# THE FUNDAMENTAL STUDY ON THE FEASIBILITY OF INTRODUCING WORKPLACE PARKING LEVY IN JAPN

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## ABSTRACT

This study aims to analyze the feasibility of a Workplace Parking Levy (WPL) in Japan. Surveys were conducted on employers and employees of firms in the City of Tachikawa, Tokyo, in order to understand the current situation of commuters using cars where there is mixed use land areas for industrial, commercial, and residential purpose. The employers and employees were asked about commuting conditions of private cars; who owns parking space, who pays parking costs, and which kind of commutation allowances are paid (or received).The employees were also asked their attitudes toward parking levies at the workplace. Finally, the feasibility of introducing WPL in Japan was analyzed by these survey data.

According to the questionnaire survey, 58% of firms allow the use of private cars for commuting, and they provide parking space for their employees. Moreover, it was revealed that these Japanese firms have unique financial support systems for commuting allowance. The employers pay travel costs while most firms provide parking space for employees. Therefore, commuters are privileged to use cars for commuting and it would be effective to introduce WPL. In addition, changing the travel allowance system would be an important issue for introducing WPL in Japan.

*Keywords: Workplace Parking Levy (WPL), Transportation Demand Management (TDM)*

## INTRODUCTION

Discussed since the Smeed Report was published 1960s, Road Pricing is the one of the powerful methods for controlling traffic demands. The London government decided to introduce a congestion charge that has been enforced since 2002. However, the Congestion Charge is not the only way to ease congestion by reducing the use of private vehicles. Transportation Demand Management has included various methods to help local authorities for controlling traffic demands. The UK Government's White Paper on Future Transport (DETR, 1998) focused on the need to manage travel demands, especially of private cars, for future transport policies in urban areas. The White paper emphasized the importance of road

user charges and workplace levies. Road User Charging (RUC) allows authorities to impose direct charges on drivers using roads within their areas. Workplace Parking Levies (WPL) allows authorities to levy charges on employers in their areas according to the number of parking spaces they provide for their employees.

The London traffic authority has determined to choose road user charges as the Congestion Charge. However, it required certain amounts of initial costs and careful monitoring to control the traffic. On the other hand, another local authority implemented the different ways of charging road users, such as the workplace parking scheme in Nottingham. Despite the numerous studies of road user charge conducted by researchers, studies of workplace parking levies are so far not common. Therefore it would be necessary to advance research about workplace parking levies for local traffic authorities for allowing alternative opportunities besides road user charges to control traffic demands.

This study aims to analyze the feasibility of a Workplace Parking Levy (WPL) in Japan. The first part concentrated on reviewing WPL from the published research and the Transportation Plan in Nottingham. In the second part, a questionnaire survey was conducted on employers for revealing the ownership of parking spaces of firms in Tokyo. For the third part, a questionnaire survey was also conducted on the employees in order to understand their commuting behaviors and attitudes toward parking levies at the workplace. Finally, the feasibility of introducing WPL in Japan was analyzed by these survey data.

# BACKGROUND

## Literature Reviews

In spite of the successful introduction of the congestion charge in London, it is believed that road pricing is difficult to widely implement in practice because of social and political impediments. Therefore, alternative countermeasures to manage the traffic demands are needed (Lam et al., 2005). Workplace parking levies are the one of the possible traffic policies that can provide opportunities for local authorities. However, there is a fear of the economic impact of levies, despite that some research predicted the impact of levies on business was modest (Whitehead, 2005). It is important to convince stakeholders, especially the business segment, before such levies can be successfully introduced. In order to ascertain the opinions of stakeholders about workplace parking charges, some studies conducted interview surveys. Regarding an interview survey that targeted local authorities (Ison, 2005), the acceptability of workplace parking charges are viewed as one of the least acceptable, compared with other pricing options. This research also suggested that over 60% of the respondents indicated that an annual levy of over £500 would be required to reduce workplace parking provisions by more than 10%. Another interview survey was conducted on the organizations that were directly involved in establishing and administering their particular car park charging scheme. 10 organizations (5 hospitals and 5 universities) were interviewed on table or telephone (Rye, 2005). However, this research was not targeted

on the businesses that would be directly concerned as key stakeholders for the introduction of a workplace parking levy. Therefore, research should be directed at how the development of new mechanisms can make local transport decision-making more transparent and inclusive for businesses (Whitehead, 2005). Since it is important to understand the business stakeholders' response for such parking levies, drivers' responses should be analyzed against each employer's response to understand the impact of WPL at local cities.

