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AN ANALYSIS OF THE IMPACTS OF BRITISH TRANSPORT REFORMS ON TRANSIT INTEGRATION IN THE METROPOLITAN AREAS

by

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Ph.D. Dissertation

Transportation Technology and Policy

University of California, Davis

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ABSTRACT

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Professor Martin Wachs, Co-Chair

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By the 1990s, many experts concluded that transit privatization in Britain had produced positive impacts on service provision in London, but that deregulation outside of the capital had resulted in a number of negative impacts to passengers, most notably, rising fares, lower service frequencies in some areas, and declining levels of service integration. In an attempt to improve mobility at the local level, the incoming Labour Government effectively devolved transport planning powers to local authorities, requiring that they submit five-year Local Transport Plans in order to receive funding. Empowering legislation specifically identified service integration as a means through which to improve transit and provide a viable alternative to the auto. More recently, however, experts have surmised that local strategies in the Metropolitan Areas (Mets) have yielded limited gains in the area of service integration, in contrast to the experience of London.

While some politicians believe that re-regulation of the transit industry in the Mets would automatically resolve integration issues, interview results suggested that there are additional factors that keep transit providers from effectively collaborating with one another. For example, existing competition law prevents transit operators from freely communicating with others, virtually eliminating the prospect of collaborative responses to common

concerns. Other factors influencing the level of integration include the ease with which local authorities voluntarily band together to provide service links, and the level of trust that transit operators have in local authorities. In addition, the interviews revealed that the integration of transit is more easily achieved where operators sense that authorities want to engage in horizontal integration and do not have a hidden agenda.

Beyond providing a better understanding of transit integration and possible reasons for past failures in the coordination of services, this study suggests ways of encouraging the sort of collaborative planning that can effectively bring together operators to work on improving service links in common areas. Attention to these issues is essential, not only to avoid disruptive, interoperator conflicts, but also to provide the conditions necessary to collectively offer a seamless, integrated transit service that provides significant benefits to passengers and society at large.

To my beautiful wife, Cristina Elizabeth

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CHAPTER 1: INTRODUCTION

In light of the widespread need to improve the integration of key services in urban areas, many government authorities throughout the world have sought to improve coordination through the centralization of power and/or the consolidation of institutions. This study examines recent attempts to improve the integration of one of Britain's essential urban services: transit

1.1 The Integration of Services

For many years, the accepted argument was that coordination and economies of scale could only be achieved through the unification of network participants under one single, government entity. Often, this has ultimately resulted in the creation of an integrated system, but increased dependence on a single service provider.

More recently, such authors as Donald Chisholm (1989) and Daniel Klein (1997) have criticized the ineffectiveness of these top-down strategies, in which coordinative decisions are centralized, often without the input of all parties involved. These authors call for a deeper understanding of the unique role that each participating institution plays in identifying existing or potential service needs and working cooperatively to satisfy them. They argue that too often, interdependent agencies establish formal linkages that are unable to address new issues that lie outside of their established scopes. Often, the traditional top-down approach does not permit the free movement of ideas between mid-level staff at different agencies, ignoring the practical input of individuals directly involved in systems planning and operations. This can prevent necessary integration, or result in serious discontent or hardship.

Between 1985 and 2000, Britain's Metropolitan Counties (Mets) witnessed a general decline in the provision of coordinated transit services (e.g., through-ticketing, information), primarily as a result of deregulation. There are varied forms of transit deregulation throughout the world (Gómez-Ibañez and Meyer 1993). In Britain, it entailed the lifting of controls over bus

routes, service levels/frequencies, operator information and fares; however, most vehicle and safety controls remained. Importantly, it removed all requirements for transit integration previously introduced by local authorities. Effectively, the *Competition Act 1980* prevented metropolitan transport organizations from promoting integration and discouraged most forms of interoperator collaboration (OFT 1980).

Recent transport policy in Britain advocates the use of alternative modes to the automobile and supports greater integration of transit modes, an approach that seeks to make transit more attractive to a wider segment of the population. British policy attempts to encourage greater integration through the devolution of transit planning authority to local areas and Mets. Each Met is required to develop a Local Transport Plan (LTP) that addresses transport issues, including better integration of transit modes. These five-year plans serve as blueprints for funding and implementing a package of specific mobility measures (DETR 2000a). Thus far, experience has shown that LTPs and their subsequent bus strategy documents vary widely, depending upon the local transport players involved, as well as the specific mobility needs and planning mechanisms unique to each Met. Similarly, coordinative strategies have varied among Mets, based on differing histories, resources and investment priorities.

In effect, the British government has decentralized transport planning, theoretically allowing Mets to implement plans that could encourage informal integration. For example, LTPs seek to improve transit accountability through the creation of Quality Bus Partnerships (QBPs) between operators and authorities (U.K. Parliament 2000). However, since most of these arrangements are voluntary, markets remain deregulated. It appears that coordinative efforts require serious negotiation between authorities and private operators to clearly define service standards and/or requirements. The role of the authorities will likely differ across corridors and Mets, as specific areas are given priority over others. While encouraging integration, they need

to be sensitive to entrepreneurial concerns and focus on issue-specific, bilateral agreements (as opposed to multilateral ones) where appropriate.

One question that arises is whether integration can improve transit service in a deregulated environment. Chisholm and others have argued that informal integration works in government-regulated transit systems, such as those in the San Francisco Bay Area or the Washington, D.C. Area (Chisholm 1989, Alexander 1995), but how effectively could this model be replicated in a privatized and deregulated market where the metropolitan planning process provides the only key to institutional change? What additional mechanisms, if any, are needed to establish the levels of integration proposed under the LTP and Bus Strategy? What are the principal impacts on local authorities and passengers and what are the implications of greater interdependence for operators? In light of the fact that since the 1980s, private operators in Britain have exercised a great deal of autonomy regarding operations and planning, what role should local government (e.g., district authorities and metropolitan transport authorities) play in the Mets?

1.2 Purpose of the Dissertation

The principal aim of this study is to explore the operational and organizational dynamics of transit integration and the principal factors affecting its implementation, particularly in a deregulated or semi-regulated environment. To this end, the study primarily focuses on three case studies in Britain: the Greater Manchester and Tyne and Wear Metropolitan Counties and Greater London. While all three of these urban areas have historically contributed to the industrial development of Britain, they differ greatly in size, geographic setting, economic importance and political orientation.

Through the analysis of major policy and implementation documents on integration and one-on-one interviews with key stakeholders, this study examines local responses to government guidelines on integration (e.g., through the implementation of specific programs), and compares the development of transit integration schemes as elements of larger bus strategies. In addition, it

studies subsequent public-private negotiations to forge integration agreements in Greater Manchester and Tyne and Wear.

The effectiveness of local strategies, including Quality Bus Partnerships, in achieving objectives related to transit integration is analyzed. The provision of transfer services is assessed through a review of national and local transport policies as well as partnership efforts and current service data from local operators and metropolitan authorities. The supply-side component includes an inventory of existing interoperator facilities, such as interagency and intermodal transfer points and coordinated regional fare instruments available to the public. It also gleans information from national transport surveys and areawide coordination surveys (e.g., South Yorkshire Household Travel Survey), which provide some information on past and present patterns of transfer between services.

The issue of comprehensive transit planning in a privatized environment is explored, as is the British Government's recent alternative to the introduction of competitive tendering outside of London: the implementation of LTPs and Bus Strategies. This study seeks to determine whether a locally oriented planning process can generate the necessary institutional change to effect improvements in interoperator services. At this point, no assessment has been made of the impacts that transport reforms have had on transit integration. Ideally, this study could provide national and local decision-makers with valuable input into future transit policy direction, while contributing to a better understanding of interoperator integration in both regulated and deregulated environments.

Next, this study explores the effectiveness of transport reforms in restoring elements of transit integration in the British Metropolitan Counties (or "Mets"), the seven largest urban areas in the country after London. It traces the evolution of integrated transit planning in Britain, and the institutional constraints introduced in the 1980s. Rather than examine all seven Mets, this study reviews and analyzes institutional and organizational changes in two of the Mets, Greater

Manchester, and Tyne and Wear (Greater Newcastle), as well as in Greater London, the classic exception to the rule.

In one section of the study, comparisons are made of local transport planning processes, institutional structures and transit integration strategies across the case cities. In each case, these efforts were developed in response to Central Government policies aimed at achieving mode shift. Where possible, this research analyzes efforts on the part of local and regional authorities to encourage planned integration in the Metropolitan Areas through public-private partnerships, such as the Integrate Project in Manchester, or the Superoutes and Orpheus Projects in Tyne and Wear; and considers a few of the institutional constraints to full integration.

A review of both the planning and implementation of areawide integration schemes allows for a comprehensive evaluation of many of these efforts to achieve the broader objectives of improved interoperator services. Ideally, this study shows us whether this new transport planning process, created as a vehicle for these reforms, has yielded service improvements in the Mets. Importantly, it provides insight into developing transit integration in privatized markets around the world, focusing on the unique ability of an area to adopt local transport plans that forge effective public-private partnerships and interoperator arrangements.

Finally, this study evaluates the effectiveness of policy in improving transit service integration, a target of the *1998 Transport White Paper* and the *Transport Act 2000* (U.K. Parliament 2000), effectively challenging the argument made by government that these reforms bring sufficient change to the system, i.e., improving access to a greater number of areas and ultimately, resulting in improved services and greater transit mode share. There appear to be other important factors affecting the behavior of operators that need to be addressed.

1.3 Research Framework

This study identifies the policy modifications designed to promote seamless connections at the local level and explores the role of operator interdependence in the provision of integrated

transit services. Through a set of case studies, it illustrates the principal issues associated with both promoting and sustaining integrated services in a deregulated market. In addition, this comparative study traces the evolution of integration strategies in the privatized, but regulated, London market.

There are a number of significant factors influencing the success or failure of integration efforts. These include the following:

- national guidelines for devolving transport planning powers to local authorities;
- the local planning process and its relation to collaborative planning;
- the role of competition law in operator dialogue;
- the costs and benefits of specific measures for improving integration; and
- the existing mechanisms for promoting formal integration.

Clearly, a better understanding of these influences could help us determine the principal causes for the existing pattern. This study of the processes involved in broadening the scope of transit integration in Britain could prove to be important for the following reasons:

1. Improved intermodal and intramodal integration can improve access by expanding the geographic scope of transit service;
2. Improved integration often reduces average travel times, making transit more competitive with the auto;
3. Public-private partnerships can provide the necessary link between local authorities and transit operators;
4. The Blair Administration initially identified integration as a tool with which to effect mode shift;
5. The planning processes involved in promoting integration could reveal the costs and benefits of specific regulatory controls.

The existing opportunities and constraints faced by stakeholders in the planning and implementation of new strategies are reviewed in this study. Hopefully, this work will bring a greater understanding of the role that integration policy can play within the larger context of the Local Transport Plan process (e.g., how strategies are developed, implemented, monitored.) Once we assess the progress of these measures, we explore theories of interorganizational integration and cooperation in British cities.

1.4 Potential Contribution

This research examines the issue of comprehensive transit planning in a privatized environment, exploring the British Government's alternative to full integration in the Mets: the implementation of LTPs and Bus Strategies. It seeks to determine whether a locally oriented planning process can generate the necessary institutional change to effect improvements in interoperator services. This study seeks to provide valuable input on transport policy and to contribute to a better understanding of interoperator transit integration in a deregulated environment.

Since the 1980s, much of the literature covering deregulation and privatization in Britain has focused on the economic performance of transit operators in light of changes to the regulatory framework. For example, while many studies released in the early 1990s evaluated system impacts on the basis of such measures as passenger cost per kilometer or average fare charged, they gave equal weight to such supply-side indices as cost per vehicle-kilometer, or total vehicle-kilometers provided. As a result, many of these earlier studies failed to measure the adverse impacts that deregulation has had on the transit passenger, in terms of system connectivity, travel time, or reliability.

More recently however, the principal debate has been over whether past regulatory and institutional changes have yielded the economic incentive necessary for operators to improve the quality of transit journeys. In the past decade, a series of studies have sought to weigh the pros

and cons of deregulation and privatization. A number of researchers now support the theory that there is a tradeoff between service innovation and economic efficiency on the one hand; and systemwide planning on the other. What has not been discussed at length, however, is to what extent government has the power to effect meaningful change from the standpoint of the passenger and the general public.

Consequently, this study seeks to evaluate the effectiveness of recent government policy in improving service integration, an objective specifically called out in the *1998 Transport White Paper*. It challenges the argument made by government that these reforms will bring significant changes to the system, improving access to a greater number of areas and generating a rise in transit mode share. Can Central Government incentives to local authorities and private operators generate a change in behavior or are the problems more deep rooted?

Methodologically, this study provides a framework for comparing alternative forms of regulation, based on strategies and public-private partnerships that have been implemented or are in the process of being implemented in the Mets. In contrast to previous studies of transit integration conducted in Britain, this research relies heavily on interview data to assess changes in levels of integration and operator behavior in specific areas. In order to verify the results of these interviews, available quantitative data on transit integration (e.g., transfer demand) are carefully analyzed.

Another potential contribution of this study could stem from the empirical evidence of improvements in service that come from the collection of both operator and passenger survey data in areas where new strategies have been implemented. Typically, in transit studies, empirical evidence primarily consists of either operator and/or passenger data; however, this study primarily assesses changes in both formal and informal forms of transit integration and evaluates this situation against a defined set of local and national policy objectives. In turn, it could have

important implications for future policies on government regulation or intervention at the local level.

Research in Britain has often focused on the adverse impacts that deregulation and privatization have had on transit integration in the past two decades, primarily since the introduction of deregulation outside of London. This study goes beyond these evaluations to examine various aspects of integration and to carefully assess the effects of the most recent attempts to promote service coordination through comprehensive transport planning at the metropolitan or regional level. It not only evaluates how integration has fared since 1998, but also explores alternative strategies for encouraging interoperator cooperation (e.g., under deregulated conditions).

Ideally, this research can provide a useful contribution to our understanding of market reorganization and operator behavior in response to national transport reforms, and the implications for transit service (supply side) under different circumstances. Changes in urban land uses and vehicle usage rates in Britain have not only led to an increase in the number of per capita transport journeys, but have also resulted in a more complex set of travel patterns (e.g., non-work trips). For public transit to be successful (e.g., in its attempt to effectively serve an increasingly divergent population in Britain), different levels of regulation and integration need to be considered.

Finally, this research tests the theoretical argument that more comprehensive transit planning at the local level can produce structural changes that ultimately lead to better service coordination, as defined by the same local transport authorities. The results of this study can provide some insights into impacts that British transport reforms have had thus far on coordinative planning, and future prospects for encouraging appropriate levels of agency interdependence and integration. In addition, this study attempts to shed light on the principal barriers to local coordination and the broader potential for applying Chisholm's theory of

informal integration and collaborative relationships to deregulated transit markets. Where appropriate, it seeks to provide helpful commentary to other countries, where regulatory have been implemented and expanded, such as in Chile; or where they are in the process of being developed, such as in South Africa (SADOT 1998).

CHAPTER 2: APPROACHES TO UNDERSTANDING INTEGRATION

The principal focus of this study is on the evolution of transit integration in Britain as it relates to service coordination and widespread collaborative planning. The following sections review the existing literature and subject areas central to this research: transit service integration; interorganizational cooperation and coordination; and transport planning and regulation in Britain. While these three areas are interrelated, over time, each has established a set of theories explaining the provision of integrated services in Britain.

2.1 Transit Service Integration

An important step toward understanding the significance of integration within the larger context of transport planning and service provision is to explore various sources of literature that seek to define this broad term and explain its potential role in the overall design, planning and management of transit systems throughout the world. This section attempts to bring together many of the key concepts surrounding the integration of transit service, as well as some of the principal theoretical issues surrounding the coordination of services.

2.1.1 Definition

While there are many forms of transport integration, such as joint transport-land use planning or the consolidation of institutional responsibilities, the planned integration of services is an essential element of any transit network, especially in large markets, where often, numerous operators provide bus or rail service. Indeed, efforts to improve interoperator integration have historically focused on metropolitan areas of more than one million inhabitants (e.g., London and the Mets), where significant levels of transit demand necessitate the provision of frequent and dependable transit services (Butler et al 1987). Despite the role of rural networks in providing mobility to a key segment of the population, most of the focus is on urban transport.

In Britain, "integration" is a term used to encompass the collective planning of services within a specific transit market. It is widely understood to be an "organizational process through which transit system elements are brought into closer and more efficient interaction," for the purposes of improving the quality of the transit services offered to the traveling public (NEA et al 2003). In most cases, the principal objective of transit integration is to offer the passenger a complete journey, from origin to destination with the least disruption possible. It entails the arrangement of different modes and services into a rational system of "operational features in terms of routes, frequencies, timetables, fares and ticketing, and also policy aspects such as management structure and approaches to planning, marketing and development" (TWPTE 1986).

In an attempt to reduce auto dependency and encourage the regular use of transit, local authorities have sought to improve the quality of services by identifying user needs. Consequently, one common focus has been to ensure that the transferring passenger is not adversely impacted by the switch from one vehicle to another, i.e., in terms of time, money, convenience and safety. In deregulated markets, where regional transit integration is normally weak or non-existent, this has involved carefully negotiated arrangements between transit providers serving common transfer points (or "interchanges").

Similarly, "coordination" comprises the assembly of discrete mode-specific elements of a larger, umbrella system. In Britain, this term usually refers to efforts aimed at centralizing interoperator information and making it readily available to the public. This ongoing compilation of information does not normally require service provision agreements between operators; however, it can involve significant cost. Where operator information is available, some Public Transport Authorities (or "PTAs") in the Mets have successfully preserved these services; however, some operators choose to limit the dissemination of service data to the public for fear that it could provide valuable information to competitors.

2.1.2 Theoretical Importance

The integration of not only transit, but also, other urban transport modes is essential for the efficient organization of urban space. Transport systems play a key role in this organization, closely interacting with the local economy and patterns of land use, but also directly impacting the environmental quality and sustainability of the metropolitan area (Vasconcellos 1996). The interconnected nature of transport can be characterized in the following ways:

1. Urban areas are not merely demographic aggregations, but rather, interconnected communities that have been shaped by specific systems of production, social organization, property ownership and public sector involvement.
2. In large part, capital accumulation determines patterns of social and spatial activity, placing direct demands on the transport system.
3. The relationship between modes of production and transport infrastructure and planning is directly impacted by economic activities tied to local cycles of capital production, which in turn, determine land use patterns and the need for each transport system to be carefully integrated into a comprehensive network.

Thus, the integration of routes, schedules and fares is essential to promoting the use of transit, especially in large British cities, where multiple operators provide bus and rail services and more than 10 percent of journeys involve a transfer (White 2002). Past studies have acknowledged that improved system integration can enhance urban access and mobility, which in turn, has social, economic and environmental implications for society (Nash, 1988, Tyson, 1990, Simpson, 1994, Stokes 1994). Indeed, in order for transit to be considered a viable travel alternative, operators must not only ensure reliability and comfort; but also, reduce in-vehicle travel and transfer times, and enhance through-ticketing services.

Most transit systems are designed to serve a number of principal destinations, however, most operators do not have the resources to provide through-services between all points in a

system (LT Planning 1997). Consequently, some transferring, or "interchange," occurs as a result of dispersed demand (e.g., between transit modes, especially buses). As cities grow and populations become more dispersed, multi-operator trips become relatively more important despite the declining role of suburban transit (White 1995b).

Studies have revealed that improved system coordination can enhance urban access and mobility, which in turn, has social, economic and environmental implications for society (LT 1997, IoLT 2000, Hensher and Brewer 2001). However, in order for transit to be considered a viable travel alternative by commuters and other users of the transport system, operators must not only ensure reliability and comfort; but also, reduce travel and transfer times, and enhance through-ticketing, i.e., increasing productivity (Chowdhury and Chien 2001).

Integration is often employed to simplify differences or inequities within a region, such as differences in timetables, fare and service levels. It is a deliberate arrangement through which two or more parties reach some form of agreement on a specific set of issues common to all. This integration can be deliberately planned as part of a larger arrangement, or can take the form of separate, provisional arrangements between system providers (Hensher and Brewer 2001). Similarly, integration can be formal, involving communications between specific managers of each organization; or informal, allowing for matters to be resolved between non-managerial staff of any level or specific levels.

In addition to the scope and nature of interagency coordination, it should also be noted that comprehensive efforts to enhance system connectivity through transit integration have both direct and indirect effects on the transit passenger (Miller et al 2005). While these efforts are designed to achieve a common set of policy objectives, regardless of their effects on the passenger, strategies aimed at altering traveler behavior in favor of transit should incorporate projects that can directly affect the passenger.

Five principal areas of integration directly affect each passenger and his/her decision to travel by transit: scheduling/frequency, fare payment, special event access, infrastructure provision, and information dissemination. These areas of integration normally provide the transit passenger with options for traveling from one point to another (at a specific time on a specific day), based on the individual desires and needs of the passenger. In the past decade, greater emphasis has been placed on the provision of services that directly benefit the passenger.

In contrast, those areas of integration not directly affecting the passenger often directly influence interorganizational relationships (e.g., between operators, or between these and authorities) as well as the competitiveness of operators. In turn, these practices influence operator decisions regarding service, and eventually influence the scope and nature of the transit services provided to passengers. In their study of the U.S. experience, Miller and his colleagues cite such interagency practices as data sharing, procurement arrangements, joint funding proposals, interchange facility improvements and areawide planning (Miller et al 2005).

2.1.3 Economic Considerations

As far as passenger services are concerned, factors impacting the demand as well as the supply and cost of transit are at the core of transport economics. Travel demand analysis is often analyzed through the application of consumer behavior theory, which considers the impacts of periodic changes in the price and supply of services on consumer utility (Powell 2001). Each consumer has a utility function that he/she attempts to maximize (as long as expenditures do not exceed income) in order to achieve a desired level of satisfaction. In some respects, it is a cumulative pattern of consumer behaviors that ultimately determines transit demand. Similarly, the demand for transit interchange is ultimately a function of consumers' desire to effectively move from one point to another as well as the specific configuration of service supply. Much like transport itself, interchange is merely a means to an end.

In contrast, travel supply can take on many forms, depending on the policies, resources and operational capacity of a particular area. For example, under similar conditions, there may be a number of ways of responding to proven demand: certain operators may provide a complete, door-to-door service; while others may provide only one segment of the service (Quinet and Vickerman 2004). This service may feature travel on one vehicle or on multiple vehicles or modes. The key point to remember is that the passenger is primarily concerned with traveling from Point A to Point B in an efficient manner, with minimal disruption or uncertainty.

In contrast, the transport professional is chiefly concerned with measuring demand and carefully studying the numerous ways in which transit service can be organized to respond. At one end of the organizational spectrum, services are provided by a monopoly or oligopoly, as in the case of West Midlands, where one private operator dominates the market and controls fares, frequencies and service quality. In such markets, it is normally easier to integrate transit services, since transit pricing is characterized by economies of scale, i.e., marginal costs are often below average costs (Gómez-Ibañez 1999). In addition, it has also been argued that transit passenger waiting times are a source of scale economies (e.g., with fewer operators, there may be fewer routes and better coordinated schedules), particularly if system costs are considered (Mohring 1972).

In contrast, at the other end of the spectrum, transit services are provided by numerous operators, as in the case of Greater Manchester, where three large bus operators dominate the market, but many other operators also offer services. In most situations, these operators plan and work independently of one another, seeking to maximize profit margins and remain competitive. However, in a limited number of cases, particularly where there is some price, quantity or quality regulation, operators are encouraged or required to coordinate services, potentially providing timetable economies of scale.

A factor influencing the provision of transit and network coordination is the extent to which services are regulated. For example, service providers may be accountable to a single authority or subject to very little, if any regulation. Clearly, these organizational and regulatory arrangements, which influence the quantity and nature of operations (e.g., the decision to operate in certain submarkets), ultimately determine the nature and scope of transit interchange in a given market. Without a minimal level of service regulation, coordination will be haphazard and network economies of scale or density will most likely not be achieved.

In theory, integration creates the economic conditions necessary to bring together fragmented components of a system. It is possible to identify three levels in the supply of transit: infrastructure, information and service (Quinet and Vickerman 2004). Each plays a key role in the organization of the market, and system integration largely depends on the coordination of these three levels. In the case of the monopoly operator and the operators working together, there are linkages between these systems; however, in the case of deregulated markets (e.g., U.K. outside of London), there may be limited coordination because private operators do not see a benefit in working together.

While Coase (1960) and others have argued that the free market will ultimately produce the best result, the fact that information and access to markets are asymmetrical often prevents operators from thinking globally and offering services that bring collective benefit to the system. Economic theory asserts that the market will tend toward an optimum, primarily where there are multiple providers that can offer specialized services at minimum cost to the consumer (Quinet and Vickerman 2004, Henry 1997). However, in transit markets, information is not perfect and integration depends heavily on the interplay of connecting operators and authorities. For example, the privatization of British Rail in the 1990s separated service planning from track ownership and maintenance, seriously limiting service and infrastructure coordination at the systemwide level. Even in the case of bus transit, without some form of contract or negotiation

between parties, coordinative efforts are limited by the willingness of operators to risk trusting their competitors and/or government.

This study focuses on the supply of transit services and policy efforts to improve service quality and travel time through better coordination between operators. In some respects, the provision of interchange is influenced by the manner in which transit operators interact with one another, particularly under the auspices of a government authority. While private operators must successfully compete with their counterparts, experience has shown that in mature markets, operators can stand to benefit from coordination with other operators (e.g., reduced waiting times), capturing new passengers and submarkets.

2.1.4 Transit System Design

Integration can additionally be viewed as one of a number of issues central to transit planning and engineering, as it is directly impacted by the physical structure of transit systems. The design of bus systems involves a number of important topics, such as route location, stop location, route scheduling, vehicle and labor scheduling, route evaluation and the control of operations. Route location is generally based on the objectives of providing convenient service and access to passengers, while avoiding adverse traffic and geometric conditions. Important considerations in the structuring of a transit system include the location of transit trip generators, the traffic conditions of streets, and the location of transfer or interchange points. Clearly, the spacing of stops and the location of interchanges depend heavily on perceived distances. In turn, interchange locations impact the time required to travel from origin to destination (Simpson 1994, White 2002).

Similarly, the preparation of route schedules involves determining headways and constructing system timetables that allow for convenient transfer times. For this reason, where there is formal interchange between individual operators, it is important for these providers to study the implications that this coordination will have on the allocation of resources. Vehicle and

staff scheduling must be factored into the establishment of these schedules, since drivers' work schedules must be accommodated and matched to route schedules. For example, route scheduling involves providing service during periods of peak demand, when the maximum number of vehicles and drivers is employed (Dickey 1983). The efficient provision of these services is often achieved through the splitting of shifts

In any transit system where integration plays a role in the efficient movement of passengers, the control of operations is vital in maintaining schedules and responding to service delays. Recent technological innovations, such as Geographic Positioning Systems (GPS) or Automatic Vehicle Locator (AVL) Systems, which provide for the ongoing monitoring of vehicle locations throughout the system, have improved local dispatching and facilitated the coordination of vehicles where interchange is required (San Francisco Municipal Railway 2005). These systems have been successfully introduced in a number of areas, largely in publicly owned and operated transit markets (e.g., San Francisco, New York).

In a privatized market, however, it is important that these technological advancements are made available to a wide spectrum of operators, particularly in service areas where transit vehicle headways exceed 10 minutes (or the maximum wait time tolerated by local passengers), or where transfers involve some form of intermodal connection. Under free market conditions, no operator should be given a competitive advantage over any other.

2.1.5 Major Theoretical Issues

A number of major issues and perspectives central to the understanding of interoperator integration, its potential benefits and constraints are presented in the following subsection.

2.1.5.1 Perceptions concerning transit integration

The traditional view of transit integration is that travelers perceive transfers as negative experiences, due to the time, cost and uncertainty involved (Horowitz and Thompson 1994). Researchers commonly regard the transit transfer as a disutility, placing varying weights for the

different components of an interoperator journey. For example, it is recognized that transfers can carry time penalties, depending on such factors as the ease of transfers between vehicles or the passenger's perception of time (White 1995b). Where the value of time is particularly significant, passengers with a wide variety of available options generally avoid taking such trips if they are required to wait more than 10 minutes for a transfer, i.e., what is commonly perceived as taking 20 minutes.

According to a report prepared for the Department of the Environment, Transport and the Regions (DETR), passengers normally transfer because there is either no direct, convenient service for their journey, or they enjoy the speed or convenience of a particular mode (Buchanan and Nevell 1999). The report points out that while interchange is often viewed as an inconvenience, it can be seen as an opportunity for passengers. In fact, Jemelin and Kaufmann (2001) argue that "the perception of transfer points plays an important role in the attractiveness of transit." Based on an extensive study of transit passengers at railway stations in Switzerland, they believe that specific measures can be taken to provide greater access to customer services at interchanges, thereby allowing passengers to benefit from the transfer experience. These authors recommend that transit planners structure bus and rail lines around a limited set of well-planned access and transfer points where comfort and the availability of all kinds of services (e.g., retail outlets) provide passengers with the opportunity to make the most of a trip.

Regardless of the approach taken, it is clear that some passengers require more than one mode to complete a journey, prompting a need for some form of planned, interoperator integration. A number of experts argue that those transit networks that feature well-defined, multi-modal transfer options (e.g., with non-motorized modes), offer passengers more travel alternatives, yielding greater network efficiency (Vuchic and Musso 1992). This integration may take the form of physical, institutional, and fare integration, depending on the political climate and institutional commitment of the area.

While the provision of seamless travel is an objective in any multi-operator transit system, planners often fail to recognize that the specific organizational and regulatory characteristics of a metropolitan area may ultimately determine the success of widespread integration. In a deregulated environment, private operators choose routes and schedules that keep them competitive, and often avoid cooperating with competitors. In fact, the *Competition Act 1998* clearly discouraged interoperator cooperation, except under certain situations, as it was seen as a threat to fair competition (OFT 1999). Government concerns have focused on the need to keep transit markets open to all operators, i.e., regardless of size. The Office of Fair Trading (OFT) believes that some interoperator agreements could effectively price new entrants out of certain markets and prevent fair competition.

Similarly, in a privatized environment, regional transit planning is often not conducted on an ongoing basis, leaving operators to incur some of the costs of integration. One important distinction however, is that in cases where a system of competitive tendering is administered, systemwide service planning is usually maintained. Nevertheless, it is essential that regional integration policy be designed to preserve operator competitiveness and integrity; and satisfy proven demand for transfer services (Nash 1988). It is interesting to note that even in a regulated transit system, service integration is not guaranteed, as geographically-based transit operators are not always willing to work with their counterparts. In some cases, transit operators fear that integration can result in ridership or revenue losses. In other cases, funding constraints force individual operators to invest in high priority services, preventing them from allocating time and funding to improving ties with other operators.

2.1.5.2 Benefits and costs of integration

In the past few decades, transit planners have identified the role that integration can play in improving quality of service, reliability and surrounding land use. Operators can benefit from greater farebox revenues and a more extensive catchment zone, while passengers potentially

benefit from better travel times, local amenities, and perhaps, lower out-of-pocket costs. Society can benefit from reduced congestion and air pollution, which are effectively achieved through a reduction in vehicle miles traveled (Tolliver 1997).

On the other hand, the integration of transit services can also incur costs, not only to the operator and passenger, but also to society. For example, under an interoperator service arrangement, the operator normally assigns resources to integration, can concede a certain percentage of revenue per passenger if participating in a fare scheme, and may share the cost of constructing/maintaining interchanges. These operators may also pay the operational and institutional costs stemming from adjustments to vehicle capacity, labor arrangements and/or fare structures. At the same time, there are indirect operational costs that passengers and society pay through higher passenger fees and/or local taxes. It is widely accepted that transit is underpriced in Britain as it is in other countries (Newbery 1995).

Despite these costs, many argue that there are clear reasons for integrating transit routes, schedules and ticketing (Nash 1988). In many large cities, there is a demonstrated demand for transfers, especially at major rail stations/facilities and main line nodes. While some transferring between vehicles occurs without comprehensive planning, well-coordinated services can reduce passenger uncertainty, travel times and out-of-pocket costs, permitting the system to offer greater access to activities.

2.1.5.3 Importance of integration

In transit, there is a difference of opinion concerning the role of system integration in the effective provision of transit services. Some authors, including Nash (1988), White (1995b) and Tyson (1990), argue that areawide integration is a key element of service, requiring ongoing planning and cooperation among operators, preferably under the auspices of metropolitan authorities. A number of publications support this point for a variety of reasons, including the argument that in some instances, the free market is incapable of satisfying all transport needs

(Preston, 2003, Dodgson 2000), an issue actively debated by the European Union in the 1990s (Glaister et al 1998). Most integration advocates place a great deal of importance on the transit passenger's need for a "seamless" set of connections that facilitates access between origin and destination points in the system. While many of these advocates initially supported public sector operation and regulation of transit in the 1980s, some have come to recognize the benefits of both integration and privatization, as evidenced through the case of London.

In contrast, such economists as Klein (1997) and Hibbs (2000) argue that government attempts to promote or force operators to accept widespread transit integration constitute a wasteful and damaging form of intervention into the entrepreneurial integrity of the operators. Both authors believe that government involvement in the systemwide organization of transit services only serves to disrupt the operational efficiencies achieved under a free market environment and to discourage private sector participation in the provision of transit. Klein draws attention to the differentiation between the coordination of timetables, and the deliberate restructuring of competitive services to provide wasteful integration strategies. He contends that under free market conditions, transit operators work together to satisfy ongoing demand for integrated services.

Similarly, Hibbs (2000) argues that some forms of transit integration provide "no opportunities for commercial innovation, require heavy social cross subsidy, and feature average cost pricing." He points out that experience has shown that the *Road Traffic Act 1930* gave local authorities the power to integrate transit services, however, nothing constructive resulted. In order to support his contention, he points out that despite government incentives, thus far, only a limited number of Quality Bus Partnerships have actually directed resources toward improving transit integration.

It is important to note however, that unlike the 1930 legislation, the *Transport Act 2000* did in fact require the inclusion of improved interoperator services as part of each Metropolitan

Area's Bus Strategy. In other words, at least some minimal effort to encourage greater integration is required under the current *Act* (U.K. Parliament 2000). The Labour Government initially claimed that one major difference between the current *Act* and past transport policy direction was that the former would ensure greater collaboration between the public and private sectors through the development, operation and promotion of Quality Bus Partnerships. It was envisioned that these public-private endeavors would guarantee operator cooperation in exchange for public investment in infrastructure (DETR 2000b, Preston 2003).

Research into the importance of integrating local transport resources and related activities into an organized set of services is not new. Articles by Elmberg and Quarmby (1981), Isaac and Brockhoff (1981), Ponsonby (1969) and others were published more than 20 years ago, before transit deregulation and privatization strategies were adopted by the British government. While many of these studies focused on facility improvements, rather than on systemwide access, they were equally concerned with providing seamless networks.

For example, the study by Elmberg and Quarmby (1981) found that the need by some passengers to make a transfer between modes gave transit a disadvantage compared to the private auto, primarily due to modal differences for in-vehicle and out-of-vehicle times. For example, where in-vehicle times for these two modes are comparable, the out-of-vehicle time is never comparable, especially when passengers are required to transfer, as schedulers will normally want to leave them at least five minutes to change vehicles. In response to this difference, Elmberg and Quarmby called for improvements in physical route design, submodes, and transfer locations; and advocated reducing the need to change vehicles (Elmberg and Quarmby 1981).

Similarly, Isaac and Brockhoff (1981) agreed that "coordination and integration are a necessary condition for adequate regional transport," based on existing trends towards consolidating activities into larger economic units. While this argument advocated the merging of some operators and did not address the absence of economies of scale in transit (e.g., larger

operators are not necessarily more efficient that smaller ones), it did present a broad list of integration-related objectives: make transit more attractive, provide a range of integrated services, exploit the possibilities of more effectively organizing transit systems through cost-effective methods (Isaac and Brockhoff 1981).

The Ponsonby article, however, was one of the most critical reviews of the pre-deregulation period. It analyzed British transport policy in the 1960s (e.g., the widespread coordination of transit operations) and concluded that too much emphasis was being placed on integration. He believed that such state interventionism posed dangers to transport efficiency, as it meant that government was predicting the market (Ponsonby 1969). The author held that transit providers should be free to offer the mix of speed, comfort and convenience the consumer is willing to pay for (rather than what public sector transport planners feel is best).

In contrast, research by Runkel, Horowitz and Thompson, and Pucher and Lefèvre, have focused more on cases outside of Britain, where integration continues to be a widely supported objective for transit. Runkel analyzes the German system of "verkehrsverbunds," integrated transit associations organized in each of the country's major urban areas (e.g., Hamburg, Rhein-Ruhr). For example, in a number of these areas, Runkel claims that ticketing barriers have been removed to facilitate movement between vehicles (Runkel 1994). However, he limits his analysis to publicly-operated transit systems and does not fully address the issues raised under a privatized market, where individual operators compete directly with other modes and must fully account for any lost revenue imposed by transfer arrangements.

Vuchic and Musso (1992) take a broader perspective, examining the role of corridors serving a transfer center. They point out that such factors as the number of lines provided, walking distances to transit and the need for feeder services in an area affect waiting times. They found that average passenger waiting times are often twice as long in fragmented markets as they

are in fully-integrated systems. Thus, if planned strategically, perhaps interchange facilities can yield time and cost savings.

Horowitz and Thompson (1994) not only attempt to distill the opinion of U.S. transit passengers and operators regarding integration, but also offer an array of methods for location, preliminary design, and evaluation of intermodal facilities. They conclude that in order to attract passengers to transit, interchanges should not only serve as points of transfer, but also facilitate access to other activities. For example, these authors suggest that when locating interchange facilities, transit planners should take into account an array of situational factors, including institutional arrangements, adjacent land use development, access to key activities, facility design and passenger benefits.

The aforementioned articles have primarily addressed integration in publicly-regulated markets, however, this study primarily focuses on efforts to promote integrated planning in deregulated markets. Not surprisingly, apart from Britain, there are still few examples of substantial efforts to integrate transit services that are free of government influence. While many of the same arguments to integrate hold under deregulation, the formal mechanisms for integrating services disappear; and many coordinative services become increasingly dependent upon informal links that may or may not develop between operators. A recent study by Pucher and Lefèvre (1996) considers the barriers that privatization presents with respect to transit service and integration. In order to address our central research topic, it is important that we review issues confronting integration in deregulated markets. The following section reviews research on transit integration and related issues.

2.1.5.4 Integration in British cities

While issues related to integration appear in the literature, only some articles address the impacts of regulatory practices on transfer arrangements. Such authors as Nash (1988), White (1995a), Gómez-Ibañez and Meyer (1997) and Glaister et al (1998) and Preston (1999) have

touched upon the impacts of deregulation from a theoretical standpoint. Similarly, Vuchic and Musso (1992), and Tyson (1995) have highlighted the role of transfers in an integrated system. In general, they have all concluded that while privatization has provided challenges to the ongoing promotion of transit integration, it is deregulation that has ultimately prevented many areas from either developing or continuing the practice of coordinating services. Without some form of government promotion or concern for network planning, competing operators are not inclined to cooperate, unless it results in significant gains.

In contrast, Wardman and Hine (2000) measured the economic impacts of integration on operators and passengers in Britain, assigning costs to this activity. They found that a clear distinction needed to be made between the penalty, transfer time and waiting time elements of interchange, and that factors which influence the costs of interchange needed to be disaggregated in order to avoid results that represent average conditions. They also placed emphasis on gaining a better understanding of the "behavioral response to interchange" and how it varies with the characteristics of the passenger and the type of trip taken. Finally, they drew attention to the impacts of integration on demand.

Nevertheless, if a goal of the *1998 Transport White Paper* is to "provide the public with an attractive alternative to the private auto" through the provision of better service integration, through-ticketing and route/schedule information (DETR 1998), then the policy evaluation process should determine whether these new policies are effectively changing the operator's outlook with respect to integration and cooperation with local authorities and other operators. Since Central Government is committed to curbing the rise of motorization through the promotion of transit-based alternatives, a rise in the quality of integrated services could prove to be a sign of success.

In light of what has occurred under transit privatization and deregulation, more recent studies have taken account of the impact that these policies have had on the provision of

integrated services. Nash (1988), White (1995b) and others have contributed to an economic understanding of the factors that influence a private operator's decision whether or not to coordinate services with other operators. The operators have explored ways in which integrated services could be improved, while maintaining competition. For example, in a few Mets, significant efforts were made to preserve parts of the joint ticketing arrangements established prior to deregulation through the creation of ticketing consortia, such as Network Ticketing in Tyne and Wear, owned in part by the private operators themselves (Tyson 1990).

In addition, it is noteworthy to mention that following adoption of the *1998 Transport White Paper*, studies have been commissioned by the DETR, Transport for London (TfL) and other agencies to establish a set of design guidelines for developing and promoting transit service integration throughout Britain (Colin Buchanan and Partners 1998, ATOC et al 2001, IoLT 2000, Greater Manchester Initiative in Passenger Transport 2000). Each agency has sought to identify issues surrounding transit service integration, such as the regional provision of reliable information or the improvement of physical interchange facilities, offering British examples of good and bad practice from the viewpoints of operators and passengers.

Nevertheless, until fairly recently, much of this work focused on specific modes of transit. For example, Wardman and Hine conclude that much of the empirical research on transit integration is somewhat limited in nature: a "heavy bias toward rail (e.g., intercity transport), but relatively little on the subject of integration" between private bus operators (Wardman and Hine 2000). Ironically, in most cities throughout the world, bus operators collectively serve the greatest number of transit passengers.

2.1.5.5 Integration in Europe

As transport has become increasingly important to the European Union (EU) in its attempt to harmonize system conditions throughout the continent, greater attention has been paid to the role of service integration in the improvement of transit. While a number of European countries

have historically boasted highly integrated systems (e.g., Germany, France, Italy), these systems have often relied on government regulation and intervention. In response to the British experience, the EU has attempted to address many of the same issues confronting nations throughout the globe, namely cost containment for the provision of services and an increased emphasis on economic principles for combined transport (Banister et al 2000).

While this policy direction has largely encouraged greater privatization and less government intervention, it has also supported user-charge principles, such as toll pricing, congestion charge and parking charge schemes, which indirectly stimulate the use of transit, and the need for greater coordination of bus and rail services. Recognizing that transit is largely intermodal in nature, the EU has cautiously approached the privatization of transport services and the eventual atomization of services. Banister et al (2000) have written that more recently, the EU has advocated programs that place emphasis on some form of transit regulation and the need to promote integration between operators and with other, non-motorized modes of transport.

The EU, through its transport arm, DG TREN, has led a number of efforts to study various forms of integration throughout Europe and to present possible good practice guidelines for further development at the regional level. For example, the PIRATE Program, coordinated through the South Yorkshire Passenger Transport Authority, has developed a research methodology for improving transit interchange (SYPTA and Partners 2000). In theory, this methodology seeks to maximize the potential for transit provision, infrastructure and service (e.g., the three levels of supply) to be driven by market forces. It appears that the jury is still out on the long-run effectiveness of this program.

Regardless of the outcome of PIRATE and the other programs, it appears that the EU is genuinely concerned that historic network integration not be lost through transport privatization. Its recognition that transit integration is a complex issue involving many players and outside

factors is reflected in its comprehensive funding of these programs and their associated discussions at the policy level.

2.2 Interorganizational Coordination

This area of research primarily focuses on the manner in which organizations, such as public or private transit providers, interact in theory and in practice, to achieve a set of common objectives. In many markets, these objectives are met through the efforts of numerous parties, i.e., interorganizational networks are often central to the success of systemwide proposals. The level of transit integration in an area is not only a function of the demand for transfers and the degree of management or regulation imposed on local providers, but also, the manner in which individual transit operators choose to interact with their fellow operators and with local or metropolitan authorities.

In addition, integration is largely subject to the levels of service interdependence existing between transit providers in a specific area or corridor. Where there is a need to coordinate individual actions within common areas of service interchange, be they physical or institutional in nature, there are opportunities for tying together these individual services into a single, complete travel alternative. In addition, from the standpoint of the service provider, even in situations in which transit operators co-exist in an open system (e.g., with limited regulation), route and service planning is to some degree based on the decisions of other operators.

2.2.1 Public Management Approach

A limitation of traditional approaches to integration is that they often lack an interorganizational component that will guarantee the coordination of operators and some form of collective implementation. In response to this limitation, some researchers have noted the importance of a public management approach to integration that considers the institutional aspects of interdependence between competitors and the behavior of public and private actors under varying circumstances (NEA et al 2003). Experience has shown that some positive results

in the area of integration can be achieved where an attempt has been made in the past to bring players together to discuss a common set of issues. Without communication and negotiation, neither a free market nor a heavily regulated system will necessarily produce a situation that is optimal for both operators and passengers.

A number of experts have attempted to categorize the different forms of collaboration between individual actors. In particular, Davidson and Lindfield (1996) identified three principal levels at which service providers work together: integration, coordination and cooperation. Cooperation, the most basic level of collaboration, merely requires a will on the part of all parties to work together and forge some sort of flexible arrangement that will achieve a common objective, i.e., based on trust, good information and continued goodwill among players. Coordination, a more formalized level of collaboration, involves more complex issues and requires formal procedures and some involvement on the part of organizations. Finally, integration refers to the most regulated of the three forms of collaboration, a formalized decision making system and set of procedures for working effectively and efficiently (e.g., as if operating as a single entity).

Indeed, past research has shown that these sorts of coordination issues are not solely found in transport, but rather, are characteristic of a number of sectors, such as water provision or urban infrastructure development. In general, it is often assumed that integration will somehow occur automatically, that it will always be desirable, and that it will produce better quality services (Davidson and Lindfield 1996). The benefits of integration and its possible trade-offs need to be fully understood, and communicated to all operators and authorities concerned. In fact, there most probably will be some tension among operators and between this group and the transport authorities. Davidson and Lindfield suggest that one way to avoid much of this anxiety and facilitate communication is to advocate some form of management that prevents integration efforts from being undermined.

