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Menos Estacionamento, Mais Incentivos para o Transporte Alternativo: Como mudanças na lei que exige a construção de número mínimo de vagas pode tornar o setor imobiliário mais sustentável – e como um projeto piloto do Banco Mundial pode servir de base para essa mudança

Andréa Leal¹, Diego Canales², Georges Darido³ e Shomik Raj Mehndiratta⁴

¹ World Bank, Rua Wanderley, 1223, São Paulo, SP, Brazil, aleal@worldbank.org

² World Bank, dcanalessalas@worldbank.org

³ World Bank, gdarido@worldbank.org

⁴ World Bank, smehndiratta@worldbank.org

RESUMO

O Projeto Piloto de Mobilidade Corporativa CENU-WTC é o primeiro projeto desenvolvido pelo Banco Internacional de Reconstrução e Desenvolvimento (BIRD) para melhorar a mobilidade em parceria com o setor privado. O Piloto está sendo implementado na cidade de São Paulo, uma área metropolitana com 19,8 milhões de pessoas, uma das mais numerosas frotas de veículos motorizados do mundo – 8,5 milhões – e alguns dos piores índices de congestionamento.

Embora a solução para o problema dos congestionamentos no longo prazo resida em investimentos em melhores sistemas de transporte, como metrô, esses investimentos são caros e demandam muito tempo. Uma maneira menos custosa de melhorar a mobilidade é modificar as escolhas de deslocamento dos usuários, ou, em outras palavras, gerindo a demanda por transporte.

O objetivo do Projeto Piloto de Mobilidade Corporativa CENU-WTC é reduzir os deslocamentos em veículos com um único ocupante. O BIRD convidou empresas sediadas em dois complexos comerciais que juntos abrigam cerca de 6.000 funcionários para participar voluntariamente desse piloto. O BIRD vai desenvolver planos de mobilidade para as empresas, com o objetivo de incentivar seus funcionários a adotar alternativas, como o uso de carona, ônibus fretado, teletrabalho e bicicleta.

O projeto foi inspirado em casos de estudo de experiências bem-sucedidas em cidades do mundo todo que têm políticas de gestão de demanda de viagens (TDM em inglês) exigindo que as empresas tenham planos de mobilidade para reduzir o número de funcionários dirigindo sozinhos para o trabalho. A implementação do projeto será concluída em novembro de 2012, com um estudo de avaliação de impacto.

Se o projeto for bem-sucedido em sua meta de reduzir o número de pessoas dirigindo sozinhas, ele poderá lançar as bases para uma mudança importante na legislação municipal de São Paulo, que poderia passar a incorporar instrumentos de TDM. Um desses instrumentos é a gestão de estacionamento. São Paulo ainda tem legislação exigindo a construção de número mínimo de vagas de estacionamento para novos empreendimentos, enquanto a tendência global é justamente limitar a oferta de estacionamento, para desencorajar o uso do carro. O Projeto Piloto de Mobilidade Corporativa pode ajudar a reduzir ou banir a exigência de números mínimos de vagas, substituindo-a pela adoção de uma política estruturada, desenvolvida para estimular a adoção de alternativas de transporte.

Palavras-chave: mobilidade, sustentabilidade, gestão de demanda de viagens, requerimento mínimo de estacionamento.

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Fewer Parking Lots, More Incentives to Alternative Transportation: *How changes in the minimum parking requirement legislation can make the real estate sector more sustainable – and how a World Bank pilot project can serve as a base for this change*

ABSTRACT

The Corporate Mobility Pilot Project CENU-WTC is the first project developed by the World Bank (WB) to improve mobility in partnership with the private sector. This pilot is being implemented in the Sao Paulo city, a metropolitan area with 19.8 million people, one of the greatest vehicles fleets in the world – 8.5 million motorized vehicles – and some of the worst records on traffic jams.

