

# Epidemiologic Report: Understanding the Changing Trajectories of Cancer and Heart Disease Mortality in Wisconsin

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## Introduction

**Background.** For over a century, since 1910, heart disease has been the leading cause of death in the United States, and remains so today. Around 1933, largely due to progress in treating infectious diseases such as pneumonia, tuberculosis, and influenza, cancer became the second leading cause of death in this country. Progress in prevention, early detection, and treatment of both heart disease and cancer has substantially, but disproportionately, reduced mortality over the past 50 years. From 1969 to 2011 in Wisconsin, the age-adjusted heart disease death rate decreased 67 percent and the cancer death rate declined 15 percent.<sup>1</sup> In 2007, cancer overtook heart disease as the number one cause of mortality in Wisconsin.

Mortality data from the National Center for Health Statistics for 2011 indicated that 24 states had cancer death rates that surpassed heart disease death rates.<sup>1</sup> By 2020, all 50 states are projected to experience a crossover between heart disease and cancer as the leading cause of death. According to the World Health Organization, cancer surpassed heart disease as the world's biggest killer in 2011, with 7.87 million cancer deaths compared to 7.02 million from heart disease.<sup>2</sup>

**Objective.** This report addresses the recent change in mortality trends, in which cancer surpassed heart disease as the leading cause of death in Wisconsin. Although the crossover was first reported in 2007, the historical perception remains that heart disease is the leading cause of death. The focus of this report is to clarify and define the comparison of heart disease and cancer mortality with detailed, standardly defined Wisconsin data. Current challenges in presenting and understanding statistics for public health purposes are also discussed in view of the changing mortality trends.

## Methods

Mortality data were drawn from the Cause of Death Public Use SEER\*Stat mortality files, based on the underlying cause of death from the National Center for Health Statistics (NCHS). Wisconsin data were analyzed to compare (1) the top ten causes of mortality for years 1969-2011, (2) the long-term trends in heart disease and cancer mortality for years 1969-2011, and (3) recent mortality data for years 2007-2011. Appendix A provides 2007-2011 mortality data by county for both diseases.

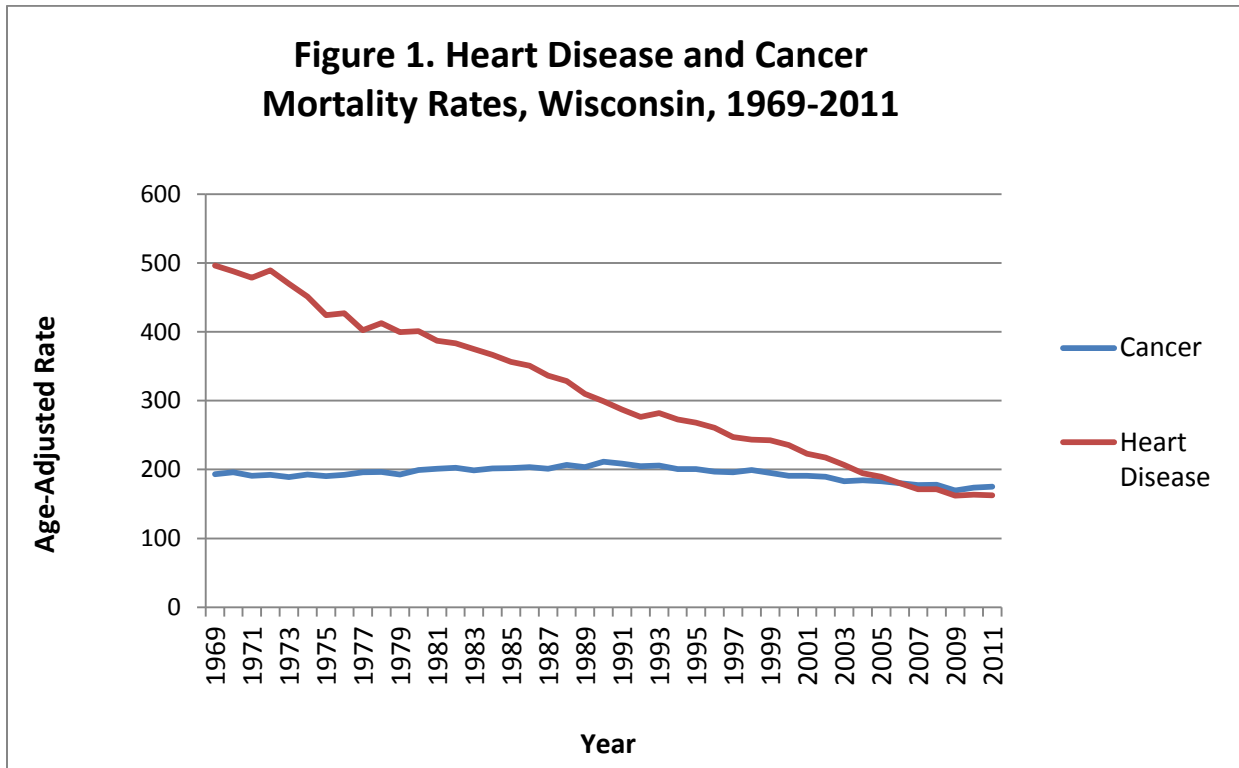
Cancer site classifications are based on the International Classification of Diseases for Oncology, Third Edition (ICD-O-3). Cancer deaths are defined as those coded 140.0 through 208.9 in ICD-9 and C00 through C97 in ICD-10. Mortality from major cardiovascular diseases from the International Classification of Diseases, Ninth and Tenth Revisions (ICD-9 and 10) includes deaths from Diseases of Heart (ICD-9 codes 390-398, 402, 404, 410-429 for years 1995-1998, and ICD-10 codes I00-I09, I11, I13, I20-I51 for years 1999 forward). The SEER cause of death recodes used in this report can be found at: <http://seer.cancer.gov/codrecode>

