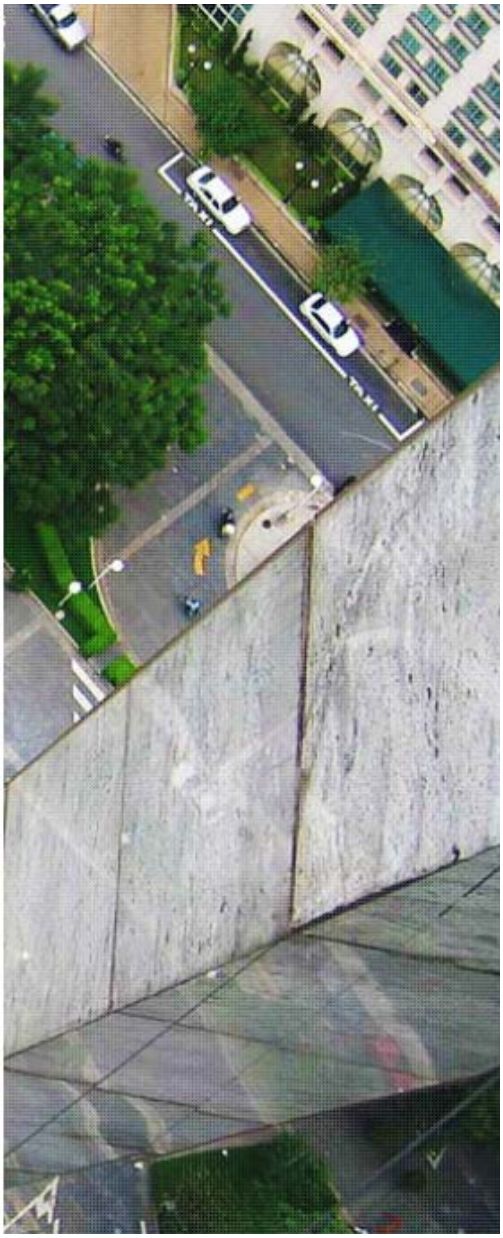
A commuter-based Traffic Demand Management Approach for Latin America: Results from Voluntary Corporate Mobility Pilots in São Paulo and Mexico City



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Summary

This report presents experiences of two pilot studies with voluntary corporate mobility programs in Sao Paulo and Mexico City. Corporate mobility programs, even voluntary ones, have been shown to be important components of broader efforts in traffic demand management (TDM), reducing single occupancy vehicle use and decreasing congestion. While voluntary corporate mobility programs are an integral element of the mobility management regime for most significant U.S. and European cities, few corporate mobility programs exist in Latin America and little data is available on the potential of these programs in this context. The pilot presented in this report focuses on the Berrini Avenue and Santa Fe business districts in Sao Paulo and Mexico City respectively. In each area, private companies were engaged in voluntary corporate mobility programs supported by the World Bank and the WRI as a local partner in Sao Paulo. Results are documented in two surveys among company employees on commuter preferences and patterns, taken before and four months after implementation of a company mobility program. Pilot results indicate a high potential impact of voluntary corporate mobility programs in Latin America, but also highlight the need for active support by company management and a set of robust, public or private, alternatives. Results also underscored the importance of addressing company parking as a critical factor influencing employees' decision to drive to work. As a result of the two pilot programs, city governments in both cities are stepping up involvement with traffic demand management.

Introduction

This report presents the results of two Voluntary Corporate Mobility pilots conducted by the World Bank in Sao Paulo and Mexico City. Corporate Mobility Programs are employer-led efforts to reduce the commuting footprint of their employees and in several U.S. and European cities have already become a standard element of those cities' mobility management toolkit. Voluntary programs, such as the ones piloted, depend on aligning the public interests of reduced congestion and pollution relief with a company's interests in enhancing employee morale and productivity and increasing profits. These demand-sided strategies have worked in the U.S. and European cities, but whether they would work in Latin American cities has been a hypothetical question, since the context is different and the transportation alternatives available to single occupancy vehicles are different.

The two pilots were conducted as part of the World Bank's broader urban transport work in Latin America to support client cities achieve goals for sustainable, efficient, and equitable transport systems that can support competitive, livable, efficient cities. The objectives of the pilot were to:

1. Identify the key issues, dynamics, and constraints framing the possibilities for mobility management strategies in Latin American cities.
2. Assess the potential of Voluntary Corporate Mobility Programs in these cities.

3. Engage with the city governments on the role of mobility management strategies to address congestion, automobile related energy-use, and pollution issues in a learning-by-doing environment.

After a brief overview of the need for corporate mobility programs in the Latin American context, this report describes the pilot's approach to introducing mobility programs at the various companies. Next, survey results combined with information from transport Origin Destination (OD) surveys in both cities are used to describe the commuting situation for employees in the pilot areas. After a description of implemented activities and preliminary results in terms of changed commuting patterns, the report presents key findings and next steps.

