

**Epidemiological Profile of Substance
Abuse Consumption and Consequence
Patterns in the Republic of Palau**

Council on Substance Abuse Prevention

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Background Information and Basic Demographic Data of Palau

Background Information

The Republic of Palau is comprised of more than 200 islands forming an archipelago in the far southwestern corner of the North Pacific Ocean. The nation consists of high volcanic islands, raised limestone islands, barrier reefs and classic atolls extending nearly 700 miles on the northeast to southwest axis. Palau has a total landmass of 188 square miles and while there are over 340 islands that make up the nation, only twelve are permanently inhabited. The main island group comprises fourteen of the total sixteen Palauan states. The 7.1 square mile island/state of Koror is currently the Republic's administrative and economic capital, with 75% of the population residing there, or in the neighboring state of Airai.

Palau is a self-governing republic that is affiliated with the United States under a Compact of Free Association, which became effective on October 1, 1994. Governmental structure in Palau is patterned on the American democratic model having executive, legislative and judiciary branches in the government. The head of the government is the President, who appoints a cabinet. Moreover, there are sixteen states that form a second tier of government. Also important is the body of traditional representatives, collectively known as the Council of Chiefs, made up of Paramount chiefs from each of the states.

Basic Demographic Data of Palau

Population

According to the 1990 census, the population of Palau totaled 15,122 persons. By 2000, this number increased to 19,129, and was recorded at 20,729 in 2005. Even given this apparent increase in population, the real population growth rate is low, primarily due to low birth rates coupled with continued emigration of Palauans seeking education and employment opportunities elsewhere. Most of the apparent population increase is due to growth in the number of foreign residents present in the Republic, the vast majority of who are of Asian ethnicities and provide labor for Palau's workforce, primarily in the private sector.

Current Population

Table 1. Population by age and sex (2000 Census)

Age	Total Persons	Males	Females
Under 5 years	1,308	690	618
5-9 years	1,700	856	844
10-14 years	1,555	794	761
15-19 years	1,382	738	644
20-24 years	1,342	731	611
25-29 years	1,910	1106	804
30-34 years	2,169	1219	950
35-39 years	1,891	1104	787
40-44 years	1,651	976	675
45-49 years	1,272	750	522
50-54 years	886	510	376
55-59 years	563	306	257
60-64 years	463	230	233
65-69 years	318	161	157
70-74 years	274	115	159
75-79 years	212	78	134
80-84 years	113	48	65
85 years and over	120	38	82
Total Persons	19,129	10,450	8,679

Source Data: United States Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau.

Palau's population is made up of three broad groups. The first being indigenous Palauans, the second being indigenous minority Palauans from the South West islands, which is home to Palau's only ethnic and linguistic minority, and the third is made up of foreign residents, the vast majority of whom are of Asian ethnicity and serve as migrant labor for Palau. The following table lists the ethnic/racial composition of the Republic's population.

Ethnicity and Language

Table 2. Ethnic origin (race)

Ethnicity	Total Persons	Percentage of Population
Palauan	13,364	69.9%
Carolinian	270	1.4%
Other Micronesian	212	1.1%
Asian	4,882	25.5%
Filipino	2,922	(15.3%)
Chinese	934	(4.9%)
Taiwanese	147	(.08%)
Korean	141	(.07%)
Vietnamese	168	(.09%)
Other Asians	570	(3.0%)
White	360	1.9%
Other Ethnicity	41	>.01%
Total	19,129	100%

Source Data: United States Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau.

According to the Palauan constitution, Palau recognizes both Palauan and English as official languages. Palau also has two other indigenous languages spoken by the people of Hatohobei and Sonsorol states (captured by the census data as Carolinian). Even though, English is recognized in the Palauan Constitution as an official language, it is not the most common second language spoken by the residents in Palau. In fact, it is much less likely to be spoken relative to an Asian language. Tagalog, or other languages/dialects of the Philippines are the second most frequently reported languages spoken in Palau, followed by English as the second most common foreign language spoken at home by residents in Palau.

Table 3. Language spoken at home (persons 5 years and over)

Language	Number of People	Percent of total
Palauan	11,525	65%
Other Languages	6,296	35%
English	1,675	9%
Carolinian	260	1.5%
Other Micronesian	98	>1%
Asian	4,085	23%
<i>Filipino</i>	2,398	13%

<i>Japanese</i>	264	1.5%
<i>Korean</i>	138	>1%
<i>Chinese/Taiwanese</i>	1,022	6%
<i>Other Asian Languages</i>	263	1
Other Language	178	1%
Total	17,821	

Source Data: United States Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau

Household characteristics

The median household size in Palau is 4.7 persons. This median ranges from a low of 3 persons in the rural outlying state of Hatohebei, to a high of 5.3 persons in the rural state of Ngardmau located on the island of Babeldoab. Both Koror and Airai, the two states in the Republic that are considered urban, had median household sizes above the national median at 4.8 and 4.9 persons respectively.

Table 4. Household size

Household Size	Total Households	Percentage of Households
1 person	324	9.7%
2 persons	467	14%
3 persons	515	15.4%
4 persons	531	15.9%
5 persons	518	15.5%
6 persons	352	10.5%
7 persons	209	6.2%
8 persons	135	4%
9 persons	104	3%
10 persons	84	2.5%
11 persons	39	1.2%
12 or more persons	72	2.1%
Total	3,350	100%

Source Data: United States Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau

School attendance and attainment

School attendance and educational attainment are tracked and measured by the office of statistics as part of the regular census activities. The census provides the numbers of children age 3 and over that are enrolled in school, however it does not provide a percentage of total children eligible for school enrollment that are actually enrolled. Educational attainment is generally measured among persons 25 years and older; while a limited amount of data is gathered on persons aged 18-24. The percent of persons with at least a high school diploma in Palau is 74.1% although this rate is slightly lower among 18-24 year olds at 70.1%. Additionally, 10% of people in Palau have a bachelor's degree or higher.

Table 5. Educational attainment

Educational Attainment	Persons 25 years and over	Percent of Persons 25 years and over
None	365	3.0%
Elementary	1,359	11.5%
<i>1 to 4 years</i>	368	
<i>5 and 6 years</i>	552	
<i>7 years</i>	90	
<i>8 years</i>	349	
High School	1,341	11.3%
<i>1 year</i>	428	
<i>2 years</i>	273	
<i>3 years</i>	234	
<i>4 years, no diploma</i>	406	
High School Graduate	5,388	45.5%
Some College, no degree	1,216	10.3%
Assoc. Degree, occupation	553	4.7%
Assoc. Degree, academic	440	3.7%
Bachelor's Degree	945	8.0%
Grad/Prof. Degree	235	2.0%
Total	11,842	100%

Source Data: United States Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau

Economics

According to the 2003 Bank of Hawaii Economic Report, Palau's economic development level can best be described as that of a "hybrid economy with attributes of both developed and developing economies." While Palau's per capita income of \$5,482 in 2002 places it at a middle-income level of development, to get a better understanding of the base of its economy, it is important to consider its components and relevant issues. Perhaps the most distinguishing factor about Palau's economy is the fact that the public sector is much larger than the private sector. Moreover, the service sector is by far the major component of the economy. The labor force is also dominated by migrant workers, particularly at unskilled, low-paying levels.

Palau's economy is also heavily subsidized by external assistance, most notably US Compact funds, US Federal Grants, bilateral assistance and UN Agency grants.

Income

According to the 2000 census there were 3,350 households in Palau. The per capita income was \$4,092, and ranged from \$3,145 for individuals living in group quarters to \$4,312 for individuals residing in household units. Moreover there is great variation between household income levels by state of residence. The highest per capita household income is found in Melekeok State with a per capita income of \$9,212. The lowest per capita household income is found in the South West Island state of Hatohobei where the per capita income reported is only \$1,403. The two states classified as urban, Koror and Airai, report per capita income levels of \$4,559 and \$3,810 respectively. It is also important to note that according to the 2000 census, 75% of males age 15 years and over with income, report being employed full time, while only 67% of women age 15 years and over with income, report full time employment.

Table 6. Household income

Households	Number	Percent
Total	3,350	100
Less than \$2,500	374	11
\$2,500 to \$4,999	241	8
\$5,000 to \$9,999	652	19
\$10,000 to \$14,999	552	16
\$15,000 to \$24,999	718	21
\$25,000 to \$34,999	380	12
\$35,000 to \$49,999	229	7

\$50,000 to \$74,999	132	4
\$75,000 or more	72	2
Median (Dollars)	13,421	100

Source Data: United States Census of Population and Housing, Office of Planning and Statistics, Ministry of Finance, Republic of Palau

The 2000 Census of Population and Housing of the Republic of Palau states that 59.8% of families in Palau have incomes below the poverty level. Among households of unrelated persons, the figure is even higher 95.3%. On an individual level, 64.2% of the working population has income levels below the poverty level. Of the families below the poverty level, 1,606 are Palauan while 158 are foreign. The category of unrelated individuals, in which over 95% of people are below poverty level, consists of 236 Palauans and 4,041 foreigners.

Gross Domestic Product

The Gross Domestic Product (GDP) of the Republic of Palau, a calculation of the value of all of the country's goods and services produced in a single year, has been increasing over the past several years. As detailed in the Table below, the draft figures for 2004 reveal a GDP of over \$120,000,000. This is up from less than \$110,000,000 in 1996.

Table 7. Gross domestic product 1996-2004

Nominal Gross Domestic Product (\$ 000)									
Particulars	1996	1997	1998	1999	2000	2001	2002	2003	2004 1/
Agriculture	1,231	1,312	1,398	1,358	1,372	1,399	1,385	1,399	1,799
Fisheries	2,973	2,057	2,038	3,148	3,274	3,372	3,271	3,271	3,671
Mining & Quarrying	158	138	176	218	229	240	233	236	236
Manufacturing	997	1,403	1,702	1,609	1,690	1,774	1,650	1,666	1,690
Electricity, Gas and Water	(8)	(388)	2,360	3,393	3,563	3,741	3,591	3,663	4,741
Construction	8,545	8,834	10,389	8,249	8,661	9,181	8,722	8,896	10,181
Trade	20,995	23,913	24,837	23,165	23,860	24,337	22,390	22,838	23,860
Hotels and Restaurants	15,360	13,986	12,370	11,938	12,057	12,419	11,301	11,527	13,057
Transport and Communication	7,270	8,734	9,191	9,846	10,338	10,855	10,095	10,297	11,855
Finance and Insurance	5,294	6,573	5,706	4,297	4,511	4,647	4,368	4,412	4,511
Real Estate and Business Services	7,570	6,298	6,555	4,611	4,842	5,036	4,368	4,777	4,842

Public Administration	26,813	29,401	28,462	29,374	30,255	30,860	31,478	31,478	31,478
Other Services	9,807	9,211	9,907	9,691	9,982	10,381	9,550	9,741	9,982
Subtotal	107,006	111,471	115,091	110,897	114,634	118,242	112,717	114,201	121,903
Less: imputed bank service charge	2,100	2,101	2,640	2,384	1,250	1,250	1,250	1,250	1,250
Plus: import duties	3,298	3,842	4,869	4,972	3,842	3,842	3,842	3,842	3,842
Gross Domestic Product	108,204	113,212	117,320	113,485	117,226	120,834	115,309	116,793	124,495

Source Data: Office of Planning and Statistics, Ministry of Finance, Republic of Palau

In 2004, Agriculture and Fishing generated \$5 million dollars of the GDP. Industry [the combination of Mining/Quarrying, Manufacturing and Construction] boasted over \$12 million. Trade provided nearly \$24 million of the 2004 GDP, while Public Administration was responsible for \$31,478,000. The Service Industry [comprised of Utilities, Hotels and Restaurants, Transportation and Communication, Finance and Insurance, Real Estate and Business Services, and Other Services] was by far the largest factor in the GDP, accounting for nearly \$50 million. These figures indicate growth in all sectors, except for Public Administration, which has stabilized at the cited figure since 2002. Assuming these figures are accurate, the lack of growth in this sector is a good thing, since it represents the expenditure of public funds.

