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Behavioural Risk Factor Survey (April 2007)

Draft Report

Commissioned by



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Executive Summary

Introduction

The Social Sciences Research Centre of the University of Hong Kong (SSRC) was commissioned by the Department of Health in April 2007 to conduct a survey on behavioural risk factors. This survey aimed to detect changes in health risk and behaviour as well as to collect further information on the health related behavioural issues among the Hong Kong population. This will provide information to facilitate the planning, implementation and evaluation of health promotion programmes on the prevention of diseases related to lifestyle and behaviour.

The scope of this survey encompassed the following:

- 1 Distribution of body mass index (BMI) and waist circumference
- 2 Prevalence of obesity/overweight/underweight
- 3 Pattern of physical activity
- 4 Dietary and eating out habits
- 5 Pattern of alcohol consumption
- 6 Smoking habit
- 7 Cervical screening (for female respondents only)
- 8 Attitude towards organ donation
- 9 General health status
- 10 Influenza vaccination
- 11 Demographic information: gender, age, education, marital status, occupation, monthly personal income, monthly household income, household size and type of living quarters.

Research Methodology

This survey was conducted by using Computer Assisted Telephone Interviews (CATI). The sample was drawn randomly from a list of telephone numbers, which included unlisted and new numbers. The target respondents were Cantonese, Putonghua or English speaking residents in Hong Kong (excluding domestic helpers) aged 18-64. A bilingual (Chinese and English) questionnaire with 77 questions was used to collect data. Fieldwork took place between the 23^{rd} April and 25^{th} May 2007. A sample size of 2 074 successful interviews was achieved. The contact rate was 43.2% and the overall response rate was 67.6%. The width of a 95% confidence interval was at most +/- 2.2%. Weighting was applied based on age and gender in order to make our findings more representative, using the Hong Kong population data compiled by the Census and Statistics Department for end-2006 as reference.

Statistical tests were applied to investigate if there is any significant association between demographics and the response variables. Only the statistically significant findings at the 5% level (2-tailed) are presented in the report.

Key Findings of the Survey

Body weight control

Using the World Health Organization (WHO)'s standard Asian classification of weight status, less than half of the respondents (48.3%) were considered as 'normal'. More than one-fifth (22.9%) of the respondents were considered as 'obese' and 17.9% were regarded as 'overweight'. The rest (10.9%) was considered as 'underweight'.

Regarding the perception of respondents' current weight status, about half of the respondents (49.9%) perceived their current weight as 'just right', more than two-fifths (42.1%) felt that they were 'overweight' and 8.0% found themselves 'underweight'. Overall, 65.0% of the respondents perceived their weight status in a way consistent with the WHO criteria, while 19.8% of the respondents overestimated and 15.2% of them underestimated their weight status. Females, the older respondents (aged 35 years or above), those with secondary education level or below and the divorced/separated/widowed or married respondents were more likely to view themselves as 'overweight'.

Only 15.3% of respondents claimed that they had a weight difference of more than 10 pounds when compared with one year ago. Among these respondents, 65.0% claimed that they had a weight increase.

During the 12 months prior to the survey, close to three-tenths (29.2%) of the respondents had done something deliberately to control their weight, of which 56.9% of them aimed to lose weight. Among those respondents who had done something deliberately to control their weight, the most commonly used methods to control weight were 'doing physical exercise' (86.2%) and 'changing dietary habit' (75.4%).

Physical activities/exercise

This survey revealed that most respondents engaged in limited physical activity. Over half of the respondents had not engaged in any moderate exercise (56.4%) or vigorous exercise (65.3%) for at least 10 minutes a day during the week prior to the survey. On the other hand, walking was the most common form of physical activity and 72.0% of the respondents had spent at least 10 minutes on walking everyday in the week prior to the survey. The survey also revealed that respondents had spent long hours sitting during the day, as shown by an average of 6.4 hours per day during weekdays (Monday to Friday) in the week prior to the survey.

Based on the categorical scoring of the International Physical Activity Questionnaire (IPAQ) analysis, most of the respondents' level of physical activity was classified as

'moderate' (57.5%) or 'low' (19.2%). The proportion of respondents having 'high' level of physical activity was 23.3%. Females, respondents aged 35-44, those with primary education level or below, clerks and managerial/professional workers were more likely to have 'low' level of physical activity than their respective counterparts.

Dietary habits

In general, vegetables appeared to be more frequently consumed than fruit by the respondents. Most respondents (79.5%) had eaten vegetables on a daily basis while over half of the respondents (50.5%) had eaten fruit everyday. Moreover, regular fruit/vegetable juice consumption was found to be uncommon amongst respondents, as only 3.4% of the respondents drank fruit/vegetable juice daily. The average daily intake of fruit and vegetables by the respondents was only 3.3 servings (including juice).

Overall, around one-fifth of the respondents (including juice: 19.4%; excluding juice: 18.4%) had a daily average intake of 5 or more servings of fruit and vegetables in the week prior to the survey. Males, younger respondents (aged 18-24 years) and never married respondents were less likely to have consumed at least the recommended 5 servings of fruit and vegetables a day than their respective counterparts.

On average, about three quarters (75.1%) of the respondents ate less than 3 bowls of grains and cereals per day. 15.5% of the respondents ate 5 to 6 taels of meat and fish per day while a larger proportion of respondents (32.1%) ate more than 6 taels of meat and fish per day. More than one-tenth (13.7%) consumed at least one serving of dairy product each day. More than two-thirds (67.6%) of the respondents had more than 6 cups of fluid each day.

About one-third of the respondents (32.8%) ate out for breakfast 5 times or more per week. Over half (52.9%) of the respondents ate out for lunch 5 times or more per week while slightly more than one-tenth (11.0%) of the respondents ate out for dinner 5 times or more per week.

Pattern of alcohol consumption

More than three-fifths of the respondents (64.4%) had ever consumed at least one alcoholic drink. In addition, less than two-fifths of the respondents (37.5%) were drinkers who had drunk at least one alcoholic drink during the month prior to the survey. On the whole, drinking during the month prior to the survey was more prevalent among males, aged 25 - 34, divorced/ separated/ widowed, those with tertiary education level or above, managerial/professional workers, those with monthly household income of \$40,000 or above and living in private housing.

Among the drinkers who had drunk during the month prior to the survey, 23.7% of them reported that they had engaged in binge drinking (drinking 5 or more glasses/cans of alcohol on one occasion) at least once in the month prior to the survey.

Among those engaged in binge drinking in the month prior to the survey, more than one-third of them (37.3%) did so three times or more in the month prior to the survey. Binge drinking was more common among males, those aged 25-34, those not completed secondary education or those with a secondary education level, never married respondents, service workers and blue collar workers.

According to the British guidelines on safer drinking, 27.8% of the drinkers who had drunk during the month prior to the survey were found to have exceeded the recommended low risk level. Males, divorced/ separated/ widowed, service workers, those drinkers who had or had not completed secondary education and with monthly household income of \$14,000- \$19,999 were more likely to exceed the low risk level.

Smoking habit

16.9% of the respondents were current smokers at time of this survey. A relatively higher proportion of current smokers who reported smoking more than 20 cigarettes a day were found amongst males, those aged 45-64, those with primary education level or below, blue collar workers and those living in public rental flats.

Cervical screening

Nearly two-thirds (63.3%) of the female respondents reported that they had had a cervical smear before. Females aged below 35, those with matriculation education level or above, never married respondents and those with monthly household income of below \$14,000 or \$20,000 - \$39,999 were less likely to have had a cervical smear than their counterparts.

Attitude towards organ donation

Most of the respondents (95.1%) reported that they would not object to their family members donating organs. Respondents who had not completed secondary education, working as service workers and blue collar workers, those who had monthly household income between \$8,000 and \$13,999, and those living in public rental flats were more likely to object to their family members donating organs.

Among the respondents who would object the donation, 33.9% of them reported that they would like to keep their family members' body intact whereas a quarter of them (25.8%) were due to personal preference. Even though their family members had expressed their will to donate organs, 29.4% of the respondents reported that they would still object to the donation.

In addition, over two-thirds (68.9%) of the respondents reported that they were willing to donate their organs after death. Notably, 22.3% of the respondents reported that they had not made the decision yet. Only 8.8% of the respondents reported that they were not willing to donate organs. Respondents aged 25-34, tertiary educated or above, working as managerial or professional workers, had a monthly household income of \$40,000 or above and living in private housing were more likely willing to

donate organs after death.

Among those not willing to donate organs, a quarter (25.3%) were due to personal beliefs whereas about one-fifth because they would like to keep their body intact (20.0%) or based on their personal preference (18.0%). Among the respondents who were willing to donate their organs, however, more than two-fifths (44.7%) had done nothing to express their wish to donate organs.

General health status

38.3% of respondents claimed that their general health status was 'good', 'very good' or 'excellent', whereas 7.8% claimed that their general health status was 'poor'.

One-third (33.3%) of the respondents considered that their health condition was 'better' or 'much better' when compared with people of their own age. On the other hand, 14.0% of respondents considered that their health condition was 'worse' or 'much worse' than those of their age.

Only 15.0% of respondents reported that their current health condition was 'better' or 'much better' when compared with 12 months ago. In contrast, over a quarter (26.8%) of the respondents claimed that their current health condition was 'worse' or 'much worse'.

Influenza vaccination

Only about a quarter (26.3%) of the respondents had ever had an influenza vaccination injection, of which about half (52.3%) had the injection within 12 months. A relatively higher proportion of the respondents who reported having the influenza vaccination in the past were found amongst females, those with tertiary education level or above, managerial or professional workers and those with monthly household income of \$40,000 or above.

Recommendations

Some recommendations based on the survey findings are suggested below:

- 1. The survey results showed that more than three-fifths of the 'underweight' respondents considered themselves as 'just right' (60.4%) or 'overweight' (4.4%). Furthermore, close to one-fifth of the respondents had low level of physical activity and less than one-fifth (including juice: 19.4%; excluding juice: 18.4%) had a daily average intake of five or more servings of fruit and vegetables in the week prior to the survey. Thus, the importance of maintaining normal body weight, engaging in regular physical activity and healthy eating needs to be further emphasized. Frequent and extensive promotion should be provided to educate the community about:
 - i. proper assessment of body weight status, such as using the Body Mass

Index (BMI);

- ii. proper methods of maintaining normal body weight, such as increased physical activity and having healthy diets;
- iii. the benefits of regular physical activity, such as reducing the risk of developing various chronic diseases; and
- iv. use the Food Pyramid as a guide to choose different categories of foods and amount to obtain a balanced diet, such as eating most grains and cereals (about 3-6 bowls per day), more fruit and vegetables (at least 5 servigns a day) with moderate amount of milk, cheese and dairy products (1-2 servings per day), and dinking 6-8 cups of fluid a day.
- 2. Close to three-tenths of drinkers (27.8%) had their drinking habit exceeding the specific guidlelines on safer drinking. Promotion of sensible drinking should be particularly targeted at male drinkers, those divorced/separated/widowed, service workers and those with lower education level.
- 3. Generally, most of the respondents were willing to donate organs and not objecting their family members to donate organs. However, more than two-fifths of those who were willing to donate their organs (44.7%) had done nothing to express their wish. Promotion may be needed to encourage people to express their wish to donate organs by telling their family members or signing the organ donation card.
- 4. Health is not only be related to personal characteristics such as gender, age, education level, marital status, occupation, income level and type of living quarters, but also determined by certain socio-economic and environmental factors. Therefore, such underlying factors should be taken into account when planning health promotion programmes as to ensure overall health in the community.

Chapter 1 Introduction

The Social Sciences Research Centre of the University of Hong Kong (SSRC) was commissioned by the Department of Health to conduct a survey on behavioural risk factors in April 2007. This survey aimed to detect changes in health risk and behaviour as well as to collect further information on the health related behavioural issues among the Hong Kong population. This will provide information to facilitate the planning, implementation and evaluation of health promotion programmes on the prevention of diseases related to lifestyle and behaviour.

The scope of this survey encompasses the following:

- Distribution of body mass index (BMI) and waist circumference
- Prevalence of obesity/overweight/underweight
- Pattern of physical activity
- Dietary and eating out habits
- Pattern of alcohol consumption
- Smoking habit
- Cervical screening (for female respondents only)
- Attitude towards organ donation
- General health status
- Influenza vaccination
- Demographic information: gender, age, education, marital status, occupation, monthly personal income, monthly household income, household size and type of living quarters

Chapter 2 Research Methodology

2.1 Sampling method

Telephone interview by using CATI (Computer Assisted Telephone Interview) was adopted. A random sample was drawn from 32 000 residential telephone numbers. These numbers were generated from the 2005 English residential telephone directory¹ by dropping the last digit, removing duplicates, adding all 10 possible final digits, randomizing order, and selecting as needed. This method provides an equal probability sample that covers unlisted and new numbers².

Where more than one eligible person resided in a household and more than one was present at the time of the telephone contact, the 'Next Birthday' rule was applied to each successful contacted residential unit, i.e., the household member who had his/her birthday the soonest was selected. This reduces the over-representation of housewives in the sample.

2.2 Target respondents

Eligible respondents were residents in different districts of Hong Kong aged between 18 and 64. They were Cantonese, Putonghua or English speaking. Domestic helpers were excluded.

2.3 Questionnaire design

A bilingual (Chinese and English) questionnaire with 55 pre-coded questions and 22 open-ended questions (with 10 demographics questions) was designed to cover the following 11 areas:

- Body height, weight and waist circumference
- Weight control
- Pattern of physical activity
- Dietary habits
- Eating out habits
- Pattern of alcohol consumption
- Smoking habits
- Cervical screening (for female respondents only)
- Attitude towards organ donation
- General health status
- Influenza vaccination
- Demographic information: gender, age, education, marital status, occupation, monthly personal income and monthly household income, household size and type of living quarters

A copy of the questionnaire is enclosed in Annex A.

¹ The Chinese residential telephone directory was not used because the total number of telephone contacts is less than the English residential telephone directory. This process has a lower response rate than pure directory sampling which does not cover unlisted and new numbers.

 $^{^2}$ This selection process includes some business and fax numbers so that the contact rate is lower than a pure directory sample.

2.4 Pilot study

A pilot study comprising 53 successfully completed interviews was conducted on 20th March and 21st March 2007 to test the length, logic, wording and format of the questionnaire. The data collected from these pilot interviews were not counted as part of the survey report.

2.5 Fieldwork

Fieldwork took place between the 23rd April and 25th May 2007. Because of the briefing, telephone calls were made between 9:00 p.m. and 10:30 p.m. on 23rd April. From 24th to 28th April, 30th April, 2nd May to 5th May, 7th to 11th May, 14th May to 18th May, 21st May to 23rd and 25th May, telephone calls were made between 4:30 p.m. and 10:30 p.m.

2.6 Response rate

A total of 28 622 telephone numbers were attempted. The number of successful interviews was 2 074. Refusal and dropout cases amounted to 994. All 'not available' (6 598), and 'no answer' (6 392) cases were attempted three times before being classified as 'not available' and 'no answer' cases. The contact rate was $43.2\%^3$ and the overall response rate was $67.6\%^4$. Table 2.6 details the breakdown of the final telephone contact status.

Туре	Final status of contacts ⁵	Number of cases
1	Success	2 074
2	Drop-out	220
3	Refusal	774
4	Language problems	48
5	Not eligible	551
6	Business lines	2 087
7	Not available	6 598
8	Busy tone	599
9	No answer	6 392

Table 2.6: Final status of telephone numbers attempted

³ Contact rate = the number of answered telephone calls divided by the total number of calls attempted, i.e. from Table 2.6, Sum of (types 1 to 7) / Total = $(2\ 074+220+774+48+551+2\ 087+6\ 598)/28\ 622 = 43.2\%$.

⁴ Response rate = the number of successful interviews divided by the sum of the numbers of successful interviews, drop-out cases and refusal cases, i.e. from Table 2.6, (type 1) / (type 1 + type 2 + type 3) = 2.074/(2.074+220+774)=67.6%.

⁵ 'Drop-out': eligible respondents who initially accepted the interview but failed to complete the interview due to some reasons. 'Refusal': eligible respondents who refused the interview. 'Language problems': eligible respondents who were not able to speak clearly in any of our 3 languages. 'Not available': eligible respondents were busy at the time of telephone contact. 'Invalid': not a valid telephone line (because we used a random method to generate telephone numbers, see section 2.1).

10	Fax/data lines	1 310
11	Invalid	7 969
TOTAL		28 622

2.7 Sample size and sample error

A sample size of 2 074 successful interviews was achieved (the target sample size was 2 000). The width of a 95% confidence interval is at most $+/-2.2\%^{6}$. This means that we can have 95% confidence that the true population proportion falls within the sample proportion plus or minus 2.2%. For example, 80% of the respondents in the sample claimed that their weight differed by more than 10 pounds when compared with one year ago. Then the conservative 95% confidence interval for the true percentage of the population stating a weight difference for the above question falls between 80% \pm 2.2%, i.e. 77.8% and 82.2%.

2.8 Quality control

All SSRC interviewers were well trained in a standardized approach prior to the commencement of the survey. All interviews were conducted by experienced interviewers fluent in Cantonese, Putonghua and English.

The SSRC engaged in quality checks for each stage of the survey to ensure satisfactory standards of performance. At least 15% of the questionnaires completed by each interviewer were checked by the SSRC independently.

2.9 Data processing and statistical analysis

This survey revealed some differences in gender and age proportions when compared with the Hong Kong population data compiled by the Census and Statistics Department (C&SD) for end-2006. The proportions of respondents among age groups 18-24, 40-44, 45-49, 50-54, 55-59 and 60-64 were higher than the population while the proportions of respondents aged 25-29, 30-34 and 35-39 years old were lower. The sample also contained a higher percentage of females when compared with the population. Table 2.9a shows the differences in terms of age and gender.

$$\pm 1.96 \times \sqrt{\frac{0.5 \times 0.5}{2074} \times 100} = 2.2\%$$

⁶ As the population proportion is unknown, 0.5 is put into the formula of the sampling error to produce the most conservative estimate of the sampling error. The confidence interval width is:

Age	This survey			Hong Kong population data – from the C&SD(end 2006)*		
Group	Male	Female	Total	Male	Female	Total
	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total
18-24	8.90	8.51	17.42	6.41	6.86	13.27
25-29	2.95	3.53	6.48	4.62	5.78	10.40
30-34	3.43	4.74	8.18	4.92	6.46	11.38
35-39	3.87	7.31	11.18	5.08	6.85	11.93
40-44	4.16	10.93	15.09	6.22	7.58	13.80
45-49	5.18	9.14	14.32	6.66	6.96	13.62
50-54	4.21	7.98	12.19	5.61	5.71	11.33
55-59	3.63	5.76	9.39	4.53	4.41	8.95
60-64	2.61	3.14	5.76	2.77	2.56	5.33
Total	38.95	61.05	100.00	46.83	53.17	100.00

Table 2.9a: Distribution differences of age and gender between this survey and theHong Kong population data compiled by the C&SD for end-2006

* Provisional figures obtained from the C&SD

In view of the demographic differences between this sample and the population, weighting was applied to gender and age in order to make the results more representative of the general population. The weights are the ratio of the age and gender distribution of the population to that of this sample (Table 2.9b).

Age	Male	Female
18-24	0.719888524	0.806229999
25-29	1.566648356	1.635518975
30-34	1.432599148	1.362084899
35-39	1.311997996	0.937732255
40-44	1.495539185	0.693046170
45-49	1.287025707	0.760942006
50-54	1.333557254	0.715829368
55-59	1.249155890	0.766829551
60-64	1.060416064	0.812638929
Age data missing	1.000000000	1.000000000

Table 2.9b: Weights by age and gender applied in the analyses

Statistical tests were applied to study the significant differences between sub-groups. Associations between selected demographic information and responses of selected questions were examined. Significance testing was conducted at the 5% level (2-tailed). The statistical software, SPSS for Windows version 13.0, was used to perform all statistical analyses.

Chapter 3 Findings of the Survey

This chapter presents the findings of this survey after weighting for gender and age. Some percentages may not add up to the total of 100% because of rounding.

3.1 Demographics

This section briefly describes the characteristics of respondents in this survey (Table 3.1).

3.1.1 Gender and age

Weighting was applied to gender and age in the survey such that the distribution of gender and age reported in Table 3.1 matches the Hong Kong population data compiled by the C&SD for end-2006 (Table 2.9a).

3.1.2 Marital status

More than half (53.4%) of all respondents were married with child/children and 8.9% were married without child. Around one-third (33.1%) were never married, while 3.2% were divorced or separated. Only 1.5% of respondents were widowed.

3.1.3 Educational attainment

A larger proportion of the respondents had an education level of secondary or above, of which 38.7% had either completed secondary (F.5) or matriculation and 31.5% attained tertiary education or above. The rest (29.8%) had an education level of lower secondary or below.

3.1.4 Occupation

35.7% of respondents were not working. This included 8.8% students, 16.7% homemakers, 4.5% unemployed and 5.7% retired persons or other non-working persons.

For working respondents, the largest proportion was clerks (14.8%), followed by associate professionals (10.0%) and professionals (7.5%).

3.1.5 Income

Most of the respondents had a monthly personal income of less than \$20,000 (40.2% had a monthly personal income of \$10,000-\$19,999 and 31.1% had a monthly personal income of below \$10,000).

Regarding the monthly household income, a larger proportion of the respondents had income of \$10,000-\$19,999 (27.4%), followed by \$30,000-\$49,999 (22.1%) and \$20,000-\$29,999 (19.8%).

3.1.6 Household size

More than half of the respondents (62.5%) were living in the household with 3 or 4 people (including the respondent but excluding domestic helpers).

3.1.7 Type of living quarters

Most of the respondents were living in private residential flats (51.5%), followed by public rental flats (26.7%) and Housing Authority subsidized sale flats (14.5%).

Tuble 5:11 Demographie	inger intanten (g		
Gender	Base = 2 074	Occupation	Base = 2 049
Male	46.8%	Employer/ Manager/	6.0%
Female	53.2%	Administrator	0.070
		Professional	7.5%
		Associate professional	10.0%
		Clerk	14.8%
		Service worker	6.6%
Age	Base = 2 067	Shop sales worker	4.2%
18-24	13.3%	Skilled agricultural/ fishery	0.20/
25-29	10.4%	worker	0.2%
30-34	11.4%	Craft and related worker	4.2%
35-39	11.9%	Plant and machine operator	4 10/
40-44	13.8%	and assembler	4.1%
45-49	13.6%	Unskilled worker	6.9%
50-54	11.3%	Student	8.8%
55-59	8.9%	Home-maker	16.7%
60-64	5.3%	Unemployed person	4.5%
		Retired person or other	5 70/
		non-working person	5.7%
Marital Status	Base = 2 069	Monthly Personal Income	Base =1 225
Never married	33.1%	Below \$ 10,000	31.1%
Married and with	53.4%	\$10,000-\$19,999	40.2%
child(ren)		\$20,000-\$29,999	13.6%
Married and without	8.9%	\$30,000-\$49,999	9.8%
child		\$50,000 or above	5.2%
Divorced/ separated	3.2%		
Widowed	1.5%		
Educational Attainment	Base = 2 074	Monthly Household Income	Base =1 590
Primary or below	11.5%	Below \$ 10,000	13.2%
Had not completed	18.3%	\$10,000-\$19,999	27.4%
secondary		\$20,000-\$29,999	19.8%
Completed secondary	30.2%	\$30,000-\$49,999	22.1%
(F.5)		\$50,000 or above	17.6%
Matriculation	8.5%		
Tertiary or above	31.5%		

Table 3.1: Demographic information $(Q22 - Q31)^7$

 $^{^{7}}$ Refer to the question number in the survey questionnaire, see Annex A.

Type of living quarters	Base =2 064	Household Size (excluding domestic helpers)	Base = 2 071
Public rental flats	26.7%	1	4.5%
Housing Authority subsidized sale flats	14.5%	2	16.3%
Housing Society subsidized sale flats	1.8%	3	28.5%
Private residential flats	51.5%	4	34.0%
Villas/ Bungalows/ Modern village houses	2.2%	5	12.2%
Simple Stone structures/ traditional village house	1.8%	6	3.4%
Staff quarters	1.5%	7 or above	1.0%

3.2 Body weight control

Fourteen questions were asked in this section to ascertain the respondents' height, weight, waist circumference and their weight controlling methods. According to respondents' reported height and weight, their Body Mass Index (BMI) was derived and classified to assess their weight status according to the World Health Organization (WHO) classifications (both European and Asian Standards).

Those respondents with a body height out of the suggested range 100-190cm or body weight out of the suggested range 37-120kg were treated as outliers and excluded from height, weight and BMI analyses. In addition, respondents who were classified as outliers were excluded from analyses in sections 3.2.1 to 3.2.9 also. A total of <u>eleven</u> cases including <u>one</u> pregnant woman were treated as outliers. Furthermore, <u>108</u> cases were excluded from the BMI analyses due to missing data for height or weight.

3.2.1 Height (when not wearing shoes)

The reported height of respondents when not wearing shoes ranged from 127 to 189cm. More than two-fifths (42.4%) of the respondents were within the range from 160.0 to less than 170.0cm, followed by 27.2% in the range from 150.0 to less than 160.0cm. The overall mean and median heights were 164.0cm and 163.0cm respectively (Table 3.2.1).

Height (cm)	Number	% of Total		
Less than 150.0	30	1.5%		
150.0 - <160.0	547	27.2%		
160.0 - <170.0	854	42.4%		
170.0 - <180.0	501	24.9%		
180.0 or above	82	4.1%		
Total	2 015*	100.0%		
Other statistics cm				
Mean	164.0			
Median	163.0			

Table 3.2.1: Height distribution of respondents (percentage, mean and median)(Q2a)

*All respondents excluding outliers, 'don't know' and refusal

3.2.2 Weight (wearing light clothes)

The reported weight of respondents when wearing simple clothes ranged from 38 to 115kg. More than one-third of the respondents (35.5%) fell into the weight range from 50.0 to less than 60.0kg, followed by 26.9% of the respondents in the range from 60.0 to less than 70.0kg. The overall mean and median weights were 60.9kg and 59.0kg respectively (Table 3.2.2).

Weight (kg)	Number	% of Total		
Less than 40.0	2	0.1%		
40.0 - <50.0	313	15.7%		
50.0 - <60.0	709	35.5%		
60.0 - <70.0	536	26.9%		
70.0 - <80.0	283	14.1%		
80.0 or above	153	7.7%		
Total	1 997*	100.0%		
Other statistics	kg			
Mean	60.9			
Median	59.0			

Table 3.2.2: Weight distribution of respondents (percentage, mean and median)(Q2b)

*All respondents excluding outliers, 'don't know' and refusal

3.2.3 Waist circumference

The reported waist circumference of the respondents ranged from 56 to 117cm. Close to two-fifths of the respondents had their waist circumference in the range from 70.0 to less than 80.0 cm (39.8%), followed by 27.3% in the range from 60.0 to less than 70.0cm. The overall mean and median waist circumferences were 75.6 and 76cm respectively (Table 3.2.3).

Table 3.2.3: Waist circumfer	ence distribu	tion of responde	ents (percentage and mean,
median) (Q2c)			

Waist circumference (cm)	Number	% of Total	
Less than 60.0	21	1.1%	
60.0 - <70.0	530	27.3%	
70.0 - <80.0	774	39.8%	
80.0 - <90.0	497	25.6%	
90.0 or above	121	6.3%	
Total	1 943* 100.0%		
Other statistics		cm	
Mean	75.6		
Median	7	76.0	

*All respondents excluding outliers, 'don't know' and refusal

3.2.4 Body Mass Index (BMI)

BMI scores were derived from weight and height by the following formula:

 $BMI = body weight (kg) / [height (m)]^{2}$

3.2.5 Weight status by WHO classification

According to WHO's standard European and Asian classification of weight status, respondents were classified into four categories of weight status as in Table 3.2.5a and Table 3.2.5b respectively.

Based on the European standard, two-thirds of the respondents (66.2%) were classified as 'normal'. 19.8% of respondents were classified as 'overweight' and 3.1% were classified as 'obese'. In addition, about one-tenth (10.9%) of the respondents were regarded as 'underweight'.

Using the Asian standard, slightly less than half of the respondents (48.3%) were considered as 'normal'. About one quarter (22.9%) of the respondents were considered as 'obese' and 17.9% were regarded as 'overweight'. The rest (10.9%) were considered as 'underweight'.

Weight status by WHO classifications	BMI score	Number	% of Total
Underweight	BMI < 18.5	213	10.9%
Normal	BMI 18.5 – <25.0	1 294	66.2%
Overweight	BMI 25.0 – <30.0	386	19.8%
Obese	BMI ≥ 30.0	61	3.1%
	Total	<i>1 955</i> *	100.0%

Table 3.2.5a: WHO classification for weight status (European standard) (Q2a, Q2b)

*All respondents excluding outliers and missing data for height or weight

Weight status by WHO classifications	BMI score	Number	% of Total
Underweight	BMI < 18.5	213	10.9%
Normal	BMI 18.5 – <23.0	945	48.3%
Overweight	BMI 23.0 – <25.0	350	17.9%
Obese	BMI ≥ 25.0	448	22.9%
	Total	1 955*	100.0%

 Table 3.2.5b: WHO classification for weight status (Asian standard) (Q2a, Q2b)

*All respondents excluding outliers and missing data for height or weight

3.2.6 Weight difference from one year ago

When respondents were asked whether they had a weight difference of more than 10 pounds when compared with one year ago, more than four-fifths (83.5%) of them did not report such a difference and 15.3% did so (Fig. 3.2.6a). Among those who had such a weight difference, 65.0% claimed that they had a weight increase while the rest (35.0%) reported that they had a weight reduction of more than 10 pounds (Fig. 3.2.6b).