While the solution for congestions on the long-run lies on investing in better transportation systems, such as metro, these investments are expensive and time-consuming. A less costly way to improve mobility is by changing the travel behavior of users, or, in other words, managing their transportation demand.

The Corporate Mobility Project's goal is to reduce single-occupancy vehicle (SOV) trips. The WB invited companies located in two office building complexes that together shelter about 6,000 employees to participate voluntarily in this pilot. The WB will develop mobility plans for each company to incentive employees to adopt alternatives such as carpooling, shuttle services, teleworking and biking.

The project was inspired by benchmarks of cities around the world that have Travel Demand Management (TDM) policies requiring companies to develop mobility plans to reduce the number of employees driving alone to work. The project implementation will finish by November 2012, with an impact evaluation study. If it manages to successfully reduce SOV trips, it can lay the foundation for changing Sao Paulo's municipal legislation in order to incorporate TDM instruments. One of them being parking management. Sao Paulo still has minimum requirements of parking for real estate developments, while the trend worldwide is to limit parking to discourage car use. The Corporate Mobility Pilot Project can support the reduction or banishment of the minimum parking requirements by putting in place a structured policy designed to stimulate the adoption of transport alternatives.

Keywords: mobility, sustainability, travel demand management, minimum parking requirements.

1. INTRODUCTION

The congestion problem in the São Paulo city is widely known. With its metropolitan population of 19.8 million people, it is one of the metropolitan areas with the greatest number of vehicles in the world – 8.5 million motorized vehicles – and, consequently, with some of the worst records on traffic jams. Accounting only for the city, it has 6.8 million vehicles, making it 615 vehicles per 1000 people¹. This motorization rates equal to those found in Canada and surpass the ones found in countries like France or Germany². Furthermore, according to IBM's Global Commuter Pain Index, São Paulo ranked as the 6th city in the world with the worst commute.

For the last 30 years or so, cities, companies and individuals began looking into these transportation problems, be: the lack of accessibility, parking shortages, long commute times, environmental degradation and even congestion, from a different lens. The typical solution was directed towards expanding the supply or accommodating an always-increasing demand of automobile vehicle trips, which often consists of increasing the amount of roads, parking lots and public transport services. While the solution on the long-run lies on adopting more efficient means of transport, creating better transportation systems such, as metro, train or BRT lines, these services are not readily available and take time to plan and build. As an example, the World Bank (WB) has made several investments in São Paulo with the intent of enhancing the transportation systems, with loans used for funding the construction of Lines 4 and 5 of the São Paulo Metro, which together add up to more than US\$ 1 billion dollars, among other several other loans for construction and rehabilitation of highways throughout Brazil.

But transport specialists progressively began rethinking these problems taking into consideration issues such as: scarce resources, lack of space, or the environmental and health externalities created by automobile trips, it was found that a way to complement more effectively and less costly these transportation enhancements, was by changing the travel behavior of users, or in other words to manage their transportation demand.

Mainly the objective of transportation demand management (TDM) can be reduced to four elements: 1) shift single-occupancy vehicle trips to high-occupancy vehicle trips, 2) increase the share of non-motorized trips, 3) shift auto trips during peak periods to non-peak periods and lastly 4) when possible to take out the need to travel at all (telework). This change in travel behavior is mainly done by providing information about a set of available transportation alternatives to people, incentivize their use, while also dis-incentivizing the use of the individual car. From the individual's perspective what TDM tries to do is to give them a bigger array of options (transportation modes) from where to choose and combine them in a way that maximizes their benefit.