Employment and unemployment

The employment situation in Palau reflects the growth of the Gross Domestic Product to a certain extent. During the past 15 years, employment has nearly doubled. While in 1990 3,544 men were employed, in 2005 5,982 men had jobs. Similarly for women, during the same time period the figure increased from 2,057 to 3,795 (Table 8).

Table 8: Labor market indicators

Labor Market Indicators	1990	1995	2000	2005
Number of males employed	3,544	4,735	5,827	5,982
Number of females employed	2,057	3,045	3,556	3,795
Number of persons employed, urban			8,170	7,883

Number of persons employed, rural			1,213	1,894
Number of persons employed, private	3,848	5,098	6,336	6,398
Number of persons employed, public	2,115	2,661	2,745	3,388
Number of unemployed, males	289	321	121	232
Number of unemployed, females	182	267	103	194
Unemployment rate, Urban			2%	3.5%
Unemployment rate, Rural			7%	7%
Unemployment rate, males 16-24			5%	12.8%
Unemployment rate, females 16-24			6%	10.5%

Source Data: Office of Planning and Statistics, Ministry of Finance, Republic of Palau

Surprisingly, the number of urban workers declined between the years 2000 and 2005, from 8,170 to 7,883. Also noteworthy is that 643 employees were added to the public sector payroll during that same time period. Based on the information in the previous section, the Public Administration expenditures had stabilized during the last three years. The influx of over 600 new employees, unless hired during 2000-2002, seems inconsistent with the costs of government having stabilized.

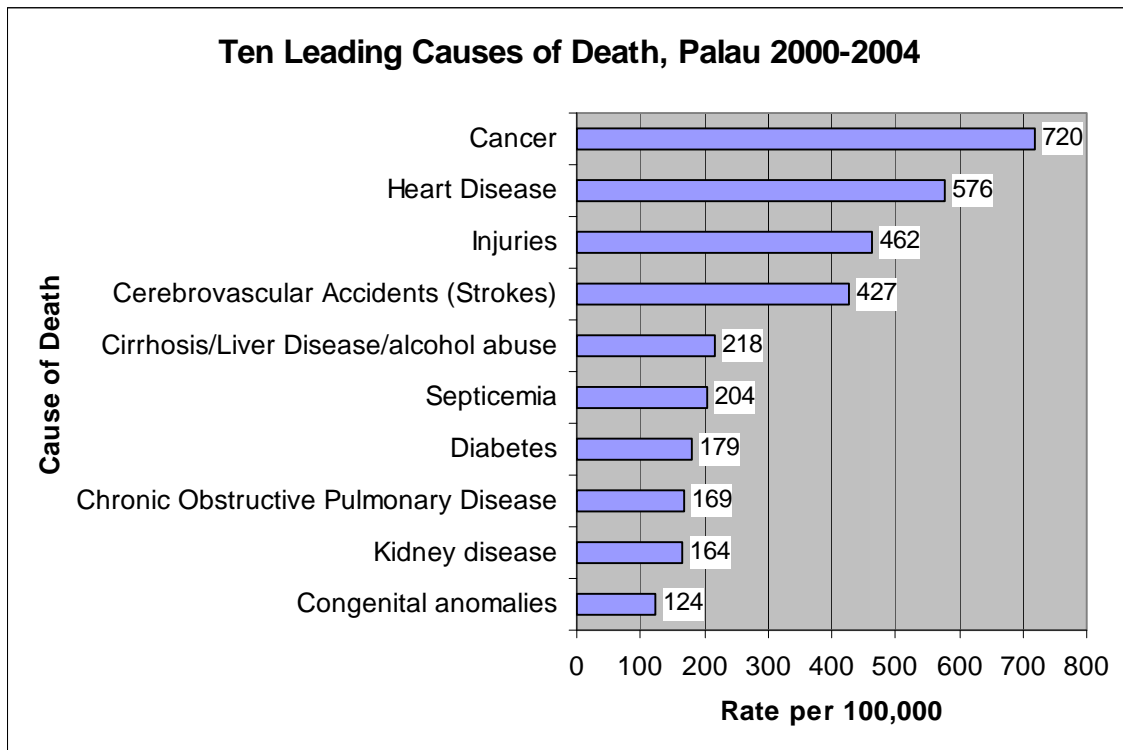
Another aspect of a statistical review worth mention is the fact that the private sector has doubled its employees since 1990, and tripled its figures from 1980, when there were only 1,182 employees in the private sector. The turning point seems to be 1990, when the number of persons employed in the private sector finally exceeded those employed by the government.

Consequences of Substance Abuse

All Cause of Death

This section begins with a brief profile of mortality in the Republic of Palau. This information is provided to help put the substance related causes of death into a broader context. It is important to note that this data is based on death certificate reviews, thus it gives a picture of cause of death, however, it does not show burden of disease caused by substance use and abuse. We recognize that this is a serious gap in our data, but it is just not available at this time. Figure 1 shows the ten leading causes of death in the Republic of Palau for the five-year period of 2000-2004. It should be noted that for the purposes of this report, liver cancers are included in the category of liver disease rather than with cancer.

Figure 1. Ten leading causes of death in Palau, 2000-2004



Source Data: Ministry of Health; Epidemiology

Of the 10 leading causes of death, all but two, septicemia and congenital anomalies are at least partially caused by substance abuse. For example, chronic obstructive pulmonary disease and lung and oral cancers are strongly associated with tobacco use. Chronic liver disease is strongly

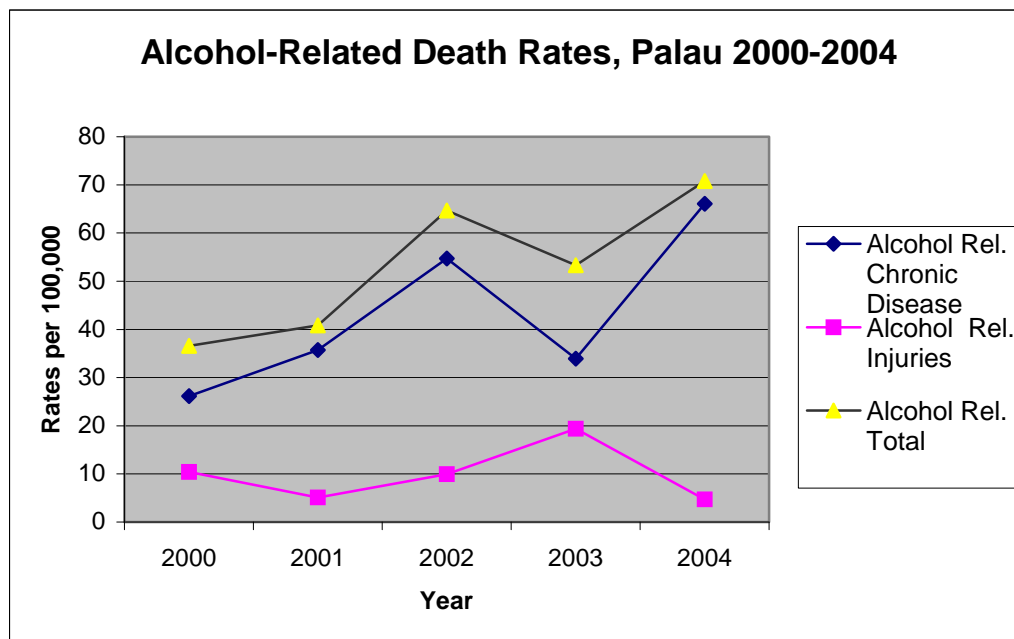
associated with chronic alcohol abuse, and many injuries are alcohol related.

Alcohol Related Death

The consequences of alcohol abuse are severe in the Republic of Palau. While the information here looks at alcohol related death that is by no means a holistic indicator of the consequences caused by alcohol abuse. Other social indicators, which are much more difficult to measure quantitatively, such as domestic violence, crime, absence from work, unemployment and depression are also strongly linked to alcohol abuse and chronic alcohol consumption.

For the purposes of this report we look at two types of alcohol-related death: alcohol-related chronic disease and alcohol-related injuries. Alcohol-related chronic liver disease is a progressive disease caused by chronic alcohol abuse. It imposes a terrible burden of both morbidity and mortality in the Republic of Palau. It consistently ranks among the top ten leading causes of death and for 2000- 2004 it was the fifth leading cause of death. As shown in the figure below alcohol-related injuries is present at a much lower rate than alcohol-related death, however, given the limitations of our current data system it is believed that alcohol-related injuries are somewhat underreported. In both categories alcohol-related chronic disease and alcohol related injury, males are at much greater risk than females.

Figure 2. Alcohol-related death rates, Palau, 2000-2004

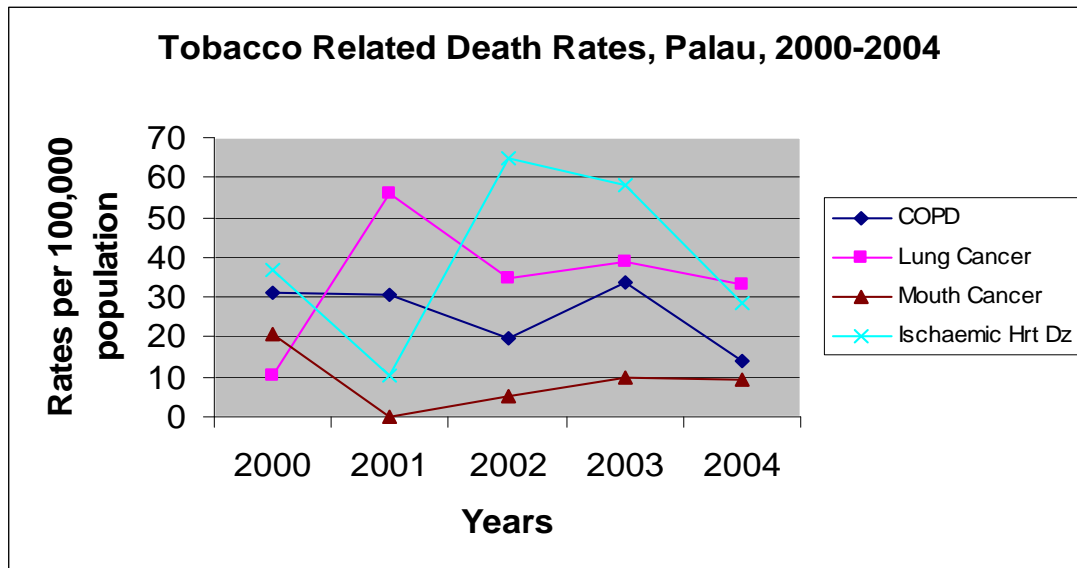


Source Data: Ministry of Health; Epidemiology

Tobacco Related Death

Tobacco use is a preventable health risk and in many countries it is the leading preventable cause of death. Most tobacco users' first experiment with tobacco products in adolescence and many become regular users before age 18. Smoking tobacco is responsible for heart disease, cancers of the lung, larynx, mouth, esophagus and bladder; stroke; and chronic obstructive pulmonary disease. Chewing tobacco alone or as an additive to betel nut is associated with leukoplakia, oral cancers, tooth and gum disease, and cardiovascular disease. The most common way of using tobacco in Palau is by chewing (pieces of cigarette or smokeless) with betel nut. As previously mentioned, tobacco imposes a terrible burden on morbidity in the Republic of Palau.

