GUAM COMMUNITY HEALTH ASSESSMENT

Department of Public Health and Social Services

A Collaborative Effort by the Department of Public Health and Social Services and Community Stakeholders.

Community Health Assessment Team

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PROMOTING A HEALTHIER GUAM

Improving the Health and Wellness of Guam

Hafa adai! It takes a collective effort from our entire community to combat the problems that rip at the fabric of our island. Whether it's fighting and deterring crime in our villages, providing programs for our islands most vulnerable, or ensuring our island has access to adequate, proper healthcare, it takes our island family to come together, so we can sail toward success.

The Department of Public Health and Social Services continually brings our island family together to combat various health concerns that affect the lives of Guamanians. Through their community health assessment they will plan, adapt, and respond to important health conditions using the information gathered, which can help us focus on health issues we need to fix.

The community health assessment will provide a centralized source of data and community resources for the public to access, which can help coordinate programs to help Guamanians, assist our community partners, enable policy, and identify funding for more programs to promote a healthier island. This is our opportunity to establish and strengthen our interagency and island partnerships, and improve the health of our community.

The Department of Public Health and Social Services is a leader for responding to community health conditions. I look forward to the completion of this assessment and encourage everyone to address health issues on Guam.

With Our Sincerest Gratitude for Your Commitment to Guam,

EDDIE BAZA CALVO **RAY TENORIO**

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MAR 1 2 2014

Hafa Adai!

The Department of Public Health and Social Services (DPHSS) is one of the major providers of healthcare and social services to the island's residents. In 2012, DPHSS convened a core planning team made up of representatives throughout the department to begin the process of conducting a Guam Community Health Assessment (CHA). DPHSS also engaged with community stakeholders which is an essential element of the CHA process. Efforts were made to gather input from stakeholders to identify what health concerns existed out in the community.

The CHA is a collaborative process of systematically collecting relevant data on the health of our community. It provides a baseline health profile for Guam and documents the process for selection of community health priorities, which will serve as the starting point for a continuous community health improvement planning process.

The 2013 Guam CHA will provide a better understanding on the health status of the community and what resources are available to improve the health of island residents in Guam. The complete 2013 CHA can be accessed on the Department of Public Health and Social Services website at www.dphss.guam.gov

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Acknowledgements

This report resulted from the collaborative efforts of the various divisions and programs that comprise the Guam Department of Public Health and Social Services (DPHSS) and numerous community stakeholders.

The data contained in this profile were contributed by the members of the DPHSS Community Health Assessment (CHA) Planning Team and Data Work Group from primary and secondary sources within each program/division. DPHSS contracted with Dr. Annette M. David to facilitate the data analysis and to serve as lead author for this report. The recently created Performance Improvement Management (PIM) Office under the auspices of the Director's Office, provided coordination, oversight, and administrative support. The PIM Office is responsible for pursuing National Public Health Improvement Initiative (NHPII) strategies and activities to improve the health outcomes for all island residents through a guided and systematic approach. The NHPII initiatives supported by the PIM Office will help to measure and improve performance throughout the department.

The key findings resulting from the creation of this report were presented for peer review and approval to community stakeholders at the Community Data Stakeholder Workshop on 27 September 2013 at the Westin Hotel, Tumon, Guam.

Executive Summary

Guam commenced its Community Health Assessment (CHA) in 2010. After laying the groundwork and engaging community partners from 2010 to 2012, data collection and analysis and the prioritization of critical health issues occurred in 2013. The Guam CHA utilized a community-based participatory process throughout, using a mix of internal consultations within the divisions and programs of DPHSS and external consultations with other agencies and community partners.

An extensive list of health indicators covering the diverse areas of public health underwent an initial screening in June 2013. Indicators were retained and data collection initiated where data was (1) available, (2) relevant to the functions of DPHSS and its partners, (3) representative, and (4) recent. In August 2013, a second round of screening was conducted, with a comparative analysis of Guam indicators with the US median or mean, and, if available, the Healthy People 2020 targets/benchmarks. Those indicators where Guam performed worse than the US underwent a third round of data analysis. The 51 red-flagged indicators were presented to community stakeholders at a Community Stakeholder Committee meeting. Data for each indicator were disaggregated by sex, age, ethnicity and income/education level, and trend data over 3-5 years were provided, if available. Stakeholders were requested to score each indicator based on four criteria:

- Magnitude of the issue in the relevant population;
- Trend over time;
- Disparity across sex, age, ethnicity or socio-economic status; and,
- Existence of evidence-based solutions to address the health issue.

Related indicators were grouped on similarities in the domains or health issues covered. Based on the process of successive internal and external consultations, and community dialogue, the following ten critical health issues were identified:

- High prevalence of unsafe sex and sexually transmitted diseases
- Other risk-taking behavior, particularly marijuana use and riding in a vehicle with a driver who had been drinking alcohol, among youth
- High prevalence of tobacco use, especially among adults
- Low vaccine utilization and high incidence and prevalence of vaccine-preventable illnesses, such as influenza, pneumococcal pneumonia, measles, mumps and varicella
- High incidence of lung and cervical cancer
- High incidence of tuberculosis
- Inadequate health system infrastructure, with insufficient number of hospital beds per capita and insufficient health workforce per capita
- Low uptake of cancer screening
- High diabetes and cardiovascular mortality
- High rates of suicide, especially among youth

This provides the baseline for a continuous public health improvement process for Guam, and establishes the basis for Community Health Improvement Planning.

Introduction

An accurate snapshot of a community's health situation is the foundation for sound and sustainable public health planning. Ensuring full community participation in determining its health status is an essential element in the assessment process. The Public Health Accreditation Board (PHAB), a voluntary, national accreditation program for public health departments, defines a Community Health Assessment (CHA) as "a systematic examination of the health status indicators for a given population that is used to identify key problems and assets in a community. The ultimate goal of a community health assessment is to develop strategies to address the community's health needs and identified issues. A variety of tools and processes may be used to conduct a community health assessment; the essential ingredients are community engagement and collaborative participation." The steps of the CHA process are diagrammed in Figure 1.

Figure 1. The Community Health Assessment (CHA) process

The CHA answers the questions:

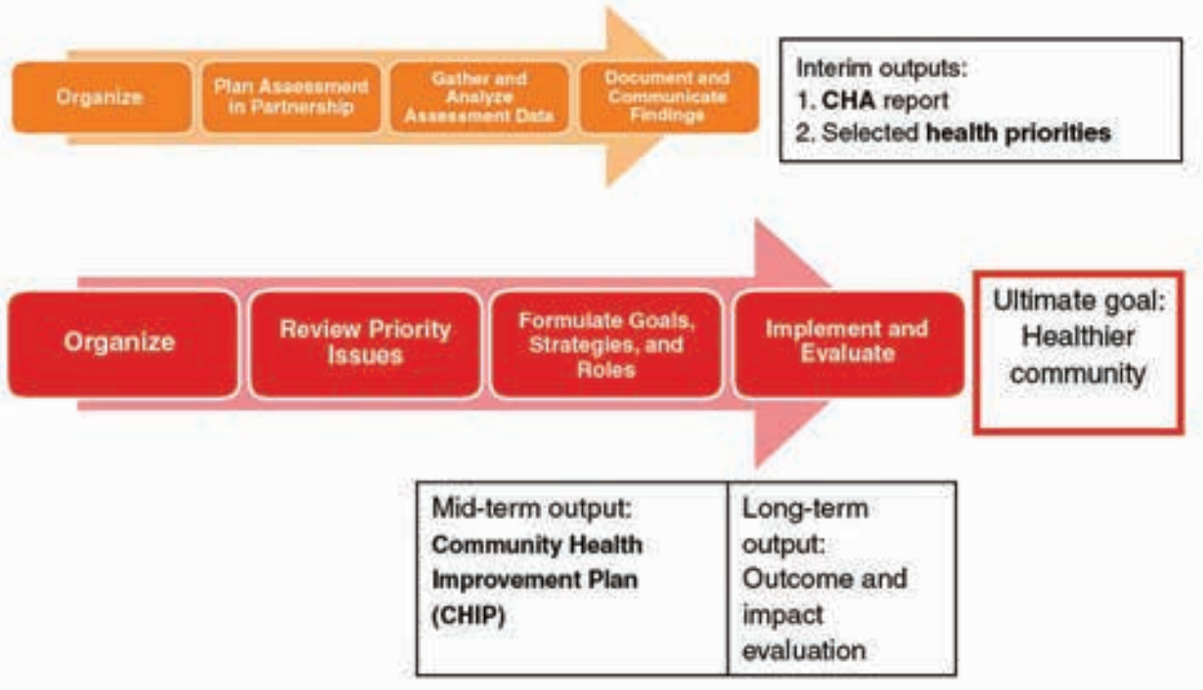
1. "How healthy are our residents?"
2. "What does the health status of our community look like?" and,
3. "What does our community perceive to be its health priorities?"

Results of the CHA provide community stakeholders and public health planners with an understanding of the community's health situation and ensure that the community determines in a rational manner the health priorities (e.g., high lung cancer rates or low immunization rates) that require immediate action. In turn, community health priorities inform the strategic development of health services and appropriate health resource allocation. Thus, the CHA represents the first step in an ongoing process of community health strategic planning and evaluation of public health programs.

Once in place, the CHA can lead to a Community Health Improvement Plan (CHIP), which is defined as "a long-term, systematic effort to address public health problems on the basis of the results of community health assessment activities and the community health improvement process."

This plan is used by health and other governmental education and human service agencies, in collaboration with community partners, to set priorities and coordinate and target resources. A community health improvement plan is critical for developing policies and defining actions to target efforts that promote health. It should define the vision for the health of the community through a collaborative process and should address the gamut of strengths, weaknesses, challenges, and opportunities that exist in the community to improve the health status of that community." (Figure 2)

Figure 2. The CHA and the CHIP



A CHA and a CHIP are two of the three prerequisite documents necessary for application by the DPHSS to the Public Health Accreditation Board; the third prerequisite is a Department Strategic Plan. This report represents the culmination of the baseline CHA process for Guam, and is intended to serve as the initial step in the public health strategic planning process that will be utilized to develop Guam's CHIP and the Department's Strategic Plan.

The Guam CHA Team

In 2010, DPHSS received a grant from the US Centers for Disease Control and Prevention (CDC) under the auspices of the National Public Health Improvement Initiative (NPHII) to conduct a comprehensive community health assessment. DPHSS contracted Red Star Innovations, a public health consulting group based in Arizona, to conduct the CHA preplanning and readiness assessment and provide an implementation plan.

As part of the pre-planning activities, DPHSS established a Core Planning Team for the CHA, consisting of representatives from all of its five divisions:

- Division of General Administration
- Division of Environmental Health
- Division of Public Health
- Division of Senior Citizens
- Division of Public Welfare

Individual team members were selected based on their experience with assessment and strategic planning, and familiarity with health data and statistics. The original members of the Guam CHA Core Planning Team are listed in Table 1. The Core Planning Team were charged with engaging community members in the assessment process, developing an initial vision, mission and desired outcomes, identifying key data indicators and collecting relevant data, facilitating the data analysis and health prioritization process with community partners, and disseminating the results to key community stakeholders.

Table 1. Original Guam CHA Core Planning Team

NAMES	TITLES	DIVISION/BUREAU
Abraham Mora	Program Coordinator III	Bureau of Primary Care Services
Alyssa Uncangco	Program Coordinator IV	Bureau of Community Health Services
Bertha A. Taijeron	Program Coordinator III	Division of General Administration, Director's Office
Cindy Naval	Planner IV	Division of Environmental Health
Elizabeth Ignacio	Program Coordinator IV	Bureau of Social Services Administration
Geraldine Gumataotao	Management Analyst III	Division of Senior Citizens
Josephine O'Mallan	Administrator	Bureau of Communicable Disease Control
Mathi Matthews	Performance Improvement Manager	Division of General Administration, Director's Office
Margaret M. Bell	Program Coordinator	Bureau of Family Health and Nursing Services
Margarita B. Gay	Administrator	Bureau of Family Health and Nursing Services
Roselie Zabala	Administrator	Bureau of Community Health Services

In 2012, during a two-day planning workshop facilitated by Red Star Innovations, the Core Planning Team defined the "community" addressed by the CHA, selected the target audiences for the CHA results and drafted a vision, purpose and outcomes of the CHA. (For more information on the Red Star Innovations report, please contact DPHSS at (671) 735-7102 or email Ms. Bertha Taijeron, Program Coordinator, at bertha.taijeron@dphss.guam.gov) The rest of this report details the activities, outputs and results of the CHA for 2013.

Background: Guam

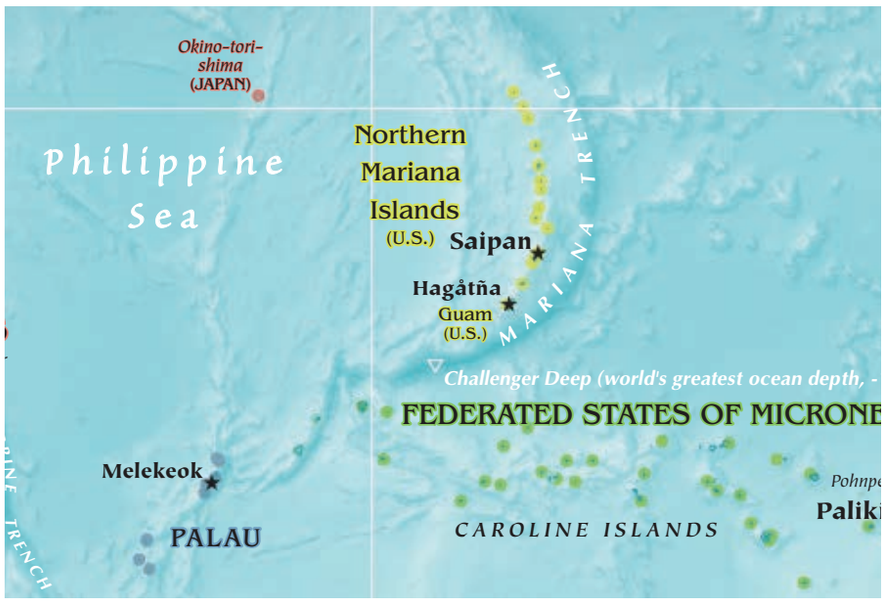
Geographic, Political, and Economic Context

Guam, "where America's day begins," is the largest and southernmost island in the Mariana Islands archipelago. Located in the western North Pacific Ocean, it houses one of the most strategically important US military installations in the Pacific. Guam also serves as a critical crossroads and distribution center within Micronesia and the rest of the Pacific, as well as Asia, because of its air links (Figure 3). This plays a significant part in the movement of tobacco, alcohol and illicit drugs into the island.

The island has a land area of 549 sq. km., roughly three times the size of Washington, DC. The terrain is of volcanic origin, surrounded by coral reefs. The climate is tropical marine, with little seasonal temperature variation. There are frequent squalls during the rainy season and, occasionally, potentially very destructive typhoons from June to December. The last major typhoon, Pongsona, in December of 2002, had a major adverse impact on the island's economy and infrastructure.

Guam is an organized, unincorporated territory of the US with policy relations under the jurisdiction of the Office of Insular Affairs, US Department of the Interior. The island's Governor and Lieutenant Governor are elected on the same ticket by popular vote, and serve a term of four years. The next gubernatorial elections are scheduled for 2018. The legislative branch is served by a unicameral Legislature with 15 seats; the members are elected by popular vote to serve two-year terms. Currently, the Democratic Party holds 9 seats while the Republican Party holds 6. Guam also elects one nonvoting delegate to the US House of Representatives to serve a two-year term. The current representative, Congresswoman Madeleine Bordallo, belongs to the Democratic Party. The next elections for the legislative branch are scheduled for November 2014. The judicial branch was recently revamped to create the Unified Judiciary of Guam, consistent with the Organic Act. Guam has the District Court of Guam (federal) and the Supreme Court of Guam (local).

Figure 3. Regional Map Showing Guam's Proximity to Key Countries



Source: CIA Factbook at http://www.cia.gov/cia/publications/factbook/geos/gq.html, last accessed 13 March 2006

Guam's economy relies heavily upon military spending, tourism and the export of fish. According to the CIA Factbook (available at https://www.cia.gov/library/publications/the-world-factbook/geos/gq.html last accessed 26 February 2012), "total grants, wage payments, and procurement outlays amounted to $1.3 billion in 2004. Over the past 30 years, the tourist industry has grown to become the largest income source following national defense." Currently, the economy is expanding in both its tourism and military sectors. The announced transfer of the military base on Okinawa to Guam will continue to drive the expansion of the military sector, although the pace of the build-up has not kept up with expectations.

Tourism is Guam's major industry. There were over 1.29 million tourist arrivals in 2012, a significant increase from the previous year. Japan remains Guam's major tourist market, accounting for over 70% of visitors (down from over 80% of tourist arrivals in 2005). Korea accounts for 14% of the market (up from 9% in 2005), and the US mainland for about 5% (Table 2).

Table 2. Air visitor arrivals by country of residence, Guam, 2005-2012

Country	2012	2011	2010	2009	2008	2007	2006	2005
Total	1,298,641	1,150,201	1,187,831	1,044,491	1,091,907	1,180,416	1,183,943	1,184,928
Japan	929,229	824,005	893,716	825,129	849,831	931,079	952,687	955,245
United States	62,618	61,348	61,381	55,525	52,797	49,590	44,226	45,859
CNMI/Micronesia	31,357	33,184	35,521	31,927	30,315	29,939	29,860	30,690
Taiwan	49,144	45,086	31,320	22,088	22,592	21,819	16,729	23,386
Philippines	10,483	10,097	12,358	11,581	10,867	8,743	8,152	7,051
Korea	182,829	149,076	134,692	82,978	110,548	122,747	117,026	109,335
Hong Kong	8,609	8,903	6,890	2,872	4,270	6,224	6,123	4,518
Other	24,372	18,502	14,953	12,391	10,687	10,275	9,140	8,844

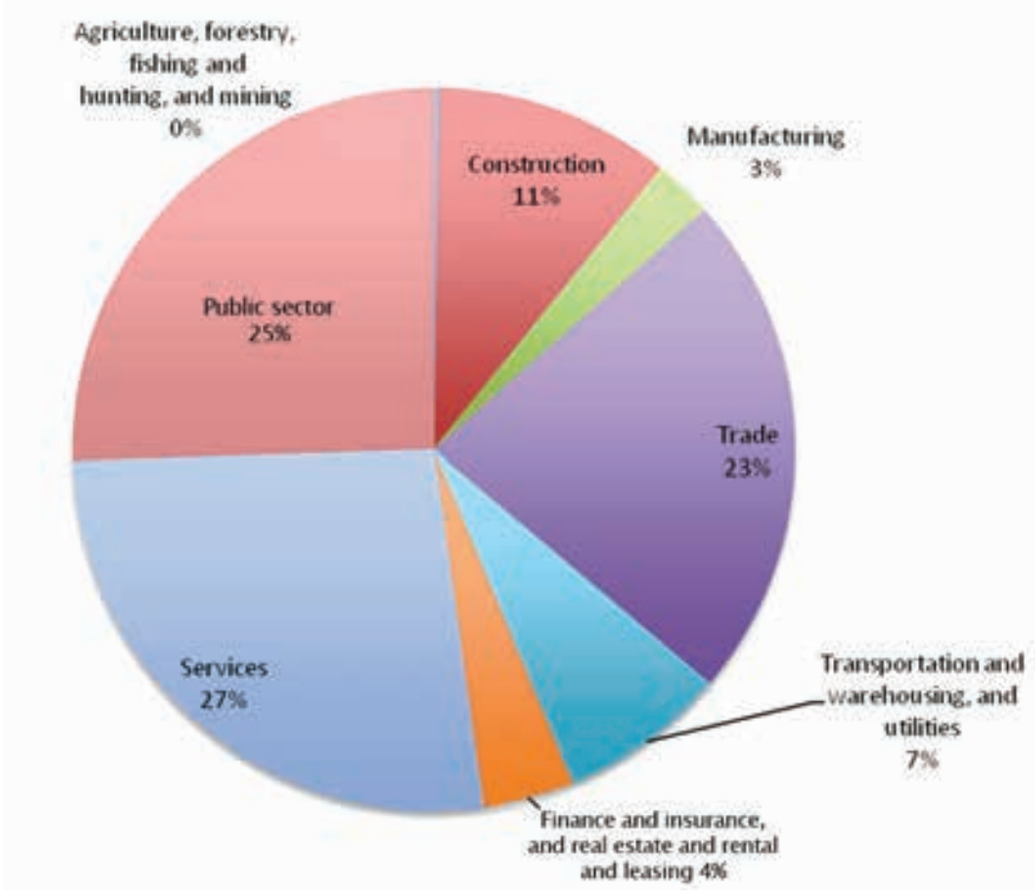
Source: Guam Visitors Bureau data as reported in 2012 Guam Statistical Yearbook
Note: This includes military and civilian air arrivals.
CNMI/Micronesia = Commonwealth of the Northern Mariana Islands/Micronesia

As of December 2012, there were 72,560 people in the civilian labor force, of whom 64,770 were employed. About ten percent were unemployed, as compared to 9.3% in 2009 (Table 3). Figure 4 shows the different sectors of employment and distribution of the labor force as of April 2010. Majority of the labor force are employed in services (27%), the public sector (25%) and trade (23%).

Table 3. Employment status, population 16 years and older, Guam, 2012, 2011 and 2009

EMPLOYMENT STATUS	2012	2011	2009
Total:	**121,340**	**119,720**	**114,000**
In labor force:	72,560	74,950	70,310
Employed:	64,770	64,970	63,800
Unemployed	7,800	9,970	6,510
Not in labor force:	48,780	44,770	43,680

Figure 4. Labor Force by Occupation, December 2012



Source: Bureau of Labor Statistics, Department of Labor as reported in the 2012 Guam Statistical Yearbook

In 2010, there were 44,664 households on Guam. Median household income increased from 2008 to 2010 (Table 4). In 2010, 19.9% of Guam's households lived on $14,999 or less per year. This is unchanged from 2008, when nearly 20% of households made $14,999 or less per year. The poorest of the poor comprised 7% of all households on Guam, and lived on less than $3000 per year. In contrast, 11.6% of households made more than $100,000 per year.

Table 4. Household income, Guam, 2005-2010

Characteristic	2010	Percent	2008	Percent	2005	Percent
Households	44,664		46,246		40,298	
No Income	2,512	5.6	2,622	5.7	1,089	2.7
Less than $3,000	619	1.4	760	1.6	537	1.3
$3,000 to $4,999	728	1.6	874	1.9	459	1.1
$5,000 to $6,999	655	1.5	760	1.6	344	0.9
$7,000 to $8,999	692	1.5	798	1.7	573	1.4
$9,000 to $10,999	1,347	3.0	1,178	2.5	1,261	3.1
$11,000 to $12,999	1,128	2.5	1,064	2.3	917	2.3
$13,000 to $14,999	1,238	2.8	1,330	2.9	1,261	3.1
$15,000 to $19,999	3,130	7.0	3,420	7.4	2,350	5.8
$20,000 to $29,999	5,242	11.7	6,346	13.7	5,274	13.1
$30,000 to $39,999	5,569	12.5	5,130	11.1	5,331	13.2
$40,000 to $49,999	4,040	9.0	5,054	10.9	4,471	11.1
$50,000 to $59,999	3,567	8.0	3,914	8.5	3,497	8.7
$60,000 to $69,999	3,058	6.8	3,078	6.7	3,038	7.5
$70,000 to $79,999	1,966	4.4	2,280	4.9	2,178	5.4
$80,000 to $89,999	2,439	5.5	1,748	3.8	1,834	4.6
$90,000 to $99,999	1,565	3.5	1,102	2.4	1,720	4.3
$100,000 or more	5,169	11.6	4,788	10.4	4,127	10.2
Median Household Income	$39,052	...	$37,741		$40,373	
Mean Household Income	$49,263	...	$45,786		$47,062	
Average Household size	3.8	...	3.5		3.9	
Average Earners per Household	1.7	...	1.5		2.2	
Per Capita Income	$12,864	...	$13,089		$12,768	

Source: Guam Department of Labor as reported by the Bureau of Statistics and Plans, Guam Statistical Yearbook 2012

Population Demographics

The latest data from the 2010 Guam census indicates that as of April 1, 2010, Guam's population totaled 159,358, representing an increase of 2.9% from the 2000 Census counts. The actual population count was 12% lower than the projected 2010 population based on the 2000 census. Thus, rates calculated using the projected population counts based on the earlier 2000 census likely resulted in underestimates. Table 5 contains the revised population estimates for the years 2000 to 2010, and Table 6 lists the population projections for 2010 to 2020 using the 2000 to 2012 population growth rate.

Table 5. Population estimate: 2000 to 2010

Year	Population	Year	Population
2000	154,805		
2001	155,254	2006	157,521
2002	155,705	2007	157,978
2003	156,157	2008	158,437
2004	156,610	2009	158,897
2005	157,065	2010	159,358

Sources: 2000 and 2010 Censuses of Guam

Table 6. Population projection: 2010 to 2020

Year	Population	Year	Population
2010	159,358		
2011	159,821	2016	162,154
2012	160,285	2017	162,625
2013	160,750	2018	163,097
2014	161,216	2019	163,570
2015	161,684	2020	164,045

Source: 2010 Census of Guam
NOTE: Uses 2000 and 2010 population growth rate

Males slightly outnumbered females, comprising 51% of the total population. Nearly 40% of the population is under the age of 21 years (Table 7). Guam's population is multi-ethnic/multi-racial. Chamorros remain the largest ethnic group, making up 37.3% of the island's population, and representing a 3.6% increase since 2000. Filipinos are the second largest group, comprising 26.3% of the total. The Yapese and Chuukese had the fastest rate of growth---the Yapese population grew by 84.1%, from 686 in 2000 to 1,263 in 2010, while the number of Chuukese grew by 80.3%, from 6,229 in 2000 to 11,230 in 2010. Majority of Guam residents, 144,429, identify themselves as being of one ethnic origin or race, representing an increase of 8.4% since 2000. Just 14,929 acknowledge 2 or more ethnic or racial origins, a decrease of 30.7% since 2000 (Table 8).

Table 7. Demographic composition of Guam population, sex by age, 2010

Age category	TOTAL	MALE	FEMALE
	159,358	81,568	77,790
Under 5 years	14,289	7,345	6,944
5 to 9 years	13,984	7,200	6,784
10 to 14 years	15,046	7,777	7,269
15 to 19 years	14,407	7,473	6,934
20 to 24 years	12,379	6,678	5,701
25 to 29 years	10,746	5,431	5,315
30 to 34 years	10,346	5,151	5,195
35 to 39 years	11,404	5,753	5,651
40 to 44 years	11,659	6,161	5,498
45 to 49 years	11,072	5,821	5,251
50 to 54 years	9,203	4,758	4,445
55 to 59 years	7,715	3,828	3,887
60 to 64 years	6,361	3,181	3,180
65 to 69 years	3,889	1,934	1,955
70 to 74 years	3,030	1,411	1,619
75 to 79 years	1,984	838	1,146
80 to 84 years	1,151	525	626

Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

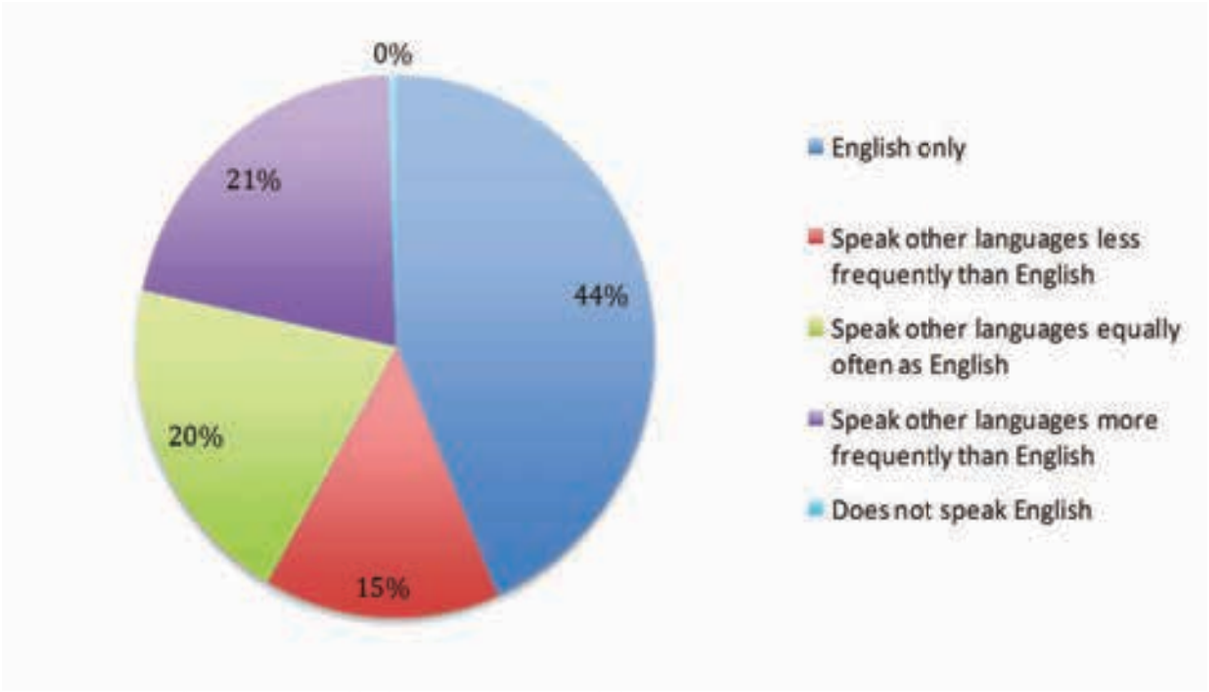
Table 8. Ethnic composition of Guam population, 2010 and 2000

ETHNICITY	2010	2000*
One Ethnic Origin or Race:	144,429	133,252
Native Hawaiian and Other Pacific Islander:	78,582	69,039
Carolinian	242	123
Chamorro	59,381	57,297
Chuukese	11,230	6,229
Kosraean	425	292
Marshallese	315	257
Palauan	2,563	2,141
Pohnpeian	2,248	1,366
Yapese	1,263	686
Other Native Hawaiian and Other Pacific Islander	915	648
Asian:	51,381	50,329
Chinese (except Taiwanese)	2,368	2,707
Filipino	41,944	40,729
Japanese	2,368	2,086
Korean	3,437	3,816
Taiwanese	249	991
Vietnamese	337	10,509
Other Asian	678	1,568
Black or African American	1,540	1,807
Hispanic or Latino	1,201	69,039
White	11,321	123
Other Ethnic Origin or Race	404	57,297
Two or More Ethnic Origins or Races	14,929	21,553
Native Hawaiian and Other Pacific Islander and other groups	11,656	
Chamorro and other groups	9,717	7,946
Asian and other groups	8,574	10,853
Total:	159,358	154,805

Source: US Census Bureau, 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012
**Source: US Census Bureau, 2000 Census for Guam as reported by the Bureau of Statistics and Plans, 2005*

The ethnic diversity is reflected in the languages spoken at home. Twenty percent of the population over 5 years of age speak a language as frequently as English at home, another 21% speak a language more frequently than English, and 0.5% speak no English at all. This has a significant implication for effective service delivery, highlighting the need for culturally competent communications and services for close to half of the island's population (Figure 5).

Figure 5. Population by language spoken at home, Guam, 2010



Source: 2010 Census for Guam as reported by the Bureau of Statistics and Plans, 2012

Methodology

The Guam CHA utilized a community-based participatory process throughout, using a mix of internal consultations within the divisions and programs of DPHSS and external consultations with other agencies and community partners (Annex 1). Community partners consisted of a diverse group of individuals representing:

- Executive branch – Office of the Governor
- Legislative branch – Office of Congresswoman M.Z. Bordallo, 32nd Guam Legislature (Office of Senator Rodriguez, Committee on Health and Human Services)
- Judicial branch – Guam District Court, Superior Court of Guam
- Consulates and embassies – Consulate of the Federated States of Micronesia (FSM), Philippine Consulate General's Office
- Local government – Mayors' Council of Guam, Guam Behavioral Health and Wellness Center, Bureau of Statistics and Plans, Guam Environmental Protection Agency, Department of Labor, Bureau of Women's Affairs, Department of Integrated Services for Individuals with Disabilities, Department of Youth Affairs, Guam Department of Education, Guam Housing and Urban Renewal Authority, Guam Police Department, Guam Regional Transit Authority, Guam Memorial Hospital Authority, Department of Public Health and Social Services
- Academe – Guam Community College, University of Guam (Cancer Research Center, University Extension Services, Guam Center for Excellence in Developmental Disabilities Education,Research, and Service (CEDDERS), Institute of Planning and Research, Father Duenas Memorial School
- Health professional organizations – Guam Cancer Care, Guam Medical Association, Guam Medical Society, Guam Nursing Association, Guam Regional Medical City, Health Services of the Pacific, Health Partners, LLC
- Health-related coalitions and councils – Guam Diabetes Control Coalition, Guam Developmental Disabilities Council, Guam NCD Consortium, PEACE Advisory Council, Governor's Council on Physical Fitness and Sports
- Community groups and non-profit organizations – Erica's House (for victims of abuse), Guam Alternative Lifestyle Association (for the Lesbian, Gay, Bisexual, Transgender and Questioning, or LGBTQ, community), Haya Foundation, Immaculate Heart of Mary Parish (faith-based), Island Girl Power (youth), Oasis Empowerment Center, Pacific Island Health Officers' Association (PIHOA), Salvation Army, Sanctuary, Inc., Victims Advocates Reaching Out (VARO-for victims of abuse), AYUDA Foundation, Catholic Social Services, Health Leaders Achieving Today - Tomorrow's Excellence (HLATTE)
- Military – Guam National Guard, Guam Veterans' Affairs Office, U.S. Naval Hospital, Guam
- Federal Government-- U.S. Probation Office, Districts of Guam and the Northern Marianas Islands, US. Centers for Disease Control and Prevention (CDC) Guam Regional Office

A series of community consultations in 2012 and early 2013 identified 127 indicators for 43 different health areas. Using the data inventory identified in 2012 by DPHSS and Red Star Innovations, the Core Planning Team consolidated this list of indicators and started the data collection. When necessary, the original list of data sources was augmented with more recent data provided by the different DPHSS divisions or found through online searches.

In June 2013, the internal team conducted an initial screen of the indicators, facilitated by Dr. David that adhered to the following criteria:

- The indicators had to address a relevant area of health, directly related to the health and health care of the Guam community.
- Indicators where no data was available were flagged as data gap areas, and removed from the list.
- Available data had to be measurable, and reported in a format (i.e. rates, proportions and percentages) that allowed for comparisons across different population sub-groups and with external standards.
- Data had to be accurate, preferably from an officially recognized source or surveillance system.
- Data had to be representative, and preferentially derived from census or randomized population samples.
- Data had to be recent, sourced from within the past 3 years. Data from 2011 sources were selected for use because the 2011 datasets were complete and officially released; 2011 was also the last year when data for both adults and youth were available.

The first round of screening decreased the number of indicators from 147 to 100. Selected indicators were re-grouped into three general headings (Figure 6): Who we are, how we live, and what's our health. In August 2013, a second round of screening was conducted, with a comparative analysis of Guam indicators with the US median or mean, and, if available, the Healthy People 2020 targets/benchmarks. Those indicators where Guam performed better than the US median or mean were color-coded green; where Guam performed similarly to the US the indicators were color-coded yellow. Indicators where Guam was worse than the US were highlighted in red. This exercise resulted in red flags for 51 out of the 100 indicators.

Figure 6: Three general headings for Guam health indicators

- Demographics
- Social determinants of health

- Wellness
- Maternal and Child health
- Oral health
- Mental health
- Disease, disability, death
- Health care system

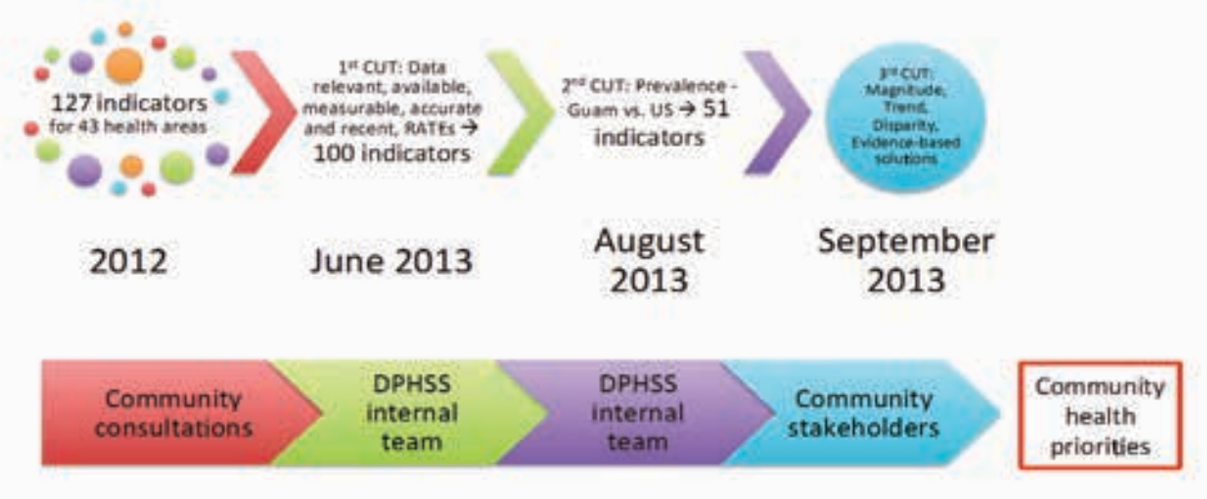
- Environment
- Behavior
- Risk and protective factors

The 51 red-flagged indicators were presented to community stakeholders at a Community Stakeholder Committee meeting. Data for each indicator were disaggregated by sex, age, ethnicity and income/education level, and trend data over 3-5 years were provided, if available. Stakeholders were requested to score each indicator based on four criteria:

- **Magnitude** of the issue in the relevant population;
- **Trend** over time;
- **Disparity** across sex, age, ethnicity or socio-economic status; and,
- Existence of **evidence-based solutions** to address the health issue.

Scores were tallied for each indicator. Possible interrelationships across indicators were explored. Indicators that were related by thematic health areas were reviewed and priority health issues were identified. Figure 7 depicts the process for reviewing indicators and selecting priority health issues.

Figure 7. Guam CHA process



Health Data Results

Who We Are

Population Demographics

Population demographics are a significant determinant of a community's health. This section provides an overview of the demographics of the Guam population as compared to the USA. All data, unless specifically noted, are taken from the 2010 US Census.

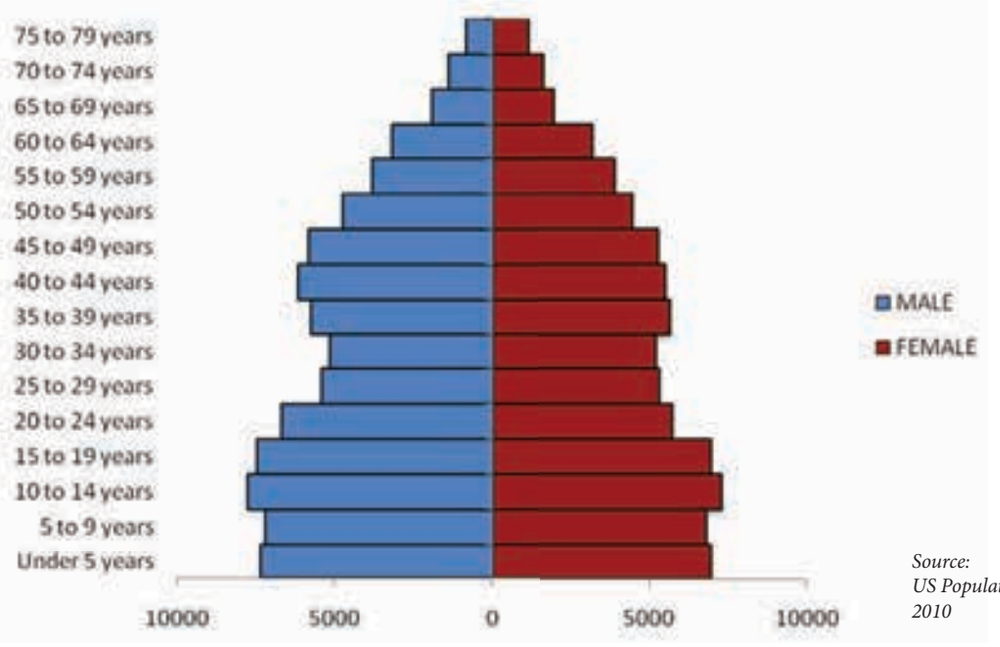
In 2010, Guam had a total population of 159,358. Figures 8 and 9 and Table 9 compare the population structure of Guam and the USA. (Details of the population composition were provided in an earlier section). Guam's people are relatively younger and have a larger proportion under the age of 30 years, accounting for the pyramidal shape, while the US population has a larger proportion of older people, accounting for its barrel shape.

