

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

Guam Substance Abuse Epidemiological Profile, 2007 Update

**Guam State Epidemiological Workgroup
3rd Quarter, 2008**



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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.

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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 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)	2007	DPHSS	Adult tobacco and alcohol use
Q-mark Adult Substance Abuse Survey	2007	DMHSA	Adult tobacco, alcohol and illicit drug use
Youth Risk Behavior Survey (YRBS)	2007	GPSS	Youth tobacco, alcohol and illicit drug use
Q-mark Youth Substance Abuse Survey	2007	DMHSA	Youth smokeless tobacco and illicit drug use
Modified YRBS	2007	DYA and Sanctuary, Inc.	Youth tobacco, alcohol and illicit drug use
Vital Statistics	2005	DPHSS	Leading Causes of Mortality
Guam Cancer Registry	1998-2002	DPHSS	Cancer prevalence and mortality
Positive Drug Tests among Clients of the US Probation Office	2007	US District Court of Guam US Probation Office	Adult illicit drug use

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 previous edition of the Guam Substance Abuse Epidemiological Profile¹.

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.

¹ Guam State Epidemiological Workgroup. *Guam Substance Abuse Epidemiological Profile*, 2006. PEACE, Hagatna, Guam, 2007.

2007 DATA HIGHLIGHTS AT A GLANCE

Tobacco

- Smoking among Guam adults remains high, and is 57% higher than the US rate.
- The percent of adult smokers trying to quit has markedly increased from 2003.
- Smoking among Guam youth has decreased significantly corresponding the years when positive tobacco control policies and programs were instituted.
- Among adults, men smoke more than women. Among youth, girls are just as likely to smoke as boys.
- Other tobacco use is increasing among youth, and needs to be monitored carefully.
- Court-involved youth have higher rates of daily smoking and other tobacco use 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.
- Over one-third of high school students are current drinkers. Current drinking among high school youth on Guam is lower than the US average. Unlike adults, girls are drinking as much as boys.
- While binge drinking among youth is lower on Guam than on the US, US rates are decreasing but Guam rates are either unchanged or increasing. Thus, the difference between Guam and US rates is shrinking.
- Court-involved youth have higher rates of binge drinking and drinking and driving than in-school youth.

Marijuana

- About 3% of adults surveyed in 2007 reported marijuana use in the past 30 days.
- Marijuana use among youth is significantly higher on Guam than in the US.
- The difference between marijuana use between girls and boys is decreasing.

Inhalants

- Inhalant use among Guam youth has now surpassed US rates.
- Unlike tobacco, alcohol and other drugs, inhalant use is higher among middle school students than among high school students.
- Unlike other substances of abuse, inhalant use rates are similar across the major ethnic groups on Guam.

Methamphetamines (“Ice”)

- Only 1% of adults surveyed in 2007 reported using “ice” in the past 30 days.
- Lifetime ice use among high school students has been decreasing from 1999 to 2005 for both US and Guam. However, in 2007, lifetime “ice” use was unchanged on Guam, while the rate decreased for the US. Hence, in 2007, Guam surpassed the US rate for “ice” use.

TOBACCO

2007 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, and 2007. The Department of Mental Health and Substance Abuse (DMHSA) Q-mark Adult Survey (2007) provides additional data on smoking prevalence. Both of these surveys utilized random digit dialing, deriving samples from a population of households with telephone land lines.

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 2007 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 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 to 2003, and 2007. 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.

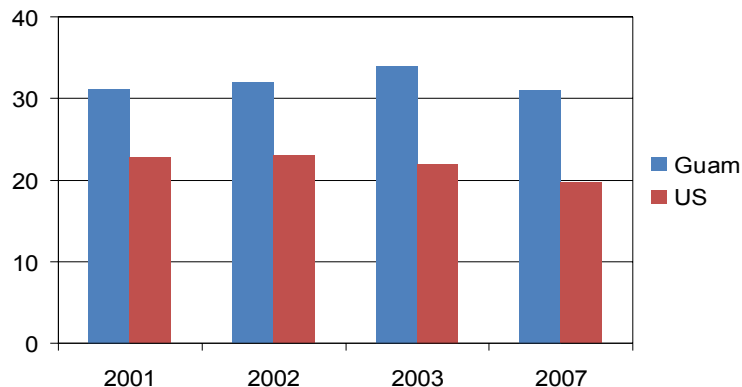
Table 1. Trends in prevalence of current smoking, Guam vs. US, 2001 to 2003 and 2007

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

Source: Behavior Risk Factor Surveillance System at <http://www.cdc.gov/brfss/index.htm> Last accessed 19 September 2008

The data reveals that smoking among adults on Guam remains unchanged from 2001. One in three adults smokes. In addition, current smoking among adults on Guam is significantly higher than the nation (57% higher).

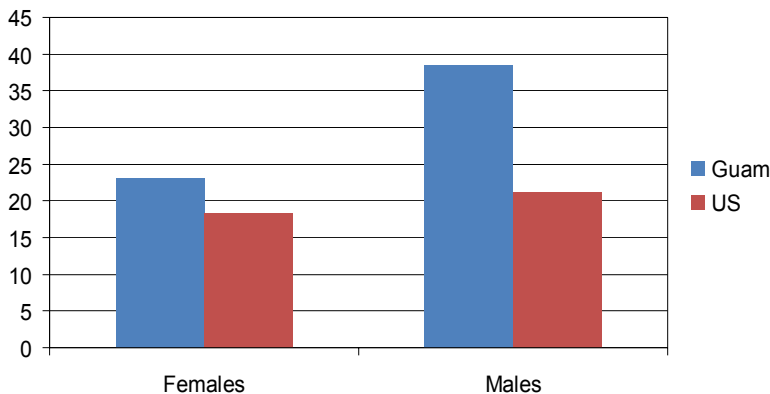
Figure 1. Adult smoking prevalence (%): Guam vs. US, 2001 to 2003 and 2007.



Source: Behavior Risk Factor Surveillance System at <http://www.cdc.gov/brfss/index.htm> Last accessed 19 September 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. However, compared to the female rates, male smoking rates on Guam are significantly higher than the US national average, almost doubling it. (Figure 2).

Figure 2. Prevalence of smoking among adults (%), by sex: Guam vs. US, 2007



Source: Behavior Risk Factor Surveillance System at <http://www.cdc.gov/brfss/index.htm> Last accessed 19 September 2008

Smoking 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 (Table 2).

Table 2. Smoking status and age: Guam, 2007

Age	Smoke everyday (%)	Smoke some days (%)	Former Smoker (%)	Never smoked (%)
18-24	17.0	14.0	5.9	N/A
25-34	25.7	10.1	15.0	N/A
35-44	N/A	7.7	9.3	N/A
45-54	29.6	4.8	12.2	46.5
55-64	19.1	1.2	N/A	N/A
65+	11.8	2.3	N/A	N/A

Source: Behavior Risk Factor Surveillance System at <http://www.cdc.gov/brfss/index.htm> Last accessed 19 Sept 2008
N/A = Not available if the unweighted sample size for the denominator was <50

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, 2007

Education	Percent current smoking (CI)
Less than High School	N/A
High School or G.E.D.	33.9 (26.6-41.2)
Some post-High School	36.2 (26.2-46.2)
College Graduate	20.1 (12.7-27.5)

Source: Behavior Risk Factor Surveillance System at <http://www.cdc.gov/brfss/index.htm> Last accessed 19 Sept 2008
N/A = Not available if the unweighted sample size for the denominator was <50

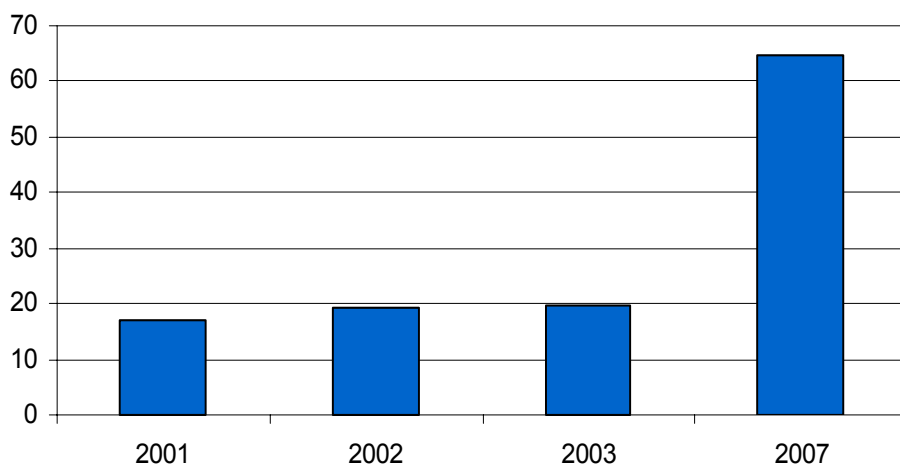
A major change for 2007 is the percentage of current smokers who tried to quit for at least one day in the past year. This increased to 64.7% in 2007, and may reflect greater awareness and readiness to quit, as well as greater availability of cessation services through the DMHSA cessation program (established in 2003) and the DPHSS quitline (established in 2007). Clearly, the data indicate the ongoing need for cessation services to support those who desire to quit using tobacco (Table 4, Figure 3).

Table 4. Percent current smokers with a quit attempt in the past year: Guam, 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: Behavior Risk factor Surveillance System, Department of Public Health and Social Services (data not online)

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



Source: Behavior Risk factor Surveillance System, Department of Public Health and Social Services

The 2007 DMHSA Q-mark Adult Survey revealed a smoking prevalence of 29%, which is within the confidence interval of the DPHSS BRFSS 2007 result. The Q-mark survey also queried respondents about other tobacco use, with specific questions on chewing tobacco with betel nut. About 5% of respondents reported using other tobacco products. 17% reported chewing betel nut (Table 5). Of those who chew betel nut, 29% add tobacco to their chew. Those who chew tobacco with betel nut were more likely to be younger than 35 years of age.

Table 5. Patterns of chewing betel nut, adults, Guam, 2007

Patterns of Betel Nut (Pugua) Use	%
By itself	69%
With Pepper Leaf/Pupulu	53%
With Lime	40%
With Tobacco	29%

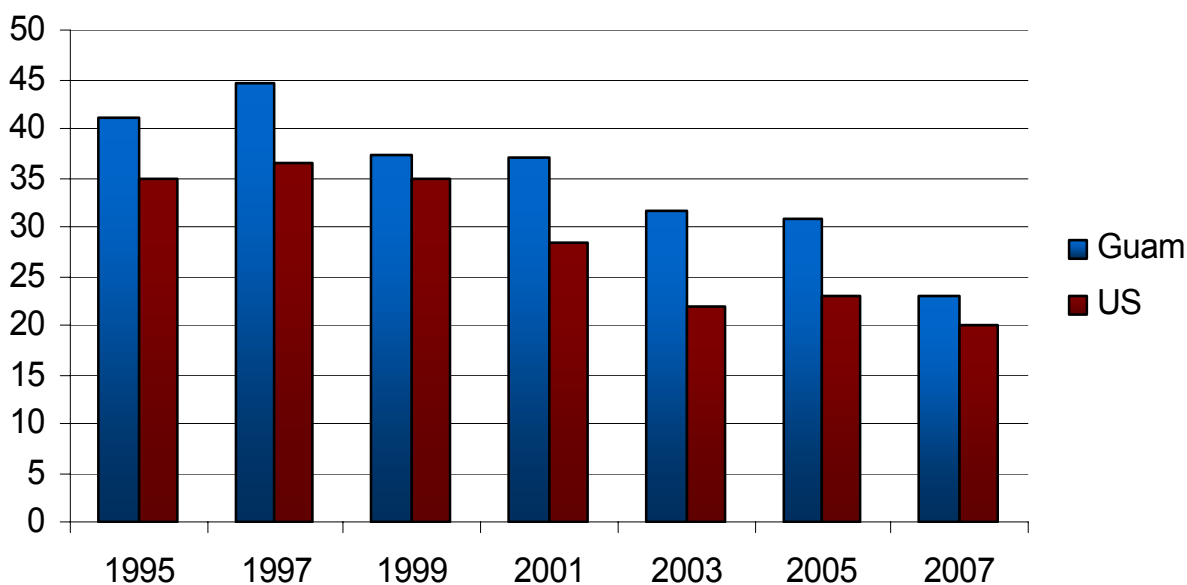
Source: DMHSA Q-Mark Adult Survey, 2007.

