Guam Epi Profile 2011

Guam State Epidemiological Outcomes Workgroup (SEOW)

This contains the latest data updates on substance abuse consumption and consequences and mental health in the US Territory of Guam.

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August 2012

TABLE OF CONTENTS

Acknowledgements

Tobacco-free

Prevention starts early

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.

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Dr. Annette M. David, SEOW Lead, oversaw the data analysis and was the lead author for this report. Ms. Roxy Mad (Health partners, LLC), Ms. Helene Paulino and Ms. April Aguon (DMHSA) undertook data collection, data entry and data management. The PEACE Central Staff, under the supervision of Prevention and Training Branch Supervisor Ms. Barbara S. N. Benavente, provided administrative support.

The key findings resulting from the creation of this profile were peer reviewed by the SEOW members and approved by the PEACE Advisory Council.

Executive Summary

Healthy families

Healthy activities

2011 DATA HIGHLIGHTS AT A GLANCE

Tobacco:

- About 1 in 4 adults 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.
- Men smoke more than women. Close to 1 in 3 adult men and 1 in 5 adult women smoke. The smoking prevalence of women in Guam is higher than the median smoking prevalence of men in the US.
- Smoking is inversely related to income and educational attainment.
- Chamorros smoke the most – 40% of Chamorro adults are current smokers. Filipinos have the lowest rates, with 12.3% of adults reporting current smoking.
- The percentage of current smokers who tried to quit for at least one day in the past year increased from 61% in 2003 to 69.3% in 2010.
- Among youth, about one in five is a current smoker.
- There is no sex difference in smoking prevalence among youth – girls smoke as much as boys.
- For both high school and middle school students, Chamorros have the highest rates for current smoking and Filipinos have the lowest rates.
- Over 80% of youth smokers want to quit.
- **Although smoking remains prevalent among youth and adults, rates have decreased significantly over time.** Youth smoking prevalence in 2011 is half that in the late 1990's, and adult rates started to decline from 20--07 onwards. The declines in smoking prevalence have occurred shortly after key policy initiatives that raised taxes on tobacco products, created smoke-free public places and established cessation programs.
- However, smokeless tobacco use is rising for both adults and youth, signaling the need for equivalent policy initiatives to address the consumption of these products.
- The top 3 causes of death on Guam are all caused by tobacco. Four of the five top causes of cancer death on Guam for both males and females are tobacco-related.
- Ethnic disparities for tobacco-related cancers mirror the higher smoking prevalence among Chamorro and other Micronesians.

Alcohol:

- Current alcohol consumption among adults appears unchanged from previous years. In 2010, 40.4% of adults on Guam reported having had at least one drink of alcohol within the past 30 days. This is lower than the nationwide median of 54.1%.
- Among adults, heavy drinking and binge drinking remain higher than US averages.
- Heavy drinking among males on Guam was about 50% higher than that of men in the US, while heavy drinking among women on Guam was half that of US women.
- Binge drinking, defined as having five or more drinks on one occasion, was reported by 17.7%, or almost 1 in 5, of adults on Guam in 2010.
- Males on Guam consistently had higher rates of binge drinking than their female counterparts, and had a rate of binge drinking that was about 30% higher than men in the US.
- Heavy and binge drinking are more likely to be reported by younger adults. Heavy drinking is highest among Chamorros and Caucasians, while binge drinking is highest among Chamorros and other Micronesians.
- The binge-drinking rate in Guam was increasing until 2010, when it dropped for the 1st time since 2001. Notably, in 2010, the minimum legal age for alcohol consumption was raised from 18 to 21 years.
- Nearly one-quarter of high school students are current drinkers. This is a significant decrease from 2007, when one in three students reported current drinking. It also represents a 50% drop from the highest recorded rate of 50.2% in 2001. The other significant decrease occurred in 2003. Of note, Guam raised taxes on alcohol products

in 2003 and the minimum legal age for alcohol consumption from 18 to 21 years in 2010.

- Unlike adults, girls are drinking as much as boys.
- About 14% of high school students reported binge drinking. In 2003, the binge-drinking rate decreased for the first time since 1995, coinciding with the legislated increase in taxes on alcohol products. In 2011, the high school binge-drinking rate in Guam dropped further. This was after the law raising the minimum legal age for alcohol consumption from 18 to 21 years was passed.
- Chamorro youth have the highest rates of alcohol consumption.
- Three of the top 5 causes of cancer death are alcohol-related. Liver cancer incidence and mortality for Chamorros and other Micronesians are higher than US rates. Other Micronesians have almost 9 times the US rate of dying from liver cancer, while Chamorros have over double the US rate.
- Close to 70% of all DUI arrests occurred among male Chamorros and other Pacific Islanders. These groups also have the highest binge drinking rates.

Illicit Drugs:

- About 1 in 3 adults have tried using marijuana and ~3-4% are current users. Men were more likely than women to have ever tried marijuana, and to currently use marijuana.
- The highest rates of lifetime marijuana use were reported by young adults aged 25-34.
- Chamorros have the highest reported rates for both ever and current marijuana use.
- Among youth, nearly 1 in 3 are current users of marijuana. Lifetime and current marijuana use among Guam's youth remained higher than among US youth in general.
- Current users of marijuana among high school students are more likely to be male and Chamorro.
- 4.9% of adult respondents in 2009, and 5.9% in 2010 reported having ever tried methamphetamine, and 0.3% admitted to using methamphetamine within the past 30 days for both survey years.
- Individuals reporting lifetime use of methamphetamine were more likely to be male, Chamorro, fall within the 25 to 44 age group, have lower incomes and education attainment.
- About 3% of high school youth reported ever trying methamphetamines or cocaine in 2011.
- About 8.5% of high school youth reported trying inhalants in 2011. Unlike other drugs, with prevalence rates higher among older students, the prevalence of inhalant use among middle school students is similar to the high school prevalence.
- About 3.4% of high school youth admitted to abusing steroids or other prescription drugs in their lifetime.

Suicide:

- Suicide remains prevalent on Guam, with an average of 1 suicide death occurring every 2 weeks. The crude death rate from suicide has remained unchanged at ~18-19 deaths per 100,000 inhabitants over the past years.
- Suicide deaths are highest among youth and young adults, with about 60% of all suicide deaths occurring in those under the age of 30 years.
- Micronesian Islanders, particularly Chuukese and Chamorros are significantly over-represented in suicide deaths.
- Suicide deaths occur predominantly among males. As demonstrated in the previous versions of this profile, this likely reflects the difference in choice of suicide method, with a higher proportion of males preferring hanging.
- Nineteen percent (19%) of those who died of suicide from 2008-2011 left direct evidence (suicide note) of intention to commit suicide. Twelve percent left indirect evidence of intent. Altogether, about 1 on three (31%) of suicides from 2008 to 2011 left evidence of their intent. If community members were better trained to pick up on intention to commit suicide, it may be possible to intervene before a suicide death occurs.
- Alcohol is implicated in almost one-fourth of all suicide deaths from 2008 to 2011. Other drugs of abuse are involved in 7% of suicide deaths.

- Youth in Guam appear to have a higher likelihood of thinking about suicide, making a suicide plan and actually attempting suicide as compared to youth in the US mainland.
- Correlates of youth suicidal ideation and suicide attempts include sexual violence, depression, identifying oneself as gay or bisexual, and substance abuse.
- Five attributes linked to higher suicide risk --- (1) being hit by a boyfriend/girlfriend in the past year, (2) forced to have sex, (3) felt sad for at least 2 weeks over the past year, (4) current daily smoking and (5) current marijuana use---have prevalence rates among Guam youth that are statistically higher on Guam than the US.

Background

Alcohol-free

Youth-led prevention outreach

Introduction

Geographic, Political, and Economic Context

Guam, "where America's day begins," is the largest and southernmost island in the Mariana Islands archipelago. 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 1). 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. The last major typhoon, Pongsona, in December of 2002, had a major adverse impact on the island's economy and infrastructure.

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 next gubernatorial elections are scheduled for 2014.

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, Congresswoman Madeleine Bordallo, belongs to the Democratic Party. The next elections for the legislative branch are scheduled for November 2012.

The judicial branch was recently 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).

Figure 1. Regional map showing Guam's proximity to key countries

Source: CIA Factbook at http://www.cia.gov/cia/publications/factbook/geos/gq.html, last accessed 13 March 2006

Guam's economy relies heavily upon military spending, tourism and the export of fish. According to the CIA Factbook (available at https://www.cia.gov/library/publications/the-world-factbook/geos/gq.html last accessed 26 February 2012), "total grants, wage payments, and procurement outlays amounted to $1.3 billion in 2004. Over the past 30 years, the tourist industry has grown to become the largest income source following national defense." Currently, the economy is expanding in both its tourism and military sectors. The announced transfer of the military base on Okinawa to Guam will continue to drive the expansion of the military sector, although the pace of the build-up has not kept up with expectations.

In 2005, the GDP was estimated at $2.5 billion, with a per capita GDP estimated at $15,000 (2005 estimate, CIA Factbook).

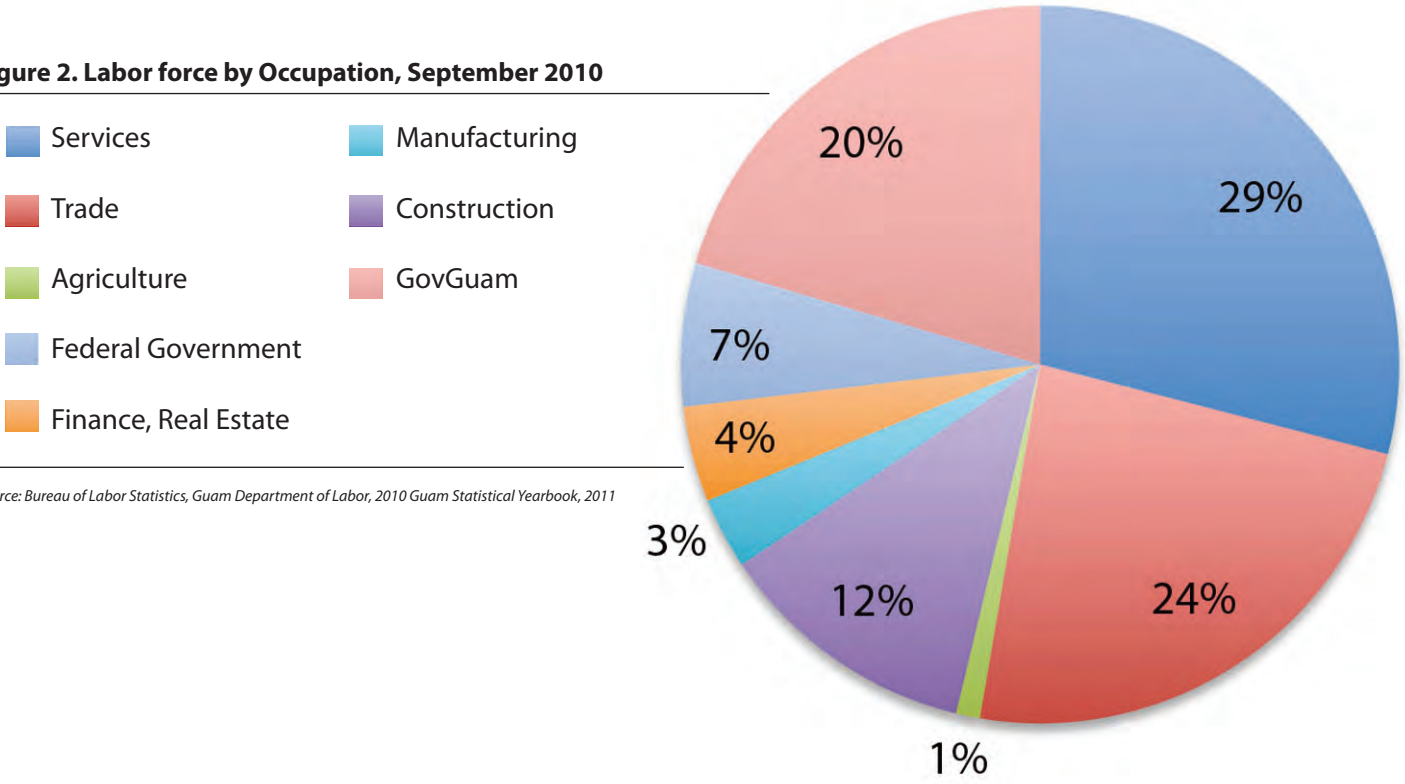
As of September 2009 there were approximately 70,310 people in the civilian labor force, of whom 63,800 were employed. In the 3rd quarter of 2009 9.3% were unemployed, as compared to 8.3% in 2007 (Table 1). Figure 2 shows the different sectors of employment and distribution of the labor force as of September 2010. Majority of the labor force are employed in services (29%), trade (24%) and local government (20%).

Table 1. Highlights of employment and unemployment, Guam, 2004-2009

Categories	September 2009	September 2007	March 2006	September 2006	December 2005	March 2004
Civilian Labor Force	70,310	63,600	65,940	66,410	59,630	61,520
Total Employment	63,800	58,290	61,390	61,520	59,630	56,810
Total Unemployment	6,510	5,310	4,550	4,890	4,500	4,710
% Unemployed	9.3	8.3	6.9	7.4	7.0	7.7

Source: Bureau of Labor Statistics, Guam Department of Labor, 2010 Guam Statistical Yearbook, 2011

Figure 2. Labor force by Occupation, September 2010



Source: Bureau of Labor Statistics, Guam Department of Labor, 2010 Guam Statistical Yearbook, 2011

Tourism is Guam's major industry. There were over 1.18 million tourist arrivals in 2010, a significant increase from the previous year. Japan remains Guam's major tourist market, accounting for over 75% of visitors (down from over 80% of tourist arrivals in 2005). Korea accounts for 11.3% of the market (up from 9% in 2005), and the US mainland for about 5.2% (Table 2). 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 2. Air visitor arrivals by country of residence, Guam, 2005-2010

Country	2010	2009	2008	2007	2006	2005
Total	*1,187,831*	*1,044,491*	*1,091,907*	*1,180,416*	*1,183,943*	*1,184,928*
Japan	893,716	825,129	849,831	931,079	952,687	955,245
United States	61,381	55,525	52,797	49,590	44,226	45,859
CNMI/Micronesia	35,521	31,927	30,315	29,939	29,860	30,690
Taiwan	31,320	22,088	22,592	21,819	16,729	23,386
Philippines	12,358	11,581	10,867	8,743	8,152	7,051
Korea	134,692	82,978	110,548	122,747	117,026	109,335
Hong Kong	6,890	2,872	4,270	6,224	6,123	4,518
Other	14,953	12,391	10,687	10,275	9,140	8,844

Note: This includes military and civilian air arrivals.

CNMI/Micronesia = Commonwealth of the Northern Mariana Islands/Micronesia

Source: Bureau of Labor Statistics, Guam Department of Labor, 2010 Guam Statistical Yearbook, 2011

Population Demographics

The latest data from the 2010 Guam census indicates that as of April 1, 2010, Guam's population totaled 159,358, representing an increase of 2.9% from the 2000 Census counts. 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. Table 3 contains the revised population estimates for the years 2000 to 2010, and table 4 lists the population projections for 2010 to 2020 using the 2000 to 20120 population growth rate.

Table 3. Population estimate, 2000 to 2010

Year	Population	Year	Population
2000	154,805		
2001	155,254	2006	157,521
2002	155,705	2007	157,978
2003	156,157	2008	158,437
2004	156,610	2009	158,897
2005	157,065	2010	159,358

Sources: 2000 and 2010 Censuses of Guam

Table 4. Population projection, 2010 to 2020

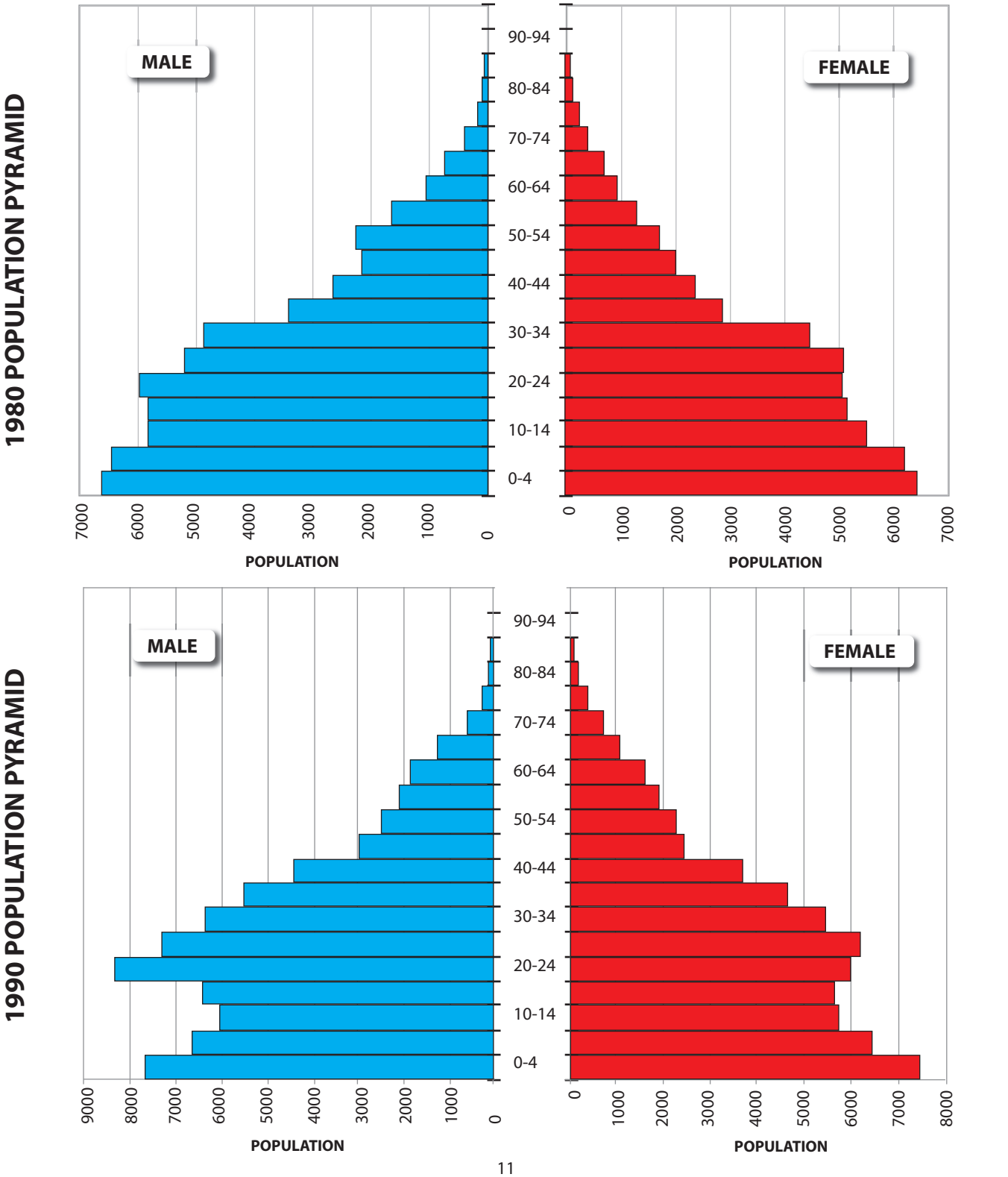
Year	Population	Year	Population
2010	159,358		
2011	159,821	2016	162,154
2012	160,285	2017	162,625
2013	160,750	2018	163,097
2014	161,216	2019	163,570
2015	161,684	2020	164,045

NOTE: Uses 2000 and 2010 population growth rate

Source: 2010 Census of Guam

Results of the 2010 Guam census are only partially in, and data on the age, sex and ethnicity breakdown of the population are still unavailable. Based on earlier data, Guam's population is a young one. Approximately 36 percent of the residents are under age 20. The population pyramids constructed from the 1980, 1990 and 2000 census data (Figure 3) demonstrate a wide base and a "bulge" between the ages of 20 to 39. These two groups---infants and children, as well as young adults---form a significant proportion of the overall population..

Figure 3. Guam population pyramids, by age and sex, 1980-2000



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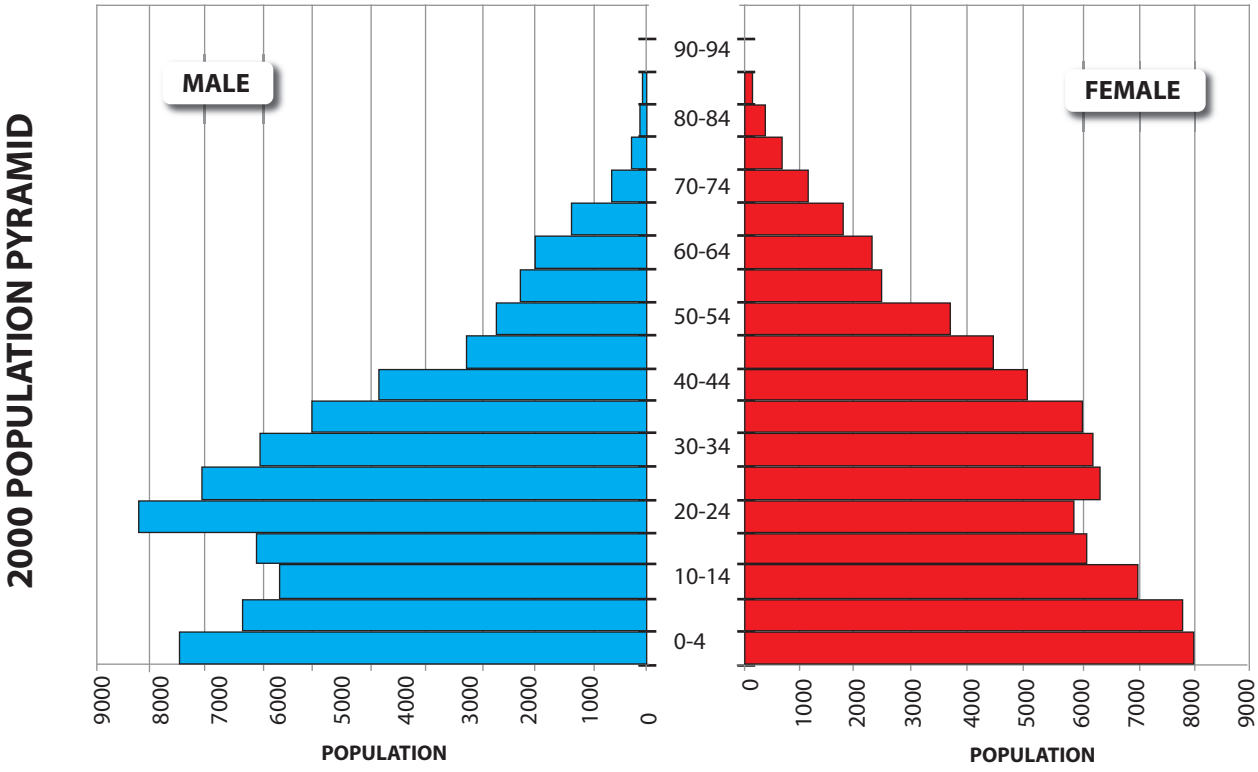


Source: 1980, 1990 and 2000 Guam censuses

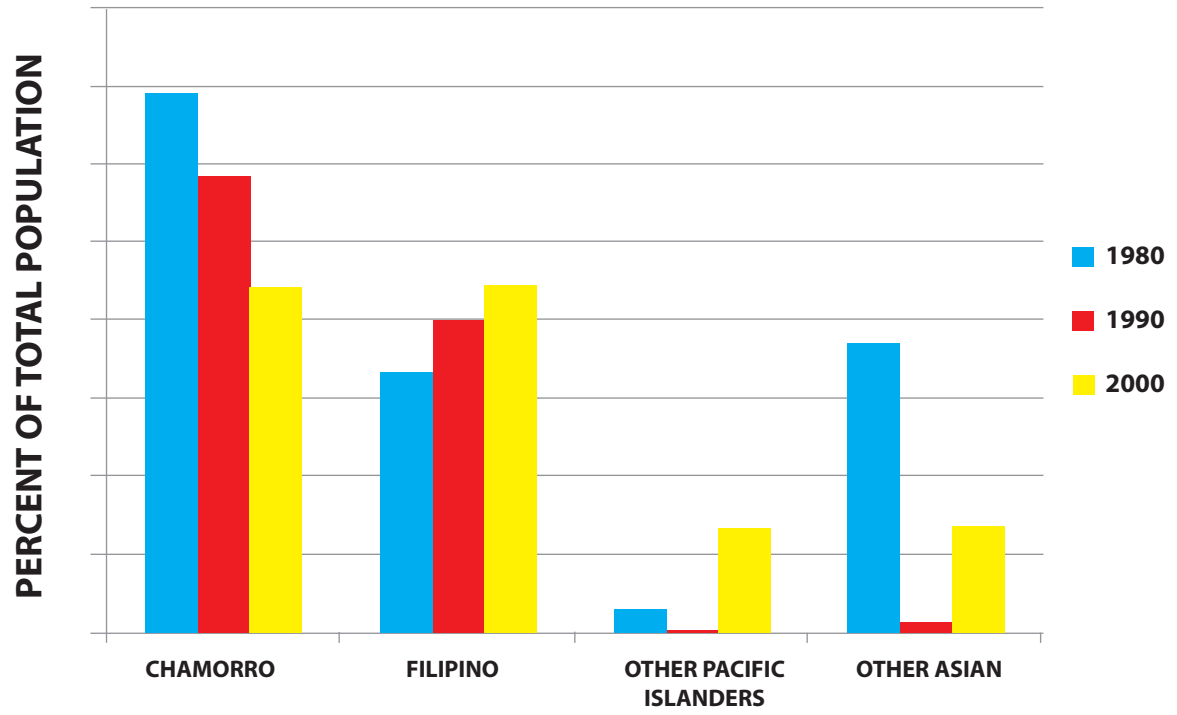
Guam's population is multi-ethnic/multi-racial. According to the 2008 Guam Statistical Yearbook, the indigenous Chamorro people comprise approximately 37 percent of the population, followed by Filipinos (26.0 percent), other Micronesians (7.5 percent), Whites (6.8 percent), other Asians (6.2 percent) and African Americans (1 percent).

The ethnic/racial composition of Guam's population has been shifting over time. The proportion of the population comprised of Chamorros has been declining, from 44.6% of the total population in 1980, to 37% in 2000. In contrast, Filipinos comprised only 21.2% of the population in 1980 but currently make up 26.3% of the island's people. The ethnic group with the fastest rate of increase is the Chuukese population; from only 0.1% in 1980, Chuukese currently make up 4% of the population, a 40-fold increase.

The ethnic composition of the population in large part determines the languages spoken at home. At present, 38.3% of Guam's households speak English exclusively. Of the remainder, 45.7% speak another language either as frequently as or more frequently than English, and another 0.7% 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.

The pattern of change in languages spoken at home (Figure 4) parallels that of ethnic composition, with households speaking Chamorro showing a relative decline over time, while Filipino and Micronesian languages are on the increase.

Figure 4. Changing pattern of languages spoken at home, Guam, 1980-2000



Source: 2004 Guam Statistical Yearbook

In 2010, there were 44,644 households on Guam. Median household income increased from 2005 to 2008, but decreased from 2008 to 2010 (Table 5). Table 5 shows that in 2010, close to 20%, or 1 in 5, of Guam's households lived on $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%, or 1 in 9 households, made more than $100,000 per year.

Table 5. Household income, 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	$12,864	…	$13,089		$12,768	
Median Individual Income	$12,786	…	$13,200		$15,011	
Mean Earner's Income	$25,462	…	$25,479		$22,625	

Source: Bureau of Labor Statistics, Guam Department of Labor, 2010 Guam Statistical Yearbook, 2011

Based on the 2000 census, ethnicity appears to be associated with income and the risk of impoverishment. Whites, Chamorros, Filipinos and other Asians have higher median incomes than other Pacific islanders. Of the Pacific Island groups, Chuukese have the lowest incomes (Table 6).

Table 6. Household and family income by ethnicity/race, Guam, 2000

Characteristic	Total	Single Ethnic Origin or Race								
		Total	Cham	Chuuk	Palau	Other Islander	Fil	Other Asian	White	Other
Households	**38,770**	**34,210**	**13,200**	**960**	**485**	**540**	**10,105**	**3,160**	**4,410**	**1,350**
Median ($)	39,317	40,487	43,019	18,099	28,618	21,850	40,666	35,694	47,933	37,453
Mean ($)	49,615	50,841	52,816	24,524	39,024	26,582	48,774	48,984	62,113	47,200
Families	**32,365**	**29,060**	**11,660**	**915**	**425**	**490**	**9,170**	**2,215**	**3,180**	**1,005**
Median ($)	41,229	41,687	44,151	17,123	27,425	20,132	41,761	40,536	51,544	40,000
Mean ($)	51,677	52,193	53,607	23,335	39,433	25,112	49,999	54,893	66,433	49,664
Median earnings ($)										
Male, full-time year-round workers	28,934	29,816	28,669	12,331	20,990	15,188	23,318	30,710	33,563	27,304
Female, full-time year-round workers	23,249	23,044	28,028	11,288	19,583	12,263	20,392	24,598	27,212	22,500
Per capita income ($)	**12,722**	**13,310**	**12,193**	**3,901**	**9,605**	**5,281**	**12,378**	**17,635**	**25,886**	**18,150**

Source: Bureau of Labor Statistics, Guam Department of Labor, 2004 Guam Statistical Yearbook, 2005

Impact of the military on population demographics

The US Military continues to play a significant role in Guam, and recent negotiations for the planned military build-up continue. Table 7 tracks the proportion of Guam's population that is made up of military personnel and their dependents. As of 2011, military and family members comprised 8.5% of Guam's total population.

Table 7. Military active duty and family members on Guam, 2006 - 2011

Military and Family Members	2011	2010	2009	2008	2007	2006
Active duty	6,275	6,400	6,379	6,331	6,286	6,253
Family members	7,247	7,059	6,821	5,833	6,051	6,058
Total Military and dependents	13,533	13,459	13,200	12,164	12,337	12,311
Resident population of Guam	159,821	159,358	158,897	157,978	157,521	156,610
% Military and dependents	8.5%	8.4%	8.3%	7.7%	7.8%	8.1%

Source: COMNAVMAR, as provided by Guam State Data Center, Bureau of Statistics and Plans, 2012

Table 8 provides date on school enrollment in the various categories of schools, including the Department of Defense (DoDEA) schools. Students enrolled in military schools made up 5% of total enrollment for school year 2010-2011.

Table 8. Fall term enrollment in Guam schools, Guam SY 2006-2007 to SY 2010-2011

School	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007
Total School Enrollment	40,373	39,083	40,560	40,108	39,850
Catholic schools	4,421	4,230	4,153	4,054	3,733
DoDEA	2,055	2,224	2,473	2,582	2,151
Other private schools	3,338	2,357	3,605	2,899	3,126
Guam public school system	30,559	30,272	30,329	30,573	30,840

Source: COMNAVMAR, as provided by Guam State Data Center, Bureau of Statistics and Plans, 2012

Prevention System Context

The Department of Mental Health and Substance Abuse (DMHSA) is Guam's single state agency responsible for mental health promotion and service provision and substance abuse prevention and control. Its mandate is firmly established through Guam Public Law 17-21. DMHSA's Prevention and Training (P & T) Branch, under the umbrella of the DMHSA Division of Clinical Services, directly oversees the prevention arm of the Department's core functions. The branch has 11 full-time prevention specialists.

DMHSA provides leadership in obtaining state and federal funding to support comprehensive prevention services on Guam. DMHSA'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 DMHSA'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 DMHSA's prevention website (www.peaceguam.org), conducts information dissemination and mass media campaigns, manages the various prevention grants of the DMHSA, and provides community-based and stakeholder training and technical assistance. Current resources for prevention programs include the Government of Guam "state" legislative appropriations and the SAMHSA Substance Abuse Prevention and Treatment Block Grant funds.

DMHSA 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 DMHSA with local data on substance abuse consumption and consequences, and selected mental health indicators. The SEOW is composed of the data gatekeepers of Guam's institutional data sources such as the Bureau of Statistics and Plans, Guam Police Department, Department of Youth Affairs, DMHSA, Department of Public Health and Social Services, Juvenile Drug Court and Guam Department of Education.

DMHSA partners with the following agencies and institutions for specific prevention programs:

- Department of Youth Affairs' (DYA) – culturally appropriate programs, services and activities geared toward youth development, rehabilitation and re-integration of juvenile clients of the justice system into the community;
- Department of Public Health and Social Services (DPHSS) - DPHSS provides leadership and direction in diverse areas: epidemiology environmental health, consumer protection, disease control, vital statistics, public assistance, foster

care, elderly programs and food stamps. Its tobacco control program collaborates with the DMHSA's tobacco prevention and control program for cessation training and policy advocacy.

- Guam Police Department (GPD) - serves as the enforcement arm for Guam's tobacco, alcohol and drug prevention and control laws;
- Superior Court - Guam Drug Court – provides integrated drug treatment services to adult/juvenile offenders and aims to reduce drug use by juveniles within the jurisdiction of the Family Court;
- Department of Revenue and Taxation (DRT) - partners with DMHSA in the conduct of federally mandated Synar activities each year from which tobacco fines and fees are directed towards DMHSA prevention programs;
- Guam National Guard (GNG) Counterdrug Program – supports individuals and organizations through drug intervention and prevention programs, anti-legalization efforts, and the positive development of youth;
- Guam Department of Education (GDOE) – serves over 16,380 middle and high school students island-wide in seven middle school and four public high schools on the island;
- University of Guam (UOG) – a land grant network, commits to pursuing excellence in teaching, research, and community service. Its activities and services aim to expand the knowledge, culture, and traditions indigenous to the Asia-Pacific Region and facilitate the social and intercultural development of communities;
- Guam Community College (GCC) – a multi¬faceted public vocational educational institution operates secondary and postsecondary vocational programs, adult and continuing education, community education, and short-term, specialized training;
- Guam Memorial Hospital (GMH) – the island's only public hospital providing emergency room care and inpatient/outpatient services;
- GUAHAN Project - Guam's only AIDS service organization, provides free and confidential OraSure HIV counseling, testing, and referral services in collaboration with Guam's DPHSS. It also provides free educational workshops and training, support groups, home and hospital visits and personal care items to people living with HIV/AIDS on Guam and the neighboring islands;
- Sanctuary Inc. is the region's only residential treatment center for youth with drug and alcohol dependency, and in 2008, received Commission on Accreditation of Rehabilitation Facilities (CARF) certification
- Guam Hotel and Restaurant Association – partners with DMHSA for hotel and restaurant based prevention programs;
- Guam Chamber of Commerce – a non-profit voluntary association of business professionals and private sector firms that support and partner with DMHSA on civic and workplace-based prevention programs; and,
- Other NGO partners for prevention on Guam, including the Guam Seventh Day Adventist Clinic & Wellness Center; Youth for Youth Live! Organization; Big Brothers, Big Sisters of Guam; and the Inafa' Maolek Conciliation Program.

Background of the State Epidemiological Outcomes Workgroup (SEOW or Epi Workgroup)

In 2003, Guam competed and was subsequently 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 on Guam. Guam's SEOW was subsequently established in 2004. Throughout 2005, the SEOW undertook a data inventory, and collated and reviewed data on substance abuse consumption patterns and consequences. The first Guam State Epidemiological Profile (Epi Profile) on substance abuse 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 DMHSA successfully applied for a SAMHSA youth suicide prevention grant. The three-year grant, entitled Focus on Life-Guam Youth Suicide Prevention, 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 on September 2011.

In late 2010, Synectics, a SAMHSA contractor, awarded a sub-grant to Guam DMHSA to sustain the SEOW. DMHSA issued a Request for Proposals (RFP) and selected Health Partners, LLC (Dr. Annette M. David) to oversee the SEOW process in January 2011. The Government of Guam finally issued the work order in October 2011.

Building upon the previous SEOW infrastructure and membership, this subcontract will enable the strengthening of a unified and coordinated mechanism to pool the island's existing statistical and data expertise for systematically managing data to inform policy and program decisions not only for substance abuse prevention but also for a broader range of behavioral health areas. As a start, data on suicide indicators will be incorporated with substance abuse consumption and consequences data. Eventually, the coverage will be expanded to include additional behavioral health indicators, such as risk and protective factors for mental health.

Currently, Guam's SEOW 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, services delivery and decision-making at the State government level as well as within individual agencies, institutions, and community organizations.

The SEOW's work has been cited and utilized by the Office of the Governor and Lt. Governor, the Guam Legislature, the University of Guam and Guam Community College, the Departments of Public Health and Social Services and Mental Health and Substance Abuse and various other policy leaders and program managers on Guam. The SEOW has contributed significantly to various policies directly related to substance abuse prevention, including Public Law 28-80 (Guam's smoke-free law, 2005), Public Law 30-80 (raising tobacco taxes and earmarking tobacco tax revenues for cancer prevention and health promotion, 2010) and Public Law 30-156 (raising the minimum legal drinking age from 18 to 21 years, 2010). It has also guided prevention program planning and resource allocation in diverse health areas. For instance, the SEOW's Epidemiological Profile is widely quoted in the Guam Comprehensive Cancer Control Plan and is a major reference for the Guam Non-communicable Disease Control and Prevention strategic plan and the Guam Focus on Life suicide prevention program. It has also been used as a reference by the University of Guam's Cancer Research Center for its U54 research grant application to the National Cancer Institute.

The expanded mandate of the SEOW and its ongoing support through the sub-grant will ensure that this valuable community prevention resource will continue to provide the local evidence base for effective substance abuse prevention and mental health promotion in Guam.

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 Behavior Risk Factor Surveillance System (BRFSS) and the Youth Risk Behavior Surveillance System (YRBS)---were given the greatest weight.

However, at that time, there are serious data gaps for Guam, and through the years, the SEOW worked to address these gaps.

- Guam had no adult data on illicit drug use and its youth data were limited to youth in public schools. As a stopgap measure, in 2007 and 2008, 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 DMHSA and DPHSS to incorporate selected questions on illicit drug use in the BRFSS. This ongoing MOU (renewed in 2010, 2011 and 2012) now provides population-based adult data on illicit drug consumption.

- 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.
- To expand the coverage of youth data to out-of-school youth, the SEOW also facilitated an agreement between DMHSA 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 of 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.
- The SEOW is currently negotiating similar agreements with the Catholic archdiocese (to include Catholic private schools in the YRBS) and the National Guard (to access substance abuse and mental health data covering the military population).
- For suicide-related data, the SEOW undertook a working agreement with the Office of Guam's Chief Medical Examiner to obtain suicide mortality data. The SEOW is currently working on securing a similar agreement with the Guam Memorial Hospital to access suicide-related hospital and Emergency Room admissions data.

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 9. 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 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 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 smokeless tobacco use by Middle School students Current smokeless tobacco use by High School students Lifetime daily cigarette use by Middle School students Current daily cigarette use by High School students Current daily cigarette use, 18 and older 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	Deaths from lung cancer Deaths from chronic obstructive pulmonary disease (COPD) and emphysema Deaths from cardiovascular and cerebrovascular diseases Tobacco-related cancer prevalence

DRUGS	Consumption	Consequences
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 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 use of steroids or other prescription drugs by High School students Illegal drug use on school property Other drug use patterns among court-involved youth % US Probation Office drug testing positive for any drug Drug seizures per year by type and amount of drug	Property crime rate Violent crime rate Drug abuse or dependence Drug-related arrests

SUICIDE	Consumption	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 youth in school Suicidal attempts among school youth % of school youth reporting persistent sadness % of school youth identifying themselves as bi- or homosexual Current binge drinking among school youth Current drug use among school youth

At present, Guam's SEOW tracks data on substance abuse consumption and consequences and suicide from the following data sources

Table 10. Data sources

Data Source	Frequency	Agency	Data Type
Behavioral Risk Factor Surveillance System (BRFSS)	annual	DPHSS	Adult tobacco and alcohol use
Youth Risk Behavior Surveillance System (YRBS)	biannual	Guam Dept. of Education (GDOE)	Youth tobacco, alcohol and drug use; suicidal ideation and attempts; mental health
Modified YRBS	annual	DYA and Sanctuary, Inc.	Youth tobacco, alcohol and illicit drug use
Guam Youth Substance Abuse Study (Qmark)	2007, 2008	DMHSA	Youth tobacco, alcohol and illicit drug use
Synar annual tobacco vendors' compliance survey	annual	DMHSA	Vendor compliance to prohibition of tobacco sales to minors
Vital Statistics	annual	DPHSS	Leading Causes of Mortality
Guam Cancer Registry	2003-2007	DPHSS	Cancer prevalence and mortality
Guam Uniform Crime Report	annual	Guam Police Department	Alcohol and drug-related crime
US Probation Office Client Random Drug Testing Statistics	annual	Guam US Probation Office	Adult drug offenders random drug testing results
Suicide Mortality Report	monthly	Chief Medical Examiner's Office	Suicide deaths and associated data

Organization and structure of the 2012 Guam Epi Profile

The Profile 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 and suicide. Each chapter addresses the issues within the general population, and when data is available, among population sub-groups. Key highlights are summarized in problem statements that appear at the beginning of each chapter. A text description of the essential findings for every indicator is supplemented with tables and charts.

In general, 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 syndrome, 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 fixed 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.

Substance Abuse

No to drugs

Young prevention advocates

TOBACCO

Adult Consumption

Tobacco consumption remains highly prevalent on Guam. Data on adult smoking is provided through the Behavioral Risk Factor Surveillance System (BRFSS) for which information is available for the years 2001 to 2003, and 2007 to 2010. This survey utilized random digit dialing, deriving samples from a population of households with telephone landlines. (Note: In 2009 and 2010, the Department of Public Health and Social Services [DPHSS] began pilot-testing the BRFSS using a subset of mobile phones. However, the results from respondents contacted using mobile phones were not included in the weighted results.)

The BRFSS uses the federal system for ethnic group/racial categories. Unfortunately, this system does not capture the diversity within the Asian-Pacific Islander community, which predominates on Guam. Thus, the Guam BRFSS for the years 2001-2003 and 2007-2008 could not be disaggregated for the island's dominant ethnic categories: "Chamorro," "Other Micronesian," and "Filipino." However, due in large part to advocacy efforts of the Guam SEOW, the DPHSS added a question on these relevant ethnic categories in 2009, as part of the State-added section of the survey. Thus, for 2009 and 2010, it was possible to do ethnic disaggregation of data.

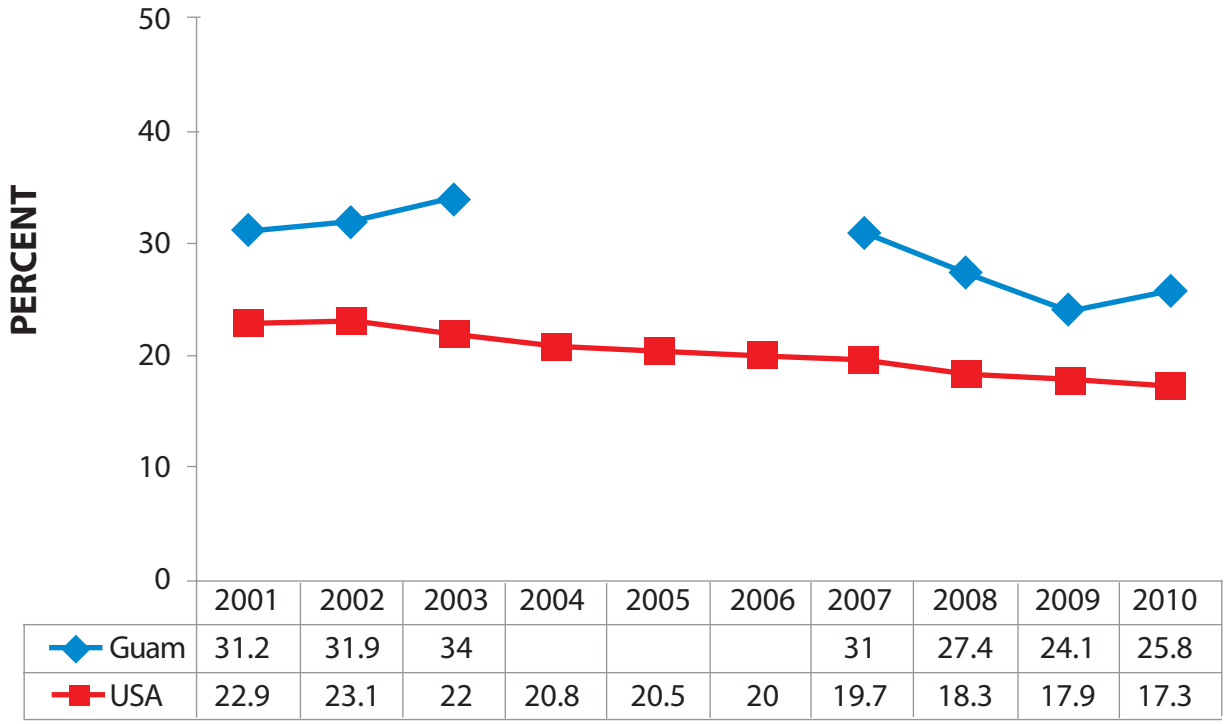
Also, in the earlier years of the BRFSS, there were no questions on other tobacco use despite the practice of chewing tobacco with betel nut (areca nut/betel quid), particularly among some of the Micronesian sub-groups, and anecdotal evidence for rising smokeless tobacco consumption. Questions on other forms of tobacco use were added in 2009, enabling us to report on alternative forms of tobacco consumption in this profile.

Smoking

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 4 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.

Guam started seeing a decline in smoking prevalence in 2007, one year after implementation of the Natasha Protection Act (P.L. 28-80: Guam's smoke-free public places law). In 2007, the Government of Guam issued a GovGuam tobacco-free policy and launched the Guam Tobacco Cessation Quitline. This was followed by subsequent decreases in smoking prevalence in 2008 and 2009. However, the rate of decline has not been sufficient to narrow the gap between Guam and the US (Figure 5).

