

Cause for concern in Wisconsin

Wisconsin is challenged with a variety of complicated health issues impacting a large number of residents that result in high costs as indicated in Table 1.

Table 1. Burden of health issues in Wisconsin (per year)

Burden in Wisconsin	Prevalence	Number of hospitalizations	Number of emergency department (ED) visits	Number of deaths	Cost
Alcohol use and related disorders	999,358 binge drinkers	48,578		1,529	\$6.8 billion
	In 2011, excessive drinking in Wisconsin resulted in approximately 46,583 treatment admissions (e.g., substance abuse treatment programs), 60,221 arrests and 5,751 motor vehicle crashes. Wisconsin ranks number one in the U.S. for rates of binge drinking and number one for intensity of drinking. Of the \$6.8 billion of total annual economic cost, \$2.9 billion is borne by the government, including federal, state and local government agencies; \$2.8 billion was borne by excessive drinkers and their family members and \$1.1 billion was borne by others in society including private health insurers and employers. ⁱ				
Arthritis	1.1 million ⁱⁱ	646,521 ⁱⁱⁱ			\$2.4 billion ^{iv}
	Arthritis comprises more than 100 disease types and rheumatic conditions. The 100 types of arthritis refer to many different conditions associated with joints, such as osteoarthritis, rheumatoid arthritis, systemic lupus, gout, bursitis, Lyme disease, carpal tunnel disease, and other conditions. ^v				
Asthma	450,00 adults 100,000 children	4,992	18,642	76	\$100 million in ED visits and hospitalizations
	Asthma is a chronic lung disease characterized by inflammation of the lungs with symptoms that include coughing, wheezing, shortness of breath and chest tightness. Asthma symptoms are responsible for decreased quality of life, sleep disturbances and an inability to carry out one's normal activities. Medical management of asthma in the state continues to fall short of the NIH asthma guidelines. The disproportionate burden of asthma and lack of adherence to treatment guidelines suggest that opportunities exist to enhance the care and health of people with asthma. ^{vi}				
Cancer	285,687 people*	17,819 ^{vii}		11,425 ^{viii}	\$4 billion **
	* Cancer prevalence represents persons alive at a given date (2016) who were previously diagnosed with cancer. These estimates do not include carcinoma in situ (non-invasive cancer) of any site except urinary bladder, nor do they include basal cell or squamous cell skin cancers. ^{ix} ** Calculated using 2015 medical costs. Over the past 20 years the cost for cancer care has nearly doubled. This estimate is for direct medical care costs (all treatment costs) and does not include travel expenditures, cost of lost productivity, necessary child care, unpaid caretakers, and other nonmedical costs. ^x				
Cardiovascular disease (CVD)	1.3 million adults have hypertension, a risk factor for heart attacks and strokes <ul style="list-style-type: none"> • 46.5 percent have controlled hypertension • 53.5 percent have uncontrolled hypertension 	CVD: 165,308 Stroke: 14,603 ^{xi}		CVD: 11,660 Stroke: 2,468 ^{xii}	\$7.9 billion *
	CVD includes a variety of heart and blood vessel diseases, such as heart attack (coronary heart disease), congestive heart failure, high blood pressure (hypertension) and brain attack (stroke). CVD is the leading				

