



Mapping Heart Disease, Stroke and Other Chronic Diseases:

Highlights from a Program to Enhance GIS Capacity within State Health Departments

Submitted to the US Centers for Disease Control and Prevention Division for Heart Disease and Stroke Prevention and the National Association of Chronic Disease Directors

Prepared by the Children's Environmental Health Initiative at the Nicholas School of the Environment, Duke University

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PURPOSE OF THIS DOCUMENT

The Division for Heart Disease and Stroke Prevention (DHDSP) funded a collaborative project with the National Association of Chronic Disease Directors (NACDD) and Duke University to enhance GIS capacity in two state health departments (SHDs). The Colorado Department of Public Health and Environment (CDPHE) and the Michigan Department of Community Health (MDCH) were selected as part of a competitive process. During the course of the GIS training, both states identified creative and innovative ways to use GIS to enhance the surveillance, prevention, and treatment of heart disease, stroke, and other chronic disease conditions. The purpose of this document is to highlight Michigan and Colorado's work as examples for other state health departments interested in developing GIS capacity.

This capacity-building project was designed to help state health departments apply GIS techniques in four key areas:

- Document the burden of heart disease, stroke and other chronic diseases
- Build and strengthen partnerships
- Inform and guide policy and program decisions
- Facilitate integration and collaboration among state health department programs, especially chronic disease

This document is organized around these four areas. Each section begins with a short description followed by a series of maps that demonstrate how each state health department used their new GIS skills to advance their institutional missions. The appendix includes additional maps created and a complete listing of presentations given using GIS by both participating states.

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I. DOCUMENT THE BURDEN OF HEART DISEASE, STROKE, AND OTHER CHRONIC DISEASES

Maps of the burden of heart disease, stroke, and other chronic diseases quickly communicate information on where the burden is the greatest, how the burden varies across geography, how the geographic disparities vary by race/ethnicity, age group, or gender, as well as other important dimensions of the geographic distributions of chronic disease burdens.

Maps in this section:

Michigan Department of Community Health



AGE-ADJUSTED CARDIOVASCULAR DISEASE DEATH RATES BY COUNTY,
2002-2006

AGE-ADJUSTED HOSPITALIZATION RATES BY COUNTY:
CARDIOVASCULAR AND HEART DISEASE, 2002-2006

LOCAL HEALTH DEPARTMENT DISTRICT SMOKING RATES IN MICHIGAN
COMPARED TO HEALTHY PEOPLE 2010 TARGETS

Colorado Department of Public Health and Environment



AGE-ADJUSTED STROKE DEATH RATES PER 100,000 BY COUNTY,
2002-2006

ISCHEMIC HEART DISEASE MORTALITY RATES PER 100,000 AND
NUMBER OF DEATHS BY COUNTY, 2002-2006

SURVEILLANCE OF THE GEOGRAPHIC PATTERNS IN AGE-ADJUSTED
STROKE DEATH RATES OVER TIME, 1992-2006



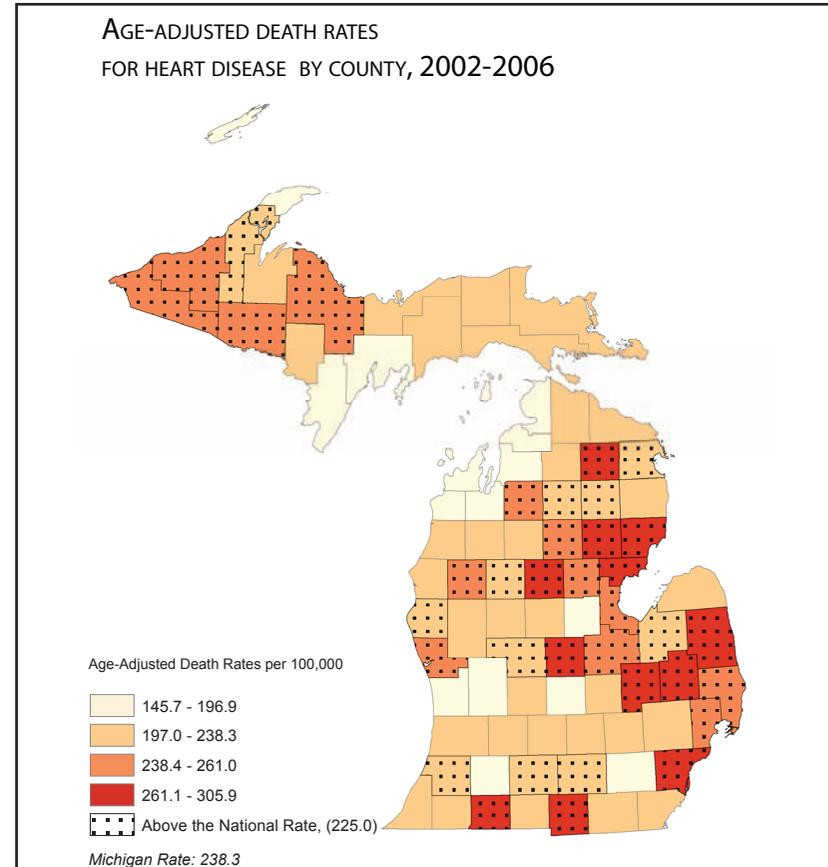
Heart disease death rates by county

The following three maps were all featured in a report entitled *The Impact of Heart Disease and Stroke in Michigan: 2008 Report on Surveillance*. The report is a result of a collaborative effort between the Michigan Cardiovascular Alliance, Chronic Disease Epidemiology Section and the Heart Disease and Stroke Prevention Unit at MDCH.

The maps in this report portray the geographic disparities in cardiovascular disease (CVD), a range of heart diseases and stroke death rates, hospitalization rates, hospital locations, emergency medical system structure, health care resources, and other relevant programs within the state.

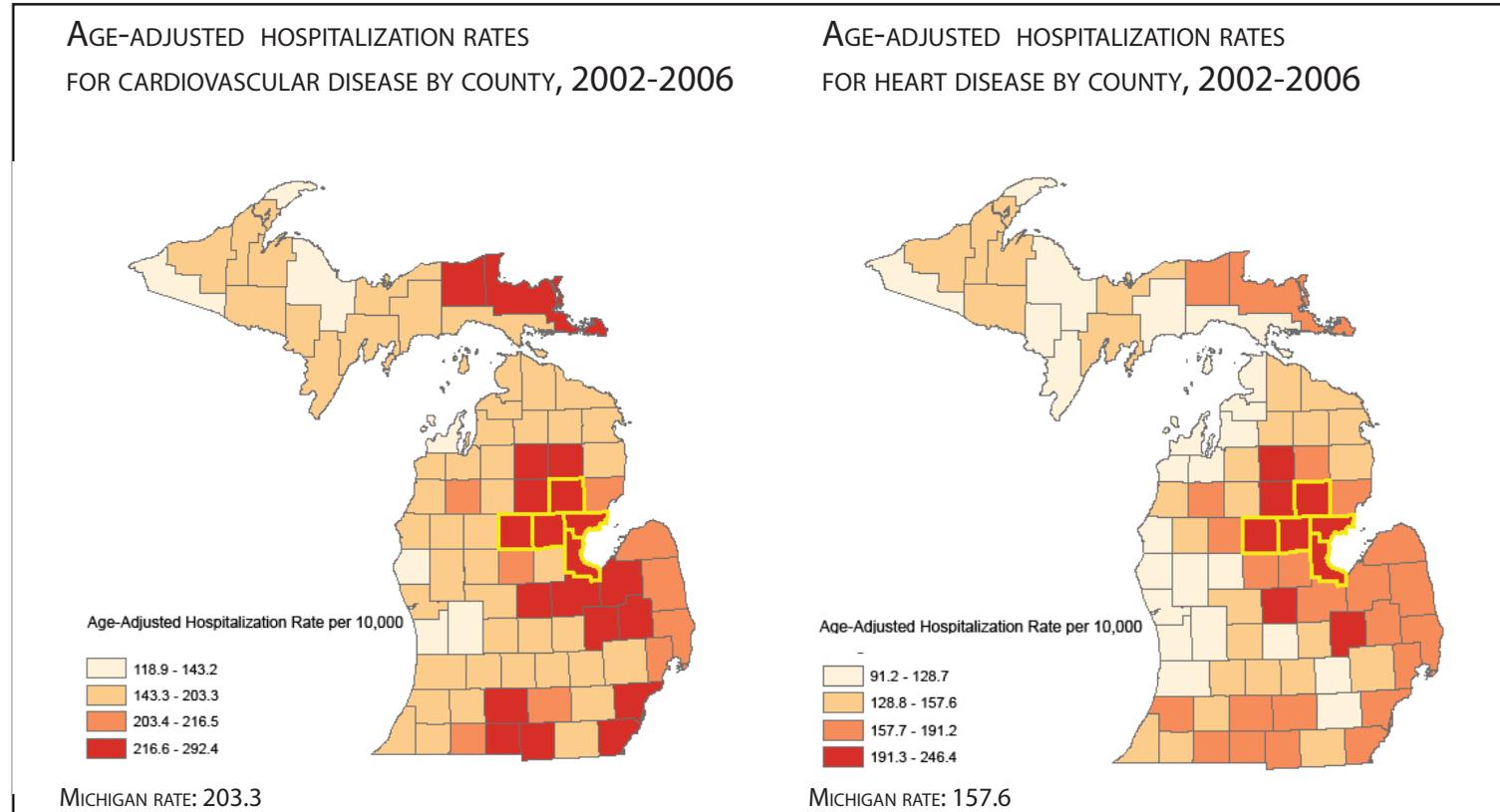
The Impact of Heart Disease and Stroke in Michigan: 2008 Report on Surveillance has been printed in color for wide distribution across the state, and each of the maps and the report itself are available for download from www.michigan.gov/cvh. These map products have all been widely used and cited.

The map to the right presents the age-adjusted heart disease death rates in Michigan by county. Counties that are above the national age-adjusted death rate are speckled to denote they have a rate above 225.0 per 100,000 people. The age-adjusted cardiovascular death rate for the State of Michigan as a whole is 238.8 deaths per 100,000 people.