Fig. 3.2.6a: Weight differed by more than 10 pounds when compared with one year ago (Q3a)



Base: All respondents excluding outliers = 2 063

Fig. 3.2.6b: Weight increased or decreased by more than 10 pounds when compared with last year (Q3b)



Base: Respondents who had a weight difference of more than 10 pounds when compared with one year ago = 316

3.2.7 Perception of current weight status

Half of the respondents (49.9%) perceived their current weight status as 'just right'. 42.1% considered themselves as 'overweight' and only 8.0% considered themselves as 'underweight' (Table 3.2.7a).

Perception of current weight	Number	% of Total
Overweight	869	42.1%
Just right	1 030	49.9%
Underweight	165	8.0%
Total	2 063*	100.0%

 Table 3.2.7a: Perception of current weight status (Q4)

* All respondents excluding outliers and 'don't know'

Table 3.2.7b shows the differences of weight status between the classification of the WHO (Asian standard) and the respondents' perception. 49.7% of respondents considered that their weight status as 'just right', but in fact 48.3% of respondents were actually 'normal' under the WHO classification (Asian standard). On the other hand, 42.3% of respondents perceived themselves as 'overweight', but in fact 40.8% were classified as 'overweight' or 'obese' according to the WHO criteria (Asian standard). Overall, 65.0% of the respondents perceived their weight status in a way consistent with the WHO criteria, while 19.8% of the respondents overestimated and 15.2% of them underestimated their weight status.

 Table 3.2.7b: Comparison of weight status between WHO classification (Asian standard) and respondents' perception of their current weight (Q2a, Q2b, Q4)

 Weight status by WHO classification

Cross-tabulation		Weight status by WHO classification (Asian standard)				
		Underweight	Normal	Overweight	Obese	Total
	Overweight	9	248	205	366	828
	% of Total	0.5%	12.7%	10.5%	18.7%	42.3%
Respondents' perception of current weight	Just right	129	625	138	80	972
	% of Total	6.6%	32.0%	7.1%	4.1%	49.7%
	Underweight	75	71	7	2	155
	% of Total	3.8%	3.6%	0.3%	0.1%	7.9%
	Total	213	945	350	448	1 955
	% of Total	10.9%	48.3%	17.9%	22.9%	100.0%

*All respondents excluding refusal, outliers and missing responses either in the question of perception about current weight or the weight status by WHO classification. The percentages of respondents' perception of current weight are slightly different from Table 3.2.7a since the bases are different

3.2.8 Weight control

During the 12 months prior to the survey, close to three-tenths (29.2%) of the respondents had done something deliberately to control their weight (Fig. 3.2.8a). Among these respondents, 56.9% of them aimed to lose weight, 38.2% aimed to maintain weight and 4.9% reported trying to increase weight (Fig. 3.2.8b).

Fig. 3.2.8a: Controlling weight deliberately in 12 months prior to the survey (Q5a)



Base: All respondents excluding outliers = 2 063

Fig. 3.2.8b: Purpose of controlling weight (Q5b)



Base: Respondents who had deliberately controlled their weight and excluding outliers = 603

3.2.9 Methods adopted to control weight

Among those respondents who had done something deliberately to control their weight, most of them reported that the methods they used to control their weight were 'doing physical exercises' (86.2%) and 'changing dietary habit' (75.4%). Other methods mentioned by respondents included 'taking drugs/products' (13.3%), 'consulting doctors/dieticians' (7.6%) and 'going to weight control/beauty parlours' (5.1%) (Fig. 3.2.9).



Fig. 3.2.9: Methods used to control weight (Q6a-f)

Base: Respondents who had deliberately controlled their weight and excluding outliers=603 (multiple responses)

3.3 Physical activities/exercise

The questions about physical activities covered in this survey (see Annex A, Q7 - Q13) were adapted from the International Physical Activity Questionnaire (IPAQ) short form. Seven questions were asked to understand the frequency and duration with which respondents engaged in physical activities⁸/exercise. All the reported physical activities/exercise lasted for at least 10 minutes and was based on their experiences during the seven days prior to the survey.

3.3.1 Frequency of physical activities per week

On a weekly basis, walking was far more prevalent than vigorous and moderate physical activities. During the seven days prior to the survey, 72.0% of respondents spent at least 10 minutes walking every day. On the other hand, 34.7% and 43.6% of the respondents claimed that they spent at least one day on vigorous and moderate physical activities in the week prior to the survey respectively (Fig. 3.3.1a).

Fig. 3.3.1a: Number of days per week spent on doing each type of physical activities in the week prior to the survey (Q7, 9 & 11)



Base: All respondents = 2 074

⁸ Respondents were informed of the definitions of vigorous physical activities, moderate physical activities and walking. Vigorous physical activities are defined as those that make people breathe much harder than normal, for example aerobics, football, swimming, heavy physical work and jogging. Moderate physical activities are defined as those that make people breathe somewhat harder than normal, for example biking, washing cars/polishing, fast walking and cleaning windows. Walking includes walking to work or school, walking to travel from place to place and walking for leisure. All the questions about vigorous exercise, moderate exercise and walking only referred to those activities on which the respondents had spent at least 10 minutes at a time.

On the week prior to the survey, respondents on average spent 6.1 days on walking. In contrast, the average number of days spent on vigorous and moderate physical activities in a week was less frequent at 1.0 and 1.5 days respectively (Fig. 3.3.1b).

Fig. 3.3.1b: Weekly average number of days spent on different types of physical activities with median and mode (Q7, 9 & 11)



Base: All respondents = 2074

3.3.2 Daily average time spent on physical activities/ exercise⁹

On average, respondents spent 11.8 minutes per day on vigorous physical activities, 13.7 minutes on moderate physical activities and 66.7 minutes on walking. The median and mode average time spent per day were both zero minute for vigorous and moderate physical activities and both were 30 minutes for walking (Fig. 3.3.2a).

It was observed that less than one-tenth of the respondents spent a daily average of 31 minutes or more on vigorous physical activities (8.6%) and moderate physical activities (8.8%), while 45.2% of respondents spent a daily average of 31 minutes or more on walking (Table 3.3.2b).

⁹ The daily average minutes spent on each type of exercise was computed by multiplying the average number of days engaged in each type of exercise on a weekly basis and the average minutes of time spent on each type of exercise on those days they have done exercise and then divided by 7 days. Vigorous exercise: (Q7xQ8)/7; Moderate exercise: (Q9xQ10)/7; Walking: (Q11xQ12)/7.

Fig 3.3.2a: Daily average minutes spent on different types of exercise and median and mode (Q7, 8, 9, 10, 11 and 12)



Base: All respondents excluding 'don't know' (Vigorous exercise = 2 067; Moderate exercise = 2 070; Walking = 2 054)

Table 3.3.2b: Daily average time spent on doing different types of exercise (Q7, 8, 9, 10, 11 and 12)

Minutes	Vigorous exercise		Moderate exercise		Walking	
Minutes	Number	% of Total	Number	% of Total	Number	% of Total
Below 10	1 625	78.6%	1547	74.7%	223	10.9%
10-<16	79	3.8%	126	6.1%	179	8.7%
16 - <31	184	8.9%	214	10.3%	723	35.2%
31 - <61	97	4.7%	104	5.0%	464	22.6%
61 or above	82	4.0%	79	3.8%	466	22.7%
Total	2 067*	100.0%	2 070*	100.0%	2 054*	100.0%

*All respondents excluding 'don't know' (Vigorous exercise = 2 067; Moderate exercise = 2 070; Walking = 2 054)

3.3.3 Sitting¹⁰

Respondents were asked how much time per day on average they spent on sitting during <u>weekdays (Monday to Friday) in the week prior to the survey</u>. Table 3.3.3 indicates that 55.7% of respondents sat for at least six hours per day. On weekdays (Monday to Friday), respondents spent an average of 6.4 hours on sitting per day. The median and mode were six and eight hours respectively.

¹⁰ Sitting includes time spent sitting at work, at home, visiting friends, reading, travelling on public transport and lying down to watch television.

Sitting Hours	Number	% of Total		
Below 2	83	4.1%		
2-<4	354	17.4%		
4 - <6	466	22.9%		
6 - <8	360	17.7%		
8 - <10	344	16.9%		
10 or above	430	21.1%		
Total	2 038* 100.0%			
Other statistics	Н	ours		
Mean	6.4			
Median	6.0			
Mode		8.0		

Table 3.3.3: Average time spent on sitting per day during weekdays in the week prior to the survey (percentage, mean, median and mode) (Q13)

*All respondents excluding 'don't know' and outliers

3.3.4 Analysis of the International Physical Activity Questionnaire

The analysis in this section is based on the guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ) – Short Form (revised November 2005)¹¹. A copy of the guidelines is enclosed in Annex B. The age range of respondents of this survey (18-64) is within the age criteria of the IPAQ analysis, i.e., 15-69. The analysis of the IPAQ short form provides two indicators of physical activity, namely categorical and continuous indicators.

According to the IPAQ data processing and cleaning rules, <u>thirty</u> cases were excluded from this part of analyses for being classified as outliers, 'don't know' and 'refusal'.

¹¹ This document for data processing and analysis of the IPAQ is available on the website: http://www.ipaq.ki.se.

3.3.4.1 Categorical scoring

The categorical score comprises three levels of physical activity, namely 'low', 'moderate' and 'high'¹². Table 3.3.4.1 details the criteria of classification.

Level of physical activity	Categorical scoring classification criteria
Low	 No activity is reported OR
	 Some activity is reported but not enough to meet categories 'Moderate' or 'High'
Moderate	Any one of the following 3 criteria
	 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR
	 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR
	 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 600 MET-min/week
High	Any one of the following 2 criteria
	 Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR
	 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 3000 MET-minutes/week

 Table 3.3.4.1: Categorical scoring classification of physical activity

Note: MET = multiples of resting metabolic rate *Source: Guidelines for data processing and analysis of the IPAQ* – *short form*

¹² The current categories of IPAQ classification are "Low", "Moderate" and "High". The previous categories were known as "Inactive", "Minimally active" and "HEPA active".

According to the classification criteria listed in Table 3.3.4.1, more than half (57.5%) of the respondents were classified as having 'moderate' level of physical activity. In addition, the proportions of respondents having 'high' and 'low' level of physical activity were 23.3% and 19.2% respectively (Fig. 3.3.4.1).



Fig. 3.3.4.1: Classification of respondents' physical activity level (Q7-Q12)

Base: All respondents excluding 'don't know', 'refusal' and outliers according to the data processing rules of the IPAQ analysis guidelines = 2.044

3.3.4.2 Continuous scoring

Continuous scoring is another measurement of physical activity suggested in the IPAQ - short form guidelines. This is achieved by weighting each type of activity by its energy requirements defined in METs (METs are multiples of the resting metabolic rate) to yield a score in MET-minutes. A MET-minute score¹³ is computed by multiplying the MET by the minutes performed. MET-minute scores are equivalent to kilocalories for a 60 kilogram person. Kilocalories can be computed from MET-minutes using the following equation: MET-minute x (weight in kilograms/60 kilograms). The selected MET values were derived from work undertaken during the IPAQ Reliability Study conducted in 2000-2001. This study yielded MET values for the three types of activity, namely 'walking'= 3.3 METs, 'moderate physical activity = 4.0 METs and 'vigorous physical activity' = 8.0 METs. These MET values are used for the continuous scoring analysis of IPAQ data in this part.

More specifically, the continuous score for each type of physical activity was computed according to the formula and examples in Table 3.3.4.2a.

¹³ Source of information: Guideline for data processing and analysis of the IPAQ

MET-min per week for each activity	= (MET level) x (min of activity) x (events per week)
Total MET-min per week	= (Walk METs x min x days) + (Moderate PA METs x min x days) + (Vigorous PA METs x min x days)
Example:	Given:
	MET-min/week for 30 min episodes, 5 times/week, MET levels for walking = 3.3METs, Moderate PA= 4.0METs and Vigorous PA= 8.0METs
MET-min/week for walking	= 3.3 x 30 x 5 = 495 MET-min/week
MET-min/week for Moderate PA	= 4.0 x 30 x 5 = 600 MET-min/week
MET-min/week for Vigorous PA	<u>= 8.0 x 30 x 5 = 1,200 MET-min/week</u>
Total MET-min/week	Total = 2 295 MET-min/week

Table 3.3.4.2a: Continuous score computation

Note: PA = physical activity

Source: Guidelines for data processing and analysis of the IPAQ – short form

As suggested by the IPAQ – short form guidelines, the continuous indicator is presented as median minutes or median MET-minutes rather than mean minutes or mean MET-minutes given the non-normal distribution of energy expenditure in many populations. However, median scores (unlike mean scores) are not additive, so the median score is not the sum of the median scores for each type of physical activity.

Table 3.3.4.2b shows the medians of the continuous scores for each type of physical activities. The medians for vigorous physical activity and moderate activity were both 0 while the median for walking was 693 MET-minutes per week. The median score of these three activities combined was 1 386 MET-minutes per week.

Table 3.3.4.2b: Medians of the IPAQ continuous score for each type of physical activity (Q7-Q12)

Statistics	Continuous Score (MET-minutes/week)				
Statistics	Vigorous exercise	Moderate exercise	Walking	Total	
Median	0	0	693	1386	

*All respondents excluding 'don't know', 'refusal' and outliers according to the data processing rules of the IPAQ analysis guideline (Vigorous exercise = 2 067; Moderate exercise = 2 070; Walking = 2 054)

3.4 Dietary habits

Eighteen questions were asked in this section to gauge respondents' dietary habits.

3.4.1 Frequency of consuming fruit/vegetable juice¹⁴ per week

Overall, 73.4% of the respondents did not consume any fruit/vegetable juice during the week prior to the survey. Only 3.4% of the respondents drank fruit/vegetable juice on a daily basis. The average number of days per week in which the respondents drank fruit/vegetable juice was 0.7 days (Fig 3.4.1).

Fig. 3.4.1: Number of days in the week when respondents drank fruit/vegetable juice (Q14c)



Base: All respondents = 2 074

3.4.2 Frequency of consuming fruit and vegetables per week

On a daily basis, respondents consumed vegetables more frequently than fruit. Fig. 3.4.2 shows that nearly four-fifths of the respondents (79.5%) had consumed vegetables everyday, while about half of the respondents (50.5%) had eaten fruit on a daily basis. Similarly, the proportion of respondents consuming no fruit at all during the week (5.0%) was much higher than that for vegetables (0.7%) (Fig. 3.4.2).

The overall average number of days per week in which the respondents consumed vegetables was 6.3 days, which is more than the corresponding figure for consuming fruit (4.9 days).

¹⁴ Fruit/vegetable juice refers to freshly squeezed juice or those labelled 100% or pure fruit/vegetable juice.



Fig. 3.4.2: Number of days in the week when respondents ate fruit and vegetables (Q14ai, Q14bi)

Base: All respondents excluding 'don't know' (Eating fruit = 2 071, Eating vegetables = 2 074)

3.4.3 Amount of fruit and vegetables eaten per day¹⁵

On average, nearly half of the respondents (46.7%) consumed less than one fruit on a daily basis. In addition, nearly one-third (32.6%) of the respondents ate less than one bowl of vegetables everyday on average. Overall, the daily average amount consumed was just 1.0 fruit and 1.1 bowls of vegetables (Table 3.4.3).

 Table 3.4.3: Daily average amount of fruit/vegetable eaten (Q14ai, Q14aii, Q14bi

 and Q14bii)

Average no. of fruit/bowl of vegetables eaten per day	No. of respondents				
	Fr	uit	Vegetables		
	Number	% of Total	Number	% of Total	
Less than 1	966	46.7%	673	32.6%	
1 – 2	1 010	48.8%	1 312	63.5%	
More than 2	92	4.4%	81	3.9%	
Total	2 068*	100.0%	2 066*	100.0%	
Mean	1.0 fruit		1.1 bowls o	f vegetables	

*Base: All respondents excluding 'don't know' and 'refusal'

3.4.4 The total number of servings of fruit and vegetables consumed per day

The WHO recommends that adults should eat at least five servings of fruit and vegetables per day or a daily intake of at least 400 grams of fruit and vegetables¹⁶.

Total servings excluding fruit/vegetable juice

The number of servings of fruit and vegetables consumed per day was defined in this section as the sum of the <u>average number of fruit eaten per day</u> and <u>twice the average</u> <u>number of bowl of vegetables eaten per day</u> (i.e. 1 piece of fruit was equated to 1 serving and 1 bowl of cooked vegetables¹⁷ was equated to 2 servings).

Only 18.4% of the respondents ate 5 or more servings of fruit and vegetables per day. The mean and median numbers of servings were 3.2 and 3.0 respectively (Table 3.4.4a).

¹⁵ Respondents were informed that one fruit equal in size to a medium sized apple or orange, one banana, two apricots or plums, or one bowl of small fruit like grapes or strawberries. For vegetables, it is calculated in terms of bowl where one bowl refers to the size of a rice bowl. The average number of fruit eaten per day is calculated by: (the average number of days eating fruit per week x the average number of fruit eaten on those days)/ 7. Similarly, the average number of bowls of vegetables eater per day is calculated by: (the average number of days eating vegetables per week x the average number of bowls of vegetable eaten on those days) / 7.

¹⁶ Fruit, vegetables and NCD disease prevention. Geneva: World Health Organization; 2003.

⁽http://www.who.int/dietphysicalactivity/media/en/gsfs_fv.pdf)

¹⁷ 1 bowl of uncooked vegetable was coded as 0.5 bowl of cooked vegetable.

No. of servings (excluding juice)	No. of respondents	
	Number	% of Total
Less than 3	946 (0 serving = 7)	45.9% (0 serving = 0.4%)
3 - <5	736	35.7%
5 or above	379	18.4%
Total	2 061*	100.0%
	No. of servings of fruit and vegetables eaten per day	
Mean	3.2 servings	
Median	3.0 servings	

Table 3.4.4a: Number of servings of fruit and vegetables consumed per day(percentage, mean and median) (Q14ai, Q14aii, Q14bi and Q14bii)

*All respondents excluding 'don't know', 'refusal' for either question

Total servings including fruit/vegetable juice

The total number of servings of fruit and vegetables consumed per day was defined in this section as the sum of the <u>average number of fruit eaten per day</u> and <u>twice the average number of bowl of vegetables eaten per day</u> (i.e. 1 piece of fruit was equated to 1 serving and 1 bowl of cooked vegetables was equated to 2 servings) and <u>the average number of days per week having drunk one cup or more of fruit/vegetable juice (fruit/vegetable juice only counted as 1 serving, regardless of how many cups of juice were drunk in one day; less than 1 cup a day did not count¹⁸).</u>

Overall, 19.4% of the respondents ate 5 or more servings of fruit and vegetables per day if fruit/vegetable juice was included in calculating the total servings per day. The mean and median numbers of servings were 3.3 and 3.0 respectively (Table 3.4.4b).

(percentage, mean and meanin) (gitai, gitai, gita			
No. of servings (including juice)	No. of respondents		
	Number	% of Total	
Less than 3	912 (0 serving =4)	44.2% (0 serving =0.2%)	
3 - <5	750	36.4%	
5 or above	399	19.4%	
Total	2 061*	100.0%	
	No. of servings of fruit and vegetables eaten per day		
Mean	3.3 servings		
Median	3.0 servings		

 Table 3.4.4b: Number of servings of fruit and vegetables consumed per day (percentage, mean and median) (Q14ai, Q14aii, Q14bi, Q14bii and Q14c)

*All respondents excluding 'don't know', 'refusal' for either question

¹⁸ Juice (fruit or vegetable) only counted as 1 serving a day, regardless of how much is drunk, because it has very little fibre. It is also likely to lose some vitamins once juiced (particularly vitamin C, which is easily destroyed by light and air).
3.4.5 Frequency of consuming grains and cereals per week

The overwhelming majority (92.6%) of respondents consumed foods made entirely from grains or cereals 7 days a week. Only 0.2% of respondents did not eat food made entirely from grains or cereal in a week. The average number of days per week in which the respondents consumed grains or cereals was 6.8 days. (Fig 3.4.5).

Fig. 3.4.5: Number of days in the week when respondents ate food made entirely from grains or cereals (Q14di)



Base: All respondents = 2074

3.4.6 The total number of bowls of grains and cereals consumed per day

On average, most of the respondents (75.1%) consumed less than 3 bowls of grains or cereals per day. 24.5% of the respondents ate 3 to 6 bowls of grains and cereals per day. The mean and median numbers of bowls were 2.1 and 2.0 respectively (Table 3.4.6).

Table 3.4.6: Number of bowls of grains and cereals consumed per day (Percentage,mean and median) (Q14di and Q14dii)

No. of howle of groins	No. of respondents	
No. of Dowls of grains	Number	% of Total
Less than 3	1 557 75.1%	
3-6	509 24.5%	
More than 6	8 0.4%	
Total	2 074 100.0%	
	No. of bowls of grains and cereals eaten per day	
Mean	2.1 bowls	
Median	2 bowls	

20%

10%

0%

9.6%

.0%

None

3.4.7 Frequency of consuming meat and fish consumed per week

On a daily basis, respondents consumed meat more frequently than fish. Fig. 3.4.7 shows that about three-quarters of the respondents (75.7%) had consumed meat everyday while only less than one-fifths of respondents (18.3%) had eaten fish on a daily basis. Similarly, the proportion of respondents consuming no fish at all during the week (9.6%) was much higher than that for meat (2.0%) (Fig. 3.4.7).

The overall average number of days per week in which the respondents consumed meat was 6.2 days, which is more than 3.3 days for consuming fish.



21.8%

5.2%

3 days

12.2%

5.1%

4 days

6.4% 6.0%

5 days

1.5% 2.4%

6 days

17.8%

3.0%

2 days

12.4%

0.7%

1 day

Fig. 3.4.7: Number of days in the week when respondents ate meat and fish (Q14ei & Q14fi)

Base: All respondents excluding 'don't know' (Eating meat = $2\ 071$, Eating fish = $2\ 072$)

3.4.8 The total number of taels of meat and fish consumed per day

Overall, slightly less than half (48.3%) of the respondents ate 3 to 6 taels of meat per day. The mean and median numbers of taels were 3.8 and 3.0 respectively (Table3.4.8a).

18.3%

7 days

No. of tools	No. of respondents	
NO. OI LACIS	Number	% of Total
Less than 3	796 38.6%	
3 – 4	619	30.0%
>4 to 6	376 18.3%	
More than 6	269	13.1%
Total	2 060* 100.0%	
	No. of taels of meat eaten per day	
Mean	3.8 taels	
Median	3.0 taels	

Table 3.4.8a: Number of taels of meat consumed per day (Percentage, mean andmedian) (Q14ei and Q14eii)

*All respondents excluding 'don't know' and outliers

Overall, most (84.1%) of the respondents at less than 3 taels of fish per day. 13.3% of the respondents at 3 to 6 taels of fish per day. The mean and median numbers of taels were 1.6 taels and 1.1 taels. (Table3.4.8b)

Table 3.4.8b: Number of taels of fish consumed per day (Percentage, mean andmedian) (Q14fi and Q14fii)

No. of tools	No. of respondents	
INO. OI LACIS	Number	% of Total
Less than 3	1 736	84.1%
3 – 4	190	9.2%
>4 to 6	85	4.1%
More than 6	54	2.6%
Total	2 065* 100.0%	
	No. of taels of fish eaten per day	
Mean	1.6 taels	
Median	1.1 taels	

*All respondents excluding 'don't know'

Slightly more than half of the respondents (52.4%) consumed less than 5 taels of meat and fish per day. 15.5% of the respondents ate 5 to 6 taels of meat and fish per day. Nearly one-third of the respondents ate more than 6 taels of meat and fish per day. The mean and median numbers of taels were 5.5 and 4.9 respectively (Table 3.4.8c).

No. of taels	No. of respondents	
	Number	% of Total
Less than 5	1 078 52.4%	
5 - 6	319 15.5%	
More than 6	661 32.1%	
Total	2 057* 100.0%	
	No. of taels of meat and fish eaten per day	
Mean	5.5 taels	
Median	4.9 taels	

Table 3.4.8c: Number of taels of meat and fish consumed per day (Percentage,mean and median) (Q14ei, Q14eii, Q14fi and Q14fii)

*All respondents excluding 'don't know' and outliers for either question

3.4.9 Frequency of consuming eggs per week

Overall, only 7.2% of respondents had eaten eggs everyday. 15.5% of respondents had eaten no egg at all during the week. The average number of days per week in which respondents had eaten eggs was 2.3 days. (Fig. 3.4.9)



Fig. 3.4.9: Number of days in the week when respondents ate egg (Q14gi)

Base: All respondents excluding 'don't know' = 2 072

3.4.10 The total number of eggs consumed per day

About one-tenth (10.3%) of the respondents ate 1 to 2 eggs per day while the vast majority of the respondents (89.1%) ate less than 1 egg per day. The mean and median numbers of eggs were 0.4 and 0.3 respectively. (Table 3.4.10)

Table 3.4.10: Number of eggs consumed per day (Percentage, mean and median)(Q14gi and Q14gii)

No of orga	No. of respondents	
THU. UI CZZS	Number	% of Total
Less than 1	1 845	89.1%
1-2	214 10.3%	
More than 2	11	0.6%
Total	2 071*	100.0%
	No. of eggs eaten per day	
Mean	0.4 egg	
Median	0.3 egg	

*All respondents excluding 'don't know'

3.4.11 Frequency of consuming soybean products per week

About one-third of respondents (34.8%) of respondents had consumed no soybean curd or soybean milk during the week. Only 3.2% of respondents had consumed soybean curd or soybean milk on a daily basis during the week. The average number of days per week in which respondents had consumed soybean products was 1.4 days.

Fig. 3.4.11: Number of days in the week when respondents ate soybean curd or dink soybean milk (Q14hi)



Base: All respondents excluding 'don't know' = 2 073

3.4.12 The total number of servings of soybean products consumed per day

Most (94.5%) of the respondents consumed less than 1 serving of soybean curd or soybean milk per day. Only 5.3% of the respondents had 1 to 2 servings per day. The mean and median numbers of servings of soybean products consumed were 0.3 and 0.1 respectively. (Table 3.4.12)

No. of commings	No. of respondents	
No. of servings	Number	% of Total
Less than 1	1 959 94.5%	
1-2	109 5.3%	
More than 2	5 0.2%	
Total	2 073*	100.0%
	No. of servings of soybean curd or soybean milk	
	consumed per day	
Mean	0.3 serving	
Median	0.1 serving	

Table 3.4.12: Number of servings of soybean products consumed per day(Percentage, mean and median) (Q14hi and Q14hii)

*All respondents excluding 'don't know'

3.4.13 Frequency of consuming dairy products per week

Nearly half (48.5%) of respondents had consumed no dairy product during the week. Only 13.8% of respondents consumed dairy products everyday. The average number of days per week in which respondents had consumed dairy products was 1.9 days.

Fig. 3.4.13: Number of days in the week when respondents consumed dairy products (Q14ii)



Base: All respondents excluding 'don't know' = 2 070

3.4.14 The total number of servings of dairy products consumed per day

Only 13.3% of the respondents had 1 to 2 servings of dairy products such as yogurts, milk or cheese per day, while the vast majority (86.3%) had less than 1 serving per day. The mean and median numbers of servings were 0.3 and 0.1 respectively (Table 3.4.14).

Table 3.4.14: Number of servings of dairy products consumed per day (Percentage, mean and median) (Q14ii and Q14iii)

No of comings	No. of respondents	
No. of servings	Number	% of Total
Less than 1	1 782	86.3%
1-2	274 13.3%	
More than 2	8	0.4%
Total	2 065* 100.0%	
	No. of servings of dairy products eaten per day	
Mean	0.3 servings	
Median	0.1 servings	

*All respondents excluding 'don't know'

3.4.15 The total number of cups of fluid consumed per day

About half (51.3%) of the respondents drank 6 to 8 cups of fluid per day while nearly one-third of the respondents (32.4%) drank less than 6 cups of fluid per day. The mean and median numbers of cups were 6.7 and 6.0 respectively (Table 3.4.10).

 Table 3.4.10: Number of cups of fluid consumed per day (Percentage, mean and median) (Q14j)

No. of ours	No. of respondents	
No. of cups	Number	% of Total
Less than 6	671	32.4%
6-8	1 060 51.3%	
More than 8	337	16.3%
Total	2 068*	100.0%
	No. of cups of fluid drunk per day	
Mean	6.7 cups	
Median	6.0 cups	

*All respondents excluding 'don't know' and outliers

3.5 Eating out habits

In this section, respondents were asked about the frequency of eating out for breakfast, lunch and dinner one month prior to the survey. Respondents who skipped breakfast, lunch or dinner were excluded.

3.5.1 Eating out for breakfast

Overall, about three-fifths of the respondents (63.2%) ate out for breakfast once a week or more, of which 32.8% ate out for breakfast 5 times or more. (Fig 3.5.1)



Fig.3.5.1: Frequency of eating out for breakfast in the previous month (Q15a)

Base: All respondents excluding those 'skipped breakfast' = 1 907

3.5.2 Eating out for lunch

Overall, most (83.8%) of the respondents ate out for lunch at least once a week, of which about half (52.9%) of the respondents ate out for lunch 5 times a week or more. (Fig. 3.5.2)



Fig. 3.5.2: Frequency of eating out for lunch (Q15b)

Base: All respondents excluding those 'skipped lunch' = 2 019

3.5.3 Eating out for dinner

Nearly two-thirds (65.1%) of the respondents ate out for dinner at least once a week. Among them, slightly more than one-tenth (11.0%) of the respondents ate out for dinner 5 times a week or more. (Fig. 3.5.3)





Base: All respondents excluding those 'skipped dinner' = 2 033

3.6 Pattern of alcohol consumption

Five questions were asked in order to understand respondents' alcohol drinking patterns and to assess if their drinking habits were within the low risk level defined by the British guidelines on safer drinking¹⁹.