Table 9. Population characteristics, Guam vs. USA, 2010

Demographic characteristic	Indicator	Guam	USA
Age composition	% Population under 30 years	50.7%	40.8%
	Median age	29.5 yrs.	37.2 yrs
	Dependency ratio (young & old))	51.3 per 100 persons	22 per 100
Sex distribution	Male: female ratio	1.05:1	96.7:1
Ethnic composition	% Pacific Islander	49.3%	0.2%

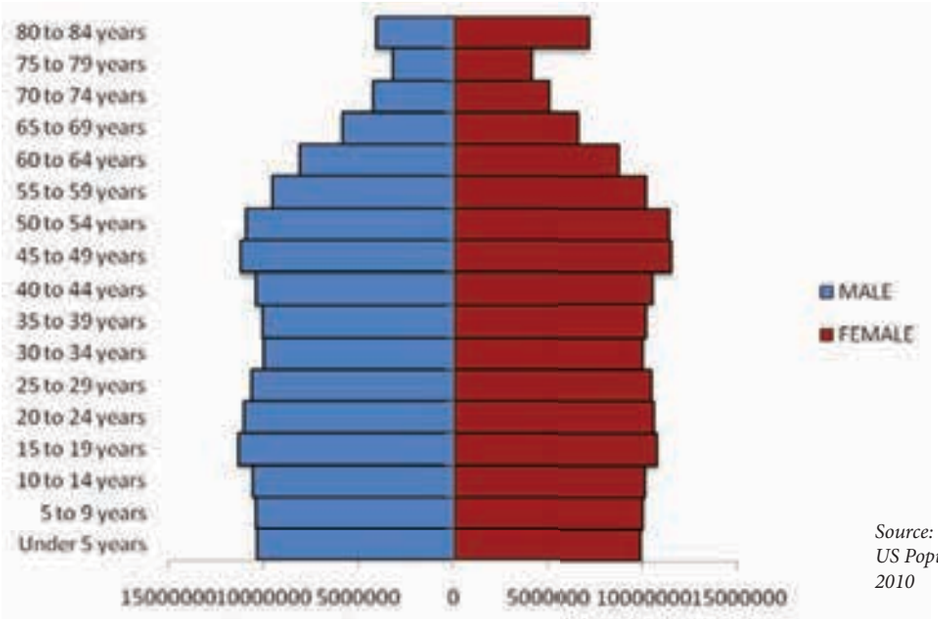
Source: US Population Census, 2010

Figure 8. Guam Population Pyramid, 2010



Source: US Population Census, 2010

Figure 9. USA Population Pyramid, 2010



Source: US Population Census, 2010

The median age of Guam's population is nearly 8 years lower than the US median age. Guam's dependency ratio is more than double the US ratio; this has significant implications for health care needs and health financing. Finally, nearly half of Guam's population is of Pacific Islander ethnicity, compared to less than 1% of the US mainland population.

Social Determinants

Table 10 summarizes the key social determinants of health for Guam as compared to the USA. Nearly 1 in 3 persons in Guam is foreign-born, compared to 1 in 8 for the US mainland, and over half of people in Guam speak a language other than English at home, compared to only 1 in 5 in the US. Guam residents are less likely to have a high school diploma or a college degree than US residents. Household size is larger in Guam, but the percentage of households headed by a single female is significantly less than the US. Although the unemployment rate is slightly lower in Guam, the median household income is about $14,000 less than the US median household income, and per capita income is half that of the US. Over 22% of Guam's residents live below the poverty level, compared to only 14% of US mainland residents. Taken altogether, the socio-economic status of Guam residents is considerably worse than people living in the US; this has significant adverse implications for health status.

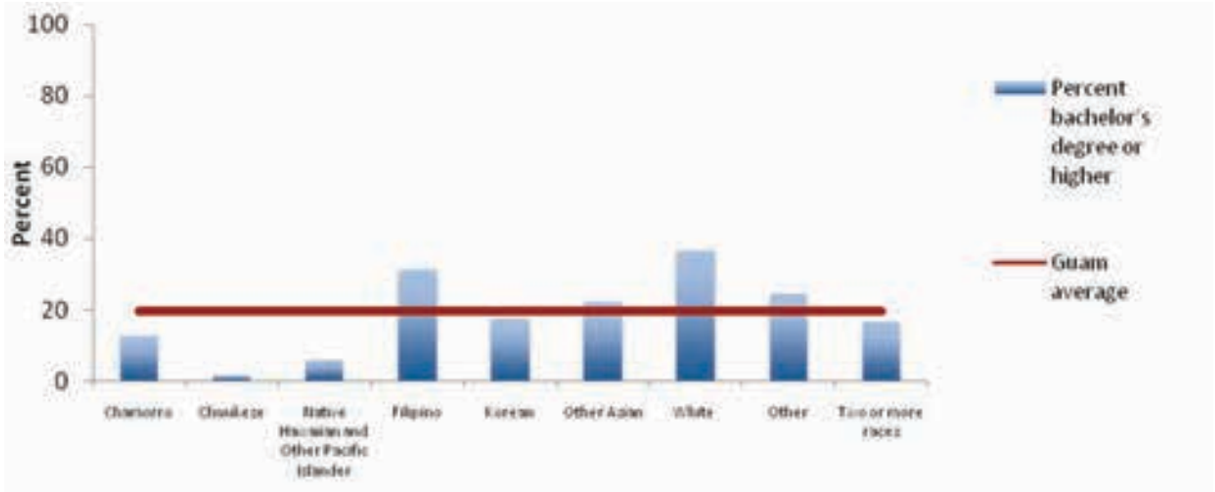
Table 10. Key socio-economic indicators Guam vs. USA, 2010

Social determinant	Indicator	Guam	USA
Migration	% Foreign-born	31.4%	12.8%
Language	% Speak a language other than English at home	56.4%	20.6%
Employment	% Civilian workforce employed	91.8%	90.3%
	Unemployment rate	8.2%	9.6%
Education	% Population with a high school degree	79.4%	85.4%
	% Population with a college degree	20.4%	28.2%
	Public school drop out rate	6.8%	7.40%
Households	Average household size	3.67	2.63
	% Households with female householder, no husband	1.8%	12.7%
	Grandparents as caregivers	39.5% of all grandparents	39.1%
Income	Median household income*	$39,052	$52,762
	Mean per capita income*	$12,864	$27,915
	% Population below poverty level	19.9%	15.3%

*Source: US Population Census, 2010; * - Department of Labor 2010 data*

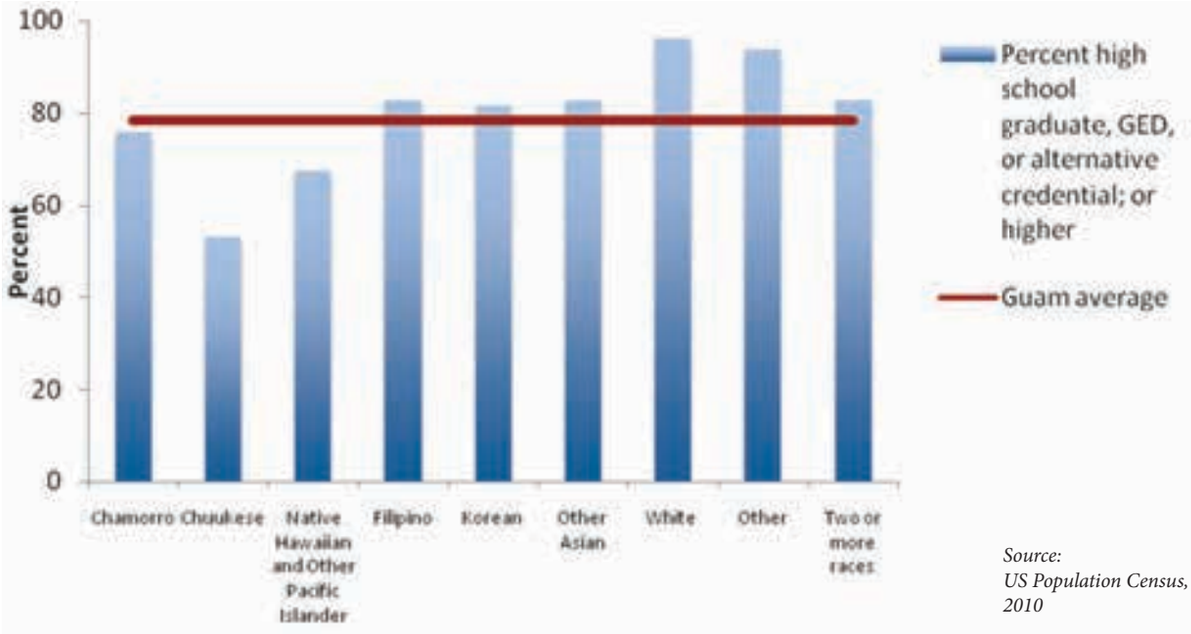
Within the Guam population, significant disparities exist in relation to socio-economic status and race/ethnicity. Pacific Islanders are less likely than other races/ethnic groups to hold a college degree (Figure 10). Pacific Islanders other than the indigenous Chamorros are less likely to have a high school diploma (Figure 11) and more likely to live under the poverty level as compared to Asians, Whites and other ethnic groups (Figure 12). These data indicate that race/ethnicity is a critical social determinant for health in Guam.

Figure 10. Educational attainment, college degree, by ethnicity/race, Guam, 2010



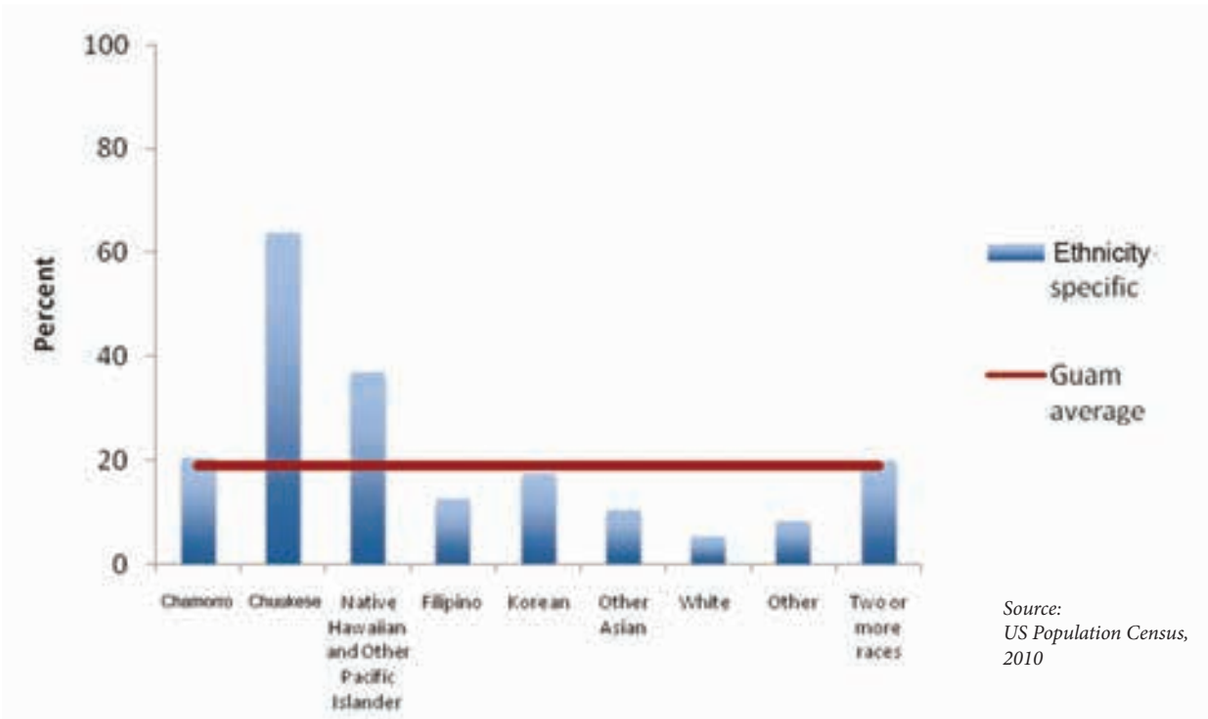
Source: US Population Census, 2010

Figure 11. Educational attainment, high school diploma, by ethnicity/race, Guam, 2010



Source:
US Population Census, 2010

Figure 12. Percent living below the poverty level by ethnicity/race, Guam 2010



Source:
US Population Census, 2010

How We Live

This section provides data on environmental indicators, behaviors and risk and protective factors related to health.

Environment

Table 11 compares specific indicators related to the built environment and crime for Guam and the US mainland. Access to running water and a public sewer is similar across the two locations. A larger percentage of the population in Guam live in houses without an indoor kitchen (9.7% vs. 1.0%) and without telephone service (3.9% vs. 2.1%). In contrast, a smaller percentage of the population in Guam is without Internet service (6.7% vs. 25.8%). Discussions with Guam's telecommunications provider indicate that an increasing percentage of the population are switching from land lines to cellular telephones; this may explain the smaller percentage reporting land-line-based telephone services. Outdoor kitchens are popular in Guam; this may contribute to the smaller percentage reporting a lack of indoor kitchen facilities. A smaller proportion of housing units in Guam report the lack of a vehicle, and the mean vehicles per household in Guam is comparable to the US average.

The 2011 violent crime rate is lower in Guam; data for property crime rate is unavailable. The population density is markedly higher in Guam.

Table 11. Comparison of environmental indicators, Guam vs. US, 2011

Domain	Indicator	Source	Guam	USA
Housing quality	% Housing units with running water	2010 Census	99.4%	97.7%
	% Housing units with public sewer access	2010 Census	72.4%	74.7%
	% Population without a kitchen	2010 Census	9.7%	1.02%
Communication access	% Population without telephone service	2010 Census	3.9%	2.10%
	% Population without internet service	2010 Census	6.7%	25.8%
Transport	% Housing units without vehicles	2010 Census	6.7%	9.1%
	Vehicles per household	2010 Census	1.9	1.92
Crime	Violent crime rate	Guam: 2011 GPD US: 2011 UCR	347.3/100,000	386.3/100,000
	Property crime rate		NA	2908.7/100,000
Population density	Persons per square mile	2010 Census	751.7	87.4

Note: GPD = Guam Police Department; UCR = Uniform Crime Report; NA = not available

Behaviors Affecting Health

Injury prevention

The use of seatbelts is similar in Guam and the US mainland. Youth in Guam are less likely to drink and drive (5.8% vs. 8.2%), but more likely to ride in a vehicle driven by someone who had consumed alcohol (34.9% vs. 24.1%). The percentage of adults always wearing seatbelts in Guam is similar to the US and nearly meets the Healthy People (HP) 2020 target (Table 12).

Table 12. Injury prevention indicators, Guam vs. US, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Injury prevention	% Always wearing seatbelt, adults	2011 BRFSS	91.5%	93.3%	92.0%
	% Never/rarely wearing seatbelt, youth	2011 YRBS	8.7%	7.7%	-
	% Riding in a vehicle driven by someone who had consumed alcohol, youth	2011 YRBS	34.9%	24.1%	-
	% Drinking and driving, youth	2011 YRBS	5.8%	8.2%	-

Note: HP 2020 = Healthy People 2020; "-" – no HP 2020 target established

Immunization Uptake

Immunization uptake for adults, infants, and children is significantly lower in Guam than in the US (Table 13); the measles immunization rate for children in Guam falls short of the HP 2020 target. Among adults, women are more likely than men to have either the flu or pneumonia vaccination (Figure 13.) Educational level does not appear to influence immunization uptake in adults (Table 14.)

Table 13. Immunization indicators, Guam vs. US, 2011

Domain	Indicator	Source	Guam	USA	HP2020 target
Immunization, adults	% Flu shot in past year	2011 BRFSS	39.2%	60.7%	90% adults 18-64 yrs.
	% Ever had pneumonia vaccine	2011 BRFSS	39.4%	70.0%	90% adults >65 years
Immunization, infants and children	% Children 19-35 mos. immunized against MMR	2007 Guam house-to-house survey	85.0%	92.1%	90%

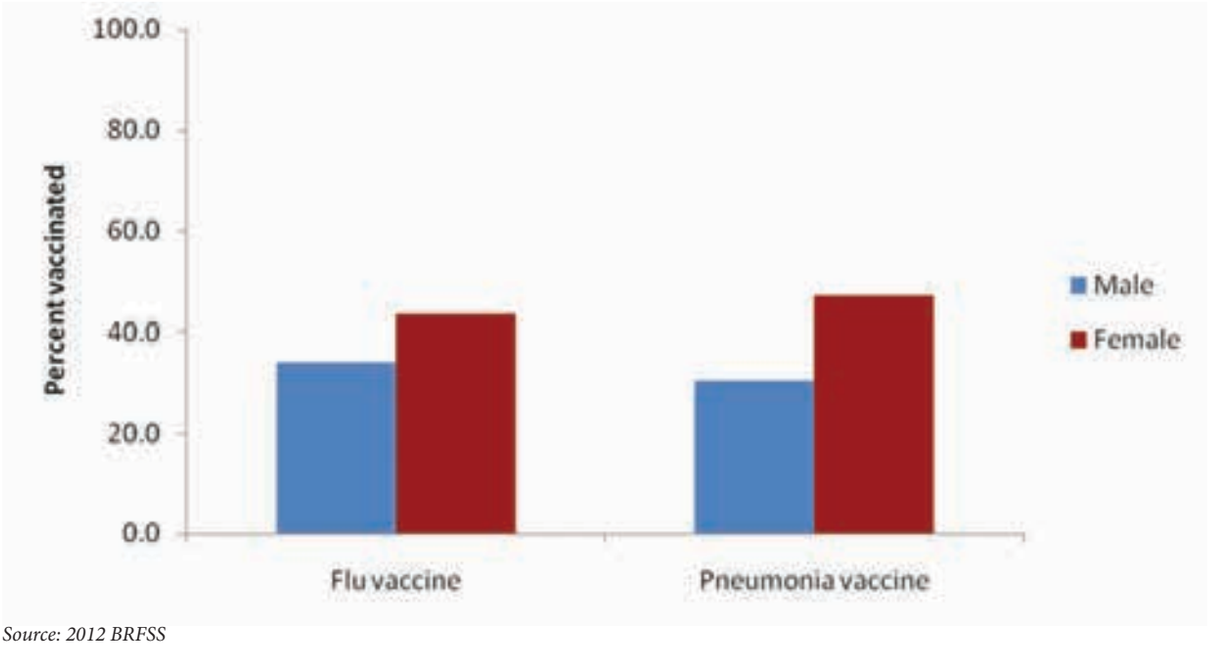
Note: HP 2020 = Healthy People 2020; "-" – no HP 2020 target established

Table 14. Adults reporting immunization, by educational attainment, 2011

Educational Level	% Vaccinated for influenza	% Vaccinated for pneumonia
< High School	NA	NA
< High School or G.E.D.	45.0	40.7
Some post H.S.	NA	NA
College Grad	43.4	37.7

Source: 2012 BRFSS
Note: NA = not available

Figure 13. Adults reporting immunization, by sex, 2012



Source: 2012 BRFSS

Sexual Health

Human Immunodeficiency Virus (HIV) testing is reported by a lower percentage of adults in Guam compared to the US (33.9% vs. 45%); the Guam rate falls way below the HP 2020 target (Table 15.)

Table 15. Sexual health indicators, Guam vs. USA, 2011

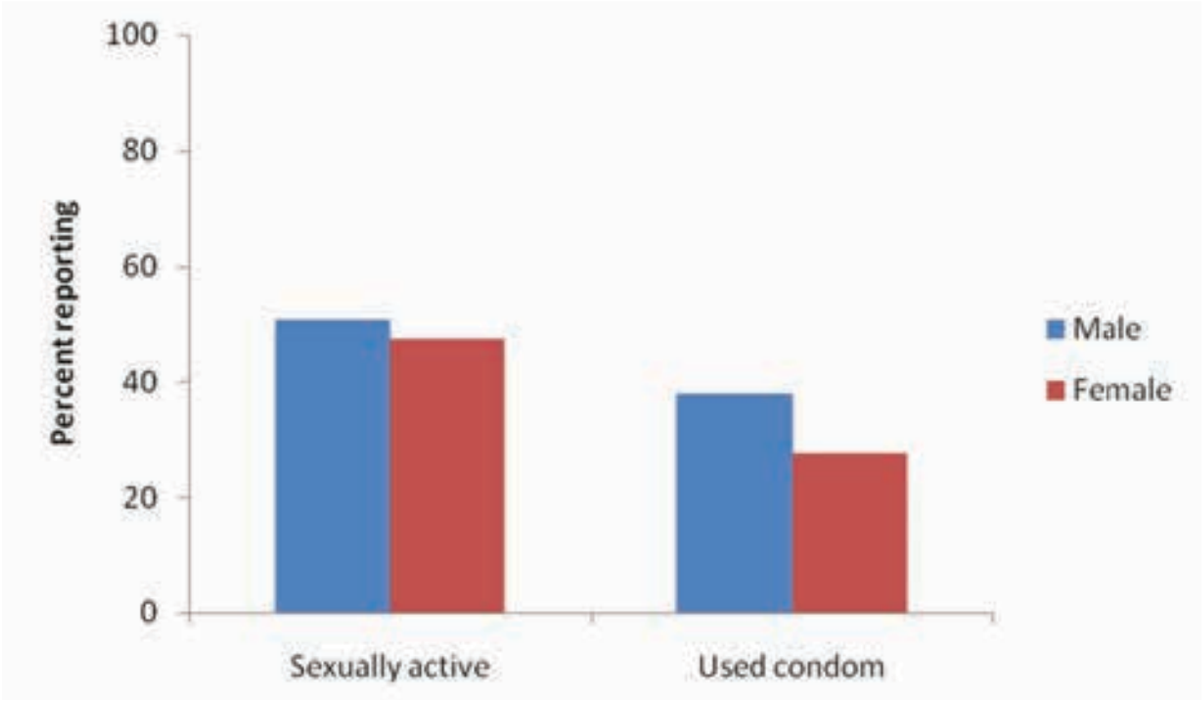
Domain	Indicator	Source	Guam	USA	HP 2020 target
Sexual health	% Tested for HIV, adults	2011 BRFSS	33.9%	N/A	90.0%
	% Youth taught about HIV/AIDS	2011 YRBS	86.0%	84.0%	-
	% Youth sexually active	2011 YRBS	32.3%	33.7%	-
	% Youth with 4 or more sexual partners	2011 YRBS	12.0%	15.3%	-
	% Youth used condom during sex	2011 YRBS	32.5%	60.2%	55.6% females; 81.5% males
	% Female youth using oral contraceptives	2011 YRBS	8.9%	18.0%	-
	% Female youth using Depo-provera*	2011 YRBS	3.8%	5.3%	-

Note: HP 2020 = Healthy People 2020; "-" – no HP 2020 target established
**Depo-provera – a contraceptive for women, given as a single shot, with effects lasting for ~3 months*

Guam youth are as likely as youth in the US mainland to have been taught about Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS), but a larger percentage in Guam are sexually active. (32.3% vs. 33.7%). The use of condoms during sex is reported by only 32.5% of Guam's youth compared to over 60% of US youth; this falls below HP 2020 targets. Female youth in Guam are less likely to use contraceptives than their mainland counterparts (Table 15.)

In Guam, girls are as likely as boys to be sexually active, and less likely to report condom use during a sexual encounter (Figure 14.) Filipino and other Micronesian Islanders are less likely to be sexually active, compared to Chamorros, Hispanic/Latinos and all other races (Figure 15).

Figure 14. Sexual activity status and condom use, by sex, Guam, 2011



Source: Guam YRBS, 2011

Figure 15. Sexual activity status by race/ethnicity, Guam youth, 2011

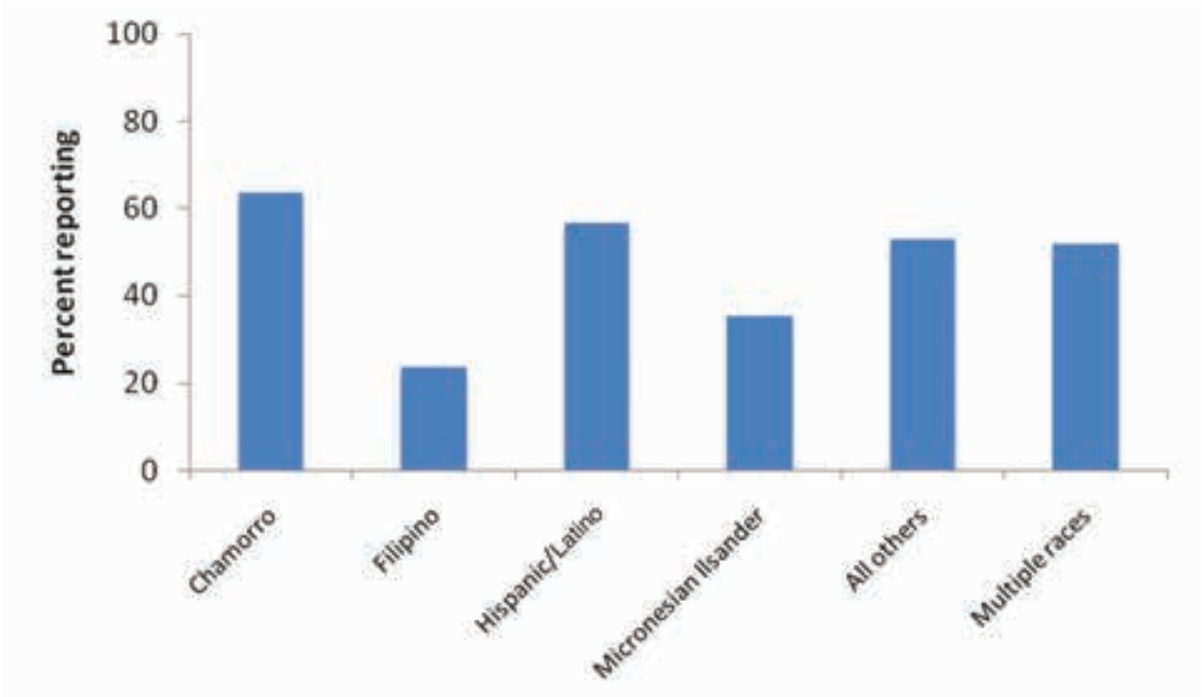


Figure 15. Sexual activity status by race/ethnicity, Guam youth, 2011

Risk and Protective Factors

Tobacco Use

Smoking prevalence and smokeless tobacco use remain higher in Guam than in the US, for both adults and youth, and are far from the HP 2020 targets.

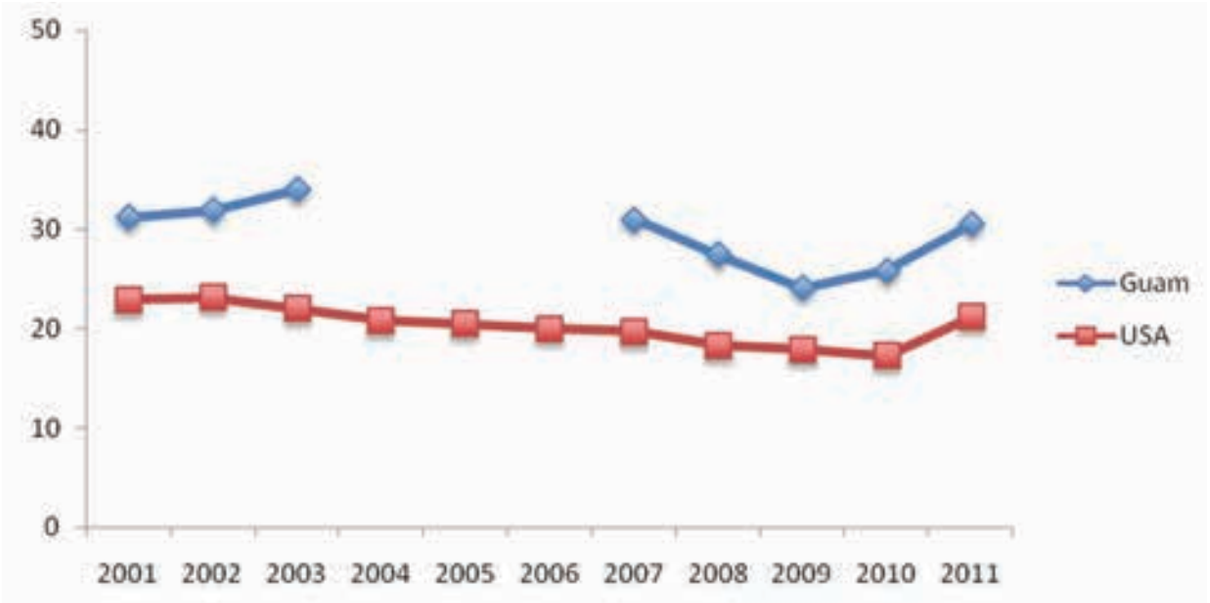
Table 16. Tobacco use indicators, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Tobacco use	Smoking prevalence, adults	2011 BRFSS	30.5%	21.2%	12.0%
	Smoking prevalence, youth	2011 YRBS	10%	18.1%	16.0%
	Smokeless tobacco use, adults	2005 NHIS	6.9%	2.3%	0.3%
	Smokeless tobacco use, youth	2011 YRBS	14.0%	7.7%	6.9%
	% Quit attempt in past year, adults	2011 BRFSS	70.0%	52.0%	-
	% Quit attempt in past year, youth	2011 YRBS	68.7%	49.9%	64.0%

Adult Smoking

Guam started seeing a decline in smoking prevalence in 2007, one year after implementation of the Natasha Protection Act (Public Law 28-80: Guam's smoke-free public places law). In 2007, the Government of Guam issued a GovGuam tobacco-free policy and launched the Guam Tobacco Cessation Quitline. This was followed by subsequent decreases in smoking prevalence in 2008 and 2009. However, the rate of decline has not been sufficient to narrow the gap between Guam and the US (Figure 16).

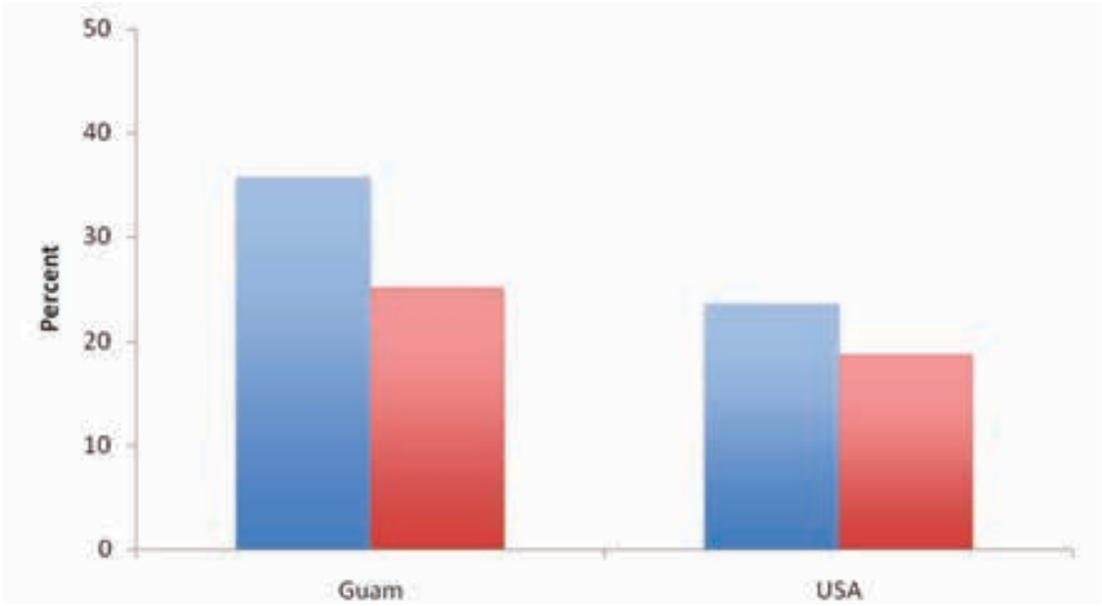
Figure 16. Smoking prevalence, adults, Guam vs. USA, 2001-2011



Source: BRFSS, 2001-2011

The difference across the sexes in current smoking is more marked in Guam (Figure17). Slightly more than 1 in 3 (35.8%) adult men and 1 in 4 (25.1%) adult women smoke. Women in Guam smoke as much as men in the US.

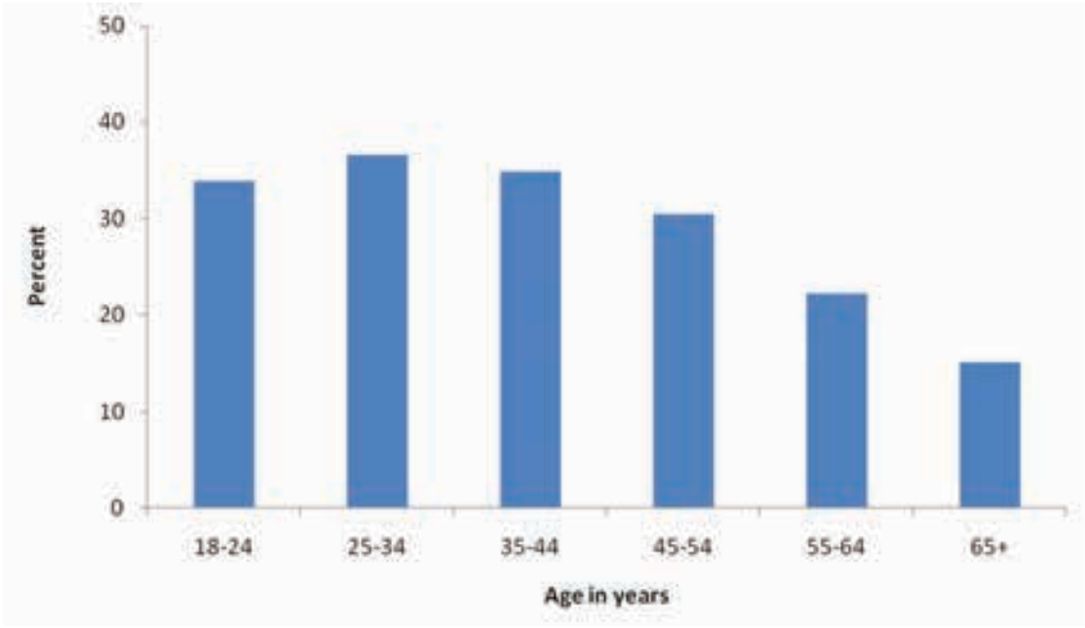
Figure 17. Current smoking, adults, by sex, Guam vs. USA, 2011



Source: BRFSS, 2011

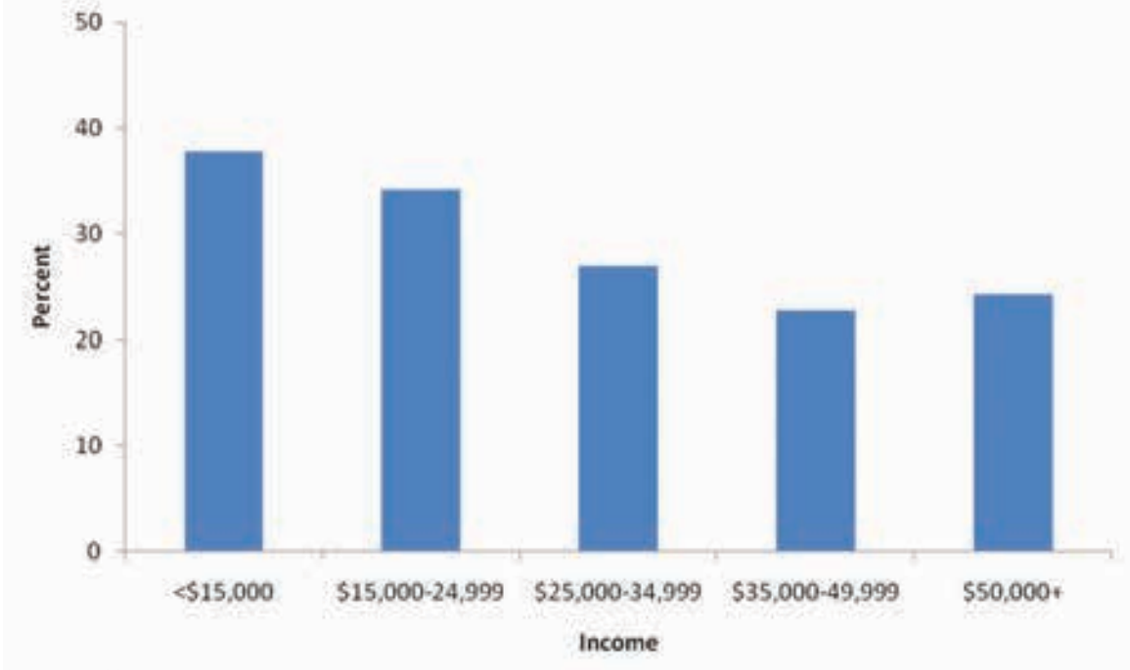
Smoking is highest among younger adults (<45 years), and is reported less frequently by those aged 45 years and older (Figure 18). Smoking is inversely related to income (Figure 19) and educational attainment (Figure 20), with current smoking reported more frequently by those with lower incomes and less years of education. This is consistent with global findings that link smoking with socio-economic status and educational attainment as social determinants of health.

