Persuasive Communication to Promote Bus Commuting: Mobility Management in Binh Duong, Vietnam

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Abstract: This study investigated the influence of persuasive communication on decisions to shift from private vehicles to public bus transport in Binh Duong province, Vietnam. Questionnaires and a series of mobility management (MM) workshops targeting government officials were held during March and August of 2016. More than half the government officials who participated in a workshop on MM reported the intention to commute by bus. According to the results of our interviews on the travel behaviour of all government officials at the Administration Centre, conducted in 2015 and November, 2016, the percentage of officials who had “never used buses” significantly decreased, from 50.5% to 42.1%. Furthermore, the percentage of those who usually used buses to commute to the Administration Centre “a few days per week” or “5 days per week” increased from 8.3% to 15.6%. These results indicate that MM programs seem to be effective for promoting the use of public transportation in Binh Duong. Furthermore, our data suggest that MM approaches should be considered for developing cities.

Keywords: mobility management, modal shift, travel plan

1. INTRODUCTION

In developing countries, economic growth has led to rapid increases in the use and ownership of private vehicles (e.g. cars and motorcycles). These changes have led to many important problems, such as air pollution, traffic accidents, and congestion. To solve such problems, numerous “hard” measures, such as large investments in roadway infrastructure and the introduction of urban mass rail transit services, have been implemented in both developing and developed countries. Additionally, “soft” measures have also been widely implemented in developed economies, such as Japan and a number of countries in Europe. One of these soft measures, known as mobility management (MM), is directed at motivating individuals to voluntarily switch to more sustainable transport modes by providing detailed travel information and incentives (Taniguchi et al., 2007). MM programs have contributed to a reduction in car usage in European countries, Australia, and Japan (Taniguchi and Fujii, 2007). In developing countries, however, policy makers and transport planners have devoted less attention to MM. Focussing on Binh Duong (Vietnam) as a case study, the main objective of

this research was to investigate the influence of MM on decisions to shift from private vehicles to public transport.

This paper provides an overview of the public transport situation in Binh Duong, followed by a discussion of the need to implement MM programs. The third section outlines the developed MM tools and its results. The pilot MM activities for government officials and the results of interviews evaluating these activities are described in the fourth section. The paper concludes with a discussion of this case study's findings and limitations.

2. PUBLIC BUS TRANSPORT AND THE NEED FOR MOBILITY MANAGEMENT

2.1 Public Bus Transport in Vietnam

Despite dramatic increases in the past, bus ridership has recently been declining in large cities in Vietnam. Specifically, the number of bus passengers in Hanoi increased from 349 million (2007) to 464 million (2014). However, it declined by 6.8% in 2015. In Ho Chi Minh City, bus ridership reached its peak, about 413 million, in 2012. It subsequently declined to 335 million in 2015, and bus ridership in Binh Duong province has been following a similar trend, decreasing from 14 million in 2010 to 9 million in 2015.