Figure 5. Current smokers, adults, Guam vs. USA, adults, 2001-2010

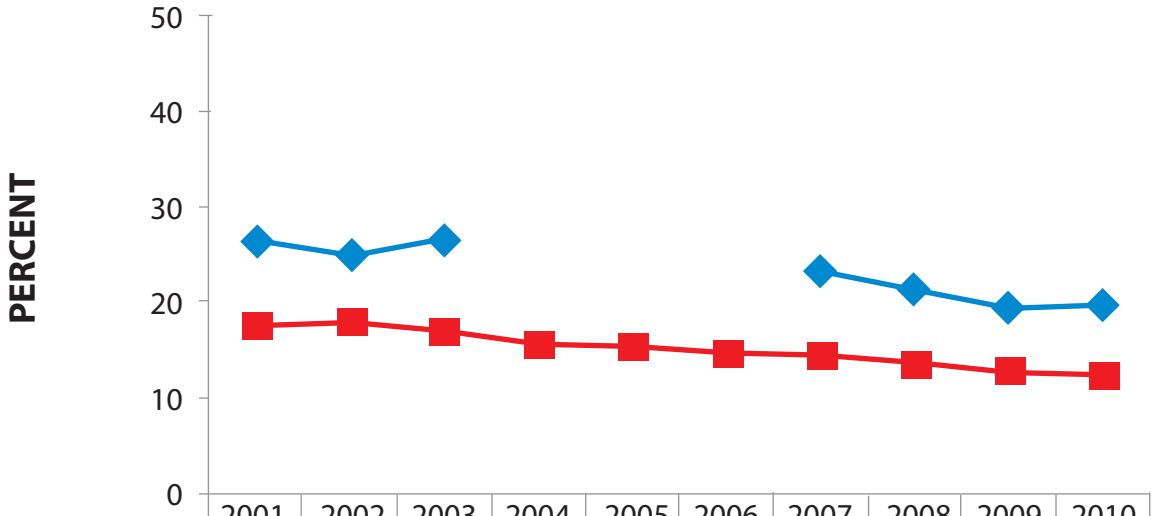


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guam	31.2	31.9	34				31	27.4	24.1	25.8
USA	22.9	23.1	22	20.8	20.5	20	19.7	18.3	17.9	17.3

Source: Guam BRFSS, 2001-2010

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. Currently, 1 on 5 adults in Guam is a daily smoker (Figure 6).

Figure 6. Daily smokers, adults, Guam vs. USA, adults, 2001-2010

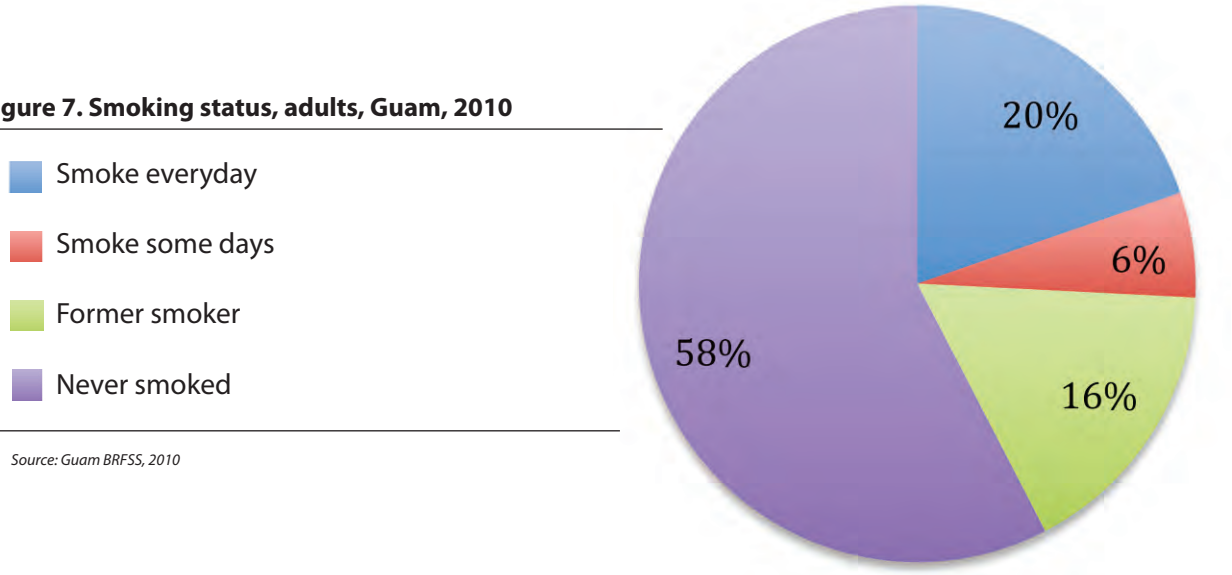


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guam	26.5	24.8	26.3				23.3	21.2	18.9	19.7
USA	17.4	17.8	16.7	15.6	15.3	14.7	14.5	13.4	12.7	12.3

Source: Guam BRFSS, 2001-2010

Six percent of adults on Guam smoke some days, 16% are former smokers and 58% have never smoked. Altogether, close to three-fourths (74%) of the island's population are non-smokers (Figure 7).

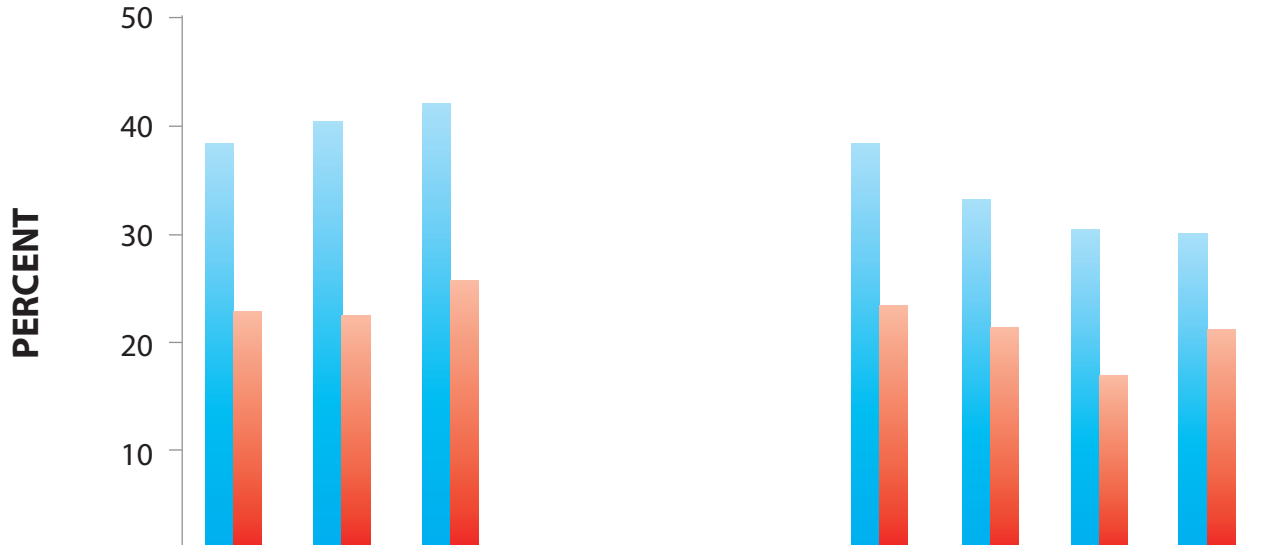
Figure 7. Smoking status, adults, Guam, 2010



Source: Guam BRFSS, 2010

The sex difference in current smoking is more marked in Guam, with 30.3% of men and 21.2% of women reporting current smoking (Figure8). Close to 1 in 3 adult men and 1 in 5 adult women smoke. The smoking prevalence of women in Guam is higher than the median smoking prevalence of men in the US (Figure 9).

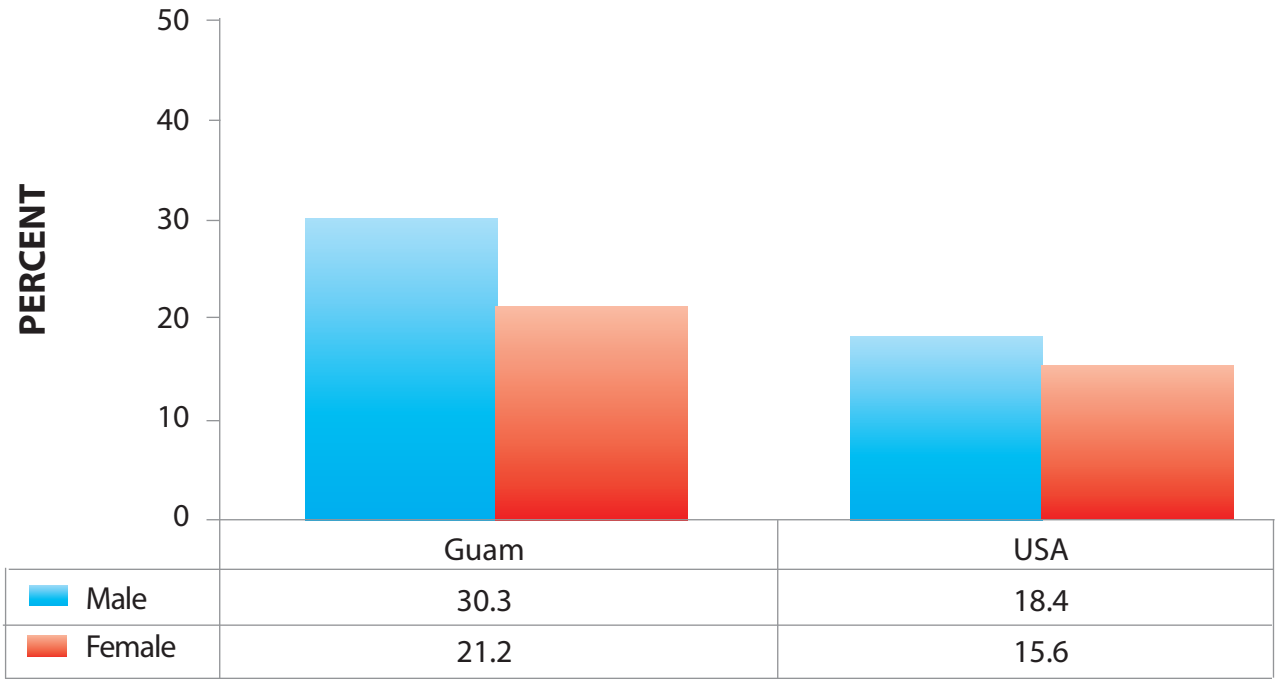
Figure 8. Current smokers, adults, by sex, Guam, 2001-2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Male	38.6	40.6	42				38.5	33.3	30.9	30.3
Female	23	22.4	25.9				23.2	21.3	17.1	21.2

Source: Guam BRFSS, 2001-2010

Figure 9. Current smoking, adults, by sex, Guam vs. USA, 2010

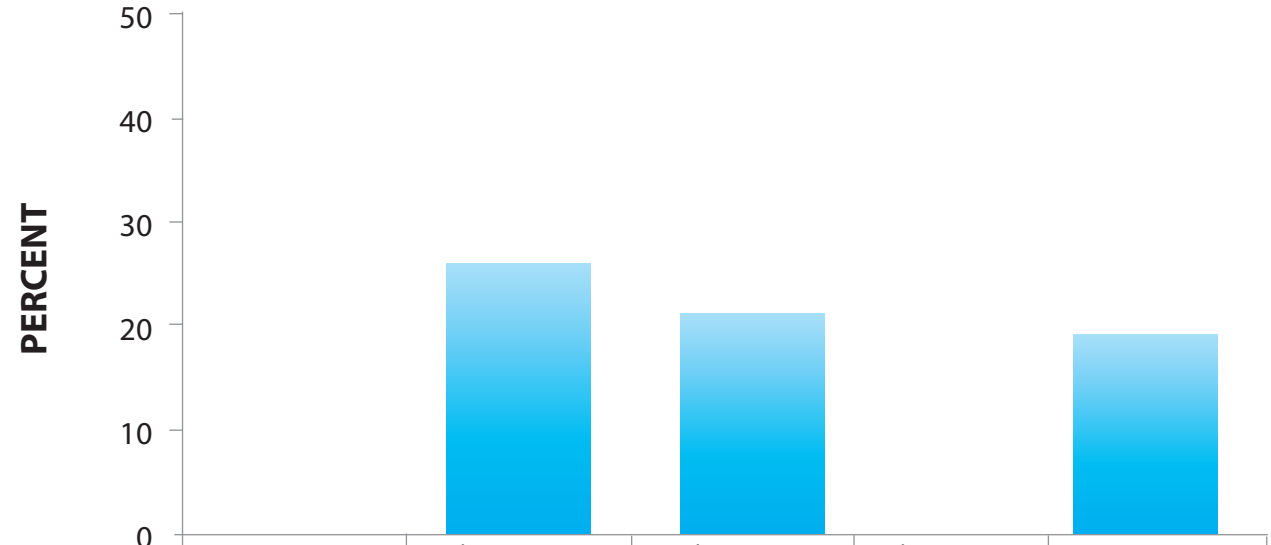


	Guam	USA
Male	30.3	18.4
Female	21.2	15.6

Source: Guam BRFSS, 2010

Smoking is inversely related to income (Figure 10) and educational attainment (Figure 11), 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.

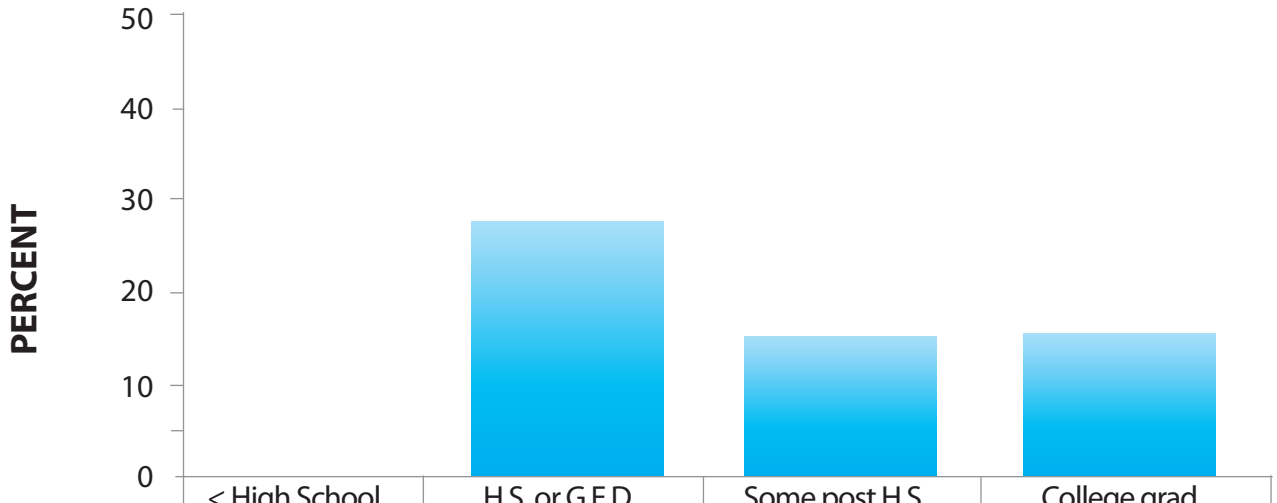
Figure 10. Current smoking, adults, by income, Guam, 2010



	<$15,000	$15,000 - $24,999	$25,000 - $34,999	$35,000 - $49,999	$50,000 +
Prevalence		26.2	21.1		19.3

Source: Guam BRFSS, 2010

Figure 11. Current smoking, adults, by education, Guam, 2010

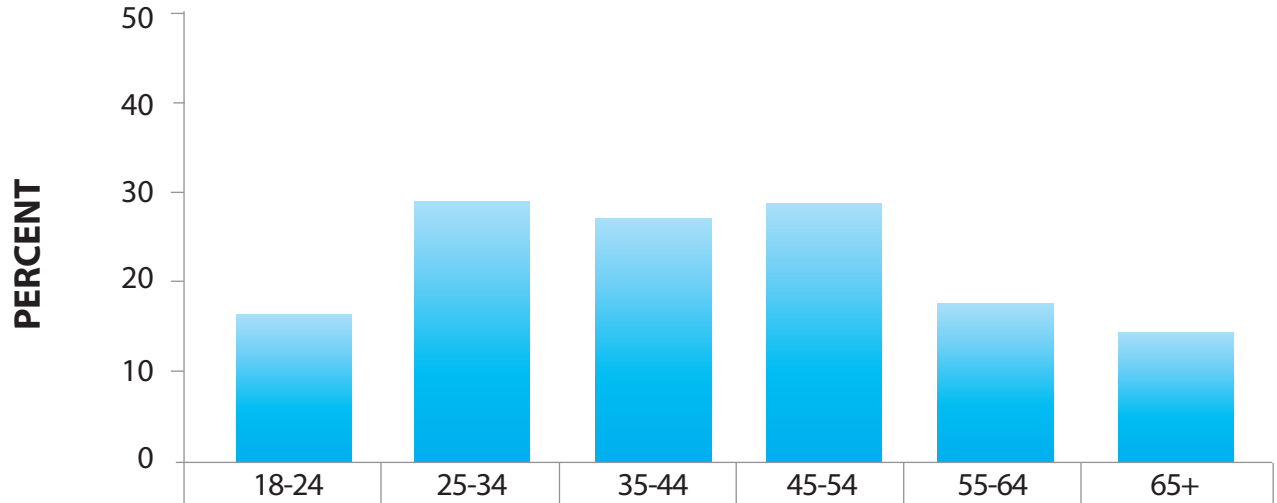


	< High School	H.S. or G.E.D.	Some post H.S.	College grad
Prevalence		27.8	15.6	15.9

Source: Guam BRFSS, 2010

Smoking is highest among adults aged 25-54, and is reported less frequently by those over 55. This probably represents the survival advantage of non-smokers, which becomes manifest after the 4th and 5th decades of life (Figure 12).

Figure 12. Current smoking, adults, by age group, Guam, 2010

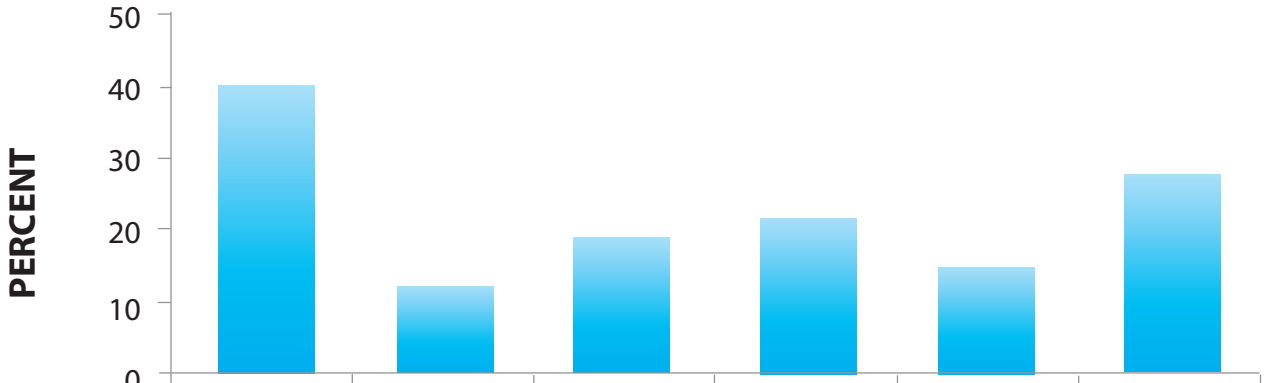


	18-24	25-34	35-44	45-54	55-64	65+
Prevalence	16.5	29.3	27.2	29.0	17.7	14.5

Source: Guam BRFSS, 2010

There is a marked variation in current smoking rates across the various ethnic groups in Guam. Chamorros have the highest rates – 40% of Chamorro adults are current smokers. Filipinos have the lowest rates, with 12.3% of adults reporting current smoking (Figure 13). This difference may explain, in part, the disparity in lung cancer and cardiovascular prevalence and morbidity amongst these groups.

Figure 13. Current smoking, adults, by ethnicity, Guam, 2010



	Chamorro	Filipino	White/ Caucasian	Other Asian	Other Micronesian	Other
Prevalence	40.3	12.3	19.0	21.9	14.9	28.1

Source: Guam BRFSS, 2010

The percentage of current smokers who tried to quit for at least one day in the past year increased from 61% in 2003 to 69.3% in 2010 (Figure 14), and may reflect greater awareness and readiness to quit, as well as greater availability of cessation services through the DMHSA cessation program (established in 2003) and the DPHSS quitline (established in August 2007). The data indicate the ongoing need for cessation services to support those who desire to quit using tobacco.

Figure 14. Quit attempts in the past 12 months, adults, Guam, 2003-2010

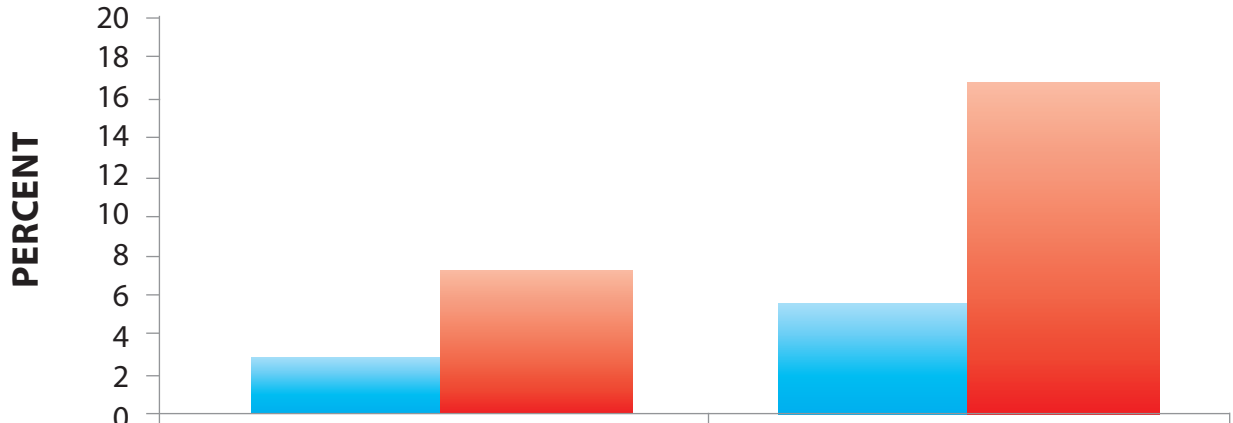
	2003	2004	2005	2006	2007	2008	2009	2010
Percent	61				64.7	66.1	58.3	69.3

Source: Guam BRFSS, 2003-2010

Smokeless Tobacco Use

In 2009, the Guam BRFSS started asking about smokeless tobacco use (specifically chewing tobacco, snuff and/or snus). Adults in Guam reported lifetime smokeless tobacco use rates of 7.3% in 2009 and 16.7% in 2010. Current smokeless tobacco use increased from 4.2% in 2009 to 6.9% in 2010 (Figure 15). Majority of current users were under the age of 45 years (Figure 16). Men were 5 times more likely than women (Figure 17) to report currently using smokeless tobacco (11.5% vs. 2.2% in 2010). Smokeless tobacco use was lowest among those with the highest educational attainment (Figure 18). The relationship with annual income was less clear (Figure 19). Overall, for both years that data were available, consumption was highest among other Micronesians (Figure 20).

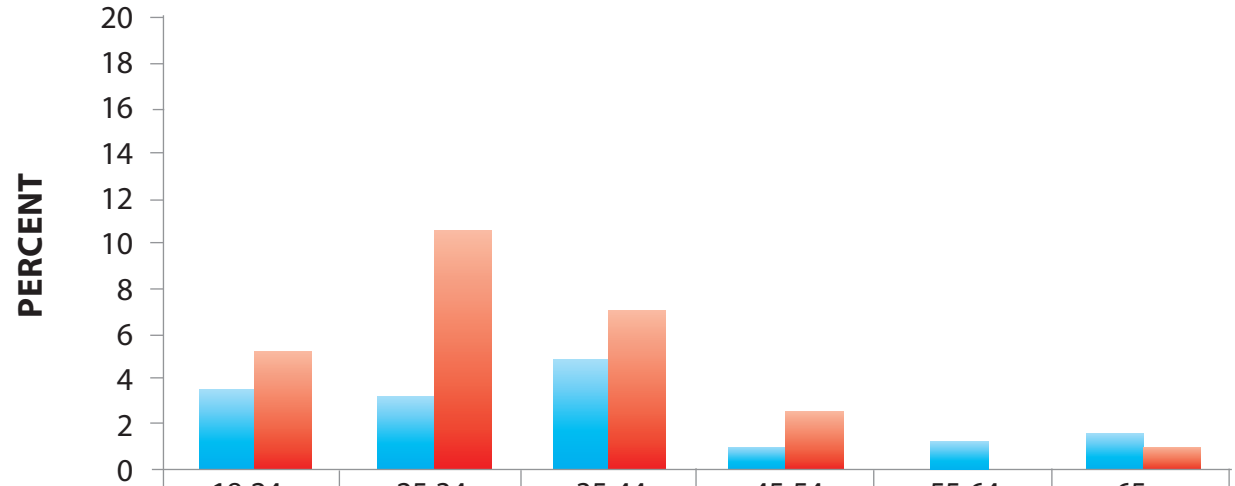
Figure 15. Current smokeless tobacco use, adults, Guam, 2009-2010



	2009	2010
Current Use	2.9	5.7
Lifetime Use	7.3	16.7

Source: Guam BRFSS, 2009-2010

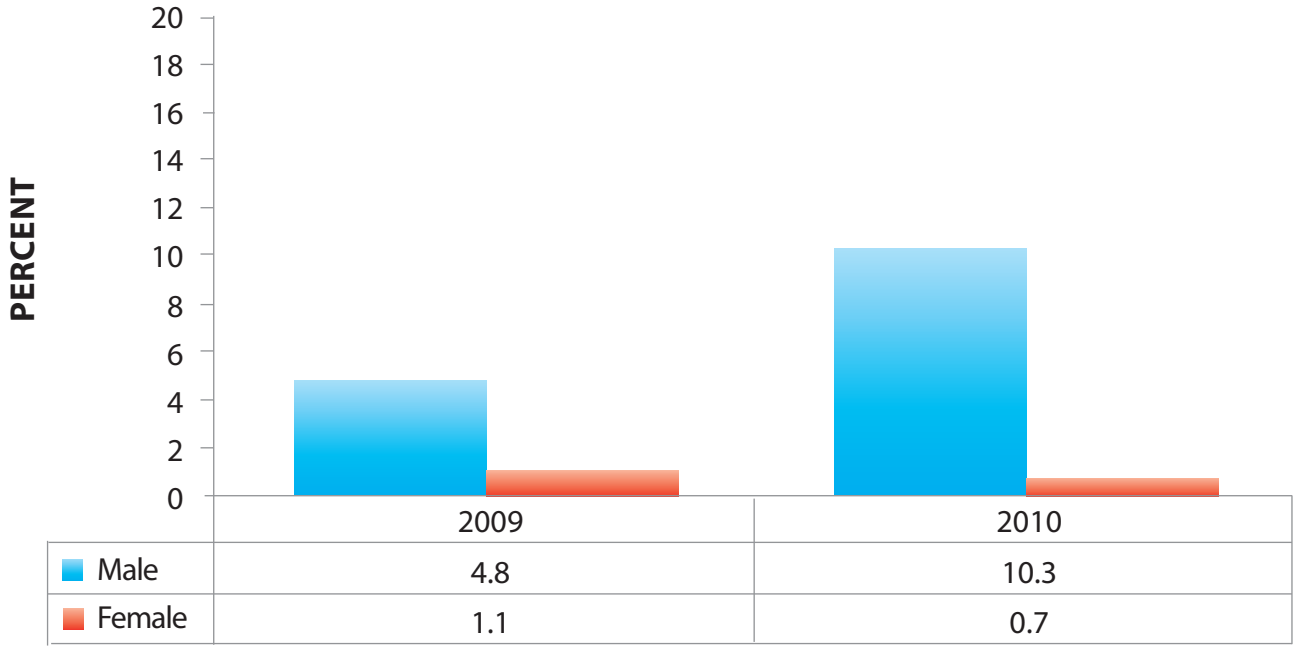
Figure 16. Current smokeless tobacco use by age group, adults, Guam, 2009-2010



	18-24	25-34	35-44	45-54	55-64	65+
2009	3.6	3.2	4.8	1.0	1.3	1.6
2010	5.3	10.7	7.0	2.5	0	1

Source: Guam BRFSS, 2009-2010

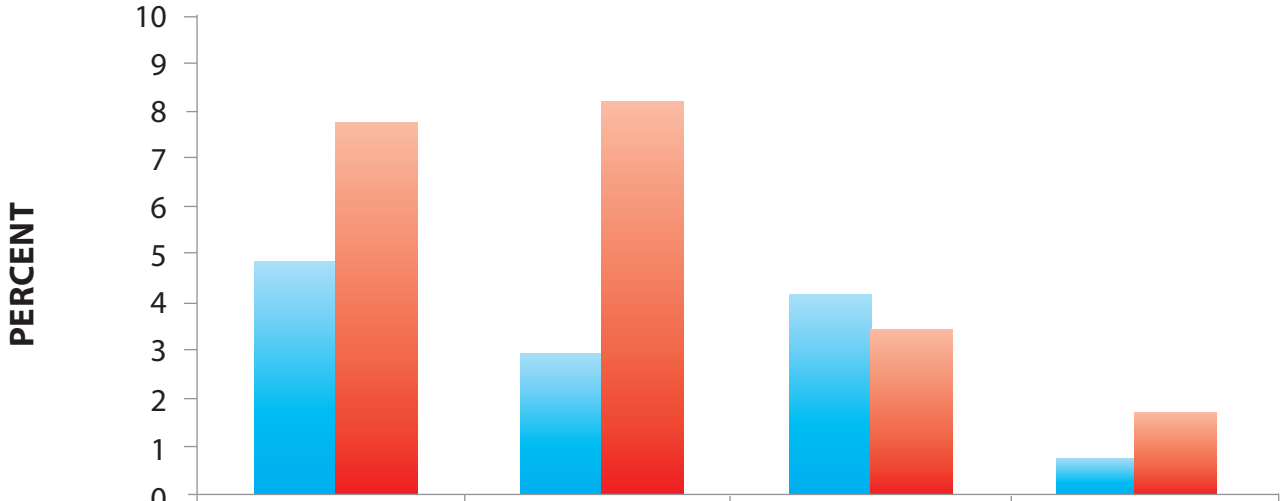
Figure 17. Current smokeless tobacco use, adults, by sex, Guam, 2009-2010



	2009	2010
Male	4.8	10.3
Female	1.1	0.7

Source: Guam BRFSS, 2009-2010

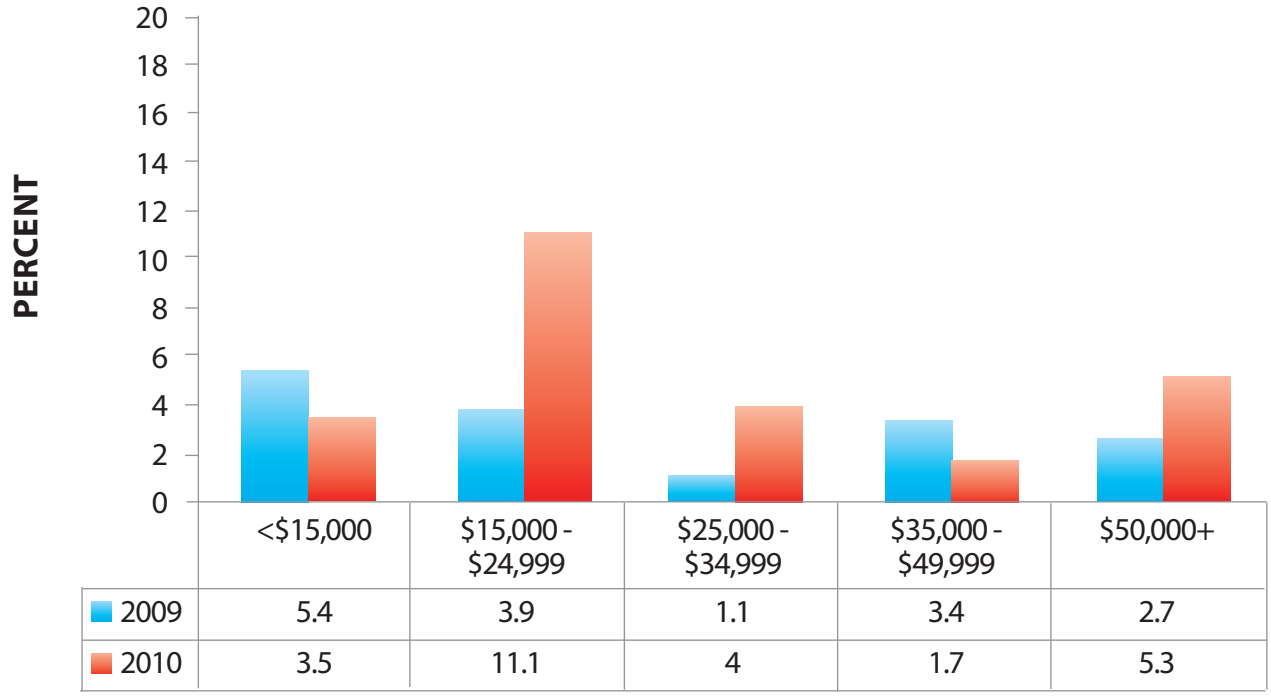
Figure 18. Current smokeless tobacco use by educational attainment, adults, Guam, 2009-2010



	<High School	H.S. or G.E.D.	Some post H.S.	College grad
2009	4.9	3.0	4.2	0.8
2010	7.8	8.2	3.5	1.7

Source: Guam BRFSS, 2009-2010

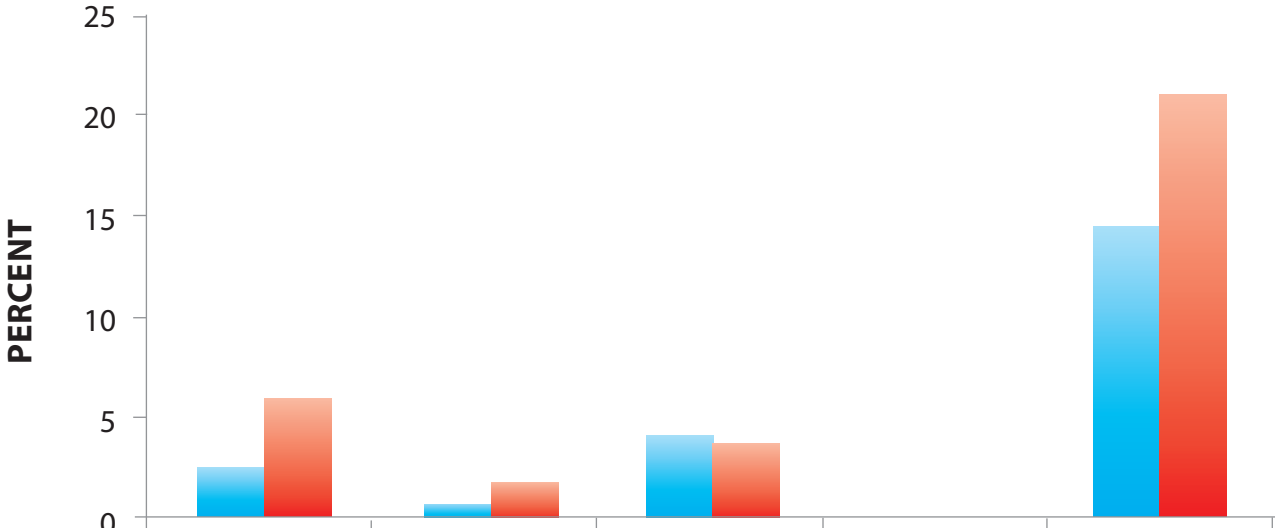
Figure 19. Current smokeless tobacco use by income, adults, Guam, 2009-2010



	<$15,000	$15,000 - $24,999	$25,000 - $34,999	$35,000 - $49,999	$50,000+
2009	5.4	3.9	1.1	3.4	2.7
2010	3.5	11.1	4	1.7	5.3

Source: Guam BRFSS, 2009-2010

Figure 20. Current smokeless tobacco use by ethnicity, adults, Guam, 2009-2010



	Chamorro	Filipino	White / Caucasian	Asian	Micronesian
2009	2.5	0.7	4.2	0.0	14.5
2010	6	1.6	3.7	0	21.1

Source: Guam BRFSS, 2009-2010

Age at first use of tobacco products

The age at first use of cigarettes is lower than the age at first use of smokeless tobacco products. Table 11 outlines the range and weighted average ages at first use for cigarettes and smokeless tobacco products for years 2009 and 2010.

Table 11. Age at first use, adults, Guam, 2009-2010

	2009		2010	
	Range (years)	Weighted mean (years)	Range (years)	Weighted mean (years)
Cigarettes Smokeless	6-71	17.3	7-48	16.9
Tobacco products	7-88	22.3	8-47	20.2

Source: Guam BRFSS, 2009-2010

Youth Consumption

Data on youth smoking is 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. Additional sources of information include smaller scale surveys conducted by DMHSA, Sanctuary Inc. and the Department of Youth Affairs (DYA).

Data from the YRBS for the years 1999, 2001, 2003 and 2005 were not reported in national databases because the data were not weighted. The withdrawal of several private schools from the survey, after sampling was already carried out, resulted in low overall response rates for 1999-2003. In 2005, a number of 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.

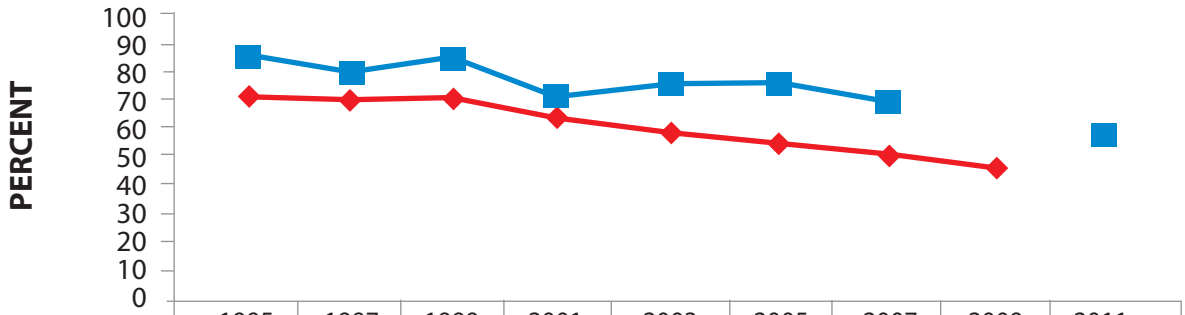
An additional challenge is the change in coding categories for ethnicity/race over the different survey years. For this profile, categories were collapsed to: Filipino, Other Asian, Chamorro, Micronesian Islanders, White and Others. However, only Chamorro, Filipino and Micronesian Islanders were retained consistently throughout the various survey years.

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

Smoking

Prevalence of smoking among youth has been declining in the US mainland and on Guam. Lifetime smoking, current smoking, current frequent cigarette use, ever-daily smoking and the percent of youth who smoked their first cigarette for the first time before the age of 13 years have been decreasing steadily since 1995. However, Guam rates, except for current smoking, have declined less rapidly than or kept pace with the US median (Figures 21-25).

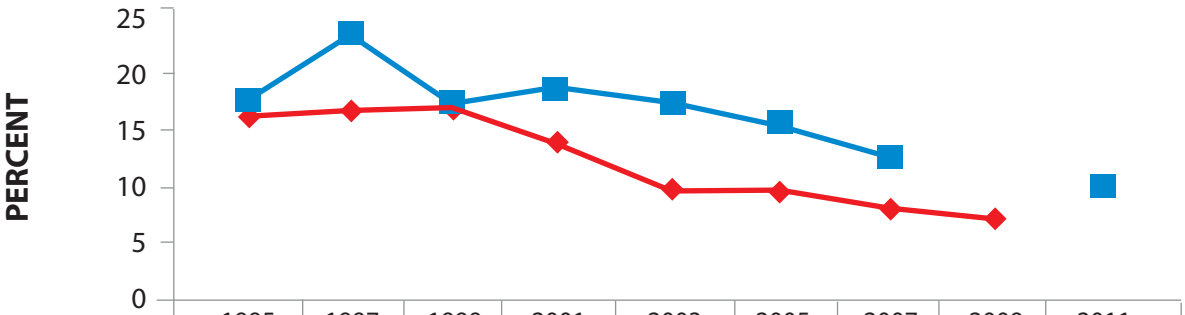
Figure 21. Lifetime smoking, high school youth, Guam vs. US, 1995-2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
US median	71.3	70.2	70.4	63.9	58.4	54.3	50.3	46.3	
Guam	84.9	79.1	83.7	70.1	75.6	75	69.7		57.8

Source: YRBS 1995-2011

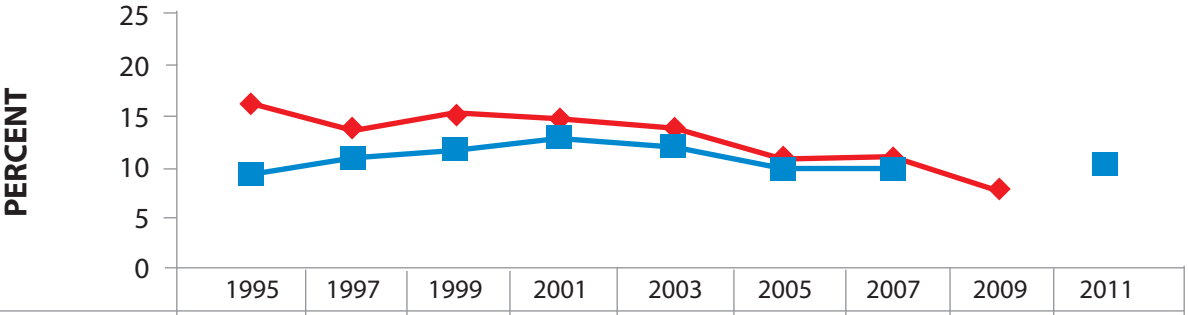
Figure 22. Current frequent smoking, high school youth, Guam vs. US, 1995-2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
US median	16.1	16.7	16.8	13.8	9.7	9.4	8.1	7.3	
Guam	17.5	23.5	17.7	18.5	17.4	15.6	12.5		10

Source: YRBS 1995-2011

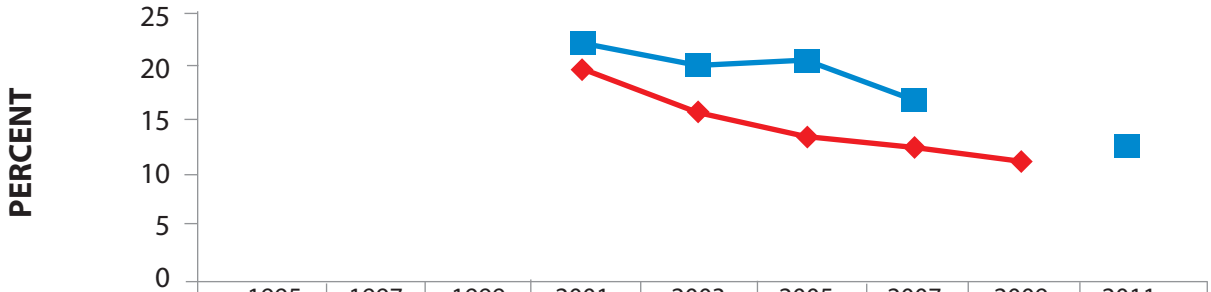
Figure 23. Current heavy smoking, high school youth, Guam vs. US, 1995-2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
US median	16.2	13.8	14.9	14.4	13.7	10.7	10.7	7.8	
Guam	9.3	11	11.9	12.9	12.2	9.6	10		10

Source: YRBS 1995-2011

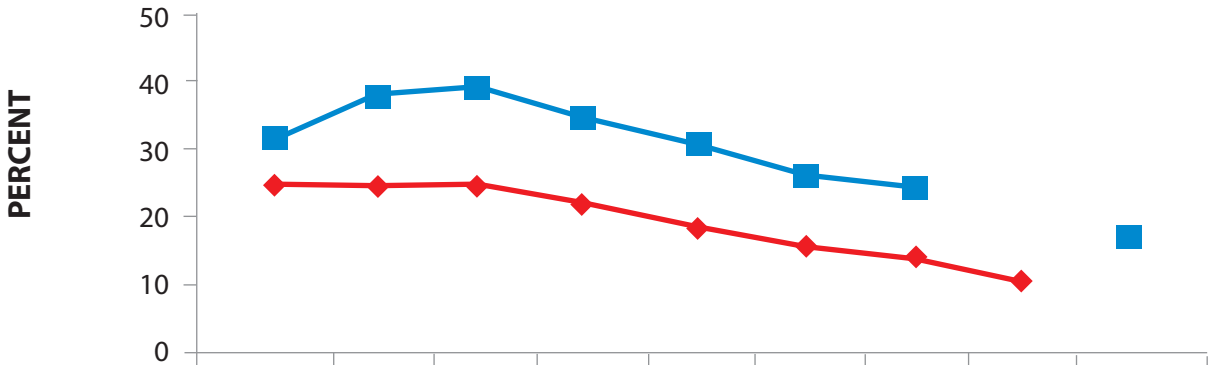
Figure 24. Ever daily smoking, high school youth, Guam vs. US, 1995-2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
US median				20	15.8	13.4	12.4	11.2	
Guam				22.3	20.2	20.6	17		12.6

Source: YRBS 1995-2011

Figure 25. Smoked a whole cigarette before age 13 years, high school youth, Guam vs. US, 1995-2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
US median	24.9	24.8	24.7	22.1	18.3	16	14.2	10.7	
Guam	31.5	37.9	39.1	34.3	30.7	25.8	24.5		17.1

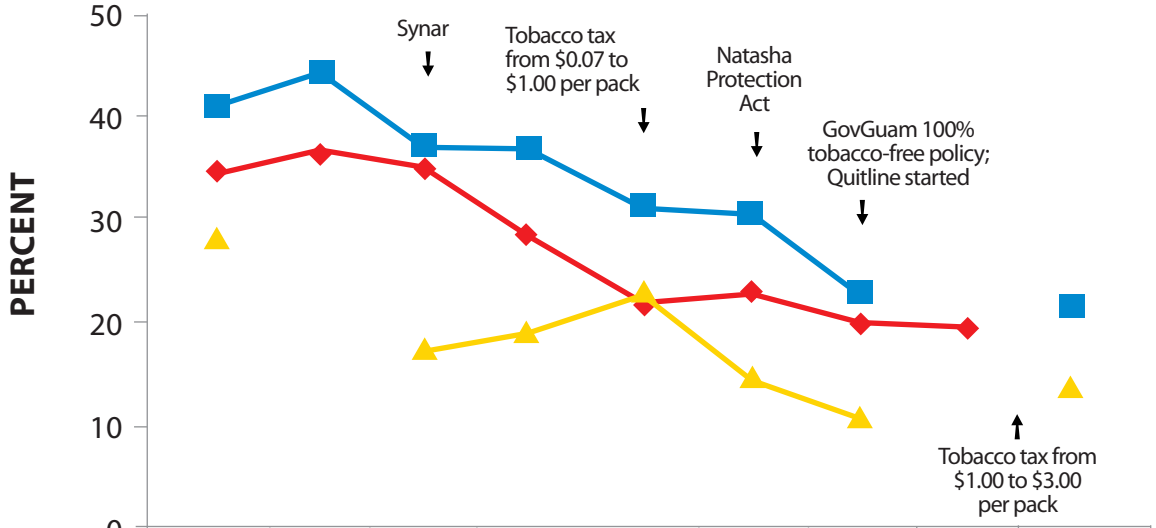
Source: YRBS 1995-2011

In 2011, almost 6 out of 10 high school students in Guam have tried smoking. One in five are current smokers, and 1 in 10 are heavy smokers. Thirteen percent have been daily smokers at some point in their lives. Seventeen percent smoked their first cigarette before the age of 13 years.