Figure 18. Current smoking, adults, by age group, Guam, 2011



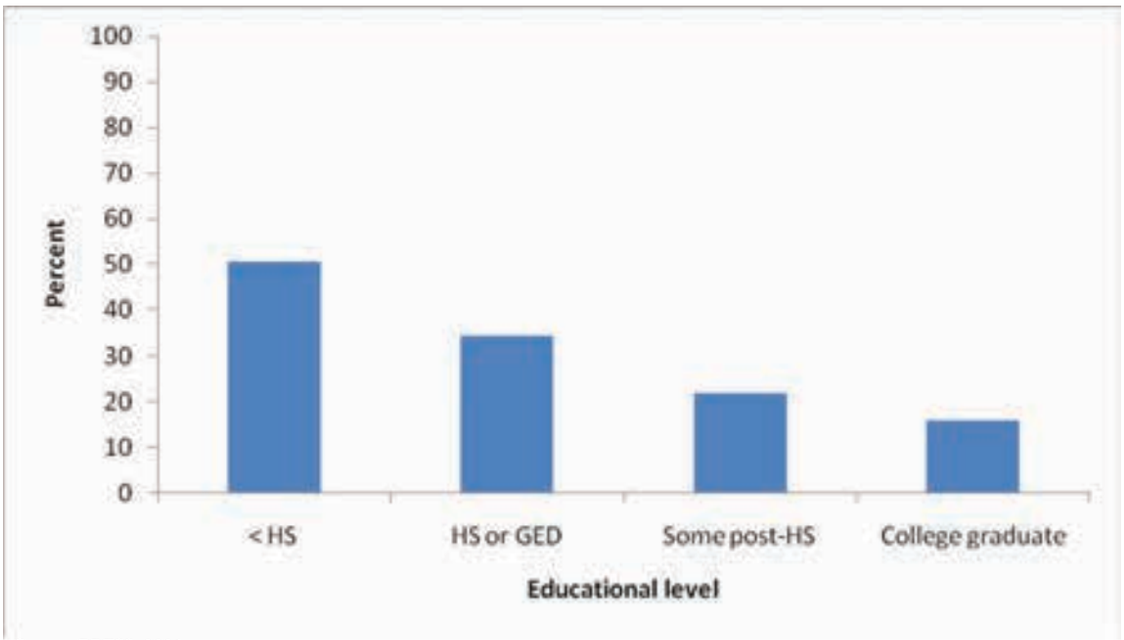
Source: BRFSS, 2001

Figure 19. Current smoking, adults, by income, Guam, 2011



Source: BRFSS, 2001

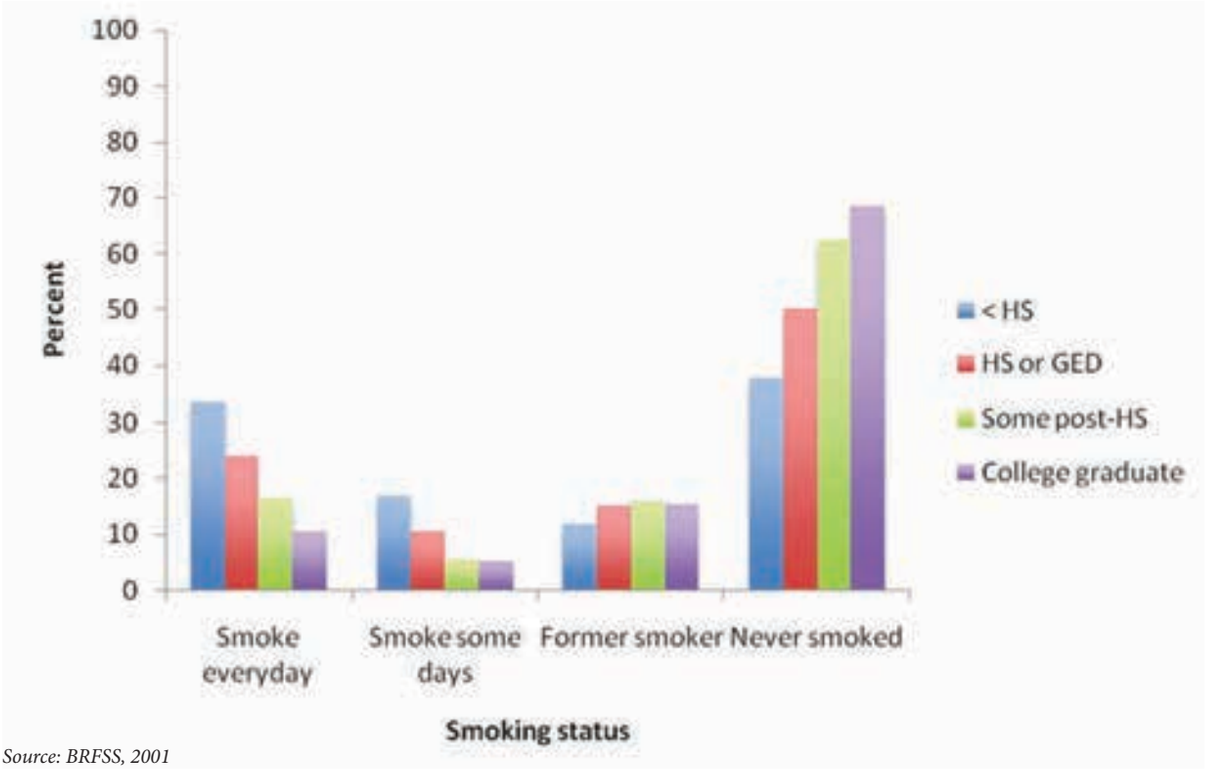
Figure 20. Current smoking, adults, by education, Guam, 2011



Source: BRFSS, 2001

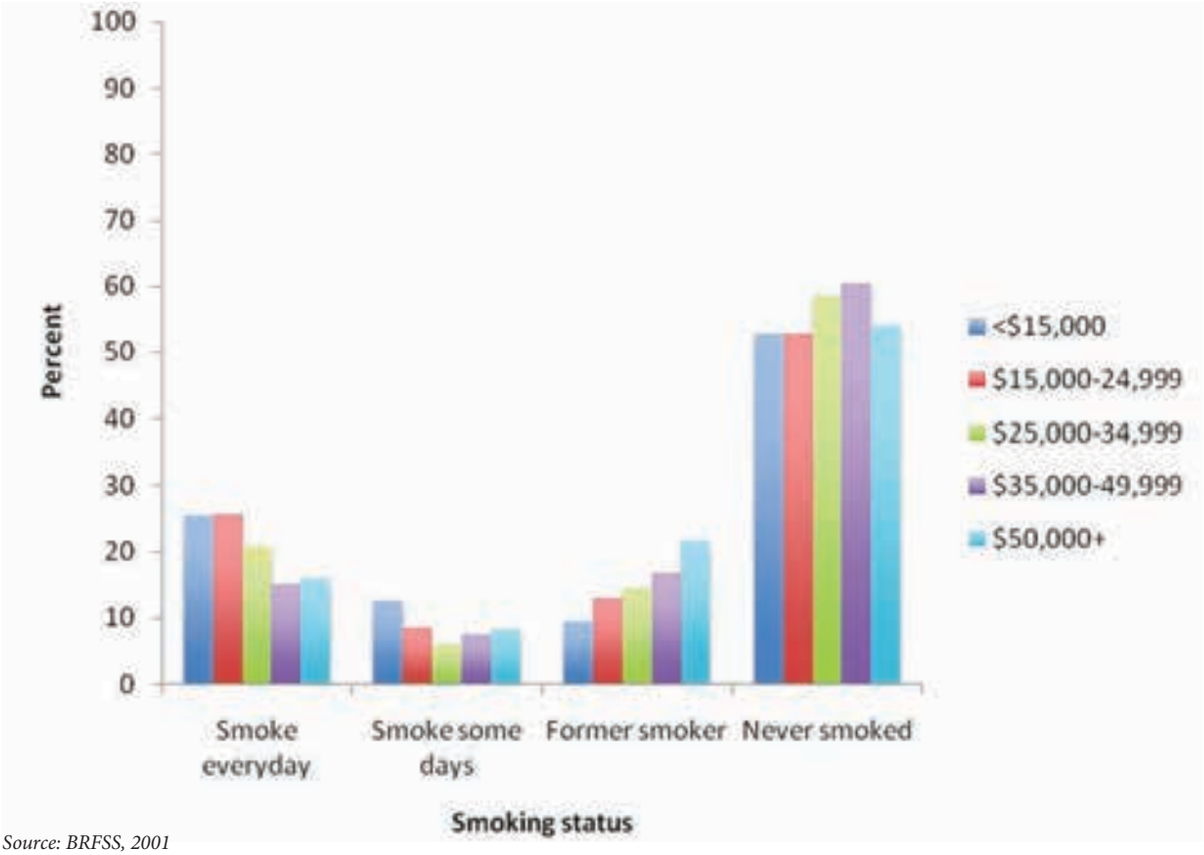
The disparities in smoking and socio-economic status are reflected in the data on four-level smoking status. Those with less education (Figure 21) and lower incomes (Figure 22) are more likely to be daily smokers. In contrast, the most educated and highest income group is more likely to have quit successfully (former smokers) or to have never smoked at all.

Figure 21. Four level smoking status, adults, by education, Guam, 2011



Source: BRFSS, 2001

Figure 22. Four level smoking status, adults, by income, Guam, 2011



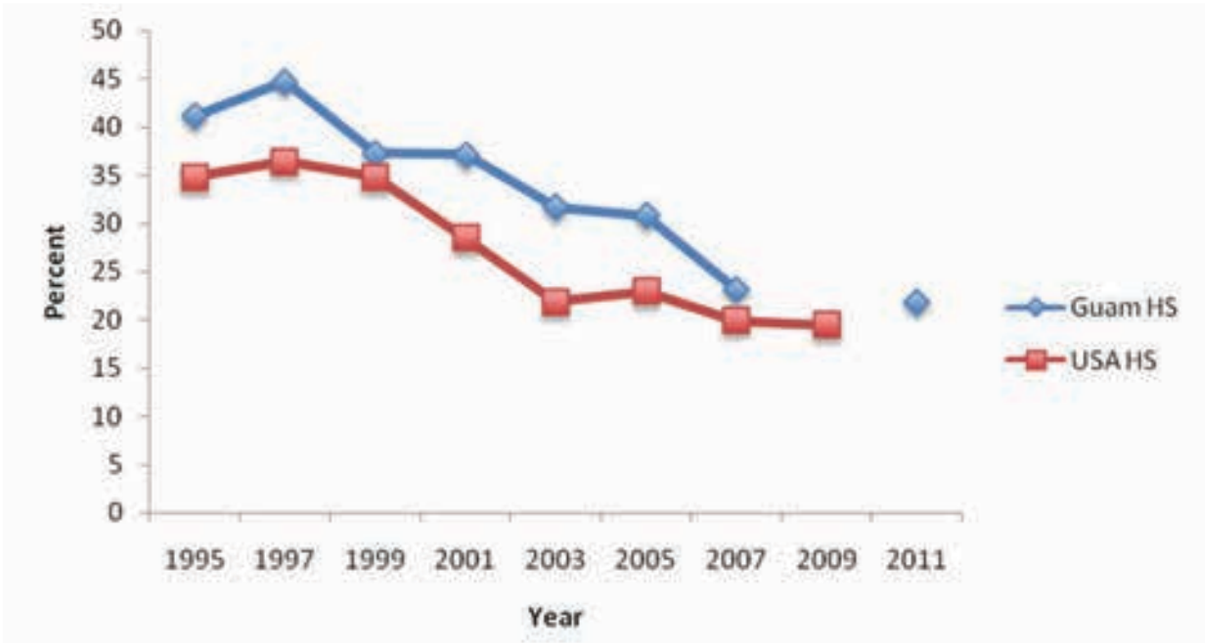
Source: BRFSS, 2001

Youth Smoking

Prevalence of smoking among youth has been declining in the US mainland and on Guam. On Guam, the decline in current smoking started in 1999, followed by significant drops in 2003 for high school students (Figure 23). In 2007, youth smoking rates continued to decrease. Although Guam surpassed the median US smoking rate for high school students in the 1990's and early 2000's, more recently, the decline in smoking was faster among Guam youth.

The declines in Guam youth smoking prevalence are temporally related to tobacco control policy changes. Synar inspections (named after Senator Mike Synar, who authored the Synar Amendment, which requires States to have laws in place prohibiting the sale and distribution of tobacco products to persons under 18 and to enforce those laws effectively) started on Guam in 1999, tobacco taxes were increased on Guam in 2003, and a sustained tobacco control program was launched by the DMHSA since 2003. In 2005, Guam's Natasha Act, making public places smoke-free, was enacted. In 2007, the Governor's Executive Order mandating all GovGuam premises and vehicles to become 100% tobacco free came into effect, and the DPHSS Quitline was established. Tobacco taxes were raised further in 2010, from $1.00/pack to $3.00/pack; which remains, to date, the largest single-time tax increase among all US States and Territories. The temporal association between these positive policy and program changes with decreases in youth smoking rates appears significant.

Figure 23. Current smoking, high school and middle school, Guam vs. US, 1995-2011

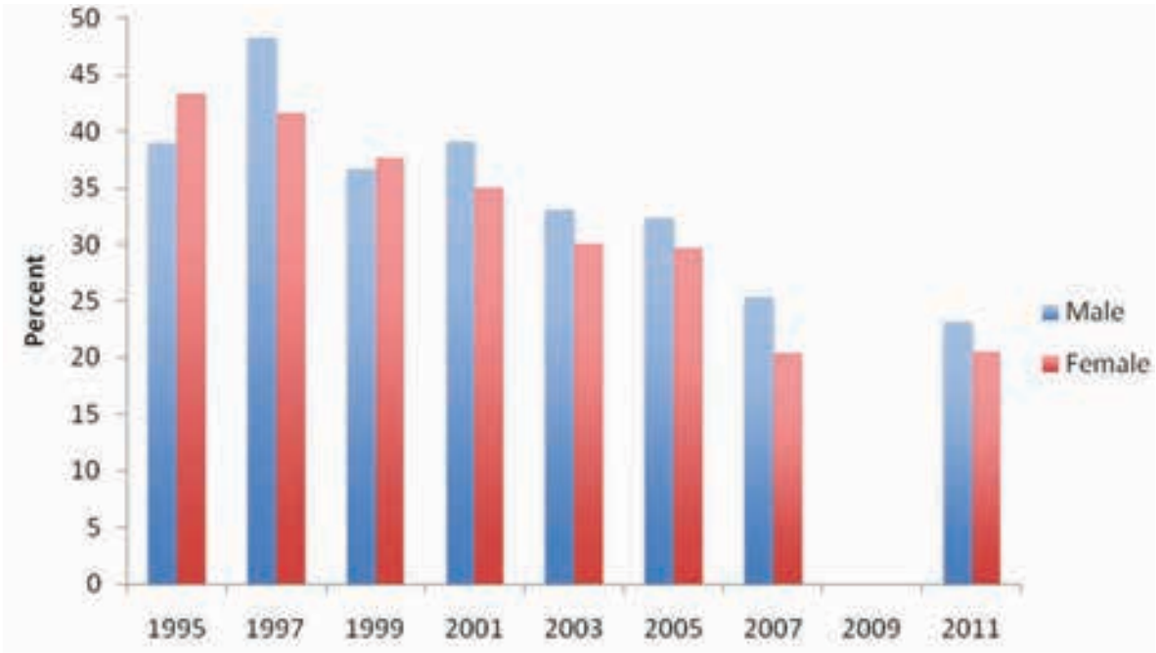


Source: YRBS 1995-2011

Unlike adults, current smoking rates are similar for young males and females (Figures 24). This is worrisome, and raises the potential for tobacco-induced poorer reproductive outcomes if smoking rates among young females are not decreased in the near future. Over the longer term, this trend foreshadows rising tobacco-related morbidity and mortality among women in Guam.

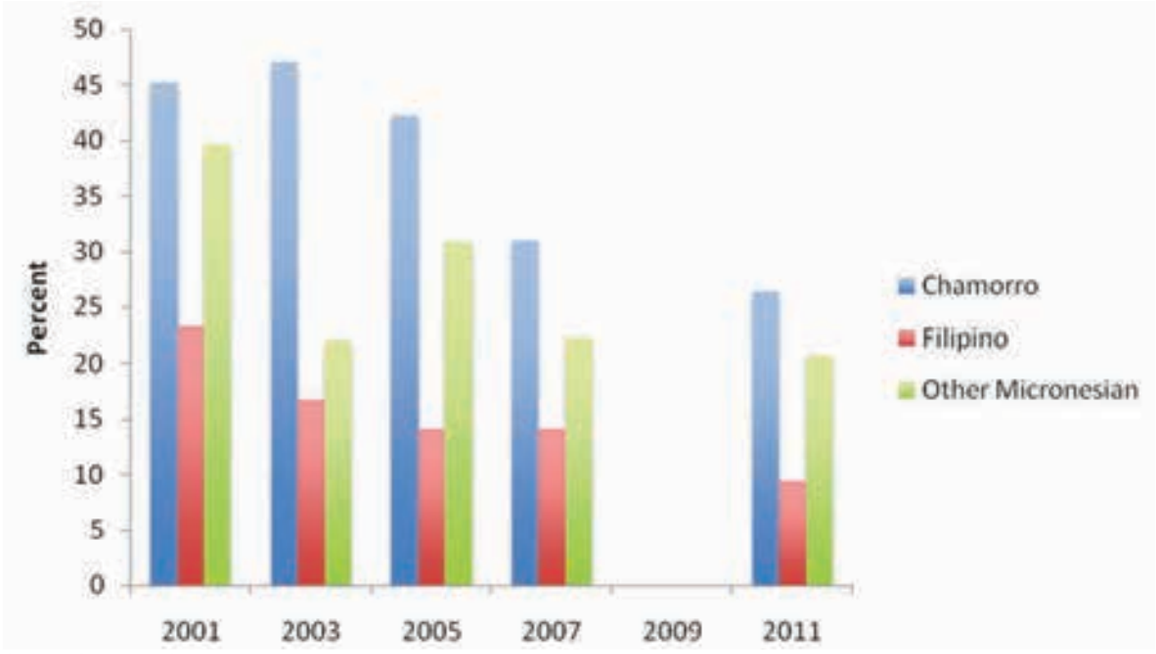
Chamorros have the highest rates for current smoking for all years and Filipinos have the lowest rates (Figure 25.)

Figure 24. Current smoking, high school by sex, Guam, 1995-2011



Source: Guam YRBS 1995-2011

Figure 25. Current smoking, high school by ethnicity, Guam, 1995-2011

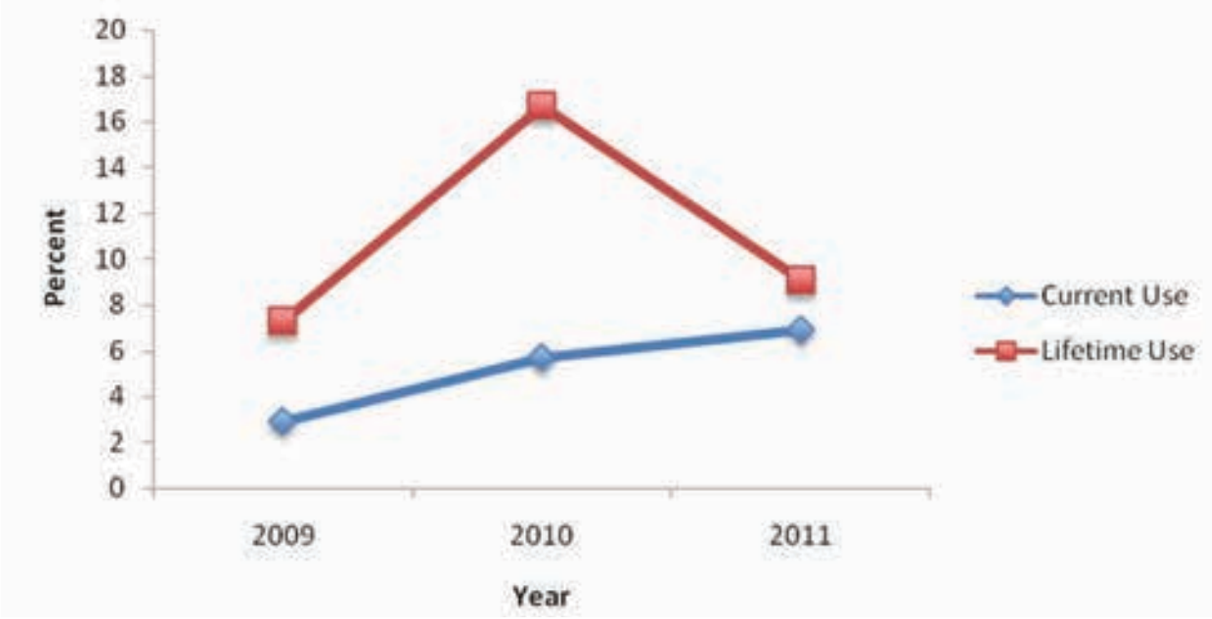


Source: Guam YRBS 2001-2011

Adult Smokeless Tobacco Use

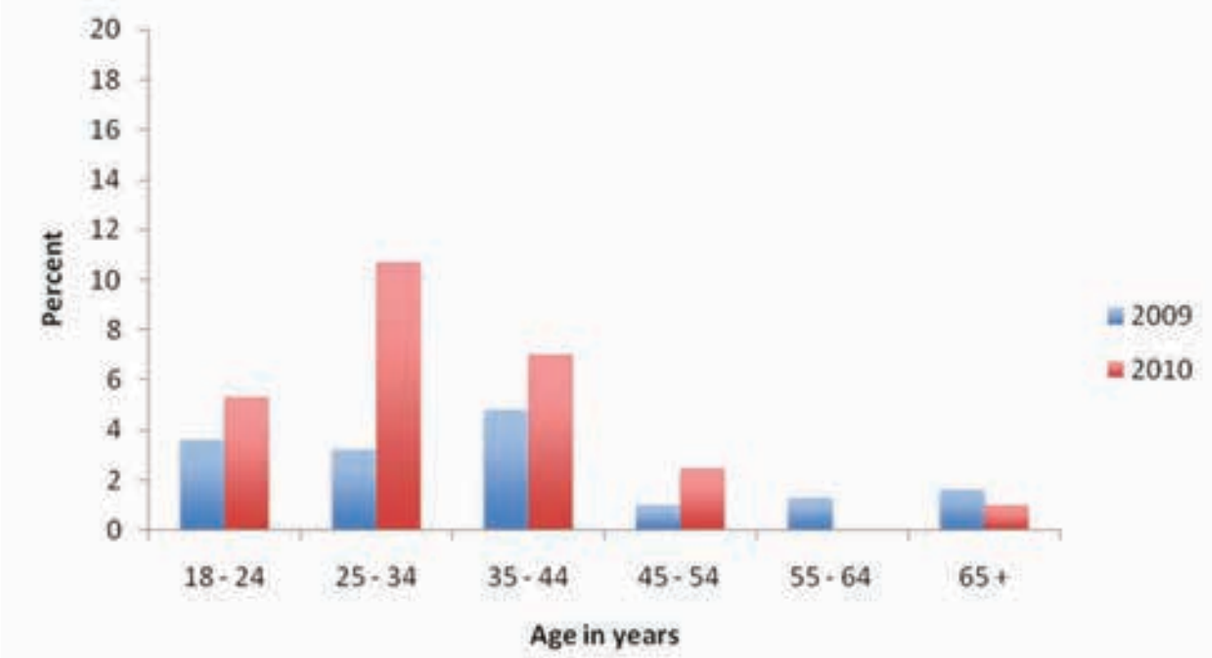
Current tobacco use is rising among Guam adults (Figure 26). Males report greater use than females (Figure 28). Majority of current users are under the age of 45 years (Figure 27). Smokeless tobacco use is lowest among those with the highest educational attainment (Figure 29). The relationship with annual income is less clear (Figure 30). Overall, for the years that data are available, consumption is highest among other Micronesians (Figure 31).

Figure 26. Current smokeless tobacco use, adults, Guam, 2009-2011



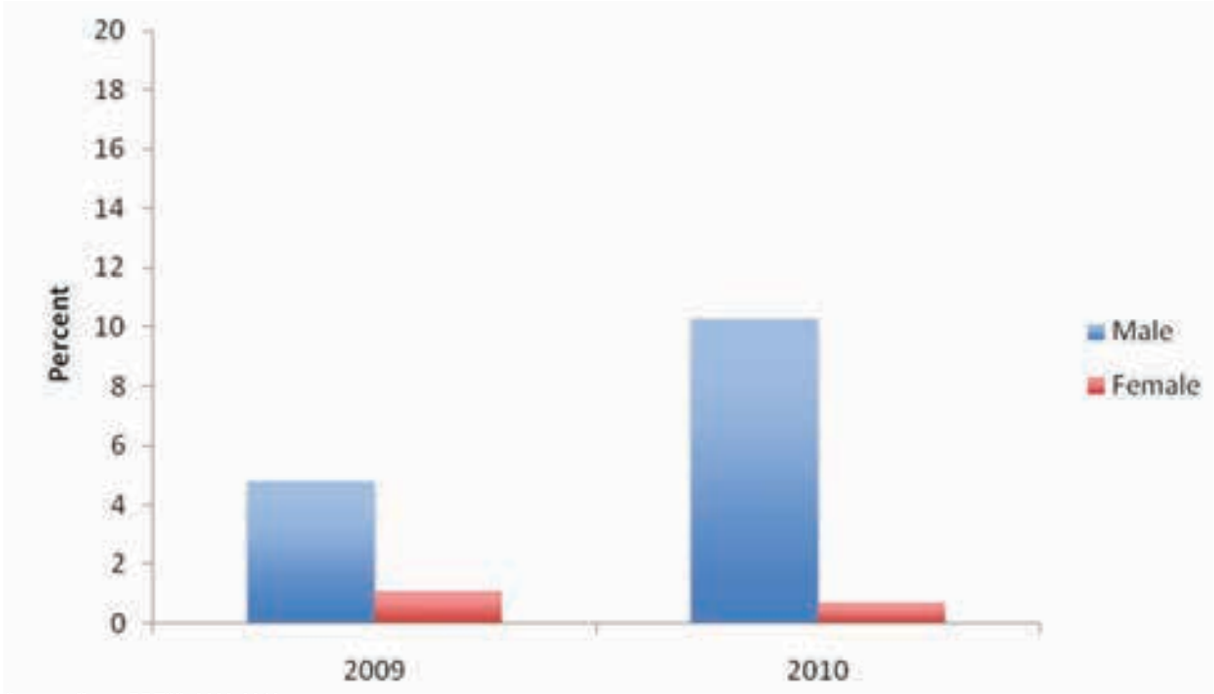
Source: Guam BRFSS, 2009-2011

Figure 27. Current smokeless tobacco use by age group, adults, Guam, 2009-2010



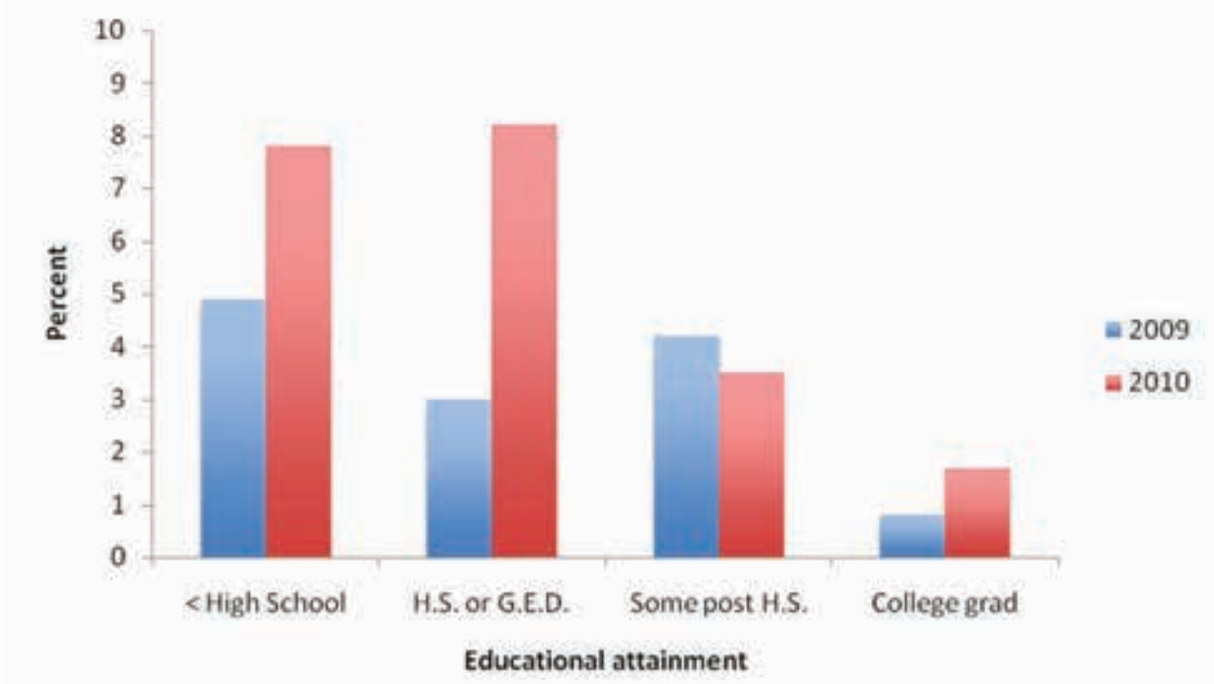
Source: Guam BRFSS, 2009-2010

Figure 28. Current smokeless tobacco use, adults, by sex, Guam, 2009-2010



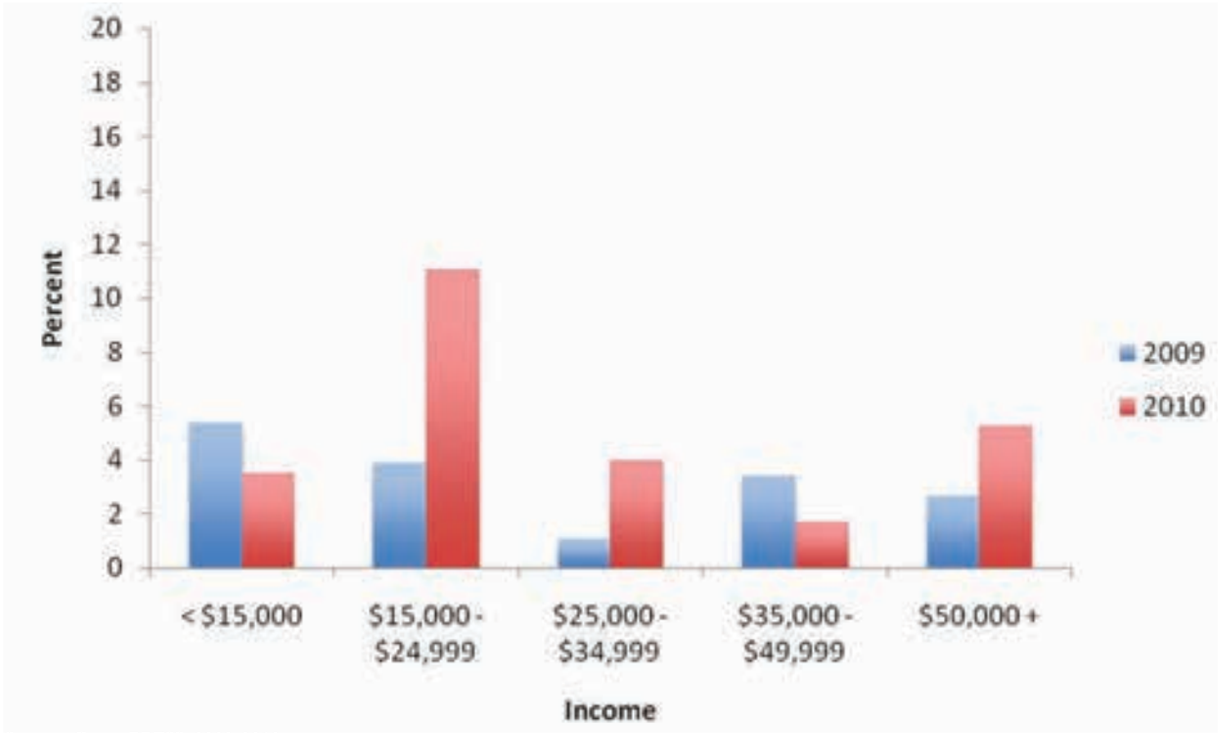
Source: Guam BRFSS, 2009-2010

Figure 29. Current smokeless tobacco use by educational attainment, adults, Guam, 2009-2010



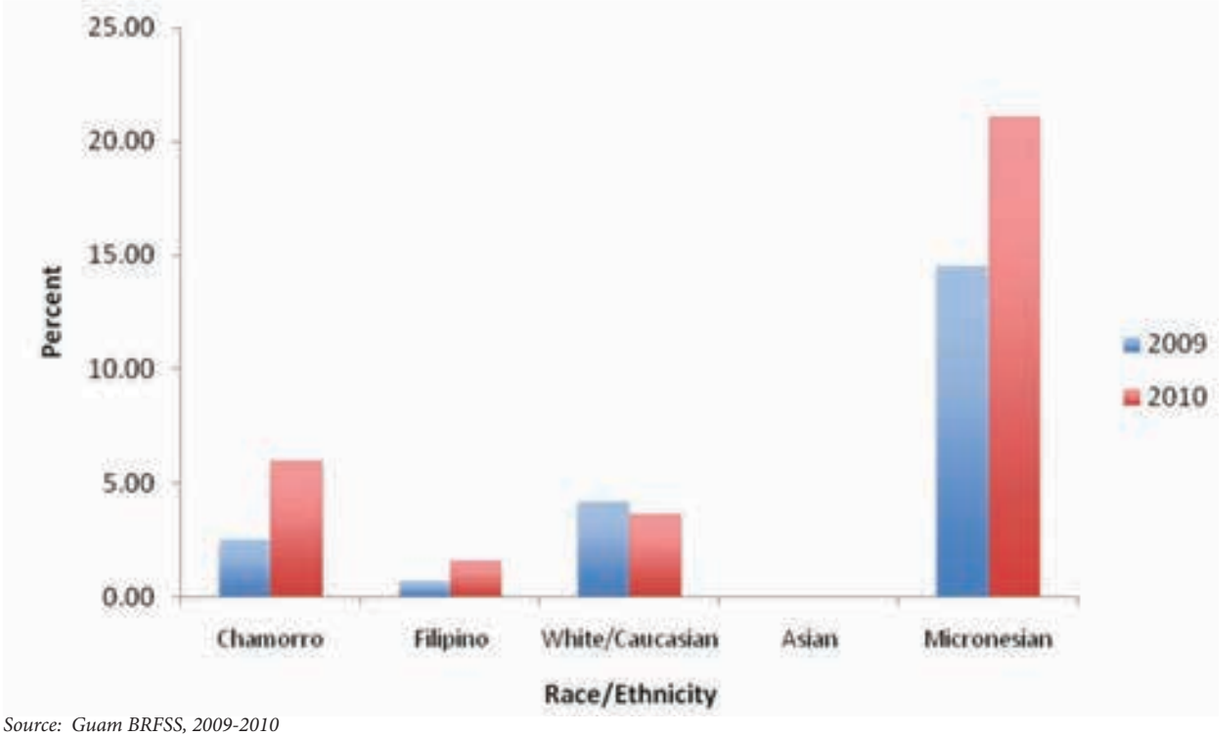
Source: Guam BRFSS, 2009-2010

Figure 30. Current smokeless tobacco use by income, adults, Guam, 2009-2010



Source: Guam BRFSS, 2009-2010

Figure 31. Current smokeless tobacco use by ethnicity, adults, Guam, 2009-2010

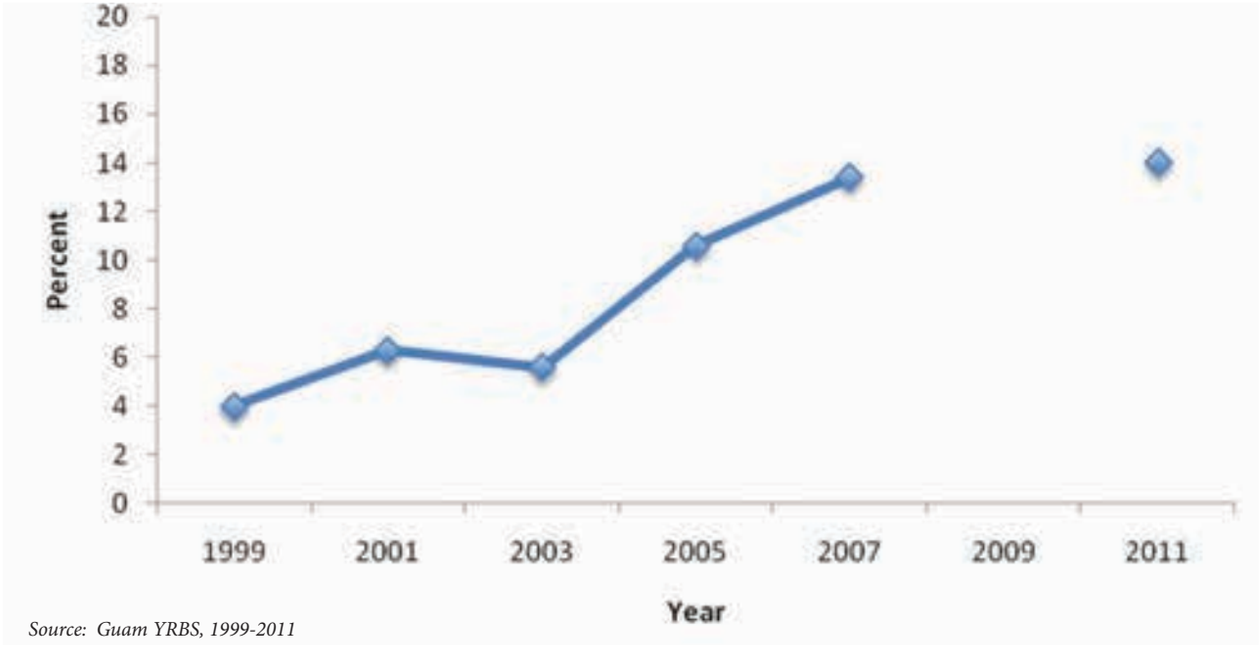


Source: Guam BRFSS, 2009-2010

Youth Smokeless Tobacco Use

The use of other tobacco products such as chewing tobacco is less prevalent than cigarette smoking among Guam's youth. However, while the actual numbers of users are small, the rate of other tobacco use, including chewing tobacco mixed with betel nut (areca nut/betel quid), is increasing among high school youth (Figure 32). The rates for high school youth doubled between 2003 and 2005, and increased further in 2007. The use of other tobacco products deserves close monitoring, and prevention and early intervention efforts are needed to offset any further increases.

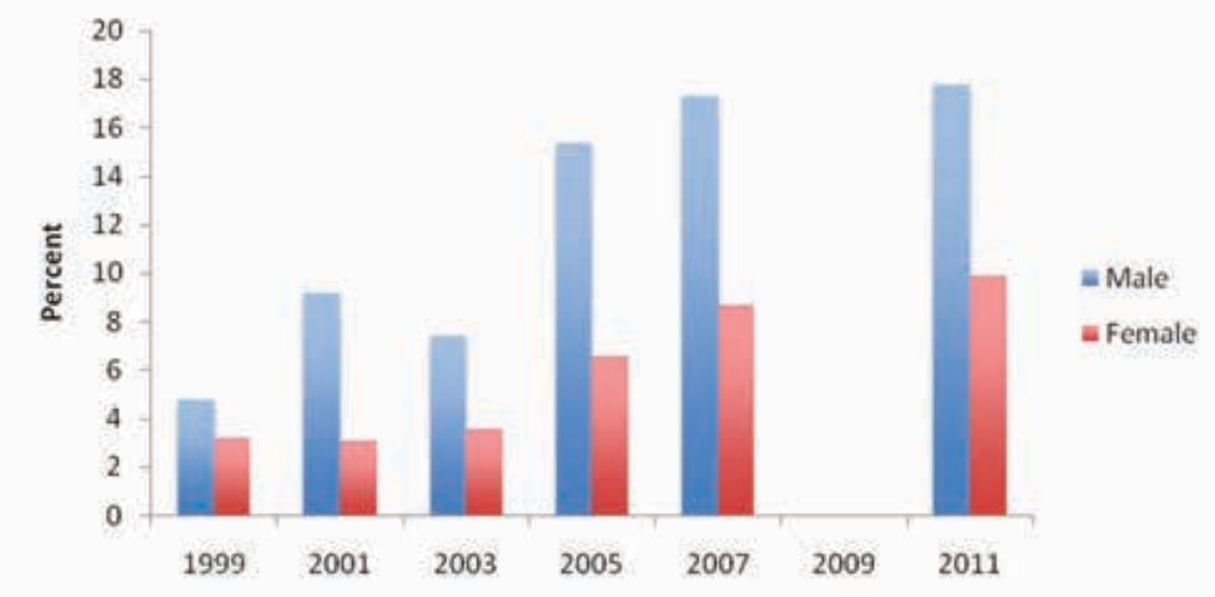
Figure 32. Smokeless tobacco use, high school youth, Guam, 1999-2011



Source: Guam YRBS, 1999-2011

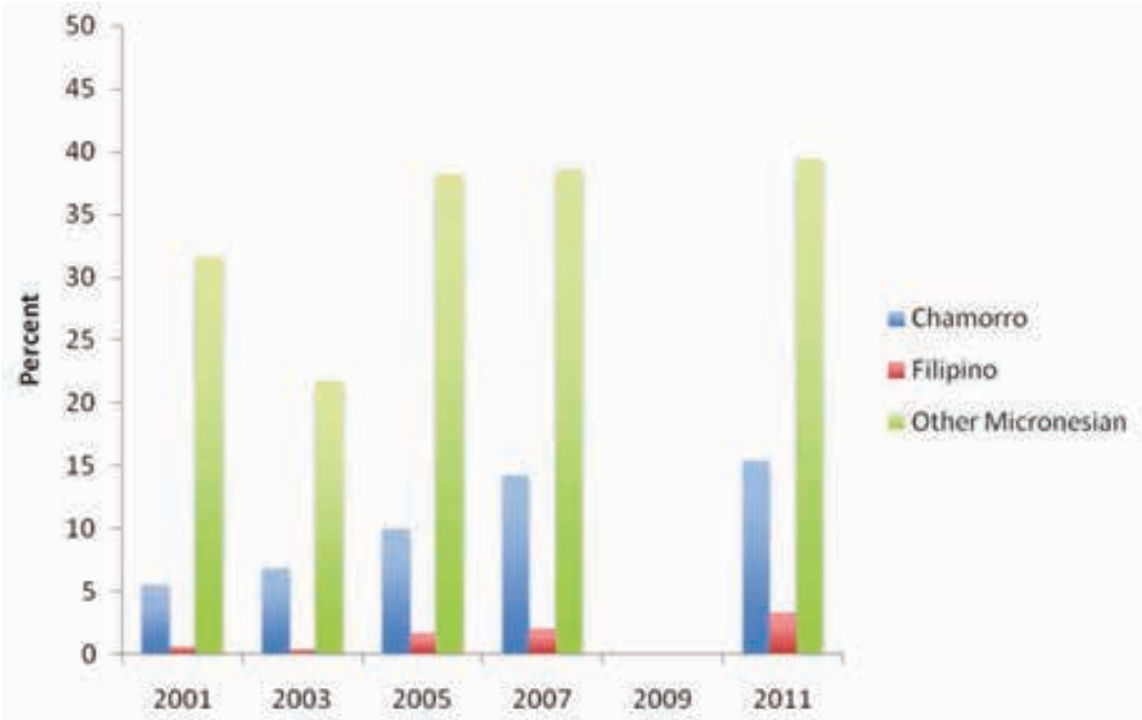
As with adults, overall, males have a higher prevalence of using other tobacco products than females (Figures 33). This is unlike the situation with youth smoking, where male and female rates are similar. The use of smokeless tobacco products is highest among Micronesian Islanders (Figure 34). The difference between other Micronesians and all other ethnic categories is remarkable. Filipinos have the lowest rates; however, their rates are increasing. Prevalence of using other tobacco products appears to be increasing among high school youth, regardless of ethnicity.

