



Cook Islands NCD Risk Factors STEPS REPORT



TE MARAE ORA
Ministry of Health
COOK ISLANDS



**World Health
Organization**
Western Pacific Region



**Cook Islands
NCD Risk Factors
STEPS REPORT**

**Printed in Suva, Fiji
April, 2011**

Acknowledgements

The Cook Islands 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 mainly between the Ministry of Health (MOH) of Cook Islands, World Health Organization (WHO) and the College of Medicine, Nursing and Health Sciences, Fiji National University.

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Appreciation is extended to the Minister of Health, Cook Islands, Hon. Nandi Glassie; the Secretary of Health, Mr Tupou Faireka; and the Director of Community Health Services, Dr Rangiau Fariu for their leadership and support of the NCD STEPS work in the Cook Islands. Special thanks to the STEPS field survey staff (see Appendix 3 of the Report) and the interviewees of the survey. Cook Islands Statistics Office is also acknowledged for assisting with sample selection, and the Aitutaki Child Welfare Association for the refreshments and support to the field survey.

Grateful acknowledgement is made to WHO and its staff, to Dr Yang Baoping (WHO Representative for American Samoa, Cook Islands, Niue, Samoa and Tokelau, WHO Office in Apia) and Dr Han Tieru (Director, Division of Building Healthy Communities and Populations, WHO Office in Manila) for their great support. Thanks are due to Dr Jan Pryor and Ms Shakila Naidu (UNICEF) as the research consultants for this STEPS survey.

We acknowledge the statistical support and result generation provided by Ms Leanne Riley, Ms Melanie Cowan and Ms Regina Guthold (WHO Office in Geneva), Mr Shalvindra Raj and Ms Elaine Chung (Australia) who made substantial contributions to the completion of data analyses.

The Cook Islands STEPS survey and the Report were funded by the Australian Agency for International Development (AusAID), New Zealand Agency for International Development (NZ Aid) and WHO. The MOH, Cook Islands provided in-kind contribution.

Dr Philayrath Phongsavan drafted the first version of the Report, working closely with the WHO Office in Suva. Dr Li Dan, Ms Leanne Riley, Dr Graham Roberts, Dr Cherian Varghese (WHO Office in Manila), Mr Shalvindra Raj, Ms Melanie Cowan and Ms Regina Guthold have conducted technical reviews for the Report.

The country consultation held in Rarotonga, Cook Islands was attended by Dr Rangiau Fariu, Ms Karen Tairea, Dr Zaw Aung, Ms Iokopeta Ngari (the MOH, Cook Islands), Dr Yang Baoping and Dr Li Dan. During the country consultation, the “Tivaevae” design, taken from the book “Tivaevae: Portraits of Cook Island Quilting” by Lynnsay Rongokea & John Daley, was selected to be put at the bottom of the cover of the Report. The Tivaevae, as a symbol of the Cook Islands, is a form of needlework art created by Cook Islands women.

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

WHO Office in Suva arranged the printing, on behalf of the MOH, Cook Islands.

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LIST OF ABBREVIATIONS

BMI	Body Mass Index
BP	Blood Pressure
CI	Confidence Interval
DBP	Diastolic Blood Pressure
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)
NCD	Noncommunicable diseases
NIDM	Non Insulin Diabetes Mellitus
PICs	Pacific island countries and areas
SBP	Systolic Blood Pressure
WHO	World Health Organization

FOREWORD



A dramatic increase in chronic noncommunicable diseases (NCD) that lead to death has been experienced in almost every country in the world today. In order to address this growing problem effectively and efficiently, we must have accurate information regarding the risk factors that contribute to the development of NCD. We also must have scientific national NCD data to identify the intervention on NCD and their risk factors. A “Risk factor” of NCD refers to any characteristic or exposure that increases a person’s likelihood of developing a NCD. These risk factors include tobacco use, harmful alcohol use, physical inactivity, obesity, high blood pressure, a raised level of cholesterol, a raised level of blood glucose, and an unbalanced diet. Each country needs to establish its capacity in order to conduct population risk surveillance over time for countries’ planning of program activities and services.

We are pleased that the World Health Organization (WHO) has been working with us to strengthen our national capacity in population risk factors survey and analysis. The findings suggest actions for implementation of policy in NCD control and prevention, supportive physical environment and infrastructure, and improved health care services. The Cook Islands NCD STEPS survey was specifically designed to assess the prevalence of the common NCD and their risk factors in our population. The information from this survey provides an important platform for the development and implementation of strategic plans and programs to address the growing epidemic of NCD in the Cook Islands.

This report showed a high prevalence of NCD and their risk factors among our population and suggests actions to: control and prevent NCD; provide a supportive physical environment and infrastructure, and improved health service delivery.

This is the first national population-based survey on the prevalence of NCD and their risk factors in the history of the Cook Islands. It is a milestone to address the increasing NCD epidemic affecting our people and marks an increased commitment by the Ministry of Health 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 STEPS survey in the Cook Islands would not have been possible without the vision and leadership of our predecessors. Their determination enabled this important survey to be given priority in the Cook Islands. Their determination in ensuring that Cook Islands STEPS survey with WHO’s support has been realized.

Last but certainly not the least, we would like to thank all the staff of the Ministry of Health, partners like the College of Medicine, Nursing and Health Sciences, Fiji National University for completing the first ever NCD population survey in the Cook Islands, thank WHO for its strong and excellent technical support, and thank AusAID and NZAID for the financial support. This report is dedicated to the hard work and commitment evidenced from the inception to the completion of the NCD Risk Factors STEPS survey in the Cook Islands.

We hope that the findings and recommendations in this report will guide our actions for preventing and controlling NCD and improving health for all in the Cook Islands.

A handwritten signature in black ink, appearing to read 'N. Glassie', written in a cursive style.

Hon. Nandi Glassie
Minister of Health
Cook Islands



Noncommunicable Diseases (NCD) are the leading causes of death, accounting for approximately 75% of deaths annually in Pacific island countries and areas. Therefore, high priority has been given to NCD surveillance, prevention and management by the Pacific island health ministers. 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 at national level. To date, 135 countries and areas throughout the world have adopted and utilized the WHO STEPS. The publication of the “Cook Islands NCD Risk Factors STEPS Report” marks a milestone as it provides the scientific, national and comparable data that will assist the government in addressing the escalating issue of NCD.

The national STEPS Report will provide scientific evidence to update the national NCD strategy, identify the prioritized intervention, evaluate the impact of NCD prevention activities, and make comparisons between and among countries and areas in judging the country’s overall performance in reducing the NCD and their risk factors.

WHO together with Cook Islands Ministry of Health worked on the STEPS, in close collaboration with the College of Medicine, Nursing and Health Sciences, Fiji National University; School of Public Health, University of Sydney; Australian Agency for International Development and New Zealand Agency for International Development.

WHO, through its offices in Apia, Suva, Manila and Geneva is proud to collaborate with the Ministry of Health of the Cook Islands in publishing this first national NCD STEPS report in the country.

Some of the important results of this STEPS report include the following:

- 43.9% of the Cook Islanders were current smokers, 33.3% smoked tobacco daily.
- 74.7% of men drank an average of 5 or more standard drinks, 51.6% of women drank an average of 4 or more standard drinks per day in the last 7 days.
- 81.8% of the population consumed less than five combined servings of fruit and vegetables per day.
- 75.3% of the population was with low level of physical activity.
- 88.5% of the population was overweight, 61.4% was obese.
- 23.6% of the population was diabetic.
- 75.2% of the population had raised blood cholesterol (≥ 5.0 mmol/L).

WHO developed “the summary of combined risk factors”, selecting five common and critical NCD risk factors: current daily smokers, overweight ($BMI \geq 25 \text{ kg/m}^2$), raised blood pressure ($SBP \geq 140$ and/or $DBP \geq 90$ mmHg or currently on medication for raised blood pressure), less than 5 combined servings of fruit and vegetables per day and low level of physical activity (< 600 METminutes per week). According to this comprehensive assessment, only 0.3% of the total population in the Cook Islands was at low risk to NCD, compared with 76.6% of the population at high risk. More attention is required for those aged 45 to 64 years age group for both men (83.8%) and women (77.1%) classified at high risk for NCD.

These results clearly document that NCD are a major problem in the Cook Islands. Future priorities need to be given to both primary and secondary prevention activities to prevent and control key NCD, including diabetes, cardiovascular diseases, cancer, and their risk factors including smoking, unhealthy diet, physical inactivity and harmful use of alcohol. The high blood cholesterol level of the Cook Islanders needs special attention and focused intervention.

A handwritten signature in black ink, appearing to read 'Yang Baoping'.

Dr Yang Baoping
World Health Organization Representative for
American Samoa, Cook Islands, Niue, Samoa and Tokelau

EXECUTIVE SUMMARY

The Cook Islands STEPS survey provides a comprehensive population-wide snapshot on the state of noncommunicable diseases (NCD) and their risk factors. The results are based on a representative population-wide sample of Cook Islanders aged 25-64 years. The survey was conducted from September 2003 to May 2004, in 9 islands: Rarotonga, Aitutaki, Mangaia, Atiu, Mauke, Mitiaro, Manihiki, Penhryn, and Pukapuka.

The key objectives of the survey were:

- Document the prevalence and magnitude of key NCD among adults aged 25-64 years;
- Document the prevalence of smoking, harmful alcohol consumption, unhealthy eating patterns, physical inactivity, obesity, high blood pressure, raised blood glucose and total cholesterol, and;
- Compare NCD and their risk factors between men and women and across different age groups.

A total of 2036 individuals (response rate of 90%) participated in the survey.

Behavioural risk factors

Tobacco use

Around 43.9% of Cook Islanders were current smokers at the time of the survey: 46.6% were male current smokers; 41.1% were female current smokers.

Among both sexes, 33.3% smoked daily. Among men, 37.5% smoked daily with the highest daily smoking prevalence was in younger men aged 25-34 years (41.7%) (although not significantly different from the next older age group). Among women, 28.8% smoked daily and the highest proportion was among the youngest age group 25-34 years (34.7%) (significantly different from the next two older age groups).

The mean age at which smoking started among daily smokers was 20.3 years; men started smoking at a marginally younger age than women, 19.7 years and 21.2 years, respectively.

The mean number of years of smoking among current daily smokers was 17.5 years; men had been smoking on average 18.8 years and women for 15.7 years.

Approximately, 3 in 5 (62.3%) current daily smokers smoked manufactured cigarettes, although just over half (55.2%) of the male smokers, the majority of female smokers (72.1%) smoked manufactured cigarettes.

Alcohol consumption

About 62.9% of the population had consumed alcohol in the past 12 months (defined as current drinkers). There was a significant difference between the proportions of men and women current drinkers: 74.4% (± 5.8) of men compared to 50.6% (± 7.3) of women. The highest proportion of current drinkers occurred in the 25-34 years age group, for both men and women (81.4% and 60.1%, respectively). Proportions of current drinking decreased with increasing age across both genders.

Approximately 74.7% of men reported drinking 5+ standard drinks on any drinking day in the past 7 days; the highest proportion was in the 25-34 years age group. Among women, about 1 in 2 (51.6%) reported drinking 4+ drinks on any drinking day in the last 7 days.

Among current drinkers, 89.3% of men and 70.7% of women reported drinking 6+ drinks on a drinking day.

Male current drinkers drink an average of 11.7 standard drinks while women current drinkers drink 6.2 standard drinks on a drinking day.

Diet

The survey indicated that consumption of fruit and vegetables among Cook Islanders was well below the recommended levels. The mean number of days in a typical week fruit and vegetables were consumed were 3.7 days and 4.0 days, respectively. When fruit and vegetables were consumed on those days, the self-reported mean number of combined fruit and vegetables servings was 3.0 standard servings.

Overall, 81.8% of the population consumed less than 5 combined servings of fruit and vegetables per day. A higher proportion of men than women generally consumed less than five combined servings of fruit and vegetables, although this difference was not significant (men: 83.5%, ± 3.1 ; women: 79.9%, ± 3.8).

The most common type of oil or fat used for meal preparation in a household was vegetable oil (80.3%).

On average Cook Islanders consumed fresh fish 3.2 days per week, with no significant difference detected in consumption pattern between men (3.3 days ± 0.3) and women (3.0 days ± 0.4). The mean number of days (1.2 days ± 0.1) of canned fish consumption by the population was lower compared to fresh fish consumption (3.2 days ± 0.2).

Physical activity

About 75.3% of the population engaged in low level of total physical activity, that is, engaged in physical activities of less than 600 METminutes per week (e.g., less than 5 days of 30 minutes moderate-intensity (150 minutes per week) or less than 3 days of 20 minutes vigorous-intensity activity). Similar proportions of men and women engaged in low levels of physical activity: men 74.4% (± 6.2), women 76.3% (± 4.3). Conversely, a higher proportion of men (14.1% ± 4.2) reported high level of total physical activity (>1500 METminutes per week or an equivalent of 3 days of 60 minutes of vigorous activity per week) compared to women (9.6% ± 2.4), but this difference was not significant.

The total physical activity performed during work, transport and leisure time averaged 52.2 minutes/day for men and 43.6 minutes/day for women. Work-related physical activities comprised 24.6 minutes/day for men and 24.1 minutes/day for women; transport-related physical activities averaged 15.5 minutes/day for men and 13.2 minutes/day for women; and leisure-related physical activities averaged 12.2 minutes/day for men and 6.3 minutes/day for women.

In general, most physical activity in Cook Islands was undertaken as part of work; leisure-time physical activity contributed very little to the total time spent doing physical activity.

Physical risk factors

Overall, 88.5% of the population was overweight (BMI ≥ 25.0 kg/m²); slightly more men were overweight (89.8% ± 2.1) than women (87.1% ± 2.3), but this difference was not statistically significant.

Overall, 61.4% (± 2.7) of the population was obese (BMI ≥ 30 kg/m²). The obesity prevalence was significantly higher among women (65.7% ± 3.2) compared to men (57.4% ± 3.6).

Mean waist circumference for men was significantly higher than for women, 103.7cm (± 1.0) and 100.0cm (± 1.5), respectively.

The survey found an estimated 33.2% of the population had a raised blood pressure (defined as having SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg or on medication for raised blood pressure). This condition was more common among men (40.6% ± 7.6) than women (25.5% ± 9.3), (although not statistically significant).

Biochemical risk factors

Based on measures of fasting capillary whole blood, the overall prevalence of diabetes (fasting glucose level ≥ 6.1 mmol/L) among Cook Islanders aged 25-64 years was 23.6%. A slightly higher proportion was detected among men (26.1% ± 6.1) compared to 21.0% (± 4.5) of women, but this difference was not significant.

Overall, 75.2% of the population had elevated total blood cholesterol level exceeding ≥ 5.0 mmol/L (or ≥ 190 mg/dl). The prevalence for men was 77.1% (± 4.8), and for women was 73.2% (± 4.4), but this difference was not significant.

Combined risk factors

As the number of NCD risk factors increases, so does the risk of developing a particular chronic condition. For this report, the population was classified into three NCD risk categories: high risk (with 3-5 risk factors), moderate risk (with 1-2 risk factors) or low risk (with no risk factor). The NCD risk categories were defined as current daily smokers, overweight (BMI ≥ 25 kg/ m²), had 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 engaged in low level of physical activity (<600 METminutes per week).

This survey found that 0.3% of the population had zero risk factor for NCD, compared with 23.1% at moderate risk and 76.6% at high risk. By aged 25-44 years, the majority of Cook Islanders (75.1%) already reported having 3 or more risk factors. By aged 45-64 years, 83.8% of men and 77.1% of women had 3-5 NCD risk factors.

Conclusion

The Cook Islands STEPS survey provides a comprehensive set of epidemiological evidence that NCD and their risk factors are a substantial public health problem in Cook Islands, with the majority of adults aged 25-64 years being at increased risk of developing chronic conditions. The key strength of the STEPS is the scientific, national, comprehensive, updated and comparable data on NCD and their risk factors has been provided. Against this backdrop, the following are recommended actions for consideration in the Cook Islands:

Actions addressing policy, organizational and environmental factors

- Assign high priority for NCD and promote NCD prevention and control as a development agenda.
- Increase resources to implement the WHO Framework Convention on Tobacco Control and Regional Action Plan for the Tobacco Free Initiative in the Western Pacific Region (2010-2014).
- Develop strategies to promote consumption of local foods.
- Develop strategies to support importation of healthy foods.
- Develop strategies to support local production and improve availability of fruit and vegetables.
- Develop policies to establish physical activity-friendly environments.
- Establish sustainable government funding mechanism and health infrastructure to support NCD prevention and management.
- Establish and strengthen coalitions, networks and partnerships of work programs for preventing and managing NCD.
- Integration of prevention and control of NCD into policies and strategies in relevant government agencies.

Actions addressing NCD behavioural risk factors

- Comprehensive anti-smoking campaigns to reduce smoking rates across all age groups and in both genders, particularly targeting the younger age groups to prevent smoking uptake.
- Comprehensive smoking cessation programs to reduce smoking rates across all age groups in both genders, particularly targeting the younger age groups.
- A high priority on cardiovascular disease prevention and control focusing on hypertension intervention and cholesterol reduction through the primary, secondary and tertiary prevention, due to the high prevalence of hypertension and total blood cholesterol, compared with other PICs having published the national STEPS reports.
- Comprehensive health promotion campaigns to reduce alcohol consumption, particularly targeting binge drinking.
- Comprehensive health promotion campaigns promoting the recommended levels of fruit and vegetable consumption across all age groups and in both genders, and increasing public awareness of the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods.
- Develop and implement cultural-appropriate programs to promote daily incidental physical activity and encourage more moderate-intensity physical activity in all age groups, particularly among women.

Establishing a coordinated approach to noncommunicable disease management system

- Increase public awareness of the importance of regular screening of blood pressure, blood cholesterol and blood sugar level.
- Increase the capacity of the healthcare system for early detection and management of individuals with chronic diseases.
- Establish a coordinated NCD program supporting management of individuals diagnosed with chronic disease conditions, including supporting patient self-management, self-monitoring of conditions, medications and lifestyle changes that will reduce length of hospitalization and improve quality of life.

Maintaining quality surveillance and public health information

- Secure political and financial commitments for a scientific, systematic and rigorous 2nd-round national STEPS survey in the Cook Islands to ensure availability of data on the trends of NCD risk factors over time.
- Standardize data collection procedures of national surveys, similar to the procedure of the national STEPS survey.

1. INTRODUCTION

1.1 Background and Rationale

The rising burden of noncommunicable diseases (NCD) is impacting on the health and development of countries of all income levels¹. However, around 8% of NCD-related deaths occur in developing countries². Noncommunicable diseases include cardiovascular conditions such as heart disease and stroke, Type 2 diabetes, some cancers, and chronic respiratory conditions. Tobacco use, harmful alcohol consumption, unhealthy diets, physical inactivity, high blood pressure, high blood glucose levels, overweight or obesity, and high cholesterol levels are major modifiable risk factors for NCD³. Together they account for a large portion of death from cardiovascular diseases, cancer, and metabolic disorders. In the Western Pacific Region, NCD have been and are contributing to a large burden of deaths and disabilities⁴, with significant social and economic consequences on all levels of the society.

Timely and reliable population surveillance of the magnitude and extent of NCD and their risk factors are critical as they provide a useful reference for governments, regional and international agencies to plan for healthcare spending and develop appropriate preventive public health programs. As part of the regional and global effort to meet the growing burden of NCD epidemics, WHO is assisting Governments to implement country-wide STEPwise approach to surveillance of NCDs and their risk factors^{4,5}. The STEPS surveys employ standardised measures and protocols for assessing tobacco use, alcohol consumption, dietary behaviour, physical activity, anthropometry, and blood pressure. Depending on local needs, technical and financial resources biochemical indicators such as fasting blood cholesterol and blood sugar levels are also collected, involving either a subsample or all of the survey population.

Participating countries follow a standardised STEPS survey methodology, including asking a core set of questions, using similar measurement tools, and employing similar analytical approaches. Since STEPS are developed in modular parts, countries can add extra questions to the core module depending on local relevance, needs and resource availability. For example, this can include expanding on the core dietary behaviour module with questions on local food produce. To enable monitoring of NCD trends over time within-country as well as critical comparisons between countries, countries are encouraged and supported to repeat the STEPS surveys. Ongoing population surveillance of changes in key risk factors is also important for assessing the impact of NCD preventive efforts in a country.

No population-wide survey to collect national epidemiological data concerning NCD risk factors has been conducted in Cook Islands. The STEPS survey will provide the first comprehensive snapshot of the extent and magnitude of the burden of NCD risk factors in this country.

1.2 The National Context

1.2.1 Geography

Cook Islands has a total land area of 240km², spread across 15 small islands dispersed over 2million km² of the South Pacific Ocean. The islands are divided into two groups: the Southern Cook Islands, and the Northern Cook Islands. The distance between the islands makes travel and transportation of goods and supplies generally very costly and time-consuming. The Northern Cook Islands are more isolated and more dispersed than the Southern group, with relatively poorer access to education and health services.

1.2.2 Population and Living Environment

The average life expectancy at birth in Cook Islands is estimated at 70 years for men and 75 years for women (2004 WHO). Despite a trend towards Cook Islands having an aging population, the country still has a relatively young population with about 45.3% aged between 15 and 44 years⁶.

The majority of the inhabitants of the Cook Islands are Maori, Polynesian people indigenous to the South Pacific. The official languages of the Cook Islands are Cook Islands Maori and English. The dominant religion in the Cook Islands is Cook Islands Christian Church, with around 65%, followed by 15% of Catholics, and the remaining belonging to other religious groups such as Seventh Day Adventists, Latter Day Saints, Assemblies of God and Baha'i Faith.

Over two-thirds of Cook Islanders live on the island of Rarotonga. In accordance with the political status of self-government in free association with New Zealand, Cook Islanders have New Zealand citizenship and are able to freely live and work in New Zealand. This means that the high population growth rate (e.g., 3.5% in 2007-2009)⁷ is offset by emigration to New Zealand, as well as Australia and other countries.

