

**Determining Relationships and Policies that Transit Properties have with Regional Employers to Increase Ridership**

**A Case of the Tren Urbano in San Juan, Puerto Rico**

by

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Submitted to the Department of Urban Studies and Planning  
in Partial Fulfillment of the Requirements for the Degree of  
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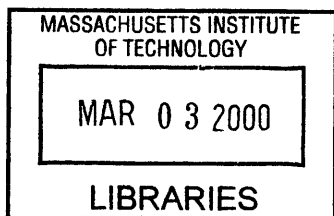
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**ABSTRACT**

Employer-based transportation demand management measures are increasingly seen by transportation planners as one of the potential means to manage the demand for private transport. These measures are essentially a comprehensive package of incentives and disincentives targeted at employees to encourage high occupancy vehicle commute as opposed to single occupancy vehicle travel. This research examines the composition of employer transportation plans and their application with respect to encouraging public transportation ridership.

Drawing on the experiences of employer transportation plans in three cities - St. Louis, Missouri, San Diego, California and the Longwood Medical Area, Boston, Massachusetts, this research argues that there are a number of preconditions which will make an employer transportation plan more likely to succeed in its aim of reducing the number of people who drive alone to work. These include providing strong management support to the program, providing adequate resources to the program – both financial and other, public-private coalition development whereby employers can partner with transit properties to build system ridership by attracting choice riders, an aggressive employee transportation coordinator and providing appropriate incentives and disincentives to employees. Other key considerations are the availability of parking, the cost of parking and access to a high-quality public transportation system.

Finally, this thesis recommends an implementation strategy for establishing employer transportation plans in San Juan, Puerto Rico. In response to the increasing traffic congestion in San Juan, Puerto Rico, a mass transit system, the Tren Urbano, is currently being constructed. There is a need to resort to travel demand management measures in San Juan because of severe traffic congestion. The arrival of Tren Urbano provides many opportunities for employers to partner with regional transportation service providers in building the transit system ridership by implementing employer supported travel demand management measures at the worksite. Taking the examples of two large employers, the Banco Popular and the Centro Medico, in San Juan, this research outlines an execution strategy for employer transportation plans in San Juan.

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## **Chapter 1: Background**

### **1.1 Introduction**

Traffic congestion and the cost of providing mobility are compelling issues to planners, decision makers and members of both the business community and the general public. Planners are therefore, constantly in search of solutions to transportation problems that provide not only increased mobility, but also greater economic productivity and a cleaner environment.

In light of these concerns, recent years have shown increased interest in measures which affect the demand side of the transportation equation. Because the resources to meet the transportation needs through infrastructure expansion are strained, and because travel trends suggest a worsening in the supply/demand balance (FTA and FHA, 1994), it has become necessary to see if increasing the efficiency of travel demand itself can contribute to improve mobility. Travel Demand Management (TDM) describes a wide range of actions that are geared toward improving the efficiency of travel demand.

The term TDM encompasses both alternatives to driving alone and the techniques or supporting strategies that encourage the use of these modes. The application of such TDM alternatives and the implementation of supporting strategies can occur at different levels under the direction of a variety of groups. Certainly, one level of application found in many parts of the country, is at individual employer sites, or at locations where there are many employers grouped together. In this situation, the employers become the important implementers of the TDM actions, even though they may be responding to a government mandate to do so.

Employer transportation plans are increasingly seen by transportation planners as one of the potential means to manage the demand for private transportation (Dunphy and Lin, 1990). Such plans seek to reduce trips by car by providing, through individual employers, a targeted integrated package of incentives and disincentives to influence commuters' choice of mode for travel to and from the workplace.

## 1.2 Employers and TDM

The TDM strategy focuses on employers, both public and private. Employers are viewed as a means of reducing vehicle trips by changing employee-commuting patterns, an approach that does not cost the public a lot of money.

Because they can reach such a large number of drivers and work trips and can provide significant incentives and disincentives, employers are in a unique position to reduce the demand for transportation. Companies that have 100 or more employees account for as much as 57.5 percent of the commuter population in urban and suburban centers such as Los Angeles and Orange County (OCTD, 1985).

Another reason for the popularity of employer focused TDM programs is that employers are a relatively visible target. While many public policies are aimed at changing individuals' behaviors, identifying and communicating to each citizen is difficult. By referring to the employer, public policy makers can more easily access a large percentage of commuting drivers.

There are many reasons for both employers and employees to participate in an employer-based transportation demand management program. As transportation problems increase in many suburban growth centers as well as downtowns, local businesses face employee dissatisfaction, productivity losses due to tardiness and absenteeism, and employee retention and recruitment difficulties. Thus, employers would typically implement TDM in response to a local or state regulation, a critical transportation problem, to reduce costs, to be "good, community citizens", etc. Employees stand to gain in terms of saving time and money.

Various types of TDM measures exist and a number of factors determine the type of management measures that would be implemented. These include firm size, location, employee demographics, organization culture and traditions as well as external funding and other resources. Assuming a non-regulatory environment (such as what exists in

many states), it seems that strong support from the top management (particularly the human resources department) as well public agency/transit property are essential to make an employer transportation plan successful.

### **1.3 Potential for Employer Sponsored Measures to Reduce Employee Trips to Work**

Employer transport plans that are well planned and resourced have been successful in reducing the number of employees driving alone to work at individual workplaces. Examples of successful workplace transport plans include those at CH2M Hill in Bellevue, Washington State (FHWA, 1990); the University of Washington, Seattle and the San Diego Trust and Savings Bank (Memorandum, 1994). The respective percentage point reductions in employees / students driving alone to the respective work / study places were 45 percent, 23 percent and 35 percent (FHWA, 1990).

Another level of application of TDM is on an area-wide basis where government agencies often direct the initiative. In this type of application, the primary focus of the TDM program is to affect as many travelers as possible within an area-wide travel system.

The target of TDM programs are generally work trips made by employees traveling to employment sites within the subject area. In area-wide TDM applications, however, a more diverse group of travelers is traveling to a wide variety of locations at many different times. Not only are the travelers targeted by the TDM program using the roads, but so too are travelers passing through the area and also non-work travelers plus goods/freight movements. Traffic volumes related to these other travelers could increase while the volumes associated with the TDM markets decrease, which at the area-wide scale could mean very little impact on congested transportation facilities. Therefore, at the area or regional level, demand is more elastic and so, if drive-alone trips to certain workplaces are reduced by successful employer transportation plans, other (perhaps non-work) trips may appear on the road network to take their place (Rye, 1999).

Therefore, the effectiveness of employer focused TDM plans is highest at an individual work-site and decreases when it is applied to a local area (such as town/city center, or business park) and on the wider regional level. (A Guidance Manual for Implementing Effective Employer-based Travel Demand Management Programs, 1993).

#### **1.4 Application of Travel Demand Management to Encouraging Public Transportation Ridership – The Case of Tren Urbano**

Employer transportation plans can have many applications depending on the objectives to be achieved. This research will examine the application of employer-supported TDM measures in encouraging public transportation ridership. This is with specific reference to the case of San Juan, Puerto Rico, where a new rail system, the Tren Urbano, is currently under construction and the Puerto Rico Highway and Transportation Authority (PRHTA) is examining techniques to market the new transportation system and build its ridership. Employer-supported TDM strategies can be used as a tool to accomplish this task by providing incentives such as by subsidizing fares, sponsoring new services and making information and tickets easily available, to employees.

A critical requirement for encouraging employees to use public transportation is accessibility to high-quality transit system(s) which can provide a suitable alternative to single-occupancy vehicle commute. The Tren Urbano has been designed such that it goes through some of the densest areas in the San Juan Metropolitan Area with 30 percent of the regional employment located less than a third of a mile from its alignment.

However, transit access to the workplace is not the only factor required to capture employee ridership. Commuters make their travel decisions based on a number of other factors. Some of these include personal income, connectivity of the public transportation system between an employee's residence and workplace, the fare charged, parking cost at the workplace, the level of service offered by the transit system (e.g., frequency of service) and incentives provided by the employer for traveling by particular modes (e.g. many employers provide free or highly subsidized parking to their employees which encourages single-occupancy-vehicle commute).

Where current, good transit service exists to a site (such as in downtown city areas), and the TDM program capitalizes on that opportunity by providing transit incentives to potential users, transit service may play a key role in meeting TDM objectives. However, in those locations where transit currently is not a viable option (e.g., in many suburban locations), providing such service and developing support strategies may not be effective in attracting large numbers of drivers. For suburban locations, it might be necessary to explore other TDM options such as ridesharing and provision of feeder services to the transit system.

### **1.5 Research Objectives and Scope of the Research**

This research will study the constituents of employer transportation plans in cities with specific application for promoting public transportation usage among employees. In particular, the focus will be on the role of rail transit and its contribution towards motivating employers to take up such programs. This, on one hand, aims to encourage employers located in downtown areas and near rail stations to provide incentives for their employees to use transit, while, on the other, it can be used to promote and encourage ridership on transit systems.

While methods to predict the failure or success of such ventures may not be possible, it is possible to determine, based on existing literature and case studies, what should be the composition of employee transport plans and what implementation difficulties/barriers need to be resolved so that these plans are “effective” and have the potential for success. Also, the research will recommend how employer transportation plans can support transit agencies in the San Juan region by encouraging ridership and/or establishing the company as a partner with regional public transportation providers.

Assuming a non-regulatory environment, the main question to be answered through this research is: how can companies design and implement effective TDM programs at their worksite? Specifically, the research will look at the following two factors:

- Actions taken by the transit property or incentives given by the government to employers to undertake employee transportation programs. This analysis will seek to answer the following questions: what public agency support do employers need, how can public agencies be catalysts for successful programs and what areas exist for employer-public agency/transit property cooperation?
- The role of a company in dealing with employee transportation issues. There is an awakening awareness that there is a causal link between the rapidly escalating environmental and social issues and the philosophy of business. The questions, which need to be answered, include why should employers concern themselves with employee transportation, what is corporate social responsibility, how do employers go about being socially responsible and does corporate social responsibility apply to regional transportation issues and what steps need to be taken by the organization to facilitate commuting alternatives for its employees.

Based on selected cases of employers, the research will determine what kind of assistance the top management and the transit property/public agency should provide such that employers are not only influenced to undertake such programs for employee trip reduction, but also, are able to execute it well.

Finally, this research will discuss the need and feasibility for employer programs in San Juan and recommend an implementation strategy for the same.

## **1.6 Application to Tren Urbano, San Juan**

The majority of surface travel in San Juan, as in many cities in the United States, is by automobile. This contributes to problems of congestion. With the implementation of the Tren Urbano Project, there are expected to be significant savings in travel time and congestion reduction for commuters. However, this can only happen if people choose to use the system. Implementation of employer transportation plans in San Juan can provide

an opportunity to build Tren Urbano's ridership by increasing the number of choice riders who currently travel in single-occupancy vehicles to their workplaces.

The PRHTA has the biggest stake in the success of Tren Urbano and therefore it should use the most aggressive, state of the art strategies to persuade its own employees as well as employees of other organizations to use the system. There are many opportunities for the PRHTA or other public agencies to associate with private employers and large institutions to promote the use of the system by attracting choice riders. Some of the identified targets of opportunity in San Juan are the Banco Popular, the Centro Medico and the University of Puerto Rico.

### **1.7 Thesis Description**

This thesis will discuss not only what employee transport plans are and how they operate but will also show the type on support systems which are essential to make such programs competitive and having potential for success. In order to gain a better understanding of what employee transport plans are and how they operate, the second chapter will discuss various facets of employee transport plans and some of the factors that have motivated the private sector to assume more responsibility for transportation problems including the concept of corporate social responsibility.

For the purpose of this study, three case studies were chosen. The first two case studies, St. Louis, Missouri and San Diego, California were chosen to approximate the issues that will confront San Juan soon after Tren Urbano's opening day. Each city has new rail systems that have recently begun operations. The study aims to find out the status of employer sponsored transportation programs in these cities as well as determine what factors have led to the programs being effective or ineffective with respect to what they set out to achieve. The third case study, the Longwood Medical Area in Boston, Massachusetts is an example of a much older system and helps determine the implications of travel demand management programs with time. The third chapter discusses the research design and methodology, specifically outlining as to why each case



study was chosen, methodology and logistics of the primary and secondary surveys and how the interviews were conducted.

Chapter Four discusses the findings of the primary surveys for each of the case studies. Chapter Five derives the implications and conclusions from the case study analysis.

Chapter Six provides a background to Tren Urbano and the city of San Juan, Puerto Rico and the opportunities for establishing employer-based transportation management programs in San Juan in context of the overhaul of the overall transportation system in San Juan, with the arrival of the Tren Urbano. Conclusions and recommendations for establishing employer – based travel programs in San Juan are also discussed in Chapter Six along with recommendations for future research.

## **Chapter 2: Literature Review**

The literature review for this study draws resources from two bodies of literature: transportation literature and management literature. In order to gain a better understanding of what employee transport plans are and how they operate, this chapter discusses various facets of employee transport plans – their composition, rationale for implementing them and analysis of travel demand management strategies. The second part of this review looks at some of the factors that have motivated the private sector to assume more responsibility for transportation problems including the concept of corporate social responsibility.

### **2.1 The Transportation Problem – Commuting and Congestion**

The increase in congestion on the country's roads over the past two decades is well known and well documented (WSDOT, 1992). Until recently, transportation supply simply increased to accommodate increased demand. In recent years, however, the expense of highway construction has increased dramatically, concern over environmental impacts has risen and resistance to further building has stiffened. The result is that it is no longer possible to build out of rising demand, and concerns about energy consumption, air quality and congestion levels make even current transportation levels unacceptable.

Thus, in recent years, policies, which aim at managing transportation demand rather than increasing supply, have arisen to deal with rising transportation demand. One such policy is transportation demand management (TDM). TDM seeks to maintain urban mobility and safety by reducing and shifting the demands on the transportation system in the face of limitations on system growth and capacities (Dunphy & Lin, 1991).

### **2.2 History of Travel Demand Management Efforts**

The history of TDM efforts extends farther than most people realize. For example, Reader's Digest magazine established an employee commute assistance program in the late 1920s after it moved its headquarters from New York City to suburban Westchester

County. To attract employees, the company began providing commuter bus services to its headquarters and subsidized the price of a fare at twenty cents. The program was so successful that the company maintained the subsidized fare at that price for more than 50 years (Dunphy & Lin, 1991).

The Second World War supplied the catalyst for the first nationwide TDM effort, an attempt by the federal government to reduce civilian demand for gasoline. For more than a year, the government Petroleum Administration for War tried to reduce gasoline consumption by one-third through voluntary reduction measures. These efforts failed, and by 1942 the U.S. government had imposed mandatory gasoline rationing (Dunphy & Lin, 1991).

Although many government agencies began their own voluntary rideshare programs, the Department of War issued regulations in 1942 that required all government-contracted manufacturers to start rideshare programs. These companies are required to survey employee travel patterns, to submit a plan to encourage carpooling, encourage employee use of public transit and to designate an employee to oversee these efforts (Roark, 1981).

Throughout the war years, many public and private agencies actively promoted conservation and ridesharing efforts. These included the American Legion, the Automobile Clubs, and a wide variety of local women's clubs and auxiliaries. A number of employers began offering material incentives for trip reductions such as extra gasoline coupons, tire allocations, and preferential carpool parking. Other organizations created free rideshare matching services (Roark, 1981).

When the war ended, such efforts generally faded. However, some companies continued and even expanded their voluntary efforts over the decades following the war. For example, the Connecticut General Insurance Company began a successful commuter assistance program in 1957 when it began offering bus services to its Hartford headquarters. At the 25 year mark of its program, Connecticut General reported that only 56 percent of employees drove alone to work, while 25 percent rode in carpools, 11

percent rode in vanpools, and 8 percent rode public transit to work each day (Dunphy & Lin, 1991).

The energy crisis of 1973-1974 and 1979-1980, which were accompanied by their severe gas shortages and skyrocketing prices, once again focused the nation's attention on ridesharing and public transit. In January 1974, Congress passed the Emergency Energy Conservation Act, which authorized the use of government funds for rideshare demonstration projects. With a 10 percent local match arrangement, the Act funded 106 demonstration projects in 34 states and 96 urban areas. The act also allowed the designation of existing highway lanes for exclusive use of buses and carpool vehicles, along with accompanying traffic control devices and the construction of publicly owned parking facilities for the use of carpools and public transit riders. The Federal Energy Act of 1974 offered tax breaks for the purchase of energy-conserving investments, including vans for ridesharing.

By 1983, a survey of Fortune 500 corporations revealed that 235 firms had active ridesharing or transit assistance programs (Dunphy & Lin, 1991). Three quarters of the firms said that the reasons for their programs had been the impact of the two gasoline shortages. Administrators of such programs cited the following obstacles to creating and maintaining the programs: employee apathy, administrative difficulties, obtaining top management support, a lack of sufficient information, difficulties in obtaining insurance, objections from mass transit carriers, and union issues. At the same time, a full 20 percent of the firms reported that they saw no need for such programs.

Despite these firm perceptions, the reality is that trip demand has grown exponentially. Between 1969 and 1983, the US population grew 16 percent. During the same period licensed drivers increased 43 percent; the number of registered vehicles increased 55 percent; and the number of annual vehicle miles traveled increased a full 77 percent (Poulenez-Donovan, 1994). Thus, with roadway capacity limited, traffic congestion has increased significantly.

### 2.3 Costs of Congestion to Employees and Employers

Much of the increased roadway demand is related to the daily work commutes. The increasing roadway demand is accompanied by a number of hidden prices. The costs of commuting in traffic congestion to employers and employees are summarized in Table 2.1. The difficulties employees experience in adapting to commuting congestion is only one. It takes its toll on productivity because by the time employees finally arrive at work, they experience stress due to their commutes.

Stokols (1978) measured the degree of stress that employees experience from commuting and found that longer home-to-work commutes, that are “high in impedance” (meaning that the length of the commutes are caused by traffic congestion and characteristics of the trip), are significantly correlated with heightened physiological arousal, as measured by blood pressure, and with the number of days hospitalized for various illnesses.

Related studies by a number of environmental psychologists and social ecologists (Glass and Singer, 1972; Sherrod, Hage, Halpern and Moore, 1972) have shown that stress caused by factors such as noise and congestion is carried over into on-the-job performance. Thus, employers bear the hidden costs of their employees’ stressful commute situations. These costs include tardiness to work when employees are stuck in traffic and time lost during work-day business trips.

**Table 2.1: Impact of Traffic Congestion on Employers and Employees**

Employer Costs	Employee Costs
Employee tardiness to work	Decrease in work productivity
Time loss during work-day business trips	Health disorders due to stressful commutes
Phenomena of "Missing Applicants"	
Impediment to Employer's growth plans	

Source: Glass and Singer, 1972; Sherrod, Hage, Halpern and Moore, 1972; SCTD, 1989; Stokols, 1978

The ultimate loss results from employees who leave their jobs to find employment closer to home. A related phenomenon is that of the “missing applicants”, i.e., the cost to a company of qualified applicants who do not even apply for a position because of their perception that the commute would be unduly difficult (Stokols, 1978). Silicon Valley companies experienced the phenomenon in the 1980s. In a highly competitive atmosphere, firms regularly competed to provide better employee incentives to recruit and retain employees. As the cost of living and commuting escalated, many firms opted to relocate to new areas so they could offer low-stress commutes to their current and future employees (SCAG, 1994).

In the past ten years, the expansion of the suburbs as regional employment hubs has caught the attention of the transportation world (Orski, 1985). A typical pattern is that an overcrowded urban core makes resettlement in undeveloped suburbs attractive, or an overcrowded suburban area makes resettlement in rural areas attractive. The subsequent development in the suburban and rural areas leads to problem in short order. Suburbs generally lack expansive transit service, and their roadways are usually constructed to handle a much lower traffic volume.

Traffic problems in and of themselves have become expensive impediments to many employers land use and growth plans, as well as for cities. They are also at the center of many of the growth management acts approved by cities, counties, and states.

## **2.4 Origins of Employer Transport Plans**

Employer transport plans grew out of attempts in the US in the 1970s to encourage car-pooling as a way of reducing petrol consumption in the face of the oil crisis (Rye, 1995). During the 1980s the concept was expanded to include a wider range of measures to reduce employee commute trips. The pressure to do this came from two sources. First, in certain growth industries in certain areas of the US, employers found that there they had to offer help with commuting – beyond the standard free parking space at work – in order to recruit and retain employees. This was the case in the aerospace industry in southern

California, for example (Rye, 1995). Secondly, in high-growth areas local governments came under considerable pressure from residents to limit the (traffic) impacts of new developments, and councils and developers looked to employee transport plans as a way to mitigate these impacts so that development could proceed. This scenario occurred in northern California, Connecticut and in the Washington DC area (FHWA, 1990). It is important to note that the original impetus for employee transport plans in these cases was not the desire to reduce congestion or air pollution, but the need to facilitate employee recruitment and business development respectively.

In 1987, however, southern California's Air Quality Management District (AQMD) adopted Regulation XV (later rule 1501) of its Air Quality Management Plan (AQMP). This required employers with more than 100 employees in the area to draw up and implement employee transport plans to reduce the number of commuters who drove to work alone. The regulation was part of a package of measures aimed directly at controlling the severe air pollution problems in southern California. It was the first large-scale attempt to require existing employers to implement employee transport plans to influence employee travel behavior (Rye, 1995).

The target adopted for most employers was that each motor vehicle arriving at the work place should have 1.5 occupants on average, although cyclists, walkers and public transport users were counted in the total from which the average was derived. Employers would have to pay fines if they did not make some attempt to implement the plan, but not if they failed to reach the target. A preliminary study by Orski (1993) found that drive-alone commuting to those sites covered by Rule 1501 fell by 8.4 percent from 1989 to 1991.

Regulation XV is still part of the AQMP for the area. However, it was heavily criticized for placing an undue burden on employers in a time of recession. Evaluation found that each commuter vehicle trip removed from the road cost employers \$11.00 on average (Ernst and Young, 1992). Political pressure forced a change (adopted on April 15<sup>th</sup> 1995 and came into effect from July 1995) such that employers must no longer have employee

transport plans if they choose other alternatives instead. In particular, companies with 100-199 employees can now buy their way out by paying \$110 per employee per year into a special fund for research and other initiatives relating to low emission vehicles (South Coast AQMD, 1995). Nonetheless, employee transport plans remain important in the US because the 1991 federal Clean Air Amendment Act requires other areas with very poor air quality to implement regulations similar to Rule 1501.

