



Cardiovascular  
Diseases



Diabetes

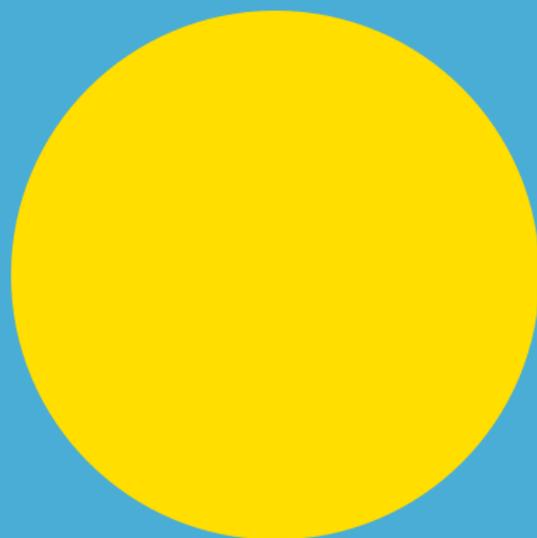


Chronic Respiratory  
Diseases



Cancer

## Non-Communicable Disease & Risk Factor Surveillance



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Palau 2017

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# Summary

The aim of this report is to assess the current prevalence of non-communicable disease (NCDs), substance use, mental health, and selected risk factors in Palau. We hope this report enables Palau to monitor trends, have a better understanding of who is at greatest risk for poor health, and finally to improve health with the development targeted interventions.

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Non-Communicable Diseases (NCDs) such as heart disease, cancer, and diabetes are global issues that result in high burdens of disability and premature death. Additionally, substance use and poor mental health can also greatly contribute to disability and premature death throughout the world. NCDs, substance use, and poor mental health are highly linked to a number of key risk factors, such as cigarette smoking, tobacco chewing, excessive alcohol consumption, unhealthy diet, lack of physical activity, and overweight/obesity. Over the past few decades there have been drastic changes in lifestyle in the Republic of Palau, a small independent nation in the northwestern region of the Pacific Ocean. Palau has shifted from mostly subsistence living and reliance on locally produced crops and fish to a more Western lifestyle of sedentary occupation and more reliance on imported foods, as well as the introduction of many illicit substances. This lifestyle shift has resulted in higher burdens of certain risk factors, NCDs, substance use, and poor mental health.

Palau undertook a novel population-based household survey that combined NCD and associated risk factor indicators, substance use, and mental health indicators from May – December 2016. A total of 1,768 individuals aged 18 years or older participated in the survey. Respondents answered questions about their alcohol and tobacco use, other substance use indicators, mental health, dietary habits, physical activity, health access, oral health, health conditions, and cancer screening. Additionally, height and weight, fasting blood glucose, total cholesterol, HDL cholesterol, and blood pressure were measured.



## Palau vs. USA

Compared to the US, Palau has worse outcomes in all health outcomes and behaviors except for general alcohol use and fruit and vegetable consumption.

	Palau %	US %	Comparison
<b>Current tobacco use</b>			
Cigarette smoking	20.5	18.1	↑
Smokeless tobacco use	51.3	4.1	↑
<b>Current alcohol use</b>			
Alcohol use (any)	36.7	53.3	↓
Binge drinking (5+ drinks per day)	27.2	16.0	↑
<b>Nutrition</b>			
<5 servings of fruits and vegetables (per day)	67.0	76.6 <sup>1</sup>	↓
<b>Health and healthcare</b>			
Fair or poor health (self-reported)	44.9	16.9	↑
No medical checkup in the past year	48.0	30.4	↑
<b>Oral health</b>			
No dental visit within past year	60.1	34.7	↑
Extracted permanent teeth due to decay/disease	65.2	43.6	↑
<b>Chronic conditions</b>			
Overweight/obesity	70.2	65.0	↑
Diabetes (self-reported + undiagnosed)	17.8	12.6 <sup>2</sup>	↑
Hypertension (self-reported + undiagnosed)	39.4	33.5 <sup>3</sup>	↑
High cholesterol (self-reported + undiagnosed)	20.0	12.1 <sup>2</sup>	↑
<b>Cancer screening</b>			
No Pap smear in the past 3 years (women 18+ yo)	27.0	17.5	↑
No mammogram in the past 2 years (women 50+ yo)	56.0	21.9	↑
Source for US comparison: BRFSS 2014 unless noted with <sup>1</sup> BRFSS 2009 or <sup>2</sup> NHANES 2011-2014 or <sup>3</sup> NHANES 2013-2014			

# Introduction

Non-Communicable Diseases (NCDs) are the leading causes of morbidity and mortality in the United States Affiliated Pacific Islands (USAPIs) (American Samoa, Guam, Commonwealth of the Northern Mariana Islands [CNMI], Federated States of Micronesia [FSM], Republic of Palau, and Republic of Marshall Islands [RMI]) [1].

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In 2010, the Pacific Island Health Officers Association (PIHOA) declared a regional health emergency due to the epidemic of NCDs in the USAPIs [2]. The NCDs of concern in the USAPIs include diabetes, heart disease, stroke, cancer, and chronic obstructive pulmonary disease [2,3]. The social determinants of health demonstrate that there is a complex system of factors that are linked to NCDs which include demographic, social, technological, cultural, environmental, biological, economic, and political factors [4]. However, the five leading risk factors attributable to NCDs globally include unhealthy diets (insufficient consumption of fruit and vegetables, excessive consumption of salt, high fat, and high sugar foods), insufficient physical activity, excessive consumption of alcohol, obesity, and tobacco use [3]. In the Pacific Islands, betel nut (which is carcinogenic to humans) chewing with or without tobacco is also identified as a significant health problem [5].

The Pacific to include the Micronesia region is known to have some of the highest rates of suicide in the world, and these suicides are highly associated with substance use and mental health disorders [6,7]. In Palau, the average annual suicide rate from 2003-2012 was 21.7 per 100,000, which is about twice the global suicide rate [8]. Very little data have been collected in Palau regarding the risk factors for suicide, to include substance use and mental health.

NCD and substance use/mental health surveillance in Palau has historically been inconsistent and inadequate. Due to the need for surveillance on these two critical health concerns, the Republic of Palau Ministry of Health Non-Communicable Disease Unit and Prevention Unit combined efforts to develop a novel, integrated adult population-based survey. This hybrid survey was designed to simultaneously assess the Substance Abuse Mental Health Services Administration's (SAMHSA), National Outcome Measures (NOMs), as well as the Centers for Disease Control and Prevention's (CDC), and the World Health Organization's (WHO) NCD risk factor indicators.



Palau is comprised of more than 340 individual islands in six island groups forming an archipelago in the far southwestern corner of the North Pacific Ocean. The nation consists of high volcanic islands, raised limestone islands, barrier reefs, and classic atolls extending nearly 700 miles on the northeast to southwest axis. The islands of Palau have a total landmass of 188 square miles.

The Republic of Palau is a self-governing republic that is affiliated with the US under a Compact of Free Association, which became effective on October 1, 1994. While there are over 340 islands that make up the nation of Palau, only twelve are permanently inhabited. The main island group comprises fourteen of the total sixteen Palauan states. Koror, the prior capital of Palau totaling 7.1<sup>2</sup> miles is where the overwhelming majority of Palau's population resides. The capitol was recently relocated to the State of Melekeok on the large, rural island of Babeldaob. The State of Kayangel, an atoll north of Palau's largest island of Babeldaob, is accessible only by boat (approximately 2 hours by speed boat). The islands of Peleliu and Angaur (also accessible by speed boat), are located south of Babeldaob. A small group of islands 200-380 miles southwest of the main islands of Palau make up the States of Sonsorol and Hatohobei. There is no air service to these islands, but they are serviced sporadically by ship.

The population of Palau is 17,661 (2015 Census). The majority of the population has always resided in the state of Koror, Palau's most urban area. In 2015, 65% of the population resided in Koror, with the second highest populated state being that of Airai (14%), located just north of Koror. Airai can be considered the "suburb" of Koror, whereas the remaining sparsely populated states are quite rural. As of 2015, 73% of the population is native Palauan, with the second largest group being Filipino at 15%. The majority of the remaining foreign residents are of other Asian ethnicities.

## Survey methodology

The Palau Hybrid Survey aimed to assess the prevalence of selected NCDs, risk factors, and substance use/mental health according to CDC, PIHOA, SAMHSA, and WHO surveillance frameworks.

