

# **STRATEGIC PREVENTION FRAMEWORK - STATE INCENTIVE GRANT (SPF-SIG)**

## **Guam Substance Abuse Epidemiological Profile, 2008 Update**

**Guam State Epidemiological Workgroup  
3<sup>rd</sup> Quarter, 2009**



This Profile was undertaken as part of Guam's SPF-SIG/PEACE Project for substance abuse prevention and control, under a grant from the Center for Substance Abuse Prevention (CSAP), Substance Abuse and Mental Health Administration (SAMHSA), as administered by Guam's Department of Mental Health and Substance Abuse (DMHSA).

## ACKNOWLEDGEMENTS

This profile resulted from the collaborative efforts of the various agencies and institutions that comprise the Guam State Epidemiological Workgroup (SEW). The data contained in this profile were contributed by the members of the SEW from primary sources within each institution.

### STATE EPIDEMIOLOGICAL WORKGROUP

Organization	Individual Representative(s)	Designation
Bureau of Statistics and Plans	Calvin Saruwatari	SEW Member
Guam Police Department (GPD)	Maggie Manibusan	SEW Member
Juvenile Drug Court, Superior Court of Guam	Jeannette Quintanilla	SEW Member
Guam Public School System (GPSS)	Paul Nededog	SEW Member
Department of Mental Health and Substance Abuse (DMHSA)	Dr. Annette M. David	SEW Lead
Department of Public Health and Social Services (DPHSS)	Gil Suguitan	SEW Member
Department of Youth Affairs (DYA)	Edward Taitano	SEW Member
PEACE/SPF-SIG Project Team	Grace Lapid Rosadino	SEW Research and Statistical Analyst
Guam Community College PEACE/SPF-SIG Evaluation Team	Dr. Ray Somera Richard Quiambao	SEW Member
University of Guam Cooperative Extension Services (UOG-CES)	Peter Barcinas	SEW Member
University of Guam, Psychology Program	Dr. Michael B. Ehlert	SEW Member
University of Guam, Division of Social Work	Dr. Ran Maosheng	SEW Member
Sanctuary, Incorporated	Daniel Duenas	SEW Member
US Probation Office	Christopher J. Duenas	SEW Member

Technical writing for this profile was accomplished by Dr. Annette M. David, SEW Lead. Ms. Grace Lapid Rosadino, PEACE/SPF-SIG Project Team Research and Statistical Analyst, oversaw data collection, data entry and data management. Ms. Rosalie Zabala and Ms. Cerina Mariano from the Department of Public Health and Social Services (DPHSS), and Dr. Robert Haddock and Ms. Rebecca Talon of the Guam Cancer Registry and the Guam Cancer Control Coalition contributed additional information. 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 reviewed by the SEW members and approved by the PEACE Advisory Council, under the leadership of 2008 PEACE Advisory Council Chair Christopher Duenas and Co-Chair Dr. Keith Horinouchi.

## NEW DATA SOURCES

This update utilizes new information derived from the following data sources:

Data Source	Year	Agency	Data Type
Behavioral Risk Factor Surveillance System (BRFSS)	2008	DPHSS	Adult tobacco and alcohol use
Modified YRBS	2008	DYA and Sanctuary, Inc.	Youth tobacco, alcohol and illicit drug use
Guam Youth Substance Abuse Study (Qmark)	2008	DMHSA	Youth tobacco, alcohol and illicit drug use
Synar annual tobacco vendors' compliance survey	2008	DMHSA	Vendor compliance to prohibition of tobacco sales to minors
Guam Cancer Registry	2003-2007	DPHSS	Cancer prevalence and mortality
Guam Uniform Crime Report	2007	Guam Police Department	Alcohol and drug-related crime

## METHOD OF WORK AND BACKGROUND INFORMATION

For a detailed description of the method of work utilized to put together this profile, and for the background information on Guam, its demographics and socio-cultural context, please refer to the 2006 edition of the Guam Substance Abuse Epidemiological Profile<sup>1</sup>.

This report contains new and recently updated information on substance abuse consumption and consequences in Guam. Unless otherwise specified, data in figures are reported in percentages. Indicators for which no new data is available are not included to avoid repetition. The reader is advised to refer to the previous edition for these indicators.

---

<sup>1</sup> Guam State Epidemiological Workgroup. *Guam Substance Abuse Epidemiological Profile, 2006*. PEACE, Hagatna, Guam, 2007.

## 2008 DATA HIGHLIGHTS AT A GLANCE

### Tobacco

- Smoking among Guam adults remains high; Guam's adult smoking prevalence is about 50% higher than the US rate.
- Male smoking prevalence on Guam is 66% higher than the US average. Smoking among adult females on Guam is higher than the average male smoking rate in the US.
- The percent of adult smokers trying to quit has markedly increased from 2003.
- Among adults, men smoke more than women. Among youth, girls are just as likely to smoke as boys.
- Court involved youth have higher rates of current smoking and other tobacco use, and a lower likelihood to quit than in-school youth.

### Alcohol

- Current alcohol consumption remains unchanged among adults on Guam, although the rate is lower than the US rate. Among adults, males drink much more than females.
- Binge drinking and heavy drinking are significantly higher among Guam adult males as compared to US adult males.
- Unlike adults, girls are drinking as much as boys.
- Court involved girls at Sanctuary, Inc. have higher rates of current and binge drinking than in-school youth and other court involved youth.
- Alcohol-related cancers account for 3 of the top 5 causes of cancer death on Guam.
- Liver cirrhosis is the 9<sup>th</sup> leading cause of death on Guam.
- Arguments due to the influence of alcohol as the cause of 36.4%, or one-third, of murders in 2006.
- Alcohol was a factor in 44% of 2007 traffic accident fatalities.
- About 30% of suicides on Guam are associated with the use of alcohol.
- Alcohol-related arrests involve primarily young males of Chamorro or other Micronesian ethnicity. These groups are most often involved in binge drinking.

### Other Illicit Substances

- Current marijuana use and lifetime methamphetamine use are similar for in-school and court involved youth.
- Lifetime inhalant use is significantly higher among in-school youth.
- Over 69% of adult arrests for drug-related crime involve methamphetamines.

# TOBACCO

## 2008 Highlights

### 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, 2007 and 2008. This survey utilized random digit dialing, deriving samples from a population of households with telephone land lines. (Note: In 2009, the Department of Public Health and Social Services [DPHSS] will begin pilot-testing the BRFSS using a subset of mobile phones.)

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. The 2008 Guam BRFSS did not provide data on other tobacco use despite the widespread use of chewing tobacco, particularly among some of the Micronesian sub-groups. However, other tobacco use was included in the 2008 DMHSA Q-mark Adult Survey.

Table 1 and Figure 1 compare prevalence of current smoking between Guam and the US national average for the years 2001-2003, and 2007-2008. Current smokers were defined as persons who had smoked at least 100 cigarettes and who reported being a smoker at the time of the interview.

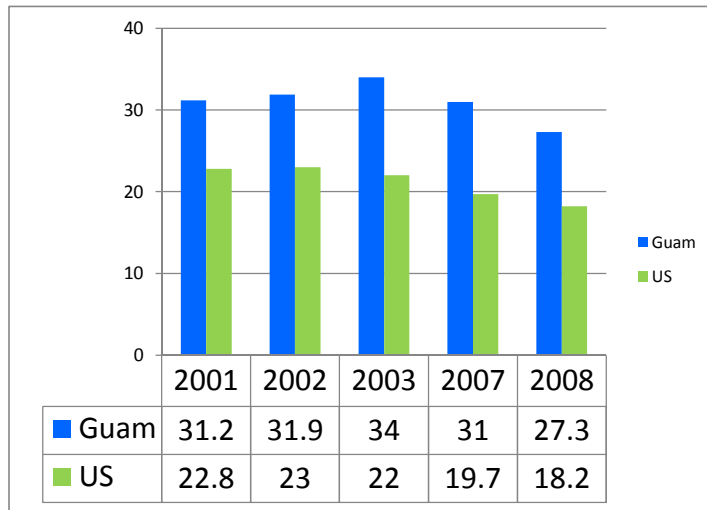
**Table 1. Trends in prevalence of current smoking, Guam vs. US, 2001-2003 and 2007-2008**

Year	Guam % (CI) n	US Median % # of States
2001	<b>31.2</b> (27.4-34.9) 252	<b>22.8</b> 54
2002	<b>31.9</b> (27.9-35.8) 249	<b>23.0</b> 54
2003	<b>34.0</b> (30.1-37.8) 254	<b>22.0</b> 54
2007	<b>31.0</b> (26.5-35.5) 183	<b>19.7</b> 54
2008	<b>27.4</b> (23.6-31.2) 195	<b>18.2</b> 54

Source: DPHSS, Behavior Risk Factor Surveillance System, 2008

While it appears that the adult smoking rate on Guam declined slightly in 2008, statistical testing reveals that the data remains unchanged from 2001. Current smoking among adults on Guam is significantly higher than the nation (50% higher). About one in four adults smoke.