1.2.3 Government, Culture and the Economy

The Cook Islands government is made up of 24 elected members serving a parliamentary term of four years; 10 of whom are from the Rarotonga and the rest are from the outer islands⁸. There is also a 15-member House of Ariki (Chiefs). The Ariki is comprised of six Ariki from Rarotonga, and nine from the outer islands. The Ariki members advise the government on traditional and customary issues.

The people of the Cook Islands place great value on family and vaka (land-owning unit). Land rights are passed through both male and female lineage, in accordance to the decisions of the senior family member. Cook Islands society is organised around a village and its Chief, Ariki.

The people of the Cook Islands enjoy a high standard of living and development, with a per capita gross domestic product of around US\$9,308⁷. The country relies heavily on tourism as its main source of income. Fish exports, financial services and pearl farming also provide major sources of national income.

1.2.4 Noncommunicable Diseases and their Risk Factors in the Cook Islands

The 2007 Ministry of Health Annual Statistics⁶ showed the steady increase in the presentation of registered hypertension and diabetes cases for hospitalisation. Between 1999 and 2007, the proportion of the local residents diagnosed and registered as hypertensive and/or diabetic increased from 14% to 24.8%. Cerebrovascular disease, ischemic heart disease and hypertension are the leading causes of death in Cook Islands, contributing to 25% of all causes of death in 2007⁶.

A cross-sectional study conducted locally in 1980 (n=1127, 543 men and 584 women) found relatively high prevalence of current smoking (38% of men and 19% of women)⁹. The study identified high proportion of women smokers, and clearly showed that tobacco consumption was already a significant public health problem in women as well as among men.

Changing food availability, increasing consumption of foods low in nutritional value¹⁰ and declining physical activity and energy expenditure¹¹ have been acknowledged as contributing factors to increased body weight among the Cook Islanders in the second half of the 20th century. These studies provide early evidence that the burden of chronic disease risk factors had existed in the Cook Islands for some time, but had attracted little public health response until recently. To our knowledge, there was no national and comprehensive epidemiological survey carried out in Cook Islands to examine the extent and scope of NCD and their risk factors.

2. OBJECTIVES

The overarching goal of the STEPS survey is to document the prevalence and magnitude of key NCD and their risk factors. As a population-based survey, STEPS will provide representative data on key indicators of NCD risk factors. The data will provide definitive evidence to inform whole-of-government and community-based approach to health services planning and the development of an integrated strategy for NCD prevention and management.

Specifically, the survey will:

- Document the prevalence and magnitude of key NCD among adults aged 25-64 years;
- Document the prevalence of smoking, harmful alcohol consumption, unhealthy eating patterns, physical inactivity, obesity, high blood pressure, raised blood glucose and cholesterol, and;
- Compare NCD and their risk factors between men and women and across different age groups.

3. METHODOLOGY

3.1 Survey Structure

The Cook Islands STEPS survey followed a sequential three-step process, with participants completing all three steps as follows (Figure 1):

Step 1: A questionnaire-based (interview) survey on smoking, alcohol drinking, dietary behaviour, and physical activity.

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

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

Similar to the national STEPS surveys in other PICs, the Cook Islands followed the STEPS standardised sampling methodology and data collection and analysis protocol. This will ensure that Cook Islands presents up-to-date population-wide and representative data for between-country comparisons as well as within-country comparisons. To assess trends, future surveys should repeat data collection of core questions, and depending on local needs and available resources add more questions or measurements to the core questions.

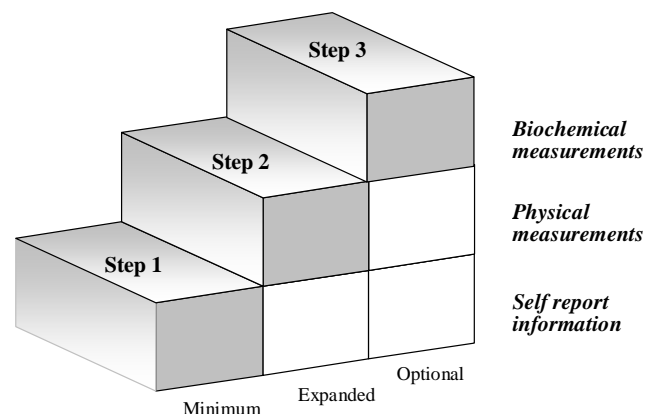


Figure 1 The WHO STEPwise approach to surveillance of NCD risk factors

3.2 Survey Sampling Frame

Following the WHO STEPwise standardised methodology, the Cook Islands STEPS survey implemented a population-based cross-sectional survey of Cook Islanders aged 25 to 64 year olds. Of the 15 islands that made up the Cook Islands, 6 islands were excluded from the sampling frame. These were islands with population less than 99, or were very difficult to reach by transportation. The final survey sampling frame comprised 9 islands with a total population of 6,501 aged 25 to 64 years (2001 Cook Islands census). This covers 98.6% of the total 25-64 year-old population of 6,594 (Figure 2).

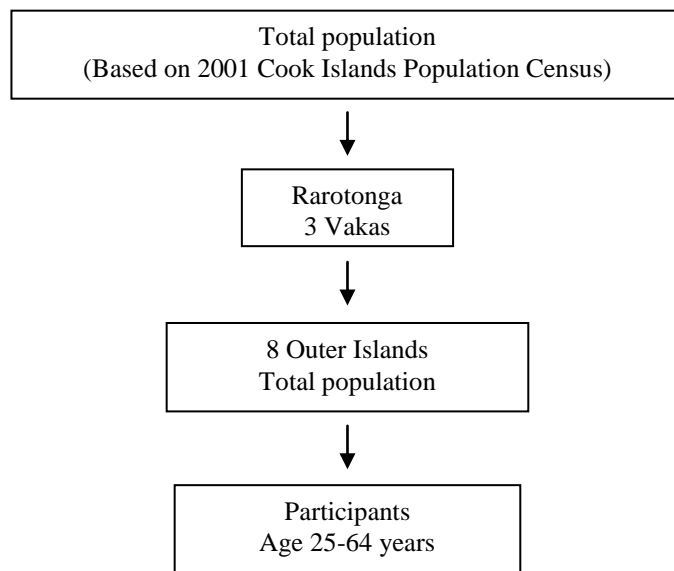


Figure 2 Survey sampling frame

3.3 Sample size

Following the STEPS sampling guidelines, the target sample size was 2,000 randomly selected Cook Islanders (Table A), with a minimum target of 250 participants in each of the eight 10-year age/sex groups: 25-34, 35-44, 45-54 and 55-64 years. This sample size would detect NCD risk factor prevalence rates as high as 60% with a 2.1% margin of error.

The sample was drawn from Rarotonga (main Island) and the outer Islands of Aitutaki, Mangaia, Mitiaro, Atiu, Mauke, Penhryn, Pukapuka and Manihiki.

Table A shows the sample sizes for selected areas. Based on the 2001 Census Population List, the total population of Rarotonga was divided into three Vakas (Puaikura, Takitumu and Te-Au-O-Tonga) and a sample of 1000 participants randomly selected with probability proportionate to the sample size as shown in Table A. Another sample of 1000 participants was randomly selected from the eight outer islands with a 25-64 year-old population of 99 or greater. All consenting participants took part in all three Steps.

A reserve list of an additional 50 participants were chosen from each age/sex group to replace any of the 250 participants in that age/sex group who declined to participate in the survey, who could not be located after repeated attempts, were off islands during the survey period or who were no longer residents in Cook Islands.

Table A Target sample size for selected areas

Vaka/ Islands	Population 25-64 years	Required sample size
Rarotonga		
Te-Au-O-Tonga	2105	478
Takitumu	1114	253
Puaikura	1184	269
Sub-total	4403	1000
Outer Islands		
Aitutaki	719	343
Mangaia	292	139
Atiu	251	120
Mauke	177	84
Mitiaro	99	47
Manihiki	218	104
Penhryn	124	59
Pukapuka	218	104
Sub-total	2098	1000
TOTAL	6501	2000

3.4 Data Collection Procedures

The survey was conducted from September 2003 to May 2004. In each survey area:

- Step 1 was conducted in the field or participants' place of residence, two weeks prior to the Step 2 and Step 3.
- Step 2 and Step 3 were conducted at a Public Health Department or selected venue in each Vaka or in each outer island.
- STEPS survey staff approached randomly selected individuals from a list of all potential participants to inform them the aims of the study and to obtain their signed informed consent.
- STEPS survey staff provided fasting instructions to participants and worked through appointment schedules for interviews and measurements.

STEPS 1 – (30 Interviewers)

STEPS 2 & 3 (12 Staff)

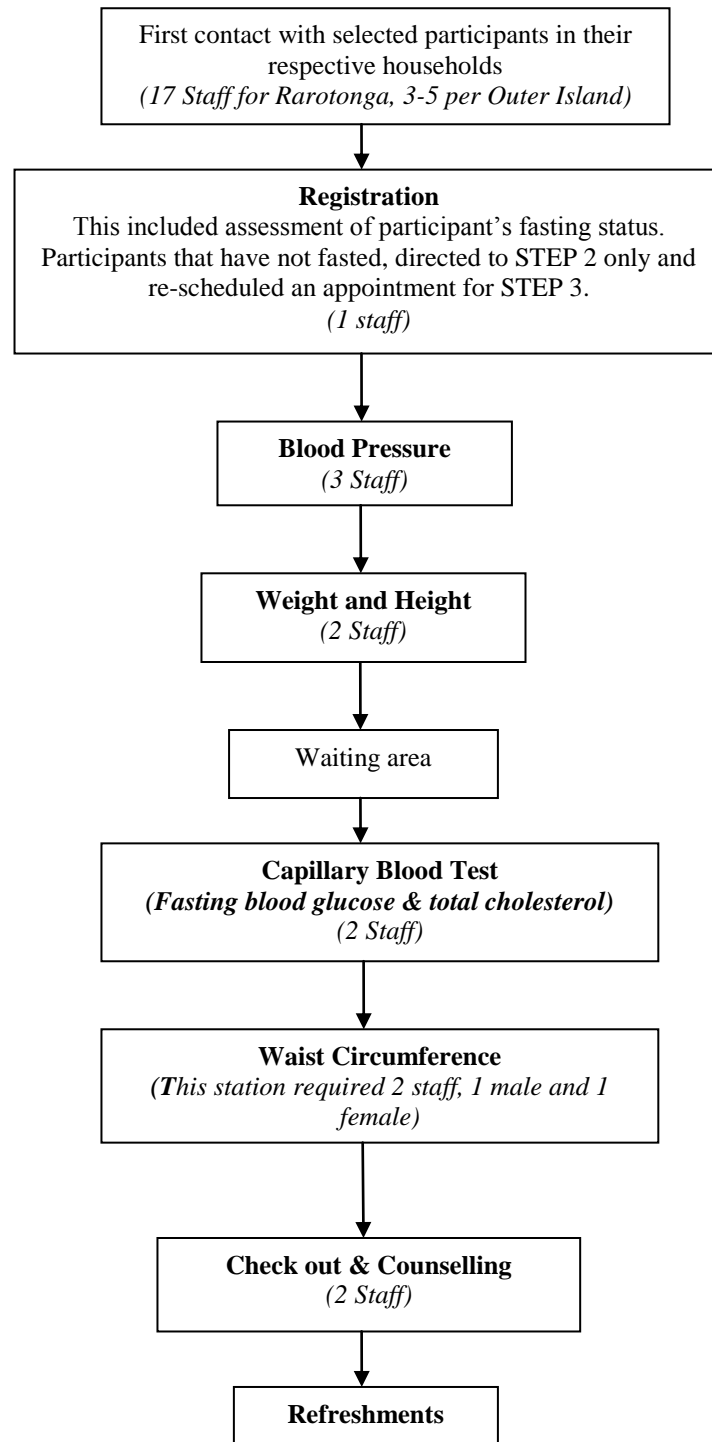


Figure 3 Flow chart of data collection activities in the Cook Islands STEPS survey

3.5 Data Collection Process

3.5.1 Step 1 - Behavioural Risk Factors Interviews

All participants took part in a face-to-face interview two weeks prior to Step 2 and Step 3. The interviews asked questions on smoking, alcohol consumption, fruit and vegetable consumption, fat/

oil used in meal preparation, fresh and canned fish consumption, physical activity and history of chronic conditions and medications. Interviews were conducted mainly in English and in some instances in Maori. Questionnaires were printed in English. Participation Information Sheet, Consent Form and Fasting Instruction were printed in English and Cook Islands Maori.



3.5.2 Registration of Participants for Step 2 and Step 3

At the registration station, survey staff confirmed informed consent, participant date of birth, fasting status of the participant, and explained to participants Step 2 and Step 3 procedures.

3.5.3 Step 2 - Physical Measurements

STEPS survey personnel conducted the physical measurements following the STEPS standardized protocols. The OMRON T5 Digital Automatic Blood Pressure Monitor (DABP) was used to measure resting blood pressure. Resting blood pressure was measured three times; the first reading followed by two more measurements taken with 2-3 minute intervals. The average of the second and third reading was used in the analysis.

Height and weight were measured once using the Infant/Child/Adult Portable Height-length Measuring Board, and weight by SOEHNLE Mediscale. A series of known weights (2 X 2.5kg, 2 X 10kg) were used to check the proper function of the scales at the beginning and at the end of each day when in use. Height was measured to the nearest 0.1 centimeter and weight to the nearest 0.1 kg, respectively. Participants were measured without shoes and wearing only light clothing.

Waist circumference was measured once using the Figure Finder Tape Measure and recorded to the nearest 0.1 cm. Waist circumference and the weights of pregnant participants were not measured.



3.5.4 Step 3 – Biochemical Measurements

Fasting blood glucose and fasting total cholesterol were assessed. Participants were advised to fast from 10:00pm the previous night until 7:00am the following morning. Capillary blood samples were drawn using the finger prick method. Advantage Meter was used to assess blood glucose, and Accutrend GCT for total cholesterol.



3.5.5 Check-out Station and Counselling

At the check out station, STEPS personnel checked through each section of the questionnaire to determine that all sections of the survey have been completed. All participants then were provided a copy of their results from Steps 2 and 3, together with educational materials about smoking, alcohol drinking, obesity and nutrition, physical activity, hypertension, diabetes, and heart diseases. Arrangements for follow-up clinical examination were made for participants identified as being at high risk of developing or with advanced chronic conditions.

3.6 Data Management and Analyses

3.6.1 Data Entry

Completed questionnaires were checked randomly to assess overall quality of data collection by different field staff and for completeness. The project staff also reviewed 3-4 randomly chosen questionnaires from each survey site to check quality of data collected. Data entry was carried out by STEPS survey staff at the Ministry of Health office using the EpiData software configured for double data entry function.

3.6.2 Data Weighting and Analysis

The weighting of the survey sample was adjusted for certain age/sex stratum being either over- or under-represented in the survey data. For categorical variables, frequency distributions were calculated using weighted complex sample frequencies. For continuous variables, weighted complex sample means were computed. Weighted frequency estimates and weighted means were reported with 95% confidence intervals by 10-year age groups and gender. These computations were performed using EpiInfo's complex survey sample table function.

The WHO Office in Geneva conducted the standardized data weighting and produced the main outputs. The WHO Office in Suva developed the core tables and completed the Data Book. All data analyses were performed using the EpiInfo 2002 – Version 3.5.1.

4. RESULTS

4.1 Characteristics of Survey Population

A total of 2036 individuals participated in the survey (response rate of 90%).

Table 1 shows similar proportions of men and women participated in the survey: 49.0% and 51.0%, respectively. A slightly higher proportion of women aged 45-54 years (52.3%) took part in the survey compared to men in that age group (47.7%). The numbers of participants are generally evenly distributed across the age groups.

Table 1 Age distribution of survey population by gender

Age group and sex of respondents							
Age Group (years)	Men		Women		Both Sexes		
	n	%	n	%	n	%	
25-34	237	48.3	254	51.7	491	24.3	
35-44	273	50.4	269	49.6	542	26.8	
45-54	236	47.7	259	52.3	495	24.5	
55-64	244	49.7	247	50.3	491	24.3	
25-64	990	49.0	1029	51.0	2019	100	

Table 2 summarises the mean years of education of the survey respondents by gender and age group. Both men and women reported similar mean years of education: 11.3 years and 11.4 years, respectively. While the oldest age group reported the lowest mean years of education (10.7 years), mean years of education across the younger age groups are similar, ranging from 11.3 years for those aged 45-54 years to 11.9 years for those aged 35-44 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	
25-34	236	11.3	253	11.8	489	11.6	
35-44	273	11.9	266	11.8	539	11.9	
45-54	235	11.3	258	11.3	493	11.3	
55-64	242	10.7	245	10.6	487	10.7	
25-64	986	11.3	1022	11.4	2008	11.4	

4.2 Tobacco Use

Respondents were asked if they smoked tobacco products, and the frequency of smoking; their responses were then categorized 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 but less frequently.

Table 3 shows that just under one half (43.9%) of Cook Islanders were current smokers. However, proportionately more men (46.6% \pm 5.2) currently smoked, compared to women (41.1% \pm 6.1) smokers. For both men and women, the highest prevalence of current smokers was in the youngest age group (53.8% \pm 6.1 and 49.8% \pm 5.8, respectively).

Table 3 Percentage of current smokers by gender and age group

Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	n	% Current smoker	95% CI	n	% Current smoker	95% CI
25-34	237	53.8	\pm 6.1	254	49.8	\pm 5.8	491	51.8	\pm 4.3
35-44	269	42.4	\pm 5.9	268	38.8	\pm 8.4	537	40.7	\pm 4.9
45-54	235	44.5	\pm 4.2	257	35.2	\pm 6.0	492	40.2	\pm 4.6
55-64	242	35.2	\pm 7.9	246	22.7	\pm 3.6	488	29.2	\pm 5.1
25-64	983	46.6	\pm5.2	1025	41.1	\pm6.1	2008	43.9	\pm3.9

Among men, 37.5% smoked daily, with 41.7% of men aged 25-34 years smoking daily, and decreasing thereafter. However, there was no significant difference in the proportion of daily smokers across age groups (Table 4).

Table 4 Current smoking status among men by age group

Age Group (years)	Smoking status						
	Men						
	n	Current smoker				% Does not smoke	95% CI
% Daily		95% CI	% Non-daily	95% CI			
25-34	237	41.7	\pm 7.8	12.1	\pm 8.6	46.2	\pm 6.1
35-44	269	35.0	\pm 7.3	7.4	\pm 2.9	57.6	\pm 5.9
45-54	235	38.1	\pm 3.5	6.4	\pm 2.5	55.5	\pm 4.2
55-64	242	27.7	\pm 7.3	7.6	\pm 2.7	64.8	\pm 7.9
25-64	983	37.5	\pm4.2	9.2	\pm4.4	53.4	\pm5.2

Table 5 shows that among women, 28.8% defined themselves as daily smokers. As noted in men, the highest proportion of daily smokers was among the youngest age group 25-34 years (34.7% \pm 5.8); this proportion was significantly higher than other two older age groups. Daily smoking prevalence declined with increasing age, with the lowest percentage of daily smokers being within the 55-64 years age group (17.7% \pm 3.9).

Table 5 Current smoking status among women by age group

Smoking status							
Women							
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34	254	34.7	\pm 5.8	15.1	\pm 5.0	50.2	\pm 5.8
35-44	268	27.2	\pm 4.2	11.6	\pm 7.0	61.2	\pm 8.4
45-54	257	24.2	\pm 7.5	11.0	\pm 5.9	64.8	\pm 6.0
55-64	246	17.7	\pm 3.9	5.1	\pm 2.1	77.3	\pm 3.6
25-64	1025	28.8	\pm3.9	12.2	\pm3.8	58.9	\pm6.1

Table 6 summarises the prevalence of daily, non-daily and non-smokers for the total population. The smoking status was: 33.3% were daily smokers, 10.7% non-daily and 56.1% non-smokers. Daily smoking declined with age, with the highest proportion (38.2% \pm 5.0) of daily smokers being in the youngest age group (25-34 years), and the lowest among those aged 55-64 years old (22.8% \pm 4.5).

Table 6 Current smoking status among both sexes by age group

Smoking status							
Both Sexes							
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34	491	38.2	\pm 5.0	13.6	\pm 4.9	48.2	\pm 4.3
35-44	537	31.2	\pm 4.1	9.4	\pm 3.7	59.3	\pm 4.9
45-54	492	31.7	\pm 6.0	8.5	\pm 3.4	59.8	\pm 4.6
55-64	488	22.8	\pm 4.5	6.4	\pm 1.9	70.8	\pm 5.1
25-64	2008	33.3	\pm2.9	10.7	\pm2.9	56.1	\pm3.9

For all current daily smokers, the mean age of starting smoking for men was 19.7 (\pm 0.9) years, and for women 21.2 years (\pm 1.2) (Table 7). With the exception of the oldest age group (55-64 years), there was no significant difference in the mean age of starting smoking between men and women across the younger age groups. There were also no significant differences in the mean age of starting smoking across age groups for both men and women. Across both genders, the youngest age group (25-34 years) reported starting smoking at a lower mean age than the current smokers in the older age groups.

Table 7 Mean age started smoking among current daily smokers

Age Group (years)	Mean age started smoking								
	Men			Women			Both Sexes		
	n	Mean age	95% CI	n	Mean age	95% CI	n	Mean age	95% CI
25-34	94	18.6	±0.9	83	19.7	±1.3	177	19.1	±0.9
35-44	95	20.3	±1.6	68	21.6	±2.4	163	20.9	±1.5
45-54	88	21.1	±2.3	58	24.5	±3.2	146	22.3	±1.8
55-64	58	20.5	±1.7	40	24.7	±2.0	98	22.1	±1.7
25-64	335	19.7	±0.9	249	21.2	±1.2	584	20.3	±0.8

Table 8 shows that the mean number of years of smoking among current daily smokers for the population was 17.5 years (±2.6). Male current daily smokers had been smoking for a mean of 18.8 years (±3.7), while female current daily smokers had been smoking for a mean of 15.7 years (±3.6). Significant gender difference was noted in the reported duration of smoking in the oldest age group, with men smoking for a mean of 37.9 years (±1.2) and women smoking for 34.1 years (±2.5).

