A PROFILE OF SUICIDE ON GUAM

April 2010

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 (Health Partners, L.L.C.)

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 Patricia Mafnas Ms. Mafnas also was responsible for data management and maintenance of the grant suicide database.

Dr. Annette M. David, representing Health Partners, L.L.C., conducted the data analysis, and authored this profile.

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,* will run from September 2008 to September 2011. The grant has 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 2001, 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.

This updated version of the Profile contains additional information on suicide mortality for the years 2008-2009. The information contained in this document is meant to guide the development of policy and program initiatives and resource allocation under 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.

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. Preliminary results were presented to prevention and mental health stakeholders and the community-at-large, to obtain their feedback through a 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) was 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 Public School System (GPSS) decided to invalidate the 2009 YRBS. Hence this data source was not available for this update.

RESULTS AND DISCUSSION

Suicide Deaths

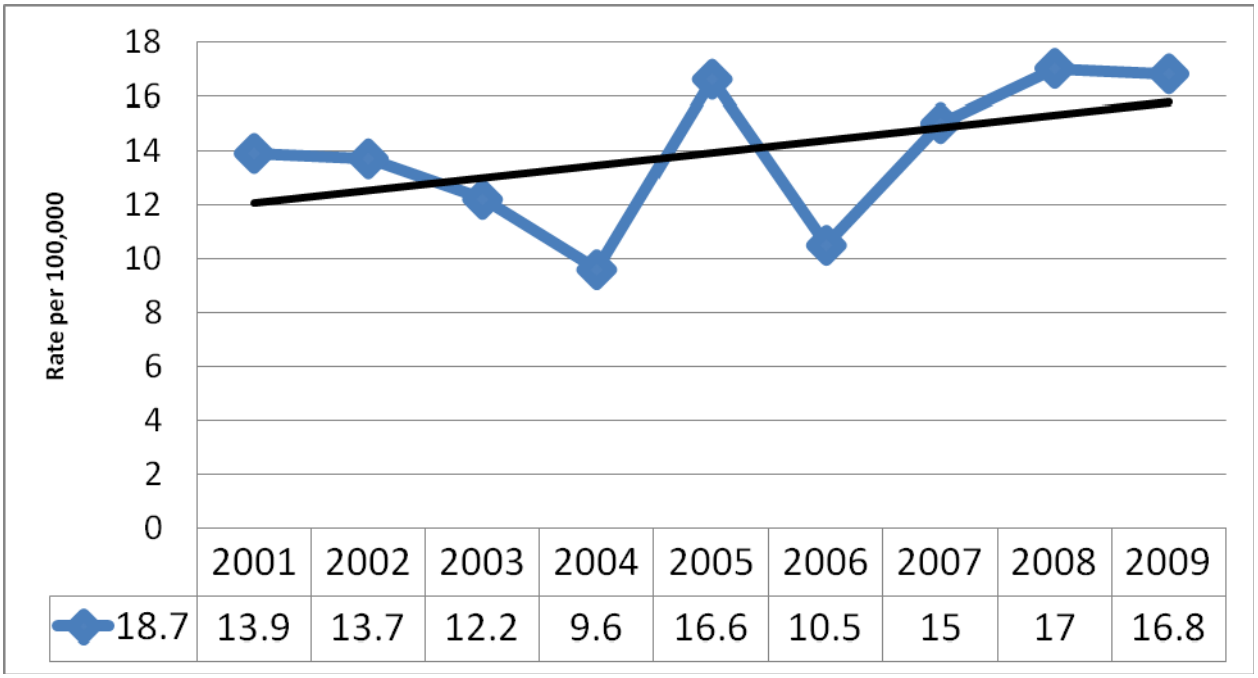
Table 1 represents the numbers and crude population death rates of suicide per year from 2000 to 2009. Annual suicide death rates were calculated using the estimated mid-year population counts as reported in the Guam Statistical Yearbook. Figure 1 depicts the yearly trend in suicide rates for the island.