Background: The Need for Corporate Mobility Programs as Part of a Larger Effort to Manage Traffic Demand in Latin America

Rapid motorization has become a central element of the mobility landscape in Latin American megacities like Sao Paulo and Mexico City. The Sao Paulo metropolitan area, with a population of 19.8 million people, is one of the most motorized in the world with 8.5 million motorized vehicles. The municipality itself has 6.8 million vehicles—its motorization rate of 615 vehicles per 1000 people[1] is higher than that of countries such as France or Germany[2]. In Mexico City, the motorization rate is 353 vehicles per 1000 people for the city and 267 vehicles per 1000 habitants for the metropolitan area[3]. These levels of motorization are causing extreme congestion and are essentially debilitating to these cities. Indices of urban congestion have ranked Mexico City's congestion worst in the world (tied with Beijing), with São Paulo ranking 6th. The congestion significantly slows down buses, making them less attractive and driving up system costs. Cars pollute, increase energy-use, and are associated with high levels of accidents.

To address this level of motorization, more and high-quality public transport is important, but only part of the solution. Both Sao Paulo and Mexico are taking steps to close their infrastructure gap with ambitious BRT and urban rail infrastructure investments, ongoing and in planning.[4] International experience, however, suggests that while quality public transport is critical to creating cities with sustainable livable mobility systems, public transport investments needs to be complemented by other actions in complimentary markets, such as improving cycling and walking options or measures to pro-actively addressing automobility.

The cities that have been most successful in addressing their mobility challenges have indeed complemented public transport improvements with a variety of complementary strategies. Cities like London, Singapore, Tokyo, and Copenhagen have established sustainable mobility systems that can reconcile increasing prosperity (more trips and generally more income that can be spent on cars) with livable, efficient cities where congestion and the problems of motorization if not altogether tamed, are at least kept in check. Seoul and New York are other high profile examples of cities that have had significant success in recent years with addressing seemingly intractable problems of congestion and associated problems of automobility. While there is no single silver bullet, a common playbook of strategies is emerging that includes

[1] http://www.nossasaopaulo.org.br/observatorio/regioes.php?regiao=33&tema=13&indicador=139
[2] http://data.worldbank.org
[3] http://ciudadanosconvision.mx/ciudadanosconvision_20120514.pdf
[4] In Sao Paulo, three urban rail lines are under construction and three more are in advanced stages of planning; the municipality has also prioritized a 150 km proposed BRT network in the next four years. In Mexico, five BRT lines and one new metro line have opened in the last decade and plans call for several more.

extensive development of non-motorized modes and a suite of mutually reinforcing strategies aimed at reducing the demand for private motorized trips.

A common theme across all such 'demand management' strategies is that they change the paradigm for government participation in urban mobility systems. In other words, they require governments to go from being primarily a supplier of infrastructure and services to proactively managing the demand for automobile trips. In some sense, such a role is not foreign; local governments in both Sao Paulo and Mexico already use a *pico placa* system to restrict cars with particular number plates at certain times. However, international experience suggests a wide-ranging set of alternatives that focus more directly on incentives and range from relatively low-cost/low-disruption measures to measures such as congestion pricing that are capital intensive, very political, and quite disruptive.

Voluntary Corporate Mobility Programs

Voluntary Corporate Mobility Programs are among the lowest cost and least disruptive of various potential TDM strategies. Corporate Mobility Programs shift some of the responsibility for the commuting footprint of their employees to the employers and have become a standard feature of the transport strategies in most major cities in the U.S. and Western Europe. These mobility programs range from completely voluntary programs to mandatory programs, with a range of possible regulatory variants. Although the trip reduction potential of a completely voluntary program is limited compared to mandatory and regulatory alternatives, they nonetheless can serve an important role by initiating change and engaging city governments and the private sector in a mobility management role.

The kind of actions in a mobility program that will gain results depend on a complex set of behavioral (cultural attitudes towards car-sharing and public transport) and supply options (availability of convenient public transport options), corporate mobility programs generally focus on reducing the private vehicle footprint of company employees by:

1. Shifting single-occupancy vehicle (SOV) trips to high-occupancy vehicle (HOV) modes,
2. Increasing the share of non-motorized trips (NMT),
3. Shifting peak travel to non-peak times, and
4. Providing alternative work arrangements eliminating the need to travel at all (telework) or during specific times of the week (compressed work week).

Experience suggests that only a few companies are able to develop and consistently implement trip reduction policies without a regulatory requirement, but voluntary programs do exist and when successful provide a powerful demonstration that employer programs can help companies achieve cost savings and increase employee productivity and moral through low-cost actions that also benefit society. In the pilot studies presented here, a voluntary approach was chosen to minimize the need for financial commitments by the participating companies, and because any mandatory approach would require some sort of already enacted ordinance to oblige companies to participate.

Introduction to the Pilot Studies in Sao Paulo and Mexico

The two pilot projects in Sao Paolo and Mexico City were designed to study the specific context and opportunities for voluntary mobility programs in Latin America. The pilots built on a 2010 World Bank study[5] for the City of Sao Paulo, which had recommended different levels of measures to directly address automobility in the city as a critical element of a broader strategy

