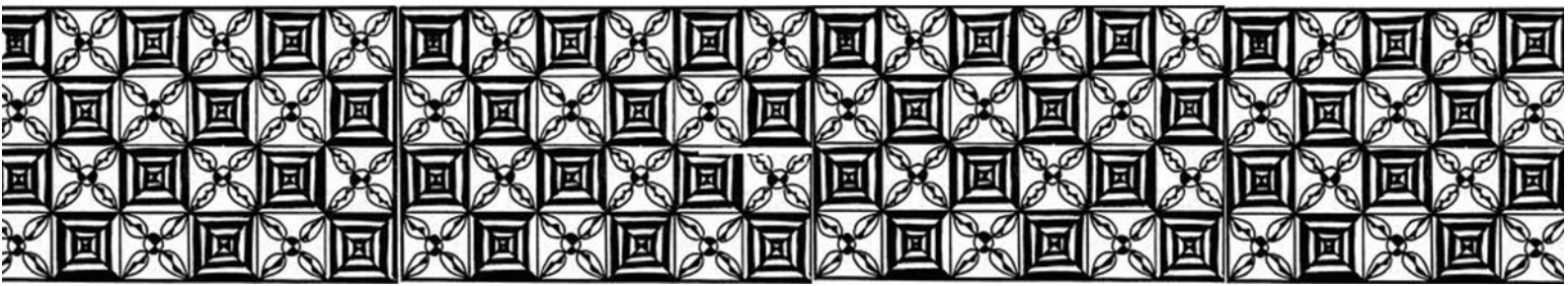
Kingdom of Tonga NCD Risk Factors

STEPS REPORT

World Health Organization

Western Pacific Region



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The Kingdom of Tonga NCD Risk Factors STEPS REPORT (referred as “the Report”) is a record of a combined effort of several organizations and many individuals. We would like to acknowledge each organization and everyone’s contributions, dedication and determination in completing the survey and finalizing the Report.

The Report is a collaborative effort between Ministry of Health, Kingdom of Tonga and World Health Organization (WHO).

The Report was compiled by: Dr Taniela Palu (MOH, Tonga), Dr Philayrath Phongsavan (Univ. of Sydney), Dr Li Dan (WHO, Nuku’alofa), Ms Leanne Riley (WHO, Geneva), Dr Malakai Ake (MOH), Dr Paula Vivili (MOH), Dr Andrew Colin Bell (WHO, Suva), Ms ‘Elisiva Na’ati, Dr Cathy Latu Tekiteki (MOH), Mr Shalvindra Raj (WHO, Suva) and Latu Fusimalohi (MOH).

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Dr Philayrath Phongsavan drafted the first version of the Report. Dr Li Dan, Ms Leanne Riley, Dr Graham Roberts (Univ. of New South Wales), Dr Andrew Colin Bell, Dr Cherian Varghese (WHO, Manila), Ms Regina Guthold and Mr Shalvindra Raj have conducted technical reviews for the Report.

The country consultation held in Nuku’alofa, Tonga was attended by Dr Siale ‘Akau’ola, Dr Malakai Ake, Dr Paula Vivili, Ms ‘Elisiva Na’ati, Latu Fusimalohi, Dr Taniela Palu, Dr Cathy Latu Tekiteki (MOH, Tonga), Ms Greta Cranston, Ms Louise Scott (AusAID, Tonga), Ms Siutaisa L. Toumoua and Dr Li Dan (WHO, Nuku’alofa). During the country consultation, the Fata-'o-Tu'i Tonga, one of the most chiefly tapa designs in Tonga, was selected to be put at the bottom of the Report cover. "Fata" refers to the central beam of the royal traditional house where the Tu'i Tonga (the first out of the three royal dynasties in the old days) sits.

Dr Li Dan, Dr Graham Roberts, Dr Philayrath Phongsavan and Dr Andrew Colin Bell are the final technical and editorial reviewers of the Report.

WHO Suva Office arranged the printing, on behalf of the Ministry of Health, Kingdom of Tonga.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

BMI	Body Mass Index
BP	Blood Pressure
CHD	Coronary Heart Disease
CI	Confidence Interval
CVD	Cardiovascular Diseases
DBP	Diastolic Blood Pressure
DM	Diabetes Mellitus
FBS	Fasting Blood Sugar
HTN	Hypertension
MET	Metabolic equivalent
mg/dL	Milligrams per decilitre (unit of blood chemistry values)
mmHg	Millimetres of mercury (unit of blood pressure measurement)
mmol/L	Millimoles per litre (unit for blood chemistry values)
NCDs	Noncommunicable diseases
PICs	Pacific island countries and areas
SBP	Systolic Blood Pressure
WHO	World Health Organization

FOREWORD

Noncommunicable diseases (NCDs), including cardiovascular diseases, diabetes, and cancer have become a high disease burden in most of the countries in the world. NCDs are the major diseases in the Kingdom of Tonga. In order to address these growing problems accurate information about the risk factors that contribute to the development of NCDs is needed. A “risk factor” is any characteristic or exposure that increases a person’s likelihood of developing a NCD. Risk factors include smoking, alcohol use, physical inactivity, obesity, high blood pressure, a raised level of blood glucose or cholesterol, and an unbalanced diet.

To increase our capacity to undertake population risk surveillance, the Ministry of Health, Kingdom of Tonga joined forces with WHO and other partners to undertake the national NCD Risk Factors STEPS Survey. The STEPS survey has been specifically designed by WHO to assess the prevalence of the common NCDs and risk factors in a population. The results from the survey provide important information to develop and implement NCD plans and programs to address the growing epidemic of NCDs. Furthermore, the survey provides a firm foundation for an ongoing surveillance for NCDs and their various risk factors.

This report is the result of the STEPS survey carried out in Tonga in Sept. to Nov., 2004. It shows high prevalence of NCDs and their risk factors among our population and suggests actions to: control and prevention NCDs; provide a supportive physical environment and infrastructure, and improve health service delivery.

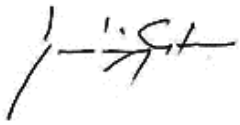
This is the first population-based nationwide STEPS survey on the prevalence of the NCD risk affecting our population. It represents a milestone in our efforts to address the increasing NCD epidemic affecting our people and marks an increased commitment of us to tackle the NCD challenge. The survey results and recommendations will enable us to develop more effective health policies and programs in primary and secondary NCD prevention and in monitoring and evaluating our ongoing efforts in NCD prevention and control.

The Tonga STEPS survey involved intensive work, long days, persistence and dedication from the Tongan survey team. We owe each of them our sincere appreciation.

We also wish to thank all the supporting staff in the Ministry of Health and our partners, WHO for its excellent coordination and strong technical support, and AusAID for its financial support.

This report is dedicated to the hard work and commitment of all those involved from the inception to the completion of the NCD Risk Factors STEPS survey in our country.

The findings and recommendations in this report will guide our actions for preventing and controlling NCDs and improving health for all in the Kingdom of Tonga.



Lord/Mr Tu'i'afitu
Minister for Health
Ministry of Health
Kingdom of Tonga

Dr Siale 'Akau'ola
Director of Health
Ministry of Health
Kingdom of Tonga

The WHO STEPwise Approach to Surveillance of NCD Risk Factors (STEPS) is the WHO recommended surveillance tool for chronic disease risk factors and chronic disease-specific morbidity and mortality at national level. To date, more than 148 countries and areas throughout the world utilize WHO STEPS to conduct national surveys on risk factors and prevalence of NCDs. The publication of the "Kingdom of Tonga NCD Risk Factors STEPS REPORT" marks a milestone as it provides the scientific, national and comparable data that will assist the government and other key stakeholders in addressing the escalating issue of NCDs.

The extremely high prevalence of NCDs in Pacific island countries and areas (PICs) accounts for 75% of all deaths and contributes to significant long term illness and disability. Ministers at the 9th Health Ministers' Meeting held in June, 2011 declared a NCD crisis in the Pacific requiring urgent attention and action.

Some of the key results of the STEPS survey and report in the Kingdom of Tonga include the following:

- 27.6% of the population smoked tobacco daily.
- 13.4% of the population was current alcohol drinkers.
- 92.8% of the population consumed less than five combined servings of fruit and vegetables per day.
- 43.9% of the population was with low level of physical activity.
- The prevalence of overweight in the population was 92.1%, the prevalence of obesity was 68.7%.
- The prevalence of hypertension was 23.1%.
- The prevalence of raised blood glucose in the population was 16.4%.
- The prevalence of raised blood cholesterol in the population was 49.7%.
- 99.9% of the population was at high risk or moderate risk of NCDs.

These results clearly document that NCDs are a major problem in Tonga. The application of this “Kingdom of Tonga NCD Risk Factors STEPS REPORT” include updating the national NCD strategy, identifying evidence-based prioritized intervention for NCD prevention and

control, providing national baseline data of NCDs for comparison over time and between countries, contributing the scaling up of the implementation of the Millennium Development Goals, and conducting evaluation against the global NCD targets and indicators among others.

Future priorities need to be given to both primary and secondary prevention activities to prevent and control NCDs, including cardiovascular diseases, diabetes, cancer, and their risk factors including tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol.

WHO is honoured to be a critical part of the collaborative efforts between the Tonga Ministry of Health, Australian Agency for International Development and New Zealand Aid Programme to complete the Tonga STEPS survey and report.

WHO is proud to collaborate with the Ministry of Health in publishing this first “Kingdom of Tonga NCD Risk Factors STEPS REPORT”, and will continue to work with health authorities, health workers, other key stakeholders and the public to address the issues raised in this report.

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EXECUTIVE SUMMARY

The Kingdom of Tonga conducted a population-wide national survey to document the prevalence of noncommunicable diseases (NCDs) and their associated risk factors among Tongans aged 15 to 64 year old in 2004. The Tonga STEPS survey was part of the global effort to reverse the trends of NCDs. The key objectives of the Tonga NCD STEPS survey were to:

- document the prevalence and magnitude of major modifiable risk factors for NCDs including tobacco use, alcohol consumption, eating patterns, physical activity, overweight and obesity, blood pressure, blood glucose and cholesterol levels
- document the prevalence of key NCDs among adults in Tonga
- compare NCDs and their risk factors across different age groups and between men and women.

A total of 1250 households were approached and one adult aged 15-64 years from each household was randomly selected to participate in the survey, the response rate was 80%. About one third of the sample (30.8%) was in the age group 35-44 years, with over half of participants being females (57.8%). Educational levels were similar across sex and age groups, with the exception of females aged 55-64 who had received marginally less years of education.

Following the standard age group reporting for WHO STEPS surveys and reports, 25-64 year data was presented in the three Steps. For Step 1 results, 15-64 year data was also presented, compared and highlighted.

Step 1: Behavioural risk factors

Tobacco use

The overall prevalence of current smoking among those aged 15-64 years was 31.0%. The proportion was significantly higher for men (46.2%) than women (16.3%). Among current smokers, 27.6% smoked daily, with a gender difference of 41.9% of men and 13.8% of women who smoked daily. The mean age of smoking uptake among daily smokers was 18.2 years, with men reported a slightly younger age of smoking uptake (17.5 years) than women (20.3 years). People in the 15-24 years age group also reported starting at a relatively younger age of 15.9 years. The mean duration of smoking was 14.5 years, and 84.0% of daily smokers smoked manufactured cigarettes.

Among those aged 25-64 years, the overall prevalence of current smoking was 29.8%, with a significantly higher proportion of men (46.2%) than women (14.3%) who smoked. Among current smokers, 26.4% smoked daily; 41.5% of men and 12.2% of women. The mean age of smoking uptake among daily smokers was 19.7 years, with men reported a lower mean age of smoking uptake (18.7 years) than women (22.7 years). The mean duration of smoking was 20.4 years, and 82.5% of daily smokers smoked manufactured cigarettes.

Alcohol consumption

The overall prevalence of current drinkers (defined as having consumed alcohol in the past 12 months) among those aged 15-64 years was 13.4%, with a significant difference found in

alcohol consumption between men (22.2%) and women (4.8%). The highest proportion of current drinkers was in the 15-24 age group (21.7%); 37.9% of men and 5.2% of women.

Among those aged 25-64 years, the prevalence of current drinkers was 8.9%; 13.6% of men and 4.6% of women.

Fruit and vegetable intake

Among those aged 15-64 years, the majority (92.8%) reported consuming less than five combined servings of fruit and vegetable per day. The mean number of days per week of combined fruit and vegetables consumed was 4.2 days. On days when fruit and vegetables were both consumed, the mean number of combined servings was 2.4 serves. Men and women were similar in their reported consumption of combined servings of fruit and vegetables.

The pattern of consumption among those aged 25-64 years was similar, with the majority (92.2%) reported consuming less than five combined servings of fruit and vegetable per day. The mean number of days per week of combined fruit and vegetables consumed was 4.3 days. On days when fruit and vegetables were both consumed, the mean number of combined servings was 2.5 serves.

Physical activity

Among those aged 15-64 years, 43.9% of those surveyed reported a low level of total physical activity, defined as less than 600 METminutes per week. A higher proportion of women (54.8%) than men (32.4%) reported low level of physical activity. There was little variation in prevalence across the age groups. In Tonga, work-related physical activities contributed the largest portion of all total physical activity (81.3 minutes per day), followed by transport (33.8 minutes per day) and recreation/leisure (15.6 minutes per day). Mean total daily minutes (across all domains) were 178.9 for men and 85.3 for women.

Among those aged 25-64 years, a similar pattern of physical activity was found with 43.9% reporting a low level of total physical activity. A higher proportion of women (53.7%) than men (33.3%) reported a low level of physical activity. Work-related physical activities accounted for the largest portion of all total physical activity (92.4 minutes per day), followed by transport (33.9 minutes per day) and recreation/leisure (12.3 minutes per day). Mean total daily minutes (across all domains) were 189.2 for men and 91.5 for women.

Step 2: Physical risk factors

Among those aged 25-64 years, the overall prevalence of overweight (BMI ≥25kg/m^2) was 92.1% (89.2% of men and 94.9% of women). By age 25-34 years, 89.6% of the sample in this age was classified as overweight, 96.6% in the age group 35-44 years. The prevalence of obesity (BMI ≥30kg/m^2) was 68.7% (60.7% of men and 76.3% of women). Only 7.7% of the sample (10.5% of men and 5.1% of women) had a normal body weight (18.5 ≤ BMI ≤ 24.9).

Women had a marginally higher mean waist circumference (105.2cm) than men (103.4cm). With the exception of the youngest age group (98.2cm), mean waist circumference for men in all age groups exceeded 102cm, a cut-off value for men where the risk of cardiovascular disease increases. Among women in all age groups, the mean waist circumference values exceeded 88cm, a cut-off value for women for increased cardiovascular disease risk.

In Tonga, one fifth of the surveyed population (23.1%) was hypertensive (defined as having SBP≥140 mmHg and/or DBP≥90 mmHg or on medication for raised blood pressure). A slightly higher proportion of men (26.5%) than women (19.9%) was hypertensive.

Step 3: Biochemical risk factors

Among those aged 25-64 years, the overall prevalence of raised blood glucose was 16.4% based on measures of fasting capillary whole blood (fasting glucose level ≥6.1 mmol/L or on medication for raised blood glucose). There was no statistical gender difference in raised blood glucose levels (men: 16.3%; women: 16.6%). The highest rate of raised blood glucose among women was in age 45-54 years and in age 55-64 years (32.8%% and 35.3% respectively).

Overall, 49.7% of the surveyed population aged 25-64 years had raised total blood cholesterol levels exceeding 5.0 mmol/L (≥190 mg/dl). A significantly higher proportion of men (66.1%) than women (34.2%) had elevated blood cholesterol. The prevalence of raised blood cholesterol increased with age in both genders. Among women, about half (50.6%) had raised cholesterol by age 45-55 years. Among men, elevated cholesterol was already evident in 60.2% of those aged 25-34 years.

Combined risk factors

The risk of developing a NCD increases with increasing number of NCD risk factors. As such, STEPS survey participants were categorized into three NCD risk groups: High Risk (with 3-5 risk factors), Moderate Risk (with 1-2 risk factors) or Low Risk (with no risk factor). The combined NCD risk factors included being current daily smokers, being overweight (BMI ≥25 kg/m^2), having raised blood pressure (SBP ≥140 and/or DBP≥90 mmHg or currently on medication), having consumed less than five combined servings of fruit and vegetables per day, and having engaged in a low level of physical activity (<600 METminutes per week).

Overall 60.7% of the surveyed population was at High Risk of NCDs, with a further 39.2% at Moderate Risk. Both men (60.5%) and women (60.8%) were equally at High Risk of NCDs. By age 25-44 years, over half of the surveyed population was already at High Risk (58.1%), 57.9% in men and 58.3% in women.

Conclusion

The Tonga STEPS survey has provided scientific and strong evidence that NCDs and associated modifiable risk factors are of the major public health concern in Tonga. With very high rates of overweight and obesity and a relatively high rate of blood cholesterol, the Tonga STEPS survey provides an important data resource that can inform setting priorities, developing preventive strategies for those vulnerable and at risk, as well as for those living with NCDs.

Recommendations

Addressing surveillance and information needs

This includes:

- Securing political and financial commitments to develop a systematic and planned STEPS NCDs risk factors data collection system, supported by a workforce skilled in implementing the survey, in order to have established an ongoing monitoring and surveillance system that is scientifically rigorous and robust in Tonga.
- Supplementing the core Tonga STEPS questionnaire with additional questions to ensure that Tonga STEPS provide timely and relevant epidemiological data for planning and policy development. Such questions for future consideration could include salt consumption and mental health.
- For the 1st time, among the published STEPS reports in the PICs, the prevalence of 15-64 age and 25-64 age were both presented in the core tables of the Step 1 in this STEPS report. These compared data show that when using 15-64 age, the prevalence of most indicators (especially in the tobacco and alcohol sections) were higher, compared to 25-64 years. Therefore, tobacco use and harmful alcohol consumption among Tongan youth and adolescents need to be paid more public health attention.
- Considering setting up national targets and indicators for NCD prevention and control.
- Participating in the comparison of STEPS findings across other Pacific island countries and areas that have completed the STEPS survey and published STEPS reports.
- Conducting data comparison over time after the 2nd-round STEPS survey in Tonga in 2011-2012 is completed.

Addressing policy, organizational and environmental factors

This includes:

- Implementing the WHO Framework Convention on Tobacco Control, such as addressing smoke-free environments and increasing tobacco taxation.
- Limiting the marketing and advertising of unhealthy foods and drinks.
- Developing policies supporting the importation of healthy foods.
- Improving the availability and affordability of fruit and vegetables.
- Developing policies to establish and support physical activity-friendly environments, such as walking paths, open public green spaces for recreational activities, sports facilities and workplace physical activity programs.
- Implementing setting-based policies to support healthy lifestyle and practices, e.g. healthy food services and physical activity promotion policies in workplaces, churches and schools.
- Policies to support health system strengthening including skilled workforce, financial coverage, essential drugs, affordable technology for managing NCDs.

Addressing knowledge and awareness of NCD behavioural risk factors

This includes implementing:

- Comprehensive anti-smoking programs to reduce smoking rates, particularly targeting adolescents and youths to prevent smoking uptake, and smoking cessation programs to reduce smoking rates across all age groups.
- Comprehensive public health programs to reduce harmful alcohol consumption, including social marketing and mass communication campaigns to increase awareness of the adverse effects of harmful alcohol consumption.

- Comprehensive public health programs promoting the consumption of the recommended levels of fruit and vegetables.
- Comprehensive social marketing and mass communication campaigns to increase public awareness of the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods.
- Culturally-appropriate and diverse programs to promote daily physical activity.
- Public awareness campaigns on the importance of regular monitoring and screening of blood pressure, blood sugar and blood cholesterol levels.
- A system of community-based, outreached care for the management of individuals with diagnosed NCDs.

1. INTRODUCTION

1.1 Background and Rationale

Globally, non-communicable diseases (NCDs) such as diabetes, cardiovascular disease, cancer, chronic respiratory conditions account for 63% of all deaths[1]. Once considered as 'diseases of affluence', NCDs have now invaded many low- and middle-income countries. In 2008, approximately 80% of NCD deaths (or four out of five deaths) occurred in developing countries[1], compared to just less than 40% of NCD deaths in 1990[2]. Importantly, a large proportion of NCD deaths occurred during the most productive period of human life, before the age of 60[1]. Worldwide, the social, economic and health consequences associated with NCDs are significant contributing to 48% of the healthy life years lost (Disability Adjusted Life Years, DALYs), compared to 40% of communicable diseases, maternal and child health, nutritional deficiencies[3]. Adding to the disease burden is the continuing presence of communicable diseases in many developing countries. Since the incidence and prevalence of NCDs are expected to accelerate in the future, due to the increasing prevalence of NCD risk factors as a consequence of globalization and urbanization, urgent preventive actions are required to mitigate the social, economic and health burden on countries.

There are four major modifiable risk factors for NCDs: unhealthy diet, physical inactivity, tobacco use, and harmful alcohol use. Some of these risk factors might 'cluster' in individuals (i.e. alcohol often clustering with smoking, physical inactivity clustering with poor diet, overweight and high blood pressure and high cholesterol). Changing these risk factors can substantially improve individual health and wellbeing[1]. The WHO STEPwise Approach to Surveillance of NCD Risk Factors outlines a standardized process and system for countries to collect and document the magnitude and patterns of the four major NCD risk factors[4]. The underlying principle of the WHO STEPS surveys is that countries collect the same core information on diet, physical activity, tobacco use, and alcohol use (Step 1), with options to collect additional information such as blood pressure, height, weight and waist circumference (Step 2), and fasting blood glucose and cholesterol (Step 3), depending on need and available resources. Countries can also collect other information (such as injuries, mental health) of local relevance. The standardized survey data collection and analysis would then allow for the country-specific data to be comparable within- and between-countries.

Previous NCD risk factor surveys have been conducted in the main island of Tongatapu in 1998, in Ha'apai and Vava'u in 2000. This Tonga STEPS survey was the first national NCD risk factors survey to be conducted across three island groups of Ha'apai and Vava'u. The STEPS data will inform policy and program development in the immediate term, but will also form the basis for long-term ongoing monitoring and surveillance of NCD risk factors in Tonga.

1.2 The National Context

1.2.1 Geography and Population

The Kingdom of Tonga is an island sovereign nation located in the South Pacific Ocean. Its 170 islands are scattered over approximately 800,000km (500miles), with only 36 of the islands inhabited. The islands are divided into five main island groups: Tongatapu, Ha'apai, Vava'u, 'Eua and Niuas. Based on the 2011 Census, two thirds of the 103,000 inhabitants live on the main island, Tongatapu and especially around the capital city of Nuku'alofa[5].

Tonga is the only sovereign monarchy among the Pacific island countries and areas, and the only pacific island nation that has avoided colonization[6]. Tongans are Polynesian by ethnicity and represent 98% of the inhabitants, with the balance comprised of Melanesians, other Pacific islanders, Europeans and Chinese. Tongan is the official language of the island, but English is also widely used.

1.2.2 Government, Education and the Economy

Tonga is a constitutional monarchy. Governance executive power is vested in the Cabinet of Ministers, headed by the Prime Minister. Members of Legislative Assembly are elected by popular vote. Local villages or group of villages are governed by town or district officials, respectively.

Education in Tonga is broadly divided into primary, secondary and post-secondary. The government of Tonga funds the majority of primary schools and approximately one third of secondary schools; the rest are auspiced by various denominations. Tongans enjoy a very high education level, with a 99% literacy rate[5].

As a small island nation, Tonga has limited human and financial resources. Similar to many of its neighbours, Tonga's ecosystem is fragile and highly vulnerable to natural disasters and rising sea levels. Tonga relies to a large degree on imported goods, and remittances from Tongans living overseas. Fishing comprises the main agricultural industry, although its growth and ability to attract foreign investment is tempered by high transportation costs and variable weather.

Overall, Tonga's Human Development Index (HDI; the United Nations composite measure of health, education and income) is 0.704, giving it a ranking of 90 out of 187 countries with comparable data[7]. The HDI of East Asia and the Pacific as a region is 0.671, placing Tonga above the regional average.

1.2.3 Health Status

Life expectancy for Tonga for 2005 to 2008 was estimated to be between 60.4 to 64.2 years for males and 65.4 to 69.0 for females, well below previously published estimates. The low life expectancy, at a relatively low infant mortality rate and high premature adult mortality, suggested that NCDs are having a profound limiting effect on health status in Tonga[8].

It was previously reported that more than 60.0% of adults in Tonga are obese according to the WHO BMI categories for obesity for adults (i.e. body mass index BMI≥30kgm^2) and that

37.0% have hypertension and 15.1% have diabetes[9]).

However, limited population-wide data exists on the prevalence of behavioural (poor diet, physical inactivity, alcohol and tobacco use) and metabolic risk factors (total cholesterol and glucose levels) for NCDs among adults in Tonga. Documenting the magnitude and extent of these modifiable risk factors will provide a valuable national resource for setting public health priorities and actions to reverse the tide on obesity and other NCDs in Tonga.

2. OBJECTIVES

The key objectives of the Tonga STEPS survey were to:

- document the prevalence and magnitude of major modifiable risk factors for NCDs including tobacco use, alcohol consumption, eating patterns, physical activity, overweight and obesity, blood pressure, blood glucose and cholesterol levels
- document the prevalence of key NCDs among adults in Tonga
- compare NCDs and their risk factors across different age groups and between men and women.

In the immediate term, the Tonga STEPS data will provide information for national policy and program development.

3. METHODOLOGY

3.1 STEPS Survey Structure

The Tonga STEPS survey was a cross-sectional study, and followed the standardized sequential three-step process (Figure 1) recommended for all STEPS surveys[10]. This is to facilitate within and between country comparisons of the Tonga STEPS survey data.

- Step 1: A questionnaire-based (interview) survey on tobacco use, alcohol drinking, fruit and vegetable consumption, physical activity, history of hypertension and history of diabetes.

- Step 2: Physiological measures of blood pressure, height, weight, and waist circumference.

- Step 3: Biochemical measures of fasting blood glucose and total cholesterol.

The Tonga STEPS survey also followed other STEPS surveys conducted in the Pacific region by collecting core data across all three steps, with scope to add more self-reported questions, physical and biochemical measurements to the core questions, depending on local needs and situations.

