
GUAM STATE EPIDEMIOLOGICAL PROFILE, 2021 UPDATE

**Dr. Annette M. David and Karina Jo C. Reyes, on behalf of the
Guam State Epidemiological Outcomes Workgroup (SEOW)**

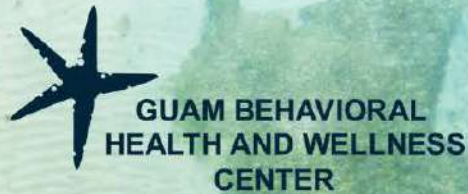




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Dr. Annette M. David, SEOW Lead, oversaw the data analysis and was the primary author for this report. Ms. Audrey Benavente and Ms. Karina Jo Reyes from Guam Behavioral Health and Wellness Center (GBHWC) oversaw data collection, retrieval and collation, data cleaning and data management, and provided direct support for the SEOW. The GBHWC Prevention Education and Community Empowerment (PEACE) staff, under the supervision of Prevention and Training Branch Acting Supervisor Ms. Sara Dimla Harrell provided administrative support. GBHWC Director Therese Arriola and her leadership team provided oversight.

The key findings resulting from the creation of this profile were peer reviewed by the SEOW members and approved by the PEACE Advisory Council. Funding for the SEOW was provided by the US Substance Abuse and Mental Health Services Administration (SAMHSA) Center for Substance Abuse Prevention (CSAP) through the Partnerships for Success grant # 5U79SP020157-02.

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GUAM STATE EPIDEMIOLOGICAL OUTCOMES WORKGROUP (SEOW) MEMBERS

Organization	Individual Representative(s)
Bureau of Statistics and Plans (BSP)	Monica J. Guerrero Esther M. Camacho
Guam Police Department (GPD)	To be designated
Juvenile Drug Court, Superior Court of Guam	Mary Grace Lapid Rosadino
Guam Department of Education (GDOE)	Paul Nededog (+) Eloise Sanchez
Health Partners, L.L.C.	Dr. Annette M. David
Department of Public Health and Social Services (DPHSS)	Alyssa Uncangco Patrick Luces
Department of Youth Affairs (DYA)	To be designated
Guam Behavioral Health and Wellness Center (GBHWC) (formerly Department of Mental Health and Substance Abuse)	Karina Jo Reyes Audrey Benavente Sara Dimla Harrell
Guam's Alternative Lifestyle Association (GALA)	Dr. Tim de la Cruz
Guam Memorial Hospital	To be designated
Guam National Guard	SSgt Zenia Samina SFC Corina Andre
Guam Regional Medical City	Dr. Melliza C. Young
Hagu Foundation	Landon Aydlett
Manelu	Samantha Taitano
Pacific Island Health Officers' Association (PIHOA)	Cerina Mariano Helene Le Mouellic Dr. Yvette Paulino
Partnerships for Success (PFS) Evaluator	Dr. Ray Somera
University of Guam	Peter Barcinas (Cooperative Extension Services) Aaron Perez (I Pinangon)
Sanctuary, Incorporated	To be designated
Substance Abuse and Mental Health Services Administration (SAMHSA)	
WestCare	Kathleen Aguon Mia Madlambayan

DEDICATION

We dedicate this 2021 Epi Profile Update to Mr. Paul Nededog, who was a highly valued and dedicated member of the SEOW. Through his efforts, Guam has solidified its surveillance system among youth in the GDOE system. He was a deeply respected data gatekeeper and SEOW partner in our community.

ABBREVIATIONS

Acronym	Meaning
BRFSS	Behavioral Risk Factor Surveillance System
BSP	Bureau of Statistics and Plans
CDC	Centers for Disease Control and Prevention
CSAP	Center for Substance Abuse Prevention
DoDEA	Department of Defense Education Activity
DPHSS	Department of Public Health and Social Services
DYA	Department of Youth Affairs
GALA	Guam Alternative Lifestyle Association
GBHWC	Guam Behavioral Health and Wellness Center
GDOE	Guam Department of Education
GLS	Garrett Lee Smith Suicide Prevention Grant
GMH	Guam Memorial Hospital
GPD	Guam Police Department
GRMC	Guam Regional Medical City
GYTS	Global Youth Tobacco Survey
NCD	Non-Communicable Disease
PEACE	Prevention, Education and Community Empowerment
PFS	Partnerships for Success
PIHOA	Pacific Islands Health Officers Association
P&T	Prevention and Training Branch
RVR	Retail Violation Rate
SEOW	State Epidemiological Outcomes Workgroup
SPF-SIG	Strategic Prevention Framework-State Incentive Grant
UCR	Uniform Crime Report
UOG	University of Guam
WHO	World Health Organization
YRBS	Youth Risk Behavior Survey

KEY FINDINGS

Substance Misuse

Tobacco

- Tobacco consumption remains higher in Guam than in the US, for both adults and youth.
- Smoking is declining, but Guam still has one of the highest smoking prevalence rates across the various States and Territories. Males smoke more than females. Adult female smoking in Guam is similar to male smoking in the US. CHamoru adults have the highest smoking prevalence.
- Smokeless tobacco use among adults is more than double the US rate, and smokeless tobacco use among Guam youth is triple the US rate. Micronesians have the highest rates of smokeless tobacco consumption.
- Electronic cigarette use, or “vaping” is high among our youth: One in four (26.5%) high school students and nearly one in four (23.5%) middle school students reported current use. Among adults, vaping rose markedly between 2018 and 2019.
- Tobacco use displays marked disparities across socio-economic gradients; the poor and less educated tend to smoke more. Conversely the rich and well educated are more likely to have never smoked.
- Tobacco-related diseases are the major cause of death in Guam today.
- Tobacco control policies are closely associated with reductions in smoking prevalence and smokeless tobacco use.

Alcohol

- Current alcohol use, binge drinking, and heavy drinking are lower among Guam adults compared to the US rates.
- Current and binge drinking among Guam youth were increasing until alcohol taxes were increased in 2003. A further reduction was noted in 2011, following passage of the law that raised the minimum legal drinking age. However, current alcohol use has risen in 2019.
- Unlike tobacco, and binge drinking among adults, there is no difference in binge drinking rates across the sexes for Guam youth. Micronesian youth have the highest binge drinking prevalence.
- Liver cancer, which is directly related to alcohol use, has risen in rank as a major cause of cancer death.
- Alcohol-related arrests comprised 8.1% of all arrests cleared in 2020.
- Alcohol control policies appear to be related to declines in adult and youth binge drinking.

Illicit Drugs

- In 2021, 12.6% of Guam adults reported using marijuana within the past 30 days. Adult males were more likely to report current marijuana use than adult females.
- Current marijuana use among youth in Guam is markedly higher than among adults. One in 4 high school students in Guam is a current user of marijuana. Current and lifetime marijuana use among Guam students are higher than the US median.
- In 2021, 10.2% of adults reported illicit drug use other than marijuana.
- Less than 2% of adults reported taking prescription drugs that were not prescribed for them.
- About 6% of Guam high school students report having tried methamphetamines. Nearly 14% reported using synthetic marijuana. About

15.5% reported taking a prescription pain medication without a doctor's prescription.

- In 2019, about 36% of high school youth reported they had been offered, sold, or given an illicit drug on school property.

Suicide

- The age-adjusted 2021 suicide rate in Guam is 21.2 per 100,000. While this decreased from 2020, it remains higher than the US rate of 14.1 per 100,000.
- Suicide deaths in Guam occurred predominantly among younger people. From 2009 to 2021, nearly half (47%) of all suicides occurred in those under 30 years of age.
- Chuukese and CHamorus have the highest ethnicity-specific suicide rates.
- Most suicides in Guam occurred at home; hanging is the predominant method.
- Guam youth have an elevated likelihood of suicidal ideation and attempts than their US counterparts.
- Alcohol use, mental illness and exposure to violence have been linked to suicide deaths.

Mental Illness

- About one-third of Guam adults reported one or more mental health symptoms in the past 30 days.
- Almost 10% of Guam adults reported being told they had depression in 2021.
- Reporting sadness or hopelessness was higher among youth in Guam compared to their US counterparts. Girls were more likely to report persistent sadness than boys. The prevalence for these symptoms is rising over time.

INTRODUCTION

Effective prevention requires a foundation of good data.

In 2003, Guam was awarded a Strategic Prevention Framework-State Incentive Grant (SPF-SIG) for substance misuse prevention and control by the Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance Abuse Prevention (CSAP). Utilizing the principles of outcomes-based prevention, the grant specified the creation of a State Epidemiological Outcomes Workgroup (SEOW), which would oversee the strategic use of data to inform and guide substance misuse prevention policy and program development in Guam. Guam's SEOW was subsequently established in 2004. Throughout 2005, the SEOW undertook a data inventory, and collated and reviewed data on substance misuse consumption patterns and consequences. The first Guam State Epidemiological Profile (Epi Profile) on substance misuse and consequences was published during the 3rd quarter of 2007. Subsequent updates to the profile were published in 2008 and 2009. The SPF-SIG formally ended in 2010.

In 2008, the Guam Behavioral Health and Wellness Center (GBHWC, formerly known as the Department of Mental Health and Substance Abuse or DMHSA) successfully applied for a SAMHSA Garrett Lee Smith (GLS) youth suicide prevention grant. The three-year grant, entitled *Focus on Life*, ran from September 2008 to September 2011. One of the grant's objectives was to strengthen and enhance suicide data collection, surveillance, and analysis. This was assigned to the SEOW, which released Guam's first Suicide Profile in January 2009. Two updates were published in April 2010 and September 2011. The suicide prevention grant ended in September 2011. In late 2010, Synectics, a SAMHSA contractor, awarded a sub-grant to Guam to sustain the SEOW through 2014. The 4th Epi Profile and 1st Community Profile were published in 2012 followed by the 5th Epi Profile and 2nd Community Profile in 2013. Subsequently, the Partnerships for Success (PFS) grant provided funding that permits the SEOW's work to continue to the present time (Figure 1). The 6th, 7th and 8th Epi Profiles were published under the PFS grant in 2015, 2018, and 2020.

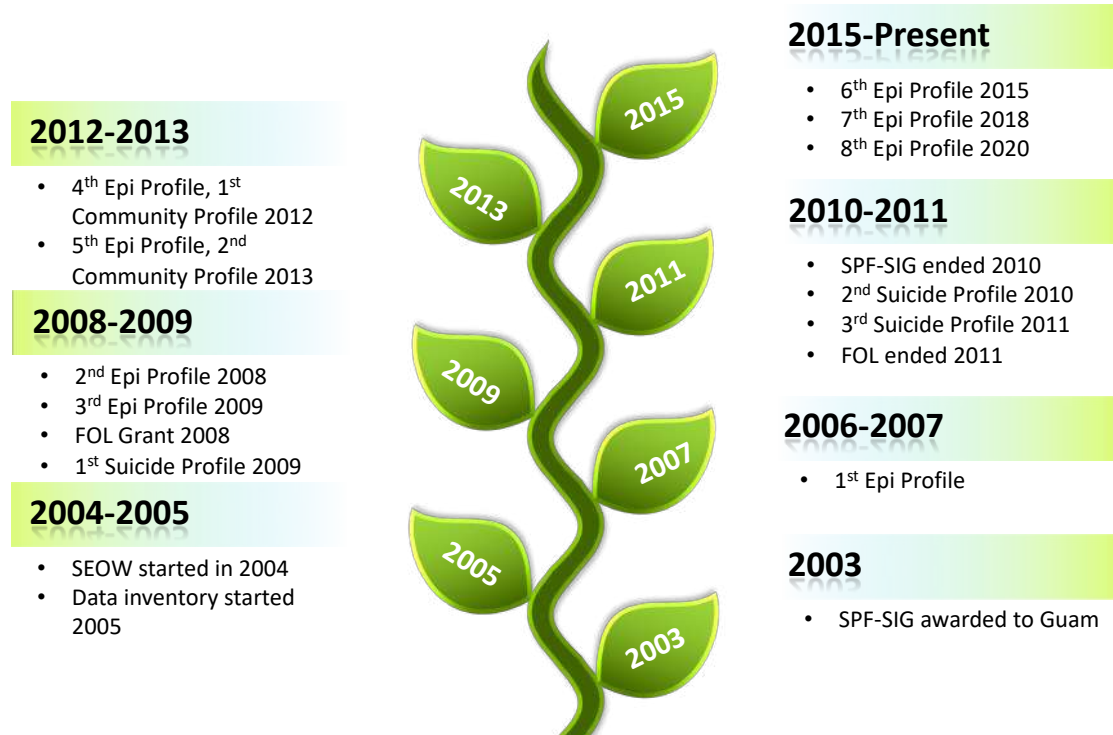
The Guam SEOW is the longest-running data work group in Guam. It is considered the definitive authority on substance misuse epidemiology on the island. Its data products are readily acknowledged as comprehensive community resources, and its work has consistently influenced substance misuse policy and program development, prevention resource allocation, service delivery and decision-making at the State government level as well as within individual agencies, institutions, and community organizations.

During the COVID pandemic, the SEOW continued its work using a virtual platform for meetings. The SEOW also provided additional data products on the association of COVID-19 with tobacco, e-cigarette and alcohol use, and the key role of mental health in pandemic resilience.

This Profile represents the work done by the various SEOW members in conjunction with the Governor's PEACE Council and the GBHWC Prevention and Training staff. It documents an ongoing process of data collation and surveillance, with an expanded scope that includes not just data on tobacco, alcohol, and other drugs of misuse but also suicide and mental health. Through this publication and its continuing work, the SEOW will continue to provide the local evidence base for effective substance misuse prevention and mental health promotion in Guam.

Figure 1. Growth of Guam's Prevention Data Products from SEOW

Guam's Prevention Data



BACKGROUND

Geographic, Political, and Economic Context and impact of COVID-19

Guam, “where America’s day begins,” is one of seventeen Non-Self-Governing Territories listed by the Special Committee on Decolonization of the United Nations. Located in the western North Pacific Ocean, it houses one of the most strategically important US military installations in the Pacific. Guam also serves as a critical crossroads and distribution center within Micronesia and the rest of the Pacific, as well as Asia, because of its air links (Figure 2). This plays a significant part in the movement of tobacco, alcohol, and illicit drugs into the island.

The island has a land area of 549 sq. km., roughly three times the size of Washington, DC. The terrain is of volcanic origin, surrounded by coral reefs. The climate is tropical marine, with little seasonal temperature variation. There are frequent squalls during the rainy season and, occasionally, potentially very destructive typhoons from June to December.

Guam is an organized, unincorporated territory of the US with policy relations under the jurisdiction of the Office of Insular Affairs, US Department of the Interior. The island’s Governor and Lieutenant Governor are elected on the same ticket by popular vote and serve a term of four years. The legislative branch is served by a unicameral Legislature with 15 seats; the members are elected by popular vote to serve two-year terms. Currently, the Democratic Party holds 9 seats while the Republican Party holds 6. Guam also elects one nonvoting delegate to the US House of Representatives to serve a two-year term. The current representative, Congressman James Moylan, belongs to the Republican Party. The judicial branch was revamped to create the Unified Judiciary of Guam, consistent with the Organic Act. Guam has the District Court of Guam (federal) and the Supreme Court of Guam and the Superior Court of Guam (local).

Key Indicators

Population (2020 census):
153,836

Sex:
Males – 78,271
Females – 75,565

Ethnic groups:
CHamoru – 33%
Filipino – 29%
Chuukese – 7%
Caucasian – 7%

Age structure:
38% under 25 years

Median age:
29 years

Birth rate:
20 births/1000 (2017)

Death rate:
6/1,000 (2017)

Life expectancy (2017):
Male: 73.6 years
Female: 78.6 years

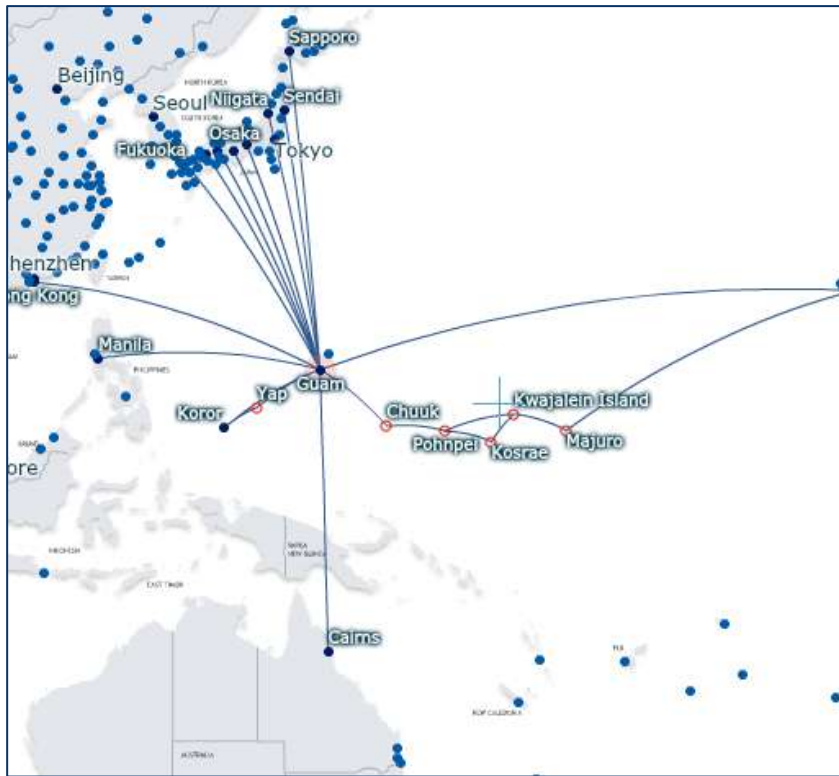
Unemployment rate:
19.4% (Dec 2020)

Families below poverty: 17%

Household mean income:
\$74,309 (2020)
Per capita real GDP: \$32,398 (2020)

Mobile phones in use:
190,200 (Feb 2022)
Internet users: 137,600 - 81% of population (Jan 2022)

Figure 2. Regional map showing Guam's air routes to key countries



Source: <http://travelisfree.com/2013/03/09/the-pacific-hopper-with-miles/>, last accessed 07 March 2018

Guam's economy relies heavily upon federal support, military spending, and tourism. The COVID-19 pandemic severely impacted tourism revenues. However, continued national defense spending and the infusion of emergency funds from the Total Coronavirus Aid, Relief, and Economic Security (CARES) Act and COVID-19 programs helped to soften the blow to the island's economy.

Tourism was adversely affected by the pandemic. Visitor arrivals in 2020 (air and sea), after the pandemic struck, were down by nearly 54% compared to the previous pre-pandemic year. Arrivals decreased even more dramatically in 2021. The decrease in hotel occupancy tax collections because of marked reductions in tourist inflows was partially cushioned by increased military use of hotel facilities and the use of hotel rooms for quarantine purposes (Table 1). Historically, tourist arrivals show repeated recovery patterns after downturns due to natural or other adverse events, and it is anticipated that visitor numbers will increase as pandemic restrictions are eased. Because much of the economy depends on tourism, the policy and program environment, especially in relation to tobacco and alcohol, is influenced by perceptions of acceptability by the tourist market.

Table 1. Visitor arrivals and hotel occupancy tax collections pre and during the COVID 19 pandemic, Guam: 2017-2021

Country	2017	2018	2019	2020	2021	% Change from 2020	% Change from 2017
Total visitors	1,559,487	1,525,219	1,631,049	755,615	51,607	-93.2	-96.7
Occupancy tax collected	\$44,011,958	\$42,871,223	\$45,061,822	\$28,390,797	\$12,870,699	-54.7	-70.8

Source: Guam Visitors Bureau data as reported in Guam Statistical Yearbook 2021

Note: This includes military and civilian air arrivals.

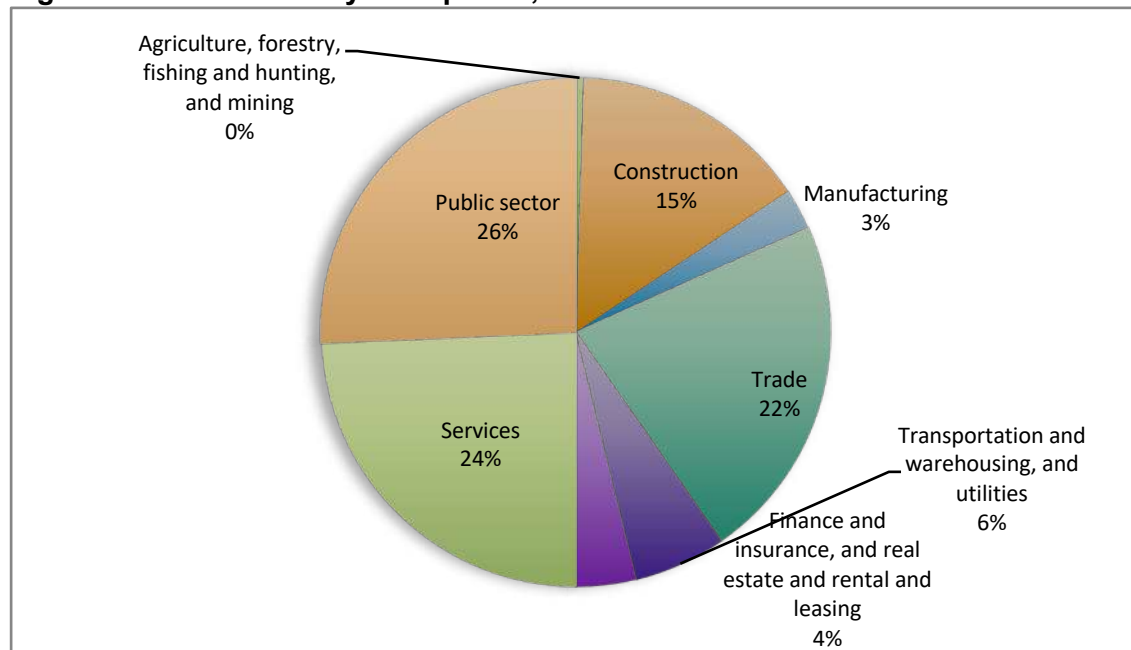
As of December 2021, there were 72,170 people in the civilian labor force, of whom 66,980 were employed. 7.2% were unemployed in December 2021, as compared to 19.4% in December 2020 (Table 2), highlighting a gradual improvement in the deleterious effect of the pandemic on the labor market. Figure 3 shows the different sectors of employment and distribution of the labor force as of December 2021. Majority of the labor force are employed in the public sector (26%), services (24%), and trade (22%).

Table 2. Employment status, population 16 years and older, Guam: 2017-2021

EMPLOYMENT STATUS	2021	2020	2019	2018	2017
Total population 16+:	124,120	123,750	123,380	122,950	122,540
In labor force:	72,170	71,360	71,490	71,490	71,600
Employed:	66,980	57,510	69,300	69,300	67,470
Unemployed	5,190	13,850	2,580	2,580	4,130
Not in labor force:	51,950	52,390	51,460	51,460	50,940

Source: Bureau of Labor Statistics, Department of Labor as reported in the Guam Statistical Yearbook 2021

Figure 3. Labor Force by Occupation, Guam: December 2021



Source: Bureau of Labor Statistics, Department of Labor as reported in the Guam Statistical Yearbook 2021

In 2020, there were 42,312 households in Guam, excluding people in military housing units. Median household income was \$58,289 (Table 3). About 11% of Guam's households lived on \$14,999 or less per year. The poorest of the poor comprised nearly 4% of all households on Guam and lived on less than \$3000 per year. In contrast, 15.8% of households made more than \$125,000 per year.

Table 3. Household income, Guam: 2010 and 2020

Characteristic	2020	Percent	Characteristic	2010	Percent
Households	42,312			44,664	
No Income	---	---		2,512	5.6
Less than \$2,500	1,670	3.9	Less than \$3,000	619	1.4
\$2,500 to \$4,999	430	1.0	\$3,000 to \$4,999	728	1.6
\$5,000 to \$9,999	1,173	2.8	\$5,000 to \$6,999	655	1.5
\$10,000 to \$14,999	1,529	3.6	\$7,000 to \$8,999	692	1.5
\$15,000 to \$19,999	1,714	4.1	\$9,000 to \$10,999	1,347	3.0
\$20,000 to 24,999	1,976	4.7	\$11,000 to \$12,999	1,128	2.5
\$25,000 to 29,999	1,894	4.5	\$13,000 to \$14,999	1,238	2.8
\$30,000 to \$39,999	3,964	9.4	\$15,000 to \$19,999	3,130	7.0
\$40,000 to \$49,999	3,773	8.9	\$20,000 to \$29,999	5,242	11.7
\$50,000 to \$59,000	3,454	8.2	\$30,000 to \$39,999	5,569	12.5
\$60,000 to \$74,999	4,544	10.7	\$40,000 to \$49,999	4,040	9.0
\$75,000 to \$99,999	5,641	13.3	\$50,000 to \$59,999	3,567	8.0
\$100,000 to \$124,999	3,869	9.1	\$60,000 to \$69,999	3,058	6.8
\$125,000 or more	6,681	15.8	\$70,000 to \$79,999	1,966	4.4
			\$80,000 to \$89,999	2,439	5.5
			\$90,000 to \$99,999	1,565	3.5
			\$100,000 or more	5,169	11.6
Median Household Income	\$58,289	...		\$39,052	...
Mean Household Income	\$74,309	...		\$49,263	...
Per Capita Income	\$21,545	...		\$12,864	...

Source: Guam Department of Labor as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2021 and Selected Economic Characteristics 2020 Census

Note: The income categories differed between 2010 and 2019; BSP advises caution in comparing data because COVID-19 impacted data collection for the 2020 census.

The economy of the island is dependent upon and influenced by the telecommunications infrastructure. Guam is a transpacific communications hub for major carriers linking the US and Asia. The island’s telephone network is integrated with US facilities for direct dialing, including free use of 800 numbers. This enables Guam to tap into US-based phone networks for its cessation quit line and suicide help line.

There are 137,600 estimated Internet users in Guam in January 2022, for an internet penetration rate of 80.5% (% of the population with Internet access)¹. According to the 2020 Census, 95% of Guam households have a computer, and 85.9% have broadband internet subscriptions.² The 2020 estimate for fixed line (land line) telephone subscriptions was 70,000, for a rate of 41 subscriptions per 100 inhabitants³. In contrast, mobile or cellular subscriptions numbered about 190,200, for a rate of 111.3 subscriptions per 100 inhabitants. This implies that phone-based surveillance should include mobile telephones, and the use of mobile technology for prevention messaging likely would yield the greatest reach within the population.

¹ Kemp S. Digital 2022: Guam. Available at <https://datareportal.com/reports/digital-2022-guam>

² US Census Bureau, 2020 Island Areas Censuses, at <https://www.census.gov/library/stories/2022/10/2020-island-areas-computer-internet-use.html>

³ The World Bank. Data. Available at: <https://data.worldbank.org/indicator/IT.MLT.MAIN.P2?locations=GU>

Population Demographics

The latest data from the 2020 Guam census indicates that as of April 1, 2020, Guam's population totaled 153,836, representing a decrease of 3.4% from the 2010 Census counts. The actual population count was 8.6% lower than the projected 2020 population based on the 2010 census, and lower than the 2000 population (Tables 4 and 5).

Table 4. Population by age and sex, Guam: 2000 to 2020

Population	2020	2010	2000
Total	153,836	159,358	154,805
Males	78,271	81,552	79,181
Females	75,565	77,806	75,624

Sources: 2000, 2010 and 2020 Guam Census, as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2021

Table 5. Population projection: 2010 to 2020

Year	Population	Year	Population
2010	159,358		
2011	159,600	2016	162,742
2012	159,914	2017	163,875
2013	160,378	2018	165,177
2014	161,001	2019	166,658
2015	161,785	2020	168,322

Source: 2010 Census of Guam as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2017
NOTE: Uses 2000 and 2010 population growth rate

Males slightly outnumber females, comprising 51% of the total population (Table 4 and 6). Nearly 38% of the population is under the age of 25 years (Table 6, Figure 4).

Guam's population is multi-ethnic/multi-racial (Table 7). CHamorus remain the largest ethnic group, making up 33% of the island's population. This represents a decrease by 3 percentage points from 2010. Filipinos are the second largest group, comprising 29% of the total, up from 26% in 2010. The Chuukese and Whites each comprise 7% of the population. Majority of Guam residents identify themselves as being of one ethnic origin or race.

The ethnic diversity is reflected in the languages spoken at home. Data from the 2020 census on this issue is not yet available. Based on the 2010 census, twenty percent of the population over 5 years speak a language as frequently as English at home, another 21% speak a language more frequently than English, and 0.5% speak no English at all. This has a significant implication for effective service delivery, highlighting the need for culturally competent communications and services for close to half of the island's population (Figure 5).

Table 6. Demographic composition of Guam population, sex by age: 2020

Age category	TOTAL	MALE	FEMALE
Total	153,836	78,271	75,565
Under 5 years	10,626	5,575	5,051
5 to 9 years	11,439	5,897	5,542
10 to 14 years	12,232	6,249	5,983
15 to 19 years	11,782	6,092	5,690
20 to 24 years	11,889	6,324	5,565
25 to 29 years	11,463	6,052	5,411
30 to 34 years	10,028	5,247	4,781
35 to 39 years	9,456	4,793	4,663
40 to 44 years	9,200	4,664	4,536
45 to 49 years	10,145	5,031	5,114
50 to 54 years	10,237	5,198	5,039
55 to 59 years	9,865	5,040	4,825
60 to 64 years	8,284	4,140	4,144
65 to 69 years	6,686	3,190	3,496
70 to 74 years	4,885	2,371	2,514
75 to 79 years	2,637	1,139	1,498
80 to 84 years	1,765	802	963
85 years and older	1,217	467	750

Source: 2020 Census for Guam as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2021

Table 7. Ethnic composition of Guam population: 2010 and 2020

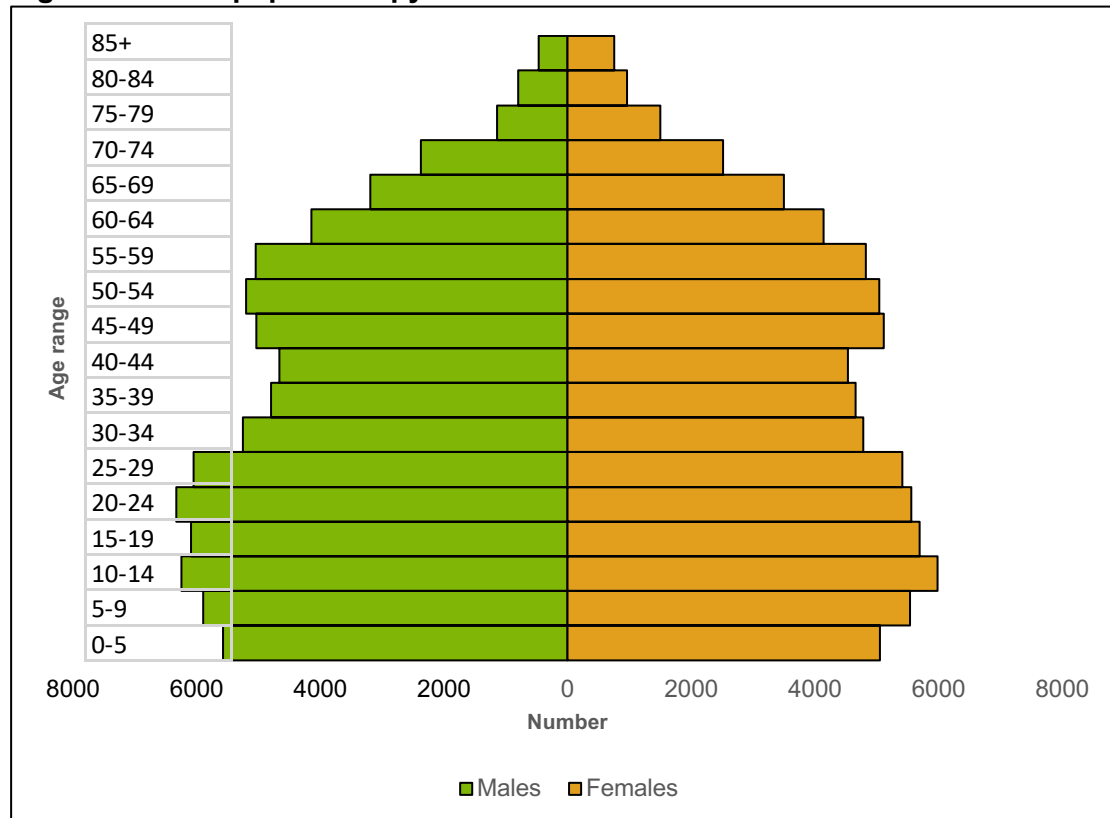
ETHNICITY	2020	2010
One Ethnic Origin or Race	138,395	144,429
Native Hawaiian and Other Pacific Islander	70,809	78,582
Carolinian	92	242
Chamorro	50,420	59,381
Chuukese	10,274	11,230
Guamanian	63	*
Kosraean	456	425
Marshallese	180	315
Native Hawaiian	126	*
Palauan	2,149	2,563
Pohnpeian	2,096	2,248
Yapese	1,533	1,263
Other Pacific Islander	3,420	915
Asian:	54,586	51,381
Chinese (except Taiwanese)	1,999	2,368
Filipino	44,793	41,944
Japanese	2,108	2,368
Korean	3,438	3,437
Taiwanese	227	249
Thai	138	*
Vietnamese	283	337
Other Asian	1,600	678
Black or African American	1,340	1,540
American Indian and Alaska Native	214	*
Hispanic or Latino	*	1,201
White	10,491	11,321
Other Ethnic Origin or Race	955	404
Two or More Ethnic Origins or Races	15,441	14,929
Pacific Islander and other groups	*	11,656
Chamorro and other groups	*	9,717
Asian and other groups	*	8,574
Total:	153,836	159,358

Source: US Census Bureau, 2010 and 2020 Census for Guam, Bureau of Statistics and Plans, Guam Statistical Yearbook 2021

Notes: The Yearbook still uses the old spelling "Chamorro."

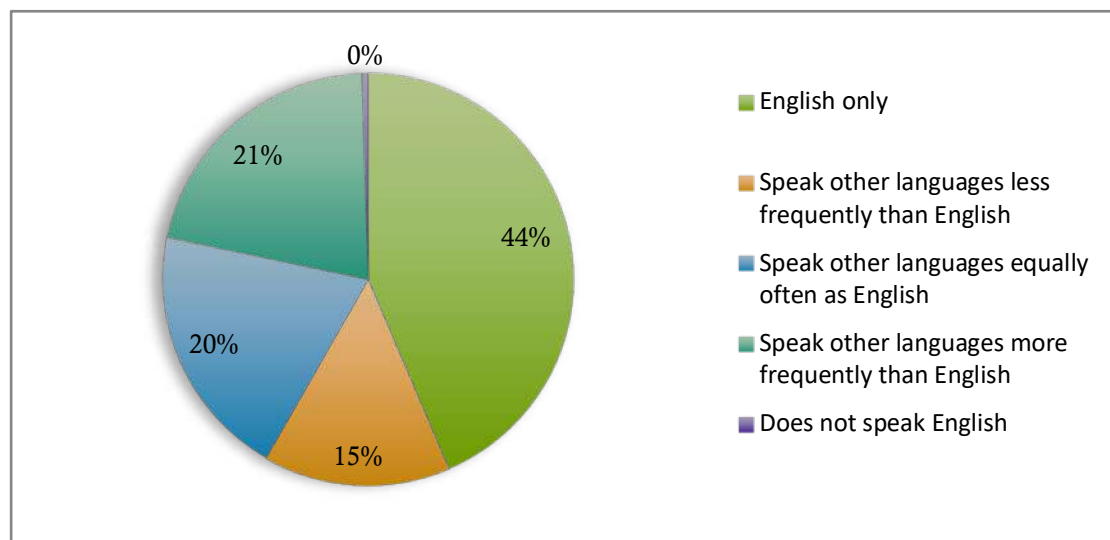
*** – Category changed across the two census years.

Figure 4. Guam population pyramid: 2020



Source: Guam 2020 census data

Figure 5. Population by language spoken at home, Guam: 2010



Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2016

Note: These data were not reported in the 2017 Statistical Yearbook. 2020 census data on this topic is not yet available.

Impact of the military on population demographics

The US Military continues to play a significant role in Guam, and although substantial delays impeded the Marine Corps relocation from Okinawa, Japan in previous years, activities associated with the military build-up are increasing. Construction activity related to the build-up is ramping up, with a positive effect on employment and

revenues for the island. Despite the acceleration in construction, delays related to labor shortages, the pandemic, and other causes, have pushed the target date for realignment of forces to Guam from FY 2025 to FY 2028.

As of 2020, military and family members comprised 4% of Guam's total population, unchanged from the previous year but less than the 7.4% in 2017 (Table 8).

Table 8. Military active duty and family members in Guam: 2015 - 2020

Military and Family Members	2020	2019	2017	2016	2015
Active duty	6,217	6,140	5,685	5,572	6,115
Family members	---	---	5,874	7,235	7,211
Total Military and dependents	6,217	6,140	11,559	12,807	13,326
Resident population of Guam	153,836	154,388	163,875	162,472	161,785
% Military and dependents	4.0	4.0	7.1	7.9	8.2

Source: COMNAVMAR, as reported by Bureau of Statistics and Plans, Guam Statistical Yearbook 2021
Notes: Data not available for 2018. Military dependent data not available for 2019 and 2020.

School enrollment

Data on school enrollment in the various categories of schools, including the Department of Defense (DoDEA) schools is available up to school year 2021-2022 (Table 9). Charter school enrollment is not included in the Guam public school enrollment data. Students enrolled in military schools made up 6% of total enrollment, while students in Catholic and other private schools comprised 20%. These students are excluded from the Guam Youth Risk Behavior Surveillance (GYTS) System, which is the primary data source for tobacco, alcohol and drug use and other risky behavior among Guam youth.

Table 9. Fall term enrollment in Guam schools, Guam: SY 2016-2017 to SY 2021-2022

School	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	2016-2017
Total School Enrollment	35,102	35,131	36,335	37,815	39,386	39,696
Private schools	6,937	6,097	5,966	6,611	7,624	7,188
DoDEA	2,209	2,174	2,279	2,250	2,252	2,264
Guam public school system	25,956	26,860	28,090	28,954	29,510	30,244

Source: Catholic Education Office; Department of Defense Education Activity (DoDEA); other Private Schools and Guam Department of Education, Government of Guam, as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2021

The Youth Risk Behavior Survey (YRBS), which is the primary data source for tobacco, alcohol and drug use and other risky behavior among Guam youth, covers 3 out of 4 students in Guam. The Guam Global Youth Tobacco Survey (GYTS) provides additional data for tobacco-related questions.



Prevention system context

The GBHWC is Guam's single state agency responsible for mental health promotion and service provision and substance misuse prevention and control. Its mandate is firmly established through Guam Public Law 17-21. GBHWC's Prevention and Training (P&T) Branch, under the umbrella of the Division of Clinical Services, directly oversees the prevention arm of the Department's core functions.

GBHWC provides leadership in obtaining state and federal funding to support comprehensive prevention services in Guam. GBHWC's P&T Branch provides direct community-based prevention services that incorporate CSAP's six primary prevention strategies – (1) information dissemination, (2) problem identification and referral, (3) education, (4) alternatives, (5) community-based process, and (6) environmental strategies. The P&T Branch monitors GBHWC's prevention systems and processes as part of an ongoing quality control assessment of the Department's prevention service delivery. In addition, the P&T Branch maintains the Center's prevention website (www.peaceguam.org), conducts information dissemination and mass media campaigns, manages the various prevention grants of the GBHWC and provides community-based and stakeholder training and technical assistance. Current resources for prevention programs include the Government of Guam state legislative appropriations, the SAMHSA Substance Abuse Prevention and Treatment Block Grant funds and SAMHSA discretionary grant funding for specific initiatives.

GBHWC works in collaboration with other partner agencies and community-based organizations to develop, implement and assess prevention policies and programs. The P&T Branch is currently supported by the Governor's Prevention Education and Community Empowerment (PEACE) Council - a multi-sectoral, state-level advisory group representative of the three branches of government and key prevention stakeholders from the private sector, including cultural, faith-based, and non-governmental/community-based organizations. The Council's composition reflects the ethnic and cultural make-up of the Guam community and provides direction and guidance for prevention priorities and approaches. Guam's State Epidemiological Outcomes Workgroup (SEOW) serves as a technical working group that supports GBHWC with local data on substance misuse consumption and consequences, suicide epidemiology, and selected mental health indicators.

The P&T Branch employs a community-based participatory approach to strategic planning. The first PEACE Strategic Prevention Framework-State Incentive Grant (SPF/SIG), Guam Comprehensive Strategic Plan (2006-2009) focused on prevention of tobacco use and harmful alcohol use, reduction in underage drinking and substance misuse-related problems and enhancement of community capacity and infrastructure for prevention. The State Prevention Enhancement (SPE) Plan 2014-2018 expanded prevention goals to include:

- Preventing/reducing consequences of underage drinking and adult problem drinking
- Preventing suicides and attempted suicides among populations at risk, including military families and LGBTQ youth
- Reducing prescription drug misuse and abuse
- Preventing substance misuse and mental illness (promote positive mental health)
- Enhancing policy and augmenting funding to support needed services for behavioral health system improvements in Guam
- Strengthening behavioral health workforce development initiatives

In 2019, the Branch created a new strategic plan for 2020-2024. The current plan focuses on five key areas of work:

- Substance misuse prevention
- Suicide prevention
- Mental health promotion
- Community outreach and empowerment
- Sustainability of the prevention system

DATA SOURCES AND METHODS

In 2005, Guam's SEOW members began by identifying a set of indicators specific to Guam that delineated alcohol, tobacco and other drug consumption patterns and the consequences related to the use of these substances. The criteria for selection of indicators included the following:

- Relevance
- Availability of data
- Validity of data
- Frequency/regularity of data collection
- Consistency in measurement
- If possible, existence of data disaggregated geographically, by age, sex and/or ethnicity/race

The SEOW also compiled a list of existing datasets from which to extract the data for the selected indicators. Indicators from well-established population-based surveillance systems---such as the Behavioral Risk Factor Surveillance System (BRFSS) and the Youth Risk Behavior Surveillance System (YRBS)---were given the greatest weight.

There are serious data gaps for Guam, and through the years, the SEOW has worked to address these gaps.

- **Adult illicit drug use***: Guam had no data on adult illicit drug use from a population-based survey prior to the SEOW. As a stopgap measure, in 2007 and 2008, GBHWC (formerly DMHSA) commissioned a population-based phone survey of drug use among youth and adults, but this could not be sustained because of the expense. In 2009, the SEOW facilitated a Memorandum of Understanding (MOU) between GBHWC and DPHSS to incorporate selected questions on illicit drug use in the BRFSS as State-added questions (SAQs). This ongoing MOU (renewed annually since 2010) now provides population-based adult data on illicit drug consumption.
- **Betel/areca nut use with tobacco***: In 2017, questions on adult betel/areca nut use, with and without tobacco, were included as State-added questions in the BRFSS.
- **Guam ethnicity categories***: Earlier adult tobacco and alcohol data from the BRFSS could not be disaggregated using Guam-specific ethnic categories. The SEOW requested DPHSS to add island-specific ethnic categories as a State-added question in 2008.
- **Expanded youth data**:
 - **Out of school youth** - To expand the coverage of youth data, the SEOW also facilitated an agreement between GBHWC and the Department of Youth Affairs (DYA) and Sanctuary, Inc. (a private sector provider of

youth drug rehabilitation services) to administer a subset of YRBS questions to all their clients, representing court-involved youth outside of the school system. Through this agreement, data on drug consumption is now available for out-of-school high-risk youth. However, no new data for this group were available for the current edition of the Epi Profile.

- **Private school and Charter school students** - The P&T Branch and SEOW are negotiating similar agreements with private schools and Charter schools to administer the YRBS to their students.
- **Additional tobacco-related youth data** - Data on smoking and smokeless tobacco use, cessation, secondhand smoke exposure, pro- and anti-tobacco media and advertising, access to and availability of tobacco products and knowledge and attitudes regarding tobacco use are collected through the Guam Global Youth Tobacco Survey (GYTS), which, to date, has been conducted in 2011, 2014 and 2017. The 2017 results are included in this profile. The GYTS was interrupted by the COVID-19 pandemic; hence no recent data are available.
- **Suicide-related data** - The SEOW undertook a working agreement with the Office of Guam's Chief Medical Examiner (CME) to obtain suicide mortality data and with the Guam Memorial Hospital to access suicide-related hospital and Emergency Room admissions data. This agreement remains in place and CME suicide data is analyzed and reported annually. The SEOW also reviews clinical data from GBHWC to assess suicide-related admissions and calls to the mental health helpline.
- **Mental health indicators** – The SEOW has gradually expanded the scope of its data analysis and now includes information on depression, violence, sexual violence and bullying among youth, and depression among adults (as an optional module to core BRFSS questions) *. It also includes some questions on risk and protective factors for tobacco, alcohol, and substance misuse, as SAQs to the YRBS and BRFSS.
- **Sexual minority populations: Lesbian, Gay, Bisexual, Transgender, Queer or Questioning (LGBTQ) populations** – In 2014, GBHWC contracted with Guam's Alternative Lifestyle Association (GALA) under the Partnerships for Success (PFS) grant to undertake the first GALA Health and Wellness Survey among the local LGBTQ community. The survey was comprised of questions taken from CDC's BRFSS, PEW Research, the DPHSS Pacific Islands HIV Test form and the Suicidal Behaviors Questionnaire (SBQ), to assess tobacco, alcohol and other substance use, mental health status, and suicide risk. In 2015, the SEOW incorporated data from the GALA survey into the Profile. Since then, however, there has not been a systematic effort to track risk within these sexual minority populations.

The Guam YRBS included questions on sexual identity and sex of sexual contacts in its high school surveys beginning in 2001, but the questions were not included regularly across all the years the survey was conducted until 2013. Nationally, questions measuring 2 elements of sexual orientation: sexual identity and sex of sexual contacts have been available in the YRBS questionnaire since 1995, but it was not until 2015 that these questions became core questions in the national YRBS questionnaire and in 53 local and state YRBS questionnaires, permitting the calculation of a national median. In 2022, the SEOW analyzed YRBS data to create a baseline profile on sexual minority youth. The report is included in the appendix. The plan is to continue using the YRBS data disaggregated by sexual identity to track prevention indicators among sexual minority youth.

It is anticipated that over time more behavioral health indicators will be incorporated into the Epi Profile. Currently, selected indicators for the expanded Epi Profile include:

Table 10. SEOW selected indicators

ALCOHOL	Consumption	Consequences
Indicators	Lifetime use of alcohol by Middle School students Current use of alcohol by High School students Current use of alcohol by 18 and older Current binge drinking by High School students Current binge drinking by 18 and older Current heavy use of alcohol by 18 and older Current binge drinking by LGBTQ Current heavy use of alcohol by LGBTQ Early initiation of alcohol use Drinking and driving among High School students Consumption patterns among court-involved youth Use of alcohol on school property by High School students	Chronic liver disease and liver cancer death rate Suicide death rate Homicide deaths % Fatal motor vehicle crashes that are alcohol-related Violent crime rate Property crime rate Alcohol abuse or dependence Alcohol-related confinement % Alcohol-related participation in treatment programs

TOBACCO	Consumption	Consequences
Indicators	Current smoking by Middle School students Current smoking by High School students Current smoking by 18 and older Current daily cigarette use, 18 and older Current smoking by LGBTQ youth Current smokeless tobacco use, Middle School students Current smokeless tobacco use, High School students Current smokeless tobacco use, LGBTQ youth Current smokeless tobacco use, adults Current e-cigarette use, adults Current e-cigarette use, High School students Current e-cigarette use, Middle School students Current e-cigarette use, LGBTQ youth Early initiation of tobacco use % Vendors selling to minors Quit attempts in the past year Use of cigarettes and smokeless tobacco products on school property	New cases (incidence) and deaths from lung cancer Deaths from other tobacco-related noncommunicable diseases (NCDs) Other tobacco-related cancer prevalence Tobacco-related environmental debris

DRUGS	Consumption	Consequences
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Indicators	Lifetime use of marijuana by Middle School students Lifetime and current use of marijuana by High School students Early initiation of marijuana use Lifetime and current use of marijuana by adults Lifetime and current use of marijuana by LGBTQ Lifetime use of cocaine by Middle School students Lifetime and current use of cocaine by High School students Lifetime use of inhalants by Middle School students Lifetime use of inhalants by High School students Lifetime use of methamphetamines or “ice” by Middle School students Lifetime and current use of methamphetamines or “ice” by adults Lifetime and current use of other drugs by adults Lifetime and current use of other drugs by LGBTQ Lifetime use of steroids by High School students Lifetime use of prescription drugs without a prescription, High School students Illegal drug use on school property Other drug use patterns among court-involved youth Drug seizures per year by type and amount of drug	Property crime rate Violent crime rate Drug abuse or dependence Drug-related arrests
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SUICIDE	Vital Statistics	Related Data
Indicators	Suicide mortality rate Demographic characteristics of suicide deaths % of suicide deaths involving alcohol use % of suicide deaths involving other drug use	Suicidal ideation among school youth Suicidal ideation among LGBTQ Suicidal attempts among school youth Suicidal attempts among LGBTQ % of school youth reporting persistent sadness

MENTAL HEALTH	Prevalence
Indicators	Prevalence of depressive symptoms among High School students Prevalence of depressive symptoms among adults

- % students threatened or injured by a weapon in school in the past 12 months
- % students in a physical fight in the past 12 months
- % students forced to have sexual intercourse, lifetime
- % students subjected to partner violence in the past 12 months
- % students bullied on school property in the past 12 months
- % students electronically bullied in the past 12 months
- % LGBTQ bullied for their sexual preference, lifetime

At present, Guam’s SEOW tracks data on substance misuse consumption and consequences and suicide from the following data sources:

Table 11. Data sources

Data Source	Frequency	Agency	Data Type
Behavioral Risk Factor Surveillance System (BRFSS)	annual	DPHSS	Adult tobacco and alcohol use, illicit drug use, depression
Youth Risk Behavior Surveillance System (YRBS)	biannual	Guam Dept. of Education (GDOE)	Youth tobacco, alcohol, and drug use; suicidal ideation and attempts; bullying, sexual violence, violence
Modified YRBS	annual	DYA	Youth tobacco, alcohol, and illicit drug use
Guam Youth Tobacco Survey (GYTS)	Every 3 years	DPHSS & WHO	Youth tobacco use, cessation, secondhand smoke exposure, pro- and anti-tobacco media and advertising, access to and availability of tobacco products and knowledge and attitudes regarding tobacco use
Synar annual tobacco vendors’ compliance survey	annual	GBHWC	Vendor compliance to prohibition of tobacco sales to minors
Guam Statistical Yearbook	annual	Bureau of Statistics and Plans	Data on environment, population demographics, justice and crime, health and vital statistics, visitor information
Vital Statistics	annual	DPHSS	Leading Causes of Mortality
Guam Cancer Facts and Figure, Cancer Registry	2013-2017	DPHSS	Cancer prevalence and mortality
Guam Uniform Crime Report	annual	Guam Police Department	Alcohol and drug-related crime
Suicide Mortality Report	quarterly	Chief Medical Examiner’s Office	Suicide deaths and associated data
US Census Bureau 2020 Guam Census results	decennial	Bureau of Statistics and Plans	Population counts, demographic profile, socio-economic indicators

Organization and structure of the 2021 Guam Epi Profile

The Profile follows the format of previous Profiles and is divided into an introductory section with background information on the island, a section on data sources and methods, and separate sections on alcohol, tobacco, illicit drugs, suicide, and mental health indicators. Each section provides magnitude/prevalence, trends, comparisons with the US national average, and when data are available, rates among population sub-groups. Data highlights are summarized in the Executive Summary. A text description of the essential findings for every indicator is supplemented with tables and charts.

In analyzing these data, we use the Guam SEOW approach of assessing (1) magnitude, (2) trend, (3) comparison to the national standard and (4) difference across groups (equity). Whenever possible, data is disaggregated by sex, age group, income, education, and ethnicity/racial group. As much as possible, ethnicity categories are reflective of the various ethnic groups that make up the Guam population. We set our p value to <0.05 to determine statistical significance between groups. For several indicators, the numbers of observations are small (e.g., suicide deaths, numbers of specific ethnic groups) and caution is required when interpreting changes across time or across groups; in these cases, a footnote alerting the reader is provided.

One question that is frequently asked is: “How can Guam’s statistics be compared to the mainland when Guam’s population is so much smaller than that of the United States?” For this reason, the statistics describing tobacco, alcohol and illicit drug consumption are in percentages, and data on suicide are in rates per 100,000 to allow comparisons across populations. That is, the consumption of these substances is reported as a proportion of the total population. Thus, even if the absolute numbers of individuals reporting the use of these substances are much smaller than the US numbers, the magnitude of the problem in relation to the total population can be compared.

Because the projected audience of this report is a diverse one, we have purposely attempted to keep the language as simple as possible, and to avoid highly technical terms. When technical language is used, the definitions are provided as notes within the text.

Data Issues and Limitations

Youth Data

Data on youth are largely provided through the Guam Department of Education (GDOE) Youth Risk Behavior Survey (YRBS), for which biennial information is available for the years 1995-2007, and 2011-2019.

Data from the YRBS for the years 1999, 2001, 2003 and 2005 were not reported in national databases because the data were not weighted. From 1999-2003, GDOE attempted to incorporate the private schools into the YRBS. However, the withdrawal of several private schools from the survey, after sampling was already carried out, resulted in low overall response rates for this time period. In 2005, several sites failed to comply with the sampling methodology. This profile uses the unweighted data from those years. Therefore, care must be taken when comparing the results from 1999 – 2005 with US national medians. In 2009, a shift in school policy regarding the procedure for parental consent resulted in a significantly lower turnout in respondents, leading the GDOE to invalidate the survey. Hence, no data are available for 2009.

The COVID-19 pandemic led to a prolonged suspension of on-site classroom learning, precluding the implementation of the YRBS in 2021. Hence no data exist for 2021.

The change in coding categories for ethnicity/race over the different survey years presents a challenge. For this profile, categories were collapsed to Filipino, Other Asian, CHamoru*, Micronesian Islanders, White and Others. However, only CHamoru, Filipino and Micronesian Islanders were retained consistently throughout the various survey years.

(*Note: “Chamorro” was replaced with “CHamoru” in accordance with Guam Public Law 33-236 in 2018.)

Adult Data

With regards to adult data, the US Centers for Disease Control and Prevention (CDC), which administers the BRFSS, introduced a new weighting methodology, replacing the “poststratification” method with “raking” or iterative proportional fitting in 2011. This more sophisticated method for weighting survey data adjusts for each variable individually in a series of data processing-intensive iterations. As each variable in the weighting process is included, the weights are adjusted until the sample weights are representative of the population (CDC 2012).

These changes resulted in an upward shift of prevalence trends for certain risk factors, such as smoking. To avoid misinterpretation of trend line shifts artificially resulting from improved methods of measuring risk factors, CDC recommends caution in interpreting pre-2011 prevalence data. The Guam SEOW concurs with this recommendation, and no longer uses pre-2011 BRFSS data for trend analysis. Instead, 2011 BRFSS data now serves as the baseline for forward trend analysis. Thus, trends for adult data begin with 2011 data.

The BRFSS uses the standard US ethnicity categories. GBHWC requested the addition of a SAQ using Guam ethnicity categories, which separate out the larger Pacific islander and Asian sub-groups. When disaggregating for ethnicity, we use data derived from cross-tabulation against this ethnicity SAQ.

Because the BRFSS is a phone-based survey, data collection continued despite the COVID-19 pandemic lockdowns. At the time of the writing of this report, data for the core questions and SAQs are available for 2021.

Small numbers

Some of the data categories, especially for ethnicity, have small numbers ($n < 50$). Hence, caution is needed when interpreting year-to-year variations, and cross-category differences.

Underestimation of rates using 2010 population projections

The 2020 census counts were lower than the projections from the 2010 census. Thus, rates calculated using the projected population counts from the earlier 2010 census likely resulted in underestimates.

SUBSTANCE MISUSE

TOBACCO

Consumption: Adults

Cigarette Smoking

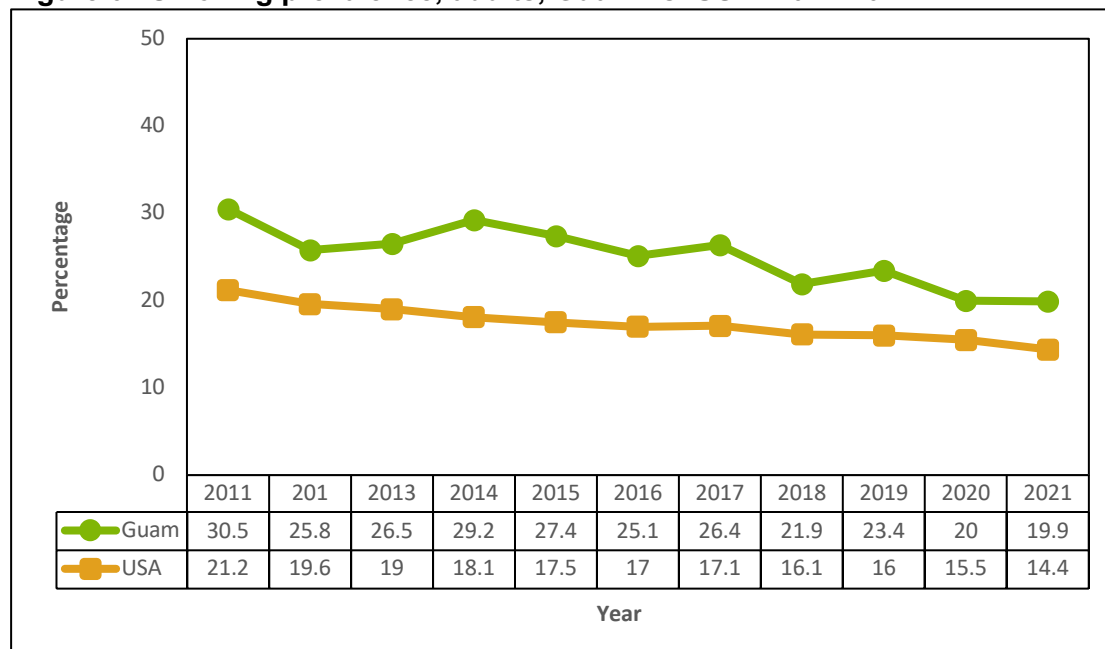
MAGNITUDE AND TREND

The BRFSS defines current cigarette smokers as adults who have smoked at least 100 cigarettes in their entire life and who currently smoke, either every day or some days.

Tobacco consumption remains prevalent in Guam. At present, about 1 in 5 adults smoke (Figure 6).

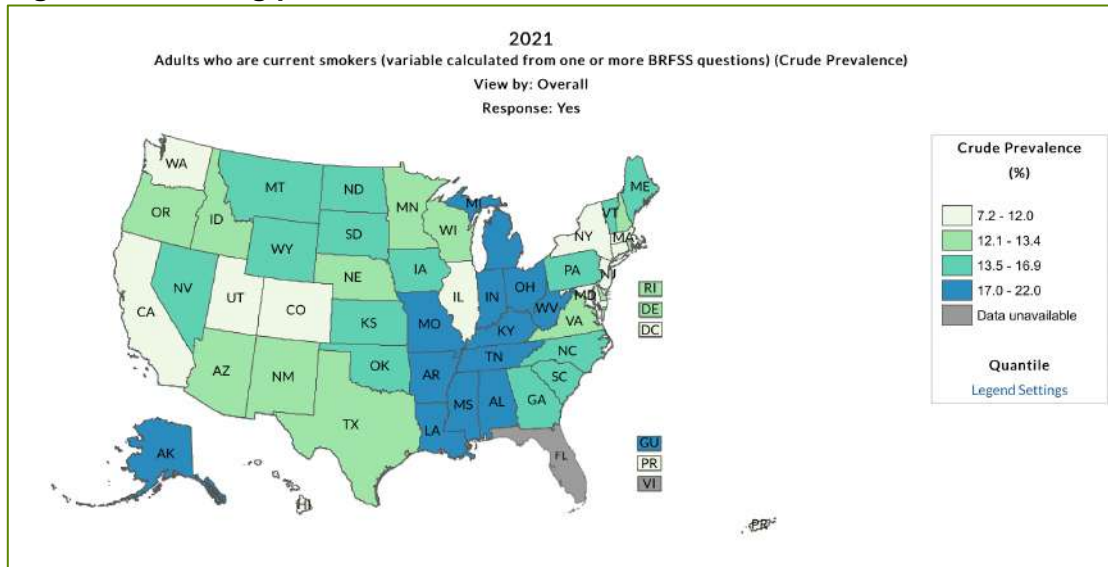
Adult smoking in Guam has decreased gradually since 2011. However, for all years where data are available, the prevalence in Guam is higher than the median smoking prevalence of all US States and Territories (Figure 6). Guam’s adult smoking prevalence is among the highest in the country (Figure 7).

Figure 6. Smoking prevalence, adults, Guam vs. USA: 2011-2021



Source: Guam DPHSS, BRFSS, 2011-2021; CDC, BRFSS 2011-2021

Figure 7. Smoking prevalence, adults, Guam vs. USA: 2021

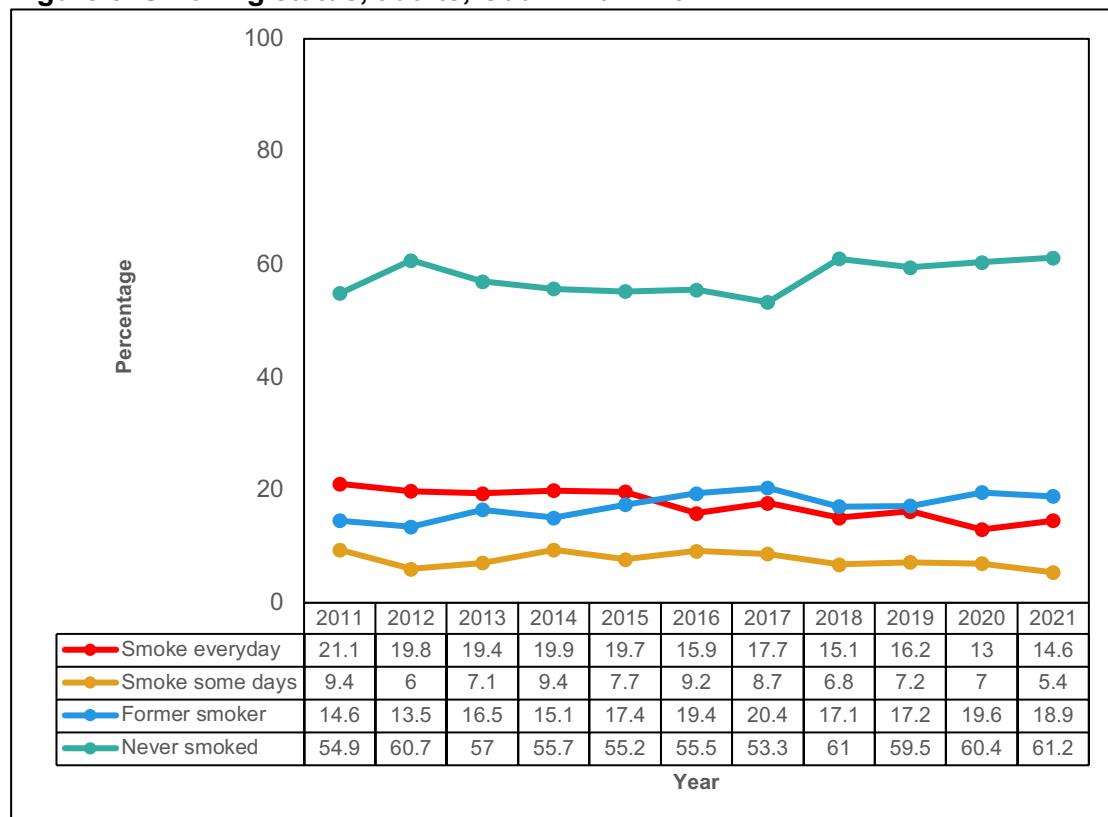


Source: CDC, BRFSS 2021

Notes: Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year. Median value reported with no confidence intervals.

