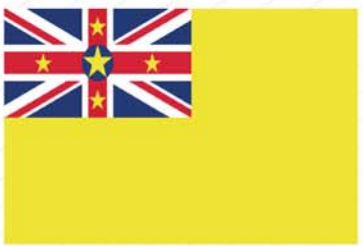
# NIUE

# NCD RISK FACTORS STEPS REPORT



World Health Organization
Western Pacific Region

# Niue

# NCD Risk Factors

STEPS REPORT

May 2013

# Acknowledgements

This publication is the outcome of collaboration between Niue Health Department and the World Health Organization with expert contributions from a number of individuals.

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## CONTENTS

# LIST OF FIGURES

*Page*



# LIST OF TABLES

*Page*

## LIST OF ABBREVIATIONS

| | |
|---|---|
| BMI | Body Mass Index |
| BP | Blood Pressure |
| DBP | Diastolic Blood Pressure |
| FAO | Food and Agriculture Organization |
| FCTC | Framework Convention on Tobacco Control |
| ISH | International Society for Hypertension |
| MET | Metabolic equivalent |
| mg/dL | Milligrams per decilitre (unit of blood chemistry values) |
| mmHg | Millimetres of mercury (unit of blood pressure measurement) |
| mmol/L | Millimoles per litre (unit for blood chemistry values) |
| NCD | Noncommunicable diseases |
| NHD | Niue Health Department |
| NIDM | Non Insulin Diabetes Mellitus |
| NHSP | Niue Health Strategic Plan |
| PDA | Personal Digital Assistant |
| PICs | Pacific island countries and areas |
| PHC | Primary Health Care |
| STEPS | WHO Stepwise approach to NCD surveillance |
| SBP | Systolic Blood Pressure |
| SPC | Secretariat of the Pacific Community |
| UN | United Nations |
| WHO | World Health Organization |

# Foreword – Niue Health Department

**Hon. Minister of Health, Niue**

**Director of Health, Niue**

In our health care facilities we see the devastating impact of noncommunicable diseases (NCDs) on the people of Niue every day. Cardiovascular diseases, diabetes, cancer and chronic respiratory diseases account for the majority of hospital admissions and they are overwhelming the health care system. NCDs are also the most common causes of death and our Doctors and Nurses are calling for stronger primary and secondary prevention to try and reduce the burden of NCDs, not only on the health system but also on the community and on our economy.

The NCD crisis in Niue can be overcome. Four of the major risk factors for NCD are modifiable. By increasing levels of physical activity, eating more fruits and vegetables and less unhealthy foods, by not smoking and by controlling alcohol intake we can prevent up to 80% of cardiovascular diseases, stroke, and diabetes and 40% of all cancers. To know how best to address these risk factors however, we need to know how prevalent they are and who is most at risk.

In this context we are pleased to announce the findings of the first Niue NCD risk factor report. Using the World Health Organization stepwise approach to risk factor surveillance, risk factors were measure on everyone in Niue aged 15 years and over. That everyone was surveyed is an accomplishment unique to Niue that we are proud of. The findings confirm the NCD burden that we are seeing in our hospital. Over one-third of the population was hypertensive, 42.1% of men and 34.9% of women had raised blood glucose and 34.8% of the population had raised total cholesterol levels. The findings also show that the prevalence of the modifiable risk factors is high. More than 60% of the population were obese (BMI ≥30kg/$m^2$), 49.3% of the population were current drinkers and of those, 54.9% of men and 31.3% reported binge drinking at least once in the last 30 days. Almost everyone aged 15 years and over (92.9%) reported consuming less than the recommended five serves of fruit and vegetables per day. Smoking rates were low and physical activity high relative to other countries but these risk factors are not to be neglected and we will aim for a Tobacco Free Niue and to maintain high levels of physical activity whether through work, recreation or transportation.

We commend to readers the carefully compiled recommendations contained in this report based directly on the findings. They are helpfully divided up into actions for government and actions for the Department of Health, actions for addressing NCD risk factors, actions for managing risk and disease and actions for surveillance. We take on board those that apply directly to the Department of Health and equally importantly will provide leadership to support those that apply in other settings. Together these recommendations will form the basis of a strategic NCD action plan over the next 5 years to strengthen NCD prevention and control in Niue.

We gratefully acknowledge the assistance of WHO, funding and support from AusAID, the contribution of local partners who assisted with the implementation and completion of the survey and of course the tremendous contribution of Niue Health Department staff.

**Hon. Joan S Viliamu**
**Minister for Health**
**Niue**

**Manila Nosa**
**Director of Health**
**Niue**

# Foreword – World Health Organization

**World Health Organization Representative**

NCDs in Pacific island countries and areas (PICs) account for 75% of all deaths and contribute to significant long term illness and disability, hampering social and economic development. Ministers at the 9th Pacific Health Ministers' Meeting held in June, 2011 declared a NCD crisis in the Pacific requiring urgent attention and Pacific Islands Forum Leaders echoed this call. As part of the global response, the September 2011 political declaration of the High-level Meeting of the UN General Assembly on the Prevention and Control of Non-communicable Diseases called for a comprehensive global monitoring framework including a set of indicators and voluntary global targets.

In light of the size of the NCD problem and the growing political support for action nationally, regionally and globally, this NCD risk factors report for Niue is timely as it coincides with final agreement at the World Health Assembly in May 2013 on what the global NCD targets and indicators will be. This puts Niue in an excellent position to develop national NCD targets, to report on the status of NCD risk factors globally and to develop policy and programs to address NCDs. Uniquely the report is based on a census and therefore gives the best possible picture of NCDs and their risk factors in Niue.

Data contained in the report were collected using the WHO STEPwise Approach to Surveillance of NCD Risk Factors (STEPS). To date, more than 148 countries and areas throughout the world have used this approach to conduct national surveys on risk factors and prevalence of NCDs.

Some of the key results of the STEPS survey were:

- 15.8% of men and 7.6% of women smoked daily with men starting smoking at age 17.7 years and women starting at age 22.4 years;
- 49.3% of the population were current drinkers and of those 54.9% of men and 31.3% reported binge drinking at least once in the last 30 days;
- 92.9% of the population reported consuming less than the recommended five serves of fruit and vegetables per day;
- Levels of work-related physical activity were high in Niue and only 17.1% of the population reported low levels of physical activity;
- 61% of the population were obese (BMI ≥30kg/$m^2$) and average waist circumferences were high (98.9 cm for men and 96.6 cm for women);
- 33.5% of the population were hypertensive;
- The prevalence of raised blood glucose was 38.4%, with a higher rate among men (42.1%) than women (34.9%);

- 34.8% of the population had raised total cholesterol levels;
- 3.3% of the population had at least a 30% risk of a fatal or non-fatal cardiovascular event in the next 10 years.

Clearly, NCD risk factors are very prevalent in Niue and the high levels of raised blood glucose and hypertension are of particular concern. In response, priority needs to be given to both primary and secondary prevention activities and I commend the Niue Health Department for the priority actions they have identified for reducing modifiable risk factors and for managing existing disease.

WHO is honoured to have been a part of the collaboration that led to the publication of this report and will continue to work with Niue Health Department and other key stakeholders to address the NCD burden in Niue.

**Dr Baoping Yang**
**World Health Organization Representative**
**(American Samoa, Cook Islands, Niue, Samoa and Tokelau)**

# Executive Summary

The Niue NCD STEPS survey provides a baseline assessment of major risk factors of noncommunicable diseases (NCDs) in Niue. Uniquely, the data are from all Niueans aged 15 years and over, taken at the time of the 2011 Census of Population and Households.

The key objectives of the NCD STEPS survey were:

- To document the prevalence and magnitude of major modifiable risk factors for NCDs in the population including tobacco use, alcohol consumption, poor eating patterns, physical inactivity, obesity, high blood pressure, raised blood glucose and cholesterol levels;
- To compare NCDs and their risk factors across different age groups and between men and women.

The report presents data and commentary on 913 individuals aged 15 years and over. The standard age group reporting for WHO STEPS surveys is 25-64 years. The inclusion of age group 15-24 in the Niue survey adds value by providing information on whether or not these young people are developing similar behaviours to those of older cohorts.

**Behavioural risk factors**

Overall, the prevalence of current smokers (smoked any tobacco product in the past 12 months) was 17.7% of the population (22.6% of men and 13.0% of women). Among current smokers 11.6% smoked daily, (15.8% of men and 7.6% of women). The mean age at which smoking started was 19.3 years with men starting almost 5 years before women (17.7 years for men and 22.4 years for women). Manufactured cigarettes were most commonly smoked among younger men and women up to age 45.

Overall, 49.3% of the population had consumed alcohol in the past 30 days and were classified as current drinkers, highest in the 35-44 age group (64.8%) and declining thereafter. There was a significant sex difference with 60.2% of men and 39.1% of women being current drinkers. Among male current drinkers, 54.9% reported drinking more than 5 standard drinks on a single occasion; and among women, 31.3% reported drinking 4 or more drinks on a single occasion, at least once in the last 30 days. The highest proportion of binge drinking was among men in the 35-44 and 45-54 years age groups and among women in the 35-44 years age group.

The average consumption of fruit and vegetables among Niueans was below the recommended levels of five or more combined servings of fruit and vegetables per day. The mean number of days per week fruit and vegetables were consumed were 3.3 and 3.8 days respectively. When fruit and vegetables were consumed on those days, the self-reported mean number of combined fruit and vegetables servings was 1.1 serves per average day. The overall prevalence of those consuming less than 5 combined servings of fruit and vegetables per day was 92.9%.

The survey found that 17.1% of the population reported a low level of total physical activity, that is, less than 600 METminutes per week (16.8% of men and 17.4% of women). Six-hundred METminutes per week are equivalent to 30 minutes of moderate-intensity physical activity for 5 days per week, or 20 minutes of vigorous activity for 3 days per week. Men undertook 38.4 minutes of recreation related physical activity per average day compared to 21.9 minutes for women.

**Physical risk factors**

The mean body mass index was was 31.8 kg/$m^2$ and similar in both sexes. The prevalence of obesity (BMI ≥30kg/$m^2$) was 61%. Among women, 86.8% were overweight (BMI ≥25kg/$m^2$) and 62.7% of these were obese. Among men, 85% were overweight and 59.2% of these were

obese. An estimated 13.7% of the population had a normal body mass index (18.5 ≤ BMI ≤ 24.9), 12.3% of women and 15.0% of men.

Mean waist circumference was higher in men than women and highest in men aged between 35 and 54 years. Women in all age groups over 25 years had mean waist circumference values exceeding 88 cm, a cut-off value for women considered to increase cardiovascular disease risks. Men in the age groups 35–64 exceeded the 102cm waist circumference where the risk of cardiovascular disease increases.

The survey found an estimated 33.5% of the population had raised blood pressure (defined as having SBP ≥140 mmHg and/or DBP ≥90 mmHg or on medication for raised blood pressure). Raised blood pressure increased with age in both sexes, increased significantly in the 25-34 in men and 35-44 in women and was highest in women in the 65+ years age group.

**Biochemical risk factors**

Based on measures of fasting capillary whole blood, the overall prevalence of raised blood glucose (fasting glucose level ≥6.1 mmol/L or on medication for raised blood glucose) was 38.4%, with a higher rate among men (42.1%) than women (34.9%). Rates of raised blood glucose increased with age in both sexes and was highest among men aged 65+ years.

Overall, 34.8% of the population was found to have raised total cholesterol levels (exceeding 5.0 mmol/L (≥190 mg/dl)), higher in women (36%) than in men (33.7%) and highest in men in the 55-64 age group and in women in the 45-54 and 55-64 years age groups, where over half of the population had raised cholesterol.

**Combined risk factors**

As the number of NCD risk factors for an individual increases, so does the risk of developing an NCD. For this report, the population was classified into three population-based 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 combined NCD risk factors included in the computation of NCD risk categories were current daily smokers, overweight (BMI ≥25 kg/$m^2$), raised blood pressure (SBP ≥140 and/or DBP≥90 mmHg or currently on medication), consuming less than five combined servings of fruit and vegetables per day, and a low level of physical activity (<600 METminutes per week).

This survey found that overall, only 0.2% of the population was at low risk of NCDs, 56% were at moderate risk and 43.8% at high risk. In age group 15-44 years, 53.5% of men and 58.4% of women were at moderate risk of NCD, reporting 1-2 risk factors and 46.2% of men and 41.4% of women were at high risk, reporting 3-5 risk factors. Over 3% of the population had at least a 30% risk of a fatal or non-fatal cardiovascular event in the next 10 years.

**Conclusion**

The Niue STEPS survey has presented strong evidence that NCDs risk factors present serious risks to the population of Niue and to national productivity. The NCD STEPS Survey represents a significant step forward in gathering national baseline data for informing the national health strategy for the prevention, control and management of NCDs.

**Actions for addressing risk factors for the Government of Niue:**

- Provide high level leadership and follow through on commitments made as part of the UN Political Declaration on NCDs;
- Establish a multi-sectoral national commission on NCDs (or similar) to oversee an NCD Action Plan with timed targets and indicators;

- Use the opportunity of the publication of this Niue NCD Risk Factors STEPS Report to scale up national NCD risk factor reduction;
- Earmark funds for ongoing NCD strategy implementation and monitoring;
- Accelerate the implementation of the WHO Framework Convention on Tobacco Control;
- Support the proposal for a Tobacco-Free Pacific by 2025;
- Require tobacco distributors to place health warnings on manufactured cigarette packages;
- Consider the potential for manufacturers and importers of cigarettes and alcohol to be taxed to the degree that they subsidize the health services provided to consumers of their products;
- Generate resources for ongoing national health education programs aimed at reducing NCD risk behaviours;
- Develop policies supporting the importation of healthy foods;
- Investigate the potential to significantly scale-up the acquisition, distribution, marketing and availability of fruit and vegetables;
- Develop policies to establish physical activity-friendly environments and infrastructures.

**For the Niue Health Department in partnership with NGOs and the community:**

- Identify the cultural factors contributing to NCD risk and identify culturally acceptable strategies to reduce NCD risk behaviours;
- Provide comprehensive anti-smoking campaigns particularly targeting teenagers and the younger adult age groups to prevent smoking uptake;
- Promote fruit and vegetable consumption through policy and increased public awareness of the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods;
- Create culturally-appropriate and diverse programs to promote daily physical activity, including in workplaces;
- Create public awareness campaigns on the national and individual importance of regular monitoring and screening of blood pressure, cholesterol and blood sugar levels;
- Create public awareness programs targeted to increase awareness of the multipliers of NCD risk associated with combining the 5 major NCD risk factors (current daily smoking, being overweight, having raised blood pressure, eating less than five combined servings of fruit and vegetables per day, and having a low level of physical activity).

**Actions for assessing and managing absolute CVD risk for the Niue Health Department:**

- Support targeted screening and referrals;
- Strengthen a responsive health care system to address NCD through implementation of Package of Essential NCD interventions in primary health care. This requires appropriately trained human resources and basic equipment and supplies made available at all levels of the health care system, particularly at the PHC level.
- Strengthen community-based care and management of individuals with diagnosed NCDs.

**Actions for Surveillance for the Niue Health Department:**

- Support secondary analysis of the data contained herein to identify statistical associations among the variables;

- Establish leadership and training of staff to repeat the Niue NCD STEPS survey every 5 years using the systematic and rigorous approach to STEPS data collection in order to create an ongoing and robust NCD surveillance system in Niue;
- Participate in the comparison of NCD STEPs findings across all PICs that have completed a NCD STEPs survey, in order to identify the risk factors that are particular to and most amenable to modification within Niue.

# 1. INTRODUCTION

## *1.1 Background and Rationale*

In all countries, non-communicable diseases (NCDs) are responsible for a high proportion of death and disability. In developing countries and in the Pacific Region, the burden of disease caused by NCDs is increasing rapidly and now presents significant social, economic, and health consequences for these countries. In 1999, NCDs caused an estimated 60% of deaths in the world and 43% of the global burden of diseases. Based on current trends, by the year 2020 these diseases are predicted to account for 73% of deaths and 60% of the disease burden. Most of these increases will reflect the epidemiological transition in developing countries; from communicable to noncommunicable diseases. Unless increasing prevalence can be reversed the disability and dependency that accompanies NCDs will present an increasing burden on health facilities and on families.

Despite such observations that NCDs are an increasing health burden, to date there is no in-depth knowledge of the national prevalence of the common risk factors contributing to NCDs in Niue.

This STEPS survey, the first to be undertaken in Niue, provides a baseline for future STEPS surveys to assist in determining the effectiveness, or otherwise, of prevention and control measures and the achievement of targets stated in the Niue's Health Strategic Plan[1] (NHSP). It also provides the basis for comparing Niue with other Pacific countries. In the immediate term, this STEPS report provides information for national policy development, health education programs, disease prevention and promotion initiatives, as ultimately, the improvements in diet and physical activity and the control of tobacco and alcohol are vested with the nation, the community and the individual.

## *1.2 The National Context*

### 1.2.1 Geography

Niue[2] is a single island in the South Pacific Ocean formed by volcanic upheavals topped by a coal atoll at Latitude 19 South and longitude 169 West. It is the largest raised coral atoll in the world and is surrounded by the Alofi Terrace, a 20-30m high terrace that surrounds the entire island. It lies 480 km East of Tonga, 930 km West of Rarotonga in the Cook Islands, 660km South East of Western Samoa and 2,400km north east of New Zealand. On the eastern side of the International Dateline, Niue is 11 hours behind Greenwich Mean Time. Niue has a land mass of 259 sq km. Niue is in the centre of a triangle of Polynesian islands made up of Tonga, Samoa and the Cook Islands. It has an Exclusive Economic Zone of 293,988 sq km.

### 1.2.2 Population and Living Environment

On the census night of Saturday 10th of September 2011[3] there were 1615 people on the island on Niue, including 125 tourists (Government Statistician, October 2012). There were 489 private households with 1,176 people of Niuean descent. The Niue NCD STEPS Survey is a unique study of the entire population of Niue aged 15 and over on the island. There were reportedly over 20,000 people of Niuean heritage living in New Zealand in 2001 (NHSP p7).

### 1.2.3 Government, Culture and the Economy

Niue has a Westminster form of Parliamentary democracy, within a single House called the Legislative Assembly. After a brief period of being a British protectorate, Niue was annexed by New Zealand in 1901. Since 1974, it is a self-governing nation in free association with New Zealand, which is responsible for foreign affairs and defence[4].

The provision of health services in Niue is a function of Government, operating through the Minister for Health and Niue Health Department (NHD). The Niue Health Strategic Plan (NHSP) 2011-21 is a 10 year plan derived from the *Niue National Strategic Plan*[5] *(2009-2013)*, *Niue ke Monuina – A Prosperous Niue*, that is directed towards *'achieving a sustainable future to meet Niue's economic and social needs while preserving environmental integrity, social stability, and the Niue culture'*.

Niueans are of Polynesian descent. They speak Niuean, a western Polynesian language, and live in a Niuean expression of Polynesian culture and tradition. Spirituality and social values are an integral part of Niuean culture that have found recent expression in Christianity.

The population of Niue has declined due to emigration to New Zealand, Australia and the United States of America over several decades[6]. Population projections forecast continued migration of people reaching working age. This results in high proportions of young and older people on the island, but lower proportions in the working ages. The bulk of migration is to New Zealand, with who Niue has been in free association since 1974.

The economy of Niue is largely dependent on support from New Zealand. Small agricultural production is mainly consumed in Niue, although some agricultural exports and a small tourism sector contribute to the economy. Imports exceed exports by a significant amount, leading to the consumption of imported processed foods. Niue ranks third among the Pacific nations on the Human Development Index[7], largely due to New Zealand's support to the national budget. In 2011, GDP was NZ$28,327m, which equates to NZ$19,403 per capita.

### 1.2.4 Noncommunicable Disease, Health Status and Health Infrastructure

Much of the following is drawn from the Government of *Niue's Health Strategic Plan* 2011–21 (NHSP) and the Niue *Moui Olaola; An Integrated NCD Action Plan* 2009–2013[8].

Section 3 of the NHSP sets out the *Results Expected* over a ten year period to 2021. It presents a Vision for Niue as "A healthy population well supported by quality health services". The Primary Goal of the NHSP is to "ensure that all those living in Niue are encouraged and supported to live healthy lives." A series of 'health strategies' are listed which include that Niue will: "promote healthy lifestyles, through sports and recreational activities, and prevention of non-communicable diseases; and, promote healthy lifestyles through education to change traditional attitudes and cultural beliefs to decrease health risks". Among the strategic targets is to: "reduce the incidence of non-communicable diseases by at least 10% per annum".

In drafting the NHSP additional targets arising from the work of Allen & Clarke[9] in 2011 were included. Those specifically relevant to NCDs are to:

- Reduce tobacco smoking prevalence to less than 25% of males and less than 13% of females by 2020/21
- By 2020/2021, reduce the annual number of new diagnoses of diabetes by 20% compared with 2011/12
- By 2020/2021, reduce the incidence of obesity in Niue by 20% compared with 2011/12

*Niue Moui Olaola; An Integrated NCD Action Plan* 2009 – 2013 (p9) summarised the NCD situation in Niue as follows:

"The obesity prevalence appears to be increasing significantly from 32% for women in 1980 to 58% in 2002. Tobacco smoking and alcohol consumption are high. According to the 2006 census: 23% of the population smoked of whom 16% were women and 31% were men, nearly 50% of adults aged 15 years and over drank alcohol. Diabetes and hypertension in both men and women is also increasing.

The Secretariat of the Pacific Community[10] (SPC) 2010 publication *NCD Statistics for the Pacific Islands Countries and Territories* ranks Niue as having the highest incidence rates of circulatory disease and diabetes among the 16 countries presented.

*Extract Niue Health Strategic Plan 2011-21 (p23):* "Over time, without concerted actions by the health sector, in partnership with all other sectors, the extent of disease associated with smoking, alcohol misuse, poor nutrition and lack of physical activity has the potential to overwhelm the Niue health service and significantly compromise the social and economic future of Niue. We cannot let this happen".

The Niue Health Department (NHD) is based at the Niue Foou Hospital, which provides the majority of primary and secondary medical and health services on Niue, and is the site of the aged care facility. The NHSP recognises that the hospital based 'treatment' model of health service provision works against the promotion of health and disease prevention in communities and is establishing outreach programs as part of the NHSP 2011-21.

### *1.3 Developing the WHO STEPS Survey in Niue*

Implementation of the NHSP 2011-21 requires accurate baseline data against which to monitor progress. The WHO STEPS Survey has not been previously conducted in Niue. Although the rise in NCDs in Niue has been observed for some time, no population-wide epidemiological data on NCD risk factors have been collected in Niue. The STEPS Survey was conducted by Niue Health Department, with technical support provided by the World Health Organization.

## 2. OBJECTIVES

The overall aim of the NCD STEPS risk factor survey is to investigate the prevalence of key NCDs and their associated risk factors. Specifically, the STEPS Survey:

- Documents the prevalence and magnitude of major modifiable risk factors for NCDs including tobacco use, alcohol consumption, unhealthy diets, physical inactivity, overweight and obesity, raised blood pressure, raised blood glucose and raised total cholesterol;
- Compares NCDs and their risk factors by age and sex groups.

## 3. METHODOLOGY

### *3.1 Survey Structure*

Niue STEPS survey followed a sequential three-step process as illustrated in Figure 1:

Step 1: A questionnaire-based (interview) survey on tobacco use, alcohol drinking, fruit and vegetable consumption, 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 other STEPS surveys conducted in the Pacific region, the Niue survey collected core information across the three steps. The STEPS standardized survey methodology was

followed. This approach ensures that Niue has available population-wide and representative data for between-country comparisons as well as within-country comparisons. In future surveys, Niue could add more questions or measurements to the core questions, depending on local needs.

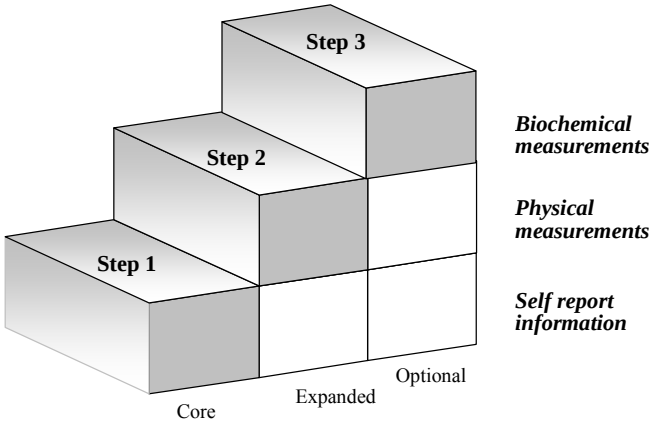



**Figure 1. The WHO STEPwise approach to NCD surveillance**

## *3.2 Survey Methodology*

The 2011 census provided the opportunity to survey the entire population of 15 years of age and above, thereby negating the need for sampling. Niue surveyed 14 villages in total. The survey team went from village to village surveying everyone aged 15 years and above. Data collection was done at the community hall in each village. The 3 STEPS of the survey were conducted at different stations within the community hall. After a participant finished the interview for STEP 1 he/she would move to the next station for the physical measurement of STEP 2.

For the biochemical measurements for STEP 3 the initial survey returned unreliable results, possibly due to people not having fasted properly prior to completing STEP 3. It was decided to resurvey all 428 people from the original survey who had shown a blood sugar level of ≥ 6.1mmol/L.

## *3.3 Study participants*

STEPS guidelines suggest a sample size powered to represent all adults in the national population, stratified into eight 10-year age-sex categories (usually 25-64 years). Since Niue has such a small population, a decision was made to undertake a census of all persons aged 15 and older.

Of the total population aged 15 years and over (n=1071), 913 were surveyed at Step 1 and Step 2 giving a response rate of 85.2%. Of these, 863 people undertook biochemical measures at Step 3 (response rate 80.6%).

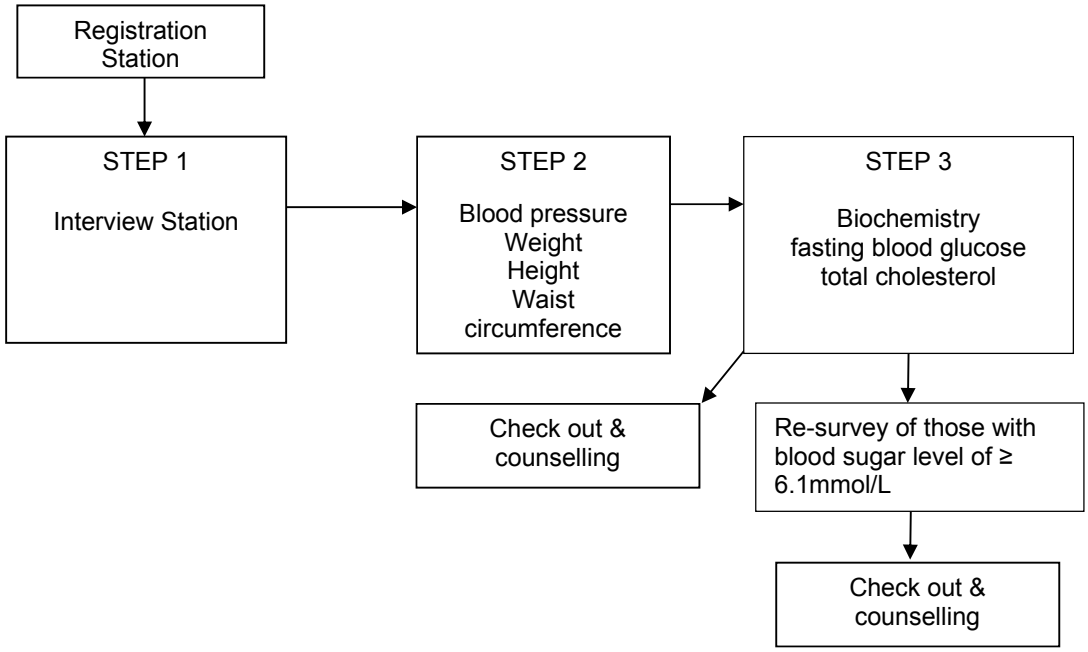
158 people were not surveyed because the majority of them were overseas during the festive season, some were sick and a small number refuse to participate. The survey was conducted from November 2011 to February 2012.

## *3.4 Data Collection Procedures*

Survey personnel obtained informed consent from survey participants and gave fasting instructions and made appointment times for those who consented to participate in the survey.

STEPs survey personnel

**Figure 2: Sequence of data collection stations at field sites**




### 3.4.1 Registration of Participants

Village registries were used to keep track of the number of participants in each village and the number of total individuals recruited (figure 2). At the registration station, survey staff confirmed written consent, participants' date of birth, fasting status of the participant, and explained to participants all the steps involved in the study. Data from all steps were recorded on Personal Digital Assistants (PDAs) by trained interviewers and clinical staff.