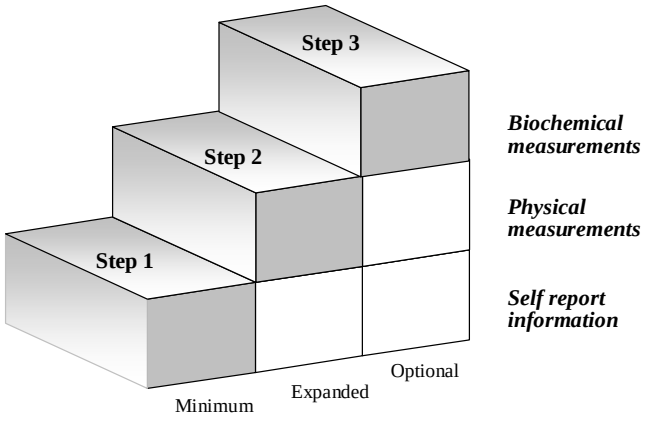

Figure 1. The WHO STEPwise approach to surveillance of NCD Risk Factors

3.2 Sampling Frame and Sample Size

The survey population included individuals aged 15-64 years living in Tonga at the time of the survey. The sampling frame was household lists of the 1996 Population Census, supplemented by the additional households information from the 2001 Agricultural Census. Information from these two databases was compared to yield more complete and updated sampled census blocks (CBs) from which the final selection of sampled households was drawn.

A sample of 1,250 households was selected; 750 households from Tongatapu and 250 households each from Ha'apai and Vava'u. In each selected household, one person aged 15-64 years was selected randomly to take part in the survey.

Only participants aged 25-64 years were selected to participate in physical and biochemical measurements (STEPS 2 and 3).

3.3 Data Collection Procedures

The STEPS survey was conducted in September 2004. All data collection took place in dedicated STEPS survey centres. Survey staff received intensive training in the STEPS survey methodology and data collection protocol. The survey questionnaire was in English, with interviews conducted in English and/or Tongan.

At the STEPS registration desk, survey interviewers obtained informed consent from all survey participants, briefed participants of the survey procedure, confirmed date of birth, and where relevant confirmed fasting status of the participant. Figure 2 briefly outlines the sequence of data collection and measurements for the survey, which followed the recommended STEPwise protocols.

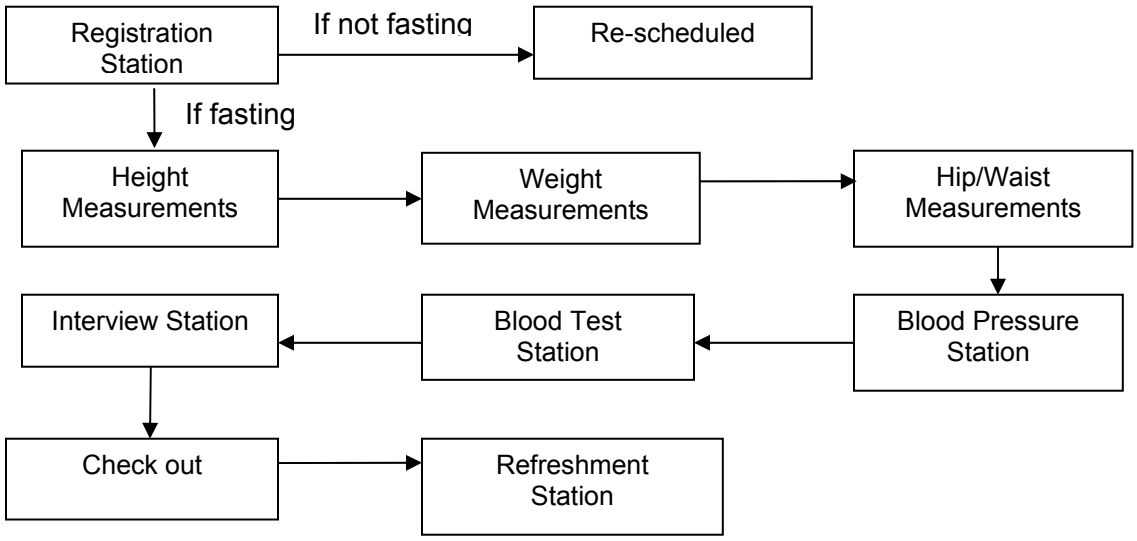

Figure 2. Sequence of data collection and stations at the survey site

3.3.1 Step 1 - Behavioural Risk Factors Interviews

All participants completed the face-to-face interview in which questions were asked about years of formal education, tobacco use, alcohol drinking, fruit and vegetable consumption, physical activity and history of hypertension and diabetes.

3.3.2 Step 2 - Physical Measurements

This Step includes measuring participants resting blood pressure, height, weight and waist circumference. The OMRON Digital Automatic Blood Pressure Monitor was used to measure resting blood pressure three times; the first reading followed by two measurements taken with 2-3 minute intervals. The average of the second and third readings was computed and used in the analysis.

The Seca Leicester Height Measure was used to measure height to the nearest whole centimetre and the Siltec PS500L to measure weight to the nearest 0.1 kg. Participants were measured wearing only light clothing and without shoes. The Figure Finder constant tension tape was used to measure waist circumference and recorded to the nearest 0.1 cm. Height, weight and waist circumference were measured once. Waist circumference of female pregnant participants was not measured.

3.3.3 Step 3 - Biochemical Measurements

This Step includes assessing participants' fasting blood glucose and fasting total cholesterol level by finger prick test. As required by the STEPS protocol, participants who took part in

Step 3 of the survey fasted from 10:00pm the previous night until 7:00am the following morning, when their capillary blood samples were drawn using the finger prick test method.

3.4 Data Management and Statistical Analysis

The data of this STEPS survey were cleaned and entered by the country staff in Tonga using EpiInfo. WHO Office in Geneva conducted data weighting, cleaning and generating the main outputs. WHO Office in Suva produced the data book. Data analysis were conducted using EpiInfo.

Means were computed for continuous variables and frequency distributions calculated for categorical variables. For both frequency estimates and means, 95% confidence intervals were reported by 10-year age groups and gender.

In this report, main data tables present findings for those aged 15-64 years, reported by 10-year age groups and by gender. In the same tables are also summary results related to behavioural risk factors for those aged 25-64 years following the standard age group reporting for WHO STEPS surveys.

4. RESULTS

4.1 Characteristics of Survey Population

This section presents results of the Tonga STEPS survey. Data for those aged 15-64 years are reported in the main tables, following the standard age group reporting for WHO STEPS surveys, and data for the age group 25-64 are presented in a separate line under the main table. Text description accompanying each table relates to the age groups 15-64, and commentary on the 25-64 years is also provided at the end of each section.

A total of 1250 households were approached and one adult aged 15-64 years from each household was randomly selected to participate in the survey, the response rate was 80%.

Table 1 presents the age and gender distribution of the entire survey respondents aged 15-64 years. Higher proportions of female than male respondents participated in the survey (57.8% and 42.2%, respectively). This pattern was consistent across all age groups, except for those aged 55-64 years (men: 52.3%; women: 47.7%).

Among the respondents aged 25-64 years, 58.2% were females and 41.8% were males. This unequal distribution has been taken into account during data weighting, so that the true male/female distribution of the population has been reflected in the results.

Table 1 Demographic characteristics of study population

Age group and sex of respondents						
Age Group (years)	Men		Women		Both Sexes	
	n	%	n	%	n	%
15-24	49	45.0	60	55.0	109	11.4
25-34	97	47.3	108	52.7	205	21.4
35-44	116	39.3	179	60.7	295	30.8
45-54	75	33.9	146	66.1	221	23.1
55-64	67	52.3	61	47.7	128	13.4
15-64	**404**	**42.2**	**554**	**57.8**	**958**	**100.0**
25-64	**355**	**41.8**	**494**	**58.2**	**849**	**100.0**

Table 2 presents the mean years of education of the survey respondents, by gender. Both genders and all age groups had similar mean years of education (men: 10.7 years; women: 10.4 years), with men having only marginally more years of education than women in age group 45-64 years. The oldest age group (55-64 years) of women reported the lowest mean years of education (8.2 years).

Among the respondents aged 25-64 years, both genders had similar mean years of education (men: 10.6 years; women: 10.3 years).

Table 2 Mean number of years of education by gender and age group

Mean number of years of education						
Age Group (years)	Men		Women		Both Sexes	
	n	Mean	n	Mean	n	Mean
15-24	44	10.9	57	11.5	101	11.3
25-34	95	11.5	107	11.3	202	11.4
35-44	115	11.0	175	10.7	290	10.9
45-54	74	10.2	145	9.8	219	10.0
55-64	65	9.2	60	8.2	125	8.8
15-64	**393**	**10.7**	**544**	**10.4**	**937**	**10.5**
25-64	**349**	**10.6**	**487**	**10.3**	**836**	**10.4**

4.2 Tobacco Use

Survey participants were asked a number of questions relating to tobacco use, and based on their responses were classified into the following smoking status:

- Current smokers – those who had smoked any tobacco product (such as cigarettes, cigars or rolled tobacco) in the past 12 months.

- Daily smokers – those who smoke any tobacco product every day.
- Non-daily smokers – those current smokers who do not smoke on a daily basis.

Table 3 shows the proportion of current smokers in the survey population, with 31.0% aged 15-64 years being current smokers. Significantly more men (46.2% ±6.7) were current smokers, compared to 16.3% ±5.2 of female respondents. Except for the youngest age group (15-24 years), this statistically significant gender difference was observed in all age groups. Among women, the highest proportion of current smokers was in the youngest age group 15-24 years (20.4% ±8.2), while among men current smoking was highest proportion in the oldest age group 55-64 years (61.3% ±11.2).

Table 3 also shows that among respondents aged 25-64 years, significantly more men (46.2% ±5.2) were current smokers, compared to 14.3% ±4.6 of women.

Table 3 Percentage of current smokers in the study population

Percentage of current smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	n	% Current smoker	95% CI	n	% Current smoker	95% CI
15-24	48	46.0	±18.4	60	20.4	±8.2	108	33.2	±11.3
25-34	97	46.1	±11.0	108	16.9	±13.6	205	31.2	±8.2
35-44	115	42.2	±4.7	178	16.6	±9.8	293	29.3	±6.9
45-54	74	41.6	±9.6	146	12.6	±4.6	220	26.2	±5.8
55-64	66	61.3	±11.2	61	6.0	±7.0	127	32.5	±9.5
15-64	**400**	**46.2**	**±6.7**	**553**	**16.3**	**±5.2**	**953**	**31.0**	**±4.1**
25-64	352	46.2	±5.6	493	14.3	±4.6	845	29.8	±3.7

Table 4 shows that 53.9% (±6.7) of male respondents were non-smokers. Of the 46.2% of current smokers, 41.9% (±8.3) smoked on a daily basis. More than half (57.2% ±11.1) of men aged 55-64 years were daily smokers. The second highest proportion of daily smokers was in the youngest age group 15-24 years (42.7% ±16.4), and decreased thereafter to 35.2% (±10.6) of daily smokers in the age group 45-54 years.

Among those aged 25-64 years, 53.8% (±5.6) of men were non-smokers and of the balance 41.5% (±7.6) smoked on a daily basis.

Table 4 Current smoking status among men in the study population by age group

Smoking status							
Age Group (years)	Men						
	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
15-24	48	42.7	±16.4	3.3	±5.8	54.0	±18.4
25-34	97	41.6	±12.8	4.5	±3.3	53.9	±11.0
35-44	115	38.2	±7.5	4.0	±5.0	57.8	±4.7
45-54	74	35.2	±10.6	6.4	±5.5	58.4	±9.6
55-64	66	57.2	±11.1	4.1	±4.9	38.7	±11.2
15-64	**400**	**41.9**	**±8.3**	**4.2**	**±3.1**	**53.9**	**±6.7**
25-64	352	41.5	±7.6	4.7	±3.1	53.8	±5.6

Table 5 shows that 83.7% (±5.2) of the female respondents were non-smokers. Of the 16.3% who were current smokers 13.8% (±3.4) smoked on a daily basis. The highest proportion of daily smokers was in the youngest age group 15-24 years (17.1% ±6.1), and decreased in age gradually to 6.0% (±7.0) in the oldest age group 55-64 years.

Among those aged 25-64 years, 85.7% (±4.6) of women were non-smokers and of the balance 12.2% (±3.4) smoked on a daily basis.

Table 5 Current smoking status among women in the study population by age group

Smoking status							
Age Group (years)	Women						
	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
15-24	60	17.1	±6.1	3.2	±5.2	79.6	±8.2
25-34	108	14.4	±9.6	2.5	±4.6	83.1	±13.6
35-44	178	12.6	±7.7	4.0	±2.8	83.4	±9.8
45-54	146	12.0	±4.6	0.6	±1.3	87.4	±4.6
55-64	61	6.0	±7.0	--	--	94.0	±7.0
15-64	**553**	**13.8**	**±3.4**	**2.5**	**±2.5**	**83.7**	**±5.2**
25-64	493	12.2	±3.4	2.2	±1.4	85.7	±4.6

Table 6 presents the prevalence of non-smokers, non-daily smokers and daily smokers for men and women combined. A total of 69.0% (±4.1) of respondents were non-smokers, 3.3% (±1.9) were non-daily smokers, and 27.6% (±4.6) were daily smokers. The highest proportion of daily smokers (30.5% ±9.9) was among in age group 55-64 years, with a marginally lower proportion (29.9% ±10.3) in age group 15-24 years; this high level was sustained through age group 35-44 years (25.3% ±6.6) and declined slightly in age group 45-54 years (22.9% ±6.4).

Among those aged 25-64 years, 70.2% (±3.7) were non-smokers, 3.4% (±1.6) were non-daily smokers, and 26.4% (±4.1) were daily smokers.

Table 6 Current smoking status among both sexes in the study population by age group

Smoking status							
Age Group (years)	Both Sexes						
	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
15-24	108	29.9	±10.3	3.3	±4.0	66.8	±11.3
25-34	205	27.7	±6.8	3.5	±2.8	68.8	±8.2
35-44	293	25.3	±6.6	4.0	±3.0	70.7	±6.9
45-54	220	22.9	±6.4	3.3	±2.9	73.8	±5.8
55-64	127	30.5	±9.9	2.0	±2.2	67.5	±9.5
15-64	**953**	**27.6**	**±4.6**	**3.3**	**±1.9**	**69.0**	**±4.1**
25-64	845	26.4	±4.1	3.4	±1.6	70.2	±3.7

Table 7 shows that among current daily smokers across both genders, the youngest age group of 15-24 years reported uptake at a younger age (15.9 years ±0.6) than the older age groups. For men, the mean age of starting smoking was 17.5 (±0.8) years, compared to 20.3 years (±1.3) for women.

A similar pattern was observed among those aged 25-64 years, with men reporting a lower mean age of smoking uptake (18.7 ±0.7) than women (22.7 ±1.7).

Table 7 Mean age started smoking among current daily smokers

Mean age started smoking									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean age	95% CI	n	Mean age	95% CI	n	Mean age	95% CI
15-24	15	15.4	±0.8	8	17.0	±1.6	23	15.9	±0.6
25-34	36	17.7	±1.1	12	20.4	±2.7	48	18.4	±1.1
35-44	36	19.1	±2.0	18	22.3	±2.2	54	19.9	±1.3
45-54	16	17.9	±4.1	14	21.8	±1.7	30	19.2	±2.5
55-64	28	20.5	±1.5	4	37.4	±17.4	32	22.7	±3.0
15-64	**131**	**17.5**	**±0.8**	**56**	**20.3**	**±1.3**	**187**	**18.2**	**±0.8**
25-64	116	18.7	±0.7	48	22.7	±1.7	164	19.7	±0.8

Table 8 shows that among current daily smokers aged 15-64 years, the mean number of years of smoking was 14.5 ±2.2 years. Men reported smoking for a mean of 15.6 ±3.2 years and women for a mean duration of 11.4 ±1.7 years. Male respondents in age group 55-64 reported a mean duration of smoking as 39.9 ±2.1 years, compared to 21.8 ±18.2 years for women. Due to the small numbers these results need to be interpreted with caution.

For those aged 25-64 years, men reported a higher mean years of smoking than women (men: 21.5 ±2.3; women: 16.8 ±3.3).

Table 8 Mean number of years of smoking among current daily smokers

Mean duration of smoking									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean duration	95% CI	n	Mean duration	95% CI	n	Mean duration	95% CI
15-24	15	5.0	±0.7	8	4.2	±1.3	23	4.8	±0.6
25-34	36	11.1	±1.4	12	9.4	±2.9	48	10.6	±1.3
35-44	36	19.7	±1.8	18	17.2	±3.6	54	19.1	±0.9
45-54	16	30.5	±4.9	14	28.2	±2.3	30	29.8	±3.1
55-64	28	39.9	±2.1	4	21.8	±18.2	32	37.6	±3.2
15-64	**131**	**15.6**	**±3.2**	**56**	**11.4**	**±1.7**	**187**	**14.5**	**±2.2**
25-64	116	21.5	±2.3	48	16.8	±3.3	164	20.4	±1.6

Table 9 shows that manufactured cigarettes were smoked by the majority of current daily smokers: 84% ±6.0. The proportions were similar for men (83.7% ±6.6) and women (84.7% ±10.5). The proportions reporting smoking manufactured cigarettes were high in all age groups of both genders, with the lowest reported in the oldest age group of 55-64 years across both genders: 61.6% ±14.9 among men and 54.9% ±62.0.

Among those aged 25-64 years, 82.5% ±5.4 of current daily smokers reported smoking manufactured cigarettes.

Table 9 Percentage of current daily smokers who smoke manufactured cigarettes

Manufactured cigarette smokers among daily smokers									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% Manu-factured cigarette smoker	95% CI	n	% Manu-factured Cigarette smoker	95% CI	n	% Manu-factured cigarette smoker	95% CI
15-24	18	85.5	±15.8	9	89.3	±22.1	27	86.6	±15.0
25-34	40	92.0	±8.6	15	82.2	±16.5	55	89.4	±10.2
35-44	40	87.5	±10.2	20	78.5	±15.8	60	85.2	±6.0
45-54	25	80.4	±19.1	16	92.9	±13.2	41	83.8	±15.5
55-64	37	61.6	±14.9	4	54.9	±62.0	41	60.9	±15.2
15-64	**160**	**83.7**	**±6.6**	**64**	**84.7**	**±10.5**	**224**	**84.0**	**±6.0**
25-64	142	82.8	±6.0	55	81.4	±12.2	197	82.5	±5.4

4.3 Alcohol Consumption

To assess patterns and prevalence of alcohol consumption, respondents were asked if they ever consumed alcohol, and the frequency and quantity of alcohol consumed. Current drinkers were defined as having consumed an alcoholic drink in the last 12 months.

Tables 10-12 summarise the prevalence of alcohol consumption during the past 12 months among men, women and both genders respectively. Overall, 13.4% (±5.7) reported having consumed alcohol in the last 12 months (Table 12). There was a significant gender difference in consumption, with 22.2% (±11.4) of men reported having consumed alcohol in the past 12 months compared with just 4.8% (±2.3) of women (Tables 10 and 11). Table 10 shows that the highest proportion of drinking occurred in the youngest age group 15-24 years for men (37.9% ±21.1) and in the 25-34 years age group for women (8.6% ±5.8) (Table 11). The prevalence of 12-month drinking decreased with increasing age for men, but for women the proportions fluctuated across age groups; from 5.2% ±8.4 (15-24 years) to 8.6% ±5.8 (25-34 years), and decreased to 4.8% ±4.4 (35-44 years) and to 0.7% ± 1.7 (45-54years). No alcohol consumption in the past 12 months was reported by women aged 55-64 years.

Among 25-64 years, the prevalence of alcohol consumption in the past 12 months was 8.9% ±5.2; with men twice more likely than women to consume alcohol over this period (men 13.6% ±7.9; women 4.6% ±3.0).

Table 10 Percentage of alcohol consumption among men during the past 12 months (mos.) by age group

Alcohol consumption status							
	Men						
Age Group (years)	n	% Current drinker (drank in last 12 mos.)	95% CI	% past 12 mos. abstainer	95% CI	% Lifetime abstainer	95% CI
15-24	49	37.9	±21.1	6.2	±8.5	55.9	±21.8
25-34	97	16.2	±9.6	19.6	±12.3	64.2	±9.6
35-44	116	16.2	±14.0	8.4	±4.6	75.4	±17.1
45-54	71	9.6	±7.9	3.0	±4.6	87.5	±10.2
55-64	67	7.0	±7.8	1.3	±2.7	91.7	±7.9
15-64	**400**	**22.2**	**±11.4**	**8.9**	**±4.1**	**68.9**	**±13.0**
25-64	351	13.6	±7.9	10.3	±5.4	76.1	±9.8

Table 11 Percentage of alcohol consumption among women during the past 12 months by age group

Alcohol consumption status							
	Women						
Age Group (years)	n	% Current drinker (drank in last 12 mos.)	95% CI	% past 12 mos. abstainer	95% CI	% Lifetime abstainer	95% CI
15-24	60	5.2	±8.4	6.0	±4.8	88.8	±6.7
25-34	108	8.6	±5.8	1.0	±2.2	90.4	±6.5
35-44	179	4.8	±4.4	1.4	±1.7	93.9	±5.0
45-54	144	0.7	±1.7	--	--	99.3	±1.7
55-64	61	--	--	--	--	100.0	±0.0
15-64	**552**	**4.8**	**±2.3**	**2.5**	**±1.7**	**92.7**	**±2.5**
25-64	492	4.6	±3.0	0.8	±0.8	94.7	±3.0

Table 12 Percentage of alcohol consumption among both sexes during the past 12 months by age group

Alcohol consumption status							
	Both Sexes						
Age Group (years)	n	% Current drinker (drank in last 12 mos.)	95% CI	% past 12 mos. abstainer	95% CI	% Lifetime abstainer	95% CI
15-24	109	21.7	±9.7	6.1	±10.5	72.2	±3.5
25-34	205	12.3	±6.8	10.1	±4.6	77.6	±4.9
35-44	295	10.4	±8.7	4.9	±10.1	84.7	±2.5
45-54	215	4.8	±4.2	1.4	±5.2	93.8	±2.2
55-64	128	3.4	±4.0	0.6	±4.1	96.0	±1.3
15-64	**952**	**13.4**	**±5.7**	**5.6**	**±6.9**	**81.0**	**±2.1**
25-64	843	8.9	±5.2	5.4	±2.4	85.7	±5.7

Table 13 presents information on the number of standard drinks consumed per drinking day across both genders. Overall, the survey respondents drank an average of 8.6 standard drinks on a drinking day. The majority of respondents (61.8% ±19.1) reported drinking 6 or more standard drinks on a drinking day, compared to 15.4% ±17.0 drinking 4-5 standard drinks, 16.3% ±14.2 drinking 2-3 drinks and 6.5% ±7.2 drinking just 1 drink on a drinking day.

A similar consumption pattern was also observed for those aged 25-64 years, with 77.8% ±22.1 reported drinking 6 or more standard drinks on a drinking.

Table 13 Number of drinks per day among both sexes who are current drinkers by age group

Number of standard drinks consumed on a drinking day											
	Both Sexes										
Age Group (years)	n	% 1 drink	95% CI	% 2-3 drinks	95% CI	% 4-5 drinks	95% CI	% 6+ drinks	95% CI	Mean # of stand-ard drinks	95% CI
15-24	16	7.3	±14.1	22.1	±22.2	20.5	±26.2	50.2	±28.8	8.1	--
25-34	18	6.2	±15.4	--	--	5.4	±11.0	88.3	±17.3	10.5	--
35-44	19	2.3	±1.9	16.8	±6.8	15.4	±26.8	65.6	±26.6	8.5	--
45-54	4	--	--	27.0	±55.3	--	--	73.0	±55.3	7.2	--
55-64	3	36.4	±65.2	--	--	--	--	63.6	±65.2	6.4	--
15-64	**60**	**6.5**	**±7.2**	**16.3**	**±14.2**	**15.4**	**±17.0**	**61.8**	**±19.1**	**8.6**	**--**
25-64	44	5.5	±6.7	8.2	±8.5	8.4	±10.6	77.8	±22.1	9.3	--

4.4 Fruit and Vegetable Intake

Fruit and vegetable intake was assessed by asking how many days respondents consumed fruit and vegetables in a typical week, and how many servings of each they consumed on one of those days. Table 14 shows that men and women reported similar mean days of fruit consumed in a typical week across all age groups, with an overall mean days of 2.6 ±0.2.

Table 14 Mean number of days in a week that fruits are consumed by gender and age group

Mean number of days fruit consumed in a typical week									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
15-24	49	2.3	±0.5	60	2.6	±0.7	109	2.5	±0.3
25-34	97	2.5	±0.5	108	2.6	±0.3	205	2.6	±0.3
35-44	115	2.6	±0.4	178	2.8	±0.4	293	2.7	±0.3
45-54	75	2.4	±0.5	146	2.9	±0.4	221	2.7	±0.4
55-64	67	3.1	±0.6	61	3.3	±0.7	128	3.2	±0.5
15-64	**403**	**2.5**	**±0.3**	**553**	**2.8**	**±0.3**	**956**	**2.6**	**±0.2**
25-64	354	2.6	±0.2	493	2.8	±0.3	847	2.7	±0.2

Table 15 shows that both genders reported a mean 4.2 ±0.8 days of vegetables consumed in a typical week. Women reported marginally higher mean days of vegetable consumption than men (women 4.6 ±0.7 and men 3.8 ±0.9). Women across all age groups reported similar mean days of vegetable consumption in a typical week, with a similar pattern of consumption noted for men also across all age groups.

For those aged 25-64 years, a mean 4.3 ±0.5 days of vegetables was consumed in a typical week, with women reporting a marginally higher mean days of vegetable consumption than men (women 4.6 ±0.5 and men 4.0 ±0.5).