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

Age Group (years)	Mean duration of smoking								
	Men			Women			Both Sexes		
	n	Mean duration	95% CI	n	Mean duration	95% CI	n	Mean duration	95% CI
25-34	94	11.7	±0.8	83	10.0	±1.2	177	10.9	±0.9
35-44	95	18.9	±1.5	68	17.6	±3.0	163	18.4	±1.6
45-54	88	28.3	±2.6	58	24.5	±2.9	146	27.0	±2.0
55-64	58	37.9	±1.2	40	34.1	±2.5	98	36.5	±1.6
25-64	335	18.8	±3.7	249	15.7	±3.6	584	17.5	±2.6

Table 9 shows that 3 in 5 daily smokers smoked manufactured cigarettes (62.3% ±8.6). While a higher proportion of female daily smokers smoked manufactured cigarettes than male smokers (72.1% ±10.5 and 55.2% ±12.4, respectively), this difference was not significant.

Table 9 Percentage of current daily smokers who smoke manufactured cigarettes

Age Group (years)	Manufactured cigarette smokers among daily smokers								
	Men			Women			Both Sexes		
	n	% Manufactured cigarette smoker	95% CI	n	% Manufactured cigarette smoker	95% CI	n	% Manufactured cigarette smoker	95% CI
25-34	98	59.6	±21.1	84	77.6	±13.0	182	67.7	±13.3
35-44	105	60.0	±19.2	73	67.4	±20.3	178	63.1	±13.8
45-54	91	49.4	±11.8	61	64.7	±24.3	152	54.8	±11.6
55-64	64	28.1	±9.8	42	64.1	±18.4	106	41.7	±13.5
25-64	358	55.2	±12.4	260	72.1	±10.5	618	62.3	±8.6

4.3 Alcohol Consumption

To assess patterns and prevalence of alcohol consumption, respondents were asked if they ever consumed alcohol, how often they consumed alcohol and the quantity of alcohol consumed. Those respondents reporting consuming an alcoholic drink in the past 12 months were classified as current drinkers.

Tables 10-12 present the prevalence of alcohol consumption during the past 12 months among men, women and total population, respectively. In the 12-month period, 74.4% (± 5.8) of men were current drinkers, compared to 50.6% (± 7.3) of women (Tables 10 and 11). There were significant gender differences in the proportions of current drinkers between those aged 25 and 54 years. The highest proportion of current drinkers in the past 12 months occurred in the 25-34 years age group, for both men and women (81.4% and 60.1%, respectively). The prevalence of current drinkers decreased with increasing age across both genders.

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

Alcohol consumption status							
Men							
Age Group (years)	n	% Lifetime Abstainer	95% CI	% Past 12 months abstainer	95% CI	% current drinker (drank in past 12 months)	95% CI
25-34	236	15.7	± 5.4	2.9	± 2.6	81.4	± 6.6
35-44	268	15.7	± 3.9	8.9	± 7.7	75.4	± 8.6
45-54	236	20.5	± 9.3	11.4	± 3.0	68.1	± 9.6
55-64	242	27.6	± 13.1	15.6	± 6.4	56.8	± 15.7
25-64	982	17.9	± 3.7	7.7	± 3.4	74.4	± 5.8

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

Alcohol consumption status							
Women							
Age Group (years)	n	% Lifetime Abstainer	95% CI	% Past 12 months abstainer	95% CI	% current drinker (drank in past 12 months)	95% CI
25-34	254	28.0	± 7.7	11.9	± 3.5	60.1	± 7.8
35-44	269	37.2	± 8.4	13.0	± 2.9	49.8	± 9.3
45-54	259	42.8	± 8.4	17.0	± 6.2	40.2	± 11.4
55-64	247	55.4	± 12.2	12.9	± 6.7	31.7	± 13.4
25-64	1029	36.3	± 6.6	13.2	± 2.2	50.6	± 7.3

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	% Lifetime Abstainer	95% CI	% Past 12 months abstainer	95% CI	% current drinker (drank in past 12 months)	95% CI
25-34	490	21.8	±5.5	7.3	±3.7	70.9	±7.9
35-44	537	26.1	±7.0	10.9	±4.5	63.0	±9.7
45-54	495	30.8	±9.0	14.0	±3.2	55.2	±10.3
55-64	489	41.1	±11.5	14.3	±4.5	44.6	±12.4
25-64	2011	26.8	±4.2	10.3	±2.4	62.9	±5.8

Tables 13 and 14 summarise the frequency (number of drinking days) and quantity of alcoholic drinks consumed (number of drinks on drinking day) by men and women current drinkers in the last 7 days. For men, 14.2% reported drinking on 4+ days in the last 7 days, while 74.7% reported 'binge drinking', that is drinking 5 or more standard drinks on any drinking day. The highest proportion of 'binge drinking' was in the 25-34 years age group. Approximately one third (33.8%) of men drinkers reported drinking 20 or more drinks in the past 7 days. While the proportions of 'binge drinking' declined with age, the proportions of those drinking 20 or more drinks fluctuated between 36.0% (25-34 years) and 28.7% (55-64 years).

Table 13 Frequency and quantity of drinks consumed in the last 7 days by current (last 12 months) drinkers, grouped into three categories

Frequency and quantity of drinks consumed in the last 7 days							
Men							
Age Group (years)	n	% Drank on 4+ days	95% CI	% 5+ drinks on any day	95% CI	% 20+ drinks in 7 days	95% CI
25-34	184	10.1	±6.4	80.2	±7.7	36.0	±6.3
35-44	193	13.1	±5.9	73.2	±7.0	31.6	±4.7
45-54	152	21.0	±5.3	72.0	±8.8	34.7	±5.8
55-64	121	26.8	±8.6	56.2	±9.6	28.7	±10.3
25-64	650	14.2	±4.5	74.7	±5.8	33.8	±3.9

Table 14 Frequency and quantity of drinks consumed in the last 7 days by current (last 12 months) drinkers, grouped into three categories

Frequency and quantity of drinks consumed in the last 7 days							
Women							
Age Group (years)	n	% Drank on 4+ days	95% CI	% 4+ drinks on any day	95% CI	% 15+ drinks in 7 days	95% CI
25-34	134	4.8	±3.5	52.2	±4.7	7.1	±3.8
35-44	126	3.6	±4.6	52.7	±8.5	13.5	±5.5
45-54	99	3.4	±1.5	52.2	±10.8	6.6	±3.1
55-64	70	5.6	±2.4	42.5	±8.8	6.2	±5.3
25-64	429	4.3	±2.3	51.6	±3.8	8.8	±2.9

A small proportion of women (4.3%) reported drinking 4+ days in the last week (Table 14). However,

on any drinking day, about 1 in 2 (51.6%) reported drinking 4+ drinks on any drinking day in the last 7 days (defined as 'binge drinking' for women); this proportion of women 'binge drinking' remained stable between 25 and 54 years and only reduced by about 10% (to 42.5%) in the 55-64 years age group. Approximately 8.8% of the women drinkers reported drinking 15 or more drinks in the past 7 days.

Table 15 Number of drinks per day among men who are current drinkers by age group

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
25-34	173	2.5	±3.8	3.6	±3.9	1.2	±1.6	92.7	±5.4	13.4	±0.7
35-44	180	3.0	±2.3	5.9	±2.3	2.2	±2.2	88.9	±5.7	10.4	±1.0
45-54	142	---	---	4.9	±2.3	6.2	±3.8	88.9	±3.2	11.4	±1.5
55-64	121	5.6	±5.9	13.8	±5.2	6.8	±2.4	73.8	±7.8	8.3	±1.6
25-64	616	2.5	±1.9	5.4	±2.5	2.8	±1.8	89.3	±4.3	11.7	±1.1

Tables 15-17 show the number and mean number of standard drinks consumed by male and female current drinkers on a drinking day. Drinking 6+ drinks was reported by 89.3% of men, and 70.7% of women. The greatest proportion of male drinking at this level was in the youngest age group (25-34 years) for both men and women (92.7% and 76.5%). Current male drinkers drink an average of 11.7 standard drinks while women drink 6.2 standard drinks.

Table 16 Number of drinks per day among women who are current drinkers by age group

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
25-34	126	3.9	±3.3	6.3	±2.4	13.2	±9.9	76.5	±11.4	6.8	±0.7
35-44	110	6.8	±4.1	11.7	±3.3	9.8	±2.9	71.7	±7.7	6.3	±0.8
45-54	94	10.6	±8.6	19.1	±8.4	15.4	±6.0	54.9	±9.6	5.1	±0.5
55-64	62	15.2	±4.3	21.0	±14.9	11.9	±10.1	51.9	±8.9	3.9	±0.6
25-64	392	6.4	±3.0	10.5	±3.8	12.4	±5.2	70.7	±9.0	6.2	±0.7

Table 17 Number of drinks per day among both sexes who are current drinkers by age group

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
25-34	299	3.1	±2.6	4.7	±2.8	6.3	±5.0	85.9	±7.6	10.6	±2.3
35-44	290	4.5	±2.0	8.0	±3.1	5.0	±3.3	82.5	±7.5	8.9	±1.5
45-54	236	3.6	±3.6	9.8	±6.0	9.3	±4.1	77.3	±10.8	9.3	±2.4
55-64	183	8.7	±5.7	16.1	±5.8	8.5	±4.1	66.7	±9.3	6.9	±1.8
25-64	1008	4.0	±1.6	7.4	±2.4	6.5	±2.8	82.0	±5.3	9.6	±1.4

4.4 Diet

Dietary behaviours were assessed by asking respondents the frequency (days and servings) of fruits, vegetables, fresh and canned fish consumed in a typical week. Respondents were also asked the type of oil or fat used in meal preparation. The mean number of days fruits consumed in a typical week was 3.7 days (Table 18). No significant difference in fruit consumption between men (3.4 days \pm 0.3) and women (4.0 days \pm 0.3) overall or across age groups was detected. The mean number of servings of fruits consumed per day was 1.5 (Table 20). For both men and women, the mean number of servings of fruits remained similar across age groups. No gender difference was noted in the mean number of servings of fruits in the overall survey population or across individual age groups.

Table 18 Mean number of days in a week that fruits are consumed by gender and age group

Age Group (years)	Mean number of days fruits consumed in a typical week								
	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
25-34	236	3.2	\pm 0.4	254	3.7	\pm 0.4	490	3.4	\pm 0.3
35-44	272	3.4	\pm 0.5	269	4.0	\pm 0.4	541	3.7	\pm 0.4
45-54	236	3.4	\pm 0.5	259	4.2	\pm 0.6	495	3.8	\pm 0.5
55-64	244	3.9	\pm 0.6	246	4.6	\pm 0.7	490	4.2	\pm 0.5
25-64	988	3.4	\pm0.3	1028	4.0	\pm0.3	2016	3.7	\pm0.2

Table 19 Mean number of days in a week that vegetables are consumed by gender and age group

Age Group (years)	Mean number of days vegetables consumed in a typical week								
	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
25-34	237	3.8	\pm 0.6	254	4.2	\pm 0.6	491	4.0	\pm 0.4
35-44	271	3.7	\pm 0.6	268	4.3	\pm 1.0	539	4.0	\pm 0.6
45-54	236	3.4	\pm 0.7	259	4.0	\pm 0.8	495	3.7	\pm 0.5
55-64	243	3.7	\pm 0.8	246	4.1	\pm 0.9	489	3.9	\pm 0.6
25-64	987	3.7	\pm0.4	1027	4.2	\pm0.4	2014	4.0	\pm0.3

For vegetable consumption, Table 19 shows that the mean number of days consumed in a typical week was 4.0 days. The mean number of days of vegetable consumption in a typical week remained stable across age groups for both genders. No significant difference in vegetable consumption between men and women was observed. On the day when vegetables were consumed, the average number of servings consumed per day was 1.5 (Table 21). No significant gender difference in vegetable consumption was noted.

Table 20 Mean number of servings of fruits consumed on a day when fruits were eaten

Mean number of servings of fruits 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
25-34	236	1.4	±0.3	254	1.5	±0.2	490	1.5	±0.2
35-44	270	1.3	±0.3	269	1.7	±0.2	539	1.5	±0.2
45-54	236	1.5	±0.3	259	1.8	±0.4	495	1.6	±0.3
55-64	244	1.6	±0.2	246	1.9	±0.3	490	1.7	±0.2
25-64	986	1.4	±0.2	1028	1.6	±0.1	2014	1.5	±0.1

Table 21 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
25-34	236	1.6	±0.4	253	1.5	±0.3	489	1.5	±0.2
35-44	270	1.5	±0.3	268	1.7	±0.4	538	1.6	±0.3
45-54	236	1.3	±0.4	259	1.5	±0.4	495	1.4	±0.3
55-64	242	1.4	±0.4	246	1.6	±0.4	488	1.5	±0.3
25-64	984	1.5	±0.2	1026	1.6	±0.2	2010	1.5	±0.1

Tables 22 and 23 show a very low fruit and vegetable consumption on the day when these food items were eaten. Overall, survey respondents reported an average of 3.0 combined servings of fruit and/or vegetables; with no significant difference between men and women. All age groups reported consuming similar mean number of fruit and vegetable servings. Table 23 indicates that approximately 82% of the population consumed less than five combined servings of fruit and/or vegetables per day; this was well below the public health recommended levels. For both men and women, the relatively high proportions did not vary significantly across the four age groups, ranging from 83.7% in the youngest age group to 78.9% in the oldest age group. A higher proportion of men than women generally consumed less than five combined servings of fruit and vegetables, although this difference was not significant (men: 83.5%, ±3.1; women: 79.9%, ±3.8).

Table 22 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
25-34	237	3.0	±0.6	254	3.0	±0.4	491	3.0	±0.4
35-44	271	2.8	±0.5	269	3.4	±0.5	540	3.1	±0.4
45-54	236	2.8	±0.6	259	3.2	±0.7	495	3.0	±0.5
55-64	244	3.0	±0.5	246	3.4	±0.6	490	3.2	±0.4
25-64	988	2.9	±0.3	1028	3.2	±0.3	2016	3.0	±0.2

Table 23 Percentage who consumed less than five combined servings of fruit and vegetables per day of the week

Less than five servings of fruit and 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
25-34	237	83.0	±5.5	254	84.5	±3.1	491	83.7	±3.3
35-44	271	85.5	±4.1	269	76.8	±6.2	540	81.3	±4.9
45-54	236	82.7	±8.5	259	76.4	±10.1	495	79.8	±7.0
55-64	244	81.6	±4.9	246	76.0	±8.3	490	78.9	±4.8
25-64	988	83.5	±3.1	1028	79.9	±3.8	2016	81.8	±2.4

Table 24 shows that the most common type of oil or fat used for meal preparation in a household was vegetable oil (80.3%), followed by margarine (10.4%).

Table 24 Type of oil or fat most often used for meal preparation in household

Type of oil or fat consumed in household														
n (households)	% Vegetable oil	95% CI	% Lard	95% CI	% Butter	95% CI	% Margarine	95% CI	% Other	95% CI	% None in particular	95% CI	% None used	95% CI
2011	80.3	±2.8	1.3	±0.8	4.8	±1.2	10.4	±2.5	1.5	±0.7	0.3	±0.3	1.4	±0.7

Table 25 Mean number of days in a week of fresh fish consumption by gender and age group

Age Group (years)	Fresh fish consumption								
	Men			Women			Both Sexes		
	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI
25-34	237	3.2	±0.4	253	2.8	±0.6	490	3.0	±0.4
35-44	271	3.4	±0.4	268	3.1	±0.5	539	3.3	±0.4
45-54	236	3.5	±0.5	259	3.3	±0.7	495	3.4	±0.4
55-64	244	3.4	±0.4	247	3.0	±0.5	491	3.2	±0.3
25-64	988	3.3	±0.3	1027	3.0	±0.4	2015	3.2	±0.2

Table 26 Mean number of days in a week of canned fish consumption by gender and age group

Age Group (years)	Canned fish consumption								
	Men			Women			Both Sexes		
	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI
25-34	236	1.2	±0.2	253	1.3	±0.1	489	1.3	±0.1
35-44	270	1.2	±0.1	268	1.2	±0.2	538	1.2	±0.1
45-54	236	1.3	±0.2	259	1.1	±0.1	495	1.2	±0.1
55-64	243	1.1	±0.2	247	1.2	±0.2	490	1.1	±0.1
25-64	985	1.2	±0.1	1027	1.2	±0.1	2012	1.2	±0.1

Table 25 shows that on average Cook Islanders consumed fresh fish 3.2 days per week, with no significant difference detected in consumption pattern between men (3.3 days ±0.3) and women (3.0 days ±0.4). There was also no significant variation in the mean number of days of fresh fish consumption across age groups. Table 26 indicates a lower mean number of days (1.2 days ±0.1) of canned fish consumption by the population compared to fresh fish consumption (3.2 days ±0.2). Both men (1.2 days ±0.1) and women (1.2 days ±0.1) reported similar mean number of days of consuming canned fish per week.

4.5 Physical Activity

4.5.1 Measurements

Survey participants were asked how often (days) and how long (minutes/hours) they engaged in physical activity during recreation or leisure time, physical activity at work and physical activity as part of active transport in a typical week. For example, for the work and leisure questions, respondents were asked how many days per week and how many hours/minutes per day they engaged in moderate- and vigorous-intensity activities. For the transport questions, respondents were asked how many days and for how long they either walk and/ or cycle to and from places.

4.5.2 Analyses

The three physical activity domains (leisure-time, work and transport) were first analysed separately to determine the proportion of activity undertaken in each domain as a portion of the total physical activity. For each domain, three levels of activity were created: low active, moderately active, and highly active¹². In each domain, the total time participants spent in an activity per week was computed by multiplying the number of days by the duration of the activity. The daily duration of activity was

then converted into METminutes per day to account for the different levels of energy expenditure required to do the activities (i.e. moderate or vigorous),

The term MET (metabolic equivalent) is used to reflect 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. For example, the energy associated with sitting is equivalent to a resting metabolic rate of 1 MET.

For the analyses in this report, the following MET values were allocated to the three physical activity domains¹³:

- Moderate physical activity (work and leisure domain) = 4.0 METS
- Vigorous 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 active: <600 METminutes per week
- Moderately active: 600-1500 METminutes per week
- Highly active: >1500 METminutes per week

4.5.3 Levels of Physical Activity

Tables 27-29 show the level of total physical activity, which combined work, leisure and transport physical activity, for men, women and total survey population. Table 27 indicates that 74.4% (± 6.2) of men reported a low level of total physical activity. Moderate level of physical activity was reported by 11.5% (± 3.0) and high level of physical activity by only 14.1% (± 4.2) of men. Young men aged 25-34 years reported a relatively high proportion (73.2% ± 12.4) of low total physical activity. Similar proportions were observed across the older age groups ranging from 73.0% ± 8.3 (55-64 years) to 76.4% ± 11.9 (45-54 years). For high level of total physical activity, the proportions generally declined with increasing age but there was no significant difference across all the age groups.

Table 27 Categories of overall physical activity among men by age group

Age Group (years)	Level of total physical activity						
	n	Men		Men		Men	
% Low		95% CI	% Moderate	95% CI	% High	95% CI	
25-34	171	73.2	± 12.4	11.0	± 5.1	15.8	± 8.3
35-44	204	75.2	± 8.4	9.2	± 4.1	15.7	± 6.2
45-54	177	76.4	± 11.9	13.0	± 8.6	10.7	± 4.9
55-64	185	73.0	± 8.3	17.2	± 7.3	9.8	± 7.0
25-64	737	74.4	± 6.2	11.5	± 3.0	14.1	± 4.2

Table 28 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
25-34	212	76.9	±6.7	13.8	±5.5	9.3	±3.2
35-44	223	77.2	±9.2	10.9	±5.1	11.9	±5.6
45-54	217	75.6	±6.7	16.7	±5.0	7.7	±4.4
55-64	206	72.4	±7.0	20.2	±6.7	7.4	±3.5
25-64	858	76.3	±4.3	14.1	±3.4	9.6	±2.4

Table 29 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
25-34	383	75.2	±7.0	12.5	±3.7	12.3	±5.1
35-44	427	76.2	±6.1	10.1	±3.1	13.7	±4.0
45-54	394	76.0	±6.8	14.8	±5.2	9.2	±3.1
55-64	391	72.7	±5.3	18.8	±4.9	8.6	±3.9
25-64	1595	75.3	±3.7	12.9	±2.2	11.8	±2.6

For women, a similar proportion (76.3% ±4.3) engaged in a low level of physical activity, compared to men (74.4% ±6.2) (Tables 28 and 27, respectively). Approximately 14.1% (±3.4) of women reported a moderate level of physical activity, which was not significantly different from that reported by men (11.5% ±3.0). Only 9.6% (±2.4) of women reported a high level of physical activity, which was lower than that reported by men (14.1% ±4.2).

Table 29 shows that for the entire population, 75.3% (±3.7) of Cook Islanders engaged in a low level of physical activity. This level of low activity remained high across all age groups. About 1 in 10 Cook Islanders (12.9% ±2.2) engaged in moderate level of physical activity, and similarly only 11.8% (±2.6) participated in high level of physical activity.

Table 30 Level of total physical activity (mean MET 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
25-34	171	53.3	±26.1	212	40.7	±10.3	383	46.5	±14.9
35-44	204	46.4	±18.7	223	48.6	±32.1	427	47.6	±18.4
45-54	177	49.6	±25.5	217	41.3	±18.7	394	45.6	±15.2
55-64	185	68.3	±37.2	206	44.2	±17.1	391	55.9	±21.8
25-64	737	52.2	±14.3	858	43.6	±11.2	1595	47.7	±9.1

Table 30 presents mean minutes of total physical activity (across all three domains) defined in METminutes per day by gender and for the survey population. Overall, Cook Islanders reported an average of 47.7 (± 9.1) minutes per day spent in total physical activity. There was no significant gender difference in mean minutes of total physical activity, with men engaged in physical activity for a mean of 52.2 (± 14.3) minutes per day, and women for a mean of 43.6 (± 11.2) minutes per day.