Daily smoking is associated with nicotine addiction. In Guam, daily smoking decreased from 2011, and the percentage of never smokers increased from previous years. Currently, nearly one in five or 19% of adults in Guam are former smokers; ~15% smoke every day, over 5% smoke some days, and 61% have never smoked (Figure 8). Among those aged 18-24 years, nearly 83% have never smoked.

Figure 8. Smoking status, adults, Guam: 2011-2021



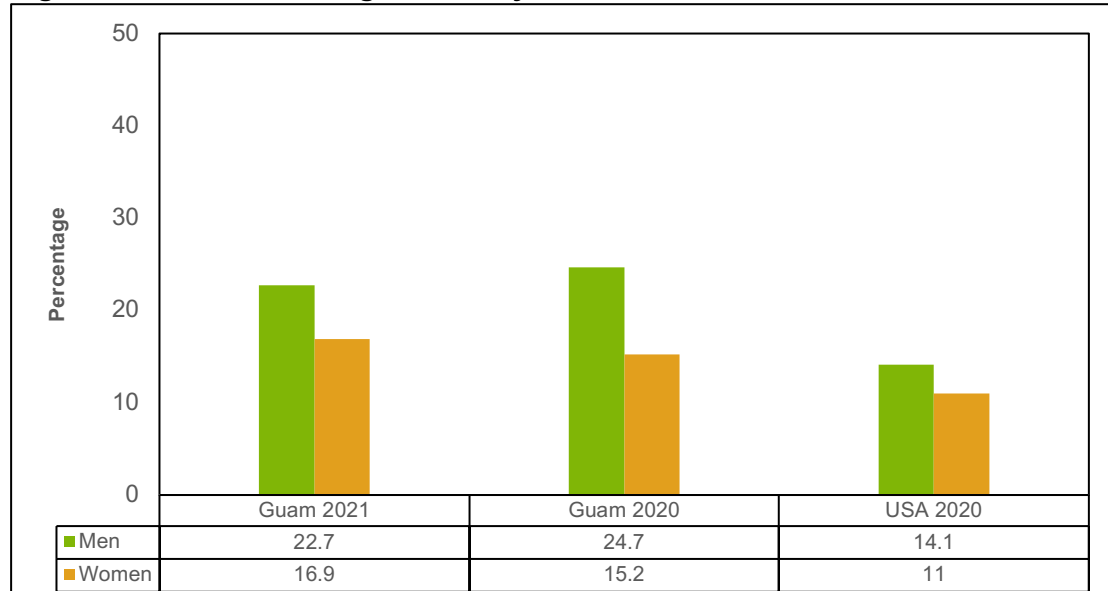
Source: Guam DPHSS, BRFSS, 2011-2021; CDC, BRFSS 2011-2021

CORRELATES OF ADULT SMOKING

Sex

Men smoke more than women in Guam (23% vs. 17%), although the gap appears to be narrowing (Figure 9). In 2020, female smoking in Guam was similar to male smoking in the USA (15% vs. 14%).

Figure 9. Current smoking, adults, by sex, Guam vs. US: 2020-2021

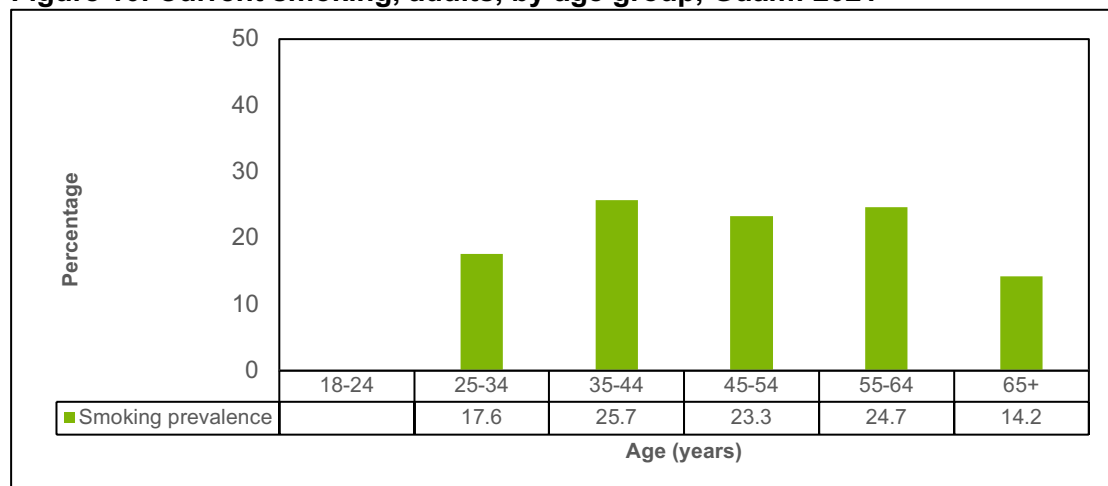


Source: Guam DPHSS, BRFSS, 2021; USA data from Centers for Disease Control and Prevention. Current cigarette smoking among adults in the United States, www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smokinbg/index.htm (last accessed 31 January 2021).

Age

Adults aged 35 to 64 have the highest smoking prevalence. In contrast, there were not enough respondents to accurately calculate a smoking prevalence for those aged 18-24. Smoking rates decline progressively in those aged 65 years and older, partly reflecting the loss of smokers due to tobacco-related mortality (Figure 10).

Figure 10. Current smoking, adults, by age group, Guam: 2021



Source: Guam DPHSS, BRFSS, 2021; blank cells = data not available because of insufficient numbers

Income

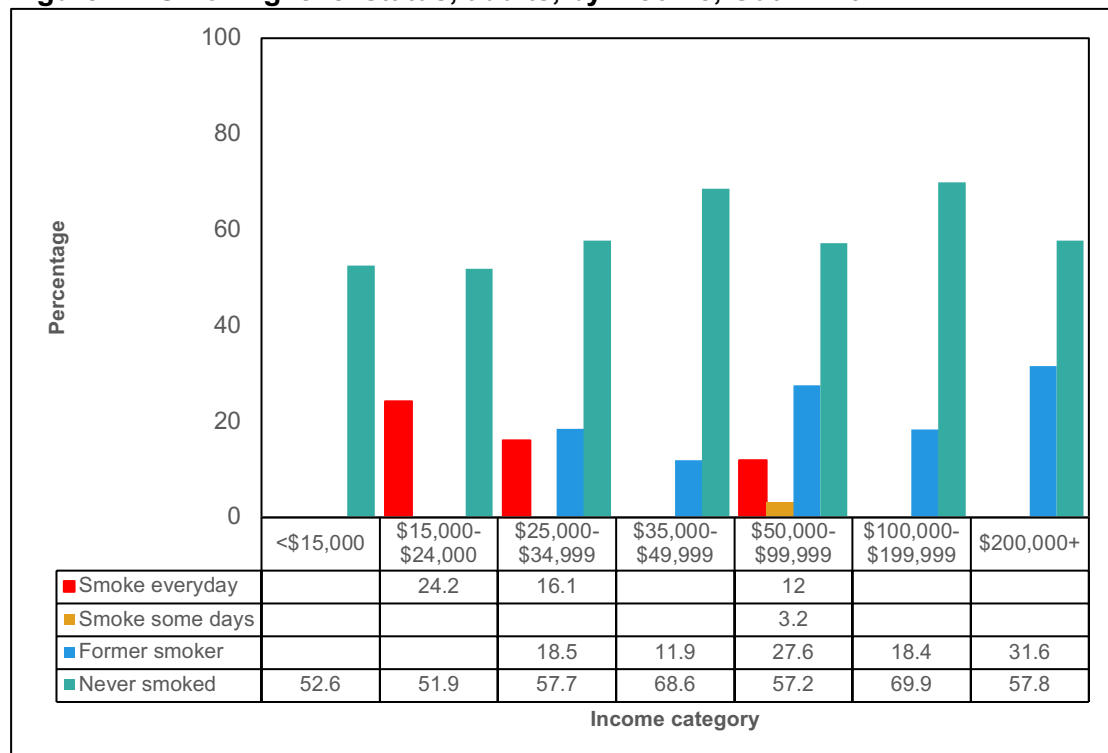
Smoking prevalence declines with increasing income (Figure 11). Those with lower incomes are more likely to be daily smokers; in contrast, those with higher incomes are more likely to have never smoked or have quit successfully (former smokers) (Figure 12). This finding is consistent across the years for which data is available and reflects the disparity in tobacco consumption due to socio-economic class.

Figure 11. Current smoking, adults, by income, Guam: 2021



Source: Guam DPHSS, BRFSS, 2021; blank cells = data not available because of insufficient numbers

Figure 12. Smoking level status, adults, by income, Guam: 2021

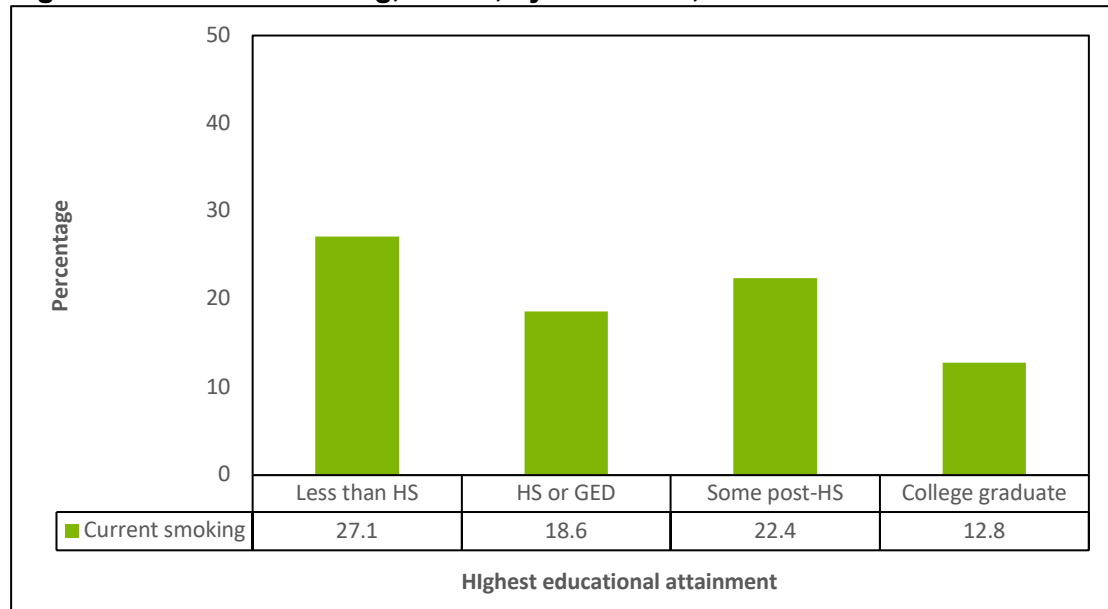


Source: Guam DPHSS, BRFSS, 2021; blank cells = data not available because of insufficient numbers

Education

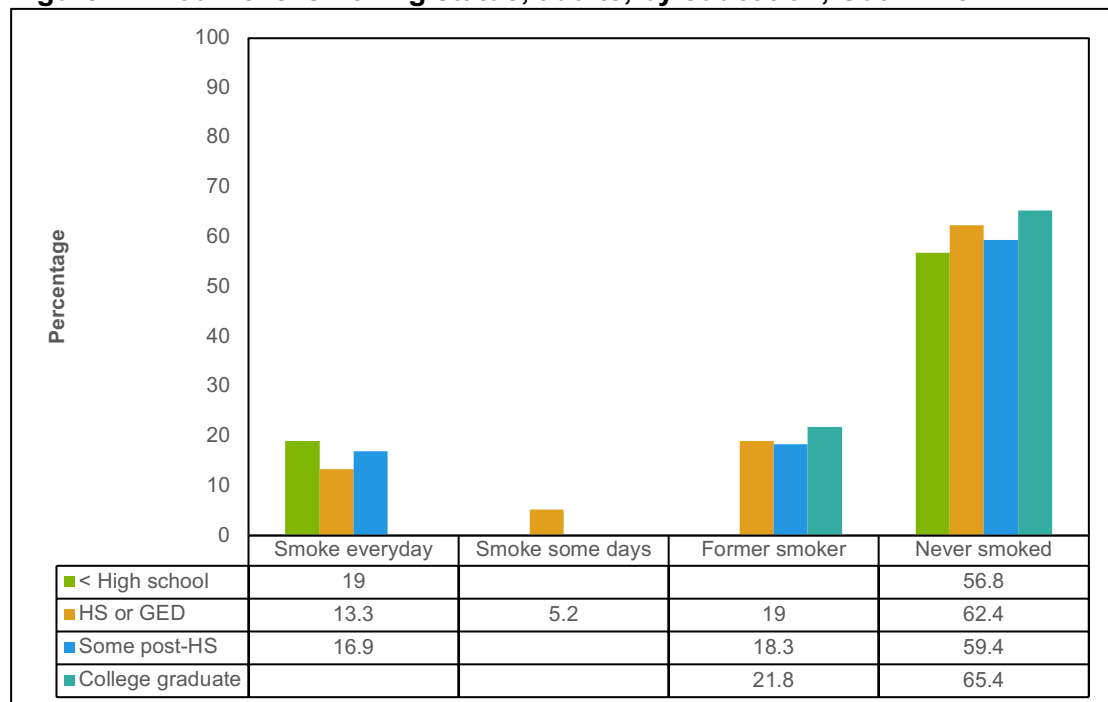
Smoking is inversely related to educational attainment (Figure 13), with current smoking reported more frequently by those with less years of education. This is consistent with global findings that link smoking with socio-economic status and education as social determinants of health. The disparities in smoking and education are reflected in the data on four-level smoking status (Figure 14).

Figure 13. Current smoking, adults, by education, Guam: 2021



Source: Guam DPHSS, BRFSS, 2021

Figure 14. Four-level smoking status, adults, by education, Guam: 2021



Source: Guam DPHSS, BRFSS, 2018; blank cells = data not available because of insufficient numbers

Ethnicity

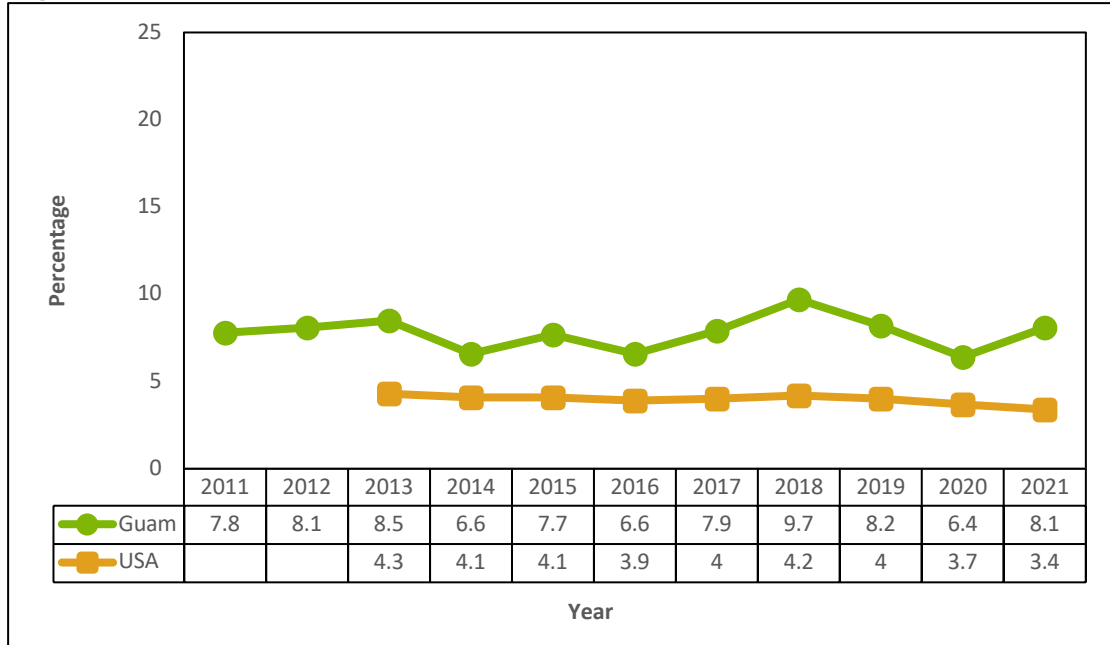
There is a marked variation in current smoking rates across the various ethnic groups in Guam. In 2021, CHamorus had the highest rates – 28.9% of CHamoru adults were current smokers – followed by Whites/Caucasians (14.1%), Micronesians (13.9%), and other Asians (11.5%). Filipinos have the lowest rates, with 9.1% of adults reporting current smoking. This difference may explain, in part, the disparity in lung cancer and cardiovascular prevalence and morbidity amongst these groups.

Smokeless Tobacco

TREND and PREVALENCE

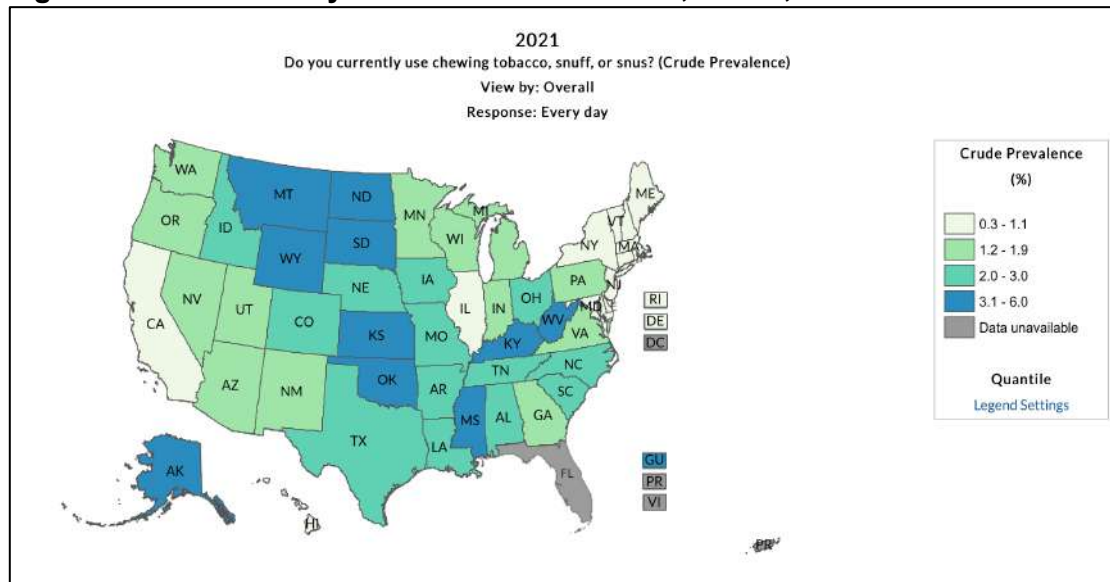
Current smokeless tobacco use remained unchanged from 2011, but Guam's prevalence is more than double that of the US median (Figure 15), and among the highest in the nation (Figure 16).

Figure 15. Current smokeless tobacco use, adults, Guam vs. USA: 2011-2021



Source: DPHSS, BRFSS, 2011-2021; CDC, BRFSS, 2013-2021; blank cells = data not available

Figure 16. Current daily smokeless tobacco use, adults, Guam vs. USA: 2021



Source: CDC, BRFSS 2021

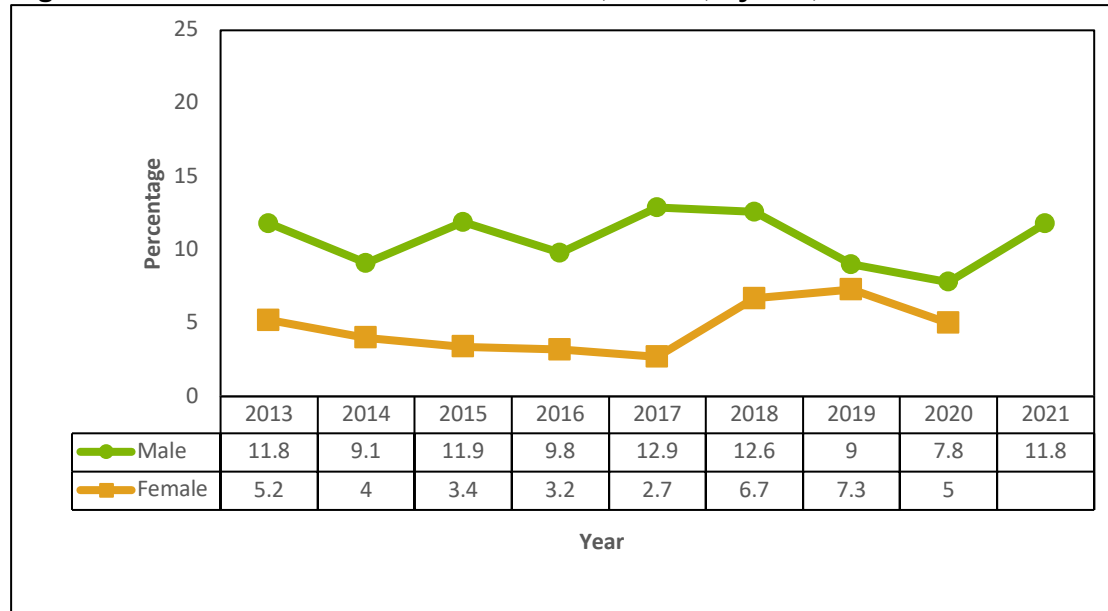
Notes: Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year. Median value reported with no confidence intervals.

CORRELATES OF ADULT SMOKELESS TOBACCO USE

Sex

There were not enough female respondents to determine the prevalence of smokeless tobacco use in 2021. In previous years, males were twice as likely as females to report currently using smokeless tobacco (Figure 17).

Figure 17. Current smokeless tobacco use, adults, by sex, Guam: 2013-2021

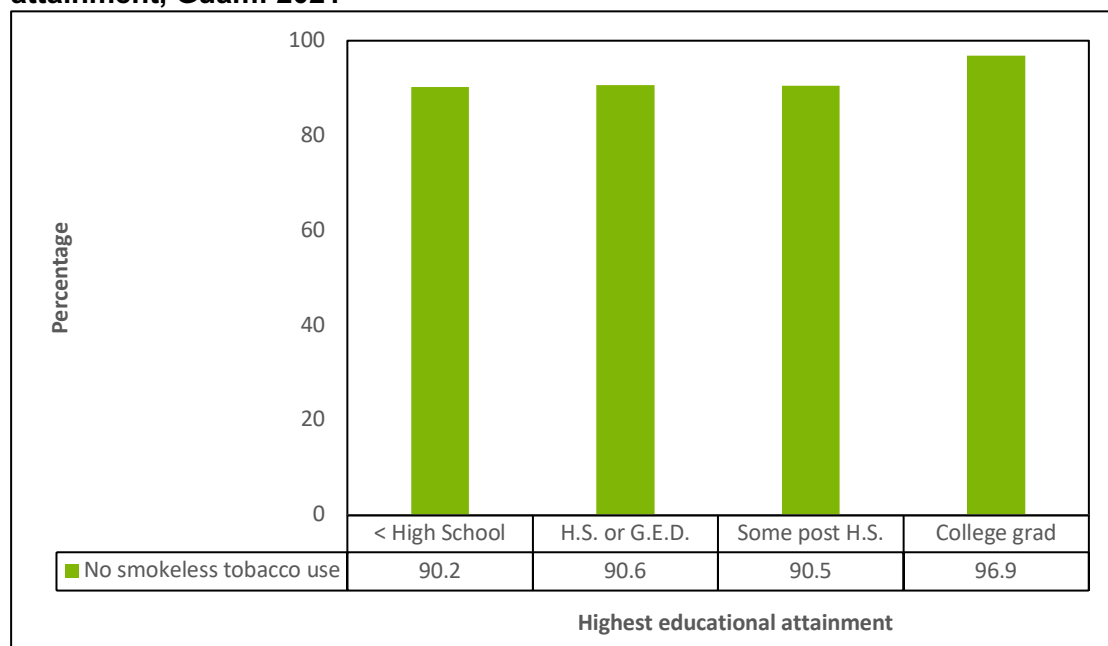


Source: DPHSS, BRFSS, 2013-2021; blank cells = data not available because of insufficient numbers

Education and income

The higher the educational attainment and income, the less likely to report smokeless tobacco use (Figure 18).

Figure 18. Adults reporting no use of smokeless tobacco, by educational attainment, Guam: 2021



Source: DPHSS, BRFSS, 2021

Ethnicity

Smokeless tobacco use in 2021 was highest among Micronesians (24.8%). The disparity is marked. Whites/Caucasians reported a rate of 14.1%, followed by CHamorus (6.9%), Filipinos (1.7%) and other Asians (1.3%).

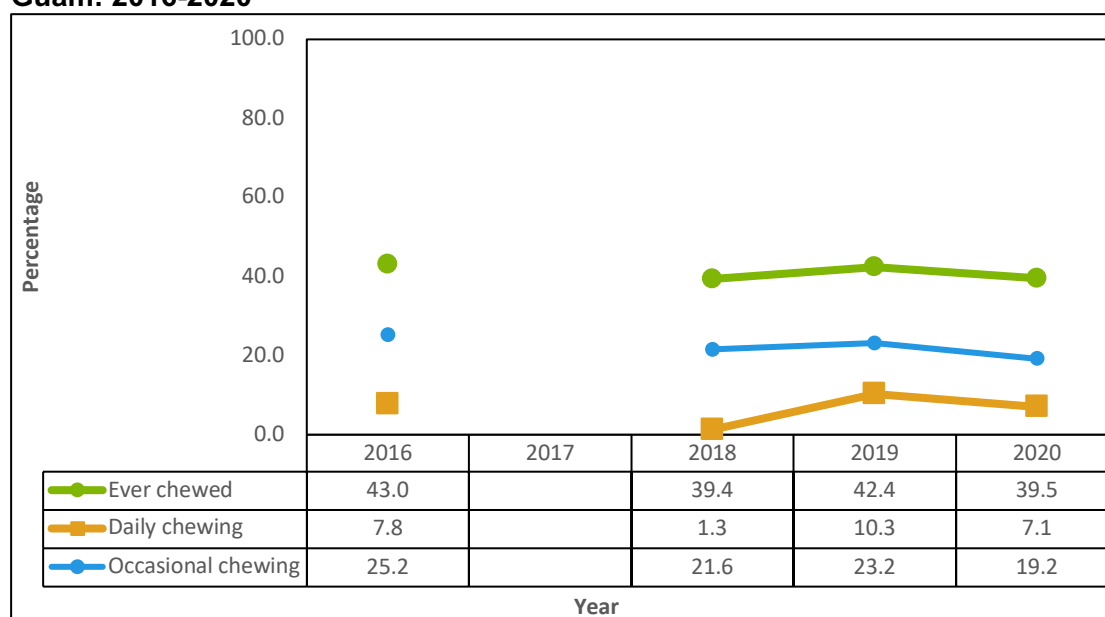
Chewing Betel Quid with or without Tobacco

The practice of chewing areca nut or betel quid (crushed areca nut with other ingredients, wrapped in betel leaf) is prevalent among certain Pacific Islander communities.⁴ Betel quid may or may not contain tobacco. Questions on betel quid consumption (known colloquially as “chewing betel nut”) were included in the 2016, 2018, 2019 and 2020 BRFSS as SAQs.

TREND and PREVALENCE

About 40% of adults in Guam report having ever tried chewing betel quid; this has not changed over time (Figure 19). In 2020, 7.1% of adults reported chewing betel quid every day, and 19.2% reported chewing on some days within the past 30 days. Among the chewers, about one in four (28.8%) added tobacco to their chew.

Figure 19. Consumption of betel quid, lifetime vs. daily and occasional use, Guam: 2016-2020



Source: DPHSS, BRFSS, SAQs, 2016-2020; blank cells = data not available; SAQ not asked in 2017

CORRELATES OF ADULT BETEL QUID USE

There are some differences in the characteristics of daily chewers vs. occasional chewers.

⁴ Mehrtash H, Duncan K, Parascandola M, David A, Gritz ER, Gupta PC, Mehrotra R, Amer Nordin AS, Pearlman PC, Warnakulasuriya S, Wen CP, Zain RB, Trimble EL. Defining a global research and policy agenda for betel quid and areca nut. *Lancet Oncol.* 2017 Dec;18(12):e767-e775. doi: 10.1016/S1470-2045(17)30460-6. PMID: 29208442.

Sex

Among daily chewers, no sex difference exists. In 2020, occasional chewers were more likely to be male. Chewers who added tobacco to their chew were also more likely to be male (Figure 20).

Age

Daily chewers were more likely to be middle-aged (45-54 years of age), while occasional chewers, and chewers who added tobacco tended to be younger.

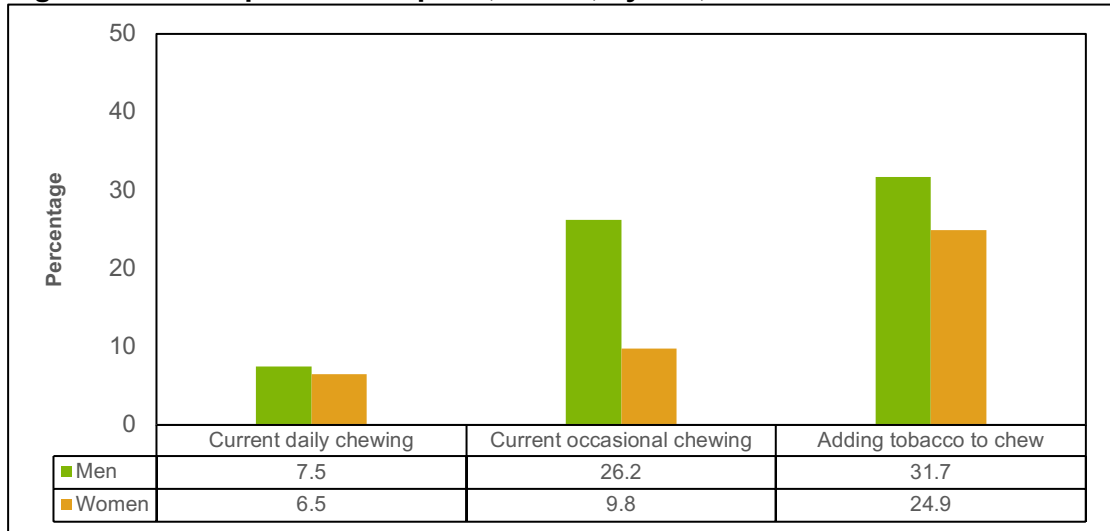
Education and Income

Chewing betel quid and including tobacco in the chew are more likely among those with less education and lower household incomes (Figure 21).

Ethnicity

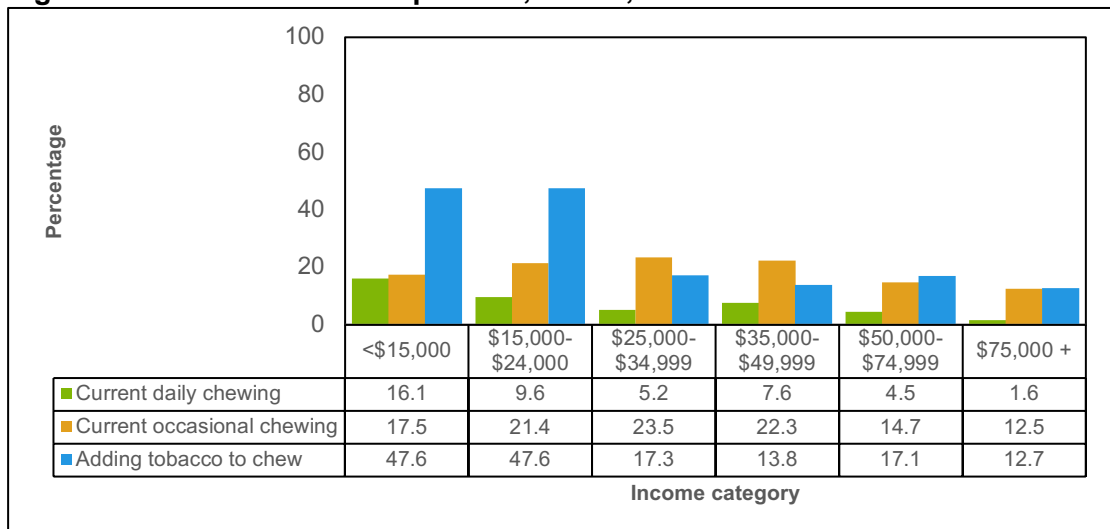
Other Micronesians are much more likely to chew betel quid and to add tobacco to their chew (Figure 22).

Figure 20. Betel quid consumption, adults, by sex, Guam: 2020



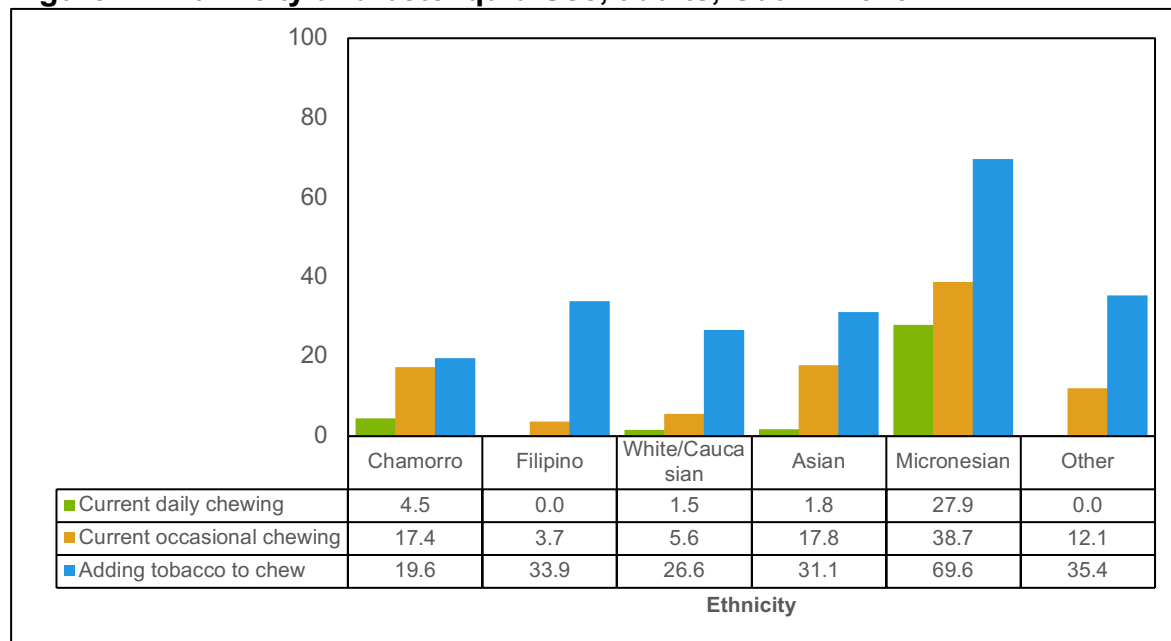
Source: DPHSS, BRFSS, 2020

Figure 21. Income and betel quid use, adults, Guam: 2020



Source: DPHSS, BRFSS, 2020

Figure 22. Ethnicity and betel quid Use, adults, Guam: 2020



Source: DPHSS, BRFSS, 2020

Electronic Vapor Products (E-cigarettes and other Electronic Nicotine Delivery Systems)

The BRFSS started asking about e-cigarette use in 2016. Data for Guam as a core question are available for 2016, 2017 and 2021. In 2018 and 2019, Guam added a State-added Question (SAQ) to the BRFSS on e-cigarette use within the past 30 days (Table 12). E-cigarette use doubled between 2018 and 2019, and remained unchanged in 2021. E-cigarette use was more likely to be reported by males, younger adults, those with a HS or GED level education, and those with a household income of \$15,000 to \$34,999. In 2021, current e-cigarette use was highest among Micronesians.

Table 12. Characteristics of current E-cigarette use, adults, Guam: 2018-2021

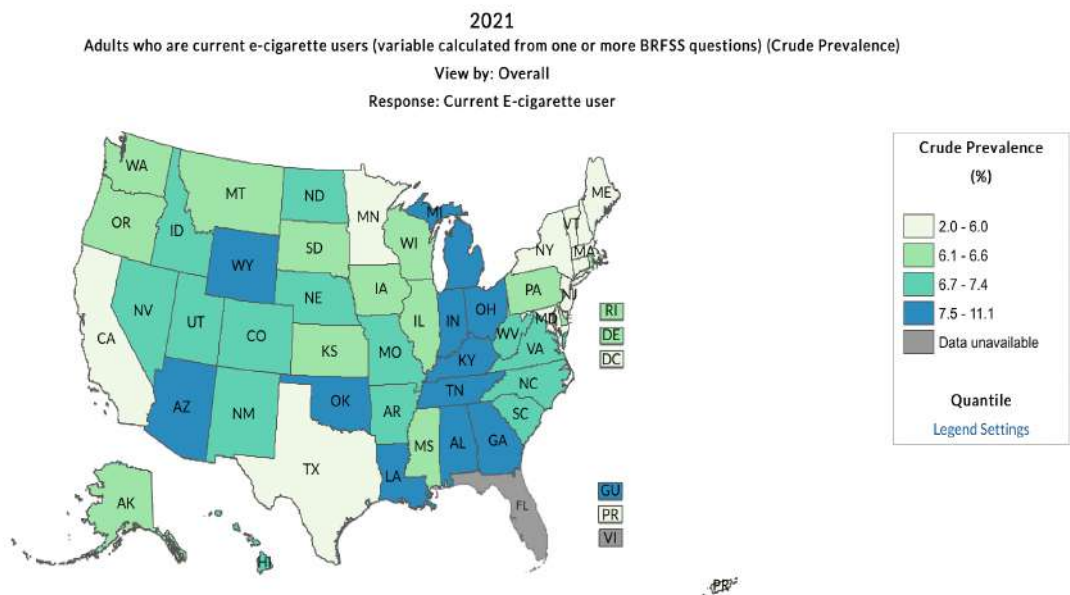
Demographic Characteristics	2018		2019		2021	
	%	95% C.I.	%	95% C.I.	%	95% C.I.
Total	4.8	3.5-6.6	11.0	10.7-11.3	11.1	8.6-13.7
Age						
18 - 24	11.5	6.5-19.6	18.5	17.4-19.6	23.0	13.7 - 32.4
25 - 34	8.3	4.9-13.9	19.3	18.7-19.9	17.5	10.8 - 24.3
35 - 44	3.9	1.7-8.7	9.5	9.1-9.9	9.7	5.0 - 14.4
45 - 54	2.3	1.1-5.0	9.0	8.6-9.4	*	
55 - 64	0.3	0.0-2.0	1.6	1.4-1.8	*	
65 +	0.0	0.0-0.0	0.3	0.0-0.6	*	
Gender						
Male	6.6	4.5-9.6	14.6	14.2-15.0	13.9	9.8 - 18.0
Female	3.0	1.6-5.4	7.2	7.0-7.4	8.0	5.1 - 11.0

Education						
< High School	3.0	1.0-8.7	9.7	8.8-10.6	*	
H.S. or G.E.D.	5.9	3.9-8.8	13.4	13.0-13.8	15.8	11.0 - 20.6
Some post H.S.	8.7	4.9-14.9	11.3	10.8-11.8	12.3	7.8 - 16.9
College grad	1.3	0.5-3.5	8.2	7.8-8.6	4.6	2.5 - 6.8
Income						
< \$15,000	4.3	1.7-10.2	7.1	6.6-7.6	*	
\$15,000 - \$24,999	5.9	3.1-10.8	14.3	13.7-14.9	*	
\$25,000 - \$34,999	6.9	2.7-16.6	13.5	12.8-14.2	15.0	7.4 - 22.7
\$35,000 - \$49,999	6.5	2.9-13.6	10.9	10.3-11.5	8.8	4.0 - 13.5
\$50,000 - \$74,999	1.8	0.6-5.8	6.7	6.2-7.2	8.1	6.3 - 15.9
\$75,000+	4.7	2.1-10.2	7.2	6.8-7.6	*	
Ethnicity						
Chamorro	6.2	4.1-9.4	12.2	11.9-12.5	10.0	
Filipino	4.2	2.0-8.6	10.6	10.2-11.0	9.4	
White/Caucasian	5.0	1.8-13.4	10.5	9.9-11.1	9.7	
Asian	4.3	1.2-14.6	10.3	9.3-11.3	5.2	
Micronesian	1.3	0.3-4.5	8.7	7.5-9.9	23.7	
Other	3.7	0.9-14.3	0.0	0.0-0.0	17.8	

Source: DPHSS, BRFSS, State-added questions, 2018-2019, core question, 2021
 Note: * - Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year.

In 2021, the e-cigarette use question was included in the core question set, with responses across the various States and territories. Guam’s rate of 11.1% was the highest in the entire nation (Figure 23)

Figure 23. Current e-cigarette use, adults, Guam vs. USA: 2021



Source: CDC, BRFSS, 2021

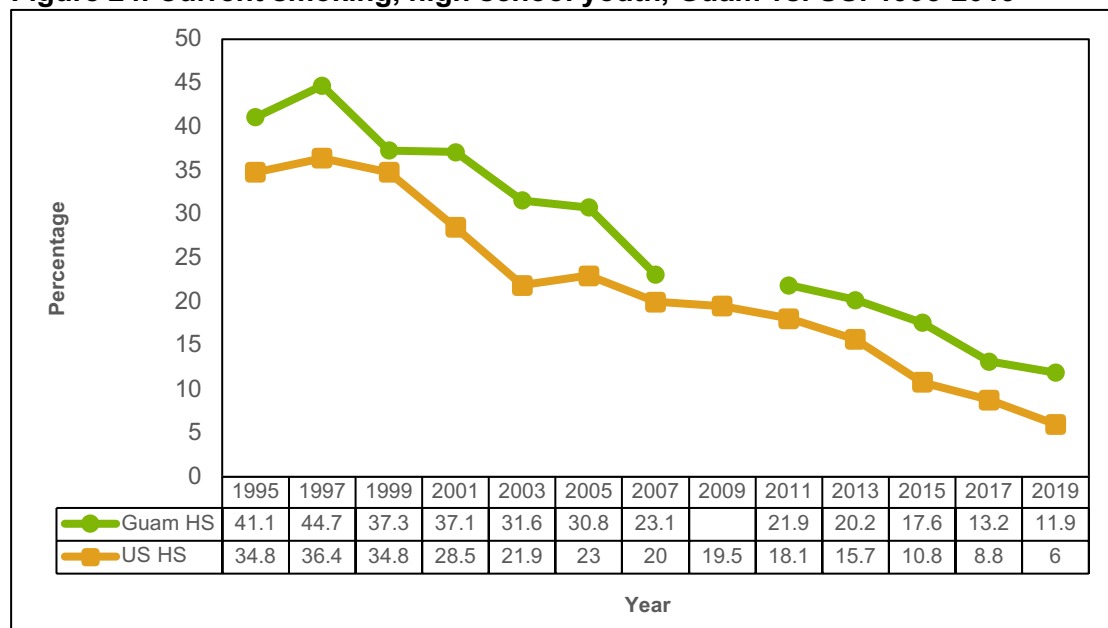
Consumption: Youth

Smoking

TREND

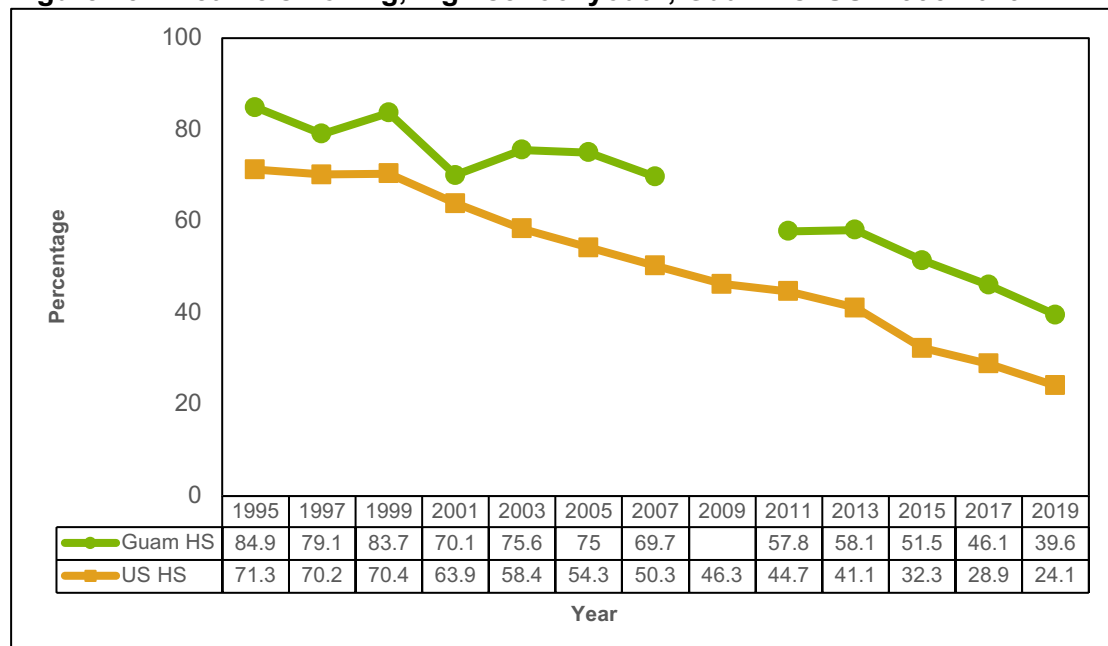
Youth smoking prevalence has been declining in the US mainland and in Guam. Lifetime smoking and current smoking have been decreasing steadily since 1995. However, Guam rates remain higher than the US median (Figures 24-25). The percent of youth who smoked their first cigarette for the first time before the age of 13 years was declining until 2011, but remained unchanged since, and is currently more than twice the US median (Figure 26).

Figure 24. Current smoking, high school youth, Guam vs. US: 1995-2019



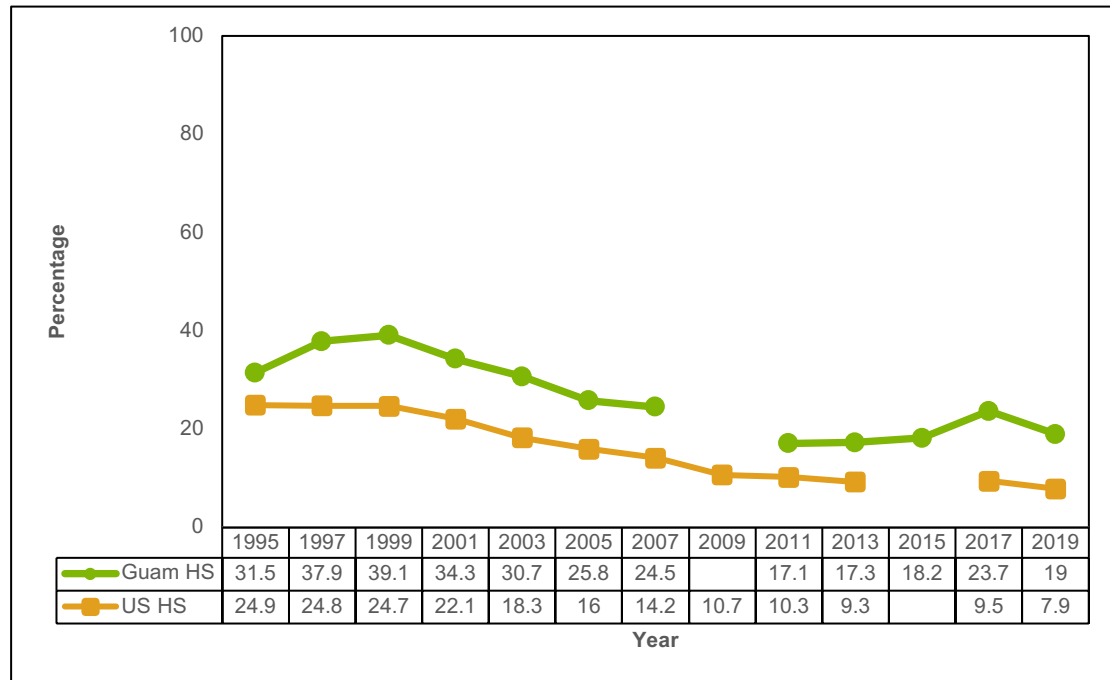
Source: GDOE, YRBS 1995-2019; CDC, YRBS 1995-2019; blank cells = data not available

Figure 25. Lifetime smoking, high school youth, Guam vs. US: 1995-2019



Source: GDOE, YRBS 1995-2015; CDC, YRBS 1995-2017; blank cells = data not available

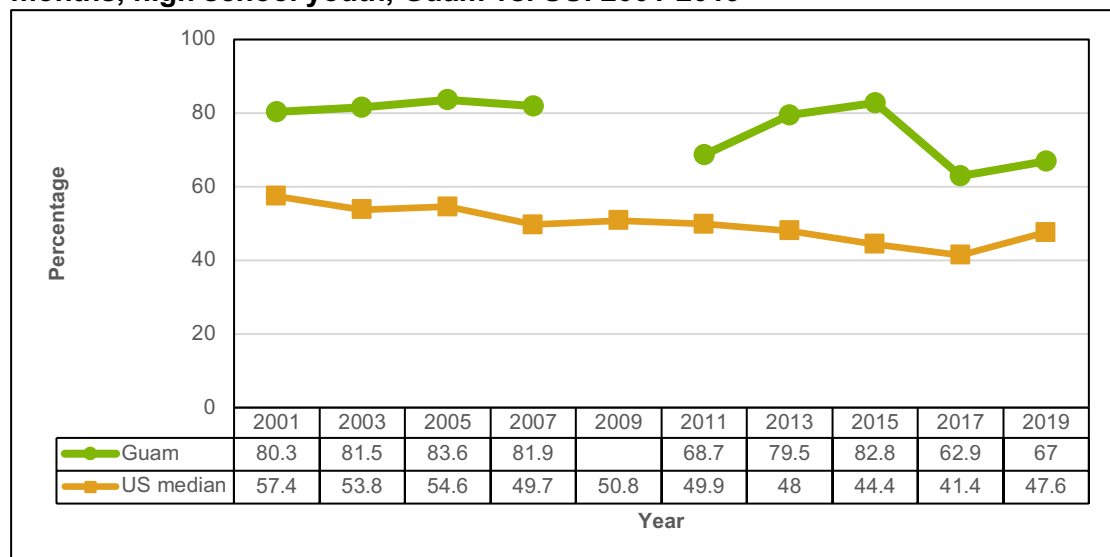
Figure 26. First tried cigarette smoking before age 13 years, high school youth, Guam vs. US: 1995-2019



Source: GDOE, YRBS 1995-2019; CDC, YRBS 1995-2019; blank cells = data not available

The percentage of youth smokers wanting to quit in the past year has always been higher in Guam than in the US. In 2011, the Guam rate for quit attempts decreased, narrowing the gap, but it rose in 2013 and 2015, before dipping in 2017, while the US rate remained unchanged (Figure 27). Clearly, majority of youth smokers in Guam want to quit, signaling the need to continue providing cessation services for this population. The decline in 2017 highlights the importance of sustained cessation messaging. Preliminary data from formative research on text-based cessation indicate this may be a viable alternative to the currently available telephone and web-based services.

Figure 27. Percentage of current smokers who attempted to quit in the past 12 months, high school youth, Guam vs. US: 2001-2019

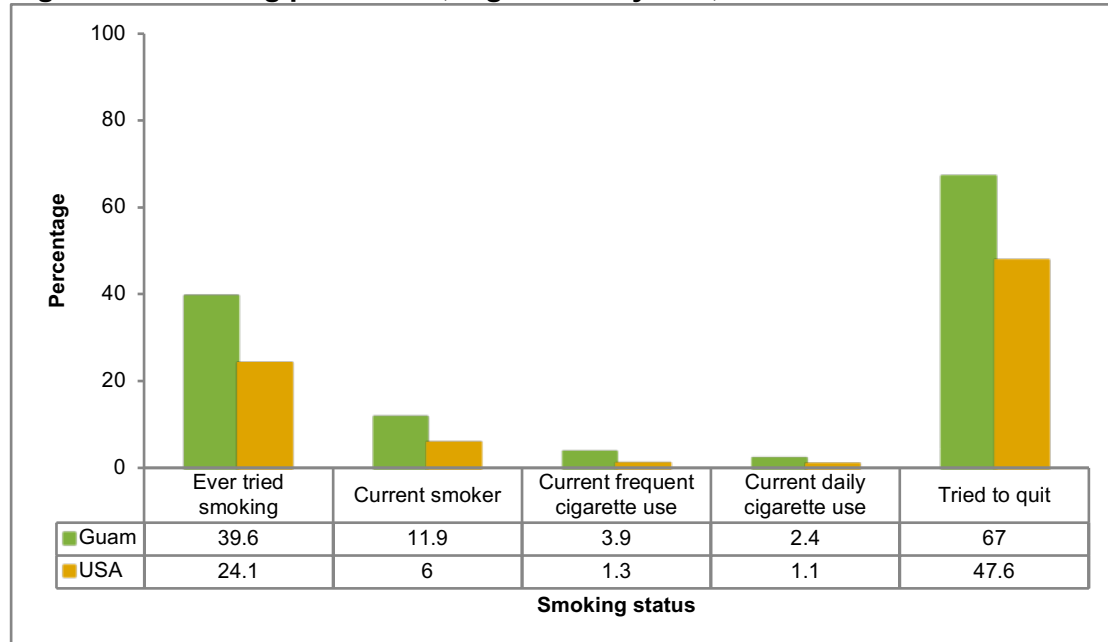


Source: GDOE, YRBS 2001-2019; CDC, YRBS 1995-2019; blank cells = data not available

PREVALENCE

In 2019, nearly 40% of high school students in Guam had tried smoking. One in eight were current smokers. Nearly seven out of ten smokers tried to quit in the past year. Guam youth were more likely than US youth to try smoking, and be current smokers, but they were also more likely to have tried quitting (Figure 28).

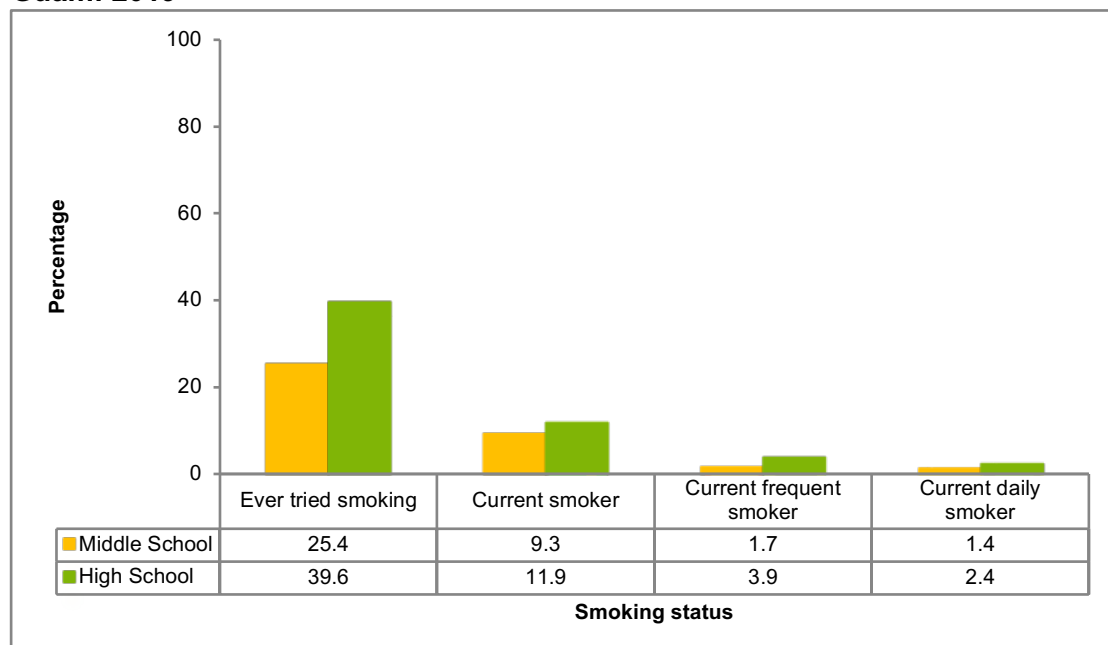
Figure 28. Smoking prevalence, high school youth, Guam vs. US: 2019



Source: GDOE, YRBS 2019; CDC, YRBS 2019

One in four middle school students had tried smoking in 2017, and nearly one in ten were current smokers (Figure 29).

Figure 29. Smoking prevalence, middle school vs. high school students, Guam: 2019



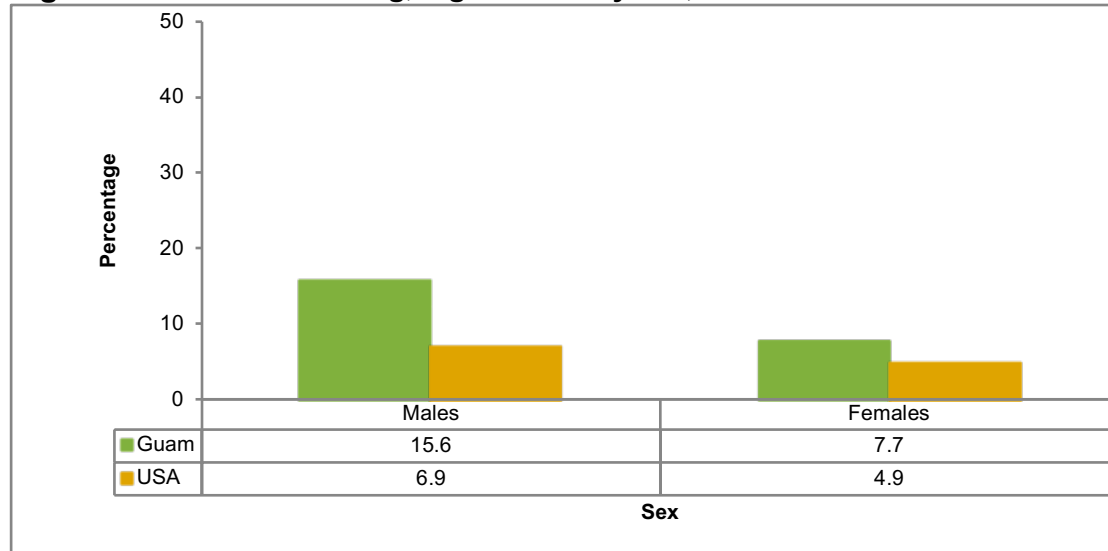
Source: GDOE, YRBS 2019

CORRELATES OF YOUTH SMOKING

Sex

In 2019, male high school students in Guam had a significantly higher smoking rate than females. Across the sexes, smoking prevalence among high school students is higher in Guam compared to the US. Female youth in Guam smoke as much as male youth in the US (Figure 30), mirroring the adult situation.

Figure 30. Current smoking, high school by sex, Guam vs. US: 2019

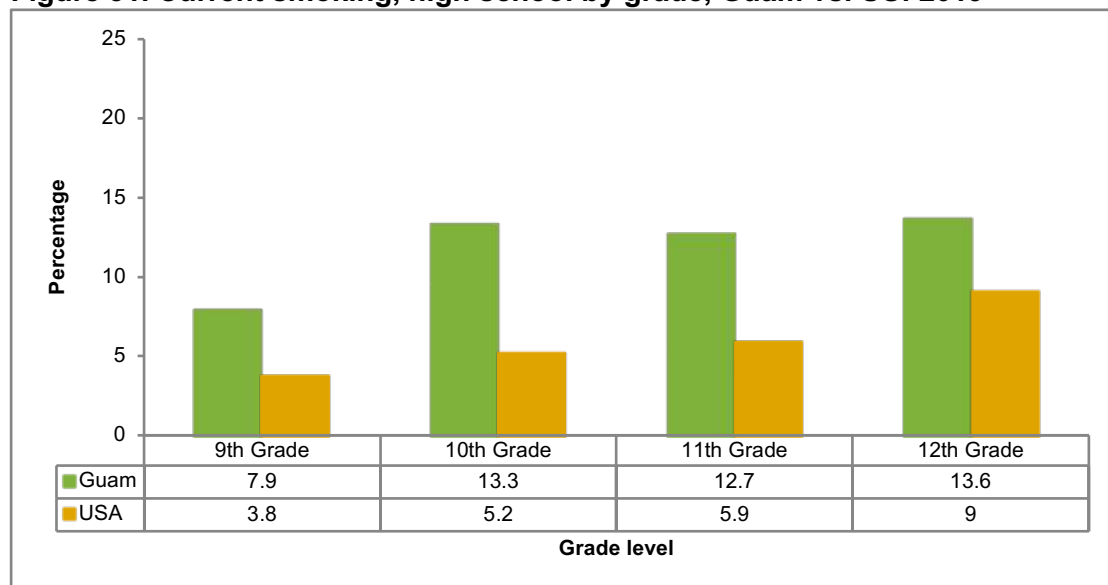


Source: GDOE, YRBS 2019; CDC, YRBS 2019

Grade Level

Overall, smoking prevalence is higher among Guam students compared to US students. Smoking increases with grade level for both Guam and US youth, but the prevalence rates are higher in Guam for every grade level (Figure 31). Together with data showing Guam youth are much more likely to start before the age of 13 years, this suggests that tobacco uptake begins long before the 9th Grade, and tobacco prevention interventions need to target lower Grade levels.

