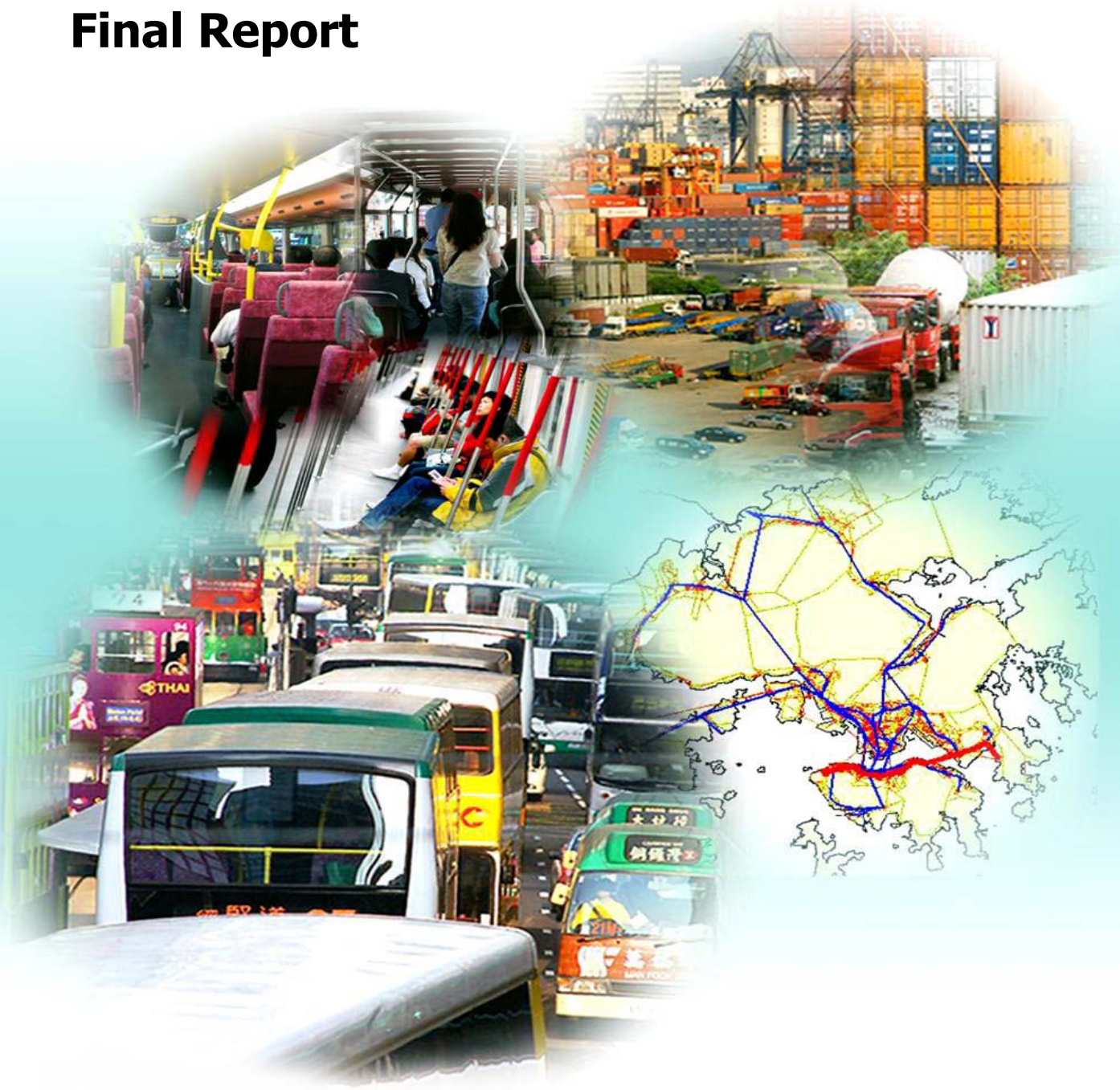
運輸署
Transport Department

Travel Characteristics Survey 2011

Final Report



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CONTENTS

LIST OF TABLES

LIST OF FIGURES

Acronyms

AS	Attachment Survey
C&SD	Census & Statistics Department
CAPI	Computer-Assisted Personal Interviewing
CBTS	Cross Boundary Travel Survey
CTS	Comprehensive Transport Study
EB	Employers' Business
HBO	Home-Based Others
HBS	Home-Based School
HBW	Home-Based Work
HIS	Household Interview Survey
HKSAR	Hong Kong Special Administrative Region
KCR	Kowloon-Canton Railway
LRT	Light Rail Transit
MTR	Mass Transit Railway
NHB	Non-Home Based
NT	New Territories
NWNT	Northwest New Territories
PlanD	Planning Department
PLB	Public Light Bus
RDS2	Second Railway Development Study
SP	Stated Preference
SPB	Special Purpose Bus
TCS 2002	Travel Characteristics Survey 2002
TCS 2011	Travel Characteristics Survey 2011
TS	Hotel/Guesthouse Tourists Survey
VoT	Value of Time

EXECUTIVE SUMMARY

E.1 Background

E.1.1 The Travel Characteristics Survey 2011 [1] (TCS 2011) aimed to collect up-to-date travel characteristics data and develop such data into a database. The database will be used for subsequent updating and enhancement of the Comprehensive Transport Study (CTS) and other government departments' transport models, as well as to provide information for future transport planning. The last TCS was conducted in 2002 (TCS 2002).

E.1.2 TCS 2011 comprised 3 main surveys:

- **Household Interview Survey (HIS)** – to obtain comprehensive household, personal and trip data, essential for enhancing the CTS Model and providing information for transport planning. In addition to collecting the above data, the HIS also included five attachment surveys on: private vehicle usage and expenses; travel propensity, walking and use of travellators; cycling; effects of transport information system; and views of elderly on transport services.

- **Stated Preference (SP) Survey** – to assess the impact of related parameters affecting choices for users of various transport modes and choices of cross-harbour tunnels; as well as to derive the behavioural values of time.

- **Hotel/Guesthouse Tourists Survey (TS)** – to collect the trip-making characteristics and trip information of visitors who stayed in hotels/guesthouses.

E.1.3 The survey fieldwork for the HIS and SP Survey were conducted between September 2011 and January 2012, while that for the TS was conducted between November 2011 and March 2012. All fieldwork was suspended during the Christmas and New Year holiday period. The data collected in the surveys were then processed, expanded and adjusted based on independent control data.

E.1.4 Some of the major findings of the surveys are summarised in the following paragraphs.

E.2 Characteristics of Trips Made by Hong Kong Residents

Demographic Information

E.2.1 The demographic information of Hong Kong residents obtained from TCS 2002 and TCS 2011 are summarised in **Table E.1**.

Table E.1 Summary of Demographic Information

Parameter	TCS 2002	TCS 2011
Number of Households	2,152,900	2,363,300
Population	6,756,100	6,881,900
Employed Workers	3,296,700	3,553,100
Full time Students	1,393,300	1,231,900
Average Household Size	3.1	2.9
Mean (Median) Household Income (at 2011 Prices)	$24,000 ($18,000)#	$30,000 ($21,000)

Converted from 2002 to 2011 prices based on Composite Consumer Price Index growth (+15.2%) between 2002 and 2011.

E.2.2 In total, there were 2,363,300 domestic households in Hong Kong and a population of 6,881,900 persons living in these domestic households (hereafter referred to as "household

[1] The Comprehensive Transport Study Model Enhancement - Feasibility Study was commissioned by Transport Department in July 2010, in which the TCS 2011was its integral part.

population [2] ") according to the 2011 Population Census data provided for this Study. The average household size was 2.9 persons in 2011, representing a 6% reduction from the average household size at 3.1 persons recorded in the TCS 2002.

E.2.3 Since the development of new towns in the 1970's, the population growth has been largely concentrated in the New Territories (NT), with a steep 43% growth in the NT population in the 10 years before 2002. Between 2002 and 2011, the NT population growth was much more modest at 5% with an increase of 160,000 persons. A marginal reduction in household population was however found in the urban areas during this period. As a result, the proportion of household population living in the NT has increased from 51% in 2002 to 52% in 2011.

Mechanised Trips [3]

E.2.4 A summary of the mechanised trips made on a weekday is given in **Table E.2** and compared against the TCS 2002 results.

Table E.2 Summary of Mechanised Trips Made on a Weekday

Item	TCS 2002	TCS 2011
Number of Mechanised Trips		
Home-Based Work (HBW)	4,620,000	5,022,000
Home-Based School (HBS)	1,571,000	1,351,000
Home-Based Others (HBO)	3,883,000	4,706,000
Non-Home Based (NHB) + Employers' Business (EB)	2,230,000	1,526,000
Total	12,304,000	12,606,000
Mechanised Trip Rate per Person	1.82	1.83
Average No. of Boardings/Trip	1.19	1.17
Mean Journey Time (minutes)		
Private Vehicle and Taxi	24	26
Public Transport (excluding Taxi)	43	43

[2] This refers to the land-based non-institutional population of the HKSAR living in domestic households who had stayed in Hong Kong for at least one month during the six months before or after the time of enumeration. It covers about 97% of the Hong Kong Resident Population and excludes the institutional population, marine population, population in non-domestic households (collective households residing in ordinary living quarters and mobile households) and population in hotels/hostels/ holiday camps.

[3] Mechanised trips Mechanised trips refer to any trips involving mechanised transport excluding trips made by some minor mechanical modes such as goods vehicle for personal use, bicycle, golf cart and cable car.

E.2.5 The average total number of mechanised trips made by Hong Kong residents on a weekday was estimated to be 12,606,000 after adjustments made for trip under-reporting [4]. Some of these trips involved more than one transport mode.

E.2.6 The average mechanised trip rate on a weekday for a Hong Kong resident was estimated at 1.83 trips per person, nearly the same as the 1.82 trips per person obtained from TCS 2002.

E.2.7 As regards trip purposes, the Home-Based Work (HBW) trip rate per employed worker and Home-Based School (HBS) trip rate per full time student have remained relatively stable since 1981 and continued to contribute to a significant proportion of the total trips made. The aggregate number of HBW and HBS trips accounted for 51% of the total mechanised trips made.

E.2.8 The number of Home-Based Others (HBO) trips has increased from 2002 to 2011 by 21%, well above the household population growth over that period. On the other hand, the aggregate number of Non-Home Based (NHB) and Employers' Business (EB) trips has decreased by over 30% with their combined trip rate per person reduced by one-third between 2002 and 2011. This could be due to a combination of economic and behavioural changes: transformation of HKSAR economic activities, increased use of information technology, working from home becoming more common, and increase in cross-boundary ties and business opportunities.

[4] As some of the trips made, typically those irregular or more trivial in nature, would inevitably be forgotten or not reported by the respondents during interview, the expanded trip data collected from the survey were compared against independent observed data or transport statistics available and then adjusted accordingly.

E.2.9 The overall peak hours for mechanised trips (on a weekday) were found to be 8:00 – 9:00 a.m. in the morning and 6:00 – 7:00 p.m. in the evening, each accounting for about 12% of the daily trips made. The same peak hours were identified in TCS 2002. 41% of the home-to-work trips occurred in the morning peak hour at 8:00 – 9:00 a.m., which compared with 40% in 2002. 34% of the work-to-home trips occurred in the evening peak hour at 6:00 – 7:00 p.m., as compared to 33% in 2002.

E.2.10 Over half (51%) of the mechanised trips were made within half an hour and 90% made within an hour for people to travel from their trip origins to destinations. The mean journey time was 40 minutes, marginally longer than the 39 minutes in 2002. HBW trips with a mean journey time of 47 minutes generally took the longest journey time among trips made for different purposes. As compared with the TCS 2002 results, the private vehicle / taxi trips on average took a longer journey time (26 minutes compared to 24 minutes) whilst the public transport (excluding taxi) trips took very much the same journey time (43 minutes).

E.2.11 From 2002 to 2011, the numbers of trips made Kowloon to/from NT and within NT showed the strongest growths at 6% and 8% respectively, that could relate to the increase of household population in the NT. The increases in other regional movements were generally very modest. Within the same period, there was a reduction in the number of trips made within Kowloon by 7%. This could be attributed to the continual development in the NT especially in the new towns which, coupled with the expansion of the transport system and improved accessibility of the NT, resulted in a shift in trip distribution with more cross-regional movements to/from the peripheral areas in Kowloon.

E.2.12 The increase in cross-regional trip movements implied a generally longer distance of travel. This is evident from the increase in average journey time from 2002 to 2011 for private vehicle / taxi trips. The change in journey time for public transport (excluding taxi) trips was not apparent that might be due to the improved public transport network. Between 2002 and 2011, the West Rail, Lok Ma Chau Spur Line, Kowloon Southern Link, Ma On Shan Line, Tseung Kwan O Line LOHAS Park Station were opened; these have improved accessibility and helped shorten the travel time to/from the concerned new towns.

E.2.13 The majority (84%) of the mechanised trips made involved one mechanised trip leg (or boarding) only. The average number of boardings per trip has decreased from 1.19 in 2002 to 1.17 in 2011. If private vehicle and taxi trips were excluded, the average number of boardings per public transport trip was 1.22. Among different trip purposes, HBW trips involved the highest average number of 1.23 boardings per trip.

E.2.14 The proportion of total boardings by private vehicles was 12%. In other words, 88% of the boardings were made by public transport [5] modes, as compared to 89% in TCS 2002.

E.2.15 As a result of the continuous railway network expansion, rail had taken the place of franchised bus as the most patronised mode of transport. In 2011, rail (including MTR and LRT but excluding tram) and franchised bus accounted for some 30% and 27% respectively of the daily number of boardings made by Hong Kong residents during weekdays. This compared with the respective corresponding figures of 25% and 33% from TCS 2002.

E.2.16 Boardings for ferry had the highest proportion (69%) involving interchange to other modes owing to the restricted catchment areas served by the ferry services. Private vehicle and taxi boardings had the lowest percentages involving interchanges (3% and 15% respectively).

[5] Throughout this report, public transport includes taxi unless otherwise stated.

E.2.17 Over 75% of Hong Kong residents walked 5 minutes or less from their trip origin to access a mechanised transport mode, and from the alighting point of a mechanised transport mode to their trip destination. The mean walking time was 4 minutes, the same as that obtained from TCS 2002. Close to 85% of the transfers made from one mode or route service to another involved walking of 5 minutes or less, and the mean walking time was 3 minutes, same as the TCS 2002 value.

Walk-Only Trips

E.2.18 Walk-only trip data were only collected from a sub-sample of the HIS respondents for reference. It should also be noted that no adjustment to the under-reporting of walk-only trips could be made because of the lack of independent observed data on walking movements.

E.2.19 The average journey time for walk-only trips was 8 minutes. Across different trip purposes, the average journey time for HBO walk trips was the longest (9 minutes).

E.2.20 Detailed trip information such as trip-making time was only collected from more significant walk-only trips which took more than 10 minutes. The peak hours for these walk-only trips occurred at 7:00 – 8:00 a.m. in the morning and 3:00 – 4:00 p.m. in the afternoon, which accounted for 11% and 10% respectively of the daily trips. Both peak hours composed of a relatively large proportion of HBS trips.

Cycling Trips

E.2.21 In the absence of independent statistics for control, adjustment to the under-reporting of cycling trips could not be made accurately. Some broad assumptions were made with reference to the extent of under-reporting for mechanised trips, but given the very different nature of cycling trips from mechanised trips, the results below should therefore be interpreted with caution and for indicative reference only.

E.2.22 80% of the cycling trips were "Cycling-only". In other words, 20% was "Cycling trips involving interchange with other mechanised transport modes". In general, HBO trips accounted for the largest proportion (45%) of the daily cycling trips, followed by HBW trips (43%).

E.2.23 The majority (87%) of the "Cycling-only" trips took 30 minutes or less from origin to destination. The average cycling time was 25 minutes.

E.2.24 65% of the "Cycling-only" trips and 82% of the cycling trip legs connecting with other mechanised modes were made within the same district. The highest concentrations of cycling trips were found in new towns like Fanling/Sheung Shui, Yuen Long, Tai Po, Sha Tin, Tuen Mun and Rural NWNT.

E.3 Availability and Usage of Private Vehicles

E.3.1 14.4% of the households in Hong Kong (or 340,300 households) had private cars available for use, among which 11.4% had more than 1 car. The mean availability was 1.15 cars per household with private cars available, amounting to a total of 391,800 private cars. 9.7% of the private cars concerned were company-owned.

E.3.2 0.8% of the households in Hong Kong (or 18,600 households) had motorcycles available for use with a mean availability of 1.04 motorcycles per household with motorcycles available. An estimated 19,300 motorcycles were found among households, of which 3.6% were company-owned.

E.3.3 Altogether, in 2011, 15.1% of households in the whole territory had private vehicles (private cars and motorcycles) available for use (hereafter referred to as "private vehicle-available households"), which was higher than 13.5% in 2002. The comparisons of the numbers and proportions of private vehicle-available households by region are summarised in **Table E.3**.

Table E.3 Comparison of Private Vehicle-Available Households in 2002 and 2011

Area	Number of Private Vehicle-Available Households		Proportion of Private Vehicle-Available Households	
	2002	2011	2002	2011
Hong Kong Island	67,000	79,400	16.0%	18.7%
Kowloon	60,600	82,100	9.1%	11.3%
NT	163,700	194,800	15.3%	16.1%
Total	291,300	356,300	13.5%	15.1%
With 1 vehicle	257,800	314,500	12.0%	13.3%
With >1 vehicles	33,500	41,800	1.5%	1.8%

E.3.4 Availability of private vehicles was observed to be correlated with the travel distance or journey time between household locations and the urban areas, type of housing (which has implications on the availability of parking spaces), household income and household size.

E.3.5 73% of the respondents attributed time-saving, convenience and work- or business-related needs as their primary reasons for owning private vehicles.

E.3.6 95% of all private vehicle-available households reported that they had used their vehicles at least once during the past seven days before the interview. The mean number of days of private vehicle usage during daytime (5:00 a.m. – 8:00 p.m.) and night-time (8:00 p.m. – 5:00 a.m.) for weekdays (Mondays to Fridays) were 2.9 days and 1.7 nights per week respectively, notably less than the corresponding figures of 3.4 days and 2.3 nights revealed in TCS 2002. The mean number of days of private vehicle usage during weekends (Saturdays and Sundays) was 1.4 days, unchanged from the 2002 figure.

E.3.7 The annual average kilometrage driven for private cars was 11,400 km and that for motorcycles was 11,600 km. These compared to 16,000 km and 11,800 km respectively in 2002 that reflected a considerable reduction in the annual average distance travelled by private cars.

E.3.8 For the private cars available for use by households, 32% were used mainly for recreational and social purposes. Marginally less (31%) were used mainly for commuting to/from work. The largest proportion (54%) of motorcycles were mainly used for commuting to/from work; relatively less (29%) were used for recreational and social purposes.

E.3.9 The average total monthly expenses in operating a private car and a motorcycle were $5,400 and $1,600 respectively (at 2011 prices) while the corresponding values obtained from TCS 2002 were $5,300 and $1,800 (at 2002 prices). For the monthly expenses incurred in operating private cars, fuel cost ($1,900) constituted the highest portion (some 36%) of the total monthly expenses. In the case of operating motorcycles, fuel cost ($600) also constituted the highest portion (40%) of the total monthly expenses.

E.4 Major Views and Attitudes Related to Travelling

E.4.1 As sub-samples of the HIS, information was also obtained from respondents who were Hong Kong residents aged 15 or above, with respect to their views and opinions on the transport system and factors affecting their travel behaviour. Some of the key findings are presented below.

Factors Affecting the Use of Environmentally-friendly Vehicles

E.4.2 For those private cars intended to be bought in the next 12 months after interview, 13% would be environmentally-friendly vehicles, including 3% electric and 10% hybrid vehicles. Only 5% of the motorcycles to be bought would be environmentally-friendly vehicles, with all being hybrid vehicles. The main reasons for not buying environmentally-friendly vehicles were the lack of experience/confidence in hybrid or electric vehicles (26%) and inadequate charging stations/facilities (22%).

E.4.3 For those households who intended to buy private vehicles in the next 12 months after interview, they would be willing to pay 15% more for an environmentally-friendly vehicle instead of a petrol/diesel-fuelled vehicle with a view to improving the environment.

Effects of Changes in Journey Time and Factors Affecting the Choice of Public Transport Mode

E.4.4 Respondents were asked how they might change their travel pattern if the journey time of their trips during the peak periods (7:00 – 10:00 a.m. and 5:00 – 8:00 p.m.) were increased by 25%, 50% and 100% respectively from the present. The results are summarised in **Table E.4**.