Besides the United States, experiments to establish employer transportation plans have also been carried out in the United Kingdom (UK) and the Netherlands. In the UK there has been sporadic interest in elements of employee transport plans – in the main organized car-sharing and minibus-pooling. Early experiments inspired mainly by American experience included minibus pooling in Ilford and car-sharing in Yorkshire. In the Netherlands, as part of the 2<sup>nd</sup> National Transport Structure plan, employee transport plans were put into effect at eight large employment sites including Rotterdam Europort and Schiphol Airport, with varying degrees of success. However, in neither case have employee transportation plans reached the stage of a fully functioning program for employees (Rye, 1995).

## **2.5 Approaches to Initiating Employer Transportation Plans**

Employers can implement travel demand management measures at the worksite due to any of the following: mandatory requirements, voluntary considerations or fiscal inducements. Mandatory implementation of the TDM at a worksite is usually required of local trip reduction ordinances (TRO or Commute Trip Reduction (CTR) Plans which specify the requirements and the employers to be targeted.

Specific CTR regulations vary from jurisdiction to jurisdiction. Affected employers are usually targeted by size: either the number of employees, number of trips generated, or some other such measure. For example, the Washington State CTR has initially defined 100+ employee companies as the minimum size to be affected, although the regulations may require firms with fewer employees to be required to participate, if necessary to reach a jurisdiction's necessary CTR goals (WSDOT, 1992).



Most CTR regulations require affected firms to create a CTR plan that outlines exactly how they will meet their goals. Moreover, firms are required to designate an employee transportation coordinator (ETC). ETCs, are frequently, existing employees who are given added responsibility for implementing and monitoring the company's TDM/CTR plan. Most jurisdictions include mandatory training for the ETCs, as well as regular and periodic reporting of the firm's SOV rates.

Should firms fail to reach their required SOV trip reduction goals, further action may be taken. While the Southern California Air Quality Management District can levy fines of \$25,000 per day for failure, it does not usually charge any penalties or fines as long as the firms are making a good effort (South Coast AQMD, 1995). Such an effort is typically demonstrated by having a written CTR plan, a trained ETC, and evidence that the plan is being implemented in some fashion.

Employers also support TDM because of voluntary and fiscal reasons. Voluntary considerations include solving a site-specific problem, personnel concerns, corporate social responsibility, etc. Employers can also be provided with fiscal incentives i.e., tax incentives such as those specified in the Transit/Vanpool Benefit Program in the Transportation Equity Act for the 21<sup>st</sup> Century, 1998 (refer Appendix A), to establish TDM plans at their employment sites. The advantages and disadvantages of the three approaches are summarized in Table 2.1.

## **2.6 Employer Transport Plans and TDM Strategies**

What alternatives can be offered to commuters to keep them from driving during the peak of the rush hour and yet offer flexibility, convenience and a reasonable cost? The three primary options and several variations are described next. These alternatives work well for some commuters, but not for the others. Their cost may seem reasonable in some areas but not during others. Finally, they may be effective during certain hours of the day, during certain seasons of the year (summer, for example), or even during major events, but not during others.

**Table 2.2: Regulatory and Other Approaches to Encourage Employers to adopt Employer Transportation Plans**

Approaches	Advantages	Disadvantages
<b>Voluntary</b>	<ul style="list-style-type: none"> <li>- Those who take part are motivated</li> <li>- No need to regulate</li> <li>- No cost to public purse</li> <li>- Beneficial for employers - improves image and can help to solve site-specific problems, e.g., parking and congestion</li> </ul>	<ul style="list-style-type: none"> <li>- Low take up in most areas</li> <li>- Consequently low overall effectiveness</li> <li>- No consistent modal split targets</li> <li>- Few economies of scale in providing services (rideshare matching, public transport) to groups of employers</li> </ul>
<b>Regulatory</b>	<ul style="list-style-type: none"> <li>- Affects all employers in an area who meet all pre-determined criteria</li> <li>- Consistent modal split targets</li> <li>- Can cover large areas</li> <li>- Economies of scale in providing services to groups of employers</li> </ul>	<ul style="list-style-type: none"> <li>- Administrative Costs</li> <li>- Perceived burden on and thus resentment from some employers</li> <li>- Difficulty in regulating large number of employers</li> <li>- Problem of how / whether to regulate small employers</li> </ul>
<b>Fiscal</b>	<ul style="list-style-type: none"> <li>- Can act as incentive to employers to implement employer transportation plans</li> <li>- Can affect individual employee as well as employers (e.g. tax status of different staff travel perks)</li> <li>- Potentially tradeable</li> <li>- Can bolt onto existing tax system rather than requiring entirely new administrative system</li> <li>- Covers all sizes of employers</li> </ul>	<ul style="list-style-type: none"> <li>- May increase overall tax burden</li> <li>- Employers may seek ways to avoid payment</li> <li>- May cause resentment among employers</li> <li>- No consistent modal split targets</li> </ul>

Source: Rye, 1999

Developing effective alternatives to the automobile and successfully managing them requires a thorough understanding of which options to promote and where and when to promote them. One important reason for people driving to work alone is that, in many cases, they are paid to do so. Many employers subsidize the cost of parking so that drivers often park free in suburban workplaces and even downtown. Despite these subsidies, alternative modes of travel offer advantages for some commuters. These advantages are discussed below.

Employer-based Transportation Demand Management (TDM) efforts attempt to change employee behavior to reduce the number of vehicles used for trip-making at certain

locations or time periods, and sometimes to reduce the need for making those trips (Glazer, 1993). TDM efforts most often utilize strategies such as (Glazer, 1993):

- Vehicle-Trip Reduction (parking management, subsidies, ridesharing, guaranteed ride home services, non-motorized facilities);
- Person-Trip Reduction (telecommuting, compressed work weeks);
- Time-Shifting (flex-time)

Vehicle trip reduction can be accomplished by means of informational, incentive, and disincentive strategies. To reduce the number of person-trips employees make, another set of strategies is used. Time-shifting strategies focus on the narrowest goals of TDM/CTR programs. Because a typical program goal is to reduce the number of solo drivers on the road during peak commute hours, changing employees' schedules so that they commute during non-peak hours also meets the goal. However, time-shifting methods do not decrease the number of work trips, or the attending pollution. They may even increase congestion in the long term by spreading out peak congestion periods (Zupan, 1993). Table 2.2 gives a summary of the various TDM strategies and their examples.

### ***2.6.1 Ridesharing***

Carpooling is one of the most ubiquitous ridesharing strategies (Zupan, 1993). Merging two or more single occupancy vehicles (SOVs) into one high occupancy vehicle (HOV) reduces the total number of vehicles on the road and by extension, reduces both congestion and air pollution. Carpools are usually limited to four by the carrying capacity of the average vehicle. Organizations can help increase HOV occupancy rates by providing a multi-passenger van (vanpooling) at a reduced rate to employees either directly or through an outside agency (CTR, 1992).

Ridesharing is most effective when employees have fixed work schedules and relatively long commutes. Researchers have reported employee commute trip reductions from 5 to

**Table 2.3: Travel Demand Management Strategies**

<b>TDM Strategies</b>	<b>Attributes</b>	<b>Examples</b>
<b>Vehicle Trip Reduction</b>		
<u>Informational Strategies</u>	Provide employees with requisite information for them to plan and organize SOV alternatives for their work commutes.	Variety of information services such as creating newspapers for rideshare matching, brochures for public transportation information
<u>Incentive Strategies</u>	Incentives provided by employer to induce employees not to commute in a single-occupant vehicle	<ul style="list-style-type: none"> <li>- Travel Allowances - ridesharing or public transportation use</li> <li>- Ridesharing Subsidies- Carpools and Vanpools</li> <li>- Preferential Parking for Ridesharers</li> <li>- Guaranteed Ride Home Programs for ridesharers</li> <li>- Transit Pass Subsidies</li> <li>- Support for Non-Vehicular Commuting such as walking and bicycling</li> <li>- Parking Cashouts</li> </ul>
<u>Disincentive Strategies</u>	Methods to dissuade employees from SOV commute by making SOV commute difficult or costly or both	<ul style="list-style-type: none"> <li>- Parking Pricing</li> <li>- Restrict Parking Supply</li> </ul>
<b>Person Trip Reduction</b>	Eliminate person trips by making employees work at home or work fewer days per week.	<ul style="list-style-type: none"> <li>- Telecommuting</li> <li>- Compressed Work Week</li> </ul>
<b>Shifting Trips</b>	Changing employees' work schedules so that they commute during non-peak hours	<ul style="list-style-type: none"> <li>- Flexible Work Timings</li> </ul>

Source: Glazer, 1993

15 percent under these conditions (Ewing 1992). To help make this task easier, many organizations implement or utilize a ridematch service. Ridematching is a system to help employees find potential carpool and vanpool partners by matching them with neighbors who have similar commute destinations and times.

However, monetary savings from ridesharing come at the expense of flexibility. In particular, employees have difficulty with employment hour changes or “last minute” assignments. Therefore, ridesharing programs are typically accompanied by other incentives such as guaranteed ride home (GRH) programs. GRH programs are provided by employers to ensure that employees, who choose not to drive alone to work, will have a way to get home if they miss their ride, work late, or have to deal with an illness in their family. Taxis, company cars, and auto rentals may be used to provide this ride home.

### ***2.6.2 Transit Subsidies and Transportation Allowances***

Many types of transportation subsidies are available. Such subsidies provide transit and/or ridesharers, as well as non-motorized commuters, with a financial incentive by paying for all or a portion of the employees’ non-SOV expenses. Such subsidies may be direct or indirect. A transportation allowance is a fixed amount given to employees each month to defray their commuting expenses (FTA, 1994). The employees choose how to spend the allowances. Those who use low-cost alternatives such as carpooling, vanpooling, riding transit, bicycling, or walking, can pocket the savings. This is known to be a popular alternative because they reward those who choose to participate, rather than punish those who do not (Ulberg, 1993).

### ***2.6.3 Parking Management***

One option available to employers is to limit the number of parking spaces available to employees. This action encourages mode shifts because employees have difficulties in trying to find a parking spot. Evidence suggests that this is one of the most effective strategies in reducing drive-alone commuters (Zupan 1993, Roach 1990). Another option is to charge for parking. Again, research shows this strategy to be very effective, as the

economic impact produced by parking fees is often significant enough to induce mode-shifts (Zupan 1993, Pickrell 1990). Providing discounted or free parking for carpools and vanpools, or providing them preferential parking, is yet another parking management tool available. However, both these parking management strategies are controversial.

The provision of free, readily available or substantially subsidized parking at the work place is a norm rather than the exception, especially in suburban employment centers. Current laws support this phenomenon by allowing employers to write off the costs of employee parking as a business tax deduction and by allowing employees to treat the free parking as a tax-free benefit (Pickrell 1990). This mind set contributes to the difficulties of implementing parking management strategies because employees view readily available (and free) parking as a “right”.

The difficulties of implementing parking management strategies should not deter employers from giving it serious consideration as part of an overall TDM program. Literature shows that by providing free parking to their employees, employers provide a strong incentive to drive alone. A study, conducted by Willson, Shoup and Wachs (1989) concluded the following:

- Employer-paid parking is worth more to most commuters than an offer of free gasoline. When parking subsidies are eliminated or replaced with a commute allowance, the economic effect spurs most kind of employees (not just low paid workers) to seek alternatives to solo driving. When greater numbers of commuters are seeking rideshare matches, it is much easier to create a carpool.
- Well-developed transit facilities provide an attractive option for commuters who face market-parking prices. However, they are not a prerequisite to successfully decreasing solo driving through parking subsidy reductions. Strong examples of the effect of reducing parking subsidies are found in suburban locations that have poor transit service. There, solo drivers usually form carpools when parking subsidies are reduced. In central business districts and other locations with high levels of transit service, solo drivers usually switch to transit.

- Employers who reduce parking subsidies do not prevent those who must drive alone from doing so. The higher parking cost reflects the greater external costs of a solo driver trip, e.g., traffic congestion and air pollution. It provides a market mechanism in which efficient commute mode decisions can be made.
- If employers wish to reduce parking subsidies, they must carefully implement that strategy. Firms and organizations that have successfully reduced subsidies have also made alternative modes more attractive through financial subsidies to transit and ridesharing, staff and program support, and upper management commitment. As more employers consider reducing parking subsidies, their efforts should be coordinated with parking requirements in zoning ordinances so that reduced parking demand is balanced with parking supply.

Other studies are consistent with these findings. Mehranian, Wachs, Shoup, and Platkin's (1987) report discussed the differences among mode choices in office buildings with and without employer subsidized parking. They concluded that parking strongly affects mode choice.

Thus, employers should strongly consider parking management strategies in their TDM program package. However, employers need to be cautious in the way they implement this type of strategy, particularly with respect to providing reasonable alternatives, to improve the likelihood of employee acceptance.

#### **2.6.4 *Non-Motor Modes***

Other incentives are available, for those who reject power-vehicles entirely. These usually take the form of facilities such as secured bicycle lockers, showers, and clothing lockers (CTS, 1990). Combined with transportation allowances, these options provide the walker or bike rider with the highest financial gain for not driving alone.

### **2.6.5 FlexTime**

The utilization of flextime introduces some problems for the employer as well. First, flextime schedules require careful coordination within an organization to ensure that all basic functions are covered and to minimize the inherent inefficiencies of not having everyone in the office at the same time. Second, the utilization of this strategy may actually hamper other TDM efforts, as early or late arrival or departure times are not usually consistent with transit and rideshare options. Thus, employers should carefully review flextime options for utilization in employer-based TDM programs.

## **2.7 Behavioral Change Strategies**

Several types of behavioral change strategies are identified and their relative strengths and weaknesses are examined. The three types of behavioral change strategies are:

- informational / educational;
- incentive / motivational; and
- disincentive / controlling;

Each strategy type involves different assumptions about what will and will not effect behavioral change. Table 2.3 summarizes the major characteristics of the three types of strategies.

## **2.8 Application of the Behavioral Strategies to Travel Behavior Changes**

Given the increasing pollution and congestion in cities and suburbs, policy makers have been struggling to find effective strategies that will change people's commuting habits. In this study of the transportation mode choices of employees at a variety of work settings, a number of factors associated with an organization's ability to successfully change employee mode choice behavior will be assessed.

It is clear that for any given individual, environmental factors lay a crucial role in framing the behavioral change options. For example, the use of public transit to get to work is dependent on the existence of a suitable public transit service to select. An employer's



**Table 2.4: Types of Behavioral Change Strategies**

<b>Behavioral Change Strategies</b>	<b>Key Attributes</b>	<b>Critical Factors</b>	<b>Issues</b>	<b>Transportation Examples</b>
<b>Informational / Educational Strategies</b>	Based on the premise that "good" ideas naturally lead people to change their behaviors	How well, how widely and how quickly information is disseminated to the target audience.	Direct and personal acquisition of information has a more powerful impact on behavioral change than external, passive reception of information	Brochures for public transportation information, rideshare matching, promotional materials for marketing TDM
<b>Incentive / Motivational Strategies</b>	Based on ideas of operant conditioning - offer specific rewards to individuals to bring about desired changes. People viewed as economic rationalists making behavioral choices on the basis of monetary costs and expenses	Proper reward in the proper amount will change behaviors	Reliance on external, physical incentives does not lead to durable behavioral changes  External incentives lose their effectiveness over time and frequently must be increased just to maintain a given level of behavior	Ridesharing Subsidies- Carpools and Vanpools, Transit Subsidies, Preferential Parking, Parking Cashouts, Guaranteed Ride Home Programs
<b>Disincentive / Controlling Strategies</b>	Based on increasing the costs to individuals for undesired behaviors to drive them toward the desired behaviors. At the same time, strategies reduce the choices available to "force" the desired changes	Negative feedback/costs approach with forceful control of available behavioral choices	Loss of choices can provoke negative reactions  People are inventive at sabotaging such policies and creatively non-complying	Parking Pricing and Restricting Parking Supply

Source: Fazio and Zanna, 1981

requirement that an employee be highly mobile over a wide geographic location during work hours (e.g., able to visit customers or other work sites) dictates that the employee has a car during the day. If no organizational vehicle is available, then one from home must be used.

## **2.9 Employer Rationale for Implementing Employee Transport Plans**

There are various reasons why employers implement TDM measures. A TDM program can support numerous employer goals. The primary goals of most area-wide TDM programs are to relieve congestion, improve air quality, and/or reduce energy consumption. While these also can be goals of employer-based programs, reasons for implementing a TDM program likely are more specific, probably one or more of the following (A Guidance Manual for Implementing Effective Employer-based Travel Demand Management Programs, 1993).

### ***2.9.1 Respond To Regulation***

Many of the employers (and developers) now implementing TDM programs are doing so to comply with a state or local regulation requiring them to reduce trips to their worksites. Such requirements are currently in place in parts of California, Arizona, Washington, Pennsylvania, New Jersey, Connecticut, Maryland, New York, Texas, Illinois, and other states (Rye, 1999).

The specific requirements and names for the programs -- Employee Trip Reduction, Employee Commute Options, Commute Trip Reduction, etc. vary by location, but the program concepts are the same. Employers, generally above a certain size, develop and implement TDM strategies to reduce the number (or percent) of employees who drive alone to the work location. Some regulations also apply to developers and building managers of commercial and residential real estate projects. In these cases, incentives are provided to encourage tenants' use of alternative modes (Ferguson, 1990).

If a company is subject to a state or local regulation, it is necessary to clearly understand the details of the requirements. Some regulations specify strategies a company must include in its TDM plan, a target trip reduction (or other measure of success) it must achieve, and other conditions it must meet.

### ***2.9.2 Solve A Site-Specific Transportation Problem***

Although compliance with regulation is the most frequently cited reason for developing a TDM program, it is by no means the only reason. Many employers nationwide have used TDM as a way to solve a transportation-related problem at their site. For example, perhaps a company's workforce is rapidly growing and there is a shortage of parking spaces. Employers could lease additional parking spaces off-site or perhaps on-site. Alternatively, they could offer carpool and transit incentives to reduce the demand for parking. Or, maybe they are relocating to a site far from the dominant residential areas of your employees. They could initiate a vanpool or buspool service to ease employees' commute to the new site. As another example, perhaps employee tardiness has increased because the company's worksite is located in a highly congested area, with unpredictable travel times. The company might institute work hours changes that allow employees to arrive earlier or later than the peak travel periods.

### ***2.9.3 Expand Employee Benefits Package***

Some employers, such as San Diego Trust & Savings Bank, are turning to TDM programs as an enhancement to the employee benefits package. Benefits packages, which in the past often included only holidays, vacations, and insurance coverage, increasingly are being expanded to include tuition assistance, child care and elder care programs, health club memberships, and other components. Commuter incentives generally can be easily added to the package. Transportation allowances, which are given to all employees to pay for whatever commuting mode the employee chooses, are especially appropriate for a benefits package because they apply equally to all employees. Companies that subsidize employee parking might consider offering incentives to

employees who use alternative modes as a way of equalizing the benefits offered to employees who drive alone and those who do not.

#### ***2.9.4 Reduce Employer Costs***

Finally, some employers are implementing TDM strategies because it saves them money. “Successful” programs, such as those implemented at US West in Bellevue, WA, can reduce so many trips that the company might be able to reduce the number of parking spaces it leases or use parking lots it owns for other purposes. For example, a company that is expanding its facilities might be able to build an additional structure on a now unused parking lot. Alternatively, the company could lease excess parking to a neighboring company. The company also might find its TDM program reduces costs by reducing employee tardiness and raising employee productivity, because employees arrive at work refreshed, rather than stressed from difficult commutes.

#### ***2.9.5 Personnel Concerns***

Measures such as vanpooling, carpooling, shuttles, etc. add stability and certainty to commuting to work and, as experience has shown so far, a high safety factor on the road. Once formed and operating on the road, the self-perpetuating nature of these measures makes them particularly suitable for employees who wish to maintain low absentee and tardiness records. Such measures also improve intra-organizational communications and employee camaraderie; since they are organized by residential location, not hierarchical position.

#### ***2.9.6 Corporate Social Responsibilities***

Another advantage for employers who implement travel demand management programs is the fulfillment of corporate social responsibilities. Since the late sixties, business managers have been asking, “What is corporate social responsibility and how do you go about being socially responsible?” The next section, derived wholly from management

literature, discusses the ideas and concepts of corporate social responsibility and corporate social policy and its application to transportation demand management.

## 2.10 Corporate Social Policy

Although there is no consensus on the meaning of the phrase “corporate social policy”, one definition refers to the

“attitudes and actions of managers of business organizations to meet social, as distinct from purely economic, demands and/or expectation’s of the company’s constituents, pressure groups, and governments” (Steiner and Steiner, 1978).

Such policies reflect the major decisions made by the top level of management in an organization to be implemented by other organizational members. Several analyses have suggested that management of large business organizations in the society has moved from ownership orientations to more of a trusteeship orientation where there is concern for a wider range of claimant groups related to the firm (Buono and Nichols, 1985). This variability, and the ambiguities inherent in the situation, has given rise to two opposed perspectives – the stockholder and stakeholder models of corporate activity (Refer Table 2.5).

**Table 2.5: Stockholder and Stakeholder Models of Corporate Performance**

<b>Stockholder Model of Corporate Performance</b>	<b>Stakeholder Model of Corporate Performance</b>
Dominant throughout American history	An emergent perspective
Corporation considered to be a private group of individuals who hold stock.	Each organization has a set of stakeholders which include a wide variety of publics not traditionally related to the corporation’s immediate self-interest.
Corporation has freedom to arrange its own affairs as long as it doesn’t violate fundamental social norms.	Regards corporations as servants of larger society.
Corporation is liable only to its stockholders who decide to invest money in their company.	Profit viewed in broader terms with greater consideration for other groups in the firm’s environment.
Relations between individual corporations and the groups affected by their operation are best structured as marketplace transactions.	Profit pursued within the basic objectives of public policy such as a pollution free environment.

Source: Buono and Nichols, 1985

Overall, the concept of corporate social policy implies that business organizations do have a social responsibility to their stakeholders, and this responsibility is sufficiently important to warrant integration into the firm's broader strategic considerations. An important coming of age of management has been the adoption of a stakeholder view of corporate operations (Buono and Nichols, 1985).

“The idea of social responsibility supposes that the corporation has not only legal and economic obligations, but also certain responsibilities to society which extend beyond those obligations” (McGuire, 1963).

Over the course of some three decades the concept of corporate social responsibility was explored in considerable depth and detail. In the process, some of the basic themes, which seem to consistently emerge from this calling for social responsibility, are reflected in moral attitudes and obligations:

- An emphasis on executive conscience leading to a set of implied standards for behavior;
- The costs (or foregone profits) of such behaviors to serve social priorities; and
- The difference between voluntary and discretionary actions and those that are mandated.