On Guam, the decline in current smoking started in 1999, followed by significant drops in 2003 for high school students and 2005 for middle school students (Figure 26). In 2007, both high school and middle school smoking rates continued to decrease. Although Guam surpassed the median US smoking rate for high school students in the 1990's and early 2000's, more recently, the decline in smoking was faster among Guam youth.

Of interest, 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 DMHSA 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; which remains, to date, the largest single-time tax increase among all US States and Territories. The temporal association between these positive policy and program changes with decreases in youth smoking rates appears significant.

Figure 26. Current smoking, high school and middle school, Guam vs. US, 1995-2011

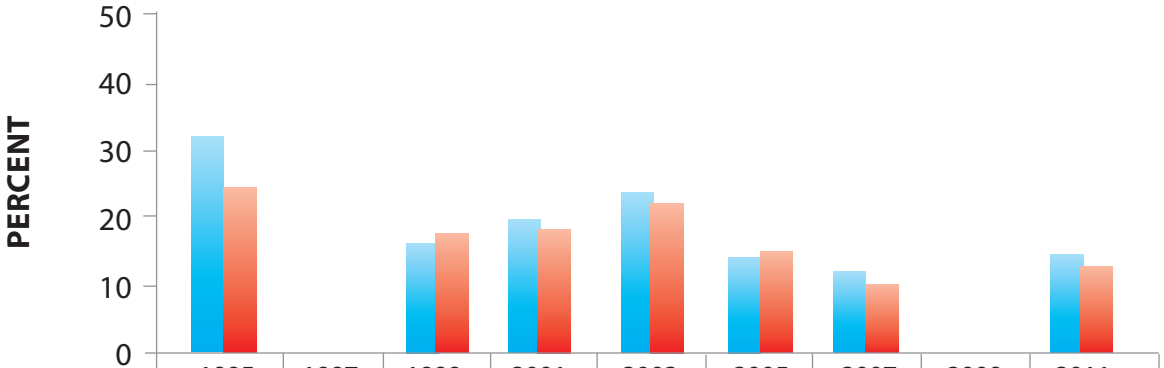


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Guam HS	41.1	44.7	37.3	37.1	31.67	30.8	23.1		21.9
USA HS	34.8	36.4	34.8	28.5	21.9	23	20	19.5	
Guam MS	28.4		17.6	19.3	23.3	14.8	11		13.9

Source: YRBS 1995-2011

Unlike adults, current smoking rates are similar for young males and females (Figures 27 and 28). This is worrisome, and raises the potential for tobacco-induced poorer reproductive outcomes if smoking rates among young females are not decreased in the near future. Over the longer term, this trend foreshadows rising tobacco-related morbidity and mortality among women in Guam.

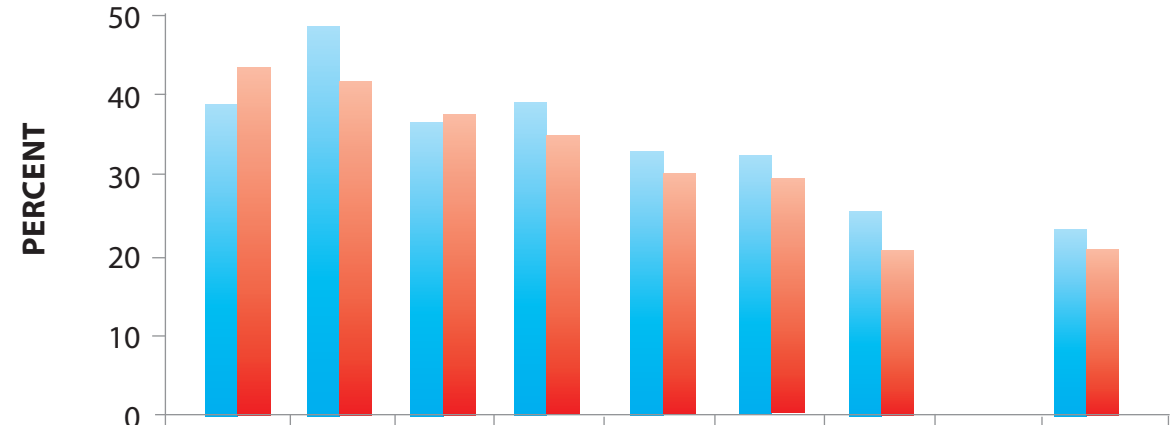
Figure 27. Current smoking, middle school by sex, Guam, 1995-2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
Male	32.2		16.6	20	24	14.4	11.9		14.8
Female	24.5		17.7	18.5	22.4	15.2	10.1		12.9

Source: YRBS 1995-2011

Figure 28. Current smoking, high school by sex, Guam, 1995-2011

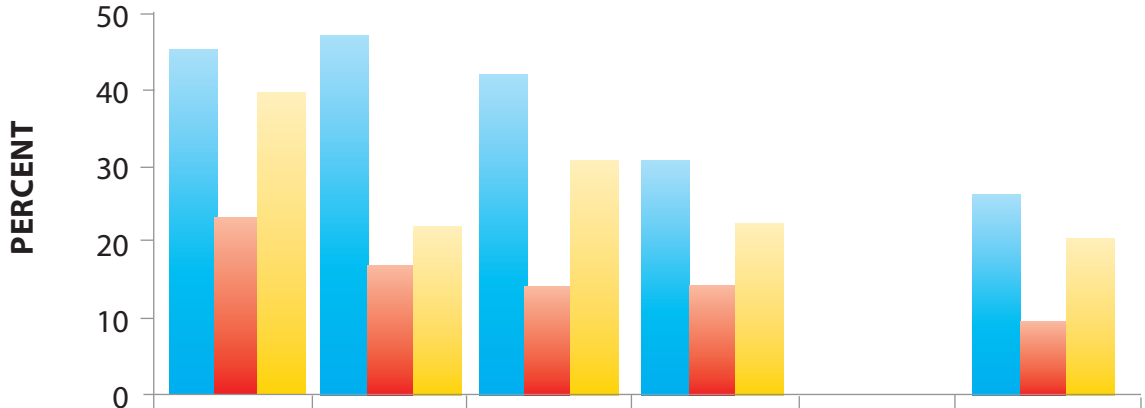


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Male	39	48.3	36.7	39.1	33.1	32.3	25.4		23.2
Female	43.3	41.6	37.6	35	30	29.7	20.4		20.5

Source: YRBS 1995-2011

Current smoking among youth disaggregated by ethnicity/race is summarized in Figures 29 and 30. Ethnic categories employed in the YRBS surveys shifted in different years; thus we retained only the three ethnic categories that remained constant throughout all the survey years. In some years, the total numbers of respondents under the categories "Filipino" and/or "Other Micronesian" were small (n<50); therefore caution is required when interpreting year-to-year differences. Among both high school and middle school students, Chamorros have the highest rates for current smoking for all years and Filipinos have the lowest rates.

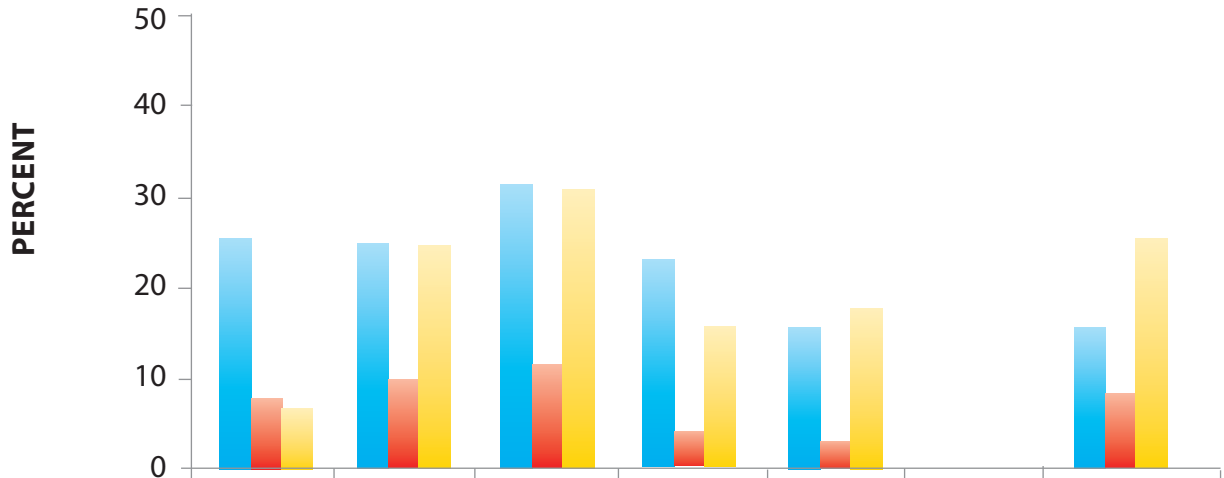
Figure 29. Current smoking, high school by ethnicity, Guam, 2001-2011



	2001	2003	2005	2007	2009	2011
Chamorro	45.2	47	42.2	31		26.4
Filipino	23.3	16.7	14.2	14.2		9.4
Other Micronesian	39.6	22	30.9	22.3		20.7

Source: YRBS 2001-2011
Note: n<50 for Filipinos in 2003, 2005, 2007, 2011; n<50 for Other Micronesians for all years

Figure 30. Current smoking, middle school by ethnicity, Guam, 1999-2011

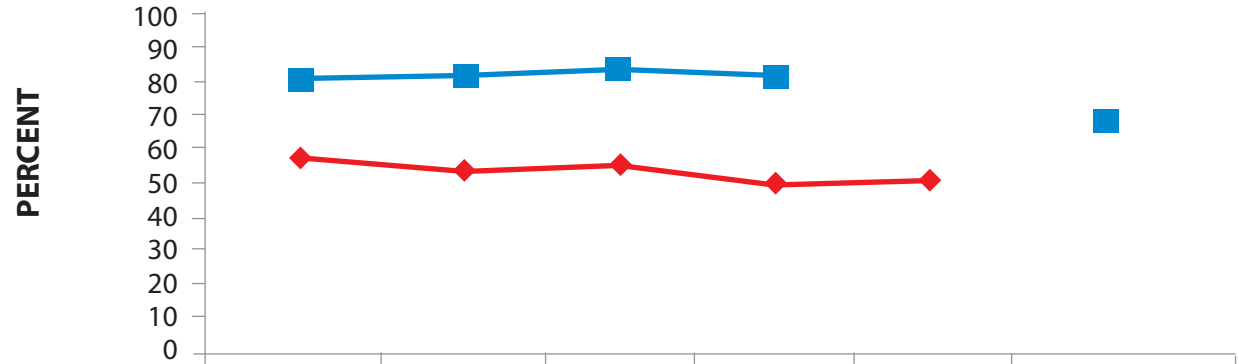


	1999	2001	2003	2005	2007	2009	2011
Chamorro	25.6	24.9	31.5	23.3	15.8		15.8
Filipino	7.7	9.8	11.5	4.1	3.1		7.9
Other Micronesian	6.7	24.8	30.8	15.7	17.7		25.7

Source: YRBS 1999-2011
Note: n<50 for Filipinos and Other Micronesians for all years

The percentage of youth smokers wanting to quit in the past year has always been higher in Guam than in the US. However, in 2011, the Guam rate for quit attempts decreased, narrowing the gap (Figure 31). Despite the decline, majority of youth smokers want to quit, signaling the need to provide cessation services for this population.

Figure 31. Percent of youth smokers wanting to quit in the past 12 months, high school, Guam vs. US, 2001-2011



	2001	2003	2005	2007	2009	2011
Guam	80.3	81.5	83.6	81.9		68.7
US median	57.4	53.8	54.6	49.7	50.8	

Source: YRBS 2001-2011

Guam initiated its annual unannounced tobacco vendors' inspections in 1999, in compliance with the Synar law. Compliance rates reached federal targets in 2003, and have remained above target since then.

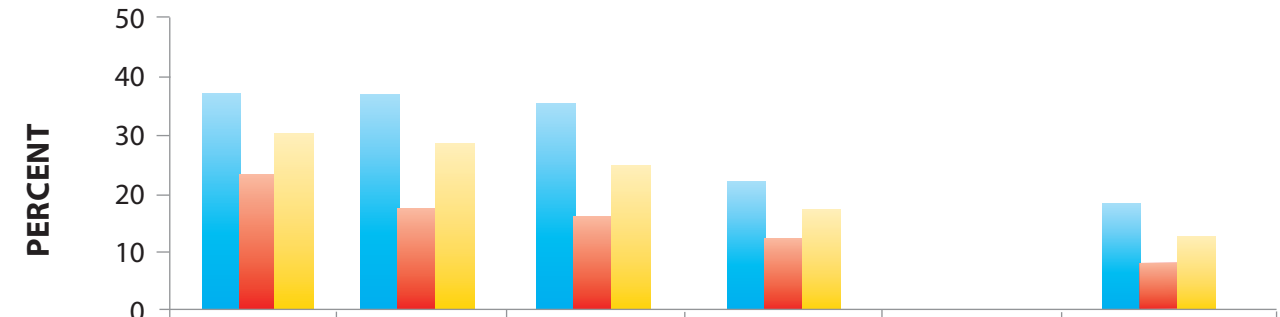
The YRBS provides information on youth smokers who purchase their cigarettes from stores (Table 12 and Figure 32). The data indicates that about one in eight (13%) high school smokers and one in fourteen middle school smokers (7.0%) purchased cigarettes from a store in 2011. The percentage of high school smokers who bought their cigarettes from a store has been declining since 2001, but the middle school percentage is rising, despite low retailer violation rates during the annual tobacco retailers' inspection. Males are more than twice as likely as females to purchase cigarettes from a store (Figure 32).

Table 12. Tobacco retailer violation rates and percent of youth purchasing cigarettes from a store, Guam, 2000-2011

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	---	---
2010	11.6	---	----
2011	7.8	7.0	13.0

Source: Synar reports, 2001-2012; YRBS 2001-2011

Figure 32. Percent purchasing cigarettes from a store, by sex, Guam, 2001-2011



	2001	2003	2005	2007	2009	2011
Male	36.8	37	35.1	21.3		17.6
Female	22.9	17.5	15.7	12.1		8.3
Total	30	27.9	24.4	17.3		13

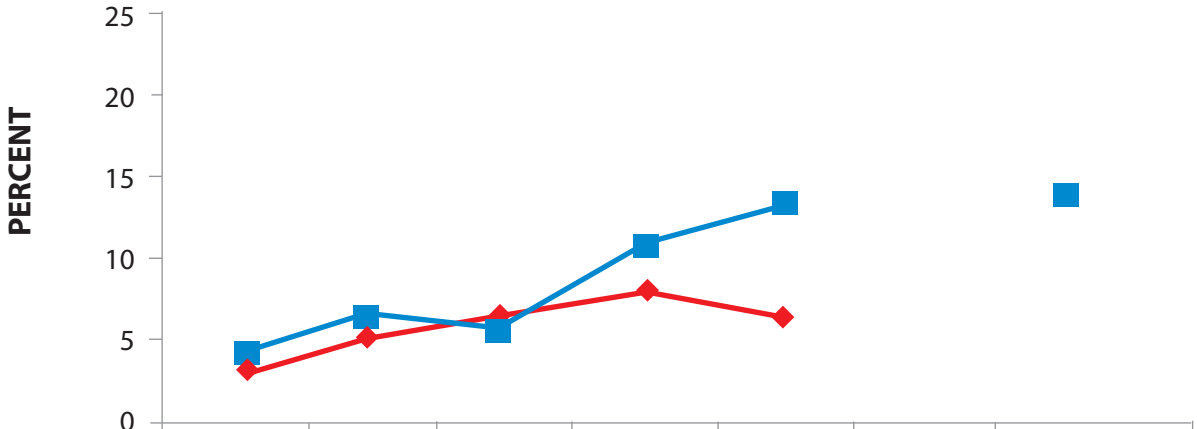
Source: YRBS 2001-2011

These figures 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.

Smokeless tobacco use

The use of other tobacco products such as chewing tobacco is less prevalent than cigarette smoking among Guam's youth. However, while the actual numbers of users are small, the rate of other tobacco use, including chewing tobacco mixed with betel nut (areca nut/betel quid), is increasing among both high school and middle school youth (Figure 33). The rates for high school youth doubled between 2003 and 2005, and increased further in 2007. Unfortunately, the YRBS dropped the question on other tobacco use for middle school students in 2011. The use of other tobacco products deserves close monitoring, and prevention and early intervention efforts are needed to offset any further increases.

Figure 33. Smokeless tobacco use, high school vs. middle school, Guam, 1999-2011

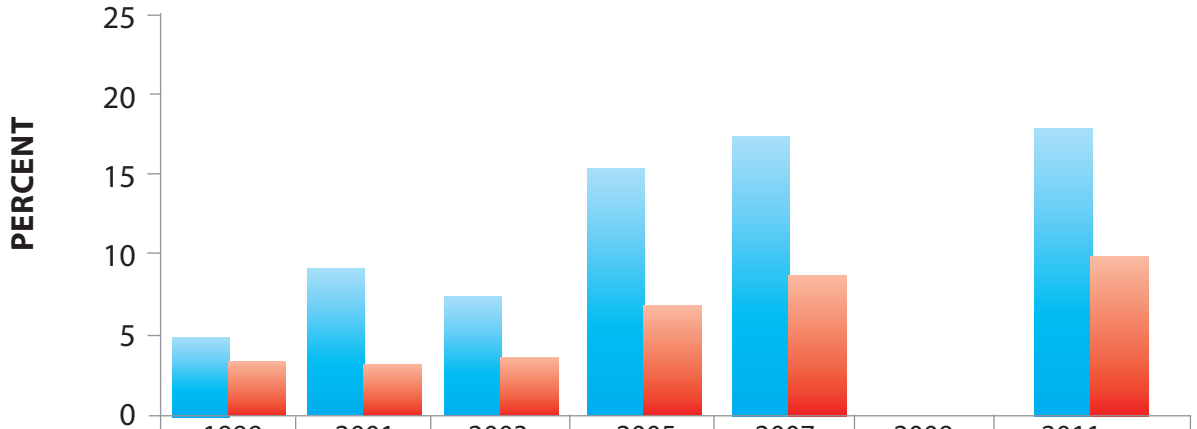


	1999	2001	2003	2005	2007	2009	2011
HS	4	6.3	5.6	10.6	13.4		14
MS	3.2	5	6.3	7.9	6.3		

Source: YRBS 1999-2011

As with adults, overall, males have a higher prevalence of using other tobacco products than females (Figures 34 and 35). This is unlike the situation with youth smoking, where male and female rates are similar.

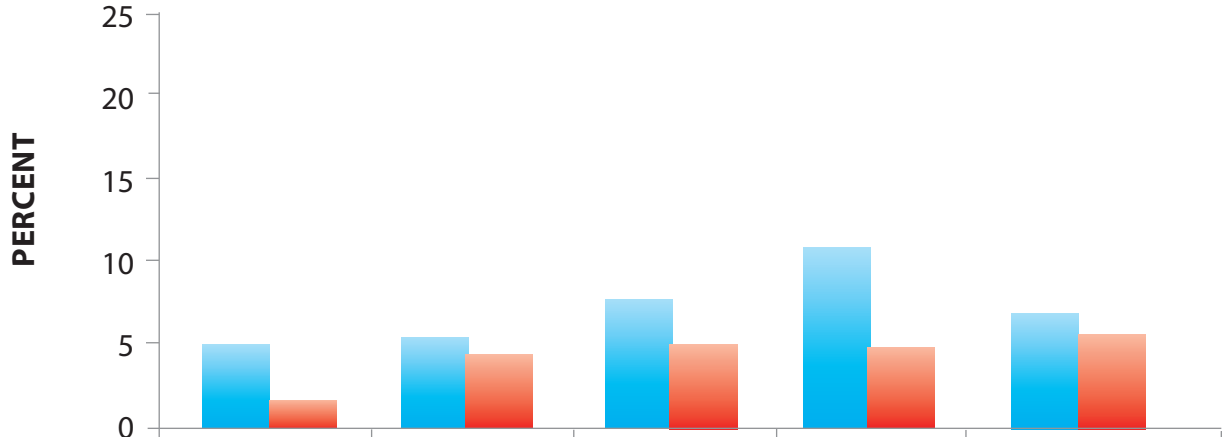
Figure 34. Smokeless tobacco use, by sex, high school, Guam, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Male	4.8	9.2	7.4	15.4	17.3		17.8
Female	3.2	3.1	3.6	6.6	8.7		9.9

Source: YRBS 1999-2011

Figure 35. Smokeless tobacco use, by sex, middle school, Guam, 1999-2007

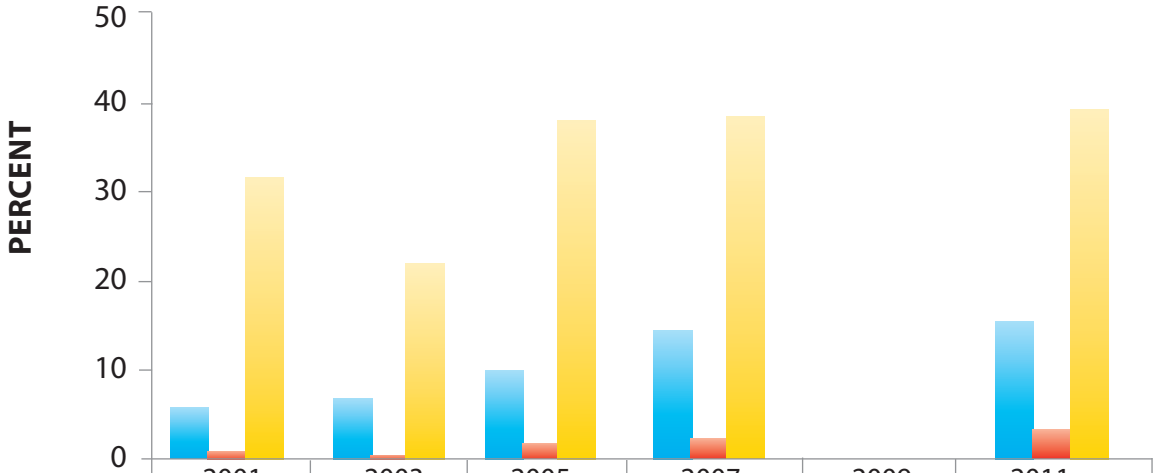


	1999	2001	2003	2005	2007
Male	5	5.5	7.7	10.9	6.9
Female	1.6	4.4	5	4.9	5.6

Source: YRBS 1999-2007

The use of smokeless tobacco products is highest among Micronesian Islanders. The difference between Other Micronesians and all other ethnic categories is remarkable. Filipinos have the lowest rates; however, rates are increasing. Prevalence of using other tobacco products appears to be increasing among high school youth, regardless of ethnicity, and among Filipino and Chamorro middle school youth (Figures 36 and 37). It is unclear what proportion of youth is using these alternative tobacco products as is, and what proportion is 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).

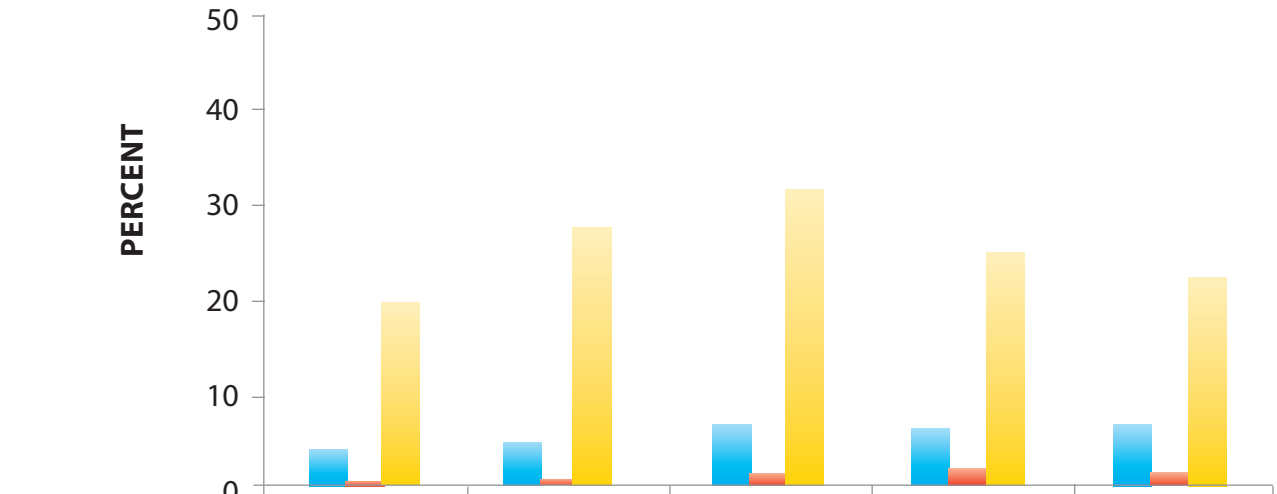
Figure 36. Smokeless tobacco use, by ethnicity, high school, Guam, 2001-2011



	2001	2003	2005	2007	2009	2011
Chamorro	5.5	6.8	9.9	14.2		15.4
Filipino	0.6	0.4	1.7	2		3.3
Other Micronesian	31.6	21.7	38.2	38.6		39.4

Source: YRBS 2001-2011

Figure 37. Smokeless tobacco use, by ethnicity, middle school, Guam, 1999-2007



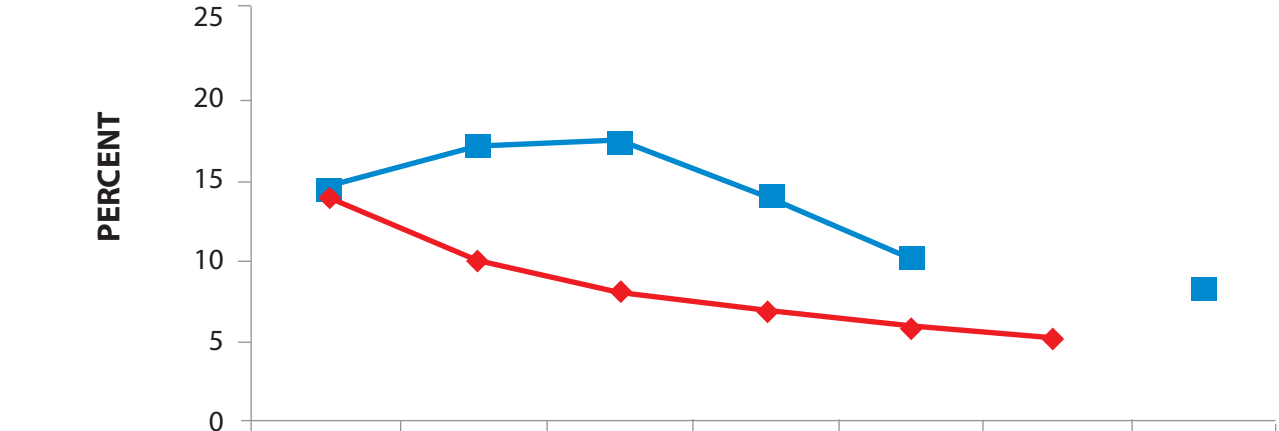
	1999	2001	2003	2005	2007
Chamorro	3.7	4.5	6.4	6.1	6.5
Filipino	0.5	0.8	1.2	1.9	1.3
Other Micronesian	20	27.6	31.7	25	22.1

Source: YRBS, 1999-2011

Use of Cigarettes and Smokeless Tobacco Products on School Property

The YRBS queried students about smoking and the use of smokeless tobacco products on school property within the past 30 days. The percentage of Guam students smoking on school property remained consistently higher than that of the US mainland from 2001 to 2007. Both Guam and the US had declining rates of students smoking on school property over time (Figure 38).

Figure 38. Smoking on school property, high school students, Guam vs. US, 1999-2011

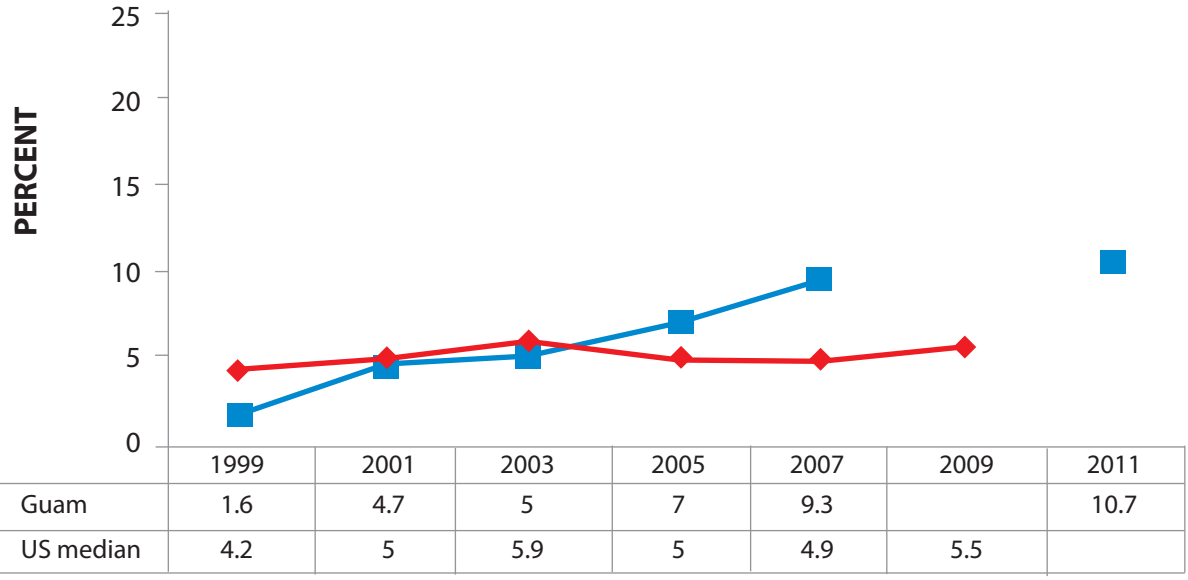


	1999	2001	2003	2005	2007	2009	2011
Guam	14.5	17.3	17.2	14.1	10.2		8.3
US median	14	9.9	8	6.8	5.7	5.1	

Source: YRBS, 1999-2011

The percentage of Guam students reporting smokeless tobacco use on school property surpassed that of the US mainland in 2005. Guam rates continued to increase through 2011, while the US rate appeared to have leveled off in 2005 (Figure 39).

Figure 39. Smokeless tobacco use on school property, high school students, Guam vs. US, 1999-2011

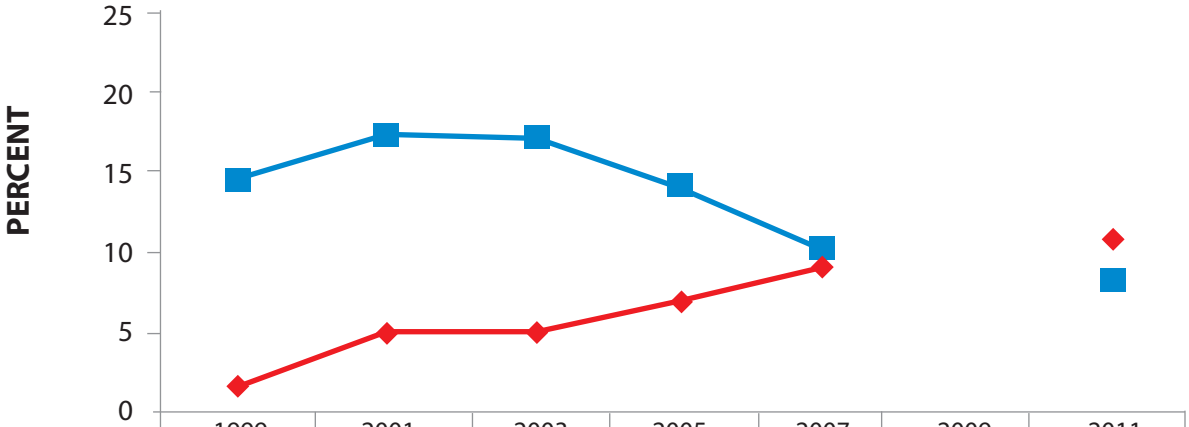


	1999	2001	2003	2005	2007	2009	2011
Guam	1.6	4.7	5	7	9.3		10.7
US median	4.2	5	5.9	5	4.9	5.5	

Source: YRBS, 1999-2011

Among Guam high school students, smoking on school property has declined over time, while the consumption of smokeless tobacco products had steadily increased over the same period. In 2011, the use of smokeless tobacco products on school property surpassed smoking (Figure 40). The changes in trend occurred during those years where key policy measures were enacted. Smokeless tobacco products are easier to hide from school tobacco-free policy enforcers, and have a relatively lower tax imposed on them as compared to cigarettes. These may all contribute to the rise in smokeless tobacco use on school property.

Figure 40. Smoking and smokeless tobacco use on school property, high school students, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Smoking	14.5	17.3	17.2	14.1	10.2		8.3
Smokeless	1.6	4.7	5	7	9.3		10.7

Source: YRBS, 1999-2011

TOBACCO

Consequences

The latest statistics from the DPHSS indicates that four of the top ten causes of death---diseases of the heart, malignant neoplasms (cancer), cerebrovascular disease (stroke) and chronic lung diseases---are directly caused by tobacco. An additional two---diabetes and septicemia---are worsened by tobacco use (Table 13).

Table 13. Top ten causes of death: Guam, 2005

Rank	Cause of Death	# of Deaths	% of all Deaths
1	Diseases of the Heart	222	31.8
2	Malignant Neoplasms	97	13.9
3	Cerebrovascular Disease	65	9.3
4	Diabetes Mellitus	33	4.7
5	Suicide	29	4.2
6	Motor Vehicle Accidents	26	3.7
7	Septicemia	22	3.2
8	Other Accidents	21	3.0
9	Fibrosis and cirrhosis of the Liver	15	2.2
10	Chronic Obstructive Pulmonary Disease	13	1.9

Source: Death Certificates, Office of Vital Statistics, Guam DPHSS (2005 data.)
Note: Total Deaths in 2005 = 697

In relation to cancer, the Guam Cancer Registry very recently released data from 2003-2007. Four of the five top causes of cancer death on Guam for both males and females are tobacco-related (Table 14). Lung, colon, liver and cervical cancer are related to smoking. Nasopharyngeal cancer is related to smoking and chewing tobacco, and second hand smoke exposure has been implicated as a risk factor for breast cancer. Lung cancer is now the major cause of cancer mortality on Guam for both males and females.

Table 14. Top causes of cancer death on Guam, by sex, 2003 to 2007

Top Causes of Cancer Death on Guam 2003-2007	
Males	Females
Lung and Bronchus*	Lung and bronchus*
Prostate	Breast***
Colon and Rectum*	Colon and Rectum*
Liver *	Cervix*
Nasopharynx**	Non-Hodgkin's Lymphoma

Source: Guam Cancer Registry, 2003 to 2007.
*Note: * related to smoking; ** related to chewing tobacco; *** related to second hand smoke exposure*

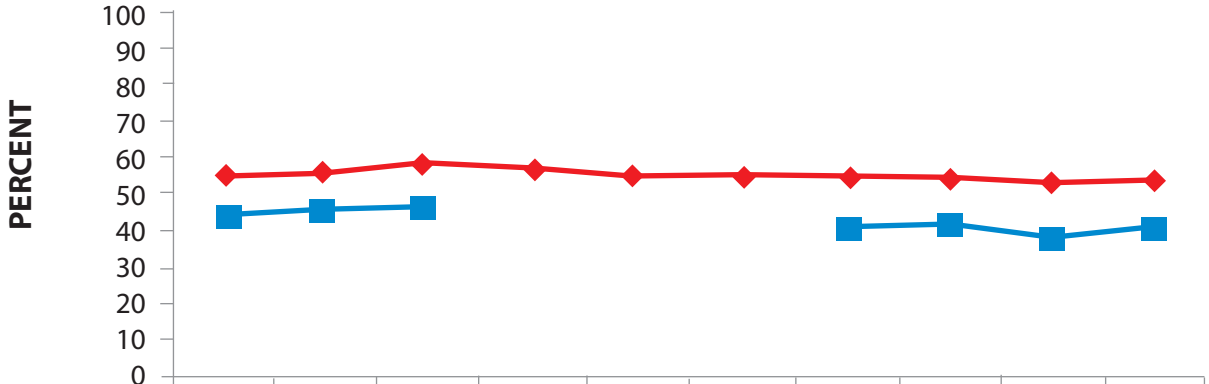
ALCOHOL

Adult consumption

Current Alcohol Use

The 2010 BRFSS defines current alcohol use as having had at least 1 drink of alcohol in the past 30 days. Current alcohol consumption appears unchanged from previous years. In 2010, 40.4% of adults on Guam reported having had at least one drink of alcohol within the past 30 days. This is lower than the nationwide median of 54.1% (Figure 41).

Figure 41. Current drinking, adults, Guam vs. US, 2001-2010

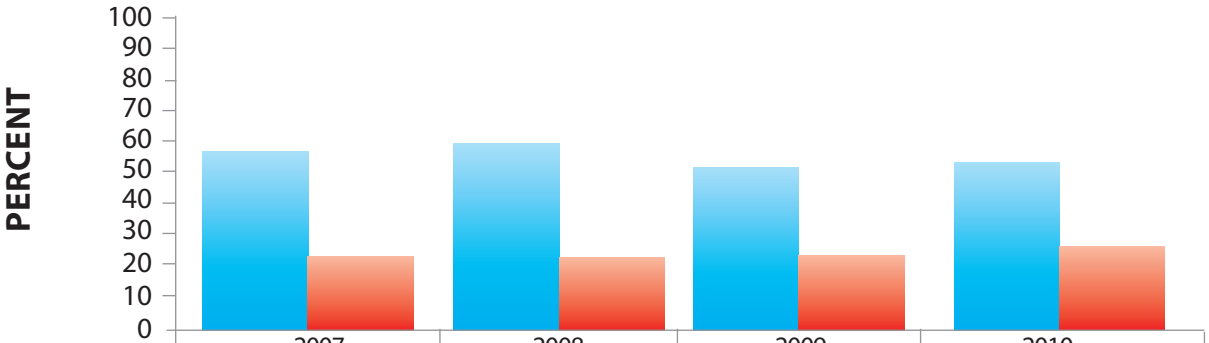


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guam	43.6	45.1	45.7				40.4	41.2	37.7	40.4
USA	55.3	56.6	58.9	56.9	55.6	55.2	54.7	53.9	53.9	54.1

Source: BRFSS, 2001-2010

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 (Figure 42). This sex difference is more marked in Guam as compared to the US (Figure 43).

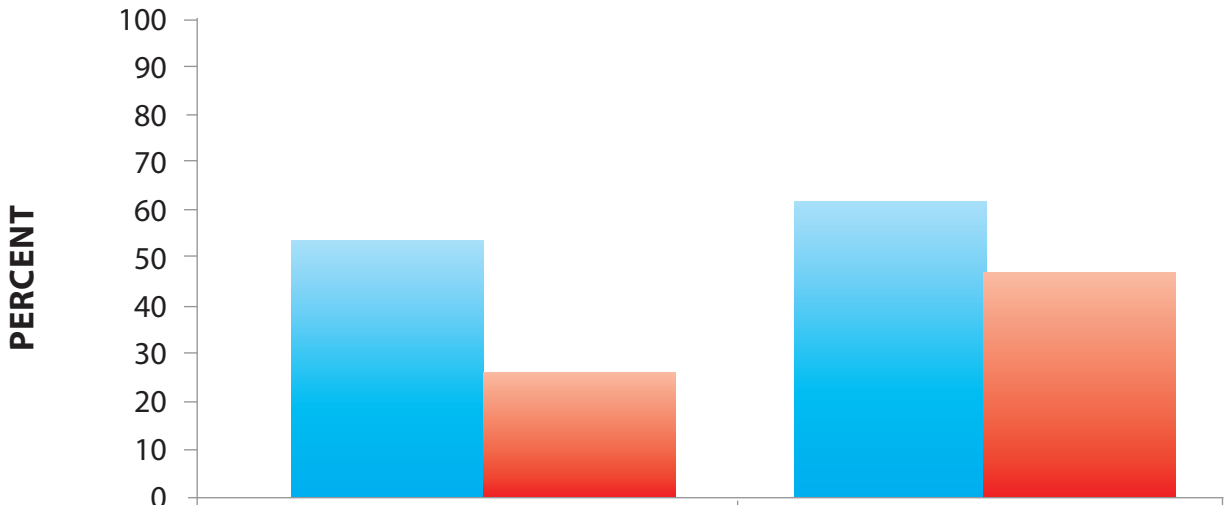
Figure 42. Current drinking, adults, by sex, Guam, 2007-2010



	2007	2008	2009	2010
Male	57.0	59.3	51.9	53.9
Female	23.2	22.6	23.0	26.4

Source: BRFSS, 2007-2010

Figure 43. Current drinking, adults, by sex, Guam vs. US, 2010



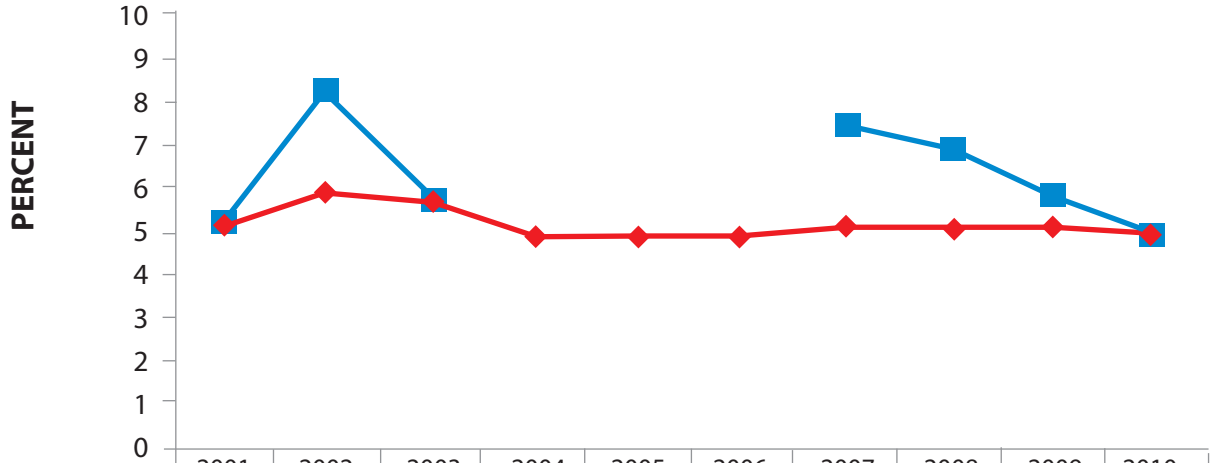
	Guam	USA
Male	53.9	61.6
Female	26.4	47.4

Source: BRFSS 2010

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 on Guam is similar to the US average (Figure 44).

Figure 44. Heavy drinkers, adults, Guam vs. US, 2001-2010

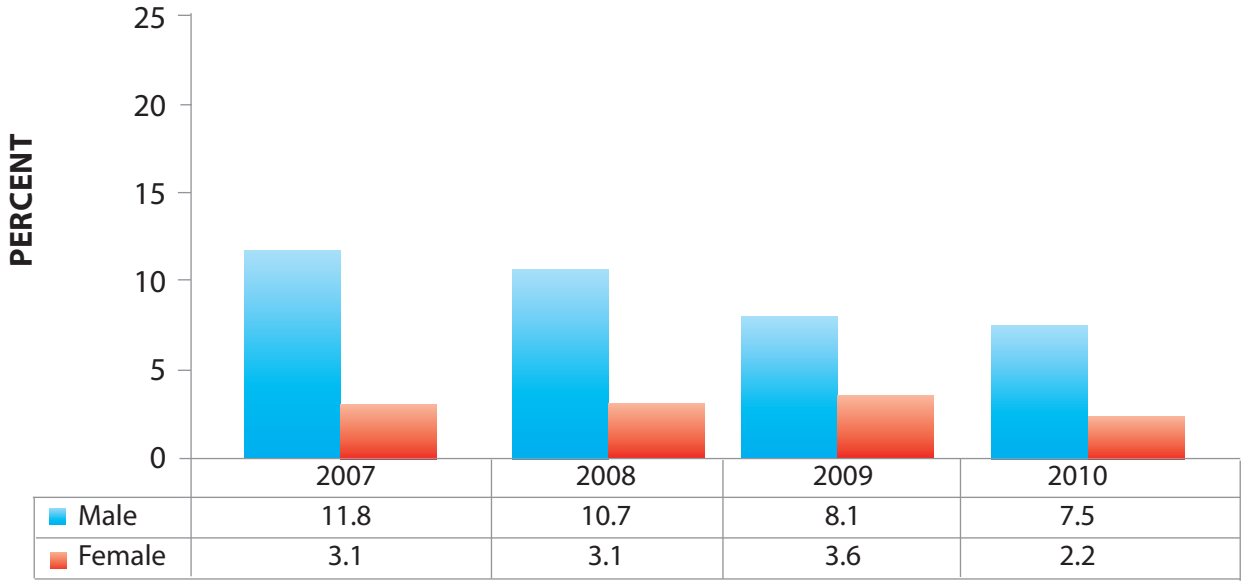


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guam	5.3	8.3	5.7				7.5	6.9	5.8	4.9
USA	5.2	5.9	5.8	4.9	4.9	4.9	5.2	5.1	5.1	4.9

Source: BRFSS 2001-2010

Males were more likely to report heavy drinking than females (Figure 45). Heavy drinking among males on Guam was about 50% higher than the US median, while heavy drinking among women on Guam was almost double the US median. The sex difference in heavy drinking was more marked in Guam (Figure 46).