<u>One</u> respendent was treated as outlier and excluded from the analyses in sections 3.6.1 to 3.6.4.

Overall, less than two-fifths (37.5%) of the respondents reported that they had consumed at least one alcoholic drink during the month prior to the survey. (Fig. 3.6).



Fig. 3.6: Ever had at least one alcoholic drink (Q16a)

3.6.1 Frequency of alcohol consumption

Among those respondesnts who had at least one alcoholic drink during the month prior to the survey, about one-tenth (9.8%) of the drinkers reported drinking daily. On the other hand, more than seven-tenths (71.8%) of the drinkers drank one day or less per week (Fig. 3.6.1).

Base: All respondents = 2 074

¹⁹ The British guidelines on safe drinking:

http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/AlcoholMisuse/AlcoholMisuse GeneralInformation/AlcoholMisuseGeneralArticle/fs/en?CONTENT_ID=4062199&chk=J782BY

Fig. 3.6.1: Frequency of drinkers consuming at least one alcoholic drink during the month prior to the survey (Q16b)



Base: Respondents who had at least one alcoholic drink during the month prior to the survey = 777

3.6.2 Amount of alcoholic drinks consumed

Among those who drank at least one alcoholic drink during the month prior to the survey, they were further asked the number of standard drinks²⁰ consumed on each drinking day. Most of them (69.7%) consumed less than 3 standard drinks on each drinking day. On average, they consumed 2.6 standard drinks on each drinking day. The median was 1.5 standard drinks. Also, Table 3.6.2 shows that about three-tenths (30.3%) of the drinkers drank 3 or more standard drinks on average on those drinking days during the month prior to the survey.

No. of standard drinks	No. of drinkers	
No. of standard drifts	Number	% of Total
Less than 3	536 69.7%	
3-<5	137	17.8%
5 or above	96 12.5%	
Total	770* 100.0%	
Mean	2.6 standard drinks	
Median	1.5 standard drinks	

Table 3.6.2: Average number of standard drinks consumed on the days they drank alcohol (percentage, mean and median) (Q16c)

* Respondents who had at least one alcoholic drink during the month prior to the survey excluding 'don't know' and outlier

²⁰ The amount of drinks consumed was measured by the following standard units: one can or small bottle of beer is approximately equal to 1.5 standard drinks, or one standard drink is approximately equal to one dining glass of wine, or one spirit nip of brandy/whisky, or one small glass of Chinese wine such as rice wine.

3.6.3 Drinking at least 5 glasses/cans of alcohol on one occasion (Binge drinking)

Among those respondents who had at least one alcoholic drink during the month prior to the survey, less than one quarter (23.7%) had consumed at least 5 glasses/cans of alcohol on one single occasion²¹ in the month prior to the survey (Fig. 3.6.3a). Among these respondents, less than two-fifths (37.3%) of the respondents had engaged in binge drinking three times or more, 21.6% had this experience twice and about two-fifths (41.1%) had this heavy consumption once (Fig. 3.6.3b).

Fig. 3.6.3a: Consumption of at least 5 glasses (or cans) of alcohol by drinkers on one single occasion during the month prior to the survey (Q16d)



Base: Respondents who had at least one alcoholic drink during the month prior to the survey = 777

Fig. 3.6.3b: Frequency of consuming at least 5 glasses (or cans) of alcohol on one single occasion by heavy drinkers during the month prior to the survey (Q16e)



Base: Drinkers who drank at least 5 glasses or cans of alcohol on at least one occasion, excluding outlier = 184

²¹ Refer to total number of glasses/cans of any types of alcohol. One single occasion means a period of a few hours.

3.6.4 Drinking habits by low risk level

According to the British guidelines on safe drinking (Table 3.6.4), more than seven-tenths (72.2%) of the drinkers who had drunk at least one alcoholic drink during the month prior to the survey were found to drink within the low risk level (Fig. 3.6.4).

 Table 3.6.4: Classification of a low risk level drinking habit by the British guidelines on safe drinking

Gender	Classification of low risk level
Male	 No more than 4 standard drinks a day, and At least 2 alcohol-free days per week, and No more than 21 standard drinks over a week²²
Female	 No more than 2 standard drinks a day, and At least 2 alcohol-free days per week, and No more than 14 standard drinks over a week²¹

Fig. 3.6.4: Classification of respondents' drinking habits (Q16a-Q16c)



Base: Respondents who had at least one alcoholic drink during the month prior to the survey excluding excluding data missing and outliers = 770

²² The number of standard drinks per week was computed by multiplying 'weekly frequency in which drinkers drank at least one alcoholic drink during last month' (i.e. Q16b) and 'the number of standard drinks consumed each day on those drinking days' (i.e. Q16c). In Q16b, 0.5 day was used for 'less than one day per week' for the computations.

3.7 Smoking habit

Three questions were asked to understand respondents' smoking habit in this section.

Slightly less than three-quarters of the respondents (73.4%) reported that they had never smoked, 9.7% smoked in the past but now abstained and 16.9% of the respondents were current smokers (Fig. 3.7).





Base: All respondents = 2 074

3.7.1 Abstaining from smoking

Among those who smoked before but now abstained from smoking, the majority (82.5%) of them had given up smoking for more than one year and more than one-tenth (15.1%) had given up smoking for one month to one year. The rest (2.3%) had given up smoking for less than one month (Fig 3.7.1).

Fig. 3.7.1: Length of time abstained from smoking (Q17b)



Base: All past smokers = 201

3.7.2 Cigarette consumption

Among the current smokers, the vast majority (93.6%) of them were daily smokers. Half of them (50.8%) reported that they smoked 1- 10 cigarettes per day and about two-fifths (42.8%) smoked at least 11 cigarettes a day (Fig. 3.7.2).

Fig. 3.7.2: Number of cigarettes smoked on average per day by current smokers (Q17c)



Base: All current smokers =352

3.8 Cervical screening (for female respondents only)

Four questions (including one screening question) were asked to understand female respondents' behaviour regarding cervical screening. Female respondents who had a hysterectomy were not included in this section.

In this survey, 53.2% of the respondents were females after weighting. Overall, close to two-thirds (63.3%) of them reported that they had had a cervical smear before (Fig. 3.8).



Fig. 3.8: Being screened for cervical smear before (Q18a and Q18b)

Base: All female respondents excluding 'not sure' and 'had a hysterectomy' = 1 059

3.8.1 Last cervical smear

Among the female respondents who had a cervical smear before, more than half (55.2%) of them had their last cervical smear taken within the 12 months prior to the survey. More than one-third (35.1%) of them had the examination within 13-36 months, while 9.7% of them had their last cervical smear 37 or more months ago (Fig. 3.8.1).



Fig. 3.8.1: Period of time since last cervical smear if ever had a smear (Q18c)

Base: Female respondents who ever had a cervical smear before, excluding 'can't remember' = 662

3.8.2 Whether the last cervical smear was the first visit

Of the female respondents who had a cervical smear before, most of them (83.9%) reported having a cervical smear more than one time. On the other hand, 16.1% claimed that the last visit was their first cervical smear (Fig. 3.8.2).





Base: Female respondents who ever had a cervical smear before, excluding 'not sure' = 669

3.9 Attitude towards organ donation

In this section, seven questions were asked to understand respondents' attitude towards organ donation.

3.9.1 Attitude towards organ donation of their family members

Overall, the vast majority (95.1%) of the respondents reported that they would not object if their family members donate organs. The rest (4.9%) reported that they would do so. (3.9.1a)

Fig. 3.9.1a: Whether the respondents would object if their family members donate organs (Q19a)



Base: All respondents excluding 'no comment' and 'no family member'= 1 854

Among those who would object if their family members donate organs, one-third of them (33.9%) reported that they would like to keep their family members' body intact. A quarter of them (25.8%) objected based on their personal preference. (Fig. 3.9.1b)

Fig. 3.9.1b: Reasons to object if their family members donate organs (Multiple responses allowed) (Q19b)



Base: Respondents who would object if their family members donate organs= 90

Those respondents, who reported that they would object if their family members donate organs, were further asked whether they would still object to the transplant if the family members had expressed their willingness. About three-tenths (29.4%) reported that they would object the transplant even if their family had expressed their will to do so. (Fig. 3.9.1c)

Fig. 3.9.1c: Whether the respondent would still object to the donation if their family member expressed their will (Q19c)



Base: Respondents who reported that they would object if their family members donate organ, excluding 'don't know' and 'refuse to answer' = 86

3.9.2 Attitude towards organ donation of their body

When being asked if they were willing to donate their organs, about one-fifth (22.3%) of the respondents had not decided or considered yet. While most of the respondents (68.9%) reported that they were willing to donate their organs, less than one-tenth (8.8%) of the respondents reported that they were not willing to do so. (Fig. 3.9.2a)



Fig. 3.9.2a: Willingness to donate their organs after death (Q19d)

Base: All respondents = 2 074

The respondents who were not willing to donate their organs after death were asked about the reasons. A quarter of them (25.3%) reported that the transplants were against their personal beliefs and one-fifths of them (20.0%) would like to keep the body intact, while 18.0% of them reported that the decision was their personal preference. (Fig. 3.9.2b)

Fig. 3.9.2b: Reasons of not willing to donate their organs after death (Multiple responses allowed) (Q19e)



Base= Respondents who were not willing to donate their organs= 183

More than two-fifths (44.7%) of the respondents who were willing to donate their organs had done nothing to express their wish to donate organs. Among those respondents who had ever expressed their wish to donate organs, 75.6% of them expressed the wish to their family members, about three-fifths (62.2%) of them signed on the organ donation card and only 5.5% of those expressed their wish to donate their organs had registered at the Hong Kong Medical Association organ donation database. Besides, 2.6% of them expressed their wish using other methods, included telling their friends and colleagues. (Fig. 3.9.2c)

Fig. 3.9.2c: Methods chosen to express their wish to donate organs after death (Multiple responses allowed) (Q19f)



Base: Respondents who were willing to donate their organs = 789

Among the respondents who signed on the organ donation card, more than half (56.4%) of them reported that they carried the card all the time with them. (Fig. 3.9.2d)

Fig. 3.9.2d: Whether the respondents carry the organ donation card all the time (Q19g)



Base: Respondents who signed the organ donation card= 490

3.10 General health status

Three questions in this survey were asked of the respondents to self assess their general health status.

Overall, only 2.4% of the respondents claimed that their general health status was excellent and 36.0% claimed that their health status was good or very good. Moreover, more than half (53.9%) of the respondents considered that their health status was fair. The rest (7.8%) of the respondents claimed that their status was 'poor' (Fig. 3.10.1).



Fig. 3.10.1: Perception about general health status (Q20a)

Base: All respondents = 2 074

When comparing their health condition with people of their age, one-third (33.3%) of the respondents considered that their health condition was better or much better than people of their age. On the other hand, 14.0% of respondents considered that their health condition was worse or much worse than people of their age. Furthermore, more than half (52.7%) claimed that their health condition was "the same" as people of their age (Fig. 3.10.2).



Fig. 3.10.2: Respondents compared their health condition with people of the same age (Q20b)

Base: All respondents = 2 074

When respondents were asked to compare their current health condition with 12 months ago, 15.0% of respondents considered that their current health condition was better or much better than 12 months ago. In contrast, more than one quarter (26.8%) of the respondents claimed that their current health condition was worse or much worse than 12 months ago. In addition, nearly three-fifths (58.2%) of the respondents claimed that their current health condition was the same as 12 months ago (Fig. 3.10.3).

Fig. 3.10.3: Compared with 12 months ago, perception about the present health condition (Q20c)



Base: All respondents = 2 074

3.11 Influenza vaccination

In this section, respondents were asked 2 questions concerning about their history of influenza vaccination.

Among the respondents, about a quarter (26.3%) of them had ever had influenza vaccine injection. Most of the respondents (73.7%) did not have the vaccine injection in the past. (Fig. 3.11.1)

Fig. 3.11.1: Ever had influenza vaccination injection in the past (Q21a)



Base: All respondents = 2 074

Among those who had the influenza vaccination, about half (52.3%) of them had the last flu shot within 12 months prior to the survey. (Fig. 3.11.2)

Fig. 3.11.2: Period of time since last flu shot if ever had the vaccination (Q21b)



Base: All respondents who had the vaccination excluding 'cannot remember' = 517

Chapter 4 Sub-group Analysis by Demographic Information and Related Questions

4.1 **Re-grouping of variables**

In this chapter, sub-group analyses are performed based on the breakdown of respondents' demographic information including gender, age, educational attainment, marital status, occupation, monthly household income and type of living quarters to see if there are any significant associations between these demographic factors and the areas being investigated. Additional cross tabulations are also done for special areas of interest. For example, Body Mass Index (BMI) is analyzed by perceptions about current weight.

Some of the responses have been re-grouped into smaller number of categories in order to make the sub-group analyses more robust. Table 4.1a shows how the demographic variables have been re-grouped while Table 4.1b illustrates how the responses of some questions were combined. The response of 'don't know', 'can't remember', 'not sure', 'not applicable', 'refuse to answer' and 'outliers' have been excluded from all the sub-group analyses in this chapter.

Demographic variable	Original level	Re-grouped level	Sample size (weighted)
	Male	Male	970
Gender	Female	Female	1 104
		18 - 24	274
		25 - 34	450
Age group	No grouping	35 - 44	532
		45 – 54	516
		55 - 64	295
	Primary or below	Primary or below	239
	Had not completed secondary	Had not completed secondary	379
Educational	Completed secondary (F.5)	Completed secondary (F.5)	626
attamment	Matriculation	Matriculation	176
	Tertiary (non-degree)/degree or above	Tertiary or above	654
Marital status	Never married	Never married	684
	Married with child(ren)	Marriad	1 280
	Married without child(ren)	Married	1 209
	Divorced/Separated	Divorced/Separated/Widewed	06
	Widowed	Divorced/Separated/ widowed	90

Table 4.1a: Re-grouping the responses of demographic information (Q22 - Q31)

	Employer/Managers/ Administrator	M	
	Professional	Managerial/professional	480
	Associate professional	worker	
	Clerk	Clerk	303
	Service worker	Service worker	220
	Shop sales worker		
	Skilled agricultural/ fishery worker		315
Occupation	Craft and related worker		
	Plant and machine operator and assembler	Blue collar worker	
	Unskilled worker		
	Student		
	Home-maker		
	Unemployed person	Not working persons	732
	Retired person		
	Other not-worker person		
	Less than \$2,000	D -1 \$2,000	133
	\$2,000 - \$3,999		
	\$4,000 - \$5,999	Delow \$8,000	
	\$6,000 - \$7,999		
	\$8,000 - \$9,999		288
	\$10,000 - \$11,999	\$8,000 - \$13,999	
	\$12,000 - \$13,999		
	\$14,000 - \$15,999		225
Monthly	\$16,000 - \$17,999	\$14,000 - \$19,999	
household	\$18,000 - \$19,999		
income	\$20,000 - \$24,999		528
	\$25,000 - \$29,999		
	\$30,000 - \$34,999	\$20,000 - \$39,999	
	\$35,000 - \$39,999		
	\$40,000 - \$44,999		
	\$45,000 - \$49,999		416
	\$50,000 - \$54,999	\$40,000 or above	
	\$55,000 - \$59,999		
	\$60,000 or above		

	Public rental flats	Public rental flats	552
	Housing Authority subsidized sale flats	Subsidized sale flats	336
Type of	flats flats		
living	Private residential flats		
quarters	Villas/ Bungalows/ Modern village houses	Private housing	1 176
	Simple stone structures/ traditional village houses	Private nousing	11/0
	Staff quarters		

Table 4.1b: Re-grouping the responses of questions

Question No.	Question content	Original level	Re-grouped level	
Q7, Q9, Q11,	Average days per week spent	0 day	0 1 1	
Q14ai, Q14bi,	on vigorous/moderate physical activities/exercise	1 day	0-1 day	
Q14c, Q14di,	and walking	2 days		
Q14ei, Q14fi,		3 days	2-3 days	
Q14gi, Q14hi,	Average days per week that respondents drink fruit	4 days	4 5 1	
Q14ii	/vegetable juice, eat	5 days	4 – 5 days	
	fruit/vegetable, grains, meat and fish, soybean curd, dairy	6 days		
	products and eggs	7 days	6 – 7 days	
Q16b	Weekly frequency of	Daily	6 days or more per	
	alcoholic drink last month	6 days per week	week	
		5 days per week	4 5 days par weak	
		4 days per week	4 – 5 days per week	
		3 days per week	2 3 days par wook	
		2 days per week	2 – 5 days per week	
		1 day per week	1 day or less per week	
		Less than 1 day per week	T day of less per week	
Q18c	Period of time since last	1-12 months	1-12 months	
		13 – 24 months	13 36 months	
		25 – 36 months	15-50 monuis	
		37 – 48 months		
		49 – 60 months	37 or more months	
		61 months or above		

Three types of statistical tests²³ are used for sub-group analysis in this report, namely Pearson chi-square test, Kruskal-Wallis test and Spearman's rank correlation. When both variables are nominal, the chi-square test is used. When one variable is nominal and the other one is ordinal, the Kruskal-Wallis test is adopted. Spearman's rank correlation is performed when both variables are ordinal. Only statistically significant results at the 5% level are presented in this chapter. As for the Pearson chi-square test, only those tables where no more than 20% of the cells had expected values of less than 5 are included.

Only the Pearson chi-square test uses weighted data; the Kruskal-Wallis test and Spearman's rank correlation are carried out without weighting as SPSS is unable to handle non-integer weights for these two tests. However, all percentages are reported after weighting.

$$\lambda^2 = \sum_{i} \sum_{j} \frac{(Oij - eij)^2}{eij}$$

where O_{ij} is the observed value corresponding to the ith column and the jth row, e_{ij} is the expected value corresponding to the ith column and the jth row. The calculation of e_{ij} is as follows: expected value = (ith column total x jth row total) / Overall total **Kruskal-Wallis test:**

$$H = \frac{12}{N(N+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(N+1)$$

where N is the total number of observations, R_i is the sum of the ranks of the values of the ith sample and n_i is the number of observations of the ith sample. Spearman's rank correlation coefficient:

$$r = \sum_{i=1}^{N} \frac{(X_i - \overline{X})(Y_i - \overline{Y})}{(N-1)SxSy}$$

where N is the sample size and Sx and Sy are the standard deviations of the rank of the two variables and Xi and Yi are the ith rank of X and Y respectively and \overline{X} and \overline{Y} are the mean rank of X and Y respectively. The rank order of each data value is used in the above formula (adjustments are made if there are ties). Pairwise method is used to handle missing data.

²³ These statistical tests used SPSS. Formulae for the three tests are included for reference. **Pearson chi-square statistics:**

4.2 Body weight control

4.2.1 Weight status

In this section, respondents are classified as 'underweight', 'normal', 'overweight' and 'obese' based on their BMI and the WHO classification for the Asian standard. 'Underweight' is defined as having a BMI below 18.5; 'normal' refers to having a BMI score between 18.5 and less than 23.0; 'overweight' is having a BMI score between 23.0 and less than 25.0; and 'obese' is defined as having a BMI score greater than or equal to 25.0.

Using the Asian standard of WHO classification, weight status is associated significantly with five demographic variables including gender, age, educational attainment, marital status and occupation (Table 4.2.1).

More males (31.1%) were classified as 'obese' while more females (16.0%) were classified as 'underweight'. In terms of age, respondents aged 34 or below (ranged from 17.3% to 29.2%) were more likely to be 'underweight' while those aged 35 or above were more likely to be classified as 'overweight' (ranged from 20.5% to 21.8%) or 'obese' (ranged from 26.3% to 30.7%) (Table 4.2.1).

A relatively higher proportion of respondents with primary education level or below (32.3%) were classified as 'obese' (Table 4.2.1).

The never married respondents (19.8%) were more likely to be 'underweight' than the married respondents (6.4%) and the divorced/separated/widowed respondents (8.7%). Relatively higher proportions of married respondents (26.8%) and divorced/separated/widowed respondents (27.2%) were classified as 'obese' (Table 4.2.1).

Regarding to the respondents' occupation, a relatively higher proportion of blue collar workers (31.7%) were classified as 'obese' while not working respondents (15.0%) and clerks (12.5%) were more likely to be 'underweight' (Table 4.2.1).

								P-value	9
Variable	Level	Base	Under- weight	Normal	Over- weight	Obese	Chi-squ are test	Kruskal- Wallis test	Rank correlation
Condon	Male	913	5.1%	41.4%	22.3%	31.1%		0.000	
Gender	Female	1 042	16.0%	54.3%	14.0%	15.7%		0.000	
	18-24	260	29.2%	55.7%	8.2%	6.8%			
	25-34	422	17.3%	52.5%	14.1%	16.1%			
Age	35-44	497	5.6%	47.5%	20.5%	26.3%			0.000
	45-54	493	4.6%	42.9%	21.8%	30.7%			
	55-64	277	5.2%	45.0%	21.0%	28.7%			

 Table 4.2.1: Weight status based on BMI score and the classification of WHO (Asian standard)

	Primary or below	217	1.4%	44.5%	21.8%	32.3%			
Educational attainment	Had not completed secondary	346	8.5%	45.5%	22.4%	23.6%			
	Completed secondary (F.5)	595	11.1%	47.2%	15.6%	26.2%			0.000
	Matriculation	165	20.5%	49.0%	21.3%	9.1%			
	Tertiary or above	632	12.9%	52.0%	15.4%	19.8%			
	Never married	639	19.8%	53.5%	11.8%	14.8%		0.000	
Marital	Married	1 222	6.4%	45.2%	21.5%	26.8%			
status	Divorced/ Separated/ Widowed	89	8.7%	51.2%	12.9%	27.2%	0.000		
	Managerial/ Professional worker	460	9.1%	44.8%	19.4%	26.7%			
	Clerk	289	12.5%	54.8%	9.7%	23.1%			
Occupation	Service worker	205	9.5%	50.7%	19.1%	20.6%		0.000	
	Blue collar worker	288	2.7%	42.2%	23.4%	31.7%			
	Not working	687	15.0%	50.1%	17.4%	17.5%			

4.2.2 Perception about current weight status

Perception about current weight status is associated significantly with respondents' gender, age, educational attainment and marital status.

A relatively higher proportion of female respondents (45.7%) considered themselves as 'overweight' while male respondents (10.1%) were more likely to have perceived themselves as 'underweight'. Respondents aged 35 or above (ranged from 45.5% to 50.3%) were more likely to consider themselves as 'overweight' than those younger age groups (ranged from 24.5% to 35.2%) (Table 4.2.2a).

Regarding the respondents' education level, a relatively higher proportion of respondents with secondary education level or below (ranged from 45.0% to 47.4%) considered themselves as 'overweight'. In terms of marital status, married respondents (47.8%) and divorced/separated/widowed respondents (41.0%) were more likely to have perceived themselves as 'overweight' (Table 4.2.2a).

							P-value	
Variable	Level	Base	Under- weight	Just right	Over- weight	Chi-square test	Kruskal- Wallis test	Rank correlation
C l	Male	963	10.1%	51.9%	38.0%		0.000	
Gender	Female	1 100	6.1%	48.2%	45.7%		0.000	
	18-24	274	15.0%	60.6%	24.5%			
Age	25-34	450	10.4%	54.4%	35.2%			
	35-44	527	5.5%	44.2%	50.3%			0.000
	45-54	511	5.6%	46.8%	47.7%			
	55-64	293	6.8%	47.8%	45.5%			
	Primary or below	237	5.3%	47.3%	47.4%			
Educational	Had not completed secondary	379	7.5%	47.5%	45.0%			
attainment	Completed secondary (F.5)	625	7.6%	46.7%	45.6%			0.000
	Matriculation	176	8.0%	59.5%	32.5%			
	Tertiary or above	647	9.6%	52.7%	37.7%			
	Never married	679	11.7%	56.8%	31.5%			
Marital ¹ status 1	Married	1 287	6.3%	45.9%	47.8%		0.000	
	Divorced/ Separated/ Widowed	93	3.4%	55.5%	41.0%		0.000	

Table 4.2.2a: Perception about current weight status (Q4)

Analyses of respondents' perception about their current weight by their weight status based on the Asian standard of WHO classification were carried out. There are significant associations between these two types of variables.

For those respondents who were classified as 'underweight', more than three-fifths considered themselves as 'just right' (60.4%) or 'overweight' (4.4%) (Table 4.2.2b).

Among those respondents who were classified as 'overweight', 39.5% of them considered themselves as 'just right'. Also, 17.8% of 'obese' respondents perceived themselves as 'just right' (Table 4.2.2b).

			Perception of current weight			P-value		
Variable	Level	Base	Undon		Over			
			-weight	right	weight	Chi-square test	Kruskal- Wallis test	Rank correlation
WIIO	Underweight	213	35.2%	60.4%	4.4%			
classification	Normal	945	7.5%	66.2%	26.3%			0.000
(Asian standard)	Overweight	350	2.0%	39.5%	58.5%			0.000
stanuaru)	Obese	448	0.5%	17.8%	81.7%			

Table 4.2.2b: Perception about current weight status analysed by weight status based on WHO classification (Asian standard)

4.2.3 Weight control

Statistically significant associations exist between respondents' behaviour in controlling weight deliberately over the 12 months prior to the survey and their age, educational attainment, occupation and monthly household income.

Comparatively speaking, respondents aged 35 to 44 (34.9%), with tertiary education or above (33.3%), managerial/professional workers (34.6%), clerks (31.0%) and service workers (31.0%) and those had household income level higher than \$40,000 (38.3%) were more likely than their respective counterparts to control their weight deliberately during the 12 months prior to the survey (Table 4.2.3a).

Table 4.2.3a: Controlling weight deliberately in the 12 months prior to the survey (Q5a)

						P-value	
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation
	18-24	274	24.0%	76.0%			
Age	25-34	450	26.3%	73.7%		0.003	
	35-44	527	34.9%	65.1%			
	45-54	511	29.8%	70.2%			
	55-64	293	28.0%	72.0%			
	Primary or below	237	25.0%	75.0%			
F. J 4 J	Had not completed secondary	379	25.4%	74.6%		0.015	
Educational attainment	Completed secondary (F.5)	625	29.7%	70.3%			
	Matriculation	176	26.6%	73.4%			
	Tertiary or above	647	33.3%	66.7%			

	Managerial/ Professional worker	475	34.6%	65.4%			
Occupation	Clerk	300	31.0%	69.0%			
	Service worker	220	31.0%	69.0%	0.002		
	Blue collar worker	315	22.4%	77.6%			
	Not working	729	26.7%	73.3%			
	Below \$8,000	129	28.1%	71.9%			
Monthly	\$8,000 - \$13,999	286	25.1%	74.9%			
household income	\$14,000 - \$19,999	225	23.8%	76.2%		0.000	
	\$20,000 - \$39,999	528	29.9%	70.1%			
	\$40,000 or above	411	38.3%	61.7%			

Respondents' behaviour in controlling weight is associated significantly with the weight status by the Asian standard of WHO classification.

Respondents who were classified as 'overweight' (34.2%) or 'obese' (41.3%) were more likely to report that they had controlled their weight in the 12 months prior to the survey than other respondents (Table 4.2.3b).

Table 4.2.3b: Controlling weight deliberately in 12 months (Q5a) analysed by weight status

					P-value			
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation	
	Underweight	213	20.7%	79.3%		0.000		
Weight status by	Normal	945	24.8%	75.2%				
(Asian standard)	Overweight	350	34.2%	65.8%				
	Obese	448	41.3%	58.7%				

4.2.4 Methods adopted to control weight

4.2.4.1 Physical exercise

The weight control method of using physical exercise is associated significantly with respondents' gender, age and marital status

A relatively higher proportion of males (92.4%) had engaged in physical exercise for weight control than females (81.2%). Respondents aged 35 to 54 were less likely control weight by doing physical activities (ranged from 79.3% to 84.7%). Also, never married respondents (91.6%) were more likely to do physical activities to control weight (Table 4.2.4.1).

					P-value			
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation	
Condon	Male	272	92.4%	7.6%	0.000			
Gender	Female	332	81.2%	18.8%	0.000			
	18-24	66	90.4%	9.6%				
	25-34	118	91.7%	8.3%	-			
Age	35-44	184	79.3%	20.7%	-	0.001		
	45-54	152	84.7%	15.3%	-			
	55-64	82	93.2%	6.8%				
	Never married	177	91.6%	8.4%				
Marital	Married	395	84.0%	16.0%	0.046			
Status	Divorced/ Separated/ Widowed	29	82.5%	17.5%				

Table 4.2.4.1: Doing physical exercise to control weight (Q6d)

4.2.4.2 Taking drugs/products

The weight control method of taking drugs/products is associated significantly with gender and monthly household income.

A higher proportion of females (16.8%) and those with monthly household income of \$40,000 or above (18.9%) reported that they had taken drugs/products to control weight (Table 4.2.4.2).

	0 01							
Variable	Level				P-value			
		Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation	
Gender	Male	272	8.9%	91.1%	0.005			
	Female	332	16.8%	83.2%	0.003			
	Below \$8,000	36	13.7%	86.3%				
Monthly	\$8,000 - \$13,999	72	10.0%	90.0%				
household income	\$14,000 - \$19,999	54	13.7%	86.3%		0.027		
	\$20,000 - \$39,999	158	7.2%	92.8%				
	\$40,000 or above	157	18.9%	81.1%				

Table 4.2.4.2: Taking drugs/products to control weight (Q6a)

4.2.4.3 Going to weight control or beauty parlours

The weight control method of going to weight control or beauty parlours is associated significantly with gender, age and occupation.