Thus, the essential ingredients of this “new concept” of social responsibility include voluntarism as opposed to coercion, the indirect linkage of certain other voluntary organizations to the corporation, and the admission that costs are involved for which it may not be possible to gauge any direct measurable economic return (Buono and Nichols, 1985). Given this orientation, some of the most critical tradeoffs facing management today are between the demands of different constituencies, who have a stake in some aspect of the organization's performance (Post, 1978).

Much of the research on organizational response to social concerns indicates that corporations are increasingly attempting to incorporate the notion of social responsiveness into their organizational structures in a more formalized manner. At the same time, however, it is important to emphasize that many organizations still attempt to manipulate their environment (Post, 1978). Thus, although some management scholars

argue that “social” policy is being increasingly viewed as part of the corporate policy-making process, others take a more skeptical, sometimes even cynical view of the true commitment and orientation of these policies.

## **2.11 Implications of Corporate Social Policy on Travel Demand Management**

TDM should be noted for its pioneering role as a social change agent. Organizations constantly face the necessity of implementing public policies, many of which are aimed at individual behaviors (Woodworth, 1992). However, such behaviors have traditionally been limited to behaviors that occur-on-the-job. TDM is different because commuting is a behavior that takes place outside of the work environment, off the work premises, and “off the clock” (during non-work hours). Thus, TDM programs are forging a new way for government to alter private behavior by using employers, rather than direct regulation, as the agents of change.

As discussed, some experts argue that social responsibility means including more than direct, short-term profitability in a firm’s decision-making matrix. For example, in implementing a vanpooling program, the management of a company has to recognize that the company would have to absorb the initial costs of the vans and the continuing costs of operating the program. Perhaps they decide to adopt the program because they think that over the years the program would yield higher productivity, which would result in higher profits. Or, perhaps they adopt the program because of concerns regarding energy shortage, urban pollution and traffic congestion. Whatever the reason, it is based on more than mere short-term gain.

Other experts have argued that social responsibility is more results-oriented than motive-oriented, and if the result of a firm’s decision enhances its business environment, then the firm is socially responsible.

Regardless of their motives or improved profits, firms implementing travel demand management measures are making substantial contributions toward reducing the energy, pollution, and congestion problems in their business environments.

The point to be made here is that TDM measures fulfill either definition of social responsibility. If we accept the premises that the 1990s have been a period of ever declining availability of resources, and that business will continue to be a target for members of the public who are frustrated by the problems which result, then TDM becomes a very palatable and advantageous program for firms which wish to be recognized as more socially responsible.

## **2.12 Implementation Barriers**

Employer transportation plans may include many elements, and it is important to recognize that, while some of these may be acceptable to all employees, there are some measures that require major changes in organizational culture and/or reallocation of resources – changes, which for many employers would rule out their implementation. Although the earlier discussions of social responsibility suggested that such acts should be voluntarily undertaken, empirical investigations have indicated that both the timing and level of commitment are directly related to the intensity of external pressures and concerns. Thus, the question is not only if business will respond, but also how and when and with what level of commitment (Buono and Nichols, 1985).

The implementation stage focuses on the initiation and execution of social policies and programs at the strategic and operating levels of an organization. Obstacles, such as, often hamper organizational efforts are (Collins and Ganotis, 1973):

- Resistance to undertake actions to which members are not accustomed;
- Perceived violation of managerial autonomy which many managers have come to regard as a right; and
- Potential negative impact of the firm's financial performance, which may threaten an individual manager's immediate bonus and "track record".

Employer transportation programs are a relatively new and untested concept. By their nature, they require organizations to devote resources and in some cases change working



practices for a relatively altruistic goal – that of reducing pollution and congestion in the wider environment. Since, for most organizations, this goal is not their concern, then the implementation of such programs will almost inevitably encounter resistance from those in the organization who see it as unnecessary and/or threat to their own personal situation.

Another barrier to the implementation of employer transportation programs are the resources that are required to fund, in particular, monetary incentives and public transport subsidies.

“It is clear that implementation of employer sponsored transportation programs can be costly – evaluation of the southern California regulation found that each commuter vehicle trip removed from the road cost employers \$11.00 on average, while the employer transport plan at the Dutch Ministry of Transport in The Hague cost about 200 pounds per employee per year, which was spent mainly on public transport subsidies” (Rye 1999).

Many employers may be unwilling to commit this level of resources to a program which is unrelated to their goals. To learn about the state of employer transportation plans, three case studies were chosen. The next chapter reviews the research design and methodology describing the case studies and the survey methods.

## **Chapter 3: Research Design and Methodology**

Many factors affect employees' decisions regarding their commute modes. These factors are complex and interrelated which makes isolating and evaluating the specific impacts of different incentives on each difficult. For the purpose of this study, an employer or an individual work site has been chosen to be the unit of analysis.

The focus of this research is to understand how voluntary employer transport plans operate, how can they help boost public transportation ridership and what factors contribute to their being "effective" or "successful". This is to be evaluated in the context of how such programs can be initiated in cities with new rail systems, specifically with reference to the case of San Juan in Puerto Rico where the Tren Urbano is currently being constructed.

### **3.1 Case Study Selection**

This work utilizes a research methodology that combines the use of literature review and case study analysis to determine conclusions and recommendations regarding establishing employer transportation plans in San Juan, and more generally in other cities. It is impossible to find an exact parallel of San Juan in the United States for the case study analysis. Therefore, case studies chosen for this research have been selected based on certain attributes, which are similar to San Juan. Three case studies were selected for this research. Two of the case studies are St. Louis, Missouri and San Diego, California. Both these cities have certain attributes similar to San Juan, which make them a worthwhile study.

Both these cities have had new rail systems implemented and have introduced employer transportation programs as a means to manage travel demand and improve air quality. St. Louis implemented a light rail system, MetroLink, in 1993 and established a transportation management association in 1996. San Diego also had a new light rail system, the Trolley system implemented in 1982 and has been encouraging establishment of employer programs to provide employees with alternative means of commuting. The

experiences of both these cities with these programs would be helpful in developing a start-up strategy for San Juan.

While the above two case studies provide enough literature regarding how employer transport plans are operating and what factors influence their effectiveness, they do not indicate what benefits can be accrued through these programs in the long run when they are managed effectively. This is primarily because both the case studies have implemented such programs fairly recently, and therefore long-term impacts of these programs cannot be measured. Therefore, a third case study of the Longwood Medical Area in Boston, Massachusetts was chosen to see the impacts of these programs over a period of time. Another reason for choosing the Longwood Medical Area as a case study is that it is analogous to the Centro Medico complex in San Juan. They are both large medical complexes with a number of hospitals, medical schools and other health related facilities.

Thus the key elements of this research methodology are:

- Selection of three case studies – St. Louis, San Diego and Longwood Medical Area in Boston
- Quantitative and qualitative data gathered with a comprehensive survey questionnaire administered to the employee transportation coordinator (ETC) in each organization/company over a phone interview.
- Qualitative data gathered through interviews in San Juan.

The quantitative information gathered from the survey forms the basis for statistical analyses. Supportive qualitative information gathered through preparation of the case study and the ETC interviews helped validate and explain the quantitative information gathered from the written surveys. The thesis does not identify and evaluate absolute cause and effect relationships because of the limitations of the selected research design. However, it helps gain valuable information regarding factors which are responsible for making employer transportation plans “successful”.

## 3.2 Data Collection Methods

Two primary methods of data gathering were used for this research:

- A written questionnaire administered to the employee transportation coordinators in each company interviewed for case study analysis
- Structured interviews with key personnel in San Juan including members of the Puerto Rico Highway and Transportation Authority (PRHTA), Siemens, the Tren Urbano office, Banco Popular, the Centro Medico and the University of Puerto Rico.

Each of these methods is discussed below in more detail.

### 3.2.1 *Written Questionnaire*

The data for case study analysis was collected through administration of an employer transportation questionnaire. Six employers each were chosen in the cities of St. Louis and San Diego. In St. Louis, all the selected employers are members of the Citizens for Modern Transit transportation management association (TMA) for downtown St. Louis. In San Diego, there are no TMA's in existence currently. Thus the employers selected are members of the ridematching agency, RideLink in San Diego. Besides these, an additional non-participating organization was interviewed in each city as well. In Boston, four member institutions of the Longwood Medical Area were selected.

Each of the selected employers had designated an employee as an employee transportation coordinator (ETC) to administer the program at their respective worksites. The written questionnaire was faxed to the ETCs in each organization so that they could take a look at it before hand. Then, a phone interview was conducted to fill up the questionnaire. This not only provided filled up questionnaires but also certain additional information which might not have been possible to obtain if the respondents were required simply to fill up the questionnaire and send them back.

The purpose of the questionnaire was to gain access to the respondents' impressions, insights, and level of understanding of the following:

- The travel demand management (TDM) program's history, components, goals and objectives,
- The TDM program's effectiveness,
- Management support for the TDM Program,
- External / Public Agency Support for the Program,
- Rationale for the Organization's TDM program, and
- Organizational Communication regarding the TDM program

The results of these interviews were meant to provide a good picture of how TDM programs were initiated, operated and managed in companies and also provide information regarding their composition and how information regarding the TDM program was distributed throughout the organization. In addition, the interviews provided an opportunity for respondents to articulate, in their own words, their feelings about the organization's culture, both as it related to the TDM program and in general. A copy of the employer questionnaire is contained in Appendix B.

### ***3.2.2 Data Collection in San Juan***

Structured interviews were carried out with relevant personnel in the Tren Urbano Office, the PRHTA and Siemens to find out about:

- The relationship and process which employers and institutions would like to have with the transit agency.
- Feasibility of formation of transportation management associations.
- The type of incentives, financial or other, which employers would require to initiate TDM programs at their worksite.

Personnel at individual large institutions such as the Banco Popular and the Centro Medico were also interviewed to discuss the above stated issues as well as obtain data regarding:

- Statistical information on the number of employees in various organizations and their mode choice in commuting to work.

- Employee characteristics e.g., income levels, automobile ownership.
- Geographical distribution of employee residences.
- Cost of parking space provision to employers.

However, not all the above data could be obtained from the employers. For example, the Centro Medico, a conglomerate of a large number of hospitals, was unable to provide information regarding the spatial location of employee residences as each hospital has its own administration and the central office, ASEM, did not have records for the whole complex.

### **3.3 Limitations of the Research**

This thesis attempts to explain how employer transportation plans can be designed and introduced in cities such that they have a potential for “success”. Unfortunately, there are no simple ways to define program “success”. A large number of variables affect the success or effectiveness of the employer transportation programs. Many of these are exogenous to an individual employer, such as access to high-quality public transportation system, and therefore cannot be addressed by merely implementing a transportation program at the worksite. Thus, questions developed to capture the essence of a program’s success, no matter how well thought out, are subject to numerous interpretations. This ambiguity affects the ability to definitely determine cause-effect relationships.

Many of the participants in the study would likely be aware of regional efforts to reduce the number of single occupant commute vehicles. Thus, study participants might be compelled to give answers to questions, both in interviews and on written questionnaires, that were “politically correct” while not actually reflecting their viewpoints. Similarly, respondents might be motivated to provide information about their organization’s culture as it “should be”, rather than as it really was.

To address these concerns, the questionnaire was structured in a way that would give multiple chances for responses in order to maximize chances for honest responses.

### **3.4 Data Analysis Approach**

The next chapter discusses the findings of the case study questionnaire analysis. Data was analyzed city wise (results are reported in aggregate for the employers interviewed in each city) in case of St. Louis and San Diego to see what specific issues or perceptions emerged from the employers interviewed. In case of Boston, since most of the institutions had similar responses (since the TDM programs in the LMA area are managed by Commute Works sponsored by MASCO), therefore, a synthesis of main issues and findings has been presented.

The conclusions and implications of the case study findings provide a general understanding of issues with establishment of employer transportation plans in cities with high-quality public transportation systems. A background analysis of San Juan helps understand the local issues and the concluding chapter provides recommendations for setting up employer transportation plans in San Juan.

## **Chapter 4: Survey Results: St. Louis and San Diego**

Primary surveys were conducted in the cities of St. Louis and San Diego to learn about the process of implementing employer transportation plans in these cities. Six employers were interviewed in each city to review specific strategies pursued at individual worksites to urge employees to use public transportation and other high occupancy modes of travel. The survey findings illustrate the state of TDM programs at work places in St. Louis and San Diego with specific reference to the public transportation systems in the two cities and support from transit and other public agencies.

### **4.1 Public Transportation Access**

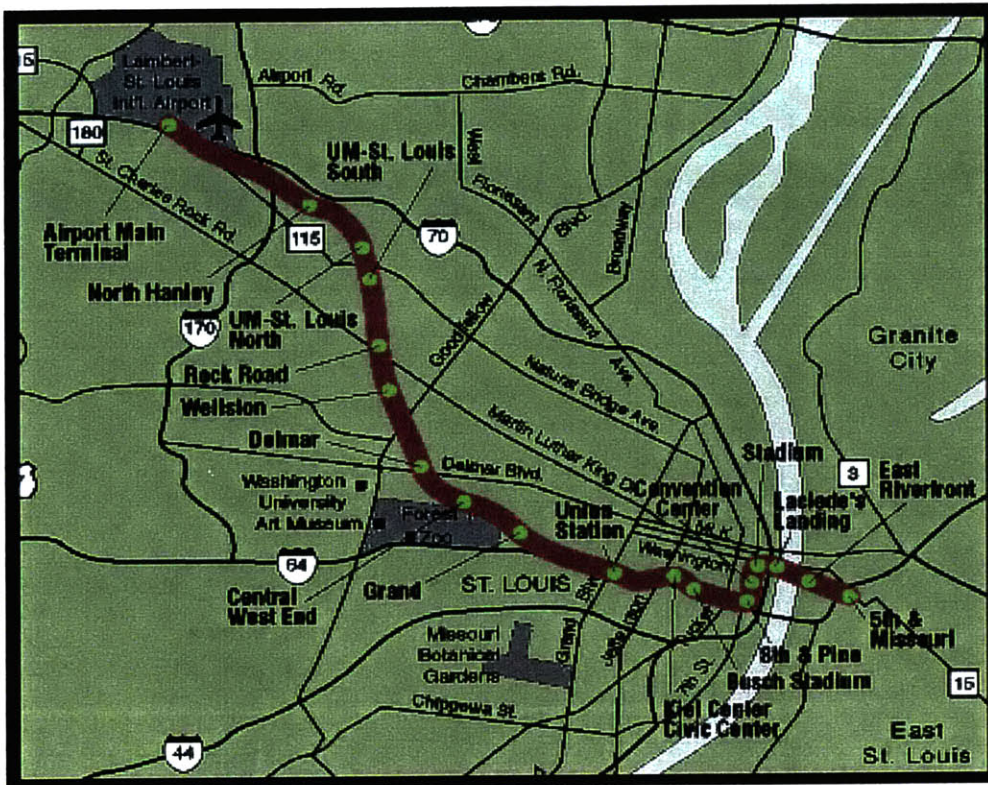
#### *St. Louis*

The Bi-State Development Agency owns and operates transportation services in the metropolitan St. Louis area, serving a population of 2.4 million in both Missouri and Illinois. MetroLink, the 17 mile light rail service, was opened in 1993 and will be nearly doubled in length with an eastward expansion due to open in 2001. See Figure 4.1. The system currently consists of a single line with 18 stations serving the airport, residential areas, major downtown attractions (convention centers, sports, stadiums) and downtown workplaces. MetroLink runs scheduled headways of 12 to 7.5 minutes.

Current rail ridership is approximately 41,000 per day. By comparison bus ridership is about 134,000 per day. The Bi-State Agency operates over 600 buses in six counties in Missouri and Illinois. The call-a-ride service provides transportation for St. Louis metropolitan area residents who are elderly or disabled. Under this scheme, approximately 1300 trips are operated per day. Bi-State has extension plans beyond the eastern extension due in 2001 that include additional western lines, commuter rail and a multi-modal terminal in downtown St. Louis.



Figure 4.1: Map of MetroLink



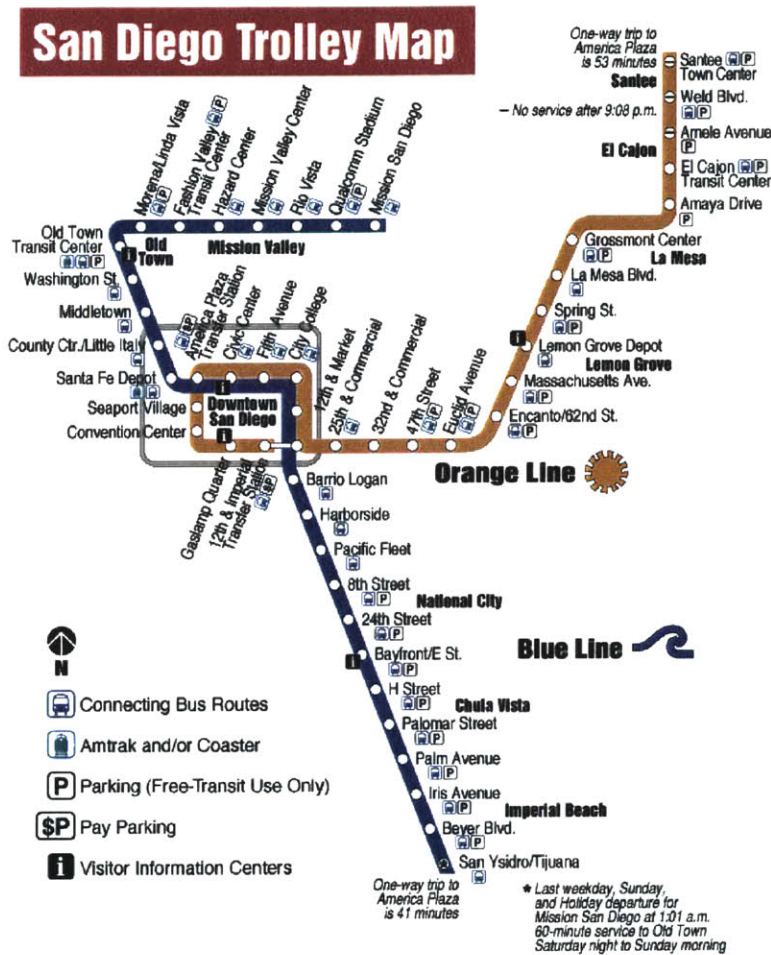
Source: Official St. Louis Regional Transit web site

### San Diego

Transit in San Diego County is organized under two public agencies. The larger of these, the Metropolitan Transit Development Board (MTDB) is a federation of 20 different bus, light rail, and dial-a-ride operators. Chula Vista Transit, National City Transit, San Diego County Transit, San Diego Transit, and San Diego Trolley (light rail system) provide transit services in the metropolitan San Diego area. Together, these organizations make up the Metropolitan Transit System (MTS). The largest operator, San Diego Transit, serves 28 routes with 281 buses. The second largest operator is San Diego Trolley Incorporated. See Figure 4.2. Besides the fixed route operations, dial-a-ride systems provide public door-to-door local services in four suburban cities. North County Transit District (NCTD) is responsible for transit in the area north of San Diego. The County operates rural services. A coordinated effort between these operators allows riders to use the same monthly passes on a variety of routes, transfer from one line to another, get

information from a central telephone center, and travel around San Diego easily. (Official San Diego Association of Governments web site.

Figure 4.2: Map of San Diego Trolley



An objective of this research is to determine how employer supported transportation measures can promote public transportation ridership especially rail transit systems ridership with specific reference to the case of San Juan in Puerto Rico. Thus, employment access to public transportation and the level of service offered is significant because to a great extent it determines the type of travel demand

management measures implemented at work-sites.

#### 4.2 Collaborating Organizations – Public Agencies, Transit Properties, TMAs.

Employers often need inducements such as incentives and financial resources to implement TDM programs at work places. Moreover, they need to be provided with information on what strategies are available and how they can be implemented. TDM programs, therefore, need to be integrated among transit providers, local agencies, and the private sector. Transit properties and local agencies including metropolitan planning organizations and TMAs can collaborate with employers to achieve the goals of travel

demand management such as air pollution control and improved mobility. Support from external agencies can constitute tangible benefits such as financial incentives and transit subsidies or even guidance regarding which measures to implement.

In an effort to encourage implementation of TDM measures in congested or poor air quality regions, some states, including California, New Jersey, Florida and Pennsylvania, provide funds through TMA Grant Programs. The existence of funds has definitely influenced the actions of groups interested in forming TMAs. The same is demonstrated by the case studies.

*St. Louis: Citizens for Modern Transit*

Citizens For Modern Transit, or CMT, is a transit advocacy group whose purpose is to work towards building communities and improving the quality of life in the St. Louis region through alternative methods of transportation. It is a private, non-profit transportation advocacy organization that was formed in 1985 with the expressed purpose of supporting the development of the St. Louis MetroLink. CMT is partially funded by a downtown business association. Additional funding comes from members in kind and foundation sources. CMT has been vital to MetroLink's success and continues to support improvements in transportation planning and Bi-State's transportation services.

The Citizens for Modern Transit TMA was formed in March 1996 to work with businesses in the Downtown and Clayton central business districts in St. Louis. Currently the TMA works with twenty employers and more than twenty-five thousand employees in the St. Louis area. With clean air as the ultimate goal, the TMA assists in setting up corporate transportation programs, promotional events, and educational materials. The TMA's goal is to shift commuters from driving alone to alternative commute choices including MetroLink, bus, carpool/vanpool, bicycle, walk and telecommute.

*San Diego: San Diego Association of Governments (SANDAG) and Ridelink*

The San Diego region does not have a transportation management association ever since the air quality mandate on the employers was removed. The eighteen cities and county

government in the San Diego region comprise San Diego Association of Governments (SANDAG), which is the metropolitan planning organization (MPO) for San Diego serving as the forum for regional decision-making. SANDAG's monthly Board meetings provide the public forum and decision point for significant regional issues such as growth, transportation, environmental management, housing, open space, air quality, energy, fiscal management, economic development, and criminal justice.

The agency also operates several programs related to travel including the San Diego Commute. RideLink sponsors the San Diego Commute. RideLink offers a number of free services to help employers set up in-house commute programs such as rideshare matching, carpooling, vanpooling, guaranteed ride home program and a Commuter's Club. RideLink also provides companies with marketing materials that include brochures, pamphlets, employee surveys and technical help in tailoring the right program according to the company's needs and interests.

### **4.3 Regulatory Issues**

#### **St. Louis: Air Quality Program**

St. Louis established an air quality program in the summer of 1996. St. Louis has been consistently in non-attainment of specified federal ozone standards. KMOV-TV, in partnership with the Bi-State Development Agency and the American Lung Association, has developed the "Green, Yellow, Red" forecast for air quality. The Air Quality Card can be purchased for a dollar and provides for free rides on the Metrolink and bus system on Red and Orange days as declared by the American Lung Association and the Bi-State Development Agency (Official CMT web site).

