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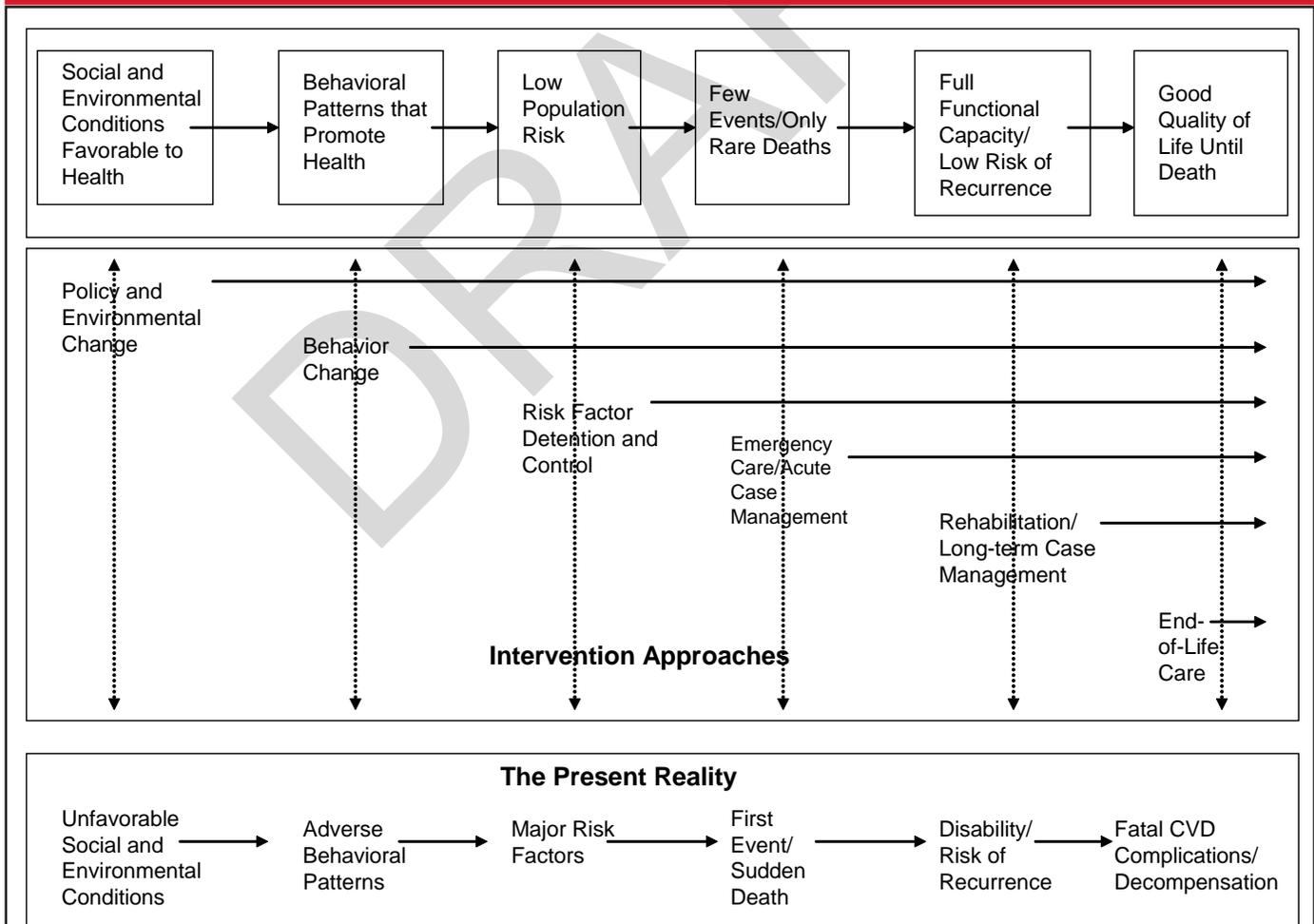


## Introduction

This document is a compilation of data available in Michigan and the United States for the purposes of guiding and informing the state plan, partnerships, interventions and evaluation plans. The data will be reviewed to identify trends and potential changes in program direction, to update and or modify program objectives, and to revise evaluation measures for the program and partners.

The use of a surveillance system model is a way to monitor the progress of the heart disease and stroke programs and to identify gaps in data and programs that should be filled. Michigan is currently using the model based on the work done by Goff et al and can be seen in Figure 1. Heart disease and stroke are complex diseases that have multiple risk factors and a long occurrence time. Therefore, there are many approaches that can be taken through out the time line from prevention to rehabilitation and it is crucial to document and track the progress being made.

Figure 1. Cardiovascular disease surveillance model.



Source: Goff DC, Jr et al. Essential Features of a Surveillance System to Support the Prevention and Management of Heart Disease and Stroke: A Scientific Statement From the American Heart Association Councils on Epidemiology and Prevention, Stroke, and Cardiovascular Nursing and the Interdisciplinary Working Groups on Quality of Care and Outcomes Research and Atherosclerotic Peripheral Vascular Disease. *Circulation*. 2007;115:127-155.

# Impact of Heart Disease and Stroke in Michigan



The Centers for Disease Control and Prevention (CDC) has identified 6 priority areas of focus for all state funded Heart Disease and Stroke Programs. Those areas are as follows:

- Increase the number of people who have high blood pressure under control.
- Increase the number of people who have total blood cholesterol less than 200 mg/dL.
- Increase the number of people who know the risk factors and signs and symptoms for heart disease and stroke and the importance of calling 9-1-1.
- Improve emergency responses.
- Improve quality of heart disease and stroke care.
- Eliminate disparities in terms of race, ethnicity, gender, geography, or socioeconomic status.