Youth Consumption

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. Additional sources of information include smaller scale surveys conducted by DMHSA, Sanctuary Inc. and the Department of Youth Affairs (DYA). A discussion of limitations of the Guam YRBS is contained in the earlier editions of this profile.

Prevalence of cigarette use among youth has been declining in the US mainland and on Guam. Nationwide, lifetime cigarette use, current cigarette use and current frequent cigarette use have been decreasing steadily since 1995. On Guam, the decline started in 1999, followed by significant drops in 2003 for high school students (Figure 4 and Table 6) and 2005 for middle school students (Figure 5). In 2007, both high school and middle school smoking rates continued to decrease. 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 Government of Guam premises and vehicles to become 100% tobacco free came into effect, and the DPHSS Quitline was established. The association between these positive policy and program changes with decreases in youth smoking rates appears significant.

Figure 4. Current smoking (%), High School: Guam vs. US, 1995 to 2007



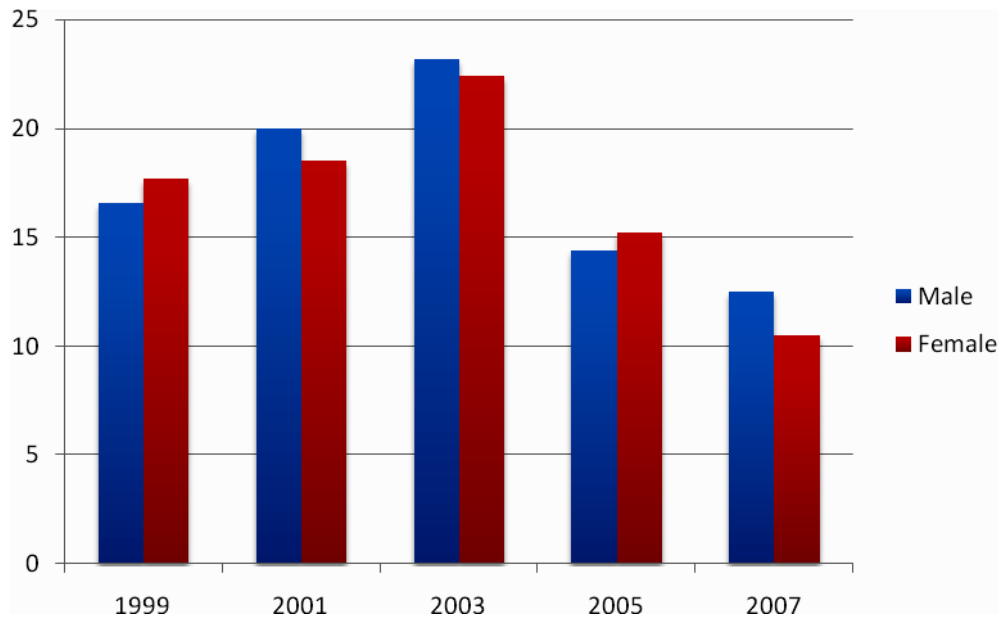
Source: Youth Risk Behavior Survey 1995 to 2007

Table 6. Current smoking, High School: Guam vs. US, 1995 to 2007

	1995	1997	1999	2001	2003	2005	2007
US average	34.8%	36.4%	34.8%	28.5%	21.9%	23.0%	20.0%
Guam	41.1%	44.7%	37.3%	37.1%	31.6%	30.8%	23.1%

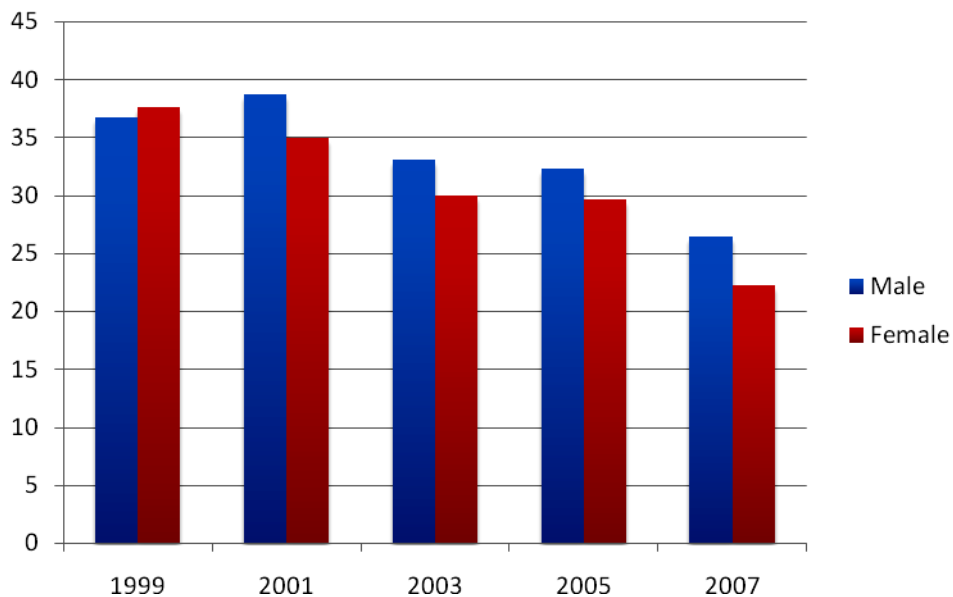
Source: Youth Risk Behavior Survey 1995 to 2007

Figure 5. Current smoking (%), Middle School by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey 1999 to 2007

Figure 6. Current smoking (%), High School by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey 1999 to 2007

Unlike adults, current smoking rates are similar for young males and females (Figures 5 and 6). This lack of difference across the sexes 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.

Smoking rates vary across different ethnic groups (Table 7). Among high school students, Chamorros have the highest rates for current smoking; rates increased from 1999 to 2003, but dropped in 2005 and then again in 2007 (Figure 7). Filipinos have the lowest rates, although the rate remained unchanged from 2005 to 2007. Current smoking decreased among Micronesian Islander high school youth in 2007.

Among middle school youth, Chamorros and Micronesian Islanders have the highest rates for current tobacco use with significant increases from 1999 to 2003. Filipino youth have the lowest rates. Current smoking decreased among Filipino and Chamorro middle school youth in 2007 (Figure 8).

Table 7. Current cigarette use among youth by ethnicity/race: Guam, 1999 to 2007

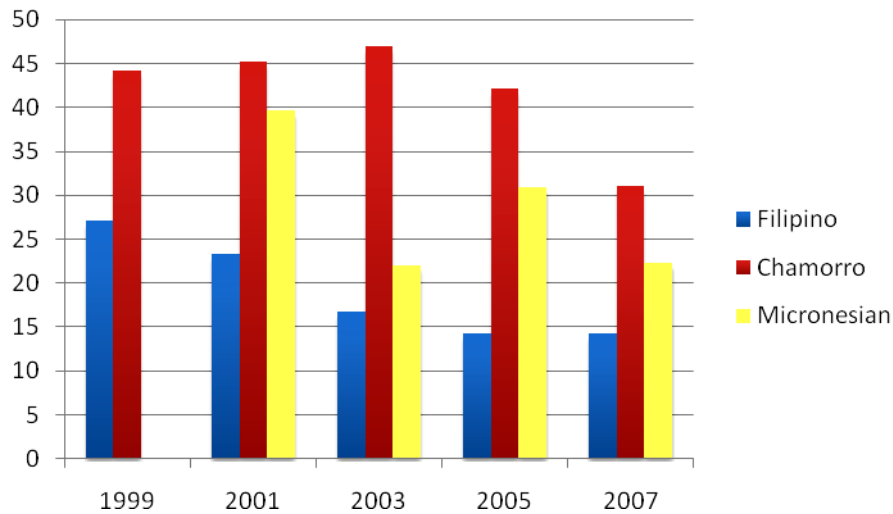
Year	Filipino	Other Asian	Chamorro	Micronesian Islander	White	Others
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
High School						
1999	27.1 (170)	30.8* (26)	44.2 (292)	NA	NA	34.3 (67)
2001	23.3 (343)	19.7 (76)	45.2 (693)	39.6 (91)	21.1* (38)	42.8 (63)
2003	16.7 (209)	9.5* (21)	47.0 (313)	22.0* (41)	0* (5)	26.3 (118)
2005	14.2 (281)	14.0 (50)	42.2 (507)	30.9 (94)	12.5* (8)	29.9 (157)
2007	14.3 (331)	N/A	30.3 (561)	20.7 (121)	NA	20.2 (101)
Middle School						
1999	7.7 (196)	10.3* (29)	25.6 (309)	6.7* (15)	NA	14.5* (55)
2001	9.8 (490)	3.9* (51)	24.9 (858)	24.8 (121)	14.8* (27)	21.8* (55)
2003	11.5 (243)	9.5* (21)	31.5 (391)	32.7 (52)	42.9* (7)	19.9 (161)
2005	4.1 (245)	0* (23)	23.3 (390)	15.7 (102)	0* (12)	12.6 (159)
2007	2.9 (295)	NA	15.5 (513)	17.1 (113)	NA	NA

Source: Youth Risk Behavior Survey 1999 to 2007

*Denotes cells where n < 50.

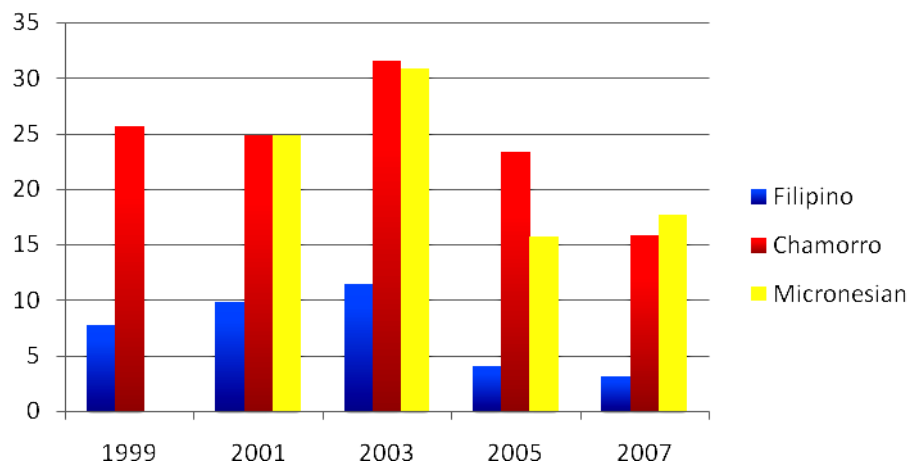
NA = not available

Figure 7. Current smoking (%) by ethnicity, High School: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey 1999 to 2007

Figure 8. Current smoking (%) by ethnicity, Middle School: Guam, 1999 to 2007



Source: YRBS 1999-2007

Table 8 shows the lifetime prevalence of daily cigarette use among Guam's youth. Table 9 demonstrates the high percentage of youth smokers who want to quit. Taken together, these figures are indicative of the addictiveness of nicotine among adolescents.