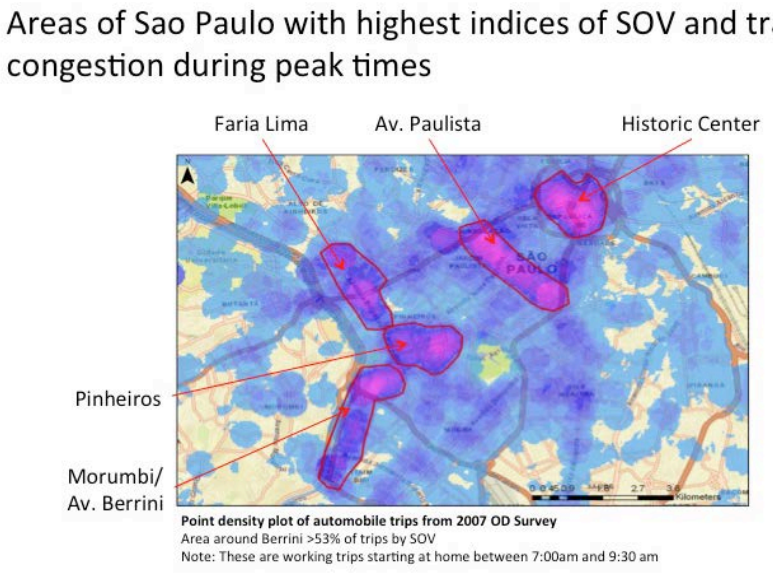
[5] Sao Paulo City Study ESW

to complement investments in public transport. The study showed that demand-side policies targeting private vehicle use could help deter congestion in Sao Paulo. According to the study, these policies should be incentive-based and pursued in voluntary partnership with private employers to change employee commuting behavior through for example reducing SOV use, facilitating alternatives (carpooling or other modes of transport), or enabling different work week schedules and telecommuting. The study also already identified parking—specifically the provision of free or reduced-price parking by employers—as a critical contributor to employees' decisions to drive to work.

Study Areas

The two pilots were carried out in the Berrini Avenue region in Sao Paulo and the Santa Fe business district in Mexico City. Both areas were selected for their high percentage of SOV during peak hours compared to the rest of the city, as well as for the presence of a cluster of private employers who could be engaged in the mobility programs. Figure 1 illustrates the areas in Sao Paulo with the highest indices of SOV and congestion during the morning peak hour. Table 1 compares the SOV rates for both pilot areas to the city average.

Figure 1. Congestion in Sao Paulo during the Morning Peak



Source: Sao Paulo 2007 OD Survey

Table 1. SOV Rates for Mexico City and Sao Paulo from OD Surveys

	Sao Paulo	Mexico City
Pilot Area SOV rate	53%	41%
City average SOV rate	34%	20%

Source: Adapted from Sao Paulo and Mexico City 2007 OD Surveys.

In the Berrini Avenue region in Sao Paulo, the pilot zoomed in on two specific office complexes with about 6,000 employees: the *Centro Empresarial Nações Unidas* (CENU) and the World Trade Center (WTC). These two developments consist of a shopping mall, four towers with business offices for about 120 companies, and three hotels (the Hilton São Paulo Morumbi, Meliá, and the Sheraton). The Santa Fe pilot area in Mexico City includes offices of companies such as Microsoft[6], IBM, and HP, many of which have a long history of commuting programs in their headquarters in the United States.

[6] Microsoft happend to be in both locations in Sao Paulo and Mexico City.

Company Recruitment and Training

At each of the pilot locations, the study team engaged with companies inside the building complexes to facilitate the set-up of voluntary corporate mobility programs. In Mexico City, Embarq Mexico was involved as a local partner.

To engage the companies, two seminars were organized. The first was used to present the project to the companies' management, highlight its potential benefits (in terms of lower parking costs, improvements in employee morale and productivity, and corporate social responsibility benefits from reduced pollution and congestion), and ask for the companies' voluntary involvement. Each company interested in active participation was asked to assign an employee transportation coordinator (ETC), who was then trained in the subsequent workshop, implemented by U.S. based transport company TMS, on mobility plans and strategies for the company. As a result of the workshops, several companies agreed to voluntarily participate by (i) conducting a survey on commuting patterns and transport preferences among employees; (ii) assigning a transport coordinator to develop a mobility plan for the employees and promote it inside the company; and (iii) trying to adopt at least two of the transport strategies identified based on the employee survey. In addition, the companies agreed to apply the same survey four months after implementing the strategies, in order to measure their impact.

Project Partners

In both cities, several project partners were brought into the project and introduced to the companies to increase the companies' access to transport alternatives. In Sao Paulo, project partners included Transfretur, the union for shuttle companies, and Caronetas, an online service for carpooling arrangements. Bike Anjo, a non-profit organization to stimulate biking to work, and TCUrbes, a company specialized in designing and planning bicycle and pedestrian infrastructure, were also included. In addition, SOBRATT, the Brazilian Society of Teleworking and Tele-activities, joined the project to explore opportunities for more flexible work schedules. Zazcar, at the time Brazil's only car-sharing company, also became a project partner.

In Mexico City, similar services were identified for carpooling, shuttle bus, car sharing, and a bike volunteering organization. For carpooling, a partnership was established with Aventones, a company who has pioneered in selling carpooling software to companies in Mexico City.

Pilot Companies' Initial Survey Results and Transport Alternatives

In Sao Paulo, 18 companies conducted the baseline survey, of which 10 later implemented some type of TDM intervention. Because of a later start for the pilot in Mexico City, only data from the baseline survey for three companies is available. Information from the employee surveys is combined with the Sao Paulo OD Survey data to provide an understanding of the transport context of the corporate mobility programs and the options available to the employees.