Figure 3. Tobacco-related death rates, Palau, 2000-2004

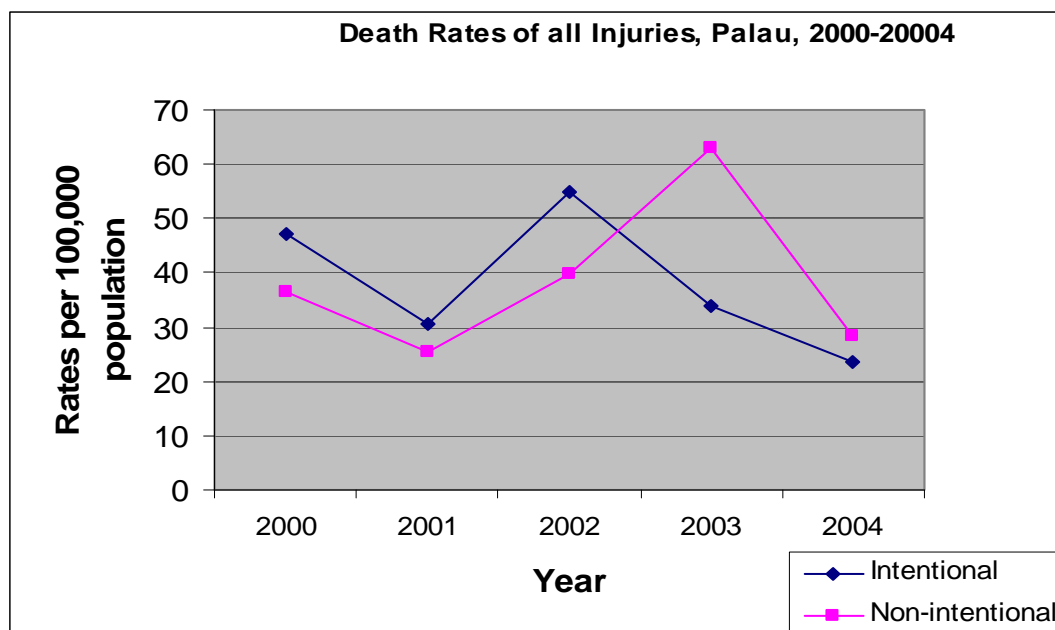


Source Data: Ministry of Health; Epidemiology

Suicide

Suicide is closely associated with drug abuse, alcohol abuse, and mental health disorders. While Palau's suicide deaths cannot be completely attributed to these conditions, suicide can be a useful indicator of the extent of these problems. As is generally the case, worldwide suicide rates in males in Palau is significantly higher than the rate in females.

Figure 4. Intentional and unintentional injury related death rates, Palau, 2000-2004



Source Data: Ministry of Health; Epidemiology

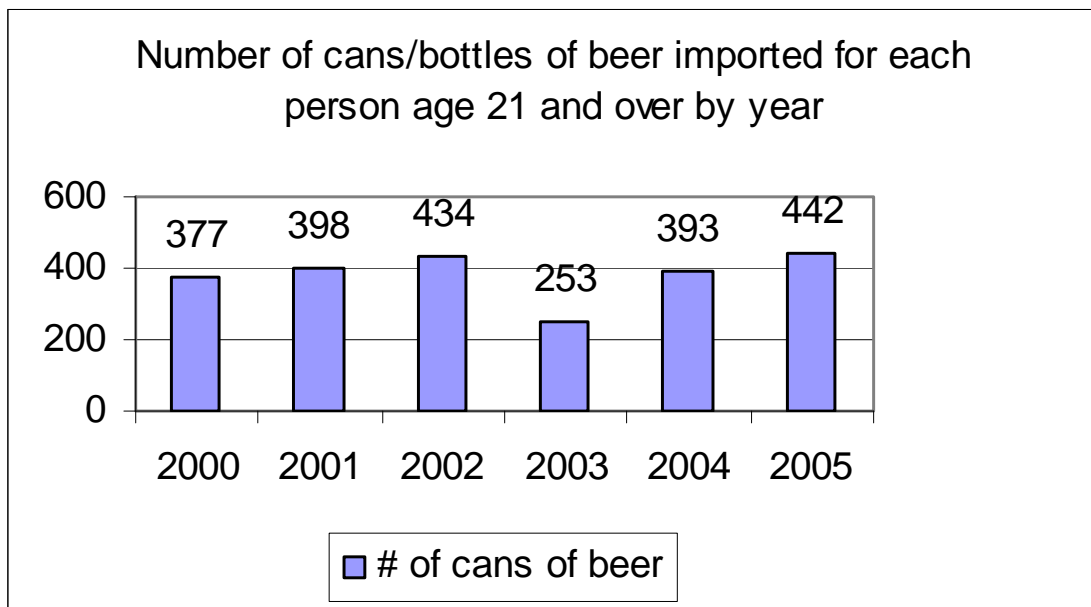
Consumption Patterns

In looking at consumption patterns for all substances, the generally accepted approach would be to look at patterns reflective of the entire population in question. Once this accurate ‘snapshot’ is provided, it is helpful to look more specifically at consumption patterns by sub-populations. Presented below is data that tries to provide the aforementioned snapshot, as well as provide specific information about consumption patterns of the adult and youth populations. This information is further broken down by substance of interest. It should be noted that the primary source of entire population level data is import data provided by the Ministry of Finance, Bureau of Revenue, Customs and Taxation. Data specific to the adult population is primarily data from the Ministry of Health’s Community Health Assessment of 2003. Finally, the most consistently collected and comprehensive data collected from the youth population is primarily from the Ministry of Education’s Youth Risk Behavioral Survey (YRBS), which includes all of the students at Palau’s only public high school and the Ministry of Health/Ministry of Education Youth Tobacco Survey (YTS), which includes not only students at Palau’s public High School, but also at Palau’s private High schools.

Alcohol Consumption

The consequences of alcohol abuse are severe in Palau, which is consistently viewed, by Budweiser at least, as a much larger scale market than most, if not all, US markets of comparable size. Figure 5 below shows the number of drinks imported per person, age 21 years and older, per year, while figures 6 and 7 show the number of standard drinks of wine and/or spirits, and the combined total (beer plus wine and/or spirits) per person age 21 and older respectively.. It is important to note that, this information only captures alcohol that is legally imported into Palau. While this clearly represents the bulk of alcohol consumed, it is necessary to consider that locally brewed moonshine, wine, coconut liquor and Red Rooster beer are not included in this total. Additionally, according to the MOH Community Health Assessment data, approximately one-half of the adult population (age 21 years and older) report not having had a drink in the past 12 months. Thus the data presented below is somewhat under-representative of the actual amount of alcohol available for consumption in Palau, and it is conceivable to think that these figures could be double what is reported if we were to look at alcohol imported each year by the number of adult persons (age 21 years and older) who report having had a drink in the previous 12 months.

Figure 5. Number of cans/bottles of beer imported per adult (21 years and older) per year

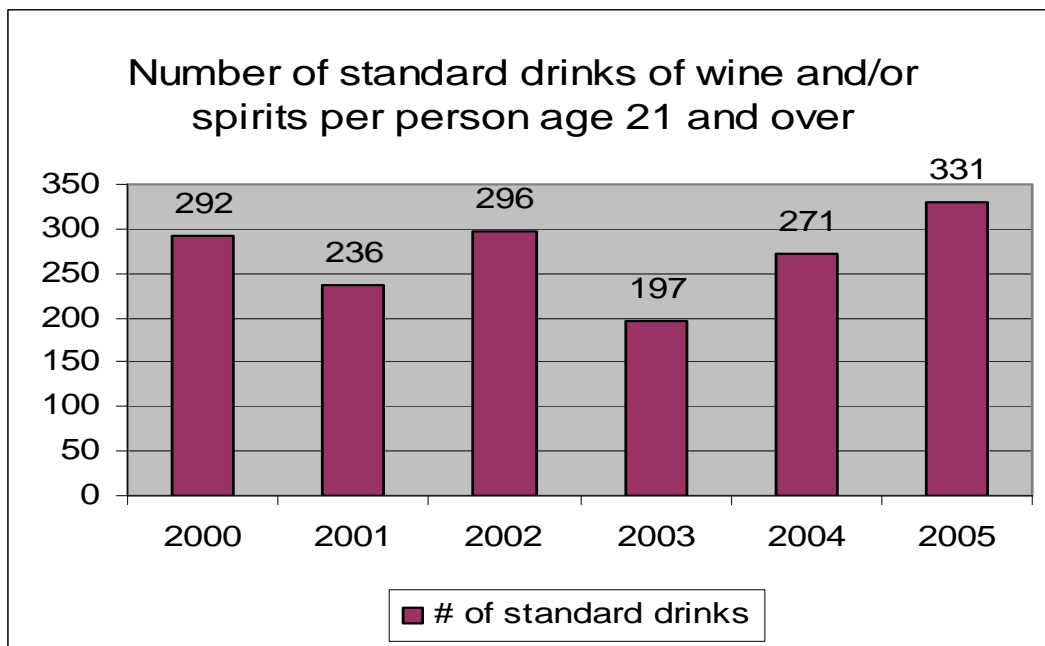


Source Data: Republic Of Palau, Bureau of Revenue, Customs & Taxation

As the above figure shows, around 400 cans of beer per person were imported each year, except during 2003, when only 253 cans were imported. This drop in imports in 2003 is likely due to the increased "sin

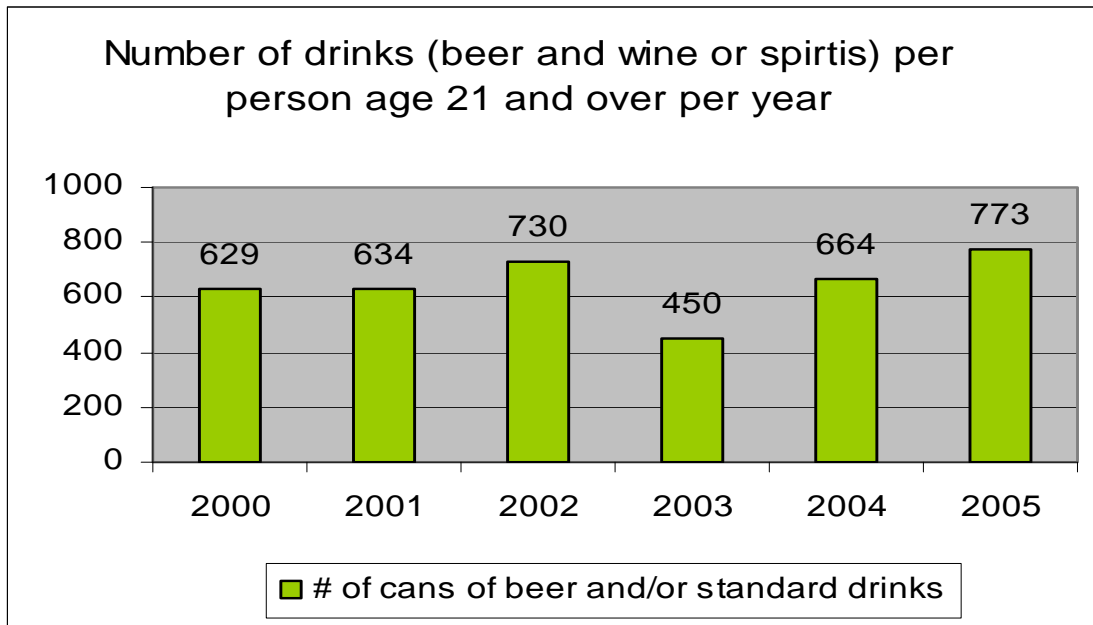
tax” that was implemented in 2003 and ‘stockpiling’ that was done in 2002 by retailers and importers in anticipation of the tax increase. Therefore the numbers of imports in 2002 may be somewhat inflated. Perhaps more important to note, is that the increased “sin tax” did not seem to have a long term affect, at least on imports of alcoholic beverages which leveled off in 2004 and increased in 2005. This trend also holds true for wine and spirits.