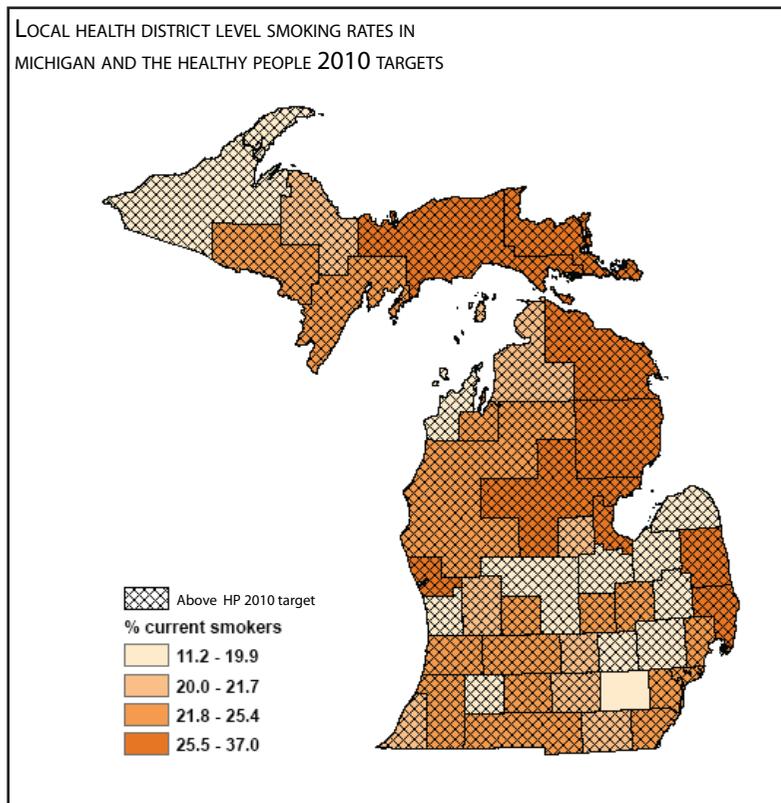
Hospitalization rates by county, for cardiovascular and heart diseases



These two maps show hospitalization rates by county over a 5 year period. The maps identify a five county area that is high in hospitalization rates for both cardiovascular disease and heart disease. The five county area is outlined in yellow. Additional maps indicate that these five counties also have high rates for coronary heart disease and heart failure. These counties are being further evaluated to understand this pattern and have been highlighted for action by the Michigan Cardiovascular Alliance.



Comparing local health district smoking rates and Healthy People 2010 target



This map displays the smoking rates in Michigan by local health district (LHD). These rates are based on an aggregated sample of BRFSS data from 2005-2007. The color ramp shows the prevalence of current smokers with darker colors representing higher prevalence rates.

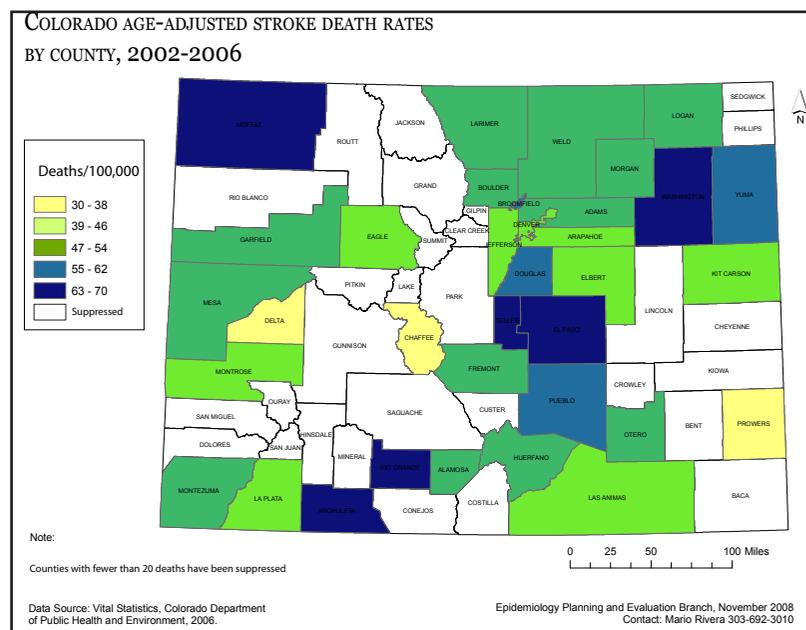
In addition, the cross-hatching indicates whether or not a health district has met the Healthy People 2010 goal. The map shows that only one LHD in Michigan has met this important public health goal.

Editor's Note: This map is based on Behavioral Risk Factor Surveillance System (BRFSS) data, which are collected to be representative at the state level. Presentations of BRFSS data for sub-state regions should be interpreted with caution.



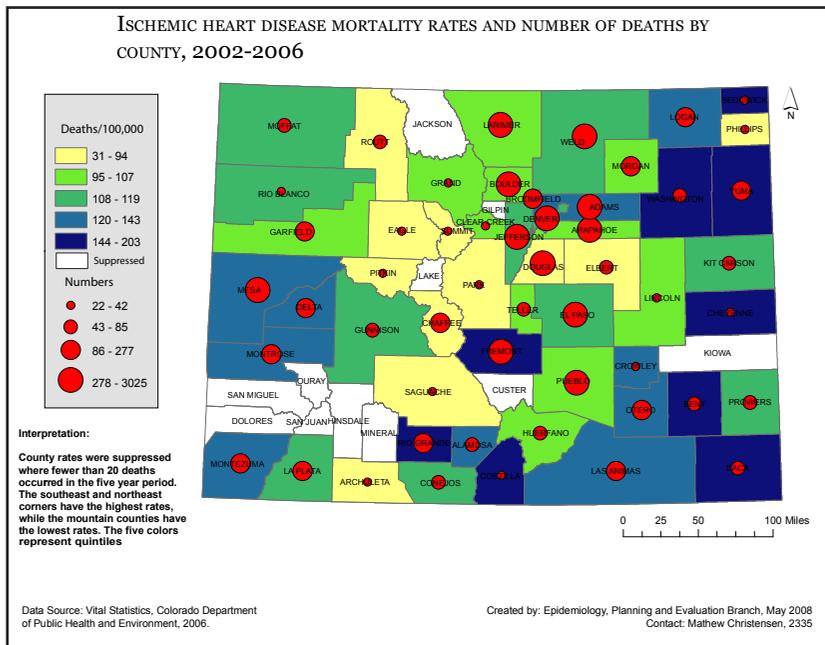
Stroke death rates by county

The map on the right shows age-adjusted stroke death rates. The map makes it apparent that many counties have sparse data, requiring suppression of values. In addition, certain areas are characterized by higher death rates across multiple adjacent counties. Other maps in the series include ischemic heart disease, acute myocardial infarction, heart failure, and stroke.



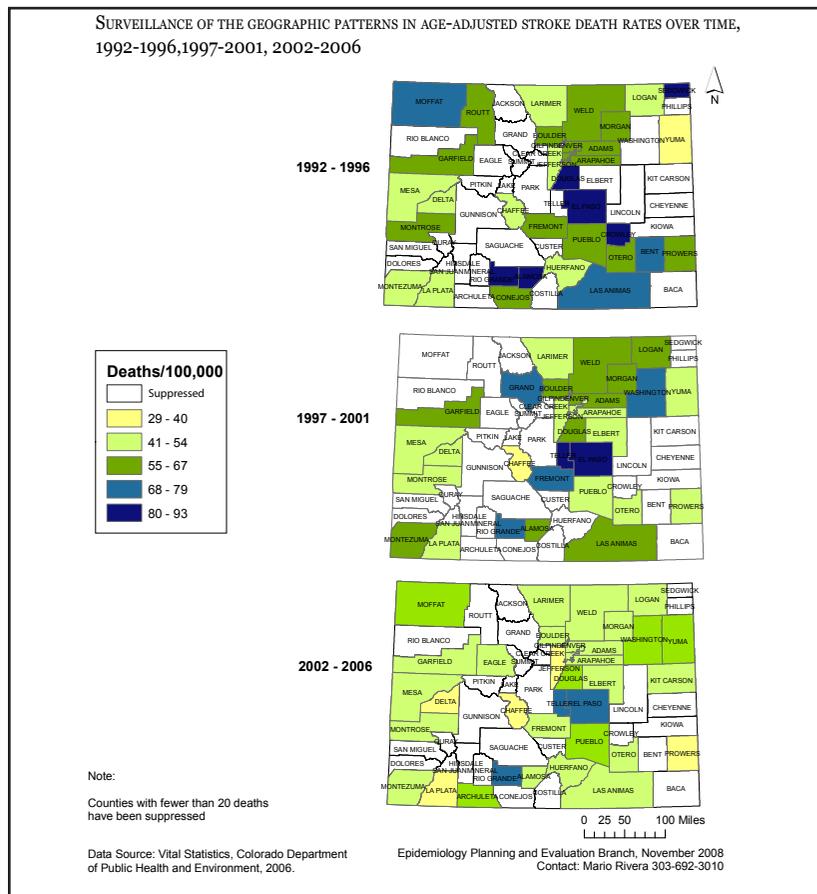


Ischemic heart disease: death rates and number of deaths by county



The map above portrays the mortality burden of ischemic heart disease in Colorado including age-adjusted death rates and number of deaths by county. The map indicates that the southeast and northeast corners of Colorado had the highest death rates due to ischemic heart disease during the 2002 - 2006 period.

Time trends in stroke death rates by county



This series displays the temporal trends in age-adjusted stroke death rates in Colorado. Aggregating five years of data per map allows for estimates at the county level for those counties with enough data to report reliable estimates. The maps use the same legend values, which shows how the counties have changed over the three time periods.

II. BUILD AND STRENGTHEN PARTNERSHIPS

The intrinsically connective nature of GIS serves as a useful mechanism for enhancing partnerships across organizations. Shared geography allows for the integration of data from a wide variety of sources and organizations. The maps in this section are the product of collaborative communication and coordination across and within groups.

Maps in this section:

Michigan Department of Community Health



STATEWIDE REGIONS FOR PROPOSED TRAUMA SYSTEM PLAN:
CORNERSTONE FOR EMS SYSTEMS OF CARE FOR STROKE AND STEMI

MICHIGAN STROKE REGISTRY QUALITY IMPROVEMENT PROGRAM

PRIMARY CARE PRACTICES AND DIABETES SELF-MANAGEMENT
RESOURCES

DOOR TO BALLOON HOSPITALS AND PRIMARY STROKE CENTERS

Colorado Department of Public Health and Environment



DENVER TOBACCO RETAILERS AND SCHOOL SITES

SCHOOL-BASED SEALANT PROGRAM SYSTEM OF CARE

LOCATION OF MAMMOGRAPHY CENTERS AND NUMBER OF WOMEN 40+
BY CENSUS TRACT



State-wide trauma system planning: Stroke and STEMI EMS systems of care



front

Regionalization of Emergency Care In Michigan Getting the **Right Patient to the Right Place at the Right Time for the Right Treatment**

What's the problem?

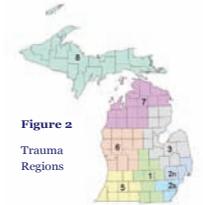
Emergency Care in Michigan has suffered for the past 25 years from fragmentation, inefficiencies, and lack of accountability due in large part to the absence of a funded state coordinated Trauma System.