Some of the strategies to prevent heart disease and stroke and reduce health disparities are:

- Education
- Policy/system changes, and
- Environmental supports.

The Michigan Heart Disease and Stroke Prevention Unit works within the identified focus areas to meet the CDC grant expectations.

MORE TO COME.....



## Overview of Michigan

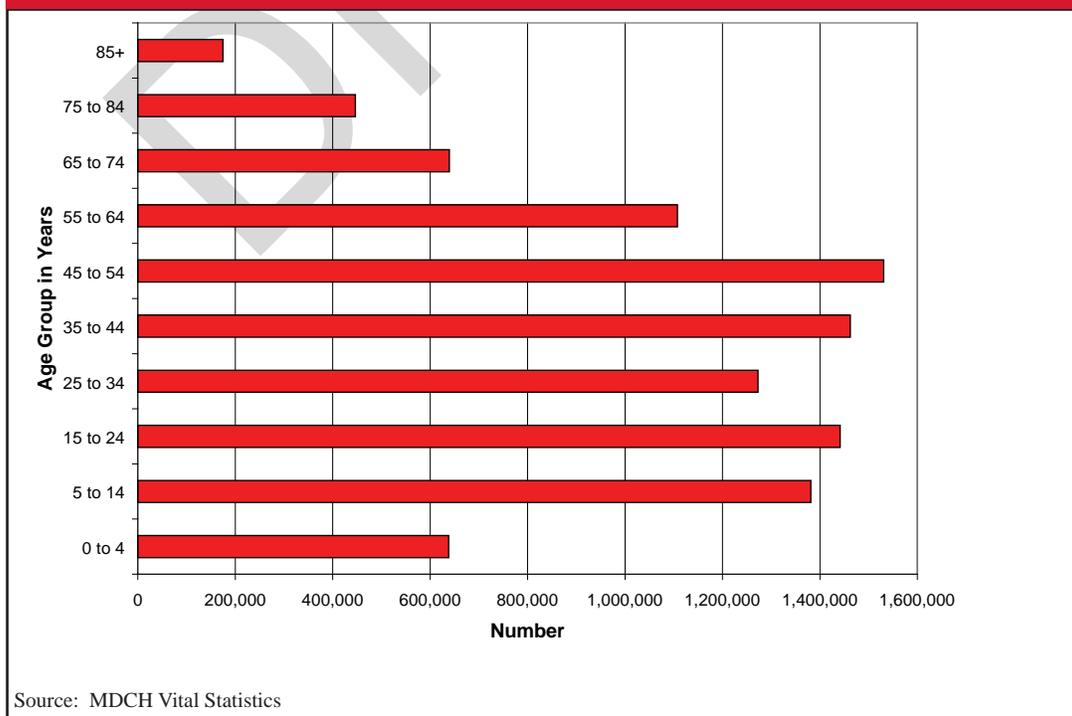
### Demographics

In 2006, the total population in Michigan was 10,095,643 and was the 8<sup>th</sup> most populated state. Females comprise more than half (50.8%) of the population and 81.2% are white (figure 2). The median age was 37.3 (figure 3) which was above the national median, 36.4. In 2006, 12.5% of the population was 65 years of age and above but by the year 2020 it is projected to be 16.8%. The median household income in 2006 was \$47,182 and 13.5% of individuals were below the poverty level. As of 2006, 87.2% of Michigan residents, 25 years of age and above, had received a high school diploma and 24.5% a bachelor's degree or higher.

Figure 2. Race and ethnicity of Michigan residents, 2006.

Race	Number	Percent (%)
White	8,026,545	79.5
African American/Black	1,426,809	14.1
American Indian or Alaska Native	50,474	0.5
Asian	236,972	2.3
Native Hawaiian and Other Pacific Islander	1,423	0.0
Other Race	174,476	1.7

Figure 3. Age of Michigan residents, 2006.



