

FINAL VERSION

JULY 24, 2013

GUAM STATE EPIDEMIOLOGICAL PROFILE

2012 UPDATE

WRITTEN BY: DR. ANNETTE M. DAVID

ON BEHALF OF THE GUAM STATE EPIDEMIOLOGICAL OUTCOMES WORKGROUP

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ACKNOWLEDGEMENTS

This profile resulted from the collaborative efforts of the various agencies and institutions that comprise the Guam State Epidemiological Outcomes Workgroup (SEOW). The data contained in this profile were contributed by the members of the SEOW from primary sources within each institution. Dr. Annette M. David, SEOW Lead, oversaw the data analysis and was the primary author for this report. Ms. Helene Paulino, Ms. Grace Lapid Rosadino and Ms. April Aguon from Guam Behavioral Health and Wellness Center (GBHWC) undertook data collection, data entry and data management. The Prevention Education And Community Empowerment (PEACE) Central Staff, under the supervision of Prevention and Training Branch Supervisor Ms. Barbara S. N. Benavente, provided administrative support.

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EXECUTIVE SUMMARY

2012 DATA HIGHLIGHTS AT A GLANCE

This update presents only new data available after the release of the 2011 Guam State Epidemiological Profile, published in 2012. Since most of Guam's youth data is collected every other year, most of the youth indicators collected by the Youth Risk Behavior Surveillance System (YRBSS) are unchanged from the previous year. In addition, the new methodology adopted by the Behavioral Risk Factor Surveillance System (BRFSS) precludes using the new 2011 BRFSS data for trend analysis with previous years' data.

TOBACCO:

- About 1 in 3 adults (30.5%) in Guam is a smoker. The smoking prevalence in Guam is higher than the median smoking prevalence of all US States and Territories; this has remained unchanged since 2001.
- Currently, 1 in 5 adults (21.1%) in Guam is a daily smoker. Daily smoking remains higher in Guam as compared to the median prevalence of all US States and Territories.
- Slightly more than 1 in 3 (35.8%) adult men and nearly 1 in 4 (23.6%) adult women smoke. Women in Guam smoke as much as men in the US.
- Smoking is highest among younger adults (<45 years), and is reported less frequently by those aged 45 years and older.
- Smoking is inversely related to income (Figure 8) and educational attainment (Figure 9), with current smoking reported more frequently by those with lower incomes and less years of education.
- Based on the Guam Global Youth Tobacco Survey (GYTS), over half of all youth had ever smoked a cigarette and about 1 in 4 (25.3%) currently smokes.
- Like adults, boys smoke more than girls (32.9% vs. 17.7%).
- Almost 1 in 4 (23.5%) youth uses other tobacco products, and 12.3% chew betel nut with tobacco.
- Youth were highly aware of the harm from smoking and second hand smoke. Despite this level of awareness, smoking continued for one quarter of the students surveyed.
- Majority (61.9%) of current smokers wanted to quit and 77.2% have attempted to stop smoking in the past year.
- Over 3 in 5 (64.4%) were exposed to second hand smoke in public places in the past week. More than three-fourths (75.8%) favor banning smoking in public places.
- The top four causes of death---diseases of the heart, malignant neoplasms (cancer), cerebrovascular disease (stroke) and diabetes---are either directly caused or exacerbated by tobacco. An additional three---chronic lower respiratory disease, influenza and pneumonia, and septicemia---are worsened by tobacco use. Altogether, tobacco is a risk factor for 68.8% of deaths in Guam.

ALCOHOL:

- In 2011, 41.8% of adults in Guam reported having had at least one drink of alcohol within the past 30 days.
- Overall, men drink more than women, but this sex difference is much more marked on Guam, where males were almost twice as likely to report recent consumption of alcohol as females.
- Current drinking is most prevalent among younger adults aged 18-44 years, and those with higher incomes.

- The prevalence of heavy drinking in Guam is similar to the US average (6.8% vs. 6.6%). Males were more likely to report heavy drinking than females (9% vs. 4.4%).
- Binge drinking was reported by 18.3% of adults in Guam in 2011. Males in Guam had a similar rate of binge drinking as their US counterparts, and had a rate of binge drinking that was about 3 times higher than women in Guam.
- Binge drinking was highest among younger adults (<45 years), and dropped rapidly after 55 years.
- Alcohol directly contributes to liver cirrhosis, the 10th leading cause of death in Guam (Table 6). In addition, alcohol is implicated in some types of cancer, stroke, suicide, motor vehicle accidents and can exacerbate diabetes.
- Alcohol-related offenses accounted for 8.6% of all juvenile arrests in 2011, up from 5.3% in 2010.
- Traffic accidents and "driving under the influence" (DUI) arrests decreased from 2010 to 2011; however, the number of traffic-related fatalities increased. Alcohol was a factor in 27.3% of traffic fatalities in 2011.

OTHER DRUG USE:

- One in five (21.2%) of adults reported ever using marijuana.
- About 5% reported lifetime use of methamphetamine and 4.4% reported the use of other illicit drugs.
- Males reported higher rates of lifetime use of illicit drugs than females, for all drug types.
- Marijuana and other illicit drug use were more likely to be reported by those with higher educational attainment and higher incomes. In contrast, methamphetamine was more likely to be reported by those with lower educational attainment and lower incomes.
- Age at first use was lower for marijuana and methamphetamine than for other illicit drug use.

SUICIDE:

- In 2012, there were 25 suicide deaths. Guam's crude suicide death rate decreased significantly for the first time in six years from 18.8/100,000 to 15.6/100,000.
- Guam's suicide mortality remains higher than the US; in 2010, the US rate was 12/100,000.
- Suicide deaths in Guam occur predominantly among males, who outnumber suicide deaths among females, with an average ratio of 6:1. In the US, overall, males outnumber females in suicide deaths by a ratio of 4:1.
- The greatest number of suicides occur among those aged 20-29 years old. Altogether, close to 60% of all suicide deaths in Guam from 2000-2011 occurred in those younger than 30 years.
- The greatest number of suicide deaths occur among Chamorros, followed by Chuukese. However, when these are corrected for the relative contribution of each ethnic group to the total population, Whites and "Others" have the highest suicide death rates per 100,000, followed by Chuukese. The increase in suicides by Whites is a recent phenomenon.
- Alcohol was involved in 24% of 2012 suicide deaths.
- One-fifth of the victims had a history of previous suicide attempts or mental illness.
- 60% of suicides during this period were committed at home. Only 11% of suicides were committed in a public place.
- Over three-fourths (76%) of completed suicides were by hanging.
- Nearly 1 in 5 (19%) of those who died of suicide from 2008-2012 left direct evidence (suicide note) of intention to commit suicide.

SEXUAL VIOLENCE:

- In 2011, rape constituted 27.2% of all violent crimes reported to the Guam Police Department.
- In 2011, of the 151 reported cases of rape, 94.7% were forcible rape.
- One in three (34%) of arrests involved perpetrators below the age of 25 years. Nearly all (96%) of arrests for adult cases, and 67% of arrests for juvenile cases, involved Pacific Islanders.
- The data indicate that sexual violence among Guam high school students is significantly higher than the US averages. Being hit by a boyfriend or girlfriend in the past year was reported by 15% of Guam students versus 9.4% of US students. Being forced to have sex was reported by 10.7% of Guam youth versus 8% of US students.

BACKGROUND

This 2012 update presents new information collected since the publication of the 2011 Guam Epi Profile. Please refer to the 2011 Guam Epi Profile for a detailed description of the geopolitical, socio-economic, demographic and cultural context, an overview of Guam's prevention system and the history and background of Guam's SEOW.

New information on ethnicity and age composition of Guam's population based on the 2010 census were released in December 2012, and are summarized in this section.

The 2010 Census revealed that as of April 1, 2010, there were 159,358 individuals living in Guam. This represents a 2.9% increase from the 2000 Census. The actual population count was 12% lower than the projected 2010 population based on the 2000 census. Thus, rates calculated using the projected population counts based on the earlier 2000 census likely resulted in underestimates. Males slightly outnumbered females, comprising 51% of the total population. Nearly 40% of the population is under the age of 21 years (Table 1).

Table 1. Demographic composition of Guam population, sex by age, 2010

Age category	TOTAL	MALE	FEMALE
	159,358	81,568	77,790
Under 5 years	14,289	7,345	6,944
5 to 9 years	13,984	7,200	6,784
10 to 14 years	15,046	7,777	7,269
15 to 19 years	14,407	7,473	6,934
20 to 24 years	12,379	6,678	5,701
25 to 29 years	10,746	5,431	5,315
30 to 34 years	10,346	5,151	5,195
35 to 39 years	11,404	5,753	5,651
40 to 44 years	11,659	6,161	5,498
45 to 49 years	11,072	5,821	5,251
50 to 54 years	9,203	4,758	4,445
55 to 59 years	7,715	3,828	3,887
60 to 64 years	6,361	3,181	3,180
65 to 69 years	3,889	1,934	1,955
70 to 74 years	3,030	1,411	1,619
75 to 79 years	1,984	838	1,146
80 to 84 years	1,151	525	626

Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

Guam's population is multi-ethnic/multi-racial. Chamorros remain the largest ethnic group, making up 37.3% of the island's population, and representing a 3.6% increase since 2000. Filipinos are the second largest group, comprising 26.3% of the total. The Yapese and Chuukese had the fastest rate of growth—the Yapese population grew by 84.1%, from 686 in 2000 to 1,263 in 2010, while the number of Chuukese grew by 80.3%, from 6,229 in 2000 to 11,230 in 2010. Majority of Guam residents identify themselves as being of one ethnic origin or race, representing an increase of 8.4% since 2000. There were 14,929 persons who chose 2 or more ethnic or racial origins, a decrease of 30.7% since 2000 (Table 2).

Table 2. Ethnic composition of Guam population, 2010 and 2000

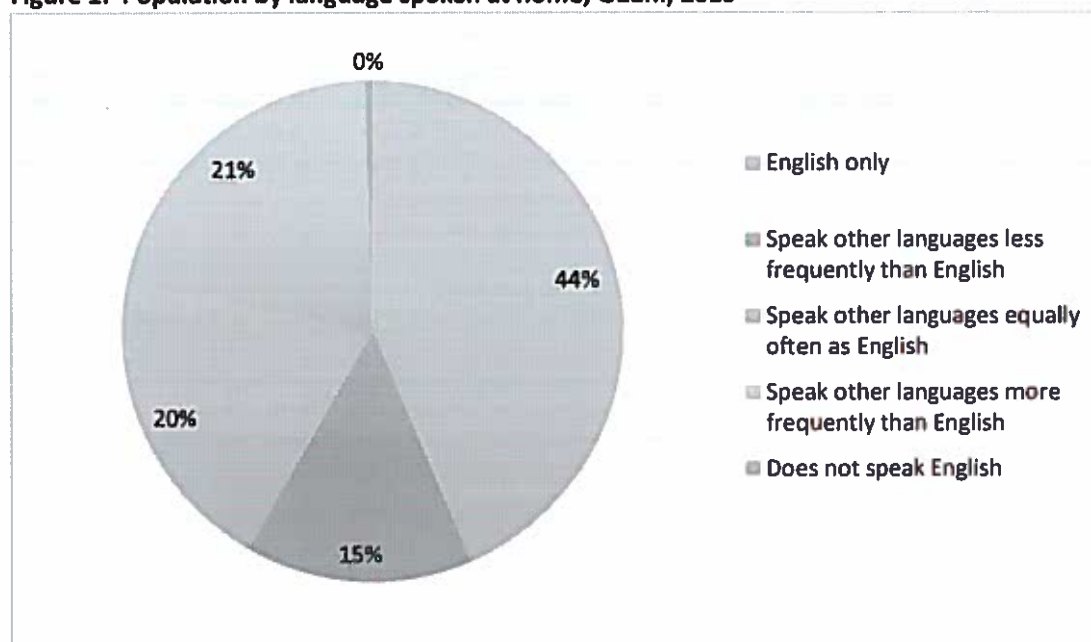
ETHNICITY	2010	2000*
One Ethnic Origin or Race:	144,429	133,252
Native Hawaiian and Other Pacific Islander:	78,582	69,039
Carolinian	242	123
Chamorro	59,381	57,297
Chuukese	11,230	6,229
Kosraean	425	292
Marshallese	315	257
Palauan	2,563	2,141
Pohnpeian	2,248	1,366
Yapese	1,263	686
Other Native Hawaiian and Other Pacific Islander	915	648
Asian:	51,381	50,329
Chinese (except Taiwanese)	2,368	2,707
Filipino	41,944	40,729
Japanese	2,368	2,086
Korean	3,437	3,816
Taiwanese	249	991
Vietnamese	337	10,509
Other Asian	678	1,568
Black or African American	1,540	1,807
Hispanic or Latino	1,201	69,039
White	11,321	123
Other Ethnic Origin or Race	404	57,297
Two or More Ethnic Origins or Races	14,929	21,553
Native Hawaiian and Other Pacific Islander and other groups	11,656	
Chamorro and other groups	9,717	7,946
Asian and other groups	8,574	10,853
Total:	159,358	154,805

Source: US Census Bureau, 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

*Source: US Census Bureau, 2000 Census for Guam as reported by the Bureau of Statistics and Plans, 2005

The ethnic diversity is reflected in the languages spoken at home. Twenty percent of the population over 5 years of age 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 1).

Figure 1. Population by language spoken at home, Guam, 2010



Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

As of April 2010, there were 69,394 people in the civilian labor force, of whom 63,687 were employed. An additional 5,006 were in the Armed Forces. 8.2% were unemployed, as compared to 11.5% in 2000 (Table 3). Figure 2 shows the different sectors of employment and distribution of the labor force as of April 2010. Majority of the labor force are employed in services (29%), trade (24%) and local government (20%).

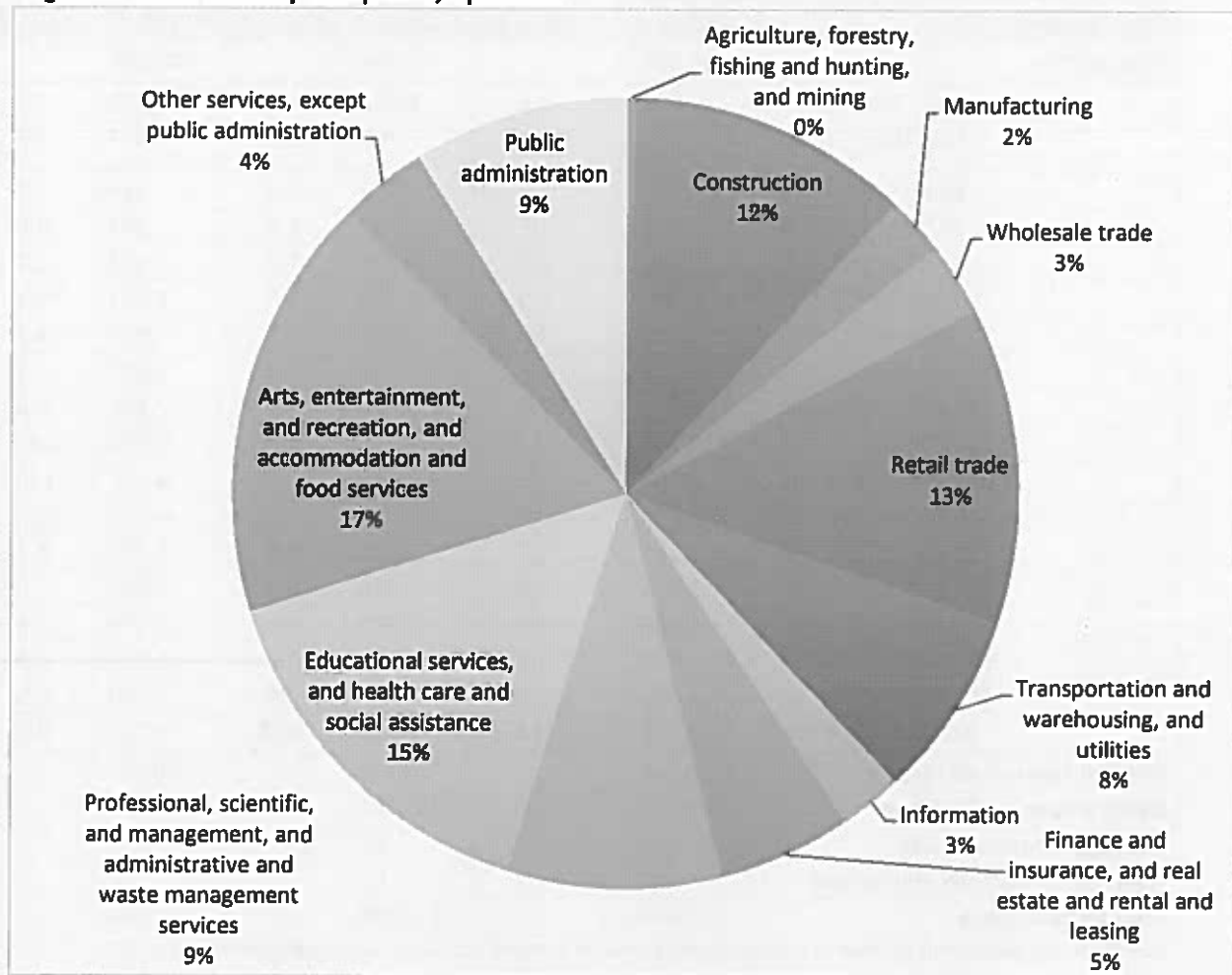
Table 3. Employment status, population 16 years and older, Guam, 2010 and 2000

EMPLOYMENT STATUS	2010	2000*
Total:	113,067	105,014
In labor force:	74,400	68,894
Civilian:	69,394	64,452
Employed:	63,678	57,053
Also did subsistence activity	2,606	4,480
Unemployed	5,716	7,399
Armed Forces	5,006	4,442
Not in labor force:	38,667	36,120
Subsistence activity only	710	2,382

Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

*Source: US Census Bureau, 2000 Guam Census Profile

Figure 2. Labor Force by Occupation, April 2010



Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

In 2010, there were 44,664 households on Guam. Median household income increased from 2008 to 2010 (Table 4). In 2010, 19.9% of Guam's households lived on \$14,999 or less per year. This is unchanged from 2008, when nearly 20% of households made \$14,999 or less per year. The poorest of the poor comprised 7% of all households on Guam, and lived on less than \$3000 per year. In contrast, 11.6% of households made more than \$100,000 per year.

