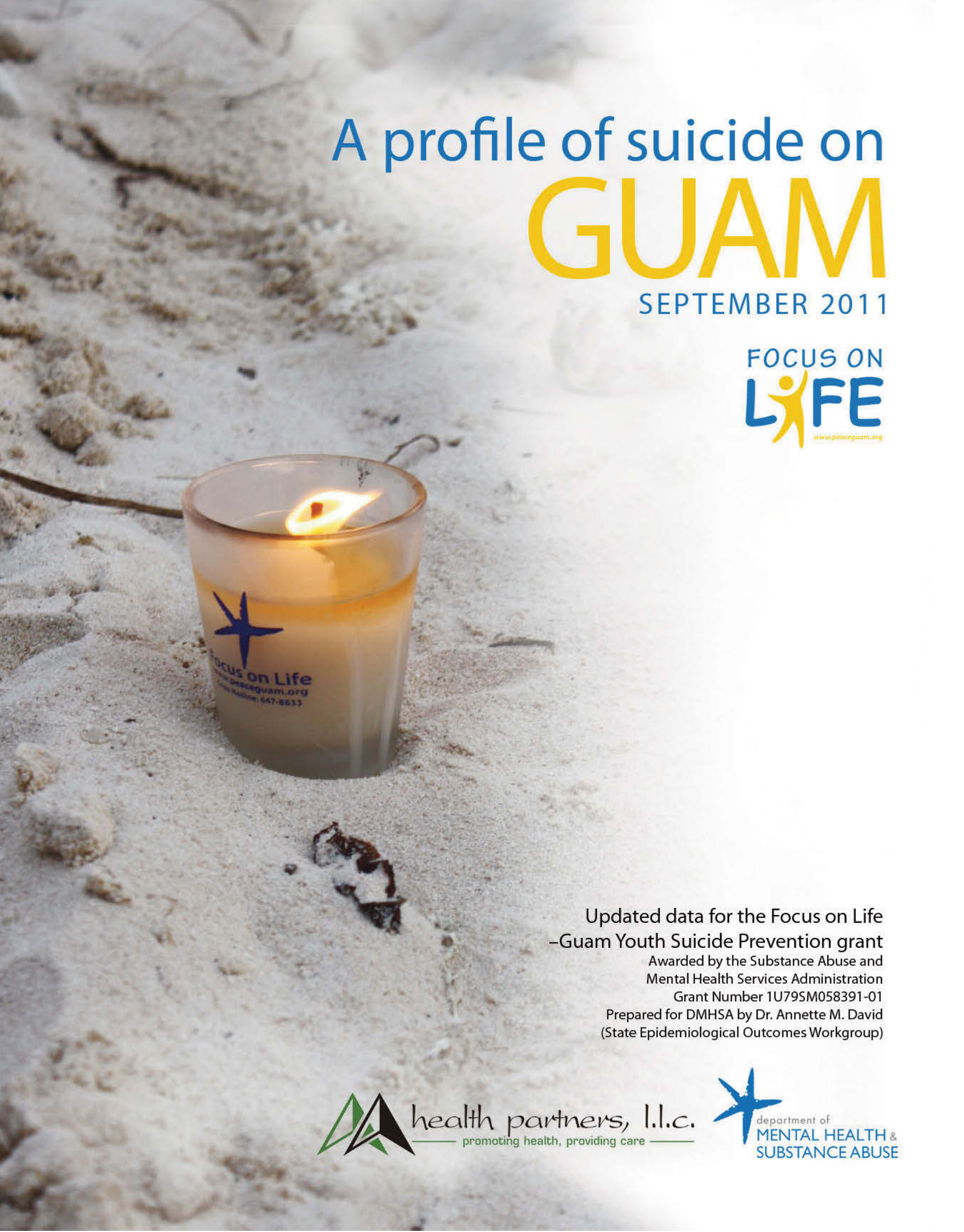


A profile of suicide on GUAM

SEPTEMBER 2011

FOCUS ON LIFE
www.peaceguam.org

Updated data for the Focus on Life –Guam Youth Suicide Prevention grant

Awarded by the Substance Abuse and Mental Health Services Administration
Grant Number 1U79SM058391-01

Prepared for DMHSA by Dr. Annette M. David
(State Epidemiological Outcomes Workgroup)

health partners, l.l.c.
promoting health, providing care

department of MENTAL HEALTH & SUBSTANCE ABUSE

ACKNOWLEDGEMENTS

This profile is the result of the collaborative efforts of several agencies and individuals, under the leadership of Guam Department of Mental Health and Substance Abuse (DMHSA) Prevention and Training Branch (Ms. Barbara S.N. Benavente, Supervisor).

For this update, data were provided by the Office of the Guam Medical Examiner, with permission from Dr. Aurelio Espinola.

Local data collection was undertaken by Ms. April Aguon. Ms. Aguon also was responsible for data management and maintenance of the grant's suicide database. Ms. Helene Paulino provided assistance in data collection and supervised the information dissemination to community stakeholders.

Dr. Annette M. David, representing Health Partners, L.L.C., conducted the data analysis, and authored this profile. Ms. Roxanne Mad, also with Health Partners, L.L.C., developed the graphic lay-out and formatted the document for printing.

Funding and technical support for this profile was provided in part by the DMHSA Focus on Life Grant with SAMHSA and in part by the DMHSA State Epidemiological Outcomes Workgroup subcontract with Synectics.

table of CONTENTS

INTRODUCTION AND BACKGROUND

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

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

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

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

In 2010, DMHSA published an updated version of the Profile with additional information on suicide mortality for the years 2008-2009. This current document represents the second update of the Profile, and contains suicide mortality data up until August 2011.

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

METHODOLOGY AND DATA SOURCES

METHODOLOGY

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

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

DATA SOURCES AND ISSUES

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

For this reporting period, no new data from the Youth Risk Behavior Survey (YRBS) were available. The 2009 YRBS was compromised by a change in the consent procedure. Previously, blanket consent was accepted from the schools, allowing students to participate in the survey. For 2009, the Institutional Review Board (IRB) that provided the IRB approval for the survey, required students to deliver individual signed parental consent forms as a condition for participation. Many of the randomly selected participants failed to provide this form, and could not be included in the survey. Thus, survey turnout was extremely low, and results could not be weighted. After serious deliberations with their partners at the US Centers for Disease Control and Prevention (CDC) School and Adolescent Health program, the Guam Department of Education (GDOE) decided to invalidate the 2009 YRBS. Hence this data source was not available for this update, and the 2007 YRBS was used for data on mental health indicators.

Data on adult alcohol use were taken from the BRFSS, which is overseen by Guam DPHSS.

RESULTS AND DISCUSSION

Suicide Deaths

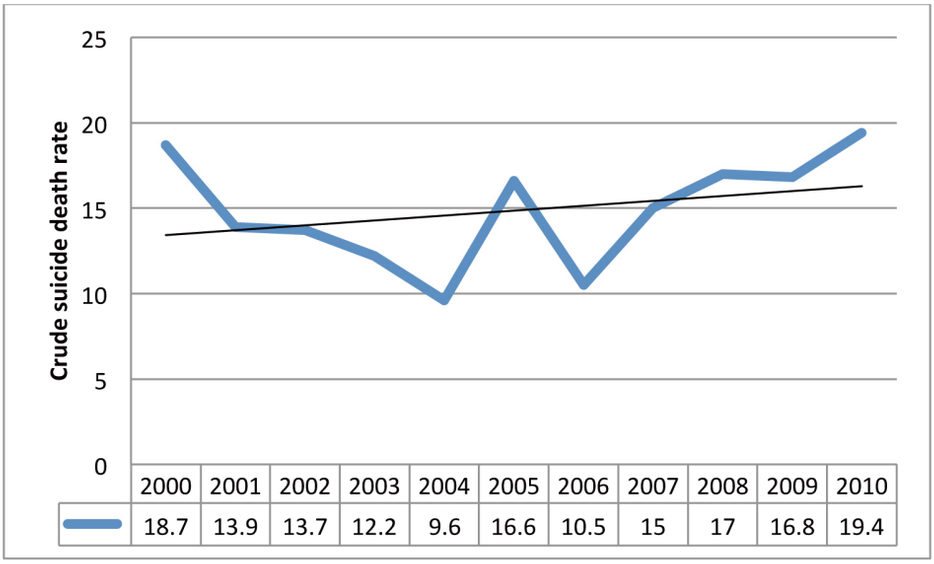
Table 1 represents the numbers and crude population death rates of suicide per year from 2000 to 2010. Annual suicide death rates were calculated using the estimated mid-year population counts as reported in the Guam Statistical Yearbook. However, for 2010, the actual mid-year population, based on the 2010 census, was used. Since the actual population count was lower than the projected population (based on the 2000 census), the crude death rate increased. Figure 1 depicts the yearly trend in suicide rates for the island.

Table 1. Suicide deaths and annual crude suicide death rates, Guam, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Deaths	29	22	22	20	16	28	18	26	30	30	31
Suicide death rate (per 100,000)	18.7	13.9	13.7	12.2	9.6	16.6	10.5	15.0	17.0	16.8	19.4

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

Figure 1. Annual trend in suicide crude death rates, Guam, 2000-2010



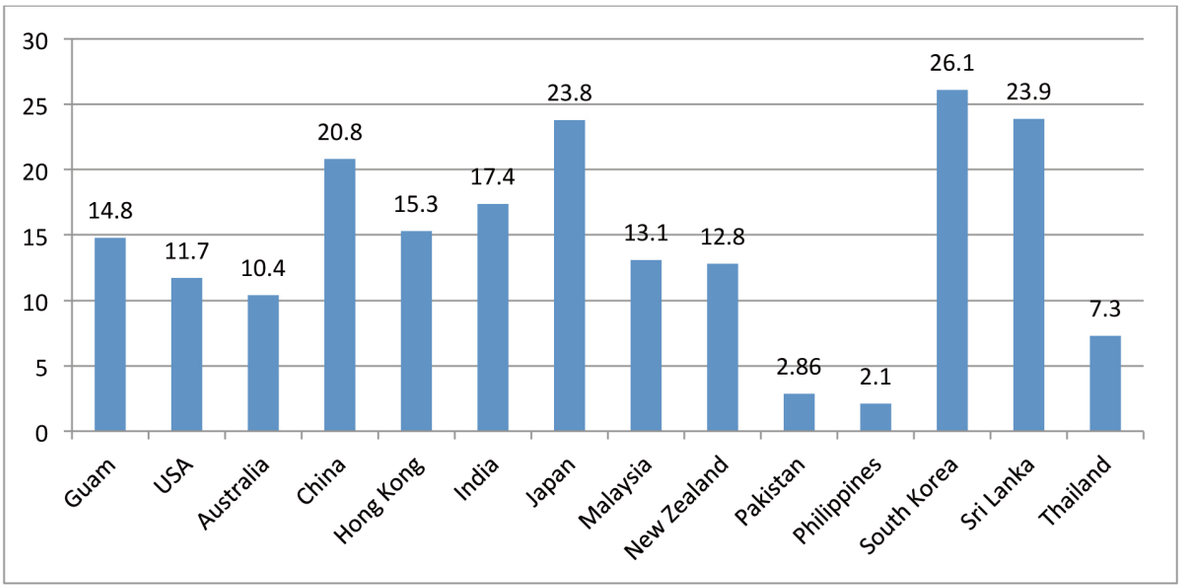
Source: Calculated based on data taken from the Office of Guam's Chief Medical Examiner, DPHSS Vital Statistics and Guam Statistical Yearbook

Because overall, the numbers are small, it is difficult to make conclusions about suicide trends over time. However, trend analysis reveals an upward trend line, indicating that over time, suicide death rates have risen. On average, from 2000 to 2010, there were 26.4 suicide deaths per year, approximately one suicide death every 2 weeks. The annual suicide death rate ranged from 9.6 to 19.4 per 100,000 people during this period, with a mean annual rate

of 14.8 per 100,000. Notably, the crude suicide death rate for 2010 is the highest for the decade. However, this is partly due to the use of the actual 2010 mid-year population count, which was recently released by the 2010 Census. The actual count was lower than the projected population count based on the 2000 census, upon which the mid-year populations of 2001 to 2009 are derived.

Figure 2 compares the average annual crude suicide death rate on Guam with the US and other countries in the Asia-Pacific region. Guam's rate is significantly higher than countries such as the Philippines, with a suicide death rate of under 3 per 100,000, but it is considerably lower that the rates in countries such as Japan and South Korea. Individuals from these three countries comprise close to 30% of the local population on Guam. The latest (preliminary) crude suicide death rate for the US is derived from 2009 mortality statistics, and is 11.9 per 100,000 people. Guam's crude death rate from suicide is over 20% higher than the national rate.