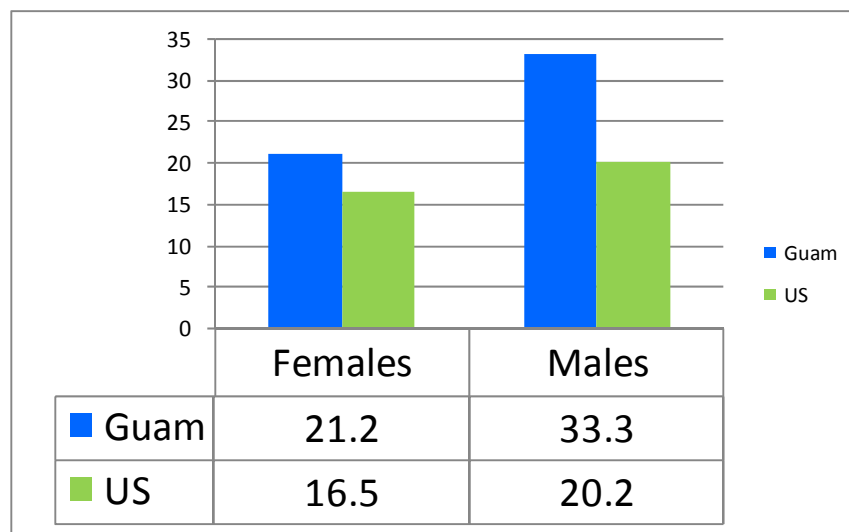
**Figure 1. Adult smoking prevalence (%): Guam vs. US, 2001-2003 and 2007-2008**



Source: DPHSS, Behavior Risk Factor Surveillance System, 2008

Unlike the US, where females smoke approximately as much as males, smoking is much higher among males on Guam. Regardless of sex, smoking is higher on Guam overall. The male smoking rate on Guam is 66% higher than the US national average. Female smoking on Guam is higher than male smoking in the US (Figure 2).

**Figure 2. Prevalence of smoking among adults (%), by sex: Guam vs. US, 2008**



Source: DPHSS, Behavior Risk Factor Surveillance System, 2008

Smoking is reported less frequently by those over 55. This probably represents the survival advantage of non-smokers, which becomes manifest after the 4<sup>th</sup> and 5<sup>th</sup> decades of life (Table 2).

**Table 2. Smoking status and age: Guam, 2008**

State:		18-24	25-34	35-44	45-54	55-64	65+
Guam	%	22.6		28.7	29.2	16.2	13.4
	CI	(14.6-30.6)	N/A	(21.1-36.4)	(21.2-37.1)	(9.4-23.1)	(4.8-22.0)
	n	27		48	47	22	9
Nationwide (States, DC, and Territories)	Median %	22.3	23.5	20	20.8	16.6	8.1
	# States	52	53	54	54	54	54

% = Percentage, CI = Confidence Interval, n = Cell Size

Percentages are weighted to population characteristics.

Use caution in interpreting cell sizes less than 50.

N/A = Not available if the unweighted sample size for the denominator was < 50 or the CI half width was > 10 for any cell, or if the state did not collect data for that calendar year. # of States includes District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands in applicable years.

Source: DPHSS, Behavior Risk Factor Surveillance System, 2008

It is difficult to discern trends between current smoking and income, because of small sample sizes for each cell. In relation to education, current smoking is lowest for college graduates, consistent with global findings that link smoking with lower educational attainment (Table 3).

**Table 3. Current smoking by education: Guam, 2008**

State:		<u>Less than H.S.</u>	<u>H.S. or G.E.D.</u>	<u>Some post-H.S.</u>	<u>College graduate</u>
Guam	%		30.7	26.7	12.8
	CI		(24.8-36.7)	(19.0-34.3)	(7.1-18.4)
	n	N/A	92	44	22
US	Median %	29.9	24.8	19.9	8.8
	# States	50	54	54	54

Source: DPHSS, Behavior Risk Factor Surveillance System, 2008

N/A = Not available if the unweighted sample size for the denominator was <50

H.S. = High School

G.E.D. = General Educational Development, an equivalent of a High School diploma

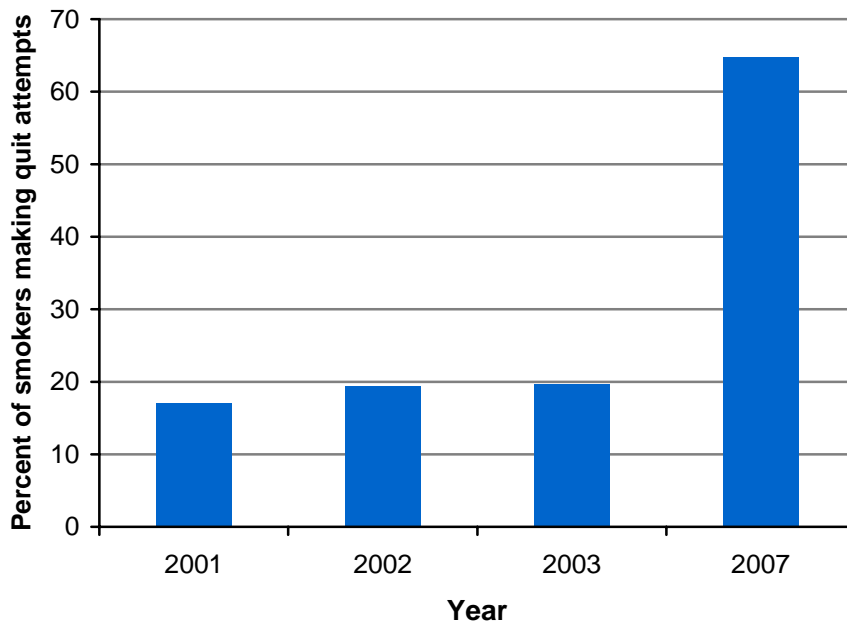
The percentage of current smokers who tried to quit for at least one day in the past year increased from 19.6% in 2003 to 64.7% in 2007, and may reflect greater awareness and readiness to quit, as well as greater availability of cessation services through the DMHSA cessation program (established in 2003) and the DPHSS quitline (established in August 2007). The 2008 data demonstrate that the percentage of former smokers (successful quitters) increased significantly for the first time since 2001, corroborating the 2007 data. Quitline calls increased by 150% between 2007 and 2008. Clearly, the data indicate the ongoing need for cessation services to support those who desire to quit using tobacco (Tables 4 and 5, Figures 3 and 4).

**Table 4. Percent current smokers with a quit attempt in the past year: Guam, 2001 to 2007**

Year	Percent who attempted to quit for at least one day in the past year
2001	17.0
2002	19.4
2003	19.6
2007	64.7

Source: DPHSS, Behavior Risk Factor Surveillance System, 2001 to 2003 and 2007 (data not online)  
 Note: This data not available for 2008.

**Figure 3. Percent of adult current smokers with a quit attempt in the past year: Guam, 2007**



Source: DPHSS, Behavior Risk Factor Surveillance System, 2001 to 2003 and 2007 (data not online)  
 Note: This data not available for 2008.

