The cover features a scenic landscape of rolling green hills and a large evergreen tree in the foreground, with snow-capped mountains in the distance under a cloudy sky. A white horizontal band is positioned across the upper middle of the image, containing the title and release date. The text is in a clean, sans-serif font. The overall color palette is dominated by greens and blues, with a white band for text.

Wisconsin Cancer Survival

September 2016 Release

Wisconsin Department of Health Services
Division of Public Health
Office of Health Informatics
Wisconsin Cancer Reporting System

In 2016, the National Program of Cancer Registries (NPCR) and the North American Association of Central Cancer Registries (NAACCR) for the first time provided cancer survival data based on passive follow-up with death data in the National Death Index. The NAACCR Survival Analysis Task Force provided the resources and guidance to NAACCR state (43) members and also provided five-year relative survival estimates in the Cancer in North America report.

Wisconsin Cancer Reporting System (WCRS) gratefully acknowledges the NAACCR provision of survival data as the foundation for future survival analyses. This paper serves as an introduction and guide for Wisconsin survival data, as an initial step towards monitoring cancer control practices, and ultimately reducing the burden of cancer.

Infographics by Stephanie Hartwig, Office of Health Informatics. Stephanie.Hartwig@wi.gov, 608-266-6760.

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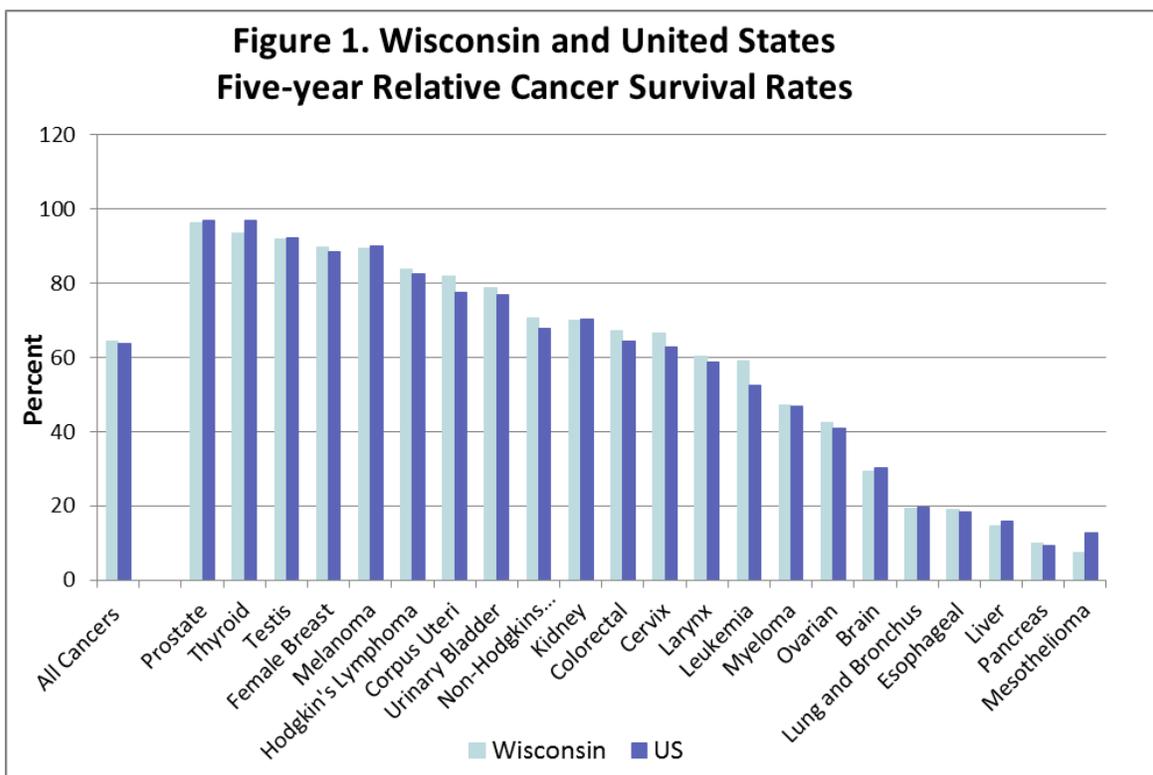
Cancer survival rates or survival statistics tell the percentage of people who survive a certain type of cancer for a specific amount of time. Overall, five-year survival rates don't specify whether cancer survivors are still undergoing treatment at five years or if they've become cancer-free (achieved remission). Cancer survival statistics often use a five-year survival rate, but that doesn't mean cancer can't recur beyond five years. Certain cancers can recur many years after first being found and treated.