Tables 31-33 summarise results on mean minutes per day engaged in work-, transport- and leisure-time physical activity. As shown in Table 31, men spent 24.6 (± 11.2) minutes/day and similarly women 24.1 (± 9.4) minutes/day on work-related physical activities. Except for those aged 35-44 years, men reported engaging in more minutes of physical activity as part of their work than women, but these differences were not statistically different.

Table 32 shows similar time spent on transport-related physical activities by men and women, with men spending an average of 15.5 (± 8.2) minutes/day, and women an average of 13.2 (± 5.5) minutes/day. Men generally engaged in more active transport than women across most age groups, but this difference was not statistically significant.

For leisure-time physical activities, Table 33 shows that the population engaged in very low levels of leisure-related physical activities, averaging 12.2 (± 3.9) minutes/day for men, a level that was significantly higher than women who averaged 6.3 (± 1.6) minutes/day. The time spent on leisure-time physical activities generally declined with increasing age for both men and women. Overall, most physical activity in the Cook Islands was undertaken as part of work. Leisure-time physical activity contributed very little to the total time spent doing physical activity.

**Table 31 Level of work-related physical activity
(mean MET 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
25-34	171	28.1	± 21.6	212	23.0	± 8.1	383	25.4	± 11.3
35-44	204	16.8	± 6.6	223	27.5	± 27.4	427	22.3	± 14.2
45-54	177	21.0	± 17.4	217	20.8	± 17.6	394	20.9	± 12.1
55-64	185	39.0	± 32.0	206	23.7	± 14.5	391	31.1	± 18.3
25-64	737	24.6	± 11.2	858	24.1	± 9.4	1595	24.3	± 7.1

**Table 32 Level of transport-related physical activity
(mean MET 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
25-34	171	9.0	± 7.4	212	10.6	± 5.4	383	9.9	± 4.5
35-44	204	16.9	± 19.0	223	14.5	± 15.0	427	15.7	± 11.7
45-54	177	21.7	± 19.8	217	16.1	± 6.1	394	19.0	± 10.0
55-64	185	24.0	± 13.9	206	15.1	± 6.2	391	19.4	± 7.5
25-64	737	15.5	± 8.2	858	13.2	± 5.5	1595	14.3	± 4.7

Table 33 Level of recreation-related physical activity (mean MET 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
25-34	171	16.2	±6.7	212	7.0	±2.5	383	11.2	±5.2
35-44	204	12.7	±3.2	223	6.6	±2.7	427	9.6	±2.4
45-54	177	6.8	±2.6	217	4.4	±2.7	394	5.7	±2.0
55-64	185	5.2	±2.4	206	5.4	±6.2	391	5.3	±3.3
25-64	737	12.2	±3.9	858	6.3	±1.6	1595	9.1	±2.4

4.6 Overweight and Obesity

Height and weight were measured following the standardised STEPS protocol outlined in the Methodology section of this report. The body mass index (BMI) of each participant was computed by dividing the weight (kilograms) by the square of the height (metres²), and the BMI risk categories defined as follows:

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

4.6.1 Height and Weight

Cook Islands men on average were significantly taller (174.4 ±0.9) and heavier (99.5kg ±2.3) than women (163.7cm ±0.7, 89.4kg ±1.5) (Tables 34 and 35). For both men and women, the highest mean weight was in the youngest age group (men: 102.9kg ±3.9; women: 90.1kg ±2.2), and declining thereafter with increasing age for both genders.

Table 34 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	214	175.5	±1.0	240	164.4	±0.9
35-44	254	174.6	±1.5	254	164.3	±1.0
45-54	224	172.6	±1.3	246	162.8	±0.8
55-64	235	172.7	±1.4	236	160.8	±1.1
25-64	927	174.4	±0.9	976	163.7	±0.7

Table 35 Mean weight by gender and age group

Age Group (years)	Mean weight (kg)					
	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
25-34	215	102.9	±3.9	231	90.1	±2.2
35-44	254	100.0	±1.7	250	89.0	±2.7
45-54	224	94.7	±3.0	246	89.6	±1.2
55-64	235	93.5	±3.2	236	87.7	±2.9
25-64	928	99.5	±2.3	963	89.4	±1.5

4.6.2 Body Mass Index Categories

As indicated in Table 36, the overall mean BMI of the population was 32.8 kg/m² (±0.4); women had a slightly higher mean BMI (33.3 kg/m² ±0.6) than men (32.3 kg/m² ±0.5), but this difference was not significant. For both sexes, the youngest age group (25-34 years) had similar mean BMI (33.0 kg/m² ±0.6) to the oldest age group (55-64 years: 32.5 kg/m² ±0.8).

Table 36 Mean body mass index (kg/m²) by gender and age group

Age Group (years)	Mean BMI (kg/m ²)								
	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	210	32.7	±0.8	231	33.2	±0.8	441	33.0	±0.6
35-44	253	32.6	±0.7	248	32.9	±1.1	501	32.7	±0.6
45-54	223	31.6	±0.9	246	33.8	±0.3	469	32.6	±0.9
55-64	235	31.3	±0.8	235	33.9	±1.3	470	32.5	±0.8
25-64	921	32.3	±0.5	960	33.3	±0.6	1881	32.8	±0.4

Table 37 BMI classifications among men by age group

Age Group (years)	BMI classifications						
	Men						
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight ≥25.0	95% CI
25-34	210	----	----	9.2	±3.4	90.8	±3.4
35-44	253	----	----	8.1	±3.0	91.9	±3.0
45-54	223	0.8	±0.9	15.6	±3.2	83.6	±3.3
55-64	235	0.5	±0.8	8.6	±2.3	90.9	±2.8
25-64	921	0.2	±0.3	10.0	±2.0	89.8	±2.1

Table 38 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	231	----	----	14.7	±4.3	85.3	±4.3
35-44	248	0.6	±1.0	13.7	±2.5	85.8	±2.1
45-54	246	----	----	9.5	±2.7	90.5	±2.7
55-64	235	0.5	±0.8	7.2	±2.4	92.3	±2.9
25-64	960	0.2	±0.4	12.7	±2.3	87.1	±2.3

Table 39 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	441	----	----	12.0	±2.8	88.0	±2.8
35-44	501	0.3	±0.5	10.8	±3.1	88.9	±3.2
45-54	469	0.5	±0.6	12.8	±2.8	86.8	±3.0
55-64	470	0.5	±0.5	7.9	±1.6	91.6	±2.0
25-64	1881	0.2	±0.2	11.3	±1.6	88.5	±1.6

Tables 37-39 summarize the proportion of the population in each BMI category for men and women and total population. Overall, Table 39 shows that 88.5% (±1.6) of the population was overweight (BMI ≥25.0 kg/m²), with slightly more men being overweight (89.8% ±2.1) than women (87.1% ±2.3). This difference was not statistically significant. The relatively high proportion of men being overweight was already evident in the youngest age group, with a prevalence of 90.8% (±3.4) among those aged 25-34 years, compared to a similar prevalence rate (90.9% ±2.8) in the oldest cohort.

The prevalence of overweight in women aged 25-34 years was also at a relatively high level of 85.3% (±4.3), and increasing to a statistically significant difference of 92.3% (±2.9) in the oldest age group of 55-64 years (Table 38).

Table 40 Percentage of obesity (BMI \geq 30 kg/m²) by gender and age group

Age Group (years)	Men			Women			Both Sexes		
	n	% BMI \geq 30	95% CI	n	% BMI \geq 30	95% CI	n	% BMI \geq 30	95% CI
25-34	210	56.4	\pm 6.9	231	64.8	\pm 3.3	441	60.6	\pm 5.2
35-44	253	60.9	\pm 3.9	248	63.0	\pm 6.6	501	61.9	\pm 3.6
45-54	223	56.8	\pm 7.6	246	71.3	\pm 4.5	469	63.5	\pm 6.3
55-64	235	52.9	\pm 5.5	235	68.0	\pm 9.6	470	60.2	\pm 5.5
25-64	921	57.4	\pm3.6	960	65.7	\pm3.2	1881	61.4	\pm2.7

Table 40 presents the obesity rates (BMI \geq 30 kg/m²) in the Cook Islands. The overall obesity prevalence was 61.4% (\pm 2.7). The obesity rate was significantly higher among women (65.7% \pm 3.2) compared to men (57.4% \pm 3.6). The highest prevalence of obese women (71.3% \pm 4.5) was in the 45-54 years age group. For men, the obesity rate peaked at a relatively younger age group (35-44 years: 60.9% \pm 3.9).

4.6.3 Waist Circumference

Central obesity is considered as a risk factor for cardiovascular diseases, and is measured by waist circumference. Table 41 shows that men had a significantly higher mean waist circumference (103.7cm \pm 1.0) than women (100.0cm \pm 1.5). Men reported marginally higher mean waist circumference than women across all age groups. While mean waist circumferences increased with age among women, the pattern fluctuated somewhat for men, between 102.8cm (\pm 1.6) in the 25-34 years age group and 104.7cm (\pm 1.8) in the 55-64 years age group.

Table 41 Mean waist circumference (cm) by gender and age group

Age Group (years)	Waist circumference (cm)					
	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
25-34	209	102.8	\pm 1.6	230	99.3	\pm 1.5
35-44	251	104.4	\pm 1.3	251	98.8	\pm 3.3
45-54	223	103.5	\pm 2.4	245	101.4	\pm 2.4
55-64	234	104.7	\pm 1.8	232	103.7	\pm 3.0
25-64	917	103.7	\pm1.0	958	100.0	\pm1.5

4.7 Blood Pressure and Hypertension

Blood pressure status was obtained through measuring objectively and self-reporting for medical history information. For self-report, survey participants were asked if they had their blood pressure measured in the last 12 months, 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. All survey participants also had their blood pressure measured.

For this report, the prevalence of hypertension was computed to include those with:

- a mean systolic pressure \geq 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 \geq 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.

To ensure comparative data across all STEPS reports, those participants who reported having been ever 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 42 and 43 show a significant gender difference in systolic and diastolic blood pressure, with men having higher mean resting blood pressure (134.6/83.1mmHg) than women (123.3/78.0mmHg). Not surprisingly, mean resting systolic blood pressure increased with increasing age in both genders. Mean resting diastolic blood pressure also increased with age, peaking at age 45-54 years for both men and women (men: 87.4mmHg \pm 3.3; women: 83.0 \pm 3.1) and dropping slightly in the oldest age group.

Table 42 Mean resting systolic blood pressure (mmHg) by gender and age group

Age Group (years)	Mean systolic blood pressure (mmHg)								
	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	214	131.3	\pm 1.9	240	116.4	\pm 1.1	454	123.8	\pm 5.2
35-44	254	131.9	\pm 3.3	254	121.6	\pm 2.9	508	126.9	\pm 4.4
45-54	224	140.5	\pm 3.5	246	134.0	\pm 3.8	470	137.5	\pm 3.2
55-64	235	144.1	\pm 4.7	236	139.2	\pm 3.9	471	141.7	\pm 3.6
25-64	927	134.6	\pm2.5	976	123.3	\pm3.9	1903	129.1	\pm3.4

Table 43 Mean resting diastolic blood pressure (mmHg) by gender and age group

Age Group (years)	Mean diastolic blood pressure (mmHg)								
	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	214	80.3	\pm 2.3	240	75.2	\pm 1.0	454	77.7	\pm 1.9
35-44	254	83.0	\pm 3.6	254	77.7	\pm 1.7	508	80.4	\pm 2.9
45-54	224	87.4	\pm 3.3	246	83.0	\pm 3.1	470	85.4	\pm 2.7
55-64	235	86.1	\pm 3.4	236	82.5	\pm 2.3	471	84.4	\pm 2.5
25-64	927	83.1	\pm2.2	976	78.0	\pm1.6	1903	80.6	\pm1.7

**Table 44 Percentage with hypertension
(SBP \geq 140 and/or DBP \geq 90 or currently on medication for raised blood pressure)**

SBP \geq140 and/or DBP \geq 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	214	28.3	\pm 4.3	240	9.2	\pm 3.6	454	18.6	\pm 6.7
35-44	255	37.2	\pm 7.6	255	20.9	\pm 4.4	510	29.3	\pm 7.8
45-54	227	55.0	\pm 8.8	247	49.3	\pm 10.0	474	52.4	\pm 6.6
55-64	237	69.2	\pm 10.2	239	66.2	\pm 5.6	476	67.8	\pm 6.1
25-64	933	40.6	\pm7.6	981	25.5	\pm9.3	1914	33.2	\pm6.7

As indicated in Table 44, the overall prevalence of hypertension in the Cook Islands, defined as having measured raised blood pressure (SBP \geq 140 and/or DBP \geq 90) or currently on medication for raised blood pressure, was 33.2% (\pm 6.7). Hypertension was more common among men (40.6% \pm 7.6) than women (25.5% \pm 9.3), but this difference was not statistically significant. While the prevalence of hypertension increased with increasing age for both genders, women experienced a substantial rise in hypertension compared to men with a seven-fold increase in the prevalence from the youngest to the oldest age group; from 9.2% (\pm 3.6) among those aged 25-34 years to 66.2% (\pm 5.6) among those aged 55-64 years.

4.8 Fasting Blood Glucose and Diabetes

During Step 1 interview, all 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. As part of Step 3, capillary whole blood was drawn using the finger prick method to assess participants' fasting blood glucose level.

The WHO guidelines for defining and classifying diabetes mellitus¹⁴ were used to compute diabetes prevalence based on the fasting capillary whole blood:

- fasting capillary whole blood value of glucose \geq 6.1 mmol/L (\geq 100 mg/dl whether or not they had previously been told by a health worker that they had diabetes, OR
- normal fasting capillary whole blood value of glucose $<$ 6.1 mmol/L ($<$ 100 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 those who were NOT on anti-diabetes medication or on a special diet prescribed by a health worker, were NOT included in the estimates among those considered as having diabetes.

Table 45 Mean fasting blood glucose (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	211	6.0	±0.2	235	5.8	±0.2	446	5.9	±0.1
35-44	245	6.4	±0.3	250	6.2	±0.2	495	6.3	±0.2
45-54	221	6.8	±0.2	242	6.3	±0.2	463	6.6	±0.2
55-64	224	7.3	±0.5	233	6.9	±0.3	457	7.1	±0.3
25-64	901	6.4	±0.2	960	6.1	±0.2	1861	6.3	±0.2

Table 46 Prevalence of diabetes by gender and age group

Raised blood glucose or currently on medication for diabetes *									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	211	15.1	±3.0	235	12.5	±4.2	446	13.8	±2.6
35-44	246	28.7	±9.7	250	21.1	±4.2	496	25.0	±6.0
45-54	222	34.7	±4.1	244	27.6	±6.8	466	31.4	±4.3
55-64	226	45.1	±7.0	236	43.5	±4.7	462	44.3	±4.3
25-64	905	26.1	±6.1	965	21.0	±4.5	1870	23.6	±3.9

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

Table 45 summarises results on mean fasting blood glucose for men and women and total population. The overall mean fasting blood glucose was 6.3 mmol/L (± 0.2). Men reported a marginally higher mean fasting glucose level (6.4 mmol/L ± 0.2) than women (6.1 mmol/L ± 0.2); this difference was not statistically significant. Mean fasting blood glucose levels increased gradually with increasing age for both genders.

Table 46 shows the overall prevalence of diabetes in the Cook Islanders was 23.6% (± 3.9). Although men had a higher diabetes rate than women, this difference was not statistically significant (men: 26.1% ± 6.1 ; women: 21.0% ± 4.5). For both men and women, the prevalence of diabetes increased with age. For men, a two-fold and significant increase in diabetes prevalence occurred between aged 25-34 years and 35-44 years, from 15.1% (± 3.0) to 28.7% (± 9.7), respectively. For women, diabetes prevalence rates between the ages of 25-34 years to 45-54 years more than doubled, from 12.5% (± 4.2) to 27.6% (± 6.8), respectively.

4.9 Total Cholesterol

Overall, the mean total blood cholesterol among Cook Islanders was 5.1 mmol/L (± 0.1); similar mean levels were observed between men (5.1 mmol/L ± 0.1) and women (5.0 mmol/L ± 0.1) (Table 47). Mean total cholesterol increased gradually with age among women, peaking in the 55-64 years age group (5.4 mmol/L ± 0.1). Mean total cholesterol among men was already at a relatively high level in the youngest age group 25-34 years (5.1 mmol/L ± 0.2), and remained at the similar level at aged 55-64 years (5.2 mmol/L ± 0.1).

Table 47 Mean levels of total blood cholesterol (mmol/L) by gender and age group

Age Group (years)	Mean total cholesterol (mmol/L)								
	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34	186	5.1	±0.2	190	4.8	±0.1	376	4.9	±0.1
35-44	219	5.2	±0.1	221	5.0	±0.1	440	5.1	±0.1
45-54	198	5.1	±0.2	231	5.2	±0.1	429	5.2	±0.1
55-64	216	5.2	±0.1	226	5.4	±0.1	442	5.3	±0.1
25-64	819	5.1	±0.1	868	5.0	±0.1	1687	5.1	±0.1

Table 48 Percentage with raised total blood cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl)

Age Group (years)	Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl								
	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	186	74.1	±8.0	190	64.9	±4.6	376	69.6	±5.0
35-44	219	82.8	±4.9	221	73.6	±4.5	440	78.3	±4.6
45-54	198	75.0	±6.0	231	79.4	±3.2	429	77.1	±3.6
55-64	216	76.6	±6.2	226	90.7	±2.4	442	83.5	±4.9
25-64	819	77.1	±4.8	868	73.2	±4.4	1687	75.2	±3.3

Table 48 shows that 75.2% (±3.3) of the population had a raised total cholesterol (≥5.0 mmol/L or ≥190 mg/dl). A higher proportion of men (77.1% ±4.8) had elevated cholesterol compared to women (73.2% ±4.4), but this difference was not statistically significant. Among women, the proportions with high-risk cholesterol generally increased with age reaching 90.7% (±2.4) among the 55-64 years age group. Among men, the proportion with raised blood total cholesterol peaked earlier, in the 35-44 years age group (82.8% ±4.9) and declined to 75.0% (±6.0) in the 45-54 years age group and increased slightly to 76.6% (±6.2) in the older age group.

4.10 Combined Risk Factors

The Cook Islands STEPS survey measured five NCD risk factors:

- current daily smokers,
- overweight (BMI ≥25 kg/m²),
- 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 activity (<600 METminutes per week).

To examine the burden of NCD risk factors among the surveyed population, these five risk factors were combined to indicate the overall risk for NCDs as follows:

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

Table 49 shows that 0.3% (± 0.5) of male respondents were classified as being at low risk for NCD (i.e. with none of the five risk factors); this prevalence was similar to that for women (0.3% ± 0.4) (Table 50). Approximately 17.9% (± 3.2) of men were at moderate risk (i.e. with 1-2 risk factors), compared with 27.8% (± 3.0) of women; a difference that was statistically significant. A significantly higher proportion of men (81.8% ± 3.3) than women (71.9% ± 3.2) surveyed had 3-5 NCD risk factors.

The proportion of raised risk (i.e. with 3-5 risk factors) increased with increasing age. By aged 45-64 years, 80.5% (± 3.1) of the population had raised risk, compared to 75.1% (± 3.9) in the younger 25-44 years group. This difference was not statistically significant. For both genders, the NCD risks were already high amongst the younger cohort (25-44 years), with 81.0% (± 4.3) of men and 70.0% (± 3.6) of women in this age group being at high risk.

Table 49 Percentage of NCD risk categories among men by age group

Raised risk							
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	337	0.3	± 0.6	18.7	± 4.1	81.0	± 4.3
45-64	344	0.3	± 0.5	15.9	± 3.5	83.8	± 3.6
25-64	681	0.3	± 0.5	17.9	± 3.2	81.8	± 3.3

Table 50 Percentage of NCD risk categories among women by age group

Raised risk							
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	398	0.2	± 0.5	29.8	± 3.3	70.0	± 3.6
45-64	402	0.4	± 0.9	22.5	± 3.1	77.1	± 3.5
25-64	800	0.3	± 0.4	27.8	± 3.0	71.9	± 3.2

Table 51 Percentage of NCD risk categories among both sexes by age group

Raised risk							
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	735	0.3	± 0.4	24.6	± 3.8	75.1	± 3.9
45-64	746	0.4	± 0.5	19.2	± 2.9	80.5	± 3.1
25-64	1481	0.3	± 0.3	23.1	± 3.0	76.6	± 3.1

5. DISCUSSION AND CONCLUSIONS

This STEPS report focuses on major NCD and their risk factors. To facilitate between-country comparisons of STEPS data, key results have been summarised in a series of standard tables. Self-report measures were used to collect behavioural risk factors data, and as such under-reporting or over-reporting of some risk factors could not be dismissed. However, the key strength of the STEPS is the scientific, national, comprehensive, updated and comparable data on NCD and their risk factors has been provided. Another important strength is that staff trained in the STEPS protocol used objective methods and clinical techniques to assess key anthropometric, physiological and biochemical indicators.

The STEPS survey was the first national study to examine the distributions of a broad range of NCD risk factors in the Cook Islands. The STEPS survey found relatively high levels of behavioural risks for NCD at all ages in the Cook Islands. The survey key findings are presented in this final section of the report, together with a series of public health recommendations as an agenda for preventing and controlling NCD burden in the Cook Islands.