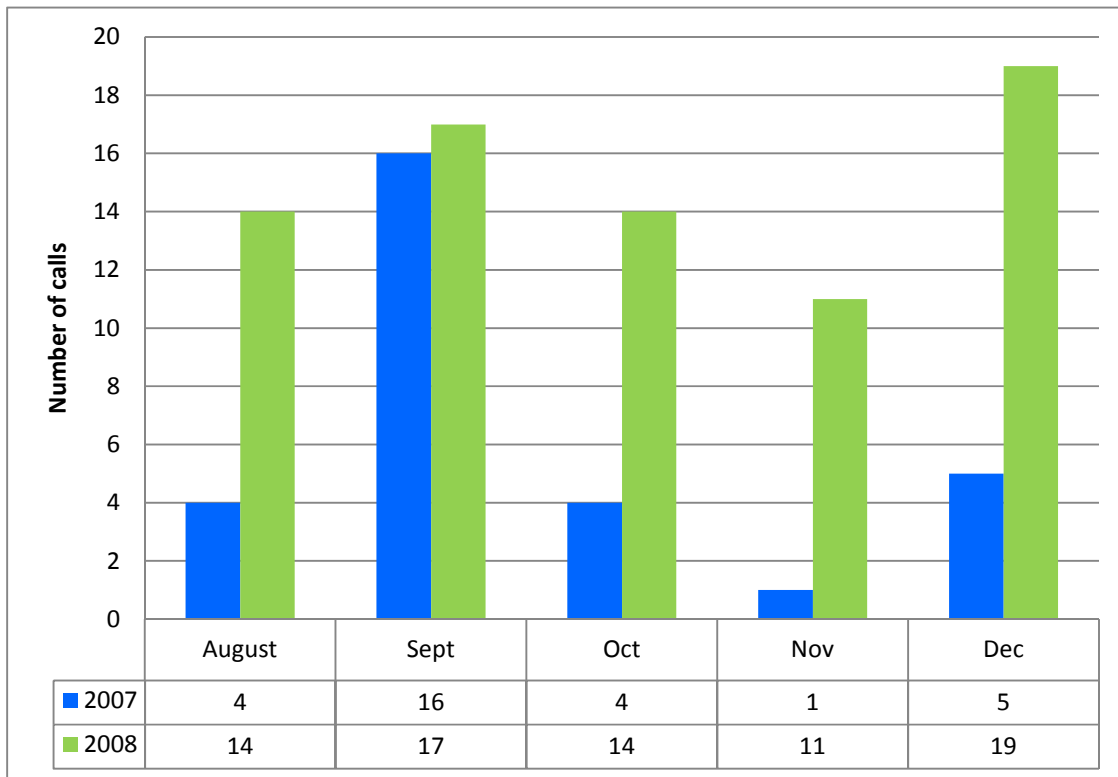


**Table 5. Percent of adult former smokers (successful quitters): 2001 to 2003, 2007 to 2008**

	Guam		
Year:	%	CI	n
2001	11.8	(9.5-14.1)	111
2002	15.5	(12.4-18.6)	120
2003	14.3	(11.6-17.0)	119
2007	14.1	(11.0-17.2)	90
2008	19.4	(16.0-22.7)	144

Source: DPHSS, Behavior Risk Factor Surveillance System, 2001 to 2003 and 2007 to 2008

**Figure 4. Quitline calls: August to December 2007 vs. August to December 2008**



Source: Department of Public Health and Social Services, Tobacco Control Program, Tobacco Cessation Quitline

## Youth Consumption

### In-school vs. Court involved Youth

Data on youth smoking are largely provided through the Guam Public School System's (GPSS) Youth Risk Behavior Study (YRBS), for which biennial information is available for the years 1995 to 2007. A discussion of limitations of the Guam YRBS is contained in the earlier editions of this profile. The GPSS data covers youth who are enrolled in the public school system. In 2008, through an agreement among DMHSA, DYA and Sanctuary, the YRBS survey questionnaire was applied to all clients seen at these institutions, enabling a comparison of tobacco alcohol and drug use rates between in-school youth and court involved high-risk youth at DYA and Sanctuary.

Table 6 depicts the sex and ethnic breakdown of the survey respondents at DYA and Sanctuary. Unlike in-school youth, where the sex breakdown is approximately equal, the youth at DYA and Sanctuary are predominantly male. Chamorro and other Micronesian youth comprise the majority of the population of high-risk youth in these institutions.

**Table 6. Sex and ethnic breakdown of YRBS respondents at DYA and Sanctuary, 2008**

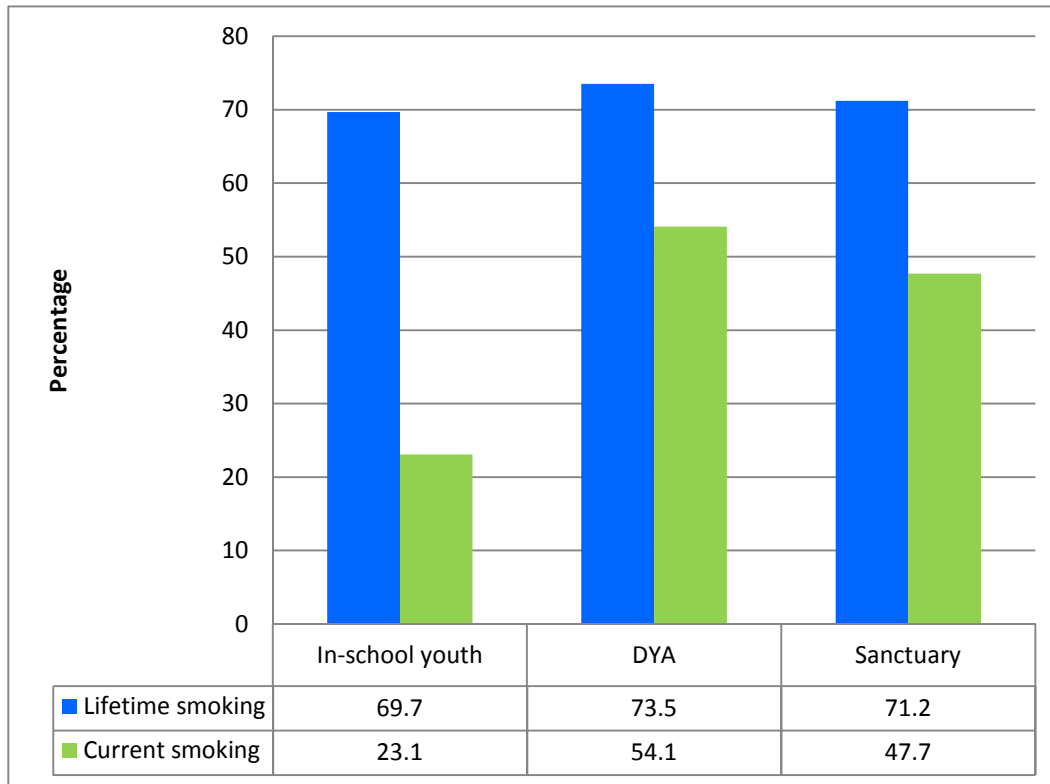
		DYA	Sanctuary
<b>Total clients surveyed</b>		<b>388</b>	<b>111</b>
<b>Sex</b>	Female	77 (20%)	24 (22%)
	Male	300 (77%)	86 (77%)
	No answer	11 (3%)	1 (0.9%)
<b>Ethnicity</b>	Chamorro	188 (49%)	59 (53%)
	Other Micronesian	120 (31%)	27 (24%)
	Filipino	17 (4%)	3 (3%)
	Mixed or Other	63 (12%)	22 (12%)

Source: DYA and Sanctuary, Inc. Youth Risk Behavior Surveys, 2008

Note: Other Micronesian = Micronesians from CNMI, FSM, RMI, Palau

Figure 5 compares lifetime and current smoking among in-school youth (2007 YRBS) and the high-risk youth at DYA and Sanctuary. Lifetime smoking (experimentation with smoking) is similar across the three populations, but current smoking is markedly higher among the DYA and Sanctuary youth.

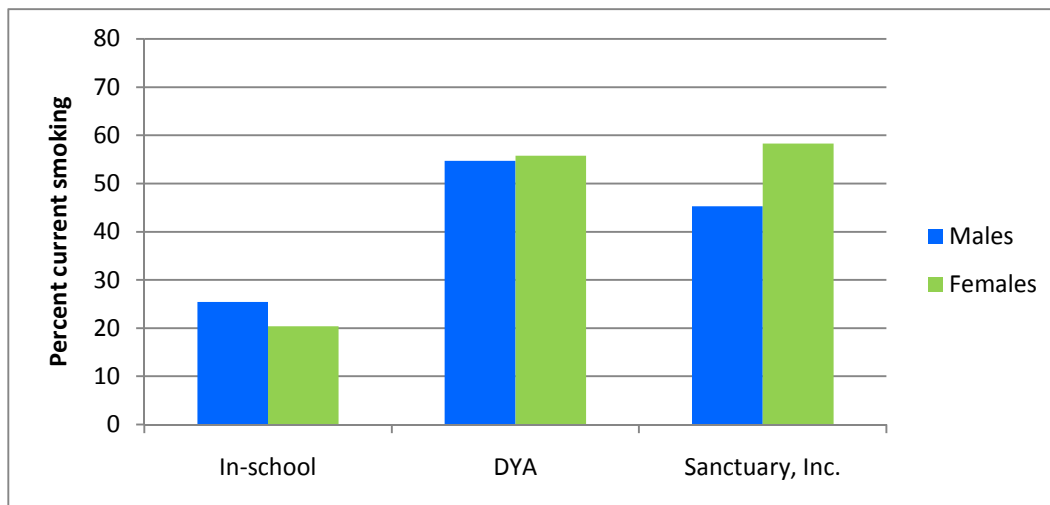
**Figure 5. Lifetime and current smoking (%), in-school youth vs. court involved youth**



Sources: GPSS, Youth Risk Behavior Survey 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

Figure 6 compares current smoking rates by sex. The sex difference in smoking seen among Guam adults is not seen among youth. Youth in school and at DYA are smoking at about the same rate, regardless of sex, while at Sanctuary, females are smoking more than males.

**Figure 6. Current smoking (%) by sex, school vs. court involved youth: Guam, 2008**



Sources: GPSS, Youth Risk Behavior Survey 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

The high smoking rates among young females is worrisome, and raises the potential for tobacco-induced poorer reproductive outcomes if smoking rates among young women are not decreased in the near future. Over the longer term, this trend foreshadows rising tobacco-related morbidity and mortality among women in Guam.

