

*Michigan Department  
of Community Health*



Jennifer M. Granholm, Governor  
Janet Olszewski, Director



# Michigan Chronic Disease Map Portfolio

A Collection of Geographic  
Information System (GIS) Maps Developed  
by a Chronic Disease GIS Team at the  
Michigan Department of Community Health

September 2009

The purpose of this document is to share maps that have been developed by a Michigan chronic disease Geographic Information System (GIS) team. This work is a product of funding and training in a grant offered by the CDC Division for Heart Disease and Stroke Prevention, National Association of Chronic Disease Directors and the Children's Environmental Health Initiative at Duke University. The project and trainings were offered from 2007- 2009 and it focused on building state health departments' capacity and work products in GIS focusing on chronic disease, heart disease, and stroke.

The maps included in this Portfolio are a reflection of the range of work done during this grant period. These are being shared to provide ideas for public health colleagues. The maps included are considered living documents that change with new questions and data; then are revised or updated as relevant. Each map in this portfolio has an explanation of the original question that led to the development of the map, data sources for the map, and how the map was used in program planning and/or evaluation. To check to see if a more recent version is available, contact the author of the map whose information is listed below.

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Maps reflect a range of data such as mortality, hospitalization, behavioral, program, and survey data.

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Website hosting this portfolio: [www.michigan.gov/CVH](http://www.michigan.gov/CVH) on the "What's New" page.

September 2009

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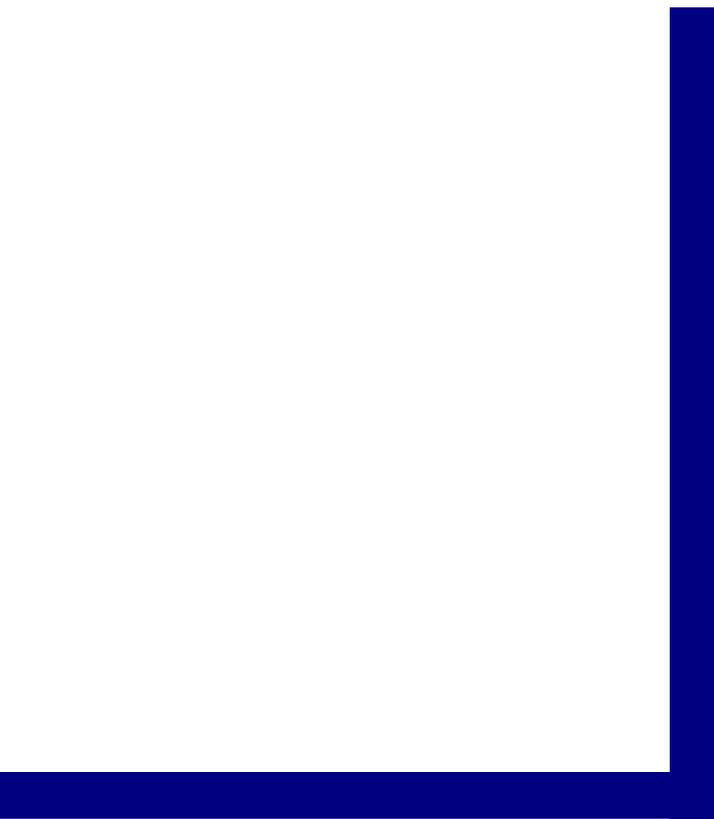
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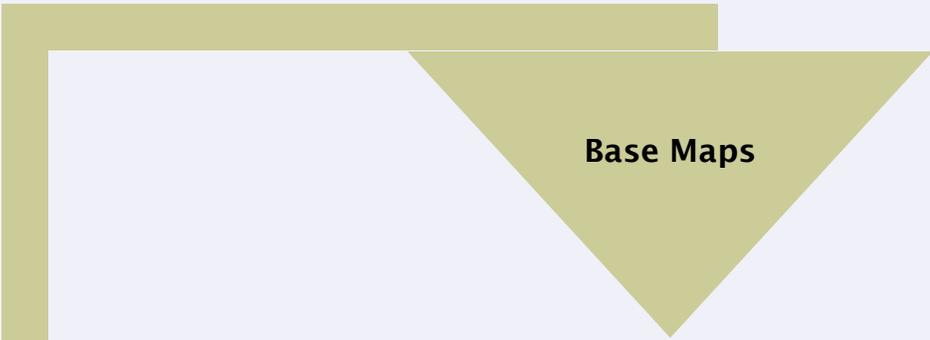
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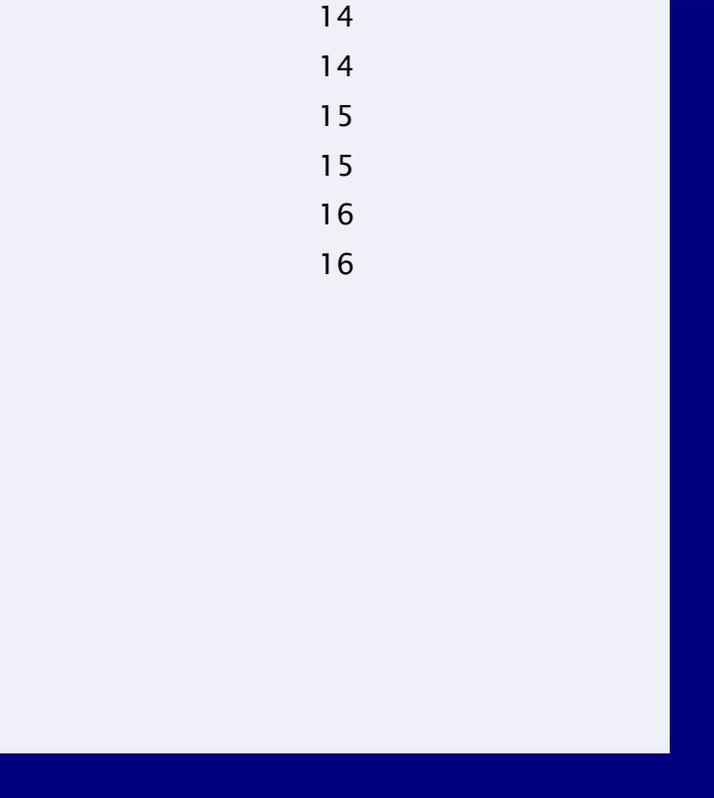
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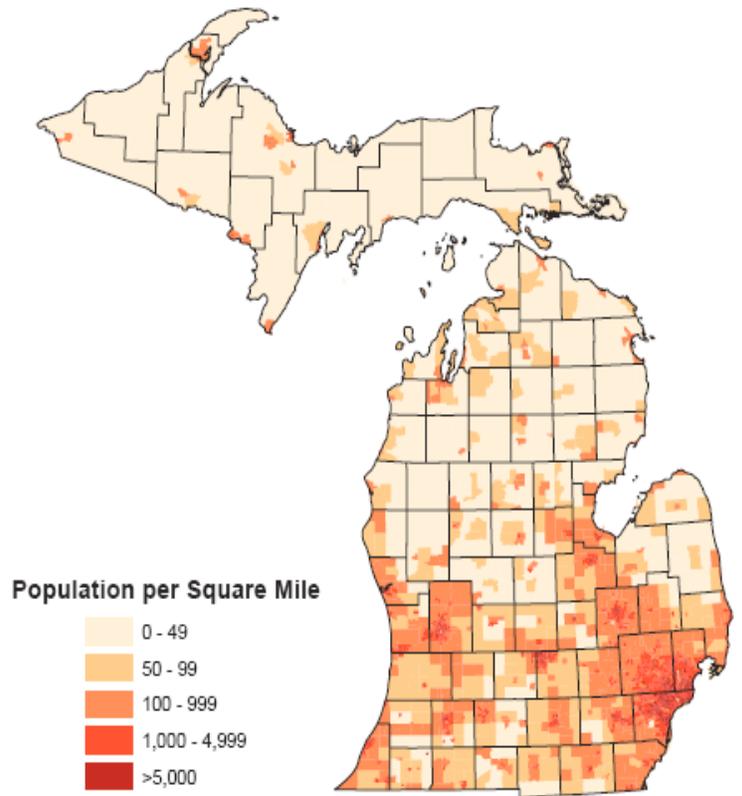
## Population Density

**Author:** Beth Anderson    **Date:** 2008

**Question:** What is the population per square mile in Michigan?

**Data Source:** U.S. Census, 2000.

**Interpretation/Use:** This map was created to see where the majority of people live in Michigan. It can be used in combination with other data such as medical resource locations.



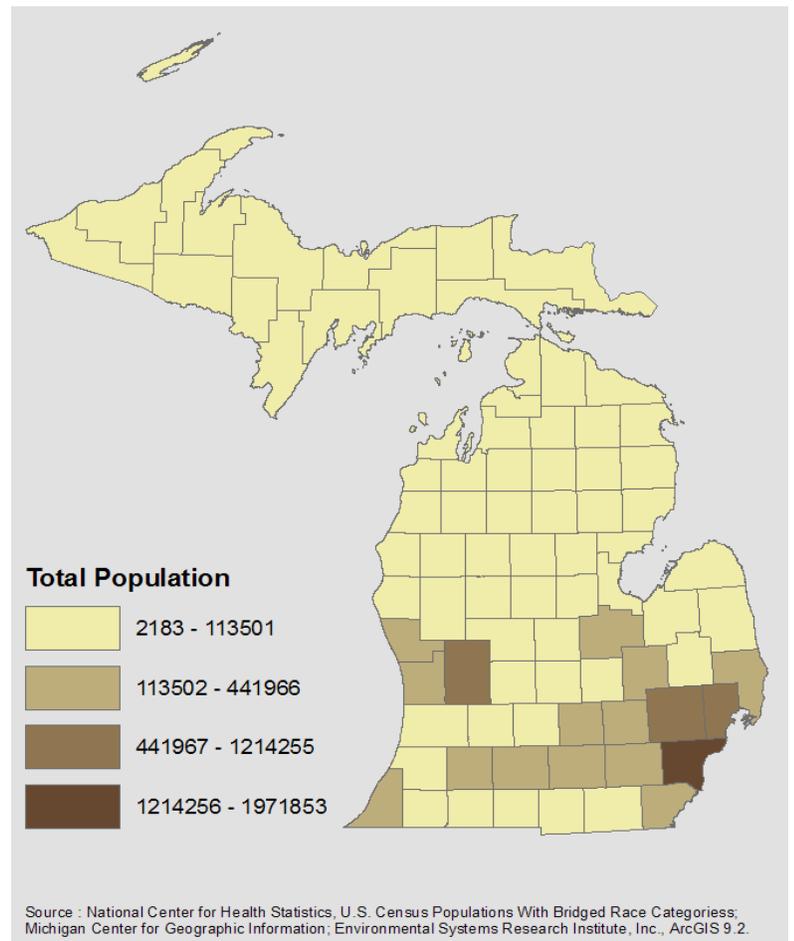
## Population Estimates by County

**Author:** Rey Bouknight II    **Date:** 2007

**Question:** What counties have a higher population?

**Data Source:** NCHS, U.S. Census, 2000.

**Interpretation/Use:** This early map was a first attempt to display larger population areas. This map has been replaced by others, such as the one above that shows more detailed information.



## Social Determinants—Urban Rural

Author: Mike Carr

Date: 2009

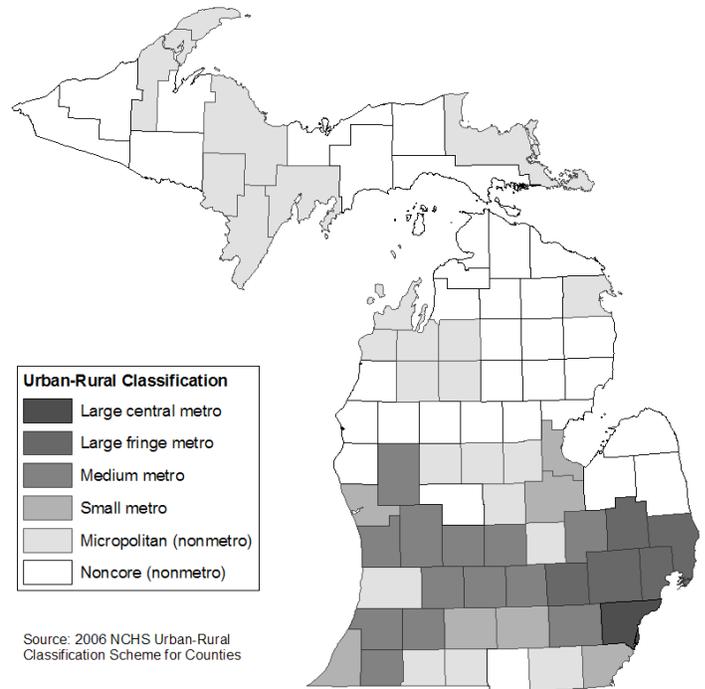
**Question:** Where are the urban versus the rural areas?

**Data Source:** NCHS Urban-Rural Classification Scheme for Counties, 2006.

**Interpretation/Use:** A basis for seeing rural areas and the opportunity for targeting programs.

## Social Determinants of Health: Urban-Rural

Urban - Rural Classification, 2006



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## Social Determinants—Age

Author: Mike Carr

Date: 2009

**Question:** What percent of the population is 65 and older?

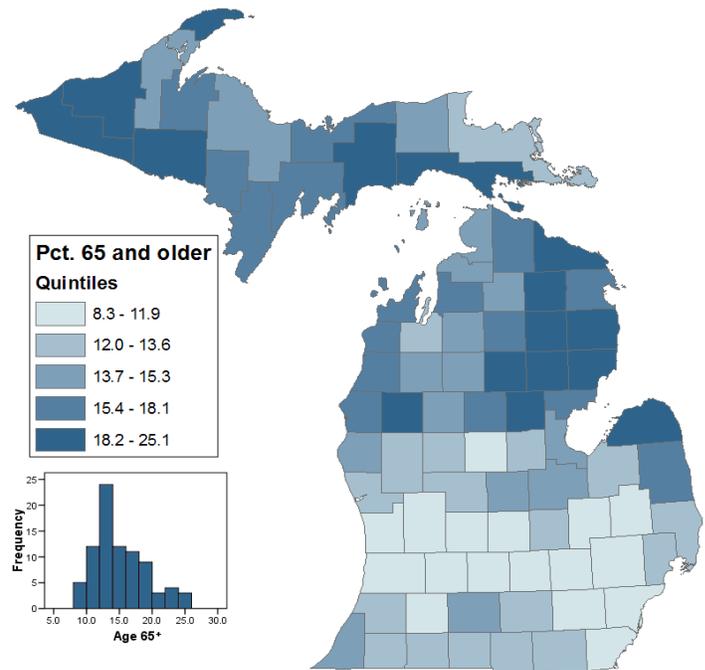
**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map is useful to see counties that have a higher percentage of older adults.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: Age

Percent of total population age 65 and older, 2002



Source: Area Resource File (ARF), 2005  
Bureau of Health Professions  
Used with permission.

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## Social Determinants—High School Education

Author: Mike Carr

Date: 2009

**Question:** What percent of population in counties (age 25+) have less than a high school education?

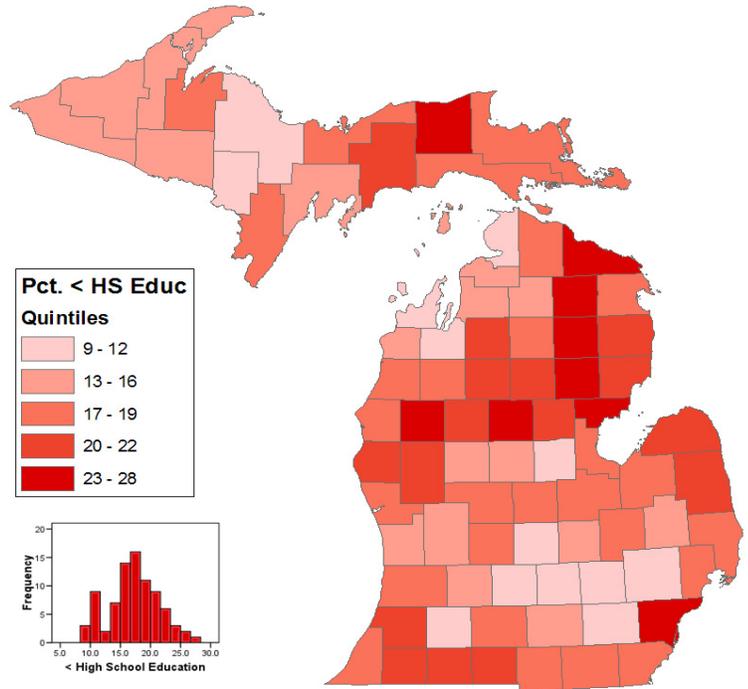
**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map identifies counties with a higher population without a high school education. The map can be helpful to programs to see where lower literacy materials/interventions are needed.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: High School Education

Percent of population age 25 and older with less than a high school education, 2004



Source: Area Resource File (ARF), 2005  
Bureau of Health Professions  
Used with permission.

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## Social Determinants—College Education

Author: Mike Carr

Date: 2009

**Question:** What percent of adults in the counties (age 25+) have less than 4 years of college?

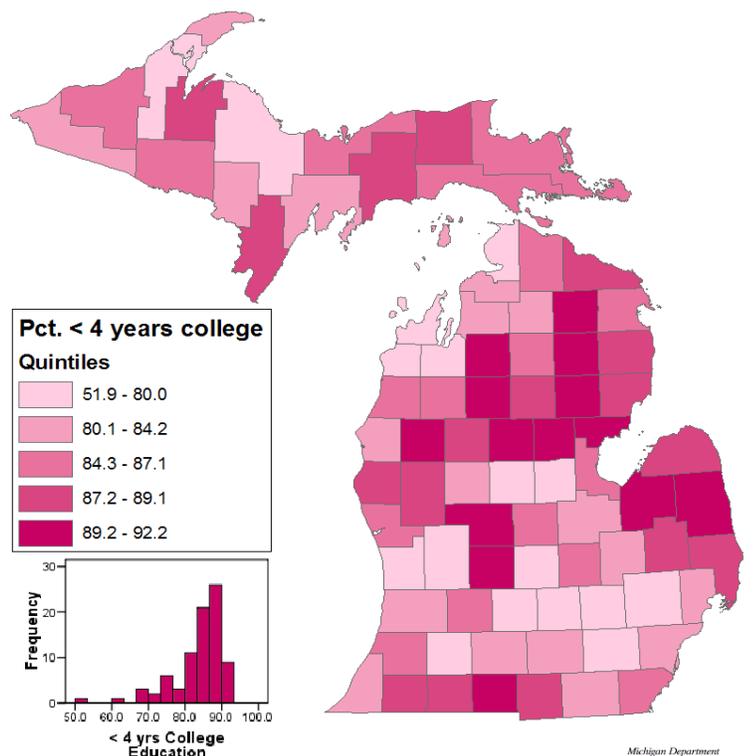
**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map identifies counties that have a higher percent of population with less than 4 years of college. Comparing this map to the High School Education map is useful.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: College Education

Percent of adults (25+) with less than 4 years of college, 2005



Source: Area Resource File (ARF), 2005  
Bureau of Health Professions  
Used with permission.

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## Social Determinants—Unemployment

Author: Mike Carr

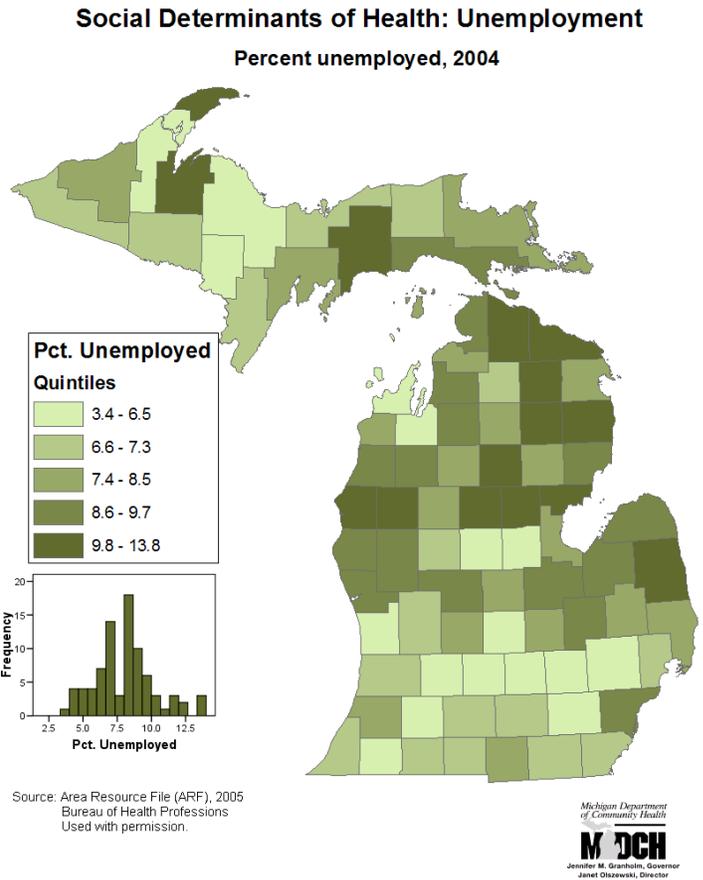
Date: 2009

**Question:** What percent of the population in counties is unemployed?

**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map shows counties with higher unemployment and is useful to look at areas of need especially when it is combined with other maps in the series.

The chart next to the map shows the range and distribution of data used in the map.



## Social Determinants—Uninsured

Author: Mike Carr

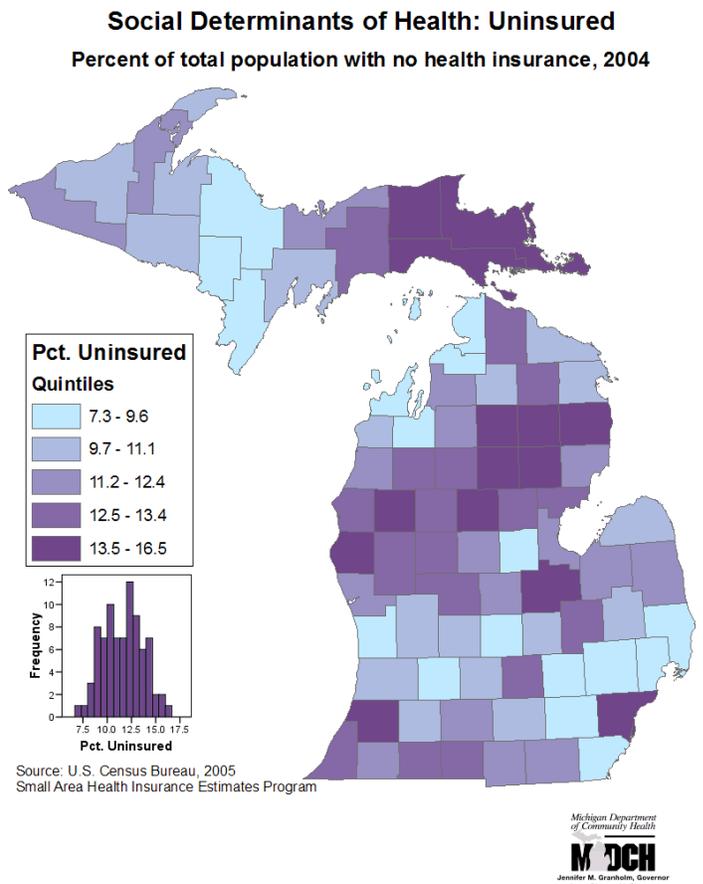
Date: 2009

**Question:** What percent of the population by county has no health insurance?

**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map shows counties with a higher rate of uninsured and is useful to look at areas of need especially when it is combined with other maps in the series.

The chart next to the map shows the range and distribution of data used in the map.



## Social Determinants—Poverty

Author: Mike Carr

Date: 2009

**Question:** What percent of the county populations is classified as in poverty?

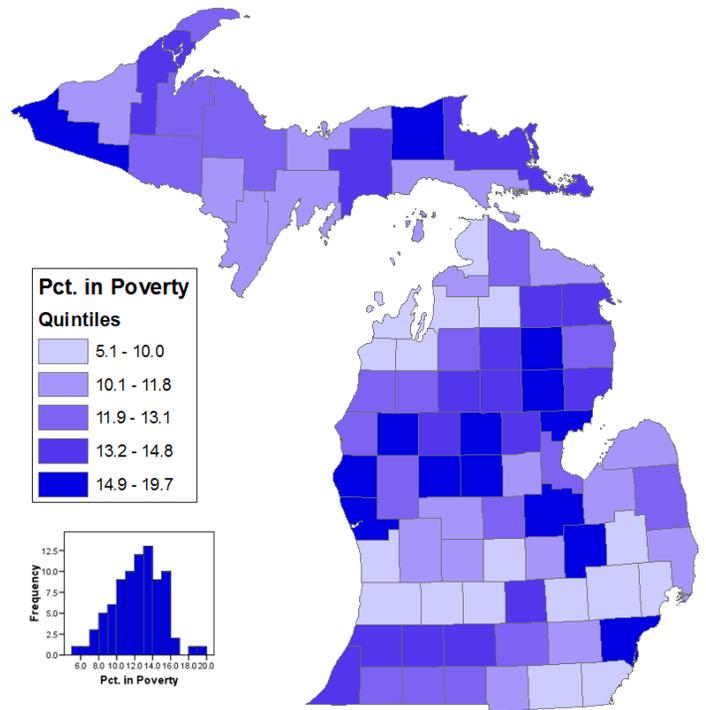
**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map shows counties with higher percentages of poverty and is useful when compared to other maps to identify areas of need.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: Poverty

Percent of total population in poverty, 2004



Source: U.S. Census Bureau, 2005 Small Area Income and Poverty Estimates Program

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## Social Determinants—White Collar

Author: Mike Carr

Date: 2009

**Question:** What percent of works in counties have white collar jobs?

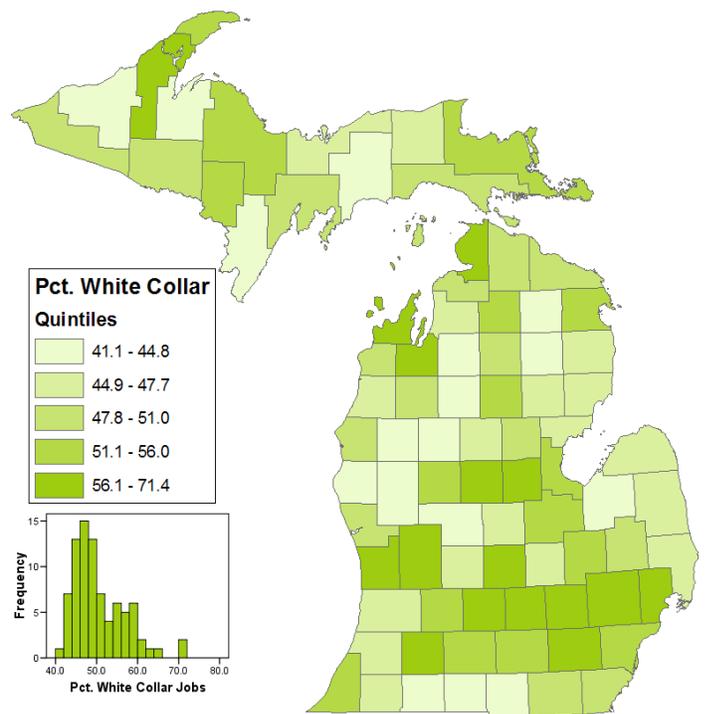
**Data Source:** Area Resource File (ARF), 2005, U.S. Department of Health & Human Services.

**Interpretation/Use:** This map shows counties with higher percentages of white collar jobs and is useful when compared to other maps to identify areas of need.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: White Collar

Percent of workers in white collar jobs, 2000



Source: Area Resource File (ARF), 2005  
Bureau of Health Professions  
Used with permission.

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## Social Determinants—Ethnicity

Author: Mike Carr

Date: 2009

**Question:** What percent of the county population is Hispanic?

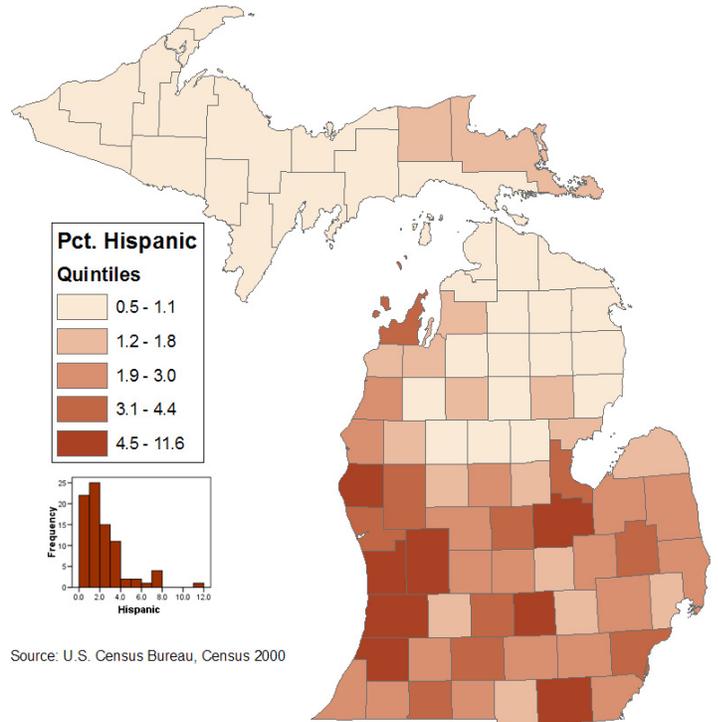
**Data Source:** U.S. Census Bureau, Census 2000.