Figure 31. Current smoking, high school by grade, Guam vs. US: 2019

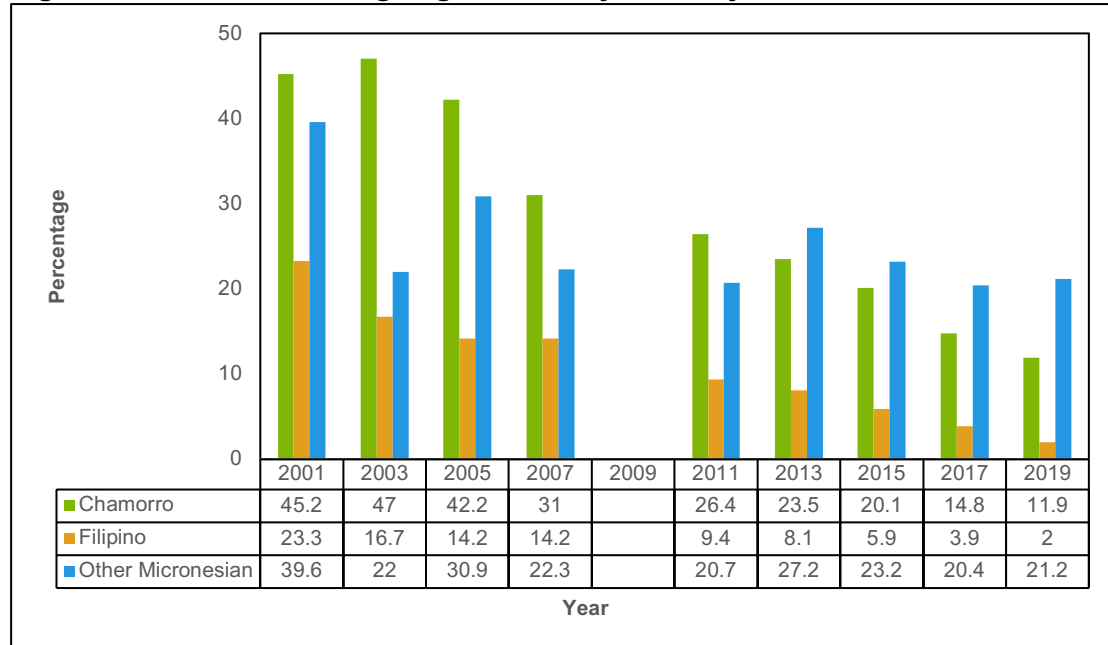


Source: GDOE, YRBS 2019; CDC, YRBS 2019

Ethnicity

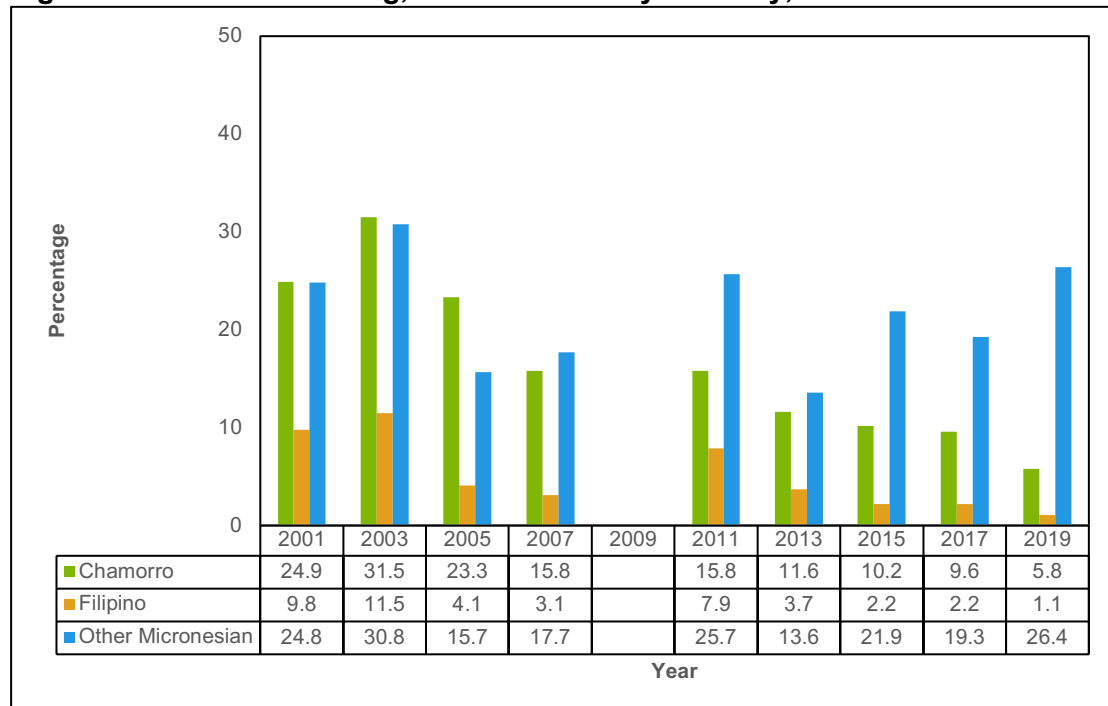
CHamorus and other Micronesians surpass Filipinos in all smoking parameters. This disparity has persisted throughout the entire period of data collection for the survey, despite the decline in overall youth smoking (Figures 32-33). Other Micronesian youth surpassed CHamoru youth in current smoking during the more recent years of the YRBS; this is more marked for middle school students.

Figure 32. Current smoking, high school by ethnicity: 2001-2019



Source: GDOE, YRBS 2001-2019; NOTE: blank cells = data not available; the YRBS still uses the old spelling "Chamorro"

Figure 33. Current smoking, middle school by ethnicity, Guam: 2001-2019



Source: GDOE, YRBS 2001-2019; blank cells = data not available
Note: the YRBS still uses the old spelling "Chamorro"

Age at initiation

Nearly one in five (19%) of Guam high school students tried cigarette smoking for the first time before the age of 13 years, and ~11% of middle school students tried cigarette smoking before the age of 11 years. Males were more likely than females to start tobacco use early (High school: 23.4% vs. 14.1%; Middle school: 14.7% vs. 7.2%)

Risk and protective factors

In 2017, Guam conducted the Global Youth Tobacco Survey (GYTS) to determine youth's exposure to secondhand smoke, pro- and anti-tobacco messaging, access and availability of tobacco products and knowledge and attitudes about tobacco use. Data for youth aged 13 to 15 years showed:

- 39.8% of students were exposed to tobacco smoke at home.
- 47.1% of students were exposed to tobacco smoke inside enclosed public places.
- Less than 1 in 5 (17.4%) have ever received help/advice from a professional or program to stop smoking.
- 22.9% of current cigarette smokers bought cigarettes from a store, shop, gas station, flea market, or night market.
- Among current cigarette smokers who tried to buy cigarettes, 47.7% were not prevented from buying them because of their age.
- Almost 6 in 10 (57.0%) students noticed anti-tobacco messages in the media.
- More than half (53.7%) noticed tobacco advertisements or promotions when visiting points of sale.
- Almost 2 in 10 (18.4%) had something with a tobacco brand logo on it.
- Over half (57.5%) of students thought other people's tobacco smoking is harmful to them.

These data point towards policy gaps in tobacco control legislation that need to be addressed, including point-of-sale and marketing promotions bans, stronger enforcement of Guam's Natasha Act and no sales to minors law, and broader cessation outreach to disseminate brief cessation advice, especially at health care delivery centers.

Smokeless Tobacco

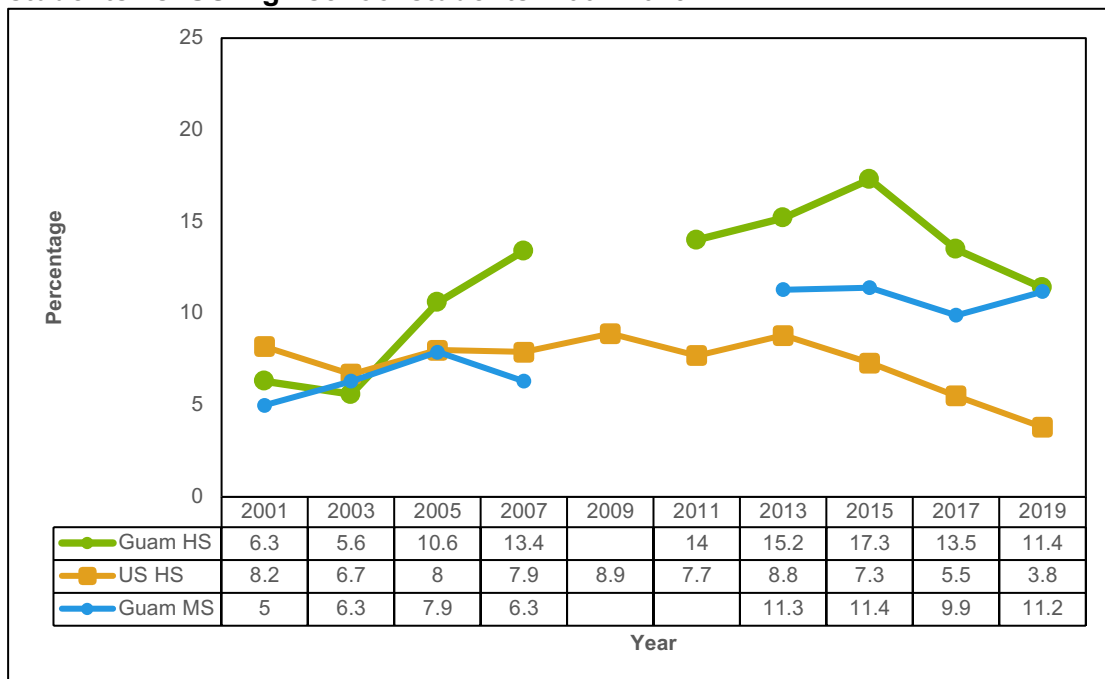
TREND

Previous editions of the Guam Epi Profile have flagged youth smokeless tobacco use for close monitoring.

The use of smokeless tobacco products with or without betel nut (areca nut/betel quid) used to be less prevalent than cigarette smoking among Guam’s youth. However, smokeless tobacco use prevalence has not decreased at the same pace as cigarette smoking, and for middle school, rates have increased since 2001. Thus, in 2019, the smokeless tobacco use prevalence is similar to cigarette smoking. High school and middle school students in Guam have nearly identical rates. Smokeless tobacco use among both high school and middle school youth in Guam is higher than the US median (Figure 34).

The rates for high school youth doubled between 2003 and 2005 and increased further from 2011 to 2015, before declining in 2017. The YRBS dropped the question on smokeless tobacco use for middle school students in 2011 but reinstated it in 2013. Data indicated that middle school smokeless tobacco use in Guam surpassed the US high school rate from 2013 onward. The use of other tobacco products deserves careful tracking, and prevention and early intervention efforts are needed to offset any further increases.

Figure 34. Smokeless tobacco use, Guam high school and middle school students vs. US high school students: 2001-2019



Source: GDOE, YRBS 2001-2019; CDC, YRBS 2001-2019; blank cells = data not available

PREVALENCE

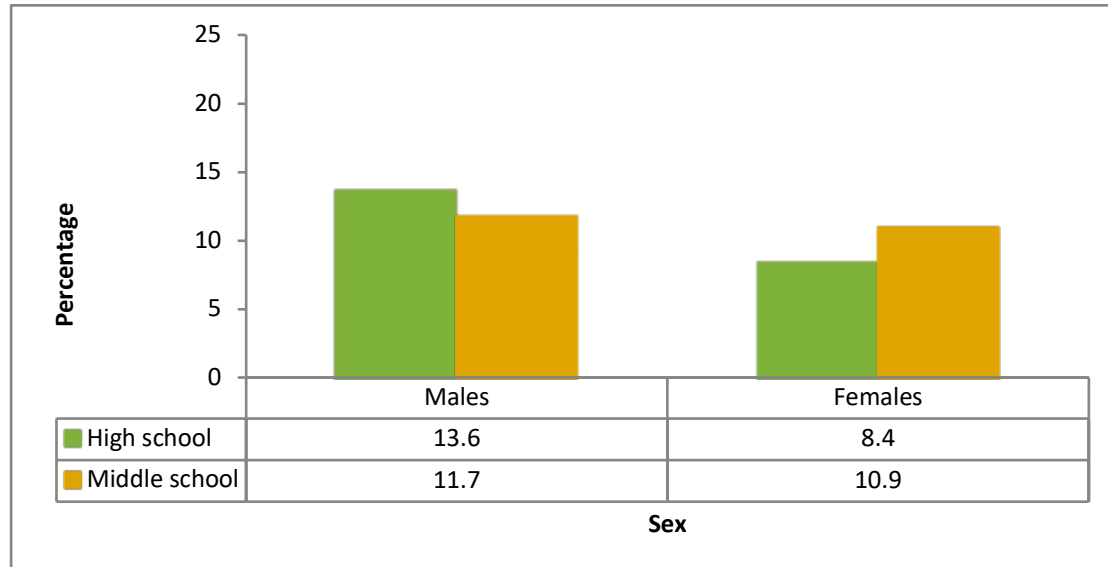
In 2019, 11.4% of high school students and 11.2% of middle school students reported smokeless tobacco use. The prevalence of smokeless tobacco use among Guam middle school students is nearly triple the rate among US high school students.

CORRELATES OF YOUTH SMOKELESS TOBACCO USE

Sex

Among high school students, males have a higher prevalence of using smokeless tobacco products than females. However, there is no sex difference among middle school students. About one in 10 (11%) middle school girls were current users of smokeless tobacco in 2019; the rate is higher than the prevalence among high school females (Figure 35).

Figure 35. Smokeless tobacco use, by sex, high school vs. middle school, Guam: 2019

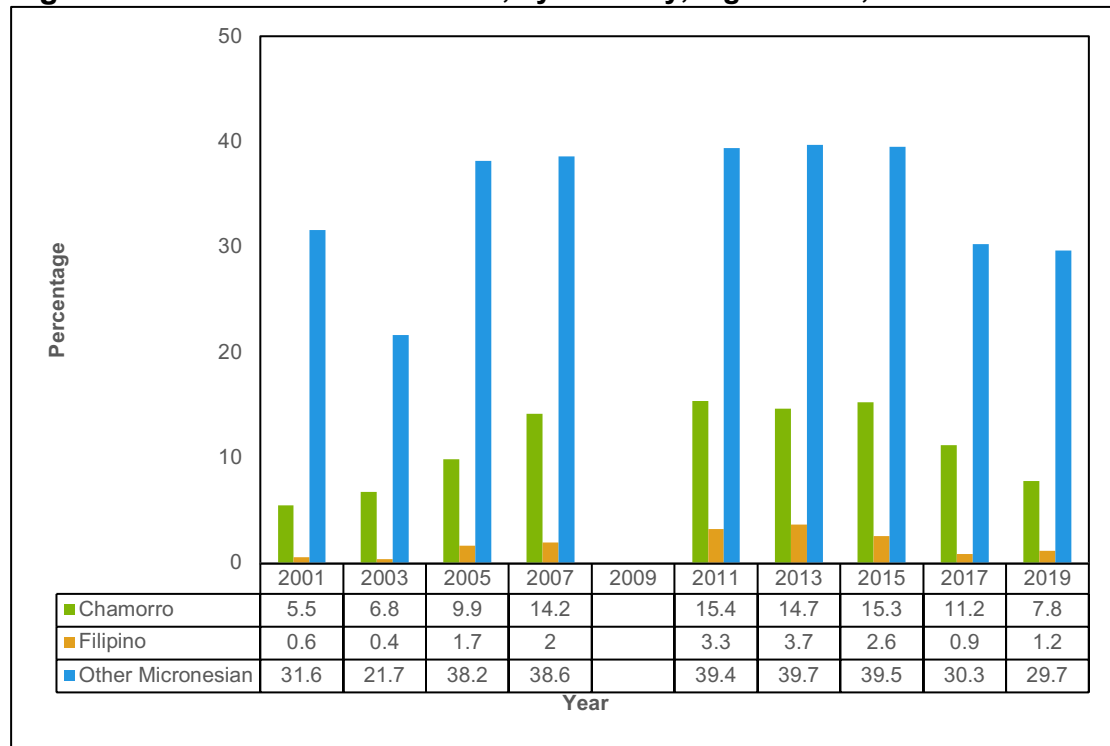


Source: GDOE, YRBS 2019

Ethnicity

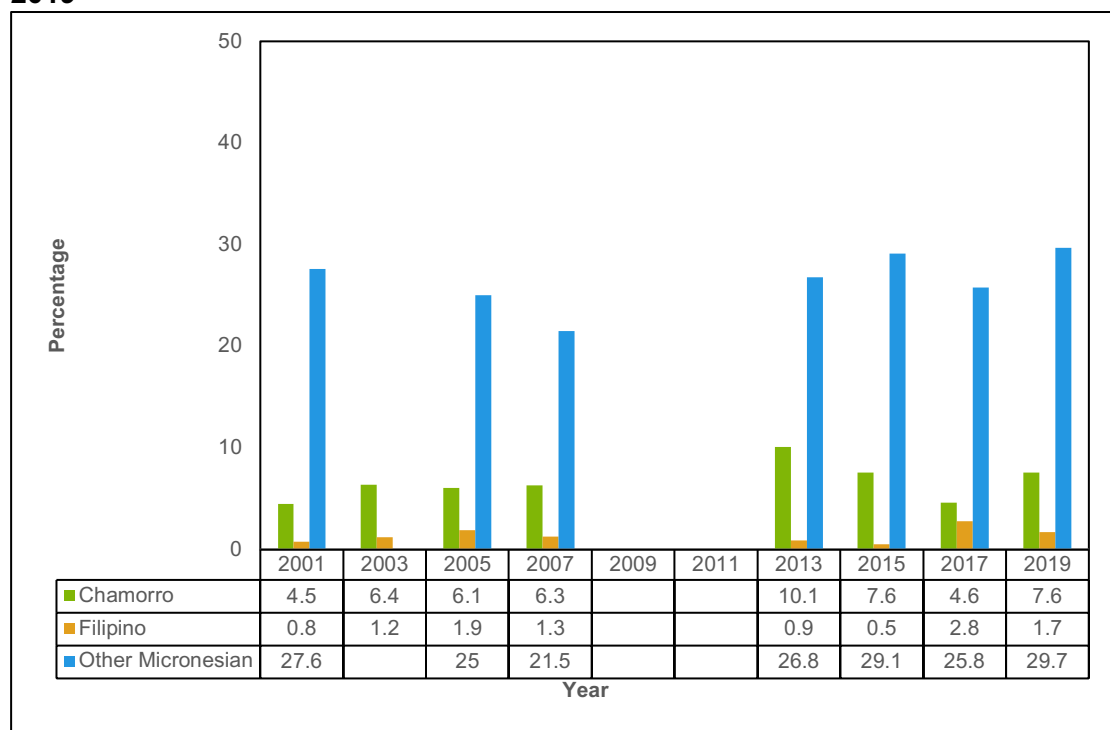
The use of smokeless tobacco products is highest among Micronesians. The difference between Micronesians and all other ethnic categories is remarkable (Figures 36 and 37). It is unclear what proportion of youth are using smokeless tobacco products as is, and what proportion are using these as additives to betel nut (areca nut/betel quid). In future iterations of the YRBS on Guam, it will be important to ask specific questions about the use of chewing tobacco, with and without betel nut (areca nut/betel quid).

Figure 36. Smokeless tobacco use, by ethnicity, high school, Guam: 2001-2019



Source: GDOE, YRBS 2001-2019; Note: blank cells = data not available; the YRBS still uses the old spelling "Chamorro"

Figure 37. Smokeless tobacco use, by ethnicity, middle school, Guam: 2001-2019

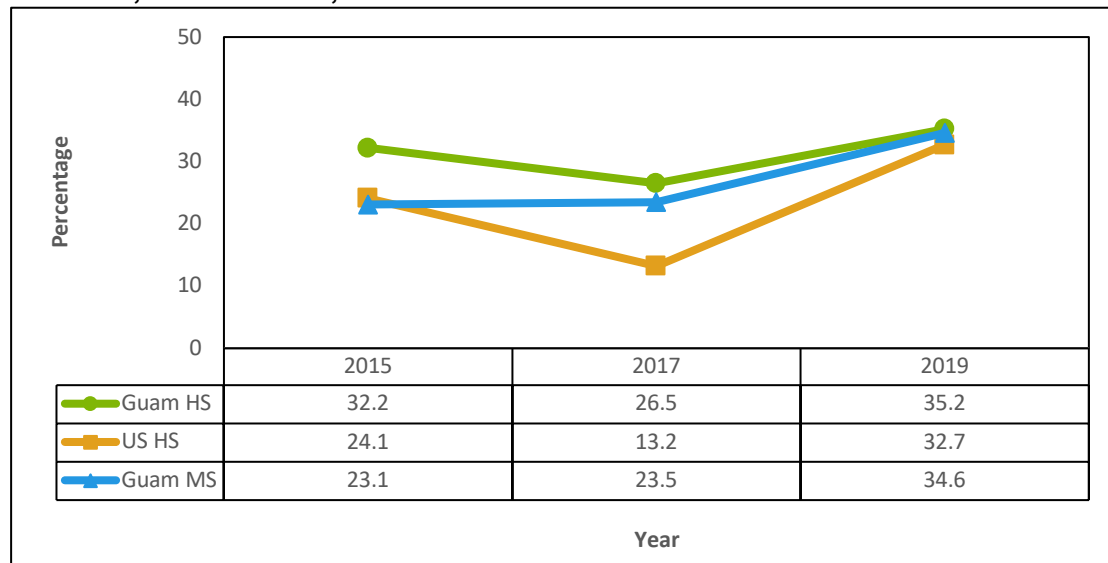


Source: GDOE, YRBS 2001-2019; blank cells = data not available
Note: the YRBS still uses the old spelling "Chamorro"

Electronic Vapor Products (E-cigarettes and other Electronic Nicotine Delivery Systems)

In 2015, questions on electronic vapor products (e-cigarettes, e-cigars, e-pipes, etc.) were added to the Guam YRBS, for both high school and middle school. In Guam, lifetime use of these products in 2019 was 68.6% among high school students and 49% among middle school students. One in three (35.2%) of high school students and one in three (34.6%) middle school students reported current use. These are similar to the US median (Figure 38). There is no sex difference in current use; Chamorus and other Micronesians have the highest rates of current use for both middle school and high school.

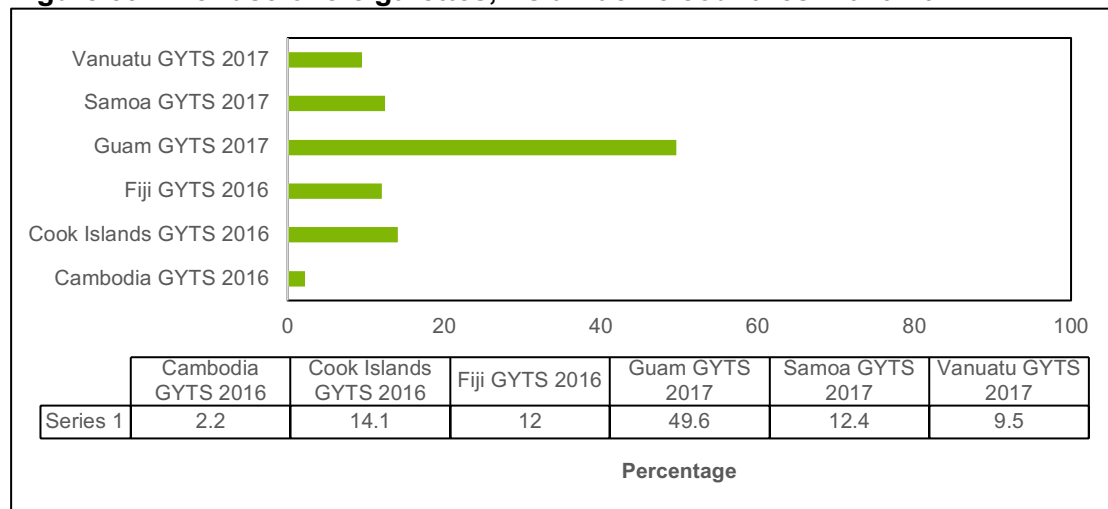
Figure 38. Current electronic vapor product use, middle and high school students, Guam vs. US, 2015-2017



Source: GDOE, YRBS 2015-2019; CDC, YRBS 2015-2019

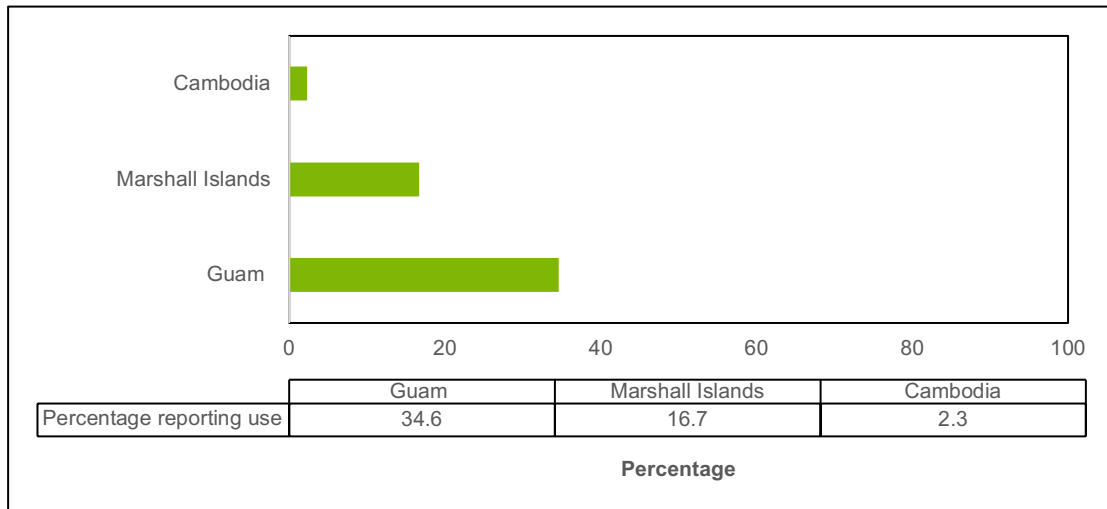
Guam youth have the highest rate of ever and current use of e-cigarettes among the countries in the Asia-Pacific region that have completed the Global Youth Tobacco Survey (GYTS) (Figures 39 and 40).

Figure 39. Ever use of e-cigarettes, Asia-Pacific countries: 2016-2017



Source: GYTS, 2016-2017; Note: for youth aged 13-15 years

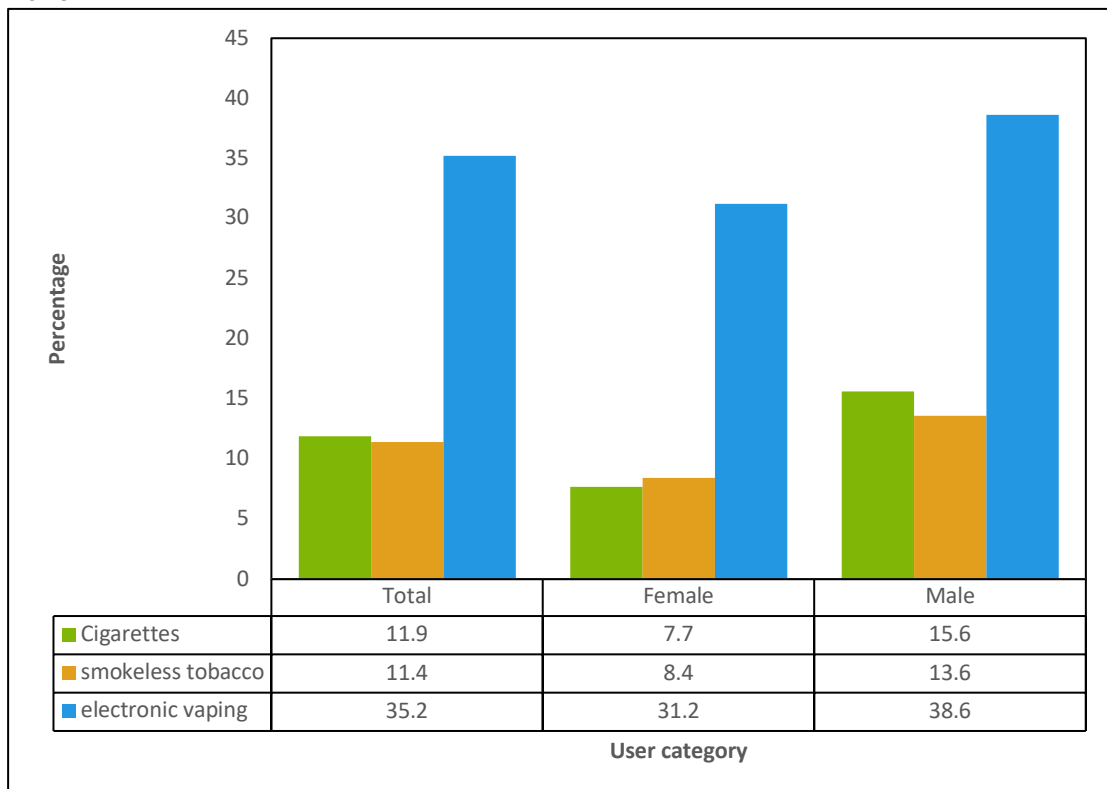
Figure 40. E-cigarette use in the past 30 days among youth aged 13-15 years, Asia-Pacific countries: 2016-2017



Source: GYTS, 2016-2017; Note: for youth aged 13-15 years

Electronic vapor product use surpassed smokeless tobacco use and smoking in 2019, for both males and females and is now the most prevalent form of tobacco use for Guam's youth (Figure 41).

Figure 41. Current tobacco product use, high school students, Guam, by sex: 2019



Source: GDOE, YRBS 2019

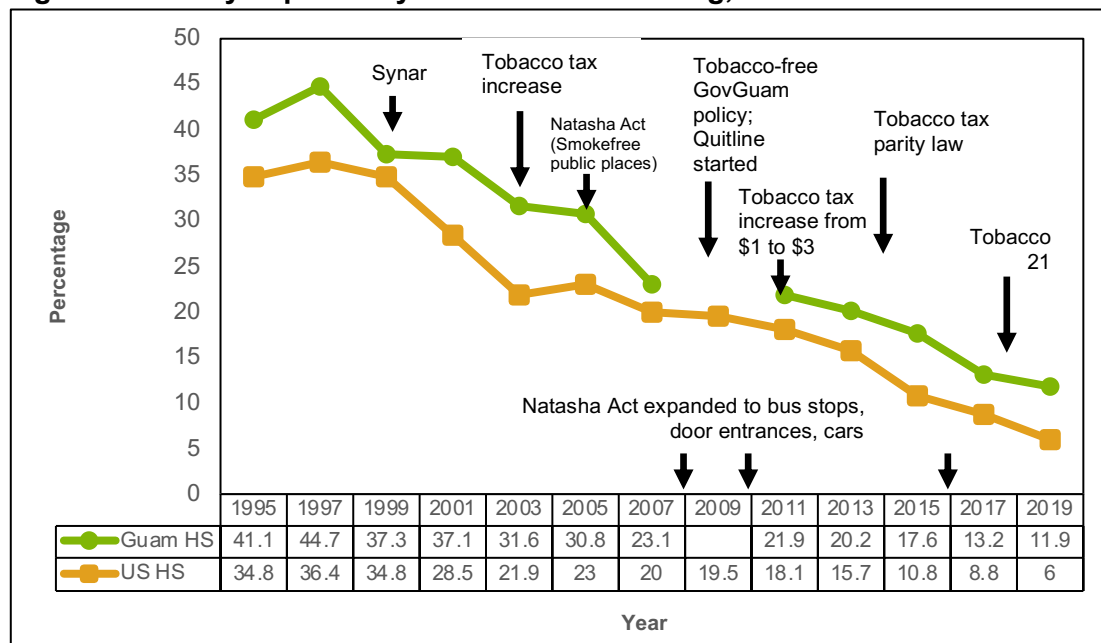
Policy impact on tobacco consumption

Youth tobacco use in Guam is responsive to policy changes.

Large declines in youth smoking prevalence coincide or follow the establishment of evidence-based tobacco control policies. SYNAR inspections started on Guam in 1999, tobacco taxes were increased on Guam in 2003, and a sustained tobacco control program was launched by the GBHWC since 2003. In 2005, Guam's Natasha Act, making public places smoke-free, was enacted. In 2007, the Governor's Executive Order mandating all GovGuam premises and vehicles to become 100% tobacco free came into effect, and the DPHSS Quitline was established. Tobacco taxes were raised further in 2010, from \$1.00/pack to \$3.00/pack; this represents one of the largest single tax increases among all US States and Territories. Guam's smoke-free public places policy was expanded in 2007, 2009 and 2016. In 2014, a tobacco tax parity law was enacted, followed by legislation to raise the legal age for consumption of tobacco products to 21 years in 2017 (Figure 42).

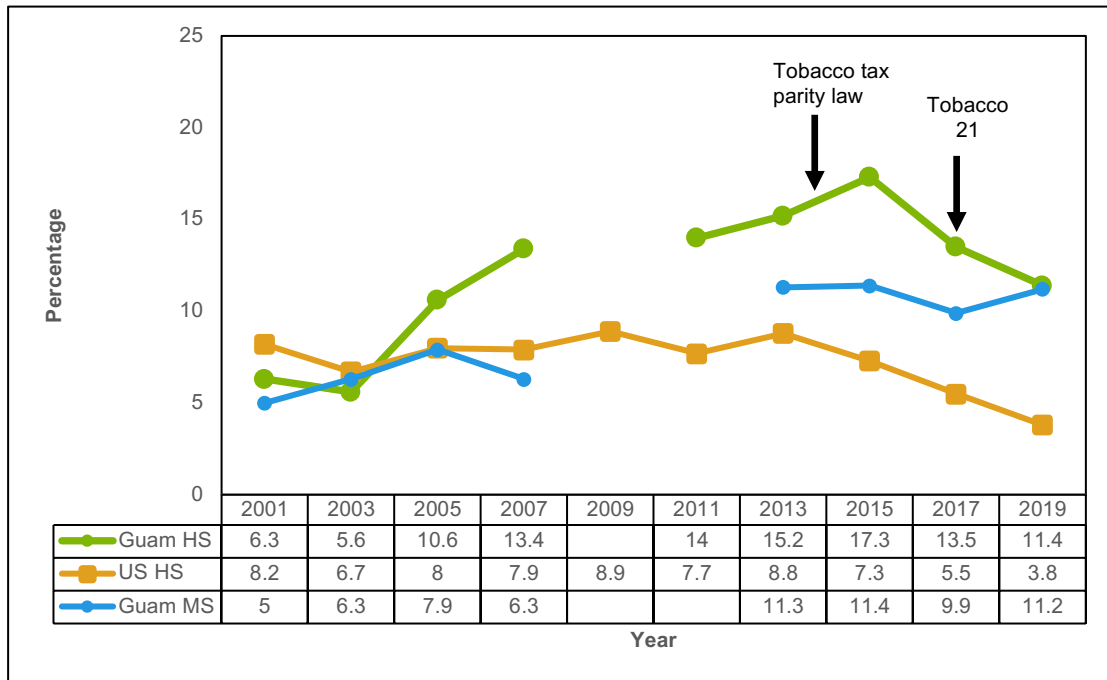
Youth smokeless tobacco use was steadily increasing until after the passage of the tobacco tax parity law in 2014 and legislation that increased the legal age for tobacco consumption from 18 to 21 years in 2017 (Figure 43). The latest data, however, indicate an uptick in middle school smokeless tobacco use; additional strong policy measures, such as increased taxes to increase price, are needed to drive prevalence down.

Figure 42. Policy impact on youth tobacco smoking, Guam vs. US: 1995-2019



Source: GDOE, YRBS 1995-2019; CDC, YRBS 1995-2019; Guam Compendium of Laws; blank cells = data not available

Figure 43. Policy impact on youth smokeless tobacco consumption, Guam vs. US: 1999-2019



Source: GDOE, YRBS 1999-2019; CDC, YRBS 1999-2019; Guam Compendium of Laws; blank cells = data not available

The Synar law and cigarette purchases by youth

Guam initiated its annual unannounced tobacco vendors' inspections in 1999, in compliance with the Synar law. Compliance rates reached the federal requirement of a retail violation rate (RVR) <20% in 2003 and have remained better than the requirement since then. Guam's RVR went below 5% in 2013 and remained below 5% until 2018, when the violation rate increased to 12.1%. However, in 2022, the violation rate once again fell below 5%.

The YRBS used to provide information on youth smokers who purchase their cigarettes from stores (Table 13). The data indicates that 6.5% of high school smokers and less than 5% of middle school smokers purchased cigarettes from a store in 2015. The percentage of high school smokers who bought their cigarettes from a store has been declining since 2001, but the middle school percentage rose from 2007 to 2013, despite low retailer violation rates during the annual tobacco retailers' inspection. The middle school rate decreased in 2015. This question was not asked in subsequent years. However, the 2017 GYTS data for youth aged 13-15 years documented that 22.9% of current smokers bought their cigarettes from a retail source and 47.7% were not prevented from purchasing these products because of their age.

These data highlight the importance of consistent enforcement of the Synar law and the need and effectiveness of a comprehensive approach to tobacco use prevention among youth, utilizing both price and non-price measures to reduce demand for tobacco products, to complement the restriction in youth access to tobacco.

Given the precipitous increase in youth e-cigarette smoking, it would be important to track retailer violation of these products as well.

Table 13. Tobacco retailer violation rates and percent of youth purchasing cigarettes from a store, Guam: 2000-2022

Year	Retailer violation rate (%)	MS Bought Cigarettes (%)	HS Bought Cigarettes (%)
2000	33.0	---	---
2001	42.0	1.1	30.0
2002	20.2	---	---
2003	11.0	0.8	27.9
2004	18.3	---	---
2005	14.9	3.6	24.5
2006	5.0	---	---
2007	9.4	3.8	17.3
2008	6.0	---	---
2009	8.9	N/A	N/A
2010	11.6	---	---
2011	7.8	7.0	13.0
2012	7	---	---
2013	5.0	8.4	10.5
2014	4.0	---	---
2015	4.4	3.9	6.5
2016	4.7	---	---

2017	4.8	---	---
2018	12.1	---	---
2019	0	---	---
2020	---	---	---
2021	11.9	---	---
2022	3.0	---	---

Source: GBHWC PEACE Office, Synar reports, 2000-2022; GDOE, YRBS 2001-2019;
 Note: "—" = data not collected for that year; "N/A" = data not available

Tobacco: Consequences

The top three causes of death---diseases of the heart, malignant neoplasms (cancer), and cerebrovascular disease (stroke)---are directly caused by tobacco. An additional four---COVID-19, nephritis, influenza and pneumonia, and septicemia---are worsened by tobacco use (Table 14).

Table 14. Top Ten Causes of Death: Guam, 2021

Rank	Cause of Death	# of deaths	% of all deaths
1	Diseases of the heart	395	30.9
2	Malignant Neoplasms	212	15.6
3	COVID-19	119	9.3
4	Cerebrovascular Disease	75	5.7
5	Nephritis, nephrotic syndrome, and nephrosis	48	3.8
6	Septicemia	45	3.5
7	Accidents/unintentional injuries	44	3.4
8	Intentional self-harm	24	1.9
9	Certain conditions originating in the perinatal period	24	1.9
10	Influenza and pneumonia	24	1.9
	All other causes	253	19.8
	Uncoded deaths	17	1.3

Source: Guam Department of Public Health and Social Services, Office of Vital Statistics Death Certificates, as reported in the 2021 Guam Statistical Yearbook, 2023

The Guam Comprehensive Cancer Control Program of the Department of Public Health and Social Services (DPHSS) in partnership with the University of Guam Cancer Research Center released cancer registry data from 2013-2017. All the top causes of cancer death in Guam are tobacco-related (Table 15). Lung, colon, liver, ovarian and cervical cancer are related to smoking, while oro-pharyngeal cancers are linked to smokeless tobacco use. Secondhand smoke exposure has been implicated as a risk factor for breast cancer.

Lung cancer is now the major cause of cancer mortality in Guam for both males and females, and cancers of the mouth and pharynx have risen in prominence. Thus, cancer mortality data highlight the critical importance of further reducing tobacco use among Guam's people. Because secondhand smoke also raises cancer risk, interventions to curb tobacco use will protect not only the tobacco users, but also all others who would have been exposed to tobacco smoke.

Table 15. Top causes of cancer death on Guam, by sex: 2013-2017

Males	Females
Lung and Bronchus*	Lung and bronchus*
Liver *	Breast**
Prostate*	Colon-Rectum-Anus*
Colon-Rectum-Anus*	Ovary*
Mouth and pharynx***	Cervix*

Source: Guam Comprehensive Cancer Control Program, DPHSS, Guam Cancer Facts and Figures 2013-2017
 Note: * related to smoking; ** related to secondhand smoke exposure; ***related to smokeless tobacco use

Interestingly, lung cancer incidence decreased for the first time since cancer registry data have been available. This may reflect the positive impact of decreasing cigarette smoking over the past two decades following the lag time for carcinogenesis.

Cigarette butts used to comprise one of the most common type of debris found on land or water in Guam, making up 16.6% of environmental garbage in 2019⁵, but it did not make its way into the top 10 debris list for 2020 and 2021. This may reflect the reduction in cigarette smoking within the general population.

⁵ The Ocean Conservancy, as reported in the 2021 Guam Statistical Yearbook

Electronic Vapor Products: Consequences

To date, there has been one recorded case of traumatic injury due to an exploding electronic cigarette in Guam. The patient sustained severe injuries to his eyeball, face and hand and required facial reconstructive surgery to repair the damage (Pacific Daily News, August 2016).

Reports from the Guam Department of Education indicate that there were at least 2 known cases of e-cigarettes exploding, leading the GDOE to request the Guam Police Department to handle and dispose of all e-cigarettes and vape paraphernalia confiscated at the schools from students. (Personal communication with GDOE Chris Anderson, February 2018).

GDOE reported a total of 875 offenses for nicotine use/possession among students for School Year (SY) 2019-2020, and 470 offenses for SY 2021-2022. (The Guam Daily Post, January 22, 2022).

In 2018, doctors from the Guam Regional Medical City (GRMC) published a journal article documenting a case of diffuse alveolar hemorrhage in a 33-year-old Guam male who had been aggressively vaping in the period prior to developing pulmonary symptoms.⁶

⁶ Agustin, Michael & Yamamoto, Michele & Cabrera, Felix & Eusebio, Ricardo. (2018). Diffuse Alveolar Hemorrhage Induced by Vaping. Case Reports in Pulmonology. 2018. 1-3. 10.1155/2018/9724530.

Alcohol

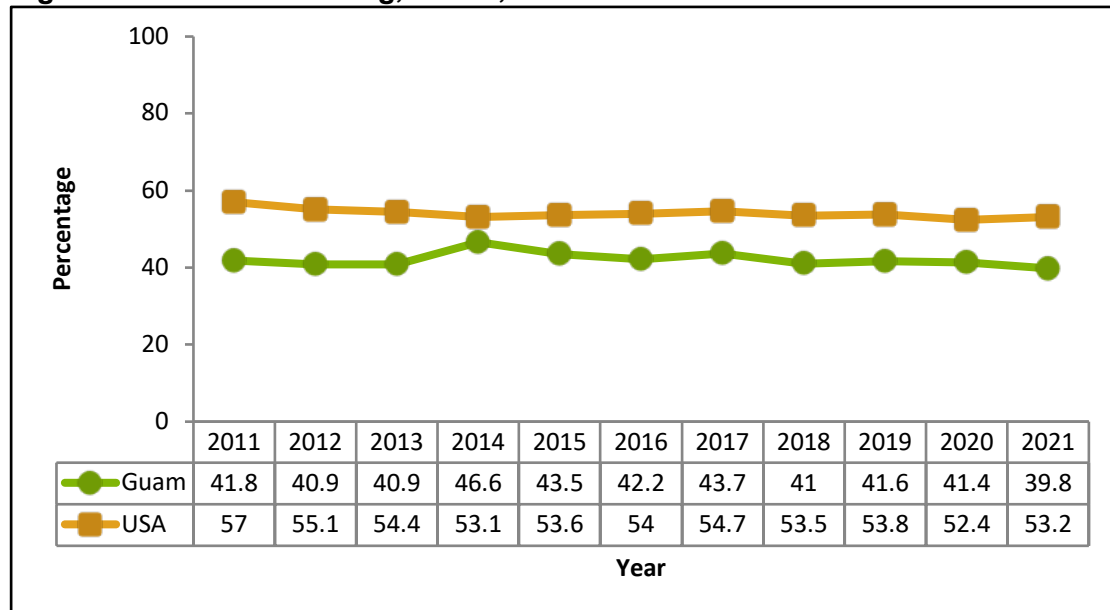
Consumption: Adults

Current Alcohol Use

TREND and PREVALENCE

The BRFSS defines current alcohol use as having had at least 1 drink of alcohol in the past 30 days. Current alcohol consumption in Guam remained unchanged from previous years. In 2021, nearly 40% of adults on Guam reported having had at least one drink of alcohol within the past 30 days (Figure 44). Current drinking among adults is lower in Guam than in the US.

Figure 44. Current drinking, adults, Guam vs. US: 2011-2021



Source: Guam DPHSS, BRFSS, 2011-2021; CDC, BRFSS 2011-2021

CORRELATES

Sex

Overall, there was no statistically significant difference between men and women for current drinking. (Figure 45).

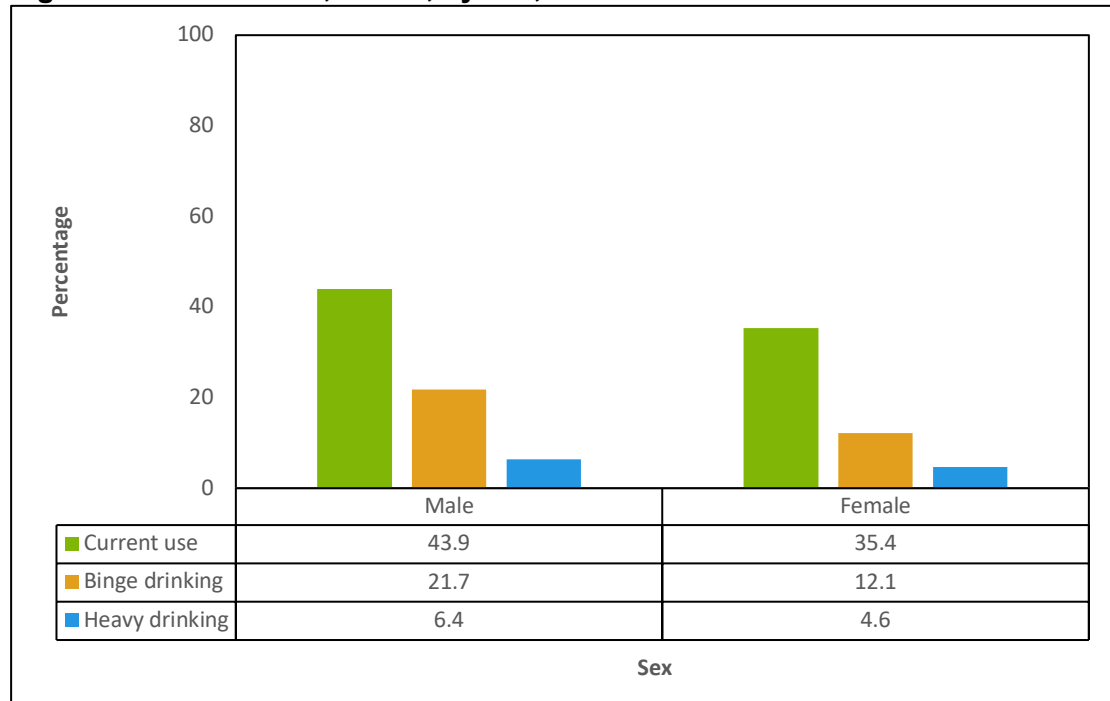
Other Correlates

There were no clearly delineated associations between age, educational attainment, income, and current drinking.

Age at First Use of Alcohol

Over one-third (34.8%) of Guam adults reported first using alcohol before the age of 17 years, and another 40.8% reported having their first alcoholic drink between 18 to 24 years of age. In Guam, the legal age for consumption is 21 years.

Figure 45. Alcohol use, adults, by sex, Guam: 2021



Source: Guam DPHSS, BRFSS, 2021

Note: No statistically significant difference noted across sex for these three categories of alcohol consumption.

Ethnicity

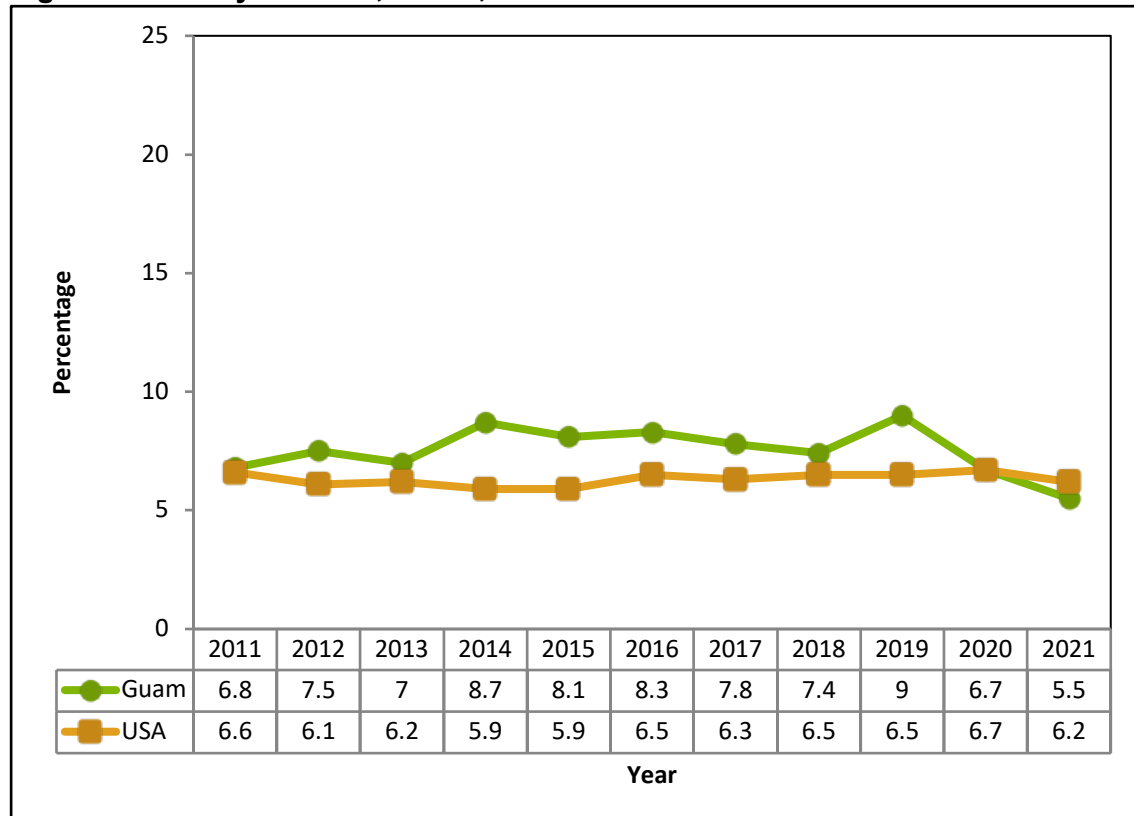
Whites/Caucasians had the highest prevalence of current drinking (59.6%) compared to other Asians (46%), Micronesians (40.6%), CHamorus (35.9%), and Filipinos (25.1%).

Heavy Alcohol Use

TREND and PREVALENCE

Heavy drinking is defined in the BRFSS as adult men having more than fourteen drinks per week and adult women having more than seven drinks per week. The prevalence of heavy drinking on Guam is similar to the US median (Figure 46).

Figure 46. Heavy drinkers, adults, Guam vs. US: 2011-2021



Source: Guam DPHSS, BRFSS, 2011-2021; CDC, BRFSS 2011-2021

CORRELATES

Sex

In 2021, there was no statistically significant difference for heavy drinking between men and women (Figure 45).

Age

Because of the small numbers of respondents reporting heavy drinking, it is difficult to ascertain relationships between heavy drinking and age.

Income

Because of the small numbers of respondents reporting heavy drinking, it is difficult to ascertain relationships between heavy drinking and income.

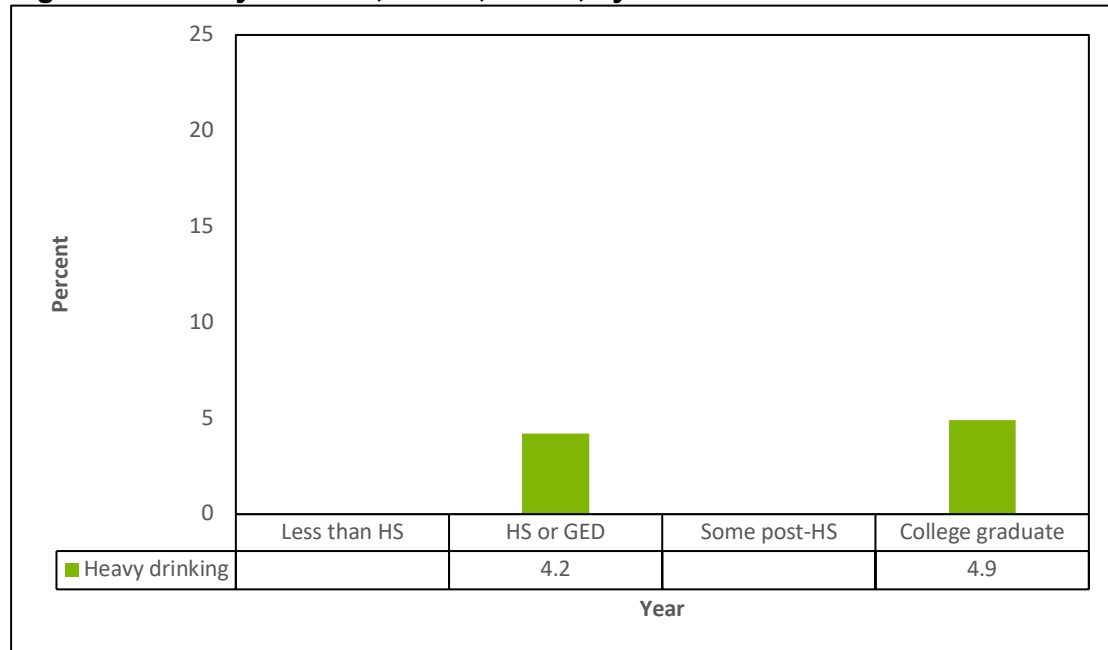
Education

Heavy drinking appears to be as likely among those with a HS or GED education as those with the highest level of educational attainment (Figure 47).

Ethnicity

CHamorus (7.0%), Whites/Caucasians (6.8%) and other Micronesians (5.6%) had higher rates of heavy drinking than Filipinos (0.8%).

Figure 47. Heavy drinkers, adults, Guam, by educational attainment: 2021



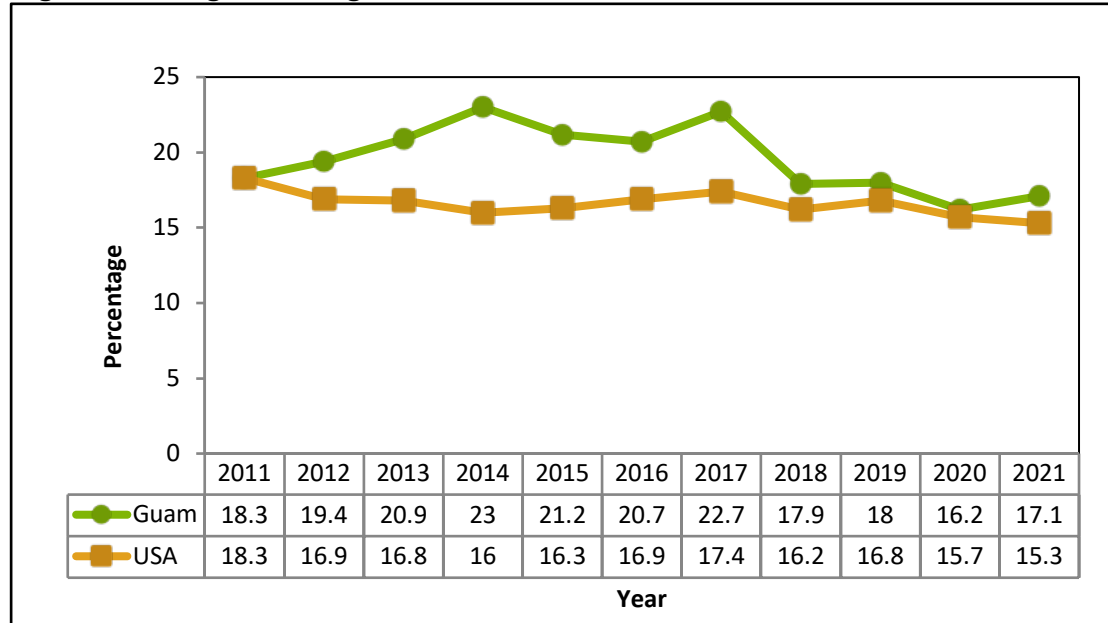
Source: Guam DPHSS, BRFSS, 2021; Note: blank cells = Prevalence estimates not available if the unweighted sample size for the denominator was < 50

Binge Drinking

TREND and PREVALENCE

Binge drinking, defined as having five or more drinks on one occasion for males, and four or more drinks on one occasion for females was reported by 17.1% of adults on Guam in 2021 (Figure 48). The trend appeared to be increasing for Guam until 2014; since then, binge drinking prevalence has been trending downwards. Of note, Guam passed its “Responsible Alcohol Sales and Service Act” in 2013, with implementation started in 2014; this law mandates training of all licensed alcohol servers in preventing the sale of alcoholic beverages to persons under 21 years of age, recognizing falsified identification documents, denial of service to an intoxicated or unruly person and enforcement of hours of service and sale of alcoholic beverages.

Figure 48. Binge drinking, adults, Guam vs. US: 2011-2021



Source: Guam DPHSS, BRFSS, 2011-2021; CDC, BRFSS, 2011-2021

CORRELATES

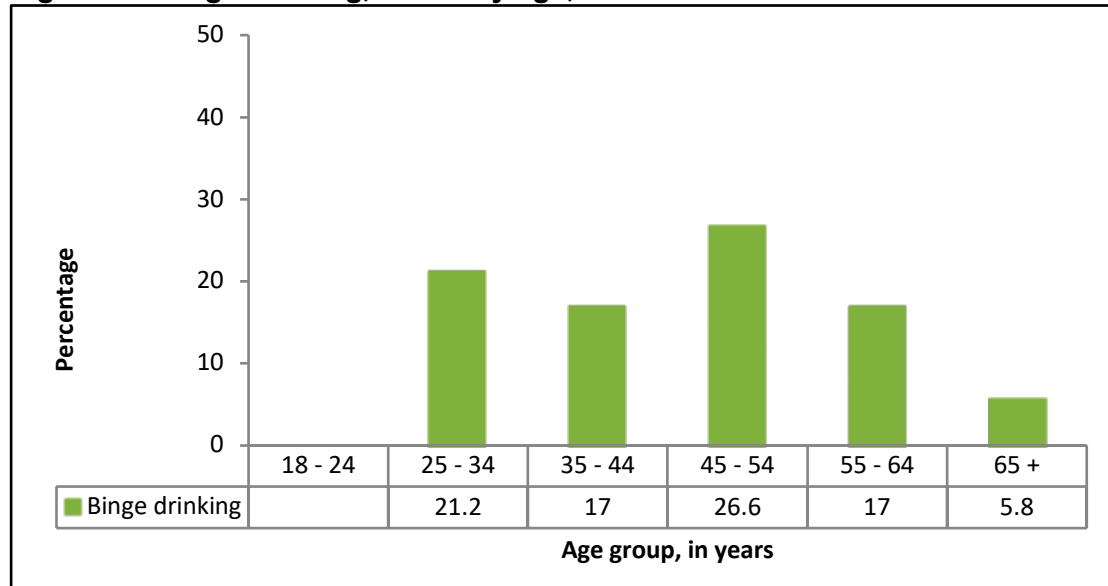
Sex

In 2021, males in Guam had a binge drinking rate that was nearly double that of their female counterparts, but the difference was not statistically significant (Figure 45).

Age

Binge drinking tends to decrease with age (Figure 49).

Figure 49. Binge drinking, adults by age, Guam: 2021



Source: Guam DPHSS, BRFSS, 2021; blank cells - Prevalence estimate not available if the unweighted sample size for the denominator was < 50

Income

There is no statistically significant difference in the likelihood of binge drinking across the income scale.

Education

There is no difference in rates of binge drinking across the educational attainment categories.

Ethnicity

Whites/Caucasians had the highest prevalence for binge drinking (25.0%) followed by Micronesians (22.5%), CHamorus (17.0%), other Asians (15.2%) and Filipinos (8.5%).

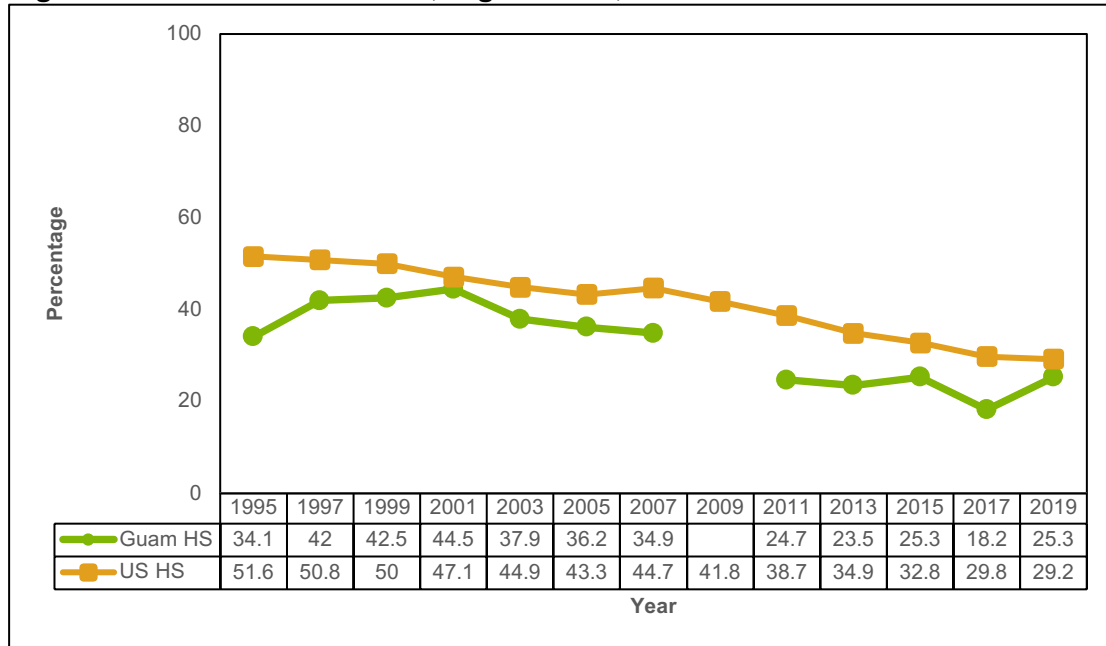
Consumption: Youth

Current and Lifetime Alcohol Use

TREND and PREVALENCE

Current alcohol use is higher among US youth. The prevalence in Guam was increasing until 2001, then started to decline over time until 2019, when the rate increased from the previous year (Figure 50).

Figure 50. Current alcohol use, High school, Guam vs. US: 1995-2019



Source: GDOE, YRBS 1995-2019; CDC, YRBS 1999-2019
 Note: blank cells = data not available

CORRELATES

Sex

Unlike youth tobacco use among high school students in Guam, current drinking is similar across the sexes (Figure 51).