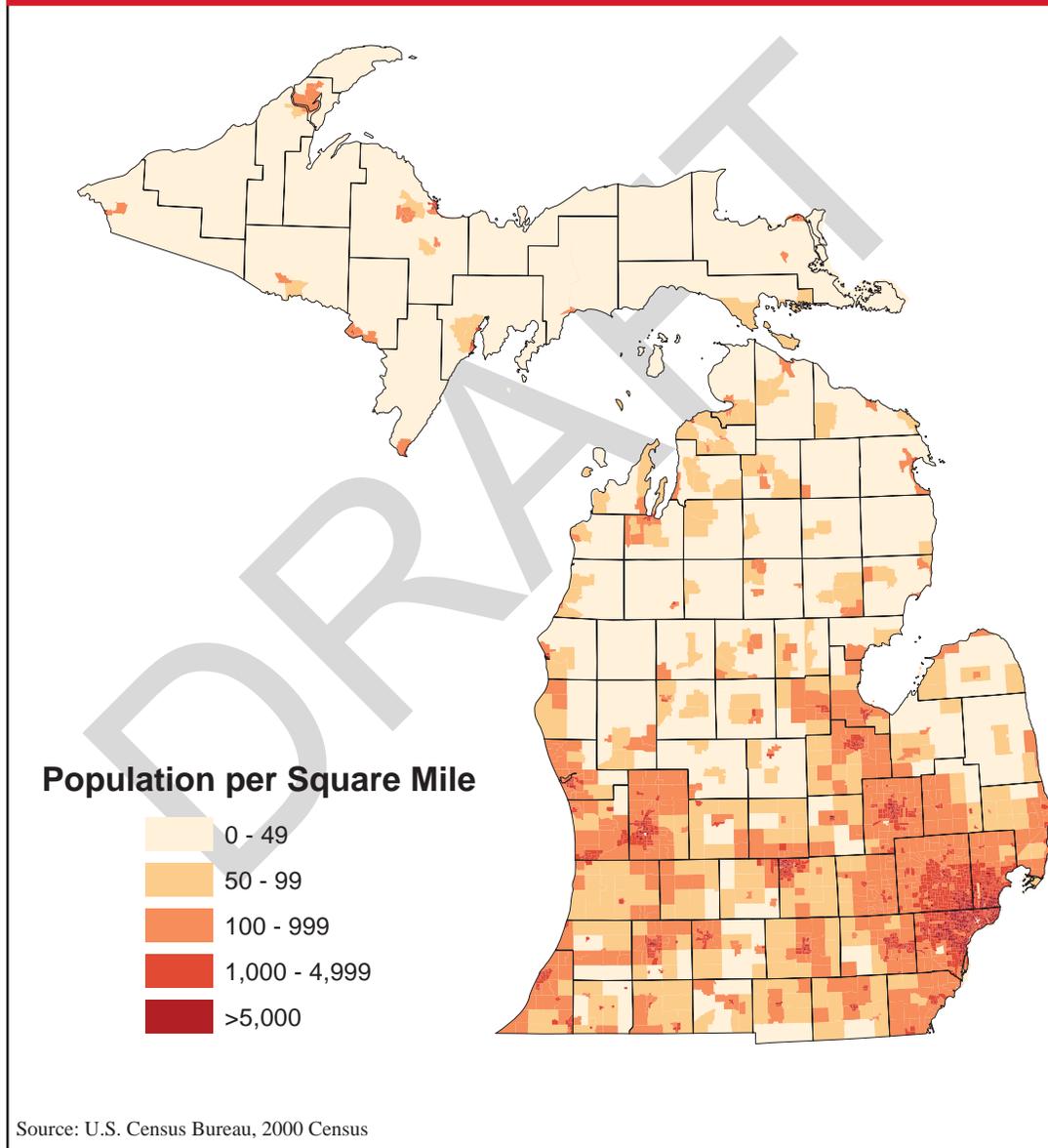
# Impact of Heart Disease and Stroke in Michigan



## Geography

Michigan consists of 2 peninsulas and covers 56,803.82 square miles. The Upper Peninsula is sparsely populated with only 312,153 residents or 3.09% of Michigan's total population. (figure 4) The largest city in Michigan is Detroit, located in the southeast, with 871,121 residents.

Figure 4. Population density map of Michigan, 2000 census tract population per square mile.





## *Insurance*

The 2007 Michigan Behavioral Risk Factor Survey preliminary results found that 14.4% of adults aged 18-64 and 1.0% aged 65+ reported having no health care coverage. This proportion changed with race; blacks, 18.6%, were more likely to have no insurance than whites, 13.6%. There were even more individuals who reported not having a personal health care provider, a total of 15.0%. The survey also assessed if there was a time in the last 12 months that residents needed health care, but due to cost, were unable to receive care. This was the case for 13.3% of adults aged 18-64 and 3.7% aged 65+.

Prevalence of residents in Michigan using Medicaid insurance was asked in the 2007 Michigan BRFS survey and 11% reported using it. This figure varied the most by race, 8.1% of whites were on Medicaid whereas 24.8% and 18.3% of blacks and other were enrolled.

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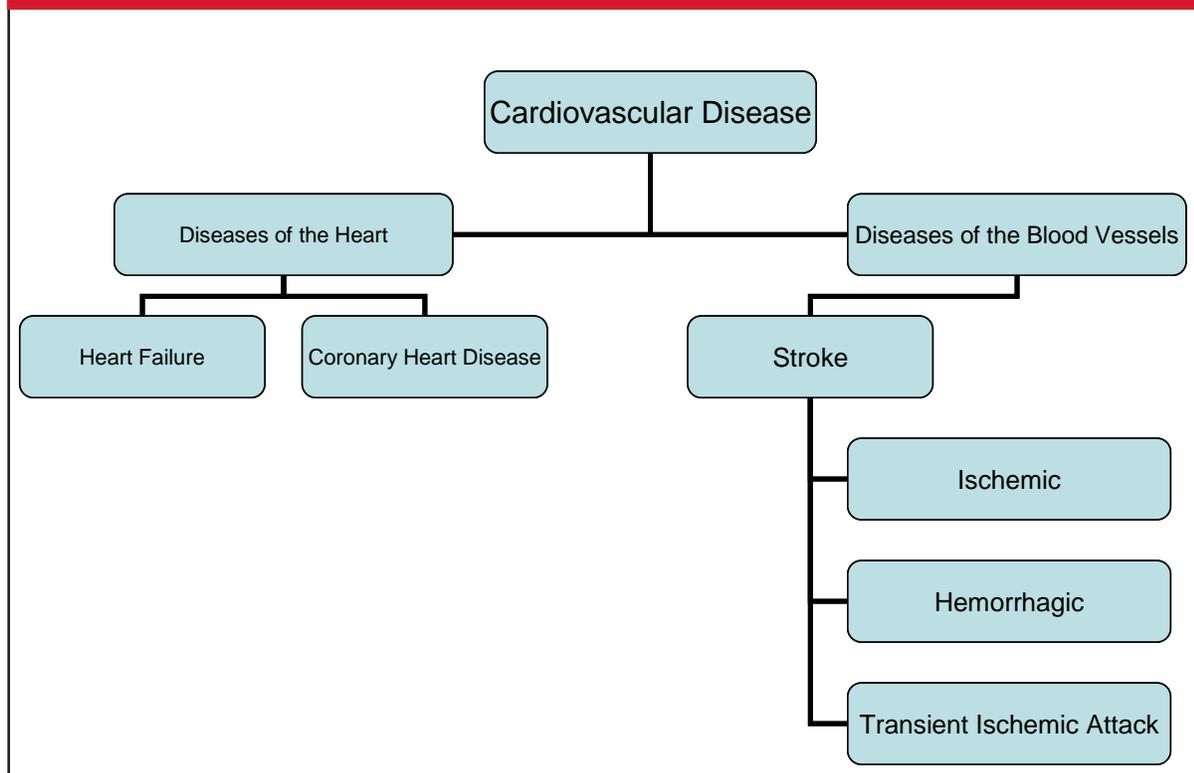
## Cardiovascular Disease