Burden in Wisconsin	Prevalence	Number of hospitalizations	Number of emergency department (ED) visits	Number of deaths	Cost
Cardiovascular disease (CVD) <i>continued</i>	<p>cause of death among men and women of all racial and ethnic groups in Wisconsin. The greatest risk factor reported in Wisconsin adults was 73 percent of the adult population eating less than 5 servings of fruits or vegetables daily. Modifiable risk factors for CVD include overweight/obesity, high blood pressure, cholesterol, physical inactivity, cigarette smoking and diabetes. ^{xiii} Chronic disease risk factors among Wisconsin adults (2011-2013):</p> <ul style="list-style-type: none"> • 67 percent are overweight or obese • 47 percent participate in physical activity less than 150 minutes per week • 36 percent have a diagnosis of high cholesterol • 31 percent have a diagnosis of high blood pressure • 25 percent binge drink each month ^{xiv} • 26 percent use any tobacco product ^{xv} <p>Of those with uncontrolled hypertension (estimated 689,000 Wisconsin adults), an estimated 275,000 are unaware they have hypertension, 110,000 are aware but untreated, and 313,000 are aware and treated.</p> <p>* Cost includes expenditures for office based visits, hospital outpatient visits, ED visits, inpatient hospital stays, dental visits, home health care, vision aids, other medical supplies and equipment, prescription medications and nursing homes.</p>				
Chronic obstructive pulmonary disorder (COPD)	158,000 cases among adults	23,646	20,606	5,444	\$712 million in inpatient hospitalizations ^{xvi}
Chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema, is a chronic lung disease.					
Diabetes	624,000 people ^{xvii}	7,463 ^{xviii}		1,331 ^{xix}	\$6.1 billion annually \$52.8 million ^{xx} for children and adolescents
People with pre diabetes have an increased risk of developing type 2 diabetes, heart disease and stroke.					
Drug use and related disorders	163,300 adults admit to using an opiate for non-medical purposes ^{xxi}	15,454 drug-related hospitalizations*		633 ^{xxii}	\$2 billion ^{xxx}
<p>Between 2004 and 2012, the proportion of drug deaths where heroin is mentioned increased five-fold, from 5 percent to 27 percent.</p> <p>Fifty-six of Wisconsin's 72 counties (77 percent) experienced increases in opioid-related hospitalizations for youth and young adults ages 12-25 between 2008 and 2012</p> <p>* Drug-related hospitalizations include such diagnoses as drug psychoses, drug dependence, drug-related polyneuropathy, and accidental and purposeful poisoning by drugs. ** Deaths in 2012 as a direct consequence of illicit drug use. *** The estimated direct and indirect costs attributable to illicit drug use in four principal areas: crime, health, medical care and productivity.</p>					
Injury		51,422	412,000	3,910 ^{xxiii}	\$2 billion unnecessary medical costs ^{xxiv}
The burden of injuries among children and adults in Wisconsin remains significant. Injuries are the leading cause of death in Wisconsin residents ages 1-44 years and a significant cause of morbidity and mortality in all ages.					

Burden in Wisconsin	Prevalence	Number of hospitalizations	Number of emergency department (ED) visits	Number of deaths	Cost
Obesity and overweight	1,202,375 obese				\$1.5 billion obese
	1,593,435 overweight				\$751 million overweight ^{xxv}
Obesity increases the risk for health conditions such as coronary heart disease, type 2 diabetes, cancer, hypertension, dyslipidemia, stroke, liver and gallbladder disease, sleep apnea and respiratory problems, osteoarthritis, and poor health status ^{xxvi}					
Oral health	4,198 Head Start children ages 3 to 5 have untreated decay ^{xxvii}		32,000 visits for non-traumatic dental complaints		\$7 million in ED visits ^{xxix}
	195,200 adults aged 35-44 have lost a tooth due to decay or gum disease ^{xxviii}				
Dental caries is a disease in which acids produced by bacteria on the teeth lead to loss of minerals from the enamel and dentin, the hard substances of teeth. If left unchecked, dental caries can result in loss of tooth structure, inadequate tooth function, unsightly appearance, pain, infection and tooth loss.					
From 2009-2011 only 52 percent of women went to a dental clinic during pregnancy. ^{xxx} During pregnancy women experience complex physiological changes that can adversely affect their oral health. Morning sickness, changes in diet and oral hygiene practices can lead to tooth demineralization and increased risk for dental caries, periodontal disease and gingivitis. The perinatal period also is a critical time to prevent dental caries for the infant as studies have documented that cariogenic bacteria that cause dental caries can be transmitted from mothers to infants. Maternal untreated dental caries increase the likelihood of dental caries in her children. Pregnancy is a period in a woman's life where preventive oral health care is extremely important not only for her health but the health of her child.					
Suboptimal breastfeeding	53,024 infants are not breastfed exclusively for six months			18 infants *	\$221 million** <ul style="list-style-type: none"> • \$164 million in premature deaths • \$38 million in direct medical costs • \$20 million in indirect costs
	In 2014, 84 percent of Wisconsin infants were ever breastfed and only 21 percent were exclusively breastfed for six months. ^{xxxi} In 2014, the Wisconsin Women, Infants and Children (WIC) program served 52 percent of the 67,119 state births. Of those, 73 percent of infants in the WIC program were ever breastfed and 12 percent were exclusively breastfed for six months. By allowing breastfeeding rates to continue at their current levels Wisconsin incurs millions of dollars in excess costs and nearly 20 preventable deaths.				
* Calculated from national data in the burden report with Wisconsin at 1.7 percent of national births ^{xxxii} and assuming breastfeeding rates similar to national rates. Costs are in 2007 dollars and 2005 breastfeeding data.					
** Calculations are based on a goal that 90 percent of U.S. families would comply with medical recommendations to breastfeed exclusively for six months as in the burden report. Diseases included in the cost analysis are necrotizing enterocolitis, otitis media, gastroenteritis, hospitalization for lower respiratory tract infections, atopic dermatitis, sudden infant death syndrome, childhood asthma, childhood leukemia, type 1 diabetes mellitus and childhood obesity. ^{xxxiii}					