Table E.4 Possible Changes in Travel Patterns with Assumed Increase in Journey Time

Possible Changes	Assumed Increase in Journey Time by		
	25%	50%	100%
Change in Transport Mode	35%	57%	66%
Shifting Trip to Non-peak Hours	23%	34%	39%

E.4.5 Respondents would be most apt to switch to another transport mode should the journey time of their trips during peak hours be lengthened. 35% of the respondents considered that they would switch to another transport mode if the journey time of their trips during peak hours were to increase by 25%, while the tendency to switch to another mode would be increased to 66% of respondents if the journey time were to double.

E.4.6 The main factors people considered in choosing among different public transport modes were travel time and walking distance between boarding/ alighting location and trip origin/destination, inferring that "door-to-door" service was much valued in such decision-making. They were followed by the travel distance and cost involved.

E.4.7 The average time people were prepared to wait for different types of public transport services ranged from 6 to 16 minutes. In general, people were prepared to wait longer for ferry services, but the least for taxis.

Walking and Cycling

E.4.8 In general, people would be willing to walk for a maximum of 10 to 12 minutes to access various public transport facilities under outdoor and sheltered condition, beyond which timing they would consider alternative modes to access the facilities or choose another transport mode. Also, respondents would be prepared to walk longer under air-conditioned situation (13 to 15 minutes) and even longer with the provision of travellators/escalators (15 to 17 minutes).

E.4.9 10.4% of the households in Hong Kong (or 245,300 households) had bicycles available for use. The percentage of households with bicycles available was much higher in the rural areas in the NT, Tai Po, Fanling/Sheung Shui, North Lantau and Sha Tin.

E.4.10 The mean availability was 1.41 bicycles per household with bicycles available, amounting to a total of 347,000 bicycles. 70% of these bicycles were parked inside home, 28% at other places near home, and 2% away from home.

E.4.11 69% of Hong Kong residents aged 15 and over knew how to cycle. Among them, 13% (or 535,000 persons) had bicycles available for use.

E.4.12 Of all Hong Kong residents aged 15 and over who knew how to ride a bicycle and had bicycles available for use, about 12% had used their bicycles for business, commuting or school trips while 28% had used their bicycles for other purposes (such as recreation / leisure) on weekdays in the past 3 months from the day of interview. On weekends during that 3 months' period, about 8% had used their bicycles for business, commuting or school trips while 42% had used their bicycles for other purposes.

E.4.13 Of all Hong Kong residents aged 15 and over who knew how to ride a bicycle (regardless of whether they had bicycles available), about 3% had rented a bicycle for recreation/leisure purpose on weekdays in the past 3 months from the day of interview. On weekends during that 3 months' period, about 6% had rented a bicycle for recreation/leisure purpose.

E.4.14 Among all the respondents who had cycled in the 3 months before interview, 85% usually cycled on cycle tracks while 15% usually on carriageways.

E.4.15 The attitudes of Hong Kong residents aged 15 and over on some of the potential measures for enhancing cycling safety are summarised in **Figure E.1**. Overall, people were more supportive of the compulsory wearing of safety helmets (78% to 89%) than the registration of bicycles (42%) and requirement of cyclists to apply for a "cycling licence" (43%).

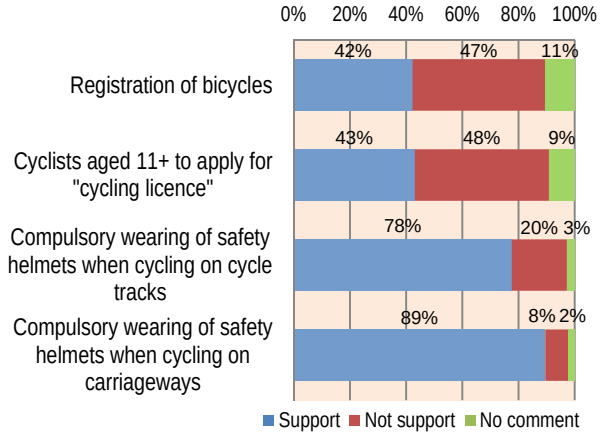


Figure E.1 : Support of Potential Legal & Enforcement Measures on Cycling

E.4.16 Regarding the compulsory wearing of safety helmets for cyclists of different age groups, respondents generally showed stronger support for the safety helmet wearing requirement to apply to younger cyclists, particularly those aged below 11.

Dissemination of Transport Information

E.4.17 Public transport users were generally most satisfied with the information provided by rail operators when compared with other operators. Public light bus (PLB) operators were considered least satisfactory in terms of providing transport services information to users.

E.4.18 Among the various aspects of public transport information provided by the public transport operators, users were generally most satisfied with the routing and service frequency (time table) information provided, but less satisfied with information on fare/concession, travel time to destination and estimated time of arrival of the next service.

E.4.19 The type of public transport service information considered most useful by the respondents for their decision-making in mode choice was "routings" (39%). The type of information considered most useful by drivers was the choice of alternative route in case of road/tunnel congestion (37%).

E.4.20 45% of the respondents were aware that various transport information services (such as traffic speed map, cross-harbour journey time, driving route search service, public transport enquiry service and traffic cam online) are available from the Internet. Among them, 18% had visited Transport Department's website to obtain relevant transport information in the 3 months before the day of interview, while 52% had visited other websites to obtain such information during that period. Generally, users found the information from Transport Department's website more helpful in facilitating their decision-making in mode choice and route choice than departure time when making trips.

Views on Measures to Relieve Traffic Congestion and to Improve Pedestrian Facilities

E.4.21 When asked how traffic congestion could be alleviated (assuming that the existing level of congestion was to worsen), the most supported measure to relieve traffic congestion given by the respondents was to build more railways (21%), followed by others as shown in **Figure E.2**.

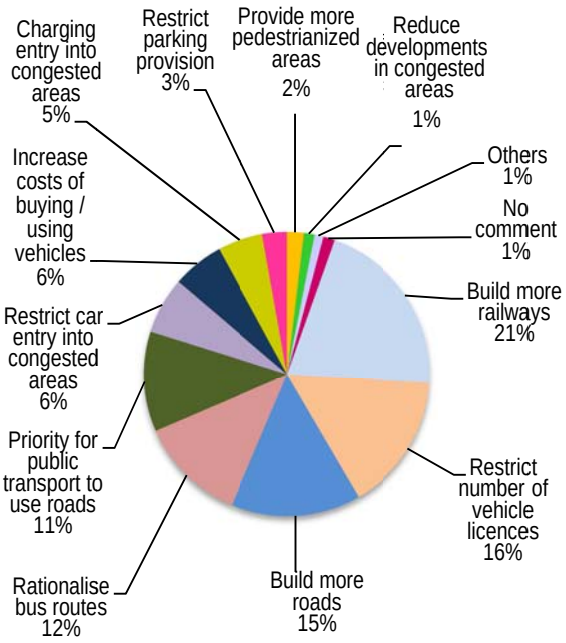


Figure E.2 : Most Supported Measures to Relieve Traffic Congestion

E.4.22 The most supported measure to improve pedestrian facilities was the provision of more travellators/escalators. The other measures are summarised in **Figure E.3**.

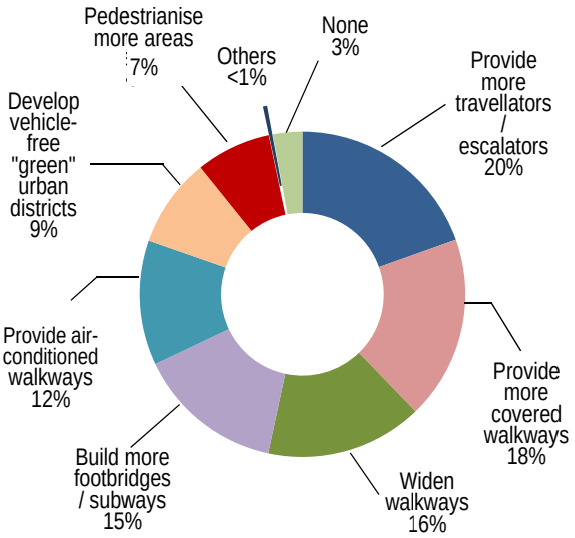


Figure E.3 : Most Supported Measures to Improve Pedestrian Facilities

Views of Elderly on Transport Services

E.4.23 19% (or 1,287,000 persons) of the household population were 60 years of age or older. Among them, 71% were retired; 16% were still in the work force; 12% were homemakers and 1% others [6].

E.4.24 Respondents aged 60 and over considered "no priority seats for elderly" as the most inconvenient when travelling on rail. "Unreliable/unpunctual services" and "rough uncomfortable ride/driving too fast" were considered most inconvenient when travelling on bus and PLB respectively.

E.4.25 The aspect of traffic facilities that respondents considered most inadequate was the provision of lifts/escalators at footbridges and subways. Other aspects cited were "pedestrian signal time too short", "unclear directional signage and/or size of the signage wording not big enough" and "inadequate/inconspicuous traffic signage".

[6] "Others" include persons of independent means (i.e. those who do not have to work for a living) and other economically inactive persons (e.g. unpaid religious workers and persons who cannot work or do not seek work because of permanent sickness or disablement).

E.5 Behavioural Values of Time [7]

E.5.1 The 2011 behavioural values of time (behavioural VoT) derived from the SP Survey are presented in **Table 5.1**.

Table E.5 Behavioural Values of Time by Private Vehicle-Available Household and Trip Purpose (at 2011 Prices)

Trip Purpose	Behavioural VoT (in Cents/Minute)			
	2002 Values (1)		2011 Values	
Private Vehicle-Available Household Member				
HBW	96 (83)	90 (78)	103	88
HBS	67 (58)		72	
HBO / NHB	92 (80)		83	
Non-Private Vehicle-Available Household Member				
HBW	58 (50)	55 (48)	68	67
HBS	53 (46)		57	
HBO / NHB	53 (46)		68	
Overall	62 (54)		72	

Note: (1) Converted from 2002 to 2011 prices based on Composite Consumer Price Index growth (+15.2%) between 2002 and 2011. Figures in brackets are 2002 values at original 2002 prices as shown in TCS 2002 Final Report.

E.5.2 Comparison between the 2002 and 2011 results shows an overall increase in the behavioural VoT by about 16% in real terms which was much lower than the 46% per capita Gross Domestic Product growth but lighter than the 5% increase in payroll per person engaged index over the 9-year period. In comparison, the behavioural VoTs for non-private vehicle-available household members showed higher growth than the private vehicle-available household members.

E.5.3 It should be noted, however, that the behavioural VoTs derived from the SP Survey could be different from the behaviour of trip-makers in reality. The actual values to be adopted for transport planning purpose would be subject to further review in the future model re-calibration process.

E.5.4 Considering that the SP survey results are highly dependent on the prevailing economic situation and sentiments that would be quite volatile, it is advisable to undertake the behavioural VoT survey more regularly to establish sufficient time series data for more rigorous analysis to derive the behavioural VoT growth relationship.

E.6 Characteristics of Trips Made by Visitors Staying in Hotels/ Guesthouses

E.6.1 The highest proportion of visitors covered by the TS was from the Mainland (including Macau) (48%), followed by those from the South East Asian countries (21%). This composition was related to the coverage of this survey targeted at visitors staying in hotels/guesthouses.

E.6.2 The main purpose of the visitors coming to Hong Kong was for sightseeing (45%). Work and business came second (25%).

E.6.3 The average number of mechanised trips made per visitor (i.e. mechanised trip rate) was 2.30 trips/day, slightly higher than the 2.18 trips/day in 2002. It was also higher than the average mechanised trip rate of Hong Kong residents (1.83 trips/day). It should be noted that no adjustment for under-reporting was carried out because of the lack of suitable data.

[7] The behavioural value of time is a measure of the amount of money trip-makers are willing to trade off with unit time saving.

E.6.4 The overall peak hours for the mechanised trips made by visitors occurred at 10:00 – 11:00 a.m. in the morning and 6:00 – 7:00 p.m. in the evening. The evening peak hour coincided with the Hong Kong residents' commuting peak. Each of the peak hours accounted for about 8% of the daily trips.

E.6.5 The average journey time for mechanised trips made was 43 minutes, longer than the 35 minutes in 2002. As compared to Hong Kong residents (whose average journey time was 40 minutes), the mechanised trips made by visitors were longer.

E.6.6 The most popular transport mode taken by visitors was MTR (including Airport Express) (35%), followed by tourist bus (including hotel shuttle bus) (25%) and taxi (20%).

E.6.7 27% of the mechanised trips made were to sightseeing spots. Of these, the three most popular spots were the Peak, Hong Kong Disneyland and Avenue of Stars.

E.6.8 16% of the mechanised trips made were to shopping centres/malls. The most popular district where visitors went for shopping was Yau Ma Tei/Tsim Sha Tsui, followed by Wan Chai (including Causeway Bay where some of the main shopping centres/malls were located).

E.7 Next Step

E.7.1 One of the prime objectives of the TCS 2011 is to provide up-to-date travel characteristics data and information to facilitate the continuous enhancement of the CTS model. All the data will form thoe basis for subsequent re-calibration and enhancement of the CTS model at the next stage of the "Comprehensive Transport Study Model Enhancement - Feasibility Study".

1. INTRODUCTION

1.1 Background

1.1.1 The last Travel Characteristics Survey (TCS 2002) was conducted in 2002 and completed in 2003. TCS 2002 collected comprehensive information on the travel characteristics of the people in Hong Kong, and provided prime basis for updating the Government's comprehensive transport model, which has been widely applied in various major territorial and sub-regional transport and planning studies in Hong Kong.

1.1.2 In order to keep the transport model up-to-date, the Transport Department commissioned Arup (the Consultant) in July 2010 to undertake the "Comprehensive Transport Study Model Enhancement – Feasibility Study" (the Consultancy Study) under Agreement No. CE 67/2009. The Consultancy Study defined the scope and data requirements of the TCS 2011 for transport planning and modelling purposes; and will apply the collected data in subsequent enhancement of the Comprehensive Transport Study (CTS) model for better simulation of the latest travel patterns in Hong Kong.

1.1.3 The planning, organisation and execution of the TCS 2011 surveys proposed by the Consultancy Study were undertaken under a separate service contract "TD 2/2011 – Provision of Services for Conducting the Travel Characteristics Survey 2011" (the Service Contract). The Service Contract was awarded to MOV Data Collection Centre in June 2011.

1.2 Study Objectives

1.2.1 TCS 2011 formed an integral part of the Consultancy Study. It was primarily a data collection exercise, the ultimate aim of which was to collect relevant up-to-date travel characteristics data and develop them into a database for subsequent updating and enhancement of the CTS and other government departments' transport models, e.g. Highways Department's railway model enhanced under the Review and Update of the Railway Development Strategy 2000 (RDS-2U). Furthermore, the TCS 2011 database will facilitate the planning of transport facilities and services in future territorial and sub-regional transport and planning studies.

1.2.2 The key objectives of the TCS 2011 are:

- To define the scope and data requirements of the surveys;
- To collect up-to-date travel characteristics data and behaviour of Hong Kong residents for modelling and planning purposes;
- To develop a database from the survey data and procedures for analysing the data;
- To assess changes in travel characteristics against the previous TCS or relevant surveys; and,
- To review and make recommendations on the approach to conduct future survey updates.

1.2.3 TCS 2011 did not include any re-calibration and enhancement work of the CTS model. Such work is being carried out as the next phase of the Consultancy Study.

1.3 Study Approach and Process

1.3.1 **Figure 1.1** illustrates the TCS 2011 process. The work was carried out in 4 phases involving the following key tasks.

Design Phase

- Review of CTS model parameters
- Identification of data requirements for CTS model and transport planning
- Outline design of interview surveys

Tender Phase

- Preparation of tender documents for the Service Contract
- Determination of evaluation criteria and marking scheme
- Tender assessment and recommendation

Data Collection Phase

Primary responsibility by Service Contractor, under the supervision and management of the Consultant as required by the Consultancy Study

- Establishment of questionnaires and fieldwork procedures
- Pilot and main survey fieldwork
- Quality control
- Data processing work
- Data checking and verification

Data Analysis / Reporting Phase

- Trip data expansion
- Data analysis and tabulations
- Recommendations on future survey update strategies
- Development of travel characteristics database, handover and training.

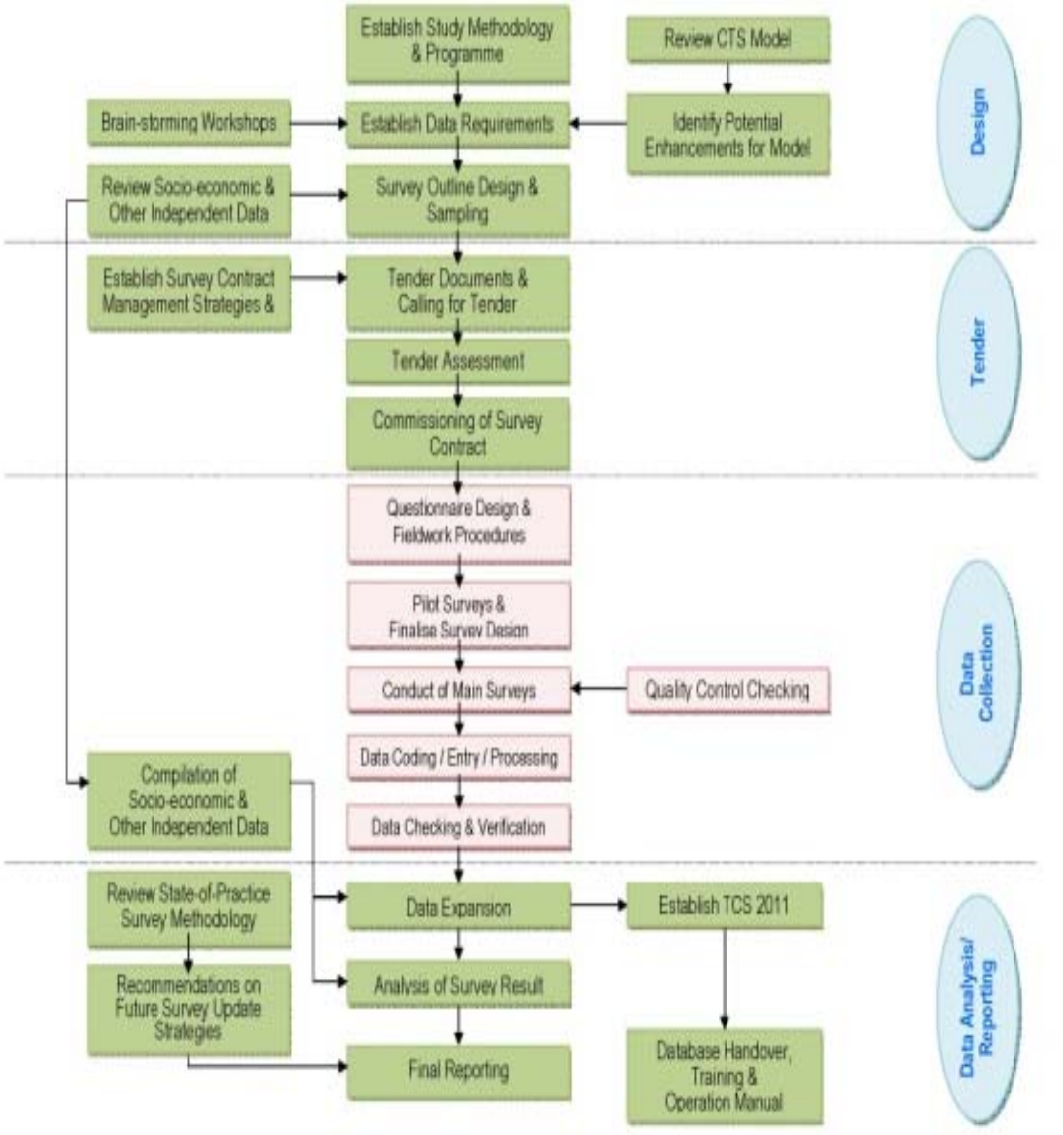


Figure 1.1 : Study Process

1.4 Structure of this Report

1.4.1 Following this introductory section, the remainder of this Report is structured as follows:

- Section 2 summarises the survey design, fieldwork implementation, data processing and database development for the TCS 2011.
- Section 3 details the characteristics and patterns of the trips made within the Hong Kong Special Administrative Region (HKSAR) by Hong Kong residents on a weekday, including mechanised trips and walk-only trips.
- Section 4 summarises the availability of private vehicles for use by households and their usage patterns.
- Section 5 presents some key findings on the public's major views and attitudes related to travelling.
- Section 6 summarises the survey results on the behavioural value of time of the population.
- Section 7 discusses the characteristics and patterns of the trips made within the HKSAR by visitors staying in hotels/guesthouses on a weekday.
- Section 8 discusses the next step with respect to the use of the TCS 2011 data.