Initial SOV Rates among Participating Companies

The baseline survey shows an average SOV rate for the three participating companies in Mexico City of 59%, and for the 18 companies in Sao Paulo of 57%. (See Annex A for SOV times by company.) These numbers are considerably higher than the average SOV rate for the city and underscore the need for interventions in these areas. Reported commuting times were also high, reflecting a burden on the employees. The average commuting time for the employees in Sao Paulo was 52 minutes with an average travelled distance of 13 km. In Mexico the average commute was 76 minutes. Table 2 illustrates the range in commuting times.

Table 2. Commuting Times for Sao Paulo and Mexico City

Time ranges	Sao Paulo	Mexico City
1-19 min	11.4%	21.4%
20-39 min	25.6%	9.4%
40-59 min	24.0%	14.5%
60-89 min	18.1%	21.0%
90-119 min	14.4%	16.8%
>120 min	6.5%	17.5%

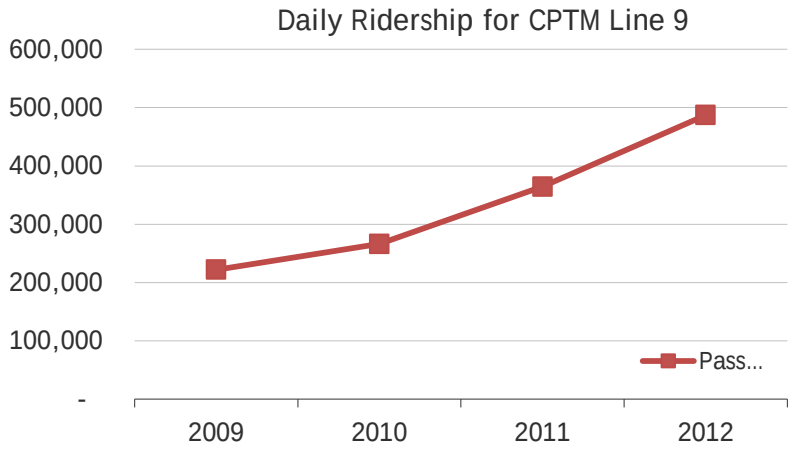
Source: Employee surveys among participating companies.

Transportation Alternatives

To effectively change commuting practices, alternatives to SOV use must be available and considered by some to be more convenient than driving. Evaluation of transport demand management (TDM) programs has found that employers located near transit have higher success rates for their programs compared to employers further away (Kuzmyak, Evans, & Pratt, 2010). In the case of Mexico City and Sao Paulo, however, public transit is often overcrowded during peak times, reducing its appeal as an alternative to driving.

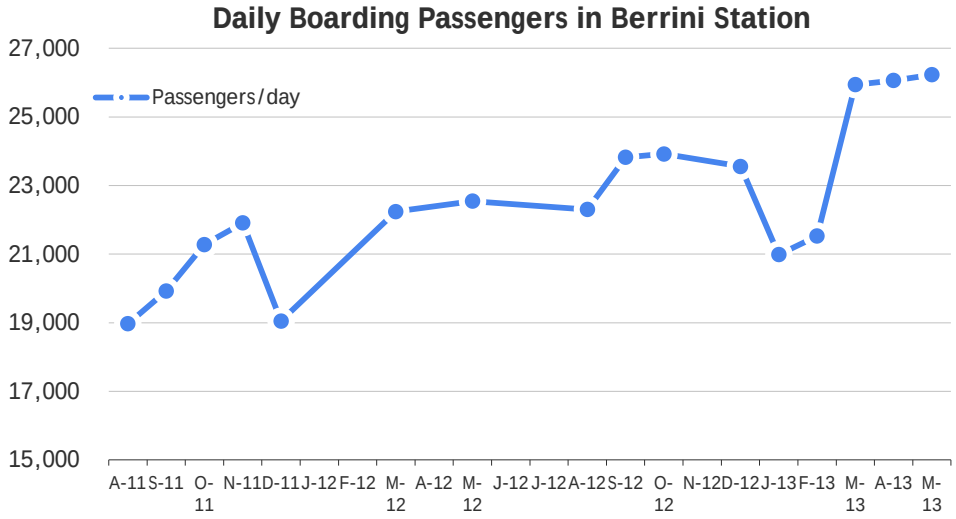
Figures 2 and 3 illustrate the heavy use and over-crowdedness of both Line 9, which serves the Berrini business area, and the Berrini station itself. The Berrini station is only 500 meter from the building complex, but the line, which serves 487,133 daily passengers, is highly congested on both directions during the morning and afternoon peak hours. From 2009 to 2012 this line saw a ridership increase of 219%. Since May of 2013, just daily boarding for the Berrini station has been of 26,232 passengers. This is an increase of 138% since August of 2011.

Figure 2. Transported Passengers for Line 9 - Esmeralda (Osasco - Grajaú)



Source: Adapted from CPTM's Annual Administrative Reports from 2009-2012

Figure 3. Berrini Station Daily Boarding by Month



Source: Adapted from CPTM's monthly boarding reports (tablelas de movimentação).

In Sao Paulo, data from the 2007 OD Survey shows that higher income segments of the population—who have a choice and who have access to cars—less rely on public transit and use their own car to drive to work (Table3).