Burden in Wisconsin	Prevalence	Number of hospitalizations	Number of emergency department (ED) visits	Number of deaths	Cost
Suicide		5,332 ^{xxxiv}	2,714	723	\$900 million in medical and work loss costs ^{xxxv}
<p>Suicide is the tenth leading cause of death in the state of Wisconsin. Wisconsin's public mental health system provides services to only 22 percent of adults who live with serious mental illnesses in the state. Wisconsin spent \$108 per capita on mental health agency services in 2006, or \$600.4 million. This was only 1.8 percent of total state spending that year. Many statistics fails to capture the number of people who only seek outpatient care following a suicide attempt or do not seek medical treatment at all. In 2013, among Wisconsin high school students, one out of seven seriously considered attempting suicide. At the societal level, suicides occurring during 2007-2011 were related to 22,000 years of potential life lost (YPLL) each year in Wisconsin. Suicide is the fourth leading cause of YPLL after unintentional injury, malignant neoplasm (cancer) and heart disease.^{xxxvi}</p>					
Tobacco	756,000 people			6,678 ^{xxxvii}	\$3.0 billion in health care costs * \$1.6 billion in lost productivity ^{xxxviii} ** \$528 estimated yearly health care cost of cigarette smoking for every man, women and child
<p>Fourteen percent of Wisconsin women smoke during pregnancy. In addition to smoking, 10 percent of Wisconsin high school students currently use smokeless tobacco (chewing tobacco, snuff or dip). This is a 67 percent increase in smokeless tobacco use since 2012.</p> <p>*Annual health care costs are a result of diseases caused by smoking.</p> <p>**Lost productivity is due to illness and premature death from smoking-related illnesses.^{xxxix}</p>					
Unintended pregnancy	42,000 unintended pregnancies				\$15.6 billion direct medical costs
<p>An unintended pregnancy is a pregnancy that is reported to have been either unwanted or mistimed and is associated with increased risk. Unintended pregnancy mainly results from not using contraception, or inconsistent or incorrect use of effective contraceptive methods.^{xi}</p> <p>By averting unintended pregnancies and other negative reproductive health outcomes, publicly funded family planning services provided by safety-net health centers in Wisconsin helped save the federal and state governments \$171.5 million in 2010.^{xii}</p>					

Total cost to Wisconsin

The Centers for Disease Control and Prevention (CDC) Chronic Disease Cost Calculator provides the cost of care for a variety of chronic disease in Wisconsin as indicated in Figures 1 and 2. Items to note about how this data is generated:

- “Annual expenditures are inflated to 2010 costs following recommendations from the Agency for Healthcare Research and Quality.
- Costs include expenditures for office based visits, hospital outpatient visits, emergency room visits, inpatient hospital stays, dental visits, home health care, vision aids, other medical supplies and equipment, prescription medicines, and nursing homes.
- Payer populations are not mutually exclusive.
- Costs for ‘all payers’ are calculated independently of costs for Medicaid, Medicare, and private insurers.
- All results generated from the calculator are estimates. Actual costs may be larger or smaller than those reported.”^{xlii}

Figure 1.