2. SURVEY DATA COLLECTION AND ASSIMILATION

2.1 Data Requirements

2.1.1 The first step of the survey design process was to establish what data items were to be collected in the TCS 2011. The key was to ensure that the data collected would be able to fulfil the intended purposes for future CTS model re-calibration and enhancement, and to facilitate future transport planning.

2.1.2 For model development purpose, a thorough review of the existing CTS model structure and sub-models was undertaken to determine data items necessary for the derivation of relevant parameters. Potential new features or enhancements to be incorporated in the model were also explored. This was to ascertain that any opportunities for future re-structuring or enhancement of the model could be catered for and not pre-empted by the nature of data to be collected.

2.1.3 Other topical data items useful for enhancing the understanding of the public's views and attitudes towards the transport system and their trip-making behaviour, were also reviewed. Such requirements had to be balanced against other considerations such as the burden on respondents, time and budgetary constraints of data collection, etc. Priority was then given to essential data items that would be more effectively collected in TCS 2011.

2.1.4 In addition, a series of brain-storming workshops had been conducted with academics and representatives from various government departments/bureaux to identify potential improvements to the existing CTS model as well as to discuss their specific data needs.

2.1.5 Resulting from the above review, the final data items to be collected in the TCS 2011 surveys were established and listed as follows:

- Household and personal characteristics
- Availability of private vehicles [1]
- Mechanised trip [2] records on a normal weekday which was not a public holiday (including locations and activities at origin/destination, time, mode, trip legs, interchange locations, etc.)
- Private vehicle ownership and usage patterns, costs and expenses incurred in operating private vehicles
- Parameters affecting the use of environmentally-friendly vehicles
- Potential changes in and factors affecting trip-making patterns
- Factors affecting walking and use of travellators
- Bicycle ownership, parking and usage patterns
- Attitudes towards possible law and enforcement measures on cycling
- Views on the dissemination of transport information
- Views of elderly on transport services
- Behavioural value of time[3](behavioural VoT) when making transport-related choices.
- Personal characteristics and trip records on a normal weekday for visitors staying in hotels/guesthouses.

2.2 Design of Surveys

2.2.1 According to the above defined data requirements, the TCS 2011 surveys comprised the following three types of surveys:

- Household Interview Survey (HIS)
- Stated Preference (SP) Survey
- Hotel/Guesthouse Tourists Survey (TS).

Household Interview Survey (HIS)

2.2.2 This formed the major part of the data collection and would serve as the mainstay of the transport model development. The survey provides essential information on the travel patterns of Hong Kong residents living in domestic households - the majority of the total travel demand within the HKSAR.

2.2.3 A random sample of quarters or area segments was selected from the Frame of Quarters maintained by the Census & Statistics Department (C&SD) and all households within the sampled quarters or segments were approached for provision of the required data.

[1] Private vehicles include private cars and motorcycles.

[2] Mechanised trips refer to any trips involving mechanised transport excluding trips made by some minor mechanical modes such as goods vehicle for personal use, bicycle, golf cart and cable car.

[3] The behavioural value of time is a measure of the amount of money trip-makers are willing to trade off with unit time saving.

Publicity Pamphlet

2.2.4 The general trip information and trip-making characteristics of all household members and live-in visitors aged 2 or above on a reference weekday (defined as the previous weekday which was not a public holiday before the day of interview) were collected as a main part of the HIS. Those members aged below 2 were excluded as the majority of their trips were accompanied by adults and had no purpose of their own. Furthermore, their trips would not normally be reflected in the independent observed data or transport statistics. In addition to the trip information, household and personal information were also collected in order to establish their relationship with the trip-making characteristics.

2.2.5 In addition to these, attitudinal surveys of the following five topics were conducted on sub-samples of the HIS in the form of supplementary surveys attached at the end of the HIS (referred as Attachment Surveys (AS's)):

- Private vehicle usage and expenses (referred as AS1)
- Travel propensity, walking and use of travellators (referred as AS2)
- Cycling (referred as AS3)
- Effects of transport information system (referred as AS4)
- Views of elderly on transport services (referred as AS5).

2.2.6 With the exception of AS5, only one eligible member within each sub-sampled household was enumerated in the AS's. For AS1, the household head or the member most informed on the car usage and expenses was interviewed. For AS2, AS3 and AS4, the target respondents were household members aged 15 or above who had stayed in Hong Kong for at least one month during the six months before or after the time of enumeration (excluding domestic helpers) and only one member aged 15 or above randomly selected from each sub-sampled household was interviewed.

2.2.7 In the case of AS5, as the survey was targeted specifically at the aged population, the target respondents were all household members aged 60 or above who had stayed in Hong Kong for at least one month during the six months before or after the time of enumeration (excluding domestic helpers) in the sub-sampled households.

Stated Preference (SP) Survey

2.2.8 The SP Survey was conducted on selected HIS sampled household members who matched the market segment criteria relevant to the respective SP survey topics. It involved the application of SP technique to assess the impact of related parameters affecting various choices of transport users and to derive the behavioural values of time which are important parameters required by the transport model.

2.2.9 Four topics were covered in this survey, relating to route choice; private mode and Park-and-Ride choice; public mode choice and perceived transfer impedance; and choice of harbour crossing. Respondents were selected based on individual household members' trip-making characteristics revealed in the HIS, and categorised by car availability, trip purpose and transport mode taken.

2.2.10 Respondents were presented a set of cards showing different transport alternatives relevant to their trip-making characteristics and were requested to rate or rank according to their preference. The results were then recorded accordingly in the record forms by the interviewers.

Hotel/Guesthouse Tourists Survey (TS)

2.2.11 The survey was carried out with visitors staying in hotels/guesthouses with a view to collecting their trip-making characteristics and trip information on a weekday, to provide useful supplementary information to the tourism model and also to better understand the transport needs of these visitors.

2.2.12 59 hotels and 17 guesthouses out of a list of 186 hotels and 116 guesthouses (with more than 10 rooms) compiled from the information provided by Hong Kong Tourism Board were successfully surveyed. The sample selection was stratified by geographical location, tariff group and number of rooms, as appropriate.

2.2.13 A random sample of visitors intercepted at the lobby of each of the selected hotels/ guesthouses were approached for face-to-face interviews with the assistance from the hotel management. The sample size in each hotel/ guesthouse depended on the number of rooms in that hotel/guesthouse.

2.3 Survey Fieldwork Implementation

2.3.1 The operation, procedures and questionnaire design of the respective interview surveys were tested through pilot surveys, with necessary refinements made for final adoption in the main fieldwork. It was of utmost importance that the interview surveys, especially those related to collection of trip records, had to be suspended during the Christmas/New Year holiday period to avoid skewed effect of travel patterns during holidays.

2.3.2 Web-based Computer-Assisted Personal Interviewing (CAPI) technology was employed for data collection in the HIS. During household visits, the enumerators brought with them a tablet PC and interviewed the respondents using the web-based CAPI on an online platform. The CAPI platform enables real-time logic checks of answers provided by the respondents and also geo-coding of locational information through Google Map. If necessary, respondents could also provide their data through self-completed electronic *e*-questionnaires via the web-based CAPI platform using a personal password to login.

2.3.3 The fieldwork period and enumeration of the respective surveys are summarised in **Table 2.1**.

Table 2.1 Fieldwork Period and Enumeration

Survey	Fieldwork Period	Enumeration
Household Interview Survey (HIS) (Response Rate: 71%)	5 Sep 2011 – 18 Jan 2012	35,401 households
AS1 – Private vehicle Usage & Expenses		10,128 respondents
AS2 – Travel Propensity, Walking and Use of Travellators		5,659 respondents
AS3 – Cycling		5,701 respondents
AS4 – Impact of Transport Information System		5,770 respondents
AS5 – Views of Elderly on Transport Services		3,326 respondents
Stated Preference (SP) Survey	26 Sep 2011 – 18 Jan 2012	Total 3,100 respondents for the 4 topics
Hotel/Guesthouse Tourists Survey (TS) *(Response Rate: 85%)*	22 Nov 2011 – 1 Mar 2012	2,785 visitors

2.3.4 Throughout the fieldwork period, quality control measures were strictly applied to ensure highest quality of data to be collected. These were implemented by an independent quality control team of the Contractor and also by the Consultant. Apart from the training and day-to-day supervision of the interviewers' work, 17% of the completed questionnaires involving household interviews were randomly selected by independent checkers for back-checking to verify that household visits were made and key information collected was correct.

Computer-Assisted Personal Interviewing (CAPI) method was employed in the Household Interview Survey

2.4 Data Processing and Expansion

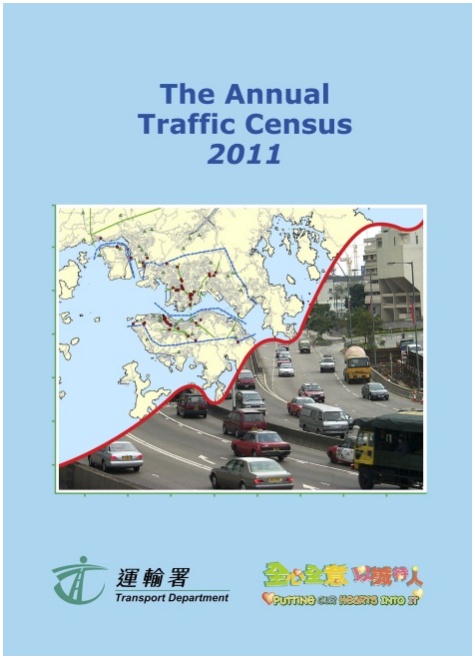
2.4.1 All the data collected in the interview surveys were edited, coded and entered in computer format by the Contractor. The addresses given for fields involving locations such as trip origin, destination and interchange locations (between transport modes taken) were coded to the Tertiary Planning Unit Street Block level. To minimise the risk of incorrect data entry, a double data entry system was adopted, i.e. all data were keypunched twice into the computer by different staff for verification.

2.4.2 The input data went through a series of validity checks using the computer to identify any duplicated records, omitted items, out-of-range values and inconsistencies between different data items, for subsequent verification and cleaning.

2.4.3 The cleaned data collected from the HIS and TS were expanded to represent the population. For the HIS data, two stages of expansion were involved, viz demographical expansion followed by trip expansion. Demographical expansion was controlled expansion at the household and person levels in order to match the 2011 Population Census population totals.

2.4.4 As TCS 2011 was carried out in the same year as the Population Census, refined Census population data was obtained from the C&SD and adopted as controls for data expansion. Expansion of household data was stratified by district, housing type and household income group, while that for person data was by district, housing type, gender and age group.

2.4.5 The demographical expansion factors so derived were applied to the trip data records of individuals initially. These expanded results were then compared against independent observed data or transport statistics available and then adjusted accordingly. This second stage of expansion was needed because, irrespective of the survey design, some under-reporting of trips by the respondents would be inevitable. In this stage of expansion process, independent transport statistics available from various sources were adopted as controls including the Annual Traffic Census traffic counts and occupancy data, ridership statistics for individual public transport modes, franchised bus and GMB passenger boarding/alighting data, and station-to-station rail passenger matrices.



Independent transport statistics obtained from various sources including the Annual Traffic Census were adopted for trip data expansion

2.4.6 The expanded results suggested that overall, 36% of the mechanised trips had been under-reported, which was higher than the 32% estimated in the TCS 2002. Typically, the extent of under-reporting was much less for regular trips between home and work or school places, as compared to other more casual or irregular trips which were more likely to be forgotten or not reported by the respondents.

2.4.7 It has to be remarked that the above trip under-reporting adjustments could only be undertaken for mechanised trips involving the transport modes with relevant statistics available as controls. The same approach could not be applied to cycling trips or trips made by some minor mechanised modes in the absence of valid basis for adjustments. They however constituted only a small proportion of the mechanised trips and should not be significant to the overall results.

2.4.8 For the TS, the data collected were first weighted according to the estimated number of visitors staying in the sampled hotel/guesthouse during the survey period. The data were then further expanded to represent the territory-wide total, according to the estimated total number of visitors in each sampling stratum, deduced from the sampling fraction of hotel/guesthouse rooms in the corresponding stratum.

2.5 TCS 2011 Database

2.5.1 The expanded data for the HIS has been developed into a comprehensive travel characteristics database which comprises the following key data items on the household, personal and trip information in **Table 2.2.**

Table 2.2 Key Data Items in the TCS 2011 Database

Data Type	Key Data Items
Household	• Type of Housing • Residential Location (in Tertiary Planning Unit Street Block) • Monthly Household Income • Availability of Private Vehicles and Parking Details
Personal	• Gender and Age • Economic Activity Status • Level of Study (for Students) • Industry Engaged (for Employed Workers) • Usual/Mobile Resident Status
All mechanised trips made on a weekday	• Locations of Trip Origins / Destinations (in Tertiary Planning Unit Street Block) • Trip Purpose • Trip Starting and Ending Time, and Journey Time • Transport Modes Taken • Trip Legs and Interchange Locations • Walking Time to Access Mechanised Transport and Interchange • Waiting Time and Fare for Taxis • Occupancy of Private Vehicle / Taxi Journeys • Use of Toll road/tunnel for Private Vehicle/Taxi Journeys • Control Points / Access Modes for Cross-boundary trips

2.5.2 The TCS 2011 database will be adopted as the basis for the re-calibration and updating of the CTS and other government departments' transport models. In addition, the information in the database will provide useful reference for transport planning in future territorial and sub-regional studies.

3. CHARACTERISTICS OF TRIPS MADE WITHIN THE HKSAR BY HONG KONG RESIDENTS

3.1 Underlying Household and Demographic Characteristics

3.1.1 Household and personal information was collected as part of the TCS 2011 HIS mainly for deriving the relationship between travel and demographic characteristics. The following summarises the main demographic data collected by the HIS for the better understanding of the respondents' characteristics which underpin the travel data collected from the HIS.

3.1.2 2011 Population Census data corresponding to the coverage of the HIS were provided by C&SD as controls. Based on the information provided, as at mid-2011, there were 2,363,300 domestic households (hereafter referred to as "households") and a total of 6,881,900 persons living in these domestic households (hereafter referred to as "household population" [4]) as covered in the HIS. The average household size was 2.9 persons, reduced from the estimated value of 3.1 in 2002.

3.1.3 A comparison of the household population and its geographical distribution by main area in 2002 and 2011 is provided in **Table 3.1**. Overall, the household population has increased by less than 2% from 2002 to 2011. The main population growth during the period has been in the New Territories (NT) and there was a reduction in population on Hong Kong Island. As a result, the proportional distribution in the NT has increased from 51% in 2002 to 52% in 2011.

Table 3.1 Comparison of Household Population Distribution in 2002 and 2011

Area	2002		2011	
	No.	%	No.	%
Hong Kong Island	1,297,100	19	1,230,900	18
Kowloon	2,030,400	30	2,063,100	30
New Territories	3,428,600	51	3,587,900	52
Total	6,756,100	100	6,881,900	100

Note: Household population distributions were based on data collected in TCS 2002 and TCS 2011.

3.1.4 From the total household population of 6,881,900 persons, there were estimated to be 3,553,100 employed persons and 1,231,900 full-time students. As compared to 2002, the number of employed persons has increased by about 8% whereas the number of students has decreased by close to 12%.

3.1.5 The key demographic characteristics are summarised in **Table A.1** in the **Appendix** by 26 broad districts commonly adopted for transport planning and modelling analysis (refer to **Figure A1** in the Appendix for definition of these districts).

3.1.6 The age distribution of household population is one of the key parameters that would have a major bearing on the trip-making characteristics. The territory-wide age distribution as derived from the TCS 2002 and TCS 2011 are compared in **Figure 3.1**, which shows a sign of aging population with the peak age group shifted from 35-44 years old in 2002 to 45-54 years old in 2011.

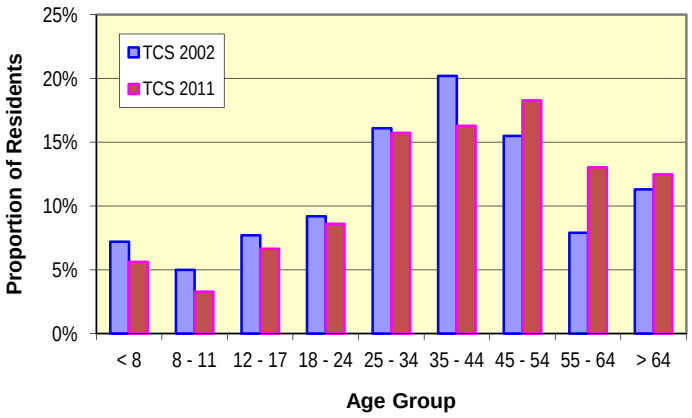


Figure 3.1 : Comparison of Age Distribution in 2002 and 2011

[4] This refers to the land-based non-institutional population of the HKSAR living in domestic households who had stayed in Hong Kong for at least one month during the six months before or after the time of enumeration. It covers about 97% of the Hong Kong Resident Population and excludes the institutional population, marine population, population in non-domestic households (collective households residing in ordinary living quarters and mobile households) and population in hotels/hostels/ holiday camps.

3.1.7 The monthly household income distributions as revealed from the TCS 2002 and TCS 2011 are compared in **Table 3.2**. The mean and median household income in 2011 were $30,000 and $21,000 per month, increased from the respective values of $24,000 and $18,000 per month (at 2011 prices) in 2002.

Table 3.2 Comparison of Monthly Household Income Distribution in 2002 and 2011

Item	2002	2011
Household Income (HK$/month at current prices)	% of Households	
Less than $10,000	32%	24%
$10,000 - $19,999	28%	24%
$20,000 - $29,999	18%	18%
$30,000 - $39,999	9%	12%
$40,000 - $49,999	5%	7%
$50,000 or more	8%	16%
Total	100%	100%
Mean Household Income	$21,000/month (2002 prices) $24,000/month (2011 prices) #	$30,000/month (2011 prices)
Median Household Income	$16,000/month (2002 prices) $18,000/month (2011 prices) #	$21,000/month (2011 prices)

Converted from 2002 to 2011 prices based on Composite Consumer Price Index growth (+15.2%) between 2002 and 2011.

3.2 Average Number of Mechanised Trips Made on a Weekday

3.2.1 It is estimated that among the 6,781,100 Hong Kong residents aged 2 and above, some 89% (around 6,061,500 persons) made trips within the HKSAR on a normal weekday (Mondays to Fridays except public holidays). The trips included walk/cycling-only trips and any mechanised trips. The remaining 11% of Hong Kong residents aged 2 and above were either outside the HKSAR (3%) or within the HKSAR but had not made any trip on the surveyed day (8%).

3.2.2 58% or some 3,927,800 Hong Kong residents aged 2 and above made mechanised trips (excluding trips made by some minor mechanical modes such as goods vehicle for personal use, bicycle, golf cart and cable car only)[5] within the HKSAR on a weekday. With the exclusion of these minor mechanical mode trips, the average total number of mechanised trips made by Hong Kong residents on a weekday was estimated to be 12,606,000[6] after under-reporting adjustments.

On average, 12.6 million mechanised trips were made by Hong Kong residents on a weekday in 2011

3.3 Mechanised Trips

Purpose of Trips

3.3.1 Trips are conventionally categorised into the following 5 trip purposes, based on the nature of the place and activity performed at the trip origin/destination:

- Home-Based Work (HBW) – From home to work place (usual or others) for work, or vice versa.
- Home-Based School (HBS) – From home to school place for attending lectures/lessons, or vice versa.

[5] Owing to the absence of valid basis for under-reporting adjustments and for consistency with the computation adopted for the transport model and that of TCS 2002, mechanised trips involving these minor mechanical modes were excluded from the analysis in this Study.

[6] Mechanised trips made by tourists/visitors within the HKSAR were not explicitly considered during the TCS 2002 trip under-reporting adjustment, therefore the estimated 12,304,000 trips had absorbed the tourist/visitor trips. In this TCS 2011, considering the increasing significance of tourist/visitor trips, such trips were separately treated and the estimated 12,606,000 mechanised trips had excluded the tourist/visitor trips. The number of mechanised trips made by tourists/visitors was estimated to be in the order of 460,000 trips daily. This amounted to a total of 13,066,000 mechanised trips made within the HKSAR daily in 2011, 6% higher than the 12,304,000 trips in 2002.

- Home-Based Others (HBO) – From home to places that are not usual/other work place (for work) or schools (for attending lectures/lessons), or vice versa. For example, home to/from shopping places, food premises, entertainment/recreational places, visiting friends, etc.
- Non-Home Based (NHB) – Trips which do not start or end at home, nor between work places (usual and/or others) for work. For example, from work place or school place to shopping or other social/recreational places.
- Employers' Business (EB) – Between work places (usual and/or others) for work. These include travelling between offices; or from office to other places related to work for meetings, site visits, fieldwork, and vice versa; or for occupations requiring outdoor work, between places for meeting clients or between places to perform work duties.