Relative survival is a measure of excess mortality experienced by cancer patients. It is calculated by dividing the observed survival from all causes of death for the patient cohort by their expected survival. Relative survival is a theoretical measure representing cancer survival in the absence of other causes of death; it is not what actually happens to cancer patients.

Relative survival is useful as a theoretical statistic for comparing rates over time or between different geographic areas. These rates compare people with cancer to demographically similar people in the overall population. For example, if the five-year relative survival rate for a specific type of cancer is 90 percent, it means that people who have that cancer are, on average, about 90 percent as likely as people who don't have that cancer to live for at least five years after being diagnosed.

In Wisconsin, the overall five-year survival rate for all cancer is 64 percent. This means that of all people who have cancer, 64 out of every 100 are living five years after diagnosis. An overall survival rate includes people of all ages and health conditions who have been diagnosed with cancer, including those diagnosed very early and those diagnosed very late.

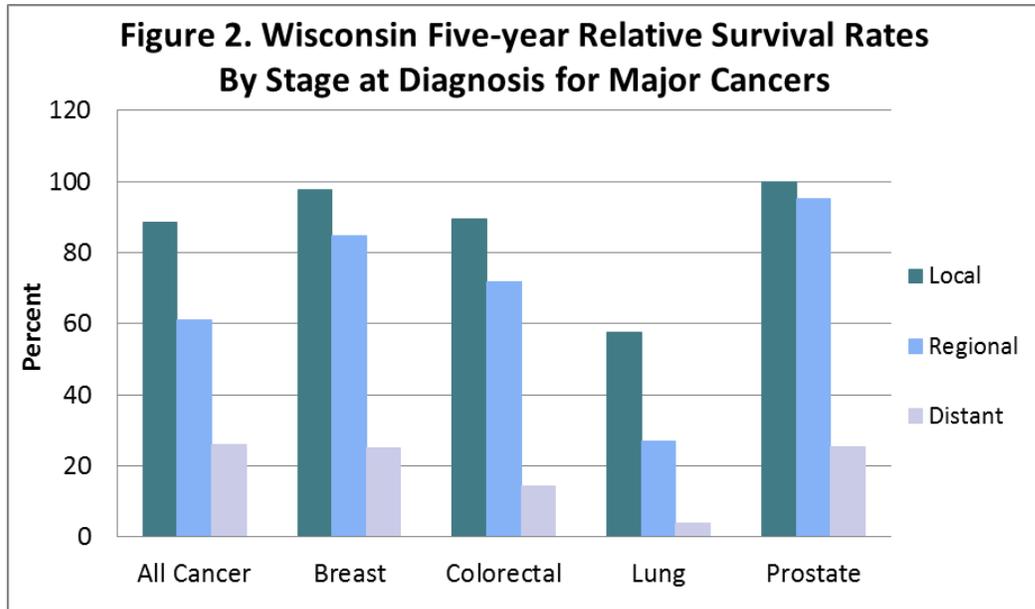
Figure 1 shows that five-year relative survival patterns in Wisconsin are similar to survival patterns reported for the U.S. (NAACCR U.S.) with the overall survival rate in Wisconsin being marginally higher than the rate for the U.S. (64.3 compared with 63.8, respectively).



Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

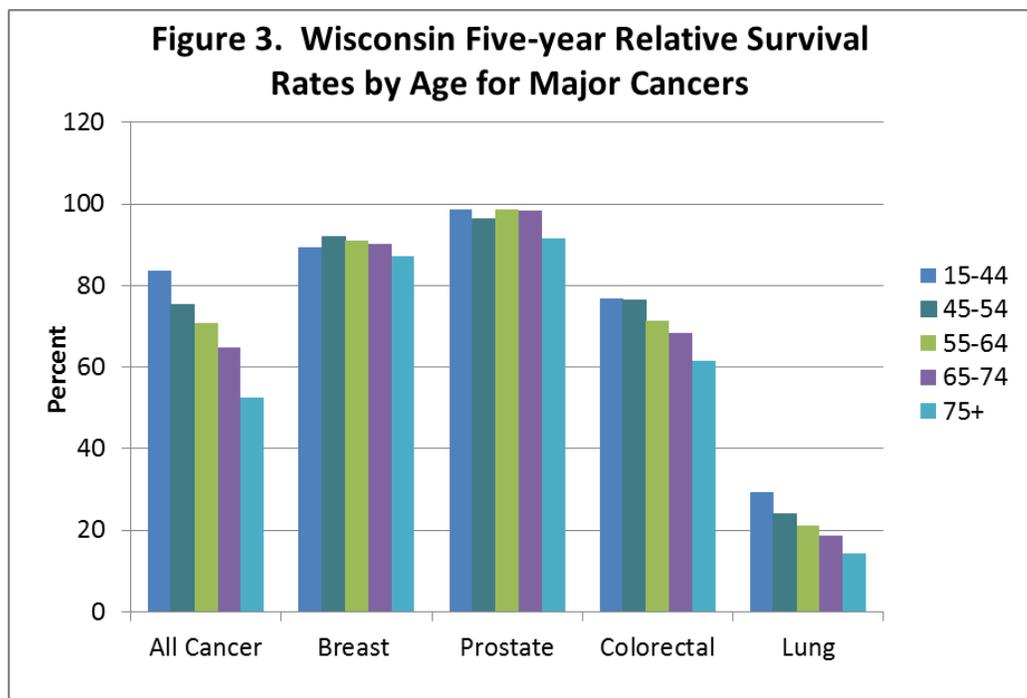
There is a great variation in survival between cancer sites. For both Wisconsin and the U.S., the five cancers with the highest survival rates are prostate, thyroid, testis, female breast, and melanoma, while the five cancers with the lowest survival rates are mesothelioma, pancreas, liver, esophagus, and lung/bronchus. More detailed survival rates by race, sex, age, and stage at diagnosis are shown with site-specific tables.

The survival rates are higher for patients when cancer is diagnosed early, so 88 percent survive for five years when cancer is diagnosed at the early local state (Figure 2). However, this advantage varies greatly by major cancer site, ranging from 100 percent for prostate cancer to 57 percent for lung cancer.