- The American College of Emergency Physicians gave Michigan a D+ for its emergency care environment
- The IOM report states "One county in Michigan has 18 different EMS systems with a range of different service models and protocols."
- There are 65 Medical Control Authorities, 800 Life Support Agencies and 110 Dispatch Centers providing emergency care in Michigan. See figure 1 for Medical Control Authorities.
- Valuable treatment time for heart attack (one occurs every 21 minutes), automobile accident/injuries (one occurs every 13 minutes), stroke (one occurs every 110 minutes) and other emergencies such as perinatal deaths is lost in this outdated system in Michigan.
- The average response time for emergencies in rural Michigan is 94.8 minutes, too late to treat a heart attack patient (ST elevation myocardial infarction) who needs treatment within 90 minutes of the onset of symptoms.



What's the answer?

- The only element keeping Michigan from implementing a statewide trauma system is funding.
- Legislation has existed since 2004 to establish a trauma system but has yet to be funded.
- A funded trauma system would regionalize care, coordinate services, address gaps and tighten communication. Therefore, allowing for patients to **get to the right place at the right time.**
- A funded trauma system would follow the regionalization design established in other key emergency areas. See figure 2 for proposed regions.
- Having a pregnant women and babies at the appropriate hospital is necessary to receive timely and appropriate care.
- Many criminal actions result in the activation of the Emergency Medical Services system and the need for trauma care.
- Efforts are underway to adjust the revenue stream of the Crime Victims Fund to provide support for the implementation of the trauma system.



These fees are expected to generate the necessary funding to operate the Trauma System as it was legislated.

back



What will a Trauma System do for us?.....

Leadership

Administrative direction, support and ongoing monitoring of the statewide trauma system from the EMS and Trauma section within the Michigan Department of Community Health.

Trauma System Development/Management

Assist with the implementation and maintenance of the trauma system by funding regional staff to coordinate the regionalization of the trauma system and support the Medical Control Authorities who provide oversight at the local level.

Trauma Center Designation/Verification Expenses

Fund staffing to coordinate the designation and verification process for all facilities.

Develop and maintain an EMS Information System/Trauma Registry

Support evaluation of the effectiveness and efficiency of the state's EMS and trauma system in reducing the incidence of trauma and improving delivery of emergency care.

"In 1995 I had a catastrophic auto accident over 13 years later I still have pain and some serious undiagnosed injuries. If a Statewide Trauma System were in place at the time of my accident then early diagnosing would have absolutely prevented the years of pain and suffering and my life would be completely different today."

A. Garcia

What are the risks of doing nothing?....

- Increases in traumatic and accidental deaths (6,648 deaths occurred in Michigan from 2001-2005).
- Loss of productive lives and millions spent in rehabilitation and recovery programs (23,873 productive lives lost in Michigan from 2001-2005).
- Perpetuating a system that does not address the emergency needs of Michigan residents adequately.
- Inadequate and inappropriate emergency care for trauma, pregnant women, heart attack and stroke patients.
- Stagnant or increasing poor pregnancy outcomes including preterm births, with negative impact on children's health or loss of women and infant lives.
- Michigan will continue to be one of only 3 states in the nation without a funded trauma system.

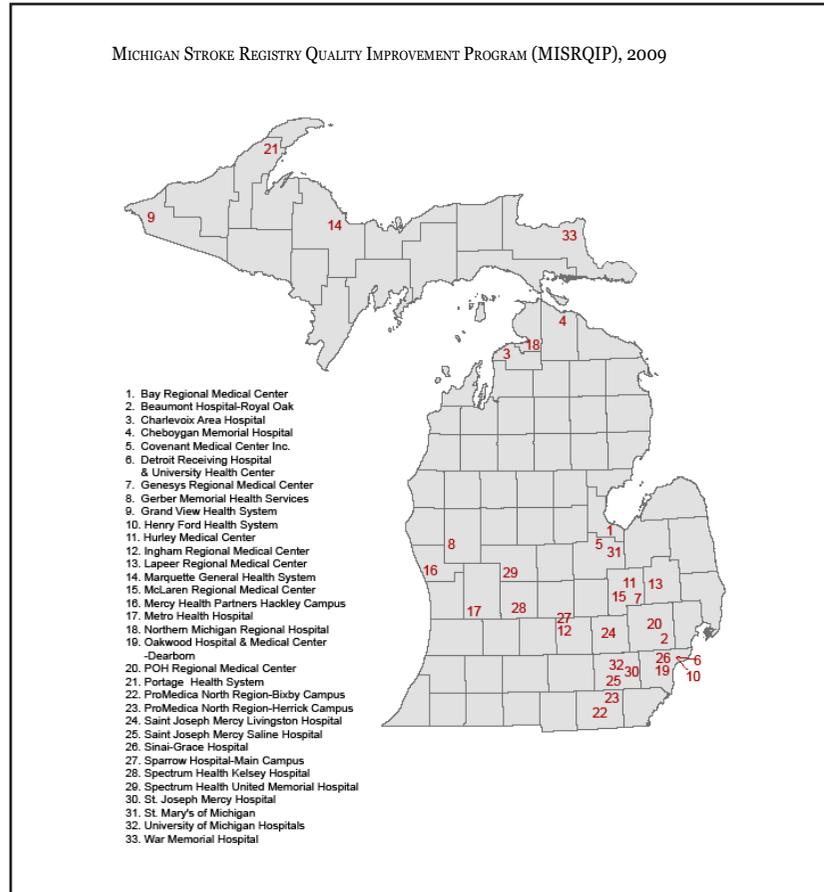


Supported by the American Heart/American Stroke Association, American Cancer Society, American College of Cardiology: MI Chapter, MI Cardiovascular Alliance, Emergency Medical Services Coordination Committee, MI College of Emergency Physicians, MI Council for Maternal and Child Health, Michigan Crime Victim Services Commission, MI Health and Hospital Association, MI Stroke Initiative, MI Trauma Coalition, Office of Health Preparedness, State Trauma Advisory Subcommittee, Perinatal Care Group and Prosecuting Attorneys Association of MI.

Two maps were embedded in this fact sheet that discusses the need for funding for a statewide trauma system. The proposed statewide regions combined with a trauma system plan, would serve as the cornerstone of system of care planning. These maps are being used in a project working to increase planned transfer, destination, and bypass in three selected regions for stroke and STEMI.

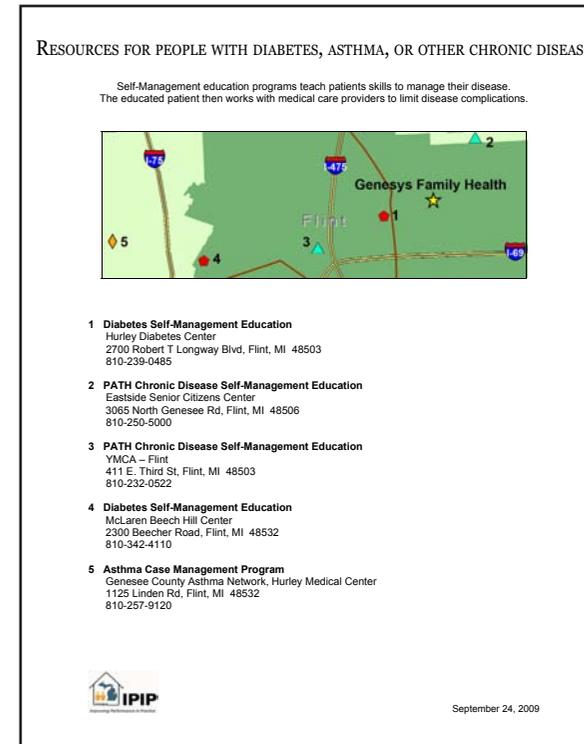


Michigan Stroke Registry Quality Improvement Program



This map was developed to assist with networking and planning in the MISRQIP. Partner hospitals and project staff have utilized the listing and map for collaboration. The map is updated as needed. This map has been incorporated in numerous documents associated with the project and will also be utilized in discussions about stroke systems of care.

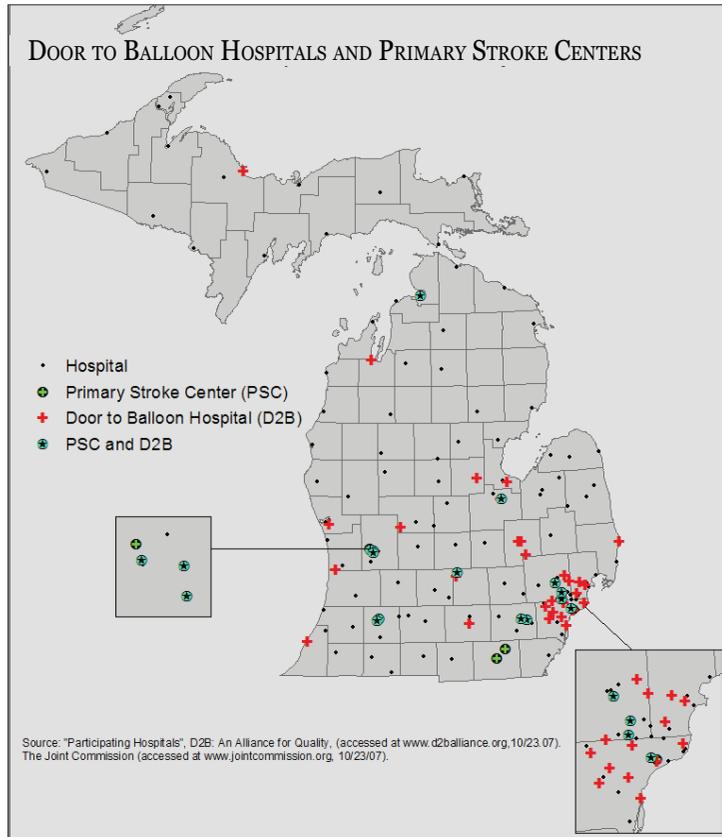
Primary care practices and diabetes self-management resources



This map was developed in response to a request from primary care practices participating in the Improving Performance in Practice (IPIP) project. Partners sought to identify the location of primary care practices participating in IPIP relative to the closest Diabetes Self-Management Education (DSME) program. The goal was to enhance referral to the appropriate DSME. Maps were hung in reception areas and exam rooms. Contact and referral information was included.