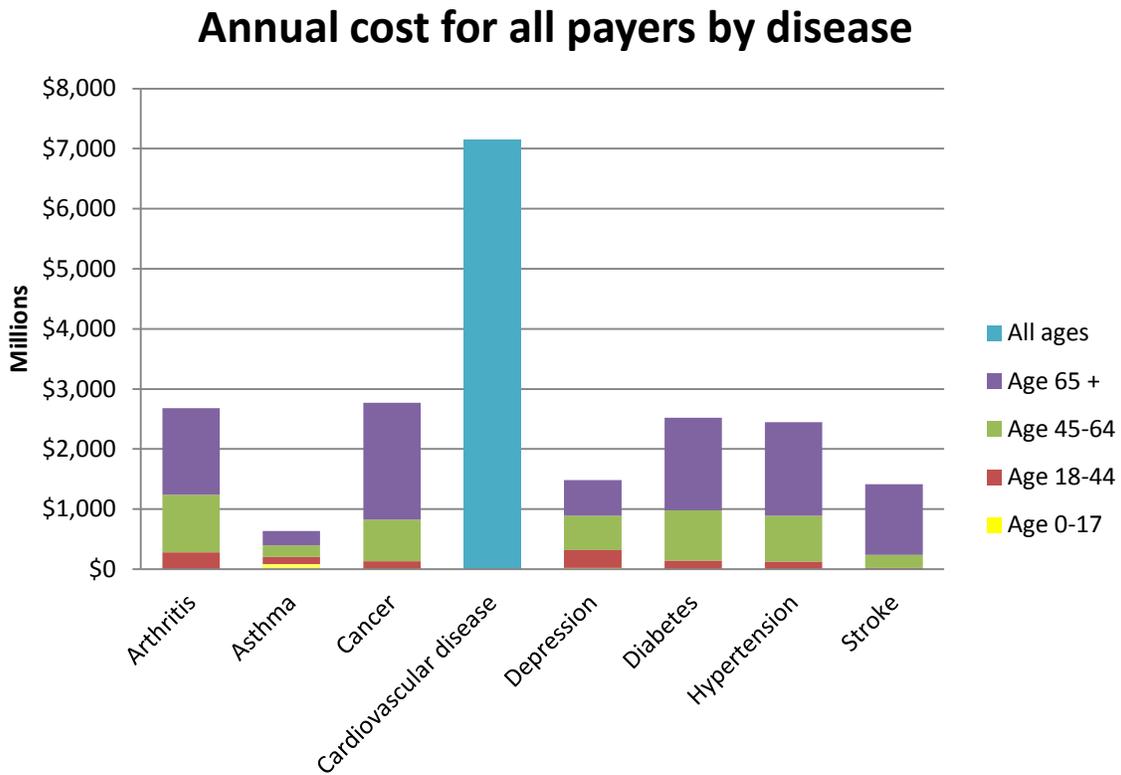
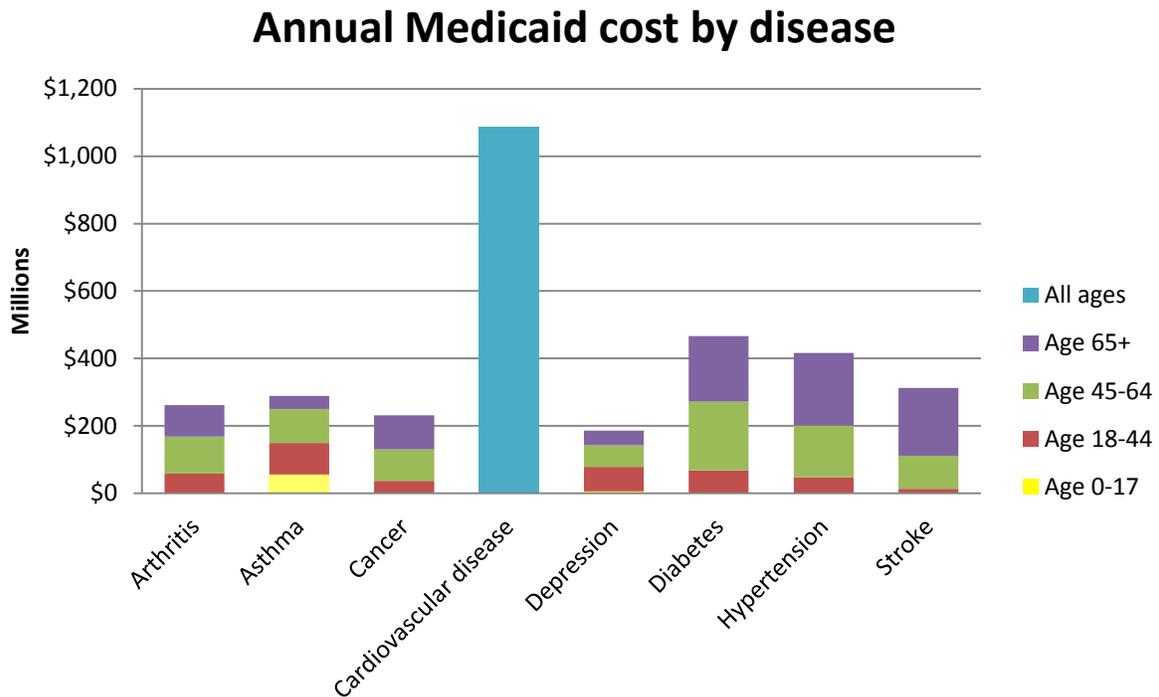


Figure 2.



Beyond traditional health care

The County Health Rankings model (Figure 3 on page 15) depicts four types of health factors which impact health outcomes, not including genetic factors. These include health behaviors, clinical care, social and economic, and physical environment factors. The model also shows how much of an impact each factor has on health outcomes.^{xliii}

In today's health care system, the majority of current health care dollars are spent in clinical care, which has a 20 percent impact on health outcomes. The County Health Rankings model demonstrates the importance of health behaviors and social and economic factors on health outcomes.