Figure 51. Current alcohol use, high school by sex, Guam vs. US: 2019

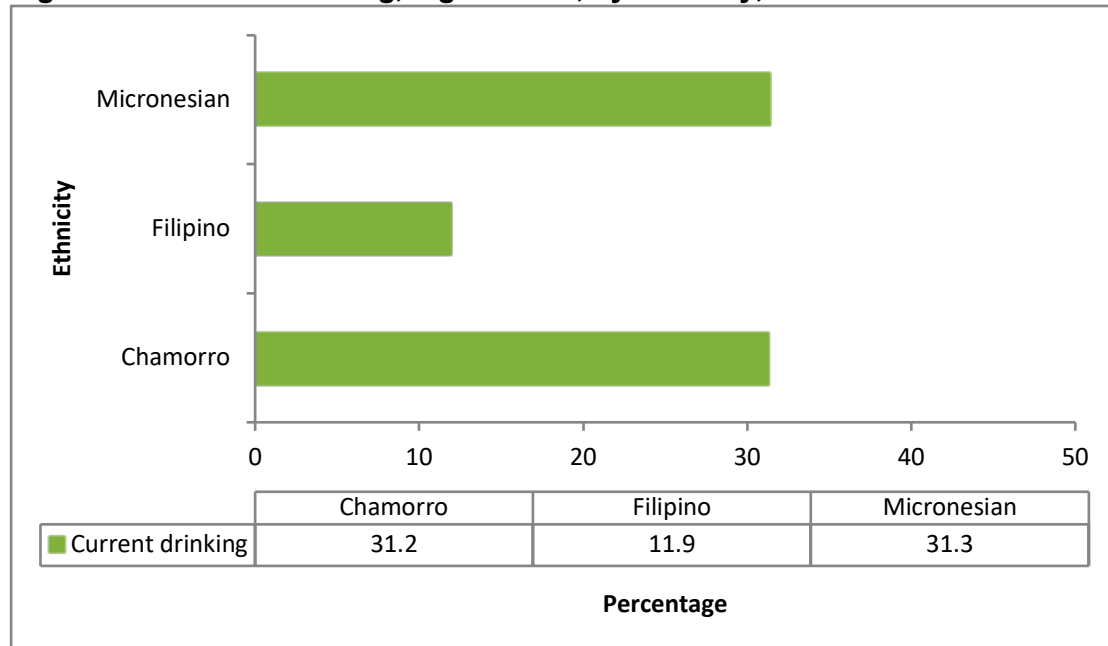


Source: GDOE, YRBS 2019; CDC, YRBS 2019

Ethnicity

When disaggregated by ethnicity/race, Filipino youth have the lowest rates for current alcohol use compared to Chamorro and other Micronesian youth (Figure 52).

Figure 52. Current drinking, high school, by ethnicity, Guam: 2019



Source: GDOE, YRBS 2019; Note: the YRBS still uses the old spelling "Chamorro"

Age at First Use of Alcohol

In 2019, 19.3% of high school students in Guam reported that they had their first alcoholic drink before the age of 13 years, while 11% of middle school students stated they had their first drink of alcohol before the age of 11 years.

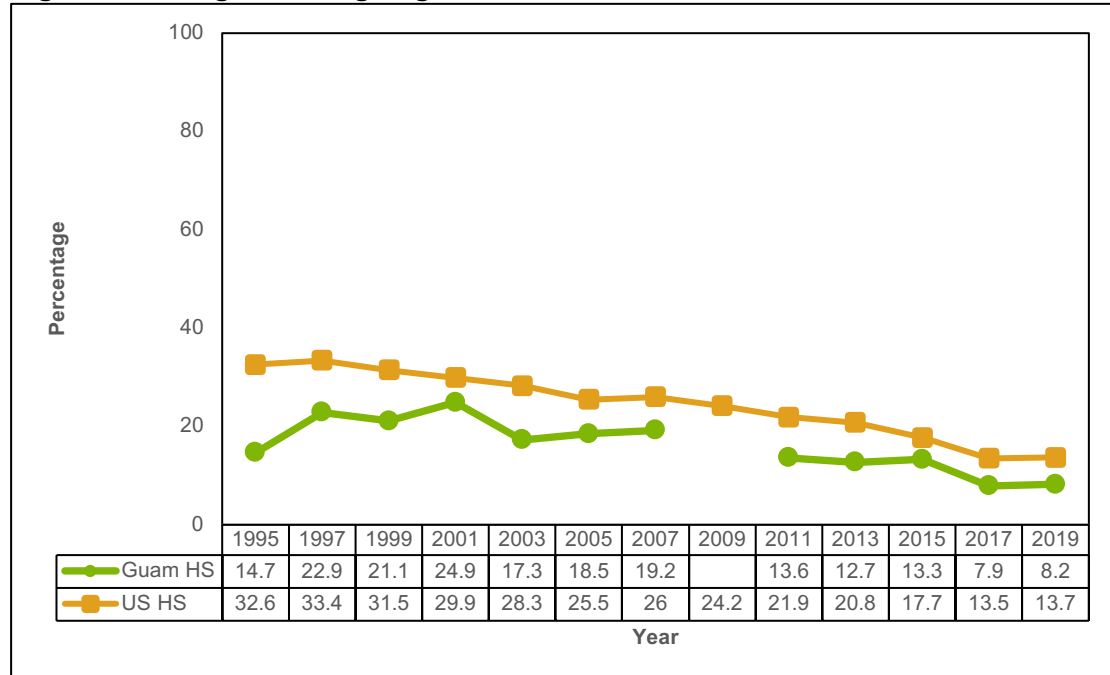
Binge Drinking

TREND and PREVALENCE

Binge drinking among youth is lower on Guam than on the US. In 2019, 8.2% of Guam high school students reported binge drinking, compared to 13.7% of high school students in the US (Figure 53).

From 1995 to 2001, US rates were decreasing while Guam rates were increasing. Thus, the difference between Guam and US rates was shrinking. In 2003, the binge-drinking rate decreased for the first time since 1995, followed by further declines in 2011 and 2017.

Figure 53. Binge drinking, high school: Guam vs. US: 1995 to 2019



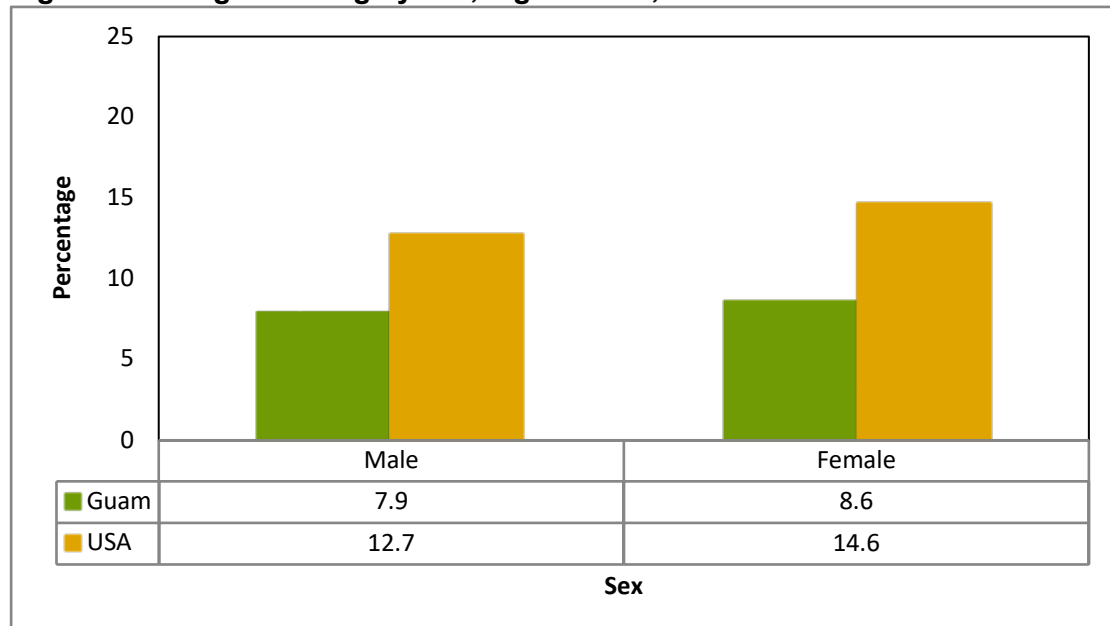
Source: GDOE, YRBS 1995-2019; CDC, YRBS 1999-2019
 Note: blank cells = data not available

CORRELATES

Sex

In 2019, there was no difference noted in binge drinking rates across the sexes in Guam. Binge drinking prevalence appeared higher among US students, regardless of sex, although the differences were not statistically significant (Figure 54).

Figure 54. Binge drinking by sex, high school, Guam vs. US: 2019

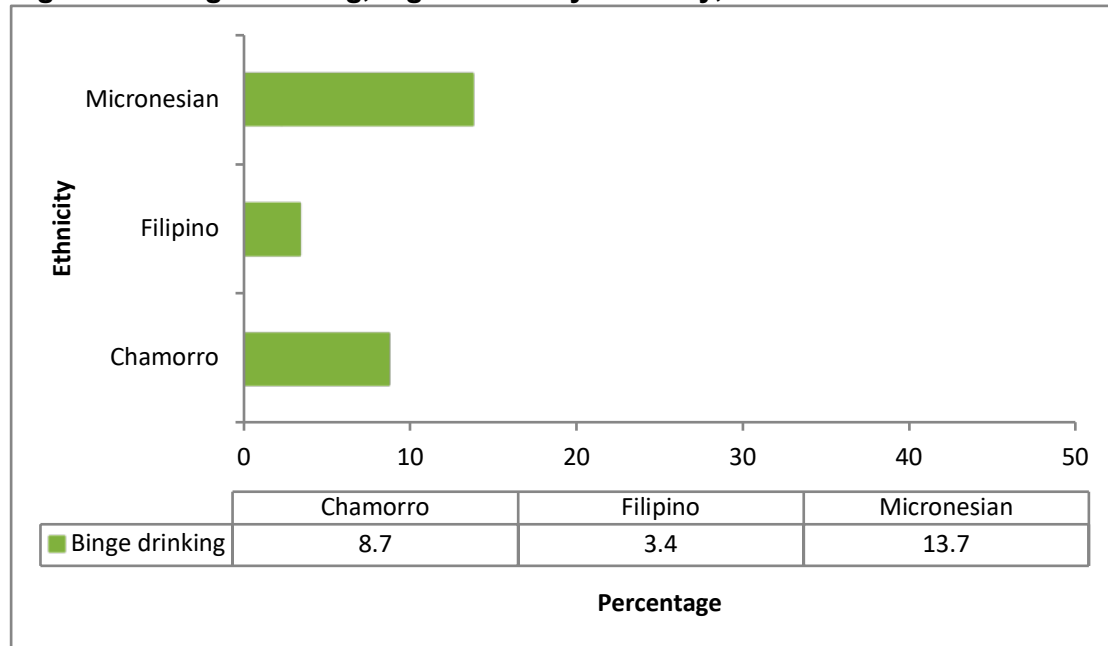


Source: GDOE, YRBS 2019; CDC, YRBS 2019

Ethnicity

Filipino youth have the lowest rates for binge drinking, while Micronesian youth have the highest (Figure 55).

Figure 55. Binge drinking, high school by ethnicity, Guam: 2019



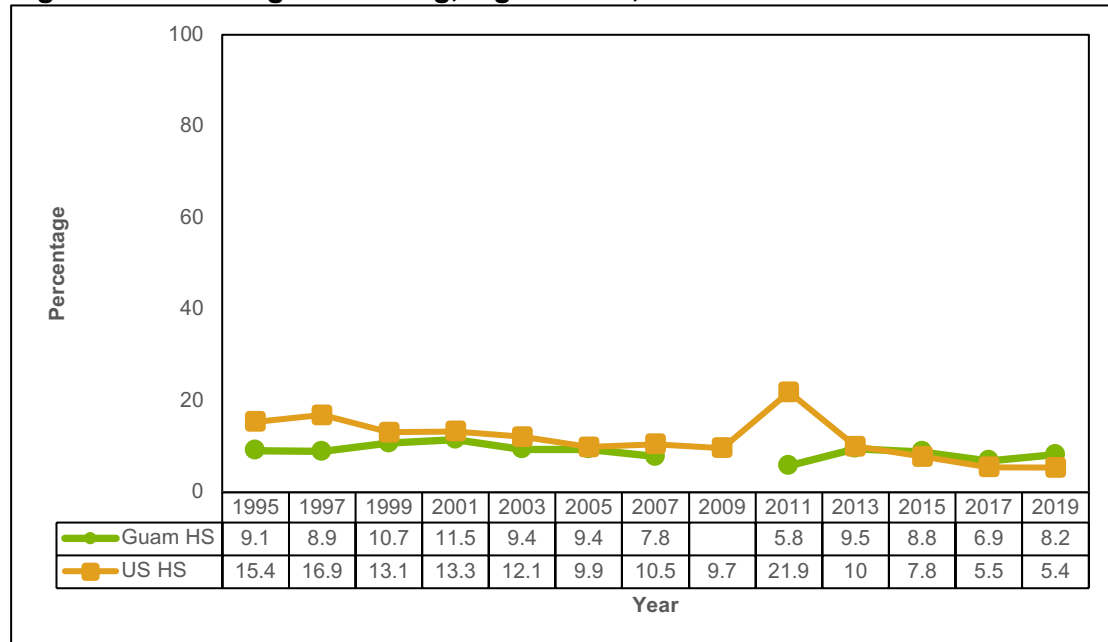
Source: GDOE, YRBS 2019

Note: the YRBS still uses the old spelling "Chamorro"

Drinking and Driving

Drinking and driving increased among Guam high school students between 2011 and 2013, with no change noted in subsequent years. Nearly one in twelve students reported they drove when drinking alcohol during the 30 days before the survey (Figure 56).

Figure 56. Drinking and driving, high school, Guam vs. US: 1995 to 2019

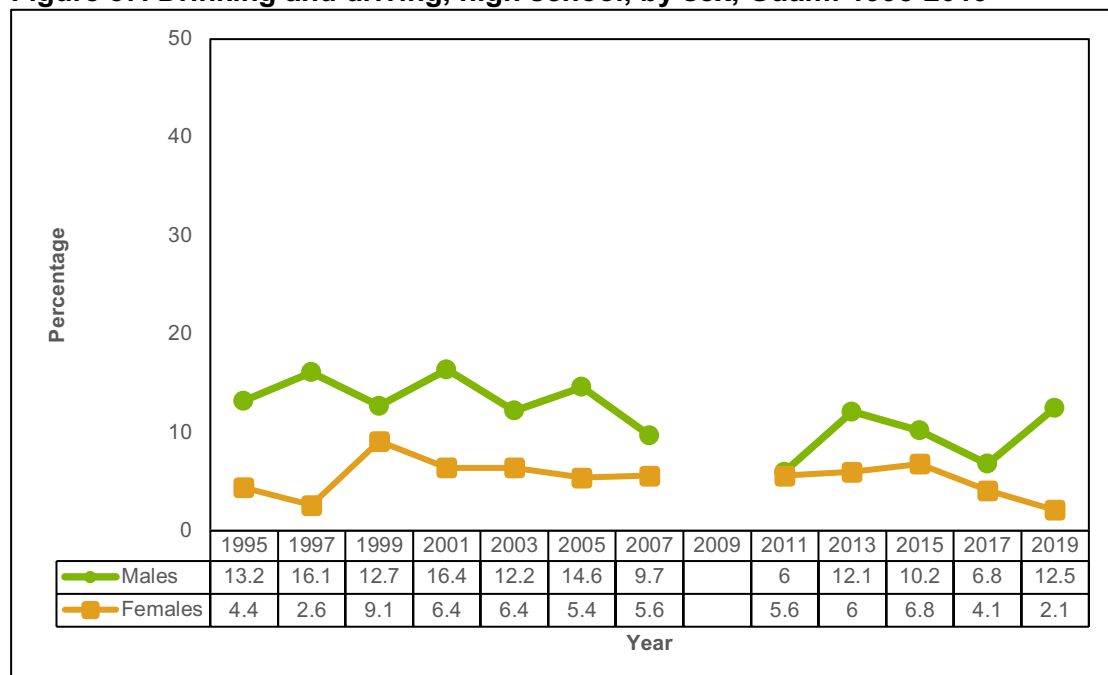


Source: GDOE, YRBS 1995-2019; CDC, YRBS 1995-2019

Note: blank cells = data not available

Males were more likely than females to drink and drive (Figure 57).

Figure 57. Drinking and driving, high school, by sex, Guam: 1995-2019



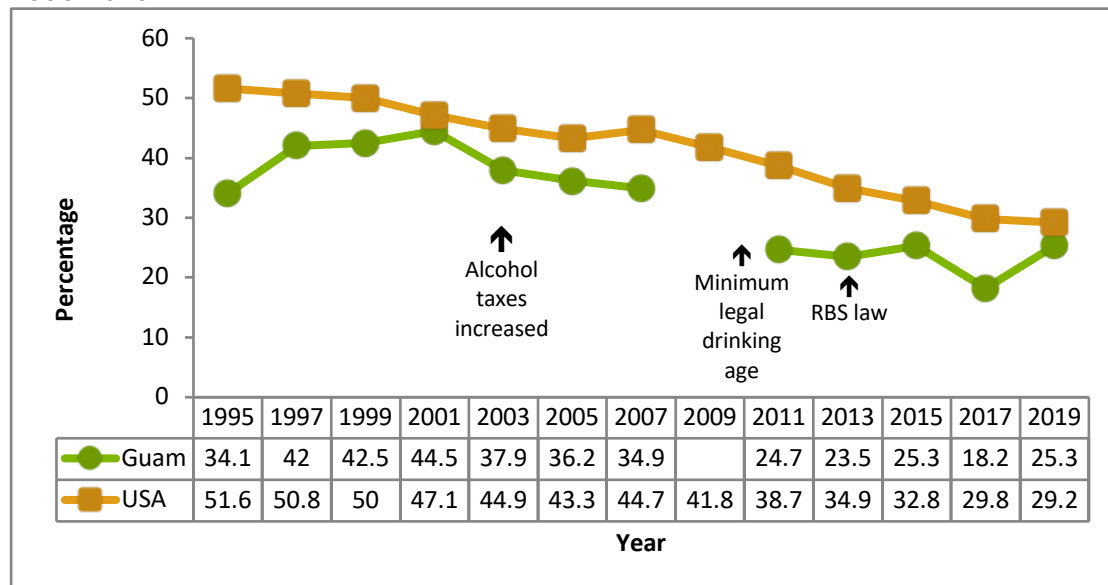
Source: GDOE, YRBS 1995-2019

Note: blank cells = data not available

Policy impact on alcohol consumption

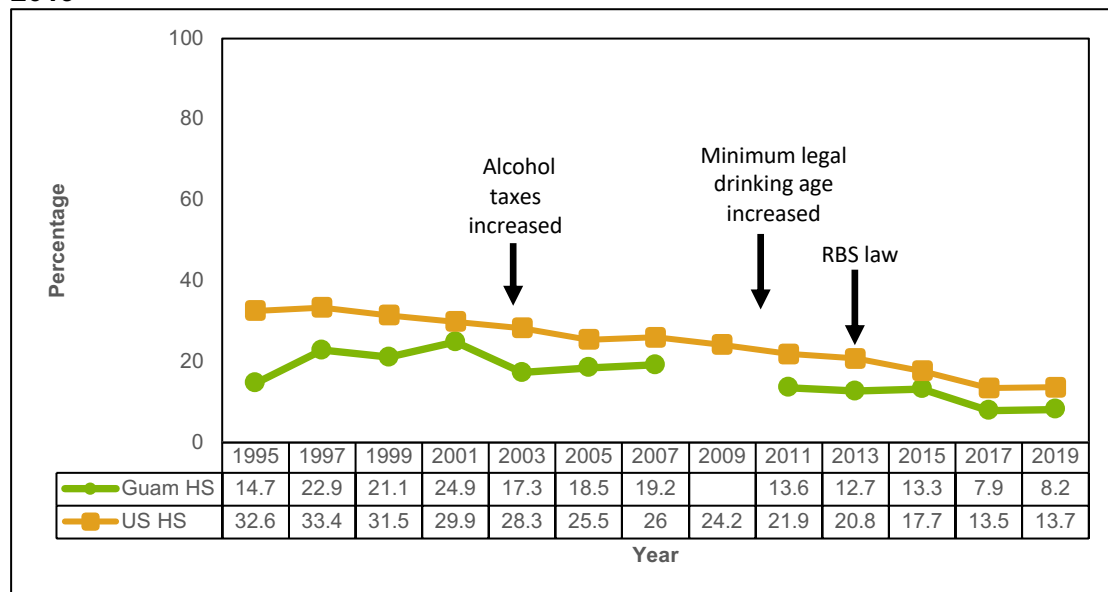
Guam raised taxes on alcohol products in 2003. In 2010, the minimum legal age for alcohol consumption was raised from 18 to 21 years. These policy milestones were accompanied or followed by significant declines in youth current alcohol use and binge drinking. Of note, the youth current alcohol use and binge drinking rates were rising steadily from 1995 to 2001; this upward trend was reversed after the increase in alcohol taxes in 2003 (Figures 58 and 59). However, the decline appears to have levelled off, indicating the need for enhanced policies to counter youth alcohol use. In contrast, the Responsible Beverage Service (RBS) law enacted in 2013 appears to have had no effect on youth drinking.

Figure 58. Policy impact on current alcohol use, high school, Guam vs. USA: 1995-2019



Source: GDOE, YRBS 1995-2017
 Note: blank cells = data not available

Figure 59. Policy impact on binge drinking, high school, Guam vs. USA: 1995-2019



Source: GDOE, YRBS 1995-2017; CDC, YRBS, 1995-2017
 Note: blank cells = data not available

Alcohol: Consequences

Health Consequences

Alcohol directly contributes to cancer, the 2nd leading cause of death on Guam (see Table 14). In addition, alcohol is implicated in some types of heart disease, stroke, suicide, and accidents and chronic alcoholism can worsen the prognosis of persons with pneumonia, septicemia, and diseases of the digestive system (liver cirrhosis).

Alcohol is a major risk factor for liver, breast, oropharyngeal and colorectal cancer. Liver cancer has risen in rank from the 5th cause of cancer death in Guam in 2003-2007, to the 3rd in 2013-2017. Previously, liver cancer accounted for 7% of cancer deaths; however, in 2013-2017, it comprised nearly 10% of all cancer deaths (Table 16). Breast, colorectal and oro-pharyngeal cancers also figure prominently among the most common causes of cancer, and cancer mortality, in Guam.

Table 16. Top cancer cases and deaths, selected cancer sites, Guam: 2013-2017

Cancer Sites		Incidence Counts (New Cases)	Percent of Total Cancer Incidence	Cancer Sites		Mortality Counts (Death)	Percent of Total Cancer Mortality
1	Breast	267	16.8	1	Lung and Bronchus	222	27.5
2	Lung and Bronchus	261	16.4	2	Colon-Rectum-Anus	82	10.2
3	Colon, Rectum & Anus	177	11.2	3	Liver	79	9.8
4	Prostate	175	11.0	4	Breast	69	8.6
5	Liver	78	4.9	5	Prostate	49	6.1
6	Uterus	76	4.8	6	Pancreas	30	3.7
7	Mouth and pharynx	50	3.2	7	Mouth and pharynx	24	3.0
8	Thyroid	43	2.7	8	Ovary	24	3.0
9	Non-Hodgkin Lymphoma	36	2.3	9	Leukemia	23	2.8
10	Skin	36	2.3	10	Stomach	22	2.7
	Other Cancer Sites	388	24.4		Other Cancer Sites	182	22.6
	All New Cancer Cases	1587	100		All Cancer Deaths	806	100

Source: DPHSS, Cancer Facts and Figures 2013-2017

Socio-economic Consequences

Alcohol-related arrests comprised 6.8% of all arrests in 2021 (Table 17).

Table 17. Alcohol-related arrests, Guam: 2016 to 2021

Year	Total Offenses Cleared by arrest	DUI (Number of all arrests)	Liquor Laws (Number of all arrests)	Drunkenness (Number of all arrests)	Alcohol-related arrests, (% of arrests)
2016	3953	145	80	7	5.9
2017	3696	122	52	12	5.0
2018	3905	96	129	159	9.8
2019	7955	269	228	308	10.1
2020	6927	293	81	187	8.1
2021	9847	461	51	161	6.8

Source: Data from Guam Police Department, Uniform Crime Report, 2021; table 3-1, pp. 45-46.

There were 358 arrests noted in the “Driving under the Influence” (DUI) special report of the 2021 UCR, up from 329 arrests from the previous year (Table 18). [NOTE: These figures do not match with the numbers reported in other sections of the UCR]. DUI arrests were highest among those age 21-25 years.

Table 18. Arrests for driving under the influence (DUI), Guam: 2016-2021

Year	Number of Arrests	Percent Change from Previous Year	Rate per 1,000 population
2016	140	-64.5	0.9
2017	125	-10.7	0.8
2018	348	178.4*	2.1*
2019	350	0.6*	2.1*
2020	329	-6.0	2.0
2021	358	8.8	2.1

Source: Guam Police Department, Uniform Crime Report, 2021; Table 5-4, p.71.

Note: * = revised from previous editions of the UCR

Alcohol-related offenses accounted for over 15% of all juvenile arrests in 2021 (Table 19).

Table 19. Alcohol-related arrests, juvenile offenders, Guam: 2016 to 2021

Year	Total Arrests	DUI (n)	Liquor Laws (n)	Drunkenness (n)	Alcohol-related arrests, % Arrests
2016	410	1	46	1	11.7
2017	337	5	122	0	35.1
2018	317*	1	34	11	14.5
2019	1241*	5	148	50	16.4
2020	1026	0	70	27	9.4
2021	436	1	22	43	15.1

Source: Guam Police Department, Uniform Crime Report, 2021

Note: * = revised from previous editions of the UCR

Alcohol use has been implicated in property crime and violent crime including family violence (Table 20).

Table 20. Violent and property crimes, cleared offenses, Guam: 2016 to 2021

Year	Violent Crime, number of cases	Property crime, number of cases
2016	341	3741
2017	369	3656
2018	712*	3764

2019	823*	4546
2020	703*	2861
2021	665	3670

Source: Guam Police Department, Uniform Crime Report, 2021

Note: * - revised from previous editions of the UCR

Environmental Consequences

Beverage cans, beverage bottles (glass) and beverage caps were among the types of debris found on land and in the water. Beverage caps comprised 34.5% of environmental debris in 2021.⁷

⁷ The Ocean Conservancy, as reported in the 2021 Guam Statistical Yearbook

MARIJUANA

Consumption: Adults

TREND AND PREVALENCE

In 2016, CDC introduced an optional marijuana use module, which queried survey participants directly about 30-day past use. During that year, about 12% of adults admitted to using marijuana on one or more of the past 30 days. 3.7% of respondents reported using marijuana daily.

GBHWC commissioned SAQs on marijuana and other drug use among adults from 2018 onwards. The prevalence of current marijuana use among Guam adults was 6.3% in 2018, 11.7% in 2019, 8.4% in 2020 and 12.6% in 2021.

CORRELATES OF MARIJUANA USE

Sex

Men were twice more likely than women to have used marijuana recently. In 2021, 16.5% of adult men and 8.3% of adult women admitted to marijuana use within the past 30 days.

Education

Adults with a high school or GED-level education reported the highest rates of 30-day marijuana use in 2021 (13.3%), although this was not statistically significantly different from other education categories.

Age

Current marijuana use was highest among those aged 25-34 years (17.6%).

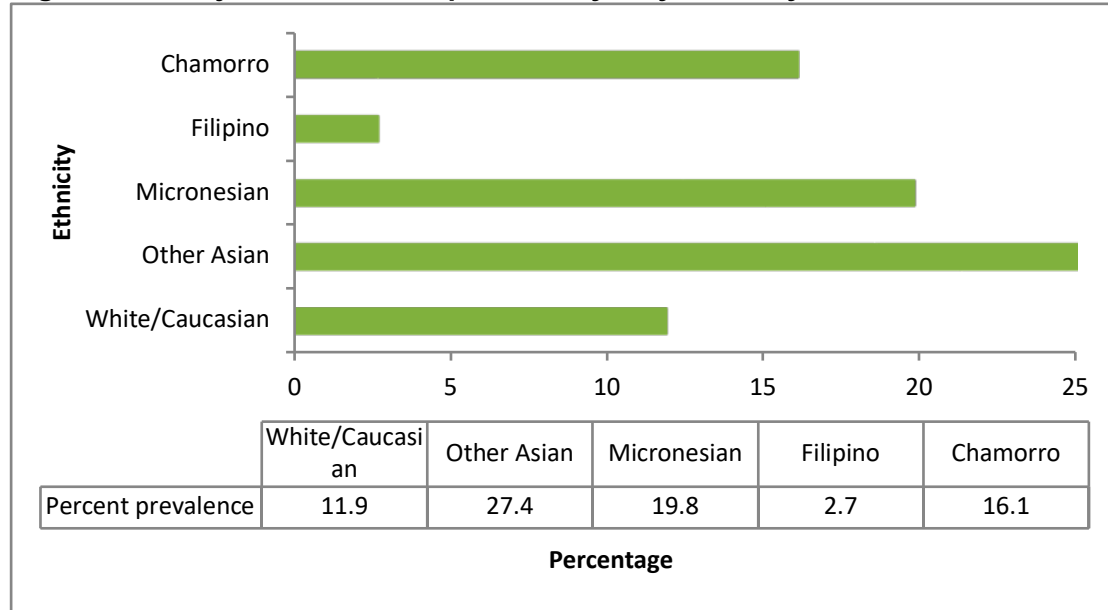
Income

The highest rates of current marijuana use were reported by those with an annual income below \$25,000.

Ethnicity

In 2021, Asians except Filipinos, CHamorus and Micronesians had the highest rates of use in the past 30 days. Filipinos had the lowest (Figure 60).

Figure 60. Marijuana use in the past 30 days, by ethnicity, adults, Guam: 2021



Source: DPHSS, BRFSS 2021: Note: the BRFSS still uses the old spelling “Chamorro”

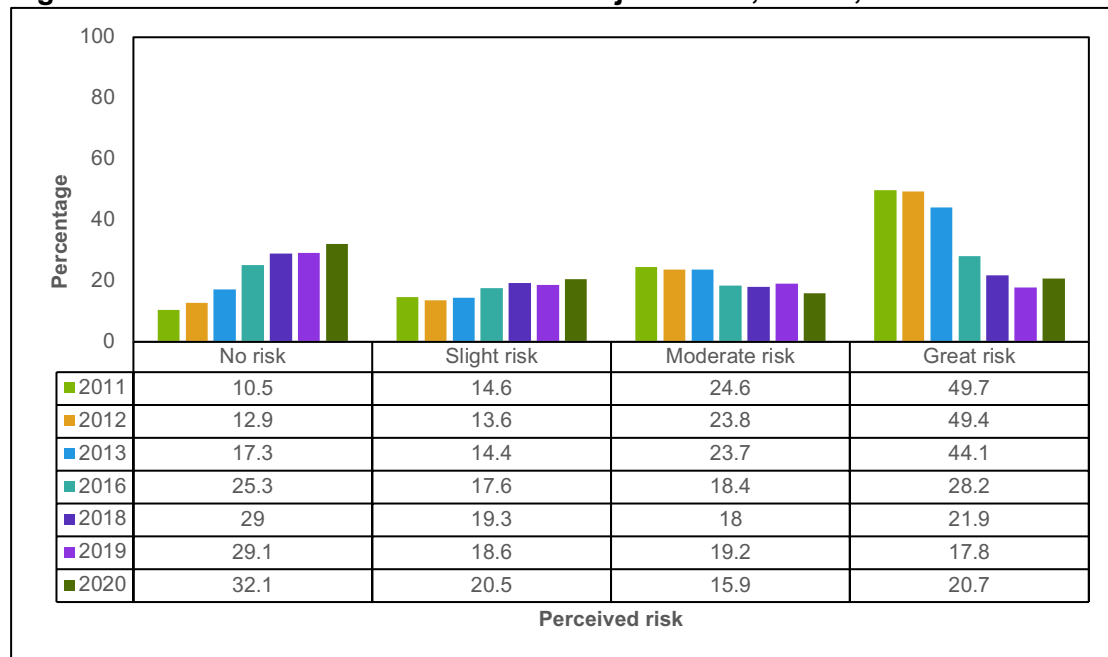
Age at Initiation

In 2020, almost 23% of lifetime users reported first using marijuana before 17 years. Another 12.3% stated they first used marijuana between 18 to 24 years.

Perceived Risk of Harm

The perceived risk of harm from marijuana has decreased significantly since the legalization of medical use in 2015, and recreational use in 2019 (Figure 61). The percentage of adults who believe marijuana use poses little or no risk has increased, while the perception of moderate to great risk has decreased.

Figure 61. Perceived risk of harm from marijuana use, adults, Guam: 2011-2020



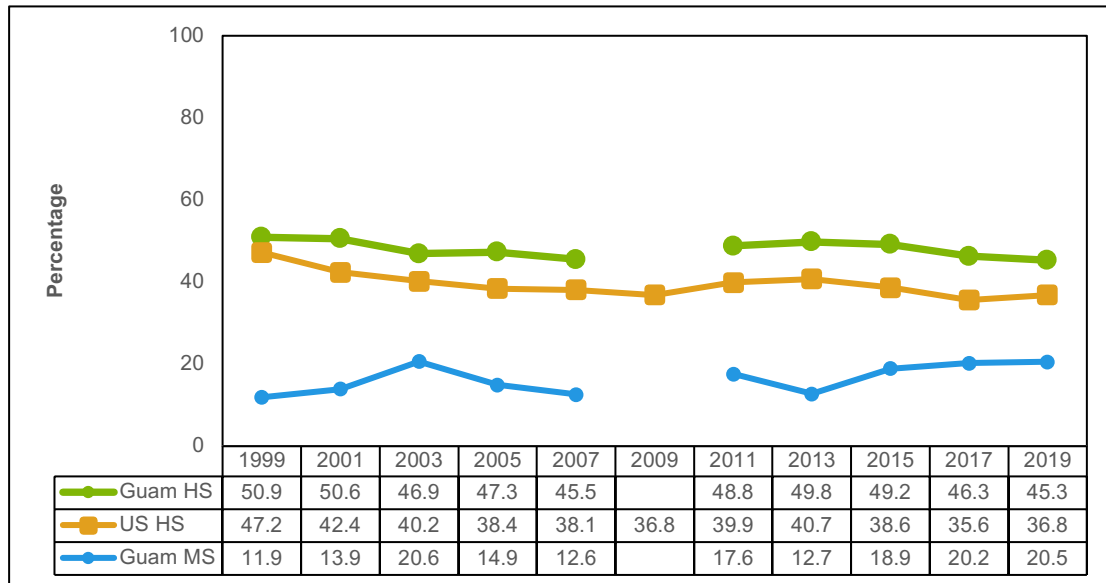
Source: DPHSS, BRFSS 2011-2020

Consumption: Youth

TREND AND PREVALENCE

Nearly half (45.3%) of all high school students had tried marijuana, and one in four (25.9%) had used marijuana within 30 days of the 2019 survey. Among middle school students, 1 in 5 (20.5%) had ever used marijuana. Lifetime marijuana use among high school students in Guam remained higher than in the US, but current prevalence is similar. (Figures 62 and 63).

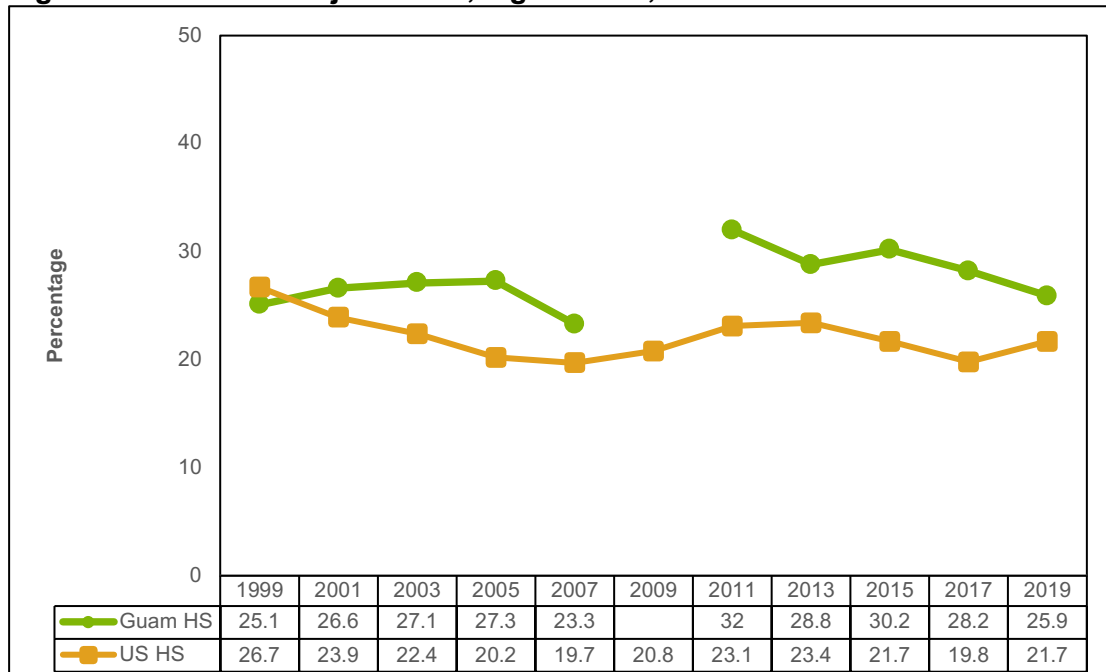
Figure 62. Lifetime marijuana use, high school, Guam vs. US, and middle school, Guam: 1999-2019



Source: GDOE, YRBS 1999-2019; CDC, YRBS 1999-2019

Note: blank cells = data not available

Figure 63. Current marijuana use, high school, Guam vs. US: 1999-2019



Source: GDOE, YRBS 1999-2019; CDC, YRBS 1999-2019

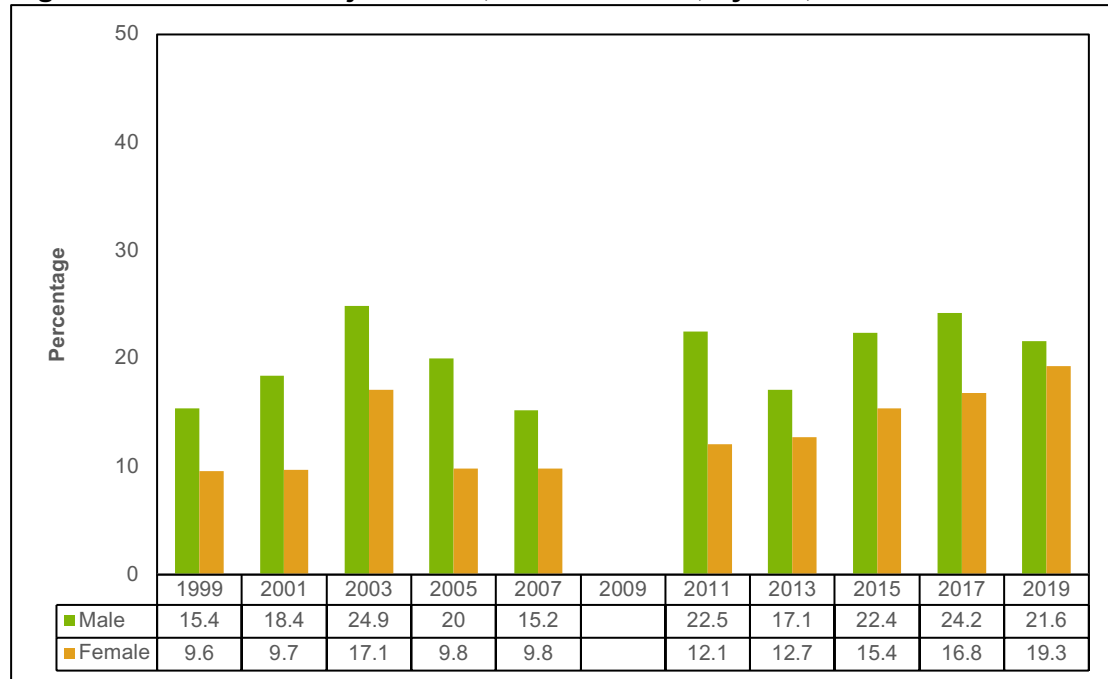
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CORRELATES OF MARIJUANA USE

Sex

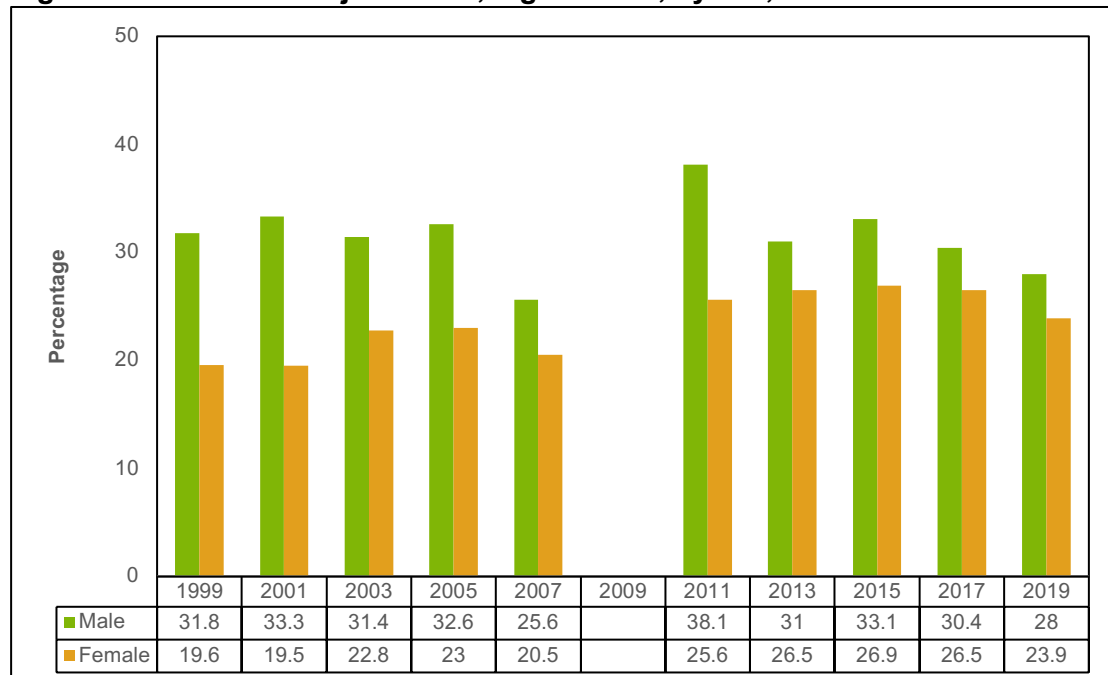
The gender gap no longer exists for marijuana use among Guam youth. In 2019, there was no sex difference in lifetime use of marijuana among middle school students, and current marijuana use among high school students (Figures 64 and 65).

Figure 64. Lifetime marijuana use, middle school, by sex, Guam: 1999 to 2019



Source: GDOE, YRBS 1999-2019
 Note: blank cells = data not available

Figure 65. Current marijuana use, high school, by sex, Guam: 1999 to 2019

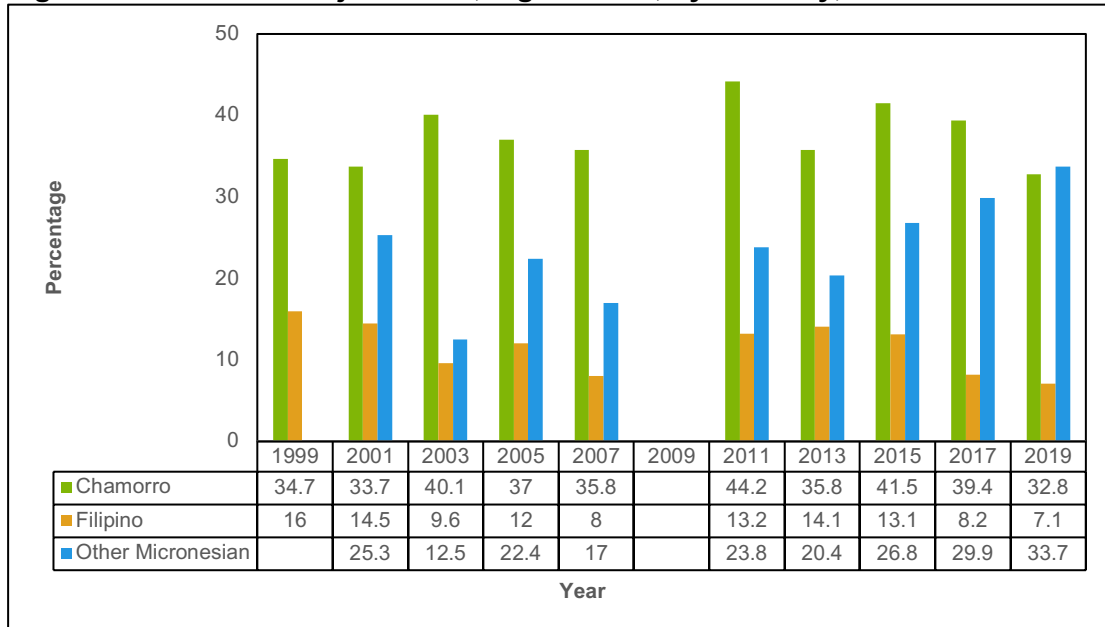


Source: GDOE, YRBS 1999-2019
 Note: blank cells = data not available

Ethnicity

Marijuana use is highest among CHamoru and other Micronesian youth and lowest for Filipino youth (Figure 66). Current marijuana use has risen among other Micronesian youth over time; in 2019, their prevalence was similar to CHamoru youth.

Figure 66. Current marijuana use, high school, by ethnicity, Guam: 1999-2019

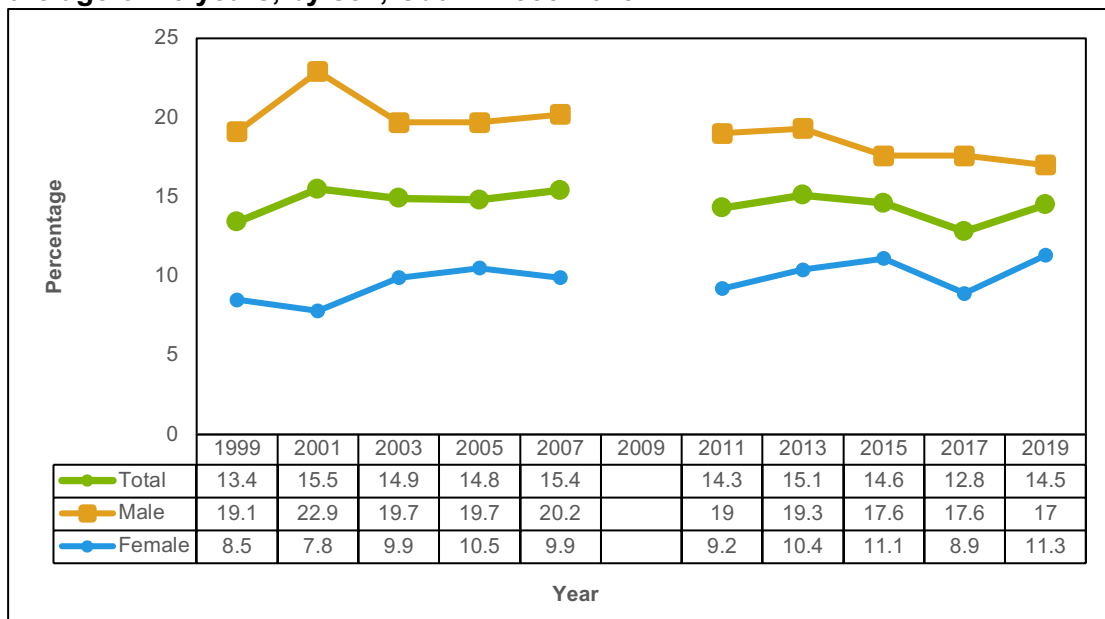


Source: GDOE, YRBS 1999-2019; Note: blank cells = data not available; the YRBS still uses the old spelling "Chamorro"

Age at Initiation

In 2019, 14.5% of high school youth started using marijuana before the age of 13 years. Males were more likely than females to report age at 1st use before 13 years (Figure 67); this has remained unchanged over time. Among middle school youth, 5.1% reported trying marijuana before the age of 11 years.

Figure 67. Percent of high school youth reporting 1st use of marijuana before the age of 13 years, by sex, Guam: 1999-2019



Source: GDOE, YRBS 1999-2019; Note: blank cells = data not available

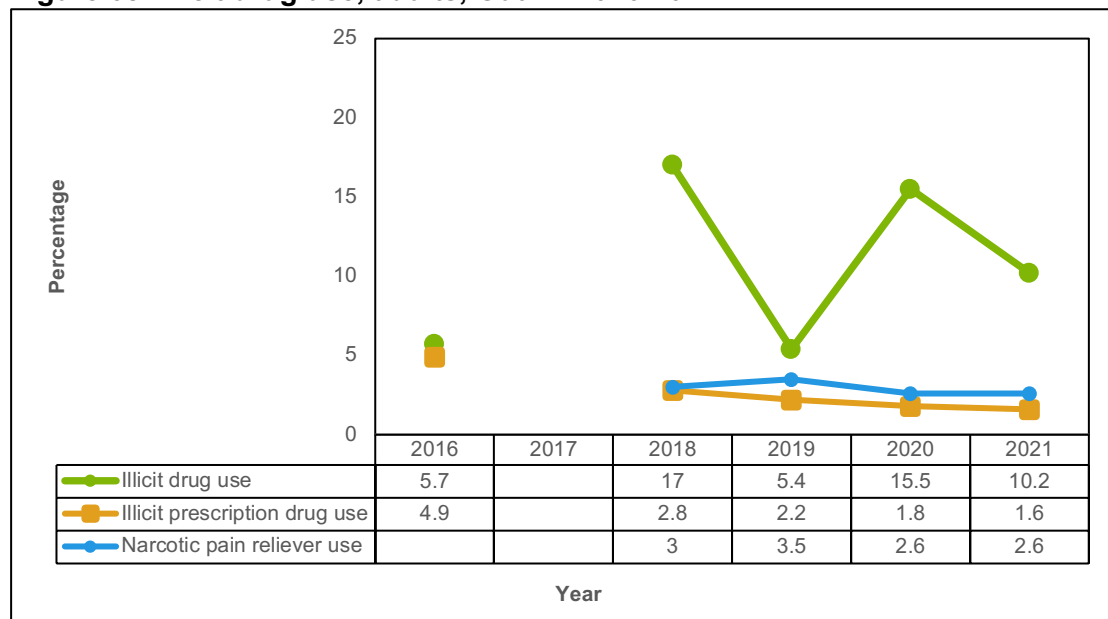
OTHER ILLICIT DRUGS

Consumption: Adults

TREND AND PREVALENCE

Guam started asking about other illicit drug use and illicit prescription drug use in its BRFSS as SAQs in 2016. In 2018, a question on narcotic pain reliever use was added, given the growing interest nationwide in this issue. In 2021, 10.2% of adults reported illicit drug use other than marijuana. (Figure 68). Less than 2% of adults reported taking prescription drugs that were not prescribed for them, and 2.6% reported narcotic pain reliever use.

Figure 68. Illicit drug use, adults, Guam: 2016-2021



Source: DPHSS, BRFSS 2016-2021; blank cells = no data available

CORRELATES OF ILLICIT DRUG USE

Because of the small numbers of adults reporting illicit drug use, it is difficult to state with accuracy if true differences exist across demographic categories.

Age at initiation

In 2020, about 3.6% of adults who used illicit drugs started before the age of 18 years.

Working for employers who conduct random employee drug testing

In 2020, 38.5% of adults were more likely to work for employers who conduct random drug or alcohol testing on its employees, while 13.2% were less likely to do so.

CORRELATES OF ILLICIT PRESCRIPTION DRUG USE

Perception of risk

In 2020, 63.7% of adults believed there is great risk in using prescription drugs improperly, while 7.4% believed there was no risk. Higher educational attainment and income were associated with greater perceived risk. 13.5% of Micronesians perceived there to be no risk, compared to 8% of Filipinos, 6.8% of other Asians, 6.3% of CHamorus and 2.3% of Caucasians.

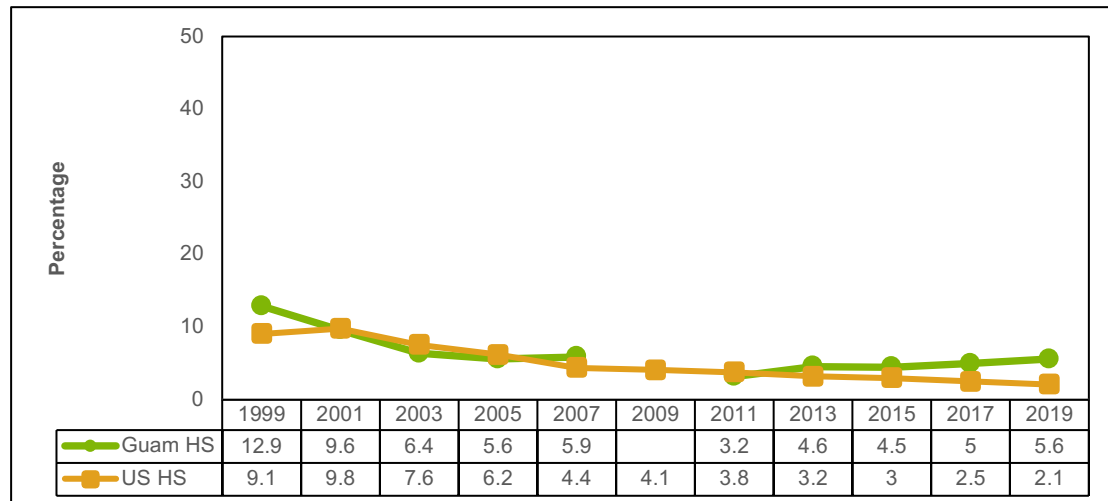
Consumption: Youth

Methamphetamine

TREND AND PREVALENCE

Lifetime prevalence among Guam youth paralleled the decrease in lifetime use among US youth from 2001 to 2011; however, lifetime use increased for Guam in 2013, with no change from 2015 to 2019, while the US rate continued to decrease (Figure 69). 5.6% of Guam high school students reported ever using methamphetamines in 2019.

Figure 69. Lifetime methamphetamine use, high school, Guam vs. US: 1999-2019



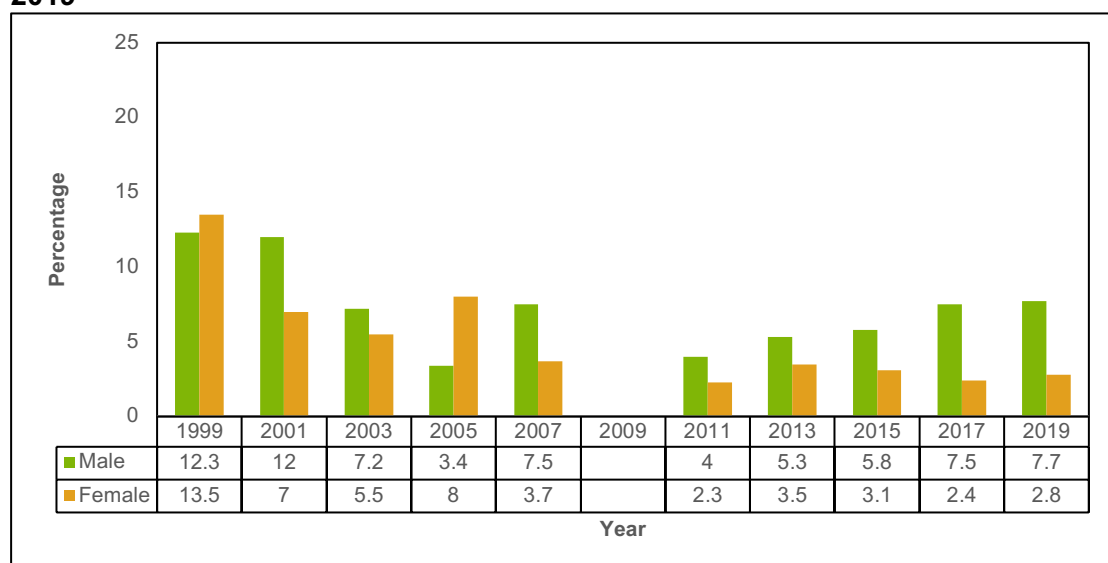
Source: GDOE, YRBS 1999-2019; CDC, YRBS 199-2019; Note: blank cells = data not available

CORRELATES OF METHAMPHETAMINE USE

Sex

Male students appear more likely to report ever using methamphetamines than females (Figure 70), but in 2019, the difference was not statistically significant. The small numbers of respondents mandate caution in interpreting results.

Figure 70. Lifetime methamphetamine use, high school, by sex, Guam: 1999-2019

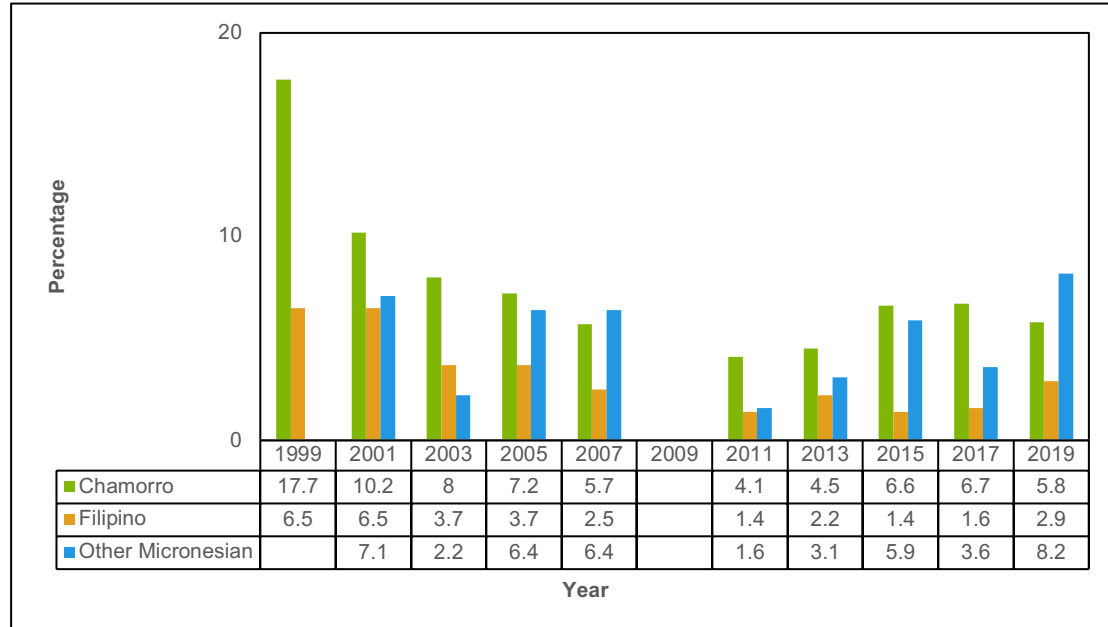


Source: GDOE, YRBS 1999-2019; Note: blank cells = data not available

Ethnicity

In 2019, other Micronesian youth have overtaken CHamoru youth in reporting the highest rate of lifetime methamphetamine use (Figure 71).

Figure 71. Lifetime methamphetamine use, high school, by ethnicity, Guam: 1999-2019



Source: GDOE, YRBS 1999-2019

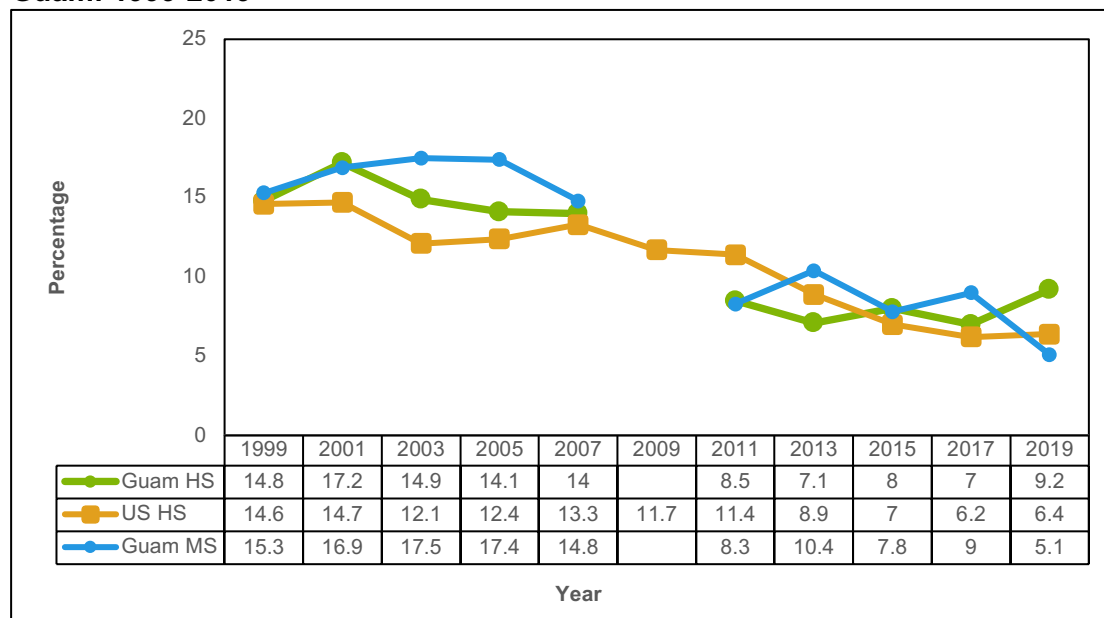
Note: blank cells = data not available; the YRBS still uses the old spelling “Chamorro”

Inhalants

TREND AND PREVALENCE

Inhalant use has decreased over time for Guam and US youth (Figure 72), but no change was noted from 2017 to 2019. In 2019, 9.2% of Guam high school and 5.1% of middle school students reported having tried inhalants.

Figure 72. Lifetime inhalant use, high school, Guam vs. US, and middle school, Guam: 1999-2019



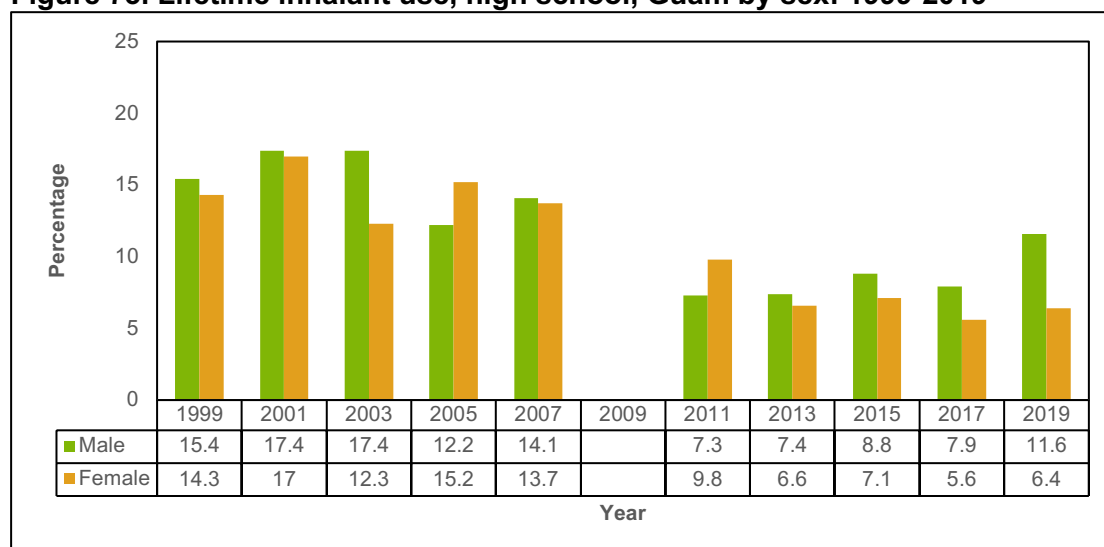
Source: GDOE, YRBS 1999-2019; CDC, YRBS, 1999-2019; Note: blank cells = data not available

CORRELATES OF INHALANT USE

Sex

There were no obvious sex differences in lifetime inhalant use among Guam youth, although the overall numbers are small, and caution is needed in interpreting the data (Figure 73).

