

THE HEALTH OF DANE COUNTY  
**2013**  
**Health Status**  
**Overview Report**

October, 2013



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## MESSAGE FROM DIRECTOR

August 2013

Public Health Madison & Dane County (PHMDC) serves almost 500,000 people and the 1,200 square miles of urban, suburban, small town and rural environments they live in. The mission of Public Health Madison & Dane County is to promote wellness, prevent disease and help ensure a healthy environment. This report gives a snapshot of the current health status of Dane County. The health of our population is instrumental to the wellbeing of our community. Although Dane County residents are quite healthy overall, by digging deeper into the data we find significant differences in rates of death and disease (health disparities) amongst our residents.

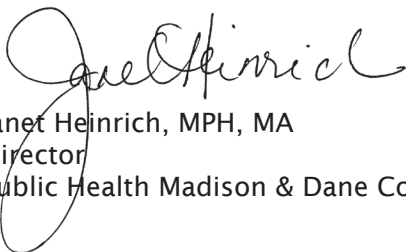
According to the County Health Rankings, out of 72 counties, Dane County ranks 3rd in Health Factors (social and economic factors) and 15th in Health Outcomes (death and disease). Similarly, our community health needs assessment website ([www.healthydane.org](http://www.healthydane.org)) **Community Dashboard** puts Dane County in the “green” category (mostly favorable comparisons with other counties) in 82 out of 115 indicators. However, the **Disparities Dashboard** tells us that not everyone is benefiting from our community’s many resources and healthy environments. For instance, Dane County has exceeded the Healthy People 2020 target for age-adjusted lung cancer death rate (40.8 deaths/100,000 population compared to a goal of 45.5/100,000), but, astonishingly, the rate among our black residents is more than double this (97.7/100,000).

Social justice is the foundation of public health, with a focus on assuring conditions in which people can be healthy. The attention to vulnerable populations and communities and the health disparities they experience is not new to public health. As infectious diseases have given way to chronic diseases as the main causes of death and disability, the same social disadvantages that created barriers to opportunity over a century ago are still important factors in determining an individual’s chances for a healthy life. Income, education, racism, environment, access to adequate and affordable housing and safe neighborhoods – all shape an individual’s chances for a long, healthy life.

Based on this tradition, PHMDC is working with individuals and families, communities and systems, to create conditions which allow everyone in Dane County to reach and maintain optimal health. PHMDC places a special emphasis on:

- Using data to identify subpopulations and neighborhoods most likely to experience health inequities, including health disparities.\*
- Closing the gaps in health status and access to care among our community’s diverse populations.
- Fostering current and building additional partnerships with local health agencies, public and private agencies, community-based coalitions, providers, consumers, educational/academic institutions, and other interested groups.
- Reducing the occurrence of preventable disease and premature death among all Dane County residents.

The journey to a healthier community requires the community’s commitment to removing the obstacles that prevent its residents from making healthy decisions. It is my hope that this report will inform conversations and encourage collaborations between community members, non-profits, and government agencies to work in partnership to create opportunities to improve health through programming and policy change that impact the environment in which we live, work, and play. Working together we can make the healthy choice the easy choice.



Janet Heinrich, MPH, MA  
Director  
Public Health Madison & Dane County

\*Health disparities are differences in health outcomes between population groups and health inequities are differences in health that are not only unnecessary and avoidable, but also unfair and unjust.

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## ABOUT THIS REPORT AND OUR COMMUNITY HEALTH ASSESSMENT PROCESS

Community assessment is a core function of Public Health that informs the priorities and services of the Public Health department, as well as local governments, health care systems and community agencies. Community health assessment includes several steps:

- review, analysis and reporting of existing health status data;
- collection of additional information from community partners and residents; and
- a process to use this data and community input to address community health needs, often in collaboration with community partners.

The health of individuals and populations are influenced by multiple factors. It is estimated that:

- social and economic factors account for 40% of health outcomes;
- 30% is related to health behaviors;
- 20% to clinical care; and
- the remaining 10% is related to the physical environment.<sup>1</sup>

Public Health Madison & Dane County is looking at community health assessment data from the perspective of health equity. Health equity means creating conditions, through just and fair inclusion, that allow everyone to reach their full potential; eliminating differences in health that are the result of unfair conditions based on race, income, ability, geography, age, gender and sexual orientation.<sup>2</sup>

Criteria to help identify important public health issues include:

- The issue disproportionately affects a segment/s of the population.
- The health consequences are serious (e.g., it causes severe illness, disability or premature deaths) and inequitably distributed in the population.
- The root causes of the health issue are inequitably distributed (e.g., poverty, isolation, lack of transportation, lack of social cohesion).
- There have been no significant statistical improvements in the trend, or in narrowing the inequity gap.
- Compared to other locales, Dane County has a worse problem than the state or other counties.
- There is evidence that prevention strategies could substantially reduce the burden of the condition on the population.
- The issue is among national and state health priorities.
- National targets for the issues are not met.
- The issue is of concern to community residents and leaders.

This overview report highlights key factors that impact health and important public health issues facing Dane County, based on review and analysis of available data by Public Health staff, and applying these criteria. The 2013 Health Status Overview Report represents step one in a community health needs assessment process that will continue in 2014. Information about that process can be found at PHMDC's website:

[www.publichealthmdc.com/healthAssessment](http://www.publichealthmdc.com/healthAssessment).

***The Healthy Dane.org data in this report has 2008-2010 data.  
Since Healthy Dane.org data is continually updated, as available,  
the data on their website is more recent than the data in this report.***

## DEMOGRAPHIC AND SOCIOECONOMIC FACTORS THAT IMPACT HEALTH

The conditions into which people are born, grow, live and age are known as the social determinants of health.<sup>1</sup> These determinants, some of which include income, educational attainment, and neighborhood conditions have profound impacts on our health. Poverty, low education level, low health literacy, language barriers, and racial discrimination are all barriers to good health for individuals and for communities. Mirroring a nationwide trend, health in Dane County varies significantly, according to these determinants. Segments of our population have been systematically disadvantaged from the ability to fully participate in economic, social and educational opportunities. The data in this report demonstrates how this translates into inequitable health outcomes.

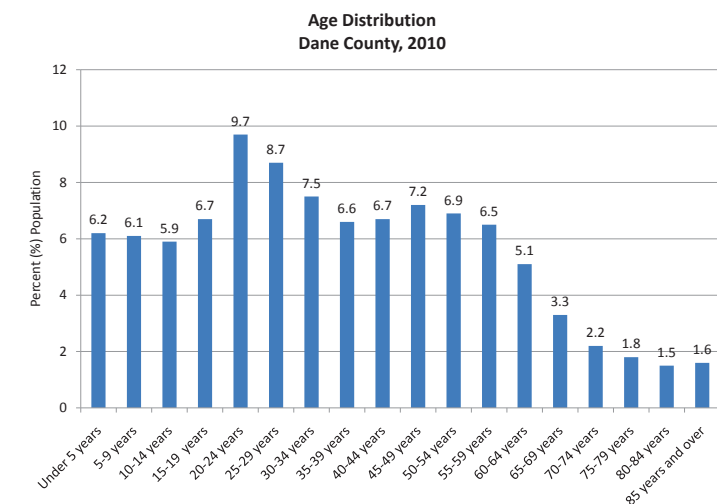
All population data listed in this section, unless otherwise noted, is from the U.S. Census Bureau.<sup>2</sup> (2010)

### Population

Dane County is the second most densely populated county in Wisconsin, and Madison is the second largest city in the state. The population of Dane County grew 14.4% between 2000 and 2010, bringing the total population to 488,073. Madison's 2010 population was 233,209, almost half of the county's population.

### Age

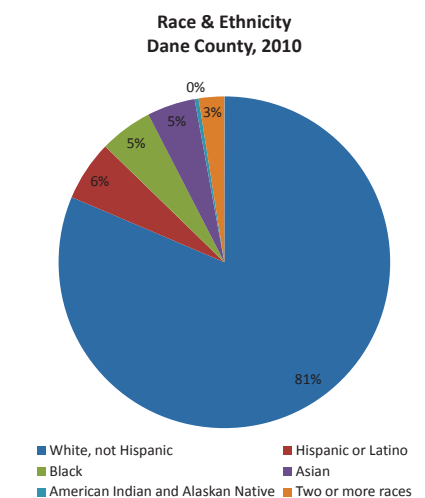
Age distribution affects population health outcome data. For example, there might be a higher crude rate of health outcomes for young adults. Therefore, the data would be age-adjusted when comparing the County to another geographic population with a different age distribution. Dane County's population has a low median age compared to Wisconsin – 34.4 years vs. 38.5 years. The population in Madison is younger, primarily due to its large college-age population. In comparing the age distribution of the populations of Dane County and Wisconsin, the most notable difference is that Dane County has a smaller older adult population but a higher proportion of older adults who live alone. In 2010, adults aged 65 and older made up 10.3% of the population in Dane County, compared to 13.7% in Wisconsin.



Source: US Census 2010

### Race & Ethnicity

The chronic discrimination and bias that is experienced by racial/ethnic minorities and other marginalized groups is one factor that contributes to health inequities, including higher risk for developing chronic diseases, depression and substance abuse.<sup>3,4,5</sup> Dane County's population has become more racially/ethnically diverse since 2000. Racial/ethnic minorities now make up almost 20% of the population, with the largest increase occurring in the Hispanic population. Minority populations, in numbers and as a percent of the entire population, are largest in Madison. Compared to Wisconsin, Dane County has a higher percent of residents who are foreign born and a higher percent of households where a language other than English is spoken at home.



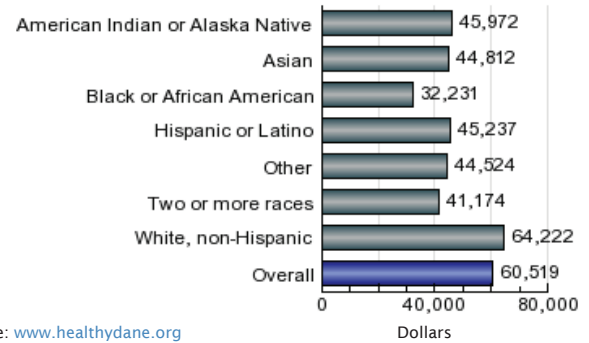
Source: US Census 2010

## Income

“A wide body of evidence has shown that wealth predicts health: the higher you are on the class pyramid, the better your health. Every step down corresponds to slightly worse health, from top to bottom. Inequitable distribution of resources helps explain why.”<sup>6</sup> Low income residents, who are stratified by their society into a lower class, tend to have worse health outcomes. On the other hand, low income residents who are not identified as lower class, such as students, are not negatively impacted.<sup>7</sup>

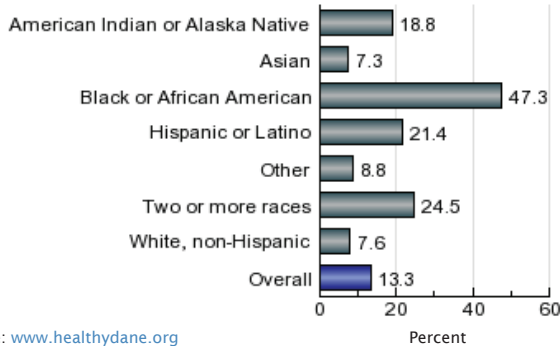
While Dane County experiences higher than average median incomes (\$60,519 versus \$51,598 statewide) and lower than average unemployment, the number of Dane County residents living in poverty has increased from 9.4% in 2000 to a current rate of 12%. Racial and ethnic minorities, especially children, are disproportionately experiencing poverty.<sup>8</sup> One in four children in Dane County and one in two children in the City of Madison are eligible for free or reduced lunch.<sup>9</sup> These statistics have profound implications for the health of our community as a whole. Children living in poverty are seven times more likely to be in fair or poor health as compared to children in more affluent families. Adults in poverty are three times as likely to have a chronic disease.<sup>10</sup> By every economic measure, racial and ethnic minorities are even more disadvantaged, as shown in the following charts.<sup>11</sup>

Median Household Income  
by Householder Race/Ethnicity  
Dane County, 2008-2010



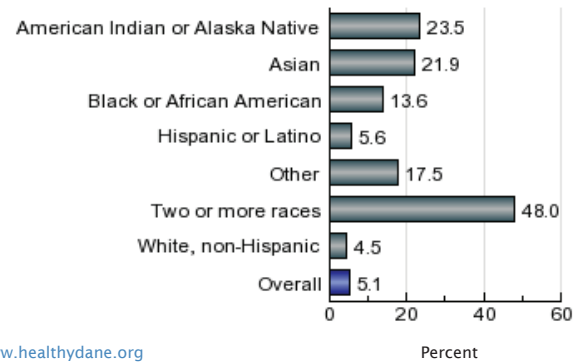
Source: [www.healthydane.org](http://www.healthydane.org)

Young Children Living Below Poverty Level  
by Race/Ethnicity  
Dane County, 2008-2010



Source: [www.healthydane.org](http://www.healthydane.org)

People 65+ Living Below Poverty Level  
by Race/Ethnicity  
Dane County, 2008-2010



Source: [www.healthydane.org](http://www.healthydane.org)

## Education

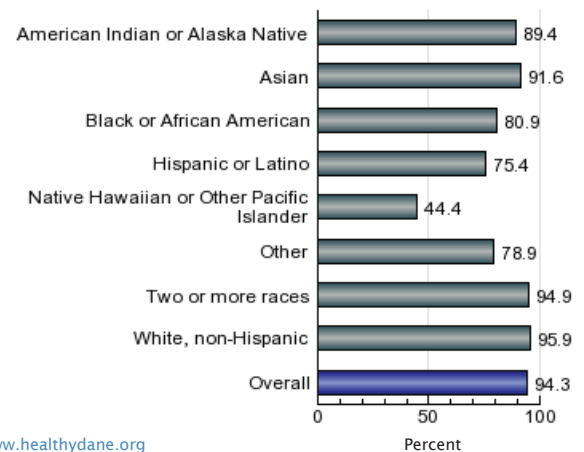
A review of the current literature shows an association between fewer years of education and a wide variety of illnesses, health problems, health behaviors and indices of overall health.<sup>12</sup> Education benefits health because it improves economic status, and also because it affects patterns of thinking and decision-making.<sup>13</sup> The literature shows that differences in health literacy level were consistently associated with increased hospitalizations, greater emergency care use, lower use of mammography, lower receipt of influenza vaccine, poorer ability to demonstrate taking medications appropriately, poorer ability to interpret labels and health messages, and, among seniors, poorer overall health status and higher mortality.<sup>14</sup> Some of the causes for low literacy among adults include: enduring poverty causing less access to resources; failed or inconsistent education policy such as segregated education, lack of alternative programs for students needing a different structure, and lack of programs to address low literacy in children; student mobility; and low self esteem and expectations of self.<sup>15</sup>

