

# **POTENTIAL OF MODAL SHIFT FOR URBAN DAILY MOBILITY**

## **THE CASE OF HANOI**

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## **ABSTRACT**

Among Asian mega-cities, Hanoi and Ho Chi Minh City can be considered as somewhat specific and singular by high motorcycle dependence for daily mobility and a rather weak part of public transport in the modal split. The present situation can be partly explained by the doi moi impact on urban transition in Vietnam. However from the early of this decade, Vietnam authorities have realized the important role of public transportation: Hanoi then Ho Chi Minh City public transport have been largely improved in terms of bus network lines, higher service quality, fare policy, users' information. In the meanwhile, some transport policy measures aimed to curb the motorbike and car ownership trend and to induce some modal shift to public transport. However one cannot observe a real change in the modal choice of people for these two cities. It is the reason why in-depth research is needed to specify the determinants of modal choice in Vietnamese cities and the potential of modal shift on public transport in a short, medium and large term aiming to change the daily mobility.

In this paper, we intend to present the objectives of our on-going research, and the first result i.e. (i) analyzing subjacent logic of people's choice in Hanoi; (ii) analyzing the related factors as well as the effectiveness of policies and solutions given by authorities in Vietnam. Base on

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these analyses, we would like to introduce some resolutions which authorities can apply to encourage people to choose public transport and result in minimizing the motorcycle use in big cities.

To achieve the above research, we will base on observation and statistic transportation data, accompanied with the result got from interviewing households in Hanoi city.

*Keywords: daily mobility, modal choice, modal shift, transport policy, public transport, Hanoi*

## **INTRODUCTION**

### **Context**

The increase in motorization, motorcycle then automobile dependence, in Southeast Asian cities and China are a problems faced by national authorities and municipalities, while the establishment of a sustainable transport system is more and more to the agenda. Vietnam has been facing this problem for more twenty years ago. Will this country be able to reverse the motorcycle dependence, and then perhaps the automobile dependence for big cities, such as Hanoi, Ho Chi Minh, Hai Phong, etc.? It is here referred to the problem of modal choice and conditions of a modal shift, at least partial, to the urban public transport. The Hong Kong or Singapore model may be transposable to Vietnam? This communication is part of an ongoing research on this topic.

The government and transport managers of Vietnam conceive well soon from the early of this decade harmful consequences of transport (waste time of congestion, rise of accidents, gas emission, noise, dust, destruction of urban landscapes by infrastructure, etc.). They tried many measures for improving the condition of transport. The most remarkable measure is development of bus system all over Hanoi and Ho Chi Minh: opening new lines, creation of pilot line, an incentive pricing policy. Before 2002, as the tram system was collapsed and the bus system was in very bad condition, the Hanoi and Ho Chi Minh people seem to have motor scooters as the unique means of daily transport which are over walking distance and cycling distance. After 2002, it can be said that bus is considered as another choice for dwellers. However, although the bus system develops continuously spending much money of government, nobody can be sure that Hanoi or Ho Chi Minh bus is a good choice for people's mobility.

The bus system actually attends to about 10% of total travels in Hanoi in 2008, while motor scooters actually attend up to 80% (Clément MUSIL, 2008). Besides, the number of cars augments progressively each year (look in figure 1). In 2005, the Police of Hanoi announced that there was on average 100 new registered cars per day in Hanoi, it means that on average 3000 new cars entering in traffic of Hanoi each month. In 2009, Hanoi had 38 033 new registered cars. Indeed, for passenger, the number of private car passengers increased by 22.3% per year while bus passengers increased by 7.2% per year over the last five years (JICA, 2007). Ultimately, in spite of spending much money on public transport, the actual situation of transport with congestion and pollution in Hanoi and Ho Chi Minh hasn't been improved yet.

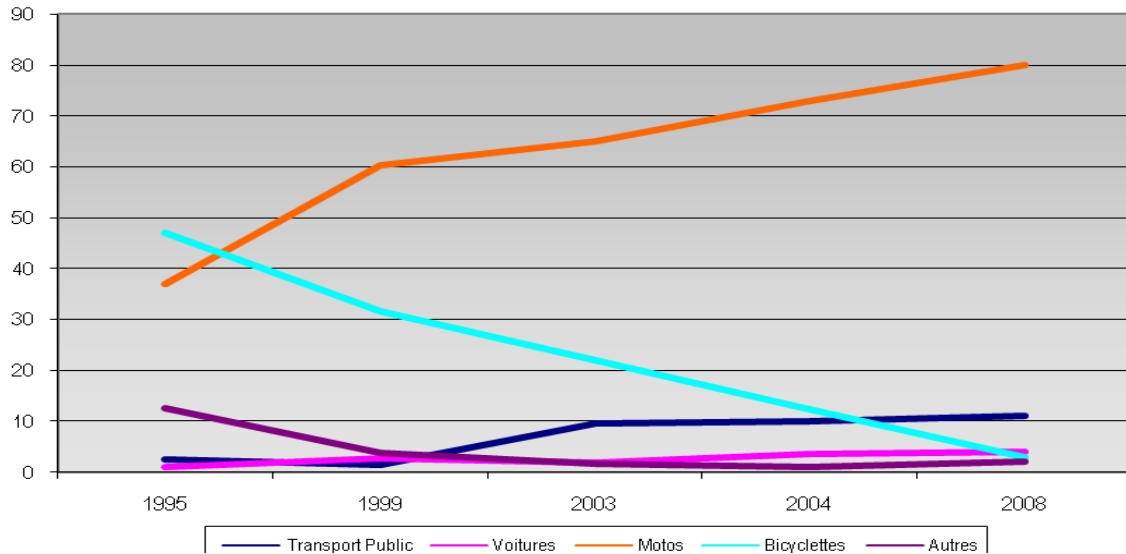


Figure 1: The modal distribution from 1995 to 2008 in Hanoi (by %)  
 (Clément MUSIL, 2008, Conference « Hanoi – the livable city »)

Hence, a major goal of transport policy is encourage people in urban modal shift in favor of public transport, hoping that the subways or light rail planned for the medium term contribute to this transfer. The modal shift to public transport is imperative, especially in the context where the two wheelers and car fleet increase by raising living standards and by the rapid growth of population in cities.

## Problem

Vietnamese authorities, how will they encourage modal shift motorcycle and car users toward non-motorized transport as well as public transport without extensive researches on residential travelling behavior in the large cities in Vietnam? Although they hope that strong development of public transport will induce this modal shift, the reality for 10 recent years seems to prove the reverse. This experience is confirmed not only in Vietnam but in many countries in the world. “A modern system of public transport with subways, tramways, bus rapid transit and so on attract new passengers obviously but not motorcyclists or automobilists” (Kaufmann, 2000).

In reality, the possibility of modal shift refers not only to technical problems (lack of transport infrastructure, difficulties in liberating land in the city centre, lack of skilled labor, mastery of the technology by the Vietnamese, etc.) or funding problems (sources and financing conditions, profitability of these investments, etc.). All these problems will be taken into account when a project of public transport system is undertaken. But the possibility of modal shift also depends on behaviors of the daily mobility of people and others problems of socio-mobile<sup>1</sup>.

<sup>1</sup> Socio-mobile, it means in this case social problems which influence on practices of inhabitants' displacements, similar to socio-economic or socio-demographic, etc.

In fact, until now analysis on different aspects of modal shift in big cities of Vietnam doesn't exist, and an assessment of policies aiming to discouraging the use of private motorized vehicles does, either. Many measures have been taken (Ex. Imposing very high car taxes and register fees, banning province's motorbikes into Hanoi and new motorcycle registration in Hanoi, prohibiting motor parking on sidewalks in downtown, etc.) to limit private motorized vehicle fleet in Hanoi, but these actions haven't produced the desired results.