The use of other tobacco products appears higher among high-risk youth at DYA and Sanctuary (Table 7). Thus, interventions that address other forms of tobacco use are definitely needed within these institutions.

**Table 7. Use of other tobacco products, in-school youth vs. court involved youth, 2008**

	Total	Males	Females
<b>In-school</b>	13.4%	17.3%	8.7%
<b>DYA</b>	26.3%	29.3%	15.6%
<b>Sanctuary</b>	30.6%	33.2%	30.3%

Sources: GPSS, Youth Risk Behavior Survey 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

The percentage of youth smokers wanting to quit in the past year is high for all three population groups, signaling the need to provide cessation services for this population (Table 8). This is consistent with the observation of early nicotine addiction among a larger proportion of youth who smoke. However, DYA and Sanctuary youth are less likely to report a quit attempt than in-school youth, indicating that the high-risk youth may be in a lower stage of readiness to quit tobacco, less exposed to brief tobacco cessation interventions and/or have lower access to cessation messages and resources than in-school youth.

**Table 8. Percentage of youth smokers who tried to quit in the past year, in-school vs. court involved youth, 2008**

	Percent of total respondents
<b>In-school</b>	81.9%
<b>DYA</b>	77.7%
<b>Sanctuary</b>	68.5%

Sources: GPSS, Youth Risk Behavior Survey 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

Guam initiated its annual unannounced tobacco vendors' inspections in 1999, in compliance with the Synar law. Compliance rates reached federal targets (>80% compliance) in 2003, and have remained above target since. The GPSS, DYA and Sanctuary YRBS provide information on youth smokers who purchase their cigarettes from stores (Table 9). The data indicates that less than one in five (17.3%) young smokers purchased cigarettes from a store in 2007, down from about one in four (24.4%) in 2005. Males are more than twice as likely as females to purchase cigarettes from a store. Increasing age is also associated with a greater likelihood of buying cigarettes from a store.

**Table 9. Synar compliance rates and percent in-school, DYA and Sanctuary youth smokers purchasing cigarettes from stores: Guam, 1999 to 2008**

Year	Compliance Rate (%)	In-school youth buying cigarettes from stores (%)	DYA youth	Sanctuary youth
2000	67			
2001	58	30.0		
2002	79.8			
2003	89.6	37.9		
2004	81.7			
2005	85.1	24.4		
2006	95			
2007	91	17.3		
2008	93.7		24.5%	10.3%

Sources: DMHSA, Synar data, 2000 to 2008; GPSS, Youth Risk Behavior Survey, 2001 to 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

### Youth Tobacco Use in the DMHSA Youth Substance Abuse Survey

DMHSA commissioned a second youth substance abuse survey in 2008. The telephone survey was conducted by Qmark, a commercial firm, in September of 2008. A sample of 400 youth aged 10-17 years was selected using a computer-assisted random digit dialing program. The survey utilized the same questions found in the Youth Risk Behavior Survey. The results in relation to tobacco consumption showed:

- 13% of respondents reported ever having smoked a cigarette. This is much lower than the reported rates of lifetime smoking encountered in the GPSS Youth Risk Behavior Survey.
- Public school students (14%) and DODEA school students (15%) were more likely to have smoked a cigarette than are their private school (6%) counterparts.
- Male respondents (16%) are more likely to have smoked a cigarette than are the female respondents (10%) polled.
- Chamorro students (21%) are the most likely ethnic segment to have tried smoking a cigarette.
- Overall, 4% of respondents reported using other forms of tobacco such as snuff, dip or chewing tobacco.
- Six percent (6%) reported chewing Pugua. Among Micronesian youth, 24% reported chewing Pugua regularly. Forty-four percent (44%) of pugua chewers mix tobacco with their chew.
- The results show 77% of those polled agree that smoking a pack a day would pose a great physical risk.
- Majority (81%) strongly disapprove of someone their own age who smoked one or more packs of cigarettes a day.

## Tobacco Use 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 10).

**Table 10. 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 preliminary 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 11). 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 11. 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

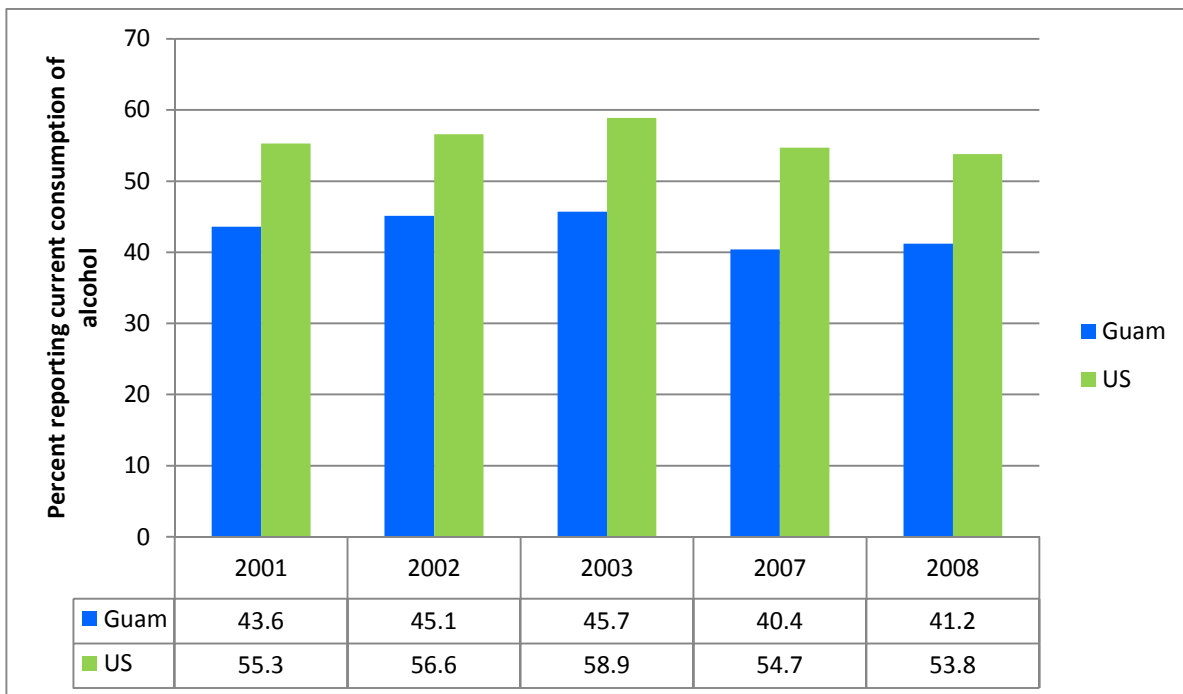
# ALCOHOL 2008 Highlights

## Adult Consumption

Data on adult alcohol consumption are largely provided through the Behavioral Risk Factor Surveillance System (BRFSS), for which information is available for the years 2001 to 2003, and 2007 to 2008.

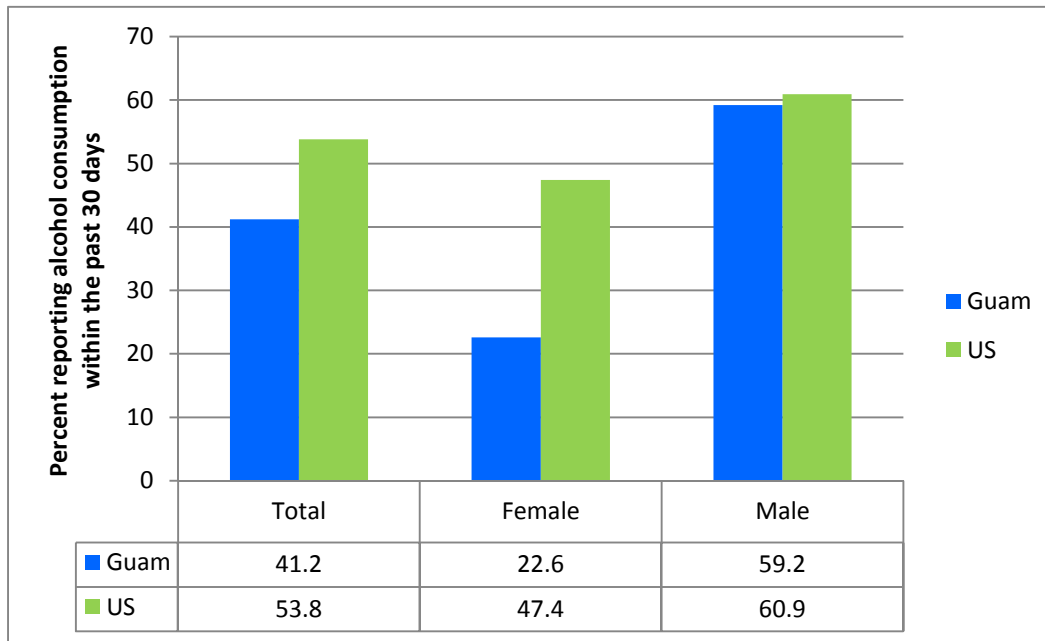
Current alcohol consumption appears unchanged from previous years (Figure 7). In 2008, 41.2% of adults on Guam reported having had at least one drink of alcohol within the past 30 days. This is lower than the nationwide average of 53.8%. Overall, men drink more than women, but this sex difference is much more marked on Guam, where males were almost twice as likely to report recent consumption of alcohol as females. The percentage of adult females reporting recent alcoholic consumption was lower than the national average, while the male prevalence rate was similar to the nation (Figure 8).