Females (8.2%), respondents aged 25-44 (ranged from 6.7% to 8.7%), managers/professional workers (7.9%) and clerks (8.7%) were more likely than their respective counterparts to control their weight by going to weight control or beauty parlours (Table 4.2.4.3).

						P-value	
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation
Condon	Male	272	1.2%	98.8%	0.000		
Gender	Female	332	8.2%	91.8%	0.000		
	18-24	66	2.3%	97.7%			
	25-34	118	8.7%	91.3%			
Age	35-44	184	6.7%	93.3%		0.043	
	45-54	152	3.3%	96.7%			
	55-64	82	1.5%	98.5%			
	Managerial/ Professional worker	164	7.9%	92.1%			
	Clerk	93	8.7%	91.3%			
Occupation	Service worker	68	3.0%	97.0%	0.036		
-	Blue collar worker	71	0.0%	100.0%]		
	Not working	195	3.8%	96.2%			

 Table 4.2.4.3: Going to weight control or beauty parlours (Q6c)
4.3 Physical activities/ exercise

4.3.1 Vigorous physical activities/exercise

The number of days spent on doing vigorous physical activities/exercise for at least 10 minutes in the week prior to the survey is associated significantly with respondents' demographic characteristics including gender, age, marital status and occupation.

Females (82.1%), married or divorced/ separated/ widowed respondents (ranged from 78.8% to 82.0%) and clerks (83.6%) were more likely than their respective counterparts to have engaged in vigorous physical activities/exercise for at least 10 minutes on one day or less in the week before interview. Also, the older the respondents, the more likely that they had spent one day or less on such activities for at least 10 minutes in the week before interview. However, a relatively higher proportion of respondents aged 55-64 spent 6-7 days on such activities for at least 10 minutes in the week (9.4%) (Table 4.3.1).

								P-value	
Variable	Level	Base	0 – 1 day	2 - 3 days	4 – 5 days	6 – 7 days	Chi-square test	Kruskal- Wallis test	Rank correlation
Condon	Male	970	70.4%	17.2%	4.9%	7.5%		0.000	
Gender	Female	1 104	82.1%	11.8%	3.2%	2.9%		0.000	
	18-24	274	65.2%	26.8%	4.0%	4.1%			
	25-34	450	73.9%	17.3%	4.9%	3.9%			
Age	35-44	532	79.8%	12.8%	3.0%	4.4%			0.000
	45-54	516	79.6%	10.8%	4.7%	5.0%			
	55-64	295	80.6%	6.9%	3.2%	9.4%			
	Never married	684	71.7%	20.4%	4.1%	3.8%			
Marital	Married	1 289	78.8%	11.7%	3.7%	5.8%		0.000	
status	Divorced/ Separated/ Widowed	96	82.0%	6.8%	6.7%	4.5%		0.000	
	Managerial/ Professional worker	480	74.2%	18.0%	4.9%	2.9%			
	Clerk	303	83.6%	11.5%	2.6%	2.3%			
Occupation	Service worker	220	79.2%	12.3%	4.0%	4.5%		0.004	
]]	Blue collar worker	315	72.3%	14.4%	3.5%	9.8%			
	Not working	732	76.7%	13.7%	4.0%	5.6%			

Table 4.3.1: Number of days per week spent on doing vigorous physical activities/ exercise for at least 10 minutes in the week prior to the survey (Q7)

4.3.2 Moderate physical activities/exercise

The number of days spent on doing moderate physical activities/exercise for at least 10 minutes in the week prior to the survey is associated significantly with respondents' educational attainment and occupation.

Respondents who had tertiary education or above (67.1%) and clerks (73.4%) were more likely to have spent one day or less on moderate physical activities for at least 10 minutes than their respective counterparts in the week prior to the survey (Table 4.3.2).

					3 4 - 5	5 6-7		P-value	
Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	Chi-square test	Kruskal- Wallis test	Rank correlation
	Primary or below	239	67.0%	12.1%	4.5%	16.4%			
Educational attainment	Had not completed secondary	379	58.2%	18.7%	6.6%	16.5%			
	Completed secondary (F.5)	626	66.4%	18.9%	5.2%	9.5%			0.006
	Matriculation	176	62.4%	22.1%	8.1%	7.4%			
	Tertiary or above	654	67.1%	19.4%	5.7%	7.7%			
	Managerial/ Professional worker	480	68.1%	17.8%	5.9%	8.2%			
	Clerk	303	73.4%	17.7%	4.3%	4.6%			
Occupation S	Service worker	220	68.9%	18.5%	3.6%	9.0%	0.000		
	Blue collar worker	315	54.2%	19.4%	8.3%	18.1%			
	Not working	732	62.6%	19.0%	5.9%	12.4%			

Table 4.3.2: Number of days spent on doing moderate physical activities/exercise for at least 10 minutes in the week prior to the survey (Q9)

4.3.3 Walking

Significant associations exist between number of days spent on walking for at least 10 minutes in the week prior to the survey and respondents' age, educational attainment, occupation and monthly household income.

A relatively higher proportion of respondents aged 55-64 (82.2%), those who had not completed secondary education (83.5%) or had an educational attainment of primary or below (78.6%), blue collar workers (84.1%) and had a monthly household income of \$8,000 to \$13,999 (80.1%) reported that they walked for at least 10 minutes on 6-7 days within the week prior to the survey (Table 4.3.3).

								p-value	
Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	Chi-square test	Kruskal- Wallis test	Rank correlation
	18-24	274	2.5%	10.7%	16.3%	70.6%			
	25-34	450	4.4%	5.7%	11.6%	78.3%			
Age	35-44	532	5.2%	9.0%	12.8%	72.9%			0.005
	45-54	516	5.2%	7.5%	9.4%	77.9%			
	55-64	295	3.3%	6.6%	7.9%	82.2%			
	Primary or below	239	7.1%	7.8%	6.5%	78.6%			
Educational attainment	Had not completed secondary	379	3.6%	2.8%	10.1%	83.5%			
	Completed secondary (F.5)	626	4.4%	7.6%	13.1%	74.9%			0.001
	Matriculation	176	3.7%	12.0%	11.8%	72.4%			
	Tertiary or above	654	4.2%	9.6%	12.3%	73.9%			
	Managerial/ Professional worker	480	6.4%	8.3%	11.9%	73.4%			
	Clerk	303	3.0%	7.1%	13.0%	76.9%		0.010	
Occupation	Service worker	220	3.1%	6.0%	13.1%	77.8%		0.010	
	Blue collar worker	315	5.7%	4.4%	5.9%	84.1%			
	Not working	732	3.5%	9.7%	12.4%	74.4%			
	Below \$8,000	133	5.8%	10.7%	5.4%	78.1%			
Monthly household income	\$8,000 - \$13,999	288	4.1%	5.2%	10.6%	80.1%			
	\$14,000 - \$19,999	225	5.0%	4.7%	13.3%	77.0%			0.024
	\$20,000 - \$39,999	528	3.9%	7.5%	13.0%	75.6%			
	\$40,000 or above	416	5.2%	11.8%	11.0%	72.0%			

Table 4.3.3: Number of days spent on walking for at least 10 minutes in the week prior to the survey (Q11)

4.3.4 Physical activity level based on the analysis of IPAQ

The physical activity level based on the IPAQ analysis is associated significantly with gender, age, educational attainment, occupation and monthly household income.

Females (21.3%), respondents aged 35-44 (22.4%), with education level of primary education or below (22.2%), clerks (21.0%), managerial/professional workers (20.8%) and with household income of \$40,000 or above (22.5%) were more likely to have their level of physical activity classified as 'low' compared with their respective counterparts (Table 4.3.4).

							p-value			
Variable	Level	Base	Low	Moderate	High	Chi-square test	Kruskal- Wallis test	Rank correlation		
C l	Male	960	16.8%	55.5%	27.7%	0.000				
Gender	Female	1 083	21.3%	59.2%	19.5%	0.000				
	18-24	272	18.1%	58.1%	23.8%					
	25-34	441	16.2%	59.6%	24.2%		0.035			
Age	35-44	523	22.4%	57.1%	20.5%					
	45-54	508	19.3%	57.3%	23.5%					
	55-64	292	18.7%	54.4%	27.0%					
	Primary or below	230	22.2%	49.2%	28.6%					
	Had not completed secondary	373	13.0%	54.1%	32.9%					
Educational attainment	Completed secondary (F.5)	618	20.1%	56.1%	23.8%		0.000			
	Matriculation	175	17.2%	59.0%	23.7%					
	Tertiary or above	649	21.3%	63.3%	15.4%					
	Managerial/ Professional worker	476	20.8%	60.1%	19.1%					
	Clerk	301	21.0%	66.2%	12.8%					
Occupation	Service worker	213	19.2%	46.8%	34.1%	0.000				
	Blue collar worker	308	14.4%	49.4%	36.2%					
	Not working	722	19.3%	59.0%	21.7%					

Table 4.3.4: Physical activity level classified based on categorical score derived fromthe analysis of IPAQ

	Below \$8,000	131	17.9%	51.5%	30.6%		
Monthly household income	\$8,000 - \$13,999	283	16.5%	56.8%	26.7%	0.010	
	\$14,000 - \$19,999	223	18.4%	51.4%	30.2%		
	\$20,000 - \$39,999	521	21.0%	57.0%	22.0%		
	\$40,000 or above	412	22.5%	60.4%	17.1%		

4.4 Dietary and eating out habits

4.4.1 Frequency of drinking fruit/vegetable juice per week

The frequency of fruit/vegetable juice consumption is associated significantly with respondents' age, educational attainment, marital status, occupation and monthly household income and type of living quarters.

A relatively higher proportion of respondents aged 35-64 (ranged from 84.2% to 86.1%), married respondents (85.2%), blue collar workers (88.9%), with household income \$8,000 to \$19,999 (ranged from 86.7% to 87.4%) and living in public rental flats (87.0%) reported that they drank juice/vegetable juice 1 day or less in a week. Also, the lower the education level of the respondents, the more likely that they drank fruit/vegetable juice 1 day or less in a week (Table 4.4.1).

Table 4.4.1: Number of days per week in which respondents consumed fruit	/
vegetable juice (Q14c)	

								p-value	
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-square test	Kruskal- Wallis test	Rank correlation
	18-24	274	80.4%	14.9%	2.2%	2.5%			
Age	25-34	450	76.0%	18.4%	1.4%	4.2%			
	35-44	532	84.2%	9.9%	2.7%	3.3%			0.004
	45-54	516	86.1%	8.5%	2.5%	2.9%			
	55-64	295	84.9%	9.3%	1.3%	4.5%			
	Primary or below	239	92.4%	5.3%	1.5%	0.9%			
Educational	Had not completed secondary	379	88.1%	8.1%	1.8%	2.1%			
attainment	Completed secondary (F.5)	626	81.5%	13.2%	2.4%	2.9%			0.000
	Matriculation	176	80.1%	14.1%	2.4%	3.4%			
	Tertiary or above	654	77.2%	14.9%	2.1%	5.8%			
Marital I Status I	Never married	684	77.6%	16.3%	2.2%	3.9%			
	Married	1 289	85.2%	10.0%	1.9%	2.9%		0.001	
	Divorced/Separated /Widowed	96	80.4%	8.3%	3.8%	7.5%			

	Managerial/ Professional worker	480	78.1%	13.7%	2.6%	5.7%			
0	Clerk	303	83.4%	12.3%	2.2%	2.2%		0.004	
Occupation	Service worker	220	81.7%	14.0%	1.9%	2.4%		0.004	
	Blue collar worker	315	88.9%	7.9%	0.4%	2.8%			
	Not working	732	82.7%	11.6%	2.6%	3.1%			
	Below \$8,000	133	85.0%	5.3%	4.9%	4.7%			
Monthly	\$8,000 - \$13,999	288	87.4%	8.4%	2.1%	2.1%			
household	\$14,000 - \$19,999	225	86.7%	10.7%	0.7%	1.9%			0.000
income	\$20,000 - \$39,999	528	83.3%	13.5%	1.5%	1.6%			
	\$40,000 or above	416	76.9%	14.7%	2.5%	5.9%			
T of	Public rental flats	552	87.0%	10.4%	1.0%	1.6%			
Type of living quarters P	Subsidized sale flats	336	82.6%	12.7%	2.2%	2.5%	0.001	0.001	
	Private housing	1 176	80.3%	12.5%	2.6%	4.6%			

4.4.2 Frequency of consuming fruit per week

The frequency of fruit consumption is associated significantly with respondents' gender, age, marital status, occupation and type of living quarters.

The proportion of people consuming fruit 6-7 days a week was higher among females (58.2%), those aged 55-64 (72.2%), married respondents (58.4%), not working respondents (58.9%) and those living in private housing (54.1%) (Table 4.4.2).

								p-value	
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-square test	Kruskal- Wallis test	Rank correlation
Gender	Male	969	14.8%	24.3%	16.2%	44.7%		0.000	
	Female	1 103	6.5%	19.8%	15.5%	58.2%		0.000	
	18-24	274	9.9%	29.3%	20.8%	40.0%			
	25-34	450	12.7%	28.2%	16.2%	42.9%			
Age 3	35-44	530	12.4%	22.7%	15.2%	49.7%			0.000
	45-54	514	8.8%	18.8%	15.9%	56.5%			
	55-64	295	6.7%	9.7%	11.3%	72.2%			

Table 4.4.2: Number of days per week in which respondents ate fruit (Q14ai)

	Never married	682	11.9%	28.8%	18.8%	40.4%			
Marital Status	Married	1 288	9.4%	18.0%	14.3%	58.4%		0.000	
Status	Divorced/Separated /Widowed	96	11.9%	27.6%	14.4%	46.2%			
0	Managerial/ Professional worker	480	9.6%	22.9%	17.1%	50.4%	0.000		
	Clerk	302	8.7%	27.2%	16.0%	48.1%		0.000	
Occupation	Service worker	220	16.2%	26.9%	11.5%	45.4%		0.000	
	Blue collar worker	313	16.1%	21.1%	15.2%	47.6%			
	Not working	732	7.4%	17.9%	15.7%	58.9%			
Type of S living f quarters F	Public rental flats	552	10.8%	25.9%	13.5%	49.8%			
	Subsidized sale flats	336	11.8%	22.6%	17.0%	48.6%		0.022	
	Private housing	1 173	9.7%	19.7%	16.6%	54.1%			

4.4.3 Frequency of consuming vegetables per week

The frequency of vegetable consumption in the week prior to the survey is associated significantly with gender, age, marital status and occupation.

A relatively higher proportion of females (88.1%), respondents aged 55-64 (88.9%), married respondents (85.6%) and not working respondents (87.7%) had consumed vegetables 6-7 days a week. Also, the older the respondents, the more likely that they had consumed vegetables 6-7 days a week (Table 4.4.3).

Table 4.4.3: Number of days per week in which respondents consumed vegetables(Q14bi)

								p-value	
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-square test	Kruskal- Wallis test	Rank correlation
Gender	Male	970	1.9%	10.5%	13.3%	74.3%		0.000	
	Female	1 104	0.5%	3.8%	7.6%	88.1%			
	18-24	274	1.1%	7.9%	12.9%	78.1%			
	25-34	450	1.0%	8.6%	13.3%	77.1%			
Age 3	35-44	532	0.8%	9.0%	10.2%	80.0%			0.000
	45-54	516	1.8%	4.6%	8.7%	84.9%			
	55-64	295	1.1%	4.1%	5.9%	88.9%			

Marital Status	Never married	684	1.1%	9.2%	14.8%	74.8%			
	Married	1 289	1.1%	5.7%	7.6%	85.6%		0.000	
	Divorced/Separated /Widowed	96	2.4%	8.7%	12.1%	76.8%			
	Managerial/ Professional worker	480	0.6%	6.7%	13.1%	79.5%	0.000		
0	Clerk	303	1.4%	7.3%	11.4%	79.8%		0.000	
Occupation S	Service worker	220	1.9%	9.2%	13.1%	75.8%			
	Blue collar worker	315	2.0%	10.2%	9.4%	78.4%			
	Not working	732	0.9%	4.7%	6.8%	87.7%			

4.4.4 Amount of fruit and vegetables consumed per day

From this survey, the average number of servings of fruit and vegetables consumed per day are associated significantly with gender, age, marital status and occupation.

4.4.4.1 Number of servings of fruit and vegetables consumed per day (excluding fruit/vegetable juice consumption)²⁴

Females (22.8%), married respondents (20.2%), those aged 45-64 (ranged from 19.3% to 20.8%), clerks (19.9%) and not working respondents (22.7%) were more likely than their respective counterparts to have consumed 5 or more servings of fruit and vegetables per day. (Table 4.4.4.1)

			Lana			p-value			
Variable	Level	Base	than 5 servings	5 servings or more	Chi-square test	Kruskal- Wallis test	Rank correlation		
Condon	Male	966	86.6%	13.4%		0.000			
Gender	Female	1 095	77.2%	22.8%		0.000			
	18-24	274	85.7%	14.3%					
	25-34	450	80.8%	19.2%					
Age	35-44	526	82.8%	17.2%			0.018		
4	45-54	512	80.7%	19.3%					
	55-64	291	79.2%	20.8%					

Table 4.4.4.1: Number of servings of fruit and vegetables consumed per day (excluding fruit and vegetable juice) (Q14a & Q14b)

²⁴ Total average number of servings: average no. of servings of fruit eaten per day + (average no. of bowls of vegetables eaten per day x 2)

	Never married	681	84.9%	15.1%				
Marital Status	Married	1 279	79.8%	20.2%		0.001		
Status	Divorced/Separated /Widowed	96	82.6%	17.4%				
	Managerial/ Professional worker	478	84.5%	15.5%				
Oserration	Clerk	302	80.1%	19.9%		0.014		
Occupation S	Service worker	218	86.9%	13.1%		0.014		
	Blue collar worker	312	84.1%	15.9%				
	Not working	727	77.3%	22.7%				

4.4.2 Number of servings of fruit and vegetables consumed per day (including fruit/vegetable juice consumption)²⁵

Females (24.0%), married respondents (21.3%), those aged 55-64 (22.0%), clerks (21.0%) and not working respondents (23.6%) were more likely than their respective counterparts to have consumed 5 or more servings of fruit and vegetables per day. (Table 4.4.4.2)

Table 4.4.4.2: Number of servings of fruit and vegetables consumed per day(including fruit and vegetable juice) (Q14a to Q14c)

			Loca			p-value	
Variable	Level	Base	than 5 servings	5 servings or more	Chi-square test	Kruskal- Wallis test	Rank correlation
Condon	Male	966	85.9%	14.1%		0.000	
Gender	Female	1 095	76.0%	24.0%		0.000	
	18-24	274	84.9%	15.1%			
	25-34	450	79.8%	20.2%			
Age	35-44	526	81.6%	18.4%			0.017
	45-54	512	80.0%	20.0%			
	55-64	291	78.0%	22.0%			
	Never married	68 <u>1</u>	84.2%	15.8%			
Marital Status /	Married	1 279	78.7%	21.3%		0.001	
	Divorced/Separated /Widowed	96	81.0%	19.0%			

²⁵ Total average number of servings: average no. of fruit eaten per day + (average no. of bowls of vegetables eaten per day x 2) + average no. of days per week having drunk one cups or more of fruit/ vegetable juice

Occupation	Managerial/ Professional worker	478	82.9%	17.1%	-		
	Clerk	302	79.0%	21.0%		0.018	
	Service worker	218	86.5%	13.5%			
	Blue collar worker	312	83.5%	16.5%			
	Not working	727	76.4%	23.6%			

4.4.5 Number of bowls of grains and cereals consumed per day

The number of bowls of grains and cereals consumed is significantly associated with the respondents' gender, age, educational attainment, marital status, occupation and type of living quarters.

A relatively higher proportion of females (88.4%), respondents aged 25 to 44 (77.0%), with education level of primary or below (78.7%), married respondents (76.8%), not working respondents (80.7%) and living in private housing (77.2%) consumed less than 3 bowls of grains and cereals per day. (Table 4.4.5)

			Loss		More		p-value	
Variable	Level	Base	than 3 bowls	3 – 6 bowls	than 6 bowls	Chi-square test	Kruskal- Wallis test	Rank correlation
Condon	Male	970	59.9%	39.4%	0.7%		0.000	
Gender	Female	1 104	88.4%	11.5%	0.1%		0.000	
	18-24	274	66.9%	32.5%	0.5%			
	25-34	450	77.0%	22.7%	0.3%			
Age	35-44	532	77.0%	22.4%	0.6%			0.000
	45-54	516	75.6%	24.2%	0.1%			
	55-64	295	75.0%	24.5%	0.4%			
	Primary or below	239	78.7%	20.5%	0.8%			
	Had not completed secondary	379	71.9%	27.3%	0.8%			
Educational attainment	Completed secondary (F.5)	626	77.7%	22.1%	0.2%			0.050
	Matriculation	176	71.1%	28.9%	0.0%			
	Tertiary or above	654	74.2%	25.6%	0.2%			
	Never married	684	71.6%	28.2%	0.2%			
Marital Status	Married	1 289	76.8%	22.7%	0.4%		0.000	
Status	Divorced/Separated /Widowed	96	75.2%	24.1%	0.7%			
	Managerial/ Professional worker	480	75.5%	24.3%	0.2%			
0	Clerk	303	75.4%	24.6%	0.0%		0.000	
Occupation S	Service worker	220	74.7%	25.3%	0.0%		0.000	
	Blue collar worker	315	60.5%	37.8%	1.6%]		
	Not working	732	80.7%	19.1%	0.3%			

Table 4.4.5: Number of bowls of grains and cereals consumed per day (Q14di & Q14dii)

Type of	Public rental flats	552	72.0%	27.4%	0.7%		
living	Subsidized sale flats	336	73.3%	26.2%	0.6%	0.046	
quarters	Private housing	1 176	77.2%	22.6%	0.2%		

4.4.6 Frequency of eating meat per week

The frequency of meat consumption is associated with respondents' gender, age, marital status, educational attainment and monthly household income.

A relatively higher proportion of males (80.6%), respondents aged 18-44 (ranged from 80.8% to 82.5%), with tertiary education level or above (82.3%) and with monthly household income of \$20,000 or above (ranged from 80.3% to 82.7%) ate meat 6 to 7 days per week. Also, divorced/ separated/ widowed respondents (8.6%) were more likely to eat meat only 0 to 1 day per week. (Table 4.4.6)

								p-value	
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-squa re test	Kruskal- Wallis test	Rank correlation
C l	Male	968	1.8%	6.9%	10.7%	80.6%		0.001	
Gender	Female	1 102	3.5%	9.3%	11.3%	75.9%		0.001	
	18-24	274	2.0%	5.4%	11.8%	80.8%			
Age	25-34	447	2.4%	6.4%	9.2%	82.0%			
	35-44	532	1.5%	7.2%	8.8%	82.5%			0.000
	45-54	516	4.3%	9.6%	12.7%	73.4%			
	55-64	295	3.4%	12.7%	14.3%	69.6%			
	Never married	681	2.4%	6.8%	11.9%	78.9%			
Marital	Married	1 289	2.5%	8.1%	10.7%	78.7%		0.002	
Status	Divorced/Separated /Widowed	96	8.6%	16.8%	8.5%	66.1%			
	Primary or below	239	4.0%	13.1%	12.7%	70.3%			
Educational	Had not completed secondary	379	2.6%	9.0%	11.7%	76.7%			
attainment	Completed secondary (F.5)	625	2.3%	8.6%	11.3%	77.8%			0.000
	Matriculation	176	2.0%	7.7%	13.7%	76.7%			
	Tertiary or above	652	3.0%	5.5%	9.1%	82.3%			
	Below \$8,000	133	4.2%	17.0%	9.0%	69.9%			
Monthly	\$8,000 - \$13,999	288	3.5%	9.3%	9.4%	77.9%			
household	\$14,000 - \$19,999	225	2.8%	9.6%	11.5%	76.2%			0.001
income \$	\$20,000 - \$39,999	528	1.0%	6.4%	12.2%	80.3%]		
	\$40,000 or above	416	2.4%	5.0%	9.9%	82.7%			

 Table 4.4.6: Frequency of eating meat per week (Q14ei)

4.4.7 Frequency of eating fish per week

The frequency of fish consumption is associated with respondents' gender, age, marital status, educational attainment and occupation.

Females (21.4%), married respondents (22.7%), blue collar workers (24.7%) and not working respondents (24.6%) were more likely to eat fish 6 to 7 days per week than their respective counterparts. Also, the older the respondents or the lower the educational attainment, the more likely that the respondents ate fish 6 to 7 days per week. (Table 4.4.7)

								p-value	
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-squa re test	Kruskal- Wallis test	Rank correlation
a l	Male	969	25.3%	40.4%	16.4%	17.9%		0.000	
Gender	Female	1 103	19.0%	39.0%	20.6%	21.4%		0.000	
	18-24	274	24.0%	41.5%	21.6%	12.9%			
Age	25-34	450	26.4%	41.4%	16.9%	15.3%			
	35-44	532	23.5%	41.8%	17.4%	17.4%			0.000
	45-54	514	19.1%	37.4%	19.7%	23.8%			
	55-64	295	15.7%	35.3%	18.6%	30.4%			
	Primary or below	238	12.4%	31.7%	16.7%	39.1%			
	Had not completed secondary	378	23.3%	31.5%	21.8%	23.4%			
Educational attainment	Completed secondary (F.5)	626	25.1%	40.4%	18.4%	16.2%			0.000
	Matriculation	176	21.4%	45.4%	17.2%	15.9%			
	Tertiary or above	654	21.9%	45.0%	18.1%	15.1%			
	Never married	683	25.8%	41.7%	17.7%	14.8%			
Marital Status	Married	1 289	19.3%	39.0%	19.0%	22.7%		0.000	
Status	Divorced/Separated /Widowed	94	29.3%	34.7%	19.1%	17.0%			
	Managerial/ Professional worker	480	21.9%	46.6%	17.5%	14.0%			
Occupation	Clerk	303	23.6%	44.6%	17.5%	14.3%		0.000	
Occupation	Service worker	220	23.5%	40.9%	19.6%	16.0%		0.000	
J	Blue collar worker	314	26.6%	30.3%	18.4%	24.7%			
	Not working	731	19.1%	36.2%	20.1%	24.6%			

 Table 4.4.7: Frequency of eating fish per week (Q14fi)

4.4.8 Number of taels of meat and fish consumed per day

The number of taels of meat and fish consumed by the respondents is associated with respondents' gender, age, marital status, educational attainment and monthly household income

The younger the respondents, the more likely that they ate more than 6 taels of meat and fish per day. In addition, males (35.6%), those never married (40.6%), those with tertiary education level or above (38.8%) and with monthly household income of \$20,000 or above (ranged from 36.2% to 36.6%) were more likely to eat more than 6 taels of meat and fish per day than their respective counterparts. (Table 4.4.8)

			Loss		Moro		p-value	
Variable	Level	Base	than 5 taels	5 – 6 taels	than 6 taels	Chi-square test	Kruskal- Wallis test	Rank correlation
Condon	Male	963	49.0%	15.4%	35.6%		0.000	
Gender	Female	1 095	55.4%	15.6%	29.0%		0.000	
	18-24	274	40.1%	16.2%	43.7%			
	25-34	447	42.9%	16.6%	40.5%			
Age	35-44	528	54.2%	14.8%	31.1%			0.000
	45-54	511	59.3%	14.7%	26.0%			
	55-64	291	62.8%	15.9%	21.2%			
	Primary or below	236	64.0%	15.2%	20.8%			
F J 4 J	Had not completed secondary	375	54.1%	14.0%	32.0%			
attainment	Completed secondary (F.5)	621	55.3%	15.1%	29.6%			0.000
	Matriculation	175	53.0%	15.4%	31.7%			
	Tertiary or above	650	44.3%	16.9%	38.8%			
	Never married	677	42.7%	16.8%	40.6%			
Marital Status	Married	1 280	56.8%	15.1%	28.0%		0.000	
Status	Divorced/Separated /Widowed	94	60.0%	12.2%	27.8%			
	Below \$8,000	131	62.4%	11.3%	26.4%			
Monthly	\$8,000 - \$13,999	288	53.4%	16.2%	30.4%			
household	\$14,000 - \$19,999	225	59.4%	14.9%	25.7%			0.000
income	\$20,000 - \$39,999	528	48.8%	14.6%	36.6%			
	\$40,000 or above	414	44.5%	19.2%	36.2%			

 Table 4.4.8: Number of taels of meat and fish consumed per day (Q14e & Q14f)

4.4.9 Frequency of consuming eggs per week

There is significant association between frequency of consuming eggs and respondents' gender, age, educational attainment, marital status and monthly household income.

Males (10.7%) respondents were more likely to eat eggs 6 to 7 days per week than females (5.3%). In addition, a relatively higher proportion of respondents aged 55-64 (48.1%), with primary education level or below (52.9%), divorced/ separated/ widowed respondents (48.7%), and with monthly household income below \$8,000 (52.0%) at eggs 0 to 1 day per week. (Table 4.4.9)

								p-value	
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-squa re test	Kruskal- Wallis test	Rank correlation
C l	Male	969	35.1%	40.2%	14.0%	10.7%		0.000	
Gender	Female	1 103	39.8%	44.4%	10.5%	5.3%		0.000	
	18-24	274	34.0%	45.9%	15.4%	4.7%			
	25-34	450	29.0%	44.5%	17.7%	8.9%			
Age	35-44	531	36.0%	43.0%	11.8%	9.2%			0.000
	45-54	516	42.1%	39.7%	10.1%	8.1%			
	55-64	294	48.1%	40.6%	5.2%	6.1%			
	Primary or below	238	52.9%	36.8%	6.0%	4.4%			
Educational	Had not completed secondary	379	37.4%	44.1%	11.5%	7.0%			0.000
attainment	Completed secondary (F.5)	625	36.3%	41.4%	11.5%	10.8%			
	Matriculation	176	32.0%	42.0%	15.9%	10.2%			
	Tertiary or above	654	35.0%	44.6%	14.4%	6.0%			
	Never married	684	33.2%	43.2%	15.4%	8.2%			
Marital Status	Married	1 287	39.2%	42.5%	10.8%	7.6%		0.003	
Status	Divorced/Separated /Widowed	96	48.7%	35.5%	7.0%	8.9%			
	Below \$8,000	133	52.0%	34.0%	7.2%	6.8%			
Monthly	\$8,000 - \$13,999	287	38.6%	45.6%	9.7%	6.1%			
Monthly household \$ income \$	\$14,000 - \$19,999	225	45.8%	37.1%	10.3%	6.9%			0.002
	\$20,000 - \$39,999	527	31.6%	44.1%	14.9%	9.4%			
	\$40,000 or above	416	35.4%	43.4%	12.2%	9.0%			

Table 4.4.9: Frequency of consuming eggs per week (Q14gi)

4.4.10 Number of eggs eaten per day

The associations between the average number of eggs eaten per day and respondents' gender and occupation are statistically significant.