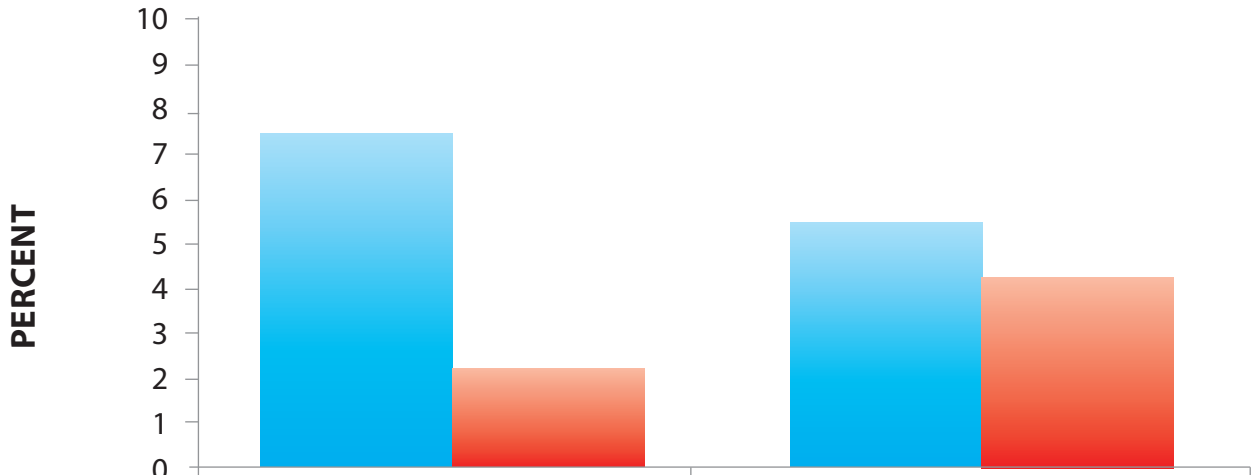
Figure 45. Heavy drinking, adults, by sex, Guam, 2007-2010



	2007	2008	2009	2010
Male	11.8	10.7	8.1	7.5
Female	3.1	3.1	3.6	2.2

Source: BRFSS 2007-2010

Figure 46. Heavy drinking, adults, by sex, Guam vs. US, 2010

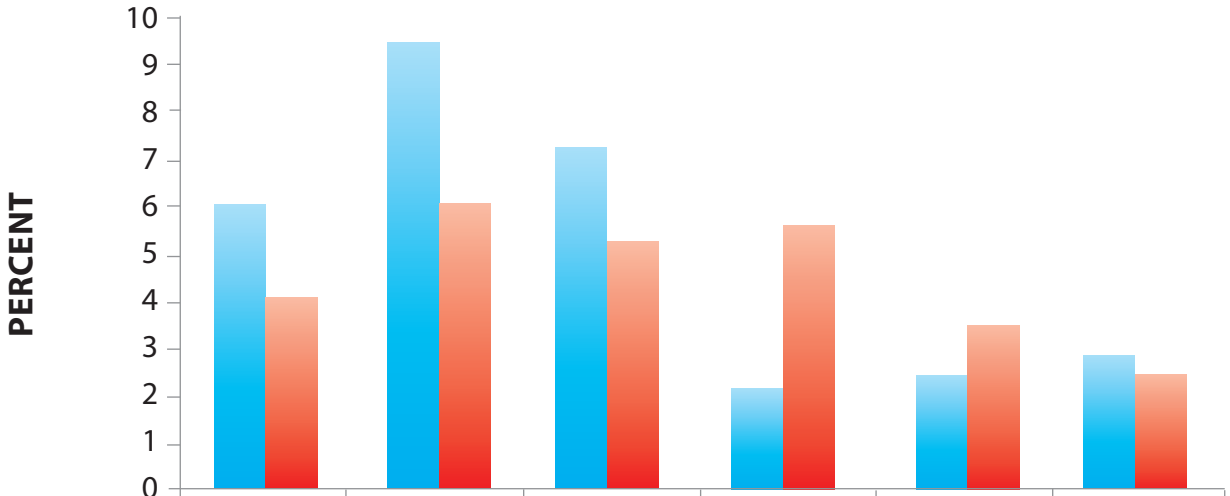


	Guam	USA
Male	7.5	5.4
Female	2.2	4.3

Source: BRFSS 2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5- percentage point scale.

Heavy drinking on Guam was most likely to be reported by younger adults (<45 years of age) (Figure 47) and those with lower educational attainment (Figure 48). The relationship between heavy drinking and income was not clear (Figure 49).

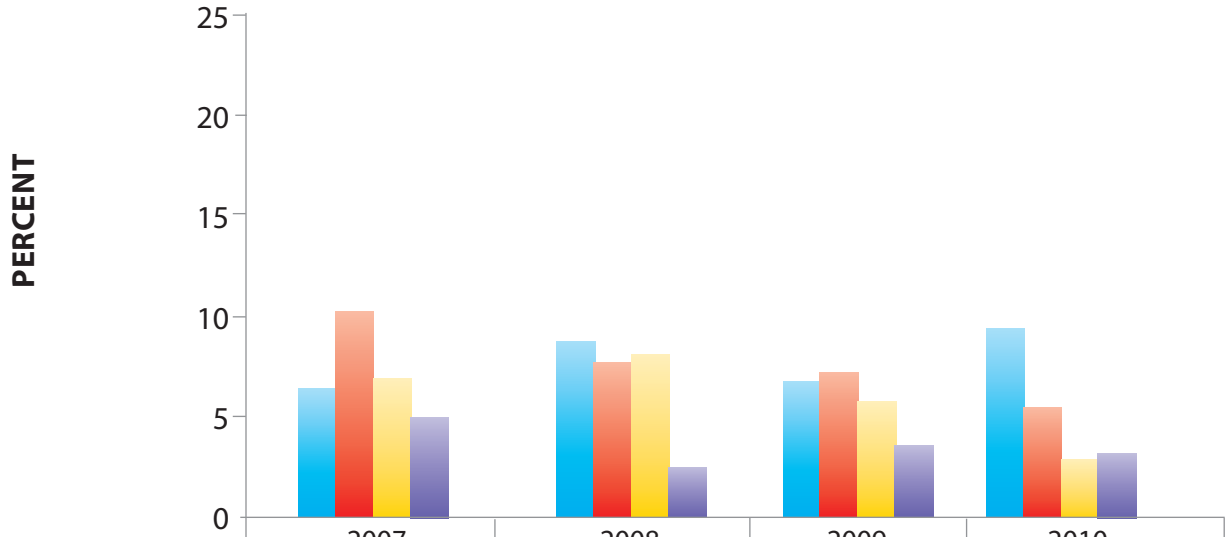
Figure 47. Heavy drinking, adults, by age, Guam, 2009-2010



	18-24	25-34	35-44	45-54	55-64	65+
2009	6.1	9.5	7.3	2.2	2.5	2.9
2010	4.1	6.1	5.3	5.6	3.5	2.5

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

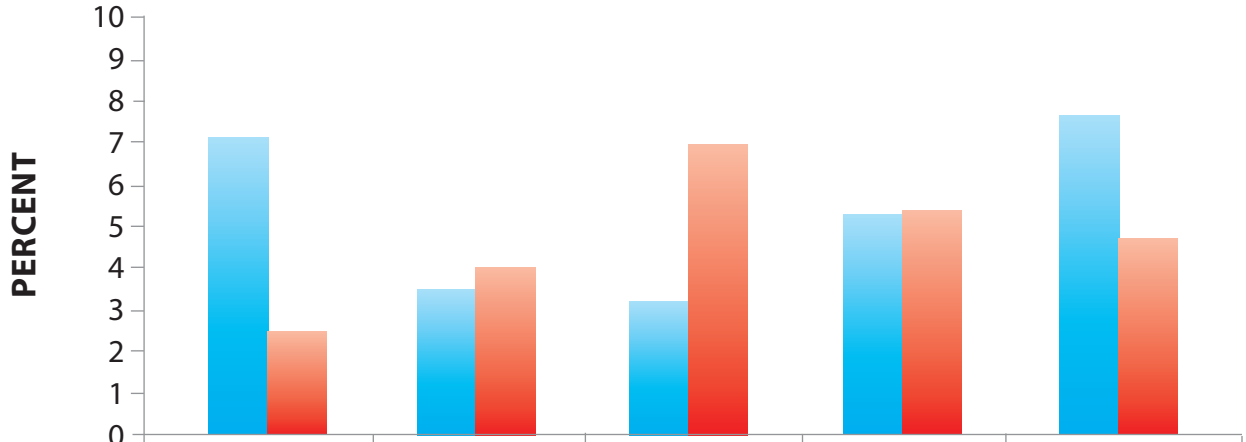
Figure 48. Heavy drinking, adults, by educational attainment, Guam, 2007-2010



	2007	2008	2009	2010
< High School	6.5	8.8	6.7	9.4
H.S. or G.E.D.	10.3	7.8	7.3	5.5
Some post H.S.	6.9	8.1	5.9	2.9
College grad	5.0	2.6	3.5	3.2

Source: BRFSS 2007-2010

Figure 49. Heavy drinkers, adults, by income, Guam, 2009-2010

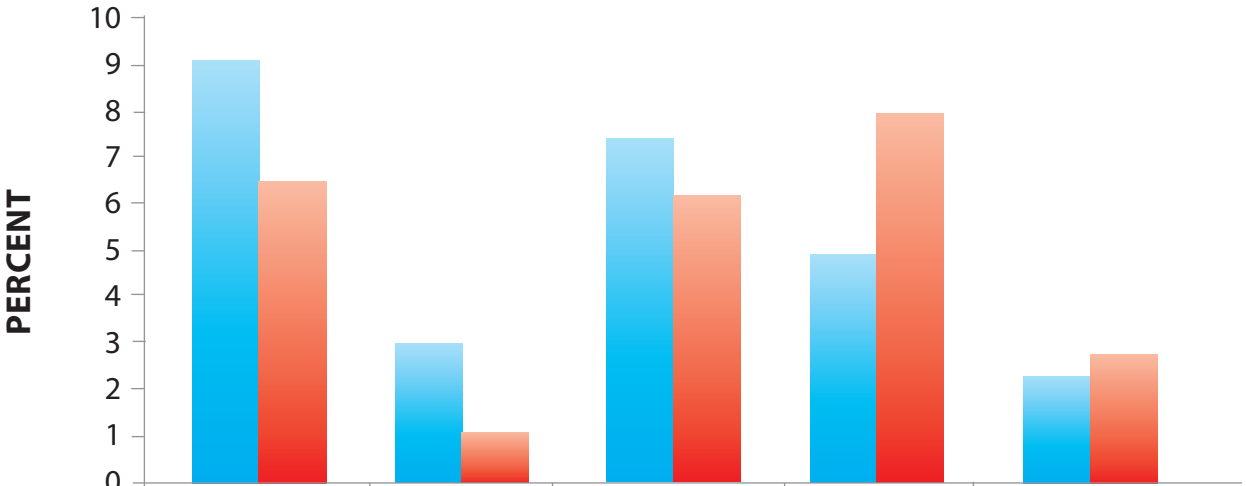


	<$15,000	$15,000 - $24,999	$25,000 - $34,999	$35,000 - $49,999	$50,000+
2009	7.1	3.5	3.2	5.3	7.7
2010	2.5	4.0	7.0	5.4	4.7

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Heavy drinking is most prevalent among Chamorros, followed by White/Caucasians and Other Asians. Filipinos have the lowest rate of heavy drinking (Figure 50).

Figure 50. Heavy drinkers, adults, by ethnicity, Guam, 2009-2010



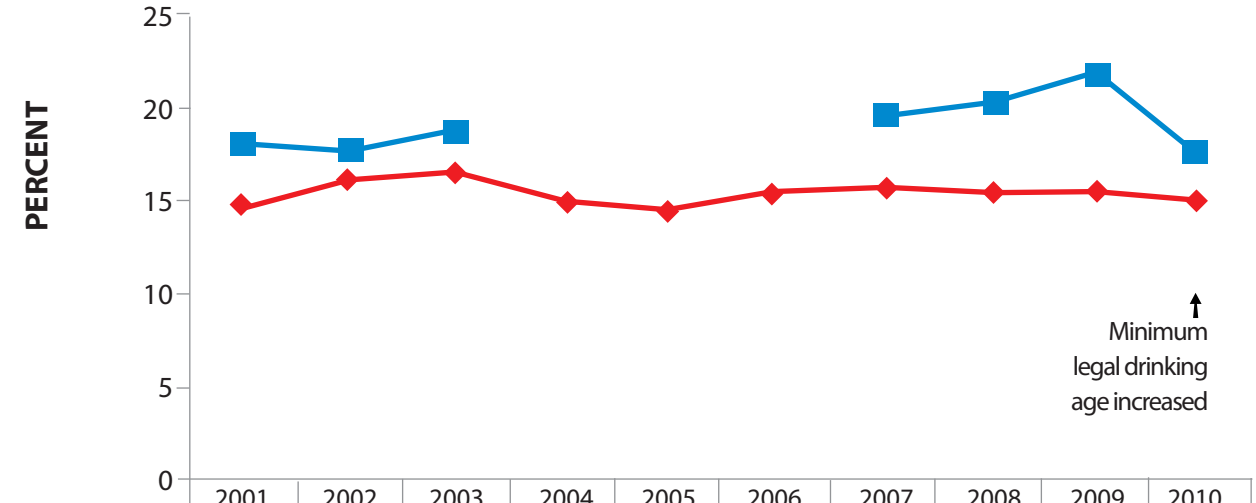
	Chamorro	Filipino	White / Caucasian	Asian	Micronesian
2009	9.0	3.0	7.4	4.9	2.3
2010	6.5	1.0	6.2	7.9	2.8

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Binge Drinking

Binge drinking, defined as having five or more drinks on one occasion, was reported by 17.7% of adults on Guam in 2010 (Figure 51). The binge drinking rate in Guam was increasing until 2010, when it dropped for the 1st time since 2001. In 2010, the minimum legal age for alcohol consumption was raised from 18 to 21 years.

Figure 51. Binge drinking, adults, Guam vs. US, 2001-2010

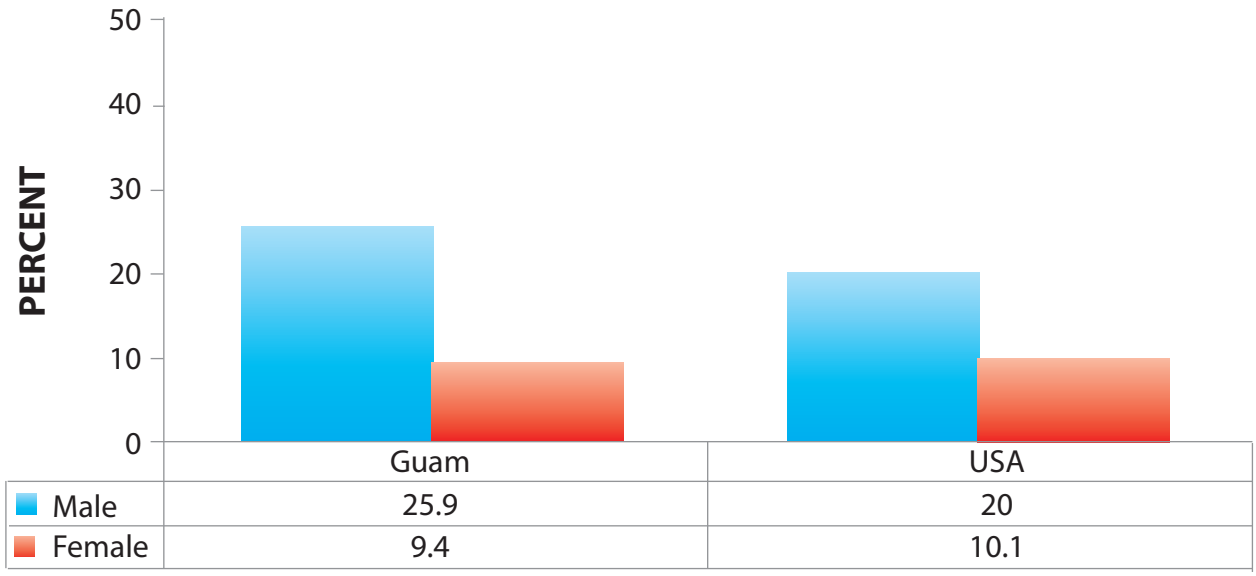


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guam	18.1	17.7	18.7				19.5	20.2	21.8	17.7
USA	14.8	16.1	16.5	14.9	14.4	15.4	15.7	15.5	15.5	15

Source: BRFSS, 2001-2010

Males on Guam consistently had higher rates of binge drinking than their female counterparts, and had a rate of binge drinking that was about 30% higher than men in the US (Figure 53). Females on Guam had a rate of binge drinking that was similar to that of females in the US (Figure 52).

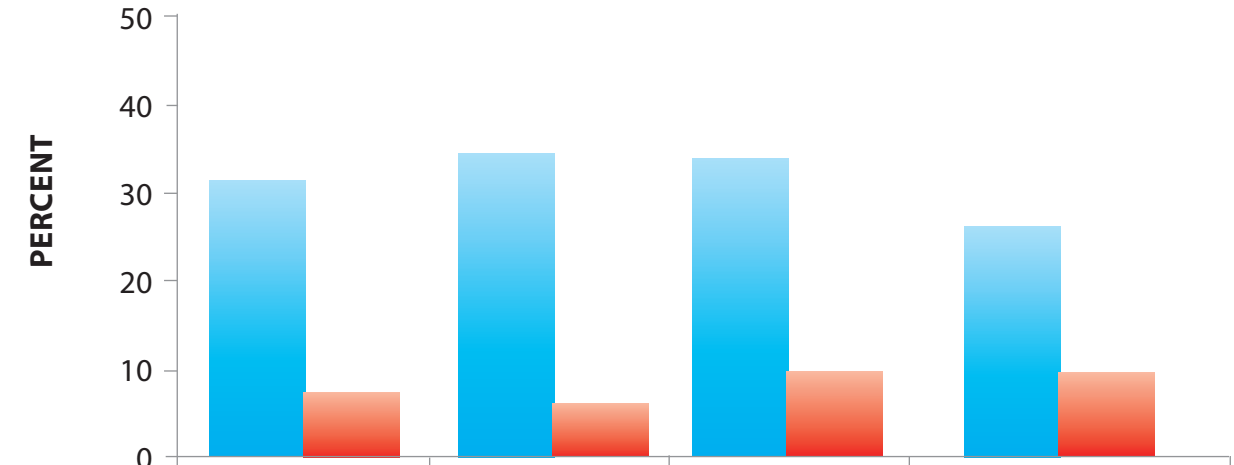
Figure 52. Binge drinking, by sex, Guam vs. US, 2010



	Guam	USA
Male	25.9	20
Female	9.4	10.1

Source: BRFSS 2010

Figure 53. Binge drinking, adults, by sex, Guam, 2007-2010

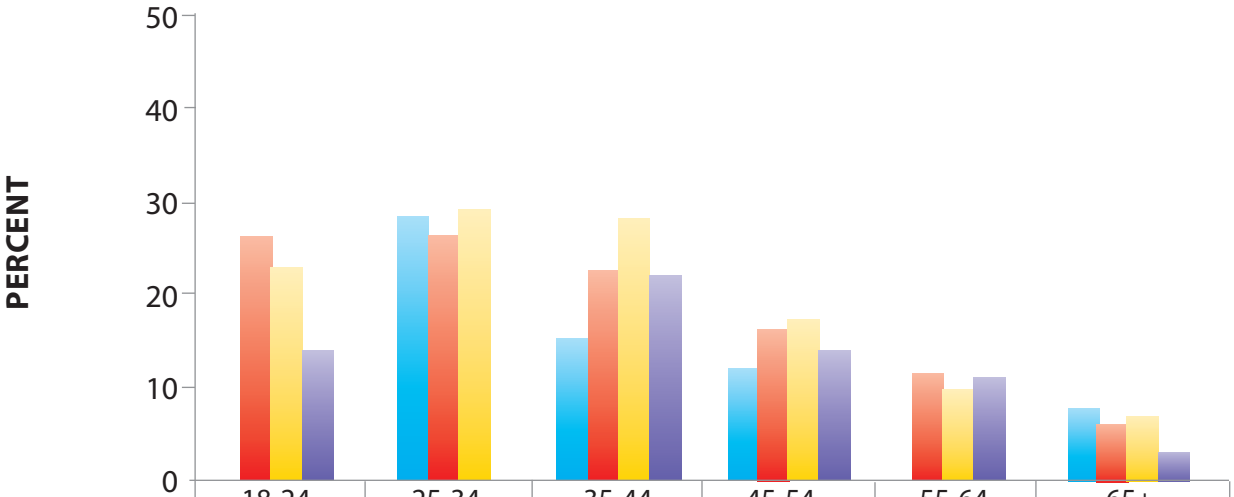


	2007	2008	2009	2010
Male	31.4	34.5	33.9	25.9
Female	7.4	5.9	9.6	9.4

Source: BRFSS 2007-2010

Like heavy drinking, binge drinking is predominantly reported by younger adults (<45 years). Adults aged 25 to 34 years had the highest rates of binge drinking (Figure 54). The relationship between binge drinking and income (Figure 55), and binge drinking and education (Figure 56), are less clear-cut.

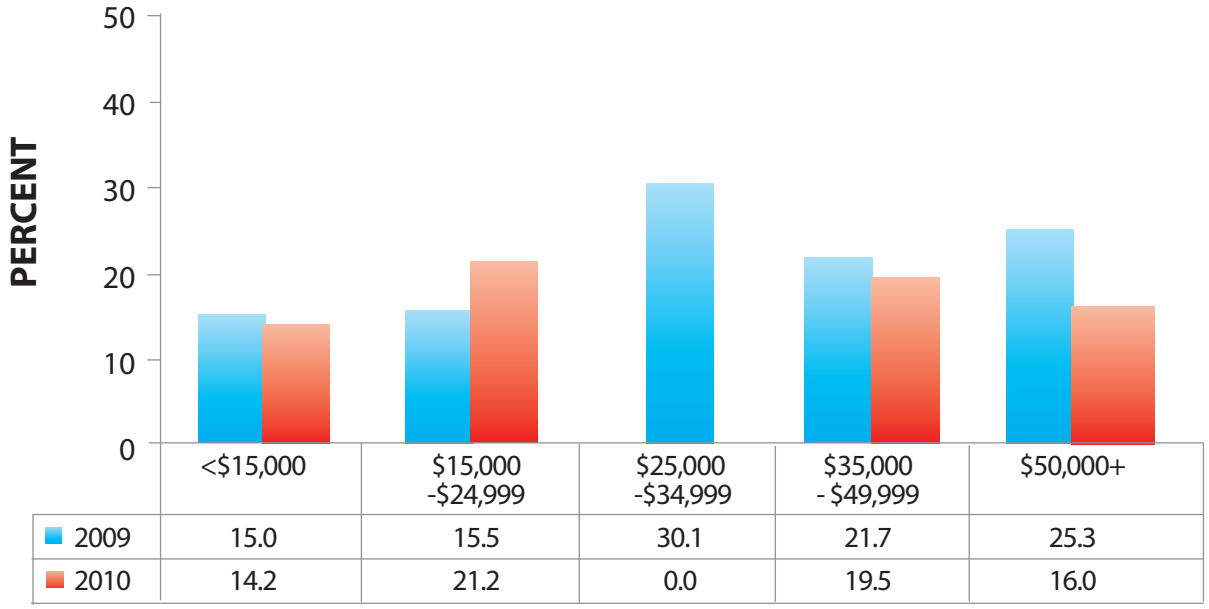
Figure 54. Binge drinking, adults by age, Guam, 2007-2010



	18-24	25-34	35-44	45-54	55-64	65+
2007	0.0	28.3	15.2	12.0		7.8
2008	26.1	26.4	22.7	16.4	11.7	6.2
2009	22.8	29.1	28.2	17.5	9.7	6.8
2010	14.0		22.0	14.0	11.0	2.9

Source: BRFSS 2007-2010
Note: Blank cells: n < 50

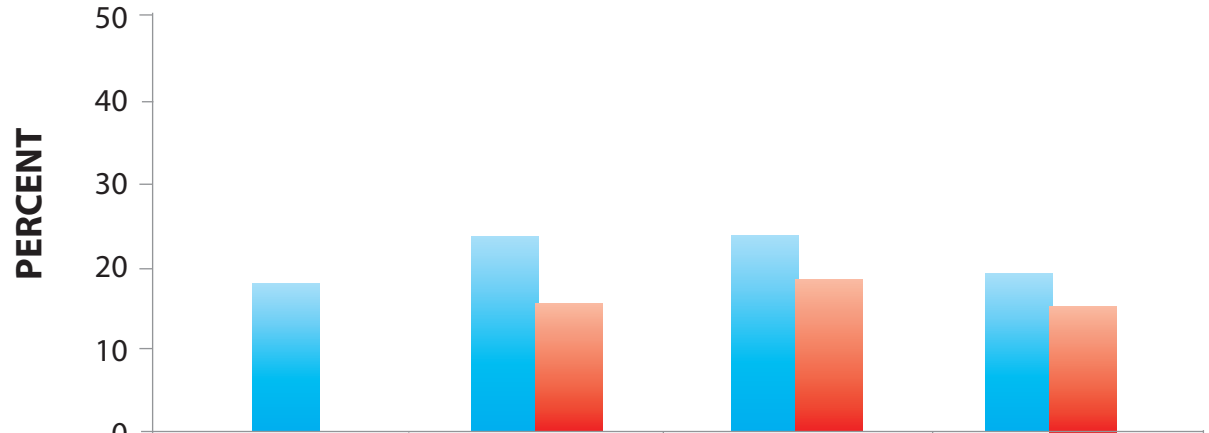
Figure 55. Binge drinking, adults, by income, Guam, 2009-2010



	<$15,000	$15,000 -$24,999	$25,000 -$34,999	$35,000 - $49,999	$50,000+
2009	15.0	15.5	30.1	21.7	25.3
2010	14.2	21.2	0.0	19.5	16.0

Source: BRFSS 2009-2010

Figure 56. Binge drinking, adults, by education, Guam, 2009-2010

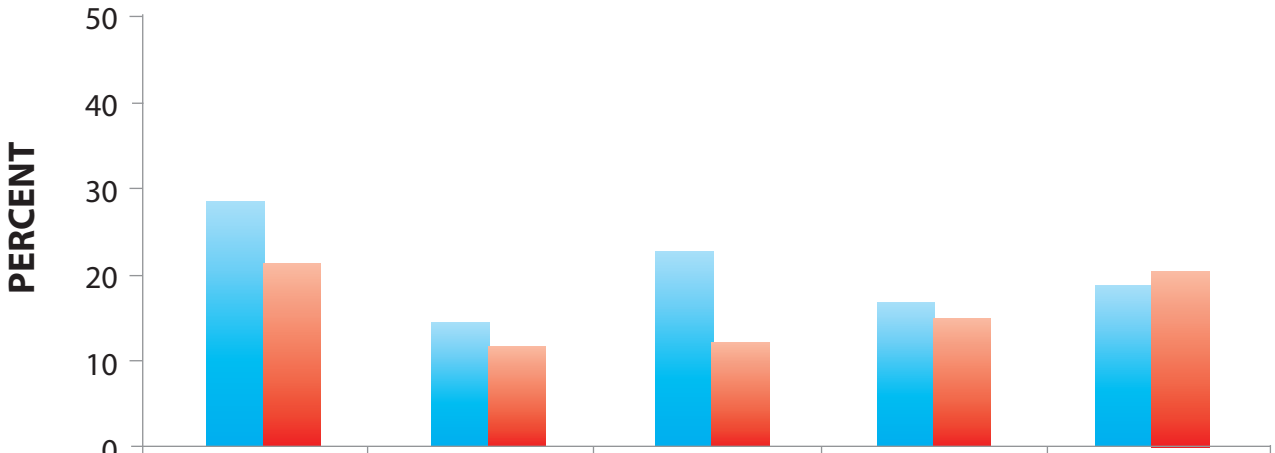


	<High School	H.S. or G.E.D.	Some post H.S.	College grad
2009	18.0	23.3	23.9	19.5
2010	0.0	15.4	18.5	15.5

Source: BRFSS 2009-2010

Binge drinking is highest among Chamorros, followed by other Micronesians. In 2010, over 1 in 5 Chamorros (21.6%) and other Micronesians (20.8%) reported binge drinking (Figure 57). This may explain the higher percentages of alcohol-related arrests among these two ethnic groups.

Figure 57. Binge drinking, adults, by ethnicity, Guam, 2009-2010



	Chamorro	Filipino	White/ Caucasian	Asian	Micronesian
2009	28.9	14.8	22.8	16.7	18.9
2010	21.6	11.9	12.5	15.0	20.8

Source: BRFSS 2009-2010

Age at First Use of Alcohol

The reported average age of first use of alcohol was 17.3 years in 2009 and 17.6 years in 2010 (Table 15).

Table 15. Age at first use of alcohol, adults, Guam, 2009-2010

	2009		2010	
	Range (years)	Weighted mean (years)	Range (years)	Weighted mean (years)
Alcohol use	5 - 77	17.3	9 - 50	17.6

Source: BRFSS 2009-2010

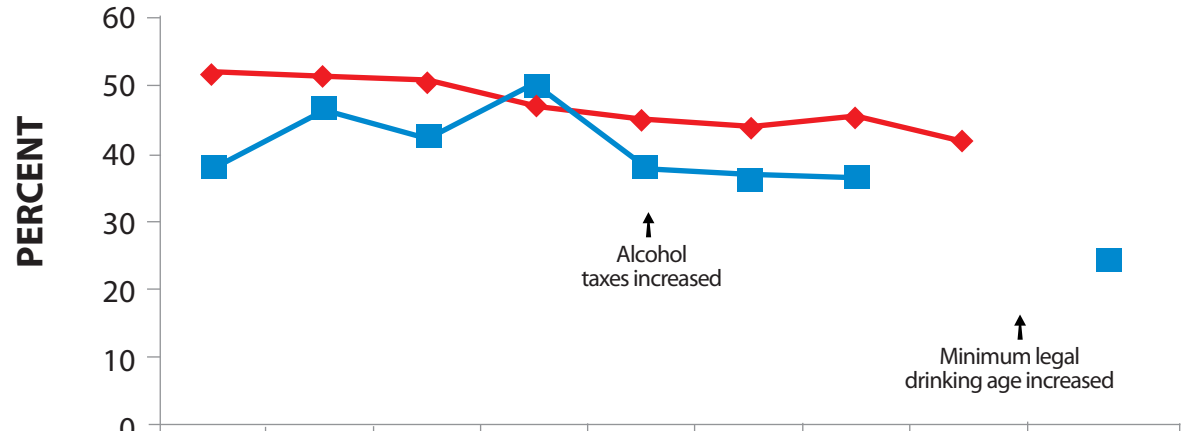
Youth Consumption

Data on alcohol consumption among youth are available from the Youth Risk Behavior Survey (YRBS). The limitations associated with this surveillance system were discussed previously.

Current and Lifetime Alcohol Use

Current drinking among high school youth on Guam is lower than the US average (Figure 58). Nearly one-quarter of high school students are current drinkers. This is a significant decrease from 2007, when one in three students reported current drinking. It also represents a 50% drop from the highest recorded rate of 50.2% in 2001. The other significant decrease occurred in 2003. Of note, Guam raised taxes on alcohol products in 2003 and the minimum legal age for alcohol consumption from 18 to 21 years in 2010.

Figure 58. Current alcohol use, high school, Guam vs. US, 1995-2011

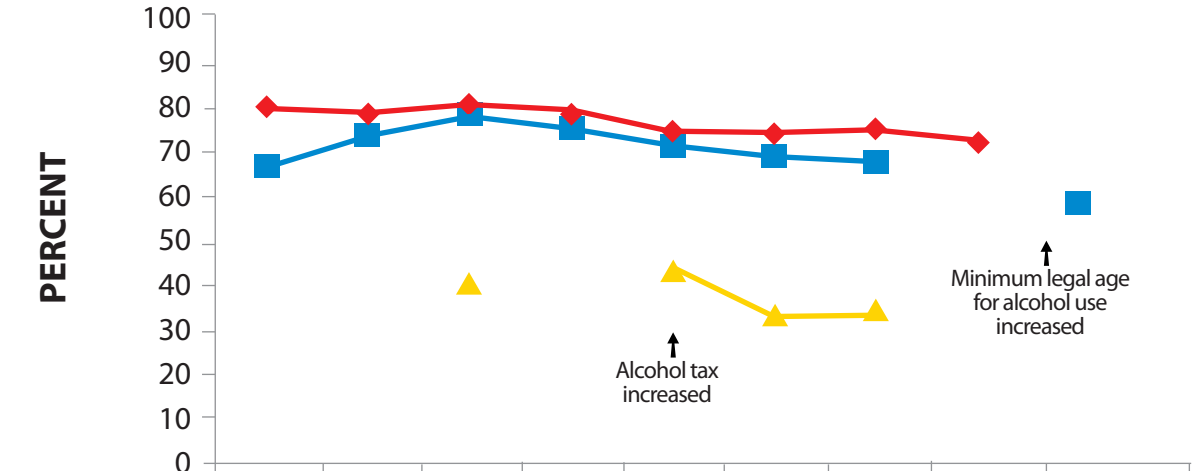


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Guam	37.6	46.9	42.5	50.2	37.9	36.2	36.2		24.2
USA	51.6	50.8	50	47.1	44.9	43.3	44.7	41.8	

Source: YRBS 1995-2011

Lifetime alcohol use among Guam high school students closely parallels the US rates (Figure 59). Prevalence was increasing from 1995 to 1999, then gradually started to decline until 2011, when a marked drop in rates occurred for Guam high school students. Of note, Guam raised the minimum legal age for alcohol consumption from 18 to 21 years in 2010.

Figure 59. Lifetime alcohol use, Guam vs. US, 1995-2011

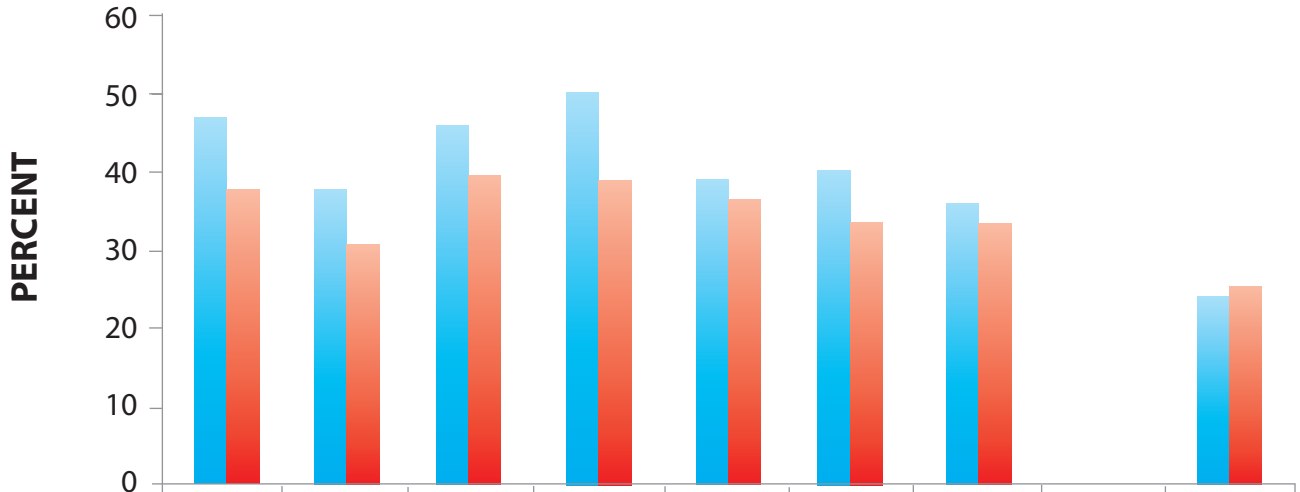


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Guam HS	66.5	74.1	78.8	75.6	71.3	68.2	68.5		58.4
USA	80.4	79.1	81	78.2	74.9	74.3	75	72.5	
Guam MS			40.3		43.6	33.5	34.4		

Source: YRBS 1995-2011

Unlike adults, girls are drinking as much as boys. The lack of sex difference in alcohol consumption among youth mirrors that of smoking, and portends negative reproductive outcomes in the near future (Figure 60).

Figure 60. Current alcohol use, high school by sex, Guam, 1995-2011

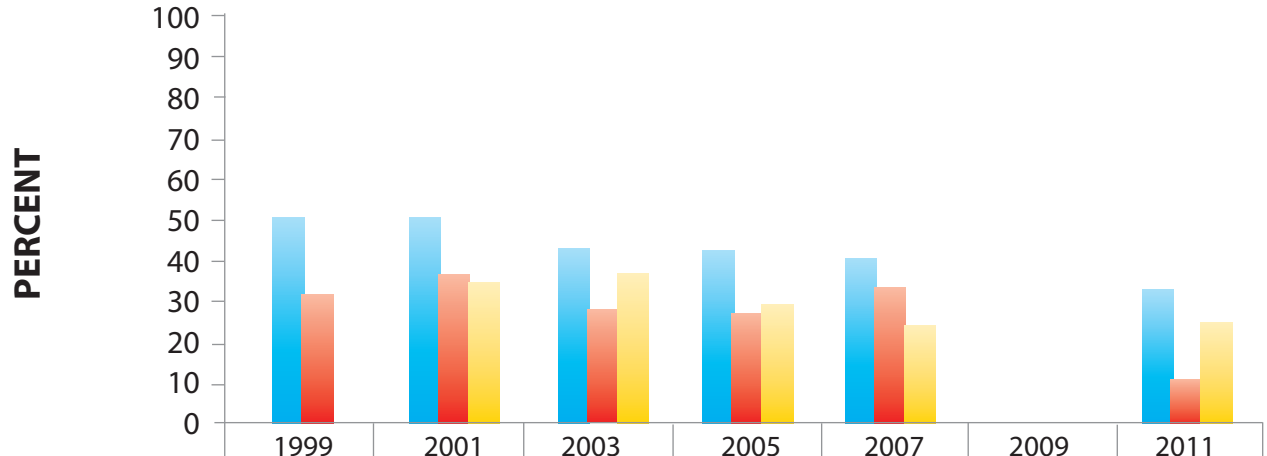


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Male	46.9	37.6	46.2	50.2	39.2	40	36.2		24.2
Female	37.9	30.5	39.6	38.7	36.6	33.2	33.4		25.4

Source: YRBS 1995-2011

When disaggregated by ethnicity/race, Filipino youth have the lowest rates for current alcohol use, while Chamorro youth have the highest. Current alcohol consumption decreased markedly for Micronesian Islander youth in 2007, but remained unchanged for Chamorro youth (Figure 61). However, current drinking increased significantly among Filipino youth in 2007. In 2011, current alcohol use decreased significantly for Chamorro and Filipino youth.

Figure 61. Current drinking, high school, by ethnicity, Guam, 1999 to 2011

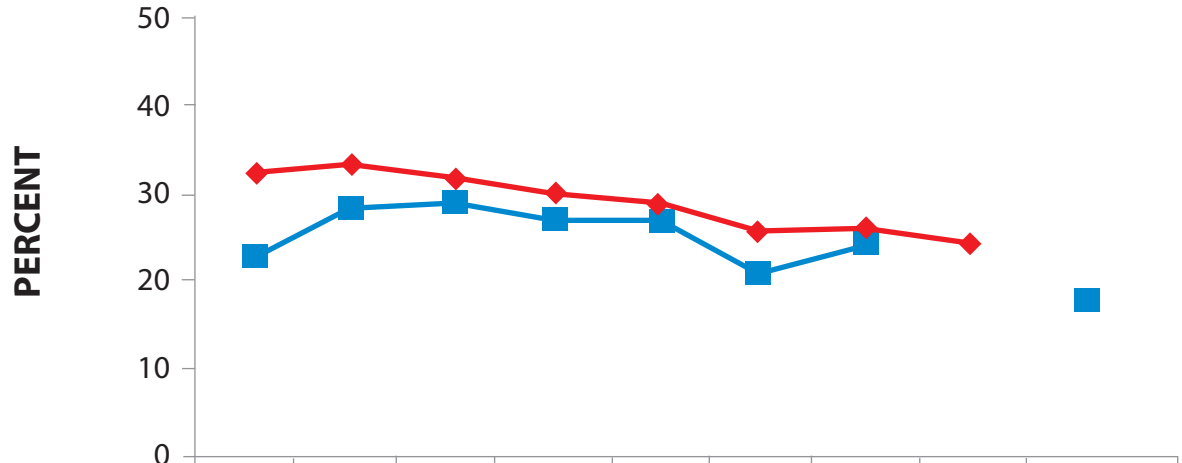


	1999	2001	2003	2005	2007	2009	2011
Chamorro	50.6	50.8	43.7	42.3	41.4		32.7
Filipino	32.2	37.2	28.3	26.6	32.8		10.8
Other Micronesian		35.1	37.2	29.2	23.1		24.6

Source: YRBS 1999-2011
Note: In 2003, the total number of Other Micronesian respondents was < 50.

In 2011, 18.2% of high students in Guam reported that they had their first alcoholic drink before the age of 13 years (Figure 62).

Figure 62. Percentage of high school students having their first alcoholic drink before 13 years, Guam vs. US, 1995-2011



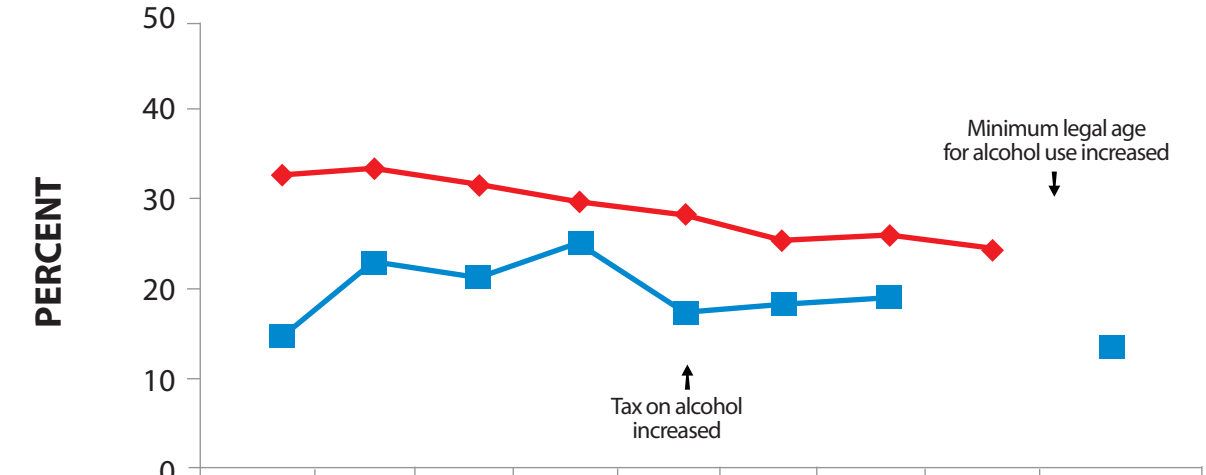
	1995	1997	1999	2001	2003	2005	2007	2009	2011
Guam HS	23.2	28.4	29.1	27.4	27	20.9	24		18.2
USA	32.6	33.4	31.5	29.9	28.3	25.5	26	24.2	

Source: YRBS 1995-2011

Binge Drinking

While in general, binge drinking among youth is lower on Guam than on the US, from 1995 to 2007, US rates were decreasing while Guam rates were either unchanged or increasing. Thus, the difference between Guam and US rates was shrinking (Figure 63). In 2005, the binge drinking rate decreased for the first time since 1995, following the legislated increase in taxes on alcohol products. In 2011, the high school binge drinking rate in Guam dropped further. This was after the law raising the minimum legal age for alcohol consumption from 18 to 21 years was passed in 2010.

Figure 63. Binge drinking, high school, Guam vs. US, 1995 to 2011

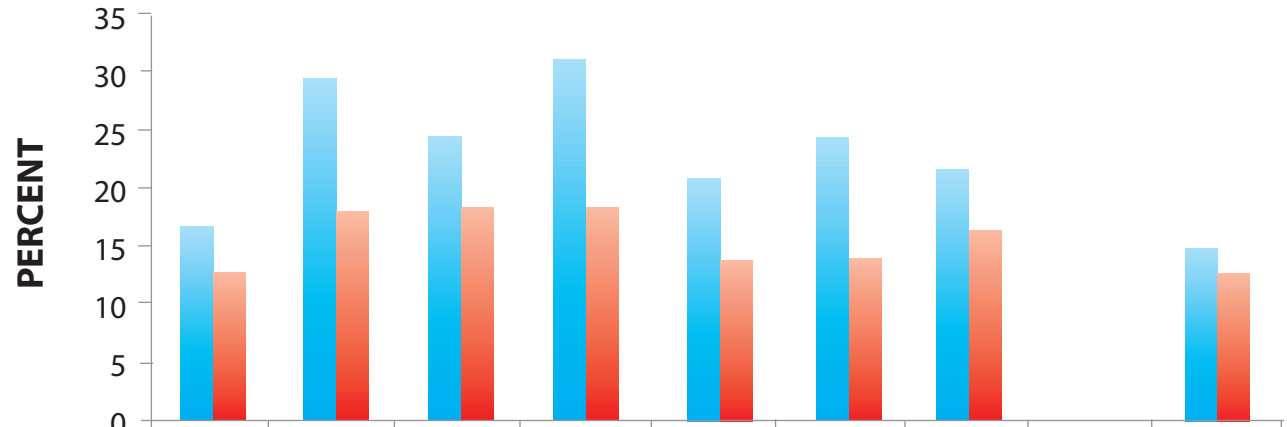


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Guam HS	14.7	22.9	21.1	24.9	17.3	18.5	19.2		13.6
USA	32.6	33.4	31.5	29.9	28.3	25.5	26	24.2	

Source: YRBS 1995-2011

Males on Guam have a higher prevalence of binge drinking than females, but the sex difference is decreasing over time as female binge drinking rates approximate those of males. Binge drinking increased among Guam youth between 2003 and 2005, largely due to a significant increase among males, but from 2005 to 2007, the increase was among females (Figure 64). In 2011, the year after the law raising the legal minimum age for alcohol use was passed, both male and female binge drinking decreased.

Figure 64. Binge drinking by sex, high school, Guam, 1995-2011

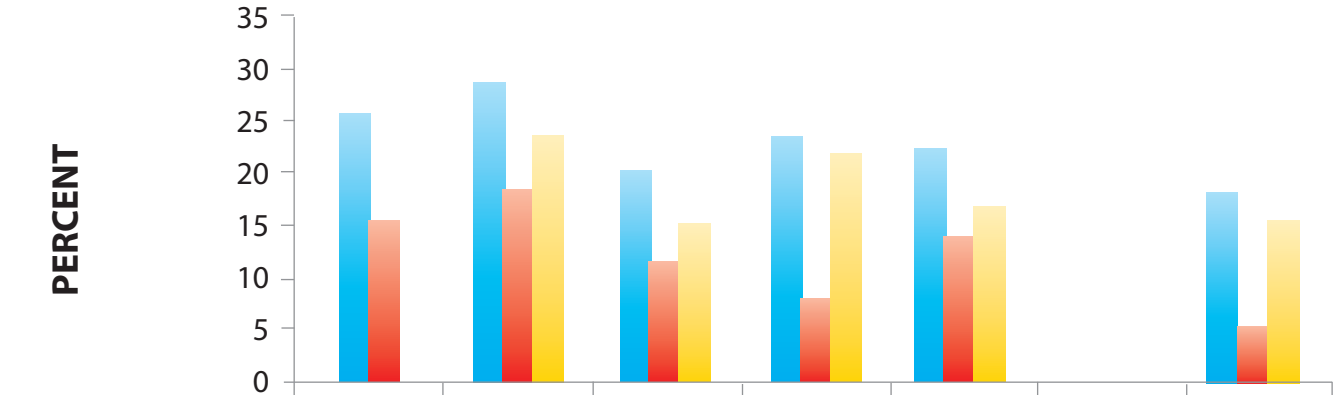


	1995	1997	1999	2001	2003	2005	2007	2009	2011
Male	16.6	29.2	24.4	31	20.7	24.2	21.6		14.6
Female	12.7	17.7	18.2	18.3	13.8	14	16.3		12.6

Source: YRBS 1995-2011

When disaggregated by ethnicity/race, Filipino youth have the lowest rates for binge drinking, while Chamorro youth have the highest. Binge drinking decreased markedly for all ethnic groups in 2003, but remained unchanged for Chamorro and other Micronesian youth (Figure 65) from 2005 to 2007. However, binge drinking decreased among Chamorro and Filipino youth in 2011.