**Figure 7. Current alcohol consumption (%): Guam vs. US, 2001 to 2003 and 2007 to 2008**



Source: DPHSS, Behavioral Risk Factor Surveillance System, 2001 to 2003 and 2007 to 2008

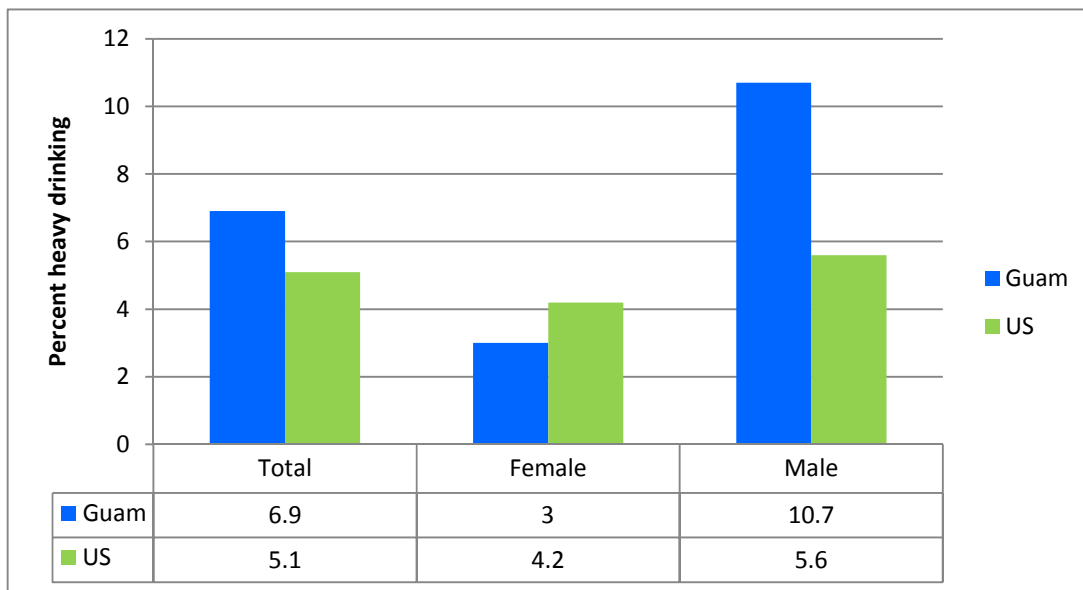
**Figure 8. Recent alcohol consumption (within the past 30 days), by sex: Guam vs. US average, 2008**



Source: DPHSS, Behavioral Risk Factor Surveillance System, 2008

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. In 2008, the prevalence of heavy drinking on Guam was higher than the US average. Like the national average, males were more likely to report heavy drinking than females. Heavy drinking among males on Guam was almost double the US average, while heavy drinking among women on Guam was similar to the US average (Figure 9). Also, heavy drinking on Guam was most likely to be reported by young adults (Figure 10).

**Figure 9. Heavy drinking, by sex: Guam vs. US, 2008**

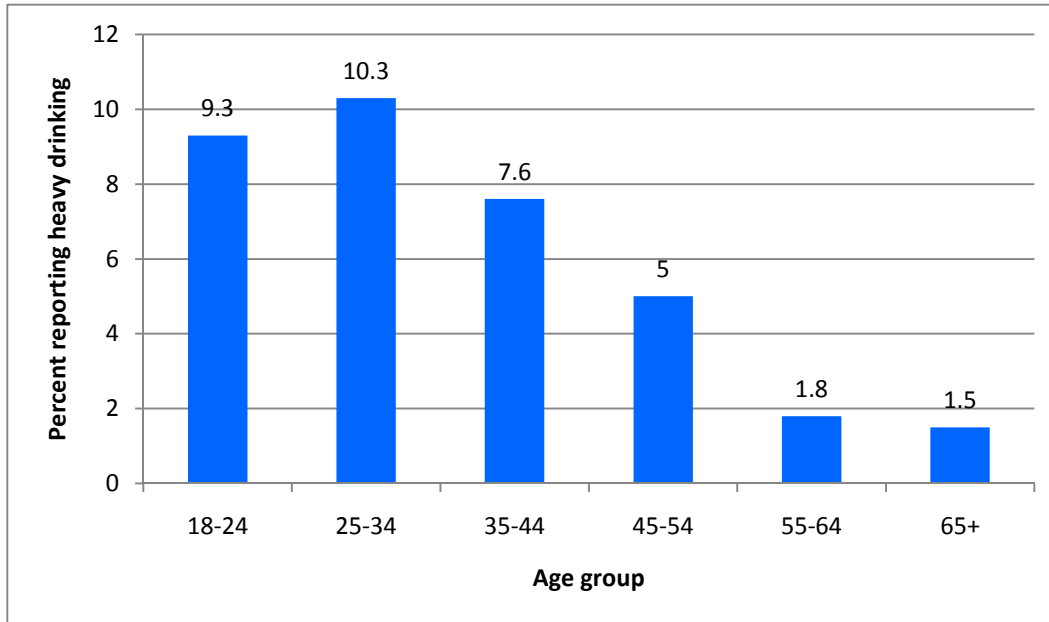


Source: DPHSS, Behavioral Risk Factor Surveillance System, 2008

Note: Because cell sizes for Guam are less than 50, care must be used when interpreting these data.



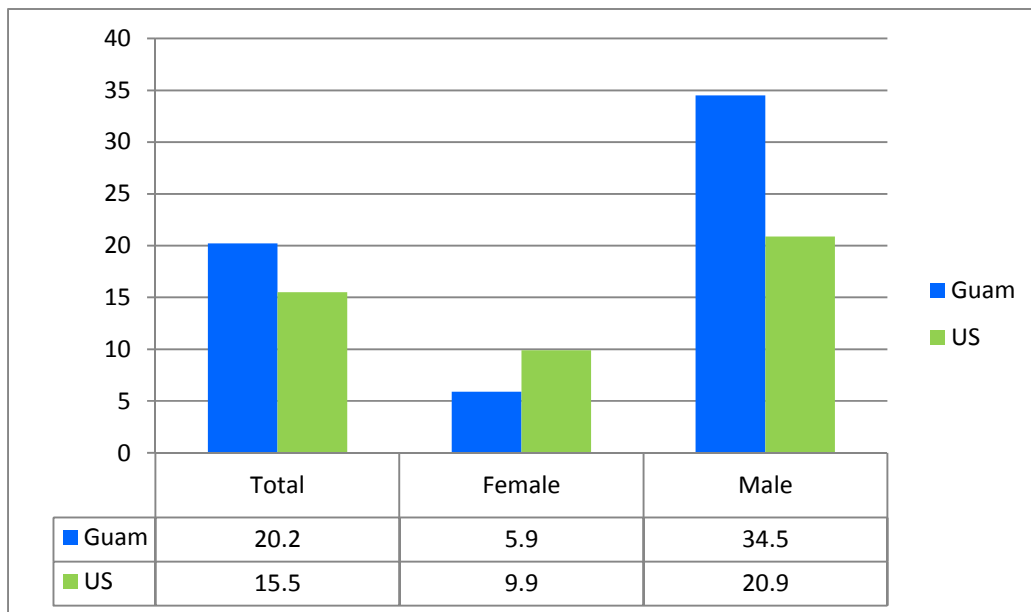
**Figure 10. Heavy drinking by age: Guam, 2008**



Source: DPHSS, Behavioral Risk Factor Surveillance System, 2008

Binge drinking, defined as having five or more drinks on one occasion, was reported by 20.2% of adults on Guam in 2008. This is higher than the US national average. The increased rate is entirely accounted for by males. Males on Guam had a rate of binge drinking that was 65% higher than men in the US. Females on Guam had a rate of binge drinking that was lower than that of females in the US (Figure 11). Like heavy drinking, binge drinking is predominantly reported by young adults (Figure 12).