Female respondents (93.3%) and not working respondents (92.5%) were more likely to eat less than 1 egg per day than their respective counterparts. (Table 4.4.10)

							p-value			
Variable	Level	Base	Less than 1	1 - 2	More than 2	Chi-square test	Kruskal- Wallis test	Rank correlation		
Gender	Male	969	84.3%	14.8%	0.9%		0.000			
	Female	1 102	93.3%	6.4%	0.2%		0.000			
	Managerial/ Professional worker	479	87.0%	12.6%	0.4%		0.000			
Occuration	Clerk	302	88.1%	10.7%	1.2%	ó				
Occupation	Service worker	219	90.0%	9.4%	0.7%		0.008			
	Blue collar worker	315	85.4%	14.1%	0.5%					
	Not working	732	92.5%	7.1%	0.4%					

Table 4.4.10: Number of eggs eaten per day (Q14gi & Q14gii)

4.4.11 Frequency of consuming soybean curd or soybean milk per week

The frequency of consuming soybean curd or soybean milk by the respondents is associated with respondents' gender and occupation. Male respondents (65.5%) and those who were blue collar workers (71.4%) or service workers (67.3%) were more likely to consume soybean curd or soybean milk 0-1 days per week than their respective counterparts. (Table 4.4.11)

								p-value			
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-square test	Kruskal- Wallis test	Rank correlation		
C l	Male	970	65.5%	27.7%	3.9%	3.0%		0.034	0.024	0.034	
Gender	Female	1 103	61.2%	30.0%	4.8%	4.0%					
	Managerial/ Professional worker	480	61.5%	30.4%	5.0%	3.1%					
Oserration	Clerk	303	60.9%	27.8%	4.9%	6.4%		0.011			
Occupation S	Service worker	219	67.3%	27.3%	3.3%	2.1%		0.011			
	Blue collar worker	315	71.4%	23.5%	2.8%	2.3%					
	Not working	732	60.7%	31.5%	4.3%	3.5%					

Table 4.4.11: Number of days per week respondents consumed soybean curd or soybean milk (Q14hi)

4.4.12 Number of servings of soybean curd or soybean milk consumed by respondents per day

From this survey, significant association is found between the number of servings of soybean curd or soybean milk consumed per day and respondents' occupation. A relatively higher proportion of clerks (8.5%) consumed 1 or more servings of soybean products. Relatively speaking, blue collar workers (96.9%) were more likely to consume less than 1 serving of soybean curd or soybean milk per day.

Table 4.4.12: Number of servings of soybean curd or soybean milk consumed byrespondents per week (Q14hi & Q14hii)

			-			p-value				
Variable	Level	Base	Less than 1	1 - 2	More than 2	Chi-square test	Kruskal- Wallis test	Rank correlation		
	Managerial/ Professional worker	480	94.6%	5.4%	0.0%					
Oserration	Clerk	303	91.6%	8.0%	0.5%		0.021			
Occupation	Service worker	219	94.2%	5.8%	0.0%		0.021			
	Blue collar worker	315	96.9%	3.1%	0.0%					
	Not working	731	95.1%	4.6%	0.3%					

4.4.13 Frequency of consuming dairy products per week

The frequency of consuming dairy products is associated with respondents' gender, age, marital status, educational attainment, occupation, monthly household income and type of living quarters.

A relatively higher proportion of males (66.9%), respondents aged 35-54 (ranged from 65.7% to 66.6%), married respondents (63.6%) or divorced/separated/widowed respondents (61.5%), blue collar workers (74.8%), with a monthly household income of \$14,000-\$19,999 (70.8%) and living in public rental flat (66.8%) consumed dairy products 0 or 1 days per week than their respective counterparts. Also, the lower the respondents' educational attainment, the more likely the respondents consumed dairy products 0 to 1 day per week. (Table 4.4.13)

								p-value	e
Variable	Level	Base	0-1 day	2-3 days	4-5 days	6-7 days	Chi-squa re test	Kruska l- Wallis test	Rank correlation
Condon	Male	967	66.9%	15.9%	4.1%	13.1%		0.000	
Gender	Female	1 103	55.7%	20.7%	7.9%	15.6%		0.000	
	18-24	274	47.8%	26.2%	8.7%	17.3%			
	25-34	447	58.0%	22.2%	5.4%	14.3%			
Age	35-44	531	66.6%	16.0%	6.1%	11.4%			0.023
	45-54	516	65.7%	16.2%	6.4%	11.7%			
	55-64	295	59.4%	14.1%	4.6%	21.9%			
	Primary or below	239	71.6%	12.2%	6.0%	10.2%			
Educational	Had not completed secondary	379	70.4%	11.2%	6.2%	12.1%			
attainment	Completed secondary (F.5)	623	60.7%	20.9%	5.4%	12.9%			0.000
	Matriculation	175	55.2%	17.8%	8.0%	19.0%			
	Tertiary or above	654	53.4%	22.8%	6.3%	17.5%			
	Never married	681	55.8%	22.2%	6.7%	15.3%			
Marital M Status	Married	1 288	63.6%	17.0%	5.6%	13.8%		0.011	
	Divorced/Separated /Widowed	96	61.5%	11.5%	10.2%	16.8%			

Table 4.4.13: Frequency of consuming dairy products per week (Q14ii)

	Managerial/ Professional worker	478	60.3%	19.6%	5.6%	14.5%		
	Clerk	303	56.5%	21.7%	6.4%	15.4%		
Occupation	Service worker	219	64.8%	14.6%	8.2%	12.4%	0.000	
	Blue collar worker	315	74.8%	13.4%	3.1%	8.7%		
	Not working	730	56.2%	19.9%	6.8%	17.1%		
	Below \$8,000	133	68.1%	15.5%	5.4%	10.9%		
Monthly	\$8,000 - \$13,999	287	64.6%	17.0%	6.6%	11.8%		
household	\$14,000 - \$19,999	224	70.8%	10.6%	7.4%	11.2%		0.003
income	\$20,000 - \$39,999	528	58.5%	21.6%	6.4%	13.5%		
	\$40,000 or above	416	56.8%	21.1%	5.3%	16.9%		
Type of	Public rental flats	551	66.8%	17.1%	5.8%	10.2%		
living	Subsidized sale flats	335	58.2%	19.6%	5.5%	16.7%	0.004	
quarters	Private housing	1 174	58.7%	19.0%	6.5%	15.8%		

4.4.14 Number of servings of dairy products consumed per day by respondents

The amount of dairy products consumed by the respondents is associated statistically with the respondents' educational attainment, occupation, monthly household income and type of living quarters.

Respondents with an education level of primary or below (91.3%), blue collar workers (92.7%) and those living in public rental flats (90.6%) were more likely than their respective counterparts to consume less than 1 serving of dairy products per day. Also, the lower the monthly household income of the respondents, the more likely to consume less than 1 serving of dairy products per day. (Table 4.4.14)

			_			p-value				
Variable	Level	Base	Less than 1	1-2	More than 2	Chi-square test	Kruskal- Wallis test	Rank correlation		
	Primary or below	239	91.3%	8.4%	0.3%					
Educational	Had not completed secondary	378	88.6%	11.1%	0.3%					
attainment	Completed secondary (F.5)	621	88.5%	11.4%	0.1%			0.000		
	Matriculation	175	80.1%	19.4%	0.4%					
	Tertiary or above	653	82.8%	16.5%	0.7%					
	Managerial/ Professional worker	478	86.8%	12.8%	0.4%					
_	Clerk	303	85.6%	13.5%	0.9%					
Occupation	Service worker	219	86.6%	13.4%	0.0%		0.013			
	Blue collar worker	313	92.7%	6.8%	0.5%					
	Not working	728	83.4%	16.3%	0.3%					
	Below \$8,000	133	90.1%	9.9%	0.0%					
	\$8,000 - \$13,999	287	88.6%	11.2%	0.3%					
Monthly household	\$14,000 - \$19,999	224	88.6%	11.0%	0.3%			0.017		
income	\$20,000 - \$39,999	527	87.3%	12.5%	0.2%					
	\$40,000 or above	416	83.5%	15.7%	0.8%					
Type of	Public rental flats	550	90.6%	9.3%	0.1%					
living quarters	Subsidized sale flats	335	85.4%	14.1%	0.4%		0.006			
	Private housing	1 171	84.5%	15.0%	0.5%					

Table 4.4.14: Number of servings of dairy products consumed per day by respondents (Q14ii & Q14iii)

4.4.15 Number of cups of fluid consumed per day

The average number of cups of fluid drunk per day by the respondents is associated with the respondents' educational attainment, occupation and monthly household income.

A relatively higher proportion of respondents who had a tertiary education level or above (73.2%), managerial or professional workers (74.9%), and those with monthly household income more than \$40,000 (76.1%) drank 6 cups of fluid or more each day. (Table 4.4.15)

						p-value			
Variable	Level	Base	Less than 6	6 - 8	More than 8	Chi-square test	Kruskal- Wallis test	Rank correlation	
	Primary or below	239	34.8%	51.4%	13.8%				
Educational	Had not completed secondary	378	34.5%	48.1%	17.3%				
attainment	Completed secondary (F.5)	623	35.6%	48.7%	15.7%			0.002	
	Matriculation	176	34.4%	52.1%	13.5%				
	Tertiary or above	652	26.8%	55.2%	17.9%				
	Managerial/ Professional worker	480	25.1%	57.2%	17.7%				
Osservation	Clerk	301	36.7%	50.9%	12.4%		0.010		
Occupation	Service worker	220	39.5%	42.3%	18.2%		0.010		
	Blue collar worker	315	33.2%	45.6%	21.2%				
	Not working	728	33.0%	52.4%	14.7%				
	Below \$8,000	133	40.4%	45.1%	14.4%				
Monthly	\$8,000 - \$13,999	287	35.8%	46.5%	17.7%				
Monthly household \$ income	\$14,000 -\$19,999	225	38.7%	42.4%	18.8%			0.000	
	\$20,000 - \$39,999	528	30.2%	53.2%	16.6%				
	\$40,000 or above	414	23.9%	58.4%	17.7%				

Table 4.4.15: Number of cups of fluid consumed per day (Q14j)

4.4.16 Eating out habits

4.4.16.1 Eating out for breakfast

The frequency of eating out for breakfast is associated with respondents' gender, educational attainment, marital status and occupation.

A relatively higher proportion of the male respondents (42.4%), divorced/ separated/ widowed respondents (43.3%), those who had not completed secondary education (40.8%) and blue collar workers (47.4%) reported eating out for breakfast 5 times or more per week. (Table 4.4.16.1)

			5	2 – 4	Onco	2 - 3	Once		p-value	
Variable	Level	Base	times or more	times per week	per week	times per month	per month or less	Chi-square test	Kruskal- Wallis test	Rank correlation
C l	Male	898	42.4%	16.7%	10.3%	4.2%	26.4%		0.000	
Gender	Female	1 009	24.3%	20.2%	13.2%	6.9%	35.3%		0.000	
	Primary or below	218	38.8%	14.4%	12.5%	5.9%	28.4%			
Educational attainment	Had not completed secondary	357	40.8%	18.0%	10.2%	5.3%	25.6%			
	Completed secondary (F.5)	574	36.0%	20.9%	9.7%	5.4%	28.0%			0.000
	Matriculation	159	23.4%	18.4%	14.1%	5.6%	38.4%			
	Tertiary or above	598	25.3%	18.2%	13.9%	6.0%	36.5%			
	Never married	613	26.8%	19.2%	11.0%	5.9%	37.1%			
Marital	Married	1 206	35.3%	18.4%	12.5%	5.6%	28.2%		0.000	
Status	Divorced/ Separated/ Widowed	83	43.3%	16.4%	6.6%	5.2%	28.5%		0.000	
Occupation S	Managerial/ Professional worker	452	33.6%	19.3%	12.2%	5.4%	29.6%			
	Clerk	278	36.0%	16.1%	14.0%	4.3%	29.6%			
	Service worker	204	41.2%	20.4%	8.8%	3.3%	26.3%		0.000	
	Blue collar worker	303	47.4%	14.5%	10.6%	3.7%	23.8%			
	Not working	646	21.5%	20.5%	12.3%	8.3%	37.3%			

 Table 4.4.16.1: Frequency of eating out for breakfast (Q15a)

4.4.16.2 Eating out for lunch

The frequency of eating out for lunch is associated with respondents' gender, age, educational attainment, marital status, occupation, monthly household income and type of living quarters.

Males (69.0%), respondents aged 25-34 (60.9%), never married (63.3%), managers or professional workers (66.3%), living in private housing (54.0%) and subsidized sale flats(53.9%) were more likely than their respective counterparts to eat out for lunch 5 times or more per week. Also, the higher the education and household income level, the more likely that the respondents ate out for lunch 5 times or more per week. (Table 4.4.16.2)

			5	2-4 times per week	Onee	2 - 3	Once	p-value			
Variable	Level	Base	times or more		per week	times per month	per month or less	Chi-square test	Kruskal- Wallis test	Rank correlation	
Caralan	Male	950	69.0%	17.2%	4.8%	2.0%	7.0%		0.000		
Gender	Female	1 069	38.6%	26.8%	12.1%	7.2%	15.3%		0.000		
	18-24	270	57.3%	27.5%	6.3%	3.4%	5.5%				
	25-34	440	60.9%	20.6%	8.0%	3.7%	6.9%				
Age	35-44	518	55.3%	23.9%	7.0%	5.4%	8.4%			0.000	
	45-54	504	51.3%	19.3%	11.1%	5.3%	13.0%				
	55-64	280	34.2%	22.8%	10.4%	5.8%	26.8%				
	Never married	671	63.3%	21.9%	6.1%	3.5%	5.2%				
Marital	Married	1 249	47.6%	22.7%	10.0%	5.3%	14.4%		0.000		
Status	Divorced/ Separated/ Widowed	93	50.9%	18.8%	9.6%	5.7%	15.1%		0.000		
	Primary or below	226	37.5%	13.9%	9.6%	7.7%	31.3%				
Educational	Had not completed secondary	362	50.7%	19.7%	9.6%	7.2%	12.8%				
Educational S attainment N N T	Completed secondary (F.5)	611	53.3%	23.8%	10.1%	4.4%	8.4%			0.000	
	Matriculation	174	53.4%	23.9%	9.5%	2.3%	11.0%				
	Tertiary or above	645	59.1%	24.7%	6.1%	3.5%	6.6%				

 Table 4.4.16.2: Frequency of eating out for lunch (Q15b)

	Managerial/ Professional worker	474	66.3%	19.3%	5.2%	3.0%	6.1%			
	Clerk	296	63.5%	20.3%	6.8%	3.8%	5.5%			
Occupation	Service worker	214	60.2%	19.4%	8.9%	3.7%	7.8%		0.000	
	Blue collar worker	306	62.5%	13.5%	7.2%	4.7%	12.2%			
	Not working	703	32.6%	30.0%	12.1%	6.9%	18.5%			
	Below \$8,000	130	38.0%	23.1%	13.9%	9.0%	16.0%			
	\$8,000 - \$13,999	278	46.1%	22.7%	13.5%	5.2%	12.5%			
Monthly household	\$14,000 - \$19,999	217	51.9%	18.6%	10.0%	6.5%	13.0%	6		0.000
income	\$20,000 - \$39,999	514	58.1%	24.1%	6.0%	3.4%	8.5%			
	\$40,000 or above	412	60.4%	24.1%	6.4%	3.6%	5.5%			
Type of	Public rental flats	536	49.9%	20.0%	8.9%	5.6%	15.5%			
Type of II living Si quarters fl P: P:	Subsidized sale flats	325	53.9%	23.5%	7.1%	5.1%	10.4%		0.033	
	Private housing	1 148	54.0%	23.0%	8.9%	4.4%	9.8%	%		

4.4.16.3 Eating out for dinner

Statistically significant associations between the frequency of eating out for dinner and respondents' gender, age, educational attainment, marital status, occupation, monthly household income and type of living quarters are found.

A relatively higher proportion of male respondents (14.2%), those aged 25-44 (ranged from 15.0% to 16.0%), divorced/ separated or widowed (19.6%), had tertiary education or above (14.8%), service workers (18.2%), managerial/professional workers (16.9%) and living in subsidized sale falts (12.6%) and private housing (12.3%) reported that they ate out for dinner 5 times or more. Also, the higher the monthly household income, the more likely the respondents ate out for dinner 5 times or more per week. (Table 4.4.16.3)

			5	2-4	Once	$\frac{2-3}{2}$	- 3 Once		p-value	
Variable	Level	Base	times or more	times per week	per week	times per month	per month or less	Chi-square test	Kruskal- Wallis test	Rank correlation
C l	Male	949	14.2%	36.2%	16.8%	13.6%	19.3%		0.000	
Gender	Female	1 084	8.2%	36.0%	19.3%	14.3%	22.3%		0.000	
	18-24	267	8.0%	48.4%	17.5%	9.7%	16.3%			
	25-34	443	16.0%	50.0%	14.9%	9.3%	9.7%			
Age	35-44	526	15.0%	38.7%	19.8%	11.0%	15.5%			0.000
	45-54	503	7.0%	24.6%	20.7%	19.6%	28.0%			
	55-64	287	5.7%	18.3%	15.5%	21.1%	39.4%			
	Primary or below	230	3.2%	11.5%	13.4%	21.1%	50.8%			
Educational	Had not completed secondary	371	8.4%	25.5%	16.6%	19.6%	29.8%			0.000
attainment	Completed secondary (F.5)	612	11.5%	36.7%	20.2%	14.1%	17.5%			0.000
	Matriculation	173	10.4%	38.6%	19.5%	16.7%	14.8%			
	Tertiary or above	647	14.8%	49.6%	18.2%	7.4%	10.0%			
	Never married	670	14.9%	49.3%	14.5%	8.6%	12.7%			
Marital	Married	1 264	8.2%	30.7%	20.0% 16.5% 24.5% 0.0	0.000				
Status	Divorced/ Separated/ Widowed	93	19.6%	15.0%	19.0%	17.3%	29.2%		0.000	
	Managerial/ Professional worker	478	16.9%	49.0%	17.7%	9.7%	6.8%			
	Clerk	297	11.4%	42.9%	22.3%	12.1%	11.3%			
Occupation	Service worker	216	18.2%	30.4%	16.7%	12.2%	22.5%		0.000	
	Blue collar worker	308	9.5%	24.3%	15.7%	17.7%	32.8%			
	Not working	710	5.1%	30.8%	18.6%	16.8%	28.7%			
	Below \$8,000	126	5.4%	21.5%	13.8%	18.0%	41.4%			
	\$8,000 - \$13,999	278	6.8%	24.2%	15.9%	21.8%	31.3%			
Monthly household	\$14,000 - \$19,999	223	6.2%	31.4%	19.9%	14.7%	27.9%			0.000
income \$	\$20,000 - \$39,999	520	12.4%	43.5%	17.8%	13.7%	12.6%			
	\$40,000 or above	415	16.2%	44.9%	20.7%	9.6%	8.5%			
Type of	Public rental flats	530	7.0%	29.8%	14.9%	15.0%	33.3%			
living quarters	Subsidized sale flats	330	12.6%	35.3%	17.6%	16.7%	17.7%		0.000	
quarters ^{fl} P	Private housing	1 164	12.3%	39.2%	19.5%	12.8%	16.2%			

 Table 4.4.16.3: Frequency of eating out for dinner (Q15c)

4.5 Pattern of alcohol consumption

4.5.1 Consumption of alcohol

The consumption of ever had at least one alcoholic drink is associated significantly with respondents' gender, age, educational attainment, marital status, occupation, monthly household income and type of living quarter.

Males (50.4%), aged 25-34 (42.1%), divorced/ separated/ widowed respondents (43.0%), managerial /professional workers (49.5%) and living in private housing (41.3%) were more likely than their respective counterparts to have consumed at least one alcoholic drink in the month prior to the survey. Also, the higher the monthly household income and educational attainment of the respondents, the more likely that they had consumed at least one alcoholic drink in the month prior to the survey (Table 4.5.1).

			Voc	Yes,	Yes,		p-value			
Variable	Level	Base	during the last month	the previous 2-12 months	than 12 months ago	No	Chi-square test	Kruskal- Wallis test	Rank correlation	
Condon	Male	970	50.4%	18.1%	8.4%	23.1%	0.000			
Gender	Female	1 104	26.2%	19.0%	8.3%	46.5%	0.000			
	18-24	274	33.8%	24.5%	9.7%	32.1%				
	25-34	450	42.1%	25.7%	5.3%	26.9%				
Age	35-44	532	36.5%	16.3%	9.5%	37.7%		0.000		
	45-54	516	40.9%	14.4%	7.2%	37.5%				
	55-64	295	29.6%	13.7%	11.9%	44.8%				
	Primary or below	239	30.0%	10.6%	10.9%	48.5%				
	Had not completed secondary	379	35.0%	15.7%	6.5%	42.8%				
Educational attainment	Completed secondary (F.5)	626	37.3%	17.9%	7.5%	37.3%		0.000		
	Matriculation	176	38.2%	17.9%	10.9%	32.9%				
	Tertiary or above	654	41.8%	23.9%	8.6%	25.7%				
	Never married	684	39.9%	25.6%	8.9%	25.7%				
Marital N	Married	1 289	36.0%	15.6%	8.1%	40.3%	0.000			
status	Divorced/Separated /Widowed	96	43.0%	8.1%	8.7%	40.2%				

 Table 4.5.1: Ever had at least one alcoholic drink
 (Q16a)

	Managerial/ Professional worker	480	49.5%	19.3%	8.2%	23.0%			
	Clerk	303	34.0%	24.0%	8.9%	33.1%	0.000		
Occupation	Service worker	220	42.6%	18.4%	5.4%	33.6%	0.000		
	Blue collar worker	315	42.5%	15.6%	8.2%	33.7%			
	Not working	732	27.0%	17.0%	9.3%	46.7%			
	Below \$8,000	133	27.4%	13.0%	16.6%	43.1%			
Monthly	\$8,000 - \$13,999	288	30.7%	17.9%	7.3%	44.1%			
household	\$14,000 - \$19,999	225	29.9%	20.4%	9.3%	40.4%		0.000	
income	\$20,000 - \$39,999	528	37.7%	22.6%	9.0%	30.7%			
	\$40,000 or above	416	49.2%	17.5%	6.2%	27.1%			
Tune of	Public rental flats	552	29.9%	19.7%	8.2%	42.2%			
living	Subsidized sale flats	336	36.9%	19.5%	6.8%	36.8%	0.000		
yuai tei s	Private housing	1 176	41.3%	17.7%	8.9%	32.1%			

4.5.2 Frequency of alcohol consumption

The frequency of alcohol consumption per week during the month prior to the survey is associated significantly with the drinkers' gender, age, educational attainment, marital status, occupation and monthly household income.

A relatively higher proportion of males (14.7%), those with primary education level or below (25.2%), divorced/separated/ widowed respondents (25.1%), blue collar workers (17.6%), and had an monthly household income level below \$8,000 (24.4%) or \$14,000 to \$19,999 (22.3%) reported that they drank 6 days or more per week. Also, the older the drinkers, the more likely that they drank 6 days or more per week (Table 4.5.2).

Variable	Level		6 days	4-5	2-3	1 day or less per week	p-value			
		Base n	or more per week	days per week	days per week		Chi-square test	Kruskal- Wallis test	Rank correlation	
Gender	Male	487	14.7%	3.7%	15.2%	66.5%		0.000		
	Female	289	5.5%	2.7%	11.1%	80.7%		0.000		

Table 4.5.2: Frequency of consuming at least one alcoholic drink in the month prior to the survey (Q16b)

	18-24	93	4.0%	1.6%	9.8%	84.6%			
	25-34	189	8.8%	4.9%	12.3%	74.0%			
Age	35-44	194	7.5%	2.8%	13.3%	76.3%			0.000
	45-54	210	14.2%	3.2%	15.5%	67.2%			
	55-64	87	24.8%	3.3%	17.4%	54.4%			
	Primary or below	72	25.2%	4.6%	8.9%	61.3%			
	Had not completed secondary	133	18.8%	2.2%	18.1%	60.9%			
Educational attainment	Completed secondary (F.5)	233	9.0%	3.8%	17.0%	70.3%			0.000
	Matriculation	67	10.5%	2.3%	11.3%	75.9%			
	Tertiary or above	272	6.1%	3.5%	10.4%	80.1%			
	Never married	273	6.7%	3.4%	12.8%	77.2%		0.010	
Marital	Married	464	12.8%	3.6%	14.6%	69.1%			
status	Divorced/Separated /Widowed	40	25.1%	0.0%	8.6%	66.3%			
	Managerial/ Professional worker	236	6.5%	2.9%	12.8%	77.7%			
	Clerk	103	8.6%	1.6%	11.9%	77.9%			
Occupation	Service worker	94	10.8%	5.4%	13.2%	70.6%		0.002	
	Blue collar worker	134	17.6%	5.2%	19.9%	57.3%			
	Not working	198	12.9%	2.6%	11.6%	72.9%			
	Below \$8,000	36	24.4%	0.0%	8.0%	67.6%			
Monthly	\$8,000 - \$13,999	89	12.7%	2.4%	14.1%	70.8%			
household	\$14,000 - \$19,999	67	22.3%	2.2%	22.4%	53.1%			0.002
income	\$20,000 - \$39,999	199	6.8%	3.5%	12.7%	77.1%			
	\$40,000 or above	203	4.0%	4.2%	13.7%	78.2%			

4.5.3 Amount of standard drinks for each drinking day

The amount of standard drinks for each drinking day is associated with the drinkers' gender, age, marital status, occupation and type of living quarters.

Male (14.7%), aged 25-34 (20.3%), divorced/ separated/ widowed respondents (24.8%), service workers (22.2%) and those living in public rental flats (17.9%) were more likely than their respective counterparts to drink 5 units of drinks or more each drinking day. (Table 4.5.3)

			Less	3 to	5 to 24	p-value			
Variable	Level	Base	than 3 units of drinks	than 5 units of drinks	units of drinks	Chi-square test	Kruskal- Wallis test	Rank correlation	
Condon	Male	483	62.7%	22.5%	14.7%		0.000		
Gender	Female	286	81.4%	9.9%	8.7%		0.000		
	18-24	93	64.8%	15.8%	19.4%				
	25-34	186	57.0%	22.7%	20.3%				
Age	35-44	193	67.9%	19.2%	12.9%			0.000	
	45-54	208	76.2%	17.0%	6.8%				
	55-64	86	89.6%	8.9%	1.5%				
	Never married	269	59.1%	23.1%	17.8%				
Marital	Married	461	75.6%	16.0%	8.3%		0.000		
status	Divorced/Separated /Widowed	40	72.0%	3.2%	24.8%				
	Managerial/ Professional worker	235	74.3%	15.7%	10.0%				
	Clerk	100	67.2%	19.7%	13.2%				
Occupation	Service worker	94	53.2%	24.6%	22.2%		0.000		
	Blue collar worker	133	61.7%	23.6%	14.7%				
	Not working	196	78.1%	12.8%	9.1%				
Type of	Public rental flats	163	64.6%	17.5%	17.9%				
living	Subsidized sale flats	121	65.2%	21.1%	13.8%		0.042		
quarters	Private housing	482	72.3%	17.2%	10.5%				

Table 4.5.3: Amount of standard drinks for each drinking day (Q16c)

4.5.4 Consumption of at least 5 glasses/cans of alcohol on one single occasion (Binge drinking)

Binge drinking during the month prior to the survey is associated significantly with the drinkers' gender, age, educational attainment, marital status and occupation.