Mortality rates (per 100,000) were calculated for diseases of the heart and malignant neoplasms from 1969 to 2011. Mortality rates were age-adjusted to the 2000 U.S. standard population using the direct standardization method. Data were analyzed using SEER\*Stat software, version 8.1.5 (National Cancer Institute) <http://seer.cancer.gov/seerstat/>.

## Results

In Wisconsin, a reported 11,608 people died of cancer and 11,266 died of heart disease in 2011. The corresponding age-adjusted mortality rates for that year are 174.9 and 162.6 per 100,000 population, respectively. The long-term trends

indicate the crossover is permanent and the difference may increase in the future. Figure 1 shows that cancer mortality declined slowly over the period of analysis, from an age-adjusted rate of 193.1 per 100,000 population in 1969 to the record low rate of 169.5 per 100,000 in 2009. Heart disease mortality declined more impressively, from a rate of 496.1 in 1969 to a low of 162.1 in 2009.

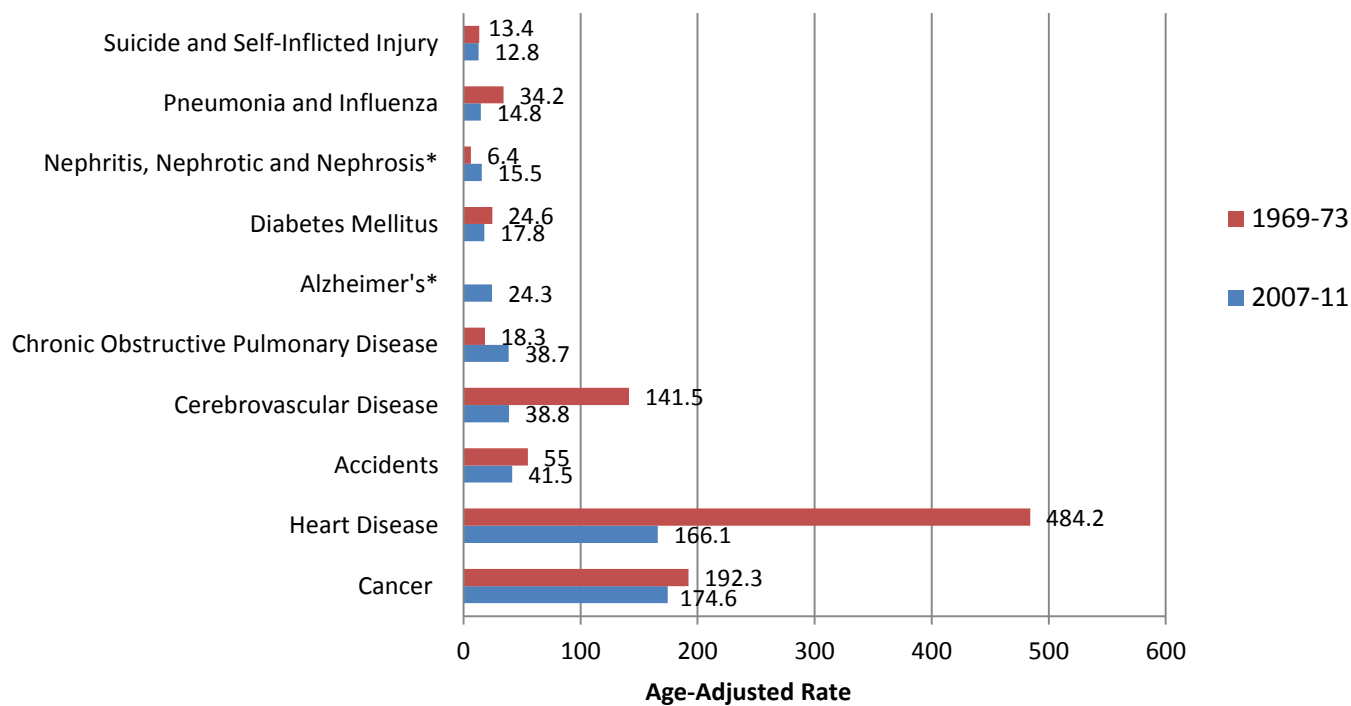


Source: Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2011) Surveillance Research Program, Surveillance Systems Branch, released July 2014. Data on underlying cause of death provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).

Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

By considerable margins, cancer and heart disease surpass all other top ten causes of death in Wisconsin. Figure 2 shows the prominence of cancer and heart disease as causes of death. It also shows the dramatic decline in heart disease and cerebrovascular deaths since 1969-1973. Suicide as a cause of death remained relatively constant. Chronic obstructive pulmonary disease, nephritis and Alzheimer’s were increasingly reported causes of death, while all other causes declined modestly over the period.

**Figure 2. Changing Mortality Rates, Leading Causes of Death in Wisconsin, 1969-1973 and 2007-2011**



Source: Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2011) Surveillance Research Program, Surveillance Systems Branch, released July 2014. Data on underlying cause of death provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).

\* Nephritis, Nephrotic disease was not a leading cause of death in 1969-1973. Data for Alzheimer's were not available for 1969-1973. Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

Table 1 presents 16-year trend mortality data for 4 major age groups. It shows heart disease as the leading cause of death only among the oldest age group, 80 and over. In 2011, almost 60 percent of deaths from heart disease, compared with 33 percent of deaths from cancer, occurred in the group aged 80 and over. Even among the oldest group, mortality from heart disease declined more significantly than cancer mortality. If this trajectory continues, cancer may surpass heart disease in this group as well. All age groups experienced steeper declines in mortality for heart disease than for cancer, as shown by the higher percent change for both number of deaths and age-adjusted rates. The majority (82%) of cancer deaths in 2011 occurred among those aged 60 years and older; the percent change is based on a greater number of deaths and is therefore less subject to change. Age-adjusted rates for both cancer and heart disease mortality dramatically increase with increasing age.