One clear message coming out of the management literature is that in most cases, coordinative plans and actions cannot be expected to automatically materialize. Even where there are common objectives or goals, there will need to be extensive debate and negotiation between the principal players (NEA et al 2003). It is pointed out that micro-economic theory assumes equal access to information, which in practice, does not exist. In addition, the transaction costs associated with the coordination of individual entities is often downplayed. NEA and its partners suggest promoting forms of working together that can lead to "mutually beneficial actions," however, they suggest that the relative ease of achieving integration will depend on a number of outside factors impacting operators, such as historic ties as well as the institutional environment. It would appear then that while collaboration can be encouraged, many of these factors are indeed, beyond the control of policymakers.

2.2.2 Collaborative Planning

There is now a significant body of literature supporting the argument that successful system integration is much more effectively achieved through collaborative planning among stakeholders (e.g., operators and authorities), than it is through hierarchical restructuring. Authors such as Innes and Booher (2003), Chisholm (1989) and Alexander (1995) have highlighted the importance of breaking down institutional barriers that prevent actors from working together to resolve differences and negotiate agreements, and advocate the development of professional capacity among operators. While much of this research has been undertaken in the United States, the British case provides a unique opportunity to explore the role of formal and informal channels of communication in the integration of transit services.

In the past decade, Innes and Booher and others have explored the failures of institutions to provide local governance. They have argued that in many cases, this lack of organizational capacity to deal with "crisis, uncertainty and change" stems from a common assumption that problems are predictable and can be solved on a piecemeal basis, when in fact, problems are often

complex and still evolving (Innes and Booher 2003). This example can certainly be applied to the deregulated transit markets outside of London, in which competition has brought reductions in fiscal costs, but where changes have brought some uncertainty to the passenger.

Indeed, the collaborative forms of planning proposed by Innes and Booher have relevance to transit integration in these areas. This engagement of public and private sector players in the coordination of transit services is certainly discussed in the *Transport Act 2000*, however, it is not clear that sufficient incentive is actually given to the players to integrate resources (U.K. Parliament 2000). That is to say, Central Government has not adequately provided the framework for this diverse set of transit players to work together in a self-organizing, adaptive fashion to resolve many of the coordinative issues confronting local transit systems, particularly in the Metropolitan Areas.

In *Coordination Without Hierarchy*, Donald Chisholm performs an extensive analysis of the San Francisco Bay Area transit system, a multi-operator network of bus, train, metro, light rail and ferry services (Chisholm 1989). He explores the importance of facilitating formal and informal integration between transit organizations so that they communicate with one another and work collectively to identify and eventually, respond to common issues (e.g., coordinated schedules). Chisholm rejects the notion that a hierarchical structure ("top-down" approach) is the sole option for ensuring integration, arguing that it forces a set of predetermined strategies on private operators, ultimately, affecting their ability to make market decisions. Instead, he favors flat, interorganizational coordination, in which operators work to solve specific integration problems (Chisholm 1989). He concludes that, contrary to widespread belief, informal aspects of organization are "not only powerful determinants of behavior within and among organizations, but also, possess characteristics rendering them effective for such tasks as coordination."

While Chisholm's book primarily focuses on transit integration among publicly-owned transit operators, his arguments are equally applicable to many privatized markets where at least

some degree of operator interdependence exists (e.g., informal interchange between bus services). His aim is to show how best to achieve interorganizational integration, employing both formal and informal mechanisms. It is argued by Chisholm and others that due in large part to the constraints of protocol, many formal channels of integration are in fact, time-consuming and circuitous and often become ineffective in dealing with day-to-day issues. Informal ties between individuals of different institutions provide the necessary flexibility to resolve changing circumstances and needs central to successful interdependence, primarily because they directly involve the parties responsible for effecting the change (Chisholm 1989).

Similarly, Alexander writes of the virtues of encouraging informal linkages between organizations, however he points out that this form of coordination does not always yield positive results. He argues that it is not static, but rather, is characterized by turbulence, as conditions change and the introduction of new players (and new examples of interdependence) brings modifications to bilateral and multilateral relationships. In contrast to Chisholm, however, Alexander believes that researchers must be cautious and not put too much faith in informal forms of coordination (Alexander 1995). He believes that, as in the case of formal coordination, only the successful cases are actually reported, and that there are probably unsuccessful examples that never are reported. Nevertheless, Alexander does agree that informal coordination can be beneficial to the network as a whole, particularly when it involves a relatively small number of interdependent organizations (e.g., a half-dozen). He too, believes that it plays a supplemental role to formal coordination structures.

As a follow-up to this research on institutional interdependence and collaborative planning, this study examines the role of public and private transit providers in improving integration in the deregulated, urban markets outside of London. If greater integration is dependent upon negotiation and informal linkages, is the newly-formed transport planning process capable of bringing change to interoperator integration? What are the proper mechanisms for encouraging

greater integration between operators in the case cities, and what have the Central Government and local authorities done to strengthen informal ties?

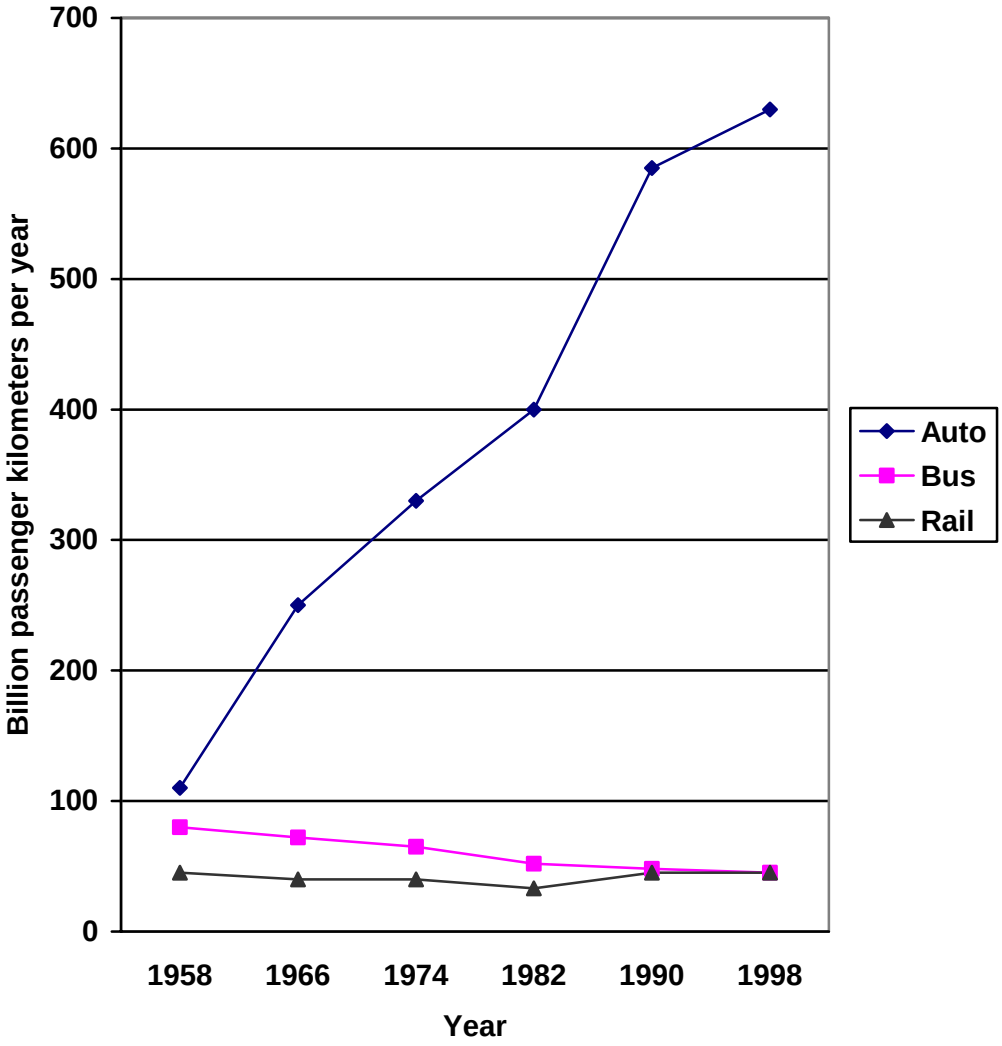
This study explores metropolitan efforts to maintain or improve integrated transit services under three distinct regulatory frameworks: pre-1998 deregulation in the Mets; the "hybrid" situation that has evolved there since 2000; and ongoing regulation (e.g., competitive tendering) in London. While all three of these regulatory arrangements have been studied in the past, little has been said of the management approaches covered in this section. This study seeks to identify the structural implications that these regulatory systems have had for transit operator interdependence and the level of operator input into the planning and integration of transit, allowed in each area.

2.3 Transport Planning and Regulation in Britain

While transit services in Britain have generally been more comprehensive than those found in Canada and the U.S., some authors argue that they have also been characterized by alternating periods of public and private sector control, with significant shifts in British transport policy. As auto ownership increased and transit ridership fell in the 1950s and 1960s (see Figure 2.1), Britain began to subsidize its transit services and to take over failing rail and bus operations (Gómez-Ibañez and Meyer 1993). Some experts argued that transit "should not simply operate as a commercial undertaking," but also "promote social planning" through the cross-subsidization of unprofitable routes (Ponsonby 1969). Nevertheless, between 1972 and 1982, revenue support grew from £10 million to £520 million, while transit ridership declined (Banister 2002).

The existing body of literature covering deregulation and privatization in Britain primarily focuses on the economic performance of transit operators, i.e., in light of recent changes to the regulatory framework. The principal debate has been over whether past institutional changes have yielded the economic incentive necessary for the improvement of trip quality. The general consensus seems to be that a tradeoff exists between service innovation and economic efficiency

Figure 2.1 Passenger Transport in Britain by Mode, 1958-1998



Source: DETR 2000b.

on the one hand; and systemwide planning on the other. Many argue that the latter should take priority over the former, especially in light of the widely held contention that transit service is a public good. It is unclear, however, what options the government really has for controlling the private sector.

According to Mackie and Preston (1996), while passage of the *Road Traffic Act 1930* established public control of the bus industry, it encouraged the creation of monopolies and urban networks, including systemwide fare structures, restricted entry, and quality control of vehicles. This regulation was viewed as necessary to ensure customer safety, however, it tended to favor certain sectors over others, and often, prevented efficient bus operation. Private interests were responsible for the design and development of Britain's early rail and tram networks; however, by the mid-20th Century, private bus operators had experienced financial difficulties, prompting the widespread takeover of operations by the public sector and increased public subsidies to transit (Gómez-Ibañez and Meyer 1993). In the 1960s and 1970s, rising levels of subsidy to transit eventually prompted Central Government to encourage the private sector provision of transit services.

2.3.1 Prior to Privatization

A key objective of the *Transport Act 1968* was to improve urban mobility through transport-land use integration and metropolitan-level planning. This legislation was developed in response to rising concerns that the public sector was not doing enough to foster comprehensive transport planning in major cities, particularly in light of the *Buchanan Report* and its calls to regulate auto use. This classic study examined local traffic patterns and the likely implications that road construction and increased congestion could have for the quality of life in urban areas (Buchanan 1963). It generally concluded that autos should be accommodated to some degree, but that private vehicle use needed to be carefully regulated through the introduction of parking policies, road charging and improved transit. This comprehensive, multi-modal approach to

transport management influenced the *Act*, as did the development of new traffic modeling techniques (e.g., based on land use inputs).

Thus, the *Transport Act 1968* effectively introduced a new framework for metropolitan transport planning, strengthening public sector support for transit. For example, it introduced direct revenue support for bus routes in Britain, encouraged the expansion of concessionary fares for the elderly and disabled, and directed local transport authorities to improve interoperator cooperation (White 1995b). In the early 1970s, Passenger Transport Authorities were established in the largest Mets to coordinate transport and land use planning, similar to what had been done earlier in London (Beatty and Haywood 1997). See Appendix B.

In the 1970s, buses operating in many of Britain's largest cities were municipally owned, while those in smaller towns were often operated by subsidiaries of the National Bus Company, a wholly-owned state corporation. At the time, bus routes were operated under a system of licenses issued by Traffic Commissioners. This system of local government regulation was established in the 1930s to moderate what was then viewed as increasingly fierce competition between bus operators (Cartledge 2002).

Between 1968 and 1986, while operators were tightly controlled by the public sector, a great deal of progress was made towards introducing the integration of services and facilities (e.g., Travelcards, improved interchanges). By the beginning of the 1980s, bus ridership in most Mets had either stabilized or increased, reversing past trends. Even though the cost of public sector service provision had increased, the PTAs continued to attract riders to transit through development of an integrated, multi-modal network of services, including integrated routing, scheduling and through-ticketing (Tyson 1995).

2.3.2 Since Privatization

In the past two decades, there has been a worldwide trend toward the privatization of public services, for the purposes of improving market competition and product quality. A number of

countries have embarked on the privatization of many urban services (Sclar 2000), such as electricity, water and waste management, as well as the design and operation of air, rail and bus services. In addition, privatization and its related efforts have often led to a rise in the liberalization of transport services, i.e., the lifting of controls. Two examples of these efforts are the deregulation of the airline industry in the U.S., and the "concessioning" of port activities in Argentina (Estache and de Rus 2000).

In the case of the airline industry, deregulation was introduced in the United States in the late 1970s as a way of liberalizing airlines from strict price, quantity and quality controls. Proponents argued that these regulations often prevented the airlines from differentiating fares and services and generally changing their mode of production to become more efficient (Bailey et al 1983). This policy of deregulation, which was eventually adopted in many other countries, including Britain, allowed for airlines to realize economies of scale in the size of aircraft used and the reorganization of passenger services into "hub and spoke" systems (e.g., reducing the average number of direct flights and achieving higher levels of occupancy).

While airline deregulation was said to have generally brought positive results, it also generated some less favorable impacts. For example, fares were lowered on the busiest corridors (e.g., Chicago to New York, Los Angeles to San Francisco), resulting in greater choice; and airport hubs were restructured to offer better integration between flights. In addition, new, low-cost airlines offered discount fares to secondary airports in medium to large markets. While safety was maintained, there were some clear disadvantages resulting from deregulation, namely, a rise in prices and the loss of regular service in smaller markets, a rise in the average number of transfers needed to complete a trip, and the collapse of many smaller airlines (Powell 2001).

The conservative Thatcher Administration initiated an effort in the early 1980s to contain public expenditure through the privatization and/or deregulation of public services, including water transport, airport operations and bus transit. In response to rising transit subsidies and

decreasing ridership in a few markets, the *Transport Act 1985* called for the break up of the National Bus Company. In London, this process entailed the awarding of contracts to private operators through a competitive tendering process, subject to regulation; whereas, in the Mets, it also included the deregulation of bus services and a reduction in subsidies. These policies limited the role of PTAs in comprehensive transit planning (Gómez-Ibañez and Meyer 1997).

Competitive tendering was introduced by London Regional Transport (LRT) on corridors previously operated by subsidiaries of the publicly-operated London Transport system. That is to say, LRT was transferred from local government to Central Government control in the mid-1980s and underwent a process of commercialization whereby the agency was split into three divisions: buses, underground and engineering. The London Buses division was initially responsible for the bidding of the privatized bus routes (Mackie and Preston 1996) . Gross cost contracts were awarded to private operators based on a set of requirements related to financial stability, experience in the field and operational capability. This type of contract guarantees that operators are paid for the delivery of a specific set of services, however, operators are required to turn all farebox revenues back to the contracting agency, in this case, London Transport.

In the case of London, these gross cost contracts also included financial penalties for poor performance with respect to mileage operated, schedule adherence and revenue collection. In addition, a set of selection criteria was developed to place emphasis on service provision, innovation, marketing of fare instruments, and coordination with other operators. According to Higginson (1991), this contractual arrangement clearly benefited large operators, which normally boasted larger and more modern fleets as well as significant marketing and product development budgets than their smaller competitors.

In the publication *Buses*, proponents claimed that deregulation would reduce costs, increase interoperator competition, and improve resource allocation (Mackie et al 1995). Some proponents argued that with these changes, local bus markets would be contestable and fares

would account for marginal costs, i.e., true competition would force operators to respond to customer need. They believed that deregulation would cut costs, increase productivity and improve service (Beesley and Glaister 1985).

In response to this push for deregulation, Gwilliam et al (1985) challenged many points presented in *Buses*. They argued that competition would be limited to a small number of large operators and that system efficiencies would only be realized under a truly contestable market, i.e., where entry barriers do not exist. They predicted that monopolies would ultimately dominate markets, and that large companies would raise costs and cut service on the least profitable routes, adversely impacting disadvantaged passengers. They claimed that competition might develop in profitable corridors, but that ridership would decrease as a result of poor coverage, high fares and a lack of integration (Gwilliam et al 1985).

In fact, past transit industry reports have shown that deregulation generated both positive and negative impacts on the sector. For example, while some transit service levels in the Mets initially rose and operating costs fell, average industry wages decreased significantly and cost per passenger in most areas remained constant (Mackie et al 1995). In addition, transit ridership fell in the Mets (see Table 2.1), not only as a result of widespread increases in passenger fares, but also due to other, external factors (e.g., increased auto ownership).

Similarly, Gwilliam et al (1985) correctly predicted that competitive tendering in London, i.e., urban bus privatization with government regulation, would preserve the benefits of integrated services. Clearly, London outperformed fully deregulated markets in a number of areas: operating costs declined in the capital, while ridership stabilized and cost per passenger declined. Competitive tendering in London produced a more contestable market, as small operators were more successful at competing for contracts.

In contrast, under deregulation, some large operators came to dominate specific corridors through predatory practices, limiting small operators to the socially-necessary services contracted

by the PTA. This may be a reason why prices drastically increased in some Mets. Ironically, Hakim et al (1996) argue that it is not competition that keeps monopolistic prices down, but rather, the threat of competition. This point was supported by McCullough et al in their study of cost efficiency trends (McCullough et al 1998).

Table 2.1 Urban Bus Ridership and Auto Ownership in Britain, 1985-1998

	BUS RIDERSHIP*			AUTO OWNERSHIP**		
METRO. AREA	**1985**	**1998**	**Δ 85-98**	**1985**	**1998**	**Δ 85-98**
Greater Manchester	136	84	- 38 %	248	403	+ 63 %
Merseyside	200	106	- 47 %	209	312	+ 49 %
South Yorkshire	259	103	- 60 %	217	331	+ 53 %
Tyne and Wear	248	137	- 45 %	188	282	+ 50 %
West Midlands	182	134	- 26 %	262	415	+ 58 %
West Yorkshire	141	88	- 38 %	250	344	+ 38 %
All Mets	182	107	- 41 %	246	363	+ 48 %
Greater London	169	180	+ 7 %	321	363	+ 13 %

* Annual trips per inhabitant ** Autos per 1,000 inhabitants

Sources: DETR 1999a, DETR 1999c

Despite London's success at effecting increases in bus patronage, a number of critics feel that system performance in London could be further improved through the introduction of systemwide modifications, such as greater flexibility in developing schedules and routing, based on minimum frequencies and corridor coverage (White 2000, Chartered Institute of Transport 1994). Others point out that privatization and deregulation have also coincided with a decline in transit share in Britain, particularly in the Mets.

While changes in mode splits can be attributed to a number of factors, many experts believe that decreasing levels of planning and integration may have contributed in part to increased motorization, at the expense of transit (Goodwin 1993). For example, after the introduction of deregulation in 1986, the PTE no longer played a key role in the collective planning of transit services. The resulting confusion over service changes as well as the gradual deterioration of

intermodal integration led many passengers to lose confidence in the system and to depend on autos for their daily travel (Tyson 1990).

2.3.3 Impacts on Integrated Services

Prior to the *Transport Act 1985*, there was a clear trend toward greater integration of transit fares, routes, and information. While London, largely because of its size, historically had the largest network of transit services and the most comprehensive transfer system in Britain, other regional cities also boasted well-coordinated transit networks featuring key intermodal links between bus and rail services (e.g., Tyne and Wear).

After 1985, many of these interline services were lost as private operators were not required to cooperate with their rivals and PTAs were no longer able to effectively promote interoperator integration. Any agreements with the operators had to be registered with the OFT, and deemed to be in the public interest. The *Competition Act 1980* restricted most contact between operators, fostering territorial rivalries. In an effort to promote competition and exert control over the industry, the OFT and the Competition Commission (CC) invoked this *Act* to prevent collusion (e.g., price fixing) between operators. Consequently, this *Act* further discouraged interoperator integration.

Consequently, during the first year of deregulation, most Mets witnessed the discontinuation of local Travelcards and the introduction of operator cards. Bus operators were discouraged from operating joint timetables because it was seen as anti-competitive (Simpson 1996), and some bus operators initially bypassed transfer points. According to Tyson (1990), the PTAs had provided three key elements that the market failed to deliver: transfer facilities, passenger information, and interoperator ticketing.

2.3.4 Labour Party Response to Integration Concerns

The British transport reforms of the late 1990s included efforts to improve transit service planning and integration. While past governments had focused a great deal of attention on

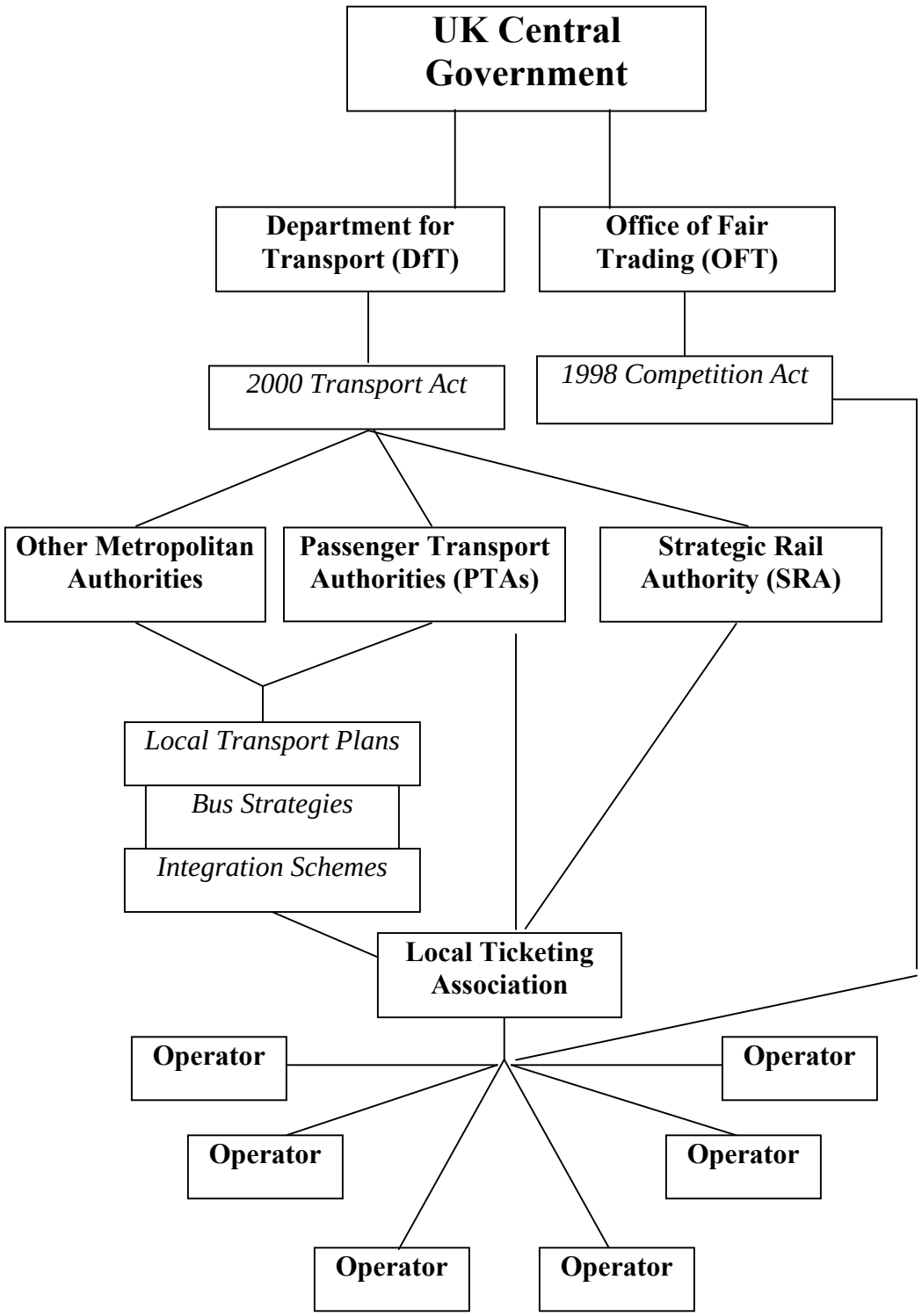
financial performance and cost reduction, the Blair Administration has attempted to address passenger needs. It has expressed concern over transit service in Britain, prompting renewed interest in the integration of bus and rail services in the major cities. Thus, the recent British reforms constitute an attempt to implement integration schemes (in the face of barriers raised under deregulation) by empowering Mets with the authority to develop plans that promote interagency cooperation through a series of reciprocal measures.

Among the principal policy initiatives of the *1998 Transport White Paper* were improvements to transport infrastructure and operations; traffic restraint; integrated land use planning; and intermodal planning. Through a multi-modal approach to investment, it included many new strategies for investing in infrastructure and improving integration. In addition to specific strategies for bicycle, pedestrian, bus and rail, the document promoted the concept of "seamless journeys" through better transfer facilities; simpler fare structures; through-ticketing; and better service information (DETR 1998).

Under current arrangements, the Local Transport Plan (LTP) serves as the principal vehicle for implementing the government's integrated transport policy. While a number of communities in Britain, including Leeds and Surrey (Ashiru et al 2000), developed pilot LTPs in the 1990s, the *Transport Act 2000* expanded the process to all areas of England, promoting community participation in the development of strategies and partnerships. Each local authority or PTA is responsible for submitting an annual LTP detailing transport priorities and funding needs (see organizational structure in Figure 2.2).

In concert with rail plans, each LTP is required to establish a five-year Bus Strategy for reducing the adverse impacts of the auto and promoting the attractiveness of transit. In each Met, this Strategy must contain policies requiring that bus services meet the transport needs of local residents; that these services meet standards set by the PTA; and that additional bus-related services and facilities be provided as the PTA sees fit (U.K. Parliament 2000). For example, a

Figure 2.2 Transit Integration in Britain: Formal Institutional Structure



Strategy might focus on such interrelated issues as network access, affordability, reliability, information provision and integration.

By containing increases in motorization throughout Britain and providing feasible alternatives for the transit passenger, these Bus Strategies place a great deal more emphasis on the effective operation of local bus systems, with proposals for Quality Bus Partnerships, bus priority systems, through-ticketing arrangements, and further review of transit smart card deployment and expansion. The document suggests that busways be planned in conjunction with light rail transit schemes, a more cost-effective approach to infrastructure provision.

Quality Bus Partnerships constitute voluntary or statutory arrangements between local authorities and operators to improve the quality of service, as specified in the Bus Strategy. Under this partnership agreement, authorities are responsible for making street improvements that facilitate bus operation along certain corridors; and in exchange, the transit operators using these facilities are responsible for providing better, more dependable service to the public. Theoretically, QBPs permit authorities to set quality standards in exchange for improved infrastructure facilities and smoother operation (U.K. Parliament 2000).

Quality Bus Contracts go a step further in requiring that operators bid for local routes through a competitive tendering process that establishes a specific set of service standards for specific corridors (DETR 1998). In effect, these Contracts are widely viewed as a form of bus re-regulation and appear to be under consideration in a few smaller transit markets. For example, Nexus has discussed applying this concept in at least one poorly served area, while the SYPTE in Sheffield, has seriously considered applying this set of standards regionwide.

The *1998 Transport White Paper* also encouraged the creation of QBPs, accords through which local governments and operators can work together to deliver services. Ideally, it was envisioned that these collaborations could provide a smoother transition between trip segments by improving points of transfer (interchange); ensuring greater reliability through up-to-date

schedule information from operators; and providing passenger information by Internet or telephone. This focus on better intermodal connections is consistent with the document's broader objective of discouraging solo driving.

Nevertheless, as previously mentioned, some industry experts are critical of these partnerships and contracts. For example, some assert that Partnerships are anti-competitive, benefiting participating operators (e.g., often, larger companies), to the detriment of other operators in the corridor. While QBP supporters point out that these partnerships are voluntary, i.e., that other operators can join in at any time, critics argue that partnerships often help strengthen territorial dominance by large, influential operators, particularly nationwide bus companies (see Appendix C). This would appear to counter Central Government's commitment to encourage greater competition between providers.

In the case of Quality Contracts, critics see them as a step in the direction of transit re-regulation and greater government control of the industry, reversing a trend toward systemwide subsidy reductions and market contestability begun in the 1980s (Hibbs 2000). With Quality Contracts, authorities would prescribe specific standards of service, limiting the operator's latitude to modify routes and timetables, in response to perceived demand. However, some critics of Quality Contracts doubt whether they will allow for the system to adjust to market changes, i.e., offering a product that is useful and attractive to specific types of passengers.

2.3.5 Challenges to Implementation

While the *1998 Transport White Paper* represented an attempt to provide an integrated set of travel alternatives, some argue that it overstated the case for using transit as an instrument for dealing with traffic congestion. Clearly, transit could be improved to benefit passengers and to provide feasible options to some motorists; however, cross-elasticities between private vehicle and transit are low, and a significant proportion of freight and passenger trips cannot be placed on

transit. Critics argued that planners should focus resources on service areas where cross-elasticities are easier to predict (Newbery 1995).

On the other hand, by strengthening public participation in the LTP process, Central Government may avoid overestimating transit demand and allow local authorities in the Mets to design Quality Bus Partnerships that effectively respond to the passenger and establish valuable links between operators and public authorities. Transport documents, such as the *1998 Transport White Paper*, or its daughter document, *From Workhorse to Thoroughbred: A Better Role for Bus Travel*, have provided some guidance and flexibility to both of these groups in the negotiation of service contracts (DETR 1999b).

Outside of London, it appears that the future direction of transit service planning, in general, and integration, in particular, will depend on the stability of QBPs in the Mets, the scope of future LTPs in the Mets, and the status of evolving agreements between authorities and operators. While the *Transport Act 2000* introduced legislation supporting the role of local governments in the provision of transit services, it did not greatly alter the deregulatory framework, except where local governments decided to impose conditions (DETR 2000b). Between 2000 and 2003, it seemed that these local authorities were willing to wait and see if the new LTP process could generate the necessary changes to improve transit services (e.g., integration) and attract riders; however, more recently, experts have begun to question this decision (PTEG 2003).

Since most provisions introduced by the Office of Fair Trading to preserve a competitive environment are still in effect, some Mets may be reluctant to impose integration requirements for fear that government will curtail their powers. For example, while regional, multi-operator Travelcards have continued, the OFT (1991) concluded that "any agreement on prices or service levels involves market-sharing or price-fixing," and is anti-competitive. It has permitted fixed pricing for multi-operator cards, but forbids it for other tickets (OFT 2001).

Metropolitan authorities have been cautious not to alienate transit unions, which primarily represent workers at the five largest bus groups and many of the rail franchises. The Transport and General Workers' Union (TGWU), an umbrella group, has demanded favorable working conditions for its workers, prompting large bus companies to argue that more attention should be paid to returns on capital, cash flow and other tools with which to maintain worker wages at an acceptable level, and appease company shareholders. While authorities must protect passenger interests, they also must guarantee that integration does not unfairly burden transit operators.

2.4 Conclusions

A significant amount of literature has been written on transit integration and regulation, not only in Britain, but also, in many other parts of the world. Many of these studies have either looked at the physical or technical requirements for designing transit facilities at major nodes (e.g., interchanges); or the economic implications of linking together a number of common services through fare and timetable integration, i.e., for the benefit of the operator and passenger. Others have explored ways of minimizing the effects of time and cost penalties on the passenger through land use and facility designs. All of these studies have contributed to a better understanding of the phenomenon under study.

Furthermore, the existing literature provides a foundation from which to explore a number of traditional assumptions and theories concerning transit coordination. For instance, it is widely assumed that integration is only possible under tight government regulation. However, in some respects, this assertion is counter-intuitive if, in fact, free market systems could theoretically allow for greater flexibility in the provision of services, and perhaps, coordination where it is deemed necessary. Conceivably, an authority keen on providing guidelines for improving coordination could generate interest in coordination and the benefits it has to offer through management of a lightly regulated system. There are, however, other mechanisms at work that often prevent integration from reaching an optimal level.

Few studies have approached integration from both a planning and an interorganizational perspective. Where a fair amount of planning has recently been devolved to local areas in Britain, it is important to analyze what integration policies have been proposed and precisely what they have achieved, if anything. Similarly, from the standpoint of the transit operator, it is important to explore the interorganizational mechanisms and incentives necessary to achieve integration at the metropolitan level. That is to say, past experiences suggest that in the absence of most forms of regulation, private operators often need a "raison d'etre" for coordinating with other operators. What benefits can they receive from such an arrangement? Surely, there have been cases where even under deregulation, there has been some interest in coordinating certain services (e.g., the establishment of Network Tickets in Tyne and Wear after deregulation).

While areawide Local Transport Plans and Bus Strategies in Britain have great expectations for the future of intermodal links and cooperation, ultimately, it may be the private operators themselves that decide whether the potential benefits stemming from changes in government transit policy actually outweigh the costs of working with competitors. While its original intent was to prevent market dominance and promote competition, perhaps it can be argued that the *Competition Act* is yet another cost imposed on the operator, adversely impacting the full integration of privatized services. How useful are LTPs in this context?

Outside of Britain, there are other examples of efforts to integrate privatized transit services, primarily in the industrialized countries. While Germany, Australia and some Scandinavian Countries have successfully introduced privatization to integrated transit systems, it is interesting to note that a number of middle income countries have also attempted to improve integration of privatized transit systems. Chapter 4 provides a look at two cities in middle-income countries that have attempted to promote greater integration as part of a larger plan to restructure privatized markets. One common aim of these efforts is to make transit more accountable to passengers, most of whom heavily depend on bus and rail services.

CHAPTER 3: THEORETICAL CONSIDERATIONS

Past studies have explored the advantages and disadvantages of integration, however, much of this work has primarily dealt with regulated transit markets. It is widely asserted that unless government consistently regulates transit operations at the local or metropolitan level, little systemwide planning and integration will be carried out. It is pointed out that in a competitive environment, private sector operators seek to maximize their profit margins and expand their service markets. Without adequate government incentives, they are more concerned with their own routes and less concerned with providing ties to other, competing services.

In fact, some operators fail to regard transit as a public good and view integration as yet another requirement imposed on them by local government. For example, transit markets in Britain were privatized and deregulated in 1986, with a reduction in subsidies. This policy effectively led to a decrease in transit ridership in the Mets between 1986 and 1998, and the withdrawal of integrated services, such as interoperator tickets and shared interchanges. In turn, these adverse impacts have probably contributed to a rise in auto ownership during this period (e.g., a 60 percent increase in West Midlands).

3.1 Problem Definition

The post-1998 changes in British policy present a unique opportunity to assess the evolution of collective transit planning and its impacts on interoperator integration under deregulation. It is helpful to identify local factors and mechanisms that influence the planning process; and to analyze the development and implementation of specific strategies for providing integrated services (e.g., accessible interchange at key nodes). In addition, a close study of recent development projects could reveal the level of importance that local interests give to integrated planning.

The central question to be dealt with in this study is whether the recent transport reforms, as manifested through the implementation of Bus Strategies and Quality Bus Partnerships, are successful in bringing improvements to transit integration in the Mets outside of London, i.e., where up to 10 percent of all transit trips require at least one transfer. This research will seek to reveal what qualitative and quantitative changes, if any, are discernable in the Mets. In response to these findings, the study will discuss the implications of greater metropolitan-level integration of services and present a set of policy recommendations for improving transit connectivity, one of the central themes of the *1998 Transport White Paper* and its "Integrated Transport" focus.

3.2 Research Questions

In an effort to understand the role transport planning plays in the provision of integrated services in the Mets, this study will seek to answer the following questions:

1. What is integration and how is it beneficial?
2. What is the existing level of integration in the case cities and is it optimal?
3. In the Mets, what are the principal barriers to transit integration?
4. What planning resources (e.g., guidelines) are available to local authorities to guarantee a minimum level of integration?
5. What particular strategies have Mets employed to encourage/engage operators?
6. What are the prospects that Mets will achieve many of the integration objectives set forth by Central Government?
7. What insights regarding the recent experience of transit integration in Britain could prove useful to other cities?

3.3 Principal Research Goals and Objectives

The principal goal of this research is to determine to what extent transit planning and integration can or should be promoted in a deregulated environment. For example, it is not clear whether the LTP process can effectively achieve greater integration between service providers, as

government funding is limited and the *Competition Act 1998* places its own set of restrictions on the types of integration permitted. Nevertheless, if the recent transport reforms can forge fruitful partnerships between transit players and improve network conditions for both the operator and the passenger, this process could serve as a model for privatized transit systems. In order to determine to what extent national transport policy and local transport planning processes appear to be affecting integration, this study proposes to do the following:

- summarize the nature of integration before deregulation;
- identify initial changes to service integration after deregulation;
- study local factors affecting the development of Local Transport Plans (e.g., political, institutional);
- analyze the development of integration schemes within the context of Bus Strategies;
- examine the organizational dynamics and negotiations involved in forging local partnerships (between operator and between operators and authorities);
- explore the nature of integrated services in Partnership areas; and
- suggest changes to existing local efforts and transport policies in Britain and abroad.

3.4 Research Propositions

Consistent with our research questions and goals/objectives, a set of propositions will be developed to test the effectiveness of British reforms in restoring collective planning and transit service integration. Based on the problem definition, the following propositions are employed as parameters for the broader discussion of formal and informal integration of services and the resulting service changes to the network:

1. The larger the number of private operators serving a particular transit corridor or set of interchanges, the more difficult it is to establish interoperator integration;

2. While the *Transport Act 2000* encourages the creation of interoperator integration projects, the *Competition Act 1998* places severe restrictions on interoperator fare schemes, deterring many operators from participating in fare coordination schemes;
3. Integrated operations (e.g., physical integration) will not expand unless private operators are given the freedom to negotiate arrangements, and give input into integration schemes;
4. Generally, informational integration is the least threatening form of cooperation to operators; however, it can also incur significant costs to metropolitan authorities, such as in the deployment of real time systems.

3.5 Research Observations

While transport policy reforms introduced by the Blair Administration have primarily focused on encouraging Mets to take a comprehensive approach to improving access to key economic activities, this research aims to determine whether this grassroots approach to planning (e.g., the formal ties and informal linkages that it produces in each Met) can achieve the level of integration necessary to make transit more attractive. Clearly, future improvements to the metropolitan transport system will depend on the coordinative planning and implementation of LTPs and their integral components, such as Bus Strategies and focused efforts to improve integration. However, these improvements will also require a long-term funding commitment from Central Government that has historically been difficult to secure. In addition, local authorities outside of London have had limited success in generating new revenue.

In defining the project, it is not only important to address the formal agreements reached by the operators and local authorities, but also to highlight the role of informal linkages between operators in the improvement and continued support of transit integration. In effect, this study seeks to determine whether this new planning tool and its resulting strategies for improving local transit service connectivity can create a sort of self-regulating system in which service integration can be improved as it has been in London under formal regulation. The success of this

experiment will depend greatly on political will and the ability of each Met to provide both formal and informal channels of engagement.

3.5.1 The Regulation-Integration Link

Past experience has shown that integration is most easily achieved where the local transit market is regulated, however, it does not necessarily hold that in a privatized environment, regulation allows for an optimal level of service innovation. Regulations can create conditions that alter the competitiveness of an operator, or favor certain operators over others, adversely affecting the mix of providers and potentially, the provision of transit.

The *1998 Transport White Paper* attempted to implement measures that could encourage local control over transit planning and service integration, so that bus operations would respond to not only efficiency requirements, but also passenger concerns. However, while many of these strategies could improve coordinative efforts and increase transit access to a larger catchment area, some experts argued that they would do so at the expense of private transport, producing negative impacts on the economy. Clearly, this concern was reflected in the *Competition Act 1998*, legislation that has implications for a number of sectors, including transport.

In response to the *1998 Transport White Paper*, some local areas have sought to address transit integration through the development of Quality Bus Partnership strategies (Nottingham City Council 2000), while others have made a case for developing a separate set of objectives for integration, as part of the LTP process (Tyson 2001). The question is whether Mets can effectively use this planning process to gain the support they need to implement QBPs and restore some of the benefits of widespread integration. Experience has shown that failure to develop a community of interest in these transit service reforms can preclude effective service integration (Chisholm 1989).

One way of comparing integration efforts in the Mets, then, would be to measure the level of integration found in corridors where Quality Bus Partnerships have been introduced, i.e.,

Quality Bus Corridors or special areas. These QBCs are transit thoroughfares where the public sector has been encouraged by Central Government to provide transit infrastructure in exchange for improved, reliable services. It is not clear that these corridors are any different than the rest, however, it is predicted that large operators will join these Partnerships and concentrate their operations in QBCs to take full advantage of public investments and positive press exposure.

Differences in transit integration between QBCs and other areas may be quite obvious in the near term, but less apparent later on, especially if QBC operators begin to set higher standards for service quality. According to Bristow et al, it is quite possible that Partnerships will develop in the most attractive markets. For example, most QBCs will be focused in "areas of mature competition," where one or two large companies dominate the market; while smaller companies may attempt to capture other markets (Bristow et al 2001).

3.5.2 Performance Measures

In order to evaluate the impacts of these recent transport policy directives on transit integration, it is necessary to establish a relevant framework for analysis. Consequently, this project will evaluate recent changes in the provision of integrated services against the key objectives called out in the *1998 Transport White Paper* and/or the *Transport Act 2000*, central to the development of an integrated system.

Collectively, efficiency and effectiveness measure a system's ability to provide transport in a manner that minimizes the use of resources in both the provision of service output and service consumption (Fielding 1987, Li and Wachs 2000). Efficiency involves the productive execution of set tasks with a minimum of waste. In the case of transit, this applies to the relationship between inputs (monetary, human resources) required to produce a specific service and the outputs produced as a result (miles, hours of service). While the scope of this research project does not include the quantification of inputs and outputs, a primary objective is to provide an assessment of post-reform conditions with respect to integration. A qualitative evaluation of the

services available for offer by each Met should allow us to draw conclusions concerning the effectiveness of these reforms in improving integration.

Service and cost effectiveness are commonly employed to track the relationship between product consumption and other, related factors. Service effectiveness charts the relationship between service outputs and service consumption (total number of passenger trips, miles or hours), while cost effectiveness measures the relationship between output costs and service consumption. For example, transit ridership can be employed as a measure of transit effectiveness, since it generally represents the total number of passengers attracted to a particular set of services.

In contrast, equity measures are often employed to gauge the degree to which individuals pay their "fair share" to support the transport system and in exchange, receive their share of benefits in terms of access to activities and opportunities. In terms of transit, equity can be measured through the relative cost of these services to the passenger, the level of access to modal choices, and the extent to which the public is allowed to participate in the systemwide planning of future services. While these issues are often expressed in qualitative terms, it is often difficult to draw causal relationships.

In the evaluation of integrated services in the Mets (under Quality Bus Partnerships), a general set of objectives for improved integration between modes and operators must set the framework for evaluating changes to the system in each case city. It is important that they encompass elements that would maximize passenger utility or minimize a specific impact in transferring between systems. Each objective listed below may have its own set of criteria for meeting a specific level of satisfaction:

- maximize systemwide integration of information;
- maximize fare integration;
- maximize passenger benefits;

- maximize route (spatial) and schedule (temporal) connectivity;
- minimize service duplication;
- minimize negative impacts to current service;
- minimize system barriers to transfer (uncertainty, physical barriers)

The data necessary to assess some of the impacts of these variables on transit service integration was acquired directly from sources in the two case Mets and Greater London, however, a preliminary assessment determined that many of these impacts can only be measured qualitatively, through interviews with transit professionals.

CHAPTER 4: TRANSIT INTEGRATION IN PRIVATIZED MARKETS

In response to the past wave of transit privatization and in some cases, deregulation, most experts have acknowledged that while these policies have increased supply and reduced government spending on transport, they have also resulted in the deterioration of some coordinated services. In many cases, mode splits have continued to shift in favor of the private vehicle, further contributing to increased motorization, traffic congestion and air pollution levels. In response to these negative impacts, a number of countries have chosen to introduce competitive tendering. This can provide not only a solid base for establishing fair competition for routes, but also an institutional foundation and legal basis for requiring that local transit services connect where necessary and appropriate.

A key objective of most competitive tendering processes has been to establish or restore systemwide transit planning, implementation and accountability, in some cases, promoting widespread coordination between transit providers. A number of cities throughout the world have introduced competitive tendering schemes as part of a larger, privatization process, arguing that it will give them greater control over specific service features, such as frequency and modal integration. However, while regulated forms of transit privatization provide governments with a great deal of transparency and accountability, regulating agencies require a certain degree of institutional capacity and political support. Not all governments may be willing or prepared to undertake such an endeavor.

In addition, efforts to preserve or establish transit integration under an ongoing system of competitive tendering and contract negotiation generate both benefits and costs. While contracted bus routes can effectively be structured to maximize the transfer of passengers between transit vehicles, it should be noted that there are tradeoffs between system coordination and service innovation. In order to facilitate system coordination, regional authorities may wish to include integration and coordination guidelines (in the contracting process) that do not

adversely inhibit the commercial integrity of participating operators. Operators must continue to see these regulated transit systems as attractive markets for providing unique services.

Many experts point out that one of the necessary conditions for the development of a well-integrated transit system is that an autonomous authority be charged with facilitating the development of a set of through-service standards (Nash 1988). When establishing intermodal objectives, this authority should attempt to balance the commercial interests of the operators with the needs and expectations of passengers and the general public. Indeed, it is essential that integration policy be transparent to all; be designed to preserve operator competitiveness and integrity; and respond to a proven demand for transfers and associated services.

In developing countries, for transit integration to be achieved it is essential that regional plans propose policies and financial support for integration. In addition, it is important that transit service plans incorporate the needs and desires of all parties, including passengers, operators, local communities, and society-at-large. In many of these countries, for example, public investment in transport is severely limited, and as a result, the lack of transit integration is especially evident in the poorest cities. The local integration of physical resources, fares and information is largely dependent on a level of institutional integration that does not normally exist, due in large part to the competitive environment separating private transit operators. In order for integration to be introduced, it appears that a government agency should assume the role of regional transport authority, promoting coordination among a wide variety of transit providers. Where possible, perhaps this should include both formal and informal operators

This chapter seeks to provide important insights into the limitations faced by transport authorities and operators in promoting system coordination in two countries of the developing world. It not only reviews some of the necessary conditions for preserving widespread integration in a privatized environment, but also draws important contrasts and similarities with the London case. The following sections provide background information on transit service in

two case cities, Santiago, Chile and Cape Town, South Africa, reviewing the potential benefits of competitive tendering and interoperator integration. See Tables 4.1 and 4.2.