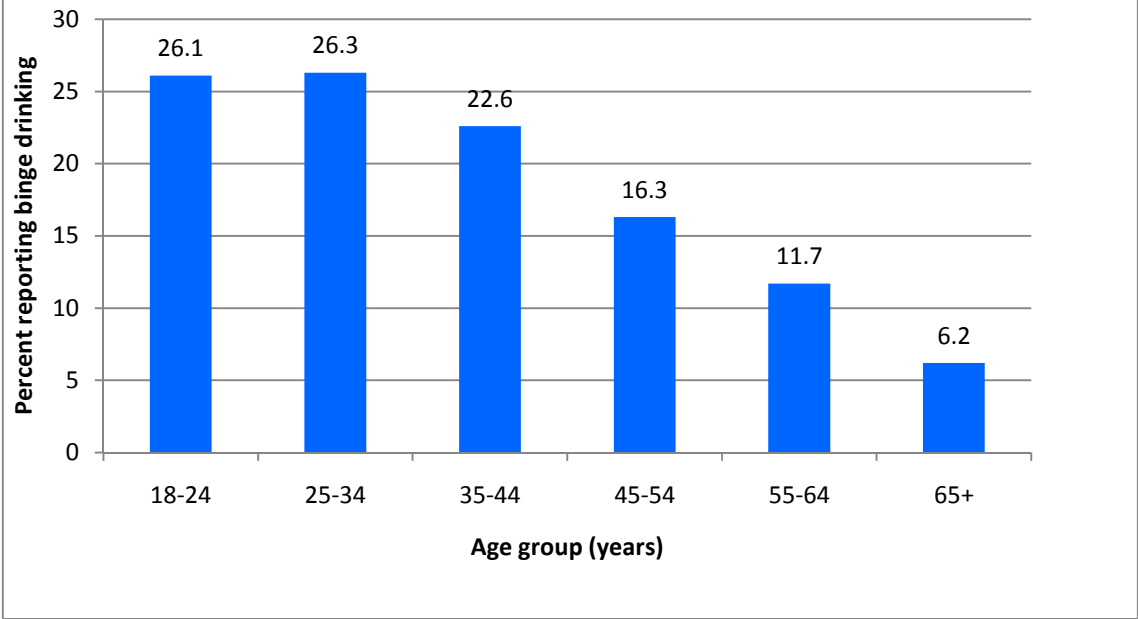
**Figure 11. Binge drinking: Guam vs. US, 2008**



Source: DPHSS, Behavioral Risk Factor Surveillance System, 2008

Note: Because some cell sizes for Guam are less than 50, care must be used when interpreting these data.

**Figure 12. Binge drinking by age: Guam, 2008**



Source: DPHSS, Behavioral Risk Factor Surveillance System, 2008  
Note: Because some cell sizes for Guam are less than 50, care must be used when interpreting these data.

## Youth Consumption

### In-school vs. Court Involved Youth

Data on alcohol consumption among youth are available from the 2007 Youth Risk Behavior Survey (YRBS). The limitations associated with this surveillance system were discussed previously. Data on court involved youth are available from the DYA and Sanctuary 2008 Youth Risk Behavior Surveys.

Over one-third of youth, both in-school and court involved, are current drinkers. Current drinking among youth on Guam is lower than the US average. Unlike adults, girls are drinking as much as boys. Among Sanctuary youth, girls are more likely to report current drinking than boys. The lack of sex difference in alcohol consumption among youth mirrors that of smoking, and portends negative reproductive outcomes in the near future (Table 12).

**Table 12. Current alcohol use, in-school vs. court involved youth: Guam vs. US, 2007 and 2008**

State	Total, percent (CI)	Male % (CI)	Female% (CI)
Guam in-school youth	34.9 (31.9-38.0)	36.2 (32.2-40.4)	33.4 (29.0-38.2)
Guam DYA youth	33.0	35.0	24.7
Guam Sanctuary youth	33.3	26.7	54.1
US Median %	44.7 (42.4-47.0)	44.7 (41.9-47.6)	44.6 (41.8-47.5)

Source: GPSS, Youth Risk Behavior Survey, 2007; DYA and Sanctuary Inc., Youth Risk Behavior Surveys, 2008

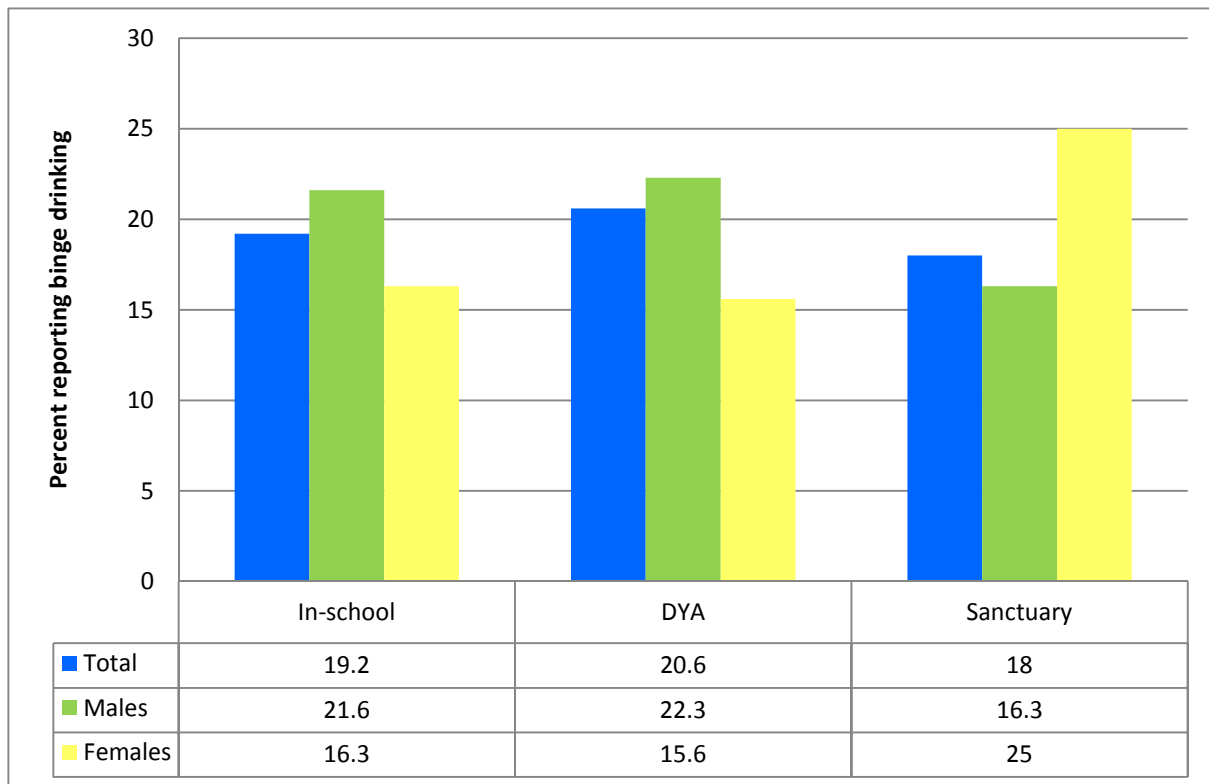
Binge drinking among youth is lower on Guam than on the US. However, US rates are decreasing while Guam rates are either unchanged or increasing (Table 13). Males on Guam have a higher prevalence of binge drinking than females, except for Sanctuary youth, where the reverse is true (Figure13).

**Table 13. Binge drinking among youth: Guam vs. US, 1995 to 2008**

Year	Guam	Nationwide	DYA	Sanctuary
	Binge Drinking % n	Binge Drinking Median % (CI)	Binge Drinking % n	Binge Drinking % n
1995	14.7	32.6 (+/- 3.0)		
1997	22.9	33.4 (+/- 2.1)		
1999	21.1 121	31.5 (+/- 1.9)		
2001	24.9 346	29.9 (+/- 2.0)		
2003	17.3 759	28.3 (+/- 2.0)		
2005	18.5 1209	25.5 (+/- 2.2)		
2007	19.2 1632	26.0 (+/- 2.0)		
2008	---	---	18.0	20.6

Source: GPSS, Youth Risk Behavior Survey, 1995 to 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

**Figure 13. Binge drinking (%) by sex, in-school vs. court involved youth: Guam vs. US, 1995 to 2008**



Source: GPSS, Youth Risk Behavior Survey, 1995 to 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

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. No difference was noted between in-school and court involved youth (Table 14).

**Table 14. Drinking and driving, by sex: Guam vs. US, 2007 and 2008**

Year	Site	Total % (+/- CI)	Female %	Male %
2008	Guam DYA	6.2*	5.2*	5.7*
	Guam Sanctuary	3.6*	4.2*	3.5*
2007	Guam GPSS	7.8 (6.2-9.8)	5.6 (3.9-8.0)	9.7 (7.5-12.4)
	US	10.5 (9.3-11.9)	8.1 (6.8-9.7)	12.8 (11.3-14.5)

Source: GPSS, Youth Risk Behavior Survey, 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys, 2008

Note: \*Denotes cells where n < 50.