- The 2003 National Assessment of Adult Literacy found that 39% of Wisconsin adults are at below basic or basic literacy levels.<sup>16</sup>

Education data also reveals a wide gap between Dane County population groups that adversely impacts the health of residents with lower educational attainment. Dane County has a much higher percentage of college graduates than Wisconsin and the U.S., but the 86% high school graduation rate is one of the lowest among Wisconsin counties.<sup>17</sup> The gap is even wider in Madison, with 52.2% of the population having at least a bachelor's degree, and only 73.7% of high school students graduating high school in four years. High school graduation rates for African American, Native American and Hispanic students are in the 50-60% range.<sup>18</sup>

Another measure of the education level of the adult population, people 25 and older with at least a high school degree, also shows significant differences between racial/ethnic groups in Dane County.<sup>19</sup>

People 25+ with a High School Degree or Higher  
by Race/Ethnicity  
Dane County, 2008-2010



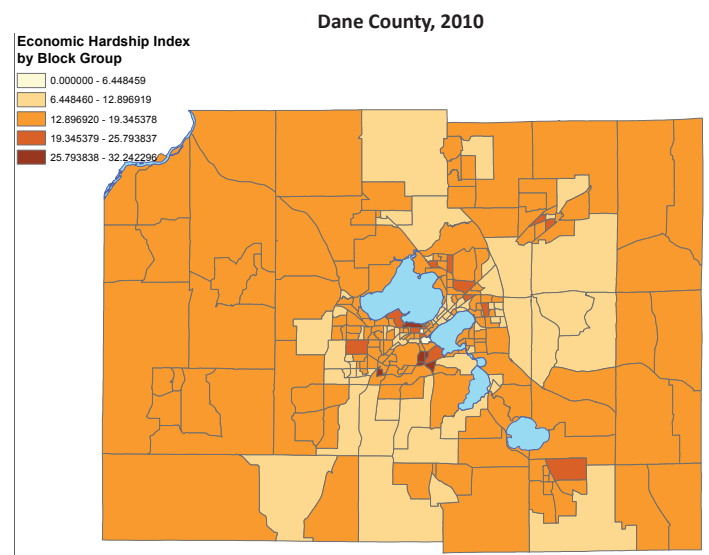
Source: [www.healthydane.org](http://www.healthydane.org)

## Neighborhood Poverty

Socioeconomic status influences where we live. Residents with higher income have greater opportunity to live in neighborhoods that promote good health. Low-income residents, particularly low-income people of color, have fewer housing options and are more likely to have to live in high-poverty neighborhoods which present multiple health risks. When there are segregated pockets of poverty within a higher income neighborhood or community, the community infrastructure and resources to meet the needs of the minority of low-income residents may be lacking. An example would be lack of a public transportation system that can allow access to jobs, shopping, community services, opportunities for youth, and other destinations that are enjoyed by those who can drive their own car.<sup>20</sup>

The percentage of residents living in poverty within a neighborhood can impact the living conditions of the neighborhood. Residents of high poverty neighborhoods are often exposed to more traffic, pollution, blight, crowding, crime and violence. Business and community divestment can mean fewer opportunities for employment, recreation, education and civic engagement.<sup>21</sup> There is typically excessive access to less nutritious food, increased access to alcohol and tobacco products, and higher exposure to those marketing messages. All of these factors can make residents feel less invested and powerless to influence their living conditions. They also influence behavior and take a toll on the health of individual residents and the neighborhood community.<sup>22,23</sup>

The social and economic conditions by census tract in the Dane County area were described using the economic hardship index.\* Scores on the index can range from 1 to 100, with a higher index number representing a greater degree of economic hardship. The map indicates a greater degree of economic hardship in certain areas within Dane County, shown by the darker orange color.<sup>24</sup>



\*The economic hardship index is scored by combining 6 indicators: crowded housing (percent of housing units with more than 1 person per room), poverty (percent of households living below the federal poverty level), unemployment (percent of persons over the age of 16 years that are unemployed), education (percent of persons over the age of 25 years without a high school education), dependency (percent of population that is under age 18 or over age 64 years), and income level (median per capita). Data for these indicators were obtained from the 2010 U.S. Census.

## ACCESS TO MEDICAL, DENTAL AND MENTAL HEALTH SERVICES

### Access to Health Services

Access to comprehensive, quality health care services is important for the achievement of health equity and for increasing the quality of a healthy life for everyone. Access to health care impacts:

- Overall physical, social, and mental health status,
- Prevention of disease and disability,
- Detection and treatment of health conditions,
- Quality of life,
- Preventable death, and
- Life expectancy.<sup>1</sup>

As demonstrated by extensive research and confirmed in National Healthcare Disparities Reports (NHDRs), racial and ethnic minorities and people of low socioeconomic status are disproportionately represented among those with access problems. Poor access to health care comes at both a personal and societal cost.<sup>2</sup>

Limited access to health care impacts people's ability to reach their full potential, negatively affecting their quality of life. Barriers to services include lack of availability, high cost, and lack of insurance coverage. These barriers to accessing health services can lead to unmet health needs, delays in receiving appropriate care, inability to get preventive services, and hospitalizations that could have been prevented.<sup>3</sup>

### Access to Mental Health Services

"Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community."<sup>4</sup>

When comparing all diseases, mental illnesses rank first in terms of causing disability in the United States, Canada, and Western Europe.<sup>5</sup> Mental health disorders are an enormous social and economic burden to society by themselves, but are also associated with increases in the risk of physical illness.<sup>6</sup> Evidence has shown that mental health disorders—most often depression—are strongly associated with the risk, occurrence, management, progression, and outcome of serious chronic diseases and health conditions, including diabetes, hypertension, stroke, heart disease, and cancer. Therefore, while efforts are underway to reduce the burden of death and disability caused by chronic disease in the United States, simultaneously improving mental health nationwide is critical to improving the health of all Americans.<sup>7</sup> Limited access to mental health services can negatively impact both physical and mental health.

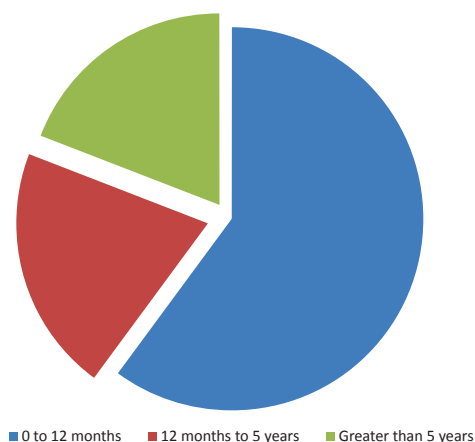
### Access to Oral Health Care

Good oral health is critical to general health and should be included when assessing the health status of a population. Untreated tooth decay (dental caries) and gum disease (periodontal disease), increase the risk for heart disease and stroke, and complications of diabetes.<sup>8</sup> In pregnant women, infections in the mouth can reach the uterus and increase the risk for premature labor.<sup>9</sup> In some cases, infections can lead to sepsis (blood infection) or even death.<sup>10</sup>

People are at higher risk of having dental problems if they have not been to a dentist in over a year.

- 22% of Dane County adults reported that they had not been to a dentist in over a year (2006-10), compared to 25% for Wisconsin adults.<sup>11</sup> (2010)
- Among Wisconsin adults, those aged 25-34, those 65 and older, African American and Hispanic adults were more likely to have not seen a dentist in over a year.<sup>12</sup> That data is not available for Dane County.

Time Since Last Dental Appointment for Older Adults  
Dane County, 2011



Source: PHMDC Older Adult Oral Health Survey

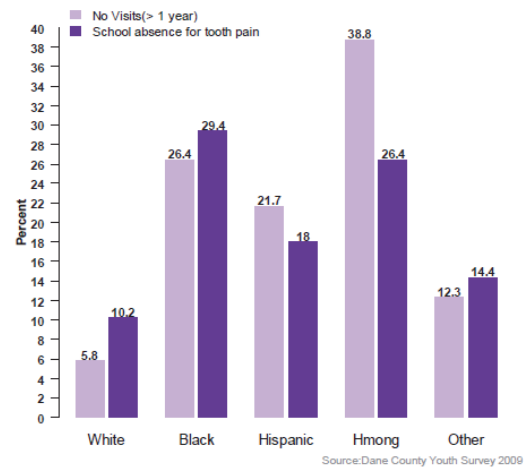


- A Public Health Oral Health survey of over 700 Dane County adults, ages 60 and older, found that 40% had not been to a dentist in the past year, often because they could not afford care.<sup>13</sup> (2011)
- 8.9% (2,194) of Dane County 7th-12th graders had not visited a dentist in over one year.<sup>14</sup> (2012) However, this percentage was lower than in 2009 (11% - 2,637). More extensive analysis of the 2009 DCYA found that Hmong, African American and Hispanic students were far more likely to have not visited the dentist in over a year than White youth (Hmong 39%; African American 26%; Hispanic 22%; White 6%).<sup>15</sup>

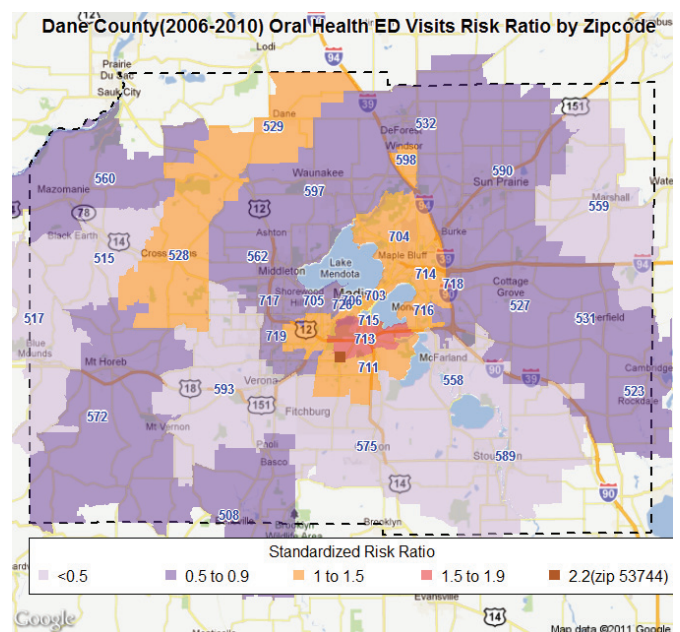
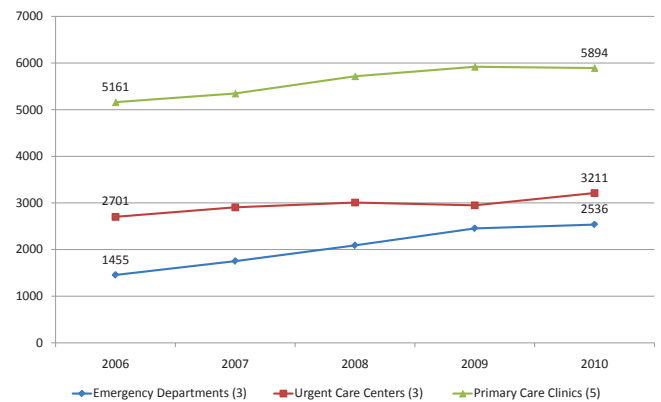
When someone does not have access to preventive oral health care and needed dental treatment, their untreated problem can result in pain and infection. The person in pain often misses school or work and then makes desperate attempts to find care. They often seek help at a hospital emergency department (ED) or an urgent care clinic center (UCC) because there is nowhere else to go.

- 14.4% of Dane County middle school students and 13.5% Dane County high school students (3,295 students) reported that they had missed school in the past year due to tooth pain. Again, minority youth were much more likely to be impacted (African American 29%, Hmong 26%, Whites 10%).<sup>16</sup> (2009)
- In 2012, PHMDC received over 225 calls from residents suffering from dental pain who were unable to access dental care.<sup>17</sup> They were either uninsured (no dental insurance), underinsured or had Medicaid/BadgerCare Plus and are not able to find a dentist willing or able to provide care. Some dentists who accept Medicaid/BadgerCare Plus may not take on additional patients.
- Between 2006-2010, there is an increasing trend of dental visits to Dane County hospital emergency departments, urgent care centers and primary care clinics for dental pain. In 2010, there were over 11,000 visits, where only palliative care was provided (pain medications for untreated cavities and/or antibiotics for infection). This is often an inappropriate and inefficient use of hospital and clinic's limited resources. The fact that many people are turning to hospitals, urgent care centers and primary care clinics to address oral health needs indicates that systems of dental care are failing to reach many people who are in need.<sup>18</sup>
  - » The hospital ED rates for oral health in some communities (identified by zip code) are higher; the highest rates are for residents from South Madison, followed by North and East Madison, Monona, Waunakee, Cross Plains and Village of Dane, compared to the average for Dane County (standardized risk ratio).<sup>19</sup> (2006-10)

Youth Oral Health Indicators by Race/Ethnicity  
Dane County, 2009



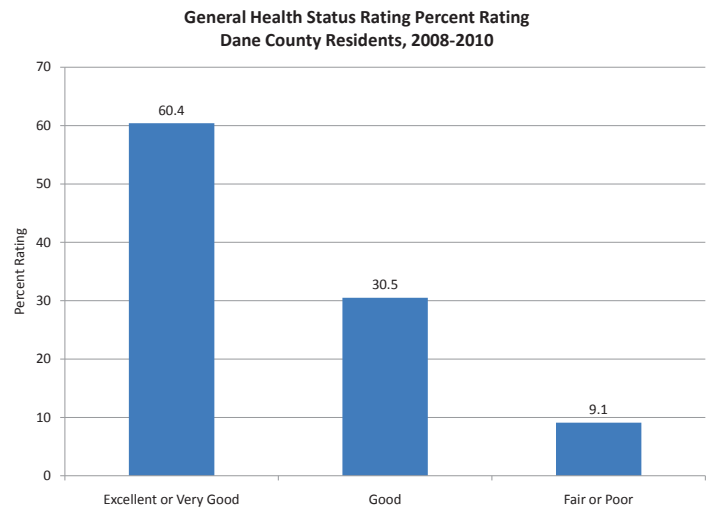
Oral Health Visits to Dane County Emergency Departments (ED), Urgent Care Centers (UCC) & Primary Care Clinics (PCC)  
2006-2010



## GENERAL HEALTH STATUS

Among Dane County adults who were surveyed:

- 60.4% rated their general health status as “Excellent” or “Very Good,”
- 30.5% rated it as “Good,”
- 9.1% rated it as “Fair” or “Poor.” The percent who reported Fair or Poor health was slightly lower than for Wisconsin (12.5%).<sup>1</sup> (2008-2010)