**Table 1. Cancer and Heart Disease Mortality by Age Groups, Wisconsin, 1995-2011**

	Under 40				40-59 years				60-79 years				80 and Over				All Ages			
	Cancer		Heart Disease		Cancer		Heart Disease		Cancer		Heart Disease		Cancer		Heart Disease		Cancer		Heart Disease	
	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths
<b>Total</b>	<b>7.0</b>	<b>3470</b>	<b>4.5</b>	<b>2230</b>	<b>112.5</b>	<b>29887</b>	<b>72.8</b>	<b>19276</b>	<b>740.0</b>	<b>92755</b>	<b>560.5</b>	<b>69729</b>	<b>1617.8</b>	<b>58709</b>	<b>3307.9</b>	<b>121420</b>	<b>185.3</b>	<b>184821</b>	<b>206.1</b>	<b>212655</b>
1995	7.2	226	4.9	153	130.4	1559	91.1	1091	804.3	5697	773.0	5464	1673.7	3090	4175.6	7709	200.5	10572	268.1	14417
1996	7.7	243	5.2	164	131.9	1626	91.3	1123	791.4	5599	765.6	5403	1597.9	3018	3979.7	7512	197.0	10486	260.8	14202
1997	7.8	241	5.0	156	122.7	1574	86.1	1105	789.6	5594	703.5	4984	1646.0	3171	3861.3	7451	195.9	10580	247.2	13696
1998	8.0	248	4.7	142	124.3	1650	84.8	1127	798.0	5660	704.4	4998	1703.5	3349	3763.0	7418	199.5	10907	243.5	13685
1999	7.5	228	4.8	146	124.3	1707	80.5	1106	784.6	5566	683.7	4857	1633.7	3254	3853.2	7718	195.1	10755	242.7	13827
2000	7.6	229	4.9	149	118.3	1681	82.8	1179	760.6	5403	638.4	4544	1643.3	3325	3793.3	7729	190.7	10638	235.4	13601
2001	7.6	229	4.7	138	119.4	1758	78.8	1161	751.1	5341	617.9	4399	1679.1	3449	3544.5	7325	191.0	10777	223.2	13023
2002	6.8	199	5.0	147	119.5	1831	75.7	1159	768.0	5489	577.9	4132	1579.9	3309	3553.3	7485	189.5	10828	217.6	12923
2003	7.5	218	4.9	142	114.2	1804	71.0	1118	713.2	5142	552.7	3981	1634.6	3484	3369.4	7238	183.1	10648	206.8	12479
2004	6.4	182	4.3	123	106.9	1748	65.1	1057	752.9	5460	511.7	3699	1600.6	3471	3214.0	7030	184.6	10861	194.4	11909
2005	6.5	185	3.4	96	111.4	1881	66.4	1119	729.8	5338	495.3	3605	1602.4	3539	3145.1	7022	182.9	10943	189.7	11842
2006	6.0	171	3.8	107	106.1	1849	64.9	1124	724.0	5339	459.5	3369	1591.9	3566	3011.6	6851	180.1	10925	180.4	11451
2007	6.2	178	3.8	107	106.6	1877	66.1	1159	703.5	5298	429.2	3206	1580.5	3610	2859.3	6638	177.3	10963	171.6	11110
2008	6.6	184	4.4	122	101.2	1820	65.1	1158	709.8	5448	438.1	3335	1608.3	3733	2807.8	6660	177.8	11185	171.2	11275
2009	5.8	163	3.8	103	95.2	1734	63.2	1126	668.3	5244	421.6	3266	1582.7	3725	2628.1	6339	169.5	10866	162.1	10834
2010	6.6	181	4.8	129	98.9	1832	64.7	1176	692.5	5517	409.1	3208	1576.8	3749	2688.4	6602	173.9	11279	163.5	11115
2011	6.0	165	3.9	106	104.9	1956	65.3	1188	684.7	5620	405.9	3279	1601.1	3867	2684.6	6693	174.9	11608	162.6	11266
PC	-16.7	-28.3	-21.0	-30.1	-19.5	25.0	-28.3	-8.9	-14.9	-1.3	-47.5	-40.0	-4.3	25.1	-35.7	-13.2	-12.8	9.8	-39.4	-21.8