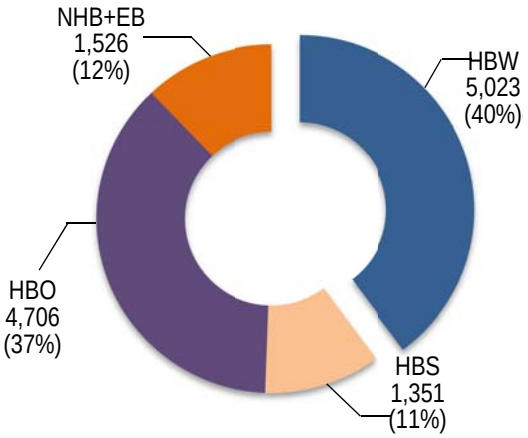


Figure 3.2 : Daily Mechanised Trips (in '000) by Trip Purpose

3.3.2 Among the estimated total of 12,606,000 mechanised trips made on a weekday, the 5,022,000 HBW trips accounted for the largest proportion (40%) of the daily trip total. It was followed by trips for HBO purpose which accounted for 37% of the daily trip total. The HBW and HBS trips, forming the largest proportion of regular trips with high concentration during peak hours, especially in the morning, have significant traffic implication for transport planners. Together, they totalled 6,373,000 trips, just over half (51%) of the daily mechanised trip total. The mechanised trip productions and attractions by 26 broad districts and by trip purpose are summarised in **Table A.2** in the Appendix.

3.3.3 The trip-making characteristics of Hong Kong residents as revealed from the 2002 and 2011 surveys are compared in **Table 3.3** by trip purpose. Mechanised trip rates which refer to the average number of mechanised trips made on a daily basis per person are also compared in the table.

Table 3.3 Comparison of Daily Mechanised Trips by Trip Purpose in 2002 and 2011

Item	2002	2011
Number of Mechanised Trips		
Home-Based Work (HBW)	4,620,000	5,022,000
Home-Based School (HBS)	1,571,000	1,351,000
Home-Based Others (HBO)	3,883,000	4,706,000
Non-Home Based (NHB) + Employers' Business (EB)	2,230,000	1,526,000
Total	12,304,000	12,606,000
Mechanised Trip Rates		
HBW Trips per employed person	1.40	1.41
HBS Trips per student	1.13	1.10
HBO Trips per person	0.57	0.68
NHB+EB Trips per person	0.33	0.22
Average Daily Mechanised Trips per person	1.82	1.83

3.3.4 The number of work (HBW) and school (HBS) trips have changed in line with the working and student population respectively. In fact, the HBW and HBS trip rates had remained relatively constant in the past two to three decades when compared with the corresponding trip rates derived in the previous TCS conducted since 1981.

3.3.5 The HBO trip rate per person has registered an increase by some 19% from 2002 to 2011. On the other hand, the most notable difference over this period is on the NHB and EB trips, with their combined trip rate per person reduced by one-third between 2002 and 2011. The above could be due to a combination of economic and behavioural changes: transformation of HKSAR economic activities, increased use of information technology, working from home becoming more common, and increase in cross-boundary ties and business opportunities.

In 2011, Hong Kong residents made an average 1.83 mechanised trips per person on a weekday

3.3.6 Overall, the total mechanised trip rate on a weekday has increased marginally from 1.82 trips/person in 2002 to 1.83 trips/person in 2011. They were also of very similar order as the total mechanised trip rate obtained from the TCS conducted in 1992.

Trip-making Time [7]

3.3.7 **Figure 3.3** illustrates the profiles of mechanised trips made against different times of a day for various trip purposes. The overall peak hours for mechanised trips were found to be 8:00 – 9:00 a.m. in the morning and 6:00 – 7:00 p.m. in the evening, with a large proportion of HBW trips. The two peak hours accounted for about 12% of the daily trip total each. The peak hours have been unchanged from those identified in TCS 2002, but the proportion of trips made in the evening peak hour has increased from 11% in 2002 to 12% in 2011.

3.3.8 By further investigating the trip-making time by direction, 41% of the home-to-work trips were made during the morning peak hour (8:00 – 9:00 a.m.) while 34% of the work-to-home trips were made during the evening peak hour (6:00 – 7:00 p.m.). These compared with the corresponding figures of 40% and 33% in 2002, While peak spreading for commuters' travel was not evident, the proportion of work-to-home trips in the hours after the evening peak hour have generally increased suggesting a shift of such activities towards the later hours in the evening.

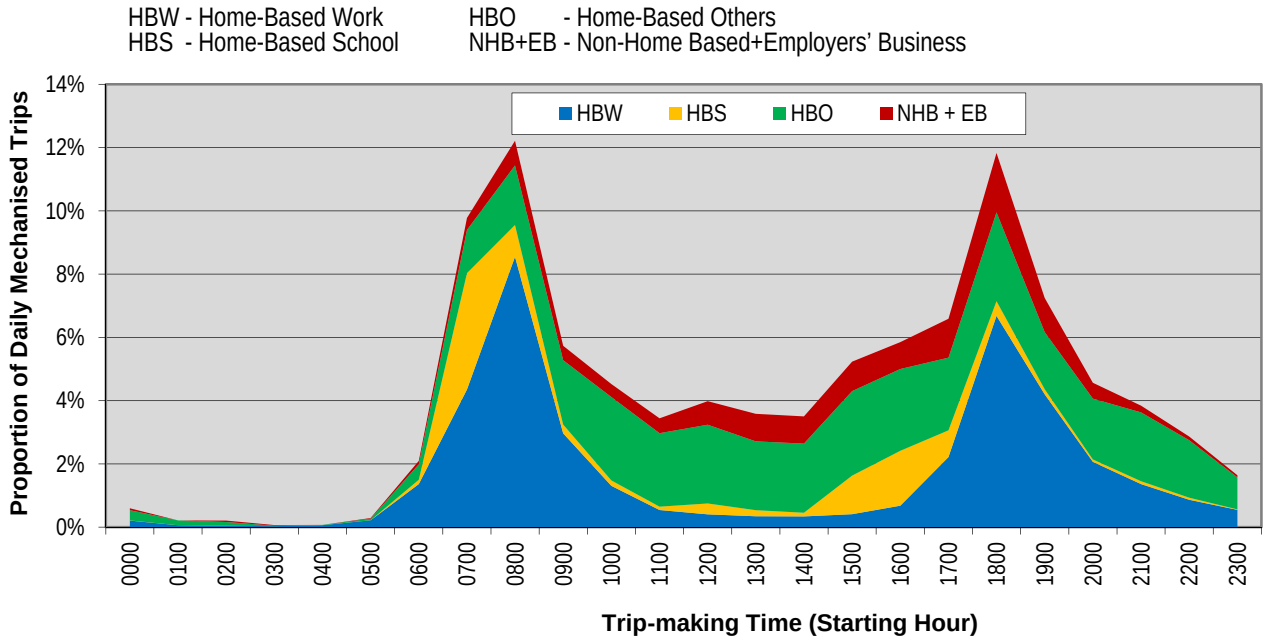


Figure 3.3 : Hourly Profiles of Mechanised Trips

[7] Trip-making time is defined as the mid-point between the time of departure at origin and time of arrival at destination, as cited by the respondent.

3.3.9 The HBS trips showed a rather different pattern with the morning peak hour occurring earlier than the HBW trips, i.e. between 7:00 and 8:00 a.m. The afternoon peak occurred over the 2-hour period from 3:00 to 5:00 p.m. For the direction from home to school, 65% of the home-to-school trips were made during 7:00 – 8:00 a.m. In the opposite direction, 24% and 34% of the school-to-home trips were made during 3:00 – 4:00 p.m. and 4:00 – 5:00 p.m. respectively.

3.3.10 The HBO trips were distributed quite uniformly throughout the day starting from 7:00 a.m. in the morning to 11:00 p.m. in the evening. There was a relative concentration of NHB trips during the period of 5:00 – 8:00 p.m., which reflected the peak period for after-work activities.

Trip Journey Time

3.3.11 The survey results showed that more than half (51%) of the mechanised trips took half an hour or less to complete, 39% took more than half an hour to one hour, and the remaining 10% took more than one hour to complete. The mean journey time was estimated to be 40 minutes, marginally longer than the 39 minutes in 2002.

3.3.12 The journey time distribution distinguished by the use of private vehicles / taxis and public transport (excluding taxis) are shown in **Figure 3.4**, which indicates considerably shorter journey time for trips made using private vehicles / taxis than trips using public transport (excluding taxis) in general. The estimated mean journey times for private vehicle / taxi and public transport (excluding taxi) trips were 26 and 43 minutes respectively. As compared to the corresponding figures of 24 and 43 minutes from TCS 2002, trips using private vehicles / taxis took a longer journey time whilst the public transport (excluding taxi) trips took very much the same journey time in 2011.

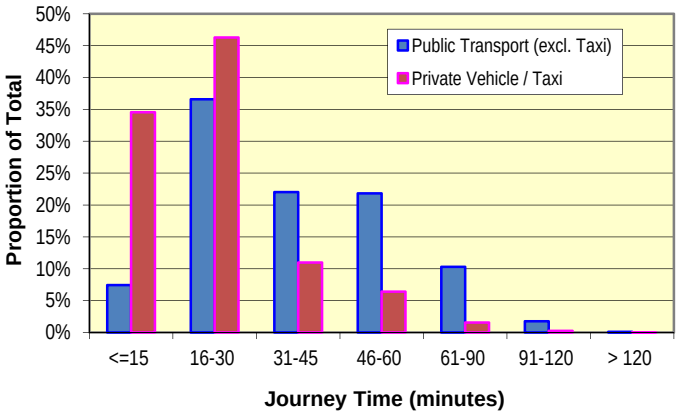


Figure 3.4 : Distribution of Journey Time

3.3.13 Subgroup analysis by trip purpose further reveals that HBW trips on average took the longest journey time with a mean of 47 minutes. It was followed by HBS trips which had a mean journey time of 38 minutes. Trips for other purposes generally had a shorter journey time with a mean of about 34 minutes.

Trip Movements

3.3.14 The daily number of trips grouped by main regional movements are depicted in **Table 3.4**.

Table 3.4 Major Trip Movements

Regional movement	Daily Trips ('000)	% of Total	Growth from 2002
Within Hong Kong Island	2,139	17%	+3%
Cross Harbour	2,055	16%	+1%
Within Kowloon	2,409	19%	-7%
Kowloon to / from NT	2,415	19%	+6%
Within NT	3,588	29%	+8%
Total	12,606	100%	+2%

3.3.15 From 2002 to 2011, the numbers of trips made Kowloon to/from NT and within NT showed the strongest growths at 6% and 8% respectively, that could relate to the increase of household population in the NT. The increases in other regional movements were generally very modest. Within the same period, there was a reduction in the number of trips made within Kowloon by 7%. This could be attributed to the continual development in the NT especially in the new towns which, coupled with the expansion of the transport system and improved accessibility of the NT, resulted in a shift in trip distribution with more cross-regional movements to/from the peripheral areas in Kowloon.

3.3.16 The increase in cross-regional trip movements implied a generally longer distance of travel. This is evident from the increase in average journey time from 2002 to 2011 for private vehicle / taxi trips. The change in journey time for public transport (excluding taxi) trips was not apparent that might be due to the improved public transport network. Between 2002 and 2011, the West Rail, Lok Ma Chau Spur Line, Kowloon Southern Link, Ma On Shan Line, Tseung Kwan O Line LOHAS Park Station were opened; these have improved accessibility and helped shorten the travel time to/from the concerned new towns.

3.3.17 Self-containment, referring to the proportion of intra-district movements among all trips to/from a particular district as consistent with previous TCS definition, is another indicator of trip movements. Self-containment is analysed for main areas based on the same area definition as TCS 2002 to facilitate comparison. The results are presented in **Table 3.5** and compared against the TCS 2002 figures.

Table 3.5 Comparison of Self-Containment by Area in 2002 and 2011

Main Areas	2002	2011
Hong Kong Island	51%	51%
Kowloon	42%	41%
Tsuen Wan / Kwai Tsing	29%	29%
Tuen Mun	31%	32%
Yuen Long / Tin Shui Wai	23%	22%
Fanling / Sheung Shui	16%	19%
Tai Po	24%	24%
Sha Tin / Ma On Shan	30%	28%
Tseung Kwan O	14%	15%
North Lantau	7%	10%

3.3.18 Self-containment has decreased slightly in Kowloon from 2002 to 2011, for the same reason as cited in Paragraph 3.3.15. On the other hand, self-containment for most new towns have increased, as a result of the increased provision of facilities in these new town developments to support the local population. Self-containment for Yuen Long / Tin Shui Wai and Sha Tin / Ma On Shan have decreased slightly.

3.3.19 In general, HBW trips were likely to involve more cross-district travel with correspondingly lower self-containment as compared with trips for other purposes. HBS trips tended to have considerably higher self-containment as schooling facilities were generally provided within most districts to serve the local residents (with the exceptions generally in the rural areas of NT).

Transport Modes Taken

3.3.20 Some of the mechanised trips involved more than one boarding, with the use of more than one transport mode and/or route service. **Table 3.6** illustrates the distribution of boardings by different mechanised transport modes. More detailed breakdown of the number of boardings by transport mode and by trip purpose are given in **Table A.3** of the Appendix.

Table 3.6 Distribution of Boardings by Transport Mode

Mode	All Purposes	HBW	HBS
Rail	30%	35%	33%
MTR	*27%*	*32%*	*26%*
LRT	*3%*	*3%*	*7%*
Franchised Bus	27%	32%	24%
PLB	13%	14%	15%
Private Vehicle	12%	8%	4%
SPB	9%	5%	21%
Taxi	6%	4%	2%
Tram	2%	2%	1%
Ferry	1%	1%	1%
Total	100%	100%	100%

3.3.21 The above table shows that the most popular transport mode was rail, which accounted for 30% of the total boardings for all trip purposes. The next most popular mode taken was franchised bus (27%). These compared to 25% (rail [8]) and 33% (franchised bus) respectively in 2002, indicating a significant increase in modal share by rail as a result of the expansion of the railway network and merger of the MTRCL and KCRC. The latter resulted in improved arrangements and reduced total fares for rail passengers when interchanging between the MTR and ex-KCR services.

[8] Rail mode was broken down into MTR, LRT and KCR in 2002 before the merger of MTRCL/KCRC. Therefore a trip taking MTR and interchanging with KCR was considered as two boardings in 2002, but was considered as only one boarding in 2011.

3.3.22 Around 35% of boardings for HBW trips were by rail, followed by franchised bus at 32%. For HBS trips, the most popular mode used was also rail (33%), followed by franchised bus (24%) and Special Purpose Bus (SPB)[9] (21%) which included school buses.

As the backbone of the transport system, mode share of rail has increased considerably over the years

3.3.23 The proportion of total boardings by private vehicle was 12%. In other words, 88% of the boardings were made by public transport[10] modes, not too much different from 89% in 2002, despite that the proportion of households with private vehicles available has increased from 13.5% in 2002 to 15.1% in 2011 (see Paragraph 4.1.3).

Interchanges between Transport Modes

3.3.24 For a mechanised trip involving the use of more than one mechanised mode of transport or route service from origin to destination, the segments of the entire trip are referred as "mechanised trip legs"[11]. It is found from the survey that the majority (84%) of the mechanised trips made daily involved only one mechanised trip leg. Another 14% comprised two mechanised trip legs and only about 2% of the trips comprised three or more mechanised trip legs.

3.3.25 The average number of mechanised trip legs per trip (or average number of boardings per trip) is a measure of the actual interchanges made between modes or different route services of the same mode. These measures distinguished by trip purpose are presented in **Table 3.7**, with the corresponding figures from TCS 2002 presented for comparison.

Table 3.7 Average Number of Boardings per Trip in 2002 and 2011

Trip Purpose	2002	2011
HBW	1.29	1.23
HBS	1.16	1.17
HBO	1.14	1.14
NHB + EB	1.10	1.10
Overall	1.19	1.17

3.3.26 Overall, the average number of boardings per trip was estimated to be 1.17 in 2011, which has been reduced from the value of 1.19 in 2002. If private vehicle and taxi trips were excluded, the average number of boardings per public transport trip was 1.22, as compared to 1.24 in 2002. Nevertheless, these figures may not be strictly comparable due to the difference in counting rail boardings before and after the MTRCL/KCRC merger.

3.3.27 Among different trip purposes, HBW trips involved the highest average number of 1.23 boardings per trip. This could be because of the generally longer distance of these trips. At the same time it might reflect that commuters travelling between home and work places were more apt to make interchanges so long as it could save time or money, provided that the services were reliable.

3.3.28 **Table 3.8** shows the number and proportion of boardings by individual modes that involved transfer/interchange to other modes or route services. Ferry was found to be the mode having the highest proportion (69%) of boardings involving interchange, followed by LRT (42%) and PLB (41%). The private vehicle and taxi modes, on the other hand, involved the smallest proportion of interchanging trips, quite obviously due to their direct door-to-door nature of service.

[9] Special Purpose Bus (SPB) includes company bus, school bus, resident bus, tourist bus, shuttle bus, cross-boundary bus, etc but excludes public light bus (red or green)

[10] Throughout this report, public transport includes taxi unless otherwise stated.

[11] A trip leg is a segment of a trip, in which only one mode or route service of transport is involved, including walking. A mechanised trip leg is a trip leg made by means of mechanised transport. It generally involves one boarding and one alighting, except for interchange between MTR lines, where the whole MTR journey is treated as one mechanised trip leg.

Table 3.8 Proportion of Boardings Involving Interchanges

Mode	Total Boardings ('000)	Boardings Involving Interchanges	
		Number ('000)	Proportion
Rail	4,504	1,519	34%
MTR	*4,047*	*1,326*	*33%*
LRT	*457*	*193*	*42%*
Tram	238	45	19%
Ferry	125	86	69%
PLB	1,972	810	41%
Franchised Bus	3,987	1,169	29%
Private Vehicle	1,735	48	3%
Taxi	950	145	15%
SPB	1,280	369	29%

3.3.29 Among the estimated total of 2,202,000 interchanges made on a weekday, the proportion of interchanges between different transport modes is presented in **Table 3.9**. The largest proportion of interchanges were made between MTR and public light bus (PLB) (23%), followed by MTR and franchised bus (19%). Interchange between MTR and special purpose bus (SPB), and interchange between different franchised bus routes, each accounted for 10% of the daily total number of interchanges.

Table 3.9 Proportion of Interchanges between Transport Modes

From Mode	To Mode					
	MTR	PLB	Franchised Bus	SPB	Others	Total
MTR	0%	12%	10%	5%	7%	34%
PLB	11%	2%	3%	1%	1%	18%
Franchised Bus	10%	3%	10%	1%	3%	27%
SPB	6%	1%	1%	0%	1%	9%
Others	6%	1%	3%	1%	1%	12%
Total	33%	19%	27%	8%	13%	100%

Walking time to Access and Interchange between Mechanised Modes

3.3.30 The following paragraphs summarise the findings on the walking time taken as a trip leg at the origin end (from trip origin to the location where the first mechanised transport was taken), at the destination end (from the location where passengers alighted from the last mechanised transport to trip destination) as well as for interchange (between different modes or route services when more than one mechanised trip leg was involved).

3.3.31 The walking times involved in such walk trip legs to access and interchange between mechanised modes of transport are depicted in **Figure 3.5** below. In general, the walking time at the origin and destination ends were quite similar, with over 75% of these trip legs taking only 5 minutes or less walking time. The mean walking time was 4 minutes, primarily the same as what was revealed in TCS 2002.

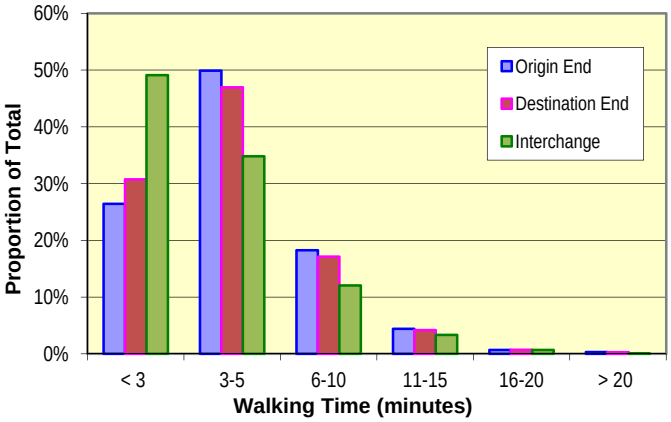


Figure 3.5 : Walking Time to Access Mechanised Transport Modes

3.3.32 The walk trip legs for interchanging between mechanised transport modes had an even shorter walking time, with close to 85% of them completed within 5 minutes. The estimated mean walking time for interchanging between mechanised transport services was 3 minutes, unchanged from the 2002 value.