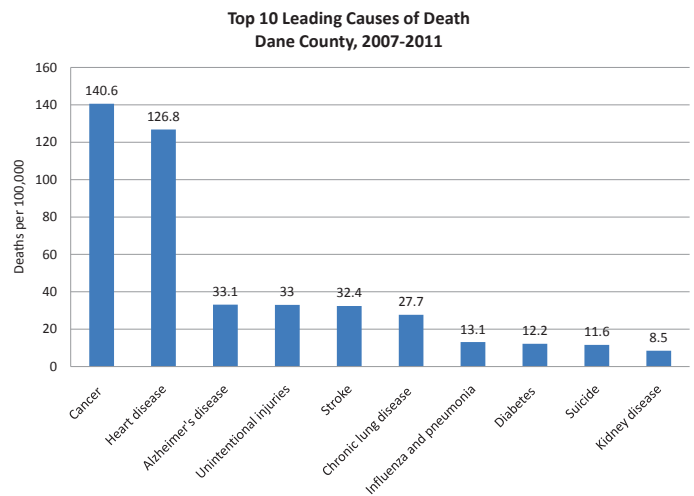


Source: CDC BRFSS

## LEADING CAUSES OF DEATH

The following is a list of the top 10 causes of death for Dane County residents for the combined years of 2007-2011, with the average number of deaths per year for that time period. This is followed by a chart with the death rates per 100,000.<sup>1</sup>

Cause of Death	Average number of deaths per year
Cancer	678
Heart disease	611
Alzheimer's disease	159
Unintentional injuries	159
Stroke	156
Chronic lung disease	134
Influenza and pneumonia	63
Diabetes	59
Suicide	56
Kidney disease	41



Source: WISH

- Compared to Wisconsin, Dane County has lower age-adjusted deaths rates for the leading causes of death, except for Alzheimer's disease. The Alzheimer's disease rate for Dane County is 36.5 per 100,000 vs. 24.4 per 100,000 for Wisconsin residents.<sup>2</sup>

### Leading Causes of Death for Dane County Residents (2007-2011), by Age Group

Age Group & Cause of Death	Rate per 100,000	Average number of deaths per year
<b>Under 1 year</b>		
Perinatal condition	295.4	18
Congenital anomalies	95.2	6
Unintentional injuries	49.2	3
<b>1-14 years</b>		
Unintentional injuries	2.7	2
Cancer (all)	1.5	1
<b>15-24 years</b>		
Unintentional injuries	18.8	15
Suicide	10	8
Homicide	2.7	2
<b>25-44 years</b>		
Unintentional injuries	30.3	42
Cancer (all)	15.1	21
Suicide	11.5	16

Age Group & Cause of Death	Rate per 100,000	Average number of deaths per year
<b>45-64 years</b>		
Cancer (all)	141.8	177
Heart disease	71.5	89
Unintentional injuries	35.3	44
Suicide	20.2	25
<b>65-84 years</b>		
Cancer (all)	818.9	342
Heart disease	517.2	216
Chronic lung disease	170.5	71
Stroke	132.6	55
<b>85 + years</b>		
Heart disease	3,925.70	292
Cancer (all)	1,812.50	135
Alzheimer's disease	1,466.10	109
Stroke	1,135.80	85

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## ENVIRONMENTAL CONDITIONS THAT IMPACT HEALTH

Community and neighborhood environments impact the health of community residents. This includes well-known environmental factors such as outdoor and indoor air pollution, as well as many other characteristics of community environments that impact behavior and lifestyle, physical and mental health, and personal safety.

### Indoor Air Quality: The Contamination of Indoor Air from Vapor Intrusion

The “vapor intrusion” pathway refers to the movement of toxic vapors from contaminated sites through the soil and into nearby homes and businesses where they could be inhaled by the occupants at unacceptable concentrations.<sup>1,2</sup> Symptoms can vary, depending on the type of chemical and the amount of exposure. Symptoms can include dizziness, headache, nose and throat irritation, and nausea following short-term (acute) exposures.<sup>3,4</sup> Long-term exposures can result in more severe health implications including liver and kidney damage, neurological damage, and cancer.<sup>5</sup>

#### *Chemicals of Interest*

Most vapor intrusion problems involve spills of gasoline and other petroleum products and/or chlorinated solvents such as tetrachloroethylene. Sites contaminated with petroleum at levels that could impact human health are typically identified by a petroleum odor that helps in the identification of potential threats. In contrast, most chlorinated solvents do not have a distinct odor which makes identification of this type of contamination more difficult.<sup>6</sup>

#### *Petroleum*

People generally smell petroleum vapors before they are likely to cause fire, explosion, or human health effects.<sup>7</sup> The Wisconsin Department of Natural Resources (WI DNR) has dozens of active cases in Dane County involving sites contaminated with petroleum products, such as gasoline, diesel fuel, engine oil and fuel oil.

#### *PCE*

Tetrachloroethylene (PCE), also known as perchloroethylene or PERC, is a chlorinated solvent that has been widely used in the dry cleaning and metal-cleaning industries. A significant portion of contaminated sites identified in Dane County are due to PCE.<sup>8</sup> The WI DNR has almost 30 separate open cases of PCE contamination in Dane County, at various stages of investigation and remediation. Additional sites that have been previously closed are under consideration for further investigation for vapor intrusion. Public Health Madison & Dane County is assisting in over a dozen of these cases to improve public understanding of this issue and communicate public health information to impacted neighborhoods. PHMDC will continue to assist the WI DNR as more sites are identified. Additional information is available at: [www.publichealthmdc.com/documents/PCEVaporIntrusionReport.pdf](http://www.publichealthmdc.com/documents/PCEVaporIntrusionReport.pdf).

### Outdoor Air Quality: Fine Particulate Matter and Human Health

Fine particulate matter (PM 2.5) describes airborne particles that are 2.5 micrometers or less in diameters, approximately 1/30th the diameter of a human hair. Particles this small can settle deep in the lungs. Exposure has been associated with asthma symptoms, and increased risk of bronchitis, heart disease, stroke and lung cancer.<sup>9,10,11</sup>

In Dane County, high levels of PM 2.5 and ground-level ozone are the major factors affecting our outdoor air quality. High levels of these contaminants result in the declaration of Clean Air Action Days and other types of air alerts in the area.

## Current Trends

Similar to previous years, the highest reported levels of PM 2.5 in 2011 occurred during the winter months but high levels could occur at any time of the year. In 2011, the last full year of data, only 1 day exceeded the federal standard of 35 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) for maximum daily concentration of fine particulate matter established by the United States Environmental Protection Agency (U.S. EPA) in 2006. This represents an approximate 83% reduction in PM 2.5 since 2007; the first year of data collection following the reduction of the U.S. EPA daily standard from  $65 \mu\text{g}/\text{m}^3$  to the current National Ambient Air Quality Standard (NAAQS).<sup>12,13</sup>

## Sources

Emissions from vehicular traffic are a major source of PM 2.5 and other chemicals such as nitrogen oxides (NOX) and volatile organic compounds (VOCs) that influence Dane County air quality. These emissions continue to grow due to the continuing increase in the numbers of vehicles on state highways.

In 2011, there was a reported increase of 22% in vehicular traffic emission, since the year 2000, in Dane County.

Other gasoline and diesel engines that power everything from construction equipment to lawn mowers are also significant contributing sources of particulate matter. Although the formation of PM 2.5 is chiefly derived from the combined emissions from gasoline and diesel engines, additional sources also include dirt, dust, smoke, liquid droplets, and other industrial emissions and natural sources.<sup>14</sup>

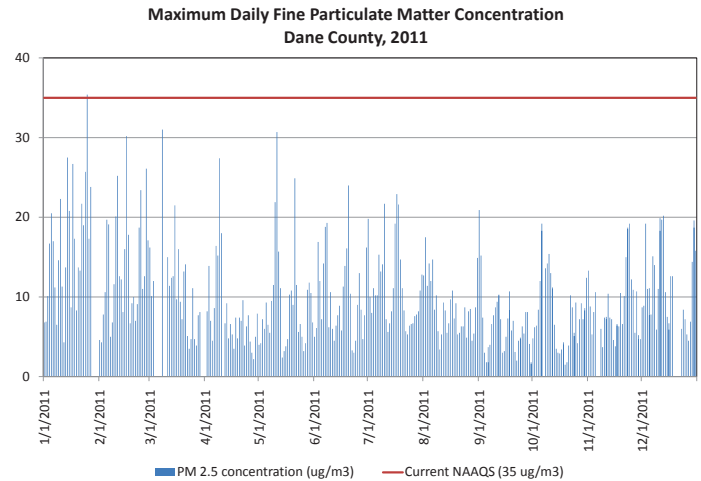
For individual and community level actions for a continued reduction of Particulate matter 2.5, see the PHMDC 2010 Environmental Health Report Card.<sup>15</sup>

## Neighborhood Safety

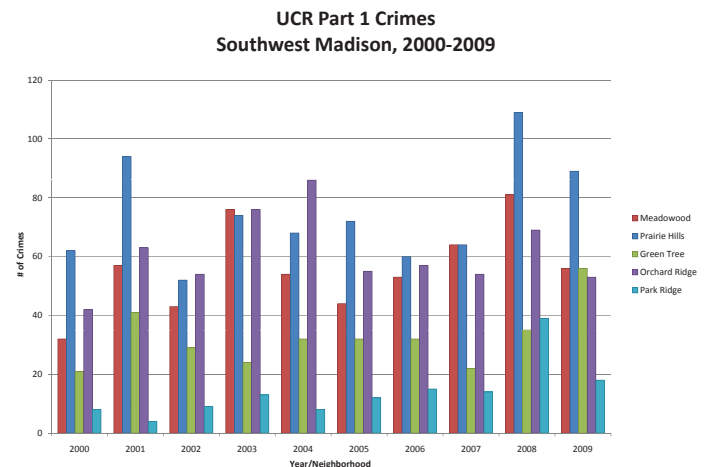
The violent crime rates in Dane County (249.1 crimes per 100,000) are higher than other comparable communities in Wisconsin.<sup>16</sup> (2008-2010) Violent crimes include homicide, assault, rape and robbery. However, nationwide data shows that violent crime rates are higher in areas where there are higher rates of poverty, higher mobility, lower levels of social capital and less access to resources.<sup>17</sup> Neighborhood crime and perceptions of safety have an impact on the community. According to Madison Police Department data from two Madison neighborhoods, residents living in areas of poverty are more likely to be victims of crime and other quality of life issues.

### Southwest Madison

In Southwest Madison, police crime data or uniform crime reporting data—UCR (e.g., murder, rape, burglary, etc.) and calls for police service related to quality of life issues—QOL (e.g., juvenile complaints, drug-related incidence, domestic violence, weapons offence, neighbor trouble, etc.) were reviewed. UCR reflects crime that has actually occurred, but there may or may not have been an arrest. QOL may or may not have been a real crime, but it reflects the perceptions of those living in the neighborhood.

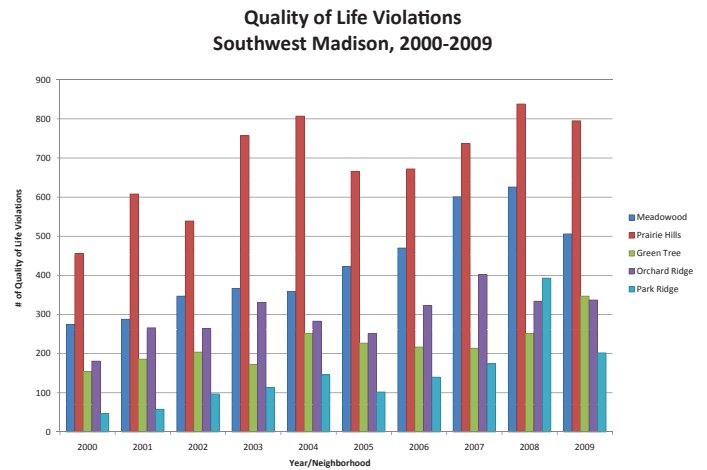


Source: WI Department of Natural Resources

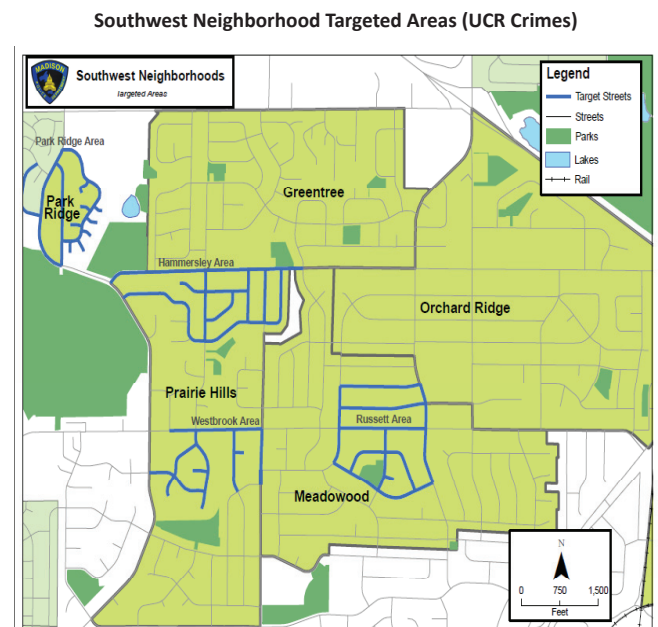


Source: Madison Police Department

- Over a 10-year period, crime rates (UCR) have gone up in all five SW neighborhoods in Madison (overall 64.9% increase) and at a higher rate than the city of Madison as a whole (4.3% increase). The rates were higher in the Prairie Hills and Meadowood neighborhoods.<sup>18</sup>
- Over a 10-year period, QOL rates have increased in all five SW neighborhoods (overall 96.5% increase) and at a higher rate than the city of Madison as a whole (62.5% increase). The rates are higher in the Prairie Hills and Meadowood neighborhoods.<sup>19</sup>
- The crime rates in Southwest Madison neighborhoods are more likely to occur in low-income areas.<sup>20</sup> (2009)
  - » 54% of Meadowood’s UCR crimes occur in the Balsam-Russett area.
  - » 72% of the Prairie Hills UCR crimes occur in the Hammersley (44%) and Westbrook Circle (28%) areas.



Source: Madison Police Department

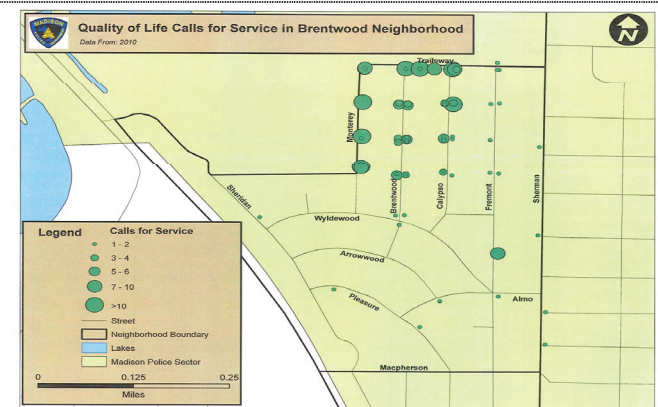


Source: Madison Police Department, 2009

### Madison’s Northside – Brentwood Neighborhood

In the Brentwood Neighborhood (Northside), the QOL measures were also reviewed and again the rates were highest in areas of low-income.<sup>21</sup> (2010)

This collaborative data (Public Health and Police) has not been analyzed on a city-wide or county-wide basis.