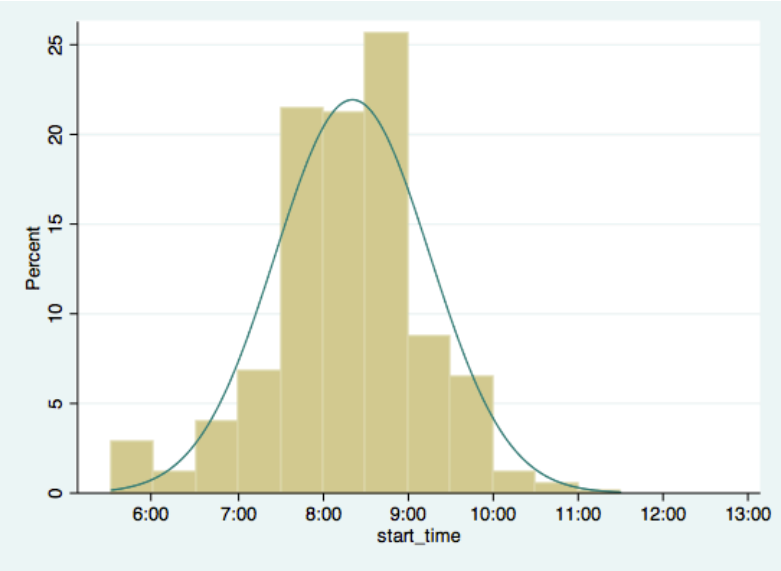
Table 3. Transportation Mode to Work by Income Percentile (%)

	Lowest	**Highest**		
Mode	**50th**	**25th**	**10th**	**5th**
Drive Alone	23.6%	63.1%	70.8%	73.9%
Carpool	4.8%	7.3%	7.6%	7.8%
Fretado	1.8%	0.8%	0.5%	0.3%
Metro	11.5%	7.8%	5.6%	4.3%
Train (CPTM)	2.9%	0.7%	0.3%	0.26%
Bus	28.9%	7.4%	4.4%	3.5%
Walked	25.8%	11.5%	9.1%	8.4%
Taxi	0.3%	1.1%	1.5%	1.3%
Total	**100**	**100**	**100**	**100**

Source: Authors, based on Sao Paulo's Origin Destination Survey, 2007.Distribution of Work Arrival Times

The initial survey among participating companies also illustrated that the bulk of employees arrives between 7:30 and 9:00am. From the people that arrived between 5:30 am and 11:30 am (95% of the 1,054 surveyed population), 68% arrived between those hours (Figure 4).

Figure 4. Distribution of Work Arrival Times



Source: Employee surveys among participating companies

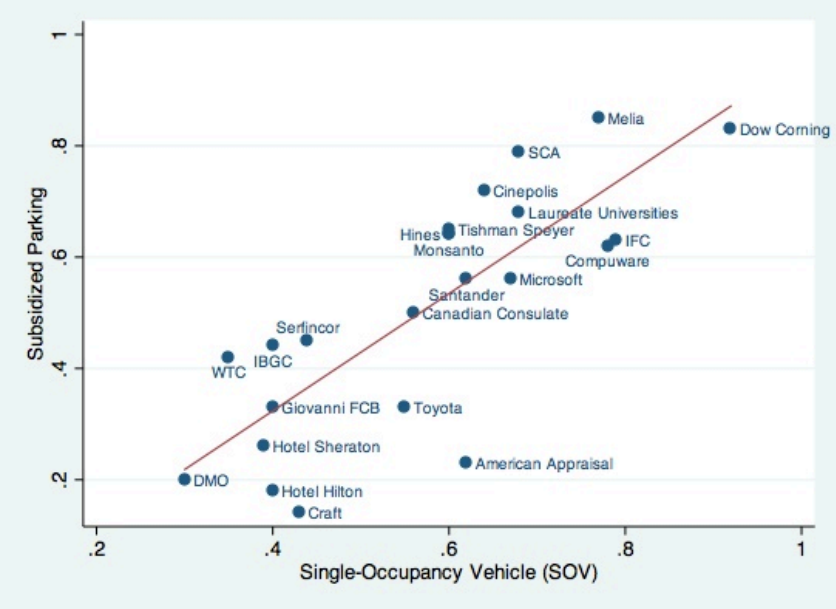
Teleworking

Survey results for Sao Paulo indicated that only one company, Microsoft, had a policy for teleworking. Almost 70% of the Microsoft employees were teleworking at least one day every two weeks. In the rest of the surveyed companies, an average of 6% of employees had teleworked at least one day during the last two weeks. In Mexico City, only 7% of employees for all companies had done at least one day of teleworking during the last two weeks.

Parking

An important finding that seems to replicate amongst major employers in Sao Paulo and Mexico City is that employees have widespread access to free parking. This is an important factor influencing SOV rates. Figure 5 is a scatter plot showing the relationship between a company's percentage of subsidized parking to employees and its SOV rate. The correlation between these two variables is R=.793. It is, however, important to note that survey response rates varied among companies and may have caused a bias in the survey results.

Figure 5. Level of Subsidized Parking and SOV Rates for Participating Companies in Mexico City and Sao Paulo



Source: Employee surveys among participating companies.