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### Objectives

1. Inform the local community of Palau and support partners on NCD, risk factor, and substance use/mental health prevalence
2. Use these data to prioritize and tailor prevention programs developed and supported by the Republic of Palau Ministry of Health
3. Support further research on risk and protective factors of NCDs and substance use/mental health in Palau
4. Use these data to monitor progress and trends to reduce morbidity and mortality in Palau

### Target group

Participants eligible for the Palau Hybrid Survey included all Palau residents aged 18 and older.

### Data collection

Data collection began on May 7, 2016 and ended on December 31, 2016. A total of 1768 respondents completed the survey and measurements.



<p><b>Sample size determination</b></p> 	<p>The original sample included 2409 households. 'Household' sample size was determined based on the most populated islands in Palau. (Koror = 1592 Households; Babeldaob = 704 Households; Peleliu = 70 Households; Angaur = 21 Households; Kayangel = 11 Households; Sonsorol = 6 Households; Hathobei = 5 Households)</p>
<p><b>Sampling procedures</b></p> 	<p>Stage 1: Households were identified at random according to geographical stratification conducted on two levels: Island and Hamlet.</p> <p>Stage 2: One individual was selected at random from each household using the KISH table method.</p>
<p><b>Data collection</b></p> 	<p>Surveys were translated and available in Palauan and English. Data were collected by trained enumerators using face-to-face questionnaires and anthropometric &amp; other physical and biochemical measurements conducted at central locations the following morning for fasting measurements. Quality control of completed questionnaires was ensured at different stages during the questionnaire-processing phase.</p>
<p><b>Data entry</b></p> 	<p>All data were collected electronically using a tablet. Tablets were uploaded on a weekly basis at the Ministry of Health.</p> <p>A data dictionary was created to explain the indicators and data codes.</p>
<p><b>Data cleaning</b></p> 	<p>Descriptive statistics were produced for all variables. Values that did not match the data codes defined in the data dictionary were verified against the original questionnaire and rectified. Outliers were also checked, validated, and rectified.</p>
<p><b>Data analysis</b></p>	<p>Descriptive data analysis was conducted. Chi-squared analysis was used to analyzed differences by:</p> <ul style="list-style-type: none"> <li>• <b>age group</b> (18-24 years old, 25-34 yo, 35-44 yo, 45-65 yo, 65+ yo)</li> <li>• <b>gender</b> (male, female)</li> <li>• <b>ethnicity</b> (Palauan, all others)</li> <li>• <b>education</b> (high school education or less, more than high school education)</li> <li>• <b>geography</b> (Koror, Airai, Outer islands, Babeldaob)</li> </ul> <p>Due to the representativeness of these data, large sample size, and ability to analyze locally, these data were not weighted.</p>

## Sample summary

The sample randomly selected to participate in the Hybrid NCD and Rick Factor survey appears to be representative of the total Palau population. The demographic distributions of the 2015 census are relatively similar to that of distributions of the survey sample demographics.

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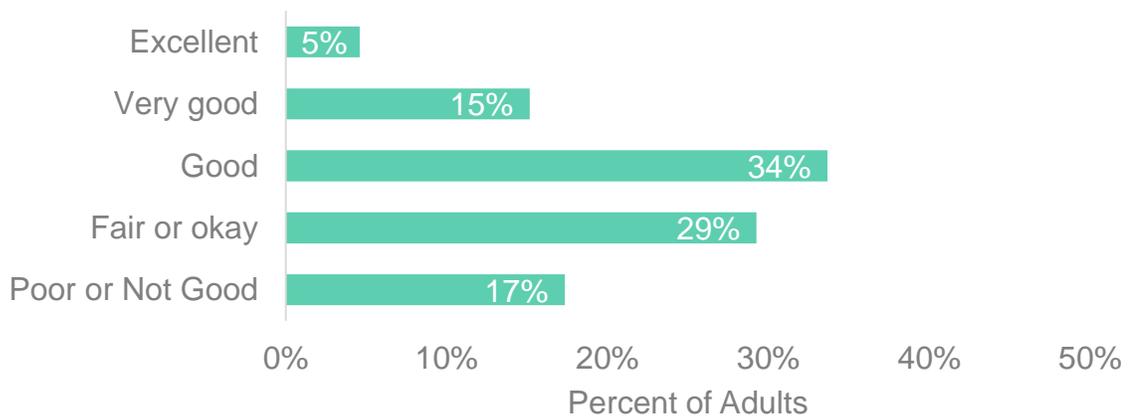
	Survey sample n=1768	2015 Census data n=13,299
<b>Gender</b>		
Male	894 (51%)	7373 (55%)
Female	874 (49%)	5926 (45%)
<b>Age group</b>		
18-24 years	143 (8%)	1660 (12%)
25-44 years	651 (37%)	5475 (41%)
45-64 years	754 (43%)	4874 (37%)
65+ years	220 (12%)	1289 (10%)
<b>Ethnicity</b>		
Palauan	1253 (71%)	(73%)*
Non-Palauan	515 (29%)	(27%)

\* For all ages

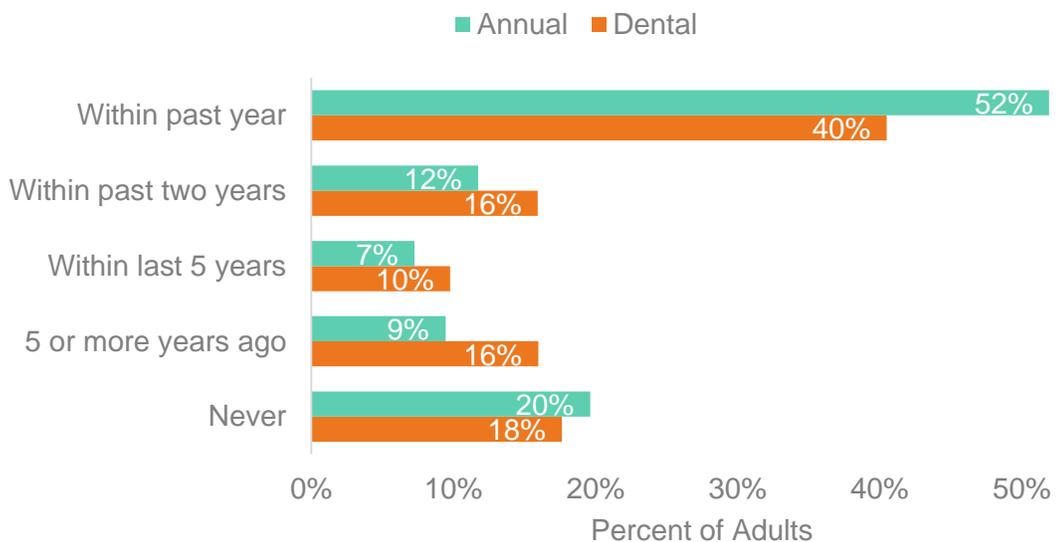
# Health Outcomes

## General Health and Access to Care

Almost half of adults in Palau (47%) reported their general health to be fair or poor.



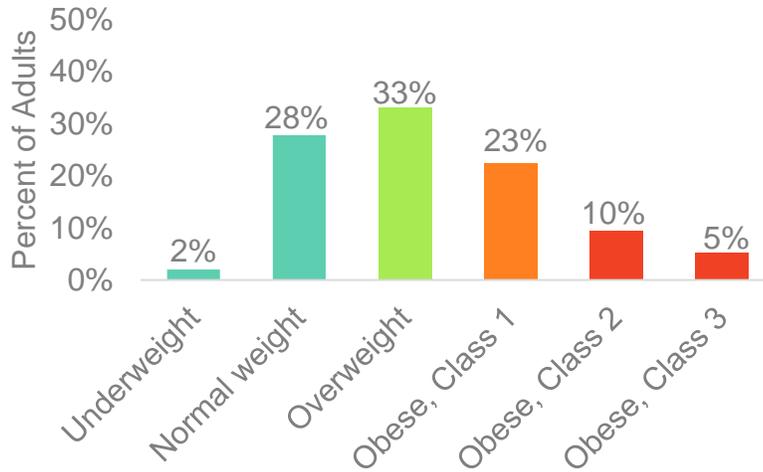
Only half of adults have visited a medical provider for a checkup in the last year (52%) and less than half have seen visited a dentist (40%).