Source: Madison Police Department, 2010

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## BEHAVIORS THAT IMPACT HEALTH

Many diseases and injuries have underlying causes and risk factors that can be prevented or reduced, including some personal behaviors. Some of these issues include high risk alcohol use, cigarette smoking, poor diet and physical inactivity. Drug poisoning and inadequate sleep are emerging issues.

### High Risk Alcohol Use

Excessive alcohol consumption contributes to injuries and many serious diseases, including many forms of cancer, liver diseases, and other cardiovascular, neurological, psychiatric and gastrointestinal problems.<sup>1</sup> Alcohol also adds calories that can contribute to obesity.

Binge drinking and drinking during adolescence are of special public health concern. Binge drinking is the highest risk alcohol use behavior. It is associated with unintentional and intentional injuries, alcohol poisoning, high risk sexual behavior, cardiovascular diseases including hypertension and stroke, liver disease, neurological damage, poor control of diabetes, and fetal injury.<sup>2</sup> Underage alcohol use puts youth at greater risk for injuries, poisoning, illegal drug use, risky sexual behavior, violence, suicide and academic failure.<sup>3</sup> Youth who begin drinking before age 14 are more likely to experience alcohol dependence as adults, as compared to those who delay initiation of alcohol use until age 21 or older.<sup>4</sup>

#### *Binge Drinking\**

Wisconsin leads the nation in binge drinking. The prevalence of binge drinking among Dane County adults (18 and older) is comparable to that for the state and well above the Healthy People 2020 target.<sup>5</sup>

- 22.3% of Dane County adults reported binge drinking at least once in the past 30 days.<sup>6</sup> (2008-2010)
- 15.8% of Dane County high school youth reported binge drinking in the past 30 days, up from 2009 for both females and males.<sup>7</sup> (2012)

#### *Early Initiation of Alcohol Use*

- 54.1% of Dane County high school youth said they have had a drink of alcohol in their lifetime, defined as more than a few sips. Among this group, 58.7% of males and 51.7% of females were 14 or younger the first time they drank.<sup>8</sup> (2012)
- 43.3% of Dane County high school youth and 12.2% of middle school youth said they drank alcohol in the past 12 months. There was no difference found between males and females, at either the middle school or high school level.<sup>9</sup> (2012)

### Use of Prescription Drugs for Non-Medical Reasons

When medications are taken for non-medical reasons, especially if taken in large quantities or mixed with other drugs and/or alcohol, abuse or dependence, and death can result.<sup>10</sup>

- There were 6.1 million people (2.4%) in the U.S., aged 12 years or older, that used prescription drugs for non-medical use.<sup>11</sup> (2011)
- 5% of Wisconsin residents, 12 and older, reported non-medical use of prescription opiates; 11% for those aged 18-25.<sup>12</sup> (2011)
- 7% of Dane County high school students reported that they have used prescription drugs that were not prescribed by their doctor, in the past 12 months.<sup>13</sup> (2012)
- In a drug overdose survey, conducted in Dane County, 3 out of 4 people (230) who were in treatment or recovery from opiate dependence reported that they started their opiate use with prescription pain medications.<sup>14</sup> (2013)

\*CDC BRFSS defines adult binge drinking as 5 or more drinks for males and 4 or more drinks for females within a few hours, at least once in the past 30 days. The Dane County Youth Assessment uses 5 or more drinks as a measure.

## Smoking Tobacco

While the smoking rate has declined over time, thousands of Dane County adults still smoke, health consequences for them are serious, and the economic costs are high. Nearly all adult tobacco use begins in adolescence. Tobacco use by youth is also problematic because it is a “gateway” substance, preceding and increasing the risk of other drug use.<sup>15</sup> See the *Pregnancy, Fetal and Infant Health Risks* section for discussion of smoking during pregnancy.

- 15.6% of Dane County adults report being current cigarette smokers, over the Healthy People 2020 target 6 of 12%.<sup>16</sup> (2004-2010)
- 20.1% of Dane County high school youth said they have smoked a cigarette in their lifetime, and about half of those youth (46.7%) have gone on to become current smokers, a testament to the highly addictive nature of tobacco.<sup>17</sup> (2012)
- 9.1% (2012) of Dane County high school youth reported smoking cigarettes in the past 30 days, down slightly from 2009.<sup>18</sup> (2012) This may, in part, reflect the national trend away from cigarettes to less expensive cigars and loose tobacco.<sup>19</sup>

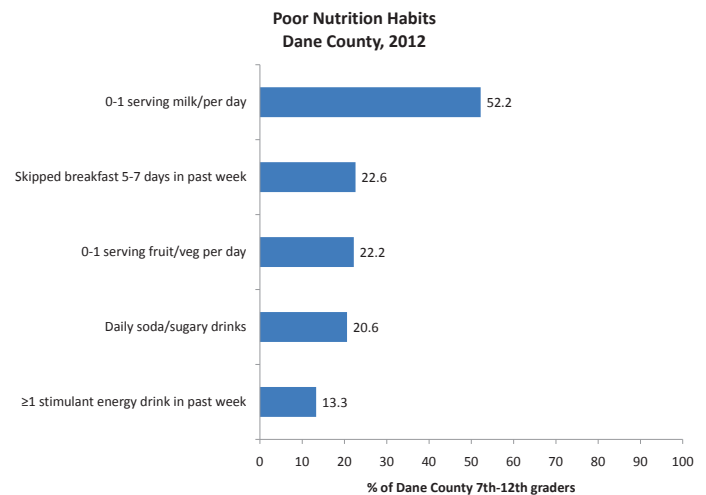
## Poor Diet and Nutritional Deficiencies

What we eat can either increase our risk or protect us from many chronic health problems, including obesity, cancer, high blood pressure, heart disease, stroke and diabetes. The only aspect of the adult diet for which there is county-level data is fruit and vegetable consumption. However, national data points to other dietary problems which are most likely shared by Dane County residents, and some of these are also highlighted below.

### Fruit and Vegetables

Fruit and vegetable intake, important for disease prevention, is low for Dane County adults and youth, and should be increased.

- 40% of adults report eating 0-2 servings per day, and only 24% eat the recommended 5 servings per day.<sup>20</sup> (2007 & 2009)
- 23.2% of Dane County adolescents eat 0 or 1 serving of fruit or vegetables per day, while only 9.2% eat the recommended 5 servings per day. (2012) Several measures point to a decline in fruit/vegetable consumption since 2009.<sup>21</sup>



Source: 2012 Dane County Youth Assessment

### Solid Fats, Sugars and Refined Grains

Solid fats (saturated fat and trans fat), added sugars, and high intake of refined grains contribute too many calories to the American diet and supplant foods that are high in nutrients and fiber.<sup>22</sup> Common food sources include grain-based desserts (bakery), pizza, full-fat cheese, high fat meats and french fries. Regular consumption of soda and other sugar-sweetened beverages, widely sold and consumed in large portions, increases the risk of obesity, metabolic syndrome and type 2 diabetes.<sup>23</sup> National data and past local youth data reveal racial and gender disparities in the amount of sweetened drinks consumed by adolescents, with males and African American youth consuming more.<sup>24</sup>

- Dane County adolescent males consume more sugary drinks than females: 24.8% of males vs. 16.2% of females drink at least one per day.<sup>25</sup> (2012)



## Milk Intake and Vitamin D Deficiency

Milk and milk products contribute essential nutrients to the diet that improve bone health, lower blood pressure, and help prevent cardiovascular disease and type 2 diabetes. Unfortunately, intake of milk products is less than the recommended amounts for many children, most teens and adults (particularly females). In addition, the majority of intake is in the form of 2% milk, whole milk and cheese, which are high in fat and calories.<sup>26</sup>

- Over half (52.2%) of all Dane County 7th-12th graders and 61.7% of Dane County high school girls reported drinking no milk or one serving per day, which does not meet the 2010 Dietary Guidelines for Americans recommendation of three cups per day for adult and youth age nine and older.<sup>27</sup> (2012)

Vitamin D is needed for good bone health, and research has pointed to other health benefits as well. Our skin produces vitamin D when exposed to sunshine, but low sun exposure (i.e., in northern latitudes) causes many people, in all age groups, to have vitamin D deficiency. Vitamin D is added to milk, but getting enough from dietary sources is still challenging. Groups at higher risk for vitamin D deficiency include people with darker skin, those who are obese, older adults who are confined indoors, pregnant women, and breastfed babies who do not take vitamin D supplements.<sup>28</sup>

## Physical Inactivity

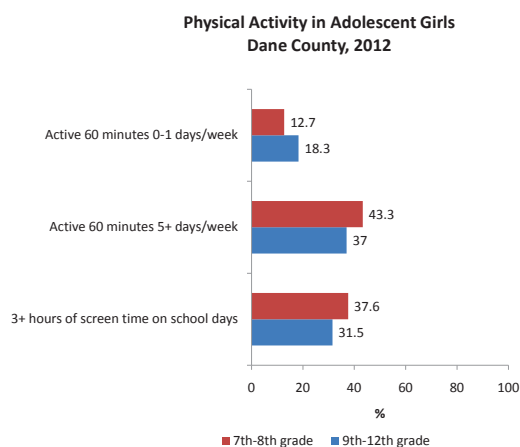
The benefits of physical activity go well beyond its important role in maintaining a healthy weight. In adults, physical activity reduces the risk of early death, heart disease, stroke, high blood pressure, type 2 diabetes, breast and colon cancer, falls and depression. For people who are inactive, even a small increase in physical activity would have health benefits. For youth, physical activity improves strength and endurance, and reduces stress, anxiety and depression.<sup>29</sup>

An estimated 80% of U.S. adults and youth are not meeting the *2008 Physical Activity Guidelines for Americans*.<sup>30</sup>

The county-level measure of physical activity in adults is defined as any physical activity or exercise outside of their regular job in the past month, including walking and gardening. Overall, Dane County adults may be more active than adults statewide, but a sizeable number (14.4%) of Dane County residents do not or cannot engage in even minimal physical activity.<sup>31</sup> (2008-2010)

The *2012 DCYA* provides a more complete picture of physical activity patterns in adolescents.

- Less than half (45.5%) of Dane County 7th-12th graders are active for 60 minutes at least 5 days per week. 14.8% are very inactive (60 minutes of activity, 0-1 days per week). Females are less active than males at the high school level because physical activity decreases as girls age.<sup>32</sup>
- 36.9% of Dane County adolescents engage in 3 or more hours of sedentary, non-homework screen time on school days, and 10.7% spend 5 or more hours. Boys are slightly more likely than girls to engage in excessive screen time.<sup>33</sup>
- Further analysis of physical activity in Madison students revealed the impact of poverty, as well as important gender and race differences.
  - » Low-income youth are more likely to be very inactive, not play team sports, and have high screen time.
  - » The gender difference in physical activity levels (girls less active) is more pronounced in African Americans and Hispanics.
  - » There are significant differences between racial/ethnic groups for girls. White girls report more days of physical activity and they are more likely to play team sports than other girls. African American girls are less likely to exercise on their own and more likely to have high screen time, compared to other girls.<sup>34</sup>

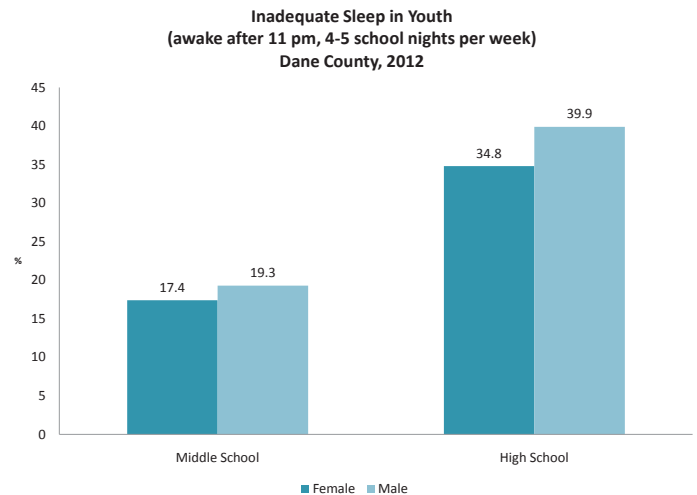


Source: 2012 Dane County Youth Assessment

## Inadequate Sleep

Inadequate sleep is common in adults and adolescents, and there are major implications. Insufficient sleep increases the risk of developing obesity, type 2 diabetes, cardiovascular disease and depression.<sup>35</sup> Lack of sleep is also responsible for motor vehicle crashes and machinery-related injuries, causing substantial injury and disability each year.<sup>36</sup> For adolescents, getting less than 8 hours of sleep a night is associated with learning and discipline problems, many risk behaviors and health problems, including obesity, depression, substance use, accidents and infections.<sup>37</sup>

- 39% of Dane County adults reported getting insufficient sleep 8 or more nights in the past 30 days.<sup>38</sup> (2008-2010)
- 37.3% of Dane County high school youth and 18.4% of middle school youth reported staying awake later than 11:00 p.m. on 4 or 5 school nights per week. 22.7% of all 7th-12th grade youth reported staying up late **every** school night.<sup>39</sup> (2012)



Source: 2012 Dane County Youth Assessment

## CHRONIC CONDITIONS

Chronic diseases are the leading causes of death and disability in Dane County, Wisconsin and the nation. Almost half of all adults in the U.S. have at least one chronic illness, about 7 out of 10 deaths are from chronic diseases, and over 75% of health care costs are due to chronic conditions.<sup>1,2</sup> The human and economic burden of chronic diseases could be reduced through improved health behaviors, preventive health services/early detection and proper management of health problems. The risk factors and prevention/control measures for the major preventable chronic diseases are impacted by socioeconomic status, education level/health literacy, community environments, and health system policy.<sup>3</sup>

The following conditions are included in this section, based on criteria identified at the beginning of report.

### Overweight and Obesity\*

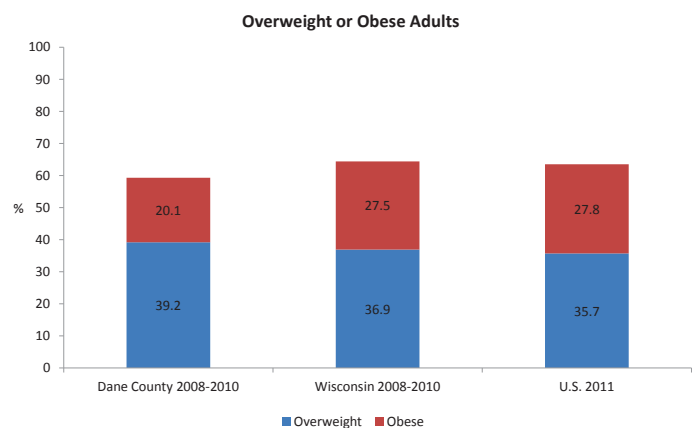
Childhood obesity has serious health impacts and it generally persists into adulthood,<sup>4</sup> contributing to type 2 diabetes, cardiovascular disease, several types of cancer, osteoarthritis, and other chronic conditions.<sup>5</sup> Obesity also appears to increase asthma risk.<sup>6</sup> The impact of obesity on pregnancy is discussed in the *Pregnancy, Fetal and Infant Health Risks* section.