Figure 33. Smokeless tobacco use, by sex, high school, Guam, 1999-2011



Source: Guam YRBS, 1999-2011

Figure 34. Smokeless tobacco use, by ethnicity, high school, Guam, 2001-2011

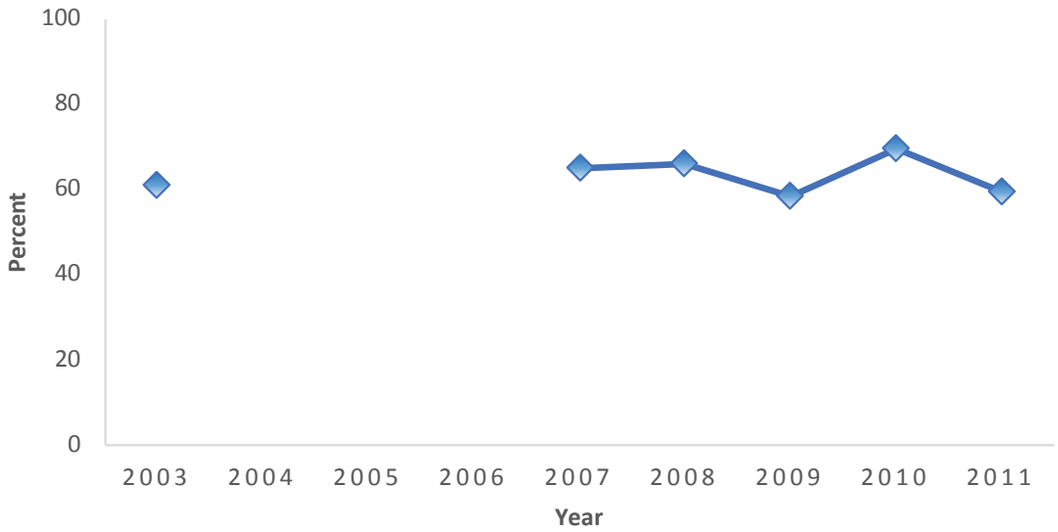


Source: Guam YRBS, 2001-2011

Quit Rates, Adults

The percentage of current smokers who tried to quit for at least one day in the past year decreased from 61% in 2003 to 59.2% in 2011 (Figure 35), significantly higher than in the US. This may reflect greater awareness and readiness to quit, as well as greater availability of cessation services through the Guam Behavioral Health and Wellness Center (GBHWC, formerly Guam Department of Mental Health and Substance Abuse) cessation program (established in 2003) and the DPHSS quitline (established in August 2007). The data indicate the ongoing need for cessation services to support those who desire to quit using tobacco.

Figure 35. Quit attempts in the past 12 months, adults, Guam, 2003-2010

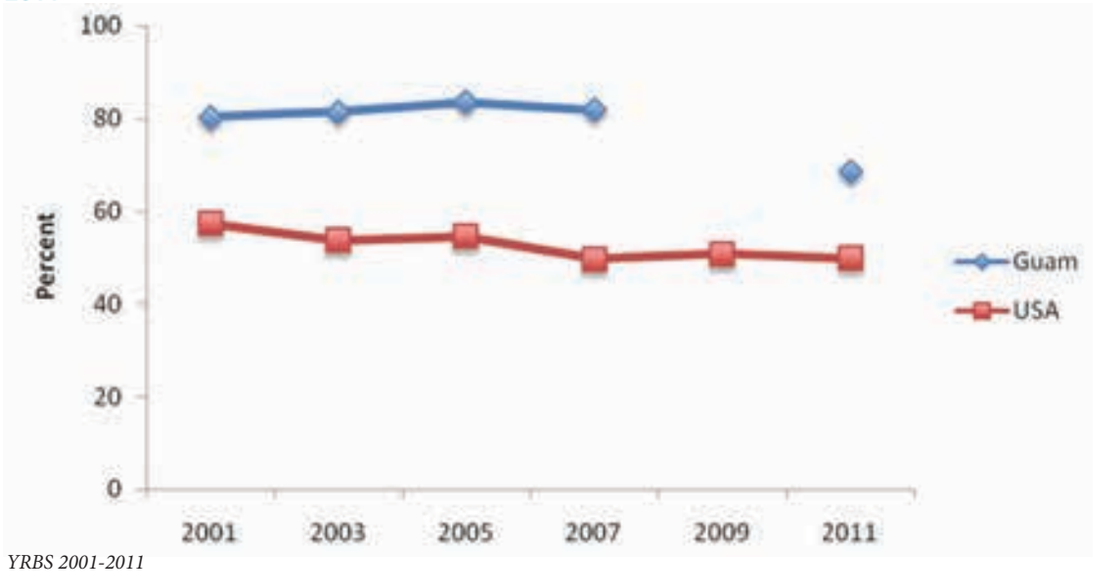


Source: Guam BRFSS, 2003-2011

Quit Rates, Youth

The percentage of youth smokers wanting to quit in the past year has always been higher in Guam than in the US. However, in 2011, the Guam rate for quit attempts decreased, narrowing the gap (Figure 36). Despite the decline, majority of youth smokers want to quit, signaling the need to provide cessation services for this population.

Figure 36. Percent of youth smokers wanting to quit in the past 12 months, high school, Guam vs. US, 2001-2011



Source: YRBS 2001-2011

Alcohol use

Table 17. Alcohol use indicators, Guam vs. USA, 2011

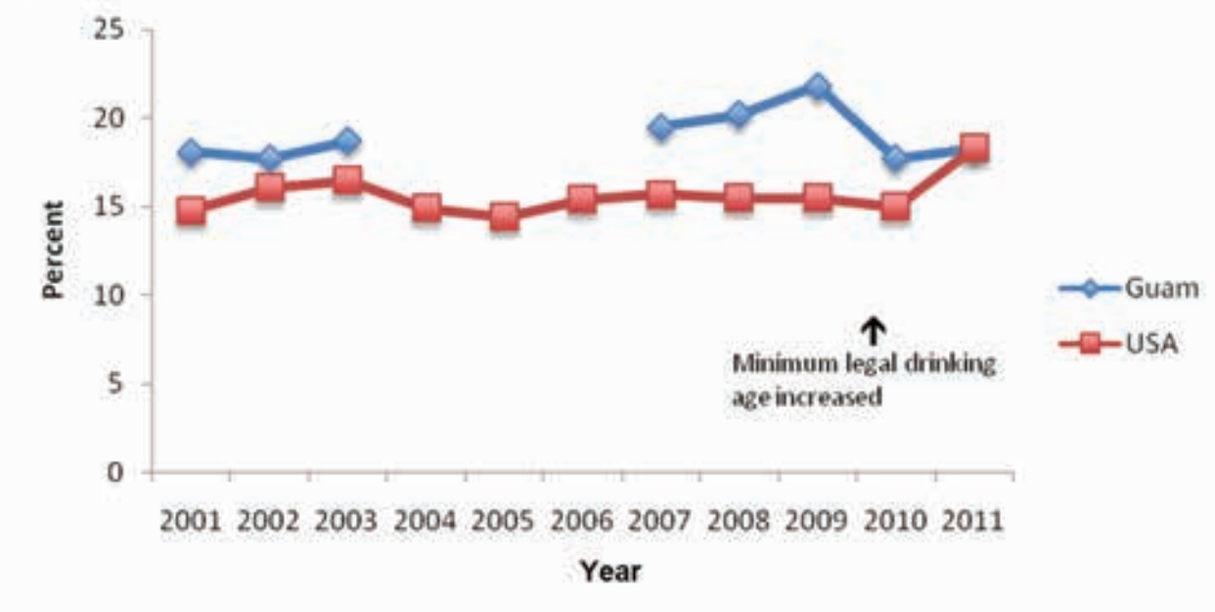
Domain	Indicator	Source	Guam	USA	HP 2020 target
Alcohol use	Binge drinking prevalence, adults	2011 BRFSS	18.3%	18.3%	24.4%
	Binge drinking prevalence, youth	2011 YRBS	13.6%	21.9%	8.6%

Binge drinking, adults

Binge drinking, defined as having five or more drinks on one occasion for males, and four or more drinks on one occasion for females, was reported by 18.3% of adults in Guam in 2011 (Table 17); this is the same as the US median and surpasses the HP2020 target of 24.4%. The binge-drinking rate in Guam was increasing until 2010, when it dropped for the first time since 2001. In 2010, the minimum legal age for alcohol consumption was raised from 18 to 21 years (Figure 37).

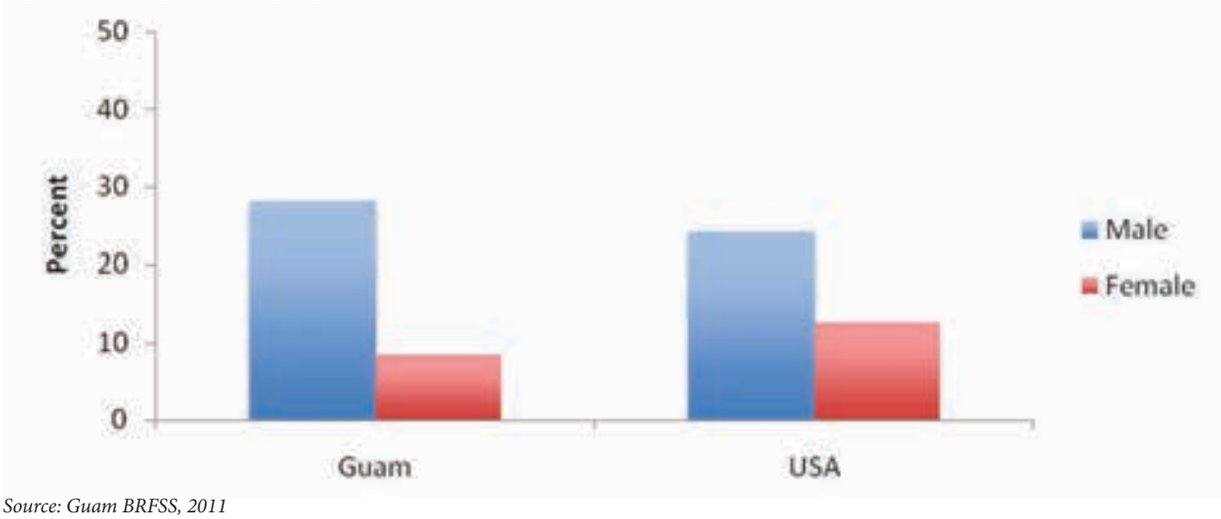
Males in Guam had a similar rate of binge drinking as their US counterparts, and had a rate of binge drinking that was about 3 times higher than women in on Guam (Figure 38). Females in Guam had a rate of binge drinking that was lower than that of females in the US. Binge drinking was highest among younger adults (<45 years), and dropped rapidly after 55 years (Figure 39). The relationship between binge drinking and income, and binge drinking and education are less clear-cut.

Figure 37. Alcohol use indicators, Guam vs. USA, 2011



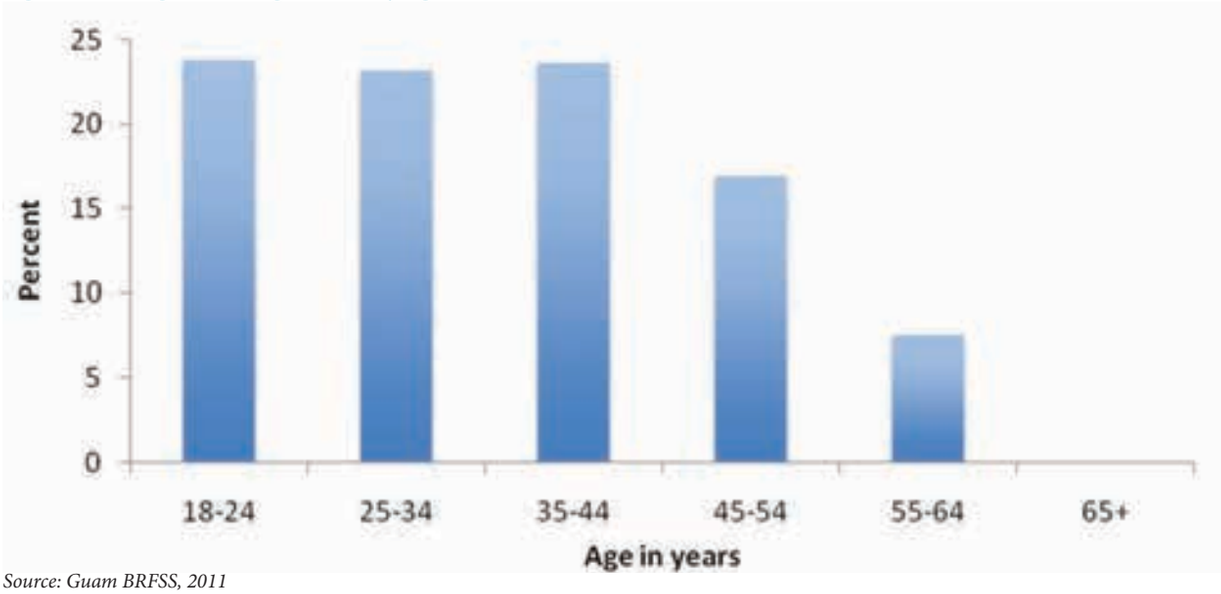
Source: Guam BRFSS, 2001-2011

Figure 38. Binge drinking, by sex, Guam vs. US, 2011



Source: Guam BRFSS, 2011

Figure 39. Binge drinking, adults by age, Guam, 2011



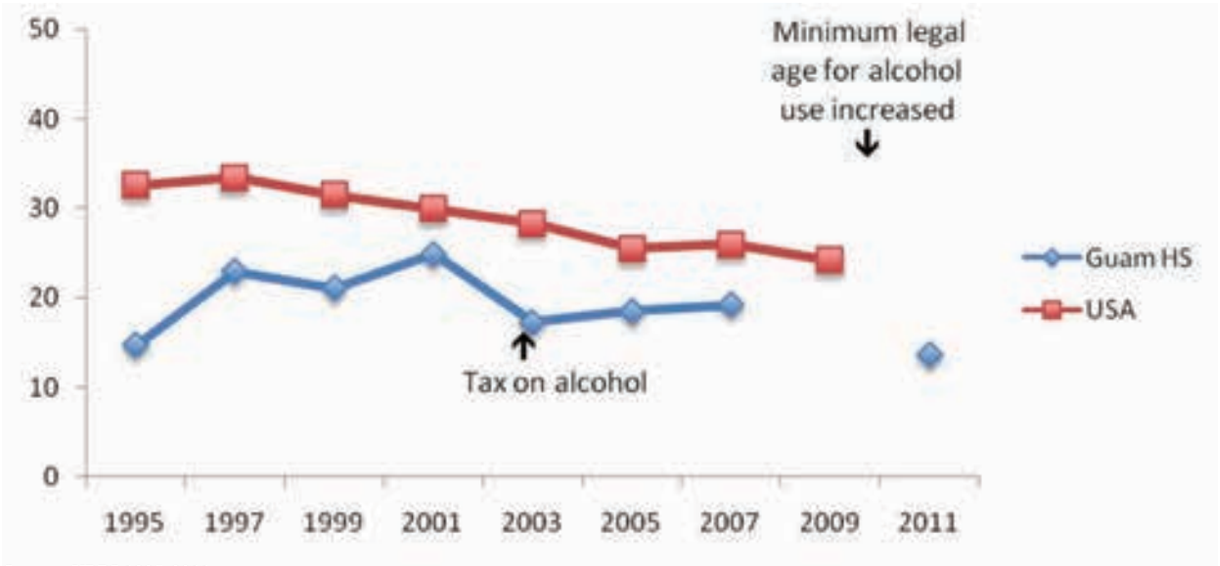
Source: Guam BRFSS, 2011

Binge drinking, youth

While in general, binge drinking among youth is lower on Guam than in the US, from 1995 to 2007, US rates were decreasing while Guam rates were either unchanged or increasing. Thus, the difference between Guam and US rates was shrinking (Figure 40). In 2005, the binge drinking rate decreased for the first time since 1995, following the legislated increase in taxes on alcohol products. In 2011, the high school binge drinking rate in Guam dropped further. This was after the law raising the minimum legal age for alcohol consumption from 18 to 21 years was passed in 2010.

Males on Guam have a higher prevalence of binge drinking than females, but the sex difference is decreasing over time as female binge drinking rates approximate those of males. Binge drinking increased among Guam youth between 2003 and 2005, largely due to a significant increase among males, but from 2005 to 2007, the increase was among females (Figure 41). In 2011, the year after the law raising the legal minimum age for alcohol use was passed, both male and female binge drinking decreased.

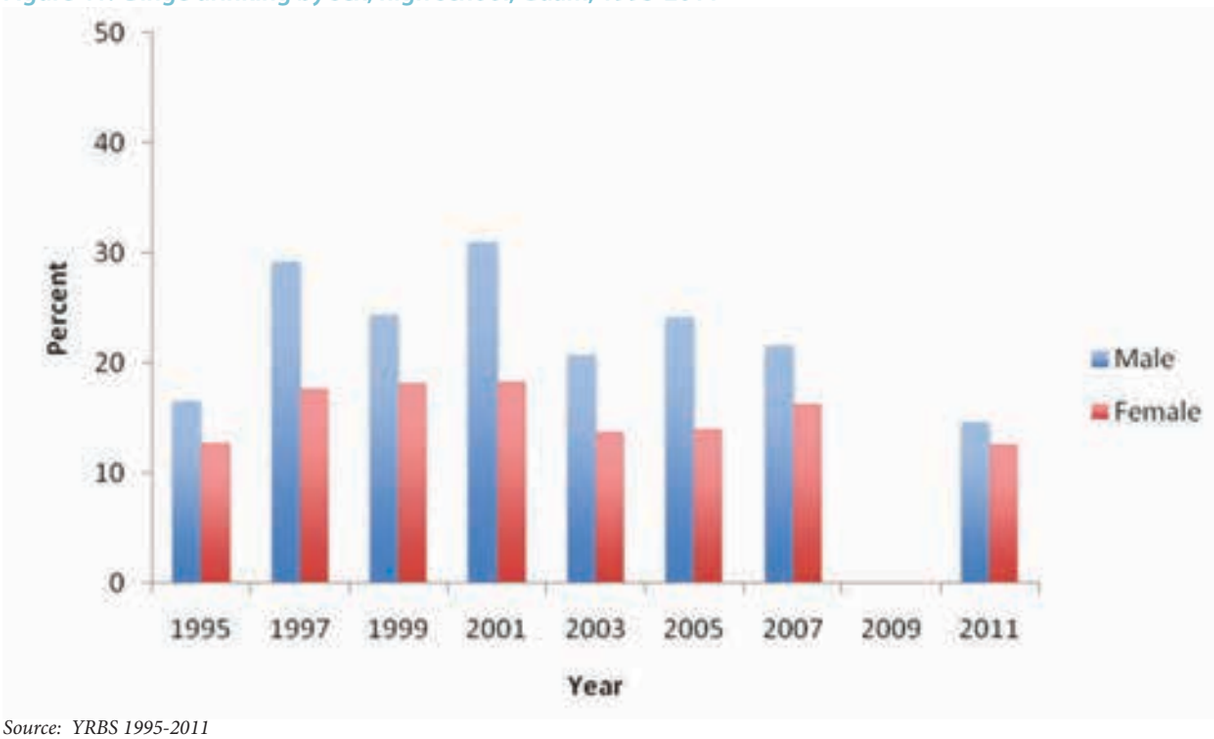
Figure 40. Binge drinking, high school, Guam vs. US, 1995 to 2011



Source: YRBS 1995-2011

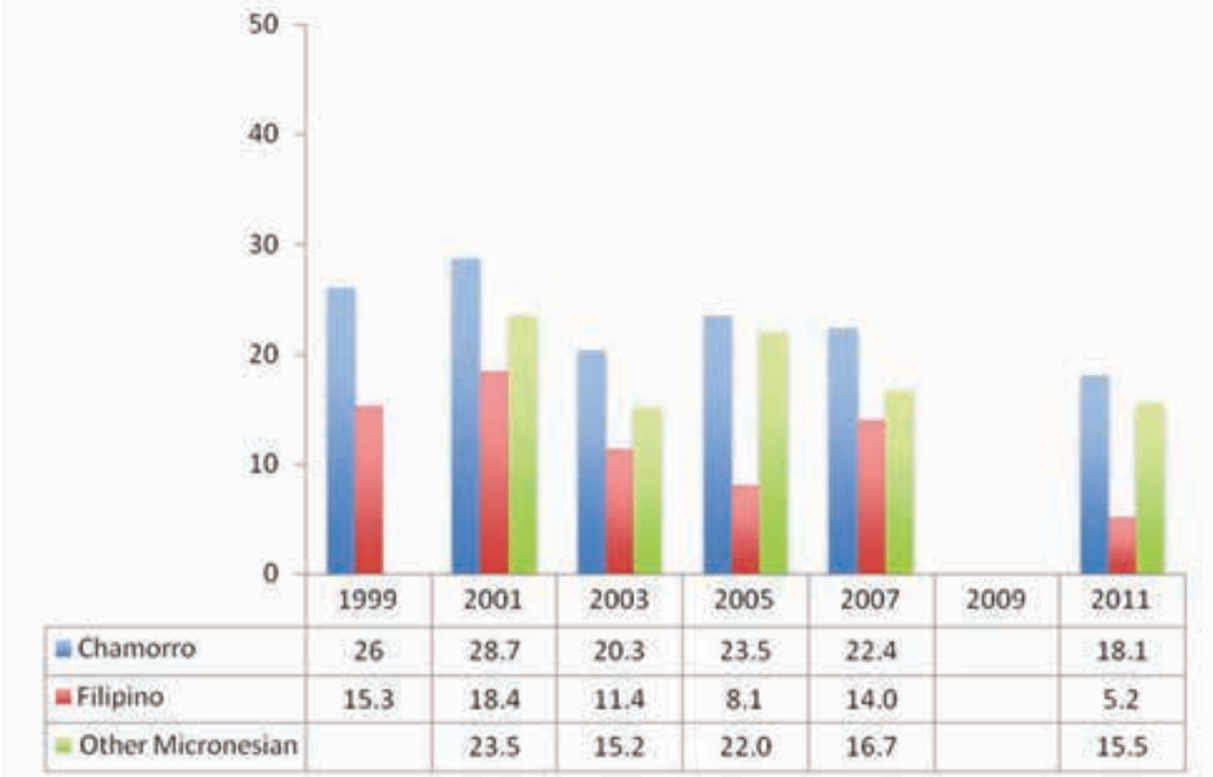
When disaggregated by ethnicity/race, Filipino youth have the lowest rates for binge drinking, while Chamorro youth have the highest. Binge drinking decreased markedly for all ethnic groups in 2003, but remained unchanged for Chamorro and other Micronesian youth (Figure 42) from 2005 to 2007. However, binge drinking decreased among Chamorro and Filipino youth in 2011.

Figure 41. Binge drinking by sex, high school, Guam, 1995-2011



Source: YRBS 1995-2011

Figure 42. Binge drinking, High School, by ethnicity, Guam, 1999 to 2011



	1999	2001	2003	2005	2007	2009	2011
Chamorro	26	28.7	20.3	23.5	22.4		18.1
Filipino	15.3	18.4	11.4	8.1	14.0		5.2
Other Micronesian		23.5	15.2	22.0	16.7		15.5

Source: YRBS 1999-2011

Other Drug Use

Table 18. Other drug use indicators, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Other drug use	30-day marijuana use, adults	2011 BRFSS	17.0%	NA	-
	30-day marijuana use, youth	2011 YRBS	32.0%	23.1%	6.0%
	Lifetime other illicit drug use, adults	2011 BRFSS	4.4%	NA	-
	Cocaine use prevalence, youth	2011 YRBS	1.5%	3.0%	-
	Lifetime methamphetamine use, adults	2011 BRFSS	5.0%	NA	-
	Methamphetamine use youth	2011 YRBS	3.2%	3.8%	-
	Inhalants use, youth	2011 YRBS	8.5%	11.4%	-
	Steroid, youth	2011 YRBS	3.4%	3.6%	-

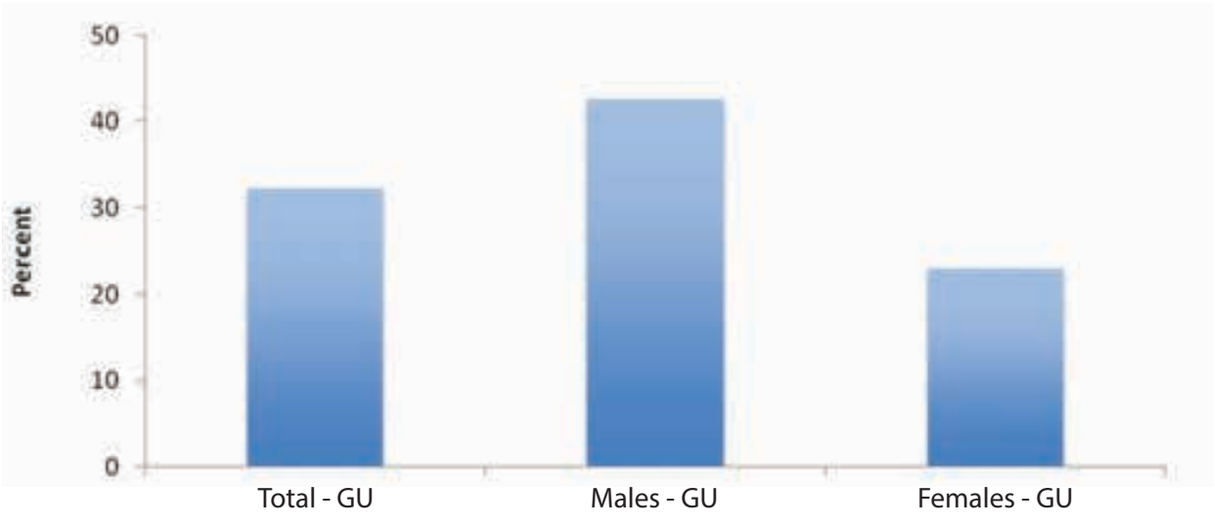
Note: NA = not available; "-"= no HP 2020 target established

The prevalence rates of methamphetamine use for youth and adults, and cocaine use for youth are lower in Guam than in the US, and steroid use rates without a prescription among youth are similar. However, Guam youth surpass US mainland youth in the use of marijuana, and Guam is far from the HP 2020 target for this indicator (Table 18).

Marijuana use, adults

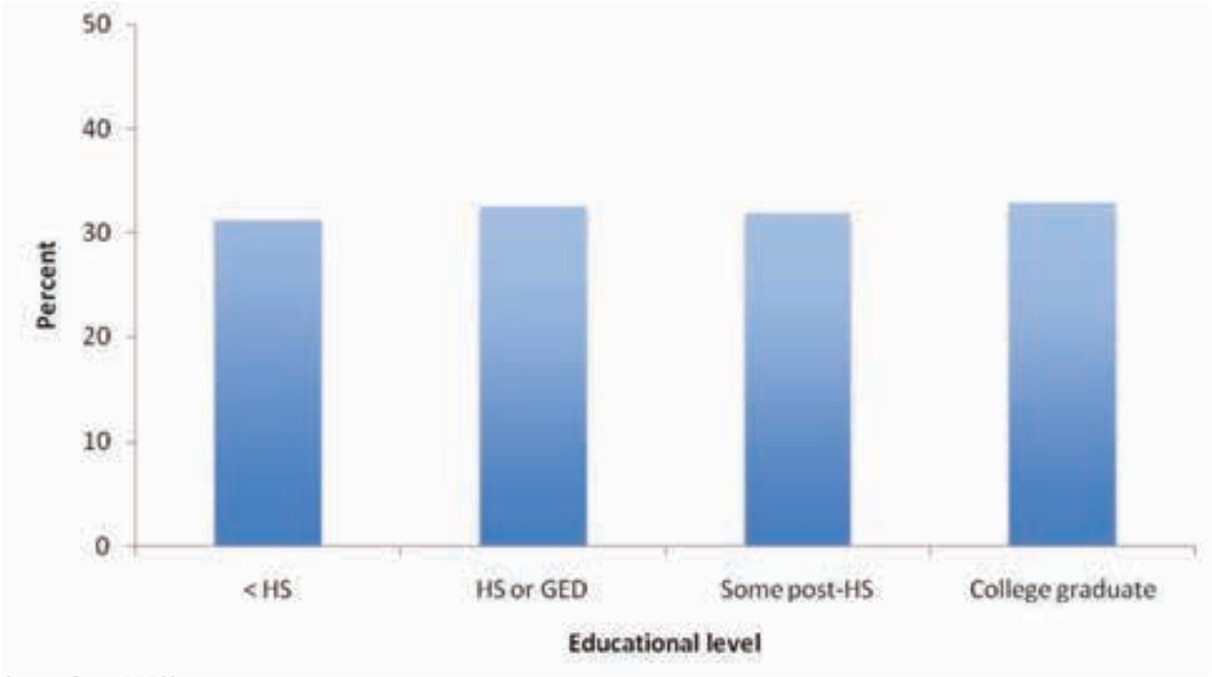
Seventeen percent (17%) of adults reported marijuana use in the past 30 days and about 1 in 3 (32%) adults reported ever using marijuana. Males were more likely than females to report lifetime marijuana use (Figure 43). There is no relative difference in the education level. Households with an income level of $50,000 and over were more likely to be associated with lifetime marijuana consumption (Figures 44 and 45). Lifetime use was highest among those aged 18 to 34; lifetime use declined progressively with age beginning at the 35-44 year age range (Figure 46). Nearly 60% of lifetime users of marijuana started between the ages of 13 and 17 years.

Figure 43. Lifetime marijuana use, adults by sex, Guam, 2011



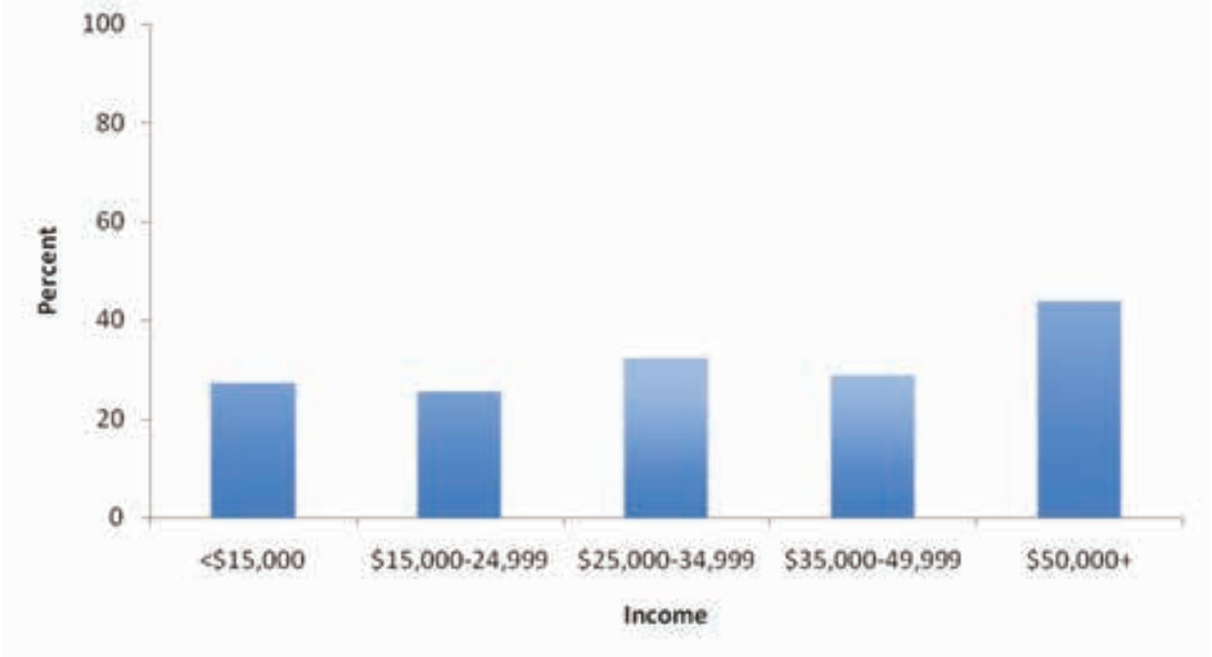
Source: Guam BRFSS, 2011

Figure 44. Lifetime marijuana use, adults by educational attainment, Guam, 2011



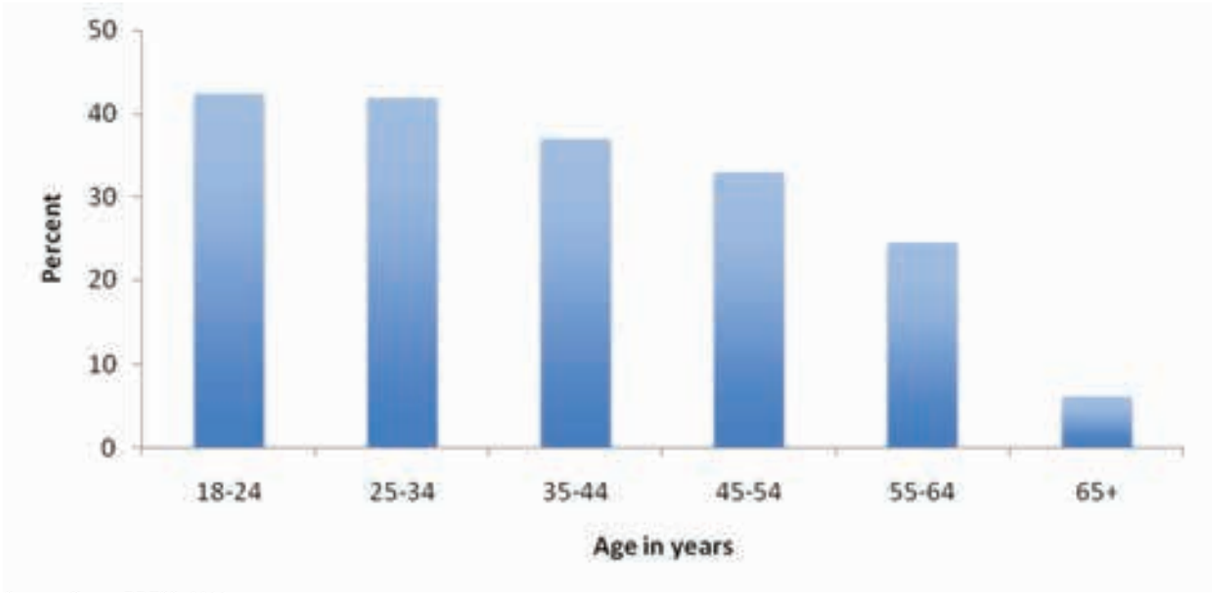
Source: Guam BRFSS, 2011

Figure 45. Lifetime marijuana use, adults by income, Guam, 2011



Source: Guam BRFSS, 2011

Figure 46. Lifetime marijuana use, adults by age, Guam, 2011



Source: Guam BRFSS, 2011

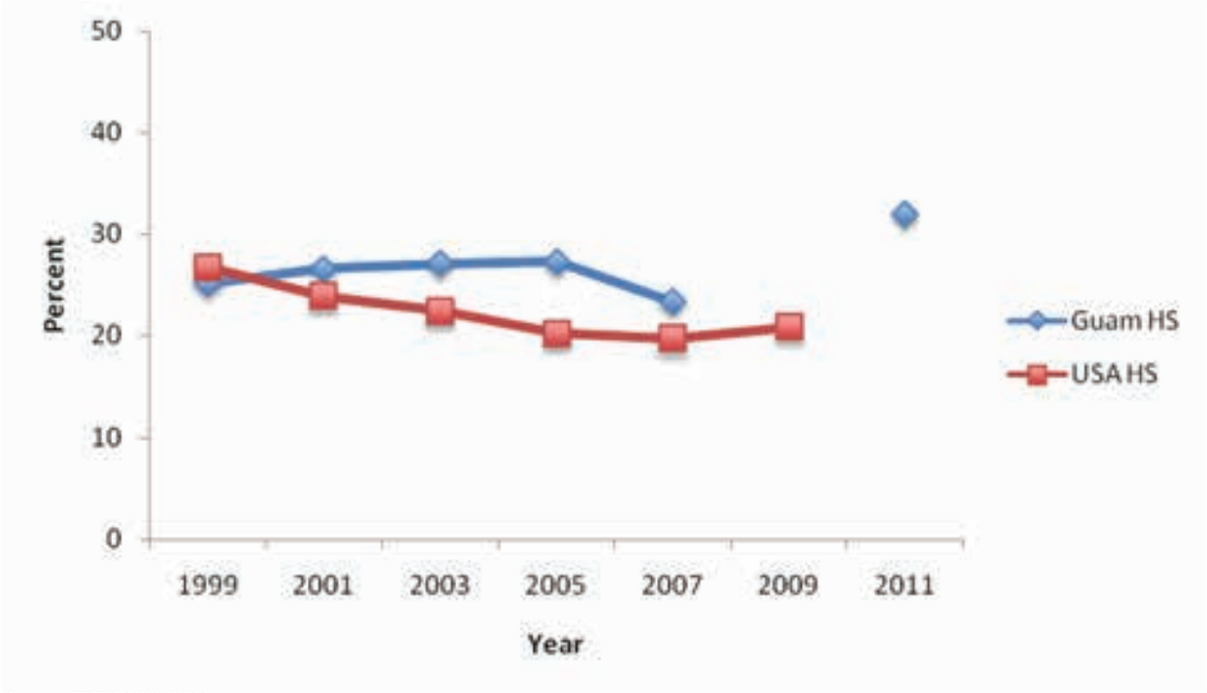
Marijuana use, youth

Current marijuana use among Guam's youth remains higher than among US youth in general (Figures 47). 30-day marijuana consumption among Guam high school youth decreased slightly in 2007, but rose sharply in 2011.

When disaggregated by sex, current marijuana use mostly occurred among males. Because the drop in marijuana use among males from 2005 to 2007 was disproportionately greater than for females, the difference between male and female marijuana use narrowed for 2007 (Figure 48). However, male prevalence rose markedly in 2011, widening the sex gap.

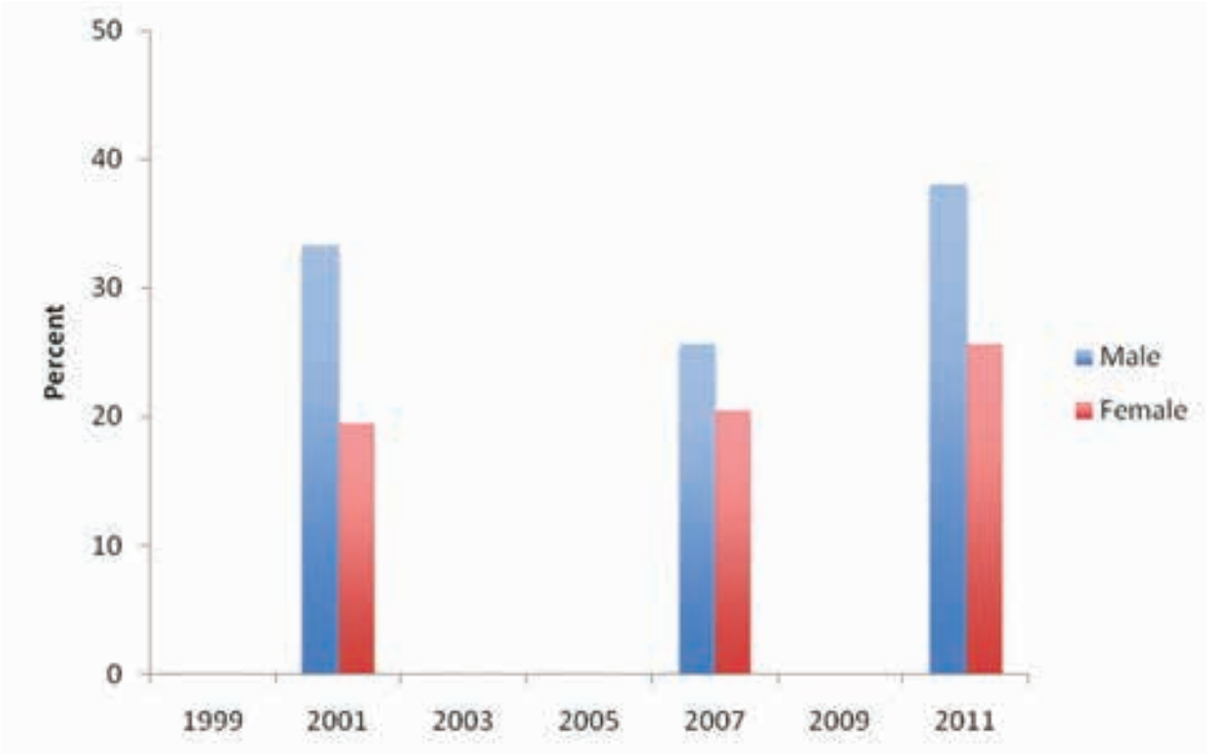
Marijuana use is highest among Chamorro youth and lowest for Filipino youth. Chamorro youth are more than three times likely to use marijuana than Filipinos, and almost twice as likely to use marijuana as other Micronesian youth (Figure 49). Current use declined for Filipino and other Micronesian youth from 2005 to 2007, but not for Chamorro youth. In 2011, prevalence increased for all three ethnic subgroups.