Table 2 on page 16 outlines a variety of social determinants and health behaviors and how they impact Wisconsin. Also included is information on how each determinant or behavior impacts health.

Figure 3: County Health Rankings model

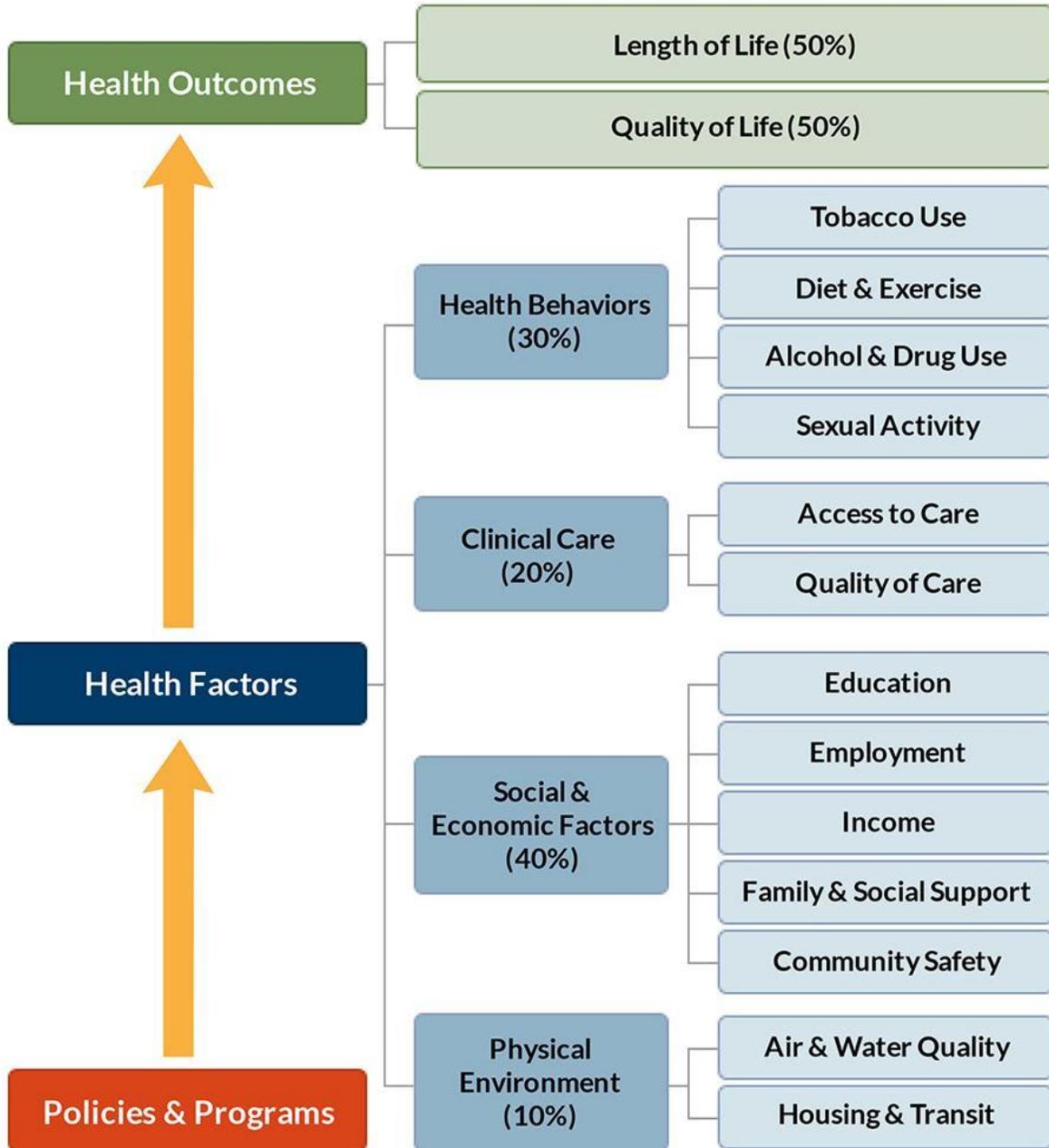


Table 2. Impact of social determinants and health behaviors in Wisconsin

Determinant or health behavior	Wisconsin impact	Importance related to health
Community safety	255 offenses Reported violent crime offenses per 100,000 population (i.e., homicide, forcible rape, robbery, aggravated assault)	High levels of violent crime compromise physical safety and psychological well-being, along with exposure to chronic stress which contributes to premature births or certain illnesses such as asthma. It also can deter residents from pursuing healthy behaviors such as exercising outdoors. ^{xliv}
Education	88 percent Ninth-grade cohort that graduates in four years	Evidence links maternal education with the health of her offspring. Parents' level of education affects their children's health directly through resources available to the children, and indirectly through the quality of schools that the children attend. ^{xlv}
	65.9 percent Adults ages 25-44 with some post-secondary education	Years of formal education correlates strongly with improved work and economic opportunities, reduced psychosocial stress, and healthier lifestyles. ^{xlvi}
	30 percent without skills 88 percent never catch up Literacy – children entering kindergarten without skills needed to learn to read	Learning to read impacts more than just a child's school performance. It impacts rates of youth school retention, juvenile delinquency and teen risk behaviors. ^{xlvii}
Employment	6.7 percent Population ages 16+ unemployed but seeking work	The unemployed population experiences worse health and higher mortality rates than the employed population. Limited access to care and an increase in unhealthy behaviors (e.g., alcohol, tobacco use, diet, exercise) ^{xlviii}