Table 15 Mean number of days in a week that vegetables are consumed by gender and age group

Mean number of days vegetables consumed in a typical week									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
15-24	49	3.6	±1.8	60	4.4	±1.2	109	4.0	±1.5
25-34	96	3.8	±0.6	107	4.5	±0.7	203	4.2	±0.5
35-44	116	3.8	±0.6	178	4.3	±0.5	294	4.1	±0.4
45-54	75	3.9	±0.9	146	4.8	±0.7	221	4.4	±0.8
55-64	65	4.9	±0.7	61	5.2	±0.5	126	5.1	±0.4
15-64	**401**	**3.8**	**±0.9**	**552**	**4.6**	**±0.7**	**953**	**4.2**	**±0.8**
25-64	352	4.0	±0.5	492	4.6	±0.5	844	4.3	±0.5

Table 16 shows the mean number of servings of fruit on a day when fruit was eaten as being similar across all age groups and both genders. For those aged 15-64 years, the mean number of fruit servings was 1.3 ±0.2 serves, and 1.4 ±0.2 serves among those aged 25-64 years.

Table 16 Mean number of servings of fruits consumed on a day when fruits were eaten

Mean number of servings of fruit on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15-24	49	1.3	±0.4	60	1.0	±0.2	109	1.2	±0.2
25-34	97	1.5	±0.5	108	1.2	±0.2	205	1.3	±0.3
35-44	115	1.6	±0.4	178	1.3	±0.2	293	1.4	±0.2
45-54	75	1.2	±0.3	146	1.2	±0.2	221	1.2	±0.2
55-64	67	1.3	±0.4	61	1.5	±0.4	128	1.4	±0.3
15-64	**403**	**1.4**	**±0.3**	**553**	**1.2**	**±0.1**	**956**	**1.3**	**±0.2**
25-64	354	1.4	±0.3	493	1.3	±0.2	847	1.4	±0.2

Table 17 shows the mean servings of vegetables on a day when vegetables were eaten as being similar across all age groups and genders. For those aged 15-64 years, the mean number of vegetable servings was 1.1 ±0.3 serves, and 1.2 ±0.2 serves among those aged 25-64 years.

Table 17 Mean number of servings of vegetables consumed on a day when vegetables were eaten

Mean number of servings of vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15-24	49	0.9	±0.6	60	1.0	±0.3	109	1.0	±0.4
25-34	96	1.1	±0.2	107	1.2	±0.2	203	1.1	±0.2
35-44	116	1.1	±0.2	178	1.2	±0.2	294	1.1	±0.2
45-54	75	1.1	±0.3	146	1.4	±0.2	221	1.2	±0.3
55-64	65	1.5	±0.2	61	1.3	±0.2	126	1.4	±0.1
15-64	**401**	**1.1**	**±0.3**	**552**	**1.2**	**±0.2**	**953**	**1.1**	**±0.3**
25-64	352	1.1	±0.2	492	1.2	±0.2	844	1.2	±0.2

Table 18 shows the average consumption of combined servings of fruit and vegetables on an average day. Overall, respondents reported an average of 2.4 ±0.4 combined servings of fruit and vegetables, with no difference between men and women. The mean number of servings reported was similar across all age groups across both genders.

Table 18 Mean number of combined servings of fruit and vegetables consumed per day of the week

Mean number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15-24	49	2.2	±0.7	60	2.1	±0.5	109	2.1	±0.5
25-34	97	2.6	±0.5	108	2.3	±0.4	205	2.5	±0.4
35-44	116	2.6	±0.4	178	2.5	±0.3	294	2.6	±0.3
45-54	75	2.3	±0.5	146	2.6	±0.4	221	2.4	±0.4
55-64	67	2.8	±0.5	61	2.8	±0.4	128	2.8	±0.4
15-64	**404**	**2.4**	**±0.4**	**553**	**2.4**	**±0.3**	**957**	**2.4**	**±0.4**
25-64	355	2.6	±0.4	493	2.5	±0.3	848	2.5	±0.3

Table 19 shows that for both genders 92.8% ±2.3 consumed less than five combined servings of fruit and vegetables on an average day with no significant difference between men (92.3% ±3.4) and women (93.2% ±2.3). All age groups across both genders reported high proportions eating less than 5 combined servings per average day.

For those aged 25-64 years, 92.2% ±2.1 of respondents consumed less than 5 combined servings of fruit and vegetables on an average day with no difference between men (91.4% ±3.4) and women (92.9% ±2.0).

Table 19 Percentage who consumed less than five combined servings of fruit and vegetables per day of the week

Less than five servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI
15-24	49	93.9	±7.9	60	94.0	±6.0	109	94.0	±5.8
25-34	97	92.3	±5.7	108	96.6	±2.8	205	94.5	±2.8
35-44	116	87.8	±6.7	178	89.6	±4.4	294	88.7	±3.6
45-54	75	94.6	±7.3	146	93.1	±3.1	221	93.8	±3.7
55-64	67	92.1	±6.9	61	90.0	±7.5	128	91.1	±6.1
15-64	**404**	**92.3**	**±3.4**	**553**	**93.2**	**±2.3**	**957**	**92.8**	**±2.3**
25-64	355	91.4	±3.4	493	92.9	±2.0	848	92.2	±2.1

4.5 Physical Activity

4.5.1 Measurements

Respondents were asked how often (days) and how long (hours and minutes) they participated in three domains of physical activity in a typical week defined as: work-related, transport-related and leisure-related. For work and leisure-related physical activity, respondents were asked how many days per week and how many hours/minutes per day they participated in moderate and vigorous intensity activities. For transport-related physical activity, respondents were asked how often and how long they either walk and/or cycle to and from places.

4.5.2 Analysis

The three activity levels were defined, combining all domains: low, moderate, and high (see below definition). To derive these overall activity levels, the total time participants spent in an activity per week was computed by multiplying the number of days by the duration of the activity. This was done for each activity type, and the values were then added.

To account for the different levels of energy expenditure required for moderate and vigorous activities, different MET values were assigned to these two intensities and multiplied with the

activity duration. The term MET (metabolic equivalent) is used as an indication of the intensity of physical activity. A MET is the ratio of the associated metabolic rate for a specific activity divided by the resting metabolic rate. The energy cost of sitting is equivalent to a resting metabolic rate of 1 MET.

In this report and for consistency across all STEPS reports, the following MET values were allocated to the three physical activity domains[11-12]:

- Moderate physical activity (work and leisure domain) = 4.0 METS
- High physical activity (work and leisure domain) = 8.0 METS
- Travel-related walking/cycling = 4.0 METS

The following levels of activity in terms of METminutes were defined as:

- Low activity: <600 METminutes per week
- Moderate activity: 600-1500 METminutes per week
- High activity: >1500 METminutes per week

Furthermore, data was analyzed for each domain separately. Mean minutes spent in work, transport and leisure time activity are presented below.

4.5.3 Levels of Physical Activity

Table 20 presents pattern of total physical activity categorized into low, moderate and high levels among male respondents. Physical activity done as part of work, transport and recreation were combined 32.4% ±9.8 of men reported a low level of total physical activity. Moderate physical activity was reported by 18.5% ±7.6 of men and a high level of physical was reported by 49% ±7.4. At least half (50.3% ±15.5) of the survey respondents in age group 15-24 years reported high total physical activity; total physical activity level peaked to 56% ±10.5 in age group 25-34 years and decreased gradually to 42.1% ±11.7 in age group 45-54 years, but increased to 49.6% ±9.4 in the oldest cohort 55-64 years. For low total physical activity, the highest proportion was recorded in age group 35-44 years (41.3% ±12.0) and the lowest in age group 25-34 years (23.9% ±11.2).

For the 25-64 age group, 48.3% ±8.6 reported high total physical activity, 18.4% ±4.4 reported moderate and 33.3% ±7.7 low total physical activity.

Table 20 Categories of overall physical activity among men by age group

Level of total physical activity							
Age Group (years)	Men						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
15-24	47	30.8	±25.7	18.9	±17.3	50.3	±15.5
25-34	92	23.9	±11.2	20.0	±8.5	56.0	±10.5
35-44	107	41.3	±12.0	16.2	±7.5	42.5	±16.6
45-54	70	38.2	±11.5	19.7	±9.7	42.1	±11.7
55-64	67	33.4	±7.3	17.0	±8.6	49.6	±9.4
15-64	**383**	**32.4**	**±9.8**	**18.5**	**±7.6**	**49.0**	**±7.4**
25-64	336	33.3	±7.7	18.4	±4.4	48.3	±8.6

A different physical activity pattern was noted among women. Table 21 shows that when physical activity done as part of work, transport and recreation time are combined 54.8% ±10.3 of women reported a low level of total physical activity, with little variation across the age groups. Moderate physical activity was reported by 23.6% ±4.5 of women, and a high level of physical was reported by 21.7%±7.8. The proportions of high level of total physical activity decreased with increasing age, the oldest age group 55-64 reported the highest proportion of high level of total physical activity relative to the younger age groups.

For the 25-64 age group, 23.6% ±6.9 reported high total physical activity, 22.6% ±4.3 reported moderate and 53.7% ±6.6 low total physical activity.

Table 21 Categories of overall physical activity among women by age group

Level of total physical activity							
Age Group (years)	Women						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
15-24	59	56.8	±20.7	25.3	±10.5	17.9	±12.6
25-34	105	56.2	±7.6	20.2	±8.6	23.6	±9.4
35-44	173	52.8	±10.3	23.5	±6.6	23.7	±9.1
45-54	143	51.9	±4.7	25.5	±9.3	22.5	±8.4
55-64	57	52.0	±21.5	22.7	±15.7	25.3	±18.0
15-64	**537**	**54.8**	**±10.3**	**23.6**	**±4.5**	**21.7**	**±7.8**
25-64	478	53.7	±6.6	22.6	±4.3	23.6	±6.9

For the total survey sample, 43.9% ±7.4 indicated a low level of total physical activity, with minimal variation across the age groups (Table 22). Moderate physical activity was reported by 21.1% ±4.0 and a high level of physical activity was reported by 34.9% ±6.6. Younger age groups recorded high proportions of low total physical activity which changed little with increasing age. The proportions of total moderate physical activity fluctuated slightly across the age groups, but overall about one in five Tongans had a moderate level of physical activity at the time of the survey.

For the 25-64 age group, 35.5% ±7.0 reported high total physical activity, 20.6% ±3.3 reported moderate and 43.9% ±5.9 low total physical activity.

Table 22 Categories of overall physical activity among both sexes by age group

Level of total physical activity							
Age Group (years)	Both Sexes						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
15-24	106	44.0	±14.8	22.1	±6.5	33.9	±10.9
25-34	197	40.7	±7.3	20.1	±7.1	39.2	±8.3
35-44	280	47.3	±9.0	20.0	±5.5	32.8	±11.1
45-54	213	45.6	±5.5	22.8	±7.4	31.6	±8.6
55-64	124	42.6	±13.6	19.8	±9.2	37.6	±8.6
15-64	**920**	**43.9**	**±7.4**	**21.1**	**±4.0**	**34.9**	**±6.6**
25-64	814	43.9	±5.9	20.6	±3.3	35.5	±7.0

Table 23 presents the mean minutes of engaging in total physical activity per day across all three domains by gender and age. Overall, respondents reported an average of 130.7 ±15.9 minutes per day spent in total physical activity. There was a statistically significant gender difference with men engaging in physical activity for an average of 178.9 ±22.9 minutes per day compared to women for an average of 85.3 ±15.7 minutes per day. This difference was largely due to more work-related activity among men. The average time spent in total physical activity among men peaked in the 25-34 age group and declined thereafter, although the average minutes reported by the oldest age group (178.6 ±31.3) was higher than the average minutes reported by the youngest age group (159.9 ±59.6). The same pattern was noted for women, with mean minutes peaked in the 35-44 years age group (96.6 ±13.9) and declined to 84.5 ±39.1 in the oldest age group, but still higher than the youngest age group (73.3 ±38.9).

For the 25-64 age group, respondents reported an average of 138.6 ±20.2 minutes per day spent in physical activity, with an average of 189.2 ±36.6 minutes reported by men and 91.5 ±11.3 minutes reported by women.

Table 23 Level of Total physical activity (mean minutes per day) by gender and age group

Mean minutes of total physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	159.9	±59.6	59	73.3	±38.9	106	116.1	±33.1
25-34	92	231.2	±54.2	105	87.5	±14.5	197	156.7	±31.2
35-44	107	160.7	±61.9	173	96.6	±13.9	280	127.6	±30.3
45-54	70	165.4	±36.6	143	95.7	±25.4	213	128.0	±17.7
55-64	67	178.6	±31.3	57	84.5	±39.1	124	131.9	±22.2
15-64	**383**	**178.9**	**±22.9**	**537**	**85.3**	**±15.7**	**920**	**130.7**	**±15.9**
25-64	336	189.2	±36.6	478	91.5	±11.3	814	138.6	±20.2

Tables 24-26 summarize results on mean minutes per day engaged in work, transport and recreation-related physical activity. Across both genders, work (81.3 ±11.0) accounted for the largest portion of all physical activity followed by transport (33.8 ±3.8) and recreation (15.6 ±4.8).

For the 25-64 age group, work (92.4±13.0) also accounted for the largest portion of all physical activity followed by transport (33.9 ±5.8) and recreation (12.3 ±5.1).

Table 24 shows that work-related physical activities comprised 110.4 ±17.1 minutes/day for men and 53.8 ±11.1 minutes/day for women, a statistically significant gender difference. Across all age groups men reported engaging in more minutes of work-related physical activity than women.

For the 25-64 age group, work-related physical activities comprised 128.6 ±26.7 minutes/day for men and 58.8 ±11.9 minutes/day for women.

Table 24 Level of Work-related physical activity (mean minutes per day) by gender and age group

Mean minutes of work-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	77.2	±38.4	59	44.2	±28.1	106	60.5	±23.2
25-34	92	146.2	±44.2	105	62.6	±15.3	197	102.8	±23.3
35-44	107	112.7	±46.0	173	55.5	±16.3	280	83.1	±18.5
45-54	70	115.9	±37.8	143	62.8	±20.5	213	87.4	±18.4
55-64	67	135.5	±30.6	57	50.4	±31.2	124	93.3	±22.7
15-64	**383**	**110.4**	**±17.1**	**537**	**53.8**	**±11.1**	**920**	**81.3**	**±11.0**
25-64	336	128.6	±26.7	478	58.8	±11.9	814	92.4	±13.0

Table 25 shows that transport-related physical activities comprised 43.0 ±5.6 minutes/day for men and 25.2 ±5.7 minutes/day for women, a statistically significant gender difference.

For the 25-64 age group, transported-related physical activities comprised 42.1±7.4 minutes/day for men and 26.2 ±6.3 minutes/day for women.

Table 25 Level of Transport-related physical activity (mean minutes per day) by gender and age group

Mean minutes of transport-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	44.5	±14.6	59	23.2	±11.3	106	33.7	±7.1
25-34	92	58.6	±17.2	105	20.8	±8.8	197	39.0	±13.5
35-44	107	30.0	±10.7	173	32.9	±12.0	280	31.5	±9.7
45-54	70	43.3	±20.5	143	21.9	±7.4	213	31.8	±12.3
55-64	67	26.0	±11.8	57	32.5	±17.4	124	29.2	±8.6
15-64	**383**	**43.0**	**±5.6**	**537**	**25.2**	**±5.7**	**920**	**33.8**	**±3.8**
25-64	336	42.1	±7.4	478	26.2	±6.3	814	33.9	±5.8

Table 26 shows that recreation-related physical activities comprised an average of 25.5 ±7.6 minutes/day for men and an average of 6.3 ±2.3 minutes/day for women. While men generally reported engaging in more minutes/day of recreation related physical activity than women in all age groups, women in 45-54 age group reported engaging in more recreational physical activities than men (women 11.0 ±7.6; men 6.2 ±6.7).

For the 25-64 age group, recreation-related physical activities comprised 18.5 ±9.0 minutes/day for men and 6.5 ±2.5 minutes/day for women.

Table 26 Level of Recreation-related physical activity (mean minutes per day) by gender and age group

Mean minutes of recreation-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	38.2	±18.1	59	5.9	±6.0	106	21.8	±10.5
25-34	92	26.4	±17.7	105	4.1	±2.2	197	14.9	±8.7
35-44	107	18.0	±16.1	173	8.3	±7.1	280	13.0	±11.0
45-54	70	6.2	±6.7	143	11.0	±7.6	213	8.8	±3.9
55-64	67	17.2	±14.8	57	1.6	±2.5	124	9.4	±6.0
15-64	**383**	**25.5**	**±7.6**	**537**	**6.3**	**±2.3**	**920**	**15.6**	**±4.8**
25-64	336	18.5	±9.0	478	6.5	±2.5	814	12.3	±5.1

4.6 Overweight and Obesity

4.6.1 Height and Weight

The height and weight of each participant aged 25-64 years was measured following the standardized STEPS protocol. The body mass index (BMI) of each participant was computed by dividing the weight (kilograms) by the square of the height (metres^2), and the BMI risk categories defined as follows:

Underweight	BMI < 18.5
Normal weight	18.5 ≤ BMI ≤ 24.9
Overweight	BMI ≥ 25.0
Obese	BMI ≥ 30.0

Tables 27 and 28 show that men were significantly taller (175.9cm ±1.0) than women (165.2cm ±0.8) and men were also marginally heavier (98.6kg ±3.5) than women (95.5kg±1.7).

Table 27 Mean height by gender and age group

Mean height (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
25-34	97	176.4	±2.3	107	165.8	±1.7
35-44	116	177.0	±0.8	179	165.4	±1.4
45-54	75	175.4	±1.2	146	165.7	±1.1
55-64	67	173.3	±1.2	61	162.6	±1.7
25-64	**355**	**175.9**	±1.0	**493**	**165.2**	±0.8

Table 28 Mean weight by gender and age group

Mean weight (kg)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
25-34	97	96.2	±4.5	108	94.5	±3.9
35-44	116	106.6	±5.8	178	98.7	±2.9
45-54	75	94.8	±3.7	146	98.1	±3.1
55-64	67	93.0	±4.9	61	88.2	±4.8
25-64	**355**	**98.6**	±3.5	**493**	**95.5**	±1.7

For both men and women, average body weight peaked in age group 35-44 (women 98.7kg ±2.9; men 106.6kg ±5.8).

4.6.2 Body Mass Index Categories

Table 29 summarizes the mean BMI for both genders and combined. The overall mean BMI was 33.3kg/m^2 ±0.6. Women had a statistically higher mean BMI (34.9kg/m^2 ±0.6) than men (31.7kg/m^2 ±1.1) and in all age groups, although significant gender difference was only noted in age groups 25-34 and 45-54. The mean BMI for both men and women fluctuated slightly across age groups.

Table 29 Mean body mass index (kg/m^2) by gender and age group

Mean BMI (kg/m^2)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	96	30.5	±1.1	106	34.2	±1.2	202	32.4	±0.9
35-44	116	34.0	±1.7	177	36.0	±1.1	293	35.0	±0.8
45-54	75	30.7	±1.4	146	35.7	±1.2	221	33.4	±1.0
55-64	67	30.9	±1.6	61	33.4	±1.5	128	32.2	±1.1
25-64	**354**	**31.7**	**±1.1**	**490**	**34.9**	**±0.6**	**844**	**33.3**	**±0.6**

Tables 30 to 32 present the distribution of the sample population across three BMI classifications: underweight, normal and overweight/obese for men, women and both genders combined. Table 32 shows that 89.2% ±4.7 of men are classified as overweight/ obese, 10.5% ±4.7 as having normal weight and 0.3% ±0.4 as being underweight.

Table 30 BMI classifications among men by age group

BMI classifications							
Age Group (years)	Men						
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight ≥25.0	95% CI
25-34	96	--	--	13.8	±6.8	86.2	±6.8
35-44	116	--	--	4.8	±6.3	95.2	±6.3
45-54	75	--	--	12.3	±6.9	87.7	±6.9
55-64	67	1.9	±3.8	12.1	±6.7	86.1	±8.1
25-64	**354**	**0.3**	**±0.4**	**10.5**	**±4.7**	**89.2**	**±4.7**

Table 31 shows that 94.9% ±2.3 of women are classified as overweight/obese and 5.1% ±2.3 as having a normal BMI.

Table 31 BMI classifications among women by age group

BMI classifications							
Age Group (years)	Women						
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight ≥25.0	95% CI
25-34	106	0.0	--	7.2	±4.8	92.8	±4.8
35-44	177	0.0	--	1.9	±2.2	98.1	±2.2
45-54	146	0.0	--	4.2	±2.6	95.8	±2.6
55-64	61	0.0	--	7.5	±8.1	92.5	±8.1
25-64	**490**	**0.0**	**--**	**5.1**	**±2.3**	**94.9**	**±2.3**

Table 32 shows that overall 92.1% ±2.1 of the survey population are classified as being overweight/obese, 7.7% ±2.1 as having a normal BMI and 0.1% ±0.2 as being underweight. For both men and women, the high prevalence of overweight/obese was evident at the youngest age group.

Table 32 BMI classifications among both sexes by age group

BMI classifications							
Age Group (years)	Both Sexes						
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight ≥25.0	95% CI
25-34	202	0.0	--	10.4	±3.5	89.6	±3.5
35-44	293	0.0	--	3.4	±3.0	96.6	±3.0
45-54	221	0.0	--	8.1	±3.7	91.9	±3.7
55-64	128	0.9	±1.9	9.7	±4.5	89.4	±5.0
25-64	**844**	**0.1**	**±0.2**	**7.7**	**±2.1**	**92.1**	**±2.1**

Table 33 presents rates of obesity (BMI ≥30 kg/m^2) for both genders and combined. The overall prevalence of obesity was 68.7% ±4.2. The obesity rate was significantly higher among women (76.3% ±3.8) than among men (60.7% ±8.9). For men, the highest prevalence of obesity was in the 35-44 age group (73.1% ± 13.7), and for women in the 45-54 age group (82.3% ±7.0).

Table 33 Percentage of obesity (BMI≥30 kg/m^2) by gender and age group

Percentage of respondents who are obese (BMI ≥ 30 kg/m^2)									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	96	55.2	±11.3	106	72.8	±9.1	202	64.2	±6.7
35-44	116	73.1	±13.7	177	81.5	±6.5	293	77.3	±7.0
45-54	75	54.2	±12.6	146	82.3	±7.0	221	69.0	±7.5
55-64	67	56.8	±11.6	61	65.9	±11.4	128	61.5	±7.2
25-64	**354**	**60.7**	**±8.9**	**490**	**76.3**	**±3.8**	**844**	**68.7**	**±4.2**

4.6.3 Waist Circumference

As a risk factor for cardiovascular diseases, central obesity was assessed by measuring waist circumference of participants. Table 34 shows the mean waist circumference for both men and women. Women had a marginally higher mean waist circumference (105.2m ±2.1) than men (103.4cm ±3.3). The mean waist circumference did not vary markedly by age among women. For men, the mean waist circumference increased from 98.2cm ±2.6 in the youngest age group to 109.6 ± 4.3 in the next age group 35-44 years and decreased marginally thereafter.

Table 34 Mean waist circumference (cm) by gender and age group

Waist circumference (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
25-34	97	98.2	±2.6	108	101.7	±3.9
35-44	116	109.6	±4.3	179	105.8	±4.1
45-54	75	102.5	±3.8	146	108.2	±3.1
55-64	67	104.6	±3.7	61	108.4	±6.7
25-64	**355**	**103.4**	**±3.3**	**494**	**105.2**	**±2.1**

4.7 Blood Pressure and Hypertension

All survey respondents aged 25-64 years had their blood pressure measured, were asked if they had had their blood pressure measured in the last 12 months or within the last 1-5 years or longer, whether they had ever been told in the last 12 months by a health worker that they had high blood pressure, and if they were currently receiving any medical treatment for high blood pressure.

Based on self-report and measured blood pressure, participants were considered as having hypertension following the STEPS classification protocol:

- a mean systolic pressure of ≥140 mmHg, whether or not they had previously been told by a health worker that they had high blood pressure, OR

- a mean diastolic pressure of ≥90 mmHg, whether or not they had previously been told by a health worker that they had high blood pressure, OR

- normal mean systolic and diastolic pressures (i.e. normotensive) AND who were currently receiving anti-hypertensive medication, whether or not they had previously been told by a health worker that they had high blood pressure.

Those participants who reported having been previously told by a health worker that they had high blood pressure, but who were normotensive and NOT on anti-hypertensive medication, were NOT included among those considered to have hypertension.

Tables 35 and 36 present mean resting systolic blood pressure and mean resting diastolic blood pressure, respectively, for men and women separately and combined. Table 37 shows a statistically higher mean systolic blood pressure among men than women (129.4mmHg ±2.7 and 122.7mmHg ±1.8 respectively). Systolic blood pressure increased with age among women. For men, mean systolic blood pressure fluctuated across age groups.

Table 35 Mean resting systolic blood pressure (mmHg) by gender and age group

Mean systolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	97	127.5	±4.3	108	115.8	±2.8	205	121.5	±2.8
35-44	116	130.0	±3.7	179	122.2	±4.3	295	126.1	±3.6
45-54	75	127.8	±2.3	146	127.3	±2.8	221	127.5	±2.0
55-64	67	134.8	±8.5	61	133.6	±4.5	128	134.2	±5.1
25-64	**355**	**129.4**	**±2.7**	**494**	**122.7**	**±1.8**	**849**	**125.9**	**±1.9**

Table 36 shows a slightly higher mean diastolic blood pressure in men and women (76.4mmHg ±2.3 and 74.3mmHg ±1.8 respectively), increasing with age in both genders from age group 35-44.

Table 36 Mean resting diastolic blood pressure (mmHg) by gender and age group

Mean diastolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	97	72.2	±2.7	108	70.7	±2.0	205	71.4	±1.7
35-44	116	78.4	±2.8	179	75.9	±3.0	295	77.1	±2.6
45-54	74	78.5	±2.4	146	76.7	±2.9	220	77.6	±1.8
55-64	67	79.8	±5.1	61	76.6	±2.9	128	78.2	±3.6
25-64	**354**	**76.4**	**±2.3**	**494**	**74.3**	**±1.8**	**848**	**75.4**	**±1.7**

Table 37 presents the prevalence of hypertension for both genders and combined. Hypertension was recorded for 23.1% ±5.0 of the total survey population. There was no statistical difference in hypertension prevalence between men and women (26.5% ±7.3 and 19.9% ±3.8 respectively). The prevalence of hypertension more than doubled for women by age 35-44 years (19.3% ±11.2) and increased thereafter. Also in age group 35-44 years the male hypertension rate increased substantially to 33.4% ±12.9 (from 19.8% ±11.2 in age group 25-34).