### 3.4.2 Step 1 - Behavioural Risk Factors Interviews

All participants undertook a face-to-face interview with a trained survey administrator in which questions were asked on tobacco use, alcohol consumption, fruit and vegetable consumption, physical activity and history of chronic conditions and current medications. Participants were also asked about selected socio-demographic information such as education, employment and ethnicity.

### 3.4.3 Step 2 - Physical Measurements

Survey staff conducted the physical measurements following the recommended STEPwise protocols. The OMRON M4 Digital Automatic Blood Pressure Monitor was used to measure resting blood pressure. Blood pressure was measured three times; the first reading followed by two more measurements taken with 2-3 minute intervals. The three readings of the blood pressure were recorded, and the average of the second and third readings was used in the analysis.

Height and weight were measured once using the Seca Leicester Height Measure to the nearest whole centimetre and the use of the digital scale Soehnle Professional 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 constant tension tape and recorded to the nearest 0.1 cm. Waist circumference of pregnant participants was not measured.

### 3.4.4 Step 3 - Biochemical Measurements

The survey included assessments of fasting blood glucose (Accucheck) and fasting total cholesterol (Accutrend). Participants fasted from 10:00pm the previous night until 6:00am the following morning, when their capillary blood samples were drawn using the finger prick method.

Because of concerns over fasting status, possibly resulting in high blood glucose values, participants with values over 6.1 mmol/L (n=468) were invited back to re-survey their blood sugar and all complied. Earlier results from these participants were excluded.


Biochemistry station at field site

### 3.4.5 Check-out Station and Counselling

All participants received health advice and counselling about smoking, alcohol drinking, obesity and nutrition, physical activity, hypertension, diabetes, and heart diseases. Participants who

were identified as being at high risk of developing, or with existing chronic conditions, were referred for a follow-up clinical examination.

Counselling at field site

## *3.5Data Management and Analyses*

### 3.5.1 Data Entry

Data collection was done using Personal Digital Assistants at the time of interview and health examination. Using PDAs for data collection means no further data entry is required. Submitted questionnaires were checked randomly by staff to assess overall quality of data collection and completeness.

### 3.5.2 Data Weighting and Analysis

With support from the WHO Office in Suva, the WHO Office in Geneva performed final data cleaning and analysis. Data analyses were conducted using EpiInfo Version 3.5.3. The WHO Office in Suva compiled the Data Book based on this analysis.

Data tables present findings for the core 25-64 age group recommended in WHO STEPS surveys as well as two additional age groups, 15-24 years (n=172) and 65+ years (n=153). Only 33 participants were aged 75+ years.

# 4. RESULTS

## 4.1 Characteristics of Survey Population

A total of 913 individuals participated. Table 1 presents the age and sex distribution of the survey sample. Overall, there are more women in Niue than men as indicated by their higher participation. There were more women participants in all age groups other than in groups 15-24 and 35-44, the largest difference being in the two oldest groups. Almost half (49%) of participants were aged below 45 years and one third (33%) were 55 or over.

**Table 1 Age and Sex of study population**

| Age group and sex of participants | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | N | % |
| 15-24 | 91 | 52.9 | 81 | 47.1 | 172 | 18.8 |
| 25-34 | 54 | 38.3 | 87 | 61.7 | 141 | 15.4 |
| 35-44 | 73 | 54.5 | 61 | 45.5 | 134 | 14.7 |
| 45-54 | 75 | 45.5 | 90 | 54.5 | 165 | 18.1 |
| 55-64 | 65 | 43.9 | 83 | 56.1 | 148 | 16.2 |
| 65+ | 59 | 38.6 | 94 | 61.4 | 153 | 16.8 |
| **15+** | **417** | **45.7** | **496** | **54.3** | **913** | **100.0** |

Table 2 presents the mean years of education of the survey participants. Men and women reported the same mean years of education in all age groups, demonstrating Niue's history of sex equality in access to education.

**Table 2 Mean number of years of education by sex and age group**

| Mean number of years of education | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 91 | 12.3 | 80 | 12.7 | 171 | 12.5 |
| 25-34 | 50 | 13.5 | 87 | 15.0 | 137 | 14.4 |
| 35-44 | 73 | 14.2 | 59 | 14.6 | 132 | 14.4 |
| 45-54 | 72 | 14.3 | 89 | 13.5 | 161 | 13.9 |
| 55-64 | 65 | 13.4 | 80 | 13.4 | 145 | 13.4 |
| 65+ | 54 | 11.4 | 82 | 10.4 | 136 | 10.8 |
| **15+** | **405** | **13.2** | **477** | **13.2** | **882** | **13.2** |

## 4.2 Tobacco Use

Tobacco use was measured by asking participants if they currently smoke tobacco products. Participants were categorized into the following smoking status:

- Ever Smokers – those who have ever smoked any tobacco product in their life.
- Current smokers – those who had smoked any tobacco product (such as cigarettes, cigars or rolled tobacco) in the past 12 months.
- Current daily smokers – those who smoke any tobacco product every day.

- Current non-daily smokers – those current smokers who do not smoke on a daily basis.
- Non-smokers – those who are past smokers or never-smokers.
- Past smokers – those who are not current smokers, but have smoked in the past.
- Never smokers – those who had never smoked

Table 3 shows that 17.7% of participants were current smokers. More than a fifth (22.6%) of men were current smokers, compared to 13% of women. This sex difference was observed in all age groups. The highest proportions of current smokers occur in men in all age groups between 25 and 64 years. Among women, smoking rates doubled between age groups 15-24 and 25-34 and declined thereafter.

**Table 3 Percentage of current smokers in the study population by sex and age group**

| Percentage of current smokers | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | N | % (n) Current smoker | N | % (n) Current smoker | N | % (n) Current smoker |
| 15-24 | 91 | 18.7 (17) | 80 | 7.5 (6) | 171 | 13.7 (23) |
| 25-34 | 51 | 25.5 (13) | 87 | 17.2 (15) | 138 | 20.7 (28) |
| 35-44 | 73 | 27.4 (20) | 60 | 16.7 (10) | 133 | 22.7 (30) |
| 45-54 | 73 | 23.3 (17) | 89 | 15.7 (14) | 162 | 19.4 (31) |
| 55-64 | 65 | 24.6 (16) | 83 | 13.3 (11) | 148 | 18.6 (27) |
| 65+ | 59 | 16.9 (10) | 94 | 8.5 (8) | 153 | 12.0 (18) |
| **15+** | **412** | **22.6 (93)** | **493** | **13.0 (64)** | **905** | **17.7 (157)** |

Table 4 shows that 77.3% of men participants were non-smokers. Of the 22.6% who smoked, 15.8% smoked on a daily basis. Daily smoking rates among men remained relatively constant in all age groups but were highest among those aged 55-64 years.

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

| Smoking status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Men | | | | |
| | N | Current smoker | | Non-Smoker | |
| | | % (n) Daily | % (n) Non-daily | % (n) Past Smoker | % (n) Never smoked |
| 15-24 | 91 | 13.2 (12) | 5.5 (5) | 22.0 (20) | 59.3 (54) |
| 25-34 | 51 | 17.6 (9) | 7.8 (4) | 47.1 (24) | 27.5 (14) |
| 35-44 | 73 | 16.4 (12) | 11.0 (8) | 38.4 (28) | 34.2 (25) |
| 45-54 | 73 | 16.4 (12) | 6.8 (5) | 39.7 (29) | 37.0 (27) |
| 55-64 | 65 | 18.5 (12) | 6.2 (4) | 41.5 (27) | 33.8 (22) |
| 65+ | 59 | 13.6 (8) | 3.4 (2) | 59.3 (35) | 23.7 (14) |
| **15+** | **412** | **15.8 (65)** | **6.8 (28)** | **39.3 (163)** | **38.0 (156)** |

Table 5 shows that 87% of the women participants were non-smokers. Of the 12.9% who smoked 7.6% smoked on a daily basis. The proportions of daily smokers increased after age 34 and decreased after age 64. The proportion of non-daily smokers peaked in the 25-34 age group and declined thereafter.

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

| Smoking status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | N | Current smoker | | Non-Smoker | |
| | | % (n) Daily | % (n) Non-daily | % (n) Past Smoker | % (n) Never smoked |
| 15-24 | 80 | 2.5 (2) | 5.0 (4) | 37.5 (30) | 55.0 (44) |
| 25-34 | 87 | 5.7 (5) | 11.5 (10) | 43.7 (38) | 39.1 (34) |
| 35-44 | 60 | 11.7 (7) | 5.0 (3) | 30.0 (18) | 53.3 (32) |
| 45-54 | 89 | 12.4 (11) | 3.4 (3) | 30.3 (27) | 53.9 (48) |
| 55-64 | 83 | 10.8 (9) | 2.4 (2) | 36.1 (30) | 50.6 (42) |
| 65+ | 94 | 4.3 (4) | 4.3 (4) | 33.0 (31) | 58.5 (55) |
| **15+** | **493** | **7.6 (38)** | **5.3 (26)** | **35.3 (174)** | **51.7 (255)** |

Table 6 presents the prevalence of daily smokers, non-daily smokers and non-smokers for men and women combined. Overall, 11.6% of survey participants were daily smokers, 6.1% were non-daily smokers and 82.4% were non-smokers. The highest proportions of daily smokers was in the age groups from 35-64, remaining constant at over 14% throughout, while the highest proportion of non-daily smokers occurred in the age group 25-34.

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

| Smoking status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | N | Current smoker | | Non-Smoker | |
| | | % (n) Daily | % (n) Non-daily | % (n) Past Smoker | % (n) Never smoked |
| 15-24 | 171 | 8.4 (14) | 5.3 (9) | 29.0 (50) | 57.4 (98) |
| 25-34 | 138 | 10.7 (14) | 10.0 (14) | 45.1 (62) | 34.2 (48) |
| 35-44 | 133 | 14.4 (19) | 8.4 (11) | 34.7 (46) | 42.6 (57) |
| 45-54 | 162 | 14.3 (23) | 5.1 (8) | 34.9 (56) | 45.8 (75) |
| 55-64 | 148 | 14.4 (21) | 4.2 (6) | 38.7 (57) | 42.7 (64) |
| 65+ | 153 | 8.1 (12) | 3.9 (6) | 43.8 (66) | 44.3 (69) |
| **15+** | **905** | **11.6 (103)** | **6.1 (54)** | **37.3 (337)** | **45.1 (411)** |

Table 7 shows that among current daily smokers, the mean age of starting smoking for men was 17.7 years and for women was 22.4 years. This sex difference in the reported mean age of smoking uptake occurs in all age groups.

**Table 7 Mean age started smoking among current daily smokers**

| Mean age started smoking | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean age | n | Mean age | n | Mean age |
| 15-24 | 12 | 16.8 | 2 | 17.5 | 14 | 16.9 |
| 25-34 | 9 | 16.8 | 5 | 21.2 | 14 | 18.2 |
| 35-44 | 12 | 17.5 | 7 | 21.1 | 19 | 18.8 |
| 45-54 | 12 | 19.4 | 11 | 24.8 | 23 | 21.8 |
| 55-64 | 12 | 16.2 | 9 | 22.6 | 21 | 18.7 |
| 65+ | 8 | 20.3 | 4 | 22.3 | 12 | 20.9 |
| **15+** | **65** | **17.7** | **38** | **22.4** | **103** | **19.3** |

Table 8 shows that among current daily smokers overall, the mean number of years of smoking was 25.2 years, similar for both sexes and longer in the older age groups, illustrating that smoking, once adopted, has a life-long duration.

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

| Mean duration of smoking | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean duration (yrs) | n | Mean duration (yrs) | n | Mean duration (yrs) |
| 15-24 | 12 | 3.3 | 2 | 4.5 | 14 | 3.4 |
| 25-34 | 9 | 12.1 | 5 | 8.8 | 14 | 11.1 |
| 35-44 | 12 | 22.8 | 7 | 18.6 | 19 | 21.3 |
| 45-54 | 12 | 29.8 | 11 | 24.7 | 23 | 27.6 |
| 55-64 | 12 | 42.5 | 9 | 36.0 | 21 | 39.9 |
| 65+ | 8 | 48.6 | 4 | 49.5 | 12 | 48.9 |
| **15+** | **65** | **25.1** | **38** | **25.2** | **103** | **25.2** |

Table 9 shows that manufactured cigarettes were the most common cigarettes (92.4%) smoked by current daily smokers of both sexes. The smoking of manufactured cigarettes was highest in the youngest age groups of both sexes, among men aged 45-54 and women to age 45 and over 65.

**Table 9 Percentage of current daily smokers who smoke manufactured cigarettes**

| Manufactured cigarette smokers among daily smokers | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | N | % (n) Manu-factured cigarette smoker | N | % (n) Manu-factured cigarette smoker | N | % (n) Manu-factured cigarette smoker |
| 15-24 | 12 | 100.0 (12) | 2 | 100.0 (2) | 14 | 100.0 (14) |
| 25-34 | 9 | 88.9 (8) | 5 | 100.0 (5) | 14 | 92.3 (13) |
| 35-44 | 12 | 91.7 (11) | 7 | 100.0 (7) | 19 | 94.6 (18) |
| 45-54 | 12 | 100.0 (12) | 11 | 81.8 (9) | 23 | 91.9 (21) |
| 55-64 | 12 | 83.3 (10) | 9 | 88.9 (8) | 21 | 85.5 (18) |
| 65+ | 8 | 87.5 (7) | 4 | 100.0 (4) | 12 | 91.4 (11) |
| **15+** | **65** | **92.4 (60)** | **38** | **92.3 (35)** | **103** | **92.4 (95)** |

## 4.3 Alcohol Consumption

This section describes patterns of alcohol consumption. To assess patterns and prevalence of alcohol consumption, participants were asked if they ever consumed alcohol, and the frequency and quantity of alcohol consumed. Those who had consumed an alcoholic drink in the past 30 days were classified as current drinkers. Tables 10-12 summarise the prevalence of alcohol consumption during the past 12 months among men, women and both sexes respectively, while Table 13 reports the percentage of persons engaged in 'binge drinking' as assessed by the percentage of men who had 5 or more and women who had 4 or more standard drinks on a single occasion in the past 30 days.

There was a significant sex difference in alcohol consumption behaviour, with 60.2% of men (Table 10) and 39.1% of women (Table 11) classified as current drinkers. Men exceeded women in all age groups of current drinkers, while the highest proportions of current drinkers in both sexes combined (Table 12) was in the age group 35-44, although only marginally higher than the age groups preceding and following. A larger proportion of women (29%) than men (9.5%) reported being lifetime abstainers from alcohol.

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

| Alcohol consumption status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Men | | | | |
| | N | % (n) Current drinker (past 30 days) | % (n) Drank in past 12 months, not current | % (n) Past 12 months abstainer | % (n) Lifetime abstainer |
| 15-24 | 91 | 52.7 (48) | 11.0 (10) | 16.5 (15) | 19.8 (18) |
| 25-34 | 51 | 64.7 (33) | 17.6 (9) | 13.7 (7) | 3.9 (2) |
| 35-44 | 73 | 69.9 (51) | 9.6 (7) | 11.0 (8) | 9.6 (7) |
| 45-54 | 73 | 74.0 (54) | 8.2 (6) | 17.8 (13) | 0.0 (0) |
| 55-64 | 65 | 60.0 (39) | 12.3 (8) | 18.5 (12) | 9.2 (6) |
| 65+ | 59 | 37.3 (22) | 6.8 (4) | 45.8 (27) | 10.2 (6) |
| **15+** | **412** | **60.2 (247)** | **10.8 (44)** | **19.6 (82)** | **9.5 (39)** |

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

| Alcohol consumption status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | N | % (n) Current drinker (past 30 days) | % (n) Drank in past 12 months, not current | % (n) Past 12 months abstainer | % (n) Lifetime abstainer |
| 15-24 | 80 | 37.5 (30) | 20.0 (16) | 16.3 (13) | 26.3 (21) |
| 25-34 | 87 | 54.0 (47) | 14.9 (13) | 12.6 (11) | 18.4 (16) |
| 35-44 | 60 | 58.3 (35) | 20.0 (12) | 10.0 (6) | 11.7 (7) |
| 45-54 | 89 | 50.6 (45) | 6.7 (6) | 11.2 (10) | 31.5 (28) |
| 55-64 | 83 | 31.3 (26) | 15.7 (13) | 22.9 (19) | 30.1 (25) |
| 65+ | 94 | 7.4 (7) | 5.3 (5) | 36.2 (34) | 51.1 (48) |
| **15+** | **493** | **39.1 (190)** | **13.4 (65)** | **18.6 (93)** | **29.0 (145)** |

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

| Alcohol consumption status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | N | % (n) Current drinker (past 30 days) | % (n) Drank in past 12 months, not current | % (n) Past 12 months abstainer | % (n) Lifetime abstainer |
| 15-24 | 171 | 45.9 (78) | 15.0 (26) | 16.4 (28) | 22.7 (39) |
| 25-34 | 138 | 58.5 (80) | 16.1 (22) | 13.1 (18) | 12.3 (18) |
| 35-44 | 133 | 64.8 (86) | 14.1 (19) | 10.5 (14) | 10.5 (14) |
| 45-54 | 162 | 61.9 (99) | 7.5 (12) | 14.4 (23) | 16.3 (28) |
| 55-64 | 148 | 44.9 (65) | 14.1 (21) | 20.8 (31) | 20.3 (31) |
| 65+ | 153 | 19.7 (29) | 5.9 (9) | 40.1 (61) | 34.3 (54) |
| **15+** | **905** | **49.3 (437)** | **12.1 (109)** | **19.0 (175)** | **19.5 (184)** |

Table 13 shows that among male drinkers, 54.9% consumed 5 or more standard drinks on any drinking occasion in the last 30 days and among female drinkers, 31.3% consumed 4 or more drinks on at least one occasion in the last 30 days. These proportions increased in both sexes after age 24 years with the highest proportions of binge drinking occurring in the 35-44 age group.

**Table 13 Percentage of men who had five or more and women who had four or more drinks on any day in the past 30 days during a single occasion by age group**

| Five/four or more drinks on a single occasion at least once during the past 30 days among total population | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | N | % (n) ≥ 5 drinks | N | % (n) ≥ 4 drinks |
| 15-24 | 91 | 49.5 (45) | 80 | 28.8 (23) |
| 25-34 | 51 | 60.8 (31) | 87 | 48.3 (42) |
| 35-44 | 73 | 67.1 (49) | 60 | 50.0 (30) |
| 45-54 | 73 | 64.4 (47) | 89 | 37.1 (33) |
| 55-64 | 65 | 55.4 (36) | 83 | 24.1 (20) |
| 65+ | 59 | 28.8 (17) | 94 | 4.3 (4) |
| **15+** | **412** | **54.9 (225)** | **493** | **31.3 (152)** |

## *4.4 Intake of Fruit and Vegetables*

The WHO/FAO recommendation for fruits and vegetables is 400gms of fruits and/or vegetables per day which equates approximately to 5 servings of 80gms each. Participants' fruit and vegetable intake was assessed by asking how many days they consumed fruit and vegetables in a typical week, and how many servings of each they consumed on one of those days. Table 14 shows that women reported marginally higher mean days of fruit consumed in a typical week (3.3 days) than men (2.9 days) overall and across all age groups except those aged 65 and over. However, the differences were not large except in the 25-34 years age group.

**Table 14 Mean number of days in a week fruits consumed by sex and age group**

| Mean number of days fruit consumed in a typical week | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean number of days | N | Mean number of days | n | Mean number of days |
| 15-24 | 90 | 2.6 | 80 | 3.2 | 170 | 2.8 |
| 25-34 | 51 | 2.0 | 86 | 3.4 | 137 | 2.8 |
| 35-44 | 73 | 2.8 | 60 | 3.2 | 133 | 3.0 |
| 45-54 | 73 | 3.2 | 89 | 4.1 | 162 | 3.7 |
| 55-64 | 64 | 3.6 | 83 | 4.3 | 147 | 4.0 |
| 65+ | 59 | 3.5 | 93 | 3.3 | 152 | 3.4 |
| **15+** | **410** | **2.9** | **491** | **3.6** | **901** | **3.3** |

Table 15 shows that women reported higher mean days of vegetable consumption in a typical week (4.1 days) than men (3.4 days) overall and across all age groups.

**Table 15 Mean number of days in a week vegetables consumed by sex and age group**

| Mean number of days vegetables consumed in a typical week | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean number of days | n | Mean number of days | n | Mean number of days |
| 15-24 | 91 | 3.3 | 80 | 3.4 | 171 | 3.3 |
| 25-34 | 51 | 3.0 | 87 | 4.2 | 138 | 3.7 |
| 35-44 | 73 | 3.8 | 60 | 4.3 | 133 | 4.0 |
| 45-54 | 73 | 3.4 | 89 | 4.4 | 162 | 3.9 |
| 55-64 | 65 | 3.8 | 83 | 4.3 | 148 | 4.1 |
| 65+ | 59 | 3.3 | 94 | 4.2 | 153 | 3.8 |
| **15+** | **412** | **3.4** | **493** | **4.1** | **905** | **3.8** |

Tables 16 and 17 show the reported consumption of servings of fruit and vegetables on the day when these food items were eaten, while Table 18 shows the reported average consumption of combined servings of fruit and vegetables per day.

Table 16 shows that, overall, participants reported an average of 1.1 servings of fruit consumed on a day when fruit was eaten relatively consistently across all age groups, although marginally lower among men aged 25-44 and both sexes aged over 65.

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

| Mean number of servings of fruit on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean number of servings | n | Mean number of servings | n | Mean number of servings |
| 15-24 | 90 | 1.1 | 80 | 1.3 | 170 | 1.2 |
| 25-34 | 51 | 0.7 | 86 | 1.2 | 137 | 1.0 |
| 35-44 | 73 | 0.8 | 60 | 1.0 | 133 | 0.9 |
| 45-54 | 73 | 1.0 | 89 | 1.2 | 162 | 1.1 |
| 55-64 | 64 | 1.1 | 83 | 1.5 | 147 | 1.3 |
| 65+ | 59 | 0.9 | 93 | 0.9 | 152 | 0.9 |
| **15+** | **410** | **1.0** | **491** | **1.2** | **901** | **1.1** |

Table 17 shows that, overall, participants reported an average of 0.9 servings of vegetables on a day when vegetables were eaten relatively consistently across all age groups. Mean vegetable serves per day was lowest among males aged 25-34 (0.6 servings).

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

| Mean number of servings of vegetables on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean number of servings | N | Mean number of servings | n | Mean number of servings |
| 15-24 | 91 | 0.8 | 80 | 0.7 | 171 | 0.8 |
| 25-34 | 51 | 0.6 | 87 | 1.0 | 138 | 0.8 |
| 35-44 | 73 | 0.9 | 60 | 1.1 | 133 | 1.0 |
| 45-54 | 73 | 0.8 | 89 | 1.1 | 162 | 1.0 |
| 55-64 | 65 | 0.9 | 83 | 1.0 | 148 | 0.9 |
| 65+ | 59 | 0.8 | 94 | 0.9 | 153 | 0.8 |
| **15+** | **412** | **0.8** | **493** | **1.0** | **905** | **0.9** |

Table 18 shows that 92.9% of participants of both sexes consumed less than five combined servings of fruit and vegetables on an average day, with a small difference between men (94.0%) and women (91.9%). Women in age groups 55-64 and 25-34 and men in age group 15-24 reported the lowest proportions of those eating less than 5 combined servings per average day.

**Table 18 Percentage who consumed less than five combined servings of fruit and vegetables per average day**

| Less than five servings of fruit and/or vegetables on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | N | % (n) < five servings per day | N | % (n) < five servings per day | N | % (n) < five servings per day |
| 15-24 | 91 | 90.1 (82) | 80 | 95.0 (76) | 171 | 92.3 (158) |
| 25-34 | 51 | 98.0 (50) | 87 | 89.7 (78) | 138 | 93.2 (128) |
| 35-44 | 73 | 94.5 (69) | 60 | 91.7 (55) | 133 | 93.3 (124) |
| 45-54 | 73 | 97.3 (71) | 89 | 92.1 (82) | 162 | 94.6 (153) |
| 55-64 | 65 | 93.8 (61) | 83 | 88.0 (73) | 148 | 90.7 (134) |
| 65+ | 59 | 91.5 (54) | 94 | 94.7 (89) | 153 | 93.4 (143) |
| **15+** | **412** | **94.0 (387)** | **493** | **91.9 (453)** | **905** | **92.9 (840)** |

## 4.5 Physical Activity

Participants were asked how often (frequency) and how long (duration) they engaged in three domains of physical activity in a typical week: work-related, transport-related and leisure-related. In the work and leisure domains, participants were asked how many days per week and how many hours/minutes per day they participate in moderate and vigorous intensity activities. In the transport domain, participants were asked how often and how long they either walk and/or cycle to and from places.

The three physical activity domains were first examined separately to determine the mean minutes of activity per day undertaken in each domain. Furthermore, taking all domains into account, mean minutes of total activity were computed, as well as three overall levels of activity: low, moderate, and high. Below, we first present mean minutes of activity per day for each domain separately, then overall levels of activity.

To account for the different levels of energy expenditure required for the activities (i.e. moderate and vigorous), the daily duration of activity was converted into METminutes per day. The term MET (metabolic equivalent) is used as an indication of the intensity of physical activity. A MET is the ratio of the associated metabolic rate for a specific activity divided by the resting metabolic rate. The energy cost of sitting is equivalent to a resting metabolic rate of 1 MET.

In this report, the following MET values were allocated to the three physical activity domains which were then combined:

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

Tables 19-21 show mean time spent being physically active at work and in transportation and leisure domains.

The tables show that for both men and women, most physical activity (183.5 minutes) occurred at work, compared to 29.9 minutes during recreation and 13.2 minutes for transportation. During work and recreation, men reported spending more time being physically active than

women but women spent slightly more time using active forms of transportation than men. Minutes of work, transport, and recreation-related physical activity varied across different age groups with the overall pattern being that those aged 25-64 years spent more time being physically active at work than the youngest or oldest age groups and that the younger age groups spent more time in recreational physical activity than older age groups. Men aged 15-24 and women aged 55-64 were the groups most likely to use active forms of transportation.

**Table 19 Mean minutes of work-related physical activity per day for men and women**

| Mean minutes of work-related physical activity per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean minutes | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 156.4 | 80 | 142.0 | 171 | 150.0 |
| 25-34 | 51 | 254.4 | 87 | 186.8 | 138 | 215.1 |
| 35-44 | 73 | 194.5 | 60 | 209.7 | 133 | 201.1 |
| 45-54 | 73 | 199.2 | 89 | 192.4 | 162 | 195.7 |
| 55-64 | 65 | 208.7 | 83 | 209.8 | 148 | 209.3 |
| 65+ | 59 | 136.2 | 91 | 139.4 | 150 | 138.0 |
| **15+** | **412** | **189.2** | **490** | **178.1** | **902** | **183.5** |

**Table 20 Mean minutes of transport-related physical activity per day for men and women**

| Mean minutes of transport-related physical activity per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean minutes | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 20.6 | 80 | 11.6 | 171 | 16.5 |
| 25-34 | 51 | 6.0 | 87 | 9.9 | 138 | 8.3 |
| 35-44 | 73 | 6.1 | 60 | 12.3 | 133 | 8.8 |
| 45-54 | 73 | 10.7 | 89 | 13.5 | 162 | 12.1 |
| 55-64 | 65 | 13.3 | 83 | 20.9 | 148 | 17.3 |
| 65+ | 59 | 17.1 | 91 | 14.6 | 150 | 15.6 |
| **15+** | **412** | **12.7** | **490** | **13.7** | **902** | **13.2** |

**Table 21 Mean minutes of recreation-related physical activity per day for men and women**

| Mean minutes of recreation-related physical activity per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean minutes | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 55.7 | 80 | 31.5 | 171 | 44.8 |
| 25-34 | 51 | 46.2 | 87 | 23.3 | 138 | 32.9 |
| 35-44 | 73 | 38.3 | 60 | 18.3 | 133 | 29.6 |
| 45-54 | 73 | 33.5 | 89 | 29.9 | 162 | 31.6 |
| 55-64 | 65 | 25.9 | 83 | 18.0 | 148 | 21.7 |
| 65+ | 59 | 21.5 | 91 | 8.7 | 150 | 14.0 |
| **15+** | **412** | **38.4** | **490** | **21.9** | **902** | **29.9** |

When physical activity done as part of work, transport and leisure time is combined and the intensity of the activity is taken into account, 16.8% of men reported a low level of total physical activity, 10.1% reported a moderate level of activity, and 73.1% reported a high level of physical activity. The proportion of men reporting high levels of physical activity was higher in the younger age groups.