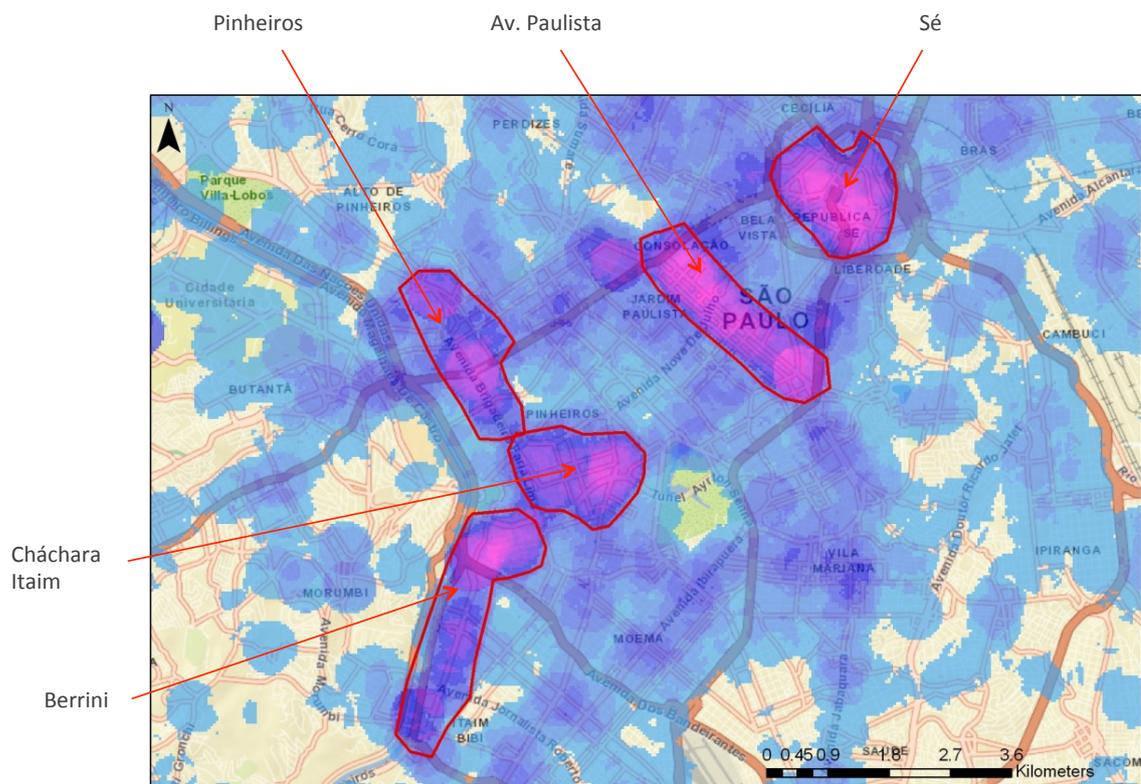
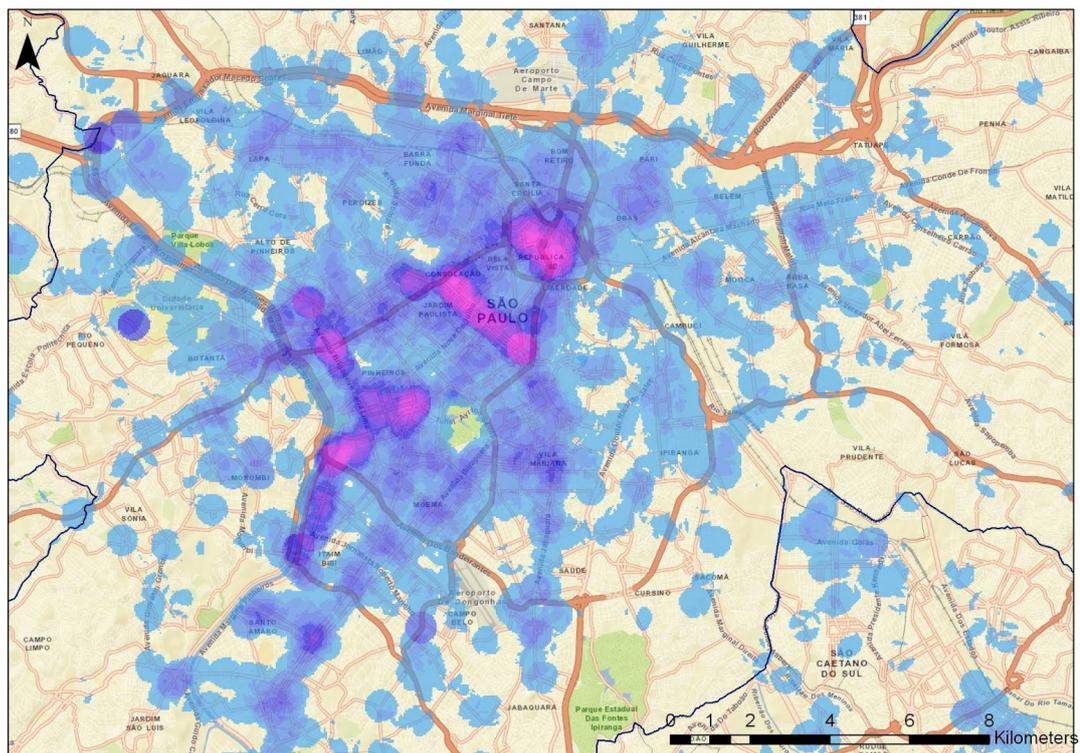
2. DESIGNING THE CORPORATE MOBILITY PILOT CENU-WTC