Figure 2. Comparison of Guam crude suicide death rate with other Asia-Pacific countries



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

Table 2 compares crude and age-adjusted death rates from suicide for 2008 to 2010. Age adjustment to the standard US 2000 population resulted in a significant increase in the suicide death rate for Guam. When comparing age-adjusted rates, the Guam rate is more than double the US rate.

Table 2. Comparison of crude and age-adjusted suicide rates, Guam, 2008-2010 and US, 2009 (preliminary)

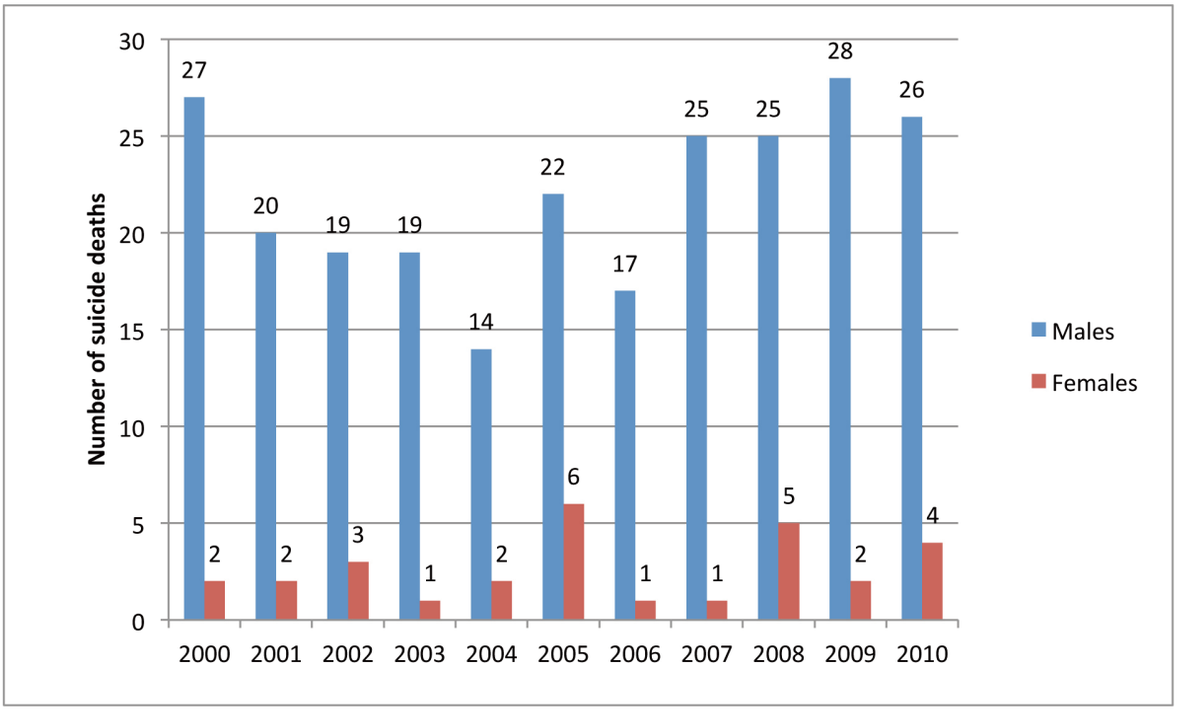
	Guam 2008	Guam 2009	Guam 2010	USA 2009
Deaths	30	30	31	36,547
Crude suicide death rate per 100,000	17.0	16.8	19.4	11.9
Age-adjusted suicide death rate per 100,000*	25.8	20.1	25.9	11.7

**Adjusted to the US 2000 population*

Sources: Office of the Chief Medical Examiner (Guam data) Kochanek KD, Xu JQ, Murphy SL, Minino AM, Kung HC. Deaths: Preliminary data for 2009. National vital statistics reports; vol 59 no 4. Hyattsville, MD: National Center for Health Statistics. 2011. (USA data)

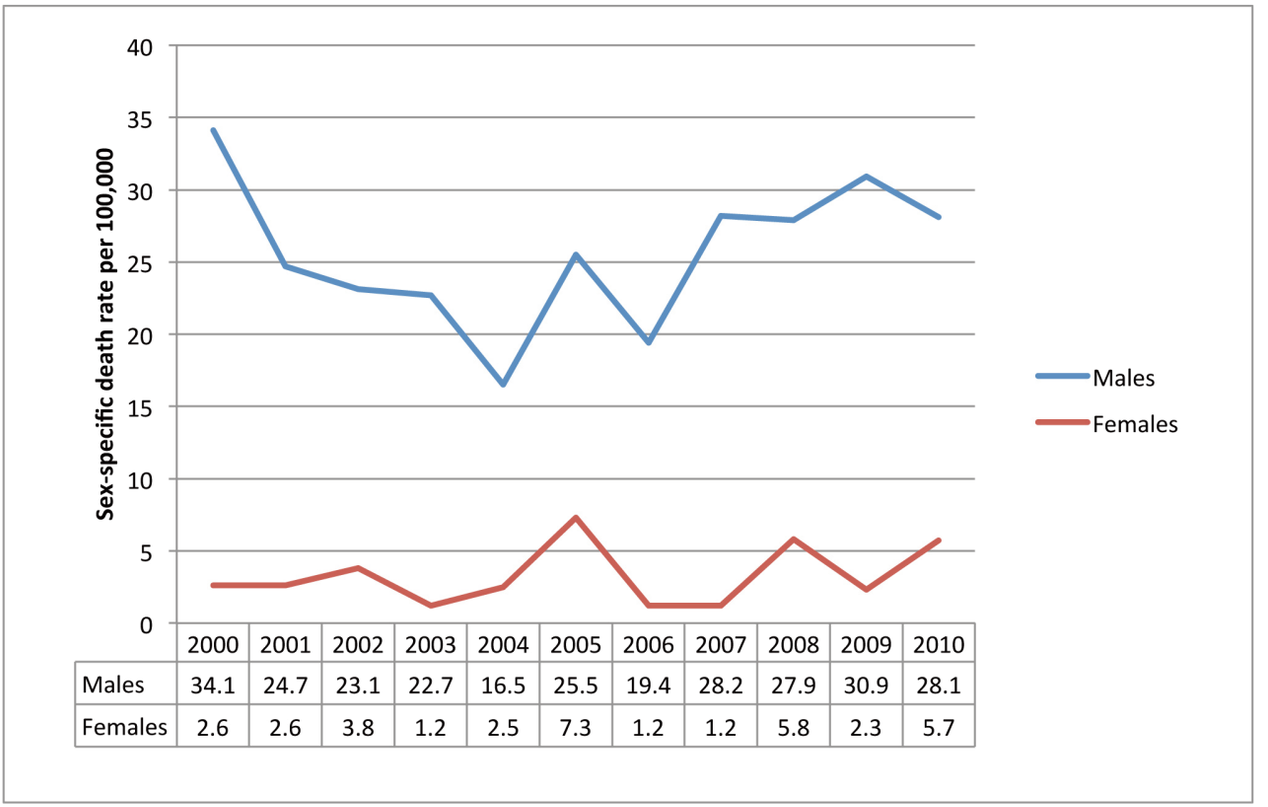
Figures 3 and 4 show respectively, the total numbers of suicide deaths and suicide rates per year from 2000 to 2010, disaggregated by sex. The data clearly show that suicide deaths on Guam occur predominantly among males, who outnumber suicide deaths among females with an average ratio of 6.6:1. In the US, overall, males outnumber females in suicide deaths by a ratio of 4:1. From 2000 to 2010, about 87% of deaths by suicide on Guam happened among males.

Figure 3. Suicide deaths by sex, Guam, 2000-2010



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

Figure 4. Annual suicide death rate by sex, Guam, 2000-2010



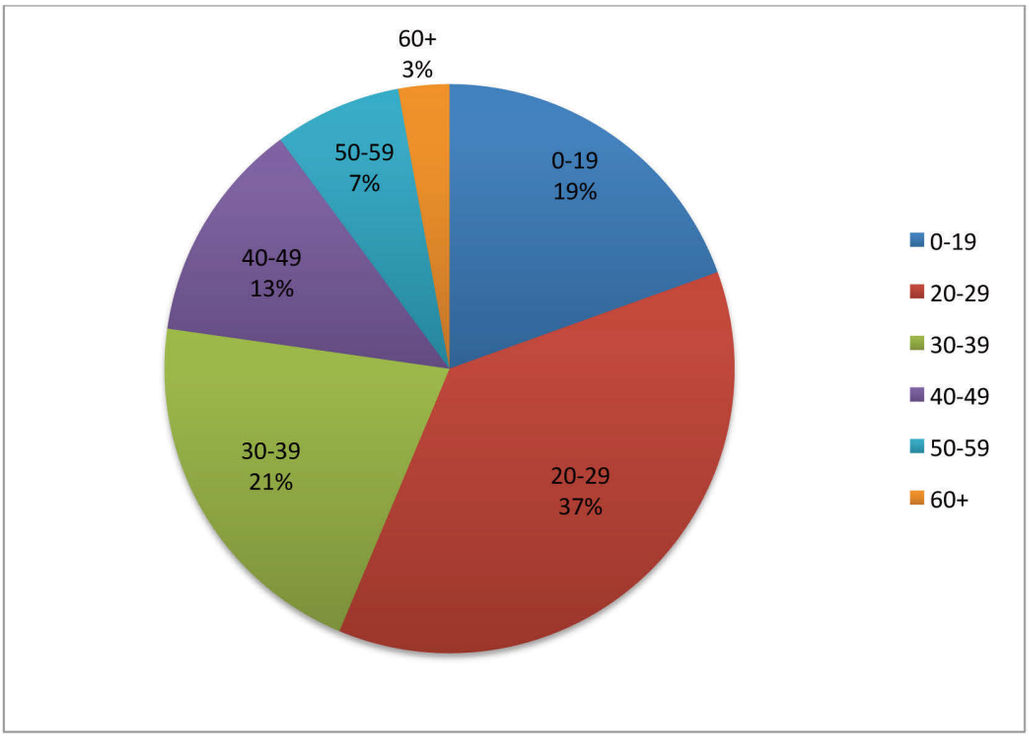
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Males	34.1	24.7	23.1	22.7	16.5	25.5	19.4	28.2	27.9	30.9	28.1
Females	2.6	2.6	3.8	1.2	2.5	7.3	1.2	1.2	5.8	2.3	5.7

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

The previous version of this profile noted that suicide rates for both sexes are similar in China, unlike Guam. Guam's situation more closely resembles Japan, South Korea, and the US mainland, with male suicide rates higher than female rates, but the sex difference is much more marked on Guam (Figure 4).

Suicide deaths disaggregated by age predominate among youth and young adults aged 10-29 on Guam (Figures 5 and 6). Cumulatively from 2000 to 2010, 20% of suicide deaths occurred in those aged 10-19, and 37% of deaths happened among those aged 20-29 years. Altogether, close to 60% of all suicide deaths on Guam from 2000-2010 occurred in those younger than 30 years. Thus, deaths by suicide on Guam occur predominantly among young people.

Figure 5. Cumulative suicide deaths by age, as percentages of a whole, Guam, 2000-2010

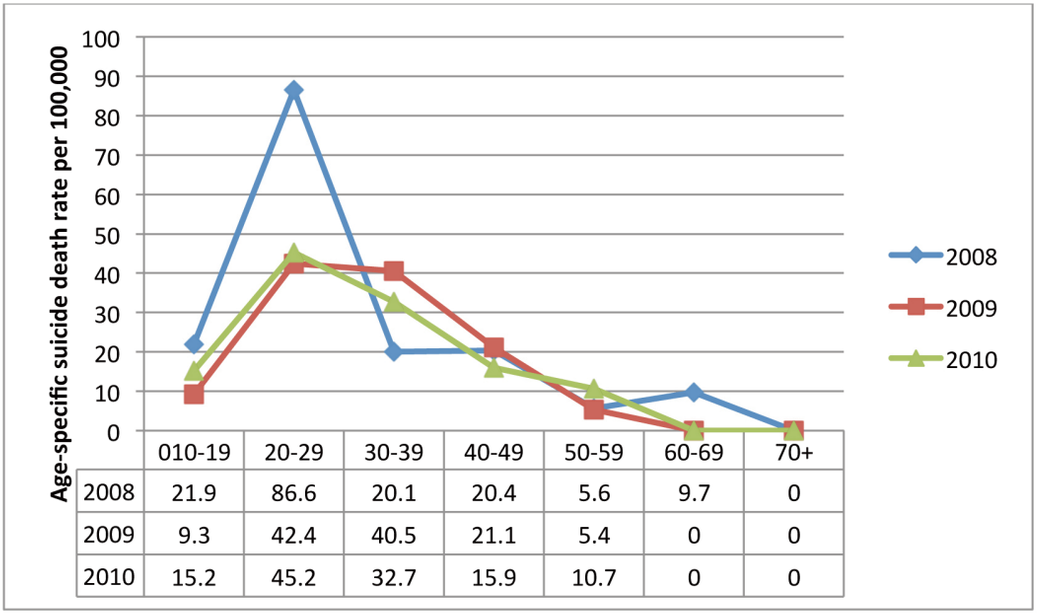


Sources: Office of the Chief Medical Examiner and DPHSS Vital Statistics

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

Figure 6 shows age-specific suicide death rates for Guam for the years 2008 to 2010. The likelihood of dying from suicide is highest in the 20-29 year old age group.

