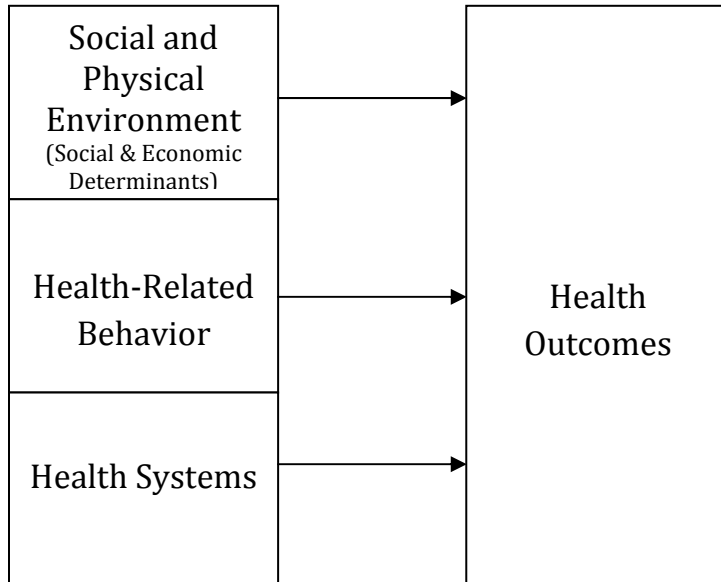


## Why are some populations healthier than others?

There is clear evidence of multiple influences on the health of populations in addition to biology. The graphic below (Figure 2) from the Institute of Medicine shows three major influences on population health, in addition to biology or genetic predisposition (IOM, 2009, page 5).

### FRAMEWORK OF INDICATOR DEVELOPMENT

Figure 2



Source: Institute of Medicine

There is increasing documentation of the multiple influences, or social and economic determinants of health, at both the individual and population levels. There is evidence for the influence on health from education, economic level, social support, and access to quality health care, especially to primary care.

*“Social and economic determinants of health refer to both specific features and pathways by which societal conditions affect health and that potentially can be altered by informed action” (Kreier, N. J Epidemiol Community Health, 2001).*



Team Building at Waipi'o Valley

## Education Positively Influences Health

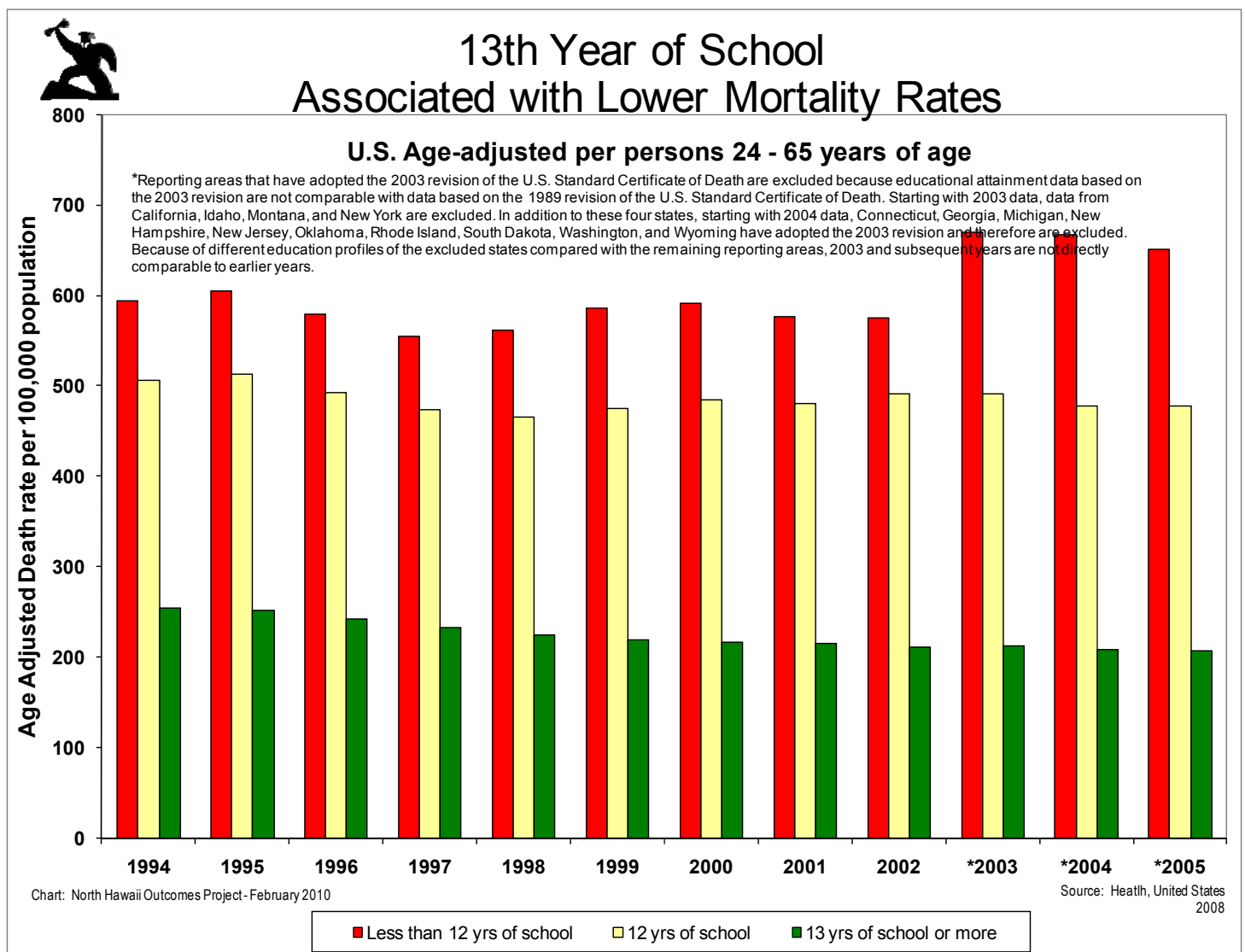
The 13<sup>th</sup> year of school graph below shows the health protective effect of the 13<sup>th</sup> year of school. A 13<sup>th</sup> year of school includes one year of college, military or vocational school. The data in Figure 3 is from the U.S. Census (1995-2005) for adults 24 – 65 years of age. Each year has the same pattern and shows that death rates are significantly lower for populations with a 13<sup>th</sup> year of school.