Table 4. Household income, Guam, 2005-2010

Characteristic	2010	Percent	2008	Percent	2005	Percent
Households	44,664		46,246		40,298	
No Income	2,512	5.6	2,622	5.7	1,089	2.7
Less than \$3,000	619	1.4	760	1.6	537	1.3
\$3,000 to \$4,999	728	1.6	874	1.9	459	1.1
\$5,000 to \$6,999	655	1.5	760	1.6	344	0.9
\$7,000 to \$8,999	692	1.5	798	1.7	573	1.4
\$9,000 to \$10,999	1,347	3.0	1,178	2.5	1,261	3.1
\$11,000 to \$12,999	1,128	2.5	1,064	2.3	917	2.3
\$13,000 to \$14,999	1,238	2.8	1,330	2.9	1,261	3.1
\$15,000 to \$19,999	3,130	7.0	3,420	7.4	2,350	5.8
\$20,000 to \$29,999	5,242	11.7	6,346	13.7	5,274	13.1
\$30,000 to \$39,999	5,569	12.5	5,130	11.1	5,331	13.2
\$40,000 to \$49,999	4,040	9.0	5,054	10.9	4,471	11.1
\$50,000 to \$59,999	3,567	8.0	3,914	8.5	3,497	8.7
\$60,000 to \$69,999	3,058	6.8	3,078	6.7	3,038	7.5
\$70,000 to \$79,999	1,966	4.4	2,280	4.9	2,178	5.4
\$80,000 to \$89,999	2,439	5.5	1,748	3.8	1,834	4.6
\$90,000 to \$99,999	1,565	3.5	1,102	2.4	1,720	4.3
\$100,000 or more	5,169	11.6	4,788	10.4	4,127	10.2
Median Household Income	\$39,052	...	\$37,741		\$40,373	
Mean Household Income	\$49,263	...	\$45,786		\$47,062	
Average Household size	3.8	...	3.5		3.9	
Average Earners per Household	1.7	...	1.5		2.2	
Per Capita Income	\$13,962	...	\$13,089		\$12,768	

Source: Guam Department of Labor as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2011

DATA SOURCES, METHODS AND ISSUES

Please refer to the 2011 Guam Epi Profile for a detailed description of Guam's selection criteria for data indicators. For this update, new data was available from:

- Behavioral Risk Factor Surveillance System (BRFSS) – 2011 data (partial)
- Guam Global Youth Tobacco Survey (GYTS) - 2011
- Guam Vital Statistics – 2011 data
- Guam Police Department – as reported in the Guam Statistical Yearbook 2011
- Suicide Mortality Report – 2012 data

The BRFSS incorporated cellular telephones into its methodology, following results of pilot studies conducted from 2008-2010. These studies indicated that the addition of cellular telephone-only households will improve survey coverage for certain population groups. For example, the proportion of interviews conducted with respondents who have lower incomes, lower educational levels, or are in younger age groups will increase because these groups more often exclusively rely on cellular telephones for personal communications. Consequently, because these groups of respondents represent populations with higher risk factors, estimates of health risk behaviors likely will increase.

The US Centers for Disease Control and Prevention (CDC), which administers the BRFSS, also started using a new weighting methodology, replacing the "poststratification" method with "raking" or iterative proportional fitting in 2011. This more sophisticated method for weighting survey data makes adjustments 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 are anticipated to result 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 2011 prevalence data. The Guam SEOW concurs with this recommendation, and will not use 2011 BRFSS data to continue trends from previous survey years. Instead, 2011 BRFSS data will serve as a baseline for future trend analysis. Thus 2011 adult data from the BRFSS will not be compared to previous years' data.

Summary statistics for Guam are compared with nationwide averages. Whenever possible, detailed information is provided, disaggregated by sex, age group and ethnicity/racial group. As much as possible, ethnicity categories are reflective of the various ethnic groups that make up the Guam population. For several indicators, the numbers of observations are small (e.g. suicide deaths, numbers of babies born with fetal alcohol spectrum disorder, etc.) 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 avoided highly technical terms. When technical language is used, the definitions are provided as notes within the text.

SUBSTANCE ABUSE

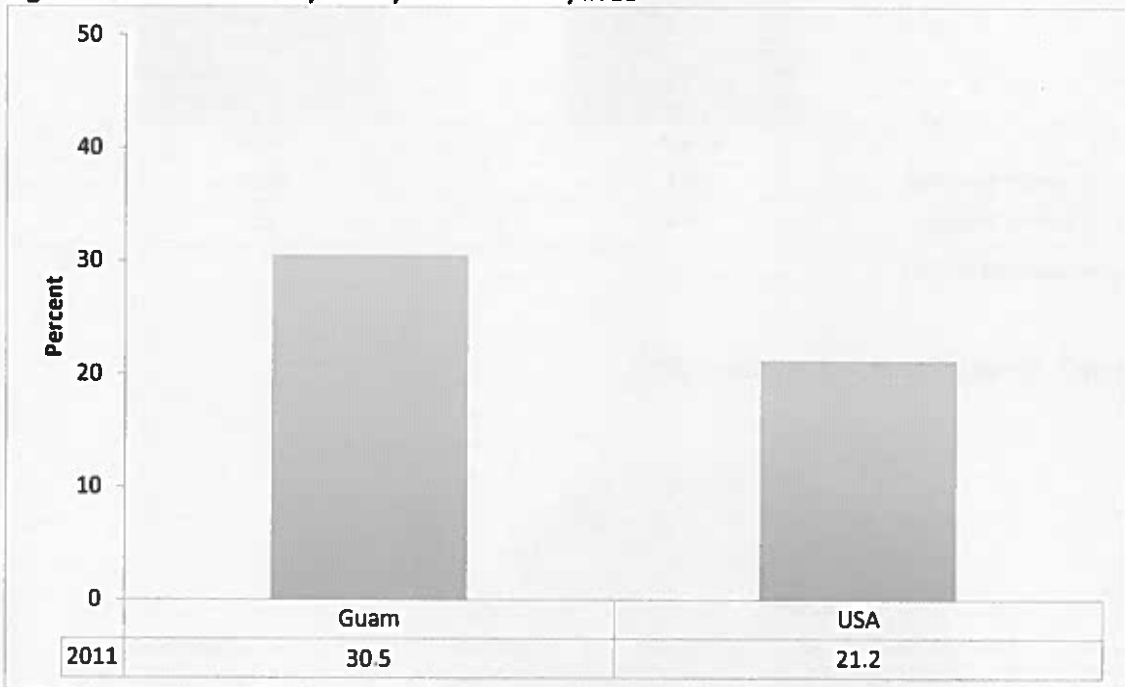
TOBACCO

ADULT CONSUMPTION

Smoking

Tobacco consumption remains highly prevalent in Guam. The BRFSS defines current smokers as adults who have smoked at least 100 cigarettes in their entire life and who currently smoke, either everyday or some days. At present, about 1 in 3 adults smoke in Guam. The prevalence in Guam is higher than the median smoking prevalence of all US States and Territories; this has remained unchanged since 2001 (Figure 3).

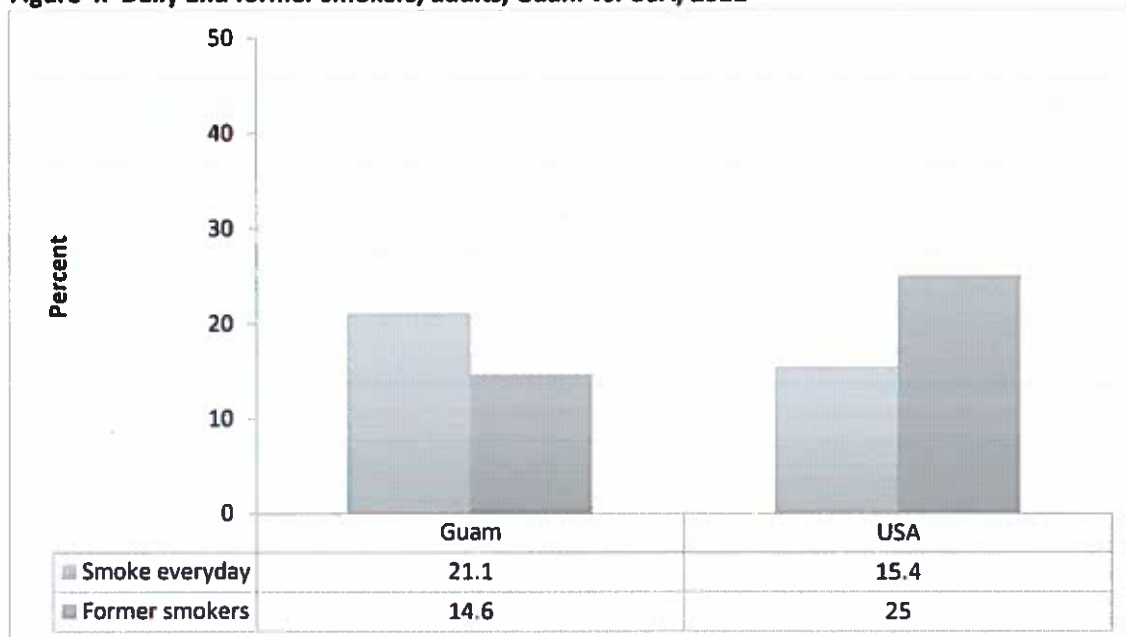
Figure 3. Current smokers, adults, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

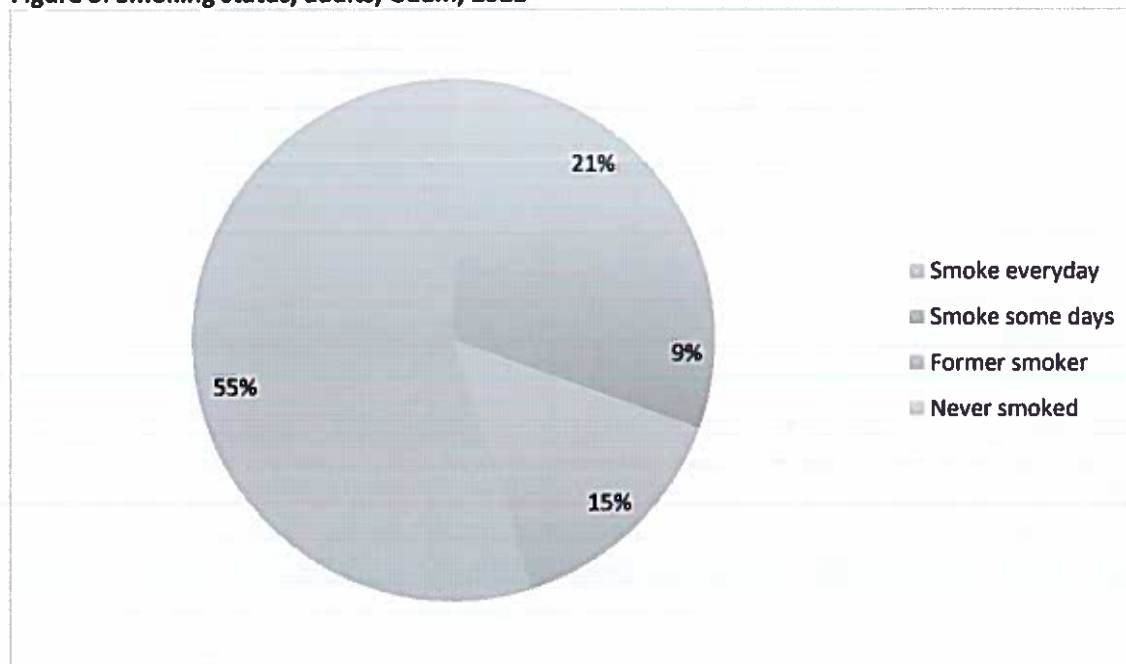
Daily smoking is an indicator for nicotine addiction. In Guam, daily smoking remains higher as compared to the median prevalence of all US States and Territories. In contrast, successful quitting is higher in the US. Currently, 1 in 5 adults (21.1%) in Guam is a daily smoker (Figure 4). Nine percent of adults in Guam smoke some days, 15% are former smokers and 55% have never smoked. Altogether, about 70% of the island's population are non-smokers (Figure 5).

Figure 4. Daily and former smokers, adults, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

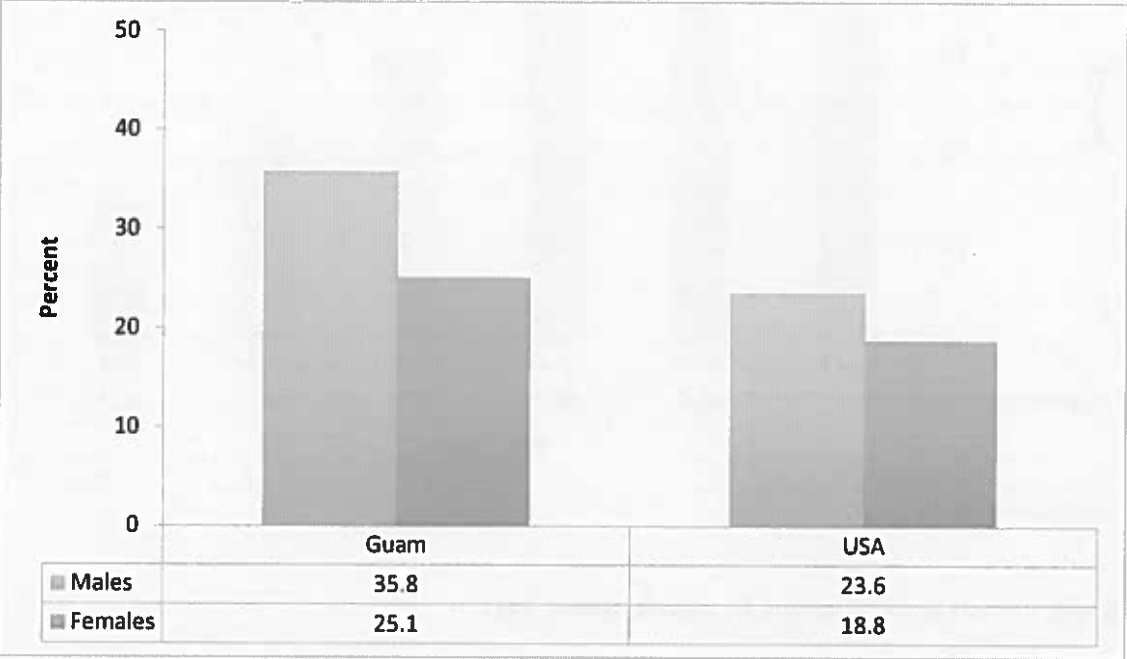
Figure 5. Smoking status, adults, Guam, 2011



Source: Guam BRFSS, 2011

The difference across the sexes in current smoking is more marked in Guam (Figure 6). Slightly more than 1 in 3 (35.8%) adult men and nearly 1 in 4 (23.6%) adult women smoke. Women in Guam smoke as much as men in the US (Figure 6).

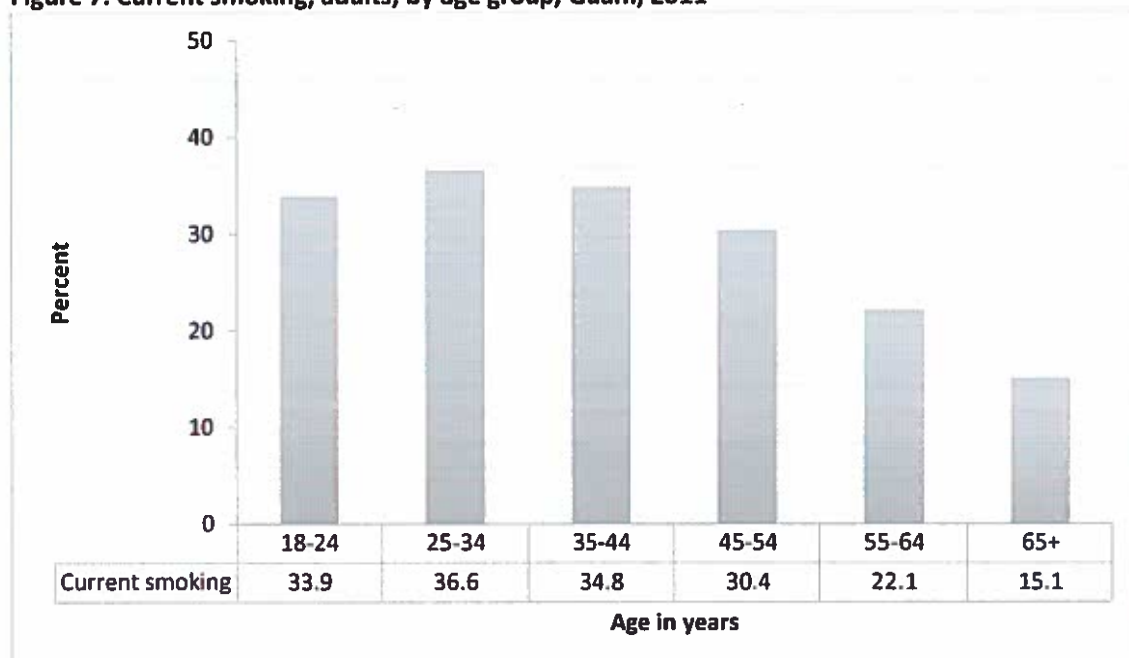
Figure 6. Current smoking, adults, by sex, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

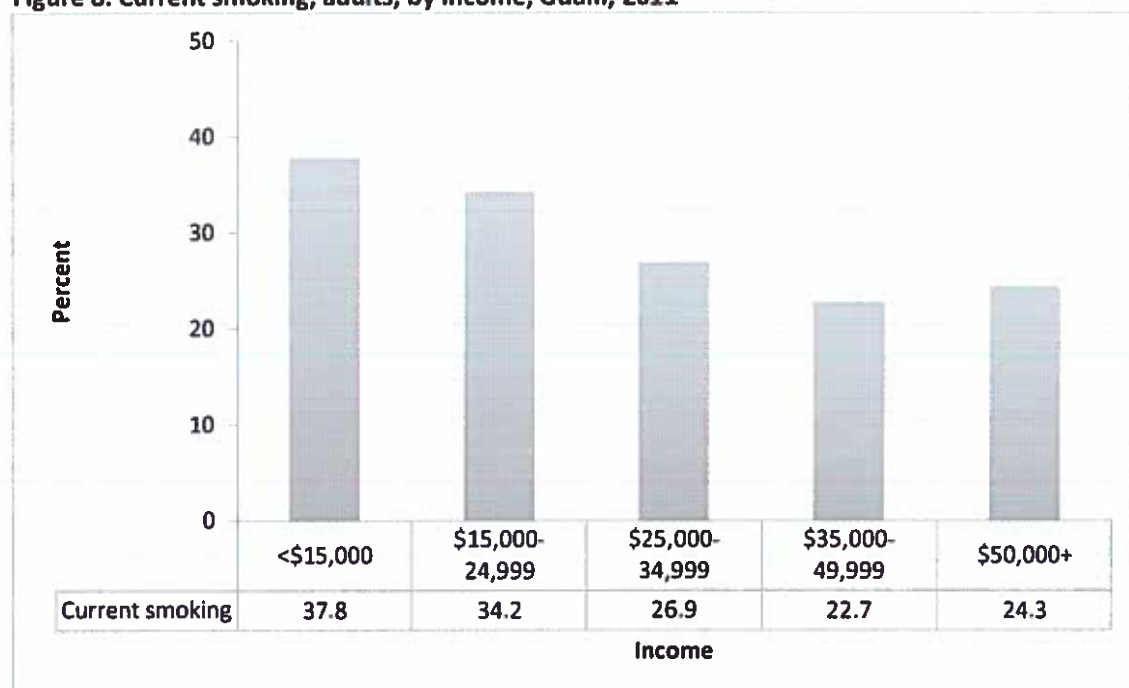
Smoking is highest among younger adults (<45 years), and is reported less frequently by those aged 45 years and older. (Figure7). Smoking is inversely related to income (Figure 8) and educational attainment (Figure 9), with current smoking reported more frequently by those with lower incomes and less years of education. This is consistent with global findings that link smoking with socio-economic status and educational attainment as social determinants of health.