A relatively higher proportion of males (29.0%), those aged 25-34 (35.1%), those who had not completed secondary education (32.2%) or those who had completed secondary level (30.1%), and service workers (34.4%) and blue collar workers (35.9%) had engaged in binge drinking during the month prior to the survey (Table 4.5.4). Also drinkers who were married were less likely to engage in binge drinking during the month prior in the survey.

					p-value			
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation	
Condon	Male	487	29.0%	71.0%	0.000			
Gender	Female	289	14.6%	85.4%	0.000			
	18-24	93	26.7%	73.3%				
	25-34	189	35.1%	64.9%				
Age	35-44	194	22.1%	77.9%		0.000		
	45-54	210	19.0%	81.0%				
	55-64	87	9.9%	90.1%				
	Primary or below	72	11.1%	88.9%				
	Had not completed secondary	133	32.2%	67.8%				
Educational attainment	Completed secondary (F.5)	233	30.1%	69.9%		0.002		
	Matriculation	67	19.7%	80.3%				
	Tertiary or above	272	18.2%	81.8%				
	Never married	273	33.9%	66.1%				
Marital	Married	464	17.1%	82.9%	0.000			
status	Divorced/Separated /Widowed	40	29.8%	70.2%				
	Managerial/ Professional worker	236	19.6%	80.4%				
	Clerk	103	22.2%	77.8%				
Occupation	Service worker	94	34.4%	65.6%	0.000			
	Blue collar worker	134	35.9%	64.1%				
	Not working	198	15.8%	84.2%				

Table 4.5.4: Consumption of at least 5 glasses/cans of alcohol on one single occasion during the month prior to the survey (Q16d)

4.5.5 Frequency of binge drinking

The frequency of binge drinking is associated with the drinkers' educational attainment. Drinkers who had primary education or below (52.0%) and had not completed secondary (45.3%) were more likely to have engaged in binge drinking for three times or more in the month prior to the survey. (Table 4.5.5)

Variable	Level			Twice	Three	p-value			
		Base	Once		times or more	Chi-square test	Kruskal- Wallis test	Rank correlation	
Educational attainment	Primary or below	8	8.8%	39.3%	52.0%				
	Had not completed secondary	43	28.8%	25.9%	45.3%				
	Completed secondary (F.5)	70	45.1%	21.4%	33.5%			0.020	
	Matriculation	13	27.1%	40.1%	32.8%				
	Tertiary or above	49	54.8%	10.4%	34.8%				

Table 4.5.5: Frequency of binge drinking in the month prior to the survey (Q16e)

4.5.6 Drinking habit by low risk level

Classification of a low risk drinking habit by the British guidelines on safe drinking is associated significantly with the drinkers' gender, educational attainment, marital status, occupation and monthly household income.

Males (30.8%), respondents who had or had not completed secondary education (ranged from 32.3% to 33.0%), divorced/separated/widowed respondents (44.0%), service workers (39.1%) and who had a monthly household income of \$14,000 to \$19,999 (38.1%) were more likely than their respective counterparts to have drunk exceeding the low risk level. (Table 4.5.6).

			Within	Exceed	p-value			
Variable	Level	Base	low risk level	low risk level	Chi-square test	Kruskal- Wallis test	Rank correlation	
Condon	Male	483	69.2%	30.8%	0.017			
Gender	Female	286	77.2%	22.8%	0.017			
	Primary or below	72	71.0%	29.0%				
	Had not completed secondary	131	67.0%	33.0%				
Educational attainment	Completed secondary (F.5)	231	67.7%	32.3%		0.037		
	Matriculation	66	70.7%	29.3%				
	Tertiary or above	270	79.2%	20.8%				
	Never married	269	68.3%	31.7%				
Marital status	Married	461	75.8%	24.2%	0.006			
	Divorced/Separated/ Widowed	40	56.0%	44.0%				

Table 4.5.6: Classification of alcohol consumption by low risk level

Occupation	Managerial/ Professional worker	235	79.3%	20.7%			
	Clerk	100	73.3%	26.7%			
	Service worker	94	60.9%	39.1%	0.013		
	Blue collar worker	133	69.2%	30.8%			
	Not working	196	71.6%	28.4%			
	Below \$8,000	36	71.5%	28.5%			
Monthly	\$8,000 - \$13,999	89	75.8%	24.2%			
household income	\$14,000 - \$19,999	67	61.9%	38.1%		0.014	
	\$20,000 - \$39,999	198	74.8%	25.2%			
	\$40,000 or above	203	82.0%	18.0%			

4.6 Smoking habit

4.6.1 Smoking habit

Smoking habit is associated significantly with gender, age, educational attainment, marital status, occupation and monthly household income.

A relatively higher proportion of males (28.2%), those aged 25-34 (20.0%), those who had not completed secondary education (26.6%), divorced/ widowed/ separated respondents (26.6%), blue collar workers (33.9%) and those with monthly household income of \$8,000-\$13,999 (23.4%) were identified as current smokers (Table 4.6.1).

			Yes,			p-value			
Variable	Level	Base	but not now	Yes, and still smoking	Never	Chi-square test	Kruskal - Wallis test	Rank correlatio n	
Condon	Male	970	15.4%	28.2%	56.4%	0.000			
Gender	Female	1 104	4.7%	7.0%	88.3%	0.000			
	18-24	274	6.6%	9.6%	83.9%				
	25-34	450	6.8%	20.0%	73.3%				
Age	35-44	532	10.0%	19.1%	70.9%		0.030		
	45-54	516	11.8%	17.2%	71.0%				
	55-64	295	13.1%	14.9%	72.0%				
	Primary or below	239	12.0%	16.7%	71.3%				
Educational	Had not completed secondary	379	12.4%	26.6%	61.0%				
attainment	Completed secondary (F.5)	626	8.9%	21.2%	69.9%		0.000		
	Matriculation	176	6.5%	13.6%	79.9%				
	Tertiary or above	654	8.9%	8.3%	82.8%				
	Never married	684	6.9%	14.2%	78.9%				
Marital Status	Married	1 289	10.8%	17.7%	71.5%	0.000			
	Divorced/Separated/ Widowed	96	15.2%	26.6%	58.3%				
	Managerial/ Professional worker	480	11.8%	13.3%	74.9%				
	Clerk	303	5.9%	12.0%	82.1%				
Occupation	Service worker	220	10.1%	26.4%	63.5%	0.000			
	Blue collar worker	315	12.6%	33.9%	53.5%				
	Not working	732	8.4%	11.3%	80.3%				

Table 4.6.1: Smoking habit (Q17a)

Monthly household income	Below \$8,000	133	11.5%	12.1%	76.4%		0.043	
	\$8,000 - \$13,999	288	10.7%	23.4%	65.8%			
	\$14,000 - \$19,999	225	7.9%	19.9%	72.2%			
	\$20,000 - \$39,999	528	10.9%	18.0%	71.0%			
	\$40,000 or above	416	11.1%	10.6%	78.2%			

4.6.2 **Period of time abstained from smoking**

The period of time for which respondents abstained from smoking is associated with respondents' age, marital status and the type of living quarters.

A relatively higher proportion of married respondents (87.7%), divorced/separated/widowed respondents (86.0%) and lived in subsidized sales flats (86.4%) or private housing (86.6%) had abstained for more than 1 year. Also, the older the abstainers, the more likely that they had abstained from smoking for more than 1 year. (Fig. 4.6.2)

			Had	Had	Had		p-value	
Variable	Level	Base	for less than 1 month	for 1 month to 1 year	for more than 1 year	Chi-square test	Kruskal- Wallis test	Rank correlation
	18-24	18	16.4%	37.3%	46.3%			
	25-34	30	0.0%	23.7%	76.3%			
Age	35-44	53	1.3%	13.4%	85.3%			0.000
	45-54	61	0.0%	15.4%	84.6%			
	55-64	39	2.7%	0.0%	97.3%			
	Never married	47	10.0%	24.0%	66.1%			
Marital	Married	139	0.0%	12.3%	87.7%		0.000	
Status	Divorced/Separated/ Widowed	15	0.0%	14.0%	86.0%			
Type of living quarters	Public rental flats	51	4.4%	25.1%	70.5%			
	Subsidized sale flats	38	0.0%	13.6%	86.4%		0.037	
	Private housing	112	2.2%	11.2%	86.6%			

Fig. 4.6.2: Period of time abstained from smoking (Q17b)
4.6.3 Amount of cigarettes consumed

The amount of cigarettes consumed is associated significantly with current smokers' gender, age, educational attainment, occupation and type of living quarters.

A relatively higher proportion of males (10.0%), respondents aged 45-64 (ranged from 13.3% to 16.5%), those with primary education level or below (21.5%), blue collar workers (14.6%) and those living in public rental flats (11.8%) reported that they smoked more than 20 cigarettes per day. (Table 4.6.3).

			Less than	1-10	11-20	More		p-valu	e
Variable	Level	Base	i cigarette per day now	cigarettes per day now	cigarettes per day now	cigarettes per day now	Chi-squ are test	Kruskal- Wallis test	Rank correlation
Condon	Male	274	7.3%	45.4%	37.3%	10.0%		0.033	
Genuer	Female	78	3.1%	69.8%	24.3%	2.7%		0.033	
	18-24	26	8.2%	74.6%	14.4%	2.7%			
	25-34	90	3.2%	66.0%	27.5%	3.3%			
Age	35-44	102	8.8%	48.2%	37.9%	5.1%			0.000
	45-54	89	8.7%	35.7%	39.1%	16.5%			
	55-64	44	1.8%	43.1%	41.7%	13.3%			
	Primary or below	40	0.0%	41.3%	37.2%	21.5%			
	Had not completed secondary	101	5.5%	35.9%	47.5%	11.0%			
Educational attainment	Completed secondary (F.5)	133	5.9%	61.6%	28.1%	4.4%			0.000
	Matriculation	24	6.0%	59.2%	24.0%	10.8%			
	Tertiary or above	54	14.1%	55.4%	28.1%	2.4%			
	Managerial/ Professional worker	64	17.0%	44.4%	33.3%	5.2%			
O a sum a ti a n	Clerk	36	0.0%	78.2%	21.8%	0.0%		0.007	
Occupation	Service worker	58	2.6%	68.0%	25.6%	3.8%		0.007	
	Blue collar worker	107	7.4%	35.5%	42.4%	14.6%			
	Not working	82	2.6%	52.3%	35.1%	10.0%			
TT C	Public rental flats	98	4.9%	42.0%	41.4%	11.8%			
Type of living quarters F	Subsidized sale flats	62	12.9%	59.4%	25.6%	2.2%		0.007	
	Private housing	189	5.2%	53.3%	32.9%	8.7%			

Table 4.6.3: Average number of cigarettes which the respondents smoked per day (Q17c)

4.7 Cervical screening (for female respondents only)

4.7.1 Experience of cervical screening

The experience of cervical screening is associated significantly with female respondents' age, educational attainment, marital status and monthly household income.

Among all female respondents, those aged 35-64 (ranged from 73.0% to 80.4%), those with secondary education level or less (ranged from 65.8 to 75.5%), married respondents (83.0%), divorced/ separated/ widowed respondents (69.4%) and those with monthly household income of \$40,000 or above (73.2%) were more likely to have had a cervical smear when compared to their respective counterparts (Table 4.7.1).

						p-value	
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation
	18-24	142	5.1%	94.9%			
	25-34	252	55.6%	44.4%			
Age	35-44	295	80.4%	19.6%		0.000	
	45-54	240	79.4%	20.6%			
	55-64	126	73.0%	27.0%			
	Primary or below	135	70.4%	29.6%			
Educational attainment	Had not completed secondary19175.5%24.5%						
	Completed secondary (F.5)	336	65.8%	34.2%		0.000	
	Matriculation	87	52.1%	47.9%			
	Tertiary or above	310	53.2%	46.8%			
	Never married	324	21.7%	78.3%			
Marital	Married	670	83.0%	17.0%	0.000		
status	Divorced/ Separated/ Widowed	62	69.4%	30.6%			
	Below \$8,000	71	62.2%	37.8%			
Monthly	\$8,000 - \$13,999	160	61.6%	38.4%			
household	\$14,000 - \$19,999	125	66.6%	33.4%		0.028	
income	\$20,000 - \$39,999	224	61.9%	38.1%]		
	\$40,000 or above	208	73.2%	26.8%			

 Table 4.7.1: Ever had cervical smear before (Q18b)

4.7.2 Time since last cervical smear

The period since the female respondents' last cervical smear for those ever screened is associated significantly with age.

Among those females who had had a cervical smear before, a relatively higher proportion of respondents aged 18-24 (77.8%) and 25-34 (62.2%) reported that they had their last smear within 12 months (Table 4.7.2).

			1.12	13-36	37 or		p-value	p-value		
Variable	Level	Base	months ago	months ago	more months ago	Chi-square test	Kruskal- Wallis test	Rank correlation		
	18-24	7	77.8%	22.2%	0.0%					
	25-34	140	62.2%	35.7%	2.1%					
Age	35-44	234	53.3%	39.8%	6.9%			0.001		
	45-54	188	55.2%	33.0%	11.8%					
	55-64	89	46.6%	28.0%	25.4%					

Table 4.7.2: Period of time since last cervical smear (Q18c)

4.7.3 First cervical smear

Frist cervical screening is associated significantly with age, marital status, occupation and monthly household income among those females who had such test before.

Respondents aged 18-24 (77.8%), never married respondents (40.3%), service workers (29.5%) and those with monthly household income of below \$8,000 (28.2%) were more likely to report that the last smear they had was their first smear. (Table 4.7.3)

						p-value		
Variable	Level	Base	Yes	No	Chi-square test	Kruskal- Wallis test	Rank correlation	
	18-24	7	77.8%	22.2%				
Age	25-34	140	31.2%	68.8%				
	35-44	237	12.8%	87.2%		0.000		
	45-54	190	8.6%	91.4%				
	55-64	91	12.9%	87.1%				
	Never married	70	40.3%	59.7%				
Marital status	Married	555	13.1%	86.9%	0.000			
	Divorced/ Separated/ Widowed	43	14.7%	85.3%				

Table 4.7.3: Only one cervical smear (Q18d)

Occupation	Managerial/ Professional worker	122	13.6%	86.4%			
	Clerk	115	14.2%	85.8%			
	Service worker	69	29.5%	70.5%	0.034		
	Blue collar worker	51	12.7%	87.3%			
	Not working	308	15.5%	84.5%			
	Below \$8,000	44	28.2%	71.8%			
Monthly	\$8,000 - \$13,999	98	17.8%	82.2%			
household sincome	\$14,000 - \$19,999	83	13.4%	86.6%		0.046	
	\$20,000 - \$39,999	138	16.1%	83.9%			
	\$40,000 or above	152	13.8%	86.2%			

4.8 Attitude towards organ donation

4.8.1 Whether object to their family members to donating organs

Whether or not respondents object to their family members donating organs is associated with respondents' educational attainment, occupation, monthly household income and type of living quarters.

Respondents who had not completed secondary education (8.2%), working as service workers (7.3%) and blue collar workers (7.9%), had monthly household income between \$8,000 and \$13,999 (9.7%), and living in public rental flats (8.1%) were more likely to object their family members to donate organs compared with their corresponding counterparts. (Table 4.8.1)

					p-value				
Variable	Level	Base	No	Yes	Chi-square test	0.019 0.000	Rank correlation		
	Primary or below	174	93.7%	6.3%					
	Had not completed secondary	325	91.8%	8.2%					
Educational attainment	Completed secondary (F.5)	567	94.8%	5.2%		0.019			
	Matriculation	171	96.0%	4.0%					
	Tertiary or above	617	97.4%	2.6%					
	Managerial/ Professional worker	451	98.4%	1.6%					
	Clerk	287	94.9%	5.1%					
Occupation	Service worker	193	92.7%	7.3%	0.001				
	Blue collar worker	276	92.1%	7.9%					
	Not working	625	95.2%	4.8%					
	Below \$8,000	113	93.3%	6.7%					
Monthly	\$8,000 - \$13,999	238	90.3%	9.7%					
household	\$14,000 - \$19,999	211	94.0%	6.0%		0.000			
income	\$20,000 - \$39,999	488	96.9%	3.1%					
	\$40,000 or above	403	97.6%	2.4%					
Type of	Public rental flats	479	91.9%	8.1%					
Type of living S	Subsidized sale flats	304	96.1%	3.9%	0.001				
quarters	Private housing	1 064	96.3%	3.7%]				

Table 4.8.1: Whether object their family members to donate organ (Q19a)

4.8.2 Willingness to donate organs after death

Willingness to donate organs after death is associated with respondents' age, educational attainment, occupation, monthly household income and type of living quarters.

Respondents aged 25-34 (91.6%), having tertiary educated or above (93.1%), working as managerial or professional workers (95.1%), having a monthly household income of \$40,000 or above (95.6%) and living in private housing (91.4%) were more willing than their respective counterparts to report that they would donate organs after death. (Table 4.8.2)

						p-value	
Variable	Level	Base	No	Yes	Chi-square test	Kruskal- Wallis test	Rank correlation
	18-24	243	10.4%	89.6%			
	25-34	375	8.4%	91.6%			
Age	35-44	409	9.3%	90.7%		0.004	
	45-54	362	12.5%	87.5%			
	55-64	216	19.1%	80.9%			
	Primary or below	146	20.5%	79.5%			
Educational attainment	Had not completed secondary	275	15.6%	84.4%			
	Completed secondary (F.5)	487	12.5%	87.5%		0.000	
	Matriculation	150	7.2%	92.8%			
	Tertiary or above	553	6.9%	93.1%			
	Managerial/ Professional worker	394	4.9%	95.1%			
Occuration	Clerk	257	10.4%	89.6%	0.000		
Occupation	Service worker	163	10.9%	89.1%	0.000		
	Blue collar worker	223	18.6%	81.4%			
	Not working	554	13.1%	86.9%			
	Below \$8,000	93	15.6%	84.4%			
Monthly	\$8,000 - \$13,999	207	20.9%	79.1%			
household	\$14,000 - \$19,999	174	12.2%	87.8%		0.000	
income	\$20,000 - \$39,999	436	7.9%	92.1%			
	\$40,000 or above	362	4.4%	95.6%			

Table 4.8.2: Willingness to donate organs after death (Q19d)

	Public rental flats	427	18.4%	81.6%		
Type of living quarters	Subsidized sale flats	258	9.3%	90.7%	0.000	
	Private housing	921	8.6%	91.4%		

4.8.3 Whether the respondents carry the organ donation card all the time

Whether or not among those respondents who signed on the organ donation card would carry the organ donation card all the time is associated with their education attainment.

A relatively higher proportion of respondents who had not completed secondary (63.7%) and completed secondary education (60.7%) carried the organ donation card with them all the time. (Table 4.8.3)

Table 4.8.3: Whether the respondents carry the organ donation card all the time (Q19g)

					p-value			
Variable	Level	Base	No	Yes	Chi-square test	Kruskal- Wallis test	Rank correlation	
	Primary or below	23	45.0%	55.0%				
	Had not completed secondary	62	36.3%	63.7%				
Educational attainment	Completed secondary (F.5)	138	39.3%	60.7%		0.050		
	Matriculation	46	42.9%	57.1%				
	Tertiary or above	220	48.4%	51.6%				

4.9 General health status

4.9.1 Perception about general health status

The perception about general health status is associated significantly with respondents' gender, age, educational attainment, marital status, occupation, monthly household income and type of living quarters.

A relatively higher proportion of respondents of females (10.0%) and those aged 55-64 (10.8%), divorced/ separated/ widowed (12.7%), with primary education level or below (15.7%), were not working (11.5%) and with monthly household income of below \$8,000 (13.0%) and living in public rental flats (9.2%) self-rated their health status as 'poor' (Table 4.9.1).

									p-value				
Variable	Level	Base	Excellent	Very good	Good	Fair	Poor	Chi-square test	Kruskal- Wallis test	Rank correlation			
C l	Male	970	3.3%	12.7%	28.1%	50.7%	5.2%		0.000				
Gender	Female	1 104	1.6%	9.8%	21.9%	56.7%	10.0%		0.000				
	18-24	274	1.4%	13.3%	29.3%	48.4%	7.6%						
	25-34	450	1.6%	12.5%	30.3%	49.0%	6.6%						
Age	35-44	532	1.8%	12.0%	25.5%	54.1%	6.5%			0.000			
	45-54	516	2.8%	8.6%	19.2%	60.9%	8.5%						
	55-64	295	4.3%	10.6%	21.0%	53.3%	10.8%						
	Primary or below	239	3.5%	3.9%	11.0%	65.9%	15.7%						
T. J., 4 ¹ 1	Had not completed secondary	379	2.7%	7.6%	22.6%	58.3%	8.7%						
attainment	Completed secondary (F.5)	626	1.8%	10.3%	23.4%	59.2%	5.3%			0.000			
	Matriculation	176	0.4%	16.7%	33.0%	44.3%	5.6%						
	Tertiary or above	654	2.8%	15.3%	30.3%	44.4%	7.3%						
	Never married	684	1.7%	13.0%	27.4%	50.3%	7.6%						
Marital	Married	1 289	2.6%	10.5%	23.9%	55.5%	7.5%		0.006				
Status	Divorced/Separated /Widowed	96	3.4%	6.4%	18.9%	58.5%	12.7%						
	Managerial/ Professional worker	480	2.1%	15.1%	32.2%	45.1%	5.4%						
0	Clerk	303	0.9%	12.1%	27.8%	53.3%	5.9%	5.9% 5.0% 5.1%	0.000				
Occupation	Service worker	220	2.9%	11.1%	26.6%	54.3%	5.0%		0.000)			
]	Blue collar worker	315	2.8%	6.7%	18.3%	66.0%	6.1%						
	Not working	732	2.7%	10.4%	20.7%	54.8%	11.5%						

Table 4.9.1: Perception about general health status (Q20a)

	Below \$8,000	133	4.0%	9.3%	13.4%	60.2%	13.0%			
M 41-1	\$8,000 - \$13,999	288	1.4%	6.3%	21.7%	63.0%	7.6%			
Monthly household	\$14,000 - \$19,999	225	2.9%	5.1%	21.4%	61.7%	8.9%			0.000
income	\$20,000 - \$39,999	528	2.3%	10.1%	28.7%	53.5%	5.4%			
	\$40,000 or above	416	2.3%	18.0%	32.8%	40.3%	6.6%			
	Public rental flats	552	2.1%	7.1%	19.6%	62.0%	9.2%			
	Subsidized sale flats	336	2.1%	9.2%	21.3%	60.8%	6.5%		0.000	
	Private housing	1 176	2.6%	13.6%	28.2%	48.0%	7.5%			

4.9.2 Perception of health condition compared with people of the same age

The perception of health condition compared with people of the same age is associated significantly with the respondents' gender, age, marital status, occupation, monthly household income and type of living quarters. Female respondents (17.0%), aged 18-24 (17.3%), never married respondents (16.0%), not working respondents (18.5%) and those with monthly household income of below \$8,000 (21.8%) and living in public rental flats (18.1%) were more likely to report their health status as 'worse' or 'much worse' when compared with their corresponding counterparts (Table 4.9.2).

									p-value	
Variable	Level	Base	Much better	Better	The same	Worse	Much worse	Chi-square test	Kruskal- Wallis test	Rank correlation
Condon	Male	970	10.3%	27.2%	51.8%	9.8%	0.8%		0.000	
Gender	Female	1 104	6.5%	23.1%	53.5%	15.3%	1.6%		0.000	
	18-24	274	3.5%	18.5%	60.7%	16.8%	0.6%			
	25-34	450	6.0%	22.3%	57.5%	13.6%	0.7%			
Age	35-44	532	7.7%	25.9%	52.0%	13.0%	1.4%			0.000
	45-54	516	8.5%	28.4%	49.9%	11.3%	2.0%			
	55-64	295	16.8%	28.5%	43.5%	9.9%	1.2%			
	Never married	684	4.0%	22.8%	57.2%	15.1%	1.0%			
Marital N status /	Married	1 289	9.9%	26.3%	50.8%	11.8%	1.2%		0.000	
	Divorced/Separated /Widowed	96	15.4%	24.0%	46.1%	10.6%	3.8%			

Table 4.9.2: Perception of the health condition compared with people of the same age(Q20b)

Occupation	Managerial/ Professional worker	480	8.8%	26.9%	53.2%	10.2%	0.9%			
	Clerk	303	6.0%	28.8%	53.4%	11.4%	0.5%		0.041	
	Service worker	220	7.9%	26.5%	53.0%	12.2%	0.3%		0.041	
	Blue collar worker	315	10.0%	21.6%	56.6%	10.6%	1.2%			
	Not working	732	8.0%	23.3%	50.3%	16.3%	2.2%			
	Below \$8,000	133	13.0%	21.4%	43.8%	15.7%	6.1%			
Monthly	\$8,000 - \$13,999	288	8.9%	23.3%	52.8%	12.1%	3.0%			
household	\$14,000 - \$19,999	225	6.6%	21.2%	53.8%	17.7%	0.8%			0.000
income	\$20,000 - \$39,999	528	7.6%	24.7%	56.7%	10.5%	0.5%			
	\$40,000 or above	416	9.1%	31.3%	49.2%	9.7%	0.6%			
Type of living quarters	Public rental flats	552	6.4%	20.2%	55.3%	16.1%	1.9%			
	Subsidized sale flats	336	6.8%	25.8%	53.3%	13.6%	0.4%		0.000	
	Private housing	1 176	9.4%	27.2%	51.3%	10.9%	1.2%			

4.9.3 Perception of present health condition compared with 12 months ago

Respondents' perception of present health condition compared with 12 months ago is associated significantly with respondents' gender, marital status and educational attainment.

Female respondents (29.4%), divorced/ separated/ widowed (29.0%) respondents and those who had primary education level or below (33.1%) or had not completed secondary (33.0%) were more likely than their respective counterparts to perceive their health status as "worse" or "much worse" compared with 12 months ago. (Table 4.9.3)

Variable	Level	Base	Much better			Worse	Much worse	p-value		
				Better	The same			Chi-square test	Kruskal- Wallis test	Rank correlation
Gender	Male	970	4.1%	11.7%	60.3%	22.3%	1.6%		0.001	
	Female	1 104	3.0%	11.1%	56.4%	27.0%	2.5%		0.001	

Table 4.9.3: Perception of the general health status compared with 12 months ago (Q20c)

Educational attainment	Primary or below	239	3.4%	9.9%	53.6%	30.2%	2.9%			0.010
	Had not completed secondary	379	6.1%	10.5%	50.4%	29.8%	3.2%			
	Completed secondary (F.5)	626	2.8%	10.0%	62.9%	23.1%	1.2%			
	Matriculation	176	4.5%	14.4%	58.1%	20.6%	2.4%			
	Tertiary or above	654	2.6%	13.1%	60.0%	22.6%	1.8%			
Marital Status	Never married	684	2.6%	15.0%	57.3%	23.2%	2.0%			
	Married	1 289	3.6%	9.7%	59.2%	25.5%	2.1%		0.029	
	Divorced/ Separated/ Widowed	96	9.6%	9.7%	51.7%	26.6%	2.4%		0.038	

4.10 Influenza vaccination

4.10.1 Prevalence of influenza vaccination

The prevalence of influenza vaccination is associated with respondents' gender educational attainment, occupation and monthly household income.

A relatively higher proportion of males (76.1%), blue collar workers (80.5%), had not completed secondary education (79.1%) and had a monthly household income below \$8,000 (81.8%) and \$14,000 to \$19,999 (80.9%) had never had an influenza vaccination. (Table 4.10.1)

					p-value				
Variable	Level	Base	Yes	Never	Chi-square test	Kruskal- Wallis test	Rank correlation		
Condon	Male	970	23.9%	76.1%	0.010				
Gender	Female	1 104	28.5%	71.5%	0.019				
	Primary or below	239	22.1%	77.9%					
	Had not completed secondary	379	20.9%	79.1%		0.006			
Educational attainment	Completed secondary (F.5)	626	26.8%	73.2%]				
	Matriculation	176	27.3%	72.7%					
	Tertiary or above	654	30.3%	69.7%					
	Managerial/ Professional worker	480	32.9%	67.1%					
	Clerk	303	28.2%	71.8%					
Occupation	Service worker	220	24.4%	75.6%	0.000				
	Blue collar worker	315	19.5%	80.5%					
	Not working	732	24.6%	75.4%					
	Below \$8,000	133	18.2%	81.8%					
Monthly household income	\$8,000 - \$13,999	288	20.7%	79.3%					
	\$14,000 - \$19,999	225	19.1%	80.9%		0.000			
	\$20,000 - \$39,999	528	29.0%	71.0%]				
	\$40,000 or above	416	32.2%	67.8%					

Table 4.10.1: Prevalence of influenza vaccination (Q21a)

4.10.2 Period of time since last flu shot

Among those who had the influenza vaccination, statistically significant associations are found between the period of time since the last flu shot and their age, marital status, monthly household income and type of living quarters.

Among those who had the influenza vaccination, aged 25-34 (54.4%), never married (53.3%) and divorced/separated/widowed (53.3%), with monthly household income below \$8,000 (60.6%) and living in subsidized sale flats (57.3%) were more likely than their respective counterparts to have the last flu shot 13 months or over. (Table 4.10.2)

Variable	Level	Base	Within 3 months	4 – 6 months	7 - 9 months		13	p-value			
						10-12 months	months or over	Chi- square test	Kruskal- Wallis test	Rank correlation	
	18-24	75	6.2%	12.2%	8.0%	20.5%	53.1%				
	25-34	113	3.8%	24.6%	12.0%	5.2%	54.4%				
Age	35-44	141	7.3%	24.1%	8.4%	16.0%	44.3%			0.025	
	45-54	113	9.7%	22.8%	9.9%	9.4%	48.1%				
	55-64	74	8.4%	26.2%	8.2%	18.3%	38.9%				
	Never married	173	5.1%	19.0%	8.2%	14.4%	53.3%				
Marital	Married	321	8.3%	24.7%	10.5%	12.1%	44.4%		0.019		
status	Divorced/ Separated/ Widowed	23	3.3%	16.3%	3.3%	23.7%	53.3%		01017		
	Below \$8000	23	0.0%	19.8%	8.9%	10.8%	60.6%				
Monthly	\$8,000 – \$13,999	57	0.0%	27.4%	11.9%	12.5%	48.3%				
household income	\$14,000 – \$19,999	42	4.2%	26.1%	6.7%	8.4%	54.6%			0.004	
	\$20,000 – \$39,999	148	10.7%	17.0%	8.6%	16.2%	47.6%				
	\$40,000 or above	129	9.9%	28.3%	10.4%	10.7%	40.8%				
Type of living quarters	Public rental flats	120	4.8%	20.2%	7.3%	13.7%	54.1%				
	Subsidized sale flats	82	6.7%	17.7%	6.5%	11.8%	57.3%		0.031		
	Private housing	310	7.7%	24.7%	11.2%	13.8%	42.7%				

 Table 4.10.2: Period of time since last shot (Q21b)

Chapter 5 Conclusion and Recommendations

5.1 Conclusion

5.1.1 Body weight control

Using the World Health Organization (WHO)'s standard Asian classification of weight status, less than half of the respondents (48.3%) were considered as 'normal'. More than one-fifth (22.9%) of the respondents were considered as 'obese' and 17.9% were regarded as 'overweight'. The rest (10.9%) was considered as 'underweight'.