**Table 22 Categories of total physical activity among men by age group**

| Level of total physical activity | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | | |
| | N | % (n) Low | % (n) Moderate | % (n) High |
| 15-24 | 91 | 14.3 (13) | 6.6 (6) | 79.1 (72) |
| 25-34 | 51 | 9.8 (5) | 11.8 (6) | 78.4 (40) |
| 35-44 | 73 | 17.8 (13) | 5.5 (4) | 76.7 (56) |
| 45-54 | 73 | 20.5 (15) | 8.2 (6) | 71.2 (52) |
| 55-64 | 65 | 10.8 (7) | 12.3 (8) | 76.9 (50) |
| 65+ | 59 | 28.8 (17) | 20.3 (12) | 50.8 (30) |
| **15+** | **412** | **16.8 (70)** | **10.1 (42)** | **73.1 (300)** |

Table 23 shows that when physical activity done as part of work, transport and leisure time is combined 17.4% of women reported a low level of total physical activity. Moderate levels of physical activity were reported by 19.9% of women and a high level of physical was reported by 62.7%. The proportions of low total physical activity decreased in age group 35-44, while the proportions reporting a moderate level of physical activity varied and decreased in the 45-54 age group, increasing thereafter. The proportion reporting a high level of total physical activity decreased in the age group 55-64.

**Table 23 Categories of total physical activity among women by age group**

| Level of total physical activity | | | | |
|---|---|---|---|---|
| Age Group (years) | Women | | | |
| | N | % (n) Low | % (n) Moderate | % (n) High |
| 15-24 | 80 | 12.5 (10) | 28.8 (23) | 58.8 (47) |
| 25-34 | 87 | 21.8 (19) | 11.5 (10) | 66.7 (58) |
| 35-44 | 60 | 10.0 (6) | 21.7 (13) | 68.3 (41) |
| 45-54 | 89 | 13.5 (12) | 13.5 (12) | 73.0 (65) |
| 55-64 | 83 | 14.5 (12) | 20.5 (17) | 65.1 (54) |
| 65+ | 91 | 29.7 (27) | 24.2 (22) | 46.2 (42) |
| **15+** | **490** | **17.4 (86)** | **19.9 (97)** | **62.7 (307)** |

Table 24 shows that when physical activity done as part of work, transport and leisure are combined 17.1% of both sexes reported a low level of total physical activity. Moderate physical activity was reported by 15.1% and a high level of physical was reported by 67.8%. The proportions of low total physical activity increased in age group 45-54, while the proportions reporting moderate and high levels of physical activity remained relatively constant but increased in age group 65+. From tables 19-21 it is clear that work is the main source of physical activity in Niue and given the high proportion of men and women reporting high levels of physical activity, it is possible that participants over-reported the intensity of their physical activity at work.

**Table 24 Categories of total physical activity among both sexes by age group**

| Level of total physical activity | | | | |
|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | |
| | N | % (n) Low | % (n) Moderate | % (n) High |
| 15-24 | 171 | 13.5 (23) | 16.6 (29) | 70.0 (119) |
| 25-34 | 138 | 16.8 (24) | 11.6 (16) | 71.6 (98) |
| 35-44 | 133 | 14.4 (19) | 12.6 (17) | 73.1 (97) |
| 45-54 | 162 | 16.9 (27) | 10.9 (18) | 72.2 (117) |
| 55-64 | 148 | 12.7 (19) | 16.6 (25) | 70.7 (104) |
| 65+ | 150 | 29.3 (44) | 22.6 (34) | 48.1 (72) |
| **15+** | **902** | **17.1 (156)** | **15.1 (139)** | **67.8 (607)** |

## 4.6 Overweight and Obesity

### 4.6.1 Height and Weight

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

| | |
|---|---|
| Underweight | BMI < 18.5 kg/m$^2$ |
| Normal weight | 18.5 ≤ BMI ≤ 24.9 kg/m$^2$ |
| Overweight | BMI ≥ 25.0 kg/m$^2$ |
| Obese | BMI ≥ 30.0 kg/m$^2$ |

Tables 25 and 26 show that on average men were substantially taller (174.3cm) and heavier (94.6kg) than women (161.5cm and 86.1kg). Among both men and women, weight peaked in the 35-44 age group at 102.7kg and 94.5kg respectively.

**Table 25 Mean height (cm) by sex and age group**

| Mean height (cm) | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | N | Mean | n | Mean |
| 15-24 | 89 | 176.6 | 81 | 164.3 |
| 25-34 | 52 | 177.3 | 84 | 163.1 |
| 35-44 | 71 | 174.4 | 61 | 162.8 |
| 45-54 | 74 | 173.3 | 89 | 162.8 |
| 55-64 | 63 | 174.1 | 82 | 161.0 |
| 65+ | 59 | 169.0 | 94 | 155.5 |
| **15+** | **408** | **174.3** | **491** | **161.5** |

**Table 26 Mean weight (kg) by sex and age group**

| Mean weight (kg) | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | N | Mean | n | Mean |
| 15-24 | 89 | 91.1 | 75 | 82.4 |
| 25-34 | 52 | 98.4 | 81 | 86.5 |
| 35-44 | 71 | 102.7 | 58 | 94.5 |
| 45-54 | 74 | 96.4 | 89 | 93.3 |
| 55-64 | 63 | 95.2 | 82 | 85.9 |
| 65+ | 59 | 83.0 | 94 | 76.5 |
| **15+** | **408** | **94.6** | **479** | **86.1** |

## 4.6.2 Body Mass Index Categories

Table 27 presents the mean BMI scores for both sexes, individually and combined. The overall mean BMI was 31.8 kg/m$^2$. Women had only a marginally higher average mean BMI (32.5kg/m$^2$) than men (31.1kg/m$^2$). Mean BMI for both men and women showed little variation across age groups.

**Table 27 Mean body mass index (kg/m$^2$) by sex and age group**

| Mean BMI (kg/m$^2$) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 89 | 29.2 | 74 | 30.2 | 163 | 29.6 |
| 25-34 | 52 | 31.4 | 81 | 32.4 | 133 | 32.0 |
| 35-44 | 71 | 33.7 | 56 | 34.6 | 127 | 34.1 |
| 45-54 | 74 | 32.0 | 87 | 33.9 | 161 | 33.0 |
| 55-64 | 63 | 31.4 | 82 | 33.1 | 145 | 32.3 |
| 65+ | 59 | 29.0 | 94 | 31.5 | 153 | 30.5 |
| **15+** | **408** | **31.1** | **474** | **32.5** | **882** | **31.8** |

Tables 28, 29 and 30 present the proportion of the sample population in 3 BMI classifications - normal weight, overweight, and obese for men, women and both sexes combined. Table 28 shows that 85% of men were classified as overweight with 59% of these classified as obese. Fifteen percent were classified as normal weight. No men were classified as underweight in any age group. The percentage of overweight men increased markedly in the 25-34 age group and continued with little variation to age 55-64.

**Table 28 BMI classifications among men by age group**

| BMI classifications | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | | |
| | N | % (n) Normal weight BMI 18.5-24.9 | % (n) Overweight BMI ≥25.0 | % (n) Obese, BMI≥30 |
| 15-24 | 89 | 33.7 (30) | 66.3 (59) | 43.8 (39) |
| 25-34 | 52 | 9.6 (5) | 90.4 (47) | 57.7 (30) |
| 35-44 | 71 | 4.2 (3) | 95.8 (68) | 77.5 (55) |
| 45-54 | 74 | 8.1 (6) | 91.9 (68) | 64.9 (48) |
| 55-64 | 63 | 7.9 (5) | 92.1 (58) | 66.7 (42) |
| 65+ | 59 | 20.3 (12) | 79.7 (47) | 47.5 (28) |
| **15+** | **408** | **15.0 (61)** | **85.0 (347)** | **59.2 (242)** |

Table 29 shows that 86.8% of women were classified as overweight, 62.7% as obese and 12.3% as normal weight. Among women, weight increased significantly, although not as markedly as in men, in the 25-34 age group and remained high with little variation. A small proportion of women (0.8% not shown) were classified as underweight in the two youngest age groups 15-34 and in the oldest (65+).

**Table 29 BMI classifications among women by age group**

| BMI classifications | | | | |
|---|---|---|---|---|
| Age Group (years) | Women | | | |
| | N | % (n) Normal weight 18.5-24.9 | % (n) Overweight ≥25.0 | % (n) Obese, BMI≥30 |
| 15-24 | 74 | 20.3 (15) | 78.4 (58) | 47.3 (35) |
| 25-34 | 81 | 12.3 (10) | 86.4 (70) | 60.5 (49) |
| 35-44 | 56 | 8.9 (5) | 91.1 (51) | 71.4 (40) |
| 45-54 | 87 | 9.2 (8) | 90.8 (79) | 71.3 (62) |
| 55-64 | 82 | 12.2 (10) | 87.8 (72) | 68.3 (56) |
| 65+ | 94 | 10.6 (10) | 87.2 (82) | 59.6 (56) |
| **15+** | **474** | **12.3 (58)** | **86.8 (412)** | **62.7 (298)** |

Table 30 shows that 13.7% of the population was classified as normal weight, 85.9% as overweight and, of these, 61.0% as obese.

**Table 30 BMI classifications among both sexes by age group**

| BMI classifications | | | | |
|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | |
| | N | % (n) Normal weight 18.5-24.9 | % (n) Overweight ≥25.0 | % (n) Obese, BMI≥30 |
| 15-24 | 163 | 27.8 (45) | 71.6 (117) | 45.3 (74) |
| 25-34 | 133 | 11.1 (15) | 88.2 (117) | 59.3 (79) |
| 35-44 | 127 | 6.2 (8) | 93.8 (119) | 74.9 (95) |
| 45-54 | 161 | 8.7 (14) | 91.3 (147) | 68.1 (110) |
| 55-64 | 145 | 10.2 (15) | 89.8 (130) | 67.5 (98) |
| 65+ | 153 | 14.6 (22) | 84.1 (129) | 54.6 (84) |
| **15+** | **882** | **13.7 (119)** | **85.9 (759)** | **61.0 (540)** |

### 4.6.3 Waist Circumference

Waist circumferences of greater than 88 cm in women and 102cm in men are indicative of central adiposity and greater cardiovascular disease risk. Table 31 shows mean waist circumference for both men and women. Men had a higher mean waist circumference (98.9cm) than women (96.6cm). Waist circumference increased after age 25 in both sexes. At least half of all men aged between 35 and 64 years and women of all ages have a waist circumference that places them at risk of cardiovascular disease.

**Table 31 Mean waist circumference (cm) by sex and age group**

| Waist circumference (cm) | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | N | Mean | n | Mean |
| 15-24 | 89 | 90.8 | 75 | 88.0 |
| 25-34 | 52 | 98.4 | 81 | 93.2 |
| 35-44 | 71 | 103.3 | 58 | 99.7 |
| 45-54 | 74 | 102.0 | 89 | 100.8 |
| 55-64 | 63 | 103.3 | 82 | 98.3 |
| 65+ | 59 | 98.2 | 92 | 99.9 |
| **15+** | **408** | **98.9** | **477** | **96.6** |

## 4.7 Raised Blood Pressure

As part of the Step 2 protocol, all survey participants had their blood pressure measured. Participants were also asked if they had 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.

The Steps protocol reports the presence of hypertension to include people with:

- a systolic pressure of ≥140 mmHg, whether or not they had previously been told by a health worker that they had high blood pressure, OR
- a diastolic pressure of ≥90 mmHg, whether or not they had previously been told by a health worker that they had high blood pressure, OR
- normal 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 raised blood pressure.

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

Table 32 and Table 33 present mean resting systolic and diastolic blood pressure for both sexes, individually and combined. Table 32 shows a higher mean systolic blood pressure in men (132 mmHg) than in women (127 mmHg), increasing with age in both sexes, although starting from a lower base in women and approaching the means of men from age 45-54 and thereafter.

**Table 32 Mean resting systolic blood pressure (mmHg) by sex and age group**

| Mean systolic blood pressure (mmHg) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 90 | 122.7 | 80 | 113.8 | 170 | 118.7 |
| 25-34 | 52 | 131.6 | 85 | 115.0 | 137 | 122.1 |
| 35-44 | 72 | 130.4 | 61 | 120.8 | 133 | 126.1 |
| 45-54 | 74 | 134.5 | 90 | 131.3 | 164 | 132.9 |
| 55-64 | 63 | 136.4 | 82 | 135.1 | 145 | 135.7 |
| 65+ | 59 | 142.1 | 93 | 144.8 | 152 | 143.7 |
| **15+** | **410** | **132.0** | **491** | **127.0** | **901** | **129.4** |

Table 33 shows little variation between men and women in mean diastolic blood pressure, both increasing with age until age 55-64 after which it decreased marginally in both men and women.

**Table 33 Mean resting diastolic blood pressure (mmHg) by sex and age group**

| Mean diastolic blood pressure (mmHg) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 90 | 68.3 | 80 | 70.1 | 170 | 69.1 |
| 25-34 | 52 | 76.5 | 85 | 70.8 | 137 | 73.3 |
| 35-44 | 72 | 79.4 | 61 | 76.3 | 133 | 78.0 |
| 45-54 | 74 | 82.7 | 90 | 79.0 | 164 | 80.8 |
| 55-64 | 63 | 79.5 | 82 | 77.6 | 145 | 78.5 |
| 65+ | 59 | 75.9 | 93 | 74.1 | 152 | 74.8 |
| **15+** | **410** | **76.6** | **491** | **74.5** | **901** | **75.5** |

Table 34 presents the prevalence of raised blood pressure consistent with the above definition. Raised blood pressure was found in one third of the sample and equally between men (33.1%) and women (33.8%). The prevalence of raised blood pressure among men in age group 25-34 (26.9%) was markedly higher than among women in the same age group (5.9%). Thereafter rates increase with age in both sexes. From age group 25-34 to age 55-64 the rate for men doubles (26.9% to 54%) while the rate for women increases ninefold (5.9% to 54.9%) and exceeds those of men from age group 45-54 and thereafter.

**Table 34 Percentage with raised blood pressure**

| SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | N | % (n) | N | % (n) | N | % (n) |
| 15-24 | 90 | 4.4 (4) | 80 | 5.0 (4) | 170 | 4.7 (8) |
| 25-34 | 52 | 26.9 (14) | 85 | 5.9 (5) | 137 | 14.9 (19) |
| 35-44 | 72 | 26.4 (19) | 61 | 14.8 (9) | 133 | 21.2 (28) |
| 45-54 | 74 | 37.8 (28) | 90 | 44.4 (40) | 164 | 41.3 (68) |
| 55-64 | 63 | 54.0 (34) | 82 | 54.9 (45) | 145 | 54.5 (79) |
| 65+ | 59 | 67.8 (40) | 93 | 74.2 (69) | 152 | 71.6 (109) |
| **15+** | **410** | **33.1 (139)** | **491** | **33.8 (172)** | **901** | **33.5 (311)** |

## 4.8 Raised Blood Glucose

Survey participants were asked if they had been told by a health worker in the previous 12 months that they had diabetes, whether within 1-5 years or longer, and whether they were currently receiving medical treatment for diabetes. To measure fasting blood sugar levels, capillary whole blood was drawn using the finger prick method. Initial results indicated that many participants may not have fully observed fasting status, so those with values ≥ 6.1 mmol/L were resurveyed and the results are presented below.

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

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

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

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

Table 35 summarizes the resurvey results on mean fasting blood glucose for both sexes individually and combined. There were no significant differences between the sexes; both showing a marginal increase in age group 45-54.

**Table 35 Mean fasting blood glucose in mmol/L by sex and age group**

| Age Group (years) | Men | | Women | | Both Sexes | |
|---|---|---|---|---|---|---|
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 85 | 5.7 | 77 | 5.5 | 162 | 5.6 |
| 25-34 | 50 | 5.8 | 84 | 5.9 | 134 | 5.9 |
| 35-44 | 70 | 6.6 | 59 | 6.5 | 129 | 6.5 |
| 45-54 | 74 | 7.1 | 86 | 7.1 | 160 | 7.1 |
| 55-64 | 63 | 6.9 | 78 | 7.0 | 141 | 7.0 |
| 65+ | 52 | 6.7 | 85 | 6.7 | 137 | 6.7 |
| **15+** | 394 | 6.4 | 469 | 6.4 | 863 | 6.4 |

Table 36 shows the prevalence of raised blood glucose for both sexes individually and combined. The overall prevalence of raised blood glucose was in excess of a third of the sample (38.4%), greater in men (42.1%) than in women (34.9%). More than a half of the sample in all age groups from 45-54 and thereafter had raised blood glucose, rising to over two thirds of men aged 65+.

**Table 36 Prevalence of raised blood glucose by sex and age group**

| Age Group (years) | Men | | Women | | Both Sexes | |
|---|---|---|---|---|---|---|
| | N | % (n) | N | % (n) | N | % (n) |
| 15-24 | 85 | 17.6 (15) | 77 | 14.3 (11) | 162 | 16.1 (26) |
| 25-34 | 50 | 26.0 (13) | 84 | 21.4 (18) | 134 | 23.4 (31) |
| 35-44 | 70 | 40.0 (28) | 59 | 27.1 (16) | 129 | 34.3 (44) |
| 45-54 | 74 | 56.8 (42) | 86 | 46.5 (40) | 160 | 51.6 (82) |
| 55-64 | 63 | 57.1 (36) | 78 | 50.0 (39) | 141 | 53.4 (75) |
| 65+ | 52 | 67.3 (35) | 85 | 50.6 (43) | 137 | 57.3 (78) |
| **15+** | **394** | **42.1 (169)** | **469** | **34.9 (167)** | **863** | **38.4 (336)** |

## 4.9 Raised Total Cholesterol

For total cholesterol, a cut-off point ≥5.0 mmol/L (≥190 mg/dl) was used to classify participants as being in a high-risk group for coronary artery disease.

Table 37 shows the overall mean cholesterol level for both sexes individually and combined. The overall mean was 4.6 mmol/L and mean levels for men and women were the same. There was little variance across age groups.

**Table 37 Mean total cholesterol (mmol/L) by sex and age group**

| Mean total cholesterol (mmol/L) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | N | Mean | n | Mean |
| 15-24 | 76 | 4.2 | 64 | 4.3 | 140 | 4.2 |
| 25-34 | 50 | 4.5 | 79 | 4.3 | 129 | 4.4 |
| 35-44 | 70 | 4.9 | 57 | 4.5 | 127 | 4.7 |
| 45-54 | 72 | 4.8 | 85 | 4.9 | 157 | 4.8 |
| 55-64 | 58 | 4.8 | 81 | 5.0 | 139 | 4.9 |
| 65+ | 53 | 4.4 | 83 | 4.7 | 136 | 4.6 |
| **15+** | **379** | **4.6** | **449** | **4.6** | **828** | **4.6** |

Table 38 shows the proportion of the sample with raised total cholesterol for both sexes individually and combined. Over one third (34.8%) had raised cholesterol, a greater proportion in women than in men (36% and 33.7% respectively) and particularly in age group 55-64 where more than half of both men and women (55.2% and 58.0% respectively) had raised cholesterol.

**Table 38 Percentage with raised cholesterol (≥ 5.0 mmol/L)**

| Total cholesterol ≥ 5.0 mmol/L or currently on medication for raised cholesterol | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | N | % (n) | N | % (n) | N | % (n) |
| 15-24 | 76 | 5.3 (4) | 64 | 17.2 (11) | 140 | 10.5 (15) |
| 25-34 | 50 | 24.0 (12) | 79 | 10.1 (8) | 129 | 16.2 (20) |
| 35-44 | 70 | 41.4 (29) | 57 | 26.3 (15) | 127 | 34.9 (44) |
| 45-54 | 72 | 40.3 (29) | 85 | 52.9 (45) | 157 | 46.7 (74) |
| 55-64 | 58 | 55.2 (32) | 81 | 58.0 (47) | 139 | 56.7 (79) |
| 65+ | 53 | 45.3 (24) | 83 | 47.0 (39) | 136 | 46.3 (63) |
| **15+** | **379** | **33.7 (130)** | **449** | **36.0 (165)** | **828** | **34.8 (295)** |

## 4.10 Combined Risk Factors

To summarize the findings for the five modifiable risk factors for NCDs, the following factors were combined and are presented in Tables 38, 39, and 40 in two age groups, 15-44 and 45+.

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

These five risk factors were summed to indicate the overall risk for NCDs as follows:

- low risk: 0 of 5 risk factors
- moderate risk: 1 or 2 of 5 risk factors
- high risk: 3 or more of 5 risk factors

Table 39 shows that almost half of men participants (46.2%) were classified as at high risk and more than half (53.5%) as at moderate risk. Table 40 shows women at a marginally lower risk than men with 41.4% at high risk but a larger proportion at moderate risk (58.4%). In both sexes combined (Table 41) the proportion at high risk was largest (43.8%) in the 45+ age group, but virtually the entire population was at moderate risk or above.

Overall, 43.8% of Niue population 15-45+ was at High Risk of NCDs.

**Table 39 Percentage of NCD risk categories among men by age group**

| Summary of Combined Risk Factors | | | | |
|---|---|---|---|---|
| | Men | | | |
| Age Group (years) | N | % with 0 risk factors | % with 1-2 risk factors | % with 3-5 risk factors |
| 15-44 | 211 | 0.0 | 67.4 | 32.6 |
| 45+ | 194 | 0.5 | 37.2 | 62.2 |
| 15+ | 405 | 0.2 | 53.5 | 46.2 |

**Table 40 Percentage of NCD risk categories among women by age group**

| Summary of Combined Risk Factors | | | | |
|---|---|---|---|---|
| | Women | | | |
| Age Group (years) | N | % with 0 risk factors | % with 1-2 risk factors | % with 3-5 risk factors |
| 15-44 | 208 | 0.0 | 77.4 | 22.6 |
| 45+ | 258 | 0.4 | 41.5 | 58.1 |
| 15+ | 466 | 0.2 | 58.4 | 41.4 |

**Table 41 Percentage of NCD risk categories among both sexes by age group**

| Summary of Combined Risk Factors | | | | |
|---|---|---|---|---|
| | Both Sexes | | | |
| Age Group (years) | N | % with 0 risk factors | % with 1-2 risk factors | % with 3-5 risk factors |
| 15-44 | 419 | 0.0 | 72.1 | 27.9 |
| 45+ | 452 | 0.5 | 39.5 | 60.0 |
| 15+ | 871 | 0.2 | 56.0 | 43.8 |

## 4.11 Ten year risk of a cardiovascular event

Using the WHO and International Society for Hypertension (ISH) charts developed for the Western Pacific Region as part of the Package of Essential NCD interventions for low resource countries,[1] absolute risk of a fatal or non-fatal cardiovascular event was determined based on participants: gender; age (in the range 40 – 79 years); smoking status (current smoker, yes or no); systolic blood pressure (SBP range = 40 – 300 mmHg); diabetes prevalence (raised blood glucose ≥6.1 mmol/L capillary whole blood value or currently on medication for diabetes) and; total blood cholesterol (with a range of 2 – 12 mmol/L).

Table 42 shows the 10-year risk of a fatal or non-fatal cardiovascular event for men. Most men (96.6%) had less than a 30% risk of fatal or non-fatal cardiovascular event in the next 10 years. However, 3.3% had a ≥ 30% risk making them eligible for drug therapy and counselling. Almost 14% of men aged 70-79 years had a ≥ 30% risk of a fatal or non-fatal cardiovascular event in the next 10-years.

[1] World Health Organization. Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care in low-resource Settings. World Health Organization 2010.

**Table 42 Percentage of men with <10%, 10-<20%, 20-<30%, 30-<40% and ≥40% risk of a fatal or non-fatal cardiovascular event in the next 10 years**

| 10-year risk of a fatal or non-fatal cardiovascular event | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | | | | |
| | n | <10% | 10-<20% | 20-<30% | 30-<40% | ≥40% |
| 40-49 | 66 | 75.8 | 21.2 | 3.0 | 0.0 | 0.0 |
| 50-59 | 73 | 65.7 | 27.5 | 4.1 | 2.7 | 0.0 |
| 60-69 | 36 | 63.8 | 30.6 | 2.8 | 2.8 | 0.0 |
| 70-79 | 29 | 48.3 | 34.5 | 3.4 | 6.9 | 6.9 |
| **40-79** | **204** | **66.3** | **26.9** | **3.4** | **2.4** | **0.9** |

Table 43 shows the 10-year risk of a fatal or non-fatal cardiovascular event for women. As for men, most women (96.8%) had less than a 30% risk of fatal or non-fatal cardiovascular event in the next 10 years with the remaining 3.2% having a ≥ 30% risk. Of concern were the 2-6% of women in the younger age groups (40-49, 50-59, and 60-69) who had ≥ 30% risk of a fatal or non-fatal cardiovascular event in the next 10-years.

**Table 43 Percentage of women with <10%, 10-<20%, 20-<30%, 30-<40% and ≥40% risk of a fatal or non-fatal cardiovascular event in the next 10 years**

| 10-year risk of a fatal or non-fatal cardiovascular event | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Women | | | | | |
| | n | <10% | 10-<20% | 20-<30% | 30-<40% | ≥40% |
| 40-49 | 63 | 78.2 | 20.1 | 0.0 | 0.0 | 1.7 |
| 50-59 | 90 | 70.1 | 24.3 | 3.3 | 2.3 | 0.0 |
| 60-69 | 51 | 62.7 | 25.5 | 7.8 | 2.0 | 1.9 |
| 70-79 | 46 | 41.3 | 50.0 | 2.2 | 4.3 | 2.2 |
| **40-79** | **250** | **65.6** | **28.1** | **3.1** | **2.0** | **1.2** |

Table 44 shows the 10-year risk of a fatal or non-fatal cardiovascular event for both men and women. Over 96% had less than a 30% risk of fatal or non-fatal cardiovascular event in the next 10 years with the remaining 3.3% having a ≥ 30% risk. The proportion of people in the high risk categories increased with age. It should be noted that weight status was not one of the risk factors used in the prediction tool and consequently the risk of a cardiovascular event may be underestimated for this population.

**Table 44 Percentage of population with <10%, 10-<20%, 20-<30%, 30-<40% and ≥40% risk of a fatal or non-fatal cardiovascular event in the next 10 years**

| 10-year risk of a fatal or non-fatal cardiovascular event | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | | |
| | n | <10% | 10-<20% | 20-<30% | 30-<40% | ≥40% |
| 40-49 | 129 | 76.9 | 20.7 | 1.6 | 0.0 | 0.8 |
| 50-59 | 163 | 68.0 | 25.8 | 3.6 | 2.5 | 0.0 |
| 60-69 | 87 | 63.2 | 27.7 | 5.6 | 2.3 | 1.1 |
| 70-79 | 75 | 44.2 | 43.6 | 2.7 | 5.4 | 4.1 |
| **40-79** | **454** | **65.9** | **27.5** | **3.3** | **2.2** | **1.1** |

# 5. DISCUSSION AND CONCLUSIONS

This section summarizes key findings of the Niue STEPS survey and presents a range of recommendations to control NCDs in Niue. The Niue NCD Risk Factor STEPS Survey was conducted on the whole adult population at the time of the 2011 census, a unique study of the entire population.

Behavioural risk factors for NCDs are common in Niue and present a public health problem at all ages, with 43.8% of the population aged 15 and over classified as at high risk of exposure to multiple NCD risk factors (having 3-5 concurrent risk factors). Niue women face only slightly less risk than men although the larger percentage at moderate risk may negate this difference. As the combination of risk factors increases, the risk of developing and dying from an NCD also increases and we found that 3.3% of the population had a ≥ 30% absolute risk of a fatal or non-fatal cardiovascular event in the next 10 years.

The inclusion of age group 15-24 in the Niue sample is an addition to the normal STEPS protocol based on age 24-64 years, yet it adds value to know the NCD risk profile of young adults in Niue. In the use of tobacco, men start younger than women with almost one fifth (18.7%) of young men 15-24 being daily smokers. That a greater proportion of younger people smoked manufactured cigarettes than older people raises the need for health protection legislation directed towards marketing. A larger proportion of young men are current alcohol drinkers than young women, although the proportion drinking is less than in older age groups. On most other measures of risk there is little difference between the youngest and other age groups.

Eighteen percent of the population was classified as current smokers. The continuance of the proportions of daily smokers across the age groups reflects the fact that smoking, once adopted, becomes a life-long habit, with a reported duration of 48.9 years among the 55-64 age group. The data also indicates that occasional (non-daily) smoking occurs more commonly in the 35-44 years age group.

Sixty percent of men were current alcohol drinkers and, among those, over half (54.9%) had participated in a binge drinking session (classified as 5 or more drinks in a single occasion) within the last 30 days). Almost 40% of women were current drinkers of whom 31% had participated in a binge drinking session (classified as 4 or more drinks in on a single occasion) within the last 30 days. Binge drinking leads to social disruption, damage to the brain and liver, risk of cancer of the mouth, throat or oesophagus, possible increased risk of neurological disorders and heart problems and increases the potential for violence and unprotected sex. After age 25, the proportions of current drinkers remained relatively constant in both sexes.

The majority (92.9%) of participants of both sexes consumed less than five combined servings of fruit and vegetables on an average day, with only a small difference between men (94%) and women (91.9%), although women in reproductive ages group of 25-34 and postmenopausal age group of 55-64; and men in age group 15-24 reported the lowest proportions of those eating less than 5 combined servings per average day. This finding for young men is anomalous suggesting the use of alternative foods. Overall, the low level of fruit and vegetable consumption is suggestive of low production levels and poor access to local produce.