Figure 6. Age-specific suicide death rates, Guam, 2008-2010



	010-19	20-29	30-39	40-49	50-59	60-69	70+
2008	21.9	86.6	20.1	20.4	5.6	9.7	0
2009	9.3	42.4	40.5	21.1	5.4	0	0
2010	15.2	45.2	32.7	15.9	10.7	0	0

Source: Office of the Chief Medical Examiner
Note: Mid-year population estimates obtained from the 2008 Guam Statistical Yearbook

Table 3 depicts the cumulative number and percentage of suicide deaths by ethnicity on Guam for the period 2000 to 2010. Death by suicide occurs most frequently among Chamorros, followed by Chuukese and those of Filipino or "Other" ethnicity.

Table 3. Cumulative suicide deaths by ethnicity, Guam, 2000-2010

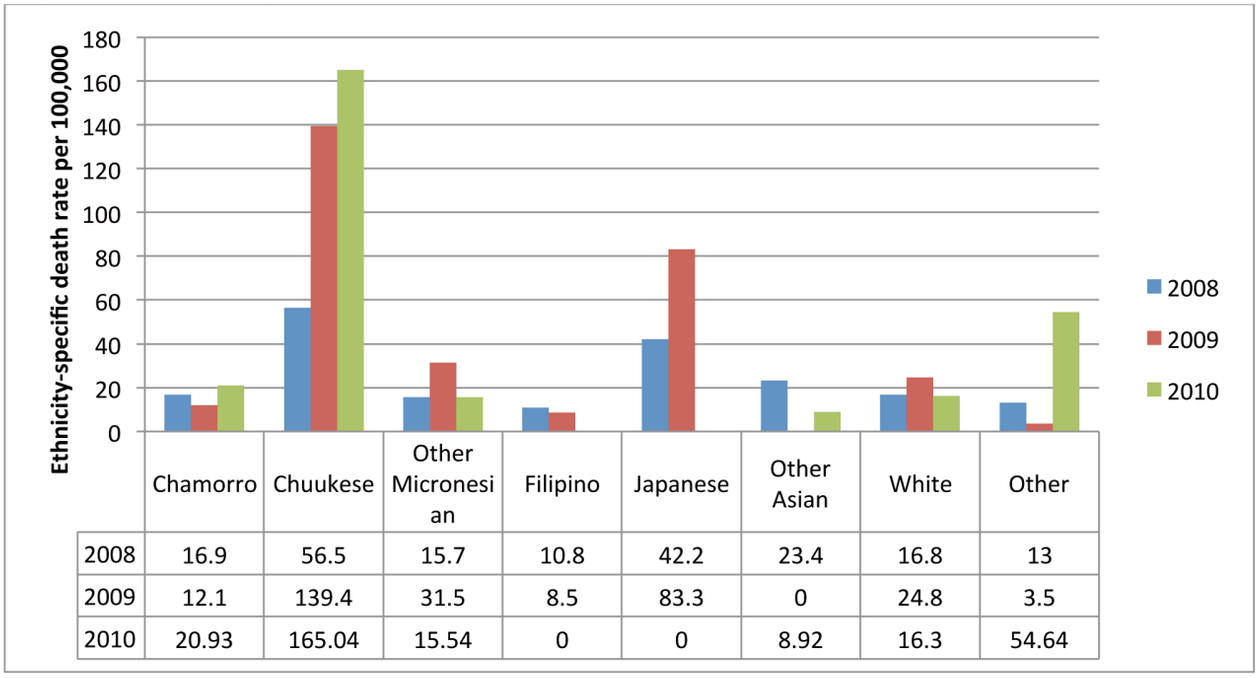
Ethnicity	Number	Percentage
Chamorro	104	38.2%
Filipino	35	12.9%
Chuukese	65	23.9%
Other FSM	15	5.5%
White	13	7.5%
Japanese	5	1.8%
Other Asian	10	3.7%
Other	30	11.0%

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

However, when assessing ethnic breakdown, it is important to consider the relative contribution of each ethnic group to the total population. Figure 7 depicts the ethnicity-specific suicide death rate per 100,000 for the years 2008-2010. Suicide death rates are highest for Chuukese, followed by Japanese, Other Micronesians, Whites and Chamorros. Based on this information, it would appear that suicide death risk on Guam is highest among Chuukese, Chamorros and Japanese. However, caution is needed when interpreting these data, as the

absolute numbers, especially for Japanese, are small.

Figure 7. Ethnicity-specific suicide death rates, Guam, 2008-2010

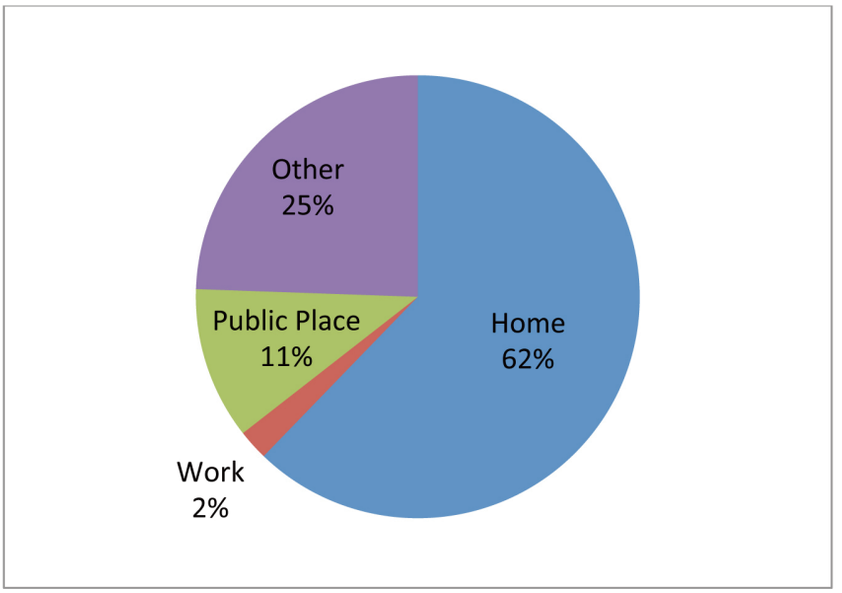


	Chamorro	Chuukese	Other Micronesian	Filipino	Japanese	Other Asian	White	Other
2008	16.9	56.5	15.7	10.8	42.2	23.4	16.8	13
2009	12.1	139.4	31.5	8.5	83.3	0	24.8	3.5
2010	20.93	165.04	15.54	0	0	8.92	16.3	54.64

Source: Office of the Chief Medical Examiner
Note: Mid-year population estimates obtained from the 2008 Guam Statistical Yearbook

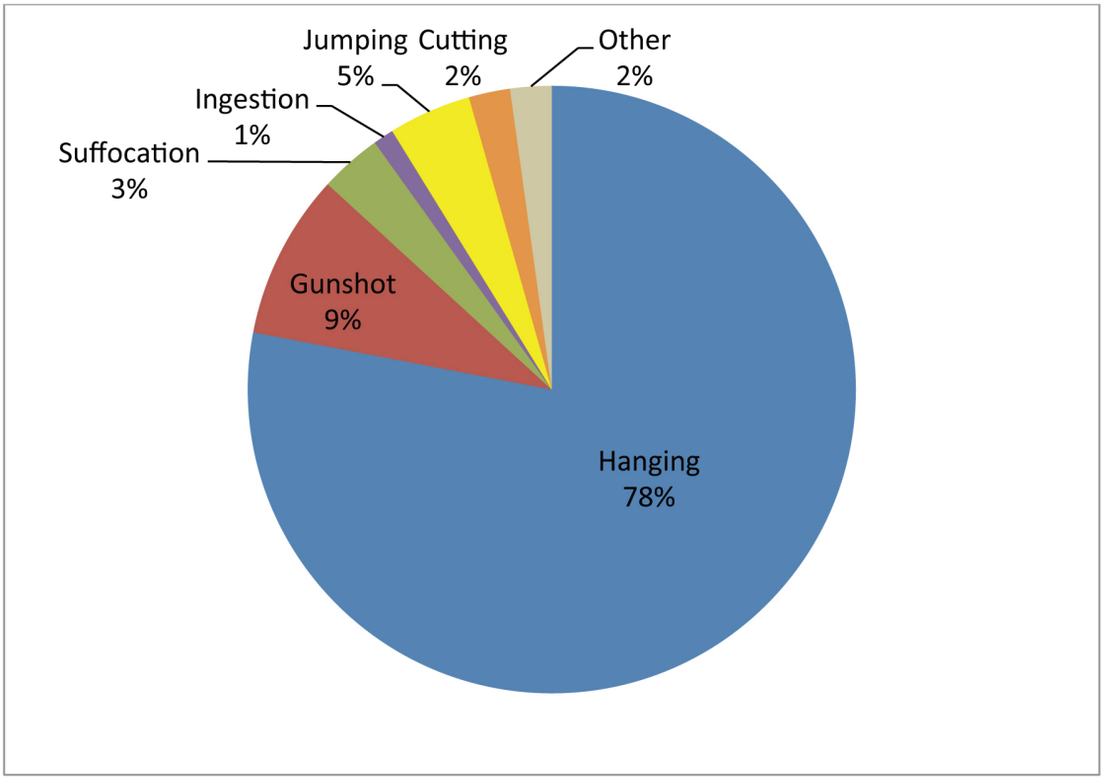
Figures 8 and 9 depict the site and method of suicide for 2008-2010 data. Over 60% of suicides during this period were committed at home. Only 11% of suicides were committed in a public place. Over three-fourths (78%) of completed suicides were by hanging. This contrasts markedly from the pattern in the US mainland, where suicide by firearms was the predominant method.

Figure 8. Site of suicide, Guam, 2008-2010



Source: Office of the Chief Medical Examiner

Figure 9. Method of suicide, Guam, 2008-2010



Source: Office of the Chief Medical Examiner

Table 4 compares the most frequent methods for suicide in the US mainland with Guam, disaggregated by sex. Unlike the US, where suicide deaths by firearms rank second for females, no female suicide deaths in Guam involved firearms. Hanging is the predominant method of suicide in Guam, regardless of sex. However, a larger proportion of males choose hanging.

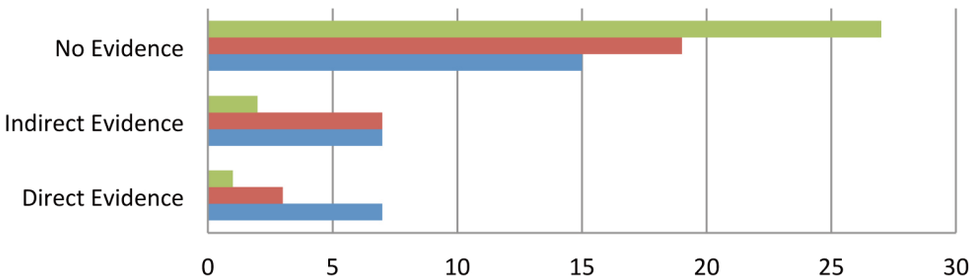
Table 4. Suicide methods, by sex, Guam versus US mainland

US Mainland (2006)		
Suicide by:	Males (%)	Females (%)
Firearms	56	31
Suffocation	23	19
Poisoning	13	40
Guam (2008-2010)		
Suicide by:	Males (%)	Females (%)
Hanging	80	67
Gunshot	10	0
Suffocation/Jumping	1.3/2.5	16.7/16.7

Sources: Office of the Chief Medical Examiner (Guam), National Institute for Mental Health (USA) at http://www.nimh.nih.gov/health/publications/suicide-in-the-us-statistics-and-prevention/index.shtml

Figure 10 shows what type of evidence of intent the suicide victim left, for 2008 to 2010, in Guam. Twelve percent (12%) of those who died of suicide from 2008-2010 left direct evidence (suicide note) of intention to commit suicide. About one in five (18%) left indirect evidence of intent. Altogether, about 1 on three (30%) of suicides from 2008 to 2010 left evidence of their intent.