Figure 73. Lifetime inhalant use, high school, Guam by sex: 1999-2019

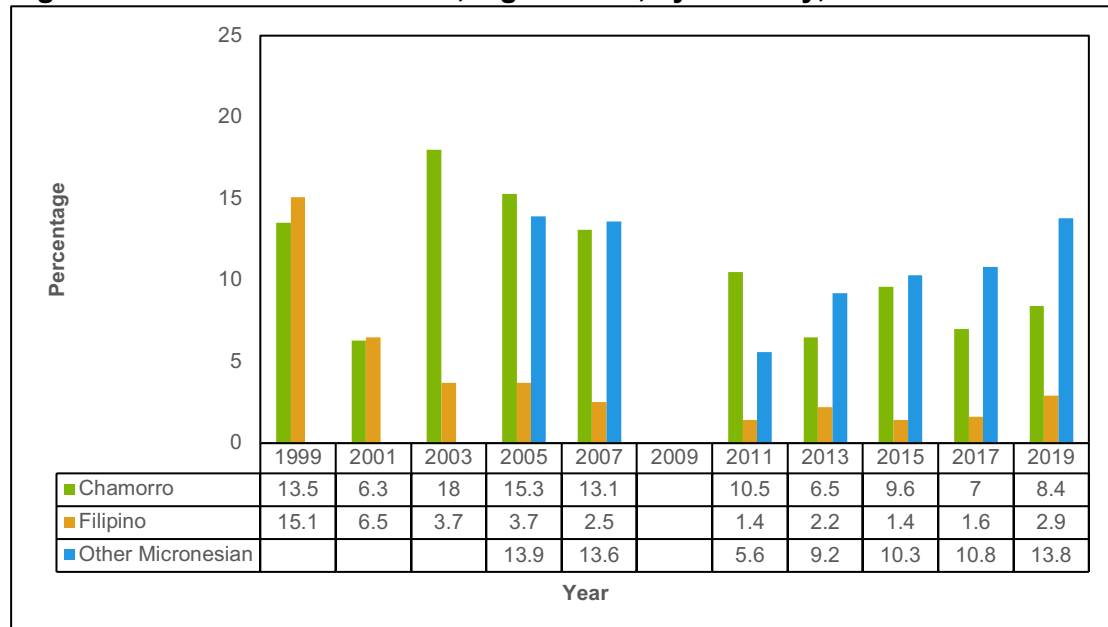


Source: GDOE, YRBS 1999-2019
Note: blank cells = data not available

Ethnicity

Among high school students, Micronesian youth have overtaken CHamoru youth in reporting the highest lifetime inhalant use; Filipinos had the lowest prevalence (Figure 74). The numbers of students under some of these categories are small, so caution is needed in interpreting the data.

Figure 74. Lifetime inhalant use, high school, by ethnicity, Guam: 1999-2019



Source: GDOE, YRBS 1999-2019

Note: blank cells = data not available; the YRBS still uses the old spelling "Chamorro"

Prescription Pain Medicine

PREVALENCE

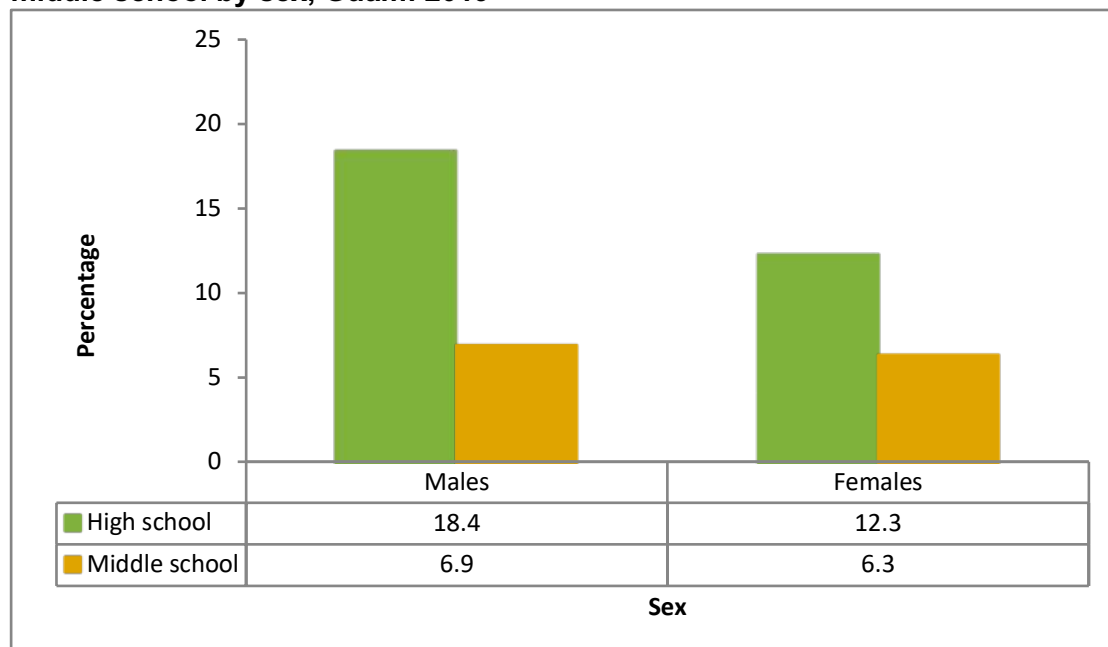
The YRBS added a question on lifetime prescription pain medicine misuse in 2017. Guam youth reported lifetime prescription pain medication misuse of 10.9% in 2017. This increased to 15.5% in 2019. In the US, 14.3% of high school students reported ever taking a prescription pain medicine without a doctor's prescription. Among Guam middle school students, 6.7% reported prescription pain medication misuse in 2019.

CORRELATES OF PRESCRIPTION PAIN MEDICATION ABUSE

Sex

Boys tend to report having ever taken a prescription pain medication without a prescription than girls, but this is not a statistically significant difference (Figure 75).

Figure 75. Lifetime prescription pain medication misuse, high school vs. middle school by sex, Guam: 2019

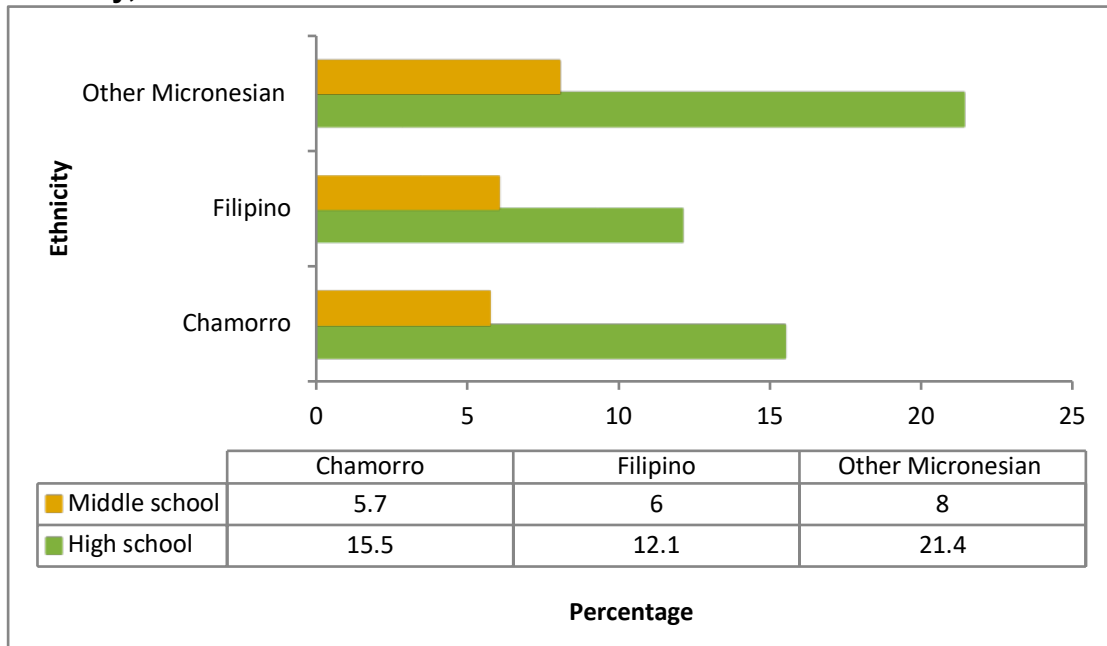


Source: GDOE, YRBS 2017

Ethnicity

Micronesians are more likely than Chamorro or Filipino youth to report ever taking a prescription pain medication without a prescription, but the differences are not significant (Figure 76).

Figure 76. Lifetime prescription drug abuse, high school vs. middle school, by ethnicity, Guam: 2019



Source: GDOE, YRBS 2019

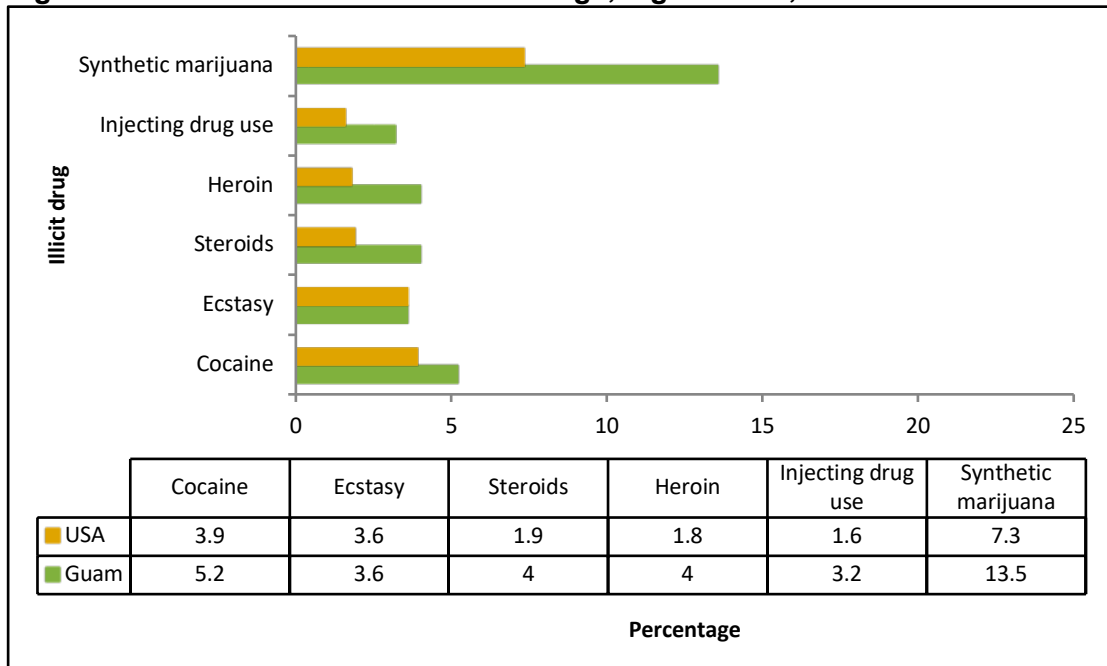
Note: The YRBS still uses the old spelling “Chamorro”

Other Illicit Drugs

PREVALENCE

Guam high school students reported higher rates of lifetime use of synthetic marijuana, steroids, heroin, and injecting drug use than their US counterparts (Figure 77). The overall Guam numbers are small, and caution is needed in interpreting the data.

Figure 77. Lifetime use of other illicit drugs, high school, Guam vs. US: 2019

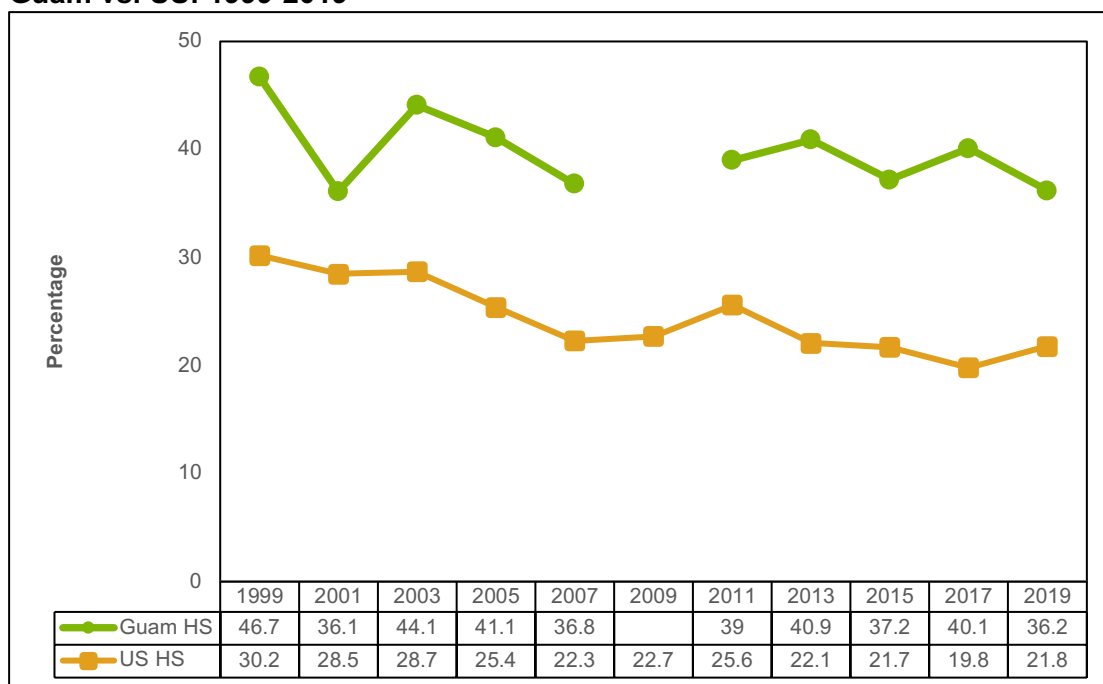


Source: GDOE, YRBS 2019; CDC, YRBS 2019

Drug Use on School Property

In 2019, 36% of high school youth reported they had been offered, sold, or given an illegal drug by someone on school property. The likelihood of this happening is significantly higher in Guam than in the US (Figure 78), and highlights school campuses as a critical drug enforcement setting.

Figure 78. Offered, sold, or given an illegal drug on school property, high school, Guam vs. US: 1999-2019

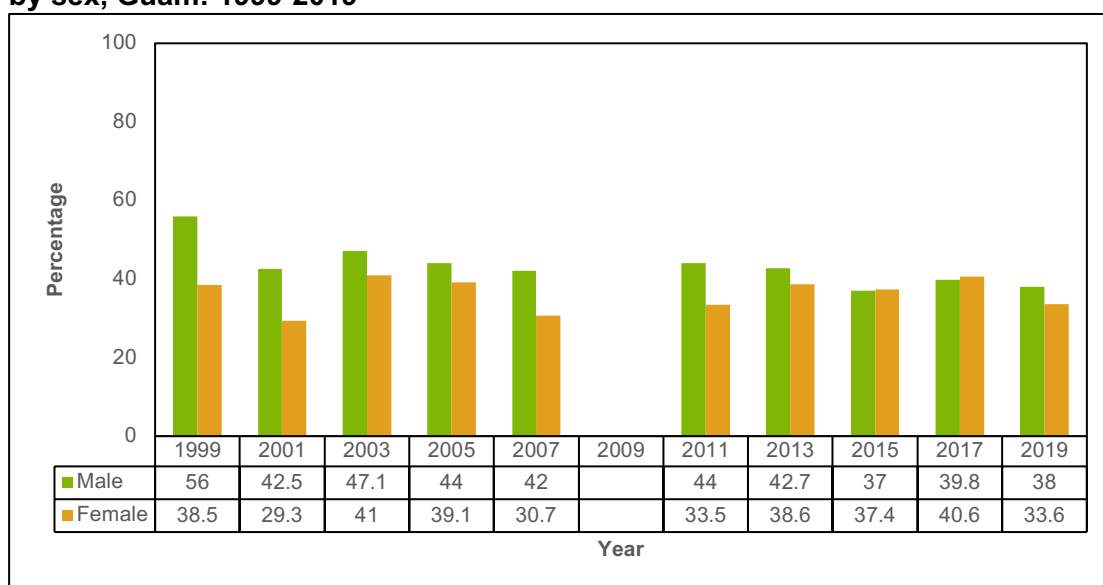


Source: GDOE, YRBS 1999-2019; CDC, YRBS 1999-2019

Note: blank cells = data not available

Males are as likely to have an illegal drug offered or sold to them on school property as females (Figure 79).

Figure 79. Offered, sold, or given an illegal drug on school property, high school, by sex, Guam: 1999-2019



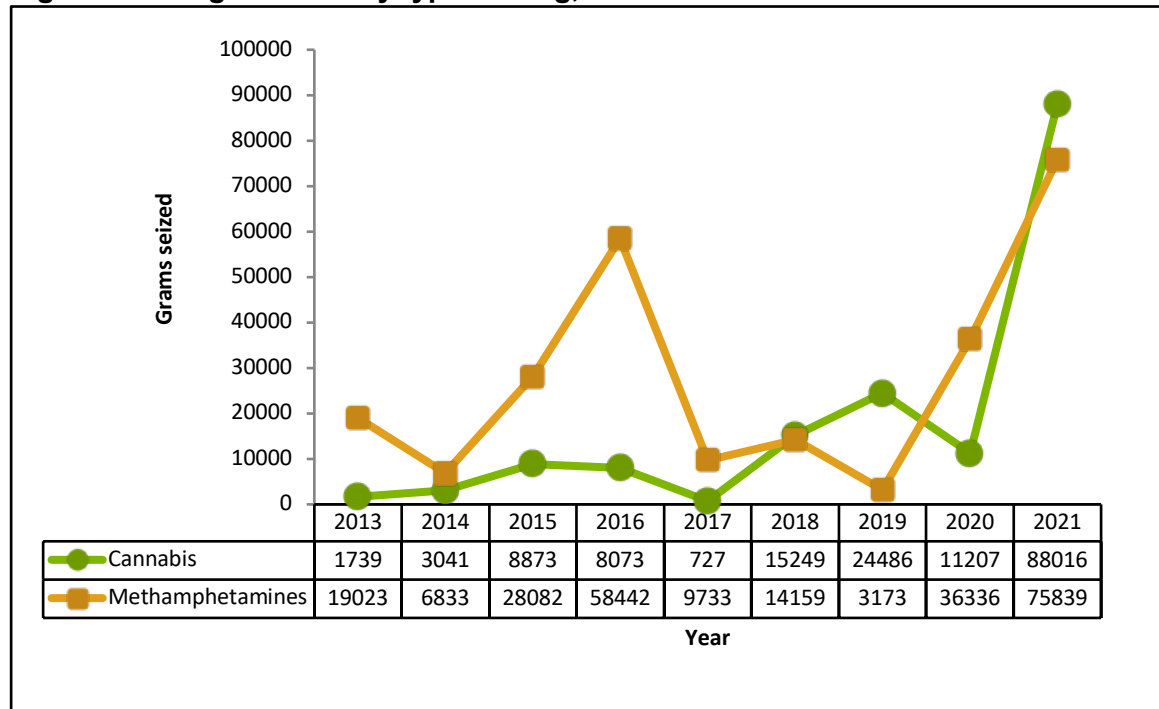
Source: GDOE, YRBS 1999-2019

Note: blank cells = data not available

Corollary data on drug consumption

Corollary data on drug seizures are available for 2013 to 2021 from the Guam Customs and Quarantine Agency. Drug seizures most frequently involved cannabis (marijuana) and methamphetamines (Figure 80).

Figure 80. Drug seizures by type of drug, Guam: 2013-2021



Source: Guam Customs and Quarantine Agency, Citizen Centric Report 2021

Consequences

Data on violent and property crime were discussed under the section on consequences of alcohol use. Arrests for drug-related offenses decreased in 2017 from 2016 but rose annually since 2018 (Table 21). The rate for drug-related arrests increased yearly from 1.5 per 1,000 people in 2017 to 5.2/100,000 in 2021.

Table 21. Number of drug-related arrests per year, Guam: 2010 to 2021

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of cases	130	221	293	271	369	477	494	230	421	494	802	880
Percent change from previous year	-17.2	70	32.6	-7.5	36.2	29.3	3.5	-53.4	83.0	17.3	62.3	9.7
Rate per 1000 population	1.0	1.4	1.8	1.7	2.3	3.0	3.0	1.5	2.6	3.0	4.9	5.2

Source: Guam Police Department, 2021 Uniform Crime Report, table 5-8, p.76

In 2021, majority of drug offenders (76%) were arrested for possession of an illegal substance.

Marijuana concentrates increasingly are being used in vaping devices.⁸ There are also reports of other illicit drugs being used in vaping devices.⁹ The increasing rate of use of these devices in Guam, for both adults and youth, taken together with the rise in drug seizures for both cannabis and methamphetamine, and the concurrent rise in violent crime, need to be carefully tracked, and the possibility that these devices are being used as drug delivery systems for other illicit drugs needs to be explored. Of note, in December 2019, the Guam Daily Post reported on a court case involving an importer of methamphetamine, where a shipment entered Guam purportedly containing “Juicy Jay’s E-liquids,” which turned out to be “40% pure methamphetamine.”¹⁰

⁸ US Drug Enforcement Agency, Vaping and marijuana Concentrates, available at:

https://www.dea.gov/sites/default/files/2019-10/VapingMarijuana_Brochure_2019_508.pdf

⁹ Arkansas Behavioral Health, Can You Vape Meth?, available at: <https://www.arkbh.com/illicit-drugs/meth/vape/>

¹⁰ O’connor J. Meth importer avoids prison pending appeal. Guam Daily Post. Dec 10, 2019.

SUICIDE

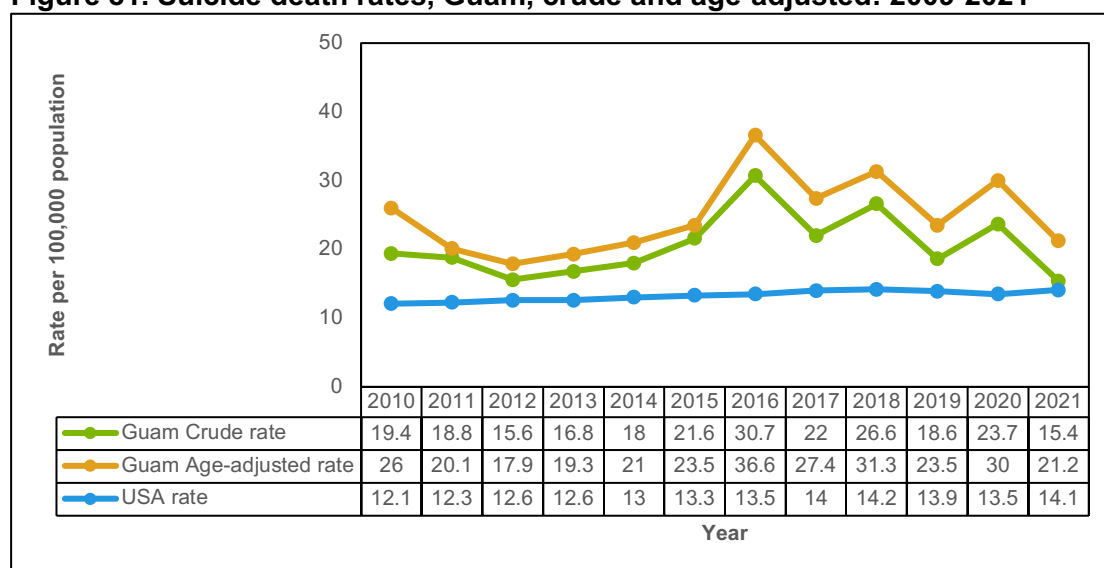
SUICIDE

Mortality

TREND and PREVALENCE

In 2021, there were 26 suicide deaths in Guam, resulting in a crude suicide rate of 15.4 per 100,000. Age-adjustment to the US 2000 standard population raised the suicide rate to 21.2 per 100,000. This represents a decrease from 2020 (Figure 81).

Figure 81. Suicide death rates, Guam, crude and age-adjusted: 2009-2021



Source: Calculated based on data taken from the Office of the Chief Medical Examiner, DPHSS Office of Vital Statistics and Bureau of Statistics and Plans, 2010-2021; US statistics from US Centers for Disease Control and Prevention (CDC), National Vital Statistics System-Mortality Data (2021) as reported in Garnett MF, Curtin SC. Suicide mortality in the United States, 2001-2021. NCHS Data Brief, no. 464. Hyattsville, MD:National Center for Health Statistics. 2023. DOI: <https://dx.doi.org/10.15620/cdc:125705>

Guam’s suicide mortality remains significantly higher than the US (Figure 81, Table 22), but the gap has decreased compared to 2020.

Table 22. Suicide death rate, Guam vs. US: 2020-2021

	Guam 2020	Guam 2021	US 2020	US 2021
Deaths (number)	40	26	45,979	48,183
Crude suicide death rate per 100,000	23.7	15.4		
Age-adjusted suicide death rate per 100,000	30.0	21.2	13.5	14.1

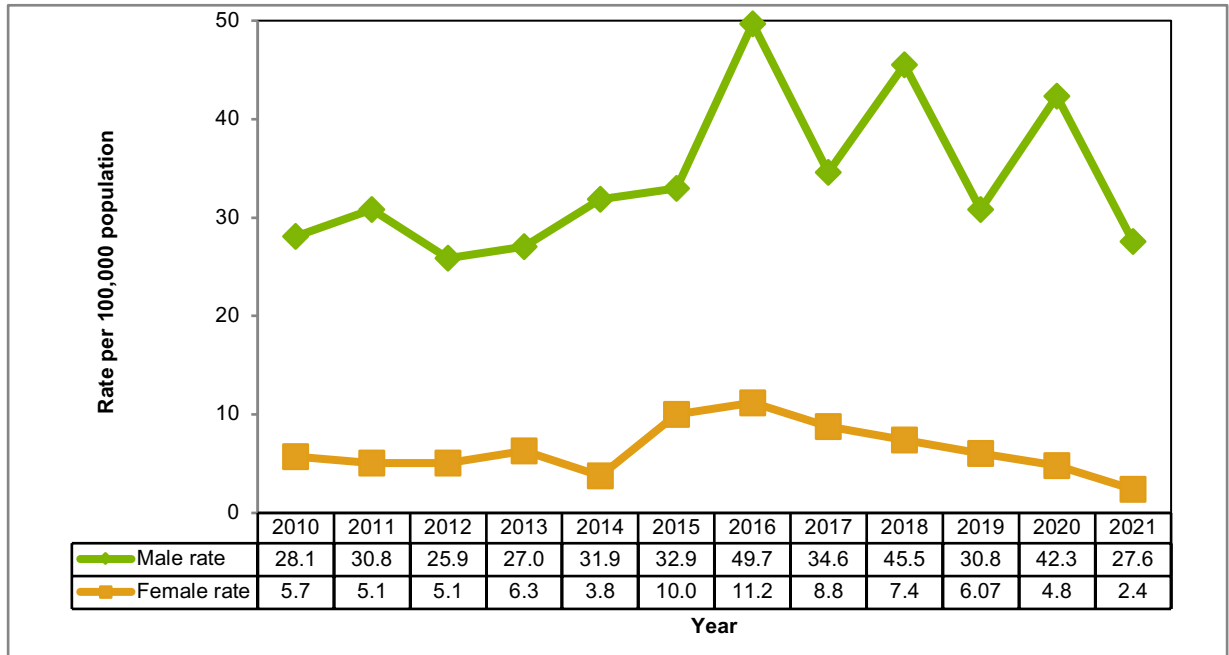
Source: Guam rates calculated based on data taken from the Office of the Chief Medical Examiner, and population projections for 2021 as published in the 2019 Guam Statistical Yearbook, Bureau of Statistics and Plans US statistics from US Centers for Disease Control and Prevention (CDC), National Vital Statistics System-Mortality Data (2021) as reported in Garnett MF, Curtin SC. Suicide mortality in the United States, 2001-2021. NCHS Data Brief, no. 464. Hyattsville, MD:National Center for Health Statistics. 2023. DOI: <https://dx.doi.org/10.15620/cdc:125705>

CORRELATES OF SUICIDE MORTALITY

Sex

Suicide deaths in Guam occur predominantly among males, who consistently outnumber female suicide deaths. In 2021, the ratio of male to female suicide deaths was 12:1. Suicide rates decreased for both sexes, but the proportional decrease was greater for females, maintaining the wide sex gap (Figure 82).

Figure 82. Suicide death rate by sex, Guam: 2010-2021



Sources: Calculated from data provided by the Office of the Chief Medical Examiner, 2010-2021 and 2021 population projections from the Bureau of Statistics and Plans

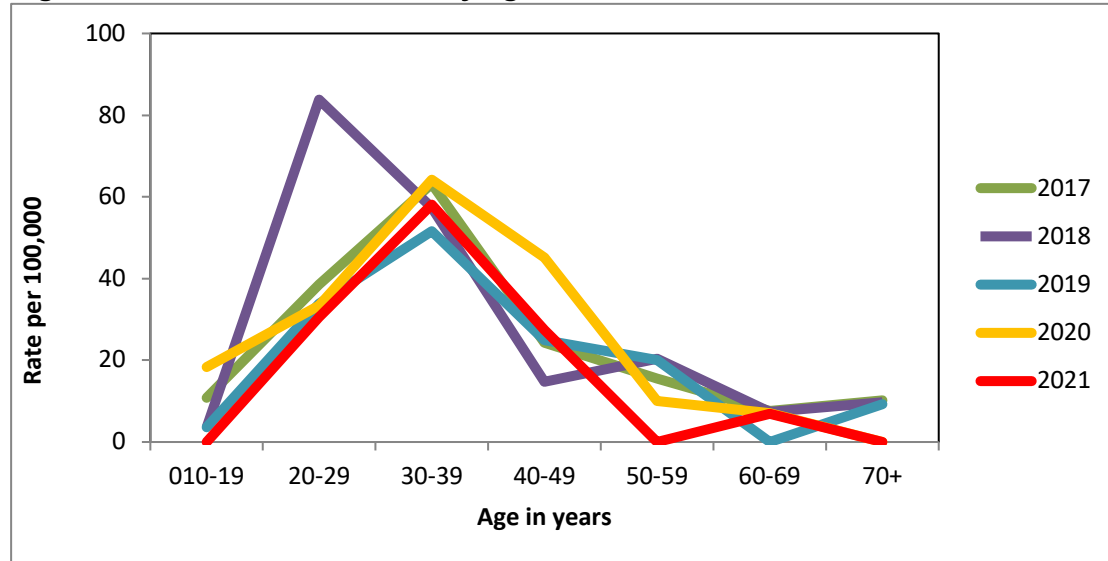
Age

In the US, suicide is highest among adults aged 85 and over (22.4 per 100,000).¹¹ In Guam, when suicide deaths are disaggregated by age, the majority are seen to occur in young adults aged 30-39 years. Over the past five years, the peak rate shifted from those aged 20-29 to those aged 30-39 years (Figure 83). The age range for suicide deaths in 2021 ranged from 21 to 66 years, with a mean age of 34 years.

Collectively, nearly half (47%) of all suicide deaths in Guam from 2010-2021 occurred in those younger than 30 years, and over a quarter (26%) happened among those aged 30-39 years (Figure 84). Only 1% occurred in those 70 years old or older. Thus, deaths by suicide in Guam occur predominantly among young people.

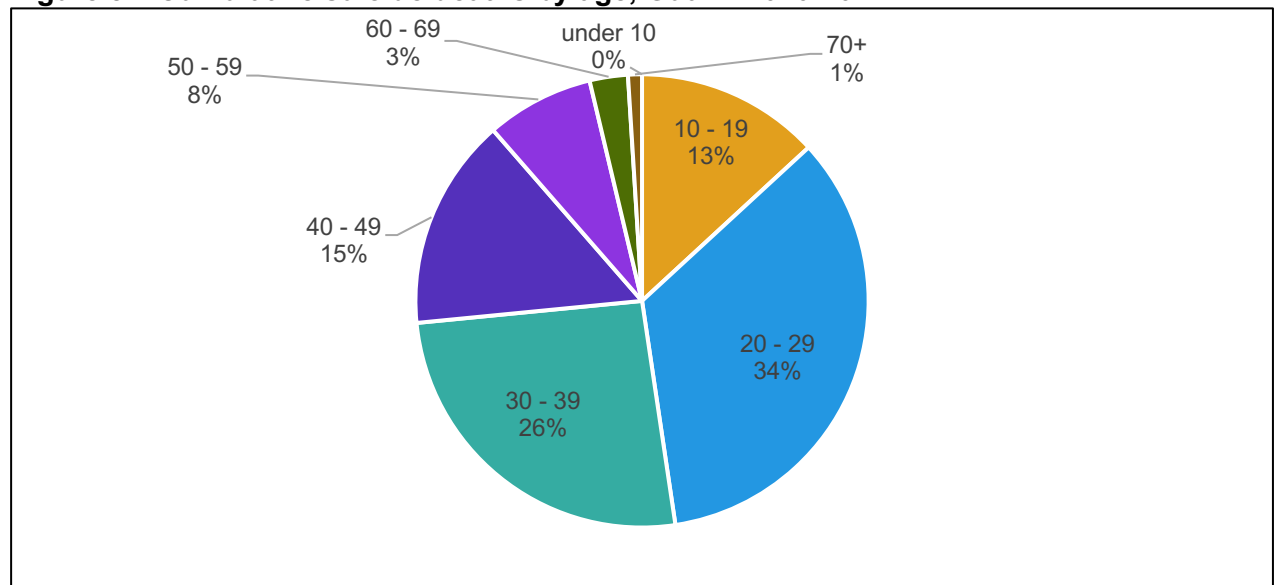
¹¹ CDC, Suicide data and statistics, last reviewed May 11, 2023. Available at www.cdc.gov and as reported in Garnett MF, Curtin SC. Suicide mortality in the United States, 2001-2021. NCHS Data Brief, no. 464. Hyattsville, MD: National Center for Health Statistics. 2023. DOI: <https://dx.doi.org/10.15620/cdc:125705>

Figure 83. Suicide death rates by age, Guam: 2017-2021



Sources: Calculated from data provided by the Office of the Chief Medical Examiner and Bureau of Statistics and Plans, 2017-2021

Figure 84. Cumulative suicide deaths by age, Guam: 2010-2021

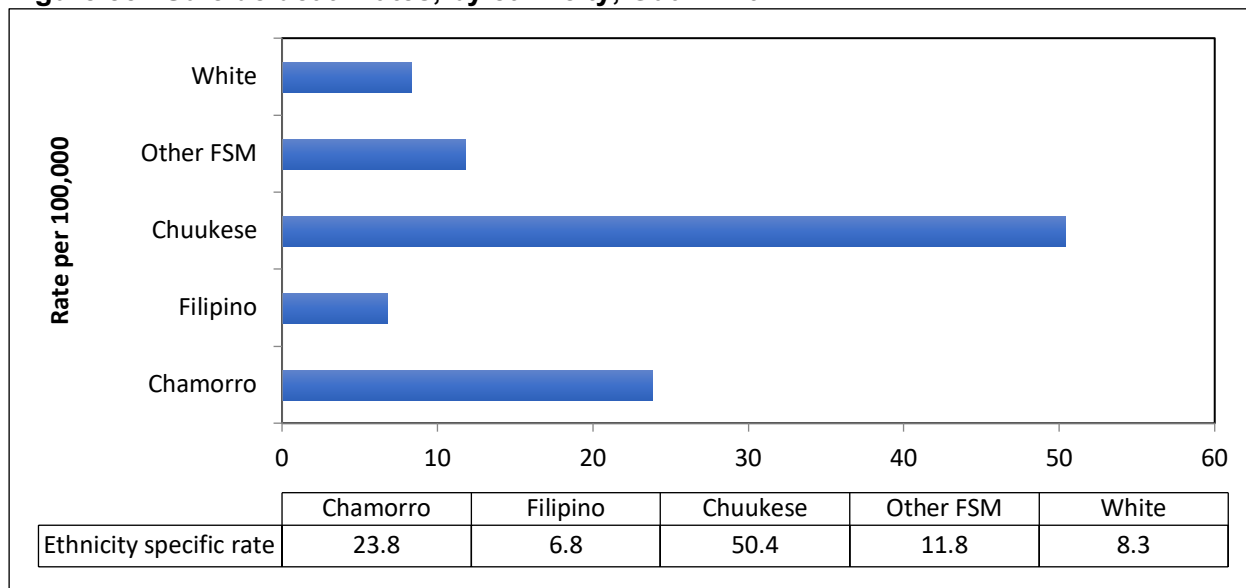


Sources: Calculated from data provided by the Office of the Chief Medical Examiner, 2010-2021

Ethnicity

In 2021, the greatest number of suicide deaths occur among CHamorus, followed by Chuukese. When these are corrected for the relative contribution of each ethnic group to the total population (Figure 85), Chuukese have the highest suicide death rates per 100,000, followed by CHamorus and other Micronesians. In contrast, in the US mainland, Pacific Islanders have the lowest suicide rates.

Figure 85. Suicide death rates, by ethnicity, Guam: 2021

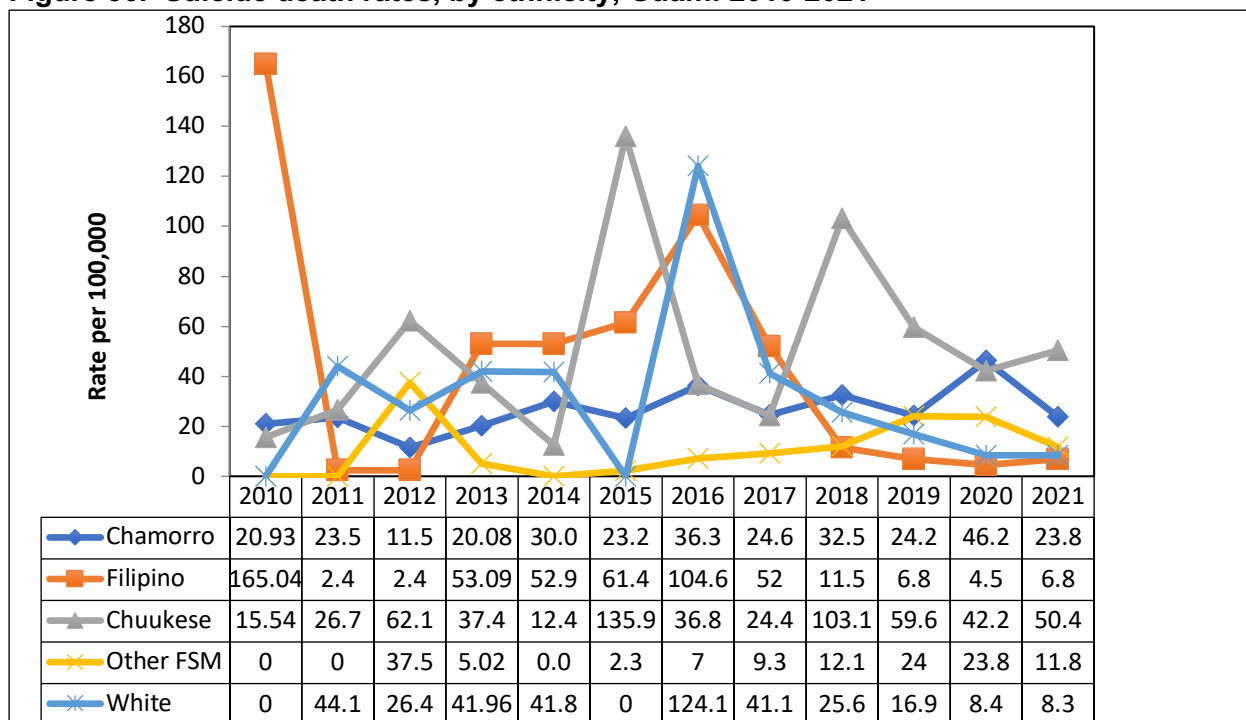


Source: Calculated from data provided by the Office of the Chief Medical Examiner, 2021, and population projections published in the 2019 Guam Statistical Handbook

Note: * = actual numbers for each of these ethnicity categories are small; caution needed in interpretation; the CME database still uses the old spelling "Chamorro"

In 2021 the suicide rate among Chuukese increased compared to the previous year, while rates decreased among CHamoros and other Micronesians (Figure 86).

Figure 86. Suicide death rates, by ethnicity, Guam: 2010-2021



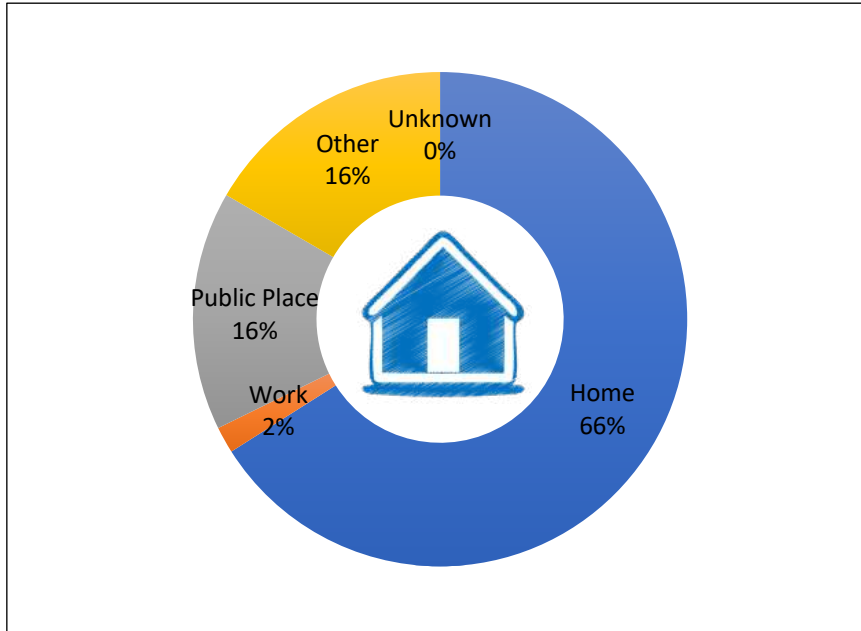
Source: Calculated from data provided by the Office of the Chief Medical Examiner, 2021, and population projections published in the 2019 Guam Statistical Handbook

Note: * = actual numbers for each of these ethnicity categories are small; caution needed in interpretation; the CME database still uses the old spelling "Chamorro"

Site of suicide

Cumulative data from 2010-2021 show that majority (66%) of suicides occurred in the home. Only 16% occurred in a public place, and only 2% happened at the workplace (Figure 87). Suicide prevention outreach needs to involve families, to equip them to recognize suicide risk among family members and to intervene early to prevent suicide death.

Figure 87. Site of suicide, Guam: 2010-2021

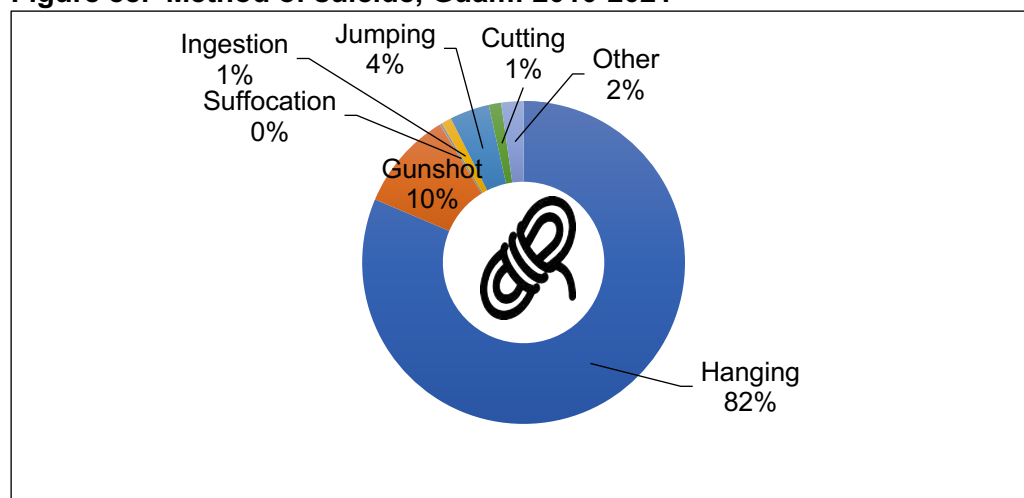


Source: Office of the Chief Medical Examiner, suicide data 2010-2021

Method of suicide

From 2010 to 2021, hanging was the predominant method of suicide, and 10% were by the use of firearms (Figure 88). This contrasts markedly from the pattern in the US mainland, where suicide by firearms was the predominant method. From a prevention policy perspective, interventions that reduce access to lethal means other than firearms may have a limited impact in Guam. Gun control may help avert about a tenth of suicides.

Figure 88. Method of suicide, Guam: 2010-2021



Source: Office of the Chief Medical Examiner, suicide data 2010-2021

Evidence of intention to die

Nearly 10% of those who died of suicide from 2009-2018 left direct evidence (suicide note) of intention to die by suicide. This highlights the need for community members to be better trained to pick up on suicide intentions and intervene early to reduce the risk of attempts.

Other correlates of suicide mortality

In Guam for the years 2010- 2021:



12% involved the use of alcohol*

3% involved the use of drugs*



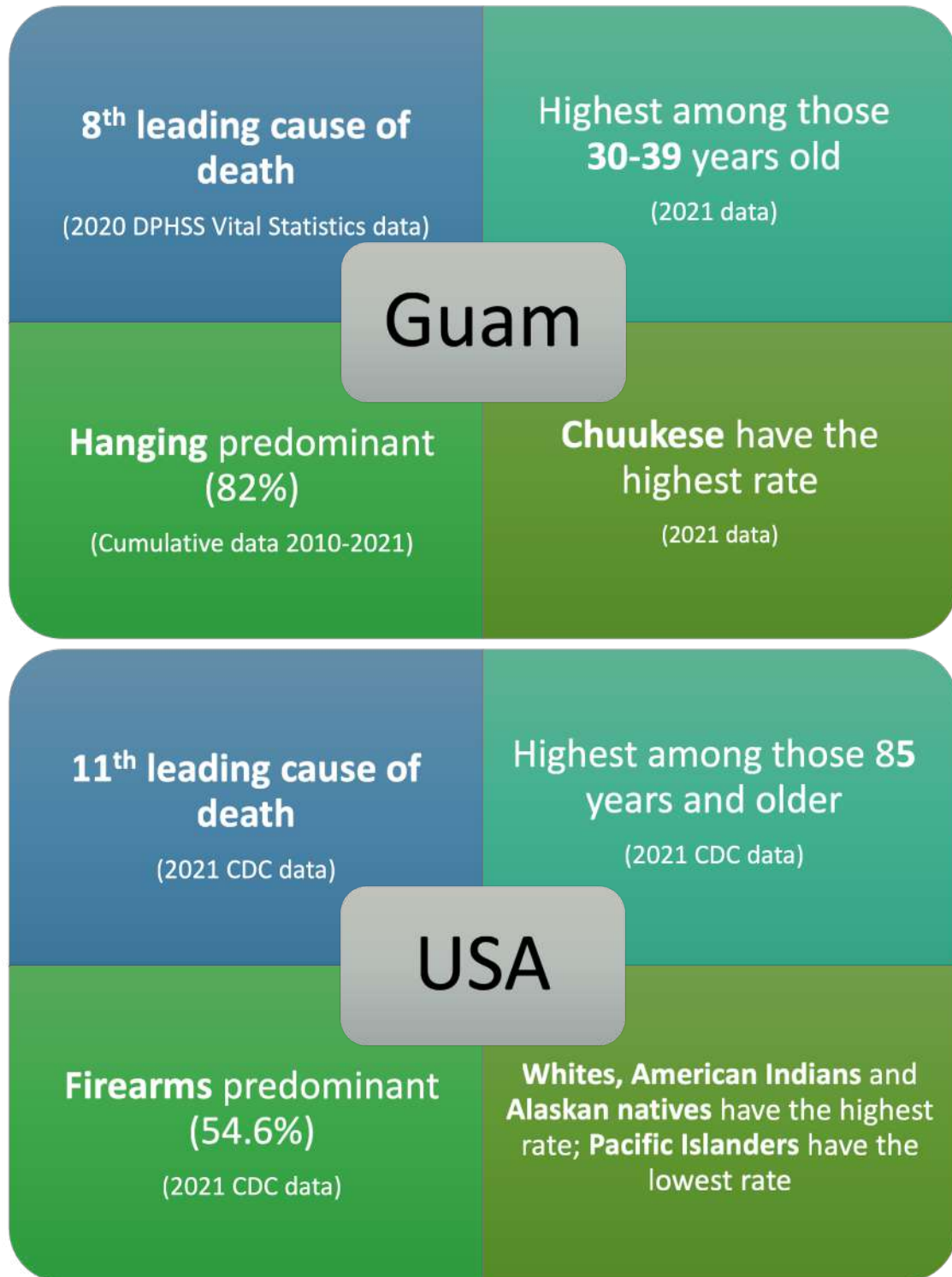
14% had a history of previous mental illness

13% had made a previous attempt



(*Note: These data were obtained by interviewing family and friends of the deceased, without toxicologic confirmation. Thus, these may under-estimate the true prevalence of these correlates.)

Figure 89. Suicides, Guam 2021 vs. USA: 2020-2021



Source: Guam data from Office of the Chief Medical Examiner, suicide data 2010-2021 and DPHSS Vital Statistics; US data from CDC National Vital Statistics System-Mortality Data (2021) via CDC WONDER and Garnett MF, Curtin SC. Suicide mortality in the United States, 2001-2021. NCHS Data Brief, no. 464. Hyattsville, MD: National Center for Health Statistics. 2023. DOI: <https://dx.doi.org/10.15620/cdc:125705>

Suicide Ideation and Attempts

Adults

GBHWC CRISIS HELPLINE CALLS

In 2021, the GBHWC crisis helpline fielded a total of 8623 calls, of which 266 (3%) were suicide related. Suicide related calls increased from Q1 to Q4 (Figure 9). Several operational changes were made during the year to the crisis helpline, which may help explain the apparent rise in suicide-related calls. In May 2021, dedicated and trained Lifeline staff began systematic screening for suicide, in addition to using the C-SSRS instrument. In November, electronic logging of calls to the helpline began, making data capture and data retrieval more efficient.

Table 23. Calls to the GBHWC crisis helpline, total vs. suicide-related, Guam: 2021

2021	Total calls	Suicide-related calls	% of total calls suicide-related
January	643		
February	597		
March	680		
Q1		25	1.3%
April	620		
May	723		
June	823		
Q2		56	2.6%
July	711		
August	910		
September	1028		
Q3		87	3.3%
October	917		
November	556		
December	415		
Q4		98	5.2%
Total	8623	266	3%

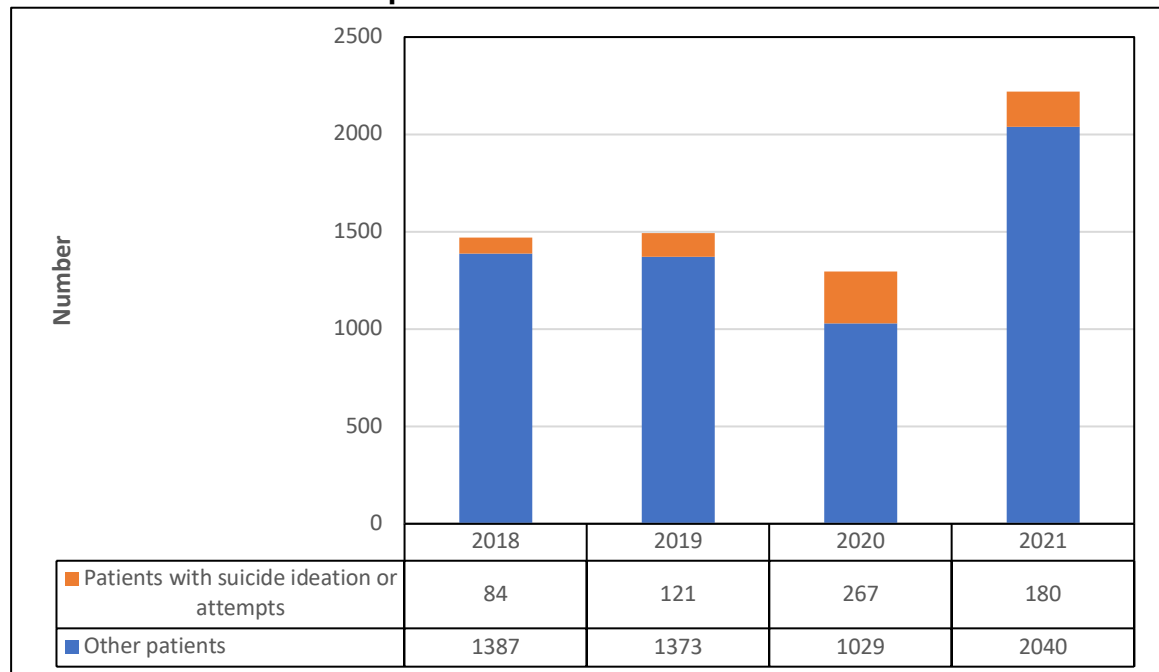
Source: Data provided by MeShaun Bamba, GBHWC 988 Helpline

GBHWC PATIENT ENCOUNTERS INVOLVING SUICIDE IDEATION AND/OR ATTEMPTS

In 2021, a total of 180 consumers at the GBHWC had suicide attempts or suicide ideation attached to their diagnoses, out of a total of 2,040 admissions (8.8% of all encounters). This represents a decrease from 2020 (Figure 90), both in absolute number and proportion of consumers.

Overall, the number of consumers in 2021 increased from previous years. However, the percentage of consumers admitted to GBHWC with suicide ideation/attempts in their diagnosis list decreased from 21% in 2020 to 8.8% in 2021. This decline occurred despite the rise in admissions for various mental health issues during the continuation of the Covid-19 pandemic and supports the observation of an overall decrease in the suicide rate for 2021.

Figure 90. Number and percent of GBHWC admissions with suicide ideation or suicide attempts: 2018-2021.



Source: GBHWC admissions data, 2018-2021

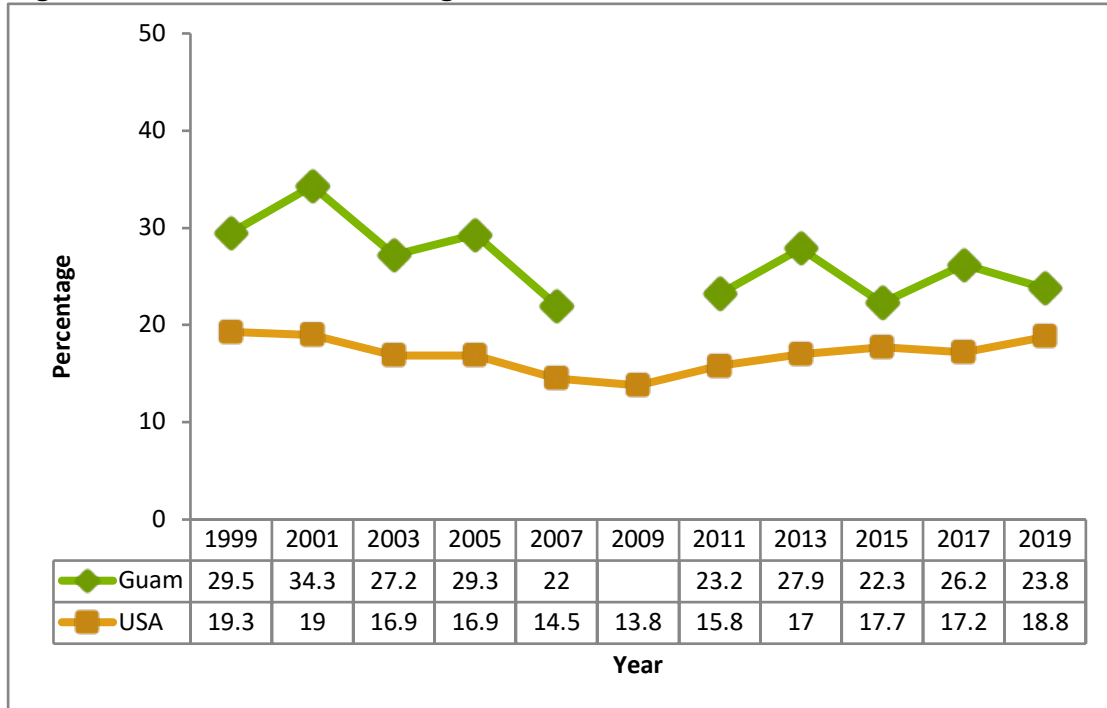
Youth

The Guam YRBS asked 4 questions on suicide:

1. During the past 12 months, did you ever seriously consider attempting suicide?
2. During the past 12 months, did you make a plan about how you would attempt suicide?
3. During the past 12 months, how many times did you actually attempt suicide?
4. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?

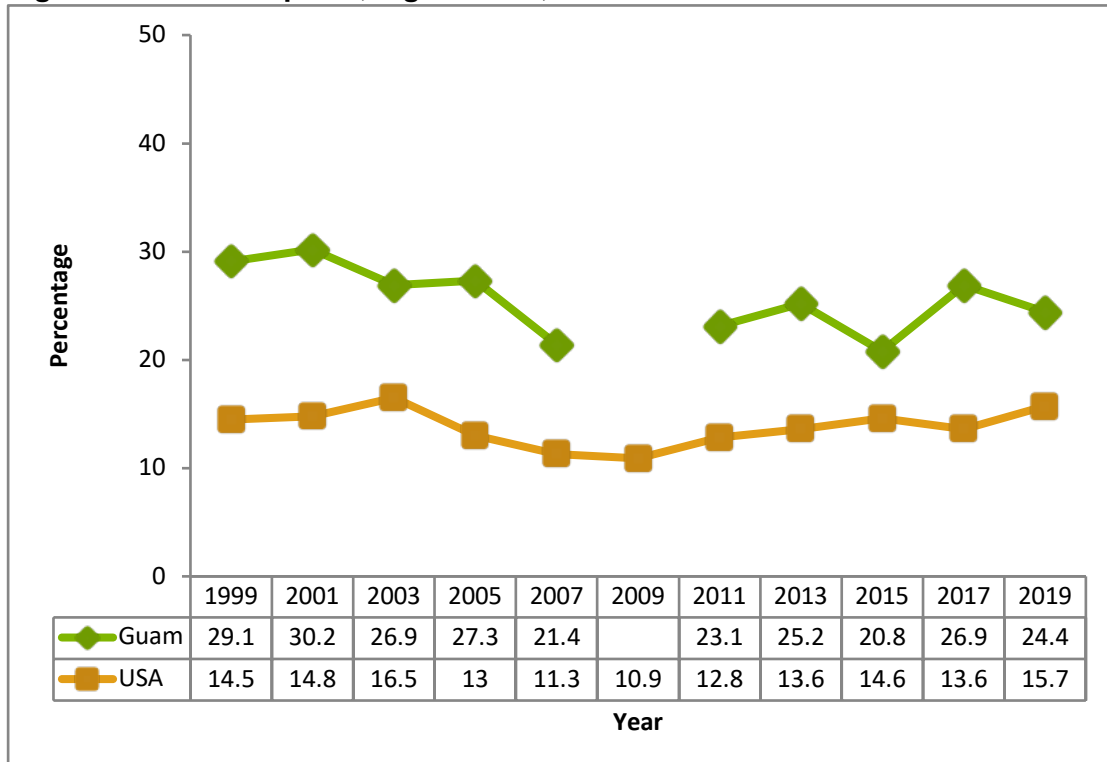
Guam surpasses the US average in the first three indicators, signifying an elevated likelihood of suicidal ideation and suicide attempts among youth in Guam (Figures 91-94). However, injurious suicidal attempts decreased among Guam youth in 2019. These data indicate a clear need for suicide prevention interventions among Guam youth.