Table 1. Suicide deaths and annual crude suicide death rates, Guam, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Deaths	29	22	22	20	16	28	18	26	30	30
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

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

Figure 1. Annual trend in suicide crude death rates, Guam, 2000-2009



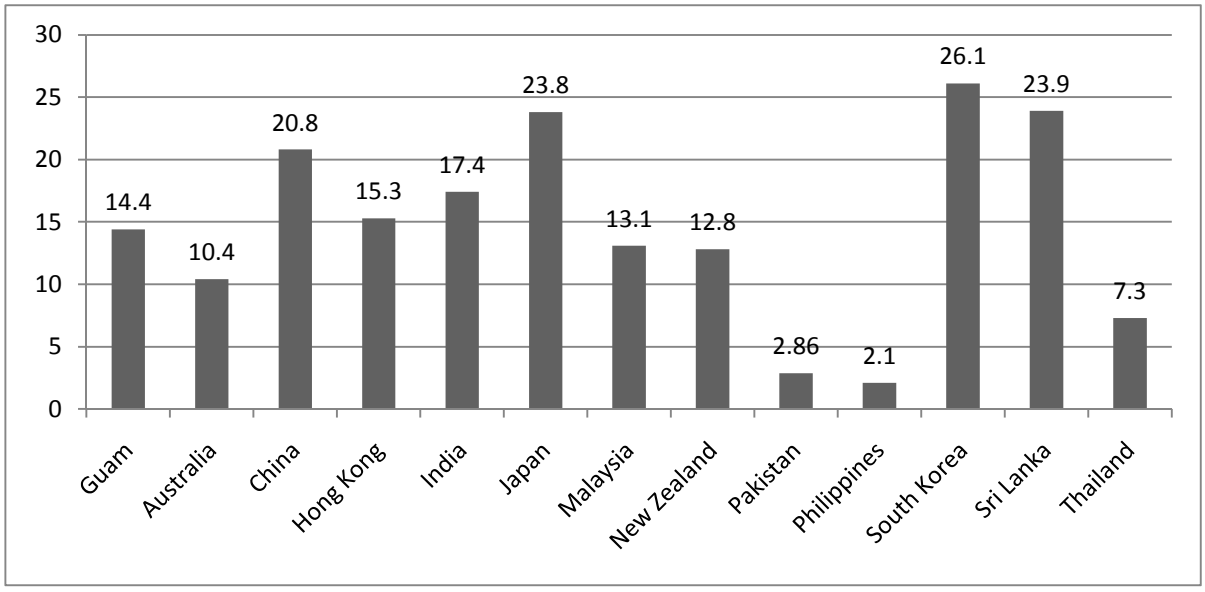
Source: Calculated based on data taken from the Office of Guam's Chief Medical Examiner, DPHSS Vital Statistics and Guam Statistical Yearbook

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 2009, there were 24 suicide deaths per year, approximately one suicide death every 2

weeks. The annual suicide death rate ranged from 9.6 to 18.7 per 100,000 people during this period, with a mean annual rate of 14.4 per 100,000.

Figure 2 compares the average annual crude suicide death rate on Guam with 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.

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; other 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 2009. Age adjustment to the standard US 2000 population resulted in a significant increase in the suicide death rate. The latest age-adjusted suicide death rate for the US is derived from 2006 mortality statistics, and is 10.9 per 100,000 people. Compared to the US, Guam's death rate from suicide is more than double the national rate.

Table 2. Comparison of crude and age-adjusted suicide rates, Guam, 2008-2009 and US, 2006