Thereby, this paper will present a survey on people's daily mobility habits in Hanoi but only concentrating on possibility of modal shift, which exists in residents themselves. The analysis based on results of this survey contributes to designing a global view of people's modal choice and the potential of modal shift.

## **Methodology**

Although the supply of public transport isn't sufficient to discourage the use of other means of transport like motors or cars, it seems to be a necessary lever. Besides, the urban form and social representations of the automobile and public transport exercise certainly its influence on modal practice (Kaufmann, 2000). This idea proposes an investigation for 3 areas in Hanoi: city centre, new developed areas, and developing area-suburbs. In city centre, the network of roads and bus lines is densest. The new developed areas' network of transport is rather dense. In developing area and suburbs, there is only one main road connected to city centre and there are narrow lanes which connect scattered hamlets to main roads (see in the figure 2 and 3).

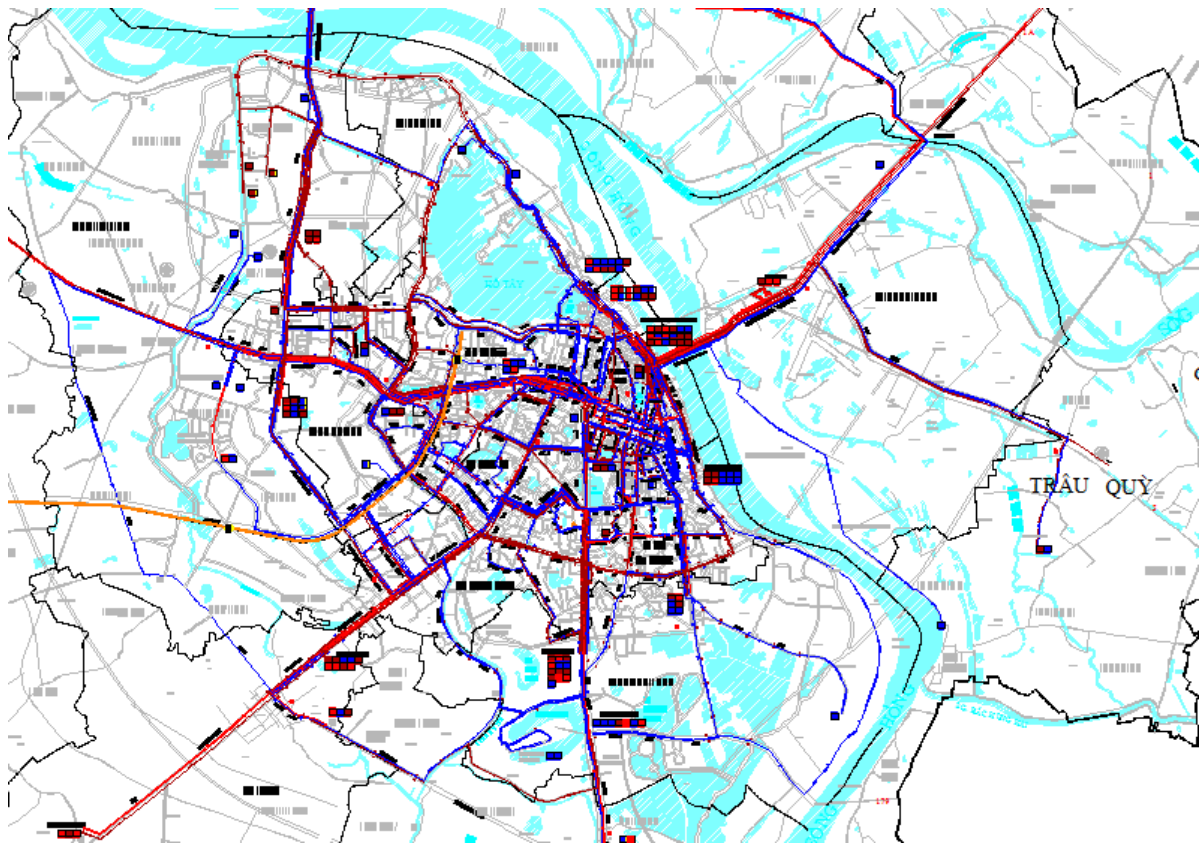


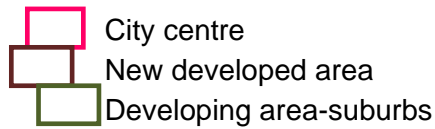
Figure 2: The map of bus network in Hanoi

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Figure 3: 3 areas of Hanoi city



According to these 3 areas and its accessibility or availability of transport supply, 4 groups of people can be divided to study:

1. Type 1: People living in the city centre where the public transportation network is dense, easily accessible, theoretically have a choice between two-wheelers and buses (note: the case of employees with a fixed place of work or not, pupils and students, unemployed ...).
2. Type 2: The inhabitants of the city center, away from the bus stops, who reside in alleys off main avenues and main streets, the public transport is not attractive very much to them
3. Type 3: The inhabitants of the districts in the peripheries, connected to downtown by bus radial lines. This population also has the choice between two-wheelers and buses to travel to the center

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- Type 4: The inhabitants of peripheries, far from major routes, poorly or not served by public transport, far and away from the bus stop, therefore have no choice other than taking their two wheelers to go to the districts of the center.

A survey of 450 people about their daily mobility in 7 sites of Hanoi was done on April 2010. Some results of analysis on this survey will be presented in this communication. Although this limited sample (n = 450), compared to 6 million population of Hanoi, can't achieve well the representative in a statistical sense, it still covers "characteristic" situations that can draw a picture of diversity behavior according to various social profiles (age, occupation, household type,...) and the spatial context (place of residence, usually transportation modes, availability of supply of infrastructure,...). Moreover, in order to achieve the representative in a statistical sense, the location of 7 sites investigated has been favored in the selection by the urban structure of Hanoi. It allows to distinguish the difference of 3 areas and 4 groups which are mentioned above.



Figure 4: 7 sites investigated in the survey



150 people interviewed

50 people interviewed

The type of survey chosen, namely the structured interview, leads us to develop an interview with yes-no question, multi choice question and comment question. The questions in *12<sup>th</sup> WCTR, July 11-15, 2010 – Lisbon, Portugal*

Vietnamese are shown at the end of this paper. There are 5 major themes of question (the situation of the family, the personal profile, the possession of means of transport and parking, the habit of displacements, the opinions about means of transport and transport policies). These questions aim to restore the mobility patterns within their environment and the opinion picture of residents on transport policies leading to modal shift.

## RESULTS

### The population of the survey

There are 450 interviewees, out of which 150 live at the centre, the other 150 live in the new developed area and the last 150 live in the developing area - suburb. In Hanoi, 49% of population is male and 51% is female. The old tower of interviewees is rather similar to the old tower of Hanoi population.