## Workplace Parking Levy Scheme at Nottingham in the UK

Nottingham City Council (Nottingham City Council, 2005) decided to introduce Workplace Parking Levy (WPL). Greater Nottingham has ambitious plans for growth, but there is a danger that increasing congestion will deter investment, degrade the environment, and impact severely upon the operations of existing businesses and public transport operations. The City Council considers that a WPL scheme offers the potential for short and medium term transport benefits to be realised in a financially efficient manner in advance of the potential establishment of a national Road User Charging (RUC) scheme.

The City Council recognizes the potential of a Road User Charging (RUC) scheme and welcomes the government's commencement of a national debate on this issue. It also recognizes that the direct impacts of RUC upon congestion could be more significant than WPL. However the City Council believes that WPL is a preferable tool to pursue at this stage because:

1. WPL is a demand management tool which focuses on commuter parking, the main determinant of congestion,

2. WPL will further encourage the uptake of travel plans and parking management policies,

3. It also applies as a land use planning tool in encouraging employers to consider the development potential/costs of land used as parking in the City,

4. WPL, when compared to RUC, represents high value for money with relatively low development costs and shorter implementation timescales, and

5. RUC technology uncertainties and the timescale needed to develop a 'national standard' scheme in the medium term mean that early resolution and progress is not likely. Premature local investment in inappropriate technology could prove to be expensive and not represent best value for money.

According to the brochures from Nottingham City Council (Nottingham City Council, 2008), the WPL charge City of Nottingham employers. Liable parking places would be those which employers provide for their staff or certain types of business visitors. If it were introduced, a WPL would see around 500 large employers charging an annual fee for each of the parking spaces it provides its staff. The levy of each space would initially be around £200 in April

2012, rising with increments and inflation in the early years until 2015, while continuing public transport improvements are conducted. It is proposed that some employers would not be charged, such as employers with 10 or less liable places, the emergency services, and staff at NHS run premises. It is also proposed that certain parking places would not be charged, such as those designated for disabled people, business customers, motorbikes, display or fleet vehicles, vehicles loading or unloading, and employees who live at their place of work.

# SURVEY FOR EMPLOYERS ABOUT CAR PARK OWNERSHIP

## Survey Background

In this study, the questionnaire survey on employers was conducted to grasp the number of car parks they owned. It is known that most commuters in central Tokyo area do not use private cars because of a well developed public transportation system. This means that most employers in central Tokyo do not own car parks for employees. On the other hand, other cities in Tokyo, such as the City of Tachikawa, are involved in traffic congestions. The City of Tachikawa is located West of Tokyo, 35 km from Central Tokyo, and has a population of 180,000. There are many business offices, commercial buildings, and industrial factories. In fact, in Tachikawa city, one third of all trips were made by cars, with car trips having increased 24% (Tokyo Metropolitan Region Transportation Planning Commission, 1999). Therefore, rather than central part of Tokyo, it could be effective to introduce the Workplace Parking Levy (WPL) in city of Tachikawa, which has similar situation of Nottingham.

## Car Park Ownership of Employers

The questionnaire sheet was sent to 551 firms in the City of Tachikawa on November 2007 and 150 employers returned their answers (27.2% of response rate). Table 1 and 2 show the characteristics of responded firms in this survey. Most firms are hiring employees less than 50 persons. The average number of hiring employees for a firm is 60.4 employees. The largest firm has 1812 employees and the smallest firm has 3 employees. Table 2 shows the type of business or industry of responded firms. The highest ratio is manufacturing industries (24.7%). Construction companies and service industries are relatively higher than other businesses. This indicated that industries in the City of Tachikawa are more likely manufacturing industries rather than commercial businesses.

