

Trends in Chronic Diseases by Demographic Variables, Hawaii's Older Population, Hawaii Health Survey (HHS)

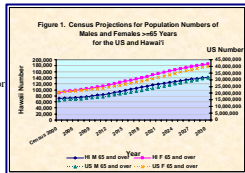
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Introduction

Hawaii's population over 265 is projected to increase along with the population of the United States as a whole (Figure 1). The state of Hawaii was ranked 16th in the nation in 2000 for the percentage of population 265 years. By the year 2010 it is projected Hawaii's rank will be 12th in the Nation. That is an increase in numbers of >30,000 people. By the year 2030 the Census projects that the increase in the population 265 for Hawaii will be over 160,000 people.

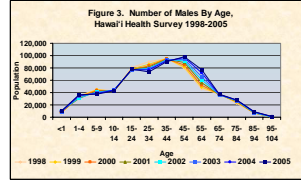
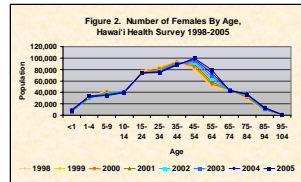
How does Hawaii fare with chronic disease? Will there be an increase burden of those suffering from a chronic disease? To answer this question data was analyzed from the Hawaii Health Survey, an annual telephone survey of Hawaii's people living in households with landlines. The years 1998-2005 were analyzed for trends in arthritis, asthma, diabetes, HBP, and HBC. Data included are from the adult respondent and also their answers for each household member. Hawaii has a multiethnic and multicultural society. Prevalence of chronic disease may vary by ethnicity. This will also be briefly presented.



Results - Age

Figures 2,3 present data by gender, age, and year from the HHS. The pattern illustrates that:

- Hawaii's population is aging
- The age group from 45-64 is increasing the fastest.



State	2006		2010		2030	
	Number	% of Total Population	Number	% of Total Population	Number	% of Total Population
United States	34,991,753	12.4	40,243,713	13.0	71,453,471	19.7
Hawaii	160,851	13.3	191,085	14.3	326,957	22.3
Increase in Population Numbers			30,484		166,576	
Percent Change from 2006 Population			+19.0%		+103.6%	

*U.S. Census Bureau, Population Division, Interim State Population Projections, 2005. Internal Release Only (IR) 1/1/2006. <http://www.census.gov/ipeds/data/states/projections/2005.html>. Downloaded October 16, 2007.

If the Census projected data are again examined. The actual percent change for 2010 and 2030 for the 265 population is:

- By 2010 19.0% percent increase from 2006.
- By 2030 103.6% percent increase by 2030.

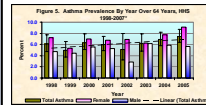
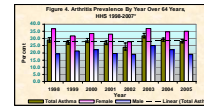
What does the increase in population mean for the prevalence of health conditions in the 265 population for the future when the 45-54 year old age group ages? First let us look at prevalence of health conditions.

Results -Disease

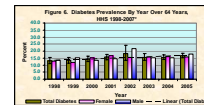
Health information presented includes both chronic conditions and risk factor information. The five health conditions include arthritis, asthma, diabetes, high blood pressure (HBP), and high blood cholesterol (HBC). The data have been age adjusted to the population of the US Census as Hawaii's population for the period of 1998-2005 is aging thus the trend information presented is an actual increase in prevalence not a result of aging of the population.

Are the chronic conditions and risk factor prevalence increasing over the period from 1998-2005 as measured by the HHS?

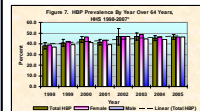
- Prevalence of arthritis in the 265 year population is not showing an increase.
- Prevalence is highest for the female population.



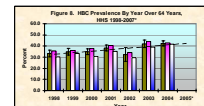
- The prevalence of asthma has increased from 1998 to 2005 (6.05 to 7.5%). However, the increase was not statistically significant (pairwise statistical comparison (a <0.05).
- Prevalence of asthma is highest among females.



- Among 265 years diabetes has increased from 1998 to 2005. The increase was statistically significant (pairwise statistical comparison at a <0.05).
- The prevalence of diabetes is similar for males and females.



- HBP has increased for both males and females from 1998 to 2005. The increase was statistically significant (pairwise statistical comparison at a <0.05).



- HBC has also increased for both males and females from 1998 to 2005. The increase was statistically significant (pairwise statistical comparison at a <0.05).

*Age and Gender adjusted to 65-74, 75-84, and 85-94 Years Variance Estimation Method, Taylor Series (WE)

- Prevalence of asthma, diabetes, HBP, and HBC are increasing in the 265 population of Hawaii.
- The female population may have a different pattern of increase when compared to the males.