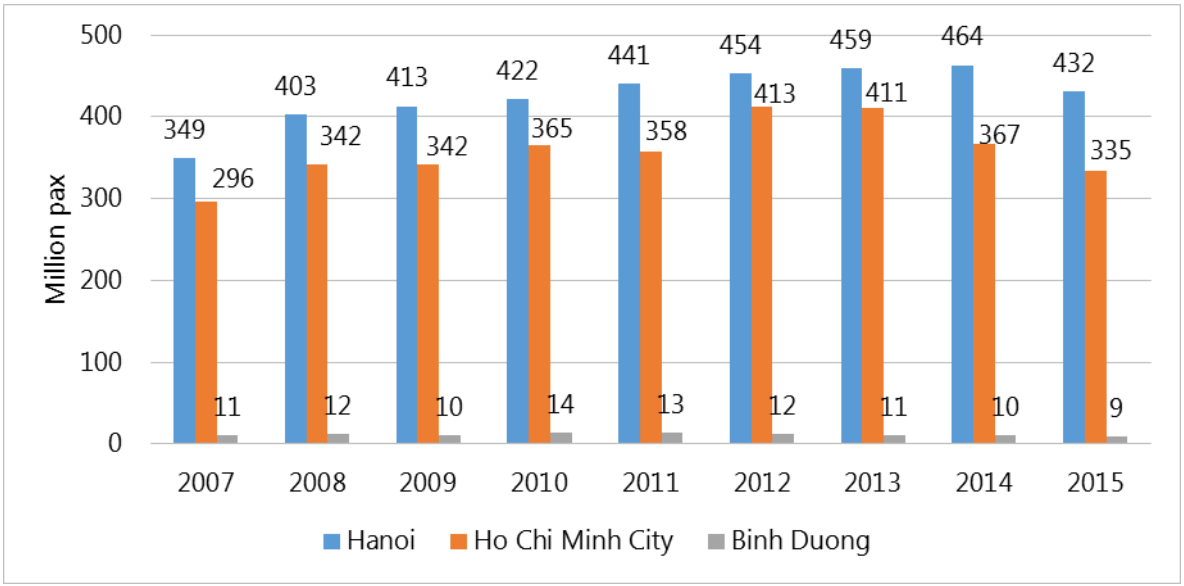

Figure 1. Bus Ridership in Hanoi, Ho Chi Minh City, and Binh Duong
(Source: MOCPT in Hanoi, Ho Chi Minh City and Binh Duong)

2.2 Public Bus Transport and the Need for Mobility Management in Binh Duong

Binh Duong province is located in the southeast region of Vietnam. Its geographical advantage is its proximity to the most important economic centre of Vietnam, which is Ho Chi Minh City. In 2009, the population of Binh Duong was 1.49 million, but it substantially increased, to 1.87 million, in 2014 (Statistical Yearbook of Vietnam, 2009, 2014). This increase was attributed primarily to the inflow of large numbers of migrant workers from other provinces seeking jobs as a result of the large influx of foreign investment and the rapid development of industrial parks in Binh Duong. At the same time, private vehicle ownership and usage also increased. Based on statistics from the Binh Duong Railroad Traffic Police

Department and the Traffic Safety Board, the rate of motorcycle ownership increased rapidly: in 2009, there were 387 vehicles per 1,000 people, but this figure increased to 459 in 2012. Meanwhile, the rate of car ownership remained quite low (i.e. only 31 vehicles per 1,000 people in 2012). The dominance of motorised vehicles in daily travel resulted in serious urban issues, such as traffic congestion on main transport corridors.

In contrast to the situation with private vehicles, buses accounted for only 2.7% of the total modal share in 2015. Currently, only regular buses operate in Binh Duong, and only a modest growth, of about 16 bus lines, was recorded from 2003 to 2014. Specifically, there were only four bus lines in 2003, and the number increased to 20 in 2014. To maintain reasonable bus fares and attract more private companies to this industry, bus service was subsidised in 2003–2012. However, the government of Binh Duong stopped subsidising bus companies in 2013, and this contributed to a reduction in the level of bus services, as shown in the low frequency of bus ridership and the poor quality of buses. Indeed, bus ridership has decreased. In this context, the government of Binh Duong enacted two important policies that had the ambitious goal of developing public transportation. Specifically, the government established the Transport Master Plan with Decision No.3247/QD-UBND and the Public Transport Master Plan with Decision No.4291/QD-UBND. The first set target shares for public transport of 30% in 2020 and of more than 40% in 2030. The second stipulated that public transport should account for 15–20% of the total modal share in 2020, for 30–35% of the total modal share before 2025, and for more than 40% of the total modal share after 2025. It also stipulated that the capacity of the bus network should account for 60% of the total capacity of the public transport network. Clearly, there is a major gap between the current and the target shares of public transport in Binh Duong. Indeed, policy makers and transport planners have recently become concerned about how to encourage people to use the bus system. In general, people do not automatically shift from private to public transport modes even when there is an adequate supply of public transport services, and the government of Binh Duong has acknowledged the need to implement soft measures (e.g. MM) to motivate people to make this transition. To this end, the government has carried out a technical assistance from the Japan International Cooperation Agency (JICA) entitled “The Project for Enhancing Management Capacity of Transport System Focused on Public Transport in Binh Duong Province”. MM is one of the key components of this program.

Thu Dau Mot City had been the administrative and political centre of Binh Duong province. However, the government of Binh Duong established a new centre in Binh Duong New City, which is located in the northeast of Thu Dau Mot City (see Figure 2). Starting in 2014, the main public offices relocated from Thu Dau Mot City to Binh Duong New City, forcing approximately 2,000 government officials residing in Thu Dau Mot to commute to Binh Duong New City. To encourage the development of the habit of using public transport, in November 2014, the government of Binh Duong established a bus line providing a high-quality service from Thu Dau Mot City to Binh Duong New City. Additionally, the government provided free monthly bus tickets, called FreePasses, to all government officials working at the Administration Centre. However, despite these incentives, the majority of government officials still use private vehicles to travel.