Table 4.1 Urban Characteristics of Santiago and Cape Town, 2000

Indicator	Santiago	Cape Town
Population	5,800,000	3,200,000
Total Employment	2,100,000	1,200,000
Density (per hectare)	89	39

Sources: City of Cape Town 2002a, Sectra 2001

Table 4.2 Travel Characteristics of Santiago and Cape Town , 2000

Indicator	Santiago	Cape Town
Daily Trips	16,300,000	3,500,000
Daily Mode Split* (percent)		
Auto	35	48
Transit	65	52
Transit Modes (percent)		
Rail	14	57
Bus	80	10
Shared Taxi/Minibus	6	33

*motorized modes

Sources: City of Cape Town 2002a, CMC 1998, Sectra 2001.

Next, this study comments on the evolution of bus tendering in Santiago, and explores some of the key objectives behind ongoing efforts to introduce a tendering scheme in Cape Town. Finally, it draws conclusions concerning the prospect of improving integration through the competitive tendering process.

4.1 Santiago, Chile

The confusing and chaotic state of transit service under deregulation in the 1980s prompted a response from the newly elected government of Patricio Aylwin. In the early 1990s, Greater Santiago became one of the first conurbations 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 transit modes. The following paragraphs briefly describe Greater Santiago, its local transport system and its past experiences in the area of re-regulation.

4.1.1 Urban Characteristics

Santiago is located in central Chile, 1,100 kilometers west of Buenos Aires and 130 kilometers east of the country's major port, Valparaiso. It is currently the sixth largest urban area in South America, with almost six million inhabitants (see Table 4.1). Situated at the northern end of the Valle Central, Greater Santiago covers an area of approximately, 650 square kilometers, and serves as Chile's capital and principal commercial center (see Map 4.1).

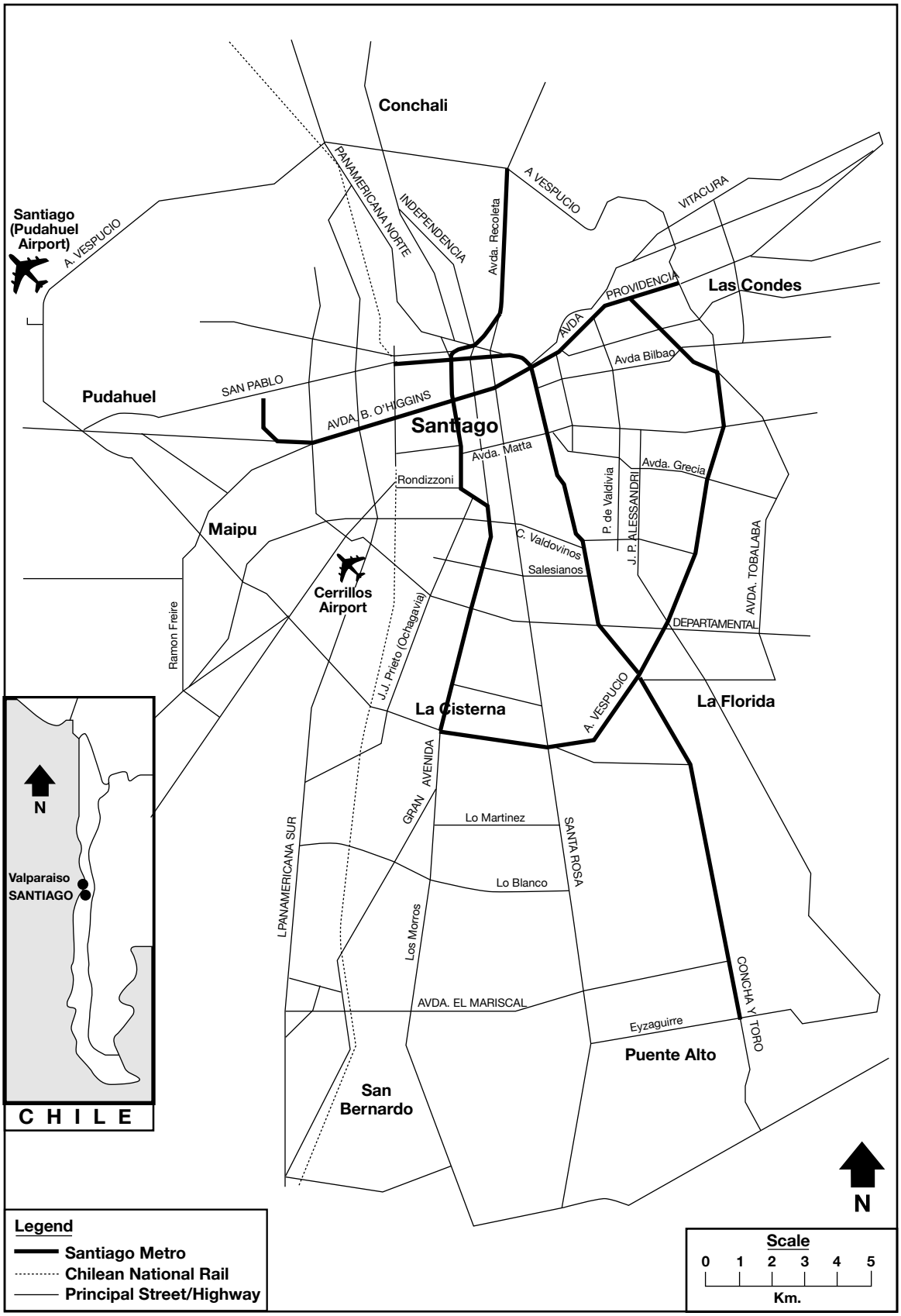
The average population density of Santiago is still less than 90 persons per hectare, a relatively low figure by world standards. Compared with many developing country cities of its size, Santiago has high average trip lengths. Despite the historic predominance of transit, over the past two decades, there has been a marked rise in private vehicle usage, particularly in the middle to high-income residential areas located east of the city center. For example, auto mode share as a percentage of all motorized trips in Santiago rose from about 25 in 1991 to 35 in 2001, and continues to rise (Sectra 2001).

4.1.2 Transit Planning and Integration

At present, the regional transit network in Santiago consists of bus services, shared taxi services, a heavy rail metro, and urban segments of the Chilean State Railway (EFE). The first two systems are privately run, whereas both rail-based modes are exclusively operated by public sector entities. Collectively, this system carries over 3 million daily passengers: 80 percent by bus, 6 percent by shared taxi and 14 percent by rail (see Table 4.2). More than 90 percent of these rail trips are by Metro. Most of these transit services extend from the urban core to outlying suburbs (Rivasplata 2000), with a limited number of cross-town routes.

While transit integration was an objective of the 1968 urban transport report that recommended construction of the Metro (BCEOM-SOFRETU-CADE 1968), profound political

Map 4.1 Greater Santiago



changes prevented local authorities in Santiago from developing an integrated transit network. As a result, when the first segment of the Santiago Metro was inaugurated in 1975, nothing was done to formally coordinate this new system with the local bus system. Eventually, the military regime of Augusto Pinochet implemented a policy of transit deregulation in the late 1970s that lifted most restrictions on the quantity and quality of bus service provided.

This policy allowed operators to determine fares and routes, effectively discouraging most forms of interoperator coordination between the Metro and private bus operators. In fact, under deregulation, some operators openly competed with the Metro, as they did in Tyne and Wear. This lack of formal regulation and system coordination resulted in an oversupply of transit service in the 1980s, contributing to severe congestion and poor air quality, particularly in the winter months when an inversion layer prevents air from circulating. Many passengers taking more than one form of transport were forced to change vehicles under precarious circumstances, without the benefits of safety and fare savings.

4.1.2.1 Metrobus Program

In an attempt to extend its catchment area beyond station areas, the Santiago Metro introduced a formal system of service integration with private operators in 1987. For almost two decades, this “Metrobus” intermodal service provided fare and physical integration between the Metro and local bus services at selected Metro stations, often at the end of a line (see Table 4.3). Since the Metro was legally prohibited from operating bus services itself, the Metrobus Program was established through a series of bilateral agreements between the Metro and individual bus operators. In contrast to the Metrobus Program in Caracas, where the local Metro acquired new vehicles and operated them along different corridors, participating operators in Santiago actually owned the Metrobus vehicles, but as part of the agreement agreed to have them “branded” in Metro blue. Similarly, these services were limited to using fixed routes originating at one of the designated Metrobus stations.

These Metrobus services, which were not restricted to Metro passengers only, accepted both Metrobus tokens and cash fares as payment. The Metrobus fare structure combined the time-based Metro fare structure with an additional surcharge for the transfer. Peak hour service on Metrobus was significantly more expensive than off-peak service, just as it was for standard Metro service. However, by purchasing a Metrobus package (consisting of a ticket and bus token) at stations and designated vendors, transferring passengers enjoyed a 40 percent discount on the combined, full fare for that time period. In most cases, it was expected that this discount would provide a strong incentive to passengers.

Table 4.3 Metrobus Interchanges in Santiago

Interchange Station	Location	Corridor	Connecting Mode	
			Type	No. of Lines
Escuela Militar	Curbside	Line 1	Local Bus	7
Salvador	Curbside	Line 1	Local Bus	2
Estación Central	Off-Street	Line 1	Regional Rail	1
Las Rejas	Curbside	Line 1	Local Bus	1
Cal y Canto	Off-Street	Line 2	Local Bus	2
Lo Ovalle	Off-Street	Line 2	Local Bus	7

Source: Metro de Santiago, 1991.

However, while the Metrobus Program offered significant cost and time saving to users, according to passenger surveys, only 3 percent of all intermodal passengers in Santiago actually took advantage of its reduced fares (Cedano and de Freitas 1994). When asked why they did not take advantage of Metrobus services, respondents gave a number of reasons. Many passengers boarding Metrobus vehicles were unaware of the Metrobus discount, or did not know where fare packages were sold. Others took the Metro regularly, but did not ride designated Metrobus vehicles because the services either did not serve the destinations of the passengers (e.g., coverage was limited), or passengers were unwilling to wait for them.

In addition, since Metrobus remained a voluntary program, it experienced a high turnover rate among its participating operators, especially under deregulation, when the local transit

market was still quite volatile. This resulted in variations in the number of operators participating in the program at any given time. Possible reasons for this variation in the level of interest among operators included:

- a concern for the lack of space available around stations (for connecting services); and
- an inability on the part of the Metro to designate adjacent curb space to participating Metrobus operators.

In anticipation of the extensive restructuring of transit service and coordination in Santiago (explained later in this chapter), the Metrobus Program was discontinued in early 2005, and another system, "Redbus," was inserted on an interim basis, i.e., until the restructured system is fully functional. Despite its inability to generate ridership increases and benefit a greater number of transferring passengers, the Metrobus Program played a small but significant role in the coordination of transit services in Santiago. Prior to the introduction of Metrobus service, formal coordination between transit operators was non-existent. While government did not actively encourage cooperation between operators, Metrobus did generate a great deal of interest in fare and route integration on the part of the Metro and a set of bus companies.

4.1.2.2 Competitive tendering process

In response to worsening traffic congestion and air quality problems in Santiago, a competitive tendering scheme was developed in the early 1990s. Initially, tender requirements focused on vehicle age, use of street facilities and professional integrity, but requirements were broadened to include other aspects. At least three separate bidding schemes have followed, and the tendered area has gradually expanded from the downtown to all areas of Greater Santiago. Nevertheless, while this re-regulation of transit improved service, until recently, little had been done to encourage service integration. As a result, many connections are still characterized by informal integration.

Until recently, government was hesitant to encourage comprehensive transit integration. For example, the Transport Infrastructure Planning Commission's (Sectra) *Urban Transport*

Development Plan set intermodal fare integration as a goal for 2005, but did not outline a specific set of actions for achieving it (Sectra 1995). However, the government of Ricardo Lagos, elected in 2000, committed itself to redesigning the entire Santiago transport system. Under the government's leadership, Sectra and some other major transport agencies developed Transantiago, a comprehensive transport plan for Santiago that seeks to improve future mobility (e.g., responding to a set of model outputs generated from a set of possible land use scenarios). A goal of Transantiago is to create a sustainable transport system through the introduction of demand management strategies, such as reductions in solo driving, improvements to the transit system, and access to non-motorized modes of transport.

4.1.2.3 Transantiago

One of the key objectives of the Transantiago Plan is to make transit a better choice for travelers through the establishment of higher standards of investment, and comprehensive planning that will create an environmentally sustainable system. The Plan proposes to create ten transit subareas, providing for local services to key destinations, as well as feeder services to trunk routes. In contrast to the current situation, contracts will be divided among 15 or fewer companies, and all subarea transit services will be contracted out to a single operator, preventing operator competition at the most local level. Cross-town trunk lines will feature modern, high capacity coaches, transporting long haul passengers from one area to another along major corridors (MOPT 2004). Together with the mainline services of the Metro, this system of trunk lines will form the central spine of the new surface transit network.

Besides restructuring the bus system and significantly expanding the Metro, Transantiago will theoretically provide for the physical, fare and informational integration of bus and rail modes in Santiago. More importantly, under a single operating agency, Transantiago will finally introduce institutional integration to the system. Funding has been set aside to add bus/rail interchange facilities, as well as to expand the scope of the local transit smart card (Multivía), to include all transit modes. With the expansion and integration of these transit systems, the

Transantiago Plan anticipates a substantial increase in ridership on the Metro as passengers take advantage of systemwide fare integration that is not currently available. Presently, there is a debate over whether the Metro will be ready on time.

Thus, Transantiago proposes to develop an integrated transit network through the development of a coordinated system of trunk and local bus routes, similar to the Transmilenio project in Bogotá. For the first time, the route tendering process in Santiago will feature provisions for ensuring physical, fare and operational integration between modes. Under this structural framework, a more orderly, integrated set of transit services will ensure greater connectivity, allowing for periodic adjustments to be made to the supply of transit, in response to greater demand (Malbran et al 2003).

4.1.2.4 Future prospects

Still, there are some areas of uncertainty regarding the Plan and its impacts on local travel. For instance, it is not clear whether a higher number of transfers per transit trip will prove to be a deterrent to passengers, or whether it is reasonable to assume that passengers of all income levels will have access to a smart card. Most likely, the provision of single use fare cards, as well as the integration of traveler information from multiple sources will facilitate the use of the system.

4.2 Cape Town, South Africa

While Cape Town and other major cities in South Africa have yet to implement competitive tendering schemes, the federal government in Pretoria has already developed a set of guidelines for restructuring the fragmented transit industry. A bidding process will essentially grant transit operators the rights to provide bus, “minibus-taxi” and rail services along fixed routes in major urban areas. In addition, the provincial government in Cape Town is committed to not only providing “an integrated, well-managed, viable and sustainable transport system,” but also to establishing coordinative arrangements among all transit operators (SADOT 1996, CMC 1998). This section describes the Cape Metropolitan Area, its transit network and recent progress toward introducing a competitive tendering system there.

4.2.1 Urban Characteristics

The Cape Metropolitan Area, which encompasses the City of Cape Town and its surrounding suburbs, is located in Western Cape Province, approximately 1,200 kilometers southwest of Johannesburg. This metropolis covers an area of about 800 square kilometers, and is surrounded by coastal mountain ranges, extensive coastline, scenic parklands and winelands. Presently, the Cape Metropolitan Area is the second largest urban area in South Africa, with more than 3 million residents (see Table 4.1 and Map 4.2). It serves as both the legislative capital and the capital of Western Cape Province, and is a center for the entertainment and tourism industries.

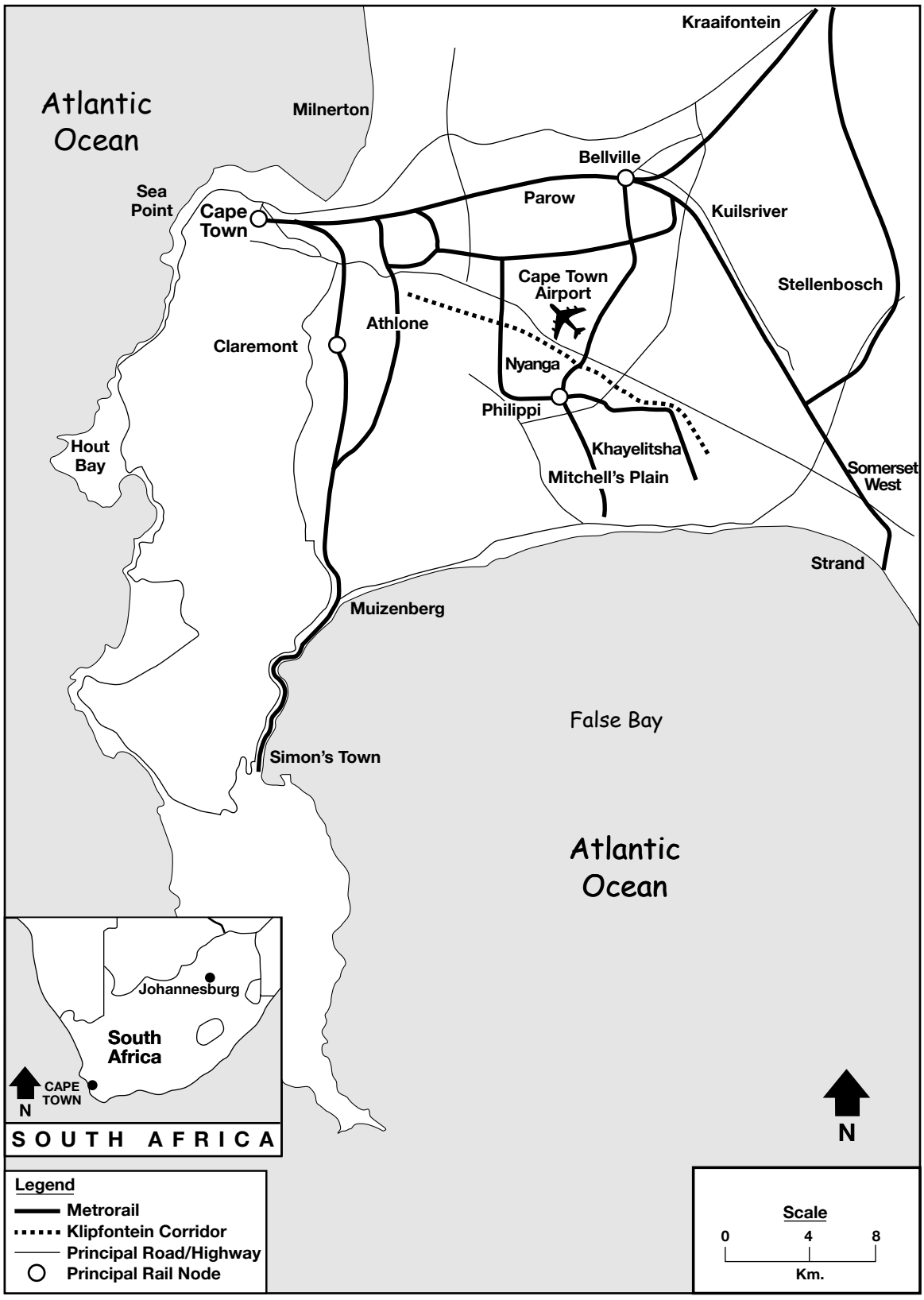
The average density of Cape Town is much lower than that of Santiago, with fewer than 40 persons per hectare. This dispersed pattern of development is a direct result of the isolationist land use policies of the apartheid governments that ruled the country before 1994. Throughout South Africa, residents of color were systematically settled in peripheral areas and relied on permits and transit to travel to work; while most white residents had access to private autos and lived closer to the city center. Consistent with these practices, national government primarily invested in roads and freeways and neglected transit.

Recent government policy has supported integrated urban development and black economic empowerment; however, the remnants of two distinct transport systems still largely dominate: one based on poorly coordinated modes, and the other based on the auto. While transit users far outnumber auto users, the former accounts for just over half of all motorized trips in Cape Town, with auto trips making up the other half (CMC 1998). In general, this disparity in transit mode share reflects Cape Town's position as one of South Africa's most auto-oriented cities.

4.2.2 Transit Planning and Integration

At present, the metropolitan transit system consists of regional rail services provided by Metrorail, a local unit of the national commuter rail company; bus services provided by Golden Arrow (GA), a large, privately-owned bus company; and many, private "minibus taxi" services.

Map 4.2 Cape Metropolitan Area



Collectively, the system transports more than one million daily passengers: approximately, 10 percent by bus, 33 percent by minibus and 57 percent by rail (see Table 4.2).

Spatially, bus and rail services extend out from the downtown core to outlying areas, while minibus services principally link low-income townships with central areas and major employment centers. As a result, in order to complete their journeys, many transit-dependent residents transfer from one mode to another at one of the area's almost 200 transit nodes, primarily located near train stations.

The City of Cape Town (2002a) recently began to record commuter volumes at these nodes. Table 4.4 (below) lists the eight highest volume interchanges in Cape Town. These data show that some interchanges handle a very high number of daily commuters. For example, while Cape Town Central Station handles over ten percent of all interchange commuters, 37 percent pass through the top eight interchanges. Outside of Cape Town Central, the largest volume of transfers is at subcenters, such as Bellville, or townships, such as Mitchell's Plain.

Table 4.4 Major Transit Interchanges in Cape Town

Transit Interchange	**Commuter Volume**			
	Rail	Bus	MB-Taxi	Total
Bellville Station	64,774	4,058	27,885	96,717
Cape Town Central Station	145,339	16,376	35,410	197,125
Maitland Station	33,536	47	6,000	39,583
Mitchell's Plain Town Centre	22,918	10,443	40,770	74,131
Mutual Station	65,295	21	1,644	66,960
Nolungile Station	38,932	1,032	24,803	64,767
Nonkqubela Station	43,822	1,449	2,914	48,185
Wynberg Station	21,725	6,444	42,360	70,529
Total: Major Interchanges (8)	436,341	39,870	181,786	657,997
All Interchanges (190)	**1,278,845**	**69,969**	**410,659**	**1,759,473**

Source: City of Cape Town 2002a.

Prior to the 1990s, transit integration was clearly a secondary concern for apartheid-era transport planners, as ongoing improvements to local road infrastructure were disproportionately

focused on the Cape's affluent communities. Few investments of any magnitude were made to improve the outdated rail and bus systems, even though a significant proportion of the population depended on them. Bus companies such as Golden Arrow were given long-term permits that did not encourage innovation or service improvements. Often, traditional bus services were not required to serve the townships, leaving local residents without means of transport.

In response to a growing need for transit services in these townships, in the 1970s, Cape Town and a number of other South African cities witnessed the birth of the minibus taxi industry. Initially, this mode primarily provided township residents with service to downtown employment centers, however, services were eventually expanded to accommodate short trips and trips to other subcenters, such as Bellville. Despite solid growth, in the 1980s the national government decided to deregulate the minibus-taxis, allowing the industry to further deteriorate in quality.

4.2.2.1 Corridor strategies

Since free elections in 1994, however, there has been an increasing awareness on the part of the national and provincial governments that a key objective for transport is to make cities sustainable. In the case of Cape Town, planners and community leaders have determined that the most efficient way to achieve this objective is through the development of corridor strategies, and the implementation of a demand management approach. They realize that transport modes in the Cape Metropolitan Area are poorly linked to one another, and that minibus taxis can and should play a larger role in the overall supply of transit throughout the area. That is to say, these strategies are charged with both promoting economic development opportunities along a specific urban corridor, and also providing an integrated transport system that can support and guide this growth, providing safe mobility for all. In the late 1990s, the local planners targeted at least ten urban corridors for development. The Klipfontein Corridor, currently under development, is the first to be implemented. It is anticipated that others will follow.

In conjunction with the development of corridors, local authorities now recognize that future investment in transport in these areas must address integration, fully engaging the

marginalized minibus-taxi industry in the overall supply of transit in Cape Town. In the past decade, government representatives of the city and province have made concerted efforts to coordinate the services of rail, bus and minibus-taxi, employing transit corridors as a testing ground for developing tendering schemes. These systemwide efforts have begun to focus on not only physical integration, but also fare and institutional integration.

Given that Metrorail plays a key role in the provision of transit throughout the area, some local planners have suggested that an effective way of improving connectivity between services in Cape Town would be to develop a rail-based network of bus and minibus feeder routes (Williams and Kingma 2002). Past experience has shown that investments in vehicle rolling stock and systemwide ticketing need to be accompanied by improvements in intermodal compatibility and facility management. For example, to avoid congestion and confusion at major interchanges, it is important that transit vehicles of different capacities are integrated in a consistent manner. Fare structures must also be consistent and made transparent to the public.

4.2.2.2 Competitive tendering process

In response to these needs, the federal government's *Transport White Paper* (1996) and the local government's *Moving Ahead* (1998) placed emphasis on renewing investment in transit and reducing travel times and monetary costs for commuters. In a departure from past policy, the federal government committed itself to opening bus routes, including those operated by Golden Arrow, to a competitive tendering process (SADOT 1996). Competitive tendering, which was first introduced in 1996, is seen as a tool with which to reduce subsidies and promote innovation. Western Cape Province regards tendering as a means through which to achieve "an effective, efficient, equitable and affordable transport system" (CMC 1998).

A focus of these tendering efforts is to improve intermodal integration through transit system restructuring; infrastructure expansion; improved service delivery; and both vehicle and facility enhancements. Authorities point out that system restructuring will yield benefits to operators and passengers, since route tendering will break up the existing bus monopoly, i.e.,

increasing network efficiency and reducing the duplication of services. While this competitive arrangement may immediately encourage innovation and reduce direct operator subsidies, it will require greater government investment in regulation and coordination.

4.2.2.3 System transformation

Steps toward the transformation and integration of scheduled transit services in Cape Town are described in the *Provincial Land Transport Framework* (Western Cape Province 2004), the primary document guiding land transport in the province. This *Transport Framework* sets the stage for the establishment of a bidding process for contracts, based on a specific set of requirements (e.g., including physical and fare integration). In general terms, the *Transport Framework* provides the following guidelines:

- All bus services are to be planned and provided in terms of a contract that specifies routes, schedules, vehicle types and fares employed;
- The first round of new contracts is to be negotiated between government and the operators, with the full inclusion of the minibus-taxi operators;
- No bus or minibus-taxi operator is to compete with contracted operators within a defined contract area;
- Bus operators are to ensure that passengers have reasonable access to transit services (consistent with social and quality charters).

Since release of the *Transport White Paper* and *Moving Ahead*, authorities have led efforts to strengthen transit integration through the construction of interchanges and shelters, as well as the system rationalization of services. However, since the three major modes still largely act in isolation of one another, even physical integration is rather spotty. In response to increasing demand for integrated services, most efforts have sought to provide connections, primarily between buses and rail, but also between minibus-taxi and rail. In the former case, bus routes have been adjusted to serve facilities adjacent to some of the rail stations, including Central

Station. For example, Golden Arrow has made an effort to provide service capacity for the transfer of passengers to/from rail during commute hours.

Between minibus-taxis and rail there have also been examples of intermodal integration, particularly since the late 1990s, when government officials began to address the mobility needs of residents living in the townships. However, in contrast to bus-rail integration, the focus of these efforts has been on providing space for minibus-taxi ranks at key stations. Due to their limited size and volume, minibus-taxis operate at higher frequencies than conventional buses, but do not always satisfy the demand of passengers accessing rail. The fact that a significant proportion of the minibus-taxi operators work illegally, without a legal operating permit, means that local authorities monitor the use of ranks. Many illegal operators congregate in off-site locations, producing local vehicle congestion, particularly during commute hours.

The Modalink Program, created in 1996 to provide coordination between transit providers, represents a jointly funded venture between national, provincial and metropolitan transport authorities that seeks to promote greater systemwide integration. Demonstration projects have included development of a telephone information center, demand-responsive services for the disabled, low-floor buses, and transit interchange management (City of Cape Town 2002b). In the last five years, rail-based interchange facilities have been built at Athlone and Mitchell's Plain, however, the program has become increasingly focused on physical integration and is not actively involved in ongoing efforts to resolve fare or institutional issues.

4.2.2.4 Future prospects

Despite these efforts, many operational and institutional issues need to be resolved. Problems facing local transit planners have included aging vehicle fleets; unequal levels of subsidy between modes; rail safety concerns; and rail fare evasion (Clark and Crous 2002). In addition, transit access for all individuals (e.g., the disabled) is still severely lacking. While there have been recent improvements in physical route and facility integration, fare coordination is virtually non-existent, due in part to uneven levels of government subsidy and territorial rivalries.

Before routes are tendered, modal fare structures will need to be realigned, a move that will surely require some adjustments to state subsidies to these two transit modes.

Thus, the upcoming restructuring and tendering processes appear to provide a unique opportunity for government and local stakeholders to establish an array of cooperative transit programs. However, for integration efforts to be effective, particularly those related to bus-rail and minibus-rail arrangements, operator contracts need to incorporate provisions that address such issues as fare integration, facility sharing, minimum headways for buses and informational resources for operators and the public. In turn, these projects will require the participation of government transport agencies, as well as rail, bus, and minibus-taxi operators.

4.3 Comparative Analysis

A comparative analysis of these case cities indicates that while both have embraced policies supporting competitive tendering and have faced many of the same barriers to implementation. Cape Town planners have aggressively sought to improve the integration of services and facilities, introducing policy measures as part of a larger effort to improve the mobility of low-income residents. Unfortunately, many underlying issues directly linked to the historic isolation of the rail, bus and minibus-taxi sectors must be resolved before services can be put out to competitive tender.

In contrast, Santiago has always been aware of the need for better interchange, but until recently, local government has not aggressively encouraged coordination, even after re-regulation in the 1990s made it easier to integrate modal fare structures. Prior to the Transantiago Plan, despite significant gains in the improvement of routes and services, local transport authorities did not introduce contract provisions that required operators to work together to improve integration, i.e., the tendering process remained focused on improving individual vehicles and services without effectively trying to tie them together into a single, seamless system. Transantiago attempts to break down these institutional barriers, developing a more integrative trunk-feeder network for buses to link with the Metro and colectivos, and mandating changes to the bus fare

collection system (e.g., that allow for the implementation of an integrated smart card system encouraging intramodal and intermodal transfers).

Despite ongoing difficulties in the restructuring of bus services in Cape Town, one positive point is that the competitive tendering process there will effectively open the market to many new operators, a situation that could cause havoc if service integration is not ensured by the government. Like Santiago, a large percentage of the population of Cape Town relies on transit; however, activity centers in South African cities are much more widely dispersed, generating greater demand for transfers. In Santiago, the transit network is denser and more readily accessible to the poor (e.g., there are numerous transfer opportunities). However, powerful operator cartels in Santiago have never widely embraced fare and timetable integration.

One way of measuring the impacts of competitive contracting on integration is to analyze changes in fare and route coordination. In both Santiago and Cape Town, serious efforts are being made to correct for the historic absence of transit integration in past plans and service contracts. While a fair assessment of the Cape Town experience cannot be made until a focused set of integrated services are introduced to a specific area of the metropolis (e.g., beginning with the Klipfontein Corridor project in 2007), we can certainly comment on the Santiago case and its agency-level promotion of both fare and route integration at strategic points.

Despite government plans to promote transit integration through greater operator coordination, thus far, the Metrobus Program represents the only serious attempt at providing comprehensive fare integration in Santiago. However, its scope and influence were limited by a number of important factors:

- access to Metrobus was restricted to a handful of stations, many of them located on the urban periphery;
- the list of participating bus operators constantly changed, generating some confusion;
- the Metro never adequately promoted Metrobus to the public, leaving passengers with questions concerning the scope and cost of its services;

- Metrobus services were comparable to those of other private bus operators and did not provide Metro passengers with premium service; and
- the Program was intermodal in character and never promoted bus-bus coordination, the type of integration that is in highest demand in Santiago.

In terms of government policy and the development of a central strategy for improving integration, prior to 2002, the route tendering process in Santiago had not yet considered specific requirements for promoting either rail-bus or bus-bus coordination. Nevertheless, by 2001, the Metro was working with Sectra and the Ministry of Public Works (MOP) to improve fare coordination, through the development of a single fare instrument for all modes, and a reduced fare for intermodal trips (Metro de Santiago 2001). Eventually, this work led to the development of the Multivía smart card, and more recently, the incorporation of integration as an element of Transantiago's transit component.

In the area of route coordination, Santiago has a number of transfer or interchange points, but only a limited number of them feature convenient and safe connections, as well as off-street facilities. This systemwide deficiency in interchange infrastructure has been identified and for the past few years, the Metro has been working closely with Sectra and MOP to design feeder routes that will directly serve Metro stations and complement the existing multi-modal network of transit routes in Santiago (Metro de Santiago 2001). In 2004, the Santiago bus network was reorganized as part of the Transantiago Plan, and services were put out to bid. This tendering phase was followed by a detailed selection process and contract negotiations with selected operators in 2005. The operation of fully integrated trunk and feeder services is expected to begin in October 2006.

The Santiago experience has shown that while interagency efforts to promote coordination are important, unless policy direction and implementation are firmly established at the regional level, most operators will continue to allocate time and resources to the improvement of their own services, and may avoid coordination with other operators. Most private operators are primarily

concerned with providing service to the passenger and reaping some form of profit on their investment that will allow them to either expand their operations (e.g., greater market share, higher profit margin), or allow them to focus on profitable market niches that offer long-term growth and stability. Unless operators can be convinced that network integration will result in ridership gains and/or greater market share, they will often question the usefulness of working directly with a market competitor. Thus, cities like Santiago appear to build their case for integration through a greater focus on demand modeling, network design, some form of competitive tendering and the allocation of integrated facilities and services where needed.

On the eve of its deployment, Transantiago appears to have efficiently restructured the transit network to facilitate integration, based on close public sector regulation. Similarly, Cape Town appears to have identified the integrated trunk and feeder routes that will serve a wide cross-section of users accessing the Klipfontein area, and provide links to the downtown area. The next question is whether the new trunk and feeder system will actually shorten travel times and make interchange a more pleasant experience for passengers.

4.4 Conclusions

This comparison of two developing world cities emphasizes the role of competitive tendering in the provision of service integration. While each of these cities has a very distinct urban structure and faces a very different set of local mobility issues, they do share something in common with their British counterparts:

- they recognize the need to enhance transit connectivity in order to attract passengers;
- they have sought to improve integration through institutional strengthening; and
- they are convinced that they possess the capacity and resources necessary to bring about this change.

An assessment of these competitive tendering schemes leads us to conclude that this form of regulation can prove instrumental in the integration of transit services as long as the regulator

incorporates the necessary provisions required to guide operators. In the case of London, competitive tendering was initiated during a period of transition towards privatization, a process that allowed regulators to encourage operators to provide integrated services. However, in Santiago and Cape Town, authorities have carefully designed new tendering schemes that require all contracting operators to provide the services necessary to ensure integration: adherence to schedules or intervals, use of specific interchange facilities; and full participation in universal fare schemes (e.g., regional smart card programs).

Market control is probably one factor affecting the length of time it takes authorities to successfully implement tendering schemes. In London, between 1984 and 1994, tendering processes were initiated in conjunction with the privatization of bus services, making private operators responsible for contract provisions from the outset. That is to say, private sector entrants to the London transit market during this transitional period of privatization were made fully aware of the fact that competition for services would be off-the-road (through the tendering process) and that these new operators would be expected to provide a package of centrally planned services to the public. Of course, these packages were designed to provide passengers with seamless links between services.

In contrast, in Santiago and Cape Town, at least some urban bus services were already provided by the private sector prior to the tendering of services. Local governments were faced with convincing operators that competitive tendering would improve the system. In Santiago, this entailed a long period of negotiation with private bus operators in the early 1990s, during which integration objectives were never articulated. For this reason, the Transantiago Plan specifically targeted integration as an element of the transit structure, i.e. the tendering process reinforced this focus. In Cape Town, while the tendering process has been delayed by the government's inability to legalize some minibus/taxi services, it appears that coordination provisions are being made (e.g., Klipfontein Corridor contracts). In the Mets, while any move

toward Quality Contracts in Britain will require the approval of the local community as well as Central Government, a number of authorities are currently considering it.

These two developing country case studies suggest that once existing transit operators are faced with the prospect of having to support competitive tendering in order to survive, it is important that the process be administered by an independent transport agency capable of maintaining a high level of objectivity in the selection of operators, and charged with ensuring that operators work cooperatively for the collective good of the transit system. In both cases, opposition from a number of operators threatened to halt the tendering process completely, prompting local authorities to negotiate with representatives of the sector. Perhaps, this is what is missing from the Met cases, where authorities attempt to negotiate, but face the communication barriers emanating from the *Competition Act*.

Furthermore, the Santiago case reminds us that the establishment and regulation of service contracts should not only focus on improving overall transit service quality (originally achieved in 1992), but also on facilitating systemwide, multi-operator travel. Without integrated system planning at the regional level, Santiago faced a paradoxical situation in which most bus routes truly responded to transit demand patterns, but there was really no permanent bond linking them together. That is to say, services were tailored to satisfy passenger flows; however, no attempt was made to address the fact that a substantial proportion of the traveling public required more than one form of transit to complete a trip.

Nevertheless, it is important to note that in much of the developing world, informal or "pirate" operators play an important role in the provision of transit service, offering some savings to a significant proportion of low-income residents, but often working in complete isolation, making it difficult to incorporate them into a comprehensive plan. Hence, without some form of communication between these operators and their formal sector counterparts, it is difficult to promote the integration of these services.

In many of these developing countries, the informal sector provides services that may not be profitable for formal sector companies to operate. Informal operators incur few overhead costs due to the fact that they are not legally registered and thus, do not pay for annual permits and normally avoid paying business taxes. While the provincial government is legally responsible for prohibiting illegal transit operators from circulating, they do not have the resources to enforce these provisions.

Thus, most of the informal operators do not offer a dependable timetable, nor do they have a set of published fares. While they often provide passenger benefits, including fare savings and direct, door-to-door service, they are often undependable. For example, many of these operators will offer minibus taxi services along a busy corridor for a given period of time, and suddenly leave without notice. In addition, they normally lack proper vehicle maintenance, presenting serious safety concerns to their passengers. Many passengers in the townships commute long distances to reach their workplaces, and expect an efficient, safe and dependable transit service.

While government authorities and formal operators resent the fact that informal operators do not commonly pay their fair share of taxes, they have sought to include them as part of the larger transport system in Cape Town. In the past, authorities sought to marginalize the informal operators from participating in the supply of services, however, more recently, authorities have tried to "formalize" these operators so that they become a productive part of the larger system. Clearly, there are political reasons for ensuring that all operators are at least given a fair chance to compete in upcoming contract efforts, and eventually corridor-based integration efforts.

In sum, it may prove desirable for each city to define its long-term transport objectives and establish its own set of criteria for developing a coordinated transit network, based on local urban values and needs, as well as available resources. Where possible, serious consideration should be given to achieving these objectives through some form of public-private collaboration that involves systemwide planning and integration (e.g., competitive tendering), and ensures that all operators are accountable to the passengers that they serve. It is important to point out that in the

developing world, this collaborative option is most readily accessible to middle-income countries like Chile and South Africa, where numerous institutions have the funding and professional capacity to work with the transit industry in an even-handed manner.

In view of these developing world cases, however, it would not appear that the prospects are always good for pursuing integration in a deregulated transit market. Before a system can be integrated, all services should meet some minimum standard of quality and all service providers should operate in a manner that is conducive to maintaining an integrated network. In the case of South Africa, this means that the operations of a large proportion of the transit market must be made transparent before integration can be pursued.

In contrast, in developed countries, the informal sector normally plays a less significant role in transit provision, representing a relatively small percentage of total supply. Even in Britain, where transit services were deregulated outside of London, operators meet at least a minimum set of standards. Perhaps, limited regulation is all that is necessary for integration to be expanded. Under the right circumstances, perhaps private sector operators can work cooperatively toward a common set of objectives.

CHAPTER 5: RESEARCH METHODOLOGY AND DATA COLLECTION

As mentioned above, the primary source of data for this research is a set of interviews with key transit stakeholders at the national and metropolitan levels. In addition, both qualitative and quantitative data from secondary sources in the case cities and national government agencies provide supplemental information concerning the key industry trends and policy framework impacting each case city.

5.1 Overview

This study seeks to evaluate the impacts of recent transport policy on transit planning and the development of integration strategies in the Metropolitan Areas. It employs the case study method in the analysis of formal and informal agreements between providers, allowing specific variables to be considered while focusing on a relatively small number of study cases -- similar research in the remaining Mets would likely have been costly and time-consuming. This analysis of specific cases allows for the researcher to identify similar situations and to compare and contrast local policy responses and outcomes.

Where there are different outcomes under similar conditions, it may be possible to draw some important conclusions regarding the effects of specific variables. This approach can effectively highlight many of the salient characteristics common to most of the Mets, emphasizing the importance of local responses and approaches to national guidelines (e.g., for enhancing transit integration). While many of these responses have been based on local circumstances, resources and development priorities, they have increasingly been influenced by other related factors, such as the work of national or multi-city planning collaboratives (e.g., Passenger Transport Executive Group).

There is also an explicit role for theory in establishing expectations with regard to the evidence that is gathered. Theoretical formulations are instrumental in defining the issues to be studied and in selecting cases (Yin 1993). The case method does not precisely replicate actual conditions, however, it can facilitate the study of real-life situations where, under similar circumstances, specific variables are introduced in one case, but not in another. Each case is selected in the context of a theoretical framework for the study (e.g., the establishment of specific forms of integration as a result of history, location and level of competition), within which the case illustrates a specific pattern of phenomena. Ideally, this study can test the validity of the research propositions presented in Chapter 3, and based on an analysis of the impacts of specific variables, can confirm the principal arguments.

In this study, one of the major issues faced in undertaking qualitative research is the ability to devise a research strategy that will yield explanations that are applicable to most or all of the English Metropolitan Areas. While quantitative measures are often a feature of good qualitative research, the process of generalizing from cases to populations is not based on purely statistical logic as it is in quantitative research (Silverman 2000). This flexibility allows for a more descriptive explanation of phenomena, with the ultimate aim of better understanding local systems and possible strategies for making them work more efficiently.

In this sense, the Complex, Large Scale, Integrated Open Systems (CLIOS) Process represents one recent approach to capturing the salient features of open, large-scale transit systems. This tool, developed by MIT researchers, attempts to identify policy and management interventions aimed at improving a system through the establishment of linkages between the physical and policy components of these systems. In this way, CLIOS works toward better integrating institutional and policy design with physical design. Subsystems are part of a complex, open system, situated within a large-scale geographic perspective and closely linked to the surrounding social, political and economic environments (Sussman 2000). This study employs a few of the key concepts of the CLIOS process.

Qualitative research is often largely based on observations of behavioral phenomena (Silverman 2000), such as the way in which people travel from one point to another on transit, or the manner in which private operators participate in areawide ticketing schemes. Many experts agree that qualitative research should follow a theoretical logic that links sampling and theory (Bryman 1988), i.e., selecting categories based on the theoretical approach of the research. Ideally, the sample builds in certain characteristics that help develop and test the research theory and explanation (Mason 1996).

It is important to select cases that will represent the wider population. Since this study is strictly limited to integration in the Mets and London, it follows that the sample should consist of a subset of these cities. In order to provide a thorough analysis of the transport planning process, each case was studied in a historical and institutional context. The evaluation of transit system integration necessitates the design and construction of a representative sampling of operators and authorities in each case city. A subset of Mets was sampled for the purposes of analyzing the relevant processes upon which authorities focus, namely metropolitan planning and integration.

In order to gain a historical perspective, a review of past policy documents, implementation reports and journals was undertaken. Background research provided an analysis of the forms of integration that existed prior to and immediately after the introduction of deregulation, examining who the principal players were, whether they constituted artificial (e.g., forced) or natural forms of integration, and what, if any, specific products resulted from these efforts. This examination of the history of service coordination provided some background for understanding recent policy priorities with regard to transit integration.

This research, however, focused on the current planning process adopted by the Labour Government, and the development of integration strategies in the case Mets. It explored elements of the negotiation process that were often carried out by coordinating authorities and operators in each Met, analyzing both formal and informal channels of communication between the principal

transit players. It also involved the review of current policy documents; industry and authority data; as well as administration of the aforementioned interviews.

Through the analysis of policy and implementation documents, this study analyzed local response to government guidelines on integration, and compared transit integration schemes (as part of larger bus strategies). In addition, it examined subsequent public-private negotiations to forge interoperator agreements in each of these Mets. For example, study interviewees were asked to elaborate on perceived areas of disagreement and compromise, as well as the establishment and implementation of services. Based on an evaluation of the current state of integration (e.g., changes in interoperator services), the theoretical models of Chisholm and other authors were taken as a point of reference for discussing the prospects of informal coordination, i.e., determining the degree to which transit strategies have encouraged informal channels and have impacted transit integration under deregulated market conditions.

The findings revealed institutional interdependencies that have developed in each Met as a result of new, integrated schemes, as well as the evolution of formal and informal ties between operators. The following questions were posed:

1. How has interoperator integration changed and how much of it has been achieved through formal and informal means?
2. What is the role of the PTA in contrast to other public bodies? Which public body wielded most influence in the negotiation process?
3. Are agreements primarily bilateral or multilateral?
4. What are the institutional constraints preventing full implementation?

Finally, this study reviewed some of the integrated transit services provided to the passenger as a result of these coordinative efforts. For example, given that there are various types of interoperator integration in some of these markets, which products or services are the easiest to provide? How significant are the changes in integration that have occurred and what are their long-term prospects for effecting mode shift?