Figure 6. Number of standard drinks imported per adult (21 years and older) per year



Source Data: Republic Of Palau, Bureau of Revenue, Customs & Taxation

Figure 7. Number of total drinks (beer, wine and/or spirits) imported per adult (21 years and older) per year



Source Data: Republic Of Palau, Bureau of Revenue, Customs & Taxation

2. Binge Drinking

Figure 7, which combines imported beer statistics with those of standard drinks, establishes that more than 600 drinks per person were imported each year, except in 2003, when only 450 drinks were imported. As stated earlier, this decrease in 2003 was most likely due to the implementation of the increased "sin tax" on alcoholic beverages. It is also interesting to note that there has been a steady increase in imported alcohol since 2003.

Adult Binge/Heavy/Chronic Drinking

Adult binge drinking (defined as having five or more drinks on a single occasion) is associated with significant rates of alcohol-related injury, death and disability. According to the latest estimates from the United States Centers for Disease Control and Prevention (CDC), almost 50% of homicides and more than 20% of suicides are alcohol-related. Moreover, also in the United States, alcohol consumption is the primary causal factor in roughly 50% of motor vehicle crash deaths among males aged 20-44; and in more than a third of motor vehicle crashes deaths among females in this age range. Anecdotal evidence suggests that the percentage of motor vehicle crash deaths associated with alcohol

consumption (and/or other abusable substances) in Palau is even greater than the rates in the United States, not only among the age group 20-44, but in all age groups. In addition to the aforementioned challenges, binge drinking is also associated with a wide range of other social problems, including domestic and sexual violence, crime, and increased risk for transmission of sexually transmitted infections.

Chronic or heavy alcohol consumption (defined as having more than 2 drinks/day for men and more than 1 drink/day for women) is associated with significant rates of alcohol-related chronic disease death and morbidity. According to the latest estimates from the Centers for Disease Control and Prevention, significant proportion of medical conditions (e.g. unspecified liver cirrhosis, pancreatitis) is alcohol related. For each of these causes, it is chronic heavy drinking (as opposed to acute short-term, or binge drinking) that is considered responsible for the alcohol-related chronic disease deaths. Chronic drinking is also associated with a wide range of other problems including domestic violence and family disruption.

While we do not have a direct measure of adult binge or chronic/heavy drinking behaviors in Palau, the best available measure for this construct comes from the community health assessment data. During the community health assessment of residents of Palau, 10,990 adults aged 20 and over were surveyed. This equals 80.4% of the adult population in Palau. Of the 10,990 participants, 9,185 participants responded to the question, "Have you ever consumed a drink that contains alcohol, such as beer, wine, tuba or whiskey?" Of these respondents, 4,428 or 48.2% answered in the affirmative, while 51.8% (or 4,757) respondents answered no. Out of the 4,428 adults that had consumed alcohol in their life, 4,347 responded that they had consumed alcohol in the previous 12 months. Respondents were further asked, "in the past 12 months how frequently have you had at least one alcohol drink?" More than 30% of respondents reported drinking one or more days a week, with 24.4% reporting that they drink 1 to 4 times per week and 6.2% reporting that they drink 5 or more times per week. Finally, respondents were asked, "When you drink alcohol, on average, how many standard drinks do you have during one day?" 59.2% of men reported drinking 5 or more drinks, on days that they drink, while 37.4% of women reported the same. A further breakdown by gender is presented below.

Table 9. Adult binge drinking by gender

Number of average standard drinks per time user drank						
Number of Drinks	Total respondents	Percent	Males	Percent	Females	Percent
1 to 4	3,890	48.2	2,557	40.8	1,333	62.5
5 to 9	1,876	30.9	1,043	32.3	833	28.3
10 to 14	1,202	15.3	825	19.4	377	7.4
15 to 19	70	1.8	64	2.5	6	0.5
20 or more	145	3.7	129	5	16	1.2

Source Data: Republic Of Palau, Bureau of Revenue, Customs & Taxation

While more women than men consume four drinks or less, a higher percentage of men drink more in the other categories. However, except for the 10 to 14 drink category, the difference between men and women is only 2 to 4 percentage points.

Youth Binge Drinking

Heavy drinking by young people is associated with outcomes such as death and disability due to injury. Youth drinking is also associated with poor academic performance and risky behaviors, such as an increased number of sexual partners and the use of marijuana. In 2003, binge drinking (having 5 or more drinks in a row over a short period of time) was more commonly reported in Palau than in the United States. While 28.3% of U.S. high school students reported binge drinking (2003 Youth Risk Behavior Survey¹), 34% of Palau High School students reported this behavior². The higher prevalence of binge drinking among Palau High School students compared to U.S. high school students was true for both boys and girls (Palau boys- 39.4%, US boys- 29.0%, Palau girls- 29.5%, US girls- 27.5%). It should be noted that the data for Palau includes only Palau High School students. This data does not account for this type of behavior among out of school youth, nor does it reflect behaviors in private school youth. Anecdotal information, from Palau as well as U.S. based research, would indicate that both of these groups are at a higher risk for binge drinking behaviors.

¹ The YRBS survey is administered to all students in Palau's public high school. The number of students ranged from approximately 575 students in 1999, to just less than 650 students in 2005. However, since not all students answer every question, the actual number of responses varies for each question, and in each survey year.

² Throughout this document where ever US comparison data from the YRBS is used, comparison is made with 2003 data, which was the most recent aggregate data available when the data analysis was being conducted, even though local YRBS data was available for 2005.

Figure 9. Binge drinking among high school students 1999- 2005

Source Data: YRBS 1999-
2005

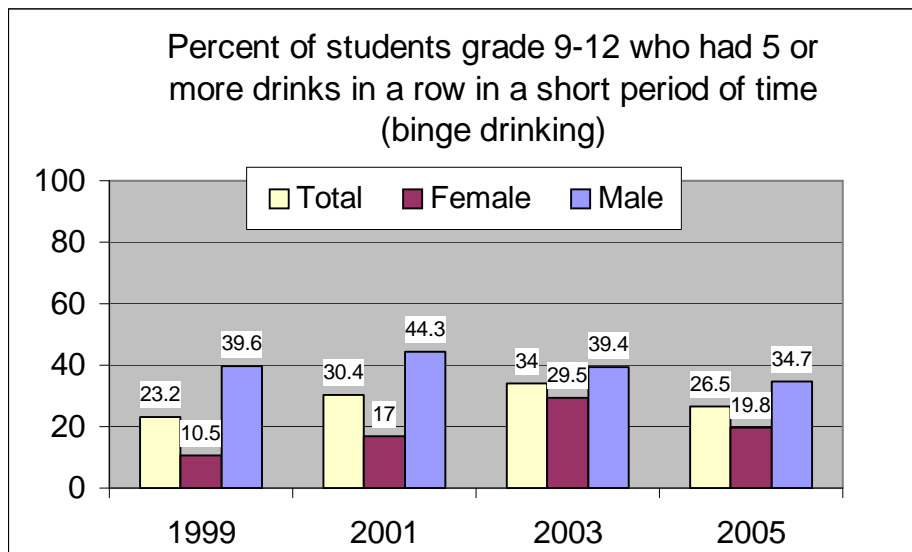
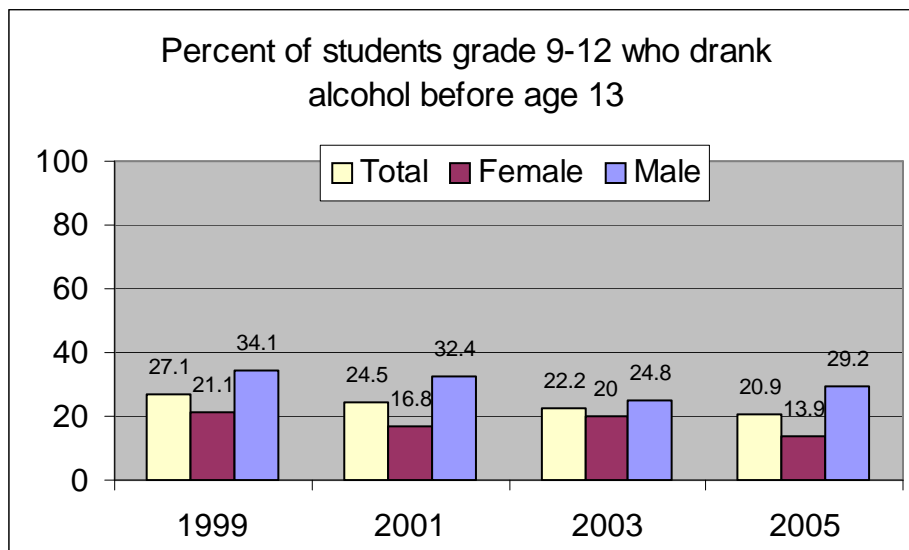


Figure 9 shows that the number of high school males engaging in binge drinking has been heading downward since 2001, resulting in a lower percentage in 2005 than 1999. Interestingly, during the same period, their female counterparts have nearly double the percentage of 1999. Overall, however, the rates decreased in 2005.

Age of First Drink and Later Drinking Behaviors

Figure 10. Early initiation of alcohol use among high school students 1999- 2005



Source Data: YRBS 1999-2005

Given Palau’s high rates of adult problem drinking, as evidenced by the amount of alcohol imported as well as self reported chronic/ heavy drinking behaviors, it is important to identify precursors to adult problem drinking that can be subjected to intervention. One such precursor is the age of one’s first drink. U.S. based research supports a strong correlation between the early age of first drinking (before age 13) and subsequent development of adult alcohol dependence. This result suggests that focusing on the age of first drinking as a target of intervention might be a reasonable prevention strategy.

In 2003, a lower proportion of Palau High School students reported an age of first drinking of 13 or younger (22.2%) than the United States overall (27.8%). This proportion holds true for both males (Palau males - 24.8%, U.S. males - 32.0%; Palau females - 20.0%, U.S. females - 23.3%).