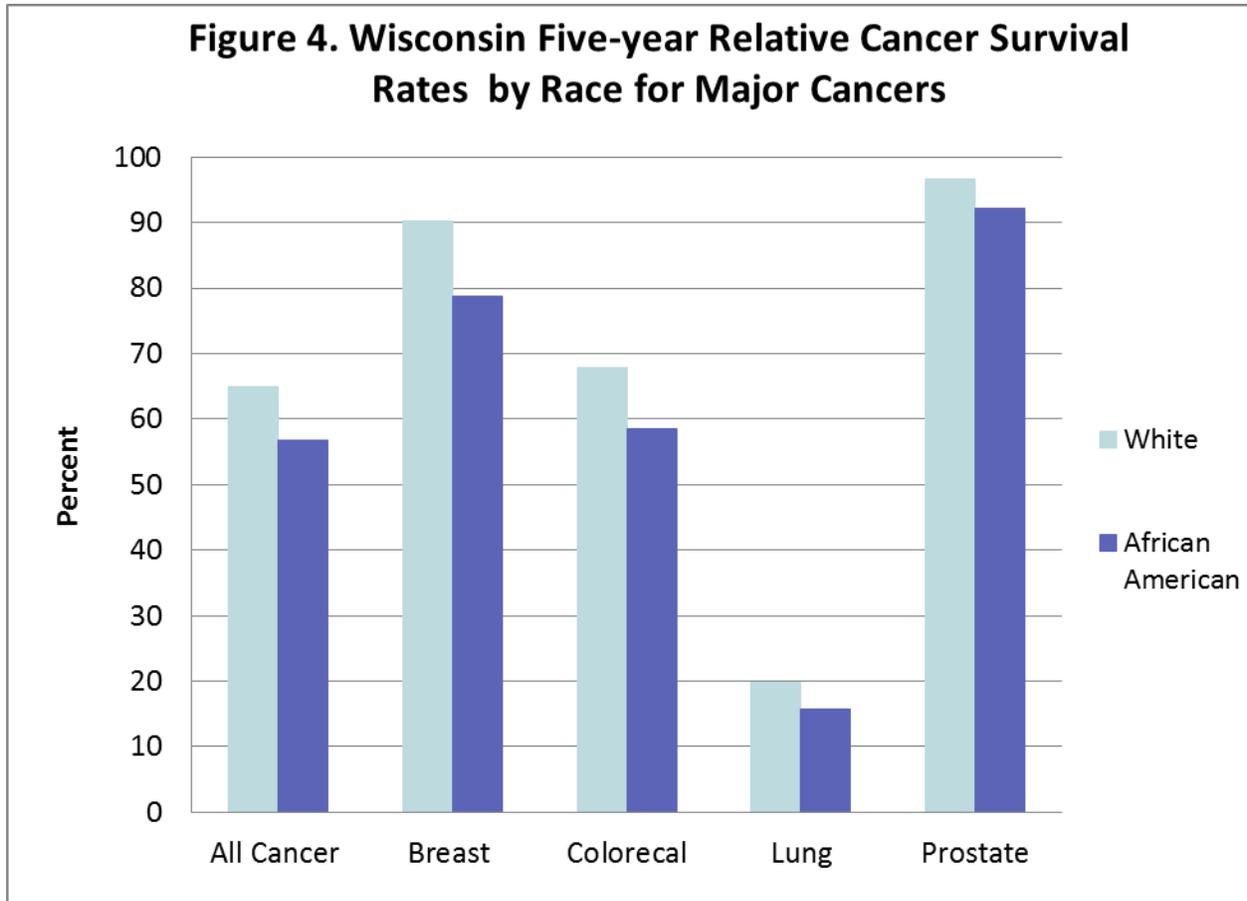
Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Survival also increases among the younger ages, so 84 percent of younger adults age 15-44 survive for five years (Figure 3). For some cancers this demographic pattern is less evident, particularly breast and prostate cancers. For lung and colorectal cancers, wider gaps in survival appear between age groups.



Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Although racial differences were not the focus of this report, the data presented have implications for cancer control programs. As shown in Figure 4, survival rates for African Americans are lower than survival rates for Whites across many cancers. This presents an opportunity for future programs to implement measures to improve survival among African Americans.



Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

This report compares five-year relative survival rates for Wisconsin with U.S. rates and provides detailed rates based on sex, race, stage of disease at diagnosis, and age for major sites (lung, colorectal, breast, and prostate) and selected sites (brain, pancreas, cervical, ovarian, testicle, and melanoma). This analysis included malignant cancers, in patients aged 15-99, diagnosed during 2005-2011 with follow-up/death ascertainment through the study cutoff date of Dec 31, 2011.

Cases reported solely via death certificates or autopsy were excluded because of the scarcity of information. These exclusion criteria resulted in counts with fewer cases than the total malignant case counts published for standard incidence rates, and therefore survival counts are not comparable to incidence counts or age-adjusted rates based on total number of malignant cancers.

Follow up for these cases is conducted annually by linkages to mortality databases. Five-year relative survival rates were computed for Wisconsin patients by site, sex, race, stage at diagnosis, and age. SEER*Stat (Version 8.2.1) was used to perform the survival calculations.¹ WCRS provided the specified data for the NAACCR analysis.

Survival calculations were performed using the actuarial method on monthly intervals, and 60-month age-standardized relative survival rates (RSR) are reported in the results. The relative survival was calculated using the Ederer II method to compute expected survival. The Ederer II method calculates the expected survival rates for patients under observation at each point of follow-up so the matched individuals are considered to be at risk until the corresponding cancer patient dies or is censored.