### *What is cardiovascular disease and why is it important?*

Cardiovascular disease refers to diseases that affect both the heart and blood vessels. Diseases of the heart include coronary heart disease, heart failure, sudden cardiac death and hypertensive heart disease, whereas stroke, atherosclerosis and hypertension are diseases of the blood vessels (figure 5).

One in three American adults or an estimated 80.7 million have one or more types of cardiovascular disease (AHA 2008 update). In 2008, it is estimated that the total direct and indirect cost due CVD in the United States will total \$448.5 billion (AHA 2008 update).

Figure 5. A flow chart of cardiovascular disease and the diseases it represents.



# Impact of Heart Disease and Stroke in Michigan

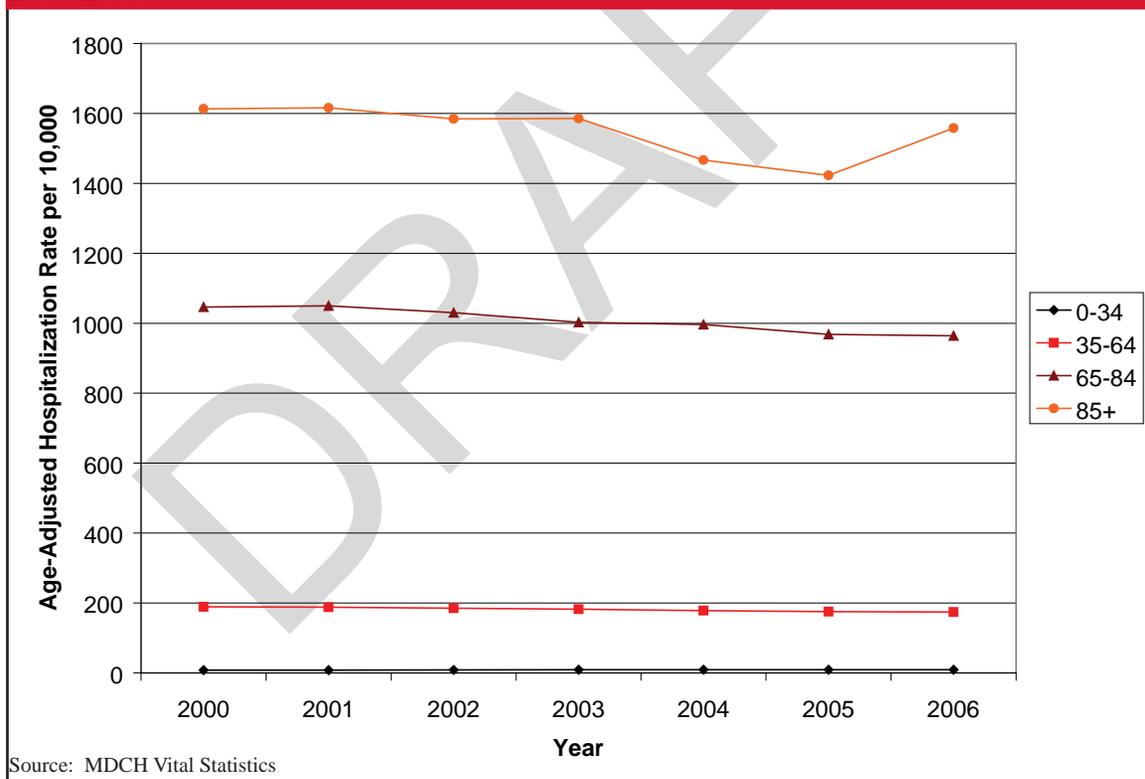


## *What is the scope of the problem?*

### *Hospitalizations*

The hospitalization rate for cardiovascular disease has decreased over the past 7 years from 217.5 per 10,000 in 2000 to 202.5 per 10,000 in 2006. However, in 2006 there were still over 200,000 hospital discharges with cardiovascular disease codes in Michigan and over 5 million throughout the United States in 2005.

Figure 6. Age-adjusted hospitalization rate for cardiovascular disease for Michigan, 2000-2006.



The majority of CVD hospital discharges, 64.3%, are to their home or self care but 14.7% and 8.5% are discharged to a home under home health services and nursing facilities respectively. Unfortunately in 2006 there were over 6,000 or 2.9% that were in-hospital deaths.