Figure 65. Binge drinking, high school, by ethnicity, Guam, 1999 to 2011



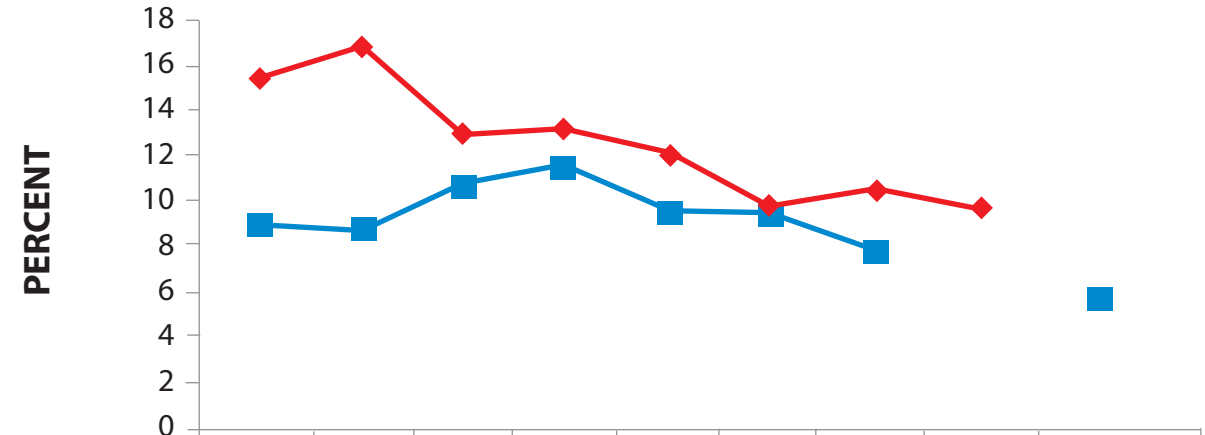
	1999	2001	2003	2005	2007	2009	2011
Chamorro	26	28.7	20.3	23.5	22.4		18.1
Filipino	15.3	18.4	11.4	8.1	14.0		5.2
Other Micronesian		23.5	15.2	22.0	16.7		15.5

Source: YRBS 1999-2011

Drinking and Driving

With regards to driving a vehicle after having been drinking alcoholic beverages, the data indicate that the likelihood of engaging in this risky behavior is higher among males, for Guam and nationwide. There was a slight decrease for Guam in 2007, and a more marked decrease in 2011, almost entirely due to a decrease in drinking and driving among males (Figures 66 and 67). Thus, in 2011, drinking and driving rates were similar for males and females.

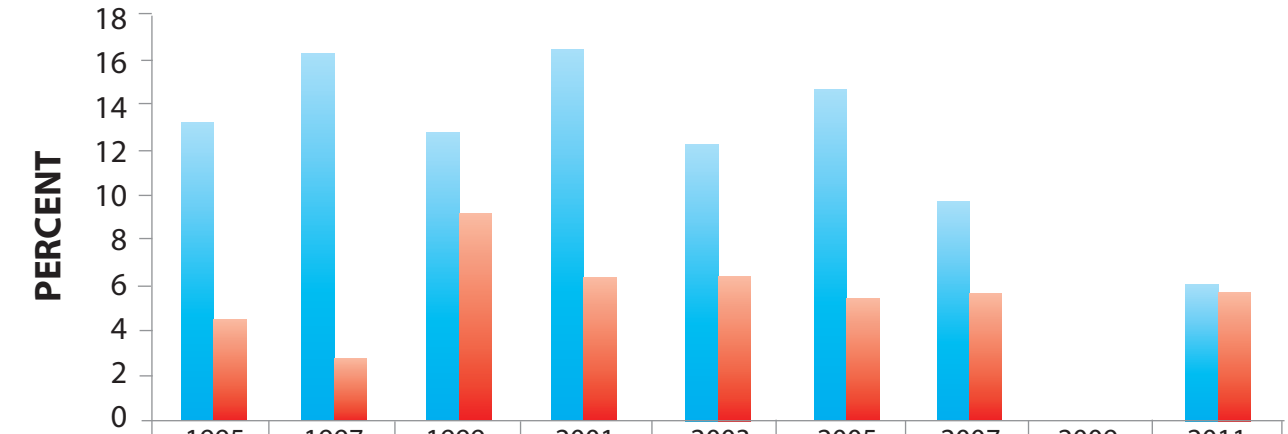
Figure 66. Drinking and driving, high school, Guam vs. US, 1995 to 2011



	1995	1997	1999	2001	2003	2005	2007	2009	2011
Guam HS	9.1	8.9	10.7	11.5	9.4	9.4	7.8		5.8
USA	15.4	16.9	13.1	13.3	12.1	9.9	10.5	9.7	

Source: YRBS 1995-2011

Figure 67. Drinking and driving, high school, by sex, Guam, 1995 to 2011



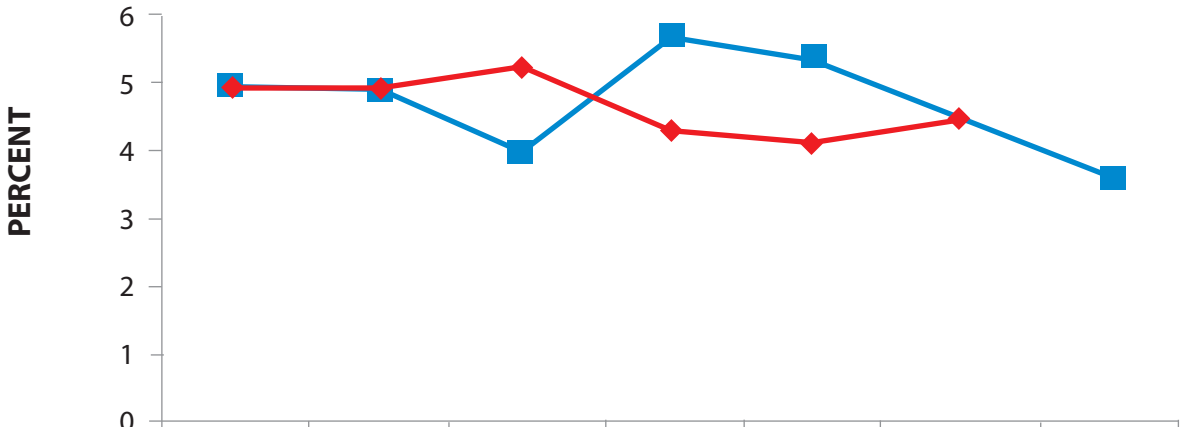
	1995	1997	1999	2001	2003	2005	2007	2009	2011
Male	13.2	16.1	12.7	16.4	12.2	14.6	9.7		6
Female	4.4	2.6	9.1	6.4	6.4	5.4	5.6		5.6

Source: YRBS 1995-2011

Use of Alcohol on School Property

The YRBS queries students about their use of alcohol on school property within the past 30 days. The percentage of Guam students reporting alcohol consumption on school property surpassed that of the US mainland in 2005 and 2007, but the Guam rate dropped in 2011 (Figure 68).

Figure 68. Alcohol use on school property, high school students, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	5	4.9	4	5.7	5.4		3.6
US median	4.9	4.9	5.2	4.3	4.1	4.5	

Source: YRBS 1999-2011

ALCOHOL

Consequences

Health Consequences

Alcohol directly contributes to liver cirrhosis, the 9th leading cause of death on Guam (see Table 13, page 49). In addition, alcohol is implicated in some types of cancer, stroke, suicide, and motor vehicle accidents and can exacerbate diabetes.

Alcohol contributes to 3 (liver, colon and rectum and nasopharynx for men; breast, colon and rectum and cervix for women) of the top 5 causes of cancer deaths on Guam for both males and females (Table 16).

Table 16. Top causes of cancer death related to alcohol on Guam, 2003 to 2007

Top Causes of Cancer Death on Guam 2003-2007	
Males	Females
Lung and Bronchus	Lung and bronchus
Prostate	Breast*
Colon and Rectum*	Colon and Rectum*
Liver *	Cervix*
Nasopharynx*	Non-Hodgkin's Lymphoma

Source: Guam Cancer Registry, 2003 to 2007
*Note: * Related to alcohol use*

Liver cancer incidence and mortality for Chamorros, and other Micronesians are higher than US rates. Other Micronesians have almost 9 times the US rate of dying from liver cancer, while Chamorros have over double the US rate (Table 17).

Table 17. Liver cancer rates by ethnicity, Guam, 1998 to 2002 and 2003 to 2007

Ethnicity	Incidence rate (per 100,000)	Mortality rate (per 100,000)	Incidence rate (per 100,000)	Mortality rate (per 100,000)
	1998-2002		2003-2007	
Chamorro	11.8	11.6	17.0	n/a
Other Micronesian	41.6	39.4	38.2	n/a
Other Asian	7.2	7.2	9.7	n/a
Filipino	8.9	5.6	5.1	n/a
US	5.2	4.6	5.8	---

Source: Guam Cancer Registry, 1998 to 2002 and 2003 to 2007
Note: Other Micronesian refers to Micronesians from CNMI, FSM, RMI, and Palau.

Socio-economic 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 through the 2010 Uniform Crime Report (UCR).

Table 18 shows the percentage of arrests of minors for alcohol-related offenses. Alcohol-related offenses accounted for 5.3% of all juvenile arrests in 2010.

Table 18. Alcohol-related arrests, juvenile offenders, Guam, 1998 to 2010

Year	Total Arrests	DUI (n)	Liquor Laws (n)	Drunkenness (n)	Alcohol-related arrests, % of arrests (n)
1998	927	3	13	17	3.5 (33)
1999	768	3	7	0	1.3 (10)
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)

Source: Guam Police Department, Uniform Crime Report, 2010

The 2010 Uniform Crime Report (UCR) provides the following information on the percent change of violent crime and property crime on Guam for the years 1999-2010 (Table 19). Violent crime increased in 2006 to 2008 while property crimes increased from 2003 to 2004, then decreased slightly each year from 2004 to 2007, followed by a marked decrease in 2008. The 2007 UCR cites arguments due to the influence of alcohol as the cause of 36.4%, or over one-third, of murders in 2006. No data regarding the use of alcohol in violent or property crime were reported in subsequent editions of the UCR.

Table 19. Change in violent and property crimes, Guam, 1999 to 2010

Year	Violent Crime	Property Crime	Total Number	Rate per 1,000 population
1999	---	---	6,274	
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	2782	3316	20.9
2009	303	2670	2973	18.7
2010	368	2672	3040	19.1

Source: Guam Police Department, Uniform Crime Report, 2010
Note: Rates were calculated using the revised population estimates based on the 2010 Guam census.

There were 316 arrests for "Driving under the Influence" (DUI) in 2010. This represents a 65.9% decrease from the previous year (Table 20). Alcohol was a factor in 33% of 2009 traffic accident fatalities (Table 21).

Table 20. Arrests for driving under the influence (DUI), Guam, 1999 to 2010

Year	Number of Arrests	Percent Change from Previous Year	Rate per 1,000 population
1999	581	-27.0	
2000	620	6.7	4.0
2001	900	45.2	5.8
2002	972	8.0	6.2
2003	743	-23.6	4.8
2004	538	-27.6	3.4
2005	817	52.0	5.2
2006	836	2.3	5.0
2007	731	-12.6	4.0
2008	491	-32.8	3.5
2009	927	+88.8	5.1
2010	316	-65.9	2.0

Source: Guam Police Department, Uniform Crime Report, 2010
Note: Rates were calculated using the revised population estimates based on the 2010 Guam census.

Table 21. DUI arrests, alcohol-related crashes and fatalities, Guam, 2001-2010

Detail	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
DUI Arrests	900	972	694	538	817	836	731	629	927	695
Involving crash	203	163	139	61	103	233	281	308	345	na
Involving injuries	79	67	81	78	23	66	54	111	128	na
Fatalities	19	13	24	14	18	13*	25*	8	12	na
Alcohol-related fatalities	12	6	7	6	9	5	11	4	4	na
% Fatalities alcohol-related	63%	46%	25%	43%	44%	38.5%	44%	50%	33%	

Sources: Guam Police Department, Uniform Crime Report, 2010; Guam Bureau of Statistics and Plans, Guam Statistical Yearbook 2010

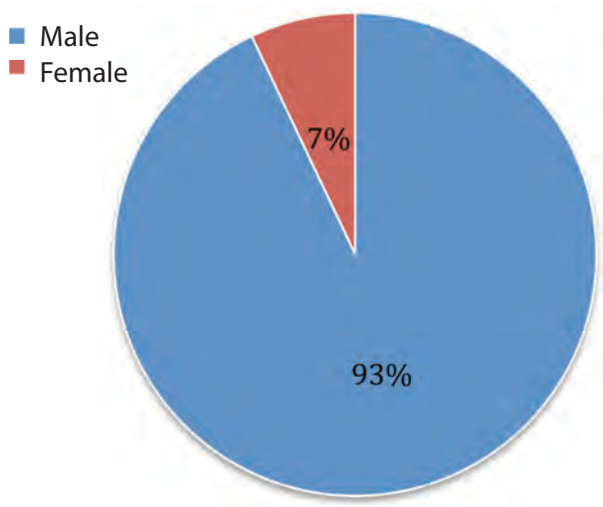
Table 22 provides the breakdown by age for DUI arrests from 2007 to 2009. Arrests for DUI are highest among those aged 20-24, followed by those aged 25-39. The large numbers of arrests among young and middle-aged adults highlight the need for complementary interventions that target these adult groups, while addressing the need to prevent underage drinking.

Table 22. DUI arrests by age, Guam, 2007-2009

	<18	18-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 and older
2007	0	30	145	130	114	101	74	58	34	22	7	16
2008	0	42	150	128	98	99	71	61	39	23	4	6
2009	0	52	196	164	138	127	91	65	35	40	12	7

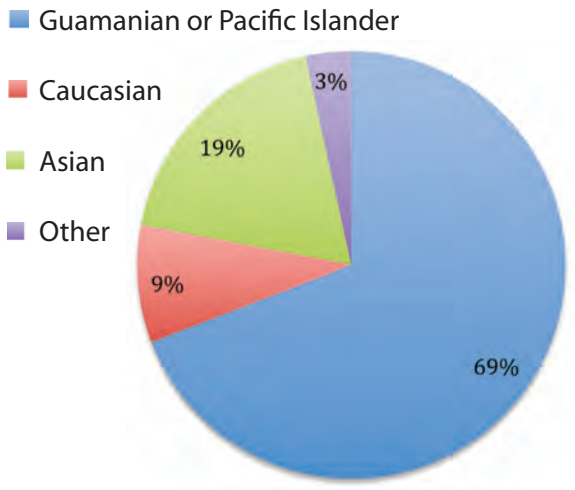
Source: Guam Police Department, Uniform Crime Report, 2007-2009
Note: The 2010 Uniform Crime Report did not provide data on DUI arrests by age.

Figure 69. DUI arrests by sex, Guam, 2010



Source: Guam Police Department, Uniform Crime Report, 2010

Figure 70. DUI arrests by ethnicity, Guam, 2010



Source: Guam Police Department, Uniform Crime Report, 2010, as reported in the Guam Statistical Yearbook 2010.

DUI arrests are predominantly among males (Figure 69). This is consistent with data that shows binge drinking as happening primarily among males.

Close to 70% of all DUI arrests occurred among Guamanians and Pacific Islanders. These groups also have the highest binge drinking rates.

The Guam Police Department reported a decrease in arrests for family violence from 550 arrests in 2009 to 501 arrests in 2010.

ILLICIT DRUGS

Adult Consumption

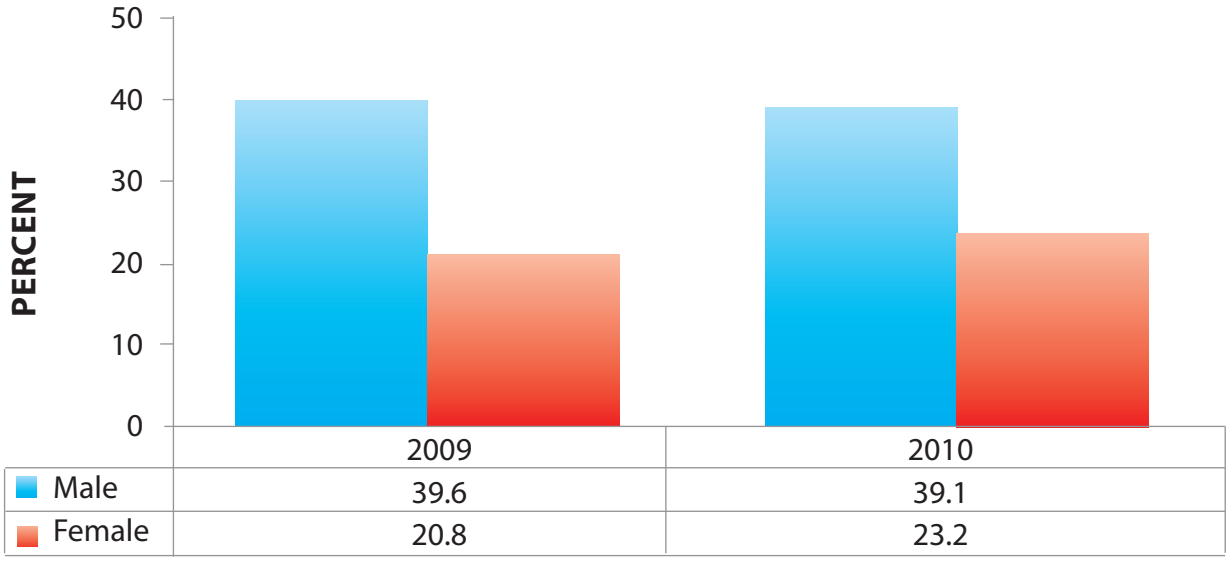
The reduction of substance abuse is one of the stated goals of Healthy People 2020. Yet, prior to 2007, Guam had no population data on the prevalence of illicit drug use among adults. In 2007 and 2008, the Guam Department of Mental Health and Substance Abuse (DMHSA) commissioned phone-based surveys on tobacco, alcohol and other drug use, utilizing a randomized sample of the Guam adult population. However, this proved unsustainable because of expense. In 2009, the DMHSA entered into an agreement with the DPHSS to incorporate selected questions on illicit drug use (marijuana, methamphetamines and other illicit drugs) taken from the Substance Abuse and Mental Health Services Administration's (SAMSHA) National Survey on Drug Use and Health (NSDUH) into the BRFSS. These questions were also included in the 2010 to 2012 BRFSS.

Marijuana

The DMHSA Q-mark adult survey on tobacco, alcohol and other drug use provided the first set of self-reported data on adult marijuana use on Guam. Of the 800 respondents, 3% used marijuana in the past month. On average, age of first use was 17.6 years. 11% stated they did not know the risks of marijuana use.

The BRFSS reported that approximately 30% of the adult respondents admitted to ever using marijuana in both 2009 (30.3%) and 2010 (31.3%), and 3.6% used marijuana within the past 30 days, for both years. The rate of 3.6% is close to the 3% prevalence uncovered by the DMHSA Q-mark adult survey. Men were more likely than women to have ever tried marijuana (Figure 71), and to currently use marijuana (Figure 72). The average age of 1st use of marijuana was 16.8 years (range: 8–45 years) in 2009 and 17.8 years (range: 8-54 years) in 2010.

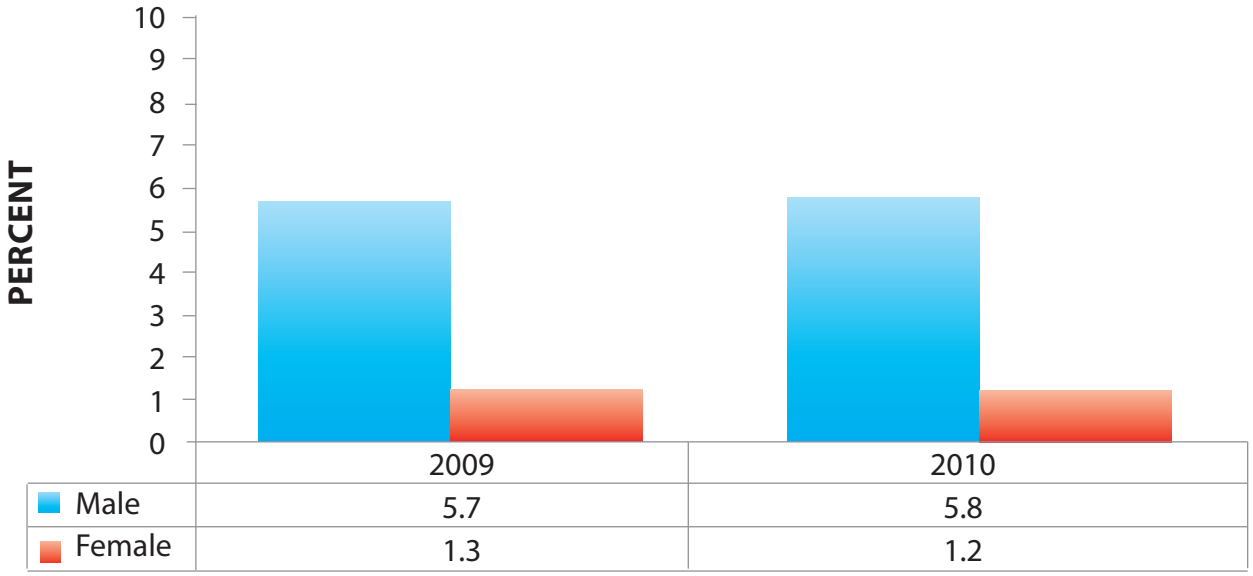
Figure 71. Lifetime marijuana use, adults, by sex, Guam, 2009-2010



	2009	2010
Male	39.6	39.1
Female	20.8	23.2

Source: BRFSS 2009-2010

Figure 72. Current marijuana use, adults, by sex, Guam, 2009-2010

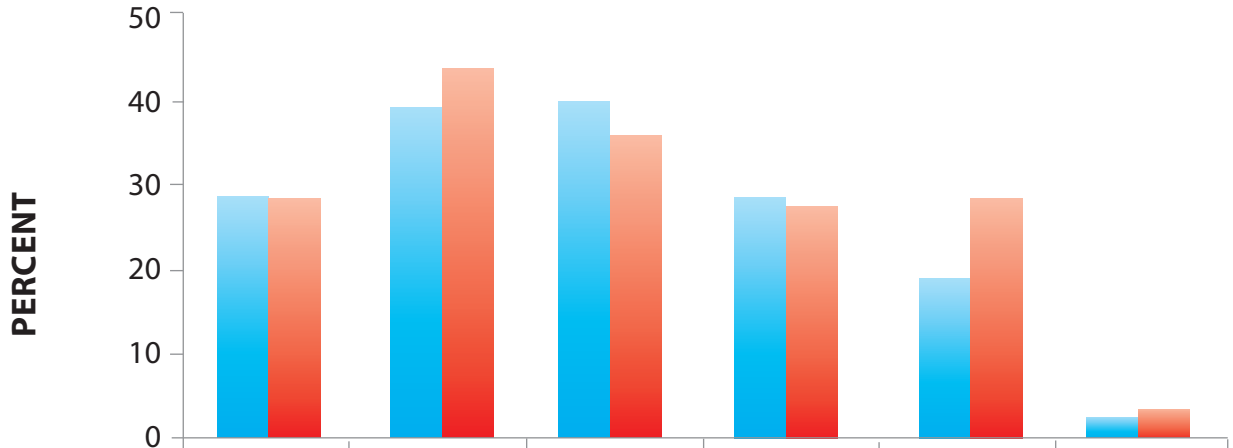


	2009	2010
Male	5.7	5.8
Female	1.3	1.2

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

The highest rates of lifetime marijuana use were reported by young adults aged 25-34, followed by those aged 35-44 (Figure 73). College graduates appeared to have slightly lower lifetime marijuana use rates compared to those with less education (Figure 74), but lifetime use appeared to increase with increasing income (Figure 75).

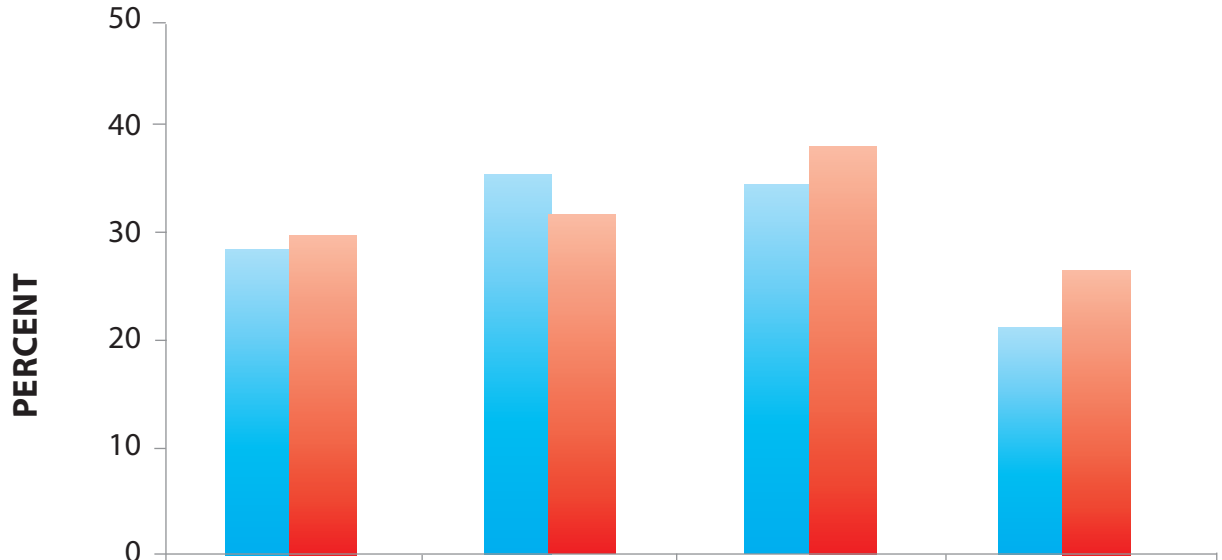
Figure 73. Lifetime marijuana use, adults, by age, Guam, 2009-2010



	18-24	25-34	35-44	45-54	55-64	65+
2009	28.6	39.3	39.9	28.6	18.6	2.0
2010	28.4	44.1	35.6	27.9	28.3	3.1

Source: BRFSS 2009-2010

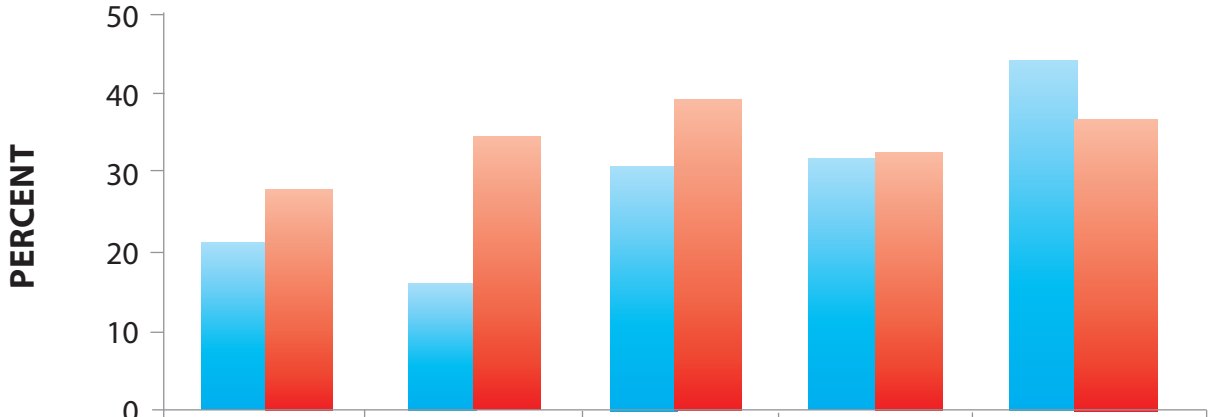
Figure 74. Lifetime marijuana use, adults, by education, Guam, 2009-2010



	<High School	H.S. or G.E.D.	Some post H.S.	College grad
2009	28.3	35.1	34.3	20.8
2010	29.6	31.5	38.0	26.1

Source: BRFSS 2009-2010

Figure 75. Lifetime marijuana use, adults, by income, Guam, 2009-2010

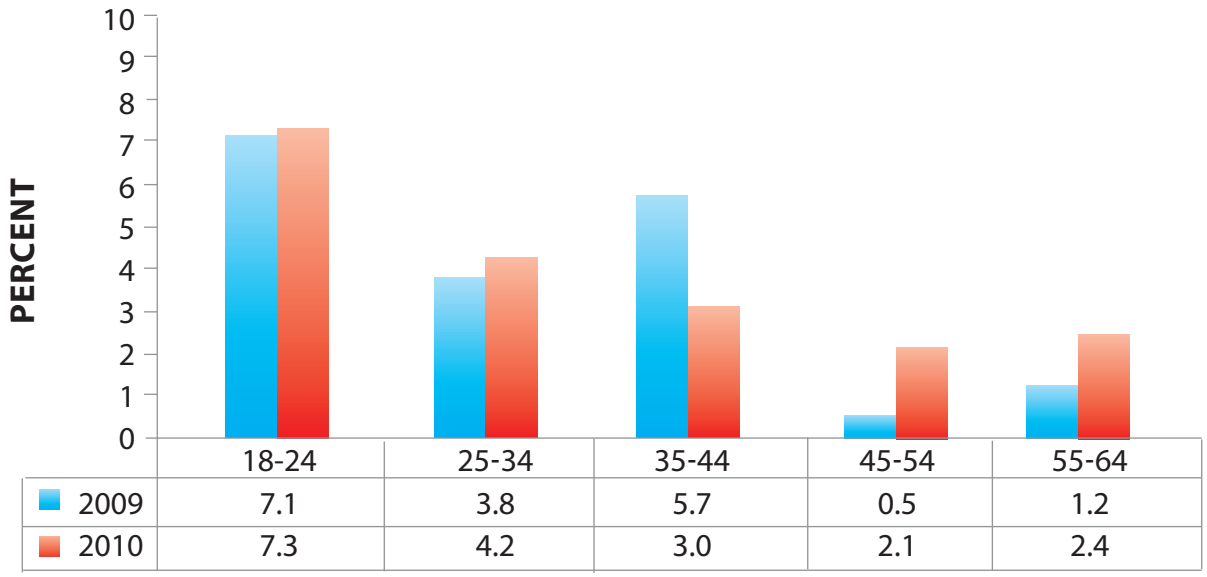


	<$15,000	$15,000 -$24,999	$25,000 -$34,999	$35,000 - $49,999	$50,000+
2009	21.0	15.9	30.6	31.7	43.7
2010	28.0	34.6	39.0	32.2	36.6

Source: BRFSS 2009-2010

The youngest age group surveyed, aged 18 to 24 years, reported the highest rates of current marijuana use (Figure 76). Current use was highest for those with the least education (Figure 77). The relationship of current marijuana use with income was not clear (Figure 78).

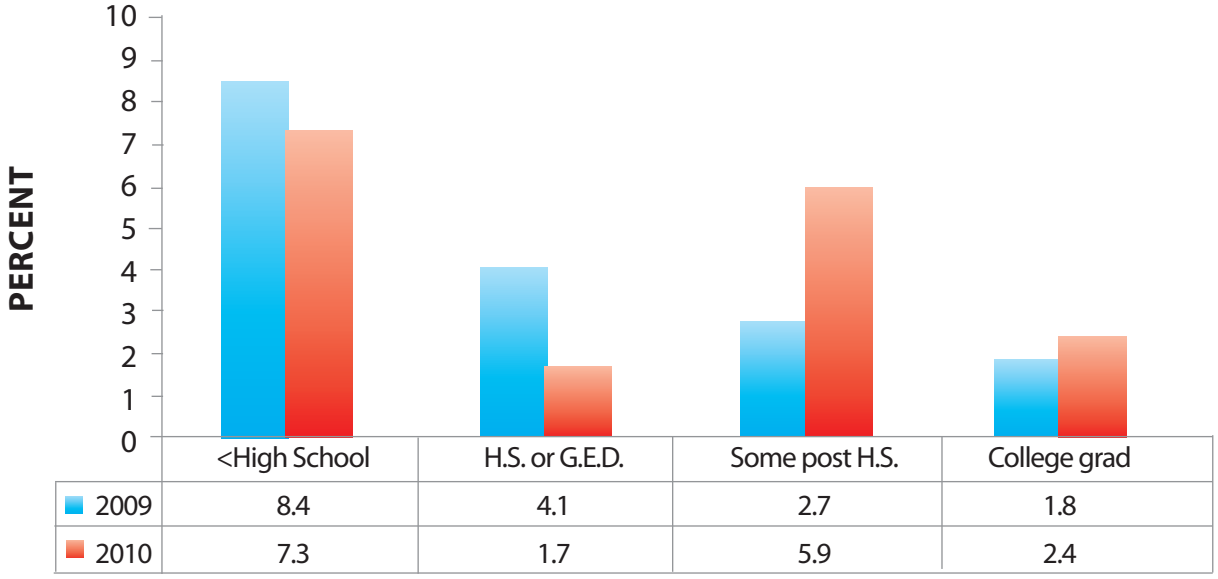
Figure 76. Current (30-day) marijuana use, adults, by age, Guam, 2009-2010



	18-24	25-34	35-44	45-54	55-64
2009	7.1	3.8	5.7	0.5	1.2
2010	7.3	4.2	3.0	2.1	2.4

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

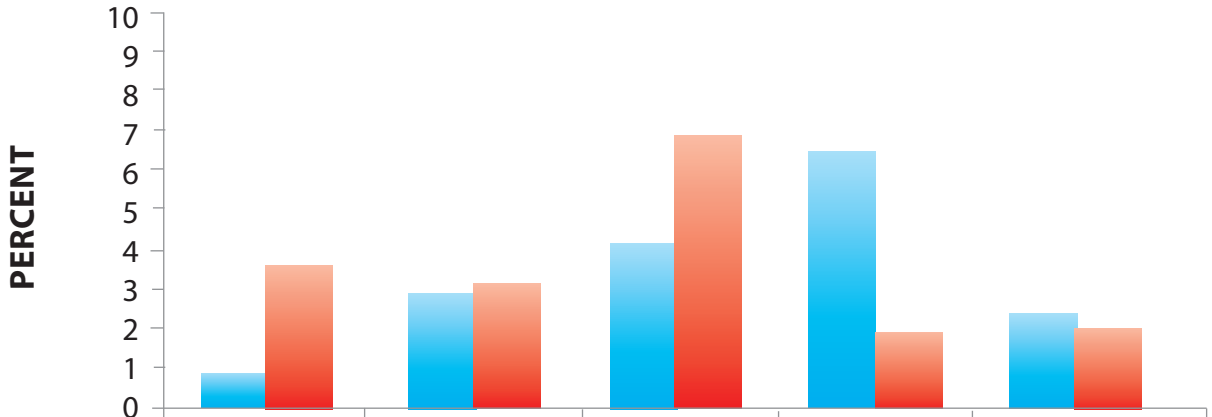
Figure 77. Current (30-day) marijuana use, adults, by education, Guam, 2009-2010



	<High School	H.S. or G.E.D.	Some post H.S.	College grad
2009	8.4	4.1	2.7	1.8
2010	7.3	1.7	5.9	2.4

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Figure 78. Current (30-day) marijuana use, adults, by income, Guam, 2009-2010

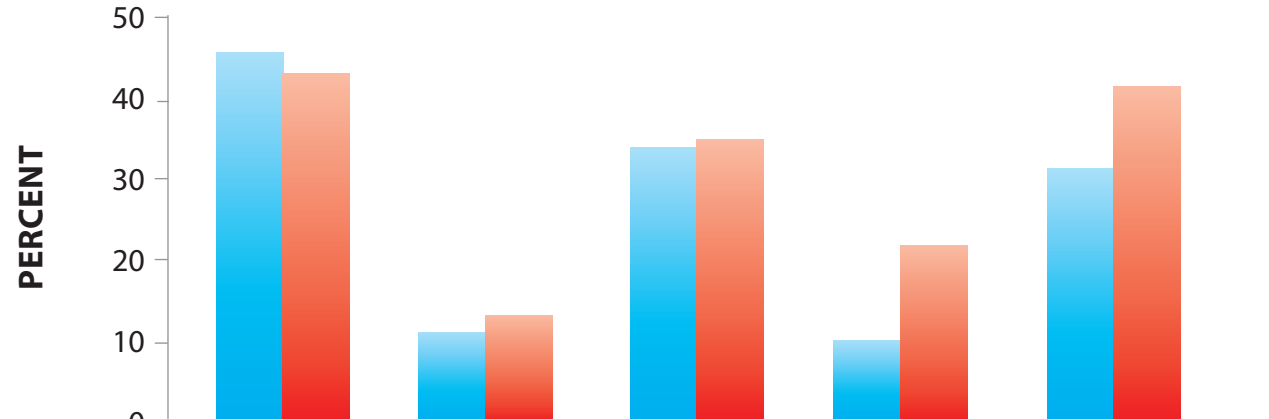


	<$15,000	$15,000 -$24,999	$25,000 -$34,999	$35,000 - $49,999	$50,000+
2009	0.9	2.9	4.2	6.7	2.4
2010	3.7	3.1	7.0	1.9	2.1

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

There are clear disparities in lifetime and current marijuana use by ethnicity. Chamorros have the highest reported rates for both ever and current use, while Filipinos have the lowest rates (Figures 79 and 80).

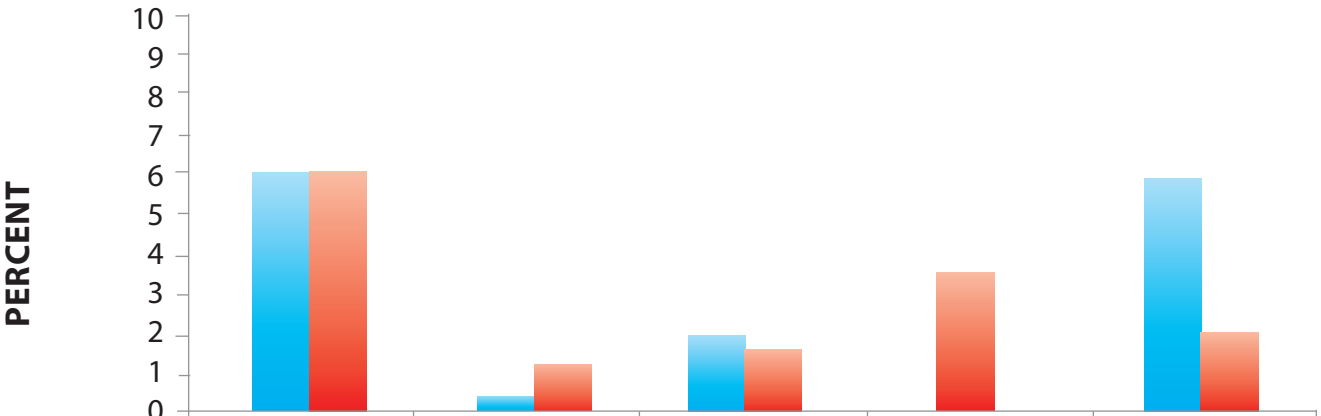
Figure 79. Lifetime marijuana use, adults, by ethnicity, Guam, 2009-2010



	Chamorro	Filipino	White / Caucasian	Asian	Micronesian
2009	45.9	11.3	34.1	10.3	31.6
2010	43.0	13.4	35.2	21.9	41.5

Source: BRFSS 2009-2010

Figure 80. Current marijuana use, adults, by ethnicity, Guam, 2009-2010



	Chamorro	Filipino	White/ Caucasian	Asian	Micronesian
2009	6.0	0.4	1.9	0.0	5.9
2010	6.0	1.2	1.6	3.5	1.9

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Perceived Risk of Harm
In 2009, 82% of adults reported perceiving marijuana to cause moderate or great risk of harm. In 2010, 76.1% of adults stated they believed marijuana posed moderate to great risk of harm.

Age at Initiation
The average reported age of first use of marijuana was 16.8 years in 2009 and 17.8 years in 2010 (Table 23).

Table 23. Age at first use of marijuana, adults, Guam, 2009-2010

	2009		2010	
	Range (years)	Weighted mean (years)	Range (years)	Weighted mean (years)
Marijuana use	8 - 45	16.8	8 - 54	17.8

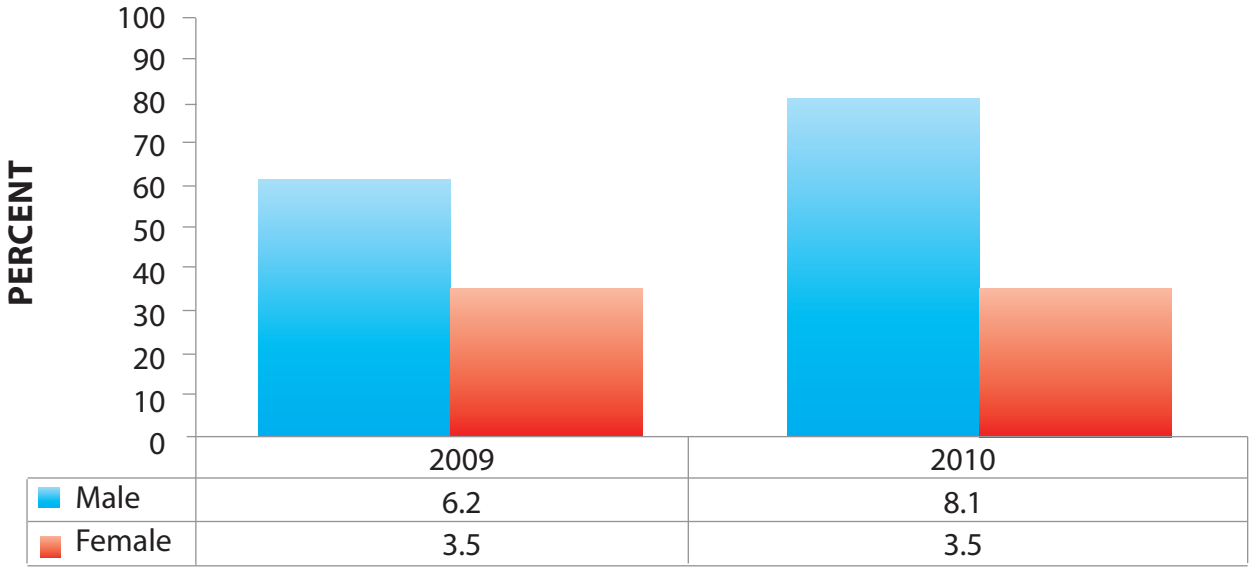
Source: BRFSS 2009-2010

Methamphetamine ("Ice")
Of the 800 respondents in the 2007 DMHSA Q-mark Adult Survey, only 1% reported using "ice" in the past 30 days. The mean age at 1st use was 23.8 years, with a range of 13-40 years. Ninety-three percent of users recognized the risks from "ice" use.

Guam added questions on lifetime and current methamphetamine use in the BRFSS in 2009 and 2010. 4.9% of adult respondents in 2009, and 5.9% in 2010 reported having ever tried methamphetamine (Figure 81), and 0.3% admitted to using methamphetamine within the past 30 days for both survey years (Figure 82).

Individuals reporting lifetime use of methamphetamine were more likely to be male (Figure 81), Chamorro (Figure 82), fall within the 25 to 44 age group (Figure 83), have lower incomes (Figure 84) and education attainment (Figure 85). Current users of methamphetamine comprised an extremely small group (n=4 in 2009; n=3 in 2010), making it difficult to characterize the group as a whole.

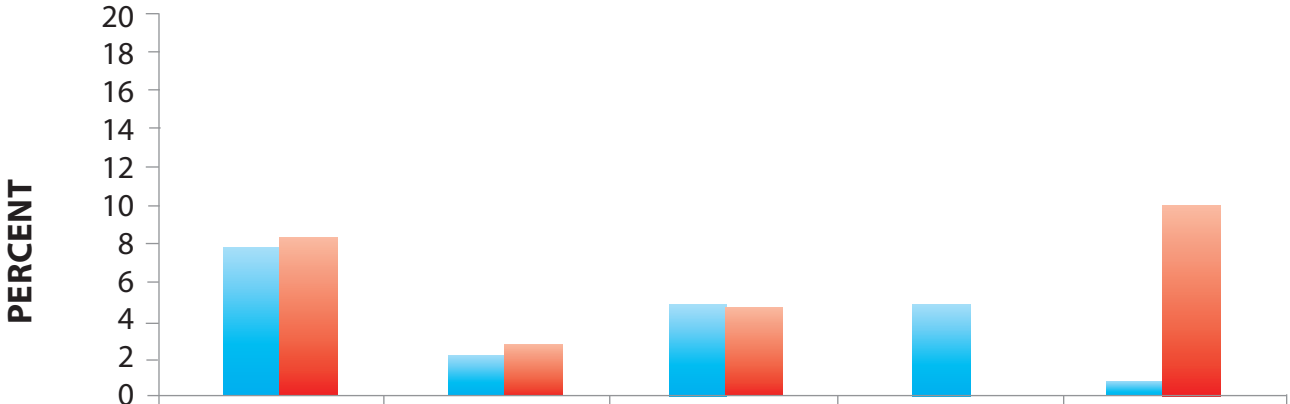
Figure 81. Lifetime users of methamphetamine, adults, by sex, Guam, 2009-2010



	2009	2010
Male	6.2	8.1
Female	3.5	3.5

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use either a 5- or 10-percentage point scale.