In measuring the principal impacts of post-1998 policy reforms on interoperator transit integration in the Mets, it is necessary to assign a set of values to the chosen units of analysis, in this case, the collective set of transit services facilitating integration in a specific Met or subarea. The following set of variables is proposed for consideration when measuring the impacts of policy reform:

- geographic location: central or suburban;
- nature of partnership: number of participants and purpose
- market size: large or small conurbation;
- commercial presence: number of operators servicing the area;
- regional guidance: level of PTA and local authority involvement;
- informal cooperation: level of interoperator dialogue;
- operator size: large or small; subsidiary of large group, or small independent

When measuring the impacts of recent transport policy on integration or the suitability of existing institutional arrangements in the Mets, it is important to define the existing system of interdependence between transit players, as well as the policy controls introduced to encourage greater cooperation between these players. The results of this analysis are revealed in Chapters 7 and 8, and general conclusions and recommendations are presented in Chapter 9.

5.2 Data Collection

The efficient collection of reliable and valid data is central to an assessment of the situation and the successful communication of representative results. Reliability has been defined as the "degree of consistency with which instances are assigned to the same category," either by one observer on separate occasions or by multiple observers (Hammersley 1992). In any such study, there needs to be a consistent method for interpreting data. In contrast, validity measures the extent to which an account fairly represents the phenomena it describes.

In an attempt to obtain as much information on integration as possible, data were acquired from a number of sources, some of which have already been mentioned:

1. Past and recent literature on relevant topics - transit planning and integration, transit policy and project implementation, bus and rail privatization, bus deregulation in the Mets, institutional organization, public administration, regional economics;
2. Central Government documents and guidelines - Transport White Papers, Transport Acts and Competition Acts, local transport planning documents (LTPs, bus strategies, QBP documents) and implementation plans, public-private agreements;
3. Existing transit service provision data (system output) and available bus usage data (service consumption), recent interchange audits, and integration-related arrangements in QBP areas;
4. The design, negotiation and implementation of transit integration schemes in each of the case cities (e.g., Integrate Project in Manchester);
5. Ongoing bilateral and multilateral agreements, and interoperator activities promoted by public sector authorities (e.g., PTA); and
6. Bilateral or multilateral integration projects/schemes:, such as interchanges, route information, participating operators in key service areas.

5.2.1 Historic Data and Existing Transit Patterns

Where available, service output and consumption data for the principal transit routes and nodes of each system were examined for the period before and immediately after deregulation. Some of this information served as background for comparing past results with more recent aspirations. For example, in the early 1990s, the Transport Research Laboratory (TRL) published a comprehensive set of studies examining systemwide changes after transit deregulation (Haseltine et al 1992). The TRL research included qualitative assessments of change in transit integration, often as a result of deregulatory policies.

Much of the secondary data for this study was acquired through Department for Transport (DfT) reports: the *Transport Statistics Bulletin*, an annual report; and the *Bus Quality Indicators Bulletin*, a quarterly. These publications provided *National Travel Survey* information on modal usage, as well as overall service quality data (e.g., customer satisfaction with bus service reliability) for all transit passengers in a specific area. These indicators tracked trends in service consumption in the case Mets, providing descriptive background data.

The results of past interchange surveys in London, Sheffield and other cities were also reviewed. They included research conducted by Transport for London as part of the *Interchange Plan*; as well as the results of an integration survey carried out in South Yorkshire (TfL 2002, Stokes 1994). These surveys measured passenger attitudes concerning interchange attributes, such as amenities, safety and buses. While limited in scope, these surveys provided some insight.

In addition, as part of the LTP process, both Greater Manchester and Tyne and Wear have sought to assess the current state of integration. In 2000, each Met developed an inventory (or audit) of all major interchanges and services provided, ranking the most important nodes and highlighting some of the modifications proposed under the local Bus Strategy. In essence, these data provide a snapshot of the prevailing conditions (relative to the provision of integrated services) that existed under deregulation, immediately prior to passage of the *Transport Act 2000*.

5.2.2 Interview Design

As mentioned above, in 2003 and 2004, over 40 study interviews were conducted in Manchester, Tyne and Wear, London and Brussels. In order to gain greater insight into some of the issues surrounding the integration of services, four key stakeholder groups were consulted: public and private sector transit operators; metropolitan, regional and national transit authorities; transit consultants and academics; and special interest groups (e.g., passenger committees, bus industry association). Apart from the academics and special groups, all respondents were senior or mid-level managers, charged with the planning or operation of the system or agency.

In order to build a theoretical model that would be applicable across authority/operator types, a diverse set of organizations was interviewed. As noted by Pettigrew (1988), in light of the limited number of individual interviews that can be conducted, it is best to choose organizations that present a spectrum of situations, i.e., capable of extending new theories. For example, in each Met, representatives of both regional and district agencies were chosen, as were representatives of both large and medium/small bus companies. In addition, industry experts and academics of different ideologies were selected, some in support of greater integration, and others opposed to it.

This survey sought to examine the extent to which participants believed that transit integration had changed (if at all), since passage of the *Transport Act 2000*. The interviews began with background questions designed to reveal the interviewee's role in transit and past familiarity with service planning and integration. These were followed by a series of questions covering three principal forms of integration: physical, informational and fare. Participants were asked to evaluate the status of each form of integration as it applied to their own city and to determine whether an acceptable level of coordination had been reached. Where they felt that this standard hadn't been met, interviewees were asked to provide suggestions for improving integration. In addition, these individuals were asked to identify the principal benefits and disbenefits resulting from recent integration policies, and to reflect on what their organization's role should be with respect to integrated transit schemes (see Appendix D).

The local authority interviews focused on the development of bus strategies, as well as methods for encouraging integration between public and private providers, and among private sector bus operators. In essence, these interviews explored the following areas:

- the public authority's role in the development of integration schemes;
- the authority's principal areas of contact with private operators; and
- the principal factors preventing certain operators from participating in schemes.

Similarly, interviews were conducted with private bus operators and associations in Greater Manchester, Tyne and Wear and Greater London. These explored many of the formal and informal ties between operators and public authorities, and between operators. The following areas were studied:

- advantages and disadvantages of encouraging integration with other operators;
- types of formal or informal arrangements for integration with other operators; and
- integrated services offered (fare/physical/informational).

Finally, interviews were conducted with academic and transit industry experts in Britain. These interviews traced changes in the provision of integrated services, not only in the case cities, but also in other Mets. These interviews sought to explore past trends, as well as the local mechanisms that were designed to plan and implement these schemes. In addition, they sought to acquire an objective account of the changes resulting from locally developed strategies and local and national factors affecting integration. The following areas were explored:

- the role played by the LTP/Bus Strategy in enhancing integration;
- changes in operator-operator and operator-authority relations; and
- prospects for improving transit integration in the medium term.

Each interview included a final section in which interviewees were asked to reflect on a number of issues related to formal and informal forms of transit integration. In each case, Donald Chisholm's work on informal organization and the advantages of promoting flat, organizational structures was presented and fully explained (Chisholm 1989). Interviewees were subsequently asked to comment on the usefulness of informal integration in a privatized environment.

Interviewees were asked to provide their personal views on how local coordinative efforts had evolved in the past, and on whether they believed that informal integration was an appropriate tool for encouraging dialogue among operators, authorities and other transit stakeholders. In addition, they were asked to reflect on past government efforts to integrate

transit services through formal means, and to identify the constraints that could prevent new forms of informal integration from being deployed.

While there are some clear disadvantages in depending so heavily on interviews, such as an increased risk of experiencing interviewee bias and sampling bias, every attempt was made to minimize these potential problems. For example, interview questions were designed to focus on options under each integration aspect. Clearly, some respondents had more direct experience in the negotiation and implementation stages than others did. For this reason, interviews were broken into thematic categories, according to the type of data needed, such as historical or partnership-related.

Individual interviews were administered according to a pre-arranged schedule of meetings with transit representatives and stakeholders. In each case, interviews involved professionals with some degree of management responsibility within the organization, i.e., that deal directly with integration issues, and are familiar with operational issues. Most interviews were scheduled within a specific time frame, allowing for some flexibility in the sequence of questions and the possibility of follow-up interviews with additional representatives, if appropriate.

An area of uncertainty in most research is the ability to control for sampling error and bias. The first of these is a function of the sample size and the variability of the chosen parameter, however, it is important to note that sampling bias stems from errors committed in choosing the sampling frame, technique and survey, and can equally be dangerous. In qualitative research, while samples do not need to be chosen randomly, they should be carefully selected, consistent with the theoretical framework of the study. This study sought to present cases where some sort of change in institutional interdependence was the result of specific transport reforms.

Another area of uncertainty concerns the internal validity of the research. While every attempt was made to reveal principal relationships between policy direction and integration, it is not always clear that this study can definitively attribute these passenger trends to changes in transport policy. There are many other factors affecting travel behavior, including the economy

and the degree of access to transit. In addition, it is important to note that interviews are limited by the accuracy of the information supplied by respondents (Singleton and Straits 1999). This study seeks to reflect changes in regulatory initiative and to control for exogenous factors that affect service provision and demand.

5.2.3 Interview Format

The interviews conducted in the three British case cities provided valuable information on the manner in which each survey participant understood the term "intermodal transit integration" and viewed its role in promoting cooperation between transit providers and in improving the mobility of historically disadvantaged groups, such as the poor, the elderly and the disabled. The subsections below provide a general profile of each the four interview groups canvassed.

5.2.3.1 Transit operators

All interview respondents in this group were engaged in the local management and/or operation of a transit service in one of the three case cities. While a majority of the group's 14 respondents were representatives of bus operators (e.g., roughly proportional to its modal share of all transit trips in the case cities), representatives of both heavy rail and light rail operators were also interviewed.

Thus, for each of the case cities, representatives of small and large bus operators as well as light and heavy rail were surveyed. In addition, at least two non-operator representatives of the transit industry (e.g., a chairperson of the local ticketing consortium, a local representative of the Confederation for Passenger Transport) were interviewed, providing a more comprehensive, systemwide perspective.

5.2.3.2 Metropolitan, regional and national authorities

This government sector group consisted of 15 professionals representing local, regional and national authorities located in the three case cities:

- mid-level management professionals working at the three metropolitan transport authorities (PTEs and TfL) and key national transport agencies;

- representatives of local and regional agencies charged with reviewing a wide array of issues (e.g., transport, health, housing); and
- representatives of national authorities responsible for enforcing the provisions of the *Competition Act 1998*

In each case city, at least one representative of a local borough or council was interviewed, in addition to senior staff and the directors of local transit authorities. In order to gain a wider perspective on both metropolitan and council-level transport issues in case cities, it was decided that both of these groups should be canvassed. While metropolitan transit authorities are primarily made up of local council representatives, these councils are directly affected by the planning and operation of specific transit services, i.e., as determined by private operators or the metropolitan authority.

Mid-level national policy and enforcement professionals from the Department for Transport, the Commission for Integrated Transport (CfIT) and the Office of Fair Trading were also interviewed. Given that these agencies are responsible for much of the policy development and regulation of transit in Britain, and England in particular, it was clear that one-on-one interviews with their representatives could provide valuable insight into inherent differences in philosophy among government ministries and the role of each agency in the provision of integrated services.

5.2.3.3 Transit sector consultants and academic professionals

Individuals interviewed in this group consisted not only of well-respected academics who had studied and written on transit integration for many years, but also, other experts in the transit planning field, including a private transport consultant with more than 30 years of experience in the field; and a research fellow from a leading independent think tank involved in the overall assessment of government transport policy. It was a relatively small subgroup, however, it featured renowned professionals who had written extensively on transit integration in Britain and

other parts of the world. Many in this group had first-hand knowledge of the key operational and regulatory issues involved in bringing services together.

5.2.3.4 Special interest groups

While this last set of interviews was relatively small, consisting of only four interviewees, it was somewhat diverse, encompassing some of the remaining transit stakeholder groups, primarily at the national level. Respondents included not only bus/rail industry and transit authority advocates (e.g., lobbying groups for the PTEs), but also, transit passenger advocacy groups charged with voicing the needs and interests of the customer. In particular, transit authority advocates provided a global view of recent performance in the case cities, as well as other Mets.

The inclusion of transit passenger advocacy groups, one local and the other national in scope, was especially significant, given that individual bus and rail passengers were not directly interviewed as part of the survey process. Nevertheless, it was useful to interview these areawide, consumer advocacy organizations, as they are largely passenger-based and charged with advocating for conditions and special arrangements that can improve transit service from the passenger's viewpoint.

5.3 Data Analysis

As previously mentioned, in order to more effectively synthesize the intricacies of the transport planning process and understand the complex sets of working relationships that exist between a variety of transport interests in each of the case cities, this study primarily focuses on the analysis of qualitative data. In addition, it analyzes quantitative data in order to discern existing travel patterns.

The data processing stage encompassed a procedure whereby specific qualitative and quantitative data were attributed to individual areas, organizations and stakeholders, and where relevant, were categorized according to area of focus. In the case of the qualitative data acquired, this process effectively allowed for the assemblage of a wide variety of data directly related to the

planning and operation of transit, and indirectly related to the role of modal integration. Through the identification of a common set of characteristics and practices, it was believed that this process would help establish specific travel patterns, according to operator type, type of service, and metropolitan area.

In the case of quantitative data, efforts primarily went into identifying the available information relevant to this research and the interpretation of these data. The quantitative data largely came from government and industry reports that had previously been published and made available in aggregate form through the government printing office, Her Majesty's Stationery Office (HMSO). In all cases, the next logical step was for data to be interpreted and for different areas and stakeholder types to be compared.

Subsequently, much of the qualitative data acquired was analyzed and applied to each case city as well as to the entire nation as a whole. This process provided the structural framework for organizing and categorizing specific findings and policy references within a local transport planning context (e.g., for Greater Manchester, Tyne and Wear, and Greater London), or within a national framework. This effort involved transcription of field notes and interviews as well as interpretation of data.

Extensive field notes that were taken throughout the data collection stage provided an effective bridge between this effort and the data analysis stage. According to Eisenhardt (1989), field notes can effectively provide a running commentary on how research is progressing, allowing for an easy transition between observation and data analysis. In order to both acquire preliminary research results and provide necessary adjustments to the interview process, field notes can be instrumental in providing some overlap between data collection and data analysis.

For example, in this study, pre-test interview results as well as extensive notes from earlier, informal meetings with government and industry contacts (in 2002 and 2003), provided valuable information on such relevant topics as the roles and responsibilities of transport authorities and large bus and rail companies (e.g., locally represented by their subsidiaries) in the planning and

development of areawide ticketing consortiums; the level of participation of some of the respondents in Quality Bus Partnerships; and collective lobbying efforts to secure the *Competition Act Block Exemption*.

While much of the available data on national transport planning policy was analyzed within the broader context of providing policy direction to local authorities and stakeholders regarding the transit planning process, most of the Met-specific, qualitative and quantitative data acquired for this study was analyzed using the comparative method. This approach allowed for a detailed analysis of the principal impacts of specific policies and measures on transit coordination and the implications these have had for specific areas and transit stakeholders. In addition, interview data acquired in individual Metropolitan Areas often facilitated cross-town as well as other comparisons (e.g., the quantity and quality of interchanges).

CHAPTER 6: INTRODUCTION TO THE CASE STUDIES

As mentioned earlier, case studies provide a rich source of information from which to compare past and existing practices and analyze the impacts of variables on integrated transit services in Britain. The case studies featured in this study illustrate many issues central to the ongoing coordination of services in a semi-regulated market, providing us with a theoretical framework for developing new strategies.

6.1 Choice of Case Cities

An important step in framing this research was choosing three case cities for analysis: two that were representative of the English Metropolitan Areas, and the special case of London. Indeed, transit integration remains a key issue in the English Mets, where collectively, close to 11 million residents lived in 2004 (see Table 6.1). While urban mobility is an important issue throughout Britain, it is in these Metropolitan Areas (of more than one million inhabitants) that many residents rely heavily on transit, and some require transfers to complete their journeys.

Table 6.1 Demographic Characteristics of the English Mets and London

METRO. AREA	CORE CITY	2004 POP.	DENSITY*	2004 EMPLOY.**
Greater Manchester	Manchester	2,539,000	19.83	1,117,200
Merseyside	Liverpool	1,365,800	21.15	552,500
South Yorkshire	Sheffield	1,278,400	8.20	555,000
Tyne and Wear	Newcastle	1,085,600	20.06	454,300
West Midlands	Birmingham	2,579,200	28.60	1,073,400
West Yorkshire	Leeds	2,108,000	10.03	953,700
ALL METS		10,956,000	15.78	4,706,100
Greater London	London	7,429,200	46.99	4,500,000

* Persons per hectare ** Number of employed persons

Source: Nomis 2004.

This study focuses on two case Mets, namely, Greater Manchester, in the northwest of England, and Tyne and Wear, in the northeast. These cities were chosen because they are somewhat dissimilar in nature and collectively represent many of the characteristics of the other Mets. Greater London, located in the prosperous Southeast, serves as a counterpoint to the case Mets. Despite the existence of free market competition, both case Mets have sought to achieve greater interoperator cooperation, particularly since the introduction of transport reforms in 1998. In contrast, London is the only major transit market in the country to have maintained regulatory control over private operators. More importantly, it is a city that has seen a visible improvement in integrated services, particularly after the creation of TfL in 2000.

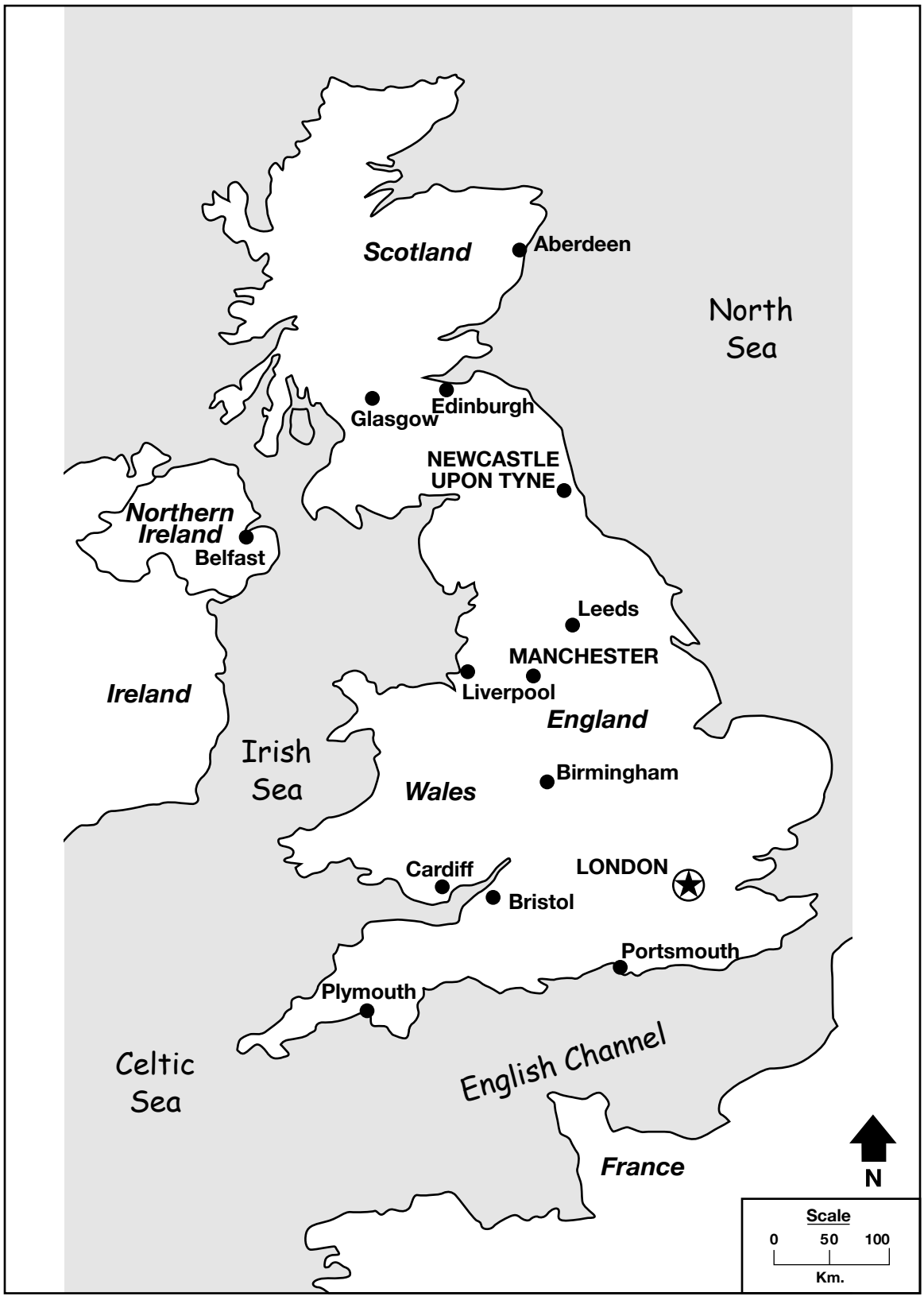
Each of these case cities has played an important role in the industrial development of Britain; however, they differ greatly in size, geographic setting and economic importance (see Map 6.1 and Appendix E). In keeping with national transport policy, each Met has developed a local transport planning process, based on a local set of factors, such as size and density, local resources, funding priorities, and experience with integration. Despite their inherent differences, in the past five years, all three cities have adopted an LTP, introduced a local bus strategy (e.g., in response to perceived surface transit needs), and established a set of measures for achieving many of the transit integration concepts established in the *1998 Transport White Paper* (see Table 6.2).

Table 6.2 Programs Supporting Transit Integration in the Case Cities

CONCEPT	Greater Manchester	Tyne and Wear	Greater London
Integrated Network	- Integrate Project	- Superoutes - Orpheus	- Countdown
Fare Integration	- Integrate Project, - GMTL	- NTL	- Travelcard - Oystercard
Route Integration	- Integrate Project	- Superoutes - Orpheus	- LBI.
Information Integration	- Integrate Project, - Info. Scheme	- Superoutes - Info. Scheme	- Travel Info. Plan

Sources: GMPTA 2001a, Nexus, 2003

Map 6.1 Britain



6.2 Description of Case Cities

In the following subsections, a descriptive profile is provided for each case Met, as well as for Greater London. Each profile summarizes the location, relative magnitude and economic importance of the case city, followed by a review of the local transit system and some of the principal issues confronting stakeholders.

6.2.1 Greater Manchester

Greater Manchester is one of the most populous Mets in Britain and yet it is the most auto-dependent. It is the classic example of a Met that has experienced rapid motorization and that needs to improve its rail linkages if it is to promote integration and make transit more attractive (NEA et al 2003). Prior to 1990, the absence of a rail link across the central area inhibited development of an integrated transit network. This systemic deficiency went hand in hand with a meteoric rise in auto ownership in the 1980s and 1990s, as average trip distances gradually increased (Tyson 1990).

Manchester has witnessed a great deal of change in the past century. Historically, it was the birthplace of the Industrial Revolution, its squalid past prompting such authors as Engels to write on the miserable working conditions of employees there, and the need for worker organization. For the first half of the 20th Century, this city was known for its industrial potential, particularly in the area of cotton manufacturing. However, since World War II, the economy has gradually been restructured to focus on trade and services (Law 2001). Today, Manchester is a center for the wholesale, insurance and banking industries in Britain, as well as for advanced technologies. Efficient rail and air connections (e.g., Manchester International is the busiest airport in Britain outside of London) have made the area more easily accessible to markets in Southeast England and Continental Europe.

Greater Manchester, which currently has a population of approximately 2.6 million people, is the principal commercial and cultural center of the northwest of England (Nomis 2004). It is comprised of 10 municipal governments, often referred to as “district councils.” Its strategic

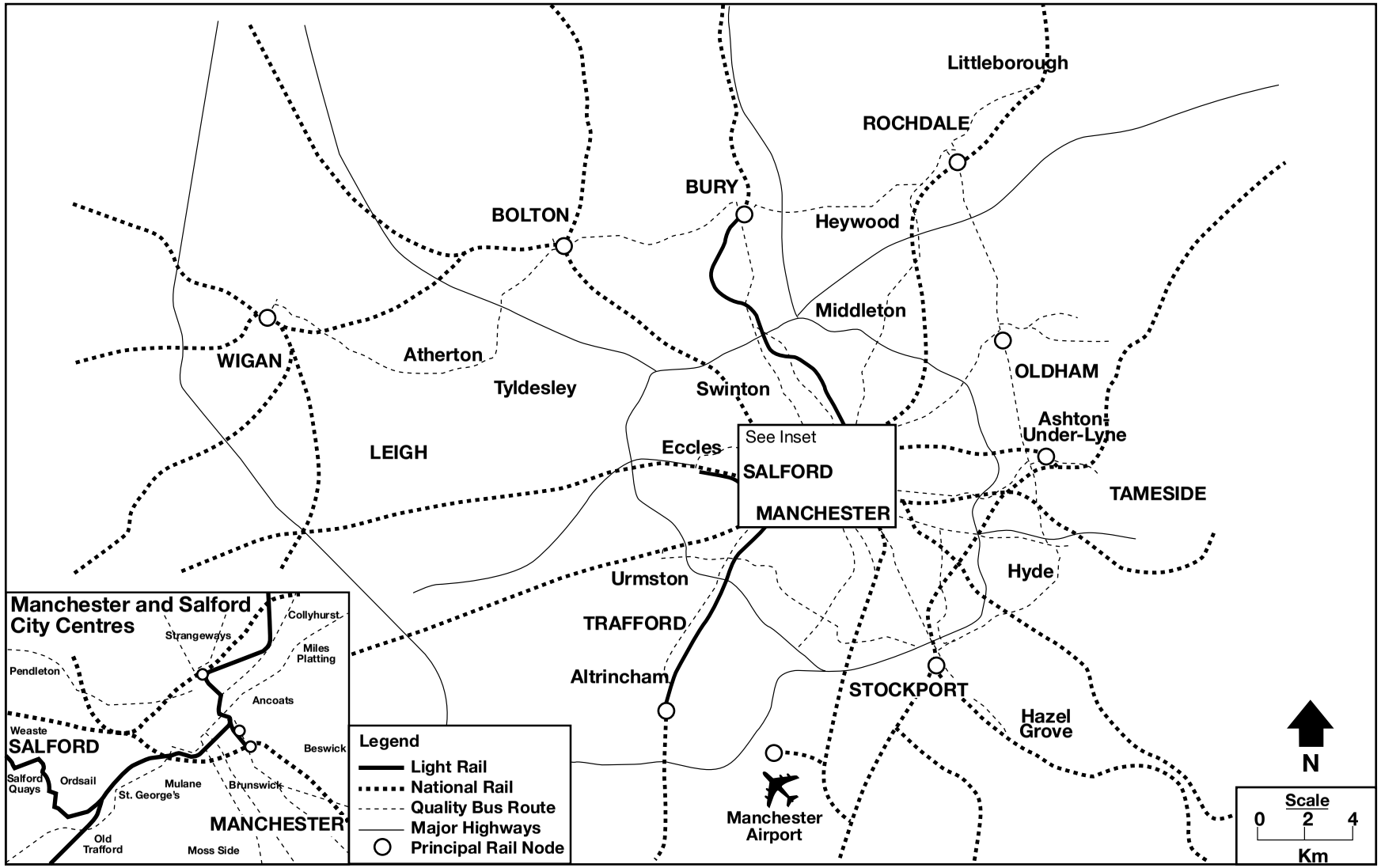
location, close to the geographic center of Britain, and its relatively large population, have made it an attractive city for business, international trade and the organization of major national and international events, such as conventions and major sports activities (Law 2001).

Situated between the conurbations of Liverpool (Merseyside County) and Leeds-Bradford (West Yorkshire County), Greater Manchester is at the center of a larger megalopolis of almost 7 million (Nomis 2004). See Map 6.2. It has witnessed a significant rise in congestion over the past few decades, as peripheral areas have been developed; between 1986 and 1998, the average number of autos per resident increased by more than 60 percent. In 1999, 75 percent of all urban journeys were by auto or van, up from 51 percent in 1981; while only 13 percent were by bus or train, down from 25 percent in 1981 (DETR 1999c).

Greater Manchester's transit system currently consists of three principal modes: bus, tram and regional rail (part of the national railway system) and features an extensive network of services to major population centers and activity sites. As in other Mets, the bus is still the most frequently used mode of transit; however, the tram system, finished in the early 1990s, was constructed to serve as the central spine of the metropolitan transit network. The tram has seen steady gains through service expansion, and increased integration with bus services. Similarly, regional rail has increasingly come to play a role in mobilizing residents throughout the Greater Manchester area, and providing some integration with buses and trams, particularly in or near town centers.

On the eve of deregulation in 1987, the Greater Manchester PTA operated 95 percent of all transit services in the county; however, today, Metrolink (the tram system) is the only service that is still publicly owned. A single provider, First Northwestern, operates the regional rail network, while the urban bus system consists of approximately, 50 individual private operators. Not all areas of the conurbation see a high level of one-on-one competition between bus operators, however, the sheer number of operators requires that local authorities negotiate areawide integration schemes with numerous, privately-owned entities. Presently, three large subsidiaries

Map 6.2 Greater Manchester



of nationwide operators dominate the local bus market: First Manchester, Stagecoach Manchester, and Arriva Northwest.

Since adoption of the *1998 Transport White Paper* and drafting of the *Local Transport Plan* in Greater Manchester, greater emphasis has been placed on discouraging use of the automobile and improving the quality of alternative travel modes, such as transit or bicycles (GMPTA 2001b). The local Bus Strategy places a great deal of importance on the improvement of access to transit and successful rail-bus integration throughout Greater Manchester. For example, such redevelopment projects as the Salford Quays depend heavily on good transit integration. However, despite recent gains in bus and light rail ridership, it remains to be seen if improved integration will attract additional auto drivers to transit.

6.2.2 Tyne and Wear

Tyne and Wear is the smallest Metropolitan County, both in land area and in population (1.1 million inhabitants), however, it boasts one of the highest levels of transit ridership in Britain outside of London, largely due to its array of transit services, historically low income and wage levels and low auto ownership rates. In contrast to the Manchester case, the local Tyne and Wear PTA commissioned a series of transport-land use studies in the 1960s and 1970s to determine ways of promoting economic growth through greater coordination between future development areas and new investments in transit. These detailed studies supported the construction of the Tyne and Wear Metro (light rail) in the late 1980s and the planned integration of bus services at key station interchanges in and near central Newcastle and Gateshead (Butler et al 1987). Subsequently, many of these integrated services were eliminated under deregulation. More recently, post-2000 transit policies have stressed the need to restore and improve multi-modal links and encourage integration between bus operators.

Newcastle originally developed as a center of coal mining and shipbuilding, however, once these industries declined in the early 1900s, it faced a long period of economic downturn, during which Central Government introduced revitalization schemes. More recently, Tyne and Wear has

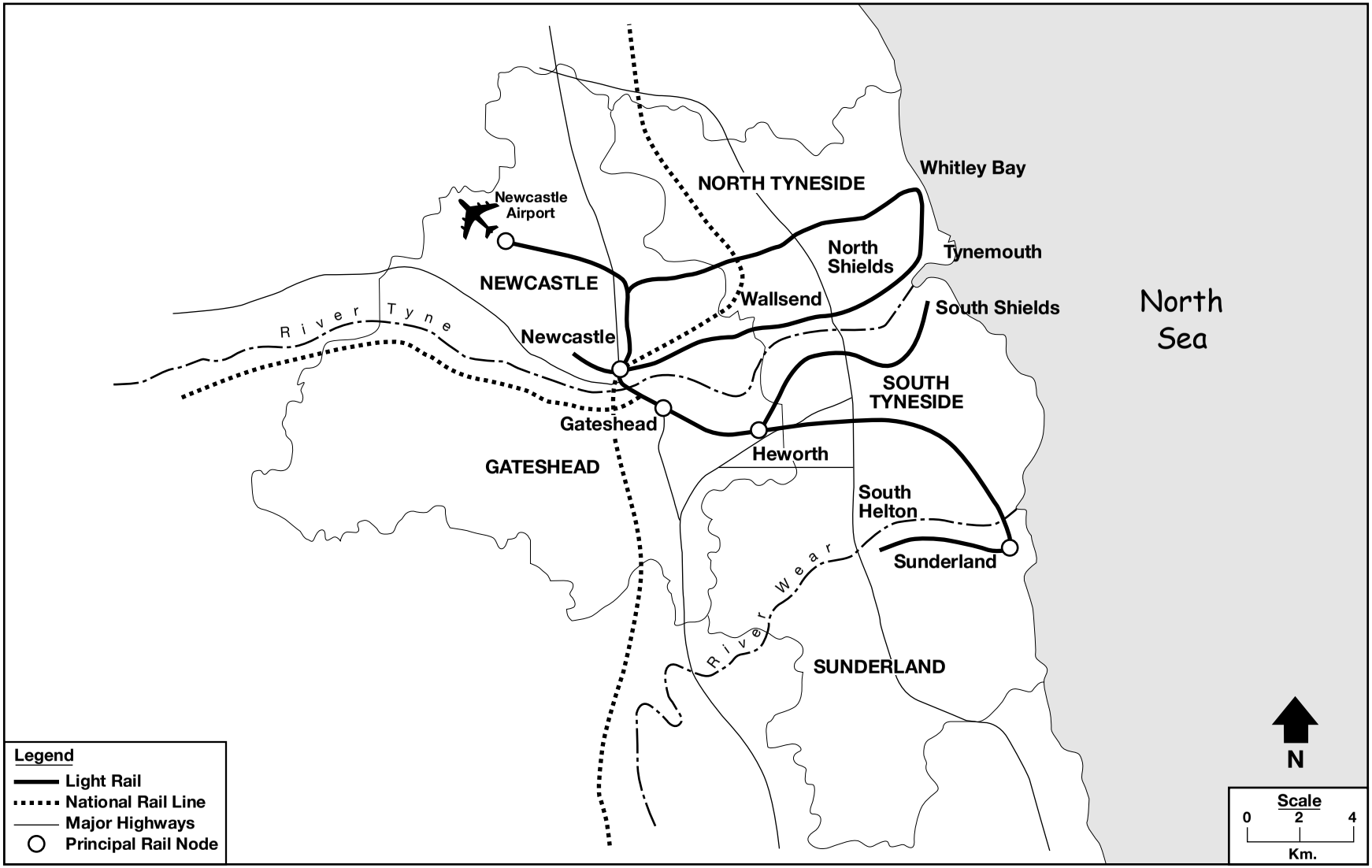
evolved into the primary commercial center of the northeast, attracting retail firms, offshore oil companies, and an auto manufacturer (Barke 2002). Nevertheless, due to its historic dependence on traditional industries, the area still has one of the highest unemployment rates in the country.

Essentially, Tyne and Wear is comprised of the cities of Newcastle-upon-Tyne, Gateshead, Sunderland and a number of other, smaller river communities. In addition, it encompasses some semi-rural areas on the periphery (see Map 6.3). The Tyne and Wear Rivers have historically posed barriers to intraurban movement, impacting local travel patterns and land use. In the past 30 years, however, cross-river road, transit and pedestrian links have improved mobility between centers in the region, effectively reducing travel times between central Newcastle and many communities within Tyne and Wear.

As a result, Tyne and Wear does not experience many of the congestion pressures felt in some of the larger Mets, and still enjoys relatively favorable traffic conditions and travel speeds. While this has been instrumental in promoting the economic growth of the area, it may explain why congestion and the search for alternative modes have not always been of primary concern to local leaders. Economic stagnation has often prompted local leaders to ignore mobility issues and focus on supporting projects that bring new opportunities to the area. For example, in the 1980s and early 1990s, a great deal of emphasis was placed on promoting the construction of development projects, some of them with poor access to transit. With a renewed interest in providing transport alternatives to a greater sector of society, it appears that the Met has begun to address this issue in its two recent LTPs and "Going for Growth" campaign, encouraging transit access to all major activity centers in the region (Newcastle City Council 2000, Burke 2002).

In addition, there are institutional constraints to transport planning in Tyne and Wear: interdistrict territorial rivalries that flared up again during the first LTP process, limited funding opportunities from Central Government, and a general distrust of the local PTA by private operators. Prior to 1986, the Tyne and Wear PTA operated 40 percent of all transit services and the region boasted the most integrated system in Britain outside of London, with numerous rail-

Map 6.3 Tyne and Wear



bus connections and widespread travel card use (Lewis 1986, Haseltine et al 1992). However, many argue that it amounted to a "forced" integration that many private operators fear could return under PTA planning dominance.

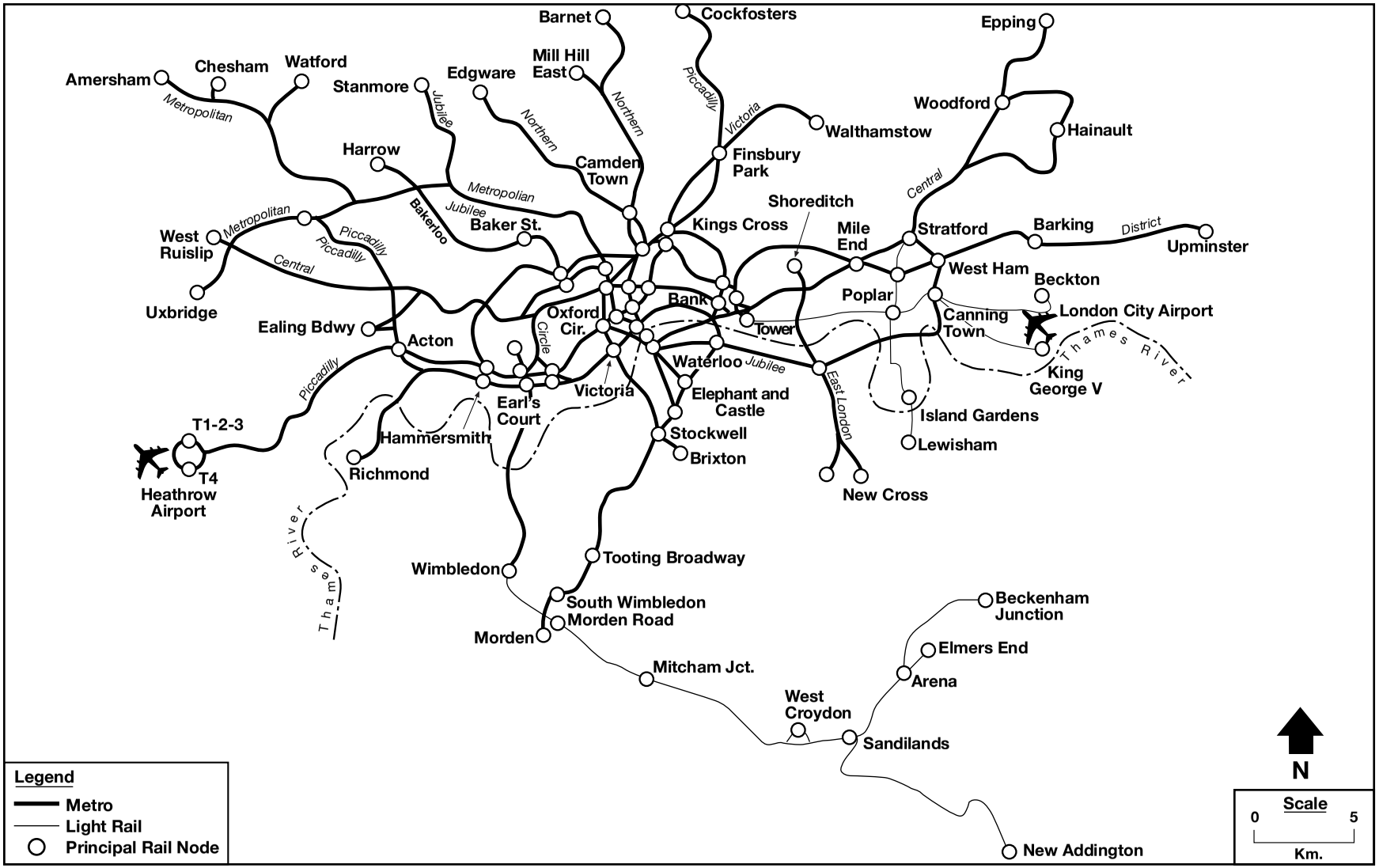
While transit mode share in Tyne and Wear is high by national standards, increased auto ownership and transit service changes have led to ridership declines over the past 15 years. In 1999, 20 percent of all journeys there were by transit, down from 35 percent in 1981; while 66 percent were by auto or van, compared to only 44 percent in 1981 (DETR 1999c). Nevertheless, Tyne and Wear boasts one of the richest assortments of transit modes outside of London with bus, light rail, ferry and regional rail. While the bus clearly dominates the transit market, the Tyne and Wear Metro has served as a spine for the regional transit network. In addition, regional rail reaches many outlying areas poorly served by bus.

Currently, fewer than 20 private operators provide bus service in Tyne and Wear, however, local light rail and ferry systems are operated by Nexus (the local PTA), and regional rail service is provided by Arriva Trains Northern. In Tyne and Wear, there are even fewer instances of one-on-one competition than in Greater Manchester, and the dominant bus operators are Stagecoach Northeast and Go Northeast. Intermodal integration continues to be a mobility issue, especially at major interchanges near central Newcastle. In addition, the Tyne Quayside Public Transport proposals are an effort to improve access between the centers of Newcastle and Gateshead, and new redevelopment projects along the Tyne.

6.2.3 Greater London

Greater London, located in the Southeast of England, serves as seat of the British government. It is not only the largest metropolitan area in Britain, but it is also a major center for international trade and commerce. Historically, it has also served as a principal transport hub for Britain and the continent. Currently, more than 7 million people live in Greater London, a well-defined urban region encompassing central and outer areas of the metropolis, i.e., an area historically served by London Transport (see Map 6.4), and presently under the jurisdiction of the

Map 6.4 Greater London



Greater London Authority and TfL. The London Metropolitan Area, a larger commute shed area, extends even further into surrounding areas of the Southeast, and is said to have a population of more than 12 million (Nomis 2004).

While development has occurred in a number of other British cities, London has continued to experience a great deal of economic growth, especially in the past decade. Despite the recent terrorist bombings of July 2005, Greater London still boasts one of the highest rates of economic growth in Britain. Historically, London has enjoyed a diverse set of urban services, including a comprehensive city park system, a very large water distribution network and one of the largest transit systems anywhere.

Unlike the other case cities, transit ridership has actually increased in the past decade, even though motorization has also gradually increased. Many attribute this growth in ridership to improvements in service and integration, including introduction of the country's first travel card in the early 1980s. In addition, along with the introduction of congestion charges in central London, there has also been a concerted effort to improve and expand bus service in London. This increase in the supply and quality of bus service has provided motorists with a viable alternative to driving (TfL 2005a).

Average population densities in Greater London are higher than in most industrial regions of North America and Australia, but they are relatively low by European standards. In the past few decades, increased motorization had led to an increase in auto mode share and a corresponding drop in transit share, especially between areas outside of central London. In addition, traffic congestion levels had risen substantially, particularly in central London, where transit provision is still relatively extensive. The recent introduction of a congestion charge for vehicles entering central London has reduced traffic queues and average travel times, investing toll revenues in transport infrastructure.

Despite the rise in motorization, transit still plays a role in the lives of most Londoners. Currently, the most widely used transit modes in Greater London include heavy rail ("tube"), bus,

commuter rail and light rail. Public entities run the first and last modes, whereas individual, private sector companies operate the other two modes. Collectively, this system carries over 13 million daily passengers: 77 percent by rail, 22 percent by bus and less than 1 percent by other modes, including river ferry (TfL 2005a).

Twenty years ago, most urban bus services in Britain were publicly operated by transport authorities, however, in 1985 the Thatcher Administration privatized the urban bus market, curtailing the powers of regional transport agencies to directly contract services and reducing public subsidy of transit. Transit deregulation accompanied privatization in most areas of Britain, including the Mets, effectively introducing yet another layer of change on the already restructured system and further liberating newly created private operators from public oversight and regulation. Only in London did planners successfully argue that deregulation would negatively impact systemwide service and cause widespread confusion.

Competitive tendering was introduced in London in the 1980s, and has been successfully implemented in a number of other cities throughout the world, including Bogotá and Santiago. After passage of the *London Transport Act 1984*, private sector bus operators were allowed to compete for service routes through a competitive tendering process. Over the following decade, all urban bus services were gradually transferred from public control to the private sector through three-year contracts with the regional authority, London Transport (LT). As part of the tendering process, performance criteria were developed to ensure safety, punctuality and coordination with other bus operators.

Since the mid-80s, contracting through a competitive tendering process has yielded some positive results in London: a 20 percent rise in bus mileage, and a 40 percent drop in cost per bus mile. In addition, the total number of passenger journeys in London has increased, despite the fact that it has significantly decreased in other areas of the U.K. (DETR 1999a). There has also been a rise in the use of Travelcards and a rise in the provision of formal transfer facilities and information (TfL 2002), particularly since the establishment of TfL under the Greater London

Authority. Thus, in the case of London, competitive tendering has yielded contracts that have reduced public sector costs without sacrificing system integration.

Nevertheless, many experts point to the key role of the private transit operator as an entrepreneur of services. Some argue that the competitive system in London tends to favor the larger operators and that some requirements are too prescriptive to ensure operator innovation. On the first point, large bus operators can often afford to invest in vehicle improvements and route coverage, giving them a competitive advantage over their smaller competitors, which often provide limited or niche market services.

In response to the second point, some observers point out that regulation stifles industry innovation (e.g., the introduction of smaller vehicles to satisfy demand) because it relies on transport authorities to predict how markets will react to outside factors. For example, contract periods range from five to seven years, widely seen as too long a period to permit adequate response to market changes. In addition, authorities do not allow for a great deal of operator input into network planning when in fact, operators know many of the routes and can provide valuable advice. Perhaps, competitive tendering and contracting processes could be structured to permit mid-contract service adjustments where warranted.

6.3 Research Focus

At present, only a limited amount of research has addressed the initial impacts of these post-1998 transport planning policies on transit services throughout Britain. So far, most of the studies have either been concerned with the implementation and evaluation of individual LTPs and Strategies (Bristow et al 2001), or the evaluation of widespread transit integration efforts in London (TfL 2002). The proposed research aims to bring these two areas together, measuring the impacts of transport reforms (introduced under the *1998 Transport White Paper*) on the integration of transit services in specific areas. For example, this study examines the impacts of Local Transport Plans and Quality Bus Partnerships on the nature of interoperator agreements and the subsequent services provided.

Some of the survey work focused on the degree to which private operators change their behavior with regard to cooperation. For example, it considered the introduction of incentives that outweigh commercial concerns. Clearly, these "carrots" hold the potential to produce significant modifications in the level and extent of seamless connections. At issue is whether Quality Bus Partnerships and other interagency arrangements can achieve a significant improvement in service and to what degree this model should be advocated as an alternative to competitive tendering in other cases. There is reason to believe that since a great deal of investment is being funneled into Quality Bus Corridors, certain Partnerships will be more effective than others.