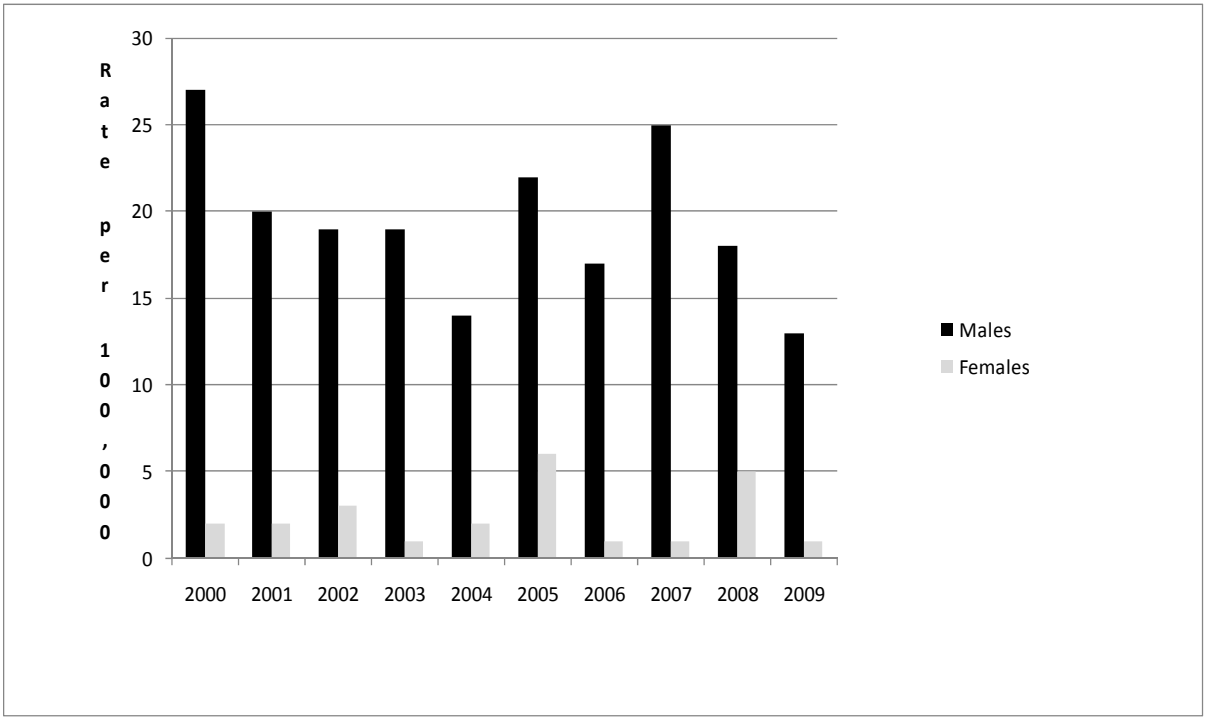
	Guam 2008	Guam 2009	USA 2006
Deaths	30	30	33,300
Crude suicide death rate per 100,000	17.0	16.8	11.1
Age-adjusted suicide death rate per 100,000*	25.8	20.1	10.9

**Adjusted to the US 2000 population*

Sources: Office of the Chief Medical Examiner (Guam data), Heron MP, Hoyert DL, Murphy SL, Xu JQ, Kochanek KD, Tejada-Vera B. Deaths: Final data for 2006. National vital statistics reports; vol 57 no 14. Hyattsville, MD: National Center for Health Statistics. 2009. (USA data)