Tobacco use is one of the most potent lifestyle behaviours contributing to NCD risks. In this survey, tobacco use was as common among women as men. Nearly half (43.9%) of the population defined themselves as current smokers, with one third reporting that they smoke daily. Among men, 37.5% smoked daily and among women 28.8% smoked daily. The highest prevalence of daily smoking among men and women was found in the youngest age group (25-34 years), from which point the prevalence declined gradually to the age of 55-64 years. A previous smoking prevalence study involving adults of similar ages as the STEPS study living in Rarotonga had reported a slightly higher prevalence for men, but a lower rate for women (38% of men and 19% of women)⁹. This comparison suggests that tobacco use has increased over the last two decades resulting in Cook Islands women facing similar risk as men in developing chronic diseases. Given the high prevalence of smoking among young people in the Cook Islands, implementing effective smoking cessation programs with this age group should be a priority. A comprehensive anti-tobacco program needs to also include public health initiatives to delay and prevent the onset of smoking in the younger age group in the first instance.

The survey found that 62.9% of Cook Islanders have consumed alcohol in the last 12 months (defined as current drinkers). Drinking was more common among men (74.4%) than women (50.6%). Harmful or excessive alcohol drinking was prevalent in the Cook Islands, especially among men. About 74.7% of men reported 'binge drinking', that is drinking on average 5 or more standard drinks in the past week, while 33.8% reported drinking 20 or more drinks on a drinking day in the past week. A particular concern was the highest proportion of excessive drinking among men in the 25-34 years age group. Binge drinking was also common among women, with half of those surveyed (51.6%) reported drinking 4 or more standard drinks on any drinking day. Heavy alcohol drinking is a major public health problem as it could result in chronic diseases such as liver cirrhosis, stroke, or dilated cardiomyopathy. In addition, heavy drinking is associated with road traffic injury, falls and violent behaviour which could lead to premature deaths and disabilities for all involved. Thus, appropriate public health programs need to be implemented to address the excessive drinking pattern in the Cook Islands.

The survey noted that fruit and vegetable consumption is generally low with fruits consumed on an average of 3.7 days per week and vegetables consumed an average of 4.0 days per week. On average, Cook Islanders are eating only 1.5 servings of fruits and also 1.5 servings of vegetables per day. The survey clearly showed that the majority of Cook Islanders (81.8%) is not consuming the recommended five combined servings of fruit and vegetables per day. Interestingly, fresh fish consumption was more common than canned fish consumption in the Cook Islands: 3.2 days per week of fresh fish compared with 1.2 days of canned fish.

As faced by many Pacific island countries and areas (PICs) promoting healthy eating practices is challenging in the Cook Islands because the behaviour is embedded within a changing and complex mix of social, economic, cultural and environmental influences¹⁰. Availability and affordability of

nutritious foods are important drivers of healthy eating and should form part of a comprehensive public health program. Equally critical is to better understand food preferences and tastes of Cook Islanders; effective public health initiatives need to consider this critical component when developing and implementing programs to promote consumption of nutritious foods.

A previous study on a convenience sample of 332 Cook Islanders aged 22-86 years found men were more physically active than women during the working week, but not on weekends¹¹. Although the STEPS survey used a different measure of physical activity the study also found some differences between men and women levels of physical activity. The STEPS survey found that the majority of Cook Islanders, especially women and older people are not obtaining the minimum recommended levels of health-enhancing physical activity, which is 30 minutes of moderate-intensity physical activity for 5 or all days of the week. The majority of Cook Islanders (75.3%) reported a low level of total physical activity. While more men (14.1%) engaged in high or vigorous levels of physical activity than women (9.6%) (although difference was not significant), this percentage was relatively low and declined with increasing age. The duration of total physical activity performed as part of work, transport and leisure time combined averaged 52.2 minutes per day for men and 43.6 minutes per day for women. The majority of physical activity comes from work-related activities, followed by active transport such as walking or cycling. Leisure-time recreational activities contributed very little to total physical activity. In sum, there is a substantial segment of the Cook Islands population, about four in five people, who are at elevated NCD risk because they are engaging in very low levels of physical activity.

The majority (88.5%) of Cook Islanders was overweight ($BMI \geq 25.0 \text{ kg/m}^2$) and about two thirds (61.4%) obese ($\geq 30 \text{ kg/m}^2$) during the time of the survey. Obesity was significantly more common among women (65.7% ± 3.2) compared to men (57.4% ± 3.6). The relatively high rates of obesity were already evident in the youngest age group for both men and women; by aged 25-34 years 56.4% of men and 64.8% were classified as obese. A study examining trends in body mass index of adults aged 20+ years living in Rarotonga had reported significant increase in obesity among men and women over a 30-year period. In 1966, 14% of men were obese, and in 1996 the proportion was 52%. Among women, 44% were obese in 1966, and in 1996 the proportion was 57%¹⁵. The latest data derived from the STEPS survey indicate that the obesity prevalence rates in the Cook Islands will not decline without concerted public health interventions.

This survey identified a substantial percentage of the population with elevated NCD risks. About one in three had a raised blood pressure at the time of the survey and/or on medication for hypertension. This condition was more common among men (40.6% ± 7.6) than women (25.5% ± 9.3), (although not statistically significant). In terms of diabetes, 23.6% of the Cook Islanders was found to have fasting blood sugar level of $\geq 6.1 \text{ mmol/L}$. This prevalence is lower than that reported for the Federated States of Micronesia (Pohnpei)¹⁶ (32.1%) and half that report in American Samoa¹⁷ (47.3%), and marginally higher than that found in Nauru¹⁸ (22.7%). As noted in other PICs, the diabetes prevalence in the Cook Islands generally increases with increasing age. Similar to that reported in the Kiribati STEPS survey¹⁹, diabetes is more common among men than women, across all age groups.

The Cook Islands STEPS survey has confirmed that NCD risk factors represent a major public health challenge. Diverse but comprehensive and coordinated strategies by governmental and non-governmental organizations and private agencies will be necessary. Combining primary, secondary and tertiary preventative approaches will be necessary to address the current high levels of NCD risk factors in Cook Islands.

6. RECOMMENDATIONS

Actions addressing policy, organizational and environmental factors

- Assign high priority for NCD and promote NCD prevention and control as a development agenda.
- Increase resources to implement the WHO Framework Convention on Tobacco Control and Regional Action Plan for the Tobacco Free Initiative in the Western Pacific Region (2010-2014).

- Develop strategies to promote consumption of local foods.
- Develop strategies to support importation of healthy foods.
- Develop strategies to support local production and improve availability of fruit and vegetables.
- Develop policies to establish physical activity-friendly environments.
- Establish sustainable government funding mechanism and health infrastructure to support NCD prevention and management.
- Establish and strengthen coalitions, networks and partnerships of work programs for preventing and managing NCD.
- Integration of prevention and control of NCD into policies and strategies in relevant government agencies.

Actions addressing NCD behavioural risk factors

- Comprehensive anti-smoking campaigns to reduce smoking rates across all age groups and in both genders, particularly targeting the younger age groups to prevent smoking uptake.
- Comprehensive smoking cessation programs to reduce smoking rates across all age groups in both genders, particularly targeting the younger age groups.
- A high priority on cardiovascular disease prevention and control focusing on hypertension intervention and cholesterol reduction through the primary, secondary and tertiary prevention, due to the high prevalence of hypertension and total blood cholesterol, compared with other PICs having published the national STEPS reports.
- Comprehensive health promotion campaigns to reduce alcohol consumption, particularly targeting binge drinking.
- Comprehensive health promotion campaigns promoting the recommended levels of fruit and vegetable consumption across all age groups and in both genders, and increasing public awareness of the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods.
- Develop and implement cultural-appropriate programs to promote daily incidental physical activity and encourage more moderate-intensity physical activity in all age groups, particularly among women.

Establishing a coordinated approach to noncommunicable disease management system

- Increase public awareness of the importance of regular screening of blood pressure, blood cholesterol and blood sugar level.
- Increase the capacity of the healthcare system for early detection and management of individuals with chronic diseases.
- Establish a coordinated NCD program supporting management of individuals diagnosed with chronic disease conditions, including supporting patient self-management, self-monitoring of conditions, medications and lifestyle changes that will reduce length of hospitalisation and improving quality of life.

Maintaining quality surveillance and public health information

- Secure political and financial commitments for a scientific, systematic and rigorous 2nd-round national STEPS survey in the Cook Islands to ensure availability of data on the trends of NCD risk factors over time.
- Standardize data collection procedures of national surveys, similar to the procedure of the national STEPS survey.

APPENDICES

Participant Identification Number

Vaka/Island

participant

Appendix 1. Cook Islands STEPS Survey Questionnaire

GOVERNMENT OF THE COOK ISLANDS TE MARAE ORA (Ministry of Health) & World Health Organization



The WHO STEPwise approach to surveillance of NCD Risk Factors

<i>Check if the following are completed (to be checked by:)</i>		Yes	No
Fasting status	(Step 2&3 Registration Station)	<input type="checkbox"/>	<input type="checkbox"/>
Checkout	(Step 2&3 Check-out Station)	<input type="checkbox"/>	<input type="checkbox"/>
EpiData data entry	(Data entry personnel)	<input type="checkbox"/>	<input type="checkbox"/>
EpiInfo data entry	(Data entry personnel)	<input type="checkbox"/>	<input type="checkbox"/>
Data entry irregularities	(Data entry personnel)	<input type="checkbox"/>	<input type="checkbox"/>

Identification Information:

V 1	Is the respondent on the participation list for the survey?	Yes, on the original list Yes, on the replacement list No (if "No", then END)	1 2 3	<input type="checkbox"/>
I 2	Village name:			
I 3	Vaka / Island code: (See Note*)			<input type="text"/>
I 4	Interviewer code			<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
		code	initials	
I 5	Date of completion of the questionnaire (See Note*)			<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / 20 <input type="text"/> <input type="text"/>
		Day	Month	Year

Participant Identification Number

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Vaka/Island

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participant

Consent														
I 6	<table border="1"> <tr> <td>Consent has been read out to participant</td> <td>Yes</td> <td>1</td> <td rowspan="2"><input type="checkbox"/></td> <td rowspan="2">If NO, read consent</td> </tr> <tr> <td></td> <td>No</td> <td>2</td> </tr> </table>	Consent has been read out to participant	Yes	1	<input type="checkbox"/>	If NO, read consent		No	2					
Consent has been read out to participant	Yes	1	<input type="checkbox"/>	If NO, read consent										
	No	2												
I 7	<table border="1"> <tr> <td>Consent has been obtained (verbal and written)</td> <td>Yes</td> <td>1</td> <td rowspan="2"><input type="checkbox"/></td> <td rowspan="2">If NO, END</td> </tr> <tr> <td></td> <td>No</td> <td>2</td> </tr> </table>	Consent has been obtained (verbal and written)	Yes	1	<input type="checkbox"/>	If NO, END		No	2					
Consent has been obtained (verbal and written)	Yes	1	<input type="checkbox"/>	If NO, END										
	No	2												
I 9	<table border="1"> <tr> <td>Time of interview (24 hour clock)</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Time of interview (24 hour clock)												
Time of interview (24 hour clock)														
I 10	Family Name													
I 11	First Name													
I 12	Contact phone number where possible													
I 13	<table border="1"> <tr> <td>Specify whose phone</td> <td>Work</td> <td>1</td> <td rowspan="4"><input type="checkbox"/></td> </tr> <tr> <td>_____ ↖</td> <td>Home</td> <td>2</td> </tr> <tr> <td></td> <td>Neighbour</td> <td>3</td> </tr> <tr> <td></td> <td>Other (specify)</td> <td>4</td> </tr> </table>	Specify whose phone	Work	1	<input type="checkbox"/>	_____ ↖	Home	2		Neighbour	3		Other (specify)	4
Specify whose phone	Work	1	<input type="checkbox"/>											
_____ ↖	Home	2												
	Neighbour	3												
	Other (specify)	4												

Note: Identification information on this page should be stored separately from the questionnaire because it contains confidential information.

Participant Identification Number

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Vaka/Island

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participant

Step 1 Demographic Information

		Coding Column	
C 1	Sex (<i>Record Male / Female as observed</i>) (<i>See Note*</i>)	Male 1 Female 2	<input type="checkbox"/>
C 2	What is your date of birth? (<i>See Note*</i>)	Day <input type="checkbox"/> <input type="checkbox"/> Month <input type="checkbox"/> <input type="checkbox"/> Year <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
C 3	How old are you? (<i>See Note*</i>)	Years	<input type="checkbox"/> <input type="checkbox"/>
C 4	In total, how many years have you spent at school or in full-time study (excluding pre-school)?	Years	<input type="checkbox"/> <input type="checkbox"/>
C 5	What is your ethnic Origin? _____ ←	Cook Islands Maori 1 European 2 Other (Specify) 3 Refused 4	<input type="checkbox"/>
C 6	What is the highest level of education you have completed ?	Never attended school 1 Some primary school 2 Primary school 3 Secondary school (Form 6 or equivalent e.g. high school) 4 Tertiary (College/University) 5 Post graduate degree 6	<input type="checkbox"/>
C 7	Which of the following best describes your main work status over the last 12 months?	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9	<input type="checkbox"/>

Note*: 1) Missing values are not permissible for Vaka / Island code, Date of Interview and Sex.

2) The **Date of Birth** (C2) or the **age** (C3) and preferably **both** (C2 & C3) have to be filled. CODE "DK" FOR DON'T KNOW or DON'T REMEMBER.

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Vaka/Island

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participant

Step 1 Behavioural Measures

Tobacco Use (Section S)		Response		Coding Column	
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.					
S 1a	Do you currently smoke any tobacco products , such as cigarettes, cigars or pipes?	Yes No	1 2	<input type="checkbox"/>	If No, go to S9a
S 1b	If Yes, Do you currently smoke tobacco products daily ?	Yes No	1 2	<input type="checkbox"/>	If No, go to S9a
S 2a	How old were you when you first started smoking daily? (CODE DK FOR DON'T KNOW or DON'T REMEMBER)	Age (years)		<input type="checkbox"/> <input type="checkbox"/>	If known, go to S3
S 2b	Do you remember how long ago it was? (CODE DK FOR DON'T KNOW or DON'T REMEMBER)	In Years OR in Months OR in Weeks		Years <input type="checkbox"/> <input type="checkbox"/> Months <input type="checkbox"/> <input type="checkbox"/> Weeks <input type="checkbox"/> <input type="checkbox"/>	
S 3	On a typical day , how many of the following do you smoke? (RECORD FOR EACH TYPE)	Manufactured cigarettes Hand-rolled cigarettes Pipes full of tobacco Cigars, cheroots, cigarillos Other (please specify):		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
S 9a	During the past 7 days , on how many days have people smoked in your presence at work ?	Number of Days		<input type="checkbox"/>	
S 9b	During the past 7 days , on how many days have people smoked in your presence at home ?	Number of Days		<input type="checkbox"/>	
S 9c	During the past 7 days , on how many days have people smoked in your presence in public ? "In public" refers to both open and enclosed areas.	Number of Days		<input type="checkbox"/>	

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Vaka/Island

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participant

Alcohol Consumption (Section A)			
The next questions ask about the consumption of alcohol.			
		Response	Coding Column
A 1a	Have you ever consumed a drink that contains alcohol such as beer, wine, spirit and home brew?	Yes 1 No 2	<input type="checkbox"/>
<i>If No, Go to Next Section (D1a)</i>			
A 1b	Have you consumed alcohol within the past 12 months ?	Yes 1 No 2	<input type="checkbox"/>
<i>If No, Go to Next Section (D1a)</i>			
A 2	In the past 12 months, how frequently have you had at least one drink? (<i>READ RESPONSES</i>) <i>USE SHOWCARD</i>	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	<input type="checkbox"/>
A 3	On a typical day that you drink alcohol, how many drinks do you have? (<i>CODE DK FOR DON'T KNOW or DON'T REMEMBER</i>)	Number	<input type="checkbox"/> <input type="checkbox"/>
A 4	During each of the past 7 days , how many standard drinks of any alcoholic drink did you have each day? (<i>RECORD FOR EACH DAY</i>) <i>USE SHOWCARD</i>	Monday Tuesday Wednesday Thursday Friday Saturday Sunday	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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 local fruits and vegetables. I will explain to you what I mean by 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 ?	Number of days	<input type="checkbox"/>
<i>If Zero days, go to D2a</i>			
D 1b	How many servings of fruit do you eat on one of those days? <i>DEMONSTRATE SERVING SIZE</i>	Number of servings	<input type="checkbox"/> <input type="checkbox"/>
D 2a	In a typical week, on how many days do you eat vegetables ?	Number of days	<input type="checkbox"/>
<i>If Zero days, go to D3</i>			
D 2b	How many servings of vegetables do you eat on one of those days? <i>DEMONSTRATE SERVING SIZE</i>	Number of servings	<input type="checkbox"/> <input type="checkbox"/>
D 3	What type of oil or fat is most often used for meal preparation in your household? <i>SELECT ONLY ONE</i> _____ ←	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 Other 5 None in particular 6 None used 7 Don't know 8	<input type="checkbox"/>

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Vaka/Island

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participant

D 4	In a typical week, on how many days do you eat fresh fish ?	Number of days	<input type="checkbox"/>
D 5	In a typical week, on how many days do you eat tinned fish ?	Number of days	<input type="checkbox"/>

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, or 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	<input type="checkbox"/>	<i>If Yes, go to P6</i>
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	<input type="checkbox"/>	<i>If No, go to P4</i>
P 3a	In a typical week, on how many days do you do vigorous activities as part of your work?	Days a week	<input type="checkbox"/>	
P 3b	On a typical day on which you do vigorous activities, how much time do you spend doing such work?	In hours and minutes hrs <input type="checkbox"/> <input type="checkbox"/> : mins <input type="checkbox"/> <input type="checkbox"/> OR in minutes only or minutes <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
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	<input type="checkbox"/>	<i>If No, go to P6</i>
P 5a	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Days a week	<input type="checkbox"/>	
P 5b	On a typical day on which you do moderate-intensity activities, how much time do you spend doing such work?	In hours and minutes hrs <input type="checkbox"/> <input type="checkbox"/> : mins <input type="checkbox"/> <input type="checkbox"/> OR in minutes only or minutes <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
P 6	How long is your typical work day?	Number of hours	hrs <input type="checkbox"/> <input type="checkbox"/>	
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, etc				
P 7	Do you walk or use a bicycle (<i>pedal cycle</i>) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2	<input type="checkbox"/>	<i>If No, go to P9</i>
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	<input type="checkbox"/>	
P 8b	How much time would you spend walking or bicycling for travel on a typical day?	In hours and minutes hrs <input type="checkbox"/> <input type="checkbox"/> : mins <input type="checkbox"/> <input type="checkbox"/> OR in minutes only or minutes <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
The next questions ask about activities you do in your leisure time for recreation, such as sport (that is, activities aside from your work or travel, and not the activities already mentioned). These are activities that you choose to do voluntarily, not including necessary plantation work or household chores.				
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	<input type="checkbox"/>	<i>If Yes, go to P 14</i>
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?	Yes 1 No 2	<input type="checkbox"/>	<i>If No, go to P 12</i>
P11a	If Yes. In a typical week, on how many days do you do vigorous activities as part of your leisure time?	Days a week	<input type="checkbox"/>	

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Vaka/Island

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participant

Step 2 Physical Measurements

Height and weight			Coding Column
M 1	Technician ID Code	(1a) height <input type="text"/> <input type="text"/>	(1b) weight <input type="text"/> <input type="text"/>
M 2a & 2b	Device IDs for height and weight	(2a) height <input type="text"/> <input type="text"/>	(2b) weight <input type="text"/> <input type="text"/>
M 3	Height	(in Centimetres)	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>
M 4	Weight <i>If too large for scale, use two scales.</i>	(in Kilograms)	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>
M 5	(For women less than 50 years) Are you pregnant?	Yes 1 No 2	<input type="checkbox"/>
Waist			
M 6	Technician ID		<input type="text"/> <input type="text"/>
M 7	Device ID for waist		<input type="text"/> <input type="text"/>
M 8	Waist circumference	(in Centimetres)	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>
Blood pressure			Coding Column
M 9	Technician ID		<input type="text"/> <input type="text"/>
M 10	Device ID for blood pressure		<input type="text"/> <input type="text"/>
M 11	Cuff size used	Normal 1 Large 2 Extra Large 3	<input type="checkbox"/>
M 12a	Reading 1	Systolic BP	Systolic mmHg <input type="text"/> <input type="text"/> <input type="text"/>
M 12b		Diastolic BP	Diastolic mmHg <input type="text"/> <input type="text"/> <input type="text"/>
M 13a	Reading 2	Systolic BP	Systolic mmHg <input type="text"/> <input type="text"/> <input type="text"/>
M 13b		Diastolic BP	Diastolic mmHg <input type="text"/> <input type="text"/> <input type="text"/>
M 14a	Reading 3	Systolic BP	Systolic mmHg <input type="text"/> <input type="text"/> <input type="text"/>
M 14b		Diastolic BP	Diastolic mmHg <input type="text"/> <input type="text"/> <input type="text"/>

If Yes, Skip Waist
(go to M9)

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Vaka/Island

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participant

Step 3 Biochemical Measurements

Blood glucose		Coding Column	
B 1	Since 10pm last night, have you had anything to eat or drink, other than water?	Yes 1 No 2	<input type="checkbox"/>
B 2	Technician ID Code		<input type="checkbox"/> <input type="checkbox"/>
B 3	Device ID code		<input type="checkbox"/> <input type="checkbox"/>
B 4	Time of day blood specimen taken (24 hour clock)		hrs <input type="checkbox"/> <input type="checkbox"/> : mins <input type="checkbox"/> <input type="checkbox"/>
B 5	Blood glucose	OR Too Low 1 Too High 2 Unable to assess 3	mmol/l <input type="checkbox"/> <input type="checkbox"/> . <input type="checkbox"/> OR <input type="checkbox"/>

Blood Lipids		Coding Column	
B 6	Technician ID Code		<input type="checkbox"/> <input type="checkbox"/>
B 7	Device ID code		<input type="checkbox"/> <input type="checkbox"/>
B 8	Total cholesterol	OR Too Low 1 Too High 2 Unable to assess 3	mmol/l <input type="checkbox"/> <input type="checkbox"/> . <input type="checkbox"/> OR <input type="checkbox"/>

Comments: Step 2 and 3		(to be answered by any Step 2 or 3 technician)	
V 4	Are there any irregularities or problems with the measurements?	Yes 1 No 2	<input type="checkbox"/>

If yes, please state the irregularities or problems in the space provided below.