3.3.33 Ferry generally involved the longest walking time for access (mean walking time 6 minutes), followed by MTR (mean walking time close to 6 minutes). The shortest walking time involved were for private vehicles and taxis (mean walking time 2 minutes), as can be reasonably expected given their door-to-door nature of service.

3.3.34 Furthermore, the survey results showed that with the exception of ferry and some other minor modes, interchanges between most transport modes were generally quite convenient with the average walking time involved in interchanges well within the maximum acceptable walking time to various transport facilities ranging from 10 to 12 minutes (under outdoor and sheltered condition) according to the results of the AS2 (see Paragraph 5.4.1).

3.4 Walk-Only Trips

3.4.1 Walk-only trips refer to trips respondents travelled from the origin to the destination solely by walking. For the segments of a trip where the trip-maker walked to connect with other mechanised modes of transport at the start/end of the journey or in between mechanised trip legs for interchange, they were considered as walk trip legs rather than walk-only trips and have been discussed in the preceding section of this Report.

3.4.2 Considering the limitation of walk-only trip data collected from the TCS (highly prone to being under-reported and without independent statistics for under-reporting adjustments) and also to minimise the burden on respondents, walk-only trip records were not collected in the TCS 2011 main HIS. Instead, for completeness in understanding the chained activities performed by the respondents for possible future applications, partial walk-only trip data was collected from a sub-sample of the HIS respondents (i.e. all household members in the households selected for conducting AS2).

Heavy pedestrian movements in Causeway Bay

3.4.3 It has to be emphasised that the walk-only trip records collected from the AS2 sub-sample were expanded based on demographic data only without any under-reporting adjustments made, due to the unavailability of independent statistics for control. The results presented for the walk-only trips should therefore be treated and interpreted with care, recognising that they could be subject to significant under-reporting given their nature.

Purpose of Trips

3.4.4 It was estimated from the survey that HBO trips accounted for the largest proportion (39%) of the daily walk-only trips. It was followed by NHB and EB trips which accounted for more than one quarter (28%) of the daily total. These two trip purposes constituted the majority of the walk-only trip total as they often involved short-distance trips, e.g. for shopping or for dining out etc., which were likely to be within walking distance. **Figure 3.6** shows the proportions of all walk-only trips by trip purpose.

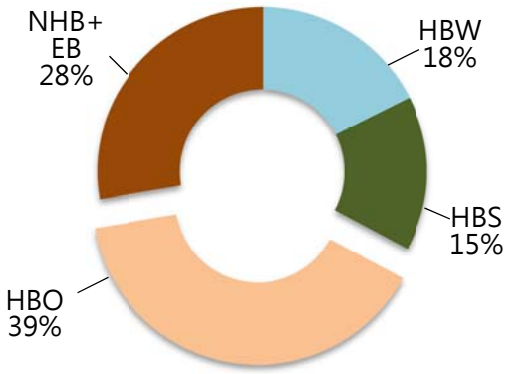


Figure 3.6 : Proportions of All Walk-Only Trips by Trip Purpose

3.4.5 In contrast, HBW trips constituted a relatively small proportion, i.e. 18% of the total walk-only trips, which was much lower than its proportion among the mechanised trips. 15% of the walk-only trips were HBS trips, which represented a higher proportion than that among mechanised trips. This indicates that work places were usually located away from the residential areas, therefore commuters would likely need to travel to/from work using some kind of mechanised transport; whilst school facilities were more often provided within the local areas, therefore the proportion of students walking to/from school would be higher.

Trip-making Time

3.4.6 The survey only collected trip-making time and origin/destination locations for walk-only trips which took more than 10 minutes. As revealed from the survey, 20% of the walk-only trips took more than 10 minutes. The distributions of these over-10-minute walk trips by time of day by trip purpose are shown in **Figure 3.7**.

3.4.7 Different from the mechanised trips, the peak hours for the concerned walk-only trips occurred earlier at 7:00 – 8:00 a.m. (11%) in the morning and 3:00 – 4:00 p.m. (10%) in the afternoon. Both peak hours were characterised with a relatively large proportion of HBS trips, with 52% and 38% of walk-only trips recorded during the respective hours being HBS trips.

3.4.8 There should be heavy pedestrian activities during lunch-time when the working population or students went out for lunch and/or other activities. However such walk trips would usually be fairly short with a large proportion of them within 10 minutes and therefore not reported.

3.4.9 Analysed by trip purpose, peak hours for the HBW walk-only trips were the same as the mechanised trips at 8:00 – 9:00 a.m. and 6:00 – 7:00 p.m., but their magnitudes were much less than walk-only trips for other purposes. The HBS walk-only trips showed two distinct peak hours at 7:00 – 8:00 a.m. and 3:00 – 4:00 p.m. that coincided with the overall peak hours of the walk-only trips. Further analysis by direction shows that 62% of the daily walk trips from home to school were made during 7:00 – 8:00 a.m.; whilst 37% of the school-to-home trips were made during 3:00 – 4:00 p.m.

3.4.10 HBO walk-only trips generally spread out quite evenly throughout the day with higher concentration observed between 9:00 a.m. and 12:00 noon. HBO trips accounted for close to 90% of the total walk-only trips during this period.

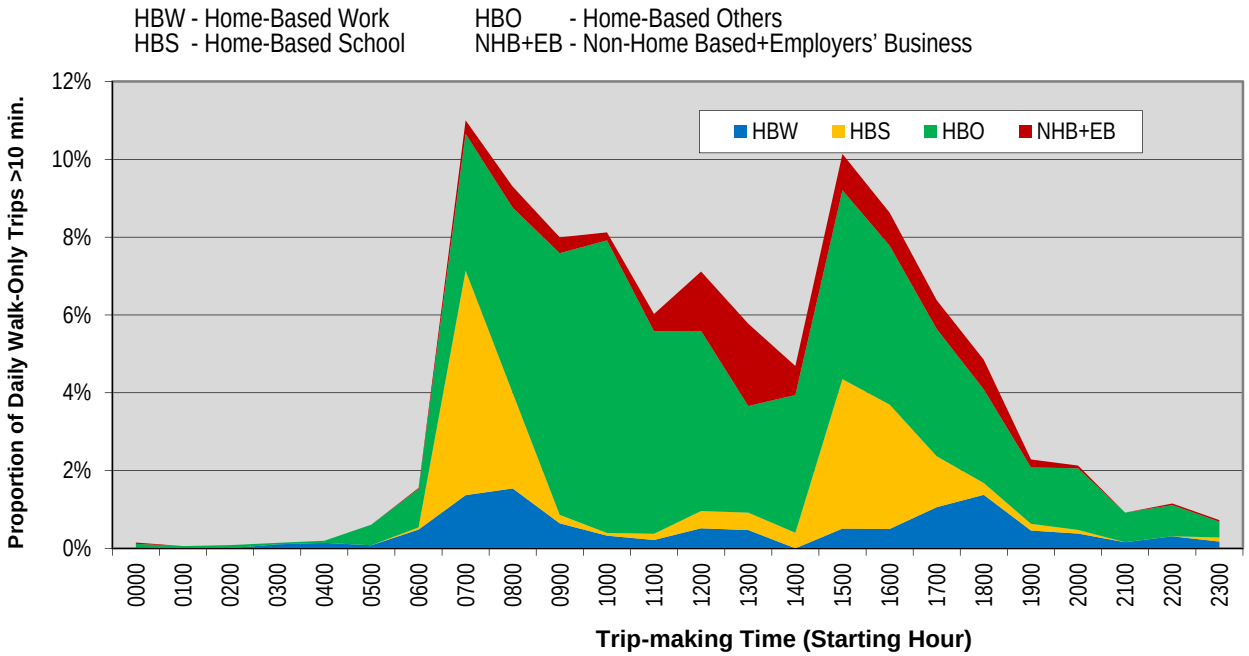


Figure 3.7 : Hourly Profiles of Walk-Only Trips Longer than 10 minutes

Trip Journey Time

3.4.11 As mentioned earlier, about 80% of the walk-only trips took 10 minutes or less. For the remaining 20% of trips taking more than 10 minutes, the journey time was derived from the trip departure and arrival times given by the respondents. In aggregate, the walk-only trip journey time distribution is illustrated in **Figure 3.8**. The mean journey time for all walk-only trips was 8 minutes.

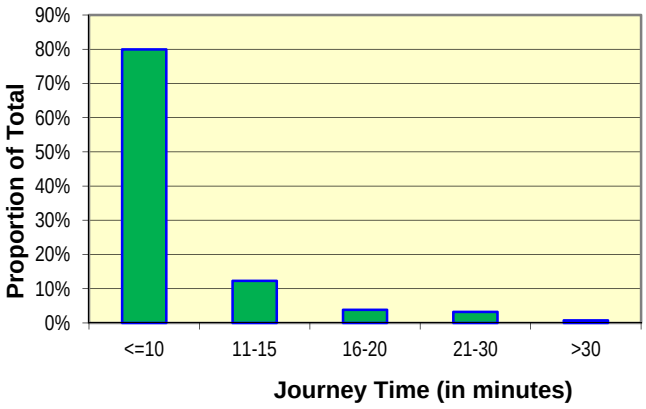


Figure 3.8 : Distribution of Walk-Only Trip Journey Time

3.5 Cycling Trips

3.5.1 Like mechanised trips, "cycling trips" made by respondents on a reference weekday were also collected in the HIS. These included "cycling-only [12] " trips and cycling trip legs connecting with other mechanised modes of transport.

3.5.2 There is a need to expand the survey data for "cycling trips", but in the absence of independent statistics for control, the same extent of under-reporting as the mechanised trips was assumed. This is likely to be under-estimated given the leisurely nature of the cycling trips. Furthermore, the number of cycling trips could be subject to large daily variation e.g. due to weather conditions. The results presented herein on the "cycling trips" should therefore be interpreted with care. It was estimated from the survey that the number of "cycling trips" was less than 1% of the total mechanised trips made by Hong Kong residents aged 2 and over, on a weekday.

3.5.3 **Table 3.10** shows the proportions of cycling trips by trip purpose and by "cycling-only" or connecting with other modes. 80% of the cycling trips were "cycling-only"; only 20% connected with other mechanised transport modes. Overall, HBO trips accounted for the largest proportion (45%) of the daily cycling trips, followed by HBW trips (43%).

Table 3.10 Proportions of Cycling Trips by Trip Purpose and by "Cycling-only" Trips or Connecting Trip Legs

Type	HBW	HBS	HBO	NHB+EB	Total
"Cycling-only" Trips	32%	3%	38%	6%	80%
Connecting Trip Legs	10%	2%	7%	0%	20%
Total	43%	6%	45%	6%	100%

3.5.4 The journey time distribution of "cycling-only" trips is shown in **Figure 3.9**. Journey time information for cycling trip legs is not available as the survey did not require respondents to provide breakdown of whole journey time into individual trip legs. The majority (87%) of the "cycling-only" trips took 30 minutes or less from origin to destination. The average cycling time was 25 minutes.

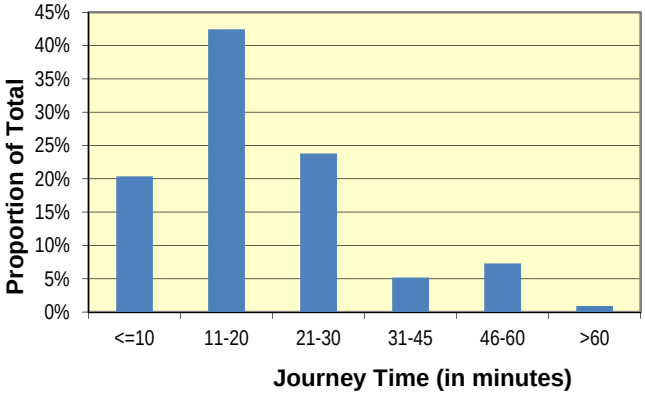


Figure 3.9 : Distribution of "Cycling-Only" Trip Journey Time

[12] A "cycling-only" trip is one travelled from the origin to the destination only by cycling without involving any other mechanised transport mode.

3.5.5 "Cycling trips" were quite often short trips, especially those which connected with other mechanised modes. As revealed from the survey, 65% of the "cycling-only" trips and 82% of the cycling trip legs connecting with other mechanised modes started and ended within the same district. The highest concentrations of "cycling trips" were found in new towns like Fanling/Sheung Shui, Rural NWNT, Yuen Long, Tai Po, Sha Tin and Tuen Mun, where generally more cycling facilities are provided.

4. AVAILABILITY AND USAGE OF PRIVATE VEHICLES

4.1 Availability of Private Vehicles

4.1.1 Availability of private vehicles [13] (referred to as "private vehicle availability [14]" hereafter) for household use was one of the key items collected by the HIS, as it is a major factor affecting the travel characteristics of the household members. The survey identified the number of private vehicles available for use by the sampled households.

4.1.2 14.4% of the households in Hong Kong (or 340,300 households) had private cars available for use, among which 11.4% had more than 1 car. The mean availability was 1.15 cars per household with private cars available.

4.1.3 A total of 391,800 private cars were estimated to be available for use by households, of which 9.7% were company-owned. This was lower than the number of private cars licensed (about 424,800) as at mid-2011, considering that some of the cars licensed under company names would be used primarily for business purpose and not normally available for personal use by employees or their families.

4.1.4 0.8% of the households in Hong Kong (or 18,600 households) had motorcycles available for use with a mean availability of 1.04 motorcycles per household with motorcycles available.

4.1.5 A total of 19,300 motorcycles were estimated to be available for use by households, of which 3.6% were company-owned. This was lower than the number of motorcycles licensed (about 38,200) but was not deemed unreasonable considering that a good proportion of the motorcycles could be for commercial use only and not available for household use.

[13] Private vehicles include private cars and motorcycles.

[14] Private vehicle availability refers to private vehicle(s) available for the use of one or more members of the household most of the time. These vehicles are not necessarily owned by the household or its member(s), and can be privately owned or company owned. However, company owned vehicles solely for company use and not to be used for work commute and/or personal purpose by household members are not included.

4.1.6 Altogether, in 2011, 15.1% of total households in the whole territory had private vehicles (private cars and motorcycles) available for use (hereafter referred to as "private vehicle-available households"), which was higher than 13.5% in 2002. The number of private vehicle-available households has increased by 22.3% (from 291,300 to 356,300), while the total number of households has only increased by about 10% (from 2,152,900 to 2,363,300) over the same period. The comparisons of the numbers and proportions of private vehicle-available households by region are summarised in **Table E.3**.

Table 4.1 Comparison of Private Vehicle-Available Households in 2002 and 2011

Area	Number of Private Vehicle-Available Households		Proportion of Private Vehicle-Available Households	
	2002	2011	2002	2011
Hong Kong Island	67,000	79,400	16.0%	18.7%
Kowloon	60,600	82,100	9.1%	11.3%
NT	163,700	194,800	15.3%	16.1%
Total	291,300	356,300	13.5%	15.1%
With 1 vehicle	257,800	314,500	12.0%	13.3%
With >1 vehicles	33,500	41,800	1.5%	1.8%

4.1.7 Comparing private vehicle availability by the three main areas, the percentage of private vehicle availability has increased in all three regions between 2002 and 2011 with the increase in Kowloon being the greatest by proportion. Even with the above average growth, average private vehicle availability remained the lowest in Kowloon while highest on Hong Kong Island largely due to its high income characteristics.

15.1% of households in Hong Kong had private vehicles available for use

4.1.8 A summary table presenting the availability of private vehicles distinguished by vehicle types across the 26 broad districts is provided in **Table A.4** of the Appendix. It indicates that the availability of private vehicles was highest in Rural Southeast NT (43%), Rural Northwest NT (38%), Rural Northeast NT (38%), Wan Chai (including Happy Valley, Jardine's Lookout and Stubbs Road areas) (25%), Ma On Shan (21%), Kowloon City (21%) and Southern (21%) that could be attributed to the rural setting or high income nature of the relevant districts.

4.2 Factors Affecting Private Vehicle Availability and Decision to Purchase Private Vehicles

4.2.1 It can be induced from Paragraph 4.1.7 above and the analysis in **Figure 4.1** and **Table 4.2** that private vehicle availability has a strong relationship with the following household characteristics:

- Remoteness of residence from urban areas and the availability of convenient public transport system
- Household income
- Housing Type
- Household size.

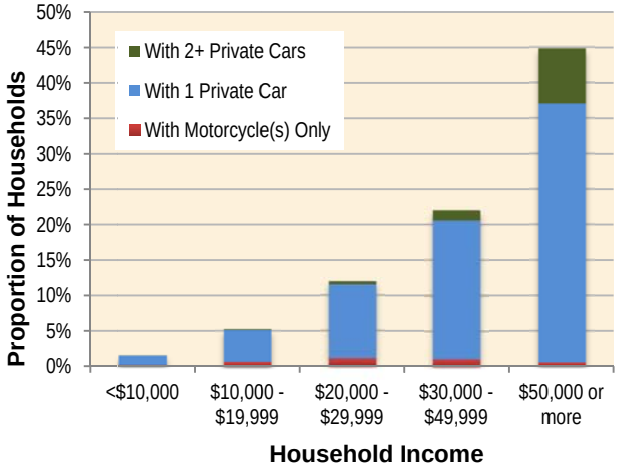


Figure 4.1 : Private Vehicle Availability versus Household Income

Table 4.2 Private Vehicle Availability Analysed by Household Characteristics

Household Characteristics	Private Car	Motor-cycle	Private Vehicle (1)
Housing Type			
Public Rental Housing	2.3%	0.6%	2.8%
Subsidised Sale Housing	9.3%	1.2%	10.4%
Private Housing	22.8%	0.8%	23.5%
Household Size (Persons)			
One	5.6%	0.4%	6.0%
Two	11.9%	0.8%	12.5%
Three	13.9%	0.9%	14.7%
Four	17.5%	0.9%	18.3%
Five or more	26.9%	1.0%	27.7%
Monthly Household Income			
Less than $10,000	1.4%	0.1%	1.5%
$10,000 - $19,999	4.5%	0.7%	5.2%
$20,000 - $29,999	10.8%	1.3%	11.9%
$30,000 - $49,999	21.0%	1.3%	22.0%
$50,000 or more	44.3%	0.8%	44.8%
Overall	14.4%	0.8%	15.1%

Note : (1) Private vehicles include private cars and motorcycles.

4.2.2 As revealed from the results of Attachment Survey 1 (AS1), the main reasons for private vehicle-available households to own their private vehicles are illustrated in **Figure 4.2**. The most commonly cited reasons were for convenience and time savings (55%), or for work/business purposes (18%).

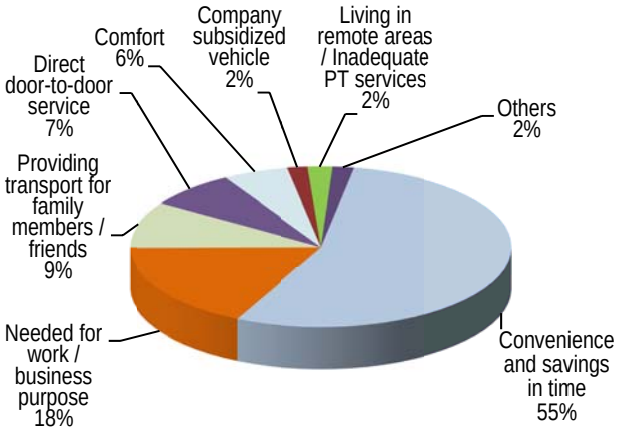


Figure 4.2 : Main Reasons for private vehicle-available Households to Purchase Private Vehicle

4.2.3 Among the households that did not have private vehicles available for use ("non-private vehicle-available households"), only 1% intended to buy private vehicles within 12 months from the day of enumeration. For those that did not, major factors affecting their decision are summarised in **Figure 4.3**. The main reasons were "don't know how to drive" (32%) and cost considerations: either the running cost (31%) or vehicle cost being too expensive (20%).

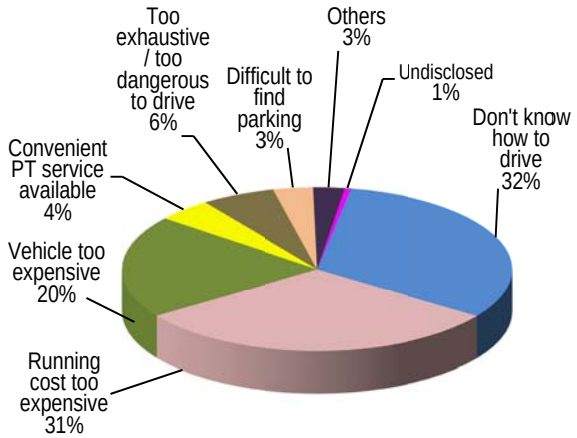


Figure 4.3 : Main Factors Affecting Non-private vehicle-available Households' Decision Not to Own Private Vehicles

4.3 Private Vehicle Usage

4.3.1 About 95% of the private vehicle-available households had used their vehicles at least once in the seven days before enumeration, with 79% having used them during daytime (5 a.m. – 8 p.m.) on weekdays, 58% during night-time (8 p.m. – 5 a.m.) on weekdays and 85% anytime on weekends. Details of the private vehicle usage in a week are shown in **Figure 4.4**.