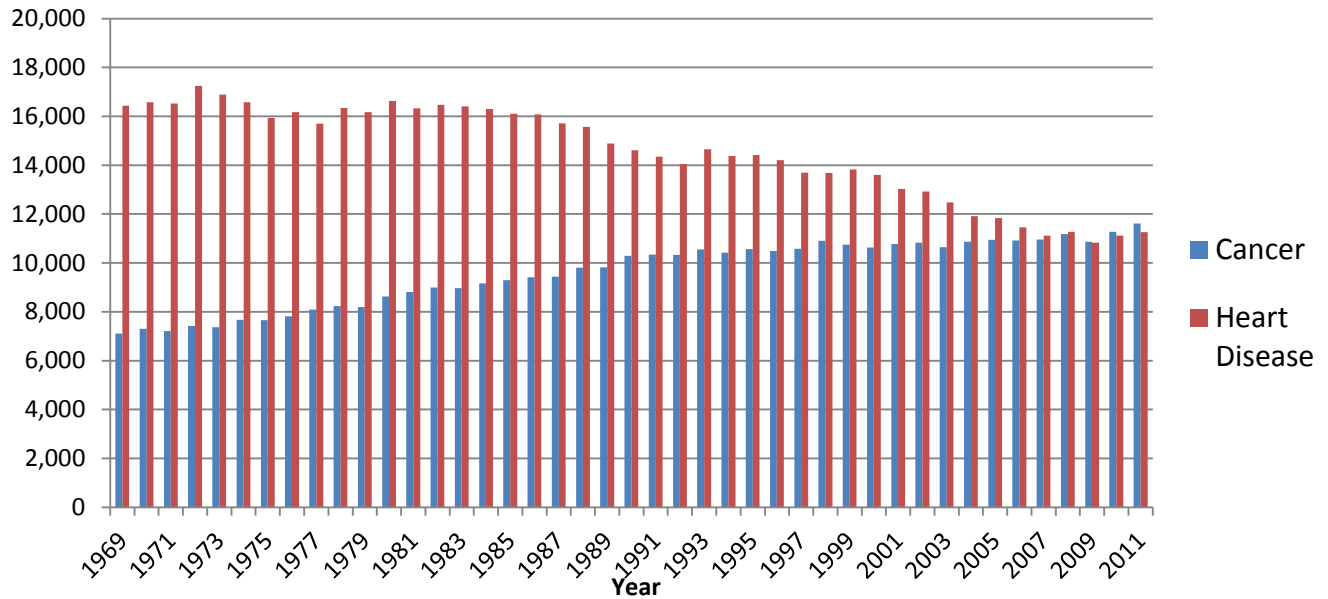
Source: Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2011) Surveillance Research Program, Surveillance Systems Branch, released July 2014. Data on underlying cause of death provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).

Rates are per 100,000 and age-adjusted to the 2000 standard U.S. population.  
PC= Percent Change

Although Wisconsin's overall cancer mortality rate exceeded its heart disease mortality rate in recent years, there was some variation across counties, as shown in Appendix A (page 10). For example, cancer was the leading cause of death in Dane County, in contrast to Milwaukee County, where heart disease mortality slightly exceeded cancer mortality. Variations at the local level are not well understood, but could be influenced by several factors: differences in lifestyle behaviors, health care availability and access, accuracy of death certificate information, familial genetic tendencies, and environmental conditions. Overall, by various margins, cancer mortality exceeded heart disease mortality in over 60 percent of Wisconsin counties during 2007-2011.

The number of deaths due to cancer in Wisconsin increased over the years from 1969 to 2011 (Figure 3), even though the age-adjusted cancer mortality rate declined, because the population of seniors is growing. The growing number of cancer cases and deaths are placing an increasing burden on cancer care systems and the health care industry, and cost containment is becoming more challenging.

**Figure 3. Number of Deaths Due to Cancer and Heart Disease in Wisconsin, 1969-2011**



Source: Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2011) Surveillance Research Program, Surveillance Systems Branch, released July 2014. Data on underlying cause of death provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).

Table 2 summarizes the relative homogeneity of the two diseases within each racial and ethnic population in Wisconsin; the parallel burdens of cancer and heart disease are not surprising in view of the shared risk factors. Cancer surpassed heart disease as a cause of death in all these populations except American Indians, although differences for smaller populations are statistically less reliable. African Americans and American Indians had the highest mortality rates for both diseases in Wisconsin.

**Table 2. Cancer and Heart Disease Mortality by Race and Ethnicity, Wisconsin, 2007-2011**

	Cancer				Heart Disease			
	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Count
White	172.6	171.1	174.1	52,731	163.2	161.8	164.6	52,731
African American	236.1	226.3	246.2	2,508	229.3	219.2	239.6	2,290
American Indian	217.5	193.5	243.3	371	229.1	203.3	256.8	364
Asian or Pacific Islander	103.1	90.6	116.6	291	90.1	77.8	103.6	215
Hispanic-Latino	101.9	92.0	112.5	496	89.5	79.8	99.9	388

Source: Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2011) Surveillance Research Program, Surveillance Systems Branch, released July 2014. Data on underlying cause of death provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).