Appendix 2. The Data Book of the Cook Islands STEPS Survey



WHO STEPS

Chronic Disease Risk Factor Surveillance

DATA BOOK FOR COOK ISLANDS

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	%
25-34	237	48.3	254	51.7	491	24.3
35-44	273	50.4	269	49.6	542	26.8
45-54	236	47.7	259	52.3	495	24.5
55-64	244	49.7	247	50.3	491	24.3
25-64	990	49.0	1029	51.0	2019	100.0

Ethnicity Description: Summary results for the ethnicity of the respondents.

Instrument Question:

- What is your ethnic background?

Ethnic group of respondents					
Age Group (years)	n	Both Sexes			
		1) Cook Islands Maori	2) European	3) Other	4) Refused
25-34	490	98.0	0.4	1.6	0.0
35-44	542	95.4	1.7	3.0	0.0
45-54	495	92.9	4.6	2.2	0.2
55-64	491	91.6	6.7	1.4	0.2
25-64	2018	94.5	3.3	2.1	0.1

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
25-34	236	11.3	253	11.8	489	11.6
35-44	273	11.9	266	11.8	539	11.9
45-54	235	11.3	258	11.3	493	11.3
55-64	242	10.7	245	10.6	487	10.7
25-64	986	11.3	1022	11.4	2008	11.4

Highest level of education Description: Highest level of education achieved by the survey respondents.
 Instrument question:
 • What is the highest level of education you have completed?

Highest level of education							
Men							
Age Group (years)	n	% No formal schooling	% Some Primary	% Primary school completed	% Secondary School completed	% Tertiary	% Post graduate degree
25-34	237	0.4	3.4	16.5	68.4	11.0	0.4
35-44	273	0.0	4.0	15.8	63.0	14.3	2.9
45-54	236	0.0	6.4	24.6	48.7	17.4	3.0
55-64	242	0.0	8.7	39.3	28.1	19.0	5.0
25-64	988	0.1	5.6	23.8	52.3	15.4	2.8

Highest level of education							
Women							
Age Group (years)	n	% No formal schooling	% Some Primary	% Primary school completed	% Secondary School completed	% Tertiary	% Post graduate degree
25-34	254	0.4	1.6	17.7	66.1	11.8	2.4
35-44	269	0.0	0.7	18.6	65.4	14.9	0.4
45-54	258	0.0	3.9	26.7	54.3	12.0	3.1
55-64	246	0.0	8.9	44.7	28.0	14.6	3.7
25-64	1027	0.1	3.7	26.7	53.8	13.3	2.3

Highest level of education							
Both Sexes							
Age Group (years)	n	% No formal schooling	% Some Primary	% Primary school completed	% Secondary School completed	% Tertiary	% Post graduate degree
25-34	491	0.4	2.4	17.1	67.2	11.4	1.4
35-44	542	0.0	2.4	17.2	64.2	14.6	1.7
45-54	494	0.0	5.1	25.7	51.6	14.6	3.0
55-64	488	0.0	8.8	42.0	28.1	16.8	4.3
25-64	2015	0.1	4.6	25.3	53.1	14.3	2.6

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
25-34	235	37.4	46.8	8.9	6.8
35-44	269	46.1	30.5	14.5	8.9
45-54	234	38.5	25.2	22.6	13.7
55-64	242	26.9	12.8	23.1	37.2
25-64	980	37.4	28.8	17.2	16.5

Employment status					
Women					
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34	252	18.7	42.1	7.9	31.3
35-44	266	23.3	37.6	14.7	24.4
45-54	258	25.6	25.6	14.3	34.5
55-64	246	17.5	11.4	17.5	53.7
25-64	1022	21.3	29.4	13.6	35.7

Employment status					
Both Sexes					
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34	487	27.7	44.4	8.4	19.5
35-44	535	34.8	34.0	14.6	16.6
45-54	492	31.7	25.4	18.3	24.6
55-64	488	22.1	12.1	20.3	45.5
25-64	2002	29.2	29.1	15.4	26.3

Unpaid work and unemployed Description: Proportion of respondents in unpaid work.
Instrument question:

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

Unpaid work and unemployed							
Age Group (years)	Men						
	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34	16	6.3	----	6.3	0.0	81.3	6.3
35-44	24	4.2	----	0.0	4.2	87.5	4.2
45-54	32	12.5	----	12.5	25.0	46.9	3.1
55-64	90	5.6	----	4.4	68.9	16.7	4.4
25-64	162	6.8	----	5.6	43.8	39.5	4.3

Unpaid work and unemployed							
Age Group (years)	Women						
	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34	79	15.2	0.0	29.1	0.0	53.2	2.5
35-44	65	12.3	0.0	46.2	0.0	38.5	3.1
45-54	89	11.2	0.0	38.2	4.5	43.8	2.2
55-64	132	9.1	0.8	32.6	35.6	15.2	6.8
25-64	365	11.5	0.3	35.6	14.0	34.5	4.1

Unpaid work and unemployed							
Age Group (years)	Both Sexes						
	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34	95	13.7	0.0	25.3	0.0	57.9	3.2
35-44	89	10.1	0.0	33.7	1.1	51.7	3.4
45-54	121	11.6	0.0	31.4	9.9	44.6	2.5
55-64	222	7.7	0.5	21.2	49.1	15.8	5.9
25-64	527	10.1	0.2	26.4	23.1	36.1	4.2

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
25-34	237	53.8	47.7 – 59.9	254	49.8	43.9 – 55.6	491	51.8	47.5 – 56.1
35-44	269	42.4	36.5 – 48.4	268	38.8	30.4 – 47.2	537	40.7	35.7 – 45.6
45-54	235	44.5	40.3 – 48.7	257	35.2	29.2 – 41.3	492	40.2	35.6 – 44.9
55-64	242	35.2	27.3 – 43.2	246	22.7	19.2 – 26.3	488	29.2	24.1 – 34.3
25-64	983	46.6	41.4 – 51.8	1025	41.1	35.0 – 47.2	2008	43.9	40.0 – 47.9

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							
Age Group (years)	Men						
	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34	237	41.7	33.9 – 49.4	12.1	3.6 – 20.7	46.2	40.1 – 52.3
35-44	269	35.0	27.8 – 42.3	7.4	4.5 – 10.3	57.6	51.7 – 63.5
45-54	235	38.1	34.6 – 41.6	6.4	3.9 – 8.9	55.5	51.3 – 59.7
55-64	242	27.7	20.4 – 35.0	7.6	4.8 – 10.3	64.8	56.8 – 72.7
25-64	983	37.5	33.3 – 41.7	9.2	4.8 – 13.6	53.4	48.2 – 58.6

Smoking status							
Age Group (years)	Women						
	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34	254	34.7	28.9 – 40.5	15.1	10.1 – 20.1	50.2	44.4 – 56.1
35-44	268	27.2	23.0 – 31.3	11.6	4.6 – 18.6	61.2	52.8 – 69.6
45-54	257	24.2	16.8 – 31.7	11.0	5.1 – 16.9	64.8	58.7 – 70.8
55-64	246	17.7	13.8 – 21.6	5.1	3.0 – 7.1	77.3	73.7 – 80.8
25-64	1025	28.8	24.9 – 32.7	12.2	8.4 – 16.1	58.9	52.8 – 65.0

Smoking status							
Age Group (years)	Both Sexes						
	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34	491	38.2	33.3 – 43.2	13.6	8.7 – 18.5	48.2	43.9 – 52.5
35-44	537	31.2	27.1 – 35.4	9.4	5.7 – 13.1	59.3	54.4 – 64.3
45-54	492	31.7	25.7 – 37.7	8.5	5.1 – 11.9	59.8	55.1 – 64.4
55-64	488	22.8	18.4 – 27.3	6.4	4.5 – 8.2	70.8	65.7 – 75.9
25-64	2008	33.3	30.4 – 36.2	10.7	7.8 – 13.6	56.1	52.1 – 60.0

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
25-34	122	77.4	62.5 – 92.3	116	69.7	60.6 – 78.8	238	73.8	65.0 – 82.5
35-44	123	82.6	74.8 – 90.4	105	70.1	57.2 – 83.0	228	76.9	69.0 – 84.7
45-54	107	85.6	80.6 – 90.6	93	68.8	52.3 – 85.2	200	78.8	69.9 – 87.8
55-64	83	78.5	71.2 – 85.9	56	77.7	68.4 – 87.0	139	78.2	72.6 – 83.8
25-64	435	80.3	72.1 – 88.6	370	70.2	63.7 – 76.7	805	75.7	70.4 – 81.1

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	% Manufactured cigarette smoker	95% CI	n	% Manufactured cigarette smoker	95% CI	n	% Manufactured cigarette smoker	95% CI
25-34	98	59.6	38.4 – 80.7	84	77.6	64.7 – 90.6	182	67.7	54.3 – 81.0
35-44	105	60.0	40.8 – 79.2	73	67.4	47.1 – 87.7	178	63.1	49.3 – 77.0
45-54	91	49.4	37.6 – 61.1	61	64.7	40.4 – 89.1	152	54.8	43.1 – 66.4
55-64	64	28.1	18.3 – 37.9	42	64.1	45.7 – 82.5	106	41.7	28.2 – 55.1
25-64	358	55.2	42.8 – 67.7	260	72.1	61.6 – 82.6	618	62.3	53.7 – 70.9

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 manufactured 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
25-34	88	8.8	3.6	92	6.5	3.2	78	0.0	----	78	0.0	----
35-44	96	6.7	2.0	100	6.8	2.0	88	0.0	----	88	0.0	----
45-54	83	10.2	2.9	82	8.6	2.7	76	0.0	----	76	0.1	0.1
55-64	56	3.8	2.0	61	12.3	4.4	54	0.0	----	54	0.0	----
25-64	323	8.1	2.1	335	7.4	1.9	296	0.0	----	296	0.0	0.0

Mean amount of tobacco used by daily smokers by type												
Women												
Age Group (years)	n	Mean # of manufactured 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
25-34	80	8.4	2.9	81	4.0	2.3	75	0.0	----	75	0.0	----
35-44	68	7.0	3.5	67	3.8	2.6	63	0.0	----	64	0.0	----
45-54	55	8.3	3.4	55	4.9	3.2	51	0.0	----	51	0.0	----
55-64	38	8.7	3.2	36	2.9	1.0	34	0.0	----	34	0.0	----
25-64	241	8.0	1.9	239	4.0	1.5	223	0.0	----	224	0.0	----

Mean amount of tobacco used by daily smokers by type												
Both Sexes												
Age Group (years)	n	Mean # of manufactured 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
25-34	168	8.6	2.4	173	5.3	2.1	153	0.0	----	153	0.0	----
35-44	164	6.8	1.9	167	5.5	1.8	151	0.0	----	152	0.0	----
45-54	138	9.5	2.4	137	7.3	2.2	127	0.0	----	127	0.0	0.1
55-64	94	5.7	2.3	97	8.9	3.6	88	0.0	----	88	0.0	----
25-64	564	8.1	1.4	574	6.0	1.3	519	0.0	----	520	0.0	0.0

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 started smoking	95% CI	n	Mean age started smoking	95% CI	n	Mean age started smoking	95% CI
25-34	94	18.6	17.7 – 19.5	83	19.7	18.4 – 21.0	177	19.1	18.2 – 20.0
35-44	95	20.3	18.7 – 21.9	68	21.6	19.2 – 24.1	163	20.9	19.4 – 22.3
45-54	88	21.1	18.8 – 23.4	58	24.5	21.2 – 27.7	146	22.3	20.4 – 24.1
55-64	58	20.5	18.8 – 22.1	40	24.7	22.6 – 26.7	98	22.1	20.3 – 23.8
25-64	335	19.7	18.7 – 20.6	249	21.2	20.0 – 22.4	584	20.3	19.5 – 21.1

Mean duration of smoking									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean yrs of smoking	95% CI	n	Mean yrs of smoking	95% CI	n	Mean yrs of smoking	95% CI
25-34	94	11.7	10.8 – 12.5	83	10.0	8.8 – 11.2	177	10.9	10.0 – 11.8
35-44	95	18.9	17.4 – 20.4	68	17.6	14.6 – 20.6	163	18.4	16.8 – 20.0
45-54	88	28.3	25.7 – 30.8	58	24.5	21.6 – 27.3	146	27.0	25.0 – 28.9
55-64	58	37.9	36.8 – 39.1	40	34.1	31.6 – 36.6	98	36.5	34.9 – 38.1
25-64	335	18.8	15.1 – 22.5	249	15.7	12.1 – 19.2	584	17.5	14.9 – 20.1

Alcohol Consumption

Alcohol consumption status Description: Alcohol consumption status of all respondents.

Instrument questions:

- Have you ever consumed alcohol?
- Have you consumed alcohol (such as beer, wine, spirits, fermented cider, or (add other local examples) within the past 12 months?

Alcohol consumption status							
Men							
Age Group (years)	n	% Lifetime Abstainer	95% CI	% Past 12 mos. abstainer	95% CI	% current drinker (drank in past 12 mos.)	95% CI
25-34	236	15.7	10.3 – 21.2	2.9	0.3 – 5.5	81.4	74.8 – 88.0
35-44	268	15.7	11.8 – 19.6	8.9	1.2 – 16.6	75.4	66.8 – 84.0
45-54	236	20.5	11.2 – 29.8	11.4	8.4 – 14.4	68.1	58.4 – 77.7
55-64	242	27.6	14.4 – 40.7	15.6	9.2 – 22.0	56.8	41.1 – 72.6
25-64	982	17.9	14.2 – 21.6	7.7	4.2 – 11.1	74.4	68.7 – 80.2

Alcohol consumption status							
Women							
Age Group (years)	n	% Lifetime Abstainer	95% CI	% Past 12 mos. abstainer	95% CI	% current drinker (drank in past 12 mos.)	95% CI
25-34	254	28.0	20.3 – 35.7	11.9	8.4 – 15.4	60.1	52.3 – 68.0
35-44	269	37.2	28.8 – 45.6	13.0	10.1 – 15.9	49.8	40.5 – 59.1
45-54	259	42.8	34.4 – 51.2	17.0	10.9 – 23.2	40.2	28.8 – 51.5
55-64	247	55.4	43.3 – 67.6	12.9	6.1 – 19.6	31.7	18.3 – 45.0
25-64	1029	36.3	29.6 – 42.9	13.2	11.0 – 15.4	50.6	43.2 – 57.9

Alcohol consumption status							
Both Sexes							
Age Group (years)	n	% Lifetime Abstainer	95% CI	% Past 12 mos. abstainer	95% CI	% current drinker (drank in past 12 mos.)	95% CI
25-34	490	21.8	16.3 – 27.3	7.3	3.7 – 11.0	70.9	62.9 – 78.8
35-44	537	26.1	19.1 – 33.1	10.9	6.4 – 15.4	63.0	53.3 – 72.7
45-54	495	30.8	21.8 – 39.8	14.0	10.8 – 17.3	55.2	44.9 – 65.5
55-64	489	41.1	29.6 – 52.6	14.3	9.7 – 18.8	44.6	32.2 – 57.0
25-64	2011	26.8	22.6 – 31.0	10.3	8.0 – 12.7	62.9	57.1 – 68.6

Frequency of alcohol consumption

Description: Frequency of alcohol consumption in the last year among those respondents who have drunk 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	% less than once a month	% 1-3 days per month		% 1-4 days per week		% ≥5 days per week		
			95% CI	95% CI	95% CI	95% CI	95% CI	95% CI	
25-34	186	17.6	13.1 – 22.1	23.3	15.8 – 30.7	49.8	41.8 – 57.8	9.4	5.7 – 13.0
35-44	196	17.3	14.4 – 20.2	23.7	18.5 – 28.9	49.4	39.3 – 59.5	9.6	4.2 – 14.9
45-54	157	15.2	7.0 – 23.4	16.2	10.8 – 21.6	53.8	47.2 – 60.3	14.9	9.3 – 20.5
55-64	126	14.7	9.8 – 19.6	18.0	10.3 – 25.7	49.9	42.4 – 57.4	17.4	13.6 – 21.2
25-64	665	16.8	14.3 – 19.4	21.8	17.8 – 25.8	50.3	45.5 – 55.2	11.0	8.3 – 13.7

Frequency of alcohol consumption in the last 12 months									
Women									
Age Group (years)	n	% less than once a month	% 1-3 days per month		% 1-4 days per week		% ≥5 days per week		
			95% CI	95% CI	95% CI	95% CI	95% CI	95% CI	
25-34	135	33.7	26.4 – 41.1	35.9	28.7 – 43.1	27.4	21.1 – 33.7	3.0	0.0 – 6.7
35-44	123	29.7	23.6 – 35.8	31.5	13.5 – 49.5	32.5	22.9 – 42.1	6.2	1.1 – 11.3
45-54	101	30.0	25.7 – 34.3	26.9	18.4 – 35.3	41.1	31.1 – 51.1	2.1	0.3 – 3.9
55-64	70	32.7	23.5 – 41.9	22.7	8.7 – 36.7	37.3	14.8 – 59.8	7.3	5.7 – 8.9
25-64	429	32.0	27.6 – 36.4	32.5	25.4 – 39.7	31.4	25.9 – 36.8	4.1	1.4 – 6.8

Frequency of alcohol consumption in the last 12 months									
Both Sexes									
Age Group (years)	n	% less than once a month	% 1-3 days per month		% 1-4 days per week		% ≥5 days per week		
			95% CI	95% CI	95% CI	95% CI	95% CI	95% CI	
25-34	321	24.3	16.8 – 31.9	28.6	21.5 – 35.7	40.4	30.3 – 50.4	6.7	2.9 – 10.4
35-44	319	22.0	17.4 – 26.5	26.7	18.3 – 35.0	43.0	33.7 – 52.4	8.3	4.2 – 12.5
45-54	258	20.1	12.1 – 28.2	19.8	14.3 – 25.2	49.5	42.7 – 56.3	10.6	4.4 – 16.8
55-64	196	20.9	12.4 – 29.3	19.6	12.7 – 26.5	45.6	35.4 – 55.8	13.9	9.7 – 18.2
25-64	1094	22.7	18.7 – 26.8	26.0	21.5 – 30.5	43.0	37.3 – 48.6	8.3	5.8 – 10.8

Standard drinks per drinking day Description: Number of standard drinks consumed on a drinking day among those respondents who have drunk 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											
Men											
Age Group (years)	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
25-34	173	2.5	0.0 – 6.2	3.6	0.0 – 7.4	1.2	0.0 – 2.8	92.7	87.3 – 98.2	13.4	12.7 – 14.1
35-44	180	3.0	0.7 – 5.3	5.9	3.6 – 8.2	2.2	0.0 – 4.4	88.9	83.3 – 94.6	10.4	9.5 – 11.4
45-54	142	----	----	4.9	2.6 – 7.2	6.2	2.4 – 9.9	88.9	85.7 – 92.1	11.4	10.0 – 12.9
55-64	121	5.6	0.0 – 11.5	13.8	8.6 – 18.9	6.8	4.4 – 9.3	73.8	66.0 – 81.6	8.3	6.6 – 9.9
25-64	616	2.5	0.6 – 4.5	5.4	2.9 – 7.9	2.8	1.0 – 4.6	89.3	85.0 – 93.5	11.7	10.6 – 12.8

Number of standard drinks consumed on a drinking day											
Women											
Age Group (years)	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
25-34	126	3.9	0.6 – 7.2	6.3	3.9 – 8.8	13.2	3.3 – 23.1	76.5	65.2 – 87.9	6.8	6.1 – 7.5
35-44	110	6.8	2.8 – 10.9	11.7	8.4 – 15.0	9.8	6.9 – 12.6	71.7	64.0 – 79.4	6.3	5.5 – 7.1
45-54	94	10.6	2.0 – 19.2	19.1	10.8 – 27.5	15.4	9.4 – 21.3	54.9	45.3 – 64.5	5.1	4.6 – 5.6
55-64	62	15.2	10.9 – 19.6	21.0	6.0 – 35.9	11.9	1.8 – 22.0	51.9	43.0 – 60.7	3.9	3.4 – 4.5
25-64	392	6.4	3.4 – 9.3	10.5	6.8 – 14.3	12.4	7.3 – 17.6	70.7	61.7 – 79.6	6.2	5.6 – 6.9

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 standard drinks	95% CI
25-34	299	3.1	0.5 – 5.7	4.7	1.9 – 7.6	6.3	1.3 – 11.3	85.9	78.3 – 93.4	10.6	8.3 – 12.9
35-44	290	4.5	2.4 – 6.5	8.0	4.9 – 11.2	5.0	1.7 – 8.3	82.5	75.0 – 90.0	8.9	7.4 – 10.4
45-54	236	3.6	0.0 – 7.2	9.8	3.8 – 15.8	9.3	5.2 – 13.4	77.3	66.5 – 88.1	9.3	6.9 – 11.7
55-64	183	8.7	3.0 – 14.5	16.1	10.3 – 21.9	8.5	4.4 – 12.5	66.7	57.4 – 76.0	6.9	5.1 – 8.7
25-64	1008	4.0	2.4 – 5.7	7.4	5.0 – 9.8	6.5	3.8 – 9.3	82.0	76.8 – 87.3	9.6	8.2 – 10.9

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							
Men							
Age Group (years)	n	% Drank on 4+ days	95% CI	% 5+ drinks on any day	95% CI	% 20+ drinks in 7 days	95% CI
25-34	184	10.1	3.7 – 16.5	80.2	72.5 – 87.9	36.0	29.7 – 42.3
35-44	193	13.1	7.2 – 19.1	73.2	66.2 – 80.1	31.6	26.9 – 36.3
45-54	152	21.0	15.8 – 26.3	72.0	63.2 – 80.9	34.7	28.8 – 40.5
55-64	121	26.8	18.2 – 35.4	56.2	46.6 – 65.8	28.7	18.3 – 39.0
25-64	650	14.2	9.7 – 18.7	74.7	68.9 – 80.5	33.8	29.9 – 37.7