**Interpretation/Use:** This map is useful to identify areas of the state that have a specific population you want to target. It can be used to overlay or compare to a range of the other maps such as risk factors and program service maps.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: Ethnicity

Percent of total population that is Hispanic, 2000



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## Social Determinants—Race: African American

Author: Mike Carr

Date: 2009

**Question:** What percent of the county population is African American?

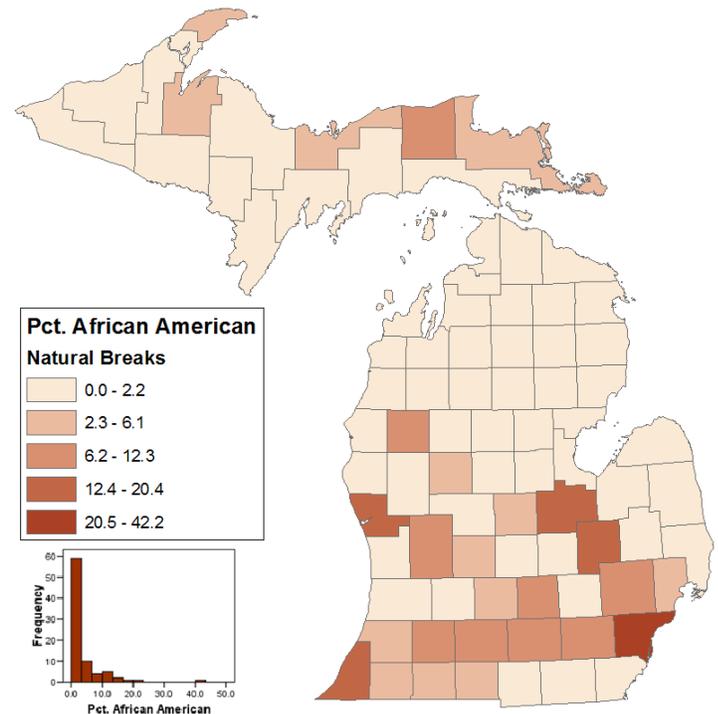
**Data Source:** U.S. Census Bureau, Census 2000.

**Interpretation/Use:** This map is useful to identify areas of the state that have a specific population you want to target. It can be used to overlay or compare to a range of the other maps such as risk factors and program service maps.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: Race

Percent of total population that is African American, 2000



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## Social Determinants—Race: American Indian

Author: Mike Carr

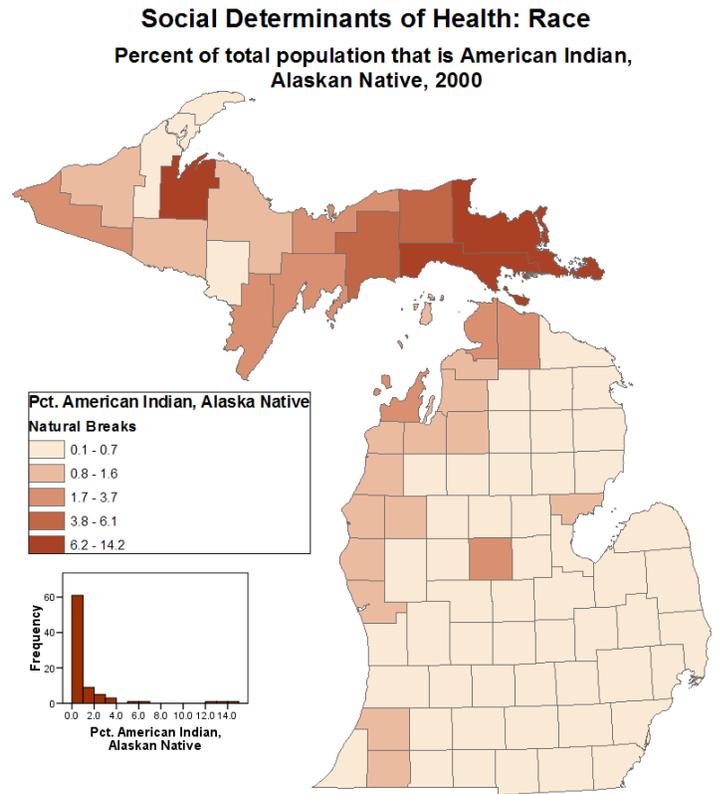
Date: 2009

**Question:** What percent of the county population is American Indian?

**Data Source:** U.S. Census Bureau, Census, 2000.

**Interpretation/Use:** This map is useful to identify areas of the state that have a specific population you want to target. It can be used to overlay or compare to a range of the other maps such as risk factors and program service maps.

The chart next to the map shows the range and distribution of data used in the map.



Source: U.S. Census Bureau, Census 2000



## Social Determinants—Race: Asian

Author: Mike Carr

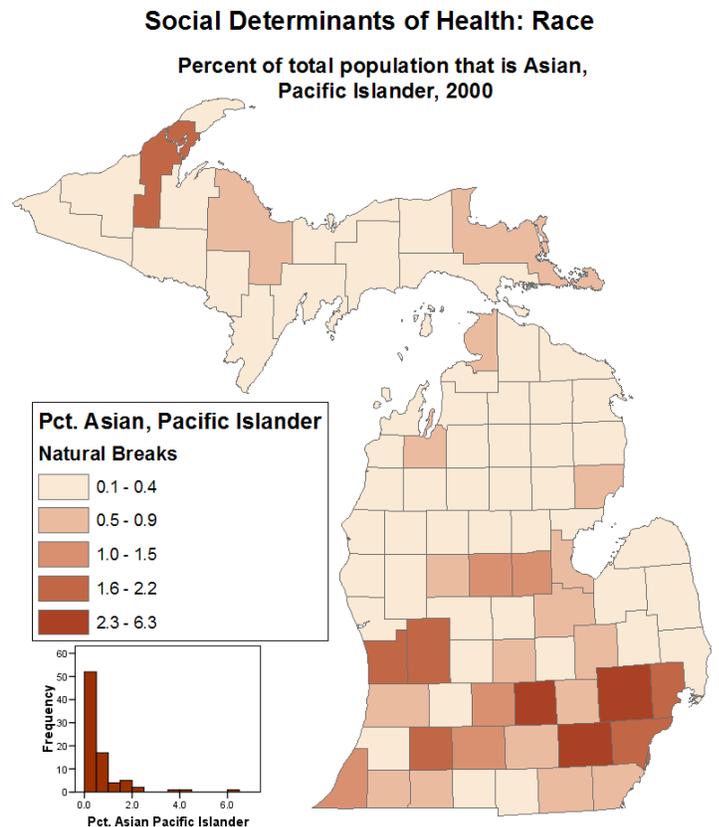
Date: 2009

**Question:** What percent of the county population is Asian?

**Data Source:** U.S. Census Bureau, Census, 2000.

**Interpretation/Use:** This map is useful to identify areas of the state that have a specific population you want to target. It can be used to overlay or compare to a range of the other maps such as risk factors and program service maps.

The chart next to the map shows the range and distribution of data used in the map.



Source: U.S. Census Bureau, Census 2000



## Social Determinants—Race: White

Author: Mike Carr

Date: 2009

**Question:** What percent of the county population is White?

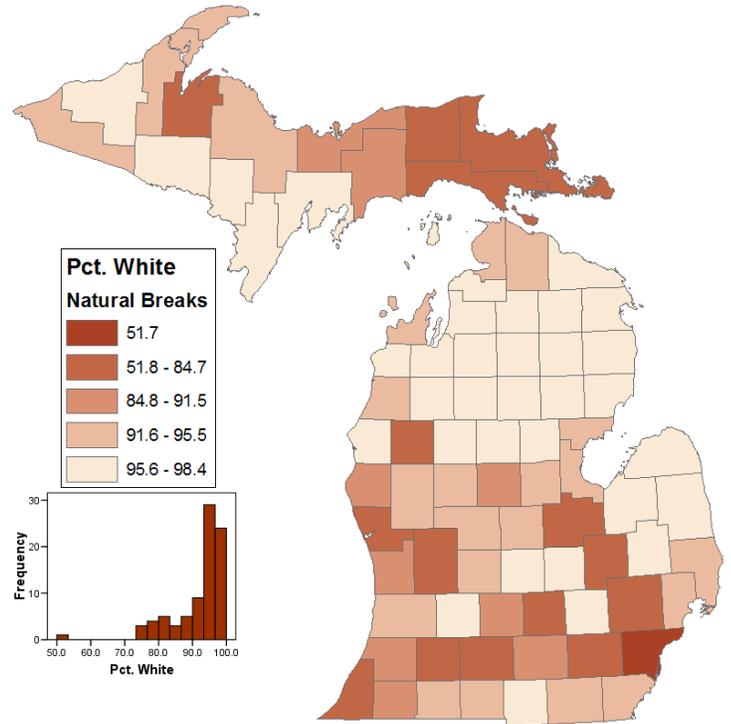
**Data Source:** U.S. Census Bureau, Census, 2000.

**Interpretation/Use:** This map is useful to identify areas of the state that have a specific population you want to target. It can be used to overlay or compare to a range of the other maps such as risk factors and program service maps.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: Race

Percent of total population that is White, 2000



Source: U.S. Census Bureau, Census 2000

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## Counties

Author: Beth Anderson

Date: 2008

**Question:** Where are the boundaries for the 83 counties in the state?

**Data Source:** Michigan Center for Geographic Information (MiCGI), 2008.

**Interpretation/Use:** This map is a foundation for many other maps developed such as mortality, hospitalization, demographics, program services, etc.



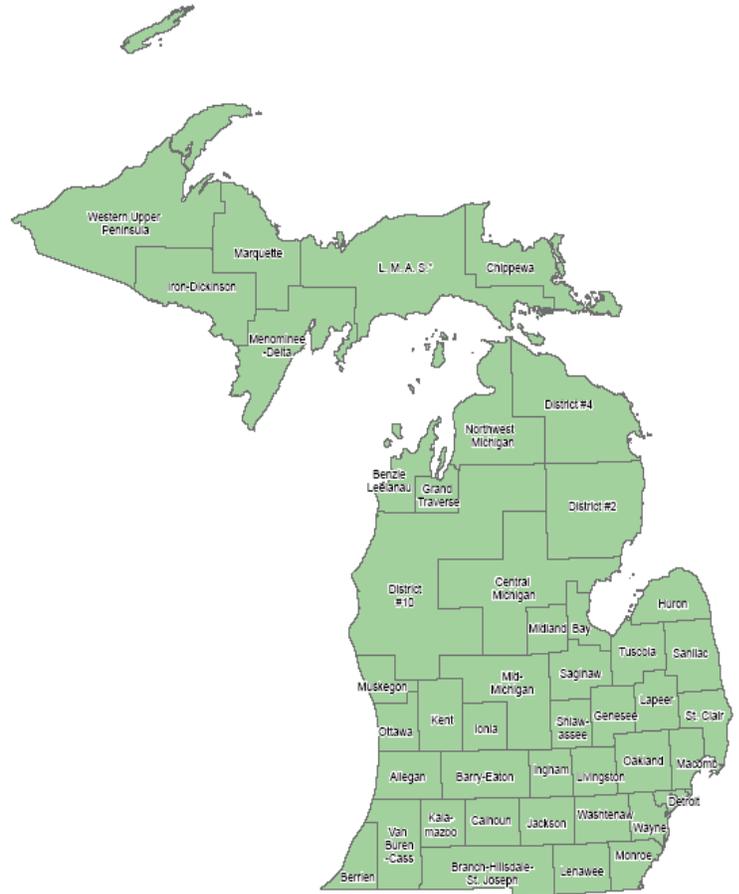
## Local Health Departments

**Author:** Henry Miller      **Date:** 2008

**Question:** What are the boundaries and names of the 45 local health departments?

**Data Source:** Michigan Center for Geographic Information (MiCGI), 2008.

**Interpretation/Use:** This map is a foundation for many other maps such as risk factor data. It is important in program planning and implementation of services.



\*Luce-Mackinac-Alger-Schoolcraft

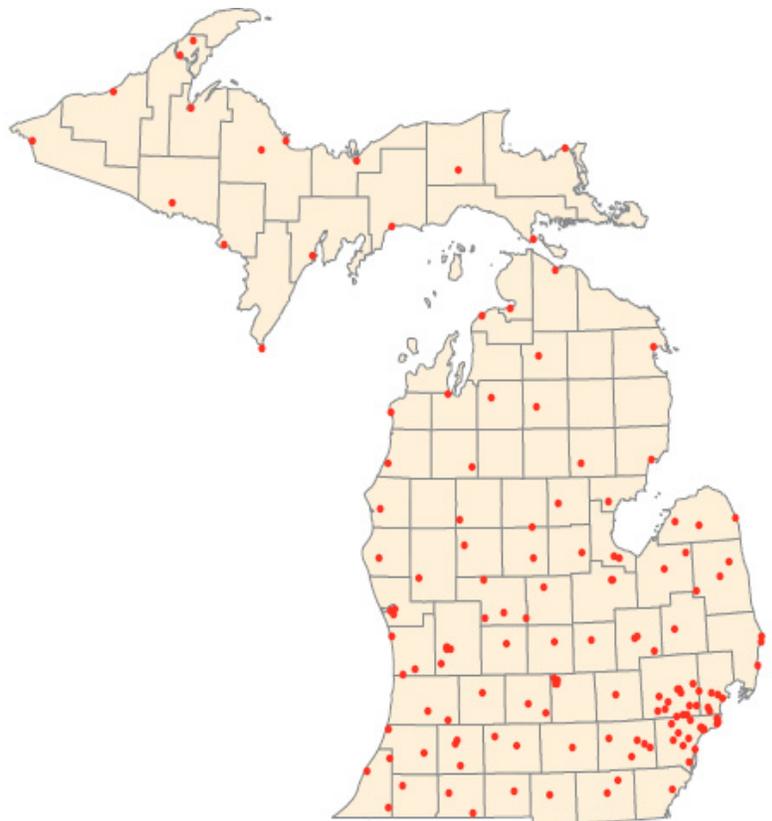
## Hospitals

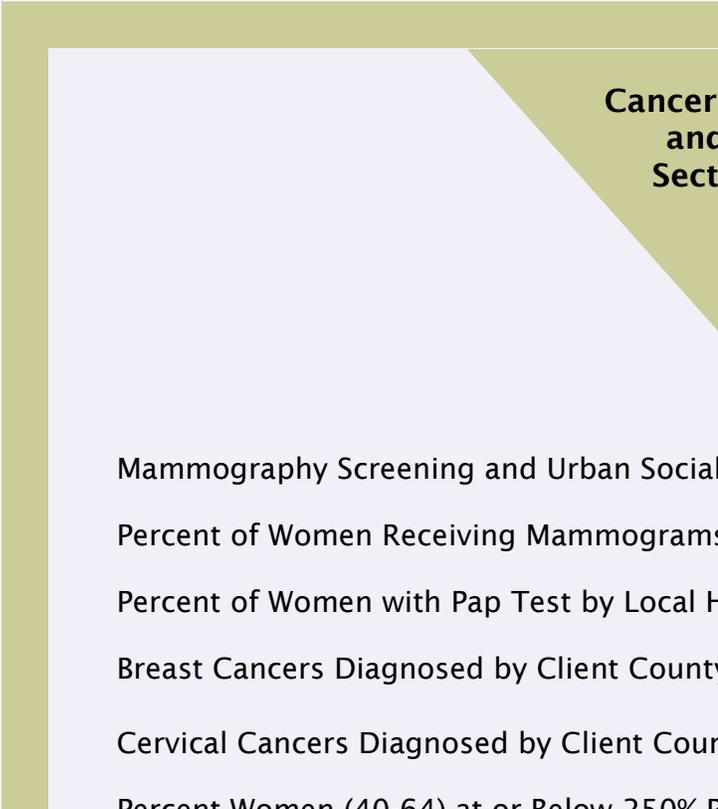
**Author:** Beth Anderson/Henry Miller  
**Date:** 2008

**Question:** Where are the 147 acute care hospitals located?

**Data Source:** Michigan Health and Hospital Association, 2008.

**Interpretation/Use:** This map has been used to identify hospitals participating in several projects such as stroke registry, heart failure mini-grants, stroke telemedicine networks, and is essential in stroke and ST elevation myocardial infarction systems of care.





**Cancer Prevention  
and Control  
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## Mammography Screening and Urban Social/Demographic Factors

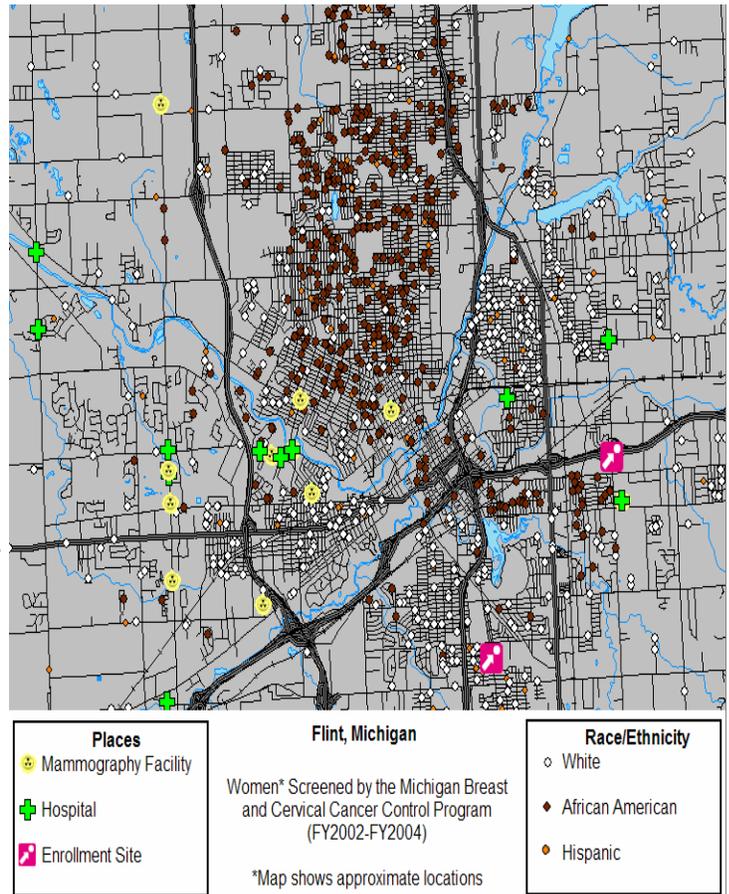
Author: Mike Carr

Date: 2007

**Question:** Is the Breast & Cervical Cancer Control Program (BCCCP) reaching areas of greatest need?

**Data Source:** Census Data, 2000. BCCCP Data, 2002-2004.

**Interpretation/Use:** This map shows the greater Flint, MI area. Points indicate the location of BCCCP health facilities, enrollment sites, and homes of women served in the program. By highlighting racial/ethnic status on the map, disparities in service locations for the intended clientele were made obvious.



## Percent of Women Receiving Mammograms by Local Health Department

Author: Lori Corteville

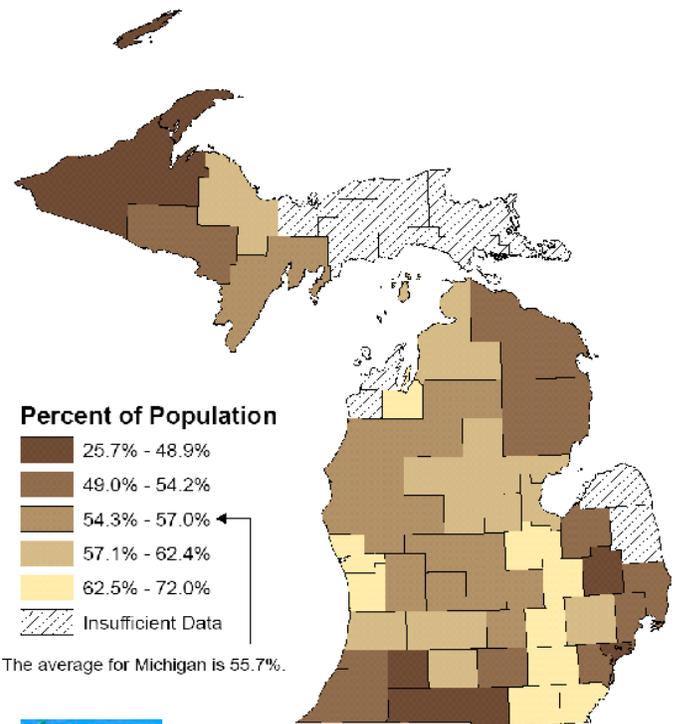
Date: 2009

**Question:** What percent of the population of women 40 and over that report having mammograms by Local Health Department area?

**Data Source:** Michigan Behavioral Risk Factor Survey (BRFS) Regional and Local Health Department Data, 2002-2006.

**Interpretation/Use:** This map shows areas of the state that have lower percent of women getting mammograms. It can be helpful in planning outreach or screening placement.

## Women Received Mammograms\* by Local Health Department Region



Chronic Disease and Injury Control Division GIS Team

\* Women age 40 and older

Source: 2002-2006 Michigan BRFS, Regional & Local Health Department Estimates, Michigan Behavioral Risk Factor Surveillance System, Michigan Department of Community Health, Chronic Disease Epidemiology Section

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## Percent of Women with Pap Test by Local Health Department

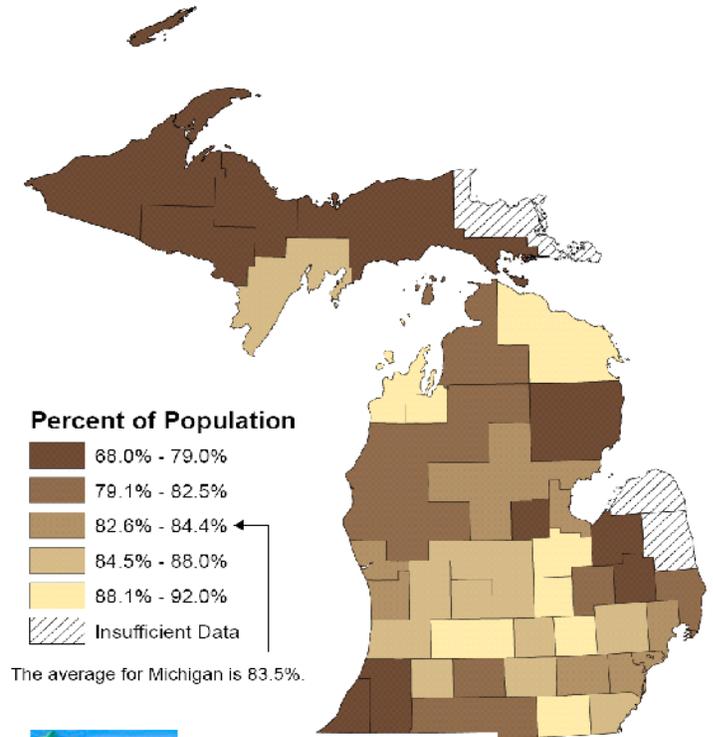
**Author:** Lori Corteville     **Date:** 2009

**Question:** What percent of women report having had a pap test within the past 3 years by Local Health Department?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2002-2006.

**Interpretation/Use:** This map showed areas of the state by Local Health Department that have lower percentages of women who have had a pap test in the past 3 years. Those areas could be targeted for awareness campaigns or outreach by Breast and Cervical Cancer Control Program (BCCCP).

## Women Had Pap Test in Past 3 Years by Local Health Department Region



Source: 2002-2006 Michigan BRFSS Regional & Local Health Department Estimates, Michigan Behavioral Risk Factor Surveillance System, Michigan Department of Community Health, Chronic Disease Epidemiology Section  
January 2009

## Breast Cancers Diagnosed by Client County of Residence, 2002-2006

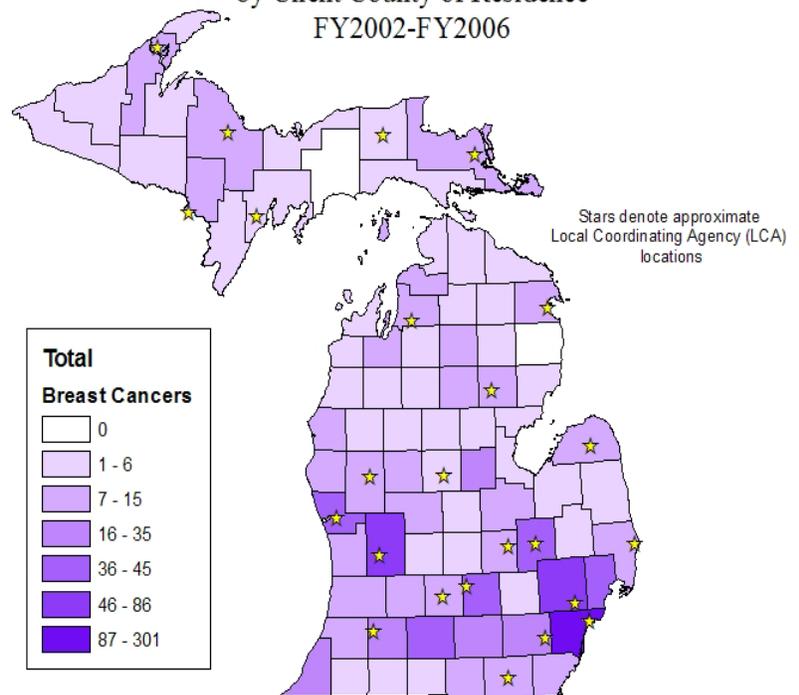
**Author:** Mike Carr     **Date:** 2007

**Question:** How many breast cancers have been diagnosed over the last 5 years by county client residence?

**Data Source:** Michigan Breast and Cancer Control Information System (MBCIS), 2002-2006.

**Interpretation/Use:** This map showed cumulative breast cancer counts over a five year time period. The map shows only those breast cancers found/treated through the Michigan Breast and Cervical Cancer Control Program. Because the map resembles a population map for Michigan, one can infer that in general, the program's service reach is proportional to the underlying population of women.

## Michigan BCCCP Breast Cancers Diagnosed by Client County of Residence FY2002-FY2006



2007

## Cervical Cancers Diagnosed by Client County of Residence, 2008

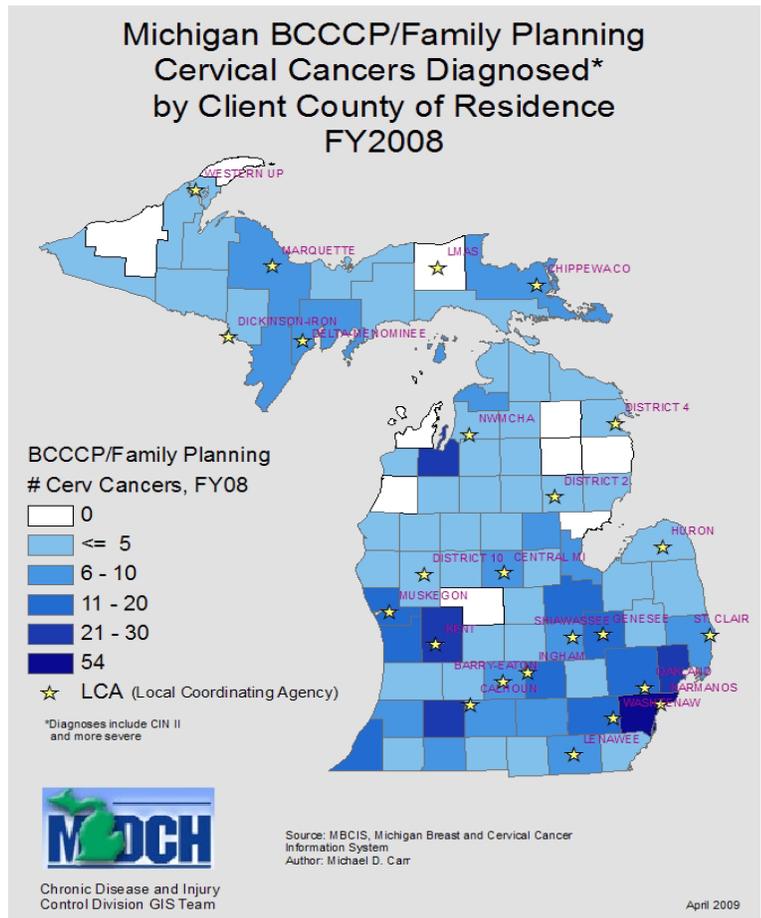
Author: Mike Carr

Date: 2009

**Question:** How many cervical cancers were diagnosed last year by county of client residence?

**Data Source:** Michigan Breast and Cancer Control Information System (MBCIS), 2008.

**Interpretation/Use:** This map showed cervical cancer counts for the Michigan Breast and Cervical Cancer Control Program and the Family Planning Program for fiscal year 2008. Because the map resembles a population map for Michigan, one can infer that in general, the program's service reach is proportional to the underlying population of women.