Family support	31 percent Children living in a household headed by a single parent	Children in single-parent households are at risk for adverse health outcomes such as mental health problems (e.g., substance abuse, depression, suicide) and greater risk of severe morbidity and all-cause mortality than their peers in two-parent household. For lone parents, self-reported health has been shown to be worse than for parents living as couples and mortality risk also is higher. ^{xlix}
Income	18 percent Children under age 18 in poverty	Children in poverty experience greater morbidity and mortality than adults due to increased risk of accidental injury and lack of health care access. Risk also may be increased due to the poor educational achievement associated with poverty. ^l
Physical inactivity	21 percent Adults aged 20+ reporting no physical activity for leisure	Decreased physical activity has been related to disease conditions such as type 2 diabetes, cancer, stroke, hypertension, cardiovascular disease, and premature mortality, independent of obesity. Inactivity causes 11 percent of premature mortality in the U.S. ^{li}
Physical activity access	83 percent Population with adequate access to locations for physical activity	The role of the built environment is important for encouraging physical activity. Individuals who live closer to sidewalks, parks and gyms are more likely to exercise. ^{lii}
Social support	11.8 memberships Number of membership associations per 10,000 population (i.e., civic, sports, religious, political, business or labor organizations)	Poor family support, minimal contact with others and limited involvement in community life are associated with increased morbidity and early mortality. Social support networks have been identified as predictors of health behaviors, suggesting that individuals without a strong social network are less likely to make healthy lifestyle choices than individuals with a strong network. ^{liii}
Teen pregnancy	27 births Number of births per 1,000 female population ages 15-19	Evidence suggests teen pregnancy significantly increases the risk of repeat pregnancy and of contracting a sexually transmitted infection (STI). Teens also are more likely than older women to have a pre-term delivery and low birth weight baby, increasing the risk of child developmental delay, illness, and mortality. ^{liv}