Figure 47. Current marijuana use, high school, Guam vs. US, 1999-2011



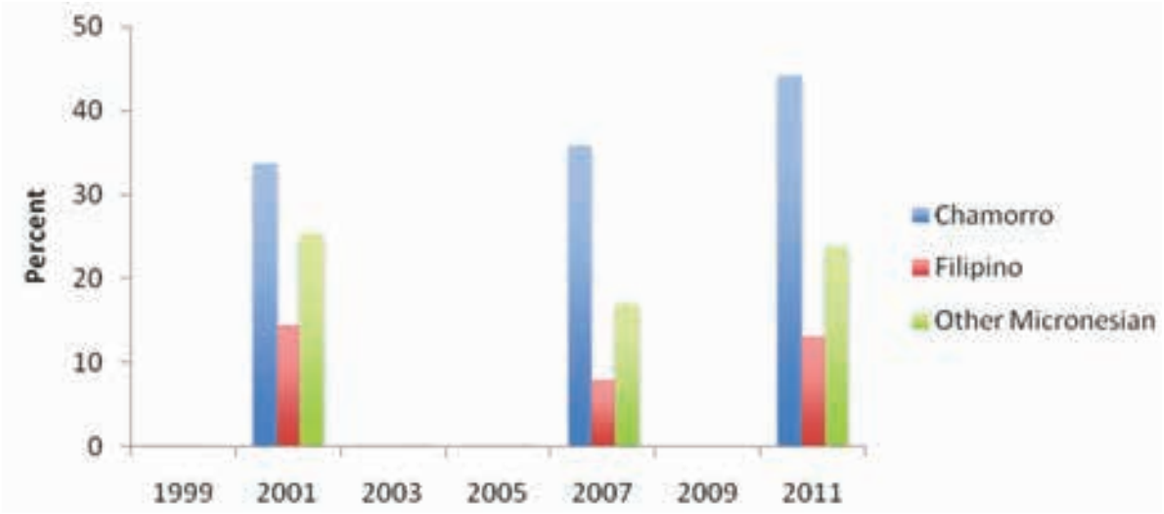
Source: YRBS 1999-2011

Figure 48. Current marijuana use, High School, by sex, Guam, 1999 to 2011



Source: Guam YRBS 1999-2011

Figure 49. Current marijuana use, high school, by ethnicity, Guam, 1999 to 2011



Source: Guam YRBS 1999-2011

Physical activity

Guam adults match US adults for physical activity, and meet the HP 2020 target. However, Guam youth report less physical activity that US youth (Table 19).

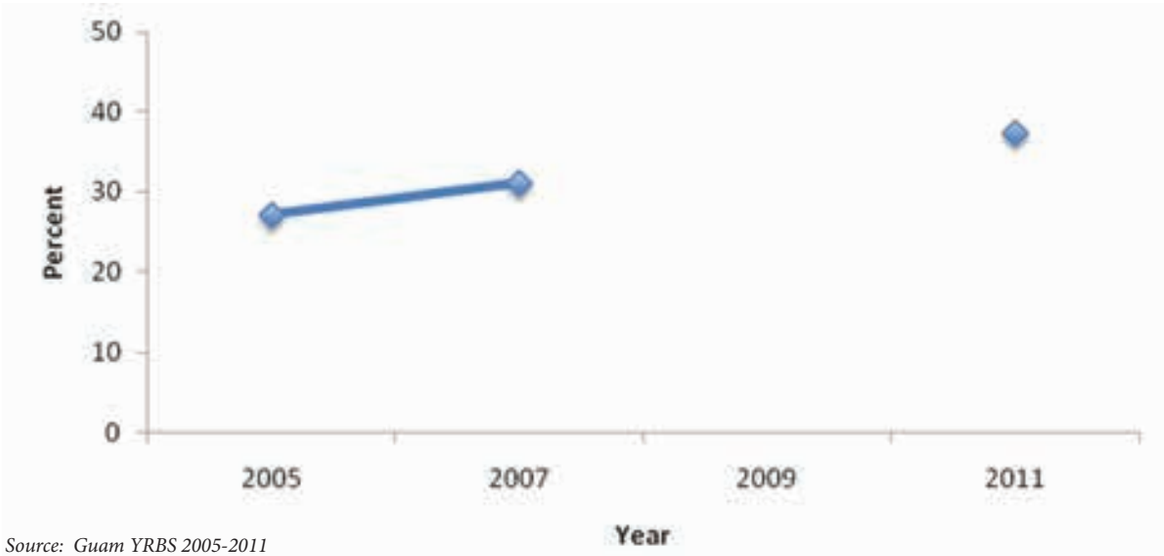
Table 19. Physical activity indicators, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Physical activity (PA)	% Adults with enough PA to meet guidelines	2011 BRFSS	20.4%	20.9%	20.1%
	% Youth reporting at least 60 mins. of PA/day for 5-7 days a week	2011 YRBS	37.4%	49.5%	-

Note: "-"= no HP 2020 target established

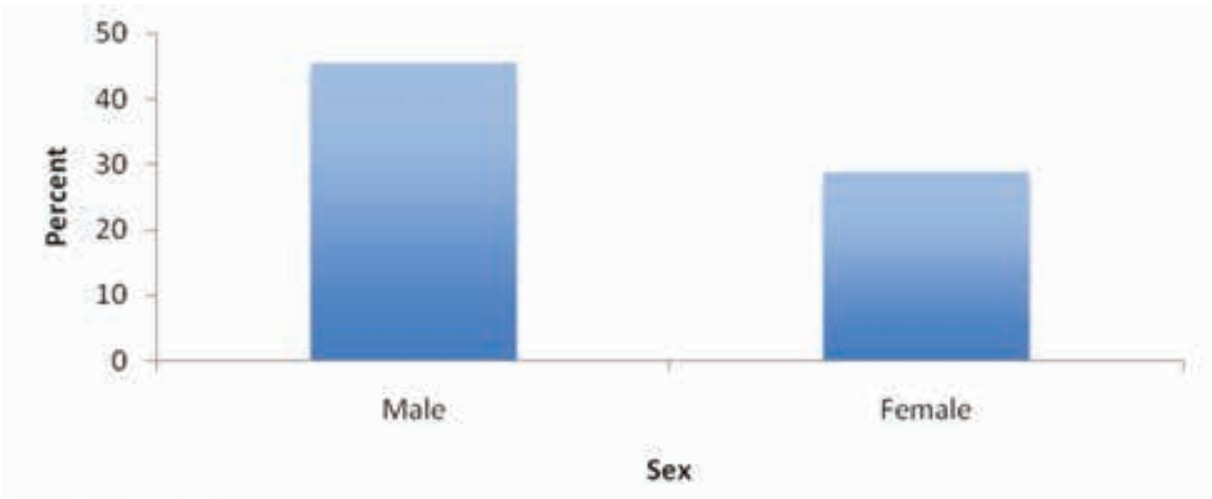
Among Guam youth, the percentage of youth meeting physical activity recommendations is rising over time (Figure 50). Males report higher levels of physical activity than females (Figure 51). Filipinos and other Micronesian Islanders report the lowest levels of physical activity (Figure 52).

Figure 50. Physical activity, high school youth, Guam, 2001-2011



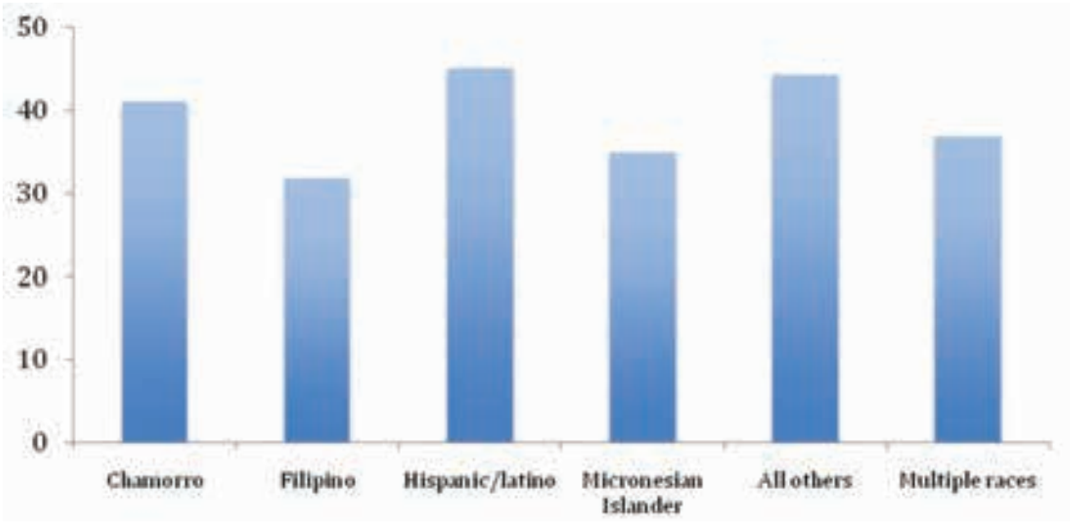
Source: Guam YRBS 2005-2011

Figure 51. Physical activity, high school youth, Guam, by sex, 2011



Source: Guam YRBS 2011

Figure 52. Physical activity, high school youth, Guam, by race/ethnicity, 2011



Source: Guam BRFSS 2011

Nutrition

Table 20. Nutrition indicators, Guam vs. USA, 2010 & 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Nutrition	% Consuming 5 or more fruits/veg per day, adults	2010 BRFSS	24.3%	23.5%	-
	% Youth drinking soda in the past 7 days	2011 YRBS	18.8%	27.8%	-

Note: "-"= no HP 2020 target established

Among Guam adults, consumption of fruits and vegetables is similar to the US median. Guam youth are less likely than US youth to report drinking soda in the last 7 days (Table 20).

Obesity

Table 21. Obesity indicators, Guam vs. USA, 2011

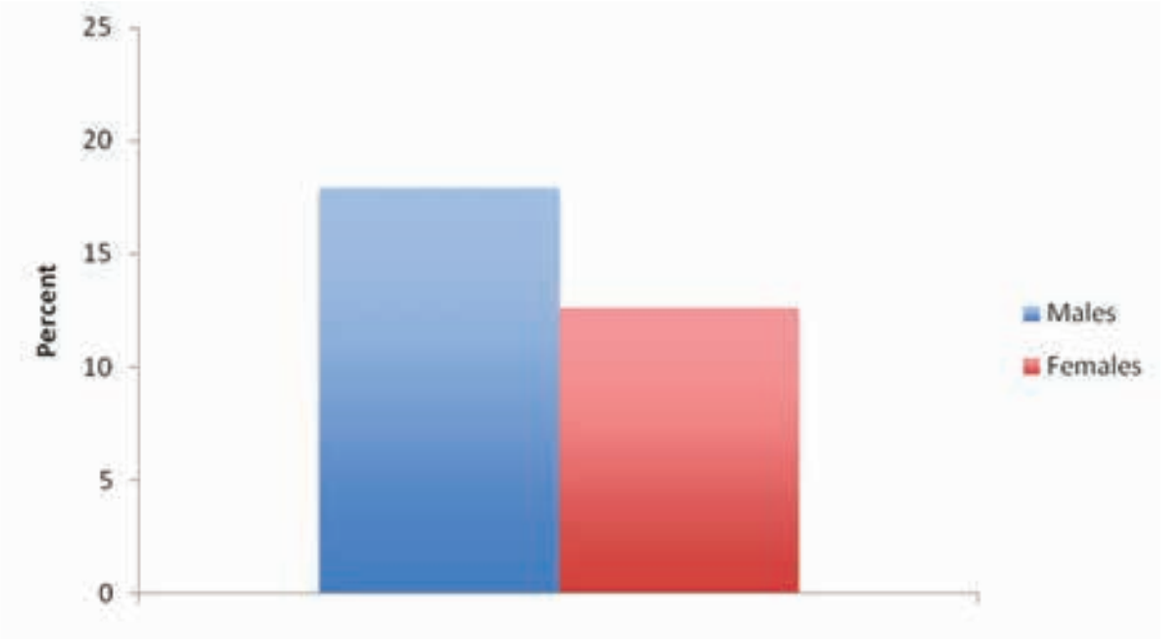
Domain	Indicator	Source	Guam	USA	HP 2020 target
Obesity	% Overweight, adults	2011 BRFSS	36.6%	35.8%	-
	% Obese, adults	2011 BRFSS	27.4%	27.7%	30.5%
	% Overweight, youth	2011 YRBS	16.5%	15.2%	-
	% Obese, youth	2011 YRBS	15.4%	13.0%	-

Source: Guam YRBS 2011

Guam adults have rates of overweight and obesity similar to US adults. Among youth, rates of overweight are similar, but obesity rates are slightly higher in Guam (Table 21). This may be partly explained by Guam youth's lower physical activity levels, and highlights the importance of achieving adequate physical activity for this age group.

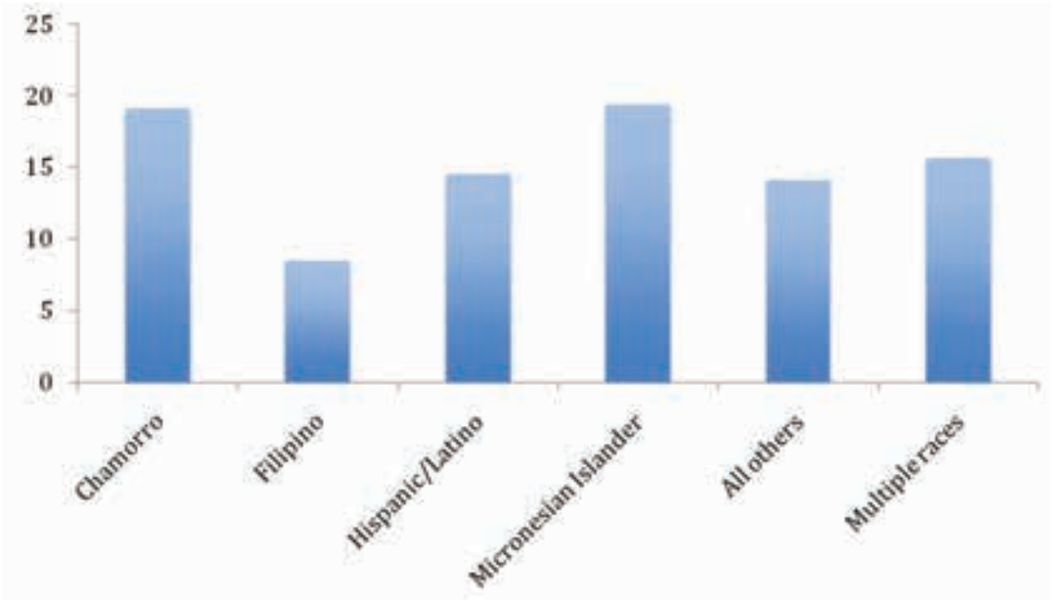
Obesity among youth is more prevalent among males (Figure 53). Filipino youth are least likely to be obese; Chamorro and other Micronesian youth are most likely to be obese (Figure 54).

Figure 53. Youth obesity by sex, Guam, 2011



Source: Guam YRBS 2011

Figure 54. Youth obesity, by ethnicity/race, Guam 2011



Source: Guam YRBS 2011

Hypertension and cholesterol levels

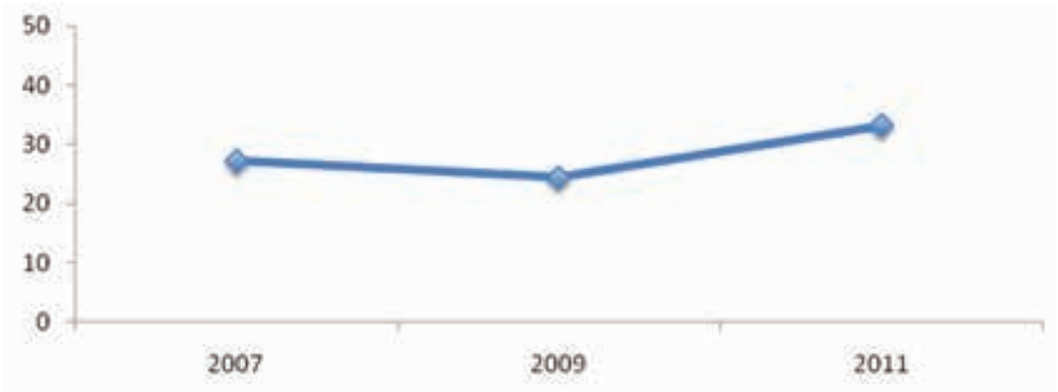
Table 22. Hypertension and cholesterol levels, adults, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Hypertension	% Diagnosed with Hypertension, adults	2011 BRFSS	20.8%	30.8%	26.9%
High Cholesterol	% Diagnosed with high cholesterol, adults	2011 BRFSS	33.1%	38.3%	13.5%

Guam adults are less likely to have been diagnosed with hypertension or high cholesterol than their US counterparts (Table 22). The data are based on self-reporting, and recall bias is possible. It is unknown if the difference is due to lower prevalence of these conditions in the Guam adult population or to lower rates of screening for these intermediate NCD risk factors.

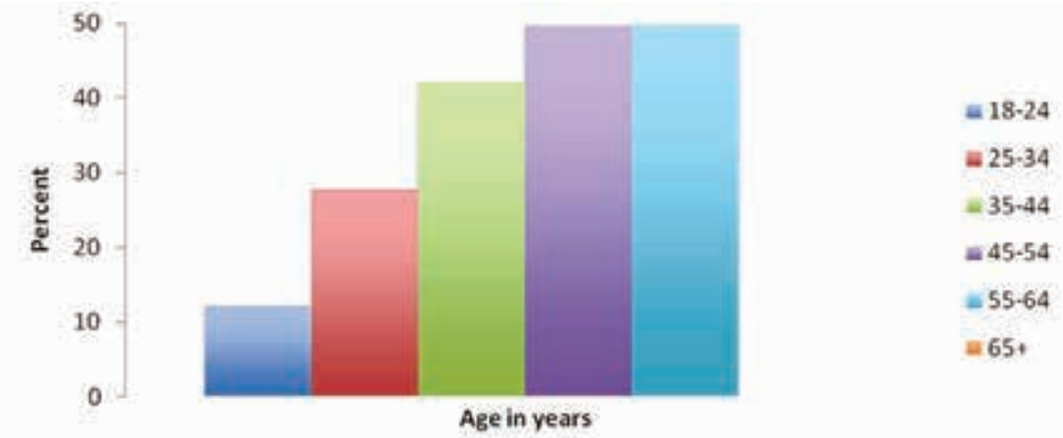
The percentage of Guam adults diagnosed with high cholesterol levels appears to be increasing over time (Figure 55). The likelihood of being diagnosed with high cholesterol increases with increasing age (Figure 56). Gender, education and income do not appear to affect the likelihood of having high cholesterol.

Figure 55. Guam adults diagnosed with high cholesterol, 2007-2011



Source: BRFSS, 2007-2011

Figure 56. High cholesterol, by age, Guam, 2011



Source: BRFSS, 2011

Cancer screening

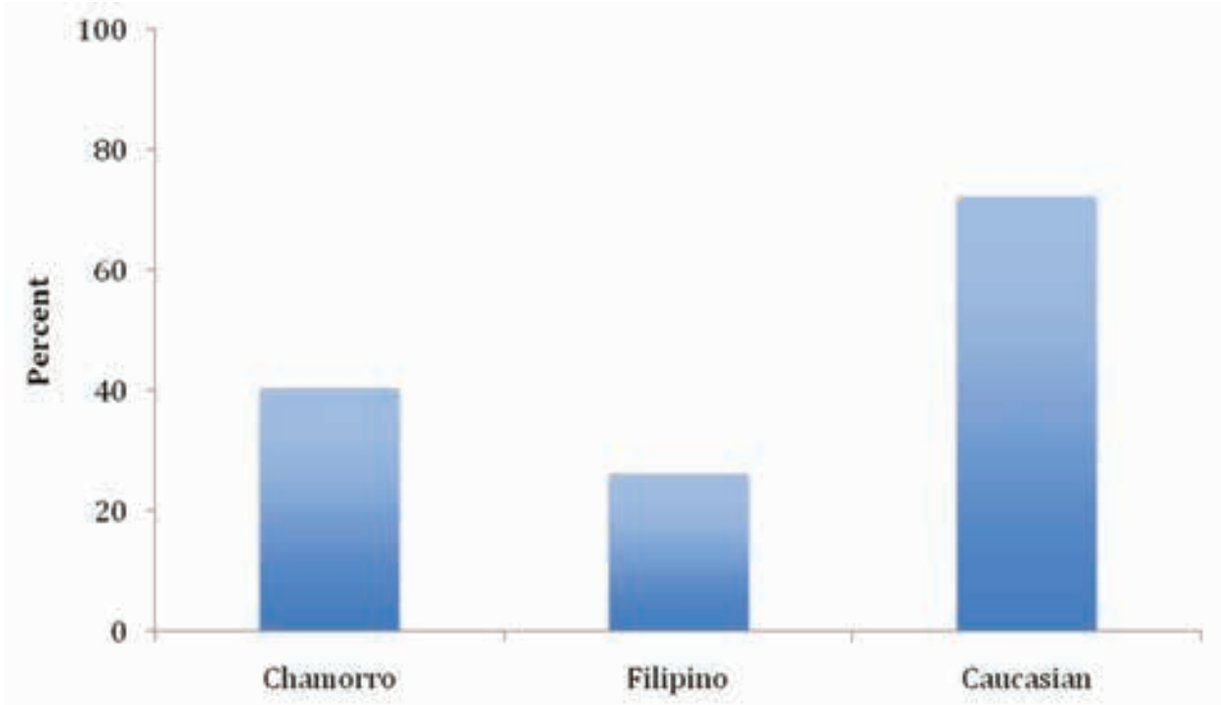
Table 23. Cancer screening rates, Guam vs. USA, 2010

Domain	Indicator	Source	Guam	USA	HP 2020 target
Cancer screening	% Women 40+ who had a mammogram in past 2 years	2010 BRFSS*	64.4%	75.2%	-
	% Women 50+ who had a mammogram in past 2 years	2010 BRFSS*	71.4%	77.8%	81.1%
	% Women 18+ who had a pap smear within past 3 years	2010 BRFSS*	67.8%	81.0%	93.0%
	% Adults 50+ who have had a colonoscopy/sigmoidoscopy	2010 BRFSS*	37.8%	64.2%	70.5%
	% Men 50+ who had prostate cancer screening	2011 BRFSS	28.3%	53.2%	-

*Note: *These questions was not asked in 2011; ** - data on prostate screening for the US and Territories combined was not available in 2011*
"-" = no HP 2020 target established; "NA" = not available

Women in Guam are less likely than their US counterparts to have had a recent mammogram or Pap smear, and adults in Guam are less likely to have had a colonoscopy/ sigmoidoscopy to screen for colon cancer. Chamorro women were more likely than Filipino women to get mammograms and Pap smears. Women with college degrees were more likely than high school graduates to have had a recent Pap smear. Caucasians were more likely than Chamorros or Filipinos to have had a colonoscopy or sigmoidoscopy (Figure 57).

Figure 57. Adults 50 years or older who have had a colonoscopy/sigmoidoscopy, by ethnicity/race, Guam 2010



Source: BRFSS, 2010

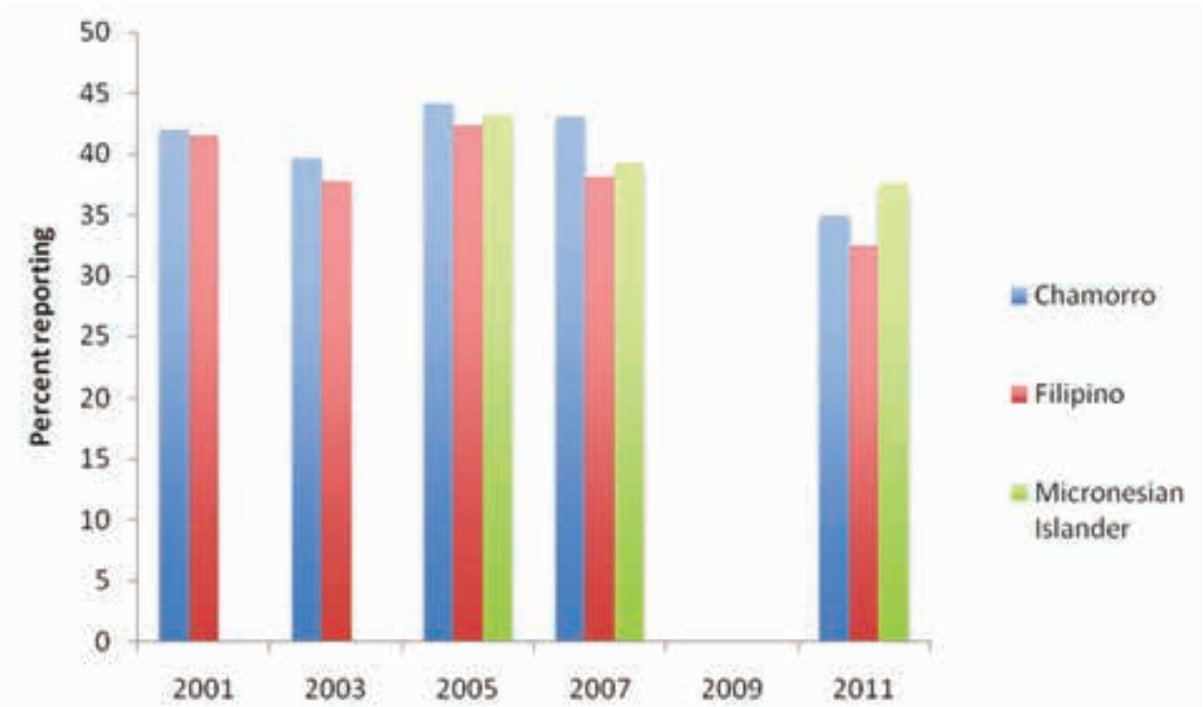
Depression

Table 24. Depression, youth and adults, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Depression	% Feeling sad > 2 weeks in past year, youth	2011 YRBS	36.2%	28.5%	7.4%
	% Diagnosed with depression, adults	2011 BRFSS	7.6%	17.5%	5.8%

Guam youth are more likely than US youth to report symptoms of depression, while Guam adults are less likely to report being diagnosed with depression than their US counterparts (Table 24). Among youth, females are more likely than males to report depressive symptoms. Other Micronesian youth are more likely to report depression than youth of other ethnicities (Figure 58).

Figure 58. Depressive symptoms, youth, Guam, by sex, and ethnicity/race, 2005-2011



Source: Guam YRBS, 2001-2011

Violence

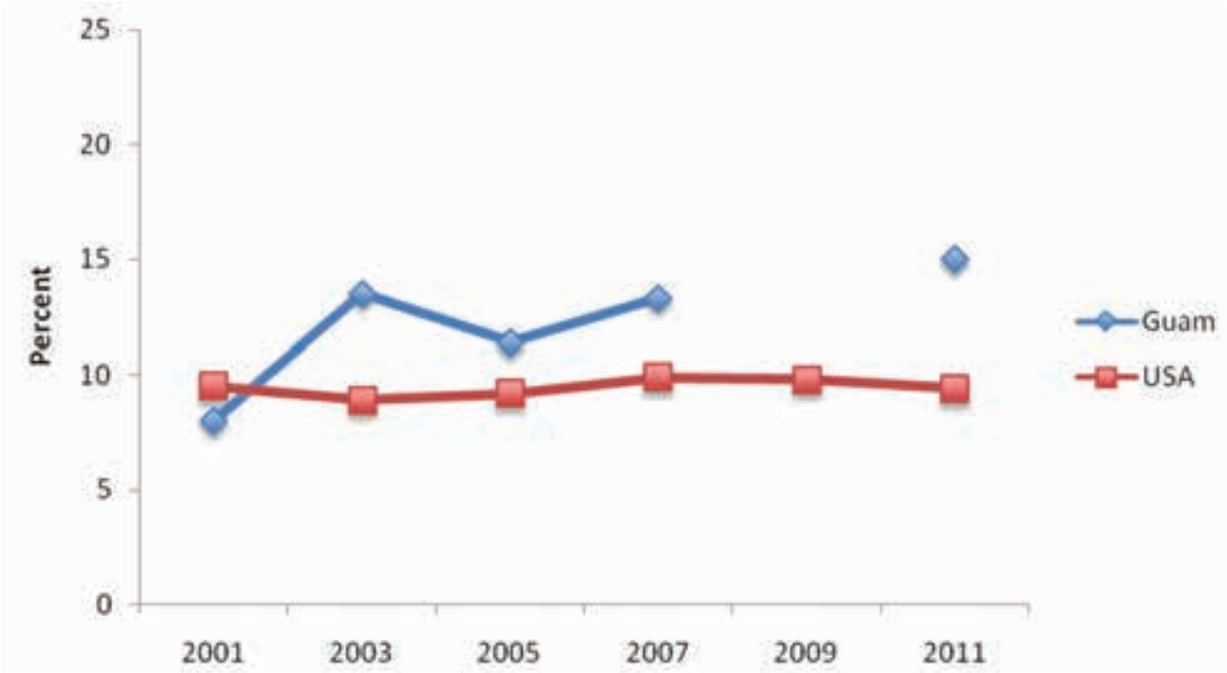
Table 25. Violence indicators, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Violence	Sexual violence: % youth hit by a partner	2011 YRBS	15.0%	9.4%	-
	Sexual violence: % youth forced to have sex	2011 YRBS	10.7%	8.0%	-
	Family violence rate	2010 GPD	314.4/100,000	NA	-
	Child abuse - # of reported cases to CPS	2011 DPHSS data	3294	NA	-

Note: "-" = no HP 2020 target established; "NA" = not available

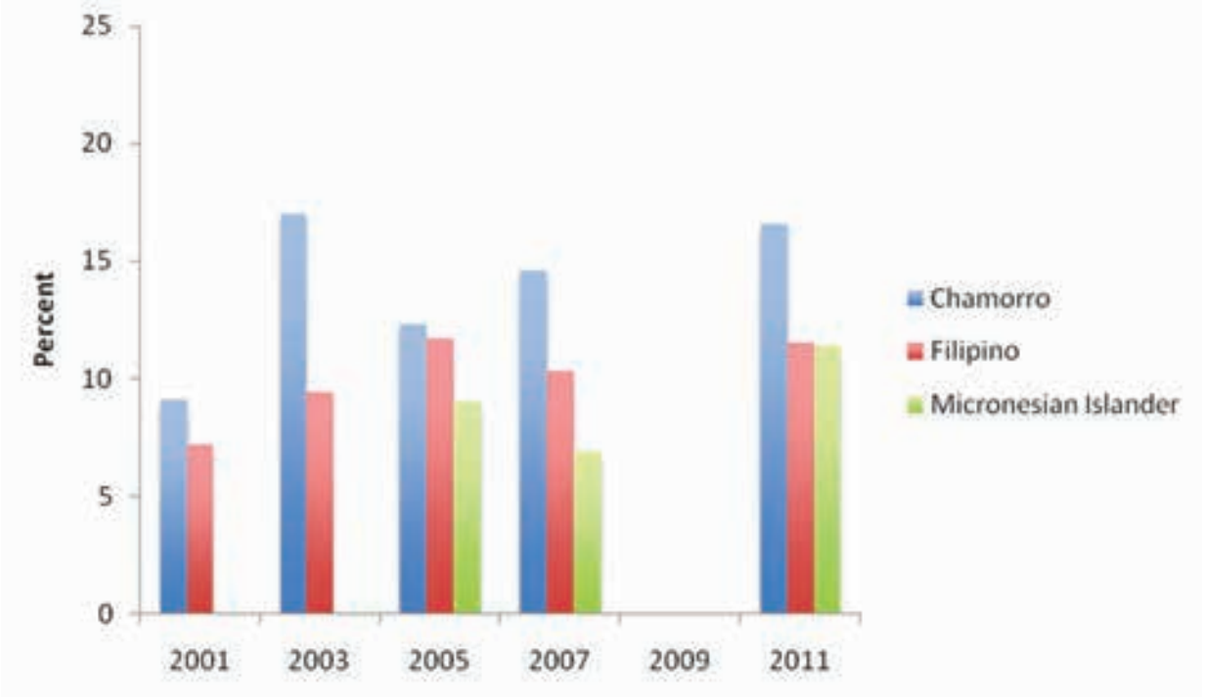
Guam youth report higher rates of sexual violence than youth in the US mainland (Table 25). "Being hit by a boyfriend or girlfriend within the past year" is rising steadily over time in Guam, while US rates are not changing significantly (Figure 59). Partner violence appears most prevalent among Chamorros (Figure 60), while "forced to have sex" is highest among Other Micronesians (Figure 61). These two ethnic sub-groups also have the highest likelihood of suicidal ideation and suicide attempts.

Figure 59. Being hit by a boyfriend or girlfriend within the past year, high school, Guam vs. USA, 2001-2011



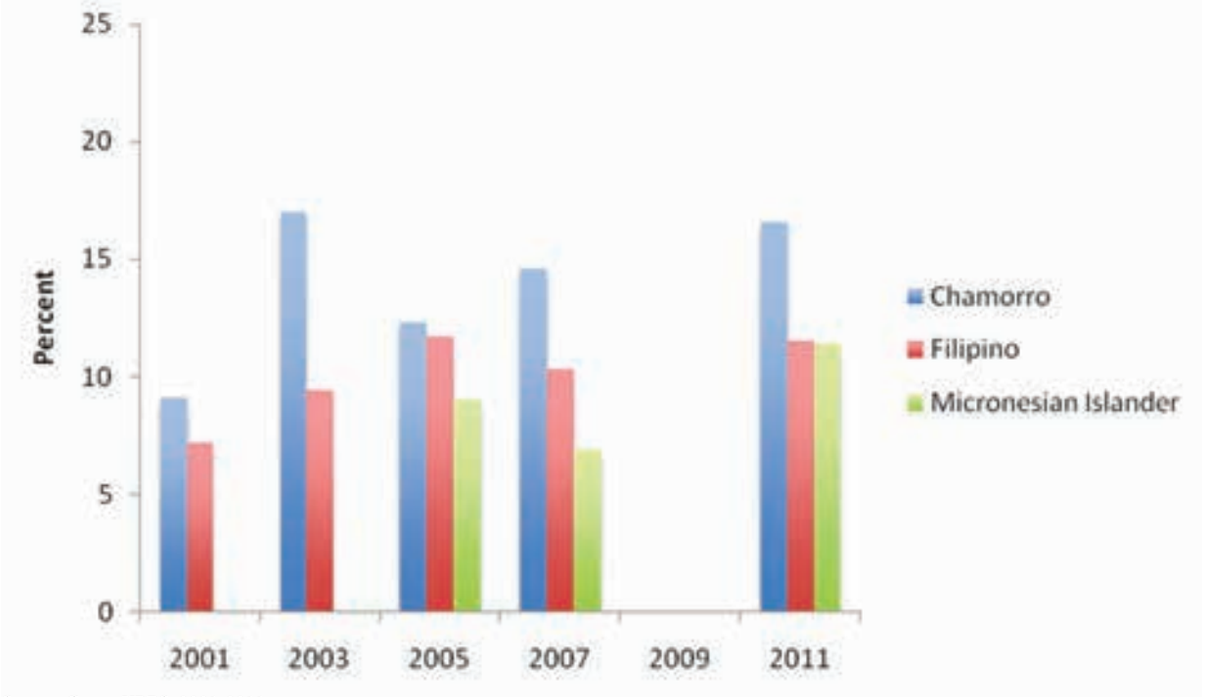
Source: YRBS 2001-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 60. Being hit by a boyfriend or girlfriend within the past year by ethnicity, Guam, 2001-2011



Source: Guam YRBS, 2001-2011

Figure 61. Forced to have sex in the past year by ethnicity, Guam, 2001-2011



Source: Guam YRBS, 2001-2011

Homelessness

Table 26. Homelessness indicators, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Homelessness	Number of homeless persons (% of population)	2012 Statistical yearbook	1301 (0.8%)	643,067* (0.2%)	-
	Homeless rate (per 10,000 people)	2012 Statistical yearbook	81	21	-

*Note: * US statistics taken from "State of Homelessness in America 2012:", published by the National Alliance to End Homelessness from data of the US Department of Housing and Urban Development; "-" = no HP 2020 target established*

Based on Guam's 2010 Census, about 1% of the population is homeless. This is higher than the 0.2% reported for the US mainland. The homeless rate for Guam is quadruple that of the US.

What's Our Health?

This section presents data on wellness, morbidity, mortality, and health care infrastructure.

Wellness

Table 27. Wellness indicators, Guam vs. USA, 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Life expectancy	Life expectancy at birth, males	DPHSS Vital Statistics	75.3 yrs.	76.2 yrs.	-
	Life expectancy at birth, females	DPHSS Vital Statistics	81.6 yrs.	81 yrs.	-
Well-being	% Adults reporting good or better health	2011 BRFSS	80.60%	82.90%	-

Note:"-" = no HP 2020 target established

Life expectancy for both males and females in Guam is similar to the US. The percentage of adults reporting good or better health in Guam is similar to the US rate (Table 27).

Maternal and Child Health

Table 28. Maternal and child health indicators, Guam vs. USA

Domain	Indicator	Source	Guam	USA	HP 2020 target
Births	Birth rate	2011 DPHSS Vital Statistics	20.7 per 1000	13.0 per 1000	-
Antenatal care	Antenatal care coverage -	2001 data, WHO CHIPs 2010	92.05%at least 1 visit as % of births	73.7% began prenatal care 1st trimester	77.9%
Adolescent health	Teen pregnancy rate	DPHSS data, Live births 15-19 yrs.	60.1/1000	34.2 live births/1000	-

Note:"-" = no HP 2020 target established

Guam has a higher overall birth rate and a markedly higher teen pregnancy rate than the US (Table 28). The teen pregnancy rate in Guam is almost double the US rate, and is likely related to the higher percentage of Guam youth reporting sexual activity and the lower likelihood of using contraception. It is difficult to compare antenatal coverage, as the definition of the indicator is different across the two sites.

Mental health

Suicide

Table 29. Suicide indicators, Guam vs. USA, 2011

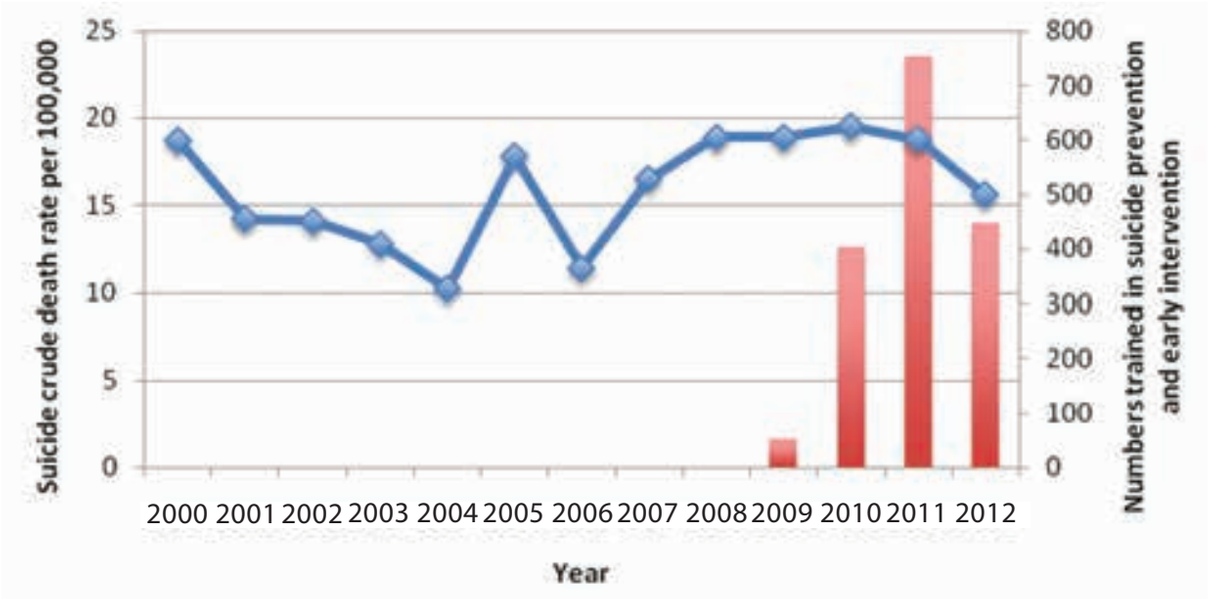
Domain	Indicator	Source	Guam	USA	HP 2020 target
Suicide	Suicide death rate	2012 Office of Chief Medical Examiner data	15.6/100.000	12/100,000*	10.2/100,000
	% Youth reporting suicidal ideation	2011 YRBS	23.20%	15.8%	-
	% Youth with a suicide attempt	2011 YRBS	17%	7.8%	-

*Note:"-" = no HP 2020 target established; * - US data taken from 2010 SAMHSA statistics*

Guam's suicide mortality is higher than the US (Table 29). Youth in Guam are more likely to think about suicide and to make a suicide attempt than youth in the US.