Figure 2. Mobility Management Target in Binh Duong
(Source: Adapted from Google Map)

3. DEVELOPMENT OF MOBILITY MANAGEMENT TOOLS

3.1. Personalised Travel Assistance for Government Officials

The target group of the MM program were government officials working at the Binh Duong Administrative building, and the JICA team developed the personalised travel assistance (PTA) an to support their use of buses to commute to and from work. Based on the home address of each official, the PTA indicated the most convenient bus routes and schedules for the trip from home to work from 6:00 am to 8:00 am and for the trip from work to home from 4:00 pm to 6:00 pm. Officials were provided with recommended bus routes, departure times, and the locations of the nearest bus stops. The PTA includes four pages addressing the following:

- The first page presents the cover with message.
- The second and the third pages present the schedules and route maps of the bus stops closest to the home address of each official (for the morning commute to work) and to the Administrative Office Building (for the afternoon commute home).
- The fourth page presents the map of the Binh Duong bus network.

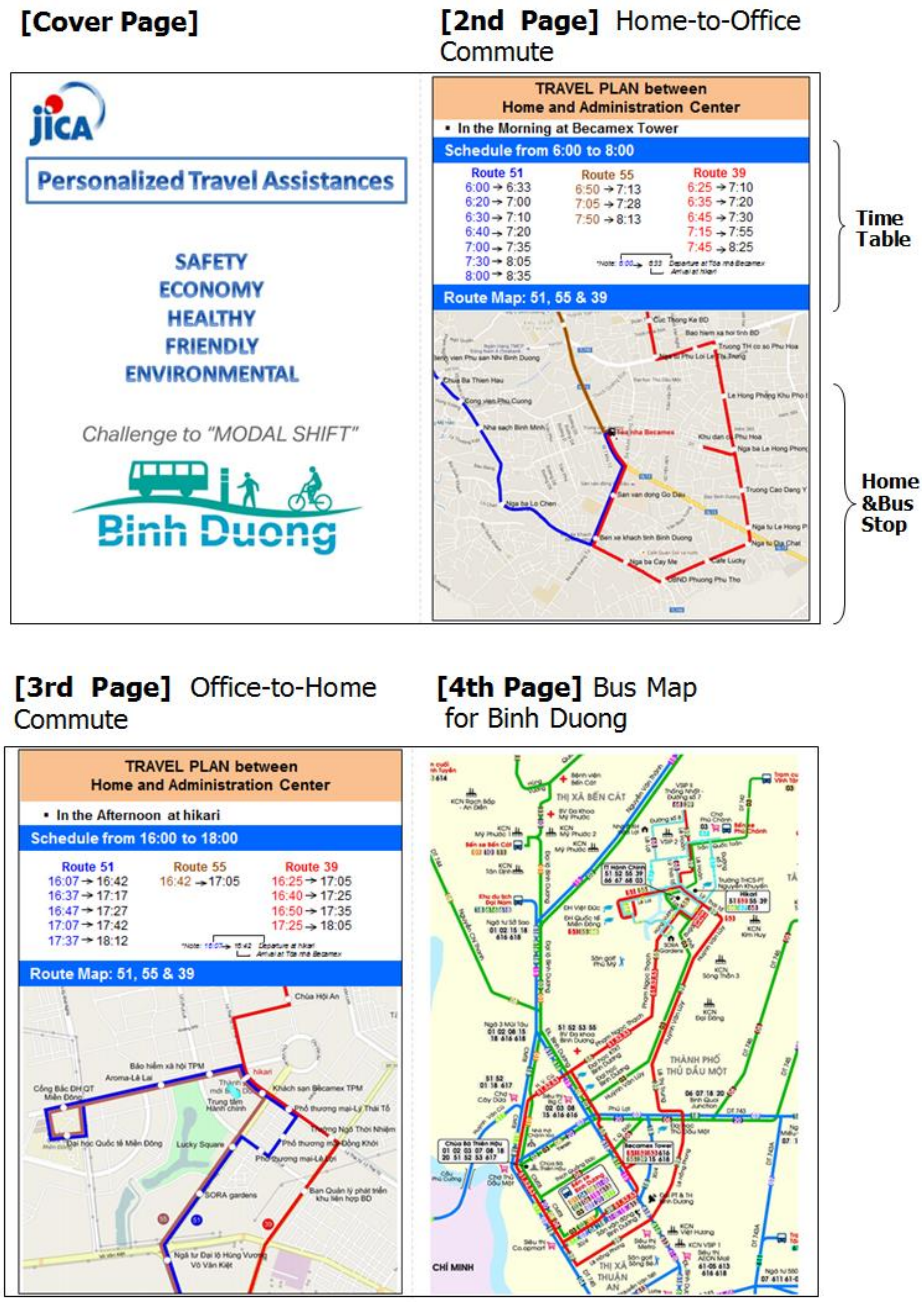

Figure 3. Personalised Travel Assistance (PTA) for Government Officials

3.2. Bus Transit Application

The hard copy of the bus map illustrates the route and schedule for each bus stop. However, it is rather complicated for first-time passengers to understand. For this reason, the project team proposed and developed a mobile application, "izziTrip", which provides the information needed by bus passengers, including the name of the bus route, departure time, arrival time, walking time, total travel time, and total travel cost. Users can determine the optimal trip based on their desired departure/arrival time. Therefore, this application helps passengers save time and money in their daily commute.

Figure 4. Interface of izziTrip Application

4. PILOT ACTIVITIES FOR MOBILITY MANAGEMENT IN BINH DUONG

The targets of the MM program were commuters to Binh Duong New City, especially government officials working in the Administration Centre. Generally, students and young people who do not own motorcycles were more familiar with bus services because they travel by bus more frequently than government officials. Therefore, it was necessary to disseminate information to and engage government officials in intensive group discussions about how to travel by bus. For this reason, MM workshops were conducted.

4.1. Objectives of MM Workshops for Government Officials