In addition to an historical analysis of the transport planning processes in each of the two case Mets and London, this research compared systemwide, coordinative efforts within all three of the case cities. For example, formal policy directives and coordinative efforts aimed at improving integration in Quality Partnerships, Bus Corridors and other service areas (see Table 6.3) were analyzed. What changes have been made to QBPs and/or QBCs and how has this affected other routes?

Table 6.3. Simple Typology of Situations for Analysis

	TYPE OF TRANSIT SERVICE	
METRO. COUNTY	Quality Partnership	Non-Quality Partnership
Greater Manchester	*Integrate Project*	*Other Services*
Tyne and Wear	*Superoutes*	*Non-Superoutes*
London	*All Routes*	

This analysis will not only consider the characteristics of a representative set of cooperative arrangements (e.g., both bilateral and multilateral agreements between transit operators and/or authorities), but will also examine the nature and quantity of changes in supply that have resulted from market conditions and policy changes. Ultimately, the intent of this work is to obtain

information that is representative of specific situations in the case Mets, so that policy-driven strategies can be evaluated.

While this study primarily evaluates the effectiveness of Quality Bus Partnerships and collaborative arrangements in the Greater Manchester and Tyne and Wear areas, it is important to distinguish between policy effectiveness and policy implementation. In this case, the former refers to whether services were enhanced (as a result of policy) more than they would normally have been without the policy, while the latter is merely the execution of services in response to local policy. This study attempts to explore the effectiveness of past programs in the improvement of integration.

Future research needs to focus on measuring the effectiveness of other integration strategies. For example, in order to better serve the needs of transferring passengers, future research efforts should additionally center on improving interoperator service expansion, collection and dissemination of information, marketing and both local and regional policy. In addition, future studies could explore the inherent characteristics of individual Quality Bus Corridors, particularly in the larger metropolitan areas. For example, what are the criteria used to select a corridor and how are they different from other areas?

CHAPTER 7: STUDY FINDINGS

As previously explained, the primary source of information for this research on integration was a series of interviews with transit industry stakeholders and academics, conducted in Britain in 2003 and 2004. In addition, other reliable sources were consulted in the acquisition of background data on each of the case cities. This chapter presents the relevant findings stemming from these interviews.

Additional data was collected from secondary sources, such as government documents and industry reports. Two principal types of information were acquired, each contributing to a better understanding of the ongoing changes in transit performance and policy direction that have characterized the industry over the past few years, (e.g., since implementation of the *Transport Act 2000*), and shedding light on research questions posed at the outset of this study.

The first type of information was quantitative, based on systemwide transit indicators, such as ridership, connectivity and other performance measures for each of the case cities and England as a whole. The second type, qualitative data on local transit planning objectives and integration policy, was extracted from industry studies and public documents, such as local Bus Performance Reports, Local Transport Plans, Bus Strategies, and integration audits. Chapters 7 and 8 detail these findings.

7.1 Interview Results

The interview process yielded some significant findings with respect to coordination between transit operators. This section presents information on the principal forms of transit integration (in London and the case Mets), levels of agency involvement in the development and implementation of integration strategies, and individual perspectives on institutional constraints to coordination and the value of formal and informal integration in the regional provision of transit services.

7.1.1 Background Information

The interviews targeted a fairly broad cross-section of transit stakeholders familiar with the principal issues surrounding integration in Britain, and especially the case cities. Approximately, 38 percent of the respondents were representatives of bus or rail operators, most of them subsidiaries of the five largest national groups; 42 percent represented local, regional and national authorities (e.g., PTEs, national government agencies); 10 percent were transport academics and consultants; and the remaining 10 percent represented transit interest groups.

In general, the data indicated that the vast majority of operators offer tendered services in urban and suburban environments in the case cities. All of the operator representatives reported that their companies serve urban and suburban areas, almost all of them featuring some form of integration. However, at least 28 percent of them also claimed that their companies provided service to rural areas. In Tyne and Wear, for example, there are a number of rural communities, located at the edge of the conurbation, that generate a significant level of transit demand.

While commercial services play an important role in the Mets, all operator respondents highlighted the importance of contracting out socially necessary services. In all of the Met cases, bus operator representatives indicated that their companies offered both commercial (deregulated) and tendered (regulated) services. In contrast, the only way for bus companies in London to participate in the market is to compete in a route tendering process, committing to the delivery of a prescribed set of services. Similarly, the rail operator representatives reported that in all cases, services were provided through local PTEs, TfL, or franchise agreements with the SRA.

In all three case cities, interview respondents were asked to rate the existing condition of integrated services: poor, fair, good, very good or excellent. Among local operators, London respondents clearly rated integration the highest (3.5), ranging from good to very good. Manchester had the next highest composite rating (3.3), with fair to very good marks. Tyne and Wear ranked lowest (2.5), ranging from fair to good. In contrast, among authorities, London respondents rated integration even higher (4.5) than their operator counterparts, while Manchester

and Tyne and Wear respondents rated integrated services lower than their operator counterparts (2.4 and 2.8, respectively). Interestingly, most national and regional authorities and academics also gave London integration very high marks (very good to excellent) and the Mets low marks (fair to good), however they were careful to differentiate between Mets and other, smaller areas. Greater Manchester and West Midlands were seen as having improved integration the most.

Regardless of these results, at least 78 percent of all operator representatives in the Mets participated in a Quality Partnership. This was especially apparent in Manchester, where almost all operator and authority representatives participated in a voluntary QBP. The interviews further explored the principal aspects of integration, as reported in the following subsections.

7.1.2 Physical Integration

While the systemwide regulation of transit services in Greater London has ultimately ensured the physical integration of services and facilities throughout the area, in the cases of both Greater Manchester and Tyne and Wear, respondents from all four interview groups generally agreed that at present:

- only limited integration of routes and common points of transfer exists; and
- hardly any integration of timetables is offered on most routes.

In the Mets, the integration of services at common points of interchange is often encouraged by the local PTE as a way of broadening the network of transit services. With the passage of the *Transport Act 2000*, these agencies are once again permitted to assess and improve interchanges for the purposes of improving connections between operators and between modes. Respondents from transit authorities in Greater Manchester and Tyne and Wear claimed that where possible, facilities were systematically improved through Quality Bus Partnership arrangements between the PTEs and bus operators. A few authority representatives cited ongoing program efforts in each of these Mets to systematically improve interchange facilities through the establishment of a hierarchical network of nodes, i.e., based on transfer demand. A similar network has been designed by Transport for London (TfL 2002), as part of its *Interchange Plan*.

Respondents from all of the interview groups remarked that as far as timetables are concerned, virtually no bilateral coordination goes on between operators. Many of these respondents stated that the primary barrier preventing private operators from coordinating schedules (to reduce waiting times) is the *Competition Act 1998*. In particular, many operators and authorities remarked that bus companies were actually deterred from coordinating specific arrival times out of fear that the Office of Fair Trading would accuse them of colluding with other companies, and impose significant monetary penalties upon them. While most respondents saw this as a major hurdle to overcome, one university researcher suggested that it might "be easier if the local authority or the PTE were to take the initiative, rather than the commercial operators." Of course, this effort would also require modifications in competition law.

In contrast, the representative of the competition authority argued that timetable integration is not prohibited as long as it is achieved through "unilateral decisions" on the part of private bus operators, and not through interoperator negotiation. In practice, this sort of unilateral integration is somewhat transitory in nature, and difficult to sustain over the long term. It can only be achieved through ongoing observation and adjustment, and is always subject to periodic timetable changes, as allowed under deregulation. As a result, this option appears to be of limited benefit to both operators and passengers, as it could create a false sense of stability.

Nevertheless, representatives of both the competition authority and a rail operator serving Greater Manchester responded that many local bus operators have used the collusion threat as an excuse for not aggressively pursuing other strategies that could lead to extensive integration. In particular, they argued that bus operators have done little to improve other forms of integration (e.g., metropolitan agreements on multi-journey and areawide tickets and passes), currently allowed under the *Competition Act 1998 Block Exemption.* However, as we will see in the next subsection, PTE and operator representatives have pointed to a number of significant developments in these areas. The evidence substantiates many of these claims.

In the case of London, both a bus services manager at the regional authority and representatives of local councils pointed out that Transport for London controls the routing and timetables of all services in Greater London, effectively providing for the planned coordination of operators under contract to the agency. Of course, it should be noted that because of its size and level of transit demand, bus and rail services in Greater London tend to be run at closer headways than in the Mets and therefore, passengers wait less if they miss a connection, i.e., they are not subject to the time penalties that they are in the Mets, where frequencies are generally lower. Nevertheless, the physical coordination of routes is essential for convenient interchange between vehicles. According to representatives of the regional authority, operators not performing up to established standards, as agreed upon by TfL and the operator, are subject to monetary penalties and/or the loss of a contract.

7.1.3 Fare Integration

Most respondents remarked that fare integration is only partially encouraged, primarily through the aforementioned *Block Exemption*. In particular, some mid-level management representatives of the local and national authorities noted significant differences in pricing policy between different forms of fare integration, such as:

- limited integration of single and through-service fares; and
- widespread availability of multi-operator fare instruments (valid for a fixed time period).

According to a PTE manager, this inconsistency in policy is largely a result of inherent constraints placed on the fare system by competition law. In general, the OFT requires that fares for common bus routes are differentiated, complicating the establishment of an interoperator fare instrument. The *Block Exemption* was merely an acknowledgement on the part of the OFT that a demand for interoperator travel does exist. It was only granted after local authorities placed significant pressure on the OFT.

Many interview respondents remarked that the integration of single and through-ticket fares is one of the most difficult areas to resolve. They claimed that the primary constraint preventing

single fares from being integrated is the *Competition Act 1998*, which prevents bilateral or multilateral agreements between operators to charge common fares, or to combine services into one common, integrated fare. A mid-level manager summed it up by explaining that if a passenger "boards a red bus in Manchester in the morning and wants to get on a green bus in the evening," under the current system, it is not possible for that individual "to buy a return round trip ticket for the journey." The manager questioned why passengers "should be subject to this policy failure if they are only concerned with taking the bus."

A number of respondents stated that the only real cases of through-ticketing in the Mets appear to be between vehicles of the same operator, or in a few cases, between intercity rail services and local buses as part of the new PlusBus network. Clearly, single operators find it advantageous to promote travel on their buses through the provision of transfers between vehicles. In addition, a number of academics and respondents stated that most of the larger bus operators still sell passes for travel on their buses only. These single operator instruments were originally developed during the early years of deregulation, when many regionwide ticketing schemes were eliminated.

Interview respondents from all four interview groups noted significant advances in the availability of regional or subregional, multi-operator passes in the Mets. Most conceded that while limited in scope, the *Block Exemption* encouraged the development of a number of fare instruments, including period passes for multi-operator travel. One senior manager at an authority in Tyne and Wear explained that under deregulation, the PTEs have had limited influence over private operators, but that they have vigorously encouraged operators to participate in ticketing schemes. A manager in Greater Manchester stated that the Integrate Project effectively re-opened interoperator dialogue.

Despite some success in the regeneration of regional fare schemes in the Mets, some academics and authorities identified constraints to more widespread success. For example, a manager in Manchester explained that while some regional tickets and passes offer unlimited

travel on multiple operators, they are sold at premium prices, beyond the reach of many transit-dependent passengers. According to a manager in Tyne and Wear, another key constraint is that while the bus represents over 70 percent of all transit trips in the case Mets, regional ticketing is primarily intermodal. While bus-rail or bus-tram travel is encouraged, bus-bus travel is not. Passengers are often required to purchase expensive period passes that exceed the cost of paying two separate bus fares per day.

In contrast, a few London respondents pointed out that Transport for London sets the fare structure in the capital, and that as part of their contract provisions, private operators are required to charge established fares. Furthermore, this agency also determines price levels for multi-stage trips, i.e., journeys requiring more than one operator, based on a zonal fare structure. A senior representative of a local authority in London pointed out that the Day Bus Pass has been the primary instrument for through bus ticketing in London, much the way the Travelcard has been for rail modes; however, the addition of the Oyster Card has allowed for more bus-rail integration. Historically, intermodal transit integration has been less commonplace in London than in other parts of the country.

7.1.4 Information Integration

While each interview group tended to take a different approach to the regional coordination of operator information, as well as the provision of such information to the public, most respondents agreed that regional authorities had been instrumental in the collection and dissemination of information. In fact, respondents from all three cities remarked that information coordination had probably progressed the most since 1998.

Most respondents were familiar with the rich array of informational services currently available. These include traditional media, such as maps, brochures and station/stop information, as well as technology-driven sources, such as Internet websites, and real time arrival data. It was clear from many of the interviews that the transit authorities of all three case cities (e.g., TfL and the PTEs) have led efforts to develop strategies aimed at providing information to promote and

facilitate the use of local transit. While all three cities have sought to comply with Section 139 of the *Transport Act 2000,* which required that PTEs spearhead efforts to improve information, each authority has tailored a strategy to fit its own unique set of circumstances.

In the case of Greater Manchester, respondents from a local authority highlighted the role of the Passenger Information Scheme in establishing local standards for transit information (GMPTA 2001a). These respondents stated that the scheme is based on the level and quality of information provided under the existing Integration Project, but stressed the importance of developing a set of guidelines on information. A key objective of the scheme has been to "ensure that existing and potential passengers have access to transit information at all stages of their journey." A local authority respondent pointed out that steps have been taken to make the information accurate, readily available to the general public, and easy to understand; however, he said that efforts have chiefly focused on QBC routes, where services are monitored.

Nevertheless, at least three respondents recognized that there was a falling out between authorities and private operators over how ongoing information integration should be financed. While transit authority managers in Greater Manchester expressed an interest in being reimbursed (by private bus operators) for the cost of providing information to the public, a few operator respondents remarked that the PTE had a responsibility to cover these costs through funding from national government, since additional costs could jeopardize the competitive advantage of operators. Nevertheless, while the *Transport Act 2000* gave PTEs the ability to regionally manage information dissemination, it also stipulated that operators would help cover the costs of providing transit information through various media.

In Tyne and Wear, a senior level manager of a local authority claimed that information coordination is one of the few areas of integration that has directly benefited from recent transport policy. Indeed, as in Greater Manchester, a local Bus Information Strategy for coordinating information has been adopted. The senior level management respondent pointed out that while Nexus historically provided at least a minimum level of regional transit information in Tyne and

Wear (even during full deregulation), it was the *Transport Act 2000* that began requiring that PTEs develop a strategy for providing information to passengers, and that a national information service, Traveline, be established. Despite these gains, this respondent felt that these improvements would have a very limited impact on transit ridership.

According to another public sector respondent, the Superoutes project has provided an opportunity for local authorities and operators to intensify efforts on this subset of the regional network, although perhaps, at the expense of other parts of the network. Since all services offered on the Superoutes system are required to meet specific standards for frequency and vehicle quality, this respondent argued that it is much easier for regional authorities to ensure that the information provided is reliable and that new technologies are introduced (e.g., real-time information). Of course, the question remains as to whether the rest of the local transit network will stand to benefit. At least one interviewer from a Tyne and Wear bus operator believed that despite the efforts of Nexus, it was still difficult to get information to the passenger because some operators were not cooperating.

In the case of London, both authority and operator respondents noted that the existence of a regulated market made it easier for TfL to provide information for all of the services in the conurbation, since it effectively determines the services and frequencies that are to be provided by operators. According to the authority respondent, as primary transit authority, TfL can also coordinate efforts in areas where it believes that there are informational deficiencies. As a result, London has one of the most comprehensive information systems in the world, featuring a number of new technologies. However, in contrast to the PTEs cited above, TfL must assume all of the costs of coordinating and disseminating transit information, this in light of widely published concerns surrounding the escalating cost of providing transit in London.

7.1.5 Formal vs. Informal Integration

This final section of the interview resulted in a very diverse set of interview responses. Interestingly, reactions to formal and informal integration often varied across each of the four

interview groups. Some respondents expressed support for exploring the potential benefits of informal integration, while many others were less optimistic that any form of integration could ever be promoted while the *Competition Act 1998* was still in effect. Other respondents doubted that informal integration between operators, authorities or other stakeholders could be beneficial in the long run. Finally, a small number of respondents believed that some informal integration either still goes on, and/or has occurred in the recent past.

For purposes of these interviews, "informal integration" was defined as a form of voluntary coordination or cooperation between transit entities operating within close proximity of one another: transit operators; operators and authorities, or authorities and other groups. Respondents were told that the principal objective of this form of integration (and certainly Chisholm's reason for promoting it) is to facilitate the joint development of transit service delivery; and that these informal ties could possibly serve to facilitate communication between transport entities at the staff level. Respondents were also told that informal integration does not necessarily follow a prescribed set of norms established under formal agreements (Chisholm 1989).

A significant number of respondents expressed doubt as to whether informal integration could in fact, yield benefits to passengers and operators, through better coordination. On one hand, some felt that such a model of voluntary partnerships would be hard to control. For example, a respondent from a local authority in Manchester argued that such an arrangement would "cloud issues of accountability on the part of the operators," further contributing to public distrust of private operators, while a senior level staff member working at a local authority in Manchester argued that informal contacts could easily be perceived negatively, as yet another opportunity for private operators to secure market share, in direct violation of the *Competition Act 1998*. Similarly, a project director at a London-based think tank argued that he did not believe that "the system could purely rely on the good will of operators," while a respondent from a small bus operator in Manchester remarked that informal integration "would allow big bus operators to put everyone else out of business."

On the other hand, there is some doubt as to whether operators in the Mets are genuinely interested in improving integration, be it through formal or informal means. For example, a respondent from a well-known transport consultancy questioned whether transit operators would "see it to their advantage" to leave their competitive interests aside and altruistically respond to service voids. He commented that in the end, they would have to feel that they are better off as a result of having indulged in this practice than they would have been if they had not. A respondent representing a Central Government agency remarked that there is evidence to suggest that many operators are not interested in improving integration. He argued that under competition law, bus operators could integrate more than they actually have, and still be within the law, i.e., operators often use competition law as an excuse for not integrating their services.

Despite these reservations, a number of respondents expressed interest in at least discussing the possibility of promoting informal integration in the Mets. While some warned of the possible consequences of allowing informal contacts, some expressed interest in trying out new schemes. Many recognized the fact that in the Mets, integration is still somewhat deficient and that dialogue needs to be promoted and maintained. Logically, some authorities felt that this voluntary coordination between transit providers should be promoted by PTEs in the Mets. They were confident that authority-sanctioned meetings and negotiations between operators would keep the integration process transparent to the public and dispel the claims of the OFT that such communication could lead to anti-competitive practices.

In many situations, if an operator can see the advantages of integration, it is in his/her best interest (and the interest of other operators and the general public) to participate in a legally-sanctioned effort. The project director of a transit advocacy group argued that voluntary arrangements could "work better than more formal structures in which there are no options for contact," but that it would require a new way of thinking in Britain. Similarly, senior level staff working for a local authority in Tyne and Wear commented that they did not have a problem with informal integration, but that it would require that the OFT relax the existing *Competition Act*

1998 provisions concerning interoperator communications, and that the PTEs be involved in interoperator discussion concerning integration issues.

Indeed, a few respondents believed that a degree of informal integration presently exists in the Mets, even though it is not widespread and some of it is seen as illegal. For instance, one respondent from a local authority in Tyne and Wear remarked that while the competition law prohibits certain kinds of contact between operators (e.g., service delivery), it does allow for limited interoperator communication concerning such issues as vehicle procurement and vehicle maintenance. Still, he suspected "that there may indeed be communication between commercial organizations" regarding services, but that it is probably between subsidiaries of the largest nationwide transit groups. He and other respondents remarked that these discussions certainly take place between subsidiaries of the same group, for example, between bus and rail subsidiaries operating within the same service area.

In contrast, a respondent representing a national transit advocacy group stated that in London, some believe that a degree of informal integration could exist, however, there is a limited scope for it because so much integration already takes place and any bilateral action taken to benefit integration in one area "might disrupt some other service feature." Most operators feel that it is in their best interest to rely on TfL for the coordination of services since this organization ultimately determines the parameters of service delivery in London. In addition, during contract negotiations, operators have a minimal level of input into service delivery and coordination.

7.1.5.1 Potential benefits of informal integration

A significant number of respondents said that they were aware of the existence of informal integration, be it between private operators, or between operators and transit authorities, and identified benefits stemming from this flexible form of cooperation. For example, a senior representative of the private bus sector in Greater Manchester remarked that informal integration between operators was more widespread prior to the creation of the PTEs in 1968, and that it essentially "amounted to staff identifying areas of operation that could improve services and

simplify connections" (e.g., through the provision of return fares and through-ticketing services). This representative went on to say that it was the *Transport Act 1968* that isolated bus operators (from one another) and led to centrally planned strategies that promoted forced integration.

While most forms of informal integration are not permitted under normal circumstances, at least a few respondents noted that it is allowed in a few situations. One is in the area of contingency planning and another is in the area of community transport. A respondent from an authority in Greater Manchester explained that some informal integration was permitted, and even encouraged in 2002, when Manchester hosted the Commonwealth Games. This sporting event was planned well in advance, so many of the additional services needed to transport spectators were budgeted ahead of time. According to the respondent, the operators decided to provide some of the service commercially, however, the local PTA funded most of it. There was a great deal of cooperation and integration in practice, largely because "the commercial end was taken out of the picture." The principal focus was placed on providing a good transit system to move people between sites and key activity centers.

According to one outspoken respondent from a local authority in Tyne and Wear, there has been an effort to encourage informal integration between traditional transit and community transport services. Outside the commercial arena, there are hundreds of local organizations within the County that operate minivans or taxi vehicles made available to them. He mentioned that there is an emerging need (touched upon in the *1998 Transport White Paper*) for local authorities to act as "community transport brokers," working to efficiently allocate resources to needy communities.

This approach involves the identification of travel needs that cannot be met by the commercial sector, encouraging the community sector to work together, and possibly, subsidizing paratransit and district transit services. These services could be contracted out to commercial operators through a separate competitive tendering scheme by local PTEs in conjunction with

representatives of these communities. In addition, a clearinghouse could be set up to provide organizations with information concerning vehicle availability.

7.1.5.2 Potential disbenefits of informal integration

As mentioned above, there were a number of concerns surrounding the prospect of informal integration between operators. In sum, respondents overwhelmingly agreed that in a perfectly contestable market, contact between transit providers, particularly large, private operators, could result in collusion and the systematic disappearance of many small operators. While this could improve several aspects of integration, including fare and timetable coordination (e.g., a fare structure for through-tickets, negotiated service headways); it could also result in an oligopoly dominated by a few operators.

However, at least three respondents from local authorities and operators in Manchester and Tyne and Wear remarked that two or three large bus operators already dominate both of these markets, with minimal competition from other operators. In some cases, their service areas have not significantly changed over the past decade, throwing into doubt the contestability of these markets. If indeed, they are not contestable, then it is not clear that open communication between operators would necessarily jeopardize the situation. A few operator respondents from the case Mets believed that there are ways of discouraging collusion, while promoting communication between operators.

Nevertheless, the prospect of widespread informal integration generates other concerns, for instance, regarding the accountability of transit providers in a deregulated market. A respondent from a local authority in Manchester mentioned the possibility that (in a deregulated environment) without some form of control over interoperator contact, two or more operators could effectively design integrated services that compete with or actually work against the efforts of established public-private partnerships (e.g., between local authorities and participating bus and rail operators). He argued that such voluntary arrangements could eventually prove to be

counterproductive if they aggressively compete with existing regional systems of integration, undercutting established fare and timetable schemes.

In London, transport authorities have firmly adhered to a system of formal integration between contracted services. For example, an authority respondent cited examples of informal integration among boroughs and between boroughs and TfL (e.g., immediately responding to service voids). In contrast, due to the terms of their contracts with TfL, most transit operators are focused on providing required integration with other operators and are not interested in identifying new areas of potential integration that lie outside of their scope.

Under London's regulatory framework, all forms of interoperator coordination are clearly prescribed by TfL (through operator contracts), based on this agency's assessment of transit needs. For example, all operators must meet strict standards requiring them to operate at set headways which are coordinated with the headways of other connecting services, effectively reducing waiting times at key interchanges. According to interview respondents, London operators are required to provide written and posted transfer information on their vehicles, and must accept the Oyster card as a method of payment, along with other regional fare instruments.

7.1.6 Other Issues

During the interview process, respondents also addressed other issues affecting both the public transit industry and interoperator integration in Britain. Key topics discussed included the possible re-regulation of transit services in the Mets, the direct benefits to integration resulting from post-1998 transport policies, and the costs of providing integrated transit services in the Mets under a more regulated regime. In these interviews, respondents exhibited a divergent set of views on these subjects.

A number of authority respondents remarked that in some Met areas, not enough had been done to achieve the level of mode shift envisioned in the *1998 White Paper*, and that short term measures should be taken by PTEs to introduce Quality Contracts where necessary. This policy option, established under the *Transport Act 2000*, would have implications for transit integration,

as transit routes in these areas would be opened for tender and the OFT would no longer be involved in ensuring open competition, i.e., obliging operators to provide integrated services. At least two respondents indicated that this position was strongly supported by local politicians, such as Councilor Roger Jones of Manchester and the Passenger Transport Executive Group (PTEG), who believed that London-style regulation would improve transit dependability in the Mets, either on a local or metropolitan level (PTEG 2003).

Nevertheless, while a number of academic, operator and even authority respondents recognized the need to guarantee better links between transit services, they expressed concern over the re-regulation of these services in the Mets, often questioning whether this modification would help achieve regional mobility objectives, such as better access to transit services. Most of these authority respondents recognized that Central Government wants "to give a fair trial to Quality Partnerships" first, only allowing for Quality Contracts under special circumstances, as evidenced in the lengthy administrative process required to manage these Contracts. One senior manager at a local authority argued that "there's a strong argument that introducing franchising on an area basis would reduce and not increase competition," as only the large operators would put in bids for those franchises, driving some of the small operators out of existence. A number of respondents from Greater Manchester and Tyne and Wear pointed out that under Quality Contracts, PTEs would require special powers to buy buses and lease them to small operators so that they could compete in the tendering process.

With respect to system benefits, while a number of respondents believed that the *1998 White Paper* had generated discussion concerning the expansion of integration in the Mets, many remarked that few of the regional efforts to provide integrated services in the Mets could directly be attributed to post-1998 government policies. In a number of interviews, respondents remarked that many of the existing programs, such as those promoting and facilitating multi-modal ticketing (e.g., rail add-ons for buses or Metrolink, multi-operator bus tickets/passes), were already in the process of being developed in 1998. However, one operator respondent from

Manchester commented that a key benefit that has come out of these policies has been a focus on improving bus services and accepting that bus companies on their own cannot improve integration. Certainly, provisions of the *Transport Act 2000* required greater participation on the part of PTEs in the promotion of service coordination.

Nevertheless, a common observation among many of the respondents was that the ongoing provision of integrated transit services requires a substantial capital investment in transit interchange facilities; the deployment of new fare instruments (e.g., London-style transit smart cards); as well as the widespread development and distribution of informational materials. Some respondents, particularly those from authorities supporting the introduction of Quality Contracts, argued that costs would not approach London proportions because this regulation would be limited to small areas where commercial operators have been unable to provide acceptable transit coverage and frequency. A number of the authority-based respondents expressed interest in pursuing a hybrid approach to bus regulation, in which not all services would ultimately be subject to competitive tendering and/or public ownership, a position that contrasts with the approach taken by some local politicians. They fear that the wholesale regulation of all transit services in an area could generate high costs and cause widespread discontent among operators.

In contrast, many operator respondents and some authority and academic representatives were skeptical of Quality Contracts. One authority respondent from Greater Manchester remarked that in some respects, the introduction of Quality Bus Contracts signaled recognition on the part of Central Government that Quality Bus Partnerships had failed, and that a voluntary approach to integration was no longer an alternative. He pointed out that this contention was not supported by the evidence: the Integrate Project, a voluntary QBP, successfully assessed needs for greater integration and introduced new interchanges and informational resources. However, in Tyne and Wear, one operator respondent recognized that “the will to push through these Partnerships” is not always apparent and that for this reason, Tyne and Wear authorities seemed

to be more confident that Quality Contracts would eventually be approved by the British Secretary of State.

7.1.7 Observations

Most respondents believed that integrated services had clearly improved since the mid-1990s, however, many expressed concern for future improvement in the quality of services, particularly with regard to timetable and fare integration in the Mets. Information integration, including the use of new technologies in the collection and dissemination of key data to passengers and the general public, was widely seen as the area in which PTEs had achieved the most, providing the necessary foundation upon which travelers could make key decisions. In addition, many respondents, particularly those at a local authority in one of the case cities, recognized the gains that were made in the expansion of regional fare integration options (e.g., Travelcards, London's Oyster Card).

In the Mets, the passage of Block Exemptions to the *Competition Act 1998* was clearly seen as beneficial to the promotion of regional fare integration. Still, it was felt by many academics and industry professionals that while Central Government had voiced a clear interest in "integration," between 1998 and 2004, it was the local authorities and operators that had forged partnerships. Some felt that Central Government had "planted the seed" but had not adequately followed up with the necessary policy guidance and funding to assist local governments, i.e., the devolution of planning powers had proceeded, but the necessary resources for its successful implementation were not fully provided.

Several respondents from each of the four interview groups concurred that the *Competition Act of 1998* serves as an effective barrier to open contact between transit operators. Furthermore, regardless of their views on informal integration and its role in the facilitation of travel, most of these respondents remarked that competition law and the penalties associated with violation of its provisions prevented operators from openly speaking to one another. Operator respondents stated that most operators were hesitant to communicate with one another for fear that penalties could

be imposed if competition authorities were able to prove that contact had occurred, regardless of whether collusion had actually taken place or not. While some authority respondents pointed out that collusion had taken place in the past, many favored the relaxing of competition law provisions to allow for PTE-sponsored integration at the regional level.

Despite some concurrence over the negative effects of competition law on interoperator and interagency communication, respondents were not in agreement over whether informal means of transit integration could yield system benefits in Britain. Some argued that informal integration among operators or other providers allowed for service voids to be identified and filled by the operators themselves in an expedient manner. However, almost all of these respondents felt that, in order for regional objectives to be met, transit authorities in the Mets needed to be at least marginally involved in bilateral or multilateral agreements, as they currently are with the regional ticketing arrangements (e.g., GMTL in Manchester). Of course, most felt that the best way to legitimately facilitate this widespread collaboration would be through the granting of a new Block Exemption. Only the OFT could grant this, under advice from Central Government.

In contrast, while recognizing the merits of informal integration in the heavily-regulated U.S. transit sector (Chisholm 1989), a significant number of respondents, primarily national authorities and some local authorities groups, concluded that this alternative form of operator collaboration does not necessarily have a place in the Mets. They explained that due to the competitive nature of the industry (as it is presently structured), there are always ill-intentioned operators that will seek to gain personal advantage at the expense of the collective good of the region and its transit stakeholders. This argument is consistent with Central Government's argument that interoperator collusion is inevitable.

In the case of London, system transparency and accountability are not currently at issue as TfL is fully engaged in the integration of timetables, fares and information. However, a concern voiced by a few of the respondents was the existing "top-down" nature of transit integration in the capital, and the limited role the bus operator is allowed to play in service planning. Despite TfL's

comprehensive coverage, some operators are concerned that operators do not have an ongoing outlet for providing input on specific services.

7.2 Transit Industry Data

The principal sources of this industry data included a number of different government and industry agencies. Much of this information came from historic and current reports documenting metropolitan wide trends in the case cities. One of the primary sources of this information was the *Bus Industry Monitor*, which annually releases national data on passenger demand and services provision, including figures from Greater London and the English Mets.

7.2.1 Demand Side Trends

As indicated earlier, ridership is one of the best measures of transit effectiveness currently available. A cross-case comparison of per capita transit ridership for all three major modes in the Mets revealed that there are significant differences between these case cities, based on local factors, such as historic and existing levels of transit dependence, pedestrian access to transit and urban densities. The most recent data clearly reflects the relative importance that each mode has within the larger network of transit services in each city (see Table 7.1).

Table 7.1 Number of Journeys per 100,000 Residents in the Mets, 2003

Indicator	Manchester	Tyne/Wear	Met Average
Annual Bus Trips/100,000	9.05 million	12.86 million	10.98 million
Annual Light Rail Trips/100,000	0.74 million	3.38 million	0.96 million
Annual Heavy Rail Trips/100,000	0.64 million	0.06 million	0.88 million

Source: Nexus 2004b

In Greater Manchester, where per capita transit use is slightly lower than the average for all English Mets, the bus plays a dominant role in the movement of passengers, while light rail and heavy rail systems serve some corridors. However, in Tyne and Wear, where transit use is above the average, the bus plays a less dominant role relative to light rail services.

The available bus ridership data provided a clear picture of past and current transit patterns in the case cities. While bus ridership in the Mets increased at an average rate of 1.4 percent per year during the first half of the 1980s, after privatization, it immediately plummeted, well below predicted levels (Mackie et al 1995). More recently, Greater Manchester has seen very small increases in transit ridership while Tyne and Wear has continued to see decreases in ridership, although they have slowed (see Table 7.2). It is interesting to note that neither case Met has seen a dramatic rise in ridership, despite the expansion of light rail facilities.

In contrast, while transit ridership in London grew slightly in the early 1980s and began to fall once reforms were introduced in 1986, it has increased significantly since completion of the bus tendering process in 1994, reaching record levels of growth between 2000 and 2004. There are now more bus passengers in Greater London than in all of the PTE areas, combined, a trend that emerged in the late 1990s (see Table 7.2). Thus, while privatization has brought ridership declines in the case Mets, it has resulted in important ridership gains in London.

Table 7.2 Annual Bus Ridership* in the Case Cities, 1988-2004

Year/Period	Manchester	Tyne/Wear	All Mets	London
1987/1988	310	243	1732	1207
1989/1990	291	244	1648	1188
1991/1992	260	220	1478	1149
1993/1994	236	182	1337	1117
1995/1996	224	168	1292	1205
1997/1998	211	161	1237	1294
1999/2000	199	151	1160	1307
2001/2002	205	141	1150	1434
2003/2004	205	134	1108	1702
1988-1994**	- 4.0%	- 4.2%	- 3.8%	- 1.2%
1994-2000**	- 2.6%	- 2.8%	- 2.2%	2.8%
2000-2004**	0.8%	- 2.8%	- 1.1%	7.6%

*In millions ** Average annual change

Sources: TAS 2004, DfT 2004b

It is also important to note that declines in bus ridership in the Mets have tended to decrease in magnitude, particularly after 1994, by which time most of the initial operator consolidations and transfers had taken place. In fact, while bus ridership for Tyne and Wear and other Mets continued to decline between 2000 and 2004, it began to rise in Greater Manchester. It is believed that this surge may be attributed to activities associated with the 2002 Commonwealth Games, which were held there. However, there is also evidence suggesting that the net increase between 2000 and 2004 may have come from improvements in service and ridership gains on Quality Bus Partnership routes, although no clear evidence of this trend was available for the other Mets.

7.2.2 Supply Side Trends

On the supply side, there is ample data on the level of transit service provided in all of the English Mets and Greater London. System output is measured in a number of ways, often, in terms of the total number of revenue kilometers or passenger-kilometers operated. Each of these effectively measures the level of scheduled service actually provided to the transit passenger. For the purposes of this study, the most reliable data available for all three case cities was annual revenue kilometers provided. Nevertheless, while both company and metropolitan area data are quite useful, it should be noted that this aggregate data can be used to measure relative change and does not always reflect service changes on specific bus routes in each of the case cities. Even in the Mets, some bus lines witnessed significant ridership gains after deregulation, as private companies were allowed to focus their commercial resources on profitable routes.

Recent trends in the provision of bus service in Greater London and the English Mets are shown in Table 7.3. These industry data indicate that while total revenue kilometers in the Mets increased between 1987 and 1994, in the past decade they have declined. In contrast, Greater London has seen a steady rise in the total number of revenue kilometers throughout the period. In

particular, these figures have increased significantly since 2000, when Transport for London was established and major investments in bus service were made under Mayor Ken Livingstone.

These results suggest that after a decade of bus industry buyouts and consolidations in the Mets, many large, nationwide companies decided to focus most of their services on an established network of profitable routes. Within each Met, large operators commonly carved out territories, virtually creating monopolies. Competitors, such as other large companies or small operators, seldomly dared compete with a dominant operator. In addition, some operators chose to bid for the right to provide services to the less profitable, tendered routes, i.e., the socially necessary routes subsidized by local authorities, such as the PTEs.; however these routes are of secondary interest, as they do not normally represent areas of potential growth.

Table 7.3 Annual Bus Kilometers Operated in the Case Cities, 1988-2004*

Year/Period	Manchester	Tyne/Wear	All Mets	London
1987/1988	135	93	616	276
1989/1990	139	97	654	292
1991/1992	144	100	662	316
1993/1994	141	109	693	343
1995/1996	142	102	695	353
1997/1998	134	97	697	362
1999/2000	124	96	659	366
2001/2002	126	92	644	380
2003/2004	118	74	636	437
1988-1994**	0.7%	2.9%	2.1%	4.0%
1994-2000**	- 2.0%	- 2.0%	- 0.8%	1.1%
2000-2004**	- 1.2%	- 5.7%	- 0.9%	4.8%

*In millions ** Average annual change

Sources: TAS 2004, DfT 2004b

An analysis of operator participation in the supply of services in Britain revealed that each of the five major bus groups has focused on a distinct segment of the transit market. For example, First Group and National Express have concentrated bus services on key PTE areas,

such as Greater Manchester, Strathclyde and West Yorkshire in the case of the former, and West Midlands, in the case of the latter. Similarly, Arriva tends to serve some PTE areas, but has focused on suburban markets and small and medium size towns in the Northeast, Northwest and Southeast (e.g., Reading, Chester, Darlington). Go-Ahead primarily serves London, Tyne and Wear and some of the medium size communities of the Northeast and Southeast. Finally, Stagecoach provides standard and premium bus services to all regions of Great Britain, including conurbations, medium and small communities.

A key element in the supply of transit is the cost of providing service to the passenger. This expense depends on a number of factors, including ridership level, route length, vehicle age, labor costs and the cost of living. Since privatization, both London and the Mets have seen costs per bus-kilometer decrease by close to three percent per year. Clearly, reductions in labor costs, which represent 70 percent of all costs, have significantly contributed to this decrease (White 1995b). In the past five years, however, labor costs have risen. Table 7.4 provides net costs per journey for each of the principal transit services contracted out by the public sector, i.e., subsidized rail services and socially necessary bus services. The cost of providing bus services is virtually the same in both Greater Manchester and Tyne and Wear, however, the cost of providing heavy rail service is almost twice as expensive in Tyne and Wear as it is in Greater Manchester, largely due to the limited extent of heavy rail in the former. In contrast, light rail journeys in Tyne and Wear are much more reasonable to provide than even bus journeys in the same Met.

Table 7.4 Net Cost per Passenger Journey in the Mets, 2003

Indicator	Manchester	Tyne/Wear	Met Average
Cost/Subsidized Bus Journeys	£0.69	£0.66	£0.69
Cost/Light Rail Journey	Not applicable	£0.45	Not applicable
Cost/Heavy Rail Journey	£4.51	£8.40	£3.90

Source: Nexus 2004b

While London fares are controlled by TfL, Met authorities only have control over fares in the subsidized bus market. The remaining 90 percent of these markets are commercially served and subject to price fluctuations. Consequently, London and the Mets have seen different rates of change in real fares between 1992 and 2002 (Steer Davies Gleave 2003). While real fares have increased by 12 percent in London, they have increased by 30 percent in the Mets. This higher rate of increase has meant that it is difficult for fares to be integrated in the Mets, even where it is allowed under the *Competition Act*. Many planners have worked on integrated ticketing schemes that seek to avoid the issues of varying fare levels between modes and operators.

Another measure often used to determine the success or failure of an integrated system is the degree to which local passengers are satisfied with specific service-related features, such as reliability or bus stop information. A comparison of satisfaction rates in each of the case regions is provided in Table 7.5. In the case of Greater London, it is the same geographic area covered in the previous tables, however, for Greater Manchester and Tyne and Wear, the only comparative data available was for the larger regions surrounding these conurbations: the Northwest for Greater Manchester; and the Northeast, for Tyne and Wear.

Table 7.5 Satisfaction Rates for Bus Passengers by Region, 2001-2004

Feature	Northwest		Northeast		Gtr. London	
	2001	2004	2001	2004	2001	2004
Overall Service	83	84	82	84	74	78
Reliability	64	67	64	63	65	69
On-bus Information	76	80	80	84	73	75
Bus Stop Information	56	65	50	55	72	72
Bus Stop Shelter Condition	77	79	70	74	73	75
Time Waiting for Bus	81	84	80	82	72	76
Journey Time	89	91	88	90	80	83

Source: DfT 2004b

In general, for almost all of these satisfaction features, ratings actually increased, indicating a rise in public perception of transit. London tended to do better than the Mets in the areas of

reliability and bus stop information, but trailed them in other categories. Of the case Met regions, the Northwest tended to score close to or slightly better than the Northeast in most areas, except for on-bus information. The greatest improvement in passenger satisfaction appears to have been in the provision of bus stop information, where it increased from 56 to 65 percent. Indeed, these statistics suggest that there was a significant improvement in the provision of bus information.

7.2.3 Industry Trends

While the previous section provides a general idea of the amount of service currently being provided in the Mets, this section explores the participation of the five major bus operator groups in the provision of transit in London and the Mets. This data can provide some insight into the operational factors affecting the supply of transit in these areas and possible implications for the integration of services. In order to understand the potential role that large operators can play in the coordination of services, it is helpful to get an idea of the modal mix of services provided by these large groups and the sorts of markets that they are targeting (e.g., bus services, which carry as much as 80 percent of all transit journeys in some areas). While some information was not available for specific case Mets, the data that was obtained can provide some insights into the differences between London and the PTEs.

For example, Table 7.6 breaks down total transit group turnover by mode. This table indicates that for most of the major transit groups, annual revenues acquired from the provision of both bus and rail services in Britain were in each case, somewhere between 28 and 40 percent of total company turnover in 2003, with overseas operations making up the remaining revenues. National Express is an exception to this rule, however, as it holds a virtual monopoly over the long-distance, intercity coach market, and operates a large share of its urban bus services in the West Midlands. In addition, Table 7.6 shows the relative importance of the First, Stagecoach and Arriva Groups within the bus sector; as well as the National Express and First Groups within the rail sector (Steer Davies Gleave 2003).

This turnover data highlights the importance of involving these nationwide bus groups in the local transit integration schemes involving company subsidiaries. An objective of the national and metropolitan authorities (PTEs), including the PTEG, should be to not only approach these transit groups on a local level (through their subsidiaries), but also on a global level. Since these groups appear to hold the purse strings for what goes on at the metropolitan level, perhaps they could be persuaded to adopt nationwide policies encouraging and supporting their subsidiaries in local efforts to improve integration, as long as these policies do not violate the *Competition Act*. Policy consistency across and within Mets is vital to the development of a stable system of network integration and customer reliability.

Table 7.6 Transit Group Turnover by Mode, 2003

Transit Group	Turnover by Mode (in thousands of UK Pounds)				
	Bus	**Coach**	**Rail**	**Other***	**Total**
First	£859 (38%)	£0 (0%)	£842 (37%)	£589 (25%)	£2,291 (100%)
Stagecoach	£598 (29%)	£0 (0%)	£690 (33%)	£699 (38%)	£2,077 (100%)
Arriva	£560 (40%)	£0 (0%)	£419 (30%)	£412 (30%)	£1,390 (100%)
National Express	£209 (9%)	£185 (8%)	£1,553 (64%)	£466 (19%)	£2,412 (100%)
Go-Ahead	£311 (28%)	£0 (0%)	£561 (51%)	£230 (21%)	£1,102 (100%)
Total – All Groups	£2,537 (27%)	£185 (2%)	£4,065 (44%)	£2,486 (27%)	£9,272 (100%)

*Includes overseas bus and rail operations

Source: Steer Davies Gleave 2003

Similarly, it is helpful to identify the areas of Britain where many of these large bus groups regularly operate. Table 7.7 breaks down transit group turnover by size of transit market, effectively giving an indication of the principal operators that have chosen to do business in London, the regulated market, as well as those focusing on bus provision in deregulated areas. The table indicates that First Group and National Express have aggressively pursued PTEs and

smaller markets, while Go-Ahead has dominated the London market more than any other transit group. In contrast, Stagecoach and Arriva have equally focused efforts on the London and PTE markets, as well as smaller markets.

In addition, the Steer Davies Gleave data revealed differences in the participation of large bus groups in London as opposed to the Mets (Steer Davies Gleave 2003). In the case of the former, smaller bus operators collectively captured 29 percent of the market, followed by Go-Ahead (21), Arriva (19), and First (15). In contrast, First captured 35 percent of the collective PTE market, followed by National Express (21), Arriva (16), Stagecoach (11), smaller operators (10), and Go-Ahead (7). Certainly, First, National and Stagecoach have even higher market shares in some of these Mets.

Table 7.7 Transit Group Turnover by Area, 2003

Transit Group	Company Turnover by Service Area				
	London	**PTEs**	**Major Urban***	**Other****	**Total**
First	13%	40%	23%	24%	100%
Stagecoach	20%	17%	1%	62%	100%
Arriva	24%	28%	6%	42%	100%
National Express	0%	94%	0%	6%	100%
Go-Ahead	57%	25%	11%	7%	100%
Other Operators	29%	13%	18%	40%	100%

*Areas of 250,000 to 1 million inhabitants **Areas of less than 250,000 inhabitants

Source: Steer Davies Gleave 2003

While these data do not show variations among Mets, they support the argument that urban bus markets are primarily dominated by the large groups. In most Mets, except for the West Midlands, two or three of these groups share control of the local market; in fact, in some cases, one group will have two or three subsidiaries in one metropolitan area (e.g., Stagecoach in Tyne and Wear). In the case of Manchester, local subsidiaries of First, Stagecoach and Arriva control the local bus market, while in Tyne and Wear, the subsidiaries of Stagecoach, Arriva and Go-

Ahead are dominant. Over time, these subsidiaries have aggressively defended their territories, leaving other operators to go after the niche markets and the socially responsible services.