Figure 7. Current smoking, adults, by age group, Guam, 2011



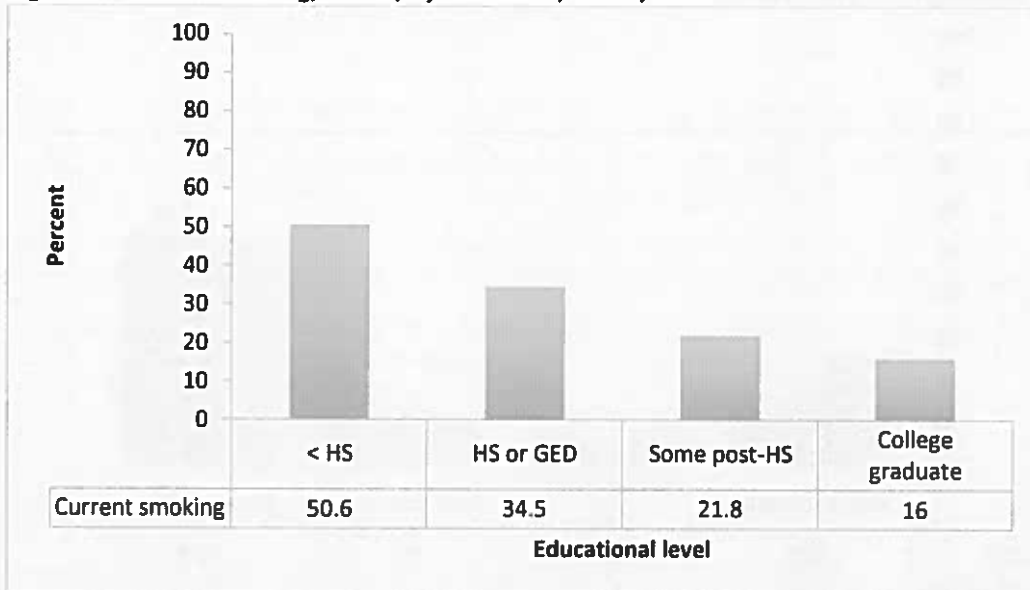
Source: Guam BRFSS, 2011

Figure 8. Current smoking, adults, by income, Guam, 2011



Source: Guam BRFSS, 2011

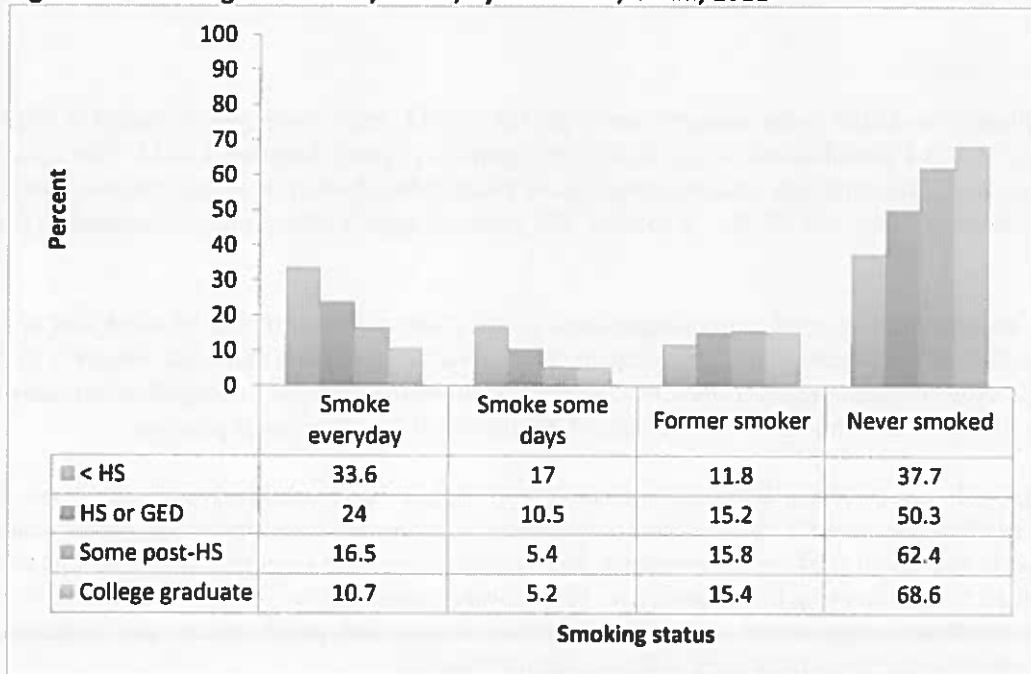
Figure 9. Current smoking, adults, by education, Guam, 2011



Source: Guam BRFSS, 2011

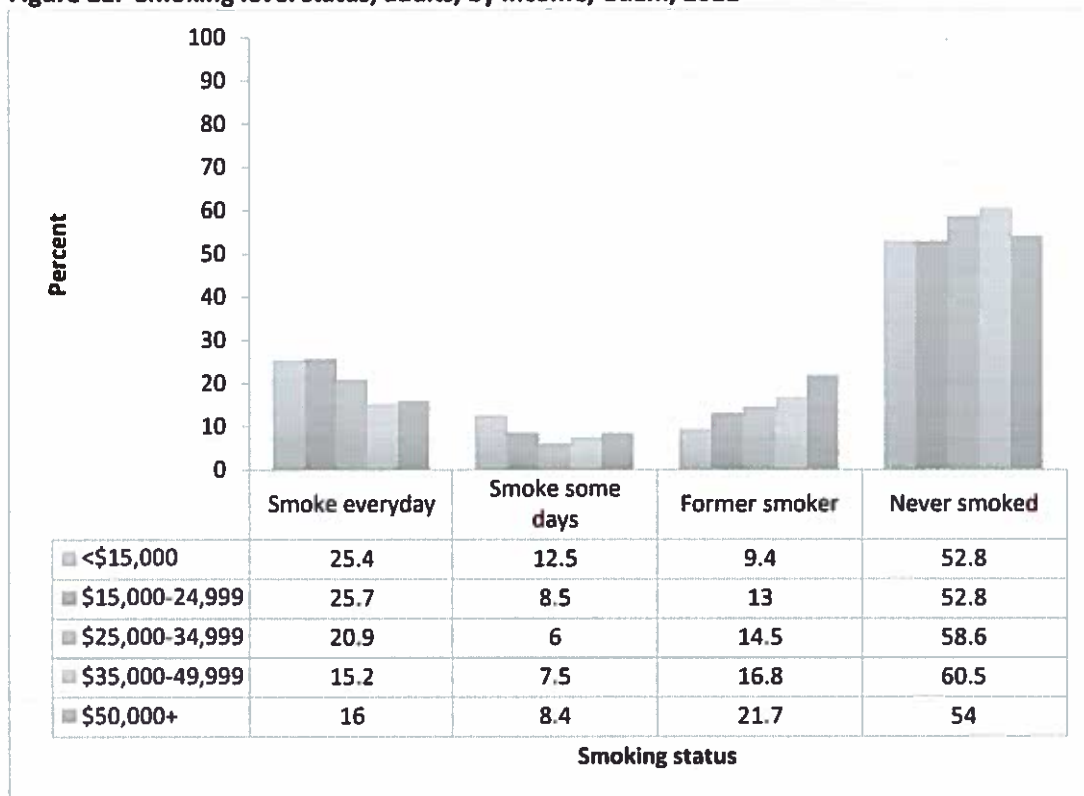
The disparities in smoking and socio-economic status are reflected in the data on four level smoking status. Those with less education (Figure 10) and lower incomes (Figure 11) are more likely to be daily smokers. In contrast, the most educated and highest income group is more likely to have quit successfully (former smokers) or to have never smoked at all.

Figure 10. Smoking level status, adults, by education, Guam, 2011



Source: Guam BRFSS, 2011

Figure 11. Smoking level status, adults, by income, Guam, 2011



Source: Guam BRFSS, 2011

YOUTH CONSUMPTION

Guam conducted the Global Youth Tobacco Survey (GYTS) in 2011, and results were released in 2012. The Guam GYTS was a school-based survey of students aged 13-15 years in grades 9 to 12. The school response rate was 100%, the class response rate was 96.7%, and the student response rate was 74.3%. Overall, the response rate was 71.8%. A total of 407 students aged 13-15 years participated in the Guam GYTS.

The results are presented as totals and disaggregated by sex (Table 5.) Over half of all youth had ever smoked a cigarette and about 1 in 4 currently smokes. Boys smoke more than girls. About 1 in 4 currently use other tobacco products; the sex difference in other tobacco use is reduced as compared to smoking. Of the youth who reported smoking, 73.8% started at age 13 years or younger.

Youth were highly aware of the harm from smoking and second hand smoke. Despite this level of awareness, smoking continued for one quarter of the students surveyed, implying that education alone is not sufficient to prevent tobacco consumption. The majority of current smokers wanted to quit and have attempted to stop smoking in the past year. This indicates a demand for youth-oriented cessation programs. Significant exposure to second hand smoke in enclosed public places was reported, signifying a need for stricter enforcement of Guam's smoke-free law.

Table 5. Results of the Guam Global Youth Tobacco Survey, 2011

INDICATOR	Total	Boys	Girls
Prevalence			
Ever smoked cigarettes	52.2%	56.5%	48.0%
Currently smoke cigarettes	25.3%	32.9%	17.7%
Currently use other tobacco products	23.5%	27%	19.7%
Chewed betel nut with tobacco	12.3%	17.5%*	7.1%*
Exposure to tobacco advertising and counter advertising			
Had object with a cigarette or tobacco brand on it	13.4%	18.4%	8.5%
Ever offered a free cigarette by a tobacco company representative	15.2%	18.5%	11.4%
Knowledge and attitudes			
Think boys who smoke have more friends	27.4%	27.7%*	27.1%
Think girls who smoke have more friends	15.2%	16.1%*	14.2%*
Think boys who smoke are more attractive	7.5%*	10.1%*	5.4%*
Think girls who smoke are more attractive	4.3%*	4.6%*	3.3%*
Are aware that smoking is harmful to health	89.3%	86.1%	92.4%
Are aware of the dangers of second hand smoke	71.4%	65.5%	77.4%
Second hand smoke			
Exposed to smoke in enclosed public places in the past week	64.4%	65.9%	63.2%
Favor banning smoking in public places	75.8%	74.1%	77.4%
Cessation			
Current cigarette smokers who desire to stop smoking	61.9%	66.7%*	55.5%*
Current cigarette smokers who tried to quit in the past year	77.2%	83.0%	72.7%*
Access/availability			
Usually buy their cigarettes in a store	1.3%*	2.1%*	0.3%*
Were not refused purchase because of their age when buying cigarettes in a store in the past 30 days	6.5%*	7.6%*	5.2%*
School			
Had been taught in class about the dangers of smoking in the past year	63.0%	62.0%	64.6%
Home			
Have one or more parents who smoke	55.8%	53.7%	57.3%

Source: DPHSS, GYTS 2011

Note: * = <50 respondents

TOBACCO

CONSEQUENCES

The Guam Department of Public Health and Social Services (DPHSS) released the 2011 Vital Statistics data recently. The top four causes of death---diseases of the heart, malignant neoplasms (cancer), cerebrovascular disease (stroke) and diabetes---are either directly caused or exacerbated by tobacco. An additional three---chronic lower respiratory disease, influenza and pneumonia, and septicemia---are worsened by tobacco use (Table 6). Altogether, tobacco is a risk factor for 68.8% of deaths in Guam.

Table 6. Top ten causes of death, Guam, 2011

Rank	Cause of Death	Number of deaths	Percent of all deaths
1	Diseases of the heart	253	30%
2	Malignant neoplasms (cancer)	156	18.5%
3	Cerebrovascular diseases and stroke	53	6.3%
4	Diabetes mellitus	48	5.7%
5	Accident	37	4.4%
	Motor vehicle accidents	17	2.0%
	Other accidents	20	2.4%
6	Septicemia	29	3.4%
7	Suicide	28	3.3%
8	Chronic lower respiratory disease	22	2.6%
9	Influenza and pneumonia	19	2.3%
10	Chronic liver diseases and cirrhosis	18	2.1%

Source: Death Certificates, Office of Vital Statistics, Guam Department of Public Health and Social Services; National Center for Health Statistics

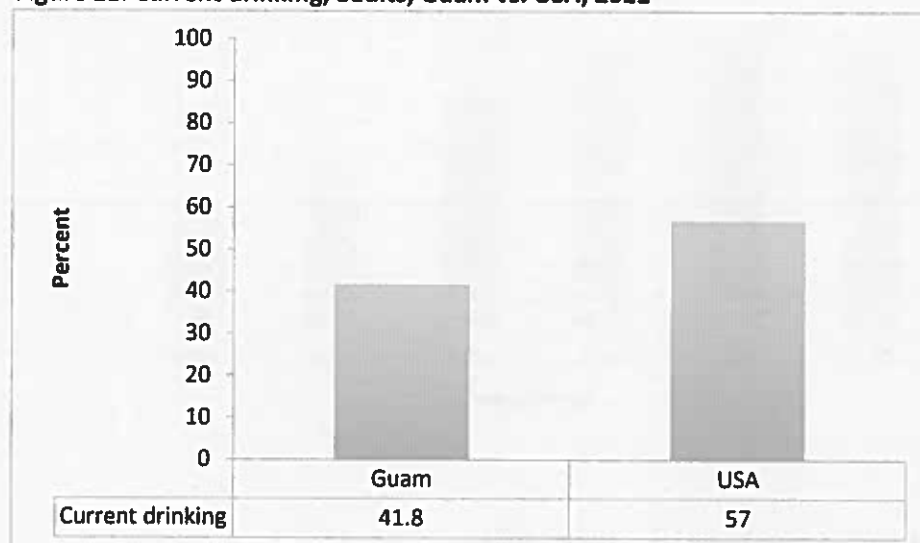
ALCOHOL

ADULT CONSUMPTION

Current Alcohol Use

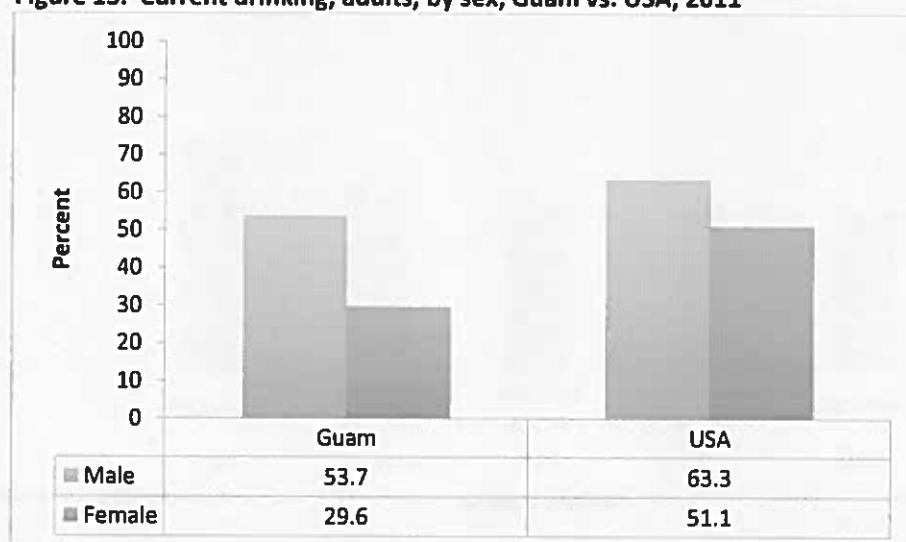
The BRFSS defines current alcohol use as having had at least 1 drink of alcohol in the past 30 days. In 2011, 41.8% of adults in Guam reported having had at least one drink of alcohol within the past 30 days. This is lower than the nationwide median of 57% (Figure 12). Overall, men drink more than women, but this sex difference is much more marked in Guam, where males were almost twice as likely to report recent consumption of alcohol as females (Figure 13).