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- ⁱ Black P., Paltzer J. *The Burden of Excessive Alcohol in Wisconsin* (2013) Pg 1-4. University of Wisconsin Population Health Institute. Retrieved from: <http://uwphi.pophealth.wisc.edu/publications/other/burden-of-excessive-alcohol-use-in-wi.pdf>
- ⁱⁱ Centers for Disease Control and Prevention. State Data Tables: Wisconsin 2013. http://www.cdc.gov/arthritis/data_statistics/state-data-list-current.htm#Wisconsin
- ⁱⁱⁱ Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics, Wisconsin Hospital Inpatient Discharge Database, 2007
- ^{iv} Wisconsin Department of Health Services. (2015). Arthritis in Wisconsin Facts. <https://www.dhs.wisconsin.gov/arthritis/data.htm>
- ^v Wisconsin Department of Health Services. (2015). Wisconsin Arthritis Program. <https://www.dhs.wisconsin.gov/arthritis/index.htm>
- ^{vi} Wisconsin Asthma Coalition (2015). *Wisconsin asthma plan 2015-2020*. Burden of asthma (Pg 11-12) <http://www.chawisconsin.org/documents/A2WACPlan2015.2020.pdf>
- ^{vii} Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics, Health Analytics Section. Public Health Profiles, Wisconsin 2015 (P-45358-15). September 2015.
- ^{viii} National Center for Health Statistics, data reported by Wisconsin Vital Statistics Program. Accessible in WISH Cancer Mortality Module.
- ^{ix} National Cancer Institute, Wisconsin State Cancer Profiles, Prevalence Counts (2016) <https://statecancerprofiles.cancer.gov/quick-profiles/index.php?statename=wisconsin#t=3>
- ^x The American Journal of Managed Care, State-Level Projections of Cancer –Related Medical Care Costs, Trogan JG, Tangka F, Ekwueme DU, et al. Vol 18, NO 9.
- ^{xi} Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics, Wisconsin Hospital Inpatient Discharge Database, 2013
- ^{xii} Wisconsin Interactive Statistics on Health. (2014). <https://www.dhs.wisconsin.gov/wish/index.htm>
- ^{xiii} Wisconsin Heart Disease and Stroke Prevention Program (February 2010). *The burden of heart disease and stroke in Wisconsin 2010*. (Pg 1-2) <https://www.dhs.wisconsin.gov/publications/p0/p00146.pdf>
- ^{xiv} Wisconsin Department of Health Services. Wisconsin Behavioral Risk Factor Surveillance System (BRFSS), 2011-13.
- ^{xv} Wisconsin Department of Health Services. Wisconsin Behavioral Risk Factor Surveillance System (BRFSS), 2010.
- ^{xvi} Wisconsin Department of Health Services. (2014). Hospital Patient Data System
- ^{xvii} Centers for Disease Control and Prevention. (2013). Wisconsin diagnosed diabetes. <http://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html>
- ^{xviii} Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics, Wisconsin Hospital Inpatient Discharge Database, 2013
- ^{xix} Wisconsin Interactive Statistics on Health. (2014). <https://www.dhs.wisconsin.gov/wish/index.htm>
- ^{xx} Wisconsin Diabetes Prevention and Control Program (2011). *The 2011 burden of diabetes in Wisconsin* (Pg 4) <https://www.dhs.wisconsin.gov/publications/p0/p00284.pdf>
- ^{xxi} Wisconsin State Council on Alcohol and Other Drug Abuse (July 2014). Wisconsin's Heroin Epidemic: Strategies and Solutions. Retrieved from: <https://scaoda.wisconsin.gov/scfiles/docs/SCAODAHeroinReportFinal063014.pdf>
- ^{xxii} Wisconsin Department of Health Services (2014). *WI epidemiological profile on alcohol and other drug use*. Retrieved from: <https://www.dhs.wisconsin.gov/publications/p4/p45718-14.pdf>
- ^{xxiii} Wisconsin Interactive Statistics on Health. (2014). <https://www.dhs.wisconsin.gov/wish/index.htm>
- ^{xxiv} Wisconsin Department of Health Services. *The Burden of Injury in Wisconsin* (2011). Retrieved from: <https://www.dhs.wisconsin.gov/publications/p0/p00283.pdf>
- ^{xxv} Wisconsin Department of Health Services (2008). Obesity, Nutrition, and Physical Activity in Wisconsin. Retrieved from: <https://www.dhs.wisconsin.gov/publications/p0/p00009.pdf>
- ^{xxvi} University of Wisconsin Population Health Institute (2015) *Adult obesity*. Retrieved from: <http://www.countyhealthrankings.org/app/#!/wisconsin/2015/measure/factors/11/description>