At present, the Binh Duong government provides a FreePass card to all government officials working at the Administrative Centre. However, despite these incentives, the majority of government officials still use private vehicles. A survey conducted in August 2015 on the actual mode of transport used by government officials to commute to work showed that motorcycles were the most popular (75.9%), followed by cars (14.7%). Buses ranked only third (7.1%), followed by other modes (2.3%).

As mentioned above, even when frequent bus service is available, government officials do not automatically shift from private to public modes of transport. Therefore, the objective of MM activities for this target group was to provide bus-related information, describe the advantages of commuting by bus and the disadvantages of motorcycle usage, and gather data on how to encourage officials to shift from private vehicles (cars, motorcycles) to public transportation. The expected outcome was that each official would commute by bus once or twice per week.

4.2. Implementation Schedule

To disseminate the information about the new bus services and promote commuting by bus to government officials working in the Administration Centre in Binh Duong New City, five MM workshops were held in the conference room at the Department of Transport in the Administration Centre (see Table 1).

Table 1. Implementation Schedule for MM Workshops at the Administrative Centre

No.	MM activities	Date	Scale (No. of Participants)
1	1st MM workshop (DOT Staff)	22 March 2016	58
2	2nd MM workshop	27 April 2016	47
3	3rd MM workshop	22 June 2016	30
4	4th MM workshop	18 July 2016	29
5	5th MM workshop	24 August 2016	34
Total			198

To prepare for the workshops, project members and student facilitators were trained by an MM expert in the skills needed to teach participants how to use the bus map and schedules and how to make personal travel plans (see Figure 5).

Figure 5. MM Expert Training for Student Facilitators

4.3. Methodology of MM Workshops

Each participant in the MM workshops received the following documents:

- Study questionnaire
- Bus map and schedule
- Personalised Travel Assistance (PTA) document
- Input sheet for each participant's travel plan

A total of five MM workshops followed the same agenda:

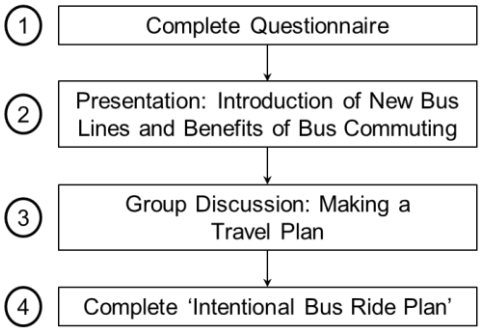

Figure 6. Agenda of MM Workshops for Government Officials

Participants were first asked to complete a questionnaire addressing their personal attributes, motivations for using private vehicles, and opinions about incentives for modal shifts. Next, they watched a presentation on the bus system connecting Thu Dau Mot City to Binh Duong New City; this presentation emphasised the advantages of commuting by bus. Participants were then divided into small groups to develop personalised travel plans for taking the bus from home to the Administration Centre. Finally, participants were asked to complete the "Intentional Bus Ride Plan".