The crude suicide death rate decreased significantly for the first time in six years from 18.8/100,000 to 15.6/100,000 (Figure 62). Because the actual number of suicide deaths is very small, data collected over the next two to three years will be crucial to demonstrate if this reduction is sustained. The drop coincides with the increasing numbers of community stakeholders trained in suicide prevention and early intervention.

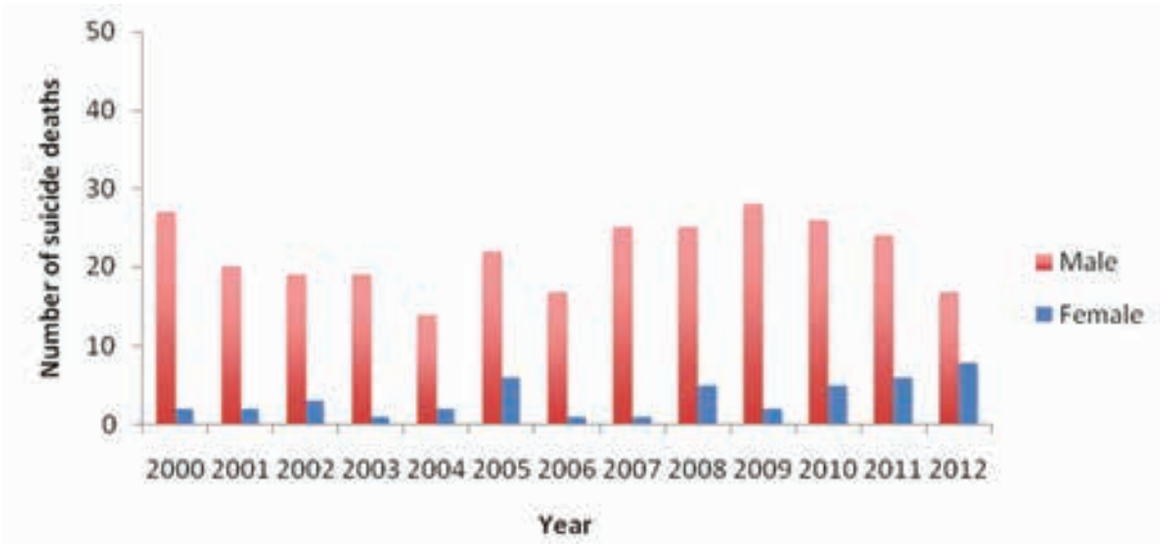
Figure 62. Annual trend in suicide crude death rates, 2000-2012 and numbers trained in suicide prevention and early intervention, 2009-2012, Guam



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

Suicide deaths on Guam occur predominantly among males, who outnumber suicide deaths among females, with an average ratio of 6:1. In the US, overall, males outnumber females in suicide deaths by a ratio of 4:1. The sex difference has been narrowing in recent years, and in 2012, the male: female ratio for suicide deaths was 2.1:1 (Figure 63).

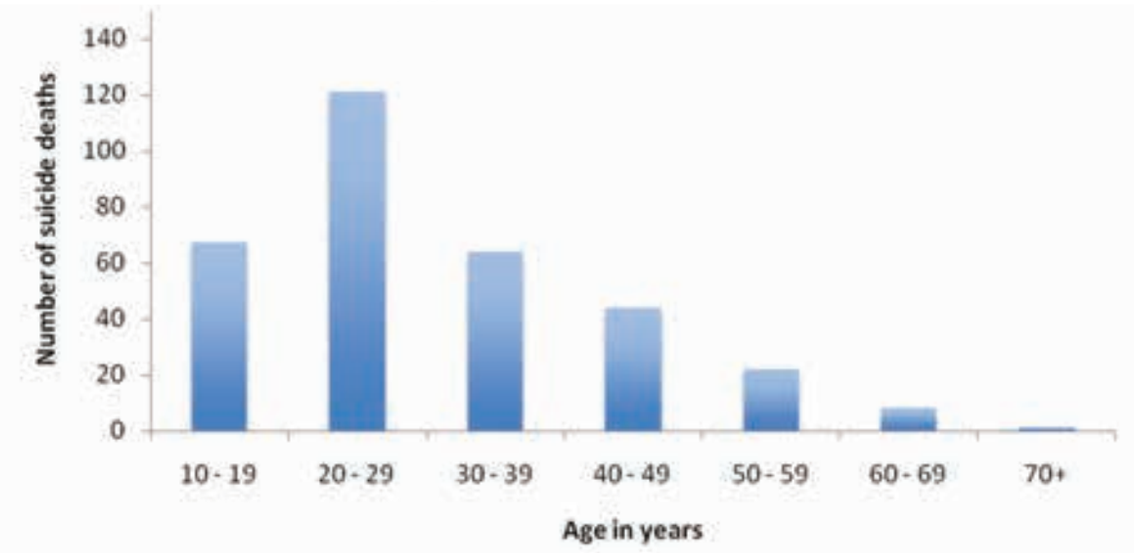
Figure 63. Suicide deaths by sex, Guam, 2000-2012



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

The epidemiologic pattern is changing in the US, with middle-aged adults (35-64 years) showing the fastest rise in suicide rates (CDC, 2013). In Guam, when suicide deaths are disaggregated by age, the great majority are seen to occur in young adults and youth, with the greatest number occurring among those aged 20-29 years old (Figure 64). Altogether, close to 60% of all suicide deaths on Guam from 2000-2011 occurred in those younger than 30 years. Thus, deaths by suicide on Guam occur predominantly among young people.

Figure 64. Cumulative suicide deaths by age, Guam, 2000-2012



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

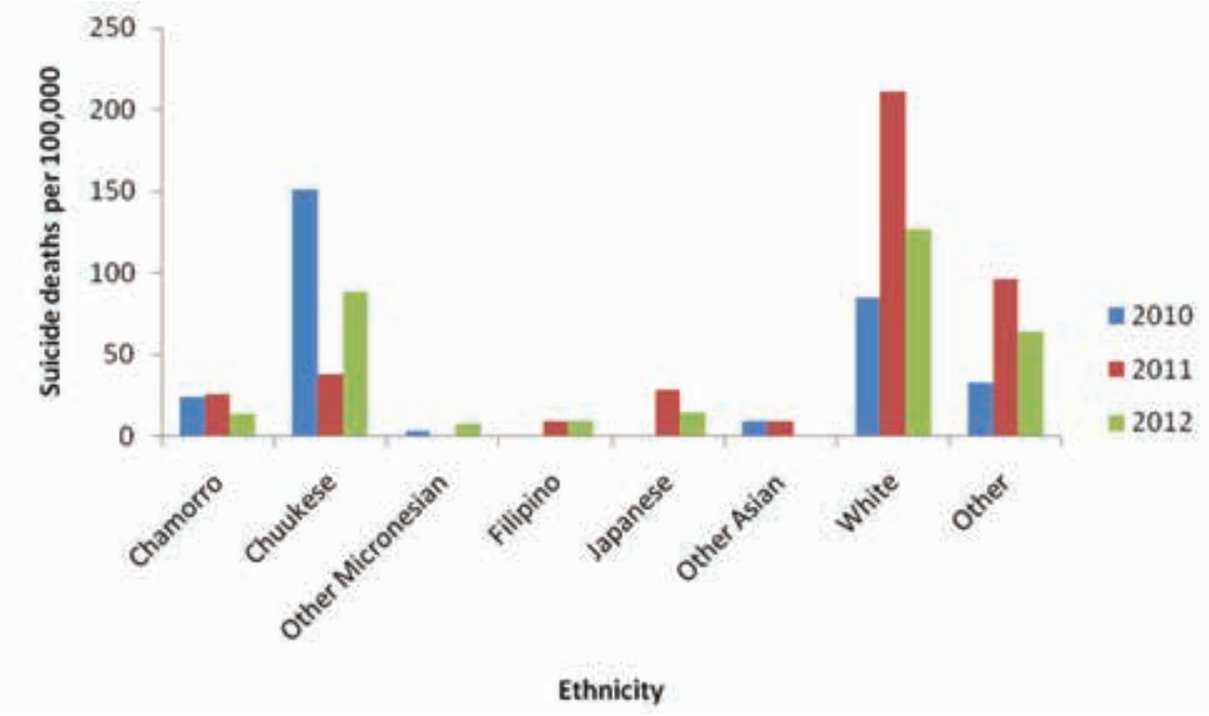
Table 30 lists age and sex-specific suicide death rates for the years 2010 to 2012. These confirm the observations noted above. Figure 65 depicts the ethnicity-specific suicide deaths for each ethnic group, corrected for the relative contribution of each ethnic group to the total population. Whites and "Others" have the highest suicide death rates per 100,000, followed by Chuukese. The increase in suicides by Whites is a recent phenomenon.

Table 30. Age and sex-specific suicide death rates, Guam, 2010-2012

	2010	2011	2012
Sex		**Rate per 100,000**	
Male	31.9	29.4	20.8
Female	6.4	7.7	10.3
Age		**Rate per 100,000**	
0-19 years	17	34.0	10.2
20-29 years	51.9	34.6	47.6
30-39 years	36.8	13.8	13.8
40-49 years	17.6	17.6	22.0
50-59 years	11.8	29.6	11.8
60-69 years	0	0	9.8
70+ years	0	0	0

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

Figure 65. Ethnicity-specific suicide death rates, Guam, 2010-2012

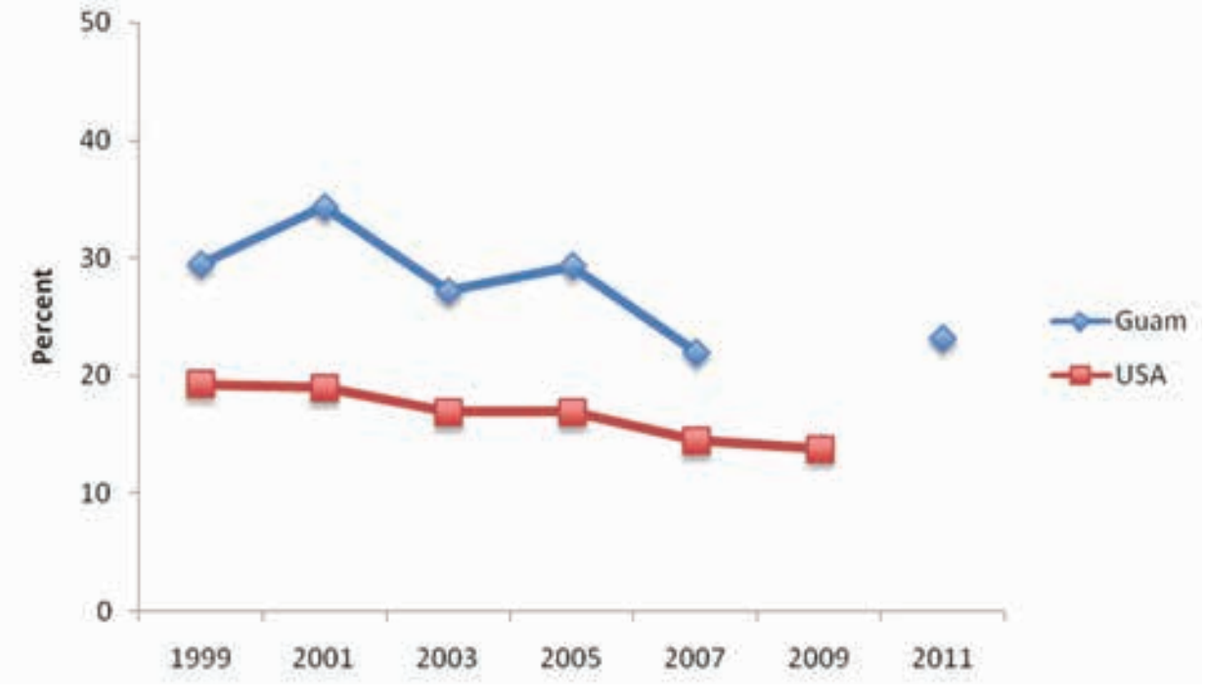


Sources: Office of the Chief Medical Examiner and DPHSS Vital Statistics

The Chief Medical Examiner recorded that alcohol was involved in 24% of 2012 suicide deaths. One-fifth of the victims had a history of previous suicide attempts or mental illness. Youth binge drinking and depressive symptoms are high among other Micronesians, of whom Chuukese make up the largest proportion.

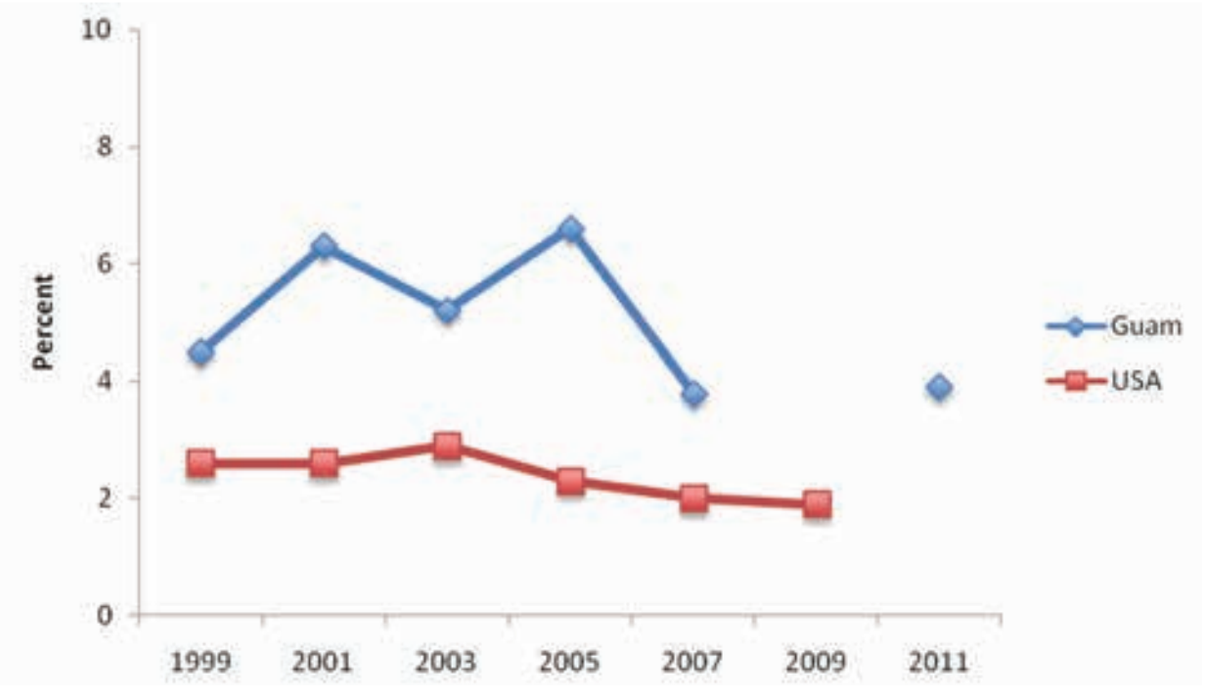
Guam surpasses the US average for youth suicidal ideation and suicidal attempts; this has been the case since 1999 (Figures 66 and 67). Females are almost twice as likely as males to think about suicide, make a plan to commit suicide and attempt suicide (Figure 68). Chamorros and Micronesian Islanders are most likely to think about suicide and make a plan to commit suicide, but Chamorros exhibit the highest likelihood to actually attempt suicide (Figure 69).

Figure 66. Suicidal ideation, high school, Guam vs. US,1999-2011



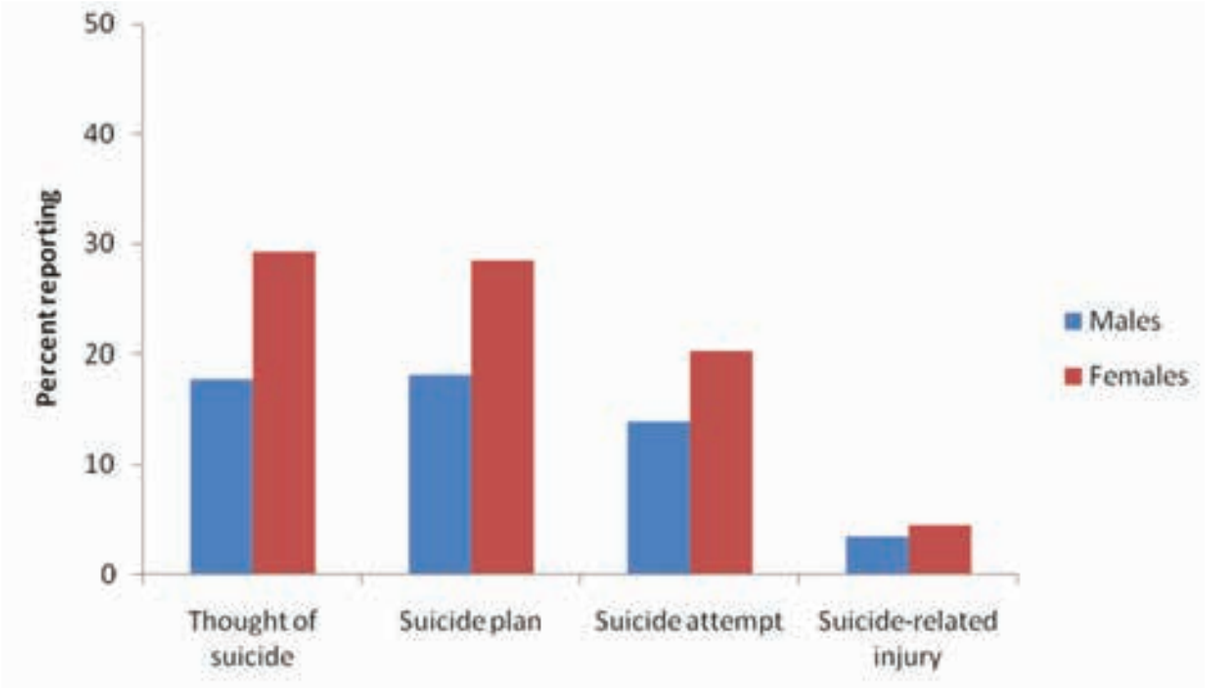
Source: YRBS 2001-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 67. Suicidal attempts, high school, Guam vs. US,1999-2011



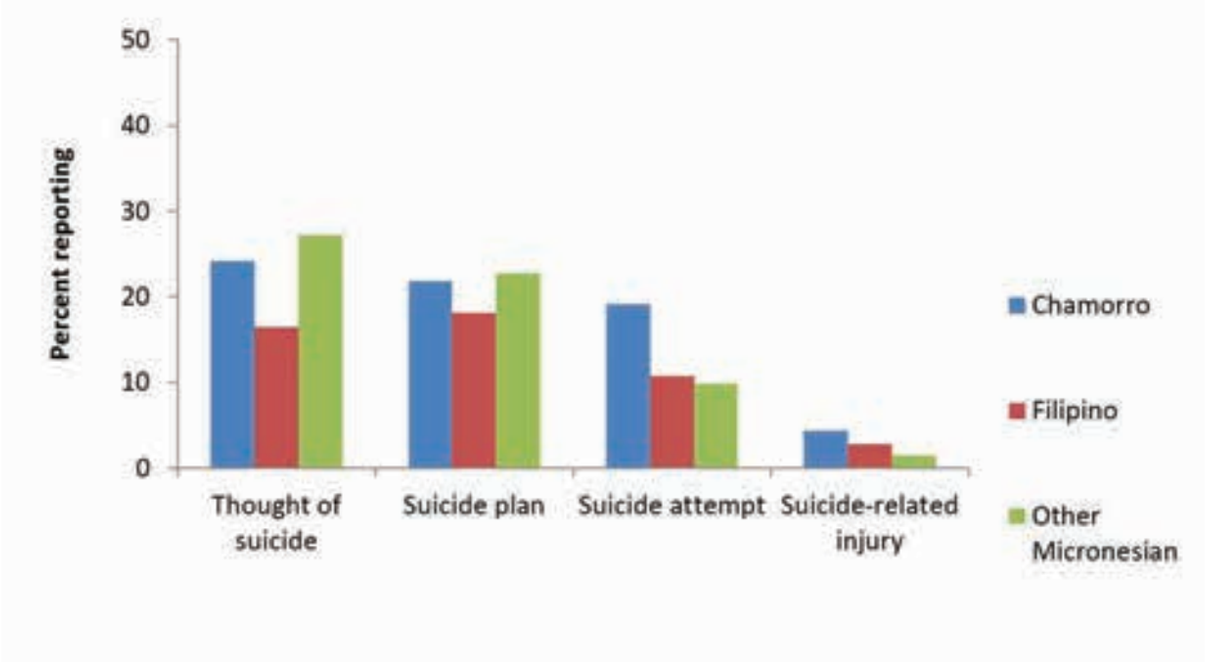
Source: YRBS 2001-2011; US CDC Youth Online at http://apps.nccd.cdc.gov/youthonline

Figure 68. Suicidal ideation and suicide attempts by sex, high school, Guam, 2011



Source: Guam YRBS, 2011

Figure 69. Suicidal ideation and suicide attempts by ethnicity, high school, Guam, 2011



Source: Guam YRBS, 2011

Currently there is no readily accessible systematic surveillance mechanism to track suicidal attempts and suicidal ideation among adults on Guam. However, the recently released Guam Statistical Yearbook 2010 offers data on inpatient admissions to the Guam Memorial Hospital (GMH) for suicidal attempts (Table 31). 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 31. 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

Disease profile (Morbidity)

Sexually transmitted diseases (STDs)

Table 32. STD indicators, Guam vs. USA, 2011-2012

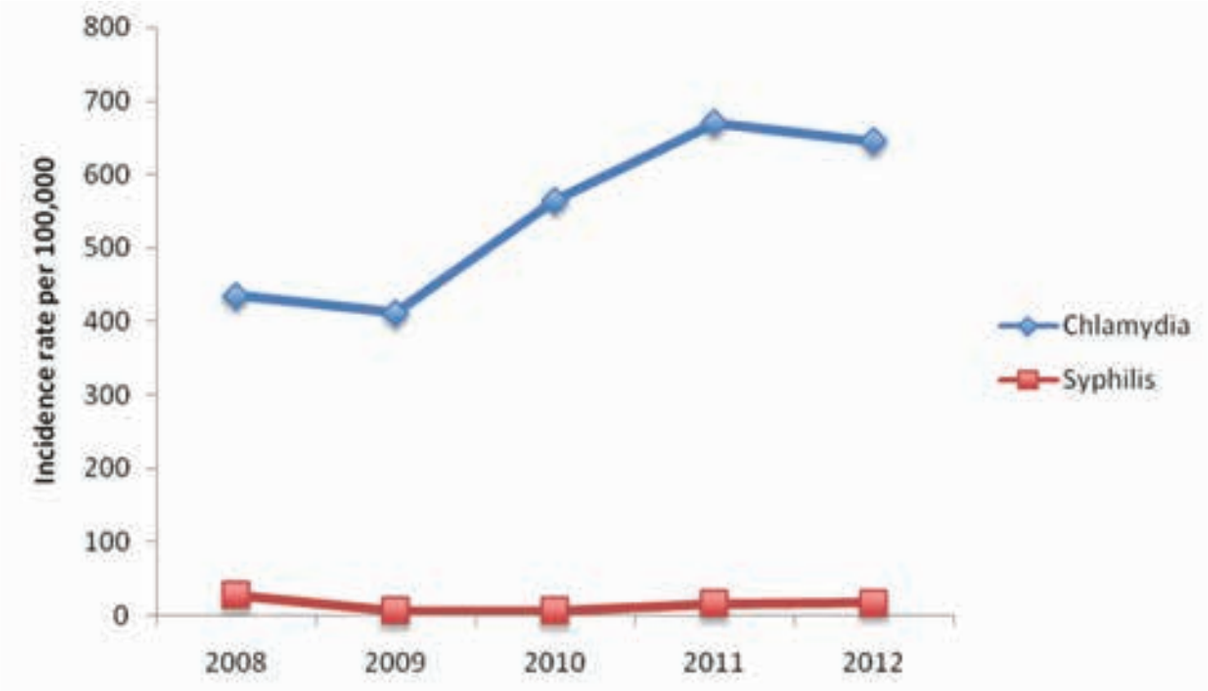
Domain	Indicator	Source: DPHSS data	Guam	USA*	HP 2020 target
STI	HIV incidence rate	2012 Data	6.9/100,000	NA	-
		2011 Data	3.8/100,000	11.32/100,000	-
	Chlamydia incidence rate	2012 Data	644.7/100,000	NA	-
		2011 Data	670.1/100,000	457.6/100,000	-
	Gonorrhea incidence rate	2012 Data	57.5/100,000	NA	-
		2011 Data	60.1/100,000	104.14/100,000	-
	AIDS incidence rate	2012 Data	4.4/100,000	NA	-
		2011 Data	3.8/100,000	NA	-
	Syphilis incidence rate	2012 Data	17.5/100,000	NA	-
		2011 Data	16.3/100,000	8.68/100,000	-

*Note:"-" = no HP 2020 target established; * - US data taken from 2011 US CDC statistics*

Both HIV/AIDS and gonorrhea incidence rates are lower in Guam than in the US. However, chlamydia and syphilis incidence rates are notably higher among people in Guam (Table 32).

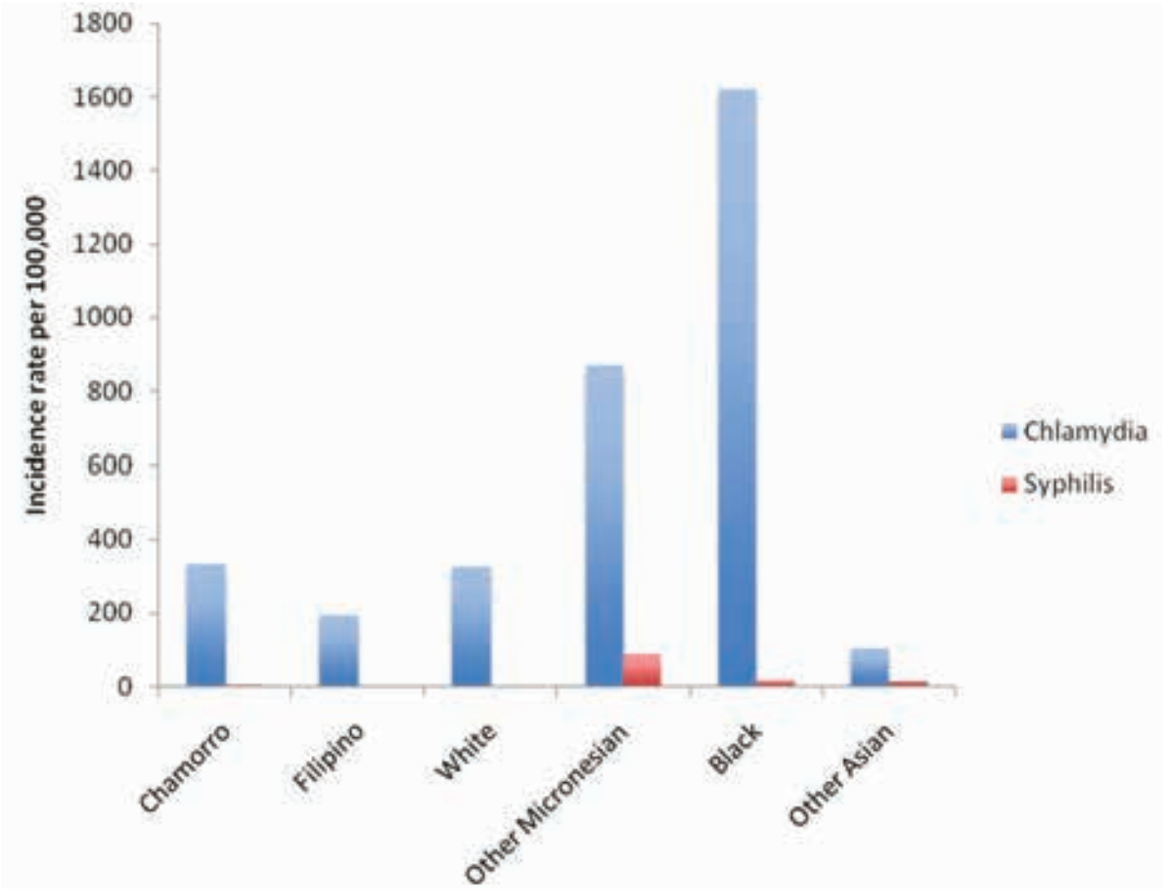
Chlamydia incidence is rising over time, while syphilis incidence is more variable (Figure 70). Both STDs are highest among other Micronesians and Blacks (Figure 71).

Figure 70. STD incidence rates, Guam, 2008-2012



Source: DPHSS data, 2008-2012

Figure 71. STD incidence rates, by ethnicity, Guam, 2008-2011 average



Vaccine preventable diseases

Table 33. Vaccine-preventable diseases, Guam vs. USA, 2011-2012

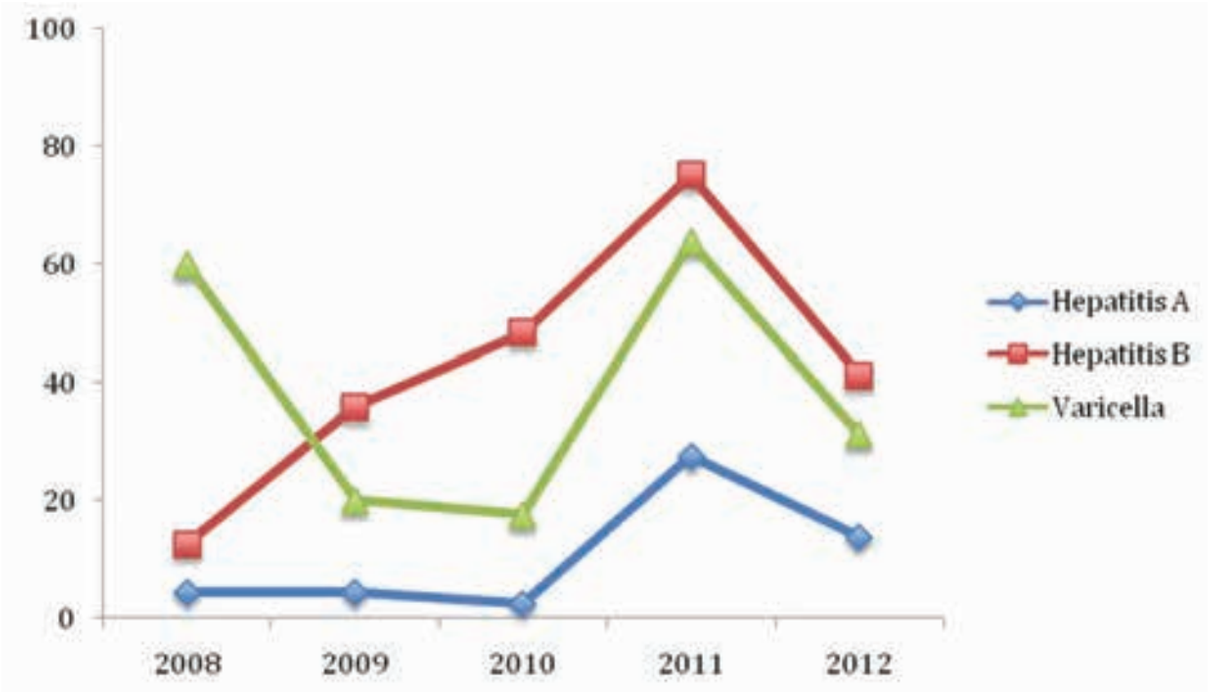
Domain	Indicator	Source: DPHSS data	Guam	USA*	HP 2020 target
Vaccine-preventable diseases	Hepatitis A incidence	2012 Data	13.8/100,000	NA	
		2011 Data	27.5/100,000	0.45/100,000	0.3/100,000
	Hepatitis B incidence	2012 Data	41.3/100,000	NA	
		2011 Data	75.1/100,000	0.94/100,000	1.5/100,000
	Varicella incidence	2012 Data	31.3/100,000	NA	
		2011 Data	63.8/100,000	5.79/100,000	1/100,000
	Influenza incidence	2012 Data	85.1/100,000	NA	- (see note below)
		2011 Data	44.4/100,000	NA	
	Measles incidence	2012 Data	0	NA	
		2011 Data	0	0.06/100,000	.0003/100,000
	Pertussis incidence	2012 Data	0.6/100,000	15.4/100,000	2,500 cases among children under the age 1year
		2011 Data	4.4/100,000		
	Mumps incidence	2012 Data	1.9/100,000	NA	
		2011 Data	1.9/100,000	0.13/100,000	.005/100,000

*Note: "-" = no overall HP 2020 target established for influenza; instead, HP 2020 sets influenza immunization coverage targets for specific age groups and risk levels ; "NA" = not available; * = US data taken from CDC statistics*

Guam had higher incidence rates for Hepatitis A and B, varicella and mumps (Table 33), which may reflect, in part, lower vaccine coverage for these diseases. However, the elevated hepatitis A and B rates may also be partly accounted for by in-migration from the other Pacific islands and Asian countries, where these diseases are highly endemic, with subsequent diagnosis made in Guam. In addition the hepatitis B vaccine was introduced into Guam in 1988-1989 for targeted groups (infants, contacts of known cases); thus, individuals born prior to vaccine introduction would not have been immunized. Thus, hepatitis A and B rates are determined by a variety of factors and may not be ideal indicators for vaccine coverage.

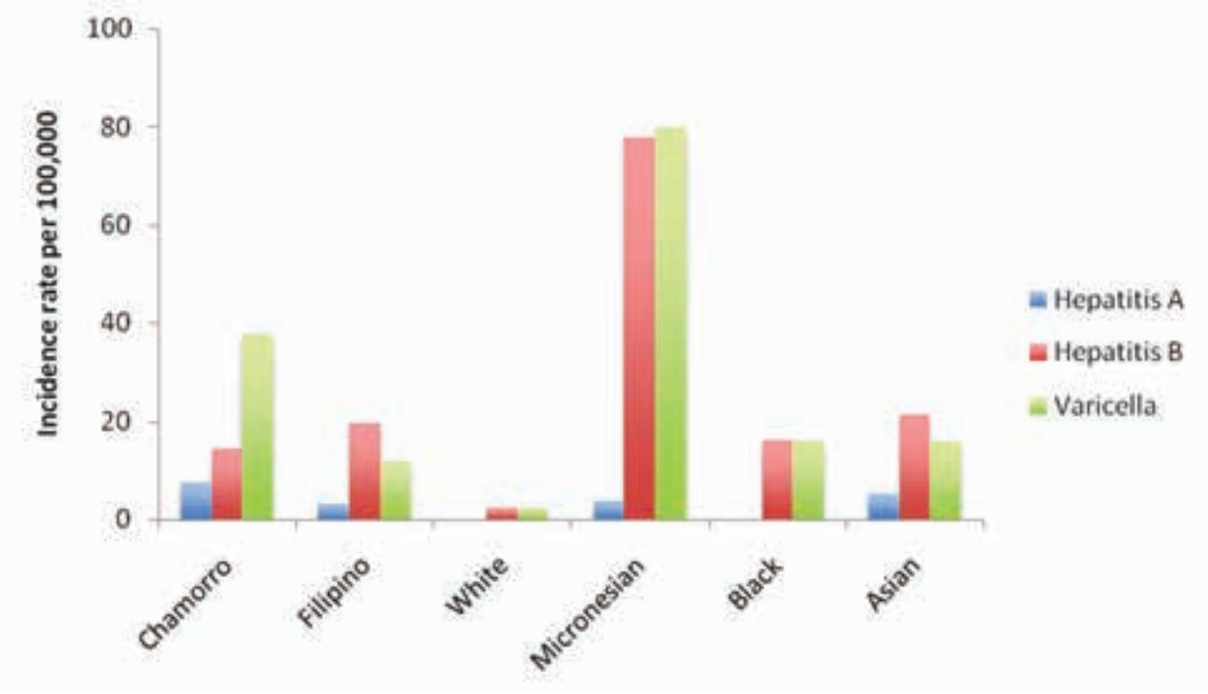
The trend over time for these diseases appears variable, with a spike in incidence for hepatitis A and B and varicella in 2011 (Figure 72). Hepatitis A incidence was highest for Chamorros, while hepatitis B and varicella incidence rates were highest for other Micronesians (Figure 73).

Figure 72. Hepatitis A, B and varicella incidence trends, Guam, 2008-2012



Source: DPHSS data, 2008-2012

Figure 73. Hepatitis A, B and Varicella incidence, by ethnicity/race, Guam, 2008-2011 average



Source: DPHSS data, 2008-2011

Other infectious diseases: Tuberculosis

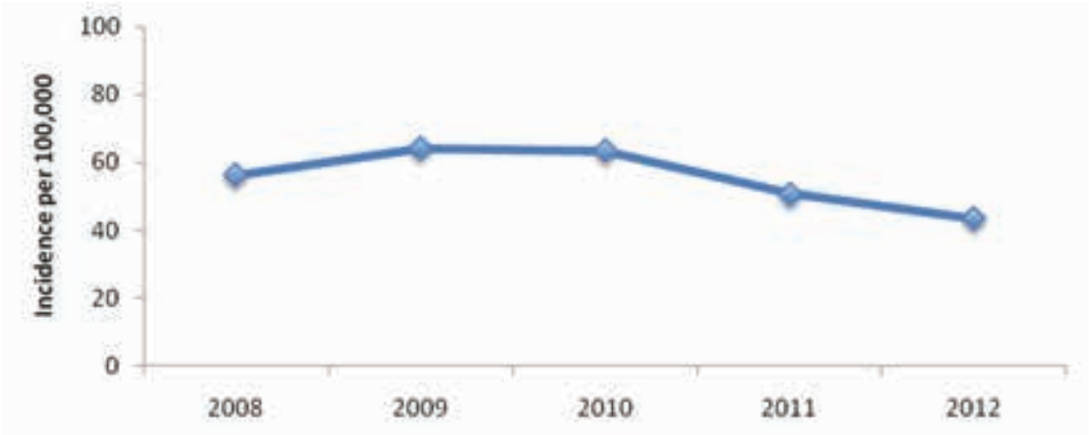
Table 34. Tuberculosis incidence rate, Guam vs. USA, 2011-2012

Domain	Indicator	Source	Guam	USA*	HP 2020 target
Infectious diseases	TB incidence rate	2012 DPHSS Data	43.3/100,000	NA	
	TB incidence rate	2011 Data	50.7	3.41/100,000	1/100,000

*Note: * = US data taken from 2011 CDC statistics*

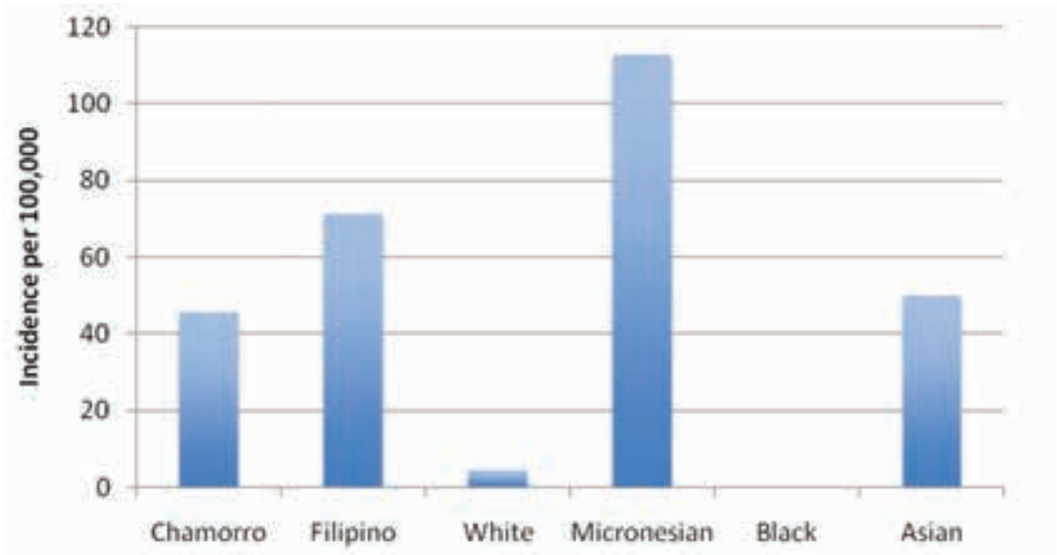
Tuberculosis (TB) incidence in Guam is declining over time (Figure 74), but remains far above the US incidence rate (Table 34). Other Micronesians have the highest incidence, followed by Filipinos (Figure 75). These numbers likely reflect the impact of migration by these two ethnic groups into Guam from countries and areas with high endemicity for TB.