When planning how and where to implement a TDM pilot that would have considerable impact, it was seen from São Paulo's trip patterns, that during peak periods a large share of the cars on the streets belonged to employees commuting to work, making them a natural target for improving mobility in the city. Along that line of thought the next step was to find high-density employment areas where many of the commuters arrived by car (figure 1).

¹ <http://www.nossasaopaulo.org.br/observatorio/regioes.php?regiao=33&tema=13&indicador=139>

² http://data.worldbank.org/indicator/IS.VEH.NVEH.P3?order=wbapi_data_value_2009+wbapi_data_value+wbapi_data_value-last&sort=desc

Figure 1: Density map of São Paulo highlighting locations where people arrive by car



At the heart of one of these areas with high rates of single-occupancy vehicle (SOV) trips is the region surrounding the Engenheiro Luís Carlos Berrini Avenue region, and also one of the densest business centers of the city. An in-depth analysis from the 2007 Origin-Destination Survey showed that 53% of the trips to Berrini were SOV trips, compared to 31% of SOV trips in the city at peak time (Tab. 1).

Table 1: 2007 Origin Destination Survey commuting modes in selected areas

Area	Commute Modes (%)							Total Trips (raw)
	Drive Alone	Carpool	Bus	Metro	Walk	Shuttle Bus	Train	
Berrini	53	7	18	3	6	1.5	6.4	406
Cháchara Itaim	54	7	21	4	6	0.3	0	305
Pinheiros	50	7	26	3	6	0	1.6	301
Av. Paulista	33	4	12	34	10	0.5	0	788
Sé	19	4	22	37	13	0.3	0	917
City	34.7	6	20	10	22	0.7	1.6	15,537

Source: Own analysis from São Paulo Origin-Destination Survey 2007

Note: These are working trips, starting at home between 7:00 and 9:00 am

Despite narrowing down the geographic area, intervening the whole Berrini corridor would be very resource intensive due to the multiplicity of buildings; therefore we focused on a specific cluster of buildings where employers, in conjunction with the property managers, could implement the pilot. The selected cluster of buildings were two office building complexes Centro Empresarial Nações Unidas (CENU) and the World Trade Center (WTC). Composed of two shopping malls, four towers with business offices, the hotels Hilton São Paulo Morumbi, Meliá and the Sheraton, these condominiums shelter around 6,000 employees in total.

The criteria for choosing these particular complexes were the high density of employers and the track record of recurring traffic jams in the area, along with the idea that employers and property managers can have a great leverage on influencing the transportation choices of employees – or, in other words, work on the demand side of transportation. This is why the Bank sought to partner with companies and property managers. After years of investing on the supply side of transportation, the Bank has begun to develop projects along with the private sector to tackle the demand side of transport through the adoption of TDM actions.