Table 3 shows the ownership of car parks in firms. 86.7% of the employers owned car parks. Half of them were located at their own site and 26.1% were leased. Even if the firm owned their car parks, not all would provide space for employees. 58.0% provide their own car parks for employees, 52.7% provide the parking space on their site, and 35.5% provide rental parking space that was leased by the firm. This means that car commuters do not have to find parking spaces by themselves because employers provide space even renting a space for them one way or another.

Table 1 – Size of firms (Number of Respondents)

| | Size of firm (number of employees) | Number of respondents | Ratio |
|---|---|---|---|
| (1) | 1-10 | 49 | 32.7% |
| (2) | 11-50 | 73 | 48.7% |
| (3) | 51-100 | 8 | 5.3% |
| (4) | 101-500 | 10 | 6.7% |
| (5) | 501- | 3 | 2.0% |
| (6) | No Answer | 7 | 4.7% |

Table 2 – Type of business or industry (Number of Respondents)

| | Type of industries | Number of respondents | Ratio |
|---|---|---|---|
| (1) | Manufacturing industries | 37 | 24.7% |
| (2) | Construction companies | 28 | 18.7% |
| (3) | Service industries | 28 | 18.7% |
| (4) | Retail dealers | 17 | 11.3% |
| (5) | Transportation companies (common carriers) | 12 | 8.0% |
| (6) | Wholesale dealers | 9 | 6.0% |
| (7) | Food & drink shops | 7 | 4.7% |
| (8) | Power suppliers | 3 | 2.0% |
| (9) | Real estate agents | 2 | 1.3% |
| (10) | Unknown | 7 | 4.7% |

Table 3 – Ownership of Car Parks (Number of Respondents)

| | YES | NO | NA (No answer) |
|---|---|---|---|
| Do you have car parks in a firm? | 130 (86.7%) | 20 (13.8%) | 0 |
| How do you get the space? | Owned: 66 (50.8%)<br>Rental: 34 (26.1%)<br>Both: 30 (23.1%) | | |
| Providing parking space? | 87 (58.0%) | 62 (41.3%) | 1 (0.7%) |
| What type of space is provided to employees? (Multiple answer) | Owned: 49 (52.7%)<br>Rental: 33 (35.5%)<br>Others: 11 (11.9%) | | |

### Financial Support for Car Commuters

Most Japanese firms pay commutation allowance for employees in addition to their salary. In this survey, employers were asked whether they pay commutation allowance for car commuters. 94.3% of the employers pay the allowance for car commuters. The employers were also asked who covers the cost of parking for commuters. Table 4 shows that more than 80% were not collecting parking fees from their employees. This means that most car commuters were using their parking spaces for free. In Japan, the commutation allowance is usually calculated by fare of public transportation. This survey result indicated that car commuters were receiving more allowance than commuters by public transportation.

Table 4 – The Question for Employers Collecting Parking Fee from Employees

| | YES | NO | NA (No answer) |
|---|---|---|---|
| Owned Parking Space | 10 (10.4%) | 79 (82.3%) | 7 (7.3%) |
| Providing parking space | 7 (10.9%) | 53 (82.8%) | 4 (6.3%) |
| Total | 17 (10.6%) | 132 (82.5%) | 11 (6.9%) |

## SURVEY OF EMPLOYEES ABOUT COMMUTING BY A CAR

### Targeted Employees for this Survey

According to the employers' survey in the city of Tachikawa, about 60% of firms were providing parking space, with about 80% of them not charging their employees. For the next step, a questionnaire survey was conducted on employees who were working that had answered they provide parking space for employees. The questionnaire sheet was sent to 250 employees in 23 firms on November 2008, with 145 returned samples (58.0% of response rate). The response rate of this survey was higher than employers' survey because the questionnaire sheet was sent with the previous survey results from the employers firms. Before analyzing this data, the respondents were divided by three groups: current car commuters (79 samples), former car commuters (19 samples), and inexperienced car commuters (47 samples).

### The Actual Conditions of Car Commuters

Analyzing the current car commuters, the average travel time to work was 41.7 minutes and the average travel distance was 15.1 km. Figure 1 shows where the employees parked their cars. Most were using the parking space owned by the firm (64.6%), and some that was

leased (29.1%). Only 6.3% secured parking by themselves. Therefore, most commuters parked their cars in space provided by the firm.