### Youth Alcohol Consumption in the DMHSA Youth Substance Abuse Survey

Major findings in the DMHSA Youth Substance Abuse Survey regarding alcohol consumption:

- One-third (33%) of the respondents have tried drinking an alcoholic beverage in the past.
  - 43% of high school students have tried alcohol.
  - Similarly, 44% of Chamorro students polled have tried alcohol.
- Of those who have tried alcohol, 31% have drunk an alcoholic beverage within the past 30 days.
- Of those who have tried alcohol, 5% stated they had their first alcoholic drink at the age of 8 years or younger.
- Majority (76%) of those polled would strongly disapprove of someone their age consuming one alcoholic beverage a day.
- About two-thirds (64%) of those polled believe binge drinking carries great risk, and 22% believe it would pose a moderate risk to their health and well-being.

## Alcohol Use Consequences

### Health Consequences

Alcohol directly contributes to liver cirrhosis, the 9<sup>th</sup> leading cause of death on Guam (see Table 10, page 14). In addition, alcohol is implicated in some types of cancer, stroke, suicide, motor vehicle accidents and can exacerbate diabetes.

Alcohol contributes to 3 of the top 5 causes of cancer deaths on Guam for both males and females (Table 15).

**Table 15. Top causes of cancer death 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 16).

**Table 16. Liver cancer rates by ethnicity: Guam, 1998 to 2002 and 2003 to 2007**

Ethnicity	1998-2002		2003-2007	
	Incidence rate (per 100,000)	Mortality rate (per 100,000)	Incidence rate (per 100,000)	Mortality rate (per 100,000)
Chamorro	11.8	11.6	17.0	n/a
Other Micnesian	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, 2003 to 2007

Note: Other Micnesian refers to Micnesians from CNMI, FSM, RMI, 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 2007 Uniform Crime Report (UCR).

Table 17 shows the percentage of arrests of minors for alcohol-related offenses. Alcohol-related offenses accounted for 6.3% of all juvenile arrests in 2007.

**Table 17. Alcohol-related arrests, juvenile offenders: Guam, 1998 to 2007**

Year	Total Arrests	DUI (n)	Liquor Laws (n)	Drunkenness (n)	Alcohol-related arrests, % of arrests (n)
1998	927	3	13	17	<b>3.5</b> (33)
1999	768	3	7	0	<b>1.3</b> (10)
2000	437	5	0	0	<b>1.1</b> (5)
2001	398	3	14	0	<b>4.3</b> (17)
2002	188	2	7	2	<b>5.8</b> (11)
2003	591	1	4	9	<b>2.3</b> (14)
2004	369	4	1	12	<b>4.6</b> (17)
2005	462	5	4	21	<b>6.5</b> (30)
2006	738	8	45	0	<b>7.2</b> (53)
2007	622	1	33	5	<b>6.3</b> (39)

Source: Guam Police Department, Uniform Crime Report, 2007

The 2007 Uniform Crime Report (UCR) provides the following information on the percent change of violent crime and property crime on Guam for the years 1999-2007 (Table 18). Violent crime increased in 2006 and 2007 while property crimes increased from 2003 to 2004, but decreased slightly each year from 2004 to 2007. 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.

**Table 18. Percent change in violent and property crimes: Guam, 1999 to 2007**

Year	Violent Crime	Property Crime	Total Number	Percent Change from Previous Year
1999	---	---	6,274	-9.70
2000	---	---	5,451	-13.12
2001	378	4,600	4,978	-8.68
2002	405	3,533	3,938	-20.89
2003	449	3,827	4,273	+8.51
2004	432	4,672	5,104	+19.4
2005	388	4,651	5,039	-1.3
2006	410	4,177	4,587	-9.0
2007	434	4,077	4,511	-1.6

Source: Guam Police Department, Uniform Crime Report, 2007

There were 731 arrests for “Driving under the Influence” (DUI) in 2007. This represents a 12.6% decrease from the previous year (Table 19). Alcohol was a factor in 44% of 2007 traffic accident fatalities (Table 20).

**Table 19. Arrests for driving under the influence (DUI): Guam, 1999 to 2007**

Year	Number of Arrests	Percent Change from Previous Year
1999	581	-27.0
2000	620	6.7
2001	900	45.2
2002	972	8.0
2003	743	-23.6
2004	538	-27.6
2005	817	52.0
2006	836	2.3
2007	731	-12.6

Source: Guam Police Department, Uniform Crime Report, 2007

**Table 20. DUI arrests, crashes and fatalities in relation to alcohol: Guam, 2000 to 2007**

Detail	2001	2002	2003	2004	2005	2006	2007
DUI Arrests	900	972	694	538	817	836	731
DUI involving crashes			139	61	103	233	281
Fatalities	19	13	24	14	18	13*	25*
Alcohol-related fatalities	12	6	7	6	9	5	11
% Fatalities alcohol-related	63%	46%	25%	43%	44%	38.5%	44%

Sources: Guam Police Department, Uniform Crime Report, 2007; \*Office of Highway Safety Performance Evaluation Report Fiscal Year 2007

Table 21 provides the breakdown by age for DUI arrests from 2000 to 2007. Figures 14 and 15 depict the sex and ethnic distribution of DUI arrests for 2007.

**Table 21. DUI arrests by age: Guam, 2000 to 2007**

Age Group	Number of Arrests						
	2000	2001	2002	2003	2004	2005	2007
<18	2	3	9	0	3	2	1
18-19	20	36	52	43	28	37	30
20-24	125	191	134	129	109	152	145
25-29	101	138	174	107	86	152	130
30-34	95	140	146	121	94	128	114
35-39	86	150	148	92	63	100	101
40-44	72	99	138	86	76	96	74
45-49	59	63	83	53	23	57	58
50-54	26	46	42	29	36	86 (50+)	34
55-59	18	14	20	21	10		22
60-64	16	20	22	4	7		7
65-69	0	0	4	9	0		9
Unknown	0	0	0	0	3	7	7
<b>Total</b>	<b>620</b>	<b>900</b>	<b>972</b>	<b>694</b>	<b>538</b>	<b>817</b>	<b>732</b>

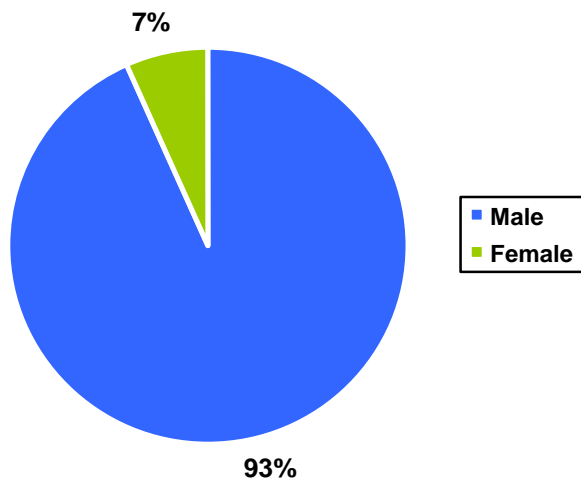
Source: Guam Police Department, Uniform Crime Report, 2007



One hundred and seventy-six (167) DUI arrests in 2007 involved individuals under the age of 25. Under Guam's current law, alcohol consumption is legally permitted for those 18 and above. Based on this age cut-off, only 1 individual with a DUI arrest was underage in 2007. If the legal age for alcoholic consumption was raised to 21, consistent with most US states and territories, an additional 29 underage DUI arrests would have resulted, comprising 8.2% of all DUI arrests.

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.

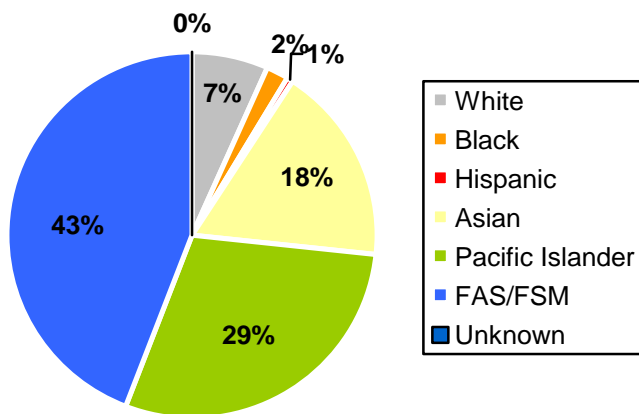
**Figure 14. DUI arrests by sex: Guam, 2007**



Source: Guam Police Department, Uniform Crime Report, 2007

DUI arrests are predominantly among males. This is consistent with data that confirms binge drinking as primarily happening among males.