Table 37 Percentage with hypertension (SBP ≥140 and/or DBP ≥ 90 or currently on medication for raised blood pressure)

SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	97	19.8	±11.2	108	6.1	±6.3	205	12.8	±6.3
35-44	116	33.4	±12.9	179	19.3	±11.2	295	26.3	±9.5
45-54	74	17.7	±6.9	146	32.2	±7.3	220	25.4	±5.3
55-64	67	40.6	±18.7	61	36.2	±11.7	128	38.3	±11.2
25-64	**354**	**26.5**	**±7.3**	**494**	**19.9**	**±3.8**	**848**	**23.1**	**±5.0**

4.8 Fasting Blood Glucose and Raised Blood Glucose

Survey participants were asked if they had been told by a health worker that they had diabetes in the previous 12 months, within 1-5 years or longer, and whether they were currently receiving medical treatment for diabetes. Participants' fasting blood sugar levels were measured by drawing capillary whole blood using the finger prick test method.

Estimates of diabetes prevalence were computed based on the capillary whole blood glucose tests and based on the WHO guidelines for defining and classifying diabetes mellitus:

- fasting capillary whole blood value of glucose ≥6.1 mmol/L (≥110 mg/dl) whether or not they had previously been told by a health worker that they had diabetes, OR

- normal capillary whole blood value of glucose <6.1 mmol/L (<110 mg/dl) AND who were currently receiving anti-diabetes medication prescribed by a health worker.

Those participants who had been advised by a health worker that they had diabetes but who had normal fasting blood glucose, and who were NOT on anti-diabetes medication or on a special diet prescribed by a health worker, were NOT included among those considered as having diabetes.

Table 38 summarizes results on mean fasting blood glucose for both genders and combined. The overall mean fasting blood glucose was 5.7mmol/L ±0.2. Men reported a slightly higher mean fasting blood glucose level (5.8mmol/L ±0.4) than women (5.6mmo/L ±0.3). For women, mean fasting blood glucose levels increased with increasing age, and peaked in those aged 45-54 (6.3mmol/L ±0.6). For men, mean fasting glucose levels fluctuated across age groups, and peaked in the oldest age group (7.0mmol/L ±1.2).

Table 38 Mean fasting blood glucose in mmol/L by gender and age group

Mean fasting blood glucose (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	55	5.0	±0.2	56	5.1	±0.4	111	5.0	±0.2
35-44	61	6.1	±0.9	100	5.7	±0.5	161	5.9	±0.6
45-54	45	5.7	±0.9	65	6.3	±0.6	110	6.0	±0.6
55-64	46	7.0	±1.2	25	6.0	±1.5	71	6.6	±0.8
25-64	**207**	**5.8**	**±0.4**	**246**	**5.6**	**±0.3**	**453**	**5.7**	**±0.2**

Table 39 Prevalence of raised blood glucose by gender and age group

Raised blood glucose*									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	55	3.5	±4.6	56	10.8	±7.1	111	7.1	±4.2
35-44	61	25.6	±16.8	100	14.8	±6.6	161	20.1	±9.5
45-54	45	10.0	±8.5	65	32.8	±12.6	110	20.4	±8.0
55-64	46	35.3	±10.0	25	15.3	±17.6	71	27.5	±9.0
25-64	**207**	**16.3**	**±7.7**	**246**	**16.6**	**±5.1**	**453**	**16.4**	**±5.5**

***** capillary whole blood value: ≥ 6.1 mmol/L (110 mg/dl)

Table 39 shows the prevalence of raised blood glucose for both genders and combined. The overall prevalence of raised blood glucose for Tonga was 16.4% ±5.5 among those aged 25-64 years. Prevalence of raised blood glucose was similar among women and men (16.6% ±5.1 and 16.3% ±7.7 respectively). By age 35-44 years, about one quarter of men was diabetic (25.6% ±16.8). By age 45-54 years, about one third of women had raised blood glucose (32.8% ±12.6).

4.9 Total Cholesterol

Table 40 shows the overall mean cholesterol level for both genders and combined. The overall mean was 5.1mmol/L ±0.1, with men recording a significantly higher mean level than women (5.4mmol/L ±0.1 and 4.8mmol/L ±0.1 respectively), with the difference not statistically different. Mean levels for men and women showed slight variation across age groups.

Table 40 Mean levels of total blood cholesterol (mmol/L) by gender and age group

Mean total cholesterol (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	97	5.3	±0.2	108	4.4	±0.2	205	4.8	±0.2
35-44	116	5.4	±0.2	179	4.7	±0.1	295	5.1	±0.1
45-54	75	5.6	±0.3	146	5.2	±0.2	221	5.4	±0.2
55-64	65	5.3	±0.3	61	5.2	±0.3	126	5.3	±0.2
25-64	353	5.4	±0.1	494	4.8	±0.1	847	5.1	±0.1

Table 41 Percentage with raised blood cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl)

Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	97	60.2	±12.0	108	18.4	±7.2	205	38.8	±9.8
35-44	116	65.7	±10.9	179	30.9	±7.1	295	48.2	±7.0
45-54	75	74.0	±16.2	146	50.6	±7.7	221	61.7	±7.1
55-64	65	70.2	±13.7	61	55.4	±12.1	126	62.5	±8.5
25-64	**353**	**66.1**	**±5.1**	**494**	**34.2**	**±5.9**	**847**	**49.7**	**±5.2**

Elevated total blood cholesterol was defined by a cut-off point ≥5.0 mmol/L (or ≥190 mg/dl) and used to classify participants as being in a high-risk group for coronary artery disease. Table 41 shows that nearly half of the survey population (49.7% ±5.2) had raised blood cholesterol, a statistically significantly greater proportion in men than in women (66.1% ±5.1 and 34.2% ±5.9 respectively). This statistical significant gender difference exists from age 25-54 years. The prevalence of raised blood cholesterol increased as people aged for both men and women.

4.10 Combined Risk Factors

To summarize the findings, the following five risk factors for NCDs were summed to indicate the overall risk for NCDs:

- current daily smokers,
- overweight (BMI ≥25 kg/m^2),
- raised blood pressure (SBP ≥140 and/or DBP≥90 mmHg or currently on medication),
- consumed less than five combined servings of fruit and vegetables per day, and
- low level of physical activity (<600 METminutes per week).

Based on these combined risk factors, three levels of the overall risk for NCDs were created as follows:

- Low Risk: 0 of 5 risk factors
- Moderate Risk: 1 or 2 of 5 risk factors
- High Risk: 3 or more of 5 risk factors

Table 42 shows that 60.5% ±6.9 of male respondents were classified as being at High Risk and 39.5% ±6.9 as at Moderate Risk.

Table 42 Percentage of NCD risk categories among men by age group

Summary of Combined Risk Factors							
Age Group (years)	Men						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	197	0.0	0.0	42.1	±9.5	57.9	±9.5
45-64	134	0.0	0.0	34.6	±8.5	65.4	±8.5
25-64	**331**	**0.0**	**0.0**	**39.5**	**±6.9**	**60.5**	**±6.9**

Table 43 Percentage of NCD risk categories among women by age group

Summary of Combined Risk Factors							
Age Group (years)	Women						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	272	0.0	0.0	41.7	±6.3	58.3	±6.3
45-64	200	0.5	0.8	34.1	±7.6	65.4	±7.5
25-64	**472**	**0.2**	**0.3**	**39.0**	**±4.0**	**60.8**	**±4.1**

Table 43 shows women at the same level of risk as men with 60.8% ±4.1 considered to be at High Risk and 39.0% ±4.0 at Moderate Risk.

Table 44 Percentage of NCD risk categories among both sexes by age group

Summary of Combined Risk Factors							
Age Group (years)	Both Sexes						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	469	0.0	0.0	41.9	±5.8	58.1	±5.8
45-64	334	0.2	±0.4	34.4	±6.6	65.4	±6.6
25-64	**803**	**0.1**	**±0.2**	**39.2**	**±4.4**	**60.7**	**±4.4**

Overall, 60.7% ±4.4 of the Tonga survey population was at High Risk of NCDs (Table 44). By age 25-44 years, more than half of the sample was at High Risk (58.1% ±5.8) and this pattern trended upwards to 65.4% ±6.6 in the oldest age group.

5. DISCUSSION AND CONCLUSIONS

The WHO STEPwise Approach to Surveillance of NCD Risk Factors provides a system for gathering population-based data on behavioural, anthropometric and metabolic risk factors for chronic diseases. The STEPwise framework was developed in response to the growing need for data on NCD risk factors in countries in the world. For Tonga, the STEPS survey has provided up-to-date epidemiological evidence that NCDs- related behavioural, metabolic and anthropometric risk factors are significant public health issues in Tonga. This section discusses key findings from the Tonga STEPS survey and presents a range of recommendations to prevent and control NCDs in the Kingdom of Tonga.

Tobacco use is a leading modifiable behavioural risk factor of NCDs. The STEPS survey highlighted that tobacco smoking is well established in Tonga, with close to one third of Tongans aged 15 years and over being current (daily and non-daily) smokers, with a significantly higher proportion of males (46.2%) being current smokers, compared with females (16.3%). Smoking uptake occurred in mid adolescence for the youngest age group 15-24 for both men and women, while older age groups reported a later uptake age of early 20s. These findings highlight the need for programs to prevent young Tongans from experimenting with tobacco products at an early age; since the younger adolescents start smoking, the more likely they are to become regular smokers in adulthood[13]. The prevalence of daily tobacco use among 25-64 age groups was: Tonga (27.6%), Nauru (49.5%), American Samoa (29.9%), Tokelau (46.9%), Federated States of Micronesia (Pohnpei) (25.5%), Kiribati (59.0%), Solomon Islands (30.6%), Cook Islands (33.3%), Federated States of Micronesia (Chuuk) (28.7%)[14-21].

About one in five (22.2%) male Tongans were classified as current drinkers (drinking alcohol in the past 12 months), compared to 4.8% of females. This gender difference may be explained by social and cultural factors; however, due to the small numbers caution is

warranted when interpreting these findings. Similarly, the magnitude and extent of harmful or binge drinking in Tonga could not be determined with certainty due again to the small numbers responding to these alcohol measures.

As found in other completed STEPS surveys and published STEPS reports[14-21] in the Pacific, the majority of Tongans reported not consuming the recommended five combined servings of fruit and vegetables per day. The low level of fruit and vegetable consumption did not differ between men and women or across age groups. A better understanding of the individual, cultural, social and economical factors that might facilitate dietary changes is an important precursor for effective policy and program development. Regardless, some of the strategies that could be considered include making affordable and accessible locally-cultivated produce, and creating societal norms for healthy eating. The latter strategy could be considered as part of a setting-based approach (church, schools, workplaces).

Measures of physical activity clearly showed that nearly half of the Tongan population engaged in low levels of physical activity, defined as achieving less than 600 METminutes per week. There was a marked gender difference whereby more than half of the females surveyed (54.8%) reported the lowest amount of physical activity in contrast to half of the males surveyed (49.0%) reported the highest amount of physical activity. Recreational-related physical activity contributed least (15.6 minutes per day) to the total physical activity undertaken by Tongans, while physical activity done as part of work contributed the most (81.3 minutes per day). Overall, the data on physical activity indicated that the majority of Tongans, especially women, are not engaging in a level of physical activity that is beneficial to their health.

The prevalence of overweight among those aged 25 to 64 years was 92.1%, with the rate being slightly higher among women (94.9%) than men (89.2%), with 76.3% of women being obese and 60.7% of men obese. These extremely high prevalence rates are observed in all age groups, and across both genders. While representing one of the highest overweight and obesity rates in the region, the rates in Tonga are similar to those reported. The prevalence of overweight and obesity among 25-64 age groups was: Nauru (Overweight: 93.3%; Obesity: 74.9%), American Samoa (Overweight: 93.5%; Obesity: 74.6%), Tokelau (Overweight: 93.5%; Obesity: 74.7%), Federated States of Micronesia (Pohnpei) (Overweight: 73.1%; Obesity: 42.6%), Kiribati (Overweight: 81.5%; Obesity: 50.6%), Solomon Islands (Overweight: 67.4%; Obesity: 32.8%), Cook Islands (Overweight: 88.5%; Obesity: 61.4%), Federated States of Micronesia (Chuuk) (Overweight: 76.5%; Obesity: 47.3%)[14-21]. In Tonga, these high rates of overweight and obesity were evident in the youngest age group (25-34 years). Preventing unhealthy weight gain at a relatively younger age would be important for addressing the significant health consequences associated with overweight and obesity.

Approximately one in five Tongans aged 25-34 years was found to have hypertension, with a marginally higher proportion of men (26.5%) than women (19.9%) being at risk. Rates of hypertension increased with age across both genders, placing the older age groups at an elevated risk of developing stroke or cardiovascular disease, and consequently premature mortality and morbidity. Effective long-term monitoring and clinical management of hypertension is required to prevent the progression to chronic diseases. The prevalence of hypertension among 25-64 age groups was: Tonga (23.1%), Nauru (24.3%), American Samoa (34.2%), Tokelau (18.1%), Federated States of Micronesia (Pohnpei) (21.2%), Kiribati (17.3%), Solomon Islands (10.7%), Cook Islands (33.2%), Federated States of Micronesia (Chuuk) (15.2%)[14-21].

The prevalence of raised blood glucose among those aged 25-64 years in the population was 16.4%, with no significant difference between men and women. By age group 35-44 years, the prevalence was 20.1% (men: 25.6%; women: 14.8%). In American Samoa, the prevalence among those also aged 25-64 years was 47.3%; and in Cook Islands 23.6%[15, 20]. Although relatively lower than other rates in the Pacific, the levels of raised blood glucose are still at high levels, especially among those aged 35 years and older.

Raised blood cholesterol was found in two thirds of men (66.1%) and one third of women (34.2%). The relatively high prevalence of high blood cholesterol was already evident in the youngest age group 25-34 years, with 60.2% of men and 18.4% of women with this problem.

A few caveats should be noted when discussing these results. First, the relatively small sample size in the older age groups and in relation to some key behavioural measures such as alcohol consumption and physical activity could affect the precision, evident in wider confidence intervals observed. Second, the reliance upon self-report of health behaviour has the potential for bias as survey respondents over-estimate or under-estimate their drinking pattern, dietary practices or physical activity participation. However, the STEPS questionnaire is comprised of well-validated measures that are standardized in terms of definitions and concepts, and survey staff were thoroughly trained in the administration of these measures. Additionally, trained staff followed a standardized data collection protocol that was relatively simple for survey staff to execute.

The Tonga STEPS survey has confirmed that its population is experiencing some of the highest rates of NCD risk factors in the Pacific and globally. Specifically, behavioural risk factors for NCDs are prevalent in Tonga for both genders and across all adult age groups. Nearly two thirds (60.7%) of the population aged 25-64 years were classified as being at High Risk of developing NCDs (with 3-5 risk factors). Sustained, diverse but complementary national actions are needed to reverse the escalating NCD risk factors epidemic, as reductions in smoking and alcohol and improvements in physical activity and dietary practices will take several years to manifest. Moreover, the four major NCD risk factors are strongly influenced by the social, cultural, religious, environmental and political influences. Acknowledging this complexity of determinants, committed advocacy and resources are a necessary antecedent to achieving change at the whole population level. Building consensus, common agendas and collaboration across government ministries and with industry, national and international development partners will be fundamental to the process. The final section of this report outlines a portfolio of measures, if effectively implemented, will contribute to preventing obesity, diabetes and other NCDs in Tonga.

6. RECOMMENDATIONS

Addressing surveillance and information needs

This includes:

- Securing political and financial commitments to develop a systematic and planned STEPS NCDs risk factors data collection system, supported by a workforce skilled in implementing the survey, in order to have established an ongoing monitoring and surveillance system that is scientifically rigorous and robust in Tonga.

- Supplementing the core Tonga STEPS questionnaire with additional questions to ensure that Tonga STEPS provide timely and relevant epidemiological data for planning and policy development. Such questions for future consideration could include salt consumption and mental health.
- For the 1st time, among the published STEPS reports in the PICs, the prevalence of 15-64 age and 25-64 age were both presented in the core tables of the Step 1 in this STEPS report. These compared data show that when using 15-64 age, the prevalence of most indicators (especially in the tobacco and alcohol sections) were higher, compared to 25-64 years. Therefore, tobacco use and harmful alcohol consumption among Tongan youth and adolescents need to be paid more public health attention.
- Considering setting up national targets and indicators for NCD prevention and control.
- Participating in the comparison of STEPS findings across other Pacific island countries and areas that have completed the STEPS survey and published STEPS reports.
- Conducting data comparison over time after the 2nd-round STEPS survey in Tonga in 2011-2012 is completed.

Addressing policy, organizational and environmental factors

This includes:
- Implementing the WHO Framework Convention on Tobacco Control, such as addressing smoke-free environments and increasing tobacco taxation.
- Limiting the marketing and advertising of unhealthy foods and drinks.
- Developing policies supporting the importation of healthy foods.
- Improving the availability and affordability of fruit and vegetables.
- Developing policies to establish and support physical activity-friendly environments, such as walking paths, open public green spaces for recreational activities, sports facilities and workplace physical activity programs.
- Implementing setting-based policies to support healthy lifestyle and practices, e.g. healthy food services and physical activity promotion policies in workplaces, churches and schools.
- Policies to support health system strengthening including skilled workforce, financial coverage, essential drugs, affordable technology for managing NCDs.

Addressing knowledge and awareness of NCD behavioural risk factors

This includes implementing:
- Comprehensive anti-smoking programs to reduce smoking rates, particularly targeting adolescents and youths to prevent smoking uptake, and smoking cessation programs to reduce smoking rates across all age groups.
- Comprehensive public health programs to reduce harmful alcohol consumption, including social marketing and mass communication campaigns to increase awareness of the adverse effects of harmful alcohol consumption.
- Comprehensive public health programs promoting the consumption of the recommended levels of fruit and vegetables.
- Comprehensive social marketing and mass communication campaigns to increase public awareness of the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods.
- Culturally-appropriate and diverse programs to promote daily physical activity.

- Public awareness campaigns on the importance of regular monitoring and screening of blood pressure, blood sugar and blood cholesterol levels.
- A system of community-based, outreached care for the management of individuals with diagnosed NCDs.

APPENDICES

Appendix 1. Kingdom of Tonga STEPS Survey Questionnaire

Tongan National NCD Survey

STEPS Instrument

The WHO STEPwise approach to Surveillance of noncommunicable diseases (STEPS)

STEPS Instrument

- This is the generic template which countries use to develop their own Instrument. It contains the CORE (unshaded and in double lined boxes) and EXPANDED items (shaded and in single lined boxes) and response options for Step 1, Step 2 and Step 3.
- The introductory statements, questions and response options should be translated and adapted where necessary to suit local conditions. *Italic typeface indicates where local examples should be inserted.*
- All CORE items should be included in the country-specific STEPS Instrument. Wording and response options for CORE questions should not be changed.
- Relevant skip patterns are shown and should be carefully reviewed. Modifications to the skip patterns will be needed according to the final items included.
- Some countries may wish to expand the CORE questions. Recommendations for EXPANDED questions for the key risk factors are included in the shaded areas. These items may be modified but it is preferable to use them where possible.
- Additional questions can be added as OPTIONAL items to meet local needs. For example questions asked in previous surveys could be added to link to previous data.
- The use of the coding column (as is used in this Instrument) facilitates easy, fast and accurate manual data entry. Using this approach does not replace the need for double data entry for maximum quality control (see data coding manual).

EXAMPLE- for a current smoker who eats 8 servings of fruit on a typical day

		Response		Skip	Coding col
S 1a	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes?	Yes No Don't know	1 2 7	*If No, go to Alcohol Section A*	1
D 1b	How many **servings** of fruit do you eat on one of those days? USE SHOWCARD	Number of servings Don't know	 77		0 8

- "Do not know" or "Don't remember" are response options indicated in CORE and EXPANDED questions where appropriate. These are coded as "7", "77" or "777" depending on the number of numerals in the other response options. Three other values are important to record: "refuse" and "not applicable" are coded as "8", "88", or "888". For example, *if S 1a is recorded as "No", then all remaining smoking questions will be set at "8"*. Missing responses to any questions should be entered as "9", "99" or "999" at time of data entry.
- Interviewer training is essential to develop thorough knowledge of the instrument format, introductory statements, questions, skip patterns, response options, use of show cards and prompts (where needed). The STEPS Field Manual is a guide and resource for training sessions.
- Undertaking pilot work with the draft country-specific STEPS instrument is essential.

Each country will need to prepare a list of the question numbers (e.g. D1a) and response code cross-referenced with the standard numbers and codes used in this generic template. This cross-referencing will facilitate communication and comparison.

Identification Information:

This is a draft cover page. Each country will adapt this page to suit their local needs. The exact details to be collected in each country–specific STEPS instrument will vary depending on the survey design and implementation procedures. However, regardless of how the interview is administered (e.g., household, clinic or other) a process by which the cover page containing personal identifying information is stored should be carefully designed and must meet recommended ethical standards. Clear instructions on handling and storage of the cover sheets must be provided to the interviewers.

I 1	Country/district code	☐☐
I 2	Centre (Village name):	☐☐☐☐☐☐☐☐
I 3	Centre (Village code): (SEE NOTE BELOW)	☐☐☐
I 4	Interviewer code	☐☐☐
I 5	Date of completion of the questionnaire	☐☐/☐☐/☐☐☐☐ Day Month Year

Identification Label				
	Consent			
I 6	Consent has been read out to respondent	Yes No	1 2	If NO, read consent ☐
I 7	Consent has been obtained (verbal or written)	Yes No	1 2	If NO, END ☐
I 9	Time of interview (24 hour clock)			☐☐:☐☐
I 10	Family Name			
I 11	First Name			

Additional Information that may be helpful

I 12	Contact phone number where possible			
I 13	Specify whose phone	Work Home Neighbour Other (specify)	1 2 3 4	☐

Please note: village code (or household code) is required as part of main instrument for data analyses.

Step 1 Core Demographic Information

			Coding Column	
C1	Sex (*Record Male / Female as observed)*	Male 1 Female 2	☐	
C2	What is your date of birth? *If Don't Know, See Note* below and Go to C3*	Day ☐☐ Month ☐☐ Year ☐☐☐☐		
C3	How old are you?	Years	☐☐	
C4	In total, how many years have you spent at school or in full-time study (excluding pre-school)?	Years	☐☐	

*Note: Coding Rule: Code "Don't Know" 7 (or 77 or 777 as appropriate).

	EXPANDED: Demographic Information			
C7	Which of the following best describes your main work status over the last 12 months?	Government employee 0 1 0 2 Non-government employee 0 3 Self-employed 0 4 Non-paid 0 5 Student 0 6 Homemaker 0 7 Retired 0 8 Unemployed (able to work) 0 9 Unemployed (unable to work)	☐☐	
C9	Taking the past year, can you tell me what the average earnings of the household have been?	Per week OR per month OR per year Refused 8 8	☐☐☐☐☐☐ ☐☐☐☐☐☐ ☐☐☐☐☐☐ ☐☐	

*Note: Coding Rule: Code "Don't Know" 7 (or 77 or 777 as appropriate).

Step 1 Core Behavioural Measures

CORE Tobacco Use (Section S)

Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with smoking.

		Response	Coding Column	Skip
S 1a	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes?	Yes 1 No 2	☐	*If No, go to Alcohol Section A**
S 1b	If Yes, Do you currently smoke tobacco products **daily**?	Yes 1 No 2	☐	*If No, go to Alcohol Section A**
S 2a	How old were you when you **first started** smoking daily?	Age (years) Don't remember 7 7	☐☐	*If Known, go to S 3*
S 2b	Do you remember how long ago it was? *(CODE 77 FOR DON'T KNOW or DON'T REMEMBER)*	In Years OR in Months OR in Weeks	Years ☐☐ Mo. ☐☐ Weeks ☐☐	
S 3	On average, **how many** of the following do you smoke each day? *(RECORD FOR EACH TYPE)* *(CODE 77 FOR DON'T KNOW* *CODE 88 FOR NOT APPLICABLE)* ☐☐☐☐☐☐☐☐☐	Manufactured cigarettes Hand-rolled cigarettes Pipes full of tobacco Cigars, cheroots, cigarillos ← Other (please specify):	☐☐ ☐☐ ☐☐ ☐☐ ☐☐	*If Using All Expanded Questions, Skip to S 6a*

EXPANDED : Tobacco Use

S 4	In the past, did you **ever** smoke **daily**?	Yes 1 No 2	☐	*If No, go to S 6a*

* Amend skip instructions if EXPANDED or OPTIONAL items are added to the Tobacco section

CORE	Alcohol Consumption (Section A)			
The next questions ask about the consumption of alcohol.				
A 1a	Have you **ever consumed** a drink that contains alcohol such as beer, wine, spirit, etc	Yes 1 No 2	☐	*If No, Go to Diet Section D**
A 1b	Have you consumed alcohol within the **past 12 months**?	Yes 1 No 2	☐	*If No, Go to Diet Section D**
A 2	In the past 12 months, **how frequently** have you had at least one drink?	5 or more days a week 1 1-4 days per week 2 1-3 days a month 3 Less than once a month 4	☐	
A 3	When you drink alcohol, **on average**, how many drinks do you have during one day?	Number Don't know 7 7	☐☐	
A 4	During each of the **past 7 days**, how many standard drinks of any alcoholic drink did you have each day? *(CODE 77 FOR DON'T KNOW)*	Monday Tuesday Wednesday Thursday Friday Saturday Sunday	☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐	

* Amend skip instructions if EXPANDED or OPTIONAL items are added to the Alcohol section

History (Section His)

The next questions ask about family history of diabetes and family history of heart disease.