Figure 10. Evidence of intention to commit suicide, Guam, 2008-2010



	Direct Evidence	Indirect Evidence	No Evidence
2010	1	2	27
2009	3	7	19
2008	7	7	15

Source: Office of the Chief Medical Examiner

Other correlates of suicide deaths in Guam from 2008 to 2010 included the following:
* 26% of suicide deaths in 2008-2010 involved alcohol consumption.
* 10% involved use of other drugs of abuse.

SUICIDAL IDEATION AND ATTEMPTS AMONG YOUTH

(NOTE: This section was originally presented in the baseline profile and is re-printed here for completion. The non-release of the 2009 YRBS data prevented further data updates. The 2011 YRBS data will be released in late 2011 or early 2012.)

The 2007 Guam YRBS asked 4 questions on suicide:
1. During the past 12 months, did you ever seriously consider attempting suicide?
2. During the past 12 months, did you make a plan about how you would attempt suicide?
3. During the past 12 months, how many times did you actually attempt suicide?
4. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?

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

Table 5 compares Guam data with US averages for each of these 4 questions on suicide. Guam surpasses the US average in all four indicators, signifying an elevated likelihood of suicidal ideation and suicide attempts among youth on Guam. This reaffirms the appropriateness of the identified target population (those between 10-24 years of age) of the suicide prevention grant.

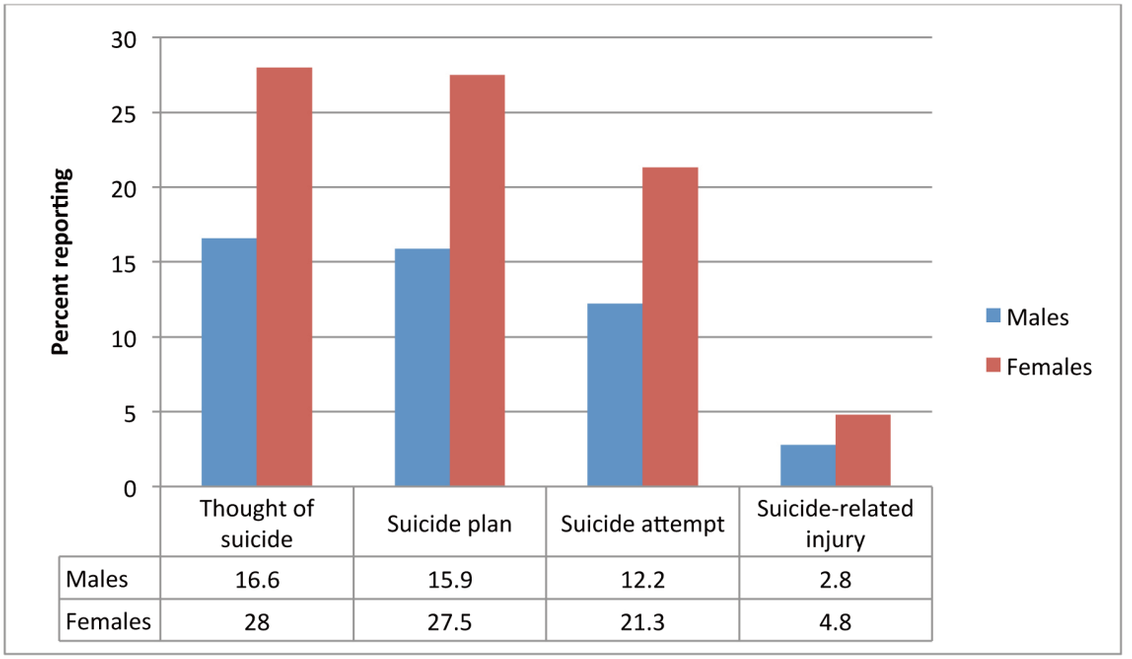
Figures 11 and 12 illustrate the prevalence of suicidal ideation and suicide attempts among high school youth disaggregated by sex and race. For this age group, females are almost twice as likely as males to think about suicide, make a plan to commit suicide and attempt suicide. Chamorros and Micronesian Islanders are most likely to think about suicide and make a plan to commit suicide, but Micronesian Islanders exhibit the highest likelihood to actually attempt suicide. This finding is consistent with data from DPHSS that identifies Micronesian Islanders, particularly Chuukese, at the highest risk for death by suicide.

Table 5. Prevalence of suicidal ideation and suicide attempts among high school youth, Guam vs. US average, 2007

Indicator (within the past 12 months preceding the survey)	Total USA (%)	Total Guam (%)	Statistically significant difference?
Percentage of students who seriously thought about killing themselves	14.5	22.0	YES
Percentage of students who made a plan about killing themselves	11.3	21.4	YES
Percentage of students who tried to kill themselves	6.9	16.9	YES
Percentage of students who made a suicide attempt that resulted in an injury, poisoning or overdose that had to be treated by a doctor or nurse	2.0	3.8	YES

Source: GDOE, 2007 YRBS

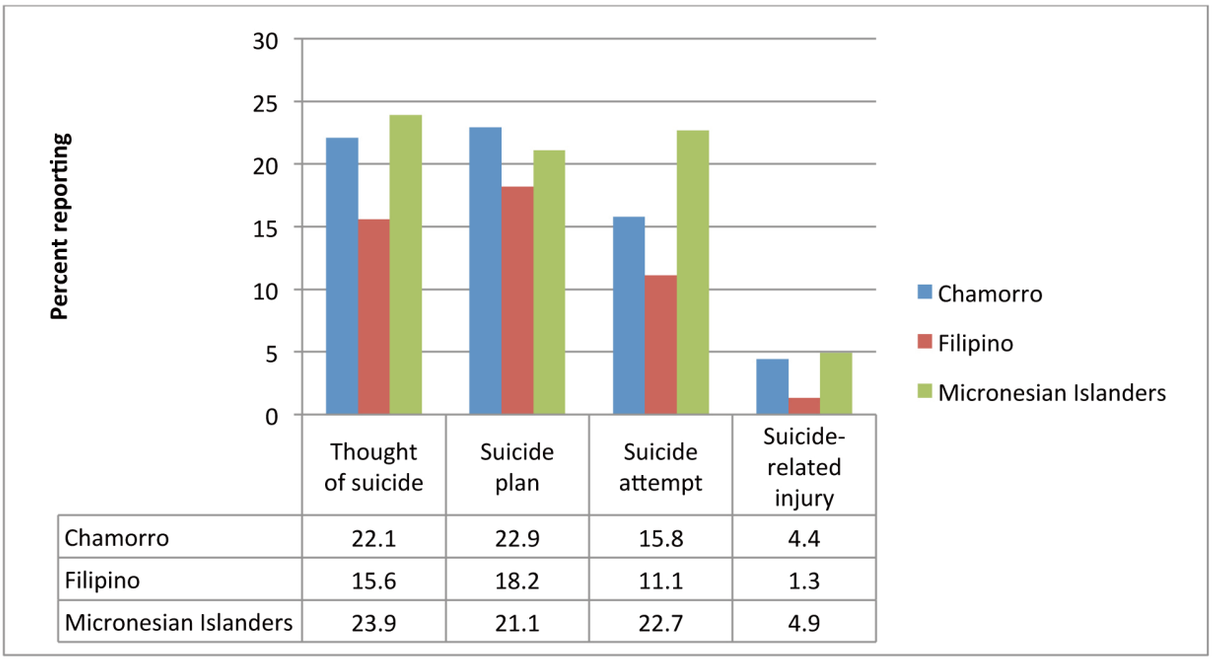
Figure 11. Suicidal ideation and suicide attempts by sex, high school, Guam, 2007



	Thought of suicide	Suicide plan	Suicide attempt	Suicide-related injury
Males	16.6	15.9	12.2	2.8
Females	28	27.5	21.3	4.8

Source: GDOE, 2007 YRBS

Figure 12. Suicidal ideation and suicide attempts by ethnicity, high school, Guam, 2007



	Thought of suicide	Suicide plan	Suicide attempt	Suicide-related injury
Chamorro	22.1	22.9	15.8	4.4
Filipino	15.6	18.2	11.1	1.3
Micronesian Islanders	23.9	21.1	22.7	4.9

Source: GDOE, 2007 YRBS

CORRELATES OF SUICIDAL IDEATION AND SUICIDAL ATTEMPTS AMONG YOUTH

Because GDOE made the 2007 database available to us, we were able to conduct tests for correlation using chi-square analysis on a number of relevant factors that include body image, sexual history, violent behavior and the use of tobacco, alcohol and illegal drugs. Table 6 summarizes the results of this statistical analysis. Of the 11 potential attributes, 10 were significantly correlated with suicidal ideation and suicide attempts. The single uncorrelated factor was describing oneself as overweight (body image). This information provides insights into the types of behaviors to target when developing suicide prevention interventions.

Table 7 shows the prevalence of these attributes on Guam as compared to the US averages. Five of the attributes--- (1) hit by a boyfriend/girlfriend in the past year, (2) forced to have sex, (3) felt sad for at least 2 weeks over the past year, (4) current daily smoker and (5) current marijuana use---have prevalence rates that are statistically significantly higher on Guam than the US. This indicates the need for integrated suicide prevention approaches that also ad-

dress skills in developing healthy relationships, physical and sexual violence prevention, tobacco and substance abuse prevention and control and aggressive screening and treatment

Table 6. Potential correlates of suicidal ideation and suicide attempts, high school, Guam, 2007

Factor	Thought about suicide	Made a plan to commit suicide	Attempted suicide
Hit by a BF/GF within the past year	YES	YES	YES
Forced to have sex	YES	YES	YES
Sad for at least 2 weeks over the past 12 mos.	YES	YES	YES
Describe self as gay, lesbian, bisexual	YES	YES	YES
Current smoker	YES	YES	YES
Daily smoker	YES	YES	YES
Current alcohol use	YES	YES	YES
Binge drinking	YES	YES	YES
Current Marijuana use	YES	YES	YES
Lifetime ice use	YES	YES	YES
Overweight	NO	NO	NO

Source: GDOE, 2007 YRBS

Table 7. Comparison of prevalence of potential correlates, Guam vs. US averages, 2007

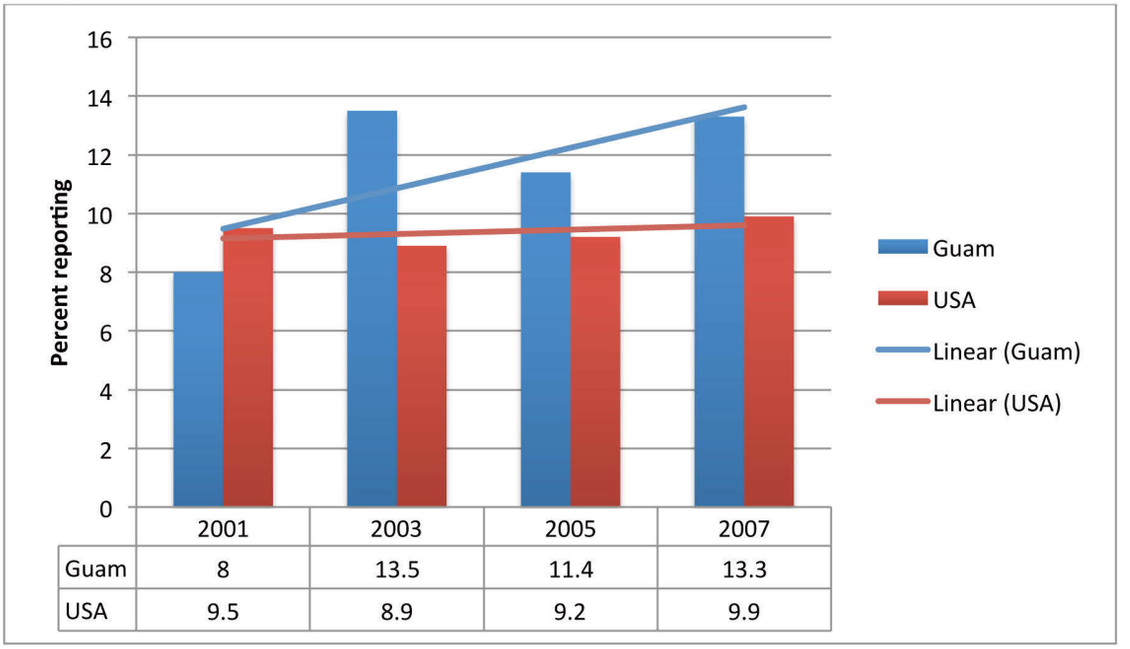
Factor	US (average) (%)	Guam (%)	Statistically higher on Guam
Hit by a BF/GF within the past year	9.9	13.3	**YES**
Forced to have sex	7.8	12.9	**YES**
Sad for at least 2 weeks over the past 12 mos.	28.5	41.5	**YES**
Describe self as gay, lesbian, bisexual	---	7.4	---
Current smoker	20.0	23.1	NO
Daily smoker	12.4	17.0	**YES**
Current alcohol use	44.7	34.9	NO
Binge drinking	26.0	19.2	NO
Current Marijuana use	38.1	45.5	**YES**
Lifetime ice use	4.4	5.9	NO
Overweight	15.8	15.3	NO

Note: "---"= data not available; this question was not asked in all States and Territories, hence no US average is available
Source: GDOE, 2007 YRBS

for depressive symptoms.