Since 1980, the prevalence of obesity has doubled for adults and tripled for children in the U.S., due to complex societal factors that have affected diet and physical activity.<sup>7</sup> All population groups have been affected, but some groups more than others. Of special concern are the high obesity rates in African American teen girls and women (compared to White females).<sup>8,9</sup>

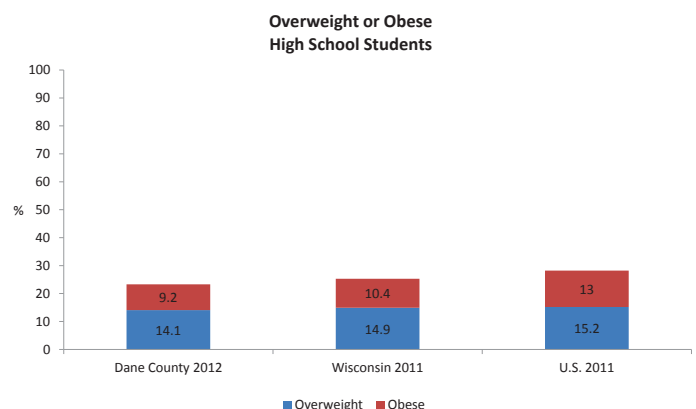
Healthy eating and regular physical activity can lower the risk of becoming overweight or obese, and reduce its severity and health impact.

The prevalence of obesity in Dane County is lower than in Wisconsin and the worsening trend may be leveling off, but the human and economic costs remain.

- Over 59% of Dane County adults are either overweight or obese, however, a smaller proportion of those are in the obese range (20.1%) than is true for Wisconsin and the U.S.<sup>10</sup> (2008-2010)
- 23.2% of Dane County 7th-12th graders are overweight or obese; 9.1% are obese. African American, Latino, Hmong and mixed race youth have significantly higher rates of overweight/obesity than White youth.<sup>11</sup> (2012)
- The percent of Dane County high school students who are overweight or obese is lower than for high school students statewide and nationally.<sup>12,13</sup>
- 13.4% of 2-4 year old Dane County children, enrolled in the federal Supplemental Nutrition Program for Women, Infants and Children (WIC) were obese, ranking Dane County 31st of the 72 Wisconsin counties.<sup>14</sup> (2010)



Source: CDC Behavioral Risk Factor Survey



Source: Dane County Youth Assessment; CDC Youth Risk Behavior Survey

\*In adults, *overweight* is defined as a BMI between 25 and 29.9; *obese or obesity* is defined as a BMI  $\geq$ 30. In children, *overweight* is defined as a BMI  $>$ 85-94.9% of youth their age and sex; *obese or obesity* is defined as a BMI  $\geq$ 95% of youth their age and sex. (CDC)

## Type 2 Diabetes

The incidence (new cases) and prevalence (number of cases present in the population) of type 2 diabetes has increased dramatically over the past 30 years and it now starts to develop at younger ages. Obesity is a major contributing factor.<sup>15</sup> Nationally, African Americans, Hispanics, Native Americans and Asians have higher rates of type 2 diabetes.<sup>16</sup>

The Wisconsin Diabetes Prevention and Control estimates:<sup>17</sup>

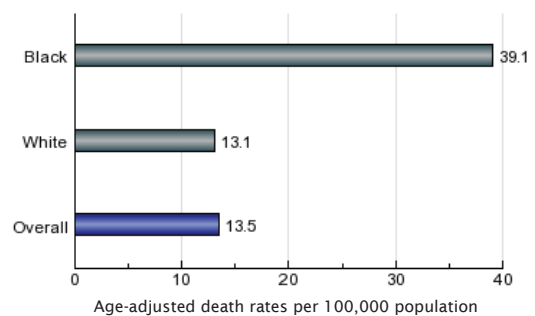
- 5.1% of adults in Dane County, or 17,600 individuals, have diagnosed diabetes, and an additional 1.9% (6,550 individuals) have diabetes that has not yet been detected. Dane County's total estimated diabetes prevalence of 7% is lower than the estimated diabetes prevalence for Wisconsin.
- An additional 129,180 Dane County adults, ages 20 and older, have **pre-diabetes**. People with pre-diabetes have blood glucose levels that are higher than normal, but not yet at diabetes levels. They have an increased risk of developing type 2 diabetes, heart disease and stroke.
- 14.2% of all hospitalizations of Dane County residents in 2010 were diabetes related.

Adults with type 2 diabetes are more likely to have high blood pressure, heart disease, stroke, chronic kidney disease, nerve damage and depression.<sup>18</sup> The impact of diabetes in pregnancy is discussed in the *Pregnancy, Fetal and Infant Health Risks* section. Good control of blood sugar reduces the risk of complications, but nationally, 12.9% of adults with diagnosed diabetes (all types) have poor blood sugar control (glycated hemoglobin A1c >9.0%). Those who are uninsured, younger adults, African Americans and Hispanics are more likely to have poor diabetic control.<sup>19</sup>

The University of Wisconsin Electronic Health Record-Public Health Information Exchange (UW eHealth-PHINEX) project has analyzed patient records and mapped diabetes diagnosis, diabetes control, economic hardship and other factors. The project found that economic hardship appears to correlate with diabetes prevalence and control, and there is considerable variation between Dane County census tracts.<sup>20</sup>

The higher prevalence of diabetes and less adequate control of diabetes in African Americans contribute to a large disparity in diabetes complications and deaths between African Americans and Whites.<sup>21,22</sup>

Death Rate due to Diabetes by Race/Ethnicity  
Dane County, 2008-2010



Source: [www.healthydane.org](http://www.healthydane.org)

## Asthma

Asthma is a common, chronic inflammatory disease of the airways of the lungs. According to the CDC, the prevalence of asthma has been on the rise since the mid-1970s. Nationally, African Americans have the highest prevalence of asthma.<sup>23</sup>

The exact cause of asthma is unknown, but it is associated with allergies and is believed to involve interaction between genetic factors and environmental exposures (including infections).<sup>24</sup> For people with asthma, exposure to smoke and other indoor and outdoor air pollution trigger asthma symptoms and make them more severe.<sup>25</sup> Obesity, which causes inflammation in the body, appears to be a risk factor for asthma.<sup>26</sup>

The prevalence of asthma in Dane County appears to be higher than that for Wisconsin and the nation. Dane County's asthma hospitalization rate is also too high, particularly for adults.<sup>27</sup> (2008-2010)

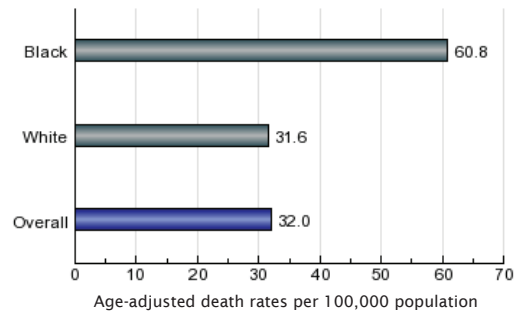
- An estimated 10.6% of Dane County adults currently have asthma.<sup>28</sup> (2006-2010)
- 4,423 youth, or 17.3% of Dane County 7th-12th graders, currently have asthma. The asthma prevalence was found to be consistent between middle school and high school students, and is considered a reliable estimate.<sup>29</sup> (2012)

- The most recent available prevalence data for current asthma among high school students is summarized in following table:

% of High School youth who CURRENTLY HAVE ASTHMA	Dane County	Wisconsin	U.S.
	(2012 DCYA)	(2007 CDC Youth Risk Behavior Survey)	(2011 CDC Youth Risk Behavior Survey)
	17.2% (±0.8)	12.4% (±1.5)	11.9% (±1)

- The UW eHealth-PHINEX project has mapped asthma prevalence for patients of the University of Wisconsin Family Medicine Clinics, most of whom live in or near Dane County. This project indicated a substantial range of prevalence in Dane County census tracts, from 6.2%-8.7% [lowest quintile] to 11.0%-13.8% [highest quintile].<sup>30</sup> It appears that asthma prevalence is high (9.4-13.8%) in most areas of Madison, particularly the northeast and southern areas, and in a number of other areas of Dane County, especially to the south. The distribution is somewhat related to economic hardship, but less so than diabetes.

Death Rate due to Chronic Lower Respiratory Diseases by Race/Ethnicity  
Dane County, 2008-2010



Source: [www.healthydane.org](http://www.healthydane.org)

Chronic Lower Respiratory Disease, which includes asthma, emphysema and chronic bronchitis, is a leading cause of death, with significant African American disparity.<sup>31</sup>

### Uncontrolled Hypertension and Preventable Stroke

Hypertension (high blood pressure) is a major risk factor for stroke, heart disease and chronic kidney disease. According to a recent CDC report, nearly one out of three U.S. adults surveyed during 2003-2010 have been diagnosed with hypertension, and about half of those did not have it under control (<140/90). Almost 1/4 of those with uncontrolled hypertension have stage 2 hypertension, putting them at risk for complications. Hispanics, African Americans, individuals with low income or low education level, and those who lack health insurance and a usual source of health care were more likely to have uncontrolled hypertension.<sup>32</sup>

- An estimated 24% of Dane County adults have been told that they have hypertension, other than during pregnancy.<sup>33</sup> (2007 & 2009)

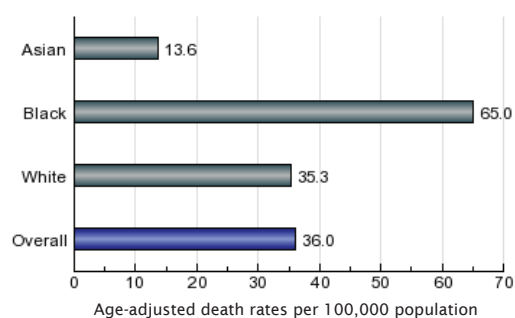
Uncontrolled hypertension is the strongest risk factor for stroke. Other controllable risk factors for stroke include: cigarette smoking, heart disease, uncontrolled diabetes, high LDL cholesterol level, physical inactivity and obesity.<sup>34</sup>

Stroke is more common and more deadly for African Americans, even in young and middle-aged adults, than for any other ethnic or racial group in the United States.<sup>35</sup>

Two key points are important to note regarding stroke in Dane County:<sup>36</sup>

- The age adjusted death rate due to stroke in Dane County is high (36.0 per 100,000), exceeding the 2020 target.
- The age adjusted stroke death rate for African Americans in Dane County is very high (65.0 per 100,000), almost double that for Whites (35.3 per 100,000).

Death Rate due to Cerebrovascular Disease (Stroke) by Race/Ethnicity  
Dane County, 2008-2010



Source: [www.healthydane.org](http://www.healthydane.org)

## PREGNANCY, FETAL AND INFANT HEALTH RISKS

Public Health Madison & Dane County conducts ongoing analysis of factors that contribute to pregnancy complications for Dane County women or poor outcomes for their babies. A *Fetal and Infant Mortality Review* process of reviewing all Dane County birth records and cases of fetal or infant death is an important source of information. Key issues will be highlighted: **pre-term birth, sudden unexpected infant death, fetal death, maternal chronic conditions, maternal substance abuse, access to healthcare, and teen pregnancy disparities.**

### Pre-Term Birth

The earlier a baby is born, the more severe his or her health problems are likely to be. More infants die from pre-term-related problems than from any other single cause.

- In Dane County, 55% of all infant deaths were pre-term-related.<sup>1</sup> (2011-2012)

Some premature babies require lengthy hospital care, and they may face lifelong disabilities such as intellectual limitations, cerebral palsy, and problems with their vision, hearing, lungs and digestive systems.<sup>2</sup>

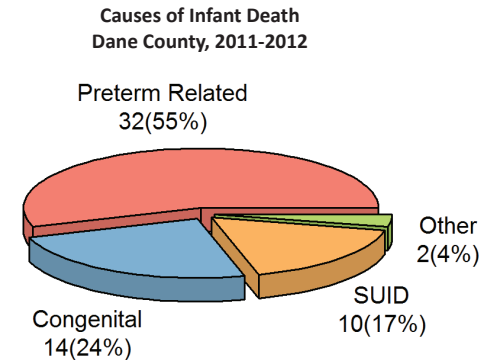
A pre-term birth is defined as a delivery at **less than 37 weeks of gestation**. Across the nation there is a steady decline in the rate of pre-term birth, reaching 11.7% in 2011. Nonetheless the rate is still unacceptably high for **African Americans**, at 16.7% in 2011.<sup>3</sup>

- In Dane County, the overall pre-term birth rate was 8.4%, with a remarkable African American rate of 10.5%.<sup>4</sup> (2011-2012)

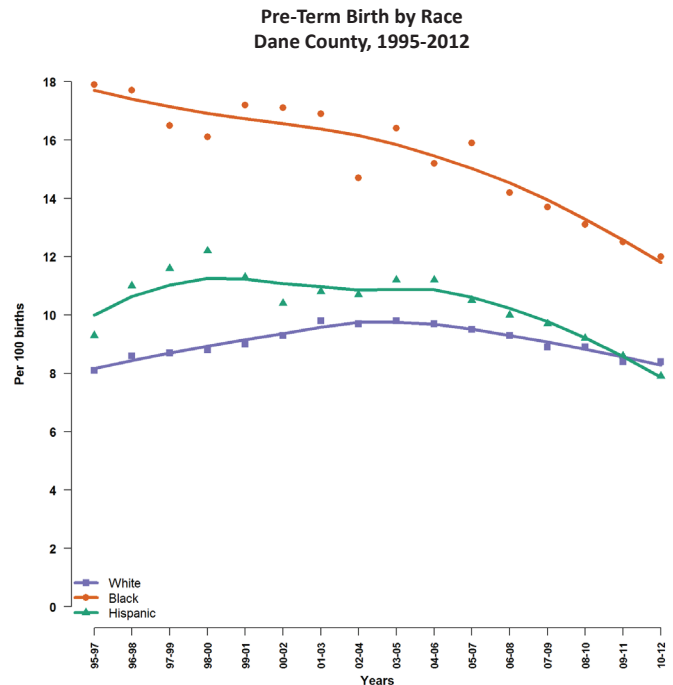
Pre-term delivery is either spontaneous or medically indicated to protect the mother's health or the fetus.