When physical activity done as part of work, transport and leisure time are combined over two thirds of the population reported high levels of physical activity; and less than a fifth reported a low level of total physical activity. As measured by mean METminutes, men engaged in more high level physical activity than women, while women engaged more at the moderate level. Men engaged in more recreation related physical activity than women, particularly in the younger age groups. Few populations have reported physical activity levels as high as observed in Niue. While such high levels are possible, and protective against NCD, it is also possible that physical activity levels may have been over-estimated.

The BMI for men marginally exceeded that for women in all age groups and increased from age 25-34. The only underweight people were a small number of young females. That 85.0% of men and 86.9% of women are classified as overweight by their BMI score is an important finding. Coupled with the prevalence of obesity (61%) the majority of the overweight are obese. Obesity in all age groups from age 35 to 64 exceeded the population average rate in both sexes. Overweight increased from age group 25-34.

The mean waist circumference for men and women were greatest in the 35-54 age groups (103cm and 100cm respectively). Men with a waist circumference of more than 102cm and women with a waist circumference of more than 88cm may have an elevated risk of high blood pressure, high cholesterol, type-2 diabetes, heart disease and stroke than people with smaller waist circumferences. On these findings, Niue women appear to be at greater risk than men.

Raised blood pressure was identified in approximately one third of the adult population, recorded earlier in men than in women and reaching 70% of the older groups. Between age 25 and 55 the rate for men doubles, while the rate for women increases ninefold and overtakes that of men from age group 45-54. This result requires further investigation into dietary salt consumption or other differences in diet between the sexes. The rates of hypertension in the older groups points to a substantial NCD risk of cardiovascular disease or stroke.

Similarly, the proportion of the population with raised blood glucose or diabetes was 38.4% overall, greater in men (42.1%) than in women (34.9%) and increasing to over half of the population in the age groups 45-54 and thereafter. These rates are comparable to the highest rates in the Pacific. Over one third (34.8%) of the population was found to have elevated fasting blood cholesterol, commencing earlier in men but marginally higher in women across all age groups from 45-54.

These behavioural, physiological and biochemical measures indicate the significant presence of NCDs and NCD risk factors in Niue, all of which increase in the older age groups. An important strength of the survey is that key physiological and biochemical indicators were measured using objective and clinical techniques by staff trained in the STEPS protocol.

Niue STEPS survey has confirmed that NCDs pose a threat to public health and longevity, and a challenge to national productivity. A national strategy is required to address cross-sectoral contributing factors, such as the availability of fruit and vegetables for daily consumption, the licensing and regulation of products that impact adversely on health status, health education campaigns on the outcomes of risk laden behaviours, particularly among young people who have the potential to avoid NCDs by changing their behaviours.

Importantly, all of the risk factors mentioned herein are modifiable. However, for NCD strategies to be effective, the population has to recognize the risks and value the outcome of improved health. This change will need to be driven by information, such as that provided in this STEPS report and provided in a manner that is sensitive to the prevailing social, economic and cultural environments of Niue.

# 6. RECOMMENDATIONS

**The following recommendations are outlined as priority actions for Niue:**

**Actions for addressing risk factors for the Government of Niue:**

- Provide high level leadership and follow through on commitments made as part of the UN Political Declaration on NCDs;
- Establish a multi-sectoral national commission on NCDs (or similar) to oversee an NCD Action Plan with timed targets and indicators;
- Use the opportunity of the publication of this Niue NCD Risk Factors STEPS Report to initiate a national NCD risk factor reduction campaign;
- Earmark funds for ongoing NCD strategy implementation and monitoring;
- Accelerate the implementation the WHO Framework Convention on Tobacco Control;
- Support the proposal for a Tobacco-Free Pacific by 2025;
- Require tobacco distributors to place health warnings on manufactured cigarette packages;
- Consider the potential for manufacturers and importers of cigarettes and alcohol to be taxed to the degree that they subsidize the health services provided to consumers of their products;
- Generate resources for ongoing national health education programs aimed at reducing NCD risk behaviours;
- Develop policies supporting the importation of healthy foods;
- Investigate the potential to significantly scale-up the acquisition, distribution, marketing and availability of fruit and vegetables;
- Develop policies to establish physical activity-friendly environments and infrastructures.

**For the Niue Health Department in partnership with NGOs and the community:**

- Identify the cultural factors contributing to NCD risk and identify culturally acceptable strategies to reduce NCD risk behaviours;
- Provide comprehensive anti-smoking campaigns particularly targeting teenagers and the younger adult age groups to prevent smoking uptake;
- Promote fruit and vegetable consumption through policy and increased public awareness of the adverse effects of excessive consumption of high-fat, high-salt, and high-sugar foods;
- Create culturally-appropriate and diverse programs to promote daily physical activity, including in workplaces;
- Create public awareness campaigns on the national and individual importance of regular monitoring and screening of blood pressure, cholesterol and blood sugar levels;
- Create public awareness programs targeted to increase awareness of the multipliers of NCD risk associated with combining the 5 major NCD risk factors (current daily smoking, being overweight, having raised blood pressure, eating less than five combined servings of fruit and vegetables per day, and having a low level of physical activity).

**Actions for assessing and managing absolute CVD risk for the Niue Health Department:**

- Support targeted screening and referrals;
- Strengthen a responsive health care system to address NCD through implementation of Package of Essential NCD interventions in primary health care. This requires appropriately

trained human resources and basic equipment and supplies made available at all levels of the health care system, particularly at the PHC level;

- Strengthen community-based care and management of individuals with diagnosed NCDs.

**Actions for Surveillance for the Niue Health Department:**

- Support secondary analysis of the data contained herein to identify statistical associations among the variables;
- Establish leadership and training of staff to repeat the Niue NCD STEPS survey every 5 years using the systematic and rigorous approach to STEPS data collection in order to create an ongoing and robust NCD surveillance system in Niue and to determine the degree of effectiveness of NCD prevention and control measures implemented in Niue;
- Participate in the comparison of NCD STEPs findings across all PICs that have completed a NCD STEPs survey, in order to identify the risk factors that are particular to and most amenable to modification within Niue.

# Appendix 1: Niue STEPS Survey Questionnaire


## WHO STEPS Instrument
### for Chronic Disease Risk Factor Surveillance

### Niue

## Survey Information

| Location and Date | | Response | Code |
|---|---|---|---|
| 1 | Cluster/Centre/Village ID | ⌊_⌊_⌊_⌊_⌋ | I1 |
| 2 | Cluster/Centre/Village name | | I2 |
| 3 | Interviewer ID | ⌊_⌊_⌊_⌊_⌋ | I3 |
| 4 | Date of completion of the instrument | ⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ dd mm year | I4 |

✂ ---------- ✂

Participant Id Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

| Consent, Interview Language and Name | | Response | Code |
|---|---|---|---|
| 5 | Consent has been read and obtained | Yes 1<br>No 2 **If NO, END** | I5 |
| 6 | Interview Language *[Insert Language]* | English 1<br>*[Add others]* 2<br>*[Add others]* 3<br>*[Add others]* 4 | I6 |
| 7 | Time of interview (24 hour clock) | ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins | I7 |
| 8 | Family Surname | | I8 |
| 9 | First Name | | I9 |
| **Additional Information that may be helpful** | | | |
| 10 | Contact phone number where possible | | I10 |

Record and file identification information (I5 to I10) separately from the completed questionnaire.

## Step 1 Demographic Information

| CORE: Demographic Information | | |
|---|---|---|
| **Question** | **Response** | **Code** |

| | | | |
|---|---|---|---|
| 11 | Sex (*Record Male / Female as observed)* | Male 1<br>Female 2 | C1 |
| 12 | What is your date of birth?<br>*Don't Know 77 77 7777* | ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋ *If known, Go to C4*<br>dd mm year | C2 |
| 13 | How old are you? | Years ⌊_⌋⌊_⌋ | C3 |
| 14 | In total, how many years have you spent at school or in full-time study (excluding pre-school)? | Years ⌊_⌋⌊_⌋ | C4 |

| **EXPANDED: Demographic Information** | | | |
|---|---|---|---|
| 15 | What is the **highest level of education** you have completed?<br><br>*[INSERT COUNTRY-SPECIFIC CATEGORIES]* | No formal schooling 1<br>Less than primary school 2<br>Primary school completed 3<br>Secondary school completed 4<br>High school completed 5<br>College/University completed 6<br>Post graduate degree 7<br>Refused 88 | C5 |
| 16 | What is your *[insert relevant ethnic group / racial group / cultural subgroup / others]* **background**? | [*Locally defined]* 1<br>[*Locally defined]* 2<br>[*Locally defined]* 3<br>Refused 88 | C6 |
| 17 | What is your **marital status**? | Never married 1<br>Currently married 2<br>Separated 3<br>Divorced 4<br>Widowed 5<br>Cohabitating 6<br>Refused 88 | C7 |
| 18 | Which of the following best describes your **main work** status over the past 12 months?<br><br>*[INSERT COUNTRY-SPECIFIC CATEGORIES]*<br><br>(*USE SHOWCARD)* | Government employee 1<br>Non-government employee 2<br>Self-employed 3<br>Non-paid 4<br>Student 5<br>Homemaker 6<br>Retired 7<br>Unemployed (able to work) 8<br>Unemployed (unable to work) 9<br>Refused 88 | C8 |
| 19 | How many people older than 18 years, including yourself, live in your household? | Number of people ⌊_⌋⌊_⌋ | C9 |

| EXPANDED: Demographic Information, Continued | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 20 | Taking **the past year**, can you tell me what the average earnings of the household have been? *(RECORD ONLY ONE, NOT ALL 3)* | Per week ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1* | C10a |
| | | OR per month ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1* | C10b |
| | | OR per year ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1* | C10c |
| | | Refused 88 | C10d |
| 21 | If you don't know the amount, can you give an **estimate** of the annual household income if I read some options to you? Is it *[INSERT QUINTILE VALUES IN LOCAL CURRENCY]* *(READ OPTIONS)* | ≤ Quintile (Q) 1 1<br>More than Q 1, ≤ Q 2 2<br>More than Q 2, ≤ Q 3 3<br>More than Q 3, ≤ Q 4 4<br>More than Q 4 5<br>Don't Know 77<br>Refused 88 | C11 |

## Step 1 Behavioural Measurements

| CORE: Tobacco Use | | | |
|---|---|---|---|
| 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 tobacco. | | | |
| **Question** | | **Response** | **Code** |
| 22 | Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes? *(USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to T6* | T1 |
| 23 | Do you currently smoke tobacco products **daily**? | Yes 1<br>No 2 *If No, go to T6* | T2 |
| 24 | How old were you when you **first started** smoking daily? | Age (years)<br>Don't know 77 ⌊_⌋⌊_⌋ *If Known, go to T5a* | T3 |
| 25 | Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77* | In Years ⌊_⌋⌊_⌋ *If Known, go to T5a* | T4a |
| | | OR in Months ⌊_⌋⌊_⌋ *If Known, go to T5a* | T4b |
| | | OR in Weeks ⌊_⌋⌊_⌋ | T4c |
| 26 | On average, **how many** of the following do you smoke each day? *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 77* | Manufactured cigarettes ⌊_⌋⌊_⌋ | T5a |
| | | Hand-rolled cigarettes ⌊_⌋⌊_⌋ | T5b |
| | | Pipes full of tobacco ⌊_⌋⌊_⌋ | T5c |
| | | Cigars, cheroots, cigarillos ⌊_⌋⌊_⌋ | T5d |
| | | Other ⌊_⌋⌊_⌋ *If Other, go to T5other, else go to T9* | T5e |
| | | Other (please specify): ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T9* | T5other |

| EXPANDED: Tobacco Use | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 27 | In the past, did you **ever** smoke **daily**? | Yes 1<br>No 2 *If No, go to T9* | T6 |
| 28 | How old were you when you **stopped** smoking **daily**? | Age (years)<br>Don't Know 77 ⌊_⌋⌊_⌋ *If Known, go to T9* | T7 |
| 29 | How **long ago** did you stop smoking daily?<br>*(RECORD ONLY 1, NOT ALL 3)*<br>*Don't Know 77* | Years ago ⌊_⌋⌊_⌋ *If Known, go to T9* | T8a |
| | | OR Months ago ⌊_⌋⌊_⌋ *If Known, go to T9* | T8b |
| | | OR Weeks ago ⌊_⌋⌊_⌋ | T8c |
| 30 | Do you **currently use** any **smokeless tobacco** such as *[snuff, chewing tobacco, betel]*? *(USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to T12* | T9 |
| 31 | Do you **currently use smokeless tobacco** products **daily?** | Yes 1<br>No 2 *If No, go to T12* | T10 |
| 32 | On average, how many **times a day** do you use ….<br>*(RECORD FOR EACH TYPE, USE SHOWCARD)*<br>*Don't Know 77* | Snuff, by mouth ⌊_⌋⌊_⌋ | T11a |
| | | Snuff, by nose ⌊_⌋⌊_⌋ | T11b |
| | | Chewing tobacco ⌊_⌋⌊_⌋ | T11c |
| | | Betel, quid ⌊_⌋⌊_⌋ | T11d |
| | | Other ⌊_⌋⌊_⌋ *If Other, go to T11other, else go to T13* | T11e |
| | | Other (specify) ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T13* | T11other |
| 33 | In the **past**, did you **ever use** smokeless tobacco such as *[snuff, chewing tobacco, or betel]* **daily**? | Yes 1<br>No 2 | T12 |
| 34 | During the past 7 days, on how many days did someone **in your home** smoke when you were present? | Number of days<br>Don't know 77 ⌊_⌋⌊_⌋ | T13 |
| 35 | During the past 7 days, on how many days did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office) when you were present? | Number of days<br>Don't know or don't work in a closed area 77 ⌊_⌋⌊_⌋ | T14 |

| CORE: Alcohol Consumption | | | |
|---|---|---|---|
| The next questions ask about the consumption of alcohol. | | | |
| **Question** | | **Response** | **Code** |
| 36 | Have you **ever** consumed an alcoholic drink such as beer, wine, spirits, fermented cider or *[add other local examples]*?<br>*(USE SHOWCARD OR SHOW EXAMPLES)* | Yes 1<br>No 2 *If No, go to D1* | A1a |
| 37 | Have you consumed an alcoholic drink within the **past 12 months**? | Yes 1<br>No 2 *If No, go to D1* | A1b |
| 38 | During the past 12 months, **how frequently** have you had at least one alcoholic drink?<br>*(READ RESPONSES, USE SHOWCARD)* | Daily 1<br>5-6 days per week 2<br>1-4 days per week 3<br>1-3 days per month 4<br>Less than once a month 5 | A2 |
| 39 | Have you consumed an alcoholic drink within the **past 30 days**? | Yes 1<br>No 2 *If No, go to D1* | A3 |
| 40 | During the past 30 days, on how many **occasions** did you have at least one alcoholic drink? | Number<br>Don't know 77 ⌊__⌋⌊__⌋ | A4 |
| 41 | During the past 30 days, when you drank alcohol, **on average**, how many **standard alcoholic drinks** did you have during one drinking occasion?<br>*(USE SHOWCARD)* | Number<br>Don't know 77 ⌊__⌋⌊__⌋ | A5 |
| 42 | During the past 30 days, what was the **largest number** of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together? | Largest number<br>Don't Know 77 ⌊__⌋⌊__⌋ | A6 |
| 43 | During the past 30 days, how many times did you have for **men**: **five or more**<br>for **women**: **four or more**<br>standard alcoholic drinks in a single drinking occasion? | Number of times<br>Don't Know 77 ⌊__⌋⌊__⌋ | A7 |

| EXPANDED: Alcohol Consumption | | | |
|---|---|---|---|
| 44 | During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks. | Usually with meals 1<br>Sometimes with meals 2<br>Rarely with meals 3<br>Never with meals 4 | A8 |
| 45 | During each of the **past 7 days**, how many standard alcoholic drinks did you have each day?<br>*(USE SHOWCARD)*<br>*Don't Know 77* | Monday ⌊__⌋⌊__⌋ | A9a |
| | | Tuesday ⌊__⌋⌊__⌋ | A9b |
| | | Wednesday ⌊__⌋⌊__⌋ | A9c |
| | | Thursday ⌊__⌋⌊__⌋ | A9d |
| | | Friday ⌊__⌋⌊__⌋ | A9e |
| | | Saturday ⌊__⌋⌊__⌋ | A9f |
| | | Sunday ⌊__⌋⌊__⌋ | A9g |

| Kava | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| | Have you consumed kava in the **past 30 days**? | Yes 1<br>No 2 *If No, go to D1* | |
| | During the past 30 days, how many occasions did you drink kava? | Number of times<br>Don't Know 77 ⌊_⌋⌊_⌋ | |
| | On each occasion that you drank kava, how many bowls did you consume? | Number of bowls<br>Don't Know 77 ⌊_⌋⌊_⌋ | |
| | Do you smoke when you drink kava? | Yes 1<br>No 2 *If No, go to D1* | |

| CORE: Diet | | | |
|---|---|---|---|
| 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. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year. | | | |
| **Question** | | **Response** | **Code** |
| 46 | In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)* | Number of days ⌊_⌋⌊_⌋ **If Zero days, go to D3**<br>Don't Know 77 | **D1** |
| 47 | How many **servings** of fruit do you eat on **one** of those days? *(USE SHOWCARD)* | Number of servings<br>Don't Know 77 ⌊_⌋⌊_⌋ | **D2** |
| 48 | In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)* | Number of days ⌊_⌋⌊_⌋ **If Zero days, go to D5**<br>Don't Know 77 | D3 |
| 49 | How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)* | Number of servings<br>Don't know 77 ⌊_⌋⌊_⌋ | D4 |

| EXPANDED: Diet | | | |
|---|---|---|---|
| 50 | What type of **oil or fat is most often** used for meal preparation in your household?<br><br>*(USE SHOWCARD)*<br>*(SELECT ONLY ONE)* | Vegetable oil 1<br>Lard or suet 2<br>Butter or ghee 3<br>Margarine 4<br>Other 5 *If Other, go to D5 other*<br>None in particular 6<br>None used 7<br>Don't know 77 | D5 |
| | | Other ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ | D5other |
| 51 | On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner. | Number<br>Don't know 77 ⌊_⌋⌊_⌋ | D6 |
| | How many of those meals consisted of fish and chips? | Number<br>Don't know 77 ⌊_⌋⌊_⌋ | |
| | What type of meat do you consume most in a typical week? | Chicken 1<br>Pork 2<br>Beef 3<br>Lamb/mutton 4 | |

| | | | |
|---|---|---|---|
| | In a typical week, on how many days do you eat **fresh fish**? | Number of days ⌊_⌋⌊_⌋ | |
| | In a typical week, on how many days do you eat **tinned/canned fish**? | Number of days ⌊_⌋⌊_⌋ | |

## CORE: Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically 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, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed].* In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

| | Question | Response | Code |
|---|---|---|---|
| **Work** | | | |
| 52 | Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to P 4* | **P1** |
| 53 | In a typical week, on how many days do you do vigorous-intensity activities as part of your work? | Number of days ⌊_⌋ | **P2** |
| 54 | How much time do you spend doing vigorous-intensity activities at work on a typical day? | Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋<br>hrs mins | P3 (a-b) |
| 55 | Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to P 7* | P4 |
| 56 | In a typical week, on how many days do you do moderate-intensity activities as part of your work? | Number of days ⌊_⌋ | P5 |
| 57 | How much time do you spend doing moderate-intensity activities at work on a typical day? | Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋<br>hrs mins | P6 (a-b) |
| **Travel to and from places** | | | |
| | The next questions exclude the physical activities at work that you have already mentioned.<br>Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. *[Insert other examples if needed]* | | |
| 58 | Do you walk or use a bicycle *(pedal cycle)* for at least 10 minutes continuously to get to and from places? | Yes 1<br>No 2 *If No, go to P 10* | P7 |
| 59 | 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? | Number of days ⌊_⌋ | P8 |
| 60 | How much time do you spend walking or bicycling for travel on a typical day? | Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋<br>hrs mins | P9 (a-b) |

| CORE: Physical Activity, Continued | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| **Recreational activities** | | | |
| The next questions exclude the work and transport activities that you have already mentioned.<br>Now I would like to ask you about sports, fitness and recreational activities (leisure), *[Insert relevant terms]*. | | | |
| 61 | Do you do any vigorous-intensity sports, fitness or recreational *(leisure)* activities that cause large increases in breathing or heart rate like *[running or football]* for at least 10 minutes continuously?<br>*[INSERT EXAMPLES] (USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to P 13* | P10 |
| 62 | In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational *(leisure)* activities? | Number of days ⌊__⌋ | P11 |
| 63 | How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day? | Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋<br>hrs mins | P12 (a-b) |
| 64 | Do you do any moderate-intensity sports, fitness or recreational *(leisure)* activities that cause a small increase in breathing or heart rate such as brisk walking, *[cycling, swimming, volleyball]* for at least 10 minutes continuously?<br>*[INSERT EXAMPLES] (USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to P16* | P13 |
| 65 | In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational *(leisure)* activities? | Number of days ⌊__⌋ | P14 |
| 66 | How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day? | Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋<br>hrs mins | P15 (a-b) |

| EXPANDED: Physical Activity | | | |
|---|---|---|---|
| **Sedentary behaviour** | | | |
| The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping.<br>*[INSERT EXAMPLES] (USE SHOWCARD)* | | | |
| 67 | How much time do you usually spend sitting or reclining on a typical day? | Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋<br>hrs mins | P16 (a-b) |

| CORE: History of Raised Blood Pressure | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 68 | Have you ever had your blood pressure measured by a doctor or other health worker? | Yes 1<br>No 2 *If No, go to H6* | H1 |
| 69 | Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension? | Yes 1<br>No 2 *If No, go to H6* | H2a |
| 70 | Have you been told in the past 12 months? | Yes 1<br>No 2 | H2b |

| EXPANDED: History of Raised Blood Pressure | | | |
|---|---|---|---|
| | **Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?** | | |
| 71 | Drugs (medication) that you have taken in the past two weeks | Yes 1<br>No 2 | H3a |
| | Advice to reduce salt intake | Yes 1<br>No 2 | H3b |
| | Advice or treatment to lose weight | Yes 1<br>No 2 | H3c |
| | Advice or treatment to stop smoking | Yes 1<br>No 2 | H3d |
| | Advice to start or do more exercise | Yes 1<br>No 2 | H3e |
| 72 | Have you ever seen a traditional healer for raised blood pressure or hypertension? | Yes 1<br>No 2 | H4 |
| 73 | Are you currently taking any herbal or traditional remedy for your raised blood pressure? | Yes 1<br>No 2 | H5 |

| CORE: History of Diabetes | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 74 | Have you ever had your blood sugar measured by a doctor or other health worker? | Yes 1<br>No 2 *If No, go to M1* | H6 |
| 75 | Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes? | Yes 1<br>No 2 *If No, go to M1* | H7a |
| 76 | Have you been told in the past 12 months? | Yes 1<br>No 2 | H7b |

| EXPANDED: History of Diabetes | | | |
|---|---|---|---|
| | Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker? | | |
| 77 | Insulin | Yes 1<br>No 2 | H8a |
| | Drugs (medication) that you have taken in the past two weeks | Yes 1<br>No 2 | H8b |
| | Special prescribed diet | Yes 1<br>No 2 | H8c |
| | Advice or treatment to lose weight | Yes 1<br>No 2 | H8d |
| | Advice or treatment to stop smoking | Yes 1<br>No 2 | H8e |
| | Advice to start or do more exercise | Yes 1<br>No 2 | H8f |

| | | | |
|---|---|---|---|
| 78 | Have you ever seen a traditional healer for diabetes or raised blood sugar? | Yes 1<br>No 2 | H9 |
| 79 | Are you currently taking any herbal or traditional remedy for your diabetes? | Yes 1<br>No 2 | H10 |

## Step 2 Physical Measurements

| CORE: Height and Weight | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 80 | Interviewer ID | ⌊_⌊_⌊_⌊_⌋ | M1 |
| 81 | Device IDs for height and weight | Height ⌊_⌊_⌋<br>Weight ⌊_⌊_⌋ | M2a<br>M2b |
| 82 | Height | in Centimetres (cm) ⌊_⌊_⌊_⌊_⌋.⌊_⌋ | M3 |
| 83 | Weight<br>*If too large for scale 666.6* | in Kilograms (kg) ⌊_⌊_⌊_⌊_⌋.⌊_⌋ | M4 |
| 84 | **For women:** Are you pregnant? | Yes 1 *If Yes, go to M 8*<br>No 2 | M5 |
| **CORE: Waist** | | | |
| 85 | Device ID for waist | ⌊_⌊_⌋ | M6 |
| 86 | Waist circumference | in Centimetres (cm) ⌊_⌊_⌊_⌊_⌋.⌊_⌋ | M7 |
| **CORE: Blood Pressure** | | | |
| 87 | Interviewer ID | ⌊_⌊_⌊_⌊_⌋ | M8 |
| 88 | Device ID for blood pressure | ⌊_⌊_⌋ | M9 |
| 89 | Cuff size used | Small 1<br>Medium 2<br>Large 3 | M10 |
| 90 | Reading 1 | Systolic ( mmHg) ⌊_⌊_⌊_⌊_⌋<br>Diastolic (mmHg) ⌊_⌊_⌊_⌊_⌋ | M11a<br>M11b |
| 91 | Reading 2 | Systolic ( mmHg) ⌊_⌊_⌊_⌊_⌋<br>Diastolic (mmHg) ⌊_⌊_⌊_⌊_⌋ | M12a<br>M12b |
| 92 | Reading 3 | Systolic ( mmHg) ⌊_⌊_⌊_⌊_⌋<br>Diastolic (mmHg) ⌊_⌊_⌊_⌊_⌋ | M13a<br>M13b |
| 93 | During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker? | Yes 1<br>No 2 | M14 |

| EXPANDED: Hip Circumference and Heart Rate | | | |
|---|---|---|---|
| 94 | Hip circumference | in Centimeters (cm) ⌊__⌋⌊__⌋⌊__⌋.⌊__⌋ | M15 |
| 95 | Heart Rate | | |
| | Reading 1 | Beats per minute ⌊__⌋⌊__⌋⌊__⌋ | M16a |
| | Reading 2 | Beats per minute ⌊__⌋⌊__⌋⌊__⌋ | M16b |
| | Reading 3 | Beats per minute ⌊__⌋⌊__⌋⌊__⌋ | M16c |

## Step 3 Biochemical Measurements

| CORE: Blood Glucose | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 96 | During the past 12 hours have you had anything to eat or drink, other than water? | Yes 1<br>No 2 | B1 |
| 97 | Technician ID | ⌊__⌋⌊__⌋⌊__⌋ | B2 |
| 98 | Device ID | ⌊__⌋⌊__⌋ | B3 |
| 99 | Time of day blood specimen taken (24 hour clock) | Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋<br>hrs mins | B4 |
| 100 | Fasting blood glucose<br>*Choose accordingly: mmol/l or mg/dl* | mmol/l ⌊__⌋⌊__⌋.⌊__⌋⌊__⌋<br>mg/dl ⌊__⌋⌊__⌋⌊__⌋.⌊__⌋ | B5 |
| 101 | Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose? | Yes 1<br>No 2 | B6 |
| **CORE: Blood Lipids** | | | |
| 102 | Device ID | ⌊__⌋⌊__⌋⌊__⌋ | B7 |
| 103 | Total cholesterol<br>*Choose accordingly: mmol/l or mg/dl* | mmol/l ⌊__⌋⌊__⌋.⌊__⌋⌊__⌋<br>mg/dl ⌊__⌋⌊__⌋⌊__⌋.⌊__⌋ | B8 |
| 104 | During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker? | Yes 1<br>No 2 | B9 |

Appendix 2: Data Book for the Niue STEPS Survey

# WHO STEPS

# Chronic Disease Risk Factor Surveillance

## DATA BOOK FOR NIUE, 2011-2012

**Databook Table of Contents**



## *Sampling and Response Proportions*

### *Response proportions*

Description: Summary results for overall response proportions.

| Response proportions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Age Group (years) | Men | | | Women | | | Both Sexes | | |
| | Eligible | Responded | | Eligible | Responded | | Eligible | Responded | |
| | n | n | % | n | n | % | n | n | % |
| 15-24 | 116 | 91 | 78.4 | 96 | 81 | 84.4 | 212 | 172 | 81.1 |
| 25-34 | 74 | 54 | 73.0 | 97 | 87 | 89.7 | 171 | 141 | 82.5 |
| 35-44 | 90 | 73 | 81.1 | 71 | 61 | 85.9 | 161 | 134 | 83.2 |
| 45-54 | 92 | 75 | 81.5 | 97 | 90 | 92.8 | 189 | 165 | 87.3 |
| 55-64 | 76 | 65 | 85.5 | 85 | 83 | 97.6 | 161 | 148 | 91.9 |
| 65+ | 68 | 59 | 86.8 | 98 | 94 | 95.9 | 166 | 153 | 92.2 |
| **15+** | **516** | **417** | **80.8** | **544** | **496** | **91.2** | **1060** | **913** | **86.1** |
| **25-64** | **332** | **267** | **80.4** | **350** | **321** | **91.7** | **682** | **588** | **86.2** |

## *Age group by sex*

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

Instrument question:

- Sex
- What is your date of birth?

| Age group and sex of respondents | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 91 | 52.9 | 81 | 47.1 | 172 | 18.8 |
| 25-34 | 54 | 38.3 | 87 | 61.7 | 141 | 15.4 |
| 35-44 | 73 | 54.5 | 61 | 45.5 | 134 | 14.7 |
| 45-54 | 75 | 45.5 | 90 | 54.5 | 165 | 18.1 |
| 55-64 | 65 | 43.9 | 83 | 56.1 | 148 | 16.2 |
| 65+ | 59 | 38.6 | 94 | 61.4 | 153 | 16.8 |
| **15+** | **417** | **45.7** | **496** | **54.3** | **913** | **100.0** |

## *Education*

Description: Mean number of years of education among respondents.