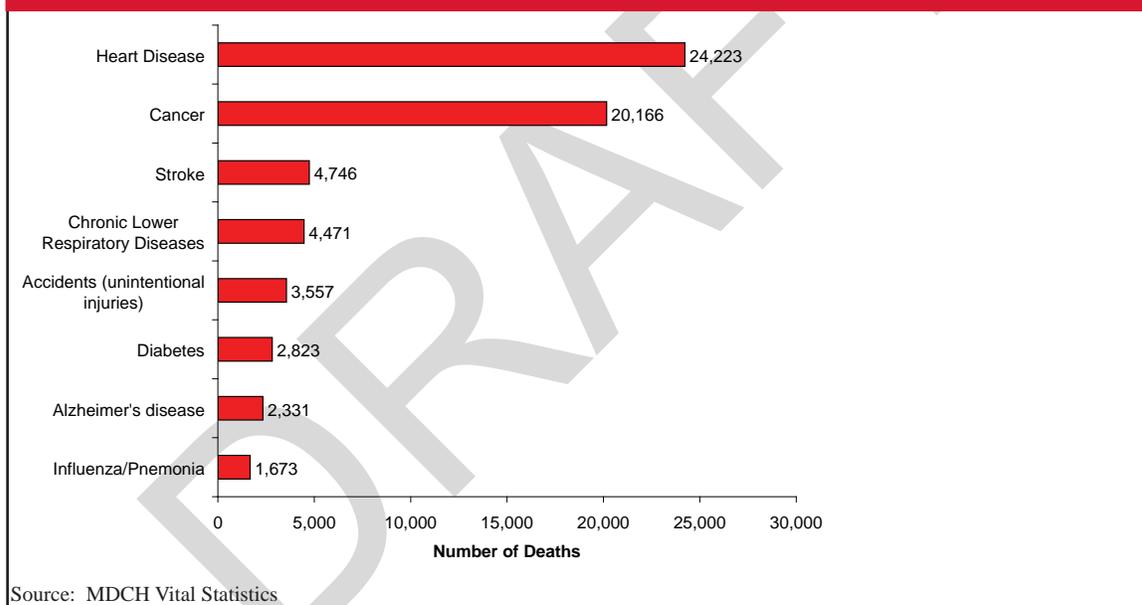
# Impact of Heart Disease and Stroke in Michigan



## *Mortality*

Cardiovascular disease is the number one cause of death in Michigan. In 2006, it was responsible for 36.1% of the deaths in Michigan; of that, 78% were due to heart disease and 15.3% were caused by stroke. Heart disease and stroke are the first and third causes of death in Michigan when they are not combined under cardiovascular disease, with cancer being the second leading cause of death (figure X).

Figure X. Leading causes of death in Michigan, 2006.

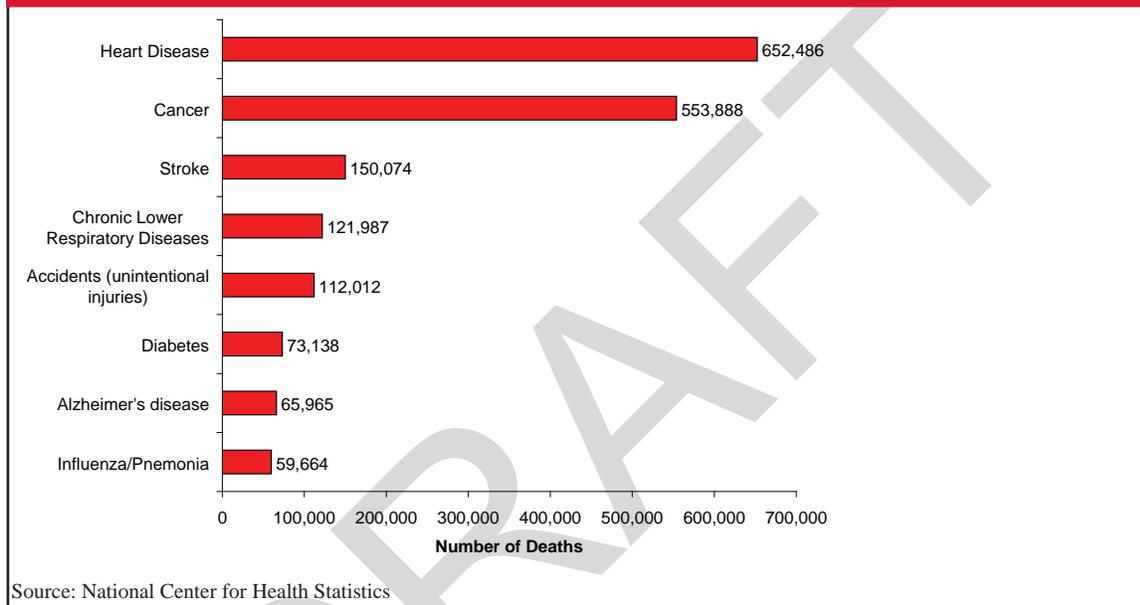


# Impact of Heart Disease and Stroke in Michigan



Cardiovascular disease is also the number one cause of death nationally and has been every year since 1900, except in 1918 during the influenza pandemic (AHA 2008 statistical update). The leading causes of death and their ranks are the same as Michigan with heart disease, cancer and stroke being the top three causes (figure X)

Figure X. Leading causes of death in the United States, 2004.