#### **San Diego: Trip Reduction Mandate**

Until 1995, the region's large employers (those with more than 100 employees) were subject to local regulations. These included the City of San Diego Transportation Demand Management Ordinance and the Traffic Abatement Program (Regulation VIII) of the Air Pollution Control District. The City ordinance required a two percent improvement in employee drive-alone rate (EDAR) per year. If the goal was not met, the

employer would have to submit a TDM plan. Employers were also required to designate an Employee Transportation Coordinator, and to conduct employee surveys every twelve months. Employers outside the city limits of San Diego were subject to Regulation VIII and were required to survey every 18 months.

In 1995, the local regulations were rescinded. This was due to a combination of the EPA reclassifying San Diego from a severe to a serious ozone non-attainment area, and also extensive lobbying by the private sector to remove the regulations.

TDM has become even more difficult now that the regulations are no longer in place. In general, the only companies interested in transportation programs are the ones that have some sort of problem (i.e. parking). According to a 2,000 person telephone survey that the San Diego Association of Governments (SANDAG) just finished of San Diego residents, only 11 percent of employers here offer TDM incentives (SANDAG Survey, 1999).

#### **4.4 Survey Questionnaire Analysis**

As part of the primary survey, six employers in St. Louis and San Diego each were interviewed. The survey questionnaire is contained in Appendix B. In St. Louis, three of the six employers are government organizations (federal, state and local), two employers are private companies while one employer is a not-for-profit organization. See Appendix C. All the six employers surveyed in San Diego are private companies. Refer Appendix D. Besides these twelve organizations, an additional company in both St. Louis and San Diego, currently not implementing any TDM program, was surveyed.

#### **4.5 Factors Governing Types of Measures Implemented by Employers**

The type of measures a firm implements is governed by a number of factors. Some of the key determinants of this are (Rye 1999):

#### ***4.5.1 Firm Location***

Location will affect which measures are selected by an organization for its employer transportation plan. If the employer is located in an area on the edge of town where there is little or no public transport service and where journey to work distances are lengthy, there is likely to be little emphasis placed on encouraging use of public transport, cycling and walking, and more on car-sharing, van-pooling and working from home.

##### *St. Louis*

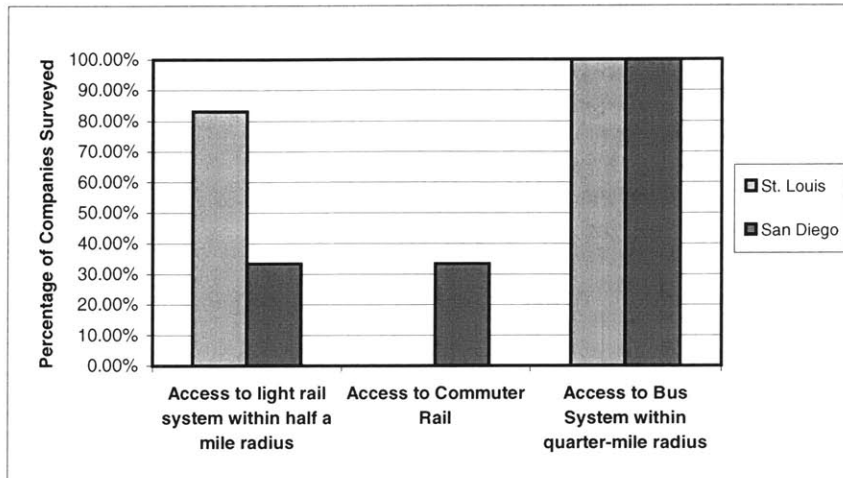
Five out of six respondents are located in downtown St. Louis. The employers were specifically selected in the downtown region of the city, which has adequate public transportation system access, to study the integration of transit schemes in the employer programs. All the companies / organizations located in downtown St. Louis have access to bus stops and transit stations near their office sites. Proximity to the transit stops varies from a block away to less than half a mile for most of the respondents.

##### *San Diego*

In San Diego, there is wide variability in the location of the surveyed companies as shown in Figure 4.3. Since San Diego doesn't have a transportation management association, there is no specific area in the city region where majority of the employers surveyed are located. All the employers' contacted use some of the services provided by Ridelink, the ridematching agency, in San Diego and thus, contacting information for most of the companies studied was obtained from Ridelink.

Because of the variability in the location of the companies only two of the six companies are located in downtown San Diego and thus, have access to a Trolley station (San Diego's Light Rail System). Two other companies (33.3 percent) are located near a Coaster train station (San Diego's commuter train system to Oceanside). The Coaster system provides shuttle services to its employees and residents within a certain distance of its stations. The remaining sample does not have access to any rail transit system. However, all the companies surveyed have a bus stop near their worksite.

**Figure 4.3: Location of Surveyed Companies with respect to Access to Transportation Systems**



Source: Primary Survey

#### 4.5.2 Firm Size

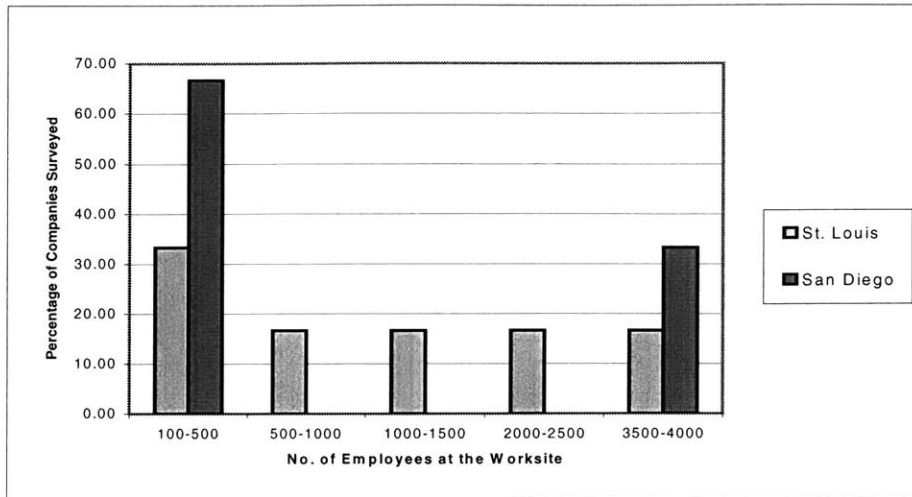
Firm size will, to an extent, dictate the level of resources that can be made available to fund an employer transportation plan. It is unlikely that a small-to-medium-sized employer would be able to justify employing on its own a member of staff full-time to work on the implementation and monitoring of an employer transportation plan. In comparison, a government transport department or airport will be able to bring considerable resources to bear to ensure the success of its employer transportation plan. Measures that require high levels of spending and intervention are therefore more likely to be the preserve of larger employers.

##### St. Louis

In the survey conducted, the number of employees in different companies varied from 250 to 2324 employees as shown in Figure 4.4. While it is true that larger employers are capable of providing greater resources, it was observed in the survey that smaller companies were more proactive. While big companies can afford to (and often do) subsidize employee parking and own/lease large parking lots, smaller employers need to manage within the resources they have. Typically such employers find it difficult to lease

additional parking land for their expanding firms in the downtown city region and thus resort to various parking management strategies to reduce demand for parking.

**Figure 4.4: Classification of Surveyed Organization According to Firm Size as Measured by the Number of Employees**



Source: Primary Survey

*San Diego*

In the survey conducted, the number of employees in different companies varied from 150 to 3600 employees. Four companies have a firm size between 150 to 400 employees. The remaining two companies have an employee size of 3500 and 3600 respectively. Thus, all the companies can be classified as big employers (50 employees and above).

**4.5.3 Organization Work Rules**

Organizational culture and traditions will have an effect on the employer’s propensity to implement those measures which require changes in working practices such as compressed working week, and working from home. Provision of flexible work hours has several implications. While it exhibits corporate concern for an employee’s quality of life and makes it easier for employees to meet family and work needs, it has a negative impact on ridesharing and, sometimes, other transit programs. Vanpooling and carpooling often require employees to follow fixed schedules and staggered working hours do just



the opposite. Thus, there are few takers for ridesharing programs in most of the companies surveyed (Rye, 1999).

### St. Louis

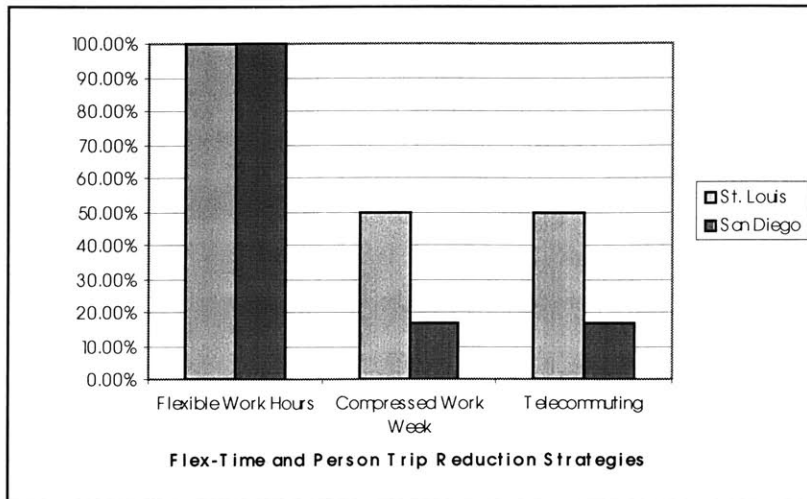
All the organizations surveyed support flexible work hours. Typically, working staggered hours is a departmental policy, i.e., each department in the organization makes its own decisions, rather than a company wide policy. 50 percent of the respondents indicated that provision for compressed work weeks and telecommuting was allowed in their companies. However, the opportunities for both the above programs were very limited in each of the organizations and were usually based on departmental decisions. Moreover, none of the employee transportation coordinators were aware of any telecenters existing in St. Louis for telecommuting purposes.

### San Diego

Similar to St. Louis, all the surveyed companies support flexible work hours. See Figure 4.5. While in most companies this feature is fairly old (two-ten years), in one of the companies it has begun as early as April 1999. In companies where flexible work hours have been in operation for a number of years, employees have staggered their work schedules making it difficult to implement ridesharing programs such as carpooling or vanpooling.

Only one company (16.7 percent) supports compressed workweek and telecommuting. This company operates seven days a week, twenty four hours a day and the telecommuting and compressed work week program programs, which were started in 1989, are used by individual groups of employees in some departments, e.g., production. Currently, there are no telecenters in the City of San Diego. Thus, similar to St. Louis, opportunities for working compressed weeks as well as telecommuting are quite limited in San Diego currently.

**Figure 4.5: Companies Implementing Flex-Time and Person Trip Reduction TDM Strategies**



Source: Primary Survey

#### **4.5.4 Socio-economic status of the workforce**

Socio-economic status of the workforce will also affect take-up of the employer transportation plans. Having a high proportion of the workforce in blue collar occupations has been found to be strongly correlated with a propensity to car-share and use public transport (CTS 1992); this is largely the effect of income on the ability to afford to drive alone, although it is also related to status and (in the case of southern California) to longer commute distances for lower income employees. Hence at a workplace with a high proportion of white-collar staff, there are considerably many more obstacles to high levels of participation in an employer transportation plan (Rye, 1999). In addition, financial incentives are unlikely to be as effective and there will be a need to use a range of more ‘qualitative’ incentives to affect choice of mode for trips to work.

The primary survey was conducted in large organizations and employer work sites where most of the employees are in white-collar jobs. Thus, the task of selling TDM to employees at these work places is complicated as most of the employees are simply not interested (phone interview, Employee Transportation Coordinators in St. Louis and San Diego).

#### ***4.5.5 Spatial Location of Employee Residences***

The distance an employee commutes everyday, especially the location of an employee's residence with respect to his / her office, is a key determinant of employee participation in transportation programs. For those who live and work along transit routes, transit use can be very convenient and provides a strong incentive. However, the greater the journey to work commutes, the less will be the incentive for the employee to resort to a higher occupancy mode of travel.

The 1995 National Transportation Planning Survey states that the mean journey to work distance in the United States is 11.2 miles. Based on this value, the respondents were asked to give a rough approximate of commute distances for majority of the employees in their respective organizations. The respondents were asked to choose from three categories: less than seven miles, between 7 to 14 miles and greater than 14 miles.

##### ***St. Louis***

The survey shows that none of the interviewed companies had conducted any demographic studies regarding employee residences. 2 of 6 respondents (33.3 percent) expressed inability to provide the required information. Two employers guessed that majority of their employees were traveling between 7-14 miles while the remaining two stated that most of their employees commuted a distance of more than 14 miles everyday. Since no demographic studies have been conducted by any of the employee transportation coordinator in the case of the St. Louis survey, it may not be correct to base results on mere speculations.

##### ***San Diego***

In contrast to St. Louis, where there were no demographic studies conducted regarding spatial distribution of employee residences, in San Diego, most of the ETC's have done some surveys or studies to determine an approximate distance the majority of their employees commute. Three respondents said that majority of their employees traveled 7-14 employees for their journey to work commute while the remaining three stated that

half of their employees traveled 7-14 miles while the other half traveled greater than 14 miles to reach their worksite.

#### **4.6 Program Awareness**

##### St. Louis

All the respondents were aware of the employer supported transportation programs and were participating in the same as members of the Citizens for Modern Transit Transportation Management Association.

##### San Diego

All the respondents were aware of employee supported transportation programs. Since there is no transportation management association in San Diego currently, all the employers are supporting employee transportation programs individually on a voluntary basis. The City of San Diego had a mandate for employee trip reduction from 1985-1995. 50 percent of the companies interviewed have retained their programs after the mandate was lifted while 50 percent of the companies have new programs i.e., they started their programs after 1995.

#### **4.7 Program Implementers – Employee Transportation Coordinators (ETCs)**

ETCs are usually regular employees in an organization who are handed the additional job of administering employer-based TDM programs. The survey results indicate that in both case studies, most of the ETCs spend less than ten hours per week on their employee transportation coordinator job.

##### St. Louis

In all the cases, an employee transportation coordinator (ETC) had been designated in each company or organization with whom the TMA maintained contacts and who was in charge of formulating and implementing the program at the worksite. In all the organizations, planning of employer transportation programs is an additional (second) job for the ETCs. The survey indicates that ETCs belong to several departments - from Administration to Human Resources to Executive to Planning. Their positions in the

departments vary from the supervisory to the secretarial level. It is interesting to note that none of the ETCs belong to middle or upper management in the organizations. There is no clear reason as to how this “additional job” was handed to them. Some of them became interested in the program since they themselves commute using public transportation and thus voluntarily decided to accept the responsibility of administering the program in the worksite. Others were handed over the job because they dealt with parking and still others because they were in the human resource division.

The fact that in all the cases the conducting of the transportation program is an additional job for the ETC is significant because it determines the commitment in terms of time and effort which the employee may be able to devote to the program. Clearly, the main priority of the ETCs in most situations would be to deal with their primary job duties first. Thus, in such circumstances it may not be possible to develop an efficient program at the worksite. However, the telephone interviews also indicate that some of the ETCs had become very interested in the program themselves and were sincerely trying to market the program at the worksite as well.

Five out of six respondents stated that they had to report their work regarding employee transportation to their immediate superior. In two of these cases it was the executive head of the organization while the other three positions varied from Assistant Director, Employees to Board Secretary to Head of the Department, Human Resources. This is significant because reporting higher up in the organization means that the top management is aware and supporting the program.

### San Diego

As in the case of St. Louis, each company had an employee transportation coordinator (ETC) to administer the program. For all ETCs, administering these programs, is an additional job. The ETCs belong to different departments in their companies such as Executive, Facilities and Human Resources. The primary jobs of some of the ETCs interviewed include administrative / executive assistant, employee services coordinator, human resources supervisors, etc. In four of six cases, the ETCs report to their

department heads while two ETCs (33.3 percent) stated that they reported directly to the CEO of their respective companies.

#### **4.8 Travel Demand Management Measures Supported or Financed by the Company**

##### ***4.8.1 Ridesharing***

The respondents were asked to choose all the TDM measures that were supported or financed by their companies or organizations.

##### ***St. Louis***

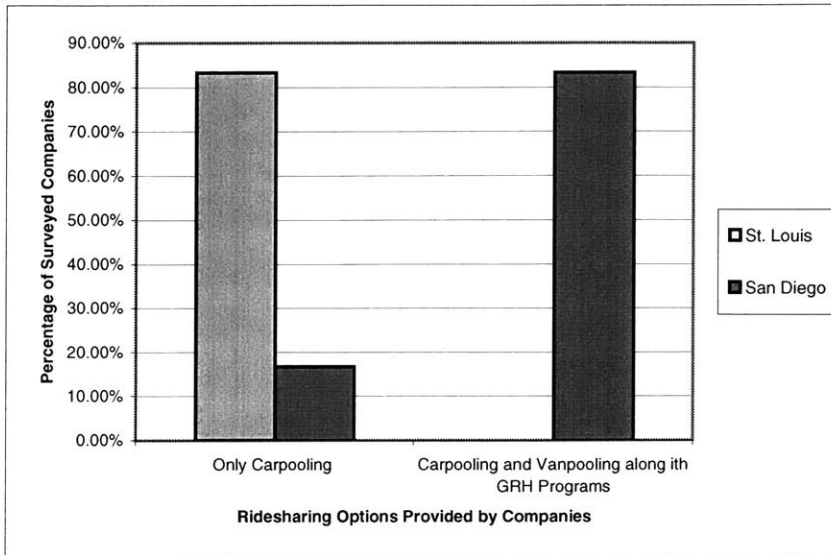
As shown in Figure 4.6, five of six respondents encourage and support ridesharing and carpool/vanpool matching programs offered by the Ridefinders, a ridematching agency located in St. Louis. Individually or as members of the CMT TMA, the employees in these companies can sign up for any carpool or vanpool-matching program and Ridefinders, which has the database of employee addresses, tries to match them up. All promotional materials regarding carpool / vanpool matching are provided by the TMA or Ridefinders to the Employee Transportation Coordinator in each organization, who forwards it to the employees. Thus these measures do not require any financing from the company and none of the surveyed companies is providing financial incentives for employees to encourage them to use these services.

Carpooling is easier to organize than vanpooling and almost all the ridesharers in the surveyed organizations are carpoolers. However, the percentage of ridesharers of the total employees varies from 0 percent to 1.3 percent across the surveyed organizations. In absolute numbers, the maximum number of ridesharers was found to be 30 employees of 2324 employees in an organization.

As discussed, a prime reason for such low takers for ridesharing is different work schedules. Due to the flexible work hour policy followed in all the surveyed organizations, ridesharing is difficult to coordinate. Moreover, these programs are often not adequately marketed in the companies and thus many employees are unaware of their

existence. The date of initiation of these programs varies from October 1996 to as recent as September 1999. Four out of five respondents who are encouraging ridesharing have started the program in the past one year. Thus, the program is quite new and that may be another reason for less employee participation currently.

**Figure 4.6: Ridesharing Options Provided by Surveyed Companies**



Source: Primary Survey

Preferential parking is often provided as an additional incentive for carpoolers or vanpoolers. However, in all the reviewed organizations, the ETCs claimed that the number of ridesharers was so insignificant as did not warrant preferential parking.

### San Diego

All the surveyed companies support ridesharing. Five of six companies (83 percent of the sample) support both carpooling and vanpooling along with the associated guaranteed ride home services.

There are a number of ways in which ridematching service is provided in San Diego. Ridelink offers one such service whereby it tries to find matches for employees interested in carpools or vanpools through its database. There are no charges for ridematching. For regular users of the Coaster, the Coaster system also provides a ridematching service for

employees to travel from and to their stations to their destinations. Three companies have developed their own company databases for ridematching.

Also, four of the six surveyed companies (66.7 percent) are providing their employees with a subsidy or financial incentive for ridesharing. The amount of the incentive or subsidy varies across the companies from \$60 in vanpool subsidy to \$25 per month as a financial incentive for ridesharing (carpool or vanpool) for each employee. In another company, the company pays for all the gasoline for vanpools while each employee participating in the vanpool program pays \$25 per month.

Vanpooling programs are more widely provided in San Diego as compared to St. Louis. See Table 4.1. In addition to the \$65 per month tax free incentive (see Appendix A), the San Diego Association of Governments (SANDAG) provides \$300 per month to each employer implementing a vanpool program. The vans in all the companies are contracted out either to a company called Enterprise or through third party leases.

Ridelink as well as the Coaster System along with their ridesharing program provide the guaranteed ride home service to vanpoolers. One company provides its own guaranteed ride home program, though on a smaller scale as compared to those provided by the two public agencies. The operating cost for vanpools varies from \$700 per month to \$2000 per month depending on the number of employees participating, the number of vans employed, number of the routes and contract charges.

Carpooling is another popular ridesharing incentive and while all the companies allow carpooling only one company provides \$25 incentive for carpooling. Three companies provide preferential parking for carpoolers and vanpoolers.

For the companies providing ridesharing services, the number of employees using the service vary from 1.6 percent (56 of 3500 employees) to 20 percent (80 of 400 employees). One ETC stated that the participation of employees in the vanpool program



has decreased because some of the drivers didn't want to drive any more while some left the company.

**Table 4.1: Summary of Ridesharing Alternatives Provided by Surveyed Companies**

Ridesharing Attributes	St. Louis	San Diego
Sample Size	6	6
Companies Supporting Carpooling only	5	1
Companies Supporting both carpooling and vanpooling along with GRH <sup>1</sup> Programs	0	5
Companies Providing GRH Programs	0	1
Ridematching agency	Ridefinders	Ridelink and Coaster
Companies providing own ridematching services	0	3
Companies Providing Financial Incentives for Ridesharing	0	4
External Agency Contribution	None	\$300 per month provided by SANDAG to employers implementing vanpool programs
% of Ridesharers of total number of employees across Surveyed Companies	0.0%-1.3%	1.6%-20.0%

Source: Primary Survey

Except for two companies, most of the ridesharing programs have begun after 1992 – some as recent as March 1998 and April 1999. However, many companies have been supporting carpools for longer periods. Similar to St. Louis, some companies indicated that due to staggered work hour schedules, there are few takers for ridesharing programs.

#### **4.8.2 Shuttle Service**

Shuttles, in the form of vans or buses, are frequently provided in areas where transit stops are farther than half a mile or one mile from the work site. They may connect a worksite to the nearest rail station or bus stop. Shuttle operations are usually very expensive and are usually provided jointly by a number of employers at an employment center or by a large employer who can afford to provide the resources to operate it.