		Response		Coding Column	
His 1	Do or did any of the following members of your family have diabetes - your father, mother, brothers, sisters or children	Yes No	1 2	☐	
His 2	Have you ever had a heart attack	Yes No	1 2	☐	*If No, Go to His 4*
His 3	Have you had heart surgery for a blocked artery to your heart	Yes No	1 2	☐	

History of Traditional Medicines

His 4	Are you currently taking any traditional medicines	Yes No *If No, skip to Next Section*	1 2	☐
His 4a	Are you taking nonu	Yes No	1 2	☐
His 4b	What other traditional medicines do you take regularly			

EXPANDED - History of High Blood pressure

H 2	During the past 12 months have you been told by a doctor or other health worker that you have elevated blood pressure or hypertension?	Yes No *If No, skip to Next Section*	1 2	☐
Are you currently receiving any of the following treatments for high blood pressure prescribed by a doctor or other health worker?				
H 3a	Drugs (medication) that you have taken in the last 2 weeks	Yes No	1 2	☐
H 5	Are you currently taking any herbal or traditional remedy for your high blood pressure?	Yes No	1 2	☐

CORE Diet (Section D)				
The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.				
D 1a	In a typical week, on how many days do you **eat fruit**? *USE SHOWCARD*	Number of days	☐	*If Zero days, go to D 2a*
D 1b	How many **servings** of fruit do you eat on **one** of those days? *USE SHOWCARD*	Number of servings	☐☐	
D 2a	In a typical week, on how many days do you **eat vegetables**? *USE SHOWCARD*	Number of days	☐☐	If Zero days, go to Section P
D 2b	How many **servings** of vegetables do you eat on one of those days? *USE SHOWCARD*	Number of servings	☐☐	

CORE Physical Activity (Section P)

Next I am going to ask you about the time you spend doing different types of physical activity. Please answer these questions even if you do not consider yourself to be an active person.

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, household chores, harvesting food, fishing or hunting for food, seeking employment.

P 1	Does your work involve mostly sitting or standing, with walking for no more than 10 minutes at a time?	Yes 1 No 2	☐	*If Yes, go to P6*
P 2	Does your work involve vigorous activity, like [*heavy lifting, digging or construction work*] for at least 10 minutes at a time?	Yes 1 No 2	☐	*If No, go to P4*
P 3a	In a typical week, on how many days do you do vigorous activities as part of your work?	Days a week	☐	
P 3b	On a typical day on which you do vigorous activity, how much time do you spend doing such work?	In hours and minutes OR in Minutes only	hrs ☐☐ : mins ☐☐ or minutes ☐☐☐	
P 4	Does your work involve moderate-intensity activity, like brisk walking *[or carrying light loads*] for at least 10 minutes at a time?	Yes 1 No 2	☐	*If No, go to P6*
P 5a	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Days a week	☐☐	
P 5b	On a typical day on which you did moderate-intensity activities, how much time do you spend doing such work?	In hours and minutes OR in Minutes only	hrs ☐☐ : mins ☐☐: or minutes ☐☐☐	
P 6	How long is your typical work day?	Number of hours	hrs ☐☐	

Other than activities that you've already mentioned, I would like to ask you about the way you travel to and from places. For example to work, for shopping, to market, to church.

P 7	Do you walk or use a bicycle (*pedal cycle*) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2		*If No, go to P9*
P 8a	In a typical week, on how many days do you walk or bicycle for at least 10 minutes to get to and from places?	Days a week	☐☐	
P 8b	How much time would you spend walking or bicycling for travel on a typical day?	In hours and minutes OR in Minutes only	hrs ☐☐ : mins ☐☐: or minutes ☐☐☐	

The next questions ask about activities you do in your leisure time. Think about activities you do for recreation, fitness or sports *[insert relevant terms*]. Do not include the physical activities you do at work or for travel mentioned already.

P 9	Does your [*recreation, sport or leisure time*] involve mostly sitting, reclining, or standing, with no physical activity lasting more than 10 minutes at a time?	Yes 1 No 2	☐	*If Yes, go to P 14*
P 10	In your [*leisure time*], do you do any vigorous activities like [*running or strenuous sports, weight lifting*] for at least 10 minutes at a time? *INSERT EXAMPLES & USE SHOWCARD*	Yes 1 No 2	☐	*If No, go to P 12*
P 11a	If Yes, In a typical week, on how many days do you do vigorous activities as part of your [*leisure time*]?	Days a week	☐☐	
P 11b	How much time do you spend doing this on a typical day?	In hours and minutes OR in minutes only	hrs ☐☐ : mins ☐☐: or minutes ☐☐☐	

CORE	Physical Activity (Section P)			
P 12	In your [*leisure time*], do you do any moderate-intensity activities like brisk walking for at least 10 minutes at a time?	Yes 1 No 2	*If No, go to P 14*	☐
P 13a	If Yes In a typical week, on how many days do you do moderate-intensity activities as part of [*leisure time*]?	Days a week		☐☐
P 13b	How much time do you spend doing this on a typical day?	In hours and minutes OR in minutes only	hrs ☐☐ : mins ☐☐: or minutes ☐☐☐	
The following question is about sitting or reclining. Think back over the past 7 days, to time spent at work, at home, in *[leisure]*, including time spent sitting at a desk, visiting friends, reading, or watching television, but do not include time spent sleeping.				
P 14	Over the past 7 days, how much time did you spend sitting or reclining on a typical day?	In hours and minutes OR in minutes only	hrs ☐☐ : mins ☐☐: or minutes ☐☐☐	

Step 2 Physical measurements

Height and weight			Coding column
M 1	Technician ID Code		☐☐☐
M 3	Height	(in Centimetres)	☐☐☐.☐
M 4	Weight *If too large for scale, code 666.6*	(in Kilograms)	☐☐☐.☐
Waist			
M 5	Technician ID Code		☐☐☐
M 8	Waist circumference	(in Centimetres)	☐☐☐.☐

SELECTED EXPANDED ITEMS			
M 7a	Hip circumference	(in Centimetres)	☐☐☐.☐

Blood Pressure				
M 9	Technician ID			☐☐☐
M 10	Device ID for blood pressure			☐☐☐
M 11	Cuff size used	small 1 normal 2 large 3		☐
M 12a	Reading 1 Systolic BP	mmHg:		Systolic ☐☐☐
M 12b	Diastolic BP	mmHg:		Diastolic ☐☐☐
M 13a	Reading 2 Systolic BP	mmHg:		Systolic ☐☐☐
M 13b	Diastolic BP	mmHg:		Diastolic ☐☐☐
M 14a	Reading 3 Systolic BP	mmHg:		Systolic ☐☐☐
M 14b	Diastolic BP	mmHg: _ _ _		Diastolic ☐☐☐
M 15	Are you currently on treatment with drugs prescribed by a health professional for treatment of blood pressure?		Yes 1 No 2	☐

Step 3 Biochemical measurements

CORE	Blood glucose		Coding column
B 1	During the last 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	☐
B 2	Technician ID Code		☐☐☐
B 3	Device ID code		☐☐
B 4	Time of day blood specimen taken (24 hour clock)		☐☐:☐☐ hours minutes
B 5	Blood glucose – capillary		mmol/l ☐☐.☐
B 6	HbA1c		% ☐☐.☐
CORE	Blood Lipids		
B 6	Technician ID Code		☐☐☐
B 7	Device ID code		☐☐
B 8	Total cholesterol		mmol/l ☐☐.☐☐

SELECTED EXPANDED ITEMS			
B 11	Triglycerides		mmol/l ☐☐.☐☐
B 14	HDL Cholesterol		mmol/l ☐.☐☐
B 15	LDL Cholesterol		mmol/l ☐.☐☐
B 5	Blood glucose – fasting – oral glucose tolerance test		mmol/l ☐☐.☐
B 5	Blood glucose – 2hour – oral glucose tolerance test		mmol/l ☐☐.☐

Appendix 2. The Data Book of the Kingdom of Tonga STEPS Survey

WHO STEPS

Chronic Disease Risk Factor Surveillance

DATA BOOK FOR THE KINGDOM OF TONGA

Demographic Information Results

Age group by sex

Description: Summary information by age group and sex of the respondents.

Instrument question:

- Sex
- What is your date of birth?

Age group and sex of respondents						
Age Group (years)	Men		Women		Both Sexes	
	n	%	n	%	n	%
15-24	49	45.0	60	55.0	109	11.4
25-34	97	47.3	108	52.7	205	21.4
35-44	116	39.3	179	60.7	295	30.8
45-54	75	33.9	146	66.1	221	23.1
55-64	67	52.3	61	47.7	128	13.4
15-64	**404**	**42.2**	**554**	**57.8**	**958**	**100.0**
25-64	**355**	**41.8**	**494**	**58.2**	**849**	**100.0**

Education

Description: Mean number of years of education among respondents.

Instrument question:

- In total, how many years have you spent at school or in full-time study (excluding pre-school)?

Mean number of years of education						
Age Group (years)	Men		Women		Both Sexes	
	n	Mean	n	Mean	n	Mean
15-24	44	10.9	57	11.5	101	11.3
25-34	95	11.5	107	11.3	202	11.4
35-44	115	11.0	175	10.7	290	10.9
45-54	74	10.2	145	9.8	219	10.0
55-64	65	9.2	60	8.2	125	8.8
15-64	**393**	**10.7**	**544**	**10.4**	**937**	**10.5**
25-64	**349**	**10.6**	**487**	**10.3**	**836**	**10.4**

Employment status

Description: Proportion of respondents in paid employment and those who are unpaid. Unpaid includes persons who are non-paid, students, homemakers, retired, and unemployed.

Instrument question:

- Which of the following best describes your main work status over the last 12 months?

Employment status					
	Men				
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
15-24	48	2.1	12.5	2.1	83.3
25-34	97	12.4	27.8	4.1	55.7
35-44	116	27.6	17.2	6.9	48.3
45-54	75	14.7	22.7	10.7	52.0
55-64	66	12.1	13.6	7.6	66.7
15-64	**402**	**15.9**	**19.7**	**6.5**	**58.0**
25-64	**354**	**17.8**	**20.6**	**7.1**	**54.5**

Employment status					
	Women				
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
15-24	57	3.5	12.3	0.0	84.2
25-34	108	8.3	4.6	1.9	85.2
35-44	178	5.6	6.2	1.7	86.5
45-54	146	9.6	2.7	0.7	87.0
55-64	61	1.6	1.6	1.6	95.1
15-64	**550**	**6.5**	**5.1**	**1.3**	**87.1**
25-64	**493**	**6.9**	**4.3**	**1.4**	**87.4**

Employment status					
	Both Sexes				
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
15-24	105	2.9	12.4	1.0	83.8
25-34	205	10.2	15.6	2.9	71.2
35-44	294	14.3	10.5	3.7	71.4
45-54	221	11.3	9.5	4.1	75.1
55-64	127	7.1	7.9	4.7	80.3
15-64	**952**	**10.5**	**11.2**	**3.5**	**74.8**
25-64	**847**	**11.5**	**11.1**	**3.8**	**73.7**

Unpaid work and unemployed

Description: Among respondents in unpaid work, proportion in each category of unpaid work.

Instrument question:

- Which of the following best describes your main work status over the last 12 months?

Unpaid work and unemployed							
	Men						
Age Group (years)	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
15-24	40	2.5	27.5	15.0	0.0	2.5	52.5
25-34	54	14.8	0.0	11.1	1.9	1.9	70.4
35-44	56	19.6	1.8	7.1	3.6	3.6	64.3
45-54	39	20.5	0.0	23.1	7.7	0.0	48.7
55-64	44	27.3	0.0	11.4	11.4	6.8	43.2
15-64	**233**	**17.2**	**5.2**	**12.9**	**4.7**	**3.0**	**57.1**
25-64	**193**	**20.2**	**0.5**	**12.4**	**5.7**	**3.1**	**58.0**

Unpaid work and unemployed							
	Women						
Age Group (years)	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
15-24	48	0.0	10.4	66.7	4.2	2.1	16.7
25-34	92	2.2	1.1	83.7	5.4	0.0	7.6
35-44	154	0.6	0.0	75.3	9.1	0.0	14.9
45-54	127	0.8	0.0	78.0	12.6	0.0	8.7
55-64	58	0.0	0.0	91.4	0.0	0.0	8.6
15-64	**479**	**0.8**	**1.3**	**78.7**	**7.7**	**0.2**	**11.3**
25-64	**431**	**0.9**	**0.2**	**80.0**	**8.1**	**0.0**	**10.7**

Unpaid work and unemployed							
	Both Sexes						
Age Group (years)	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
15-24	88	1.1	18.2	43.2	2.3	2.3	33.0
25-34	146	6.8	0.7	56.8	4.1	0.7	30.8
35-44	210	5.7	0.5	57.1	7.6	1.0	28.1
45-54	166	5.4	0.0	65.1	11.4	0.0	18.1
55-64	102	11.8	0.0	56.9	4.9	2.9	23.5
15-64	**712**	**6.2**	**2.5**	**57.2**	**6.7**	**1.1**	**26.3**
25-64	**624**	**6.9**	**0.3**	**59.1**	**7.4**	**1.0**	**25.3**

Per capita annual income

Description: Mean reported per capita annual income of respondents in local currency.

Instrument question:

- How many people older than 18 years, including yourself, live in your household?
- Taking the past year, can you tell me what the average earning of the household has been?

Mean annual per capita income		
Age Group	n	Mean
15-64	**234**	**106,972.0**
25-64	**215**	**116,074.5**

Tobacco Use

Current smoking

Description: Current smokers among all respondents.

Instrument questions:

- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?

Percentage of current smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	n	% Current smoker	95% CI	n	% Current smoker	95% CI
15-24	48	46.0	27.7-64.4	60	20.4	12.2-28.5	108	33.2	21.9-44.5
25-34	97	46.1	35.1-57.1	108	16.9	3.3-30.5	205	31.2	23.0-39.4
35-44	115	42.2	37.5-46.9	178	16.6	6.8-26.4	293	29.3	22.3-36.2
45-54	74	41.6	31.9-51.2	146	12.6	8.0-17.2	220	26.2	20.4-32.1
55-64	66	61.3	50.1-72.5	61	6.0	0.0-12.9	127	32.5	23.0-42.1
15-64	**400**	**46.2**	**39.4-52.9**	**553**	**16.3**	**11.1-21.5**	**953**	**31.0**	**26.9-35.1**
25-64	**352**	**46.2**	**40.6-51.8**	**493**	**14.3**	**9.7-18.9**	**845**	**29.8**	**26.1-33.5**

Smoking Status

Description: Smoking status of all respondents.

Instrument questions:

- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?
- Do you currently smoke tobacco products daily?

Smoking status							
	Men						
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
15-24	48	42.7	26.3-59.1	3.3	0.0-9.1	54.0	35.6-72.3
25-34	97	41.6	28.9-54.4	4.5	1.2-7.8	53.9	42.9-64.9
35-44	115	38.2	30.7-45.7	4.0	0.0-9.1	57.8	53.1-62.5
45-54	74	35.2	24.6-45.7	6.4	0.9-11.9	58.4	48.8-68.1
55-64	66	57.2	46.1-68.3	4.1	0.0-9.0	38.7	27.5-49.9
15-64	**400**	**41.9**	**33.6-50.3**	**4.2**	**1.1-7.3**	**53.9**	**47.1-60.6**
25-64	**352**	**41.5**	**33.9-49.1**	**4.7**	**1.6-7.7**	**53.8**	**48.2-59.4**

Smoking status							
	Women						
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
15-24	60	17.1	11.0-23.3	3.2	0.0-8.5	79.6	71.5-87.8
25-34	108	14.4	4.8-24.0	2.5	0.0-7.1	83.1	69.5-96.7
35-44	178	12.6	4.9-20.3	4.0	1.1-6.8	83.4	73.6-93.2
45-54	146	12.0	7.4-16.6	0.6	0.0-1.9	87.4	82.8-92.0
55-64	61	6.0	0.0-12.9	0.0	0.0-0.0	94.0	87.1-100.0
15-64	**553**	**13.8**	**10.4-17.2**	**2.5**	**0.0-5.0**	**83.7**	**78.5-88.9**
25-64	**493**	**12.2**	**8.8-15.5**	**2.2**	**0.8-3.5**	**85.7**	**81.1-90.3**

Smoking status							
	Both Sexes						
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
15-24	108	29.9	19.7-40.2	3.3	0.0-7.3	66.8	55.5-78.1
25-34	205	27.7	20.9-34.5	3.5	0.7-6.2	68.8	60.6-77.0
35-44	293	25.3	18.7-31.8	4.0	1.1-7.0	70.7	63.8-77.7
45-54	220	22.9	16.5-29.3	3.3	0.4-6.2	73.8	67.9-79.6
55-64	127	30.5	20.6-40.5	2.0	0.0-4.1	67.5	57.9-77.0
15-64	**953**	**27.6**	**23.0-32.2**	**3.3**	**1.4-5.3**	**69.0**	**64.9-73.1**
25-64	**845**	**26.4**	**22.3-30.5**	**3.4**	**1.8-5.0**	**70.2**	**66.5-73.9**

Frequency of smoking

Description: Percentage of current daily smokers among smokers.

Instrument question:

- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?
- Do you currently smoke tobacco products daily?

Current daily smokers among smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI
15-24	20	92.8	81.2-100.0	11	84.2	61.4-100.0	31	90.2	78.9-100.0
25-34	44	90.3	81.6-98.9	18	85.3	67.2-100.0	62	88.9	81.4-96.4
35-44	47	90.4	78.1-100.0	26	76.0	65.8-86.2	73	86.3	76.7-96.0
45-54	30	84.6	71.2-98.0	17	95.3	85.0-100.0	47	87.3	75.9-98.8
55-64	40	93.3	85.4-100.0	4	100.0	100.0-100.0	44	93.9	86.8-100.0
15-64	**181**	**90.9**	**83.6-98.2**	**76**	**84.6**	**72.7-96.6**	**257**	**89.2**	**82.7-95.7**
25-64	**161**	**89.9**	**82.5-97.2**	**65**	**84.9**	**79.5-90.3**	**226**	**88.7**	**83.1-94.2**

Manufactured cigarette smokers

Description: Percentage of smokers who use manufactured cigarettes among daily smokers.

Instrument question:

- On average, how many of the following do you smoke each day?

Manufactured cigarette smokers among daily smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Manu-factured cigarette smoker	95% CI	n	% Manu-factured cigarette smoker	95% CI	n	% Manu-factured cigarette smoker	95% CI
15-24	18	85.5	69.6-100.0	9	89.3	67.2-100.0	27	86.6	71.6-100.0
25-34	40	92.0	83.4-100.0	15	82.2	65.7-98.7	55	89.4	79.2-99.7
35-44	40	87.5	77.3-97.7	20	78.5	62.8-94.3	60	85.2	79.2-91.2
45-54	25	80.4	61.2-99.5	16	92.9	79.7-100.0	41	83.8	68.3-99.4
55-64	37	61.6	46.7-76.6	4	54.9	0.0-100.0	41	60.9	45.8-76.1
15-64	**160**	**83.7**	**77.1-90.4**	**64**	**84.7**	**74.2-95.2**	**224**	**84.0**	**78.0-89.9**
25-64	**142**	**82.8**	**76.8-88.8**	**55**	**81.4**	**69.2-93.5**	**197**	**82.5**	**77.1-87.8**

Amount of tobacco used among smokers by type

Description: Mean amount of tobacco used by daily smokers per day, by type.

Instrument question:

- On average, how many of the following do you smoke each day?

Mean amount of tobacco used by daily smokers by type

Men

Age Group (years)	n	Mean # of manu-factured cig.	95% CI	n	Mean #of hand-rolled cig.	95 % CI	n	Mean # of pipes of tobacco	95% CI	n	Mean # of other type of tobacco	95% CI
15-24	15	12.7	2.8-22.6	2	5.3	--	1	0.0	--	1	0.0	--
25-34	36	11.9	8.3-15.4	5	9.9	--	2	0.0	--	3	0.8	0.0-2.4
35-44	33	14.8	11.3-18.4	6	15.8	--	1	0.0	--	1	0.0	--
45-54	21	14.0	7.1-20.8	5	19.1	--	3	0.0	--	3	0.0	--
55-64	25	13.2	6.2-20.2	13	13.8	--	3	0.0	--	3	0.0	--
15-64	**130**	**13.1**	**8.4-17.7**	**31**	**12.0**	**--**	**10**	**0.0**	**--**	**11**	**0.2**	**0.0-0.8**
25-64	**115**	**13.3**	**10.9-15.7**	**29**	**14.2**	**--**	**9**	**0.0**	**--**	**10**	**0.3**	**0.0-1.1**

Mean amount of tobacco used by daily smokers by type

Women

Age Group (years)	n	Mean # of manu-factured cig.	95% CI	n	Mean #of hand-rolled cig.	95% CI	n	Mean # of pipes of tobacco	95% CI	n	Mean # of other type of tobacco	95% CI
15-24	8	8.6	3.4-13.7	1	4.0	--	1	0.0	--	1	0.0	--
25-34	12	13.1	6.4-19.8	1	8.0	--	0	--	--	0	--	--
35-44	16	9.7	3.1-16.2	1	0.0	--	1	0.0	--	1	0.0	--
45-54	15	12.0	8.1-15.8	3	12.6	--	0	--	--	0	--	--
55-64	2	8.7	3.2-14.2	2	3.2	--	1	0.0	--	1	0.0	--
15-64	**53**	**10.3**	**6.7-13.9**	**8**	**5.9**	**--**	**3**	**0.0**	**--**	**3**	**0.0**	**--**
25-64	**45**	**11.6**	**7.6-15.7**	**7**	**7.4**	**--**	**2**	**0.0**	**--**	**2**	**0.0**	**--**

Mean amount of tobacco used by daily smokers by type

Both Sexes

Age Group (years)	n	Mean # of manu-factured cig.	95% CI	n	Mean #of hand-rolled cig.	95% CI	n	Mean # of pipes of tobacco	95% CI	n	Mean # of other type of tobacco	95% CI
15-24	23	11.5	3.5-19.4	3	4.9	--	2	0.0	--	2	0.0	--
25-34	48	12.2	8.6-15.7	6	9.8	--	2	0.0	--	3	0.8	0.0-2.4
35-44	49	13.6	11.4-15.9	7	14.2	--	2	0.0	--	2	0.0	--
45-54	36	13.4	8.8-17.9	8	17.4	--	3	0.0	--	3	0.0	--
55-64	27	12.8	6.3-19.3	15	12.5	--	4	0.0	--	4	0.0	--
15-64	**183**	**12.4**	**8.6-16.1**	**39**	**10.9**	**--**	**13**	**0.0**	**--**	**14**	**0.2**	**0.0-0.6**
25-64	**160**	**12.9**	**10.7-15.1**	**36**	**13.3**	**--**	**11**	**0.0**	**--**	**12**	**0.3**	**0.0-0.9**

Initiation of smoking

Description: Mean age of initiation and mean duration of smoking, in years, among daily smokers (no total age group for mean duration of smoking as age influences these values).

Instrument questions:

- How old were you when you first started smoking daily?
- How long ago did you stop smoking daily?

Mean age started smoking									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean age	95% CI	n	Mean age	95% CI	n	Mean age	95% CI
15-24	15	15.4	14.5-16.2	8	17.0	15.4-18.6	23	15.9	15.3-16.4
25-34	36	17.7	16.6-18.9	12	20.4	17.7-23.1	48	18.4	17.3-19.5
35-44	36	19.1	17.1-21.1	18	22.3	20.1-24.4	54	19.9	18.6-21.2
45-54	16	17.9	13.8-21.9	14	21.8	20.1-23.4	30	19.2	16.6-21.7
55-64	28	20.5	19.0-22.0	4	37.4	20.1-54.8	32	22.7	19.6-25.7
15-64	**131**	**17.5**	**16.7-18.3**	**56**	**20.3**	**19.0-21.6**	**187**	**18.2**	**17.4-19.0**
25-64	**116**	**18.7**	**18.0-19.4**	**48**	**22.7**	**21.0-24.4**	**164**	**19.7**	**18.9-20.4**

Mean duration of smoking									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean duration	95% CI	n	Mean duration	95% CI	n	Mean duration	95% CI
15-24	15	5.0	4.3-5.8	8	4.2	2.9-5.5	23	4.8	4.2-5.3
25-34	36	11.1	9.6-12.5	12	9.4	6.5-12.3	48	10.6	9.4-11.9
35-44	36	19.7	17.9-21.5	18	17.2	13.5-20.8	54	19.1	18.2-20.0
45-54	16	30.5	25.6-35.5	14	28.2	26.0-30.5	30	29.8	26.6-32.9
55-64	28	39.9	37.8-42.0	4	21.8	3.6-39.9	32	37.6	34.4-40.7
15-64	**131**	**15.6**	**12.4-18.8**	**56**	**11.4**	**9.8-13.1**	**187**	**14.5**	**12.3-16.7**
25-64	**116**	**21.5**	**19.3-23.8**	**48**	**16.8**	**13.5-20.1**	**164**	**20.4**	**18.8-21.9**

Alcohol Consumption

Alcohol consumption status

Description: Alcohol consumption status of all respondents.

Instrument questions:

- Have you ever consumed a drink that contains alcohol such as beer, wine, spirit, etc?
- Have you consumed alcohol within the past 12 months?

Alcohol consumption status							
	Men						
Age Group (years)	n	% Current drinker (drank in last 12 mos.)	95% CI	% past 12 mos. abstainer	95% CI	% Lifetime abstainer	95% CI
15-24	49	37.9	16.8-59.0	6.2	0.0-14.7	55.9	34.1-77.7
25-34	97	16.2	6.6-25.8	19.6	7.3-32.0	64.2	54.6-73.7
35-44	116	16.2	2.2-30.2	8.4	3.8-13.0	75.4	58.3-92.5
45-54	71	9.6	1.7-17.5	3.0	0.0-7.6	87.5	77.3-97.6
55-64	67	7.0	0.0-14.8	1.3	0.0-4.0	91.7	83.8-99.6
15-64	**400**	**22.2**	**10.8-33.5**	**8.9**	**4.7-13.0**	**68.9**	**55.9-82.0**
25-64	**351**	**13.6**	**5.7-21.5**	**10.3**	**5.0-15.7**	**76.1**	**66.3-85.9**

Alcohol consumption status							
	Women						
Age Group (years)	n	% Current drinker (drank in last 12 mos.)	95% CI	% past 12 mos. abstainer	95% CI	% Lifetime abstainer	95% CI
15-24	60	5.2	0.0-13.6	6.0	1.1-10.8	88.8	82.2-95.5
25-34	108	8.6	2.8-14.4	1.0	0.0-3.2	90.4	83.9-96.9
35-44	179	4.8	0.3-9.2	1.4	0.0-3.0	93.9	88.9-98.9
45-54	144	0.7	0.0-2.4	0.0	0.0-0.0	99.3	97.6-100.0
55-64	61	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
15-64	**552**	**4.8**	**2.5-7.1**	**2.5**	**0.8-4.2**	**92.7**	**90.2-95.2**
25-64	**492**	**4.6**	**1.6-7.6**	**0.8**	**0.0-1.5**	**94.7**	**91.7-97.6**

Alcohol consumption status							
	Both Sexes						
Age Group (years)	n	% Current drinker (drank in last 12 mos.)	95% CI	% past 12 mos. abstainer	95% CI	% Lifetime abstainer	95% CI
15-24	109	21.7	12.0-31.5	6.1	2.6-9.6	72.2	61.6-82.7
25-34	205	12.3	5.5-19.1	10.1	5.2-15.0	77.6	73.0-82.2
35-44	295	10.4	1.7-19.1	4.9	2.3-7.4	84.7	74.6-94.8
45-54	215	4.8	0.7-9.0	1.4	0.0-3.5	93.8	88.6-99.0
55-64	128	3.4	0.0-7.4	0.6	0.0-2.0	96.0	91.9-100.0
15-64	**952**	**13.4**	**7.7-19.0**	**5.6**	**3.5-7.8**	**81.0**	**74.1-87.9**
25-64	**843**	**8.9**	**3.8-14.1**	**5.4**	**3.0-7.8**	**85.7**	**80.0-91.3**

Frequency of alcohol consumption

Description: Frequency of alcohol consumption in the last year among those respondents who have drank in the last 12 months.