Financially, some bus groups have done better than others. One way of measuring the financial position of some of these large bus groups is by comparing their profits. Table 7.8 presents the operating profits of the large bus groups and other operators, by size of area. Here, we see much higher rates in the PTEs than in the London market. In the Mets, the largest bus groups achieved operating margins of anywhere from 10 to 24 percent, while the remaining companies averaged margins of closer to 5 percent. In contrast, in London these margins were from 8 to 9 percent for the largest groups and just over 8 percent for the remaining operators serving the market.

Table 7.8 Transit Group Operating Margins, 2003

Transit Group	Company Operating Margins by Service Area				
	London	PTEs	Major Urban*	Medium Urban**	All Areas
First	9.3%	15.0%	15.0%	11.1%	13.0%
Stagecoach	8.5%	16.2%	7.7%	13.6%	11.6%
Arriva	9.0%	10.1%	19.6%	10.8%	10.8%
National Express	n.a.	24.0%	n.a	13.4%	23.3%
Go-Ahead	9.0%	10.0%	16.2%	9.1%	10.0%
Other Operators	8.1%	5.2%	7.8%	3.0%	6.7%

*Areas of 250,000 to 1 million inhabitants **Areas of 150,000 to 250,000 inhabitants

Source: Steer Davies Gleave 2003

The data presented above suggest that in general, the major bus groups have enjoyed higher operating margins in the PTE areas than in London, a finding that suggests that these groups are in fact well positioned to coordinate and provide integrated services with other operators. Except for Go-Ahead, all of these operators do better in the PTEs than they do anywhere else in Britain, which may be a reason why Go-Ahead has decided to remain heavily invested in London (e.g., through subsidiaries such as London General).

7.3 Government Policies and Programs

This section includes policy-related information, as well as some data from the interviews conducted in the three case cities during 2003-2004. The former, obtained through the review and examination of numerous local, regional and national policy documents, permitted an analysis of the primary policy documents as well as the local transport documents and strategies formulated to tailor national policies to local realities. In contrast, the anonymous, interviews provided first-hand information on stakeholder perspectives concerning transit operation and planning in the Mets.

7.3.1 National Framework

Design and implementation of Central Government's long-term transit policy agenda has required the active participation of a number of national level departments and agencies, including not only the DfT and the OFT, but also the Chancellor of the Exchequer, the government office charged with determining and allocating national budgets. This research has shown that while some of these government entities have worked together, others have not, often causing widespread confusion and inconsistencies in the application of transit policies and the effective integration of transit modes in major cities of Britain.

7.3.1.1 Institutional background

Research into the role of transit institutions revealed that while private transit companies are responsible for the operation of transit services throughout Britain, since the *Transport Act 2000*, Central Government authorities have assumed a greater role in the planning, budgeting and implementation of transport projects in Britain. The principal agencies involved in the execution of the national transport agenda are the Department for Transport, the Exchequer and the Competition Commission (through the Office of Fair Trading). Each of these agencies plays a distinct role in providing guidelines for the delivery of transport, the budgeting of services and the monitoring of operator behavior.

The Department for Transport, the primary government agency working under the Minister for Transport, is charged with developing transport policy for a wide number of subfields. It periodically provides policy guidance through the introduction of industry White Papers on strategies for improving the provision of transport services. These Transport White Papers, which are issued by the governing political party soon after taking control, provide points of discussion on a number of issues. They then form the basis for seeking political consensus and drafting the necessary legislation with which to require changes at the national level.

For example, the *1998 Transport White Paper* represented a major shift in transit policy outside of London, from a purely market-driven approach to a more passenger-friendly focus on better access to opportunities. This new approach downplayed the decreases in public sector costs that resulted from deregulation, and began to place greater emphasis on the need for stakeholder participation in local planning, i.e., through the devolution of powers to local councils and the development of Local Transport Plans, and the introduction of environmentally-oriented strategies. Analytical tools no longer merely measured the effectiveness of transit strategies in terms of benefits to the operator (e.g., profit margins), but rather, took a broader view of the impacts of privatization and deregulation on passengers and society in general: ridership levels, integrated transport services. Initially, the *1998 Transport White Paper* was widely supported, as it presented a new alternative for shaping travel in Britain.

In addition, this policy document encouraged the formation of advisory groups comprised of national experts and professionals. As a result, the DfT was able to seek the input of other transport agencies, not only benefiting from the work of local governments, but also the input provided by the Commission for Integrated Transport and the Bus Forum. The former is an independent body, established in the *1998 Transport White Paper*, charged with advising the Government on integrated transport policy and its interface with wider Government objectives, such as economic prosperity and social inclusion. Based on a “blue sky” approach to future strategic issues in Britain, this organization has developed best practice guidelines for

encouraging improved transit performance through better coordination of services. It views physical integration as one vital element in a larger, transport picture.

In contrast, the Bus Forum, a group originally convened by former Transport Minister Spellar, constitutes a diverse set of transit operators and authorities. This nationwide forum has discussed a number of industry issues relevant to transport policy, including transit integration. A Task and Finish Group of the Forum published a report that identified some of the constraints facing integration and a few possible strategies for improving the situation. While neither this group nor CfIT have direct control over transport policy in Britain, the DfT carefully considers their inputs, often adjusting policy guidance to reflect their concerns.

In the area of fiscal spending, each year the DfT proposes an annual budget for all transport projects, based on the mobility objectives outlined in its *Strategic Plan*. In turn, the Office of the Exchequer considers proposals and only approves a specific set of line items, based on national goals and priorities, as well as a perceived set of local and national needs. Often, high profile projects are only partly funded, as in the case of the Phase III Metrolink extensions in Greater Manchester; or are rejected and reformulated, as in the case of the Orpheus Project in Tyne and Wear. In practice, due to budget constraints, only a few proposed transport projects are actually approved each year.

A number of agency pamphlets provided information on the objectives and scope of the Office of Fair Trading. Essentially, it is a national authority charged with encouraging market competition in not only the transit industry, but also a number of other competitive industries throughout Britain (e.g., water provision). In the deregulated transit markets, where there is presently “on road” competition between private bus operators, the Office of Fair Trading has direct responsibility for ensuring that there is open competition and that operator behavior does not prevent new bus operators from having direct access to the market (e.g., through the creation of barriers).

In contrast, within Greater London and in areas of Britain where local authorities administer a competitive tendering process to contract out socially necessary transit services, competition is not as much of a concern as it is in the deregulated areas. In regulated cases, it is generally assumed that either Transport for London or a local transport authority (e.g., PTE) will have the wherewithal to adequately assess local transit demand and choose responsible bidders for the delivery of bus services. This system of "off road" competition ensures greater competition, effectively eliminating the need for the OFT to be directly involved in the ongoing monitoring of operations.

Under competitive tendering, transit authorities have effectively taken control of the market in exchange for the subsidization of services. This is especially true in cities such as London or Santiago, where all services are tendered to private operators. In both cities, authorities have developed metropolitan bus and rail networks that require ongoing route planning and design, i.e., it is not the operator that determines route service levels, but rather the transit authority. This integrated style of transit planning ensures that all routes and modes are not planned in isolation, but rather, in the context of the rest of the system. This system approach guarantees better coordination between operators (e.g., joint scheduling and ticketing, shared information).

7.3.1.2 Legislative background

In general, White Papers provide the basis and framework for developing government legislation that will establish the specific requirements and actions necessary to achieve a desired policy outcome. Normally, new legislation is drafted thereafter and approved within a few years of the publication of a White Paper, i.e., once government ministries, elected officials (MPs) and other stakeholders have had a chance to fully debate the issues and both funding and enforcement mechanisms have been identified. The government ministry authoring the White Paper normally provides guidance to local governments on the implementation of the legislative act.

In the case of transport, release of the *1998 Transport White Paper* led to the development and approval of the *Transport Act 2000*, the primary piece of government legislation charged

with establishing transport policy in Britain (U.K. Parliament 2000). As with past Transport Acts, Central Government envisioned that this legislation would provide local governments with the ability to design services that respond to transit demand, effectively providing the necessary guidelines for better service planning and coordination. Concurrently, Central Government authored *Transport 2010: The Ten-Year Plan*, the initial vehicle for setting targets and developing strategies that implement the goals set forth in the *1998 Transport White Paper* (DETR 2000b).

In practice, it is widely acknowledged that in the end, concepts discussed in the *1998 Transport White Paper* were watered down for the *Transport Act 2000*, limiting the public sector's commitment to fully implement them. For example, some critics point to the Labour Government's decision to allow for some road and highway construction, in contrast to the White Paper's anti-auto approach (Begg 2003); or the Government's lack of follow-through to make Quality Contracts a more viable alternative at the metropolitan level. While Central Government passed legislation that enabled local governments to introduce such measures as congestion charging, it did not specifically guarantee funding for initiating these efforts. Thus, some experts believe that the corresponding legislation was less aggressive, passing up an opportunity to introduce truly revolutionary policies that could bring significant mode shift.

The primary vehicle for encouraging competition in Britain has been the *1998 Competition Act.* This legislation built upon past efforts to encourage private participation in the provision of public services, introduced under the Thatcher Administration, such as the *Competition Acts* of 1980 and 1988. However, due to its focus on promoting competition in all industries, this legislation does not necessarily ensure a well-balanced transport system. Instead, it works to prevent communication and collaboration between private operators, regardless of intent, based on the premise that communication equates with collusion, i.e., to the detriment of third parties.

7.3.1.3 Funding support

While Central Government has historically provided much of the financial support for the operation and maintenance of transit systems throughout Britain, since the deregulation of transit

in the 1980s, the flow of monetary resources has dramatically changed in the areas outside of London. While there are some variations between the Mets and other areas outside of London, all of these communities have experienced some decline in the role of local authorities. In some cases, money has flowed from Central Government to operators, with little participation on the part of local government.

In response to this change, a major objective of the *Transport Act 2000* has been to strengthen the role of the PTE and/or district councils in the generation of new revenues for transit services and planning. Some transit funding has been provided for local areas, however, recent policy has effectively removed some of the financial burden historically assumed by Central Government. The latter has supported a systematic devolution of transport planning powers to the Mets, in exchange for greater responsibility on the part of PTEs in the generation of local funding.

In the Mets, the PTEs determine local spending on transit services, in accordance with the local budget, setting up interagency competition for funding in such areas as transport, education and housing. At the national level, the DfT provides PTEs with capital funding for systemwide infrastructure improvements, however commercial bus services are largely funded through fare revenues and local authority reimbursement of concessionary fares. New buses are often funded by the private operator, with assistance from the PTE, however, bus-related infrastructure (e.g., bus stops) is funded by the PTEs and district councils. In general, local authorities in the Mets secure funding from a number of sources (GMPTA 2001b, Tyne and Wear Partners 2001):

- fare revenues collected by operators;
- Revenue Support Grants, provided by Central Government;
- Urban Bus Challenge funds from DfT;
- council taxes; and
- various other revenue sources, such as parking revenues or developer contributions.

Figure 7.1 provides a diagram of the principal revenue flows for bus services in the Mets.

In contrast, London has benefited from the full participation of TfL in the planning, procurement and regulation of bus services. Since 1999, the Mayor of London has been responsible for establishing a transport strategy in the capital. TfL determines the scope of the bus network, establishes the services to be provided and receives tenders from private operators for the provision of prescribed services on the bus network. It sets and receives fares, paying operators for the provision of services. The London bus system has a number of funding resources at its disposal, including the following:

- fare revenues, just over 50 percent of the operating costs in 2004-05;
- concessionary fare reimbursements from the boroughs;
- Transport Grant from the DfT, for capital expenditure;
- congestion charging and third party funding;
- loans from financial institutions; and
- council taxes.

Figure 7.2 provides a diagram of the principal flows of revenue in London

7.3.1.4 Transport planning documents

As previously explained, under the *Transport Act 2000*, each metropolitan area outside London is required to develop a Local Transport Plan (LTP) that addresses transport issues. This document is designed to provide the basis for funding and implementing a coordinated set of mobility measures. Each PTE area developed its initial LTP in 2001, based on interagency planning and public outreach, and has now completed its second LTP. In both of the case Mets, LTP documents were forwarded to Central Government before 2002, after a good deal of planning and discussion among stakeholder groups. Similarly, the Mayor of London directed Transport for London and other major transport agencies in the capital to engage in the

Figure 7.1 Monetary Flows in the Metropolitan Area Bus Markets

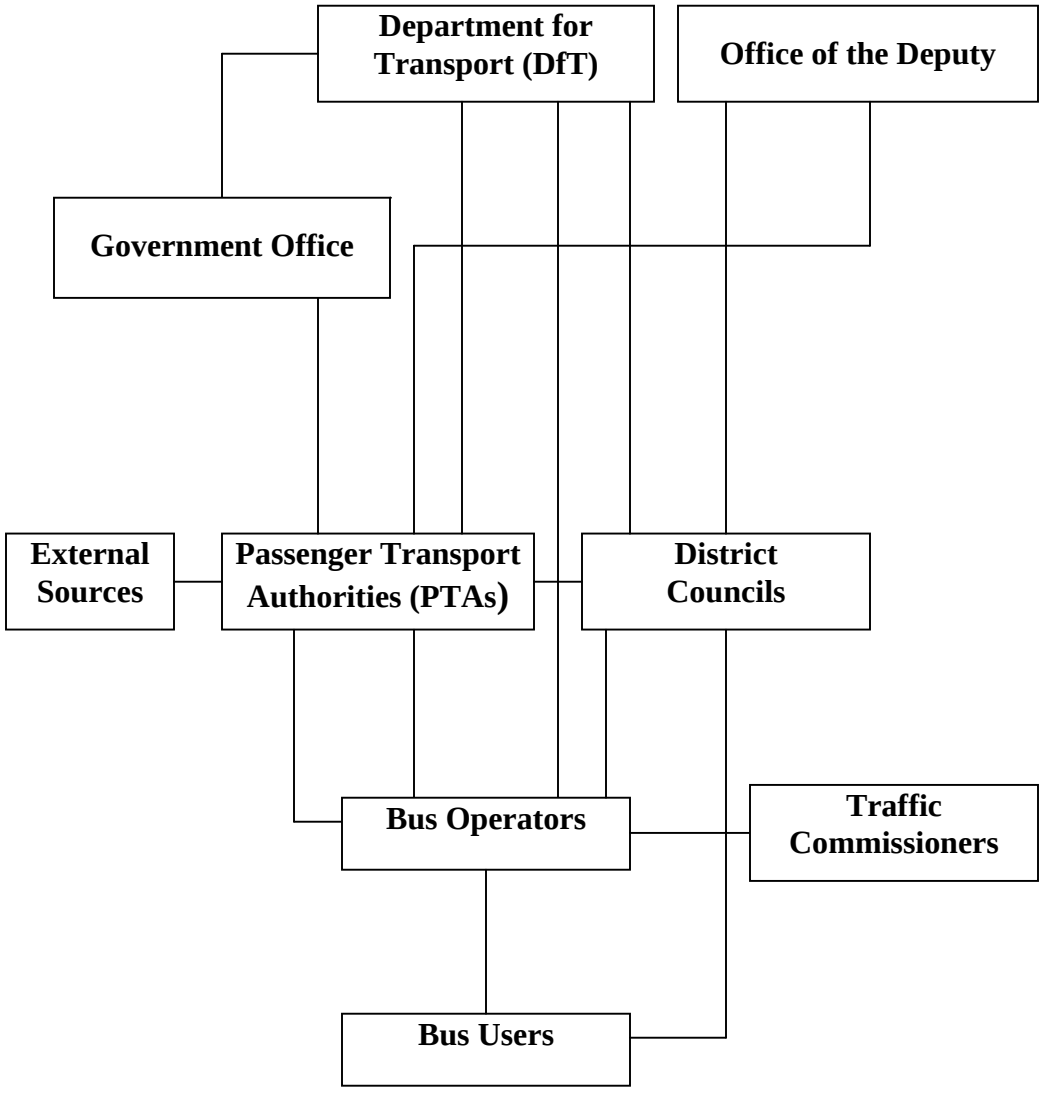
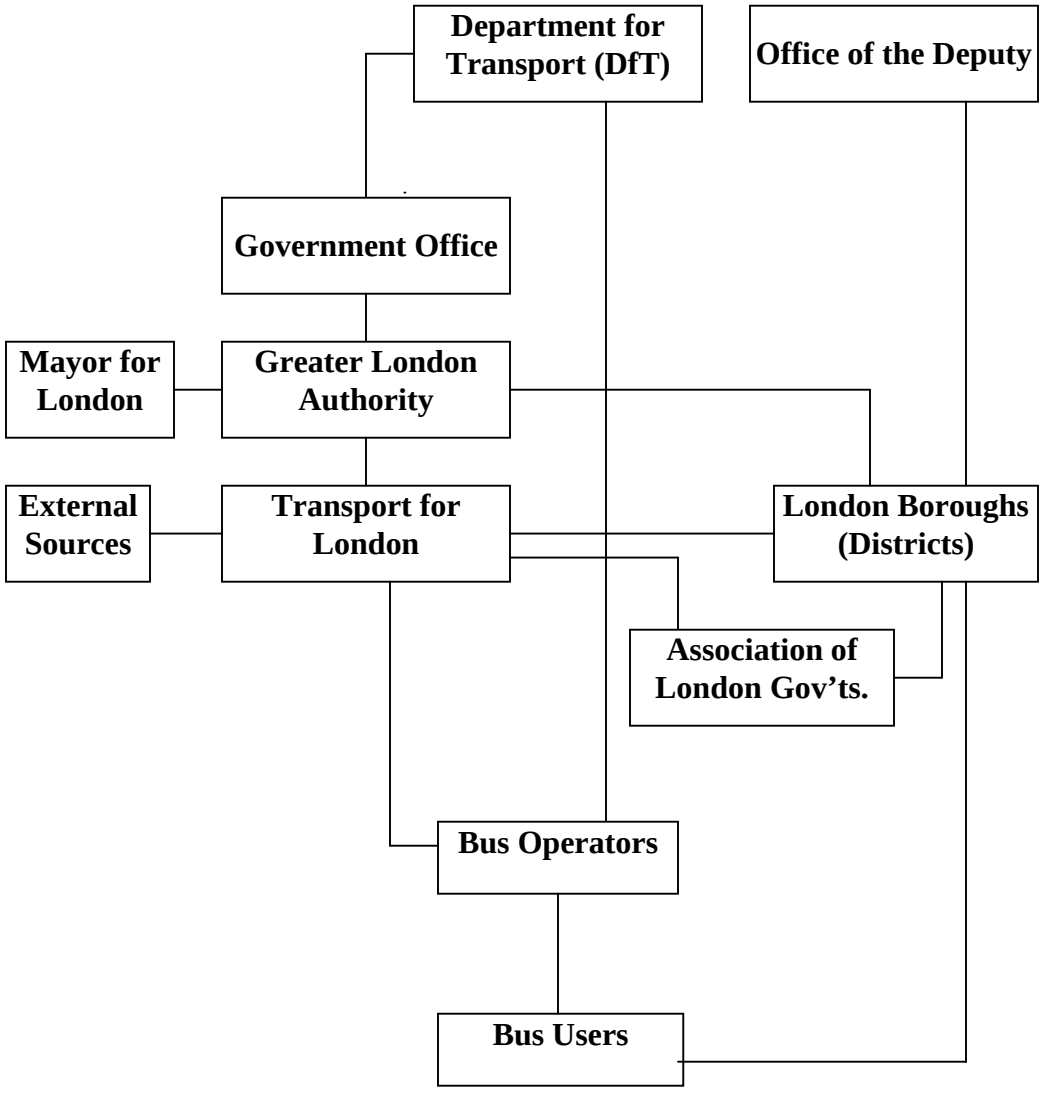


Figure 7.2 Monetary Flows in the London Bus Market



development of a metropolitan plan. This local planning process subsequently yielded a transport planning document, *The Mayor's Transport Strategy*.

Each of these local planning efforts has addressed such issues as improving and maintaining the highway, road and rail network; ensuring system safety and security; and facilitating the movement of freight; as well as expanding the transit system. Logically, this study is primarily concerned with the transit-related components of the document. Each LTP has outlined the program objectives for local transit between 2001 and 2006, and the necessary steps for achieving them within this period and beyond. However, the implementation strategies and tools for evaluating transit performance vary by metropolitan area, e.g., as determined by local authorities and detailed in the local Bus Strategy and accompanying documents and programs.

Thus, as part of the LTP process each Met is required to develop a five-year Bus Strategy for reducing the adverse impacts of the automobile and promoting the attractiveness of public transit. In theory, these strategies contain a set of general policies indicating how best to carry out agency functions, as defined by the local stakeholders. They are ultimately designed to employ schemes that will ensure that bus services meet the transit needs of local residents; that these services meet the performance standards established by the local PTA; and that additional bus-related services and facilities be provided as the PTA sees fit (U.K. Parliament 2000). For example, a Bus Strategy might focus on such issues as access to the network, affordability, reliability, information provision and integration.

Presently, efforts toward developing a second round of LTPs is in full swing throughout Britain as the first five-year plan comes to an end in 2006. One of the principal intents of the *2004 Transport White Paper* was to lay the groundwork for the proposed adjustments to transport policy under the second round of LTPs (2006-2011). Central Government is proposing to introduce new funding for special projects at the PTE level. On the bus side, government guidelines for the next round of LTPs are focusing on improvements to the present system. For example, the government is attempting to facilitate the introduction of Quality Contracts in cases

where objectives are not being met under current transit arrangements or partnerships. These objectives could include the achievement of specific standards, such as relative frequency. Before they are approved, however, the Secretary of State is required to deem individual QC efforts justifiable. An in-depth analysis of the professional capacity and financial feasibility of each PTE will be necessary.

Certainly, if a Passenger Transport Executive chooses to pursue the development of a QC, it will have greater incentive to do so after 2006, since some PTEs have included language in their LTPs that supports the introduction of Contracts. In particular, Bus Strategies will be better structured to provide evidence on alleged failures in the existing system, backing the formation of one or more QCs, based on community support. Under any circumstances, these Contracts will be a hard sell, and may take as long as two years to implement. Nevertheless, they do present an opportunity to control the supply of services in a subarea, satisfying local demand.

7.3.1.5 Integrated transit planning programs

While a significant amount of integrated transport planning in British metropolitan areas was initiated as a result of the *Transport Act 1968*, by the late 1990s, there were a number of concerted attempts to restore much of the network-wide planning and coordination lost during the decade, following privatization and deregulation in the Mets. Some of these efforts, such as the Integrate Project in Manchester, began as part of an effort to address coordination needs not otherwise satisfied under deregulation.

7.3.2 European Framework

In the past decade, the European Union has increasingly recognized the importance of establishing a set of guidelines for improving transit system integration in large and medium-size cities throughout Europe. In many member countries, the systematic opening up of urban markets to private sector competition has raised a number of passenger and public benefit concerns throughout the continent. For this reason, the European Commission has encouraged

measures promoting “intermodality for people,” stressing the importance of users’ rights and obligations with respect to all modes (EU 2001).

Due to the varied nature of transport planning and provision on the continent, European transport policy allows for some flexibility in the application of integration standards. The primary focus is on the need to effect improvements that will facilitate intermodal travel (e.g., through effective transfer systems and conditions), regardless of the regulatory system employed. Recognizing that some users require multiple modes to complete a trip, the *European Transport Policy for 2010 (EU Transport White Paper)* emphasizes three areas of action: integrated ticketing, baggage handling; and continuity of transfers (EU 2001).

7.3.3 Integrated Service Development

In addition to some of the transfer programs described above, there have been a number of technological innovations that have permitted the introduction of new, integrated transit services structured to facilitate the effective transfer of passengers requiring more than one form of transport to complete a journey. For maximum effectiveness, these products have been designed to generate significant benefits for both operators and passengers. This section outlines one service product from each of the three major areas of integration, describing its evolution and application within the three case cities.

7.3.3.1 Fare integration: transit smart cards

While there have been a number of recent developments in the area of fare collection and the introduction of a universal ticket, none has been as significant as the introduction of the transit smart card. This electronic payment system can potentially offer a number of benefits to transit operators, authorities and passengers, achieving many of the policy objectives of a regional fare collection strategy (MTC 2005), namely,

- improve fare integration between transit operators;
- improve fare collection and revenue accountability;
- improve data collection for service planning purposes;

- reduce boarding times (e.g., shorter queues), particularly during peak periods;
- promote fare cost savings and convenience to passengers; and
- enhance quality of service through improved operator safety.

In the past decade, numerous breakthroughs in fare payment and collection technology have permitted the development of stored value smart cards in transit markets throughout the world, including Hong Kong, Washington, D.C., Santiago (Chile), and London. The smart card contains a computer chip with both memory and logic capabilities, allowing for the long-term storage of cash value on one or more local transit operators. Generally, it can store an abundance of information, giving it the capacity to serve as a cash card or "electronic purse," for paying from stored value; a debit card, for transferring money from the user's bank account to the service provider's bank; and a credit card, for deferred payment (Rivasplata and Zegras 1996).

One advantage of this card is that it can be programmed to recognize zonal (distance-based) transit fare structures. In major transit stations and terminals, this normally involves modifying turnstiles to allow for card readers to register entry and exit. On most bus systems, however, smart card technologies require that passengers communicate trip information to drivers upon boarding, i.e., to accurately enter the correct fare to be deducted from the card. While these cards do not have the capacity to directly measure kilometres travelled, they can easily be adapted to the zonal fare structure systems currently employed in all three case cities.

It is important to point out that despite technological advances, the smart card cannot address the needs of all transit users, since it is but one element of the fare payment structure. The smart card will not necessarily be convenient to everyone (e.g., the poor and occasional user), but will be expected to coexist alongside paper tickets, magnetic tickets and cash on a number of different modes. In fact, the development and subsequent introduction of a transit smart card system does incur some significant costs for regional authorities, operators, and society at large:

- substantial public investment in smart card technology, equipment and implementation;

- widespread acceptance on the part of government and transit operators;
- investment in operator training and passenger information/promotion
- possible operator losses from revenue sharing.

The cost of introducing smart technology to the transit industry varies according to the application, the level of demand, and the type of technology used. One cost analysis conducted in the U.S. in the 1990s (Chira-Chavala and Coifman 1996) revealed that while the capital and administrative costs per bus are higher for smart card systems than they are for farebox technologies, additional maintenance and operating costs make smart card systems competitive and potentially cheaper than traditional fare box apparatus (see Table 7.9).

Table 7.9 Costs of Fare Box vs. Smart Card System (in US Dollars)*

Cost Component	Cost/Fare Box/Bus	Cost/Card/Bus
Capital Costs - vehicle unit - card	 220-543 not applicable	 734-1,468 21-106
Administration, sales, marketing	not applicable	500-1,000
Maintenance, repairs	850	45
Data retrieval	550	Negligible
Supplemental data collection	225-450	not applicable
Printing transfers	125	not applicable
Total	1,970-2,518	1,300-2,513

*Costs annualized according to 12-year bus life, 5-year card life, 10 percent interest rate.

Source: Chira-Chavala and Coifman 1996

In Britain, transit planners have expressed widespread interest in smart card technology, as it could effectively provide for significant time and fare savings, as well as the integration of fare structures. Outside of Greater London, where individual operators determine fares, the implementation of a smart card system would be most effective in the Mets, where there may be a critical mass of passengers. Smart cards can be attractive to users, ultimately generating a mode

shift in favor of transit. Apart from a very limited pilot project in the 1990s (which centered on elderly passengers in Manchester), London is the only city in the country to have introduced a transit smart card. This instrument, commercially known as the Oyster Card, was extensively tested and made available to the general public in early 2004.

7.3.3.2 Information integration: real-time transit facilities

In order for transit to be competitive with the private automobile, operators must ensure that transit is a fast, safe and dependable mode of travel, however, one manner in which transport authorities and private operators can help passengers take greater advantage of these services is through the provision of current data. Where transport services are scheduled and/or routes are fixed, concise, easily accessible information provides the passenger with the necessary tools with which to make educated decisions concerning the most convenient travel alternatives available. In turn, the provision of this real-time information can effectively reduce passenger uncertainty and stress, in some cases leading to ridership gains.

The *Transport Act 2000* gave transport authorities new powers to establish a bus information strategy. Ideally, these strategies guarantee the effective and timely provision of bus information to the general public. While transit passengers have historically had access to some service information, most notably, paper and electronic schedules and fare tables, the advent of real-time information has provided a key tool to transferring passengers.

Past experience has shown that the provision of dependable, up-to-the-minute transit information can minimize passenger waiting times, improve passenger confidence and facilitate the physical transfer of transit passengers from one operator to another. In the past ten years, a number of technological advancements in the provision of traveler information have significantly expanded the scope and potential of these systems.

In contrast to smart card systems, real time information facilities are far less costly and time-consuming to develop, and have been successfully deployed in numerous cities throughout the world. Beginning in the 1990s, real time information was introduced in a limited number of

transit facilities in Britain, including bus stations and major nodes (e.g., Heworth in Tyne and Wear). In the past ten years, it has been expanded in all three case cities, as well as numerous other urban areas.

7.3.3.3 Physical integration: interchange facilities

A major element of any integrated transit network is the interchange, a strategic node designed to accommodate the transfer of passengers between services. According to the Institute of Logistics and Transport (IoLT), an interchange is any facility in which scheduled transit services "are in sufficiently close proximity that transfer between them or to another mode, is practicable or cost-effective, or could be made so" for the passenger (IoLT 2000). Interchanges come in a variety of shapes, from adjacent bus stops to a bus/rail station or a purpose-built facility. The physical size of the facility is of less importance than the function performed.

A number of government policy documents and good practice publications have highlighted the need to develop a hierarchical network of interchanges in major cities that will allow for these transfer centers to be better defined and their facilities improved over time (TfL 2001). Certainly, it is the interchange's capacity to accommodate the flow of passengers between vehicles and modes, as well as between transit and other, non-motorized modes, such as the bicycle, that is of paramount importance to local transport authorities, especially those outside of London, where integration had declined prior to the transport reforms of 1998.

Where this demand exists on an ongoing basis, transit planners have often worked to ensure the provision of adequate interchange facilities by establishing a specific standard for passengers (DETR 1999b, IoLT 2000). In addition, in an effort to coordinate transit services with the surrounding community, some local authorities have begun to develop controls for ensuring complementary land uses in the vicinity of principal interchanges.

CHAPTER 8: ANALYSIS OF THE CASE CITIES

The following subsections provide a review of the principal findings for each of the British case cities. They include an historic look at past policy and practice with regard to transit integration, i.e., prior to and after deregulation; as well as an assessment of the program components proposed as part of the initial LTP process. Finally, this chapter provides a set of conclusions, based on a synthesis of the principal findings presented.

8.1 Greater Manchester

8.1.1 Historic Transport Policies

Prior to 1998, post-war transport policy in Manchester saw a number of reforms, from a road-based focus on improving urban streets and highways, to the development of coordinated transport/land use planning, and back to a road-based program of transport investment that was accompanied by a systematic divestment of transit (e.g., under deregulation). During this period, policy direction followed the mandates of the latest *Transport Act*. This was especially true after the publication of the *Transport Acts* of 1968 and 1985, each of which constituted a policy switch in the direction of either more or less government intervention.

In the 1950s and 1960s, urban transport policy in most British cities, including Manchester, was largely determined by Central Government's decision to invest a considerable amount in roads and highways. While significant investments were made to save the railways, road construction further encouraged automobile use, adding to the decline of transit (Powell 2001). At the time, government embraced a "predict and provide" policy of investment, based on the belief that the construction of highways (to satisfy demand for road space) would solve the country's transport problems. Instead, these policies indirectly favored private transport over transit (Vigar 2002), much as they did in the U.S. Nevertheless, in industrial cities like Manchester, transit remained the primary mode of transport up until the 1970s.

In contrast, by the late 1960s, Manchester began to reap the benefits of a renewed investment in transit. The *Buchanan Report* of 1963 and the *1966 Transport White Paper*, encouraged local authorities in Manchester to redirect some investments from intra-urban road construction to transit, which by this time was in decline (Buchanan 1963). Some experts claim that this policy shift toward a more balanced system of investment ultimately led to the *Transport Act 1968* and efforts to coordinate transit and create Passenger Transport Authorities in major urban areas, such as Manchester, Glasgow and Newcastle (Button, 1974, Grant 1977).

While these developments heralded a new era of coordinative planning in many British cities, in Manchester, the absence of a direct rail link across the central city hindered the development of a fully integrated transit system. Despite local efforts to seriously reduce the duplication of bus services in Greater Manchester and to restructure them to reflect true passenger demand, the GMPTE maintained that integration would remain limited until a direct rail line was built (Butler et al 1987). As far back as the early 1980s, the GMPTE, the County Council and other stakeholders envisioned the development of a light rail service that would bridge this gap.

Interestingly, between 1982 and 1987, the GMPTE decided to freeze bus and rail fares, which led to ridership increases after years of steady decline. In addition, the aforementioned restructuring of transit supply throughout the system was brought into line with levels of passenger need and demand for services. To this end, the GMPTE became the first PTE to use an electronic form of data collection (Butler et al 1987).

As previously mentioned, prior to deregulation, the GMPTE operated almost all bus services, the largest proportion operated by any of the PTEs. This virtual control over the bus system allowed the GMPTE to guide efforts toward developing an integrated network. Historically, the local approach to transit coordination in Greater Manchester had been one of casual interchange and not forced integration, as in Tyne and Wear. Subsequently, important bus/rail interchanges were constructed, while a systemwide rationalization of the bus network was carried out.

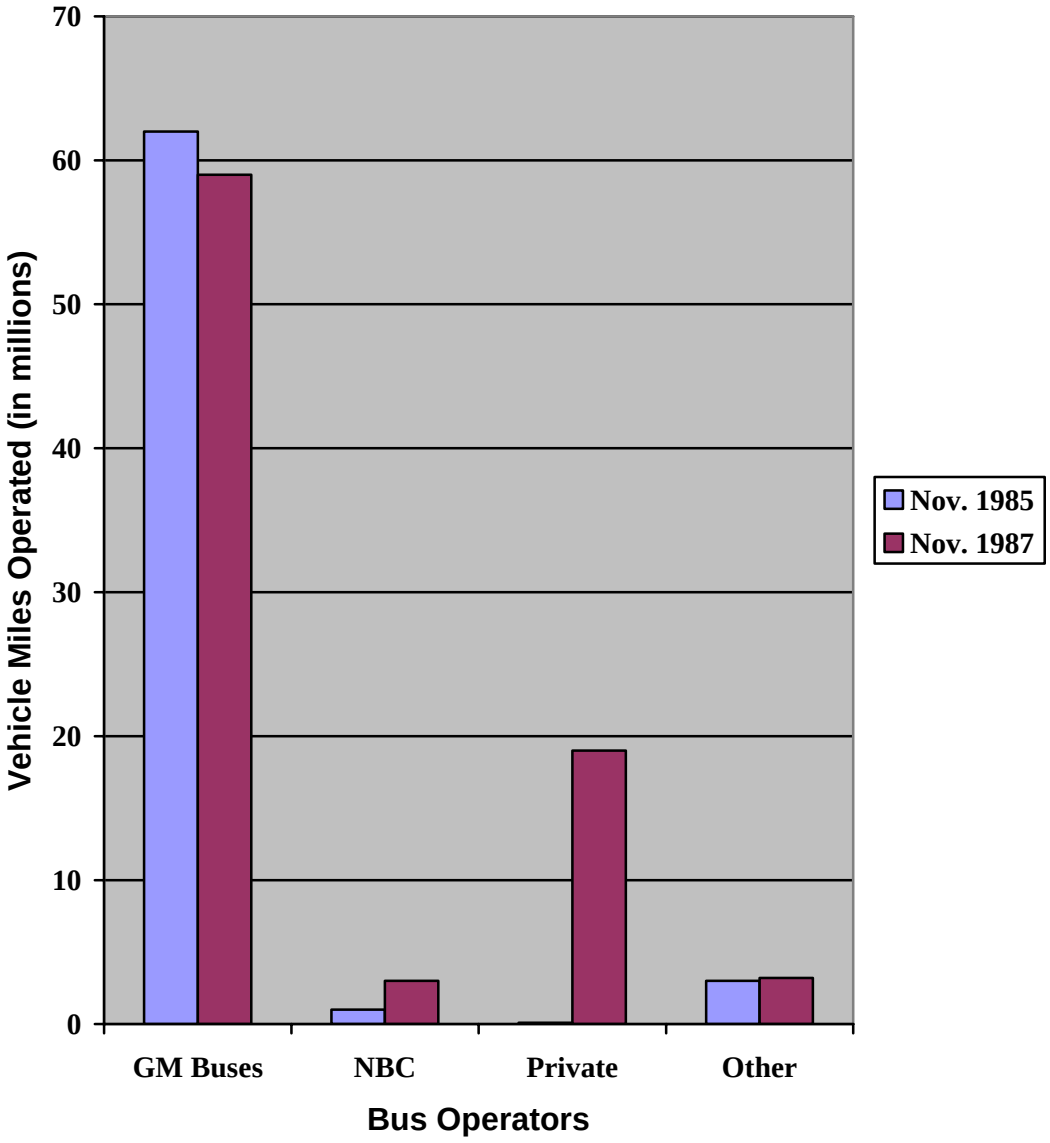
Similarly, the GMPTE offered systemwide ticketing and the opportunity to buy reduced fare passes for daily, weekly, monthly and annual use, as well as a series of multi-journey tickets. In the early 1980s, a common fares policy was applied to both bus and rail tickets within the Met, facilitating the establishment of multi-modal fare media (Tyson 1990). This arrangement provided significant fare savings to local passengers and allowed the GMPTE to offer very low fares to both pensioners and children.

As in most major cities throughout Britain, transit privatization and deregulation brought a great deal of confusion and uncertainty to transit passengers in Greater Manchester. With the introduction of these free market policies in 1987, the GMPTE's control over the planning and operation of transit services weakened, as evidenced by the decline of GM Buses and the growth of private operators (see Figure 8.1). This authority was legally prohibited from participating in the provision or management of any transit service in Greater Manchester. However it did continue to play a minimal role in encouraging systemwide planning, coordination of ticketing opportunities and information dissemination.

While transit deregulation and the uncertainties that accompanied it produced a number of negative impacts on local transit service connectivity, it is interesting to note that the GMPTE simultaneously promoted the development of a fully integrated transit system, successfully opening a new tram system, Metrolink, in 1992 (GMPTA 2003). However, by this time the initial impacts of deregulation had set in. The eventual sale of GM Buses to subsidiaries of Stagecoach and First, appeared to complicate any future prospects for integration between Metrolink and the local bus operators.

It appears that subsequent efforts on the part of the GMPTE to create a fully integrated network through the establishment of ties with all transit stakeholders (e.g., operators, other agencies) were central to the formation of coordinative arrangements. In addition, these ties were established at an opportune time, just prior to release of the *1998 Transport White Paper*.

Figure 8.1 Vehicle Miles Operated in Greater Manchester, 1985-1987



Source: GMPTE, 1987.

8.1.2 Transport Planning Initiatives: Local Transport Plan and Bus Strategy

The *2001-2006 Local Transport Plan*, adopted in July 2000, incorporated many of the objectives developed in the *1999 Provisional LTP*, namely, to improve transit, to promote use of alternative modes, to enhance safety and security, to revitalize town centers, to facilitate freight movement, to make efficient use of existing infrastructure, and to promote urban design. The full LTP received widespread support from local government and key stakeholders in Greater Manchester, setting the stage for consultations and partnership arrangements.

The principal theme of this LTP, "Investing in Excellence," represented a local commitment to fund and implement transport projects that would yield important benefits: better quality transit, less traffic congestion, and improved quality of life for local residents. In addition, these new investments in mobility management were intended to improve overall mobility in Greater Manchester, providing an attractive environment for business and other economic activities. The Plan provided not only an overall vision for transport, but also a five-year program of projects, a set of performance indicators and an implementation strategy.

In developing an integrated strategy, the LTP defined a number of overarching themes through which to implement the overall strategy. This approach was shaped by stakeholder input and a commitment to deliver Best Value to the transport system (e.g., through service assessment). The following themes encompass individual policies and action plans for Greater Manchester (GMPTA 2001b):

- widening travel choice;
- changing attitudes toward travel;
- prioritizing safety;
- making best use of the existing transport system;
- promoting demand management;
- delivering goods and services;

- taking account of details; and
- planning for the future.

For the purposes of this study, the most relevant parts of this LTP are those that deal directly with the improvement of transit and related efforts to develop a high quality, intermodal transit network in Greater Manchester. As mentioned above, the principal reason for developing the transit alternative was to make it a more feasible alternative to the auto, particularly for low-income and physically challenged residents. The LTP document identified the key components of the area's "fixed track' transit investment program: Metrolink, regional rail services, Quality Bus Corridors, and the Integrate Project. The first three components were mode specific efforts to improve the deployment and quality of service, whereas the Integrate Project was concerned with tying these transit services together and linking them to other networks (e.g., roads).

Given that local buses carry the vast majority of transit trips in the County, the Greater Manchester Bus Strategy is an important element of the LTP. It details efforts to improve the larger transit system through the development of a five-year plan to enhance the quality and efficiency of bus services and develop an integrated, multi-modal network throughout Greater Manchester. Previously, transit had often been seen as a collection of independent modes or services, rather than a coherent system of interlocking parts.

The Bus Strategy specifically identified a series of local objectives, describing the actions undertaken to achieve them (GMPTA 2002). The GMPTE, in its role as the metropolitan transit planning organization in Greater Manchester, played an important role in the drafting of this document, in conjunction with the ten district councils of the conurbation, and in consultation with areawide stakeholders. The principal purpose of this first Bus Strategy was to identify local policies for not only expanding the scope and capacity of the bus system in Manchester, but also for improving the performance of the existing network and the allocation of resources. For example, the document attempts to address the efficient operation and expansion of commercial and subsidized bus routes throughout Manchester (GMPTA 2002).

In response to local transit conditions, the Bus Strategy is primarily concerned with:

- Improving the quality of the bus network;
- Providing mobility to individuals with no access to a private vehicle
- Providing services that cater to the needs of travelers
- Increasing bus ridership throughout the system.

As an integral element of the LTP, the Bus Strategy is periodically monitored through a number of reports: Best Value Reviews of Revenue Support, Accessible Transport and Safety; and Annual Progress Reports. These reports provide ongoing data on a number of performance indicators (e.g., proportion of bus stops with timetable information, passenger satisfaction levels), based on a set of benchmarks established during development of the LTP.

In addition, the Greater Manchester Bus Strategy features an Interchange component that provides guidance on integrated services, as well as relevant links to the Information, Ticketing, and Fares components. The aim of the Interchange component is to "offer the passenger a seamless journey, no matter how many buses, trams or trains" it requires (GMPTA 2002). For example, the component places emphasis on extending the scope and range of the metropolitan transit network by providing connecting services and by allowing buses to serve as effective feeders to rail and Metrolink with minimal competition between modes.

Based on the pretext that in order to compete with the private vehicle, transit must function as an integrated network, this policy component introduces key concepts from the Integrate Project and its comprehensive treatment of transit integration:

- ticketing - improve through-ticketing so that passengers can complete a trip with one instrument and so that a wide range of travel cards is available (e.g., Readycards);
- information - make available more information concerning connecting services, such as departure times, stop locations, fares;
- physical interchanges - minimize walking distances and improve walking routes provided between connecting services;

- service reliability - reduce delays caused by traffic congestion through the introduction of bus priority measures on QBCs and at major points of congestion.

The Interchange component contains an Action Plan for implementing specific measures, as well as a specific set of Performance Indicators. The Plan includes such actions as completing bus/rail interchange facilities, drawing an improvement plan based on an audit of all interchanges, and providing information on where to catch connecting services (GMPTA 2002). Performance indicators and targets are primarily related to achieving established standards at each audited interchange (e.g., spatial, information, other). As mentioned above, at least three other components of the Bus Strategy are linked to integration, however, their Action Plans and Performance Indicators do not directly address service coordination.

8.1.3 Integrated Transit Planning Programs: Integrate Project

Initiated in 1998, this coordinative project was developed as part of the Greater Manchester Transport Strategy, a pillar of the *Greater Manchester Local Transport Plan*. It has received a significant amount of support from the Deputy Prime Minister, leading the metropolitan area to be named a center of excellence in Integrated Transport Planning.

The project seeks to achieve two principal transit policy objectives (Greater Manchester Initiative in Passenger Transport, 2000):

- improve the quality of transit in Greater Manchester; and
- present an integrated, high quality network, easy to understand and use.

This project has required the collaboration of a number of agencies throughout the area. At least eight individual transport entities are involved in the deployment of this project, each serving as an equal partner through the establishment of Quality Partnerships. They not only include the passenger transport authority, the rail operators and the association representing most bus operators, but also the highway agency, the district councils of Greater Manchester and Manchester International Airport. This broad-based organization of transport providers allows for a more comprehensive approach to addressing the principal coordination issues of the area.

Indeed, the Partnership both engages its members in both network-level (countywide) and single corridor strategies.

It is the Countywide component that is most relevant to transit integration in the Greater Manchester area, since it has entailed extensive discussions between agencies and with the OFT to improve network-level coordination of services. The major aims of the Agreement are to successfully execute the following:

- Provide more complete passenger information;
- Expand multi-modal ticketing; and
- Provide improved passenger interchange facilities.

In addition, the Agreement calls for switching to low emission, fully accessible buses; confining service changes to fixed dates; and significantly enhancing service on main corridors.

According to recent reports, the Project has delivered improvements in the quality of transit in the following areas: passenger information, the waiting environment, services, ticketing and transit connections/interchange (Greater Manchester Initiative in Passenger Transport, 2001). This focus has been documented in annual reports for the project and in Best Value Performance reports released in the past few years.

8.1.4 Smart Card Integration: Future Plans

In the case Mets, considerable attention has been given to discussing the feasibility of introducing transit smart cards on some, if not all major transit modes. However, under the current system of deregulation, there are issues preventing the short-term implementation of these schemes. First, the local PTEs are still somewhat weak and cautious as to their influence over private operators, in light of the *Competition Act 1998*. Second, smart card projects outside of London have been stalled while national interoperability specifications are developed by the Integrated Transport Smartcard Organisation (ITSO), and a combination of technical and commercial concerns are reviewed by Central Government. Third, experience has shown that the development and deployment of a transit smart card system of universal fare payment is quite

expensive and can take a number of years to develop and implement. Consequently, approval of such a formidable undertaking requires strong financial support from not only the PTE and local operators, but also, support from various agencies of Central Government, including the Department for Transport.