### St. Louis

Since most of the interviewed organizations are located near a Metrolink station or a bus stop there is no need of a shuttle service. Only one organization is running a shuttle service which connects the work site, not to a transit stop, but to the office parking lot. The shuttle van is contracted out and the organization spends approximately \$70,000 annually for its operation and maintenance.

### San Diego

None of the surveyed companies are operating a shuttle service by themselves or in partnership with some other companies. Shuttles which are operated by the San Diego Coaster System serve employment sites located near the Coaster stations. However, none of the employers or their staff is required to pay for the use of the shuttles if they are Coaster riders.

## **4.8.3 Parking Management**

### St. Louis

Only two of the six companies charge for parking at the work site. An ETC in one of the smaller companies stated that the company had begun the parking program as well as other programs to reduce the parking demand at their worksite as they did not have enough land for parking. They charged their employees \$450 a year for parking in the company parking lot. The other organization charges \$50 per month for parking. However, at the same time they continue to subsidize parking and are constructing an additional parking lot.

Other surveyed companies have adequate parking space available. The parking policy of these organizations is such that while they are trying to give a choice to their employees by encouraging high occupancy modes means of commuting, they also continue to subsidize employee parking. Most of the ETCs do not see the parking policies of their companies changing in the near future. Since parking in downtown St. Louis is very

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<sup>1</sup> Guaranteed Ride Home

expensive, most of the companies interviewed stated that if additional parking were required at their work site they would need to lease or construct additional parking lots to retain their employees.

### San Diego

None of the surveyed organizations were charging their employees for parking. This is despite the fact that most of these programs were initiated due to parking scarcity.

#### **4.8.4 Transit Subsidies**

### St. Louis

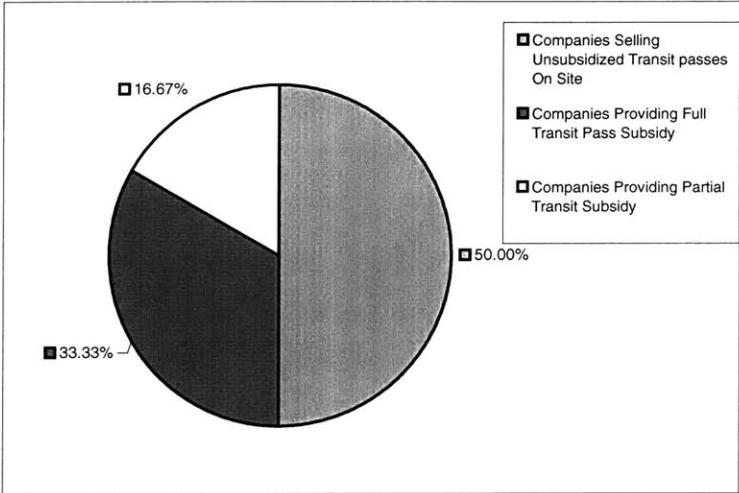
All six companies surveyed are supporting transit pass programs. Three companies are transit pass vendors. They sell light rail and bus tickets and passes on site without any subsidy. The regional transit authority in St. Louis, the Bi-State Development Agency, sends monthly consignments of passes to these companies who sell it on site to their employees for the same price. On site selling of transit tickets makes it easier and more convenient for employees to purchase passes.

These programs were setup in 1996 to as recent as early 1998. The participation rate of employees in these programs varies from 1.5 percent to 4.6 percent. The lowest percent is in the organization that has been selling transit tickets since the past three years. This is a strong statement that without financial incentives and marketing of the program, employees often will not use the service.

The remaining three companies subsidize transit for their employees. Two of the companies offer a 100 percent subsidy for transit passes (i.e. \$40 for Metrolink monthly passes) while one company offers a 50 percent discount that is \$20 subsidy for Metrolink passes. In companies that offer transit subsidies, the subsidy is given with a choice. Employees who choose to avail of subsidized transit passes have to forfeit the right to parking. Thus, employees have to choose between free transit and free/paid parking.

The number of employees participating in the program varies from 4.7 percent in the organization that offers half subsidies to 16 percent in the organization that offers full transit subsidy. In absolute numbers this figure varies from 185 of 3900 employees to 106 of 660 employees respectively. Companies receive up to \$56,000 annually in the budget for the transit subsidy program. The participation rates clearly indicate that monetary incentives encourage transit ridership much more than mere unsubsidized transit pass selling.

**Figure 4.7: Incentives Provided by Companies in St. Louis to Encourage Transit Use**



Source: Primary Survey

San Diego

Three companies provide transit subsidies to their employees. Two of these companies are located near a Trolley station while one company is located near a Coaster station.

Companies provide full or partial transit subsidy to their employees - equal to or less than \$60 and \$65 value per month respectively. The subsidy varies from \$40 to \$65 per month depending on the number of days per week the employee uses transit. One company provides a \$25 per month transit allowance for its employees.

The number of employees using transit subsidies varies considerably among the three companies. For e.g., one of the organizations located in downtown San Diego offers its

315 employees a 100 percent transit subsidy. Employees have free parking, but off-site, in a company-leased garage located several blocks away. Monthly garage pass holders are given passes to the downtown trolley service, which connects the garage to the office. The organization has a transit share of 36 percent, substantially higher than the 19 percent average for all employers in the CBD. The transit subsidy program in this organization was begun when the mandate was imposed in San Diego and it has continued since then. In the other two companies, light rail share varies from 2 percent to 3 percent respectively. One of these programs was initiated prior to 1992 whereas the other is quite recent.

#### **4.9 Program Motivational Factors**

The respondents were asked to choose all factors that were responsible for motivating their respective companies to undertake or support employee transportation programs. In addition, they were asked to rank these factors in order of importance.

##### *St. Louis*

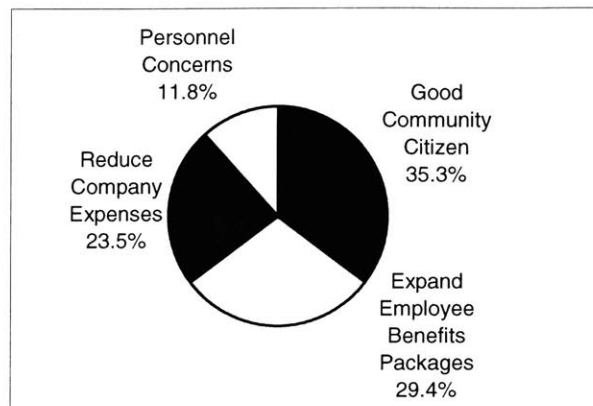
The programs in all the surveyed companies are completely voluntary. Good community citizenship, i.e., fulfilling corporate social responsibilities, was the most frequently cited (35.3 percent) reason by ETCs for taking up these programs. St. Louis has an air quality problem and has consistently been in non-attainment of specified ozone standards.

Almost all the surveyed companies indicated that they believed that the transportation plans in their companies would help improve the situation regarding air quality. Also, some companies are concerned about the increasing traffic congestion and so by undertaking such programs they feel that they are contributing to society and helping reduce societal problems. See Figure 4.2.

The next most frequently stated factor was that companies wanted to expand the benefits package provided to their employees by supporting such programs. ETCs of these companies stated that the company wanted to give their employees a choice of how to commute and therefore were providing these measures as part of benefits package. For

companies that are facing parking space paucity or want to reduce the demand for parking, reducing company expenses by reducing required parking was also a motivational factor. Lastly, some of the companies have introduced these measures because they are concerned about their employee commutes, especially for those that work after hours or may not have access to a private automobile.

**Figure 4.8: Motivational Factors for Undertaking the TDM program – St. Louis**



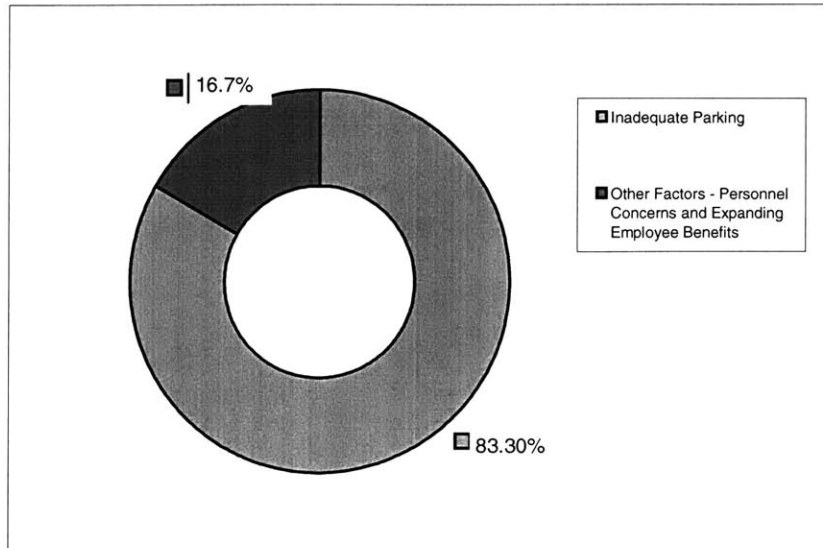
Source: Primary Survey

In terms of importance, three companies ranked fulfilling social responsibilities as the most important motivating reason behind their program while the other three cited reducing company expenses i.e. specifically dealing with parking paucity at the work site. Thus companies are increasingly concerning themselves with environmental concerns such as air quality and traffic congestion. At the same time, most of the employers fund these programs by providing subsidy or ridesharing or operating shuttles only when they need to solve a site-specific transportation problem such as parking.

San Diego

Five of six surveyed companies (83 percent of the respondents) named inadequate parking as the prime reason for undertaking these programs. In all these cases, parking scarcity was given the highest rank in terms of the importance of the factor.

**Figure 4.9: Motivational Factors for Undertaking TDM Programs – San Diego**



Source: Primary Survey

The other two most important factors listed were personnel concerns followed by expansion of employee benefits package. Some of the surveyed companies are expanding and therefore, they are concerned about how their employees are able to access the work site with limited parking facilities. Most of these programs are also part of the benefits package for regular full-time employees.

Another advantage of these programs could be reducing company expenses. However, the ETCs gave it a low priority since the companies had yet to realize cost savings from the program. The ETCs stated that while air quality and traffic congestion were definitely a concern, in none of the cases were they ever the prime rationale for launching the program.

Companies, which had launched the program due to trip reduction regulations, acknowledged that complying with the regulation had been the primary objective. However, currently the objective was to deal with parking or other factors as discussed previously.

#### **4.10 Program Goals**

##### St. Louis

In all the cases the employee transportation program goals in the companies are closely related to the program motivational factors. For the companies citing fulfilling social responsibilities as the prime motivational factor, the program goals included reducing pollution and congestion while the companies which listed parking scarcity as their prime motivational factor have listed reducing parking requirements at the work site as their program goal.

##### San Diego

In 83.3percent of the cases, the employee transportation program goals are to free parking space and to a lesser extent – improve air quality and congestion.

#### **4.11 Most Effective Measures**

##### St. Louis

The ETCs of companies who are simply transit pass vendors and supported ridesharing as well, stated that since the participation in the transit programs was more, they ranked it as more effective than ridesharing programs. For companies offering subsidies as well as charging for parking, the most effective measure was transit subsidies because of the high participation of employees. Since these subsidies are funded by the company and have a high-quality public transportation system as the backbone, such measures are definitely very popular.

##### San Diego

Companies who are offering only ridesharing services stated that both carpools and vanpools were performing equally though the participation in the carpool program was slightly higher. In four of the six cases (66.7 percent ), the ETC’s judged carpooling to be the most “effective” measure due to higher participation rates of the employees. Only one company (16.7 percent) rated its transit subsidy program ahead of carpooling due to the high share of transit riders.



#### **4.12 Program Implementation Difficulties**

The ETCs were asked to choose from a list in the questionnaire all the problems that they faced / are facing while administering the program.

##### *St. Louis*

The most frequently cited reason (five out of six companies) was lack of employee interest. According to the ETCs, it is extremely difficult to change employee preference for single occupancy vehicle travel.

The next most important difficulty faced by ETCs is in obtaining management support and financial resources for the program. These two factors are closely interrelated because management commitment and interest in the program often leads to provision of funding for the program. Most of the travel demand management programs are resource hungry and without management interest they cannot really take-off in the organization. Many ETCs claim that despite repeated trials, they cannot get the top management interested to support the program with financial and other resources. Often the management does not see the relevance of such programs because they feel that these programs are not really effective in dealing with congestion or pollution and moreover, change is difficult to bring about even at the top management level in companies. Most of these organizations are currently providing free or subsidized parking to their employees and there is reluctance on the part of management to change these policies and encourage other modes of travel.

Some of the other factors which were cited as difficulties faced include: inadequate knowledge about what needs to be pursued, organizational communication and other management problems such as dealing with employees, paperwork, etc. ETCs are often not sure or not knowledgeable regarding which measures to pursue and how to implement them at their work site. Also, it is difficult to administer the program across all the departments in a company and since employee transportation coordination is usually an additional job for most of the ETCs, dealing with additional paperwork and employee

concerns is a problem. An additional concern stated by one of the ETC's was getting the employees to participate in the right manner and not abuse the program.

### San Diego

Similar to St. Louis, five respondents (83.3 percent) cited "lack of employee interest" as the main difficulty in implementing the program. According to the ETCs, changing employee mindsets is very difficult and "most Californians love their cars and would rather drive than rideshare or use transit".

Dealing with employees and paperwork was an additional difficulty mentioned by three respondents. Other cited problems include "inadequate knowledge about what needs to be pursued" (33.3 percent responses) and organizational communication (33.3 percent responses). Also, dealing with staggered work schedules and obtaining financial resources were mentioned as concerns.

## **4.13 Program Costs**

### St. Louis

None of the surveyed companies have achieved any monetary savings due to the program. Most of these programs are fairly new and need to be further developed before they can yield net savings to the company. Three of the six companies (50 percent) are simply promoters of ridesharing and unsubsidized transit pass vendors. Thus, these companies do not spend anything on travel demand management measures and the cost associated with these organizations is the cost of the ETC's time.

One of the organization's, which runs the shuttle service and provides full transit subsidy spends, about \$128,000 annually on these programs. The other two organizations which provide transit subsidies, spend \$90,000 to \$30,000 respectively on their programs.

### San Diego

The program start-up costs have varied between \$1500 per month and \$5800\* per month among different companies. Typically, those operating vanpool programs have higher program costs compared to those who support only carpooling or transit subsidies.

The gross operating costs for the programs vary from \$1400 per month to \$5000 per month.\*\* Two other companies were unable to provide any cost estimates for their programs.

Five ETCs claimed that they had been unable to realize cost savings from the program as yet. The organization with the oldest program believed that the firm had saved in terms of reduced requirements for parking spaces. However, the ETC was unable to quantify the savings.

#### **4.14 Other Tangible Benefits**

### St. Louis

Most of the ETCs state that employees who have used the program have gotten to know each other better and there is greater sociability and affability among employees. One of the ETCs also stated that providing the shuttle service increased employee productivity as they could safely get from the parking lot to the work site. Easier recruitment of employees was not cited as one of the tangible benefits of the program since this is a concern for mostly suburban employers and not employers located in the downtown region of the city.

### San Diego

One respondent mentioned that the employee transportation programs had helped in recruiting engineers required for their firms. Three others believed that there had been some increase in sociability among employees who participated in the program. The remaining sample maintained that there had not been any tangible benefit of the program.

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\* only 2 companies provided this information

\*\* only 4 companies provided this information

#### **4.15 Program Evaluation**

In St. Louis, since all the organizations interviewed are pursuing the program voluntarily, they are not required to evaluate the program and consequently, none of the organizations have conducted any evaluations of their program. However, three of the companies (50 percent) in San Diego have evaluated their programs in terms of employee participation and parking space use.

Various TDM/CTR measures have not proven as successful as hoped. In part, the problem has been due to a lack of comprehensive evaluation. Typical measures of a program's effectiveness have been based on outcome criteria, such as vehicle miles traveled, vehicle occupancy rates, and the like. These evaluations are traditional, black-box studies that have produced quantitative measures without an understanding of the reasons behind the numbers (high or low). More importantly, they lack information about the actions employers can take to maximize their employees' participation in TDM/CTR programs.

Ferguson is one among many who has called for comprehensive evaluation of existing and emerging TDM programs. He recommends a combination of methods in a large sample of matched organizational sites.

“One critical obstacle to the significant allocation of resources to TDM program implementation from either the public or private sectors is the great uncertainty concerning the likelihood of success and expected magnitude of TDM program impacts” (Ferguson, 1990).

Ferguson's conclusion, although aimed specifically at TDM measures, is important to transportation studies, and travel behavior in general. Whenever there is an attempt to engineer changes in the behavior and reactions of organizations and individuals, a detailed understanding of why the tried interventions have or have not worked need to be assessed.

#### **4.16 Support from Top Management**

The success of a company's TDM program is heavily dependent on how supportive management is of the program. Management support obviously must come in the form of resources dedicated to the development and maintenance of the TDM program, but it refers more broadly to the overall corporate commitment. Is upper management willing to provide significant, tangible incentives, and establish a corporate "culture" that supports (rather than penalizes) employees' use of commute alternatives?

##### *St. Louis*

One of the six companies contacted stated that there has been no management support in their company and therefore, their program failed to take off. Three companies stated that they had adequate top management support in their company which was reflected in the financial resources they had been able to garner for this program. The remaining two organizations stated that while they were unable to get financial support for their program, they did feel that they had some type of management support. This is in the form of public encouragement and visibility, since the management did choose to sign up with the Citizens for Modern Transit Transportation Management Association and the management was aware that the ETCs attended meetings held by the TMA and publicized the promotional material sent by the TMA.

##### *San Diego*

Since in all the cases, funding is provided to operate the programs in the form of ridesharing and transit subsidies, it is evident that the top management of the companies has been providing support to the program. Five of six ETCs (83.3 percent) mentioned that besides providing monetary help, the management was also supporting the program through public encouragement and visibility.

#### **4.17 Support from Other Agencies**

##### St. Louis

All the ETCs interviewed stated that the Citizens for Modern transit TMA had been very helpful in providing promotional materials for the program. They sent regular e-mails and newsletters regarding ride promotions, high ozone days and air quality cards and set up special events such as “try transit week” for their members’ employees. They also sent packets of information to the ETCs to be passed on to the new riders. However, the ETCs claimed that there was no help in implementing the measures or external funding for any of the programs from the TMA or any other agency. Except for the sending of monthly consignment of transit passes, the Bi-State transit authority was not involved in any of the programs. Employers were simply “another vendor” for the Bi-State agency. However, the Citizens for Modern Transit works in closely with the Bi-State agency to improve transportation services in the St. Louis region.

##### San Diego

Some of the ETCs stated that they had received support in the form of information dissemination from Rideline and SANDAG. SANDAG also provides a \$300 per month external funding / grant to employers operating vanpool programs. Other than that there has been no interaction with public agencies and the ETCs pretty much handle the program on their own in their respective companies.

#### **4.18 Factors necessary for successful implementation of employer-sponsored transportation programs**

##### St. Louis

The most frequently cited factors for successful implementation of programs was management commitment. In terms of ranking as well, most ETCs gave this factor a high rank. The second most important element was educating employers and providing guidance on what to undertake and how to implement. The third important factor was provision of financial resources which, as discussed previously, is usually a follow-up of management commitment. At the same, three respondents recommended provision of

other resources in the form of promotional information through newsletters, advertising, incentives, etc. since proper marketing of such programs to employees is a critical determinant of success of employee transportation programs.

### San Diego

Two of the ETCs stated that provision of a quality public transportation system was the most important factor for any of the programs to operate successfully. The next most important and the most frequently cited element was “educating employers and providing guidance on what to undertake and how to implement”. Provisions of financial resources and management commitment were considered the next most important constituents.

Since San Diego previously had a trip reduction mandate, two ETCs (33.3 percent) also listed “help in complying with local regulation” (if they exist) as an important component of a “successful” program. Finally, two respondents also regarded “public leadership” to be an important constituent.

#### **4.19 Non-Participating Employers**

One of the currently non-participating employers was surveyed to determine the reasons for their non-participation in such programs. The company, located in St. Louis, has 250 employees and is close to two Metrolink stations as well as a bus stop. The company supports flexible work hours. The person contacted in the organization is the supervisor in the human resources department.

According to the supervisor, the Citizens for Modern Transit TMA approached their company to sign up as a member. However, their company was not participating in the program due to lack of management support and without management support, the program cannot take off. Parking was not a problem for the company and therefore, it was difficult to convince the management the need for such programs. The human resources supervisor in the company is concerned about the air quality in St. Louis and being a daily public transport user herself, would like to develop a program addressing these issues. However, she claimed that her efforts at convincing the management had not

succeeded and so in the near future they will not be part of employee transportation programs.

This study aims to find out the status of employer sponsored transportation programs in selected cities as well as determine what factors have led to the programs being effective or ineffective with respect to what they set out to achieve. The case studies discussed so far, St. Louis, Missouri and San Diego, California were chosen to approximate the issues that will confront San Juan soon after Tren Urbano's opening day. Each city has a new rail system that has recently begun operations. The third case study, the Longwood Medical Area in Boston, Massachusetts is an example of a much older system and helps determine the implications of travel demand management programs with time.

### **The Longwood Medical Area and MASCO – the Boston Case**

#### **4.20 MASCO**

The Longwood Medical Area (LMA) is a 175-acre community approximately 2.5 miles southwest of downtown Boston. The residential neighborhoods of Mission Hill and the Fenway and the town of Brookline surround the community. This community is characterized by its high concentration of healthcare and educational institutions and is recognized as “one of the most prestigious centers of medical and educational service in the region and in the country.” (Thomason, 1994). See Figure 4.3. The transportation management organization serving this community is Commute Works.

CommuteWorks operates under its “parent company” MASCO. MASCO (Medical Academic and Scientific Community Organization, Inc.) is a charitable corporation established in 1972 by its member institutions to plan, develop, and enhance the Longwood Medical and Academic Area for the benefit of the general public and its members, and to create and implement programs that assist the institutions and individuals in the LMA. MASCO and its affiliates -- MASCO Services, Inc., and the Longwood Medical Area Child Care Center -- offer a wide range of services including



area planning and development, parking and transit services, group purchasing, shared business services, and child care.

In 1992, the Medical Area Service Corp. (Boston, Massachusetts) changed its name and status to become the nonprofit Medical, Academic, and Scientific Community Organization (MASCO). The new name represented not only a change in tax status, but also recognition of the organization's increased focus on planning. MASCO's area planning and development program has won the comprehensive planning award (for a large jurisdiction) in 1994 for tackling a range of complex issues, including transportation. A seven member staff coordinates development of the 175-acre campus shared by its fifteen member institutions, including Harvard Medical School and four of its teaching hospitals.