# Biometric Measures

## Health measure Who is at risk?

### Body Mass Index Category



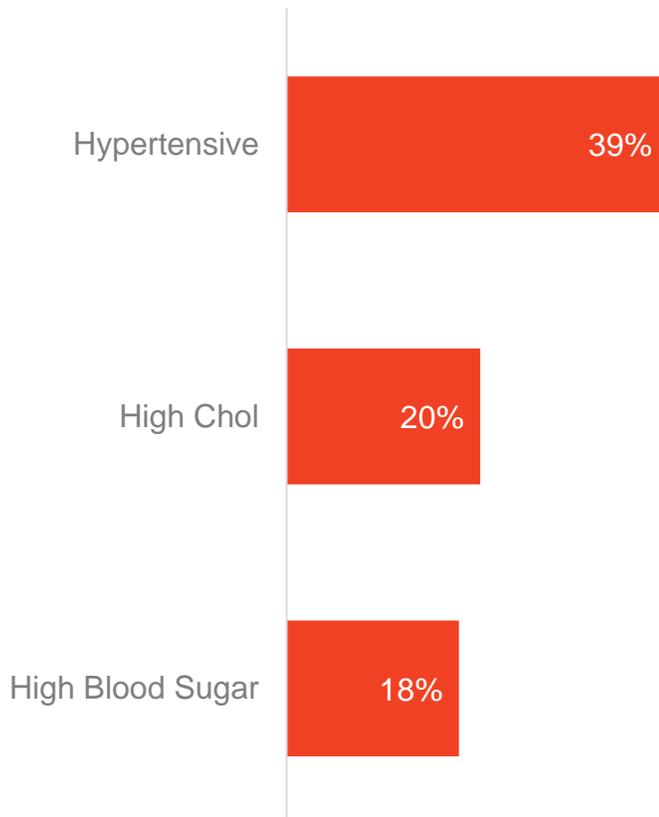
**Women** are more likely to be obese, while men are more likely to be overweight.

**Older age groups** have higher rates of overweight and obesity but the youngest group has some high rates of Obesity, Class 2.

**Palauans** are more likely to be overweight and obese compared to non-Palauans.

No differences by education or geography.

### Biometric values



**Older age groups** have higher rates of hypertension.

**Palauans** are more likely to have hypertension (44%) compared to non-Palauans (29%).

No differences by gender, education, or geography.

**Older age groups** have higher rates of high cholesterol.

**Women** are more likely (22.4%) compared to men (17.6%).

**Palauans** are more likely (21.6% v. 15.9%).

**Higher than HS edu** (22.7% v. 18.5%)

No differences by geography.

**Older age groups** are more likely to have high blood sugar.

**Palauans** are more likely (20.2% v. 11.8%)

No differences by gender, education, or geography.

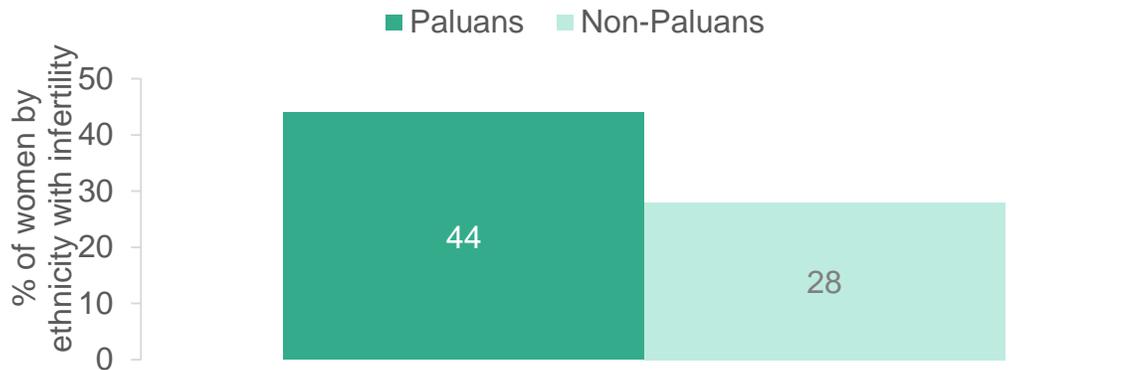
## Self-reported Chronic Disease

Self-reported chronic disease is organized below by most prevalent to least. We also explored those who are at greater risk for these chronic diseases by gender, age, ethnicity (Palauan), education, and geography.

	%	Gender	Age	Palauan	Edu	Geo
<b>Gout</b>	<b>8.8</b>	<b>Men</b> (12.4 v 5.4%)	<b>Older</b>	<b>Palauan</b> (10.6 v 4.5%)	☐	☐
<b>Arthritis</b>	<b>8.2</b>	<b>Women</b> (10.6 v 5.8%)	<b>Older</b>	<b>Palauan</b> (9.3 v 5.5%)	☐	☐
<b>Asthma</b>	<b>7.7</b>	☐	☐	<b>Palauan</b> (9.4 v 3.7%)	☐	☐
<b>Ulcer</b>	<b>5.6</b>	☐	<b>Older</b>	<b>Palauan</b> (6.9 v 2.5%)	☐	☐
<b>Other heart disease</b>	<b>5.1</b>	☐	<b>Older</b>	<b>Palauan</b> (6.1 v 2.5%)	☐	☐
<b>Heart disease</b>	<b>4.6</b>	☐	<b>Older</b>	<b>Palauan</b> (5.6 v 2.3%)	☐	☐
<b>Tuberculosis</b>	<b>3.8</b>	☐	<b>Older</b>	<b>Palauan</b> (4.7 v 1.6%)	☐	☐
<b>Depression</b>	<b>2.9</b>	<b>Women</b> (3.6 v 2.2%)	☐	☐	☐	☐
<b>Stroke</b>	<b>2.4</b>	☐	<b>Older</b>	☐	<b>Higher edu</b> (3.4 v 1.9%)	☐
<b>Lung Disease</b>	<b>1.8</b>	☐	<b>Older</b>	<b>Palauan</b> (2.2 v 0.6%)	☐	☐
<b>Cancer</b>	<b>1.3</b>	☐	<b>Older</b>	☐	<b>Higher edu</b> (2.5 v 0.6%)	☐

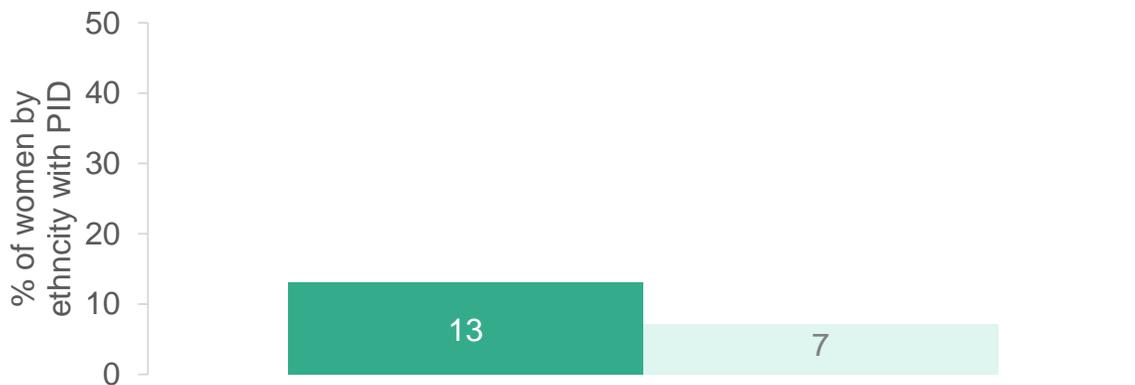
## Women's Health

**Almost 40% of women have issues with infertility** (defined as tried to become pregnant for 12 months and not got pregnant). **Palauans have increased rates compared to non-Palauans (44 v 28%).**



**Ectopic pregnancies are higher in Palau at 3.3% compared to North America at 2.0% and have no differences across socio-demographics.**

**11% of women reported having had pelvic inflammatory disease (PID). Palauans had increased rates compared to non-Palauans (13% v 7%).**



# Health Risk Behaviors

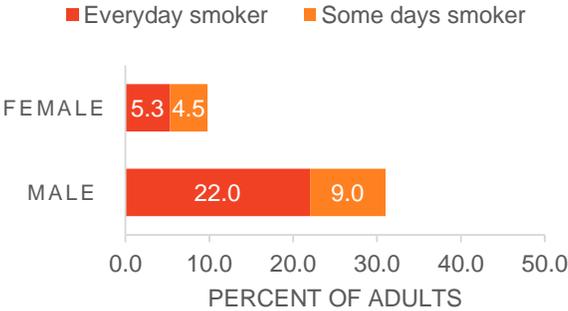
## Cigarette use

1 out of 4 adults in the Palau reported cigarette smoking use in the last 30 days