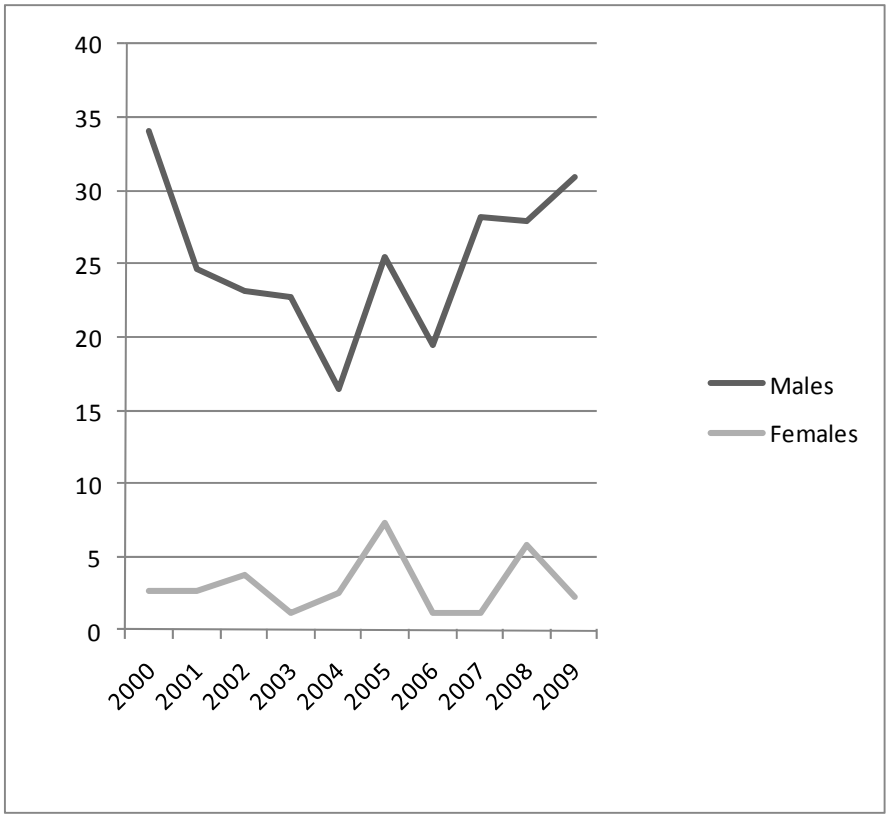
Figures 3 and 4 show respectively, the total numbers of suicide deaths and suicide rates per year from 2000 to 2009, disaggregated by sex. The data clearly show that suicide deaths on Guam occur predominantly among males, who outnumber suicide deaths among females with an average ratio of 8.6:1. In the US, overall, males outnumber females in suicide deaths by a ratio of 4:1. From 2000 to 2009, about 90% of deaths by suicide on Guam happened among males.

Figure 3. Suicide deaths by sex, Guam, 2000-2009



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

Figure 4. Annual suicide death rate by sex, Guam, 2000-2009

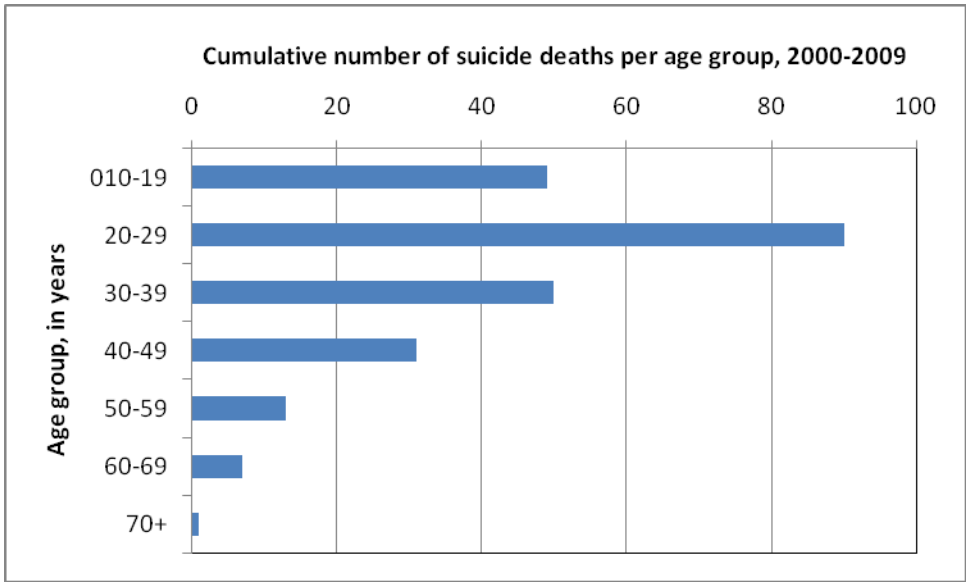


Sources: Office of the Chief Medical Examiner and DPHSS Vital Statistics

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 depicts how that sex difference appears to be widening in 2009.