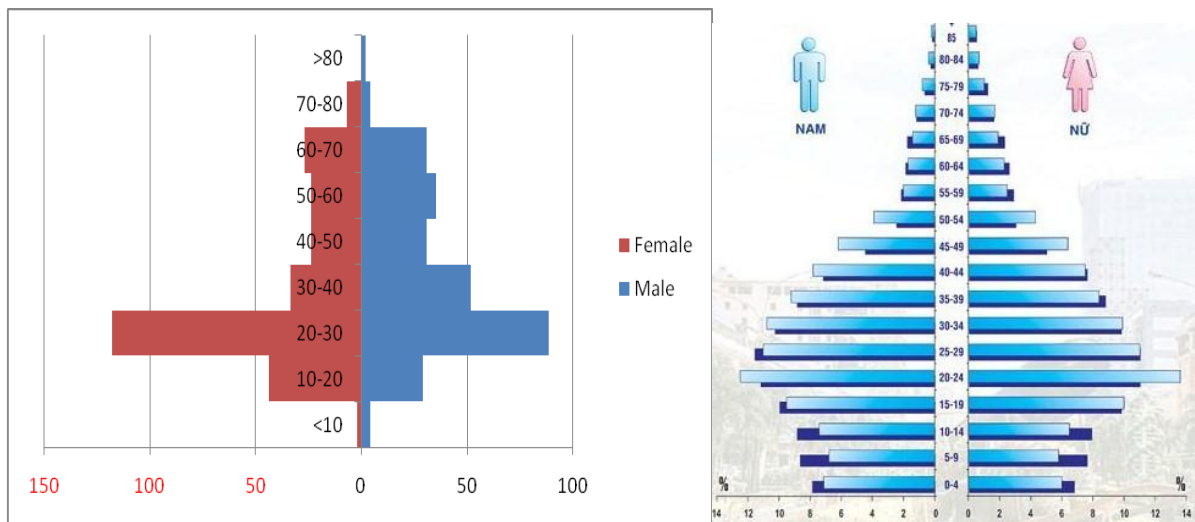


Figure 5: The old tower of the population in the survey in comparison with the old tower of Hanoi population

The occupational percentage and the educational level of interviewees are acceptable because they reflect the reality. The number of employed workers in Vietnam occupies about 50% of population. So we can use this sample for analysis on mobility of Hanoi.

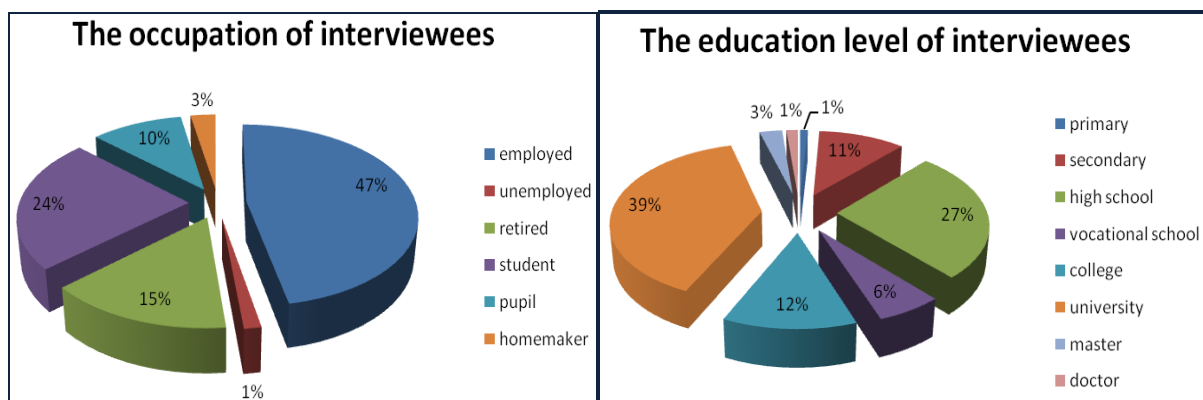


Figure 6: The occupation and the educational level of interviewees

Actually, there are many factors which influence transport behavior and modal choice of people. Principally, they are related to 3 major factors: feature of users (age, sex, profession, income, social position, residence, working place, preference, experiences, esprit, cognition, etc.); political environment (law, rule, politics, plan, project, etc.); availability of infrastructure (companies of transportation's services: price, travel time, comfort, security, etc.). All collected data of 450 people will be synthesized and analyzed to find out the relations between the modal choice of people and factors which are mentioned above, then the potential of modal shift.

### Modal choices and profiles of people

Living standard of interviewee's family

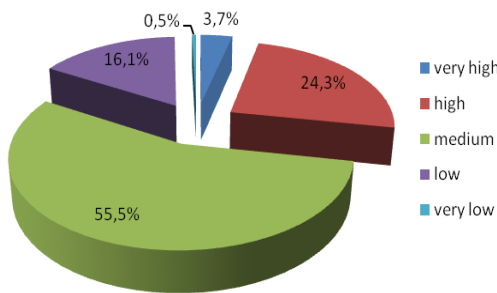


Figure 7: Distribution of living standard

The situation of families, mostly the living standard, contributes to deciding the means of transport that members in the family use for their daily mobility. As we can see in the figure 8, the higher incomes the family earns, the more cars they have. On the contrary, the more the family earns, the less bicycles they have, except the very poor family. Almost all very poor families haven't got money to buy even a bicycle. Similarly, except very rich families, the motor number possession of family increase according to living standards.

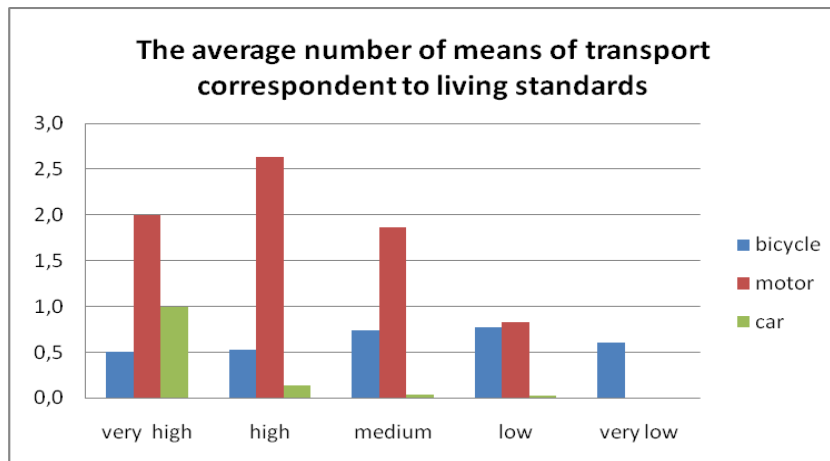


Figure 8: The average number of means of transport correspondent to living standards

All families at medium and high incomes have on average more than 1.8 motors. However, these families have on average only about 0.5 motor per person. The average number of bicycle per person decreases according to living standards.



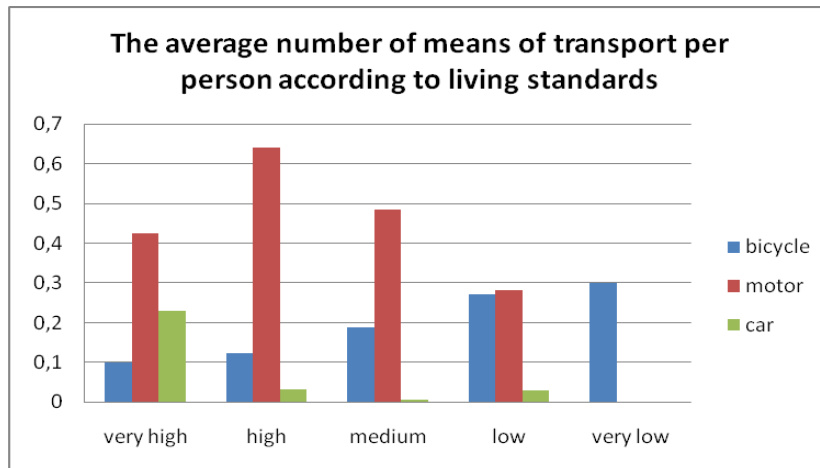


Figure 9: The average number of means of transport per person according to living standards

So, we can see that the possession of motor and car increases corresponding to living standard while the possession of bicycles decreases. In the meanwhile, percentages of families who want to buy a new vehicle increase when the living standard decreases. Except for the families at low incomes, the percentage of families who want to buy a motor or a car decrease according to living standard, perhaps they haven't got money enough to think about buying motors or cars. Even so, the percentage of families wanting to buy a motor or a car is much higher than those wanting to buy a bicycle.