- In Dane County, 44% of the pre-term deliveries were medically indicated. (2011-2012)

Conditions such as infection, diabetes or preeclampsia could be the indications for pre-term delivery. Women with a twin pregnancy, a previous pre-term or a short inter-pregnancy interval (<6 months) have a higher risk of spontaneous pre-term delivery. Being a African American woman alone increases the risk of pre-term delivery.<sup>5</sup>



Source: PHMDC 2013



Source: PHMDC 2013

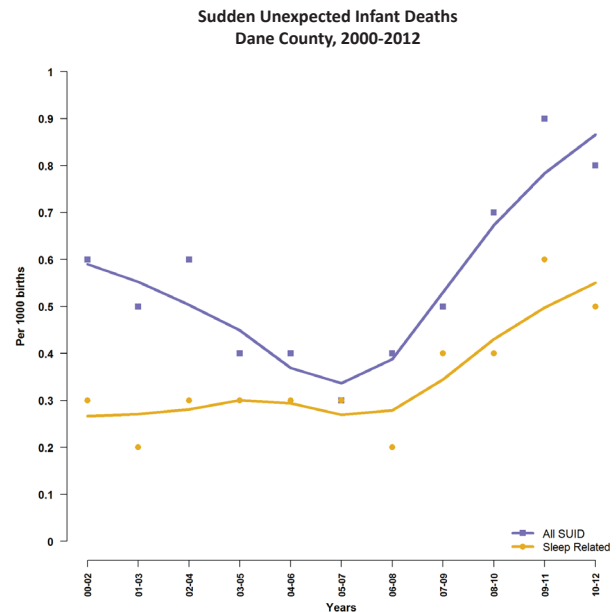
## Sudden Unexpected Infant Deaths

“Sudden Unexpected Infant Deaths (SUID) are defined as deaths in infants less than 1 year of age that occur suddenly and unexpectedly, and whose cause of death is not immediately obvious prior to investigation.”<sup>6</sup>

After a thorough multi-disciplinary investigation that includes autopsy and scene investigation the cause of SUID is determined. The main categories of SUID are accidental suffocation or strangulation in bed (ASSB), sudden infant death (SIDS), or unspecified cause.<sup>7</sup> The triple-risk model<sup>8</sup> for SIDS is useful to understand the occurrence of SUID. It highlights the converging roles of an infant already **vulnerable, a critical developmental phase and an unsafe environment**. That model explains why pre-term birth, respiratory infection, age of the infant, second-hand smoke and sleep environment are associated with SUID.

- SUID is the third leading cause of infant death after pre-term birth and congenital anomalies. Notably during that period (2011-2012), half of the SUID cases were from **African American mothers**. That represents 42% of the causes of all infant deaths among African Americans, equaling pre-term-related causes.<sup>9</sup>
- In the last five years, there is an increase in the rate of SUID in Dane County (not statistically significant), after a decade of plateau similar to the rest of the nation.<sup>10</sup>
- In Dane County, ten of the infant deaths (17%) were SUID and eight of these were attributable to unsafe sleep environment.<sup>11</sup> (2011-2012)

Most of the latest cases of SUID are unsafe sleep-related and highly preventable. SIDS is no longer the explanation as the investigations become more comprehensive.<sup>12</sup>

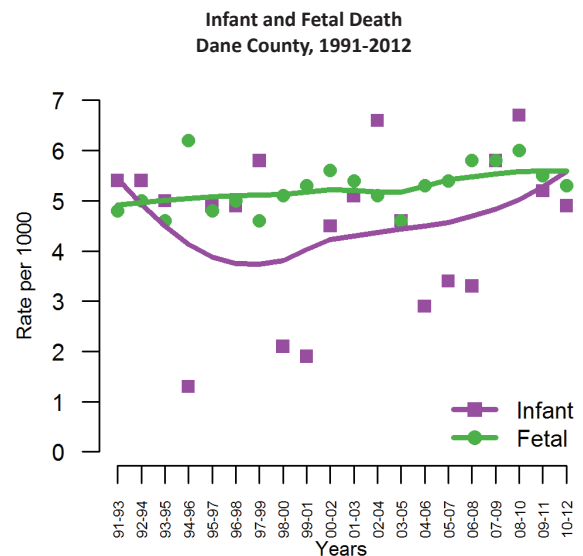


Source: PHMDC 2013

## Fetal Deaths

Fetal death is the death of the fetus any time during pregnancy. However in Wisconsin like in many other states, it is reportable only if the fetus is 20 weeks of gestation or weighs 350 grams or more. At that age, it is also called stillbirth. Fetal death is a tragic event overshadowed by infant mortality, often mourned in silence by the parents alone.

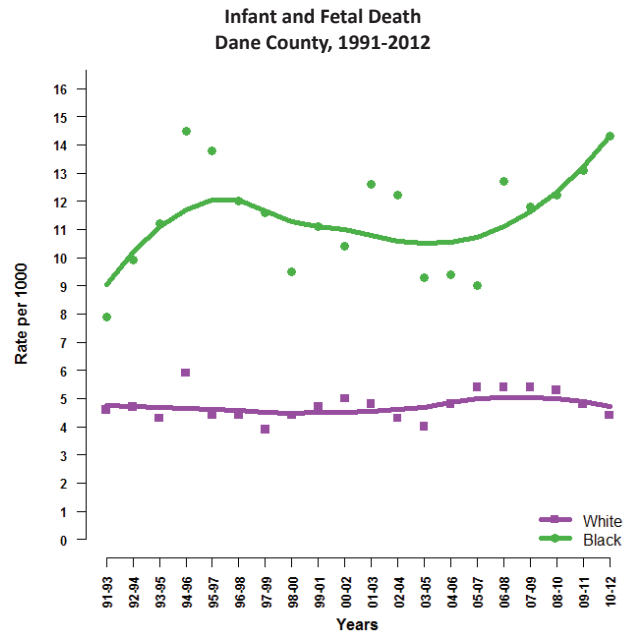
- Most of the last 20 years in Dane County, the number of reportable fetal deaths is higher than infant deaths.<sup>13,14</sup> (1991-2012)



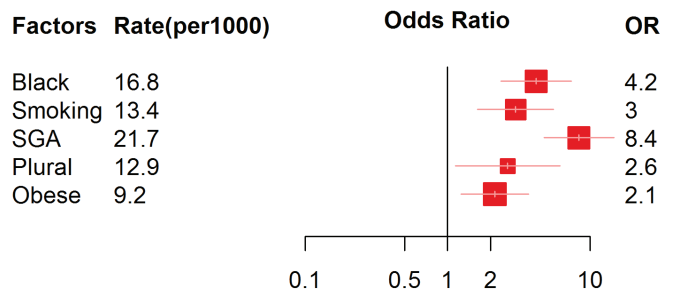
- In Dane County, 55% of the 64 fetal deaths occurred in the last trimester of the pregnancy. In addition, in the last two years in Dane County, African American fetal mortality is four times higher compared to White's; a larger African American/White disparity compared to infant mortality.<sup>15</sup> (2011-2012)

The causes of fetal death are often classified as undetermined because of the lack of thorough investigation including autopsy and placental examination. The lack of explanation contributes to the invisibility of fetal death. Most of the deaths are antepartum (before the start of the labor) and could be due to infection, congenital anomalies, or other causes of placental, fetal or maternal origin.<sup>16</sup> They share causes with maternal and neonatal deaths.

- In Dane County, fetal deaths were associated with smoking (OR=3), intrauterine growth restriction, assessed with SGA (small for gestational age) (IUGR or SGA OR=8.4), obesity (OR=2.1), and plural (e.g., twins, triplets, etc.) pregnancy (OR=2.6).<sup>17</sup> (2011-2012)



Odds Ratios\* of Selected Risk Factors for Fetal Deaths Dane County, 2011-2012



## Maternal Chronic Conditions

Certain health conditions can increase the risk of serious complications for the pregnant woman and baby. The conditions with the greatest impact are obesity, elevated blood sugar (pre-diabetes and diabetes), and high blood pressure.<sup>18</sup> Prevention and screening for medical conditions such as hypertension and diabetes are important to improve birth outcomes.

### Obesity

Obesity can pose a risk for pregnant women and their babies. Women who enter pregnancy overweight or obese are at higher risk for gestational diabetes, high blood pressure, premature delivery and needing cesarean delivery.<sup>19</sup> Obesity in pregnant women is also associated with an increased risk of fetal death.<sup>20</sup>

- In Dane County, 46.3% of those who gave birth were overweight or obese before pregnancy. The rates were much higher for African American mothers, 63.8% were overweight or obese.<sup>21</sup> (2011-2012)

\*Odds Ratio (OR): The ratio of the odds of having the outcome (fetal death) among the exposed (the risk factor or specific characteristic) to the odds of having the outcome among the unexposed (without the specific characteristic). An OR greater than 1 indicates a greater risk of outcome when the exposure is present. An OR less than 1 indicates a lower risk of outcome when there is exposure.



## Diabetes

Women who have diabetes mellitus have an increased risk for fetal death, congenital malformations or infant large for gestational age (LGA). LGA leads to complications at delivery affecting both mother and infant.<sup>22</sup>

- Among all Dane County women who gave birth, 7.6% had diabetes developed during pregnancy. Most of the cases were gestational diabetes.<sup>23</sup> (2011-2012)
- Hispanic women had the higher prevalence with 11.9% and a pre-pregnancy diabetes rate comparable to African American women.<sup>24</sup> (2011-2012)

## High Blood Pressure (Hypertension)

Hypertension can complicate a pregnancy increasing the risk of fetal death, pre-term birth or maternal mortality. It may present as a chronic hypertension, a gestational hypertension, a preeclampsia or eclampsia. The latter is a serious threat to the life of the mother.<sup>25</sup>

- Among Dane County women who gave birth, 8.2% had a pregnancy with hypertension. African American women were more affected, especially with chronic hypertension (twice the rate of Whites).<sup>26</sup> (2011-2012)

Selected Chronic Health Conditions During Pregnancy  
Dane County, 2011-2012

Race	Obese (BMI≥30)		Diabetes		Hypertension	
	Percent	95%CI	Percent	95%CI	Percent	95%CI
White	20.2	( 19.4,21 )	6.2	( 5.7,6.7 )	8.6	( 8,9.2 )
African American	38.8	( 35.9,41.9 )	7.1	( 5.7,8.8 )	11.8	( 10,13.9 )
Hispanic	23.5	( 21,26.1 )	11.9	( 10.1,13.9 )	5.9	( 4.7,7.4 )
Other	13.6	( 11.7,15.7 )	14	( 12.2,16.2 )	4.3	( 3.3,5.6 )
All	21.4	( 20.7,22.2 )	7.6	( 7.1,8 )	8.2	( 7.7,8.7 )

## Maternal Substance Abuse

Substance use (tobacco, alcohol and illicit drugs) can have adverse effects on the both the pregnant woman and the infant. The baby may be born early, with low birth weight, addicted and have withdrawal symptoms from the drugs after birth, or with birth defects. Substance abuse and dependence are considered mental health disorders, which are associated with other mental health disorders, such as depression. Mental health disorders can interfere with the ability of the mother to care for herself and the infant.<sup>27</sup>

## Tobacco/Smoking

Smoking during pregnancy is known to restrict fetal growth increasing the risk of pre-term birth and fetal death. Even after the baby is born, secondhand smoking can contribute to SUID, asthma onset, and stunted growth.<sup>28</sup>

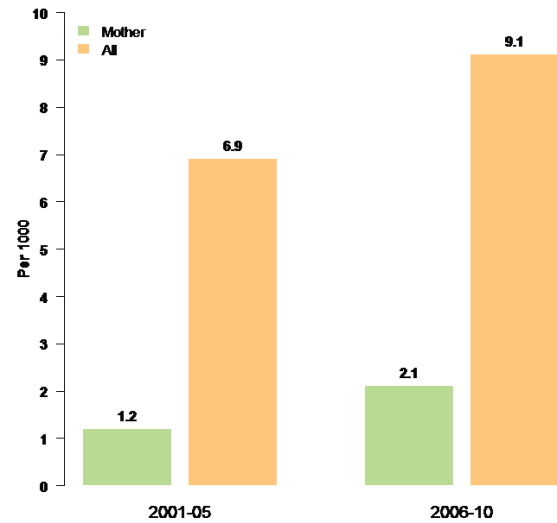
- In Dane County 8.4% of mothers smoked during pregnancy and 17.4% of newborns live with smokers (potentially exposed to smoking). The rates were higher for African American mothers with 21.3% who smoked during pregnancy and 37.4% newborns who lived with smokers.<sup>29</sup> (2011-2012)

## Opiates

In Dane County, we have seen a dramatic increase in opiate poisonings over the last 10 years.<sup>30</sup> This increase has been seen in pregnant women as well.<sup>31</sup> Pregnancy risks associated with opiate use include the infant not growing properly, still birth, and pre-term labor. A serious consequence of women addicted to opiates (prescription or illicit), including those being treated with Methadone or Suboxone is infants with Neonatal Abstinence Syndrome (NAS). These infants may require treatment and close monitoring, sometimes hospitalized for several weeks.<sup>32</sup> There is an increasing trend of NAS on a national level.<sup>33</sup>

- Comparing the years 2001-05 and 2006-2010, the number of pregnant women hospitalized in Dane County with a diagnosis of opiate abuse and dependence doubled.<sup>34</sup>
- In Dane County, the NAS rates have increased over the past 10 years.<sup>35</sup> (2002-2010)

Opiate Abuse and Dependence Among Dane Co. In-Patients



Source: PHMDC 2011

Dane County Hospital Discharges with Neonatal Abstinence Syndrome

Year	Birth	NAS	per1000	95%CI
2002	5539	7	1.3	( 0.6,2.6 )
2003	5649	7	1.2	( 0.6,2.6 )
2004	5928	8	1.3	( 0.7,2.7 )
2005	5935	6	1	( 0.5,2.2 )
2006	5978	17	2.8	( 1.8,4.5 )
2007	6090	17	2.8	( 1.7,4.5 )
2008	6000	12	2	( 1.1,3.5 )
2009	5991	24	4	( 2.7,6 )
2010	5843	18	3.1	( 1.9,4.9 )

## Access to Health Care Before, During and After Pregnancy

Health care access before and in between pregnancies is important to birth outcomes. Low-income women are less likely to have health insurance outside of pregnancy and are more likely to be affected by chronic conditions which can affect birth outcomes.<sup>36</sup>

There are also gaps in health care coverage during pregnancy in Dane County.<sup>37</sup>

- 8.9% of women initiated their prenatal care after the first trimester (12 weeks of gestation). (2011-2012)
- 11.8% had less than 75% of the expected numbers of prenatal visits. (2011-2012)
- For African American mothers, those measures are much higher, 20.4% initiated prenatal care after the first trimester; 23.7% had less than 75% of the expected number of prenatal visits. (2011-2012)