Regarding the perception of respondents' current weight status, about half of the respondents (49.9%) perceived their current weight as 'just right', more than two-fifths (42.1%) felt that they were 'overweight' and 8.0% found themselves 'underweight'. Overall, 65.0% of the respondents perceived their weight status in a way consistent with the WHO criteria, while 19.8% of the respondents overestimated and 15.2% of them underestimated their weight status. Females, the older respondents (aged 35 years or above), those with secondary education level or below and the married or divorced/separated/widowed respondents were more likely to view themselves as 'overweight'.

Only 15.3% of respondents claimed that they had a weight difference of more than 10 pounds when compared with one year ago. Among these respondents, 65.0% claimed that they had a weight increase.

During the 12 months prior to the survey, close to three-tenths (29.2%) of the respondents had done something deliberately to control their weight, of which 56.9% of them aimed to lose weight. Among those respondents who had done something deliberately to control their weight, the most commonly used methods to control weight were 'doing physical exercise' (86.2%) and 'changing dietary habit' (75.4%).

5.1.2 Physical activities/exercise

For people of all ages, sexes and bodily conditions, regular physical activity improves health²⁶. However, this survey revealed that most respondents engaged in limited physical activity. Over half of the respondents had not engaged in any moderate exercise (56.4%) or vigorous exercise (65.3%) for at least 10 minutes a day during the week prior to the survey. On the other hand, walking was the most common form of physical activity and 72.0% of the respondents had spent at least 10 minutes on walking everyday in the week prior to the survey. The survey also revealed that respondents had spent long hours sitting during the day, as shown by an average of 6.4 hours per day during weekdays (Monday to Friday) in the week prior to the survey.

Based on the categorical scoring of the International Physical Activity Questionnaire (IPAQ) analysis, most of the respondents' level of physical activity was classified as

²⁶ "Fact Sheet on Physical Activity", Department of Health. (http://www.info.gov.hk/dh/do_you_k/eng/exercise.htm)

'moderate' (57.5%) or 'low' (19.2%). The proportion of respondents having 'high' level of physical activity was 23.3%. Females, respondents aged 35-44, those with primary education level or below, clerks and managerial or professional workers were more likely to have 'low' level of physical activity than their respective counterparts.

5.1.3 Dietary habits

Eating enough fruit and vegetables has many health benefits. Adequate consumption of fruit and vegetables as part of the daily diet could help prevent major non-communicable diseases (NCD) such as cardiovascular diseases and certain cancers.²⁷ Eating a variety of vegetables and fruit could ensure an adequate intake of most micronutrients and dietary fibres. Moreover, increased fruit and vegetables consumption can help displace foods high in saturated fats, sugar or salt.

In general, vegetables appeared to be more frequently consumed than fruit by the respondents. Most respondents (79.5%) had eaten vegetables on a daily basis while over half of the respondents (50.5%) had eaten fruit everyday. Moreover, regular fruit/vegetable juice consumption was found to be uncommon amongst respondents, as only 3.4% of the respondents drank fruit/vegetable juice daily. However, the average daily intake of fruit and vegetables by the respondents was only 3.3 servings (including juice).

Overall, around one-fifth of the respondents (including juice: 19.4%; excluding juice: 18.4%) had a daily average intake of 5 or more servings of fruit and vegetables in the week prior to the survey. Males, younger respondents (aged 18-24 years) and never married respondents were less likely to have consumed at least the recommended 5 servings of fruit and vegetables a day than their respective counterparts.

On average, about three-fifths (75.1%) of the respondents ate less than 3 bowls of grains and cereals per day. 15.5% of the respondents ate 5 to 6 taels of meat and fish per day while a larger proportion of respondents (32.1%) ate more than 6 taels of meat and fish per day. More than one-tenth (13.7%) consumed at least one serving of dairy product each day. More than two-thirds (67.6%) of the respondents had more than 6 cups of fluid each day.

About one-third of the respondents (32.8%) ate out for breakfast 5 times or more per week. Over half (52.9) of the respondents ate out for lunch 5 times or more per week while slightly more than one-tenth (11.0%) of the respondents ate out for dinner 5 times or more per week.

5.1.4 Pattern of alcohol consumption

More than three-fifths of the respondents (64.4%) had ever consumed at least one alcoholic drink. In addition, less than two-fifths of the respondents (37.5%) were drinkers who had drunk at least one alcoholic drink during the month prior to the survey. On the whole, drinking during the month prior to the survey was more

²⁷ Fruit, vegetables and NCD prevention. Geneva: World Health Organization; 2003. (http://www.who.int/dietphysicalactivity/publications/facts/fruit/en/index.html)

prevalent among males, aged 25 - 34, divorced/ separated/ widowed, those with tertiary education level or above, managerial/professional workers, those with monthly household income of \$40,000 or above and living in private housing.

Among the drinkers who had drunk during the month prior to the survey, 23.7% of them reported that they had engaged in binge drinking (drinking 5 or more glasses/cans of alcohol on one occasion) at least once in the month prior to the survey. Among those engaged in binge drinking in the month prior to the survey, more than one-third of them (37.3%) did so three times or more in the month prior to the survey. Binge drinking was more common among males, those aged 25-34, those not completed secondary education or those with a secondary education level, never married respondents, service workers and blue collar workers.

According to the British guidelines on safer drinking, 27.8% of the drinkers who had drunk during the month prior to the survey were found to have exceeded the recommended low risk level. Males, divorced/ separated/ widowed respondents, service workers, those who had or had not completed secondary education and with monthly household income of \$14,000-\$19,999 were more likely to exceed the low risk level.

5.1.5 Smoking habits

Cigarette smoking is a leading cause of death and diseases including heart disease, certain cancers and chronic lung disease. 16.9% of the respondents were current smokers at time of this survey. A relatively higher proportion of current smokers who reported smoking more than 20 cigarettes a day were found amongst males, those aged 45-64, those with primary education level or below, blue collar workers and those living in public rental flats.

5.1.6 Cervical screening

Nearly two-thirds (63.3%) of the female respondents reported that they had had a cervical smear before. Females aged below 35, those with matriculation education level or above, never married respondents and those with monthly household income of below \$14,000 or \$20,000-\$39,999 were less likely to have had a cervical smear than their counterparts.

5.1.7 Organ donation

Most of the respondents (95.1%) reported that they would not object to their family members donating organs. Respondents who had not completed secondary education, working as service workers and blue collar workers, those who had monthly household income between \$8,000 and \$13,999, and those living in public rental flats were more likely to object to their family members donating organs.

Among the respondents who would object the donation, 33.9% of them reported that they would like to keep their family members' body intact whereas a quarter of them (25.8%) were due to personal preference. Even though their family members had expressed their will to donate organs, 29.4% of the respondents reported that they

would still pbject to the donation.

In addition, over two-thirds (68.9%) of the respondents reported that they were willing to donate their organs after death. Notably, 22.3% of the respondents reported that they had not made the decision yet. Only 8.8% of the respondents reported that they were not willing to donate organs. Respondents aged 25-34, tertiary educated or above, working as managerial or professional workers, had a monthly household income of \$40,000 or above and living in private housing were more likely willing to donate organs after death.

Among those not willing to donate organs, a quarter (25.3%) were due to personal beliefs whereas about one-fifths because they would like to keep their body intact (20.0%) or based on their personal preference (18.0%). Among the respondents who were willing to donate their organs, however, more than two-fifths (44.7%) had done nothing to express their wish to donate organs.

5.1.8 General health status

38.3% of respondents claimed that their general health status was 'good', 'very good' or 'excellent', whereas 7.8% claimed that their general health status was 'poor'.

One-third (33.3%) of the respondents considered that their health condition was 'better' or 'much better' when compared with people of their own age. On the other hand, 14.0% of respondents considered that their health condition was 'worse' or 'much worse' than those of their age.

Only 15.0% of respondents reported that their current health condition was 'better' or 'much better' when compared with 12 months ago. In contrast, more than a quarter (26.8%) of the respondents claimed that their current health condition was 'worse' or 'much worse'.

5.1.9 Influenza vaccination

Only about a quarter (26.3%) of the respondents had ever had an influenza vaccination injection, of which about half (52.3%) had the injection within 12 months. A relatively higher proportion of the respondents who reported having the influenza vaccination in the past were found amongst females, those with tertiary education level or above, managerial or professional workers and those with monthly household income of \$40,000 or above.

5.2 **Recommendations**

Some recommendations based on the survey findings are suggested below:

- 1. The survey results showed that more than three-fifths of the 'underweight' respondents considered themselves as 'just right' (60.4%) or 'overweight' (4.4%). Furthermore, close to one-fifths of the respondents had low level of physical activity and less than one-fifth (including juice: 19.4%; excluding juice: 18.4%) had a daily average intake of five or more servings of fruit and vegetables in the week prior to the survey. Thus, the importance of maintaining normal body weight, engaging in regular physical activity and healthy eating needs to be further emphasized. Frequent and extensive promotion should be provided to educate the community about:
 - i. proper assessment of body weight status, such as using the Body Mass Index (BMI);
 - ii. proper methods of maintaining normal body weight, such as increased physical activity and having healthy diets;
 - iii. the benefits of regular physical activity, such as reducing the risk of developing various chronic diseases; and
 - iv. use the Food Pyramid as a guide to choose different categories of foods and amount to obtain a balanced diet, such as eating most grains and cereals (about 3-6 bowls per day), more fruit and vegetables (at least 5 servigns a day) with moderate amount of milk, cheese and dairy products (1-2 servings per day), and drinking 6-8 cups of fluid a day.
- 2. Close to three-tenths of drinkers (27.8%) had their drinking habit exceeding the specific guidlelines on safer drinking. Promotion of sensible drinking should be particularly targeted at male drinkers, those divorced/separated/widowed, service workers and those with lower education level.
- 3. Generally, most of the respondents were willing to donate organs and not objecting their family members to donate organs. However, more than two-fifths of those who were willing to donate their organs (44.7%) had done nothing to express their wish. Promotion may be needed to encourage people to express their wish to donate organs by telling their family members or signing the organ donation card.
- 4. Health is not only be related to personal characteristics such as gender, age, education level, marital status, occupation, income level and type of living quarters, but also determined by certain socio-economic and environmental factors. Therefore, such underlying factors should be taken into account when planning health promotion programmes to ensure overall health in the community.

5.3 Limitations

- 1. Although the data were weighted by age and sex distribution in order to correct for over- or under-representation of all groups in the population, the data were not weighted for the number of eligible respondents in a household and the number of phones in a household, or to account directly for non-response.
- 2. The use of the 'Next Birthday' rule to select respondent when there is more than one eligible respondent resided in a household by the time of the telephone contact cannot cover people who are always not at home in the evening and weekends.
- 3. A household telephone survey, by definition, excludes the institutionalized population and households without fixed line telephones, so the findings cannot be generalized to these sub-populations. However, as the fixed line telephone coverage in households still exceeds 90%, this reason only excludes a small proportion of households.
- 4. The survey relied on self-reported data and had certain limitations.
 - i. Respondents might not be willing to disclose to interviewers and deliberately under-report those behaviours that are socially undesirable or considered as unhealthy (such as high alcohol consumption). Conversely, respondents might over-report those behaviours that are considered desirable (such as the willingness to donate organs).
 - ii. Self-reporting behaviour or practices was also subjected to recall bias and recall error (such as the consumption of fruit and vegetables or amount of physical activities). However, the recall period was kept quite short in this survey that would reduce such bias.
- 5. Finally, this was a cross-sectional study. The causal or time relationship between various factors could not be identified.

Annex A Survey Questionnaire

BEHAVIOURAL RISK FACTOR SURVEY APRIL 2007 QUESTIONNAIRE (REVISED)

Introduction

Hello! My name is ______, an interviewer from the Social Sciences Research Centre of the University of Hong Kong (SSRC). We are commissioned by the Department of Health to conduct a public survey on healthy living. Would you mind sparing some time to answer a few questions? All the information provided by you will be kept strictly confidential and for collective analysis only. If you have any queries on this survey, you can call the SSRC at phone number: 2857 8333 during office hours between 9 am and 6 pm. If you have questions about your rights as a research participant, please contact the Human Research Ethics Committee for Non-Clinical Faculties of the University at 2241 5267.

Respondent selection

 Telephone No.

 Interviewer No.

Because we are choosing a respondent randomly, please tell me how many household members aged 18-64 years there are at home right now?

_____ persons

Who is the one who will next have a birthday? (Interviewer: explain the "Next Birthday" rule if respondent questions)

Q1. Record the gender

- 1. Male
- 2. Female

A) Body Measurements, Weight Perception and Body Weight Control

Because the Department of Health wishes to gauge the height and weight of Hong Kong people, please provide the figures as accurate as possible in the following questions. (Interviewer: please convert the measurement scale as needed; if the respondent does not know his/her height/weight/waist/hip circumference, input '998'; if the respondent refuses to report his/her height/weight/waist/hip circumference, input '999' as the missing value.)

- Q2a. What is your height without wearing shoes? _____ cm
- Q2b. What is your weight wearing simple clothes? _____Kg
- Q2c. What is your waist circumference? _____ cm
- Q3a. Does your weight now differ by more than 10 pounds (about 4.5 Kg) from your weight one year ago?
 - 1. Yes
 - 2. No (skip to Q4)
 - 3. Don't know (skip to Q4)
- Q3b. Did it increase or decrease?
 - 1. Increase
 - 2. Decrease
- Q4. What do you think about your current weight?
 - 1. Overweight
 - 2. Just right
 - 3. Underweight
- Q5a. During the past 12 months, did you try to do something deliberately to control your weight for example increasing weight, decreasing weight or maintaining weight?
 - 1. Yes
 - 2. No (skip to Q7)

Q5b. Was it for increasing weight, losing weight or maintaining weight?

- 1. Losing weight
- 2. Increasing weight
- 3. Maintaining weight

Q6. Did you use the following methods to control your weight?

Q6a. Taking the drugs or products including health food for controlling your weight?

- 1. Yes
- 2. No

Q6b. Consulting doctors or dieticians?

- 1. Yes
- 2. No

Q6c. Going to weight control or beauty parlours?

- 1. Yes
- 2. No

Q6d. Doing physical exercises?

- 1. Yes
- 2. No

Q6e. Changing dietary habit?

- 1. Yes
- 2. No

Q6f. Any other methods?

- 1. Yes, please specify:_____
- 2. No

B) Physical Activity/Exercises

In the following few questions, I am going to ask you about the time you spent on vigorous physical activities, moderate physical activities and walking in the last 7 days. These activities can be carried out in your work place, your home or in your leisure time.

- Q7. During the last 7 days, on how many days did you do vigorous physical activities? Vigorous activities are those that make you breathe much harder than normal, e.g., aerobics, football, swimming, heavy physical work, jogging, etc., and you did these activities for at least 10 minutes at a time.
- Q8. [Ask those whose answers in Q7 are greater than or equal to "1"] On those days that you have performed vigorous physical activity for at least 10 minutes, how much time on average per day did you usually spend on doing vigorous physical activities? _____Minutes
- Q9. During the last 7 days, on how many days did you do moderate physical activities? Moderate physical activities are those that make you breathe somewhat harder than normal, e.g., bicycling, washing cars/polishing, fast walking, cleaning windows, etc. and you did these activities for at least 10 minutes at a time. _____Days
- Q10. [Ask those whose answers in Q9 are greater than or equal to "1"] On those days that you have performed moderate physical activity for at least 10 minutes, how much time on average per day did you usually spend on doing moderate physical activities? _____Minutes
- Q11. During the last 7 days, on how many days did you walk for at least 10 minutes at a time? This includes walking to offices/schools, walking to travel from place to place, and walking for leisure. _____Days

Q12. [Ask those whose answers in Q11 are greater than or equal to "1"] On those days that you have walked for at least 10 minutes, how much time on average did you usually spend on walking in one of those days?

_____Hours _____Minutes

Q13. During the last 7 days, how much time on average did you usually spend on sitting on a weekday? This includes time spent sitting at work, at home, visiting friends, reading, travelling on public transport, and lying down to watch television. [If the respondent cannot answer the daily average time, then say: Please try to make an estimate as accurate as possible.]

_____Hours _____Minutes

C) Dietary and Eating Out Habits

Fruit and vegetable

Q14ai. On average, how many days do you eat fruit each week? (not including fruit

juice)

- 1. 1 Day
- 2. 2 Days
- 3. 3 Days
- 4. 4 Days
- 5. 5 Days
- 6. 6 Days
- 7. 7 Days
- 8. None (skip to Q14bi)

Q14aii. [Ask those whose answers in the above question are from "1" to "7"]

On average, how many fruit did you eat on one of those days?

(Interviewer: One fruit equals to 1 medium-sized apple or orange, 1 medium sized banana, or 2 kiwi fruits or plums, or 1 bowel of small fruits like grapes or strawberries. Ask exactly what they ate and then convert using table. The numbers can be recorded as half such as 0.5 or 1.5).

- Q14bi. On average, how many days do you eat vegetables each week? (not including vegetable juice)
 - 1. 1 Day
 - 2. 2 Days
 - 3. 3 Days
 - 4. 4 Days
 - 5. 5 Days
 - 6. 6 Days
 - 7. 7 Days
 - 8. None (skip to Q14c)
- Q14bii. [Ask those whose answers in the above question are from "1" to "7"] On average, how many bowls of cooked vegetables did you eat on one of those days? (Interviewer's prompts: one bowl refers to the size of a rice bowl The numbers can be recorded as half such as 0.5 or 1.5. For uncooked leafy vegetables, half the total)

____bowls

- Q14c. On average, how many days do you drink at least one cup of fruit or vegetable juice each week? "Juice" refers to freshly squeezed juice or those are labelled 100% or pure fruit/vegetable juice. A cup means 250 mls in volume or a standard-sized tetra pack of juice drink.
 - 1. 1 Day
 - 2. 2 Days
 - 3. 3 Days
 - 4. 4 Days
 - 5. 5 Days
 - 6. 6 Days
 - 7. 7 Days
 - 8. None

Grain or cereal

- Q14di. On average, how many days do you eat food make entirely from grains or cereals each week, such as rice, noodles, bread or oatmeal?
 - 1. 1 Day
 - 2. 2 Days
 - 3. 3 Days
 - 4. 4 Days
 - 5. 5 Days
 - 6. 6 Days
 - 7. 7 Days
 - 8. None (skip to Q14ei)
- Q14dii. [Ask those whose answers in the above question are from "1" to "7"]

On average, how many bowls of grains or cereals did you eat on one of those days? [Interviewer's prompts: one bowl refers to the size of a rice bowl. The numbers can be recorded as half such as 0.5 or 1.5; one slide of bread or 1 bowls of cooked oatmeal or 1 bowls of congee equal to 0.4 bowl of rice].

_____ bowls

Meat

- Q14ei. On average, how many days do you eat meat each week, including pork, beef, and poultry?
 - 1. 1 Day
 - 2. 2 Days
 - 3. 3 Days
 - 4. 4 Days
 - 5. 5 Days
 - 6. 6 Days
 - 7. 7 Days
 - 8. None (skip to Q14fi)

Q14eii. [Ask those whose answers in the above question are from "1" to "7"]

On average, how many taels /pieces of meat about the size of a mahjong tile did you eat on one of those days? (Interviewer's prompts: A tael of meat also equates 40 grams, 1.33 ounces or four pieces and 1 pound is equivalent to 12 taels. The numbers can be recorded as half such as 0.5 or 1.5 taels)

_____ taels

Q14fi. On average, how many days do you eat fish each week?

- 1. 1 Day
- 2. 2 Days
- 3. 3 Days
- 4. 4 Days
- 5. 5 Days
- 6. 6 Days
- 7. 7 Days
- 8. None (skip to Q14gi)

Q14fii. [Ask those whose answers in the above question are from "1" to "7"]

On average, how many taels /pieces of fish of about the size of a mahjong tile did you eat on one of those days? (Interviewer's prompts: A tael of fish equates to 40 grams, 1.33 ounces or four pieces and 1 pound is equivalent to 12 taels. The numbers can be recorded as half such as 0.5 or 1.5 taels)

_____ taels

Egg

Q14gi On average, how many days do you eat egg, such as chicken or duck egg?

- 1. 1 Day
- 2. 2 Days
- 3. 3 Days
- 4. 4 Days
- 5. 5 Days
- 6. 6 Days
- 7. 7 Days
- 8. None (skip to Q14hi)

Q14gii. [Ask those whose answers in the above question are from "1" to "7"]

On average, how many eggs did you eat on one of those days? [Interviewer's prompts: The numbers can be recorded as half such as 0.5 or 1.5].

_____ eggs

Soybean

Q14hi. On average, how many days do you eat soybean curd or drink soybean milk each week?

- 1. 1 Day
- 2. 2 Days
- 3. 3 Days
- 4. 4 Days
- 5. 5 Days
- 6. 6 Days
- 7. 7 Days
- 8. None (skip to Q14ii)

Q14hii. [Ask those whose answers in the above question are from "1" to "7"] On average, how many servings of soybean curd or cups of soybean milk did you eat or drink on one of those days? One serving of soybean curd approximately equates to one box of 250 gram soybean curd or two pieces of dry bean curd. One cup of soybean milk equates to 250 ml. (Interviewer's prompts: The numbers can be recorded as half such as 0.5 or 1.5)

_____ servings

Dairy product

Q14ii. On average, how many days do you drink or eat dairy products such as milk, yogurt or cheese each week? (Excluding cheese products such as cheese cake)

- 1. 1 Day
- 2. 2 Days
- 3. 3 Days
- 4. 4 Days
- 5. 5 Days
- 6. 6 Days
- 7. 7 Days
- 8. None (skip to Q14j)

Q14iii. [Ask those whose answers in the above question are from "1" to "7"] How many servings of milk/yogurt or cheese, on average, did you eat on one of those days? (Interviewer's prompts: One serving equates 1 cup of 250 ml milk/yogurt, or two sheets of pre-cut square cheese). The numbers can be recorded as half such as 0.5 or 1.5)

_____servings

Q14j. On average, how many cups of fluid do you drink a day, such as water, tea, clear soup, juice and milk? A cup means 250 mls in volume or a standard-sized 250 ml tetra pack of drink.

_____ cups

Eating out

- Q15a. In the past month, how often did you eat out for breakfast? "Eat out for breakfast" refers to the breakfast that is not made at home and excludes the bread that is bought from a bakery. (Interviewer: Do not read out the answers)
 - 1. 5 times or more a week
 - 2. 2-4 times a week
 - 3. Once a week
 - 4. 2-3 times a month
 - 5. Once a month or less
 - 6. Skipped breakfast
- Q15b. In the past month, how often did you eat out for lunch? "Eat out for lunch" refers to the lunch that is not made at home. (Interviewer: Do not read out the answers)
 - 1. 5 times or more a week
 - 2. 2-4 times a week
 - 3. Once a week
 - 4. 2-3 times a month
 - 5. Once a month or less
 - 6. Skipped lunch

- Q15c. In the past month, how often did you eat out for dinner? "Eat out for dinner" refers to the dinner that is not made at home. (Interviewer: Do not read out the answers)
 - 1. 5 times or more a week
 - 2. 2-4 times a week
 - 3. Once a week
 - 4. 2-3 times a month
 - 5. Once a month or less
 - 6. Skipped dinner

D) Pattern of Alcohol Consumption

- Q16a. Have you ever had at least one alcoholic drink? (Interviewer: read out the answers one by one)
 - 1. Yes, during the last month
 - 2. Yes, during the previous 2 12 months (skip to Q17a)
 - 3. Yes, more than 12 months ago (skip to Q17a)
 - 4. No (skip to Q17a)
- Q16b. On how many days per week during the last month, on average, did you drink at least one alcoholic drink? (Interviewer: Do not read out the answers)
 - 1. Daily
 - 2. 6 days per week
 - 3. 5 days per week
 - 4. 4 days per week
 - 5. 3 days per week
 - 6. 2 days per week
 - 7. 1 day per week
 - 8. Less than 1 day per week

Q16c. How many standard drinks on average did you drink on those days? (Read out the types of standard drink) (A can or small bottle of beer is approximately equal to 1.5 standard drink. Or 1 standard drink is approximately equal to one dining glass of wine, or 1 spirit nip of brandy/whisky, or one small glass of Chinese wine such as rice wine) (a can/ small bottle of beer approximately equals to about 330 – 375 mls. Be aware, a big bottle can range from 640 mls (most brands) to 960 mls (Blue Ribbon)). [Interviewer please refer to the standard drink information sheet- the illustrated guide to typical standard drinks- for other examples if needed]

_____units of drinks

- Q16d. In the last month, did you drink at least 5 glasses or cans of alcohol on one occasion? That means the total number of glasses and cans of any type of alcohol, and one occasion means period of a few hours.
 - 1. Yes
 - 2. No (skip to Q17a)
- Q16e. How many times did you do this in the last month? (Interviewer: Do not read out the answers)
 - 1. Once
 - 2. Twice
 - 3. Three times or more

E) Smoking Pattern

Q17a. Have you smoked before? (Interviewer: read out the answers one by one)

- 1. Yes, but not now
- 2. Yes, and still smoking (skip to Q17c)
- 3. Never (skip to Q18a)

- Q17b. How long have you abstained from smoking? (Interviewer: read out the answers one by one)
 - 1. Had abstained for less than 1 month (skip to Q18a)
 - 2. Had abstained for 1 month to 1 year (skip to Q18a)
 - 3. Had abstained for more than 1 year (skip to Q18a)
- Q17c. How many cigarettes do you smoke on average per day? (Interviewer: Do not read out the answers)
 - 1. less than 1 cigarette per day now
 - 2. 1-10 cigarettes per day now
 - 3. 11-20 cigarettes per day now
 - 4. more than 20 cigarettes per day now

F) Cervical Screening (female only)

- Q18a. Have you had a total hysterectomy (surgical removal of the entire uterus) before?
 - 1. Yes (skip to Q19a)
 - 2. No

Q18b. Have you had a cervical smear before?

- 1. Yes
- 2. No (skip to Q19a)
- 3. Not sure (skip to Q19a)

Q18c. [Ask those whose answers in Q18b are "Yes"]

About how long ago did you have the last cervical smear?

(Interviewer: Do not read out the answers)

- 1. Within 12 months
- 2. 13-24 months
- 3. 25-36 months
- 4. 37-48 months
- 5. 49-60 months
- 6. 61 months and above
- 7. Cannot remember

Q18d. [Ask those whose answers in Q18b are "Yes"]

Was it your first cervical smear?

- 1. Yes, first smear
- 2. No, repeated smear
- 3. Not sure

G) Organ Donation

The following questions are related to organ donation. In general, organ transplants are performed by removing the organ(s) from donors after death and surgically transplanting the useful organs to recipients in need.

Q19a. Will you object if your family members donate their organs after their death? Family members refer to your parents, spouse and children.

- 1. No (skip to Q19d)
- 2. Yes
- 3. No comment (skip to Q19d)
- 4. No family member (skip to Q19d)
- Q19b. What are the reasons for objecting to your family members to donating their organs? (Interviewer: Do not read out the answers) (May choose more than one option)
 - 1. Would like to keep body intact
 - 2. My family member(s) had not expressed any wish to donate
 - 3. Fear that other relatives may object to the decision
 - 4. Fear that donation will increase suffering of family members when they are critically ill
 - 5. Fear of being given less treatment in the hospital or emergency room
 - 6. Religious beliefs, the religion: _____
 - 7. Personal preference
 - 8. No comment/ Don't know
 - 9. Others: _____

- Q19c. If your family members have expressed their will of donating their organs after death, will you object to the transplant?
 - 1. No
 - 2. Yes

Q19d. Are you willing to donate your organs? (Interviewer: Do not read out the answers)

- 1. No
- 2. Yes (skip to Q19f)
- 3. Not decided/considered yet (skip to Q20a.)

Q19e. What are your reasons for NOT being willing to donate your organs? (Interviewer: Do not read out the answers) (May choose more than one option)

- 1. Would like to keep body intact
- 2. Not supported by family members
- 3. Fear that donation will increase my suffering when I am critically ill
- 4. Fear of being given less treatment in the hospital or emergency room
- 5. Religious beliefs, the religion: _
- 6. Personal belief (e.g. Touch wood)
- 7. Others: _____
- 8. Personal preference
- 9. No comment/ Don't know
- \rightarrow (skip to Q20a)
- Q19f. Have you used any of the following ways to express your wish to donate organ ? (May choose more than one option)
 - 1. None
 - 2. Signed on the organ donation card
 - 3. Registered at the Hong Kong Medical Association organ donation database
 - 4. Expressed your wish to your family members
 - 5. Others :_____

Q19g. [Ask those whose answers in Q19f are "2"]

Do you carry the card all the time with you?

- 1. No
- 2. Yes

H) General Health Status

Q20a. In general, would you say your health is: (Interviewer: Read out the answers)

- 1. Excellent
- 2. Very good
- 3. Good
- 4. Fair
- 5. Poor

Q20b. Compared with people of your age, do you consider that your health condition is: (Interviewer: Read out the answers)

- 1. Much better
- 2. Better
- 3. The same
- 4. Worse
- 5. Much worse
- Q20c. Compared with past 12 months, what do you think about your present health condition? (Interviewer: Read out the answers)
 - 1. Much better
 - 2. Better
 - 3. The same
 - 4. Worse
 - 5. Much worse

I) Influenza Vaccination

Q21a. Have you ever had influenza vaccine injection?