Table 1: The intention of buying new vehicle according to living standard of the family

Living standard	No intention	Buy a bicycle	Buy a motor or a car
very high	89%	0%	11%
high	87%	0%	13%
medium	71%	1%	28%
low	77%	3%	20%
very low	78%	4%	18%

Logically, the more motors or cars families have, the less they use buses. Families with high income don't use buses usually. Most of them use buses rarely or never.

Table 2: The living standard and the using of bus

	everyday	often	sometimes	rarely	never
very high	0%	0%	0%	43%	57%
high	6%	2%	23%	23%	46%
medium	11%	9%	12%	39%	29%
low	34%	6%	29%	17%	14%
very low	#	#	#	#	#

We can imagine that the modal shift potential toward public transportation of families at low incomes is higher than those at high income, mostly when policies of tax and fee are implemented in order to limit the using of motor and car. This potential is economically enforced rather than voluntarily. More than a half of interviewees don't agree with the policies

aiming at limiting car and motor fleet such as: growth of new motorized tax, new motorized vehicle register fee as well as petrol price.

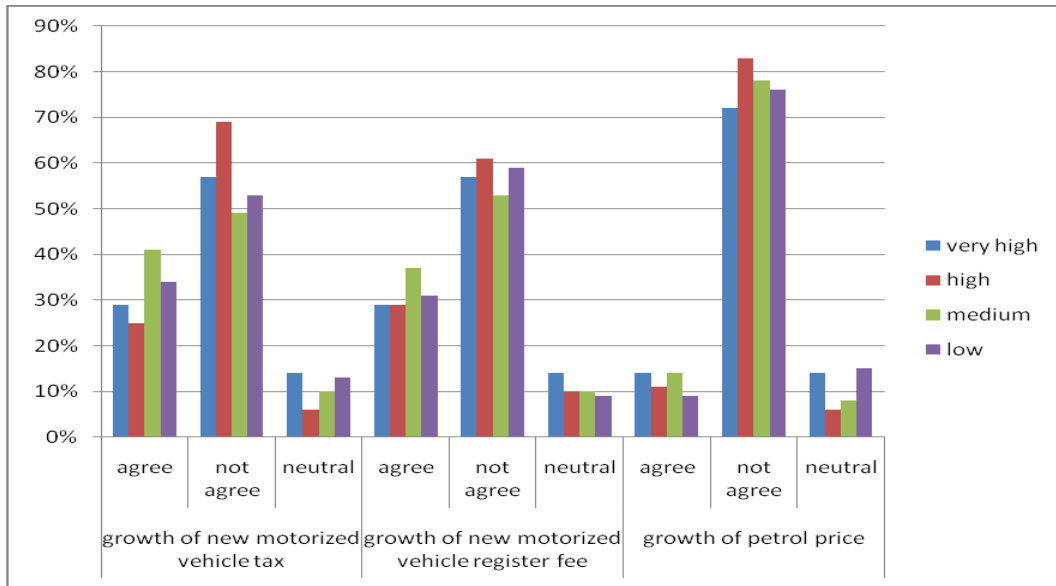


Figure 10: the level of agreement with transport policies and living standards

Studying the relationship between sex and modal choice, we find that women walk, cycle and go by bus more than men. In contrast, men drive motors, especially cars more than women. The woman accept multimodal more than man, so we suppose that the modal shift potential of women is higher than that of men.

Table 3: Sex and modal choice

	walk	bicycle	motor	car	bus	multimodal
<b>Male</b>	49%	41%	53%	79%	41%	43%
<b>Female</b>	51%	59%	47%	21%	59%	57%

Getting older, people walk more, because 90% of seniors think that walking is the safest means of transport. Nearly a half of elders walks instead of using others means of transport. In contrast, people use buses or multimodal less when they get older. This proves that the Hanoi bus system don't attract much elders. In fact, 99% of passengers said that they must always be in a hurry to get on or off the bus because the bus driver doesn't wait for all people to get on or off, he leaves the bus stop when he "wants"! Therefore, how can seniors get on and off the bus in safety and comfort?

The number of elders using motors for their mobility isn't small (30% of elder interviewees). The most frequent cyclist is under 20 years old (48% of junior interviewees), which is the most numerous multimodal users too. The group which travels by buses and uses motors the most is from 20 to 40 years old. But the group uses cars the most is from 40 to 60, because it is assumed that they have higher incomes than younger.

Besides, 100% of interviewees think that walking and cycling are suitable only for gymnast or when moving a short distance. Most of them agree that walking on the pavement is always hindered by motor's parking and shops. Last but not least, the inconvenience of walking has

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negative effect on the increasing number of bus passengers. Some interviewees, whose bus stop is 100m far from home, accept a walking distance of only 50m.

Table 4: Mode choice and age

Age	Walk	Bicycle	Motor	Car	Bus	Multimodal
<20	3%	48%	24%	3%	7%	14%
20-40	8%	6%	61%	3%	13%	9%
40-60	13%	13%	53%	7%	7%	7%
60-80	44%	19%	30%	0%	4%	4%
>80	0%	100%	0%	0%	0%	0%

*(The number of interviewees more than 80 years old is very small, so the results of analysis isn't useful)*

In the table 5, we found that the employee use the motor the most frequently (66%) while the pupil uses bus the most. 68% of interviewees said that buses aren't suitable for employees. Motors are considered to be the most convenient means for active people by almost all interviewees. About 50% taxis-motor drivers interviewed replied that there are many passengers who get off the bus and hire them to go to work on time. 99% students using buses or cycling said that they would buy a motor when they graduate because with a motor they could find a job more easily.

The percentage of students who use multimodal is the highest among all groups (14%). Retired people walk the most (44%), that's because most of retired people are elders.

Table 5: modal choice and the occupation

Occupation	Walk	Bicycle	Motor	Car	Bus	Multimodal
Employee	7%	7%	66%	6%	3%	11%
Unemployed	0%	0%	67%	0%	33%	0%
Retired	44%	13%	31%	0%	3%	9%
Pupil	12%	12%	41%	0%	24%	12%
Student	0%	59%	18%	5%	5%	14%
Homemaker	17%	17%	33%	0%	0%	33%

*(The number of interviewees who are unemployed and homemaker is very small, so the results of analysis isn't useful)*

The student group who has monthly bus ticket occupies the most numerous (78%), while 19% monthly bus ticket belongs to employees. This result is much worth because it proves the effect of price policy. In fact, the price of monthly bus ticket in Hanoi is very cheap: 2.6 USD for students and 4.2 USD for others. However, until 45% people who have never travelled by bus is employees and 32% is students. No retired one use monthly bus ticket. Perhaps retired ones don't travel much each day, so it's more reasonable to use daily ticket. Many employees use daily ticket because very few of them can use bus to go to work all days. 32% of interviewees said that they use bus to go out or shopping with friends only.