2.1. Offering Transport Alternatives

In order to make the project viable, the Bank team identified and partnered with local partners that provided transport alternatives capable of serving the demand for HOV trips, non-motorized trips or decrease the need to travel at all. As mentioned earlier, the intention of TDM strategies is to: 1) shift single-occupancy vehicle trips to high-occupancy vehicle trips, 2) increase the share of non-motorized trips, 3) shift auto trips during peak periods to non-peak periods and lastly 4) take out the need to travel at all when possible (telework).

To accomplish the mission of shifting single-occupancy vehicle trips to high-occupancy vehicle trips, two local organizations were invited to partner in the project: Transfretur, the shuttle companies union, and Caronetas an online service that helps employees make carpooling arrangements within companies' employees and among companies' employees as well. Although the shuttle service is a widely known transportation option for commuting in Brazil, the value added we are trying to bring is by providing the opportunity to coordinate the services amongst companies, in order to generate economies of scale and increase the number of possible routes

and schedules, due to the larger number of passengers using the service. On the carpooling side, the advantage of using the company Caronetas is that since the carpools are matched among employees that work at the same company, or at companies in the same building, the carpool can be perceived as safer, and it also allows the users to split costs.

In order to increase the share of non-motorized trips, the Bank partnered with two organizations devoted to the use of bicycles. Bike Anjo, a non-profit organization that offers voluntary accompanying of employees willing to commute biking by experienced bikers that give tips on riding and safe routes; and TCURbes, a company specialized on developing facilities for bicycles and pedestrians, which could improve bike facilities in the buildings if the survey shows there is a high demand for this transport mode. In parallel, the Bank team has also developed a dialogue with the city administration and with the police department, to ask for better street lighting and patrolling in the area between CENU and WTC buildings and the closest transit station, which is about two blocks away, to increase security for employees interested in using public transportation. Moreover, the implementation of flexible work schedules for employees interested in commuting by transit, avoiding peak hours, is another alternative promoted in the project. Flexible schedules are also an efficient strategy to shift auto trips from peak periods to non-peak periods.

There is also a partner to help companies eliminate not only the motorized trips, but the commuting trips altogether - at least a few days a month. SOBRATT, the Brazilian Society of Teleworking and Tele-activities, is an NGO that gives technical assistance to companies interested in adopting teleworking. SOBRATT developed performance indicators to help companies evaluate employees that work remotely, it provides training for employees and management and can develop pilot experiences with small groups in the companies to test telework before actually implementing it.

Another company that is participating in the project is Zazcar, the only existing Brazilian car-sharing company. It can be a valuable alternative for employees willing to commute without their private cars that might need to use a car to run errands or for work-related activities during the day. This type of service also benefits companies with car fleets as it allows them to accrue savings by relinquishing their fleet and opt for a more efficient use-based system where they would only pay for the use of the vehicles and not for the costs involved with owning them (capital costs, depreciation, parking costs during dead-times, etc.).

2.2. The Workshops to Invite Companies and Capacitate Employees

Once this set of alternatives were put in place, Transportation Management Services (TMS), a US consulting firm specialized in TDM projects was brought on-board to help structure the pilot and provide TDM guidelines to the participating companies. The companies located in the chosen site were invited to participate in the project, voluntarily and free of charge. The WB organized two seminars, one to present the project to the companies located in the area, and another one to teach them how to implement the transport programs.

The companies that agreed to participate committed to implement four main actions: i) send a survey to all of their employees, designed to identify their commuting patterns and transport preferences; ii) choose a transport coordinator that would be in charge of creating mobility plans for the employees and promoting them inside the company; iii) try to adopt at least two of the transport alternatives presented by the project, based on the preferences attested by their employees responses; and iv) apply the same survey four months after the project implementation, in order to measure its impact.