A detailed trend analysis of early initiation of alcohol use is presented in Figure 10 above while the overall percentage is on a downward trend, from 27.1% to 10.9%; there is no consistent trend for either boys or girls.

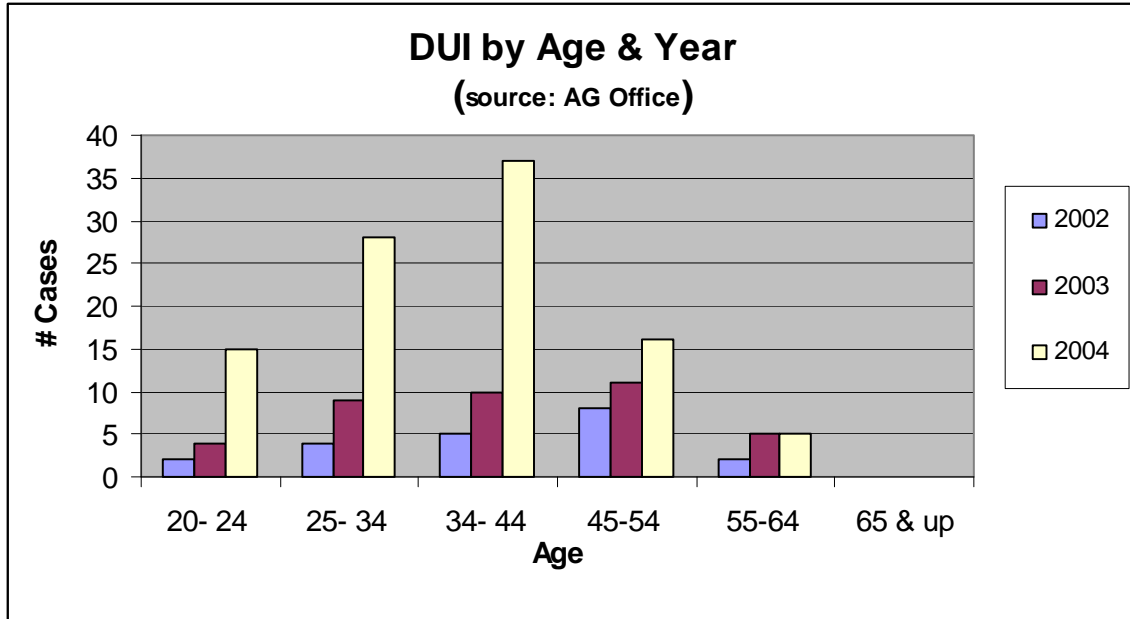
3. Drinking and Driving Behaviors

Adult DUI Data

Adult drinking and driving is associated with injury outcomes such as alcohol-related motor-vehicle crash injury and death. According to the latest estimate from the Centers for Disease Control and Prevention, in the United States, alcohol consumption is the primary causal factor in roughly 50% of motor vehicle crash deaths among males aged 20-44; and in more than a third of motor vehicle crash deaths among females in this age range. In Palau, anecdotal evidence suggests that the percentage of motor vehicle crash deaths associated with alcohol consumption (and/or other abusable substances) is even greater than in the United States, not only among the age group 20-44, but in all age groups.

In Palau, we have limited adult data on drinking and driving behavior. The best measure available is data on the number of arrests for DUI. It is important to note that data on arrests for DUI in Palau does not capture the true extent of the problem. For example, police will frequently intervene to prevent intoxicated persons from driving. Police have been known to transport intoxicated individuals to their place of residence and impound their vehicles until the person comes to claim the vehicle in a sober state, or they simply drive the car home for the intoxicated individual. This type of intervention is quite culturally appropriate given our small population and the fact that our ultimate goal is to prevent DUIs. However, as the figure below shows, in 2004 there was a significant increase in cases of DUI, as reported by the Attorney General's office. This is most likely due to a change of leadership at both the Ministry of Justice and the Division of Public Safety.

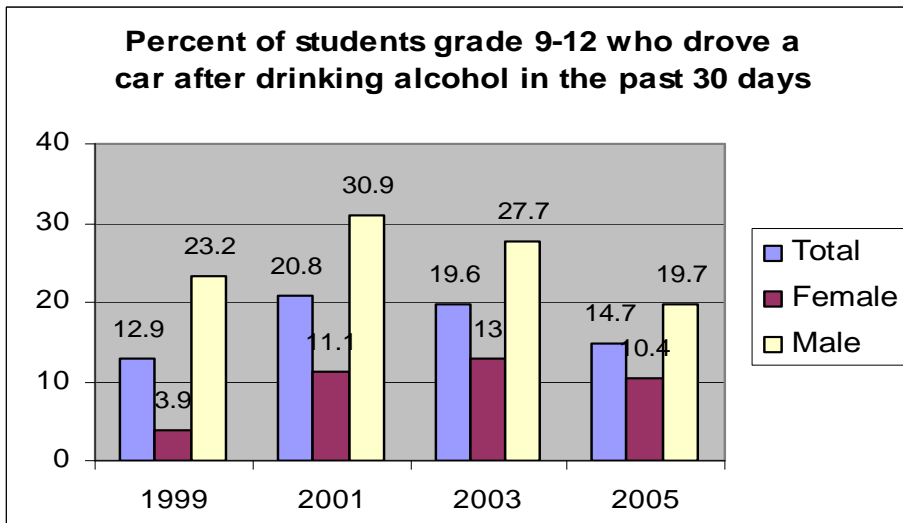
Figure 11. Number of cases of DUI by age, 2002-2004



Youth DUI Data

As with other alcohol statistics, there are indications that point to the young people of Palau developing alcohol consumption patterns that will soon mirror that of their parents' generation.

Figure 12. Youth drinking and driving



Source Data: YRBS 1999-2005

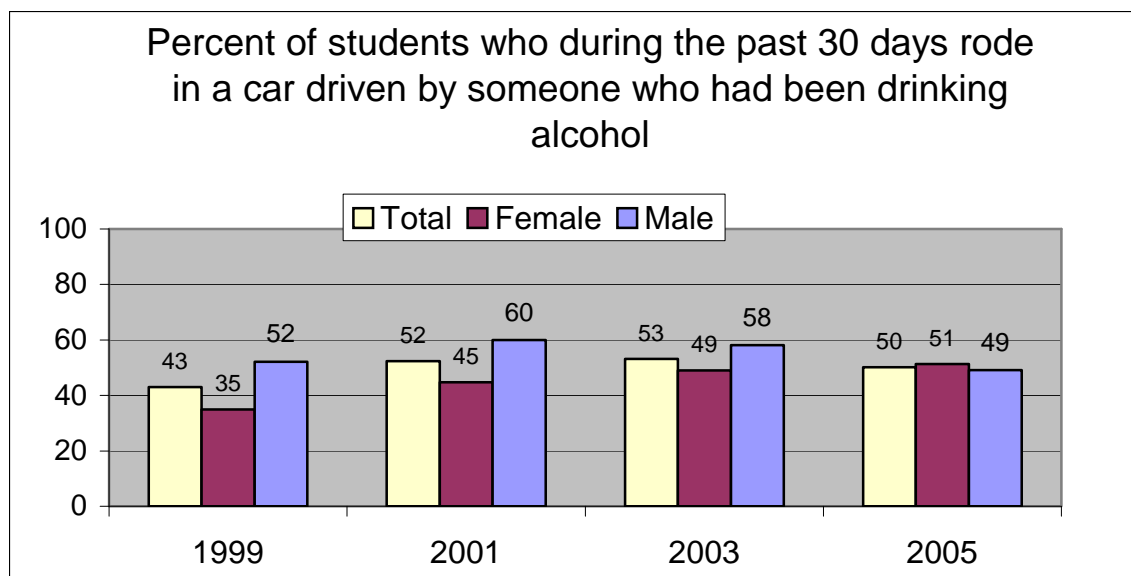
Figure 12 shows that, high school students are already combining drinking and driving. Again, there does appear to be some decline in the overall statistics since 2001, going from a high of almost 31% down to a

low of just under 20% in 2005. Again, the decrease appears to be in the young male population. The statistics for young females indicates a slight rise and then a slight drop, but again the 2005 reported rate is more than twice that of 1999.

Youth Riding with Drivers who have been Drinking (YRBS)

In addition to concern about young people driving after consuming alcohol, statistics indicate there is a need for concern about the decisions of young people to ride with drivers who have been drinking.

Figure 13. Youth riding with a driver who has been drinking



Source Data: YRBS 1999–2005

Figure 13 shows that 50% of YRBS survey respondents rode with a driver who had been drinking during 2005. This is an increase over 1999, and demonstrates that young people continue to be influenced to engage in risky behavior around alcohol issues. Moreover, this also indicates that youth in Palau are likely to be riding with adult drivers who have been drinking, since the number reporting this behavior far outweighs the number of youth reporting drinking and driving.

Tobacco Use

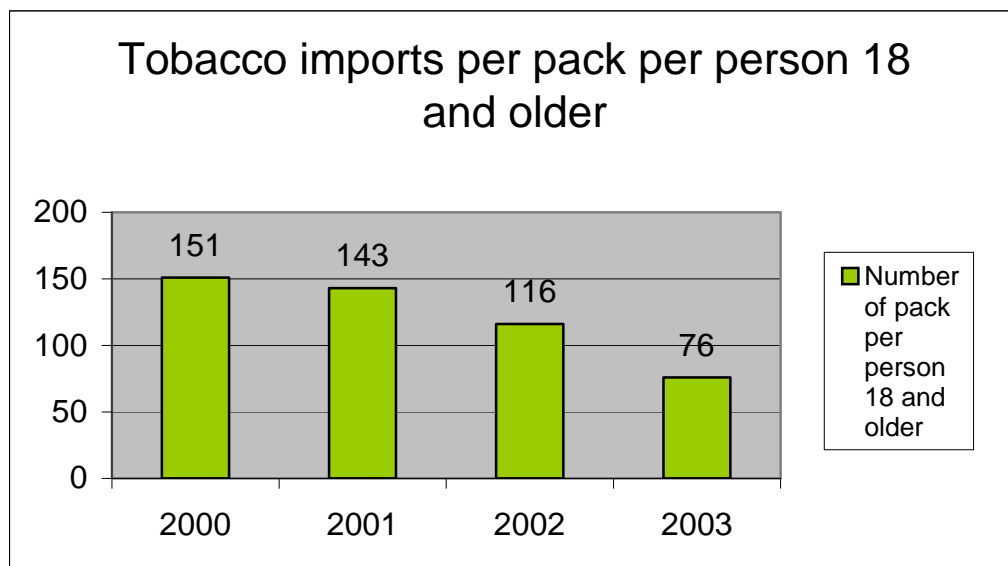
The use of tobacco contributes to health problems and drains money from the economy. While tobacco is smoked at high rates, it is more commonly used as an additive to betel nut in the form of a piece of cigarette or smokeless tobacco) and then chewed. As a result, health problems range from asthma, bronchitis and emphysema, and conditions

leading to those diseases, to heart disease and hypertension and to cancers of the mouth and lungs. At a time when health care costs continue to skyrocket, pocketbook constraints can force families to make hard decisions about what care they can afford to provide for their unhealthy family members. Similarly, the government will need to make hard decisions about the amount by which it can subsidize health care for the diseases caused by the use of tobacco. The economic impact is not limited to future health costs. Since very little tobacco is grown in Palau, most tobacco products are imported which means that most of the money spent for cigarettes and other tobacco products is exported out of Palau.