Figure 91. Suicidal ideation, high school, Guam vs. US: 1999-2019



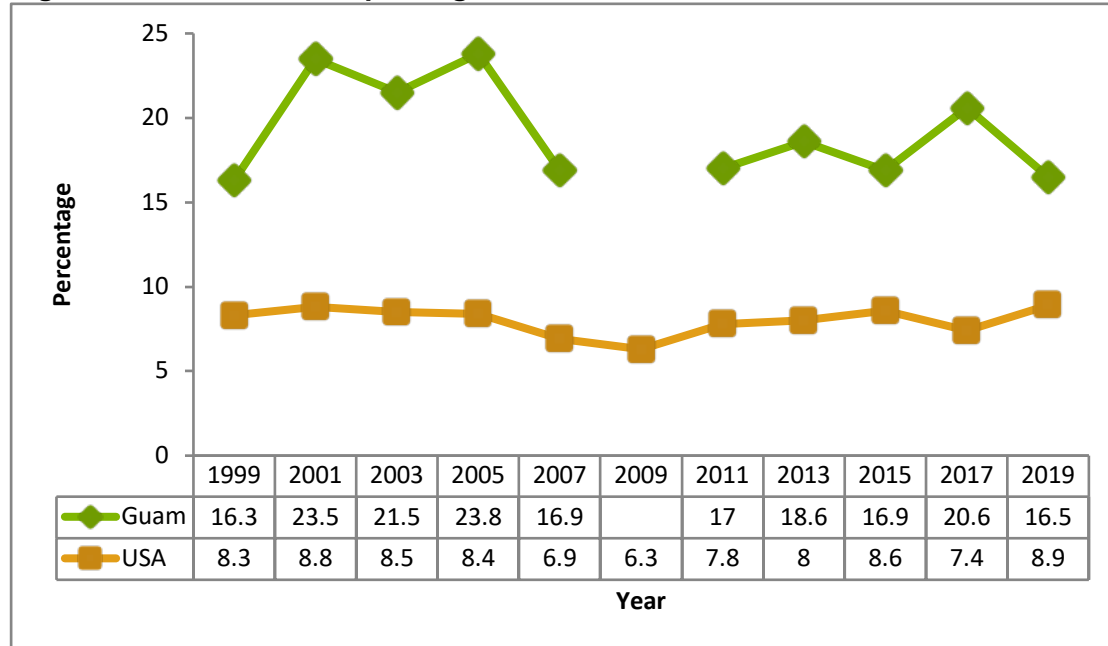
Source: GDOE, YRBS 1999-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>
 Note: blank cells = data not available

Figure 92. Suicidal plans, high school, Guam vs. US: 1999-2019



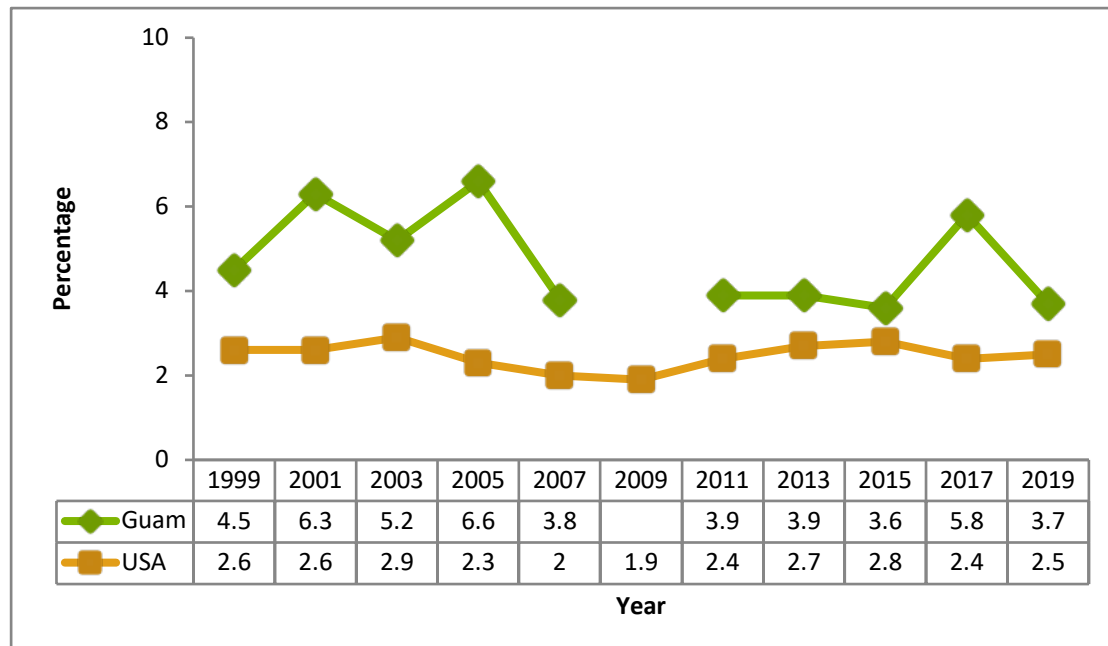
Source: GDOE, YRBS 1999-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>
 Note: blank cells = data not available

Figure 93. Suicidal attempts, high school, Guam vs. US: 1999-2019



Source: GDOE, YRBS 1999-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>
 Note: blank cells = data not available

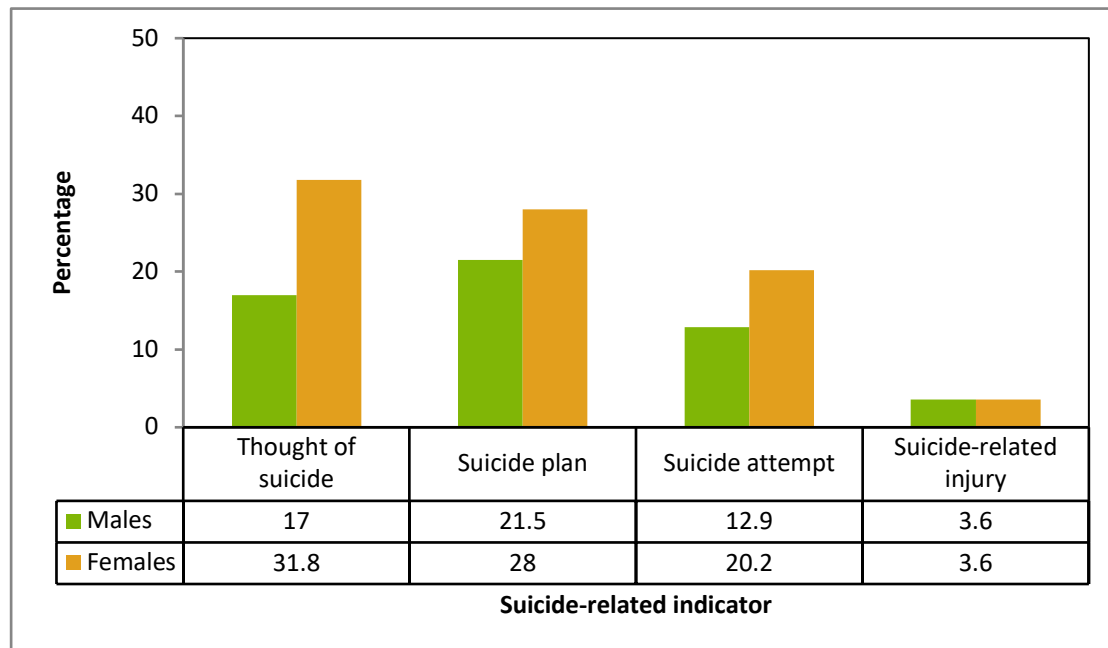
Figure 94. Suicidal attempts requiring medical attention, high school, Guam vs. US: 1999-2019



Source: GDOE, YRBS 1999-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>
 Note: blank cells = data not available

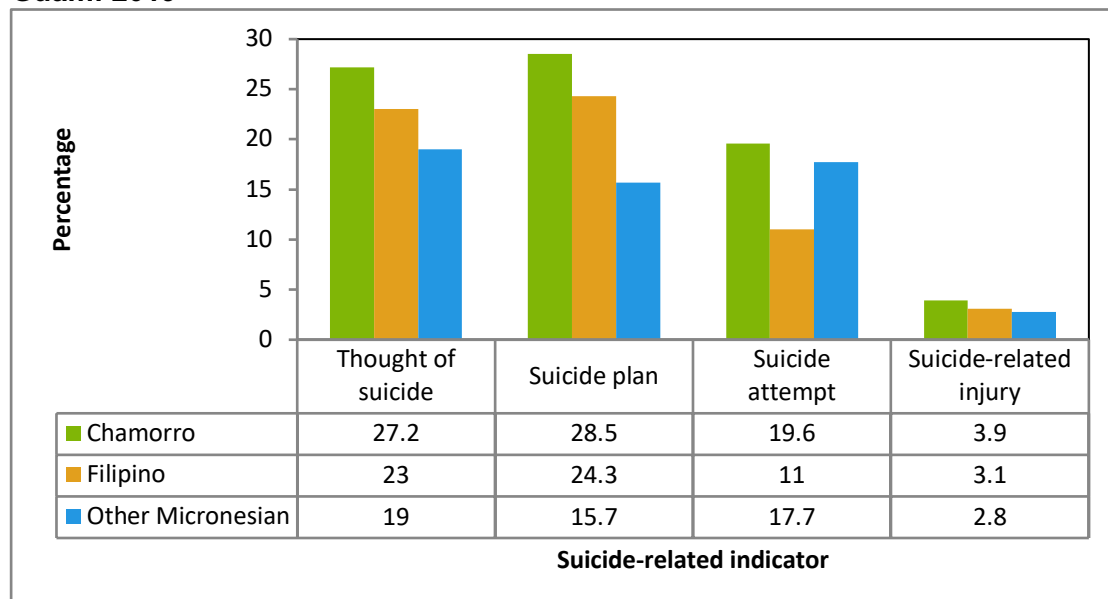
Females are more likely to think about suicide, make a plan to commit suicide and attempt suicide (Figure 95). CHamorus are most likely to think about suicide and make a suicide plan; CHamorus and Micronesians are more likely to actually attempt suicide, but there is no difference across these ethnic categories for serious attempts at suicide that require medical treatment (Figure 96).

Figure 95. Suicidal ideation and suicide attempts by sex, high school: Guam, 2019



Source: GDOE, YRBS 2019

Figure 96. Suicidal ideation and suicide attempts by ethnicity, high school, Guam: 2019



Source: GDOE, YRBS 2019

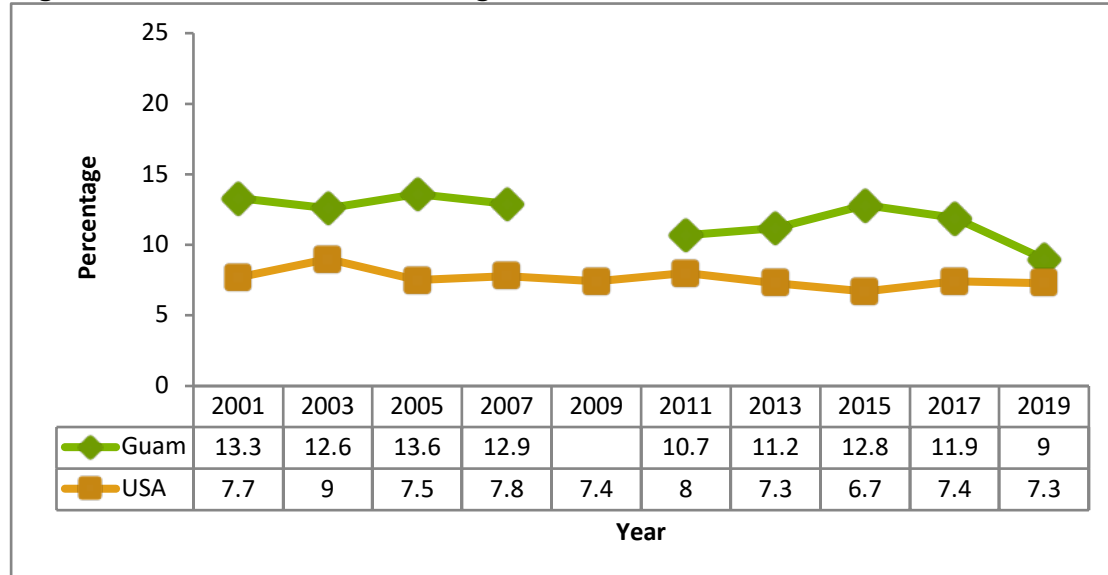
Note: The YRBS still uses the old spelling "Chamorro"

Other Suicide Risk Factors

The scientific literature indicates that sexual history, physical violence, a history of mental illness and the use of tobacco, alcohol and illicit drugs may increase the risk of suicidal ideation and attempts. In Guam, alcohol and mental illness have been associated with suicide deaths.

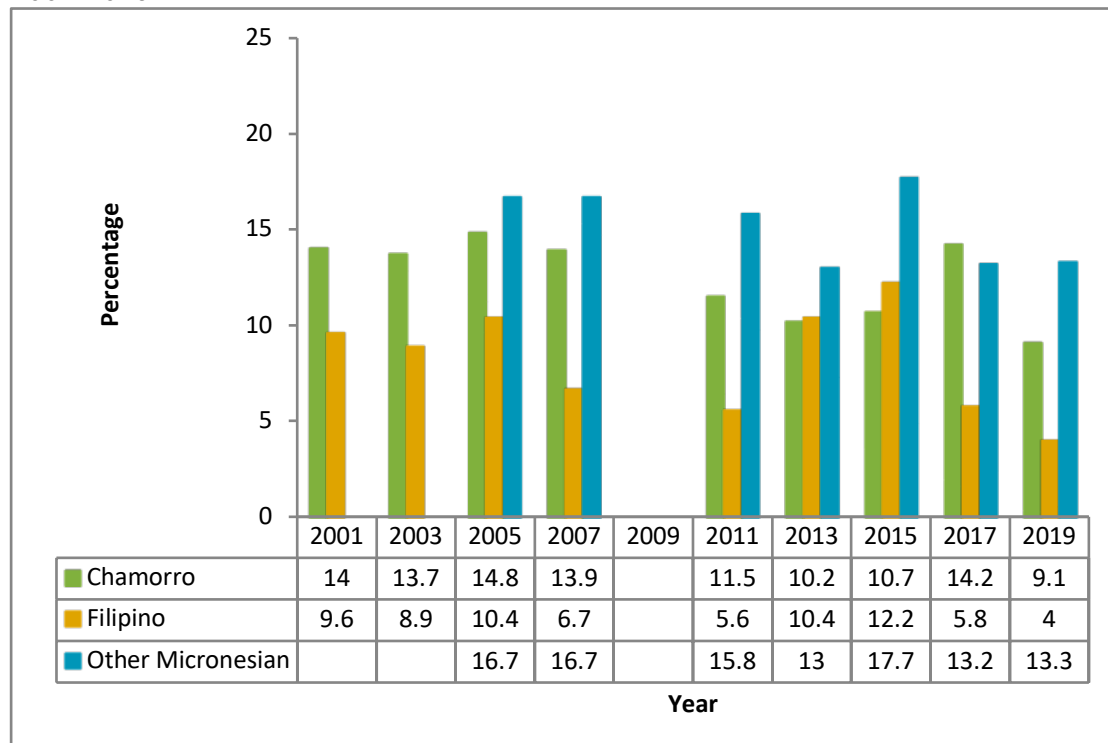
Sexual violence among Guam high school students is similar to the US median. The proportion of high school students reporting having been forced to have sex decreased from 2017 (Figure 97). CHamorus and Micronesians reported higher rates than Filipinos (Figure 98).

Figure 97. Forced to have sex, high school, Guam vs. USA: 2001-2019



Source: GDOE, YRBS 2001-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>
 Note: blank cells = data not available

Figure 98. Forced to have sex in the past year by ethnicity, high school, Guam: 2001-2019



Source: GDOE, YRBS 2001-2019
 Note: blank cells = data not available; the YRBS still uses the old spelling "Chamorro"

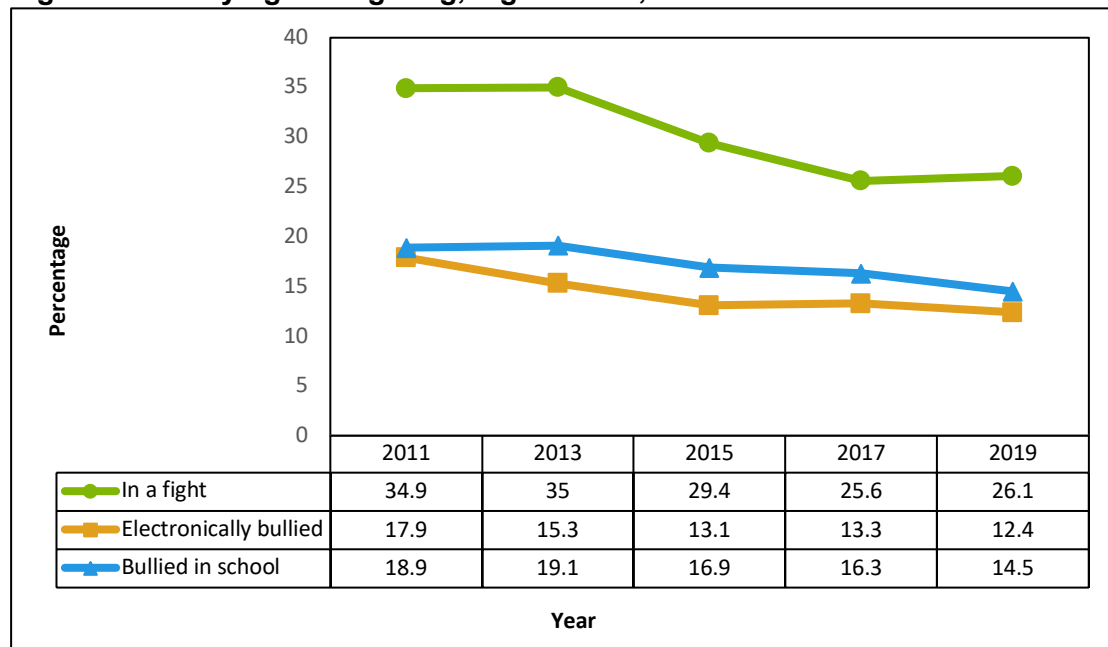
Bullying and physical violence may also be linked to an increased likelihood for suicide. In 2019 for every 100 Guam high school students:

- 5 carried a weapon on school property at least 1 day during the 30 days before the survey.
- 5 carried a gun on at least 1 day during the past year.
- 7 were threatened or injured with a weapon on school property.
- 11 were in a physical fight on school property.
- 11 did not attend class because they felt unsafe in school.
- 13 were electronically bullied in the past year.
- 16 were bullied on school property.
- 26 were in a physical fight one or more times in the past year.

(Source: GDOE, YRBS 2019)

The reported prevalence of violence and bullying have decreased over time from 2011, but no changes were noted from 2017 (Figure 99).

Figure 99. Bullying and fighting, high school, Guam: 2011-2019



Source: GDOE, YRBS 2011-2019

These data indicate that addressing sexual and physical violence and bullying should be integral to suicide prevention efforts among youth in Guam.

MENTAL HEALTH

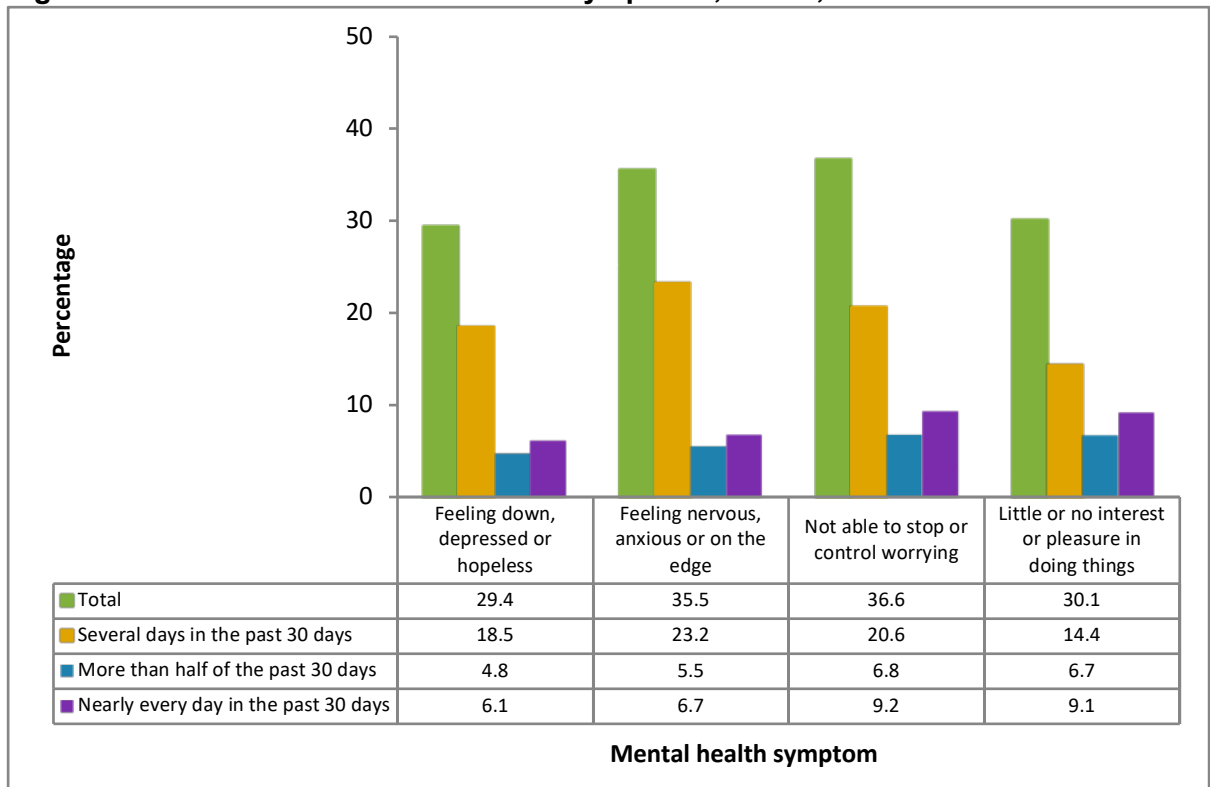
MENTAL HEALTH

Mental illness is closely linked to substance misuse and suicide. The GBHWC started commissioning mental health questions incorporated into the BRFSS in 2013, and risk and protective factors questions into the YRBS since 2011. BRFSS also asks about depression diagnosis as part of the Chronic Diseases Indicators. The latest data on adults are from 2021; for youth, the latest data are from 2019. National data are not available for the mental health questions in the optional modules, but comparative data exist for depression diagnosis in BRFSS.

Adults

In 2021, about one-third of Guam adults reported experiencing a mental health symptom within the past 30 days. Of these, about 6-9% reported experiencing these symptoms nearly every day in the past month (Figure 100). Except for anhedonia (having little or no interest or pleasure in doing things), women are more likely to report symptoms than men (Figure 101).

Figure 100. Prevalence of mental health symptoms, adults, Guam: 2021



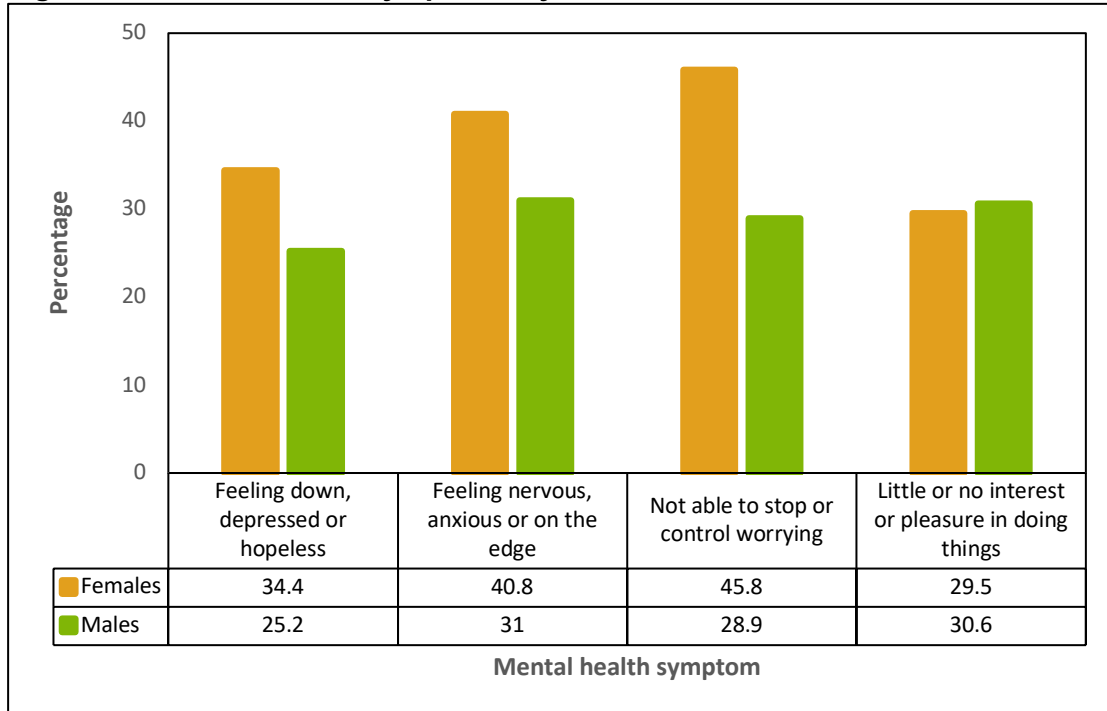
Source: DPHSS and GBHWC, BRFSS State-added questions, 2021

Note: blank cells = data not available

In 2021, nearly 10% of Guam adults reported being told they had a form of depression; this is unchanged from previous years. Depression among adults is lower in Guam than in the US (Figure 102). No statistical differences were noted across sex, education, or income level.

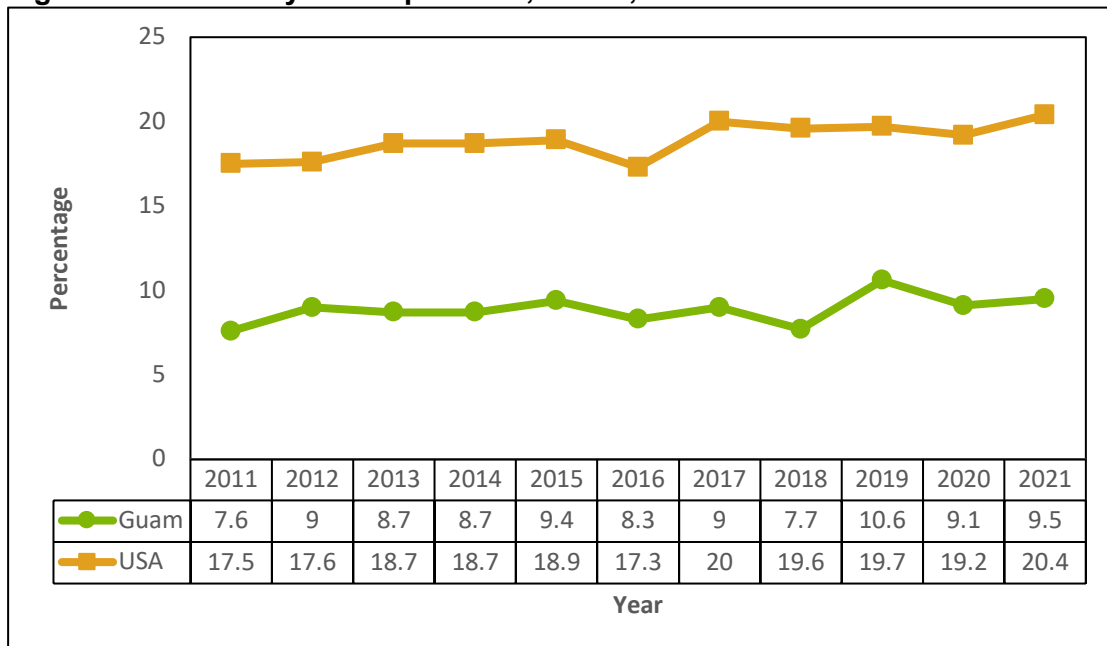
The data for symptom prevalence are higher than the prevalence of depression diagnosis; it appears a significant number of possible cases are not being picked up or recognized.

Figure 101. Mental health symptoms by sex, adults, Guam: 2021



Source: DPHSS and GBHWC, BRFSS State-added questions, 2021

Figure 102. Told they had depression, adults, Guam vs. USA: 2011-2021

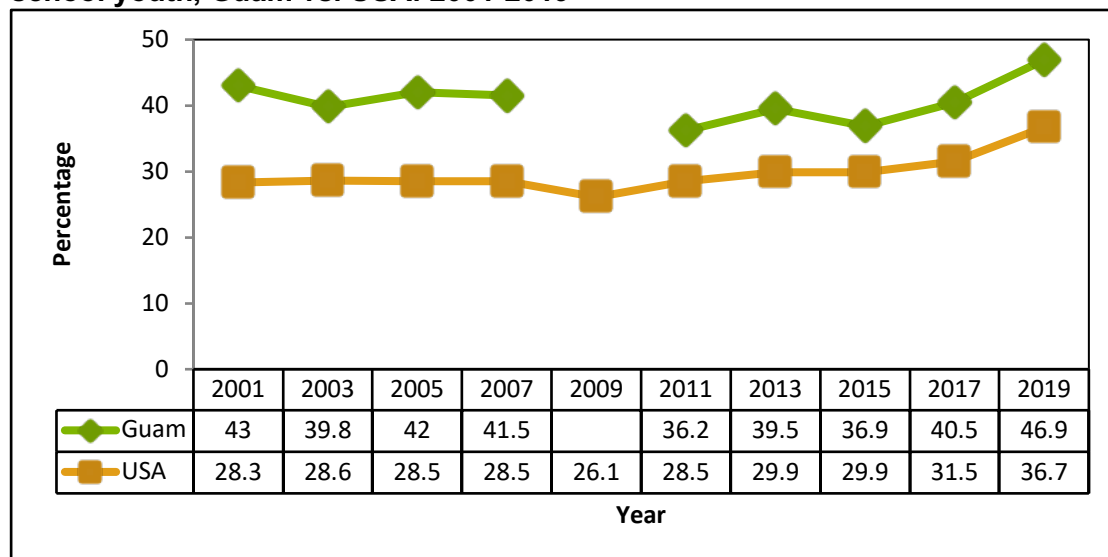


Source: Guam DPHSS, BRFSS, 2011-2021; CDC, BRFSS, 2011-2021

Youth

Persistent sadness is an indicator for depression. From 2015 to 2019, the percentage of high school students reporting feeling sad or hopeless almost every day for 2 weeks in a row, within the past 12 months, increased significantly. Reporting sadness or hopelessness was higher among youth in Guam compared to their US counterparts (Figure 103). Girls were more likely to report persistent sadness than boys (58.9% vs. 36.9%). The prevalence of depressive symptoms did not vary among youth of different ethnicities (Figure 104). This suggests that depression screening and early referral to mental health professionals should be conducted routinely among all high school youth, as a mental health and suicide prevention intervention.

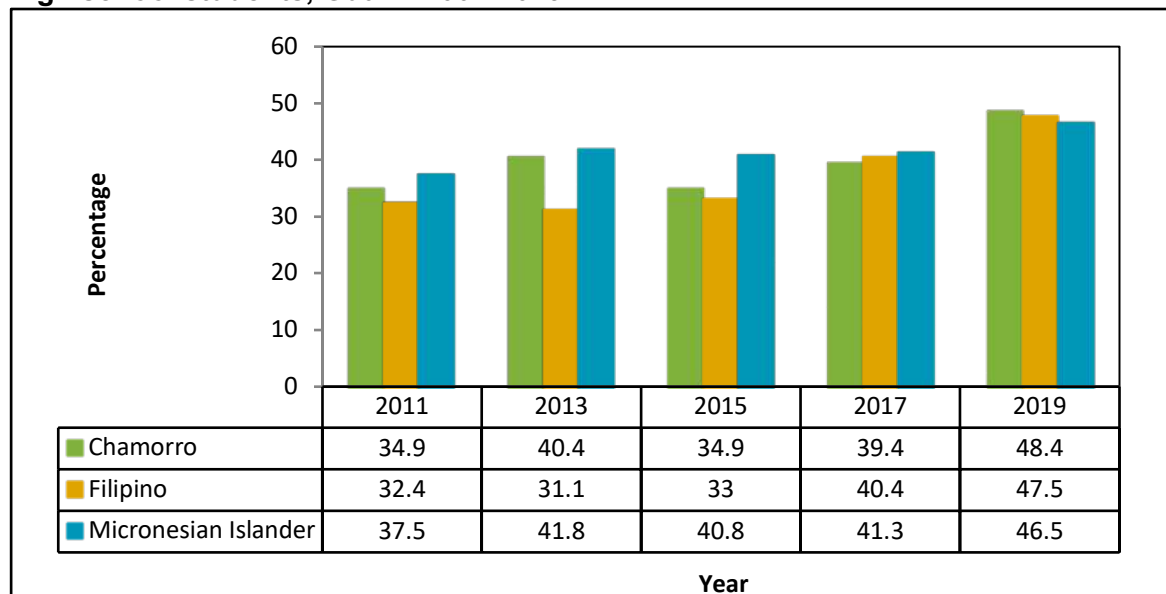
Figure 103. Feeling sad for at least 2 weeks over the past 12 months, high school youth, Guam vs. USA: 2001-2019



Source: GDOE, YRBS 2001-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>

Note: blank cells = data not available

Figure 104. Feeling sad for at least 2 weeks over the past 12 months by ethnicity, high school students, Guam: 2001-2019



Source: GDOE, YRBS 2001-2019; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>

Note: blank cells = data not available

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

This version of the Guam Epidemiological Profile combines substance misuse, suicide, and mental health data in a comprehensive but user-friendly data document. These three areas of behavioral health are intrinsically linked, and the interrelationships are broad and far-reaching.

The Covid-19 pandemic dominated the political, health socio-economic and psychological landscape between 2020 to 2022. During this time, it was hypothesized that substance misuse and mental health disturbances across the global community would be significant. This update of the Epi Profile depicts the actual situation in the island.

Clearly, challenges in substance misuse prevention and control remain. Tobacco use remains high, and smoking, smokeless and electronic vaping product use are significantly higher in Guam than in the US. Smokeless tobacco use is nearly double the US rate. Electronic vaping product use among youth is markedly higher than the US median, and adult use is rising rapidly; these need to be carefully monitored.

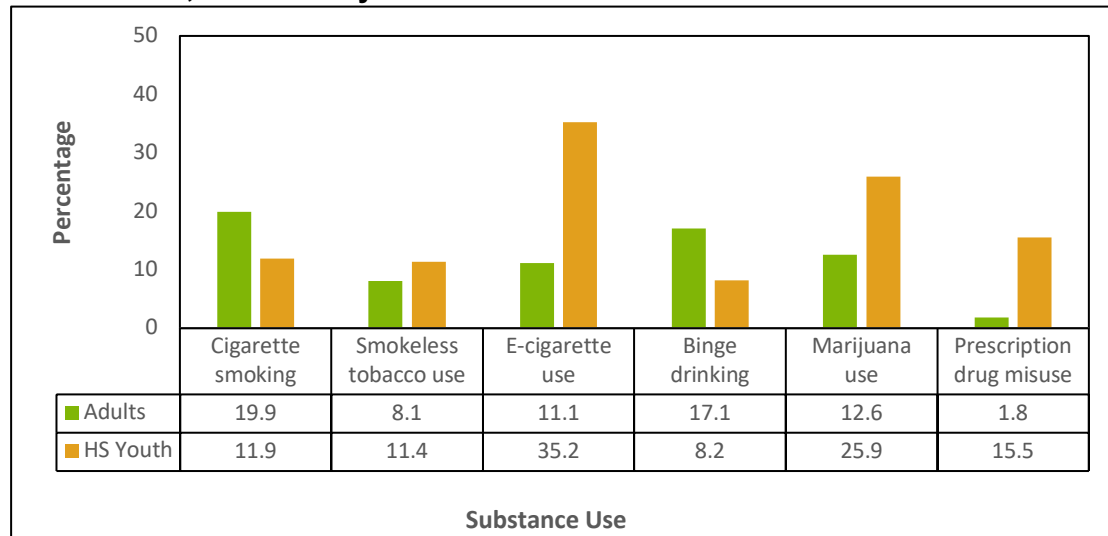
On the positive side, smoking is declining among both youth and adults. The decline has occurred in temporal association with key tobacco control policy wins. And for the first time, the positive impact of decreased smoking prevalence on the health burden in relation to lung cancer, is evident with reductions in disease incidence and mortality. Nonetheless, tobacco-related noncommunicable diseases (NCD) remain a major part of the island's health burden, signaling the need for stronger interventions to reduce all forms of tobacco use.

Currently, binge and heavy drinking among adults in Guam are similar or lower than US rates. Youth alcohol consumption reflects the powerful and immediate impact of sound policies---current and binge drinking among Guam youth dropped markedly following policy milestones in 2003, 2010 and 2014. However, the lack of change in 2019 reflects the need for more and stronger alcohol prevention interventions and policies.

In contrast, marijuana prevalence among youth remained unchanged, and rates for lifetime use were notably higher in Guam than in the US. It will be critical to track future marijuana consumption, with the recently enacted medical marijuana act that legalizes marijuana use for both medical and recreational use. Already, the perception of risk from marijuana use has decreased following its legalization. Guam's Epi Profile highlights the pivotal role of environmental interventions through policies in substance misuse prevention.

A comparison of the prevalence across the various substances of concern indicates that for adults, the priorities are cigarette smoking, binge drinking and marijuana use. For youth, e-cigarettes, marijuana use, and prescription drug misuse predominate, and youth prevalence rates surpass the adult rates considerably (Figure 105). E-cigarette prevalence is particularly concerning given the magnitude and rapid increase in use over time, and the potential for these devices to be used for other substances, such as marijuana and liquid methamphetamine. Furthermore, youth current alcohol use is significant; underage alcohol consumption raises the risks for adverse health and behavioral impacts and increases the likelihood of future dependency.

Figure 105. Comparison of prevalence of tobacco, alcohol and other substance use in Guam, adults and youth: 2019-2021



Sources: GDOE, YRBS 2019; DPHSS, BRFSS 2020-2021

In Guam, the 2020 suicide rate increased from 2019 and was higher than the US rate. However, in 2021, suicide deaths decreased in Guam, although the age-adjusted rate remained higher than that in the US mainland. One hypothesis for this reduction in suicide rate pertains to the attenuation of fear and mental distress from the COVID pandemic. In 2021, the availability of vaccines and therapeutic agents to combat SARS CoV-2 may have contributed to a lowered perception of danger from the pandemic and reduced mental anguish. GBHWC’s proactive outreach and expanded services such as through the crisis helpline, may have helped to diminish the risk for mental suffering and suicide risk. Finally, the Government’s efforts to mobilize financial and social safety nets, such as through the rental assistance program, financial support to poor households, expansion of eligibility for food assistance and medical coverage, assistance for small business owners, childcare benefits, etc., may have addressed those social determinants that underlie depression and substance and alcohol abuse, thereby contributing to lowered suicide risk by addressing root causes of emotional distress.

The demographics of suicide in Guam differ from the US, with higher risk among younger persons, and those of CHamoru or Chuukese ethnicity. Previous suicide attempts, alcohol, and drug use, and/or a history of mental illness confer heightened risk. Hanging is by far the predominant method, and majority of suicides occur at home.

Suicide prevention remains a key public health priority, and the data point towards specific strategies to reduce suicide in Guam. These strategies include:

- Investing in suicide prevention efforts towards youth and young adults, especially CHamorus, Chuukese and other Micronesians.
- Strengthening community capacity to recognize the signs of impending or possible suicide and training families, community members and first responders to effectively intervene to bring individuals at risk of suicide to professional attention.
- Training emergency room personnel and other hospital personnel to do brief interventions and referral to GBHWC and other mental health treatment providers for all cases of attempted suicide.

- Ensuring access to continuing care and support for those who have made suicide attempts.
- Aggressively screening to recognize and treat mental illness and depression.
- Preventing and controlling alcohol and other substance misuse.
- Building a sustainable suicide prevention and treatment infrastructure.
- Incorporating mental health interventions and suicide prevention into emergency/crisis response and disaster preparedness.

The recent launch of the dedicated Suicide and Crisis Lifeline – 988 – and the creation of new community initiatives to counter suicide risk, through community partners like Breaking Waves Theater Company, the Hagu Foundation, TU;MA, and the University of Guam (UOG) Press and Cooperative Extension, may help to expand Guam’s suicide prevention efforts. It is anticipated that these may reduce suicide rates further, as more members of the community are engaged in mental health promotion, early recognition of suicide risk and appropriate intervention.

Mental health indicators highlight the discrepancy between those who have a debilitating mental condition or emotional problem and those who receive treatment for their condition. Symptoms of depression appear pervasive among our youth, suggesting that depression screening and early referral to mental health providers should be conducted routinely among all high schools.

By examining substance misuse, suicide and mental health through disaggregated data, this Profile makes note of disparities across socio-economic and demographic sub-groups. Furthermore, this analysis begins to define the linkages between social determinants of consumption and disparities in health and social consequences of substance misuse, such as the higher smoking and binge drinking prevalence among CHamorus and other Micronesians and their notably higher rates of tobacco and alcohol-related cancer mortality, and likelihood of committing suicide.

For this edition of the Profile, YRBS data disaggregated by sexual identity are included as a separate report in the Appendix. Once similar data are available for adults, they will be incorporated in future iterations of the Epi Profile.

This expanded Profile represents the culmination of multiple efforts through the years by Guam’s SEOW to strengthen and expand the substance misuse and mental health surveillance system. Over the years, with SAMHSA/CSAP support [through the SPF-SIG, Focus on Life, SEOW and Partnerships for Success (PFS) grants], Guam has upgraded its substance misuse and mental health data capacity and infrastructure. For example, the previous lack of adult illicit drug use data was addressed through an ongoing Memorandum of Understanding between DPHSS and GBHWC.

Some data limitations remain. For example, youth in the private and charter schools, and the military are not covered by the current surveillance mechanisms. The SEOW and PEACE Office conducted a survey among students within the Catholic school system but were not given permission to release the results in public.

Guam also is constantly challenged by the difficulties of working with small numbers. Especially when data is disaggregated, the totals are often too small for accurate trending, and interpretation of for example, year-to-year changes or comparisons across similarly small groups are fraught with uncertainty. The lack of standardization

in defining subgroup categories, such as age groups and ethnicity, sometimes within the same surveillance system across time, also make comparisons challenging.

Nonetheless, this Profile attests to the enhanced data capacity developed through the years, with leadership by the SEOW and support from the GBHWC PEACE Office and SAMHSA/CSAP. Evidence-based prevention is now facilitated and guided by accessible data in Guam.

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APPENDIX



SPECIAL POPULATION: SEXUAL MINORITY (LGBTQ) YOUTH

Prepared for the GBHWC by the State Epidemiological Outcomes
Workgroup (SEOW)

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EXECUTIVE SUMMARY

As part of its mission, the SEOW analyzes data to uncover vulnerabilities and inequities within our island community. One of the areas pinpointed by the SEOW where better data are needed was for sexual minority populations, defined as those who identify as lesbian, gay, or bisexual; who are not sure of their sexual identity; or who have had sexual contact with people of the same sex. We used the data from the 2015 – 2019 Guam Youth Risk Behavior Surveys to develop this baseline profile of sexual minority youth in Guam.

We identified 25 questions that reflect key indicators under 4 domains: (1) experiencing violence, (2) mental health, including suicide risk, (3) tobacco and harmful alcohol use, and (4) other substance use. In analyzing these data, we assessed (1) magnitude, (2) trend, (3) comparison to the national standard and (4) difference across groups (equity), comparing sexual minority youth categories to heterosexual youth. We set our p value to <0.05 to determine statistical significance between groups

Analyzing data from the YRBS using the lens of sexual identity uncovered a number of key differences between sexual minority youth and their peers under the four domains or focus areas (Tables 1 and 2):

- (1) **Experiencing violence:** Youth who are not sure of their sexual identity are more likely than their heterosexual and lesbian/gay/bisexual counterparts to be bullied on school property and to miss school days because they felt unsafe. Likewise, youth whose sexual contacts are either of the same sex or both sexes are more likely to feel unsafe in school compared to youth with opposite sex only sexual contacts.
- (2) **Mental health and suicide risk:** Lesbian, gay and bisexual youth and those uncertain of their sexual identity are more likely to report feeling sad and hopeless than their heterosexual peers. Lesbian, gay and bisexual youth are also more likely to report thinking about suicide, making a suicide plan and attempting suicide.
- (3) **Tobacco and harmful alcohol use:** Sexual minority youth are less likely to be current cigarette smokers, users of electronic vapor products or binge drinkers than their heterosexual counterparts in Guam.
- (4) **Other substance use:** Sexual minority youth in Guam are more likely to report substance use compared to their heterosexual counterparts.

These important differences indicate that sexual minority youth face higher risks of experiencing violence, mental health problems and suicide, and substance use; and conversely, tobacco and harmful alcohol use appear lower. These disparities emerge only when data are disaggregated or sexual identity, highlighting its role as a social determinant of health.

Trends from 2015 demonstrate improvements in reported bullying, sexual violence, dating violence and cigarette smoking, but the use of electronic vapor products is rising, while substance use, and suicide risk remain unchanged.

This baseline report is intended to guide prevention stakeholders in selecting priorities, developing strategies, and allocating resources to better serve Guam's young people who remain at risk for mental health and substance use problems. Its findings highlight the importance of integrating sexual identity when screening for risk, developing and selecting prevention interventions and designing advocacy, education, and outreach programs, so that services reach those that need them the most. The data also highlight the need to directly address the social influences that drive these disparities—including stigma, marginalization, prejudice, and discrimination. Ultimately, the data call for social change to address the underlying or root causes of the inequities and health disparities that adversely impact our youth.

Table 1. Overview of data on violence, mental health, tobacco, alcohol, and other substance use by sexual identity, Guam high school youth, 2019

Indicator	Heterosexual (straight)	Gay, lesbian or bisexual	p-value	Heterosexual vs. gay, lesbian, bisexual	Not sure	p-value	Heterosexual vs. not sure
Violence							
Were electronically bullied	11.6	13.9	0.54		16.4	0.43	
Were bullied on school property	12.7	18.7	0.12		28.9	0.04	
Did not go to school because they felt unsafe at school or on their way to or from school	9.6	14.7	0.13		22.5	0.03	
Were ever physically forced to have sexual intercourse	7.7	11.2	0.18		8.7	0.82	
Experienced sexual violence by anyone	9.3	15.8	0.07		17.9	0.15	
Experienced sexual dating violence	3.6	9.5	0.12		-	-	
Experienced physical dating violence	6.0	10.6	0.42		22.9	0.13	
Mental health							
Felt sad or hopeless	43.5	60.0	0.00		60.5	0.04	
Seriously considered attempting suicide	19.4	39.3	0.00		33.6	0.05	
Made a plan about how they would attempt suicide	20.6	40.3	0.00		33.1	0.08	
Actually attempted suicide	11.9	34.1	0.00		18.7	0.32	
Suicide attempt resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse	2.5	9.0	0.09		4.0	0.67	
Tobacco and alcohol use							
Currently smoked cigarettes	10.6	13.7	0.45		14.8	0.47	
Currently used electronic vapor products	35.8	36.1	0.95		20.9	0.04	
Currently used smokeless tobacco	9.8	14.7	0.31		15.9	0.33	
Currently were binge drinking	8.2	9.2	0.79		0.3	0.00	
Other substance use							
Currently used marijuana	26.0	28.8	0.53		21.0	0.41	
Ever took prescription pain medicine without a doctor's prescription or	14.6	20.0	0.28		18.4	0.50	

differently than how a doctor told them to use it							
Ever used cocaine	3.6	9.0	0.08		8.4	0.11	
Ever used inhalants	6.5	15.3	0.02		25.3	0.01	
Ever used heroin	2.1	5.7	0.13		11.6	0.04	
Ever used methamphetamines	3.5	11.1	0.04		11.0	0.10	
Ever used ecstasy	1.9	10.5	0.04		4.4	0.27	
Ever took steroids without a doctor's prescription	2.0	7.7	0.02		6.9	0.20	
Ever injected any illegal drug	1.5	8.8	0.02		10.2	0.06	

Legend:

	Sexual minority youth at higher risk
	No difference
	Sexual minority youth at lower risk

Table 2. Overview of data on violence, mental health, tobacco, alcohol, and other substance use by sex of sexual contacts, Guam high school youth, 2019

Indicator	Opposite sex only	Same sex only or both sexes	p-value	Comparison
Violence				
Were electronically bullied	12.4	26.0	0.07	
Were bullied on school property	12.6	25.3	0.06	
Did not go to school because they felt unsafe at school or on their way to or from school	7.9	22.2	0.01	
Were ever physically forced to have sexual intercourse	10.6	17.1	0.26	
Experienced sexual violence by anyone	11.5	21.8	0.17	
Experienced sexual dating violence	4.8	8.3	0.51	
Experienced physical dating violence	11.0	14.1	0.62	
Mental health				
Felt sad or hopeless	47.4	67.6	0.01	
Seriously considered attempting suicide	26.2	48.1	0.01	
Made a plan about how they would attempt suicide	28.6	41.1	0.07	
Actually attempted suicide	18.4	31.4	0.08	
Suicide attempt resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse	3.5	4.5	0.80	
Tobacco and alcohol use				
Currently smoked cigarettes	21.2	4.7	0.00	
Currently used electronic vapor products	61.8	61.8	1.0	
Currently used smokeless tobacco	15.2	15.4	0.97	
Currently were binge drinking	15.6	9.9	0.30	
Other substance use				
Currently used marijuana	42.6	31.3	0.10	
Ever took prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it	21.1	19.6	0.80	
Ever used cocaine	6.1	17.0	0.03	
Ever used inhalants	9.7	25.1	0.02	
Ever used heroin	3.4	18.0	0.02	
Ever used methamphetamines	6.5	18.9	0.07	
Ever used ecstasy	3.5	11.1	0.07	
Ever took steroids without a doctor's prescription	4.3	20.1	0.02	
Ever injected any illegal drug	1.9	13.9	0.02	

Legend:

	Sexual minority youth at higher risk
	No difference
	Sexual minority youth at lower risk

INTRODUCTION

In 2003, Guam was awarded a Strategic Prevention Framework-State Incentive Grant (SPF-SIG) for substance abuse prevention and control by the Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance Abuse Prevention (CSAP). Utilizing the principles of outcomes-based prevention, the grant specified the creation of a State Epidemiological Outcomes Workgroup (SEOW), which would oversee the strategic use of data to inform and guide substance abuse prevention policy and program development in Guam. Guam's SEOW was subsequently established within the Prevention and Training Branch of the Guam Behavioral Health and Wellness Center (GBHWC) in 2004. Since that time, it has produced and disseminated various data products that address the issues of tobacco and alcohol use, other substance use, mental health, and suicide risk.

The Guam SEOW is the longest-running data work group in Guam. It is considered the definitive authority on substance abuse epidemiology on the island. Its data products are readily acknowledged as comprehensive community resources, and its work has consistently influenced substance abuse policy and program development, prevention resource allocation, service delivery and decision-making at the State government level as well as within individual agencies, institutions, and community organizations.

From the outset, the SEOW undertook a process of identifying and addressing data gaps in Guam. One of the areas pinpointed by the SEOW where better data are needed was for the Lesbian/Gay/Bisexual/Transgender/Queer/Questioning (LGBTQ) population. In 2014, GBHWC contracted with Guam's Alternative Lifestyle Association (GALA) under the Partnerships for Success (PFS) grant to undertake a first GALA Health and Wellness Survey among the local LGBTQ community. The survey was comprised of questions taken from CDC's BRFSS, PEW Research, the DPHSS Pacific Islands HIV Test form and the Suicidal Behaviors Questionnaire (SBQ), to assess tobacco, alcohol and other substance use, mental health status, and suicide risk. Since then, however, there has not been a systematic effort to track risk within this special population.

This special report represents the initial attempt by the SEOW to establish a baseline profile of LGBTQ youth in Guam, specific to four sets of indicators that examine violence, mental health, tobacco and alcohol use, and other substance use. In contrast to the GALA survey, which used respondent driven sampling, the SEOW utilized population data from the 2015-2019 Youth Risk Behavior Surveys (YRBS), which are school-based surveys conducted biannually in Guam. (Note: Because of the COVID pandemic, the 2021 YRBS was suspended; thus 2019 represents the latest year for which data are available.)

As part of its mission, the SEOW analyzes data to uncover vulnerabilities and inequities within our island community. The LGBTQ population is a sexual and gender minority group that, in studies done within the US mainland, demonstrates disparities in academic performance, substance use, suicide risk, depression risk and violence victimization.^{1,2,3} This baseline profile aims to review data disaggregated by sexual identity among Guam youth, to uncover any health disparities that require focused attention and resources. This will assist health policy leaders and prevention providers to strategically develop and implement policies and interventions to reduce health disparities and address the causes of inequities that place sexual minority youth at increased risk from violence, tobacco, alcohol and other substance use, and mental health issues including suicide.

¹ Zaza S, Kann L, Barrios L. Lesbian, gay, and bisexual adolescents: Population estimate and prevalence of health behaviors. *JAMA*. 2016;316(22):2355-2356.

² Kann L, O'Malley Olsen E, McManus T, et al. Sexual identity, sex of sexual contacts, and health-related behaviors among students in grades 9-12 – United States and selected sites, 2015. *MMWR Morb Mortal Wkly Rep*. 2016;65(90):1-2.

³ Johns MM, Lowry R, Rasberry CN, et al. Violence Victimization, Substance Use, and Suicide Risk Among Sexual Minority High School Students – United States, 2015–2017. *MMWR Morb Mortal Wkly Rep*. 2018;67:1211–1215. DOI: <http://dx.doi.org/10.15585/mmwr.mm6743a4>.

METHODOLOGY

The Guam YRBS included questions on sexual identity and sex of sexual contacts in its high school surveys beginning in 2001, but the questions were not included regularly across all the years the survey was conducted until 2013. Nationally, questions measuring 2 elements of sexual orientation: sexual identity and sex of sexual contacts (see Box 1) have been available in the YRBS questionnaire since 1995, but it was not until 2015 that these questions became core questions in the national YRBS questionnaire and to 53 local and state YRBS questionnaires, permitting the calculation of a national median. Because of this, we decided to focus this baseline profile on data from the 2015-2019 Guam YRBS data.

Text Box 1: Questions Used on the Youth Risk Behavior Survey Questionnaire to Ascertain Sexual Identity and Sex of Sexual Contacts

During your life, with whom have you had sexual contact?

- A. I have never had sexual contact
- B. Females
- C. Males
- D. Females and males

Which of the following best describes you?

- A. Heterosexual (straight)
- B. Gay or lesbian
- C. Bisexual
- D. Not sure

The full questionnaires, report, and data files can be found at <http://www.cdc.gov/yrbs>.

The US Centers for Disease Control and Prevention (CDC) recently published a report based on YRBS data that included a section on sexual minority youth. We decided to model this baseline profile on that report, aligning terminology and definitions or consistency. Thus, for this report, we define sexual minority youth (SMY) as those who identify as lesbian, gay, or bisexual; who are not sure of their sexual identity; or who have had sexual contact with people of the same sex. Conversely, non-SMY are defined as those who identify as heterosexual or who have only had sexual contact with people of the opposite sex.⁴

We identified 25 questions that reflect key indicators under 4 domains/focus areas (Appendix 1):

- Experiencing violence
- Mental health, including suicide risk
- Tobacco and harmful alcohol use
- Other substance use

In analyzing these data, we continued to use the Guam SEOW approach of assessing (1) magnitude, (2) trend, (3) comparison to the national standard and (4) difference across groups (equity). We set our p value to <0.05 to determine statistical significance between groups

While the Guam YRBS data represents the best available population data for high school youth, several data limitations exist. Only public-school students within the Guam Department of Education (GDOE) system are included in the sampling frame. If significant differences exist between public and private school students in Guam, YRBS data may not be generalizable to the entire youth population on island. For certain categories, the numbers of respondents may be small (n<50). Hence, caution is needed when interpreting year-to-year variations, and cross-category differences. Finally, discordance between sexual identity and sex of sexual contacts was identified in the 2015 national YRBS.⁵ These need to be considered when drawing inferences from these data.

⁴ US CDC National Centers for HIV/AIDS, Viral Hepatitis, STD and TB prevention. Youth Risk Behavior Surveillance Data Summary & Trends Report: 2009-2019. October 2021. Available online at <https://www.cdc.gov/healthyouth/data/yrbs/pdf/YRBSDataSummaryTrendsReport2019-508.pdf>

⁵ Zaza S, Kann K and Barrios LC. Lesbian, gay, and bisexual adolescents population estimate and prevalence of health behaviors. *JAMA*. Dec 2016; 316(22):2355-2356.

FOCUS AREA: EXPERIENCING VIOLENCE

Summary of findings

We examined data from 7 questions to assess exposure to violence:

- Were electronically bullied
- Were bullied on school property
- Did not go to school because they felt unsafe at school or on their way to school
- Were ever physically forced to have sexual intercourse
- Experienced sexual violence by anyone
- Experienced sexual dating violence
- Experienced physical dating violence

The data show that:

- Youth who are not sure of their sexual identity are more likely than their heterosexual and lesbian/gay/bisexual counterparts to be bullied on school property and to miss school days because they felt unsafe in school or on the way to school.
- Youth whose sexual contacts are either of the same sex or both sexes are more likely to feel unsafe in school compared to youth with opposite sex only sexual contacts.
- No statistical differences were noted for electronic bullying, being physically forced to have sex, experiencing sexual violence by anyone, experiencing sexual dating violence, or experiencing physical dating violence based on sexual identity or the sex of sexual contacts.
- Rates of electronic bullying, bullying on school property, being forced to have sexual intercourse, sexual dating violence appear lower among Guam youth. The only exception is being forced to have sex among heterosexual youth, which is statistically higher in Guam than in the US.
- Trend data are going in the right direction for:
 - Electronic bullying among lesbian/gay/bisexual youth
 - Being forced to have sexual intercourse among heterosexual youth, and youth whose sexual contacts are of the opposite sex only
 - Sexual violence by anyone, among youth whose sexual contacts are of the opposite sex only
 - Sexual dating violence among heterosexual and lesbian/gay/bisexual youth, and youth whose sexual contacts are of the opposite sex only

WERE ELECTRONICALLY BULLIED

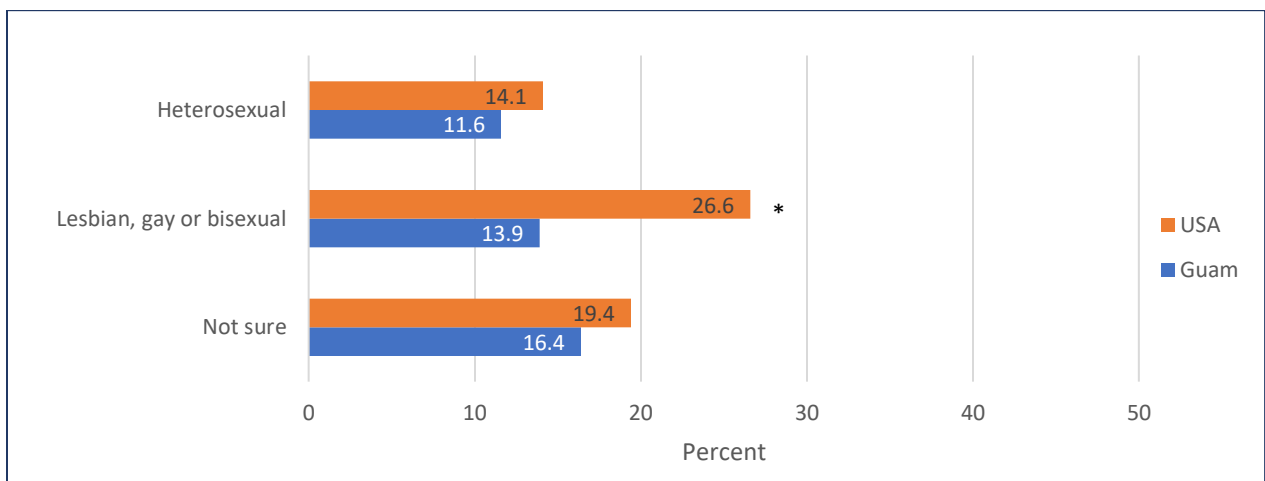
In Guam:

- No statistical differences were noted for Guam youth for electronic bullying by sexual identity or by sex of sexual contacts.

Compared to the US:

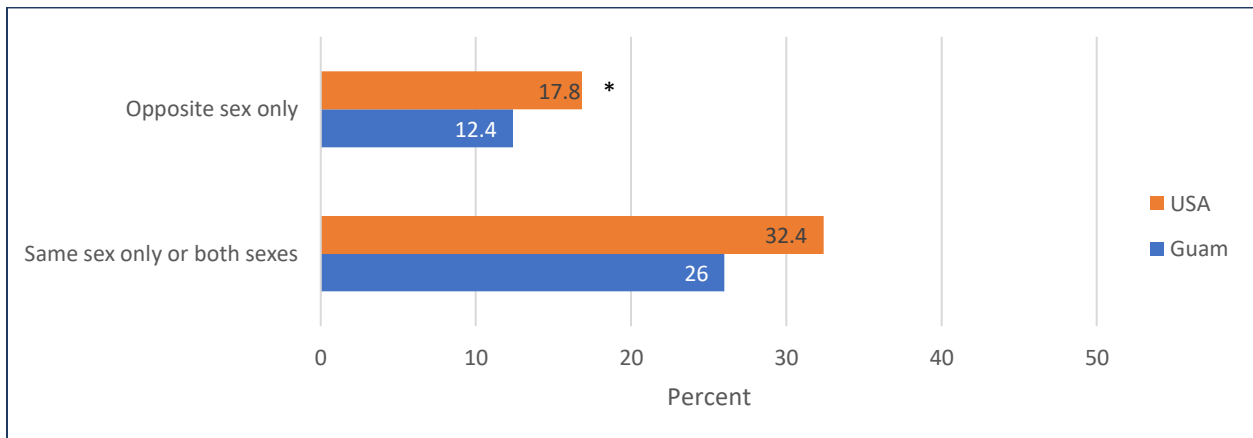
- Guam lesbian, gay, or bisexual youth and youth whose sexual contacts are of the opposite sex only are less likely to report electronic bullying.

Figure 1: Percentage of high school students who were electronically bullied by sexual identity, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth

Figure 2: Percentage of high school students who were electronically bullied by sex of sexual contacts, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth

From 2015 to 2019, lesbian, gay, and bisexual youth reported less electronic bullying. No changes over time were noted for the other categories of youth.

Table 3. Trends in electronic bullying by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	11.4 (8.9–14.5)	11.1 (8.7–14.1)	11.6 (9.0–14.8)	
	Lesbian, gay or bisexual	24.5 (17.8–32.5)	16.3 (10.6–24.2)	13.9 (8.2–22.5)	
	Not sure	8.6 (3.9–17.7)	26.0 (15.7–39.7)	16.4 (7.7–31.7)	
By sex of sexual contacts	Opposite sex only	13.8 (10.4–18.1)	14.6 (11.3–18.8)	12.4 (8.4–18.1)	
	Same sex only or both sexes	30.2 (19.6–43.4)	26.9 (17.7–38.8)	26.0 (15.3–40.8)	

Key:

	In the wrong direction
	No change
	In the right direction

WERE BULLIED ON SCHOOL PROPERTY

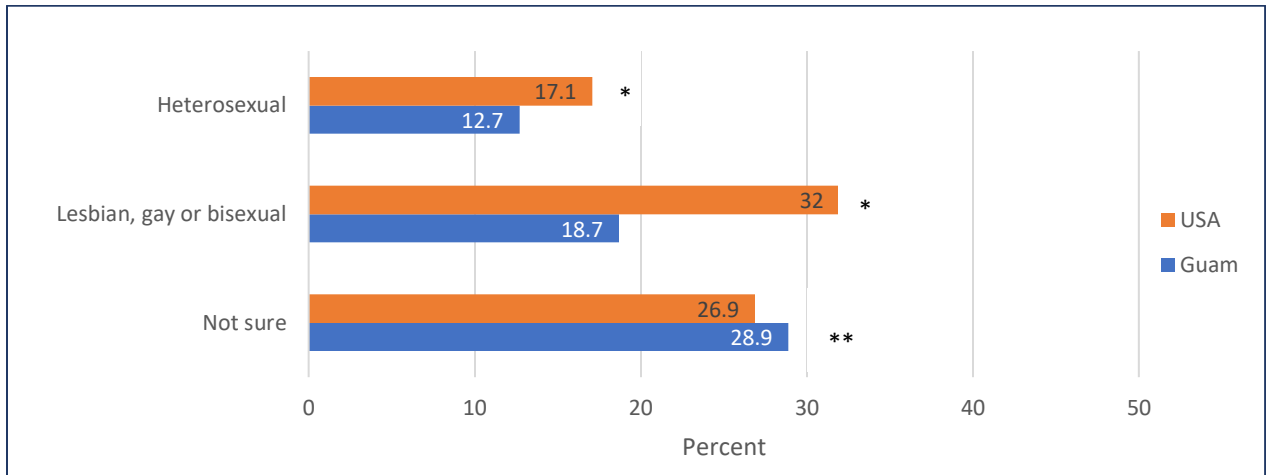
In Guam:

- Youth who are not sure of their sexual identity are more likely than their heterosexual counterparts to be bullied on school property.