Cases were censored at an achieved age of 100 years. Expected survival was estimated from life tables matched to the cancer patients by age, sex, year, and geographic area, and for the U.S., also by race and socioeconomic status.² Please refer to the complete NAACCR Survival Methods and Notes for a more complete description.

<http://www.naacr.org/LinkClick.aspx?fileticket=p4mnWWbQg9s%3d&tabid=161&mid=523>

Because the excess mortality of cancer is often age dependent, relative survival estimates were age-standardized using the International Cancer Survival Standards (ICSS) and age groups 15-44, 45-54, 55-64, 65-74, and 75+.³ These are the default age groups used for all sites in this report; other analyses may modify the age groups to reflect unique patterns for certain cancers.

Survival statistics were not calculated if the number of cases was fewer than 10. If the number of cases was between 10 and 49, age standardization was not performed and unstandardized RSR are shown. If the number of cases was 50 or more, age-standardized RSRs were calculated.

1. SEER*Stat version 8.2.1; produced by the Surveillance Research Program of the Division of Cancer Control and Population Sciences, National Cancer Institute, and Information Management Services, Inc., Calverton, Maryland.

2. Ederer F, Heise H (1959). Instructions to IBM 650 programmers in processing survival computations, methodological note 10. End Results Evaluation Section, National Cancer Institute.

3 Corazziari I, Quinn M, 3. Corazziari I, Quinn M, Capocaccia R. Standard cancer patient population for age standardizing survival ratios. Eur J Cancer. 2004 Oct;40(15):2307-16.

The strength of the current NAACCR survival data is in the standardized and well-documented estimates based on the widest populations for national coverage. The NAACCR Survival Analysis Task Force provided the resources and guidance to NAACCR state members and provided five-year relative survival estimates in the Cancer in North America report. Survival reports will be generated for inclusion in future NAACCR reports and provided to state members. The survival rates in this report are the first ever published and should therefore be considered as provisional and subject to modification in subsequent analyses and publications.

This approach has a time limitation in that even the most recent survival estimates are exclusively based on patients diagnosed many years ago. Recent progress in cancer diagnosis and treatment are not reflected, especially in cancer sites where there have been dramatic improvements in survival. As treatments are improving over time, people who are now being diagnosed with cancer may have a better outlook than these statistics indicate.

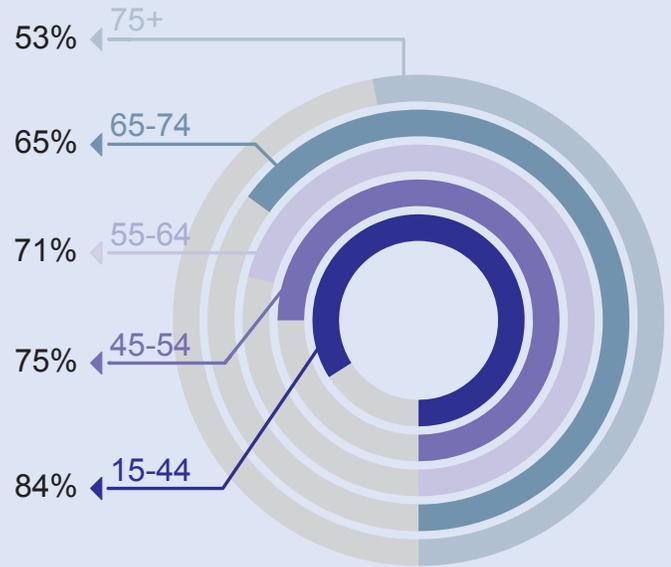
Population-based survival (passive follow-up) derived from cancer registries differs in several important ways from survival derived in clinical trial settings and from SEER registries that conduct active follow-up of cancer patients. In clinical trials and active follow-ups there is a detailed review of the medical record to ascertain the cause of death, whereas in population-based registry settings death certificates have inherent inaccuracies and limitations.