It should be noted that the most common form of tobacco use in Palau is chewing cigarettes with betel nut. While people also smoke cigarettes, chewing tobacco (in the form of cigarettes) is a much more prevalent way the product is used. Hence the data is presented on chewing tobacco and smoking tobacco.

Indicative of the extent of tobacco use in Palau are the statistics on the import taxes paid on tobacco products brought into Palau.

Figure 14. Tobacco imports per capita



Source Data: Republic Of Palau, Bureau of Revenue, Customs & Taxation

Based on figure 14 it appears that, tobacco use is declining in very small increments. This may be due to the hefty increase in those taxes during the relevant years. In 1998, the tax on a pack of cigarettes was \$increased from \$.30 to \$.50 per pack; in 2002 the tax was Further

increased from \$.50 to \$2.00 per pack. While some people are quitting the use of tobacco, others are beginning such use, particularly the young people of Palau.

Adult Tobacco Use

Chewing and Smoking

Like alcohol, our best source of tobacco consumption data for adults is the MOH Community Health Assessment. According to the 2003 CHA, which surveyed 10,990 adults, 48% of adults responded that they chew betel nut, and of those 48%, 85%, or 4,369 individuals, reported chewing betel nut with tobacco.

The number of adult respondents who reported smoking was 17%, or 1,492 individuals. However, a disproportionate percentage of the smokers in the CHA were not Palauan. The number of Palauans who reported to be daily smokers was 1,197.

In addition to the aforementioned tobacco consumption patterns in adults, the NEWG specifically examined tobacco usage patterns in pregnant women. Historically, the infant mortality rate in Palau averaged less than 10 infants per 1,000 live births. However, as illustrated in table 10 this rate doubled in 1999, rising to a high of 30.8 in 2004. As part of an ongoing epidemiological investigation into the cause of this dramatic increase, the NEWG examined a MOH generated report that showed that in nearly every infant death case, the mothers used tobacco throughout their pregnancy.

Table 10. Infant mortality rate, Palau

Year	Infant Mortality Rate
1997	3.0
1998	10.7
1999	20.0
2000	21.6
2001	16.7
2002	23.2
2003	9.6
2004	30.6
2005	18.5

Source Data: Ministry of Health; Epidemiology

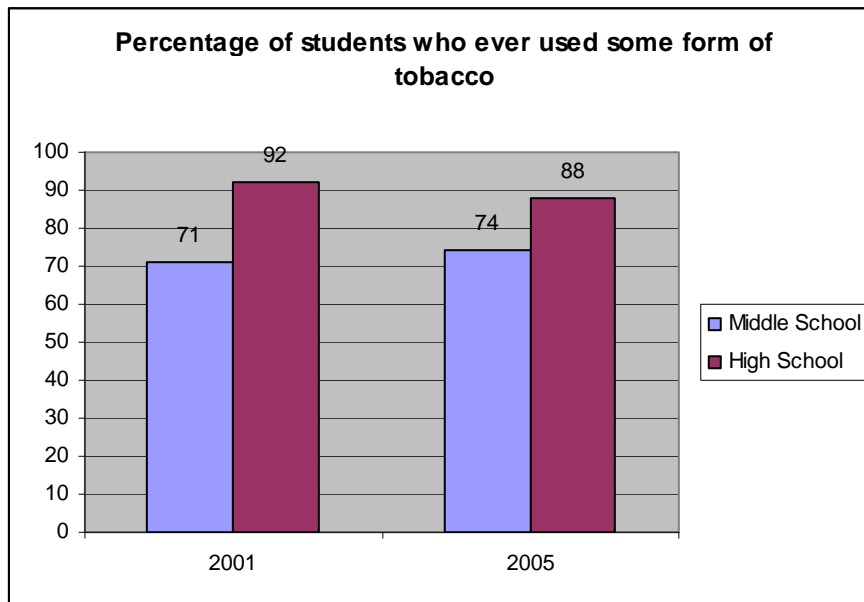
Youth Tobacco Use³

Data on youth tobacco consumption is derived from Palau's Youth Tobacco Survey (PYTS). The YTS is a school-based survey that collects data from middle and high school students by using a standardized methodology of constructing the sample frame, selecting participating schools and classes and processing data and is used in over 132 countries including the U.S. In addition to YTS data, YRBS also has data on youth tobacco use, albeit less specific to actual usage patterns in Palau.

Lifetime Tobacco Use – Any Type

Almost all (88.1%) of Palauan high school students and almost 3/4 (74.3%) of Palauan middle school students have tried using some form of tobacco (in betel nut or smoking) in their lives. Exposure to tobacco products in various forms is clearly very common.

Figure 15. Percentage of students who ever used any kind of tobacco



Source Data: Palau YTS 2001, 2005

³ The Palau Youth Tobacco Survey (PYTS) was first administered in 2001 and again in 2005, thus data can only be shown for the two time periods. The PYTS is used because it is a very rich source of youth tobacco data and covers all school youth in the Republic.

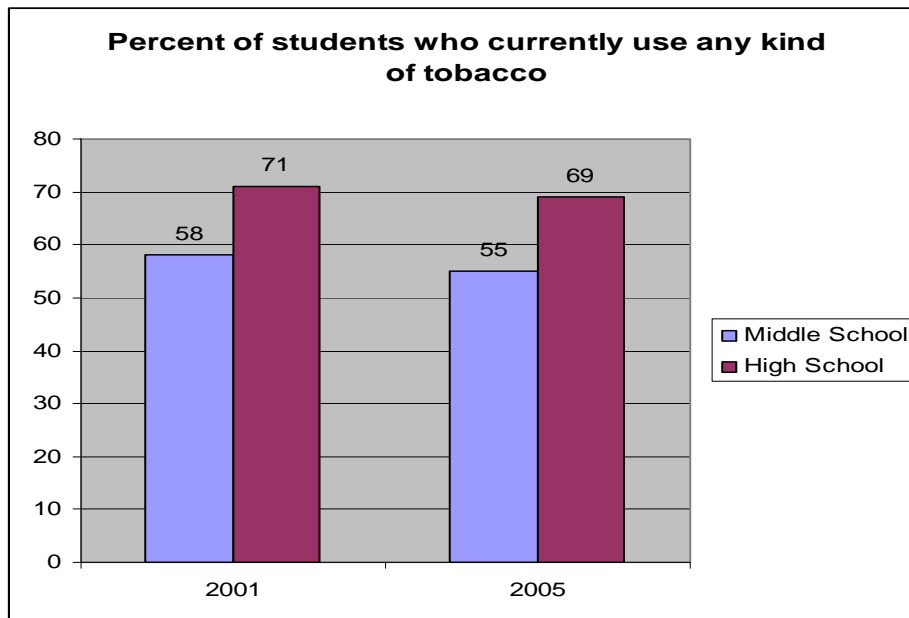
Current Use- Any Type

Literature on tobacco and other substance use defines a “current user” as someone who has used a product on one or more of the past 30 days. Sixty-nine percent (69.3%) of students in grades 9 through 12 are current users of some form of tobacco, virtually unchanged from 71% in 2001.

More than half (55.3%) of students in grades 6 through 8 are current users of some form of tobacco (in betel nut, smoking cigarettes, or smokeless tobacco [not in betel nut]).

For both high and middle school students, there is no significant difference in the proportion of boys and girls who are current users of any form of tobacco, and the proportion of students who report currently using any form of tobacco does not change significantly as grade increases.

Figure 16. Percentage of students who used any form of tobacco in the past 30 days



Source Data: Palau YTS 2001–2005

Current Use - Chewing Betel nut with Tobacco

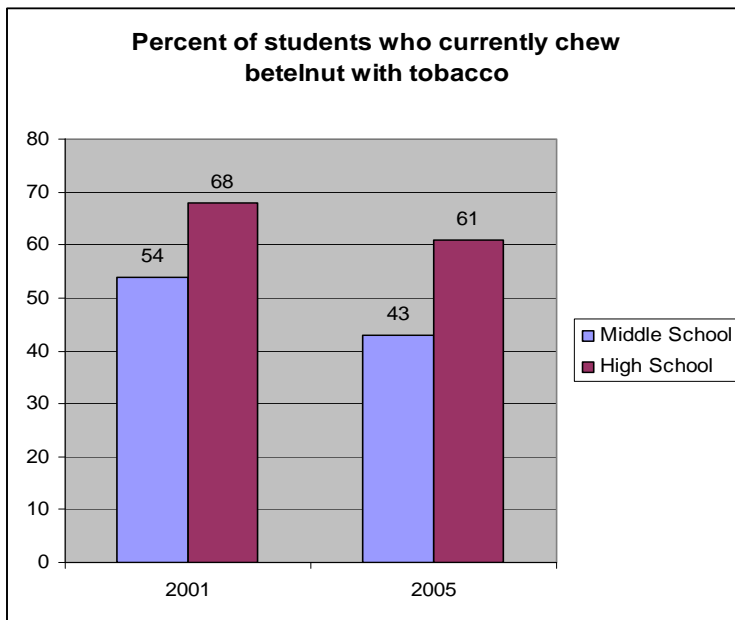
The majority (61.1%) of high school students answered that they usually added tobacco to their betel nut chew in the past 30 days. Nearly sixty

percent (59.9%) usually added cigarettes (down from 67.5 in 2001) while 1.2% answered that they usually added smokeless tobacco.

There is no significant difference in the proportion of males versus females, or among students by grade who report that they usually add tobacco to their betel nut chew.

For middle school students, almost half (43.1%) answered that they usually added tobacco to their betel nut chew in the past 30 days. 41.9% usually added cigarettes (down from 51.5 in 2001) while 1.3% answered that they usually added smokeless tobacco.

Figure 17. Percentage of students chewed betel nut with tobacco in the past 30 days.



Source Data: Palau YTS

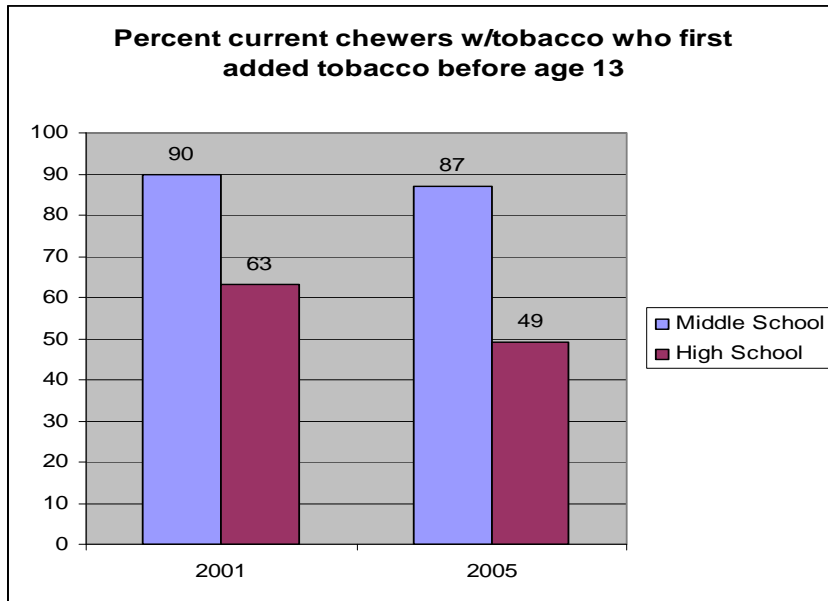
2001-2005

Early Initiation - Chewing Betel nut with Tobacco

Of the 61.1% of high school students who reported current use of tobacco with their betel nut, 49.2% reported that they started adding tobacco to their chew before the age of 13 years.