Level of bus using among interviewees

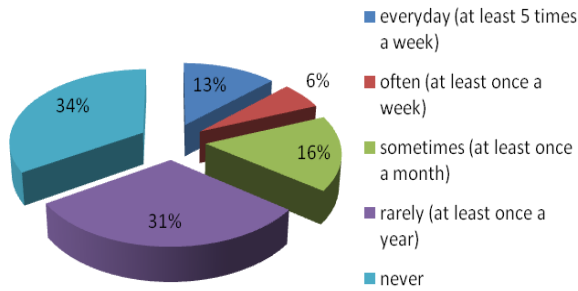


Figure 11: Level of bus using among interviewees

Table 6: The bus using level of interviewees

Every day (at least 5 times a week)	13%
Often (at least once a week)	6%
Sometimes (at least once a month)	17%
Rarely (at least once a year)	31%
Never	34%

Table 7: The bus using level according to the occupation of interviewees

	everyday	often	sometimes	rarely	never
employee	19%	38%	50%	61%	45%
unemployed	4%	0%	3%	0%	2%
retired	0%	23%	14%	18%	18%
student	78%	31%	31%	19%	32%
homemaker	0%	8%	3%	1%	3%

Modal choices and the location of residence and working

In general, the living standards in the new developed area are lower than in the centre and higher than in the developing area - suburb. That's why we can find in the table 6 that the people in the centre use buses less than in the new developed area and the developing area. Up to 50% people in the centre have never gone by bus, in the new developed area 35% and 14% in the developing area. Only 9% people in the centre use the bus every day, 11% in the new developed area and 19% in the developing area. This data is corresponding to results in the table 2. The richer people are, the less they use the bus. Hence, in the case of Hanoi the availability of public transport seems not to be an important factor deciding people's modal choice.

The percentage of people in developing area-suburb who rarely use the bus is rather high (43%). In reality, many people in developing area-suburb said that they only travel by bus to the centre of Hanoi several times per year for visiting or shopping, because going by buses with long distances is cheaper and more comfortable than motors. Besides, staying on the bus they don't have to suffer dust and gas smoke from to transport. In fact, most of them move everyday near the home or go to work in industrial area in the suburbs or others cities (Bac Ninh), rarely they go to the centre.

### Living standards according to areas

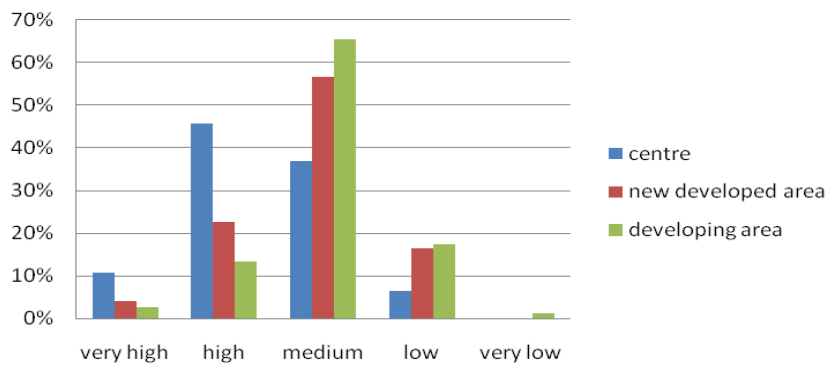


Figure 12: Percentage of living standards according to areas

Table 8: The bus using of interviewees corresponding to areas

	everyday	often	sometimes	rarely	never
<b>centre</b>	9%	7%	13%	22%	50%
<b>new developed area</b>	11%	6%	21%	27%	35%
<b>developing area</b>	18%	10%	15%	43%	14%

The distance from home to bus stops has also influences the bus using level. People living near bus stops use buses as daily means 3 times more than people living far from bus stops. 11% people who live in small lanes far from main streets said that if there are buses passing all small lanes and bus stops not more than 50m far from their home, they'll use buses and don't think about using motors any more. Until 60% people who use bus everyday replied that they choose buses as daily means of transport because there is a bus line connecting from their home to their working or studying place, besides, the bus stop is very near to their home.

Table 9: The distance from residence to the nearest bus stop and the level of using the bus

	Use bus as daily means of transport	No use bus as daily means of transport
<b>&lt;=500m</b>	15%	85%
<b>&gt;500m</b>	6%	94%

The working place affects the modal choice of people as well. The people who must move frequently for working (2 permanent working places and so on) choose the motor more but walking, bicycles or buses less than ones who work at home or at only a permanent place. Most of people who work at more than 3 permanent places are immigrants from countryside to Hanoi and they work as liberal job in Hanoi. So they earn low income, that's why until 11% of them choose bicycle although they must move frequently.

Table 10: The working place and modal choice

	Walk	Bicycle	Motor	Car	Bus	Multimodal
<b>working at home</b>	10%	23%	57%	0%	10%	0%
<b>working at only a permanent place except at home</b>	10%	14%	51%	4%	12%	9%
<b>working at 2 or 3 permanent place</b>	0%	0%	75%	25%	0%	0%
<b>working at more than 3 permanent place</b>	0%	11%	67%	11%	11%	0%

Only 9% people who work at a permanent place choose multimodal, which means that they use motors and sometimes buses to go to work. Among 35% interviewees who have one or two bus lines connecting from their home to working place, 12% of them choose buses as daily means of transport and 9% choose buses as alternative means with motors.

Table 11: Bus line connecting from residence to working place

Line bus connecting from home to working place	percentage of interviewees
an unique line connecting	23%
transfer one time	12%
transfer two times	1%
transfer more than 2 times	0%
no lines connecting	34%
don't know	28%

### Potential of modal shift and images of means of transport

Means of transport	Advantage	Inconvenience
<b>Walking</b>	<p>100% interviewees said that walking is good for health, economic and non-polluted. Most of them consider walking as gymnast.</p> <p>23% interviewees suppose that walking is safe and comfortable</p> <p>13% interviewees think by walking they can avoid traffic jam.</p>	<p>100% interviewees said that walking is slow, time wasting, suitable only for short distance (&lt;500m).</p> <p>100% interviewees in the centre and in the developed area, 43% interviewees in developing area feel uncomfortable because all pavements are occupied by parking of motors and commerce.</p> <p>52% interviewees are afraid of passing the road.</p> <p>9% interviewees think that walking is dirty when rainy.</p>
<b>Bicycle</b>	<p>100% interviewees think that cycling is good for health, economic and non-polluted</p> <p>15% interviewees suppose that bicycle is suitable for students and elders who don't have driving license.</p> <p>3% interviewees said that cycling is safe, comfortable and convenient.</p>	<p>100% interviewees said that cycling is slow, time wasting and tired for a long distance (&gt;3 km).</p> <p>8% interviewees think that cycling is unsafe, difficult to move in congestion, polluted by others motorized means of transport.</p> <p>1% interviewees said that bicycles are often damaged.</p>
<b>Motor</b>	<p>100% interviewees think that motor is mobile, rapid, independent, time saving, more convenient than bus.</p> <p>99% interviewees said that motors are very convenient for employee and active people.</p> <p>63% interviewees suppose that motor is the</p>	<p>99% interviewees said that motor is dangerous due to accidents, polluted for drivers.</p> <p>48% interviewees feel uncomfortable to find a place of parking. 33% of them think that the fee of parking is expensive and although motor is rapid but waste the time for parking.</p>