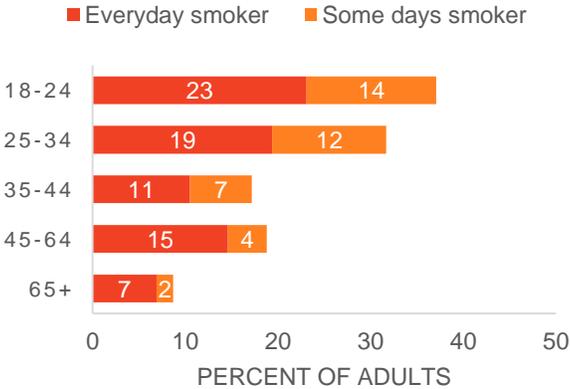


14% everyday smoker • 7% some days smoker • 79% non-smokers

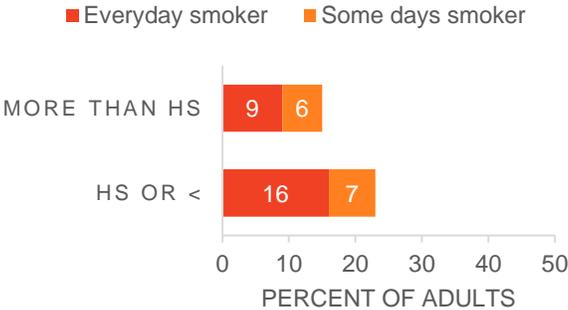
### Differences by Gender



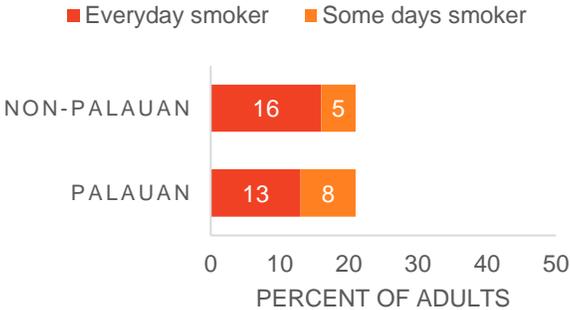
### Differences by Age Group



### Differences by Education



### Differences by Ethnicity



71% of respondents that smoked said they wanted to quit.

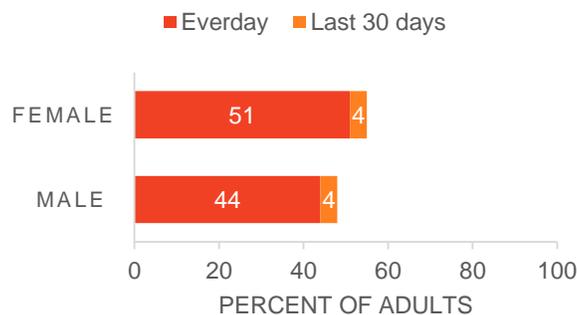
## Betel Nut use

1 out of 2 adults in the Palau reported betel nut use in the last 30 days

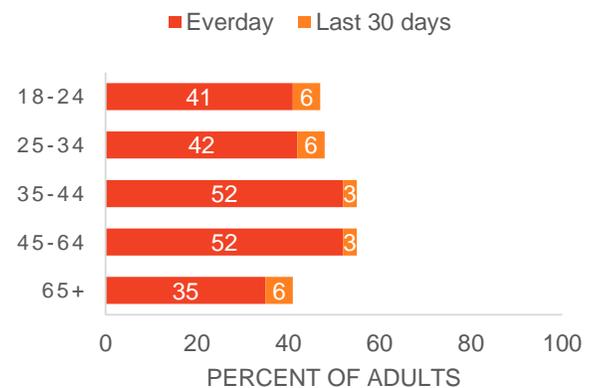


47% use everyday • 4% use at least once in last month • 49% non-users

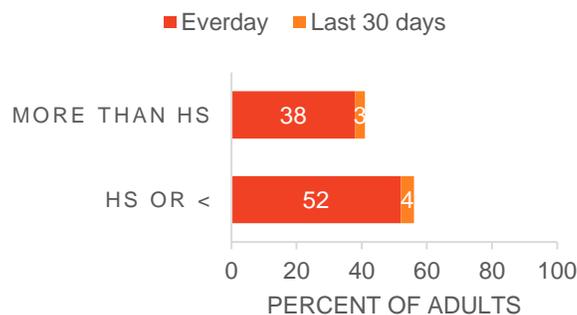
### Differences by Gender



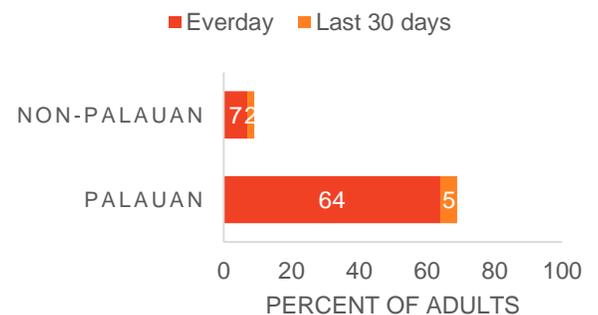
### Differences by Age Group



### Differences by Education



### Differences by Ethnicity



87% of respondents who use betel nut add tobacco.

60% of respondents that used betel nut said they wanted to quit.

While males are more likely to use everyday, females are more likely to use occasionally.  
Less educated individuals and Palauans are more likely to use

# Alcohol use and binge drinking

1 out of 3 adults in the Palau reported alcohol use and 1 in 4 reported binge drinking, in the last 30 days.

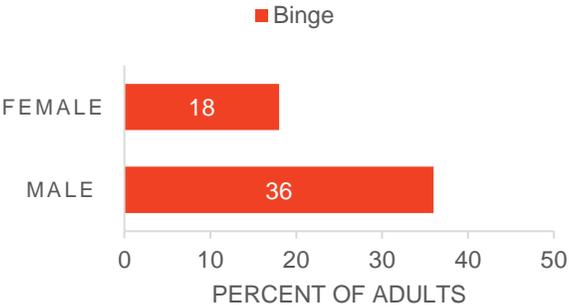


2% use everyday • 35% use at least once in last month • 63% non-users

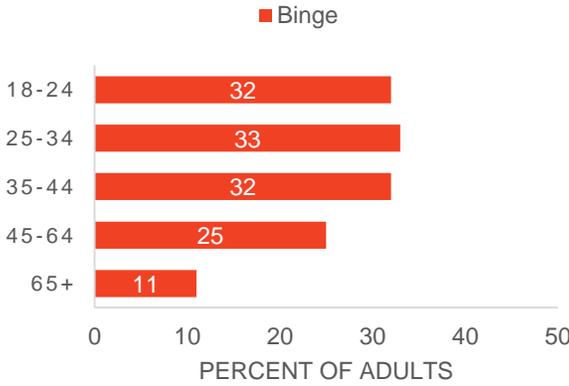
Trends are similar across socio-demographics for alcohol use and binge drinking\*. Below we report on binge drinking differences.

\*Binge drinking= 5+ drinks in a day for men and 4+ drinks a day for women

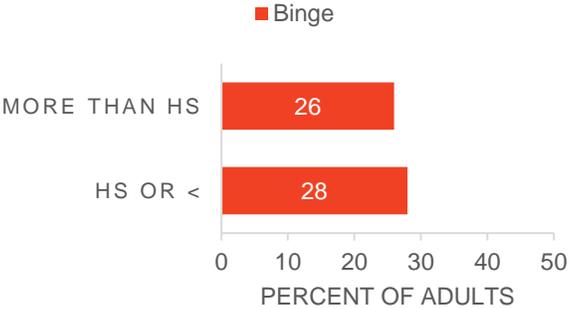
### Differences by Gender



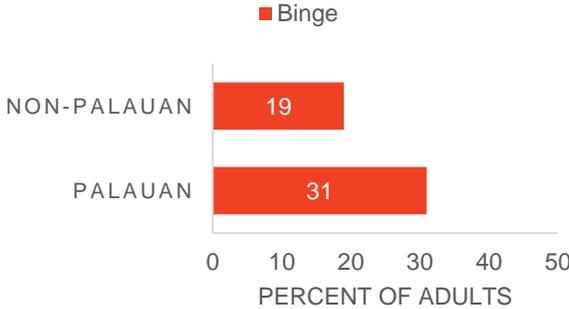
### Differences by Age Group



### Differences by Education



### Differences by Ethnicity



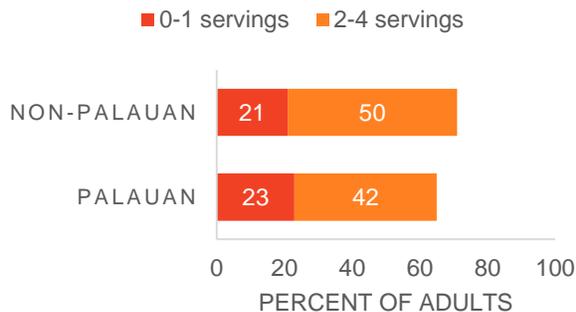
Males, younger age groups, less educated, and Palauans are all more likely to binge drink.