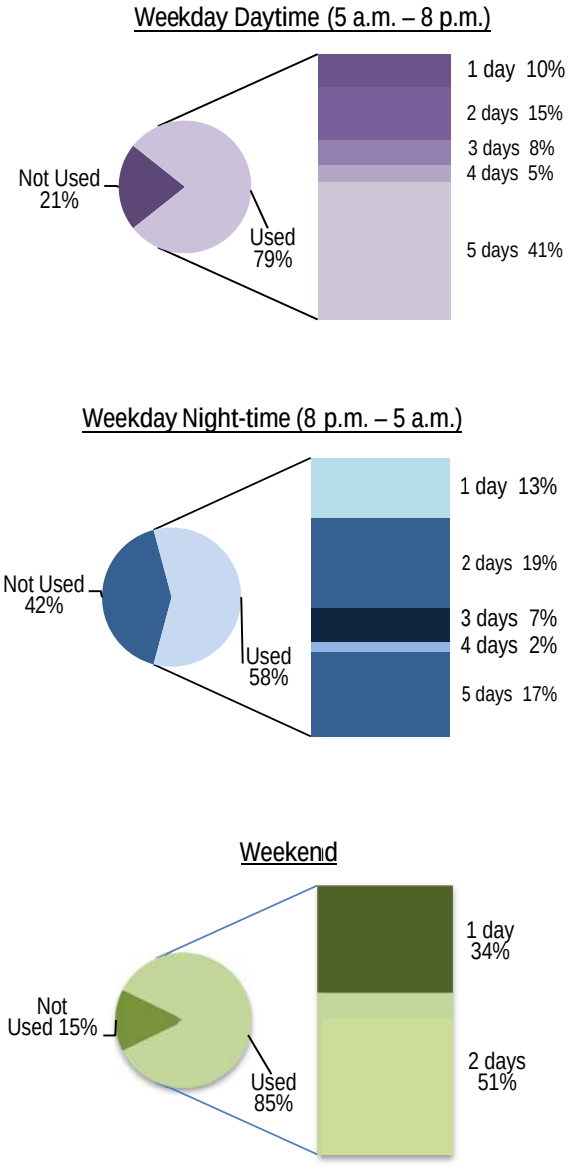


Figure 4.4 : Weekly Usage of Private Vehicles

4.3.2 The average numbers of weekdays that the private vehicles were used during daytime and night-time in a week were 2.9 and 1.7 days respectively. The average number of days on weekends that the private vehicles were used in a week was 1.4 days. Comparison with the TCS 2002 results in **Table 4.3** shows that the usage of private vehicles on weekdays has reduced both during daytime and night-time, especially the latter. On the other hand, the private vehicle usage on weekends has remained relatively unchanged between 2002 and 2011. This indicates that the proportion of weekend drivers has increased. On weekdays for commuting purpose, public transport services might still be used in favour of the private vehicles for their efficiency and reliability.

Table 4.3 Comparison of Weekly Private Vehicle Usage in 2002 and 2011

Period	Mean no. of days/ nights that vehicles were used in a week	
	2002	2011
Weekday Daytime	3.4	2.9
Weekday Night-time	2.3	1.7
Weekend	1.4	1.4

4.3.3 The annual average kilometrage driven for private cars was 11,400 km and that for motorcycles was 11,600 km according to the 2011 survey results. These compared to 16,000 km and 11,800 km respectively in 2002, representing a considerable reduction in the average distance travelled especially by private cars. This again suggests a generally less regular use of the private vehicles. Despite the relatively significant increase in the number of licensed vehicles and private vehicle availability, the vehicle-km travelled on roads was not observed to increase by the same proportion. As evident from the HIS trip data, the private vehicle trips in 2011 has increased from 2002 by less than 10%, but the licensed private vehicle and private vehicle-available household numbers have grown by more than 20% over the same period.

4.3.4 The AS1 also identified the main purposes of private vehicle usage by private vehicle-available households. The results are depicted in **Figure 4.5** distinguished by vehicle type. As revealed from the survey results, the largest proportion (32%) of private cars were used mainly for recreational and social purposes; whilst the largest proportion (54%) of motorcycles were used for travelling to/from work.

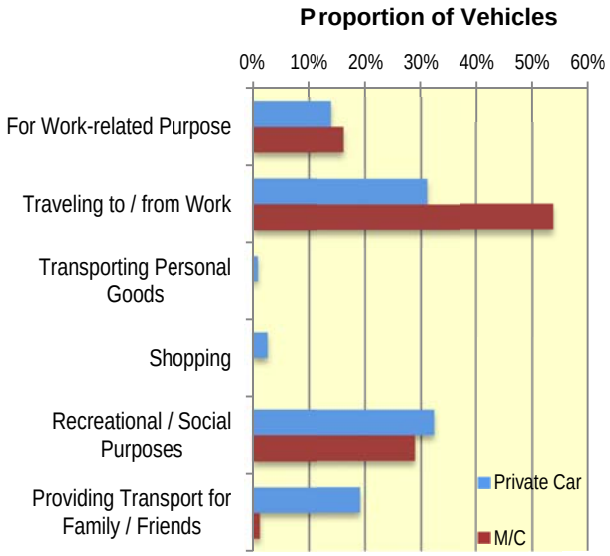


Figure 4.5 : Main Purposes for Private Vehicle Usage

4.4 Costs for Operating Private Vehicles

4.4.1 Detailed information was obtained from private vehicle-available households about the monthly expenses incurred in operating their vehicles. **Table 4.4** summarises the average monthly expenses, itemised by different types of expenses and distinguished by vehicle types.

Table 4.4 Average Monthly Expenses Incurred by Private Vehicles

Expenses	Private Car	Motorcycle
Parking Fee	$1,810	$330
Fuel Cost	$1,910	$630
Repair/Maintenance Cost	$430	$190
Toll Expenses	$450	$210
Insurance Premium	$320	$110
Licence Fee	$460	$110
Total Expenses (2011)	$5,370	$1,570
Total Expenses (2002)	$5,260	$1,770

Note: Monetary values above are expressed in nominal terms (i.e. money-of-the-day). Between 2002 and 2011, the Composite Consumer Price Index has increased by 15.2%.

4.4.2 Overall, the average total monthly cost incurred by a private car was $5,370, three times more expensive than the $1,570 for a motorcycle. As compared to the operating costs obtained in TCS 2002, there was a marginal increase by 2% in the private car operating cost from 2002 to 2011 in nominal terms. The total operating cost incurred by motorcycles has however dropped by 11% between 2002 and 2011. In real terms, both the operating costs for private cars and motorcycles dropped between the two years.

4.4.3 Amongst the operating expenses of private cars, fuel cost constituted the highest portion (36%) of the total, which was followed by the parking fee (34%). In the case of motorcycles, fuel cost also constituted the highest portion (40%) of the total expenses, followed by parking fee (21%). As compared with the 2002 results, the most notable increase has been on fuel cost due to the rise in oil price over the period.

4.4.4 The survey showed that the majority (over 90%) of the vehicles available for household use were not entitled to any company subsidy on the expenses. Overall, company subsidy accounted for about 11% of the average total expenses for private cars, and even less (about 5%) for motorcycles.

5. MAJOR VIEWS AND ATTITUDES RELATED TO TRAVELLING

5.1 Factors Affecting the Use of Environmentally-Friendly Vehicles

5.1.1 2% of the households had intention to buy private cars or motorcycles in the 12 months after enumeration. Among those private cars intended to be bought by households, 87% would be petrol-or diesel-fuelled vehicles; only 13% would be environmentally-friendly vehicles, including 3% electric and 10% hybrid vehicles. On the other hand, 95% of the motorcycles intended to be bought would be petrol-fuelled and 5% would be hybrid vehicles.

5.1.2 As illustrated in **Figure 5.1**, the main reasons cited for not buying environmentally-friendly vehicles were "no experience/had no confidence in hybrid or electric vehicles" (26%) and "inadequate charging stations/facilities" (22%).

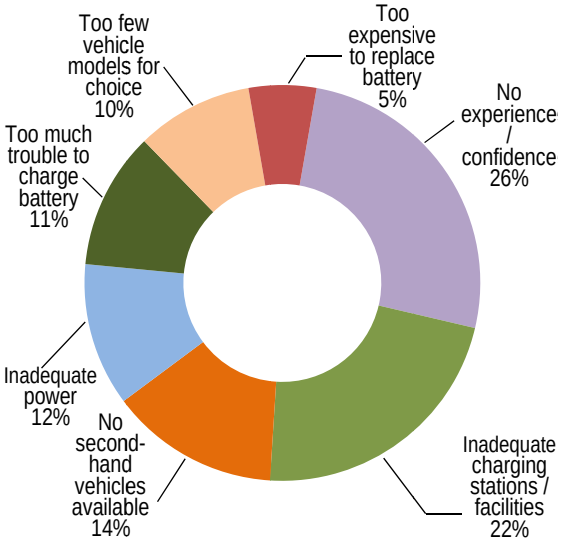


Figure 5.1 : Main Reasons for Not Buying Environmentally-Friendly Vehicles

5.1.3 Those households intending to buy private vehicles in the 12 months after enumeration were asked how much more they would be willing to pay for an environmentally-friendly vehicle in lieu of a petrol/diesel-fuelled vehicle with a view to improving the environment. The results are presented in **Figure 5.2**. On average, respondents were willing to pay about 15% extra for an environmentally-friendly vehicle.

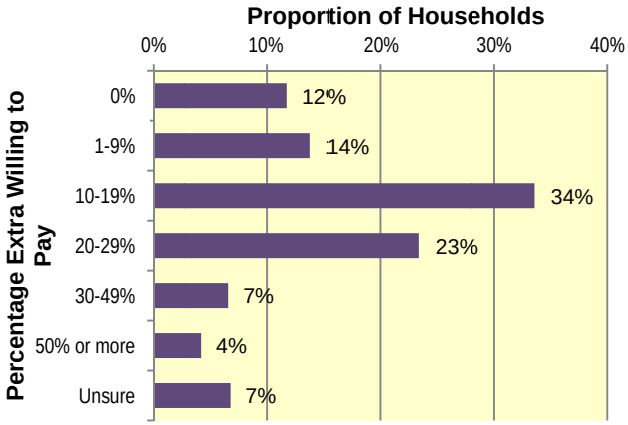


Figure 5.2 : Extra Price Willing to Pay for an Environmentally-Friendly Vehicle

5.2 Main Factors Affecting the Choice of Public Transport Mode

5.2.1 As indicated in **Figure 5.3**, the **related** factors respondents aged 15 and over would consider in choosing among different modes of public transport were travel time (26%) and walking distance between locations for getting on/off the mechanised transport and the locations of trip origin/destination (26%). They were followed by travel distance and travel cost. Relatively small proportions of people cited the need for transfer, punctuality of service and degree of comfort as their key consideration factors in making their choices.

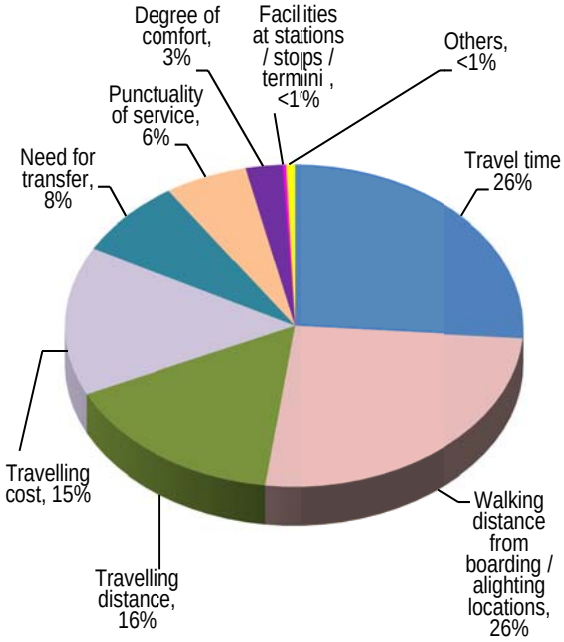


Figure 5.3 : Main Factors Affecting the Choice of Public Transport Mode

5.2.2 The above results were quite similar to the survey results in 2002 when the key factors cited in descending order were "walking distance from boarding/alighting locations" (26%), "travel time" (24%), "travel distance" (22%) and travel cost (19%). In comparison, a slightly larger proportion of respondents considered "travel time" as the most important factor in TCS 2011; whilst smaller proportions of them considered "travel distance" and "travel cost" as the main factors.

5.2.3 Further analysis of the survey results by household income indicated that a larger proportion of respondents from the lower income group considered "travel cost" as their key consideration when choosing among different public transport modes, as opposed to "travel time" and "punctuality of service" for those with higher household income. The differences in "travel time" and "travel cost" were particularly apparent, strongly indicating those with higher household income more willing to trade off time with cost.

5.2.4 Information was also obtained in the survey on how long respondents were prepared to wait for various transport services. The results are presented in **Table 5.1** below.

Table 5.1 Stated Maximum Acceptable Waiting Time for Transport Services

Transport Service	Waiting Time (minutes)
Taxi	6
PLB	10
Franchised Bus	12
Rail	6
Ferry	16

5.2.5 The average time people were prepared to wait for different types of transport services varied from 6 to 16 minutes. Among the five modes of public transport services, the maximum acceptable waiting time generally followed in ascending order: taxi, rail, PLB, franchised bus and ferry. In other words, people were more prepared to wait longer for ferry services, but the least for taxis.

5.3 Effects of Changes in Journey Time and Factors Affecting the Choice of Public Transport Mode

5.3.1 To appreciate the effects of journey time on people's travel patterns for transport modelling purpose, respondents aged 15 and over were asked how they might change their travel patterns with an assumed 25%, 50% and 100% increase in journey time from the present during specified peak periods (7:00 – 10:00 a.m. and 5:00 – 8:00 p.m.). The results are summarised in **Table 5.2**. Among the two aspects of possible changes assessed, respondents would more likely switch to another transport mode (up to 66% should the journey time of their trips during the peak periods be doubled from present) than to shift their trip-making time to non-peak hours (39% should the journey time of their trips be doubled during the peak periods).

Table 5.2 Possible Changes in Travel Patterns with Assumed Increase in Journey Time

Possible Changes	Assumed Increase in Journey Time by		
	25%	50%	100%
Change in Transport Mode	35%	57%	66%
Shifting Trip to Non-peak Hours	23%	34%	39%

5.3.2 Overall, commuting (HBW and HBS) and EB trips were found more susceptible to the change in transport mode as compared to trips for other purposes. On the other hand, NHB trip-makers would less likely change their transport mode taken or trip-making time even if the journey time was assumed to double suggesting that they were relatively insensitive to an increase in journey time.

5.4 Attitudes Towards Walking and Use of Travellators

5.4.1 Survey results revealed the respondents' (aged 15 and over) average maximum acceptable walking time to access various public transport facilities as shown in **Figure 5.4**. Overall, under outdoor and sheltered condition, the maximum acceptable walking time stated ranged from 10 to 12 minutes on average. People were prepared to walk longer to ferry piers than to rail stations or franchised bus/PLB terminals/stops.

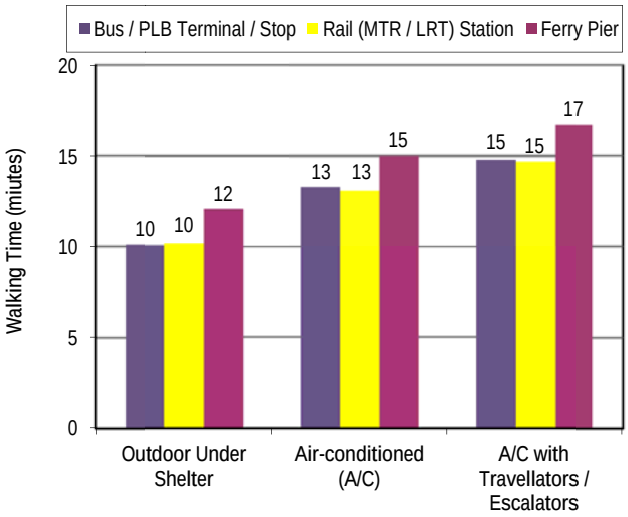


Figure 5.4 : Stated Maximum Acceptable Walking Time to Access Public Transport Facilities

5.4.2 By comparing the results across different prescribed walking conditions, it was evident that people would be prepared to walk longer to access various transport facilities with improved conditions, i.e. provision of air-conditioning (about 3 minutes longer than walking outdoor) and travellators/escalators (another 2 minutes longer).

5.4.3 As compared to the results of a similar attitudinal survey in TCS 2002, the maximum acceptable walking time stated by the respondents had been reduced across all categories by roughly 10% from 2002 to 2011. This implies that Hong Kong residents aged 15 and over had generally become less willing to walk.

5.5 Availability and Usage of Bicycles

5.5.1 It was estimated from the survey that 10.4% of households in the HKSAR (or 245,300 households) had bicycles available for use. The proportions of households with bicycles available by broad district are set out in **Table A.5** in the Appendix. The proportion was found larger among those households in rural Northeast NT, rural Northwest NT, Tai Po, Fanling/Sheung Shui, North Lantau, rural Southwest NT and Sha Tin. This was likely related to the better provision of cycling facilities e.g. cycle tracks and bicycle parking spaces in these districts.

5.5.2 Of the estimated 347,000 bicycles available for use by households, 70% were parked inside home, 28% at other places near home, and 2% away from home. Further breakdown is provided in **Table 5.3**.

Table 5.3 Parking Arrangement of Bicycles

Parking Location	Proportion of Bicycles
Near Home	98%
Inside Home	*70%*
Other Places Within the Building of Residence (e.g. corridor / Lobby / Rooftop / Locker Room)	*9%*
Designated Bicycle Parking Spaces Within Housing Court / Estate	*10%*
Non-designated Spaces Within Housing Court / Estate	*5%*
Other Designated Bicycle Parking Spaces Near Home	*1%*
Other Non-designated Bicycle Parking Spaces Near Home	*3%*
Not Near Home	2%
Total	100%

Designated bicycle parking spaces within housing development

5.5.3 The survey revealed that among all Hong Kong residents aged 15 and over, 69% (or 4,034,000 persons) knew how to ride a bicycle. Among them, 13% (or 535,000 persons) had bicycles available for use in their household.

5.5.4 Of all Hong Kong residents aged 15 and over who knew how to cycle and had bicycles available for use, about 12% had used their bicycles for business, commuting or school trips while 28% had used their bicycles for other purposes (such as recreation / leisure) on weekdays in the past 3 months from the day of interview. On weekends during that 3 months' period, about 8% had used their bicycles for business/commuting purpose while 42% had used their bicycles for other purposes. The frequency of people using their own bicycles are summarised in **Table 5.4**.

Table 5.4 Frequency of People Using Their Own Bicycles in Past 3 Months

Frequency of Bicycle Usage	For Business, / Commuting or School Trips	For Other Purposes
On Weekdays		
5 days / week	7.1%	5.5%
3-4 days / week	1.7%	4.5%
1-2 days / week	2.7%	10.0%
Less than once a week	0.9%	8.0%
Overall	12.4%	28.0%
On Weekends		
2 days / week	2.0%	8.6%
1 day / week	3.8%	14.0%
Less than once a week	1.7%	19.7%
Overall	7.5%	42.3%

5.5.5 Of all Hong Kong residents aged 15 and over who knew how to cycle, about 3% had rented a bicycle for recreation/leisure purpose on weekdays in the past 3 months from the day of interview. On weekends during that 3 months' period, about 6% had rented a bicycle for recreation/leisure purpose. The frequency of people renting bicycles are summarised in **Table 5.5**.

Table 5.5 Frequency of People Renting Bicycles for Recreation / Leisure Purpose in Past 3 Months

Frequency of Renting Bicycles	Proportion of Persons
On Weekdays	
3-5 days / week	0.6%
1-2 days / week	0.9%
Less than once a week but at least once a month	0.7%
Less than once a month	1.3%
Overall	3.4%
On Weekends	
1-2 days / week	0.7%
Less than once a week but at least once a month	1.7%
Less than once a month	3.9%
Overall	6.3%

5.5.6 Among all the respondents who had cycled in the three months before enumeration, either by using the bicycles available for their household use or by renting bicycles for recreation/leisure purpose, 85% reported that they usually cycled on cycle tracks while 15% usually on carriageways. By comparing the results across different districts of residence, a larger proportion (28%) of respondents living in the rural NT usually cycled on carriageways.