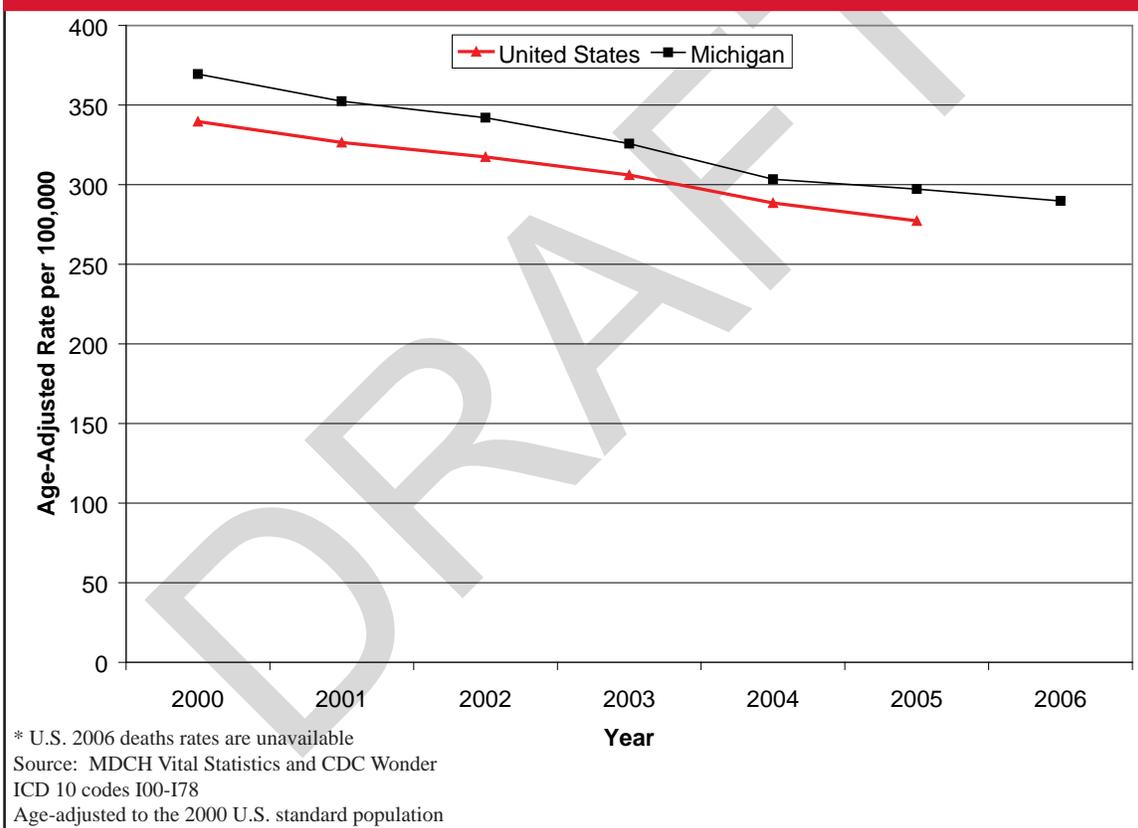


# Impact of Heart Disease and Stroke in Michigan



Death rates due to CVD have been declining for a number of years. However, the death rate of CVD for Michigan is still well above the national rate. In 2005, the CVD age-adjusted mortality rate was 297.2 per 100,000 people (figure 2). The rate for the United States was 277.3 per 100,000 people in the same year.

Figure X. Age-adjusted mortality rates for cardiovascular disease for Michigan and United States, 2000-2006\*.

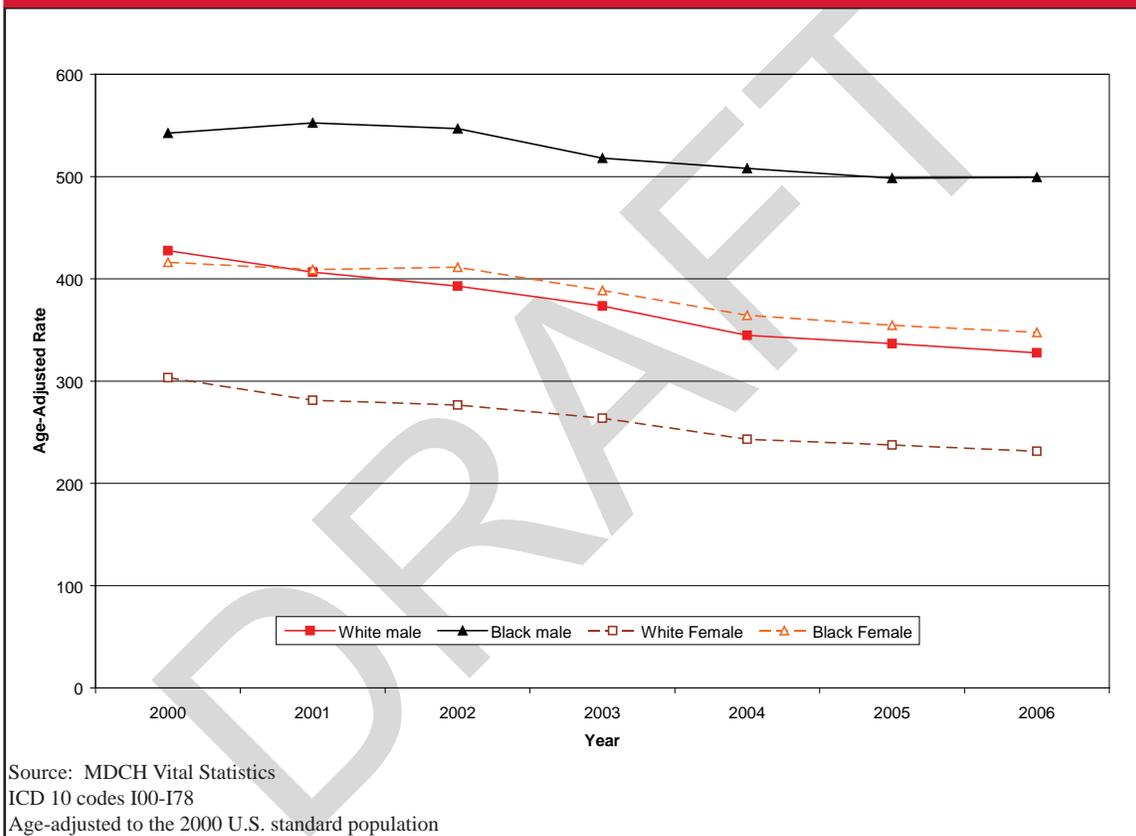


# Impact of Heart Disease and Stroke in Michigan



Black males have the highest age-adjusted mortality rate, 499.4 per 100,000, when compared to the other gender and races. The lowest rate is found in white females, 231.3 per 100,000 (Figure X).

Figure X. Age-adjusted mortality rates by race and gender for cardiovascular disease for Michigan, 2000-2006.