Rates are per 100,000 and age-adjusted to the U.S. standard. Counts are for all five years combined. Upper and Lower CIs = Confidence intervals are 95% for rates. Hispanic-Latino category includes all races.

**Understanding Data for Public Health Implications**

**Definition of Cardiovascular Disease.** Arriving at accurate information requires understanding the nomenclature of cardiovascular disease (CVD), coronary artery disease, coronary heart disease, and cerebrovascular disease—not always clearly specified. The separation of heart disease and stroke in mortality classifications was due largely to differences between the sexes and ethnic groups, useful in public health planning and treatments. CDC houses the Division of Heart Disease and Stroke, from which mortality data for heart disease are reported distinctly from mortality data for strokes (cerebrovascular disease).<sup>3</sup>

Diseases under the heart disease umbrella include blood vessel diseases, such as coronary artery disease; heart rhythm problems (arrhythmias); and congenital heart defects, among others. The term "heart disease" is often used interchangeably with the term "cardiovascular disease" (CVD). Cardiovascular disease generally refers to conditions that involve narrowed or blocked blood vessels that can lead to a heart attack, chest pain (angina), or stroke. Other heart conditions, such as those that affect the heart muscle, valves or rhythm, also are considered forms of heart disease. However, heart disease and stroke share many features and are, therefore, sometimes reported as one disease, under the total CVD umbrella. If stroke—or cerebrovascular disease—were included in the CVD definition, cancer would be the second leading killer in Wisconsin.

**Challenge of Cancer and Heart Disease.** From a public health standpoint, heart disease and cancer are both menacing diseases for an aging population. Certain cancers could be prevented by appropriate healthy eating, exercise, and self-care. However, the goal of eradicating cancer is not in sight, and the Pulitzer-Prize-winning book *Emperor of All Maladies* chronicles cancer as a 5,000-year-old, virulent, complicated disease that has evolved with humans.<sup>4</sup> The inventory of challenges to winning the war on cancer, earnestly declared in 1971, includes:

- Inherent biological complexity of the disease
- Roadblocks to translational medicine (translating research to cancer care)
- Challenges of early detection and diagnosis
- The long process for approving drug treatments
- Availability of and access to patients with suitable tumor tissue for research
- Challenges in implementing preventive measures, such as the development and use of preventive drugs and therapies
- Technical challenges in mapping changes over time in the national incidence rate, by cancer type, relative to the population at risk

Efforts to address heart disease have been bolstered by the identification of preventable medical precursors. Medications now exist for controlling diabetes, high blood pressure, high cholesterol, and even the ratio of “good” to “bad” cholesterol. Low-calorie diets, exercise, and other healthy life choices can lead to relatively quick, measurable improvements in heart health. When heart disease gets a head start, surgical measures are increasingly less invasive and more effective, such as stents, valve replacement, pacemakers, and strategic mechanical corrections.<sup>5,6</sup> In contrast to treatments for heart disease, cancer treatments are often physically harsh and less predictable in outcome.

**Financial Burden of Cancer.** The National Cancer Institute (NCI) estimates that in 2010 the overall cost of cancer in the United States was \$124.6 billion in direct medical costs, and approximately \$134.8 billion in indirect costs for lost productivity. Wisconsin represented approximately 1.8 percent of the total U.S. population in 2012. Based on 1.8 percent of the national annual direct cost for cancer, it is estimated that the total direct annual cost for cancer in Wisconsin in 2010 was \$2.2 billion, and the indirect annual cost due to lost productivity was an additional \$2.4 billion. According to an NCI study, based on population growth and the aging of the U.S. population, direct medical expenditures for cancer in 2020 are projected to reach \$158 billion nationally, a 27 percent increase over 2010. Assuming a 2 percent annual increase in medical costs—the current trajectory—total projected 2020 costs would be \$173 billion.<sup>7</sup>

Together, heart disease and stroke are also among the most widespread and costly health problems facing the nation today, accounting for more than \$312.6 billion in health care expenditures and lost productivity annually.<sup>8</sup>

**Progress in Cancer Control.** There is some good news. The cancer mortality rate was 193.1 per 100,000 population in 1969, peaked at 211.2 per 100,000 in 1990, and then declined steadily to a record low rate of 169.5 per 100,000 in 2009. The 2011 cancer mortality rate rose to 174.9 per 100,000, a recent upward trend that bears watching. A diagnosis of cancer once was the virtual equivalent of a death sentence, but cancer is increasingly controlled and treated, if not always eradicated. The five-year relative survival rate in 2010 was 66 percent, compared with 49 percent in 1975.