## Percent Women (40-64) at or Below 250% Poverty and Uninsured, 2005

Author: Mike Carr

Date: 2009

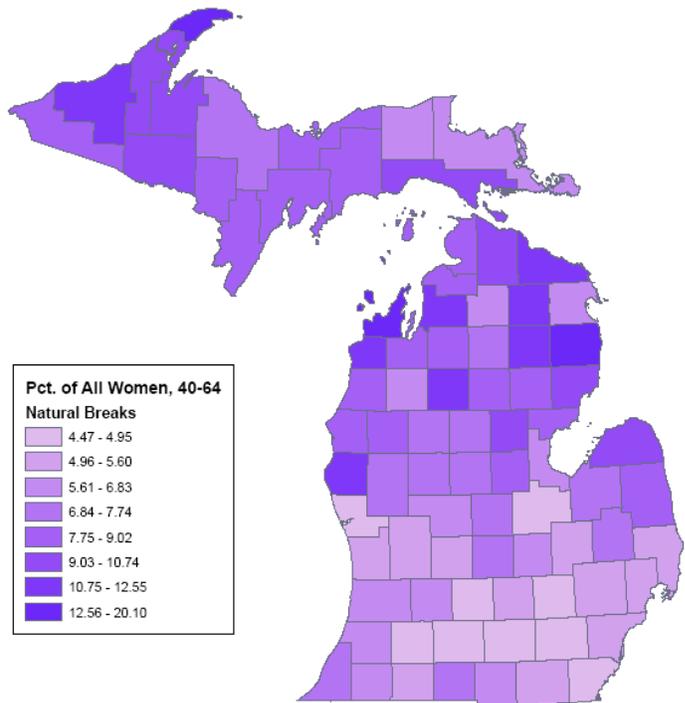
**Question:** How are program-eligible women (less than 250% poverty, in the 40 to 64 age group, and have no insurance) distributed by county across Michigan?

**Data Source:** Small Area Health Insurance Estimates, 2005.

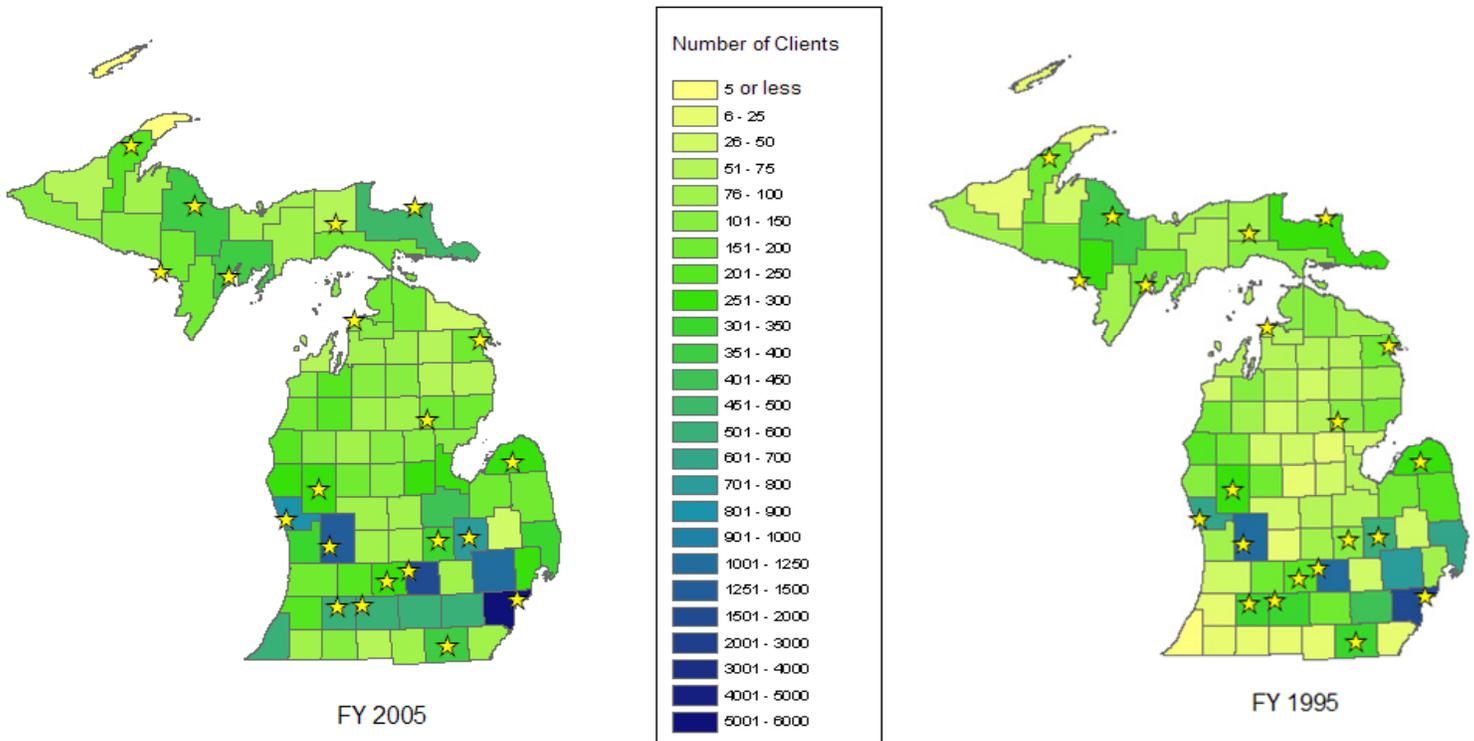
**Interpretation/Use:** The percent of all women aged 40 to 64 that meet the eligibility criteria listed above were mapped by county. A large number of categories (i.e., 8) were used to highlight existing variability and add contrast to the map. There appears to be a greater percentage of program-eligible women in the Upper Peninsula and the northern half of the Lower Peninsula.

## Michigan: Small Area Health Insurance Estimates (SAHIE) 2005

Percent Women at or Below 250% Poverty and Uninsured by County using Natural Breaks Categories



Michigan BCCCP  
 Women Screened by Client County of Residence  
 Program Growth from FY1995 to FY2005



Stars denote LCA (Local Coordinating Agency) locations.

Source: MBCIS, the database for the Michigan Breast and Cervical Cancer Control Program  
 Author: Michael D. Carr

## Women Screened by Client County of Residence Program Growth

**Author:** Mike Carr **Date:** 2007

**Question:** Has growth taken place in the Michigan Breast and Cervical Cancer Control Program with regards to total number of women served?

**Data Source:** Michigan Breast and Cancer Control Information System (MBCIS), 2005 and 1995.

**Interpretation/Use:** This map showed a snapshot of program data from fiscal year 1995 compared to fiscal year 2005. A single, expanded legend was used so that the two inset maps could be directly compared on the same scale. From left to right, the growth in the program over time is readily apparent for almost all Michigan counties.

## WISEWOMAN\* Program Services

Author: Mike Carr

Date: 2009

**Question:** What counties will be served by the WISEWOMAN program starting July 2008?

**Data Source:** WISEWOMAN Program Data, 2008.

**Interpretation/Use:** This map showed the counties currently offering WISEWOMAN services for women enrolled in the Michigan Breast and Cervical Cancer Control Program. Some agencies and counties served had changed from the previous year.

\* Well Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN)



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Physical Activity & Obesity  
Prevention Section  
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**Cardiovascular Health, Nutrition,  
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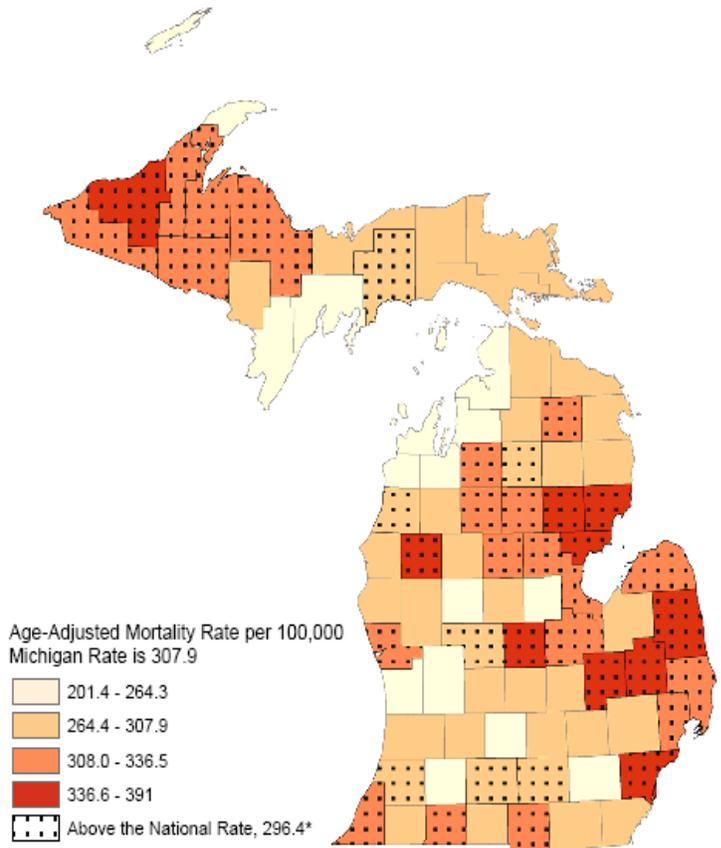
## Cardiovascular Disease Mortality Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher cardiovascular disease (CVD) mortality rates?

**Data Source:** MDCH Vital Records & Health Statistics, 2002-2006 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map was published in a fact sheet developed for legislators, in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. It shows there are 30 counties with rates above the Michigan rate and 37 counties above the national rate.



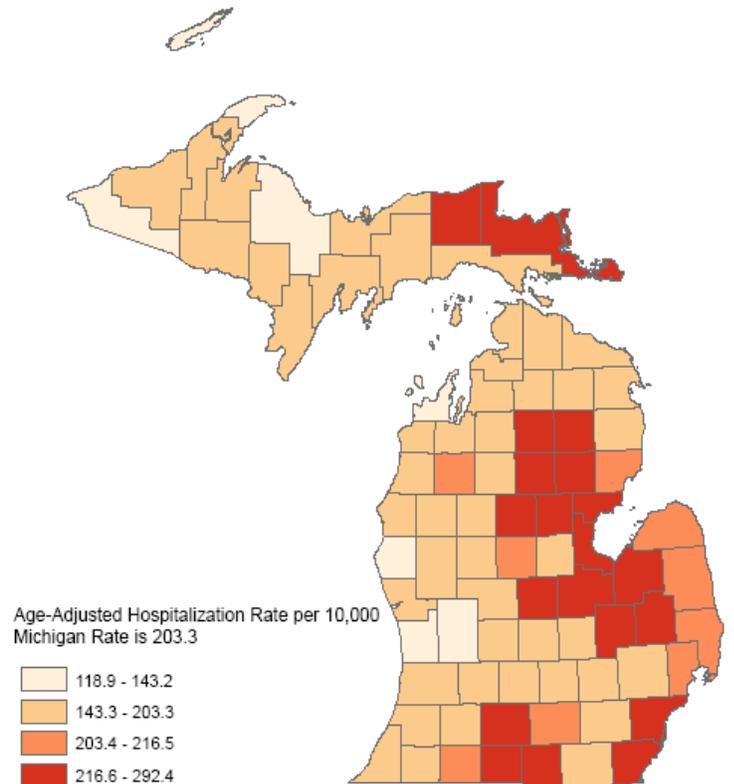
## Cardiovascular Disease Hospitalization Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher cardiovascular hospitalization rates?

**Data Source:** Michigan Resident Inpatient Files, Division of Vital Records & Health Statistics, MDCH, 2002-2006.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan*, and in presentations. It shows there were 29 counties above the Michigan rate.



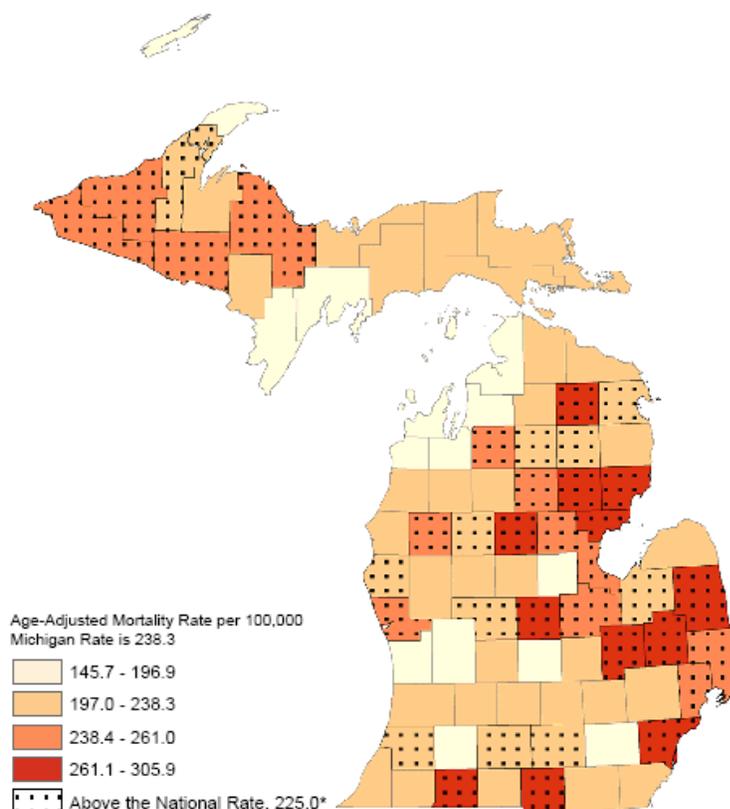
## Heart Disease Mortality Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher heart disease mortality rates and which counties are above the national rate?

**Data Source:** MDCH Vital Statistics, 2002-2006 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. There were 26 counties above the state rate and an additional 11 exceeded the national rate.



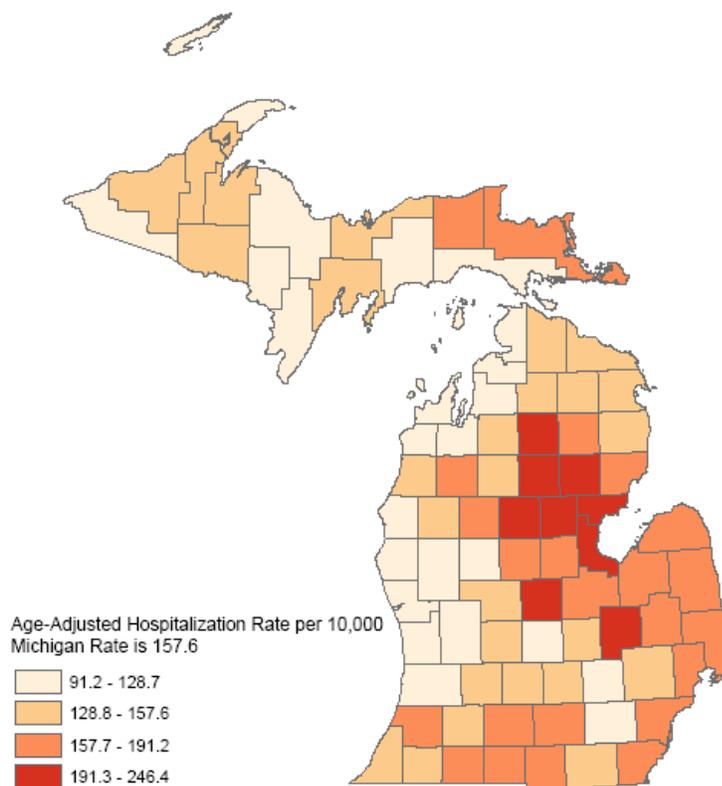
## Heart Disease Hospitalization Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher heart disease hospitalization rates?

**Data Source:** Michigan Resident Inpatient Files, Division for Vital Records & Health Statistics, MDCH 2002-2006.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. There were 51 counties below the state rate. This map was compared to other CVD maps for patterns of higher need.



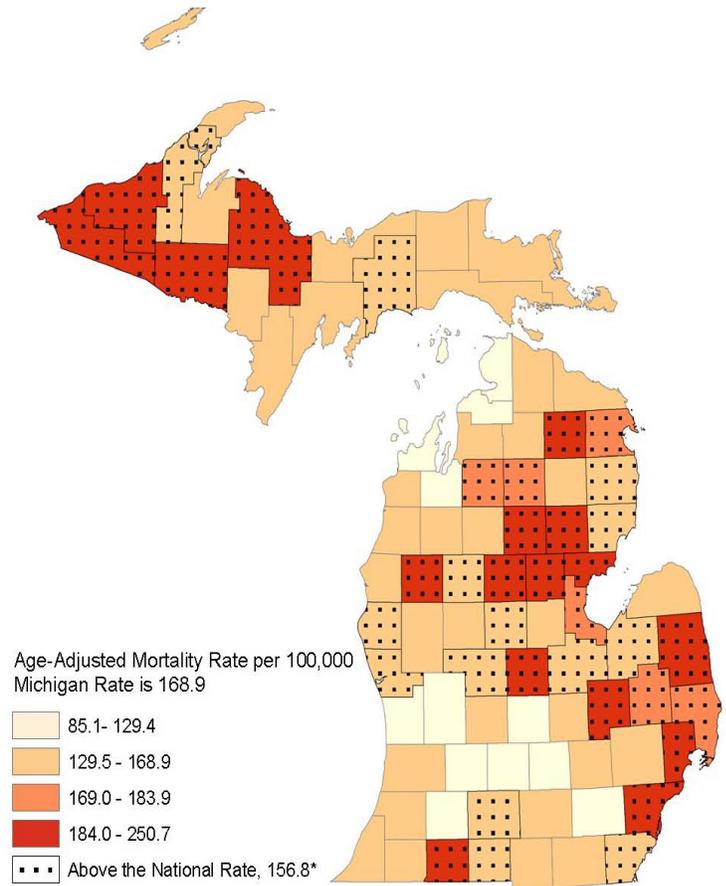
## Coronary Heart Disease Mortality Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher coronary heart disease mortality rates?

**Data Source:** MDCH Vital Statistics 2002-2006 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. There were 24 counties above the Michigan rate and an additional 14 above the national rate.



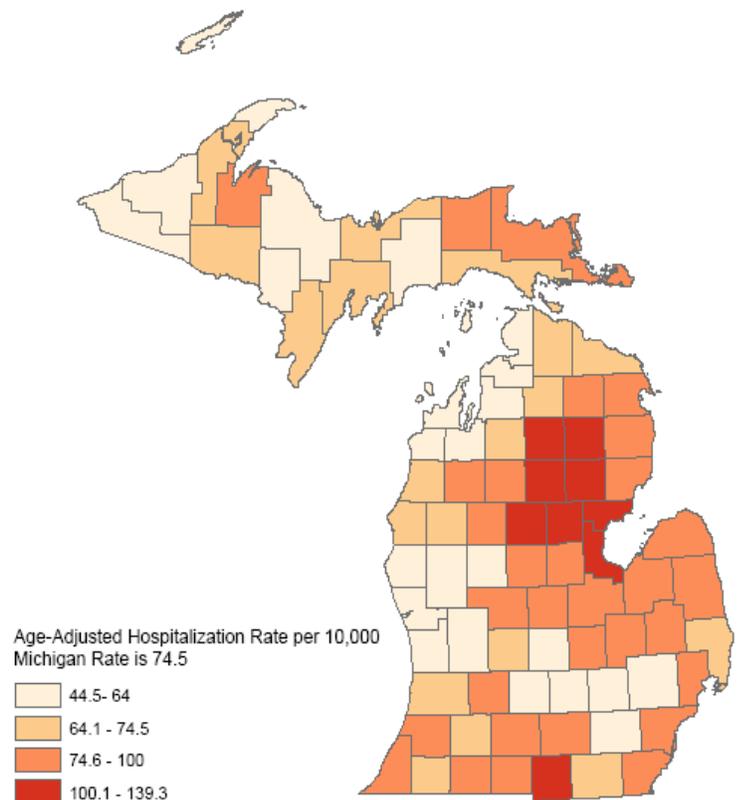
## Coronary Heart Disease Hospitalization Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have a higher hospitalization rate for coronary heart disease?

**Data Source:** Michigan Resident Inpatient Files, Division of Vital Records & Health Statistics, MDCH 2002-2006.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. There were 40 counties that had higher rates than the state rate.



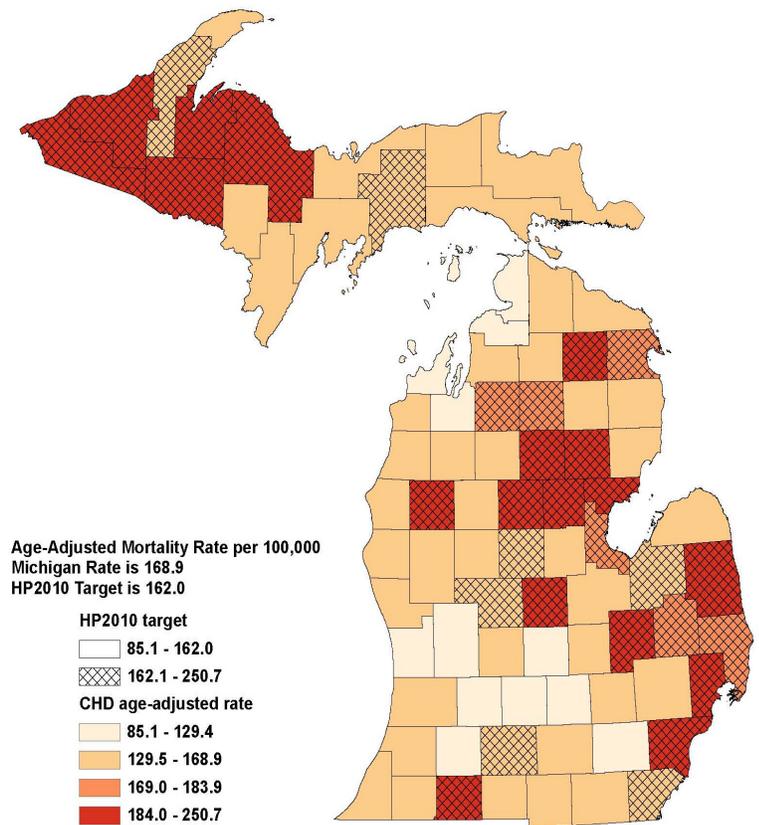
## Coronary Heart Disease Mortality Rates, 2002-2006 Compared to *Healthy People 2010 (HP 2010)* Target

**Author:** Beth Anderson    **Date:** 2008

**Question:** How do the coronary heart disease mortality rates in Michigan compare to the *Healthy People 2010 (HP 2010)* target?

**Data Source:** MDCH Vital Statistics, 2002-2006, HP 2010 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map identified counties in Michigan that are meeting the HP 2010 target—age adjusted mortality rate (162 per 100,000) or below. There were 30 counties out of 85 who were above the HP 2010 target.



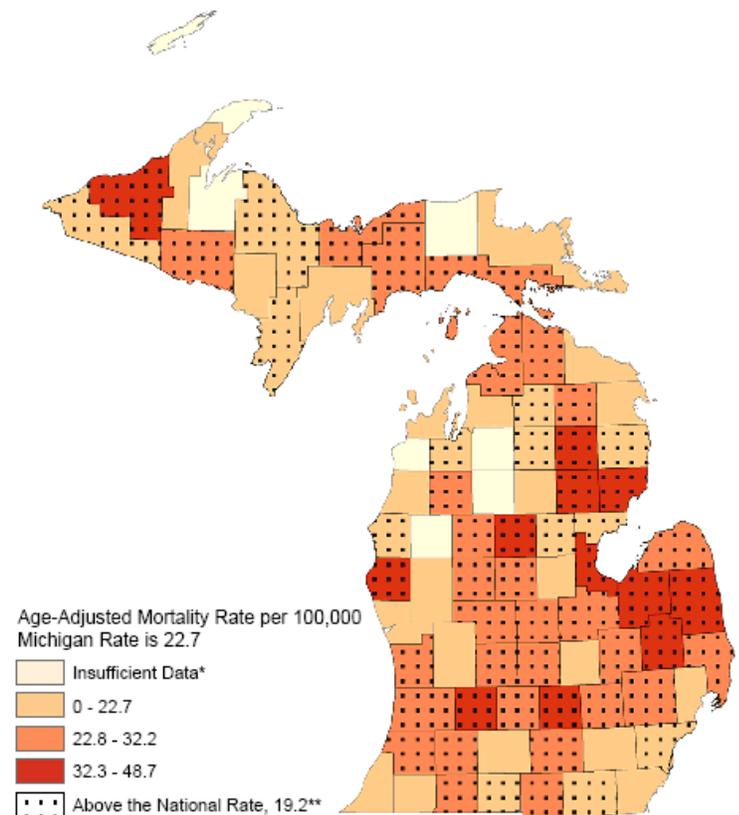
## Heart Failure Mortality Rates, 2002-2006

**Author:** Beth Anderson    **Date:** 2008

**Question:** Which counties in Michigan have higher heart failure mortality rates, and are above the national average?

**Data Source:** MDCH Vital Statistics, 2002-2006 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan*, and in presentations. Over 72% of (55) counties were above the national rate and 42 of those were also above the average Michigan rate.



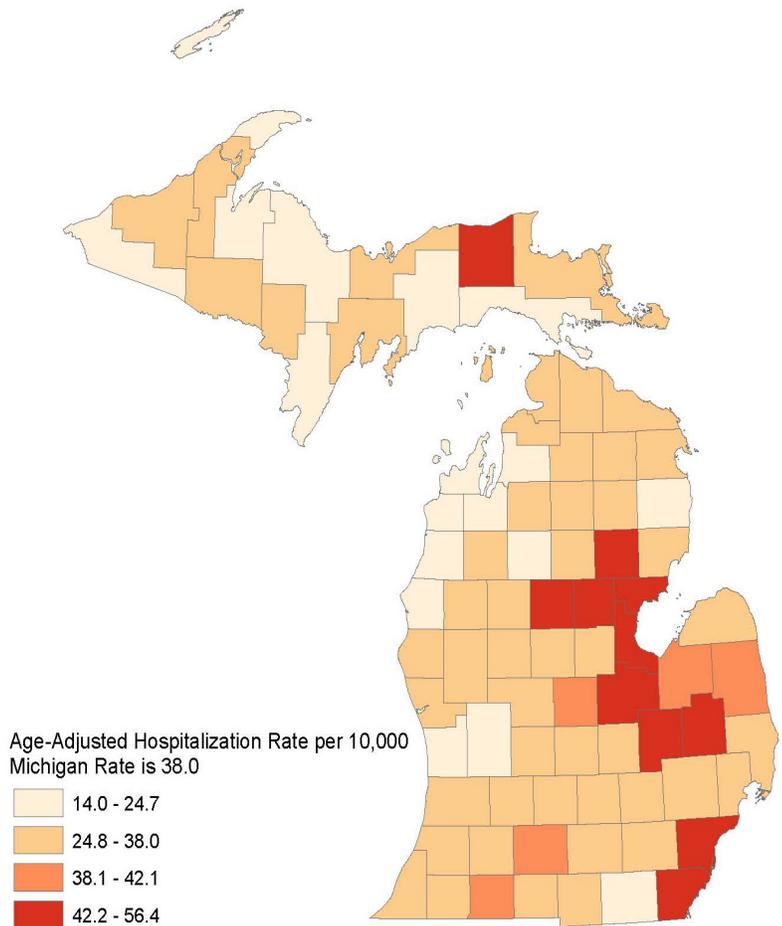
## Heart Failure Hospitalization Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher hospitalization rates for heart failure?

**Data Source:** Michigan Resident Inpatient Files, Division of Vital Records & Health Statistics, MDCH 2002-2006.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. There were 16 counties above the state rate.