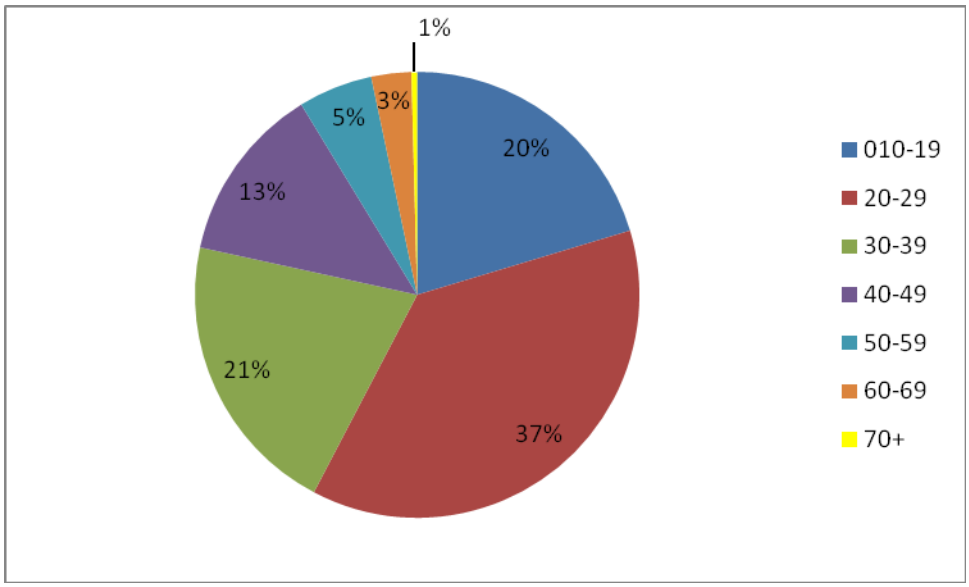
Suicide deaths disaggregated by age predominate among youth and young adults aged 10-29 on Guam (Figures 5 and 6). Cumulatively from 2000 to 2009, 20% of suicide deaths occurred in those aged 10-19, and 37% of deaths happened among those aged 20-29 years. Altogether, close to 60% of all suicide deaths on Guam from 2000-2009 occurred in those younger than 30 years. Thus, deaths by suicide on Guam occur predominantly among young people.

Figure 5. Suicide deaths by age, Guam, 2000-2009



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

Figure 6. Cumulative suicide deaths by age, as percentages of a whole, Guam, 2000-2009



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 (Table 3). 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)

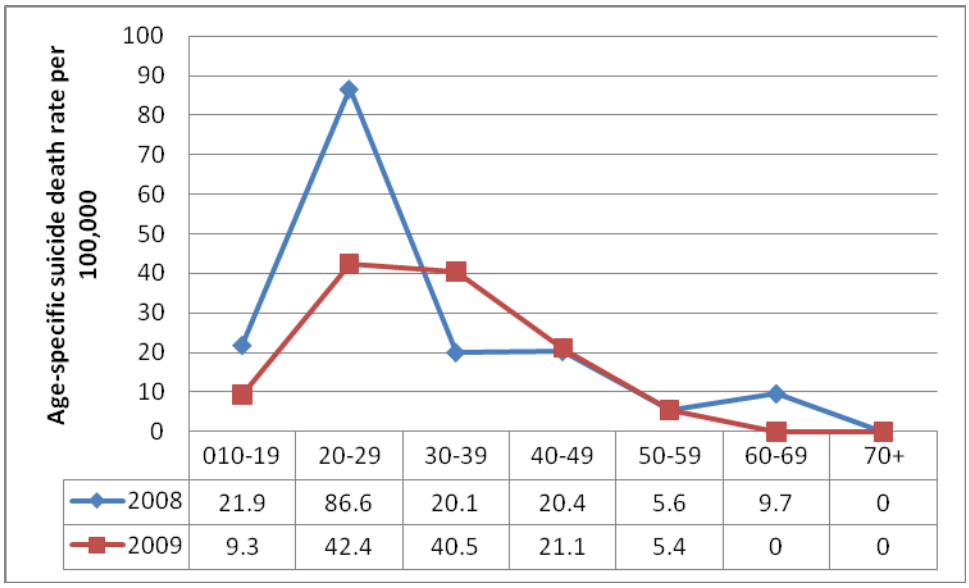
Table 3. Suicide deaths by age, China (1999) and Japan (2006)