Lifetime daily cigarette use continued to decrease among high school and middle school youth on Guam from 2005 to 2007. While the decline is encouraging, over 17% of high school students have been or are habitual, or regular, smokers. This implies early addiction to nicotine, and increased risks for tobacco-related adverse health outcomes in the future.

Table 8. Lifetime daily cigarette use among youth: Guam, 1999 to 2007

Year	Total (%) n	Female (%) n	Male (%) n
High School			
1999	21.6 (125)	20.1 (62)	23.4 (63)
2001	22.2 (303)	19.0 (132)	25.5 (170)
2003	20.2 (154)	17.5 (66)	22.9 (88)
2005	20.6 (243)	18.6 (122)	23.1 (120)
2007	17.0 (1633)	16.2 (799)	17.8 (827)
Middle School			
1999	9.4 (60)	9.3* (34)	9.1* (24)
2001	7.2 (120)	7.3 (63)	7.1 (57)
2003	13.0 (124)	12.6 (64)	14.4 (59)
2005	5.7 (56)	5.3* (26)	6.0* (30)
2007	4.8 (1392)	4.9 (714)	4.8 (676)

Source: Youth Risk Behavior Survey, 1999 to 2007

* Denotes cells where n<50

The percentage of youth smokers wanting to quit in the past year remains high, over 80%, signaling the need to provide cessation services for this population (Table 9). This is consistent with the observation of early nicotine addiction among a larger proportion of youth who smoke.

Table 9. Percentage of youth smokers who tried to quit in the past year: Guam, 1999 to 2007

Year	Total (%) N	Female (%) N	Male (%) N
High School			
1999	58.7 (277)	61.2 (150)	55.9 (127)
2001	77.1 (442)	76.9 (206)	77.2 (234)
2003	81.5 (216)	80.4 (102)	82.5 (114)
2005	82.3 (349)	84.9 (191)	79.3 (157)
2007	81.9 (354)	81.4 (159)	82.3 (195)

Source: Youth Risk Behavior Survey, 1999 to 2007

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, particularly chewing tobacco mixed with betel nut, is increasing among both high school and middle school youth. The rates for high school youth doubled between 2003 and 2005, then increased further in 2007. Overall, males have a higher prevalence of using other tobacco products than females (Table 10). The use of other tobacco products, particularly chewing tobacco with betel nut, deserves close monitoring, and prevention and early intervention efforts are needed to offset any further increases.

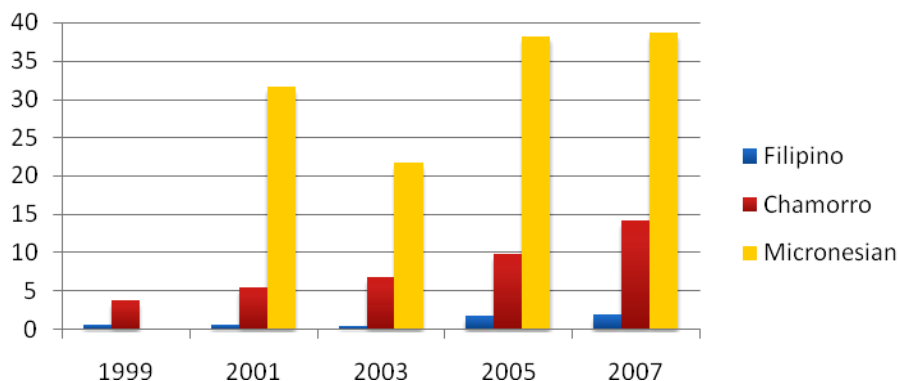
Table 10. Current use of other tobacco products among youth, by sex: Guam, 1999 to 2007

Year	Total (%) N	Female (%) n	Male (%) n
High School			
1999	4.0 (580)	3.2 (310)	4.8 (270)
2001	6.3 (1363)	2.9 (700)	8.9 (663)
2003	5.6 (791)	3.6 (384)	7.4 (407)
2005	10.6 (1214)	6.6 (680)	15.4 (534)
2007	13.4 (1668)	8.7 (804)	17.3 (855)
Middle School			
1999	3.2 (630)	1.6 (365)	5.0 (260)
2001	5.0 (1692)	4.4 (869)	5.5 (821)
2003	6.3 (939)	5.0 (522)	7.7 (414)
2005	7.9 (1021)	4.9 (508)	10.9 (513)
2007	6.3 (1440)	5.6 (732)	6.9 (706)

Source: Youth Risk Behavior Survey, 1999 to 2007

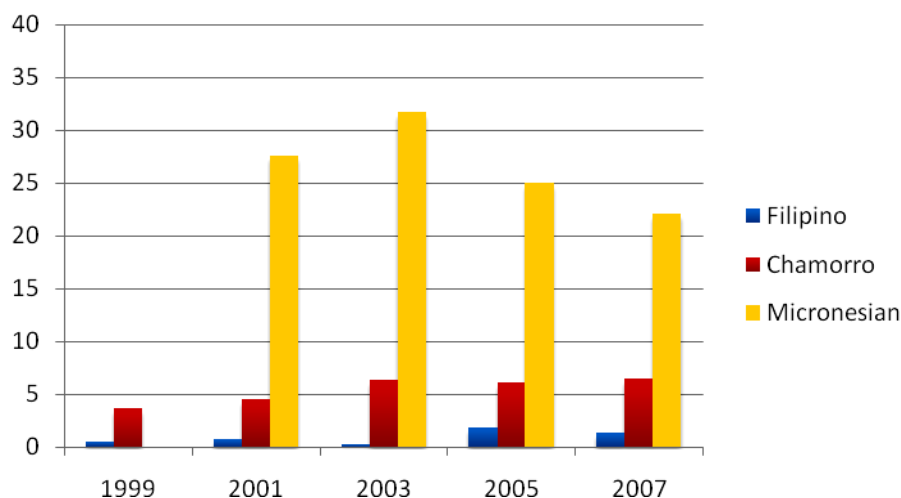
The use of other tobacco products, such as chewing tobacco with betel nut, is highest among Micronesian Islanders. Filipinos and Other Asians have the lowest rates; however, rates are increasing. Prevalence of using other tobacco products appears to be increasing among high school youth, regardless of ethnicity, and among Filipino and Chamorro middle school youth (Figures 9 and 10). 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.

Figure 9. Other tobacco use (%), High School, by ethnicity: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Figure 10. Other tobacco use (%), Middle School, by ethnicity: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

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 YRBS provides information on youth smokers who purchase their cigarettes from stores (Table 11). 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 11. Synar compliance rates and percent youth smokers purchasing cigarettes from stores, Guam, 1999 to 2008

Year	Compliance Rate (%)	Youth smokers (High School) buying cigarettes from stores (%)
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

Sources: Synar data, Department of Mental Health and Substance Abuse, 2000 to 2007; Youth Risk Behavior Survey, 2001 to 2007

A significant decrease in cigarette smoking among high school students occurred in 1999, in 2003 and 2007. Middle school smoking, which had been increasing since 1999, first dropped in 2005, and continued to decrease in 2007. The drop in 1999 could be attributed to the heightened publicity about the law prohibiting sales of tobacco products to minors. However, smoking rates stabilized over the succeeding biennium.

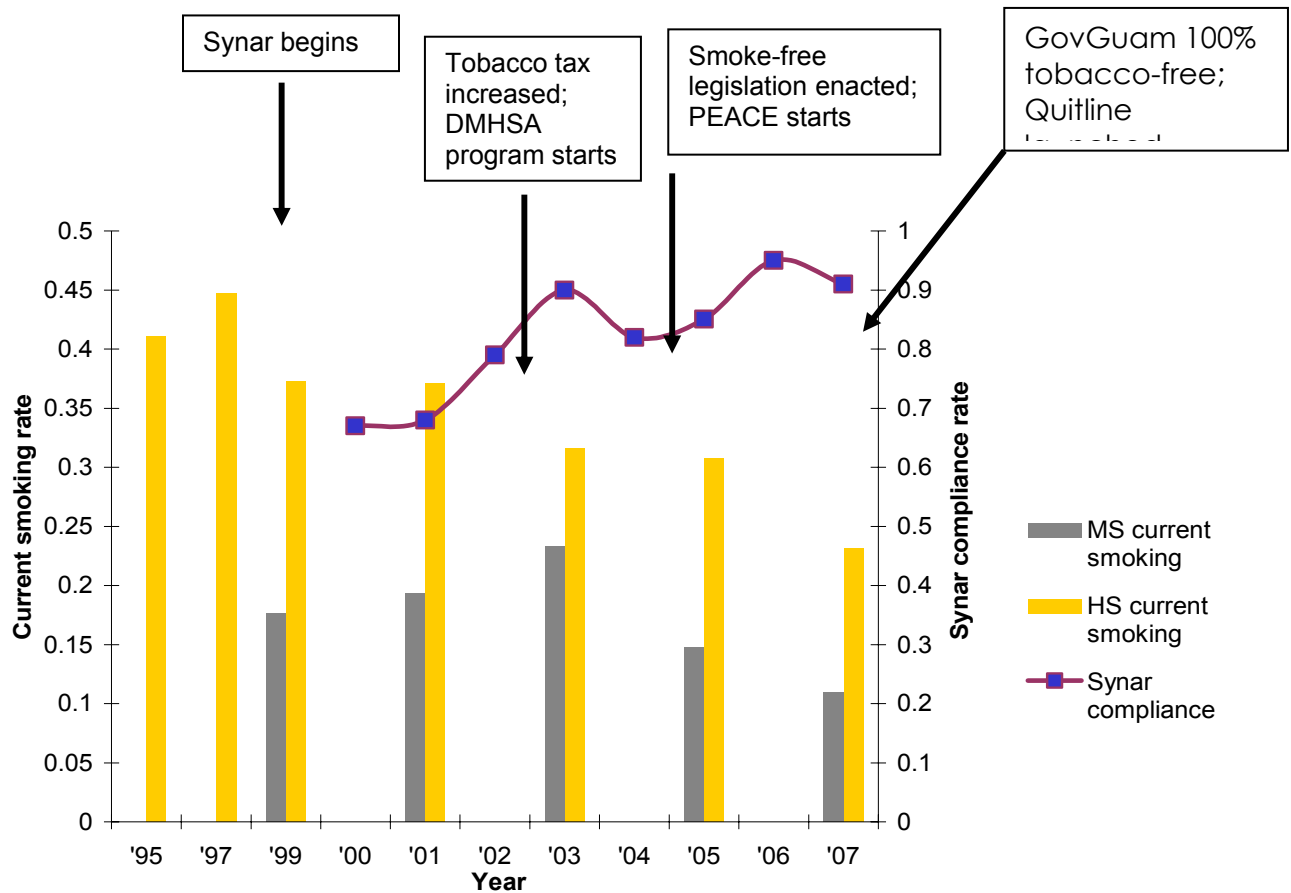
The next drop in high school smoking occurred in 2003, when taxes on cigarettes increased by 1400%, and the Department of Mental Health and Substance Abuse launched its tobacco control media campaign.

Guam's "Natasha Protection Act," which prohibits smoking in enclosed public places, was enacted in 2005. The Guam SPF-SIG PEACE project also began operations in 2005. The 2005 YRBS,

conducted in the latter half of the year, documented a significant drop in middle school smoking rates. In 2007, decreases in both high school and middle school smoking occurred.