Figure 12. Current drinking, adults, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

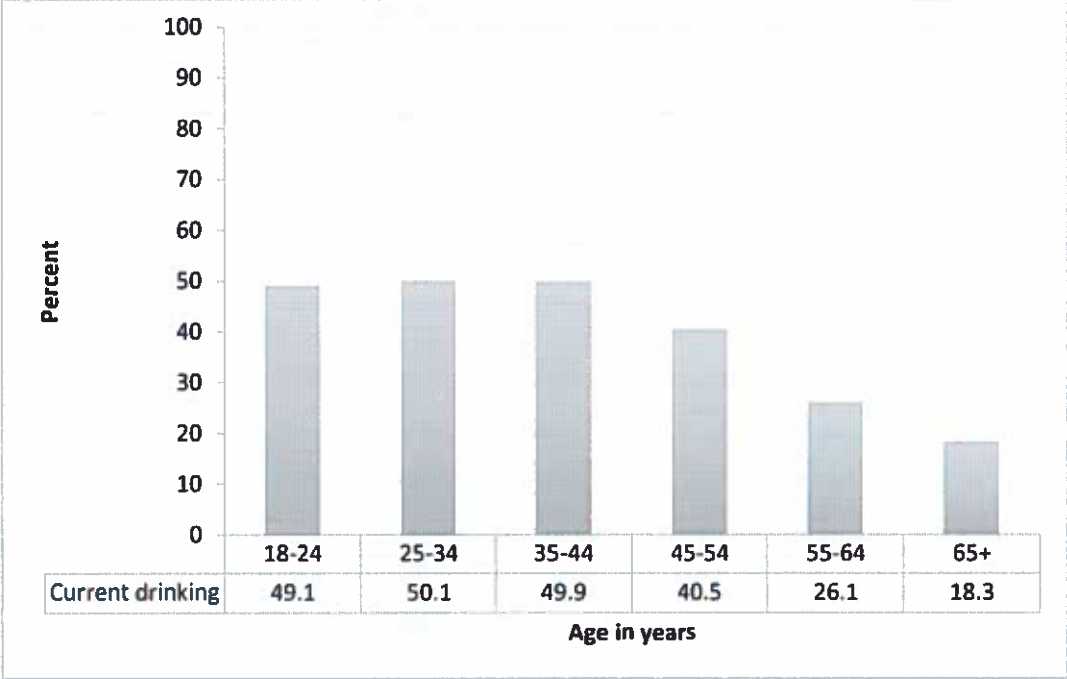
Figure 13. Current drinking, adults, by sex, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

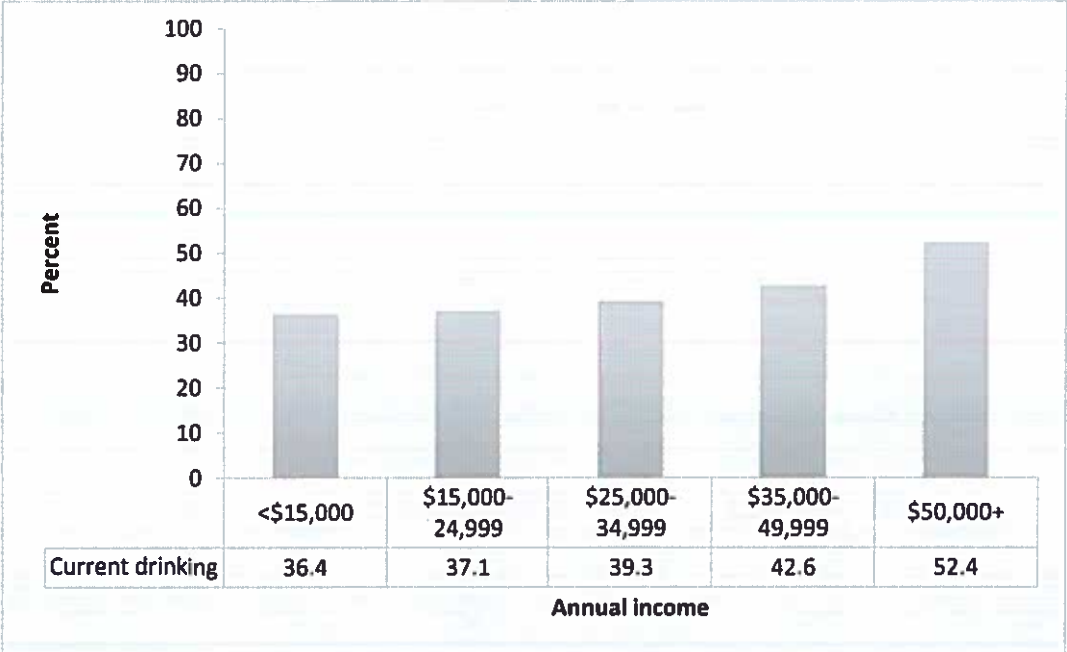
Current drinking is most prevalent among younger adults aged 18-44 years (Figure 14), and those with higher incomes (Figure 15).

Figure 14. Current drinking, adults, by age, Guam, 2011



Source: Guam BRFSS, 2011

Figure 15. Current drinking, adults, by income, Guam, 2011

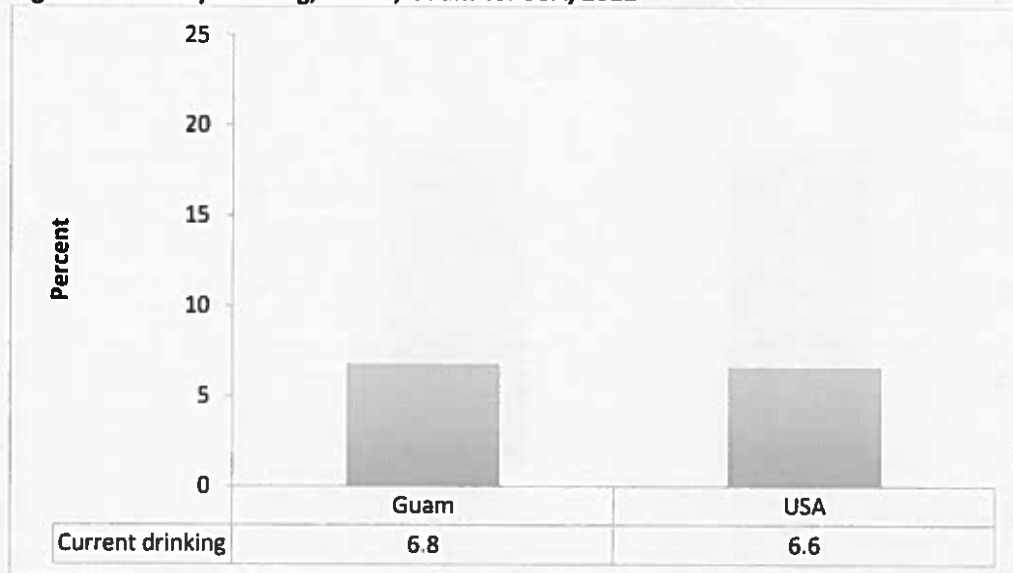


Source: Guam BRFSS, 2011

Heavy Alcohol Use

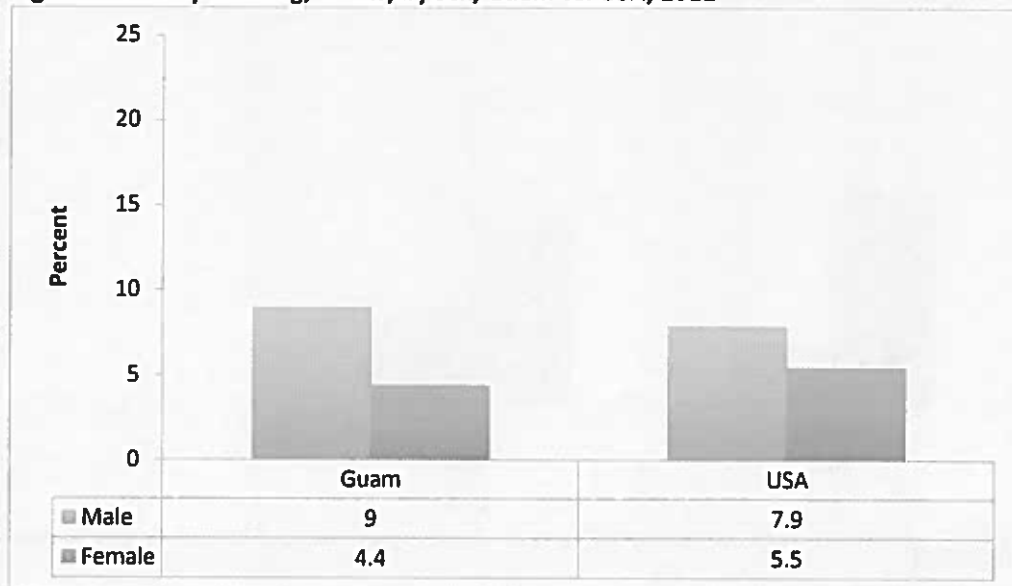
Heavy drinking is defined in the BRFSS as adult men having more than two drinks per day and adult women having more than one drink per day. The prevalence of heavy drinking in Guam is similar to the US average (Figure 16). Males were more likely to report heavy drinking than females (Figure 17). Because of the small numbers of respondents reporting heavy drinking, it is difficult to ascertain relationships between heavy drinking and age, education and income.

Figure 16. Heavy drinking, adults, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

Figure 17. Heavy drinking, adults, by sex, Guam vs. USA, 2011

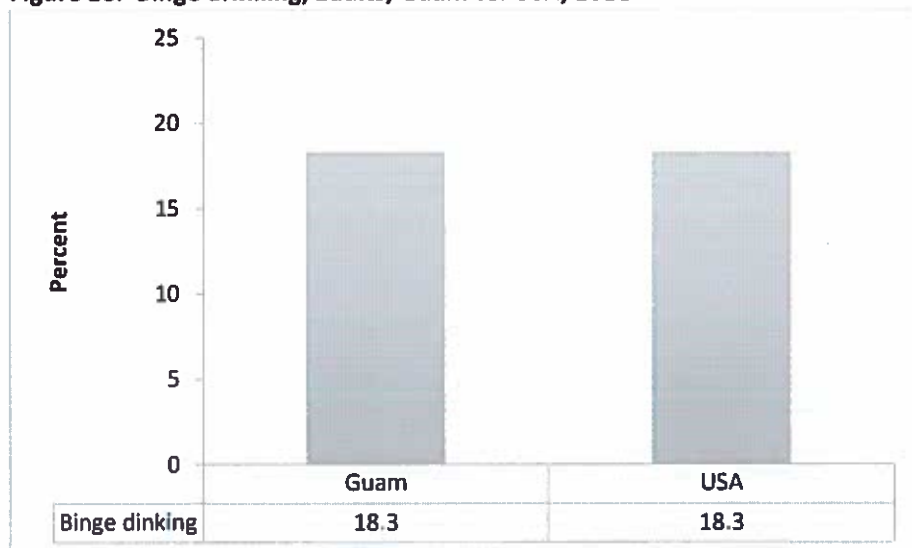


Source: Guam BRFSS, 2011

Binge Drinking

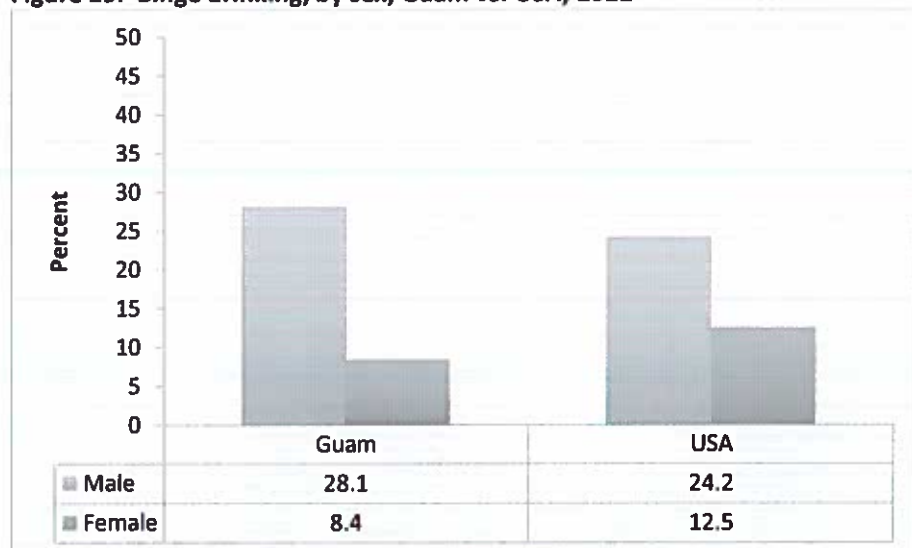
Binge drinking, defined as having five or more drinks on one occasion for males, and four or more drinks on one occasion for females, was reported by 18.3% of adults in Guam in 2011 (Figure 18). Males in Guam had a similar rate of binge drinking as their US counterparts, and had a rate of binge drinking that was about 3 times higher than women in Guam (Figure 19). Females in Guam had a rate of binge drinking that was lower than that of females in the US.

Figure 18. Binge drinking, adults, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

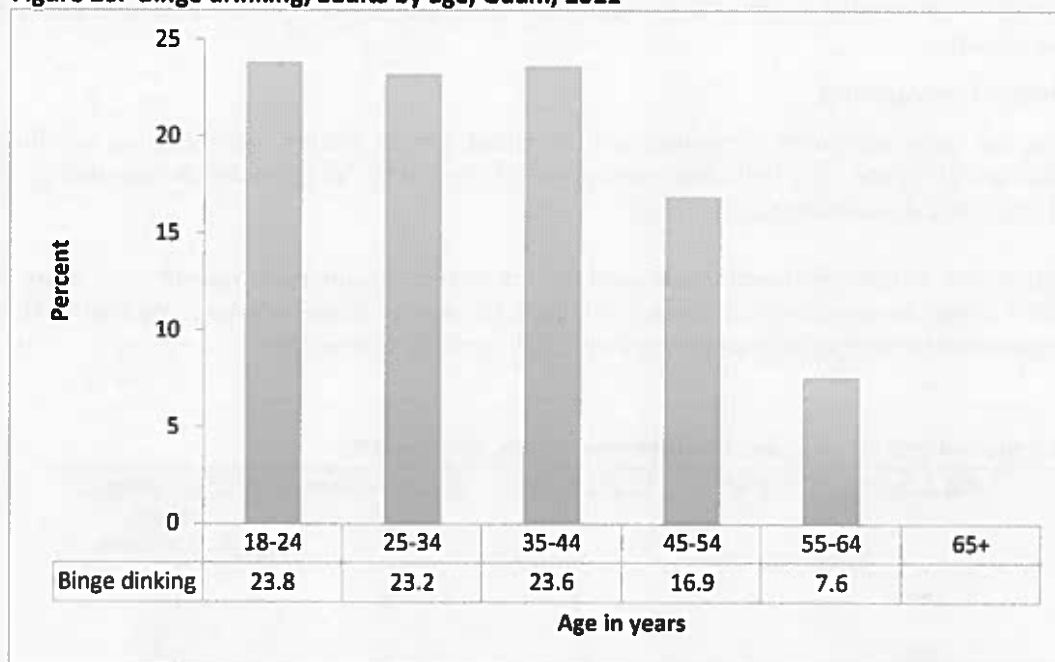
Figure 19. Binge drinking, by sex, Guam vs. USA, 2011



Source: Guam BRFSS, 2011

Binge drinking was highest among younger adults (<45 years), and dropped rapidly after 55 years (Figure 20). The relationship between binge drinking and income, and binge drinking and education are less clear-cut.

Figure 20. Binge drinking, adults by age, Guam, 2011



Source: Guam BRFSS, 2011

YOUTH CONSUMPTION

No new data were available on youth alcohol consumption for this profile. The next set of youth data from the Youth Risk Behavior Survey (YRBS) will be available in 2014.

ALCOHOL

CONSEQUENCES

Health Consequences

Alcohol directly contributes to liver cirrhosis, the 10th leading cause of death in Guam (Table 6). In addition, alcohol is implicated in some types of cancer, stroke, suicide, motor vehicle accidents and can exacerbate diabetes.

Socioeconomic Consequences

Alcohol use has been implicated in criminal arrests, motor vehicle crashes, violent crime including family violence and suicide. The following statistics were provided by the Guam Police Department as reported in the 2011 Guam Statistical Yearbook.

Guam legislated an increase in the minimum legal age for alcohol consumption from 18 to 21 years in 2010. Table 7 shows the percentage of arrests of minors for alcohol-related offenses. Alcohol-related offenses accounted for 8.6% of all juvenile arrests in 2011, up from 5.3% in 2010.

Table 7. Alcohol-related arrests, juvenile offenders, Guam, 2000 to 2011

Year	Total Arrests	DUI (n)	Liquor Laws (n)	Drunkenness (n)	Alcohol-related arrests, % of arrests (n)
2000	437	5	0	0	1.1 (5)
2001	398	3	14	0	4.3 (17)
2002	188	2	7	2	5.8 (11)
2003	591	1	4	9	2.3 (14)
2004	369	4	1	12	4.6 (17)
2005	462	5	4	21	6.5 (30)
2006	738	8	45	0	7.2 (53)
2007	622	1	33	5	6.3 (39)
2008	644	8	39	3	7.7 (50)
2009	168	0	4	0	2.4 (4)
2010	320	3	14	0	5.3 (17)
2011	451	1	31	7	8.6% (39)

Source: Guam Police Department, as reported in 2011 Guam Statistical Yearbook

The number of violent and property crimes in Guam increased from 2010 to 2011 (Table 8). No data regarding the use of alcohol in the commission of these crimes is available.

Table 8. Change in violent and property crimes, Guam, 2000 to 2011

Year	Violent Crime	Property Crime	Total Number	Rate per 1,000 population
2000	---	---	5,451	35.2
2001	378	4,600	4,978	32.1
2002	405	3,533	3,938	25.4
2003	449	3,827	4,273	27.4
2004	432	4,672	5,104	32.6
2005	388	4,651	5,039	32.1
2006	410	4,177	4,587	29.0
2007	434	4,077	4,511	28.6
2008	534	2,782	3,316	20.9
2009R	475	2,670	3,145	19.8
2010	368	2,672	3,040	19.1
2011	562	4,140	4,702	29.4

Source: Guam Police Department, Uniform Crime Report, 2010; 2011 Guam Statistical Yearbook R = Revised

Note: Rates were calculated using the revised population estimates based on the 2010 Guam census.

Traffic accidents and "driving under the influence" (DUI) arrests decreased from 2010 to 2011; however, the number of traffic-related fatalities increased. Alcohol was a factor in 27.3% of traffic fatalities in 2011 (Table 9).