Compared to the US:

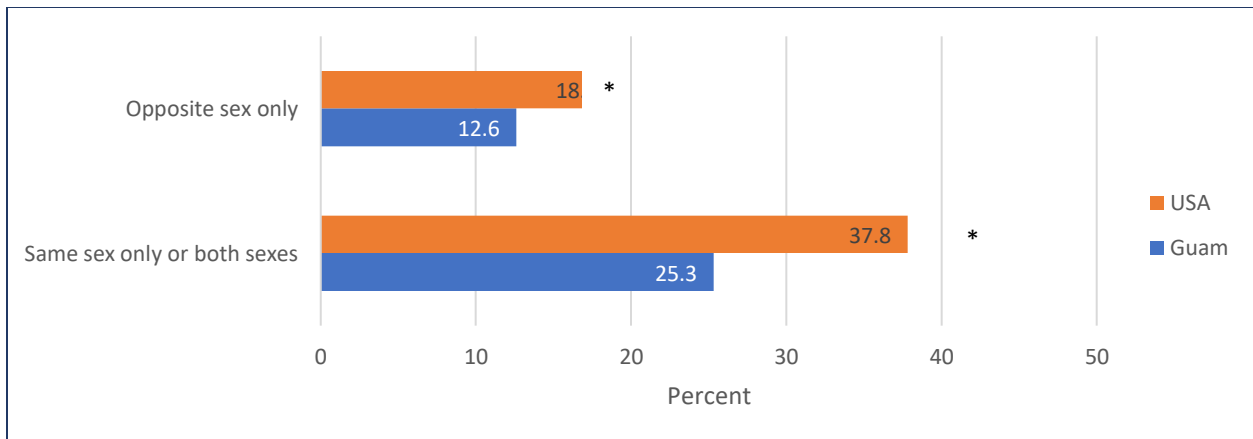
- Lesbian, gay, or bisexual youth and heterosexual youth in Guam are less likely to report bullying in school property.
- Youth in Guam are less likely to be bullied on school property compared to their US counterparts, regardless of the sex of their sexual contacts.

Figure 3: Percentage of high school students who were bullied on school property by sexual identity, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth; "**" – Within Guam, youth not sure of sexual identity more likely than heterosexual youth

Figure 4: Percentage of high school students who were bullied on school property by sex of sexual contacts, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth

From 2015 to 2019, no significant changes occurred for experiencing bullying on school property for all categories of youth.

Table 4. Trends in being bullied on school property by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	15.6 (12.8–18.9)	14.8 (11.9–18.2)	12.7 (10.3–15.6)	
	Lesbian, gay or bisexual	27.8 (19.6–37.9)	19.7 (14.2–26.8)	18.7 (12.6–26.9)	
	Not sure	18.0 (8.6–33.9)	25.4 (15.9–38.0)	28.9 (16.3–45.9)	
By sex of sexual contacts	Opposite sex only	16.5 (12.9–20.7)	15.8 (12.0–20.5)	12.6 (8.5–18.3)	
	Same sex only or both sexes	30.8 (19.8–44.5)	30.4 (20.1–43.2)	25.3 (15.8–37.9)	

Key:

	In the wrong direction
	No change
	In the right direction

DID NOT GO TO SCHOOL BECAUSE THEY FELT UNSAFE

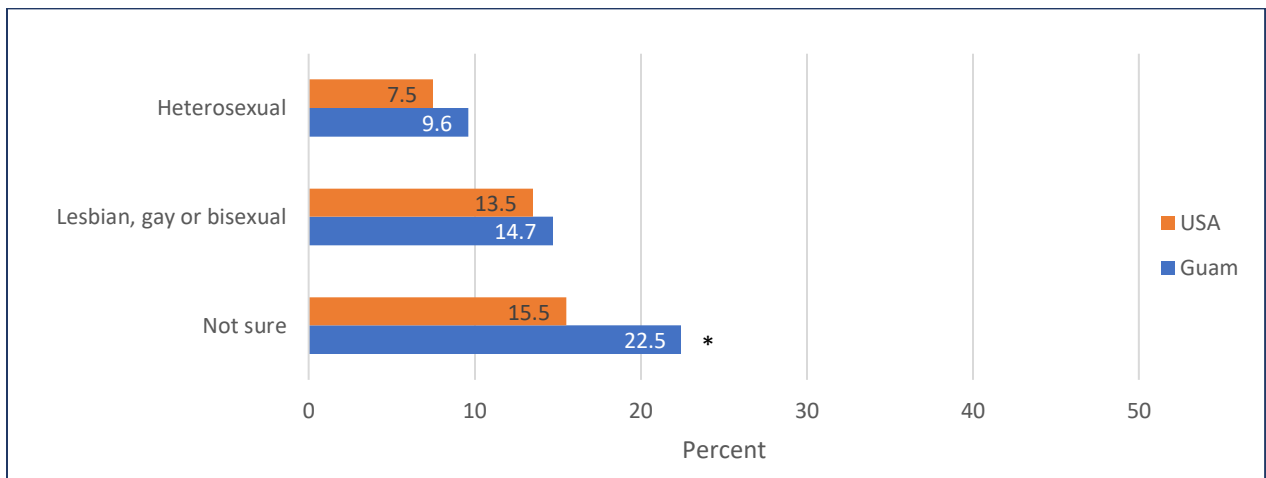
In Guam:

- Youth who are not sure of their sexual identity are more likely than their heterosexual counterparts to miss school because they felt unsafe.
- Youth in Guam with sexual contacts of the same sex only or both sexes are more likely to feel unsafe in school compared to youth with opposite sex only sexual contacts

Compared to the US:

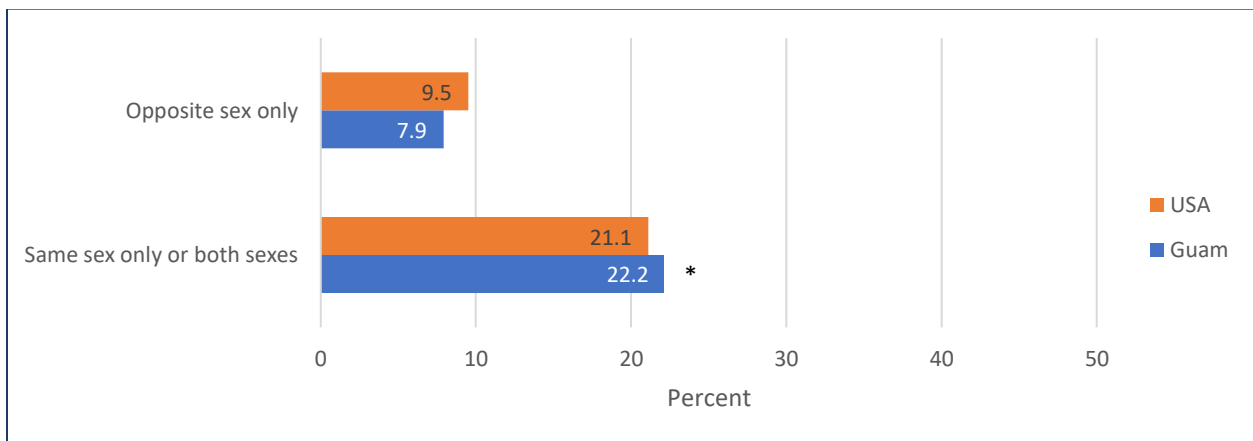
- No statistically significant differences are observed.

Figure 5: Percentage of high school students who did not go to school because they felt unsafe at school or on their way to school, by sexual identity, Guam and US, 2019



Note: "*" – Within Guam, youth not sure of sexual identity more likely than heterosexual youth

Figure 6: Percentage of high school students who did not go to school because they felt unsafe at school or on their way to school, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Youth in Guam with sexual contacts of the same sex only or both sexes more likely to feel unsafe in school compared to youth with opposite sex only sexual contacts

From 2015 to 2019, no significant changes occurred in missing school because of feeling unsafe for all categories of youth.

Table 5. Trends in youth not going to school because they felt unsafe at school or on their way to school, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	10.1 (7.5–13.4)	8.8 (6.6–11.7)	9.6 (7.5–12.4)	
	Lesbian, gay or bisexual	20.1 (13.9–28.0)	17.4 (10.7–27.0)	14.7 (9.5–22.2)	
	Not sure	19.5 (10.3–33.6)	24.7 (14.7–38.5)	22.5 (13.2–35.6)	
By sex of sexual contacts	Opposite sex only	10.4 (7.5–14.2)	11.2 (7.7–15.9)	7.9 (5.5–11.3)	
	Same sex only or both sexes	24.4 (15.7–36.0)	28.7 (18.4–41.9)	22.2 (13.0–35.4)	

Key:

	In the wrong direction
	No change
	In the right direction

WERE EVER PHYSICALLY FORCED TO HAVE SEXUAL INTERCOURSE

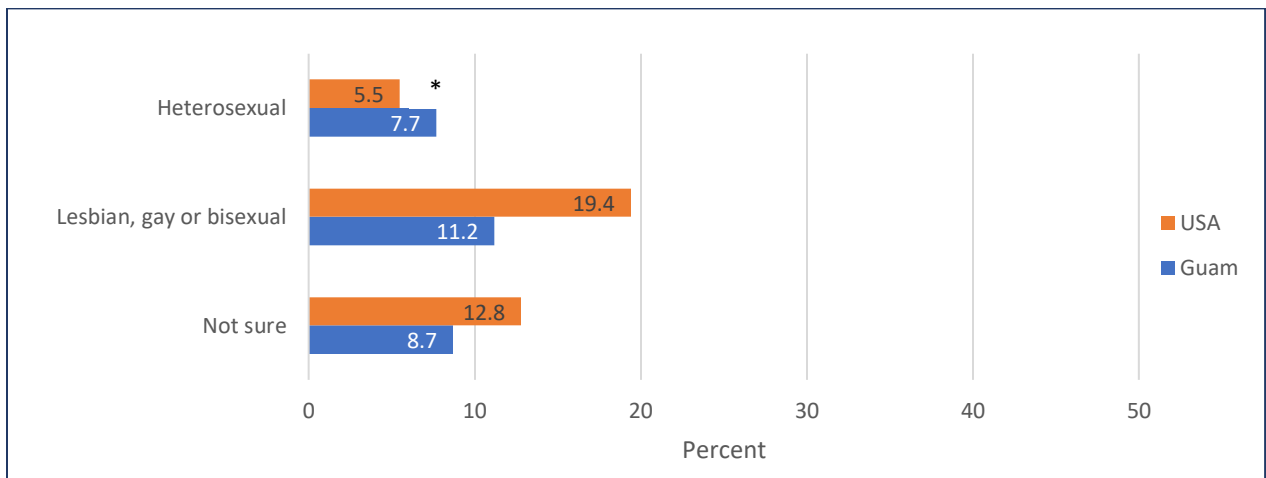
In Guam:

- No statistically significant differences are observed.

Compared to the US:

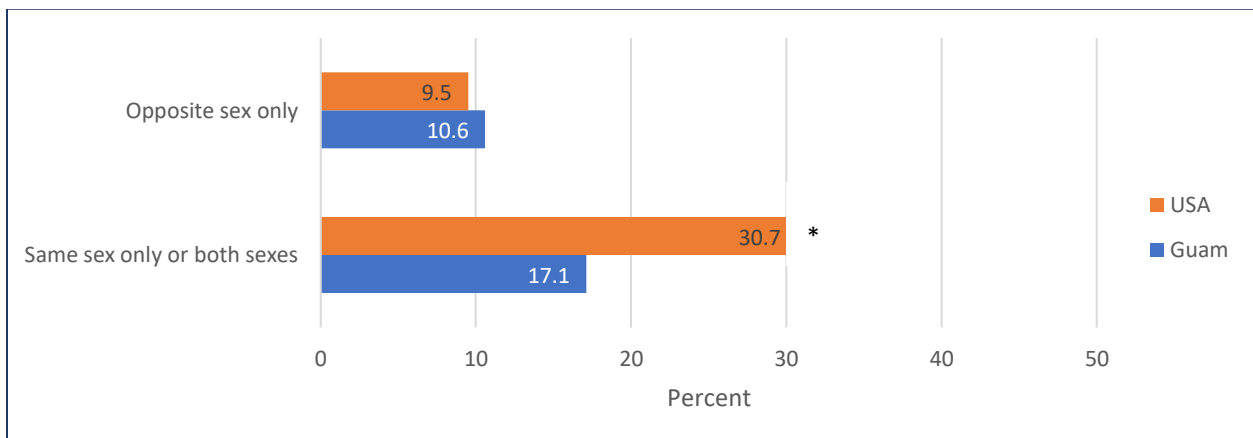
- Heterosexual youth in Guam are more likely to have been ever physically forced to have sexual intercourse.
- Lesbian, gay, or bisexual youth in Guam are less likely to have been ever physically forced to have sexual intercourse.

Figure 7: Percentage of high school students who were ever physically forced to have sexual intercourse, by sexual identity, Guam and US, 2019



Note: "*" – US youth less likely than Guam youth

Figure 8: Percentage of high school students who were ever physically forced to have sexual intercourse, by sex of sexual contacts, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth

From 2015 to 2019, a decrease was noted in heterosexual youth and youth whose sexual partners were of the opposite sex only reporting being physically forced to have sexual intercourse.

Table 6. Trends in youth who were ever physically forced to have sexual intercourse, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	12.4 (9.9–15.4)	10.9 (8.5–13.9)	7.7 (6.0–10.0)	
	Lesbian, gay or bisexual	19.0 (12.3–28.1)	16.7 (10.4–25.7)	11.2 (7.2–17.0)	
	Not sure	10.3 (4.0–24.2)	6.0 (2.2–15.6)	8.7 (3.3–20.9)	
By sex of sexual contacts	Opposite sex only	17.0 (12.8–22.2)	14.4 (10.9–18.8)	10.6 (7.6–14.5)	
	Same sex only or both sexes	23.0 (14.5–34.5)	26.0 (12.7–45.8)	17.1 (8.8–30.8)	

Key:

	In the wrong direction
	No change
	In the right direction

EXPERIENCED SEXUAL VIOLENCE BY ANYONE

In Guam:

- No statistically significant differences are observed.

Compared to the US:

- No statistically significant differences are observed.

Figure 9: Percentage of high school students who experienced sexual violence by anyone, by sexual identity, Guam and US, 2019

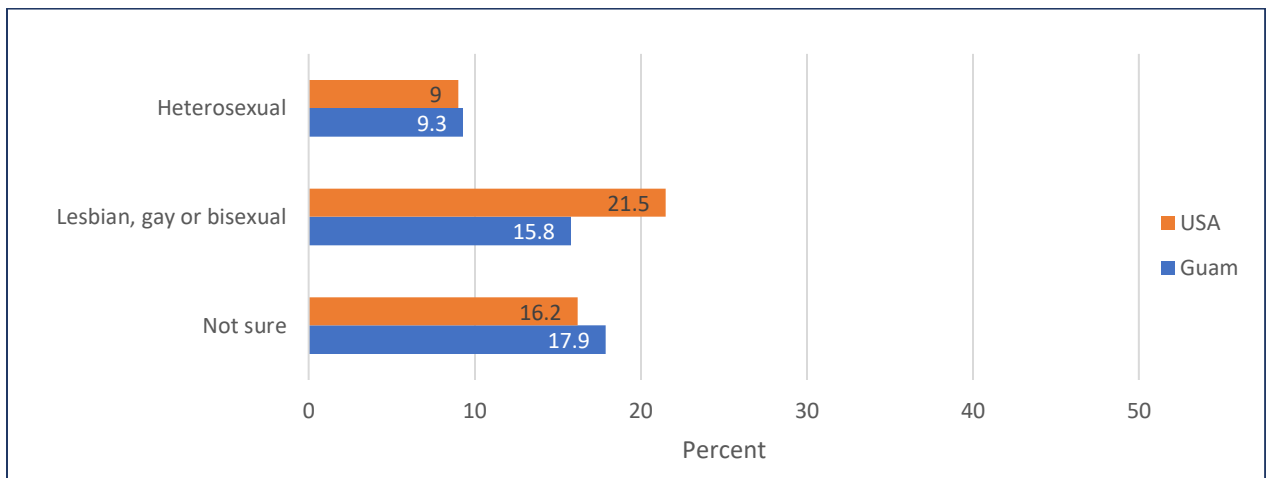
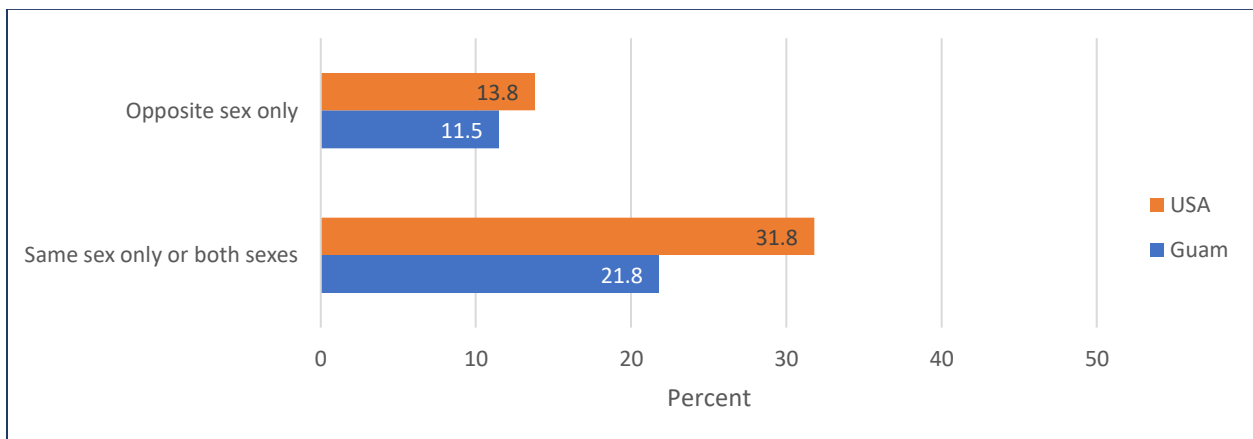


Figure 10: Percentage of high school students who experienced sexual violence by anyone, by sex of sexual contacts, Guam and US, 2019



No data were available for this indicator in 2015. From 2017 to 2019, a decrease was noted in youth whose sexual partners were of the opposite sex only reporting experiencing sexual violence by anyone.

Table 7. Trends in youth who experienced sexual violence by anyone, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual		12.4 (9.7–15.7)	9.3 (7.4–11.8)	
	Lesbian, gay or bisexual		19.8 (13.2–28.6)	15.8 (10.2–23.7)	
	Not sure		21.6 (12.2–35.3)	17.9 (9.2–31.7)	
By sex of sexual contacts	Opposite sex only		17.8 (13.5–23.2)	11.5 (8.4–15.5)	
	Same sex only or both sexes		33.0 (22.0–46.2)	21.8 (11.1–38.2)	

Key:

	In the wrong direction
	No change
	In the right direction

EXPERIENCED SEXUAL DATING VIOLENCE

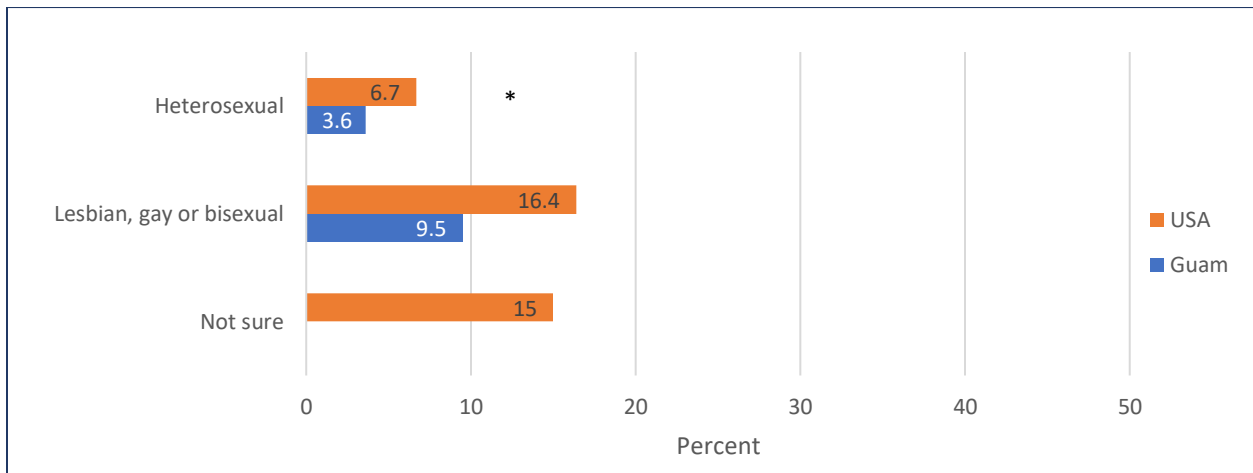
In Guam:

- No statistically significant differences are observed.

Compared to the US:

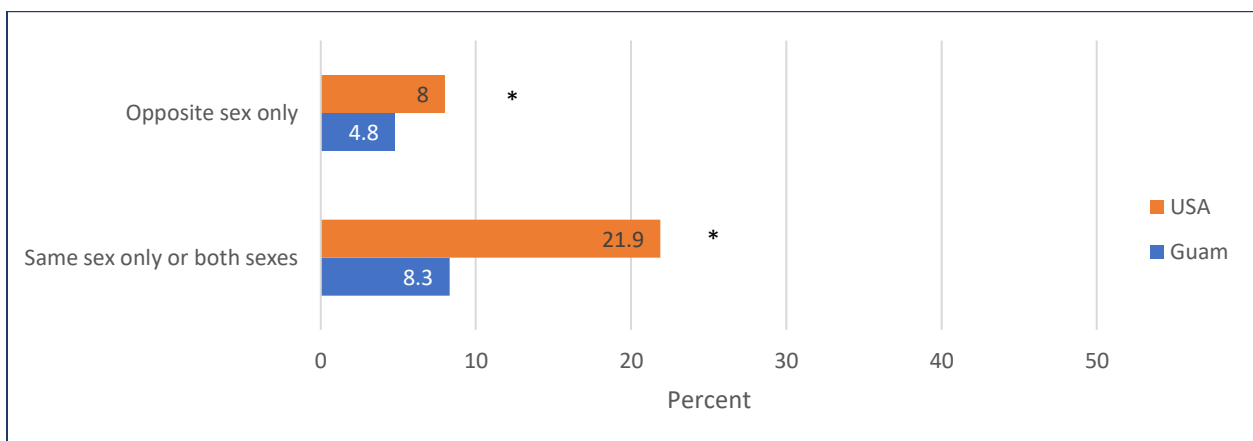
- Heterosexual Guam youth are less likely to report sexual dating violence.
- Guam youth are less likely to experience sexual dating violence, regardless of the sex of their sexual contacts.

Figure 11: Percentage of high school students who experienced sexual dating violence, by sexual identity, Guam and US, 2019



Note: “*” – US youth more likely than Guam youth

Figure 12: Percentage of high school students who experienced sexual dating violence, by sex of sexual contacts, Guam and US, 2019



Note: “*” – US youth more likely than Guam youth

From 2015 to 2019, sexual dating violence declined significantly for heterosexual and lesbian, gay, or bisexual youth, and for youth whose sexual contacts were only with the opposite sex.

Table 8. Trends in youth who experienced sexual dating violence, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	14.7 (11.2–19.0)	7.9 (5.0–12.4)	3.6 (2.2–5.8)	
	Lesbian, gay or bisexual	23.8 (14.4–36.7)	10.3 (4.6–21.4)	9.5 (4.4–19.3)	
	Not sure	-	34.2 (18.7–54.0)	-	
By sex of sexual contacts	Opposite sex only	18.9 (13.7–25.5)	10.8 (7.0–16.4)	4.8 (2.8–8.0)	
	Same sex only or both sexes	27.1 (14.0–45.8)	25.1 (11.1–47.3)	8.3 (2.3–26.4)	

Note: “-“ = n < 30

Key:

	In the wrong direction
	No change
	In the right direction

EXPERIENCED PHYSICAL DATING VIOLENCE

In Guam:

- No statistically significant differences are observed.

Compared to the US:

- No statistically significant differences are observed.

Figure 13: Percentage of high school students who experienced physical dating violence, by sexual identity, Guam and US, 2019

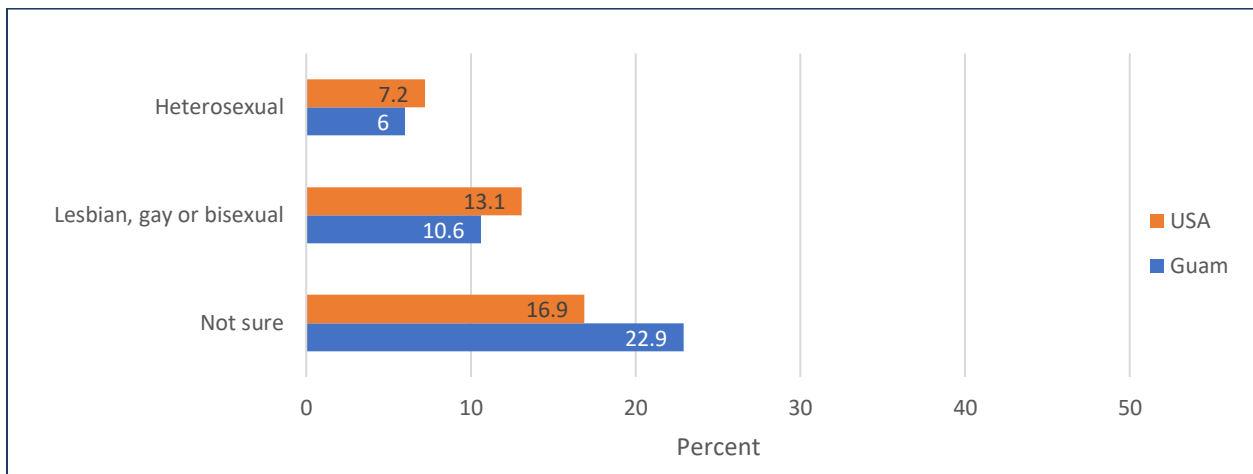
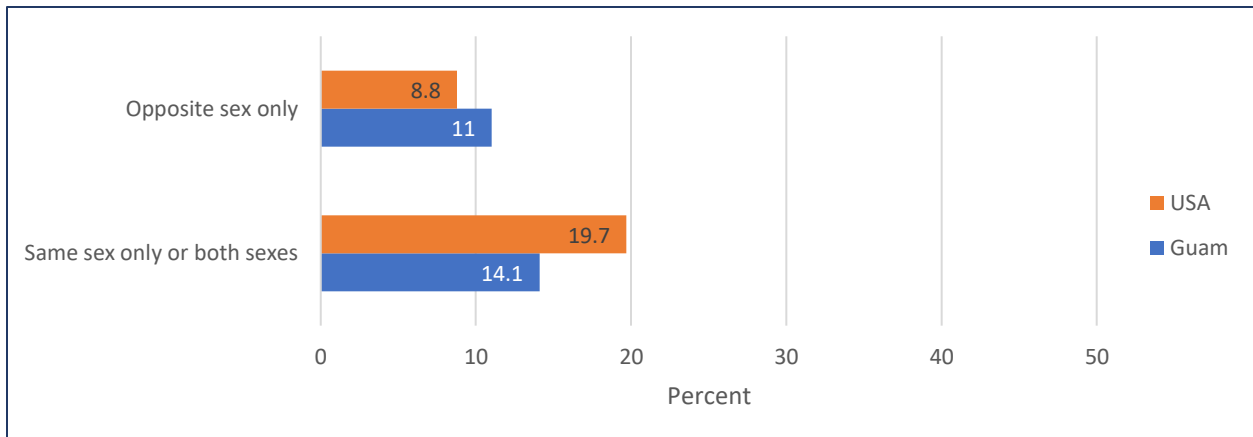


Figure 14: Percentage of high school students who experienced physical dating violence, by sex of sexual contacts, Guam and US, 2019



From 2015 to 2019, no significant changes occurred in physical dating violence for all categories of youth.

Table 9. Trends in youth who experienced physical dating violence, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	9.4 (7.0–12.5)	10.0 (6.8–14.5)	6.0 (4.1–8.8)	
	Lesbian, gay or bisexual	15.0 (7.9–26.5)	20.7 (12.6–31.9)	10.6 (3.3–28.9)	
	Not sure	-	42.0 (26.1–59.7)	22.9 (7.9–50.6)	
By sex of sexual contacts	Opposite sex only	10.2 (7.0–14.5)	14.0 (9.9–19.6)	11.0 (6.5–18.0)	
	Same sex only or both sexes	25.5 (14.6–40.8)	39.2 (24.9–55.6)	14.1 (5.7–31.0)	

Note: “-” = n < 30

Key:

	In the wrong direction
	No change
	In the right direction

Summary of findings

We examined data from 5 questions to assess exposure to violence:

- Felt sad or hopeless
- Seriously considered attempting suicide
- Made a plan about how they would attempt suicide
- Actually attempted suicide
- Suicide attempt resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse

The data show that:

- Feeling sad or hopeless is prevalent among Guam high school youth regardless of sexual identity. However, sexual minority youth have significantly higher rates of sadness and hopelessness than heterosexual youth.
- Sexual minority youth are more likely than their heterosexual counterparts to consider attempting suicide in Guam; one in three youth who identify as lesbian/gay/bisexual have thought seriously about suicide.
- Sexual minority youth in Guam are more likely to have made a suicide plan and actually attempted suicide than their heterosexual counterparts.
- Guam youth report higher rates of thinking about suicide than US youth, regardless of sexual identity.
- Heterosexual youth in Guam are more likely than their US counterparts to have thought about suicide, made a suicide plan and attempted suicide.
- These high rates of feeling sad and hopeless, suicidal ideation, suicidal planning and attempts have remained unchanged over time for all categories of youth in Guam.

FELT SAD OR HOPELESS

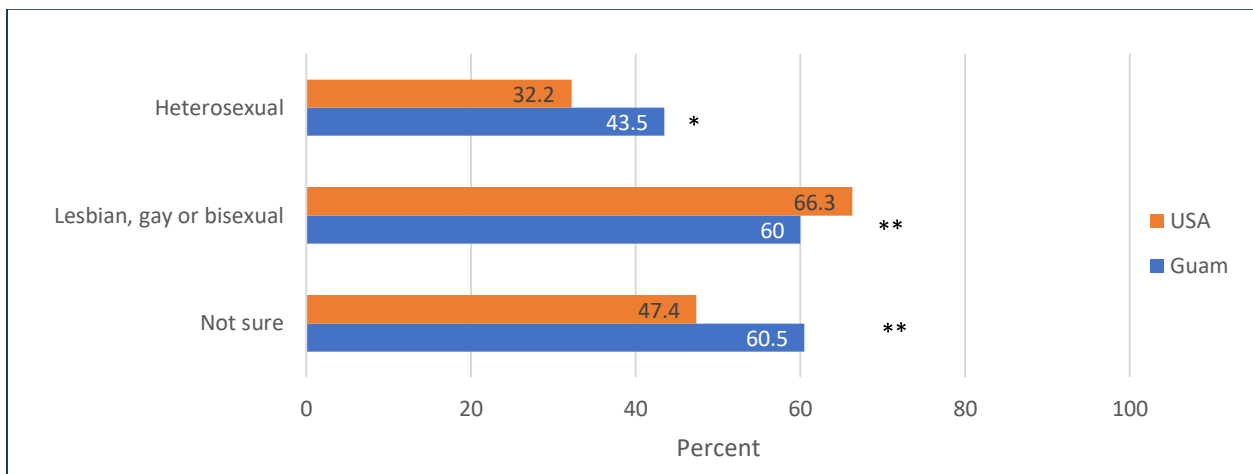
In Guam:

- Rates of feeling sad or hopeless are strikingly high among youth of all categories.
- However, lesbian/gay/bisexual youth, youth who are unsure of their sexual identity, and youth whose sexual contacts are of the same sex only or both sexes, have significantly higher likelihood of feeling sad or hopeless.

Compared to the US:

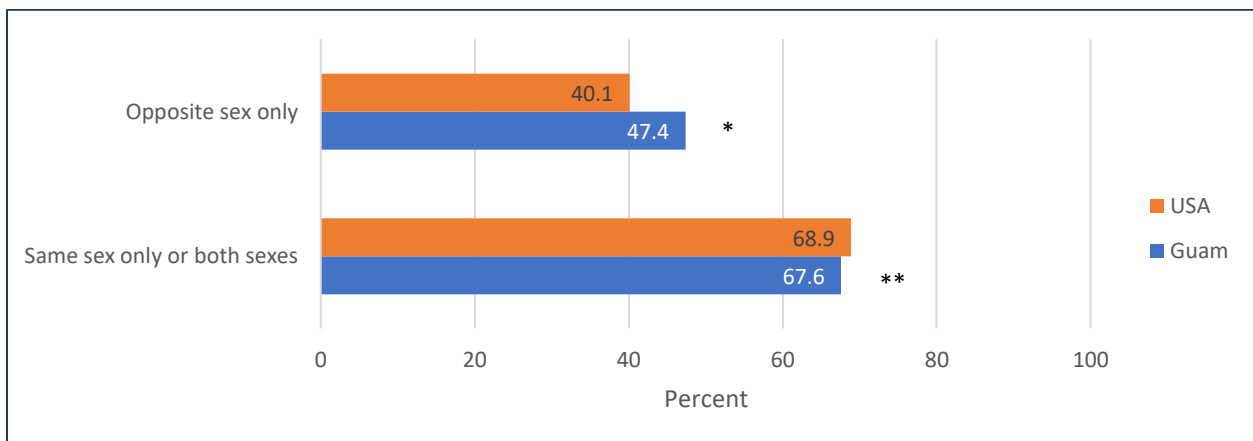
- A larger percentage of Guam heterosexual youth report feeling sad or hopeless.

Figure 15: Percentage of high school students who felt sad or hopeless, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "***" – Guam youth who are lesbian/gay/bisexual or not sure more likely than heterosexual youth

Figure 16: Percentage of high school students who felt sad or hopeless, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "***" – Guam youth whose sexual contacts are of the same sex only or both sexes more likely than heterosexual youth

From 2015 to 2019, feeling sad or hopeless increased for heterosexual youth and youth unsure of their sexual identity.

Table 10. Trends in youth who felt sad or hopeless, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	34.5 (30.5–38.8)	36.3 (32.1–40.7)	43.5 (38.9–48.2)	
	Lesbian, gay or bisexual	55.5 (45.6–64.9)	63.9 (54.3–72.5)	60.0 (50.8–68.6)	
	Not sure	32.0 (20.1–46.8)	52.1 (38.0–65.8)	60.5 (45.1–74.0)	
By sex of sexual contacts	Opposite sex only	40.7 (35.3–46.4)	46.0 (40.3–51.9)	47.4 (41.7–53.1)	
	Same sex only or both sexes	51.7 (35.0–68.1)	61.2 (49.7–71.5)	67.6 (51.4–80.4)	

Key:

	In the wrong direction
	No change
	In the right direction

SERIOUSLY CONSIDERED ATTEMPTING SUICIDE

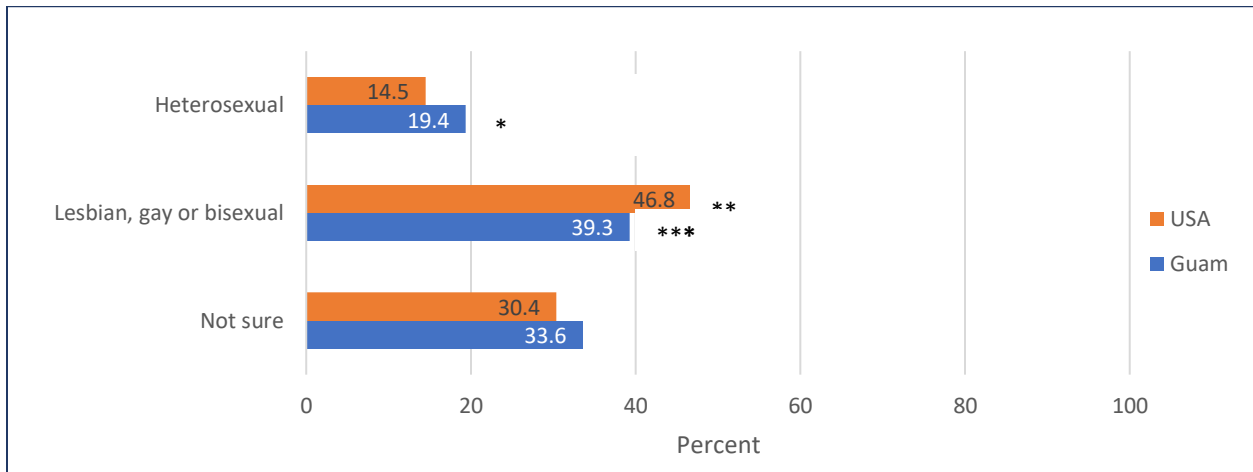
In Guam:

- More than one in three lesbian/gay/bisexual youth and youth who are not sure of their sexual identity have seriously considered attempting suicide.
- Lesbian/gay/bisexual youth are more likely than heterosexual youth to have seriously considered attempting suicide.
- Youth whose sexual contacts are of the same sex only or both sexes are more likely to have seriously considered attempting suicide than youth with opposite sex only sexual contacts.

Compared to the US:

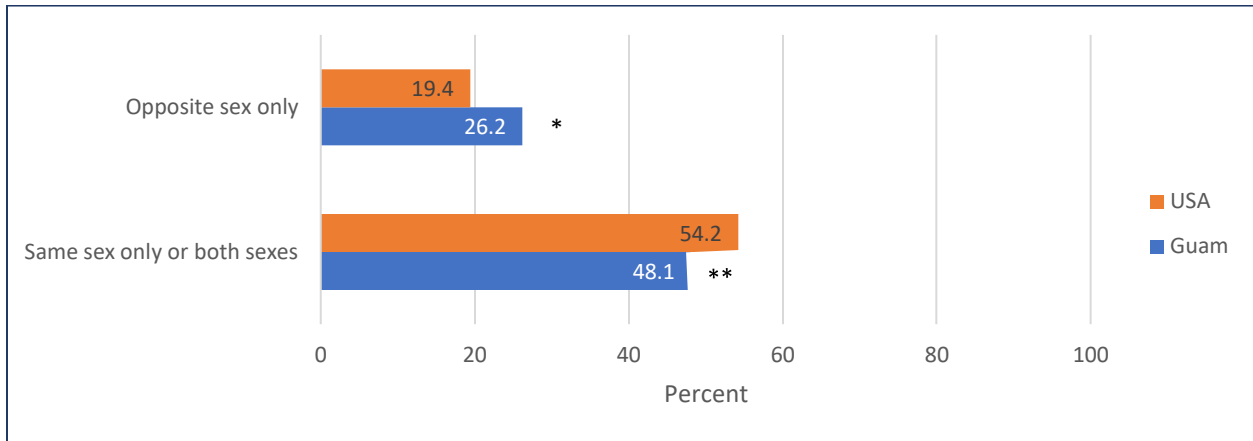
- A larger percentage of Guam heterosexual and lesbian/gay/bisexual youth have seriously considered attempting suicide.
- Guam youth with opposite sex only sexual contacts are more likely to have seriously considered attempting suicide.

Figure 17: Percentage of high school students who seriously considered attempting suicide, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "***" – US youth more likely than Guam youth; "****" – LGB youth more likely than heterosexual youth in Guam

Figure 18: Percentage of high school students who seriously considered attempting suicide, by sex of sexual contacts, Guam and US, 2019



Note: “*” – Guam youth more likely than US youth; “**” – Guam youth whose sexual contacts are of the same sex only or both sexes more likely than youth with sexual contacts of the opposite sex only

From 2015 to 2019, there was no change in the trend for seriously considering attempting suicide across all categories.

Table 11. Trends in youth who seriously considered attempting suicide, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	20.4 (17.3–24.0)	22.6 (19.2–26.5)	19.4 (16.2–23.1)	
	Lesbian, gay or bisexual	32.0 (24.6–40.5)	43.6 (33.2–54.6)	39.3 (29.6–49.9)	
	Not sure	25.3 (14.5–40.3)	25.4 (16.1–37.6)	33.6 (21.9–47.8)	
By sex of sexual contacts	Opposite sex only	25.9 (21.2–31.2)	36.0 (30.0–42.4)	26.2 (20.8–32.5)	
	Same sex only or both sexes	30.5 (21.0–42.0)	38.0 (26.9–50.4)	48.1 (33.6–62.9)	

Key:

	In the wrong direction
	No change
	In the right direction

MADE A PLAN ABOUT HOW THEY WOULD ATTEMPT SUICIDE

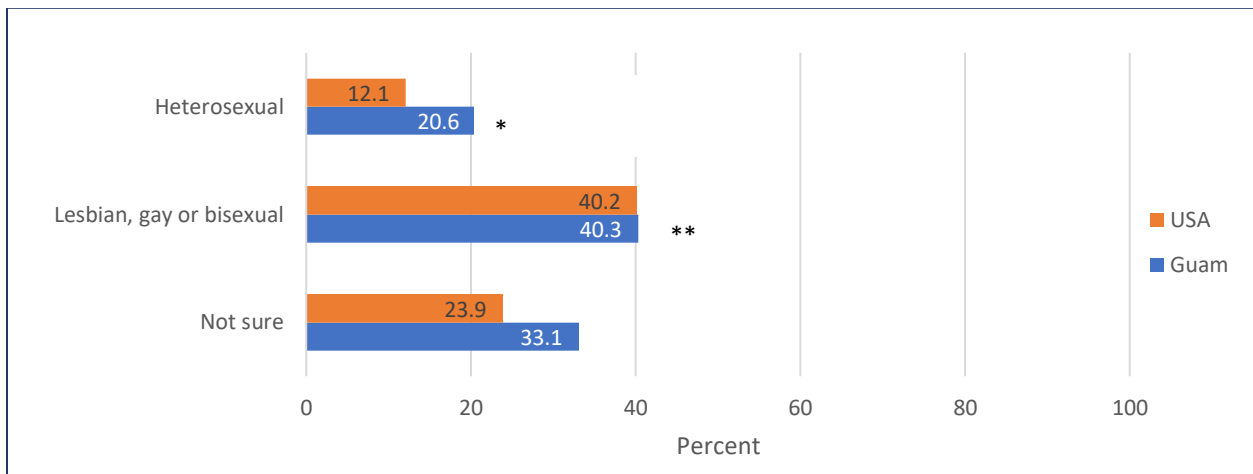
In Guam:

- Lesbian/gay/bisexual youth are more likely than heterosexual youth to have made a suicide plan.
- Youth whose sexual contacts are of the same sex only or both sexes are more likely to have seriously considered attempting suicide than youth with opposite sex only sexual contacts.

Compared to the US:

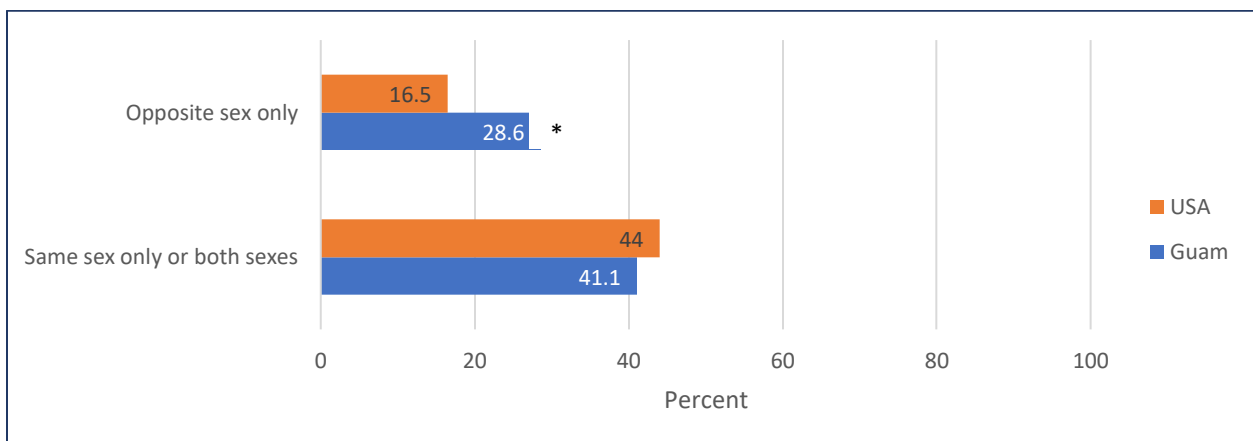
- A larger percentage of Guam heterosexual youth have made a suicide plan.
- Guam youth whose sexual contacts are of the opposite sex only are more likely to have made a suicide plan.

Figure 19: Percentage of high school students who made a plan about how they would attempt suicide, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "**" – LGB youth more likely than heterosexual youth in Guam

Figure 20: Percentage of high school students who made a plan about how they would attempt suicide, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

From 2015 to 2019, there was no change in the trend for having made a suicide plan across all categories.

Table 12. Trends in youth who made a plan about how they would attempt suicide, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	18.2 (15.4–21.4)	24.7 (21.5–28.3)	20.6 (16.4–25.5)	
	Lesbian, gay or bisexual	33.2 (26.1–41.1)	40.5 (31.6–50.1)	40.3 (30.1–51.5)	
	Not sure	23.1 (12.3–39.0)	26.2 (17.1–38.0)	33.1 (21.4–47.5)	
By sex of sexual contacts	Opposite sex only	21.5 (17.7–25.9)	32.7 (27.1–38.9)	28.6 (21.4–37.1)	
	Same sex only or both sexes	42.3 (30.6–55.0)	46.4 (32.7–60.8)	41.1 (29.5–53.8)	

Key:

	In the wrong direction
	No change
	In the right direction

ACTUALLY ATTEMPTED SUICIDE

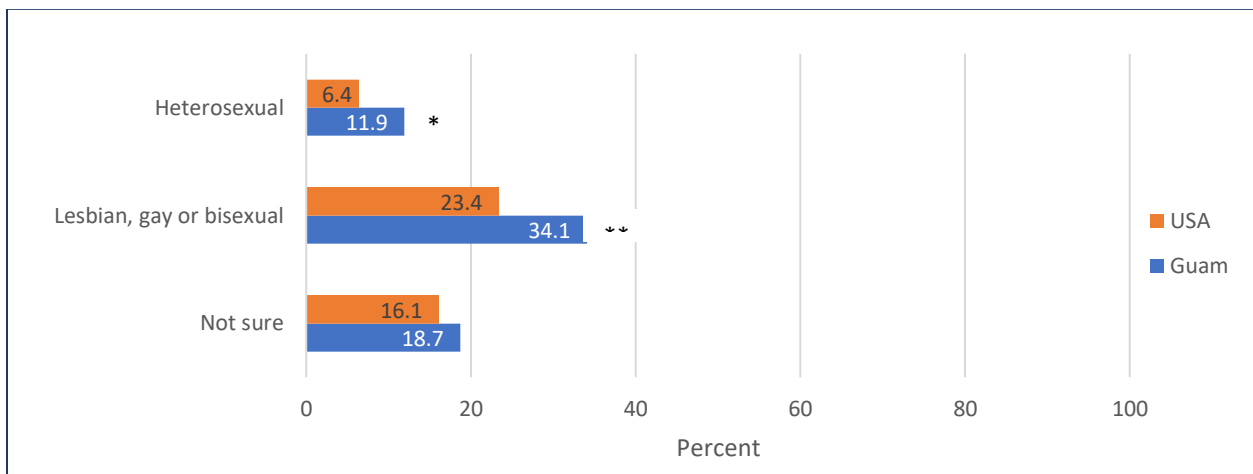
In Guam:

- Lesbian/gay/bisexual youth are more likely than heterosexual youth to have made a suicide attempt.

Compared to the US:

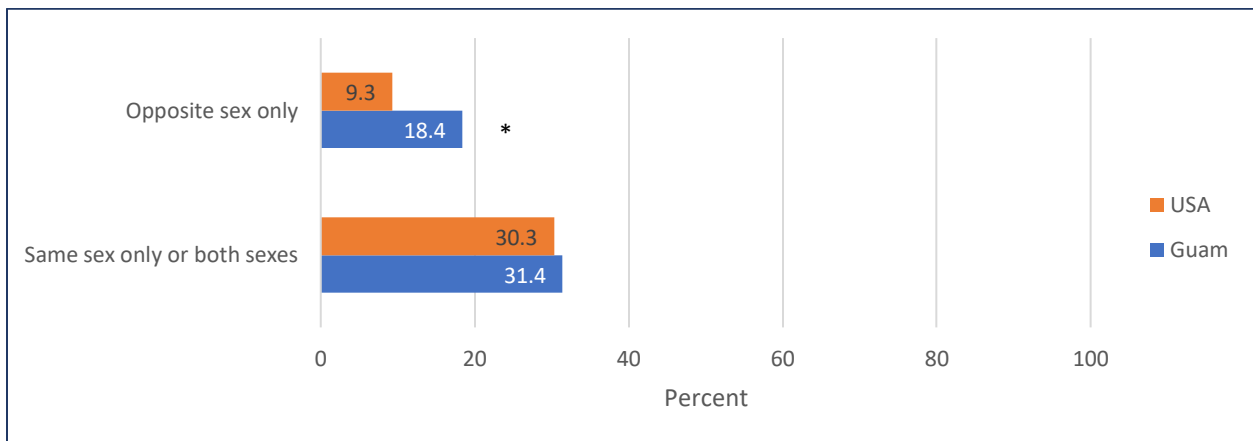
- A larger percentage of Guam heterosexual youth have made a suicide attempt.
- Guam youth whose sexual contacts are of the opposite sex only are more likely to have made a suicide attempt.

Figure 21: Percentage of high school students who actually attempted suicide, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "**" – LGB youth more likely than heterosexual youth in Guam

Figure 22: Percentage of high school students who actually attempted suicide, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

From 2015 to 2019, there was no change in the trend for having attempted suicide across all categories.

Table 13. Trends in youth who actually attempted suicide, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	15.2 (12.0–19.0)	16.4 (13.3–19.9)	11.9 (9.1–15.4)	
	Lesbian, gay or bisexual	23.7 (14.7–36.0)	40.6 (27.8–54.7)	34.1 (22.6–47.9)	
	Not sure	26.7 (14.7–43.6)	26.9 (14.8–43.7)	18.7 (8.7–35.5)	
By sex of sexual contacts	Opposite sex only	19.4 (15.2–24.3)	26.7 (21.2–33.0)	18.4 (12.5–26.2)	
	Same sex only or both sexes	36.1 (26.2–47.4)	55.8 (40.6–69.9)	31.4 (18.9–47.5)	

Key:

	In the wrong direction
	No change
	In the right direction

SUICIDE ATTEMPT RESULTED IN AN INJURY REQUIRING THE ATTENTION OF A DOCTOR OR NURSE

In Guam:

- No significant differences were noted for injurious suicide attempts across all categories.

Compared to the US:

- No significant differences were noted for injurious suicide attempts across all categories.

Figure 23: Percentage of high school students whose suicide attempt resulted in an injury requiring the attention of a doctor or nurse, by sexual identity, Guam and US, 2019

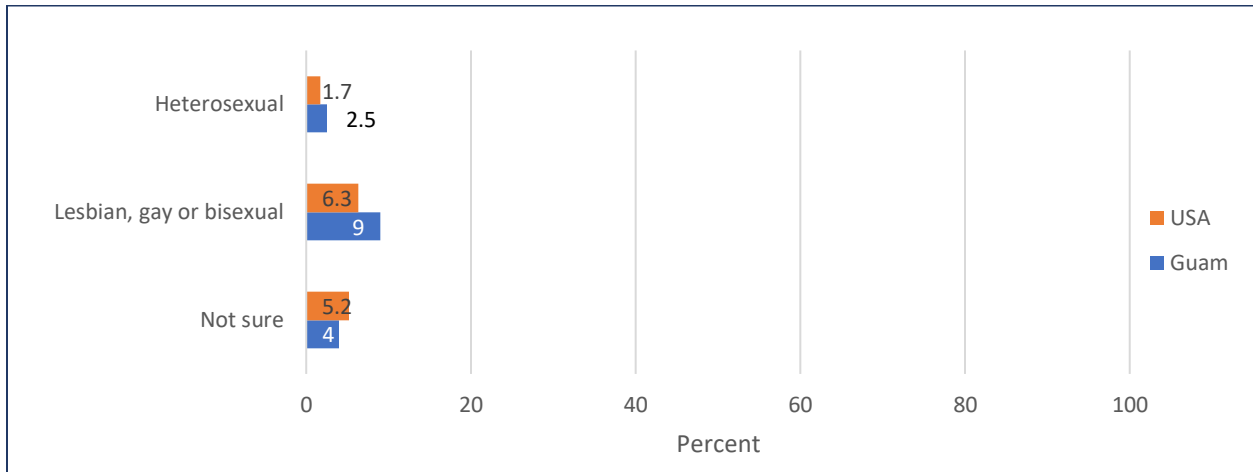
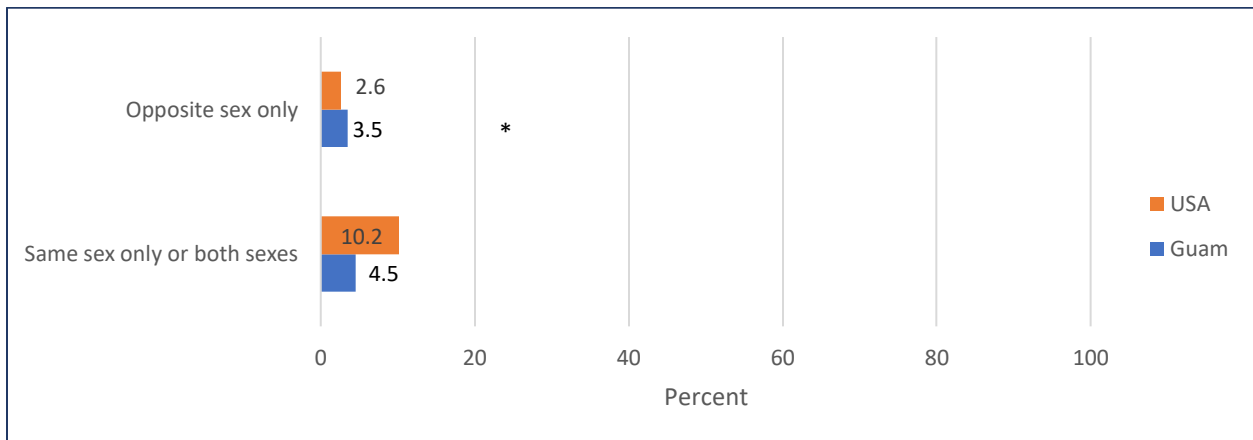


Figure 24: Percentage of high school students whose suicide attempt resulted in an injury requiring the attention of a doctor or nurse, by sex of sexual contacts, Guam and US, 2019



From 2015 to 2019, there was no change in the trend for having attempted suicide resulting in an injury that required the attention of a doctor or nurse.

Table 14. Trends in youth whose suicide attempt resulted in an injury requiring the attention of a doctor or nurse, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	2.8 (1.6–4.8)	4.6 (2.9–7.3)	2.5 (1.7–3.8)	
	Lesbian, gay or bisexual	8.8 (4.3–17.3)	12.0 (7.0–19.8)	9.0 (3.8–19.8)	
	Not sure	3.4 (0.5–19.6)	6.0 (1.9–17.2)	4.0 (0.7–18.4)	
By sex of sexual contacts	Opposite sex only	2.1 (1.0–4.5)	6.8 (3.9–11.6)	3.5 (1.8–6.8)	
	Same sex only or both sexes	13.8 (7.0–25.3)	13.0 (6.6–24.2)	4.5 (0.9–19.9)	

Key:

	In the wrong direction
	No change
	In the right direction

FOCUS AREA: TOBACCO AND HARMFUL ALCOHOL USE

Summary of findings

We examined data from 4 questions to assess prevalence of tobacco and harmful alcohol use:

- Currently smoked cigarettes
- Currently used electronic vapor products
- Currently used smokeless tobacco
- Currently were binge drinking

The data show that:

- Sexual minority youth are less likely to be current cigarette smokers, users of electronic vapor products or binge drinkers than their heterosexual counterparts in Guam.
- The current use of smokeless tobacco is higher among Guam youth across all categories of sexual identity than among US youth.
- Heterosexual youth in Guam smoke more than their US counterparts.
- Youth in Guam who report opposite sex only sexual contacts use electronic vapor products more than their US counterparts.
- US youth tend to have higher rates of binge drinking overall.

CURRENTLY SMOKED CIGARETTES

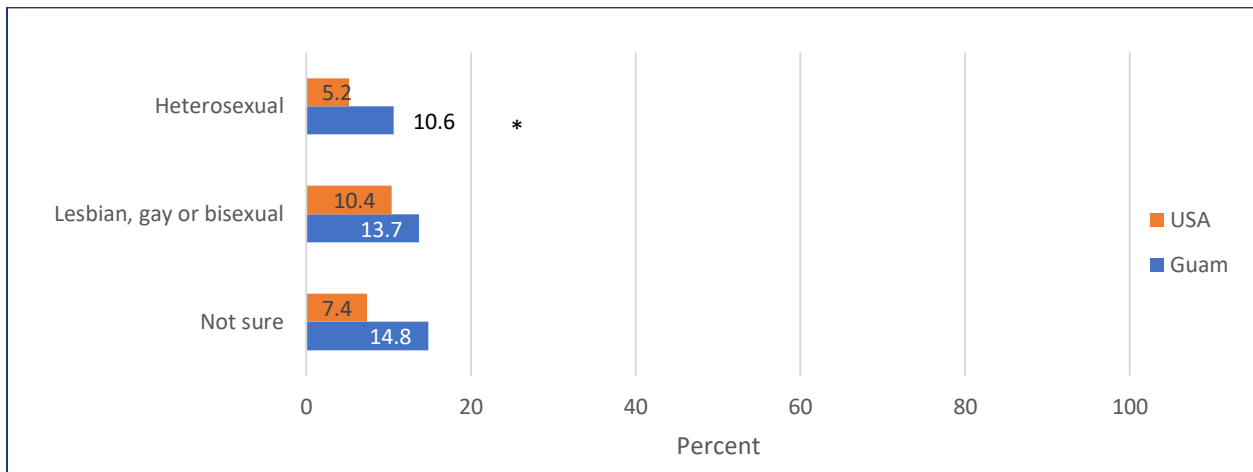
In Guam:

- Youth whose sexual contacts are of the opposite sex only are more likely to be current smokers than youth with sexual contacts who are of the same sex only or both sexes.

Compared to the US:

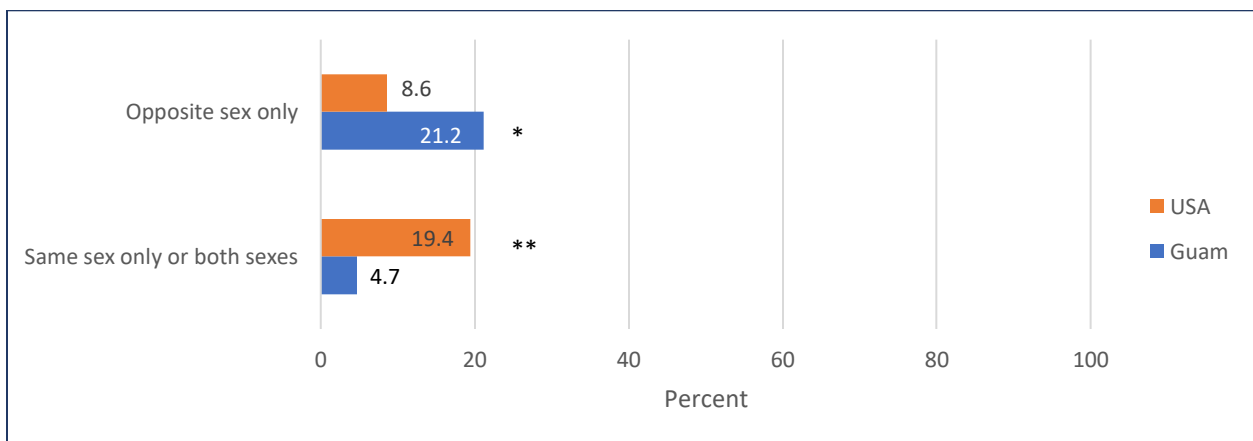
- Heterosexual youth in Guam smoke more than their US counterparts.
- Sexual minority youth with sexual contacts who are of the same sex only or both sexes are less likely to smoke.

Figure 25: Percentage of high school students who currently smoke cigarettes, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

Figure 26: Percentage of high school students who currently smoke cigarettes, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "**" – US youth more likely than Guam youth

From 2015 to 2019, there was a decrease in current smoking for heterosexual youth, and for youth whose sexual contacts are of the same sex only or both sexes.

Table 15. Trends in youth who currently smoke cigarettes, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	16.5 (13.0–20.8)	12.7 (9.5–16.8)	10.6 (7.8–14.4)	
	Lesbian, gay or bisexual	19.5 (13.0–28.1)	13.6 (8.7–20.7)	13.7 (8.2–22.1)	
	Not sure	28.4 (16.8–43.9)	17.2 (8.9–30.7)	14.8 (6.7–29.5)	
By sex of sexual contacts	Opposite sex only	29.0 (23.3–35.3)	20.8 (15.0–28.0)	21.2 (16.3–27.0)	
	Same sex only or both sexes	23.0 (12.5–38.6)	19.8 (10.4–34.3)	4.7 (1.1–18.6)	

Key:

	In the wrong direction
	No change
	In the right direction

CURRENTLY USED ELECTRONIC VAPOR PRODUCTS

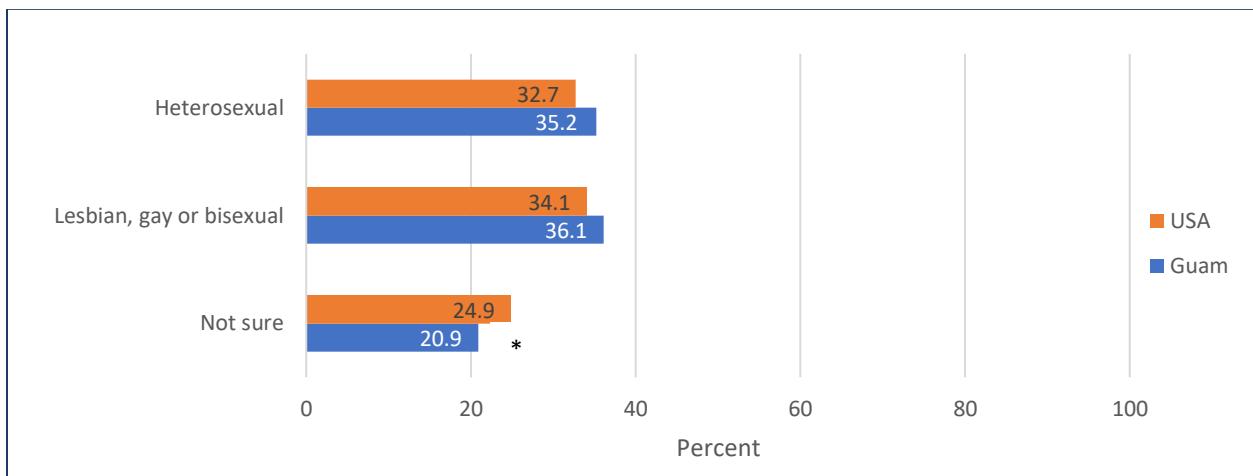
In Guam:

- Current vaping rates are high across all categories of youth.
- Youth who are unsure of their sexual identity are less likely to be current users of electronic vapor products.