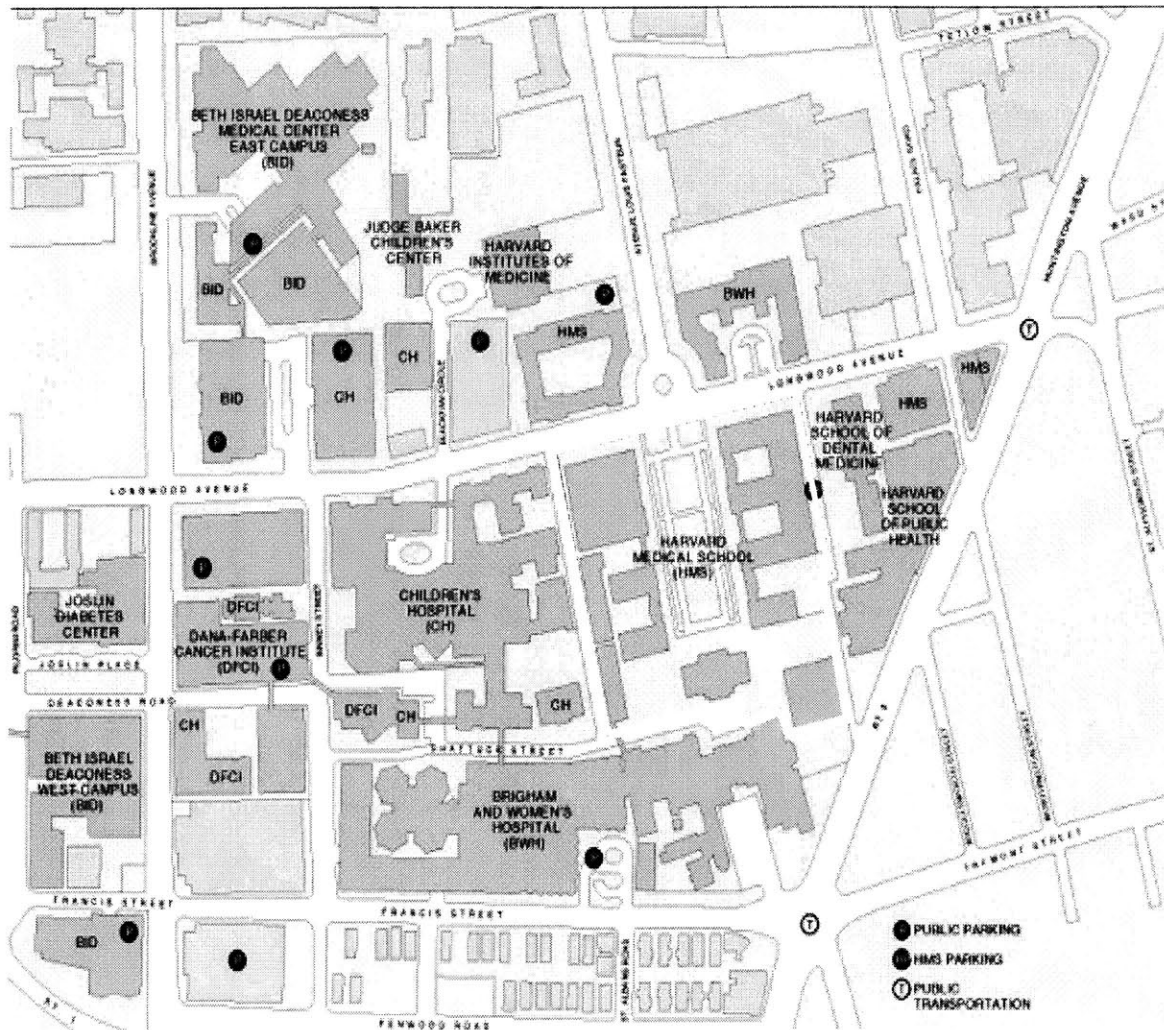
The LMA area has grown dramatically. Nearly two million square feet of building space has been added in the last 12 years, one million square feet of construction is under way today, and another million is in the pipeline. Some 27,000 people work there, 10,000 study there, and more than a million patients visit the hospitals annually (A Guide to MASCO, 1997).

MASCO planners have made the greatest impact on managing the parking and traffic that result from the large daily influx of commuters (MASCO's area planning and development program, 1994). By 1986, the planners decided that MASCO should run its own shuttle bus subsidiary as a taxable corporation. In 1990, MASCO established CommuteWorks which is the Longwood Medical Area transportation management association.

Parking and Transportation Services develops and implements programs to improve the accessibility of the LMA for employees, students, patients, and visitors. MASCO manages and operates parking facilities for its member institutions and the general public. MASCO operates shuttle services to and from parking facilities outside the LMA, serving employees of member institutions, in an effort to reduce automobile traffic within the

LMA. MASCO provides a shuttle service between the Harvard Medical School and Harvard University in Cambridge. MASCO also operates an employee shuttle between the Ruggles MBTA station and the LMA.

*Figure 4.10: Map of Longwood Medical Area*



Source: [www.masco.org](http://www.masco.org)

## 4.21 Car Substitutes

### 4.21.1 CommuteWorks

A 1987 transportation and parking study prepared by the staff and the consulting firm of Vanasse Hangen & Brustlin, Inc., of Watertown, Massachusetts, convinced MASCO's planners that more should be done to improve local roads and reduce the number of

commuters driving to the area alone. In 1990 MASCO established CommuteWorks, which was one of the first urban transportation management organizations in the country. CommuteWorks offers a computerized ridematching service, prepares commuter mobility maps for each institution, and designates an onsite advisor at each facility to discuss commuting alternatives (A Guide to MASCO, 1997).

#### ***4.21.2 Shuttle Services***

At first, MASCO merely managed parking lots for its member institutions and provided shuttle bus service for their employees. But by 1986, the planners decided that MASCO should run its own shuttle bus subsidiary as a taxable corporation. Currently MetroBus, Inc. operates 22 buses. One fleet picks up about 2,055 employees at six remote lots every day, mostly off campus. Another runs on a fixed route, daily shuttling about 1,900 people from Harvard Square in Cambridge to the Longwood Medical Area. There are three off-site parking shuttles in addition to the Cambridge shuttle. MASCO also manages about 2,500 onsite parking spaces.

With respect to shuttles, studies have been done to determine other concentrated areas of demand that might justify the implementation of other shuttle routes. Justifiable demand does exist in certain areas but officials have so far been unwilling to invest in additional services.

#### ***4.21.3 Public Transportation Program and the T-Pass Program***

The LMA is presently served by three light rail stations (the 'D' and 'E' lines of the Green Line) on the perimeter of the community in addition to six bus routes that run either through or along the limits of the area. MASCO has had a strong cooperative relationship with the Massachusetts Bay Transit Authority (MBTA) for many years including construction of bus shelters around the area and the shared effort in the initiation of CommuteWorks.

One of their most important relationships was their shared effort in obtaining the \$100,000 as “seed-funding” to initiate CommuteWorks. The grant was provided by UMTA (now FTA) as part of its Suburban Mobility Program. As a private organization, MASCO was not eligible to apply for the funds directly, but was dependent on the MBTA to submit the proposal and administer the transfer. As it was a new experience for both organizations, it was necessary for the representatives of each work together cooperatively in preparing the application.

MASCO also encourages its members to subsidize Massachusetts Bay Transit Authority passes for their employees at a 40 percent discount. Most of the institutions interviewed provided a monthly T-pass subsidy between 25 percent-35 percent. The passes are sold by the designated employee transportation advisors in each of the member institutions in the Parking and Transportation Office or the Cashier’s Office.

#### ***4.21.4 Ridesharing***

CommuteWorks also encourages ridesharing and has arranged with CARAVAN for Commuters, Inc. (the regional ridematching agency) to coordinate vanpooling services for the LMA. Vanpools receive free parking on-site in the LMA, making vanpools convenient and less expensive than driving alone. Current vanpool programs are provided for groups of 9 to 15 commuters and the following locations are served: Brockton /Randolph, Manchester NH, Newburyport /Lynnfield, Rockland, Sagamore/Kingston, Shrewsbury/Westboro, Windham NH. Most of the vanpools cost between \$85-\$110 per month. The member institutions surveyed provide a vanpool subsidy of 25 percent-35 percent off the monthly cost of vanpools.

Carpools of three or more people are eligible to use the “Zipper Lane” on Route 93 Southbound, and are eligible for the Massachusetts Turnpike Authority’s Carpool Pass Program which reduces the toll process by 90 to 95 percent. In addition to the above mentioned benefits, employees who carpool or vanpool are eligible to participate in CommuteWorks Emergency Ride Home and Poolaide Parking programs.

#### ***4.21.5 Parking Management***

The access and distribution of parking is an issue of concern for those who commute by car. There are a few public parking spaces available, but for the most part each institution is responsible for its own parking facilities whether or not they are on or off site.

Typically an institution has some on-site parking in addition to either owned or leased off-site parking. MASCO also leases off-site parking areas and then releases them to LMA employees or institutions. Employees pay monthly for a space, and rates can range from \$70 to \$110 per month. Rates also vary depending on the type of institution (medical or academic). There are approximately 13,500 spaces of use, of which roughly 3000 are off-site. For medical institutions, their primary concern is to provide convenient on-site parking for visitors and patients which puts much of their employee parking off-site. Thus, MASCO operates three off-site parking shuttles.

#### **4.22 Bringing It All Together**

The funding structure for MASCO is similar to that of a typical TMA. There are 15 member institutions currently and MASCO assesses its members about \$1 million annually for the area development and planning and other programs. A \$3 million restricted fund pays for studies and capital improvements, with annual capital expenditures in the range of \$300,000 to \$400,000.

The formation process was much more efficient than in other cases because the institutional relationships and communication process had already been established. According to the employee transportation coordinators, support within the community varies depending on the size and needs of the institutions. The larger institutions that may have plans for future development are more supportive because of permit requirements. There is also a level of competition among the medical institutions for employees and patients and one must be willing to provide similar incentives such as T-pass subsidies if they are seen as worthwhile benefits.

Thus, through concentrated planning and analysis MASCO has been able to achieve congruence between member institutions personal interests and the corporation's area development and planning interests in the Longwood Medical Area. As a central planning and coordinating agency, MASCO has been able to offer a comprehensive program that all the institutions can buy into.

The conclusions derived from MASCO as well as the other two case studies' analyses are discussed in the next chapter.

## **Chapter 5: Implications**

The surveys have briefly considered the development and results of employee transport plans in three different cities covering four to six employers in each city. The case studies indicate that there are a number of preconditions which will make the employee transport plan more likely, firstly, to reach the implementation stage and, secondly, to have some impact on employee modal split.

### **5.1 Building Management Support**

Since the employee transport program requires participation by all sections of the organization, those employers that have attempted to build corporate commitment to their plan have been more successful. Strong management support for employee transportation programs greatly influences its success. Management demonstrates support by participating in the development of the program and devoting adequate resources, but also by creating a work environment that encourages the use of commute alternatives, not simply tolerates their use.

As seen in the case of San Diego, programs initiated to satisfy a worksite problem, such as parking shortage, generally have strong management support, because management itself initiates the idea for the program, sets goals designed to solve the problem, and develops the program to meet the goals. The financial resources provided by the management to deal with the worksite problem demonstrate this. Providing money for the employee transport plan is the most obvious way of demonstrating support for the program. The management can further emphasize this by being visible, personally using the services and providing public encouragement.

Sometimes public agencies and transportation management associations try to convince employers to take up such programs, as in the case of CMT in St. Louis and MASCO in LMA, Boston. LMA institutions provide fees to MASCO to operate the TDM transportation services. In St. Louis half of the surveyed employers provide funding for operating the program while the others simply demonstrate their commitment by having

signed up with a transportation management association. More often, though it is not part of this research, the program is started to comply with a trip reduction requirement and management may not accept the program is needed. The employers, who discontinued their programs once the trip reduction mandate in San Diego was lifted, are an indication of the same.

## **5.2 Financial Resources**

Secondly, there is a need for resources to be put into the employee transport plan. As can be seen from the case of St. Louis, employers who are merely transit pass vendors and not investing their own funds for any of the programs, have very low employee participation rates. It can be said that despite having become a member of the CMT TMA and having designated an ETC in the organization, the transport plan in these organizations has hardly taken off because the management hasn't provided financial resources to the program.

Compared to St. Louis, employee transport plans in San Diego have had greater participation because the employers have invested resources and implemented programs such that they appear attractive to employees. MASCO, which has been operating shuttles and other ridesharing and transit programs in the Longwood Medical Area, spends close to a million dollars annually for their operation. While shuttles and vanpools are by themselves very expensive to operate, even low resource programs such as transit subsidies need financial support so that they are attractive enough to appeal to students and employees.

## **5.3 Employee Transportation Coordinators**

The person responsible for the employee transport plan can be critical to its success. From the survey, all the companies/organizations surveyed in St. Louis, San Diego and the Longwood Medical Area in Boston have designated an employee as an employee transportation coordinator to administer the program. However, most of the coordinators spend fewer than ten hours per week on the program because of their additional job. In



such cases, marketing the program to employees remains inadequate since the logistics of administering the program consumes the time and resources. Therefore, it can be inferred that most coordinators don't have enough time to properly market the program and disseminate information to employees. Marketing is a critical component of any program. Marketing travel demand management measures effectively is one of the best ways of dealing with problems of employee disinterest.

Hence, many employee transportation programs are developed casually as in the case of some of the organizations in St. Louis. Program measures are selected because they "were used elsewhere" or are easy or inexpensive to implement. Most of the employee coordinators have not conducted any survey or demographic studies to study employee commute patterns. Similarly, program marketing is unfocused, with little or no thought as to whether the right people are hearing the message. The result often is a program that is less effective than it could be.

Alternatively, as in the case of LMA in Boston, time invested in a worksite assessment, in which information is gathered about factors that affect the employees worksite journey-to-work commute, can help in developing a successful program in less time, with less cost and frustration.

#### **5.4 Firm Size**

Although larger firms do often have significant resources that can be assigned to make a TDM program a success, there is no clear evidence that smaller companies have any greater difficulty. In the cases reviewed for this project, some of the smaller firms had more successful TDM programs than the larger firms. Many of these firms were confronted with parking space scarcity and therefore, had launched a more aggressive program. It is also possible for large employers to face parking problems. However, since they have the resources they are just as likely to lease/buy additional land for parking as they are likely to setting up an employee transportation plan.

## **5.4 Modal Shares – Parking Policy**

The surveys in St. Louis and San Diego suggest that transit and ridesharing allowances have a modest impact on modal shares at most employment sites. When packaged with other TDM measures like information dissemination, preferential parking for carpools, on-site transportation coordinator, etc., such programs have reduced solo driver shares up to five to ten percent (as calculated from the surveys). This is because parking price and availability is a critical consideration in a traveler's decision on how to make a trip. In those situations where parking is unrestricted, efforts to coax travelers out of single occupant cars are difficult.

Much greater reductions in solo driving shares (up to 30 percent) have been achieved at employment sites where transit and ridesharing incentives are packaged with parking charges for solo drivers or subsidy reductions for employee parking.

In other words, if an employer wishes to reduce solo driving significantly (whether to save on parking spaces and costs, or to comply with local regulatory requirements), parking subsidy reductions and/or additional parking charges for solo drivers would have to be part of any employer based trip reduction program. Then, transit and ridesharing allowances and carpool allowances or parking discounts could be considered to achieve the trip reduction goals.

## **5.5 Financial Incentives**

As discussed, marketing techniques may be used to educate and foster employee interest. Through effective marketing, employees will hopefully become motivated to participate voluntarily in the program. However, the employer needs to realize that at first it may not be enough to merely remove the barriers and implement a marketing plan. Employees generally need some type of inducement to convince them to alter their commute patterns.

The surveys clearly establish that financial incentives increase participation of employees substantially. Even within the St. Louis case, employers who offer full or partial transit subsidy have greater number of employees using transit as compared to employers who are mere transit pass vendors. Similarly, in San Diego companies offering transit subsidies have a higher share of employees using transit compared to companies that can't offer subsidies.

## **5.6 Program Evaluation**

Typically voluntary employer transportation programs seldom require the program to be technically evaluated unlike mandatory programs. The onus of conducting an evaluation lies with the employer transportation coordinators. It depends on their interest and motivation to carry out an assessment of the success, failure or progress of the program. In case of St. Louis, since in some of the organizations there are no funds for the program, the management and the ETCs are hardly interested in evaluating the program. Another factor is also that most of the programs in St. Louis have begun recently and this might explain the lack of any appraisal studies so far.

Employers who are investing their own money in the program usually have some generic form of appraisal of the program to be carried out as in the case of San Diego. This is usually in terms of employee participation or reduced parking requirements. This is so that they are able to reassure themselves that the money is put to a beneficial use for the company. However, since these studies are not standardized and not submitted to a specific authority, unlike mandated program requirements, it is almost impossible for researchers to gauge their success even at an individual work-site level.

Agencies such as MASCO, which spend huge amount of resources on operating shuttles and other programs for their member institutions, are more likely to document program assessments regularly as it helps them provide accountability to their members besides aiding them in improving the programs.

## **5.7 Support from External Agencies/Organizations**

In all the three case studies, external agencies have played varying levels of roles to aid in public-private partnership development and help establish employer programs. The stronger the partnership, greater is the success of the programs in achieving what they planned out to achieve.

In case of St. Louis, Citizens for Modern Transit, a grassroots activist organization, took the initiative of setting up a transportation management association and convincing employers to establish employee transportation plans. While the CMT does not provide external funding for any of the programs, ETCs have generally stated that they found their interaction with CMT helpful. This partnership needs to be further strengthened and many more employers in the downtown St. Louis region need to establish robust programs to improve the air quality in St. Louis and fulfill other objectives as well.

SANDAG's contribution of \$300 per month to vanpool providers has definitely provided an incentive to employers operate vanpools. Besides information dissemination and marketing, setting up of Ridelink and Commuter's Club for ridesharing or transit commuters are other examples by which SANDAG has sought employer cooperation and support for establishing commute alternatives programs at employer work sites.

Clearly the strongest and the oldest partnership existing, is between MASCO and its member institutions at LMA in Boston, whereby MASCO operates all the programs for its institutions based on an annual membership fee.

It is interesting to note that all the three agencies, CMT, SANDAG and MASCO, are not mere transportation organizations. They all started out as planning organizations to improve various environments in their respective cities. Thus, they are all large organizations providing diverse services and therefore, are capable of contributing resources to commute alternatives plans and integrating them with other developmental plans.

## 5.8 Transit versus Ridesharing

TDM success is often directly related to the type of land use conditions and transit services available to an employer at the employment site. As expected, downtowns with good quality public transportation systems have a high share of transit riders of their employees using alternative commuting methods. This has varied between two to 36 percent among employers surveyed in St. Louis and San Diego. Boston's high quality public transportation system is the backbone of the LMA shuttle and transit pass programs.

Where current, good transit service exists to a site, and the TDM program capitalizes on that opportunity by providing transit incentives to potential users, experience indicates that the transit service plays a key role in meeting TDM objectives. However, transit quality is best in central cities and typically deteriorates as one moves towards the suburbs. Therefore, it is not without reason that an ETC working in suburban San Diego complained:

“The Trolley system is great for those who live and work near it. However, for those who work in the suburbs or away from the downtown, public transportation is awful – providing no alternative to commuters.”

Clearly, then if employee transportation programs are needed to promote transit usage in suburbs as well, serious reforms have to be undertaken to improve the quality of service in suburban areas as well where most of the jobs and residences are now increasingly being located. The most common TDM strategy used in suburban areas is therefore, ridesharing.

The results of this study indicate that a carpooling program is a common element of all TDM programs. The reason for this is that carpooling appeals to market segments that rely most heavily on vehicle, characteristics of the single occupant vehicle, e.g., door-to-door convenience, relaxing environment, and commitment to schedule. Incentives such as preferential parking certainly help in providing an inducement to carpool. Vanpools are more useful for longer commutes.

Some of the organizations provide financial incentives for employees to use transit and rideshare. As can be seen in the comparison case studies of St. Louis and San Diego, financial incentives certainly help promote high occupancy vehicle commute. Special services, such as operation of shuttles in large campuses, connecting employees and students to transit stops, as in the case of LMA, also help encourage transit use or park and ride. However, they cannot overcome the deficiencies of the transportation system itself – i.e., even with financial incentives and provision of shuttles, employees will utilize transit only if the system itself is accessible, high quality and reliable.

### **5.9 Rationale for Setting up the Programs**

In the surveys, different employers set up employee transportation programs for a variety of reasons. Parking was the dominant factor in case of San Diego. In case of the Longwood Medical Area, parking was definitely one of the concerns for establishing commute alternatives. However, MASCO also wished to integrate transportation with the land use and planning improvements in the area. In case of St. Louis, a variety of reasons were cited such as personnel concerns and expanding benefits package. Also, some firms were simply doing it since they wished to be “good community citizens”.

The survey indicates that while some of the other factors might play a limited role, the commitment to an employee transport plan is greatest when the employers are trying to improve something at the worksite, such as solving parking problems. Regulation or personal interests are the most effective rationales for setting up such programs. Most of the other factors rarely are a prime inducement to employers to implement such programs.

### **5.10 Organizational Work Rules**

Flexible work hour programs can be a benefit or liability to a TDM program. If the TDM target is to reduce peak hour congestion, removing vehicles from this peak hour through alternative work hour programs will be successful. If, however, the intent is to reduce

total trips or vehicle miles (such as might be the case with air quality requirements), then alternative work hour programs might be counterproductive. In addition, flexible work hours have been found to make ridesharing arrangements more difficult. The same can be said about telecommuting. Certainly, telecommuting will reduce peak hour trip making. But to date, there have been limited opportunities for telecommuting in most cities.

### **5.11 Effectiveness of Employer Programs**

Depending on the goals of individual employment sites, program effectiveness measures could vary from vehicle trip reduction (e.g. companies facing parking space crunch) to change in modal split (e.g. encouraging public transportation ridership) and so on. With the right mix of TDM alternatives and strategies, a TDM program at individual employment sites can be very effective, reducing vehicle trips by as much as 30 to 40 percent in relation to background conditions as can be supported by a few cases in San Diego. The surveys show that effective TDM employer programs usually employ a wide variety of TDM alternatives and strategies, each mutually supporting the overall objective of trip reduction as in the case of LMA in Boston and some employers in San Diego.

### **5.12 Best Practices**

There are a number of factors that are commonly found at companies with successful programs. These include:

- Support of both upper and middle management.
- Partnering with public agencies such as transit properties and transportation management associations to build system ridership by attracting choice riders.
- Appointment of a qualified and committed employee transportation coordinator (ETC).
- Effective market research on the commute patterns of employees and transportation options available to employees.
- Selection of an appropriate and effective set of measures including incentives and disincentives to encourage employees to select non drive-alone modes.