Instrument question:

- In the past 12 months, how frequently have you had at least one drink?

Frequency of alcohol consumption in the last 12 months									
	Men								
Age Group (years)	n	% 5+ days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
15-24	8	0.0	0.0-0.0	0.0	0.0-0.0	60.1	20.8-99.3	40.0	0.7-79.2
25-34	7	0.0	0.0-0.0	0.0	0.0-0.0	55.5	0.0-100.0	44.5	0.0-100.0
35-44	7	0.0	0.0-0.0	16.9	0.0-56.2	32.5	0.0-89.0	50.7	25.7-75.6
45-54	4	0.0	0.0-0.0	0.0	0.0-0.0	24.8	0.0-73.0	75.2	27.0-100.0
55-64	3	0.0	0.0-0.0	36.4	0.0-100.0	63.6	0.0-100.0	0.0	0.0-0.0
15-64	**29**	**0.0**	**--**	**3.2**	**0.0-10.5**	**53.6**	**22.8-84.5**	**43.1**	**16.9-69.4**
25-64	**21**	**0.0**	**--**	**8.7**	**0.0-28.4**	**42.8**	**0.0-87.6**	**48.5**	**12.3-84.7**

Frequency of alcohol consumption in the last 12 months									
	Women								
Age Group (years)	n	% 5+ days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
15-24	2	0.0	0.0-0.0	0.0	0.0-0.0	55.9	0.0-100.0	44.1	0.0-100.0
25-34	3	0.0	0.0-0.0	0.0	0.0-0.0	71.8	34.3-100.0	28.2	0.0-65.7
35-44	4	0.0	0.0-0.0	0.0	0.0-0.0	25.7	0.0-56.4	74.3	43.6-100.0
45-54	1	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0	0.0	0.0-0.0
55-64	0	--	--	--	--	--	--	--	--
15-64	**10**	**0.0**	**--**	**0.0**	**--**	**55.8**	**17.2-94.5**	**44.2**	**5.5-82.8**
25-64	**8**	**0.0**	**--**	**0.0**	**--**	**55.7**	**0.0-100.0**	**44.3**	**0.0-100.0**

Frequency of alcohol consumption in the last 12 months									
Age Group (years)	Both Sexes								
	n	% 5+ days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
15-24	10	0.0	0.0-0.0	0.0	0.0-0.0	59.5	26.1-92.8	40.5	7.2-73.9
25-34	10	0.0	0.0-0.0	0.0	0.0-0.0	60.5	11.5-100.0	39.5	0.0-88.5
35-44	11	0.0	0.0-0.0	12.1	0.0-41.1	30.5	0.0-69.3	57.4	38.3-76.5
45-54	5	0.0	0.0-0.0	0.0	0.0-0.0	33.4	0.0-81.8	66.6	18.2-100.0
55-64	3	0.0	0.0-0.0	36.4	0.0-100.0	63.6	0.0-100.0	0.0	0.0-0.0
15-64	**39**	**0.0**	**0.0-0.0**	**2.6**	**0.0-7.9**	**54.0**	**28.2-79.9**	**43.3**	**19.9-66.8**
25-64	**29**	**0.0**	**--**	**6.5**	**0.0-20.8**	**46.0**	**9.4-82.7**	**47.5**	**15.9-79.0**

Standard drinks per drinking day

Description: Number of standard drinks consumed on a drinking day among those respondents who have drank in the last 12 months.

Instrument question:

- When you drink alcohol, on average, how many drinks do you have during one day?

Number of standard drinks consumed on a drinking day											
Age Group (years)	Men										
	n	% 1 drink	95% CI	% 2-3 drinks	95% CI	% 4-5 drinks	95% CI	% 6+ drinks	95% CI	Mean # of standard drinks	95% CI
15-24	14	8.1	0.0-23.9	24.7	1.5-47.9	11.3	0.0-26.9	56.0	23.8-88.1	8.5	--
25-34	12	0.0	0.0-0.0	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0	11.7	--
35-44	13	3.0	0.5-5.5	16.7	2.0-31.4	9.0	0.0-25.0	71.3	47.0-95.6	9.2	--
45-54	3	0.0	0.0-0.0	31.5	0.0-96.6	0.0	0.0-0.0	68.5	3.4-100.0	5.1	--
55-64	3	36.4	0.0-100.0	0.0	0.0-0.0	0.0	0.0-0.0	63.6	0.0-100.0	6.4	--
15-64	**45**	**6.2**	**0.0-16.4**	**18.9**	**4.0-33.8**	**8.3**	**0.0-21.4**	**66.5**	**43.2-89.8**	**9.0**	**--**
25-64	**31**	**3.1**	**0.0-7.6**	**9.2**	**0.0-22.4**	**3.4**	**0.0-11.6**	**84.3**	**66.3-100.0**	**9.9**	**--**

Number of standard drinks consumed on a drinking day											
Age Group (years)	Women										
	n	% 1 drink	95% CI	% 2-3 drinks	95% CI	% 4-5 drinks	95% CI	% 6+ drinks	95% CI	Mean # of standard drinks	95% CI
15-24	2	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0	0.0	0.0-0.0	4.0	--
25-34	6	19.2	0.0-68.1	0.0	0.0-0.0	16.6	0.0-50.9	64.2	20.1-100.0	8.0	--
35-44	6	0.0	0.0-0.0	16.9	0.0-54.1	35.3	0.0-100.0	47.8	0.0-100.0	6.2	--
45-54	1	0.0	0.0-0.0	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0	20.0	--
55-64	0	--	--	--	--	--	--	--	--	--	--
15-64	**15**	**7.9**	**0.0-28.9**	**3.7**	**0.0-13.6**	**49.1**	**0.0-100.0**	**39.4**	**0.0-82.5**	**6.6**	**--**
25-64	**13**	**12.0**	**0.0-40.3**	**5.6**	**0.0-19.1**	**22.1**	**0.0-52.0**	**60.2**	**15.0-100.0**	**7.9**	**--**

Number of standard drinks consumed on a drinking day											
Age Group (years)	Both Sexes										
	n	% 1 drink	95% CI	% 2-3 drinks	95% CI	% 4-5 drinks	95% CI	% 6+ drinks	95% CI	Mean # of standard drinks	95% CI
15-24	16	7.3	0.0-21.3	22.1	0.0-44.3	20.5	0.0-46.7	50.2	21.3-79.0	8.1	--
25-34	18	6.2	0.0-21.6	0.0	0.0-0.0	5.4	0.0-16.4	88.3	71.1-100.0	10.5	--
35-44	19	2.3	0.4-4.2	16.8	10.0-23.6	15.4	0.0-42.2	65.6	39.0-92.2	8.5	--
45-54	4	0.0	0.0-0.0	27.0	0.0-82.3	0.0	0.0-0.0	73.0	17.7-100.0	7.2	--
55-64	3	36.4	0.0-100.0	0.0	0.0-0.0	0.0	0.0-0.0	63.6	0.0-100.0	6.4	--
15-64	**60**	**6.5**	**0.0-13.7**	**16.3**	**2.0-30.5**	**15.4**	**0.0-32.4**	**61.8**	**42.7-80.9**	**8.6**	**--**
25-64	**44**	**5.5**	**0.0-13.3**	**8.2**	**0.0-16.9**	**8.4**	**0.0-21.2**	**77.8**	**55.8-99.9**	**9.3**	**--**

Heavy drinking

Description: Frequency and quantity of drinks consumed in the last 7 days by current (last 30 days) drinker, grouped into three categories.

Instrument question:

- During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day?

Frequency and quantity of drinks consumed in the last 7 days							
Age Group (years)	Men						
	n	% Drank on 4+ days	95% CI	% 5+ drinks on any day	95% CI	% 20+ drinks in 7 days	95% CI
15-24	11	0.0	--	74.3	53.3-95.2	15.0	0.0-34.5
25-34	10	0.0	--	89.9	67.1-100.0	0.0	0.0-0.0
35-44	11	0.0	--	63.4	40.3-86.6	7.1	0.0-24.1
45-54	4	0.0	--	48.7	0.0-100.0	0.0	0.0-0.0
55-64	5	0.0	--	34.5	0.0-94.7	0.0	0.0-0.0
15-64	**41**	**0.0**	**--**	**72.4**	**56.4-88.5**	**9.6**	**0.0-22.1**
25-64	**30**	**0.0**	**--**	**70.0**	**42.4-97.6**	**2.5**	**0.0-8.5**

Frequency and quantity of drinks consumed in the last 7 days							
Age Group (years)	Women						
	n	% Drank on 4+ days	95% CI	% 4+ drinks on any day	95% CI	% 15+ drinks in 7 days	95% CI
15-24	2	0.0	--	50.0	50.0-50.0	0.0	0.0-0.0
25-34	6	0.0	--	62.4	7.2-100.0	0.0	0.0-0.0
35-44	4	0.0	--	74.1	11.7-100.0	0.0	0.0-0.0
45-54	1	0.0	--	100.0	100.0-100.0	100.0	100.0-100.0
55-64	0	--	--	--	--	--	--
15-64	**13**	**0.0**	**--**	**60.7**	**30.6-90.7**	**2.9**	**0.0-11.3**
25-64	**11**	**0.0**	**--**	**67.0**	**18.7-100.0**	**4.7**	**0.0-16.7**

Frequency and quantity of drinks consumed in the last 7 days			
Age Group (years)	Both Sexes		
	n	% Drank on 4+ days	95% CI
15-24	13	0.0	--
25-34	16	0.0	--
35-44	15	0.0	--
45-54	5	0.0	--
55-64	5	0.0	--
15-64	**54**	**0.0**	**--**
25-64	**41**	**0.0**	**--**

Hazardous and harmful drinking

Description: Percentage of current (last 30 days) drinker engaging in hazardous and harmful drinking in the last 7 days.
Harmful drinking is defined as ≥60g of pure alcohol on average per day for men and ≥40 g for women.
Hazardous drinking is defined as 40-59.9g of pure alcohol on average per day for men and 20-39.9g for women.
A standard drink contains approximately 10g of pure alcohol.
Instrument question:

- During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day?

Hazardous and harmful drinking in the last 7 days							
Age Group (years)	Men						
	n	% harmful drinking	95% CI	% hazardous drinking	95% CI	% <40g pure alcohol per day	95% CI
15-24	11	0.0	0.0-0.0	3.8	0.9-6.7	96.2	93.3-99.2
25-34	10	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
35-44	11	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
45-54	4	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
55-64	5	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
15-64	**41**	**0.0**	**0.0-0.0**	**2.1**	**1.2-3.1**	**97.9**	**96.9-98.8**
25-64	**30**	**0.0**	**0.0-0.0**	**0.0**	**0.0-0.0**	**100.0**	**100.0-100.0**

Hazardous and harmful drinking in the last 7 days							
Age Group (years)	Women						
	n	% harmful drinking	95% CI	% hazardous drinking	95% CI	% <20g pure alcohol per day	95% CI
15-24	2	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
25-34	6	0.0	0.0-0.0	15.8	0.0-56.3	84.2	43.7-100.0
35-44	4	0.0	0.0-0.0	24.0	0.0-83.3	76.0	16.7-100.0
45-54	1	0.0	0.0-0.0	100.0	100.0-100.0	0.0	0.0-0.0
55-64	0	--	--	--	--	--	--
15-64	**13**	**0.0**	**0.0-0.0**	**13.6**	**0.0-39.6**	**86.4**	**60.4-100.0**
25-64	**11**	**0.0**	**0.0-0.0**	**21.7**	**0.0-64.6**	**78.3**	**35.4-100.0**

Fruit and Vegetable Consumption

Mean number of days of fruit and vegetable consumption

Description: mean number of days fruit and vegetables consumed.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- In a typical week, on how many days do you eat vegetables?

Mean number of days fruit consumed in a typical week

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
15-24	49	2.3	1.8-2.8	60	2.6	2.0-3.3	109	2.5	2.2-2.8
25-34	97	2.5	2.0-3.1	108	2.6	2.3-2.9	205	2.6	2.3-2.9
35-44	115	2.6	2.2-3.1	178	2.8	2.4-3.2	293	2.7	2.4-3.0
45-54	75	2.4	1.9-2.9	146	2.9	2.5-3.2	221	2.7	2.3-3.0
55-64	67	3.1	2.5-3.6	61	3.3	2.6-4.0	128	3.2	2.7-3.7
15-64	**403**	**2.5**	**2.2-2.8**	**553**	**2.8**	**2.4-3.1**	**956**	**2.6**	**2.5-2.8**
25-64	**354**	**2.6**	**2.4-2.8**	**493**	**2.8**	**2.6-3.1**	**847**	**2.7**	**2.5-2.9**

Mean number of days vegetables consumed in a typical week

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
15-24	49	3.6	1.8-5.4	60	4.4	3.2-5.7	109	4.0	2.5-5.5
25-34	96	3.8	3.2-4.5	107	4.5	3.9-5.2	203	4.2	3.7-4.7
35-44	116	3.8	3.3-4.4	178	4.3	3.8-4.9	294	4.1	3.6-4.5
45-54	75	3.9	3.0-4.8	146	4.8	4.2-5.5	221	4.4	3.6-5.2
55-64	65	4.9	4.2-5.7	61	5.2	4.7-5.7	126	5.1	4.6-5.5
15-64	**401**	**3.8**	**2.9-4.8**	**552**	**4.6**	**3.8-5.3**	**953**	**4.2**	**3.4-5.0**
25-64	**352**	**4.0**	**3.5-4.5**	**492**	**4.6**	**4.1-5.1**	**844**	**4.3**	**3.8-4.8**

Mean number of servings of fruit and vegetable consumption

Description: mean number of fruit, vegetable, and combined fruit and vegetable servings on average per day.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- How many servings of fruit do you eat on one of those days?
- In a typical week, on how many days do you eat vegetables?
- How many servings of vegetables do you eat on one of those days?

Mean number of servings of fruit on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15-24	49	1.3	0.9-1.7	60	1.0	0.8-1.3	109	1.2	1.0-1.4
25-34	97	1.5	1.1-2.0	108	1.2	1.0-1.4	205	1.3	1.1-1.6
35-44	115	1.6	1.2-1.9	178	1.3	1.1-1.5	293	1.4	1.3-1.6
45-54	75	1.2	0.9-1.5	146	1.2	1.0-1.4	221	1.2	1.0-1.4
55-64	67	1.3	1.0-1.7	61	1.5	1.1-1.8	128	1.4	1.1-1.7
15-64	**403**	**1.4**	**1.1-1.7**	**553**	**1.2**	**1.1-1.3**	**956**	**1.3**	**1.1-1.4**
25-64	**354**	**1.4**	**1.2-1.7**	**493**	**1.3**	**1.1-1.4**	**847**	**1.4**	**1.2-1.5**

Mean number of servings of vegetables on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15-24	49	0.9	0.4-1.5	60	1.0	0.7-1.3	109	1.0	0.5-1.4
25-34	96	1.1	0.9-1.2	107	1.2	1.0-1.4	203	1.1	1.0-1.3
35-44	116	1.1	0.9-1.2	178	1.2	1.0-1.4	294	1.1	1.0-1.3
45-54	75	1.1	0.8-1.4	146	1.4	1.1-1.6	221	1.2	1.0-1.5
55-64	65	1.5	1.3-1.7	61	1.3	1.2-1.5	126	1.4	1.3-1.5
15-64	**401**	**1.1**	**0.8-1.4**	**552**	**1.2**	**0.9-1.4**	**953**	**1.1**	**0.9-1.4**
25-64	**352**	**1.1**	**1.0-1.3**	**492**	**1.2**	**1.1-1.4**	**844**	**1.2**	**1.0-1.4**

Mean number of servings of fruit and/or vegetables on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15-24	49	2.2	1.5-2.9	60	2.1	1.6-2.5	109	2.1	1.6-2.7
25-34	97	2.6	2.1-3.1	108	2.3	1.9-2.8	205	2.5	2.1-2.8
35-44	116	2.6	2.2-3.1	178	2.5	2.2-2.9	294	2.6	2.3-2.9
45-54	75	2.3	1.8-2.8	146	2.6	2.2-3.0	221	2.4	2.0-2.9
55-64	67	2.8	2.3-3.3	61	2.8	2.4-3.2	128	2.8	2.4-3.2
15-64	**404**	**2.4**	**2.0-2.9**	**553**	**2.4**	**2.0-2.7**	**957**	**2.4**	**2.0-2.8**
25-64	**355**	**2.6**	**2.2-2.9**	**493**	**2.5**	**2.2-2.8**	**848**	**2.5**	**2.3-2.8**

Fruit and vegetable consumption per day

Description: Frequency of fruit and/or vegetable consumption.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- How many servings of fruit do you eat on one of those days?
- In a typical week, on how many days do you eat vegetables?
- How many servings of vegetables do you eat on one of those days?

Number of servings of fruit and/or vegetables on average per day									
	Men								
Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
15-24	49	20.2	1.4-39.1	56.7	38.7-74.6	17.0	5.3-28.7	6.1	0.0-13.9
25-34	97	15.5	5.3-25.7	56.6	48.4-64.7	20.3	9.8-30.8	7.7	2.0-13.3
35-44	116	16.8	7.1-26.6	51.9	42.2-61.6	19.1	9.3-28.9	12.2	5.5-18.9
45-54	75	19.8	8.0-31.6	50.3	40.2-60.4	24.5	11.0-37.9	5.4	0.0-12.7
55-64	67	13.0	3.1-23.0	43.0	26.0-60.0	36.1	27.4-44.7	7.9	1.0-14.7
15-64	**404**	**17.8**	**7.7-27.9**	**53.6**	**46.6-60.6**	**20.9**	**12.6-29.3**	**7.7**	**4.3-11.2**
25-64	**355**	**16.4**	**9.8-23.1**	**51.9**	**48.4-55.5**	**23.1**	**16.2-29.9**	**8.6**	**5.2-12.0**

Number of servings of fruit and/or vegetables on average per day									
	Women								
Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
15-24	60	18.6	0.0-41.0	58.8	43.0-74.7	16.5	3.6-29.4	6.0	0.0-12.0
25-34	108	12.6	3.1-22.2	63.3	52.5-74.1	20.7	11.6-29.7	3.4	0.6-6.2
35-44	178	14.6	3.6-25.5	55.5	47.5-63.5	19.5	14.8-24.2	10.4	6.0-14.8
45-54	146	11.5	2.9-20.0	52.8	47.5-58.1	28.8	21.0-36.7	6.9	3.8-9.9
55-64	61	7.7	0.0-16.9	55.6	36.8-74.3	26.7	16.9-36.5	10.0	2.4-17.5
15-64	**553**	**14.4**	**2.0-26.7**	**58.1**	**50.9-65.3**	**20.8**	**14.6-27.0**	**6.8**	**4.4-9.1**
25-64	**493**	**12.2**	**5.0-19.4**	**57.7**	**52.5-62.9**	**22.9**	**17.1-28.7**	**7.1**	**5.2-9.1**

Number of servings of fruit and/or vegetables on average per day									
	Both Sexes								
Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
15-24	109	19.4	0.0-39.6	57.7	45.0-70.5	16.8	8.2-25.4	6.0	0.3-11.8
25-34	205	14.0	5.1-23.0	60.0	51.1-69.0	20.5	12.4-28.6	5.5	2.7-8.3
35-44	294	15.7	6.9-24.5	53.7	47.7-59.7	19.3	13.6-25.0	11.3	7.6-14.9
45-54	221	15.4	6.1-24.7	51.6	46.4-56.9	26.8	17.0-36.5	6.2	2.5-9.8
55-64	128	10.3	6.3-14.3	49.5	38.1-60.9	31.2	24.6-37.9	8.9	2.8-15.1
15-64	**957**	**16.0**	**5.0-27.1**	**55.9**	**49.8-61.9**	**20.9**	**14.4-27.4**	**7.2**	**4.9-9.6**
25-64	**848**	**14.3**	**7.7-20.8**	**54.9**	**51.0-58.8**	**23.0**	**17.2-28.8**	**7.8**	**5.8-9.9**

Fruit and vegetable consumption per day

Description: Percentage of those eating less than five servings of fruit and/or vegetables on average per day.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- How many servings of fruit do you eat on one of those days?
- In a typical week, on how many days do you eat vegetables?
- How many servings of vegetables do you eat on one of those days?

Less than five servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI
15-24	49	93.9	86.1-100.0	60	94.0	88.0-100.0	109	94.0	88.2-99.7
25-34	97	92.3	86.7-98.0	108	96.6	93.8-99.4	205	94.5	91.7-97.3
35-44	116	87.8	81.1-94.5	178	89.6	85.2-94.0	294	88.7	85.1-92.4
45-54	75	94.6	87.3-100.0	146	93.1	90.1-96.2	221	93.8	90.2-97.5
55-64	67	92.1	85.3-99.0	61	90.0	82.5-97.6	128	91.1	84.9-97.2
15-64	**404**	**92.3**	**88.9-95.7**	**553**	**93.2**	**90.9-95.6**	**957**	**92.8**	**90.4-95.1**
25-64	**355**	**91.4**	**88.0-94.8**	**493**	**92.9**	**90.9-94.8**	**848**	**92.2**	**90.1-94.2**

Physical Activity

Introduction Analysis physical activity data can be very complicated and the result confusing. The following guidelines will help clarify the results of the physical activity data and will also provide valuable information on the classifications. Make sure you use some of these guidelines when you report physical activity data.

- MET values are applied to vigorous and moderate intensity variables in the work, transport and recreation domains. These have been calculated using an average of the typical types of activity undertaken. Different types of activities have been grouped together and given a MET value based on the intensity of the activity. Applying MET values to types of activities allows us to calculate total physical activity. For more information regarding MET values go the STEPS website at www.who.int/chp/steps .

- The calculations below use multiple questions in the physical activity section. To simplify this a bit the questions have been clustered into four groups (as they appear in the Instrument). In the Instrument questions section of the table, only the group label appears. The specific questions for each group are presented below.

Activity at work:
- Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [examples] for at least 10 minutes continuously?
- In a typical week, on how many days do you do vigorous-intensity activities as part of your work?
- How much time do you spend doing vigorous-intensity activities at work on a typical day?
- Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking for at least 10 minutes continuously?
- In a typical week, on how many days do you do moderate-intensity activities as part of your work?
- How much time do you spend doing moderate-intensity activities at work on a typical day?

Travel to and from places:
- Do you walk or use a bicycle for at least 10 minutes continuously to get to and from places?
- In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?

Continued on next page

Introduction (continued)

How much time do you spend walking or bicycling for travel on a typical day?

Recreational activities:

Do you do any involve vigorous-intensity sports, fitness or recreational activities that cause large increases in breathing or heart rate like [examples] for at least 10 minutes continuously?

In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational activities?

How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?

Do you do any involve moderate-intensity sports, fitness or recreational activities that cause large increases in breathing or heart rate like [examples] for at least 10 minutes continuously?

In a typical week, on how many days do you do moderate--intensity sports, fitness or recreational activities?

How much time do you spend doing moderate--intensity sports, fitness or recreational activities on a typical day?

Sedentary behaviour :

How much time do you usually spend sitting or reclining on a typical day?

Levels of total physical activity

Description: Percentage of respondents classified into three categories of total physical activity.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Level of total physical activity							
Age Group (years)	Men						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
15-24	47	30.8	5.1-56.6	18.9	1.5-36.2	50.3	34.8-65.8
25-34	92	23.9	12.7-35.1	20.0	11.5-28.6	56.0	45.6-66.5
35-44	107	41.3	29.3-53.3	16.2	8.7-23.7	42.5	26.0-59.1
45-54	70	38.2	26.7-49.6	19.7	10.0-29.5	42.1	30.4-53.9
55-64	67	33.4	26.1-40.7	17.0	8.5-25.6	49.6	40.2-59.0
15-64	**383**	**32.4**	**22.7-42.2**	**18.5**	**10.9-26.2**	**49.0**	**41.6-56.4**
25-64	**336**	**33.3**	**25.6-41.0**	**18.4**	**14.0-22.8**	**48.3**	**39.7-56.9**

Level of total physical activity							
Age Group (years)	Women						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
15-24	59	56.8	36.1-77.5	25.3	14.8-35.8	17.9	5.3-30.5
25-34	105	56.2	48.6-63.8	20.2	11.6-28.8	23.6	14.2-33.0
35-44	173	52.8	42.5-63.2	23.5	16.9-30.1	23.7	14.6-32.7
45-54	143	51.9	47.2-56.7	25.5	16.2-34.8	22.5	14.1-31.0
55-64	57	52.0	30.5-73.5	22.7	7.0-38.3	25.3	7.3-43.4
15-64	**537**	**54.8**	**44.5-65.1**	**23.6**	**19.1-28.0**	**21.7**	**13.8-29.5**
25-64	**478**	**53.7**	**47.2-60.3**	**22.6**	**18.4-26.9**	**23.6**	**16.8-30.5**

Level of total physical activity							
Age Group (years)	Both Sexes						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
15-24	106	44.0	29.2-58.7	22.1	15.6-28.7	33.9	23.0-44.8
25-34	197	40.7	33.4-47.9	20.1	13.0-27.2	39.2	30.9-47.5
35-44	280	47.3	38.2-56.3	20.0	14.5-25.4	32.8	21.7-43.9
45-54	213	45.6	40.1-51.1	22.8	15.4-30.2	31.6	22.9-40.2
55-64	124	42.6	29.0-56.2	19.8	10.7-29.0	37.6	28.9-46.2
15-64	**920**	**43.9**	**36.5-51.3**	**21.1**	**17.2-25.1**	**34.9**	**28.4-41.5**
25-64	**814**	**43.9**	**38.0-49.8**	**20.6**	**17.3-23.8**	**35.5**	**28.5-42.5**

Total physical activity-mean

Description: Mean minutes of total physical activity on average per day.