Age group	China		Japan	
	Number of deaths	% of suicide deaths	Number of deaths	% of suicide deaths
0-14	147	1%	77	0%
15-24	1541	9%	1892	6%
25-34	3294	20%	3800	13%
35-44	2638	16%	4397	15%
45-54	2382	14%	5230	18%
55-64	2182	13%	6652	22%
65-74	2598	15%	4135	14%
75+	2054	12%	3584	12%

Source: WHO at http://www.who.int/mental_health/prevention/suicide/country_reports/en/index.html

Figure 7 shows age-specific suicide death rates for Guam for the years 2008 and 2009. The likelihood of dying from suicide is highest in the 20-29 year old age group.

Figure 7. Age-specific suicide death rates, Guam, 2008-2009



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

Table 4 depicts the cumulative number and percentage of suicide deaths by ethnicity on Guam for the period 2000 to 2009. Death by suicide occurs most

frequently among Chamorros, followed by Chuukese and those of Filipino or "Other" ethnicity.

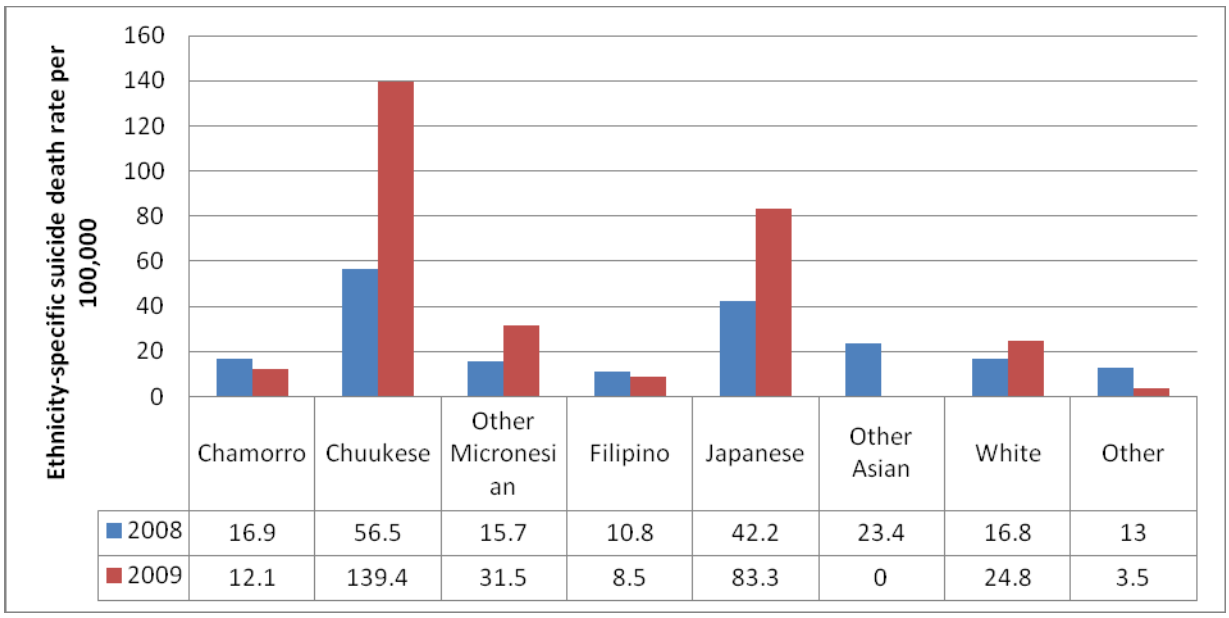
Table 4. Cumulative suicide deaths by ethnicity, Guam, 2000-2009

Ethnicity	Number	Percentage
Chamorro	90	37.3%
Filipino	30	12.4%
Chuukese	53	22.0%
Other FSM	14	5.8%
White	11	4.6%
Japanese	5	2.1%
Other Asian	9	3.7%
Other	29	12.0%

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 8 depicts the ethnicity-specific suicide death rate per 100,000 for the years 2008-2009. 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 and Japanese.