Prevalence 2030?

What does the increase in population by Census projections suggest for prevalence of the selected health conditions in 2030?

By applying the prevalence proportion estimates from the HHS 2003-2005 average population by gender and age to the projections of the population by age and gender from the Census, estimates were calculated for the projected prevalence of the health conditions. All estimates are projected to almost double in numbers a percent increase of from 96.5 to 97.6%.

Variable	Arthritis	Asthma	Diabetes	HBP	HBC
Numbers	48,407	10,935	25,615	74,503	56,976
Percent	97.6	97.1	96.5	96.7	96.6

**Hawaii Health Survey (HHS)
DOH, OHSM**

Ethnicity Summary

Data was also examined by full and part ethnicity for the Hawaiian, Filipino, Japanese, and White population of Hawaii. There are distinct differences. Table 4 summarizes some of the highest increases in prevalence by full/part ethnicity. Please see our Web site listed below for further information.

Ethnicity	Full/Part	Condition	1998-2000	2003-2005
Hawaiian	Full	Diabetes	15.2	20.2
	Part	HBP	41.6	55.6
White	Part	HBC	29.2	36.3
	Part	HBP	41.5	52.2
Filipino	Part	HBC	28.3	37.1
	Part	HBP	39.1	56.4
Japanese	Part	HBC	33.5	46.1
	Part	HBP	41.1	52.8

It is projected that the population 265 years will increase in Hawaii but also the prevalence of selected health conditions. The numbers for projections for prevalence estimates for the year 2030 suggested here may be conservative as the increasing prevalence of asthma, diabetes, HBP, and HBC are not taken into account. In addition, patterns vary considerably by ethnicity.

Limitations:

- Prevalence for health conditions are self reported and proxy information for other than the respondent.
- Group quarters (hospitals, nursing, care homes), homeless, and households without telephones are not sampled.

Hawaii Health Survey

The Hawaii Health Survey, initiated in 1968, was originally modeled after the National Health Interview Survey as a "face to face" survey and became a telephone survey in 1996. It is implemented through the Hawaii Department of Health (DOH), Office of Health Status Monitoring (OHSM). SMS Research and Marketing Services Inc., Honolulu, does the actual telephone interviewing by a Computer Assisted Telephone Interviewing (CATI) system. By year sample includes over 6,000 adults with approximately 15,000 household members (Table 1). The survey response is approximately 50%. For further information please see the survey manual.

Population not surveyed includes households without telephones, homeless, group quarters, and the island of Ni'ihau. Sample data are weighted and adjusted using Census data, vital record data from OHSM, and proprietary information from SMS Research. Sample numbers are weighted to represent households, adults, or the population of Hawaii. Data are analyzed using SAS and SUDAAN taking into account the complex survey design.

Year	Sample	Response
1998	10,000	5,000
1999	10,000	5,000
2000	10,000	5,000
2001	10,000	5,000
2002	10,000	5,000
2003	10,000	5,000
2004	10,000	5,000
2005	10,000	5,000

Years 1998 through 2005 were analyzed to provide estimates on prevalence of selected chronic conditions of the population. The questions asked are roster questions: Has anyone in the household been told by a physician or medical professional that they have high cholesterol? Who are they? Information on ethnicity is provided by coding the responses to Of what ethnic background is household member's mother? Father? Over eight responses may be coded to determine whether the person is full or part ethnicity.

Literature Cited

¹US Census Bureau. State interim population projections by age and sex: 2004-2030. Washington DC: US Census Bureau; 2005. Available at <http://www.census.gov/population/www/projections/projectionsagesex.html>

U.S. Census Bureau. Ranking of States by Projected Percent of Population Age 65 and Older: 2000, 2010, and 2030. U.S. Census Bureau, Population Division, Interim State Population Projections, 2005. Internet Release April 1, 2005

²Hawaii Health Survey 2005 Survey Manual, Hawaii's Department of Health, Office of Health Status Monitoring. Prepared By SMS Research and Marketing Services, Inc. July 2005.

Projected State-Specific Increases in Self-Reported Doctor Diagnosed Arthritis and Arthritis Attributable Activity Limitations -- United States, 2005-2030. MMWR May 4, 2007 / Vol 56, No 17:423-425. www.cdc.gov/mmwr/preview/mmwrhtml/mm5617a3.htm

Acknowledgements

We would like to thank the people of Hawaii who kindly gave their time and information so that this survey is possible.

WEB/ Contact Information

For further information on the present subject and for more information on the Hawaii Health Survey please consult our Web address at:

<http://www.hawaii.gov/health/statistics/hhs/>