To better understand the influence of free parking on employee behavior and company decisions, a specific parking questionnaire was sent to the companies. Five companies (three in Sao Paulo and two in Mexico City) responded the questionnaire. Their answers showed that all of the office space leasing agreements included a certain number of parking spots per rented square footage into the leasing cost (Table 4). All companies then passed these free parking spots on to their employees, along with other parking spots added through a separate parking lease with the property managers. Only 2 of the 5 companies charged their employees for the extra rented parking spots, while the rest offered them at no cost for the employee.

Table 4. Parking Questionnaire to Surveyed Companies

Parking in Companies	Sao Paulo			Mexico City	
	Microsoft	Compuware	IBGC	SCA	Cinepolis
Number of employees	900	67	33	381	87
Parking spots included in the lease	150	6	12	106	49
Rented parking spots	465	45	2	82	23
# of employees with free parking	615	6	12	188	72
# of employees who are charged by their employer for a parking spot	0	45	2	0	0
% of employees with free or subsidized parking	68%	76%	36%	49%	83%
Cost per spot (USD)	$200	$151	$100	N/A	$110
Monthly spending in parking – USD – current scenario (bundled parking)	$93,000	$6,795	$200	N/A	$2,530

Source: Pilot study parking questionnaire.

These survey findings and information on company SOV rates underscore earlier findings from the 2010 World Bank study on transport and automobility in Sao Paulo: Office space leases with bundled parking ("free" parking included in the building lease) provide a strong incentive for companies to offer these parking spots to their employees, effectively subsidizing driving to work. Bundled parking also hinders the implementation of a popular TDM measure for "parking cash out," when a company offers its employees a choice between a parking space at work or

money in lieu of the parking spot. Parking cash out has been found to be one of the most effective measures to reduce SOV rates among employees[7] as it levels the playing field between driving and other modes. (Not giving a choice between parking and cash effectively only rewards employees who take advantage of the subsided parking.) Parking, however, also represents a very valuable source of revenue for the property managers, which might influence their support for any programs to reduce SOV use.

Implementation of the Corporate Mobility Programs

Companies participating in the program mainly focused their mobility programs on carpooling and teleworking (see Annex A for a list of interventions across companies.) A few other initiatives were tried as well.

Carpooling and Fretado Services

In Sao Paulo, one of the main interventions implemented by the companies was to register their employees with the Caronetas carpooling service, which can match employees from either the same or nearby companies for a ride. This services differs slight from other carpooling services in the US in that it is based on a closed network in order to address the safety concerns of users. Efforts to reserve dedicated parking spaces for carpoolers at the CENU and WTC were unsuccessful, as it would be difficult for the property managers to effectively manage and control use of these spaces, without additional costs. Another initiative to organize and set up a building-wide fretado service for CENU and WTC's 6,000 employees from more than 120 companies also was not successful due to low interest from the employers to inform their employees about this initiative[8]. One company, IBGC, started subsidizing fretado services to its employees during the pilot study.

Teleworking

Based on the survey results, which indicated that none of the companies in Sao Paulo other than Microsoft had a policy for teleworking, a teleworking program was implemented with the assistance of SOBRATT. The program was co-funded jointly with two of the participating companies, Compuware and IBGC. This intervention had full management support (including funding), assuring implementation beyond the three month pilot study. Management support in both companies was based on their interests to (i) contribute to addressing the region's urban mobility problem and air quality; (ii) increase employee productivity; (iii) improve quality of life among employees; (iv) improve talent attraction and retention; and (v) strengthen their institutional image among stakeholders. In addition, Compuware specifically was interested in learning how they perhaps could migrate to smaller offices in the near future and reduce their costs. The intervention looked at teleworking from five different areas, including project management, information technology, human resources, organizational structure, and legal/labor issues.

[7] An evaluation of 8 firms that implemented parking cash out under California's cash-out law showed that SOV rates fell by an average of 13%, and the largest decrease in driving rates occurred in a company located in downtown L.A., which in conjunction with a high transit coverage allowed a reduction of 22% (Shoup, 2005).
[8] Only about one hundred thirty people from a total of 19 companies expressed interest in an organized fretado service.

Other Interventions and Partnerships

In addition to the larger efforts to establish and promote carpooling and teleworking, smaller interventions also took place. For example, several months into the program, property managers at CENU agreed to reserve two parking spaces for cars from the Zazcar car-sharing program. In addition, property managers for CENU and WTC—through their regular meetings initiated by the project—approved the development and financing of a welcome package for new employees at any of the companies located in their buildings. The welcome package included a transportation section with descriptions of alternative transportation modes and information about the rail network and location of metro, train, and bus stations. The package further introduced the car-sharing spots that were located in CENU, a planned bike-sharing station outside the WTC, and several smartphone apps to help locate transit routes or provide real-time data on the location of SPTrans' buses.

Figure 6. Welcome Package for New Employees

Also as a result of the project and the new level of coordination among property managers, other new partnerships also became established. The Property Manager's Coalition, Conexão Berrini, with support by the Bank team, developed a dialogue with the borough administration and police department. They asked for better street lighting and patrolling in the area between CENU and the WTC buildings and the closest transit station, which is about two blocks away, to increase security for employees interested in using public transportation.