The red bar shows the death rate for U.S. people with less than 12 years of school, roughly 550 deaths per 100,000 age-adjusted population.

The yellow bar shows a decrease in the death rate to approximately 450 for the population with 12 years of school.

The lowest death rate occurs in the population with a 13<sup>th</sup> year of school as noted by the green bar. With the 13<sup>th</sup> year, death rates drop to approximately 200 per 100,000 age-adjusted U.S. populations.

Figure 3



## Hawaii Study Confirms Positive Influence of Early Education



A longitudinal study, *The Children of Kauai Resiliency and Recovery in Adolescent and Adulthood* by Werner (1992) showed that one of the most powerful predictors of successful adult adaptation among the high risk children of Kauai was effective reading skills by grade four. Conversely, inadequate reading skills by grade four were associated with risky behavior. See 3<sup>rd</sup> grade reading proficiency, [Figure 38](#) on page 21.

### **Implication:**

*Improving the health of the people in Hawaii County will require collaborating and mobilizing resources to support children to have effective reading skills by grade four, graduate from high school and complete at least a 13<sup>th</sup> year of school.*



Waimea Elementary School Youth

## Education Influences Income

Hawaii State data from the American Community Survey (2005-2007) shows as expected that Hawaii income increases as education level increases. It also shows the average income for different levels of education as noted in Figure 4.

This increase in income with education is similar to the U.S. although to a smaller extent as shown in Figure 5.

## Professional Education has Less Impact on Income in Hawaii

Figure 5 compares Hawaii State to the U.S. and shows that the impact of higher education on income in Hawaii is less than the impact of education for the U.S. as a whole. At the lower education levels, on average, Hawaii income is relatively higher than the U.S. However, at higher education levels, the average Hawaii income is relatively lower than the U.S. average. This may partly explain why Hawaii County has a shortage of doctors and healthcare professionals.

### **Implication:**

*Relatively lower income in Hawaii County for those with professional degrees is likely contributing to the growing healthcare professional workforce shortages.*