Figures 13 and 14 show the trends for the sexual violence indicators for Guam versus the US average. The data indicate that sexual violence among Guam high school students is significantly higher than the US averages. "Being hit by a boyfriend or girlfriend within the past year" is rising steadily over time in Guam, while US rates are not changing significantly.

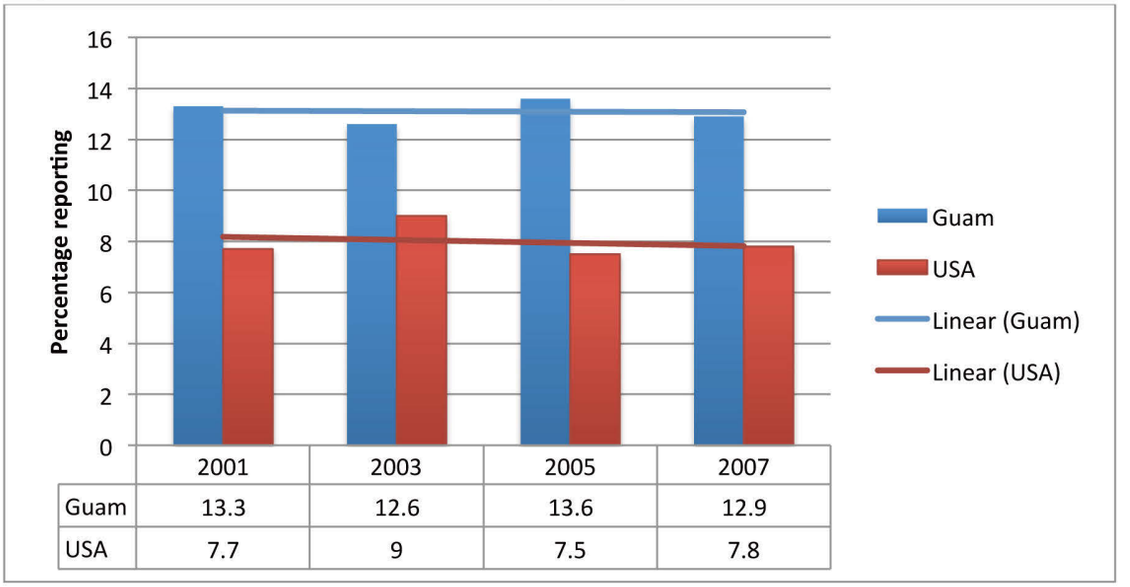
Figure 13. Being hit by a boyfriend or girlfriend within the past year, Guam vs. USA, 2001-2007



	2001	2003	2005	2007
Guam	8	13.5	11.4	13.3
USA	9.5	8.9	9.2	9.9

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 14. Forced to have sex in the past year, Guam vs. USA, 2001-2007

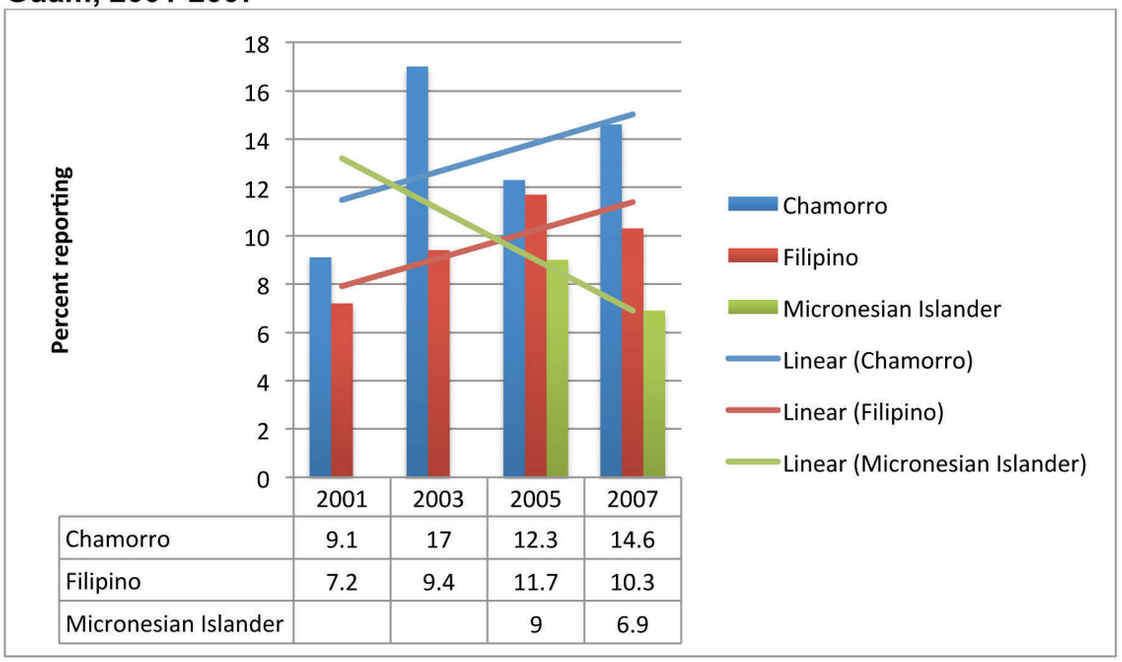


	2001	2003	2005	2007
Guam	13.3	12.6	13.6	12.9
USA	7.7	9	7.5	7.8

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figures 15 and 16 show disaggregated data for sexual violence among ethnic sub-groups in Guam.

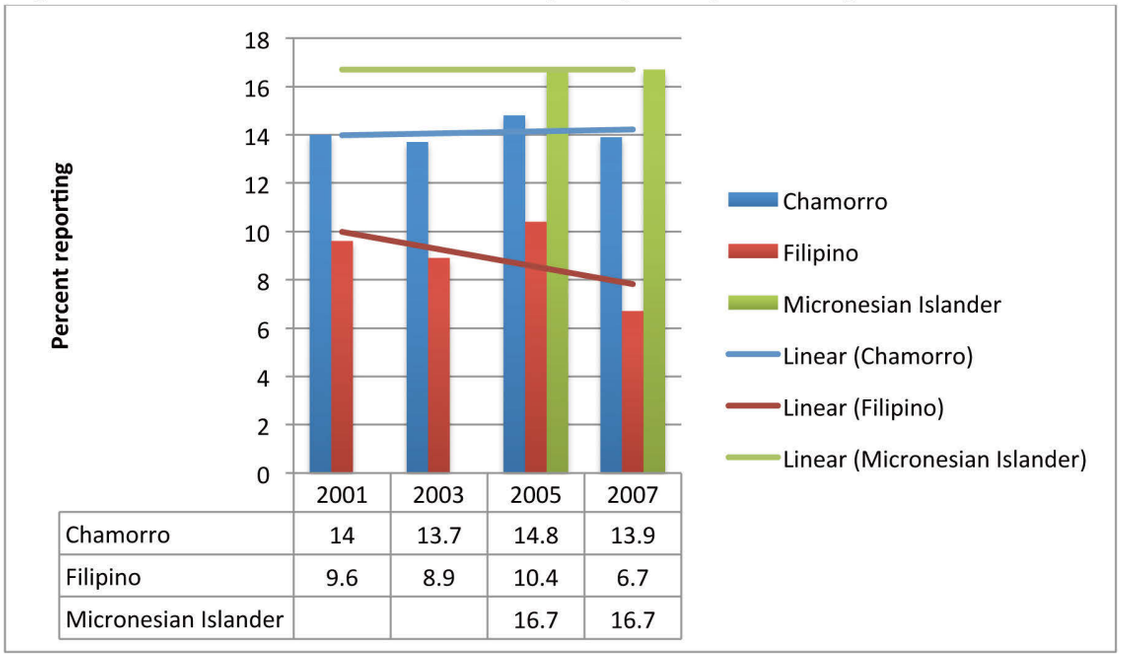
Figure 15. Being hit by a boyfriend or girlfriend within the past year by ethnicity, Guam, 2001-2007



	2001	2003	2005	2007
Chamorro	9.1	17	12.3	14.6
Filipino	7.2	9.4	11.7	10.3
Micronesian Islander			9	6.9

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 16. Forced to have sex in the past year by ethnicity, Guam, 2001-2007



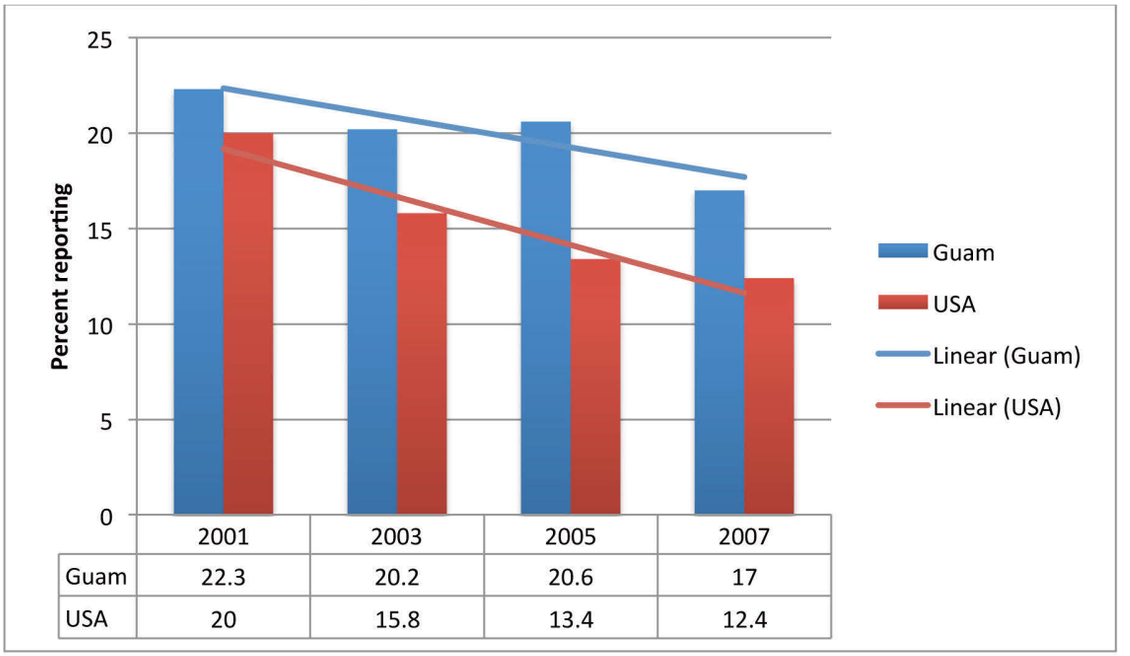
	2001	2003	2005	2007
Chamorro	14	13.7	14.8	13.9
Filipino	9.6	8.9	10.4	6.7
Micronesian Islander			16.7	16.7

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

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

Figures 17 to 19 depict the trends in substance abuse correlates of suicide among Guam high school students as compared to the US averages. Daily smoking (Figure 17) is significantly higher among Guam high school students for all the years of the survey. Moreover, while it appears to be declining over time for both Guam and the US, the rate of decline is much faster for the US, resulting in a widening gap between the two locations.