Pilot Companies' Commuter Profiles after Implementation of the Mobility Program

Not all companies were able to implement voluntary corporate mobility programs, but the ones that did actively pursued initiatives combined with incentives did have an effect on the commuting behavior of their employees. Table 5 presents an overview of the ten participating companies in Sao Paulo and their baseline and follow-up SOV rates. (See Annex A for a complete list of companies and their baseline SOV rates.)

Table 5. SOV Rates for Participating Companies in Sao Paulo

Company	Baseline SOV rate[9]	Follow-up SOV rate	Mobility Strategies			
Canadian Consulate	50.0%	40.0%	Caronetas			
Compuware	74.3%	67.2%	Caronetas	Teleworking Policy	Biking Workshop	
Dow Corning	78.3%	72.5%				
Hilton Hotel	37.6%	55.8%	Caronetas	Personalized commuting plan for new		

[9] SOV rates were calculated following the CTR program methodology from Washington State, where the count of all single vehicle trips made during the week are divided by the 5 days of the commute week.

				employees		
Hotel Sheraton	34.8%	41.3%	Caronetas	Biking Workshop		
IBGC	41.6%	27.3%	Caronetas	Teleworking Policy[10]	Subsidized transit pass	Parking cashout (gym membership)
Laureate Universities	67.1%	52.3%	Caronetas			
Tishman Speyer	58.1%	65.5%				
Toyota	51.9%	35.1%				
WTC	36.7%	41%	Caronetas			

Source: Employee surveys among participating companies[11].

Most companies subscribed to the Caronetas service, which was the least burdensome of all the initiatives since there were no financial costs for the companies or the employees for using the service.

Exploring shifts in mode share rates on a case-by-case basis, we can see that Toyota had a large decrease in their SOV rate, with a consequent increase of 15%12 in fretado use. Even though Toyota did not implement any direct initiative to support fretados, an hypothesis for this increase relates to the Bank's team effort to create a new fretado line for the building complex, where employees of all interested companies, including Toyota, were asked to write the names of the interested employees in using fretado, in the event that we could materialize a route (provided enough demand). In the end there was not enough demand because not every company passed on the list to their employees, nevertheless 40% (45) of Toyota employees had signed up to the list, thus showing real interest on using the service. We believe that just the fact of having made Toyota's employees think of fretado as an alternative and make them interested in it could have prompted some of them to look for these services on their own.

Even though the Hilton Hotel could seem as a case where the program had an adverse effect, a closer look of its numbers show that there is little linkage between this increase in SOV and the program, due to it's poor response rate, which was 3 times lower than the rate from the baseline survey (only 19 people responded compared to 50), and the initiative they did regarding elaborating a commuting plan for its employees was only for new employees, not for all employees. While the increase of this SOV is uncertain it can be hypothesized that there could have been a selection bias in the people who answered the survey this time as opposed to the baseline survey.

IBGC was the only company, which used financial incentives as a strategy, and they did so by fully subsidizing the transit pass to their employees. This is an important measure because even though under Brazilian law all formal employees are required to get a transit pass from their employer, this comes at a cost of a 6% deduction from their salary. IBGC did not take away this deduction, and as a result is saw a 10% increase in the mode share rate in transit use among its employees.

Key Findings and Lessons Learned

While the pilot in Mexico City is still ongoing, several key findings already emerge across the two pilot projects. These can be summarized as follows:

[10] When the follow-up survey was launched IBGC had not yet started phasing in their teleworking policy

[11] It should be noted that the three companies that saw a large increase in their SOV rates (Hotel Hilton, Sheraton and Tishman Speyer) also had very bad response rates, 13% and 10% respectively. See Annex A for a list of complete response rates for all companies.

[12] For results on all the mode share rates please refer to table A.2 of the Annex.

1. *Corporate Mobility Programs show a potential to change employee behavior and affect their mode of transport.* The results from actively participating companies indicated that significant decreases in SOV rates can be achieved, even with a voluntary program.
2. *"Getting it right" and management involvement are key.* The support for the corporate mobility programs has to come from the top, while opening communication channels to be receptive of the demands and concerns of their employees. It is important to study the context and provide a mobility program that fits the company structures and culture.
3. *Addressing free parking is an important element of any corporate mobility program.* The bundling of parking space with lease agreements provides incentive for companies to provide free parking to their employees, which effectively subsidizes driving compared to other modes of transport.
4. *City governments should play an active role in managing demand.* They already do as pointed before, but their strategies should also diversify their interventions by targeting identifiable populations who have a large incidence on congestion, throughout the use of cost-effective and incentive-based interventions.

In the case of parking, city governments might consider policies that can encourage developers to voluntarily start unbundling parking for any type of transaction, whether buying or renting an office building[13]. An example might be the U.S. city of Bellevue in Washington State, which has stipulated in its Transportation Development Code that any office lease has to have a separate line item to identify the cost of parking and a minimum rate for monthly long-term parking which costs no less than a current two-zone Metro pass (City of Bellevue, Washington, 2012). As building tenants might use this to decrease their leasing costs, the policy might be a gateway for developers to voluntarily start unbundling parking. It is important to keep in mind that while parking is ubiquitous, it's relationship with companies will vary depending on the city's real estate dynamics; and policies tackling it should properly identify the mechanisms on how it is offered. This point was clearly demonstrated in Mexico City and Sao Paulo, where some of the participating companies in Mexico City owned the building as well as the parking spaces, thus having little room for decreasing its parking costs.