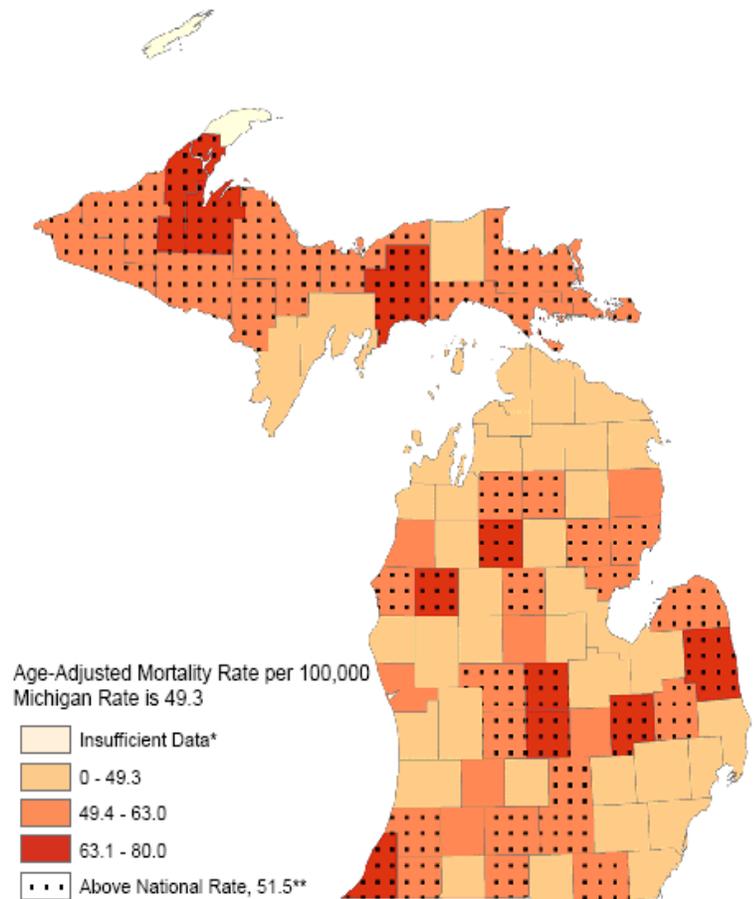
## Stroke Mortality Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher stroke mortality rates?

**Data Source:** MDCH Vital Statistics, 2002-2006 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. Over half of the counties were above the state rate and 36 were above both the state and national rate.



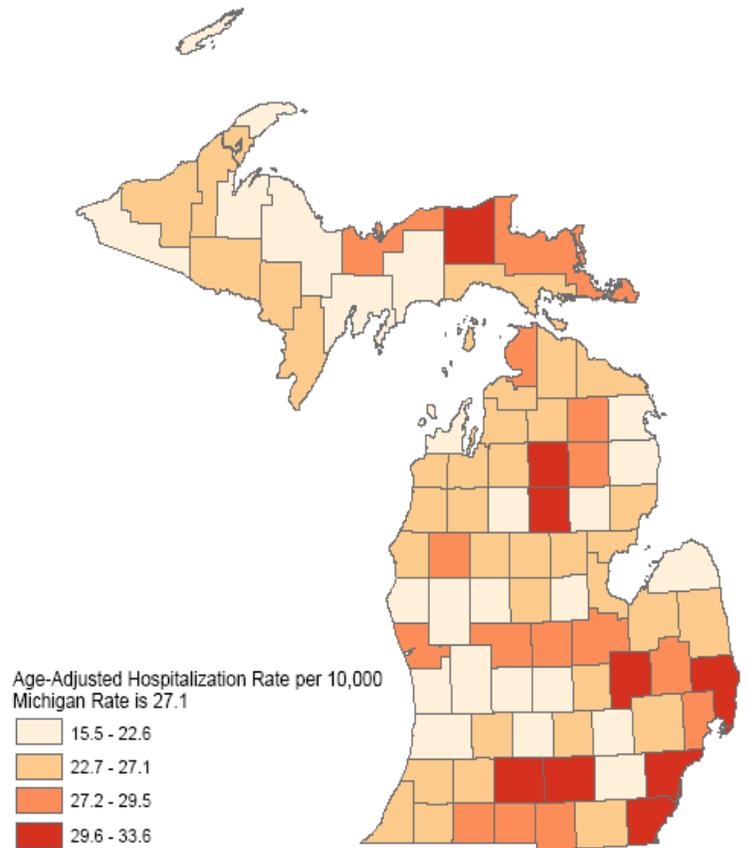
## Stroke Hospitalization Rates, 2002-2006

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher stroke hospitalization rates?

**Data Source:** Michigan Resident Inpatient Files, Division for Vital Records & Health Statistics, MDCH 2002-2006.

**Interpretation/Use:** This map was published in the *Impact of Heart Disease & Stroke in Michigan* and in presentations. A total of 24 counties were above the state rate.



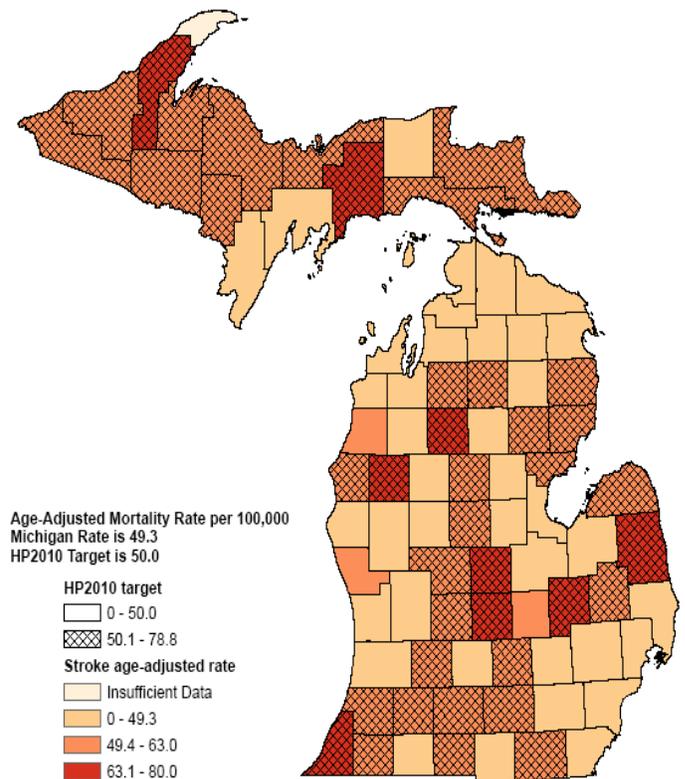
## Stroke Mortality Rates Compared to Healthy People 2010 (HP 2010) Targets

Author: Beth Anderson Date: 2008

**Question:** Which counties in Michigan have higher stroke mortality rates than the HP 2010 target?

**Data Source:** MDCH Vital Statistics, 2002-2006, HP 2010 and CDC Wonder, 2002-2005.

**Interpretation/Use:** This map identifies counties that are meeting HP 2010 targets for age-adjusted stroke mortality (50 per 100,000 persons). Michigan has 40 out of 85 counties not meeting the HP 2010 target. Although Michigan's rate is below the target, there are a large number of counties above.



# Hospitalization Maps for Heart Disease, Coronary Heart Disease, Heart Failure and Stroke, 2002-2006 Highlighting Higher Five County Areas

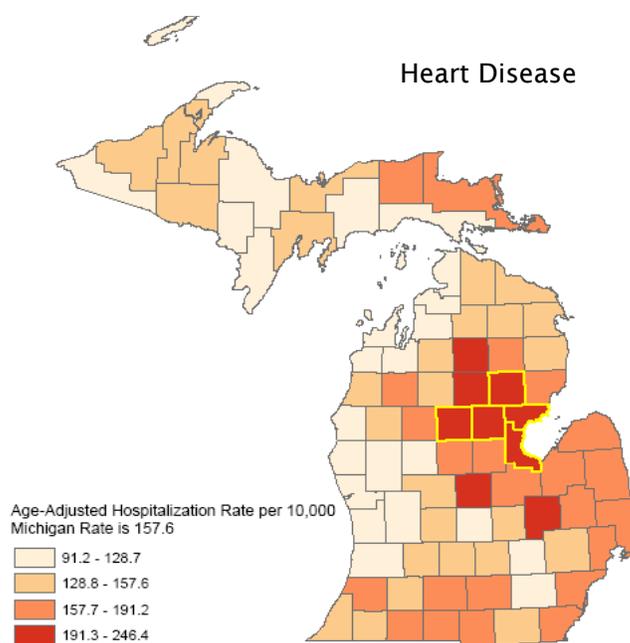
Author: Beth Anderson Date: 2008

Question: Is there a common area in Michigan that has higher rates of CVD hospitalization?

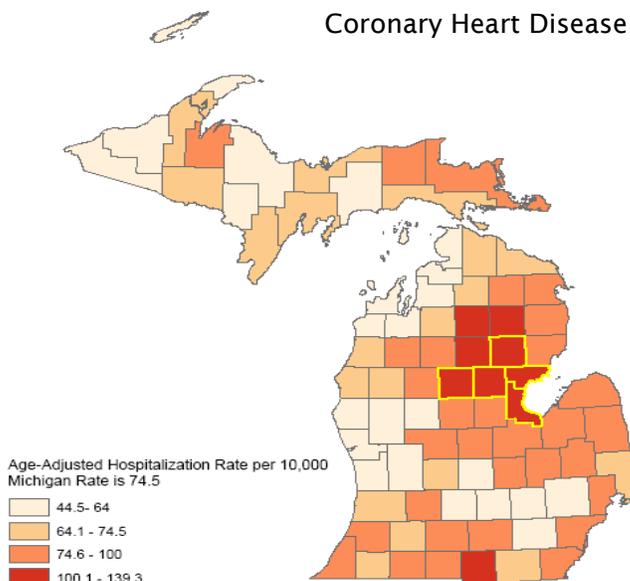
Data Source: Michigan Resident Inpatient Files, Division for Vital Records & Health Statistics, MDCH 2002-2006.

Interpretation/Use: These maps identify a contiguous five county area in Michigan that has high rates of hospitalization for heart disease, coronary heart disease and heart failure. They were not high in stroke hospitalization. This has been shared in presentations and has been identified for further investigation by our partners and MDCH staff for Fiscal Year 2010.

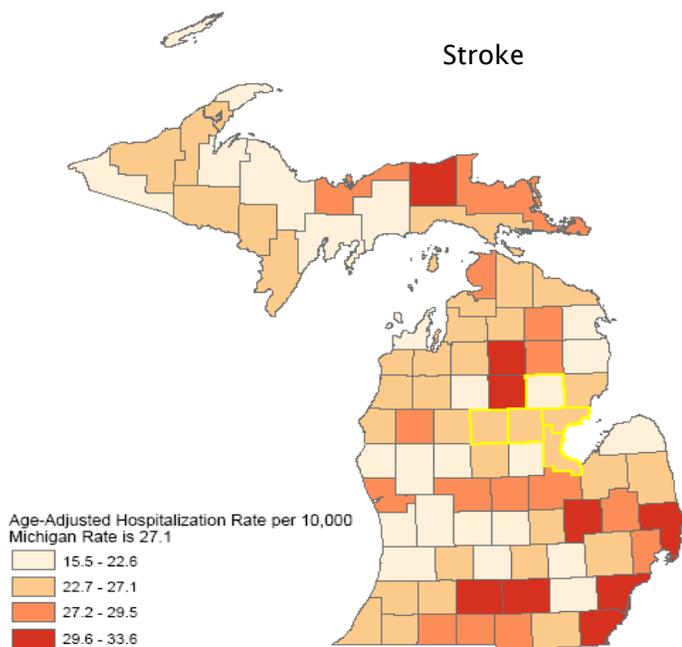
Heart Disease



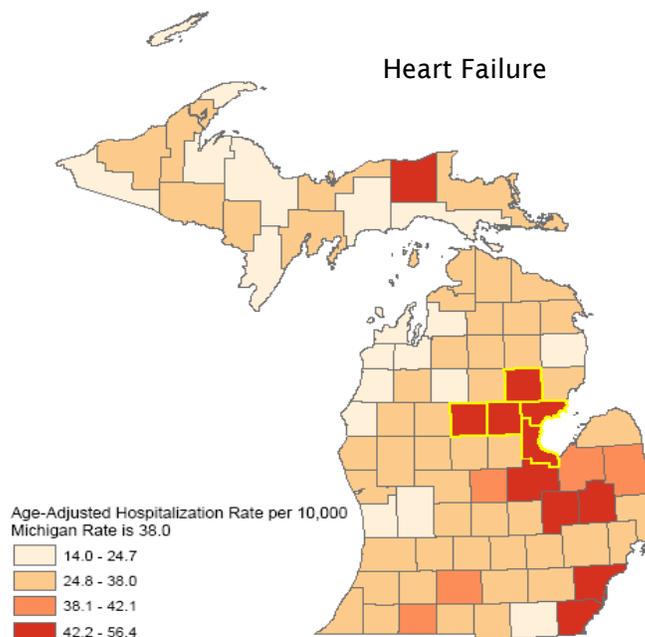
Coronary Heart Disease



Stroke



Heart Failure



## Sudden Cardiac Death of the Young (SCDY)

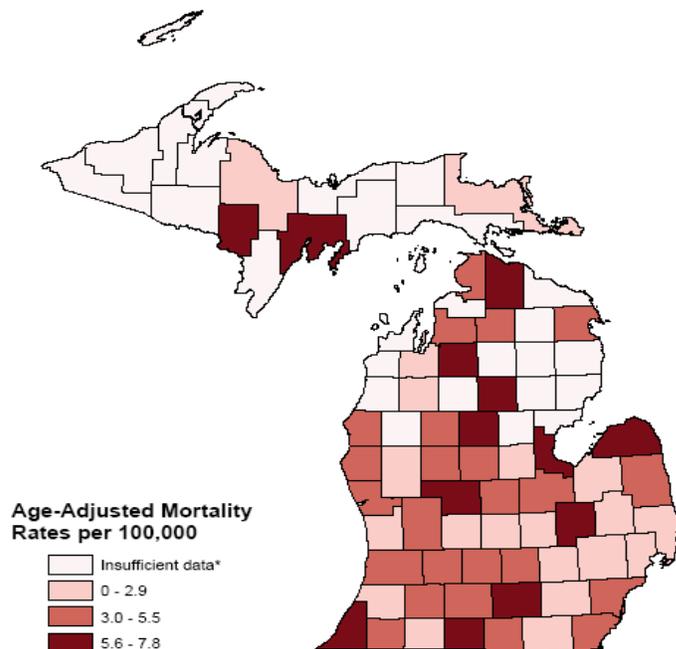
**Author:** Beth Anderson **Date:** 2009

**Question:** What counties in Michigan have a higher than average mortality rate for SCDY?

**Data Source:** MDCH Vital Statistics, 1999-2006.

**Interpretation/Use:** This map is used by MDCH to identify areas with higher mortality rates of SCDY. Thirteen counties were above the state average. The map was published in the report, *Too Young to Die: The Impact of SCDY in Michigan 1999-2008*.

## Age-Adjusted Mortality Rates for SCD, Michigan Residents Age 1-39 by County, 1999-2006



\*Counties with fewer than five sudden cardiac deaths from 1999-2006  
Michigan's age-adjusted mortality rate is 5.5 per 100,000  
Source: MDCH Vital Statistics  
Age-adjusted to the 2000 U.S. standard population

## Cholesterol Diagnosis

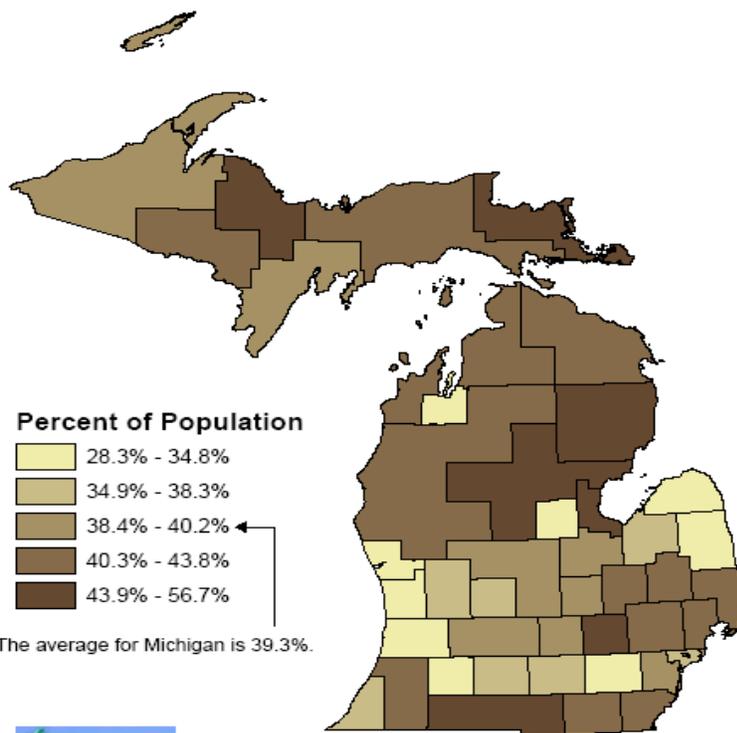
**Author:** Lori Corteville **Date:** 2009

**Question:** Which areas of the state have higher percentages of the population with high cholesterol?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map can be used to identify areas of the state with higher percentages of residents with high cholesterol. It can be useful in program outreach and program planning.

## Told High Cholesterol by Local Health Department Region



Chronic Disease and Injury Control Division GIS Team

Source: 2005-2007 Michigan BRFSS Regional & Local Health Department Estimates. Michigan Behavioral Risk Factor Surveillance System. Michigan Department of Community Health, Chronic Disease Epidemiology Section.

January 2009

## Cholesterol Screening

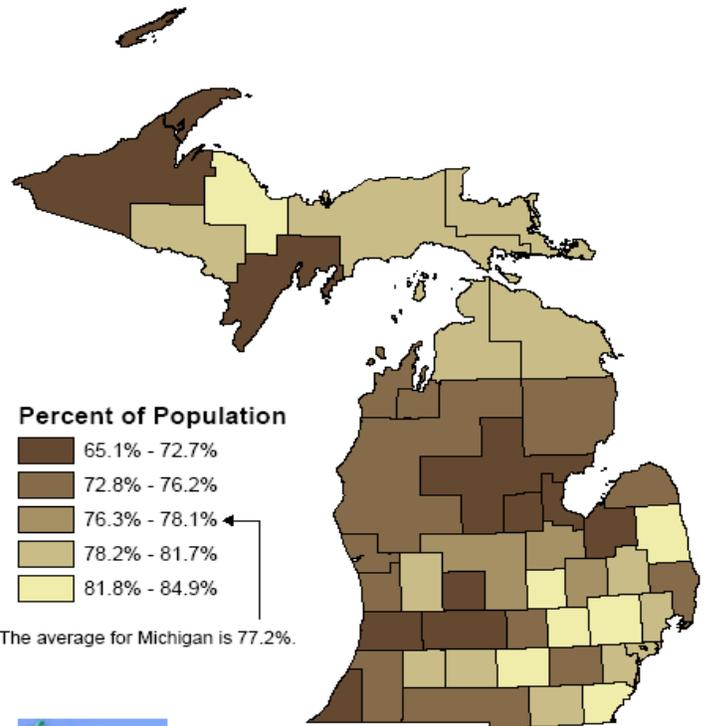
**Author:** Lori Corteville    **Date:** 2009

**Question:** What areas of the state have lower percentages of the population screened for cholesterol?

**Data Source:** Michigan BRFs Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map can be used to identify areas of the state that have lower levels of cholesterol screened. It can be useful in program outreach and program planning.

## Cholesterol Checked in Past 5 Years by Local Health Department Region



Chronic Disease and Injury Control Division GIS Team

Source: 2005-2007 Michigan BRFs Regional & Local Health Department Estimates, Michigan Behavioral Risk Factor Surveillance System, Michigan Department of Community Health, Chronic Disease Epidemiology Section.

January 2009

## Diagnosed Hypertension

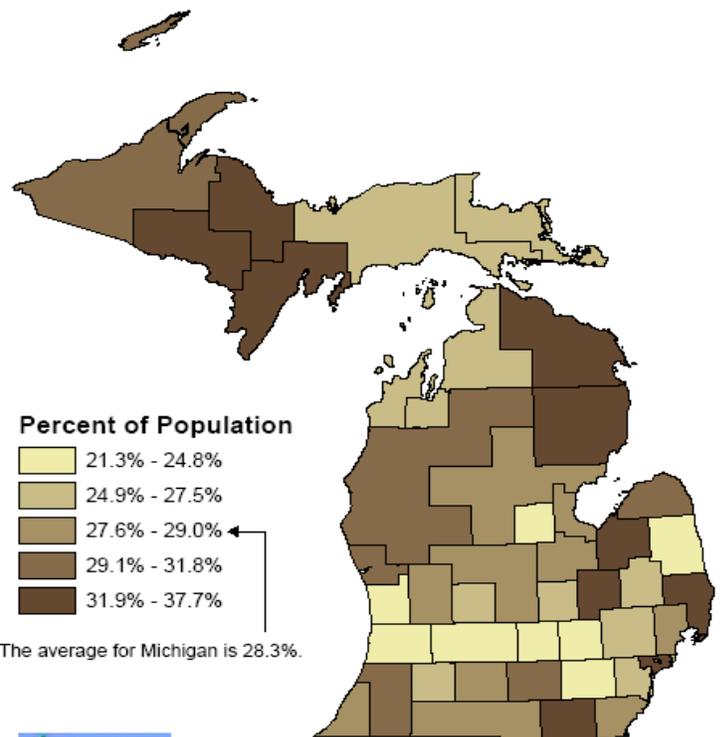
**Author:** Lori Corteville    **Date:** 2009

**Question:** What areas of the state have higher percentages of the population with high blood pressure/hypertension?

**Data Source:** Michigan BRFs Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map can be used to identify areas of the state that have higher levels of hypertension. It can be useful in program outreach and program planning.

## Diagnosed Hypertension by Local Health Department Region



Chronic Disease and Injury Control Division GIS Team

Source: 2005-2007 Michigan BRFs Regional & Local Health Department Estimates, Michigan Behavioral Risk Factor Surveillance System, Michigan Department of Community Health, Chronic Disease Epidemiology Section.

January 2009

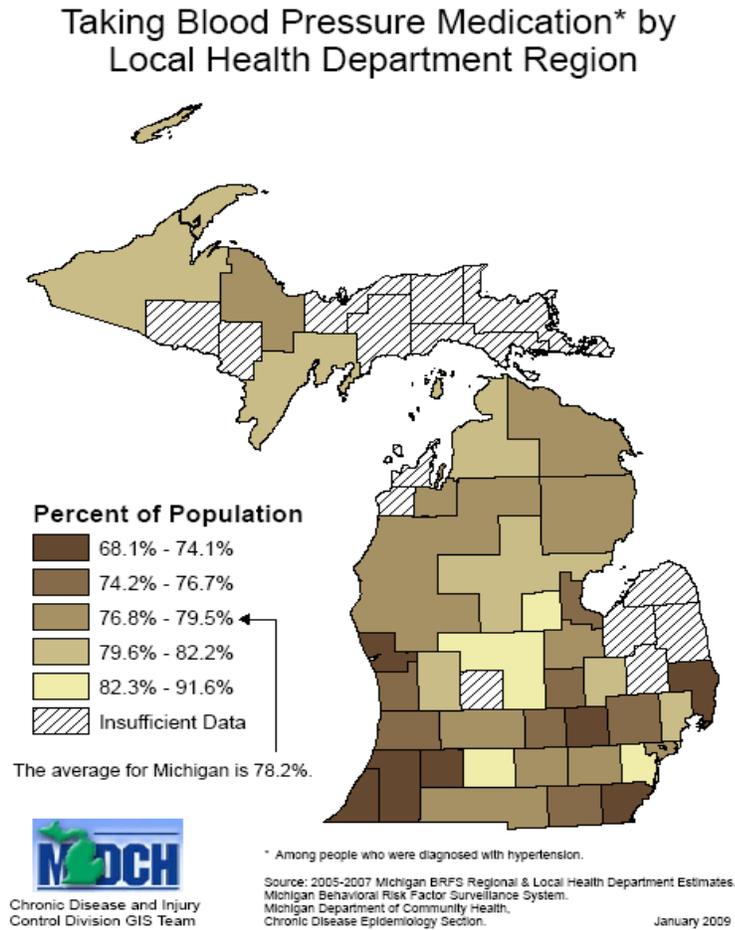
## Hypertension Medication

**Author:** Lori Corteville    **Date:** 2009

**Question:** What areas of the state have higher percentages of individuals taking hypertension medication?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map can be used to identify areas of the state that have lower blood pressure medication usage. The data are only for people with diagnosed hypertension. It can be useful in program outreach and program planning.



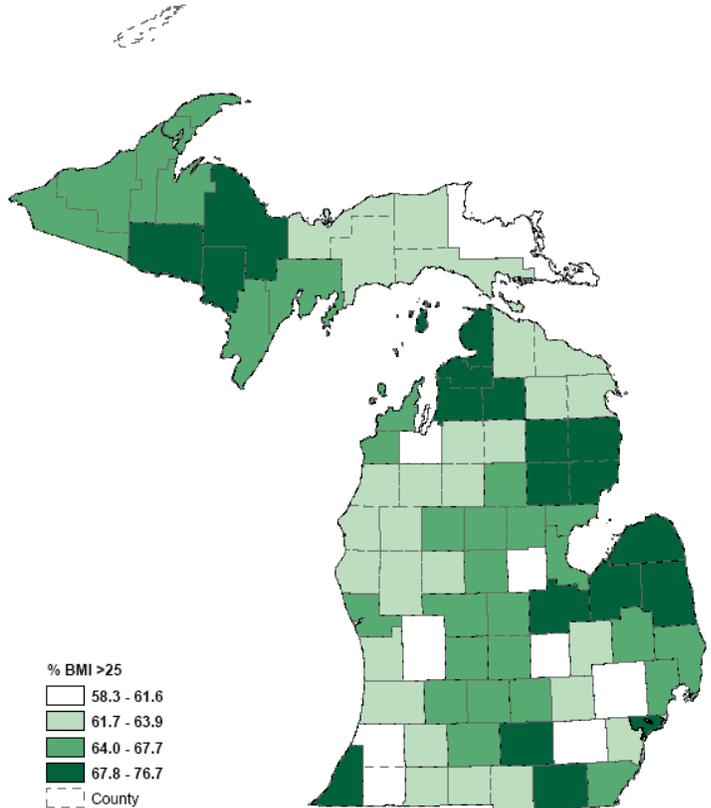
## Overweight and Obesity \*

**Author:** Beth Anderson    **Date:** 2009

**Question:** What areas of the state have higher percentages of the population that are overweight or obese?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** The prevalence of overweight and obesity between 2005-2007 was 63.9%. There were 27 local health departments out of 45 who were above the percentage. This map was published in *Overweight & Obesity in Michigan: Surveillance Report 2009* and has been incorporated in presentations & program planning.



\* BMI 25-29 is classified as overweight and  $\geq 30$  is classified as obese

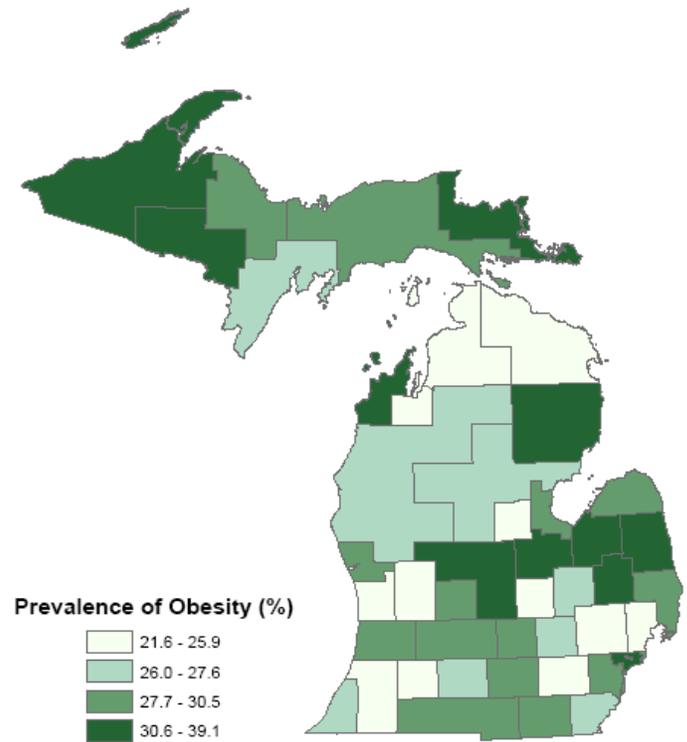
## Obesity

**Author:** Beth Anderson    **Date:** 2009

**Question:** What areas of the state have higher percentages of the population that are obese\*?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map was used with partners and MDCH staff to identify areas of the state that have a higher prevalence of obesity.