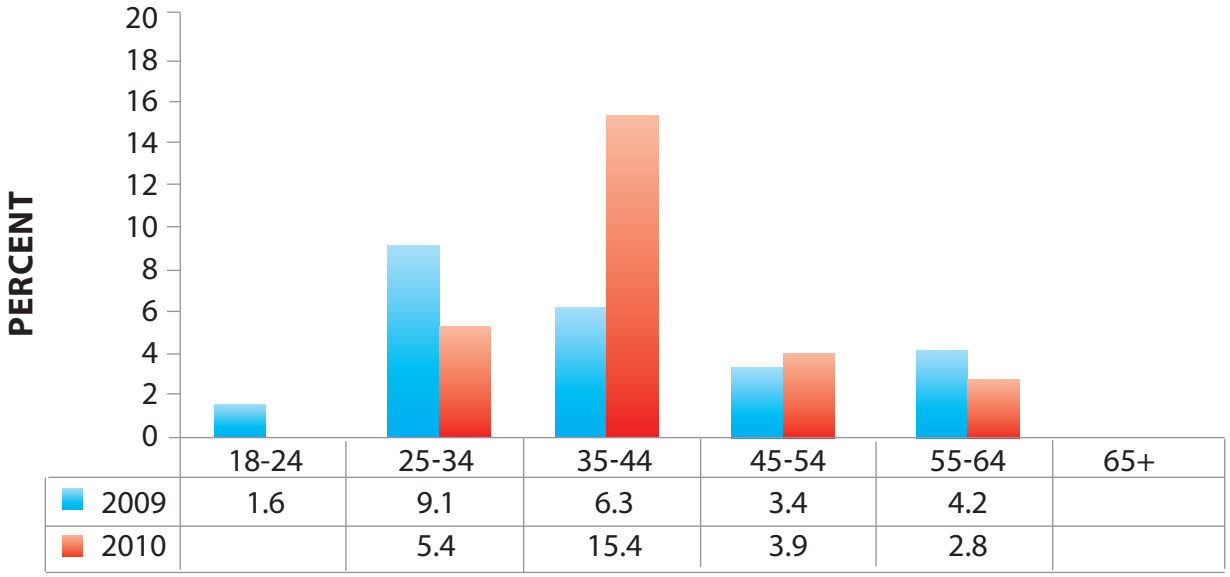
Figure 82. Lifetime users of methamphetamine, adults, by ethnicity, Guam, 2009-2010



	Chamorro	Filipino	White/ Caucasian	Asian	Micronesian
2009	7.7	2.0	4.8	4.9	0.7
2010	8.3	2.7	4.7	0.0	10.0

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

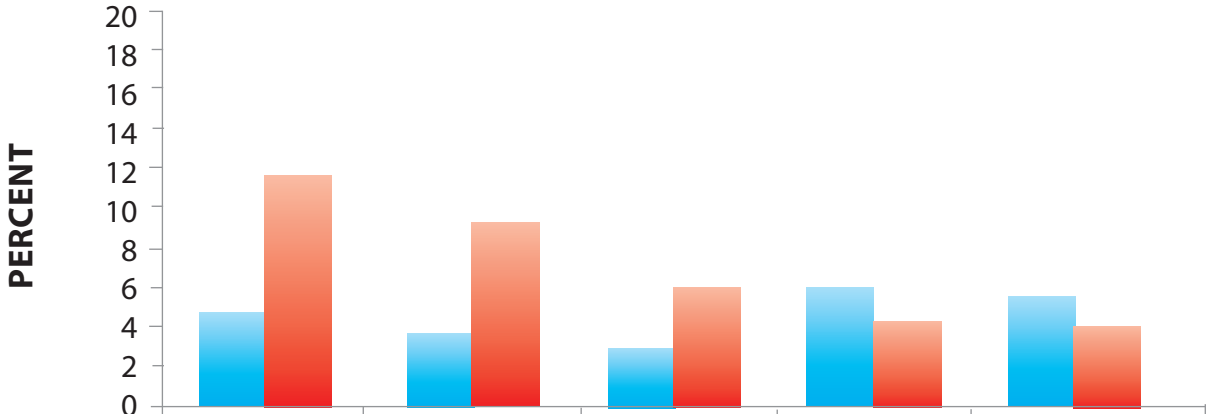
Figure 83. Lifetime users of methamphetamine, adults, by age, Guam, 2009-2010



	18-24	25-34	35-44	45-54	55-64	65+
2009	1.6	9.1	6.3	3.4	4.2	
2010		5.4	15.4	3.9	2.8	

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

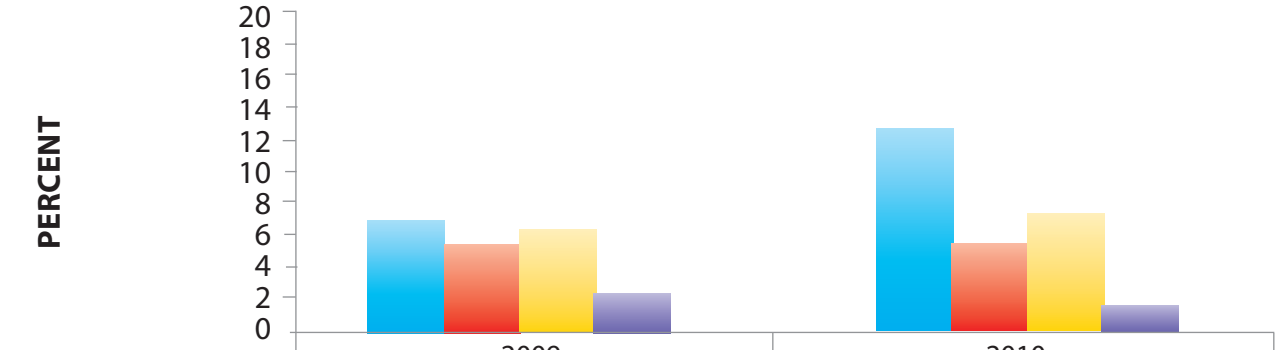
Figure 84. Lifetime users of methamphetamine, adults, by income, Guam, 2009-2010



	<$15,000	$15,000 -$24,999	$25,000 -$34,999	$35,000 - $49,999	$50,000+
2009	4.8	3.7	2.8	6.0	5.5
2010	11.7	9.2	5.9	4.2	4.1

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

Figure 85. Lifetime users of methamphetamine, adults, by educational attainment, Guam, 2009-2010



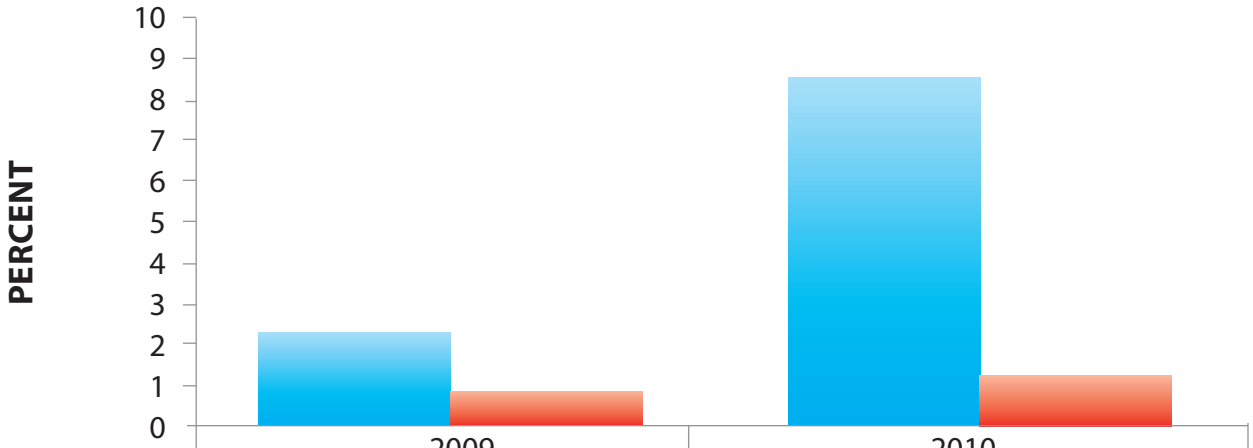
	2009	2010
< High School	6.8	12.7
H.S. or G.E.D.	5.4	5.4
Some post H.S.	6.3	7.4
College graduate	2.1	1.4

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

Other Drugs

The BRFSS asked about other illegal drug use. 1.6% of 2009 respondents and 4.9% of 2010 respondents reported having ever used other illegal drugs. Ever users of illicit drugs tended to be male (Figure 86), Chamorro or Caucasian (Figure 87), aged 35-33 years (Figure 88), and belong to higher income groups (Figure 89). In 2009, 0.2% of respondents admitted using other illegal drugs within 320 days of the survey. In 2010, the prevalence of self-reported current other drug use was 0.4%. The small numbers of respondents admitting to using other illegal drugs makes it difficult to accurately characterize the group.

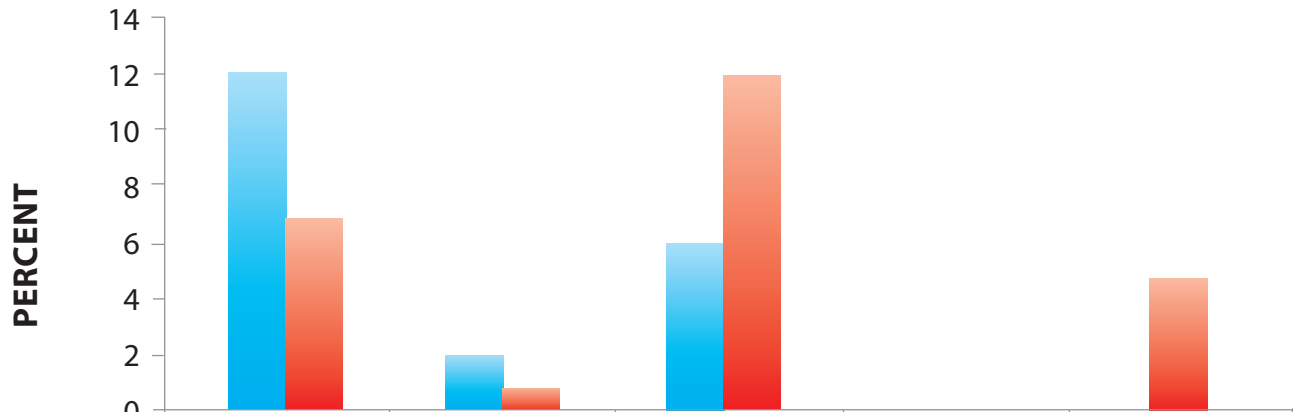
Figure 86. Lifetime users of other drugs, adults, by sex, Guam, 2009-2010



	2009	2010
Male	2.3	8.5
Female	0.8	1.2

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

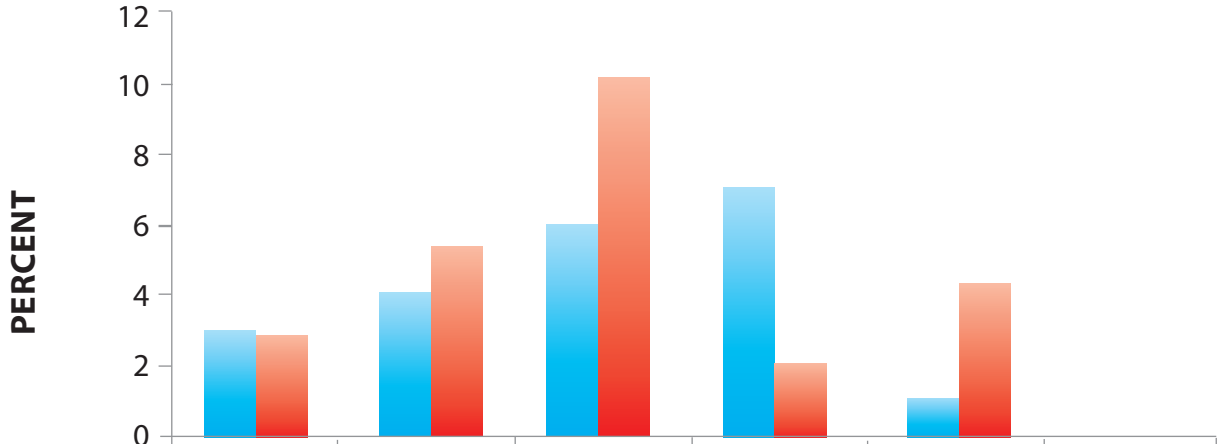
Figure 87. Lifetime users of other drugs, adults, by ethnicity, Guam, 2009-2010



	Chamorro	Filipino	White/ Caucasian	Asian	Micronesian
2009	12	2	6	0	0
2010	6.9	0.9	12.0	0.0	4.7

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

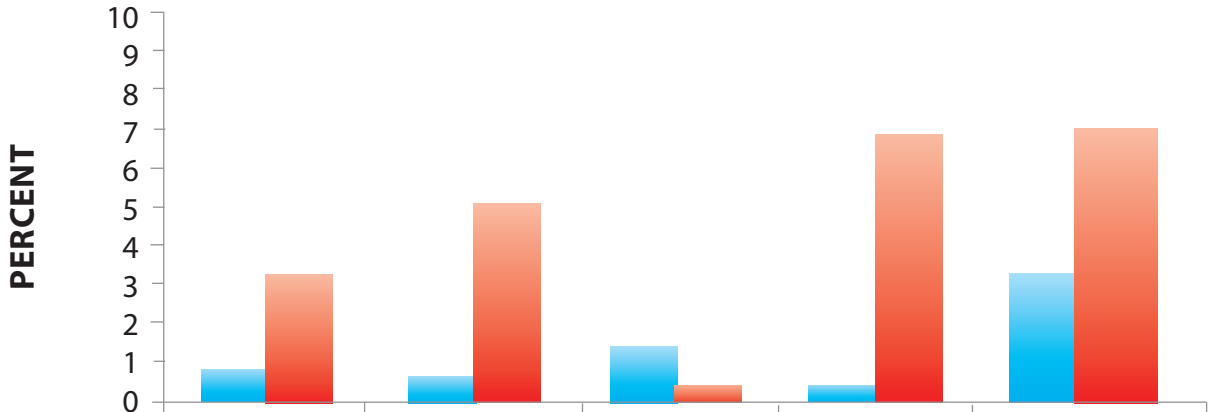
Figure 88. Lifetime users of other drugs, adults, by age, Guam, 2009-2010



	18-24	25-34	35-44	45-54	55-64	65+
2009	3	4	6	7	1	0
2010	2.8	5.4	10.2	2.0	4.3	0.0

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

Figure 89. Lifetime users of other drugs, adults, by income, Guam, 2009-2010



	<$15,000	$15,000 -$24,999	$25,000 -$34,999	$35,000 - $49,999	$50,000+
2009	0.8	0.6	1.4	0.4	3.3
2010	3.3	5.0	0.4	6.9	7.0

Source: BRFSS 2009-2010
Note: Because of the small percentages reporting lifetime use, the scale for this graph is based on 2 percentage points, unlike other graphs in this document, which use a 5- or 10-percentage point scale.

The US Probation Office, District of Guam, conducted drug testing on 153 clients in 2009. Of these, 123 (80.4%) were male and 30 (19.6%) were female. A total of 3.437 drug tests were conducted on these clients, with 74 (2.2%) positive results. Thirty-nine (25.5%) of the 153 clients had positive drug tests.

Table 24 depicts a summary of the positive drug test results. The results showed that methamphetamines and amphetamines were the most commonly detected substances in positive drug tests, followed by opiates.

Table 24. Summary of positive drug test results for clients of the US Probation Office, District of Guam, 2007

Drug/Drugs	Number of positive tests	Percent of positive tests
Amphetamine and/or Methamphetamine	52	70.3%
Cannabinoids	8	10.8%
Opiates	11	14.9%
Cannabinoids and Amphetamine and/or Methamphetamine	3	4.1%

Source: US Probation Office District of Guam statistics, 2009

Other Indicators

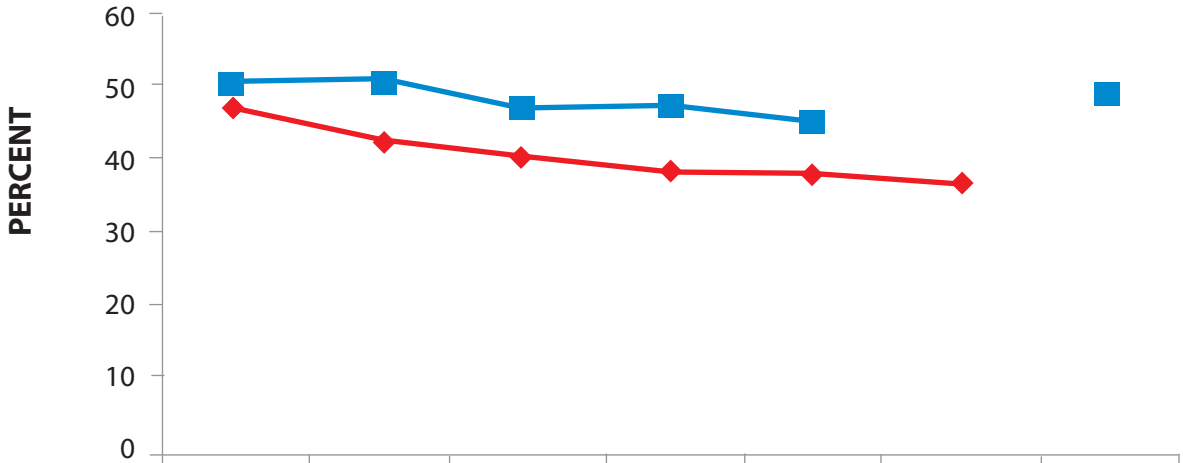
About half of the respondents (59.4% in 2009 and 47.4% in 2010) were more likely to work for an employer conducting random drug testing. About 3 out of 4 adults (73.2% in 2009 and 78.8% in 2010) have talked to their child/children about the dangers of alcohol and drugs.

Youth Consumption

Marijuana

Lifetime and current marijuana use among Guam's youth remained higher than among US youth in general (Figures 90 and 91). 30-day marijuana consumption among Guam high school youth decreased slightly in 2007, but rose sharply in 2011.

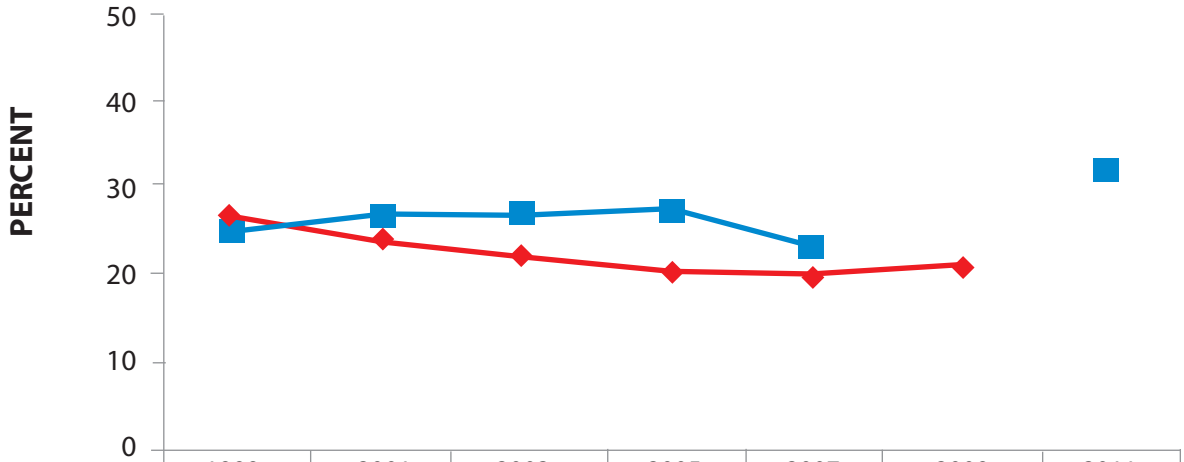
Figure 90. Lifetime marijuana use, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam HS	50.9	50.6	46.9	47.3	45.5		48.8
USA HS	47.2	42.4	40.2	38.4	38.1	36.8	

Source: YRBS 1999-2011

Figure 91. Current marijuana use, high school, Guam vs. US, 1999-2011

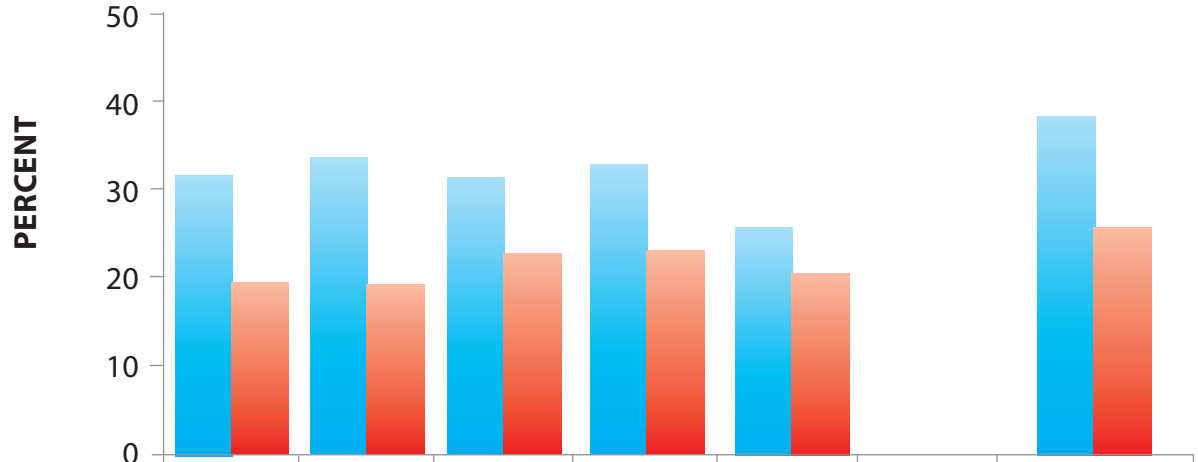


	1999	2001	2003	2005	2007	2009	2011
Guam HS	25.1	26.6	27.1	27.3	23.3		32
USA HS	26.7	23.9	22.4	20.2	19.7	20.8	

Source: YRBS 1999-2011

When disaggregated by sex, current marijuana use mostly occurred among males. Because the drop in marijuana use among males from 2005 to 2007 was disproportionately greater than for females, the difference between male and female marijuana use narrowed for 2007 (Figure 92). However, male prevalence rose markedly in 2011, widening the sex gap.

Figure 92. Current marijuana use, high school, by sex, Guam, 2009-2010

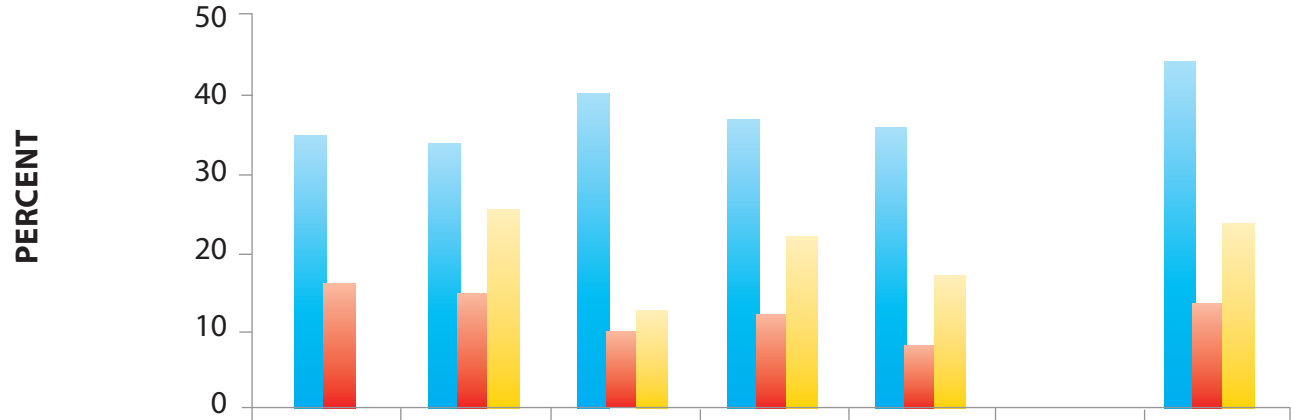


	1999	2001	2003	2005	2007	2009	2011
Male	31.8	33.3	31.4	32.6	25.6		38.1
Female	19.6	19.5	22.8	23	20.5		25.6

Source: YRBS 1999-2011

Marijuana use is highest among Chamorro youth and lowest for Filipino youth. Chamorro youth are more than three times likely to use marijuana than Filipinos, and almost twice as likely to use marijuana as other Micronesian youth (Figure 93). Current use declined for Filipino and other Micronesian youth from 2005 to 2007, but not for Chamorro youth. In 2011, prevalence increased for all three ethnic subgroups.

Figure 93. Current marijuana use, high school, by ethnicity, Guam, 2009-2010

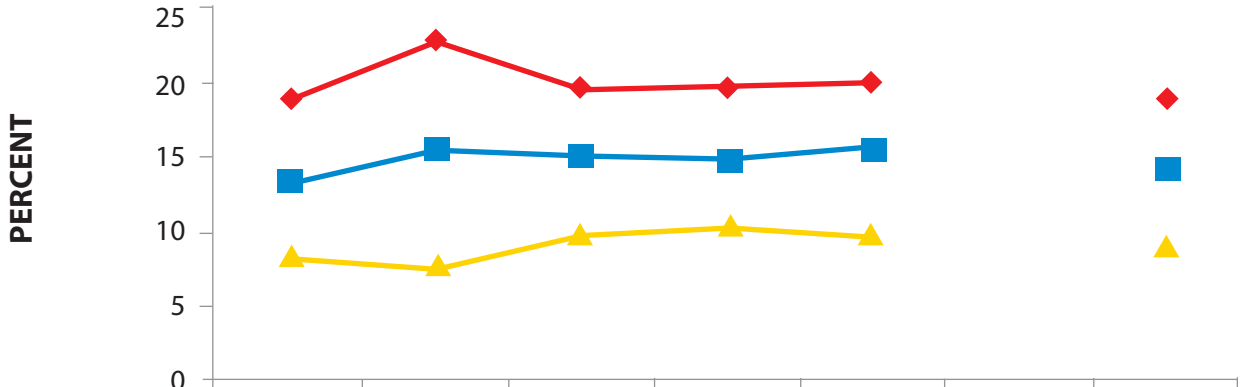


	1999	2001	2003	2005	2007	2009	2011
Chamorro	34.7	33.7	40.1	37	35.8		44.2
Filipino	16	14.5	9.6	12	8		13.2
Other Micronesian		25.3	12.5	22.4	17		23.8

Source: YRBS 1999-2011

Overall, the proportion of youth who started using marijuana before the age of 13 years, remained stable at around 15%. Males are twice as likely as females to report age at 1st use before 13 years (Figure 94).

Figure 94. Percent of high school youth reporting first use of marijuana before the age of 13 years, Guam, by sex, 1999-2011

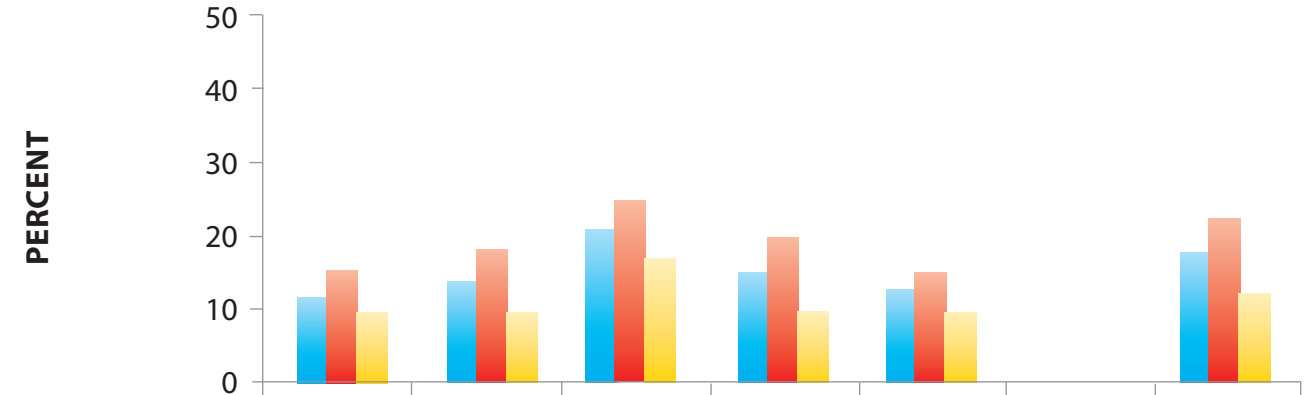


	1999	2001	2003	2005	2007	2009	2011
Total	13.4	15.5	14.9	14.8	15.4		14.3
Male	19.1	22.9	19.7	19.7	20.2		19
Female	8.5	7.8	9.9	10.5	9.9		9.2

Source: YRBS 1999-2011

Among middle school youth, lifetime marijuana use was higher for males than females. In 2011, over 1 in 5 middle school males reported they had tried using marijuana, compared to 1 in 8 females (Figure 95).

Figure 95. Lifetime marijuana use, middle school, by sex, Guam, 2009-2010



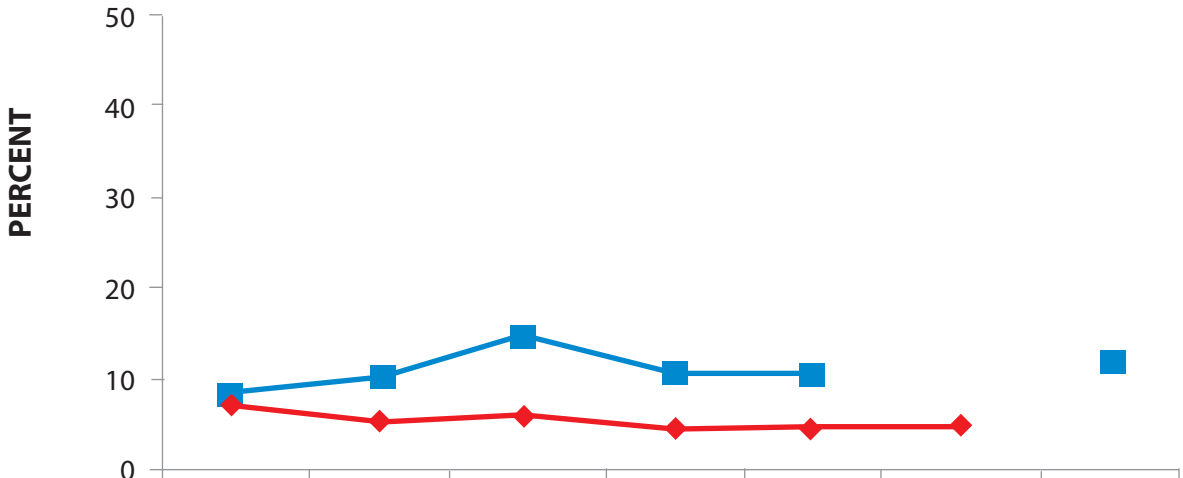
	1999	2001	2003	2005	2007	2009	2011
Guam MS	11.9	13.9	20.6	14.9	12.6		17.6
Male	15.4	18.4	24.9	20	15.2		22.5
Female	9.6	9.7	17.1	9.8	9.8		12.1

Source: YRBS 1999-2011

Use of Marijuana on School Property

The YRBS queried students about their use of marijuana on school property within the past 30 days. The percentage of Guam students reporting marijuana use on school property surpassed that of the US mainland since 1999 (Figure 96).

Figure 96. Marijuana use on school property, high school students, Guam vs. US, 1999-2011



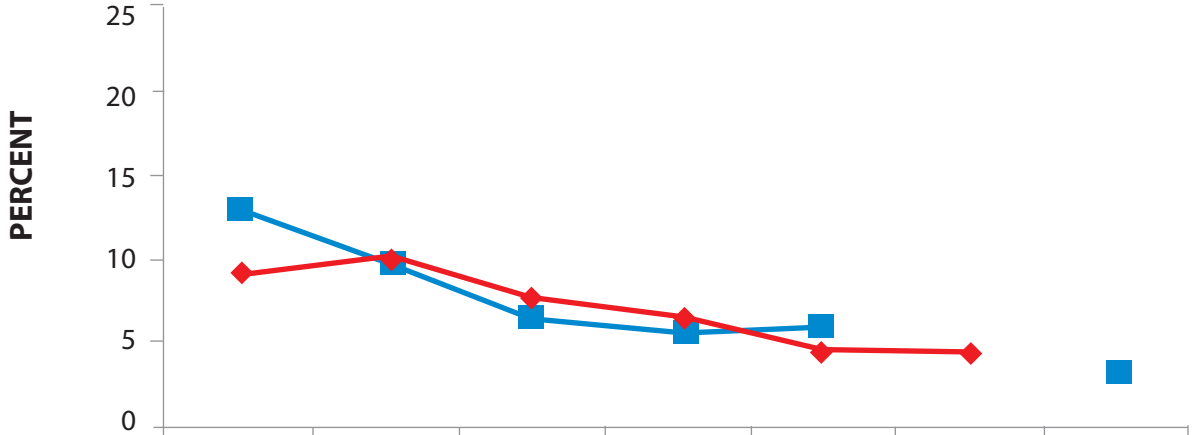
	1999	2001	2003	2005	2007	2009	2011
Guam	8.2	10.5	14.6	10.6	10.1		11.9
US median	7.2	5.4	5.8	4.5	4.5	4.6	

Source: YRBS 1999-2011

Methamphetamines ("Ice")

The YRBS started tracking methamphetamine ("ice") use among students beginning in 1999. Lifetime prevalence among Guam youth paralleled the decrease in lifetime use among US youth from 2001 to 2011 (Figure 97).

Figure 97. Lifetime methamphetamine use, high school, Guam vs. US, 1999-2011

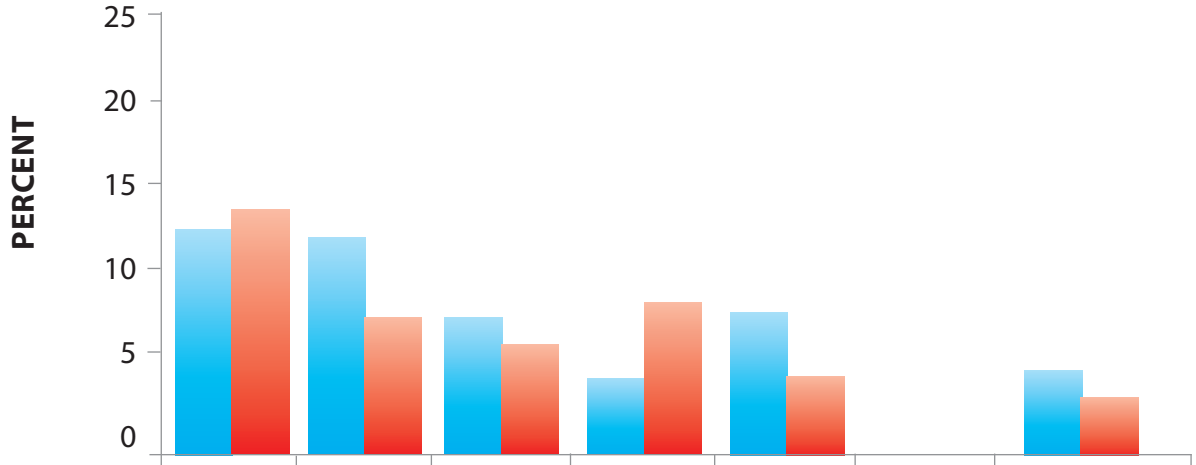


	1999	2001	2003	2005	2007	2009	2011
Guam	12.9	9.6	6.4	5.6	5.9		3.2
US	9.1	9.8	7.6	6.2	4.4	4.1	

Source: YRBS 1999-2011

Lifetime use of methamphetamine among high school students decreased for both sexes in Guam.

Figure 98. Lifetime methamphetamine use, high school, by sex, Guam vs. US, 1999-2011

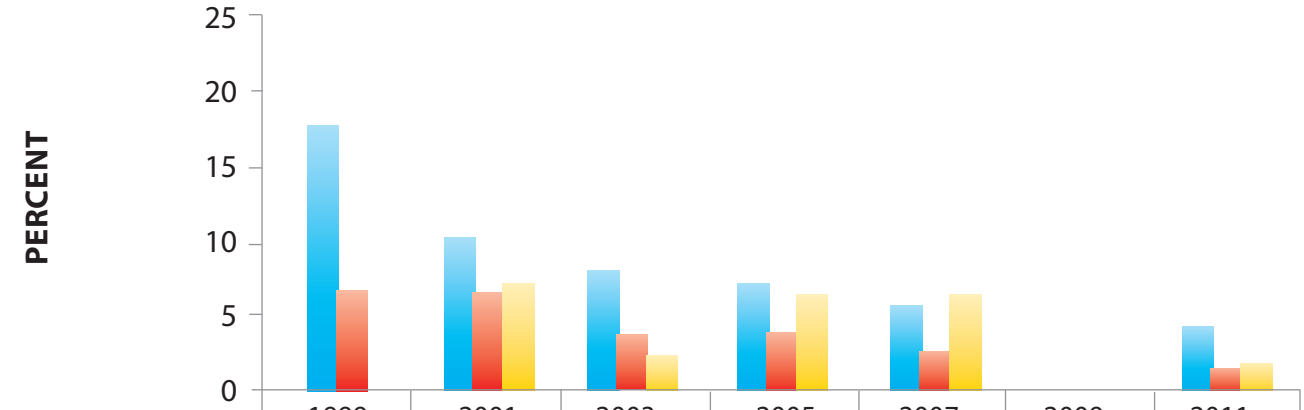


	1999	2001	2003	2005	2007	2009	2011
Male	12.3	12	7.2	3.4	7.5		4
Female	13.5	7	5.5	8	3.7		2.3

Source: YRBS, 1999-2011

Chamorro youth have the highest rate of lifetime methamphetamine use, while Filipino youth have the lowest. Methamphetamine use appears to be decreasing across all ethnic categories, with the largest proportional decrease among Chamorros (Figure 99).

Figure 99. Lifetime methamphetamine use, high school, by ethnicity, Guam, 1999-2011



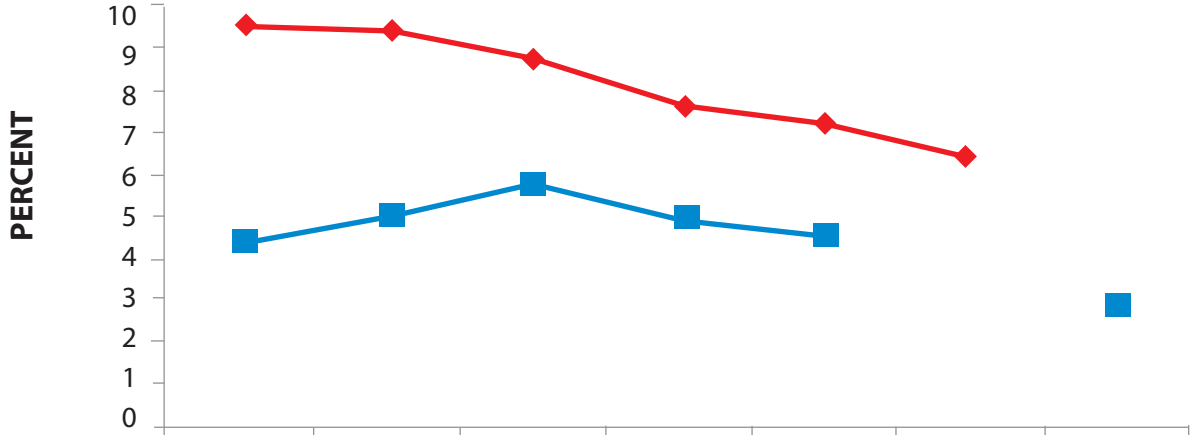
	1999	2001	2003	2005	2007	2009	2011
Chamorro	17.7	10.2	8	7.2	5.7		4.1
Filipino	6.5	6.5	3.7	3.7	2.5		1.4
Other Micronesian		7.1	2.2	6.4	6.4		1.6

Source: YRBS, 1999-2011
Note: For other Micronesians, n < 50 for some years

Cocaine

Figures 100 and 101 compare rates of reported lifetime and current cocaine use among Guam high school students and the US. Guam prevalence is lower than the nation with regards to this drug, for both lifetime and current cocaine use. Reported lifetime use of cocaine continued to decrease on Guam between 2007 and 2011, while current cocaine use remained unchanged.

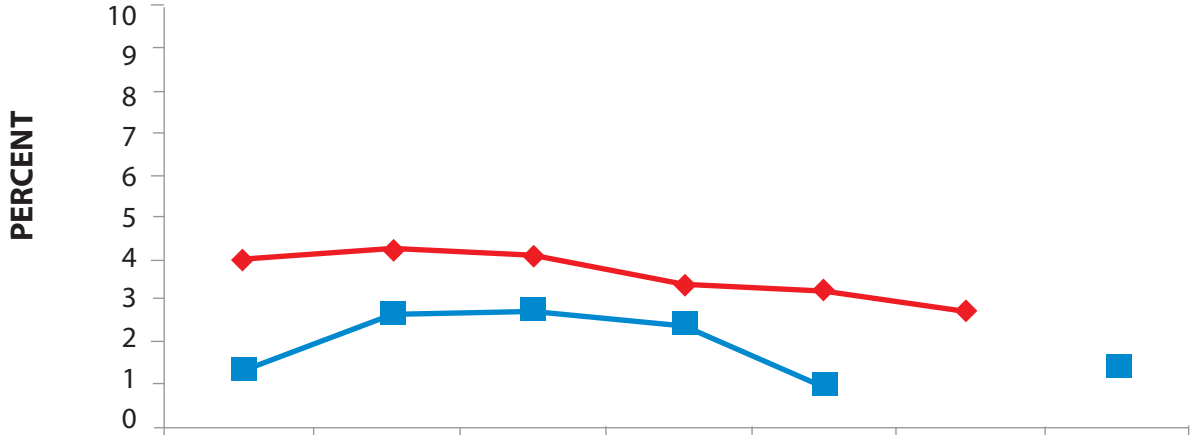
Figure 100. Lifetime cocaine use, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	4.4	5	5.8	4.9	4.6		2.9
US	9.5	9.4	8.7	7.6	7.2	6.4	

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Figure 101. Current cocaine use, high school, Guam vs. US, 1999-2011

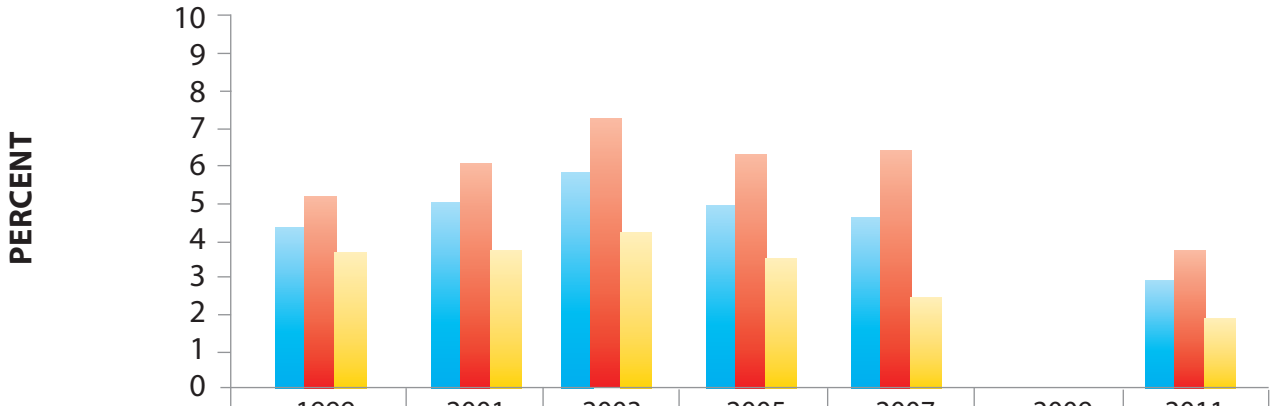


	1999	2001	2003	2005	2007	2009	2011
Guam	1.4	2.7	2.8	2.5	1		1.5
US	4	4.2	4.1	3.4	3.3	2.8	

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Guam males reported cocaine use more frequently than females (Figures 102 and 103), although the total numbers are small, making it difficult to interpret year-to-year changes with accuracy.

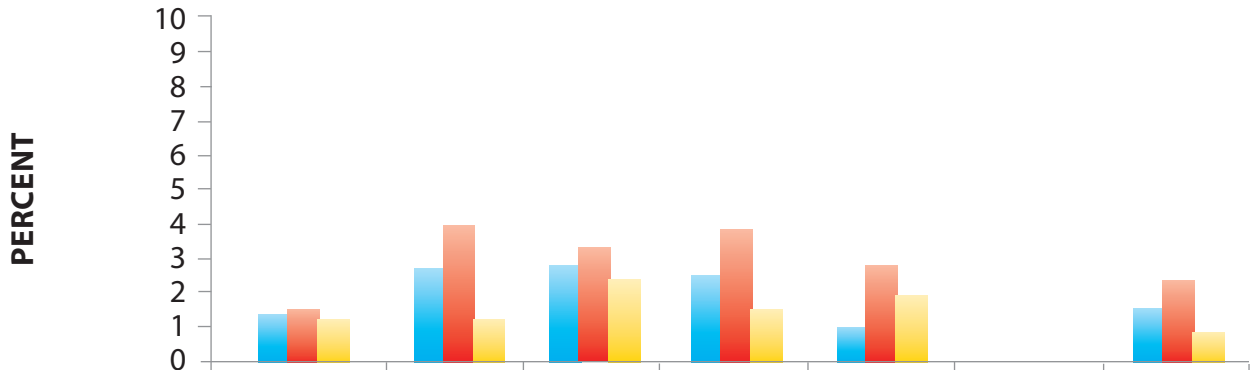
Figure 102. Lifetime cocaine use, high school by sex, Guam, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Total	4.4	5	5.8	4.9	4.6		2.9
Male	5.2	6.1	7.3	6.3	6.4		3.7
Female	3.6	3.7	4.2	3.5	2.5		1.9

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5- percentage point scale.