Table 9. Change in traffic accidents, DUI arrests and alcohol-related traffic fatalities, Guam, 2001 to 2011

Year	Traffic accidents	Fatalities		DUI Arrests
		Total	Alcohol-related (%)	
2001	6,729	18	11 (61.1%)	900
2002	6,615	11	6 (54.5%)	972
2003	6,762	23	7 (30.4%)	694
2004	6,561	14	6 (42.8%)	538
2005	6,587	17	8 (47%)	817
2006	6,250	13	5 (38.5%)	836
2007	9,162	25	9 (36%)	731
2008	6,964	8	4 (50%)	629
2009R	6,911	12	4 (33.3%)	927
2010	7,505	13	5 (38.5%)	316
2011	7,188	22	6 (27.3%)	294

Source: Guam Police Department, Uniform Crime Report, 2010 R = Revised

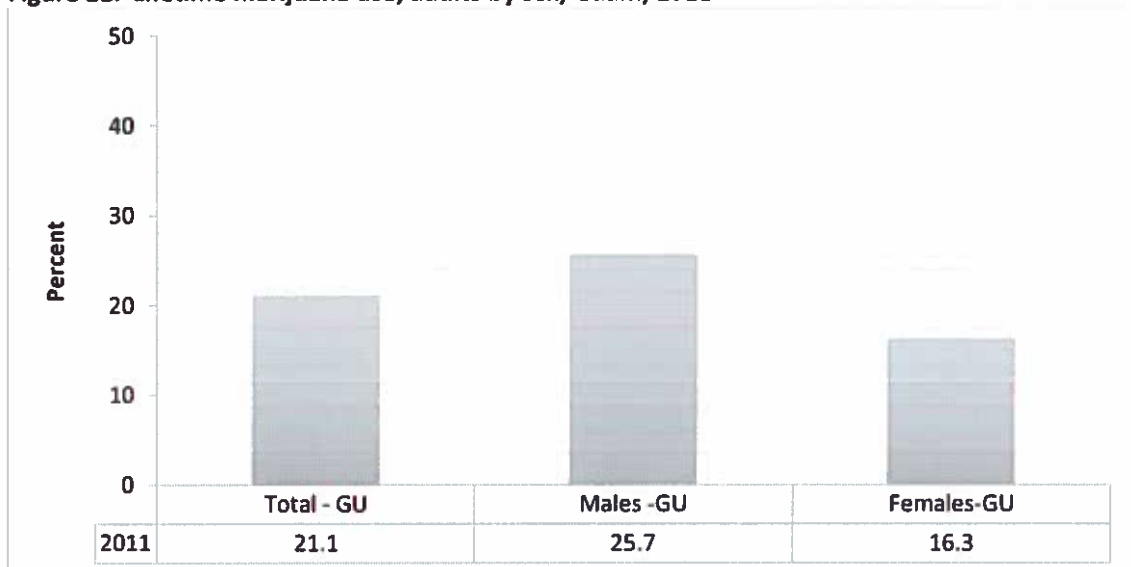
OTHER DRUG USE

Guam added State-specific questions to the BRFSS regarding other drug use, including marijuana, methamphetamines and other illicit drugs, in 2011. This represents the first time that population-level data on adult illicit drug use is available for the island.

MARIJUANA

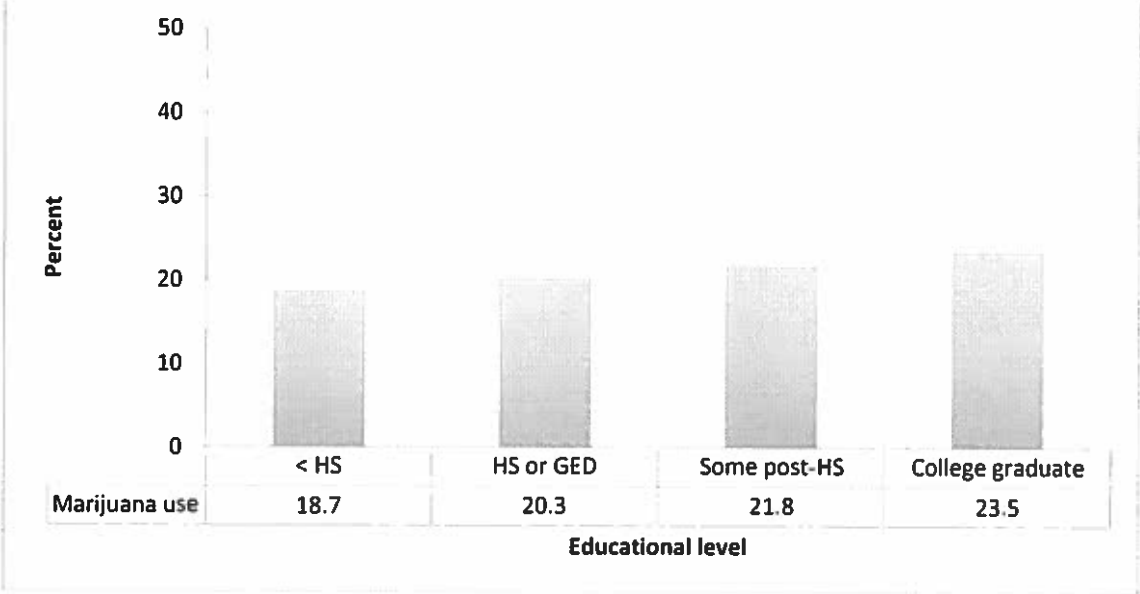
Seventeen percent (17%) of adults reported marijuana use in the past 30 days and about 1 in 5 (21.1%) of adults reported ever using marijuana. Males were more likely than females to report lifetime marijuana use (Figure 21). Higher educational attainment and higher income were more likely to be associated with lifetime marijuana consumption (Figures 22 and 23). Lifetime use did not change appreciably with age, until the 55-64 year old age group, where lifetime use declined slightly (Figure 24). Nearly 60% of lifetime users of marijuana started between the ages of 13 and 17 years (Figure 25).

Figure 21. Lifetime marijuana use, adults by sex, Guam, 2011



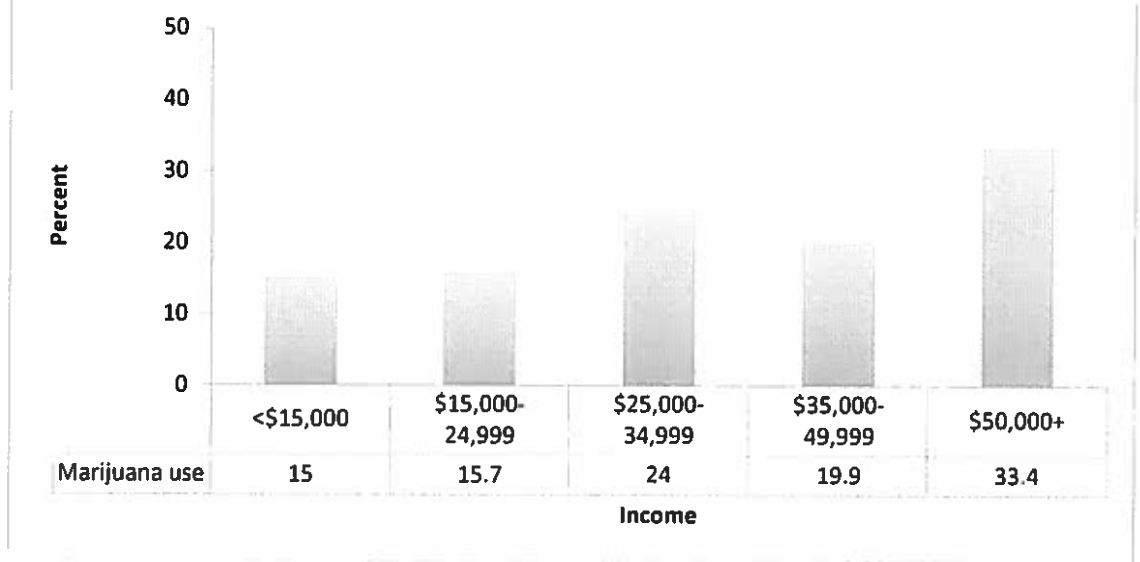
Source: Guam BRFSS, 2011

Figure 22. Lifetime marijuana use, adults by educational attainment, Guam, 2011



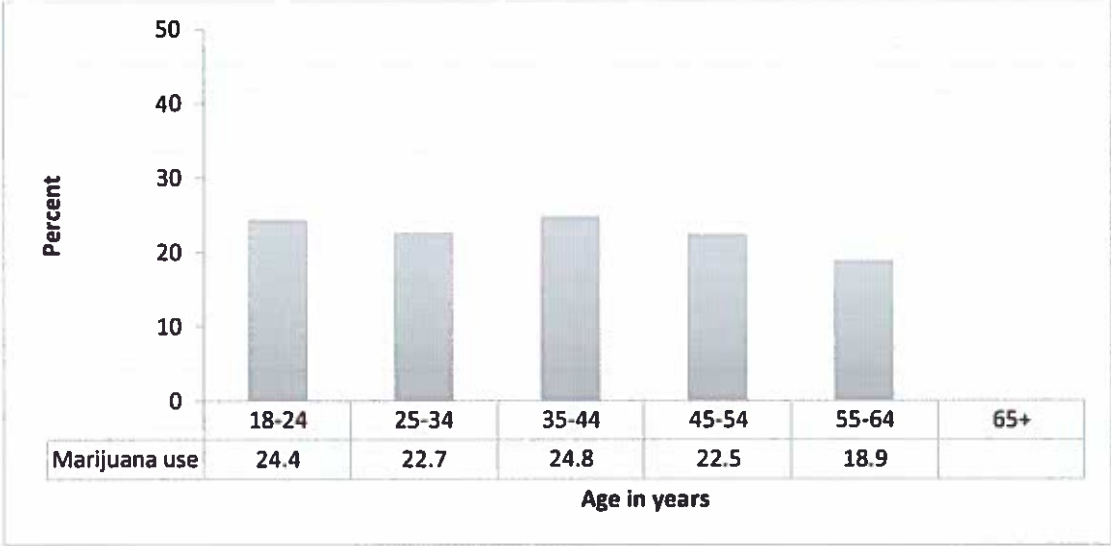
Source: Guam BRFSS, 2011

Figure 23. Lifetime marijuana use, adults by income, Guam, 2011



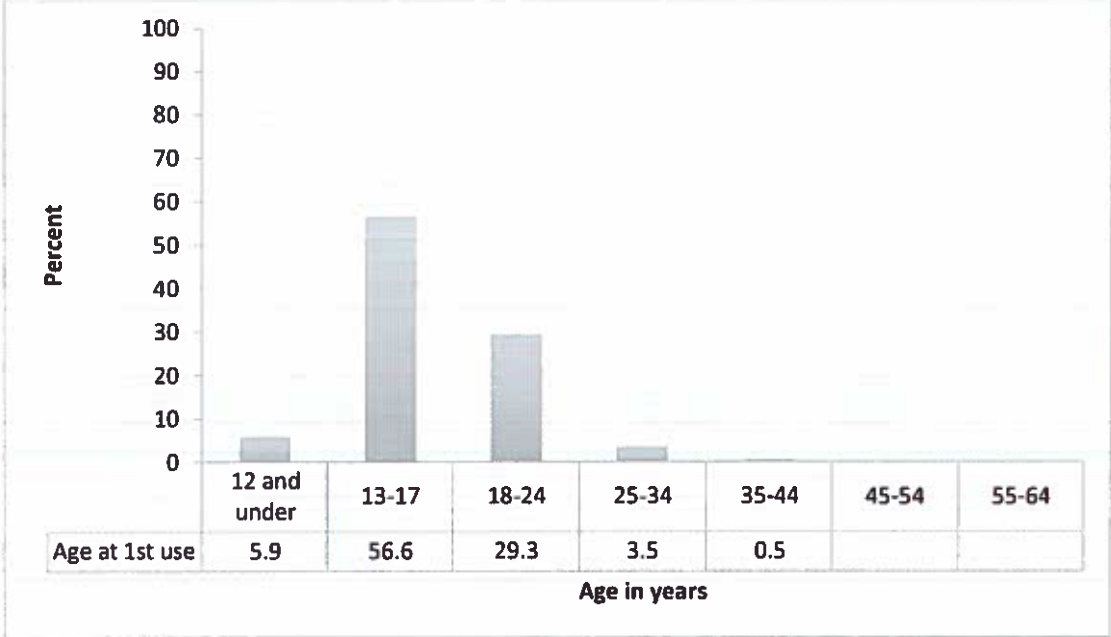
Source: Guam BRFSS, 2011

Figure 24. Lifetime marijuana use, adults by age, Guam, 2011



Source: Guam BRFSS, 2011

Figure 25. Lifetime marijuana use, adults, age at first use, Guam, 2011

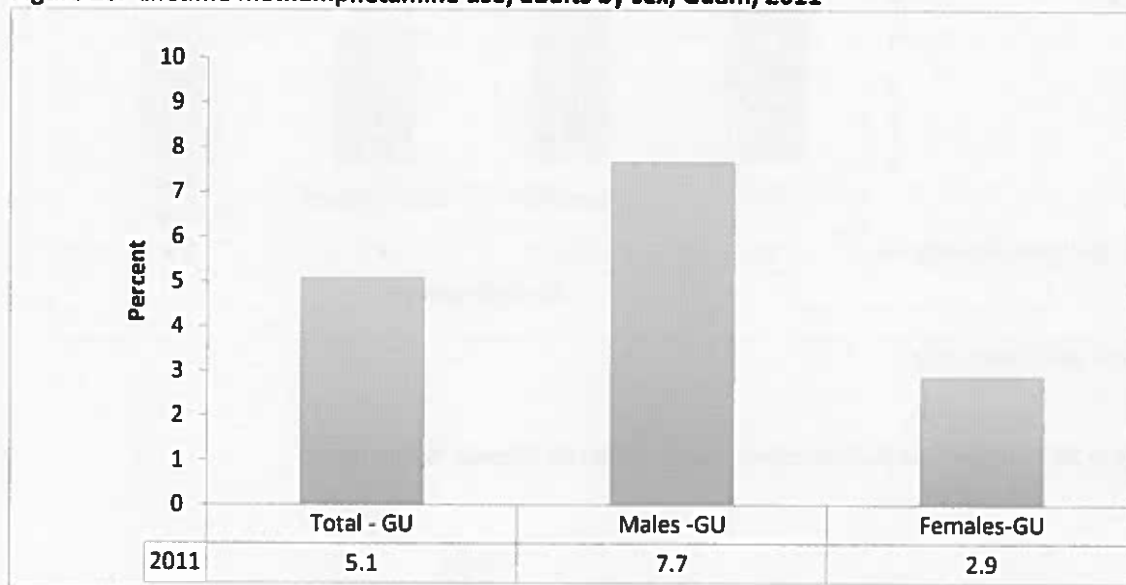


Source: Guam BRFSS, 2011

METHAMPHETAMINE

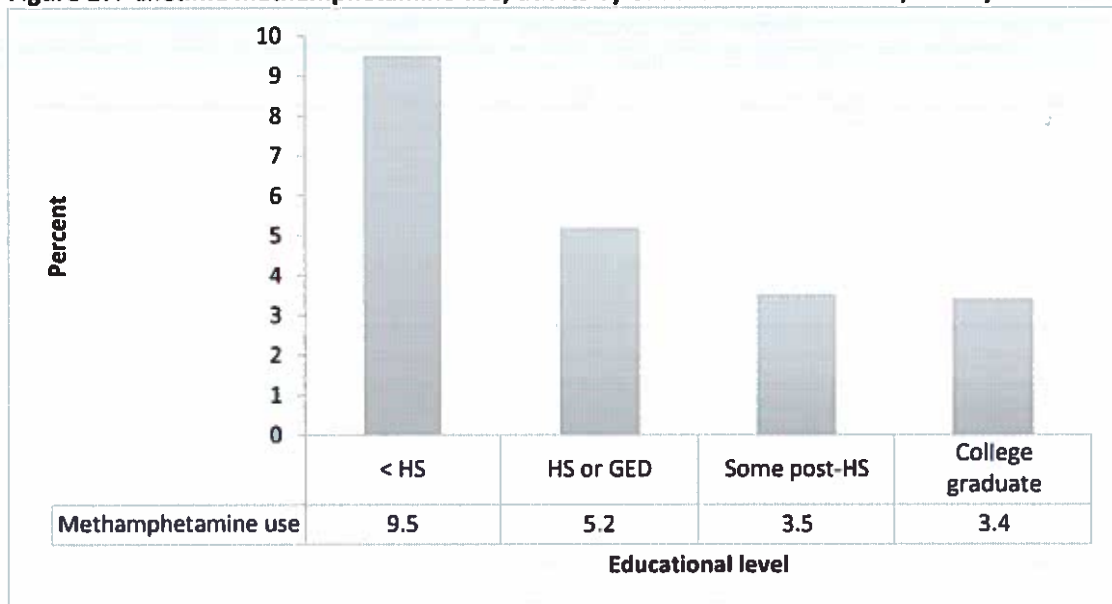
Five percent (5%) of adults reported ever using methamphetamines. Like marijuana, males were more likely than females to report lifetime methamphetamine use (Figure 26). In contrast to marijuana, lower educational attainment and lower income were more likely to be associated with lifetime methamphetamine consumption (Figures 27 and 28). Lifetime use was highest for those aged 25-34 years (Figure 29). Over 40% of lifetime users of methamphetamine started between the ages of 18 and 24 years (Figure 30).