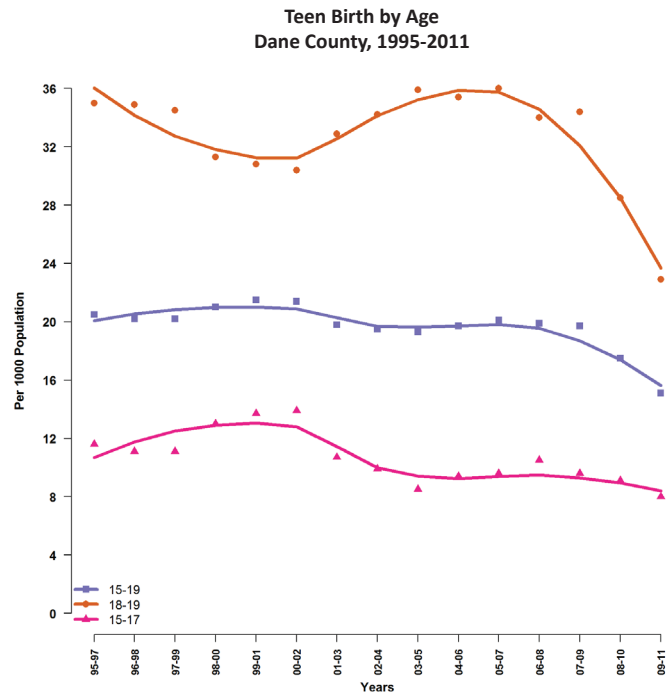
Wisconsin's policy to recover Medicaid expenses for prenatal care and childbirth from the unmarried fathers may also deter women from seeking the full range of prenatal care that they need.<sup>38</sup> That policy reduces the resources available to the couple and their child. Thus, 41 states are no longer pursuing that policy. It may disproportionately affect African American women.<sup>39</sup>

- In Dane County, 77% of African American new mothers were single.<sup>40</sup> (2011-2012)
- 86% of African Americans were in Medicaid at the time of delivery.<sup>41</sup> (2011)

## Teen Pregnancy

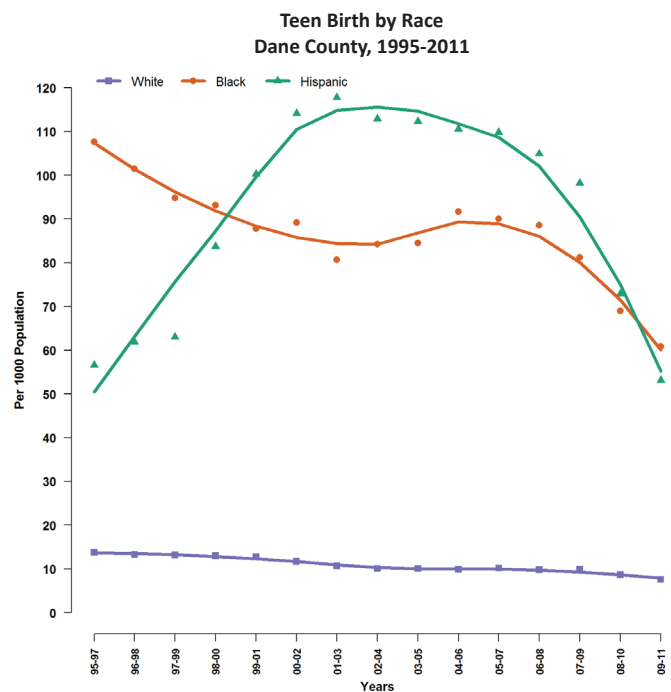
Teen pregnancies have serious social and economic impacts to the adolescent, her family and the entire community. Pregnant teens are more likely to be socially disadvantaged, victims of abuse, and abusing substance. They are less likely to graduate high school and more likely to see their own daughters become teen mothers.<sup>42</sup> They have a higher risk of delaying prenatal care initiation and pre-term birth.

- In Dane County, teen mothers had a 2.8 times higher risk of delayed prenatal care initiation and 30% higher risk of pre-term birth compared to non-adolescent mothers.<sup>43</sup> (2011-1012)
- 3.6% of Dane County births in the last two years were to teen moms (<age 20).<sup>44</sup> (2011-2012)
- In the last decade there was a decline in teen birth in Dane County and in the U.S.<sup>45</sup>
- In Dane County, the rate is still high among African American and Hispanic teens compared to White teens (7 to 8 times).<sup>46</sup> (2011-2012)



Source: PHMDC 2013

- In Dane County, 75% of all births to 15 to 17 year olds were to African American or Hispanic mothers.<sup>47</sup> (2009-2011) This emphasizes the poor access and use of reproductive health services for minority women.<sup>48</sup>



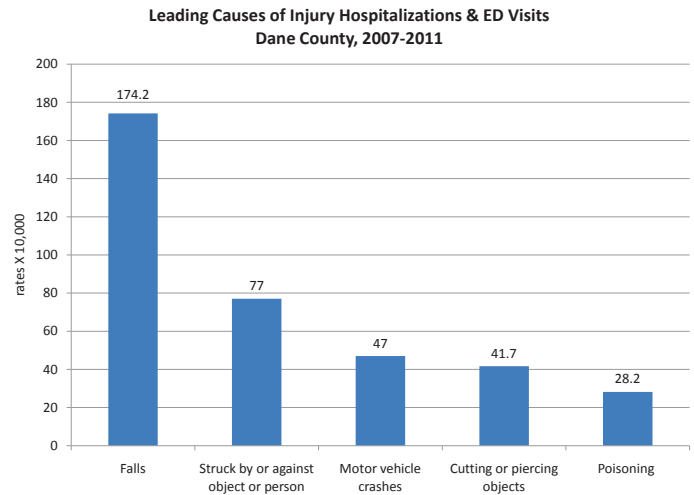
Source: PHMDC 2013

## INJURIES

Injuries are a significant public health problem in Dane County and the nation causing needless pain and suffering as well as emotional and financial stress.<sup>1</sup>

Unintentional injuries and suicide are among the top ten leading causes of all deaths for Dane County residents. On average each year, there were over 140 deaths due to unintentional injuries and over 50 deaths due to suicide.<sup>2</sup> (2008-2010)

- The five leading causes of injury deaths in Dane County are poisoning, falls, motor vehicle crashes, suffocation and firearms.<sup>3</sup> (2000-2010)
- The five leading causes of injury hospitalization and emergency department (ED) visits in Dane County are falls, struck by or against an object or person, motor vehicle crashes, cutting or piercing objects and poisoning.<sup>4</sup> (2007-2011)



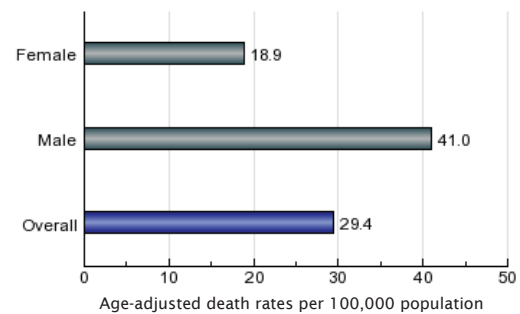
Source: WISH

### Unintentional Injury

Deaths from unintentional injuries impact people of all ages, regardless of gender, race or economic status. In Dane County there were 29.4 deaths per 100,000 for unintentional injuries, which meet the Healthy People 2020 national health target (36 per 100,000).<sup>5</sup> However, the rates are higher for certain population groups:

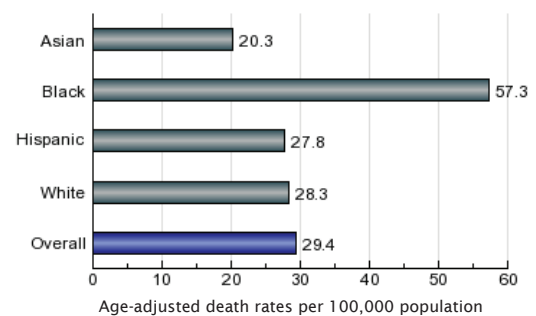
- The unintentional injury death rates are more than double for males (41.0 per 100,000) than for females (18.9 per 100,000).<sup>6</sup> (2008-2010)
- The unintentional injury death rates for African Americans (57.3 per 100,000) are double those of other races (20.3 to 28.3 per 100,000).<sup>7</sup> (2008-2010) The type of unintentional injury death where disparities exist (African Americans higher than other races) is for motor vehicle crashes, poisoning, suffocation and drowning.<sup>8</sup> (2008-2010)

**Death Rate due to Unintentional Injuries by Gender  
Dane County, 2008-2010**



Source: [www.healthydane.org](http://www.healthydane.org)

**Death Rate due to Unintentional Injuries by Race/Ethnicity  
Dane County, 2008-2010**



Source: [www.healthydane.org](http://www.healthydane.org)

## Suicide and Suicide Attempt

Suicide is a significant public health problem in Dane County. Suicide deaths in Dane County (2007-2011) are above the Healthy People 2020 target (11.1 vs 10.2 per 100,000 respectively).<sup>9</sup> In the past five years, there has been an average of about 50 deaths per year. However, in 2011, there were 74 deaths from suicide (a 41% increase from previous five years).<sup>10</sup> Between 2007 and 2011, there was an average of 822 hospital visits that were self-inflicted (suicide attempts) in Dane County.<sup>11</sup>

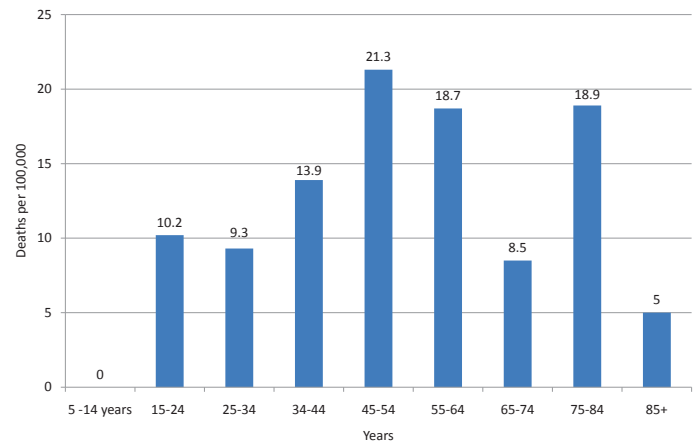
For both completed suicides and suicide attempts, there are differences in gender and age groups. In Dane County, for the years 2007-2011:

- The rates of suicide are almost three times greater for males than females (17.2 vs 6.0 per 100,000 respectively).<sup>12</sup> The rates of self-inflicted hospitalizations and ED visits (suicide attempts) for females are double those of males (211.7 vs. 111.1 per 100,000 respectively).<sup>13</sup>
- The rates for suicides are greatest in those 45-54 years of age.<sup>14</sup> The rates for suicide attempts are highest in those 15-24 years of age.<sup>15</sup>
- The leading methods of suicide are firearms (38%), followed by poisoning (28%) and suffocation/hanging (25%).<sup>16</sup>
- For those that visit the hospital (hospitalizations & ED visits), poisoning (70%) is the leading method of attempted suicide, followed by cutting and piercing by a sharp instrument (24%).<sup>17</sup>

Suicidal thoughts and attempted suicides have been studied in Dane County youth.

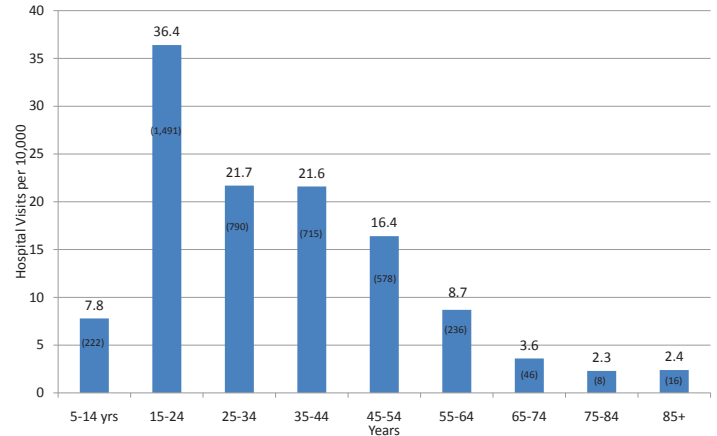
- 12.3% of all 7th-12th grade youth reported having suicidal thoughts during the past 30 days and 4.6% (1,179) of youth said they have attempted suicide in the past 12 months. (2012)<sup>18</sup>
- 7th-12th grade females are slightly more likely than males to have suicidal thoughts (14.3% vs. 10.4%).<sup>19</sup> (2012)
- The percent of youth with recent suicidal thoughts was slightly higher than in 2009 for middle school and high school females, and for middle school males.<sup>20</sup> (2009 & 2012)

Suicide Deaths by Age Group  
Dane County, 2007-2011



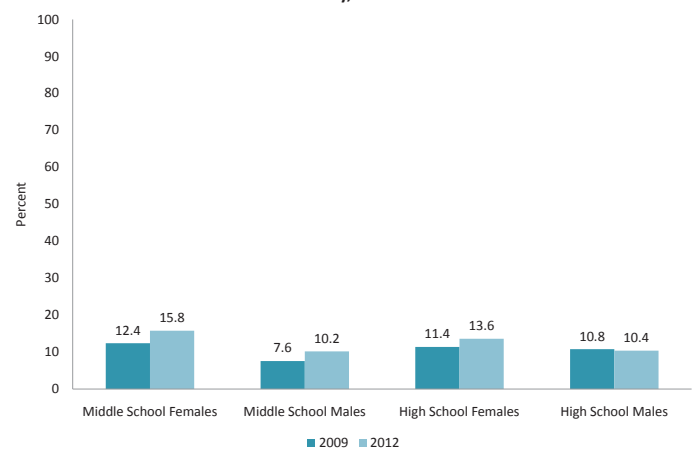
Source: WISH

Self-Inflicted Hospitalizations  
& ED Visits by Age Group  
Dane County, 2007-2011



Source: WISH

Suicidal Thoughts in the Past 30 Days for Youth  
Dane County, 2009 & 2012



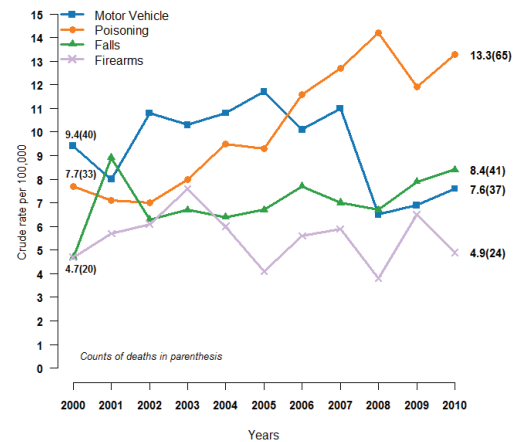
Source: DCYA

## Poisoning

Poisoning is the leading cause of injury death in Dane County and the rates have dramatically increased over the past decade, surpassing motor vehicle crashes in 2006.<sup>21</sup> Hospital admissions due to poisoning are also of concern. Of particular concern is unintentional poisoning due to opiates.