Frequency and quantity of drinks consumed in the last 7 days							
Women							
Age Group (years)	n	% Drank on 4+ days	95% CI	% 4+ drinks on any day	95% CI	% 15+ drinks in 7 days	95% CI
25-34	134	4.8	1.3 – 8.3	52.2	47.4 – 56.9	7.1	3.3 – 10.9
35-44	126	3.6	0.0 – 8.2	52.7	44.2 – 61.2	13.5	7.9 – 19.0
45-54	99	3.4	1.8 – 4.9	52.2	41.4 – 62.9	6.6	3.5 – 9.6
55-64	70	5.6	3.2 – 8.0	42.5	33.7 – 51.3	6.2	0.8 – 11.5
25-64	429	4.3	2.0 – 6.6	51.6	47.8 – 55.5	8.8	6.0 – 11.7

Frequency and quantity of drinks consumed in the last 7 days			
Both Sexes			
Age Group (years)	n	% Drank on 4+ days	95% CI
25-34	318	7.9	3.6 – 12.1
35-44	319	9.5	4.1 – 14.9
45-54	251	15.1	8.2 – 21.9
55-64	191	19.4	10.4 – 28.4
25-64	1079	10.3	7.2 – 13.5

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 ≥ 60 g 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					
Men					
Age Group (years)	% hazardous drinking		% harmful drinking		
	n	95% CI	n	95% CI	n
25-34	184	11.7	7.2 – 16.2	11.2	5.9 – 16.4
35-44	193	10.2	4.5 – 15.9	13.0	6.7 – 19.3
45-54	152	8.1	5.4 – 10.8	15.3	11.4 – 19.3
55-64	121	8.9	3.4 – 14.5	14.8	9.1 – 20.4
25-64	650	10.4	7.4 – 13.4	12.7	9.4 – 16.0

Hazardous and harmful drinking in the last 7 days					
Women					
Age Group (years)	% hazardous drinking		% harmful drinking		
	n	95% CI	n	95% CI	n
25-34	134	6.2	1.1 – 11.4	4.7	0.4 – 9.1
35-44	126	11.9	7.8 – 16.0	4.7	0.0 – 9.5
45-54	99	6.3	1.4 – 11.2	3.7	1.8 – 5.6
55-64	70	5.3	0.8 – 9.8	0.9	0.0 – 2.7
25-64	429	7.9	4.7 – 11.0	4.3	1.7 – 6.9

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
25-34	236	3.2	2.8 – 3.6	254	3.7	3.3 – 4.1	490	3.4	3.1 – 3.7
35-44	272	3.4	2.9 – 4.0	269	4.0	3.6 – 4.4	541	3.7	3.3 – 4.1
45-54	236	3.4	2.8 – 3.9	259	4.2	3.7 – 4.8	495	3.8	3.3 – 4.2
55-64	244	3.9	3.2 – 4.5	246	4.6	4.0 – 5.3	490	4.2	3.7 – 4.8
25-64	988	3.4	3.1 – 3.6	1028	4.0	3.7 – 4.3	2016	3.7	3.4 – 3.9

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
25-34	237	3.8	3.2 – 4.5	254	4.2	3.6 – 4.8	491	4.0	3.6 – 4.5
35-44	271	3.7	3.1 – 4.3	268	4.3	3.3 – 5.4	539	4.0	3.4 – 4.6
45-54	236	3.4	2.8 – 4.1	259	4.0	3.2 – 4.7	495	3.7	3.2 – 4.2
55-64	243	3.7	2.9 – 4.6	246	4.1	3.2 – 5.0	489	3.9	3.3 – 4.5
25-64	987	3.7	3.3 – 4.1	1027	4.2	3.8 – 4.7	2014	4.0	3.7 – 4.3

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
25-34	236	1.4	1.1 – 1.7	254	1.5	1.3 – 1.7	490	1.5	1.3 – 1.6
35-44	270	1.3	1.0 – 1.6	269	1.7	1.5 – 1.9	539	1.5	1.3 – 1.7
45-54	236	1.5	1.1 – 1.8	259	1.8	1.4 – 2.1	495	1.6	1.3 – 1.8
55-64	244	1.6	1.3 – 1.8	246	1.9	1.6 – 2.2	490	1.7	1.5 – 1.9
25-64	986	1.4	1.2 – 1.6	1028	1.6	1.5 – 1.8	2014	1.5	1.4 – 1.6

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
25-34	236	1.6	1.2 – 1.9	253	1.5	1.2 – 1.8	489	1.5	1.3 – 1.8
35-44	270	1.5	1.2 – 1.8	268	1.7	1.2 – 2.1	538	1.6	1.3 – 1.8
45-54	236	1.3	1.0 – 1.7	259	1.5	1.1 – 1.9	495	1.4	1.1 – 1.7
55-64	242	1.4	1.0 – 1.8	246	1.6	1.2 – 2.0	488	1.5	1.2 – 1.7
25-64	984	1.5	1.3 – 1.7	1026	1.6	1.4 – 1.8	2010	1.5	1.4 – 1.7

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
25-34	237	3.0	2.4 – 3.6	254	3.0	2.6 – 3.4	491	3.0	2.6 – 3.4
35-44	271	2.8	2.3 – 3.2	269	3.4	2.8 – 3.9	540	3.1	2.6 – 3.5
45-54	236	2.8	2.2 – 3.4	259	3.2	2.5 – 4.0	495	3.0	2.5 – 3.5
55-64	244	3.0	2.4 – 3.5	246	3.4	2.8 – 4.1	490	3.2	2.8 – 3.6
25-64	988	2.9	2.5 – 3.2	1028	3.2	2.9 – 3.5	2016	3.0	2.8 – 3.3

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									
Age Group (years)	Men								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34	237	21.7	10.1 – 33.3	35.8	29.2 – 42.4	25.5	19.4 – 31.6	17.0	11.5 – 22.5
35-44	271	19.9	11.5 – 28.3	40.7	36.9 – 44.6	24.9	19.1 – 30.7	14.5	10.3 – 18.6
45-54	236	23.9	11.4 – 36.4	39.0	31.3 – 46.7	19.8	13.5 – 26.0	17.3	8.8 – 25.8
55-64	244	22.2	9.6 – 34.8	36.9	28.3 – 45.4	22.5	12.6 – 32.4	18.4	13.5 – 23.4
25-64	988	21.6	15.6 – 27.6	38.0	34.5 – 41.5	24.0	20.2 – 27.7	16.5	13.3 – 19.6

Number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Women								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34	254	14.0	6.7 – 21.3	43.1	38.6 – 47.5	27.4	19.1 – 35.8	15.5	12.3 – 18.6
35-44	269	14.1	5.1 – 23.1	36.1	30.2 – 42.0	26.6	16.8 – 36.3	23.2	17.1 – 29.4
45-54	259	19.1	7.3 – 30.9	36.4	31.0 – 41.8	20.9	13.7 – 28.1	23.6	13.5 – 33.7
55-64	246	15.9	4.1 – 27.8	35.4	32.2 – 38.6	24.7	15.5 – 33.8	24.0	15.6 – 32.3
25-64	1028	15.1	10.2 – 20.0	39.0	36.0 – 42.1	25.8	20.5 – 31.1	20.1	16.3 – 23.9

Number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Both Sexes								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34	491	17.9	11.1 – 24.7	39.4	35.3 – 43.5	26.4	21.3 – 31.6	16.3	13.0 – 19.5
35-44	540	17.1	10.7 – 23.6	38.5	34.5 – 42.5	25.7	20.1 – 31.2	18.7	13.8 – 23.5
45-54	495	21.7	13.2 – 30.1	37.8	32.8 – 42.8	20.3	15.7 – 24.9	20.2	13.3 – 27.2
55-64	490	19.2	10.6 – 27.7	36.2	31.5 – 40.8	23.6	16.8 – 20.3	21.1	16.4 – 25.9
25-64	2016	18.4	14.5 – 22.4	38.5	36.2 – 40.8	24.8	21.7 – 28.0	18.2	15.8 – 20.6

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
25-34	237	83.0	77.5 – 88.5	254	84.5	81.4 – 87.7	491	83.7	80.5 – 87.0
35-44	271	85.5	81.4 – 89.7	269	76.8	70.6 – 82.9	540	81.3	76.5 – 86.2
45-54	236	82.7	74.2 – 91.2	259	76.4	66.3 – 86.5	495	79.8	72.8 – 86.7
55-64	244	81.6	76.6 – 86.5	246	76.0	67.7 – 84.4	490	78.9	74.1 – 83.6
25-64	988	83.5	80.4 – 86.7	1028	79.9	76.2 – 83.7	2016	81.8	79.4 – 84.2

Type of oil used most frequently

Description: type of oil or fat most often used for meal preparation in households (presented only for both sexes because results are for the household not individuals).

Instrument question:

- What type of oil or fat is most often used for meal preparation in your household?

Type of oil or fat most often used for meal preparation in household														
n (households)	% Vegetable oil	95% CI	% Lard	95% CI	% Butter	95% CI	% Margarine	95% CI	% Other	95% CI	% None in particular	95% CI	% None used	95% CI
2011	80.3	2.8	1.3	0.8	4.8	1.2	10.4	2.5	1.5	0.7	0.3	0.3	1.4	0.7

Fish Consumption

Description: Mean no. of days per week tinned or fresh fish consumed.

Fresh Fish Consumption									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI
25-34	237	3.2	2.8 – 3.6	253	2.8	2.1 – 3.4	490	3.0	2.6 – 3.4
35-44	271	3.4	3.0 – 3.9	268	3.1	2.6 – 3.6	539	3.3	2.9 – 3.6
45-54	236	3.5	3.0 – 4.0	259	3.3	2.5 – 4.0	495	3.4	3.0 – 3.8
55-64	244	3.4	3.0 – 3.7	247	3.0	2.5 – 3.5	491	3.2	2.9 – 3.5
25-64	988	3.3	3.1 – 3.6	1027	3.0	2.6 – 3.3	2015	3.2	2.9 – 3.4

Tinned Fish Consumption									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI	n	Mean no. of days	95% CI
25-34	236	1.2	1.0 – 1.5	253	1.3	1.2 – 1.5	489	1.3	1.1 – 1.4
35-44	270	1.2	1.1 – 1.3	268	1.2	1.0 – 1.4	538	1.2	1.1 – 1.3
45-54	236	1.3	1.1 – 1.5	259	1.1	1.0 – 1.3	495	1.2	1.1 – 1.3
55-64	243	1.1	1.0 – 1.3	247	1.2	0.9 – 1.4	490	1.1	1.0 – 1.3
25-64	985	1.2	1.1 – 1.3	1027	1.2	1.1 – 1.3	2012	1.2	1.2 – 1.3

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

Physical Activity, Continued

Introduction (cont.)

- 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
25-34	171	73.2	60.8 – 85.6	11.0	5.9 – 16.1	15.8	7.5 – 24.1
35-44	204	75.2	66.8 – 83.6	9.2	5.0 – 13.3	15.7	9.4 – 21.9
45-54	177	76.4	64.5 – 88.2	13.0	4.4 – 21.6	10.7	5.8 – 15.6
55-64	185	73.0	64.7 – 81.2	17.2	9.9 – 24.5	9.8	2.8 – 16.8
25-64	737	74.4	68.2 – 80.6	11.5	8.5 – 14.6	14.1	9.9 – 18.4

Level of total physical activity							
Age Group (years)	Women						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
25-34	212	76.9	70.1 – 83.6	13.8	8.3 – 19.3	9.3	6.2 – 12.5
35-44	223	77.2	68.0 – 86.3	10.9	5.8 – 16.0	11.9	6.4 – 17.5
45-54	217	75.6	68.9 – 82.3	16.7	11.7 – 21.7	7.7	3.3 – 12.2
55-64	206	72.4	65.4 – 79.4	20.2	13.6 – 26.9	7.4	3.9 – 10.9
25-64	858	76.3	72.0 – 80.6	14.1	10.8 – 17.5	9.6	7.2 – 12.1

Level of total physical activity							
Age Group (years)	Both Sexes						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
25-34	383	75.2	68.2 – 82.2	12.5	8.8 – 16.3	12.3	7.2 – 17.4
35-44	427	76.2	70.1 – 82.3	10.1	6.9 – 13.2	13.7	9.8 – 17.7
45-54	394	76.0	69.2 – 82.8	14.8	9.6 – 19.9	9.2	6.2 – 12.3
55-64	391	72.7	67.4 – 77.9	18.8	13.9 – 23.6	8.6	4.7 – 12.4
25-64	1595	75.3	71.6 – 79.1	12.9	10.6 – 15.1	11.8	9.2 – 14.4

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
25-34	171	53.3	27.2 – 79.4	212	40.7	30.4 – 50.9	383	46.5	31.6 – 61.4
35-44	204	46.4	27.7 – 65.1	223	48.6	16.6 – 80.7	427	47.6	29.1 – 66.0
45-54	177	49.6	24.1 – 75.0	217	41.3	22.6 – 60.0	394	45.6	30.4 – 60.7
55-64	185	68.3	31.1 – 105.5	206	44.2	27.1 – 61.3	391	55.9	34.1 – 77.7
25-64	737	52.2	37.9 – 66.5	858	43.6	32.4 – 54.8	1595	47.7	38.6 – 56.8

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)
25-34	171	0.0	0.0 - 51.4	212	0.0	0.0 - 30.0	383	0.0	0.0 - 42.9
35-44	204	0.0	0.0 - 42.9	223	0.0	0.0 - 42.9	427	0.0	0.0 - 42.9
45-54	177	0.0	0.0 - 25.7	217	0.0	0.0 - 34.3	394	0.0	0.0 - 32.1
55-64	185	0.0	0.0 - 34.3	206	0.0	0.0 - 42.9	391	0.0	0.0 - 42.9
25-64	737	0.0	0.0 - 42.9	858	0.0	0.0 - 34.3	1595	0.0	0.0 - 38.6

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
25-34	171	28.1	6.5 – 49.7	212	23.0	14.9 – 31.1	383	25.4	14.1 – 36.6
35-44	204	16.8	10.2 – 23.5	223	27.5	0.2 – 54.9	427	22.3	8.1 – 36.5
45-54	177	21.0	3.6 – 38.4	217	20.8	3.2 – 38.3	394	20.9	8.8 – 33.0
55-64	185	39.0	7.0 – 71.0	206	23.7	9.2 – 38.2	391	31.1	12.8 – 49.4
25-64	737	24.6	13.4 – 35.7	858	24.1	14.7 – 33.5	1595	24.3	17.2 – 31.5

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
25-34	171	9.0	1.6 – 16.4	212	10.6	5.2 – 16.0	383	9.9	5.4 – 14.4
35-44	204	16.9	0.0 – 35.8	223	14.5	0.0 – 29.5	427	15.7	4.0 – 27.4
45-54	177	21.7	1.9 – 41.6	217	16.1	10.0 – 22.2	394	19.0	9.0 – 29.0
55-64	185	24.0	10.2 – 37.9	206	15.1	8.9 – 21.3	391	19.4	11.9 – 27.0
25-64	737	15.5	7.2 – 23.7	858	13.2	7.7 – 18.6	1595	14.3	9.5 – 19.0

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
25-34	171	16.2	9.5 – 22.9	212	7.0	4.5 – 9.6	383	11.2	6.0 – 16.5
35-44	204	12.7	9.5 – 15.9	223	6.6	3.9 – 9.3	427	9.6	7.2 – 12.0
45-54	177	6.8	4.2 – 9.5	217	4.4	1.7 – 7.2	394	5.7	3.7 – 7.6
55-64	185	5.2	2.8 – 7.7	206	5.4	0.0 – 11.6	391	5.3	2.0 – 8.7
25-64	737	12.2	8.3 – 16.0	858	6.3	4.7 – 7.9	1595	9.1	6.7 – 11.6

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)
25-34	171	0.0	0.0 – 0.0	212	0.0	0.0 – 0.0	383	0.0	0.0 – 0.0
35-44	204	0.0	0.0 – 0.0	223	0.0	0.0 – 0.0	427	0.0	0.0 – 0.0
45-54	177	0.0	0.0 – 0.0	217	0.0	0.0 – 0.0	394	0.0	0.0 – 0.0
55-64	185	0.0	0.0 – 0.0	206	0.0	0.0 – 0.0	391	0.0	0.0 – 0.0
25-64	737	0.0	0.0 – 0.0	858	0.0	0.0 – 0.0	1595	0.0	0.0 – 0.0

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)
25-34	171	0.0	0.0 – 0.0	212	0.0	0.0 – 5.7	383	0.0	0.0 – 0.0
35-44	204	0.0	0.0 – 0.0	223	0.0	0.0 – 0.0	427	0.0	0.0 – 0.0
45-54	177	0.0	0.0 – 0.0	217	0.0	0.0 – 17.1	394	0.0	0.0 – 10.0
55-64	185	0.0	0.0 – 8.6	206	0.0	0.0 – 17.1	391	0.0	0.0 – 12.9
25-64	737	0.0	0.0 – 0.0	858	0.0	0.0 – 7.1	1595	0.0	0.0 – 2.1

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)
25-34	171	0.0	0.0 – 0.0	212	0.0	0.0 – 0.0	383	0.0	0.0 – 0.0
35-44	204	0.0	0.0 – 0.0	223	0.0	0.0 – 0.0	427	0.0	0.0 – 0.0
45-54	177	0.0	0.0 – 0.0	217	0.0	0.0 – 0.0	394	0.0	0.0 – 0.0
55-64	185	0.0	0.0 – 0.0	206	0.0	0.0 – 0.0	391	0.0	0.0 – 0.0
25-64	737	0.0	0.0 – 0.0	858	0.0	0.0 – 0.0	1595	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
25-34	171	86.6	77.0 – 96.2	212	87.8	83.2 – 92.4	383	87.2	82.1 – 92.4
35-44	204	92.3	88.7 – 95.8	223	88.6	78.3 – 98.8	427	90.4	85.0 – 95.7
45-54	177	89.9	81.8 – 97.9	217	93.1	88.3 – 97.8	394	91.4	86.7 – 96.1
55-64	185	86.2	79.2 – 93.2	206	89.3	84.0 – 94.7	391	87.8	83.5 – 92.2
25-64	737	88.9	84.1 – 93.7	858	89.0	85.3 – 92.8	1595	89.0	86.0 – 91.9

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
25-34	171	80.0	73.4 – 86.5	212	72.6	65.7 – 79.5	383	76.0	70.8 – 81.2
35-44	204	79.1	68.0 – 90.3	223	79.1	70.7 – 87.4	427	79.1	72.3 – 85.9
45-54	177	75.5	65.9 – 85.1	217	61.5	50.8 – 72.1	394	68.7	60.3 – 77.1
55-64	185	68.0	55.0 – 81.0	206	67.3	58.4 – 76.2	391	67.6	60.1 – 75.2
25-64	737	77.5	72.1 – 82.9	858	72.2	67.0 – 77.4	1595	74.8	71.0 – 78.6

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
25-34	171	78.4	70.8 – 86.0	212	88.7	85.3 – 92.0	383	83.9	77.7 – 90.2
35-44	204	85.7	80.8 – 90.7	223	86.2	83.4 – 89.0	427	86.0	83.2 – 88.7
45-54	177	90.3	85.8 – 94.9	217	90.9	87.4 – 94.3	394	90.6	87.8 – 93.4
55-64	185	89.7	85.5 – 93.8	206	92.9	86.0 – 99.8	391	91.3	87.1 – 95.6
25-64	737	84.1	79.1 – 89.1	858	88.7	86.6 – 90.9	1595	86.5	83.6 – 89.4

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
25-34	74	25.1	13.1 – 37.1	40.3	28.7 – 51.9	34.7	29.3 – 40.0
35-44	81	18.5	8.7 – 28.4	49.9	29.5 – 70.3	31.6	17.7 – 45.5
45-54	70	24.8	7.3 – 42.3	60.5	43.2 – 77.8	14.7	7.2 – 22.3
55-64	82	27.2	15.9 – 38.5	58.4	44.3 – 72.6	14.4	6.3 – 22.4
25-64	307	23.5	16.3 – 30.7	48.4	37.9 – 58.8	28.1	21.8 – 34.4

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
25-34	85	25.3	14.7 – 35.9	55.2	44.6 – 65.9	19.5	12.8 – 26.2
35-44	91	27.2	9.1 – 45.2	45.0	27.8 – 62.3	27.8	16.4 – 39.2
45-54	101	13.6	3.8 – 23.4	72.9	60.2 – 85.6	13.5	6.7 – 20.2
55-64	91	20.6	9.8 – 31.4	66.1	48.0 – 84.2	13.3	2.9 – 23.8
25-64	368	23.2	15.8 – 30.5	56.7	48.0 – 65.5	20.1	14.4 – 25.7

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
25-34	159	25.2	17.3 – 33.0	47.7	36.7 – 58.6	27.2	20.5 – 33.8
35-44	172	23.1	12.5 – 33.8	47.3	34.3 – 60.3	29.6	20.8 – 38.3
45-54	171	18.8	8.5 – 29.1	67.2	56.1 – 78.2	14.1	9.1 – 19.0
55-64	173	23.8	15.9 – 31.7	62.4	51.1 – 73.7	13.8	7.4 – 20.3
25-64	675	23.3	18.3 – 28.4	52.7	45.5 – 59.9	24.0	19.4 – 28.5

**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
25-34	171	83.6	76.2 – 91.1	212	94.3	91.4 – 97.1	383	89.4	83.6 – 95.2
35-44	204	90.1	85.5 – 94.7	223	96.0	93.8 – 98.2	427	93.1	90.2 – 96.0
45-54	177	94.6	92.9 – 96.4	217	98.3	96.3 – 100.0	394	96.4	94.6 – 98.2
55-64	185	95.7	92.0 – 99.4	206	98.2	97.1 – 99.3	391	97.0	95.0 – 98.9
25-64	737	89.0	84.7 – 93.4	858	95.8	94.5 – 97.2	1595	92.6	89.9 – 95.3

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	Inter-quartile range (P25-P75)
25-34	219	320.2	269.5 – 370.9	270	180 - 420
35-44	252	319.7	286.8 – 352.6	240	180 - 480
45-54	219	331.6	286.1 – 377.1	240	180 - 480
55-64	227	319.6	269.2 – 370.0	300	180 - 420
25-64	917	322.0	297.2 – 346.7	240	180 - 420

Minutes spent in sedentary activities on average per day					
Women					
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
25-34	242	367.5	310.8 – 424.2	330	210 - 540
35-44	246	329.5	288.6 – 370.3	300	120 - 480
45-54	239	334.0	277.6 – 390.4	300	150 - 480
55-64	224	305.9	250.6 – 361.3	240	120 - 480
25-64	951	343.9	309.9 – 377.9	300	180 - 480

Minutes spent in sedentary activities on average per day					
Both Sexes					
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
25-34	461	343.5	302.7 – 384.2	300	180 - 480
35-44	498	324.3	298.5 – 350.2	255	180 - 480
45-54	458	332.7	297.6 – 367.9	270	180 - 480
55-64	451	313.1	276.2 – 350.0	270	120 - 420
25-64	1868	332.5	311.2 – 353.8	300	180 - 480

Blood Pressure and Diabetes History

Blood pressure diagnosis and treatment Description: Raised blood pressure diagnosis and treatment results among all respondents.