For the employees working at CENU and WTC, mobility, or the lack of it, is a daily – and costly – issue. Besides facing long traffic jams in peak hours, parking lot availability is also a problem. In WTC and CENU, the parking lots capacity was surpassed, forcing employees to pay

for parking in the vicinities. For employees that do pay for parking space in one of the buildings, prices are high, about US\$200 (a vast majority of employers subsidize parking) and waiting times to leave the garages in peak hours can reach half an hour.

One of the main messages the Bank tries to convey to companies is that because of this high density and the close location, companies in CENU and WTC could benefit from the project by gaining economies of scale, improving their employees' quality of life and generating environmental gains by reducing congestion and cutting greenhouse gas (GHG) emissions – the sustainability tripod. Some of the companies participating in the project are Toyota, Monsanto and Microsoft.

2.3. What's in for a Property Manager?

Property managers benefit from the project by offering better services to their tenants, since parking garage has become a bottleneck for the companies. When the hotels Sheraton and Hilton host events, for instance, the parking supply for visitors is often insufficient. For that reason, Tishman Speyer, CENU's property manager, and Jones Lang, WTC's, are close partners in this entrepreneurship and have showed great interest in participating in the project.

A contribution of the Pilot Project to their roles as property managers is the possibility of creating a new job position: the transport concierge, a person hired by the building managers to be in charge of informing tenants on the transport options available and facilitating the commuters access to these alternatives. The transport concierge would be responsible, for instance, for organizing taxi pooling among employees of different companies and providing information on the existing shuttle services attending the building, the available transit options nearby and on bike routes in the area. In a scenario where employees are forced to wait half an hour just to leave the parking lots and then face over an hour of journey in the rush hour, or events' visitors can't find a spot to park their cars, having a transport concierge has the potential to be an extremely valuable service.

3. THE TDM CONCEPT

TDM techniques are largely used in the US and in Europe to control the volume of cars on the streets and alleviate congestion. The methods are varied and can range from municipal zoning laws restricting parking to requirements for new developments, which obligates companies to come up with mobility programs capable of limiting the number of employees commuting by car. The Corporate Mobility Pilot Project concept was based on insightful case studies on companies and public authorities that successfully implemented TDM policies.

On the public sphere, one of the main examples studied is the Washington State in the US. In 1991, the Washington State Legislature passed the Commute Trip Reduction (CTR) Law to address traffic congestion, air pollution and petroleum fuel consumption, and, in 2006, legislators passed the CTR Efficiency Act, requiring local governments in urban areas with traffic congestion to develop programs that reduce drive-alone trips and vehicle miles traveled per capita³.

The outcomes of such an ambitious policy to address congestion and improve mobility indicate that the Washington State headed on the right direction. According to the State's Department of Transportation, three years after the programs started, in 2009, people at CTR worksites across the state had reduced their weekday morning trips by about 30,000, traffic

³ CTR Overview. Washington State Department of Transportation.
<http://www.wsdot.wa.gov/Transit/CTR/overview.htm>

delays were reduced by 8% in the Central Puget Sound Region, and rush hour commuters saved estimated US\$59.00 each that year in fuel and time.

Accordingly, there has been good news in respect to GHG emissions. Since transportation represents about half of the GHG emissions in the Washington State, measures to reduce congestion have significant impact in emissions. The State data shows that participants in the CTR program drove 154 million fewer miles since 2007, saved about 3 million gallons of gasoline in the 2009-2010 biennium, and have prevented about 69,000 metric tons of GHG from entering the atmosphere each year.

Following State legislation, Seattle (WA) adopted its CTR Plan in 2008, requiring major employers to develop, implement and promote programs to help employees reduce drive alone commutes⁴. Specifically, the city requires organizations with 100 employees or more who report to work at a single site between 6 and 9 a.m. to:

- Appoint and maintain an Employee Transportation Coordinator for employees and to be the primary contact with the City;
- Develop and promote a program that helps employees reduce drive-alone commute trips;
- Submit the program to the City for review and approval once every two years;
- Conduct a commuter survey once every two years to measure employees' drive alone rates.