## Get With the Guidelines

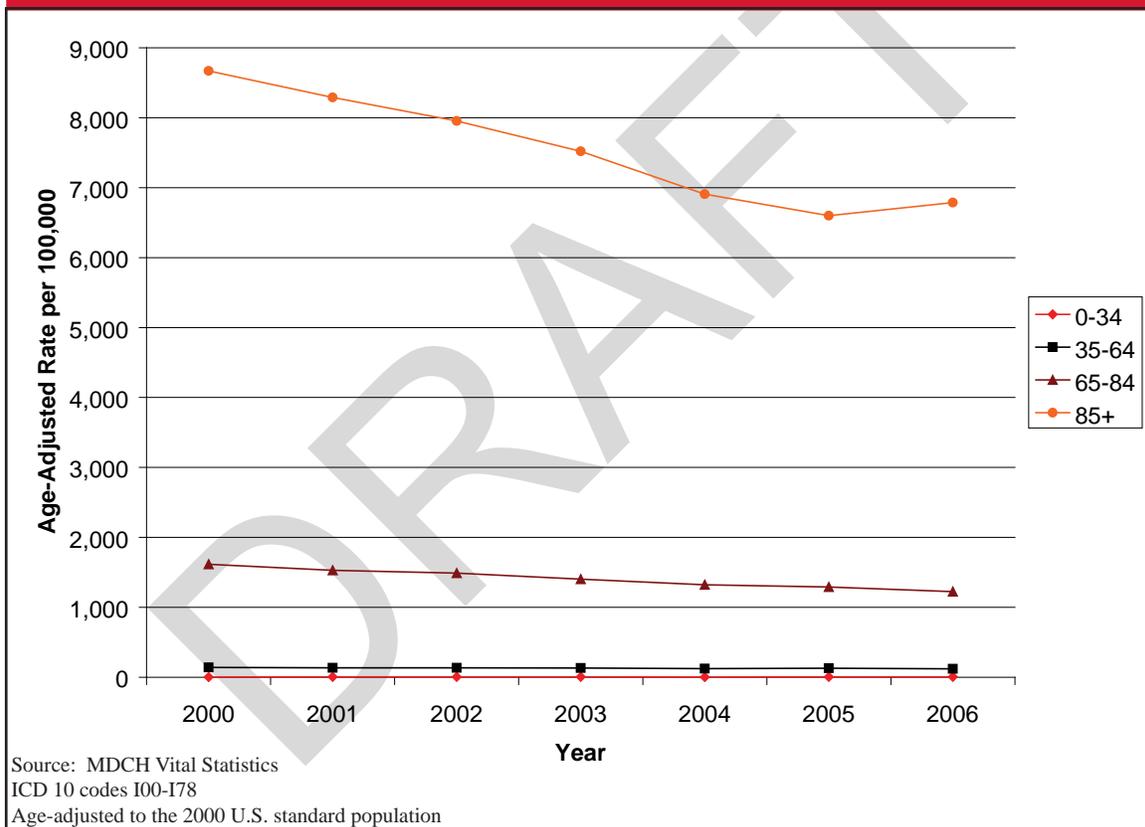
Get With the Guidelines (GWTG)<sup>SM</sup> is a hospital data reporting and quality improvement program developed by the American Heart Association (AHA) in 2000. The AHA has three different GWTG modules: Stroke, Heart Failure (HF) and Coronary Heart Disease (CHD). Each module emphasizes using a team approach to implement evidence based treatment and discharge guidelines in acute care hospitals. Nationally more than 1,400 hospitals have participated reaching over one million patients. Michigan Department of Community Health started supporting hospital involvement in 2004, primarily in stroke and HF. Mini-grants are offered and in the 2007 CDC-funded Coverdell (stroke registry) grant, 23 hospitals were supported for GWTG stroke. Analysis from a previous Michigan Coverdell project showed significant improvement in stroke care when GWTG and quality improvement activities are supported. Quality of care increased as follows: smoking cessation by 31%, dysphagia screening by 19%, use of stroke scale by 19%, documentation of reasons for not using rt-PA by 13% and lastly documentation of dyslipidemia by 9%. In 2008 eleven GWTG HF mini-grants were awarded with an emphasis on reducing readmissions and improving the management of inpatients and post discharge.

# Impact of Heart Disease and Stroke in Michigan



Each age group has seen a decline in mortality rates with the exception of the 0-34 year olds who have remained steady between 4.1 and 5.4 per 100,000. There has been a 21.7% decrease in age-adjusted mortality rates for the 85+ age group in the last 7 years (Figure X).

Figure X. Age-adjusted mortality rates by age for cardiovascular disease for Michigan, 2000-2006.