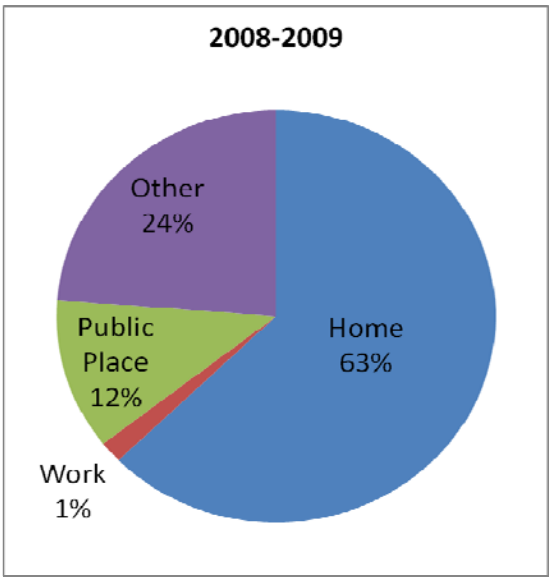
Figure 8. Ethnicity-specific suicide death rates, Guam, 2008-2009



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

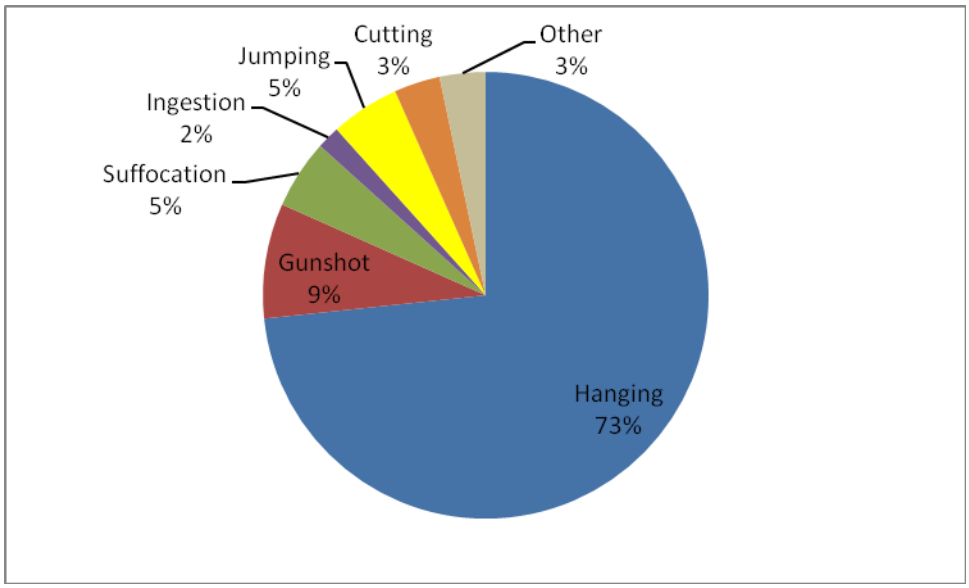
Figures 9 and 10 depict the site and method of suicide for 2008-2009 data. Over 60% of suicides during this period were committed at home. Only 12% of suicides were committed in a public place. Almost three-fourths (73%) of completed suicides were by hanging. This contrasts markedly from the pattern in the US mainland, where suicide by firearms was the predominant method.

Figure 9. Site of suicide, Guam, 2008-2009



Source: Office of the Chief Medical Examiner

Figure 10. Method of suicide, Guam, 2008-2009



Source: Office of the Chief Medical Examiner

Table 5 compares the most frequent methods for suicide in the US mainland with Guam, disaggregated by sex.