**Figure 15. DUI arrests by ethnicity: Guam, 2007**



Source: Guam Police Department, Uniform Crime Report, 2007

Other Micronesians (Micronesians from FSM, RMI and Palau) are significantly over-represented in DUI arrests, given the very small proportion of the total population that is comprised of Micronesians (Figure 15). Over 43% of DUI arrests were among other Micronesians. Chamorros accounted for 29% of DUI arrest.

The Guam Police Department reported an increase in arrests for family violence from 590 arrests in 2006 to 630 arrests in 2007. Of 35 cases of drunkenness recorded by the police, 20 (57%) involved family violence.

The 2008 DMHSA Profile of Suicide on Guam reported that about 30% of suicides are associated with the use of alcohol (Table 22).

**Table 22. Correlates of suicide and suicide-attempts: Guam, 2006-2007**

<b>Variable</b>	<b>YES</b>	<b>NO</b>	<b>Unrecorded</b>
History of Mental Illness	22 (16%)	2	113
Alcohol Use	40 (31%)	---	89
Other Drug Use	1 (1%)	---	89
Previous suicide attempt	30 (18%)	15	120

Source: Guam Police Department, Suicide Statistics, 2006 - 2007

# ILLICIT DRUG USE 2008 Highlights

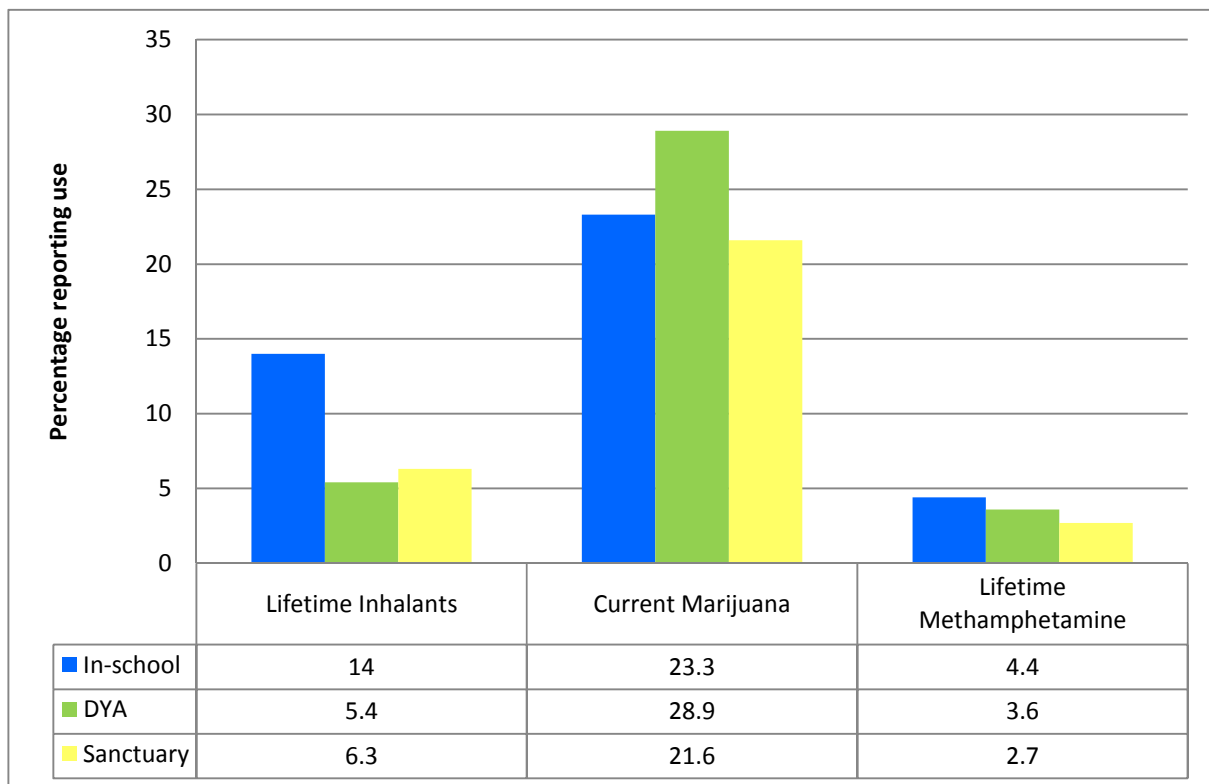
## Adult Consumption

New data on adult illicit drug consumption was not available for 2008.

## Youth Consumption In-school vs. Court Involved youth

Figure 16 depicts current marijuana use, lifetime inhalant use and lifetime methamphetamine (“ice”) use among in-school and court involved youth.

**Figure 16. Current marijuana use, lifetime inhalant use and methamphetamine use, in-school vs. court involved youth: Guam, 2007 and 2008**



Source: GPSS, Youth Risk Behavior Survey, 2007; DYA and Sanctuary, Inc., Youth Risk Behavior Surveys 2008

The data indicate that current marijuana and lifetime methamphetamine use are similar across the population groups. Lifetime inhalant use is significantly higher among in-school youth. The reason for this is unknown.

### **Youth Illicit Drug Consumption in the DMHSA Youth Substance Abuse Survey**

- Eight percent (8%) of respondents reported having used marijuana. Of these, two-thirds (66%) reported using marijuana within the past 30 days.
- Three percent of respondents reported having used inhalants.
- Only 1 respondent, representing less than 1% of respondents, admitted using methamphetamines.
- No respondents admitted to using other illegal drugs.
- A majority (76%) of those polled strongly disapproved of someone their age using marijuana.
- Two-thirds (66%) of the respondents agreed smoking marijuana once or twice a week poses a great risk to one's physical well-being.

## Illicit Drug Use Consequences

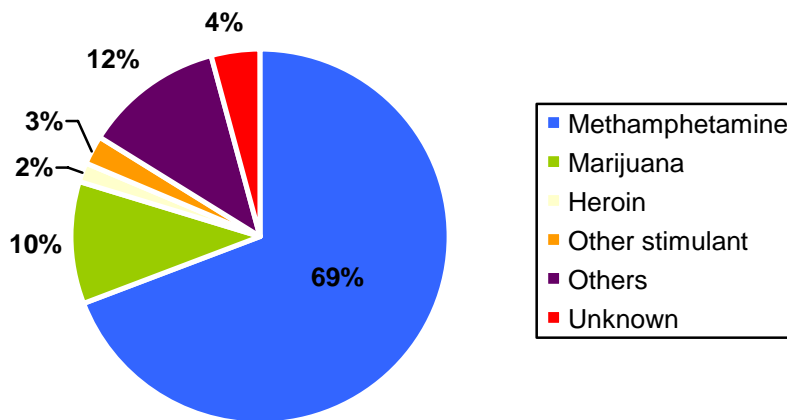
Arrests for drug-related offenses decreased in 2003 and 2004, increased markedly in 2005, then decreased again in 2006 and 2007 (Table 23). Of all known drug cases in 2007, 69% involved methamphetamines and 10% involved marijuana (Figure 17).

**Table 23. Number of drug-related arrests per year: Guam, 2003 to 2007**

	2003	2004	2005	2006	2007
<b>Number of cases</b>	206	182	283	182	155
<b>Percent change from previous year</b>	-2.4	-12.0	55.5	-36.0	-15.0

Source: Guam Police Department, Uniform Crime Report, 2007

**Figure 17. Drug cases by type of drug involved: Guam, 2007**



Source: Guam Police Department, Uniform Crime Report, 2007

## REFERENCES:

Guam Department of Mental Health and Substance Abuse. **SYNAR Tobacco Vendors Compliance Surveillance Report.** Guam: 1999-2008.

Guam Department of Mental Health and Substance Abuse. **Q-mark Youth Substance Abuse Survey.** Guam: 2008.

Guam Department of Public Health and Social Services. **Behavioral Risk Factor Surveillance System, 2001-2003 and 2007-2008 Surveys.** As reported in <http://www.cdc.gov/brfss/>.

Guam Department of Public Health and Social Services. **Vital Statistics, 2005 (Preliminary Data).**

Guam Department of Youth Affairs. **Intake Assessment Data Using Modified YRBS.** Guam: 2008.

Guam Police Department. **Uniform Crime Report 2007.** Guam: 2008

Guam Public School System, **Youth Risk Behavior Surveillance System, 1995-2007 Surveys.** (1995, 1997, 2001 and 2007 surveys as reported in <http://www.cdc.gov/HealthyYouth/yrbs/index.htm> )

Guam State Epidemiological Workgroup. **Guam Substance Abuse Epidemiological Profile, 2006.** PEACE, Hagatna, Guam, 2007.

Guam State Epidemiological Workgroup. **Guam Substance Abuse Epidemiological Profile, 2007 Update.** PEACE, Hagatna, Guam, 2008.

Sanctuary, Inc. **Intake Assessment Data Using Modified YRBS.** Guam: 2008.

University of Guam Cancer Research Center. **Guam Cancer Registry, 2003-2007.**