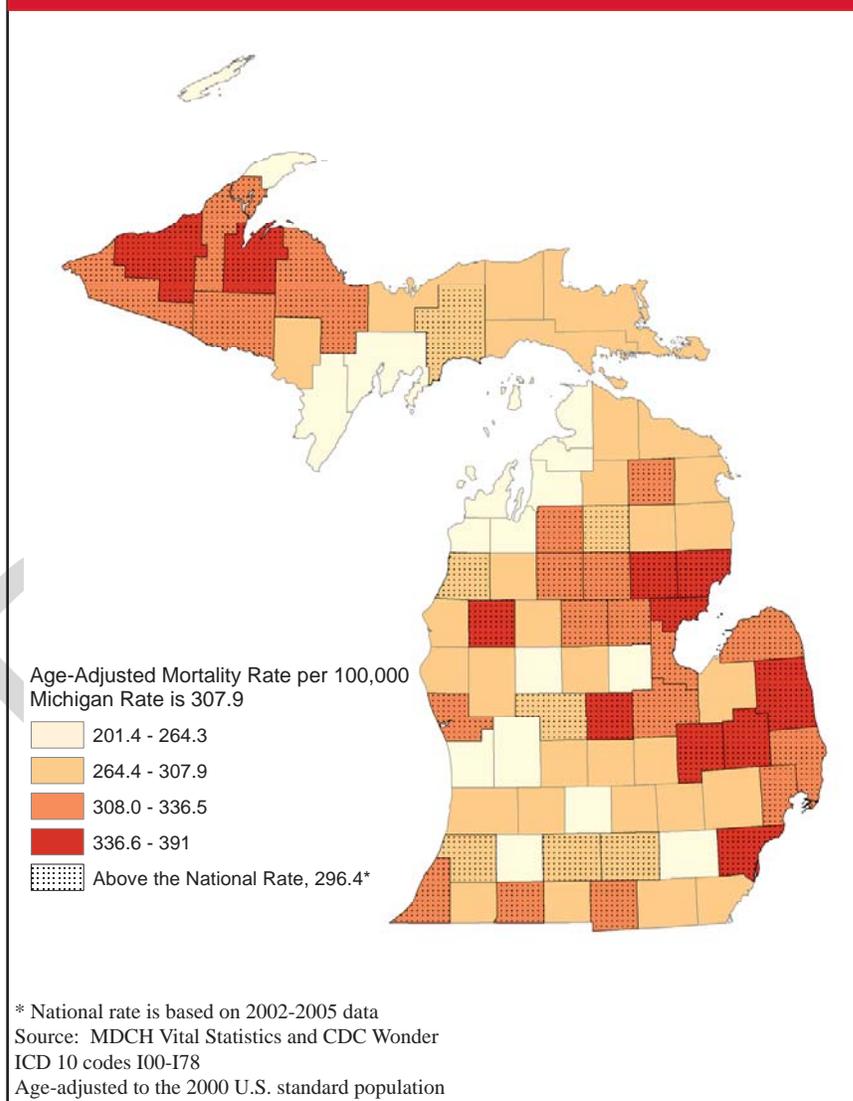
# Impact of Heart Disease and Stroke in Michigan



## Regional Distribution

The age-adjusted CVD mortality rate in Michigan from 2002-2006 was 307.9 per 100,000 people. There are 30 counties that have rates above this with Wayne (376), Ogemaw (383) and Sanilac (390.2) having the highest 5 year age-adjusted rates. There are 37 counties above the national rate, 296.4 per 100,000 people and 7 of them were below the state rate. The lowest rates were found in Leelanau (201.4) and Ottawa (227.5). See appendix X for a listing of all county rates.

Figure X. Age-adjusted 5 year mortality rates for cardiovascular disease by county, 2002-2006.





## Risk Factors

The American Heart Association has identified six modifiable risk factors for heart disease and stroke. The six risk factors are cigarette smoking, physical inactivity, high blood pressure, high blood cholesterol, obesity and overweight, and diabetes mellitus. Each of these risk factors can be changed, treated or controlled through medication or lifestyle changes. (americanheart.org)

## Cigarette Smoking

### *Why is it important?*

Cigarette smoking is the most preventable cause of premature death in the United States, accounting for more than 400,000 deaths a year or approximately 1 in 5 deaths ([http://www.cdc.gov/tobacco/data\\_statistics/Factsheets/tobacco\\_related\\_mortality.htm](http://www.cdc.gov/tobacco/data_statistics/Factsheets/tobacco_related_mortality.htm)). Cigarette smoking has a strong affect on the circulatory system causing a narrowing of the blood vessels (americanheart.org). People who smoke cigarettes are 2-4 times more likely to develop coronary heart disease and have twice the risk for stroke ([http://www.cdc.gov/tobacco/health\\_effects/heart.htm](http://www.cdc.gov/tobacco/health_effects/heart.htm)).

It is estimated that smoking costs \$167 billion in direct medical costs (\$75.5 billion) and lost productivity (\$92 billion) in the United States each year (AHA 2008 Update).

### *What is the scope of the problem?*

In Michigan and the United States there has been a slight decline in the prevalence of smokers from 2001 to 2007. In Michigan there was a 19.2% decrease in the 6 year period, where the U.S. decreased 14.0% (Figure X). Preliminary survey results from the 2007 Michigan BRFs show that men (23.5%), whites (21.5%) and 18-34 year olds (28.8%) have the highest smoking rates.

Michigan had the 35th best smoking rate in the United States or the 16th worst, including Washington D.C., in 2007.

Twenty-five percent of current smokers reported having no health care coverage in the Michigan BRFs. This number is well above the state prevalence, 14.4%, and the non-smokers prevalence, 8.6%.

### **Secondhand Smoke and Heart Disease**

Secondhand smoke is estimated to cause from 750 to 2,300 premature deaths from heart disease each year in Michigan among nonsmokers. Nonsmokers who are exposed to secondhand smoke regularly at home or at work increase their risk of developing heart disease by 25-30%. Secondhand smoke interferes with the normal functioning of the heart, blood and vascular systems. Even a short time in a smoky room can cause the blood platelets to become stickier, damage the lining of blood vessels, decrease coronary flow velocity reserves and reduce heart rate variability, potentially increasing the risk of heart attack.

The current Surgeon General's Report concluded that scientific evidence indicates that there is no risk-free level of exposure to second hand smoke, and the Centers for Disease Control and Prevention advise individuals with heart disease to avoid indoor settings with exposure to secondhand smoke. The implementation of comprehensive smoke-free policies helps to protect the health of non-smokers, and it also helps to encourage current smokers to quit smoking.



Figure X. Prevalence of current cigarette smoking use among adults, 18 and over, in Michigan and United States, 2001-2007.