5.6 Attitudes Towards Possible Law and Enforcement Measures on Cycling

5.6.1 In respect of the law and enforcement for cycling, 62% of the respondents aged 15 and over were aware that cyclists have to abide by the Road Users' Code. As can be expected, such awareness was comparatively higher among those persons with bicycles available in their household and those who had experience with cycling.

5.6.2 In the survey, respondents were asked whether they supported the following potential measures for enhancing cycling safety:

- Registration of bicycles for being used on carriageways or cycle tracks,
- Persons aged 11 or above to apply for "cycling licence" in order to cycle on carriageways or cycle tracks,
- Compulsory wearing of safety helmets when cycling on cycle tracks, and
- Compulsory wearing of safety helmets when cycling on carriageways.

5.6.3 The results are shown in **Figure 5.5** below. Overall, people were more supportive of the compulsory wearing of safety helmets (78% to 89%) than the registration of bicycles (42%) and application for "cycling licence" (43%).

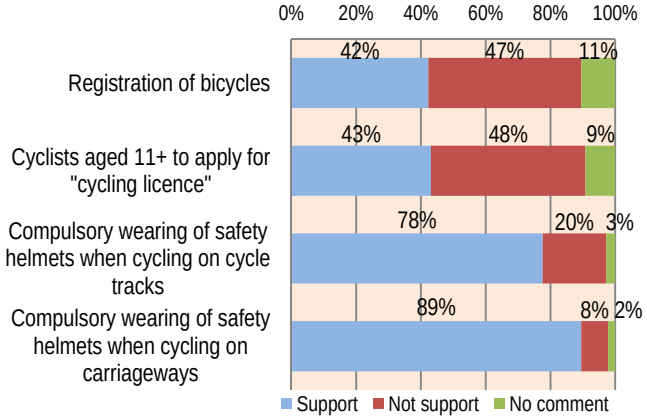


Figure 5.5 : Support of Potential Legal & Enforcement Measures on Cycling

5.6.4 Support of the above potential measures on cycling varied among cyclists and non-cyclists as shown in **Table 5.6**. As can be expected, respondents who knew how to ride a bicycle were less supportive of the measures than those who did not.

Table 5.6 Support of Potential Legal & Enforcement Measures on Cycling by Whether Respondents Knew How to Ride a Bicycle

Measure	Proportion of Support	
	Those Who Knew How to Ride a Bicycle	Those Who Did Not Know How to Ride a Bicycle
Registration of bicycles	39%	49%
Cyclists aged 11+ to apply for "cycling licence"	40%	51%
Compulsory wearing of safety helmets when cycling on cycle tracks	74%	86%
Compulsory wearing of safety helmets when cycling on carriageways	89%	90%

5.6.5 Survey results on compulsory wearing of safety helmets for cyclists of different age groups are given in **Table 5.7**. Respondents generally showed stronger support for the safety helmet wearing requirement to apply to younger cyclists, particularly those aged below 11. The difference was more evident for cycling on cycle tracks.

Table 5.7 Support of Compulsory Wearing of Safety Helmets for Cyclists of Different Age Groups

Age Group	Proportion of Support	
	When Cycling on Cycle Tracks	When Cycling on Carriageways
Below 11	91%	93%
11 to 17	83%	92%
18 or Above	78%	90%
All Ages	78%	89%

5.6.6 Of those respondents who knew how to ride a bicycle, 71% considered that a mandatory requirement for cyclists to wear safety helmets would have no effect on their frequency of cycling, whereas 23% said they would cycle less frequently and 6% would cycle more frequently.

5.7 Attitudes and Views Towards Dissemination of Transport Information

5.7.1 The opinions of respondents aged 15 and over on the adequacy of transport information provided by the following public transport modes were collected: franchised bus, rail, PLB and ferry. The findings are summarised in **Table 5.8** below.

Table 5.8 Views of Respondents on the Adequacy of Existing Transport Information Provided by Transport Operators

Mode	Perceived Adequacy by Type of Information				
	Routing	Time-table	Fare	Time to Destination	Next Service Arrival
Rail	94%	90%	90%	81%	67%
Ferry	71%	71%	62%	62%	59%
Franchised Bus	85%	68%	55%	54%	49%
PLB	63%	47%	45%	44%	34%

5.7.2 By comparing the survey results for the four modes, users were generally most satisfied with the information currently provided by the rail operator, with the highest percentage (67% to 94%) of users rating the information currently provided with respect to all the 5 aspects as adequate. It was followed by ferry and franchised bus operators. Among the four modes, the information provided by PLB operators was considered the least adequate, with the lowest proportion of users considering the information provided in all the 5 aspects as adequate.

5.7.3 Among the 5 aspects of public transport information, users were generally most satisfied with the routing and service frequency (time table) information provided by operators of all the four modes.

Dissemination of transport information on board

5.7.4 In general, the types of public transport information considered most useful by the respondents in facilitating their decision-making in mode choice are depicted in **Figure 5.6**. The information considered most useful was "routings" which accounted for 39% of total. It was followed by information on "travel time to destination" and "service frequency and timetable".

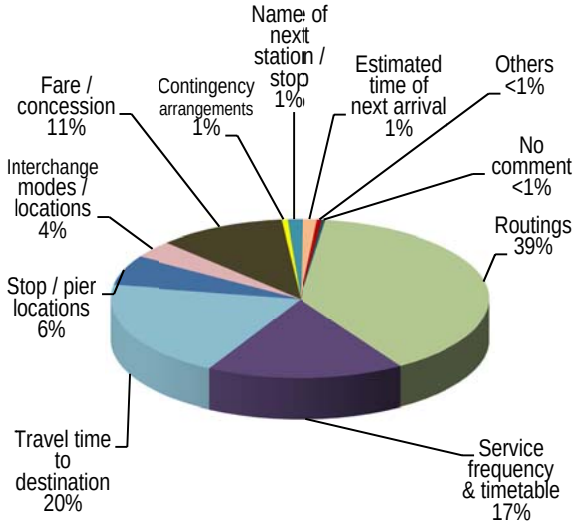


Figure 5.6 : Public Transport Information Considered Most Useful

5.7.5 As for dissemination of information to drivers, the types of transport information drivers considered most useful are presented in **Figure 5.7**. The largest proportion (37%) of drivers considered "choice of route in case of road/tunnel congestion" most useful, followed by "estimated queue length at major congested locations" and "route guidance from origin to destination".

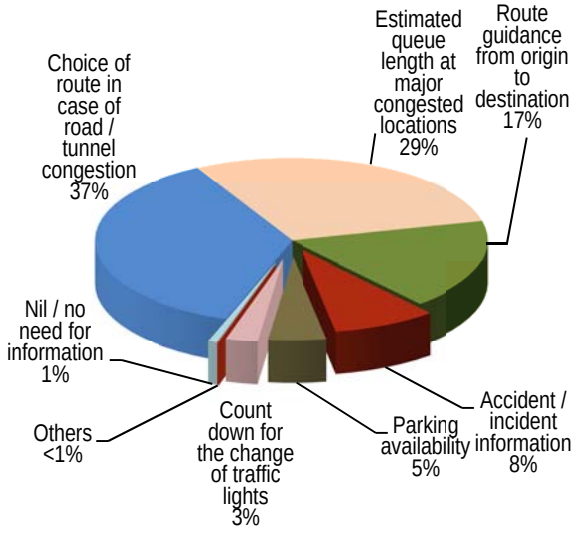


Figure 5.7 : Information Considered Most Useful to Drivers

5.7.6 45% of the respondents aged 15 and over were aware that various transport information services (such as traffic speed map, cross-harbour journey time, driving route search service, public transport enquiry service and traffic cam online) are available from the Internet. Among them, 18% had visited Transport Department's website to obtain relevant transport information in the three months before enumeration, while 52% had visited other websites to obtain such information during that period. The frequency of people visiting Transport Department and other websites for the above information services are summarised in **Table 5.9**.

Table 5.9 Frequency of People Visiting Transport Department and Other Websites in Past 3 Months

Frequency of Visit	Transport Department's Website	Other Websites
At least once a day	0.5%	0.9%
Less than once a day but at least once a week	5.0%	7.7%
Less than once a week but at least once a month	5.9%	22.0%
Less than once a month	6.9%	21.2%
Nil	81.6%	48.2%
Total	100.0%	100.0%

Base: Hong Kong residents aged 15 and over who were aware that various transport information services are available from the Internet.

5.7.7 For those who had visited Transport Department's website to obtain relevant transport information in the three months before enumeration, their opinions on the information obtained in helping them to make appropriate decisions on (a) mode choice, (b) route choice and (c) departure time when making trips are illustrated in **Figure 5.8**.

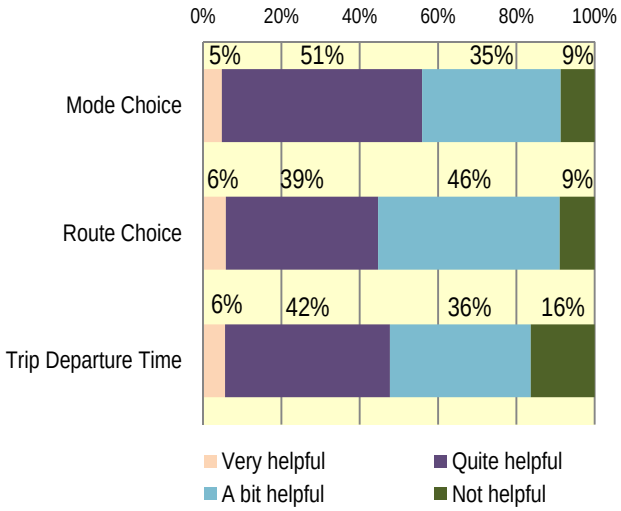


Figure 5.8 : Opinions on the Information Obtained Via Transport Department's Website

5.7.8 In general, users tended to find the information available from Transport Department's website more helpful to their decision-making in mode choice and route choice than choice of departure time when making trips.

5.8 Views on Traffic Relief Measures and Improvement Measures to Pedestrian Facilities

5.8.1 Attitudinal surveys were conducted on the public's opinions and views on possible measures to relieve traffic congestion (assuming that the existing level of traffic congestion was to worsen) and to improve pedestrian facilities.

5.8.2 The traffic relief measure most supported by the respondents was "building more railways" (21%), followed by "restricting the number of vehicle licences issued" (16%), and "building more roads" (15%). Over 10% of respondents were most supportive of "Rationalising bus routes / truncating duplicated bus routes" (12%) and "giving higher priority for public transport to use roads (e.g. bus lanes)" (11%).

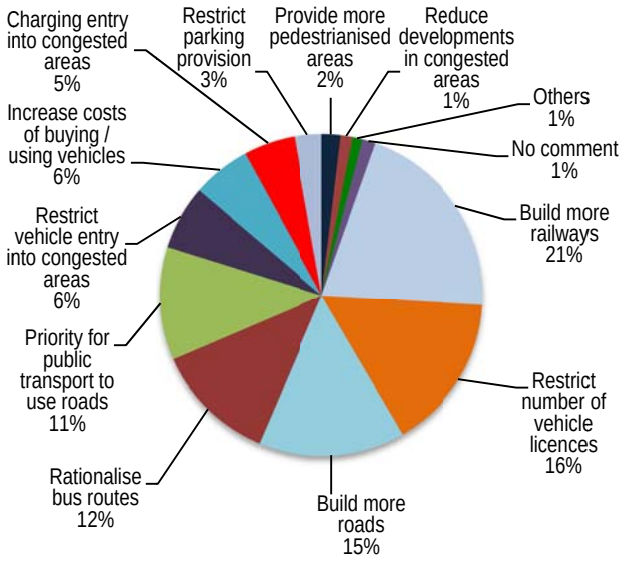


Figure 5.9 : Most Supported Measures to Relieve Traffic Congestion

5.8.3 Comparing the responses by private vehicle-available and non-private vehicle-available household members, it was found that a larger proportion of private vehicle-available households supported "building more roads" (24%, almost double the 13% for non-private vehicle-available households). On the other hand, larger proportions of the non-private vehicle-available households supported "building more railways" and "giving higher priority for public transport to use roads" (12-22%, as compared to 6-15% for private vehicle-available households).

Building more railways was most supported by the respondents as the means to relieve traffic congestion

5.8.4 It was also interesting to note that respondents from private vehicle-available households were marginally more supportive of some measures affecting vehicle usage with respect to "restricting vehicle entry into congested areas" (9%) and "charging vehicle entry into congested areas during peak hours" (8%), as compared to those without vehicles available for use (6% and 5% correspondingly).

5.8.5 As for measures to improve the facilities for pedestrians, the results are summarised in **Figure 5.10.**

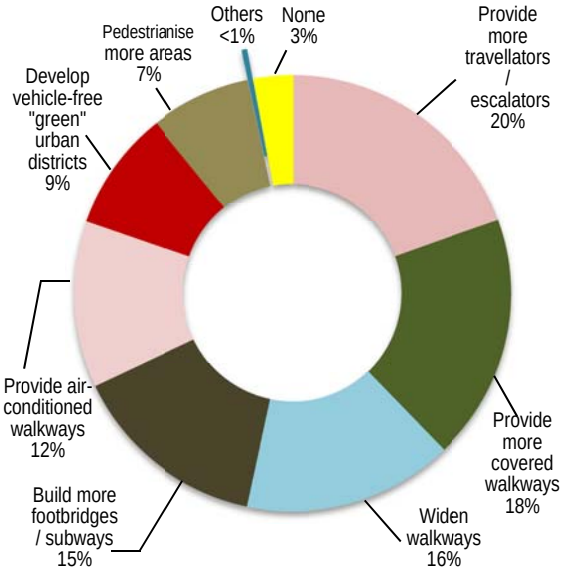
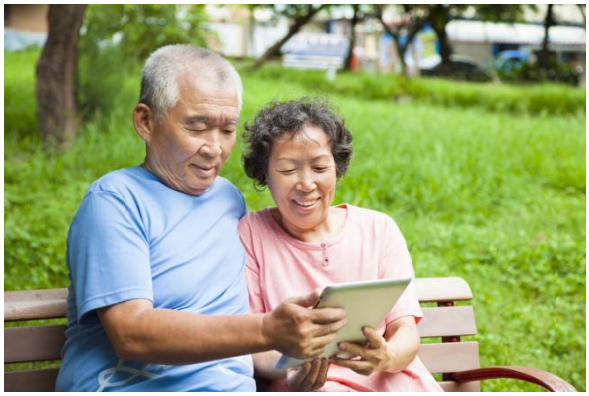


Figure 5.10 : Most Supported Measures to Improve Pedestrian Facilities

5.8.6 Overall, the most supported measure to improve pedestrian facilities was "providing more travellators/escalators" (20%). Other more commonly cited measures were: "providing more covered walkways" (18%), "widening walkways" (16%), "building more footbridges/ subways" (15%) and "providing air-conditioned walkways" (12%).

5.9 Views of Elderly on Transport Services



The HKSAR population has been aging in the past decade

5.9.1 It was estimated from the survey that in 2011, about 19% (or 1,287,000 persons) of the household population were 60 years of age or older. Among them, 71% were retired; 16% were still in the work force; 12% were homemakers and 1% others [15].

5.9.2 Attitudinal survey was conducted with respondents aged 60 and over on the aspects they considered most inconvenient and in need for improvement when travelling on rail, bus and PLB. The findings are summarised as follows.

- *Rail:* The 3 aspects considered most inconvenient or uncomfortable were "no priority seats for elderly" (28%), "long distance walk from station entrance to platform" (21%) and "rough uncomfortable ride" (10%).
- *Bus:* The 3 aspects considered most inconvenient were "unreliable/unpunctual services" (30%), "no priority seats for elderly" (22%) and "rough uncomfortable ride/driving too fast" (9%).
- *PLB:* The aspects most cited was "rough uncomfortable ride/driving too fast" (31%), followed by "no concessionary fares for elderly" (20%) and "unreliable/unpunctual services" (15%).

5.9.3 The aspects of the current provision of traffic facilities that respondents considered most inadequate and in need for improvement are shown in **Figure 5.11**. The largest proportion (32%) of respondents cited "inadequate provision of lifts/escalators at footbridges/ subways". It was followed by "pedestrian signal time too short" (23%), "unclear directional signage and/or size of the signage wording not big enough" (16%) and "inadequate/ inconspicuous traffic signage" (10%).

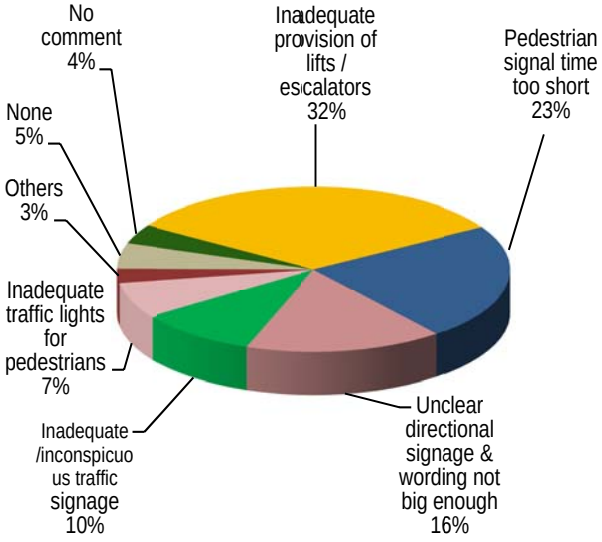


Figure 5.11 : Aspects of Traffic Facilities Provision that Elderly Considered Most Inadequate

[15] "Others" include persons of independent means (i.e. those who do not have to work for a living) and other economically inactive persons (e.g. unpaid religious workers and persons who cannot work or do not seek work because of permanent sickness or disablement).

6. BEHAVIOURAL VALUE OF TIME

6.1 General

6.1.1 The SP Survey undertaken as part of the TCS 2011 aimed to investigate the behavioural value of time (behavioural VoT) of the population. The behavioural VoT is a measure of the amount of money trip-makers are willing to trade off with unit time saving. It serves as a key parameter in the transport model to simulate the behaviour of trip-makers in making choices when they are faced with different transport alternatives, usually characterised by different journey time and cost.

6.2 Behavioural Value of Time

6.2.1 The TCS 2011 SP Survey was targeted at assessing the behavioural VoT which reflected the underlying travel behaviour of the respondents. The behavioural VoT can be expected to vary considerably among individuals because of their different characteristics as well as the purpose of the trips in question. For that reason, the survey was conducted on different sectors of the population categorised based on their private vehicle availability, trip purpose and transport mode taken.

6.2.2 The behavioural VoTs were analysed for the different sectors of the population by linear regression models based on a logit formulation. The regression model output results for individual segments were then weighted according to the HIS derived daily trip totals by private vehicle availability, trip purpose and transport mode groups. The derived behavioural VoTs in 2011 are presented in **Table 6.1**, together with the TCS 2002 results for comparison. The corresponding TCS 2002 values have been converted from 2002 to 2011 prices based on the Composite Consumer Price Index (CPI) growth of +15.2% between 2002 and 2011.

Table 6.1 Behavioural Values of Time by Private Vehicle-Available Household and Trip Purpose (at 2011 Prices)

<table>
<tr><th rowspan="2">Trip Purpose</th><th colspan="4">Behavioural VoT (in Cents/Minute)</th></tr>
<tr><th colspan="2">2002 Values [1]</th><th colspan="2">2011 Values</th></tr>
<tr><td colspan="5">Private Vehicle-Available Household Member</td></tr>
<tr><td>HBW</td><td>96 (83)</td><td rowspan="3">90 (78)</td><td>103</td><td rowspan="3">88</td></tr>
<tr><td>HBS</td><td>67 (58)</td><td>72</td></tr>
<tr><td>HBO / NHB</td><td>92 (80)</td><td>83</td></tr>
<tr><td colspan="5">Non-Private Vehicle-Available Household Member</td></tr>
<tr><td>HBW</td><td>58 (50)</td><td rowspan="3">55 (48)</td><td>68</td><td rowspan="3">67</td></tr>
<tr><td>HBS</td><td>53 (46)</td><td>57</td></tr>
<tr><td>HBO / NHB</td><td>53 (46)</td><td>68</td></tr>
<tr><td>Overall</td><td colspan="2">62 (54)</td><td colspan="2">72</td></tr>
</table>

Note: [1] Converted from 2002 to 2011 prices based on Composite Consumer Price Index growth (+15.2%) between 2002 and 2011. Figures in brackets are 2002 values at original 2002 prices as shown in TCS 2002 Final Report.