Figure 17. Daily smoking, Guam vs. USA, 2001-2007

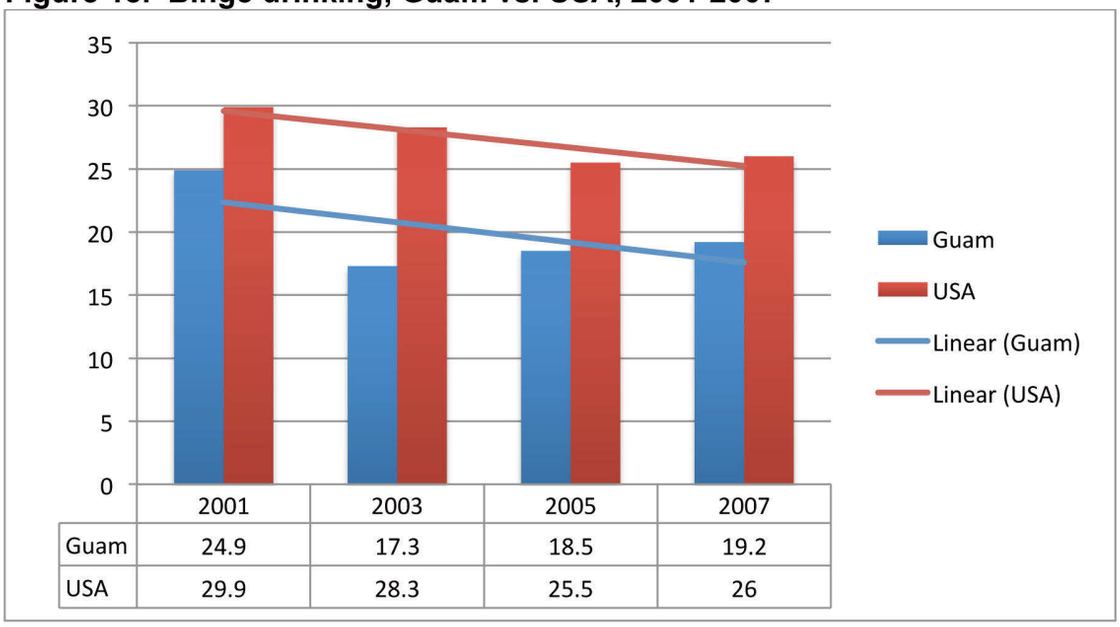


	2001	2003	2005	2007
Guam	22.3	20.2	20.6	17
USA	20	15.8	13.4	12.4

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Unlike trends in daily smoking, binge drinking among Guam youth is consistently lower than among US mainland youth (Figure 18). In both populations, a declining trend is noted over time with a similar rate of decline. Hence, a gap persists, with binge drinking rates lower in Guam.

Figure 18. Binge drinking, Guam vs. USA, 2001-2007

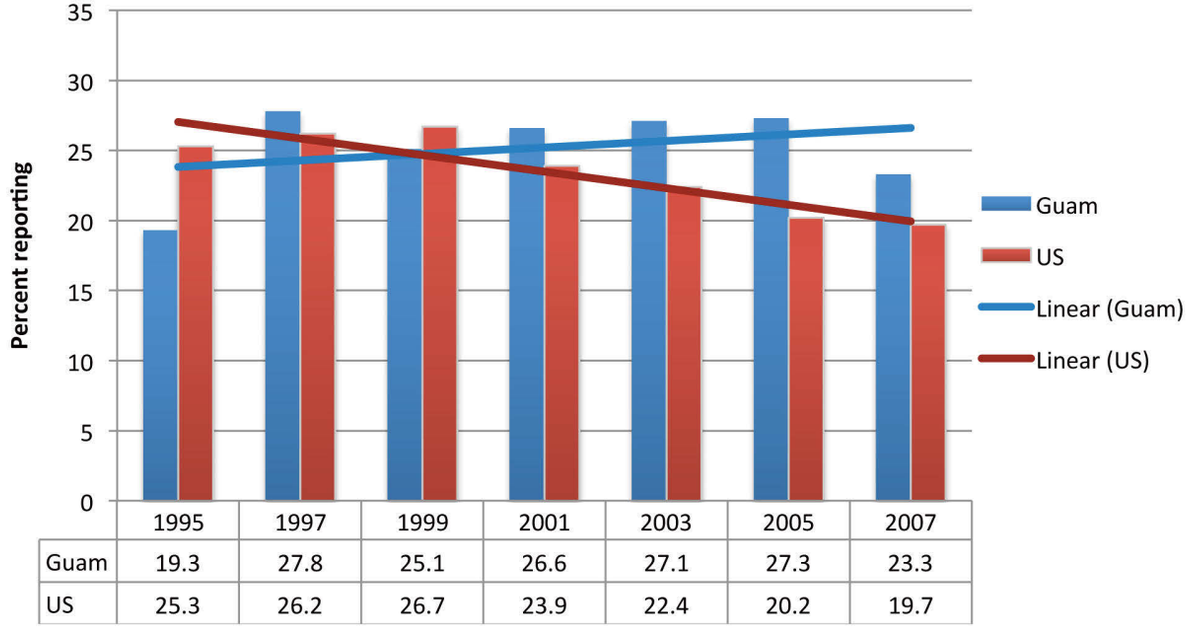


	2001	2003	2005	2007
Guam	24.9	17.3	18.5	19.2
USA	29.9	28.3	25.5	26

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

The trend in marijuana use for Guam is opposite that of the US, with Guam rates showing a steady increase over time (Figure 19). As a consequence, while US rates surpassed Guam rates in the 1990's, Guam rates have now overtaken US rates, and the gap between the two locations continues to widen.

Figure 19. Marijuana use, Guam vs. USA, 2001-2007

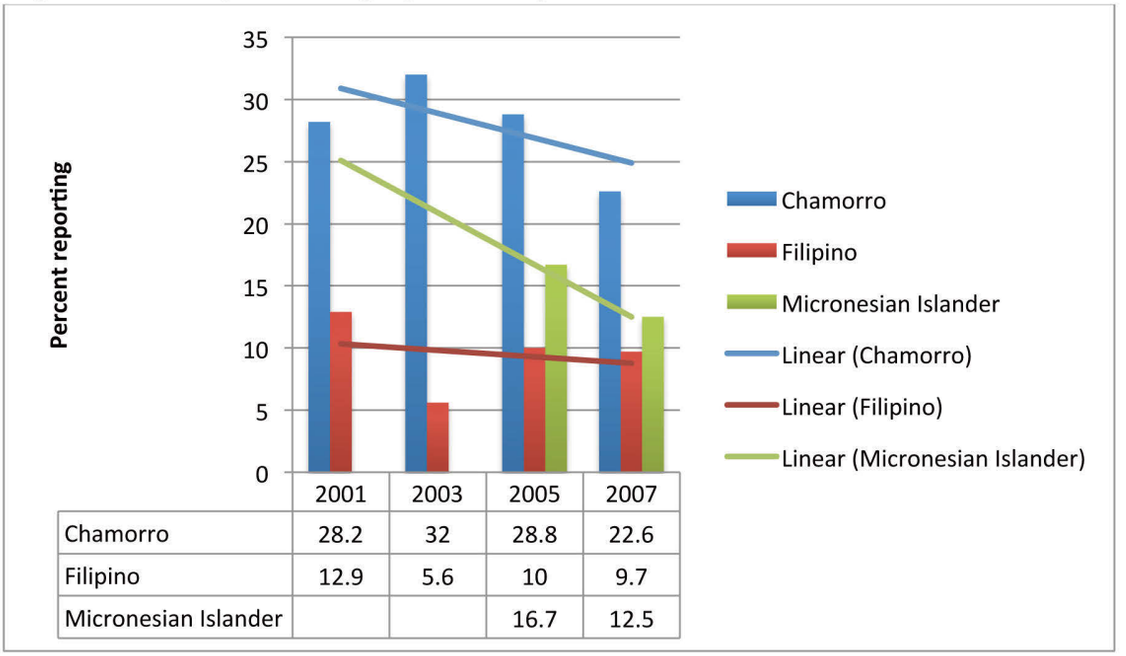


	1995	1997	1999	2001	2003	2005	2007
Guam	19.3	27.8	25.1	26.6	27.1	27.3	23.3
US	25.3	26.2	26.7	23.9	22.4	20.2	19.7

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figures 20 to 22 show disaggregated data for substance abuse indicators correlated to suicide among ethnic sub-groups in Guam.

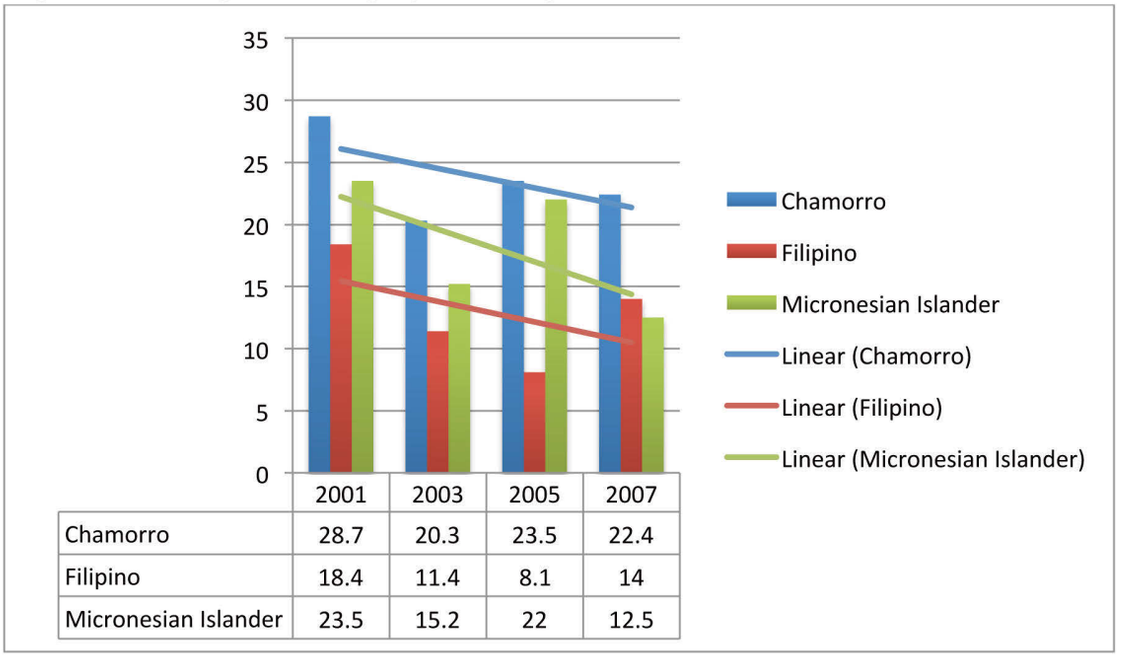
Figure 20. Daily smoking by ethnicity, Guam, 2001-2007



	2001	2003	2005	2007
Chamorro	28.2	32	28.8	22.6
Filipino	12.9	5.6	10	9.7
Micronesian Islander			16.7	12.5

Source: GDOE, 2001-2007 YRBS

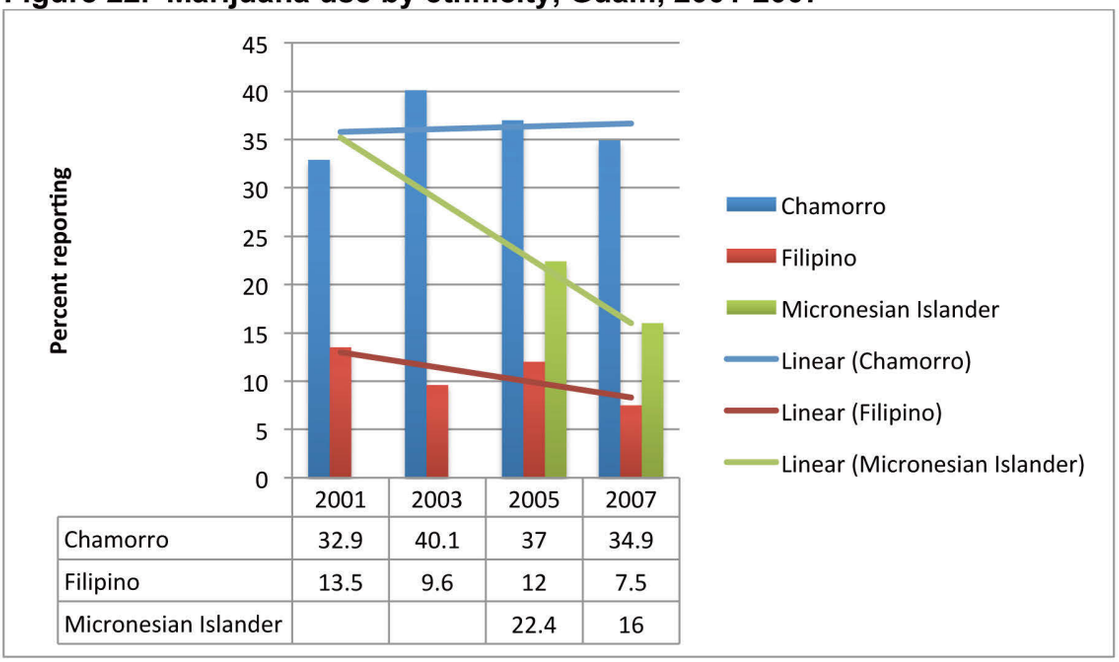
Figure 21. Binge drinking by ethnicity, Guam, 2001-2007



	2001	2003	2005	2007
Chamorro	28.7	20.3	23.5	22.4
Filipino	18.4	11.4	8.1	14
Micronesian Islander	23.5	15.2	22	12.5

Source: GDOE, 2001-2007 YRBS

Figure 22. Marijuana use by ethnicity, Guam, 2001-2007



	2001	2003	2005	2007
Chamorro	32.9	40.1	37	34.9
Filipino	13.5	9.6	12	7.5
Micronesian Islander			22.4	16