There are many considerations to take into account when an employer selects measures to put into a plan. Key among these are: the availability of parking, the cost of parking, and the availability of mass transit. Of course each worksite is unique and an effective program is designed to meet the needs of employees at each particular worksite.

The lessons learned from the case studies will be helpful for setting up similar programs in other cities. The specific case of San Juan, Puerto Rico is discussed in the next chapter.



## **Chapter 6: Opportunities for Employer-Based TDM Programs in San Juan and Recommendations for an Implementation Strategy**

### **6.1 Background**

In San Juan, the capital of Puerto Rico, a complete mass transit system is being built as a turnkey project. The mass transit system is being set up by Siemens Transit Team which will operate the system for the first five years after completion according to a design-build-operation-contract.

Though only 160 kilometers long by 56 kilometers wide, Puerto Rico has a population of 3.8 million. About one-third of the Island's residents, 1.3 million, live in the San Juan Metropolitan Area (SJMA), a region on the northeast coast encompassing 13 municipalities and 400 square miles. The population of the SJMA generates about 3.2 million trips per day. An estimated 4,206 vehicles per square mile in the central SJMA create one of the most congested urban roadway networks in the world. And by 2010 vehicle trips per day are expected to increase by 45percent over 1990 levels. (Source: Tren Urbano Project Status 1998 - <http://www.dtop.gov.pr/English/tu/tu.htm>).

### **6.2 Tren Urbano**

Every transportation study of the San Juan region from 1968 to 1993 recommended construction of a transit system running in an exclusive guideway. In the spring of 1994 the present administration of the Government of Puerto Rico approved plans for a heavy rail transit system. This system was the centerpiece of an intermodal master plan for managing mobility in the SJMA developed by the Puerto Rico Department of Transportation and Public Works (DTPW) and its Highway and Transportation Authority (PRHTA). The initial phase of Tren Urbano will serve three central municipalities of the SJMA, Bayamón, Guaynabo, and San Juan, and cost an estimated \$1.25 billion.

July 1996 marked the start of the final design and construction phase of the first modern rail transit system in Puerto Rico. The 17-kilometer, 15-station Phase I line of this

automated heavy rail system, called *Tren Urbano*, is slated to begin operations in the summer of 2001.

The Phase I line will operate 20 hours a day, with trains running every four minutes during peak hours in the morning and afternoon. Though trains will have operators aboard, the system will be completely automated, with a double-track guideway that will serve an estimated 115,000 passengers per day. The population densities within one-half mile of the alignment range from 10,000 to 20,000 people per square mile, and over 30percent of the total regional employment, nearly 150,000 jobs, will be located within a third of a mile of the train corridor (Tren Urbano Project Status 1998 - <http://www.dtop.gov.pr/English/tu/tu.htm>).

Thus, there exists a tremendous opportunity to boost the ridership of the Tren Urbano by establishing travel demand management programs in San Juan and encouraging the use of transit. With such a large number of jobs located in the vicinity of the train's alignment, employer based transportation plans need to be given an impetus in the region. They are likely to increase not only Tren Urbano's ridership but can also contribute to improving traffic congestion at area level. Moreover, they can be beneficial to employers by saving them parking costs, which are considerable given the high rate of automobile ownership (1.6 persons per car) and usage in San Juan.

### **6.3 Issues with Implementation of Travel Demand Management Programs in San Juan**

#### ***6.3.1 Large Number of Small Businesses compared to Large Corporations***

The city of San Juan does not have many large corporations (with a few exceptions such as Banco Popular). On the contrary, most of its business and commercial districts, Hato Rey, F. D. Roosevelt Avenue, Centro Medico etc., are a conglomerate of many small institutions, organizations and shops. Thus, efforts to provide employee incentives and market transit need to be coordinated with a coalition of employers and institutions though it may be easier to target individual companies initially. At present there is no

such coalition existing in the region. Therefore, transportation management association (TMA) development needs to be given an impetus in the region.

### ***6.3.2 Abundance of Free/Cheap Parking***

Parking is a major problem in San Juan. At present the parking rates are regulated low in Puerto Rico. As a result, corporations such as the Banco Popular spend thousands of dollars every month to subsidize their employee parking. A parking management strategy, which would entail raising the price of parking in business and commercial districts or restrict parking, after the Tren Urbano starts its operations, needs to be considered.

### ***6.3.3 Absence of Employer Based Travel Management Measures***

Currently there are no TDM measures being implemented in San Juan. Thus, both public agencies and employers need to be informed about employer-based programs - their need, options available, implementation and monitoring strategies and so forth. State and local agencies, both public and private, which are considering implementation of a TDM program, need information concerning the costs and benefits of various TDM alternatives.

### ***6.3.4 People unaccustomed to Rail Systems***

The island of Puerto Rico has never had a mass transit system in the past and therefore, extensive marketing is required to build Tren Urbano's ridership. Thus, TDM alternatives aimed at expanding the train's ridership need to encompass suitable incentives, such as subsidizing fares, sponsoring new services and making information and tickets easily available, to make people consider using transit and other high occupancy modes for their daily work commute.

## **6.4 Recommended Implementation Strategy**

Many travel demand management strategies are very often difficult to implement because of their very nature of trying to change human behavior. Successful designs of TDM programs call for combinations of actions and action strategies. In addition, employer, employee and public agency participation is deemed critical to overall success. In most cases, the successes of these actions relate to the fine level of attention paid to the details of implementation. Who are the constituencies most likely to support the strategy? What advantages will private employers see to their participation? How do we obtain top management commitment to demand management? How do we put together the private sector and public official coalition that is necessary for progress? These and many more issues often need to be addressed before TDM strategies and programs are implemented.

The key to a successful TDM program is therefore an effective implementation strategy. The best TDM plan will go nowhere unless thought has been given to what steps need to be taken by whom.

In the case of San Juan, because of a number of small employers, it is prudent to initiate TDM programs in some of the large corporations and institutions such as the Banco Popular and Centro Medico, which are located near the proposed stations. An advantage of starting with large employers is that they have an organized institutional structure, greater resources and a large number of employees. Firm size and location are important factors in establishing such programs though they do not guarantee “effectiveness”. Both these organizations are located on the Tren Urbano alignment and it is easier to introduce TDM alternatives in these institutions.

### ***6.4.1 Motivation for Implementing the Program***

From a transit agency perspective, e.g. the Puerto Rico Highway and Transportation Authority (PRHTA), in the wake of the arrival of the Tren Urbano, the primary aim of setting up employer-based transportation plans in San Juan is promotion of public

transport use at the workplace. A secondary, but related, objective can be improving the current traffic situation in San Juan.

From the employer's perspective, at its most basic level, the motivation for TDM participation is primarily one of self-benefit. By implementing a TDM program, will the participants meet the requirements of a state or local statute and thus avoid the sanctions and/or embarrassment of noncompliance? Or, will the TDM program greatly ease the congestion problem in an area and thus make the commute easier? Or, by encouraging multi-occupant vehicle commutes, can the capital or leasing expense of future parking expansion be avoided? In San Juan there is currently no statute requiring implementation of such programs; nor is traffic congestion likely to be the prime motivator for employers to provide support to these programs. Undoubtedly, parking space savings and thereby cost savings as well as other tangible benefits such as increase in employee productivity and on-time attendance, are the benefits offered by Tren Urbano that will be most important to employers. Tax incentives for employers will also be a major motivating factor.

In essence, it is necessary to derive congruence between the transit agency's objectives of promoting public transit use and employers' self interests to effectively establish TDM programs in the San Juan Metropolitan Area.

#### ***6.4.2 Program Coordination***

Even if the TDM programs are started with the Banco Popular and Centro Medico, as pilot programs, a public agency or a TMA needs to get in touch with the management of these organizations and work with them towards developing and implementing a program. Currently there are no TMAs in existence in San Juan. Thus, an entirely new organization would have to be created to establish links with employers and provide help in setting up the program. Employers themselves, as in the case of Commute Works in the Longwood Medical Area, usually sponsor TMAs and they may not be willing to commit resources for TMA sponsorship at such an early stage.

A simpler strategy is for a transit agency like the PRHTA or the agency in charge of marketing, i.e. the Siemens Transit Team, to take the initiative and coordinate with the large employers and help launch TDM programs in large institutions. Gradually, as the programs in these pilot organizations are established and operating, more institutions or companies can be enlisted for membership. A TMA can then be set up to establish an area wide program. This is also important because small employers usually do not have the power, financial resources or the will to accomplish all the necessary facility changes or incentive programs alone. A TMA can help employers to collectively work together to achieve effective results.

#### **6.4.3 *Obtaining Management Support***

At the initial stage, the primary job of the PRHTA or Siemens or any other agency would be to enlist the support of employers. Private employers and corporate managers are key participants of TDM programs. Because the organizational culture of these participants is based on responding to top management direction, the successful inclusion of these participants in a TDM program requires that top management be committed to the program. Often, meetings are held early in the formulation stage to simply enlist top corporate support for TDM programs. The importance of these meetings thus rests in convincing corporate leaders of the importance of their participation and in sending this message to those subsequently responsible for implementing individual corporate elements of the program. The corporate leaders must be able to determine clearly what benefits will accrue to their company by participating in the program. In other words, they must be motivated. And, as the TDM program evolves overtime, this motivation might change.

Management support comes not only in the form of resources dedicated to the development and maintenance of the TDM program, but it also refers more broadly to the overall "corporate commitment." Is upper management willing to provide significant, tangible incentives, and establish a corporate "culture" that supports (rather than penalizes) employees' use of commute alternatives? A strong commitment typically is

demonstrated by an extensive package of incentives offered to commuters. However, supportive work environment policies, such as not holding meetings late in the afternoon, not penalizing ridesharing employees who choose not to work overtime, and rewarding employees for their contribution to the TDM effort, are also indications of corporate commitment.

In San Juan specifically, the President of Banco Popular needs to be convinced by the transit authority of the benefits and usefulness of undertaking TDM at the company's offices. In the case of Centro Medico, the central organization, ASEM along with the individual hospitals need to support the TDM program for it to be feasible.

#### **6.4.4 Worksite Analysis**

If and when corporate support for TDM programs is obtained, it is possible to conduct site analysis and choose from the range of TDM options available. Successful TDM programs are site-specific; that is, strategies must be chosen to fit unique circumstances of the setting and target population. Therefore, after having defined the TDM goal, the characteristics of the employee population, worksite, and the company's operations need to be examined to identify features or characteristics that might discourage or encourage the use of commute alternatives. Barriers to alternative mode use need to be analyzed and it needs to be determined how they can be changed or their impact minimized. It is also necessary to think how to capitalize on site and employee characteristics favorable to commute alternatives.

#### **6.5 Examples**

The following section looks at examples of two institutions in San Juan, Puerto Rico, - Banco Popular and the Centro Medico - discussing some of the site characteristics and possible TDM alternatives, which can be implemented at these sites.

### 6.5.1 Banco Popular

Popular, Inc. (previously BanPonce Corporation), with \$23.2 billion in total assets, is the 44th largest bank holding company in the United States. Banco Popular, its main subsidiary, is Puerto Rico's premier banking institution, with a tradition of more than 100 years of service. In addition to banking, the Corporation offers mortgage lending, leasing, consumer finance, investment banking and processing services (Banco Popular, Annual Report, 1997).

**Figure 6.1: Location of Banco Popular Offices Along the Tren Urbano Alignment**



Source: Banco Popular and Tren Urbano's official Website. (Tren Urbano Project Status 1998 - <http://www.dtop.gov.pr/English/tu/tu.htm>)



Banco Popular has more than 6,000 employees in over 160 branches in Puerto Rico as well as 30 other states. In Puerto Rico alone it has 5,662 employees with 3,215 employees in its main offices and 2,447 employees in its branch offices. See Figure 4.1. The preferred mode of commute by the employees is private automobile and in the Hato Rey district, where the headquarters of the Banco Popular are located, 98 percent of the employees commute everyday by car. Thus, parking provision is a big issue for the bank and it has leased as many as three plots of expensive land for parking in the Hato Rey area.

Figures 6.2, 6.3 and 6.4 display the origin of employee residences by region for three offices of the Banco Popular in San Juan: Hato Rey, Cupey and Old San Juan. The distribution shows that in most cases almost 80-90 percent of the employees traveling to their work place live in the metropolitan area of San Juan, though not necessarily along the alignment of the Tren Urbano. A large number of employees originate from Rio Piedras and Bayamon. And thus, as a first step it would be desirable for the Bank to target those employees who live along the alignment and market incentives to them aggressively to promote transit ridership. As a second step, those employees who would need to use the feeder services to Tren Urbano need to be targeted. Different measures and strategies would be required by the Bank to deal with these two situations.

#### *Hato Rey and Cupey Offices*

Hato Rey is the financial district of San Juan. It comprises a large number of banking and financial institutions. The headquarters of Banco Popular are located in the Hato Rey district along with some of the other main offices and branches. Most of the offices are located at a distance of less than quarter-of-a-mile from the proposed Hato Rey Station. As shown in Figure 6.2, almost 32 percent of the total 1353 employees originate from Rio Piedras and Bayamon. There are others who live close to the alignment.

Total Number of Employees at the Hato Rey offices: 1353

Number of Employees Originating from the San Juan Metropolitan Area: 1155 (85.3%)

Banco Popular houses its main operations center in Cupey, located close to the proposed Cupey station. 80 percent of the employees live in the San Juan Metropolitan Area with about 37 percent of the total 1372 employees coming from Rio Piedras and Bayamon.

Total Number of Employees at the Cupey Operations Center: 1372

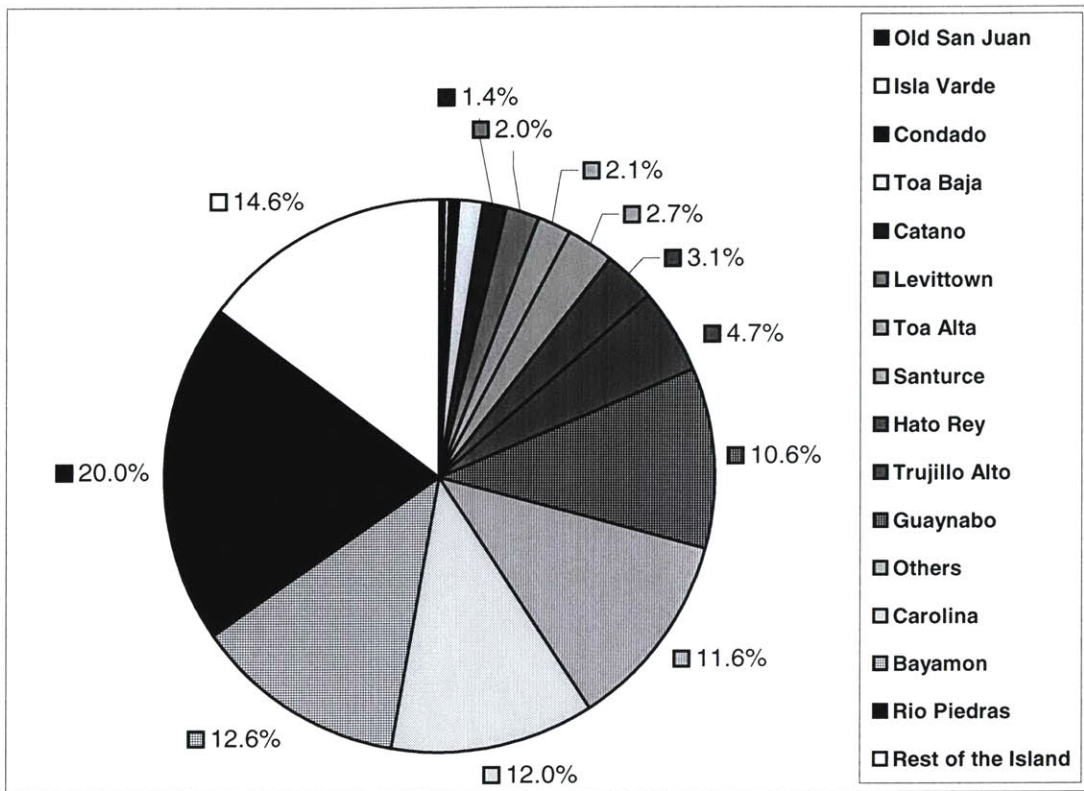
Number of Employees originating from the San Juan Metropolitan Area: 1107 (80.6%)

Provision of transit subsidies or subsidized transit passes to travel on board the Tren Urbano and AMA buses may be a good strategy to encourage public transit usage especially among those who live close to the alignment. The amount of the subsidy needs to be determined by the management based on the total cost of monthly public transportation commute for employees, tax incentives, management's budget and other variables.

Besides transit subsidies, ridesharing can be promoted to provide an option to employees commuting long distances and areas not served by the train. Carpooling can be encouraged and preferential parking may be provided as an incentive. Almost 12 percent of the employees in Hato Rey and 11 percent in Cupey commute from Carolina. In absolute numbers they represent 150-160 employees. Vanpooling programs can be setup for such long distance commuters where large number of employees commute from the same area.

Any TDM strategy will offer its greatest impact if it is supported by a comprehensive TDM package. Obviously, commute alternatives and incentives to encourage their use must be available. But, strong promotion and corporate backing also must be present. Even financial incentives, shown to be quite important in reducing trips, can be effective only if employees are aware of the incentives and feel management supports their use. It is particularly important to reinforce employees' awareness of the program over time; otherwise, new employees and those whose travel patterns change might not participate.

**Figure 6.2: Origin of Employees Working at Banco Popular’s Hato Rey Offices**



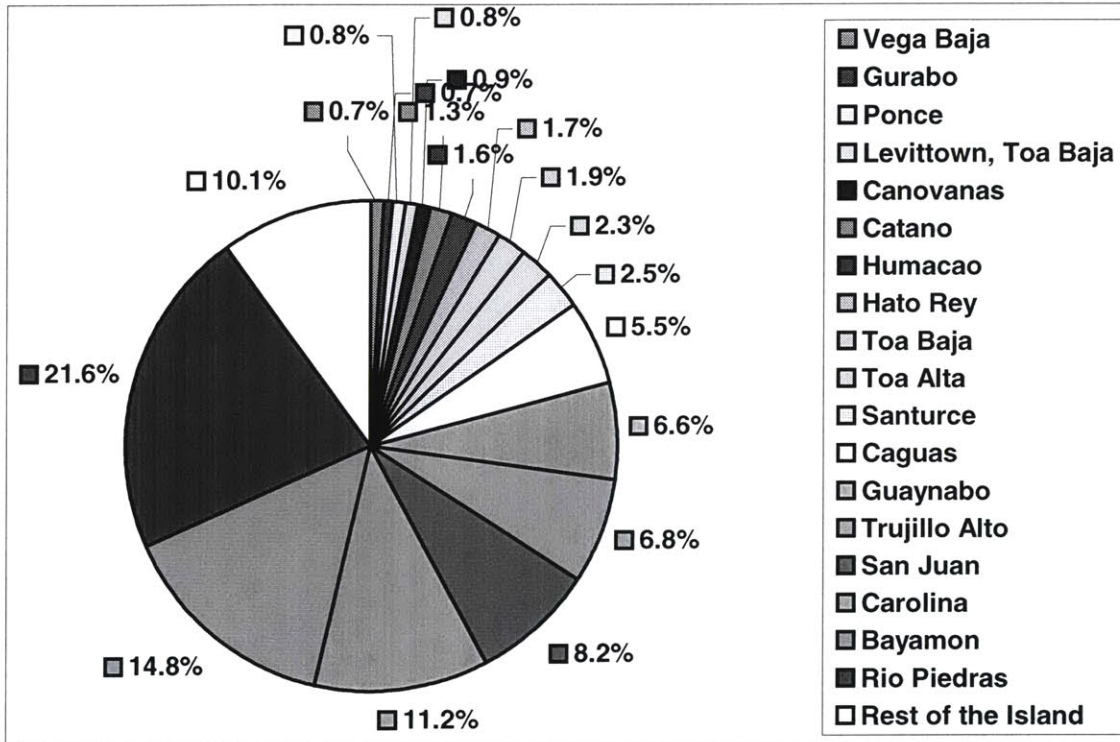
Source: Banco Popular, Human Resources Department

A TDM strategy that will be most effective is an integrated parking management strategy. Tren Urbano provides a high quality mode of daily commute as an alternative to single occupancy vehicle commute. Thus, the Bank, needs to implement parking restrictions simultaneously with providing incentives for transit use and ridesharing. An interesting aspect of levying parking charges is that it can generate revenue that can be used to subsidize employees who use transit and other alternative modes.

It would be suitable to utilize the services of a transportation professional who provides personalized assistance to commuters. It is recommended that an existing employee or a new employee take up the job of an employee transportation coordinator (ETC) to offer individual trip planning assistance, as well as performing more general marketing and information functions. The ETC will generally be the focus of the company’s commute program, and will manage the program’s development, implementation, marketing,

administration, and evaluation. As discussed in the case study analysis, it is also important for the ETC to devote at least fifteen hours per week of the TDM program of the company because without the ETCs commitment, the employer transportation plan will not be able to take off.

**Figure 6.3: Origin of Employees Working at Banco Popular’s Cupey Office**

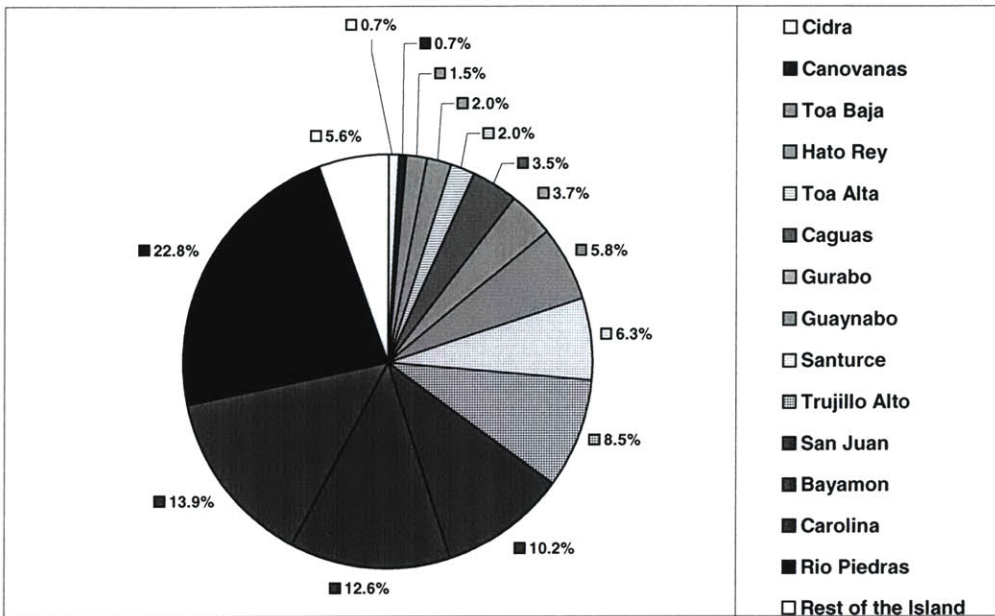


Source: Banco Popular, Human Resources Department, 1998

Old San Juan

Banco Popular’s third largest office in Puerto Rico is in Old San Juan. Old San Juan is the oldest and the densest district in the San Juan Metropolitan Area. One of the most congested areas in San Juan, Old San Juan will not be linked by the Tren Urbano system in the first or second phase of the alignment.