Deaths are more likely to be missed during passive follow-up that would have been caught during active follow-up, and thus survival rates provided by passive follow-up may overestimate actual survival rates. Strict criteria for linkages may require manual review and human error and missed matches may be the result. Additionally, if death files have not captured the correct cause of death, the vital status will remain unchanged. Lastly, it is important to remember that survival rates based on previous outcomes of large numbers of people who had cancer do not predict what will happen in any particular person's case.

Wisconsin Cancer Survival

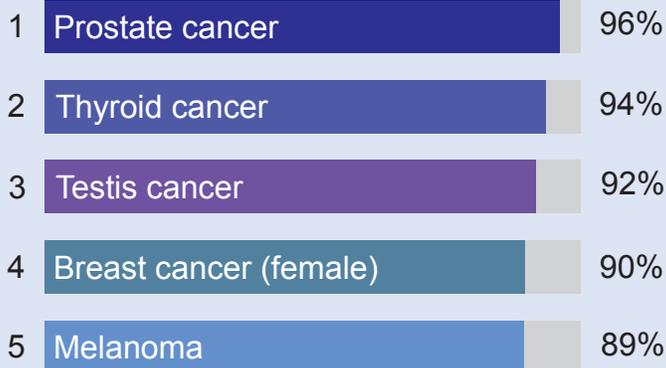
of people with cancer in Wisconsin survive **64%** **5 years** after being diagnosed.

AGE & CANCER SURVIVAL

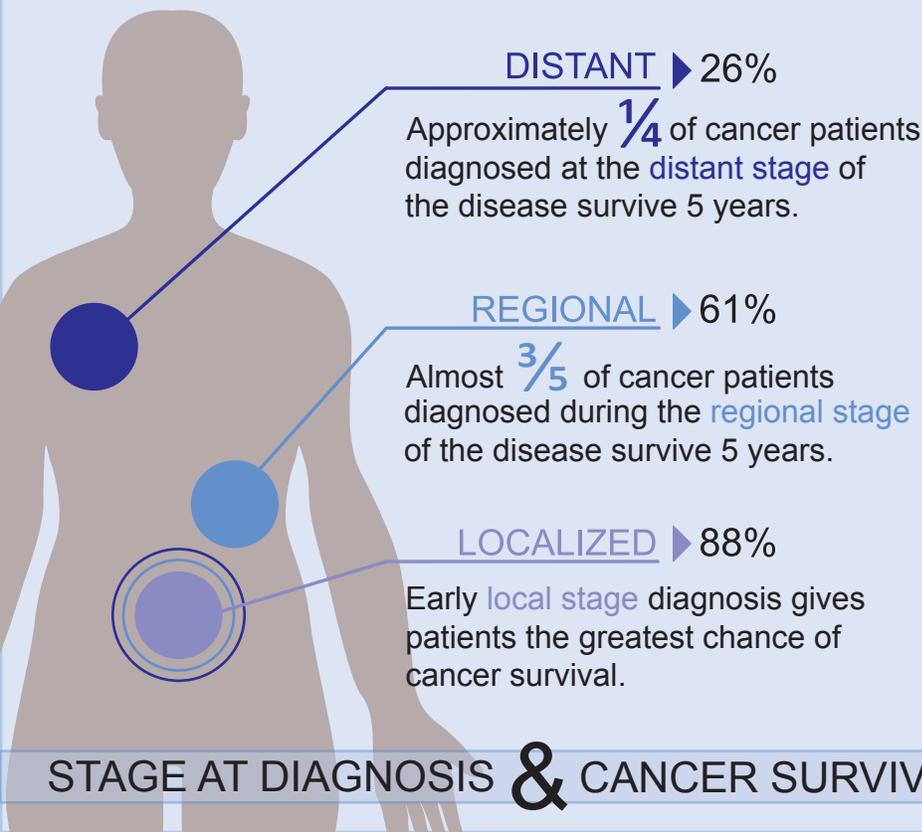


The oldest age group is the **largest**, **fastest-growing**, and **most cancer-prone**.