Figure 74. TB incidence, Guam, 2008-2012



Source: DPHSS data, 2008-2012

Figure 75. TB incidence, by ethnicity/race, Guam, 2008-2011 average



Source: DPHSS data, 2008-2011

Vector-borne diseases: Dengue

Table 35. Dengue incidence rate, Guam vs. USA, 2012

Domain	Indicator	Source	Guam	USA*	HP 2020 target
Vector-borne diseases	Dengue incidence rate	2012 DPHSS Data	3.1/100,000**	0.22/100,000	-

*Note: * = US data taken from 2010 CDC statistics; **represents imported cases of dengue from travel to the Philippines, Thailand and Palau; "-" = no HP 2020 target established*

While dengue incidence is markedly higher in Guam than in the US, all cases represent imported disease. The mosquito vectors for dengue are not found in Guam.

Noncommunicable diseases

Table 36. Noncommunicable disease indicators, Guam vs. USA 2011

Domain	Indicator	Source	Guam	USA	HP 2020 target
Non communicable disease	% Adults diagnosed with heart attack	2011 BRFSS	3.10%	4.4%	-
	% Adults diagnosed with CVD	2011 BRFSS	2.80%	4.1%	-
	% Adults diagnosed with stroke	2011 BRFSS	3.20%	2.9%	-
	% Adults diagnosed with diabetes	2011 BRFSS	9.90%	9.5%	-
	% Pregnant women with gestational diabetes	2010 BRFSS	1.0%	0.9%	-
	Lung cancer incidence (Per 100,000)	2003-2007 Cancer Registry data	85.4 males	78.2	-
			40.6 Females	54.1	-
	Breast cancer incidence (Per 100,000)	2003-2007 Cancer Registry data	81.5 Females	123.1	-
	Colon cancer incidence (Per 100,000)	2003-2007 Cancer Registry data	34.4 Males	49.2	-
			23.9 Females	37.1	-
	Cervical cancer incidence (Per 100,000)	2003-2007 Cancer Registry data	13.4 Females	7.5	-
	Cancer survivorship	2010 BRFSS	2.7%	6.3%	-

Note: US cancer data taken from Surveillance, Epidemiology and End Results (SEER) 18 and US Cancer Statistics Data; US cancer survivorship data taken from the 2010 National Health Interview Survey (NHIS); "-" = no HP 2020 target established

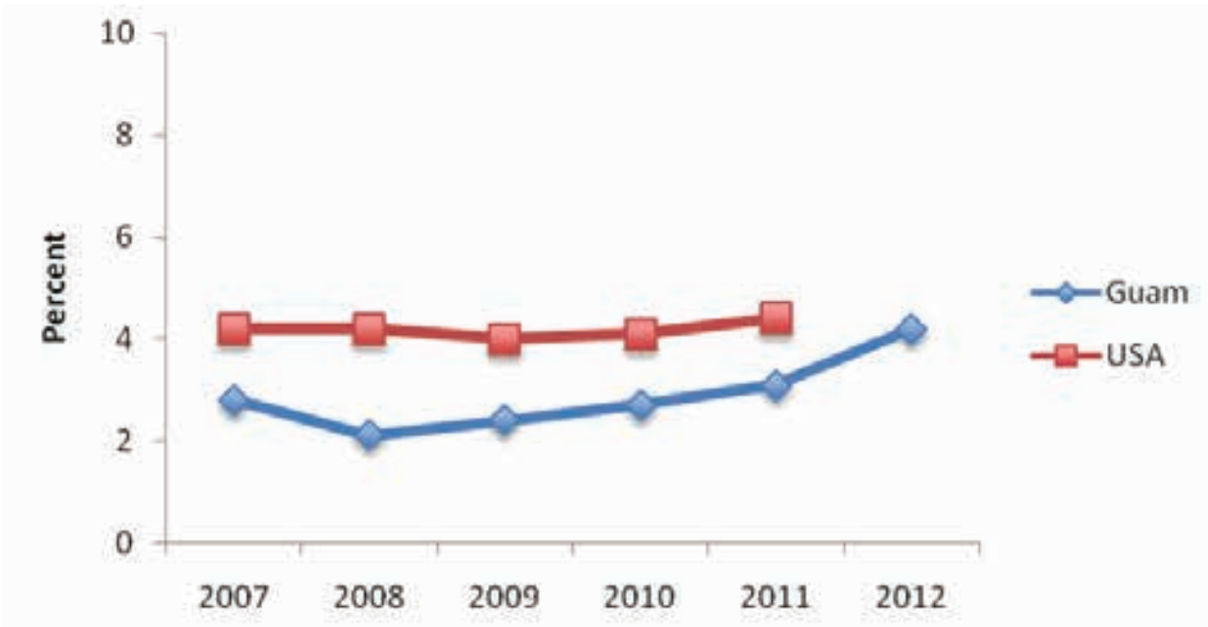
The profile for noncommunicable diseases (NCDs) in Guam is a mixed one (Table 36). Guam residents are less likely to report having had a diagnosis of heart attack or cardiovascular disease (CVD) than their US counterparts, and as likely to be diagnosed with diabetes, and for pregnant women, with gestational diabetes. Lung and breast cancer incidence for women, and colon cancer incidence for both sexes are significantly lower than in the US. However, Guam residents are more likely to report having been diagnosed with a stroke, and lung cancer incidence for men and cervical cancer incidence for women are higher than the US mainland rates. Cancer survivorship is lower in Guam than in the US.

Heart attack

At present, the percentage of Guam residents reporting a diagnosis of heart attack is lower than the US median. However, the Guam percentage has been rising over time, while the US percentage has remained stable for several years (Figure 76). If these trends continue, Guam will approach and possibly surpass, the US median in the near future.

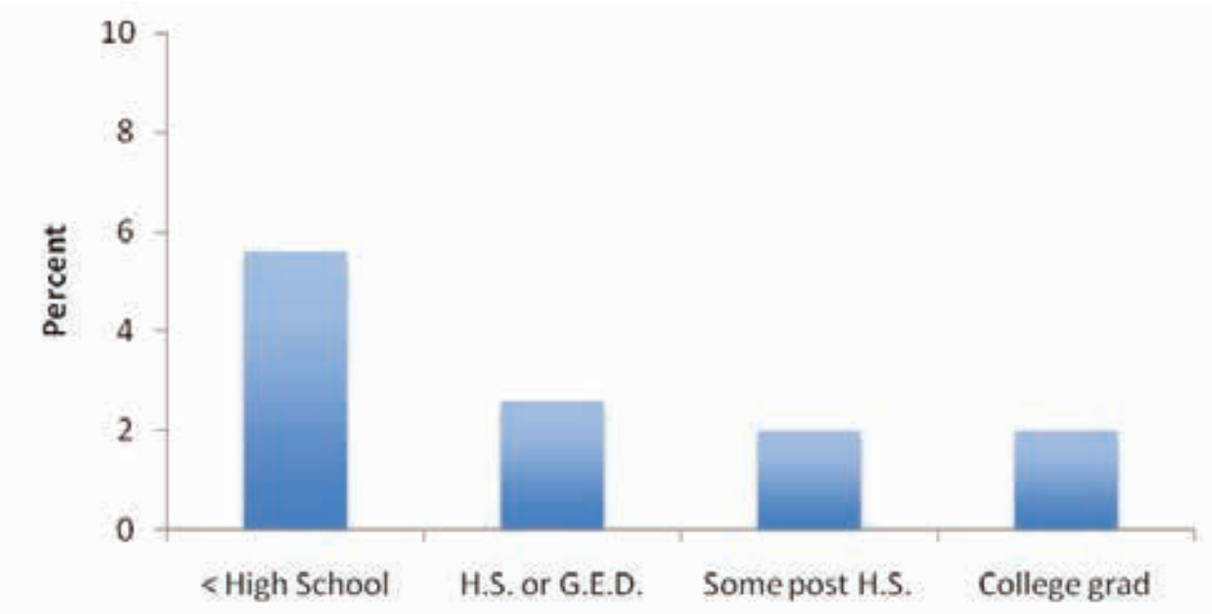
Males are as likely as females to report a heart attack. In 2010, when data was available for education and income categories, heart attack diagnosis was most likely for those with the lowest educational attainment and income level. In 2009, when data was available for the three largest ethnic groups in Guam, Micronesians and Chamorros had the highest likelihood of heart attack (Figure 79).

Figure 76. Diagnosed with a heart attack, adults, Guam vs. USA, 2007-2012



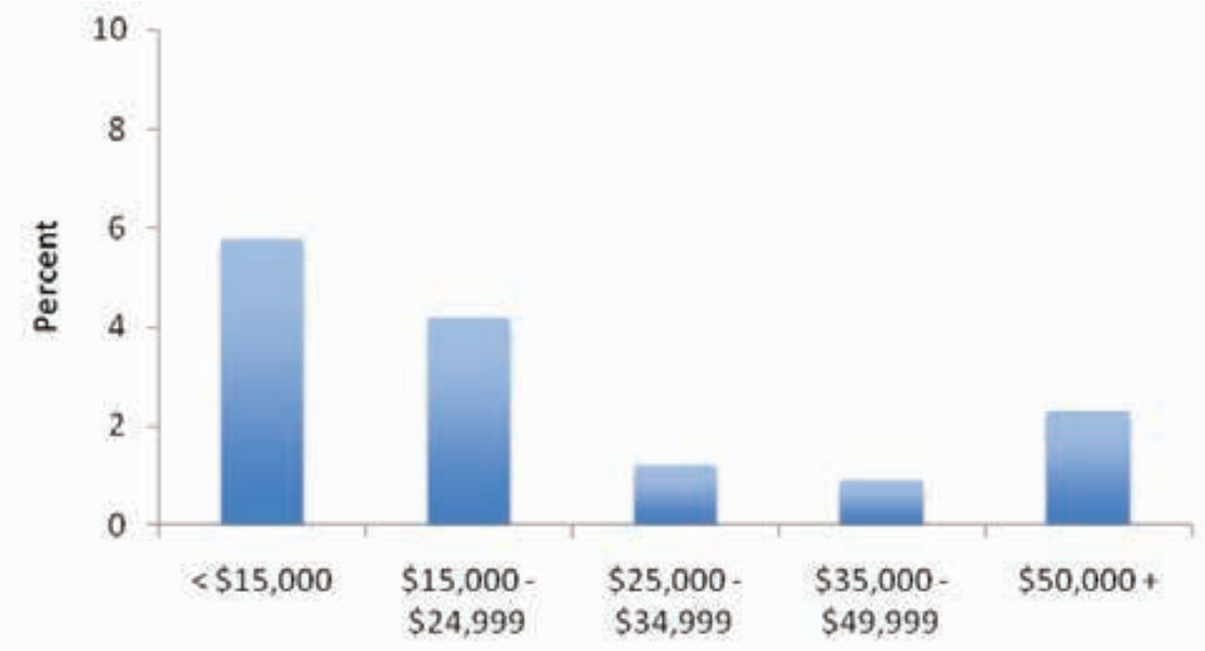
Source: BRFSS, 2007 - 2012

Figure 77. Heart attack diagnosis, by educational level, Guam, 2010



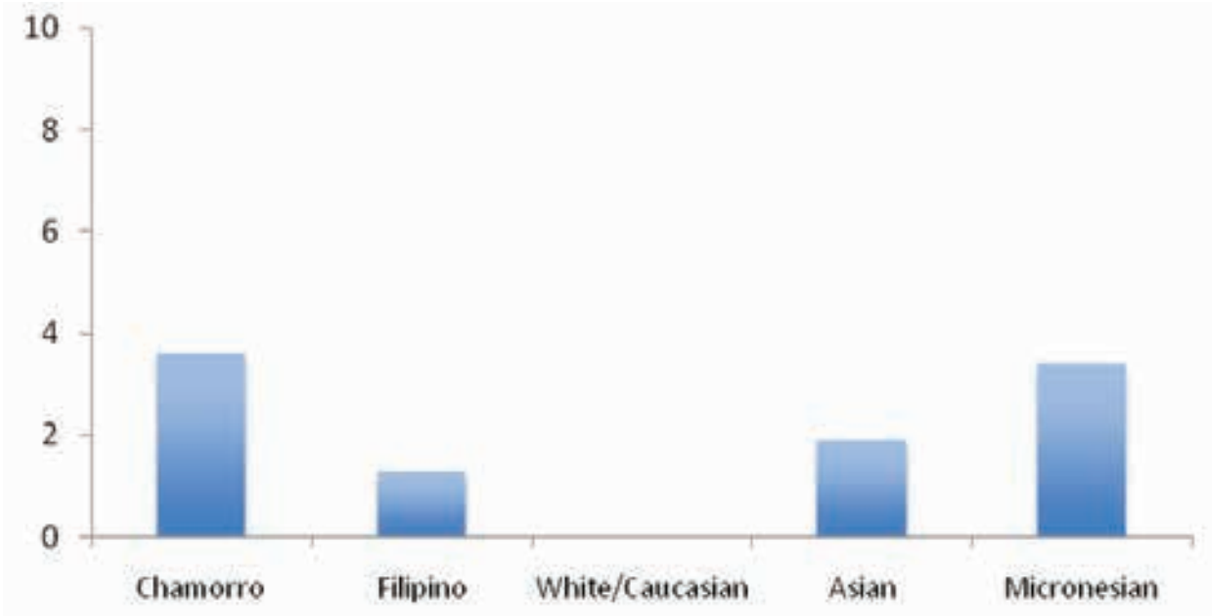
Source: BRFSS, 2010 (note: 2010 had data for all educational categories)

Figure 78. Heart attack diagnosis, by income category, Guam, 2010



Source: BRFSS, 2010 (note: 2010 had data for all income categories)

Figure 79. Heart attack diagnosis, by ethnicity/race, Guam 2009

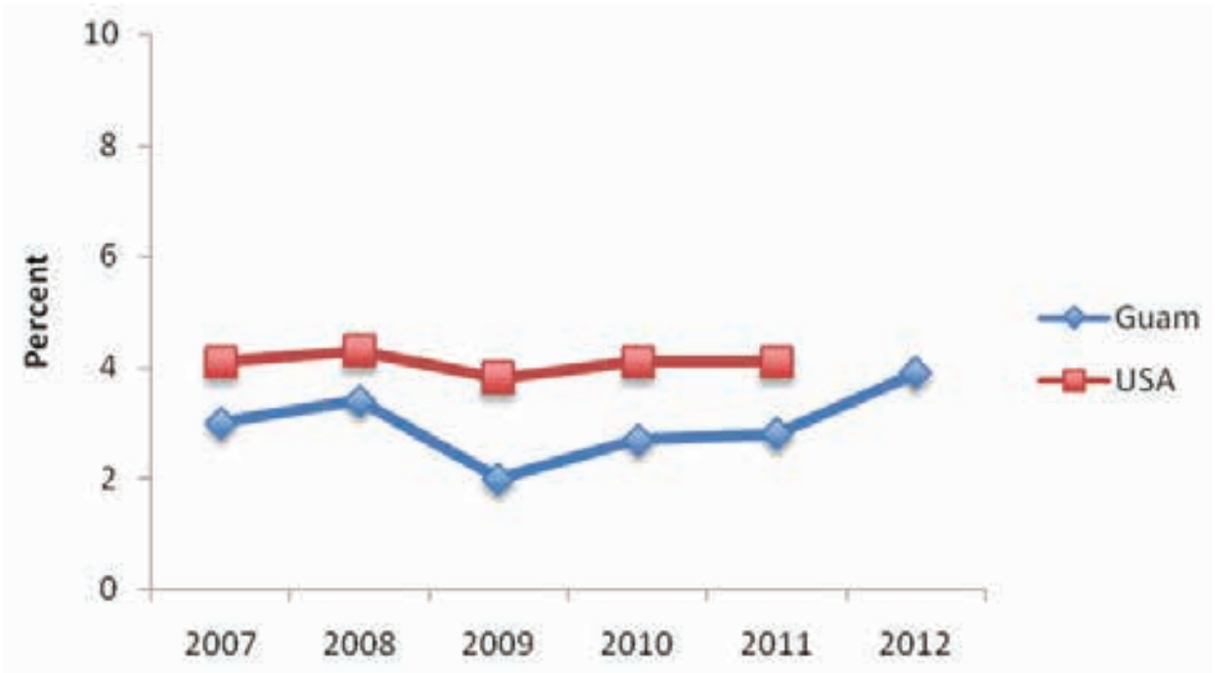


Source: BRFSS, 2009 (note: 2009 had data for the 3 largest ethnic groups)

Cardiovascular disease (CVD)

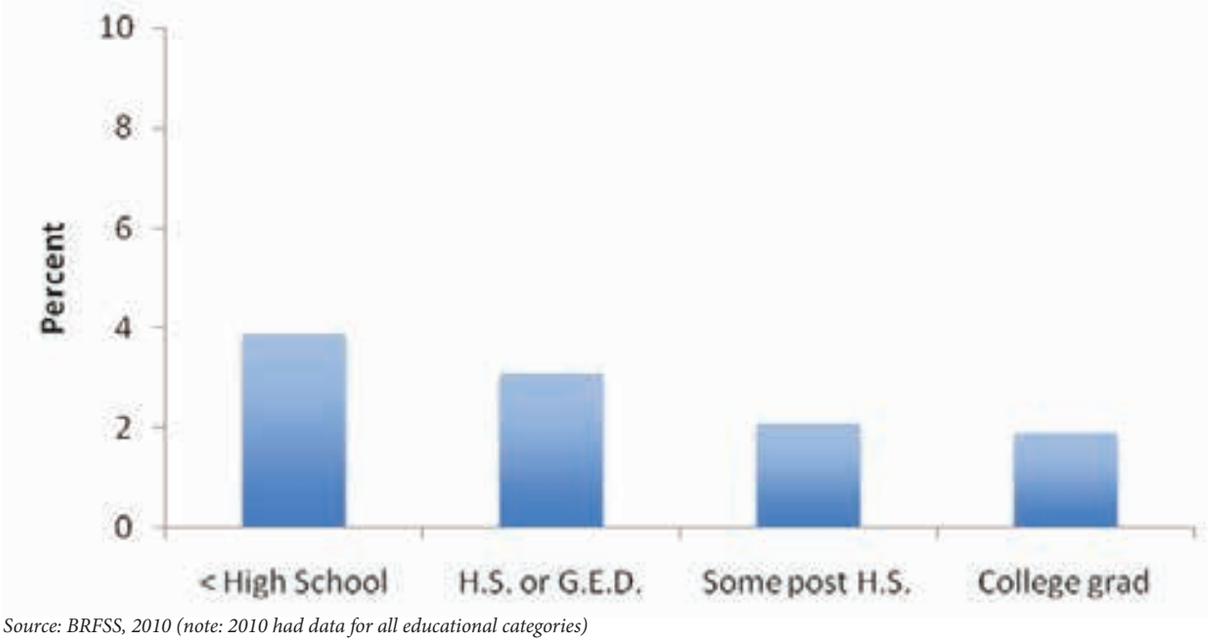
The percentage of Guam residents reporting a diagnosis of CVD is rising over time, while the US rate is stable (Figure 80). Males are equally likely as females to report a CVD diagnosis (2.9% vs. 2.8%, 2011). CVD diagnosis is most likely amongst persons with the lowest educational attainment (Figure 81); the relationship with income level is unclear. Micronesians are the most likely to report a diagnosis of CVD (Figure 82).

Figure 80. CVD diagnosis, Guam vs. USA, 2007-2012



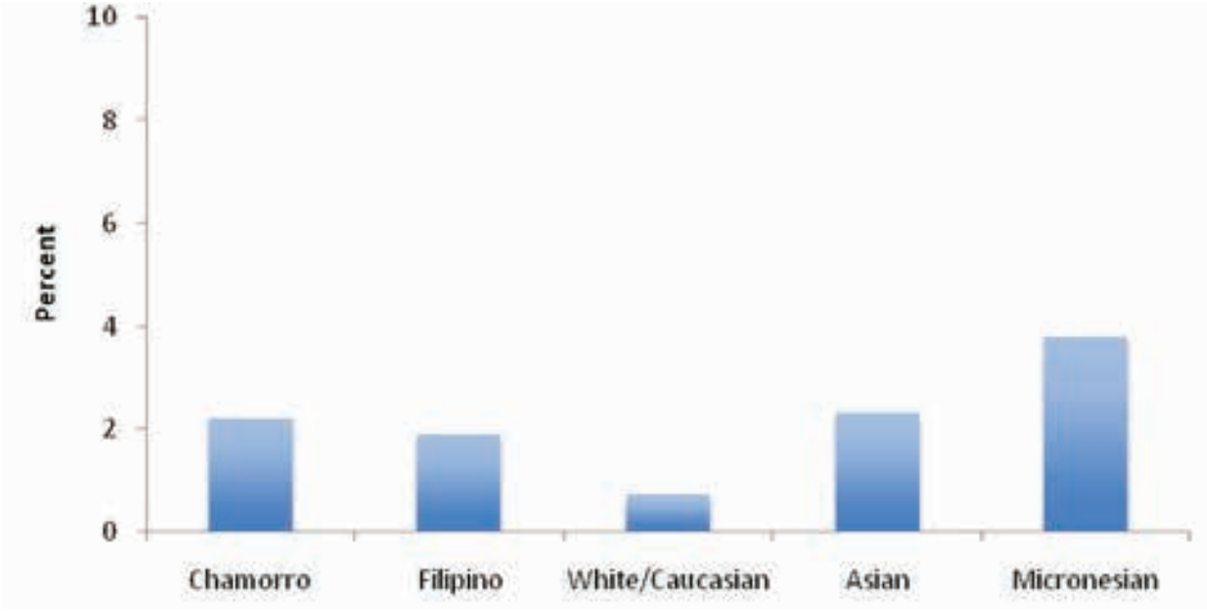
Source: BRFSS, 2007-2012

Figure 81. CVD diagnosis, by educational level, Guam, 2010



Source: BRFSS, 2010 (note: 2010 had data for all educational categories)

Figure 82. CVD diagnosis, by ethnicity/race, Guam 2009

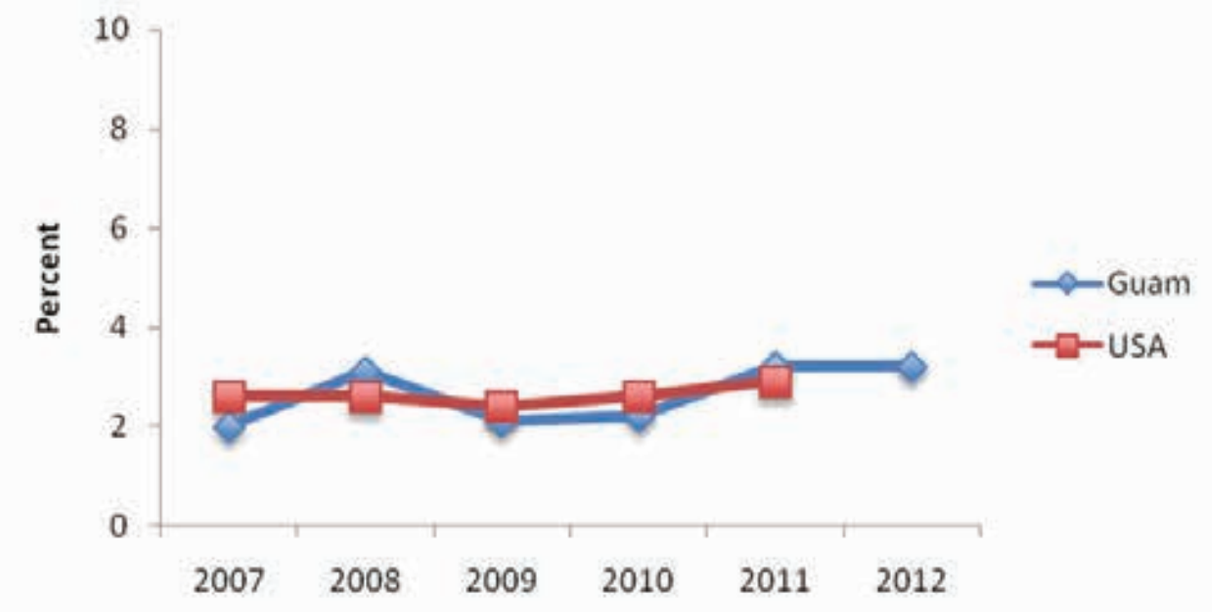


Source: BRFSS, 2009 (note: 2009 had data for the 3 largest ethnic groups)

Stroke

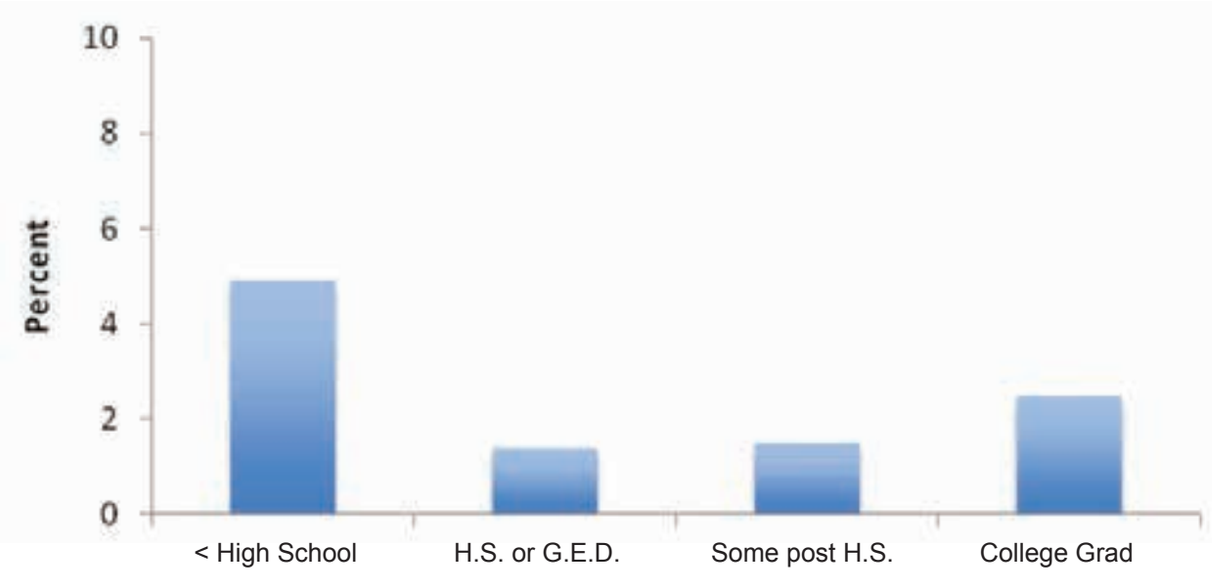
The percentage of Guam residents reporting a diagnosis of stroke is rising over time, and is now comparable to the US (Figure 83). Males are equally likely as females to report a stroke diagnosis. CVD diagnosis is most likely amongst persons with the lowest educational attainment (Figure 84) and lowest income level (Figure 85). Chamorros and Caucasians are the most likely to report a diagnosis of CVD (Figure 86).

Figure 83. Stroke diagnosis, Guam vs. USA, 2007-2012



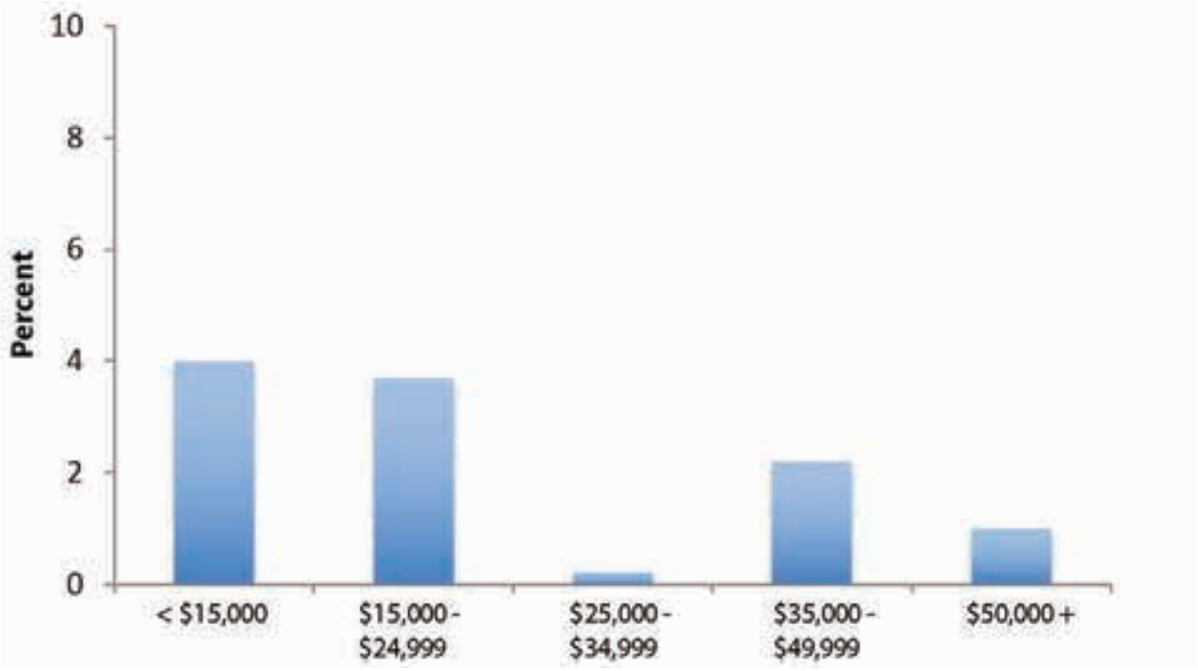
Source: BRFSS, 2007-2012

Figure 84. Stroke diagnosis, by educational level, Guam, 2010



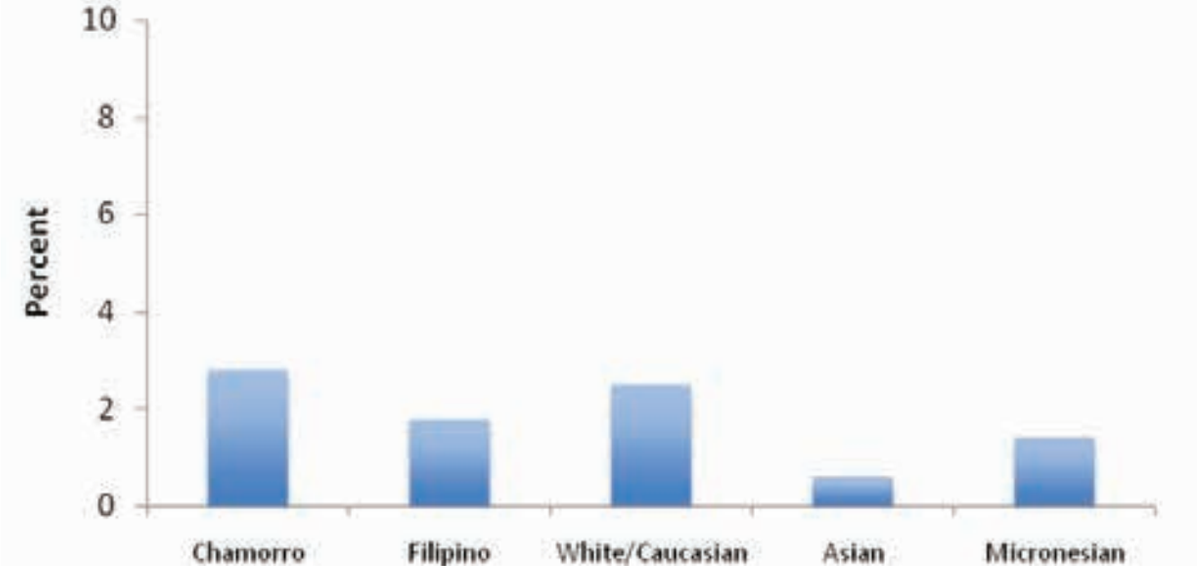
Source: BRFSS, 2010 (note: 2010 had data for all educational categories)

Figure 85. Stroke diagnosis, by income level, Guam, 2010



Source: BRFSS, 2010 (note: 2010 had data for all income categories)

Figure 86. Stroke diagnosis, by ethnicity/race, Guam 2010

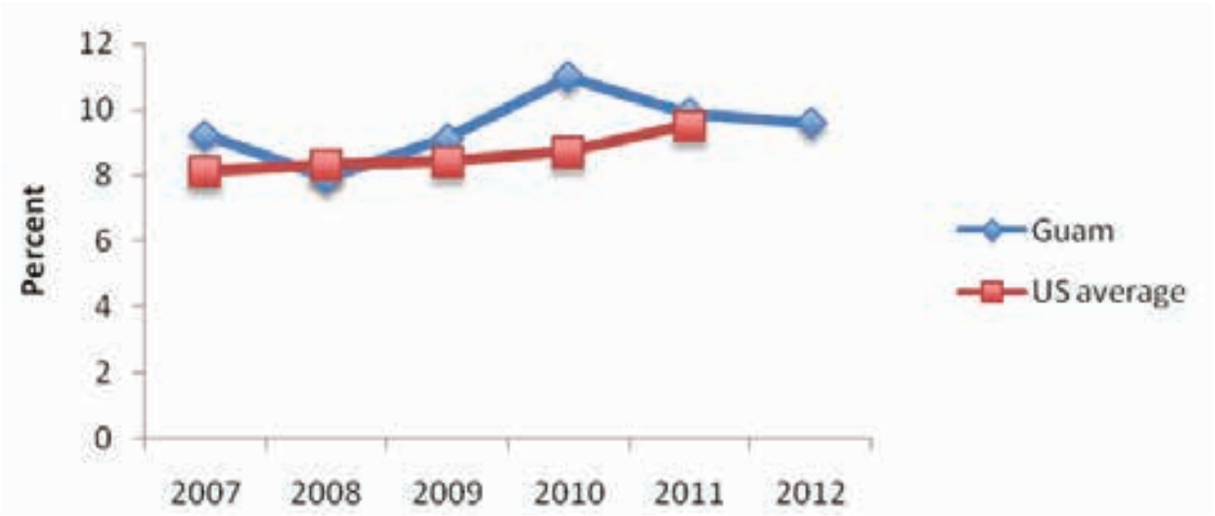


Source: BRFSS, 2010 (note: 2010 had data for the 3 largest ethnic groups)

Diabetes

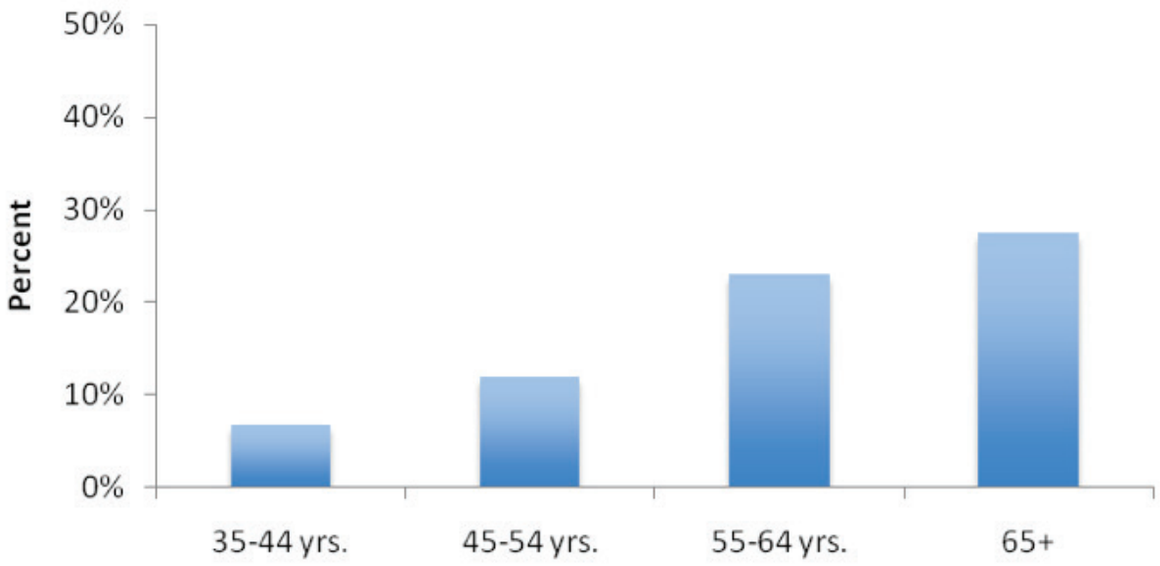
The percentage of adults in Guam diagnosed with diabetes is similar to the US median (Figure 87). Increasing age (Figure 88), lower education (Figure 89), and higher income (Figure 90) appear to be related to the diagnosis of diabetes.

Figure 87. Diabetes diagnosis, Guam vs. USA, 2007-2012



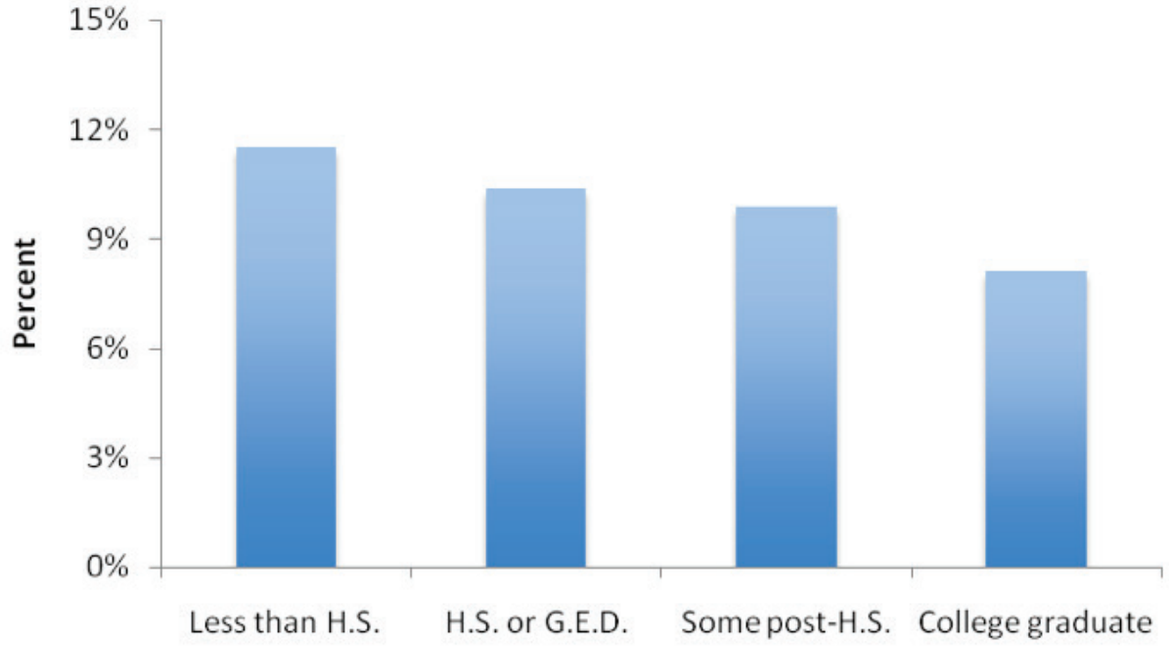
Source: BRFSS, 2007-2012

Figure 88. Diabetes diagnosis, by age, Guam, 2011



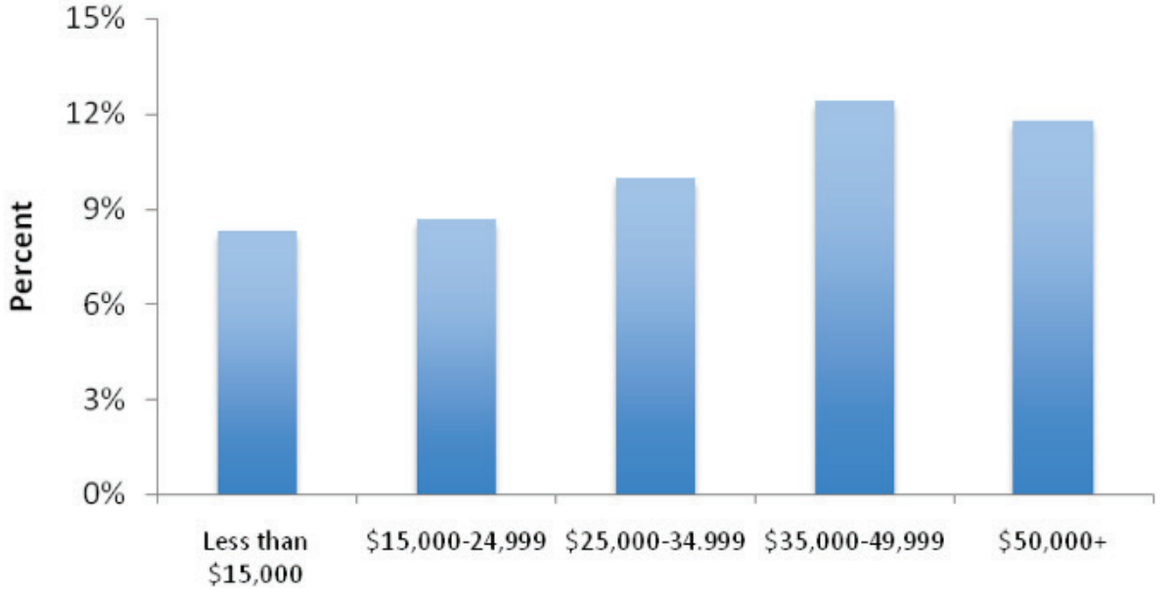
Source: BRFSS, 2011

Figure 89. Diabetes diagnosis, by educational level, Guam, 2011



Source: BRFSS, 2011

Figure 90. Diabetes diagnosis, by income level, Guam, 2011



Source: BRFSS, 2011

Lung cancer

Lung cancer incidence is higher among males. Other Micronesians and Chamorros have the highest incidence of lung cancer (Table 37); these groups also have the highest tobacco consumption.