Instrument question:

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

| Mean number of years of education | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 91 | 12.3 | 80 | 12.7 | 171 | 12.5 |
| 25-34 | 50 | 13.5 | 87 | 15.0 | 137 | 14.4 |
| 35-44 | 73 | 14.2 | 59 | 14.6 | 132 | 14.4 |
| 45-54 | 72 | 14.3 | 89 | 13.5 | 161 | 13.9 |
| 55-64 | 65 | 13.4 | 80 | 13.4 | 145 | 13.4 |
| 65+ | 54 | 11.4 | 82 | 10.4 | 136 | 10.8 |
| **15+** | **405** | **13.2** | **477** | **13.2** | **882** | **13.2** |

***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 | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Men | | | | |
| | n | % No formal schooling | % Primary school completed | % Secondary school completed | % Tertiary school completed |
| 15-24 | 91 | 0.0 | 30.8 | 53.8 | 15.4 |
| 25-34 | 51 | 2.0 | 9.8 | 43.1 | 45.1 |
| 35-44 | 72 | 0.0 | 4.2 | 41.7 | 54.2 |
| 45-54 | 72 | 0.0 | 5.6 | 50.0 | 44.4 |
| 55-64 | 63 | 0.0 | 6.3 | 44.4 | 49.2 |
| 65+ | 59 | 5.1 | 25.4 | 39.0 | 30.5 |
| **15+** | **408** | **1.0** | **14.5** | **46.1** | **38.5** |

| Highest level of education | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | n | % No formal schooling | % Primary school completed | % Secondary school completed | % Tertiary school completed |
| 15-24 | 80 | 0.0 | 25.0 | 61.3 | 13.8 |
| 25-34 | 87 | 0.0 | 1.1 | 29.9 | 69.0 |
| 35-44 | 60 | 0.0 | 5.0 | 31.7 | 63.3 |
| 45-54 | 89 | 0.0 | 7.9 | 44.9 | 47.2 |
| 55-64 | 82 | 0.0 | 20.7 | 41.5 | 37.8 |
| 65+ | 94 | 4.3 | 38.3 | 39.4 | 18.1 |
| **15+** | **492** | **0.8** | **17.1** | **41.7** | **40.4** |

| Highest level of education | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | n | % No formal schooling | % Primary school completed | % Secondary school completed | % Tertiary school completed |
| 15-24 | 171 | 0.0 | 28.1 | 57.3 | 14.6 |
| 25-34 | 138 | 0.7 | 4.3 | 34.8 | 60.1 |
| 35-44 | 132 | 0.0 | 4.5 | 37.1 | 58.3 |
| 45-54 | 161 | 0.0 | 6.8 | 47.2 | 46.0 |
| 55-64 | 145 | 0.0 | 14.5 | 42.8 | 42.8 |
| 65+ | 153 | 4.6 | 33.3 | 39.2 | 22.9 |
| **15+** | **900** | **0.9** | **15.9** | **43.7** | **39.6** |

## *Ethnicity*

Description: Summary results for the ethnicity of the respondents.

Instrument Question:

- What is your [insert relevant ethnic group/racial group/cultural subgroup/others] background?

| Ethnic group of respondents | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | | |
| | n | % Niuean | % Tongan | % Tuvaluan | % Samoan | % Cook Islander |
| 15-24 | 167 | 86.8 | 3.0 | 5.4 | 2.4 | 0.0 |
| 25-34 | 131 | 75.6 | 4.6 | 7.6 | 3.1 | 0.0 |
| 35-44 | 129 | 89.1 | 3.9 | 0.0 | 3.9 | 0.0 |
| 45-54 | 151 | 84.8 | 2.0 | 4.6 | 0.0 | 0.0 |
| 55-64 | 145 | 80.0 | 4.8 | 6.9 | 2.1 | 0.0 |
| 65+ | 151 | 92.1 | 2.0 | 0.7 | 0.0 | 0.7 |
| **15+** | **874** | **84.9** | **3.3** | **4.2** | **1.8** | **0.1** |

| Ethnic group of respondents | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | n | % New Zealander | % Australian | % Asian | % Other |
| 15-24 | 167 | 1.8 | 0.0 | 0.0 | 0.6 |
| 25-34 | 131 | 4.6 | 0.8 | 0.0 | 3.8 |
| 35-44 | 129 | 0.8 | 1.6 | 0.0 | 0.8 |
| 45-54 | 151 | 1.3 | 4.6 | 0.7 | 2.0 |
| 55-64 | 145 | 2.8 | 2.1 | 0.7 | 0.7 |
| 65+ | 151 | 0.0 | 4.6 | 0.0 | 0.0 |
| **15+** | **874** | **1.8** | **2.3** | **0.2** | **1.3** |

## *Martial status*

Description: Marital status of survey respondents.

Instrument question:

- What is your marital status?

| Marital status | | | | | | | |
|---|---|---|---|---|---|---|---|
| Age Group (years) | Men | | | | | | |
| | n | % Never married | % Currently married | % Separated | % Divorced | % Widowed | % Cohabiting |
| 15-24 | 91 | 89.0 | 3.3 | 0.0 | 0.0 | 0.0 | 7.7 |
| 25-34 | 51 | 37.3 | 45.1 | 0.0 | 2.0 | 0.0 | 15.7 |
| 35-44 | 73 | 12.3 | 79.5 | 1.4 | 0.0 | 0.0 | 6.8 |
| 45-54 | 73 | 13.7 | 78.1 | 2.7 | 2.7 | 0.0 | 2.7 |
| 55-64 | 65 | 4.6 | 83.1 | 3.1 | 3.1 | 4.6 | 1.5 |
| 65+ | 59 | 10.2 | 64.4 | 5.1 | 0.0 | 18.6 | 1.7 |
| **15+** | **412** | **31.1** | **56.6** | **1.9** | **1.2** | **3.4** | **5.8** |

| Marital status | | | | | | | |
|---|---|---|---|---|---|---|---|
| Age Group (years) | Women | | | | | | |
| | n | % Never married | % Currently married | % Separated | % Divorced | % Widowed | % Cohabiting |
| 15-24 | 80 | 82.5 | 8.8 | 0.0 | 0.0 | 0.0 | 8.8 |
| 25-34 | 87 | 41.4 | 46.0 | 1.1 | 1.1 | 0.0 | 10.3 |
| 35-44 | 60 | 15.0 | 76.7 | 0.0 | 0.0 | 0.0 | 8.3 |
| 45-54 | 88 | 2.3 | 80.7 | 3.4 | 4.5 | 5.7 | 3.4 |
| 55-64 | 83 | 6.0 | 71.1 | 3.6 | 0.0 | 18.1 | 1.2 |
| 65+ | 94 | 7.4 | 45.7 | 2.1 | 3.2 | 41.5 | 0.0 |
| **15+** | **492** | **25.4** | **54.1** | **1.8** | **1.6** | **12.0** | **5.1** |

| Marital status | | | | | | | |
|---|---|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | | | |
| | n | % Never married | % Currently married | % Separated | % Divorced | % Widowed | % Cohabiting |
| 15-24 | 171 | 86.0 | 5.8 | 0.0 | 0.0 | 0.0 | 8.2 |
| 25-34 | 138 | 39.9 | 45.7 | 0.7 | 1.4 | 0.0 | 12.3 |
| 35-44 | 133 | 13.5 | 78.2 | 0.8 | 0.0 | 0.0 | 7.5 |
| 45-54 | 161 | 7.5 | 79.5 | 3.1 | 3.7 | 3.1 | 3.1 |
| 55-64 | 148 | 5.4 | 76.4 | 3.4 | 1.4 | 12.2 | 1.4 |
| 65+ | 153 | 8.5 | 52.9 | 3.3 | 2.0 | 32.7 | 0.7 |
| **15+** | **904** | **28.0** | **55.2** | **1.9** | **1.4** | **8.1** | **5.4** |

### *Employment status*

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

Instrument question:

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

| Employment status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Men | | | | |
| | n | % Government employee | % Non-government employee | % Self-employed | % Unpaid |
| 15-24 | 91 | 31.9 | 15.4 | 3.3 | 49.5 |
| 25-34 | 51 | 49.0 | 37.3 | 9.8 | 3.9 |
| 35-44 | 73 | 72.6 | 12.3 | 13.7 | 1.4 |
| 45-54 | 73 | 64.4 | 13.7 | 13.7 | 8.2 |
| 55-64 | 65 | 36.9 | 15.4 | 21.5 | 26.2 |
| 65+ | 59 | 6.8 | 5.1 | 10.2 | 78.0 |
| **15+** | **412** | **44.2** | **15.8** | **11.7** | **28.4** |

| Employment status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | n | % Government employee | % Non-government employee | % Self-employed | % Unpaid |
| 15-24 | 80 | 28.8 | 13.8 | 0.0 | 57.5 |
| 25-34 | 87 | 62.1 | 24.1 | 3.4 | 10.3 |
| 35-44 | 60 | 73.3 | 10.0 | 10.0 | 6.7 |
| 45-54 | 89 | 49.4 | 14.6 | 14.6 | 21.3 |
| 55-64 | 83 | 20.5 | 13.3 | 19.3 | 47.0 |
| 65+ | 94 | 4.3 | 10.6 | 6.4 | 78.7 |
| **15+** | **493** | **37.7** | **14.6** | **8.9** | **38.7** |

| Employment status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | n | % Government employee | % Non-government employee | % Self-employed | % Unpaid |
| 15-24 | 171 | 30.4 | 14.6 | 1.8 | 53.2 |
| 25-34 | 138 | 57.2 | 29.0 | 5.8 | 8.0 |
| 35-44 | 133 | 72.9 | 11.3 | 12.0 | 3.8 |
| 45-54 | 162 | 56.2 | 14.2 | 14.2 | 15.4 |
| 55-64 | 148 | 27.7 | 14.2 | 20.3 | 37.8 |
| 65+ | 153 | 5.2 | 8.5 | 7.8 | 78.4 |
| **15+** | **905** | **40.7** | **15.1** | **10.2** | **34.0** |

### *Unpaid work and unemployed*

Description: Proportion of respondents in types of unpaid work, amongst those respondents in unpaid work.

Instrument question:

- Which of the following best describes your main work status over the past 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 |
| 15-24 | 45 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25-34 | 2 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| 35-44 | 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| 45-54 | 6 | 33.3 | 0.0 | 16.7 | 50.0 | 0.0 | 0.0 |
| 55-64 | 17 | 0.0 | 0.0 | 17.6 | 58.8 | 23.5 | 0.0 |
| 65+ | 46 | 4.3 | 0.0 | 28.3 | 58.7 | 6.5 | 2.2 |
| **15+** | **117** | **3.4** | **38.5** | **14.5** | **34.2** | **7.7** | **1.7** |

| Unpaid work and unemployed | | | | | | | |
|---|---|---|---|---|---|---|---|
| Age Group (years) | Women | | | | | | |
| | n | % Non-paid | % Student | % Home-maker | % Retired | Unemployed | |
| | | | | | | % Able to work | % Not able to work |
| 15-24 | 46 | 2.2 | 91.3 | 6.5 | 0.0 | 0.0 | 0.0 |
| 25-34 | 9 | 0.0 | 22.2 | 55.6 | 0.0 | 22.2 | 0.0 |
| 35-44 | 4 | 25.0 | 0.0 | 75.0 | 0.0 | 0.0 | 0.0 |
| 45-54 | 19 | 0.0 | 0.0 | 73.7 | 10.5 | 5.3 | 10.5 |
| 55-64 | 39 | 7.7 | 0.0 | 59.0 | 28.2 | 5.1 | 0.0 |
| 65+ | 74 | 0.0 | 0.0 | 75.7 | 23.0 | 0.0 | 1.4 |
| **15+** | **191** | **2.6** | **23.0** | **54.5** | **15.7** | **2.6** | **1.6** |

| Unpaid work and unemployed | | | | | | | |
|---|---|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | | | |
| | n | % Non-paid | % Student | % Home-maker | % Retired | Unemployed | |
| | | | | | | % Able to work | % Not able to work |
| 15-24 | 91 | 1.1 | 95.6 | 3.3 | 0.0 | 0.0 | 0.0 |
| 25-34 | 11 | 0.0 | 18.2 | 45.5 | 0.0 | 36.4 | 0.0 |
| 35-44 | 5 | 20.0 | 0.0 | 60.0 | 0.0 | 0.0 | 20.0 |
| 45-54 | 25 | 8.0 | 0.0 | 60.0 | 20.0 | 4.0 | 8.0 |
| 55-64 | 56 | 5.4 | 0.0 | 46.4 | 37.5 | 10.7 | 0.0 |
| 65+ | 120 | 1.7 | 0.0 | 57.5 | 36.7 | 2.5 | 1.7 |
| **15+** | **308** | **2.9** | **28.9** | **39.3** | **22.7** | **4.5** | **1.6** |

### *Per capita annual income*

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

Instrument question:

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

| Mean annual per capita income | |
|---|---|
| n | Mean |
| **556** | **10039.3** |

### *Estimated household earnings*

Description: summary of participant household earnings by quintile.

Instrument question:

- If you don't know the amount, can you give an estimate of the annual household income if I read some options to you?

| Estimated household earnings | | | | | | |
|---|---|---|---|---|---|---|
| n | % > 5,000 and ≤ 9,999 | % > 9,999 and ≤ 14,999 | % > 14,999 and ≤ 19,999 | % >19,999 and ≤ 29,999 | % > 29,999 and ≤ 39,999 | % > 39,999 |
| **57** | **3.5** | **12.3** | **31.6** | **22.8** | **5.3** | **24.6** |

## *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 | n | % Current smoker | n | % Current smoker |
| 15-24 | 91 | 18.7 | 80 | 7.5 | 171 | 13.7 |
| 25-34 | 51 | 25.5 | 87 | 17.2 | 138 | 20.7 |
| 35-44 | 73 | 27.4 | 60 | 16.7 | 133 | 22.7 |
| 45-54 | 73 | 23.3 | 89 | 15.7 | 162 | 19.4 |
| 55-64 | 65 | 24.6 | 83 | 13.3 | 148 | 18.6 |
| 65+ | 59 | 16.9 | 94 | 8.5 | 153 | 12.0 |
| **15+** | **412** | **22.6** | **493** | **13.0** | **905** | **17.7** |

## *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 | | Non-Smoker | |
| | | % Daily | % Non-daily | % Past Smoker | % Never smoked |
| 15-24 | 91 | 13.2 | 5.5 | 22.0 | 59.3 |
| 25-34 | 51 | 17.6 | 7.8 | 47.1 | 27.5 |
| 35-44 | 73 | 16.4 | 11.0 | 38.4 | 34.2 |
| 45-54 | 73 | 16.4 | 6.8 | 39.7 | 37.0 |
| 55-64 | 65 | 18.5 | 6.2 | 41.5 | 33.8 |
| 65+ | 59 | 13.6 | 3.4 | 59.3 | 23.7 |
| **15+** | **412** | **15.8** | **6.8** | **39.3** | **38.0** |

| Smoking status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | n | Current smoker | | Non-Smoker | |
| | | % Daily | % Non-daily | % Past Smoker | % Never smoked |
| 15-24 | 80 | 2.5 | 5.0 | 37.5 | 55.0 |
| 25-34 | 87 | 5.7 | 11.5 | 43.7 | 39.1 |
| 35-44 | 60 | 11.7 | 5.0 | 30.0 | 53.3 |
| 45-54 | 89 | 12.4 | 3.4 | 30.3 | 53.9 |
| 55-64 | 83 | 10.8 | 2.4 | 36.1 | 50.6 |
| 65+ | 94 | 4.3 | 4.3 | 33.0 | 58.5 |
| **15+** | **493** | **7.6** | **5.3** | **35.3** | **51.7** |

| Smoking status | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | n | Current smoker | | Non-Smoker | |
| | | % Daily | % Non-daily | % Past Smoker | % Never smoked |
| 15-24 | 171 | 8.4 | 5.3 | 29.0 | 57.4 |
| 25-34 | 138 | 10.7 | 10.0 | 45.1 | 34.2 |
| 35-44 | 133 | 14.4 | 8.4 | 34.7 | 42.6 |
| 45-54 | 162 | 14.3 | 5.1 | 34.9 | 45.8 |
| 55-64 | 148 | 14.4 | 4.2 | 38.7 | 42.7 |
| 65+ | 153 | 8.1 | 3.9 | 43.8 | 44.3 |
| **15+** | **905** | **11.6** | **6.1** | **37.3** | **45.1** |

## *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 | n | % Daily smokers | n | % Daily smokers |
| 15-24 | 17 | 70.6 | 6 | 33.3 | 23 | 61.4 |
| 25-34 | 13 | 69.2 | 15 | 33.3 | 28 | 51.8 |
| 35-44 | 20 | 60.0 | 10 | 70.0 | 30 | 63.2 |
| 45-54 | 17 | 70.6 | 14 | 78.6 | 31 | 73.9 |
| 55-64 | 16 | 75.0 | 11 | 81.8 | 27 | 77.6 |
| 65+ | 10 | 80.0 | 8 | 50.0 | 18 | 67.4 |
| **15+** | **93** | **69.8** | **64** | **58.9** | **157** | **65.7** |

## *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?
- Do you remember how long ago it was?

| Mean age started smoking | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean age | n | Mean age | n | Mean age |
| 15-24 | 12 | 16.8 | 2 | 17.5 | 14 | 16.9 |
| 25-34 | 9 | 16.8 | 5 | 21.2 | 14 | 18.2 |
| 35-44 | 12 | 17.5 | 7 | 21.1 | 19 | 18.8 |
| 45-54 | 12 | 19.4 | 11 | 24.8 | 23 | 21.8 |
| 55-64 | 12 | 16.2 | 9 | 22.6 | 21 | 18.7 |
| 65+ | 8 | 20.3 | 4 | 22.3 | 12 | 20.9 |
| **15+** | **65** | **17.7** | **38** | **22.4** | **103** | **19.3** |

| Mean duration of smoking | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean duration | n | Mean duration | n | Mean duration |
| 15-24 | 12 | 3.3 | 2 | 4.5 | 14 | 3.4 |
| 25-34 | 9 | 12.1 | 5 | 8.8 | 14 | 11.1 |
| 35-44 | 12 | 22.8 | 7 | 18.6 | 19 | 21.3 |
| 45-54 | 12 | 29.8 | 11 | 24.7 | 23 | 27.6 |
| 55-64 | 12 | 42.5 | 9 | 36.0 | 21 | 39.9 |
| 65+ | 8 | 48.6 | 4 | 49.5 | 12 | 48.9 |
| **15+** | **65** | **25.1** | **38** | **25.2** | **103** | **25.2** |

### *Manufactured cigarette smokers*

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

Instrument question:

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

| Manufactured cigarette smokers among daily smokers | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Manu-factured cigarette smoker | n | % Manu-factured cigarette smoker | n | % Manu-factured cigarette smoker |
| 15-24 | 12 | 100.0 | 2 | 100.0 | 14 | 100.0 |
| 25-34 | 9 | 88.9 | 5 | 100.0 | 14 | 92.3 |
| 35-44 | 12 | 91.7 | 7 | 100.0 | 19 | 94.6 |
| 45-54 | 12 | 100.0 | 11 | 81.8 | 23 | 91.9 |
| 55-64 | 12 | 83.3 | 9 | 88.9 | 21 | 85.5 |
| 65+ | 8 | 87.5 | 4 | 100.0 | 12 | 91.4 |
| **15+** | **65** | **92.4** | **38** | **92.3** | **103** | **92.4** |

***Amount of tobacco used among smokers by type***

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

Instrument question:

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

| Mean amount of tobacco used by daily smokers by type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | | |
| Age Group (years) | n | Mean # of manu-factured cig. | n | Mean #of hand-rolled cig. | n | Mean # of pipes of tobacco | n | Mean # of other type of tobacco |
| 15-24 | 12 | 10.8 | 12 | 3.2 | 12 | 0.1 | 12 | 0.0 |
| 25-34 | 9 | 15.2 | 9 | 6.8 | 9 | 0.0 | 9 | 0.0 |
| 35-44 | 12 | 12.9 | 12 | 1.3 | 12 | 0.0 | 12 | 0.0 |
| 45-54 | 12 | 13.4 | 12 | 1.3 | 12 | 0.0 | 12 | 0.0 |
| 55-64 | 11 | 15.2 | 12 | 5.2 | 12 | 0.1 | 12 | 0.2 |
| 65+ | 8 | 7.6 | 8 | 1.6 | 8 | 0.0 | 8 | 0.0 |
| **15+** | **64** | **12.7** | **65** | **3.2** | **65** | **0.0** | **65** | **0.0** |

| Mean amount of tobacco used by daily smokers by type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Women | | | | | | | |
| Age Group (years) | n | Mean # of manu-factured cig. | n | Mean #of hand-rolled cig. | n | Mean # of pipes of tobacco | n | Mean # of other type of tobacco |
| 15-24 | 2 | 9.0 | 2 | 0.0 | 2 | 0.0 | 2 | 0.0 |
| 25-34 | 5 | 6.6 | 5 | 0.0 | 5 | 0.0 | 5 | 0.0 |
| 35-44 | 7 | 11.1 | 7 | 0.0 | 7 | 0.0 | 7 | 0.0 |
| 45-54 | 11 | 5.4 | 11 | 0.4 | 11 | 0.0 | 11 | 0.0 |
| 55-64 | 9 | 10.8 | 8 | 1.4 | 9 | 0.0 | 9 | 0.0 |
| 65+ | 4 | 14.0 | 4 | 0.0 | 4 | 0.0 | 4 | 0.0 |
| **15+** | **38** | **9.0** | **37** | **0.4** | **38** | **0.0** | **38** | **0.0** |

| Mean amount of tobacco used by daily smokers by type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Both Sexes | | | | | | | |
| Age Group (years) | n | Mean # of manu-factured cig. | n | Mean #of hand-rolled cig. | n | Mean # of pipes of tobacco | n | Mean # of other type of tobacco |
| 15-24 | 14 | 10.5 | 14 | 2.7 | 14 | 0.1 | 14 | 0.1 |
| 25-34 | 14 | 12.5 | 14 | 4.7 | 14 | 0.0 | 14 | 0.0 |
| 35-44 | 19 | 12.3 | 19 | 0.9 | 19 | 0.0 | 19 | 0.0 |
| 45-54 | 23 | 9.8 | 23 | 0.9 | 23 | 0.0 | 23 | 0.0 |
| 55-64 | 20 | 13.3 | 20 | 3.8 | 21 | 0.1 | 21 | 0.1 |
| 65+ | 12 | 9.6 | 12 | 1.1 | 12 | 0.0 | 12 | 0.0 |
| **15+** | **102** | **11.4** | **102** | **2.3** | **103** | **0.0** | **103** | **0.0** |

***Percentage of ex daily smokers in the population***

Description: Percentage of ex-daily smokers among all respondents and the mean duration, in years, since ex-daily smokers quit smoking daily.

Instrument question:

- In the past did you ever smoke daily?
- How old were you when you stopped smoking daily?

| Ex-daily smokers among all respondents | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % ex daily smokers | n | % ex daily smokers | n | % ex daily smokers |
| 15-24 | 91 | 4.4 | 80 | 6.3 | 171 | 5.2 |
| 25-34 | 51 | 19.6 | 87 | 12.6 | 138 | 15.6 |
| 35-44 | 73 | 20.5 | 60 | 11.7 | 133 | 16.7 |
| 45-54 | 73 | 23.3 | 89 | 6.7 | 162 | 14.7 |
| 55-64 | 65 | 27.7 | 83 | 19.3 | 148 | 23.3 |
| 65+ | 59 | 37.3 | 94 | 16.0 | 153 | 24.7 |
| **15+** | **412** | **20.5** | **493** | **12.0** | **905** | **16.1** |

| Mean years since cessation | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean years | n | Mean years | n | Mean years |
| 15-24 | 0 | -- | 0 | -- | 0 | -- |
| 25-34 | 1 | 17.0 | 2 | 12.0 | 3 | 13.9 |
| 35-44 | 10 | 19.4 | 6 | 17.3 | 16 | 18.7 |
| 45-54 | 13 | 21.5 | 2 | 30.0 | 15 | 22.5 |
| 55-64 | 12 | 24.1 | 14 | 26.0 | 26 | 25.1 |
| 65+ | 18 | 28.2 | 13 | 32.8 | 31 | 30.0 |
| **15+** | **54** | **23.7** | **37** | **26.2** | **91** | **24.7** |

### *Current Users of smokeless tobacco*

Description: Percentage of current users of smokeless tobacco among all respondents.

Instrument question:

- Do you currently use any smokeless tobacco such as [snuff, chewing tobacco, betel]?

| Current users of smokeless tobacco | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Current users | n | % Current users | n | % Current users |
| 15-24 | 91 | 0.0 | 80 | 0.0 | 171 | 0.0 |
| 25-34 | 51 | 2.0 | 87 | 1.1 | 138 | 1.5 |
| 35-44 | 73 | 0.0 | 60 | 0.0 | 133 | 0.0 |
| 45-54 | 73 | 0.0 | 89 | 0.0 | 162 | 0.0 |
| 55-64 | 65 | 0.0 | 83 | 0.0 | 148 | 0.0 |
| 65+ | 59 | 0.0 | 94 | 0.0 | 153 | 0.0 |
| **15+** | **412** | **0.3** | **493** | **0.2** | **905** | **0.2** |

### *Smokeless tobacco use*

Description: Status of using smokeless tobacco among all respondents.

Instrument questions:

- Do you currently use any smokeless tobacco such as [snuff, chewing tobacco, betel]?
- Do you currently use smokeless tobacco products daily?

| Smokeless tobacco use | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Men | | | | |
| | n | Current user | | Non-User | |
| | | % Daily | % Non-daily | % Past Smoker | % Never smoked |
| 15-24 | 91 | 0.0 | 0.0 | 1.1 | 98.9 |
| 25-34 | 51 | 0.0 | 2.0 | 7.8 | 90.2 |
| 35-44 | 73 | 0.0 | 0.0 | 6.8 | 93.2 |
| 45-54 | 73 | 0.0 | 0.0 | 2.7 | 97.3 |
| 55-64 | 65 | 0.0 | 0.0 | 4.6 | 95.4 |
| 65+ | 59 | 0.0 | 0.0 | 3.4 | 96.6 |
| **15+** | **412** | **0.0** | **0.3** | **4.2** | **95.6** |

| Smokeless tobacco use | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | n | Current user | | Non-User | |
| | | % Daily | % Non-daily | % Past Smoker | % Never smoked |
| 15-24 | 80 | 0.0 | 0.0 | 1.3 | 98.8 |
| 25-34 | 87 | 0.0 | 1.1 | 5.7 | 93.1 |
| 35-44 | 60 | 0.0 | 0.0 | 3.3 | 96.7 |
| 45-54 | 89 | 0.0 | 0.0 | 1.1 | 98.9 |
| 55-64 | 83 | 0.0 | 0.0 | 0.0 | 100.0 |
| 65+ | 94 | 0.0 | 0.0 | 0.0 | 100.0 |
| **15+** | **493** | **0.0** | **0.2** | **1.9** | **97.9** |

| Smokeless tobacco use | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | n | Current user | | Non-User | |
| | | % Daily | % Non-daily | % Past Smoker | % Never smoked |
| 15-24 | 171 | 0.0 | 0.0 | 1.2 | 98.8 |
| 25-34 | 138 | 0.0 | 1.5 | 6.6 | 91.9 |
| 35-44 | 133 | 0.0 | 0.0 | 5.3 | 94.7 |
| 45-54 | 162 | 0.0 | 0.0 | 1.9 | 98.1 |
| 55-64 | 148 | 0.0 | 0.0 | 2.2 | 97.8 |
| 65+ | 153 | 0.0 | 0.0 | 1.4 | 98.6 |
| **15+** | **905** | **0.0** | **0.2** | **3.0** | **96.8** |

### *Percentage of ex daily users of smokeless tobacco in the population*

Description: Percentage of ex-daily users of smokeless tobacco among all respondents.