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Means of transport	Advantage	Inconvenience
	<p>most suitable means of transport for the infrastructure's condition of Hanoi and for the condition of almost all families.</p>	<p>12% of interviewees think that moving by motor is uncomfortable when the weather is bad (rainy, sunny).</p> <p>7% interviewees think that the fee of using the motor is expensive.</p> <p>1% interviewees don't like wear helmets.</p>
<b>Car</b>	<p>100% interviewees think that moving by car is very comfortable and luxurious.</p> <p>4% interviewees said that car is safe and clean for them and their children to go to work or school (avoiding dust, gas smoke, sun, rain).</p> <p>1% interviewees think that car is non-economic but suitable for big families.</p>	<p>100% interviewees think that the fee of using the car is expensive.</p> <p>34% interviewees said that it's difficult to find a place of parking, to move in the condition of Hanoi.</p> <p>11% interviewees think that car is reason of pollution and congestion.</p> <p>2% interviewees feel carsick.</p>
<b>Bus</b>	<p>99% interviewees said that bus is safe and very cheap.</p> <p>4% interviewees said that bus is comfortable and they can move many places in Hanoi by bus.</p> <p>2% interviewees said that moving by bus is pure (avoid dust, gas smoke, sun, rain) and more rapid than bicycle.</p> <p>1% thinks that after ameliorations in 2008, the bus service is much better than before, and they are quite satisfied.</p>	<p>95% interviewees said that bus is dependent, slow.</p> <p>33% interviewees said that bus is camped and uncomfortable in rush hour. It must wait long time in the congestion.</p> <p>32% interviewees think that the attitude of drivers isn't good.</p> <p>3% think that the quality isn't equal among bus lines in Hanoi. The quality depends on each line.</p>
<b>Taxi-motor</b>	<p>61% thinks that motor-taxis are rapid, easy to access everywhere.</p> <p>5% thinks that the fee is acceptable.</p>	<p>58% thinks that motor-taxis aren't safe and only use in urgent and necessary case, such as their motor is broken down or they haven't any motor.</p> <p>6% thinks that the using fee is expensive</p>
<b>Taxi</b>	<p>45% think that taxis are safe, independent, comfortable, accessible, and clean.</p> <p>6% only use taxis when they go out with friends.</p>	<p>45% think that taxis are expensive.</p> <p>21% think that taxis are cause of pollution and congestion.</p> <p>1% supposes that the service isn't good enough.</p>

In general, while almost all people who usually use buses highly appreciate the Hanoi bus service, people who have never used buses hold opposite opinions. Daily users are rather satisfied. In contrast, non-users not only criticize badly but also feel uncomfortable when participating in traffic with buses. However, it is still advisable for Hanoi Bus Company to increase the number of vehicles as well as lines.

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Motorcyclists accept weaknesses of motor (pollution, congestion, danger of accidents and so on). They always consider motors as the most mobile and rapid means of transport in Hanoi. Almost all multimodal users hold open views: they can use any means of transport under the condition that it is convenient for their displacement.

Many people living in developing area aren't sensible with the problem of traffic in Hanoi such as congestion and pollution. They are divided into two types: motorcyclist or non-motorcyclist moving not much every day. People belonging to the second type rarely go to the centre of Hanoi. Some of them use buses or taxi to go there, others use motor.

Table 12: The reason why some people choose buses as mean of daily mobility

Reason	Percentage of daily buses users
Very cheap	98%
Convenient, because there is a bus line connecting from their home to working place and bus stops near the residence	60%
not tired as walking or cycling	10%
They haven't any private vehicle to use	8%
They can't drive motor and car	12%
Safe	77%
not cause pollution and congestion	14%
Can move many places in Hanoi	35%
They don't have to suffer dust, sun, rain	19%
Convenient to go to the centre of Hanoi	11%

After analyzing, we found that there are 17.2% interviewees, who made modal shift for some of their daily displacements such as go to work, go to school, go to countryside, and go out with friends. This result is interesting because it prove the effect of government's urban transport policies based on the development of public transport.

Table 13: motivations of trips and modal choices

	go to work	go to school	personal task	go to market	shopping	take children to school	go to doctor	go to entertainment	go to visit
<b>Walk</b>	7%	8%	3%	47%	9%	10%	4%	17%	2%
<b>Bicycle</b>	18%	4%	6%	11%	5%	3%	2%	6%	2%
<b>Motor, Taxi-motor</b>	35%	57%	71%	35%	60%	69%	60%	43%	48%
<b>Car, Taxi</b>	2%	9%	3%	1%	3%	5%	14%	6%	7%
<b>Bus</b>	15%	6%	3%	1%	3%	3%	2%	2%	7%
<b>Multimodal</b>	22%	16%	14%	5%	20%	10%	19%	26%	34%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



### **Modal shift with policies of transport**

I try to ask people if they agree or not with the policy of limitation the motor and car fleet in Hanoi. 85% of interviewees say “yes”, 10% say “no”, and 6% say “no idea”. There by, most of Hanoi residents think that the government should reduce the number of motors and cars in Hanoi in order to improve the condition of transport as well as to decrease the pollution. However, only 1% of interviewees said that they’ll use public transport in the near future. All these are elders, and they explain that because they are old now and they won’t be able to drive. Moreover, 62% of interviewees said that they are using and will always use motors or cars. We find ridiculous behaviors of almost all people!

When I ask people if a modern system of public transport (subway, tramway, light rail and so on) appear in Hanoi, whether they will use it as daily means of transport instead of motor or not. While 87% of people who have ever used subways or tramways abroad say “yes”, 13% say “not sure”, 62% of people who have never used subways or tramways say “yes”, 12% say “no”. The people say “not sure” because they don’t believe that Hanoi can have such modern public system as developed countries. Some of them suppose that it is a fiction in Hanoi. Nevertheless, the numbers of people who say “yes” prove that most of people believe in advantages of this system.

Table 14: If Hanoi has a modern system of public transport, will you use it instead of motorcycle or not?

<b>Will they use metro or not?</b>	<b>yes</b>	<b>no</b>	<b>haven't known yet</b>
had used metro or tramway abroad	87%	0%	13%
have never used metro or tramway	62%	12%	26%

## **PERSPECTIVE AND CONCLUSION**

According to all synthesized figures, we have some comments as the following:

1. The appearance of bus network in Hanoi for 10 recent years has affected mobility behavior of many people. At least, we found that 17.2% interviewees made modal shifts from motors towards buses for at least one of their movement.
2. The people with high income and employed workers seem always to be the most difficult objects of modal shift policy. It’s easier to encourage students, elders as well as people at low income using public transportation.
3. All data prove that the availability of public transportation have not much positive effects on people’s modal choice decision. The living standard seems to be more important factor.
4. Because all means of transport have advantages as well as disadvantages for everybody, multimodal is a good suggestion for urban transport policy indeed. We found that number of people who use multimodal for their daily movement isn’t small (about 15%). It is advisable for public transport companies to pay much attention to the combination between buses and taxi-motors. In fact, 92% bus users confirmed that they had used taxis-motor combining with bus for some of their travelling before.

5. Large investments in a modern public transport system are not the key to cope with motorcycle and car dependence. It implies a better coordination between public transport planning and urban planning, urban sprawl control and road infrastructures as well.

## **ACKNOWLEDGMENTS**

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## QUESTIONS OF THE SURVEY

**PHIẾU ĐIỀU TRA THỜI QUEN GIAO THÔNG  
 HÀ NỘI 2010 (dành cho hộ gia đình)**

Mã số phiếu: 0405 Mã số người trả lời (lấy số trong phần II dưới đây): 01  
 Địa chỉ: Số nhà Xuân Thịnh đường Đức Vọng phường Đức Vọng Quận Cầu Giấy  
 Ngày: 3/4/2010 Tên người đi điều tra: Đặng Thị Sơn Mã số: 01

**HOÀN CẢNH CHUNG CỦA GIA ĐÌNH:**

**1. Loại nhà ở:**  
01. Nhà kiểu thuộc địa ở phố cổ    02. Nhà riêng    03. Tập thể cũ  
04. Chung cư mới xây    05. Biệt thự    000. Loại khác (ghi rõ).....