Table 37. Lung cancer incidence, Guam, 1998-2002 and 2003-2007

	1998-2002	2003-2007
Demographic Characteristics	**Incidence (new cases) per 100,000**	**Incidence per 100,000**
Gender		
Male	73.7	85.4
Female	28.9	40.6
Ethnicity		
Chamorro	75.4	88.4
Filipino	35.6	34.0
White/Caucasian	89.6	85.3
Asian	25.8	77.3
Micronesian	111.5	174.7

Source: Guam Cancer Registry

Cervical cancer

Cervical cancer incidence among Guam women is almost double the rate of US women. Cervical cancer is highest among Micronesian women (Table 38). This is likely linked to the lower utilization of Pap smears by women in Guam.

Table 38. Cervical cancer incidence, Guam, 1998-2002 and 2003-2007

	1998-2002	2003-2007
Demographic Characteristics	**Incidence (new cases) per 100,000**	**Incidence per 100,000**
Total	13.4	9.5
Ethnicity		
Chamorro	16.2	11.6
Filipino	8.4	5.5
White/Caucasian	10.5	9.6
Asian	8.5	14.5
Micronesian	27.4	21.1
Other		

Source: Guam Cancer Registry

Disability

Table 39. Disability indicators, Guam vs. USA, 2010-2011

Domain	Indicator	Source: DPHSS data	Guam	USA	HP 2020 target
Disability	% Adults with health problems requiring use of special equipment	2011 BRFSS	5.10%	7.90%	-
	% Adults with limited activity	2011 BRFSS	16.70%	23.60%	-
	% Civilian noninstitutionalized population with a disability	2010 Census	7.9%	11.90%	-
Caregiving	% Adults serving as caregivers	2011 BRFSS	29.4%	29%	

Note: "-" = no HP 2020 target established

Disability indicators for Guam are better than the US figures. The percent of the adult population serving as caregivers is similar across both sites.

Mortality

Table 40. Mortality indicators, Guam vs. USA, 2010

Domain	Indicator	Source: DPHSS data	Guam	USA*	HP 2020 target
Overall mortality	All-cause death rate	NCHS data, 2010	570.7/100,000	798.7/100,000	-
Age-specific mortality	Infant mortality rate	2011 DPHSS Vital Statistics	12.7 per 1000 live births	6.14/1000	6.0/1000
Cause specific mortality	Cardiovascular mortality rate	NCHS data, 2010	223.1/100,000	192.9/100,000	100.8/100,000
	Cancer mortality rate	NCHS data, 2010	111.1/100,00	185.9/100,000	160.6/100,000
	Diabetes mortality rate	NCHS data, 2010	39.9/100,000	22.3/100,000	65.8/100,000
	COPD mortality rate	NCHS data, 2010	15.7/100,000	44.6/100,000	-
	Accidental injury mortality rate	NCHS data, 2010	23.4/100,000	38.2/100,000	36/100,000

*Note: * = US all-cause, cardiovascular, diabetes and accidental injury mortality rates are from 2010 National Vital Statistics System (NVSS) data; US infant and cancer mortality from 2010 National Center for Health Statistics (NCHS) data; "-" = no HP 2020 target established*

Overall (all-cause) mortality in Guam is lower than the US. However, Guam's infant mortality rate is double that of the US. The cardiovascular and diabetes mortality rates in Guam's population are also notably higher than the corresponding cause-specific mortality rates in the US mainland. Cancer, COPD and accidental injury mortality are lower in Guam.

Other health indicators: Oral health

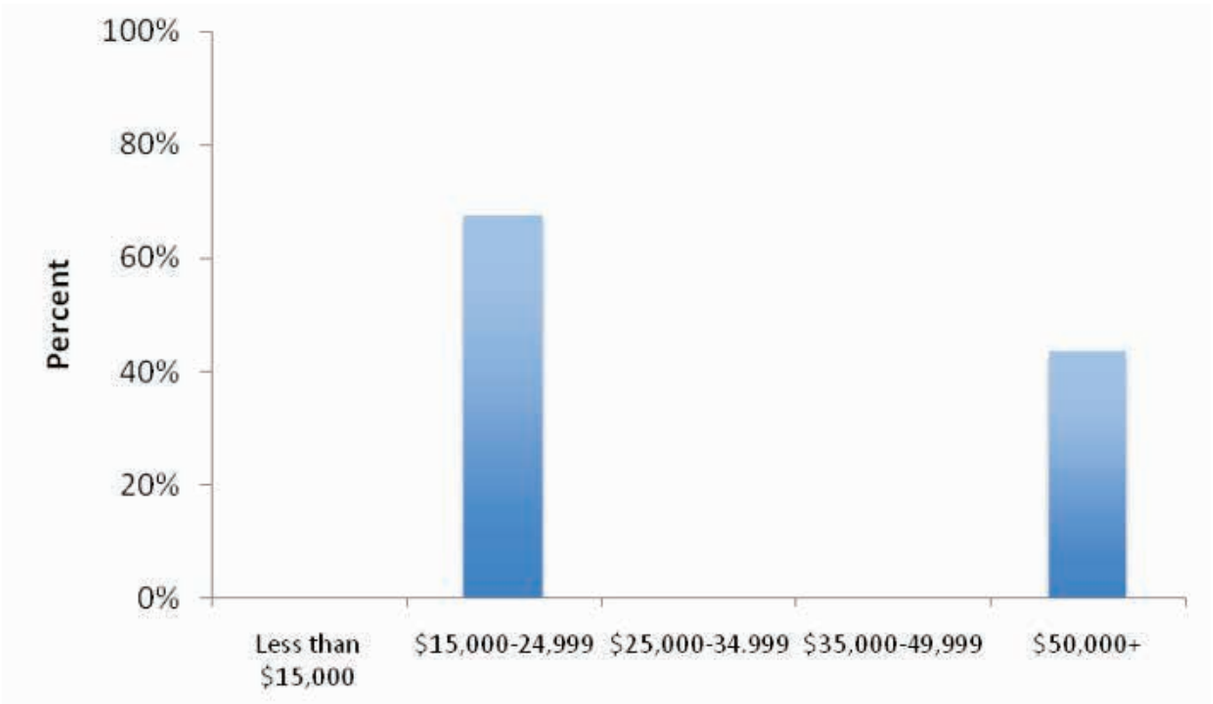
Table 41. Oral health indicators, Guam vs. USA, 2010

Domain	Indicator	Source: DPHSS data	Guam	USA	HP 2020 target
Dentition Dental care Gum disease	Adults that have had any permanent teeth extracted	2010 BRFSS	56.60%	43.70%	-
	Adults that have visited the dentist or dental clinic within the past year for any reason	2010 BRFSS	61.20%	69.60%	-
	Gum disease rates	no data			

Note:"-" = no HP 2020 target established

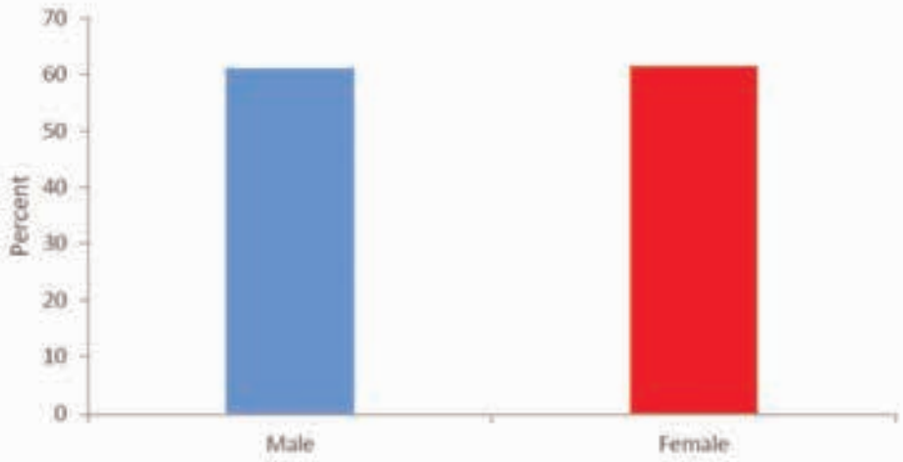
Guam residents are more likely to have lost their permanent teeth and less likely than their US counterparts to have visited the dentist within the past year (Table 41). Permanent tooth loss is higher among those with lower incomes (Figure 91). Dental visits are more likely among those with higher incomes (Figure 92).

Figure 91. Permanent tooth loss, by income, Guam, 2010



Source: BRFSS, 2010

Figure 92. Visit the Dentist or Dental Clinic Within the Past Year, 2010



Gender	Yes
Male	61.0
Female	61.4

Source: Guam BRFSS, 2010

Health system

Table 42. Health system indicators, Guam vs. USA, 2000-2011

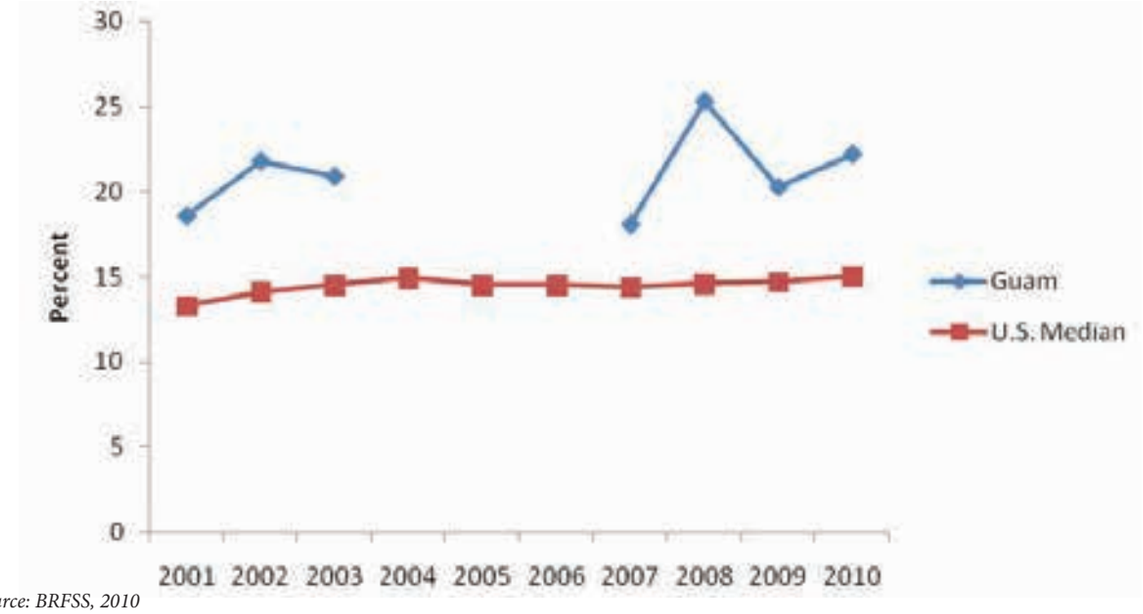
Domain	Indicator	Source	Guam	USA	HP 2020 target
Health workforce	Physician to population ratio	BSP 2011	0.98/1000	2.42/1000	-
Health infrastructure	Hospital bed to population ratio	BSP 2011	0.92/1000	3.0/1000	-
	Per capita health expenditure	2000 data, WHO CHIPS 2010	$1,032.36	$8,608	-
	% Population uninsured	2005 data, WHO CHIPs, 2010	23.4%	16.30%	-
	% Civilian noninstitutionalized population covered	2010 Census	78.9%	83.70%	100%
Health financing	% Under 18 years covered	2010 Census	85.4%	90.60%	-

Note: "-" = no HP 2020 target established

Guam lags behind the US for all the indicators addressing the health care system (Table 42). There are less physicians and less hospital beds per capita, lower per capital health expenditure, and a greater percentage of uninsured individuals in Guam. These data highlight the need for significant health system strengthening, and may largely explain the apparent paradox of similar rates of CVD, stroke and diabetes diagnoses but higher cardiovascular, stroke and diabetes-specific mortality (since these disease-specific mortality rates are determined in part by the availability of tertiary care facilities and subspecialist physicians and medical staff for management of complex medical cases).

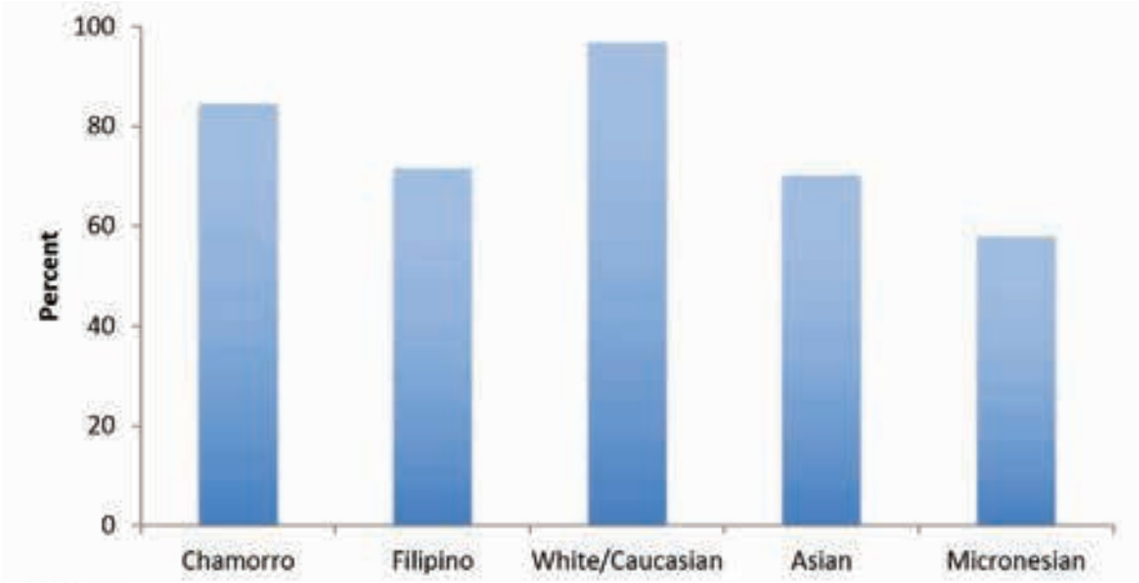
Individuals in Guam are more likely to be uninsured than their US counterparts (Figure 93). Figure 94 depicts the wide disparities among various ethnic groups in relation to health insurance coverage. Caucasians are least likely to be uninsured; Micronesians are most likely to not have health insurance.

Figure 93. Insurance coverage as a % of those uninsured, Guam vs. USA, 2010



Source: BRFSS, 2010

Figure 94. Insurance coverage as a % of those with health insurance, by ethnicity, Guam, 2010



Source: BRFSS, 2010

Community Health Priorities

In September 2013, DPHSS convened a gathering of 54 community health stakeholders representing multiple sectors at a Community Stakeholder Committee meeting. Together with the CHA Core Team, these stakeholders reviewed the indicators and data collated for the CHA, and further disaggregated and analyzed the indicators that were red-flagged as being worse in Guam as compared to the US mainland. The workshop used a scoring system to assess four criteria:

- Magnitude of the problem
- Trend over time
- Disparity
- Existence of evidence-based solutions

The prioritization exercise involved the use of a scoring system that assigned points for each of the four criteria, as follows:

Magnitude

1 = < 25% of population negatively affected
2 = 25% to <50% of population negatively affected
3 = >50% to <75% of population negatively affected
4 = > 75% of population negatively affected

Trend

1 = Trend improving over time
2 = No change over time, or unable to detect a clear trend
3 = Trend worsening over time

Disparity

1 = No obvious disparity; condition affects different groups just about equally
2 = Some groups affected more than others; least affected group and most affected group in at least 1 category (age, sex, ethnicity, or income) differ by less than 100%
3 = Least affected group and most affected group in at least 1 category differ by 100% or more

Evidence-based practice

1 = No strategy known to effectively address the health issue
2 = Some strategies to address the health issue exist but they are not evidence-based
3 = Evidence-based practices exist but have never been implemented in Guam
4 = Evidence-based practices exist and have been implemented with success in Guam

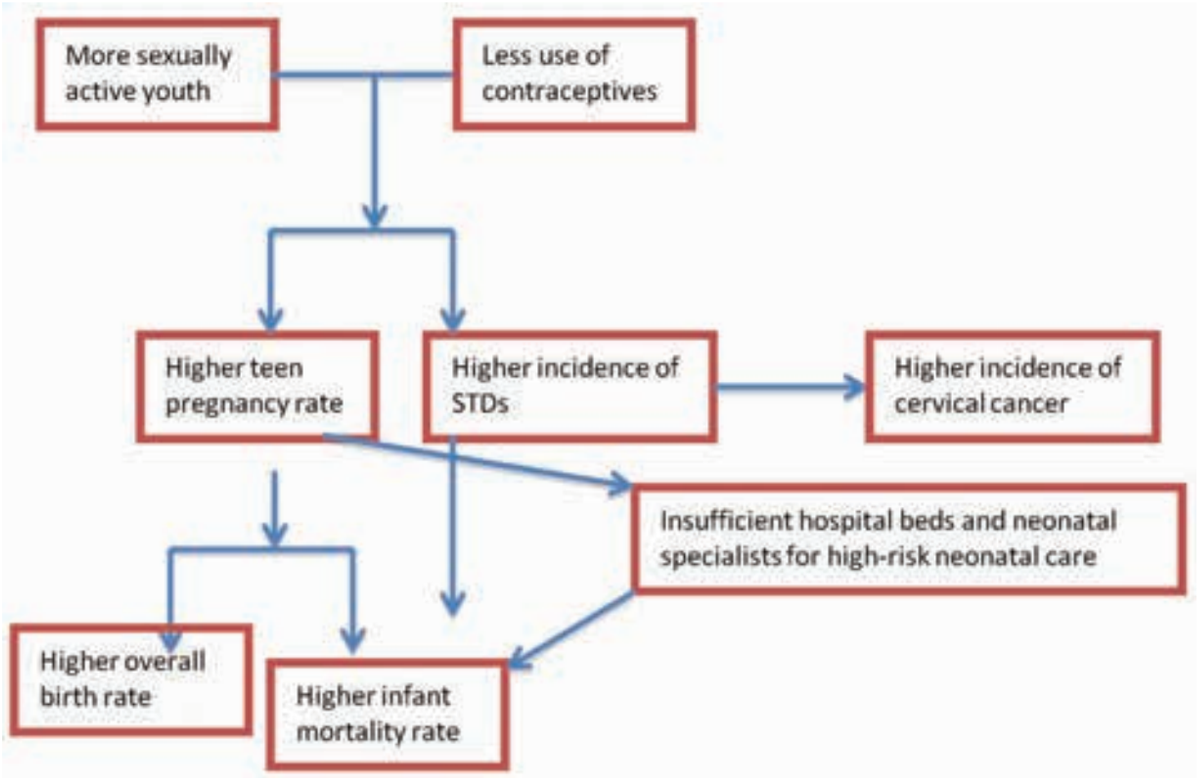
Scores across the four criteria were multiplied, and the group reviewed the highest scoring indicators. Related indicators were grouped together based on similarities in the domains or health issues covered. The top ten health issues were identified; these were not ranked against each other but collectively selected as the health priorities for Guam.

Based on the scores and subsequent discussion, the priority health issues that emerged were:

- High prevalence of unsafe sex and sexually transmitted diseases
- Other risk-taking behavior, particularly marijuana use and riding in a vehicle with a driver who had been drinking alcohol, among youth
- High prevalence of tobacco use, especially among adults
- Low vaccine utilization and high incidence of vaccine-preventable illnesses, such as influenza, pneumococcal pneumonia, measles, mumps and varicella
- High incidence of lung and cervical cancer
- High incidence of tuberculosis
- Inadequate health system infrastructure, with insufficient number of hospital beds per capita and insufficient health workforce per capita
- Low uptake of cancer screening
- High diabetes and cardiovascular mortality
- High rates of suicide, especially among youth

The participants noted the interrelationship among the various indicators. For example, the indicators for unsafe sex and sexually transmitted disease incidence can be linked to high teenage pregnancy, higher overall birth rate, higher infant mortality and higher cervical cancer incidence (Figure 95). Other obvious linkages include smoking and lung cancer, low vaccine utilization and high incidence of vaccine preventable diseases. Figures 96 and 97 outline potential linkages between mental health and violence indicators with suicide (Figure 96), and social determinants and TB (Figure 97). These all argue for a comprehensive and holistic approach to public health improvements.

Figure 95. Linkages between indicators related to unsafe sex, STD incidence, birth rate, infant mortality, cervical cancer



Note: "-" = no HP 2020 target established

Figure 96. Linkages between violence and depression with suicide

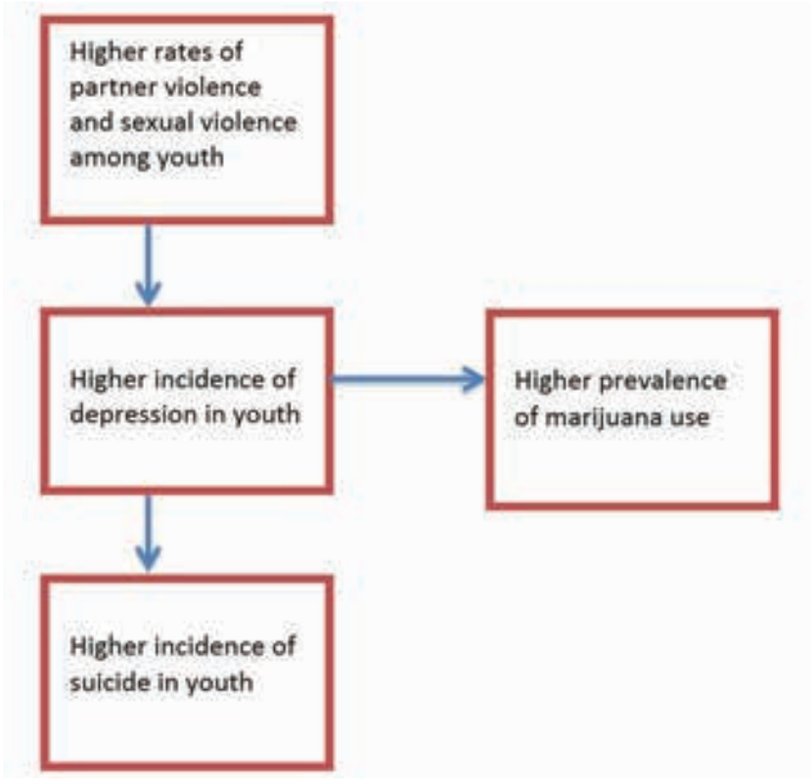
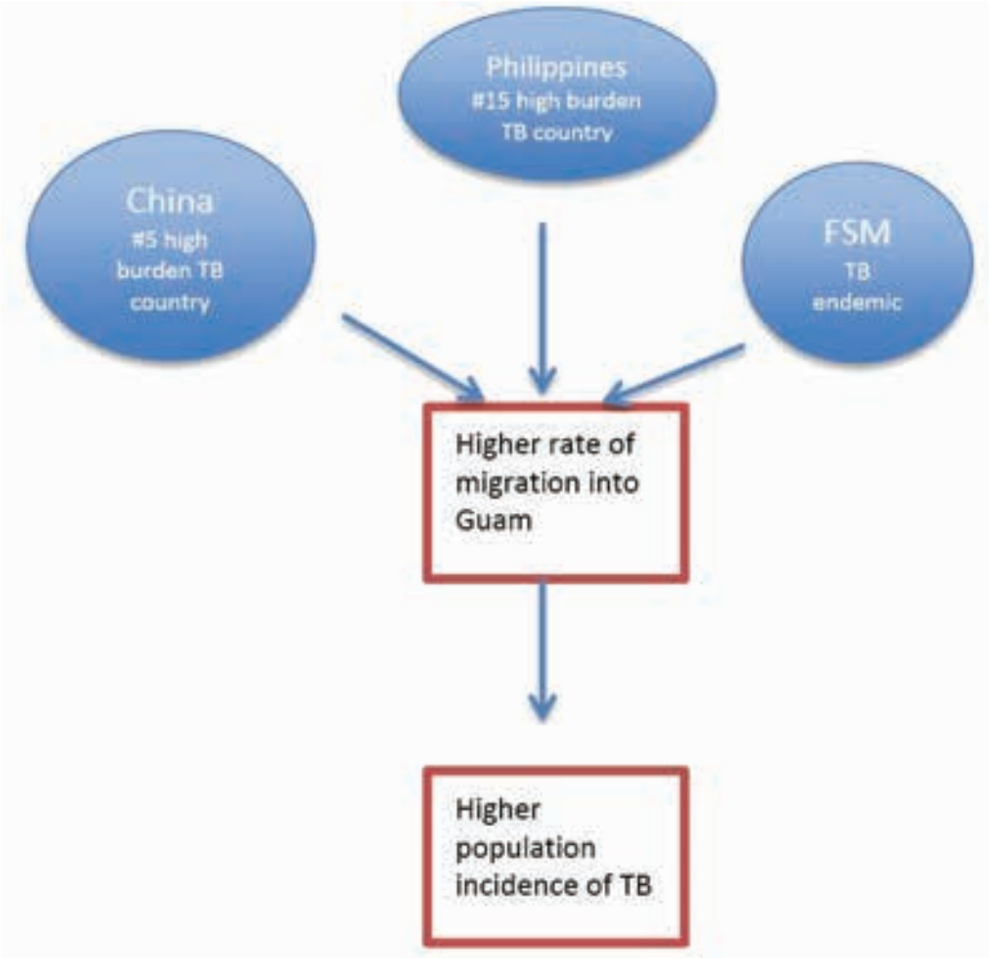
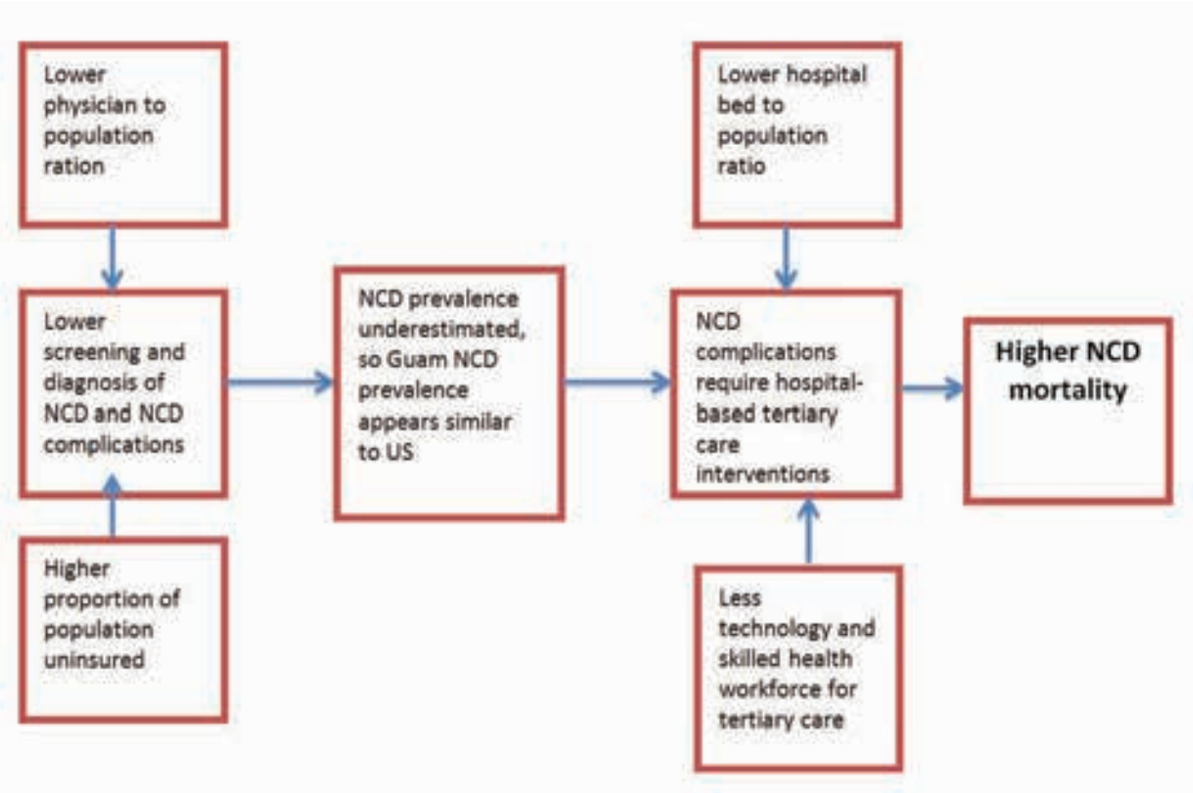


Figure 97. Linkages between social determinants and TB



The apparent paradox of similar heart attack, CVD, stroke and diabetes prevalence but worse disease-specific mortality in Guam can be accounted for likely by the weaker health care system in Guam. At the front end, Guam NCD prevalence may be underestimated because of lower screening rates, reflecting gaps in primary health care services, which may be related partly to the lower physician-to-population ratio and higher proportion in the population of medically uninsured. Downstream, potentially fatal incidents of heart attack, CVD, stroke and diabetes requiring tertiary level hospital facilities and a specialized health workforce capable of performing complex procedures (such as angioplasties and coronary bypass for heart attacks and CVD, reperfusion technologies for stroke and kidney transplantation for diabetes-related end-stage renal disease) may not be adequately addressed given reduced hospital bed capacity and medical technology/skilled workforce gaps. The insufficient hospital and health workforce per capita ratios in Guam contribute to reduced capacities of the health care system to address both preventive/early interventions, like screening and prompt treatment, and tertiary care for potentially fatal NCD incidents. Thus, augmenting the health system should be a priority for overall health improvement in the island, with investments in both primary and tertiary care. The construction of a second hospital in Guam will help to address some of the capacity shortfall; ensuring equitable access to this hospital for Guam's population will be essential.

Figure 98. Linkages between NCD incidents, NCD mortality, and healthcare infrastructure and capacity



Community Asset Mapping

Workshop participants were divided into 4 groups, representing the 4 districts of Guam:

Kattan district (Eastern)
- Barrigada
- Chalan Pago – Ordot
- Mangilao
- Mongmong-Toto-Maite

Luchan district (Western)
- Asan-Mai'na
- Agana Heights
- Hagatna
- Piti
- Sinajana
- Tamuning

Haya district (Southern)
- Agat
- Inarajan
- Merizo
- Santa Rita
- Talofofo
- Umatac
- Yona

Lagu district (Northern)
- Dededo
- Yigo

Participants were asked to self-select into the district that they were most familiar with. They identified as many health-related district and village-level health resources and assets. The composite health asset inventory is listed in pages 89 & 90:

Table 43. Health resources and assets, by district, Guam

Kattan district (Eastern)

Health Services	Socio-political resources	Faith-based resources	Physical assets	Programs and other resources
• Private medical clinics • Chiropractor clinics • Dental clinics • Veterans' Administration koban	• University of Guam • Guam Community College • Other schools • National Guard Readiness Center • Phoenix Center at Father Duenas Memorial School • Senior Citizens' Center • Thursday night markets	• Toto Church • Evangelical Christian Academy • Dominican day care and nursery • Faith bookstore	• Latte Heights park • Basketball courts • Track and field oval at GW • Village baseball fields • Tiyan soccer and tennis fields • Gyms – Synergy, karate • Leo Palace Resort facilities	• "Just say no" dance group • Community gardens • Zumba classes • Karate gyms

Luchan district (Western)

Health Services	Socio-political resources	Faith-based resources	Physical assets	Programs and other resources
• Ambulance services/911 services • Guam Memorial Hospital • GBHWC • Private clinics • Dental clinics • Chiropractor clinics	• Police patrols • GHURA offices • Mass transit resources • Senior Citizens' Center • Community Centers • Police stations • Mayors' offices	• Archdiocese of Agana facilities and resources	• Agana pool • Parks and recreational facilities • Guam International Airport • Tumon beach; Ypao beach • Tamuning basketball and tennis courts • Recreational facilities in hotels • Water parks	• Guma Mami • Aqua Zumba classes

Haya district (Southern)

Health Services	Socio-political resources	Faith-based resources	Physical assets	Programs and other resources
• Private medical clinics	• Senior Citizens' Center • Youth Centers • Mayors' offices • Schools • Firestations • Day care	• Churches of various denominations	• Village parks • Gyms • Recreational centers	• Community gardens and farms • Cultural programs • Community programs • NGO offices and programs

Lagu district (Northern)

Health Services	Socio-political resources	Faith-based resources	Physical assets	Programs and other resources
• Northern Community Health Center • New hospital – Guam Regional Medical City (under construction) • Private medical clinics • Pharmacies • Dialysis center • Dental clinics • Ross Hearing Center • Chiropractor clinics	• Guam Police Department • Guam Fire Stations (2) • Mayors' Offices • Bingo Hall • Flea market • GABI – Farmers' Cooperative • Community Centers • Adult day care center • Senior Citizens' center • Social Security Administration • Family Violence Shelter • Youth Resource Center	• Churches • Buddhist temple • Harvest Ministries	• Swimming pool • Baseball field • Basketball courts • Wettengel Rugby field • Gyms – martial arts, exercise, zumba classes • Golf courses • Paintball field • Sports facilities in private developments • Sta. Barbara field • Village parks	• Zumba at the Mall • Vaccinations at the Mall • Guma San Jose homeless services and community garden • Girl Scouts of Yigo • Island Girl Power • UOG Agricultural Research Center • MADD program • Guam Football Association • Guam Animals In Need shelter

Data Gaps and Community Concerns

Because the CHA is a data-driven process, the issues covered are those for which data is available. However, there were several data gaps noted, and community concerns raised over issues for which there was scant data.

A major data gap exists for environmental hazard exposures, which limits the ability of health authorities to address community concerns about their exposure risk. Some of the concerns that have been specifically mentioned include:

1. Health impact of chemical use by the military in previous decades, including Agent Orange and chemical sprays of unknown nature used in the '60s
2. Presence and health effects of genetically modified organisms and food products
3. Radiation effects from nuclear testing in previous years

Another data gap is the paucity of historical data, particularly in relation to the current health of affected vulnerable groups, such as the Manengon Concentration Camp survivors from World War 2. A third data gap area concerns the military population in Guam, for which little data are available outside of the military health system.

Some existing data are limited in scope and do not represent population data. In addition, stakeholders expressed concerns about the inaccessibility of data, and specifically indicated the advantages of having a centralized electronic database that would enable access for all agencies and data users. Other expressed data needs included the desirability of having an NCD registry, geospatial data for health issues and hazardous risk exposures, a detailed inventory of medical services available on island and data on enforcement and compliance with health policies and legislation.

DPHSS and its partners will need to assess how best to address these data gaps and data needs as it configures its strategic plan of action and the CHIP in the near future.

Conclusion and Recommendations

This report provides a baseline health profile for Guam and documents the process for selection of community health priorities, which will serve as the starting point for a continuous community health improvement strategic planning process. Throughout the report, whenever data was available, health indicators were linked to social determinants, particularly sex, age, educational attainment, income and ethnicity/race. The findings confirm the intrinsic interrelationship of socio-economic status with health outcomes, and argue for the use of an "equity lens" during the strategic planning process. The results also underline the critical importance of redressing the greater social inequities that lead to poorer health. Towards this end, Guam should explore recent developments in enhancing health care access for the socially and economically disadvantaged, such as the Affordable Health Care Act, to initiate the process of narrowing the disparities that lead to poorer health outcomes. The data in this profile also indicate which population subgroups are most vulnerable for specific health behaviors and health outcomes, and point the way forward for prioritizing the highest risk groups.

The discussions that resulted from a review of the data highlight the linkages of these various indicators, and call attention to the need for holistic and comprehensive solutions to improve health. At the same time, the data also provide compelling evidence that a significant proportion of ill health results from a relatively small number of common shared risk factors. Targeting evidence-based interventions to address this shared pool of risk factors would result in significant "wins" for public health. A large number of these risk factors are behavioral; the public health community in Guam should be tasked to explore innovative options to change population behavior effectively, through policy, other environmental interventions and effective advocacy that fully utilizes the potential of today's technology and news media.

The CHA process highlights key data challenges. Outside of the established population-based surveys, such as the BRFSS and YRBS, trend data are not always readily available, and data access can be difficult. Some program data are not available online, and not always included in widely circulated reports such as the Guam Statistical Yearbook. Additionally, data are not always disaggregated by ethnicity, age, sex and socio-economic status, so it is difficult to discern if disparities exist across diverse population sub-groups. For those data where disaggregation was done, significant disparities were revealed across socio-economic and ethnic groups. Specifically, non-Chamorro Micronesians appear to be at higher risk for numerous unhealthy behaviors and diseases, identifying them as a vulnerable group requiring particular attention for public health action. Thus the CHA process also guides the selection of specific populations who may require targeted health interventions.

Finally, the CHA confirms the effectiveness of the community-based participatory process in engaging community partners in the health improvement cycle. The behavioral nature of needed interventions will require cross-sectoral approaches, and public health improvement will need to occur in multiple settings. Engaging critical community partners for the cross-sectoral, multi-setting strategies to improve health early on, in the planning process, ensures buy-in and participation during the developmental and implementation phases of public health improvement. It is anticipated that the data presented in this CHA report will support the succeeding phases to create and implement Guam's Community Health Improvement Plan, so that Guam will ultimately attain its vision:

> "All people of Guam will have access to affordable health care, choose to live a long, more productive life (body, mind and spirit) and live in a clean environment."

Acronyms

AIDS	Acquired Immunodeficiency Syndrome
BRFSS	Behavioral Risk Factor Surveillance System
CDC	US Centers for Disease Control and Prevention
CHA	Community Health Assessment
CHIP	Community Health Improvement Plan
CHIPs	Country Health Information Profiles
COPD	Chronic Obstructive Pulmonary Disease
CPS	Child Protective Services
CVD	Cardiovascular Disease
DPHSS	Department of Public Health and Social Services
FSM	Federated States of Micronesia
GBHWC	Guam Behavioral Health and Wellness Center
GED	General Educational Development
GMH	Guam Memorial Hospital
GPD	Guam Police Department
HIV	Human Immunodeficiency Virus
HP 2020	Healthy People 2020
HS	High School
NCD	Non-Communicable Diseases
NCHS	National Center for Health Statistics
NHPII	National Public Health Improvement Initiative
NVSS	National Vital Statistics System
PA	Physical Activity
PHAB	Public Health Accreditation Board
PIHOA	Pacific Island Health Officers' Association
PIM	Performance Improvement Management
SAMHSA	Substance Abuse and Mental Health Services Administration
STD	Sexually Transmitted Diseases
TB	Tuberculosis
UCR	Uniform Crime Report
VARO	Victims Advocates Reaching Out
WHO	World Health Organization
YRBS	Youth Risk Behavior Survey

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Annex 1: Community Stakeholders participating at the CHA Consultation Workshops

Last Name	First Name	Title	Organization
Aguon	Annette	Communicable Disease Control Coordinator Supervisor	Department of Public Health and Social Services
Aguon	Vince	Communicable Disease Control Coordinator I	Department of Public Health and Social Services
Alam	Lawrence	Program Coordinator IV	Department of Public Health and Social Services
Arcangel	Ma. Theresa	Administrator, Bureau of Health Care Financing Administration	Department of Public Health and Social Services
Bautista	Jenelyn	Intern, University of Guam	Department of Public Health and Social Services
Bell	Margaret	Program Coordinator IV	Department of Public Health and Social Services
Carbullido	Marlene	Administrator, Health Professional and Licensing Office	Department of Public Health and Social Services
Casil	Leo	Deputy Director	Department of Public Health and Social Services
Cate	Jessica	Program Coordinator IV	Department of Public Health and Social Services
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10 Essential Public Health Services

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. Assure a competent public and personal healthcare workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population based health services.
10. Research for new insights and innovative solutions to health problems.

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