The correlation between major tobacco control policy changes and drops in youth smoking (Figure 11) highlight the importance 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.

Figure 11. Synar compliance rates, youth current cigarette use, and tobacco control policy and program changes: Guam, 1995 to 2005



Source: Synar data, Department of Mental Health and Substance Abuse, 1999 to 2007; Youth Risk Behavior Survey, 1995 to 2007

Tobacco Consumption Among Court-involved Youth

For the latter portion of 2007, both the Guam Department of Youth Affairs (DYA) and Sanctuary, Inc. administered a version of the YRBS to their clients. Table 12 summarizes some of the key indicators across these populations. In general, current smoking, lifetime daily smoking and other tobacco use are higher among court-involved youth. However, the percent who tried to quit in the past year is similar to that of in-school youth.

Table 12. Tobacco consumption, court-involved youth vs. in-school youth: Guam, 2007

2007	In-school youth (%)	DYA youth (%)	Sanctuary, Inc. youth (%)
Indicator			
Ever smoking	69.7	73.2	83.3
Current smoking	23.1	58.4	59.2
Current other tobacco use	13.4	28.8	37.0
Lifetime daily smoking	17.0	35.2	40.7
Tried to quit in the past year	81.9	76.0	85.7

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

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 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 (Preliminary data.)

Total Deaths: 697

In relation to cancer, lung cancer is now the leading cause of cancer death on Guam, consistent with Guam's high smoking rates. Other smoking-related cancers, such as stomach cancer, show elevated incidence rates consistent with adult smoking rates (Table 14).

Table 14. Tobacco-related cancer incidence, by ethnicity: Guam, 1998 to 2002

Ethnicity	Lung cancer incidence (per 100,000)	Stomach cancer incidence (per 100,000)
Chamorro	74.3	11.5
Other Micronesian	111.5	9.0
Filipino	35.6	4.0
US average	70.1	7.4

Source: Guam Cancer Registry data, 1998-2002

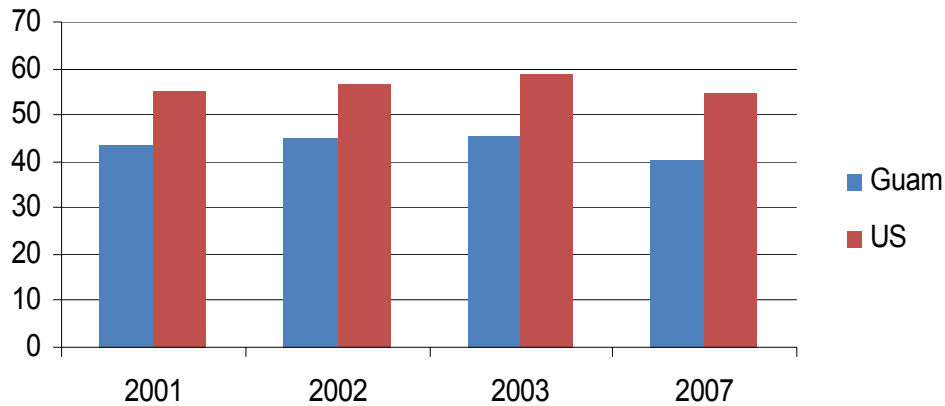
ALCOHOL 2007 Highlights

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.

Current alcohol consumption appears unchanged from previous years (Figure 12). In 2007, 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 average. Males were almost twice as likely to report recent consumption of alcohol as females on Guam. 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 (Table 15).

Figure 12. Current alcohol consumption (%): Guam vs. US, 2001 to 2003 and 2007



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

Table 15. Recent alcohol consumption (within the past 30 days): Guam vs. US Average, 2007

State	Total	Male	Female
Guam			
%	40.4	57	23.2
Nationwide			
Median %	54.7	62	47.6

Source: Behavioral Risk Factor Surveillance System, 2007

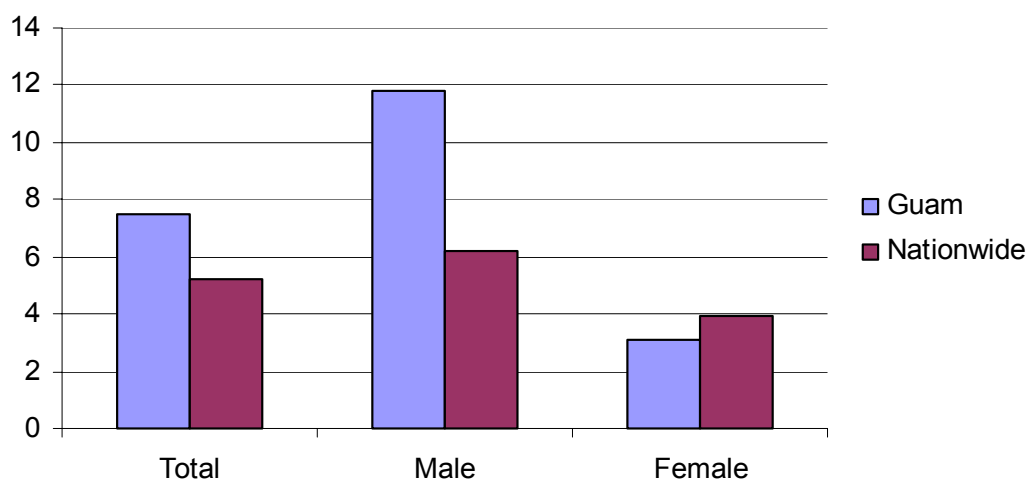
Heavy drinking is defined in the BRFSS as adult men having more than two drinks per day and adult women having more than one drink per day. In 2007, the prevalence of heavy drinking on Guam was higher than the US average. Like the national average, males were more likely to report heavy drinking than 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 (Table 16 and Figure 13).

Table 16. Heavy drinking: Guam vs. US, 2007*

State	Total	Male	Female
Guam			
%	7.5	11.8	3.1
Nationwide			
Median %	5.2	6.2	3.9

Source: Behavioral Risk Factor Surveillance System, 2007

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

Figure 13. Heavy drinking (%) by sex: Guam vs. US, 2007

Source: Behavioral Risk Factor Surveillance System 2007

Binge drinking, defined as having five or more drinks on one occasion, was reported by 19.5% of adults on Guam in 2007. This is higher than the US national average. Overall, males were more likely to report binge drinking than females. Males on Guam had a rate of binge drinking that was almost one-third 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 (Tables 17 and Figure 14).

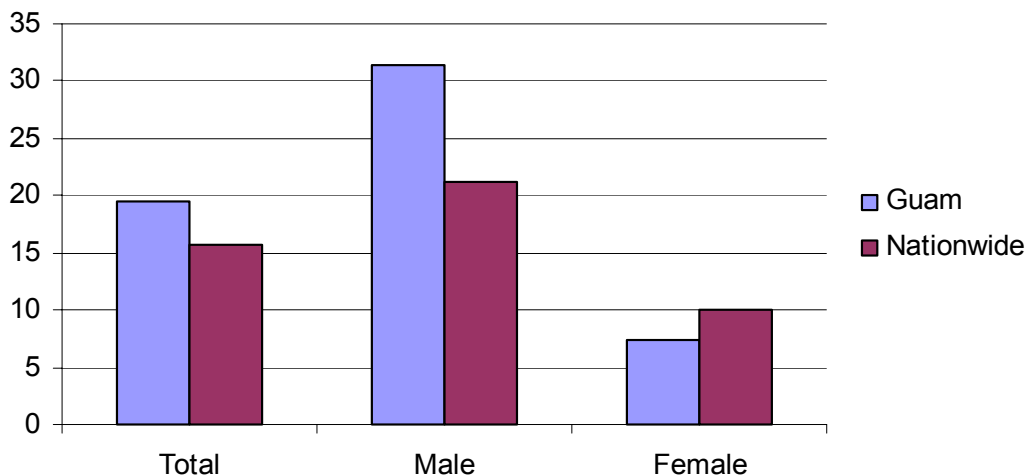
Table 17. Binge drinking: Guam vs. US, 2007

State	Total	Male	Female
Guam*			
%	19.5	31.4	7.4*
Nationwide			
Median %	15.7	21.2	10.1

Source: Behavioral Risk Factor Surveillance System, 2007

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

Figure 14. Binge drinking (%), by sex: Guam vs. US, 2007



Source: Behavioral Risk Factor Surveillance System, 2007

Youth Consumption

Data on alcohol consumption among youth are available from the 2007 Youth Risk Behavior Survey. The limitations associated with this surveillance system were discussed previously.

Over one-third of high school students are current drinkers. Current drinking among high school youth on Guam is lower than the US average. 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 (Table 18).

Table 18. Current alcohol use, High School: Guam vs. US, 2007

State	Total	Male	Female
Guam %	34.9	36.2	33.4
(CI)	(31.9-38.0)	(32.2-40.4)	(29.0-38.2)
Nationwide Median %	44.7	44.7	44.6
(CI)	(42.4-47.0)	(41.9-47.6)	(41.8-47.5)

Source: Youth Risk Behavior Survey, 2007

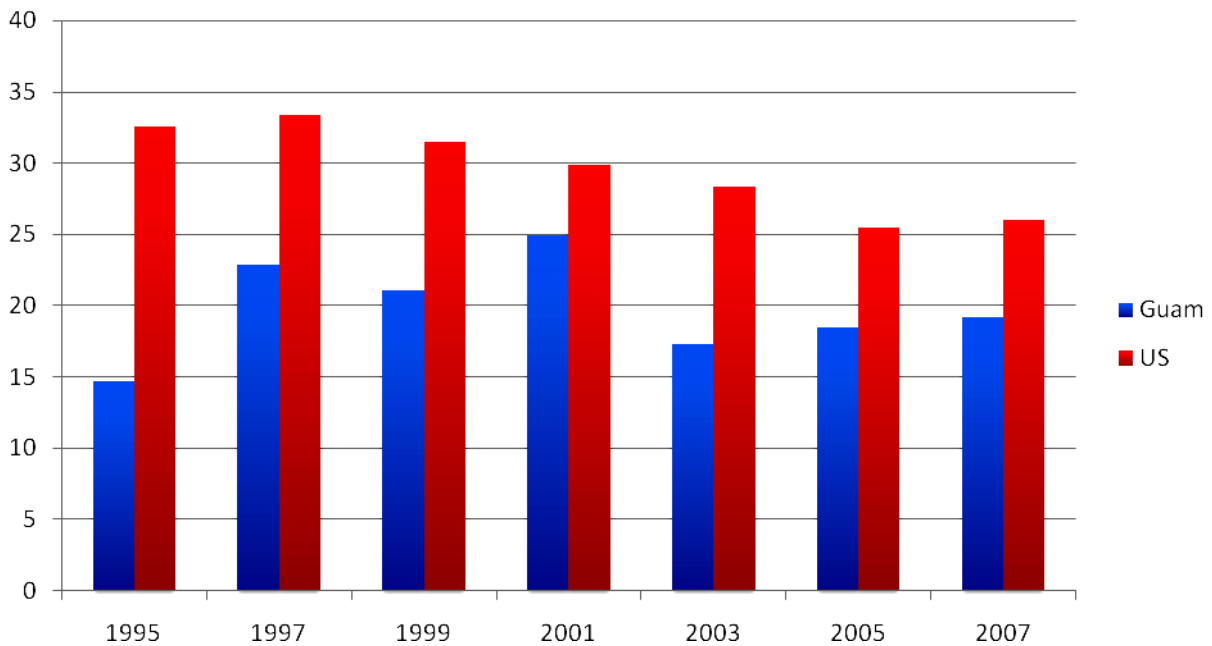
While binge drinking among youth is lower on Guam than on the US, US rates are decreasing while Guam rates are either unchanged or increasing. Thus, the difference between Guam and US rates is shrinking (Figure 15). Males on Guam have a higher prevalence of binge drinking than females. Binge drinking 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 16).