Figure 103. Current cocaine use, high school by sex, Guam, 1999-2011

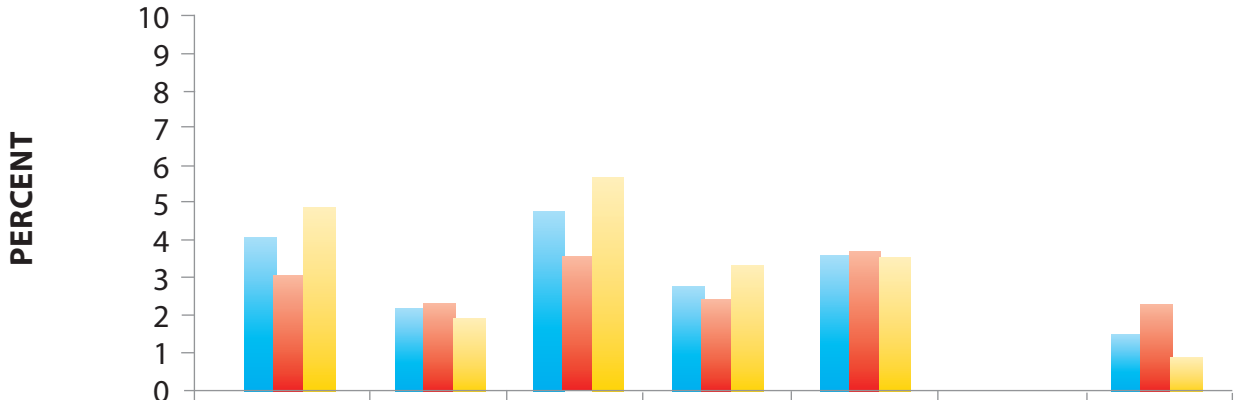


	1999	2001	2003	2005	2007	2009	2011
Total	1.4	2.7	2.8	2.5	1		1.5
Male	1.5	3.9	3.3	3.8	2.8		2.3
Female	1.3	1.3	2.4	1.5	2		0.8

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale

Guam's YRBS also tracks lifetime cocaine use among middle school students. With the small numbers, it is difficult to ascertain trends in the year-to-year changes in prevalence.

Figure 104. Lifetime cocaine use, middle school, by sex, Guam, 1999-2011



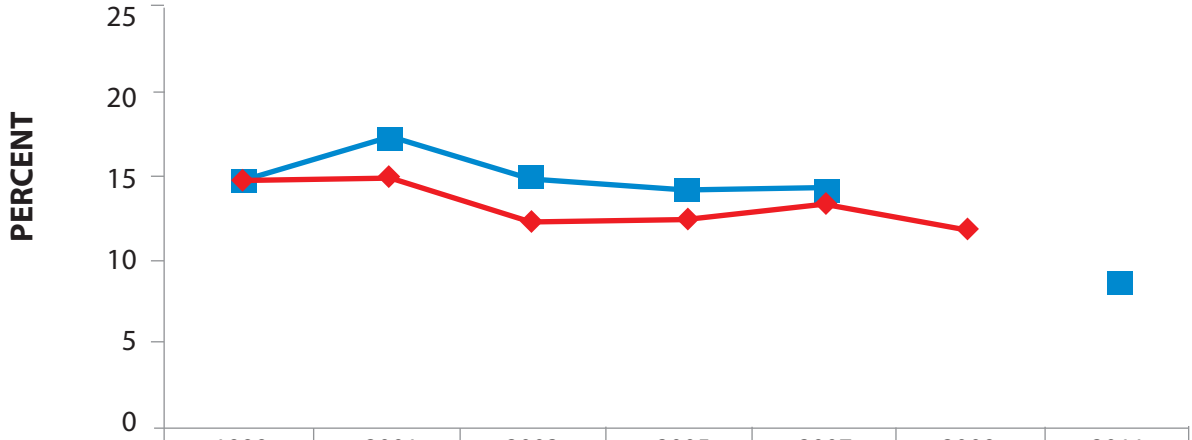
	1999	2001	2003	2005	2007	2009	2011
Total	4.1	2.1	4.8	2.8	3.6		1.5
Male	3.1	2.3	3.6	2.4	3.7		2.3
Female	4.9	1.9	5.7	3.3	3.5		0.8

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Inhalants

Inhalant use appeared to decrease among US and Guam high school youth for the period 1999 to 2011 (Figure 105). 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 106).

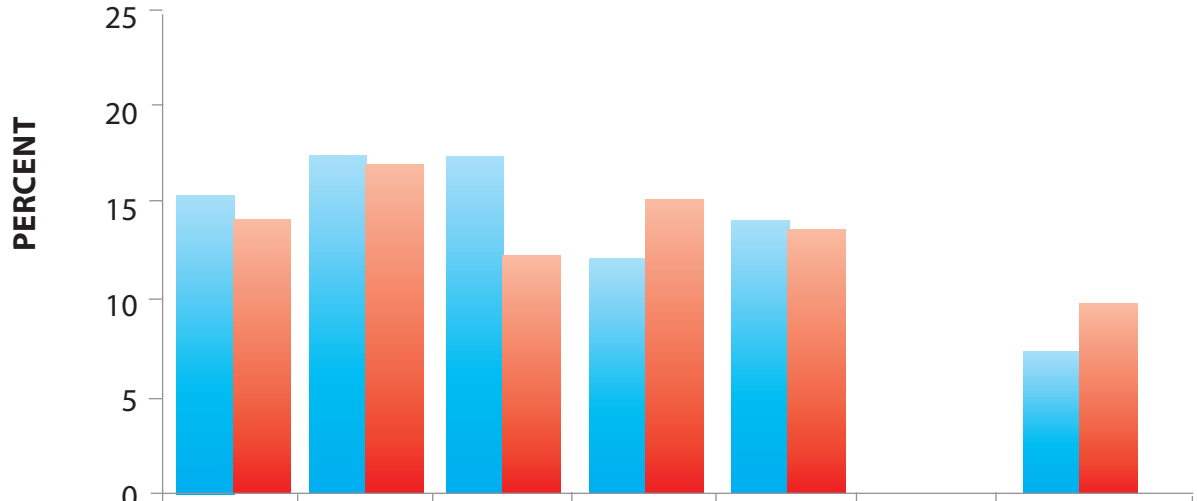
Figure 105. Lifetime inhalant use, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	14.8	17.2	14.9	14.1	14		8.5
US	14.6	14.7	12.1	12.4	13.3	11.7	

Source: YRBS, 1999-2011

Figure 106. Lifetime inhalant use, high school, Guam by sex, 1999-2011

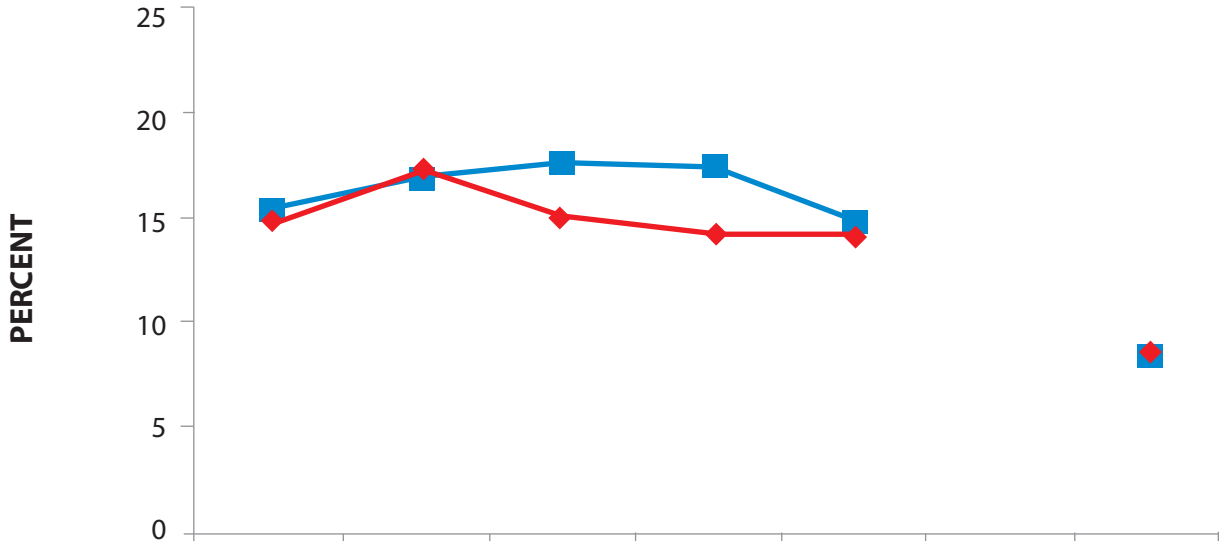


	1999	2001	2003	2005	2007	2009	2011
Male	15.4	17.4	17.4	12.2	14.1		7.3
Female	14.3	17	12.3	15.2	13.7		9.8

Source: YRBS, 1999-2011

Lifetime inhalant use among middle school students in Guam approximated the prevalence among high school youth. This pattern is unlike other substances of abuse, where prevalence among older youth is usually higher (Figure 107). There was no discernible sex difference in lifetime inhalant use among middle school youth (Figure 108).

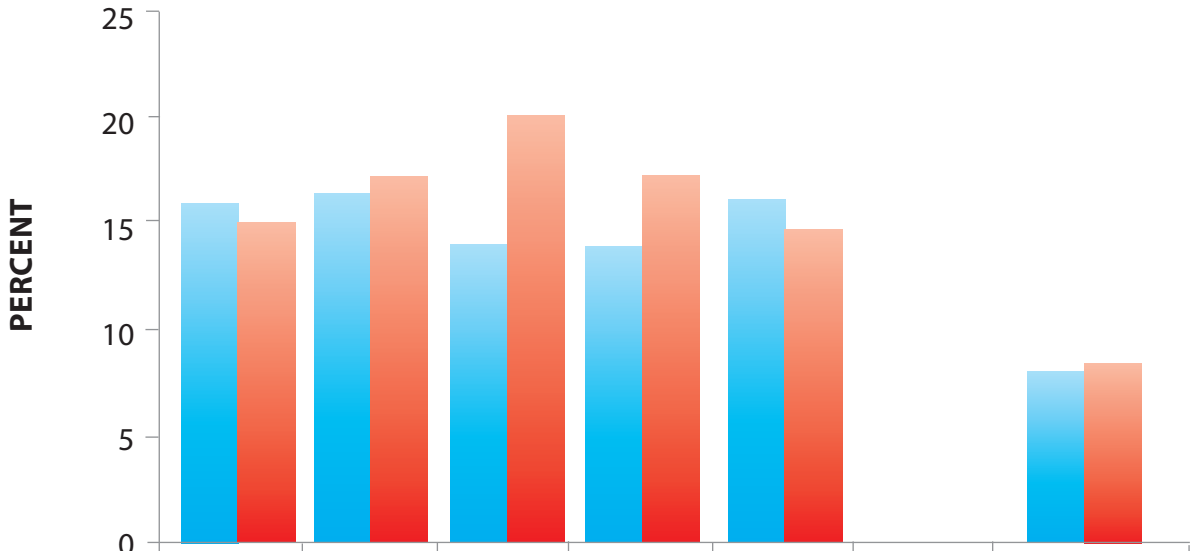
Figure 107. Lifetime inhalant use, high school vs. middle school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam MS	15.3	16.9	17.5	17.4	14.8		8.3
Guam HS	14.8	17.2	14.9	14.1	14		8.5

Source: YRBS 1999-2011

Figure 108. Lifetime inhalant use, high school, Guam by sex, 1999-2011

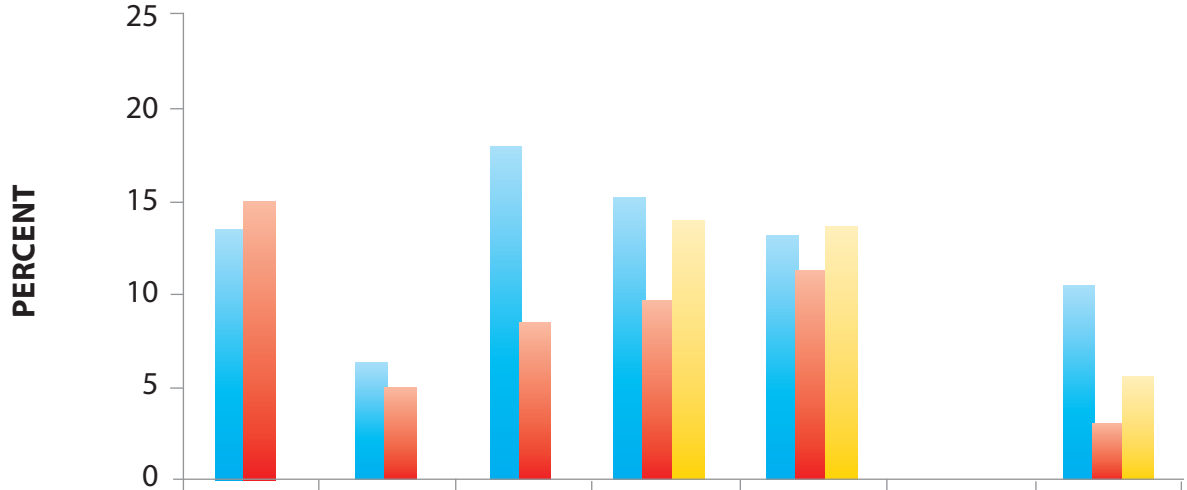


	1999	2001	2003	2005	2007	2009	2011
Male	15.9	16.5	14.1	14	16.2		8.1
Female	15.1	17.2	20.1	17.4	14.8		8.5

Source: YRBS, 1999-2011

Data on current and lifetime inhalant use among youth broken down by ethnicity/race is presented in Figures 109 and 110. The numbers of students under some of these categories are small, so caution is needed in interpreting the data. Lifetime inhalant use among high school students appeared to decrease among Chamorros, Micronesians and Filipinos in 2011. For middle school students, lifetime inhalant use decreased in 2011 for Chamorros.

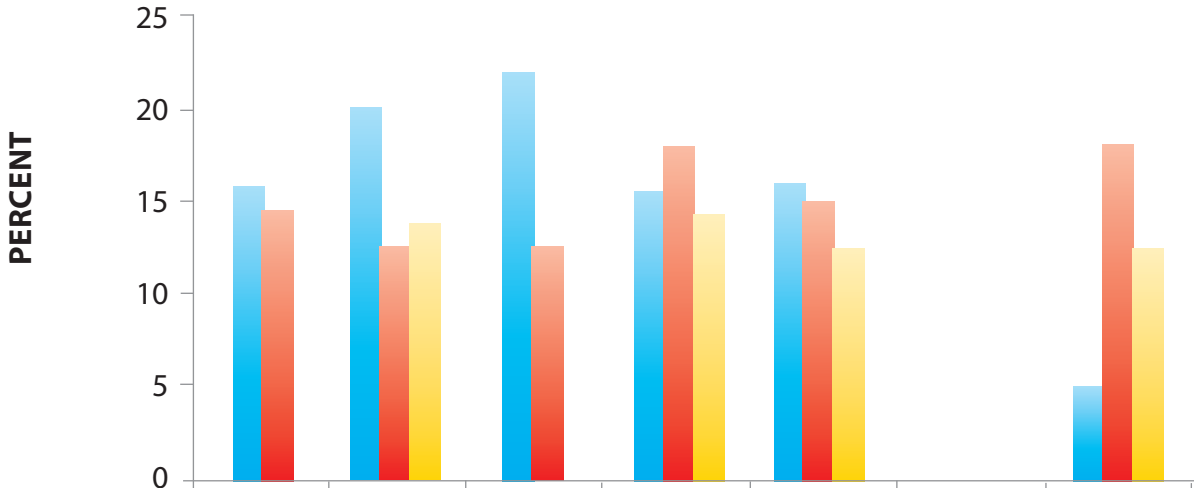
Figure 109. Lifetime inhalant use, high school, by ethnicity, Guam, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Chamorro	13.5	6.3	18	15.3	13.1		10.5
Filipino	15.1	5	8.6	9.7	11.2		3
Other Micronesian				13.9	13.6		5.6

Source: YRBS, 1999-2011
Note: n<50 for Filipino and, Micronesian Islander sub-groups

Figure 110. Lifetime inhalant use, middle school, by ethnicity, Guam, 1999-2011



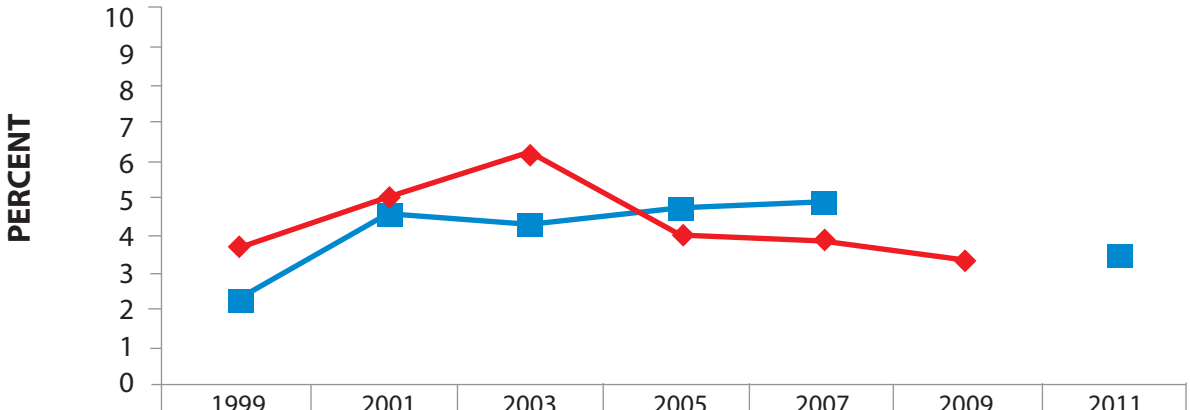
	1999	2001	2003	2005	2007	2009	2011
Chamorro	15.9	20	21.9	15.4	15.9		4.9
Filipino	14.4	12.5	12.5	18.1	15		18
Other Micronesian		13.8		14.3	12.4		12.5

Source: YRBS, 1999-2011
Note: n<50 for Filipino and, Micronesian Islander sub-groups

Steroids and Other Prescription Drugs

The YRBS also tracks the abuse of steroids and other prescription drugs. Lifetime prevalence remains low, with Guam approximating the US (Figure 111).

Figure 111. Lifetime abuse of steroids and other prescription drugs, high school, Guam vs. US, 1999-2011

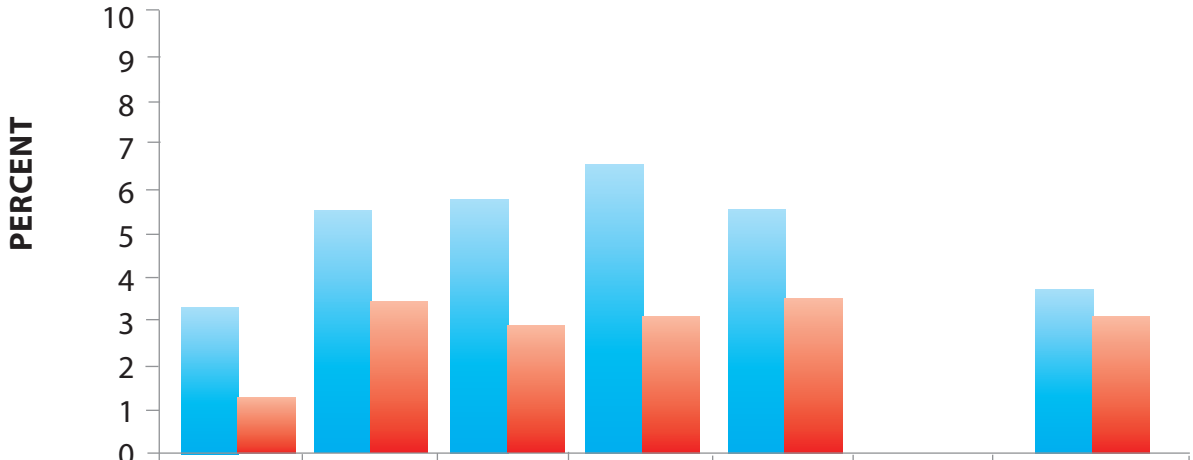


	1999	2001	2003	2005	2007	2009	2011
Guam	2.2	4.5	4.3	4.7	4.8		3.4
US median	3.7	5	6.1	4	3.9	3.3	

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Males have higher rates of reported lifetime use of these drugs than females, although the sex gap narrowed in 2011, when male prevalence decreased while female prevalence remained unchanged (Figure 112).

Figure 112. Lifetime abuse of steroids and other prescription drugs, high school, by sex, Guam, 1999-2011

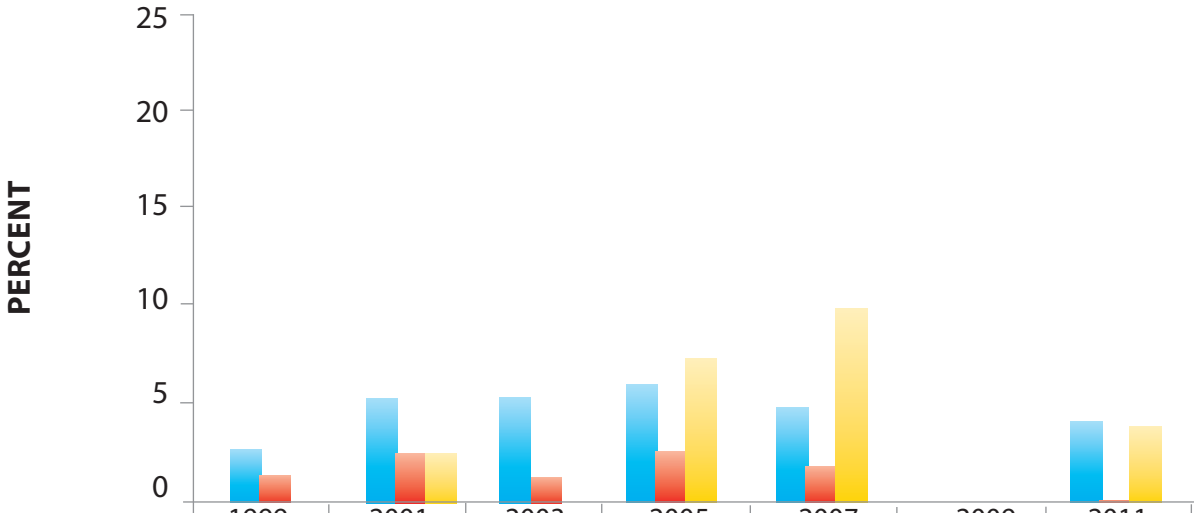


	1999	2001	2003	2005	2007	2009	2011
Male	3.3	5.5	5.7	6.5	5.5		3.7
Female	1.3	3.4	2.9	3.1	3.5		3.1

Source: YRBS, 1999-2011
Note: Because of the small percentages reporting current use, the scale for this graph is based on single percentage points, unlike other graphs in this document, which use a 5-percentage point scale.

Chamorro and other Micronesians have higher rates of lifetime use; Filipinos have the lowest rates (Figure 113).

Figure 113. Lifetime abuse of steroids and other prescription drugs, high school, by ethnicity, Guam, 1999-2011



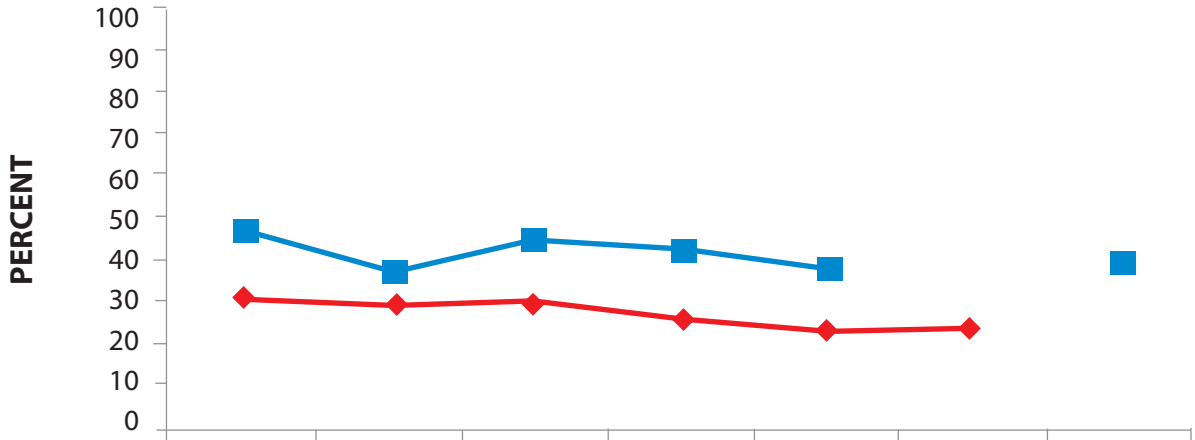
	1999	2001	2003	2005	2007	2009	2011
Chamorro	2.6	5.3	5.4	5.9	4.7		4.1
Filipino	1.1	2	0.9	2.3	1.8		0.8
Micronesian		2		7.1	10.3		4

Source: YRBS, 1999-2011
Note: n<50 for Filipino and, Micronesian Islander sub-groups

Illicit Drug Use on School Property

In 2011, more than 1 in 3 high school youth reported they had been offered, sold or given an illicit drug by someone on school property. The likelihood of this happening is higher in Guam than in the US, in general (Figure 114). Males are slightly more likely to have an illicit drug offered or sold to them on school property than females (Figure 115).

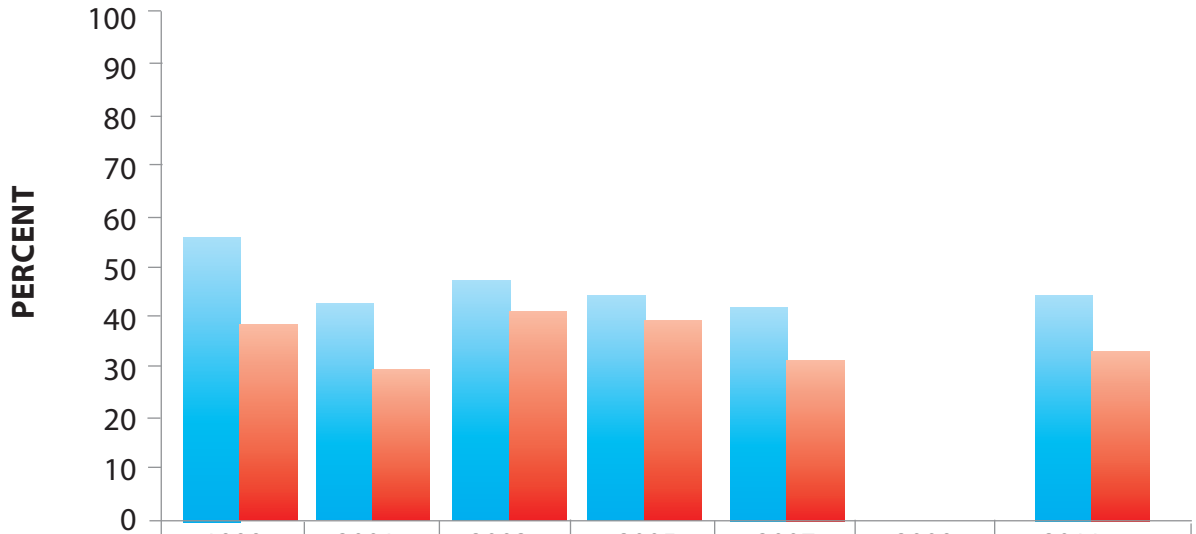
Figure 114. Illicit drug use on school property, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	46.7	36.1	44.1	41.1	36.8		39
US median	30.2	28.5	28.7	25.4	22.3	22.7	

Source: YRBS, 1999-2011

Figure 115. Illicit drug use on school property, high school, by sex, Guam,1999-2011



	1999	2001	2003	2005	2007	2009	2011
Male	56	42.5	47.1	44	42		44
Female	38.5	29.3	41	39.1	30.7		33.5

Source: YRBS, 1999-2011

ILLICIT DRUGS

Consequences

Data on violent and property crime were discussed under the section on consequences of alcohol use. Arrests for drug-related offenses decreased in 2010 by 17% from 2009 (Table 25). The rate for drug-related arrests decreased from 1.8 per 1,000 population in 2006 to 0.8 per 1,000 population in 2010.

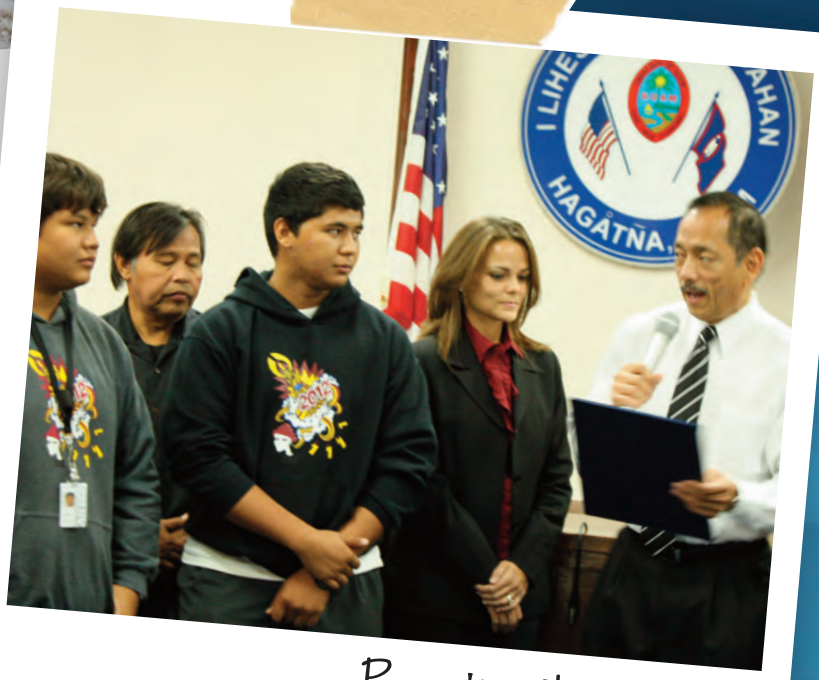
Table 25. Number of drug-related arrests per year, Guam, 2006 to 2010

	2006	2007	2008	2009	2010
Number of cases	277	237	150	157	130
Percent change from previous year	36.5	-14.4	-36.7	4.7	-17.2
Rate per 1,000 population	1.8	1.5	0.9	1.0	0.8

Source: Guam Police Department, Uniform Crime Report, 2010
Note: Rates were calculated using the revised population estimates based on the 2010 Guam census.

Mental Health

Cherish life



Prevention through policy

SUICIDE

Background

Suicide is the fifth leading cause of death on Guam, and is widely recognized as a significant public health issue by the Guam community. However, prior to the Focus on Life-Guam Youth Suicide Prevention grant, comprehensive data on suicide did not exist. Hence, it was difficult to assess the magnitude and ascertain the characteristics of suicide to guide suicide prevention policy development, program planning and resource allocation.

In 2008, the Guam DMHSA successfully applied for a youth suicide prevention grant offered by the Substance Abuse and Mental Health Services Administration (SAMHSA). The three-year grant, entitled Focus on Life-Guam Youth Suicide Prevention, ran from September 2008 to September 2011. The grant had five goals:

- Data collection, surveillance and analysis
- Workforce capacity building
- Comprehensive intervention plan
- Evidence based policies, programs and practices
- Evaluation and monitoring

The first Profile, published in 2009, represented the initial effort to strengthen data collection, surveillance and analysis of the prevalence and attributes of suicide on Guam. It was also intended to serve as a baseline against which progress attained under the grant will be measured. The data in that Profile consisted of mortality data from 2000 to 2007, reports of suicide-related incidents to the Guam Police Department from 2006-2007 and correlates of suicidal ideation and attempts as captured by the Guam Youth Risk Behavior Survey 2007.

In 2010, DMHSA's SEOW published an updated version of the Profile with additional information on suicide mortality for the years 2008-2009. In 2011, the SEOW released the second update of the Profile with suicide mortality data up until August 2011.

In 2012, consistent with the general move within the mental health and substance abuse community to more fully integrate these two disciplines, the SEOW decided to combine its substance abuse profile with the latest update of its suicide profile. This section of the Guam Epi Profile contains an update of suicide on Guam with data up until December 2011.

The information contained in this section is meant to guide the continued development of policy and program initiatives and resource allocation for Guam's suicide prevention program, after the completion of the Focus on Life-Guam Youth Suicide Prevention grant.

Methodology

During an informal discussion with Guam's Chief Medical Examiner (CME), Dr. Aurelio Espinola, Health Partners, L.L.C. (represented by Dr. Annette M. David) ascertained that under Guam law, all suspected suicide deaths have to undergo a review by the Medical Examiner's Office. This established the Office of the CME as the ultimate source for suicide mortality data. Dr. David and DMHSA Prevention and Training Branch initiated an agreement with the Office of the CME to extract suicide mortality data from 2008 to 2009, and monthly from 2010 onwards, using the Monitoring Form for Fatal Suicide Behaviours of the World Health Organization's Suicide Trends in At-Risk Territories (START) study. In compliance with HIPAA requirements, no personal identifiers were included in the data collection. Data collection on a monthly basis is ongoing.

In the previous suicide profiles, suicide mortality data were analyzed, and disaggregated to provide age, sex and race-specific death rates, using population estimates from the Guam 2000 census. Age adjusted death rates using the US 2000 population as the standard were calculated and compared to national averages. Data on youth risk factors associated with suicide were taken from the 2007 Youth Risk Behavior Survey (YRBS), and compared with the US averages from that year. Data on adult alcohol use were derived from the Behavior Risk Factor Surveillance System (BRFSS), which is overseen by the Guam Department of Public Health and Social Services (DPHSS). Preliminary results were presented to prevention and mental health stakeholders and the community-at-large, to obtain their feedback through an informal peer and community review process.

Since the last edition of the profile, the Guam Bureau of Statistics and Plans has released partial results of the Guam 2010 census, with an actual census count that was lower than the previous estimates. Thus new estimates of the mid-year populations from 2000 to 2020 were generated using the 2010 census results. **Unfortunately, age, sex and ethnicity-specific population counts have not yet been released, so at this point in time, we are unable to calculate age, sex and ethnicity specific suicide death rates.** We have, however, recalculated the crude suicide death rates for the years 2000 to 2011, using the new population estimates.

This section also reports on new data on suicidal ideation, suicide attempts and selected suicide risk factors from the 2011 YRBS. The 2011 US average for these indicators, however, are not yet available for comparison. Instead, we have highlighted trend data from 1999 to 2011 for these indicators, and used the US averages for the years 1999 to 2009 to give an indication of the relative magnitude of each indicator in Guam.

Data Sources and Issues

Suicide mortality data used in this profile were taken directly from the Office of the Chief Medical Examiner. These are the same data forwarded to the DPHSS Vital Statistics office. Guam law mandates that all suspected suicide deaths be reviewed by the CME, and the data from his office is considered the "gold standard" for suicide mortality. The data provide information on annual deaths from suicide on Guam, although the figures may represent an underestimate of actual deaths if not all deaths by suicide are recognized as such at the time of death. Also, mortality data does not provide any information on the magnitude of suicide attempts, as those attempts that do not lead to demise are not included.

The actual numbers of suicide mortalities are small, and caution is needed when interpreting year-to-year changes.

Suicide Mortality

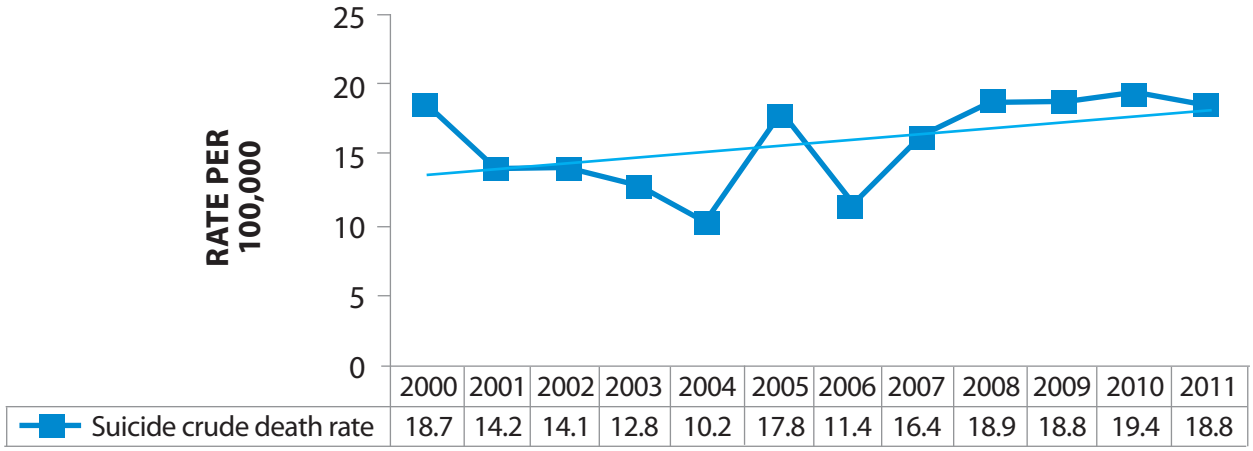
Table 26 represents the numbers and crude population death rates of suicide in Guam per year from 2000 to 2010. Annual suicide death rates were calculated using the estimated mid-year population counts based on the 2010 census, as revised from the 2000 census (used in previous editions of this profile) by the Bureau of Statistics and Plans. Since the actual population count in 2010 was lower than the projected population (based on the 2000 census), the crude death rates increased. Figure 116 depicts the yearly trend in suicide rates for the island.

Table 26. Suicide deaths and annual crude suicide death rates, Guam, 2000-2011

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Deaths	29	22	22	20	16	28	18	26	30	30	31	30
Suicide death rate (per 100,000)	18.7	14.2	14.1	12.8	10.2	17.8	11.4	16.4	18.9	18.8	19.4	18.8

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

Figure 116. Annual trend in suicide crude death rates, Guam, 2000-2011

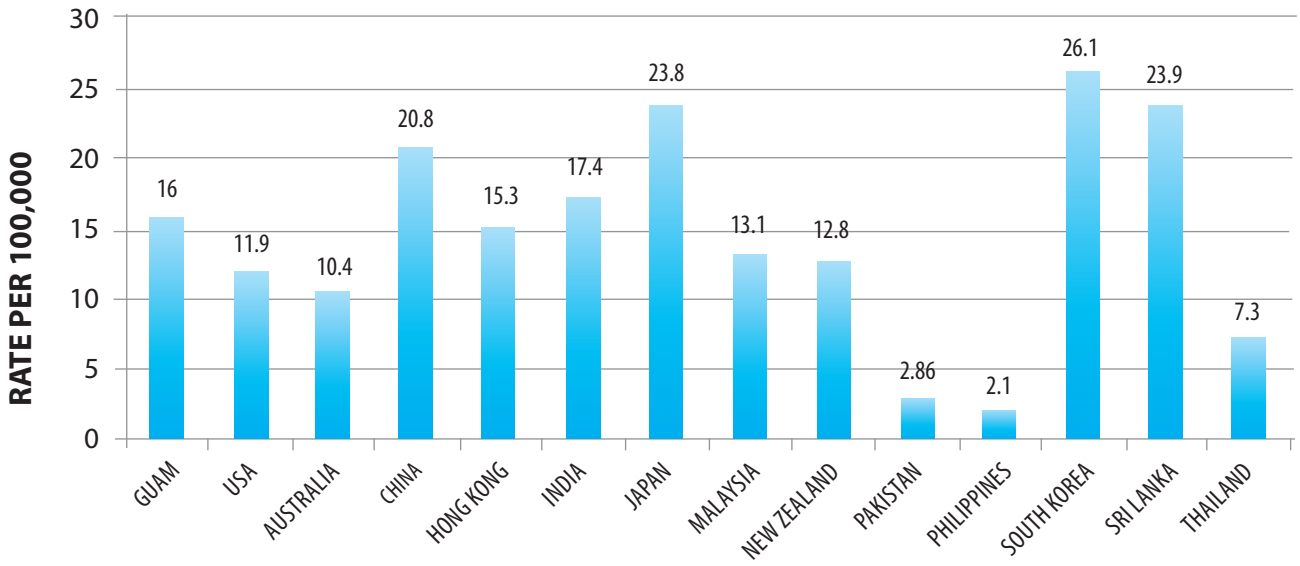


Source: Calculated based on data taken from the Office of Guam's Chief Medical Examiner, DPHSS Vital Statistics and Guam Bureau of Statistics and Plans

Because overall, the numbers are small, it is difficult to make conclusions about suicide trends over time. On average, from 2000 to 2011, there were 25.2 suicide deaths per year, approximately one suicide death every 2 weeks. The annual suicide death rate ranged from 10.2 to 19.4 per 100,000 people during this period, with a mean annual rate of 16.0 per 100,000.

Figure 117 compares the average annual crude suicide death rate on Guam with the US and other countries in the Asia-Pacific region. Guam's rate is significantly higher than countries such as the Philippines, with a suicide death rate of under 3 per 100,000, but it is considerably lower that the rates in countries such as Japan and South Korea. Individuals from these three countries comprise close to 30% of the local population on Guam. The latest (preliminary) crude suicide death rate for the US is derived from 2009 mortality statistics, and is 11.9 per 100,000 people. Guam's crude death rate from suicide is over 30% higher than the national rate.

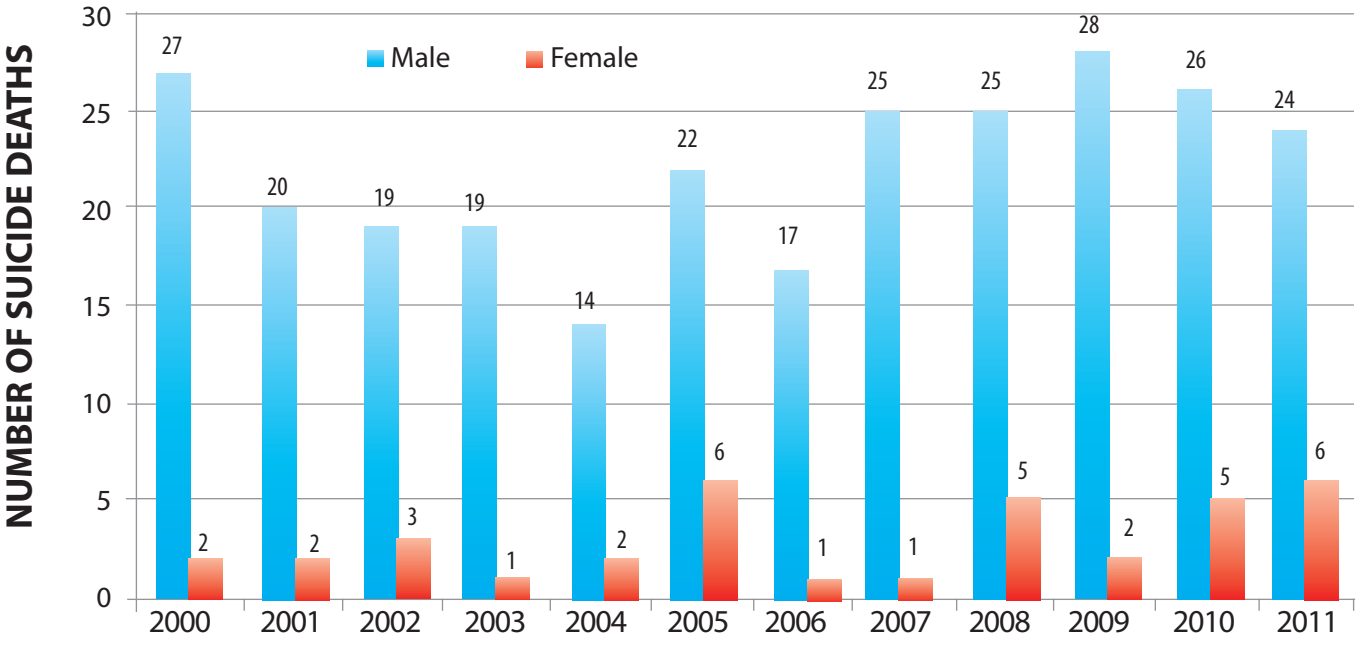
Figure 117. Comparison of Guam crude suicide death rate with other Asia-Pacific countries



Note: Rates are per 100,000
Sources: Guam rate calculated from CME and DPHSS data; US rate from the National Vital Statistics Report, March 2011; international rates from Suicide and Suicide Prevention in Asia, WHO, 2008 (Hendin et al, editors)

Figure 118 shows the total numbers of suicide deaths from 2000 to 2011, disaggregated by sex. The data clearly show that suicide deaths on Guam occur predominantly among males, who outnumber suicide deaths among females with an average ratio of 6.3:1. In the US, overall, males outnumber females in suicide deaths by a ratio of 4:1. From 2000 to 2011, about 88% of deaths by suicide on Guam happened among males.

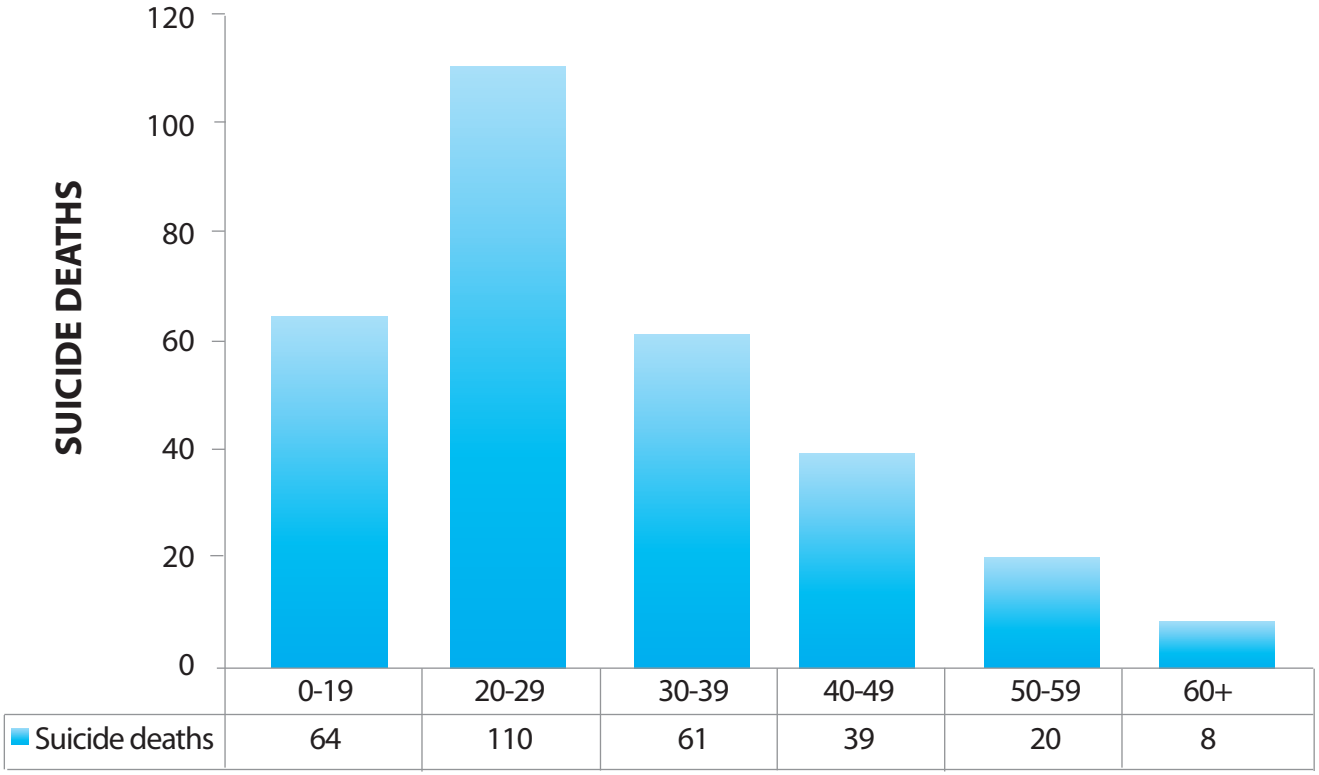
Figure 118. Suicide deaths by sex, Guam, 2000-2011



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

Suicide deaths disaggregated by age predominate among youth and young adults aged 10-29 on Guam (Figures 119). Cumulatively from 2000 to 2011, 21% of suicide deaths occurred in those aged 10-19, and 36% of deaths happened among those aged 20-29 years. Altogether, close to 60% of all suicide deaths on Guam from 2000-2011 occurred in those younger than 30 years. Thus, deaths by suicide on Guam occur predominantly among young people.