\* BMI  $\geq$  30 is classified as obese

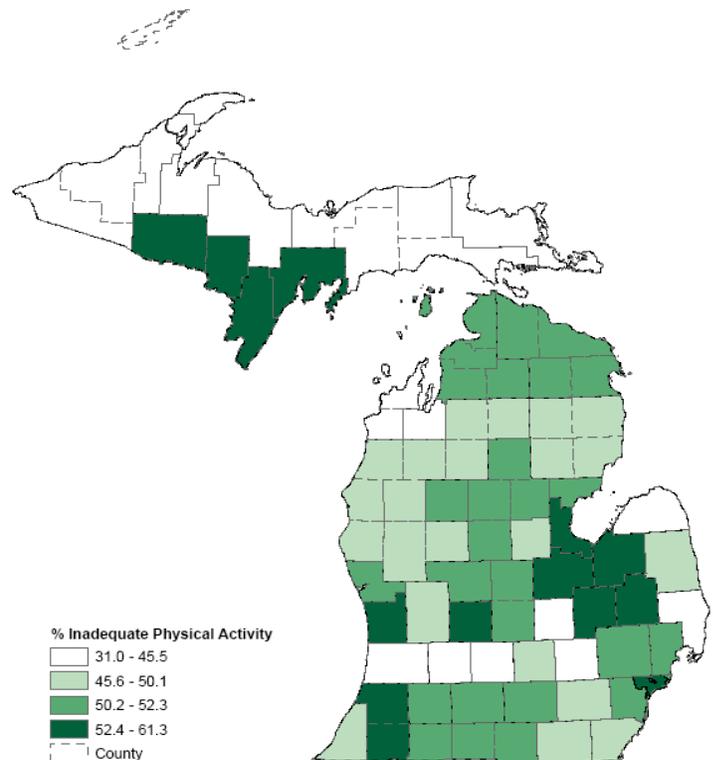
## Inadequate Physical Activity

**Author:** Beth Anderson    **Date:** 2009

**Question:** What areas of the state have higher percentages of the population not getting regular physical activity?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** The prevalence of inadequate physical activity in Michigan was 50.1%. More than half of adults in 23 local health departments were not meeting physical activity recommendations. This map was published in *Overweight & Obesity in Michigan: Surveillance Report 2009* and has been incorporated in presentations & program planning.



Inadequate physical activity—The proportion who reported that they do not usually do moderate physical activities for a total of at least 30 minutes on five or more days a week or vigorous activities for a total of at least 20 minutes on three or more days per week while not at work.

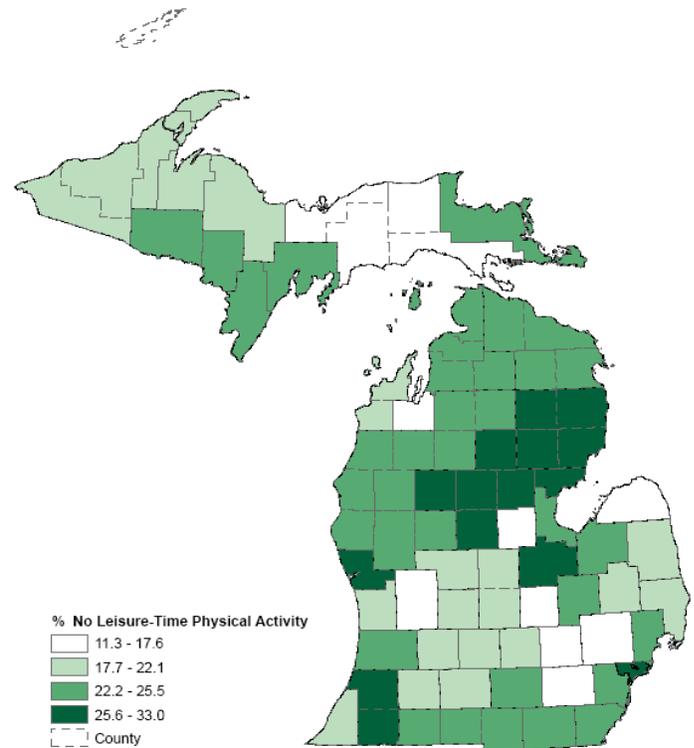
## No Leisure-time Physical Activity\*

Author: Beth Anderson Date: 2009

**Question:** What areas of the state have higher percentages of the population not participating in leisure-time physical activity?

**Data Source:** Michigan 2005-2007 BRFs Regional and Local Health Department Data.

**Interpretation/Use:** The prevalence of no leisure-time physical activity was 22.1%. This map was published in *Overweight & Obesity in Michigan: Surveillance Report 2009* and has been incorporated in presentations & program planning.



\* The proportion who reported not participating in any leisure-time physical activities or exercises such as running, calisthenics, golfing, gardening, or walking during the past month.

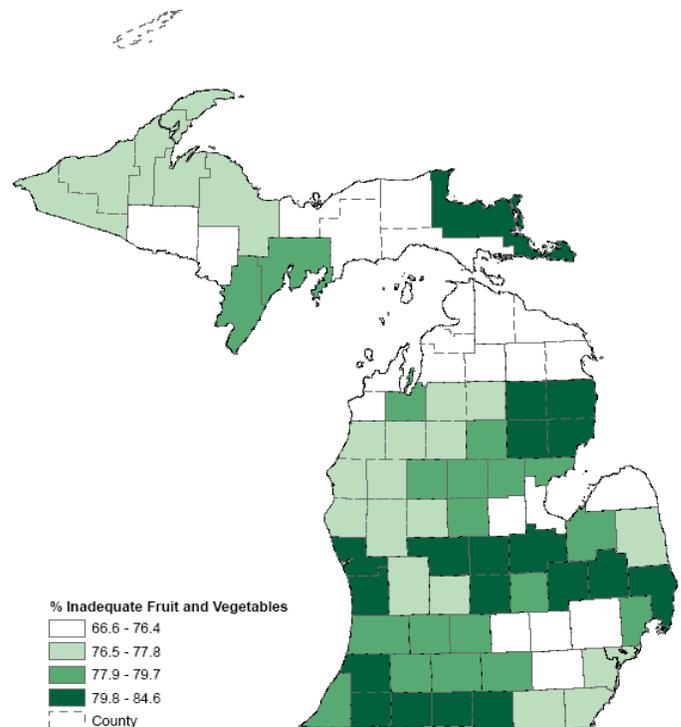
## Inadequate Fruit and Vegetable Consumption\*

Author: Beth Anderson Date: 2009

**Question:** What areas of the state have higher percentages of the population not getting the recommended amount of fruits and vegetables?

**Data Source:** Michigan BRFs Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** The prevalence of inadequate fruit and vegetable consumption was 77.8%. More than 75% of adults in 38 of the 45 local health departments reported inadequate fruit and vegetable consumption. This map was published in *Overweight & Obesity in Michigan: Surveillance Report 2009* and has been incorporated in presentations & program planning.



\* The proportion whose total reported consumption of fruits (including juice) and vegetables was less than five times per day.

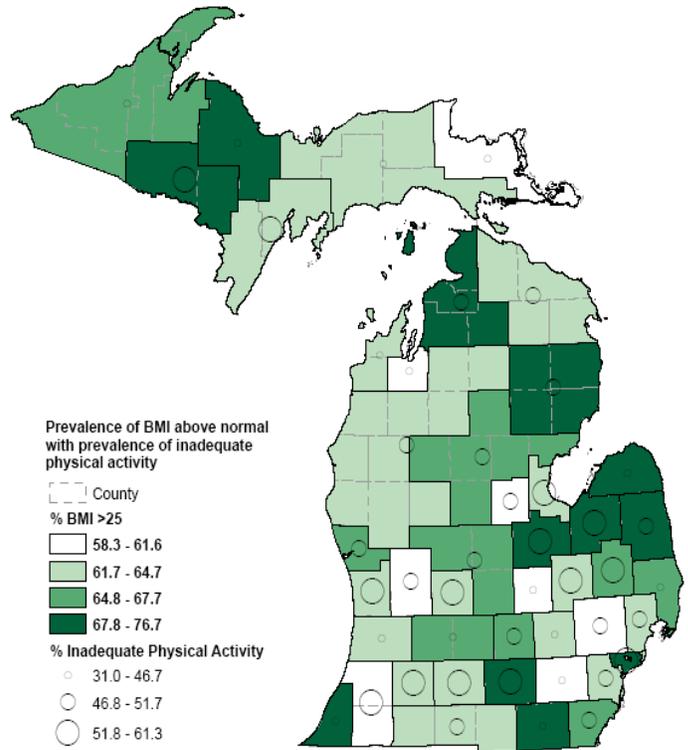
## Prevalence of BMI Above Normal with Prevalence of Inadequate Physical Activity

Author: Beth Anderson Date: 2009

**Question:** What areas of the state have higher percentages of the population above a normal BMI compared to not meeting physical activity recommendations?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map was used by partners and MDCH staff to see the correlation of overweight/obesity and inadequate physical activity. It helped evaluate higher priority regions.



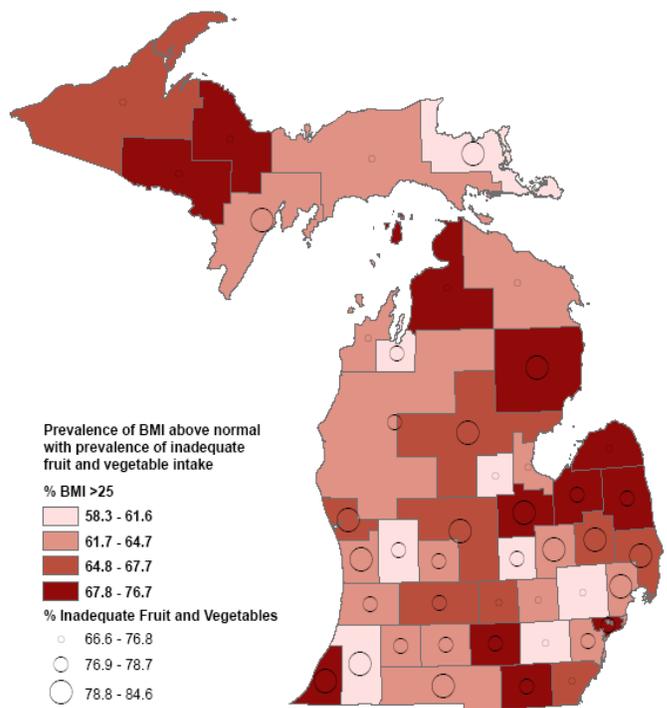
## Prevalence of BMI Above Normal with Prevalence of Inadequate Fruit and Vegetable Intake

Author: Beth Anderson Date: 2008

**Question:** What areas of the state have higher percentages of the population above a normal BMI compared to prevalence of inadequate fruits and vegetables?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map was used by partners and MDCH staff to see the correlation of overweight/obesity and inadequate fruit and vegetable intake for purposes of identifying higher risk areas of the state.



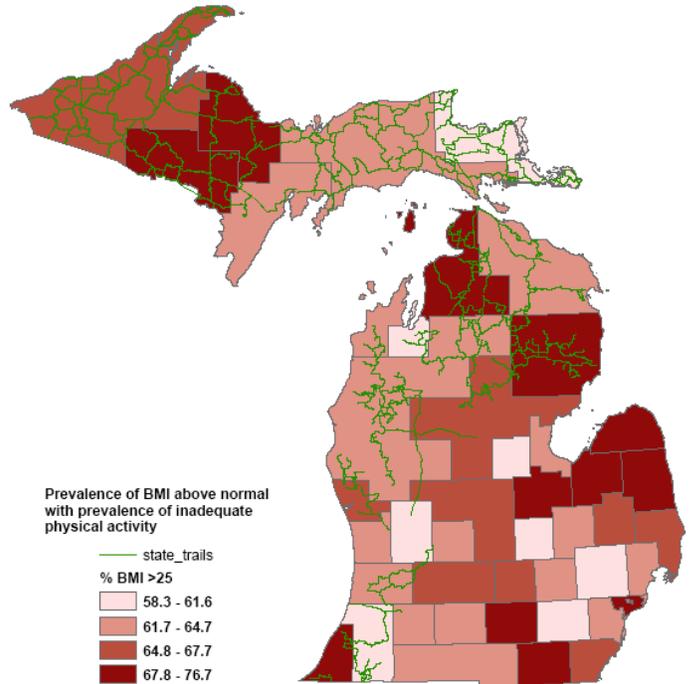
## State Trails and Prevalence of BMI above Normal with Prevalence of Inadequate Physical Activity

**Author:** Beth Anderson    **Date:** 2008

**Question:** Where are the state trails in relation to populations overweight and inactive?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007 MiCGI State Trails.

**Interpretation/Use:** This map can be used to identify state trails in areas where programs exist to encourage higher risk populations to get more regular physical activity. The map was used to begin to look at areas providing opportunities for physical activity but it is not complete as it does not include all trails such as city trails, bike paths, etc., this limited the usefulness of the map.



## Emergency Preparedness Regions

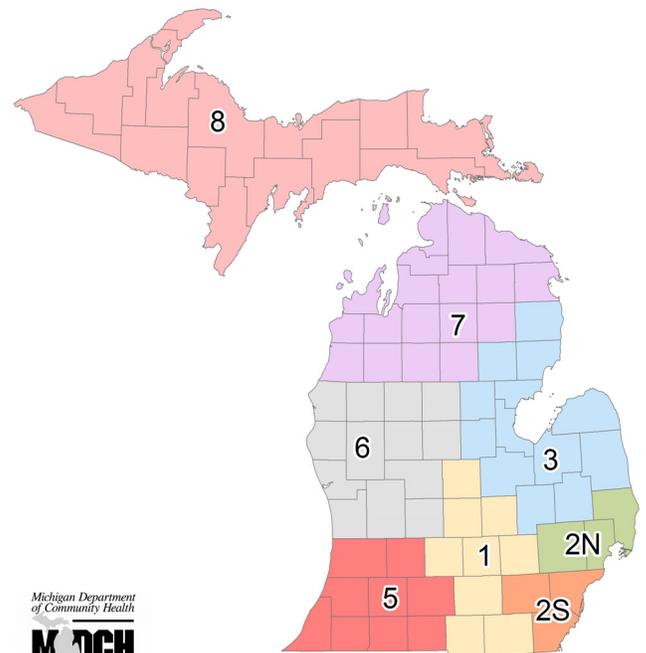
**Author:** Henry Miller    **Date:** 2009

**Question:** Where are the regions for emergency preparedness?

**Data Source:** Office of Public Health Preparedness.

**Interpretation/Use:** This map has been used to relate to the “Medical Control Authorities” as planning and organization of emergency systems of care are done. It was used in an educational flyer explaining the need for a funded statewide trauma system as well as an educational flyer for partners to advocate for a regional system.

## Emergency Preparedness Regions Michigan, 2009



Michigan Department of Community Health  
**M DCH**  
 Jennifer M. Granholm, Governor  
 Janet Olszewski, Director

Chronic Disease and Injury Control Division GIS Team

Henry Miller; August 31, 2009

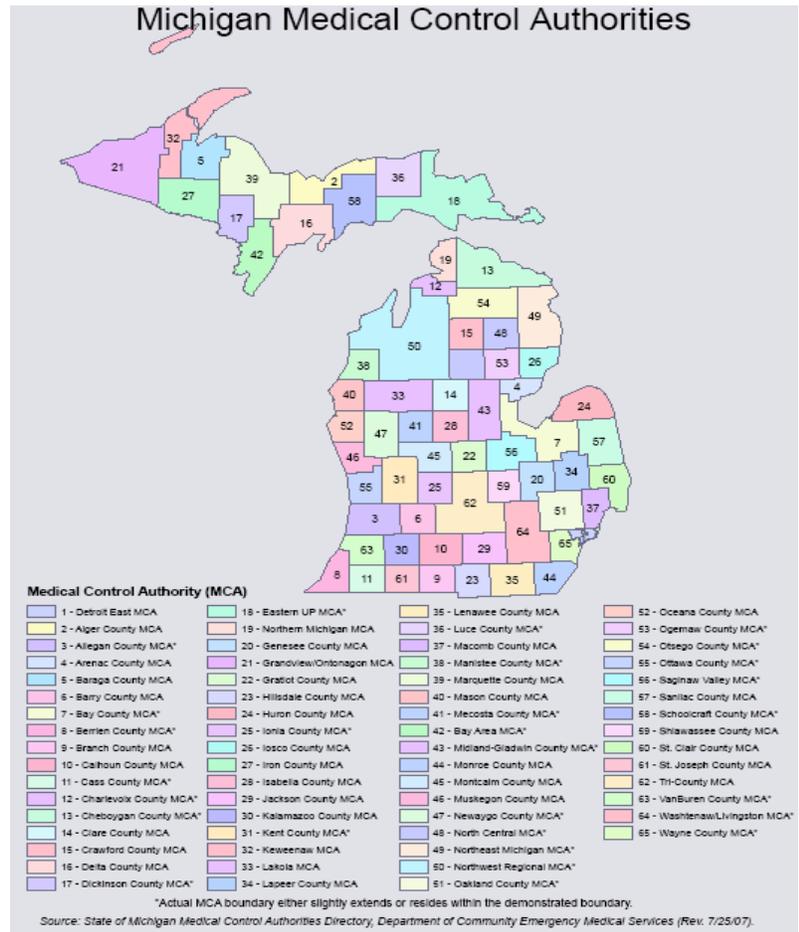
## Medical Control Authorities (MCAs)

**Author:** Rey Bouknight II **Date:** 2007

**Question:** Where are the locations/boundaries for the 65 MCAs?

**Data Source:** State of Michigan Medical Control Authority Directory, Department of Community Emergency Medical Services.

**Interpretation/Use:** This early map estimates some of the borders of the MCAs. It has been used in a range of ways. One way was to show the complexity of the system. Another way was to relate this map to the Emergency Preparedness Regions. The map was published in the *Impact of Heart Disease & Stroke in Michigan*, and used in presentations.



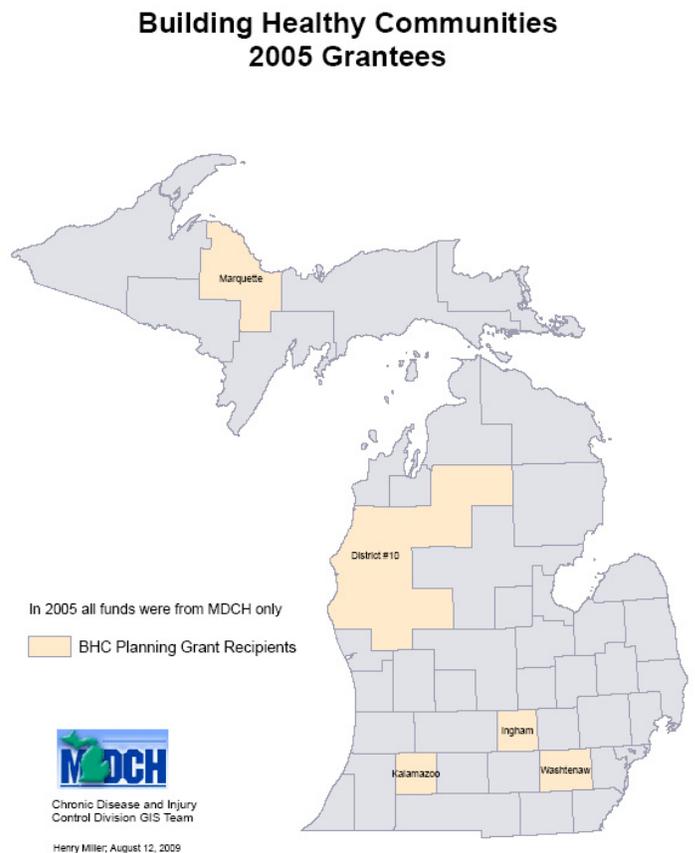
## Building Healthy Communities 2005 Grantees

**Author:** Henry Miller **Date:** 2009

**Question:** Where were the Building Healthy Community (BHC) grants awarded in 2005?

**Data Source:** MDCH Building Healthy Communities Grantee Program Files, 2005.

**Interpretation/Use:** To document program reach.



## Building Healthy Communities 2006 Grantees

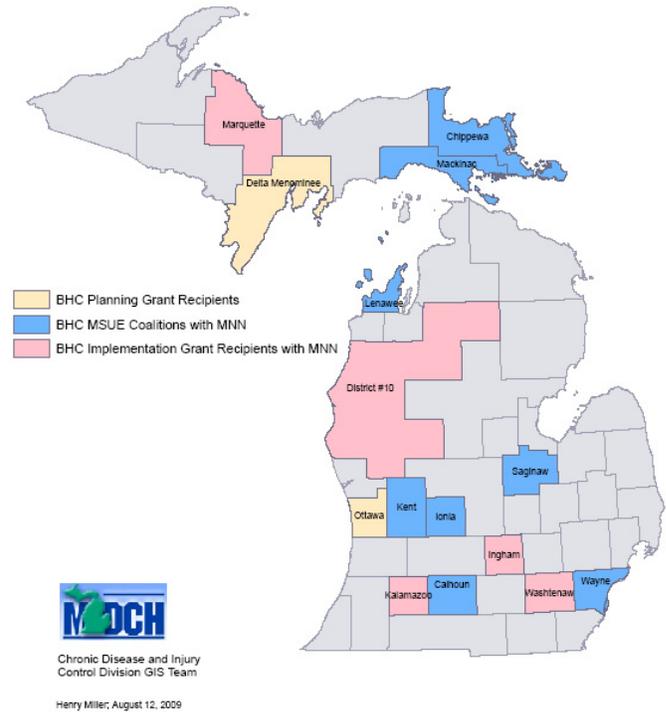
**Author:** Henry Miller      **Date:** 2009

**Question:** Where were the Building Healthy Community (BHC) grants awarded in 2006?

**Data Source:** MDCH Building Healthy Communities Grantee Program Files, 2006.

**Interpretation/Use:** To document program reach.

## Building Healthy Communities 2006 Grantees



## Building Healthy Communities 2007 Grantees

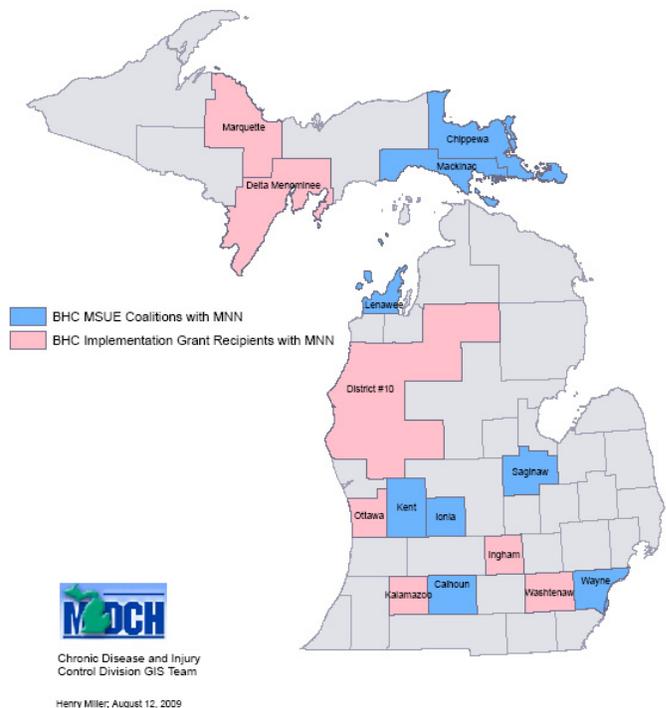
**Author:** Henry Miller      **Date:** 2009

**Question:** Where were the Building Healthy Community (BHC) grants awarded in 2007?

**Data Source:** 2007 MDCH Building Healthy Communities Grantee Program Files.

**Interpretation/Use:** To document program reach.

## Building Healthy Communities 2007 Grantees



## Building Healthy Communities Project 2008

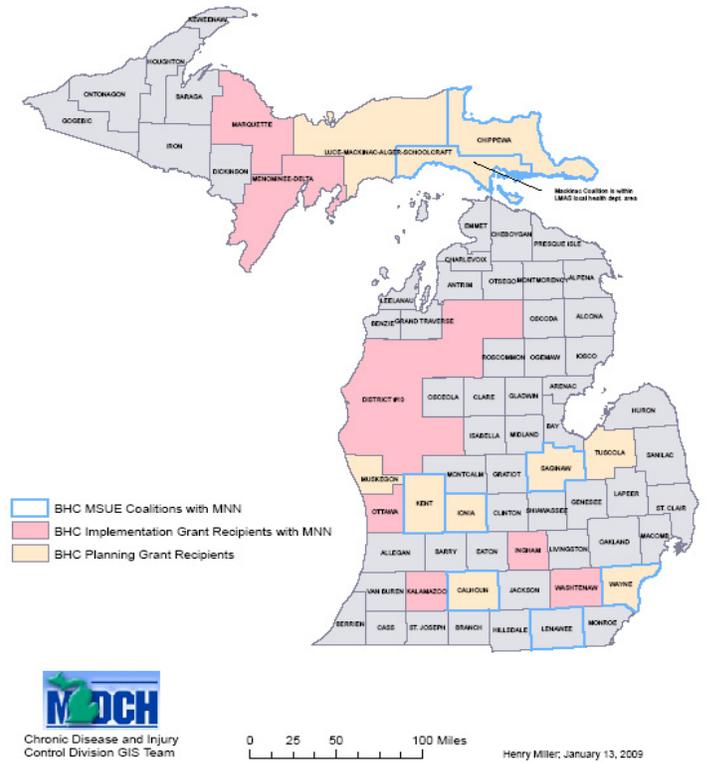
Author: Henry Miller Date: 2009

Question: Where were the Building Healthy Community (BHC) grants awarded in 2008?

Data Source: MDCH Building Healthy Communities Grantee Program Files, 2008.

Interpretation/Use: To document program reach.

## Building Healthy Communities Grant Types and Coalitions, 2008



## Building Healthy Communities Project 2009

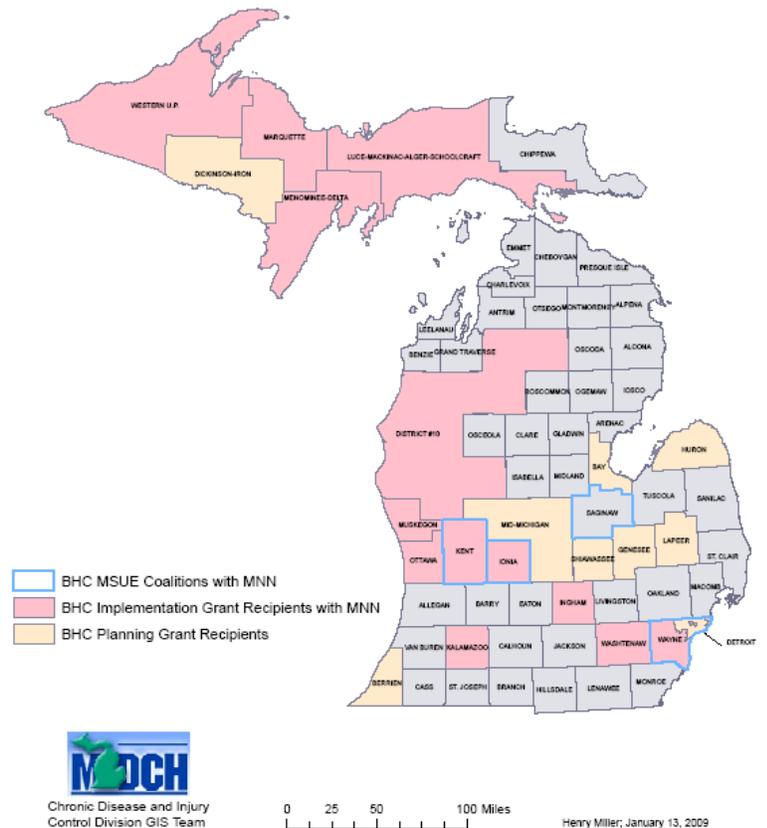
Author: Henry Miller Date: 2009

Question: Where were the Building Healthy Community (BHC) grants awarded in 2009?

Data Source: MDCH Building Healthy Communities Grantee Program Files, 2009.

Interpretation/Use: To document program reach.