Figure 26. Lifetime methamphetamine use, adults by sex, Guam, 2011



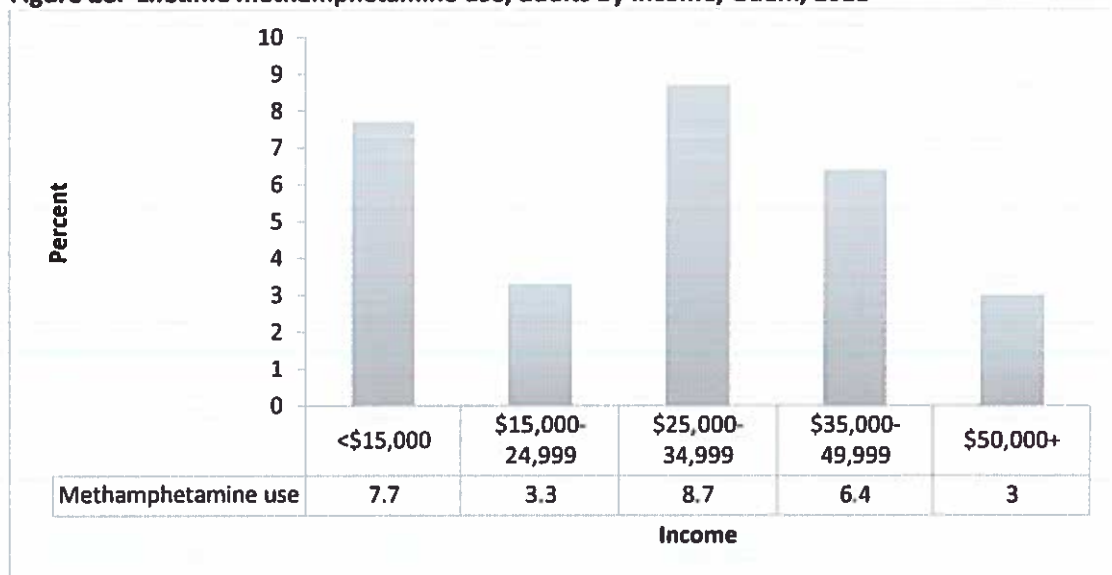
Source: Guam BRFSS, 2011

Figure 27. Lifetime methamphetamine use, adults by educational attainment, Guam, 2011



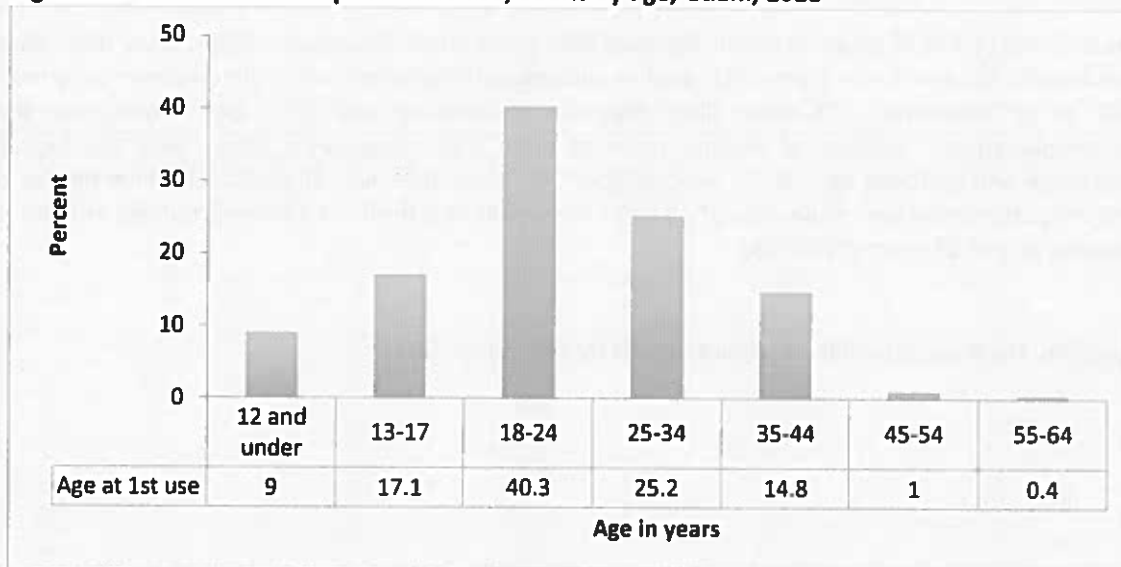
Source: Guam BRFSS, 2011

Figure 28. Lifetime methamphetamine use, adults by income, Guam, 2011



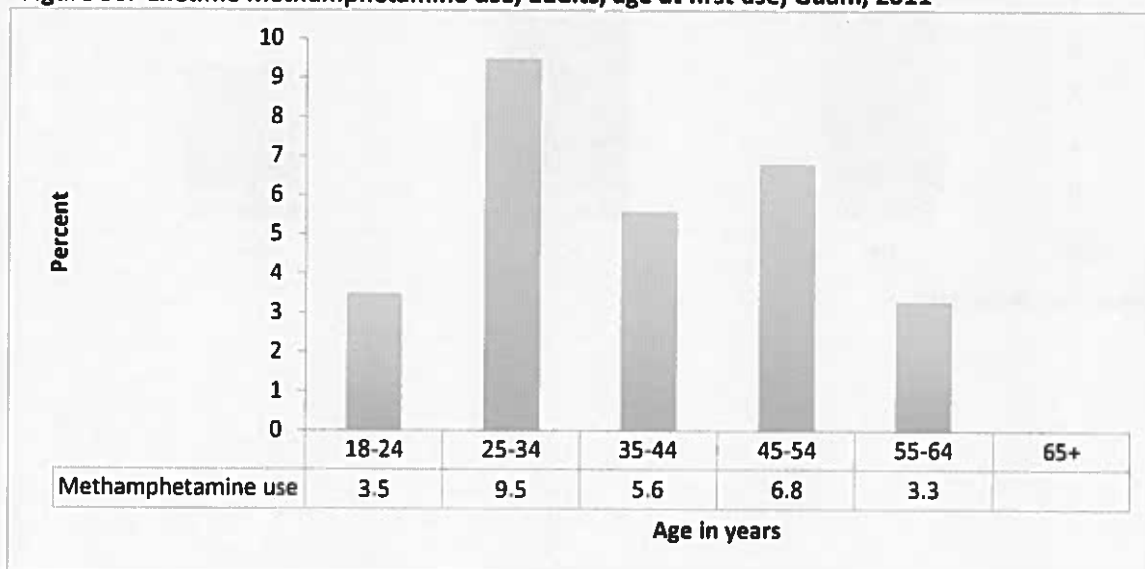
Source: Guam BRFSS, 2011

Figure 29. Lifetime methamphetamine use, adults by age, Guam, 2011



Source: Guam BRFSS, 2011

Figure 30. Lifetime methamphetamine use, adults, age at first use, Guam, 2011

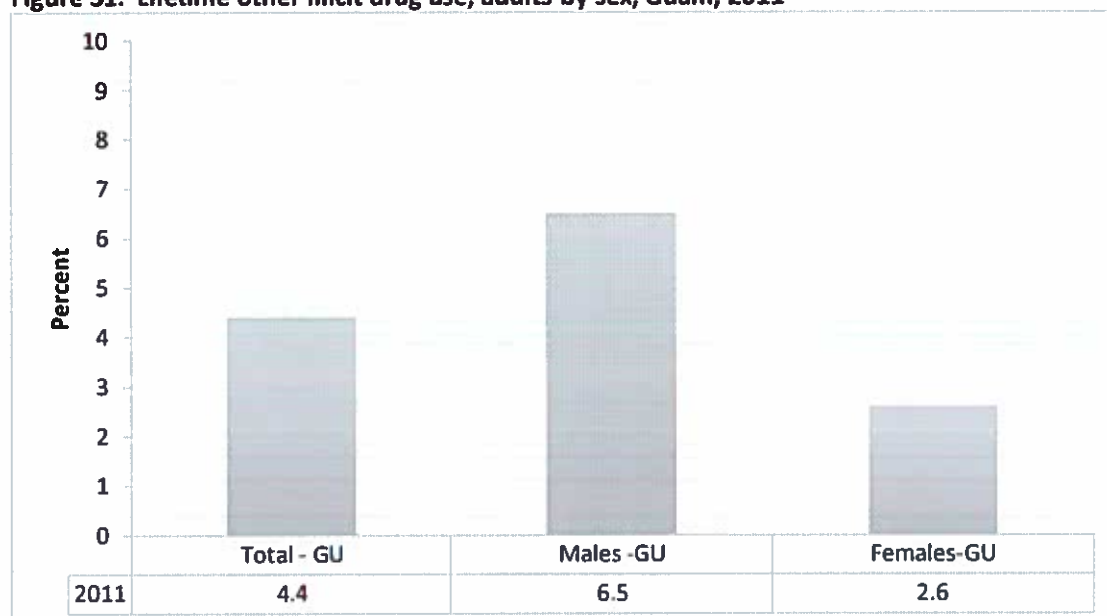


Source: Guam BRFSS, 2011

OTHER ILLICIT DRUG USE

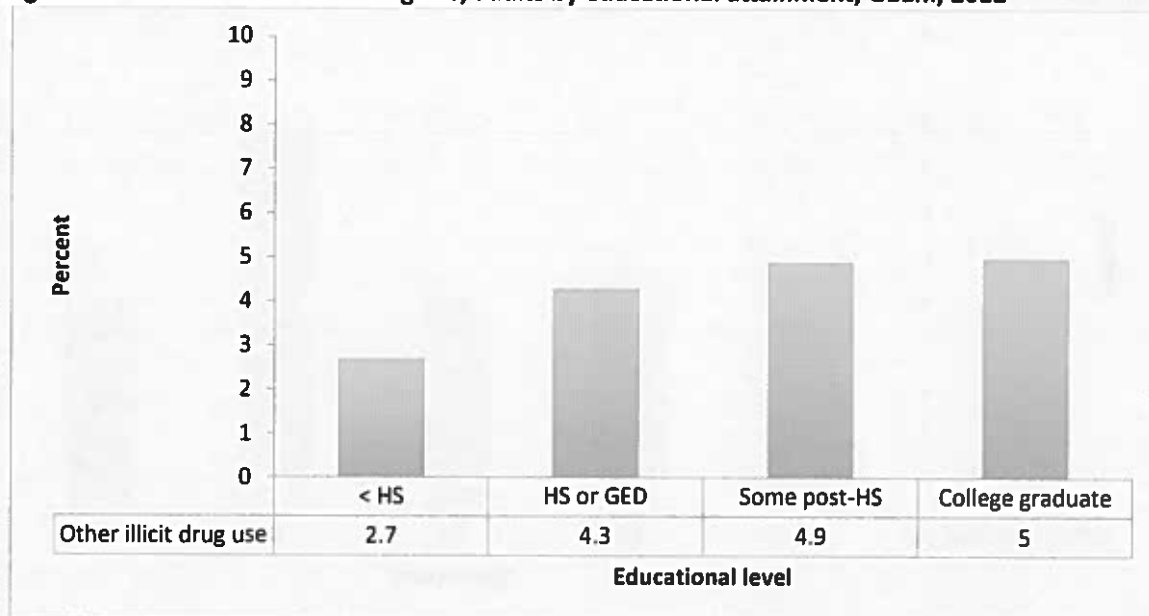
Less than 5% (4.4%) of adults in Guam reported ever using other illicit drugs. Males were more likely than females to report use (Figure 31). Higher educational attainment and higher income were more likely to be associated with other illicit drug use (Figures 32 and 33). Unlike marijuana and methamphetamine, majority of lifetime users of other illicit drugs were older, with the highest percentage among those ages 45-54 years (Figure 34). More than half of adults with lifetime use of illicit drugs started between the ages of 18 to 24 and about one-third (34.2%) reported age at first use between 13 and 17 years (Figure 35).

Figure 31. Lifetime other illicit drug use, adults by sex, Guam, 2011



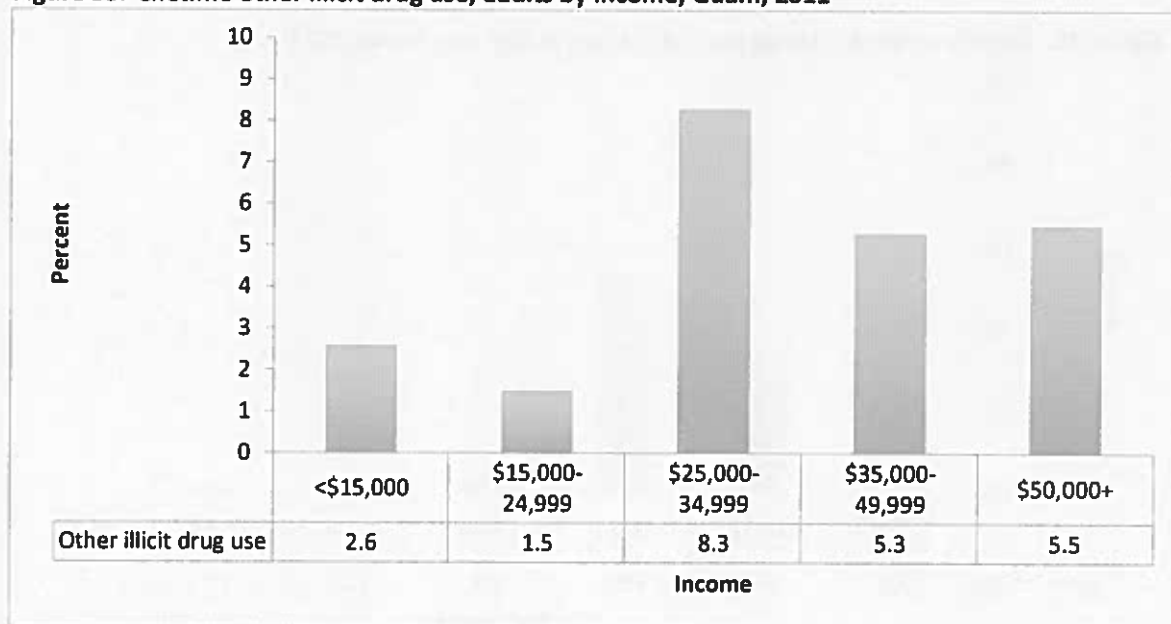
Source: Guam BRFSS, 2011

Figure 32. Lifetime other illicit drug use, adults by educational attainment, Guam, 2011



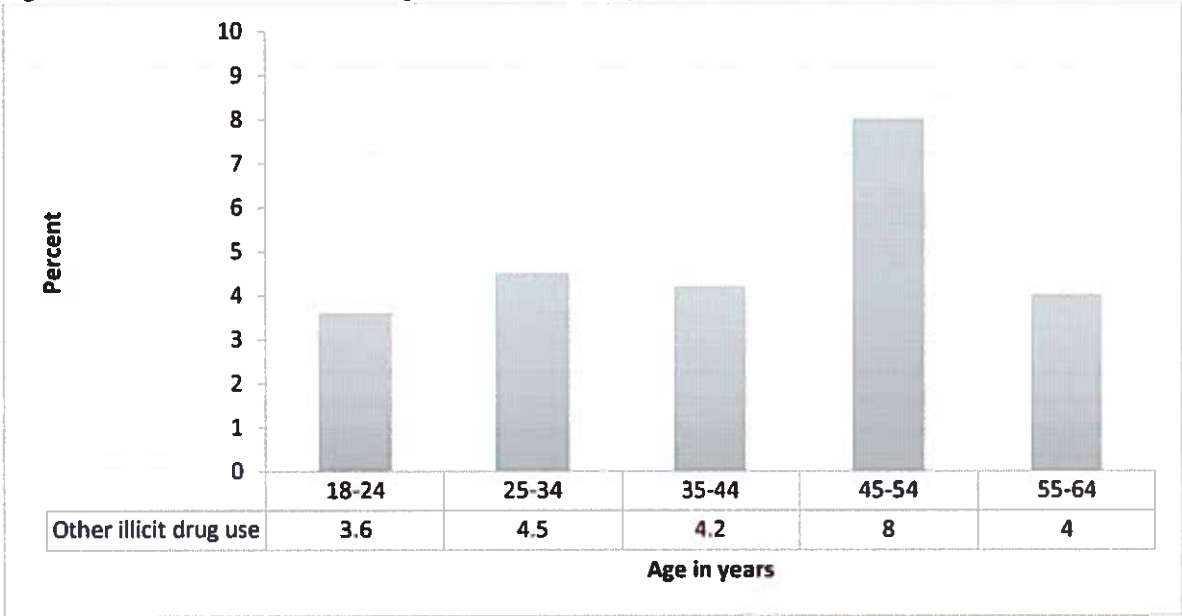
Source: Guam BRFSS, 2011

Figure 33. Lifetime other illicit drug use, adults by income, Guam, 2011



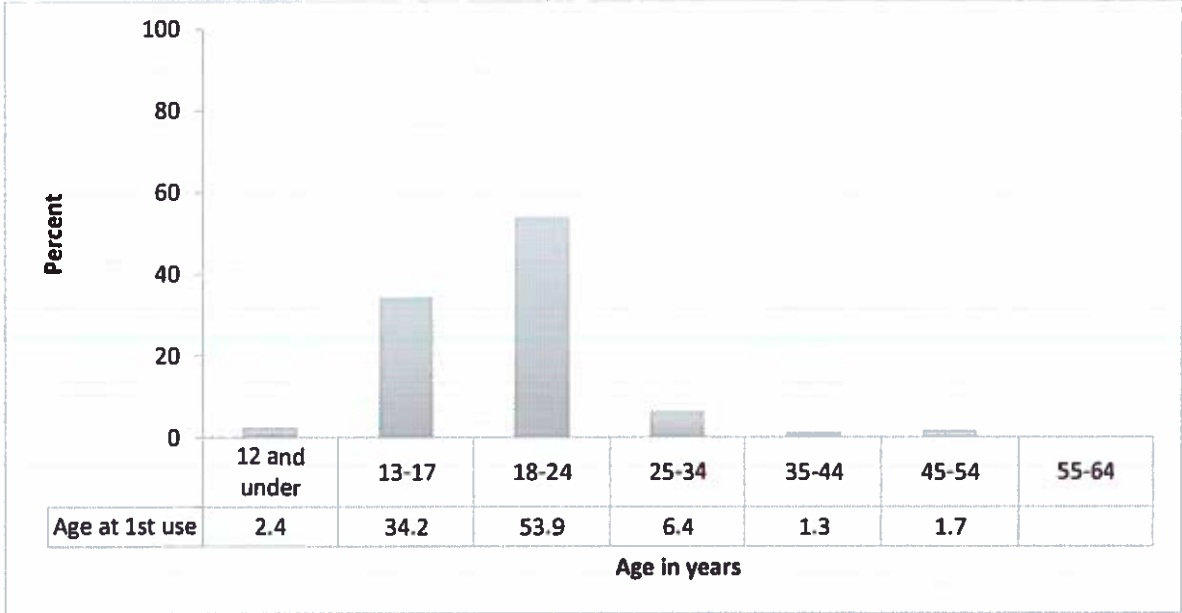
Source: Guam BRFSS, 2011

Figure 34. Lifetime other illicit drug use, adults by age, Guam, 2011



Source: Guam BRFSS, 2011

Figure 35. Lifetime other illicit drug use, adults, age at first use, Guam, 2011



Source: Guam BRFSS, 2011

MENTAL HEALTH

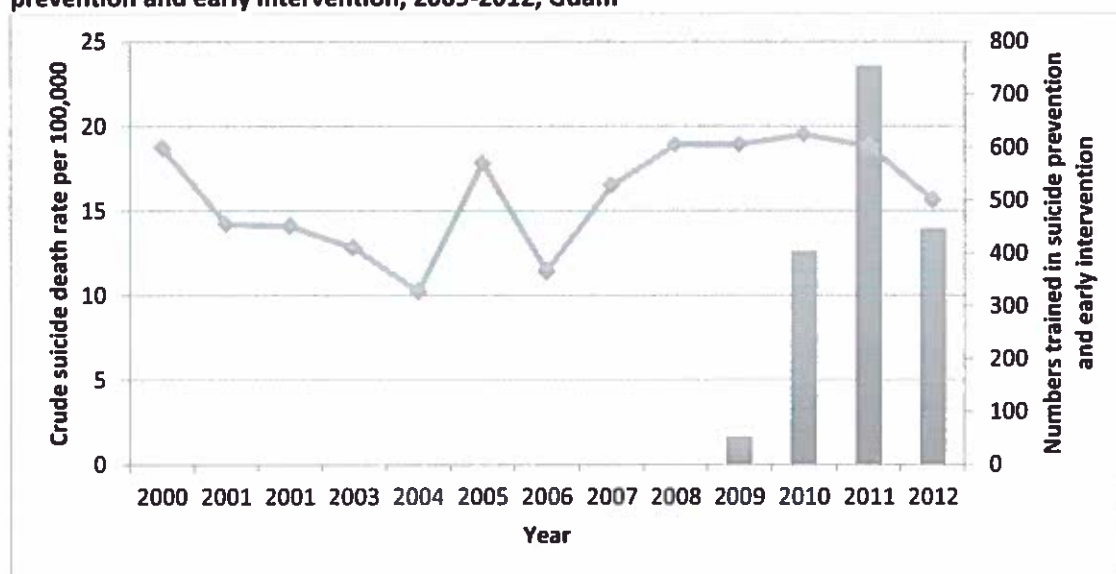
Figure 1. Number of mental health services received by patients, by age group, 2010-2012



SUICIDE MORTALITY

In 2012, there were 25 suicide deaths in Guam. Guam's suicide mortality remains higher than the US (US rate = 12 per 100,000). However, the crude suicide death rate decreased significantly for the first time in six years from 18.8 per 100,000 to 15.6 per 100,000 (Figure 36). Because the actual number of suicide deaths is very small, data collected over the next two to three years will be crucial to demonstrate if this reduction is sustained. The drop coincides with the increasing numbers of community stakeholders trained in suicide prevention and early intervention.