## Healthy eating: fruit and vegetable consumption

2 out of 3 adults in the Palau consume less than the recommended fruits and vegetables 5 per day



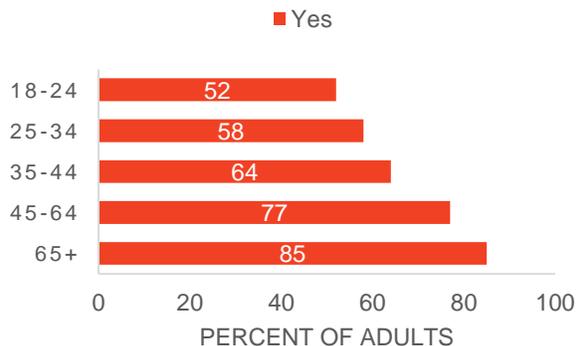
44% 1 or 0 servings/day • 23% 2-4 servings/day • 33% 5 or more servings/day



Fruit and vegetable consumption is lower among non-Palauans (71% don't get recommended 5+ servings compared to 65% of Palauans).

## Watching salt consumption

2 out of 3 adults in the Palau say they are currently watching their salt intake.



That increases by age group, 52% of adults 18-24 years say they are watching their salt intake compared to 85% of 65+ year olds.

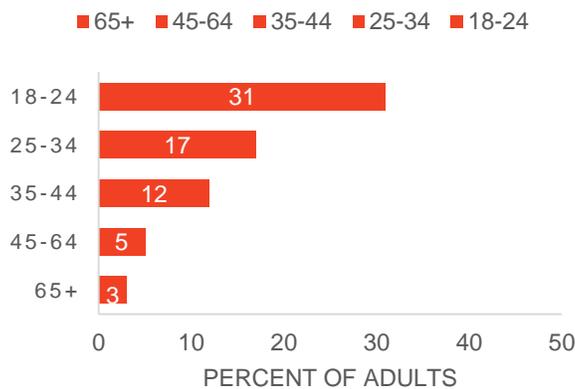
## Processed meat consumption

1 out 2 adults in the Palau consumes at least one processed meat a day.

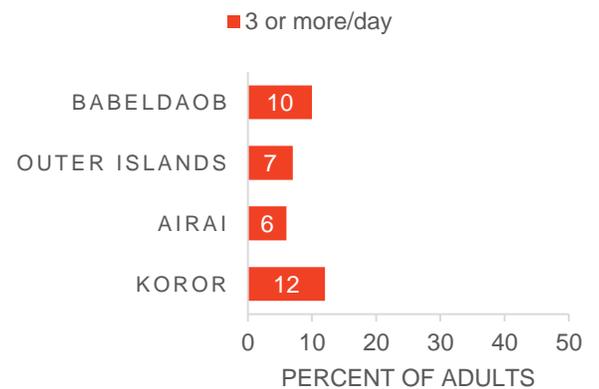


11% 2 or more servings/day • 35% 1 servings/day • 54% 0 servings/day

### Processed meat by Age



### Processed meat by Geo



High processed meat consumption is more likely in younger age groups and Koror.

## Sugar-sweetened beverages

3 out 4 adults in the Palau consumes at least one sugar-sweetened beverage each day.



43% 2 or more servings/day • 34% 1 servings/day • 23% 0 servings/day

There were no differences in sugar-sweetened beverages by socio-demographics.

## Physical Activity

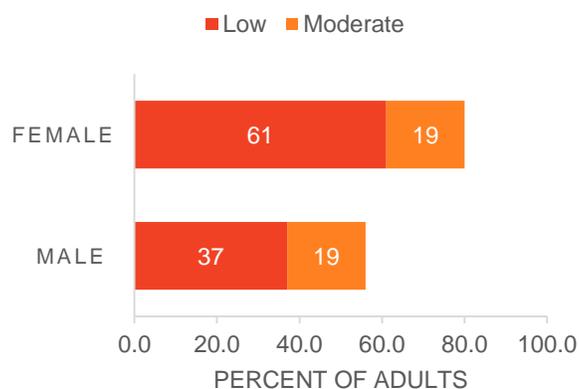
1 out of 2 adults in the Palau are classified as having low-level total physical activity.



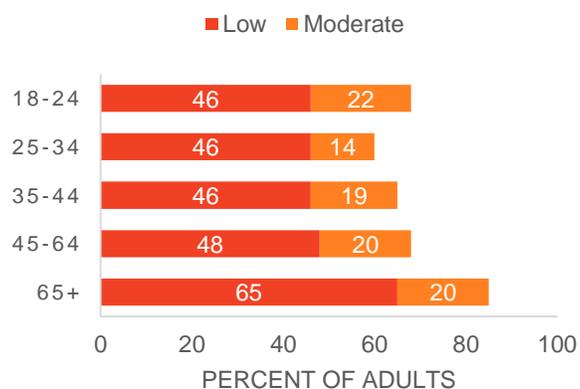
49% low-level • 19% moderate-level • 32% high-level

Physical activity is defined by amount of time spent being vigorously or moderately physically active through work, transportation, and leisure activities.