Door to balloon hospitals and primary stroke centers

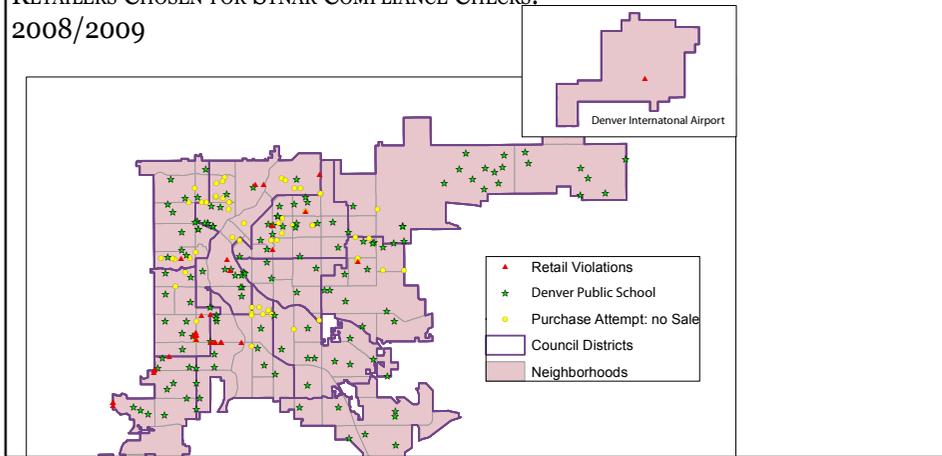


This map was developed in 2007 to display the locations of Primary Stroke Centers and hospitals capable of treating myocardial infarctions in 90 minutes or less. It was used by the American Heart Association and MDCH to discuss coverage areas and lack of resources with partner groups. Hospitals are depicted by a small black dot, Primary Stroke Centers as green crosses, Door to Balloon hospitals (those participating in improving time to treatment for heart attack patients) are shown as red crosses, and hospitals that have both are indicated with stars. This map is being updated and refined for the American Heart Association Mission Lifeline initiative. Drive times will be included in further work.



Denver tobacco retailers and school sites

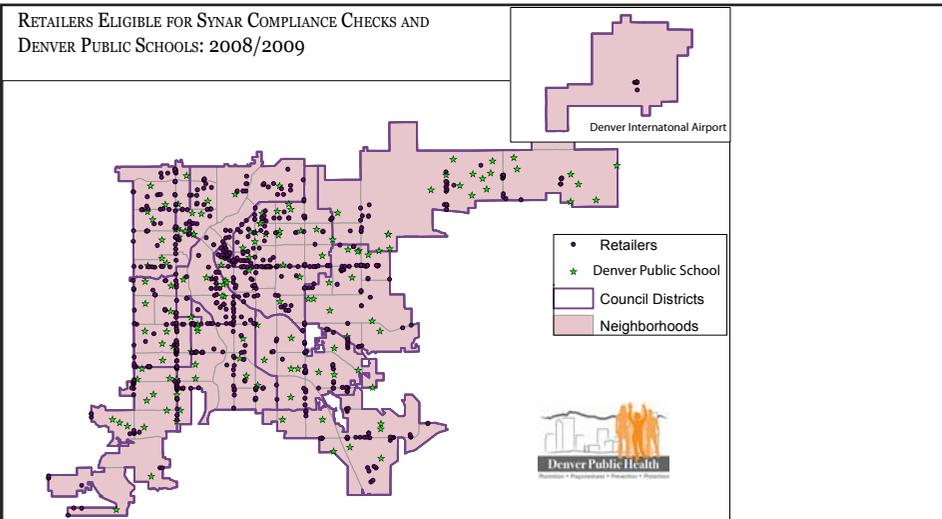
DENVER PUBLIC SCHOOLS AND
RETAILERS CHOSEN FOR SYNAR COMPLIANCE CHECKS:
2008/2009



These maps show the location of tobacco retailers and schools. Highlighted are retailers that were sampled for compliance checks on preventing underage sales of tobacco to minors (Synar checks) and the result of those purchase attempts (violations through sales versus no sales). These maps demonstrate the geographic proximity of tobacco outlets to Denver Public schools. Additional maps (not shown) displayed hookah establishments.

The state tobacco control grants program (State Tobacco Education & Prevention Partnership, STEPP) and a local grantee (Denver Health) were interested in sharing existing data in a way that could be used to educate city council members about tobacco sales to minors. The project involved the integration of four diverse datasets: 1) the Colorado Department of Revenue's Synar compliance data (lists of tobacco retailers with reports on checks and violations); 2) Denver Public Schools' listing of school buildings; 3) telephone book listings of hookah establishments; and 4) the City and County of Denver's council districts.

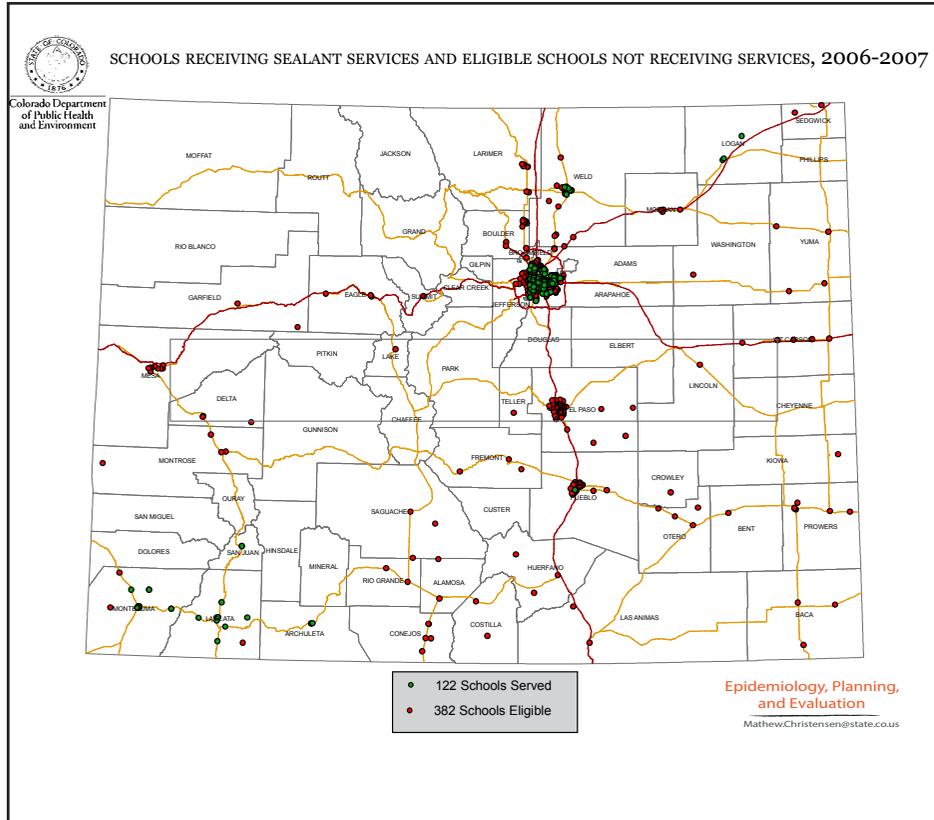
RETAILERS ELIGIBLE FOR SYNAR COMPLIANCE CHECKS AND
DENVER PUBLIC SCHOOLS: 2008/2009



The project enhanced partnerships with local tobacco control grantees and the department's and the division's GIS team. To pilot this GIS project, Denver Health was selected as a partner based on their readiness to use the resulting maps and their internal capacity to maintain these map products in the future. A collaborative process was employed to explore the data and to create the maps.



School-based sealant program system of care

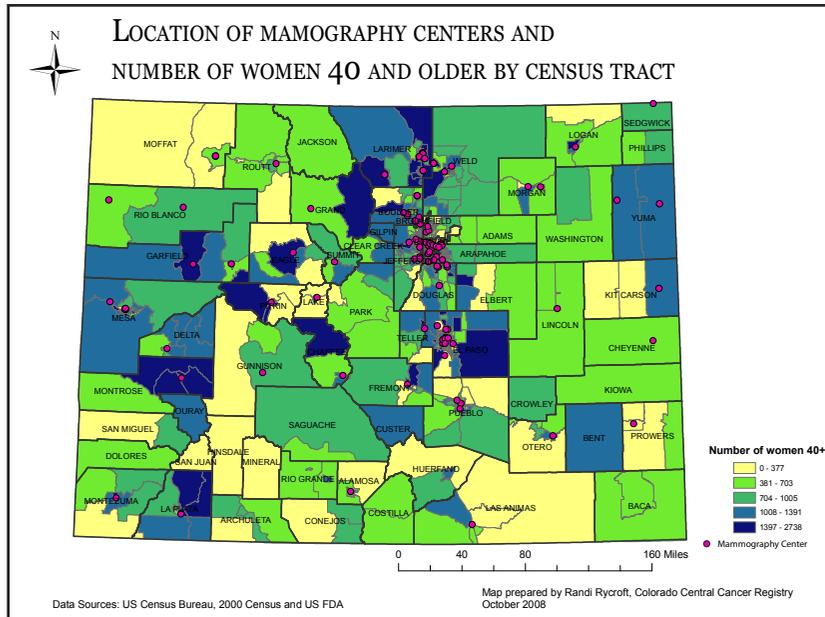


This map shows the number and location of school-based sealant contractors in Colorado, as well as the reach of number of schools served by each. This map demonstrates oral health service disparities by locating the 382 schools eligible (based on 50% or more of enrolled students qualifying for free and reduced school lunch) for the School-based Sealant Programs and identifying the 122 schools that are actually served.

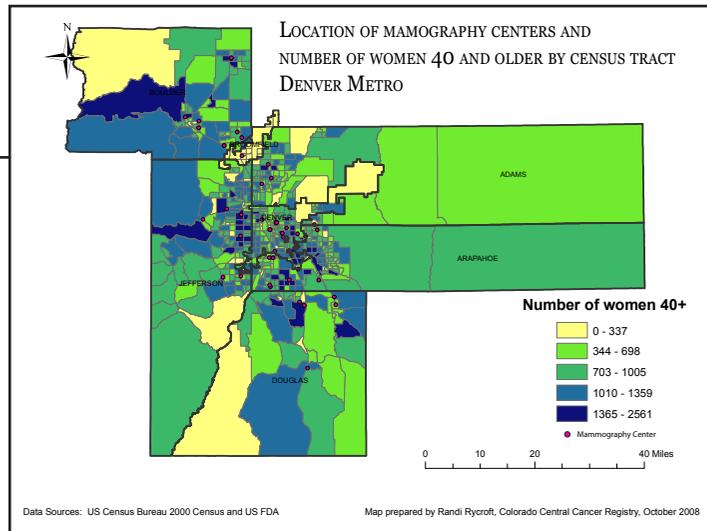
The map allows the state oral health program and service providers (sealant contractors) to see the system of care. This can serve to identify gaps between needs and resources and begin the conversation regarding where providers are needed or need to expand their service areas. This map is also useful for communicating oral health services and needs to other units within the state health department.