In addition to that, Seattle's CTR program includes transit subsidy and guaranteed ride home for employees.

The consequence of this type of legislation is having the private sector creating innovative solutions to attend the State's requirements, which they do by giving incentives and disincentives for employees not to drive alone to work. A good example is the Seattle Children's Hospital⁵. Through incentives, such as paying employees not to drive to work and giving bikes for free for employees willing to bike to work at least three times a week, the project successfully drove 60% of the hospital's 5,000 employees to change their habits and start using alternative transport modes – and saved millions of dollars by avoiding the construction of a new parking lot.

Another impressive case is Microsoft's headquarters in a suburban area of Redmond (WA). By offering shuttle bus services to employees and other incentives, the company achieved a rate of 40% of its 40 thousand employees using alternative means of transportation or telecommuting to work.

4. PARKING POLICY AS TDM INSTRUMENT

The project's main objective is to decrease the number of cars circulating in the city, and though not widely known, availability of parking and its market price can have a strong influence on people's decision on whether to drive alone or not (Hess, 2001). Automobile travel tends to be very sensitive to parking supply and price. The Price Elasticity of parking is -0.1 to -0.3 , or, in other words, a 10% increase in parking charges can reduce driving from 1 to 3% (Shaw, 1997). Charging the full cost of providing parking facilities – by not providing free parking to all residents in a building, but charging the cost of parking only from those who use it – can lead to a much more drastic reduction in SOV rates by 10 to 30%, if implemented with other Commute Trip Reduction strategies⁶.

⁴ City of Seattle's government website: <http://www.seattle.gov/waytogo/commute.htm>

⁵ TMS Presentation for the Corporate Mobility Pilot Project CENU-WTC Implementation Workshop
<http://www.empresas-pela-mobilidade.com/toolkit/>

⁶ *Online TDM Encyclopedia*, Victoria Transport Policy Institute.
http://www.vtpi.org/tdm/tdm28.htm/#_Toc128220496

Parking Management can help shift automobile travel to alternative modes, and improves access by creating more clustered, multi-modal land use patterns. As the number of parking spaces per employee in a commercial center declines, use of alternative modes tends to increase. Abundant, un-priced parking availability, on the other hand, tends to increase driving and discourage use of alternative modes. The adoption of minimum parking requirements is closely related to this problem, since the minimum requirements are generally designed to satisfy peak demand for free parking (Shoup 2002), which creates an oversupply of parking spaces⁷. It is not for other reason that this kind of policy has been reviewed in many cities around the world. Cities like Boston, Portland, New York City abandoned the minimum requirement back 1970⁸. Minimum parking represents a subsidy to driving, and is unfair to people who drive less than average. It encourages driving, which increases traffic congestion, crashes and environmental impacts.

Parking availability is not only a driver to stimulate car use, but it also has further socio-economic implications, impacting significantly the real estate market and its ability to develop low-income housing projects. Because parking is so expensive to provide, parking ratios and pricing policies strongly influence developers' ability to provide affordable housing. A study by Litman estimated that one parking space per housing unit increases the cost by 12.5% and two spaces increase the cost by 25%. Shoup found that in Los Angeles, construction of aboveground parking increases the cost of a unit by 27% and underground, 67%. However, since motorists park for free, they are not being charged for this cost increase. Shoup alerts that minimum requirements bundle the cost of parking spaces into the cost of the development, increasing the cost of all goods and services sold at the sites offering free parking.

Jia and Wachs compared prices of dwellings with and without off-street parking in San Francisco in 1996 and found that the price of a single-family unit without parking was 12% lower than the price of a unit with off-street parking. For units in condominiums, the price of units with off-street parking was 13% higher. Based on the conditions for households to qualify for mortgages in San Francisco, Jia and Wachs concluded that 24% more households could afford single-family houses and 20% could afford condominiums if the developments were built without off-street parking.