### Differences by Gender

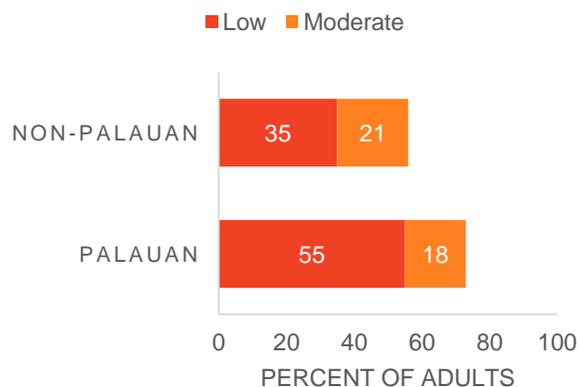


### Differences by Age Group

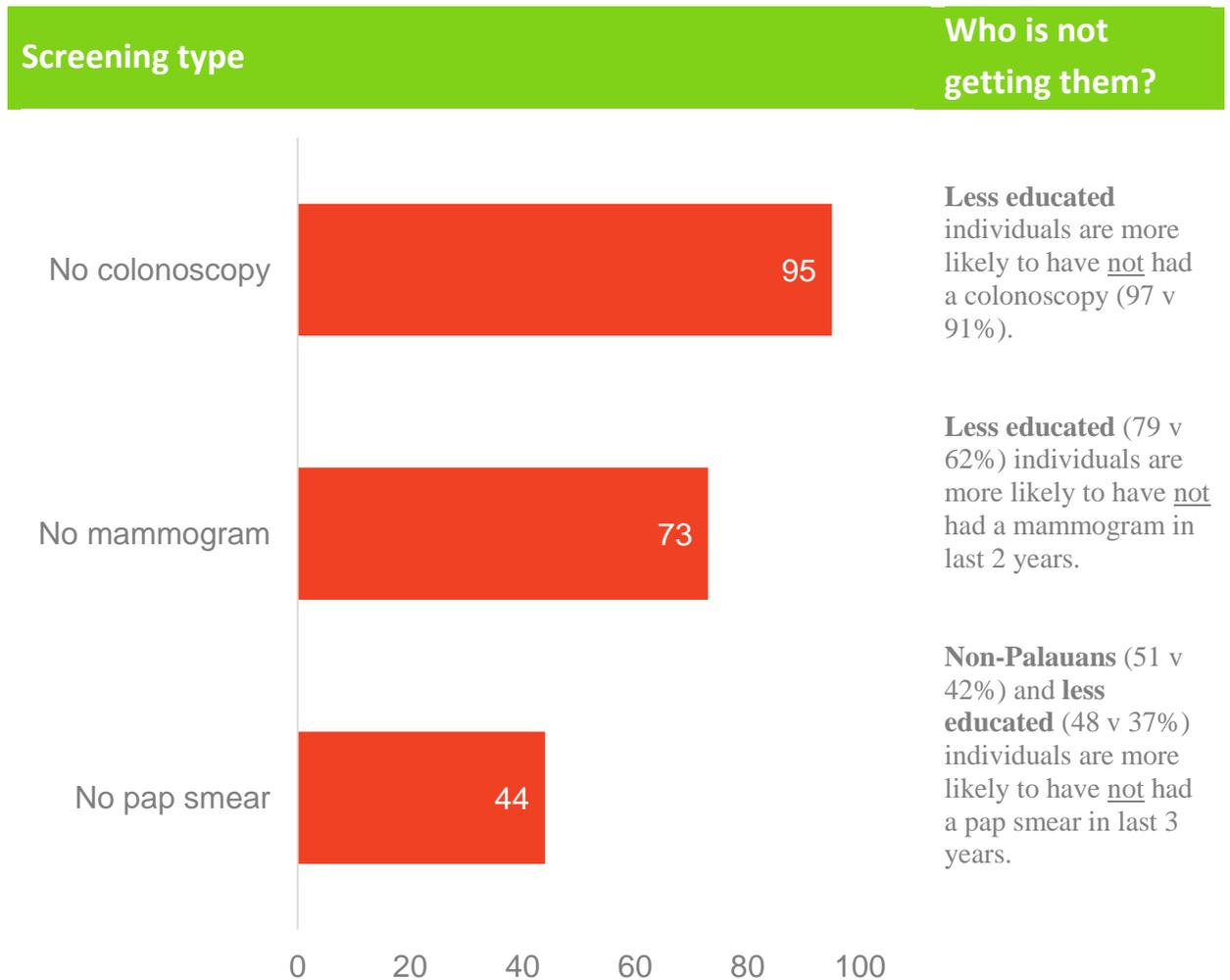


### No differences by Edu

### Differences by Ethnicity



## Screenings



**No colonoscopy**= all respondents over the age of 50 who have never had a colonoscopy

**No mammogram**= all women over the age of 50 who have not had a mammogram in the last 2 years

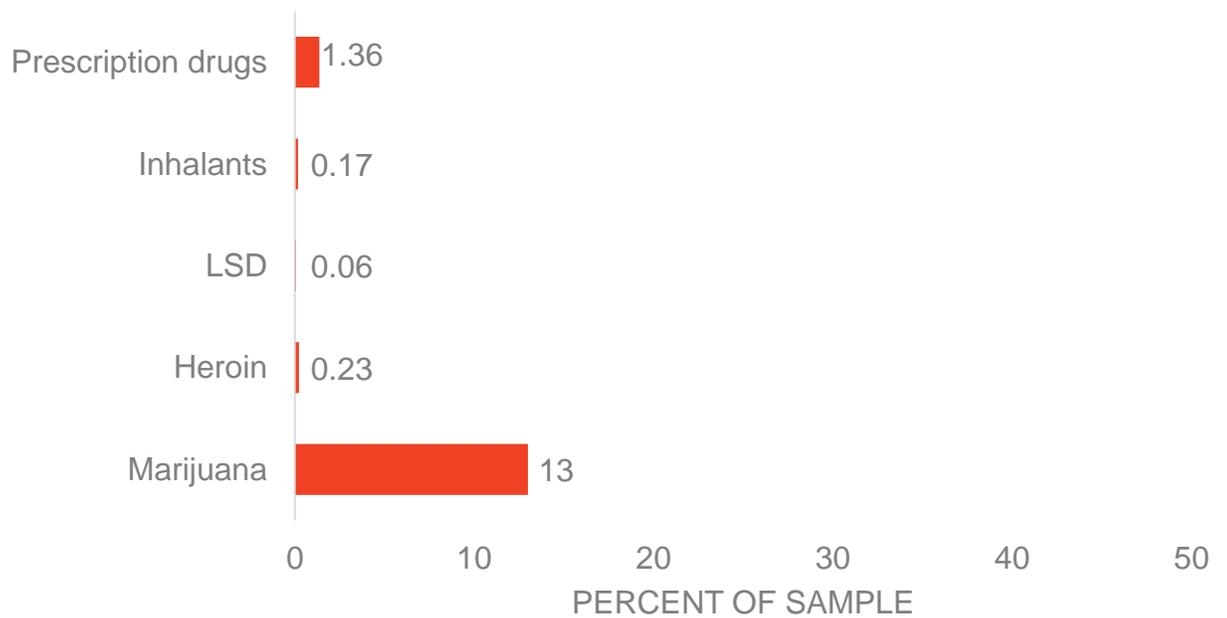
**No pap smear**= all women who have not had a pap smear in the last 3 years

## Drug Use

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Drug use is relatively rare in Palau with only 13% using marijuana, 1.3% using prescription drugs without doctor's orders less and <1% using inhalants, LSD, or heroin.

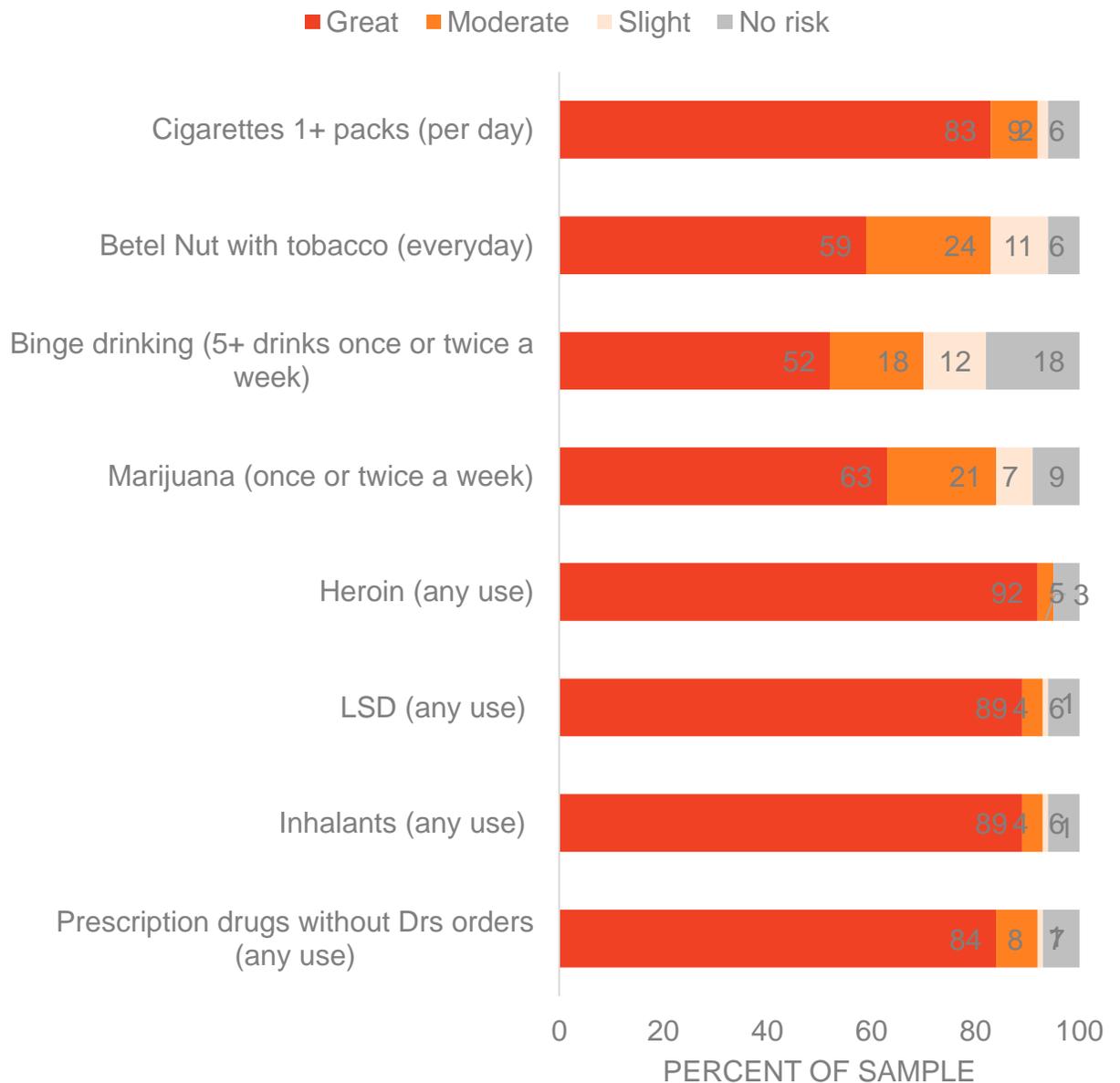
Percent of respondents who used the following substances