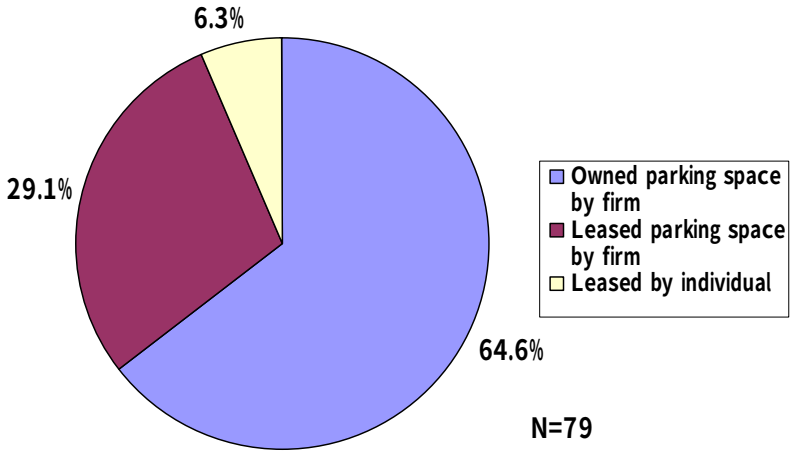


Figure 1 – Employees' Parking Space (Multiple answer)

According to this survey, 84.8% of car commuters received commutation allowance. The estimation of it depended on the firm. Figure 2 shows how to calculate the cost of allowance for car commuters. The employers pay the allowance as same cost as public transportation fare (45.9%), gasoline price (31.1%), travel distance (14.9%) and others (8.1%).

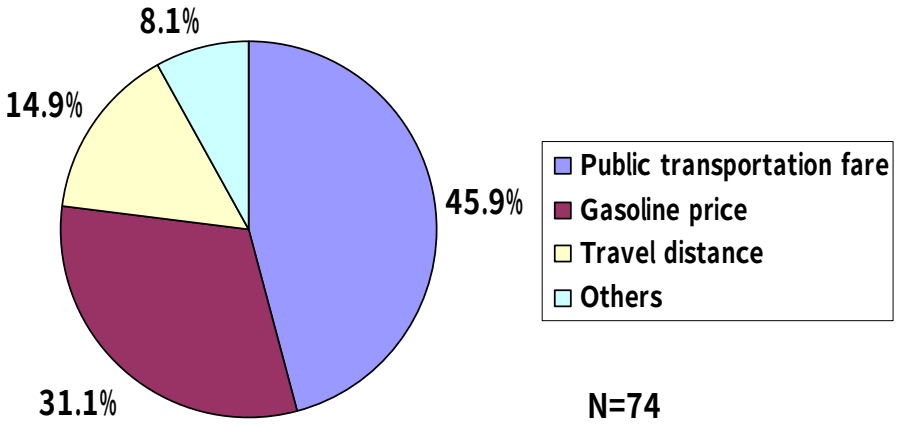


Figure 2 – Detail of Commutation Allowance for Car Commuters

The respondents were also asked whether car commuters were paying some expenses for parking or whether they parked for free. Unlike the result of employers' survey (Table 2), 62.0% of car commuters were paying some expenses (not full) individually (Figure 3). This difference may be caused by larger firms more likely charging parking costs to employees so that larger numbers of employees had to pay some expense for parking.

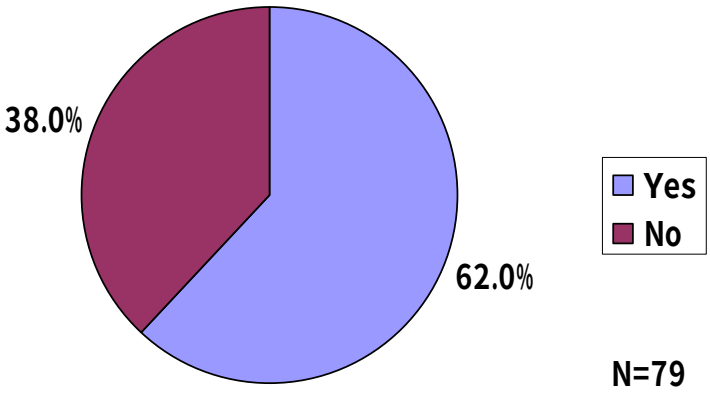


Figure 3 – Paying some expense for parking space by an employee

### Reason for using a car for commute

Table 5 shows why car commuters were using private cars for commuting. The most frequent answer was “no time limitation” (22.0%) and the second was “more comfortable than public transportation” (19.3%). Car commuters thought that commuting by car to work was more comfortable and useful than commuting by public transportation.