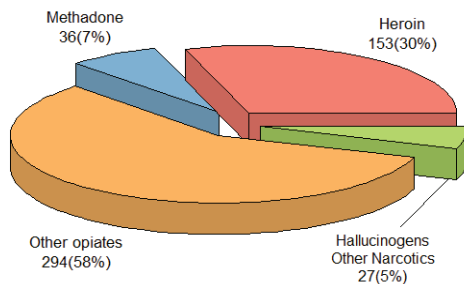
- Between 2000 and 2010, there was a 181% increase in the number of opiate-related deaths. In 2010, there were 45 opiate-related deaths, 60% of these opiate deaths were due to prescription opiates.<sup>22</sup>
- Between 2002 and 2011, there was a 11.6% increase in opiate-related hospital admissions. In 2011, 270 hospital admissions were for opiate-related poisonings and 1,000 for opiate abuse and dependence. 41% of the opiate poisonings were prescription opiates.<sup>23</sup>

**Injury Mortality Trends  
Dane County, 2000-2010**



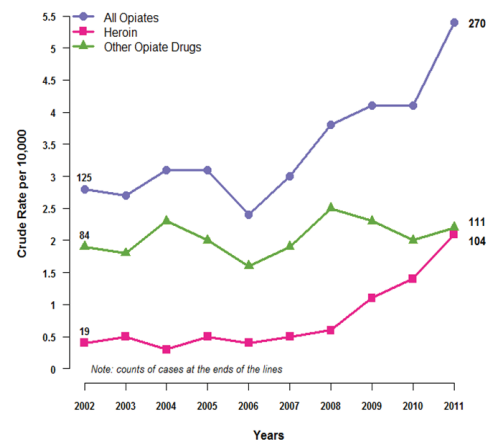
Source: PHMDC

**Unintentional Poisoning ED Visits and Hospitalization  
for Opiates and Other Narcotics  
Dane County, 2007-2011**



Source: PHMDC

**Opiate Poisoning Hospitalization & ED Visits  
Dane County, 2002-2011**



Source: PHMDC

## Falls

Falls are a leading cause of injury-related deaths and the number one cause of injury-related hospitalization and ED visits for all ages in Dane County.<sup>24</sup>

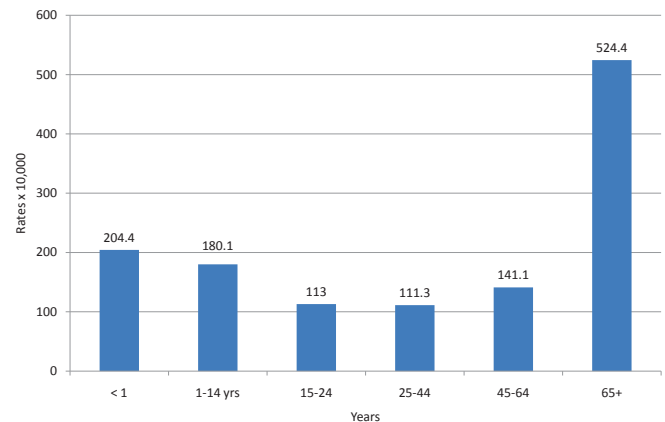
In Dane County, there were 10.0 deaths per 100,000 for falls (2007-2011), higher than the Healthy People 2020 national target (7.0 per 100,000) and the rates have increased over the past decade.<sup>25</sup>

Falls-related injury rates are especially high for those ages 65 and older. Falls among older adults can lead to a loss of independence and a decrease in the quality of life. It affects not only the individual, but also their families. Significant health care costs can also result.<sup>26</sup>

In Dane County, for adults over 65 years of age, for the years 2007-2011:

- The fall-related death rates for older adults were 75.6 per 100,000 and the rates for fall-related hospitalizations and ED visits were 524.4 per 10,000.<sup>27</sup>
- In 2011, there were 72 deaths from falls.<sup>28</sup>
- In 2011, there were 2,624 visits to the hospital due to falls (hospitalizations and ED visits).<sup>29</sup>

**Falls Hospitalizations & ED Visits  
Dane County, 2007-2011**



Source: WISH

## INFECTIOUS DISEASES

### Immunizations and Infectious Diseases

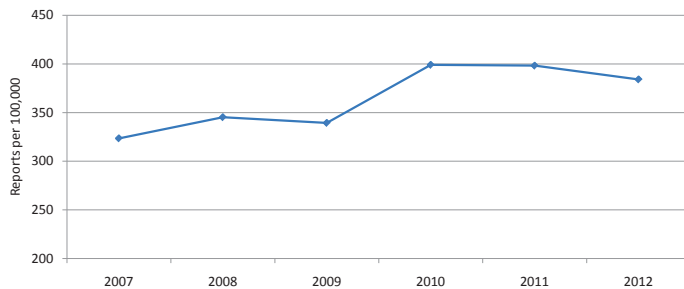
Infectious diseases are caused by microorganisms including bacteria, viruses, and parasites. Infectious diseases such as influenza, whooping cough, Lyme disease, and E. coli infections are responsible for many illnesses and lost days of work and school. Some infectious diseases have the capacity to spread easily through food or from person to person and make a large number of people ill.

### Chlamydia

Chlamydia is a sexually transmitted infection and is the most commonly reported infection in Dane County,<sup>1</sup> Wisconsin,<sup>2</sup> and the U.S.<sup>3</sup> Chlamydia infections are often asymptomatic. Untreated chlamydia infections can lead to infertility in women.<sup>4</sup>

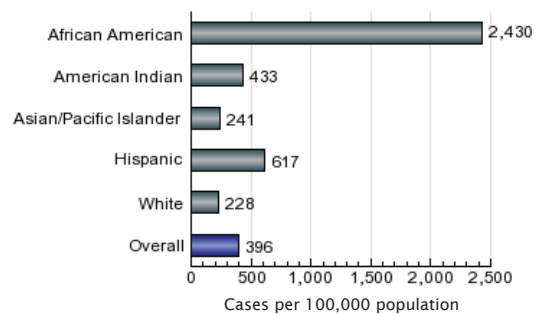
- In Dane County, the incidence of chlamydia has generally stayed the same over the past three years and is higher than in most counties in Wisconsin.<sup>5</sup> In 2012, there were 384 chlamydia reports per 100,000 people.<sup>6</sup>
- African Americans are disproportionately affected by chlamydia in Dane County and the U.S.<sup>7</sup> The incidence of chlamydia among African Americans in Dane County in 2010 was 10.7 times higher than the incidence in Whites.<sup>8</sup>

Incidence of Chlamydia  
Dane County, 2007-2012



Source: PHMDC

Chlamydia Incidence Rate by Race/Ethnicity  
Dane County, 2008-2010



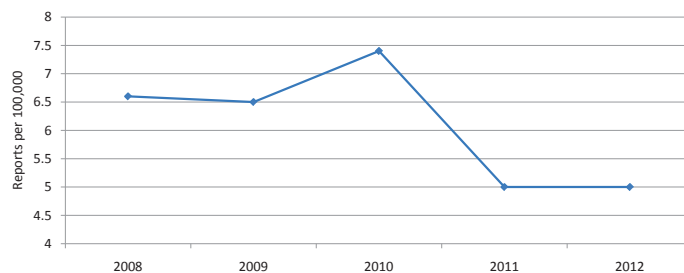
Source: [www.healthydane.org](http://www.healthydane.org)

### HIV

Human immunodeficiency virus (HIV) is the virus that causes AIDS. HIV is a lifelong infection that requires expensive treatment and disproportionately affects younger individuals.<sup>9</sup>

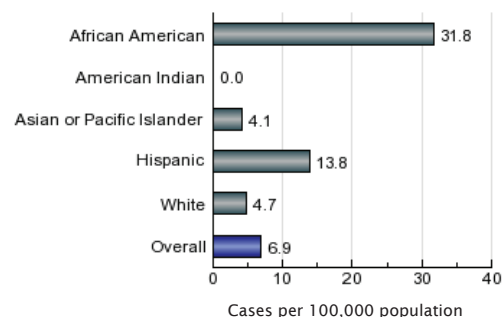
- In Dane County, the incidence of HIV has remained fairly steady over the past five years. (2008-2012) In 2012, there were 5.0 HIV reports per 100,000 people. In Dane County, most HIV cases are among men who have sex with men.<sup>10</sup>
- African Americans are disproportionately affected by HIV in Dane County and the U.S.<sup>11</sup> The incidence of HIV infection in African Americans is 6.8 times higher than that of Whites.<sup>12</sup> (2008-2010)

HIV Incidence  
Dane County, 2008-2012



Source: PHMDC

HIV Incidence Rate by Race/Ethnicity  
Dane County, 2008-2010



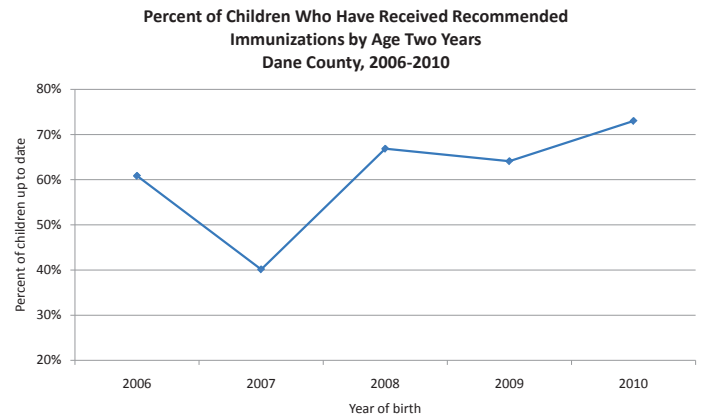
Source: [www.healthydane.org](http://www.healthydane.org)

## Immunizations

Immunizations are a cost-effective way to protect individuals from a number of infectious diseases, both by preventing disease in immunized individuals and by protecting un-immunized people by decreasing the amount of disease in the population.<sup>13</sup>

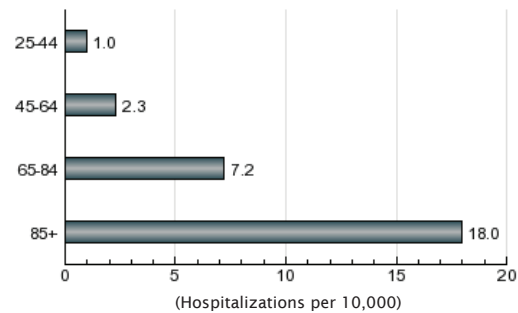
Childhood immunizations protect children against 14 different diseases. Seventy-three percent of Dane County children are up-to-date in their immunizations when they turn two years old.<sup>14</sup> (2006-2010)

Influenza and some types of pneumonia can be prevented through immunization. These immunizations are recommended for individuals 65 and over, who are more likely to be hospitalized when they acquire these diseases.<sup>15</sup> (2008-2010)



Source: PHMDC

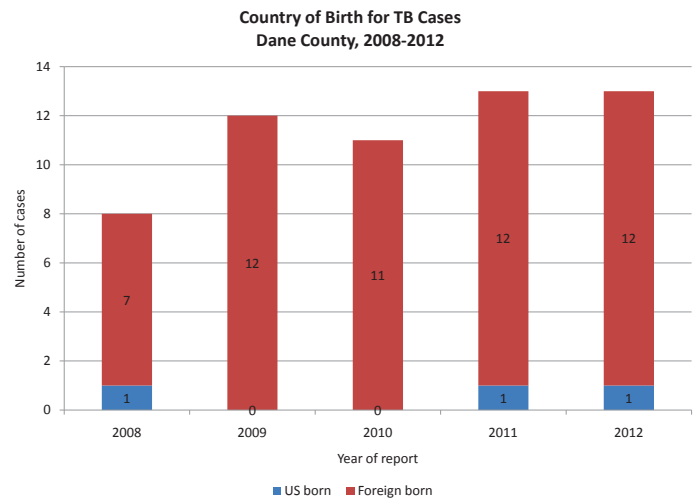
**Hospitalization Rate due to Immunization-Preventable Pneumonia and Influenza by Age Dane County, 2008-2010**



Source: [www.healthydane.org](http://www.healthydane.org)

## Tuberculosis

Tuberculosis (TB) is a disease caused by the bacterium *Mycobacteria tuberculosis*. Tuberculosis is a debilitating disease that usually affects the lungs but can affect any part of the body. One third of the world's population is infected with M. tuberculosis and each year millions of people worldwide develop TB disease.<sup>16</sup> In Dane County most of the individuals who develop TB disease are foreign-born.<sup>17</sup> (2008-2012) It is important to work with this population to prevent the spread of TB through treatment for latent TB infection and treatment of active TB disease.



Source: PHMDC



## NEXT STEPS

This Health Status Overview Report is part of the Assessment phase of our Community Health Improvement Planning Process, a requirement for all local health departments. *See diagram below for a summary.*

The planned outcomes for the Community Health Status section of our Assessment phase include this Overview report, and the following:

- Launch of Healthy Dane.org, an interactive local health and population data website, in collaboration with Dane County hospitals.
- Other health data reports on specific issues and topics, compiled and produced by Public Health Madison & Dane County.
- Fetal Infant Mortality Review (FIMR) report, another Public Health Madison & Dane County collaboration.

The information gathered in this overview report, most notably where health inequities have been identified, will help us to determine the population groups with whom we work to gather community input in order to identify community issues, factors that impact health, and strengths of the community, plus to mobilize the community to take action.

Completion of Public Health Madison & Dane County's Community Health Improvement Planning process will enable Public Health Madison & Dane County and partners to more effectively build capacity for improving the health of Dane County.



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## REFERENCES

### About this Report and our Community Health Assessment Process

<sup>1</sup> The Theory and Application of UW eHealth-PHINEX, A Clinical Electronic Health Record - Public Health Information Exchange, Wisconsin Medical Journal, June 2012.

<sup>2</sup> Bell, J. and Lee, M. M. 2011. Why place and race matter, Oakland, CA: PolicyLink.

### Demographic and Socioeconomic Factors that Impact Health

<sup>1</sup> World Health Organization. 2013. Social determinants of health. Retrieved from [www.who.int/topics/social\\_determinants/en](http://www.who.int/topics/social_determinants/en).

<sup>2</sup> American Community Survey, US Census Bureau, 2010. Retrieved from [www.census.gov/acs/www](http://www.census.gov/acs/www) and US Census 2010. Retrieved from [www.census.gov/2010census](http://www.census.gov/2010census).

<sup>3</sup> Wyatt, S.B., Williams, D.R., Calvin, R., et al., "Racism and Cardiovascular Disease in African Americans," American Journal of the Medical Sciences 325(6): 315-31 (June 2003).

<sup>4</sup> Chambers, E.C., Tull, E.S., Fraser, H., et al. "The Relationship of Internalized Racism to Body Fat Distribution and Insulin Resistance is Independent of Birth Weight in African Caribbean Adolescents on Barbados, West Indies," Journal of the National Medical Association 96 (December 2004): 1594-98.

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## Pregnancy, Fetal and Infant Health Risks

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