Figure 36. Annual trend in crude suicide death rates, 2000-2012 and numbers trained in suicide prevention and early intervention, 2009-2012, Guam



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

Suicide deaths in Guam occur predominantly among males, who outnumber suicide deaths among females, with an average ratio of 6:1. In the US, overall, males outnumber females in suicide deaths by a ratio of 4:1. The sex difference has been narrowing in recent years, and in 2012, the male:female ratio for suicide deaths was 2.1:1 (Figure 37).

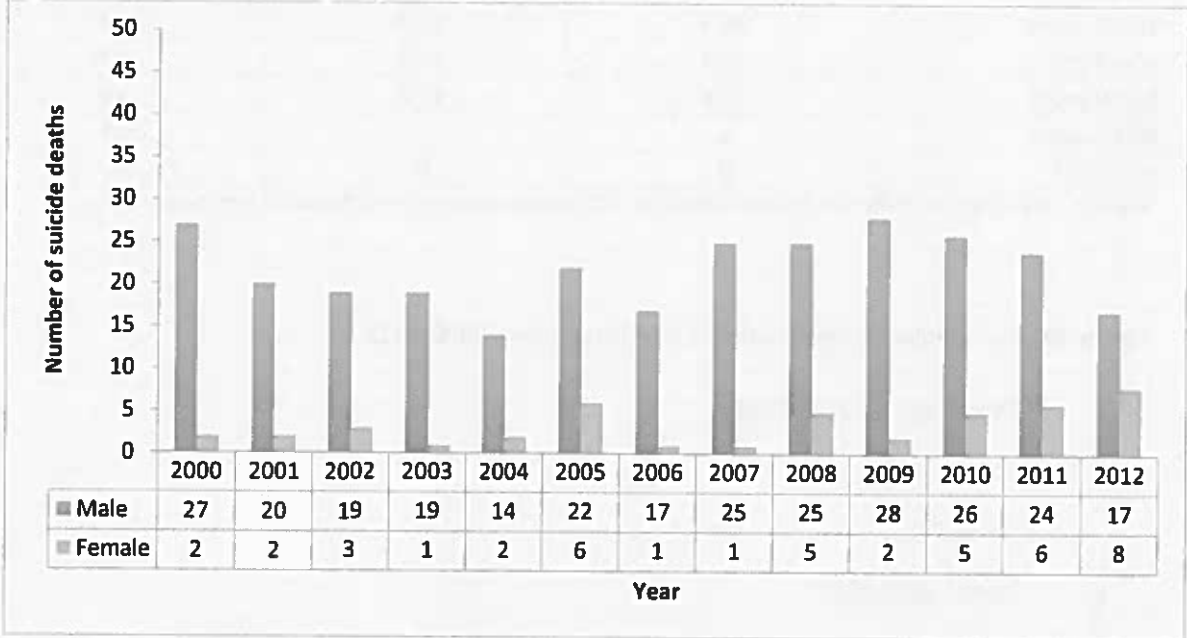
The epidemiologic pattern is changing in the US, with middle-aged adults (35-64 years) showing the fastest rise in suicide rates (CDC, 2013). In Guam, when suicide deaths are disaggregated by age, the great majority are seen to occur in young adults and youth, with the greatest number occurring among those aged 20-29 years old (Figure 38). Altogether, close to 60% of all suicide deaths in Guam from 2000-2012 occurred in those younger than 30 years. Thus, deaths by suicide in Guam occur predominantly among young people.

Table 10 lists age and sex-specific suicide death rates for the years 2010 to 2012. These confirm the observations noted above. Figure 39 depicts the absolute number of suicide deaths for each ethnic group. The greatest number of suicide deaths occur among Chamorros, followed by Chuukese.

However, when these are corrected for the relative contribution of each ethnic group to the total population (Figure 40), Whites and “Others” have the highest suicide death rates per 100,000, followed by Chuukese. The increase in suicides by Whites is a recent phenomenon.

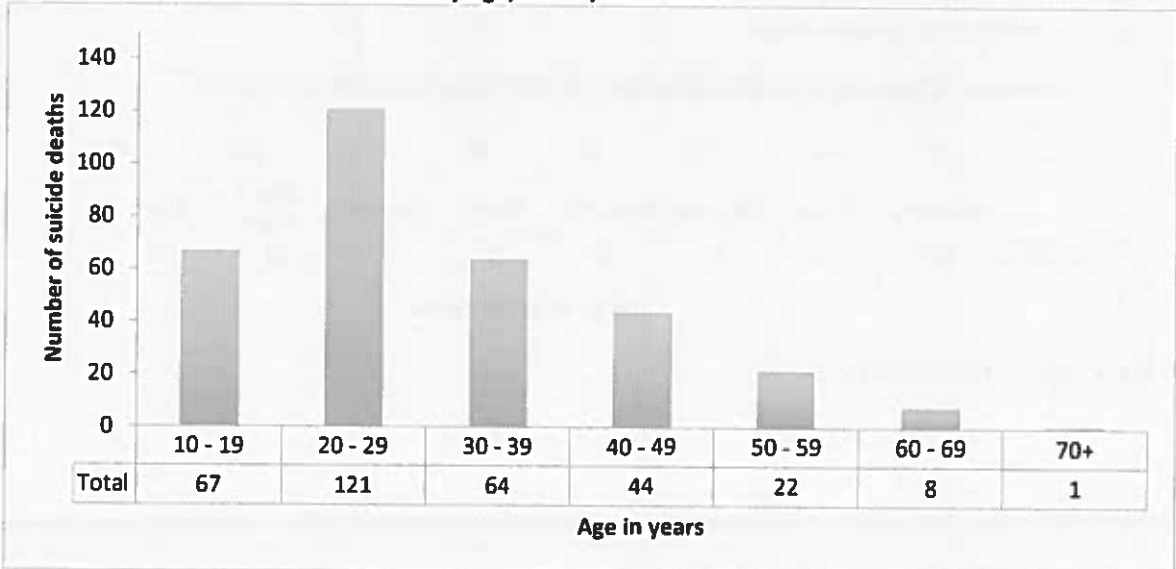
The Chief Medical Examiner reported that alcohol was involved in 24% of 2012 suicide deaths. One-fifth of the victims had a history of previous suicide attempts or mental illness.

Figure 37. Suicide deaths by sex, Guam, 2000-2012



Sources: Office of the Chief Medical Examiner and DPHSS Office of Vital Statistics

Figure 38. Cumulative suicide deaths by age, Guam, 2000-2012



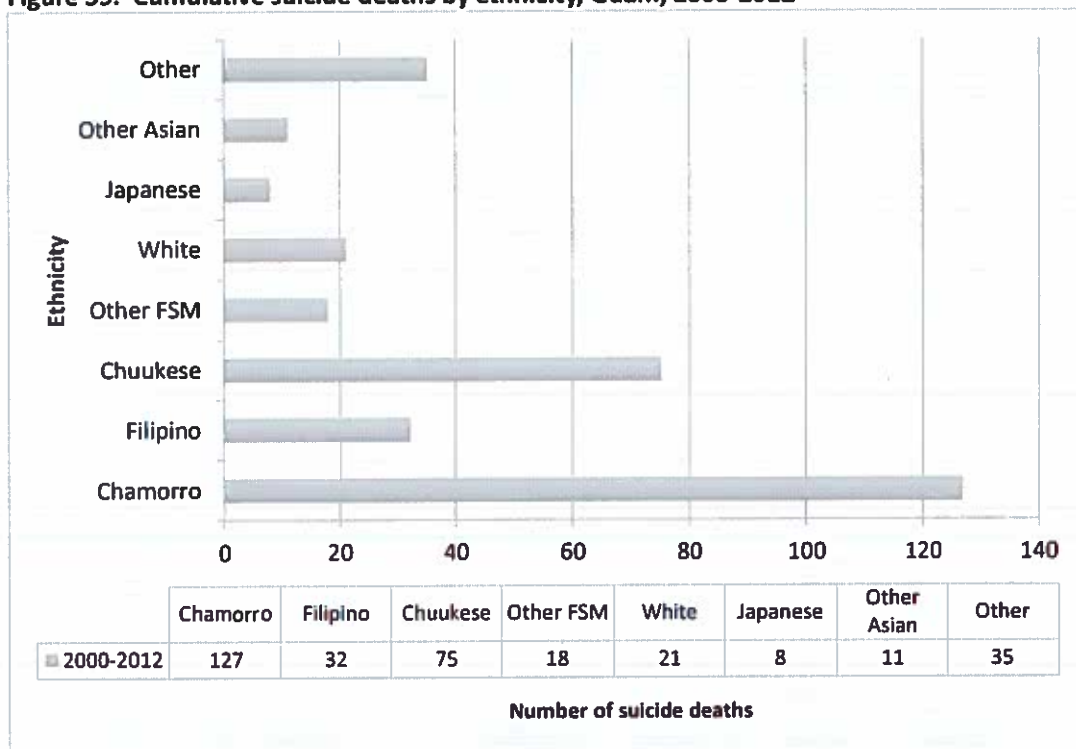
Sources: Office of the Chief Medical Examiner and DPHSS Office of Vital Statistics

Table 10. Age and sex-specific suicide death rates, Guam, 2010-2012

	2010	2011	2012
Sex	Rate per 100,000		
Male	31.9	29.4	20.8
Female	6.4	7.7	10.3
Age	Rate per 100,000		
0-19 years	17	34.0	10.2
20-29 years	51.9	34.6	47.6
30-39 years	36.8	13.8	13.8
40-49 years	17.6	17.6	22.0
50-59 years	11.8	29.6	11.8
60-69 years	0	0	9.8
70+ years	0	0	0

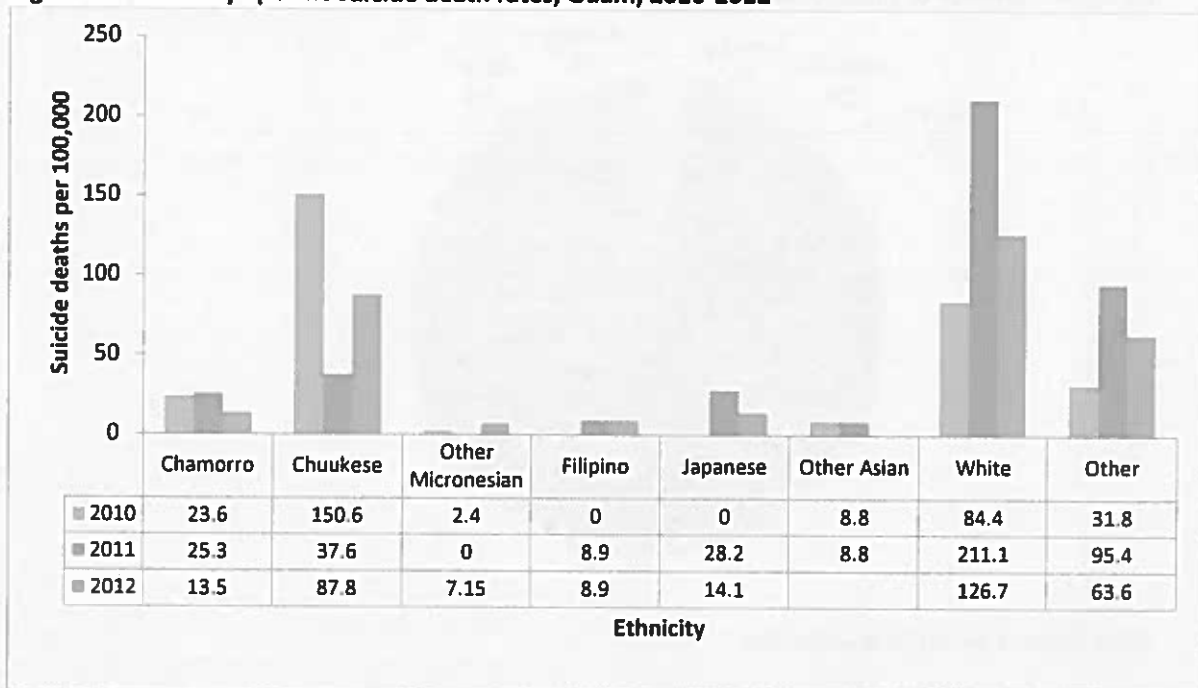
Sources: Office of the Chief Medical Examiner and Guam 2010 population projections, Bureau of Statistics and Plans

Figure 39. Cumulative suicide deaths by ethnicity, Guam, 2000-2012



Source: Office of the Chief Medical Examiner

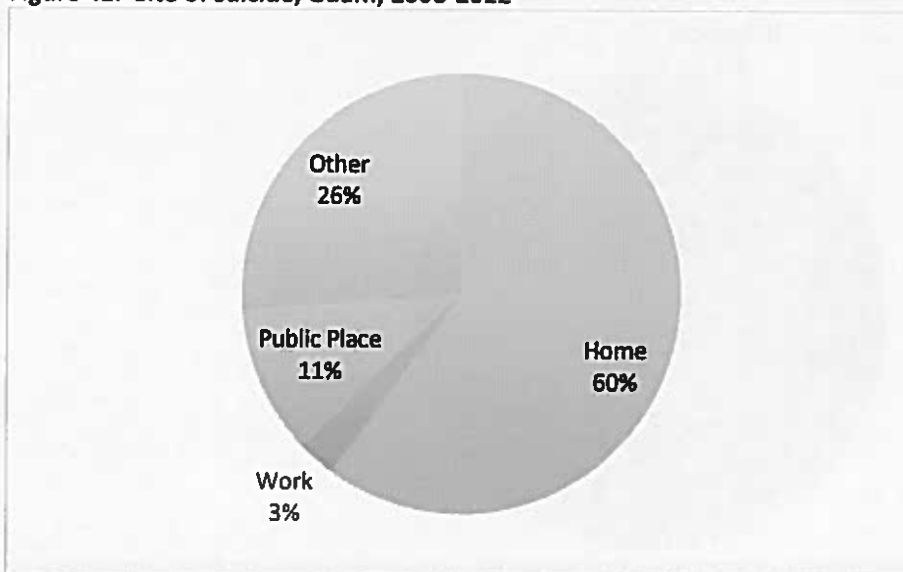
Figure 40. Ethnicity-specific suicide death rates, Guam, 2010-2012



Sources: Office of the Chief Medical Examiner and Guam 2010 population projections, Bureau of Statistics and Plans

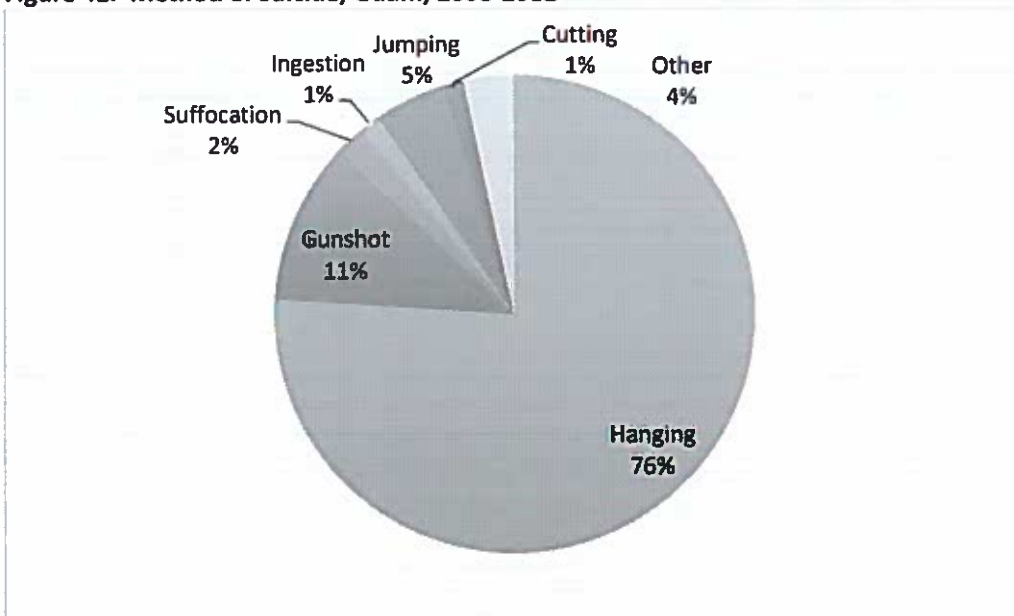
60% of suicides during this period were at home. Only 11% of suicides were in a public place (Figure 41). Over three-fourths (76%) of suicides were by hanging (Figure 42). This contrasts markedly from the pattern in the US mainland, where suicide by firearms was the predominant method.