Figure 4

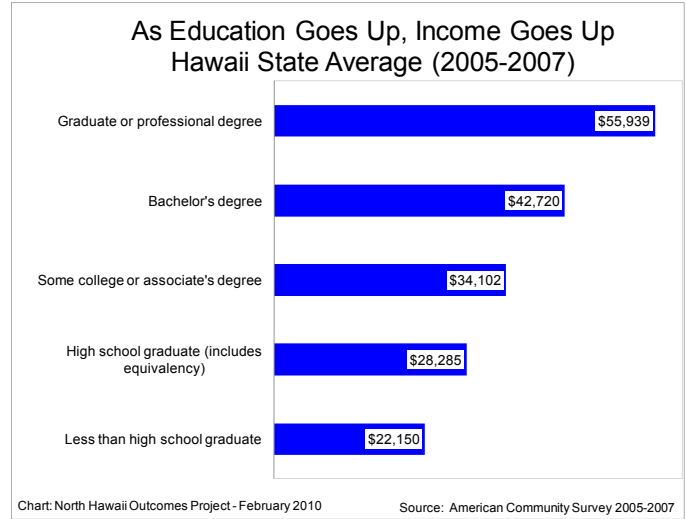


Figure 5

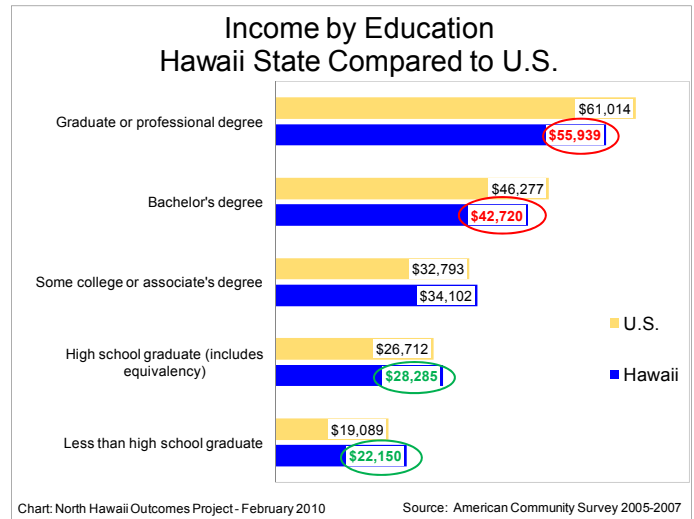


Figure 6

## Improving Access to Primary Healthcare



Source: Institute of Health Improvement, John Wasson, M.D.

## Income and Income Disparity (relative deprivation) Influence Health

The U.S. Census (2006) data in **Figure 7** shows the direct relationship between household income and self-reported health; as personal income goes up, poor health status goes down. It is likely that lower income impacts health through multiple paths including living conditions and opportunities for healthy behaviors, as well as access to quality healthcare.

## Wide Income Disparity is Associated with Poor Health

According to a study by Harvard and Johns Hopkins University (1999) researchers comparing the health of all the counties in the 50 U.S. states, there is strong correlation between counties with a large income disparity (**Figure 8** Gini coefficient) and counties with poor health. In that study, counties with a large income disparity had higher death rates overall as well as for stroke and infant mortality. **Figure 8** shows Hawaii County does have a larger income disparity and the health status section of this report shows Hawaii County has higher death rates overall and for stroke and infant mortality.

Figure 7

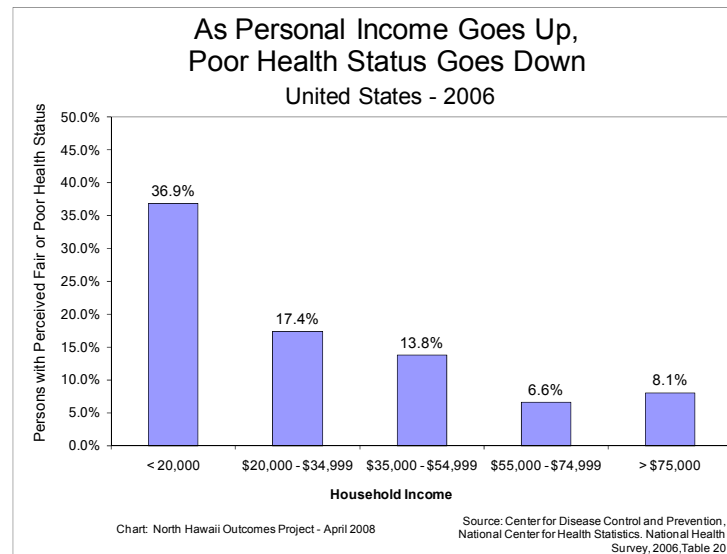
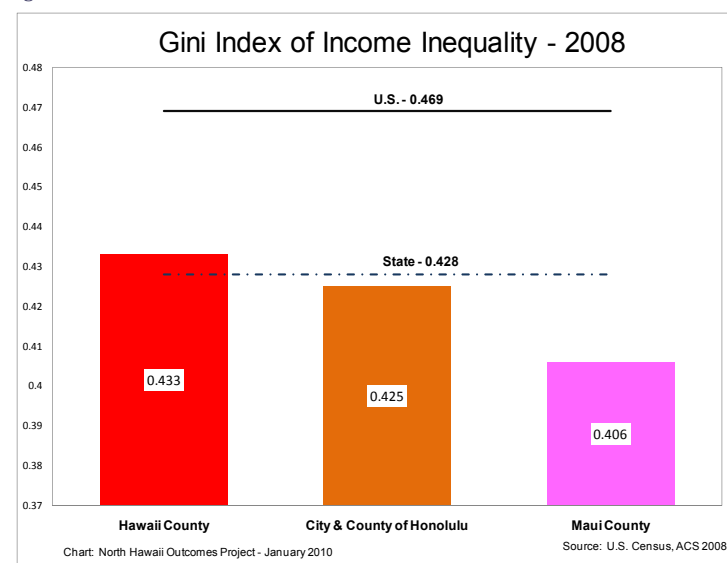


Figure 8



## Higher Rates of Primary Care Providers to Population Linked with Lower Death Rates

The same study clearly documented those counties with a higher ratio of primary care providers to the population reduced the impact of income disparity and were associated with lower death rates.

## Wide Income Disparity in Hawaii County

**Figure 9** shows variations in the percent of the population with income at or below 200% of federal poverty level.

Figure 9