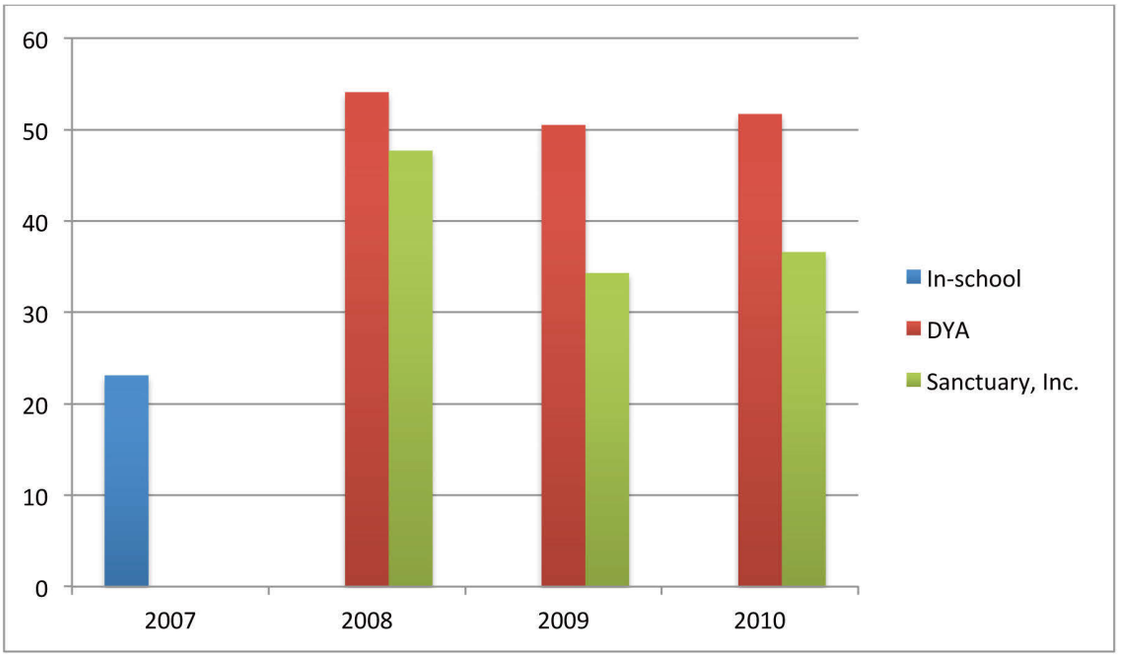
Source: GDOE, 2001-2007 YRBS

For daily smoking, binge drinking and current marijuana use, rates are highest among Chamorro youth, followed by other Micronesian Islander youth. The rates of these 2 ethnic subgroups are markedly higher than the Filipino rate, which echo the higher rates of suicidal ideation and attempts among Chamorro and other Micronesian youth as compared to Filipino youth.

In 2008, Guam started including YRBS questions in the screening intake form for the Department of Youth Affairs (DYA) and Sanctuary, Inc. Both agencies oversee the care of court-involved youth, most of whom are in residential facilities and therefore, not part of the regular school system.

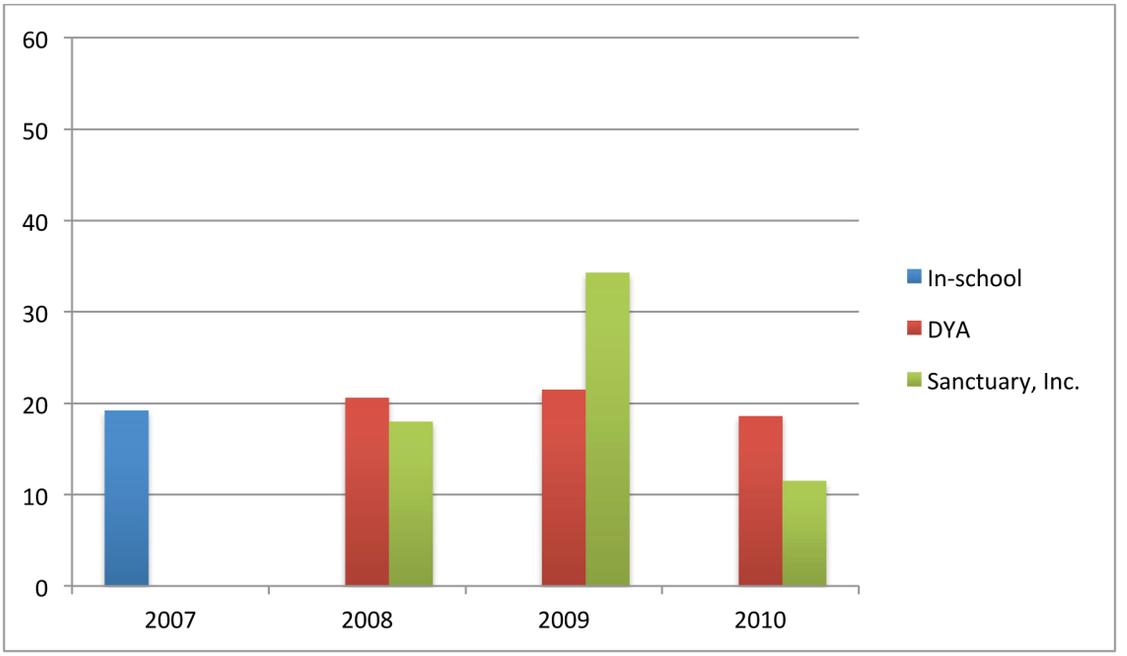
Figures 23-25 compare the rates of current smoking, binge drinking and current marijuana use among in-school youth and court-involved youth. The data indicate much higher prevalence rates among the court-involved youth for current tobacco and marijuana use, but not for binge drinking.

Figure 23. Current smoking, in-school vs. court-involved youth, Guam, 2007-2010



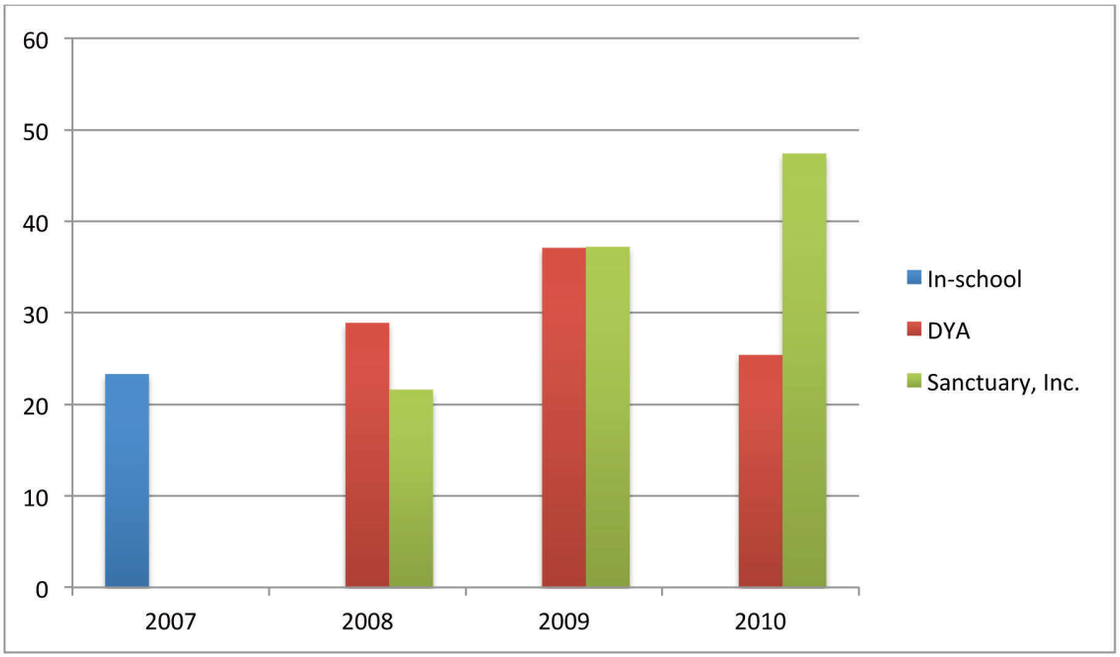
Source: GDOE, 2001-2007 YRBS; Sanctuary, Inc. and Guam DYA data, 2008-2010

Figure 24. Binge drinking, in-school vs. court-involved youth, Guam, 2007-2010



Source: GDOE, 2001-2007 YRBS; Sanctuary, Inc. and Guam DYA data, 2008-2010

Figure 25. Marijuana use, in-school vs. court-involved youth, Guam, 2007-2010

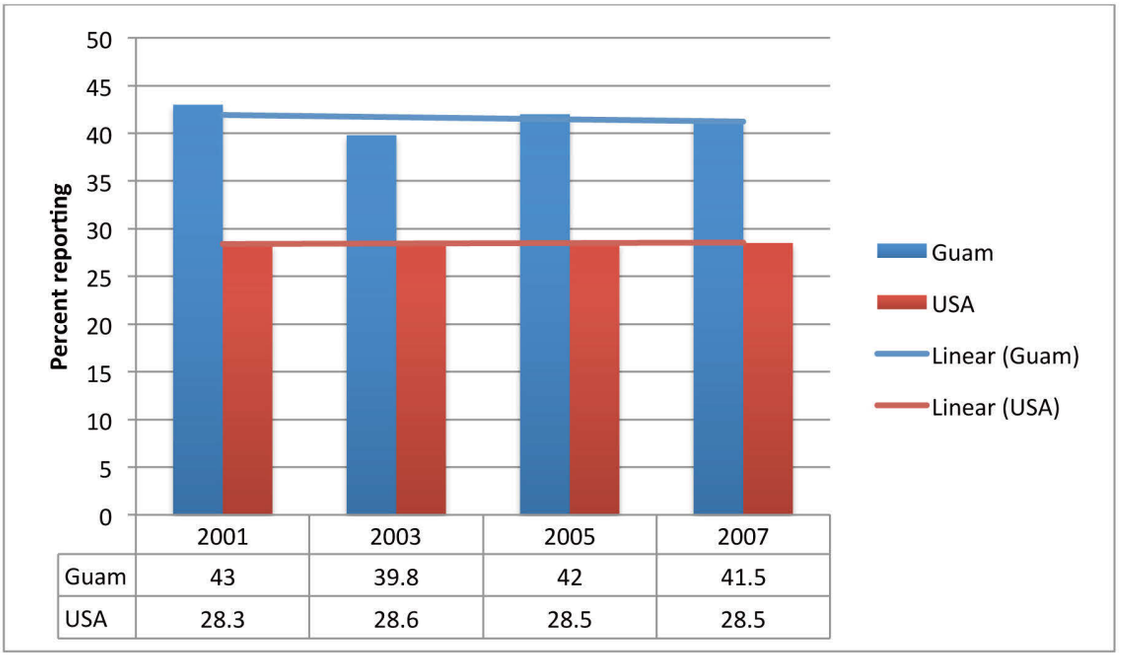


Source: GDOE, 2001-2007 YRBS; Sanctuary, Inc. and Guam DYA data, 2008-2010

Figure 26 compares the depression indicator "feeling sad for at least 2 weeks over the past 12 months" for Guam and the US. Figure 27 disaggregates this indicator over time for the various ethnic sub-groups in Guam.