Table 19. Binge drinking, High School: Guam vs. US, 1995 to 2007

Year	Guam	Nationwide
	Binge Drinking % (n)	Binge Drinking Median % (CI)
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)

Source: Youth Risk Behavior Survey, 1995 to 2007

Figure 15. Trends in binge drinking (%), High School: Guam vs. US, 1995 to 2007



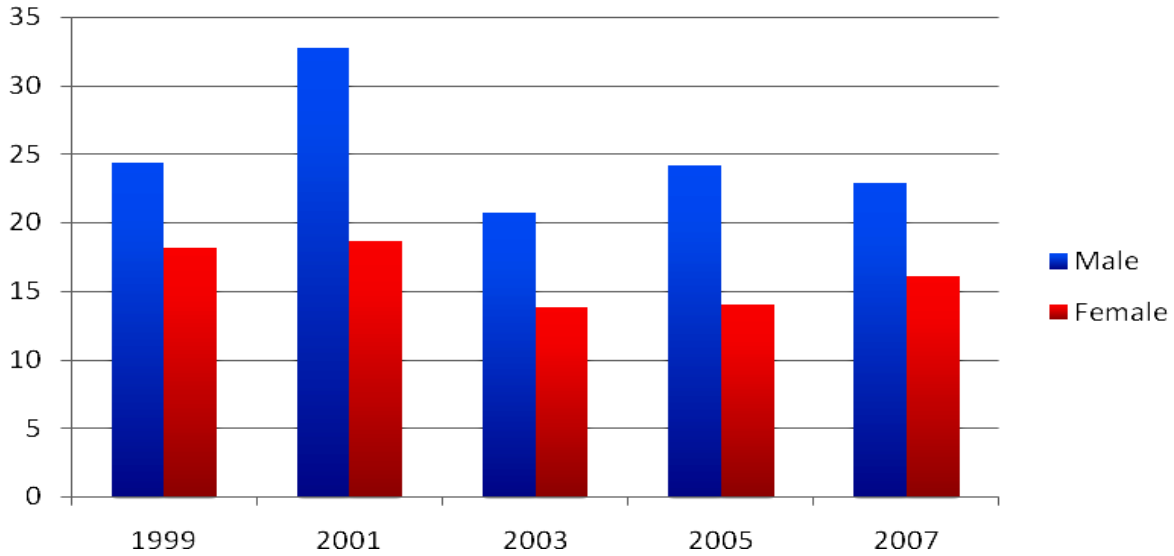
Source: Youth Risk Behavior Survey, 1995 to 2007

Table 20. Binge drinking by sex, High School: Guam, 1999 to 2007

Guam	Total % (n)	Male % (n)	Female % (n)
1999	21.1 (574)	24.4 (266)	18.2 (307)
2001	24.9 (1357)	31.0 (655)	18.3 (698)
2003	17.3 (759)	20.7 (382)	13.8 (377)
2005	18.5 (1209)	24.2 (525)	14.0 (678)
2007	19.2 (1632)	21.6 (831)	16.3 (793)

Source: Youth Risk Behavior Survey, 1999 to 2007

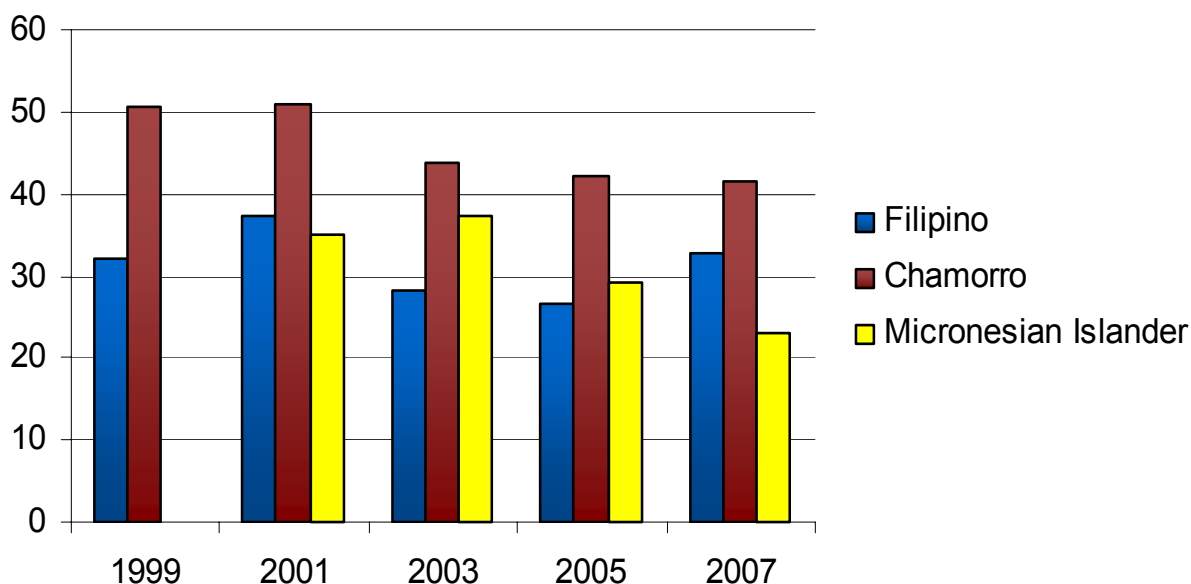
Figure 16. Current binge drinking, High School (%), by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

When disaggregated by ethnicity/race, Filipino youth have the lowest rates for current and binge drinking, while Chamorro youth have the highest. Current and binge drinking decreased markedly for Micronesian Islander youth in 2007, but remained unchanged for Chamorro youth (Tables 21 and 22; Figures 17 and 18). However, current and binge drinking increased significantly among Filipino youth in 2007.

Figure 17. Current drinking (%), High School, by ethnicity: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

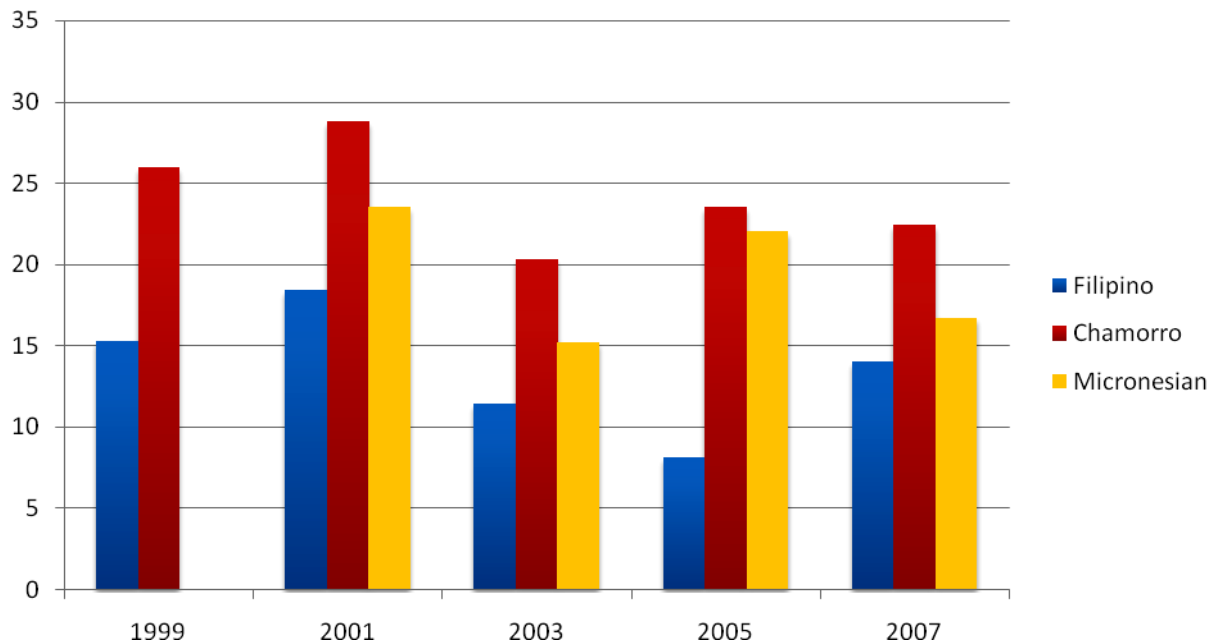
Table 21. Current drinking by ethnicity, High School: Guam, 1999 to 2007

Year	Filipino % (n)	Other Asian % (n)	Chamorro % (n)	Micronesian Islander % (n)	White % (n)	Others % (n)
1999	32.2 (183)	42.9* (28)	50.6 (312)	NA	NA	43.3 (60)
2001	37.2 (344)	40.8 (76)	50.8 (697)	35.1 (94)	53.8* (39)	50.0 (60)
2003	28.3 (219)	45.0* (20)	43.7 (311)	37.2* (43)	20.0* (5)	40.5 (121)
2005	26.6 (278)	26.0 (50)	42.3 (518)	29.2 (96)	37.5* (8)	40.4 (166)
2007	32.8 (311)	30.0 (40)	41.4 (551)	23.1 (121)	66.7* (9)	33.3 (418)

Source: Youth Risk Behavior Survey, 1999 to 2007

*Denotes cells where n < 50.

Figure 18. Binge drinking (%), High School, by ethnicity: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Table 22. Binge drinking by ethnicity, High School: Guam, 1999 to 2007

Year	Filipino % (n)	Other Asian % (n)	Chamorro % (n)	Micronesians Islander % (n)	White % (n)	Others % (n)
1999	15.3 (183)	21.4* (28)	26.0 (312)	NA	NA	26.2 (61)
2001	18.4 (348)	21.3 (80)	28.7 (721)	23.5 (98)	27.5* (40)	31.3 (64)
2003	11.4 (220)	14.3* (21)	20.3 (340)	15.2* (46)	0.0* (5)	21.6 (125)
2005	8.1 (296)	11.8 (51)	23.5 (550)	22.0 (109)	22.2* (9)	18.9 (180)
2007	14.0 (350)	14.3* (49)	22.4 (616)	16.7 (138)	40.0* (10)	21.1 (469)

Source: Youth Risk Behavior Survey, 1999 to 2007

*Denotes cells where n < 50.

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, almost entirely due to a decrease in drinking and driving among males (Table 23 and Figures 19 and 20).