Figure 119. Cumulative suicide deaths by age, Guam, 2000-2011

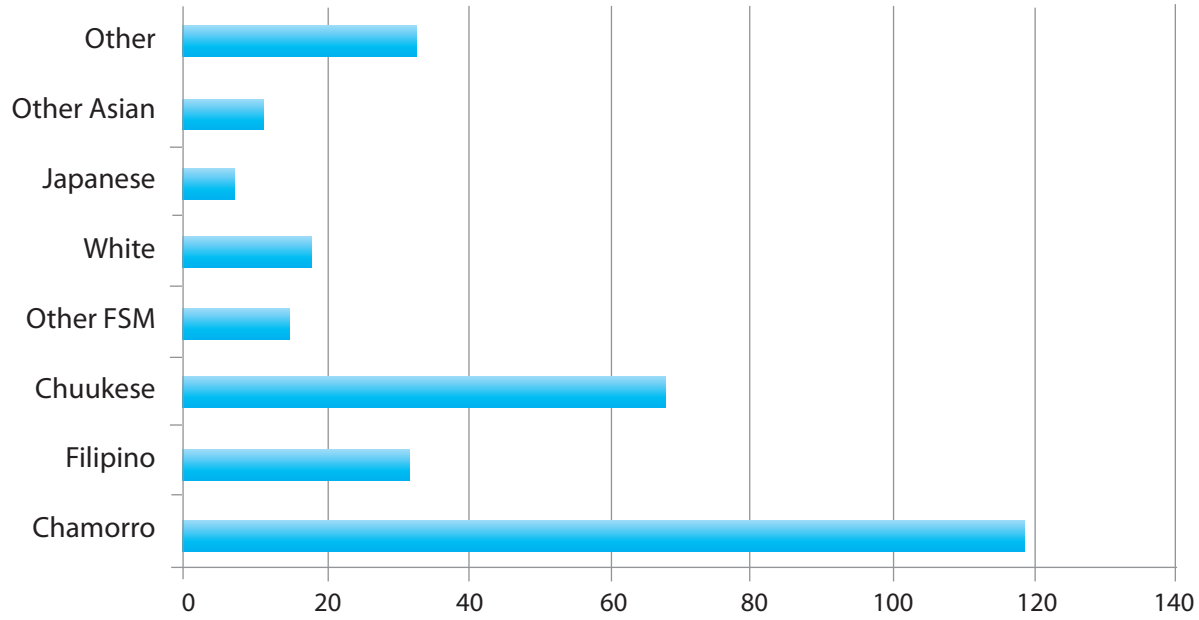


Sources: Office of the Chief Medical Examiner and DPHSS Vital Statistics

This is in contrast to China, Japan and South Korea, where death by suicide is a phenomenon that predominates among older adults. Close to half of all suicides in these countries occur in those over 55. Less than 20% of suicide deaths in Japan and less than 30% in China occur in those younger than 35 years. The US is transitioning from older suicides towards more suicides in younger people - from 1991 to 2003, suicide rates were consistently higher among those 65 years and older compared to the younger age groups. From 2000 to 2006, the suicide rates among the 25-64 year age group increased to surpass the rate of those 65 years and older in 2004 and again in 2006
(Source: CDC at http://www.cdc.gov/violenceprevention/suicide/statistics/trends02.html)

Figure 120 depicts the cumulative number of suicide deaths by ethnicity on Guam for the period 2000 to 2011. Death by suicide occurs most frequently among Chamorros, followed by Chuukese and those of Filipino or "Other" ethnicity. However, when assessing ethnic breakdown, it is important to consider the relative contribution of each ethnic group to the total population.

Figure 120. Cumulative suicide deaths by ethnicity, Guam, 2000-2011

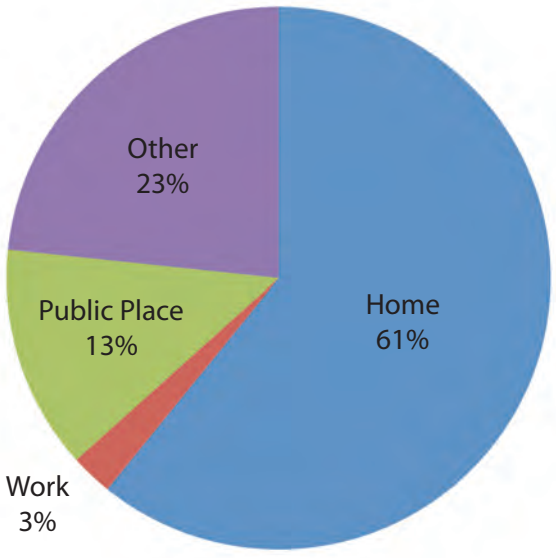


	Chamorro	Filipino	Chuukese	Other FSM	White	Japanese	Other Asian	Other
2000-2011	119	31	68	15	18	7	11	33

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

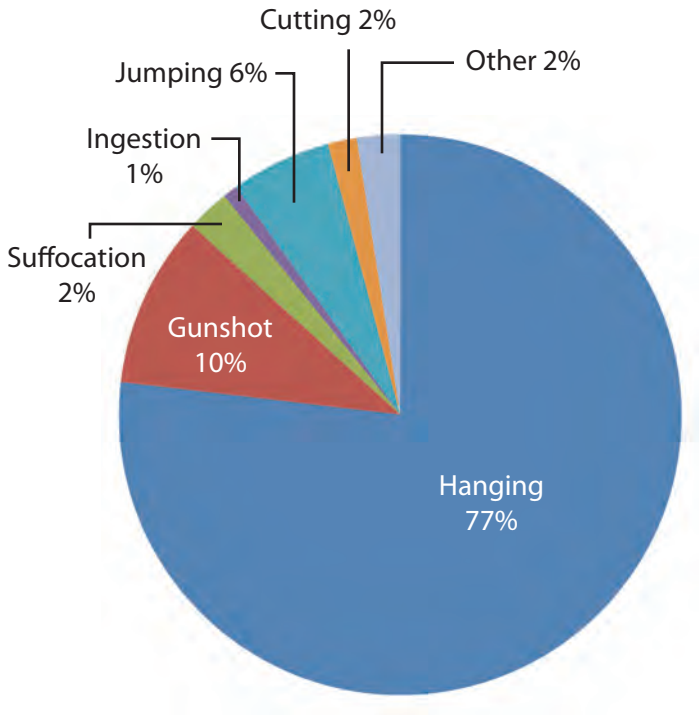
Figures 121 and 122 depict the site and method of suicide for 2008-2011 data. Over 60% of suicides during this period were committed at home. Only 13% of suicides were committed in a public place. Over three-fourths (77%) of completed suicides were by hanging. This contrasts markedly from the pattern in the US mainland, where suicide by firearms was the predominant method.

Figure 121. Site of suicide, Guam, 2008-2011



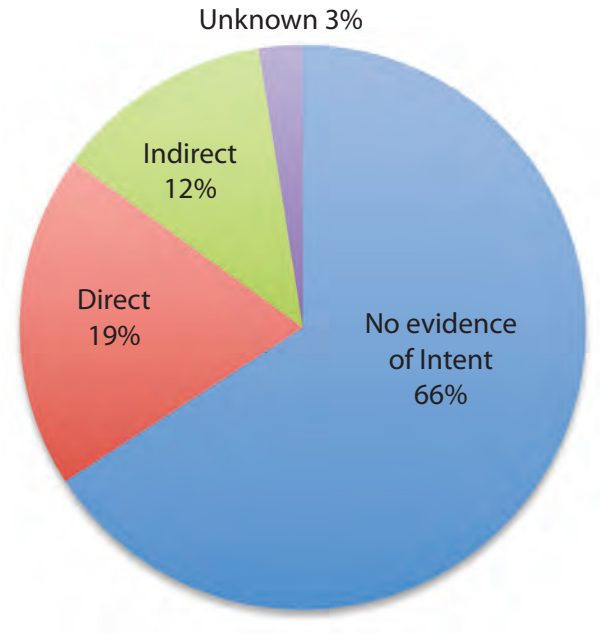
Source: Office of the Chief Medical Examiner

Figure 122. Method of suicide, Guam, 2008-2011



Source: Office of the Chief Medical Examiner

Figure 123. Evidence of intention to commit suicide, Guam, 2008-2011



Source: Office of the Chief Medical Examiner

Figure 123 shows what type of evidence of intent the suicide victim left, for 2008 to 2011, in Guam. Nearly 1 in 5 (19%) of those who died of suicide from 2008-2011 left direct evidence (suicide note) of intention to commit suicide. About one in eight (12%) left indirect evidence of intent. Altogether, about 1 on three (31%) of suicides from 2008 to 2011 left evidence of their intent.

Other correlates of suicide deaths in Guam from 2008 to 2010 included the following:

- 23%, or nearly 1 in 4, of suicide deaths in 2008-2011 involved alcohol consumption;
- 7% involved use of other drugs of abuse;
- 8% had a prior history of mental illness; and,
- 11.6% had a prior suicide attempt.

Suicidal Ideation And Attempts Among Youth

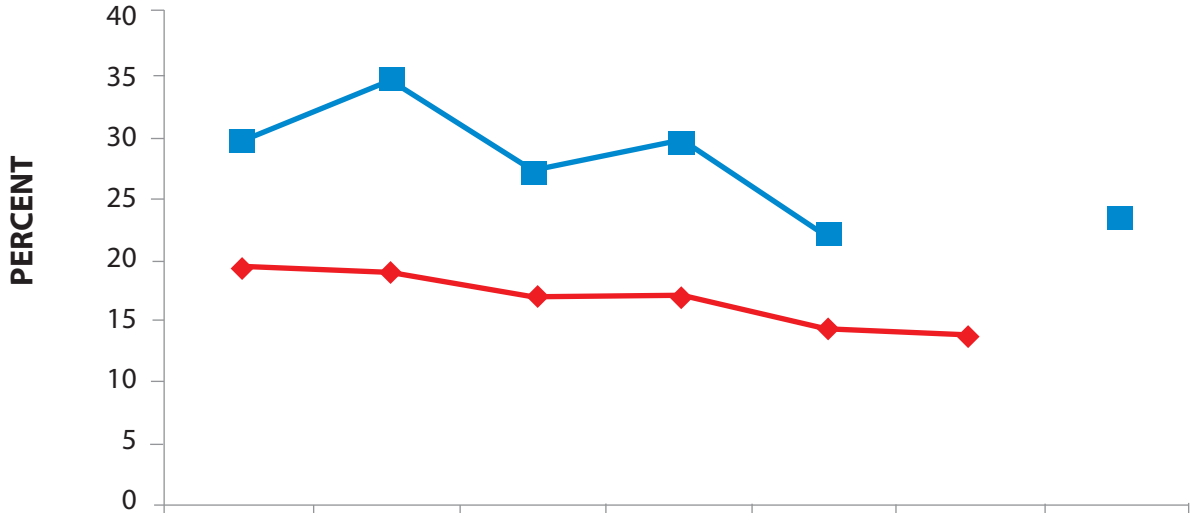
The Guam YRBS asked 4 questions on suicide:

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?

The responses to these questions provide insights into the extent of suicidal ideation and suicide attempts among youth in school. Because the survey is conducted nationally, and data is weighted for each survey site, it is possible to compare Guam data with US averages.

Figures 124 to 127 compare Guam data with US averages for each of these 4 questions on suicide over time. Guam surpasses the US average in all four indicators, signifying an elevated likelihood of suicidal ideation and suicide attempts among youth on Guam. This reaffirms the appropriateness of the identified target population (those between 10-24 years of age) of the suicide prevention program.

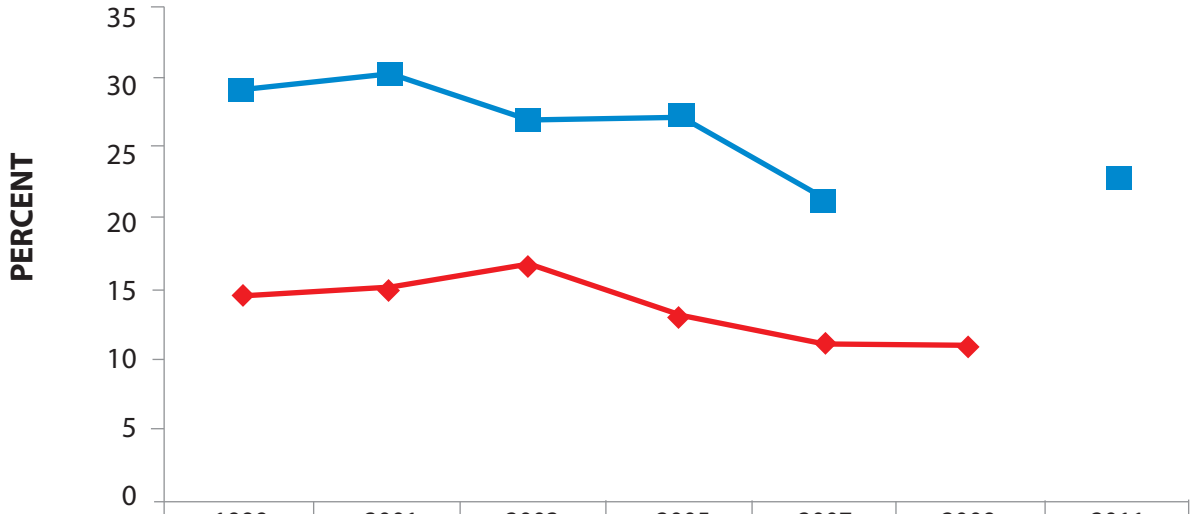
Figure 124. Suicidal ideation, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	29.5	34.3	27.2	29.3	22		23.2
USA	19.3	19	16.9	16.9	14.5	13.8	

Source: GDOE, YRBS 1999-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

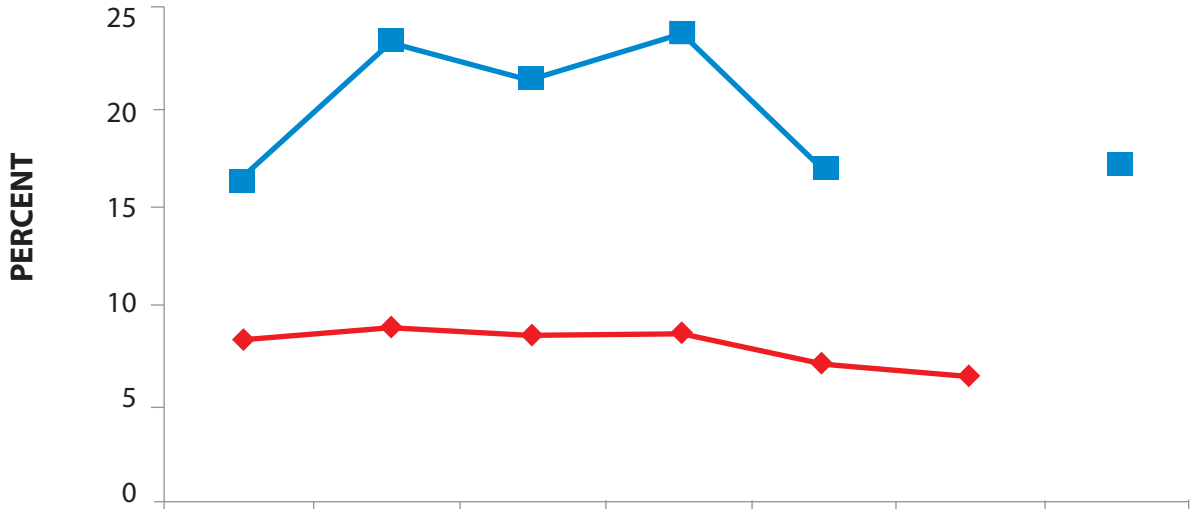
Figure 125. Suicidal plans, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	29.1	30.2	26.9	27.3	21.4		23.1
USA	14.5	14.8	16.5	13	11.3	10.9	

Source: GDOE, YRBS 1999-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

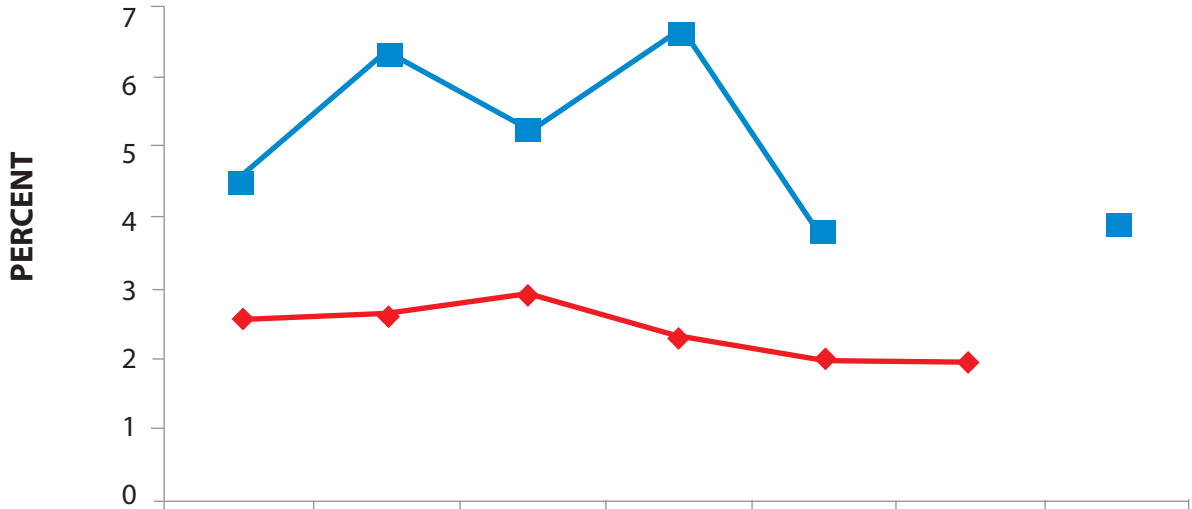
Figure 126. Suicidal attempts, high school, Guam vs. US, 1999-2011



	1999	2001	2003	2005	2007	2009	2011
Guam	16.3	23.5	21.5	23.8	16.9		17
USA	8.3	8.8	8.5	8.4	6.9	6.3	

Source: GDOE, YRBS 1999-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 127. Suicidal attempts requiring medical attention, high school, Guam vs. US, 1999-2011

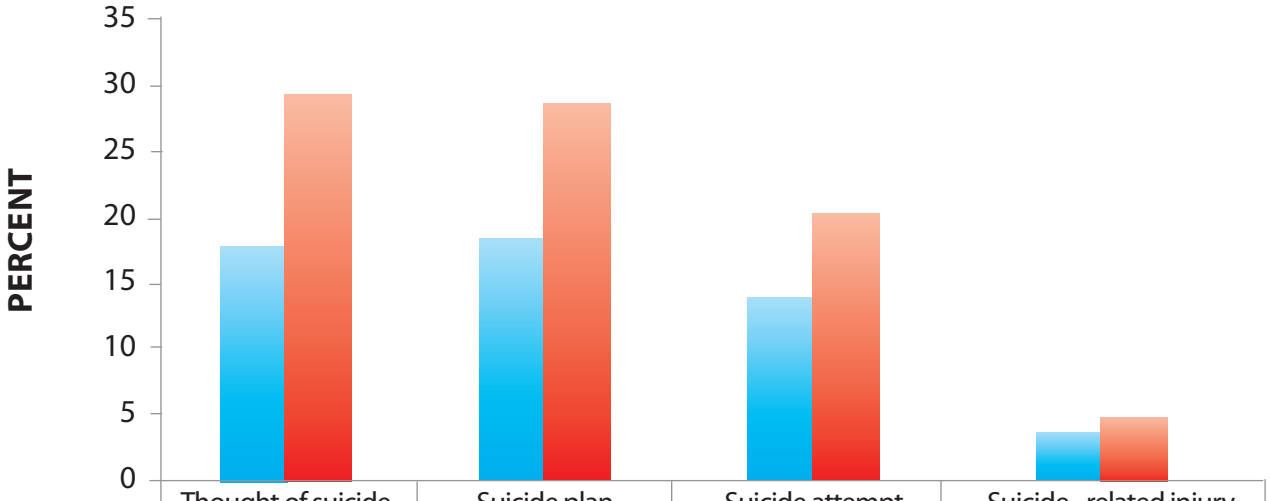


	1999	2001	2003	2005	2007	2009	2011
Guam	4.5	6.3	5.2	6.6	3.8		3.9
USA	2.6	2.6	2.9	2.3	2	1.9	

Source: GDOE, YRBS 1999-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figures 128 and 129 illustrate the prevalence of suicidal ideation and suicide attempts among high school youth disaggregated by sex and race for 2011. For this age group, females are almost twice as likely as males to think about suicide, make a plan to commit suicide and attempt suicide. Chamorros and Micronesian Islanders are most likely to think about suicide and make a plan to commit suicide, but Chamorros exhibit the highest likelihood to actually attempt suicide.

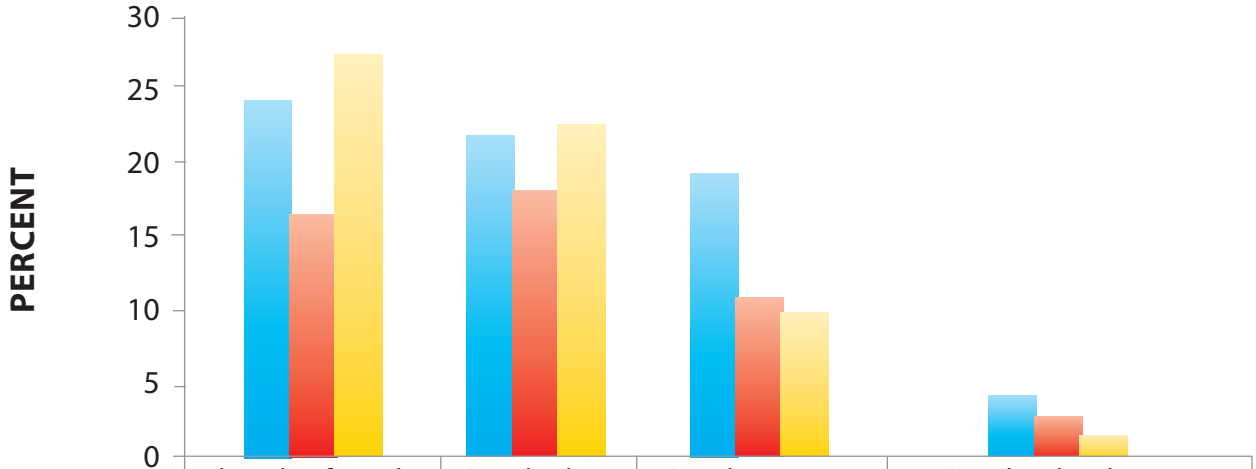
Figure 128. Suicidal ideation and suicide attempts by sex, high school, Guam, 2011



	Thought of suicide	Suicide plan	Suicide attempt	Suicide--related injury
Males	17.8	18.2	13.9	3.4
Females	29.2	28.5	20.2	4.5

Source: GDOE, YRBS 2011

Figure129. Suicidal ideation and suicide attempts by ethnicity, high school, Guam, 2011



	Thought of suicide	Suicide plan	Suicide attempt	Suicide-related injury
Chamorro	24.2	21.8	19.1	4.3
Filipino	16.4	18.1	10.7	2.8
Other Micronesian	27.2	22.7	9.8	1.4

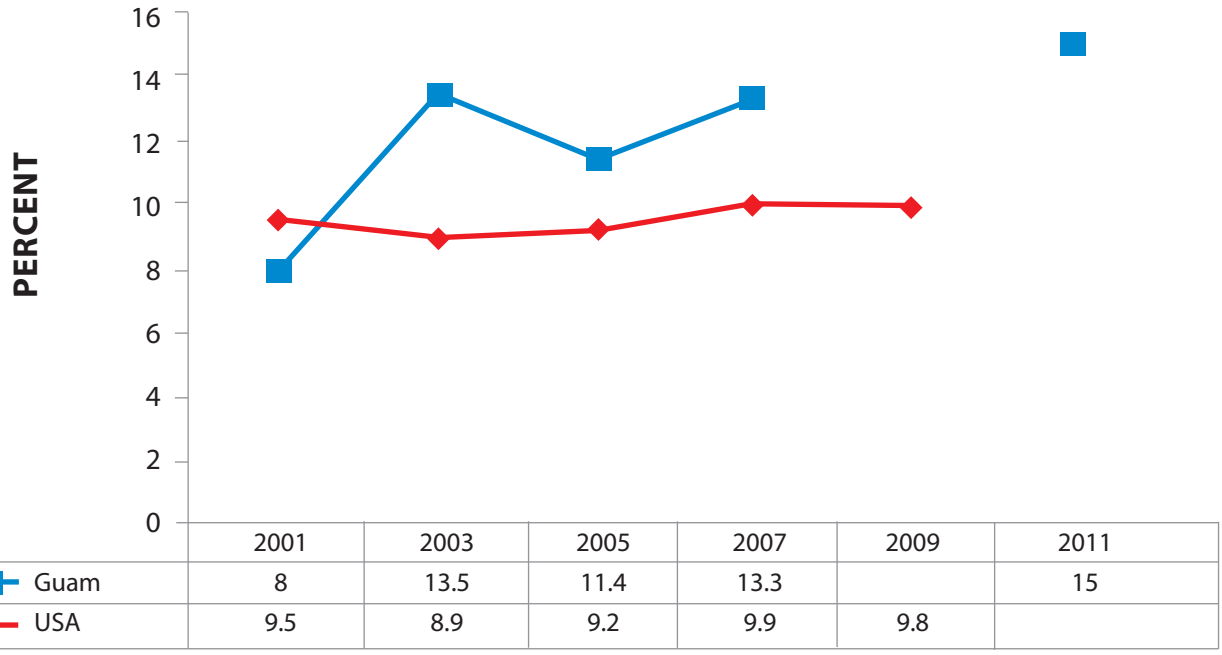
Source: GDOE, YRBS 2011

Selected Risk factors for Suicide Among Youth

The scientific literature indicates that sexual history, violent behavior, a history of mental illness and the use of tobacco, alcohol and illicit drugs may increase the risk of suicidal ideation and attempts. Figures 130 to 135 compare selected indicators pertaining to these risk factors between Guam and US youth. Five of the attributes--- (1) hit by a boyfriend/girlfriend in the past year, (2) forced to have sex, (3) felt sad for at least 2 weeks over the past year, (4) current daily smoking, and (5) current marijuana use---have prevalence rates that are significantly higher among Guam youth than youth in the US. (Note: Current daily smoking and marijuana use rates were described in the section on illegal drugs.) This indicates the need for integrated suicide prevention approaches that also address skills in developing healthy relationships, physical and sexual violence prevention, substance abuse prevention and control and aggressive screening and treatment for depressive symptoms and other underlying mental disorders.

Figures 130 and 131 show the trends for the sexual violence indicators for Guam versus the US average. 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 within the past year" is rising steadily over time in Guam, while US rates are not changing significantly.

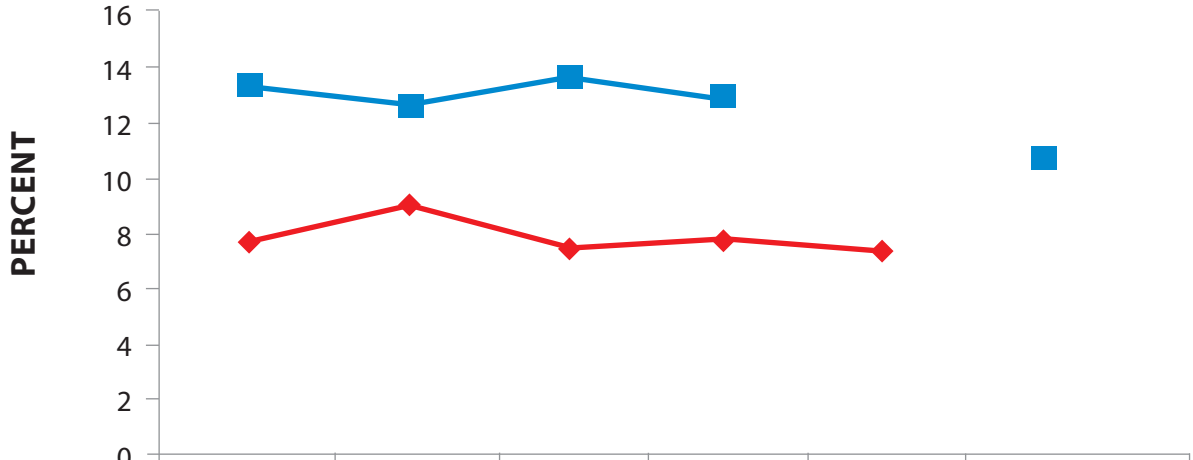
Figure 130. Being hit by a boyfriend or girlfriend within the past year, high school, Guam vs. USA, 2001-2011



	2001	2003	2005	2007	2009	2011
Guam	8	13.5	11.4	13.3		15
USA	9.5	8.9	9.2	9.9	9.8	

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

Figure 131. Forced to have sex in the past year, high school, Guam vs. USA, 2001-2011

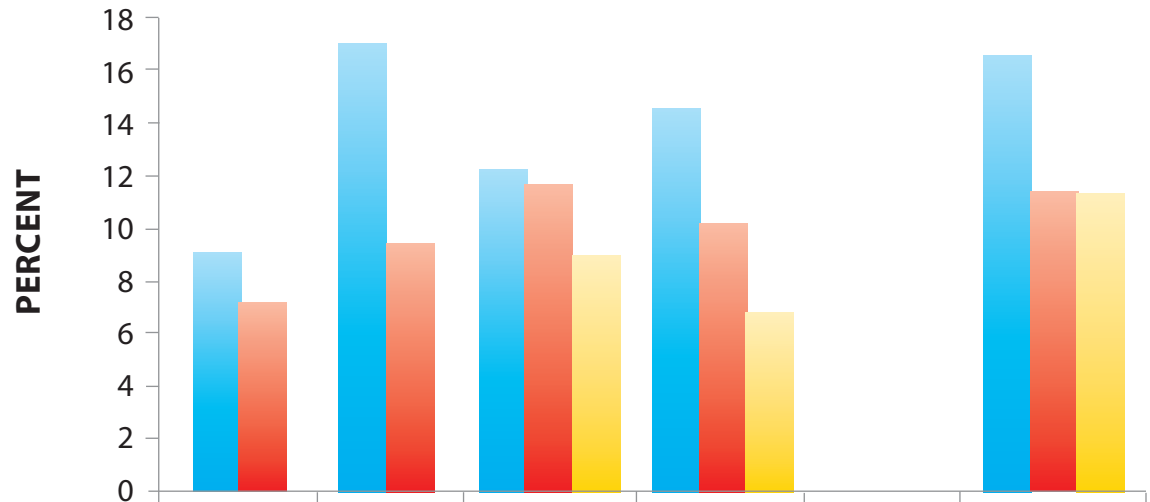


	2001	2003	2005	2007	2009	2011
Guam	13.3	12.6	13.6	12.9		10.7
USA	7.7	9	7.5	7.8	7.4	

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

Figures 132 and 133 show disaggregated data for sexual violence among ethnic sub-groups in Guam. The data indicate that "being hit by a boyfriend or girlfriend" appears most prevalent among Chamorros, while "forced to have sex" is highest among Other Micronesians. These 2 ethnic sub-groups also have the highest likelihood of suicidal ideation and suicide attempts.

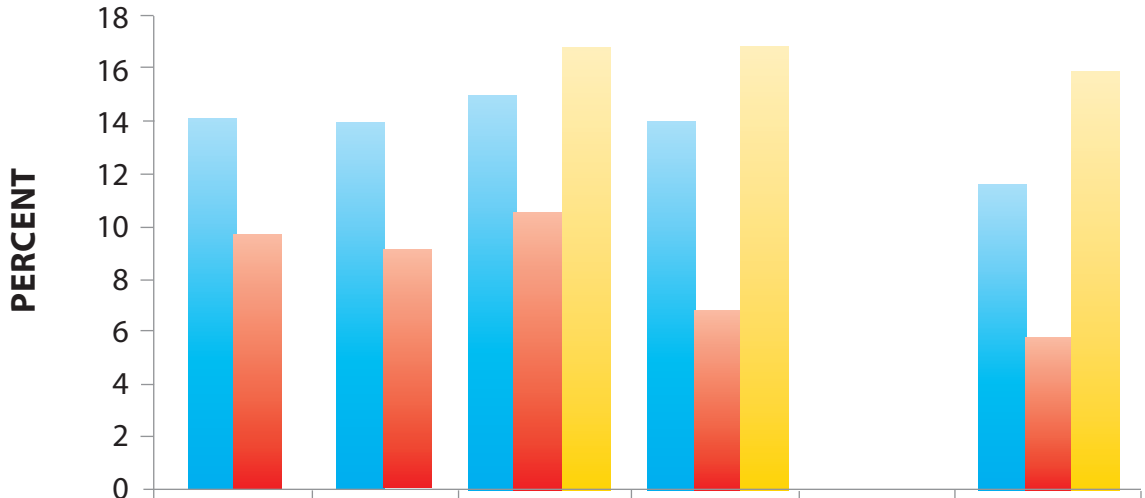
Figure 132. Being hit by a boyfriend or girlfriend within the past year by ethnicity, Guam, 2001-2011



	2001	2003	2005	2007	2009	2011
Chamorro	9.1	17	12.3	14.6		16.6
Filipino	7.2	9.4	11.7	10.3		11.5
Other Micronesian			9	6.9		11.4

Source: GDOE, YRBS 2001-2011

Figure 133. Forced to have sex in the past year by ethnicity, Guam, 2001-2011



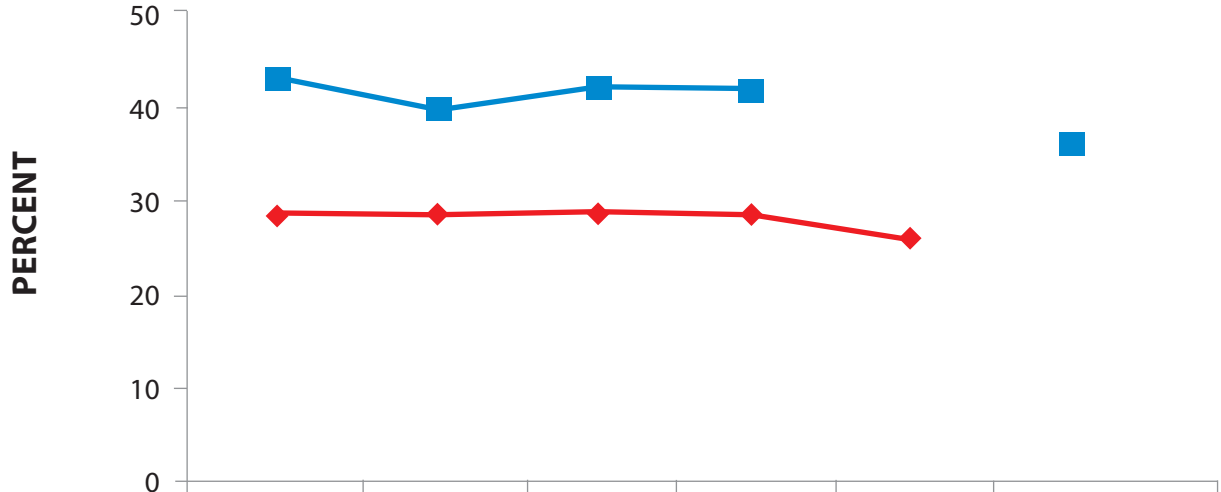
	2001	2003	2005	2007	2009	2011
Chamorro	14	13.7	14.8	13.9		11.5
Filipino	9.6	8.9	10.4	6.7		5.6
Other Micronesian			16.7	16.7		15.8

Source: GDOE, YRBS 2001-2011

Figure 134 compares the depression indicator "feeling sad for at least 2 weeks over the past 12 months" for Guam and the US. Figure 135 disaggregates this indicator over time for the various ethnic sub-groups in Guam.

The data indicate that depression prevalence may be significantly higher among youth on Guam. Unlike the other suicide correlates, there appears to be a uniformly high rate of depressive symptoms among youth of different ethnicities. This suggests that depression screening and early referral to mental health professionals should be conducted routinely among all high school youth, as a suicide prevention intervention.

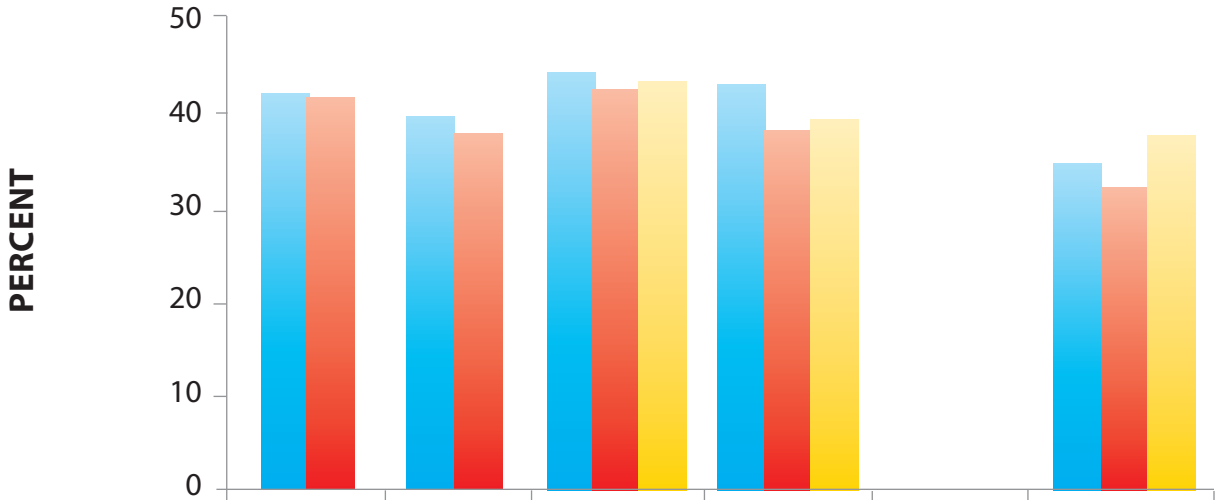
Figure 134. Feeling sad for at least 2 weeks over the past 12 months, Guam vs. USA, 2001-2011



	2001	2003	2005	2007	2009	2011
Guam	43	39.8	42	41.5		36.2
USA	28.3	28.6	28.5	28.5	26.1	

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

Figure 135. Feeling sad for at least 2 weeks over the past 12 months by ethnicity, Guam, 2001-2011



	2001	2003	2005	2007	2009	2011
Chamorro	42	39.6	44.1	43.1		34.9
Filipino	41.5	37.7	42.3	38.1		32.4
Micronesian Islander			43.2	39.3		37.5

Source: GDOE, YRBS 2001-2011

Suicidal Ideation And Suicidal Attempts Among Adults

Currently there is no readily accessible systematic surveillance mechanism to track suicidal attempts and suicidal ideation among adults on Guam.

Efforts to obtain data from the Guam Memorial Hospital Emergency Room Department have been unsuccessful thus far. However, the recently released Guam Statistical Yearbook 2010 offers data on inpatient admissions to the Guam Memorial Hospital for suicidal attempts (Table 28). The numbers are lower than total suicide deaths, and indicate that a significant proportion of suicides are not captured by the hospital emergency room surveillance system.

Table 27. Admissions to Guam Memorial Hospital for intentional self-harm, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Admissions for intentional self-harm	12	16	16	7	6	4	3	4	9	8	9
Total admissions	10,634	10,932	11,723	10,627	11,058	11,716	10,624	11,186	11,104	11,828	11,689

Source: Guam Memorial Hospital Authority, as reported in Guam Statistical Yearbook 2010

Discussions and Conclusions

Promote cessation

Nurture prevention leadership

SUBSTANCE ABUSE

The landscape of substance abuse is changing in the US Territory of Guam. The most significant changes noted over time were decreases in smoking and binge drinking that occurred in direct temporal association with key policy initiatives. In contrast, for marijuana, where the only policy initiative introduced (but not enacted into law) during the period covered by surveillance was to legalize its use, prevalence among youth remained high. These findings support the relatively quick and considerable population impact of policy change, particularly among youth, who are considered a vulnerable population. Thus, Guam's Epi Profile highlights the pivotal role of environmental interventions through sound policies in substance abuse prevention.

The Profile also calls attention to the importance of programs that respond to community needs. For example, the percentage of current smokers who tried to quit for at least one day in the past year increased from 61% in 2003 to 69.3% in 2010, and may reflect greater awareness and readiness to quit, as well as greater availability of cessation services through the DMHSA cessation program (established in 2003) and the DPHSS quitline (established in August 2007). The data indicate the ongoing need for cessation services to support those who desire to quit using tobacco.

The rising prevalence of smokeless tobacco use and marijuana consumption, especially among youth, are red flags. These pinpoint areas for future policy and program development, to offset further increases in prevalence and their attendant health and socio-economic consequences.

The Profile also begins to address the social determinants of substance abuse, by examining the effect of age, sex, education, income and ethnicity on consumption patterns. Furthermore, this analysis begins to define the linkages between determinants of consumption and disparities in substance abuse consequences, such as the higher smoking and binge drinking prevalence among Chamorros and other Micronesians and their notably higher rates of tobacco and alcohol-related cancer mortality, as well as the predominance of Chamorro and other Micronesians arrested for alcohol-related offenses. For instance, close to 70% of all DUI arrests occurred among male Chamorros and other Pacific Islanders, the groups that have the highest binge drinking rates.

SUICIDE

This version of the Profile provides an updated overview of suicide on Guam. It delineates the characteristics of suicides on Guam, identifying those groups that appear to be at highest risk. For instance, Micronesian Islanders, particularly Chuukese and Chamorros are significantly over-represented in suicide deaths and constitute critical target groups for suicide prevention.

Unlike previous suicide profiles, which were stand-alone publications, for the first time, the SEOW attempted to link suicide with underlying risk factors. Correlates of youth suicidal ideation and suicide attempts include sexual violence, depression, identifying oneself as gay or bisexual, and substance abuse. The profile sought out additional indicators of suicide risk in the YRBS and incorporated these into the data analysis. Five attributes--- (1) being hit by a boyfriend/girlfriend in the past year, (2) forced to have sex, (3) felt sad for at least 2 weeks over the past year, (4) current daily smoking and (5) current marijuana use---were found to have prevalence rates among Guam youth that are statistically higher on Guam than the US. These provide justification for integrated suicide prevention approaches that also address skills in developing healthy relationships, physical and sexual violence prevention, tobacco and substance abuse prevention and control and aggressive screening and treatment for depressive symptoms.

The data have implications for suicide prevention approaches, such as:

- Youth and young adults are a valid target for suicide prevention efforts.
- Micronesian Islanders, especially Chuukese, and Chamorros constitute critical target groups for prevention intervention.
- Strategies that may be important for suicide prevention include:

    - Preventing and controlling alcohol and other drug abuse;
    - Aggressively screening to recognize and treat mental illness and depression;
    - Building community capacity to recognize the signs of impending or possible suicide and training 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 DMHSA and other mental health treatment providers for all cases of attempted suicide; and,
- Skills training in developing healthy relationships and physical and sexual violence prevention.

DATA ISSUES: PROGRESS AND LIMITATIONS

Over the years, with SAMHSA/CSAP support through the SPF-SIG, Focus on Life and SEOW grants Guam has upgraded its substance abuse and mental health data 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 DMHSA, 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 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.

Regarding the 2010 census data, which affects the calculation of population rates, Guam's results are only partially in. Once the complete results of the 2010 Guam census become available, it will be possible to calculate age, sex and ethnicity specific rates and age-adjusted suicide death rates. These will provide further insight and guidance into suicide prevention for the island community.

In relation to integrating substance abuse and mental health surveillance, at present, suicide and its risk factors 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.

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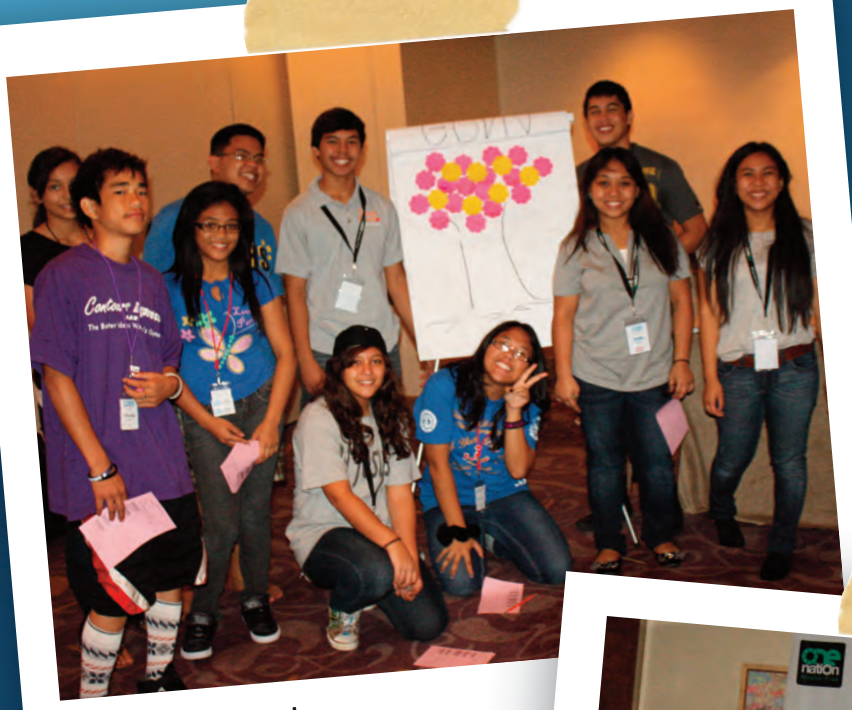

Empower youth

Convey the prevention message

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List of tables

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LIST OF TABLES