Instrument questions
- activity at work
- travel to and from places
- recreational activities

Mean minutes of total physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	159.9	100.3-219.4	59	73.3	34.3-112.2	106	116.1	83.0-149.2
25-34	92	231.2	177.0-285.4	105	87.5	73.0-102.0	197	156.7	125.5-187.9
35-44	107	160.7	98.7-222.6	173	96.6	82.7-110.5	280	127.6	97.3-157.9
45-54	70	165.4	128.7-202.0	143	95.7	70.3-121.1	213	128.0	110.2-145.7
55-64	67	178.6	147.4-209.9	57	84.5	45.3-123.6	124	131.9	109.7-154.2
15-64	**383**	**178.9**	**156.0-201.7**	**537**	**85.3**	**69.6-101.0**	**920**	**130.7**	**114.8-146.7**
25-64	**336**	**189.2**	**152.6-225.8**	**478**	**91.5**	**80.2-102.8**	**814**	**138.6**	**118.4-158.7**

Total physical activity-median

Description: Median minutes of total physical activity on average per day.

Instrument questions
- activity at work
- travel to and from places
- recreational activities

Median minutes of total physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)
15-24	47	90.0	25.7-240.0	59	17.1	2.9-68.6	106	51.4	4.3-150.0
25-34	92	205.7	25.7-377.1	105	25.7	0.0-120.0	197	85.7	0.0-257.1
35-44	107	85.7	4.3-257.1	173	30.0	0.0-128.6	280	51.4	2.9-195.0
45-54	70	98.6	15.0-300.0	143	38.6	0.0-124.3	213	51.4	2.9-217.1
55-64	67	173.6	19.3-308.6	57	51.4	6.4-137.1	124	60.0	8.6-222.9
15-64	**383**	**117.1**	**15.0-308.6**	**537**	**30.0**	**0.0-111.4**	**920**	**51.4**	**2.9-214.3**
25-64	**336**	**137.1**	**12.9-317.1**	**478**	**31.4**	**0.0-128.6**	**814**	**60.0**	**2.9-222.9**

Domain-specific physical activity-mean

Description: Mean minutes spent in work-, transport- and recreation-related physical activity on average per day.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Mean minutes of work-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	77.2	38.8-115.5	59	44.2	16.1-72.3	106	60.5	37.3-83.7
25-34	92	146.2	102.0-190.4	105	62.6	47.3-77.8	197	102.8	79.5-126.1
35-44	107	112.7	66.6-158.7	173	55.5	39.1-71.8	280	83.1	64.6-101.6
45-54	70	115.9	78.1-153.8	143	62.8	42.3-83.4	213	87.4	69.0-105.8
55-64	67	135.5	104.9-166.1	57	50.4	19.2-81.6	124	93.3	70.6-116.0
15-64	**383**	**110.4**	**93.3-127.6**	**537**	**53.8**	**42.8-64.9**	**920**	**81.3**	**70.3-92.4**
25-64	**336**	**128.6**	**102.0-155.3**	**478**	**58.8**	**46.9-70.7**	**814**	**92.4**	**79.5-105.4**

Mean minutes of transport-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15-24	47	44.5	29.9-59.1	59	23.2	11.9-34.5	106	33.7	26.6-40.8
25-34	92	58.6	41.4-75.7	105	20.8	12.0-29.6	197	39.0	25.5-52.5
35-44	107	30.0	19.3-40.7	173	32.9	20.9-44.9	280	31.5	21.8-41.2
45-54	70	43.3	22.8-63.8	143	21.9	14.4-29.3	213	31.8	19.4-44.1
55-64	67	26.0	14.2-37.8	57	32.5	15.0-49.9	124	29.2	20.6-37.8
15-64	**383**	**43.0**	**37.3-48.6**	**537**	**25.2**	**19.5-30.9**	**920**	**33.8**	**30.1-37.6**
25-64	**336**	**42.1**	**34.7-49.5**	**478**	**26.2**	**20.0-32.5**	**814**	**33.9**	**28.1-39.6**

Mean minutes of recreation-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	**n**	**Mean minutes**	**95% CI**
15-24	47	38.2	20.0-56.3	59	5.9	0.0-11.9	106	21.8	11.3-32.3
25-34	92	26.4	8.7-44.1	105	4.1	1.9-6.3	197	14.9	6.1-23.6
35-44	107	18.0	1.9-34.1	173	8.3	1.2-15.4	280	13.0	2.0-23.9
45-54	70	6.2	0.0-12.8	143	11.0	3.4-18.7	213	8.8	4.9-12.7
55-64	67	17.2	2.3-32.0	57	1.6	0.0-4.1	124	9.4	3.4-15.4
15-64	**383**	**25.5**	**17.9-33.0**	**537**	**6.3**	**3.9-8.6**	**920**	**15.6**	**10.8-20.4**
25-64	**336**	**18.5**	**9.5-27.5**	**478**	**6.5**	**4.0-8.9**	**814**	**12.3**	**7.2-17.3**

Domain-specific physical activity - median

Description: Median minutes spent on average per day in work-, transport- and recreation-related physical activity.
Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Median minutes of work-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)
15-24	47	0.0	0.0-102.9	59	0.0	0.0-4.3	106	0.0	0.0-60.0
25-34	92	60.0	0.0-308.6	105	0.0	0.0-102.9	197	0.0	0.0-192.9
35-44	107	0.0	0.0-205.7	173	0.0	0.0-0.0	280	0.0	0.0-128.6
45-54	70	0.0	0.0-257.1	143	0.0	0.0-60.0	213	0.0	0.0-145.7
55-64	67	25.7	0.0-300.0	57	0.0	0.0-77.1	124	0.0	0.0-171.4
15-64	**383**	**0.0**	**0.0-214.3**	**537**	**0.0**	**0.0-51.4**	**920**	**0.0**	**0.0-128.6**
25-64	**336**	**0.0**	**0.0-257.1**	**478**	**0.0**	**0.0-68.6**	**814**	**0.0**	**0.0-171.4**

Median minutes of transport-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)
15-24	47	25.7	0.0-85.7	59	8.6	0.0-42.9	106	12.9	0.0-51.4
25-34	92	22.9	0.0-102.9	105	6.4	0.0-17.1	197	8.6	0.0-60.0
35-44	107	2.9	0.0-30.0	173	12.9	0.0-34.3	280	8.6	0.0-30.0
45-54	70	15.0	0.0-51.4	143	2.9	0.0-34.3	213	8.6	0.0-42.9
55-64	67	5.7	0.0-25.7	57	15.0	0.0-51.4	124	8.6	0.0-38.6
15-64	**383**	**15.0**	**0.0-60.0**	**537**	**8.6**	**0.0-34.3**	**920**	**8.6**	**0.0-51.4**
25-64	**336**	**10.0**	**0.0-51.4**	**478**	**8.6**	**0.0-30.0**	**814**	**8.6**	**0.0-42.9**

Median minutes of recreation-related physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)
15-24	47	0.0	0.0-51.4	59	0.0	0.0-0.0	106	0.0	0.0-0.0
25-34	92	0.0	0.0-25.7	105	0.0	0.0-0.0	197	0.0	0.0-0.0
35-44	107	0.0	0.0-0.0	173	0.0	0.0-0.0	280	0.0	0.0-0.0
45-54	70	0.0	0.0-0.0	143	0.0	0.0-0.0	213	0.0	0.0-0.0
55-64	67	0.0	0.0-0.0	57	0.0	0.0-0.0	124	0.0	0.0-0.0
15-64	**383**	**0.0**	**0.0-17.1**	**537**	**0.0**	**0.0-0.0**	**920**	**0.0**	**0.0-0.0**
25-64	**336**	**0.0**	**0.0-0.0**	**478**	**0.0**	**0.0-0.0**	**814**	**0.0**	**0.0-0.0**

No physical activity by domain

Description: Percentage of respondents classified as doing no work-, transport- or recreational-related physical activity.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

No work-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at work	95% CI	n	% no activity at work	95% CI	n	% no activity at work	95% CI
15-24	47	63.6	52.2-75.0	59	73.6	61.5-85.8	106	68.7	59.1-78.3
25-34	92	49.7	38.3-61.0	105	69.3	61.3-77.4	197	59.9	52.9-66.8
35-44	107	55.7	44.5-66.9	173	75.6	69.8-81.4	280	66.0	60.5-71.4
45-54	70	54.9	44.2-65.7	143	67.9	62.5-73.3	213	61.9	57.1-66.7
55-64	67	49.7	41.2-58.2	57	63.2	42.4-84.1	124	56.4	43.9-68.9
15-64	**383**	**56.4**	**51.1-61.8**	**537**	**71.2**	**65.6-76.9**	**920**	**64.0**	**59.2-68.9**
25-64	**336**	**52.5**	**45.7-59.3**	**478**	**70.0**	**65.7-74.4**	**814**	**61.6**	**57.1-66.1**

No transport-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity for transport	95% CI	n	% no activity for transport	95% CI	n	% no activity for transport	95% CI
15-24	47	38.2	16.4-59.9	59	36.8	20.6-52.9	106	37.5	26.5-48.4
25-34	92	36.0	23.7-48.3	105	47.1	36.8-57.4	197	41.8	35.7-47.9
35-44	107	47.3	37.4-57.2	173	37.6	27.3-47.9	280	42.3	32.4-52.1
45-54	70	33.5	19.0-48.1	143	47.8	33.3-62.3	213	41.2	30.6-51.8
55-64	67	47.8	36.6-59.1	57	39.1	24.7-53.6	124	43.5	36.5-50.6
15-64	**383**	**39.8**	**29.9-49.6**	**537**	**41.1**	**36.1-46.1**	**920**	**40.5**	**36.1-44.8**
25-64	**336**	**40.7**	**33.7-47.7**	**478**	**43.4**	**35.5-51.2**	**814**	**42.1**	**36.4-47.7**

No recreation-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI
15-24	47	61.7	42.6-80.8	59	88.2	80.5-95.8	106	75.1	64.0-86.2
25-34	92	70.7	59.0-82.4	105	89.2	83.5-95.0	197	80.3	73.4-87.2
35-44	107	86.1	78.0-94.1	173	90.4	84.4-96.3	280	88.3	82.2-94.4
45-54	70	88.7	80.8-96.7	143	90.1	86.4-93.7	213	89.4	86.1-92.8
55-64	67	87.5	75.6-99.4	57	94.4	86.6-100.0	124	90.9	85.4-96.5
15-64	**383**	**74.4**	**67.4-81.5**	**537**	**89.7**	**85.7-93.7**	**920**	**82.3**	**77.4-87.2**
25-64	**336**	**81.4**	**74.5-88.3**	**478**	**90.5**	**87.2-93.8**	**814**	**86.1**	**81.5-90.7**

Composition of total physical activity

Description: Percentage of work, transport and recreational activity contributing to total activity.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Composition of total physical activity							
	Men						
Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
15-24	38	29.9	21.5-38.2	44.9	37.0-52.9	25.2	17.1-33.3
25-34	78	46.3	36.2-56.4	41.0	32.1-49.8	12.8	3.2-22.3
35-44	90	47.9	38.6-57.1	41.4	31.6-51.2	10.7	4.6-16.8
45-54	60	45.0	31.2-58.8	49.2	34.2-64.3	5.8	0.0-11.6
55-64	55	54.9	45.8-63.9	33.3	19.1-47.5	11.8	0.5-23.2
15-64	**321**	**41.7**	**36.5-47.0**	**42.7**	**38.2-47.3**	**15.5**	**12.7-18.4**
25-64	**283**	**47.8**	**41.0-54.6**	**41.6**	**34.9-48.3**	**10.6**	**6.2-15.0**

Composition of total physical activity							
	Women						
Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
15-24	45	27.2	14.4-40.0	63.9	46.4-81.4	8.9	1.3-16.5
25-34	67	40.1	30.8-49.4	48.7	37.5-59.9	11.2	4.1-18.3
35-44	129	28.2	20.6-35.9	61.9	54.5-69.3	9.9	3.3-16.5
45-54	98	36.9	29.4-44.4	51.7	41.6-61.7	11.4	5.2-17.6
55-64	47	38.7	18.9-58.5	57.1	35.6-78.7	4.2	0.0-10.4
15-64	**386**	**32.5**	**26.7-38.3**	**58.1**	**51.8-64.4**	**9.4**	**6.4-12.5**
25-64	**341**	**35.6**	**30.4-40.7**	**54.7**	**49.4-60.0**	**9.7**	**6.1-13.3**

Composition of total physical activity							
	Both Sexes						
Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
15-24	83	28.5	19.6-37.4	54.6	43.8-65.5	16.9	10.1-23.7
25-34	145	43.4	35.5-51.4	44.5	35.3-53.7	12.1	6.2-17.9
35-44	219	38.2	31.4-45.0	51.5	44.1-58.9	10.3	5.1-15.5
45-54	158	41.1	32.9-49.3	50.4	41.3-59.5	8.5	5.4-11.5
55-64	102	46.9	35.4-58.5	45.0	35.1-54.8	8.1	2.8-13.4
15-64	**707**	**37.2**	**33.0-41.4**	**50.2**	**45.7-54.8**	**12.5**	**10.2-14.9**
25-64	**624**	**42.0**	**37.4-46.6**	**47.9**	**42.2-53.5**	**10.2**	**7.1-13.3**

No vigorous physical activity

Description: Percentage of respondents not engaging in vigorous physical activity.

Instrument questions:

- activity at work
- recreational activities

No vigorous physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI
15-24	47	55.3	42.2-68.5	59	90.9	83.4-98.5	106	73.3	65.2-81.5
25-34	92	50.8	36.4-65.2	105	94.5	88.9-100.0	197	73.5	63.4-83.5
35-44	107	62.6	45.5-79.7	173	92.8	88.7-97.0	280	78.2	69.2-87.2
45-54	70	66.4	55.2-77.5	143	90.4	85.9-94.9	213	79.3	73.8-84.7
55-64	67	55.1	42.8-67.4	57	88.9	78.6-99.1	124	71.8	64.7-79.0
15-64	**383**	**57.1**	**50.7-63.5**	**537**	**91.8**	**86.9-96.7**	**920**	**75.0**	**69.5-80.4**
25-64	**336**	**58.1**	**49.1-67.0**	**478**	**92.3**	**88.0-96.7**	**814**	**75.8**	**69.8-81.9**

Sedentary Description: Minutes spent in sedentary activities on a typical day.

Instrument question:

- sedentary behaviour

Minutes spent in sedentary activities on average per day					
	Men				
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Interquartile range (P25-P75)
15-24	48	316.7	251.0-382.3	240.0	120.0-360.0
25-34	93	228.8	174.2-283.5	180.0	120.0-240.0
35-44	115	250.5	177.2-323.8	120.0	120.0-300.0
45-54	73	261.3	206.6-316.1	180.0	120.0-240.0
55-64	67	236.2	175.9-296.6	150.0	120.0-240.0
15-64	**396**	**269.2**	**219.7-318.6**	**180.0**	**120.0-300.0**
25-64	**348**	**243.0**	**200.7-285.3**	**180.0**	**120.0-240.0**

Minutes spent in sedentary activities on average per day					
	Women				
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Interquartile range (P25-P75)
15-24	60	248.4	188.2-308.7	180.0	120.0-300.0
25-34	107	179.1	145.0-213.1	120.0	120.0-180.0
35-44	176	194.3	171.7-216.9	120.0	120.0-240.0
45-54	141	189.1	171.5-206.8	120.0	120.0-240.0
55-64	60	198.2	141.6-254.8	120.0	120.0-240.0
15-64	**544**	**208.7**	**176.7-240.8**	**180.0**	**120.0-240.0**
25-64	**484**	**188.4**	**167.7-209.1**	**120.0**	**120.0-240.0**

Minutes spent in sedentary activities on average per day					
	Both Sexes				
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Interquartile range (P25-P75)
15-24	108	282.8	229.9-335.6	180.0	120.0-360.0
25-34	200	203.0	166.8-239.2	120.0	120.0-240.0
35-44	291	222.3	185.1-259.4	120.0	120.0-240.0
45-54	214	223.2	195.3-251.2	180.0	120.0-240.0
55-64	127	216.8	184.6-249.0	120.0	120.0-240.0
15-64	**940**	**238.4**	**202.6-274.3**	**180.0**	**120.0-240.0**
25-64	**832**	**214.9**	**186.2-243.6**	**120.0**	**120.0-240.0**

Health History

Blood pressure diagnosis and treatment

Description: Raised blood pressure diagnosis among all respondents and treatment among those diagnosed with raised blood pressure.
Instrument questions:

- During the past 12 months have you been told by a doctor or other health worker that you have elevated blood pressure or hypertension?
- Are you currently receiving any of the following treatments for high blood pressure prescribed by a doctor or other health worker?: Drugs (medication) that you have taken in the last 2 weeks?
- Are you currently taking any herbal or traditional remedy for your high blood pressure?

Raised blood pressure diagnosed by doctor or health worker in last 12 months

Age Group (years)	Men			Women			Both Sexes		
	n	% diagnosed	95% CI	n	% diagnosed	95% CI	n	% diagnosed	95% CI
15-24	49	2.6	0.0-7.3	58	5.0	0.0-13.8	107	3.7	0.0-10.3
25-34	97	1.2	0.0-3.8	108	2.3	0.0-7.5	205	1.8	0.0-4.6
35-44	116	8.5	0.0-17.4	179	7.8	3.1-12.5	295	8.2	3.3-13.0
45-54	74	6.5	1.5-11.4	146	7.5	2.3-12.8	220	7.0	3.6-10.5
55-64	66	5.2	0.0-10.5	61	7.0	0.0-16.5	127	6.2	1.0-11.3
15-64	**402**	**4.2**	**1.5-6.9**	**552**	**5.5**	**0.7-10.2**	**954**	**4.8**	**1.5-8.2**
25-64	**353**	**5.1**	**1.8-8.4**	**494**	**5.7**	**2.5-8.9**	**847**	**5.4**	**2.8-8.0**

Currently taking blood pressure drugs prescribed by doctor or health worker

Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
15-24	1	0.0	0.0-0.0	3	14.9	0.0-44.8	4	9.6	0.0-36.9
25-34	1	0.0	0.0-0.0	2	0.0	0.0-0.0	3	0.0	0.0-0.0
35-44	9	39.3	18.0-60.6	14	29.8	0.0-64.1	23	34.7	10.8-58.6
45-54	5	77.1	27.8-100.0	12	79.3	49.0-100.0	17	78.4	56.3-100.0
55-64	4	64.0	4.3-100.0	5	100.0	100.0-100.0	9	85.3	50.2-100.0
15-64	**20**	**38.5**	**8.6-68.4**	**36**	**41.0**	**0.0-90.1**	**56**	**39.9**	**2.3-77.5**
25-64	**19**	**49.2**	**25.5-72.9**	**33**	**51.9**	**11.2-92.6**	**52**	**50.7**	**24.4-76.9**

Currently taking herbal or traditional remedy for high blood pressure

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	1	0.0	0.0-0.0	2	0.0	0.0-0.0	3	0.0	0.0-0.0
25-34	1	0.0	0.0-0.0	2	0.0	0.0-0.0	3	0.0	0.0-0.0
35-44	7	0.0	0.0-0.0	10	12.5	0.0-29.6	17	6.0	0.0-16.2
45-54	5	0.0	0.0-0.0	11	0.0	0.0-0.0	16	0.0	0.0-0.0
55-64	4	38.7	0.0-100.0	5	10.1	0.0-29.0	9	21.7	0.0-56.6
15-64	**18**	**5.0**	**0.0-13.4**	**30**	**4.5**	**0.0-11.0**	**48**	**4.7**	**0.0-11.2**
25-64	**17**	**6.5**	**0.0-17.4**	**28**	**6.3**	**0.0-13.6**	**45**	**6.4**	**0.0-14.1**

Family history of diabetes

Description: Percentage of respondents who have a family member who has/had diabetes.

Instrument question:

- Do or did any of the following members of your family have diabetes - your father, mother, brothers, sisters or children?

Family member who has / had diabetes									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	30.9	14.7-47.2	60	37.4	28.1-46.7	109	34.1	22.6-45.7
25-34	97	26.6	15.9-37.2	107	42.2	32.0-52.5	204	34.5	29.5-39.5
35-44	116	41.0	28.3-53.8	179	34.9	28.6-41.1	295	37.9	32.0-43.9
45-54	75	13.1	7.5-18.8	146	24.5	16.7-32.4	221	19.1	15.4-22.8
55-64	67	16.6	6.0-27.2	61	30.7	15.5-45.8	128	23.8	15.9-31.7
15-64	**404**	**28.3**	**19.8-36.7**	**553**	**35.6**	**31.7-39.4**	**957**	**32.0**	**26.7-37.2**
25-64	**355**	**26.8**	**20.1-33.5**	**493**	**34.6**	**30.3-39.0**	**848**	**30.8**	**26.6-35.0**

Heart attack history

Description: Percentage of respondents who have had a heart attack.

Instrument question:

- Have you ever had a heart attack?

Percentage of respondents who have had a heart attack									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	48	0.0	0.0-0.0	59	0.0	0.0-0.0	107	0.0	0.0-0.0
25-34	97	0.0	0.0-0.0	108	2.2	0.0-5.5	205	1.1	0.0-2.8
35-44	116	1.0	0.0-2.9	176	2.4	0.0-5.3	292	1.7	0.0-3.6
45-54	74	3.0	0.0-9.4	146	0.0	0.0-0.0	220	1.4	0.0-4.5
55-64	67	0.0	0.0-0.0	61	0.0	0.0-0.0	128	0.0	0.0-0.0
15-64	**402**	**0.6**	**0.0-1.4**	**550**	**1.0**	**0.0-2.1**	**952**	**0.8**	**0.0-1.7**
25-64	**354**	**0.9**	**0.0-2.2**	**491**	**1.5**	**0.0-3.2**	**845**	**1.2**	**0.0-2.6**

Traditional medicine

Description: Percentage of respondents who are currently taking any traditional medicines.

Instrument question:

- Are you currently taking any traditional medicines?

Percentage of respondents currently taking traditional medicine									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	32.8	20.9-44.7	60	47.3	36.0-58.6	109	40.0	32.8-47.2
25-34	97	54.9	42.1-67.6	108	57.9	51.0-64.7	205	56.4	48.7-64.0
35-44	116	62.1	48.6-75.5	179	75.7	66.0-85.4	295	68.9	61.7-76.1
45-54	75	70.0	57.6-82.4	146	76.7	70.1-83.4	221	73.5	66.6-80.4
55-64	67	80.0	65.9-94.2	59	79.7	69.5-90.0	126	79.9	71.7-88.1
15-64	**404**	**52.8**	**46.3-59.4**	**552**	**62.5**	**56.0-69.0**	**956**	**57.7**	**52.1-63.3**
25-64	**355**	**63.7**	**56.0-71.4**	**492**	**70.2**	**65.6-74.8**	**847**	**67.0**	**61.7-72.4**

Nonu

Description: Percentage of respondents who are taking nonu, among those respondents who are currently taking traditional medicine.

Instrument question:

- Are you currently taking any traditional medicines?
- Are you taking nonu?

Among respondents currently taking traditional medicine, the percentage using nonu									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	15	29.4	0.4-58.5	30	37.0	15.7-58.3	45	33.9	13.5-54.3
25-34	54	19.5	7.5-31.5	66	24.6	12.8-36.4	120	22.2	15.6-28.7
35-44	73	33.4	19.3-47.4	135	29.9	23.3-36.5	208	31.5	24.4-38.5
45-54	50	43.4	26.5-60.2	113	36.2	30.8-41.6	163	39.3	31.6-47.1
55-64	51	43.5	26.1-60.9	47	49.9	37.5-62.4	98	46.8	35.0-58.6
15-64	**243**	**32.3**	**24.3-40.2**	**391**	**34.0**	**24.1-44.0**	**634**	**33.2**	**26.8-39.7**
25-64	**228**	**33.1**	**24.0-42.2**	**361**	**33.0**	**25.7-40.4**	**589**	**33.0**	**27.6-38.5**

Physical Measurements

Height, weight and BMI

Description: Mean height, weight, and body mass index among all respondent (excluding pregnant women for weight and BMI).

Instrument questions:

- Height
- Weight

Mean height (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15-24	49	178.4	176.6-180.2	60	168.3	167.3-169.4
25-34	97	176.4	174.1-178.7	107	165.8	164.0-167.5
35-44	116	177.0	176.2-177.8	179	165.4	164.0-166.8
45-54	75	175.4	174.2-176.6	146	165.7	164.6-166.8
55-64	67	173.3	172.0-174.5	61	162.6	160.9-164.4
15-64	**404**	**176.8**	**175.9-177.7**	**553**	**166.2**	**165.6-166.9**
25-64	**355**	**175.9**	**174.9-176.9**	**493**	**165.2**	**164.4-166.0**

Mean weight (kg)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15-24	49	84.9	78.4-91.5	60	86.5	81.3-91.6
25-34	97	96.2	91.7-100.7	108	94.5	90.6-98.4
35-44	116	106.6	100.8-112.4	178	98.7	95.8-101.6
45-54	75	94.8	91.1-98.5	146	98.1	94.9-101.2
55-64	67	93.0	88.1-97.9	61	88.2	83.4-93.0
15-64	**404**	**93.8**	**89.8-97.8**	**553**	**92.5**	**90.3-94.7**
25-64	**355**	**98.6**	**95.1-102.1**	**493**	**95.5**	**93.9-97.2**

Mean BMI (kg/m^2)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	26.6	24.7-28.5	60	30.5	28.8-32.1	109	28.5	27.0-30.0
25-34	96	30.5	29.4-31.5	106	34.2	33.0-35.4	202	32.4	31.4-33.3
35-44	116	34.0	32.3-35.7	177	36.0	34.9-37.0	293	35.0	34.1-35.8
45-54	75	30.7	29.4-32.1	146	35.7	34.5-37.0	221	33.4	32.4-34.4
55-64	67	30.9	29.3-32.5	61	33.4	31.9-34.8	128	32.2	31.1-33.3
15-64	**403**	**29.9**	**28.6-31.1**	**550**	**33.4**	**32.6-34.2**	**953**	**31.7**	**30.7-32.7**
25-64	**354**	**31.7**	**30.6-32.8**	**490**	**34.9**	**34.3-35.5**	**844**	**33.3**	**32.7-34.0**

Waist circumference

Description: Mean waist circumference among all respondents (excluding pregnant women).