A key part of the MM workshops was the group discussions during which the PTA was developed. Participants were grouped by residential area (Phu Cuong ward, Phu Hoa ward, Phu Loi wand, Chanh Nghia ward, and other areas), and each group was assigned two facilitators (one project member and one VGU student). The procedure for formulating the PTA was as follows:

- First, participants were asked to specify where they lived and to identify the nearest bus stop. Facilitators encouraged participants to place round stickers on their maps to mark their home and the nearest bus stop.
- Then, participants completed the PTA documents. The second page of the PTA document included a map and schedule for the bus stops that were most convenient for them. Information about buses for commuting from the office to home was presented on the third page. The bus system in Binh Duong was illustrated on the fourth page. Participants could easily place this A6-sized document in their bag.
- Based on this customised information, facilitators taught each participant how to travel by bus between their house and the Administration Centre.

Figure 7. MM Workshop at the Binh Duong Department of Transport

At the end of the MM workshops, participants were asked to present their bus travel plan, which was designed to include information about the following:

- Their intention to use the bus;
- The parameters of bus travel, such as departure and arrival times, access and egress modes, and the location of the bus stop nearest to each participant's home; and
- Frequency of bus use

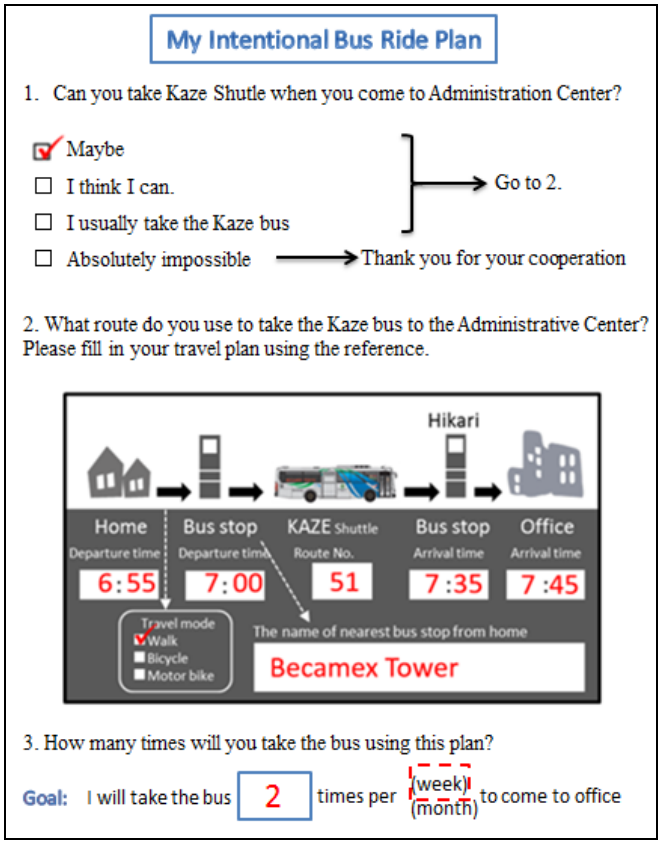

Figure 8. Example of a Bus Ride Plan

4.4. Monitoring and Evaluation

After the MM workshops, all participants fully understood "how to commute by bus and make personal travel plans" and reported the behavioural intention to commute by bus. In total, about 69% of the 112 officials who completed the "Intentional Bus Ride Plan" at the end of the MM workshops reported an intention to commute by bus more than twice per week; overall, they intended to commute by bus an average of about 2.7 times/week. Those with prior experience commuting by bus expressed a stronger intention to travel by bus than did those without such experience. In particular, participants who commuted by motorcycle and had no experience with commuting by bus intended to commute by bus only once or twice per week; however, those with prior experience commuting by bus intended to do so an average of 4.4 times per week.