## Building Healthy Communities Grant Types and Coalitions, 2009



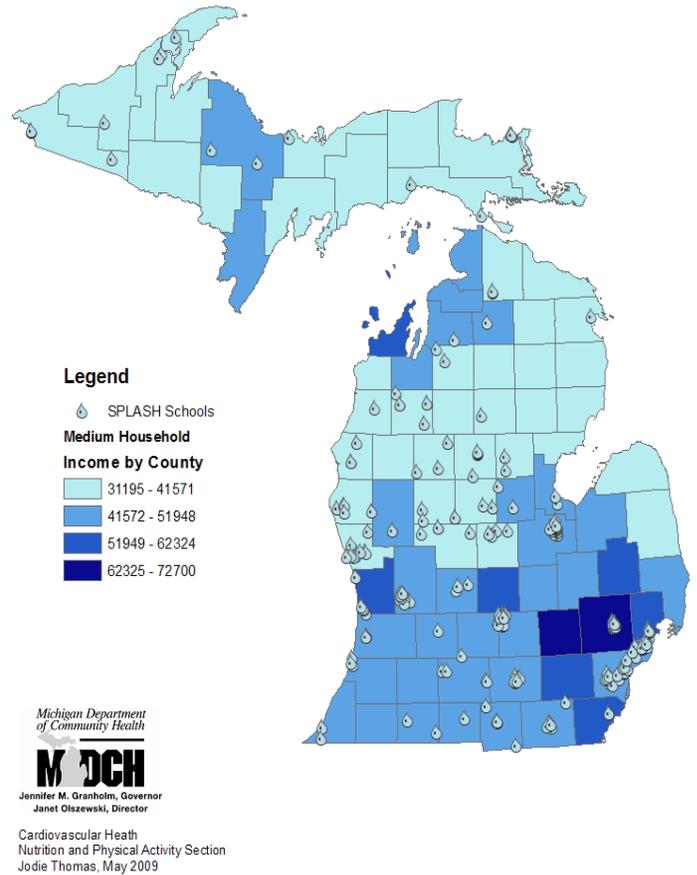
# Shaping Positive Lifestyles and Attitudes Through School Health (SPLASH) Programs Compared to County Income Level

**Author:** Henry Miller/Jodi Thomas  
**Date:** 2009

**Question:** Where are the SPLASH schools and how do they correlate with income levels?

**Data Source:** SPLASH Program School Database, 2009 and Census Medium Household Income Data by County, 2000.

**Interpretation/Use:** This map was used by MDCH SPLASH staff to evaluate appropriate program reach and to share with partners.



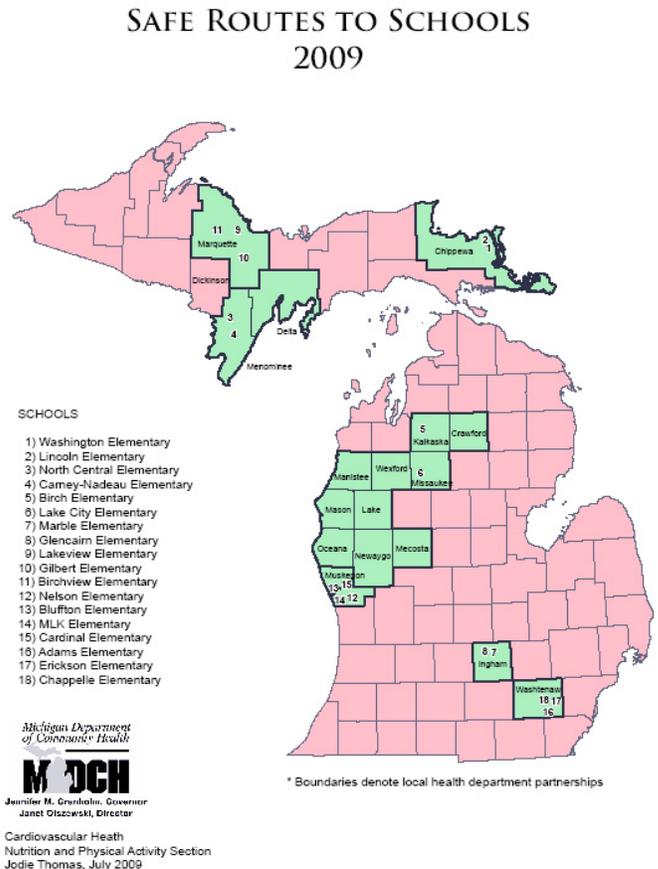
# Safe Routes to School

**Author:** Henry Miller      **Date:** 2009

**Question:** Where are the schools that are participating in the Safe Routes to Schools (SRTF) programs?

**Data Source:** Safe Routes to School Program Data, 2009.

**Interpretation/Use:** This map was used by MDCH staff and other SRTS participants to network and collaborate. It has been used to describe program locations to funders.



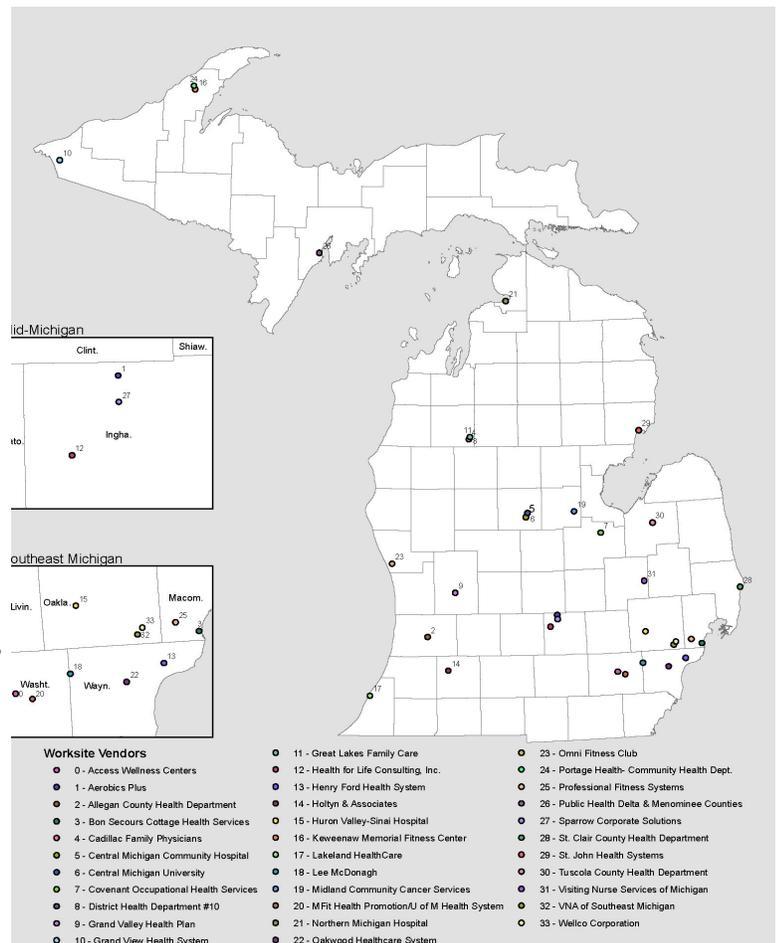
## Worksite Wellness Vendor Locations

**Author:** Rey Bouknight II **Date:** 2007

**Question:** Where are worksite wellness vendors?

**Data Source:** Survey Results of Former Wellness Vendors, 2007.

**Interpretation/Use:** A directory had been published that identified worksite wellness vendors and their services and staff requested a map to quickly locate vendors. When work-sites want to access a vendor close to them this map is used to identify choices.



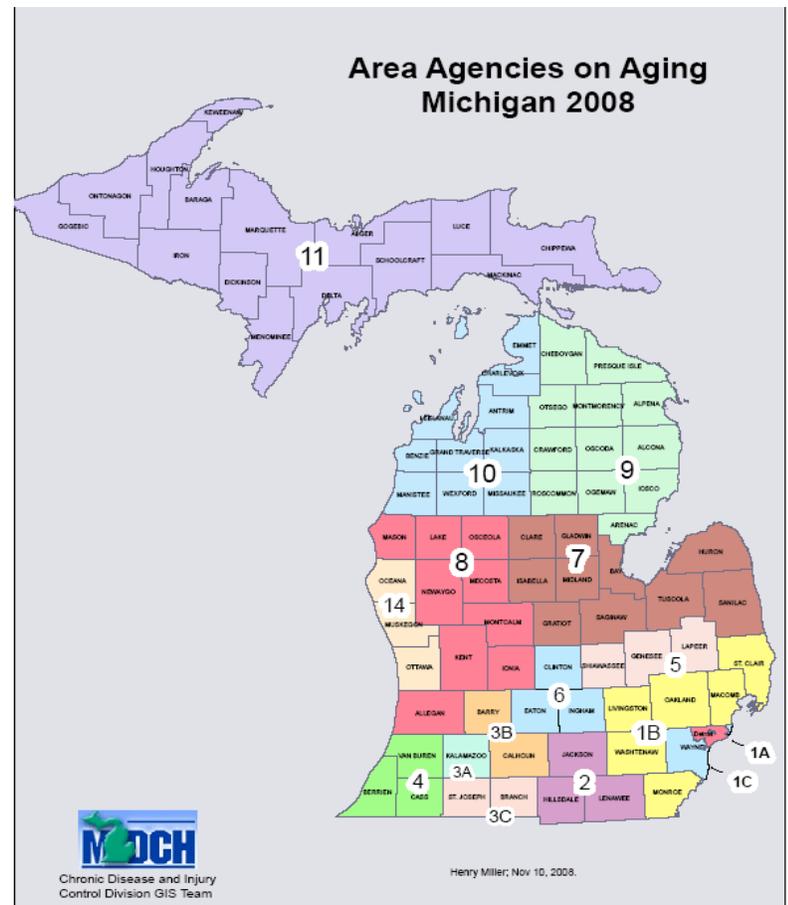
## Area Agencies on Aging

**Author:** Henry Miller **Date:** 2008

**Question:** Where are the various agencies on aging?

**Data Source:** MDCH Program Data, 2008.

**Interpretation/Use:** This map was used with partners and program staff.



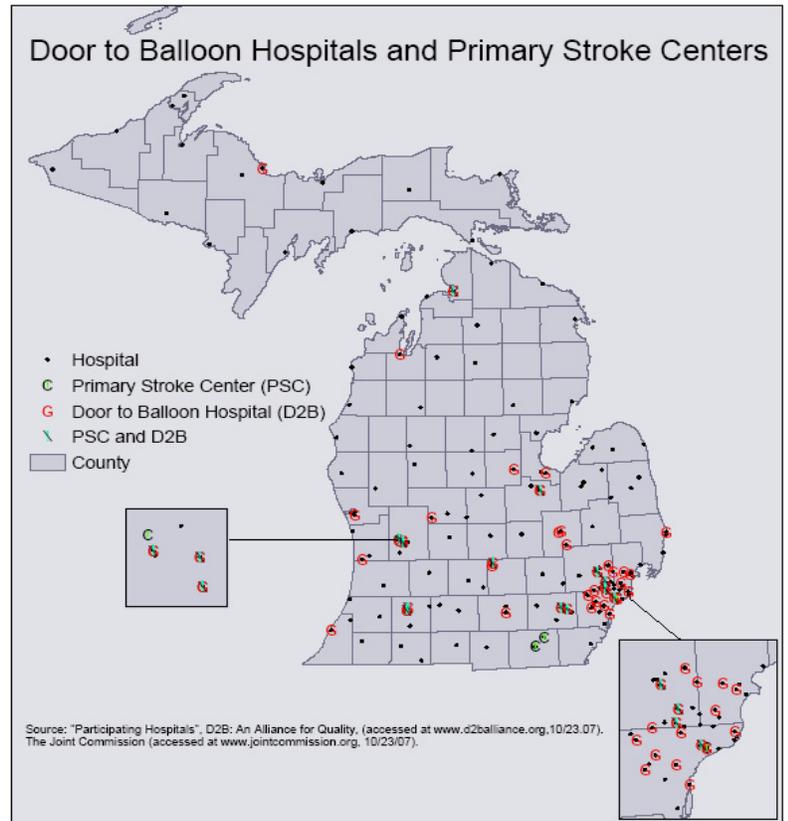
## Door to Balloon (D2B) and Primary Stroke Centers (PSC)

**Author:** Rey Bouknight II **Date:** 2007

**Question:** How many D2B and PSC hospitals are there and where are they located?

**Data Source:** D2B Alliance for Quality Hospital list (2007) and The Joint Commission Website Listing of PSCs, 2007.

**Interpretation/Use:** This early map helped visualize areas who had access to PSCs and D2B hospitals, those areas that had both of those resources and areas with no coverage.



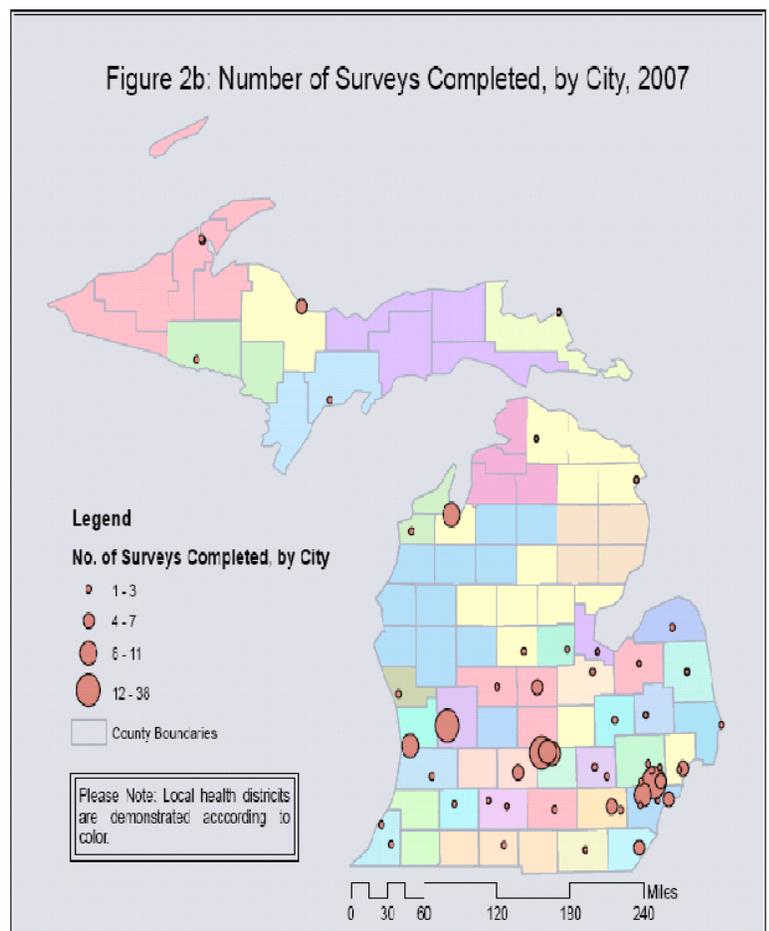
## Healthy Kids, Healthy Michigan (HKHM): Surveys Completed

**Author:** Rey Bouknight II **Date:** 2007

**Question:** Which sites completed the HKHM surveys?

**Data Source:** HKHM Program Survey Results, 2007.

**Interpretation/Use:** This map was used by MDCH staff and HKHM partners to identify which sites responded to the survey and how many responses were received.



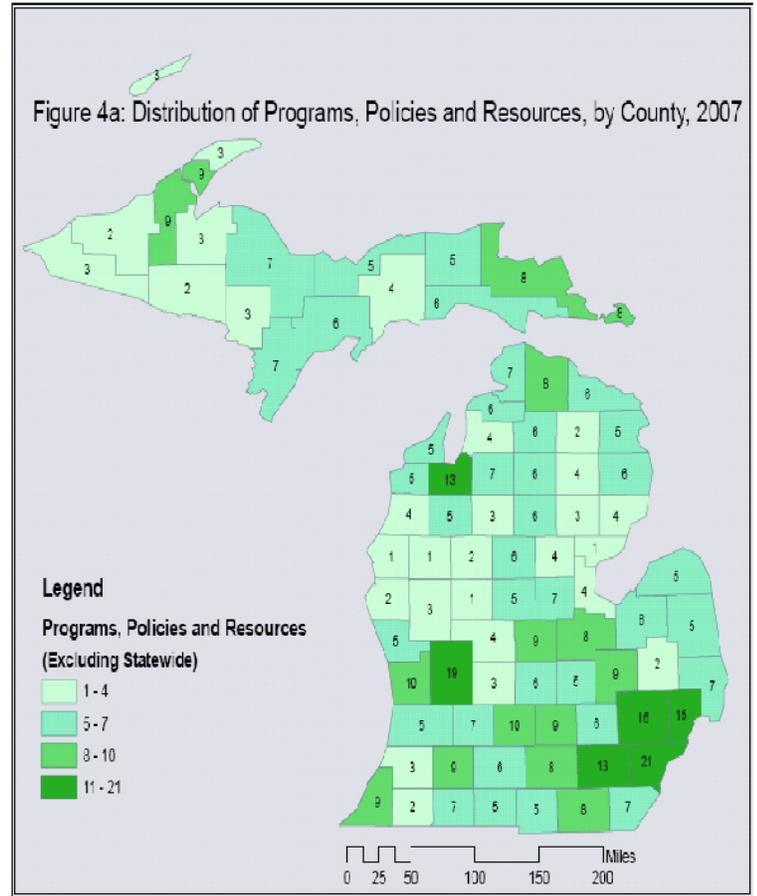
## Healthy Kids, Healthy Michigan (HKHM), Number of Programs, Policies, and Resources by County

**Author:** Rey Bouknight II **Date:** 2007

**Question:** How many counties have a program or policy for focusing on childhood obesity prevention and how many do they have?

**Data Source:** MDCH HKHM Survey, 2007.

**Interpretation/Use:** To identify the number of policies and programs and see where they are located.



## Cardiologists

**Author:** Mike Carr **Date:** 2009

**Question:** Where is the concentration of cardiologists?

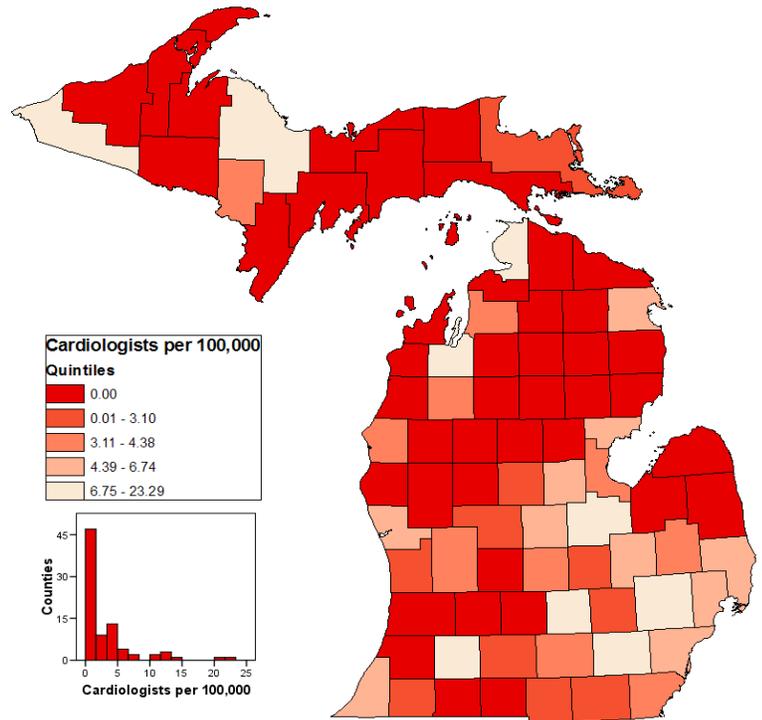
**Data Source:** Area Resource File (ARF), U.S. Department of Health & Human Services, 2005.

**Interpretation/Use:** This map is useful to see areas of the state that have fewer cardiologists.

The chart next to the map shows the range and distribution of data used in the map.

## Social Determinants of Health: Cardiologists

Number of cardiologists per 100,000 population, 2005



Source: Area Resource File (ARF), 2005  
Bureau of Health Professions  
Used with permission.

Michigan Department  
of Community Health  
**MDCH**  
Jennifer M. Granholm, Governor  
Janet Olszewski, Director

## Neurologists

Author: Mike Carr

Date: 2009

**Question:** Where is the concentration of Neurologists?

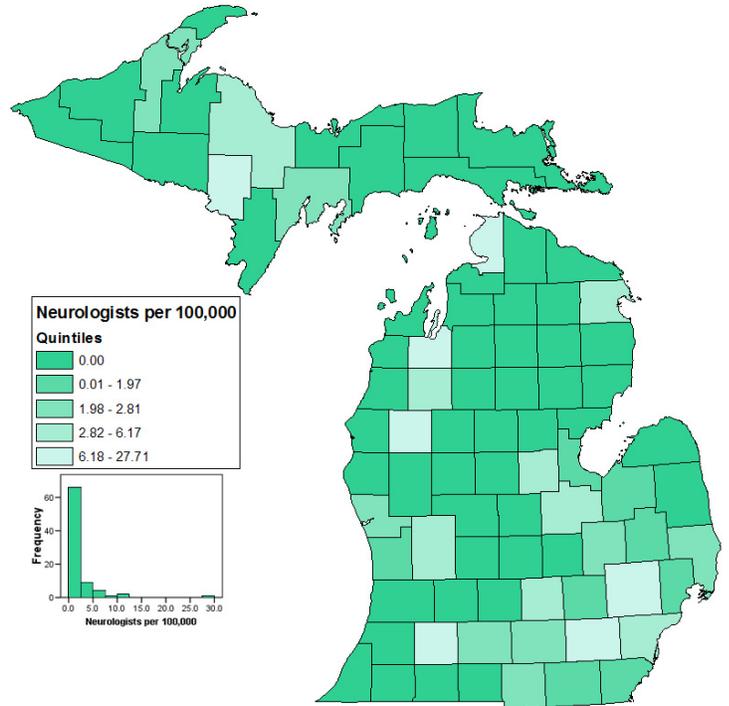
**Data Source:** Area Resource File (ARF), U.S. Department of Health & Human Services, 2005.

**Interpretation/Use:** This map is useful to see areas of the state that have fewer neurologists.

The chart next to the map shows the range and distribution of data used in the map.

### Social Determinants of Health: Neurologists

Number of neurologists per 100,000 population, 2004



Source: Area Resource File (ARF), 2005  
Bureau of Health Professions  
Used with permission.

Michigan Department  
of Community Health  
**MDCH**  
Jennifer M. Granholm, Governor  
Janet Olszewski, Director

## Get With The Guidelines (GWTG) Heart Failure Hospitals

Author: Henry Miller

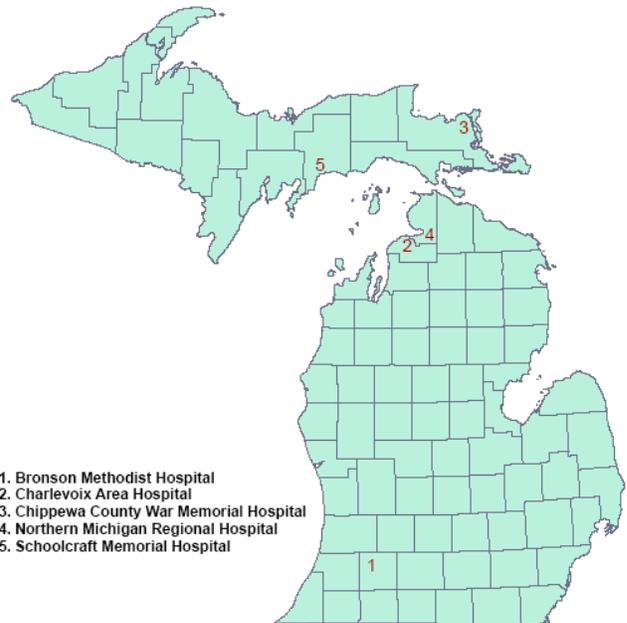
Date: 2009

**Question:** Where are the heart failure Get With The Guidelines hospital grants located?

**Data Source:** MDCH Program Files, 2009.

**Interpretation/Use:** This map described where the GWTG heart failure funded projects are. It was also useful to compare the heart failure locations with our stroke GWTG hospitals.

### Get With the Guidelines Heart Failure Hospitals



1. Bronson Methodist Hospital
2. Charlevoix Area Hospital
3. Chippewa County War Memorial Hospital
4. Northern Michigan Regional Hospital
5. Schoolcraft Memorial Hospital

Michigan Department  
of Community Health  
**MDCH**  
Jennifer M. Granholm, Governor  
Janet Olszewski, Director

Chronic Disease and Injury  
Control Division GIS Team

Henry Miller, August 3, 2009

## The Joint Commission Primary Stroke Center Hospitals and Medical Centers 2009

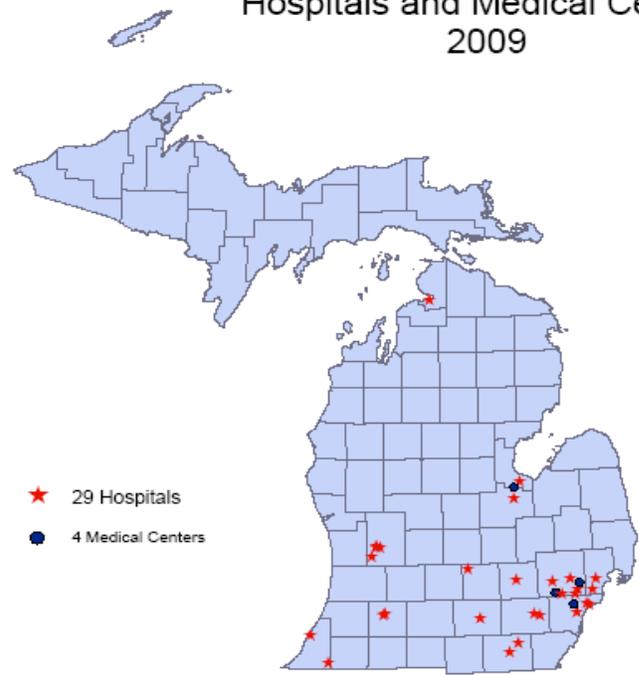
### Primary Stroke Centers

**Author:** Henry Miller      **Date:** 2009

**Question:** Where are the Joint Commission (TJC) Primary Stroke Center locations?

**Data Source:** The Joint Commission, 2009.

**Interpretation/Use:** This map showed the hospitals that have achieved Primary Stroke Center certification by TJC. This map has been used in educational material, laminate reminder pocket cards for EMS providers, the *Impact of Heart Disease and Stroke in Michigan*, and website postings.



Michigan Department  
of Community Health  
**M DCH**  
Jenna M. Grantham, Governor  
Carol Okazochi, Director  
Chronic Disease and Injury  
Control Division GIS Team

Henry Miller, May 7, 2009

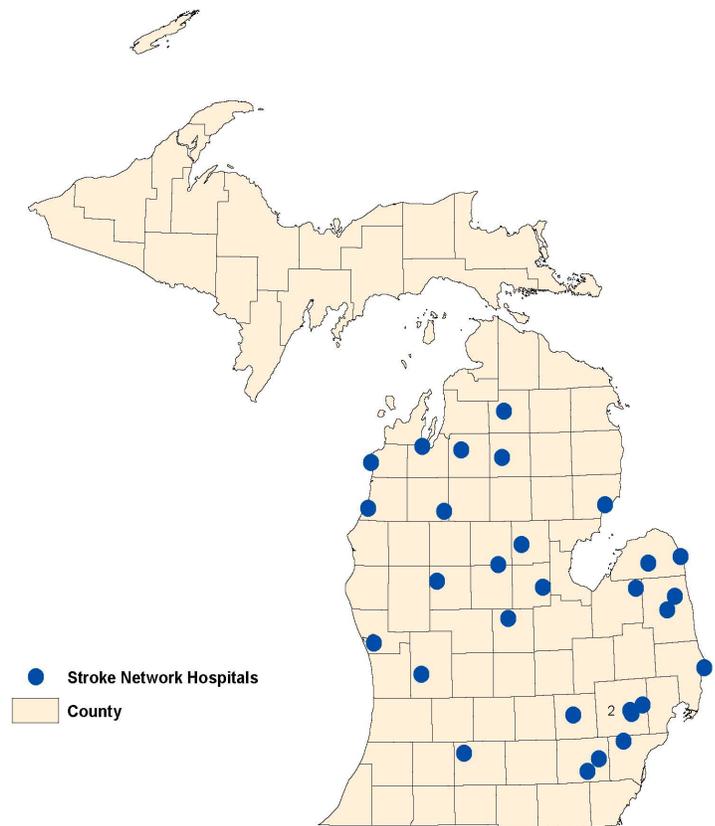
### Stroke Network Hospitals

**Author:** Henry Miller      **Date:** 2008

**Question:** Where are the 29 hospitals that are participating in a Trinity Health stroke telemedicine program?

**Data Source:** Trinity Health Listing of Participating Hospitals, 2008.

**Interpretation/Use:** This map has been used in the *Impact of Heart Disease and Stroke in Michigan*, in presentations and with partners to describe the network of telemedicine designed to provide consultation and advice for suspect acute stroke patients.