**Figure 6.4: Origin of Employees Working at Banco Popular’s Old San Juan Office**



Source: Banco Popular, Human Resource Department, 1998

The worksite’s distance from the Tren Urbano makes it difficult to provide transit subsidy incentives as part of the TDM program of the company. It needs to be considered whether it is worthwhile implementing TDM programs at such employment sites where public transportation access, especially access to the mass transit system, is limited.

From Figure 6.4:

Total Number of Employees at the Old San Juan office: 539

Number of Employees Originating from the San Juan Metropolitan Area: 490 (90.9%)

The case study implications show that where current, good transit service exists to a site, and the TDM program capitalizes on that opportunity by providing transit incentives to potential users, experience indicates that the transit service plays a key role in meeting TDM objectives. However, in those locations where transit currently is not a viable option (e.g., in many suburban locations), providing such service and developing support strategies has not been effective in attracting large numbers of drivers.

Having good transit service that already serves a site that experiences severe parking shortages could very well make it easier to reduce single occupant vehicle use. However, the measure of TDM program effectiveness is the level of trip reduction in relation to what is normal for that site. Thus, for example, a site could have the worst situation for trip reduction - a heavily suburban area, no transit, and unlimited parking - and still have a successful TDM program relative to its peers. In the case of Old San Juan, the percent reduction in vehicle trip making would be more important than its modal split. Thus, ridesharing measures and bus transit usage promotion need to be marketed at the worksite to at least make a difference from what currently exists.

Consequently, if and when pilot TDM programs are initiated in the Bank's offices, it is recommended to begin with the larger employment sites located close to the rail stations so that it is easier to design and develop a program. The plans can be implemented simultaneously in different offices across the city keeping in view the distinct site characteristics for each employment location.

### **6.5.2 *Centro Medico***

The Centro Medico or the Puerto Rico Medical Center (PRMC), a dependency of the Puerto Rico Department of Health, is the island's largest medical services complex. Located almost in the center of the San Juan Metropolitan Area in the Rio Piedras sector of the municipality of San Juan, the PRMC contains numerous medical facilities offering, since 1962, a wide variety of immediate and preventive health care services to the entire population of the island. Present employment at the PRMC is estimated to be 25,000.<sup>2</sup>

The PRMC consists of several medical institutions, offices and services. According to information provided by ASEM and several of the individual institutions, between July 1990 and April 1991, the PRMC accounted for monthly averages of 4,182 emergency visits and 13,720 visits to the hospitals.

The continuous increase in vehicular traffic and parking demand has had an adverse impact on the PRMC. Although the PRMC is served by several Metropolitan Bus Authority (AMA – the Spanish acronym) and publico-car routes, their quality of service is low and most employees, students and patients prefer to use their personal automobile to travel to the medical center. This has resulted in a series of traffic and transit related problems at the PRMC. These problems include traffic congestion at the principal access points, internal traffic congestion due to illegally parked vehicles on the curbs, interruption of efficient emergency vehicle circulation and increased parking demand beyond the available capacity.

Centro Medico will have its own rail station along the Tren Urbano alignment in the first phase of construction. The case of the Centro Medico is almost analogous to that of the Longwood Medical and Academic Area in Boston. Both complexes have a high concentration of institutions related to a specific industry – healthcare. Transit sale tickets, shuttle services and ridesharing can be encouraged at the Centro Medico just as in the case of the LMA. However, the question, as to who is likely to implement and administer the TDM programs at the center, needs to be considered. Currently, all institutions in the complex have their own administration. The central office, ASEM, carries out certain administrative tasks which are common to all the institutions. It is also in charge of parking rules enforcement at the center. However, to date, parking enforcement has been difficult to carry out.

It would be valuable for ASEM to broaden its scope and take up planning and development functions for the complex (analogous to MASCO), in addition to administrative tasks. It can set up its own transportation management association in the medical center to provide demand management services. A TMA can be setup by partnering with the transit agency, PRHTA. The TMA's initial job would be to convince the medical institutions to become members by enumerating the associated benefits such

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<sup>2</sup> Estimated 1997-98 employee population for all PRMC institutions, as obtained by the Puerto Rico Administration of Medical Services.

as cost savings associated with parking space savings, personnel concerns and comprehensive area planning for the medical center.

The medical campus currently does not operate any shuttle services though there are AMA bus routes and a publico terminal serving the area. The medical campus is divided into three distinct areas – the Hospitals, Academic Institutions and Psychiatric Health Centers. The three districts are located in separate parts of the campus with no public transportation connectivity.

Given the volume of employees, students and visitors using the campus daily, it may be useful to run a shuttle on campus connecting the three medical areas, the parking lots and the proposed mass transit station. Also, proximity to the proposed station at Centro Medico, gives a further incentive to the institutions on campus to promote transit use through sale of transit tickets and subsidized passes. The current spatial distribution of employee and student residences is not known. However, it may be possible to organize vanpools and other ridesharing mechanisms to some of the distant locations if the number of employees originating from these locations is large.

Planning and implementation of any of the above measures requires coordination among all the institutions. Clearly, there is an opportunity and a need for an agency like ASEM to take up the task of not only providing transportation services but also area planning and development. Like a TMA, the agency can change its status to that of a company and assess fees for each of the member institutions depending on the number of employees and services consumed. Comprehensive TDM incentive programs, comprising transit ticket sales, ridesharing, parking management and shuttle operations, can be launched that individual institutions can buy into.

## **6.6 Conclusion**

The Tren Urbano provides a unique opportunity to give impetus to establishment of travel demand management programs in San Juan. Moreover, it also provides a unique opportunity for partnering between transit agencies and private corporations / institutions



to achieve their respective objectives. Public agencies, like the PRHTA, can act as catalysts to encourage private sector interest and sponsorship in employee commuting. Thus, the need for employer-supported transportation demand management strategies in San Juan exists and the prospects for launching the same appear promising.

However, behavioral changes, such as those which TDM programs hope to accomplish, are seldom accomplished in a short period of time. This is especially true for cities like San Juan where solo vehicle work-commute is a convention. As the case studies demonstrate, it may take up to a few years to setup TMAs, establish coalitions between transit authorities and employers, analyze work sites and determine suitable TDM alternatives.

The case study analyses also show that it is a myth to think that employer support measures such as rideshare matching, guaranteed ride home, transportation coordinators, are all that have to be done to produce trip reductions or change commute behavior. In reality, although employer support measures are very important in supporting TDM alternatives, they are not instruments that, in themselves, actually change behavior. The construction of Tren Urbano and the overhaul of the public transportation system in San Juan provide alternatives to the traveler and then a truly effective employer-supported TDM strategy will reinforce the TDM travel decision by implementing incentives and disincentives that are clearly perceived by the individual making the decision to travel.

Some of the critical factors to develop a successful program in San Juan will be: provision of reasonable and attractive alternatives (like the Tren Urbano) to traveling by private automobile during the peak hour; sufficient incentives and disincentives to encourage people to change their travel patterns; integration of TDM programs among transit providers, local agencies, and the private sector; and a willingness to revise the program to strengthen successful elements and eliminate weaknesses.

This research has shown that employer transport plans, while simple in concept, are in fact complex to plan and implement, not least because their implications go well beyond

transportation and they need both corporate and public agency commitment. Cities like San Juan, where employer transportation plans and establishment of TMAs are being considered, need to very carefully consider its implications and not expect spectacular results in a very short time.

## **6.7 Guidelines for Future Research**

This research discussed the relevance and composition of employer-supported transportation measures with particular focus on how they can be used to boost employee transit use and promote public-private partnership in transportation demand management in San Juan. There are several avenues that could be pursued for further research either with respect to the issue of demand management or the application of TMAs.

- A related area of research, being currently pursued by Ms. Jessica Verghese at the Center for Transportation Studies, at the Massachusetts Institute of Technology, is to examine another market segment of public transportation users – students. The focus of her research is the role of TDM in educational institutions, such as colleges and universities, in providing incentives to students to use public transportation. The research will recommend strategies to be applied to universities in San Juan, such as the University of Puerto Rico and the Sagrado Corazon.
- As the project in San Juan develops, there should be several windows of opportunity over the long-term to investigate how different yet specific demand management programs affect the various businesses and communities in the region surrounding the project.

## **Appendices**

### **Appendix A: Transportation Equity Act for the 21st Century (TEA-21)**

The new Transportation Equity Act for the 21st Century signed by President Clinton on June 9, 1998 can save companies time and money. There are many possibilities for employers to save money such as deductions from business income taxes or reduced payroll expenses.

Under TEA-21, the Transit/Vanpool Benefit Program is a provision of the Internal Revenue Code that lets the company pay for the employee's cost of commuting to work, other than driving alone. Under Section 132 (f) of the Internal Revenue Code, an employer can provide up to \$65 per month, \$780 a year, to those employees who commute by transit or vanpool and qualified parking expenses up to \$175 a month, \$2,100 a year. The employer can deduct these costs as business expenses and the employees do not report the subsidy as income for tax purposes.

#### **Employer Benefits**

Advantages to employers include both: a tax deduction for the expense, and savings on payroll taxes, FICA, disability insurance and payments into 401(k) plans.

In New York for example, employers found that providing transit subsidies saved between 30-40percent over providing the same dollar value to employees in the form of salaries.

#### **The Transit /Vanpool Benefit**

The employer can provide a cash reimbursement to an employee for public transit or vanpool transportation costs for trips taken between the employee's home and place of business. A cash reimbursement is only permitted if a voucher which may be exchanged for a transit or vanpool pass is not readily available. A transit pass includes any pass, ticket, voucher or similar item entitling a person to transportation on mass transit or

provided by a vanpool. In some cities, businesses can become a pass vendor and provide transit passes directly to the employees. Employers can provide a combination of transit and vanpool benefits to an employee as long as the maximum monthly benefit does not exceed \$65.

## **Benefit Options**

There are several ways to provide the benefit to employees:

- An employer may provide the transit/vanpool benefit in addition to an employee's current salary. The benefit would be free of all payroll and income taxes to the employee, and the employer would deduct the cost from their business income taxes.
- An employer may permit employees to set aside (in lieu of) some of their pre-tax income to pay for transit or vanpools. Employees would not pay income or payroll taxes on the amount of the benefit, and employers would not pay payroll taxes because the pass is seen as a benefit and not taxable salary.

An employer may share the cost of commuting with the employee. Employers may give their employees part of the commuting expense tax free in addition to their compensation and allow the employees to set aside part of their gross income to pay the remaining amount, up to the limit of \$65.

### *Parking Cash Out Program*

As a part of the Transit/Vanpool Benefit Program, employers could establish parking cash out programs where employees may choose to cash out the value of an employer-provided parking space, forego parking, and receive the taxable cash value of the parking or a tax-free transit/vanpool benefit. The employer transfers its expenditure for the parking space, assuming it's leased, to a payment to the employee. If the employee chooses the cash value instead of the transit/vanpool benefit, that amount will be treated as salary. The employee would pay income and payroll taxes on the new amount.

If the value exceeds \$65 on the parking space, then the employee could accept the transit/vanpool benefit and receive the balance in taxable salary. The employer only incurs payroll taxes on the cash value provided. This additional compensation gives employees the option of financing other modes of transit not funded under the program such as walking, bicycling, carpooling, roller blading, or other means of commuting to work.

For example, a company provides employees parking at \$55 a month. The company changes its parking policy to allow employees to choose from the following options: keep the parking spot worth \$55 a month, give up the parking spot and receive \$55 extra each month in salary, or get a \$55 reimbursement for transit or vanpool expenses.

#### *Other Considerations*

Under the Transit/Vanpool Benefit Program, an employee can receive a transit, vanpool or combination with one another up to \$65 a month. When considering a vanpool benefit, a vanpool is defined as any vehicle that has a seating capacity of at least six adults (not including the driver) and at least 80 percent of the mileage must be used for purposes of transporting employees in connection with commuting to work. The program does take into account inflation, the legislation provides for the limit to increase from \$65 to \$100 for taxable years beginning after December 31, 2001.

## Appendix B: Survey Questionnaire

### 1. COMPANY INFORMATION

Name of the Company / Organization:-----

Address:-----

Phone:----- Fax:----- E-mail-----

Name of the person being interviewed:-----

Department:----- Designation:-----

#### 2. Is the worksite located near a: *(check all that apply)*

— Transit Station      — Bus Stop

#### 3. Does your company support: *(check all that apply)*

- Flexible Work Hours
- Compressed Work Week
- Telecommuting

### EMPLOYEE INFORMATION

4. Number of Employees in the Company at your location:-----

#### 5. Is the geographic location of most employee residences: *(check one of the following)*

- Within less than 7 miles
- Between 7-14 miles
- More than 14 miles
- Can't Say

### PROGRAM INFORMATION

6. Is your organization aware about employer-sponsored transportation measures? Yes/No

7. Is your organization currently part of employer-supported transportation measures? Yes/No

If Yes, then please complete the following sections:

If No, then please proceed to the last section titled "NON-PARTICIPATING EMPLOYERS"

#### 8. Is your participation in this program: *(Check all that apply)*

- As an individual firm
- As a member of a transportation management association (TMA) (please specify which TMA)-----
- In partnership with some other agency – public or private (please specify)-----

#### 9. Whose responsibility is it in the organization to administer the program? *(check all that apply)*

- An Employee Transportation Coordinator
- Human Resource Department
- Other (please specify)-----

**10. To whom does the in-charge of this operation report? (check one of the following)**

- President /Vice-President/ Director of the Company
- Head of the Department - Human Resources
- Head of the Department – Finance Department
- Other (please specify)-----

**11. What kind of transportation services do you finance or support your employees with: (check all that apply)**

- Guaranteed Ride home services
- Carpools
- Vanpools
- Shuttle Services (to and from transit stops)
- Parking Charges
- Parking Cashouts
- Preferential Parking
- Transit Subsidies
- Other Financial Incentives (please specify)-----
- Other Measures (please specify)-----

**12. Please fill in the relevant details regarding each of the measures checked above: (Depending on the programs you provide, please fill the shaded boxes with the details. The details should include whether the measure is contracted out, cost of implementing, how many employees it serves, what are the parking charges, subsidies etc..)**

Service Types	When Started?	Contracted Out (Yes/No)	Estimated Employees Using Service	Cost of Implementing (\$)	Charges / Subsidies
Guaranteed Ride Home					
Carpools					
Vanpools					
Shuttle Services					
Parking Charges					
Parking Cashouts					
Preferential Parking					
Transit Subsidies					
Other Financial Incentives					
Other Measures					

**13. Are these services offered to: (check one of the following)**

- all employees of the company at your location
- specially targeted groups based on their residence, income, position, etc..

**14. What prompted your organization to take up such measures: (check all that apply and rank them in order of importance).**

- |  | <b>Rank</b> |
|--|-------------|
| — Regulation / Trip Reduction Ordinance                      | -----       |
| — Expand Employee Benefits Packages                          | -----       |
| — Reduce Company Expenses, e.g., parking, tax benefits       | -----       |
| — Personnel Concerns   | -----       |
| — Good Community Citizen, fulfilling social responsibilities | -----       |
| — Other (please specify)-----                                | -----       |

**15. What goal(s) are you trying to achieve through your transportation program? (check all that apply)**

- Employee Trip Reduction
- Reduce Congestion
- Reduce Pollution
- Fulfilling Social Responsibilities
- Realize Cost Savings
- Other (please specify)-----

**16. In your opinion, which of the above (Q.11) have been most effective in achieving your goals?**

1. -----
2. -----
3. -----

**17. What difficulties did you face while implementing the program? (check all that apply)**

- Inadequate knowledge about what needs to be pursued
- Organizational Communication
- Inadequate support from the top management
- Lack of employee interest
- Other management problems such as dealing with employees, paperwork, etc..
- Inadequate co-operation with the TMA or public agency
- Financial Resources
- Other Resources (please specify)-----
- Other (please specify)-----

**18. In your opinion, why did some of these did not yield the results you expected?**

1. -----
2. -----
3. -----

**19. Has your organization been able to save money by implementing these measures? Yes/No**

**20. What were the Program Implementation Costs (aggregate for the whole program)?**

- Start-Up Costs-----
- Gross (operating) Costs-----
- Net Savings (if any)-----

**21. In your opinion, have there been other tangible benefits (not related to cost) of the program?  
(check all that apply)**

- Easier recruitment of employees
- Increased sociability, affability among employees
- Other (please specify)-----

**22. Has your organization evaluated the effectiveness of these programs? Yes/No**

If Yes, what evaluation measures were used?-----

#### **SUPPORT FROM TOP MANAGEMENT**

**23. Have any of the senior executives in your company outwardly provided support to the program in terms of: (check all that apply)**



- Money
- Visibility
- Personal Use
- Public Encouragement
- Other (please specify) -----

**SUPPORT FROM OTHER AGENCIES**

**24. Has your organization received**

Organizations	Has Your Organization Received any external help from any organization?		
	Guidance about TDM <sup>1</sup> Measures (Yes/No)	Help for implementing any of these measures (Yes/No)	External funding (Yes/No)
Transportation Management Association (TMA)			
Public Agency (e.g., state dept. of transportation, mayor's office, etc..)			
Transit Authority			
Other (please specify)			

**25. As an employer, what kind of internal and external support (support from TMAs and public agencies) do you perceive as necessary for successful implementation of such programs in organizations such as yours? (check all that apply and rank them according to their order of importance)**

- |  | <i>Rank</i> |
|--|-------------|
| — Educating employers and providing guidance on what to undertake and how to implement | -----       |
| — Help in complying with local regulations   | -----       |
| — Management Commitment  | -----       |
| — Public Leadership  | -----       |
| — Provide financial resources  | -----       |
| — Provide other resources  | -----       |
| — Other (please specify)-----  | -----       |

**NON-PARTICIPATING EMPLOYERS**

**26. What are the reasons for your not participating in this program? (check all that apply)**

- Inadequate knowledge about what needs to be pursued
- Organizational Communication
- Inadequate support from the top management
- Other management problems such as dealing with employees, paperwork, etc..
- Inadequate co-operation with the TMA or public agency
- Financial Resources
- Other Resources (please specify)-----
- Other (please specify)-----

<sup>1</sup> Travel demand management

## **Appendix C: Summary of Companies Surveyed in St. Louis and the Travel Demand Management Programs They Offer**

### **A.G. Edwards**

A.G. Edwards has 3,900 employees at their One North Jefferson site. A.G. Edwards is a transit pass vendor that sells more than 185 transit passes a month. The company offers a \$20 transit and vanpool subsidy to its employees. Also, A.G. Edwards offers a carpool/vanpool matching program and bicycle facilities for its employees. In addition, the company distributes educational information and holds promotional events for the transportation program.

### **Blue Cross Blue Shield**

Blue Cross Blue Shield of Missouri has 1,200 employees at the Chestnut location. The company has an Employee Transportation Coordinator (ETC) who distributes educational information and holds promotional events. The company became a transit pass vendor in 1996 and also has a carpool/vanpool-matching program.

### **St. Louis County Government**

St. Louis County Government located at 41 S. Central has 2,324 employees. St. Louis County has an Employee Transportation Coordinator (ETC) who distributes educational information and holds promotional events such as Taste of Transit Fairs for the employees. St. Louis County is a transit pass vendor and is considering a transit subsidy program. The County charges its employees for parking as well.

### **Wainwright State Office Building**

The Wainwright State Office Building has 660 employees at the worksite. There is an Employee Transportation Coordinator (ETC) who distributes educational information and holds promotional events. The Wainwright Building is a transit pass vendor and offers a full transit subsidy (\$40/month). The program has the maximum number of participants.

### **Department of Veteran's Affairs**

The Department of Veteran's Affairs has 325 employees at the worksite. There is an Employee Transportation Coordinator (ETC) who distributes educational information and holds promotional events. The Department of Veteran's Affairs is also a transit pass vendor.

### **Greensfelder, Hemker & Gale**

Greensfelder, Hemker & Gale, a law firm located at 10 S. Broadway, has 170 employees. The company has an Employee Transportation Coordinator (ETC) who distributes educational information. The company is a transit pass vendor and provides its employees a full transit subsidy (\$40 month). The company also offers a carpool/vanpool matching program. Greensfelder charges its employees for parking as well.

## **Appendix D: Summary of Companies Surveyed in San Diego and the TDM Programs they offer**

### **Union Bank**

Union Bank is located in downtown San Diego and has 315 employees. It initiated the transportation program when the trip reduction mandate was imposed in San Diego.

Union Bank sells about a 100 transit passes every month and provides up to \$60 subsidy to transit and vanpool users. Also, the Union Bank offers a carpool/ vanpool-matching program through Ridelink.

In addition, the organization distributes educational information regarding alternative commuting for its employees.

### **Pharmigen**

Pharmigen is located near a Coaster station and has 400 employees. It provides \$65 per month subsidy to carpoolers, vanpoolers or transit users. Pharmigen offers its own ridematching service to its employees and also operates a small-scale guaranteed ride home program for ridesharers. The employee transportation coordinator also distributes promotional and educational information through e-mail.

### **Rick Engineering**

This company is also located in downtown San Diego near a Trolley station. It has 150 employees. The company offers a \$60 vanpool subsidy as well as \$25 per month as transit subsidies.

### **Sony**

Sony is located in Via Espirillo, San Diego and there is no rail station nearby. It has 3500 employees. The office operates seven days a week, twenty-four hours a day. Sony covers the cost of gasoline for vanpools and each employee pays \$25 per month for ridesharing. The company also provides preferential parking for carpools. Sony supports flexible work hours, telecommuting as well as compressed workweeks.

**SAIC**

SAIC is located near a Coaster station and has 3600 employees. It provides its employees with \$25 per month for participation in ridesharing.

**West Capital Financial Services**

This company has 275 employees. The company is not located near any rail station. The company provides \$25 per month subsidy for carpools or vanpools. It also provides preferential parking for carpools.

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