Instrument question:

- In the past, did you ever use smokeless tobacco such as [snuff, chewing tobacco, betel] daily?

| Ex-daily smokeless tobacco users | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Ex daily users | n | % Ex daily users | n | % Ex daily users |
| 15-24 | 91 | 1.1 | 80 | 0.0 | 171 | 0.6 |
| 25-34 | 51 | 5.9 | 87 | 2.3 | 138 | 3.8 |
| 35-44 | 73 | 0.0 | 60 | 0.0 | 133 | 0.0 |
| 45-54 | 73 | 2.7 | 89 | 0.0 | 162 | 1.3 |
| 55-64 | 65 | 1.5 | 83 | 0.0 | 148 | 0.7 |
| 65+ | 59 | 1.7 | 94 | 0.0 | 153 | 0.7 |
| **15+** | **412** | **2.0** | **493** | **0.4** | **905** | **1.2** |

## *Current tobacco users*

Description: Percentage of daily and current (daily plus non-daily) tobacco users, includes smoking and smokeless, among all respondents.

Instrument questions:

- Do you currently smoke tobacco products daily?
- Do you currently use smokeless tobacco products daily?

| Daily tobacco users | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Daily users | n | % Daily users | n | % Daily users |
| 15-24 | 91 | 13.2 | 80 | 2.5 | 171 | 8.4 |
| 25-34 | 51 | 17.6 | 87 | 5.7 | 138 | 10.7 |
| 35-44 | 73 | 16.4 | 60 | 11.7 | 133 | 14.4 |
| 45-54 | 73 | 16.4 | 89 | 12.4 | 162 | 14.3 |
| 55-64 | 65 | 18.5 | 83 | 10.8 | 148 | 14.4 |
| 65+ | 59 | 13.6 | 94 | 4.3 | 153 | 8.1 |
| **15+** | **412** | **15.8** | **493** | **7.6** | **905** | **11.6** |

| Current tobacco users | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Current users | n | % Current users | n | % Current users |
| 15-24 | 91 | 18.7 | 80 | 7.5 | 171 | 13.7 |
| 25-34 | 51 | 27.5 | 87 | 18.4 | 138 | 22.2 |
| 35-44 | 73 | 27.4 | 60 | 16.7 | 133 | 22.7 |
| 45-54 | 73 | 23.3 | 89 | 15.7 | 162 | 19.4 |
| 55-64 | 65 | 24.6 | 83 | 13.3 | 148 | 18.6 |
| 65+ | 59 | 16.9 | 94 | 8.5 | 153 | 12.0 |
| **15+** | **412** | **22.9** | **493** | **13.2** | **905** | **17.9** |

## *Cessation*

Description: Percentage of current smokers who have tried to stop smoking during the past 12 months.

Instrument question:

- During the past 12 months, have you tried to stop smoking?

| Current smokers who have tried to stop smoking | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 17 | 70.6 | 6 | 66.7 | 23 | 69.6 |
| 25-34 | 13 | 76.9 | 15 | 80.0 | 28 | 78.4 |
| 35-44 | 20 | 60.0 | 10 | 80.0 | 30 | 66.4 |
| 45-54 | 17 | 64.7 | 14 | 78.6 | 31 | 70.5 |
| 55-64 | 16 | 68.8 | 11 | 72.7 | 27 | 70.2 |
| 65+ | 10 | 70.0 | 8 | 75.0 | 18 | 72.1 |
| **15+** | **93** | **67.9** | **64** | **76.6** | **157** | **71.2** |

## *Advice to stop smoking*

Description: Percentage of current smokers who have been advised by a doctor or other health worker to stop smoking, among those smokers who have had a visit to a doctor or other health worker in the past 12 months.

Instrument question:

- During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco?

| Current smokers who have been advised by doctor to stop smoking | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 14 | 42.9 | 5 | 60.0 | 19 | 47.1 |
| 25-34 | 10 | 30.0 | 12 | 41.7 | 22 | 35.8 |
| 35-44 | 19 | 31.6 | 10 | 60.0 | 29 | 41.0 |
| 45-54 | 16 | 25.0 | 13 | 38.5 | 29 | 30.6 |
| 55-64 | 14 | 64.3 | 10 | 50.0 | 24 | 58.8 |
| 65+ | 9 | 66.7 | 8 | 62.5 | 17 | 64.8 |
| **15+** | **82** | **41.0** | **58** | **50.1** | **140** | **44.5** |

### *Exposure to ETS in home in past 7 days*

Description: Percentage of respondents exposed to environmental tobacco smoke in the home on one or more days in the past 7 days.

Instrument question:

- In the past 7 days, how many days did someone in the house smoke when you were present?

| Exposed to ETS in home on 1 or more of the past 7 days | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Exposed | n | % Exposed | n | % Exposed |
| 15-24 | 91 | 39.6 | 80 | 37.5 | 171 | 38.6 |
| 25-34 | 51 | 23.5 | 87 | 35.6 | 138 | 30.6 |
| 35-44 | 73 | 21.9 | 60 | 26.7 | 133 | 24.0 |
| 45-54 | 73 | 11.0 | 89 | 23.6 | 162 | 17.5 |
| 55-64 | 65 | 12.3 | 83 | 26.5 | 148 | 19.8 |
| 65+ | 59 | 13.6 | 94 | 19.1 | 153 | 16.9 |
| **15+** | **412** | **21.7** | **493** | **28.2** | **905** | **25.1** |

### *Exposure to ETS in the workplace in past 7 days*

Description: Percentage of respondents exposed to environmental tobacco smoke in the workplace on one or more days in the past 7 days.

Instrument question:

- In the past 7 days, how many days did someone smoke in closed areas in your workplace (in the building, in a work area or a specific office) when you were present?

| Exposed to ETS in the workplace on 1 or more of the past 7 days | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Exposed | n | % Exposed | n | % Exposed |
| 15-24 | 90 | 27.8 | 78 | 16.7 | 168 | 22.8 |
| 25-34 | 50 | 50.0 | 87 | 21.8 | 137 | 33.5 |
| 35-44 | 73 | 38.4 | 60 | 21.7 | 133 | 31.1 |
| 45-54 | 73 | 39.7 | 89 | 25.8 | 162 | 32.5 |
| 55-64 | 65 | 12.3 | 83 | 19.3 | 148 | 16.0 |
| 65+ | 59 | 10.2 | 94 | 10.6 | 153 | 10.4 |
| **15+** | **410** | **30.1** | **491** | **19.2** | **901** | **24.5** |

## *Alcohol consumption status*

Description: Alcohol consumption status of all respondents.

Instrument questions:

- Have you ever consumed an alcoholic drink such as …?
- Have you consumed an alcoholic drink in the past 12 months?
- Have you consumed an alcoholic drink in the past 30 days?

| Alcohol consumption status | | | | | |
|---|---|---|---|---|---|
| | Men | | | | |
| Age Group (years) | n | % Current drinker (past 30 days) | % Drank in past 12 months, not current | % Past 12 months abstainer | % Lifetime abstainer |
| 15-24 | 91 | 52.7 | 11.0 | 16.5 | 19.8 |
| 25-34 | 51 | 64.7 | 17.6 | 13.7 | 3.9 |
| 35-44 | 73 | 69.9 | 9.6 | 11.0 | 9.6 |
| 45-54 | 73 | 74.0 | 8.2 | 17.8 | 0.0 |
| 55-64 | 65 | 60.0 | 12.3 | 18.5 | 9.2 |
| 65+ | 59 | 37.3 | 6.8 | 45.8 | 10.2 |
| **15+** | **412** | **60.2** | **10.8** | **19.6** | **9.5** |

| Alcohol consumption status | | | | | |
|---|---|---|---|---|---|
| | Women | | | | |
| Age Group (years) | n | % Current drinker (past 30 days) | % Drank in past 12 months, not current | % Past 12 months abstainer | % Lifetime abstainer |
| 15-24 | 80 | 37.5 | 20.0 | 16.3 | 26.3 |
| 25-34 | 87 | 54.0 | 14.9 | 12.6 | 18.4 |
| 35-44 | 60 | 58.3 | 20.0 | 10.0 | 11.7 |
| 45-54 | 89 | 50.6 | 6.7 | 11.2 | 31.5 |
| 55-64 | 83 | 31.3 | 15.7 | 22.9 | 30.1 |
| 65+ | 94 | 7.4 | 5.3 | 36.2 | 51.1 |
| **15+** | **493** | **39.1** | **13.4** | **18.6** | **29.0** |

| Alcohol consumption status | | | | | |
|---|---|---|---|---|---|
| | Both Sexes | | | | |
| Age Group (years) | n | % Current drinker (past 30 days) | % Drank in past 12 months, not current | % Past 12 months abstainer | % Lifetime abstainer |
| 15-24 | 171 | 45.9 | 15.0 | 16.4 | 22.7 |
| 25-34 | 138 | 58.5 | 16.1 | 13.1 | 12.3 |
| 35-44 | 133 | 64.8 | 14.1 | 10.5 | 10.5 |
| 45-54 | 162 | 61.9 | 7.5 | 14.4 | 16.3 |
| 55-64 | 148 | 44.9 | 14.1 | 20.8 | 20.3 |
| 65+ | 153 | 19.7 | 5.9 | 40.1 | 34.3 |
| **15+** | **905** | **49.3** | **12.1** | **19.0** | **19.5** |

## *Frequency of alcohol consumption*

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

Instrument question:

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

| Frequency of alcohol consumption in the past 12 months | | | | | | |
|---|---|---|---|---|---|---|
| | Men | | | | | |
| Age Group (years) | n | % Daily | % 5-6 days p. week | % 1-4 days p. week | % 1-3 days p. month | % < once a month |
| 15-24 | 58 | 1.7 | 0.0 | 31.0 | 32.8 | 34.5 |
| 25-34 | 42 | 0.0 | 0.0 | 45.2 | 21.4 | 33.3 |
| 35-44 | 57 | 0.0 | 5.3 | 43.9 | 35.1 | 15.8 |
| 45-54 | 60 | 5.0 | 5.0 | 38.3 | 28.3 | 23.3 |
| 55-64 | 47 | 2.1 | 6.4 | 44.7 | 17.0 | 29.8 |
| 65+ | 26 | 11.5 | 7.7 | 26.9 | 23.1 | 30.8 |
| **15+** | **290** | **2.7** | **3.7** | **39.0** | **27.3** | **27.4** |

| Frequency of alcohol consumption in the past 12 months | | | | | | |
|---|---|---|---|---|---|---|
| | Women | | | | | |
| Age Group (years) | n | % Daily | % 5-6 days p. week | % 1-4 days p. week | % 1-3 days p. month | % < once a month |
| 15-24 | 45 | 0.0 | 0.0 | 24.4 | 33.3 | 42.2 |
| 25-34 | 60 | 0.0 | 5.0 | 23.3 | 30.0 | 41.7 |
| 35-44 | 46 | 0.0 | 8.7 | 15.2 | 34.8 | 41.3 |
| 45-54 | 51 | 2.0 | 2.0 | 25.5 | 23.5 | 47.1 |
| 55-64 | 38 | 0.0 | 7.9 | 21.1 | 21.1 | 50.0 |
| 65+ | 12 | 0.0 | 0.0 | 16.7 | 25.0 | 58.3 |
| **15+** | **252** | **0.4** | **4.3** | **21.8** | **28.8** | **44.7** |

| Frequency of alcohol consumption in the past 12 months | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | | |
| | n | % Daily | % 5-6 days p. week | % 1-4 days p. week | % 1-3 days p. month | % < once a month |
| 15-24 | 103 | 1.0 | 0.0 | 28.3 | 33.0 | 37.7 |
| 25-34 | 102 | 0.0 | 2.7 | 33.5 | 26.0 | 37.8 |
| 35-44 | 103 | 0.0 | 6.7 | 31.5 | 35.0 | 26.8 |
| 45-54 | 111 | 3.7 | 3.7 | 32.8 | 26.3 | 33.5 |
| 55-64 | 85 | 1.2 | 7.0 | 34.9 | 18.7 | 38.2 |
| 65+ | 38 | 8.1 | 5.4 | 23.9 | 23.6 | 38.9 |
| **15+** | **542** | **1.7** | **4.0** | **31.5** | **28.0** | **34.9** |

### *Drinking occasions in the past 30 days*

Description: Mean number of occasions with at least one drink in the past 30 days among current (past 30 days) drinkers.

Instrument question:

- During the past 30 days, on how many occasions did you have at least one alcoholic drink?

| Mean number of drinking occasions in the past 30 days among current (past 30 days) drinkers | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 46 | 3.3 | 30 | 3.3 | 76 | 3.3 |
| 25-34 | 33 | 4.8 | 47 | 3.8 | 80 | 4.3 |
| 35-44 | 51 | 4.2 | 35 | 3.1 | 86 | 3.8 |
| 45-54 | 54 | 5.7 | 44 | 3.9 | 98 | 5.0 |
| 55-64 | 38 | 5.3 | 26 | 2.7 | 64 | 4.3 |
| 65+ | 22 | 5.0 | 7 | 2.1 | 29 | 4.4 |
| **15+** | **244** | **4.7** | **189** | **3.4** | **433** | **4.1** |

### *Standard drinks per drinking day*

Description: Mean number of standard drinks consumed on a drinking occasion among current (past 30 days) drinker.

Instrument question:

- During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one occasion?

| Mean number of standard drinks per drinking occasion among current (past 30 days) drinkers | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 48 | 12.2 | 28 | 5.9 | 76 | 10.0 |
| 25-34 | 31 | 10.5 | 46 | 7.0 | 77 | 8.5 |
| 35-44 | 51 | 10.3 | 35 | 4.6 | 86 | 8.0 |
| 45-54 | 53 | 8.3 | 44 | 4.2 | 97 | 6.6 |
| 55-64 | 39 | 5.9 | 26 | 3.3 | 65 | 5.0 |
| 65+ | 22 | 4.0 | 7 | 1.6 | 29 | 3.5 |
| **15+** | **244** | **9.1** | **186** | **5.0** | **430** | **7.4** |

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### *Average volume drinking categories among all respondents*

Description: Percentage of respondents engaging in category II and category III drinking.

Category III is defined as drinking ≥60g of pure alcohol on average per day for men and ≥40 g for women.

Category II is defined as drinking 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 questions:

- During the past 30 days, on how many occasions did you have at least one alcoholic drink?
- During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one occasion?

| Category III drinking among all respondents | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Category III | n | % Category III | n | % Category III |
| 15-24 | 89 | 1.1 | 78 | 1.3 | 167 | 1.2 |
| 25-34 | 49 | 6.1 | 86 | 1.2 | 135 | 3.2 |
| 35-44 | 73 | 2.7 | 60 | 0.0 | 133 | 1.5 |
| 45-54 | 72 | 1.4 | 88 | 0.0 | 160 | 0.7 |
| 55-64 | 64 | 1.6 | 83 | 0.0 | 147 | 0.7 |
| 65+ | 59 | 0.0 | 94 | 0.0 | 153 | 0.0 |
| **15+** | **406** | **2.0** | **489** | **0.4** | **895** | **1.2** |

| Category II drinking among all respondents | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % Category II | n | % Category II | n | % Category II |
| 15-24 | 89 | 2.2 | 78 | 1.3 | 167 | 1.8 |
| 25-34 | 49 | 2.0 | 86 | 3.5 | 135 | 2.9 |
| 35-44 | 73 | 1.4 | 60 | 3.3 | 133 | 2.2 |
| 45-54 | 72 | 6.9 | 88 | 2.3 | 160 | 4.5 |
| 55-64 | 64 | 3.1 | 83 | 1.2 | 147 | 2.1 |
| 65+ | 59 | 1.7 | 94 | 0.0 | 153 | 0.7 |
| **15+** | **406** | **2.9** | **489** | **1.9** | **895** | **2.4** |

***Average volume drinking categories among current (past 30 days) drinkers***

Description: Percentage of current (last 30 days) drinker engaging in category I, category II and category III drinking.

Category III is defined as drinking ≥60g of pure alcohol on average per day for men and ≥40 g for women.

Category II is defined as drinking 40-59.9g of pure alcohol on average per day for men and 20-39.9g for women.

Category I is defined as drinking <40g of pure alcohol on average per day for men and <20 for women.

A standard drink contains approximately 10g of pure alcohol.

Instrument questions:

- During the past 30 days, on how many occasions did you have at least one alcoholic drink?
- During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one occasion?

| Category I, II and III drinking among current (past 30 days) drinkers | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | | |
| | n | % Category III | % Category II | % Category I |
| 15-24 | 46 | 2.2 | 4.3 | 93.5 |
| 25-34 | 31 | 9.7 | 3.2 | 87.1 |
| 35-44 | 51 | 3.9 | 2.0 | 94.1 |
| 45-54 | 53 | 1.9 | 9.4 | 88.7 |
| 55-64 | 38 | 2.6 | 5.3 | 92.1 |
| 65+ | 22 | 0.0 | 4.5 | 95.5 |
| **15+** | **241** | **3.4** | **4.9** | **91.6** |

| Category I, II and III drinking among current (past 30 days) drinkers | | | | |
|---|---|---|---|---|
| Age Group (years) | Women | | | |
| | n | % Category III | % Category II | % Category I |
| 15-24 | 28 | 3.6 | 3.6 | 92.9 |
| 25-34 | 46 | 2.2 | 6.5 | 91.3 |
| 35-44 | 35 | 0.0 | 5.7 | 94.3 |
| 45-54 | 44 | 0.0 | 4.5 | 95.5 |
| 55-64 | 26 | 0.0 | 3.8 | 96.2 |
| 65+ | 7 | 0.0 | 0.0 | 100.0 |
| **15+** | **186** | **1.1** | **4.9** | **94.0** |

***Largest number of drinks in the past 30 days***

Description: Largest number of drinks consumed during a single occasion in the past 30 days among current (past 30 days) drinker).

Instrument question:

- During the past 30 days what was the largest number of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together?

| Mean maximum number of drinks consumed on one occasion in the past 30 days | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean maximum number | n | Mean maximum number | n | Mean maximum number |
| 15-24 | 47 | 17.2 | 30 | 10.5 | 77 | 14.7 |
| 25-34 | 33 | 15.7 | 47 | 11.3 | 80 | 13.3 |
| 35-44 | 51 | 13.3 | 35 | 5.7 | 86 | 10.3 |
| 45-54 | 53 | 10.8 | 44 | 5.4 | 97 | 8.5 |
| 55-64 | 38 | 7.5 | 26 | 3.8 | 64 | 6.1 |
| 65+ | 22 | 7.5 | 7 | 1.7 | 29 | 6.2 |
| **15+** | **244** | **12.5** | **189** | **7.5** | **433** | **10.5** |

***Five/four or more drinks on a single occasion***

Description: Percentage of men who had five or more/women who had four or more drinks on any day in the past 30 days during a single occasion among the total population.

Instrument question:

• During the past 30 days, how many times did you have
for men: **five or more**
for women: **four or more**
standard alcoholic drinks in a single drinking occasion?

| Five/four or more drinks on a single occasion at least once during the past 30 days among total population | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | n | % ≥ 5 drinks | n | % ≥ 4drinks |
| 15-24 | 91 | 49.5 | 80 | 28.8 |
| 25-34 | 51 | 60.8 | 87 | 48.3 |
| 35-44 | 73 | 67.1 | 60 | 50.0 |
| 45-54 | 73 | 64.4 | 89 | 37.1 |
| 55-64 | 65 | 55.4 | 83 | 24.1 |
| 65+ | 59 | 28.8 | 94 | 4.3 |
| **15+** | **412** | **54.9** | **493** | **31.3** |

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***Five/four or more drinks on a single occasion***

Description: Mean number of times in the past 30 days on which current (past 30 days) drinker consumed five (for men)/four (for women) or more drinks during a single occasion among current (past 30 days) drinkers.

Instrument question:

• During the past 30 days, how many times did you have
for men: **five or more**
for women: **four or more**
standard alcoholic drinks in a single drinking occasion?

| Mean number of times with five/four or more drinks during a single occasion in the past 30 days among current drinkers | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | n | Mean number of times | n | Mean number of times |
| 15-24 | 48 | 6.1 | 30 | 3.2 |
| 25-34 | 33 | 5.7 | 47 | 3.9 |
| 35-44 | 51 | 4.8 | 35 | 3.4 |
| 45-54 | 54 | 4.8 | 45 | 2.4 |
| 55-64 | 39 | 4.7 | 26 | 2.5 |
| 65+ | 22 | 3.7 | 7 | 1.0 |
| **15+** | **247** | **5.1** | **190** | **3.0** |

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***Drinking with meals***

Description: Percentage of current (past 30 days) drinkers who usually, sometimes, rarely or never drink with meals.

Instrument questions:

- During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks.

| Drinking with meals among current drinker | | | | | |
|---|---|---|---|---|---|
| | Men | | | | |
| Age Group (years) | n | % Usually with meals | % Sometimes with meals | % Rarely with meals | % Never with meals |
| 15-24 | 48 | 50.0 | 10.4 | 6.3 | 33.3 |
| 25-34 | 33 | 39.4 | 12.1 | 3.0 | 45.5 |
| 35-44 | 51 | 43.1 | 21.6 | 5.9 | 29.4 |
| 45-54 | 54 | 40.7 | 20.4 | 5.6 | 33.3 |
| 55-64 | 39 | 41.0 | 17.9 | 10.3 | 30.8 |
| 65+ | 22 | 54.5 | 18.2 | 13.6 | 13.6 |
| **15+** | **247** | **44.1** | **16.9** | **6.8** | **32.3** |

| Drinking with meals among current drinker | | | | | |
|---|---|---|---|---|---|
| | Women | | | | |
| Age Group (years) | n | % Usually with meals | % Sometimes with meals | % Rarely with meals | % Never with meals |
| 15-24 | 30 | 40.0 | 13.3 | 20.0 | 26.7 |
| 25-34 | 47 | 48.9 | 6.4 | 8.5 | 36.2 |
| 35-44 | 35 | 51.4 | 8.6 | 8.6 | 31.4 |
| 45-54 | 45 | 60.0 | 11.1 | 8.9 | 20.0 |
| 55-64 | 26 | 61.5 | 15.4 | 15.4 | 7.7 |
| 65+ | 7 | 42.9 | 14.3 | 0.0 | 42.9 |
| **15+** | **190** | **51.8** | **10.5** | **11.1** | **26.6** |

| Drinking with meals among current drinker | | | | | |
|---|---|---|---|---|---|
| | Both Sexes | | | | |
| Age Group (years) | n | % Usually with meals | % Sometimes with meals | % Rarely with meals | % Never with meals |
| 15-24 | 78 | 46.3 | 11.5 | 11.3 | 30.9 |
| 25-34 | 80 | 44.5 | 9.0 | 6.0 | 40.5 |
| 35-44 | 86 | 46.4 | 16.5 | 6.9 | 30.2 |
| 45-54 | 99 | 48.9 | 16.5 | 7.0 | 27.7 |
| 55-64 | 65 | 48.6 | 17.0 | 12.1 | 22.3 |
| 65+ | 29 | 51.9 | 17.3 | 10.6 | 20.2 |
| **15+** | **437** | **47.2** | **14.3** | **8.5** | **30.0** |

### *Past 7 days drinking*

Description: Frequency and quantity of drinks consumed in the past 7 days by current (past 30 days) drinkers, 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 past 7 days | | | | |
|---|---|---|---|---|
| | Men | | | |
| Age Group (years) | n | % Drank on 4+ days | % 5+ drinks on any day | % 20+ drinks in 7 days |
| 15-24 | 48 | 10.4 | 68.8 | 29.2 |
| 25-34 | 33 | 6.1 | 69.7 | 15.2 |
| 35-44 | 51 | 9.8 | 70.6 | 17.6 |
| 45-54 | 54 | 5.6 | 59.3 | 22.2 |
| 55-64 | 39 | 15.4 | 61.5 | 20.5 |
| 65+ | 22 | 22.7 | 50.0 | 13.6 |
| **15+** | **247** | **10.4** | **64.6** | **20.7** |

| Frequency and quantity of drinks consumed in the past 7 days | | | | |
|---|---|---|---|---|
| | Women | | | |
| Age Group (years) | n | % Drank on 4+ days | % 4+ drinks on any day | % 15+ drinks in 7 days |
| 15-24 | 30 | 0.0 | 63.3 | 10.0 |
| 25-34 | 47 | 4.3 | 57.4 | 19.1 |
| 35-44 | 35 | 5.7 | 51.4 | 0.0 |
| 45-54 | 45 | 6.7 | 37.8 | 2.2 |
| 55-64 | 26 | 7.7 | 38.5 | 3.8 |
| 65+ | 7 | 14.3 | 0.0 | 0.0 |
| **15+** | **190** | **5.2** | **48.4** | **7.4** |

| Frequency and quantity of drinks consumed in the past 7 days | | |
|---|---|---|
| | Both Sexes | |
| Age Group (years) | n | % Drank on 4+ days |
| 15-24 | 78 | 6.6 |
| 25-34 | 80 | 5.1 |
| 35-44 | 86 | 8.2 |
| 45-54 | 99 | 6.0 |
| 55-64 | 65 | 12.5 |
| 65+ | 29 | 20.8 |
| **15+** | **437** | **8.2** |

## *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 | n | Mean number of days | n | Mean number of days |
| 15-24 | 90 | 2.6 | 80 | 3.2 | 170 | 2.8 |
| 25-34 | 51 | 2.0 | 86 | 3.4 | 137 | 2.8 |
| 35-44 | 73 | 2.8 | 60 | 3.2 | 133 | 3.0 |
| 45-54 | 73 | 3.2 | 89 | 4.1 | 162 | 3.7 |
| 55-64 | 64 | 3.6 | 83 | 4.3 | 147 | 4.0 |
| 65+ | 59 | 3.5 | 93 | 3.3 | 152 | 3.4 |
| **15+** | **410** | **2.9** | **491** | **3.6** | **901** | **3.3** |

**Mean number of days vegetables consumed in a typical week**

| Age Group (years) | Men | | Women | | Both Sexes | |
|---|---|---|---|---|---|---|
| | n | Mean number of days | n | Mean number of days | n | Mean number of days |
| 15-24 | 91 | 3.3 | 80 | 3.4 | 171 | 3.3 |
| 25-34 | 51 | 3.0 | 87 | 4.2 | 138 | 3.7 |
| 35-44 | 73 | 3.8 | 60 | 4.3 | 133 | 4.0 |
| 45-54 | 73 | 3.4 | 89 | 4.4 | 162 | 3.9 |
| 55-64 | 65 | 3.8 | 83 | 4.3 | 148 | 4.1 |
| 65+ | 59 | 3.3 | 94 | 4.2 | 153 | 3.8 |
| **15+** | **412** | **3.4** | **493** | **4.1** | **905** | **3.8** |

## *Mean number of servings of fruit and vegetable consumption*

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

Instrument questions:

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

**Mean number of servings of fruit on average per day**

| Age Group (years) | Men | | Women | | Both Sexes | |
|---|---|---|---|---|---|---|
| | n | Mean number of servings | n | Mean number of servings | n | Mean number of servings |
| 15-24 | 90 | 1.1 | 80 | 1.3 | 170 | 1.2 |
| 25-34 | 51 | 0.7 | 86 | 1.2 | 137 | 1.0 |
| 35-44 | 73 | 0.8 | 60 | 1.0 | 133 | 0.9 |
| 45-54 | 73 | 1.0 | 89 | 1.2 | 162 | 1.1 |
| 55-64 | 64 | 1.1 | 83 | 1.5 | 147 | 1.3 |
| 65+ | 59 | 0.9 | 93 | 0.9 | 152 | 0.9 |
| **15+** | **410** | **1.0** | **491** | **1.2** | **901** | **1.1** |

**Mean number of servings of vegetables on average per day**

| Age Group (years) | Men | | Women | | Both Sexes | |
|---|---|---|---|---|---|---|
| | n | Mean number of servings | n | Mean number of servings | n | Mean number of servings |
| 15-24 | 91 | 0.8 | 80 | 0.7 | 171 | 0.8 |
| 25-34 | 51 | 0.6 | 87 | 1.0 | 138 | 0.8 |
| 35-44 | 73 | 0.9 | 60 | 1.1 | 133 | 1.0 |
| 45-54 | 73 | 0.8 | 89 | 1.1 | 162 | 1.0 |
| 55-64 | 65 | 0.9 | 83 | 1.0 | 148 | 0.9 |
| 65+ | 59 | 0.8 | 94 | 0.9 | 153 | 0.8 |
| **15+** | **412** | **0.8** | **493** | **1.0** | **905** | **0.9** |

**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 | n | Mean number of servings | n | Mean number of servings |
| 15-24 | 91 | 1.9 | 80 | 2.0 | 171 | 2.0 |
| 25-34 | 51 | 1.3 | 87 | 2.1 | 138 | 1.8 |
| 35-44 | 73 | 1.7 | 60 | 2.1 | 133 | 1.9 |
| 45-54 | 73 | 1.7 | 89 | 2.4 | 162 | 2.1 |
| 55-64 | 65 | 1.9 | 83 | 2.5 | 148 | 2.2 |
| 65+ | 59 | 1.7 | 94 | 1.8 | 153 | 1.7 |
| **15+** | **412** | **1.7** | **493** | **2.1** | **905** | **1.9** |

## *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 | % 1-2 servings | % 3-4 servings | % ≥5 servings |
| 15-24 | 91 | 38.5 | 42.9 | 8.8 | 9.9 |
| 25-34 | 51 | 49.0 | 45.1 | 3.9 | 2.0 |
| 35-44 | 73 | 37.0 | 45.2 | 12.3 | 5.5 |
| 45-54 | 73 | 32.9 | 49.3 | 15.1 | 2.7 |
| 55-64 | 65 | 29.2 | 55.4 | 9.2 | 6.2 |
| 65+ | 59 | 45.8 | 33.9 | 11.9 | 8.5 |
| **15+** | **412** | **38.3** | **45.4** | **10.3** | **6.0** |

| Number of servings of fruit and/or vegetables on average per day | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Women | | | | |
| | n | % no fruit and/or vegetables | % 1-2 servings | % 3-4 servings | % ≥5 servings |
| 15-24 | 80 | 28.8 | 48.8 | 17.5 | 5.0 |
| 25-34 | 87 | 27.6 | 51.7 | 10.3 | 10.3 |
| 35-44 | 60 | 20.0 | 56.7 | 15.0 | 8.3 |
| 45-54 | 89 | 21.3 | 50.6 | 20.2 | 7.9 |
| 55-64 | 83 | 25.3 | 38.6 | 24.1 | 12.0 |
| 65+ | 94 | 35.1 | 45.7 | 13.8 | 5.3 |
| **15+** | **493** | **26.7** | **48.5** | **16.7** | **8.1** |

| Number of servings of fruit and/or vegetables on average per day | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | | |
| | n | % no fruit and/or vegetables | % 1-2 servings | % 3-4 servings | % ≥5 servings |
| 15-24 | 171 | 34.1 | 45.5 | 12.7 | 7.7 |
| 25-34 | 138 | 36.6 | 48.9 | 7.7 | 6.8 |
| 35-44 | 133 | 29.6 | 50.2 | 13.5 | 6.7 |
| 45-54 | 162 | 26.9 | 50.0 | 17.7 | 5.4 |
| 55-64 | 148 | 27.2 | 46.5 | 17.1 | 9.3 |
| 65+ | 153 | 39.5 | 40.9 | 13.0 | 6.6 |
| **15+** | **905** | **32.3** | **47.0** | **13.6** | **7.1** |

### *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 | n | % < five servings per day | n | % < five servings per day |
| 15-24 | 91 | 90.1 | 80 | 95.0 | 171 | 92.3 |
| 25-34 | 51 | 98.0 | 87 | 89.7 | 138 | 93.2 |
| 35-44 | 73 | 94.5 | 60 | 91.7 | 133 | 93.3 |
| 45-54 | 73 | 97.3 | 89 | 92.1 | 162 | 94.6 |
| 55-64 | 65 | 93.8 | 83 | 88.0 | 148 | 90.7 |
| 65+ | 59 | 91.5 | 94 | 94.7 | 153 | 93.4 |
| **15+** | **412** | **94.0** | **493** | **91.9** | **905** | **92.9** |

### *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 (house -holds) | % Vegetable oil | % Coconut cream | % Olive oil | % Lard or suet | % Butter or ghee | % Margarine | % Other |
| **849** | **45.1** | **2.0** | **18.9** | **0.1** | **7.5** | **15.9** | **5.3** |

| Type of oil or fat most often used for meal preparation in household | | |
|---|---|---|
| n (house -holds) | % None in particular | % None used |
| **849** | **2.9** | **2.5** |

## *Eating outside home*

Description: Mean number of meals per week eaten outside a home.