Abandoning the minimum requirements for parking could not only dis-encourage people from driving, but also have significant impact on real estate prices and on the low-income housing market.

It is hard to advocate, however for the abandonment of minimum requirements in Sao Paulo without having in place policies to account for the current parking demand and to lead the main actors responsible for generating trips – employers and schools – to change the way they relate to the city and to the impact they have on travel demand. The Corporate Mobility Pilot Project CENU-WTC is a demonstration project capable of showing how policies tailored to manage demand in business sites can have a positive impact in the reduction of SOV rates. These policies, then, can leave the field of voluntary initiatives of the companies, and became municipal laws, such as the ones that exist in Seattle, requiring employers to have mobility plans, transport coordinators, and be held accountable for the motorized trips they generate. The Corporate Mobility Pilot Project can support the banishment of the minimum requirements, by putting in place a much more structured policy designed not to increase the use of cars, but to stimulate the adoption of transport alternatives.

⁷ Parking Ratios – White Paper. FREILICH, LEITNER & CARLISLE. Study presented to the Town hall of Chapel Hill, NC. July 2002 <http://townhall.townofchapelhill.org/agendas/ca050523/8-attach4.PDF>

⁸ Weinberger, Rachel; Kaehny, John and Ruto, Matthew. *U.S. Parking Policies: An Overview of Management Strategies*. Institute for Transportation and Development Policy (ITDP). http://www.itdp.org/documents/ITDP_US_Parking_Report.pdf

5. EXPECTED OUTCOMES AND POTENTIAL POLICY IMPLICATIONS

The pilot project's goal is to reduce SOV rates in the participating companies. In other words, a successful project would lead to a change in behavior, encouraging a significant number of employees that used to commute driving alone to use alternative means of transportation or carpooling.

If it achieves its goal, the pilot is an experiment that can be used as a demonstration to the Sao Paulo city that there are viable alternatives to the current transport policies. The project's outcomes can serve as an input for changes on the Traffic Generation Poles law and on the legislation that requires minimum parking stock for real estate developments in Sao Paulo. The basic fundamentals of the project – having developments hiring transport coordinators and stimulating the use of alternative means of transportation – can be incorporated to new municipal policies and legislation, in line with international trends that intend to limit, instead of increase, the supply of facilities for motorized vehicles.

For developers, the gain is to have the option to build less parking when the market demands it, thus appealing to a different public that wants lower rents (either residential or commercial) in exchange for their parking space. In São Paulo most of the times parking spaces are built underground, increasing considerably the developments costs, which are latter transferred to the tenants. These types of policies could also boost the construction of affordable housing, which often have to be subsidized by the government.

The Corporate Mobility Pilot Project can lay the foundation for the reduction or banishment of the minimum requirement of parking spaces by development, by tying this change in the law to requirements such as mandating developers to hire transport coordinators and offer viable alternative means of transportation to tenants in the buildings – all this at a fraction of the cost of building additional parking spaces, thus making it a win-win situation. Regarding the Traffic Generation Poles law, the project can be a driver for changes to devote more investments to public transport and to the development of facilities for alternative modes of transport – like bike racks and spaces for embarkation and disembarkation of shuttle buses passengers – than to road system improvements.

In cities engaged in improving sustainability, the question is no longer how many parking spaces a new development needs to accommodate all tenants, but what transport alternatives do they offer so that the tenants do not need to commute driving. Limiting the number of parking spaces and providing incentives for new mobility solutions might be the essence of a new, sustainable transport policy for the Sao Paulo city, and, consequently, the key to the development of a more sustainable real estate sector. The Corporate Mobility Pilot Project CENU-WTC can be the empirical evidence showing what are the instruments to achieve this change in Sao Paulo.

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