Instrument question:

- Waist circumference measurement

Waist circumference (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15-24	49	86.4	81.6-91.2	60	90.8	87.7-94.0
25-34	97	98.2	95.6-100.8	108	101.7	97.8-105.5
35-44	116	109.6	105.4-113.9	179	105.8	101.6-109.9
45-54	75	102.5	98.6-106.3	146	108.2	105.1-111.2
55-64	67	104.6	100.9-108.4	61	108.4	101.7-115.1
15-64	**404**	**97.4**	**93.8-101.1**	**554**	**100.4**	**98.2-102.6**
25-64	**355**	**103.4**	**100.2-106.7**	**494**	**105.2**	**103.2-107.3**

Hip circumference

Description: Mean hip circumference among all respondents (excluding pregnant women).

Instrument question:

- Hip circumference measurement

Hip circumference (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15-24	49	103.2	96.5-109.9	60	110.5	103.9-117.1
25-34	97	109.6	105.3-113.8	108	117.6	114.9-120.3
35-44	116	114.2	111.0-117.5	178	121.3	118.3-124.2
45-54	75	109.3	106.6-111.9	146	121.0	118.3-123.7
55-64	67	110.6	106.7-114.5	61	119.0	115.7-122.3
15-64	**404**	**108.3**	**103.8-112.8**	**553**	**116.5**	**113.7-119.4**
25-64	**355**	**111.1**	**107.9-114.3**	**493**	**119.6**	**118.3-120.9**

Waist / hip ratio

Description: Mean waist-to-hip ratio among all respondents (excluding pregnant women).

Instrument question:

- Waist and hip circumference measurement

Mean waist / hip ratio						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15-24	49	0.8	0.8-0.9	60	0.8	0.8-0.9
25-34	97	0.9	0.9-0.9	108	0.9	0.8-0.9
35-44	116	1.0	0.9-1.0	178	0.9	0.9-0.9
45-54	75	0.9	0.9-1.0	146	0.9	0.9-0.9
55-64	67	0.9	0.9-1.0	61	0.9	0.8-1.0
15-64	**404**	**0.9**	**0.9-0.9**	**553**	**0.9**	**0.9-0.9**
25-64	**355**	**0.9**	**0.9-0.9**	**493**	**0.9**	**0.9-0.9**

Blood pressure

Description: Mean blood pressure among all respondents, excluding those currently on medication for raised blood pressure.

Instrument question:

- During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?
- Reading 1-3 systolic and diastolic blood pressure

Mean systolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	123.2	120.9-125.6	60	115.1	112.8-117.4	109	119.2	117.7-120.7
25-34	97	127.5	123.2-131.8	108	115.8	113.0-118.6	205	121.5	118.7-124.3
35-44	116	130.0	126.3-133.8	179	122.2	117.9-126.5	295	126.1	122.5-129.7
45-54	75	127.8	125.6-130.1	146	127.3	124.5-130.1	221	127.5	125.6-129.5
55-64	67	134.8	126.2-143.3	61	133.6	129.1-138.0	128	134.2	129.1-139.2
15-64	**404**	**127.2**	**125.1-129.4**	**554**	**120.1**	**118.7-121.5**	**958**	**123.6**	**122.2-125.1**
25-64	**355**	**129.4**	**126.7-132.1**	**494**	**122.7**	**120.9-124.5**	**849**	**125.9**	**124.0-127.9**

Mean diastolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	66.7	64.5-68.9	60	70.5	68.3-72.8	109	68.6	67.5-69.7
25-34	97	72.2	69.5-74.9	108	70.7	68.7-72.7	205	71.4	69.7-73.1
35-44	116	78.4	75.6-81.2	179	75.9	72.9-78.9	295	77.1	74.6-79.7
45-54	74	78.5	76.1-80.9	146	76.7	73.8-79.6	220	77.6	75.8-79.4
55-64	67	79.8	74.7-84.9	61	76.6	73.7-79.5	128	78.2	74.5-81.8
15-64	**403**	**73.0**	**71.3-74.7**	**554**	**73.1**	**71.4-74.7**	**957**	**73.0**	**71.9-74.2**
25-64	**354**	**76.4**	**74.2-78.7**	**494**	**74.3**	**72.5-76.2**	**848**	**75.4**	**73.7-77.0**

Raised blood pressure

Description: Percentage of respondents with raised blood pressure and percentage on medication for raised blood pressure.

Instrument question:

- During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?
- Reading 1-3 systolic and diastolic blood pressure

SBP ≥140 and/or DBP ≥ 90 mmHg									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	12.4	7.5-17.2	59	3.8	0.0-10.2	108	8.2	4.3-12.0
25-34	97	19.8	8.6-31.1	108	6.1	0.0-12.4	205	12.8	6.5-19.1
35-44	112	31.1	19.7-42.4	174	17.0	7.7-26.2	286	23.9	15.6-32.2
45-54	70	13.4	7.9-18.8	136	27.9	20.0-35.8	206	21.0	14.7-27.3
55-64	64	38.6	19.6-57.5	56	31.4	17.2-45.5	120	34.9	24.1-45.7
15-64	**392**	**20.3**	**14.3-26.2**	**533**	**12.7**	**10.7-14.7**	**925**	**16.4**	**13.3-19.6**
25-64	**343**	**24.7**	**17.4-31.9**	**474**	**17.3**	**13.3-21.3**	**817**	**20.9**	**15.9-25.9**

SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	12.4	7.5-17.2	60	4.5	0.0-11.2	109	8.5	4.5-12.5
25-34	97	19.8	8.6-31.1	108	6.1	0.0-12.4	205	12.8	6.5-19.1
35-44	116	33.4	20.4-46.3	179	19.3	8.1-30.5	295	26.3	16.8-35.8
45-54	74	17.7	10.7-24.6	146	32.2	25.0-39.5	220	25.4	20.0-30.7
55-64	67	40.6	21.9-59.3	61	36.2	24.5-47.9	128	38.3	27.1-49.6
15-64	**403**	**21.5**	**15.2-27.9**	**554**	**14.7**	**12.3-17.2**	**957**	**18.1**	**14.5-21.7**
25-64	**354**	**26.5**	**19.2-33.8**	**494**	**19.9**	**16.1-23.7**	**848**	**23.1**	**18.1-28.1**

Currently on medication for raised blood pressure									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	0.0	0.0-0.0	60	0.7	0.0-2.2	109	0.4	0.0-1.1
25-34	97	0.0	0.0-0.0	108	0.0	0.0-0.0	205	0.0	0.0-0.0
35-44	116	3.4	0.0-7.5	179	2.8	0.0-5.8	295	3.1	0.6-5.6
45-54	74	5.0	0.6-9.4	146	6.0	1.1-10.8	220	5.5	2.6-8.4
55-64	67	3.3	0.0-7.1	61	7.0	0.0-16.5	128	5.2	0.0-10.6
15-64	**403**	**1.6**	**0.1-3.1**	**554**	**2.3**	**0.5-4.1**	**957**	**2.0**	**0.6-3.4**
25-64	**354**	**2.5**	**0.5-4.5**	**494**	**3.1**	**1.0-5.2**	**848**	**2.8**	**1.0-4.6**

Raised blood pressure

Description: Percentage of respondents with raised blood pressure

Instrument question:

- During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?
- Reading 1-3 systolic and diastolic blood pressure

SBP ≥160 and/or DBP ≥ 100 mmHg									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	0.0	0.0-0.0	59	0.0	0.0-0.0	108	0.0	0.0-0.0
25-34	97	5.4	1.7-9.0	108	0.0	0.0-0.0	205	2.6	0.9-4.4
35-44	112	4.5	0.9-8.0	174	3.3	0.0-6.9	286	3.9	1.3-6.4
45-54	70	5.1	0.0-11.1	136	7.5	2.1-12.8	206	6.3	1.1-11.5
55-64	64	12.2	0.0-28.6	56	5.9	0.0-13.0	120	9.0	0.0-20.1
15-64	**392**	**3.9**	**1.5-6.2**	**533**	**2.2**	**0.9-3.5**	**925**	**3.0**	**1.3-4.7**
25-64	**343**	**6.0**	**2.2-9.9**	**474**	**3.3**	**1.3-5.3**	**817**	**4.6**	**1.9-7.4**

SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	0.0	0.0-0.0	60	0.7	0.0-2.2	109	0.4	0.0-1.1
25-34	97	5.4	1.7-9.0	108	0.0	0.0-0.0	205	2.6	0.9-4.4
35-44	116	7.7	1.1-14.3	179	6.0	0.1-11.9	295	6.8	2.4-11.3
45-54	74	9.8	3.2-16.5	146	13.0	6.4-19.5	220	11.5	6.8-16.1
55-64	67	15.1	0.0-31.9	61	12.5	4.7-20.4	128	13.8	2.9-24.7
15-64	**403**	**5.4**	**2.8-8.1**	**554**	**4.4**	**2.7-6.2**	**957**	**4.9**	**2.9-6.9**
25-64	**354**	**8.4**	**4.5-12.3**	**494**	**6.3**	**4.1-8.5**	**848**	**7.3**	**4.5-10.1**

Biochemical Measurements

Mean fasting blood glucose

Description: mean fasting blood glucose results (nn-fasting recipients excluded).

Instrument questions:

- Blood glucose measurement

Mean fasting blood glucose (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	32	5.2	4.9-5.5	41	4.9	4.6-5.2	73	5.1	4.8-5.3
25-34	55	5.0	4.8-5.1	56	5.1	4.7-5.4	111	5.0	4.8-5.2
35-44	61	6.1	5.2-6.9	100	5.7	5.2-6.1	161	5.9	5.3-6.5
45-54	45	5.7	4.8-6.6	65	6.3	5.8-6.9	110	6.0	5.4-6.6
55-64	46	7.0	5.8-8.2	25	6.0	4.5-7.5	71	6.6	5.8-7.4
15-64	**239**	**5.5**	**5.3-5.8**	**287**	**5.3**	**5.2-5.5**	**526**	**5.4**	**5.3-5.6**
25-64	**207**	**5.8**	**5.4-6.1**	**246**	**5.6**	**5.3-5.9**	**453**	**5.7**	**5.5-5.9**

Mean fasting blood glucose (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	32	94.1	88.6-99.5	41	88.6	83.4-93.8	73	91.4	86.8-96.1
25-34	55	89.6	86.6-92.5	56	91.0	83.8-98.1	111	90.3	86.8-93.7
35-44	61	109.5	93.9-125.1	100	102.1	93.8-110.5	161	105.7	95.0-116.4
45-54	45	102.5	85.7-119.3	65	114.0	103.7-124.4	110	107.7	97.0-118.4
55-64	46	126.2	103.8-148.5	25	108.5	81.4-135.6	71	119.3	105.0-133.6
15-64	**239**	**99.9**	**96.1-103.8**	**287**	**95.8**	**93.1-98.5**	**526**	**97.9**	**95.9-100.0**
25-64	**207**	**103.8**	**98.1-109.4**	**246**	**100.8**	**95.9-105.6**	**453**	**102.3**	**99.1-105.5**

Raised blood glucose

Description: Categorization of respondents into blood glucose level categories and percentage currently on medication for raised blood glucose (non-fasting recipients excluded).

Instrument questions:

- Blood glucose measurement

Impaired Fasting Glycaemia*									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	32	6.5	0.0-14.6	41	7.3	0.0-17.1	73	6.9	0.0-14.2
25-34	55	12.6	5.2-20.0	56	8.7	0.0-19.0	111	10.7	4.7-16.7
35-44	61	25.3	11.8-38.8	100	11.9	2.4-21.4	161	18.4	13.2-23.7
45-54	45	25.8	9.3-42.2	65	26.7	14.1-39.4	110	26.2	15.2-37.2
55-64	46	20.1	4.1-36.1	25	15.7	0.0-35.3	71	18.4	7.1-29.6
15-64	**239**	**14.6**	**10.0-19.3**	**287**	**11.2**	**6.4-15.9**	**526**	**13.0**	**9.2-16.8**
25-64	**207**	**20.0**	**15.3-24.8**	**246**	**13.8**	**9.5-18.1**	**453**	**17.1**	**13.8-20.4**

Raised blood glucose**									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	32	13.0	0.0-28.4	41	5.1	0.0-11.1	73	9.2	0.0-20.1
25-34	55	3.5	0.0-8.2	56	10.8	3.7-17.9	111	7.1	2.9-11.3
35-44	61	25.6	8.8-42.3	100	14.8	8.2-21.4	161	20.1	10.5-29.6
45-54	45	10.0	1.6-18.5	65	32.8	20.3-45.4	110	20.4	12.4-28.3
55-64	46	35.3	25.4-45.3	25	15.3	0.0-32.9	71	27.5	18.5-36.6
15-64	**239**	**15.0**	**9.1-20.9**	**287**	**11.9**	**8.6-15.3**	**526**	**13.5**	**9.4-17.6**
25-64	**207**	**16.3**	**8.6-24.0**	**246**	**16.6**	**11.5-21.6**	**453**	**16.4**	**11.0-21.9**

* Impaired fasting glycaemia is defined as either

- plasma venous value: ≥6.1mmol/L (110mg/dl) and <7.0mmol/L (126mg/dl)
- capillary whole blood value: ≥5.6mmol/L (100mg/dl) and <6.1mmol/L (110mg/dl)

** Raised blood glucose is defined as either

- plasma venous value: ≥ 7.0 mmol/L (126 mg/dl)
- capillary whole blood value: ≥ 6.1 mmol/L (110 mg/dl)

Total cholesterol

Description: Mean total cholesterol among all respondents.

Instrument question:

- Total cholesterol measurement

Mean total cholesterol (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	4.2	4.0-4.5	60	4.0	3.8-4.2	109	4.1	4.0-4.3
25-34	97	5.3	5.0-5.5	108	4.4	4.2-4.6	205	4.8	4.6-5.0
35-44	116	5.4	5.3-5.6	179	4.7	4.5-4.8	295	5.1	4.9-5.2
45-54	75	5.6	5.2-5.9	146	5.2	5.0-5.3	221	5.4	5.2-5.5
55-64	65	5.3	5.0-5.6	61	5.2	5.0-5.5	126	5.3	5.1-5.5
15-64	**402**	**5.0**	**4.8-5.2**	**554**	**4.5**	**4.5-4.6**	**956**	**4.7**	**4.6-4.9**
25-64	**353**	**5.4**	**5.3-5.5**	**494**	**4.8**	**4.7-4.9**	**847**	**5.1**	**5.0-5.2**

Mean total cholesterol (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	163.2	154.2-172.3	60	155.8	148.4-163.3	109	159.6	153.5-165.7
25-34	97	203.6	194.8-212.4	108	170.2	163.1-177.2	205	186.5	178.9-194.0
35-44	116	210.7	204.6-216.8	179	180.7	175.2-186.3	295	195.6	191.3-199.9
45-54	75	215.6	202.0-229.1	146	200.5	194.3-206.7	221	207.6	201.2-214.1
55-64	65	206.4	195.1-217.7	61	202.7	191.7-213.6	126	204.4	196.5-212.4
15-64	**402**	**192.6**	**184.9-200.2**	**554**	**174.8**	**172.3-177.4**	**956**	**183.6**	**179.5-187.6**
25-64	**353**	**208.6**	**204.8-212.3**	**494**	**184.4**	**181.1-187.7**	**847**	**196.1**	**192.8-199.5**

Raised total cholesterol

Description: Percentage of respondents with raised total cholesterol.

Instrument question:

- Total cholesterol measurement

Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	14.6	5.0-24.3	60	10.0	0.1-20.0	109	12.3	3.3-21.4
25-34	97	60.2	48.2-72.2	108	18.4	11.2-25.6	205	38.8	29.0-48.6
35-44	116	65.7	54.8-76.7	179	30.9	23.8-37.9	295	48.2	41.1-55.2
45-54	75	74.0	57.8-90.2	146	50.6	42.9-58.3	221	61.7	54.6-68.8
55-64	65	70.2	56.5-84.0	61	55.4	43.4-67.5	126	62.5	53.9-71.0
15-64	**402**	**47.9**	**40.9-55.0**	**554**	**26.1**	**20.1-32.2**	**956**	**36.9**	**31.5-42.2**
25-64	**353**	**66.1**	**61.0-71.1**	**494**	**34.2**	**28.3-40.1**	**847**	**49.7**	**44.5-54.9**

Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	49	0.9	0.0-2.8	60	0.7	0.0-2.2	109	0.8	0.0-2.5
25-34	97	20.0	10.1-29.8	108	3.2	0.0-7.3	205	11.4	5.4-17.3
35-44	116	23.0	17.9-28.1	179	3.9	0.9-7.0	295	13.4	10.0-16.8
45-54	75	22.3	12.7-32.0	146	16.2	7.4-25.0	221	19.1	11.6-26.6
55-64	65	15.1	1.7-28.6	61	16.3	5.2-27.4	126	15.7	5.3-26.2
15-64	**402**	**13.7**	**10.1-17.3**	**554**	**5.6**	**3.7-7.5**	**956**	**9.6**	**7.7-11.5**
25-64	**353**	**20.7**	**17.7-23.7**	**494**	**8.1**	**5.5-10.7**	**847**	**14.2**	**12.6-15.8**

High density lipoprotein (HDL)

Description: Mean HDL among all respondents and percentage of respondents with low HDL.

Instrument question:

- HDL cholesterol measurement

HDL (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	1.1	1.0-1.2	60	1.1	1.0-1.2	109	1.1	1.0-1.2
25-34	96	1.0	0.9-1.1	107	1.1	1.0-1.2	203	1.1	1.0-1.1
35-44	113	1.0	0.9-1.1	178	1.1	1.0-1.2	291	1.0	0.9-1.1
45-54	75	1.1	1.0-1.2	146	1.1	1.0-1.1	221	1.1	1.0-1.2
55-64	65	1.0	0.9-1.1	60	1.1	0.9-1.2	125	1.0	0.9-1.2
15-64	**398**	**1.0**	**1.0-1.1**	**551**	**1.1**	**1.0-1.1**	**949**	**1.1**	**1.0-1.1**
25-64	**349**	**1.0**	**0.9-1.1**	**491**	**1.1**	**1.0-1.2**	**840**	**1.1**	**1.0-1.1**

HDL (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	49	41.8	38.5-45.1	60	42.6	39.4-45.8	109	42.2	39.0-45.3
25-34	96	40.2	36.4-44.0	107	42.1	39.0-45.1	203	41.1	38.1-44.2
35-44	113	38.4	32.9-43.9	178	41.7	38.7-44.7	291	40.1	36.3-43.9
45-54	75	41.5	37.0-46.0	146	40.7	37.3-44.2	221	41.1	37.4-44.9
55-64	65	39.7	36.0-43.3	60	41.4	35.4-47.4	125	40.6	36.0-45.1
15-64	**398**	**40.5**	**37.3-43.7**	**551**	**41.9**	**39.5-44.3**	**949**	**41.2**	**38.6-43.9**
25-64	**349**	**39.8**	**36.0-43.7**	**491**	**41.6**	**38.6-44.6**	**840**	**40.7**	**37.6-43.9**

Percentage of those with HDL <1.03mmol/L or <40 mg/dl			
Age Group (years)	Men		
	n	%	95% CI
15-24	49	40.6	29.0-52.3
25-34	96	52.8	37.7-67.9
35-44	113	62.8	50.4-75.3
45-54	75	50.0	35.7-64.4
55-64	65	57.2	47.2-67.3
15-64	**398**	**50.5**	**43.4-57.5**
25-64	**349**	**55.9**	**45.8-65.9**

Percentage of those with HDL <1.29mmol/L or <50 mg/dl			
Age Group (years)	Women		
	n	%	95% CI
15-24	60	76.1	63.4-88.9
25-34	107	77.8	67.5-88.2
35-44	178	79.7	70.8-88.5
45-54	146	80.2	68.9-91.5
55-64	60	78.5	63.7-93.2
15-64	**551**	**78.0**	**70.9-85.1**
25-64	**491**	**79.0**	**71.1-86.8**

Triglycerides Description: Mean fasting triglycerides among all respondents and percentage of respondents with raised fasting triglycerides.
Instrument question:

- Triglyceride measurement

Triglycerides (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	31	1.1	0.8-1.4	41	1.1	0.9-1.3	72	1.1	0.9-1.3
25-34	55	1.5	1.2-1.8	56	1.3	1.1-1.4	111	1.4	1.2-1.5
35-44	61	2.1	1.5-2.7	99	1.4	1.2-1.6	160	1.7	1.4-2.1
45-54	45	1.6	1.2-2.0	65	1.5	1.3-1.7	110	1.5	1.2-1.8
55-64	47	1.9	1.5-2.4	25	1.7	1.4-2.0	72	1.8	1.5-2.2
15-64	**239**	**1.5**	**1.3-1.7**	**286**	**1.3**	**1.2-1.4**	**525**	**1.4**	**1.3-1.5**
25-64	**208**	**1.7**	**1.5-2.0**	**245**	**1.4**	**1.3-1.5**	**453**	**1.6**	**1.5-1.7**

Triglycerides (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15-24	31	98.4	69.2-127.6	41	96.3	81.0-111.7	72	97.4	81.0-113.8
25-34	55	132.2	108.9-155.4	56	110.8	99.6-122.0	111	121.6	107.5-135.7
35-44	61	184.0	130.0-238.1	99	126.8	108.3-145.4	160	154.9	126.1-183.8
45-54	45	138.2	102.9-173.6	65	131.5	113.2-149.8	110	135.2	108.9-161.5
55-64	47	171.6	131.0-212.3	25	147.0	119.7-174.3	72	162.2	131.8-192.5
15-64	**239**	**132.7**	**115.1-150.4**	**286**	**112.7**	**105.1-120.2**	**525**	**123.0**	**113.8-132.2**
25-64	**208**	**154.6**	**136.5-172.7**	**245**	**123.9**	**116.2-131.6**	**453**	**140.0**	**131.0-149.0**

Percentage of those with Triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	31	15.9	0.0-39.9	41	11.5	2.8-20.2	72	13.7	1.1-26.4
25-34	55	29.9	22.4-37.4	56	23.9	12.7-35.0	111	26.9	19.8-34.1
35-44	61	46.9	24.6-69.3	99	20.8	9.8-31.8	160	33.6	23.0-44.3
45-54	45	37.1	15.4-58.9	65	31.3	23.4-39.2	110	34.5	21.4-47.6
55-64	47	33.1	14.4-51.8	25	40.5	19.9-61.1	72	35.9	21.2-50.7
15-64	**239**	**28.6**	**13.3-43.9**	**286**	**20.2**	**15.6-24.8**	**525**	**24.5**	**16.9-32.2**
25-64	**208**	**36.7**	**25.9-47.4**	**245**	**26.1**	**21.1-31.2**	**453**	**31.7**	**26.2-37.1**

Percentage of those with Triglycerides ≥ 2.0 mmol/L or ≥ 180 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15-24	31	9.7	0.0-22.4	41	9.1	0.0-18.8	72	9.4	3.9-15.0
25-34	55	13.0	2.6-23.5	56	20.1	10.6-29.7	111	16.5	8.8-24.2
35-44	61	35.8	12.6-58.9	99	15.9	6.1-25.7	160	25.7	14.8-36.6
45-54	45	17.9	1.1-34.7	65	18.6	9.7-27.6	110	18.2	7.0-29.4
55-64	47	28.6	9.8-47.4	25	32.5	12.6-52.5	72	30.1	13.5-46.8
15-64	**239**	**17.8**	**7.7-27.9**	**286**	**15.5**	**10.6-20.4**	**525**	**16.7**	**12.2-21.2**
25-64	**208**	**23.0**	**12.8-33.2**	**245**	**19.9**	**15.7-24.2**	**453**	**21.5**	**16.4-26.7**

Raised Risk

Raised risk

Description: Percentage of respondents with 0, 1-2, or 3-5 of the following risk factors:

- current daily smoker
- less than 5 servings of fruits & vegetables per day
- low level of activity (<600 MET -minutes)
- overweight or obese (BMI ≥ 25 kg/m^2)
- raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP).

Instrument question: combined from Step 1 and Step 2

Summary of Combined Risk Factors							
	Men						
Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	197	0.0	0.0-0.0	42.1	32.7-51.6	57.9	48.4-67.3
45-64	134	0.0	0.0-0.0	34.6	26.2-43.1	65.4	56.9-73.8
25-64	**331**	**0.0**	**0.0-0.0**	**39.5**	**32.6-46.4**	**60.5**	**53.6-67.4**

Summary of Combined Risk Factors							
	Women						
Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	272	0.0	0.0-0.0	41.7	35.4-48.0	58.3	52.0-64.6
45-64	200	0.5	0.0-1.5	34.1	26.5-41.7	65.4	57.9-72.9
25-64	**472**	**0.2**	**0.0-0.5**	**39.0**	**35.0-43.0**	**60.8**	**56.8-64.9**

Summary of Combined Risk Factors							
	Both Sexes						
Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44	469	0.0	0.0-0.0	41.9	36.2-47.7	58.1	52.3-63.8
45-64	334	0.2	0.0-0.8	34.4	27.8-41.0	65.4	58.8-72.0
25-64	**803**	**0.1**	**0.0-0.3**	**39.2**	**34.9-43.6**	**60.7**	**56.3-65.1**

Appendix 3. List of STEPS Field Survey Staff from the Kingdom of Tonga

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Field Survey Team from Tongatapu, Tonga

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Saipaleti Ikahihifo

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Kaloni Fihaki

Field Survey From Ha’apai, Tonga

Kalolaine Hoeft

‘Alisi Fifita

Monolisa Veikoso

Falahola Ngata

Field Survey from Vava’u, Tonga

‘Emeline Takai

Anometa Ma’afu

Tapaita Lea

‘Ana Mahe

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