Location of mammography centers and number of women 40+ by census tract



Developed in collaboration with Denver Hospital, these maps depict the location of all mammography centers in the state and the total number of women aged 40 and older. These maps were produced in response to a request from a Denver area hospital that was interested in deploying a mobile mammography van in the state. One map shows the entire state and one is focused on the Denver Metro area. The maps reveal a mismatch between need and resources. The project highlighted areas of the state in which there are Census tracts with many women in need and no mammography center proximate, as well as areas of the state with few women in need and a mammography unit close by. These maps can be used to better target areas to be served by the mobile mammography van.



III. INFORM AND GUIDE POLICY AND PROGRAM DECISIONS

GIS permits the rapid display of administrative, health, socio-demographic and physical data at varying political and administrative scales. As a result, GIS is an especially powerful set of tools for use by state public health professionals to make decisions regarding tailoring policy and program development to the needs of specific communities, and addressing the geographic disparities in heart disease, stroke, and other chronic diseases.

Maps in this section:

Michigan Department of Community Health



AGE-ADJUSTED MORTALITY RATES FOR SUDDEN CARDIAC DEATH BY
COUNTY MICHIGAN RESIDENTS, AGES 1-39, 1999-2006

JOINT COMMISSION PRIMARY STROKE CENTERS (PSC) IN MICHIGAN

MAMMOGRAPHY SERVICES IN AN URBAN CONTEXT

SMOKE-FREE WORK SITE REGULATIONS IN MICHIGAN

Colorado Department of Public Health and Environment



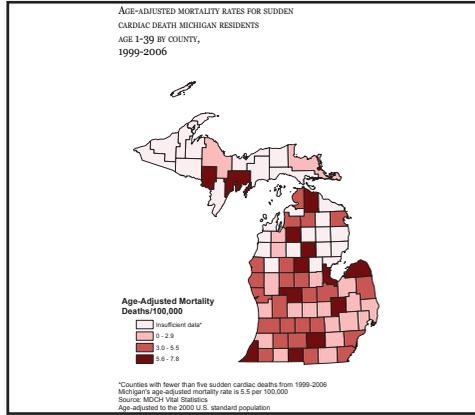
COLORADO, DIABETES SELF MANAGEMENT TRAINERS

WOMEN'S WELLNESS CONNECTION (WWC), PERCENT OF TARGET
POPULATION SCREENED, 2007

BREAST AND CERVICAL CANCER SCREENING



Investigating sudden cardiac death rates

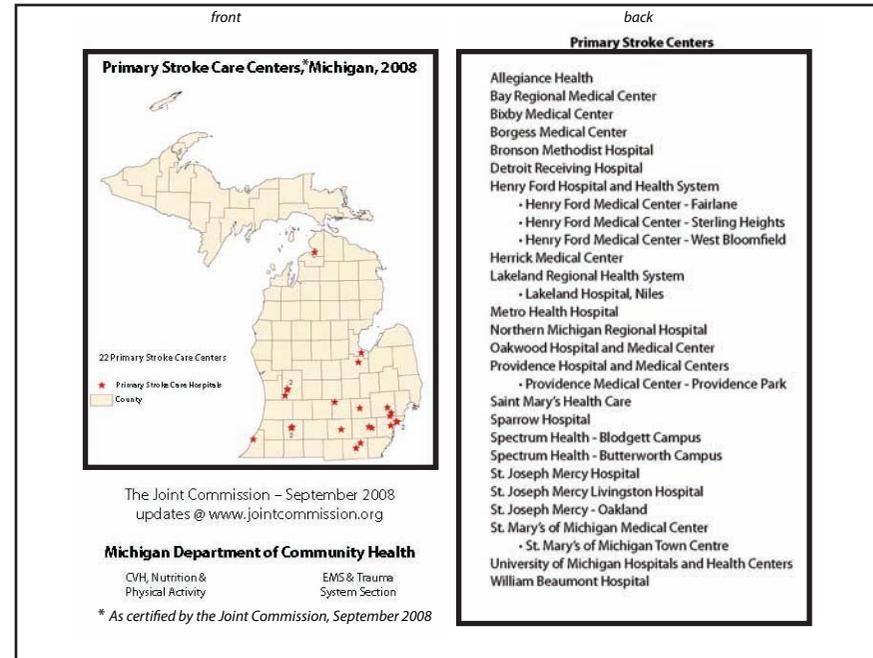


In 2007, stakeholders were convened by MDCH Genomics and CVD Sections, to review questions about the role of public health in preventing sudden cardiac death in the young (ages 1-39). At that time, little had been published about this small but devastating category of deaths.

Expert mortality reviews of unexplained cardiac deaths in this age group were held and specific actions were suggested by the group of experts. A symposium was held to develop recommendations around 5 central themes. The results of this work were published in the document *Too Young to Die: Impact of Sudden Cardiac Death of the Young in Michigan: 1999-2008*. This document is available at: www.michigan.gov/cvh on the "What's New" page.

The map displays the range of sudden cardiac death rates by county and identifies those counties with the highest death rates. This will help inform stakeholders as they work to influence policies and services that may have an impact on the unexplained cardiac deaths of young Michigan residents.

Identification of Primary Stroke Centers

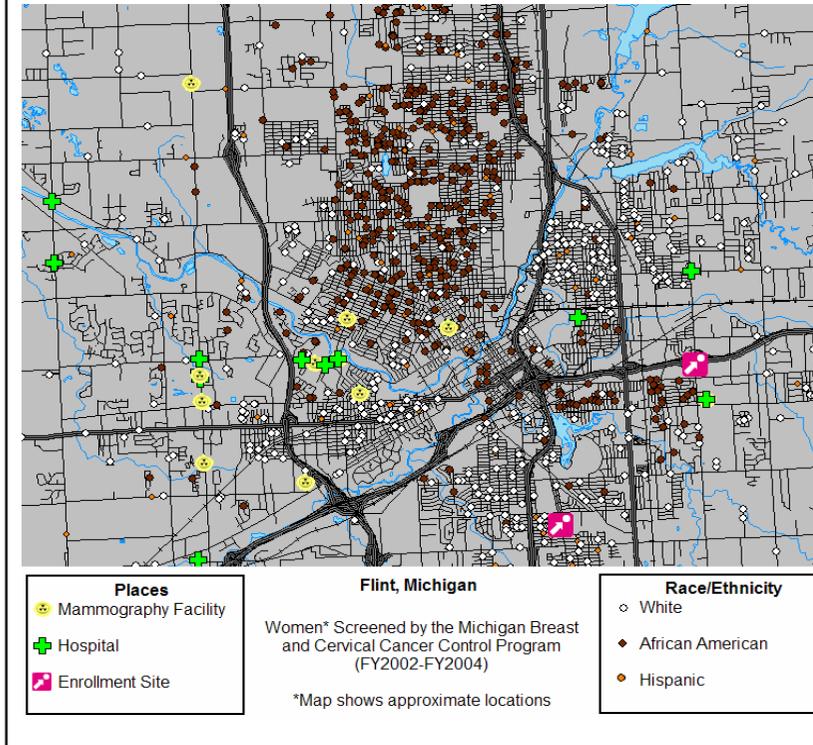


This map has been used for a number of projects. One of the most prominent was inclusion on a laminated pocket card for EMS Providers. In an earlier survey, the EMS providers identified a lack of knowledge about the location of primary stroke centers. This map was combined with educational and checklist prompts for stroke victims. The cards were sent to over 500 EMS providers, incorporated into educational programs, and are being reprinted for additional distribution. An evaluation of the cards showed favorable results.



Targeting mammography services in an urban population

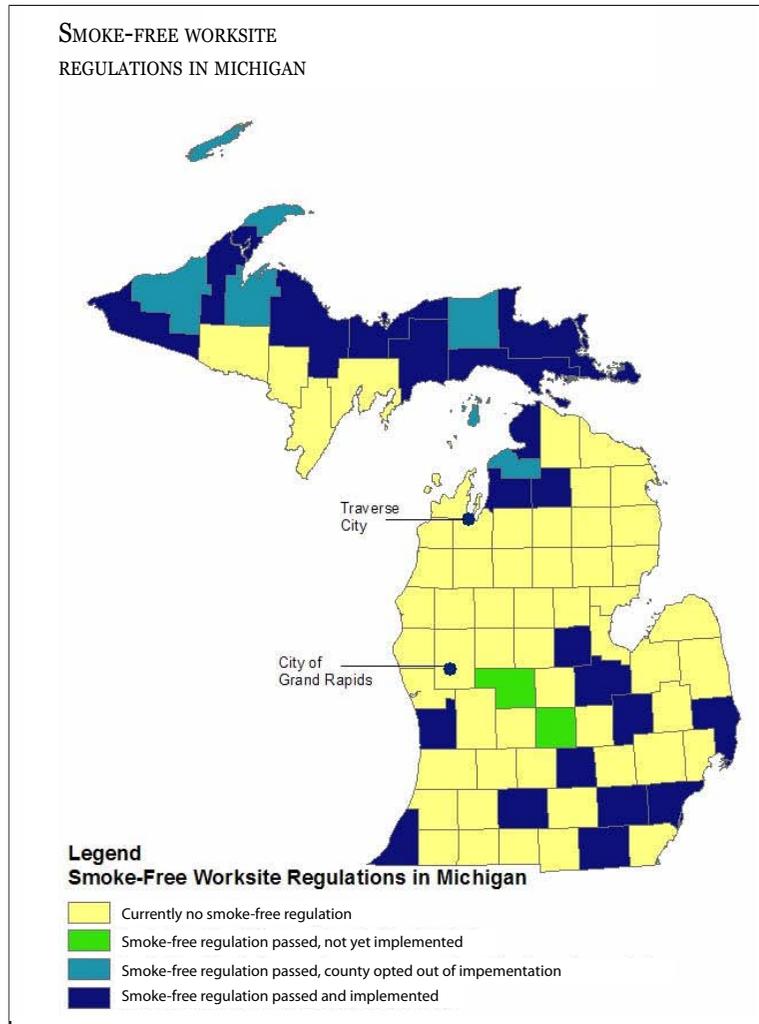
MAMMOGRAPHY SITES IN AN URBAN CONTEXT
WITH LOCATIONS OF POPULATIONS



The Breast and Cervical Cancer Control Program (BCCCP) provides cancer prevention screenings to uninsured or under-insured women 40-64 years of age. Statewide, about 25,000 women are served each year. Twenty different agency maps were created to determine if the women served by the program were proportionately coming from the areas (based on Census block groups) of greatest need. Program data from 2002-2004 were compared to Census 2000 data. This map displays the location of BCCCP health facilities compared to where the women actually live. It reveals an obvious disparity with few facilities located in close proximity to high minority neighborhoods. This map was used to assist program staff and build resources with program partners to look more carefully at location of services.