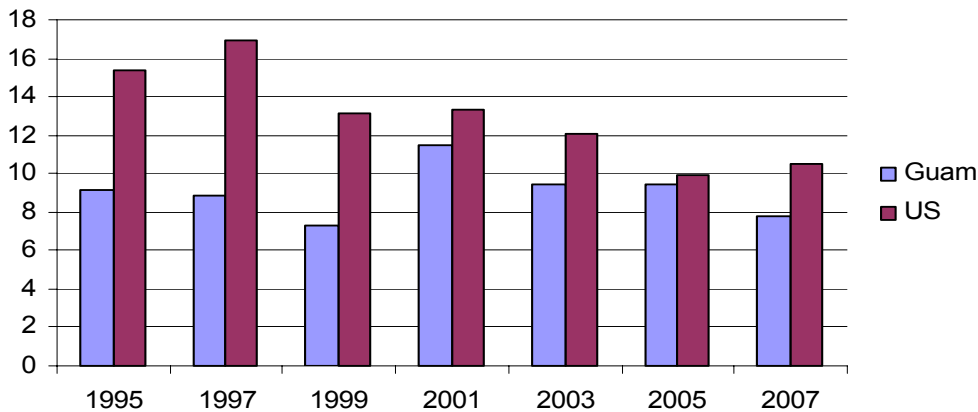
Table 23. Drinking and driving, by ethnicity, High School: Guam, 1995 to 2007

Year	Site	Total % (CI)	Female % (CI)	Male % (CI)
2007	Guam	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)
2005	Guam	9.4	5.4	14.6
	US	9.9 (8.9-11.0)	8.1 (7.1-9.2)	11.7 (10.3-13.2)
2003	Guam	9.4	6.4	12.2
	US	12.1 (10.8-13.4)	8.9 (7.8-10.1)	15.0 (13.4-16.8)
2001	Guam	11.5 (9.5-14.0)	6.4 (4.8-8.6)	16.4 (12.9-20.5)
	US	13.3 (11.8-14.8)	9.5 (8.2-11.0)	17.2 (15.1-19.4)
1999	Guam	7.3	9.1	12.7
	US	13.1 (11.9-14.3)	8.7 (7.0-10.7)	17.4 (15.8-19.2)
1997	Guam	8.9 (6.7-11.7)	2.6 (1.0-6.6)	16.1 (12.2-20.9)
	US	16.9 (14.3-19.9)	12.0 (9.6-14.9)	21.0 (17.9-24.5)
1995	Guam	9.1 (5.0-16.0)	4.4 (1.6-11.4)	13.2 (6.8-24.1)
	US	15.4 (12.3-19.1)	11.9 (8.6-16.2)	18.5 (15.4-22.0)

Source: Youth Risk Behavior Survey, 1995 to 2007

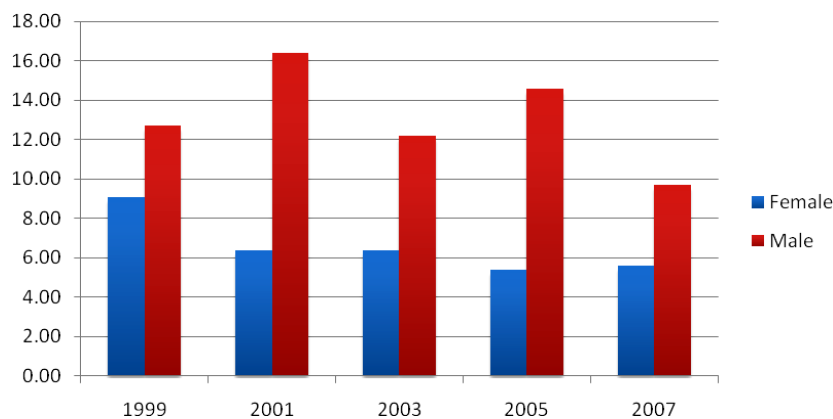
*Denotes cells where n < 50.

Figure 19. Drinking and driving (%), High School: Guam vs. US, 1999 to 2007



Source: Youth Risk Behavior Survey, 1995 to 2007

Figure 20. Drinking and driving (%), High School, by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Alcohol Consumption Among Court-involved Youth

Table 24 highlights some of the alcohol consumption indicators for court-involved youth at the Department of Youth Affairs and Sanctuary, Inc. as compared to in-school youth. The data indicate that while court-involved youth have similar rates of lifetime and current alcohol consumption as in-school youth, they appear more likely to binge drink and to drive after drinking.

Table 24. Alcohol consumption, court-involved youth vs. in-school youth: Guam, 2007

2007	In-school youth (%)	DYA youth (%)	Sanctuary, Inc. youth (%)
Indicator			
Lifetime alcohol consumption	68.5	54.0	63.0
Current alcohol consumption	34.9	37.6	33.3
Binge drinking	19.2	25.6	29.6
Drinking and driving	7.8	10.0	13.0

Source: Department of Youth Affairs and Sanctuary data; Youth Risk Behavior Survey, 2007

Alcohol Use Consequences

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

Liver cancer incidence and mortality for Chamorros, Micronesians and Filipinos are higher than US rates. Micronesians have almost 9 times the US rate of dying from liver cancer, while Chamorros have over double the US rate (Table 25).

Table 25. Liver cancer rates by ethnicity: Guam, 1998 to 2002

Ethnicity	Incidence rate (per 100,000)	Mortality rate (per 100,000)
Chamorro	11.8	11.6
Other Micronesian	41.6	39.4
Other Asian	7.2	7.2
Filipino	8.9	5.6
US	5.2	4.6

Source: Guam Cancer Registry data, 1998 to 2002

To date, the 2007 Uniform Crime Report remains unavailable to the Guam SEW. Hence, there is no updated data on alcohol-related crime and motor vehicle accidents. Please refer to the previous edition of this profile for existing data on these indicators.

MARIJUANA

2007 Highlights

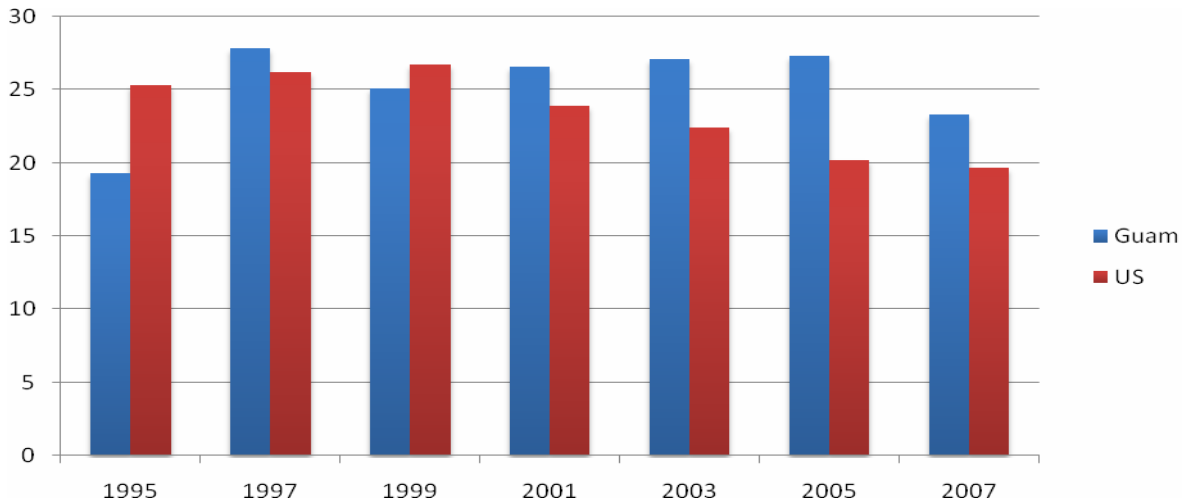
Adult Consumption

The DMHSA Q-mark Adult Survey provides 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.

Youth Consumption

Marijuana consumption among high school youth decreased slightly in 2007. However, marijuana use among Guam's youth remains significantly higher than among US youth in general (Figure 21 and Table 26).

Figure 21. Current marijuana use (%), High School: Guam vs. US, 1995-2007



Source: Youth Risk Behavior Survey, 1995 to 2007

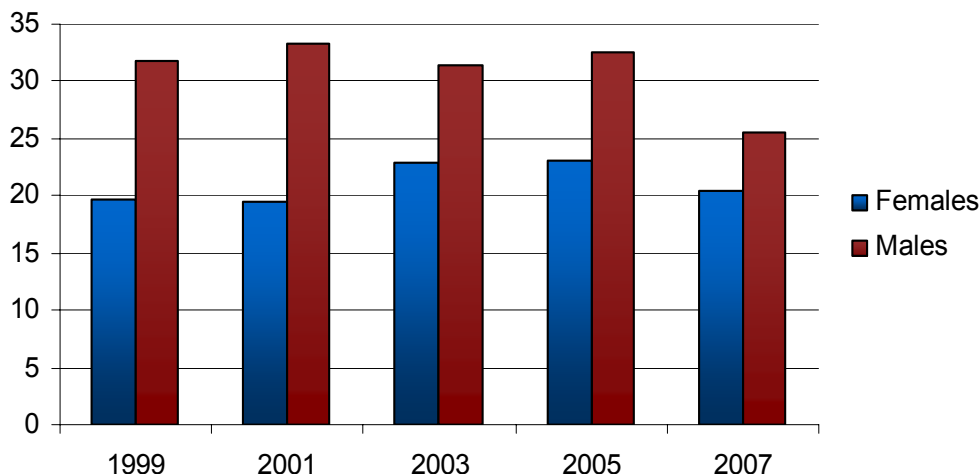
Table 26. Current marijuana use, High School: Guam vs. US, 1995 to 2007

Year	Guam Current Marijuana Use % (CI)	Nationwide Current Marijuana Use Median % (CI)
1995	19.3 (14.1-25.9)	25.3 (23.5-27.3)
1997	27.8 (23.5-32.5)	26.2 (24.0-28.5)
1999	25.1	26.7 (24.2-29.4)
2001	26.6 (23.4-30.2)	23.9 (22.3-25.5)
2003	27.1	22.4 (20.2-24.6)
2005	27.3	20.2 (18.6-22.0)
2007	23.3 (20.7-26.1)	19.7 (17.8-21.8)

Source: Youth Risk Behavior Survey, 1995 to 2007

When disaggregated by sex, the decrease in total 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 (Table 27 and Figure 22).

Figure 22. Current marijuana use (%), High School, by sex; Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Table 27. Current marijuana use, High School, by sex: Guam, 1999 to 2007

Year	Females % (N)	Males % (N)
1999	19.6 (306)	31.8 (258)
2001	19.5 (696)	33.3 (653)
2003	22.8 (381)	31.4 (373)
2005	23.0 (675)	32.6 (524)
2007	20.5 (790)	25.6 (820)

Source: Youth Risk Behavior Survey, 1999 to 2007

Marijuana use is highest among Chamorro youth and lowest for Filipino youth. Chamorro youth are more than five times likely to use marijuana than Filipinos, and twice as likely to use marijuana as other Micronesian youth (Table 28 and Figure 23). Current use declined for Filipino and other Micronesian youth from 2005 to 2007, but not for Chamorro youth.