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

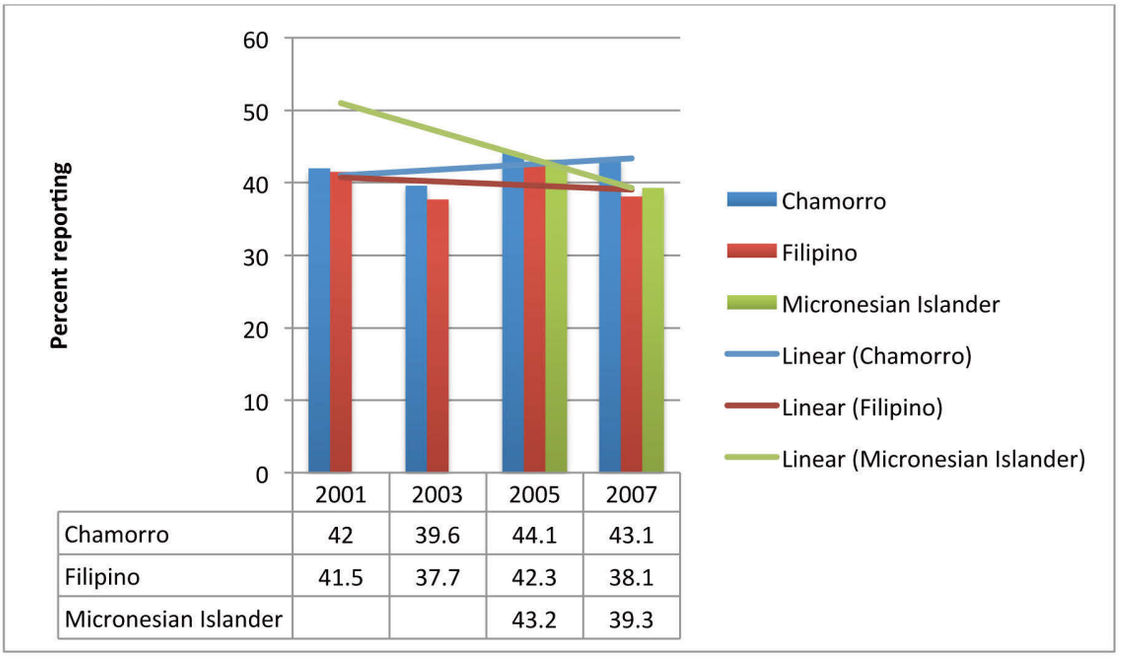
Figure 26. Feeling sad for at least 2 weeks over the past 12 months, Guam vs. USA, 2001-2007



	2001	2003	2005	2007
Guam	43	39.8	42	41.5
USA	28.3	28.6	28.5	28.5

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 27. Feeling sad for at least 2 weeks over the past 12 months by ethnicity, Guam, 2001-2007



	2001	2003	2005	2007
Chamorro	42	39.6	44.1	43.1
Filipino	41.5	37.7	42.3	38.1
Micronesian Islander			43.2	39.3

Source: GDOE, 2001-2007 YRBS; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

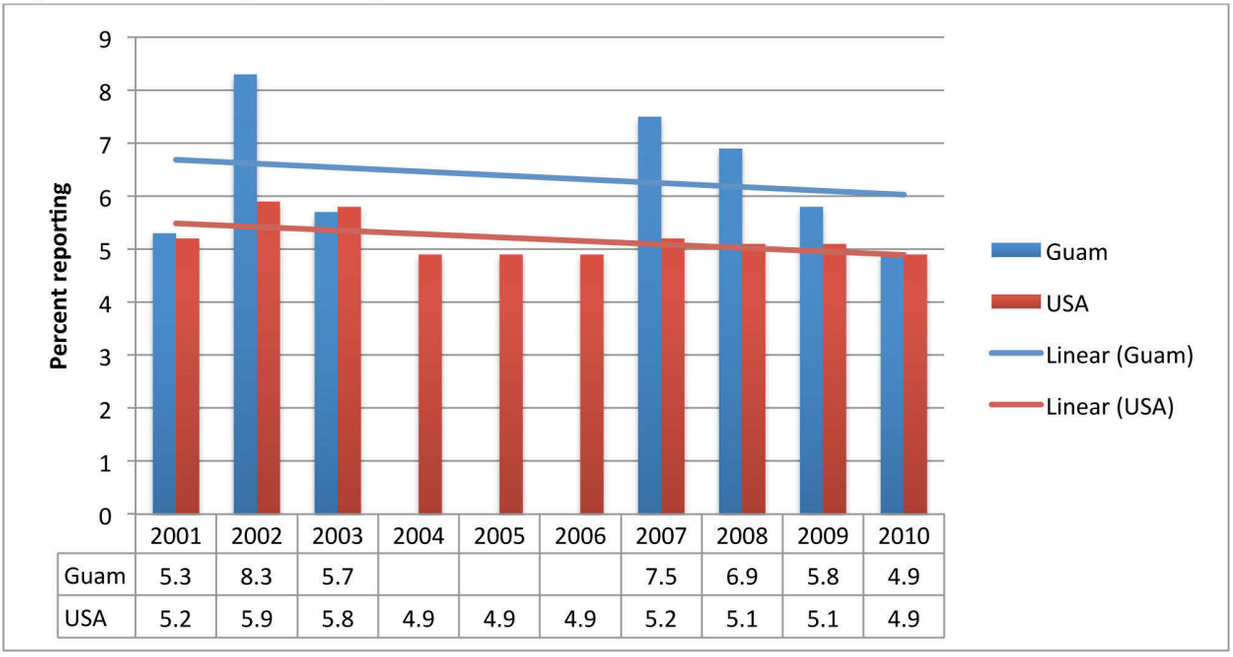
SUICIDAL IDEATION AND SUICIDAL ATTEMPTS AMONG ADULTS

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

Because the Guam CME data indicates that suicide deaths are associate with alcohol use in over one-quarter of cases for the years 2008 to 2010, we examined alcohol consumption rates from the BRFSS, which uses random dialing to survey a representative sample of adults aged 18 years and older in Guam.

Figure 28 depicts heavy drinking among adults in Guam as compared to the US averages for the years 2001 to 2010, while figure 229 shows binge drinking trends for the same time period. (Note: The Guam BRFSS was suspended from 2004 to 2006, hence the gap in annual data. The US average for binge drinking was no longer reported after 2005.) The data reveal that heavy drinking is more prevalent on Guam for all the years surveyed, and while rates in both the US and in Guam are declining, the prevalence difference is being maintained. For binge drinking, Guam prevalence rates were markedly higher, over 3 times the US average.

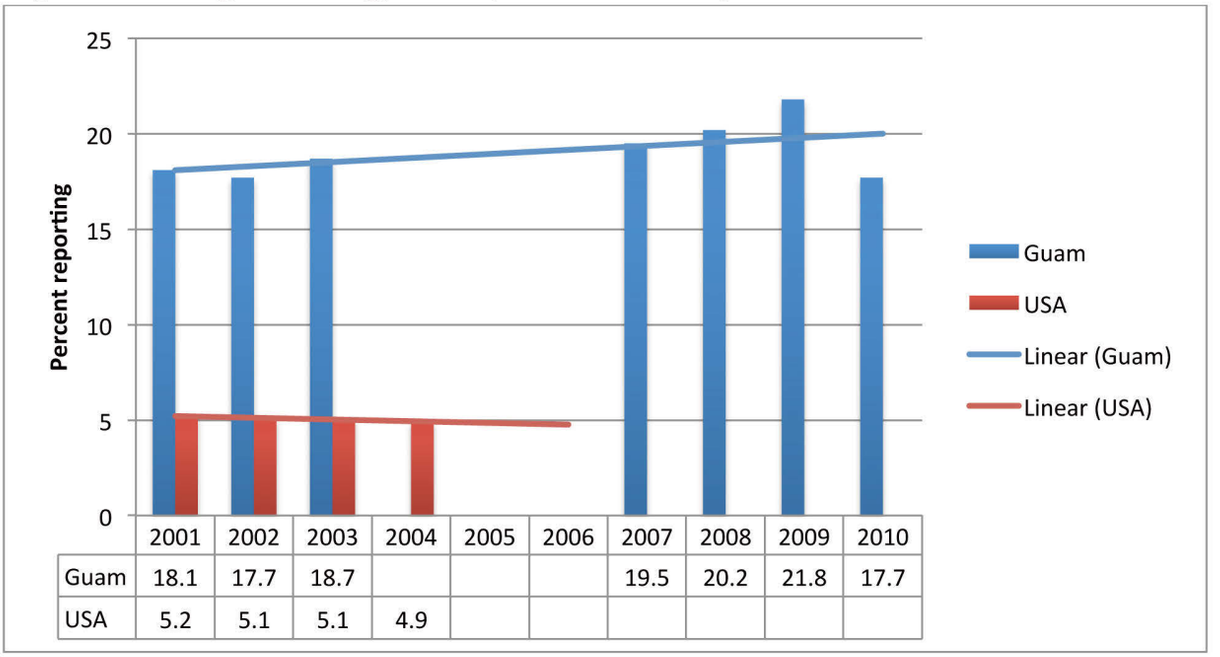
Figure 28. Heavy drinking, adults, Guam vs. USA, 2001-2010



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

Source: GDPHSS, 2001-2010 BRFSS at http://www.cdc.gov/brfss/

Figure 29. Binge drinking, adults, Guam vs. USA, 2001-2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Guam	18.1	17.7	18.7				19.5	20.2	21.8	17.7
USA	5.2	5.1	5.1	4.9						

Source: GDPHSS, 2001-2010 BRFSS at http://www.cdc.gov/brfss/

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

Table 8. Admissions to Guam Memorial Hospital for intentional self-harm, 2000-2010

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

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

CONCLUSIONS AND RECOMMENDATIONS

This version of the Profile provides an updated overview of suicide on Guam. The key findings are:

- Suicide remains prevalent on Guam, with an average of 1 suicide death occurring every 2 weeks. Within the Asia-pacific region, Guam's suicide rate is significantly higher than countries like the Philippines, but lower than the rates seen in China, Japan and South Korea. The age-adjusted suicide death rate for Guam is more than twice that of the US mainland.

- Suicide deaths are highest among youth and young adults, with about 60% of all suicide deaths occurring in those under the age of 30 years. This pattern is unlike that seen in the US mainland, Japan and South Korea, where suicide deaths occur predominantly among older adults.

- Micronesian Islanders, particularly Chuukese, Chamorros and Japanese are significantly over-represented in suicide deaths and constitute critical target groups for suicide prevention.

- Suicide deaths occur predominantly among males. As demonstrated in the previous versions of this profile, this likely reflects the difference in choice of suicide method, with a higher proportion of males preferring hanging.

- Twelve percent (12%) of those who died of suicide from 2008-2010 left direct evidence (suicide note) of intention to commit suicide. About one in five (18%) left indirect evidence of intent. Altogether, about 1 on three (30%) of suicides from 2008 to 2010 left evidence of their intent. If community members were better trained to pick up on intention to commit suicide, it may be possible to intervene before a suicide death occurs.

- Alcohol is implicated in over one-fourth of all suicide deaths from 2008 to 2010. Other drugs of abuse are involved in 10% of suicide deaths. Preventing alcohol and drug abuse should be part of population-based suicide prevention strategies.

- Youth in Guam appear to have a higher likelihood of thinking about suicide, making a

suicide plan and actually attempting suicide as compared to youth in the US mainland.

- Correlates of youth suicidal ideation and suicide attempts include sexual violence, depression, identifying oneself as gay or bisexual, and substance abuse.

- Five attributes--- (1) being hit by a boyfriend/girlfriend in the past year, (2) forced to have sex, (3) felt sad for at least 2 weeks over the past year, (4) current daily smoking and (5) current marijuana use---have prevalence rates among Guam youth that are statistically higher on Guam than the US. This indicates the need for integrated suicide prevention approaches that also address skills in developing healthy relationships, physical and sexual violence prevention, tobacco and substance abuse prevention and control and aggressive screening and treatment for depressive symptoms.

- Among adults, heavy drinking and binge drinking remain markedly higher than US averages.

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

- Youth and young adults are a valid target for suicide prevention efforts.

- Micronesian Islanders, especially Chuukese, Chamorros and Japanese constitute critical target groups for prevention intervention.

- Strategies that may be important for suicide prevention include:

    - Preventing and controlling alcohol and other drug abuse;

    - Aggressively screening to recognize and treat mental illness and depression;

    - Building community capacity to recognize the signs of impending or possible suicide and training community members to effectively intervene to bring individuals at risk of suicide to professional attention; and,

    - Skills training in developing healthy relationships and physical and sexual violence prevention.

REFERENCES

Bertolete JM and Fleischman A. A global perspective on the epidemiology of suicide. Suicidologi, 2002, 7(2):6-13.

Guam Department of Public Health and Social Services. Vital Statistics, 2000-2007 (suicide data).

Guam Department of Public Health and Social Services. Behavioral Risk Factor Surveillance System. Unpublished data, 2001-2010.

Kochanek KD, Xu JQ, Murphy SL, Minino AM, Kung HC. Deaths: Preliminary data for 2009. National vital statistics reports; vol 59 no 4. Hyattsville, MD: National Center for Health Statistics. 2011.

National Institute for Mental Health. Suicide in the US: Statistics and Prevention at http://www.nimh.nih.gov/health/publications/suicide-in-the-us-statistics-and-prevention/index.shtml

US Centers for Disease Control and Prevention. Behavioral Risk factor Surveillance System. Available at:

US Centers for Disease Control and Prevention. National Suicide Statistics at a Glance, as reported in http://www.cdc.gov/violenceprevention/suicide/statistics/trends02.html

World Health Organization. Figures and facts about suicide. WHO, Geneva, 1999.

World Health Organization. Suicide and Suicide Prevention in Asia (Hendin H, et. al., editors). WHO, Geneva, 2008.

World Health Organization. Suicide Country Data as reported in http://www.who.int/mental_health/prevention/suicide/country_reports/en/index.html .

World Health Organization. Suicide Prevention as reported in http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/ .

World Health Organization Western Pacific Regional Office. Regional Strategy for Mental Health. WHO-WPRO, Manila, 2002.