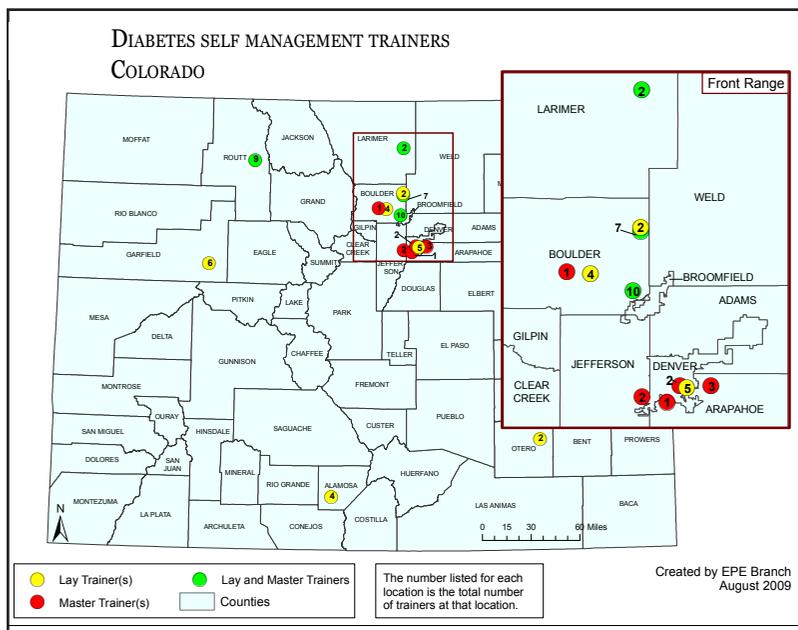
Demonstrating smoke free regulation



This map was developed by the Tobacco Control Section to demonstrate counties that have smoke-free regulations in worksites. A program goal is to reduce second-hand smoke and policies in work sites have been shown as an effective strategy. The map shows that 22 counties and 2 cities have passed and implemented a smoke-free worksite regulation. Progress will be mapped over time and reported to the Tobacco-Free Michigan partnership.

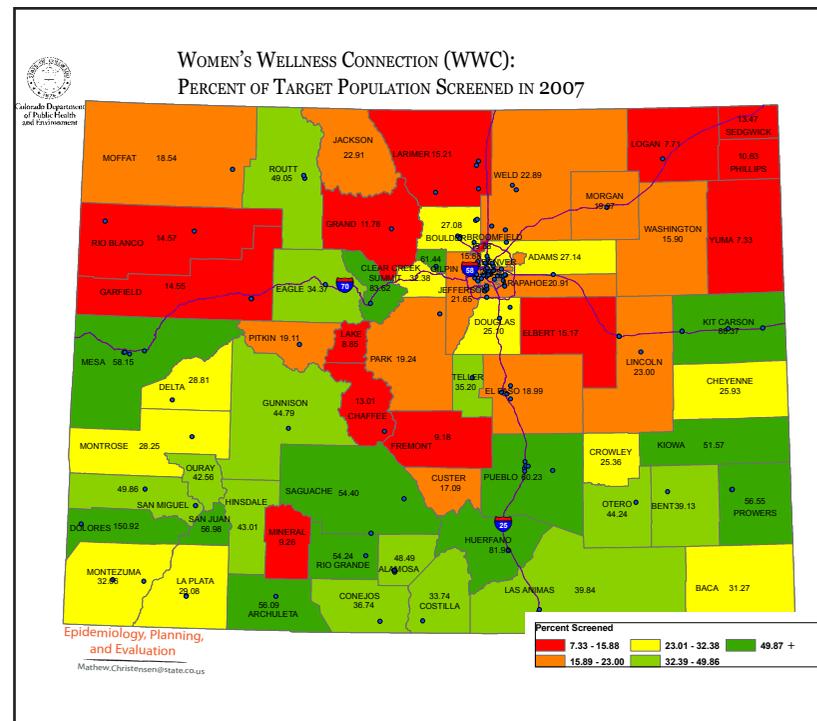


Diabetes prevention needs assessment



This map was created as part of needs assessment project by the Diabetes Prevention and Control Program, focusing on the geographic distribution of self-management education. The program and stakeholders were interested in identifying needs and resources with an intent to focus additional resources to make diabetes self-management education available in under-served areas in the future. This map also provides the infrastructure to track progress over time and to spatially present coverage by specific models of diabetes self-management education.

Program evaluation for Women's Wellness Connection



This map was created for the Women's Wellness Connection, Colorado's National Breast and Cervical Cancer Early Detection Program (BCCEDP). This map shows the locations of clinics currently providing breast and cervical cancer screening as part of the BCCEDP. It combines the number of eligible women with the number of women screened in each county by presenting the percent of eligible population screened by county. It shows where screening coverage is high and low, thereby revealing areas of need for program focus.

IV. FACILITATE INTEGRATION AND COLLABORATION AMONG OTHER STATE HEALTH DEPARTMENT PROGRAMS, ESPECIALLY CHRONIC DISEASE

GIS can play a critical role in facilitating integration and collaboration within state health departments. Once the infrastructure is in place to support GIS, it is efficient and practical for multiple administrative units within a state health department to share the resources (hardware, software, georeferenced datasets, staff expertise) that enable management to simultaneously address heart disease, stroke, and other chronic diseases.

Maps in this section:

Michigan Department of Community Health



LOCATION OF PATH WORKSHOPS BY REGION

MICHIGAN DIABETES OUTREACH NETWORK REGIONS

SPLASH SCHOOLS, 2008-2009

PHYSICAL INACTIVITY AND BODY MASS INDEX

Colorado Department of Public Health and Environment

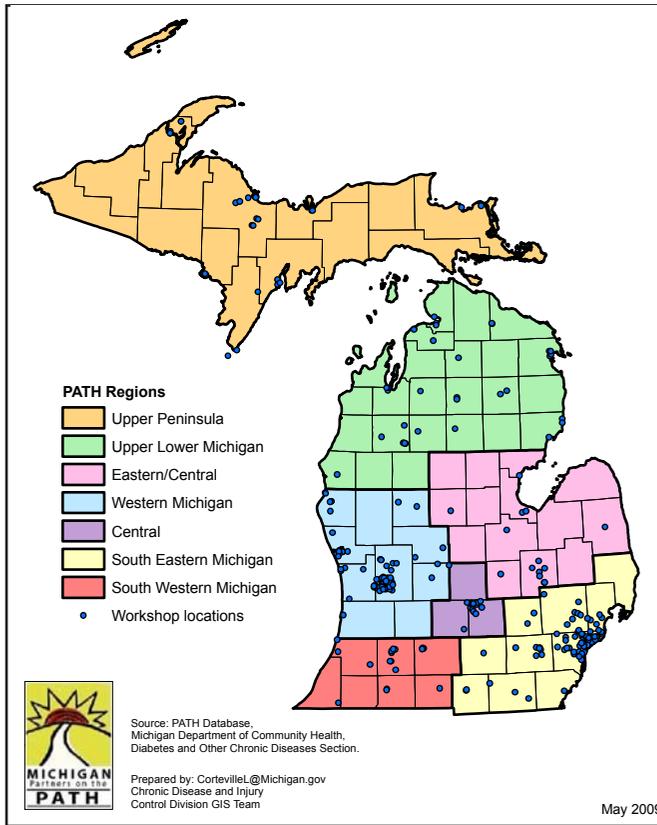


CIGARETTE SMOKING PREVALENCE BY COUNTY, 2005

COLORADO OBESITY BY HEALTH STATISTICS REGION, 2005-2007

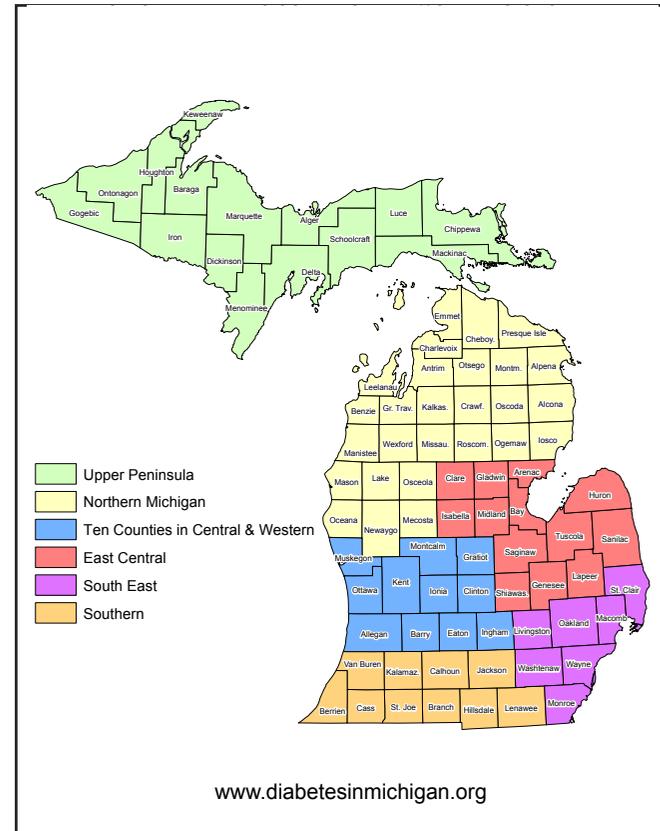


Identification of special programs



Personal Action Toward Health (PATH) is Michigan's chronic disease self-management program. This program is evidence-based and provides education and support for chronic disease patients. This map was developed to identify the locations of programs within geographic areas to expedite referrals. The map was also used Michigan's application to CDC for supplemental funding by the Heart Disease and Stroke Prevention Program in 2009.