Table 5 – The Reason for using a car for commute (Multiple answers)

| | Reason | Number of respondents | Ratio |
|---|---|---|---|
| (1) | No time limitation | 33 | 22.0% |
| (2) | More comfortable than public transportation | 29 | 19.4% |
| (3) | House is far from a train station | 27 | 18.0% |
| (4) | Using a car for business | 16 | 10.7% |
| (5) | Firm is far from a train station | 12 | 8.0% |
| (6) | Prefer driving a car | 11 | 7.3% |
| (7) | Impossible to use public transportation | 8 | 5.3% |
| (8) | Cheaper cost | 6 | 4.0% |
| (9) | Others | 8 | 5.3% |

## RESPONSE TO WORKPLACE PARKING LEVY

In order to identify the opinion of a Workplace Parking Levy, the employees were asked the response to levies of 10,000 yen (about $100), 30,000 yen (about $300), and 50,000 yen (about $500) per year for their parking space. 27.8% of respondents answered they would change their commuting mode from car to other transportation any levy was charged (Table

6). The largest percentage of respondents (30.4%) indicated they would change their mode of commute from cars if they were charged 10,000 yen per year. Cumulatively, 75.6% of car commuters would change their transportation mode if they were charged 50,000 yen per year for one space. However, 17.7% of respondents answered that they would never change their commuting transportation mode even if they were charged more than 50,000 yen per year.

Table 6 – How much cost would you change your commuting transportation mode from car

| | All respondents | Group of paying parking cost | Group of using parking space for free |
|---|---|---|---|
| Some charge | 22 (27.8%) | 14 (46.7%) | 8 (16.3%) |
| 10,000 yen a year | 24 (30.4%) | 8 (26.7%) | 16 (32.7%) |
| 30,000 yen a year | 11 (13.9%) | 2 (6.7%) | 9 (18.4%) |
| 50,000 yen a year | 4 (5.1%) | 0 (0.0%) | 4 (8.2%) |
| No change | 18 (22.8%) | 6 (20.0%) | 12 (24.5%) |

Responses about WPL seemed to be different whether the car commuters were currently paying any expense for their parking cost or not. Car commuters who received all expense for parking (non self expense group) were more likely to change their commuting transportation mode from cars. 46.7% of this group would stop using a car to commute if they were charged any levy. On the other hand, car commuters who were paying some self expense for parking were less likely to change their commuting transportation mode. However, 32.7% of this group answered they would change the commuting transportation mode if they were charged 10,000 yen per year. These results indicated that the responses toward a workplace parking levy is influenced by the financial support for parking from the firm.

# CONCLUSIONS

This study analyzed the feasibility of introducing a Workplace Parking Levy in Japan by conducting City of Tachikawa. As a result, the following findings were revealed from two surveys.

1. There were many firms that owned parking spaces, and half of them were providing these spaces for employees to commute. These firms were paying the cost of parking for their employees.

2. Most of the employees were receiving commutation allowance, and half of them were not paying parking costs by themselves. In addition, car commuters thought that commuting by car was more comfortable and useful than commuting by public transportation.

3. Cumulatively, 75.6% of car commuters would change their transportation mode if they were charged 50,000 yen per year for one space. However, 17.7% of car commuters would not change commuting mode even they were charged any levy.

In conclusion, it is possible to change the commuters' transportation mode from a car by introducing a WPL. However, commuters in Japan are receiving a commutation allowance and the privilege of using parking space. Therefore, in order to reduce traffic congestion, it is important to change the financial support system for commuters and enforce reducing parking spaces for commuters at their firms.

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