● Stroke Network Hospitals  
□ County

# Michigan Stroke Registry Quality Improvement Program (MiSRQIP) and Age Adjusted Mortality Rates for Stroke by County

**Author:** Henry Miller/Beth Anderson  
**Date:** 2009

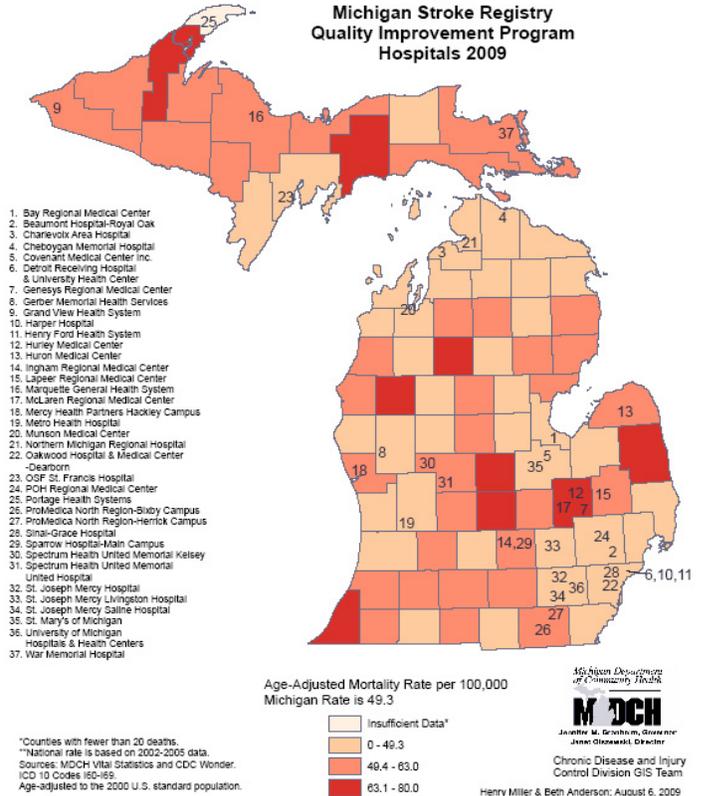
**Question:** Where are the Coverdell stroke registry hospitals (MiSRQIP) located in relation to stroke mortality rates by county?

**Data Source:** MiSRQIP Program Database, 2009 and MDCH Vital Statistics, 2002-2006.

**Interpretation/Use:** This and an earlier program map have been used in a wide range of reports, posted on our website, shared with other MiSRQIP hospitals, our advisory partnership, other groups and funders.

## Age-Adjusted Five-Year Mortality Rates for Stroke by County, 2002 to 2006

with  
**Michigan Stroke Registry Quality Improvement Program Hospitals 2009**



# Michigan Stroke Registry Quality Improvement Program (MiSRQIP) Hospitals 2008-2009

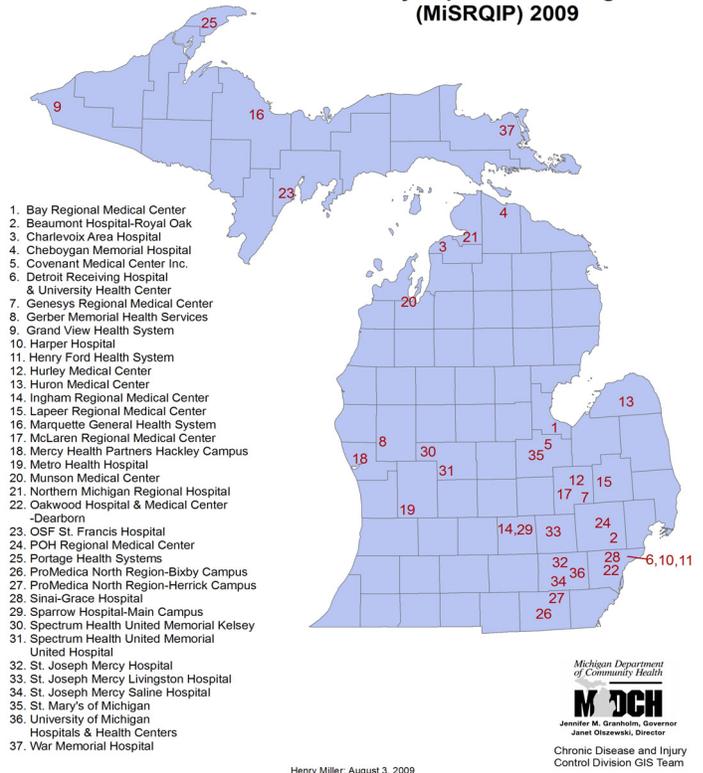
**Author:** Henry Miller      **Date:** 2009

**Question:** Where are the MiSRQIP hospitals located?

**Data Source:** MiSRQIP Program Database, MDCH, 2009.

**Interpretation/Use:** This map is used in a range of printed material to inform MDCH staff, partners and participating hospitals about hospital locations.

## Michigan Stroke Registry Quality Improvement Program (MiSRQIP) 2009



## Local Breastfeeding Coalitions by County

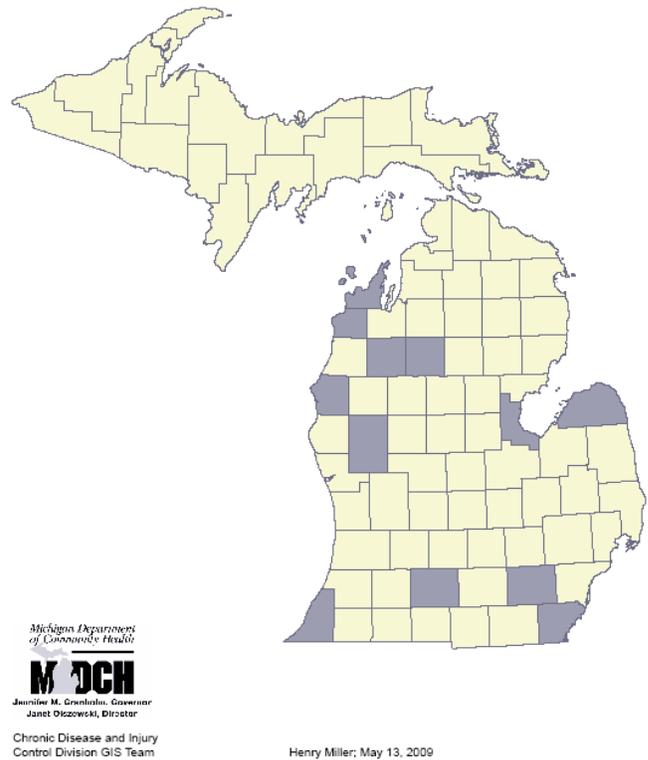
**Author:** Henry Miller      **Date:** 2009

**Question:** Where are the breastfeeding coalitions located?

**Data Source:** In-house MDCH Survey, 2009.

**Interpretation/Use:** This map helps partners and staff see where coalitions are located. It is used to support networking and identify areas that would benefit from new coalitions.

## Local Breastfeeding Coalitions by County, 2009



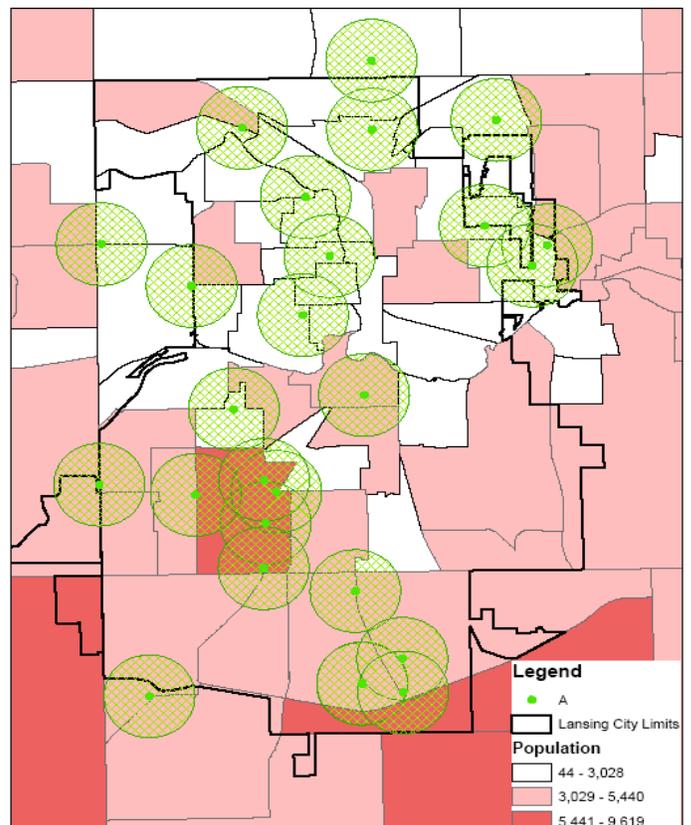
## Healthy Food Retail Locations in Lansing

**Author:** Beth Anderson      **Date:** 2009

**Question:** What are the coverage areas of healthy food retail locations in Lansing?

**Data Source:** Michigan Department of Agriculture State Food Establishment Licenses, 2009.

**Interpretation/Use:** This was a pilot project started to see where the healthy and healthy food retail locations in Lansing were. A 1 mile buffer was placed around the locations selling healthy foods to get an idea of their coverage area. Work on this project will be continued including mapping where the restaurants are in this same area.



**Diabetes and Other  
Chronic Diseases  
Section Maps**

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Diagnosed Arthritis	53
Reported Disability	54
Current Asthma	54
Federally Recognized Tribes in Michigan by DON Regions	55

## Diabetes Foot Screening Locations with Targeted Populations

Author: Lori Corteville Date: 2009

**Question:** The American Diabetes Association of Michigan selects sites for its annual foot screening day based on need. Where are the areas of need?

**Data Source:** Small Area Health Insurance Estimates, U.S. Census, 2005 . National Diabetes Surveillance System, CDC, 2005. P7—Hispanic or Latino by Race, SF3 File, U.S. Census, 2000.

**Interpretation/Use:** The map was used by the American Diabetes Association of Michigan to match areas of need (defined by high diabetes prevalence, uninsured, and Black and Hispanic populations) with available resources to select sites for 2009. Performance of 2008 sites were also considered.

## Personal Action Toward Health (PATH) Workshops by Regions

Author: Lori Corteville Date: 2009

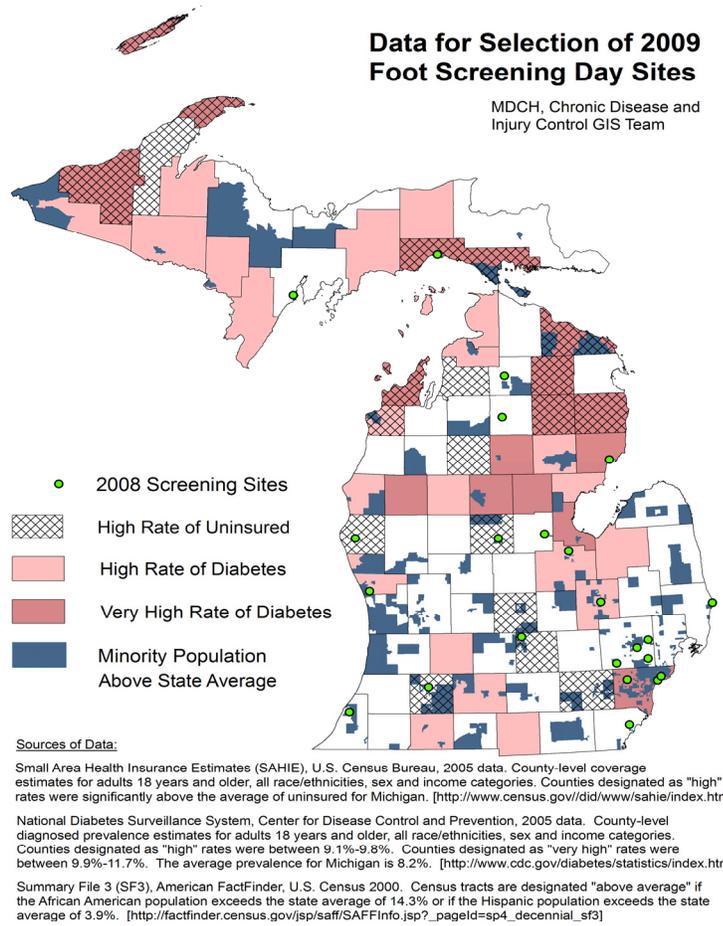
**Question:** The Personal Action Toward Health (PATH) staff and coordinating group wanted to know where these self management programs (PATH) were and their locations within the PATH regions.

**Data Source:** 2009 PATH Data Base was used to identify workshop locations. PATH Regions were obtained from MDCH staff in the program.

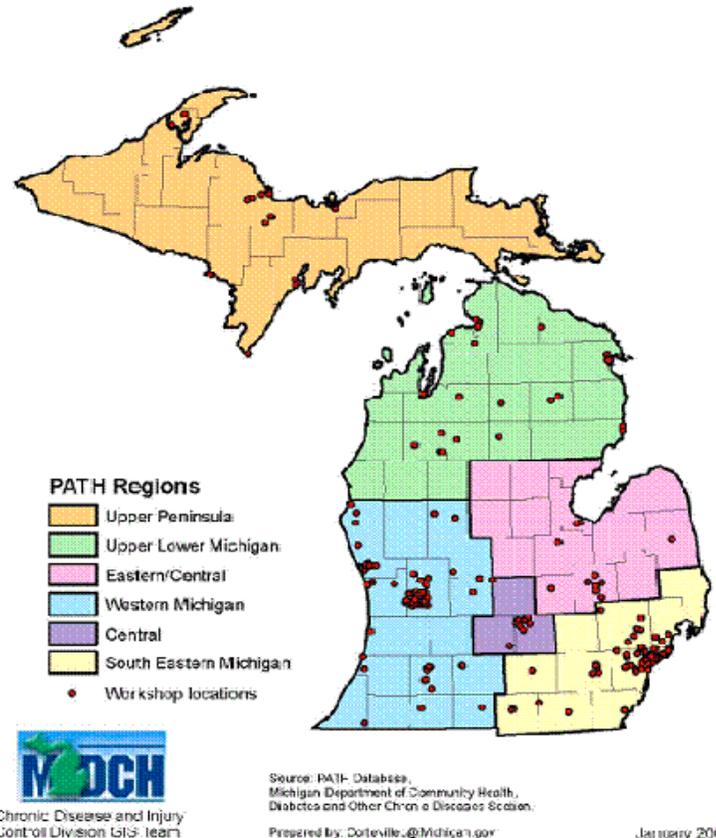
**Interpretation/Use:** This map is used to enhance referrals within geographical areas by identifying where the workshops are. The map was used in the Heart Disease & Stroke 2009 funding request to CDC. The map is also helpful in identifying areas where workshops are needed.

## Data for Selection of 2009 Foot Screening Day Sites

MDCH, Chronic Disease and Injury Control GIS Team



## Location of PATH Workshops by PATH Region



## Diabetes Outreach Network (DON) Regions

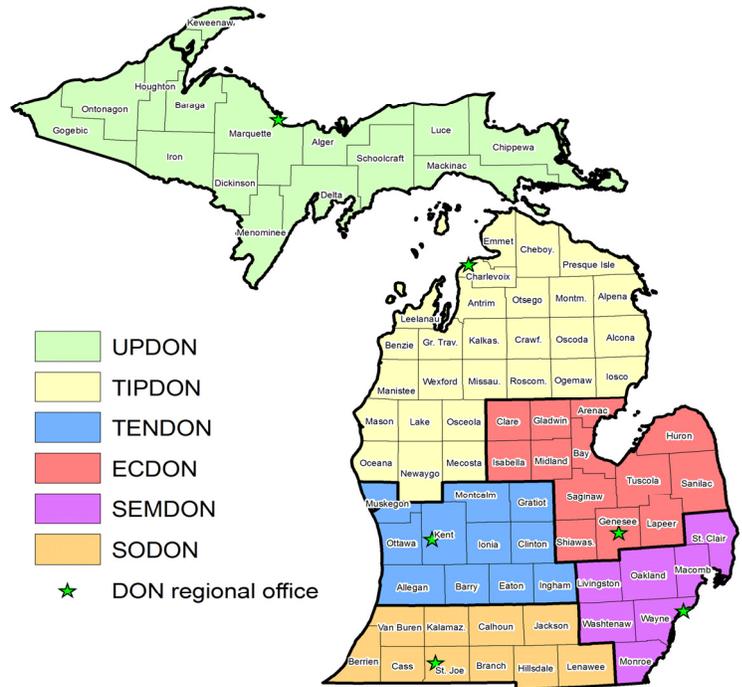
**Author:** Lori Cortevilles      **Date:** 2009

**Question:** What counties are served by the different Diabetes Outreach Networks (DONs), which are regional community-based organizations serving people with diabetes and health professionals?

**Data Source:** MDCH Diabetes staff

**Interpretation/Use:** This map is used to enhance understanding of the different areas and contacts in those areas for diabetes services. The DONs serve health professionals, patients, and the public and is a foundation for other services offered to diabetes.

## Michigan Diabetes Outreach Network Regions



[www.diabetesinmichigan.org](http://www.diabetesinmichigan.org)

## Primary Care Locations and Self Management Classes

**Author:** Lori Corteville      **Date:** 2009

**Question:** Where are the PATH and Diabetes Self-Management classes in relation to primary care practices participating in Improving Performance in Practice Project (IPIP)?

**Data Source:** Primary Care Practice Locations were provided by IPIP Staff and Diabetes Self-Management Program Locations are tracked by MDCH.

**Interpretation/Use:** A series of maps covering different areas of Michigan were developed and distributed to IPIP primary care practices. Red stars are Diabetes Self-Management and blue are PATH progress. The maps were posted in reception areas and exam rooms with a goal of increasing referral to the self management programs.

Shelly Williams DO

### Resources for People with Diabetes, Asthma or Other Chronic Disease

Self-Management education programs teach patients skills to manage their disease. The educated patient then works with medical care providers to limit disease complications.



- |   |   |
|---|---|
| 1 PATH Chronic Disease Self-Management Ed<br>New Hope Baptist Church<br>560 Yuba, Muskegon, MI 49444<br>231-773-2128                      | 6 PATH Chronic Disease Self-Management Ed<br>McGraft Park<br>2204 Wickham, Muskegon, MI 49441<br>231-755-0434                           |
| 2 PATH Chronic Disease Self-Management Ed<br>Muskegon Community Health Project<br>565 W. Western Ave, Muskegon, MI 49440<br>231-728-3201  | 7 PATH Chronic Disease Self-Management Ed<br>HealthCare<br>134 E. Barney Ave, Muskegon Hgts, MI 49444<br>231-733-2128                   |
| 3 PATH Chronic Disease Self-Management Ed<br>Catholic Charities of West MI<br>1095 Third St, Suite 10, Muskegon, MI 49441<br>231-727-4140 | 8 PATH Chronic Disease Self-Management Ed<br>Christian Manor Assisted Living<br>1480 McLaughlin Ave, Muskegon, MI 49442<br>231-733-6634 |
| 4 PATH Chronic Disease Self-Management Ed<br>Access Health<br>1200 Ransom St, Muskegon, MI 49442<br>231-728-5180                          | 9 PATH Chronic Disease Self-Management Ed<br>Pine Grove Manor<br>1764 East Apple, Muskegon, MI 49442<br>231-755-0434                    |
| 5 Diabetes Self-Management Education<br>Mercy Health Partners – Hackley<br>1700 Clinton St, Muskegon, MI 49442<br>231-798-0369            |   |



September 24, 2009

## Diagnosed Diabetes

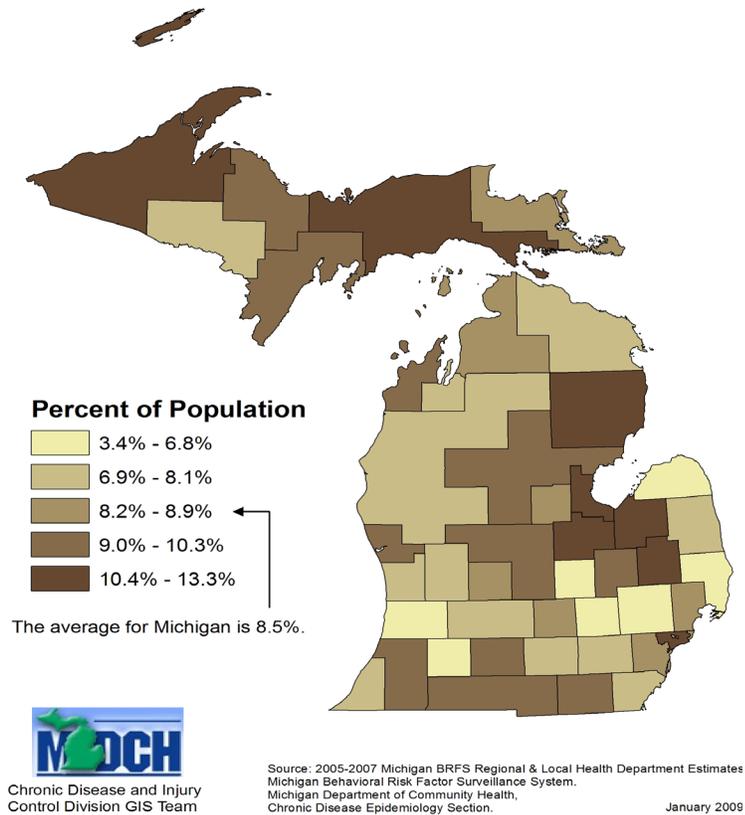
Author: Lori Corteville      Date: 2009

**Question:** Which areas of the state have a higher percentage of population with diagnosed diabetes?

**Data Source:** Michigan BRFs Regional and Local Health Department data, 2005-2007.

**Interpretation/Use:** This map can be used to identify local health departments with higher percentages of diabetes and those with percentages above the Michigan average.

## Diagnosed Diabetes by Local Health Department Region



## Diagnosed Arthritis

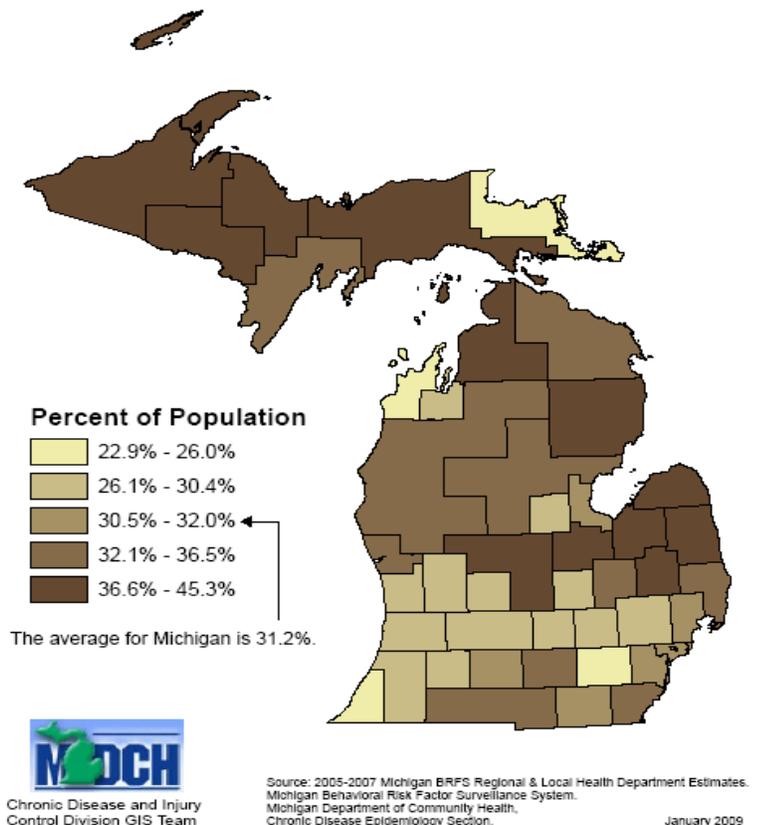
Author: Lori Corteville      Date: 2009

**Question:** Which areas of the state have a higher percentage of population with diagnosed arthritis?

**Data Source:** Michigan BRFs Regional and Local Health Department data, 2005-2007.

**Interpretation/Use:** This map can be used to identify local health departments with higher percentages of arthritis and those with percentages above the Michigan average.

## Diagnosed Arthritis by Local Health Department Region



## Reported Disability

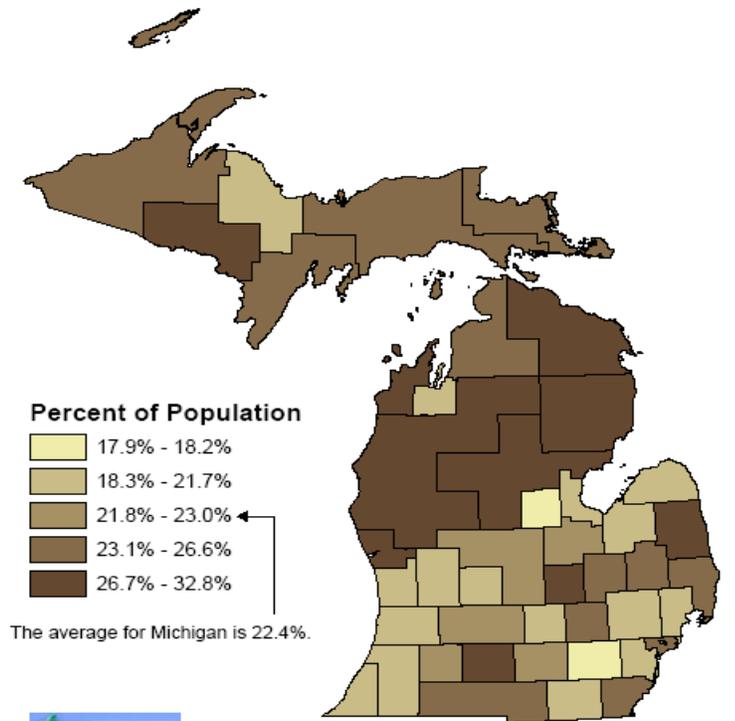
**Author:** Lori Corteville      **Date:** 2009

**Question:** Which areas of the state have a higher percentage of population with reported disability?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map can be used to identify local health departments with higher percentages of disabilities and those with percentages above the Michigan average.

## Disability (Physical, Mental or Emotional) by Local Health Department Region



Source: 2005-2007 Michigan BRFSS Regional & Local Health Department Estimates.  
Michigan Behavioral Risk Factor Surveillance System.  
Michigan Department of Community Health,  
Chronic Disease Epidemiology Section.  
January 2009

## Current Asthma

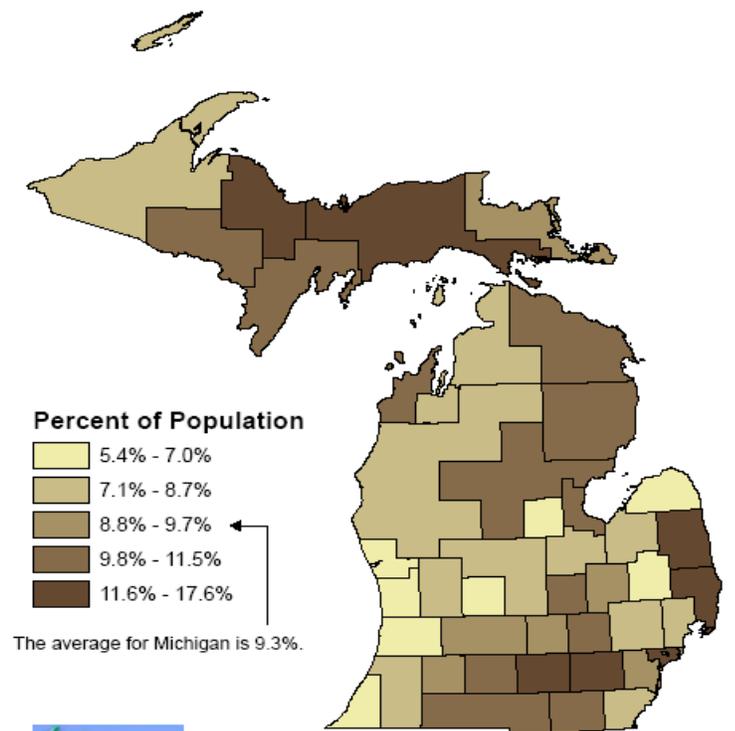
**Author:** Lori Corteville      **Date:** 2009

**Question:** Which areas of the state have a higher percentage of population with Asthma?

**Data Source:** Michigan BRFSS Regional and Local Health Department Data, 2005-2007.

**Interpretation/Use:** This map can be used to identify local health departments with higher percentages of asthma and those with percentages above the Michigan average.