Finally, several lessons were learned about the practical implementation of the pilot projects. In both pilot studies, getting high-level management involvement was complicated because of dissimilar corporate structures and general difficulties in getting access to the right person who could make the decision for the company to be involved in this kind of voluntary program. Although management did not always see the mobility issue as an urgent problem that could be solved from their end, employees were interested and expressed this concern throughout the different communication channels that were established, namely the commuting survey and other mobility events for raising awareness. Finding "champions" within companies, who would promote the mobility program, proved a key element for its success, but was not enough if management was not aligned because often these "champions were relocated to other areas and in several cases left the company.

[13] It is important to acknowledge that enforcing parking unbundling from developers has its inherent difficulties, as San Francisco has found out, since developers have been found to price the parking well below market rate in order for the buyer or renter to acquire it (Weinberger, Kaehny, & Rufo, 2010).

Conclusion and Next Steps

The results from the two pilot studies have indicated the potential for corporate mobility programs in the Latin American context. With active engagement and support by management, significant results can be achieved. Moving forward, however, addressing the provision of free parking by unbundling and setting maximum caps as opposed to the current minimum parking requirements for buildings will be key. The experiences from the pilots have also brought to the foreground the important role city governments can play in demand management. By enabling and requiring corporate mobility programs, city governments broaden their influence on traffic, pollution, and congestion in the city. The pilot identifies roles for the city as a champion and facilitator of good practices, such as voluntary trip reduction programs, as well as a role as liaison for issues such as telework, fretados, carpooling, and car-sharing-modes that ideally could be supported by the city as complements to their support for the public transport system, with direct impacts on congestion.

Annex A

Table A.1. Transport Mode Share Rate for Participating Companies in Sao Paulo

	SOV		Transit		Telework		Carpool		Fretado		Walking		Biking	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Canadian Consulate	50.0%	40.0%	12.2%	31.3%	0.0%	0.0%	2.2%	15.0%	21.1%	11.3%	5.6%	2.5%	2.2%	0.0%
Compuware	74.3%	67.2%	8.1%	6.7%	5.7%	16.1%	4.8%	2.8%	1.9%	5.6%	0.0%	0.0%	2.4%	5.6%
Dow Corning	78.3%	72.5%	8.3%	0.0%	13.3%	15.0%	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hilton	37.6%	55.8%	37.2%	27.4%	0.0%	0.0%	7.6%	12.6%	6.0%	4.2%	4.0%	0.0%	2.0%	0.0%
IBGC	41.6%	27.3%	48.8%	58.0%	0.0%	0.0%	4.0%	6.7%	3.2%	6.7%	0.0%	6.7%	0.0%	6.7%
Laureate	67.1%	52.3%	20.7%	30.8%	5.7%	0.0%	0.7%	5.4%	0.0%	3.8%	5.7%	7.7%	0.0%	0.0%
Sheraton	34.8%	41.3%	52.5%	47.5%	0.0%	0.0%	6.6%	2.1%	3.3%	0.4%	0.0%	0.7%	0.0%	2.1%
Tishman Speyer	58.1%	65.5%	25.6%	19.1%	0.0%	0.0%	3.7%	4.5%	7.0%	9.1%	0.0%	0.0%	0.0%	0.0%
Toyota	51.9%	35.1%	20.6%	28.2%	0.0%	0.3%	13.8%	7.5%	9.1%	24.3%	0.9%	0.7%	0.0%	0.3%
WTC	36.7%	41%	41.0%	38.1%	0.0%	0.0%	8.6%	5.2%	7.1%	6.5%	0.5%	1.9%	0.5%	0.6%

Table A.2. Percentage Change in the Mode Share for Participating Companies

	SOV Rate	Transit	Telework	Carpool	Fretado	Walking	Biking
Canadian Consulate	-10.0%	19.0%	0.0%	12.8%	-9.9%	-3.1%	-2.2%
Compuware	-7.1%	-1.4%	10.4%	-2.0%	3.7%	0.0%	3.2%
Dow Corning	-5.8%	-8.3%	1.7%	12.5%	0.0%	0.0%	0.0%
Hilton	18.2%	-9.8%	0.0%	5.0%	-1.8%	-4.0%	-2.0%
IBGC	-14.3%	9.2%	0.0%	2.7%	3.5%	6.7%	6.7%
Laureate	-14.8%	10.1%	-5.7%	4.7%	3.8%	2.0%	0.0%
Sheraton	6.5%	-5.0%	0.0%	-4.5%	-2.9%	0.7%	2.1%
Tishman Speyer	7.3%	-6.5%	0.0%	0.8%	2.1%	0.0%	0.0%
Toyota	-16.8%	7.6%	0.3%	-6.2%	15.2%	-0.3%	0.3%
WTC	4.6%	-2.9%	0.0%	-3.4%	-0.7%	1.5%	0.2%

Table. A.3. Survey Response Rate for Participating Companies in Sao Paulo

Companies	Response rate baseline	Response rate follow-up
Canadian Consulate	30%	27%
Compuware	54%	46%
Dow Corning	75%	50%
Hilton	35%	13%
IBGC	45%	54%
Laureate	44%	41%
Sheraton	31%	24%
Tishman Speyer	20%	10%
Toyota	57%	53%
WTC	81%	60%