Of the 43.1% of the middle school students who reported current use of betel nut with tobacco, 87.1% reported first adding tobacco prior to age 13 a slight decrease from 2001.

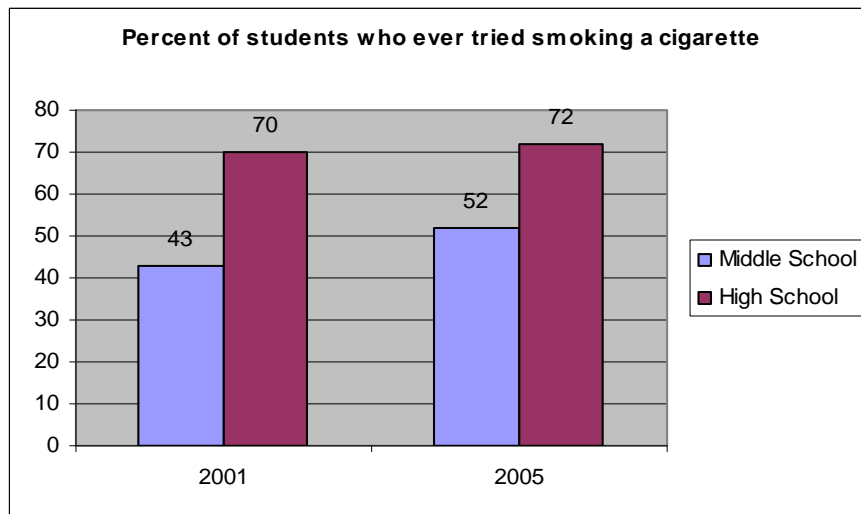
Figure 18. Percentage of students who first added tobacco to their betel nut by age 13.



Source Data: Palau YTS 2001-2005

Lifetime Use - Smoking

Figure 19: Percentage of students who ever tried smoking a cigarette, even one or two puffs.



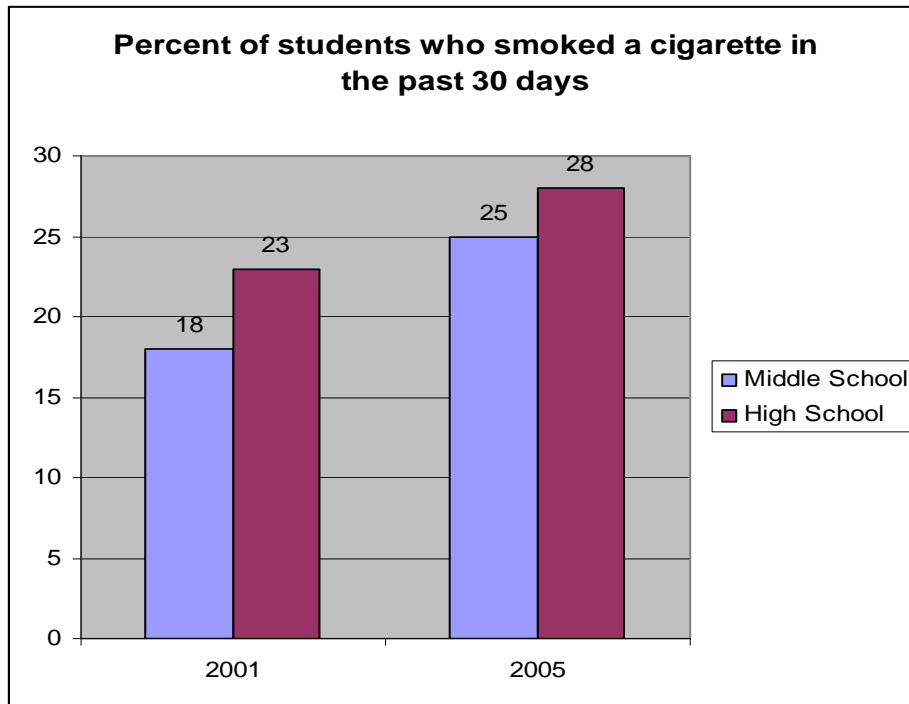
Source Data: Palau YTS 2001-2005

Current Use - Smoking

Current smokers are defined as those who have smoked cigarettes on 1 or more of the past 30 days. 27.6% of high school students are current smokers, up from 23.1% in 2001. Even though this is not the primary form of tobacco use among Palauan high school students, the level of current smoking is comparable to many U.S. states. The national prevalence of current smoking among high school students in the United States was measured at 22% in 2004.

Twenty-five percent (25.4%) of middle school students are current smokers, up from 18.3% in 2001. As in the case of high school students, this is not the primary form of tobacco use among Palauan middle school students, yet the level of current smoking is higher than many in many U.S. states, and much higher than the national average. The 2004 U.S. National Youth Tobacco Survey reports a current cigarette smoking rate of 8.4% among middle school students.

Figure 20. Percentage of students who smoked a cigarette in the past 30 days.

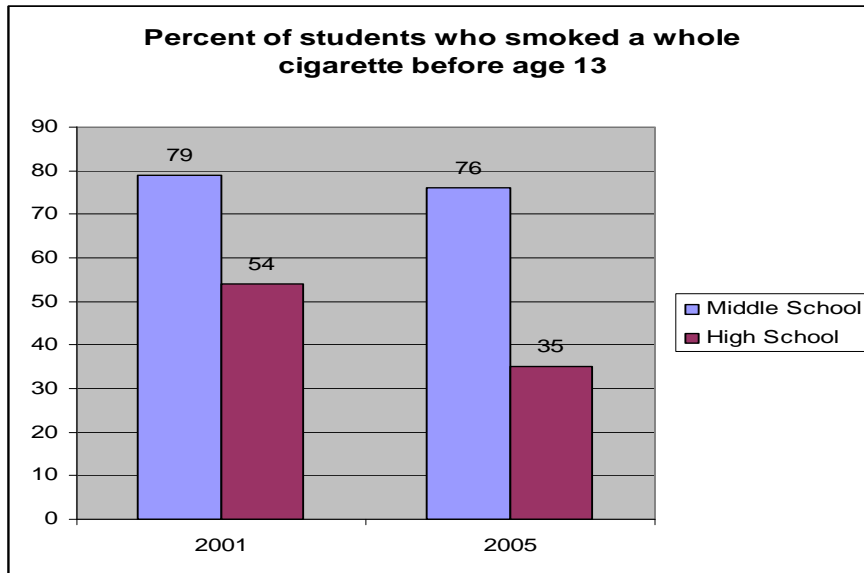


Source Data: Palau YTS 2001-2005

Early Initiation - Smoking

Almost half of high school students (44.9%) and 2/3 (63.6%) of middle school students reported that they have never smoked a whole cigarette. However 35.3% of those high school and more than ¾ (76.3%) of middle school students who had smoked a whole cigarette, reported doing so before the age of 13 years.

Figure 21. Percentage of students who smoked their first cigarette by age 13.



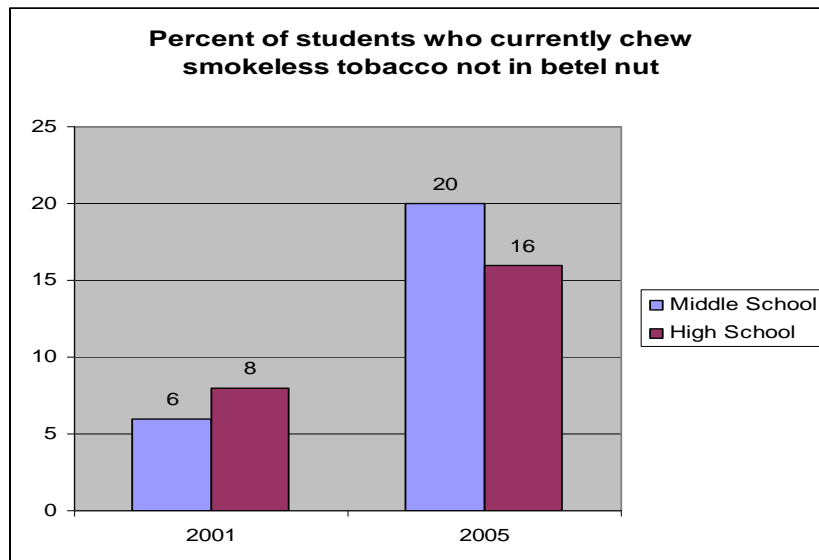
Source Data: Palau YTS 2001-2005

Current Use - Smokeless Tobacco

Nearly seventeen percent (16.5%) of Palauan high school students currently use smokeless/chewing tobacco (not in betel nut). This compares to 7% in the U.S. (See *CDC Surveillance Summaries 2004*;53 (SS-2):1-96 for more details of the 2003 YRBS results). This should be cause for concern as it represents a 100% increase from 2001.

Twenty-one percent of Palauan middle school students currently use smokeless/chewing tobacco (not in betel nut). This compares to just 2.8% in the U.S. (see 2004 U.S. National Youth Tobacco Survey) and represents a three fold increase from 2001.

Figure 22. Percentage of students who used smokeless tobacco in the past 30 days.



Source Data: Palau YTS 2001–2005

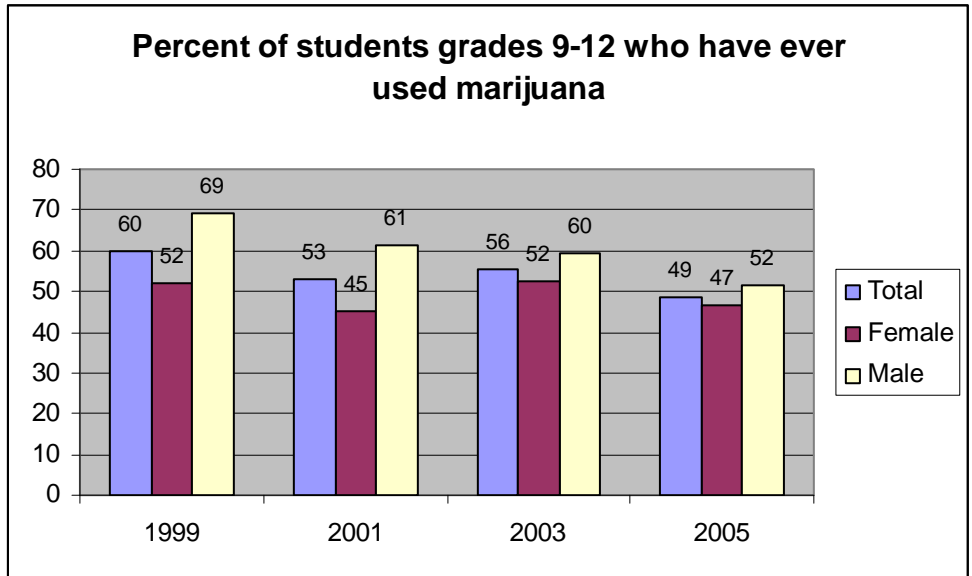
Illicit Drugs

The use of illicit drugs continues to be a matter of concern. In addition to drugs that are strictly illegal, like marijuana and ice, the use of inhalants and steroids must be considered. Although no statistics are currently available regarding use of these drugs in the adult population, the YRBS has provided some sobering data regarding the young people of Palau and their use of illicit drugs.