Cancer control efforts can claim three primary victories in recent years. The drop in lung cancer mortality—more than 18 percent for males from 1995 to 2010—has been largely attributed to a decrease in smoking; it remains the number one killer of all cancers because it is usually detected at an advanced stage and is difficult to treat. Second, childhood cancer mortality has dropped more than 50 percent since 1975, due largely to effective clinical trials. Third, colorectal cancer mortality declined by 36 percent (1995-2010) due in large part to increased screening and early detection, such as increased colonoscopies among the general population over 50.<sup>9</sup>

Wisconsin's 2011 age-adjusted mortality rate for all cancer was 13 percent lower than the 1995 rate, largely driven by declining rates for the major cancers (colorectal, lung, breast and prostate). However, increasing mortality rates for less common but often fatal cancers such as pancreatic, liver and kidney cancers, and melanoma, have curtailed the decline in overall cancer mortality.<sup>10</sup>

**Wisconsin Heart Health Compared With Our Neighbors.** Minnesota consistently has the lowest death rate from heart disease in the nation.<sup>11</sup> In 2000, Minnesota became the first state in the nation in which heart disease dropped to the second-leading cause of death behind cancer. In 2009, Minnesota became the first state to see the total number of deaths from both heart disease and stroke fall below the number of deaths from cancer. That year, there were 37,851 deaths in Minnesota; heart disease accounted for 7,238 (19.1%) of them, stroke for 2,033 (5.4%), and cancer for 9,580 (25.3%). In Wisconsin, there were 45,696 deaths in 2009; heart disease accounted for 10,834 (23.7%), stroke for 2,501 (5.5%), and cancer for 10,866 (23.8%).<sup>1</sup>

Mortality data from the National Center for Health Statistics for 2011 indicated that 24 states including Minnesota had cancer rates that surpassed heart disease rates. While the national trend is clearly moving in the direction of cancer surpassing heart disease as the leading cause of death, states vary greatly in the trajectory of trends for these two groups of chronic diseases. For example, in 2011, Iowa, Minnesota and Wisconsin had fewer people die from heart disease than from cancer, but in Michigan and Illinois heart disease remains the leading cause of death. Michigan's heart disease mortality rate in 2011 was 198.8 compared to Wisconsin's rate of 162.6, although the cancer mortality rate was similar to Wisconsin's rate, 177.4 and 174.9, respectively.<sup>1</sup>

**Global, National and State Public Health Implications.** There are critical reasons for accurately reporting and monitoring the leading causes of death in Wisconsin, and the U.S., because the future of health care holds unprecedented challenges for an aging population. The broad "globalization" of the chronic disease threat has been well described by WHO and CDC. For only the second time in its history, the United Nations General Assembly in September 2011 focused on the prevention and control of noncommunicable diseases.

For the first time in human history, more people live in urban than rural areas. More people are overweight than underweight around the world. Noncommunicable disease such as heart disease and stroke, cancer, diabetes, and chronic lung disease kill more people globally than infectious diseases. These four diseases share the common risk factors of tobacco use, unhealthy diets, physical inactivity, and harmful use of alcohol, as well as high blood pressure and cholesterol.<sup>12</sup>

From CDC in 2014: More than 75 percent of all deaths (38 million deaths) worldwide are due to noncommunicable diseases, now exceeding all communicable, maternal, and perinatal nutrition-related deaths combined and representing an emerging global health threat.<sup>13</sup>

## Conclusion

During the 20th century, heart disease, cancer, and other chronic conditions assumed more dominance as causes of death. By 2020, chronic diseases are expected to account for 7 of every 10 deaths in the world, as they have in the U.S. and Wisconsin since 2010. Public health educators have a responsibility not only to convey statistics that are accurate and balanced, but to promote informed collaboration and understanding of all chronic disease. Two of these chronic diseases—heart disease and cancer—together accounted for over 47 percent of all 2011 deaths in Wisconsin (22,874 of 48,410 deaths). Successes in prevention and treatment, such as the dramatic reductions in heart disease deaths, have led to new challenges and opportunities for increased cancer control efforts. Future challenges for educators, health care providers, and researchers will require coordinated alliances and partnerships to address the two leading threats to the health of Wisconsin.