# Perceptions of Health

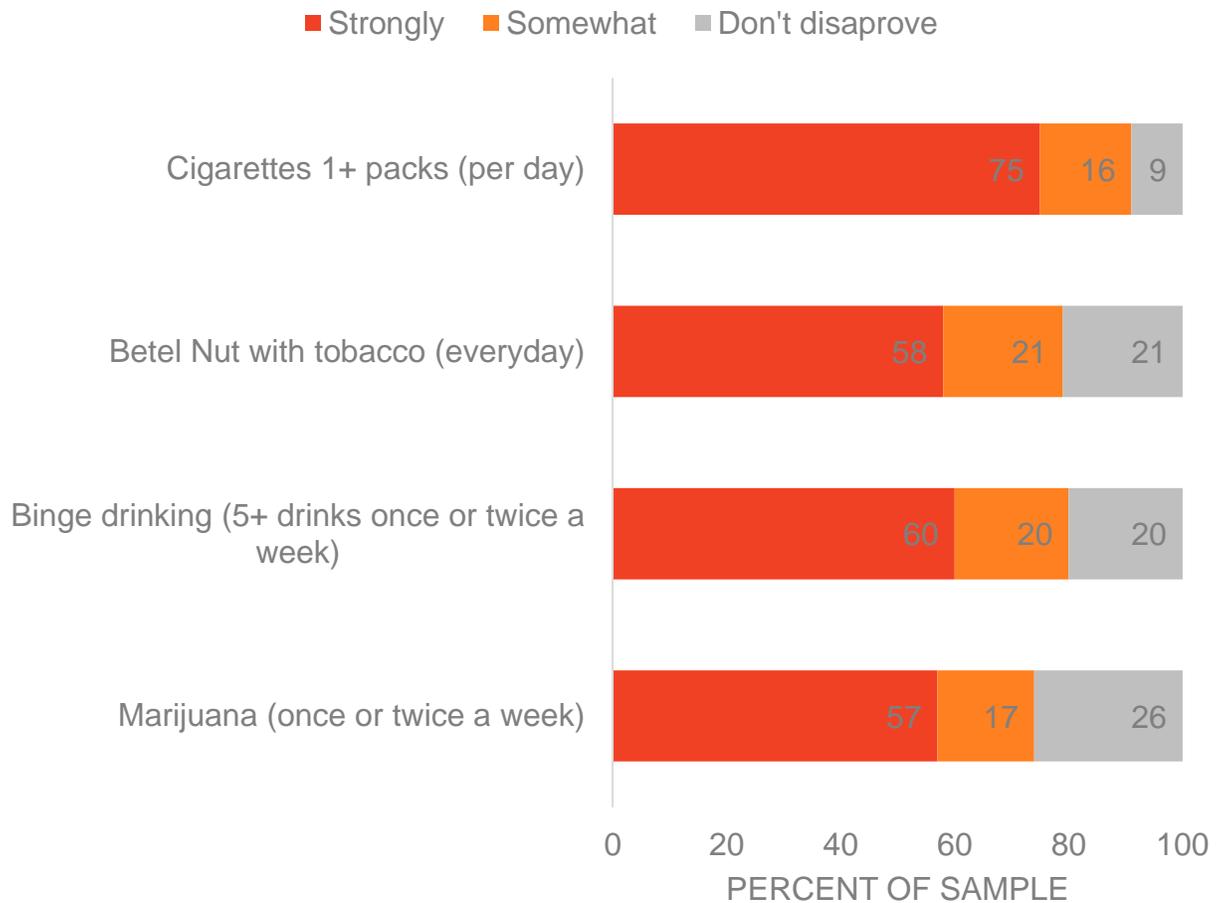
There are high perceptions of risk for engaging in substance use. Alcohol has the lowest perceived risk of harm.

Percent of respondents who perceive the following substances as risky



## There is high disapproval for engaging in substance use.

### Percent of respondents who disapprove of following substances



# Important notes about survey

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## Limitations

- Most data collected were based on self-report so bias may exist
- Not all of the original sample was surveyed due to missing households, off-island residents, refusals, etc.

## Strengths

- Thorough training of enumerators
- Standardization of anthropometric measures (height and weight)
- Successful collaboration between Palau MOH NCD Bureau, Palau MOH Prevention Unit, Palau Office of Planning and Statistics, University of Hawaii, and University of Rochester
- Support and collaboration of partners, specifically CDC, PIHOA, SAMHSA, and WHO
- Collection of physical and biochemical measurement for NCD prevalence estimation rather than just self-report
- Data collection using tablets was timely and effective

## Challenges

- Not enough enumerators were recruited and trained and enumerator retention was an issue
- Household sample from 2015 census was challenging to use due to rapidly changing households and changes in current owners/renters due to recent influx of tourism and foreign workers
- Some difficulties with language barriers with some foreign workers (survey was only available in English and Palauan)

# Recommendations



As previously mentioned, non-communicable diseases are the leading causes of morbidity and mortality in the U.S. Affiliated Pacific Islands, which includes the Palau [1]. Based on the results found, it is apparent that many Palau residents are currently suffering from various NCDs and their lifestyle may be contributing to these morbidities. Cigarette smoking, betel nut chewing, low vegetable and fruit consumption, and overweight/obesity have been identified as prevalent risk factors of NCDs in Palau. Evidence-based programs and policies targeting adults as well as youth may be particularly effective in reducing the prevalence of NCDs in the Palau.

Prevalence of NCDs may also be impacted by limited medical resources in this small island nation such as lack of medical specialists, lack of appropriate equipment and technicians, and lack of laboratory testing supplies and capacity. This is especially true in the smaller outer islands. These limited resources may be contributing to the low prevalence of medical screenings, including mammograms and colonoscopies.

Additionally, it is evident that there are striking ethnic disparities with most NCDs and NCD risk factors. Programs targeting native Palauans should be considered.

## **Priority areas for health improvement in the Palau include:**

- 1. Reducing overweight and obesity**
- 2. Improving diet/nutrition and increasing physical activity**
- 3. Addressing tobacco and betel nut use**
- 4. Strengthening NCD screening programs among adults in Palau.**
- 5. Providing appropriate cessation services for substance use, specifically tobacco and alcohol**
- 6. Consider policy approaches to reduce certain risk factors**
- 7. Support chronic disease self-management programs to help individuals with NCDs control their disease.**

# Acknowledgements

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## Within Palau

### **Republic of Palau Ministry of Health**

Dr. Emalis Roberts, Minister of Health,  
Gregorio Ngirmang, Former Minister of Health

### **Republic of Palau Ministry of Health, Bureau of Public Health**

Sherilynn Madraisau, Director, Bureau of Public Health/Project Principal Investigator

### **Republic of Palau Ministry of Health, Non-Communicable Disease (NCD) Unit**

Non-Communicable Disease (NCD) Team

### **Republic of Palau Ministry of Health, Division of Behavioral Health**

Prevention Unit Team

### **Office of Planning and Statistics**

Kyonori Tellames, Associate Planning Analyst

### **Survey Planning and Development**

Palau State Epidemiological Outcomes Workgroup

## External Partners

### **Centers for Disease Control and Prevention (CDC)**

Stacy De Jesus, Pacific Islands Team Lead

### **World Health Organization**

Dr. Wendy Snowden, Team Coordinator-Pacific NCD and Health through the Life-Course

### **Pacific Island Health Officers' Association**

Dr. Haley Cash, Regional USAPI Epidemiologist  
Emi Chutaro, Executive Director

### **Substance Abuse and Mental Health Services Administration (SAMHSA)**

### **University of Hawaii, Children's Healthy Living Program (CHL)**

Dr. Rachel Novotny, Interim Dean of CTAHR, CHL Principal Investigator, Professor, Graduate Chair, Nutrition PhD Program