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/advice for high blood pressure prescribed by a doctor or other health worker?
- Drugs (medication) that you have taken in the last 2 weeks?

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
25-34	162	11.8	6.3 – 17.3	186	5.1	0.6 – 9.7	348	8.4	3.5 – 13.3
35-44	198	11.6	3.7 – 19.6	219	12.8	8.3 – 17.2	417	12.2	7.7 – 16.7
45-54	188	28.1	21.1 – 35.2	205	29.4	23.9 – 34.9	393	28.7	24.2 – 33.3
55-64	192	45.3	39.5 – 51.1	222	51.2	43.9 – 58.4	414	48.3	43.6 – 53.0
25-64	740	19.1	13.5 – 24.6	832	17.6	10.3 – 24.8	1572	18.3	13.8 – 22.8

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
25-34	19	11.5	0.0 – 27.1	12	3.3	0.0 – 9.7	31	8.8	0.0 – 18.5
35-44	33	40.1	25.1 – 55.2	32	56.4	46.2 – 66.6	65	48.1	39.1 – 57.1
45-54	62	71.8	60.2 – 83.4	71	71.8	59.5 – 84.0	133	71.8	63.6 – 80.0
55-64	98	81.3	74.3 – 88.3	122	92.6	88.3 – 96.9	220	87.4	82.2 – 92.6
25-64	212	54.4	39.7 – 69.0	237	67.7	56.1 – 79.3	449	60.8	51.2 – 70.4

Blood pressure advice by a traditional healer

Description: Percentage of respondents who have sought advice or received treatment from traditional healers for raised blood pressure.

Instrument questions:

- During the past 12 months have you seen a traditional healer for raised blood pressure?
- Are you currently taking any herbal or traditional remedy for your high blood pressure?

Seen a traditional healer in the last 12 months									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	15	5.8	0.0 – 18.2	10	3.7	0.0 – 10.8	25	5.1	0.0 – 13.2
35-44	24	1.9	0.0 – 6.3	28	----	----	52	0.9	0.0 – 2.8
45-54	56	5.7	0.0 – 11.8	63	4.2	0.0 – 8.5	119	5.0	1.2 – 8.7
55-64	91	7.7	1.7 – 13.7	117	8.8	4.4 – 13.2	208	8.3	4.7 – 11.9
25-64	186	5.6	1.8 – 9.4	218	4.9	2.4 – 7.5	404	5.3	3.1 – 7.5

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
25-34	15	----	----	10	----	----	25	----	----
35-44	24	11.8	0.0 – 29.1	28	11.6	0.0 – 23.4	52	11.7	1.7 – 21.7
45-54	56	12.2	3.8 – 20.6	63	12.7	1.2 – 24.1	119	12.4	5.6 – 19.3
55-64	90	14.5	9.9 – 19.1	117	20.2	6.7 – 33.7	207	17.7	10.1 – 25.2
25-64	185	10.3	5.0 – 15.7	218	13.9	6.8 – 21.0	403	12.1	7.8 – 16.4

Diabetes diagnosis and treatment Description: Diabetes diagnosis and treatment results among all respondents.

Instrument questions:

- During the past 12 months, have you ever been told by a doctor or other health worker that you have diabetes?
- Are you currently taking any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

Diabetes 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
25-34	236	2.1	0.7 – 3.4	253	2.0	0.0 – 5.4	489	2.0	0.3 – 3.8
35-44	267	4.0	2.0 – 6.1	268	6.8	4.6 – 9.0	535	5.4	3.7 – 7.1
45-54	234	14.3	11.0 – 17.7	258	7.7	3.0 – 12.4	492	11.3	7.9 – 14.7
55-64	236	19.2	15.9 – 22.6	244	23.8	18.1 – 29.5	480	21.5	18.0 – 25.0
25-64	973	6.7	4.0 – 9.5	1023	6.8	3.6 – 10.1	1996	6.8	4.7 – 8.9

Currently taking insulin prescribed for diabetes by doctor or health worker									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking insulin	95% CI	n	% taking insulin	95% CI	n	% taking insulin	95% CI
25-64	101	10.1	4.0 – 16.2	105	12.3	2.0 – 22.6	206	11.2	5.4 – 16.9

Currently taking oral drugs prescribed for diabetes 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
25-64	100	59.3	44.2 – 74.4	105	62.6	43.0 – 82.1	205	60.9	49.0 – 72.9

Diabetes advice by traditional healer Description: Percentage of respondents who are have sought advice or treatment from traditional healers for diabetes.

Instrument questions:

- During the past 12 months have you seen a traditional healer for diabetes?
- Are you currently taking any herbal or traditional remedy for your diabetes?

Seen a traditional healer for diabetes in the last 12 months									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-64	100	3.8	0.5 – 7.1	104	2.2	0.0 – 4.5	204	3.0	1.0 – 5.0

Currently taking herbal or traditional treatment for diabetes									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-64	100	10.9	2.1 – 19.8	104	12.4	2.3 – 22.4	204	11.6	5.2 – 18.1

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
25-34	214	175.5	174.5 – 176.5	240	164.4	163.5 – 165.3
35-44	254	174.6	173.2 – 176.1	254	164.3	163.3 – 165.3
45-54	224	172.6	171.3 – 173.9	246	162.8	162.1 – 163.6
55-64	235	172.7	171.4 – 174.1	236	160.8	159.7 – 161.9
25-64	927	174.4	173.5 – 175.3	976	163.7	163.0 – 164.4

Mean weight (kg)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
25-34	215	102.9	99.1 – 106.8	231	90.1	87.8 – 92.3
35-44	254	100.0	98.3 – 101.7	250	89.0	86.3 – 91.7
45-54	224	94.7	91.7 – 97.7	246	89.6	88.4 – 90.8
55-64	235	93.5	90.3 – 96.6	236	87.7	84.9 – 90.6
25-64	928	99.5	97.2 – 101.8	963	89.4	87.9 – 90.9

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	210	32.7	31.9 – 33.5	231	33.2	32.4 – 34.0	441	33.0	32.3 – 33.6
35-44	253	32.6	31.9 – 33.3	248	32.9	31.7 – 34.0	501	32.7	32.1 – 33.3
45-54	223	31.6	30.7 – 32.6	246	33.8	33.4 – 34.1	469	32.6	31.7 – 33.5
55-64	235	31.3	30.4 – 32.1	235	33.9	32.6 – 35.1	470	32.5	31.7 – 33.3
25-64	921	32.3	31.9 – 32.8	960	33.3	32.7 – 33.8	1881	32.8	32.4 – 33.2

BMI categories Description: Percentage of respondents (excluding pregnant women) in each BMI category.

Instrument questions:

- Height
- Weight

BMI classifications									
Men									
Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
25-34	210	----	----	9.2	5.9 – 12.6	34.3	30.3 – 38.4	56.4	49.6 – 63.3
35-44	253	----	----	8.1	5.1 – 11.1	31.0	26.9 – 35.0	60.9	57.0 – 64.9
45-54	223	0.8	0.0 – 1.7	15.6	12.4 – 18.8	26.8	18.3 – 35.2	56.8	49.2 – 64.4
55-64	235	0.5	0.0 – 1.3	8.6	6.3 – 10.9	38.0	32.4 – 43.6	52.9	47.4 – 58.4
25-64	921	0.2	0.0 – 0.5	10.0	8.0 – 11.9	32.4	29.4 – 35.3	57.4	53.8 – 61.1

BMI classifications									
Women									
Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
25-34	231	----	----	14.7	10.4 – 19.0	20.5	15.5 – 25.5	64.8	61.5 – 68.1
35-44	248	0.6	0.0 – 1.6	13.7	11.2 – 16.2	22.7	17.5 – 27.9	63.0	56.4 – 69.6
45-54	246	----	----	9.5	6.7 – 12.2	19.2	12.8 – 25.7	71.3	66.7 – 75.8
55-64	235	0.5	0.0 – 1.3	7.2	4.8 – 9.6	24.2	16.4 – 32.1	68.0	58.4 – 77.6
25-64	960	0.2	0.0 – 0.6	12.7	10.4 – 15.0	21.4	18.4 – 24.5	65.7	62.5 – 68.9

BMI classifications									
Both Sexes									
Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over-weight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
25-34	441	----	----	12.0	9.1 – 14.8	27.4	21.6 – 33.2	60.6	55.4 – 65.8
35-44	501	0.3	0.0 – 0.8	10.8	7.7 – 13.9	27.0	23.1 – 30.9	61.9	58.4 – 65.5
45-54	469	0.5	0.0 – 1.0	12.8	10.0 – 15.5	23.3	17.5 – 29.1	63.5	57.2 – 69.8
55-64	470	0.5	0.0 – 1.0	7.9	6.3 – 9.6	31.4	26.6 – 36.2	60.2	54.7 – 65.7
25-64	1881	0.2	0.0 – 0.4	11.3	9.7 – 12.9	27.1	24.1 – 30.0	61.4	58.7 – 64.2

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
25-34	209	102.8	101.2 – 104.4	230	99.3	97.8 – 100.9
35-44	251	104.4	103.1 – 105.7	251	98.8	95.5 – 102.1
45-54	223	103.5	101.1 – 105.9	245	101.4	99.0 – 103.8
55-64	234	104.7	102.9 – 106.5	232	103.7	100.7 – 106.8
25-64	917	103.7	102.6 – 104.7	958	100.0	98.5 – 101.5

Blood pressure Description: Mean blood pressure among all respondents.

Instrument question:

- 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
25-34	214	131.3	129.4 – 133.3	240	116.4	115.3 – 117.5	454	123.8	118.6 – 129.0
35-44	254	131.9	128.6 – 135.1	254	121.6	118.7 – 124.5	508	126.9	122.5 – 131.2
45-54	224	140.5	137.0 – 144.1	246	134.0	130.2 – 137.8	470	137.5	134.3 – 140.8
55-64	235	144.1	139.4 – 148.8	236	139.2	135.3 – 143.2	471	141.7	138.1 – 145.4
25-64	927	134.6	132.1 – 137.2	976	123.3	119.4 – 127.3	1903	129.1	125.7 – 132.5

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	214	80.3	78.1 – 82.6	240	75.2	74.2 – 76.2	454	77.7	75.8 – 79.6
35-44	254	83.0	79.4 – 86.6	254	77.7	76.0 – 79.4	508	80.4	77.5 – 83.4
45-54	224	87.4	84.1 – 90.7	246	83.0	79.9 – 86.1	470	85.4	82.7 – 88.1
55-64	235	86.1	82.7 – 89.6	236	82.5	80.2 – 84.7	471	84.4	81.8 – 86.9
25-64	927	83.1	80.8 – 85.3	976	78.0	76.4 – 79.6	1903	80.6	78.9 – 82.3

Raised blood pressure

Description: Percentage of respondents with raised blood pressure.

Instrument question:

- 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
25-34	211	27.6	23.3 – 32.0	239	9.0	5.3 – 12.7	450	18.2	11.5 – 24.8
35-44	243	33.9	25.1 – 42.6	236	14.7	10.8 – 18.6	479	24.7	15.7 – 33.6
45-54	182	45.1	33.1 – 57.0	194	36.5	22.0 – 50.9	376	41.2	31.8 – 50.5
55-64	157	54.9	39.7 – 70.2	127	37.8	24.3 – 51.4	284	47.6	35.4 – 59.9
25-64	793	34.8	28.8 – 40.8	796	16.7	10.7 – 22.6	1589	26.0	20.3 – 31.7

SBP ≥160 and/or DBP ≥ 100 mmHg									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	211	5.5	3.8 – 7.1	239	2.6	0.8 – 4.3	450	4.0	2.4 – 5.6
35-44	243	7.8	1.7 – 13.9	236	5.2	1.4 – 9.1	479	6.6	2.7 – 10.4
45-54	182	18.1	11.3 – 24.9	194	12.4	6.8 – 18.0	376	15.5	10.4 – 20.6
55-64	157	22.2	12.8 – 31.6	127	14.0	4.6 – 23.3	284	18.7	11.1 – 26.3
25-64	793	9.7	6.2 – 13.2	796	5.6	3.2 – 8.0	1589	7.7	5.4 – 10.0

Biochemical Measurements

Mean fasting blood glucose

Description: mean fasting blood glucose results excluding those currently on medication for diabetes (Non-fasting recipients excluded).

Instrument questions:

- Are you currently receiving any of the following treatments for diabetes prescribed by a doctor or other health worker?
 - Insulin?
 - Oral drugs (medication) that you have taken in the last 2 weeks?
- During the last 12 hours have you had anything to eat or drink, other than water?
- 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
25-34	211	6.0	5.8 – 6.1	235	5.8	5.6 – 6.0	446	5.9	5.7 – 6.0
35-44	245	6.4	6.1 – 6.8	250	6.2	6.0 – 6.3	495	6.3	6.1 – 6.5
45-54	221	6.8	6.6 – 7.0	242	6.3	6.1 – 6.5	463	6.6	6.4 – 6.8
55-64	224	7.3	6.7 – 7.8	233	6.9	6.7 – 7.2	457	7.1	6.8 – 7.4
25-64	901	6.4	6.2 – 6.6	960	6.1	5.9 – 6.3	1861	6.3	6.1 – 6.4

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
25-34	211	107.2	104.3 – 110.1	235	104.6	101.1 – 108.1	446	105.9	103.5 – 108.3
35-44	245	115.8	109.8 – 121.7	250	110.8	107.5 – 114.2	495	113.4	109.3 – 117.4
45-54	221	122.4	118.4 – 126.3	242	113.2	109.6 – 116.7	463	118.1	114.4 – 121.9
55-64	224	130.7	121.1 – 140.3	233	124.9	120.1 – 129.6	457	127.8	122.2 – 133.4
25-64	901	115.2	110.8 – 119.5	960	110.1	106.9 – 113.3	1861	112.7	109.9 – 115.5

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:

- Are you currently receiving any of the following treatments for diabetes prescribed by a doctor or other health worker?
 - Insulin?
 - Oral drugs (medication) that you have taken in the last 2 weeks?
- During the last 12 hours have you had anything to eat or drink, other than water?
- Blood glucose measurement

Impaired Fasting Glycaemia*									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	211	46.2	36.1 – 56.4	235	34.7	30.6 – 38.9	446	40.4	34.1 – 46.8
35-44	246	51.9	42.5 – 61.3	250	37.8	33.2 – 42.5	496	45.0	38.6 – 51.5
45-54	222	45.6	38.5 – 52.6	244	36.9	31.7 – 42.2	466	41.6	36.2 – 47.0
55-64	226	41.5	34.2 – 48.8	236	35.0	29.4 – 40.5	462	38.3	33.8 – 42.8
25-64	905	47.3	41.8 – 52.7	965	36.0	33.3 – 38.8	1870	41.8	38.1 – 45.4

Raised blood glucose or currently on medication for diabetes**									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	211	15.1	12.0 – 18.1	235	12.5	8.2 – 16.7	446	13.8	11.1 – 16.4
35-44	246	28.7	19.0 – 38.4	250	21.1	16.8 – 25.3	496	25.0	19.0 – 31.0
45-54	222	34.7	30.6 – 38.8	244	27.6	20.8 – 34.4	466	31.4	27.1 – 35.8
55-64	226	45.1	38.1 – 52.1	236	43.5	38.8 – 48.2	462	44.3	40.0 – 48.6
25-64	905	26.1	20.0 – 32.2	965	21.0	16.4 – 25.5	1870	23.6	19.7 – 27.4

Currently on medication for diabetes									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	237	1.0	0.0 – 2.3	254	----	----	491	0.5	0.0 – 1.1
35-44	273	1.4	0.4 – 2.4	269	4.6	2.7 – 6.5	542	2.9	1.3 – 4.5
45-54	236	9.8	7.0 – 12.6	259	6.0	2.4 – 9.5	495	8.0	5.6 – 10.5
55-64	244	15.2	11.3 – 19.1	247	20.2	15.1 – 25.3	491	17.6	14.3 – 21.0
25-64	990	4.3	2.0 – 6.6	1029	4.7	2.1 – 7.2	2019	4.5	2.8 – 6.1

* Impaired fasting glycaemia is defined as either

- plasma venous value: ≥ 6.1 mmol/L (110mg/dl) and < 7.0 mmol/L (126mg/dl)
- capillary whole blood value: ≥ 5.6 mmol/L (100mg/dl) and < 6.1 mmol/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 and percentage of respondents with raised total cholesterol.

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
25-34	186	5.1	4.9 – 5.2	190	4.8	4.7 – 4.9	376	4.9	4.8 – 5.1
35-44	219	5.2	5.1 – 5.3	221	5.0	4.9 – 5.1	440	5.1	5.0 – 5.2
45-54	198	5.1	4.9 – 5.4	231	5.2	5.1 – 5.3	429	5.2	5.0 – 5.3
55-64	216	5.2	5.1 – 5.4	226	5.4	5.3 – 5.5	442	5.3	5.2 – 5.4
25-64	819	5.1	5.0 – 5.2	868	5.0	4.9 – 5.1	1687	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
25-34	186	195.4	188.4 – 202.4	190	185.4	182.0 – 188.7	376	190.5	185.7 – 195.3
35-44	219	201.0	197.1 – 205.0	221	194.0	189.2 – 198.9	440	197.6	193.4 – 201.8
45-54	198	198.5	189.7 – 207.3	231	200.3	196.4 – 204.3	429	199.4	194.5 – 204.3
55-64	216	201.3	195.8 – 206.9	226	209.3	204.3 – 214.4	442	205.3	201.1 – 209.4
25-64	819	198.3	194.2 – 202.5	868	193.5	189.2 – 197.8	1687	196.0	192.8 – 199.2

Total cholesterol \geq 5.0 mmol/L or \geq 190 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	186	74.1	66.1 – 82.1	190	64.9	60.3 – 69.4	376	69.6	64.6 – 74.6
35-44	219	82.8	77.9 – 87.7	221	73.6	69.2 – 78.1	440	78.3	73.7 – 82.9
45-54	198	75.0	69.0 – 81.0	231	79.4	76.2 – 82.6	429	77.1	73.5 – 80.7
55-64	216	76.6	70.4 – 82.9	226	90.7	88.3 – 93.1	442	83.5	78.7 – 88.4
25-64	819	77.1	72.4 – 81.9	868	73.2	68.8 – 77.5	1687	75.2	71.9 – 78.5

Total cholesterol \geq 6.2 mmol/L or \geq 240 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34	186	5.9	1.3 – 10.5	190	1.8	0.0 – 3.8	376	3.9	1.1 – 6.7
35-44	219	7.0	4.9 – 9.1	221	7.0	1.8 – 12.1	440	7.0	4.3 – 9.6
45-54	198	9.0	1.7 – 16.3	231	6.0	4.2 – 7.7	429	7.6	3.5 – 11.6
55-64	216	8.9	3.8 – 14.0	226	12.7	9.6 – 15.8	442	10.8	7.8 – 13.7
25-64	819	7.1	4.6 – 9.7	868	5.4	3.1 – 7.7	1687	6.3	4.6 – 8.0

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 \geq 25 kg/m²)
- raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg or currently on medication for raised BP).

Instrument questions: combined from Step 1 and Step 2

Raised Risk							
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	337	0.3	0.0 – 1.0	18.7	14.7 – 22.8	81.0	76.7 – 85.3
45-64	344	0.3	0.0 – 0.8	15.9	12.4 – 19.4	83.8	80.2 – 87.4
25-64	681	0.3	0.0 – 0.8	17.9	14.7 – 21.0	81.8	78.5 – 85.1

Raised Risk							
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	398	0.2	0.0 – 0.7	29.8	26.5 – 33.1	70.0	66.4 – 73.6
45-64	402	0.4	0.0 – 1.3	22.5	19.4 – 25.6	77.1	73.6 – 80.5
25-64	800	0.3	0.0 – 0.7	27.8	24.8 – 30.9	71.9	68.7 – 75.1

Raised Risk							
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	735	0.3	0.0 – 0.7	24.6	20.9 – 28.4	75.1	71.2 – 79.0
45-64	746	0.4	0.0 – 0.9	19.2	16.2 – 22.1	80.5	77.4 – 83.5
25-64	1481	0.3	0.0 – 0.6	23.1	20.1 – 26.1	76.6	73.6 – 79.7

Appendix 3. List of STEPS Survey Staff from the Cook Islands

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We also wish to acknowledge the following for their assistance with the survey:

Aitutaki Child Welfare Association for refreshments and support
Cook Islands Statistics Office for assisting with sample selection

Appendix 4. References

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