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APPENDIX A

**Cancer and Heart Disease Mortality by County, Wisconsin, 2007-2011**

	CANCER		HEART DISEASE	
	<i>Rate</i>	<i>Count</i>	<i>Rate</i>	<i>Count</i>
<b>Wisconsin</b>	174.6	55,901	166.1	55,600
Adams County	216.3	362	178.7	287
Ashland County	215.6	222	194.1	221
Barron County	170.7	553	150.4	530
Bayfield County	181.2	206	189.2	211
Brown County	163.5	1,988	175.2	2,177
Buffalo County	178.8	168	188.9	182
Burnett County	182.5	230	139.7	168
Calumet County	146.9	345	141.4	337
Chippewa County	168.4	615	155.4	595
Clark County	154.4	342	169.8	421
Columbia County	190.6	640	154.5	535
Crawford County	180.0	214	154.7	191
Dane County	157.1	3,400	136.6	3,063
Dodge County	192.0	1,038	180.3	1,057
Door County	157.6	375	169.0	434
Douglas County	194.0	509	167.7	444
Dunn County	165.0	364	155.2	368
Eau Claire County	161.6	832	151.6	836
Florence County	197.4	69	227.0	79
Fond du Lac County	167.1	1,043	160.7	1,095
Forest County	200.2	143	204.3	143
Grant County	185.5	582	165.5	568
Green County	174.3	402	136.2	328
Green Lake County	185.7	267	173.9	278
Iowa County	163.0	227	185.6	262
Iron County	177.7	106	191.6	121
Jackson County	171.0	222	191.3	243
Jefferson County	174.3	782	170.3	767
Juneau County	191.9	348	162.1	300
Kenosha County	191.0	1,529	194.0	1,576
Kewaunee County	137.3	191	169.3	258
La Crosse County	163.8	1,034	132.2	893
Lafayette County	176.2	187	168.4	179
Langlade County	170.7	265	191.0	311
Lincoln County	182.6	378	152.7	341
Manitowoc County	167.5	928	158.5	964
Marathon County	163.4	1,277	143.4	1,209
Marinette County	177.8	557	202.4	675
Marquette County	213.4	256	143.8	165

County	CANCER		HEART DISEASE	
	Rate	Count	Rate	Count
Menominee County	250.1	46	204.2	34
Milwaukee County	194.1	9,111	198.3	9,858
Monroe County	177.6	452	188.4	497
Oconto County	183.0	432	217.0	495
Oneida County	196.8	581	189.9	559
Outagamie County	161.1	1,409	149.0	1,344
Ozaukee County	162.1	866	166.2	929
Pepin County	137.5	74	180.8	105
Pierce County	167.6	302	147.6	269
Polk County	175.1	498	156.2	462
Portage County	163.8	599	139.1	530
Price County	193.3	224	180.7	217
Racine County	180.3	1,923	169.3	1,860
Richland County	166.1	219	157.2	222
Rock County	192.4	1,694	160.3	1,439
Rusk County	170.3	190	175.9	209
St Croix County	173.7	628	156.9	566
Sauk County	180.5	691	183.3	740
Sawyer County	225.2	284	172.3	201
Shawano County	164.2	477	155.1	477
Sheboygan County	166.5	1,156	179.4	1,330
Taylor County	149.8	205	173.2	259
Trempealeau County	166.1	309	169.0	338
Vernon County	173.3	344	170.1	361
Vilas County	191.4	378	187.1	370
Walworth County	180.8	1,021	160.2	926
Washburn County	196.0	250	198.0	252
Washington County	159.5	1,161	143.0	1,062
Waukesha County	160.8	3,677	139.3	3,277
Waupaca County	194.7	736	217.0	913
Waushara County	176.4	334	215.0	393
Winnebago County	176.7	1,636	145.2	1,436
Wood County	156.3	798	153.2	858

Data on underlying cause of death provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).  
Rates are per 100,000 and age-adjusted to the 2000 standard population.  
Death counts are for five-year total.



**Wisconsin Department of Health Services**  
Division of Public Health  
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