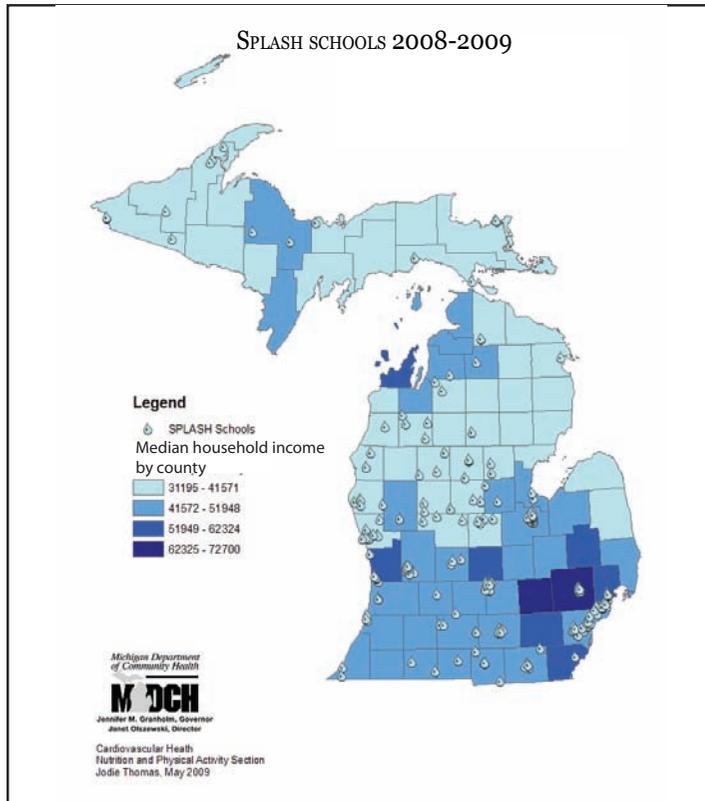
Mapping diabetes outreach networks



The Diabetes Outreach Networks are regional areas that service diabetic patients and health professionals. This map is used to enhance understanding of these areas so users know who to contact for services. It is also a foundation for overlaying other services offered to diabetics

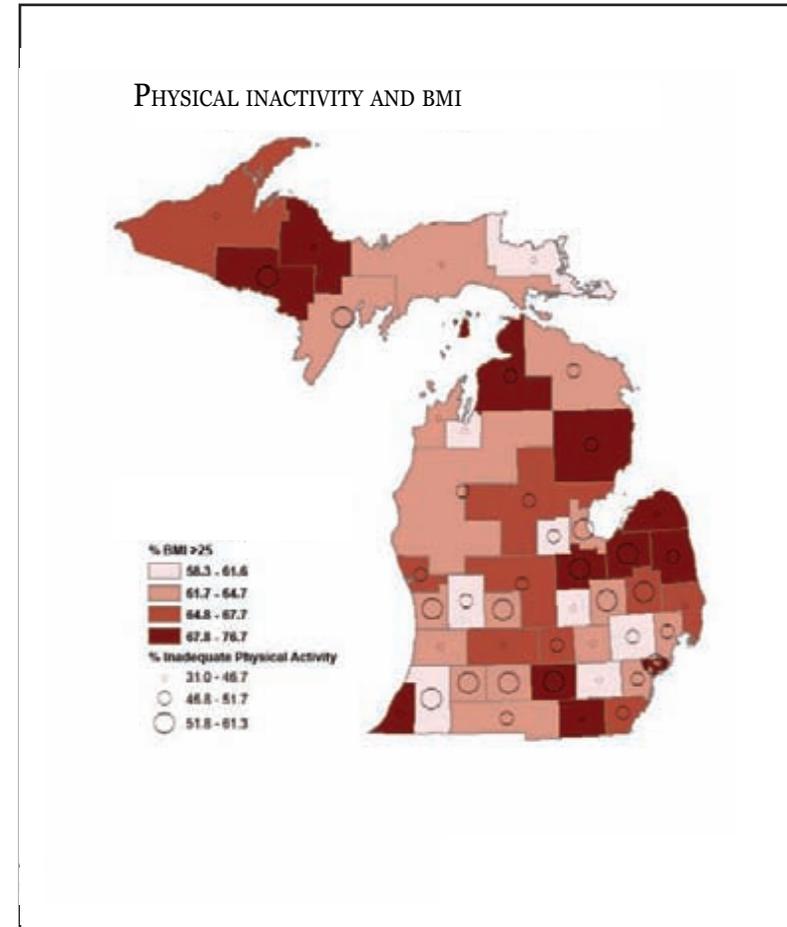


Targeting healthy lifestyle programs



This map was developed for the “Shaping Positive Lifestyles and Attitudes through School Health” (SPLASH) program in Michigan, a statewide project focusing on low-income schools to improve healthy lifestyles in students and families. The map depicts the household income by counties and locates current SPLASH programs to evaluate the saturation of programs in counties of need and evaluate program reach.

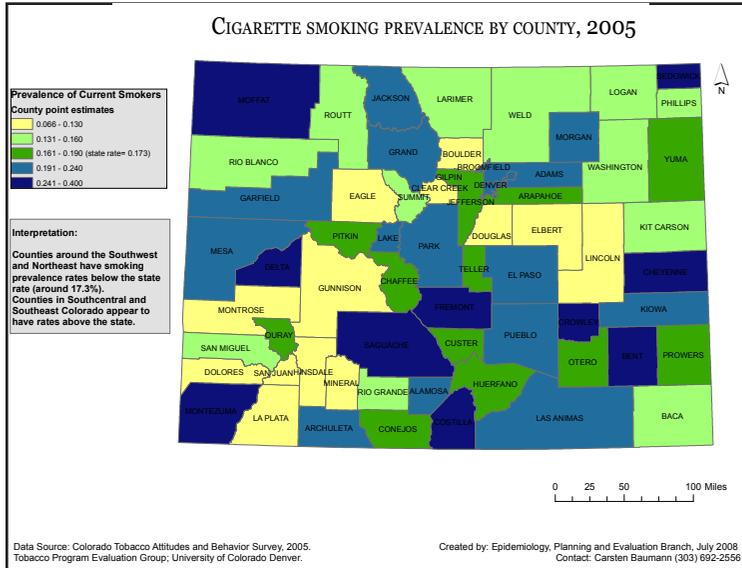
Targeting interventions



This map combines data regarding physical inactivity and BMI. This map has been shared with the *Healthy Weight Partnership*, the stakeholder group for the Obesity Prevention Program.

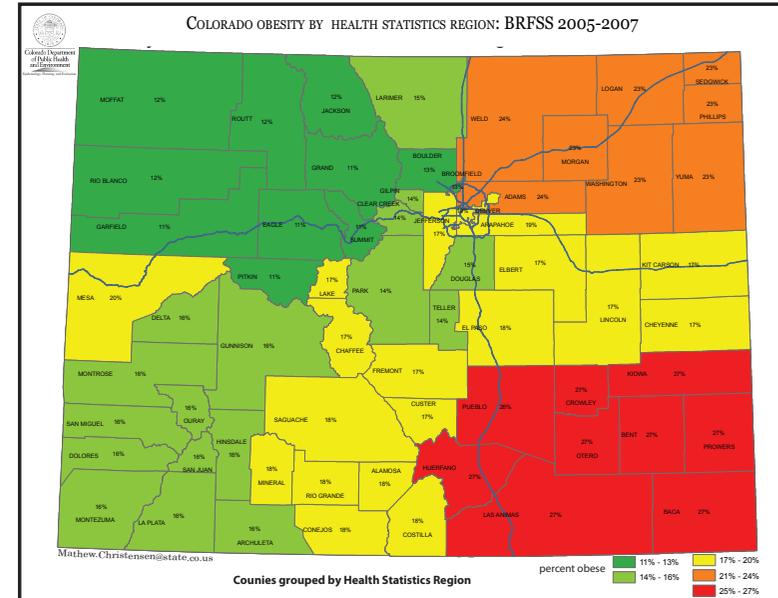
Editor's Note: This map is based on Behavioral Risk Factor Surveillance System (BRFSS) data, which are collected to be representative at the state level. Presentations of BRFSS data for sub-state regions should be interpreted with caution.

Examining risk factors



This map shows county-level prevalence of adult cigarette smoking using Colorado's 2005 Tobacco Attitudes and Behavior Survey (TABS). For this survey, based on the California Adult Tobacco Survey and the National Adult Tobacco Survey, we sampled at the county level. This map provides one of the foundations for programs throughout the Prevention Services Division in the CDPHE to collaborate since tobacco use is a primary risk factor for many chronic diseases. The maps present a practical way for program managers to integrate these data. It also provides an example of improved efficiencies in that chronic disease programs will not need to independently collect, analyze and present these risk factor data.

Regional obesity trends



This map is a useful tool to inform managers of disease-specific programs on the burden of obesity. In addition, it makes these data accessible our external partners working in obesity prevention; for example, projects by LiveWell Colorado (funded by the Colorado Health Foundation, Kaiser Permanente Colorado, and the Kresge Foundation) are currently using these maps to inform programs and planning. These efforts have built a common data infrastructure for a public-private partnership between the Prevention Services Division's Colorado Physical Activity and Nutrition Program and LiveWell.

Editor's Note: This map is based on Behavioral Risk Factor Surveillance System (BRFSS) data, which are collected to be representative at the state level. Presentations of BRFSS data for sub-state regions should be interpreted with caution.

APPENDIX: ADDITIONAL MAPS AND LIST OF PRESENTATIONS

Not all of the work resulting from this project has been shown in the previous pages; indeed only a selection of the work has been showcased. This section includes a sampling of additional maps produced by each state health department and a complete listing of all presentations using GIS given by participants.

Maps in this section:

Michigan Department of Community Health



SOCIAL DETERMINANTS OF HEALTH: POVERTY

SOCIAL DETERMINANTS OF HEALTH: UNINSURED

FRUIT AND VEGETABLE INTAKE AND BODY MASS INDEX

HEART DISEASE AND STROKE DEATH RATES BY COUNTY IN GUIDE FOR
LEGISLATORS

Colorado Department of Public Health and Environment

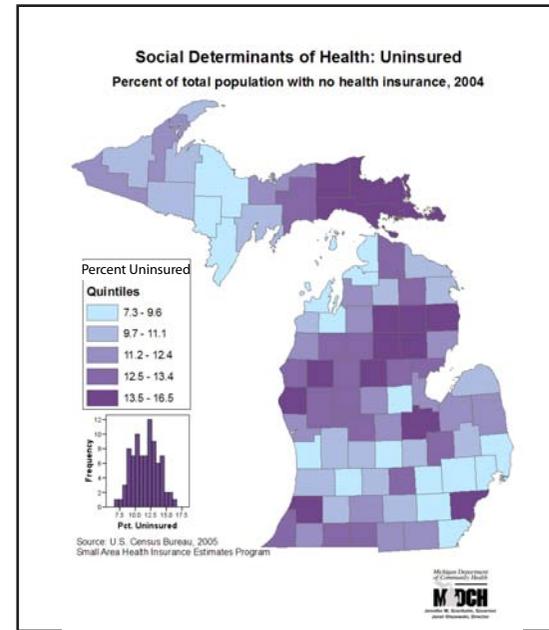
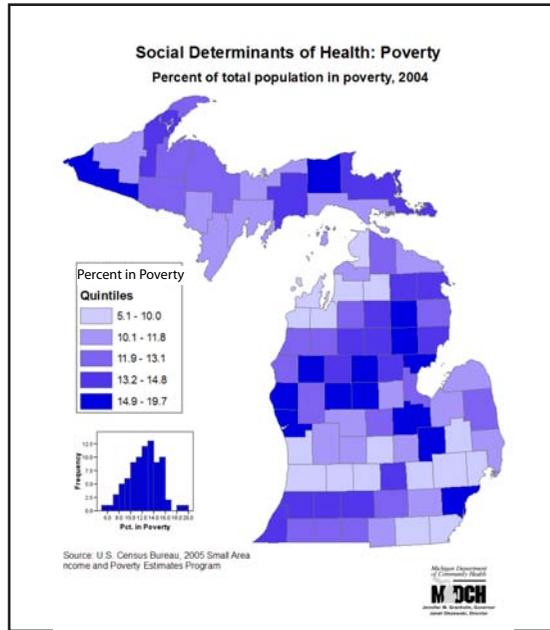


MAJOR CARDIOVASCULAR DISEASE DEATH RATES BY COUNTIES: IDENTIFYING
AREAS OF NEED, 2002-2006

ERIE COLORADO WATER SERVICE AREAS RECEIVING OPTIMAL FLOURIDA
TION 2009: ~ 17,000 RESIDENTS

AMENDMENT 35 FUNDING ACROSS TWO GRANTS PROGRAMS (CCPD,
STEPP)

COLORADO GYN CANCERS DIAGNOSED, 2006-2008



2009 Heart Disease and Stroke Guide for Michigan Legislators

Why Worry About Heart Disease & Stroke in Michigan?