Compared to the US:

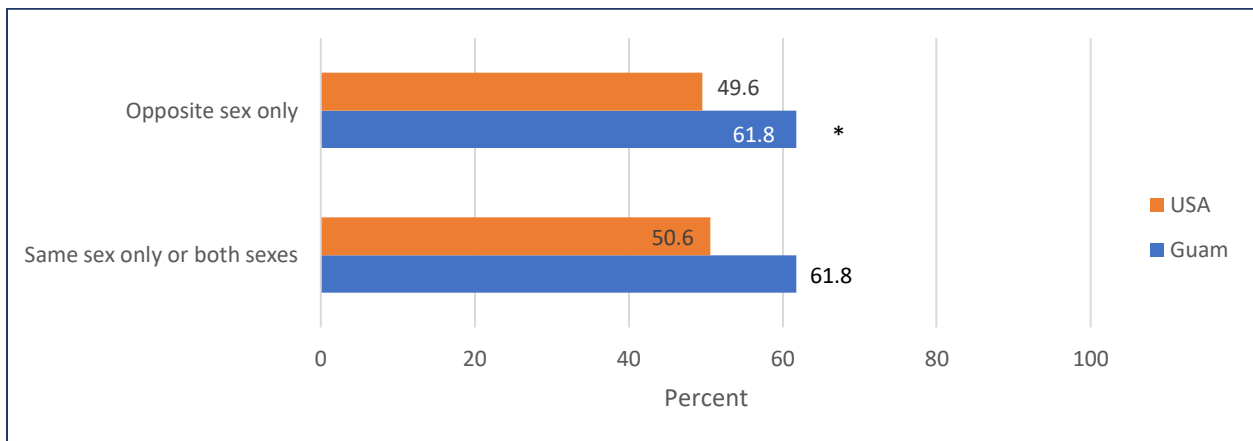
- Youth with only opposite sex partners are more likely to use electronic vapor products than their US counterparts.

Figure 27: Percentage of high school students who currently used electronic vapor products, by sexual identity, Guam and US, 2019



Note: "*" – Guam heterosexual youth more likely than Guam youth who are not sure of sexual identity

Figure 28: Percentage of high school students who currently used electronic vapor products, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

From 2015 to 2019, there was an increase in current use of electronic vapor products for youth whose sexual contacts are of the opposite sex only.

Table 16. Trends in youth who currently used electronic vapor products, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	30.7 (26.3–35.5)	23.3 (18.9–28.5)	35.8 (30.2–41.8)	
	Lesbian, gay or bisexual	35.1 (26.3–45.0)	47.0 (34.2–60.3)	36.1 (25.1–48.8)	
	Not sure	31.1 (19.5–45.6)	23.2 (12.4–39.2)	20.9 (10.2–38.1)	
By sex of sexual contacts	Opposite sex only	42.0 (35.8–48.6)	46.7 (38.4–55.2)	61.8 (53.1–69.8)	
	Same sex only or both sexes	45.8 (32.8–59.5)	57.5 (39.8–73.4)	61.8 (44.0–77.0)	

Key:

	In the wrong direction
	No change
	In the right direction

CURRENTLY USED SMOKELESS TOBACCO

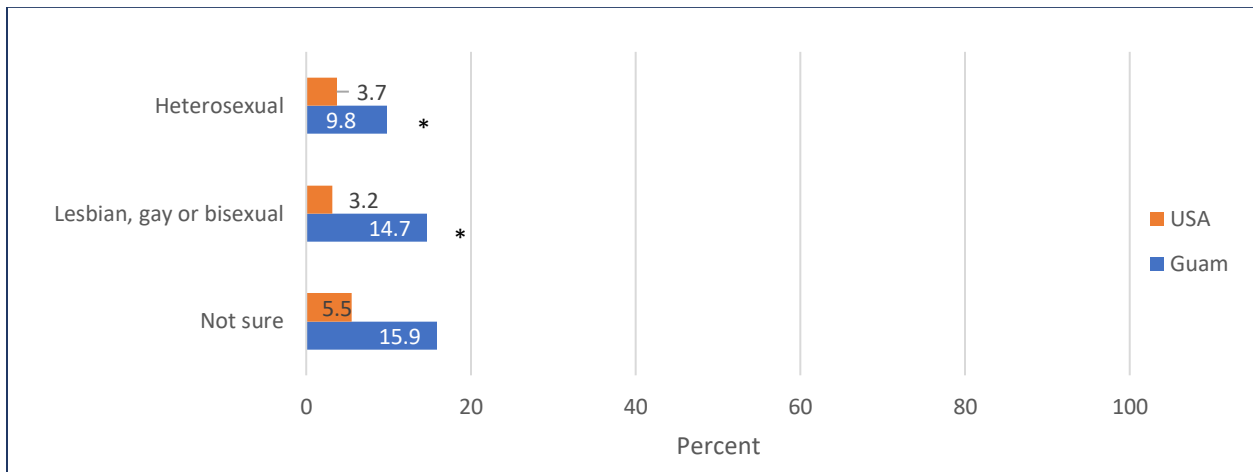
In Guam:

- No significant differences in the current use of smokeless tobacco were noted across the various categories of sexual identity.

Compared to the US:

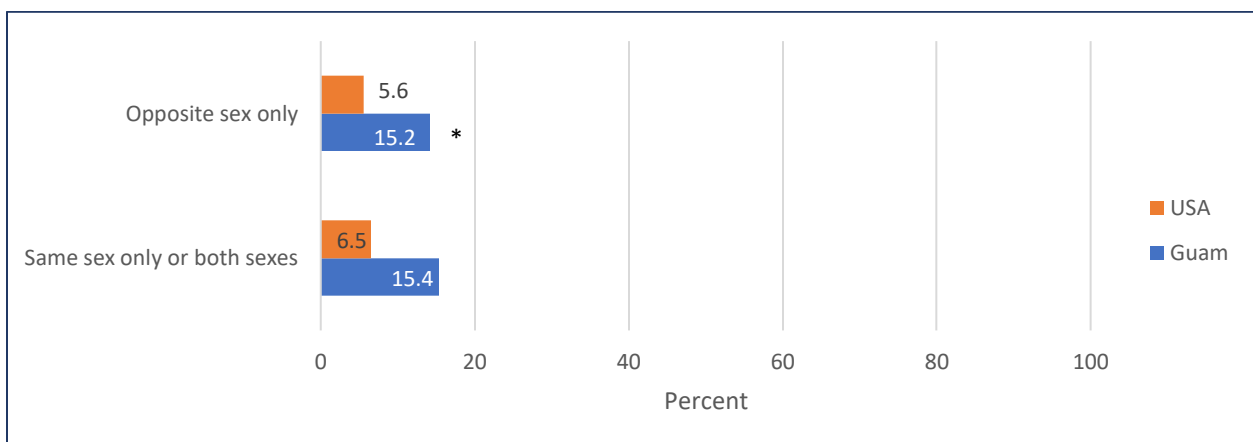
- Guam youth have higher rates of current smokeless tobacco use across all categories of sexual identity.

Figure 29: Percentage of high school students who currently used smokeless tobacco, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

Figure 30: Percentage of high school students who currently used smokeless tobacco, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

From 2017 to 2019, there was no change in current use of smokeless tobacco for all youth.

Table 17. Trends in youth who currently used smokeless tobacco, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	NA	12.9 (9.9–16.6)	9.8 (7.2–13.3)	
	Lesbian, gay or bisexual	NA	15.4 (8.5–26.3)	14.7 (7.6–26.4)	
	Not sure	NA	17.8 (9.5–30.8)	15.9 (7.2–31.7)	
By sex of sexual contacts	Opposite sex only	NA	21.7 (16.4–28.2)	15.2 (10.8–21.0)	
	Same sex only or both sexes	NA	19.4 (9.5–35.7)	15.4 (7.1–30.2)	

Key:

	In the wrong direction
	No change
	In the right direction

CURRENTLY WERE BINGE DRINKING

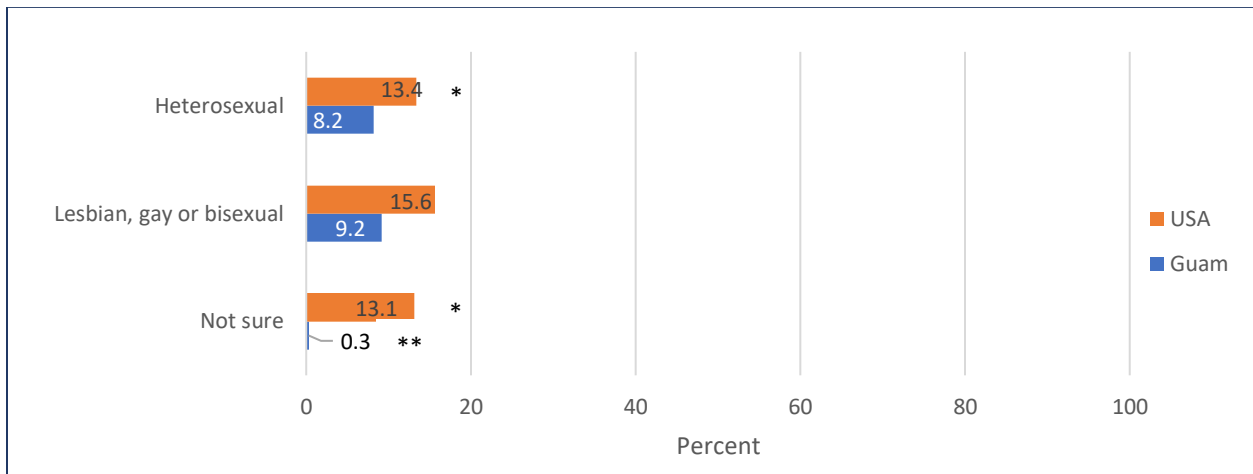
In Guam:

- Youth who were not sure of their sexual identity were less likely to binge drink than their heterosexual counterparts.

Compared to the US:

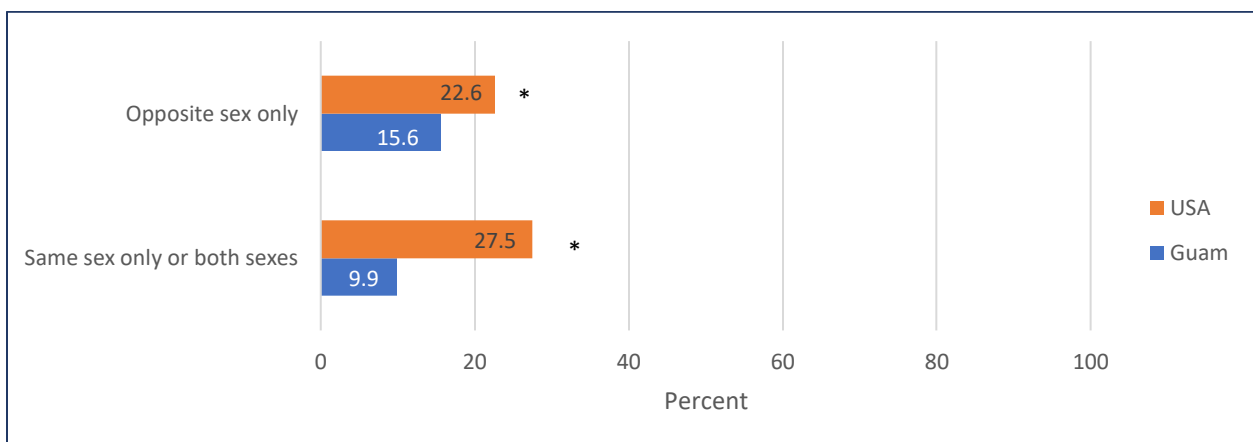
- Guam youth have lower rates of current binge drinking use across several categories of sexual identity.

Figure 31: Percentage of high school students who currently were binge drinking, by sexual identity, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth; "**" Guam youth not sure of sexual identity less likely than heterosexual youth

Figure 32: Percentage of high school students who currently were binge drinking, by sex of sexual contacts, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth

From 2017 to 2019, current binge drinking decreased for youth who were unsure of their sexual identity.

Table 18. Trends in youth who currently were binge drinking, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	NA	6.8 (4.9–9.3)	8.2 (5.9–11.3)	
	Lesbian, gay or bisexual	NA	13.4 (7.3–23.1)	9.2 (4.1–19.4)	
	Not sure	NA	13.7 (6.3–27.3)	0.3 (0.0–2.0)	
By sex of sexual contacts	Opposite sex only	NA	10.9 (7.4–15.6)	15.6 (10.5–22.6)	
	Same sex only or both sexes	NA	21.7 (13.2–33.6)	9.9 (3.6–24.3)	

Key:

	In the wrong direction
	No change
	In the right direction

FOCUS AREA: OTHER SUBSTANCE USE

Summary of findings

We examined data from 9 questions to assess prevalence of other substance use:

- Currently used marijuana
- Ever took prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it
- Ever used cocaine
- Ever used inhalants
- Ever used heroin
- Ever used methamphetamine
- Ever used ecstasy
- Ever took steroids without a doctor's prescription
- Ever injected any illegal drug

The data show that:

- Sexual minority youth in Guam are more likely to report substance use compared to their heterosexual counterparts. Specifically:
 - Lesbian, gay and bisexual are more likely to report ever using inhalants, methamphetamine, ecstasy, steroids (without a doctor's prescription) and injecting an illegal drug.
 - Youth who remain unsure of their sexual identity are more likely to report using inhalants and heroin.
 - Youth whose sexual contacts are with those of the same sex only or both sexes are more likely to have ever used cocaine, inhalants, heroin, steroids (without a doctor's prescription), and injected an illegal drug.
- Heterosexual youth in Guam are more likely to currently use marijuana, and to have ever used methamphetamines than their US counterparts.
- Trends in substance use have largely remained unchanged over time among Guam youth.

CURRENTLY USED MARIJUANA

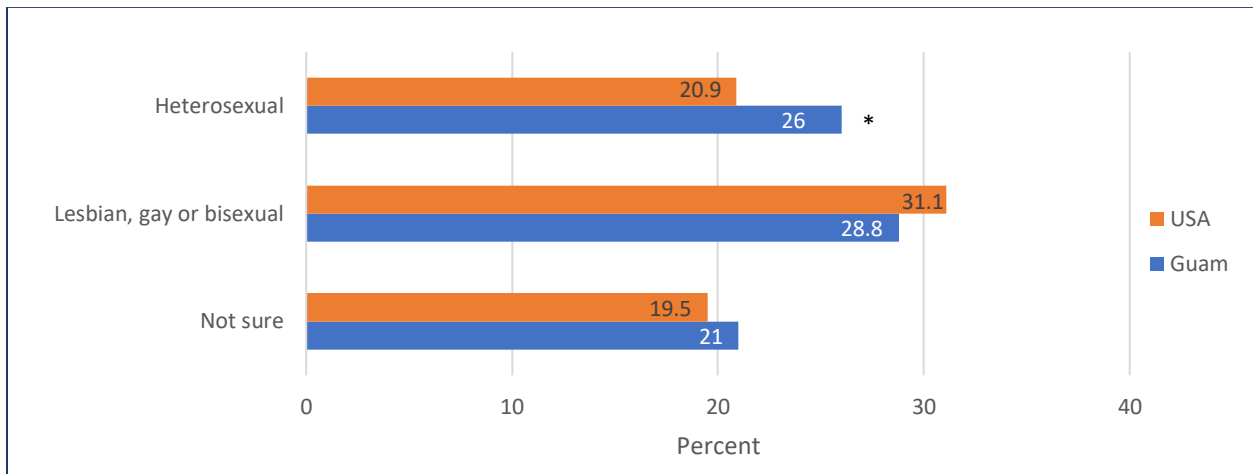
In Guam:

- Current marijuana use did not differ significantly across the various sexual identity categories.

Compared to the US:

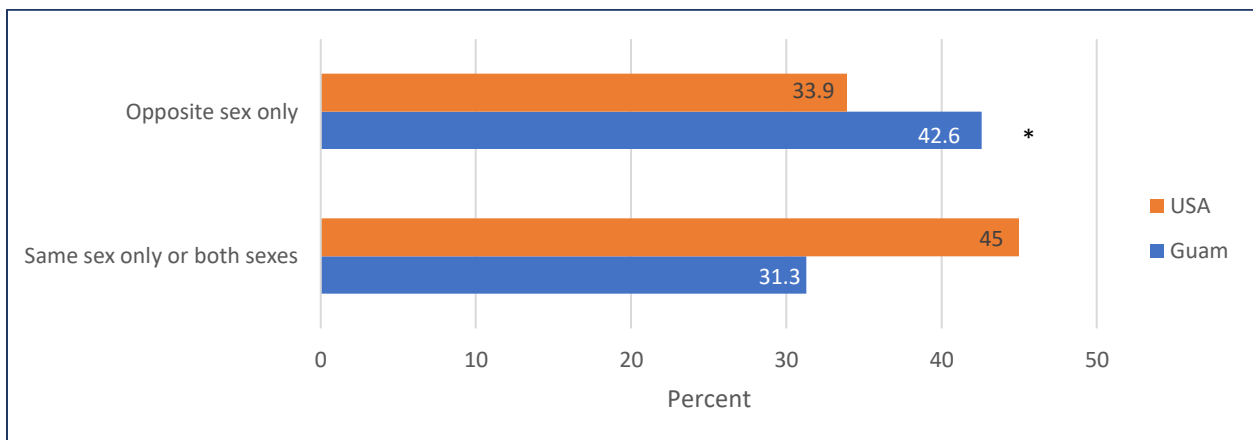
- Guam youth who are heterosexual or whose sexual contacts are of the opposite sex only have higher rates of current marijuana use.

Figure 33: Percentage of high school students who currently used marijuana, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

Figure 34: Percentage of high school students who currently used marijuana, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

From 2015 to 2019, current marijuana use among Guam youth remained unchanged.

Table 19. Trends in youth who currently used marijuana, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	30.6 (26.2–35.5)	27.9 (24.3–31.7)	26.0 (22.0–30.5)	
	Lesbian, gay or bisexual	31.7 (23.0–42.0)	39.0 (29.3–49.5)	28.8 (21.5–37.4)	
	Not sure	19.8 (10.7–33.6)	15.7 (9.3–25.4)	21.0 (11.1–36.0)	
By sex of sexual contacts	Opposite sex only	48.8 (42.7–54.9)	42.9 (36.7–49.4)	42.6 (36.7–48.7)	
	Same sex only or both sexes	38.8 (28.9–49.8)	48.2 (34.6–62.1)	31.3 (20.2–45.1)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER TOOK PRESCRIPTION PAIN MEDICINE WITHOUT A DOCTOR'S PRESCRIPTION OR DIFFERENTLY THAN HOW A DOCTOR TOLD THEM TO USE IT

In Guam:

- Prescription pain medication misuse did not differ significantly across the various sexual identity categories.

Compared to the US:

- Guam youth whose sexual contacts are of the same sex only or both sexes have lower rates of prescription pain medication misuse.

Figure 35: Percentage of high school students who ever took prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it, by sexual identity, Guam and US, 2019

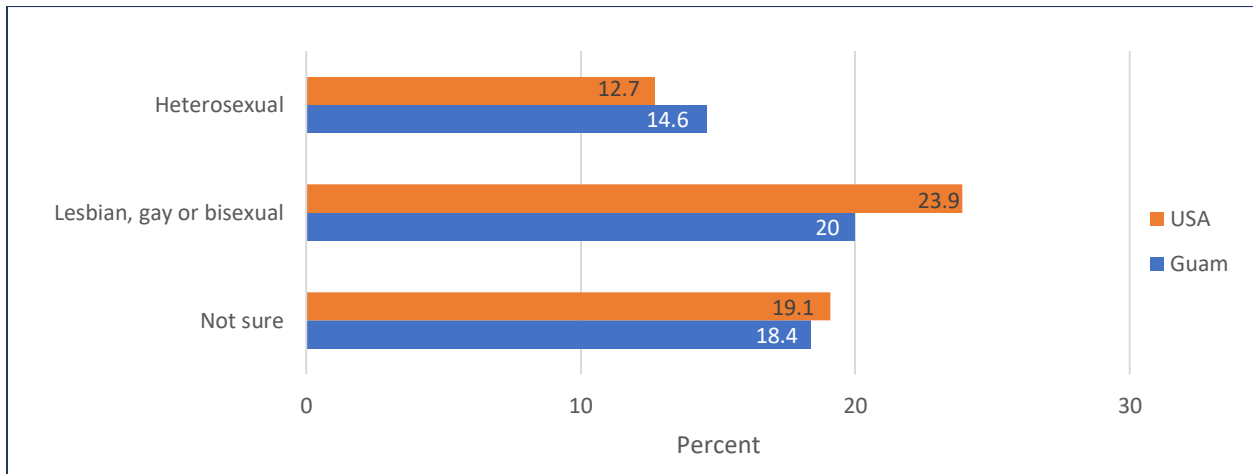
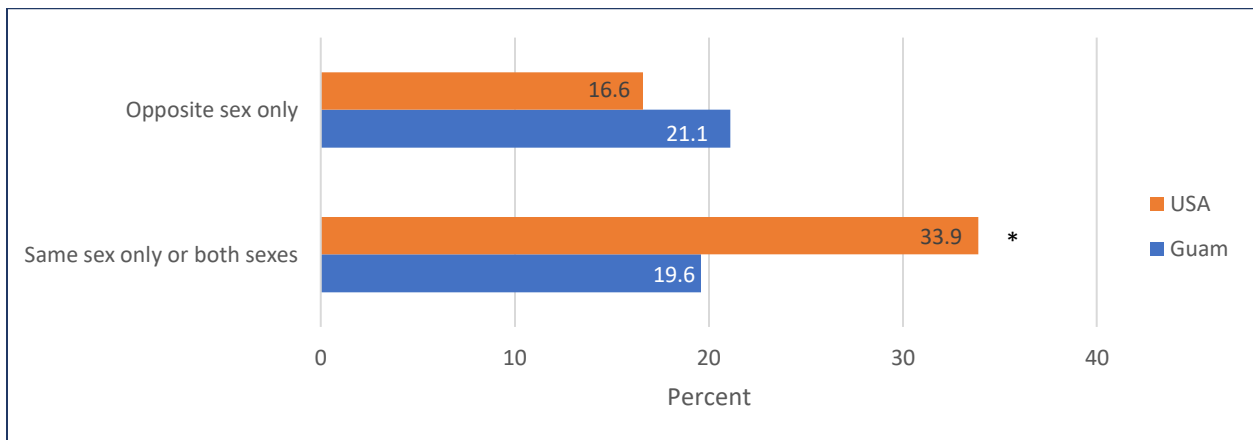


Figure 36: Percentage of high school students who ever took prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it, by sex of sexual contacts, Guam and US, 2019



Note: "*" – US youth more likely than Guam youth

From 2017 to 2019, prescription pain medication misuse among Guam heterosexual youth increased.

Table 20. Trends in youth who ever took prescription pain medicine without a doctor’s prescription or differently than how a doctor told them to use it, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	NA	8.2 (6.2–10.6)	14.6 (11.9–17.9)	
	Lesbian, gay or bisexual	NA	25.6 (17.0–36.6)	20.0 (12.1–31.3)	
	Not sure	NA	15.8 (8.5–27.4)	18.4 (9.8–32.1)	
By sex of sexual contacts	Opposite sex only	NA	15.5 (12.2–19.4)	21.1 (16.7–26.2)	
	Same sex only or both sexes	NA	32.9 (24.3–42.8)	19.6 (10.5–33.7)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER USED COCAINE

In Guam:

- Sexual minority youth are more likely to report lifetime use of cocaine

Compared to the US:

- No significant differences exist between Guam and US youth within the same sexual identity categories.

Figure 37: Percentage of high school students who ever used cocaine, by sexual identity, Guam and US, 2019

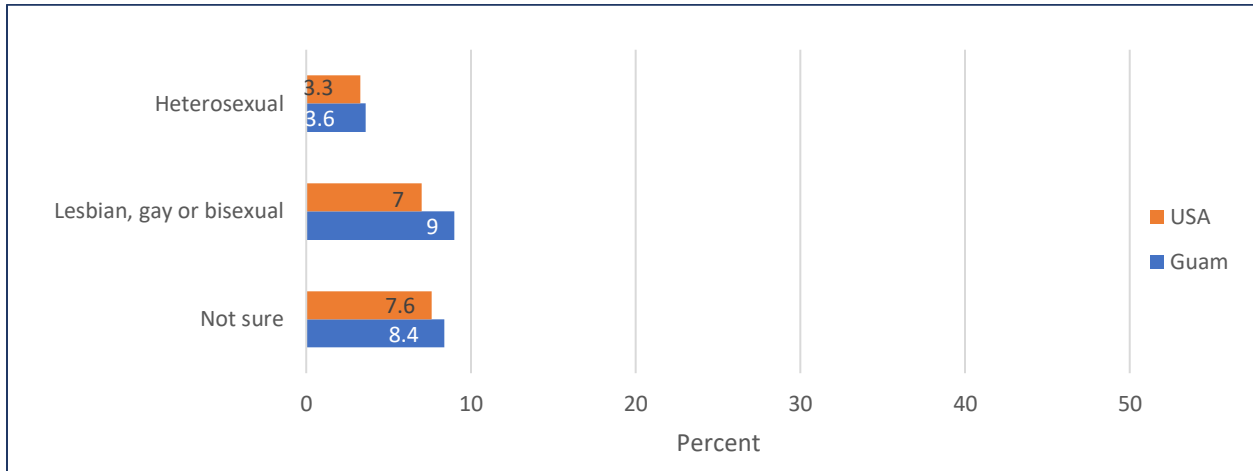
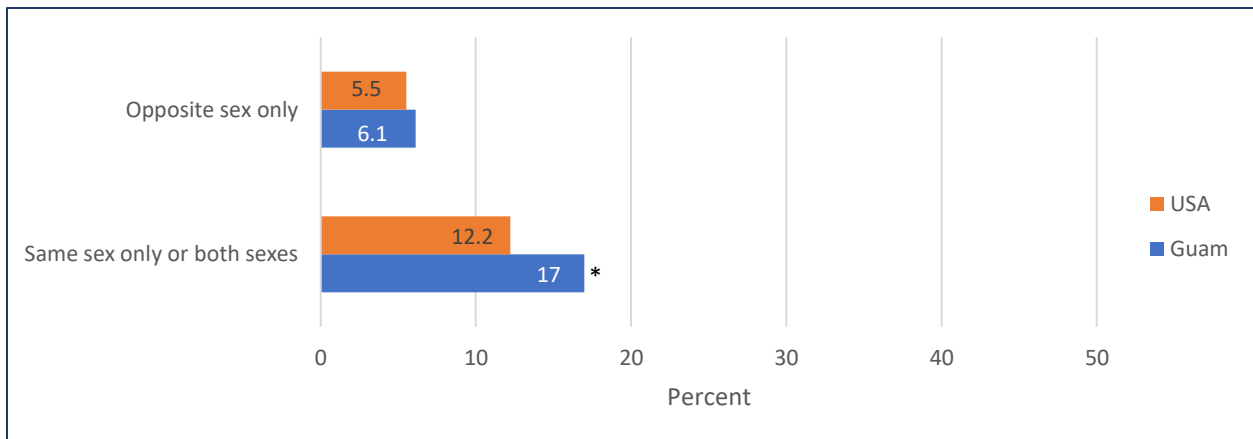


Figure 38: Percentage of high school students who ever used cocaine, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth with sexual contacts of the same sex only or both sexes more likely than youth with opposite sex partners

From 2015 to 2019, lifetime ever use of cocaine among Guam youth remained unchanged, regardless of sexual identity.

Table 21. Trends in youth who ever used cocaine, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	2.0 (1.1–3.5)	4.4 (3.1–6.2)	3.6 (2.5–5.3)	
	Lesbian, gay or bisexual	11.3 (6.9–17.9)	17.6 (10.6–27.6)	9.0 (4.5–17.1)	
	Not sure	12.7 (4.9–29.1)	9.1 (4.2–18.7)	8.4 (4.2–16.4)	
By sex of sexual contacts	Opposite sex only	4.6 (2.7–7.5)	7.0 (4.5–10.6)	6.1 (4.0–9.3)	
	Same sex only or both sexes	13.7 (7.3–24.2)	19.7 (12.7–29.3)	17.0 (9.2–29.2)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER USED INHALANTS

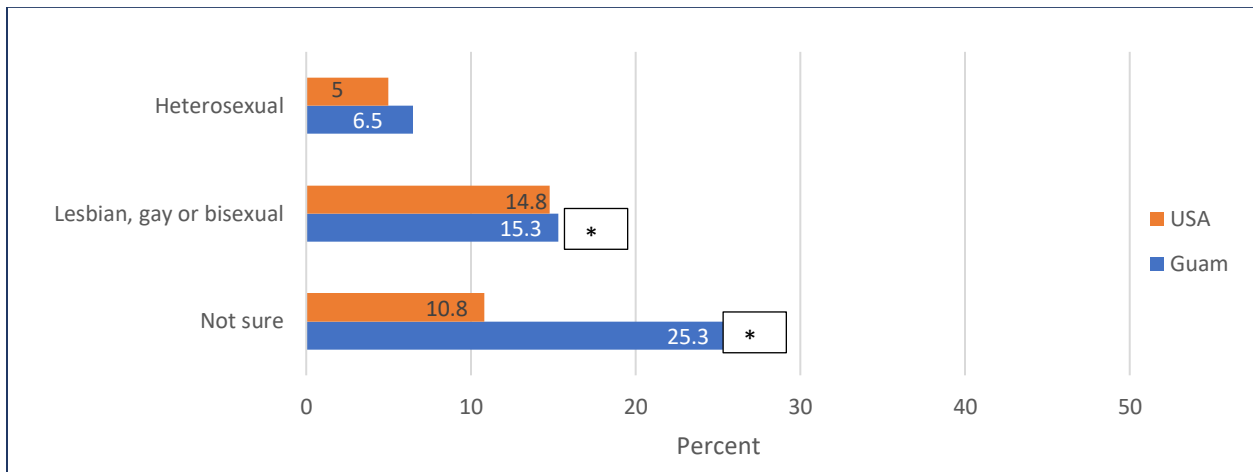
In Guam:

- Sexual minority youth are more likely to report lifetime use of inhalants. Youth who are not sure of their sexual identity, and those whose sexual contacts are either same sex only or both sexes report the highest use rates.

Compared to the US:

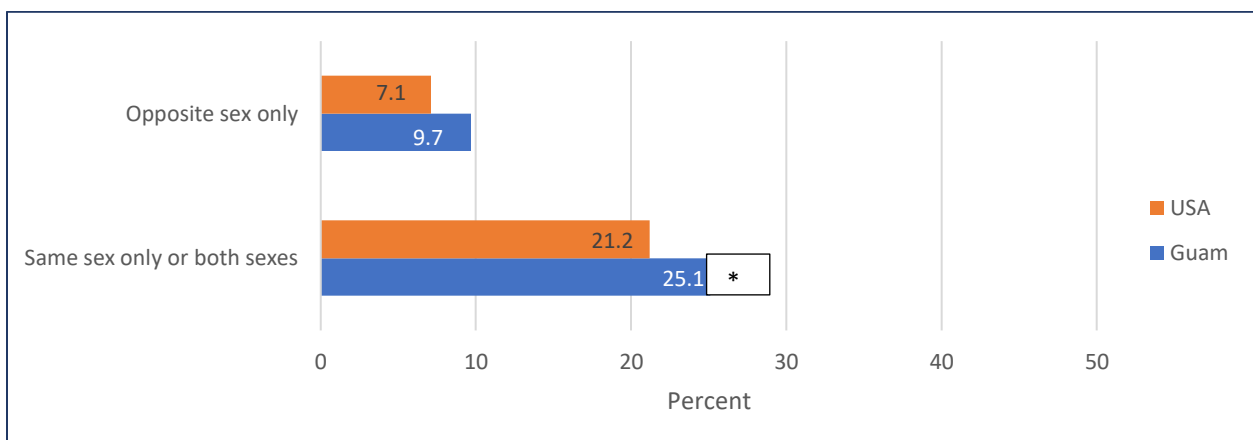
- No significant differences exist between Guam and US youth within the same sexual identity categories.

Figure 39: Percentage of high school students who ever used inhalants, by sexual identity, Guam and US, 2019



Note: "*" – LGB and youth who are unsure of their sexual identity more likely to report than heterosexual youth

Figure 40: Percentage of high school students who ever used inhalants, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth with sexual contacts of the same sex only or both sexes more likely than youth with opposite sex partners

From 2015 to 2019, lifetime use of inhalants among Guam youth remained unchanged, regardless of sexual identity.

Table 22. Trends in youth who ever used inhalants, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	7.1 (5.3–9.6)	5.6 (4.2–7.5)	6.5 (4.9–8.7)	
	Lesbian, gay or bisexual	12.7 (7.7–20.2)	12.7 (8.1–19.3)	15.3 (9.4–23.9)	
	Not sure	9.4 (3.6–22.5)	12.7 (6.6–23.0)	25.3 (13.5–42.4)	
By sex of sexual contacts	Opposite sex only	4.6 (2.7–7.5)	7.0 (4.5–10.6)	6.1 (4.0–9.3)	
	Same sex only or both sexes	13.7 (7.3–24.2)	19.7 (12.7–29.3)	17.0 (9.2–29.2)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER USED HEROIN

In Guam:

- Youth who are not sure of their sexual identity are more likely to report lifetime use of heroin compared to their heterosexual counterparts.
- Youth whose sexual contacts are same sex only or both sexes are more likely to have used heroin than youth whose sexual contacts are of the opposite sex only.

Compared to the US:

- No significant differences exist between Guam and US youth within the same sexual identity categories.

Figure 41: Percentage of high school students who ever used heroin, by sexual identity, Guam and US, 2019

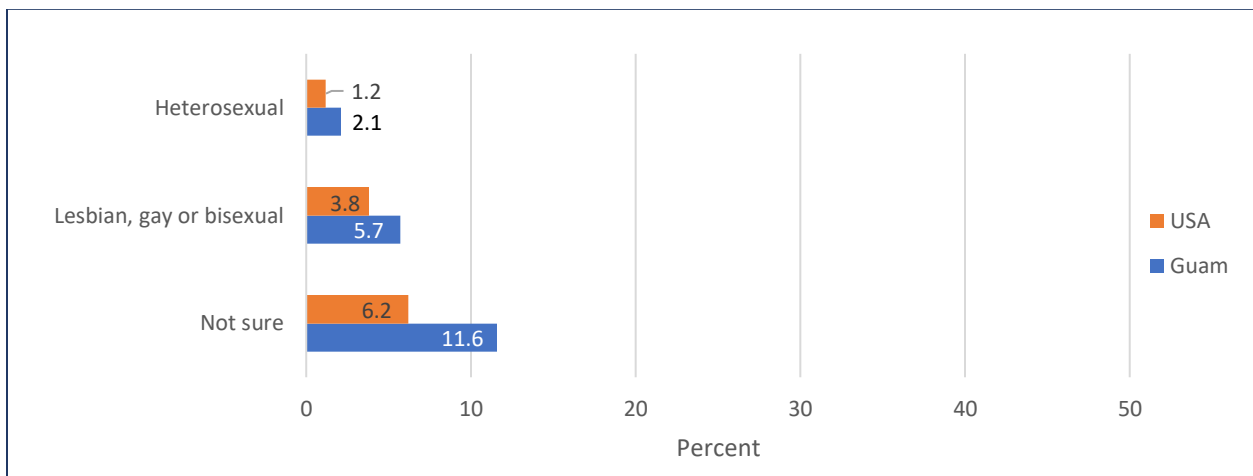
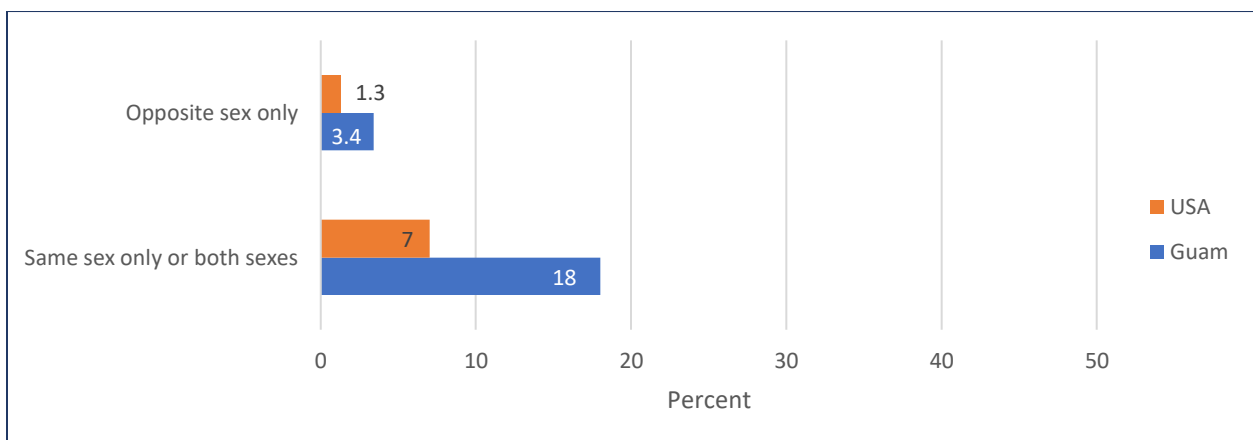


Figure 42: Percentage of high school students who ever used heroin, by sex of sexual contacts, Guam and US, 2019



From 2015 to 2019, lifetime use of heroin among Guam youth remained unchanged, regardless of sexual identity.

Table 23. Trends in youth who ever used heroin, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	1.7 (1.0–2.8)	2.1 (1.2–3.6)	2.1 (1.1–3.9)	
	Lesbian, gay or bisexual	4.4 (1.8–10.4)	16.6 (10.3–25.6)	5.7 (2.4–12.8)	
	Not sure	4.8 (1.1–18.0)	6.9 (2.4–18.6)	11.6 (5.3–23.4)	
By sex of sexual contacts	Opposite sex only	2.5 (1.3–4.8)	4.8 (2.8–8.0)	3.4 (1.9–6.2)	
	Same sex only or both sexes	10.8 (5.4–20.4)	15.0 (8.3–25.7)	18.0 (8.7–33.7)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER USED METHAMPHETAMINE

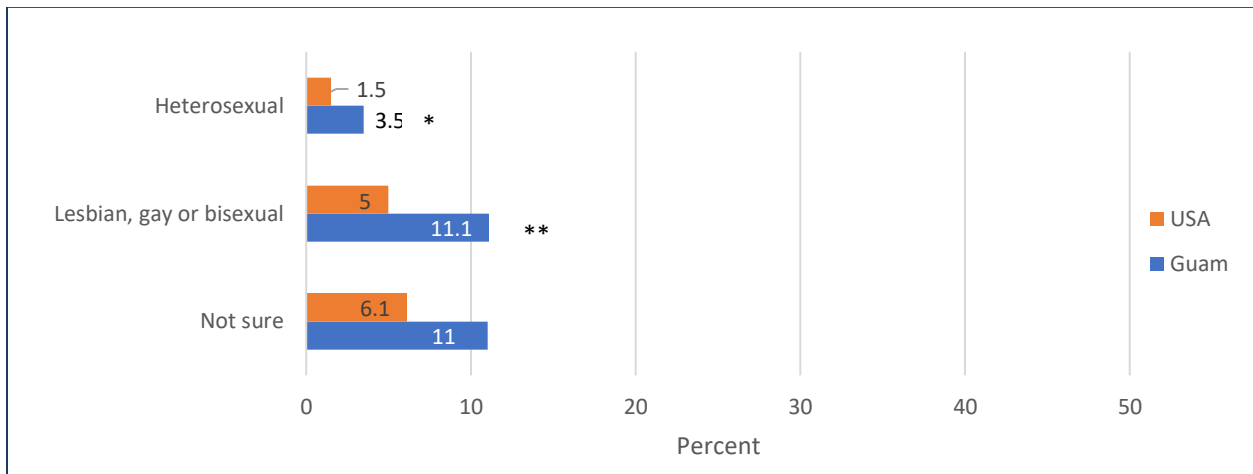
In Guam:

- Youth identify as lesbian/gay/bisexual are more likely to report lifetime use of methamphetamine compared to their heterosexual counterparts.

Compared to the US:

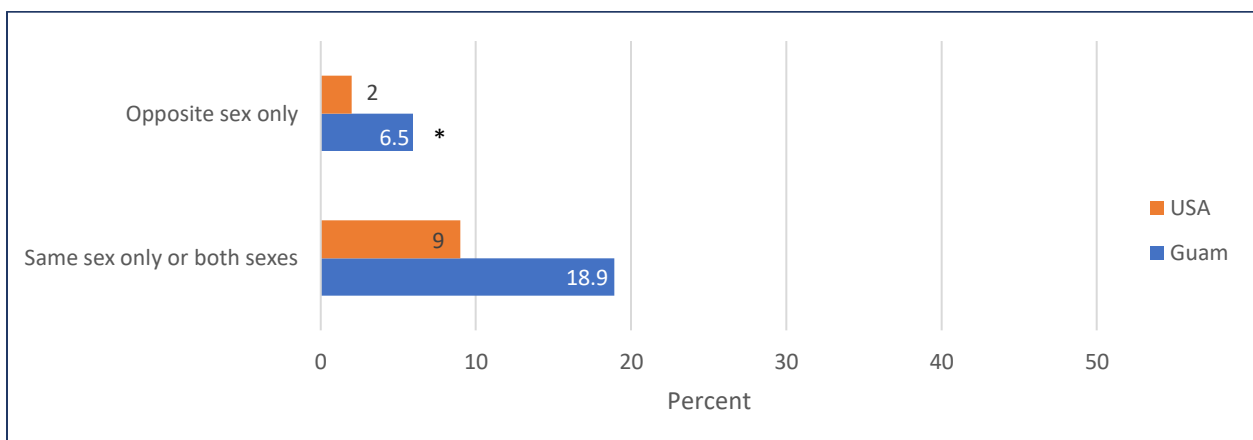
- Heterosexual Guam youth have higher rates of lifetime methamphetamine use than their US counterparts.

Figure 43: Percentage of high school students who ever used methamphetamine, by sexual identity, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "**" – LGB youth more likely than heterosexual youth in Guam

Figure 44: Percentage of high school students who ever used methamphetamine, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth

From 2015 to 2019, lifetime use of methamphetamine among Guam youth remained unchanged, regardless of sexual identity.

Table 24. Trends in youth who ever used methamphetamine, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	2.9 (1.8–4.6)	3.6 (2.3–5.6)	3.5 (2.3–5.5)	
	Lesbian, gay or bisexual	10.6 (5.6–19.1)	13.1 (7.6–21.6)	11.1 (5.8–20.1)	
	Not sure	12.1 (5.6–24.3)	7.4 (3.1–16.7)	11.0 (4.9–22.9)	
By sex of sexual contacts	Opposite sex only	5.6 (3.2–9.6)	4.4 (2.7–7.2)	6.5 (4.5–9.4)	
	Same sex only or both sexes	17.1 (9.7–28.5)	18.2 (10.7–29.2)	18.9 (9.3–34.6)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER USED ECSTASY

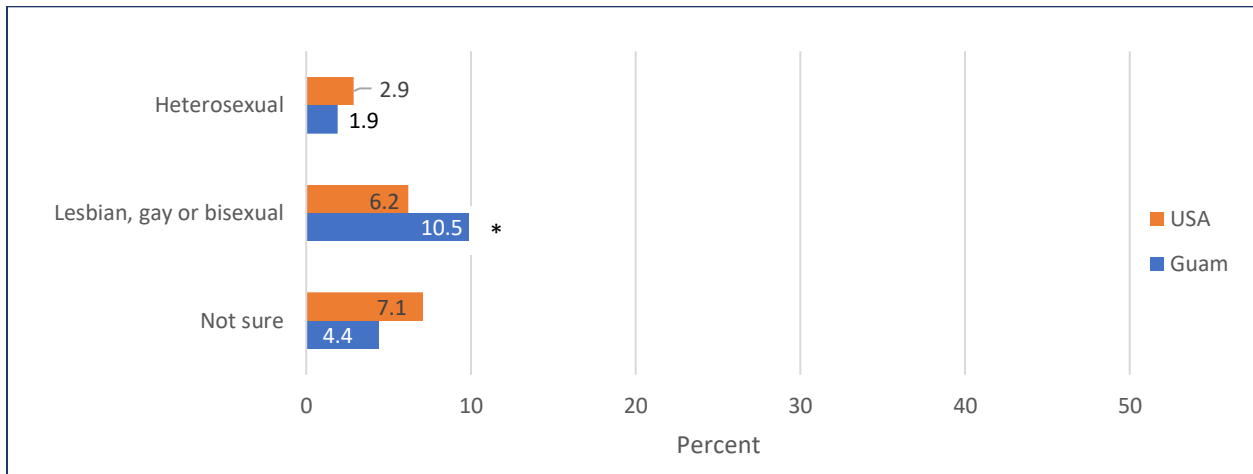
In Guam:

- Youth who identify as lesbian/gay/bisexual are more likely to report lifetime use of ecstasy compared to their heterosexual counterparts.

Compared to the US:

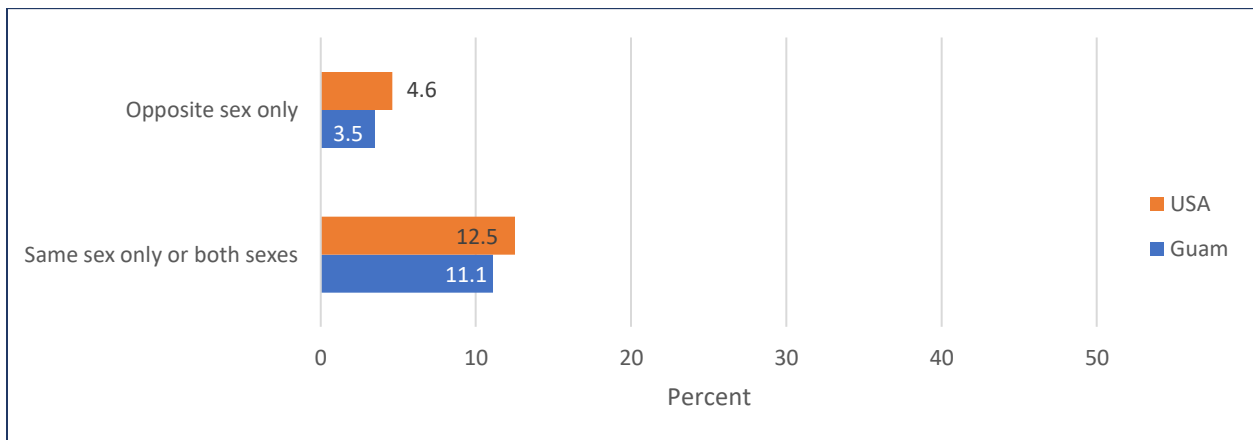
- No significant differences exist across the various Guam sexual identity categories.

Figure 45: Percentage of high school students who ever used ecstasy, by sexual identity, Guam and US, 2019



Note: "*" – LGB youth more likely than heterosexual youth in Guam

Figure 46: Percentage of high school students who ever used ecstasy, by sex of sexual contacts, Guam and US, 2019



From 2015 to 2019, lifetime use of ecstasy among Guam youth remained unchanged, regardless of sexual identity.

Table 25. Trends in youth who ever used ecstasy, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	3.1 (2.1–4.7)	2.1 (1.3–3.5)	1.9 (1.1–3.2)	
	Lesbian, gay or bisexual	9.7 (5.7–16.2)	13.8 (8.2–22.4)	10.5 (4.7–21.8)	
	Not sure	10.9 (4.5–23.8)	10.5 (4.7–21.9)	4.4 (1.6–11.8)	
By sex of sexual contacts	Opposite sex only	5.5 (3.5–8.6)	4.2 (2.4–7.0)	3.5 (2.0–6.2)	
	Same sex only or both sexes	17.0 (10.4–26.5)	20.1 (10.7–34.6)	11.1 (5.1–22.4)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER TOOK STEROIDS WITHOUT A DOCTOR'S PRESCRIPTION

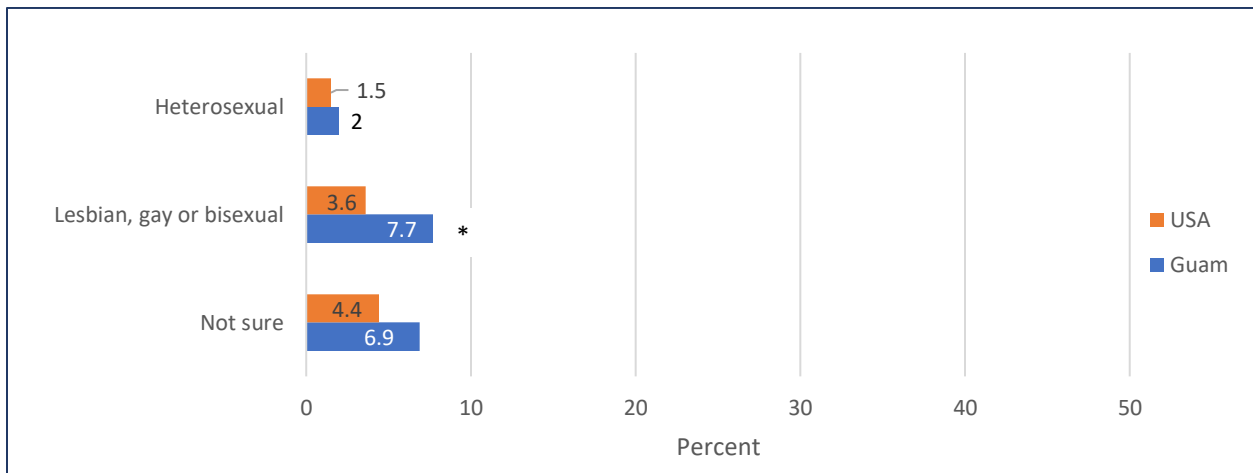
In Guam:

- Youth who identify as lesbian/gay/bisexual are more likely to report lifetime use of steroids without a doctor's prescription compared to their heterosexual counterparts.
- Youth whose sexual contacts are of the same sex only or both sexes are more likely to report having taken steroids without a doctor's prescription.

Compared to the US:

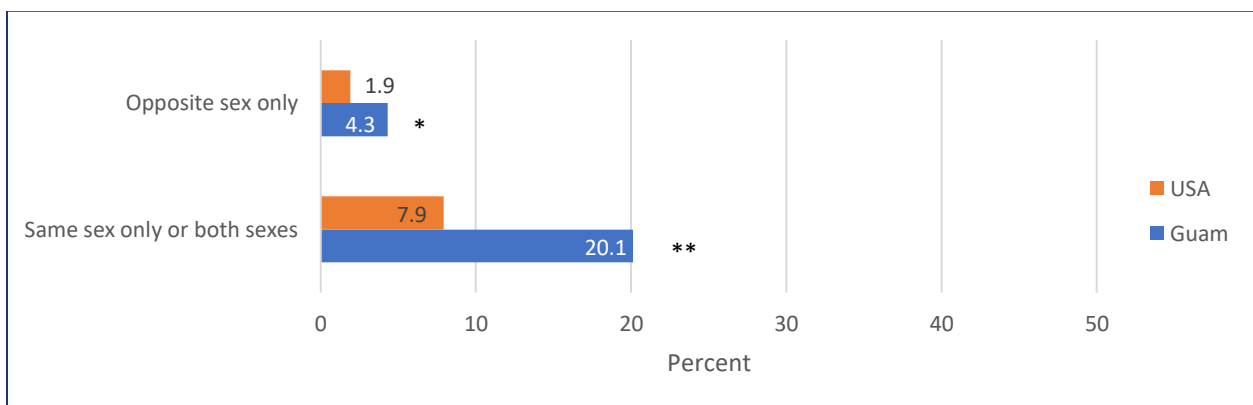
- Youth with sexual contacts of the opposite sex only are more likely to report having taken steroids without a doctor's prescription.

Figure 47: Percentage of high school students who ever took steroids without a doctor's prescription, by sexual identity, Guam and US, 2019



Note: "*" – LGB youth more likely than heterosexual youth in Guam

Figure 48: Percentage of high school students who ever took steroids without a doctor's prescription, by sex of sexual contacts, Guam and US, 2019



Note: "*" – Guam youth more likely than US youth; "**" – Guam youth with same sex only or both sexes as sexual contacts more likely to report than Guam youth with opposite sex partners

From 2015 to 2019, ever taking steroids without a doctor’s prescription among Guam youth remained unchanged, regardless of sexual identity.

Table 26. Trends in youth who ever took steroids without a doctor’s prescription, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	2.8 (1.8–4.2)	3.4 (2.3–5.0)	2.0 (1.2–3.4)	
	Lesbian, gay or bisexual	5.2 (2.3–11.6)	13.9 (8.3–22.4)	7.7 (4.1–13.7)	
	Not sure	8.5 (3.2–20.5)	10.9 (5.1–21.8)	6.9 (2.3–18.8)	
By sex of sexual contacts	Opposite sex only	4.1 (2.3–7.2)	4.9 (3.1–7.8)	4.3 (2.5–7.2)	
	Same sex only or both sexes	12.0 (6.2–22.2)	21.0 (11.3–35.8)	20.1 (10.5–35.0)	

Key:

	In the wrong direction
	No change
	In the right direction

EVER INJECTED ANY ILLEGAL DRUG

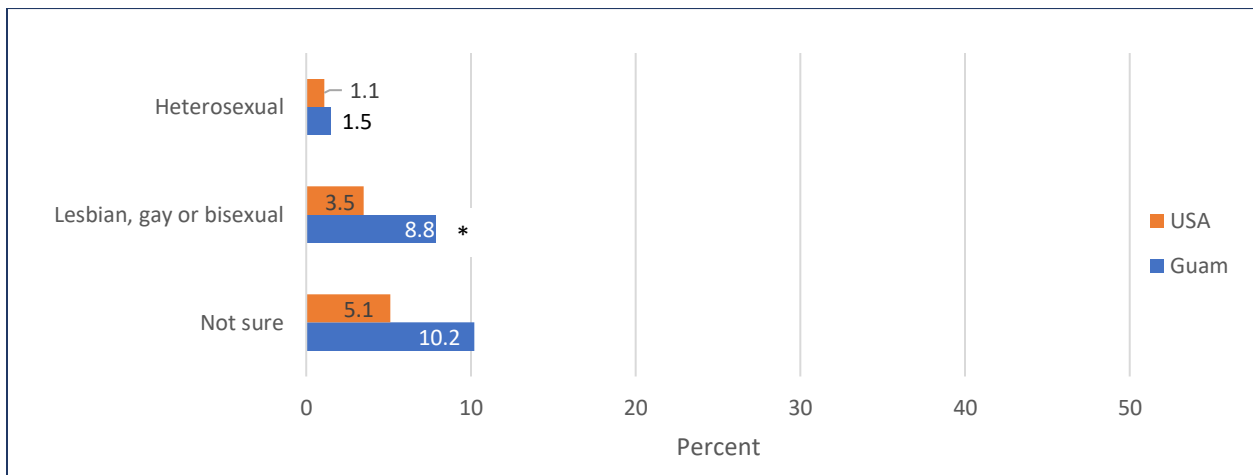
In Guam:

- Youth who identify as lesbian/gay/bisexual are more likely to report injecting an illegal drug compared to their heterosexual counterparts.
- Youth whose sexual contacts are of the same sex only or both sexes are more likely to report injecting an illegal drug compared to their counterparts with opposite sex only sexual contacts.

Compared to the US:

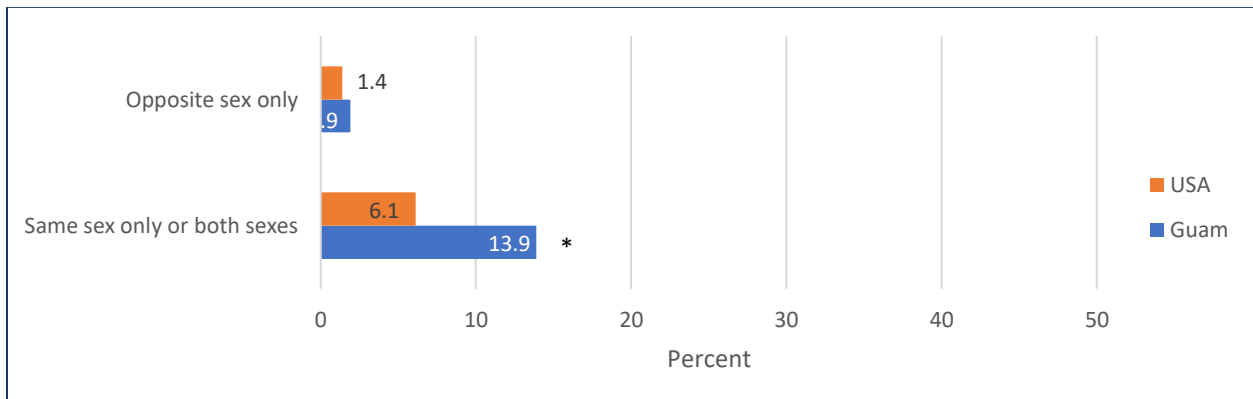
- No significant differences were noted.

Figure 49: Percentage of high school students who ever injected any illegal drug, by sexual identity, Guam and US, 2019



Note: "*" – LGB youth more likely than heterosexual youth in Guam

Figure 50: Percentage of high school students who ever injected any illegal drug, by sex of sexual contacts, Guam and US, 2019



Note: "*" –Guam youth with same sex only or both sexes as sexual contacts more likely to report than Guam youth with opposite sex partners

From 2015 to 2019, having ever injected any illegal drug among Guam youth remained unchanged, regardless of sexual identity.

Table 27. Trends in youth who ever injected any illegal drug, by sexual identity and sex of sexual contacts, Guam high school youth, 2015-2019

		2015 % (95% CI)	2017 % (95% CI)	2019 % (95% CI)	Trend
By sexual identity	Heterosexual	2.3 (1.4–3.7)	2.9 (1.8–4.7)	1.5 (0.7–3.3)	
	Lesbian, gay or bisexual	4.0 (1.4–10.4)	9.3 (4.9–17.1)	8.8 (3.9–18.7)	
	Not sure	9.6 (3.6–23.2)	10.6 (4.7–22.3)	10.2 (4.0–23.7)	
By sex of sexual contacts	Opposite sex only	3.6 (2.0–6.3)	4.2 (2.2–8.1)	1.9 (0.8–4.5)	
	Same sex only or both sexes	5.7 (1.9–16.0)	16.3 (8.3–29.4)	13.9 (6.4–27.6)	

Key:

	In the wrong direction
	No change
	In the right direction

CONCLUSION AND RECOMMENDATIONS

Analyzing data from the YRBS using the lens of sexual identity uncovered a number of key differences between sexual minority youth and their peers under four domains:

- (5) **Experiencing violence:** Youth who are not sure of their sexual identity are more likely than their heterosexual and lesbian/gay/bisexual counterparts to be bullied on school property and to miss school days because they felt unsafe. Likewise, youth whose sexual contacts are either of the same sex or both sexes are more likely to feel unsafe in school compared to youth with opposite sex only sexual contacts.
- (6) **Mental health and suicide risk:** Lesbian, gay and bisexual youth and those uncertain of their sexual identity are more likely to report feeling sad and hopeless than their heterosexual peers. Lesbian, gay and bisexual youth are also more likely to report thinking about suicide, making a suicide plan and actually attempting suicide.
- (7) **Tobacco and alcohol use:** Sexual minority youth are less likely to be current cigarette smokers, users of electronic vapor products or binge drinkers than their heterosexual counterparts in Guam.
- (8) **Other substance use:** Sexual minority youth in Guam are more likely to report substance use compared to their heterosexual counterparts.

These important differences indicate that sexual minority youth face higher risks of experiencing violence, mental health problems and suicide, and substance use; and conversely, tobacco and harmful alcohol use appear lower. These disparities emerge only when data are disaggregated or sexual identity, highlighting its role as a social determinant of health.

Trends from 2015 demonstrate improvements in reported bullying, sexual violence, dating violence and cigarette smoking, but the use of electronic vapor products is rising, while substance use and suicide risk remain unchanged.

This baseline report is intended to guide prevention stakeholders in selecting priorities, developing strategies, and allocating resources to better serve Guam's young people who remain at risk for mental health and substance use problems. Its findings highlight the importance of integrating sexual identity when screening for risk, developing and selecting prevention interventions and designing advocacy, education, and outreach programs, so that services reach those that need them the most. The data also highlight the need to directly address the social influences that drive these disparities—including stigma, marginalization, prejudice, and discrimination. Ultimately, the data call for social change to address the underlying or root causes of the inequities and health disparities that adversely impact our youth.

APPENDIX 1: DOMAINS AND INDICATORS

Domain/Focus Area	Indicator	Question
<i>Experiencing violence</i>	Were electronically bullied	During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.)
	Were bullied on school property	During the past 12 months, have you ever been bullied on school property?
	Did not go to school because they felt unsafe at school or on their way to school	During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?
	Were ever physically forced to have sexual intercourse	Have you ever been physically forced to have sexual intercourse when you did not want to?
	Experienced sexual violence by anyone	During the past 12 months, how many times did anyone force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)
	Experienced sexual dating violence	During the past 12 months, how many times did someone you were dating or going out with force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)
	Experienced physical dating violence	During the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose? (Count such things as being hit, slammed into something, or injured with an object or weapon.)
<i>Mental health and suicide risk</i>	Felt sad or hopeless	During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?
	Seriously considered attempting suicide	During the past 12 months, did you ever seriously consider attempting suicide?
	Made a plan about how they would attempt suicide	During the past 12 months, did you make a plan about how you would attempt suicide?
	Actually attempted suicide	During the past 12 months, how many times did you actually attempt suicide?
	Suicide attempt resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse	If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?
<i>Tobacco and harmful alcohol use</i>	Currently smoked cigarettes	During the past 30 days, on how many days did you smoke cigarettes?
	Currently used electronic vapor products	During the past 30 days, on how many days did you use an electronic vapor product?

	Currently used smokeless tobacco	During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products, such as Copenhagen, Grizzly, Skoal, or Camel Snus? (Do not count any electronic vapor products.)
	Currently were binge drinking	During the past 30 days, on how many days did you have 4 or more drinks of alcohol in a row, that is, within a couple of hours (if you are female) or 5 or more drinks of alcohol in a row, that is, within a couple of hours (if you are male)?
<i>Other substance use</i>	Currently used marijuana	During the past 30 days, how many times did you use marijuana?
	Ever took prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it	During your life, how many times have you taken prescription pain medicine without a doctor's prescription or differently than how a doctor told you to use it?
	Ever used cocaine	During your life, how many times have you used any form of cocaine, including powder, crack, or freebase?
	Ever used inhalants	During your life, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
	Ever used heroin	During your life, how many times have you used heroin (also called smack, junk, or China White)?
	Ever used methamphetamine	During your life, how many times have you used methamphetamines (also called speed, crystal meth, crank, ice, or meth)?
	Ever used ecstasy	During your life, how many times have you used ecstasy (also called MDMA)?
	Ever took steroids without a doctor's prescription	During your life, how many times have you taken steroid pills or shots without a doctor's prescription?
	Ever injected any illegal drug	During your life, how many times have you used a needle to inject any illegal drug into your body?





**GUAM BEHAVIORAL
HEALTH AND WELLNESS
CENTER**



PEACE
PREVENTION & TRAINING BRANCH

**Prevention and Training Branch
790 Gov. Carlos Camacho Road
Tamuning, Guam 96913
Tel: (671) 477-9079 thru 9083
www.gbhwc.guam.gov/peace**

Photo source: Jakubgodja

PEACE uses SAMHSA's Strategic Prevention Framework, a 5-step planning process to guide the selection, implementation, and evaluation of effective, culturally appropriate, and sustainable prevention activities. The effectiveness of this process begins with a clear understanding of community needs and depends on the involvement of community members in all stages of the planning process.