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- ^{xxvii} LeMay, W., Bell, L., and Olson, M. Healthy Smiles for a Healthy Head Start The Oral Health of Wisconsin's Head Start Children, 2009. Wisconsin Oral Health Program, Wisconsin Department of Health Services
- ^{xxviii} Olson, MA and LeMay WR. The Burden of Oral Disease in Wisconsin, 2010. Wisconsin Oral Health Program, Wisconsin Department of Health Services.
- ^{xxix} Pew Children's Dental Campaign. February 2012 Issue brief: A Costly Dental Destination. Retrieved from: <http://www.pewtrusts.org/~media/assets/2012/01/16/a-costly-dental-destination.pdf>
- ^{xxx} Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin PRAMS Data Book 2009-2011: Key Findings from the Wisconsin Pregnancy Risk Assessment Monitoring System (P-00740).
- ^{xxxi} Centers for Disease Control and Prevention. (2014). Breastfeeding report card. <http://www.cdc.gov/breastfeeding/pdf/2014breastfeedingreportcard.pdf>
- ^{xxxii} United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2007-2013, on CDC WONDER Online Database, January 2015. <http://wonder.cdc.gov/natality-current.html>
- ^{xxxiii} Bartick M, Reinhold A. The Burden of Suboptimal Breastfeeding in the United States: A Pediatric Cost Analysis. *Pediatrics*.2010; 125:e1048-e1056. <http://pediatrics.aappublications.org/content/125/5/e1048>
- ^{xxxiv} Wisconsin Interactive Statistics on Health. (2014). <https://www.dhs.wisconsin.gov/wish/index.htm>
- ^{xxxv} American Foundation for Suicide Prevention. (2015). Suicide: Wisconsin 2015 facts and figures. http://www.google.com/url?url=http://udhyami.com/content/download/16212/266505/file/Wisconsin_percent2520Fact_percent2520Sheet_percent2520NEW.pdf&rct=j&frm=1&q=&esrc=s&sa=U&ved=0ahUKEwj-yZicyqjOAhXGNiYKHUzzBzAQFgg5MAY&sig2=9nXWulrtrch3Ej80A9zRyg&usg=AFQjCNGC41VXxz5iODxLI59jM70sYDt_aQ
- ^{xxxvi} Wisconsin Department of Health Services (2014). *The burden of suicide in Wisconsin*. <https://www.dhs.gov/publications/p0/p00648-2014.pdf>
- ^{xxxvii} Palmersheim KA, Prosser EC. Burden of Tobacco in Wisconsin: 2015 Edition. University of Wisconsin-Milwaukee, Center for Urban Initiatives and Research, Milwaukee, WI: 2015.
- ^{xxxviii} Palmersheim KA, Prosser EC. *Burden of Tobacco in Wisconsin: 2015 Edition*. University of Wisconsin-Milwaukee, Center for Urban Initiatives and Research. Retrieved from: <http://uwm.edu/cuir/wp-content/uploads/sites/111/2015/04/Burden-of-Tobacco-2015.pdf>
- ^{xxxix} UW Population Health Sciences (2015). *Data Look October 2015 Wisconsin Tobacco Prevention and Control Movement*. Retrieved from: <http://tobwis.org/resources#!/tags=factsheet,data-WI>
- ^{xl} Centers for Disease Control and Prevention (January 2015). *Unintended pregnancy prevention*. Retrieved from: <http://www.cdc.gov/reproductivehealth/UnintendedPregnancy/index.htm>
- ^{xli} Guttmacher Institute (2014). *State facts about unintended pregnancy: Wisconsin*. Retrieved from: <http://www.guttmacher.org/statecenter/unintended-pregnancy/pdf/WI.pdf>
- ^{xlii} Centers for Disease Control and Prevention (2015). Chronic Disease Cost Calculator Version 2. <http://www.cdc.gov/chronicdisease/calculator/index.html>
- ^{xliiii} Our approach. (2015). County Health Rankings. <http://www.countyhealthrankings.org/our-approach>
- ^{xliiv} University of Wisconsin Population Health Institute (2015). Violent crime. Retrieved from: <http://www.countyhealthrankings.org/app#!/wisconsin/2015/measure/factors/43/description>
- ^{xli v} University of Wisconsin Population Health Institute (2015). *High school graduation*. Retrieved from: <http://www.countyhealthrankings.org/app#!/wisconsin/2015/measure/factors/21/description>
- ^{xli vi} University of Wisconsin Population Health Institute (2015). *Some college*. Retrieved from: <http://www.countyhealthrankings.org/app#!/wisconsin/2015/measure/factors/69/description>
- ^{xli vii} Children's Health Alliance of Wisconsin (2015). *Early literacy overview*. Retrieved from: <https://www.chawisconsin.org/early-literacy/>
- ^{xli viii} University of Wisconsin Population Health Institute (2015). *Unemployment*. Retrieved from: <http://www.countyhealthrankings.org/app#!/wisconsin/2015/measure/factors/23/description>
- ^{xli ix} University of Wisconsin Population Health Institute (2015). Children in single-parent households. Retrieved from: <http://www.countyhealthrankings.org/app#!/wisconsin/2015/measure/factors/82/description>

ⁱ University of Wisconsin Population Health Institute (2015). *Children in poverty*. Retrieved from: <http://www.countyhealthrankings.org/app/#!/wisconsin/2015/measure/factors/24/description>

ⁱⁱ University of Wisconsin Population Health Institute (2015). Physical inactivity. Retrieved from: <http://www.countyhealthrankings.org/app/#!/wisconsin/2015/measure/factors/70/description>

ⁱⁱⁱ University of Wisconsin Population Health Institute (2015). Access to exercise opportunities. Retrieved from: <http://www.countyhealthrankings.org/app/#!/wisconsin/2015/measure/factors/132/description>

ⁱⁱⁱⁱ University of Wisconsin Population Health Institute (2015). Social associations. Retrieved from: <http://www.countyhealthrankings.org/app/#!/wisconsin/2015/measure/factors/140/description>

^{iv} University of Wisconsin Population Health Institute (2015) Teen births. Retrieved from: <http://www.countyhealthrankings.org/app/#!/wisconsin/2015/measure/factors/14/description>