- 1. Yes
- 2. Never (skip to Q22)

Q21b. [Ask those who answers in Q21a are "Yes"]

About how long ago did you have the last flu shot? (Interviewer: Do not read out the answers)

- 1. Within 3 months
- 2. 4-6 months
- 3. 7-9 months
- 4. 10 12 months
- 5. 13 months or over
- 6. Cannot remember

J) Demographics

Please tell us more about yourself in the order to facilitate our analysis. All information collected would be treated in strictest confidence.

Q22. What is your age? _____ years

- Q23. What is your highest educational attainment? (Interview: read out the answers one by one)
 - 1. Primary or below
 - 2. Had not completed secondary
 - 3. Completed secondary (F5)
 - 4. Matriculation
 - 5. Tertiary (Non-degree, degree or above)

Q24. What is your marital status (Interview: read out the answers one by one)

- 1. Never married
- 2. Married and with child (ren)
- 3. Married and without child (ren)
- 4. Divorced or Separated
- 5. Widowed
- 6. Refuse to answer
Q25. Are you currently engaged in a job

- 1. Yes
- 2. No (skip to Q27)

Q26. What is your occupation?

- 1. Employers/Managers/Administrator
- 2. Professional
- 3. Associate Professional
- 4. Clerk
- 5. Service worker
- 6. Shop sales worker
- 7. Skilled agricultural/fishery worker
- 8. Craft and related worker
- 9. Plant and machine operator and assembler
- 10. Un-skilled worker
- 11. Other: _____

Q27. Are you a? (Interviewer: read out the answers one by one)

- 1. Student
- 2. Home-maker
- 3. Unemployed person
- 4. Retired person
- 5. Others (Please specify____)

(skip to Q29)

(skip to Q28)

Q28. How much is your monthly personal income including all the income?

- 1. None
- 2. \$1-1,999
- 3. \$2,000-3,999
- 4. \$4,000-5,999
- 5. \$6,000-7,999
- 6. \$8,000-9,999
- 7. \$10,000-11,999
- 8. \$12,000-13,999
- 9. \$14,000-15,999
- 10. \$16,000-17,999
- 11. \$18,000-19,999
- 12. \$20,000-24,999
- 13. \$25,000-29,999
- 14. \$30,000-34,999
- 15. \$35,000-39,999
- 16. \$40,000-44,999
- 17. \$45,000-49,999
- 18. \$50,000 or above
- 19. Refuse to answer

Q29. How much is your monthly household income including all the income?

- 1. Less than \$2,000
- 2. \$2,000-3,999
- 3. \$4,000-5,999
- 4. \$6,000-7,999
- 5. \$8,000-9,999
- 6. \$10,000-11,999
- 7. \$12,000-13,999
- 8. \$14,000-15,999
- 9. \$16,000-17,999
- 10. \$18,000-19,999
- 11. \$20,000-24,999
- 12. \$25,000-29,999
- 13. \$30,000-34,999
- 14. \$35,000-39,999
- 15. \$40,000-44,999
- 16. \$45,000-49,999
- 17. \$50,000-54,999
- 18. \$55,000-59,999
- 19. \$60,000 or above
- 20. Don't Know
- 21. Refuse to answer
- Q30. How many people are living in this household, including yourself but excluding live-in maids?

_____ persons

Q31. What is your type of living quarters?

- 1. Public rental flats
- 2. Housing Authority subsidized sale flats
- 3. Housing Society subsidized sale flats
- 4. Private residential flats
- 5. Villas/ Bungalows/ Modern village houses
- 6. Simple stone structures/ traditional village houses
- 7. Staff quarters
- 8. Non-domestic quarters

The end: The survey has come to the end. Thank you very much for your participation. Goodbye!

Annex B Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ)



Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ)

- Short and Long Forms

November 2005

Contents

- 1. Introduction
- 2. Uses of IPAQ Instruments
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- 4. Overview of Continuous and Categorical Analyses of IPAQ
- 5. Protocol for Short Form
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Appendix 1.	At A Glance IPAQ Scoring Protocol – Short Forms
Appendix 2.	At A Glance IPAQ Scoring Protocol – Long Forms

Revised November2005

1

1. Introduction

This document describes recommended methods of scoring the data derived from the telephone / interview administered and self-administered IPAQ short and long form instruments. The methods outlined provide a revision to earlier scoring protocols for the IPAQ short form and provide for the first time a comparable scoring method for IPAQ long form. Latest versions of IPAQ instruments are available from www.ipaq.ki.se.

Although there are many different ways to analyse physical activity data, to date there is no formal consensus on a 'correct' method for defining or describing levels of physical activity based on self-report population surveys. The use of different scoring protocols makes it very difficult to compare within and between countries, even when the same instrument has been used. Use of these scoring methods will enhance the comparability between surveys, provided identical sampling and survey methods have been used.

2. Uses of IPAQ Instruments

IPAQ short form is an instrument designed primarily for population surveillance of physical activity among adults. It has been developed and tested for use in adults (age range of 15-69 years) and until further development and testing is undertaken the use of IPAQ with older and younger age groups is not recommended.

IPAQ short and long forms are sometimes being used as an evaluation tool in intervention studies, but this was not the intended purpose of IPAQ. Users should carefully note the range of domains and types of activities included in IPAQ before using it in this context. Use as an outcome measure in small scale intervention studies is not recommended.

3. Summary Characteristics of IPAQ Short and Long Forms

- 1. IPAQ assesses physical activity undertaken across a comprehensive set of domains including:
 - a. leisure time physical activity
 - b. domestic and gardening (yard) activities
 - c. work-related physical activity
 - d. transport-related physical activity;
- The IPAQ short form asks about three specific types of activity undertaken in the four domains introduced above. The specific types of activity that are assessed are walking, moderate-intensity activities and vigorous-intensity activities.
- 3. The items in the **short** IPAQ form were structured to provide separate scores on walking, moderate-intensity and vigorous-intensity activity. Computation of the total score for the short form requires summation of the duration (in minutes) and frequency (days) of walking, moderate-intensity and vigorous-intensity activities. Domain specific estimates cannot be estimated.

- 4. The IPAQ **long** form asks details about the specific types of activities undertaken within each of the four domains. Examples include walking for transportation and moderate-intensity leisure-time activity.
- 5. The items in the long IPAQ form were structured to provide separate domain specific scores for walking, moderate-intensity and vigorous-intensity activity within each of the work, transportation, domestic chores and gardening (yard) and leisure-time domains. Computation of the total scores for the long form requires summation of the duration (in minutes) and frequency (days) for all the types of activities in all domains. Domain specific scores or activity specific subscores may be calculated. Domain specific scores require summation of the scores for walking, moderate-intensity and vigorous-intensity activities within the specific domain, whereas activity-specific scores require summation of the scores for the specific type of activity across domains.

4. Overview of Continuous and Categorical Analyses of IPAQ

Both categorical and continuous indicators of physical activity are possible from both IPAQ forms. However, given the non-normal distribution of energy expenditure in many populations, it is suggested that the continuous indicator be presented as median minutes/week or median MET-minutes/week rather than means (such as mean minutes/week or mean MET-minutes/week).

4.1 Continuous Variables

Data collected with IPAQ can be reported as a continuous measure. One measure of the volume of activity can be computed by weighting each type of activity by its energy requirements defined in METs to yield a score in MET–minutes. METs are multiples of the resting metabolic rate and a MET-minute is computed by multiplying the MET score of an activity by the minutes performed. MET-minute scores are equivalent to kilocalories for a 60 kilogram person. Kilocalories may be computed from MET-minutes using the following equation: MET-min x (weight in kilograms/60 kilograms). MET-minutes/day or MET-minutes/week can be presented although the latter is more frequently used and is thus suggested.

Details for the computation for summary variables from IPAQ short and long forms are detailed below. As there are no established thresholds for presenting MET-minutes, the IPAQ Research Committee propose that these data are reported as comparisons of median values and interquartile ranges for different populations.

4.2 Categorical Variable: Rationale for Cut Point Values

There are three levels of physical activity proposed to classify populations:

- 1. Low
- 2. Moderate
- 3. High

The algorithms for the short and long forms are defined in more detail in Sections 5.3 and 6.3, respectively. Rules for data cleaning and processing prior to computing the algorithms appear in Section 7.

Regular participation is a key concept included in current public health guidelines for physical activity.¹ Therefore, both the total volume and the number of days/sessions are included in the IPAQ analysis algorithms.

The criteria for these levels have been set taking into account that IPAQ asks questions in all domains of daily life, resulting in higher median MET-minutes estimates than would have been estimated from leisure-time participation alone. The criteria for these three levels are shown below.

Given that measures such as IPAQ assess total physical activity in all domains, the "leisure time physical activity" based public health recommendation of 30 minutes on most days will be achieved by most adults in a population. Although widely accepted as a goal, in absolute terms 30 minutes of moderate-intensity activity is low and broadly equivalent to the background or basal levels of activity adult individuals would accumulate in a day. Therefore a new, higher cutpoint is needed to describe the levels of physical activity associated with health benefits for measures such as IPAQ, which report on a broad range of domains of physical activity.

'High'

This category was developed to describe higher levels of participation. Although it is known that greater health benefits are associated with increased levels of activity there is no consensus on the exact amount of activity for maximal benefit. In the absence of any established criteria, the IPAQ Research Committee proposes a measure which equates to approximately at least one hour per day or more, of at least moderate-intensity activity above the basal level of physical activity Considering that basal activity may be considered to be equivalent to approximately 5000 steps per day, it is proposed that "high active" category be considered as those who move at least 12,500 steps per day, or the equivalent in moderate and vigorous activities. This represents at least an hour more moderate-intensity activity over and above the basal level of activity, or half an hour of vigorous-intensity activity over and above basal levels daily. These calculations were based on emerging results of pedometers studies.²

This category provides a higher threshold of measures of total physical activity and is a useful mechanism to distinguish variation in population groups. Also it could be used to set population targets for health-enhancing physical activity when multidomain instruments, such as IPAQ are used.

¹ Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of American Medical Association* 1995; 273(5):402-7. and U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General.* Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, The Presidents' Council on Physical Fitness and Sports: Atlanta, GA:USA. 1996.

² Tudor-Locke C, Bassett DR Jr. How many steps/day are enough? Preliminary pedometer indices for public health. Sports Med. 2004;34(1):1-8.

'Moderate'

This category is defined as doing some activity, more than the low active category. It is proposed that it is a level of activity equivalent to "half an hour of at least moderate-intensity PA on most days", the former leisure time-based physical activity population health recommendation.

'Low'

This category is simply defined as not meeting any of the criteria for either of the previous categories.

5. Protocol for IPAQ Short Form

5.1 Continuous Scores

Median values and interquartile ranges can be computed for walking (W), moderateintensity activities (M), vigorous-intensity activities (V) and a combined total physical activity score. All continuous scores are expressed in MET-minutes/week as defined below.

5.2 MET Values and Formula for Computation of MET-minutes/week

The selected MET values were derived from work undertaken during the IPAQ Reliability Study undertaken in 2000-2001³. Using the Ainsworth et al. Compendium (*Med Sci Sports Med* 2000) an average MET score was derived for each type of activity. For example; all types of walking were included and an average MET value for walking was created. The same procedure was undertaken for moderate-intensity activities and vigorous-intensity activities. The following values continue to be used for the analysis of IPAQ data: Walking = 3.3 METs, Moderate PA = 4.0 METs and Vigorous PA = 8.0 METs. Using these values, four continuous scores are defined:

Walking MET-minutes/week = 3.3 * walking minutes * walking days Moderate MET-minutes/week = 4.0 * moderate-intensity activity minutes * moderate days Vigorous MET-minutes/week = 8.0 * vigorous-intensity activity minutes * vigorous-intensity days Total physical activity MET-minutes/week = sum of Walking + Moderate + Vigorous METminutes/week scores.

5.3 Categorical Score

Category 1 Low

This is the lowest level of physical activity. Those individuals who not meet criteria for Categories 2 or 3 are considered to have a 'low' physical activity level.

³ Craig CL,Marshall A, Sjostrom M et al. International Physical Activity Questionnaire: 12 country reliability and validity Med Sci Sports Exerc 2003;August

Category 2 Moderate

The pattern of activity to be classified as 'moderate' is either of the following criteria:

- a) 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR
- b) 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day
 OR
- c) 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum Total physical activity of at least 600 MET-minutes/week.

Individuals meeting at least one of the above criteria would be defined as accumulating a minimum level of activity and therefore be classified as 'moderate'. See Section 7.5 for information about combining days across categories.

Category 3 High

A separate category labelled 'high' can be computed to describe higher levels of participation.

The two criteria for classification as 'high' are:

- a) vigorous-intensity activity on at least 3 days achieving a minimum Total physical activity of at least 1500 MET-minutes/week
 OR
- b) 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 3000 MET-minutes/week.

See Section 7.5 for information about combining days across categories.

5.4 Sitting Question in IPAQ Short Form

The IPAQ sitting question is an additional indicator variable of time spent in sedentary activity and is not included as part of any summary score of physical activity. Data on sitting should be reported as median values and interquartile ranges. To-date there are few data on sedentary (sitting) behaviours and no well-accepted thresholds for data presented as categorical levels.

6. Protocol for IPAQ Long Form

The long form of IPAQ asks in detail about walking, moderate-intensity and vigorousintensity physical activity in each of the four domains. Note: asking more detailed questions regarding physical activity within domains is likely to produce higher prevalence estimates than the more generic IPAQ short form.

6.1 Continuous Score

Data collected with the IPAQ long form can be reported as a continuous measure and reported as median MET-minutes. Median values and interquartile ranges can be computed for walking (W), moderate-intensity activities (M), and vigorous-intensity activities (V) within each domain using the formulas below. Total scores may also be calculated for walking (W), moderate-intensity activities (M), and vigorous-intensity activities (V); for each domain (work, transport, domestic and garden, and leisure) and for an overall grand total.

6.2 MET Values and Formula for Computation of MET-minutes

Work Domain

Walking MET-minutes/week at work = 3.3 * walking minutes * walking days at work

- Moderate MET-minutes/week at work= 4.0 * moderate-intensity activity minutes * moderate-intensity days at work
- Vigorous MET-minutes/week at work= 8.0 * vigorous-intensity activity minutes * vigorous-intensity days at work
- Total Work MET-minutes/week =sum of Walking + Moderate + Vigorous MET-minutes/week scores at work.

Active Transportation Domain

Walking MET-minutes/week for transport = 3.3 * walking minutes * walking days for transportation Cycle MET-minutes/week for transport= 6.0 * cycling minutes * cycle days for transportation Total Transport MET-minutes/week = sum of Walking + Cycling MET-minutes/week scores for transportation.

Domestic and Garden [Yard Work] Domain

- Vigorous MET-minutes/week yard chores= 5.5 * vigorous-intensity activity minutes * vigorous-intensity days doing yard work (**Note**: the MET value of 5.5 indicates that vigorous garden/yard work should be considered a moderate-intensity activity for scoring and computing total moderate intensity activities.)
- Moderate MET-minutes/week yard chores= 4.0 * moderate-intensity activity minutes * moderateintensity days doing yard work
- Moderate MET-minutes/week inside chores= 3.0* moderate-intensity activity minutes * moderateintensity days doing inside chores.
- Total Domestic and Garden MET-minutes/week =sum of Vigorous yard + Moderate yard + Moderate inside chores MET-minutes/week scores.

Leisure-Time Domain

Walking MET-minutes/week leisure = 3.3 * walking minutes * walking days in leisure

- Moderate MET-minutes/week leisure = 4.0 * moderate-intensity activity minutes * moderate-intensity days in leisure
- Vigorous MET-minutes/week leisure = 8.0 * vigorous-intensity activity minutes * vigorous-intensity days in leisure
- Total Leisure-Time MET-minutes/week = sum of Walking + Moderate + Vigorous MET-minutes/week scores in leisure.

Total Scores for all Walking, Moderate and Vigorous Physical Activities

Total Walking MET-minutes/week = Walking MET-minutes/week (at Work + for Transport + in Leisure)

Total Moderate MET-minutes/week total = Moderate MET-minutes/week (at Work + Yard chores + inside chores + in Leisure time) + Cycling Met-minutes/week for Transport + Vigorous Yard chores MET-minutes/week

Total Vigorous MET-minutes/week = Vigorous MET-minutes/week (at Work + in Leisure)

Note: Cycling MET value and Vigorous garden/yard work MET value fall within the coding range of moderate-intensity activities.

Total Physical Activity Scores

An overall total physical activity MET-minutes/week score can be computed as: Total physical activity MET-minutes/week = sum of Total (Walking + Moderate + Vigorous) MET-

minutes/week scores. This is equivalent to computing:

Total physical activity MET-minutes/week = sum of Total Work + Total Transport + Total Domestic and Garden + Total Leisure-Time MET-minutes/week scores.

As there are no established thresholds for presenting MET-minutes, the IPAQ Research Committee proposes that these data are reported as comparisons of median values and interquartile ranges for different populations.

6.3 Categorical Score

As noted earlier, regular participation is a key concept included in current public health guidelines for physical activity.⁴ Therefore, both the total volume and the number of day/sessions are included in the IPAQ analysis algorithms. There are three levels of physical activity proposed to classify populations – 'low', 'moderate', and 'high'. The criteria for these levels are the same as for the IPAQ short [described earlier in Section 4.2]

Category 1 Low

This is the lowest level of physical activity. Those individuals who not meet criteria for Categories 2 or 3 are considered 'low'.

Category 2 Moderate

The pattern of activity to be classified as 'moderate' is either of the following criteria:

- d) 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR
- e) 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day

OR

⁴ Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of American Medical Association* 1995; 273(5):402-7. and U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Department of Health and Human Services. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. The Presidents' Council on Physical Fitness and Sports: Atlanta, GA:USA. 1996.

f) 5 or more days of any combination of walking, moderate-intensity or vigorousintensity activities achieving a minimum Total physical activity of at least 600 MET-minutes/week.

Individuals meeting at least one of the above criteria would be defined as accumulating a moderate level of activity. See Section 7.5 for information about combining days across categories.

Category 3 High

A separate category labelled 'high' can be computed to describe higher levels of participation.

The two criteria for classification as 'high' are:

- vigorous-intensity activity on at least 3 days achieving a minimum Total physical activity of at least 1500 MET-minutes/week
- OR
- b) 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 3000 MET-minutes/week.

See Section 7.5 for information about combining days across categories.

6.4 IPAQ Sitting Question IPAQ Long Form

The IPAQ sitting question is an additional indicator variable and is not included as part of any summary score of physical activity. To-date there are few data on sedentary (sitting) behaviours and no well-accepted thresholds for data presented as categorical levels. For the sitting question 'Minutes' is used as the indicator to reflect time spent in sitting rather than MET-minutes which would suggest an estimate of energy expenditure.

IPAQ long assesses an estimate of sitting on a typical weekday, weekend day and time spent sitting during travel (see transport domain questions).

Summary sitting variables include

Sitting Total Minutes/week = weekday sitting minutes* 5 weekdays + weekend day sitting minutes* 2 weekend days

Average Sitting Total Minutes/day = (weekday sitting minutes* 5 weekdays + weekend day sitting minutes* 2 weekend days) / 7

Note: The above calculation of 'Sitting Total' excludes time spent sitting during travel because the introduction in IPAQ long directs the responder to NOT include this component as it would have already been captured under the Transport section. If a summary sitting variable including time spent sitting for transport is required, it should be calculated by adding the time reported (travelling in a motor vehicle) under transport to the above formula. Care should be taken in reporting these alternate data to clearly distinguish the 'total sitting' variable from a 'total sitting – including transport' variable.

7. Data Processing Rules

In addition to a standardized approach to computing categorical and continuous measures of physical activity, it is necessary to undertake standard methods for the cleaning and treatment of IPAQ datasets. The use of different approaches and rules would introduce variability and reduce the comparability of data.

There are no established rules for data cleaning and processing on physical activity. Thus, to allow more accurate comparisons across studies IPAQ Research Committee has established and recommends the following guidelines:

7.1 Data Cleaning

- I. Any responses to duration (time) provided in the hours and minutes response option should be converted from hours and minutes into minutes.
- II. To ensure that responses in 'minutes' were not entered in the 'hours' column by mistake during self-completion or during data entry process, values of '15', '30', '45', '60' and '90' in the 'hours' column should be converted to '15', '30', '45', '60' and '90' minutes, respectively, in the minutes column.
- III. In some cases duration (time) will be reported as weekly (not daily) e.g., VWHRS, VWMINS. These data should be converted into an average daily time by dividing by 7.
- IV. If 'don't know' or 'refused ' or data are missing for time or days then that case is removed from analysis.

Note: Both the number of days and daily time are required for the creation of categorical and continuous summary variables

7.2 Maximum Values for Excluding Outliers

This rule is to exclude data which are unreasonably high; these data are to be considered outliers and thus are excluded from analysis. All cases in which the sum total of all Walking, Moderate and Vigorous time variables is greater than 960 minutes (16 hours) should be excluded from the analysis. This assumes that on average an individual of 8 hours per day is spent sleeping.

The 'days' variables can take the range 0-7 days, or 8, 9 (don't know or refused); values greater than 9 should not be allowed and those cases excluded from analysis.

7.3 Minimum Values for Duration of Activity

Only values of 10 or more minutes of activity should be included in the calculation of summary scores. The rationale being that the scientific evidence indicates that episodes or bouts of at least 10 minutes are required to achieve health benefits. Responses of less than 10 minutes [and their associated days] should be re-coded to 'zero'.

7.4 Truncation of Data Rules

This rule attempts to normalize the distribution of levels of activity which are usually skewed in national or large population data sets.

In IPAQ short - it is recommended that all Walking, Moderate and Vigorous time variables exceeding '3 hours' or '180 minutes' are truncated (that is re-coded) to be equal to '180 minutes' in a new variable. This rule permits a maximum of 21 hours of activity in a week to be reported for each category (3 hours * 7 days).

In IPAQ long – the truncation process is more complicated, but to be consistent with the approach for IPAQ short requires that the variables total Walking, total Moderateintensity and total Vigorous-intensity activity are calculated and then, for each of these summed behaviours, the total value should be truncated to 3 hours (180 minutes).

When analysing the data as categorical variable or presenting median and interquartile ranges of the MET-minute scores, the application of the truncation rule will not affect the results. This rule does have the important effect of preventing misclassification in the 'high' category. For example, an individual who reports walking for 10 minutes on 6 days and 12 hours of moderate activity on one day could be coded as 'high' because this pattern meets the '7 day" and "3000 MET-min" criteria for 'high'. However, this uncommon pattern of activity is unlikely to yield the health benefits that the 'high' category is intended to represent.

Although using median is recommended due to the skewed distribution of scores, if IPAQ data are analysed and presented as a continuous variable using mean values, the application of the truncation rule will produce slightly lower mean values than would otherwise be obtained.

7.5 Calculating MET-minute/week Scores

Data processing rules 7.2, 7.3, and 7.4 deals first with excluding outlier data, then secondly, with recoding minimum values and then finally dealing with high values. These rules will ensure that highly active people remain classified as 'high', while decreasing the chances that less active individuals are misclassified and coded as 'high'.

Using the resulting variables, convert time and days to MET-minute/week scores [see above Sections 5.2 and 6.2; METS x days x daily time].

7.6 Calculating Total Days for Presenting Categorical Data on Moderate and High Levels

Presenting IPAQ data using categorical variables requires the total number of 'days' on which all physical activity was undertaken to be assessed. This is difficult because frequency in 'days' is asked separately for walking, moderate-intensity and vigorous-intensity activities, thus allowing the total number of 'days' to range from a minimum

of 0 to a maximum of 21'days' per week in IPAQ short and higher in IPAQ long. The IPAQ instrument does not record if different types of activity are undertaken on the same day.

In calculating 'moderately active', the primary requirement is to identify those individuals who undertake activity on <u>at least '5 days'/week [see Sections 4.2 and 5.3]</u>. Individuals who meet this criterion should be coded in a new variable called "*at least five days*" and this variable should be used to identify those meeting criterion b) at least 30 minutes of moderate-intensity activity and/or walking; and those meeting criterion c) any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of 600 MET-minutes/week.

Below are two examples showing this coding in practice:

- an individual who reports '2 days of moderate-intensity' and '3 days of walking' should be coded as a value indicating "at least five days";
- an individual reporting '2 days of vigorous-intensity', '2 days of moderateintensity' and '2 days of walking should be coded as a value to indicate "at least five days" [even though the actual total is 6].

The original frequency of 'days' for each type of activity should remain in the data file for use in the other calculations.

The same approach as described above is used to calculate total days for computing the 'high' category. The primary requirement according to the stated criteria is to identify those individuals who undertake a combination of walking, moderate-intensity and or vigorous-intensity activity on <u>at least 7 days/week [See section 4.2]</u>. Individuals who meet this criterion should be coded as a value in a new variable to reflect "*at least 7 days*".

Below are two examples showing this coding in practice:

- an individual who reports '4 days of moderate-intensity' and '3 days of walking' should be coded as the new variable "at least 7 days".
- an individual reporting '3 days of vigorous-intensity', '3 days moderateintensity' and '3 days walking' should be coded as "at least 7 days" [even though the total adds to 9].

8. Summary algorithms

The algorithms in Appendix 1 and Appendix 2 to this document show how these rules work in an analysis plan, to develop the categories 1 [Low], 2 [Moderate], and 3 [High] levels of activity.

IPAQ Research Committee November 2005

APPENDIX 1

At A Glance IPAQ Scoring Protocol (Short Forms)

Continuous Score

Expressed as MET-min per week: MET level x minutes of activity/day x days per week

Sample Calculation

MET levels	MET-minutes/week for 30 min/day, 5 days
Walking = 3.3 METs	3.3*30*5 = 495 MET-minutes/week
Moderate Intensity = 4.0 METs	4.0*30*5 = 600 MET-minutes/week
Vigorous Intensity = 8.0 METs	8.0*30*5 = 1,200 MET-minutes/week
	TOTAL = 2,295 MET-minutes/week

Total MET-minutes/week = Walk (METs*min*days) + Mod (METs*min*days) + Vig (METs*min*days)

Categorical Score- three levels of physical activity are proposed

- 1. <u>Low</u>
 - · No activity is reported OR
 - Some activity is reported but not enough to meet Categories 2 or 3.

2. Moderate

Either of the following 3 criteria

- 3 or more days of vigorous activity of at least 20 minutes per day OR
- 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day OR
- 5 or more days of any combination of walking, moderate-intensity or vigorousintensity activities achieving a minimum of at least 600 MET-minutes/week.

3. <u>High</u>

Any one of the following 2 criteria

- Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR
- 7 or more days of any combination of walking, moderate- or vigorous-intensity activities accumulating at least 3000 MET-minutes/week

Please review the full document "Guidelines for the data processing and analysis of the International Physical Activity Questionnaire" for more detailed description of IPAQ analysis and recommendations for data cleaning and processing [www.ipaq.ki.se].

APPENDIX 2

At A Glance IPAQ Scoring Protocol (Long Forms)

Continuous Score

Expressed as MET-minutes per week: MET level x minutes of activity/day x days per week

Sample Calculation

MET levels

Walking at work= 3.3 METs Cycling for transportation= 6.0 METs Moderate yard work= 4.0 METs Vigorous intensity in leisure= 8.0 METs

MET-minutes/week for 30 min/day, 5 days

3.3*30*5 = 495 MET-minutes/week 6.0*30*5 = 900 MET-minutes/week 4.0*30*5 = 600 MET-minutes/week 8.0*30*5 = 1,200 MET-minutes/week

TOTAL = 3,195 MET-minutes/week

Domain Sub Scores

Total MET-minutes/week at work = Walk (METs*min*days) + Mod (METs*min*days) + Vig (METs*min*days) at work

Total MET-minutes/week for transportation = Walk (METs*min*days) + Cycle (METs*min*days) for transportation

Total MET-minutes/week from domestic and garden = Vig (METs*min*days) yard work + Mod (METs*min*days) yard work + Mod (METs*min*days) inside chores

Total MET-minutes/week in leisure-time = Walk (METs*min*days) + Mod (METs*min*days) + Vig (METs*min*days) in leisure-time

Walking, Moderate-Intensity and Vigorous-Intensity Sub Scores

Total Walking MET-minutes/week = Walk MET-minutes/week (at Work + for Transport + in Leisure)

Total Moderate MET-minutes/week = Cycle MET-minutes/week for Transport + Mod METminutes/week (Work + Yard chores + Inside chores + Leisure) + Vigorous Yard chores METminutes

Note: The above is a total moderate activities only score. If you require a total of all moderate-intensity physical activities you would sum Total Walking and Total Moderate

Total Vigorous MET-minutes/week = Vig MET-minutes/week (at Work + in Leisure)

Total Physical Activity Score

Total Physical Activity MET-minutes/week = Walking MET-minutes/week + Moderate METminutes/week + Total Vigorous MET-minutes/week

Continued.....

Also

Total Physical Activity MET-minutes/week = Total MET-minutes/week (at Work + for Transport + in Chores + in Leisure)

Categorical Score- three levels of physical activity are proposed

1. <u>Low</u>

No activity is reported **OR** a. Some activity is reported but not enough to meet Categories 2 or 3.

2. Moderate

Either of the following 3 criteria

- a. 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR
- b. 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day OR
- c. 5 or more days of any combination of walking, moderate-intensity or vigorousintensity activities achieving a minimum of at least 600 MET-min/week.
- 3. High

Any one of the following 2 criteria

- Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR
- 7 or more days of any combination of walking, moderate- or vigorous- intensity activities accumulating at least 3000 MET-minutes/week

Please review the full document "Guidelines for the data processing and analysis of the International Physical Activity Questionnaire" for more detailed description of IPAQ analysis and recommendations for data cleaning and processing [www.ipaq.ki.se].