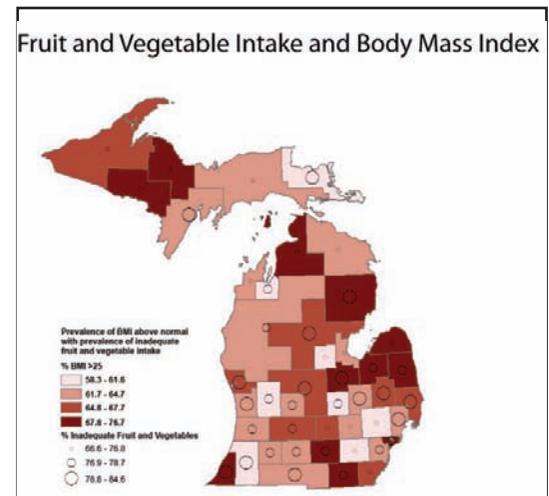
- Cardiovascular disease (often referred to as heart disease and stroke) has been the number one cause of death in Michigan for more than 100 years.
- Compared to national death rates, 39 Michigan counties are above the national death rate for heart disease; 36 counties for stroke.
- 361,300 Michigan Medicaid patients had cardiovascular disease with a total cost of care of \$993 million.
- Stroke is the leading cause of long-term disability and the number one cause of people moving from hospitals to nursing homes.
- Cardiovascular disease is the number two cause of death for children under 15.
- 9 of 10 adults have one or more cardiovascular disease risk factors and only 4% practice a healthy lifestyle (regular physical activity, healthy weight, healthy eating, and not smoking.)
- 70% of patients with hypertension do not have their blood pressure under control. Lowering high blood pressure by 12-points can reduce heart attacks by 21% and strokes by 37%.
- As baby boomers age, heart disease and stroke are expected to increase sharply.

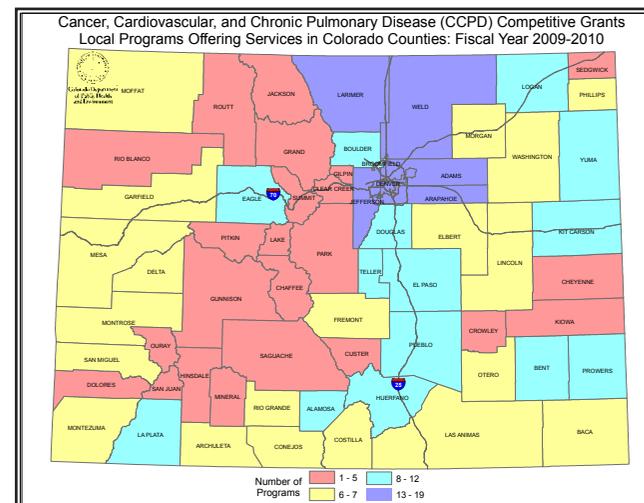
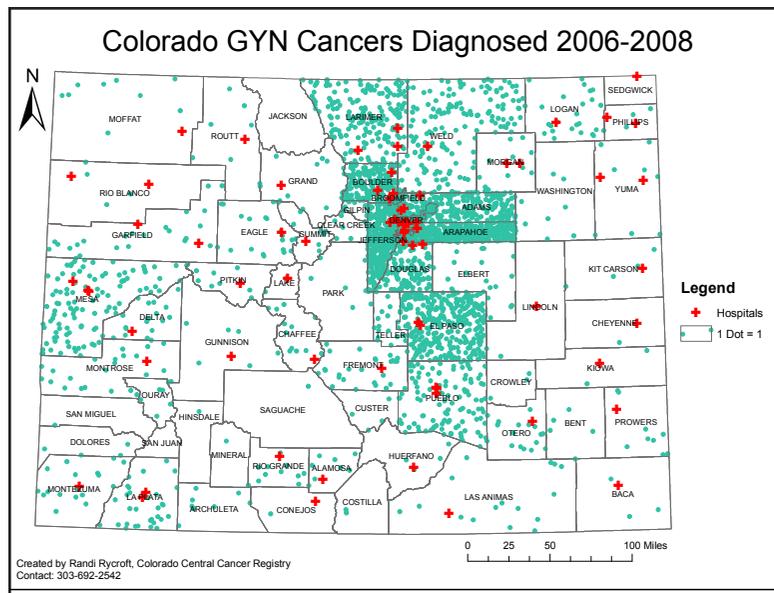
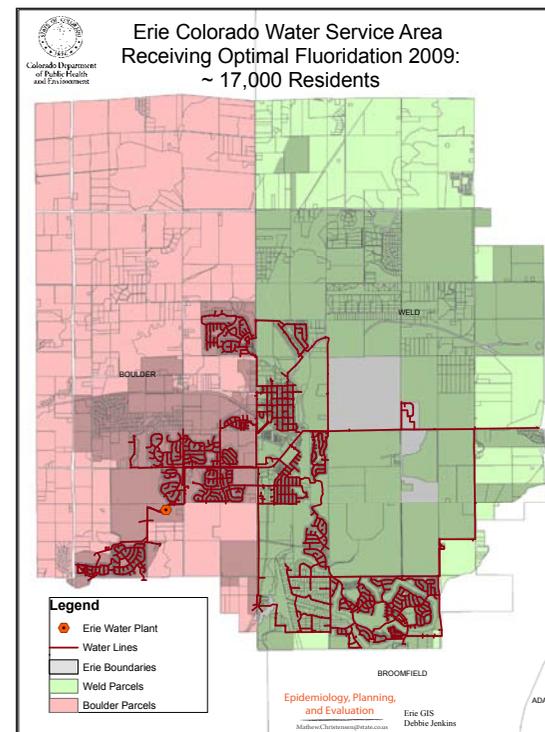
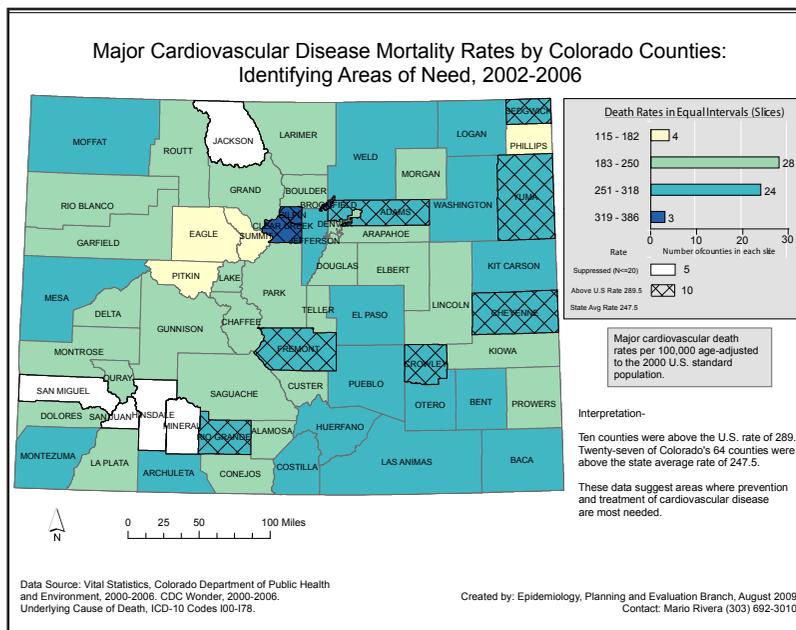
Heart Disease & Stroke Death Rates

Reducing Michigan Health Care Costs

- Reducing the number of Medicaid patients with high blood pressure by 10% could save \$48 million.
- A 10% reduction in strokes could reduce Medicaid costs by \$29.8 million.
- If only 5% of sedentary residents become physically active, it could save \$575 million.
- Healthier diets could save \$2.5 billion in medical costs, lost productivity and lost lives.

State matching funds bring an additional \$1.5 million in federal funds and \$500,000 in private funds to combat cardiovascular disease and obesity. Federal grants usually require state matching funds. If state funds are lost, so are federal funds.





PRESENTATIONS UTILIZING GIS SKILLS

Colorado Department of Public Health and Environment

- 2007 National Institute for Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, GA
- 2008 Colorado Public Health Association annual conference
- 2008 Colorado Chronic Disease conference
- 2008 National Institute for Heart Disease and Stroke Prevention Centers for Disease Control and Prevention, Atlanta, GA
- 2009 National Institute for Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, GA
- 2009 APHA Annual Meeting, Philadelphia, PA

Michigan Department of Community Health

- 2007 National Institute for Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, GA
- 2007 MDCH-GIS Users Group Meeting
- 2008 Poster Presentation at the Annual Epidemiology Conference
- 2008 Michigan Public Health Association
- 2008 Michigan Association for Local Public Health
- 2008 National Institute for Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, GA
- 2008 Michigan Cardiovascular Alliance
- 2008 Michigan Stroke Initiative
- 2009 National Institute for Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, GA
- 2009 APHA Annual Meeting, Philadelphia, PA
- 2009 Michigan Society of Public Health Educators
- 2009 Chronic Disease Section Managers Meeting
- 2009 Cardiovascular Health, Nutrition, and Physical Activity Section Program Showcase
- 2009 Michigan Cardiovascular Alliance
- 2009 Michigan Stroke Initiative
- 2009 Healthy Weight Partnership



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