**2. Tình trạng sở hữu:**  
01. Chủ sở hữu    02. Nhà thuê, tiền thuê: ..... đồng/tháng    03. Nhà của cơ quan  
04. Nhà được cho ở miễn phí    000. Loại khác (ghi rõ).....

**3. Diện tích nhà:** 40 .....(m<sup>2</sup>)

**4. Số thành viên trong gia đình:** 5 .....(người)

**5. Các loại phương tiện giao thông của gia đình (không tính xe dùng cho mục đích thương mại)**

	Số lượng	Năm mua cái mới nhất	Có dự định mua thêm không?	Chỗ để xe hàng ngày
Xe đạp				
Xe máy	<u>4</u>	<u>2009</u>	<u>có</u>	<u>trong nhà</u>
Ô tô				

**6. Mức sống của gia đình:**  
01. Mức rất cao    02. Mức cao    03. Trung bình    04. Mức thấp    05. Mức rất thấp

Ghi chú lại những quan sát giúp khẳng định câu trả lời: Chỉ mới biết

**THÀNH VIÊN GIA ĐÌNH:**

Số TT	Giới tính (N/Nu)	Vị trí trong gia đình	Tuổi	Tình trạng lao động (2)	Phương tiện di chuyển hàng ngày	Ghi chú (3)
1		<u>Cháu trai</u>	<u>20</u>	<u>SV</u>	<u>bus</u>	
2		<u>cha</u>	<u>46</u>	<u>buôn bán</u>	<u>xe máy</u>	
3		<u>mẹ</u>	<u>42</u>	<u>buôn bán</u>	<u>xe máy</u>	
4		<u>Con trai</u>	<u>19</u>	<u>SV</u>	<u>xe máy</u>	
5		<u>Con gái</u>	<u>14</u>	<u>đi</u>	<u>bus</u>	
6		<u>Anh chị em</u>	<u>22</u>	<u>tv</u>	<u>xe máy</u>	
7						
8						
9						
10						

(1) Vị trí trong gia đình: cụ nội/ngoại; ông bà nội/ngoại; bố; mẹ; vợ/chồng; anh, chị, dượng, rể; con trai/gái; cháu trai, cháu gái.  
 (2) Tình trạng lao động: Sinh viên, học sinh, người đang đi làm, người thất nghiệp, nghỉ hưu, nội trợ, đang tìm việc  
 (3) Nếu đó không phải là một gia đình thì ghi chú lại (ví dụ: sinh viên thuê trọ, bạn bè thuê trọ cùng nhau,...)

**7. Khoảng cách từ nhà đến các bến xe bus gần nhà:**  
 Bến gần nhất: 200 .....(m), có các tuyến buýt số: 20, 26, 32, 39  
 Bến khác: .....(m), có các tuyến buýt số: .....  
 Bến khác: .....(m), có các tuyến buýt số: .....

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**PHIẾU ĐIỀU TRA THỜI QUEN GIAO THÔNG  
 HÀ NỘI 04/2010 (dành cho mỗi cá nhân)**

Mã số gia đình : 02 ..... (lấy lại mã số gia đình của phiếu điều tra thời quen giao thông dành cho gia đình)  
 Tên của người đi điều tra : ..... Mã số cá nhân trong danh sách thành viên gia đình: 04

**NGHỀ NGHIỆP VÀ TRÌNH ĐỘ VĂN HÓA :**

1. Trình độ học vấn và đào tạo cao nhất của bạn :  
00. Dưới tiểu học    01. Tiểu học    02. Cấp 2    03. Cấp 3    04. Học nghề  
05. Cao đẳng    06. Đại học    07. Thạc sĩ    08. Tiến sĩ

2. Tình trạng lao động của bạn :  
01. Làm việc    02. Thất nghiệp    03. Nghỉ hưu    04. Sinh viên    05. Học sinh    06. Nội trợ

3. Lĩnh vực hoạt động nghề nghiệp chính của bạn :  
01. Cơ quan nhà nước    02. Dịch vụ công cộng (điện thoại, bưu điện, điện, nước, vận tải, y tế, giáo dục...)  
03. Làm việc tại nhà (bán hàng, làm thủ công...)  
04. Công ty tư nhân    05. Nội trợ  
06. Chủ sở hữu công ty, doanh nghiệp    07. Nghề tự do    08. Nhà tư    000. Loại khác : .....

4. Xin nói rõ hơn về nghề nghiệp của bạn: .....

5. Thời gian làm việc của bạn ? Số ngày/tuần : 6... Số giờ/ngày (từ mấy giờ đến mấy giờ) : 12h35 - 13h20

6. Địa chỉ nơi làm việc hoặc nơi học tập thường xuyên của bạn :  
01. Tại gia  
02. 1 nơi cố định trừ tại nhà : Số 95... đường... Quận Hai Bà Trưng  
03. 2 hoặc 3 nơi cố định :  
 • Nơi thứ nhất : Số... đường... Quận...  
 • Nơi thứ hai : Số... đường... Quận...  
 • Nơi thứ ba : Số... đường... Quận...  
04. Tự do (nhiều hơn 3 nơi cố định) : .....

000. Loại khác (làm ơn ghi rõ) : .....

**SỐ HIỮU PHƯƠNG TIỆN VÀ ĐỒ XE :**

7. Bạn có bằng lái xe máy không ? : 01. Có    02. Không  
 8. Bạn có bằng lái xe ô tô con không ? : 01. Có    02. Không  
 9. Bạn có mua vé tháng xe bus không ? : 01. Có    02. Không

Nếu có thì thuê bao xe bus của bạn có giá trị :  
01. một tuyến    02. 2 tuyến    03. Liên tuyến    000. Loại khác : ..... (xin nói rõ)

10. Bạn có chỗ đỗ xe ở nơi làm việc hoặc học tập không?    01. Có    02. Không

Nếu có : 01. Miễn phí    02. Trả tiền, tiền hàng tháng : 30.000... đồng/tháng

11. Có tuyến buýt hoặc liên tuyến nào cho phép bạn đi từ nhà đến nơi làm việc hoặc nơi học tập thường xuyên của bạn không ?  
01. Có    02. Không    03. Không biết

Nếu có : 01. Một tuyến nối trực tiếp    02. Chuyển tuyến một lần    03. Chuyển tuyến 2 lần  
04. Chuyển tuyến nhiều hơn 2 lần    000. Loại khác : ..... (xin nói rõ)

12. Khoảng cách từ chỗ làm việc của bạn đến các bến xe bus gần đó :  
 Bến gần nhất : 300... (m) có các tuyến buýt số : 31, 19, 20, 21, 25, 03.  
 Bến khác : 300... (m) có các tuyến buýt số : 12  
 Bến khác : ..... (m) có các tuyến buýt số : .....  
 Bến khác : ..... (m) có các tuyến buýt số : .....