6.2.3 Comparison of the 2011 and 2002 survey results indicates an overall increase in the VoT by about 16% in real terms which was much slower than the 46% real terms growth in Gross Domestic Product (GDP) per capita between 2002 and 2011. The VoT growth varied among different trip categories. For private vehicle-available household members, the VoT for commuting (HBW/HBS) purposes had increased by 8% but that for other purposes fell by about 10%. The growths for the non-private vehicle-available categories were more prominent in the range of 8-28% with non-commuting (HBO/NHB) trips showing the highest growth which was still only about half of the real GDP growth per capita during the period.

6.2.4 Trip-makers from private vehicle-available households continued to show higher behavioural VoTs than those from non-private vehicle-available households, although the difference had narrowed between 2002 and 2011. The behavioural VoTs of private vehicle-available trip-makers were some 20-50% higher than the non-private vehicle-available ones in 2011.

6.2.5 It has to be remarked that the behavioural VoTs derived from the SP Survey could sometimes be different from their behaviour in reality. As such, the behavioural VoTs derived from the TCS 2011 SP Survey would be subject to further review against trip-makers' actual travel behaviour as revealed from their trip data.

6.2.6 This will be done as part of the future model re-calibration process, before the final values are applied for transport planning purpose. Considering that the SP survey results may be highly dependent on the prevailing consumer sentiments that would be quite volatile to properly projected values for future years, it is advisable to undertake the VoT survey more regularly to establish sufficient time series data for more rigorous analysis to derive the VoT growth relationship.

7. CHARACTERISTICS OF TRIPS MADE BY VISITORS STAYING IN HOTELS/GUESTHOUSES

7.1 Underlying Demographic Characteristics of the Visitors

7.1.1 Key demographic characteristics of visitor respondents covered by the Hotel/Guesthouse Tourists Survey (TS) were collected mainly for better understanding of their relationship with the trip-making characteristics of visitors. This part of the survey was, therefore, not intended to project the overall characteristics of visitors to Hong Kong, due to the definition of target respondents covered by this survey (see Paragraph 7.1.3 below for details). The following summarises the key demographic data of the TS respondents, against the above background.

7.1.2 It was estimated that, on averge, there were some 99,500 visitors aged 2 and over who stayed in hotels/guesthouses on a weekday. 53% of them were male while 47% were female. Their age distribution is shown in **Figure 7.1** below with the largest proportion (30%) in the age group between 30 and 39.

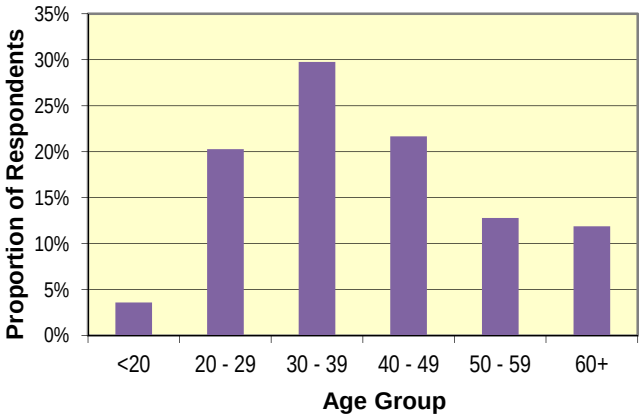


Figure 7.1 : Age Distribution of Visitor Respondents

7.1.3 The countries/territories of residence of the respondents are summarised in **Table 7.1**. The highest proportion (48%) was from the Mainland/Macau, but as compared with the Hong Kong Tourism Board's visitor arrival statistics by country/territory of residence, the proportion of visitors from the Mainland/Macau and Taiwan were substantially lower in this TS. This could be explained by the fact that respondents of the subject survey did not include visitors living in households or places other than hotels/guesthouses, nor did it include same-day visitors (as only visitors in Hong Kong anytime between 3:00 a.m. the day before and 3:00 a.m. of the day of interview were enumerated). The non-coverage of the TS would likely under-estimate the visitors from the Mainland/Macau and Taiwan as compared to the number of visitors indicated on immigration records. This point needs to be recognised when interpreting the results of the TS.

Table 7.1 Proportion of Visitor Respondents by Main Country/Territory of Residence

Main country / territory of residence	TCS 2011 (1)	Hong Kong Tourism Board (2)
The Mainland/ Macau	47.6%	69.0%
Taiwan	3.6%	5.1%
South East Asian Countries	20.5%	11.4%
Japan	3.7%	3.1%
European countries	9.5%	2.9%
United States	4.8%	2.9%
Canada	2.0%	1.0%
Australia / New Zealand	5.4%	1.8%
Other countries	2.9%	2.8%
Total	100.0%	100.0%

Source: (1) TS results only covered visitors who stayed at hotels/guesthouses. The results could be quite different from the immigration records due to the difference in coverage.

(2) Jan-Dec 2011 figures extracted from the Hong Kong Monthly Digest of Statistics, Census & Statistics Department and Hong Kong Tourism Board's Visitor Arrival Statistics.

7.1.4 The main purposes of their visits to the HKSAR are illustrated graphically in **Figure 7.2**. The largest proportion (45%) were for sightseeing, followed by those who came for work/business (25%).

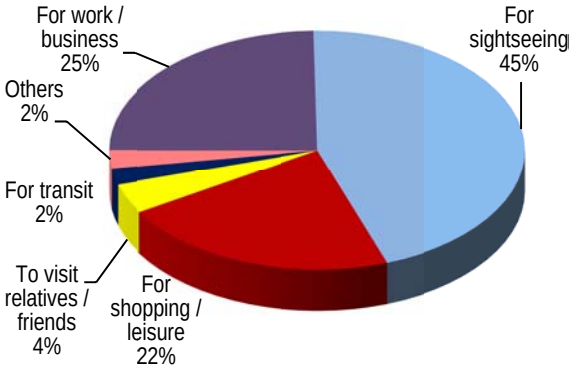


Figure 7.2 : Main Purposes of Visit

7.2 Average Number of Mechanised Trips Made on a Weekday

7.2.1 It was estimated that among those visitors aged 2 and over who stayed in hotels/guesthouses, a large majority (90%) had made mechanised trips within the HKSAR on a weekday (excluding public holiday). The remaining 10% of visitors either just made walk-only trips to places in the vicinity of their hotels/guesthouses (7%) or had not made any trip on the surveyed day (3%).

7.2.2 The average total number of mechanised trips made by these visitors on a weekday was estimated to be 229,000. This was more than double of the 103,000 mechanised trips estimated in the 2002 survey. Such an increase was generally in line with the growth in population of visitors staying in hotels/ guesthouses which was also doubled from 2002 to 2011. In 2011, the mechanised trips generated by the hotel/guesthouse visitors was less than 2% of the total number of mechanised trips made by Hong Kong residents on a weekday.

7.2.3 It has to be emphasised however that the above estimate was based on what reported by the respondents and expanded according to the number of hotel/guesthouse rooms. It would be subject to respondents' under-reporting of trips when there was little basis for adjustment due to the lack of independent observed data.

7.3 Characteristics of Mechanised Trips Made

Purpose of Trips

7.3.1 For visitors staying in hotels/guesthouses, their base would be the hotel/guesthouse where they stayed, very much similar to "home" for residents. On that basis, the trip purposes of visitors are categorised by "hotel-based" and "non-hotel-based", with the "hotel-based" trips further classified by 5 purposes defined according to the nature of the place and major activity performed at the non-hotel end of the trips:

- Sightseeing
- Shopping
- Work
- Dining
- Others

7.3.2 The proportions of daily trips made by these visitors staying in hotels/guesthouses, for the 6 trip purposes are illustrated in **Figure 7.3**. Mechanised trip rates, defined as the average number of mechanised trips made daily per visitor, by the six trip purposes are summarised in **Table 7.2** and compared against the 2002 survey results.

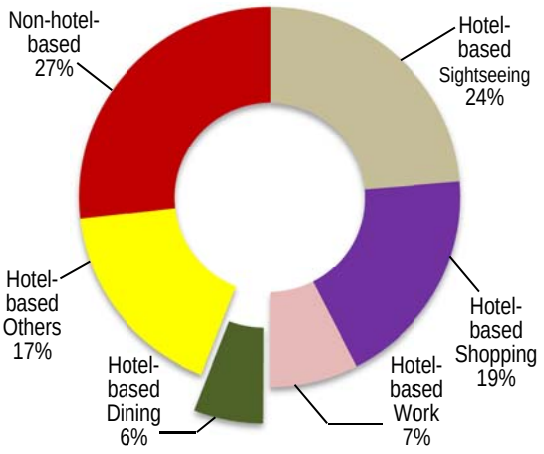


Figure 7.3 : Proportions of Visitors' Mechanised Trips by Trip Purpose

Table 7.2 Visitors' Mechanised Trip Rates by Trip Purpose in 2002 and 2011

Trip purpose	Daily Mechanised Trips per Visitor	
	2002	2011
Hotel-based		
- Sightseeing	0.34	0.54
- Shopping	0.37	0.43
- Work	0.27	0.18
- Dining	0.23	0.13
- Others	0.40	0.40
Non-hotel-based	0.57	0.62
Total	2.18	2.30

7.3.3 The average total mechanised trip rate of a visitor was estimated to be 2.30 trips per day, slightly higher than the 2.18 trips in 2002. In particular, the hotel-based sightseeing trip rate in 2011 is much higher than that revealed in 2002. In contrast, both the hotel-based work and hotel-based dining trip rates in 2011 are lower than those in 2002. This could be attributed to the change in composition of visitors, for example, a significant increase in the proportion of visitors from the Mainland who tended to make more hotel-based sightseeing and shopping trips but less work and dining trips as compared to visitors from other countries/territories. Also, new sightseeing attractions such as the Hong Kong Disneyland, Avenue of Stars and Ngong Ping 360 had opened after 2002 that could contribute to the increase in sightseeing trips.

Trip-making Time

7.3.4 **Figure 7.4** illustrates the profiles of mechanised trips made by the visitors, against the time of day for the six trip purposes. In general, the mechanised trips made by visitors staying in hotels/guesthouses spread out rather evenly during the day, starting from 9:00 a.m. in the morning until late at night (11:00 p.m.). Less distinctive peaks for the trips occurred at 10:00 – 11:00 a.m. in the morning and 6:00 – 7:00 p.m. in the evening. The two peak hours each accounted for about 8% of the daily trip total.

7.3.5 In the morning, peak hour for the visitors' trips was later than that of the Hong Kong residents which occurred at 8:00 – 9:00 a.m. The evening peak hour for the visitors' trips however coincided with the commuter's peak hour at 6:00 – 7:00 p.m.

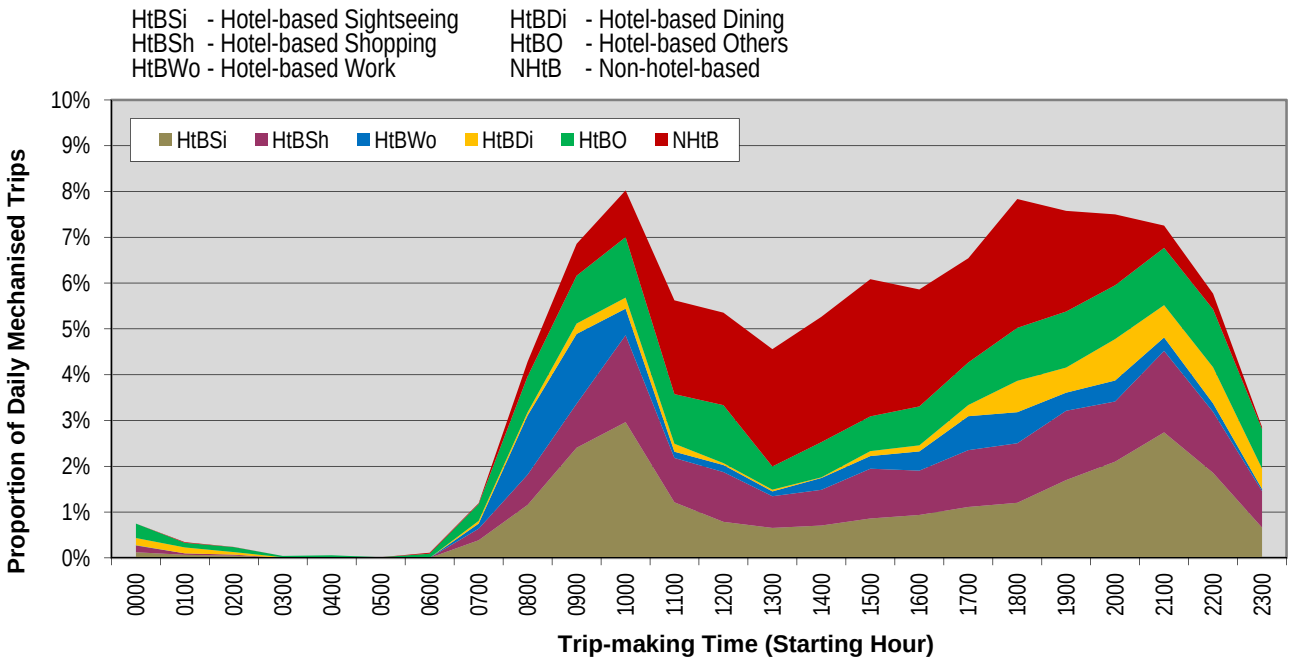


Figure 7.4 : Hourly Profiles of Visitors' Mechanised Trips

Trip Journey Time

7.3.6 As revealed from the survey results, 23% of the mechanised trips made by the visitors took less than half an hour to complete, 44% half an hour to less than one hour, and the remaining 33% one hour or more. The mean journey time was 43 minutes, longer than the 35 minutes in 2002. As compared to the mechanised trips made by Hong Kong residents (mean 40 minutes), the average journey time for visitors' trips was longer.

7.3.7 Comparison of average journey time by trip purpose in **Table 7.3** shows that longer journey time was involved for hotel-based sightseeing trips and hotel-based others trips (which included trips between boundary control points and hotels when arriving or leaving the HKSAR). In 2011, the mean journey time of trips for these two purposes were 53 and 51 minutes respectively, as compared to 29 – 41 minutes for the other trip purposes.

Table 7.3 Average Journey Time of Visitors' Mechanised Trips by Trip Purpose in 2002 and 2011

Trip Purpose	Mean Journey Time (minutes)	
	2002	2011
Hotel-based		
- Sightseeing	44	53
- Shopping	27	36
- Work	25	29
- Dining	26	30
- Others	50	51
Non-hotel-based	31	41
Overall	35	43

7.3.8 As also indicated in the above table, the mean journey time of the visitors' trips were longer in 2011 than in 2002 across all trip purposes. The increases in journey time were most notable for hotel-based shopping and non-hotel-based trips.

Trip Movements

7.3.9 For the mechanised trips made by the visitors, some 15% started and ended within the same broad district, with 6% made within Yau Ma Tei / Tsim Sha Tsui (Yau Tsim) district, 2% within Central & Western district (including the Peak), and 2% within Wan Chai district (including Causeway Bay). For those which crossed districts, the most significant movements were between Yau Tsim and Central & Western, and between Yau Tsim and Wan Chai districts, each accounting for close to 7% (some 15,000 trips) of the total number of mechanised trips made by these visitors on a daily basis. They were followed by the movement between Yau Tsim and North Lantau districts which accounted for about 6% (some 13,000 trips) of the daily trips total.

7.3.10 Overall, Yau Tsim district was found to be the most significant generation/attraction district for mechanised trips made by visitors, which was followed by Central & Western and Wan Chai districts. These are the districts where most of the hotels/guesthouses are located and where most of the main activities of visitors related to shopping and dining etc. took place.

Yau Ma Tei/Tsim Sha Tsui was the district attracting most visitor trips in both 2002 and 2011

Mechanised Transport Modes Taken

7.3.11 As shown in **Table 7.4**, the most popular transport mode taken by the visitors was MTR (including Airport Express) (35%), followed by tourist bus (including shuttle bus provided by hotel) (25%) and taxi (20%). Franchised bus which was popular among Hong Kong residents, only accounted for 8% of the boardings made by the visitors, as most of the visitors might not be familiar with the routing and service details of buses and were generally more willing to pay more for other more direct transport services.

Table 7.4 Proportions of Boardings of Visitors by Mechanised Transport Mode in 2002 and 2011

Transport Mode	Distribution of Boardings	
	2002	2011
MTR (including Airport Express)	*26%*	*35%*
Tourist Bus (including shuttle bus provided by hotel)	*23%*	*25%*
Taxi	*25%*	*20%*
Franchised Bus	*8%*	*8%*
Private Vehicle	*7%*	*4%*
Ferry	*6%*	*3%*
LRT / Tram	*1%*	*2%*
Others	*4%*	*3%*
Total	*100%*	*100%*

7.3.12 As compared with the 2002 survey results, the mode share by MTR had increased significantly, largely attributed to the expansion of railway network. Most of the new tourist attractions opened after 2002 are easily accessible by MTR therefore encouraging more rail use. The proportion of visitor boardings by tourist bus had also increased between 2002 and 2011. The shares of other modes generally declined, with the reductions in private vehicle and taxi use being most notable.

7.3.13 The majority (86%) of the mechanised trips made by visitors involved only one mechanised trip leg; 13% comprised two legs, and 1% three legs. The average number of boardings per trip was derived to be 1.15, marginally less than that for Hong Kong residents (1.17 boardings/trip). Among the six trip purposes, hotel-based sightseeing and hotel-based others trips had higher average number of boardings per trip, estimated at 1.27 and 1.21 respectively. This also explains why their average journey times were longer than those for other trip purposes.

7.4 Most Popular Sightseeing and Shopping Attractions for Visitors

7.4.1 A particular interest of the TS was to understand the major sightseeing spots and shopping centres which were the most popular to the tourists/visitors, and to derive the visitors' travel demand to these attractions.

7.4.2 It was estimated from the survey that of the 229,000 mechanised trips made on a weekday by visitors aged 2 and over who stayed in hotels/ guesthouses, 27% or some 63,000 trips were made to various sightseeing spots. Of the sightseeing spots visited, the two most popular ones were "The Peak" and "Hong Kong Disneyland", each accounting for about 15% of the total number of visits. They were followed by "Avenue of Stars" (13%), "Ocean Park" (12%), "Ladies' Street/Sneaker Street in Mong Kok" (10%) and "Golden Bauhinia Square" (5%). Refer to **Table A.6** of the Appendix for details.

7.4.3 In particular for the visitors from the Mainland/Macau, "Hong Kong Disneyland" (17%) was the most popular sightseeing spot. The proportions of visitors from the Mainland/Macau found visiting "Avenue of Stars" (16%), "Ocean Park" (16%), and "Golden Bauhinia Square" (9%) were also higher, while less of them visited the "The Peak" and "Ladies' Street/Sneaker Street in Mong Kok", as compared with visitors from other countries/territories.

The Peak was the most popular sightseeing spot visited by tourists/visitors who stayed in hotels/ guesthouses

7.4.4 It was also revealed from the survey that 16% of the mechanised trips made by visitors on a weekday or about 37,000 trips were to various shopping centres/malls. Of those shopping centres/malls visited, the ones located in Yau Tsim district were most patronised by visitors (34%). Wan Chai (also covering Causeway Bay)" was the second most popular shopping district for visitors that accounted for about 25% of the total trips made by visitors to shopping centres/malls. It was then followed by Central & Western (18%). Further details are presented in **Table A.7** of the Appendix.

7.4.5 The trip pattern for visitors from the Mainland/Macau was found to be quite similar to visitors from other countries/territories for shopping, with the shopping centres in Yau Tsim and Wan Chai being their most popular shopping venues. A slightly smaller proportion of visitors from the Mainland/Macau went to Central & Western district for shopping, as compared with visitors from other countries/territories.

8. NEXT STEP

8.1 Application of Data for Model Enhancement

8.1.1 One of the prime objectives of the TCS 2011 is to provide up-to-date travel characteristics data and information to facilitate the continuous enhancement of the Comprehensive Transport Study (CTS) model. The current CTS model was developed based on the Travel Characteristics Survey (TCS) 2002 data. Although periodically adjusted for validation purpose, the model form and most of the calibrated model parameters are some 10 years old and in need of major review and updating to better reflect the current travel behaviour of Hong Kong residents.

Up-to-date travel characteristics data collected by TCS 2011 will be applied for subsequent enhancement of the CTS model

8.1.2 The mainstay of the model development will be the household and personal travel data extensively collected in the Household Interview Survey (HIS). All the data will form thoe basis for subsequent re-calibration and enhancement of the CTS model at the next stage of the "Comprehensive Transport Study Model Enhancement - Feasibility Study".