In Greater Manchester, one of the principal components of the Integrate Project is the systemwide improvement and integration of fare structures. An objective of the project has been to remove barriers to seamless travel without "compromising each operator's ability to raise revenues" and to efficiently compete in the local transit market (Greater Manchester Initiative 2001). While Greater Manchester already participated in a pilot smart card project (for concessionary passengers) in the mid-1990s, it remains committed to introducing a contactless smart card system.

However, the implementation of smart card systems in the Mets has been delayed by both ITSO and DfT, primarily for funding reasons. Central Government is hesitant to fully invest in more than one smart card system outside of London for fear that the deployment of multiple systems could lead to a colossal flop in cities where ridership has steadily decreased over the past decade. For this reason, there is a feeling that Central Government should focus on financing one smart card system in the Mets during this initial stage, and require that the chosen Met subsequently provide necessary guidance to other Metropolitan Areas.

It now appears that South Yorkshire Passenger Transport Executive (SYPTE) will be the first authority outside of London to fully develop a smart card system. As part of its ongoing push to regulate some bus services in and around the South Yorkshire Metropolitan Area, the SYPTE has proposed to implement a £7 million scheme to initially develop and deploy a transit smart card in the area. This new fare instrument, known commercially as "Yorcard," is to be introduced on three bus routes in Sheffield and on rail services linking that city and nearby Doncaster. Again, the GMPTE, Nexus and other PTEs hope that they can learn from the South Yorkshire PTE experiment, and perhaps, implement a smart card system in the future.

8.1.5 Real Time Information Integration

In the case of Greater Manchester, as part of the Integrate Project, regional representatives proposed to expand the availability of real time information. In concept, a primary aim of this program was to display the "next vehicle" departure times of all major transit modes, such as buses, light rail, and regional rail. Ideally, these new facilities were to be made available to the public at the following locations (Greater Manchester Initiative, 2000):

- every rail station, Metrolink stop, bus station, principal stops on Quality Corridors;
- the buses themselves;
- telephone information bureau;
- mobile phones; and
- on the Internet.

In the early stages of its development, this program was incorporated into the Information Services section of the Draft Passenger Information Scheme, a regional plan aimed at satisfying the national objectives of the *Transport Act 2000*.

In anticipation of the second round of LTPs, new technological innovations were introduced to the local Information Scheme for Greater Manchester. For example, an advanced real time information system employs satellite tracking to locate buses and track on-time performance, impacting the service of over 300 buses. In addition, at least 100 stop displays have been developed on Quality Bus Corridors and on buses and trains in Manchester, Stockport, and Hazel Grove. In the future, while GMPTE hopes to provide information at more QBC stops, it has concluded that it is may be more efficient to provide rail information through a network of special telephone numbers.

8.1.6 Interchange Facilities

Beginning with the Integrate Project in 1998, Greater Manchester identified the need to reassess its network of interchanges, and to establish priorities for improving facilities. Historically, transit consisted of bus and regional rail service; however, with the opening of the

Metrolink system in 1992, there was a growing need for interchange at stations and stops. Local transit planners recognized that a linked network of "efficient, secure and user-friendly interchanges could enable a greater number of passengers to make full use of the transit network" for most journeys (Greater Manchester Initiative 2000). Thus, the Integrate Project set out to identify all points of interchange in the Met, including not only intermodal interchanges, such as bus and rail stations, but also nodes where bus services meet, i.e., points where passengers must change vehicles to complete a journey. Many of these concerns were reflected in the first LTP and Bus Strategy, which stressed the need for seamless connections between transit services.

What set the Integrate Project apart from earlier efforts to improve the quality of interchanges in Greater Manchester was a commitment on the part of the Project partners to develop standards for facilities at specific types of interchanges. This hierarchy of interchange types was established according to the level and type of existing and potential transfer demand throughout the transit network, and a full inventory of the existing facilities at these interchanges was carried out in order to identify the physical improvements needed to meet the new standards. Subsequently, as part of the six-year Integrate Project, an expenditure program was developed for the improvement and expansion of facilities, in coordination with other elements of the Project.

An evaluation of progress toward the achievement of stated regional goals reveals that in general, the Integrate Project has successfully met the objectives specifically established for interchanges. By 2006, it is expected that the GMPTE will complete all additions and renovations to interchanges targeted in the original plan. In addition, the GMPTE has adopted and begun to implement an interchange strategy that it believes will continue to maintain established standards.

Despite these successes, however, this effort does not meet the criteria of a major transport scheme, as defined by the DfT, and thus, its progress will depend heavily on local funding and resources. As a result, authorities have taken an incremental approach to developing interchanges, focusing on the improvement of information at new bus stops (e.g., signage and

maps indicating how to get to a specific area), the provision of new shelters, and the introduction of real time information.

8.2 Tyne and Wear

8.2.1 Historic Transport Policies

During the second half of the 20th Century, Tyne and Wear was subject to the same periodic changes in national transport policy that Greater Manchester was, however, it appears that Tyne and Wear authorities more aggressively pursued transport/land use studies in the 1970s, approving and constructing the local light rail system within a decade. This emphasis on the development of a fully integrated transit system, i.e., during a period of tight public sector regulation and operation of most forms of transit, ultimately led to total control of the system on the part of the Tyne and Wear Passenger Transport Executive (Nexus). This level of domination would have implications for the future of integration during the period of deregulation.

In the 1950s and 1960s, transport investments in Tyne and Wear were primarily road-based in nature, such as the design and construction of the central freeway and distributor system in central Newcastle. Some of these projects were undertaken with little regard for the historic urban street pattern, as evidenced in the manner in which they still obtrusively cut across the center of the city. However, road construction was not as extensive as in other cities, and in fact, some urban road proposals were abandoned (Vigar 2002). As mentioned earlier, Tyne and Wear has had one of the lowest levels of motorization of any city in Britain.

In the mid-1960s, in response to the *Buchanan Report* and concerns over local economic difficulties, Central Government collaborated with local authorities in the development of an areawide transport/land use study. This effort, entitled the *Tyneside Land Use Transportation Study*, eventually resulted in the development of the *Tyne-Wear Plan* (Voorhees and Associates 1972). Local authorities identified the need to make transit more competitive and attractive, and expressed concern over a number of mobility issues, including expansion of service sector employment in Gateshead and Newcastle City Centers; relocation of manufacturing activities to

peripheral sites; migration of residents from the central city areas to peripheral residential developments; and the lengthening of work trips (Vigar et al 2000).

This study suggested that greater investment was needed to bring passengers back to transit and that both a reorientation of the bus system and construction of a rapid transit system would give Tyne and Wear the transit resources with which to confront the changing needs of the local population. It pointed out that such a network could effectively respond to the rapidly changing settlement and employment patterns of the conurbation (Vigar et al 2000). Thus, the Tyneside Passenger Transport Authority (later Nexus) was created in 1969 and charged with securing an efficient system of transit with which "to meet the needs of the area" over the long-term (Tyneside Passenger Transport Authority 1973). Subsequently, an infrastructure grant was awarded and improvements to the transit network were authorized: development of the Tyne and Wear Metro from old British Rail lines; and a restructuring of the bus system, which was placed under PTE control and PTE/National Bus Company operation (Butler et al 1987).

The Metro was designed to serve as the principal spine of an integrated transit network consisting of light rail, bus, regional rail and ferry. It was the first rail transit system to be built in Britain in decades and was widely touted as a catalyst for integrated transit planning. As chief architect and operator, the PTE developed the organizational and institutional structures with which to encourage coordination, including the introduction of integrated ticketing (e.g., through-ticketing), timetables and fare structures (Vigar et al 2000). In addition, an areawide integration policy limited intermodal transfers to specific stations, where connecting bus services terminated. This reorientation often caused vehicle capacity concerns at certain interchanges (e.g., Heworth) and deprived passengers of alternative bus services from which to choose.

The privatization and deregulation of most transit systems in Britain in 1987 had significant implications for the Tyne and Wear transit system, resulting in the sale of bus companies to

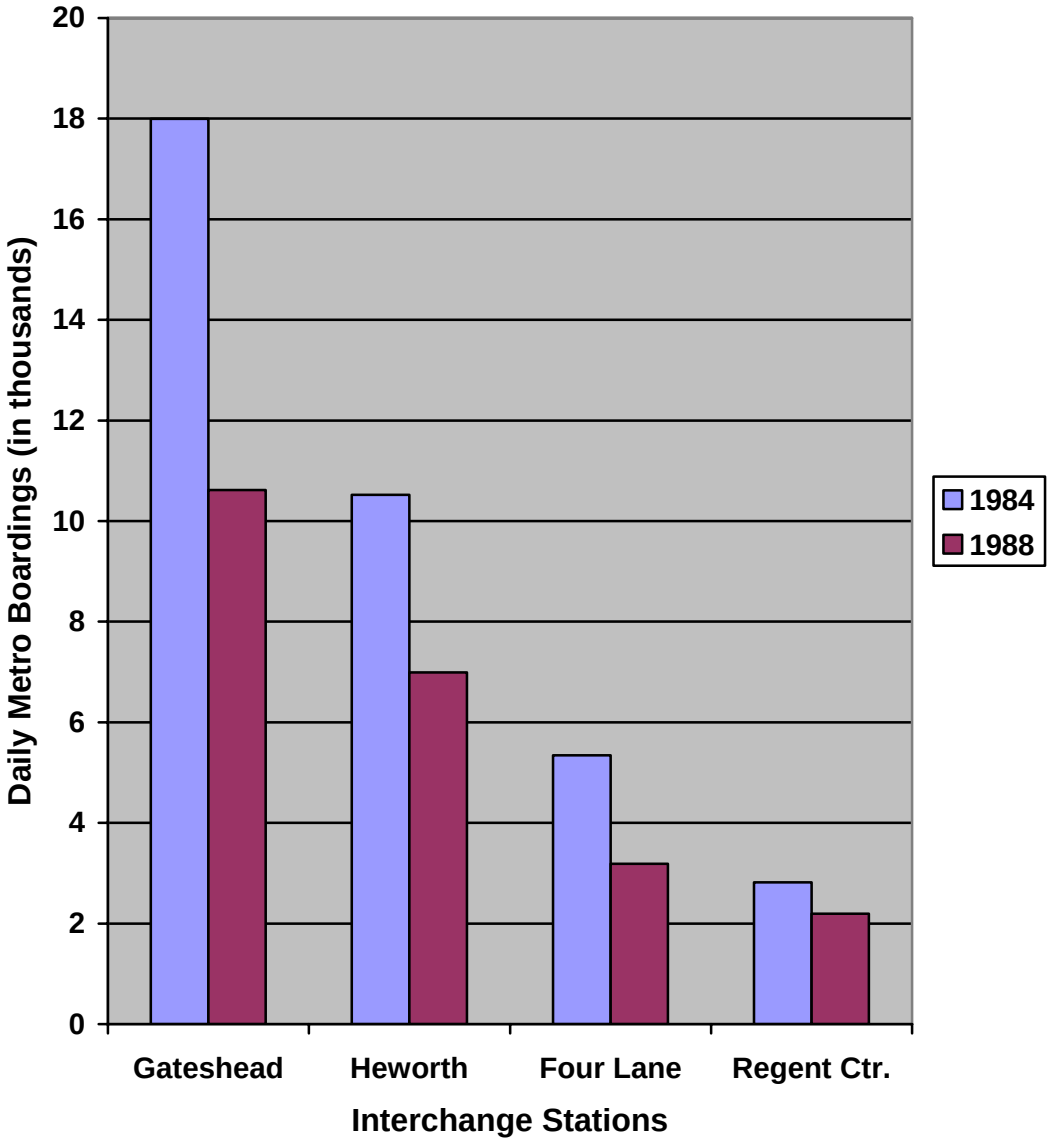
private operators, the loss of most integrated ticketing, and the loss of most interchange opportunities at transfer stations (see Figure 8.2). A number of experts have written on the effects that transport reforms, introduced under Thatcher, have had on the seamless integration model in Tyne and Wear and other Mets (Tyson 1990, Haseltine et al 1992, White 1995a).

In general, the *Transport Act 1985* took most planning and integration functions way from the local PTE and transferred them to the private sector. Suddenly, Central Government placed greater policy emphasis on reducing the public sector cost of transit provision through privatization, and leaving integration to somehow be worked out among competitors (e.g., under deregulation). This freed up government to invest in the construction of new roads and highways, as it had in the 1950s and 1960s. This focus on auto-based solutions gave many of the residents of Tyne and Wear further incentive to embrace the auto.

Logically, under these conditions, most system efficiencies achieved under an integrated transit network were eventually lost and a lack of brand familiarity, reliability and punctuality prompted many passengers to abandon transit. However, once the initial impacts of transit deregulation on operators played out (e.g., competition with the Metro to take passengers across the Tyne River), Tyne and Wear authorities made some significant gains in the area of integration: the creation of the NTL ticketing company, in conjunction with the area operators; the improvement of informational systems, and the improvement of interchange facilities in the mid-1990s.

While Tyne and Wear gradually began to restore some integrated services, Nexus was not able to regain the confidence of the passengers and private operators. In the early 1990s, there was a shift in transport policy, from the predict and provide approach to a travel demand management focus (e.g., vehicular access control in Newcastle, Quality Partnerships along bus corridors). Many of these projects, such as the development of alternative transport modes, were part of a larger, national movement promoting green, sustainable transport strategies. The release of key public documents in the 1990s, such as the Royal Commission on Environmental

Figure 8.2 Weekday Boardings at Tyne and Wear Interchanges, 1984-1988



Source: Tyne and Wear PTE 1988.

Pollution's report on the environmental impacts of transport (RCEP 1994), further strengthened this campaign.

While this movement developed many of the key concepts that generated the transport policy reforms introduced by the Labour Government in the late 1990s, in Tyne and Wear it did not initially cause a dramatic policy shift in favor of an integrated transit network. Instead, operators avoided most forms of coordination until the *Transport Act 2000* required it. It would appear that private operators in Tyne and Wear had little incentive to improve coordination, unlike their Manchester counterparts, which participated in voluntary integration strategies.

8.2.2 Transport Planning Initiatives: Local Transport Plan and Bus Strategy

The local LTP, adopted in 2001, represents a five-year commitment on the part of local authorities to improve mobility in Tyne and Wear. The transit component of this document was largely based on *Towards 2010*, a 15-year transport strategy developed by Nexus and approved by the Tyne and Wear PTA in 1996, i.e., prior to the adoption of the *1998 Transport White Paper*. The key policy objectives of the *Towards 2010* document were to improve accessibility and mobility, to regenerate the economy by alleviating congestion, and to reduce air and noise pollution (Nexus 1996).

The Tyne and Wear LTP supported the aims and objectives of the *Towards 2010* document, placing even greater emphasis on the establishment of a high quality transit network serving all districts of the conurbation, even the outlying areas that remain somewhat rural in nature. The Tyne and Wear LTP identified five key objectives: improve access to transport, support economic growth, reduce negative impacts on the environment, improve integration between networks and between land use and transport, and improve safety. In addition, it proposed new strategies for improving operation of the transport system, much as the Greater Manchester LTP does.

Again, for purposes of this study, the most relevant parts of the LTP are those linked to transit planning and implementation. For example, one principal objective of the document was the development of a transit system in Tyne and Wear that would effectively provide local

residents and visitors with a viable and reasonable transport alternative to driving alone. Certainly, government adoption of such policy documents as the *Transport Act 2000* and the subsequent *Ten Year Plan* provided Nexus with many of the planning tools necessary to implement local strategies developed earlier, i.e., the LTP became the vehicle through which to both design and implement specific strategies.

Similar to its counterpart in Manchester, the Tyne and Wear Bus Strategy attempted to improve the attractiveness of bus transit as an alternative mode to the auto. While it was only one component of a larger transit strategy for the entire area (under the Tyne and Wear LTP), this Bus Strategy identified a set of action plans for achieving the following objectives (Tyne and Wear Plan Partners 2001):

- Ensure a core network of coordinated bus services;
- Develop a high quality infrastructure, information and integrated fares structure;
- Operate environmentally friendly transit vehicles as part of an accessible network; and
- Integrate buses with the full range of travel options (e.g., bicycles, taxis, care services).

Based in part on an existing network of industry relationships and interactions, this Bus Strategy proposed to introduce a comprehensive, areawide Quality Partnership, known locally as Network Tyne and Wear. When the Strategy was originally drafted, it was determined that this Partnership would become a formal entity in itself, bound to a well-defined set of transit standards and regulations. It was established that Network Tyne and Wear would consist of four principal components: a core network of premium bus services (presently known as the Superoutes Program); a complementary network of bus services not upgraded to core network status; a set of demand responsive services (e.g., employing community buses, local taxis and dial-a ride services); and an areawide network of school bus services (Tyne and Wear Plan Partners 2001).

In addition, as part of the larger Public Transport Strategy, area planners developed a separate Integration component, aimed at improving interchange between the most heavily used

transit routes in Tyne and Wear. Its chief objective is to improve the links between local transit networks by:

- improving interchange (e.g., physical environment, transfer distances)
- facilitating seamless travel, particularly by transit.

A few years after release of the initial LTP, a Best Value Review of Integration in Tyne and Wear identified a number of actions to improve levels of integration, concluding that the most comprehensive way of achieving this would be for Nexus to work on a Service Improvement Plan for integration in isolation, but also for Nexus to work together with areawide operators in the implementation of strategies. The Review concluded that the most effective way of achieving involvement through a partnership approach would be to create an Integration Board comprised of nominees from Nexus and bus operators (at the Director level). Initially, this Board will establish the aims, objectives and targets for the partnership, including a county-wide patronage target and an action plan for delivery. This action plan will contain three key approaches to the improvement of integration: a ticketing strategy, an information strategy and an interchange and infrastructure component.

As in Greater Manchester, the quantitative evaluation of integration services in Tyne and Wear has thus far amounted to little more than an audit of all of the interchange facilities in the conurbation, largely ignoring the progress of other forms of transit integration. Employing many of the concepts developed in the *Interchange Best Practice Guide*, an audit was performed and three levels of interchange were identified: high usage, medium usage and low usage (Colin Buchanan and Partners 1998). Subsequently, a very comprehensive assessment of existing facilities and conditions was conducted throughout Tyne and Wear, and a set of facility improvements was identified for each usage level (Nexus 2004b). Over the past five years, periodic monitoring of these facilities has allowed Nexus to gauge the progress of this effort as part of the Best Value evaluation process.

In contrast to the Greater Manchester effort, however, the Tyne and Wear Bus Strategy proposes the creation of new bus partnerships without having experienced as high a level of support among operators. This fact alone may eventually prove to be a barrier to widespread trust and good will among not only bus operators, but also, the limited number of transport authorities involved. In Tyne and Wear, the three largest bus operators, Stagecoach, Arriva and Go-Ahead, that are presently committed to working with local authorities to ensure a specific standard of integrated services (Nexus 2005).

In addition, these efforts to strengthen the integration of transit services form part of Nexus' Orpheus Project, a 20-year plan to support, improve and expand the scope of the Metro Network to include areas not yet adequately served by transit. A total of 29 travel corridors in Tyne and Wear, most of which already had bus service, were analyzed to determine the best transit solution. While the Project has been reformulated to feature better bus services in areas adjacent to Metro stations, its principal focus for the first ten years is to "reinvigorate" the Metro through the enhancement of services and rolling stock. While many bus operators support this move to improve transit, many question the intent of Nexus in investing a significant amount of capital in a transit system that it will operate.

While Tyne and Wear had a rich history of integrated services prior to deregulation in 1986, these were developed at a time when most services were still owned and operated by public sector organizations like the PTEs. Recent experience has shown that to some extent, private-public cooperation between operators and authorities in Tyne and Wear has tended to be less successful than in Greater Manchester and other Mets, particularly in light of perceived threats that authorities may wish to re-regulate these systems.

It is ironic that in Tyne and Wear, where transit services were probably better integrated than in most places, there is only limited interest in widespread system integration. In some respects, it is the private operators (which largely entered the market after 1986) that sense the threat of having to live up to the standards of another era. Many of them were formed as the

result of mergers or buyouts. According to some of the authority representatives interviewed for this study, since deregulation, bus companies in Tyne and Wear have not really had to conform to strict standards, and thus, are not aware of the benefits of integration. According to one representative of small operators, they do not wish to return to a situation in which services are heavily controlled by the public sector (e.g., Nexus).

8.2.3 Integrated Transit Planning Programs: Superoutes

The Superoute Project, launched in 2002 as part of an effort to improve transit in the area, represents a new concept for bus travel in Tyne and Wear. In parallel with the Orpheus Project and similar efforts to preserve and expand the reach of the Metro, Superoutes is designed to deliver dependable, good quality services along key routes, featuring modern buses, shelters, information at stops, and road improvements. It arose from LTP provisions to increase transit ridership through the introduction of a high quality network of bus routes in Tyne and Wear. Superoutes represents the first serious attempt since deregulation to collectively integrate a physical set of bus routes into one network. However, in this case, it is based on a voluntary Quality Bus Partnership.

Like the Integrate Project, the overreaching aim of this project is to improve the quality of transit and to promote an integrated network of bus routes as a single, recognizable system or product. To this end, the project has a number of objectives, including the following:

- reduce road traffic congestion through the provision of segregated bus lanes;
- effect modal shift in favor of transit through better access to services, connections; and
- increase levels of passenger satisfaction through reduction in fare penalties and travel times (e.g., using segregated lanes).

In an attempt to improve the quality and efficiency of local bus services (Nexus 2003), the Superoutes Project combines an expanding bus route network with a high quality infrastructure and information system. In late 2003, the Superoutes network expanded from 17 to 35 routes, with additional routes to be introduced in late 2004 (see Map 8.1). This network primarily

consists of bus routes providing reliable frequencies and good connections with other routes, the Metro and key facilities. It is envisioned that the project will also lead to better intermodal integration: bus-bus and bus-rail interchanges, as well as integrated ticketing between bus operators, further enhanced by smart card technology.

Shortly after the introduction of Superoutes, a management board was formed. In contrast to the Integrate Project, the partnership is represented by a relatively small group of partners: Nexus, which indirectly represents all five local councils and the light rail system; and three major local bus operators. Originally, all bus companies in Tyne and Wear were invited to participate in the Superoutes Project, however, only the largest bus operators have expressed interest thus far. Nevertheless, entry remains open to all operators meeting the criteria.

While the Superoutes project is fairly new, both Nexus and the Tyne and Wear PTA are committed to monitoring its progress, exercising coordinative powers recently restored to metropolitan authorities under the *Transport Act 2000*. Performance benchmarks for this new network include not only punctuality, reliability, and bus ridership standards, but also a 30-minute minimum headway and the use of new, low floor buses on all routes.

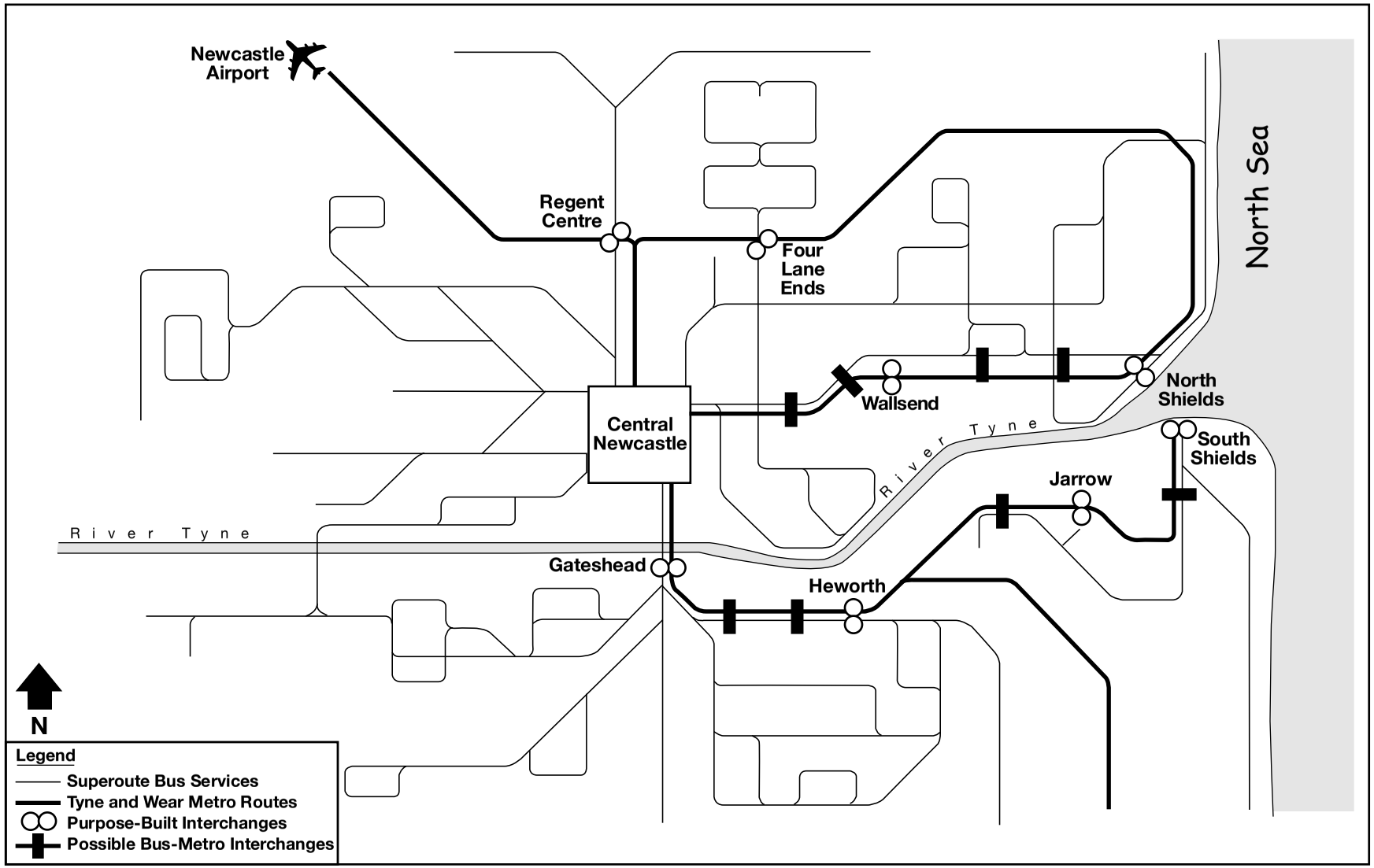
There are two principal concerns that should be addressed when fully evaluating this work effort:

- How much will this project cost in the medium and long-term?
- Where will the resources come from?

8.2.4 Smart Card Integration: Future Plans

In contrast, while many authority representatives in Tyne and Wear have recognized the advantages of a smart card system, some local transport experts feel that the County may not generate the necessary level of travel demand to warrant the introduction of such an expensive system. As shown in Table 7.9, there are significant capital and administrative costs to consider when starting up a smart card system, even if a similar configuration has been implemented in

Map 8.1 Tyne and Wear Superoutes



another English PTE. In order for this smart card project to be profitable, transport authorities will need to ensure that the system is capable of reaching a specific level of ridership. For example, if hardly anyone ever uses the smart card system, there is no way that the benefits will outweigh the costs of maintaining access to it, i.e., without some critical mass of card users, it will be hard to justify development of the system. A more detailed needs study must be carried out before any sort of decision is made.

On record, however, the local PTE supports the deployment of a London-style smart card that can facilitate faster boarding, better intermodal fare integration and the collection of new data (e.g., permitting a better tracking of transit travel patterns in the area). Similarly, the North East Regional Smartcard Consortium (NERSC) was founded in 1999 to develop a strategy and governance framework for the implementation of a multi-purpose smartcard that could be used for travel throughout the greater Northeast region of England. This consortium, consisting of 26 local authorities, One Northeast and Nexus, is charged with facilitating institutional transit coordination throughout the County and developing a Smartcard platform.

More recently, both case Mets have joined their counterparts in other English Mets in the analysis of smart card systems. It has become increasingly clear that in most cases, individual Mets do not have sufficient resources to independently develop and deploy such an advanced fare collection system. For this reason, the current PTEG strategy is to support the Department for Transport and its plans to develop a smart card system in one of the English Mets, i.e., subsequently share knowledge and resources with PTEs in the remaining Mets, including Greater Manchester and Tyne and Wear. While each Met has a unique set of needs, it is argued that this sharing of knowledge and resources will help local authorities avoid many of the initial planning costs (e.g., allowing for PTEs to concentrate available resources on system deployment.

8.2.5 Real Time Information Integration

Similarly, Nexus is working with operators and local authorities to implement a real time information system for Tyne and Wear, effectively establishing a technical standard. The Tyne

and Wear Real Time Passenger Information Strategy contains a set of detailed proposals for implementation (Nexus 2004a). While the distribution of these services is not as extensive as in Manchester, this strategy provides arrival and departure information for transit, in real time:

- at all bus stations and key bus stops;
- through a telephone information bureau;
- via personal information devices.

As in the case of Greater Manchester, the deployment of real time information is one element of the overall Bus Information Strategy for Tyne and Wear (Nexus 2004a). In this document, the total number of transit stops providing real time information is identified as an indicator of growth. In 2003/2004, Nexus reported that 20 stops had been upgraded, however, it estimated that in the following year, there would be close to 50. By the end of 2005, Nexus and its collaborators set a goal of at least 75 real time facilities throughout the County (Nexus 2004b). Currently, apart from existing screens at key intermodal nodes, real time information is available on selected bus routes in Gateshead, Bensham and along Stephenson´s Corridor.

8.2.6 Interchange Facilities

While Tyne and Wear was known nationally as a center for purpose-built interchanges in the 1970s and early 1980s, under deregulation there was a deliberate move away from building or expanding facilities in the 1990s as many felt that the forced integration of the previous period had negatively impacted the bus system. However, the first Tyne and Wear LTP (2001-2006) set local targets for both integration and accessibility, recognizing that “poor interchange between transit services” existed at some key nodes (Tyne and Wear Plan Partners, 2001). Similarly, the ensuing Bus Strategy for Tyne and Wear identified the need for a core network of accessible bus services that provide high quality infrastructure and information.

The Integration Strategy for Tyne and Wear was drafted under the premise that integration is and will continue to be a necessary component of transit service. It assumes that while the Tyne and Wear transit system might be comprehensive, it could not possibly satisfy passenger

demand through the provision of single vehicle journeys. The Tyne and Wear Plan Partners (2001) argued that a network of intersecting services could effectively broaden the range of opportunities, and established a set of criteria for establishing a network of interchanges. A total of 75 interchange sites were identified and categorized according to relative importance: high, medium and low use. In order to bring existing facilities up to the standards set forth in the Interchange Strategy, a set of facility improvements was scheduled for the 2001-2006 period.

Annual progress towards achieving interchange targets has been monitored through the *Local Transport Plan* and Capital Programme for Tyne and Wear. Recent audits have revealed that established interchange targets have not been met. While all designated interchanges were required to score at least 75 percent against the established criteria (e.g., access, signage, furniture, waiting areas), only 23 percent of high usage interchanges and 3 percent of medium use interchanges scored above 75 percent (Tyne and Wear Plan Partners 2003). Nevertheless, the Annual Progress Report revealed that significant advances were made to upgrade interchanges at Gateshead and Four Lane Ends, and that passengers were satisfied with recent changes at Park Lane and Ryton. It would appear that while network-wide targets have not been met, some passengers have benefited from recent improvements to specific interchanges.

8.3 Greater London

8.3.1 Historic Transport Policies

While London was not impacted by as many transport reforms as the other case cities were, the conurbation did witness some clear changes in transit policy between 1945 and 1998. While the capital had historically enjoyed a high level of transit access, it too was subject to the road-based focus that swept the country during the 1950s and 1960s. However, the *1968 Transport Act* brought a policy shift in favor of comprehensive transport planning that was supported by the Greater London Council (GLC), a regional planning body (e.g., eventually dismantled by the Conservatives). While privatization in the mid-1980s significantly altered the provision of transit in London, it did not modify local government's commitment to service regulation. As

mentioned earlier, in the late 1990s, regional government was reinstituted in London, and TfL further solidified the role of the public sector in the planning and integration of transit with the release of London's transport plan.

After the Second World War, London also began to find ways of accommodating the auto. Britain's road building program, designed to support the regeneration of the economy, was also consistent with the key planning ideology of the time. Along with its call to preserve open space, the *Greater London Plan* advocated improving mobility in the conurbation, creating safe, unobstructed parkways that would conveniently link central London with open space and residential communities outside the Green Belt (Abercrombie 1945). In addition, Britain's road building program was inspired by the *Federal-Aid Highway Act of 1956*, which funded the creation of the Interstate Highway System in the U.S.

Despite this focus on road building, London remained one of the world's great transit cities, with London Transport providing transit service. By the 1950s, buses began to dominate the transit scene (as they did in the U.S.), however rail continued to provide a significant proportion of London's transit supply. The *Transport Act of 1947* called for consolidation of the regulatory structure and development of a government modernization plan that would save the failing railways (Button 2000), which had come under public ownership in the 1940s. Clearly, the capital's higher commercial and residential densities provided the critical mass necessary to justify comprehensive rail service.

In the 1960s, the *Beeching* and *Buchanan Reports* had very different recipes for improving the state of transport in Britain, of which London was at the center. While the *Beeching Report* of the early 1960s advocated the closure of unprofitable rail lines (the "Beeching Axe") and the improvement of lucrative routes throughout Britain (BTC 1963), it had little direct impact on transit in London, since many of the less profitable routes were in rural areas. Still, it could have resulted in the replacement of rail by buses on less profitable routes and the construction of even more roads, a trend that would have ultimately affected London in the long term.

In contrast, the *Buchanan Report* produced a greater awareness of the detrimental effects of transport, leading planners in London and other cities to search for alternatives to the single-occupant auto. Where the *Beeching Report* indirectly advocated modal planning (as opposed to integrated planning), the *Buchanan Report* challenged planners to consider ways of collectively improving transit as an alternative to the single-occupant auto. Nowhere was this more viable than in London and some of the Mets, where multiple modal options were available.

In response to this concern, the *Transport Act 1968* created the institutional framework and financial capacity for developing transport policies in London in the 1970s and early 1980s. While it largely focused on improving transit in the Mets, the *Act* also advocated better coordination of services in London, with "controlled competition" under tight government regulation (Button 2000). Consequently, by the early 1980s, almost all bus services in the conurbation were provided by London Buses Limited (LBL), a subsidiary of London Transport (LT). This agency, controlled by Central Government in the 1960s and the GLC after 1970, was responsible for operating transit in Greater London (Powell 2001). However, while local transit policy was coordinated under LRT (e.g., which oversaw the buses and the Underground), the suburban rail system was still operated by a separate government agency, British Rail.

While the 1984 White Paper *Buses* argued for the privatization and deregulation of transit in Britain, based largely on the fact that government subsidies had risen significantly over the past decades, the Conservative Government decided to defer deregulation in London. Subsequently, the *London Regional Transport Act of 1984* removed LT from under the now-defunct GLC and again placed it under the control of Central Government, which privatized services (Higginson 1991). The strategy was to break up bus services into subsidiaries and begin tendering routes to private operators. The objective was to minimize public expenditure and maintain service quality (Kennedy 1995). While service integration was lacking in some areas (e.g. due to lags in tendering), under this policy of market privatization, transit service appears to have improved,

with significant ridership gains on most bus routes and the introduction of new passenger services, such as the Travelcard.

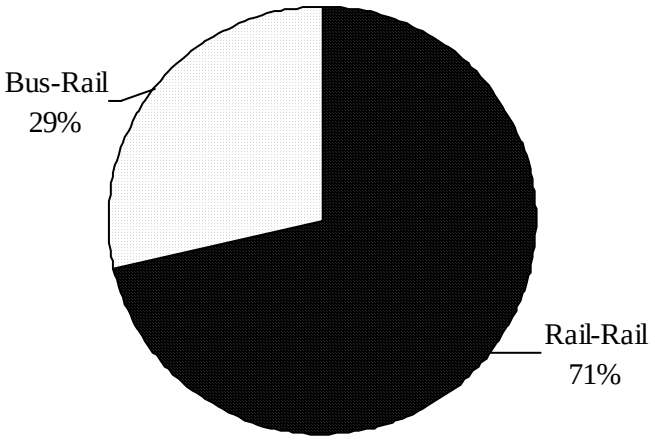
In the late 1990s, the transit system continued to experience a relatively high level of interchange demand as ridership on the Underground, buses and National Rail continued to rise gradually. An orientation toward accommodating rail-based transfers was not only apparent in central London, but also other areas in Greater London (see Figures 8.3 and 8.4). In the former case, demand for interchange was especially high between the Underground and metropolitan segments of the National Rail network in London. However, it was also recognized that systemwide information and ticketing required substantial improvements in order for the London system to be truly seamless, especially in the area of bus-bus interchange.

Under the Blair Administration, transport policy again shifted in favor of greater control over transit services, even if only in the area of service management. While *Transport Act 2000* addressed the need to improve transit integration and bring greater accountability to the public, it primarily focused on devolving planning powers to the deregulated areas. It was the *Greater London Authority Act of 1999* that effectively devolved transport planning and management back to the local area when it created the GLA. London, which had largely retained control over transit services all along, was allowed to further improve management of its privatized network (e.g., developing a truly integrated transit system consisting of all modes) through the consolidation of all responsibilities under one transport agency, the TfL.

8.3.2 Transport Planning Documents: Transport Strategy and Integration Policy

While London did not follow the same path as the rest of the country in drafting and adopting a Local Transport Plan and Bus Strategy, the Greater London Authority did develop its own Transport Strategy, under the auspices of the newly created Office of the Mayor of London (Greater London Authority 2001). In effect, Greater London regained many of the regional planning powers that it had lost during the 1980s, when in 2000, the Greater London Authority

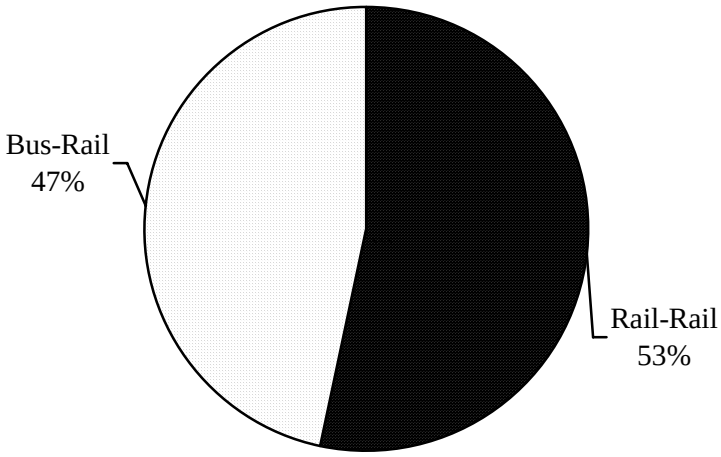
Figure 8.3 Rail-based Transfers in Central London (A.M. Peak), 1997



Total: 702 transfers

Source: London Transport Planning 1997

Figure 8.4 Rail-based Transfers Outside Central London (A.M. Peak), 1997



Total: 296 transfers

Source: London Transport Planning 1997

(GLA) was created and a new mayor was elected to oversee the organization as well as the consolidation of transport planning functions under one single entity, Transport for London. In keeping with the spirit of the *Transport Act 2000*, one of the first acts of the GLA was to draft and adopt *The Mayor's Transport Strategy* in 2001, a detailed document describing the Mayor's commitment to improving mobility in the capital.

This Strategy recognized London's key role as both a principal generator of the national economy and a major gateway for international investment and tourism. Not surprisingly, its focus on maintaining the local transport infrastructure and improving urban mobility for all is deeply rooted in a need to remain competitive in the world market. In order to support this vision, the London Strategy proposes to improve some key aspects of the transport system, such as capacity, efficiency, reliability, quality and integration. In general terms, it identifies ten regional priorities:

- reducing traffic congestion, which has implications for transit throughput;
- improving access to the transport system for all sectors of the population;
- improving the capacity, reliability and frequency of bus and rail services;
- improving all forms of integration between rail, bus, metro and boat services;
- increasing the number of rail links (e.g., rail-rail, rail-bus) across London;
- improving average transit journey times, effectively reducing auto dependency;
- supporting transport initiatives that regenerate town centers and promote the use of alternative travel modes, such as transit and walking; and
- making the distribution of goods and services more reliable for the consumer and transit passenger.

As in Greater Manchester and Tyne and Wear, *The Mayor's Transport Strategy* includes a bus component that is charged with improving surface transit so that it is a viable alternative to the auto. While rail has a higher transit mode share in London than it does in any other city in Britain, the document recognizes the greater potential that the bus has to promptly deliver key

service improvements, as well as the limited capacity for expansion of the Underground (metro) services in London (GLA 2001).

Thus, a major focus of the Strategy is to improve the quality of bus service so that this mode becomes the first choice for a greater number of trips, i.e., effectively relieving some of the pressures placed on the Underground. Mayor Livingstone's direction with respect to bus service is consistent with national policy advocating a greater role for buses in the overall provision of transit service throughout Britain. This policy, articulated in supporting documents released after the *1998 Transport White Paper*, is primarily based on the contention that bus transit has historically been deprived of adequate funding, chiefly because it is seen as a vehicle for the masses, and not a fast and clean alternative, i.e., as rail often is. The current Labour Government is willing to improve bus service as a way of attracting riders to transit in general. Clearly, transit integration is seen as a way of bringing together all modes into one common package.

The Integration Policy component of the *Strategy* (4P) specifically focuses on ensuring that every part of the London transit passenger's journey is easy, safe, comfortable and reliable. While London has boasted the most comprehensive transit network in Britain, it has often been criticized for developing in an ad hoc manner, failing to provide sufficient links between the high volume bus and rail systems. The primary aim of the Policy is to facilitate the seamless movement of passengers across multiple modes, making transit more attractive and competitive with the private auto (Mayor of London 2001).

In consultation with Transport for London, the Strategic Rail Authority, local passenger groups and other key transit stakeholders, the Greater London Authority proposes to maintain local transit services that complement one another and further strengthen integration and coordination within the conurbation. The Integration Policy identifies the following priorities (Greater London Authority 2001):

- improve fare/ticketing coordination;
- provide information and journey planning

- improve interchange functions and facilities; and
- provide an integrated approach to safety and security.

8.3.3 Integrated Transit Planning Programs: Systemwide Integration

In contrast to the cases of Greater Manchester and Tyne and Wear, by the late 1990s, Greater London already enjoyed a relatively high level of transit integration. Under London's regulated system, private operators are responsible for providing a set of established services specified in each contract. Transport for London, which in turn, reports to the Mayor, purchases these commercial bus services from the operators, having specified the fares and service levels (DfT 2004a). Collectively, these contracts provide for a larger, interconnected network of buses, rail and river services, managed by TfL.

One result of the gradual break-up and privatization of the bus sector was that the local authority, London Transport, made a concerted effort to introduce specific provisions for ensuring integration within the competitive tendering process. These included the requirement that all bus operators honor bus travel cards, and that they serve specified stops at key interchanges. That is to say, even during the transition phase, the nature or level of integration was always determined by public authorities and was never left to the private operator to decide, as it largely was under deregulation outside of London. Once the privatization process was completed in London and the first transport reforms were introduced in the late-1990s, the institutional framework for integration was in place. Subsequently, TfL assumed regulatory responsibility.

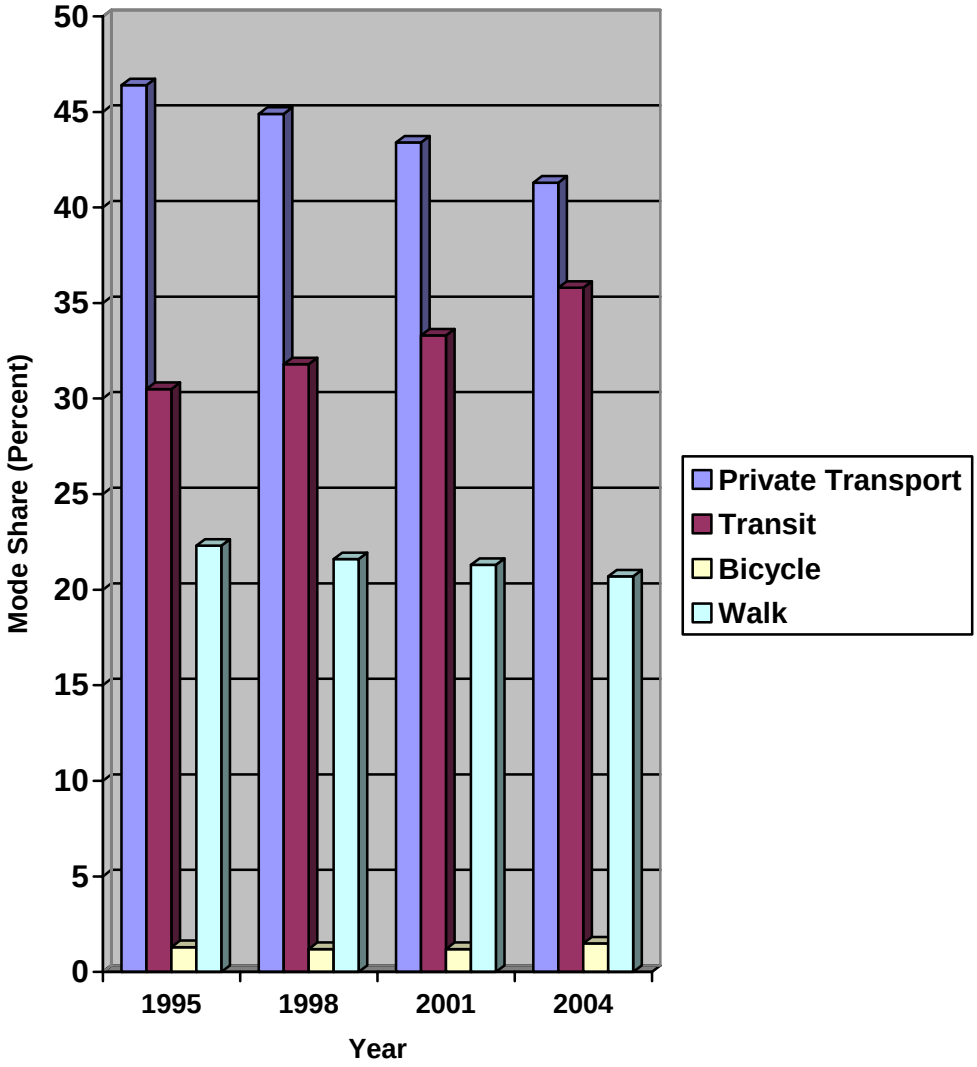
Nevertheless, in the spirit of the *Transport Act 2000*, local authorities and transit planners in London were compelled to improve all forms of integration (fare, information, route/timetable) between modes and operators of the same mode. A strategy to promote greater use of the bus was part of a larger plan to effect mode shift in London, accommodating increased transit demand in London, i.e., capacity not currently available on the Underground), in conjunction with implementation of the congestion charging program for central London.