Instrument question:

- On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner.

| Mean number of meals eaten outside a home | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | mean | n | mean | n | mean |
| 15-24 | 91 | 1.9 | 79 | 2.1 | 170 | 2.0 |
| 25-34 | 51 | 1.7 | 87 | 2.1 | 138 | 2.0 |
| 35-44 | 73 | 1.4 | 60 | 1.5 | 133 | 1.4 |
| 45-54 | 73 | 1.3 | 89 | 1.2 | 162 | 1.3 |
| 55-64 | 65 | 1.0 | 83 | 0.9 | 148 | 0.9 |
| 65+ | 59 | 0.9 | 94 | 0.8 | 153 | 0.8 |
| **15+** | **412** | **1.4** | **492** | **1.4** | **904** | **1.4** |

## *Introduction*

A population's physical activity (or inactivity) can be described in different ways. The two most common ways are

(1) to estimate a population's mean or median physical activity using a continuous indicator such as MET-minutes per week or time spent in physical activity, and

(2) to classify a certain percentage of a population as 'inactive' by setting up a cut-point for a specific amount of physical activity.

When analyzing GPAQ data, both continuous as well as categorical indicators are used.

## *Metabolic Equivalent (MET)*

METs (Metabolic Equivalents) are commonly used to express the intensity of physical activities, and are also used for the analysis of GPAQ data.

Applying MET values to activity levels allows us to calculate total physical activity. MET is the ratio of a person's working metabolic rate relative to the resting metabolic rate. One MET is defined as the energy cost of sitting quietly, and is equivalent to a caloric consumption of 1 kcal/kg/hour. For the analysis of GPAQ data, existing guidelines have been adopted: It is estimated that, compared to sitting quietly, a person's caloric consumption is four times as high when being moderately active, and eight times as high when being vigorously active.

Therefore, for the calculation of a person's total physical activity using GPAQ data, the following MET values are used:

| Domain | MET value |
|---|---|
| Work | • Moderate MET value = 4.0<br>• Vigorous MET value = 8.0 |
| Transport | Cycling and walking MET value = 4.0 |
| Recreation | • Moderate MET value = 4.0<br>• Vigorous MET value = 8.0 |

## *Categorical indicator*

For the calculation of a categorical indicator, the total time spent in physical activity during a typical week, the number of days as well as the intensity of the physical activity are taken into account.

The three levels of physical activity suggested

for classifying populations are low, moderate, and high. The criteria for these levels are shown below.

- **High**

A person reaching any of the following criteria is classified in this category:

- Vigorous-intensity activity on at least 3 days achieving a minimum of at least 1,500 MET-minutes/week OR

- 7 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 3,000 MET-minutes per week.

- **Moderate**

A person not meeting the criteria for the "high" category, but meeting any of the following criteria is classified in this category:

- 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR

- 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR

- 5 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 600 MET-minutes per week.

- **Low**

A person not meeting any of the above mentioned criteria falls in this category.

---

## *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 | % Moderate | % High |
| 15-24 | 91 | 14.3 | 6.6 | 79.1 |
| 25-34 | 51 | 9.8 | 11.8 | 78.4 |
| 35-44 | 73 | 17.8 | 5.5 | 76.7 |
| 45-54 | 73 | 20.5 | 8.2 | 71.2 |
| 55-64 | 65 | 10.8 | 12.3 | 76.9 |
| 65+ | 59 | 28.8 | 20.3 | 50.8 |
| **15+** | **412** | **16.8** | **10.1** | **73.1** |

| Level of total physical activity | | | | |
|---|---|---|---|---|
| Age Group (years) | Women | | | |
| | n | % Low | % Moderate | % High |
| 15-24 | 80 | 12.5 | 28.8 | 58.8 |
| 25-34 | 87 | 21.8 | 11.5 | 66.7 |
| 35-44 | 60 | 10.0 | 21.7 | 68.3 |
| 45-54 | 89 | 13.5 | 13.5 | 73.0 |
| 55-64 | 83 | 14.5 | 20.5 | 65.1 |
| 65+ | 91 | 29.7 | 24.2 | 46.2 |
| **15+** | **490** | **17.4** | **19.9** | **62.7** |

| Level of total physical activity | | | | |
|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | |
| | n | % Low | % Moderate | % High |
| 15-24 | 171 | 13.5 | 16.6 | 70.0 |
| 25-34 | 138 | 16.8 | 11.6 | 71.6 |
| 35-44 | 133 | 14.4 | 12.6 | 73.1 |
| 45-54 | 162 | 16.9 | 10.9 | 72.2 |
| 55-64 | 148 | 12.7 | 16.6 | 70.7 |
| 65+ | 150 | 29.3 | 22.6 | 48.1 |
| **15+** | **902** | **17.1** | **15.1** | **67.8** |

## *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 | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 232.7 | 80 | 185.1 | 171 | 211.3 |
| 25-34 | 51 | 306.6 | 87 | 220.0 | 138 | 256.3 |
| 35-44 | 73 | 238.9 | 60 | 240.3 | 133 | 239.5 |
| 45-54 | 73 | 243.4 | 89 | 235.7 | 162 | 239.4 |
| 55-64 | 65 | 247.8 | 83 | 248.7 | 148 | 248.3 |
| 65+ | 59 | 174.7 | 91 | 162.7 | 150 | 167.7 |
| **15+** | **412** | **240.3** | **490** | **213.7** | **902** | **226.7** |

## *Total physical activity-median*

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

Instrument questions

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

| Median minutes of total physical activity on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Median minutes | n | Median minutes | n | Median minutes |
| 15-24 | 91 | 180.0 | 80 | 132.9 | 171 | 154.3 |
| 25-34 | 51 | 205.7 | 87 | 160.0 | 138 | 180.0 |
| 35-44 | 73 | 171.4 | 60 | 180.0 | 133 | 171.4 |
| 45-54 | 73 | 197.1 | 89 | 175.7 | 162 | 192.9 |
| 55-64 | 65 | 192.9 | 83 | 201.4 | 148 | 199.3 |
| 65+ | 59 | 128.6 | 91 | 120.0 | 150 | 120.0 |
| **15+** | **412** | **180.0** | **490** | **167.1** | **902** | **171.4** |

## *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 | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 156.4 | 80 | 142.0 | 171 | 150.0 |
| 25-34 | 51 | 254.4 | 87 | 186.8 | 138 | 215.1 |
| 35-44 | 73 | 194.5 | 60 | 209.7 | 133 | 201.1 |
| 45-54 | 73 | 199.2 | 89 | 192.4 | 162 | 195.7 |
| 55-64 | 65 | 208.7 | 83 | 209.8 | 148 | 209.3 |
| 65+ | 59 | 136.2 | 91 | 139.4 | 150 | 138.0 |
| **15+** | **412** | **189.2** | **490** | **178.1** | **902** | **183.5** |

| Mean minutes of transport-related physical activity on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean minutes | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 20.6 | 80 | 11.6 | 171 | 16.5 |
| 25-34 | 51 | 6.0 | 87 | 9.9 | 138 | 8.3 |
| 35-44 | 73 | 6.1 | 60 | 12.3 | 133 | 8.8 |
| 45-54 | 73 | 10.7 | 89 | 13.5 | 162 | 12.1 |
| 55-64 | 65 | 13.3 | 83 | 20.9 | 148 | 17.3 |
| 65+ | 59 | 17.1 | 91 | 14.6 | 150 | 15.6 |
| **15+** | **412** | **12.7** | **490** | **13.7** | **902** | **13.2** |

| Mean minutes of recreation-related physical activity on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean minutes | n | Mean minutes | n | Mean minutes |
| 15-24 | 91 | 55.7 | 80 | 31.5 | 171 | 44.8 |
| 25-34 | 51 | 46.2 | 87 | 23.3 | 138 | 32.9 |
| 35-44 | 73 | 38.3 | 60 | 18.3 | 133 | 29.6 |
| 45-54 | 73 | 33.5 | 89 | 29.9 | 162 | 31.6 |
| 55-64 | 65 | 25.9 | 83 | 18.0 | 148 | 21.7 |
| 65+ | 59 | 21.5 | 91 | 8.7 | 150 | 14.0 |
| **15+** | **412** | **38.4** | **490** | **21.9** | **902** | **29.9** |

***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 | n | Median minutes | n | Median minutes |
| 15-24 | 91 | 102.9 | 80 | 102.9 | 171 | 102.9 |
| 25-34 | 51 | 180.0 | 87 | 120.0 | 138 | 137.1 |
| 35-44 | 73 | 120.0 | 60 | 154.3 | 133 | 145.7 |
| 45-54 | 73 | 154.3 | 89 | 137.1 | 162 | 154.3 |
| 55-64 | 65 | 162.9 | 83 | 154.3 | 148 | 162.9 |
| 65+ | 59 | 85.7 | 91 | 94.3 | 150 | 94.3 |
| **15+** | **412** | **128.6** | **490** | **120.0** | **902** | **128.6** |

| Median minutes of transport-related physical activity on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Median minutes | n | Median minutes | n | Median minutes |
| 15-24 | 91 | 6.4 | 80 | 0.0 | 171 | 2.9 |
| 25-34 | 51 | 0.0 | 87 | 0.0 | 138 | 0.0 |
| 35-44 | 73 | 0.0 | 60 | 0.0 | 133 | 0.0 |
| 45-54 | 73 | 0.0 | 89 | 0.0 | 162 | 0.0 |
| 55-64 | 65 | 0.0 | 83 | 4.3 | 148 | 1.4 |
| 65+ | 59 | 0.0 | 91 | 0.0 | 150 | 0.0 |
| **15+** | **412** | **0.0** | **490** | **0.0** | **902** | **0.0** |

| Median minutes of recreation-related physical activity on average per day | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Median minutes | n | Median minutes | n | Median minutes |
| 15-24 | 91 | 38.6 | 80 | 17.1 | 171 | 25.7 |
| 25-34 | 51 | 8.6 | 87 | 8.6 | 138 | 8.6 |
| 35-44 | 73 | 17.1 | 60 | 5.7 | 133 | 12.9 |
| 45-54 | 73 | 0.0 | 89 | 8.6 | 162 | 8.6 |
| 55-64 | 65 | 0.0 | 83 | 0.0 | 148 | 0.0 |
| 65+ | 59 | 0.0 | 91 | 0.0 | 150 | 0.0 |
| **15+** | **412** | **8.6** | **490** | **6.4** | **902** | **8.6** |

## *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 | n | % no activity at work | n | % no activity at work |
| 15-24 | 91 | 9.9 | 80 | 5.0 | 171 | 7.7 |
| 25-34 | 51 | 3.9 | 87 | 11.5 | 138 | 8.3 |
| 35-44 | 73 | 2.7 | 60 | 6.7 | 133 | 4.5 |
| 45-54 | 73 | 6.8 | 89 | 11.2 | 162 | 9.1 |
| 55-64 | 65 | 1.5 | 83 | 4.8 | 148 | 3.3 |
| 65+ | 59 | 20.3 | 91 | 18.7 | 150 | 19.4 |
| **15+** | **412** | **7.4** | **490** | **9.9** | **902** | **8.7** |

| No transport-related physical activity | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % no activity for transport | n | % no activity for transport | n | % no activity for transport |
| 15-24 | 91 | 40.7 | 80 | 60.0 | 171 | 49.4 |
| 25-34 | 51 | 70.6 | 87 | 58.6 | 138 | 63.6 |
| 35-44 | 73 | 64.4 | 60 | 51.7 | 133 | 58.8 |
| 45-54 | 73 | 65.8 | 89 | 51.7 | 162 | 58.5 |
| 55-64 | 65 | 52.3 | 83 | 47.0 | 148 | 49.5 |
| 65+ | 59 | 62.7 | 91 | 58.2 | 150 | 60.1 |
| **15+** | **412** | **58.0** | **490** | **54.8** | **902** | **56.4** |

| No recreation-related physical activity | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % no activity at recreation | n | % no activity at recreation | n | % no activity at recreation |
| 15-24 | 91 | 24.2 | 80 | 35.0 | 171 | 29.0 |
| 25-34 | 51 | 43.1 | 87 | 37.9 | 138 | 40.1 |
| 35-44 | 73 | 32.9 | 60 | 43.3 | 133 | 37.4 |
| 45-54 | 73 | 49.3 | 89 | 39.3 | 162 | 44.1 |
| 55-64 | 65 | 60.0 | 83 | 51.8 | 148 | 55.7 |
| 65+ | 59 | 71.2 | 91 | 68.1 | 150 | 69.4 |
| **15+** | **412** | **44.4** | **490** | **45.9** | **902** | **45.1** |

***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 | % Activity for transport | % Activity during leisure time |
| 15-24 | 91 | 59.9 | 13.8 | 26.4 |
| 25-34 | 51 | 78.4 | 5.7 | 15.9 |
| 35-44 | 72 | 77.1 | 5.1 | 17.8 |
| 45-54 | 71 | 79.0 | 7.3 | 13.7 |
| 55-64 | 65 | 83.3 | 7.2 | 9.4 |
| 65+ | 53 | 76.9 | 11.1 | 12.1 |
| **15+** | **403** | **74.5** | **8.7** | **16.8** |

| Composition of total physical activity | | | | |
|---|---|---|---|---|
| | Women | | | |
| Age Group (years) | n | % Activity from work | % Activity for transport | % Activity during leisure time |
| 15-24 | 80 | 72.5 | 6.9 | 20.7 |
| 25-34 | 85 | 75.2 | 9.5 | 15.3 |
| 35-44 | 60 | 79.2 | 8.2 | 12.7 |
| 45-54 | 85 | 75.3 | 10.0 | 14.7 |
| 55-64 | 82 | 77.5 | 11.6 | 10.9 |
| 65+ | 81 | 77.6 | 16.0 | 6.4 |
| **15+** | **473** | **76.0** | **10.3** | **13.7** |

| Composition of total physical activity | | | | |
|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | |
| | n | % Activity from work | % Activity for transport | % Activity during leisure time |
| 15-24 | 171 | 65.5 | 10.7 | 23.8 |
| 25-34 | 136 | 76.6 | 7.9 | 15.5 |
| 35-44 | 132 | 78.0 | 6.5 | 15.5 |
| 45-54 | 156 | 77.1 | 8.7 | 14.2 |
| 55-64 | 147 | 80.3 | 9.5 | 10.2 |
| 65+ | 134 | 77.3 | 13.9 | 8.8 |
| **15+** | **876** | **75.3** | **9.5** | **15.2** |

***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 | n | % no vigorous activity | n | % no vigorous activity |
| 15-24 | 91 | 19.8 | 80 | 58.8 | 171 | 37.3 |
| 25-34 | 51 | 15.7 | 87 | 58.6 | 138 | 40.6 |
| 35-44 | 73 | 17.8 | 60 | 70.0 | 133 | 40.6 |
| 45-54 | 73 | 24.7 | 89 | 58.4 | 162 | 42.1 |
| 55-64 | 65 | 27.7 | 83 | 60.2 | 148 | 44.9 |
| 65+ | 59 | 55.9 | 91 | 78.0 | 150 | 68.8 |
| **15+** | **412** | **25.7** | **490** | **63.8** | **902** | **45.3** |

## *Sedentary*

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

Instrument question:

- sedentary behaviour

| Minutes spent in sedentary activities on average per day | | | |
|---|---|---|---|
| Age Group (years) | Men | | |
| | n | Mean minutes | Median minutes |
| 15-24 | 91 | 250.4 | 180.0 |
| 25-34 | 51 | 277.6 | 300.0 |
| 35-44 | 73 | 226.5 | 180.0 |
| 45-54 | 73 | 244.2 | 180.0 |
| 55-64 | 65 | 226.4 | 210.0 |
| 65+ | 59 | 223.9 | 180.0 |
| **15+** | **412** | **241.7** | **180.0** |

| Minutes spent in sedentary activities on average per day | | | |
|---|---|---|---|
| Age Group (years) | Women | | |
| | n | Mean minutes | Median minutes |
| 15-24 | 80 | 319.3 | 300.0 |
| 25-34 | 87 | 240.6 | 240.0 |
| 35-44 | 60 | 250.6 | 180.0 |
| 45-54 | 89 | 218.0 | 175.0 |
| 55-64 | 83 | 213.4 | 180.0 |
| 65+ | 94 | 241.2 | 210.0 |
| **15+** | **493** | **247.5** | **240.0** |

| Minutes spent in sedentary activities on average per day | | | |
|---|---|---|---|
| Age Group (years) | Both Sexes | | |
| | n | Mean minutes | Median minutes |
| 15-24 | 171 | 281.4 | 240.0 |
| 25-34 | 138 | 256.1 | 240.0 |
| 35-44 | 133 | 237.0 | 180.0 |
| 45-54 | 162 | 230.6 | 180.0 |
| 55-64 | 148 | 219.5 | 180.0 |
| 65+ | 153 | 234.1 | 180.0 |
| **15+** | **905** | **244.7** | **210.0** |

## *Blood pressure measurement and diagnosis*

Description: Blood pressure measurement and diagnosis among all respondents.

Instrument questions:

- Have you ever had your blood pressure measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?
- Have you been told in the past 12 months?

| Blood pressure measurement and diagnosis | | | | | |
|---|---|---|---|---|---|
| | Men | | | | |
| Age Group (years) | n | % Never measured | % measured, not diagnosed | % diagnosed, but not within past 12 months | % diagnosed within past 12 months |
| 15-24 | 91 | 29.7 | 65.9 | 1.1 | 3.3 |
| 25-34 | 51 | 19.6 | 76.5 | 2.0 | 2.0 |
| 35-44 | 73 | 8.2 | 76.7 | 2.7 | 12.3 |
| 45-54 | 73 | 4.1 | 63.0 | 5.5 | 27.4 |
| 55-64 | 65 | 3.1 | 66.2 | 6.2 | 24.6 |
| 65+ | 59 | 1.7 | 61.0 | 5.1 | 32.2 |
| **15+** | **412** | **12.3** | **68.1** | **3.6** | **16.0** |

| Blood pressure measurement and diagnosis | | | | | |
|---|---|---|---|---|---|
| | Women | | | | |
| Age Group (years) | n | % Never measured | % measured, not diagnosed | % diagnosed, but not within past 12 months | % diagnosed within past 12 months |
| 15-24 | 80 | 23.8 | 76.3 | 0.0 | 0.0 |
| 25-34 | 87 | 8.0 | 86.2 | 2.3 | 3.4 |
| 35-44 | 60 | 3.3 | 76.7 | 8.3 | 11.7 |
| 45-54 | 89 | 4.5 | 62.9 | 6.7 | 25.8 |
| 55-64 | 83 | 4.8 | 57.8 | 12.0 | 25.3 |
| 65+ | 94 | 5.3 | 42.6 | 16.0 | 36.2 |
| **15+** | **493** | **8.6** | **66.7** | **7.5** | **17.2** |

| Blood pressure measurement and diagnosis | | | | | |
|---|---|---|---|---|---|
| Age Group (years) | Both sexes | | | | |
| | n | % Never measured | % measured, not diagnosed | % diagnosed, but not within past 12 months | % diagnosed within past 12 months |
| 15-24 | 171 | 27.0 | 70.6 | 0.6 | 1.8 |
| 25-34 | 138 | 12.9 | 82.1 | 2.2 | 2.8 |
| 35-44 | 133 | 6.1 | 76.7 | 5.2 | 12.0 |
| 45-54 | 162 | 4.3 | 63.0 | 6.1 | 26.6 |
| 55-64 | 148 | 4.0 | 61.8 | 9.3 | 25.0 |
| 65+ | 153 | 3.8 | 50.1 | 11.5 | 34.5 |
| **15+** | **905** | **10.4** | **67.4** | **5.6** | **16.6** |

## *Blood pressure treatment among those diagnosed*

Description: raised blood pressure treatment results among those previously diagnosed with raised blood pressure.

Instrument questions:

- Have you ever been told by a doctor or other health worker that you have raised 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?

| Currently taking blood pressure drugs prescribed by doctor or health worker among those diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % taking meds | n | % taking meds | n | % taking meds |
| 15-24 | 4 | 100.0 | | | 4 | 0.0 |
| 25-34 | 2 | 100.0 | 5 | 20.0 | 7 | 13.4 |
| 35-44 | 11 | 54.5 | 12 | 16.7 | 23 | 30.8 |
| 45-54 | 24 | 45.8 | 29 | 65.5 | 53 | 60.0 |
| 55-64 | 20 | 25.0 | 31 | 83.9 | 51 | 80.1 |
| 65+ | 22 | 18.2 | 49 | 85.7 | 71 | 84.4 |
| **15+** | **83** | **39.4** | **126** | **70.6** | **209** | **66.3** |

***Blood pressure lifestyle advice***

Description: Percentage of respondents who received lifestyle advice from a doctor or health worker to treat raised blood pressure among those previously diagnosed with raised blood pressure.

Instrument questions:

- When was your blood pressure last measured by a health professional?
- Have you ever been told by a doctor or other health worker that you have raised 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?

| Advised by doctor or health worker to reduce salt intake among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 4 | 50.0 | 0 | -- | 4 | 50.0 |
| 25-34 | 2 | 100.0 | 5 | 20.0 | 7 | 46.4 |
| 35-44 | 11 | 72.7 | 12 | 83.3 | 23 | 78.1 |
| 45-54 | 24 | 79.2 | 29 | 75.9 | 53 | 77.5 |
| 55-64 | 20 | 65.0 | 31 | 80.6 | 51 | 74.0 |
| 65+ | 22 | 59.1 | 49 | 57.1 | 71 | 57.8 |
| **15+** | **83** | **68.9** | **126** | **68.3** | **209** | **68.6** |

| Advised by doctor or health worker to lose weight among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 4 | 75.0 | 0 | -- | 4 | 75.0 |
| 25-34 | 2 | 100.0 | 5 | 60.0 | 7 | 73.2 |
| 35-44 | 11 | 81.8 | 12 | 83.3 | 23 | 82.6 |
| 45-54 | 24 | 66.7 | 29 | 93.1 | 53 | 80.3 |
| 55-64 | 20 | 85.0 | 31 | 83.9 | 51 | 84.4 |
| 65+ | 22 | 77.3 | 49 | 69.4 | 71 | 72.0 |
| **15+** | **83** | **77.1** | **126** | **79.4** | **209** | **78.4** |

| Advised by doctor or health worker to stop smoking among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 4 | 25.0 | 0 | -- | 4 | 25.0 |
| 25-34 | 2 | 0.0 | 5 | 20.0 | 7 | 13.4 |
| 35-44 | 11 | 45.5 | 12 | 25.0 | 23 | 35.1 |
| 45-54 | 24 | 33.3 | 29 | 41.4 | 53 | 37.5 |
| 55-64 | 20 | 30.0 | 31 | 25.8 | 51 | 27.6 |
| 65+ | 22 | 22.7 | 49 | 18.4 | 71 | 19.8 |
| **15+** | **83** | **30.2** | **126** | **26.3** | **209** | **27.9** |

| Advised by doctor or health worker to start or do more exercise among those previously diagnosed | | | | | | | |
|---|---|---|---|---|---|---|---|
| Age Group (years) | Men | | | Women | | | Both Sexes |
| | n | % | | n | % | n | % |
| 15-24 | 4 | 75.0 | | 0 | -- | 4 | 75.0 |
| 25-34 | 2 | 100.0 | | 5 | 80.0 | 7 | 86.6 |
| 35-44 | 11 | 63.6 | | 12 | 83.3 | 23 | 73.6 |
| 45-54 | 24 | 83.3 | | 29 | 86.2 | 53 | 84.8 |
| 55-64 | 20 | 100.0 | | 31 | 90.3 | 51 | 94.4 |
| 65+ | 22 | 72.7 | | 49 | 81.6 | 71 | 78.7 |
| **15+** | **83** | **81.9** | | **126** | **84.9** | **209** | **83.6** |

### *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 among those previously diagnosed with raised blood pressure.

Instrument questions:

- When was your blood pressure last measured by a health professional?
- Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?
- Have you ever 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 among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 4 | 0.0 | 0 | -- | 4 | 0.0 |
| 25-34 | 2 | 0.0 | 5 | 0.0 | 7 | 0.0 |
| 35-44 | 11 | 27.3 | 12 | 8.3 | 23 | 17.7 |
| 45-54 | 24 | 4.2 | 29 | 6.9 | 53 | 5.6 |
| 55-64 | 20 | 10.0 | 31 | 6.5 | 51 | 8.0 |
| 65+ | 22 | 0.0 | 49 | 8.2 | 71 | 5.5 |
| **15+** | **83** | **7.3** | **126** | **7.1** | **209** | **7.2** |

| Currently taking herbal or traditional remedy for high blood pressure among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 4 | 0.0 | 0 | -- | 4 | 0.0 |
| 25-34 | 2 | 0.0 | 5 | 0.0 | 7 | 0.0 |
| 35-44 | 11 | 18.2 | 12 | 8.3 | 23 | 13.2 |
| 45-54 | 24 | 8.3 | 29 | 17.2 | 53 | 12.9 |
| 55-64 | 20 | 5.0 | 31 | 16.1 | 51 | 11.4 |
| 65+ | 22 | 13.6 | 49 | 30.6 | 71 | 25.0 |
| **15+** | **83** | **9.6** | **126** | **20.4** | **209** | **15.8** |

## *Diabetes measurement and diagnosis*

Description: Diabetes measurement and diagnosis among all respondents.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Have you been told in the past 12 months?