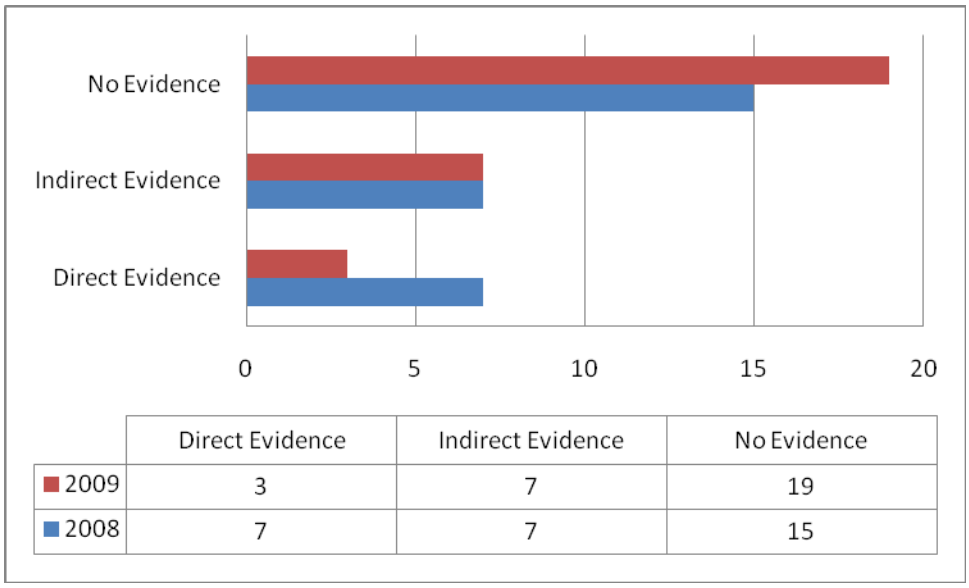
Table 5. Suicide methods, by sex, Guam versus US mainland

US Mainland (2006)		
Suicide by:	Males (%)	Females (%)
Firearms	56	31
Suffocation	23	19
Poisoning	13	40
Guam (2008-2009)		
Suicide by:	Males (%)	Females (%)
Hanging	75	57
Gunshot	9	0
Suffocation/Jumping	2/4	28/14

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 11 shows what type of evidence of intent, if any, was left by the suicide victim, for 2008 to 2009 on Guam. One in six (17%) of those who died of suicide from 2008-2009 left direct evidence (suicide note) of intention to commit suicide. About one in four (23%) left indirect evidence of intent.

Figure 11. Evidence of intention to commit suicide, Guam, 2008-2009



	Direct Evidence	Indirect Evidence	No Evidence
2009	3	7	19
2008	7	7	15

Source: Office of the Chief Medical Examiner

Other correlates of suicide deaths on Guam included the following:

- 30% of suicide deaths in 2008-2009 involved alcohol consumption.
- 15% involved use of other drugs of abuse.
- 12% of suicide deaths had a history of prior suicide attempts
- 10% had a history of mental illness.

CONCLUSIONS AND RECOMMENDATIONS

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

- Suicide is 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 twice that of the US mainland.

- Suicide is the 5th leading cause of death on the island.

- 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 Japan and South Korea, where suicide deaths occur predominantly among older adults.

- Micronesian Islanders, particularly Chuukese, 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 version of this profile, this likely reflects the difference in choice of suicide method, with males preferring hanging while females more often choosing suffocation, jumping, drug overdose, or cutting.

- One in six (17%) of those who died of suicide from 2008-2009 left direct evidence (suicide note) of intention to commit suicide. About one in four (23%) left indirect evidence of 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 close to one-third of all suicide-related incidents. Other drugs of abuse are involved in 15% of suicides. Preventing alcohol and drug abuse should be part of population-based suicide prevention strategies.

- A history of mental illness is implicated in 10% of suicide-related incidents, and about 12% of suicide-related incidents are repeat attempts. These serve as red flags that indicate a heightened risk for suicide.

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

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

- Micronesian Islanders, especially Chuukese, and 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.

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 Police Department. Suicide-related Incidents, 2006-2007.

Heron MP, Hoyert DL, Murphy SL, Xu JQ, Kochanek KD, Tejada-Vera B. Deaths: Final data for 2006. *National Vital Statistics Reports*, vol 57 no 14. Hyattsville, MD: National Center for Health Statistics. 2009.

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. 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.

ANNEX: List of tables and figures