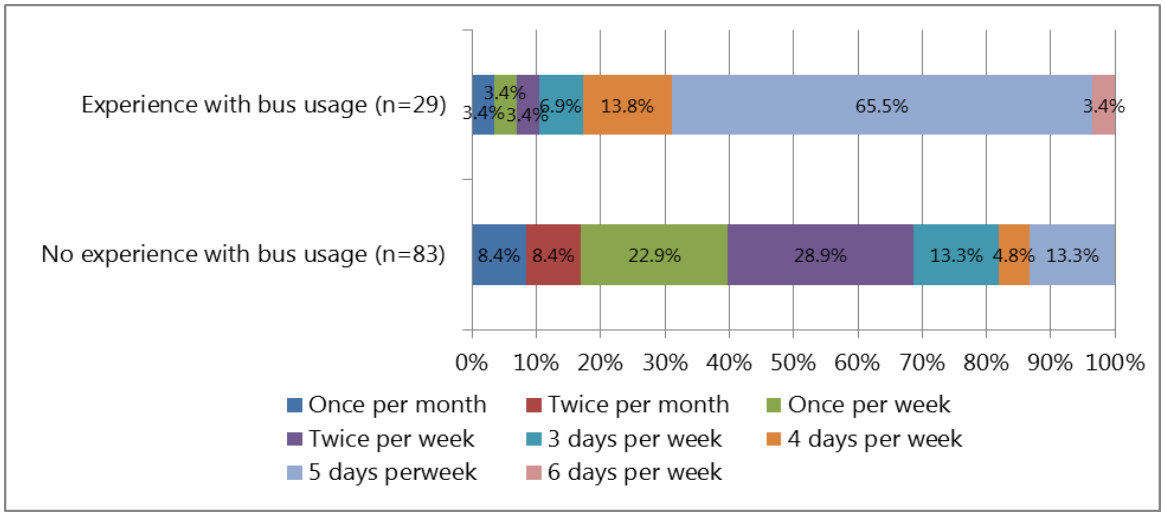

Figure 9. Behavioural Intentions of Officials after Participation in MM Workshop

The above results indicate that, although motorcycles are still convenient for commuting to work, for transporting children, and for shopping, most participants expressed the intention to use the bus at least once or twice per week as an alternative travel mode. Indeed, the MM workshops were particularly effective among motorcycle users with no prior experience commuting by bus.

According to interviews on travel behaviour conducted in 2015 and November of 2016, the percentage of government officials working at the Administration Centre who "never used the bus" significantly decreased, from 50.5% to 42.1%, whereas the percentage of those who usually used a bus as their main transport mode to work "a few days per week" or "5 days per week" increased from 8.3% to 15.6%, as shown in Figure 10.

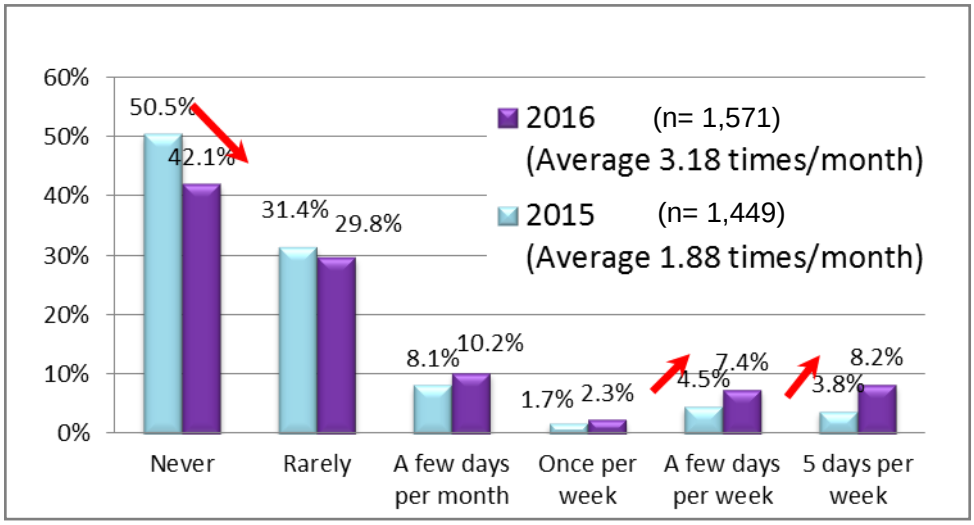

Figure 10. Changes in Bus Usage of Government Officials

5. CONCLUSION

People do not automatically use public transport, even when such services are available and of high quality. In this context, it is necessary to develop and implement soft measures,

such as MM, to achieve a modal shift to public transport. Policy makers and transport researchers in developed countries have been devoting increasing attention to MM. However, the same cannot be said with regard to developing countries.

Focussing on Binh Duong as a case study of a developing country, this research aimed to investigate the effect of a MM program on commuters, in terms of persuading them to shift from private vehicles to public transport. MM workshops targeting government officials were implemented.

In conclusion, MM seems to be an effective approach with regard to motivating a group of commuters in Binh Duong to use public transportation. However, this type of soft measure might not work for people who have developed a strong habit of using private vehicles. Therefore, additional case studies on the use of MM programs in different countries and cities are needed.

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