| Blood sugar measurement and diagnosis | | | | | |
|---|---|---|---|---|---|
| | Men | | | | |
| Age Group (years) | n | % Never measured | % measured, not diagnosed | % diagnosed, but not within past 12 months | % diagnosed within past 12 months |
| 15-24 | 91 | 34.1 | 65.9 | 0.0 | 0.0 |
| 25-34 | 51 | 27.5 | 70.6 | 2.0 | 0.0 |
| 35-44 | 73 | 15.1 | 74.0 | 1.4 | 9.6 |
| 45-54 | 73 | 8.2 | 63.0 | 2.7 | 26.0 |
| 55-64 | 65 | 4.6 | 61.5 | 4.6 | 29.2 |
| 65+ | 59 | 3.4 | 67.8 | 6.8 | 22.0 |
| **15+** | **412** | **16.8** | **67.1** | **2.6** | **13.6** |

| Blood sugar measurement and diagnosis | | | | | |
|---|---|---|---|---|---|
| | Women | | | | |
| Age Group (years) | n | % Never measured | % measured, not diagnosed | % diagnosed, but not within past 12 months | % diagnosed within past 12 months |
| 15-24 | 80 | 36.3 | 60.0 | 1.3 | 2.5 |
| 25-34 | 87 | 13.8 | 78.2 | 4.6 | 3.4 |
| 35-44 | 60 | 6.7 | 68.3 | 8.3 | 16.7 |
| 45-54 | 89 | 3.4 | 70.8 | 3.4 | 22.5 |
| 55-64 | 83 | 9.6 | 61.4 | 7.2 | 21.7 |
| 65+ | 94 | 4.3 | 59.6 | 8.5 | 27.7 |
| **15+** | **493** | **12.6** | **66.4** | **5.4** | **15.6** |

| Blood sugar measurement and diagnosis | | | | | |
|---|---|---|---|---|---|
| | Both sexes | | | | |
| Age Group (years) | n | % Never measured | % measured, not diagnosed | % diagnosed, but not within past 12 months | % diagnosed within past 12 months |
| 15-24 | 171 | 35.0 | 63.3 | 0.6 | 1.1 |
| 25-34 | 138 | 19.5 | 75.0 | 3.5 | 2.0 |
| 35-44 | 133 | 11.4 | 71.5 | 4.4 | 12.7 |
| 45-54 | 162 | 5.7 | 67.0 | 3.1 | 24.2 |
| 55-64 | 148 | 7.3 | 61.5 | 6.0 | 25.2 |
| 65+ | 153 | 3.9 | 62.9 | 7.8 | 25.4 |
| **15+** | **905** | **14.6** | **66.7** | **4.0** | **14.6** |

## *Diabetes treatment among those diagnosed*

Description: Diabetes treatment results among those previously diagnosed with raised blood sugar or diabetes.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

| Currently taking insulin prescribed for diabetes among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % taking insulin | n | % taking insulin | n | % taking insulin |
| 15-24 | 0 | -- | 3 | 0.0 | 3 | 0.0 |
| 25-34 | 1 | 0.0 | 7 | 0.0 | 8 | 0.0 |
| 35-44 | 8 | 0.0 | 15 | 6.7 | 23 | 4.3 |
| 45-54 | 21 | 19.0 | 23 | 4.3 | 44 | 11.8 |
| 55-64 | 22 | 13.6 | 24 | 16.7 | 46 | 15.1 |
| 65+ | 17 | 17.6 | 34 | 20.6 | 51 | 19.5 |
| **15+** | **69** | **14.4** | **106** | **12.0** | **175** | **13.0** |

| Currently taking oral drugs prescribed for diabetes among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % taking insulin | n | % taking insulin | n | % taking insulin |
| 15-24 | 0 | -- | 3 | 0.0 | 3 | 0.0 |
| 25-34 | 1 | 0.0 | 7 | 0.0 | 8 | 0.0 |
| 35-44 | 8 | 62.5 | 15 | 40.0 | 23 | 48.1 |
| 45-54 | 21 | 85.7 | 23 | 56.5 | 44 | 71.4 |
| 55-64 | 22 | 77.3 | 24 | 83.3 | 46 | 80.2 |
| 65+ | 17 | 76.5 | 34 | 79.4 | 51 | 78.4 |
| **15+** | **69** | **76.7** | **106** | **61.3** | **175** | **67.7** |

### *Diabetes lifestyle advice*

Description: Percentage of respondents who received diabetes lifestyle advice from a doctor or health worker among those previously diagnosed with diabetes.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

| Advised by doctor or health worker to have special prescribed diet among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 0 | -- | 3 | 0.0 | 3 | 0.0 |
| 25-34 | 1 | 0.0 | 7 | 42.9 | 8 | 36.5 |
| 35-44 | 8 | 100.0 | 15 | 40.0 | 23 | 61.7 |
| 45-54 | 21 | 71.4 | 23 | 43.5 | 44 | 57.7 |
| 55-64 | 22 | 72.7 | 24 | 37.5 | 46 | 55.5 |
| 65+ | 17 | 47.1 | 34 | 67.6 | 51 | 60.3 |
| **15+** | **69** | **68.3** | **106** | **47.8** | **175** | **56.4** |

| Advised by doctor or health worker to lose weight among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 0 | -- | 3 | 66.7 | 3 | 66.7 |
| 25-34 | 1 | 100.0 | 7 | 71.4 | 8 | 75.7 |
| 35-44 | 8 | 87.5 | 15 | 80.0 | 23 | 82.7 |
| 45-54 | 21 | 76.2 | 23 | 78.3 | 44 | 77.2 |
| 55-64 | 22 | 81.8 | 24 | 83.3 | 46 | 82.6 |
| 65+ | 17 | 64.7 | 34 | 79.4 | 51 | 74.2 |
| **15+** | **69** | **77.0** | **106** | **79.2** | **175** | **78.2** |

| Advised by doctor or health worker to stop smoking among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 0 | -- | 3 | 0.0 | 3 | 0.0 |
| 25-34 | 1 | 0.0 | 7 | 14.3 | 8 | 12.2 |
| 35-44 | 8 | 37.5 | 15 | 26.7 | 23 | 30.6 |
| 45-54 | 21 | 28.6 | 23 | 34.8 | 44 | 31.6 |
| 55-64 | 22 | 31.8 | 24 | 25.0 | 46 | 28.5 |
| 65+ | 17 | 29.4 | 34 | 26.5 | 51 | 27.5 |
| **15+** | **69** | **30.4** | **106** | **26.3** | **175** | **28.0** |

| Advised by doctor or health worker to start or do more exercise among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 0 | -- | 3 | 66.7 | 3 | 66.7 |
| 25-34 | 1 | 100.0 | 7 | 57.1 | 8 | 63.5 |
| 35-44 | 8 | 100.0 | 15 | 86.7 | 23 | 91.5 |
| 45-54 | 21 | 85.7 | 23 | 82.6 | 44 | 84.2 |
| 55-64 | 22 | 95.5 | 24 | 95.8 | 46 | 95.6 |
| 65+ | 17 | 58.8 | 34 | 88.2 | 51 | 77.8 |
| **15+** | **69** | **84.3** | **106** | **85.6** | **175** | **85.1** |

***Diabetes advice by traditional healer***

Description: Percentage of respondents who are have sought advice or treatment from traditional healers for diabetes among those previously diagnosed.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Have you ever seen a traditional healer for diabetes or raised blood sugar?
- Are you currently taking any herbal or traditional remedy for your diabetes?

| Seen a traditional healer for diabetes among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 0 | -- | 3 | 0.0 | 3 | 0.0 |
| 25-34 | 1 | 0.0 | 7 | 0.0 | 8 | 0.0 |
| 35-44 | 8 | 0.0 | 15 | 6.7 | 23 | 4.3 |
| 45-54 | 21 | 9.5 | 23 | 8.7 | 44 | 9.1 |
| 55-64 | 22 | 18.2 | 24 | 12.5 | 46 | 15.4 |
| 65+ | 17 | 5.9 | 34 | 2.9 | 51 | 4.0 |
| **15+** | **69** | **10.1** | **106** | **6.5** | **175** | **8.0** |

| Currently taking herbal or traditional treatment for diabetes among those previously diagnosed | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 0 | -- | 3 | 0.0 | 3 | 0.0 |
| 25-34 | 1 | 0.0 | 7 | 0.0 | 8 | 0.0 |
| 35-44 | 8 | 25.0 | 15 | 0.0 | 23 | 9.0 |
| 45-54 | 21 | 19.0 | 23 | 21.7 | 44 | 20.4 |
| 55-64 | 22 | 9.1 | 24 | 20.8 | 46 | 14.8 |
| 65+ | 17 | 23.5 | 34 | 26.5 | 51 | 25.4 |
| **15+** | **69** | **17.4** | **106** | **17.5** | **175** | **17.5** |

## *Height, weight and BMI*

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

Instrument questions:

- Height
- Weight

| Mean height (cm) | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | n | Mean | n | Mean |
| 15-24 | 89 | 176.6 | 81 | 164.3 |
| 25-34 | 52 | 177.3 | 84 | 163.1 |
| 35-44 | 71 | 174.4 | 61 | 162.8 |
| 45-54 | 74 | 173.3 | 89 | 162.8 |
| 55-64 | 63 | 174.1 | 82 | 161.0 |
| 65+ | 59 | 169.0 | 94 | 155.5 |
| **15+** | **408** | **174.3** | **491** | **161.5** |

| Mean weight (kg) | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | n | Mean | n | Mean |
| 15-24 | 89 | 91.1 | 75 | 82.4 |
| 25-34 | 52 | 98.4 | 81 | 86.5 |
| 35-44 | 71 | 102.7 | 58 | 94.5 |
| 45-54 | 74 | 96.4 | 89 | 93.3 |
| 55-64 | 63 | 95.2 | 82 | 85.9 |
| 65+ | 59 | 83.0 | 94 | 76.5 |
| **15+** | **408** | **94.6** | **479** | **86.1** |

| Mean BMI (kg/m$^2$) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 89 | 29.2 | 74 | 30.2 | 163 | 29.6 |
| 25-34 | 52 | 31.4 | 81 | 32.4 | 133 | 32.0 |
| 35-44 | 71 | 33.7 | 56 | 34.6 | 127 | 34.1 |
| 45-54 | 74 | 32.0 | 87 | 33.9 | 161 | 33.0 |
| 55-64 | 63 | 31.4 | 82 | 33.1 | 145 | 32.3 |
| 65+ | 59 | 29.0 | 94 | 31.5 | 153 | 30.5 |
| **15+** | **408** | **31.1** | **474** | **32.5** | **882** | **31.8** |

***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 | % Normal weight 18.5-24.9 | % BMI 25.0-29.9 | % Obese ≥30.0 |
| 15-24 | 89 | 0.0 | 33.7 | 22.5 | 43.8 |
| 25-34 | 52 | 0.0 | 9.6 | 32.7 | 57.7 |
| 35-44 | 71 | 0.0 | 4.2 | 18.3 | 77.5 |
| 45-54 | 74 | 0.0 | 8.1 | 27.0 | 64.9 |
| 55-64 | 63 | 0.0 | 7.9 | 25.4 | 66.7 |
| 65+ | 59 | 0.0 | 20.3 | 32.2 | 47.5 |
| **15+** | **408** | **0.0** | **15.0** | **25.8** | **59.2** |

| BMI classifications | | | | | |
|---|---|---|---|---|---|
| | Women | | | | |
| Age Group (years) | n | % Under-weight <18.5 | % Normal weight 18.5-24.9 | % BMI 25.0-29.9 | % Obese ≥30.0 |
| 15-24 | 74 | 1.4 | 20.3 | 31.1 | 47.3 |
| 25-34 | 81 | 1.2 | 12.3 | 25.9 | 60.5 |
| 35-44 | 56 | 0.0 | 8.9 | 19.6 | 71.4 |
| 45-54 | 87 | 0.0 | 9.2 | 19.5 | 71.3 |
| 55-64 | 82 | 0.0 | 12.2 | 19.5 | 68.3 |
| 65+ | 94 | 2.1 | 10.6 | 27.7 | 59.6 |
| **15+** | **474** | **0.8** | **12.3** | **24.1** | **62.7** |

| BMI classifications | | | | | |
|---|---|---|---|---|---|
| | Both Sexes | | | | |
| Age Group (years) | n | % Under-weight <18.5 | % Normal weight 18.5-24.9 | % BMI 25.0-29.9 | % Obese ≥30.0 |
| 15-24 | 163 | 0.6 | 27.8 | 26.2 | 45.3 |
| 25-34 | 133 | 0.7 | 11.1 | 28.9 | 59.3 |
| 35-44 | 127 | 0.0 | 6.2 | 18.9 | 74.9 |
| 45-54 | 161 | 0.0 | 8.7 | 23.2 | 68.1 |
| 55-64 | 145 | 0.0 | 10.2 | 22.3 | 67.5 |
| 65+ | 153 | 1.3 | 14.6 | 29.5 | 54.6 |
| **15+** | **882** | **0.4** | **13.7** | **24.9** | **61.0** |

### *BMI ≥25*

Description: Percentage of respondents being classified as overweight (BMI≥25)

Instrument questions:

- Height
- Weight

| BMI≥25 | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % BMI≥25 | n | % BMI≥25 | n | % BMI≥25 |
| 15-24 | 89 | 66.3 | 74 | 78.4 | 163 | 71.6 |
| 25-34 | 52 | 90.4 | 81 | 86.4 | 133 | 88.2 |
| 35-44 | 71 | 95.8 | 56 | 91.1 | 127 | 93.8 |
| 45-54 | 74 | 91.9 | 87 | 90.8 | 161 | 91.3 |
| 55-64 | 63 | 92.1 | 82 | 87.8 | 145 | 89.8 |
| 65+ | 59 | 79.7 | 94 | 87.2 | 153 | 84.1 |
| **15+** | **408** | **85.0** | **474** | **86.8** | **882** | **85.9** |

### *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 | n | Mean |
| 15-24 | 89 | 90.8 | 75 | 88.0 |
| 25-34 | 52 | 98.4 | 81 | 93.2 |
| 35-44 | 71 | 103.3 | 58 | 99.7 |
| 45-54 | 74 | 102.0 | 89 | 100.8 |
| 55-64 | 63 | 103.3 | 82 | 98.3 |
| 65+ | 59 | 98.2 | 92 | 99.9 |
| **15+** | **408** | **98.9** | **477** | **96.6** |

### *Hip circumference*

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

Instrument question:

- Hip circumference measurement

| Hip circumference (cm) | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | n | Mean | n | Mean |
| 15-24 | 89 | 106.7 | 75 | 110.5 |
| 25-34 | 52 | 111.3 | 81 | 112.2 |
| 35-44 | 71 | 111.6 | 58 | 118.5 |
| 45-54 | 74 | 109.9 | 89 | 116.4 |
| 55-64 | 63 | 109.0 | 82 | 112.2 |
| 65+ | 59 | 103.6 | 92 | 108.9 |
| **15+** | **408** | **108.7** | **477** | **112.9** |

### *Waist / hip ratio*

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

Instrument question:

- Waist and hip circumference measurement

| Mean waist / hip ratio | | | | |
|---|---|---|---|---|
| Age Group (years) | Men | | Women | |
| | n | Mean | n | Mean |
| 15-24 | 89 | 0.9 | 75 | 0.8 |
| 25-34 | 52 | 0.9 | 81 | 0.8 |
| 35-44 | 71 | 0.9 | 58 | 0.8 |
| 45-54 | 74 | 0.9 | 89 | 0.9 |
| 55-64 | 63 | 0.9 | 82 | 0.9 |
| 65+ | 59 | 0.9 | 92 | 0.9 |
| **15+** | **408** | **0.9** | **477** | **0.9** |

## *Blood pressure*

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

Instrument question:

- Reading 1-3 systolic and diastolic blood pressure

| Mean systolic blood pressure (mmHg) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 90 | 122.7 | 80 | 113.8 | 170 | 118.7 |
| 25-34 | 52 | 131.6 | 85 | 115.0 | 137 | 122.1 |
| 35-44 | 72 | 130.4 | 61 | 120.8 | 133 | 126.1 |
| 45-54 | 74 | 134.5 | 90 | 131.3 | 164 | 132.9 |
| 55-64 | 63 | 136.4 | 82 | 135.1 | 145 | 135.7 |
| 65+ | 59 | 142.1 | 93 | 144.8 | 152 | 143.7 |
| **15+** | **410** | **132.0** | **491** | **127.0** | **901** | **129.4** |

| Mean diastolic blood pressure (mmHg) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 90 | 68.3 | 80 | 70.1 | 170 | 69.1 |
| 25-34 | 52 | 76.5 | 85 | 70.8 | 137 | 73.3 |
| 35-44 | 72 | 79.4 | 61 | 76.3 | 133 | 78.0 |
| 45-54 | 74 | 82.7 | 90 | 79.0 | 164 | 80.8 |
| 55-64 | 63 | 79.5 | 82 | 77.6 | 145 | 78.5 |
| 65+ | 59 | 75.9 | 93 | 74.1 | 152 | 74.8 |
| **15+** | **410** | **76.6** | **491** | **74.5** | **901** | **75.5** |

## *Raised blood pressure*

Description: Percentage of respondents with raised blood pressure.

Instrument question:

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

| SBP ≥140 and/or DBP ≥ 90 mmHg, excluding those on medication for raised blood pressure | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 90 | 4.4 | 79 | 3.8 | 169 | 4.2 |
| 25-34 | 52 | 26.9 | 85 | 5.9 | 137 | 14.9 |
| 35-44 | 64 | 17.2 | 59 | 11.9 | 123 | 14.7 |
| 45-54 | 60 | 23.3 | 66 | 24.2 | 126 | 23.8 |
| 55-64 | 43 | 32.6 | 49 | 24.5 | 92 | 28.5 |
| 65+ | 31 | 38.7 | 44 | 45.5 | 75 | 42.5 |
| **15+** | **340** | **20.1** | **382** | **15.9** | **722** | **18.0** |

| SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 90 | 4.4 | 80 | 5.0 | 170 | 4.7 |
| 25-34 | 52 | 26.9 | 85 | 5.9 | 137 | 14.9 |
| 35-44 | 72 | 26.4 | 61 | 14.8 | 133 | 21.2 |
| 45-54 | 74 | 37.8 | 90 | 44.4 | 164 | 41.3 |
| 55-64 | 63 | 54.0 | 82 | 54.9 | 145 | 54.5 |
| 65+ | 59 | 67.8 | 93 | 74.2 | 152 | 71.6 |
| **15+** | **410** | **33.1** | **491** | **33.8** | **901** | **33.5** |

| SBP ≥160 and/or DBP ≥ 100 mmHg, excluding those on medication for raised blood pressure | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 90 | 0.0 | 79 | 0.0 | 169 | 0.0 |
| 25-34 | 52 | 0.0 | 85 | 1.2 | 137 | 0.7 |
| 35-44 | 64 | 1.6 | 59 | 3.4 | 123 | 2.4 |
| 45-54 | 60 | 5.0 | 66 | 7.6 | 126 | 6.3 |
| 55-64 | 43 | 7.0 | 49 | 4.1 | 92 | 5.5 |
| 65+ | 31 | 16.1 | 44 | 27.3 | 75 | 22.4 |
| **15+** | **340** | **3.3** | **382** | **5.5** | **722** | **4.4** |

| SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 90 | 0.0 | 80 | 1.3 | 170 | 0.6 |
| 25-34 | 52 | 0.0 | 85 | 1.2 | 137 | 0.7 |
| 35-44 | 72 | 12.5 | 61 | 6.6 | 133 | 9.9 |
| 45-54 | 74 | 23.0 | 90 | 32.2 | 164 | 27.8 |
| 55-64 | 63 | 36.5 | 82 | 42.7 | 145 | 39.8 |
| 65+ | 59 | 55.9 | 93 | 65.6 | 152 | 61.6 |
| **15+** | **410** | **19.1** | **491** | **25.6** | **901** | **22.4** |

***Treatment and control of raised blood pressure***

Description: Percentage of respondents with treated and/or controlled of raised blood pressure among those with raised blood pressure (SBP ≥140 and/or DBP ≥ 90 mmHg) or currently on medication for raised blood pressure.

Instrument questions:

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

| Respondents with treated and/or controlled raised blood pressure | | | | |
|---|---|---|---|---|
| | Men | | | |
| Age Group (years) | n | % On medication and SBP<140 and DBP<90 | % On medication and SBP≥140 and/orDBP≥90 | % Not on medication and SBP≥140 and/orDBP≥90 |
| 15-24 | 4 | 0.0 | 0.0 | 100.0 |
| 25-34 | 14 | 0.0 | 0.0 | 100.0 |
| 35-44 | 18 | 16.7 | 27.8 | 55.6 |
| 45-54 | 28 | 10.7 | 39.3 | 50.0 |
| 55-64 | 33 | 33.3 | 27.3 | 39.4 |
| 65+ | 40 | 32.5 | 37.5 | 30.0 |
| **15+** | **137** | **21.3** | **28.7** | **50.0** |

| Respondents with treated and/or controlled raised blood pressure | | | | |
|---|---|---|---|---|
| | Women | | | |
| Age Group (years) | n | % On medication and SBP<140 and DBP<90 | % On medication and SBP≥140 and/orDBP≥90 | % Not on medication and SBP≥140 and/orDBP≥90 |
| 15-24 | 4 | 0.0 | 25.0 | 75.0 |
| 25-34 | 5 | 0.0 | 0.0 | 100.0 |
| 35-44 | 9 | 0.0 | 22.2 | 77.8 |
| 45-54 | 40 | 40.0 | 20.0 | 40.0 |
| 55-64 | 45 | 37.8 | 35.6 | 26.7 |
| 65+ | 68 | 27.9 | 44.1 | 27.9 |
| **15+** | **171** | **30.1** | **33.1** | **36.8** |

| Respondents with treated and/or controlled raised blood pressure | | | | |
|---|---|---|---|---|
| Age Group (years) | Both Sexes | | | |
| | n | % On medication and SBP<140 and DBP<90 | % On medication and SBP≥140 and/orDBP≥90 | % Not on medication and SBP≥140 and/orDBP≥90 |
| 15-24 | 8 | 0.0 | 12.0 | 88.0 |
| 25-34 | 19 | 0.0 | 0.0 | 100.0 |
| 35-44 | 27 | 11.3 | 26.0 | 62.7 |
| 45-54 | 68 | 27.0 | 28.6 | 44.4 |
| 55-64 | 78 | 35.8 | 31.8 | 32.5 |
| 65+ | 108 | 29.7 | 41.5 | 28.8 |
| **15+** | **308** | **25.9** | **31.0** | **43.1** |

### *Mean heart rate*

Description: Mean heart rate (beats per minute).

Instrument question:

- Reading 1-3 heart rate

| Mean heart rate (beats per minute) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | mean | n | mean | n | mean |
| 15-24 | 90 | 68.6 | 80 | 75.5 | 170 | 71.7 |
| 25-34 | 52 | 68.3 | 85 | 72.4 | 137 | 70.7 |
| 35-44 | 72 | 68.7 | 61 | 73.0 | 133 | 70.6 |
| 45-54 | 74 | 69.0 | 90 | 68.5 | 164 | 68.7 |
| 55-64 | 63 | 69.2 | 82 | 67.2 | 145 | 68.1 |
| 65+ | 59 | 65.3 | 93 | 68.1 | 152 | 66.9 |
| **15+** | **410** | **68.3** | **491** | **70.7** | **901** | **69.6** |

## *Total cholesterol*

Description: Mean total cholesterol among all respondents including those currently on medication for raised cholesterol.

Instrument questions:

- Total cholesterol measurement

| Mean total cholesterol (mmol/L) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 76 | 4.2 | 64 | 4.3 | 140 | 4.2 |
| 25-34 | 50 | 4.5 | 79 | 4.3 | 129 | 4.4 |
| 35-44 | 70 | 4.9 | 57 | 4.5 | 127 | 4.7 |
| 45-54 | 72 | 4.8 | 85 | 4.9 | 157 | 4.8 |
| 55-64 | 58 | 4.8 | 81 | 5.0 | 139 | 4.9 |
| 65+ | 53 | 4.4 | 83 | 4.7 | 136 | 4.6 |
| **15+** | **379** | **4.6** | **449** | **4.6** | **828** | **4.6** |

| Mean total cholesterol (mg/dl) | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | Mean | n | Mean | n | Mean |
| 15-24 | 76 | 162.0 | 64 | 167.1 | 140 | 164.3 |
| 25-34 | 50 | 175.1 | 79 | 165.6 | 129 | 169.8 |
| 35-44 | 70 | 187.7 | 57 | 175.1 | 127 | 182.2 |
| 45-54 | 72 | 184.2 | 85 | 189.6 | 157 | 187.0 |
| 55-64 | 58 | 183.9 | 81 | 192.8 | 139 | 188.8 |
| 65+ | 53 | 171.9 | 83 | 181.9 | 136 | 177.8 |
| **15+** | **379** | **177.3** | **449** | **179.1** | **828** | **178.2** |

***Raised total cholesterol***

Description: Percentage of respondents with raised total cholesterol and percentage of respondents currently on medication for raised cholesterol.

Instrument questions:

- Total cholesterol measurement
- During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?

| Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 76 | 5.3 | 64 | 17.2 | 140 | 10.5 |
| 25-34 | 50 | 24.0 | 79 | 10.1 | 129 | 16.2 |
| 35-44 | 70 | 41.4 | 57 | 26.3 | 127 | 34.9 |
| 45-54 | 72 | 40.3 | 85 | 52.9 | 157 | 46.7 |
| 55-64 | 58 | 55.2 | 81 | 58.0 | 139 | 56.7 |
| 65+ | 53 | 45.3 | 83 | 47.0 | 136 | 46.3 |
| **15+** | **379** | **33.7** | **449** | **36.0** | **828** | **34.8** |

| Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl or currently on medication for raised cholesterol | | | | | | |
|---|---|---|---|---|---|---|
| Age Group (years) | Men | | Women | | Both Sexes | |
| | n | % | n | % | n | % |
| 15-24 | 76 | 1.3 | 64 | 4.7 | 140 | 2.8 |
| 25-34 | 50 | 4.0 | 79 | 0.0 | 129 | 1.8 |
| 35-44 | 70 | 7.1 | 57 | 3.5 | 127 | 5.6 |
| 45-54 | 72 | 16.7 | 85 | 24.7 | 157 | 20.8 |
| 55-64 | 58 | 29.3 | 81 | 25.9 | 139 | 27.4 |
| 65+ | 53 | 30.2 | 83 | 18.1 | 136 | 23.1 |
| **15+** | **379** | **13.5** | **449** | **13.4** | **828** | **13.4** |

## *Summary of Combined Risk Factors*

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

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

Instrument questions: combined from Step 1 and Step 2

| Summary of Combined Risk Factors | | | | |
|---|---|---|---|---|
| | Men | | | |
| Age Group (years) | n | % with 0 risk factors | % with 1-2 risk factors | % with 3-5 risk factors |
| 15-44 | 211 | 0.0 | 67.4 | 32.6 |
| 45+ | 194 | 0.5 | 37.2 | 62.2 |
| **15+** | 405 | 0.2 | 53.5 | 46.2 |

| Summary of Combined Risk Factors | | | | |
|---|---|---|---|---|
| | Women | | | |
| Age Group (years) | n | % with 0 risk factors | % with 1-2 risk factors | % with 3-5 risk factors |
| 15-44 | 208 | 0.0 | 77.4 | 22.6 |
| 45+ | 258 | 0.4 | 41.5 | 58.1 |
| **15+** | 466 | 0.2 | 58.4 | 41.4 |

| Summary of Combined Risk Factors | | | | |
|---|---|---|---|---|
| | Both Sexes | | | |
| Age Group (years) | n | % with 0 risk factors | % with 1-2 risk factors | % with 3-5 risk factors |
| 15-44 | 419 | 0.0 | 72.1 | 27.9 |
| 45+ | 452 | 0.5 | 39.5 | 60.0 |
| **15+** | 871 | 0.2 | 56.0 | 43.8 |

# Appendix 3. List of STEPS Survey Field Staff

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# Appendix 4: References:


1. Niue Health Strategic Plan 2011-21
2. Niue Tourism http://www.niueisland.com/
3. First look at Niue census figures; The Niue government statistician, News Content © Radio New Zealand International, Wellington, New Zealand, 5th October 2011
4. http://www.historyofnations.net/history of Niue
5. Niue National Strategic Plan (2009-2013) *Niue ke Monuina – A Prosperous Niue*
6. Census of Population and Housing Reports; Niue Population Profile 2012; statsniue@mail.gov.nu
7. Human Development Index, http://www.nationsonline.org/oneworld/human_development.htm
8. Moui Olaola: an Integrated NCD Action Plan 2009-13
9. Allen + Clarke 2011. Niue Health Sector Needs Analysis. June 2011. Report submitted to Niue Health Department.
10. Secretariat for the Pacific Community, NCD statistics for Pacific Island Countries, 2010, SPC Noumea

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