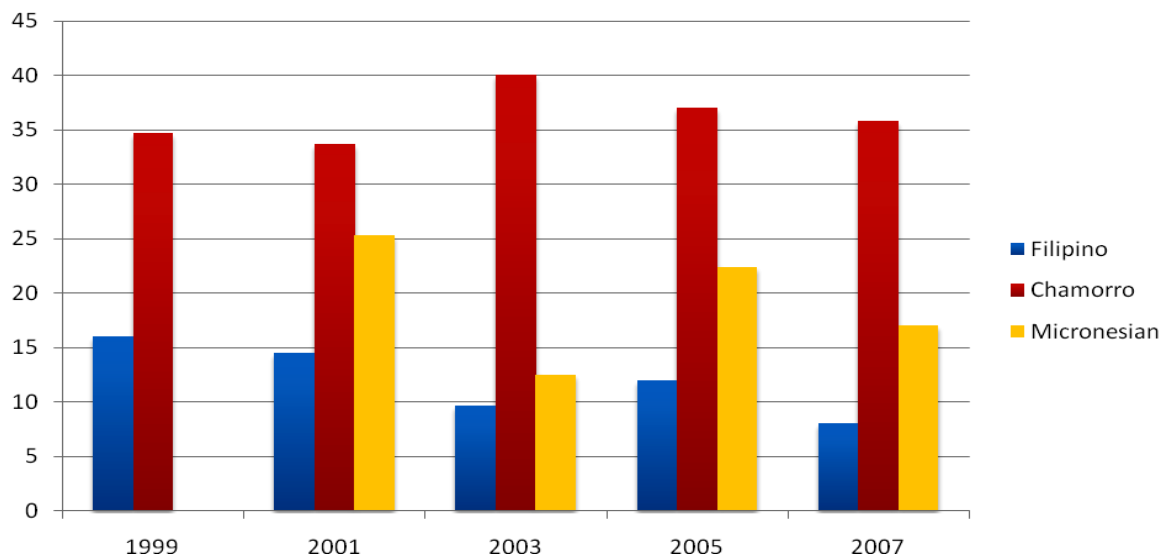
Table 28. Current marijuana use by ethnicity, High School: Guam, 1999 to 2007

Year	Filipino % (n)	Other Asian % (n)	Chamorro % (n)	Micronesian Islander % (n)	White % (n)	Others % (n)
1999	16.0 (181)	21.4* (28)	34.7 (308)	NA	NA	21.7 (60)
2001	14.5 (352)	13.8 (80)	33.7 (712)	25.3 (99)	32.5* (40)	38.5 (65)
2003	9.6 (219)	14.3* (21)	40.1 (344)	12.5* (40)	20.0* (5)	29.3 (123)
2005	12.0 (292)	8.3 (48)	37.0 (552)	22.4 (107)	22.2* (9)	30.6 (183)
2007	8.0 (352)	12.2* (49)	35.8 (609)	17.0 (135)	54.5* (11)	25.8 (462)

Source: Youth Risk Behavior Survey, 1999 to 2007

*Denotes cells where n < 50.

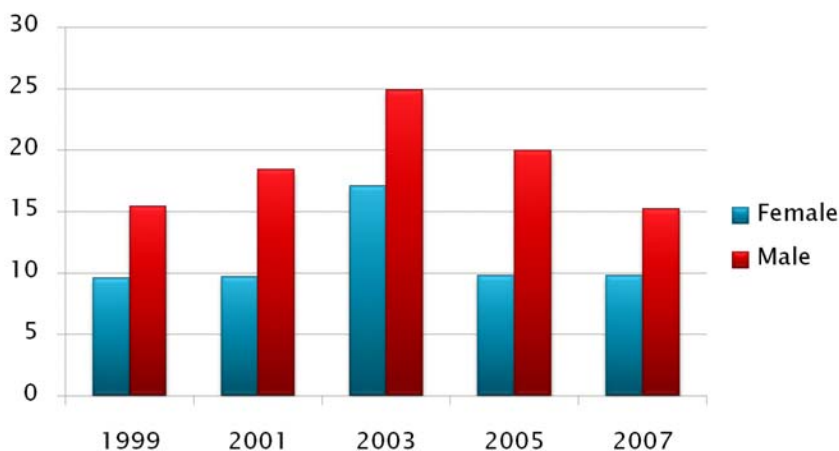
Figure 23. Current marijuana use (%), High School, by ethnicity: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Among middle school youth, lifetime marijuana use appears to have declined for boys in 2007 (Table 29 and Figure 24). However, use among females remained unchanged. Thus, the difference between male and female rates has diminished.

Figure 24. Lifetime marijuana use (%), Middle School, by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Table 29. Lifetime marijuana use by sex, Middle School: Guam, 1999 to 2007

Year	Females % (N)	Males % (N)
1999	9.6 (365)	15.4 (260)
2001	9.7 (863)	18.4 (816)
2003	17.1 (502)	24.9 (389)
2005	9.8 (498)	20.0 (495)
2007	9.8 (696)	15.2 (676)

Source: Youth Risk Behavior Survey, 1999 to 2007

INHALANT USE

2007 Highlights

Youth Consumption

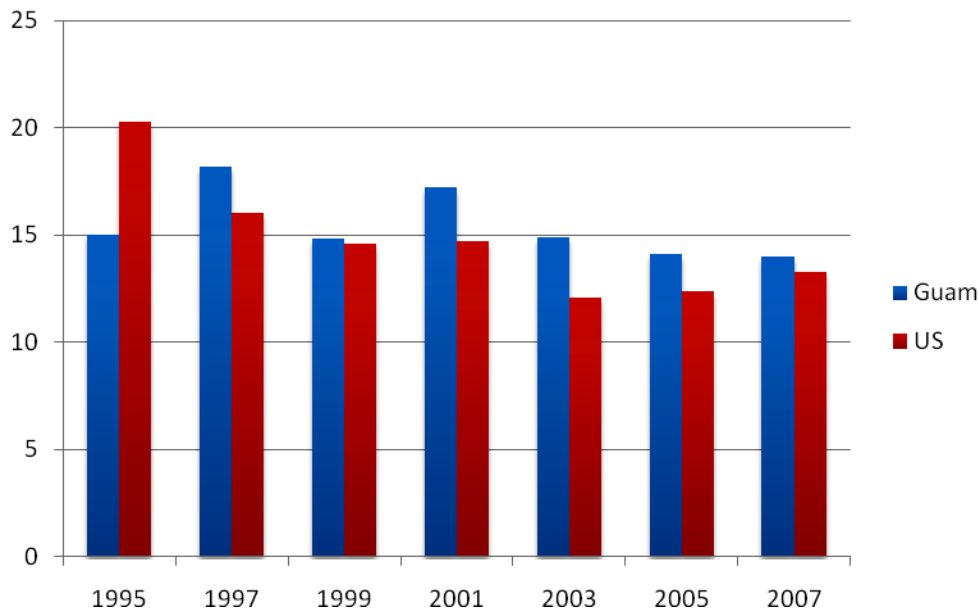
Lifetime inhalant use remains higher on Guam than in the US (Table 30 and Figure 25). Unlike tobacco, alcohol and other illicit substances, inhalant use is higher among middle school youth than among high school youth (Table 31 and Figure 26).

Table 30. Lifetime inhalant use, High School: Guam vs. US, 1995 to 2007

Year	Guam	Nationwide
	Lifetime Inhalant Use % (CI)	Lifetime Inhalant Use % (CI)
1995	15.1 (11.5-19.5)	20.3 (18.3-22.5)
1997	18.2 (15.4-21.3)	16.0 (14.7-17.3)
1999	14.8	14.6 (12.9-16.5)
2001	17.2 (14.9-19.9)	14.7 (13.1-16.6)
2003	14.9	12.1 (10.9-13.4)
2005	14.1	12.4 (11.1-13.8)
2007	14.0 (12.4-15.7)	13.3 (12.1-14.6)

Source: Youth Risk Behavior Survey, 1995 to 2007

Figure 25. Lifetime inhalant use (%), High School: Guam vs. US, 1995 to 2007



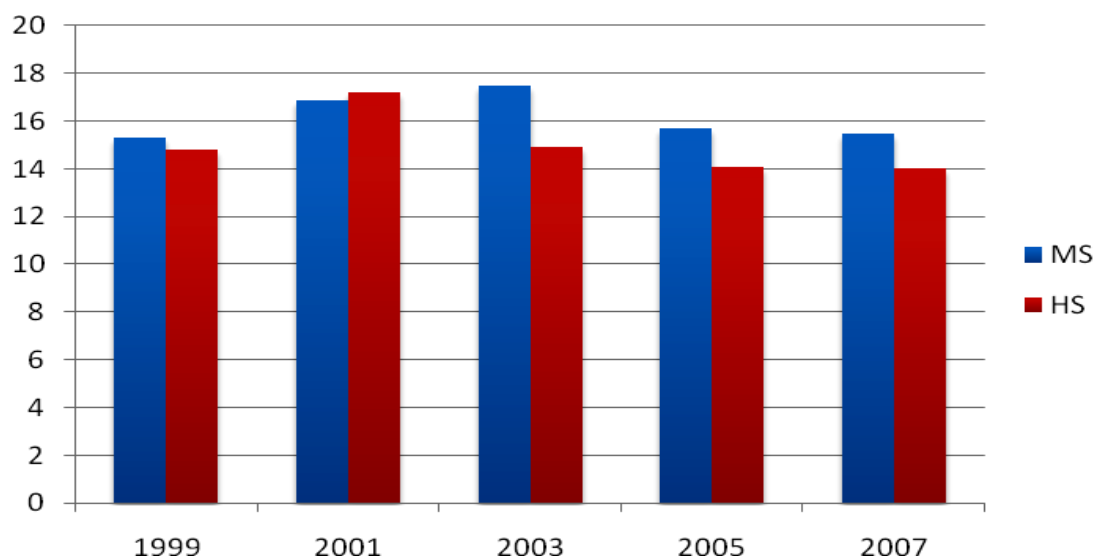
Source: Youth Risk Behavior Survey, 1995 to 2007

Table 31. Lifetime inhalant use, Middle and High School, by sex: Guam vs. US, 1999 to 2007

Year	Middle School			High School		
	Total % (n)	Female % (n)	Male % (n)	Total % (n)	Female % (n)	Male % (n)
1999	15.3 (640)	15.1 (372)	15.9 (264)	14.8 (582)	14.3 (308)	15.4 (273)
2001	16.9 (1698)	17.2 (871)	16.5 (825)	17.2 (1364)	17.0 (697)	17.4 (662)
2003	17.5 (936)	20.1 (522)	14.1 (411)	14.9 (778)	12.3 (381)	17.4 (397)
2005	15.7 (1032)	17.4 (511)	14.0 (520)	14.1 (1242)	15.2 (686)	12.2 (548)
2007	15.5 (1426)	14.8 (723)	16.2 (701)	14.0 (1689)	13.7 (809)	14.1 (869)

Source: Youth Risk Behavior Survey, 1999 to 2007

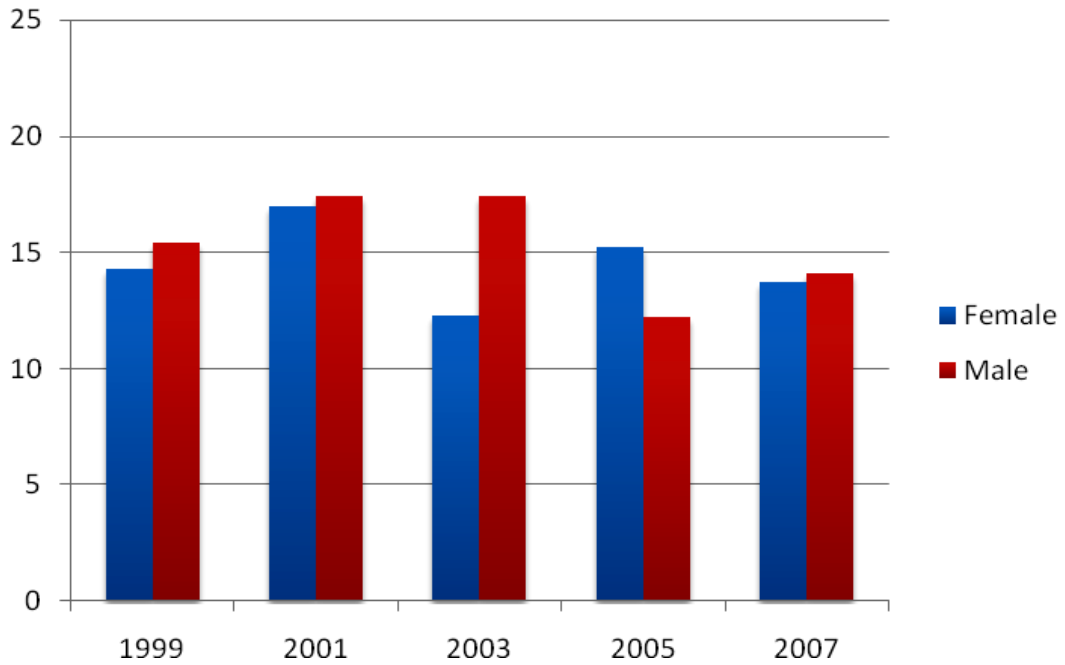
Figure 26. Lifetime inhalant use (%), High School vs. Middle School: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