13. Khoảng cách từ nhà bạn đến các chợ mà bạn thường xuyên mua thức ăn hàng ngày (ghi 000 nếu như bạn không biết hoặc không bao giờ đi chợ) :  
 Chợ mua nhiều nhất : tên chợ : chợ... Khoảng cách : 100... (m)  
 Chợ khác : tên chợ : ..... Khoảng cách : ..... (m)  
 Chợ khác : tên chợ : ..... Khoảng cách : ..... (m)  
 Chợ khác : tên chợ : ..... Khoảng cách : ..... (m)

14. Bạn mất bao nhiêu thời gian để đi từ nhà bạn đến chỗ làm? (ghi 000 nếu như bạn không biết)

Phương tiện	Thời gian (phút)	Ghi chú
Đi bộ		
Xe đạp		
Xe máy	25	
Ô tô con		
Buýt	30	

**THÓI QUEN ĐI LẠI :**

15. Phương tiện giao thông nào bạn sử dụng cho các mục đích đi lại sau :

Ít nhất 5 lần/tuần (ghi số 5)      Ít nhất 3 lần/tuần (ghi số 3)      Ít nhất 1 lần/tuần (ghi số 1)  
 Hiếm khi dùng (ghi chữ H)      Không bao giờ dùng (ghi chữ K)

Mục đích	ĐB	XD	XM	Ô	Bus	XÔ	Taxi	XM+bus	XÔ+bus
Đi học					5				
Đi làm									
Công việc cá nhân trừ giải trí (làm giấy tờ,...)									
Đi chợ hàng ngày									
Đi mua sắm (shopping)									
Đưa con đi học									
Đưa vợ hoặc chồng đi làm									
Đi khám sức khỏe hoặc bệnh viện									
Đi thăm người thân, gia đình, bạn bè									
Giải trí (thể thao, nhà hàng, game,...)									
Về quê				1					
Công tác xa									

ĐB : Đi bộ    XD : Xe đạp    XM : Xe máy    Ô : Ô tô    Bus : Xe buýt    XÔ : Xe ôm

16. Nếu bạn là người thường xuyên đi lại bằng xe bus, tại sao bạn lại chọn xe bus mà không phải là phương tiện khác ?  
*Kinh tế, dễ lái*

17. Hiện nay bạn có đi xe buýt cho một hoặc một số đi chuyển hàng ngày (đi làm, đi học, đi mua sắm,...) mà trước kia bạn thường đi bằng xe máy không?     01. Có     02. Không  
 Nếu có : từ khi nào ? *9/2008* Cho mục đích đi chuyển nào ? *đi học, đi chợ*  
 Tại sao bạn đã quyết định đi xe buýt thay cho xe máy ?  
*Kinh tế*

**SUY NGHĨ CỦA BẠN VỀ CÁC LOẠI PHƯƠNG TIỆN GIAO THÔNG HIỆN NAY :**

18. Bạn nghĩ gì về các loại phương tiện giao thông dùng cho đi lại hàng ngày hiện nay ? (ví dụ : kinh tế, an toàn, nhanh chóng, tiện lợi, cơ động, tiện nghi, tình trạng đi lại trên đường, đỗ xe, dễ tiếp cận, thời gian chờ đợi, độc lập đi lại hay phụ thuộc, ô nhiễm hay không ô nhiễm,...)

Hình ảnh	Thuận lợi	Kho khan
Đi bộ	Ô nhiễm	Chậm, ò
Xe đạp	Ô nhiễm	Chậm, an toàn
Xe máy	Tận lực, Cơ động	Ô nhiễm
Ô tô	Hiện đại, tiện nghi	Ô nhiễm, Đỗ xe
Bus	Kinh tế, an toàn	Thời gian chờ đợi
Xe ôm		
Taxi		

**NGHĨ CHO TƯƠNG LAI :**

19. Theo bạn sự thay thế xe máy bằng ô tô trong tương lai ở Hà Nội là :

	Đồng ý	Không đồng ý	Không biết
Một xu hướng tất yếu của sự phát triển và hiện đại	<input checked="" type="checkbox"/>		
Một hiện tượng sẽ bị hạn chế vì thiếu bãi đỗ xe trong Hà Nội			<input checked="" type="checkbox"/>
Một hiện tượng đáng lo lắng vì sự tắc đường và ô nhiễm		<input checked="" type="checkbox"/>	
Hà Nội phải có biện pháp hạn chế sự gia tăng số lượng ô tô trong thành phố		<input checked="" type="checkbox"/>	

20. Bạn có cho rằng tình hình giao thông trong Hà Nội hiện nay, ô nhiễm và tắc đường đã đạt đến mức đáng lo lắng và báo động không ? 01.  Có 02.  Không 03.  Không ý kiến

Nếu có, bạn có nghĩ đã đến lúc áp dụng các biện pháp mạnh để hạn chế số lượng xe máy và ô tô ở trung tâm thành phố không ? 01.  Có 02.  Không 03.  Không ý kiến

Hay bạn có gợi ý nào khác : đường dành cho xe máy ở Đ.Đ

21. Bạn có dự định chuyển sang dùng các loại phương tiện giao thông nào khác phương tiện bạn đang dùng trong tương lai không ?

	Có	Không	Tại sao?	Nếu có thì với điều kiện gì ?
Xe máy				
Ô tô				
GTCC		<input checked="" type="checkbox"/>	<u>chưa đủ thời</u>	
Xe đạp				
Xe ôm				
Taxi				

22. Bạn đã từng ra nước ngoài và sử dụng GTCC hiện đại (metro, tram) ở đó lần nào chưa ?  
 01. Rồi  02. Chưa

23. Nếu Hà Nội có hệ thống tàu điện ngầm hoặc xe điện hiện đại thì bạn có sẵn sàng từ bỏ xe máy để đi GTCC không ?  01. Có  02. Không  03. Chưa biết được (xem đã)

24. Bạn có đồng ý với các chính sách sau đây nhằm hạn chế số lượng xe máy và ô tô không ?

Chính sách	Có	Không	Ở giữa
Tăng thuế đối với xe máy và ô tô	<input checked="" type="checkbox"/>		
Tăng lệ phí đăng kí xe máy và ô tô			<input checked="" type="checkbox"/>
Tăng giá xăng để hạn chế đi lại bằng giao thông cơ giới		<input checked="" type="checkbox"/>	
Áp dụng hệ thống thu phí các phương tiện cơ giới cá nhân đi vào trung tâm thành phố			<input checked="" type="checkbox"/>
Thu phí môi trường hoặc phí sử dụng hàng năm đối với xe máy và ô tô đang hoạt động	<input checked="" type="checkbox"/>		
Hạn chế chỗ đỗ xe trong trung tâm, tăng phí đỗ xe	<input checked="" type="checkbox"/>		
Tăng tiền phạt đối với người vi phạm luật lệ giao thông	<input checked="" type="checkbox"/>		
Trên các tuyến đường chính hiện nay, tạo làn đường riêng cho xe bus và thu hẹp phần đường cho giao thông cơ giới cá nhân (xe máy, ô tô con)			<input checked="" type="checkbox"/>
Xây dựng các bãi đỗ xe tại đầu mỗi GTCC ở khu vực cửa ngõ vào thủ đô	<input checked="" type="checkbox"/>		
Cải tạo giao thông cơ giới trong trung tâm phố cổ, thay vào đó bằng hệ thống xe bus nhỏ	<input checked="" type="checkbox"/>		
Phát triển hơn nữa đường xá cho xe máy và ô tô để tránh tắc đường thay vì áp dụng các biện pháp ở trên	<input checked="" type="checkbox"/>		

25. Bạn có đồng ý là cần phải khuyến khích trở lại việc đi bộ và đi xe đạp bằng các biện pháp thích hợp (đảm đương riêng, cải tạo lại vỉa hè dành riêng cho người đi bộ,...) ?  01. Có  02. Không

Chú ý : .....

26. Bạn có đồng ý là một thành phố hiện đại và bền vững thì phát triển GTCC là không thể thiếu ?  
 01. Có  02. Không Chú ý .....

27. Nếu bạn đã từng đi lại bằng xe bus trong Hà Nội, bạn có gợi ý nào giúp cải thiện dịch vụ bus đáp ứng hơn nhu cầu của bạn và thu hút nhiều khách hơn không ?  
Tăng số chuyến, cải thiện chất lượng phục vụ, giảm chi phí, tăng cường hệ thống thông tin, sửa chữa xe