Transport for London initiated a systemwide assessment of key integration facilities and services in Greater London, identifying the network's strengths and weaknesses. This process involved not only the categorization of transit interchanges into five distinct levels of importance (A through E), but also, the identification of past efforts to disseminate useful transfer and schedule information to passengers; the development of a timeline for establishing a universal, smart card ticket for all transit modes; and the reduction of waiting times at points of interchange.

As a result, since 2001 there has been a significant increase in bus service capacity throughout London, with associated increases in transit mode share (see Figure 8.5) and improvements in the quality of integrated services. These improvements have been developed in concert with the Congestion Charging scheme, providing a feasible set of alternative services to the private auto. For example, the net operating costs of bus services in London have gone up, from £88 million in 2000-01 to £562 million in 2003-04, an average annual increase of about 180 percent. These costs have been covered through direct subsidies of more than £100 million per annum, growth that under the current funding environment will only be sustainable for a few more years. This additional cost includes a number of program elements designed to facilitate multi-modal travel, including improved bus shelters and real time information (at stops and on the Internet), as well as launch of the Oyster card, a regionwide transit smart card.

While the Greater London system has highlighted the benefits of modal integration, there are some minor tradeoffs, particularly from the viewpoint of the private bus operator. On the one hand, this systemwide management of integrated services ensures a seamless network of transit service connections, however, critics point out that operator contracts are rather prescriptive and that they do not permit a great deal of operator input into the transit planning process. Indeed, private operators are often afforded little flexibility with regard to service delivery. For example, as part of a specific gross cost contract, selected operators might be required to maintain specific frequencies, adhere to a specific route, provide information, and accept regionwide bus passes.

Figure 8.5 Changes in London Mode Split: 1995-2004



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Source: TfL 2005a.

8.3.4 Smart Card Integration: Oyster Card

The Oyster Card follows a long line of multi-operator transit passes in Britain. Manchester experimented with one of the first such regional transit passes in the 1970s, and by the 1980s, regional fare instruments had been implemented in all three case cities, as well as a number of other British cities. Due in large part to its scope, the London Travelcard has had the greatest impact on transit ridership. It allows for travel for a specified period of time, within designated zones of Greater London. When it debuted in 1983, it met immediate success, becoming the primary fare instrument of many Underground riders (LT 1996). Subsequently, it has seen solid growth and is currently, the mode of payment for 34 percent of all bus journeys (White 2002).

Despite these important gains in passenger acceptance, however, both authorities and passengers have recognized the limitations of this technology. In general, these instruments were designed to facilitate multi-journey travel, usually focusing on either rail only or bus only travel. As such, they are inherently limited in at least two areas:

- They benefit commuters and middle-class passengers that can pay in advance for travel over a set period; and
- They do not have a mechanism for estimating volume of travel, nor for accurately reallocating sales revenues back to specific operators.

The Oyster Card removed these historic barriers and helped move London in the direction of cashless fare payment, effectively providing a larger proportion of local passengers with the option of purchasing a specific value of transit fare. The “Pre-Pay” option, which was extended to buses and light rail in 2004, allows for the purchase of a specified value of transit fares. In addition, the card allows for the loading of period passes (e.g., monthly, seasonal) for travel on any of the participating modes.

The Oyster Card provides a great deal of flexibility to TfL and individual operators in the application of special fare discounts to card users and the provision of paperless bus-rail and bus-bus transfers. It provides detailed operator information for each trip link of a journey (GLA

2001), allowing authorities and operators to develop accurate profiles for card users, to efficiently account for service usage on specific network segments, and to provide adequate interchange facilities at key areas of transfer demand. Collectively, this information can provide TfL and the operators with a useful tool for measuring demand for specific services.

Over the past few years, TranSys, a consortium under contract to TfL for the development of the Oyster Card system, has publicly promoted the advantages of the new card to both existing and potential passengers. To this end, project brochures have listed a number of important product features common to most smart card systems, including: passenger convenience, security from loss or theft; ease of use, access to regional services, physical resilience (of the card); and flexibility in use.

Thus far, the Oyster Card has met initial expectations. London successfully secured the participation of all major transit modes in the Oyster Card program, making it a truly integrated fare instrument. In contrast to many other cities with the smart card system of fare payment (e.g., Washington, Santiago), TfL did not make the Oyster Card exclusive to the metro, but rather, opted to develop a card that could be used on all of the major transit modes under its authority: the bus, the Underground and both light rail systems. While development and deployment of the Oyster Card have involved some significant costs thus far, transit planners have argued that this multi-modal approach will contribute to continued growth in transit ridership, as more passengers see the systemwide benefits of the card.

According to Transport for London, in early 2005 more than 2 million transit passengers regularly used the Oyster Card. Given that this fare system has only been available to the public for a relatively short period (two years), the current level of use of the card is impressive. There is a good chance that use will remain stable or continue to rise in the near future (even if bus ridership falls off a bit in the next few years), as the rate of use is still on the upswing. The Oyster Card will never completely replace other forms of fare payment, however, greater use

could potentially bring further reductions to boarding times and permit easier fare payment for multi-operator trips.

8.3.5 Real Time Information Integration

For its part, in the late 1990s, Greater London identified the importance of providing passengers with good quality, comprehensive information on transit services. A key component of TfL's strategy for promoting the use of transit is the administration of real time information services for all major modes in the capital. Basically, these services have been made accessible to the general public through many of the same sources as in the Mets: bus stop displays, telephone information bureaus, and Internet web pages.

The London Buses Countdown System and similar platform indicator systems provide passengers with up-to-the-minute information, effectively reassuring them that services will arrive within a specified period of time. This resource allows passengers to make better informed decisions about their journeys (e.g., whether to interchange at a specific point), eliminating most timetable uncertainties and providing significant time savings. As a provider of information for the bus system, the Countdown System has the potential to bring the greatest impact on transit in the capital. This system employs an Automatic Vehicle Locator (AVL) technology that tracks the position of more than 7,000 buses on 500 routes across London, providing arrival information that is sent to bus stops, effectively removing uncertainty. It provides information on routes arriving at a bus stop, displaying not only the order in which buses are due to arrive, but also, information on their destinations and their expected arrival times. In addition, this system can display special messages about service changes or traffic delays (TfL 2005b).

Despite these advances, TfL plans to introduce better timetable and service information, employing different formats and languages to satisfy an ever-expanding assortment of passenger needs. In an attempt to bring additional benefits to local passengers and operators, the current structure that supports Countdown is to be replaced with newer technology. For example, in the near future, Countdown signage will provide information in both audio and video format,

employing satellite-based systems, as well as mobile phone technology (TfL 2005b). The feasibility of implementing these new innovations will be analyzed in light of TfL's examination of future systems.

8.3.6 Interchange Facilities

London has a very extensive transit network that has developed over decades, often in an ad hoc manner. As a result, physical connections between transit modes, such as bus and rail, have frequently been inconvenient. Similarly, some interchanges have not been adequately developed to satisfy demand, and have remained unattractive to passengers. This problem was compounded by the fact that prior to the 1990s, only limited attention was paid to facilitating the movement of passengers from one mode to another.

Thus, transit passengers historically found some variation in comparative levels of access, comfort and security among interchanges throughout the conurbation. In response to this pattern, TfL has identified the need to maintain a balance between deliberately reducing the need for interchange where cost effective (e.g., through direct routings), and improving coordination through either the expansion of existing interchange facilities or the creation of new facilities (Mayor of London 2001).

Policy guidance on the improvement of local connections has been provided through the *Interchange Plan*, a TfL policy document that seeks to integrate the Mayor's overall policy aims for London with the transport objectives of improved accessibility and quality of service (TfL 2002). The four main objectives of the Plan are to:

- Identify important locations that support the Mayor's Strategy;
- Improve facilities that will directly address the needs of passengers;
- Identify minimum facility standards; and
- Develop strategic interchange "packages" that will generate network benefits.

In the past four years, TfL has undertaken an inventory of all Underground, bus and regional rail interchanges, identifying five general types of facility (based on spatial and strategic

criteria). This inventory has sought to establish a set of priorities for the efficient use of available resources (TfL 2002). However, in contrast to the situation in the Mets, the *London Interchange Plan* is not prescriptive with respect to where improvements should be made. In addition, TfL is not the only source of funding for interchanges as monies are also available through Borough Spending Plans and parking revenues.

Some information is currently available on performance of the Integration Plan, however it appears to be limited to the analysis of some high profile transfer points. This may be due to the fact that the Interchange Plan was only established in 2002 and little data is available, as well as the fact that the Plan is not prescriptive, i.e., Plan performance will be evaluated based on indicators that measure the degree to which specific elements satisfy the objectives of the *Mayor's Transport Strategy*. Nevertheless, TfL reports that the renovation of a major interchange at Finsbury Park is due to be completed by 2007. Smaller scale interchange improvements are scheduled to be made at other bus and rail locations, including improved signage and security measures (TfL 2004).

8.4 Conclusions

In sum, Chapters 7 and 8 have offered a synthesis of extensive research in all three case cities. The interview process revealed some common threads between respondents with respect to government shortfalls and the need for integrated service planning, but also some conflicting viewpoints on the role of informal contacts in the ongoing planning and operation of transit in Britain. While a number of respondents recognized that integrated services had clearly improved since the mid-1990s, many respondents, particularly in the Mets and at academic institutions, supported the need for more effective fare and physical integration and questioned the actions of the Office of Fair Trading in restricting contact between operators and authorities, for example.

Some quantitative data allowed for an assessment of passenger satisfaction, operator participation in specific markets, and modal changes in local supply and demand for transit, however, it is the qualitative data that essentially provided much of the available information on

the nature of local integration (e.g., goals and objectives), as well as the performance of certain plans and strategies. This qualitative data took the form of reports published by local authorities, partnership groups and government ministries.

Historical information effectively provided background for understanding many of the policy decisions that were taken with regard to transit planning and integration in each of the case areas, as well the paradigm shifts that came about as a result of changes in government. By the 1990s, it had become increasingly obvious that deregulation offered limited benefits (e.g., cost reductions), particularly to operators and government agencies. As a result, transit passengers began to feel the negative impacts of rising fares and a lack of service coordination. In order to attract passengers back to transit, Central Government embarked on a campaign to improve transit service and make it more competitive with the auto. Better integration was effectively seen as a way of organizing these services into a seamless system of interlocking components.

Traditionally, London has set standards in the area of service provision, as the city's size and intensity have required that it have an extensive transit system, regardless of national policy. Central Government transport authorities have never been seriously concerned with ridership figures in London, as these have generally increased or remained stable. As a result, London authorities were given limited autonomy in managing transit, avoiding many of the nationwide reforms imposed by the Thatcher Administration in the 1980s. Thus, for the most part, service levels in London have been maintained and there have been fewer obstacles to integration.

In contrast, Manchester placed a great deal of effort into integrating its transit network, particularly after construction of the tram. According to public documents, initial planning for the Metrolink system took place in the 1980s, however, construction of the first line was not initiated until the early-1990s, i.e., after the transit industry had been privatized and deregulated. One important point to note, however, is that Greater Manchester Buses Limited (GMBL), the system operated by the GMPTE, was allowed to continue operation into the early 1990s, facilitating some coordination between the buses and Metrolink. Even though GMBL was

eventually sold off to subsidiaries of Stagecoach and First Group, it appears that the PTE established a working relationship with the private operators that assumed ownership of the services.

Despite the early development of a fully integrated transit network in Tyne and Wear, deregulation contributed to deterioration in the quantity and quality of interchange there. The private operators that came to offer bus services in the area did not find it particularly advantageous to continue to terminate services at Metro stations and instead, began to compete with the light rail in the provision of transit services along certain corridors. This behavior generated friction and distrust between the bus operators and Nexus, operator of the Metro. Hence, the period between 1987 and 1998 was characterized by a general lack of communication between operators and local authorities (e.g., Nexus) in Tyne and Wear. Some interviewees believed that bus operators were hesitant to coordinate services for fear that the PTE would seize power and re-introduce a policy of forced integration between modes.

Turning to the quantitative data available on integration, an examination of recent best value reports and assessments of post-2000 changes in service coordination revealed that many authorities have found it difficult to agree on a comprehensive set of performance indicators for measuring progress. Without a reliable set of base data on the level and nature of interchange, it is difficult to quantify improvements. While some quantitative tools for measuring change in the provision of system information and interchange facilities were developed in the case Mets, such as Greater Manchester, in general, most aspects of integration (e.g., interchange volume, timetable adherence) were difficult to quantify and Central Government refrained from suggesting definitive ways of measuring change in performance. The introduction of smart card systems will likely provide more information on certain aspects of system integration.

For example, in the area of information integration, measuring changes in the number of new real time information kiosks or the number of pieces of information distributed does not necessarily reveal the degree of impact they are having on transit passengers. At best, these

quantitative measures merely reflect efforts to improve physical connections (e.g., the number of new or upgraded interchanges since 2000). Area or systemwide indices, such as ridership or service provision, do not allow us to directly attribute a rise or a fall in service to a specific program. For this reason, a clear, qualitative assessment of integrated services and the manner in which they are achieved through local planning and interoperator coordination, is essential.

Despite variations in approach and local priority, some of the qualitative data on integrated services (acquired from government agencies in the case cities) was as revealing as the interview data, permitting an assessment of the specific programs and services introduced through the LTP process. For example, the Bus Strategy documents described goals and objectives for each of the key aspects of transit integration, identifying specific programs intended to encourage coordination among operators and authorities. These strategies have subsequently been followed up with program reports on transit elements and partnerships, such as the Integration Project in Greater Manchester or the Superoute and Orpheus Programs in Tyne and Wear. Finally, the Best Value Reports in each of the case cities gave descriptive assessments of these programs and other similar efforts, providing a better indication of performance, as well as areas for improvement.

Of course, these government reports did not discuss alternative forms of integration, an area covered in the interviews. Many authorities and operators believed that the uncertainty of operator behavior tended to outweigh the benefits of this form of integration, particularly from the point of view of the passenger. The prospect of allowing operators to work outside of a regionally established set of norms for integrated services (e.g., with unregulated freedom to determine when and where service integration is most appropriate or profitable) was troublesome to some respondents.

Thus, despite some concurrence over the negative impacts of competition law on interoperator and interagency communication, interview respondents were not in agreement over whether informal means of transit integration could yield system benefits. Proponents argued that informal integration between operators or other providers allowed for service voids to be

identified and filled by the operators themselves in an expedient and efficient manner. However, others felt that, in order for regional objectives to be met, transit authorities in the Mets needed to be at least marginally involved in bilateral or multilateral agreements, as they currently are with the regional ticketing arrangements (e.g., GMTL in Manchester). Also, most felt that the best way to legitimately facilitate this widespread collaboration would be through the granting of a new Block Exemption. Only the OFT could grant this, under advice from Central Government.

While recognizing the potential usefulness of integration, only some respondents felt that it could bring significant system benefits. As a result, not all were open to encouraging bilateral communication between operators. They believed that it is necessary for all dealings to remain transparent, in order to ensure full accountability and regional consistency. This means that all forms of integration would have to start at the PTE level and would require the approval of all operators in the market (e.g., following an established protocol). In contrast, the existing structure of integration in London is formal, based on time-specific contracts (e.g., lasting five years), and does not necessarily account for the market changes that can impact system inputs and consequently, outputs. For example, if it is discovered that TfL service planners miscalculated supply relative to existing demand for integrated services, then they may have to wait until the end of the contract before they can re-specify service.

However, some recognized that Central Government's reluctance to link the desire to improve transit integration with the need for operators to communicate more freely among themselves has serious implications for the future provision of integrated services outside of London. For the most part, operators are being asked to improve connections with other services, but ironically are not allowed to develop collaborative strategies. Many are of the opinion that the *Block Exemption* was merely an acknowledgement on the part of the OFT that there is a high demand for some interoperator travel within the Mets, and was only granted after local authorities placed pressure on the OFT.

Nevertheless, the *Competition Act 1998* clearly establishes that fares must be differentiated between operators serving the same corridor, effectively eliminating the establishment of a common round trip fare. This requirement is based on the argument that the best way to encourage competition, and the creation of more innovative services, is through the liberalization of fares. However, one ingredient missing in most of these markets is the differentiation of services, a feature that free market economists often claim is a common end product of transit privatization.

A respondent from an academic institution pointed out the irony with which Central Government, through implementation of the *Act*, approaches the issue of integrating transit services in a specific corridor. Despite its stated policies in support of generating new, innovative bus services in the Mets, in many cases, the OFT actually favors the consolidation of two competing bus operators into a single operator, i.e., instead of the planned integration of their respective services. These actions do not appear to promote open competition, a cornerstone of most arguments in favor of deregulation. The consolidation of services may indeed facilitate the implementation of some integrated services (e.g., the economies of scale argument), however, it virtually removes competition and any benefits associated with it.

A number of important transit policy lessons can be drawn from the data gathered in the three case cities presented. A key finding from this work is that the most important implications for future transport policy in Britain are directly related to the manner in which central and local government coordinate with operators in the planning and operation of transit services in large cities. While the deregulation of transit services in the 1980s effectively restructured the industry outside of London, subsequent reforms under the Blair Administration have failed to deliver the integrated transit systems conceptualized in the *1998 Transport White Paper* and proposed for implementation under the *Transport Act 2000*. One reason may be due to the fact that the proper steps have not been taken to promote collaboration between transit providers

That is to say, it can be argued that Central Government has failed to successfully consolidate transit policy (e.g., remove many of the institutional barriers) and provide the opportunity for operators and authorities to work toward a common set of objectives. Until this is achieved, operators will continue to fear reprisals on the part of government agencies, such as the Office of Fair Trading, and consequently, will remain hesitant to fully engage in all forms of transit integration, regardless of the benefits.

This lack of commitment on the part of government to create the mechanisms necessary to encourage collaboration and service integration may lead to further frustration on the part of the most progressive bus operators, and serve as an excuse for the least cooperative operators to avoid participating in sanctioned integrated strategies with other entities. This lack of communication will probably be most evident in those Mets where multiple transit operators provide services.

CHAPTER 9: SUMMARY AND RECOMMENDATIONS

It is often argued that a coordinated system of individual components is greater than the sum of its parts. While this may not necessarily be true in every case, there certainly are a number of instances in which the integration of these components can enhance the quality of the system. The same process that requires that elements or players work together to achieve a common set of goals and objectives, i.e., providing a discrete set of goods or services, often leads to a working environment and set of relationships that yield opportunities not otherwise available. It is important, however, to establish guidelines for long-term coordination between autonomous players. This is especially true in the case of transport, where the coordination of individual modes can often yield efficient and less expensive transit services, as well as wider access to urban activities.

Most transit services in the English Mets currently remain deregulated and consequently, related planning functions are not centralized, even after the transport reforms of 1998. Nevertheless, based on this and other studies, there is reason to believe that effective system planning and coordination could in fact, be achieved without full regulation. That is to say, in the English Mets, there is evidence that a horizontally integrated system of independent operators could indeed provide network planning and coordination, effectively offering added value to the system within a competitive environment. However, in order to avoid the possibility of being accused of collusion, a set of industry guidelines for interoperator cooperation needs to be developed by authorities and operators.

This study of London and two of the deregulated Mets explored the balance that continues to exist between widespread interest in fully integrating transit services and the desire to maintain an acceptable level of competition between operators. Relying on interview data, as well as qualitative and quantitative data on the local provision of transit services, this study sought to measure the progress of efforts to integrate transit services into a coherent system. While transit

regulation has played an important role in the integration of transit services in London, integration efforts in the Mets have had limited success. It has become increasing evident that in the end, government interventions (aimed at promoting competition between operators) have effectively prevented authorities from achieving their objectives with respect to integration.

Based on the research conducted, this study concludes that the most important factors affecting future transit planning and integration include the following:

- interoperator coordination in the ongoing provision of services;
- the role of local government in identifying funding opportunities;
- the long-term status of public-private (quality) partnerships in transit provision;
- the role of Quality Contracts in the effective delivery of integrated services;
- the role of fare media (e.g., smart cards) in the integration of fare structures;
- application of lessons learned to similar tendering processes in other countries; and
- the role of complementary transport measures in promoting transit use

Furthermore, the study findings suggest that while integration and deregulation are not normally pursued in tandem, especially in developing countries, they are not mutually exclusive and can theoretically co-exist. In practice, the planned integration of transit services is achieved through varying forms of bilateral and/or multilateral cooperation among transit operators, often, under the auspices of a local transport authority or regulating agency. Gómez-Ibáñez and Meyer (1993) point out that most cities evolve along a cycle of private-public involvement in the provision of transit: from emerging, entrepreneurial-based bus or rail services, to publicly-provided services, to the eventual privatization and/or deregulation of transit markets. Similarly, it can also be argued that all transit systems lie along a spectrum of regulatory control stretching from total deregulation on one side to strict regulation on the other.

Given that few transit systems are either totally deregulated or completely controlled, where there is demand for the integration of transit services, some form of coordination should be possible. That is to say, unless all forms of regulatory control have permanently been lifted,

transit integration can theoretically still exist if operators can be persuaded to take part in collaborative efforts. Where only a token set of transit regulations exist, integration can and should be pursued, particularly in large, multi-operator markets, where a substantial proportion of the population depends on transit. Of course, integration is more readily achieved where authorities have input into the planning of services.

Nevertheless, in some cases, market factors play a role in the provision of integrated transit services. For example, there are instances in which market demands make it profitable for bus operators to participate in integrated strategies. In markets such as Santiago, where transit share is relatively high, operators have found that integration gives them access to markets that they would not normally serve. This opening up of markets has implications for the operator: it increases passenger awareness of the scope and quality of connecting services; it enhances the image of participating operators (e.g., working together toward a common objective); and it gives operators access to new submarkets. In many cases, where passengers are familiar with the benefits of integration, authorities feel obliged to impose requirements on operators, often providing subsidies to those that integrate services.

Market demands for not only better integration, but cheap and efficient transit are probably most easily mitigated under a democracy, where government normally assumes a social responsibility to see that the general public has adequate access to transport, and is not adversely affected by such negative externalities as traffic congestion or air pollution. Without some minimal level of consumer advocacy, there are fewer incentives for private operators to cooperate. An exception to this might be where one or two large operators control the entire market and provide integration between most of their services.

While Britain provides a textbook case for studying the impacts of regulatory controls on the integration of transit services in major cities, it draws attention to the fact that, despite the most genuine of attempts to encourage integration in major cities, there are a number of other factors involved in the process. This study has found that these key factors include conflicting

government policy regarding competition; limited funding at the national and local levels to provide for better integration of operator services; and lack of interest on the part of government to actively explore collaborative forms of transit planning at the metropolitan level.

In addition, this study found that the transit industry is trending toward the consolidation of operators into large transit groups. These publicly traded companies are primarily concerned with monitoring market share, i.e., in response to shareholder concerns, often through market domination and/or preservation of traditional market boundaries. As a result, from the standpoint of the operator group, integration is often seen as a form of public meddling that hardly acknowledges changing market conditions. In addition, these companies argue that authorities are not faced with pressures asserted by company stakeholders and union representatives.

That is not to say, however, that integration is not achievable in deregulated to semi-regulated markets in the Mets. Evidence from the interviews suggest that there could be greater interoperator coordination if PTEs were allowed to broker bilateral and multilateral agreements. Perhaps, the development of loosely knit collaboratives could prove to be an effective alternative to tendering, allowing for greater input from both transport authorities and operators

Of course, from the standpoint of other transit stakeholders, particularly passengers and local authorities, the costs of not integrating are significant and in many cases, outweigh the costs of providing integration. The first costs include longer wait times (e.g., lost wages and opportunities), higher fares and poorer quality travel, as well as lower transit mode share and potentially, higher motorization, i.e., along with the negative impacts associated with it. Even operators face significant costs if they choose not to integrate with other operators (e.g., foregoing the ability to generate new markets). Thus, on balance, where there is a significant demand for transfer between transit services, the costs of not providing integration between services can have detrimental effects for society as a whole.

Case studies in two developing countries revealed a similar, but different situation for transit operators, suggesting that integration cannot seriously be pursued without a minimum

level of regulation. While private operators dominate local transit markets in Santiago and Cape Town as they do in almost all areas of Britain, a significant proportion of these services (particularly in the latter city) are not operated legally. As a result, attempts to integrate all transit services often prove futile because only licensed operators can be considered partners. Operators working without a license commonly work clandestinely (e.g., employing unscheduled services and flexible routes), in the hope that local transit authorities and enforcement agencies will not detect their presence. In effect, these operators are marginalized from the transit mainstream, unable to tap into resources and added benefits.

Nevertheless, this study found that in both Santiago and Cape Town, there was an apparent will on the part of government authorities to promote integration. In the case of Cape Town, the only apparent way to achieve this is to systematically legalize as many operators as possible. This is a formidable task for Cape Town, where nearly half of all minibus taxi services are provided by the informal sector. Most developing world cities cannot even contemplate systemwide coordination without some form of legalization.

Of course, transit integration is only one part of the transport solution. It is equally important to develop a comprehensive set of transport policies that promotes alternative modes to the auto. Indeed, many cities in both the developed and developing world (e.g., Barcelona and Bogotá) have adopted local strategies encouraging the use of alternative modes of transport to achieve a more sustainable environment. It is through the development of a comprehensive set of mobility measures that planners can effectively achieve long-term objectives, i.e., the integration of transit service is not a stand alone measure, but rather, one element of a package that supports and is supported by other measures. In practice, these other measures include the coordination of land uses, the pricing of parking, or the restriction of traffic.

The introduction of a congestion charging scheme in central London in 2003 was one such strategy which, taken in combination with the improvement of bus services, effectively discouraged many residents from driving into London. A mere increase in the supply of reliable,

efficient bus service in conjunction with improved fare coordination regionwide could have generated increases in ridership, however, without the congestion charging program they would not have generated the new ridership that they did. Many auto travelers are attracted to an extensive and better-integrated transit system, as they are discouraged from paying an eight-pound (£8) toll charge to enter central London. In addition, the congestion charging program provides a significant source of revenue for bus improvements that would not normally exist. Many of these comprehensive transport strategies are most often based on the assumption that a strong, centralized transport agency exists to systematically plan and fund such efforts.

In contrast, while congestion charging and other restrictive measures have been considered in some cities outside of London (including Greater Manchester and Tyne and Wear), if such a system were deployed, it is not clear that transit could adequately be positioned to handle a large volume of passengers. Without the necessary investment in transit service and better coordination between operators, it is feared that the implementation of a congestion charging scheme in the Mets could backfire. Certainly, congestion charging is not always an option where institutional capacity and political will are lacking.

In the Mets, however, there are other ways of engaging local transit stakeholders in collaborative programs that bring benefits to passengers and operators alike. In the past few decades, authors such as Chisholm, Alexander, and Innes and Booher have extolled the virtues of loosely bound, horizontal relationships between transit providers that allow for the ongoing discussion of issues, without the threat of government control or intimidation. Most evidence seems to come from the U.S., where many industries are still regulated and formal integration between entities is time consuming and limited; however, it seems that it would be even easier to implement collaborative planning where fewer regulations are imposed.

In a country such as Britain, where transit is primarily deregulated, there may be a role for coordination through collaborative planning (e.g., voluntary transit forums). Clearly, a number of regulatory modifications would need to be implemented, including the elimination of most

Competition Act 1998 provisions restricting route and fare integration. Nevertheless, the findings of this study suggest that both operators and authorities are somewhat willing to work together to encourage greater cooperation and firmly reject collusion between operators.

Perhaps, one way to facilitate the integration of modes is to promote linkages between public and private transit entities that can offer clear benefits to each participant. For these collaborations to work, all parties must feel that they have gained something from the relationship, such as increased revenue, direct access to new markets, or enhanced connectivity. Local authorities could have a role, not as strict regulators, but as facilitators. They could assist in encouraging collaboratives in which all participants engage at the same level, and work together on bilateral or multi-lateral agreements that address the demand for integrated services.

This internally regulated, collaborative form of integration could foster greater trust as well as buy-in from operators, authorities, and local residents. If participants feel a sense of ownership over the process, they will most probably contribute to the success of the elements that directly involve them. However, participants will need to find common issues for discussion and pursue strategies that contribute to universally accepted objectives. One clear role for an independent authority (e.g., promoting horizontal integration) would be to maintain transparency in transit planning, effectively preventing collusion while continuing to facilitate collaboration.

Interview findings also suggested that operators are willing to play a major role in systemwide planning. In order to remain competitive, operators must be empowered with some degree of autonomy in the establishment of timetables and fare structures, consistent with the set of standards established for the transit network. In addition, given that many stakeholders depend on these services and their effective deployment, as part of a collaborative transport plan process (e.g., LTP), planners and stakeholders should develop a set of integrated objectives and policies, i.e., addressing the need for communication and cooperation between stakeholders.

At a metropolitan level, it is important that integration plans incorporate the input of a wide spectrum of stakeholders, including representatives of passenger groups, transit operators, other

transport system users, and both regional and federal transport authorities. Private and public service providers could collaboratively plan future development through the creation of a technical advisory committee (TAC) of transit professionals. This committee would be charged with developing a set of formal procedures for implementing integration standards regionwide, i.e., based on the objectives and policies defined under the Local Transport Plan. In addition, this or another group could subsequently monitor these standards.

Clearly, in the Mets, some form of metropolitan-level coordination is necessary, even if it is through a loose-knit organization of transit stakeholders. In keeping with national objectives, any form of formal/informal agreement or contract between operators and local transit authorities should ensure that these entities work together to provide the following:

- punctuality and reliability;
- improved physical access to transfer services;
- availability of timetables (or service intervals) and other relevant information;
- participation in systemwide, through-ticketing services.

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APPENDIX A: GLOSSARY OF TERMS AND ABBREVIATIONS

Terms

Authority: Government agency holding administrative powers in a specified area

Best Value: Government assessment to determine the effectiveness of transit services provided

***Bus Strategy*:** Long-term plan for improving local bus service in each Met; identified in the *LTP*

Cape Metropolitan Area: Urban area in Western Cape Province, centered on Cape Town

***Competition Act*:** British legislation defining that which is considered non-competitive practice

Conservative Party: The previous political party in power (1979-1997)

Greater London: Metropolitan region in southeast England, encompassing central and outer London (population: 7.1 million)

Greater Manchester: Metropolitan county in northwest England, centered on Manchester (population: 2.6 million)

Integration: The collective planning of inter-operator transit services

Interchange: The physical point of transfer between operators; can be formal or informal

Labour Party: The ruling political party in government (after 1997), led by Tony Blair

Operator: Private or public entity providing transit service

Tyne and Wear: Metropolitan county in northeast England centered on Newcastle upon Tyne (population: 1.1 million)

***Transport Act*:** The principal transport policy document in Britain; published in 1968, 1985, 2000, and 2004

***Transport White Paper*:** The government document providing guidelines on transport policy direction; most recently published in 1985, 1998 and 2004.

Abbreviations/Acronyms

CC (Competition Commission): Independent public body established by the *Competition Act 1998*, which replaced the Monopolies and Mergers Commission in April 1999

CfIT (Commission for Integrated Transport): An independent body charged with advising the Government on issues concerning the coordination of transit

CPT (Confederation of Passenger Transport): London-based organization representing bus and light rail operators throughout Britain

DfT (Department for Transport): Government agency overseeing transport policy in Britain; formerly known as DETR in 1998

EFE (Chilean State Railway): Principal intercity rail company in Chile

EU (European Union): Brussels-based, multinational government structure overseeing European policy (including transport)

GA (Golden Arrow): Principal private bus operator in Cape Metropolitan Area

GLA (Greater London Authority): Regional entity charged with overseeing urban services in Greater London

GMPTA (Greater Manchester Passenger Transport Authority): Metropolitan transport authority for Greater Manchester (comprised of elected council members)

GMPTE: Agency supporting the GMPTA (professional staff)

LTP (Local Transport Plan): Transport planning document designed to address local mobility concerns in Britain's towns and cities

LT (London Transport): Primary transport authority in London, prior to 2001 (now TfL)

Mets (Metropolitan Counties): British metropolitan areas of more than one million population, excluding London

MOP (Public Works Ministry): Chilean government agency responsible for the construction of transport infrastructure

Nexus: Agency supporting the TWPTA (professional staff)

OFT (Office of Fair Trading): Central Government agency responsible for guaranteeing fair competition in Britain through implementation of the *Competition Act*

PTE (Passenger Transport Executive): Transit planning organization for each Met

QBC (Quality Bus Corridor): Transit corridor where QBPs operate new services and facilities

QBP (Quality Bus Partnership): Private-public agreements aimed at improving bus service/facilities

QC (Quality Contract): Agreement between a local transit authority and a private operator to provide transit service as specified

Sectra (Chilean Transport Infrastructure Planning Commission): Interagency organization charged with coordinating transport infrastructure planning in Chile

TDM (Travel Demand Management): Strategies for making efficient use of alternative modes

TfL (Transport for London): Metropolitan transport authority for Greater London

TWPTA (Tyne and Wear Passenger Transport Authority): Metropolitan transport authority for Tyne and Wear (comprised of elected council members)

APPENDIX B: TRANSIT PLANNING ORGANIZATIONS

Transport for London (TfL) and the Passenger Transport Executives (PTEs) are the primary transit planning organizations in Britain, providing varying degrees of policy direction and project funding to transit providers in the seven largest metropolitan areas. The following paragraphs describe the transit planning organization in each of the case cities, as well as the national association representing the PTEs:

Greater Manchester Passenger Transport Executive (GMPTE)

This metropolitan agency was originally created in the late 1960s as one of the original Passenger Transport Executives (PTEs). Along with its parent agency, the Greater Manchester Passenger Transport Authority (GMPTA), the GMPTE professional staff seeks to influence and plan for the provision of public transit throughout Greater Manchester. While the actual provision of transit services currently lies with the private bus, light rail and rail operators in the area, the GMPTE provides many local transit facilities, including terminals, shelters and stops, as well as passenger information, and concessionary fares for youths and the elderly. In addition, the GMPTE monitors the metropolitan transit network, providing some policy guidance (e.g., suggesting ways to fill service voids left by private operators on commercially unprofitable routes). The GMPTE, which receives annual funding from Central Government and the 10 district councils of Greater Manchester, administers transit funds on behalf of the GMPTA.

Nexus

Nexus, originally known as the Tyneside Passenger Transport Executive as well as the Tyne and Wear Passenger Transport Executive (TWPTE), was formed in the early 1970s as part of a second wave of PTE starts authorized and supported by Central Government. On behalf of the Tyne and Wear Passenger Transport Authority (TWPTA), its parent organization, Nexus distributes transit funding to providers in Tyne and Wear, however, unlike most other PTEs, it also operates the regional light rail services (Tyne and Wear Metro). In turn, it receives annual

funding from Central Government, as well as the five district councils that comprise the conurbation. Similar to the GMPTE, Nexus provides some local transit transfer services at terminals, shelters and stops, as well as passenger information and concessionary fares for the youth and elderly. The principal tasks confronting Nexus include raising the quality and quantity of transit, in order to meet the needs of the transit-dependent; and attracting auto users to transit, i.e., for some of their journeys.

Transport for London (TfL)

This metropolitan transit authority for Greater London was established in 2000 as a successor to the old London Transport (LT) agency. Transport for London (TfL) serves as not only the integrated entity responsible for the capital's transit system, but also has responsibility over its roads and waterways. As the metropolitan transport organization for London, its principal role is to implement the *Mayor's Transport Strategy for London* and manage the transport services across the conurbation, for which the Mayor has responsibility. Under the Greater London Authority (GLA), TfL is accountable for both the planning and delivery of transport facilities, as well as direct operation of the Underground rail system. This policy approach enables it to take a truly integrated approach to how people, goods and services move around London. TfL is directed by a management board whose members are chosen for their understanding of transport matters and appointed by Ken Livingstone, Mayor of London, who chairs the TfL Board.

Passenger Transport Executive Group (PTEG)

The Passenger Transport Executive Group brings together and promotes the interests of the seven Passenger Transport Executives in England and Scotland: Centro (West Midlands); GMPTE (Greater Manchester); Merseytravel (Merseyside); Metro (West Yorkshire); Nexus (Tyne and Wear); SPT (Strathclyde); and SYPTE (South Yorkshire). In addition, Transport for London (TfL) is an associate member. In general, the PTEG has two principal tasks:

- facilitate the exchange of knowledge and good practice within the PTE network, and

- raise awareness nationally about the key transport challenges faced by city regions, and the public transport solutions, which PTEs are implementing.

The Directors General of the seven PTEs, which normally meet quarterly, collectively determine PTEG strategy and policy. PTEG also runs a number of task groups and committees that bring together professionals from across the PTE network to focus on specific policy areas, and to share expertise and good practice. The PTEG Support Unit, based in Leeds (West Yorkshire), coordinates the Group's activities, lobbies Central Government on regional governance matters and serves as a central point of contact for policymakers.

APPENDIX C: MAJOR TRANSIT SERVICE OPERATORS IN BRITAIN

In Britain, five large operator groups dominate the local transit industry, providing both bus and rail services to local and regional markets throughout the country. All of these groups are large corporate entities that offer common stock on the London Stock Exchange (LSE). In turn, each of these groups has a bus component that operates numerous subsidiaries throughout Britain, as well as bus operations in other countries (e.g., Stagecoach in Canada). In Britain, the bus services operated by these groups collectively account for 66 percent of all local bus trips.

As corporate entities, these large bus operators are obliged to achieve the goals and objectives of the company stakeholders, namely, to provide a recognizable, stand-alone product; maximize profits; facilitate cash flow; and have capital with which to invest in new products. The following paragraphs give a brief description of the five major transit groups:

Arriva

Arriva is one of the largest transport service organizations in Europe, employing at least 30,000 people and delivering more than one billion passenger journeys per year across eight European countries, including Italy, and Spain. In Britain, it operates both local bus and rail services in a number of local and regional markets, primarily in the Southeast, Northwest and Northeast. Indeed, Arriva operates services in all three case study areas: Greater London, Greater Manchester and Tyne and Wear. In addition, it operates intercity rail services throughout Britain.

First Group

The First Group is Britain's largest surface transport company, running more than 1 in 5 of all local bus services in the country, and carrying 2.8 million passengers every day. Currently it services both Greater London and Greater Manchester. Its passenger operations include intercity rail (First Great Western, TransPennine Express, Hull Trains) and London commuter rail (First Great Western Link). First operates the Croydon Tramlink network for Transport for London.

Go Ahead

The Go-Ahead Group, which originated in Northeast England, was originally created in the 1980s, shortly after the introduction of transit deregulation in Britain. Its subsidiaries primarily provide transit services in the Northeast and Southeast of England, including Greater London, where it is the largest commuter rail operator, and Tyne and Wear. Over the past decades, Go-Ahead has gradually claimed an increasing share of the transit market in Britain, operating services under several franchises and brand names.

National Express

National Express is the largest scheduled intercity coach service in Britain, serving about 1,000 cities and towns throughout Britain, and featuring coach services to all of the major airports in Britain. In addition, National Express operates both regional rail and local bus services in Britain, most notably the Gatwick Express from Victoria Station in Greater London, and the bulk of transit services in West Midlands (Greater Birmingham): the Midland Mainline and Travel West Midlands.

Stagecoach Group

Stagecoach, which originally began operations in Scotland, has witnessed phenomenal growth over the past decades as it has expanded worldwide. Presently, it is one of the largest transit operators in Britain, featuring a fleet of more than 7,000 vehicles and serving more than 100 cities. It operates both express and local bus services across the country and is the dominant operator in many urban markets. It also runs the country's largest rail franchise (25% of the British passenger rail network).

APPENDIX D: INTERVIEW GUIDE – OPERATORS

Introduction:

This survey is part of a larger study covering public transport integration in major cities of the U.K. The purpose of this exercise is to acquire information on the existing level of integrated services in Greater Manchester, Tyne & Wear, and London, as well as to identify key opportunities and constraints faced by stakeholders in response to government directives to promote ridership through service integration.

You were invited to participate in this study, and have graciously agreed to be interviewed. We have already collected general information on the provision of public transport services in the Metropolitan Areas; however, a more comprehensive examination of key integration issues is not possible without your input. The first part of the interview will cover background information on your company/agency, while the remaining questions will seek your input on the status of integration in the Mets.

In compliance with the directives of the University of California Human Subjects Review Committee, I have sought and received your verbal permission to tape this interview so that I may more thoroughly record your comments. Please answer the questions below to the best of your ability and don't hesitate to ask for clarification. All responses will remain anonymous and statements will not be attributed to a specific company or agency.

1. Please state your name, position and company or agency:

2. Which of the following service modes does your company offer?
   Local Bus ___
   Intercity Rail ___
   Metro/Tram ___
   Authority ___

3. Which of the following areas does your company serve?
   Central City ___
   Suburbs ___
   Rural Area ___

4. Which of the following services are served by your company?
   Commercial ___
   Tendered ___
   Both ___

5. Do you participate in a Quality Partnership (QP)?
   Yes___
   No ___ (Continue to Question 7)
   If yes, where? _____

6a. As far as interoperator integration in QP areas is concerned,
   1. Are routes coordinated? Yes ___ No ___
   2. Are schedules coordinated? Yes ___ No ___

3. Are fares coordinated? Yes ___ No ___
4. Are multi-operator passes available? Yes ___ No ___
5. Are transfers available? Yes ___ No ___
6. Are transfer facilities provided? Yes ___ No ___
7. Is route/schedule information available from one source? Yes ___ No ___

6b. Do you believe that there is room for improvement?
Yes ___
No ___ (Continue to Question 7)
If so, which area/areas of integration need improvement? (Explain)
Fare/Ticket _____
Route/Facility _____
Informational _____

6c. In general, how would you characterize the level of integration in the QP areas?
Excellent ___ Very Good ___ Good ___ Fair___ Poor ___

7a. As far as interoperator integration in non-QP areas is concerned,
1. Are routes coordinated? Yes ___ No ___
2. Are schedules coordinated? Yes ___ No ___
3. Are fares coordinated? Yes ___ No ___
4. Are multi-operator passes available? Yes ___ No ___
5. Are transfers available? Yes ___ No ___
6. Are transfer facilities provided? Yes ___ No ___
7. Is route/schedule information available from one source? Yes ___ No ___

7b. Do you believe that there is room for improvement?
Yes ___
No ___ (Continue to Question 7)
If so, which area/areas of integration need improvement? (Explain)
Fare/Ticket _____
Route/Facility _____
Informational _____

7c. In general, how would you characterize the level of integration in non-QP areas?
Excellent ___ Very Good ___ Good ___ Fair___ Poor ___

8a. Is your company/agency in some way integrated with other agencies/companies?**
Yes ___
No ___ (Continue to Question 9)

8b. If so, explain the integration structure and benefits/problems that have resulted as a consequence of changes in integration policy (e.g., 1998 Transport White Paper).
_____

9. If transfers are permitted, how are revenues divided? _____

10. In your opinion, what are the principal benefits to integration resulting from current policy?
For operators _____
For public transport users _____
For the local area _____

11. In your opinion, what are the principal disbenefits to integration resulting from current policy?
For operators _____
For public transport users _____

For the local area _____

12. In your opinion, what are the most critical issues preventing Greater Manchester/Tyne and Wear from achieving a more integrated system?
    For operators _____
    For public transport users _____
    For the local area _____

13. Is your company/agency willing to work toward increasing the current level of integration?
    Yes___
    No ___
    If so, how? _____
    If not, why not? _____

14. Do you have any additional comments to share concerning public transport integration?
    _____

15. This last section explores informal integration** and the coordination of operators, authorities and other public transport stakeholders. In your opinion, what (if any) role can informal integration play in the coordination of services in the English Metropolitan Areas?

Thank you for participating in our integration study. The survey results will be made available to all interested participants.

** Informal integration defined and specific examples of formal and informal integration provided

APPENDIX E: CASE CITY PROFILES, 2004

	Gtr. Manchester	Tyne and Wear	Gtr. London
Population	2.6 million	1.1 million	7.4 million
Political Divisions	10 Districts	5 Districts	33 Boroughs
Auto Ownership (autos/1,000 residents)	400	336	391
Pop. without auto	33.5%	42.5%	34.8%
Mode Share to Work	Auto: 74% Transit: 11% Walk/Bike: 12% Other: 3%	Auto: 68% Transit: 20% Walk/Bike: 9% Other: 3%	Auto: 42% Transit: 44% Walk/Bike: 11% Other: 3%
Transit Ridership (boardings/year)	263 million	176 million	3,225 million
Transit Mode Share	Bus: 86% Heavy Rail: 7% Light Rail: 7%	Bus: 77% Heavy Rail: 1%* Light Rail: 22% Ferry: 1%*	Bus: 53% Heavy Rail: 16% Light Rail: 2% Metro: 29%
Bus Usage (boardings/person/yr)	79	122	230
Transport Documents	*Greater Manchester LTP* (2001-06)	*Tyne and Wear LTP* (2001-06)	*Mayor's Transport Strategy* (2001-06)
Supporting Documents	Integrate Proj. Repts. Bus Strategy APRs	Towards 2016 Bus Strategy APRs	Travel Info. Plan London Bus Init. APRs
Integration Programs	Integrate Program	Superoutes	London Bus Net.
physical **fare** **informational**	Interchange Network Travel card, others Real time, internet	Superoutes, nodes Transfare, smartcard Real time, signage	Integrated Network Travelcard, Oyster Real time, signage
Regulatory Setting	Deregulated	Deregulated	Regulated
Quality Partnerships	Integrate	Superoutes	Not promoted

*denotes a mode share of less than 1 percent

Sources: DfT 2005, DfT 2004b, Nomis 2004