Figure 41. Site of suicide, Guam, 2008-2012



Source: Office of the Chief Medical Examiner

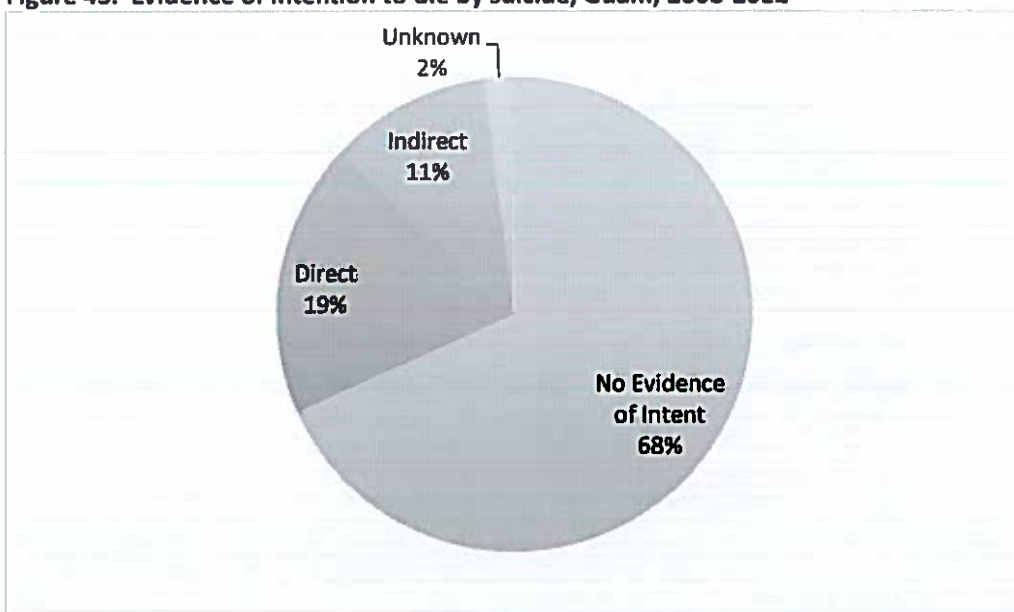
Figure 42. Method of suicide, Guam, 2008-2012



Source: Office of the Chief Medical Examiner

Nearly 1 in 5 (19%) of those who died of suicide from 2008-2012 left direct evidence (suicide note) of intention to die by suicide (Figure 43). About one in eight (11%) left indirect evidence of intent. Altogether, about 1 in three (30%) of suicides from 2008 to 2011 left evidence of their intent. This highlights the need for community members to be better trained to pick up on suicide intentions to increase the capacity to intervene before a suicide death occurs.

Figure 43. Evidence of intention to die by suicide, Guam, 2008-2012



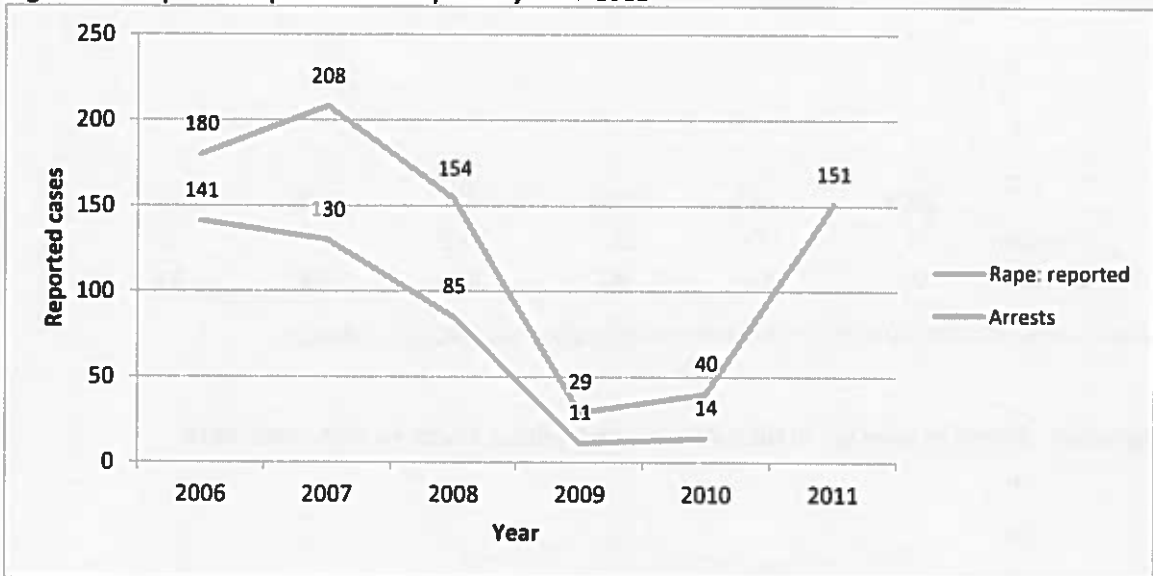
Source: Office of the Chief Medical Examiner

SEXUAL VIOLENCE

In the first quarter of 2013, the Office of Senator Aline Yamashita requested the Guam SEOW to present data on sexual violence at a public hearing. The data is summarized in this section, as a component of the mental health profile for the island.

Rape is likely the most manifest act of sexual violence. In 2011, rape constituted 27.2% of all violent crimes reported to the Guam Police Department. Figure 44 depicts the trend in numbers of reported cases and arrests for rape for the years 2006-2011.

Figure 44. Reported rape and arrests, Guam, 2006-2011



Source: Guam Police Department, as reported in the Guam 2011 Statistical Yearbook, Bureau of Statistics and Plans

In 2011, of the 151 reported cases of rape, 94.7% were forcible rape. Data on arrests was not available for 2011. One in three (34%) of arrests involved perpetrators below the age of 25 years. Nearly all (96%) of arrests for adult cases, and 67% of arrests for juvenile cases, involved Pacific Islanders. Of all crimes cleared by arrest in 2010, 14.1% were rape cases.

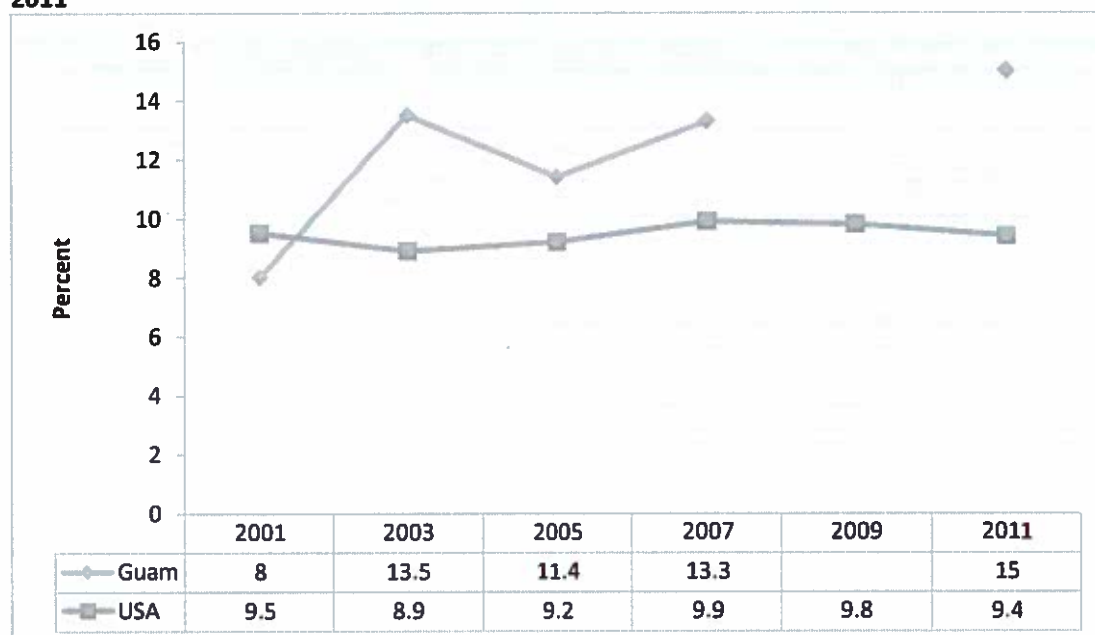
The YRBS asks 2 questions related to sexual violence:

- During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose?
- Have you ever been physically forced to have sexual intercourse when you did not want to?

The data indicate that sexual violence among Guam high school students is significantly higher than the US averages (Figures 45 and 46). "Being hit by a boyfriend or girlfriend within the past year" is rising steadily over time in Guam, while US rates are not changing significantly.

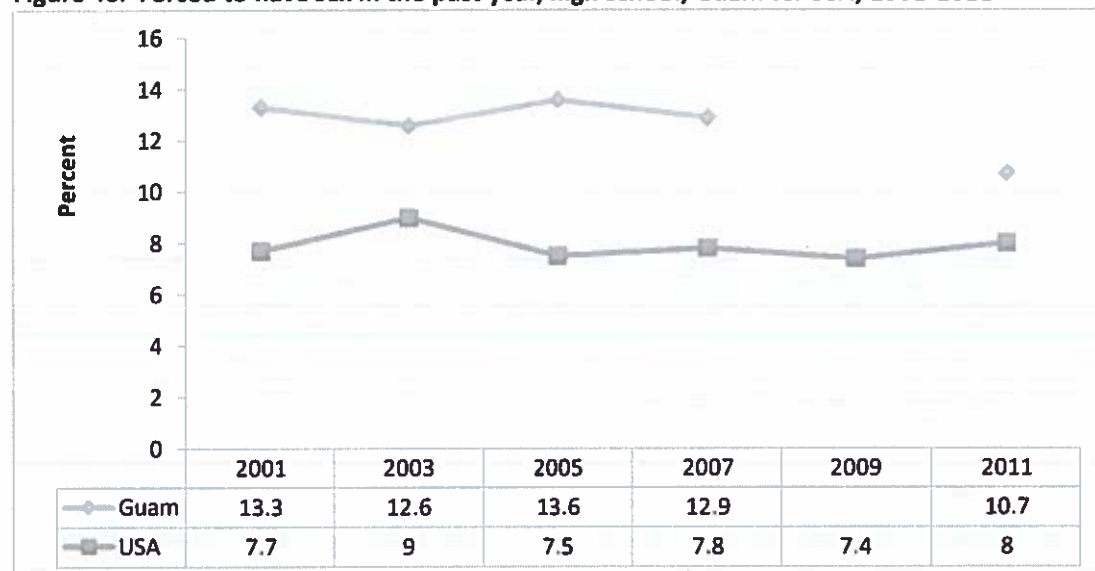
"Being hit by a boyfriend or girlfriend" appears most prevalent among Chamorros (Figure 47), while "forced to have sex" is highest among Other Micronesians (Figure 48). These 2 ethnic sub-groups also have the highest likelihood of suicidal ideation and suicide attempts.

Figure 45. Being hit by a boyfriend or girlfriend within the past year, high school, Guam vs. USA, 2001-2011



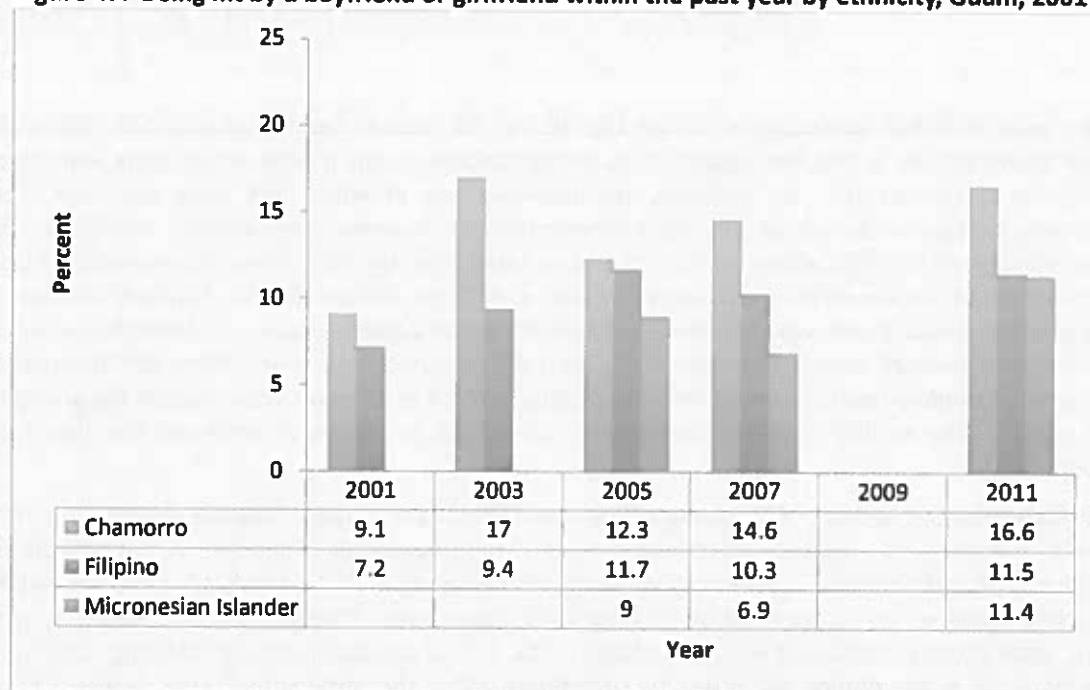
Source: GDOE, YRBS 2001-2011; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>

Figure 46. Forced to have sex in the past year, high school, Guam vs. USA, 2001-2011



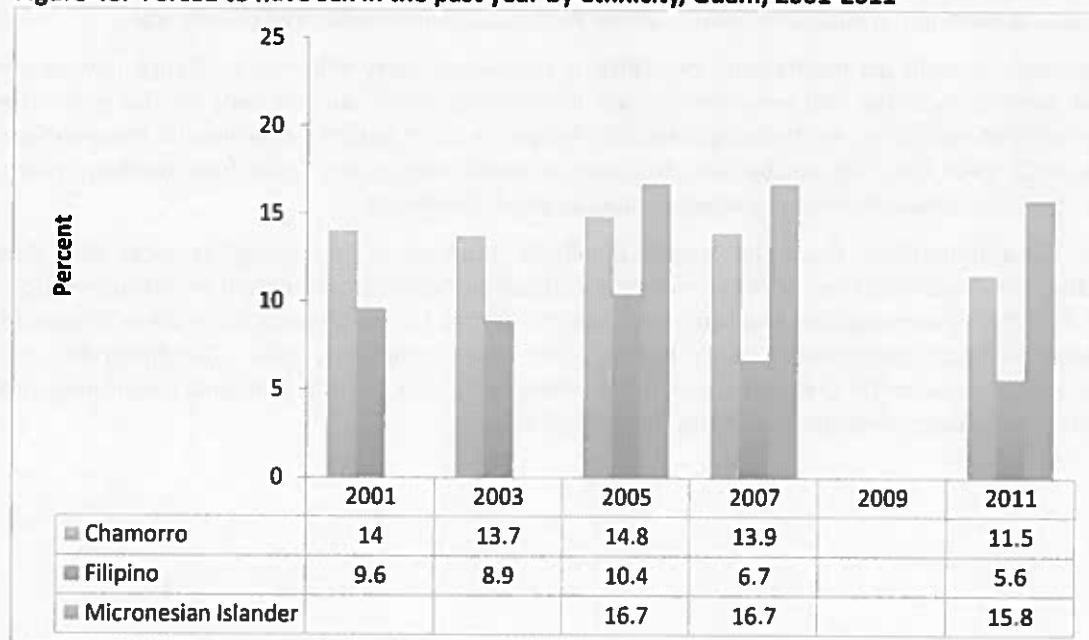
Source: GDOE, YRBS 2001-2011; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>

Figure 47. Being hit by a boyfriend or girlfriend within the past year by ethnicity, Guam, 2001-2011



Source: GDOE, YRBS 2001-2011; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>

Figure 48. Forced to have sex in the past year by ethnicity, Guam, 2001-2011



Source: GDOE, YRBS 2001-2011; US CDC Youth Online at <http://apps.nccd.cdc.gov/youthonline>

DATA ISSUES AND LIMITATIONS

Over the years, with SAMHSA support through the SPF-SIG, Garrett Lee Smith Memorial Act - Focus on Life and SEOW grants, Guam has upgraded its substance abuse and mental health data reporting capacity and infrastructure. For example, the previous lack of adult illicit drug use data was satisfactorily addressed through an ongoing Memorandum of Understanding between DPHSS (which runs the BRFSS) and GBHWC, where selected questions taken from the NSDUH survey instrument have been appended to the annual BRFSS survey instrument as a "State-added module." Similarly, data gaps involving out-of-school youth, who may have the highest risks of substance abuse and suicide, are now being addressed through cooperative agreements with the Department of Youth Affairs and Sanctuary, Inc., whereby an abbreviated version of the YRBS is administered to all youth clients within the juvenile justice system. The regular YRBS administered in schools would otherwise leave out this high-risk subgroup.

Some data limitations remain. For example, youth in the private schools, and the military are not covered by the current surveillance mechanisms. 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. 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.

In relation to integrating substance abuse and mental health surveillance, at present, suicide and its risk factors, including sexual violence, make up our mental health section. Guam's SEOW will review the options to expand the data surveillance system to capture other mental health indicators.

Guam's youth surveillance mechanism, the YRBS, is conducted every other year. Hence new youth data will become available next year, leaving gaps in youth substance abuse trends for this year. The change in BRFSS weighting methodology affected this year's adult data; as explained in the methods section, 2011 adult data will not be used to continue trend analysis with data from previous years. Instead, the 2011 data will serve as a new baseline for adult prevalence.

Despite these limitations, Guam has made significant progress in promoting its local data and advocating for evidence-based action in substance abuse prevention and mental health promotion. Guam's SEOW is now recognized as a legitimate expert resource for health data and is often requested to provide technical assistance at public hearings and other community fora. The Epi Profile has become a local resource for prevention and other related programs, for the academic community and for local policy makers, who often cite from the Epi Profile.

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