Marijuana

It is well known that marijuana is locally grown here in Palau, so it is not surprising that a large number of residents of Palau have access to this illegal drug. Young people are among those with access, and, as the following figure shows, many of them have tried it.

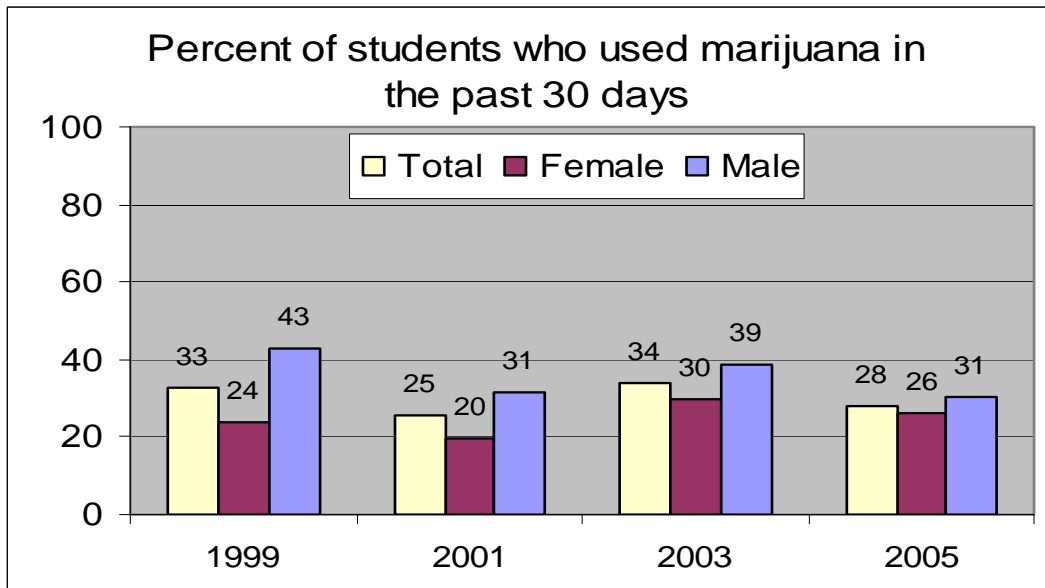
Figure 23. Youth lifetime use of marijuana



Source Data: YRBS 1999–2005

As indicated above, between 50% and 69% of high school students have used marijuana on at least one occasion and one can note that there has been a slow, but steady decline in the number of students reporting lifetime use of marijuana. On the other hand current use rates, as defined by having used at least once in the past 30 days, have fluctuated.

Figure 24: Youth current use of marijuana



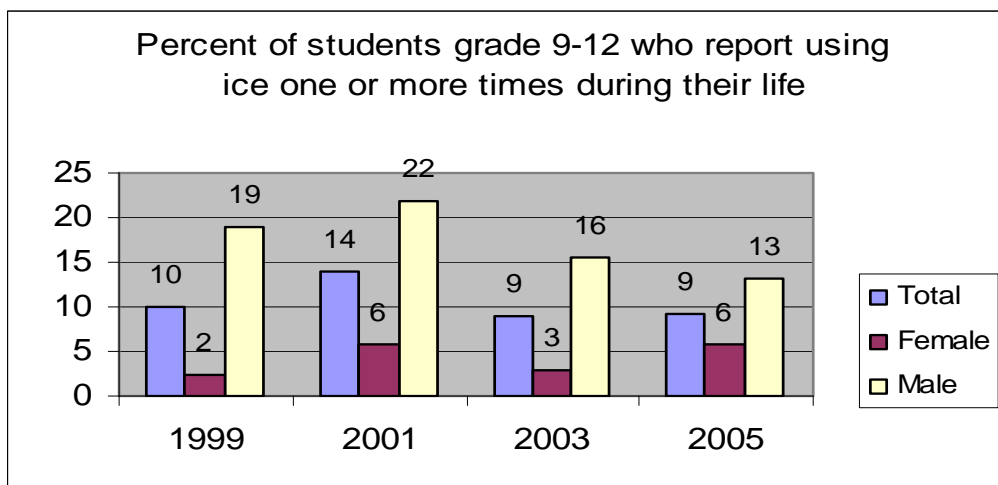
Source Data: YRBS 1999–2005

As indicated in Figure xx, use of marijuana fluctuates from year to year, but is generally in the 25% to 40% range. This compares quite unfavorably with the statistics from the United States, where 22% of students had smoked marijuana during the month prior to the 2003 survey, as compared to Palau's 34%.

Methamphetamine

The following Figure indicates the use of methamphetamine by students in Palau.

Figure 25: Youth lifetime use of methamphetamine



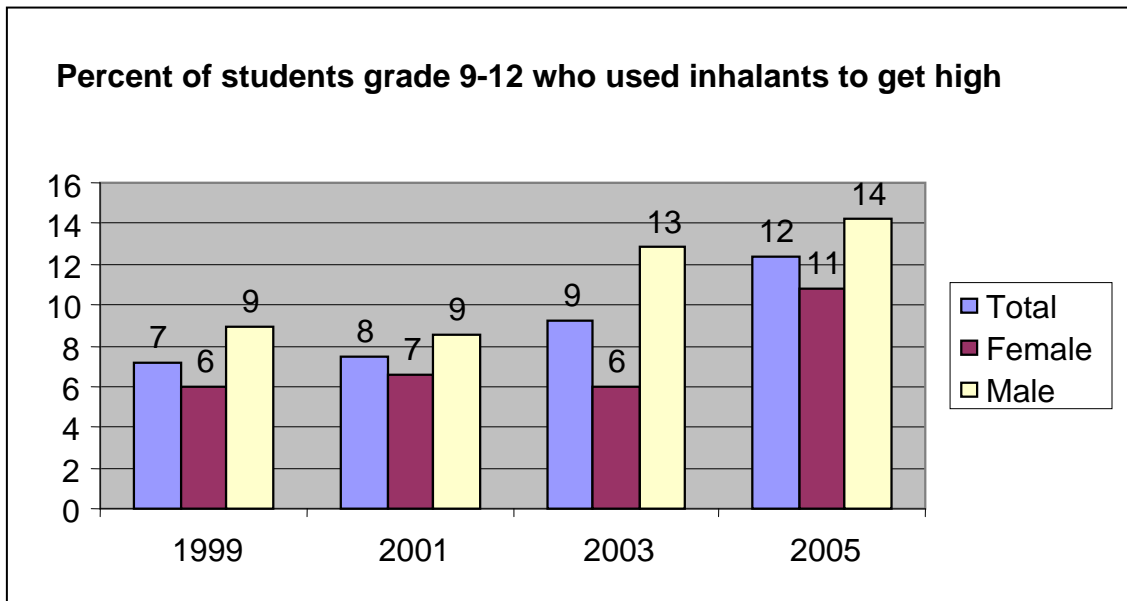
Source Data: YRBS 1999–2005

Figure 25 demonstrates some encouraging news, as there is a trend of a reduction in the use of ice, overall use having gone from 19% in 1999 to 13% in 2005. Once again, however, the fluctuations in use by high school females resulted in a tripling of the percentage from 1999 to 2005. On the other hand, students in Palau still report usage rates above the US rates, where, in 2003, only 7 6% of students have used ice at least once in their lives.

Inhalants

Inhalants have been around for a long time, and are used primarily by young people, and usually when they cannot afford other drugs or when other drugs are not readily available. The most well-known inhalant is glue, but other types are also used. One of the more popular inhalants in Palau is kerosene. Figure 26 shows an increasing trend in inhalant use.

Figure 26: Youth lifetime use of inhalants



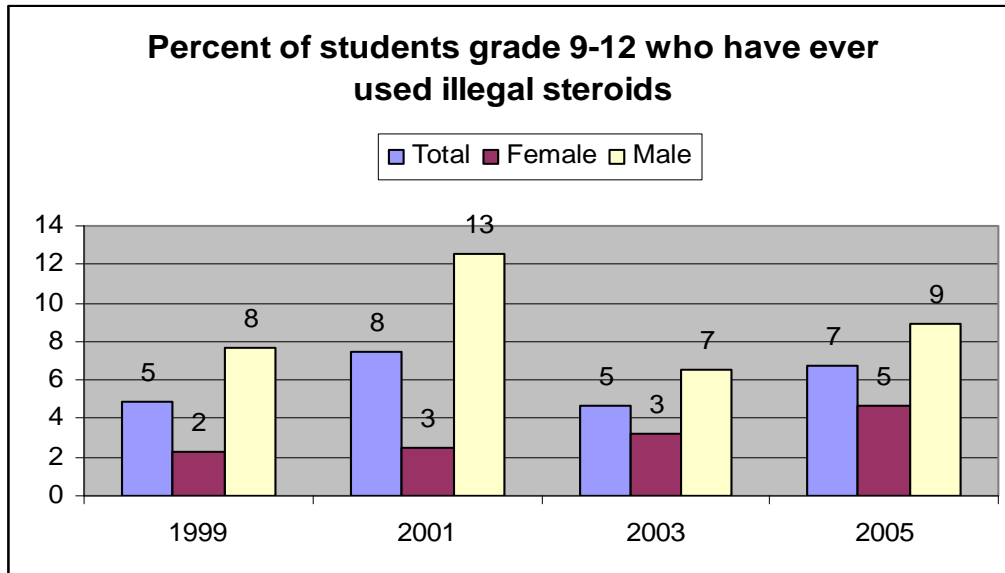
Source Data: YRBS 1999-2005

Both young men and young women are using as a way of getting high. While these percentages are relatively low in comparison with the use of alcohol and tobacco, the trend of increased usage is cause for concern. Patterns of inhalant use among Palauan youth mirrors that of U.S. use rates which in 2003 were recorded at 12%. Moreover, inhalant use rates reported by the middle school YRBS, are higher than those reported by the high school survey which may indicate that inhalant use is actually on the rise in Palau.

Steroids

Steroid use is another source of concern, which families and the health community need to address. There is great potential for severe health problems, particularly when steroids are used on young bodies that are not yet fully developed.

Figure 27: Youth lifetime use of illegal steroids



Source Data: YRBS 1999–2005

Although figure 27 indicates the percentage of use has dropped since 2001's high of 13%, the fact remains that nearly 10% of students report lifetime use of illegal steroids.

The information presented in this profile represents some of the more critical information concerning substance use and abuse in the Republic of Palau. The NEWG examined all of this information in depth, as well as other information not presented in this profile. This review and analysis of data lead the NEWG to recommend four substance use/abuse patterns as priority areas. This prioritization is presented below in section III. However, as the above figures and discussion indicates, progress is being made in certain population sub groups during certain time periods. However, there is not a lot of strong, consistent reduction of alcohol, tobacco or drug use in the Republic of Palau. As a health issue and as an economic issue, the use of alcohol, tobacco and drugs is one that this nation must address in more effective ways.