Dr. Marie Kainoa Fialkowski Revilla, Dietetics Program Director & Assistant Professor in Human Nutrition

### **University of Rochester**

Dr. Tim Dye, Professor  
Dr. Margaret Demment, Staff Scientist

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# APPENDIX: Details on outcomes

Variable	Source question	Classifications used in this report
General Health	Would you say that your general health is...	The following response were used: <ul style="list-style-type: none"> <li>• Excellent</li> <li>• Very good</li> <li>• Good</li> <li>• Fair or okay</li> <li>• Poor or not good</li> </ul>
Last doctor visit	About how long has it been since you last visited a medical provider for an annual checkup? An annual checkup is a general physical exam, not an exam for a specific injury, illness, or condition.	The following response were used: <ul style="list-style-type: none"> <li>• Within past year</li> <li>• Within past 2 years</li> <li>• Within last 5 years</li> <li>• 5 or more years ago</li> <li>• Never</li> </ul>
Last dental visit	How long has it been since you last visited a dentist or a dental clinic for any reason? Include visits to dental specialists, such as orthodontists.	The following response were used: <ul style="list-style-type: none"> <li>• Within past year</li> <li>• Within past 2 years</li> <li>• Within last 5 years</li> <li>• 5 or more years ago</li> </ul> Never
Body Mass Index category	Measured height and weight were used if available (82% of sample). If not available, reported height and weight was used.	BMI is calculated by taking your weight (in kilograms) over your height squared (in centimeters).  We used CDC categories: <ul style="list-style-type: none"> <li>• Underweight &lt;18.5</li> <li>• Normal 18.5-24.9</li> <li>• Overweight 25-29.9</li> <li>• Obese I 30-34.9</li> <li>• Obese II 35-39.9</li> <li>• Obese III 40+</li> </ul>
Hypertension	Measured blood pressure and self-reported high blood pressure was used to categorize hypertension.	If systolic was equal to or greater than 140 or diastolic was equal to or greater than 90 the individual was classified as hypertensive.  Or if they self-reported high blood pressure.

High Cholesterol	Measured cholesterol and self-reported high blood pressure was used to categorize high cholesterol.	If total cholesterol was above 240 the individual was classified as having high cholesterol.  Or if they self-reported high cholesterol.
High blood sugar	Measured blood sugar and self-reported high blood sugar was used to categorize high blood sugar.	If total blood sugar was above 140 the individual was classified as having high blood sugar.  Or if they self-reported high blood sugar.
Gout	Have you ever been told by a doctor that you have _____?	Yes or no
Arthritis		
Asthma		
Ulcer		
Other heart disease		
Heart disease		
Tuberculosis		
Depression		
Stroke		
Lung Disease		
Cancer		
Infertility	At any time did you try for more than 12 months and not become pregnant?	Yes or no
Ectopic pregnancy	Were you ever told that you had an ectopic pregnancy (tubal pregnancy that resulted in a miscarriage)?	Yes or no
Pelvic Inflammatory Disease	Have you ever been treated with antibiotics for an infection in your fallopian tubes, womb, or ovaries, also called a pelvic infection, pelvic inflammatory disease, or P.I.D.?	Yes or no
Cigarette Use	During the past 30 days, on how many days did you smoke cigarettes?	0 days= no use 1-29 days= some use 30 days= Everyday use
Quit cigarette use	Do you want to quit smoking cigarettes?	Yes or no
Betel nut use	During the past 30 days, on how many days did you chew betel nut?	0 days= no use 1-29 days= some use 30 days= Everyday use

Use tobacco in betel nut use	What kind of tobacco do you most often add to your betel nut chew?	If they answered yes to any of the following they were categorized as using tobacco with betel nut: <ul style="list-style-type: none"> <li>• Cigarette Sticks</li> <li>• Imported loose tobacco</li> <li>• Locally grown tobacco</li> <li>• Other type of tobacco</li> </ul>
Quit betel nut use	Do you want to quit chewing betel nut with tobacco?	Yes or no
Alcohol consumption	During the past 30 days, on how many days did you have at least one standard drink of any alcohol?	0 days= no use 1-29 days= some use 30 days= Everyday use
Binge alcohol frequency	During the past 30 days, how many days did you have: <ul style="list-style-type: none"> <li>• for men: <ul style="list-style-type: none"> <li>○ Five or more standard alcoholic drinks?</li> </ul> </li> <li>• for women: <ul style="list-style-type: none"> <li>○ Four or more standard alcoholic drinks?</li> </ul> </li> </ul>	0 days= no binge 1-29 days= some binge 30 days= Everyday binge
Fruit and vegetable consumption	Sum of usual fruit consumption and vegetable consumption.	0-1 servings 2-4 servings 5 or more servings
Watching salt intake	Most of the sodium or salt we eat comes from processed foods and foods prepared in restaurants. Salt also can be added in cooking or at the table. Are you currently watching or reducing your sodium or salt intake?	Yes or no
Processed meat consumption	In a regular day, how many times do you eat processed meats? This does not include canned fish.	0 servings 1 serving 2 or more servings
Sugar-sweetened beverage consumption	In a regular day, how many sugary drinks do you drink? This does not include diet drinks made with artificial sweeteners.	0 servings 1 serving 2 or more servings
Physical activity level	Based on GPAQ questions and calculations which is a combination of how many weeks a person is vigorously or moderately active due to work, transportation, or recreational activities AND the total number of METs in a week.  METs are commonly used in the analysis of physical activity. MET (Metabolic Equivalent): The ratio of the work metabolic rate to the resting metabolic rate. One MET is defined as 1 kcal/kg/hour and is equivalent to the energy cost of sitting quietly. A MET is also defined as oxygen	High-level <ul style="list-style-type: none"> <li>• If vigorous PA due to work or leisure on more than 3 days a week and Total physical activity MET minutes per week is greater than or equal to 1500</li> <li>• If moderate PA due to work or leisure on 7 days a week and Total physical activity MET minutes per week is</li> </ul>

	uptake in ml/kg/min with one MET equal to the oxygen cost of sitting quietly, around 3.5 ml/kg/min.	<p>greater than or equal to 3000</p> <p>Moderate-level</p> <ul style="list-style-type: none"> <li>• If vigorous PA due to work or leisure on more than 3 days a week that totals 60 or more minutes</li> <li>• If moderately PA due to work or leisure on 5 days a week that totals 150 or more minutes</li> <li>• If moderate PA due to work or leisure at least 5 days a week and Total physical activity MET minutes per week is greater than or equal to 600</li> </ul> <p>Low-level</p> <ul style="list-style-type: none"> <li>• Doesn't meet any of the above criteria</li> </ul>
Colonoscopy screening	How long has it been since your last colonoscopy?	No colonoscopy= all respondents over the age of 50 who have never had a colonoscopy
Mammogram screening	How long has it been since you had your last mammogram?	No mammogram= all women over the age of 50 who have not had a mammogram in the last 2 years
Pap smear screening	How long has it been since you had your last Pap test?	No pap smear= all women who have not had a pap smear in the last 3 years
Prescription drug use	During the past 30 days, report on how many days you used any of the following substance: _____.	No use= 0 days
Inhalant drug use		Use= 1 or more days
LSD drug use		
Heroin drug use		
Marijuana drug use		

<p>Perceptions of drugs as risky</p>	<p>How much do people risk harming themselves physically and in other ways when they engage in the following behaviors?</p> <ul style="list-style-type: none"> <li>• Cigarettes</li> <li>• Alcohol</li> <li>• Marijuana</li> <li>• Betel nut with tobacco</li> <li>• Heroin</li> <li>• LSD</li> <li>• Inhalants</li> <li>• Prescription drugs without doctor's orders</li> </ul>	<p>The following response were used:</p> <ul style="list-style-type: none"> <li>• Great risk</li> <li>• Moderate</li> <li>• Slight</li> <li>• No risk</li> </ul>
<p>Disapproval of drug use</p>	<p>How much do you approve or disapprove of the following substances?</p> <ul style="list-style-type: none"> <li>• More than 1 pack of cigarettes per day</li> <li>• Betel nut with tobacco everyday</li> <li>• Marijuana more than once a month</li> <li>• 2 or more alcohol beverages a day</li> </ul>	<p>The following response were used:</p> <ul style="list-style-type: none"> <li>• Strongly disapprove</li> <li>• Somewhat disapprove</li> <li>• Don't disapprove (includes: approve, somewhat approve, and neither approve or disapprove)</li> </ul>