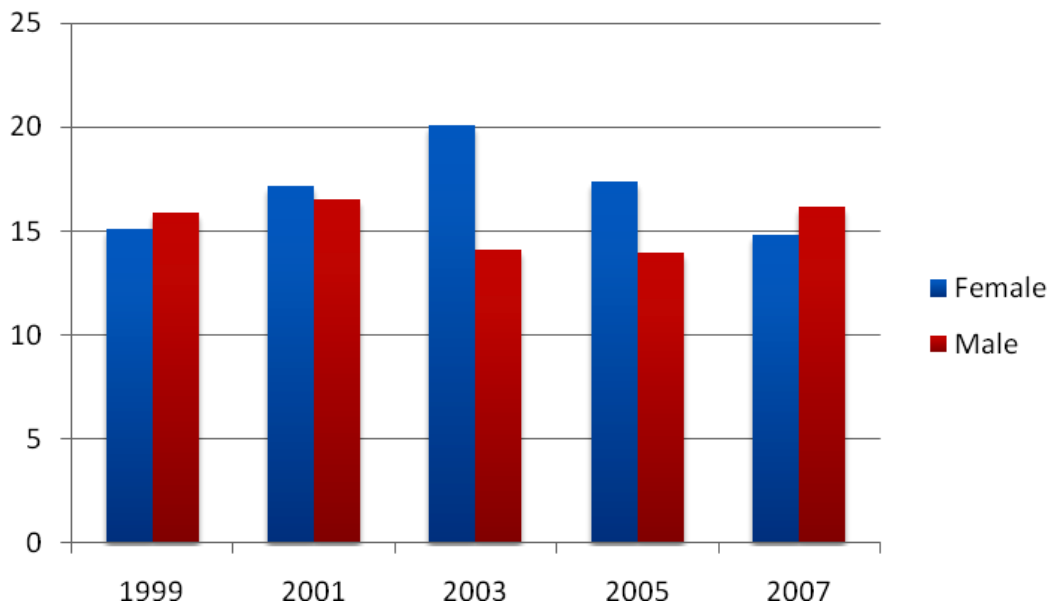
Inhalant use appears similar across the sexes, whether in high school or middle school (Figures 27 and 28). Unlike the other substances of abuse, there do not appear to be large differences in use rates across the different ethnic groups (Table 32 and Figure 29), although Filipinos have a slightly lower rate of lifetime use overall.

Figure 27. Lifetime inhalant use (%), High School, by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Figure 28. Lifetime inhalant use (%), Middle School, by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

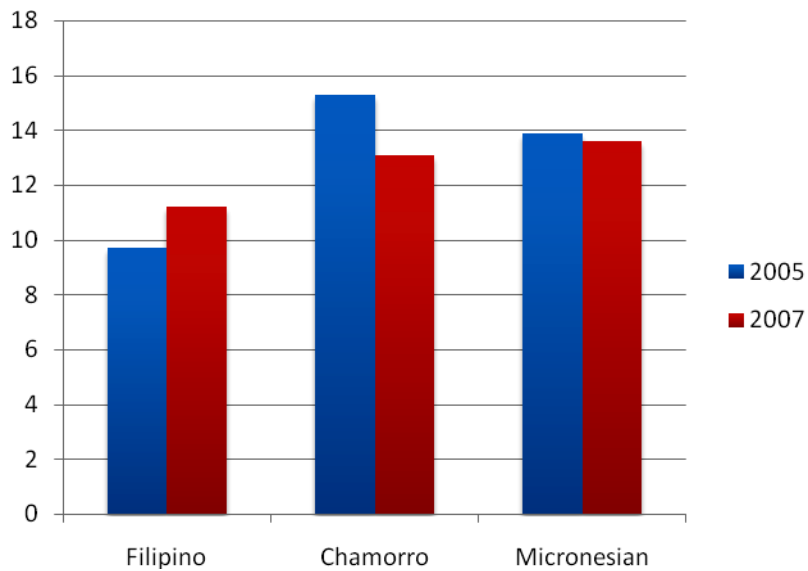
Table 32. Lifetime inhalant use by ethnicity, High School: Guam, 2005 to 2007

Year	Filipino % (n)	Other Asian % (n)	Chamorro % (n)	Micronesian Islander % (n)	White % (n)	Others % (n)
2005	9.7 (298)	11.3 (53)	15.3 (575)	13.9 (108)	11.1* (9)	18.4 (185)
2007	11.2 (358)	20.0 (50)	13.1 (640)	13.6 (140)	36.4* (11)	15.1 (490)

Source: Youth Risk Behavior Survey, 2005 to 2007

*Denotes cells where n < 50.

Figure 29. Lifetime inhalant use (%), High School, by ethnicity: Guam, 2005 to 2007



Source: Youth Risk Behavior Survey, 2005 to 2007

METHAMPHETAMINE (“ICE”) USE

2007 Highlights

Adult Consumption

Of the 800 respondents in the 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.

The US District Court of Guam, US Probation Office conducted drug testing on 176 clients in 2007. Of these, 136 (77%) were male and 40 (23%) were female. A total of 3318 drug tests were conducted on these clients, with 93 (2.8%) positive results. Table 33 depicts a summary of the positive drug test results. The results show that methamphetamines and amphetamines are the most commonly detected substances in positive drug tests, followed by cannabinoids (marijuana).

Table 33. Summary of positive drug test results for clients of the US District Court of Guam, US Probation Office, 2007

Drug/Drugs	Number of positive tests	Percent of positive tests
Amphetamine, Methamphetamine	31	33.3%
Methamphetamine	27	29.0%
Cannabinoids	21	22.6%
Opiates	9	9.7%
Cannabinoids, Amphetamine, Methamphetamine	2	2.2%
Cannabinoids, Methamphetamine	2	2.2%
Cannabinoids, Opiates	1	1.1%

Source: US District Court of Guam, US Probation Office statistics, 2007

Youth Consumption

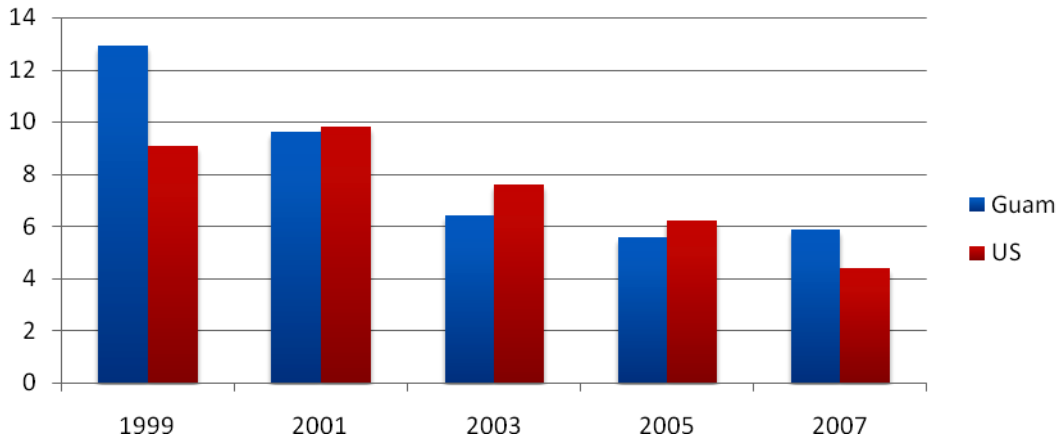
Lifetime ice use among high school students has been decreasing since 1999 (Table 34, Figure 30). However, in 2007, lifetime “ice” use was unchanged on Guam, while the rate decreased for the US. Hence, in 2007, Guam surpassed the US rate for “ice” use. Ice use is higher for males (Figure 31).

Table 34. Lifetime “ice” use by sex, High School: Guam vs. US, 1999 to 2007

Year	Guam			Nationwide		
	Total % (CI)	Female % (CI)	Male % (CI)	Total % (CI)	Female % (CI)	Male % (CI)
1999	12.9	13.5	12.3	9.1 (7.9-10.5)	8.4 (7.1-10.0)	9.9 (9.3-11.7)
2001	9.6 (7.8-11.8)	7.0 (5.3-9.3)	12.0 (9.2-15.4)	9.8 (8.3-11.5)	9.2 (7.5-11.2)	10.5 (9.0-12.2)
2003	6.4	5.5	7.2	7.6 (6.7-8.7)	6.8 (5.9-7.8)	8.3 (7.1-9.8)
2005	5.6	3.4	8.0	6.2 (5.3-7.2)	6.0 (4.9-7.4)	6.3 (5.3-7.4)
2007	5.9 (4.7-7.3)	3.7 (2.5-5.4)	7.5 (5.6-9.9)	4.4 (3.7-5.3)	4.1 (3.2-5.3)	4.6 (3.8-5.5)

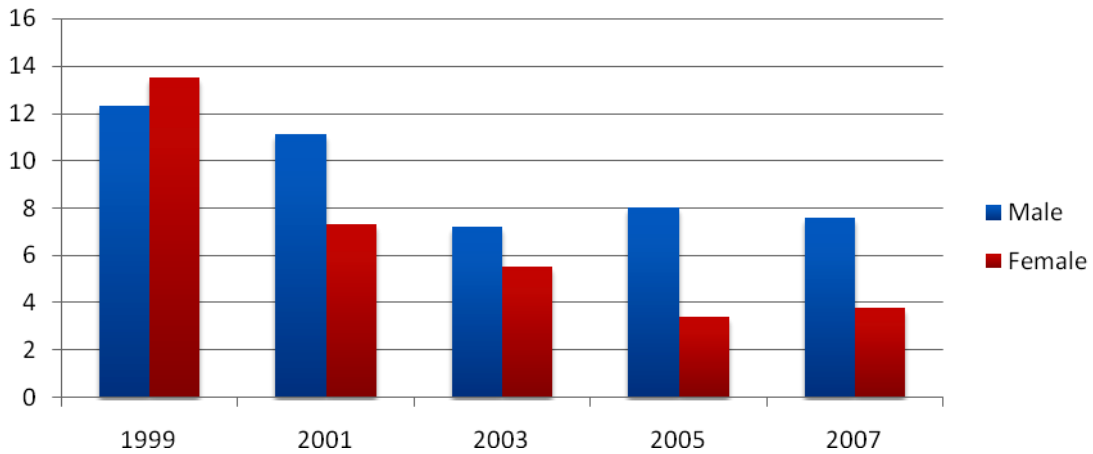
Source: Youth Risk Behavior Survey, 1999 to 2007

Figure 30. Lifetime “ice” use (%), High School: Guam vs. US, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Figure 31. Lifetime “ice” use (%), High School, by sex: Guam, 1999 to 2007



Source: Youth Risk Behavior Survey, 1999 to 2007

Other Illicit Drug Use Consequences

Illicit drug use contributes to suicide, which is the 5th leading cause of death on Guam. While recent data has yet to be released, suicide rates on Guam are among the highest in the Western Pacific region.

At present, no new data on drug-related arrests and crime are available for the SEW’s review. Please refer to the previous edition of this profile for the 2006 data.

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