## Current Asthma by Local Health Department Region



Source: 2005-2007 Michigan BRFSS Regional & Local Health Department Estimates.  
Michigan Behavioral Risk Factor Surveillance System.  
Michigan Department of Community Health,  
Chronic Disease Epidemiology Section.  
January 2009

# Federally Recognized Tribes in Michigan by Diabetes Outreach Network (DON) Regions

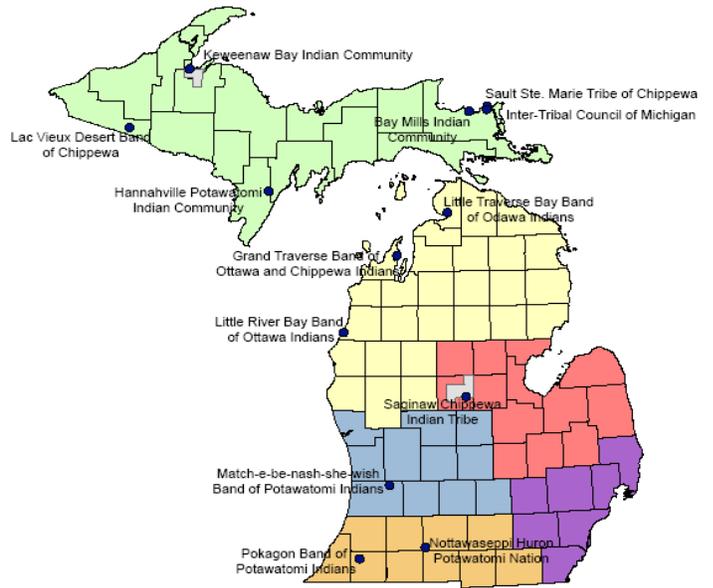
**Author:** Lori Corteville     **Date:** 2009

**Question:** Where are tribes located in relation to DON regions?

**Data Source:** American Indian/Alaskan Native/Native Hawaiian Area Shapefile, Tiger/Line, U.S. Census, 2008.

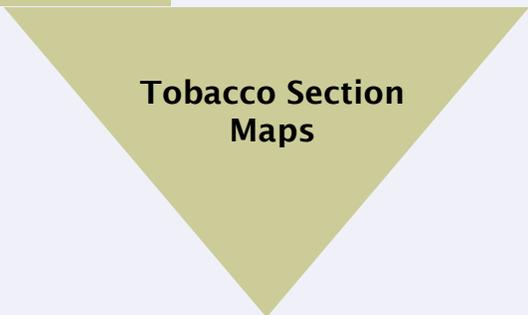
**Interpretation/Use:** This map was used as part of the Tribal Plan for Michigan Diabetes Prevention and Control Program. The DONs were contracted to maintain relationships and provide services to tribes in their region.

## Federally Recognized Tribes in Michigan



Michigan Diabetes Outreach Network





**Tobacco Section  
Maps**

Smoking Prevalence	57
Smoking Prevalence Compared with <i>Healthy People 2010</i> Target	57
Worksites with a Smoke-free Regulation by County	58
Cotinine Laboratory Locations	58



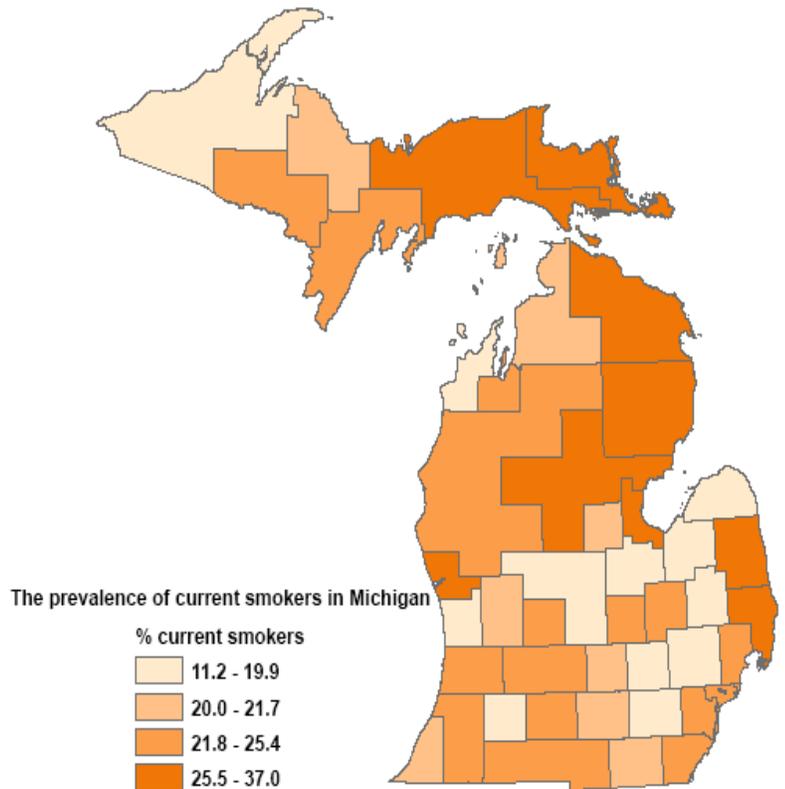
## Smoking Prevalence

**Author:** Kathie Boynton    **Date:**

**Question:** What is the prevalence of current smokers in Local Health Departments?

**Data Source:** Michigan Regional and Local Health Department Data, 2005-2007 and BRFSS, 2005-2007

**Interpretation/Use:** This map can be used to identify higher level regions in Michigan for current smoking. It can be compared to program activities and used to target programming.



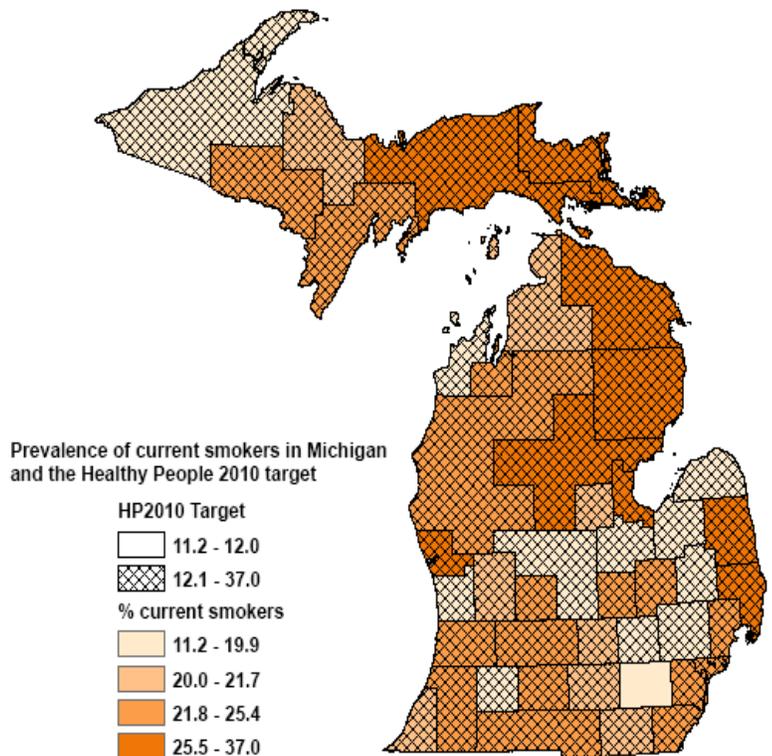
## Smoking Prevalence by Local Health Departments Compared with *Healthy People 2010 (HP 2010)* Target

**Author:** Beth Anderson    **Date:** 2008

**Question:** How do areas of Michigan compare to the HP 2010 goal for current smokers?

**Data Source:** Michigan Regional and Local Health Department Data, 2005-2007 and BRFSS, 2005-2007 and *HP 2010*.

**Interpretation/Use:** This map shows that only one county in Michigan is at or below the HP 2010 target (12%) for current smokers. The map also shows higher risk areas and is used by MDCH staff.



## Worksites with a Smoke-Free Regulation by County

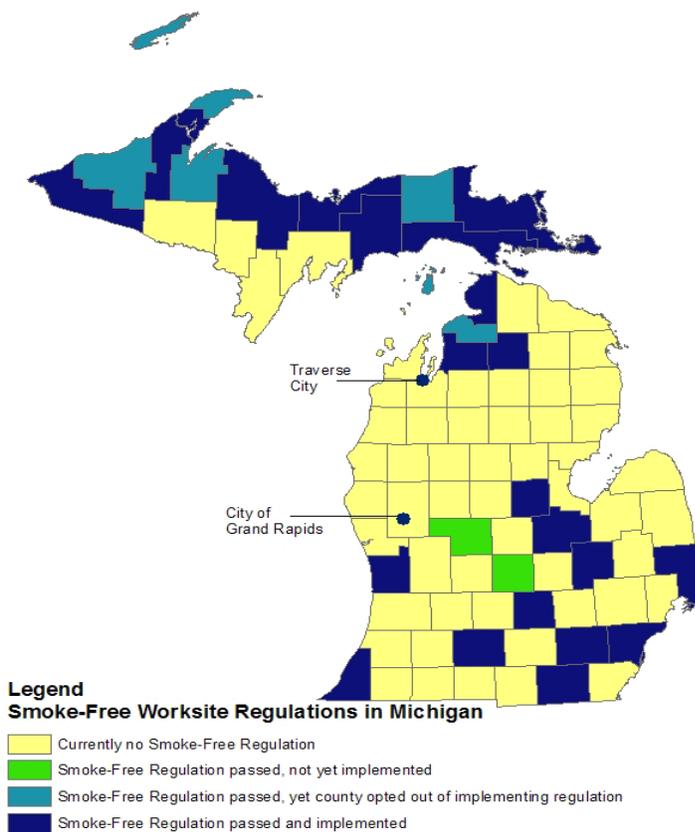
**Author:** Kathie Boynton **Date:** 2008

**Question:** Which counties have smoke-free regulations and at what level of implementation?

**Data Source:** MDCH Tobacco Section Database (database continually updated), 2008.

**Interpretation/Use:** This map was used by MDCH staff and Tobacco-free Michigan to identify counties with policies, those at early stages in implementation and counties/cities that are opportunities for outreach. This map will be updated to map progress in the goal to reduce second-hand smoke statewide. The map shows 22 counties and 2 cities that have passed and implemented a smoke-free worksite regulation.

## Smoke-Free Worksite Regulations in Michigan



## Cotinine Laboratory Locations

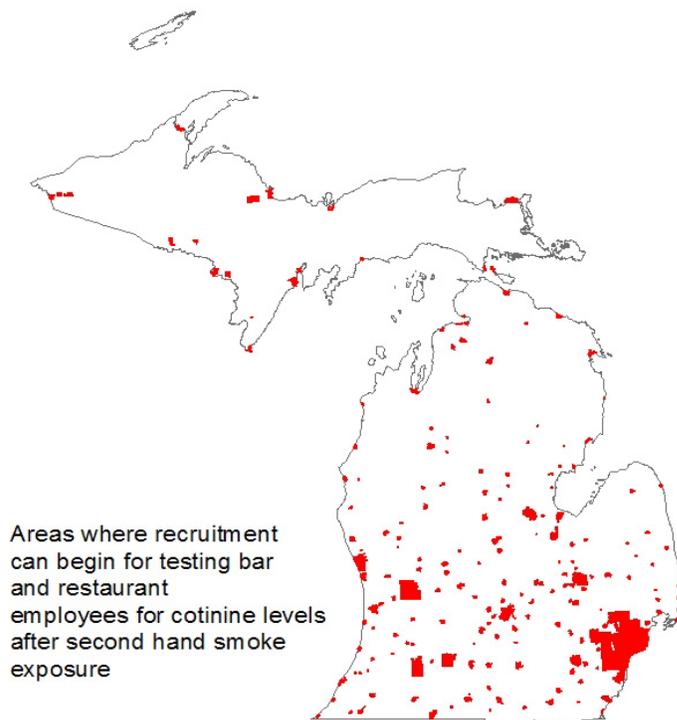
**Author:** Kathie Boynton/Henry Miller  
**Date:** 2008

**Question:** Where are the laboratories that test cotinine levels to evaluate second-hand smoke exposure?

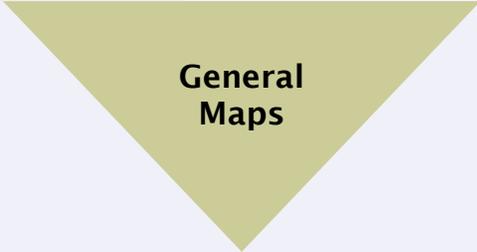
**Data Source:** Tobacco-free Michigan Survey Data 2008.

**Interpretation/Use:** Tobacco-free Michigan and MDCH Tobacco staff used this map to identify areas where recruitment could be started for testing bar and restaurant workers to determine level of second-hand smoke exposure.

## QuestPro Laboratory Locations by Michigan City, 2008



K.Boynton; May 16, 2008



**General  
Maps**

Dental Visits in Past Year	60
Regional School Health Coordinator Sites	60
Legislative Districts—Senate	61
Legislative Districts—House	61



## Dental Visits in Past Year

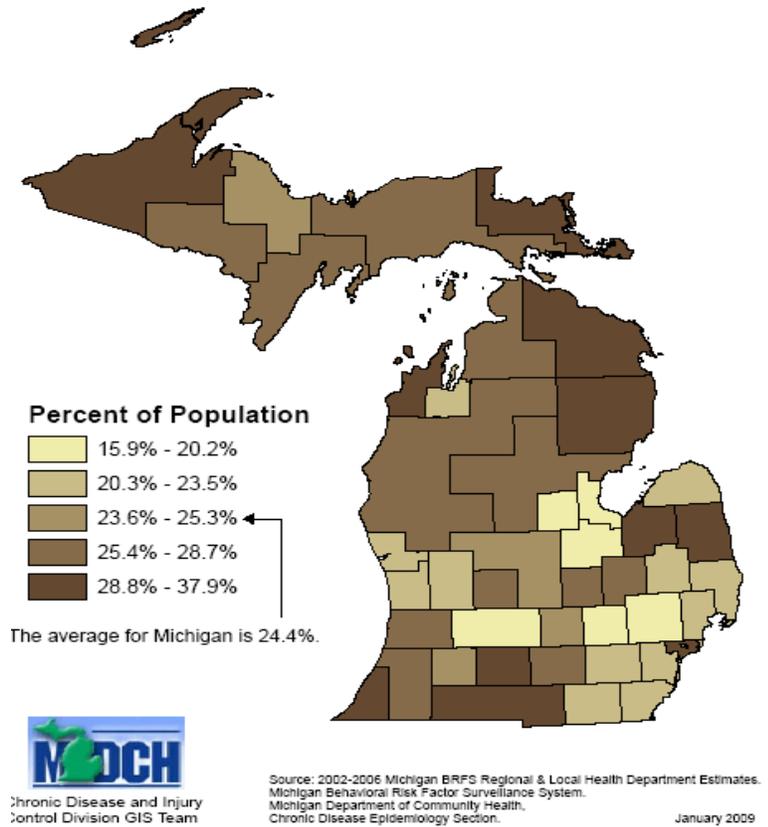
Author: Lori Corteville Date: 2009

**Question:** Which areas of the state have lower percentages of dental visits?

**Data Source:** Michigan BRFs Regional and Local Health Department Data, 2002-2006.

**Interpretation/Use:** This map can be useful to dental health professionals and MDCH staff to consider areas of outreach and program services.

## No Dental Visit in Past Year by Local Health Department Region



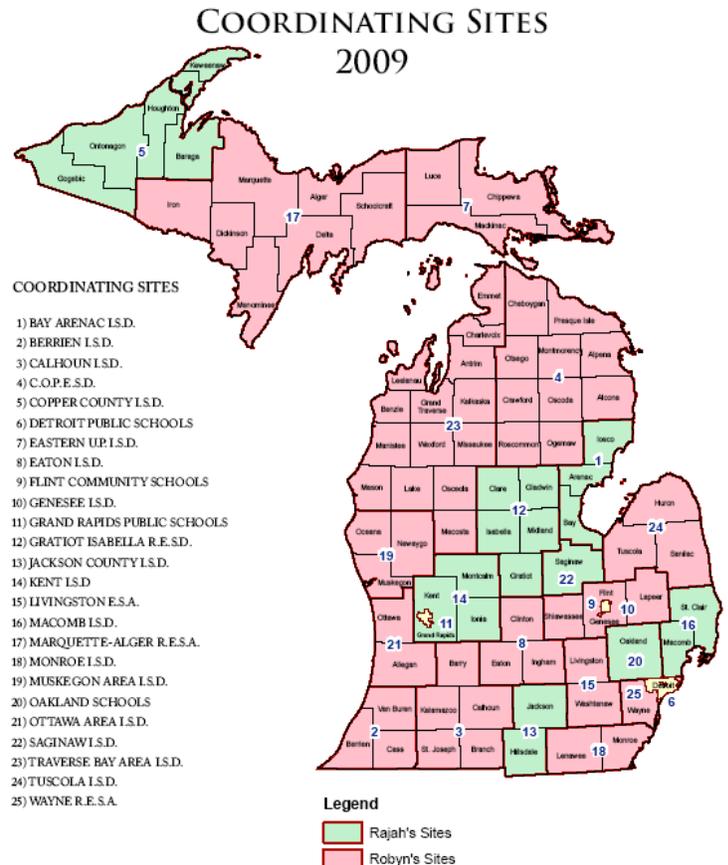
## Regional School Health Coordinator Sites

Author: Henry Miller/Jodi Thomas Date: 2009

**Question:** Where are the Regional School Health Coordinator sites and which SPLASH staff are assigned to the sites?

**Data Source:** MDE Data, 2009 and MDCH SPLASH Data.

**Interpretation/Use:** This map is used internally to identify MDCH staff assignments and assist other staff in knowing who the contact is for those specific regional school health coordinator locations.



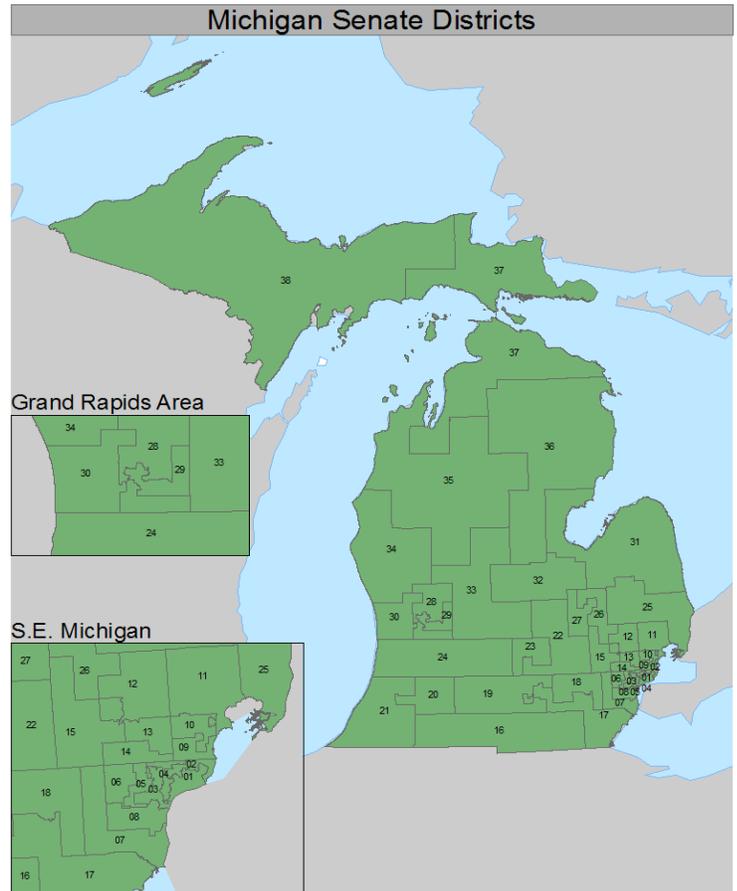
## Legislative Districts—Senate

**Author:** Rey Bouknight II **Date:** 2007

**Question:** Where are the boundaries for the legislative districts?

**Data Source:** Michigan Center for Geographic Information (MiCGI), 2007.

**Interpretation/Use:** This map can be used to align surveillance data identifying higher need regions or program services offered to individual Senators and their constituents.



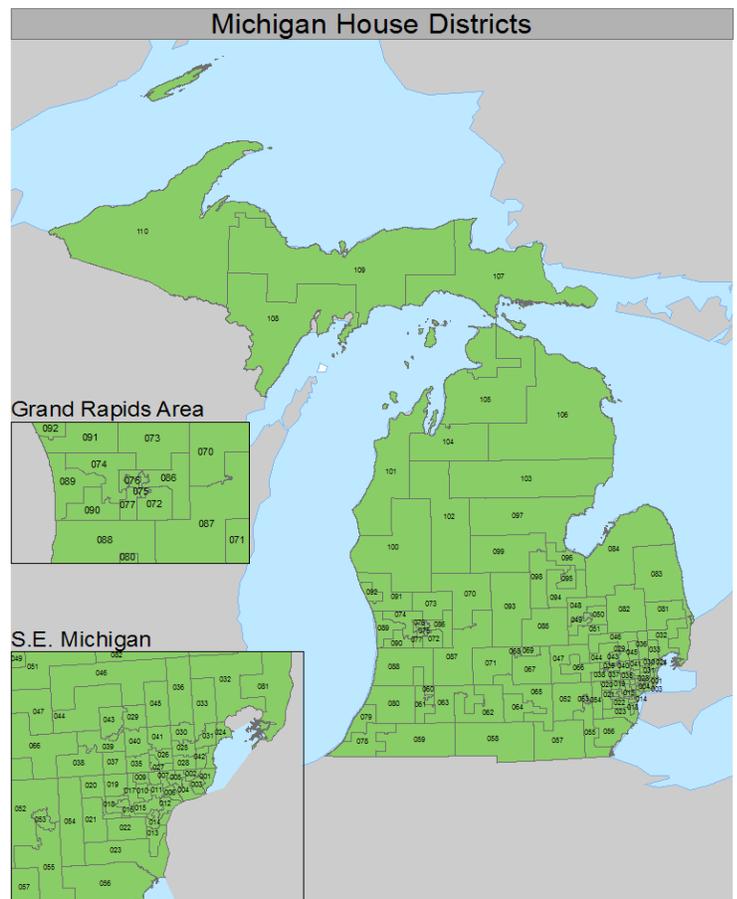
## Legislative Districts—House

**Author:** Rey Bouknight II **Date:** 2007

**Question:** Where are the boundaries for the legislative districts?

**Data Source:** Michigan Center for Geographic Information (MiCGI), 2007.

**Interpretation/Use:** This map can be used to align surveillance data identifying higher need regions or program services offered to individual House members and their constituents.



## Appendix List of Abbreviations

ACC	American College of Cardiology
AHA	American Heart Association
ARF	Area Resource File, 2005, U. S. Department of Health & Human Services
BCCCP	Breast and Cervical Cancer Control Program
BHC	Building Healthy Communities
BMI	Body Mass Index
BRFS	Behavioral Risk Factor Survey
CAH	Critical Access Hospital
CDC	Centers for Disease Control and Prevention
CHD	Coronary Heart Disease
CVD	Cardiovascular Disease
DON	Diabetes Outreach Network
D2B	Door to Balloon
EMS	Emergency Medical Services
HD	Heart Disease
HF	Heart Failure
HKHM	Healthy Kids, Healthy Michigan
HP 2010	<i>Healthy People 2010</i>
GIS	Geographic Information System
GWTG	Get with the Guidelines
ICD	International Classification of Diseases
MCA	Medical Control Authorities
MDCH	Michigan Department of Community Health
MDE	Michigan Department of Education
MHA	Michigan Health and Hospital Association
MiCGI	Michigan Center for Geographic Information
MiSRQIP	Michigan Stroke Registry Quality Improvement Program
NCHS	National Center for Health Statistics
PATH	Personal Action Toward Health
PCI	Percutaneous Coronary Intervention
PSC	Primary Stroke Center
SPLASH	Shaping Positive Lifestyles and Attitudes Through School Health
SRTS	Safe Routes to School
STEMI	ST-segment Elevation Myocardial Infarction
SCDY	Sudden Cardiac Death of the Young
TJC	The Joint Commission
WISEWOMAN	Well Integrated Screening and Evaluation for Women Across the Nation

## Appendix Additional Data Source and Methods Section

**Name:** Area Resource File, 2005, U. S. Department of Health & Human Services

**Acronym:** ARF

### **What are the primary data sources?**

The ARF integrates data from numerous primary data sources including: the American Hospital Association, the American Medical Association, the American Dental Association, the American Osteopathic Association, the Bureau of the Census, the Centers for Medicare and Medicaid Services (formerly Health Care Financing Administration), Bureau of Labor Statistics, InterStudy and the Veteran's Administration.

From [www.arf.hrsa.gov](http://www.arf.hrsa.gov) U.S. Department of Health and Human Service Health Resources and Services Administration

### **Coding for hospitalization and mortality data**

The International Classification of Diseases (ICD) Ninth Revision Clinical Modification (ICD-9-CM) was used to classify hospitalization data and the ICD Tenth Revision (ICD-10) was used for the mortality data. The following principal diagnosis codes in the hospitalization data and the underlying cause of death codes in the mortality data were used.

Disease	ICD-9	ICD-10
Cardiovascular Disease	390-434, 436-448	100-178
Disease of the Heart	390-398, 402, 404, 410-429	100-109, 111, 113, 120-151
Coronary Heart Disease	410-414, 429.2	120-125
Stroke	430-434, 436-438	160-169
TIA	435	
Heart Failure	428	150

A hospitalization is defined as an inpatient stay with a primary discharge diagnosis listed above. Data represent the number of hospitalization stays, not the number of people hospitalized.

**Data Suppression:** Reporting of data is suppressed when the numbers are too small or protection of individual information might be jeopardized.

**Geographic Information System (GIS):** A geographic information system integrates hardware, software, and data for capturing, managing, analyzing and displaying all forms of geographically referenced information. The software used for this grant was ESRI ArcGIS. This methodology allows users to understand and question data in ways that reveal relationships, patterns and trends not easily seen in other data analyses.

**Name:** Michigan Behavioral Risk Factor Surveillance System

**Acronym:** BRFSS

**Basic Purpose and History:** The BRFSS is a source of estimates of the prevalence of certain health behaviors, conditions, and practices associated with leading cause of death. Michigan has conducted the BRFSS survey since 1987.

**Data Collection Process:** Annual estimates are based on data collected by telephone from a sample of Michigan adults selected using random-digit dial methods. It is a population-based representative sample of non-institutionalized Michigan residents. The data are weighted to represent estimates for the general adult population. BRFSS interviewers use a Computer Assisted Telephone Interviewing (CATI) system, which provides the interviewer with prompts. The interviewer types the respondent's responses directly onto the computer screen, providing quality control and minimizing interviewer error.

**Population Included:** A record is a completed telephone interview. The selected respondent must be a Michigan resident, 18 years of age or older who lives in a private residence and has a telephone. One randomly selected adult from a household is interviewed.

**Additional Information:** For more information about the BRFSS and national data for comparison, visit <http://www.cdc.gov/brfss/index.htm>. For a complete report of the Michigan BRFSS Survey, visit <http://www.michigan.gov/brfs>.

**Name:** Michigan Inpatient Database

**Acronym:** MIDB

**Basic Purpose and History:** These data help support the State of Michigan health planning activities and are used by facilities themselves for internal evaluation. The Michigan Department of Community Health (MDCH) has purchased data from the Michigan Health and Hospital Association (MHA) since 1982.

**Data Collection Process:** Data are collected throughout a patient hospital stay by clinical and administrative staff and filed within a medical record. Hospital medical record personnel ascertain and keypunch information from these records. Some small hospitals complete data collection forms and send these directly to MHA for processing. Depending on the facility, data are submitted on a voluntary basis monthly, quarterly, or annually to MHA. Because data formats often differ by hospital, all coding is converted into standard formats at MHA. The public use file provided to MDCH is stripped of all patient, provider, and hospital identifiers.

**Population Included:** Records include all hospital discharges from any of Michigan's reporting acute care hospitals or Michigan residents discharged from acute care hospitals in contiguous states. It includes virtually all hospitalizations in Michigan and for Michigan residents.

**Additional Information:** For the latest data regarding preventable hospitalizations in Michigan, visit <http://www.mdch.state.mi.us/pha/osr/chi/hosp/frame.html>.

**Name:** Michigan Resident Death Files

**Acronym:** MRDF

**Basic Purpose and History:** The death certificate database is a high quality computerized data set containing demographic and cause of death information for all Michigan residents (out of state deaths included) and non-Michigan residents dying in Michigan. Death certificates are one of public health's vital records for monitoring the health of citizens. Death certificates have been collected in Michigan since 1897.

**Data Collection process:** A funeral director, or another individual responsible for disposing of the body, completes the demographic and disposition components of the death certificate. When applicable, an attending physician or other hospital medical staff completes the portion of the death certificate describing the death (time, date, place, and immediate/underlying cause). A county medical examiner completes this section in all unexpected deaths including fatal injuries. The death certificate is then sent to the local registrar who verifies that the document has been properly filled out. If not, it is returned to the appropriate person for revision. Certificates for Michigan residents dying out-of-state are provided by those states (primarily Indiana, Ohio, and Wisconsin). Instructional materials to complete the death certificate are available at the state and local level for doctors, hospitals, medical examiners, and funeral directors. Michigan funeral director training also includes an annual seminar on death certificate completion.

**Population Included:** All in-state occurrences regardless of the state of residence and all Michigan residents regardless of location of death are included.

**Additional Information:** For more data regarding Michigan mortality, visit <http://www.mdch.state.mi.us/pha/osr/index.asp?ld=4>.



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