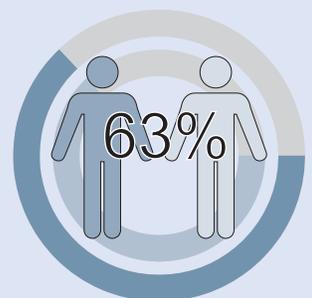
HIGHEST SURVIVAL RATES



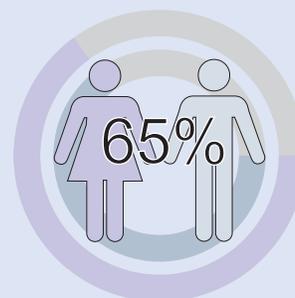
SEX AND RACE & CANCER SURVIVAL



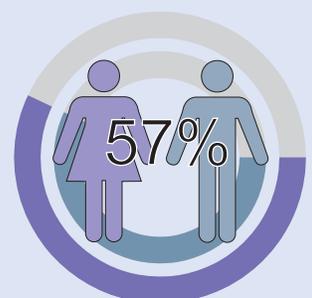
Female



Male



White



African American

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 1. Wisconsin Five-Year Relative Survival Rates, All Cancer (Standardized)

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	64.3 (193,433)	64.0 - 64.6	63.5 (100,536)	62.9 - 63.8	65.2 (92,827)	64.8 - 65.6
Race						
White	64.9 (179,439)	64.6 - 65.2	64.0 (93,179)	63.6 - 64.5	65.9 (86,260)	65.4 - 66.3
African American	56.8 (8,175)	54.9 - 58.7	57.6 (4,417)	54.9 - 60.4	55.9 (3,758)	53.3 - 58.6
Stage						
Localized	88.4 (85,529)	87.9 - 88.9	88.4 (44,714)	87.7 - 89.0	88.2 (40,815)	87.5 - 88.9
Regional	61.2 (40,983)	60.4 - 61.9	57.5 (18,774)	56.3 - 58.6	63.9 (22,209)	62.9 - 65.0
Distant	26.1 (45,471)	25.5 - 26.7	26.1 (24,417)	25.3 - 26.9	26.3 (21,054)	25.4 - 27.1
Unknown	47.7 (14,983)	46.6 - 48.7	48.8 (7,713)	47.3 - 50.2	46.2 (7,273)	44.7 - 47.6
Age Group*						
15-44	83.7 (14,666)	83.0 - 84.5	80.2 (5,495)	78.9 - 81.5	85.8 (9,171)	84.9 - 86.7
45-54	75.4 (26,305)	74.8 - 76.1	70.2 (11,797)	69.1 - 71.2	79.7 (14,508)	78.8 - 80.5
55-64	70.8 (43,595)	70.2 - 71.3	70.8 (24,592)	70.0 - 71.6	70.7 (19,003)	69.8 - 71.6
65-74	64.7 (47,465)	64.1 - 65.3	66.7 (27,316)	65.8 - 67.5	62.1 (20,149)	61.1 - 63.0
75+	52.5 (53,895)	51.7 - 53.3	53.6 (26,760)	52.5 - 54.7	51.4 (27,135)	50.4 - 52.5

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*Age Group values are not age-standardized.

Standardized total counts (N) for Total and Race exceed total counts for Stage and Age because standardized counts include all cancers, while Stage and Age are limited to one case per person.

In Wisconsin, 64 percent of people diagnosed with cancer survive at least five years. The survival rate for “Total” cancer includes people of all ages and health conditions who have been diagnosed with cancer, including those diagnosed very early and those diagnosed very late. In Wisconsin, the proportion of persons with cancer who survived five years was higher among females (65%) compared with males (63%), but lower among African Americans (57%) compared with Whites (66%). The five-year survival was highest among those diagnosed with cancer before the age of 45 (84%) and decreased with increasing age. By stage at diagnosis there are also significant differences in survival, with a precipitous drop for those diagnosed at the distant stage of disease.

Lung and Bronchus Cancer

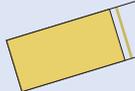
Lung cancer is the **LEADING CAUSE**

of cancer deaths in Wisconsin.

<20% of people survive 5 years after being diagnosed

Lung cancer causes more cancer deaths than **colorectal**, **breast**, and **prostate** cancers **combined**

80% of lung cancer deaths are caused by smoking.



AGE & CANCER SURVIVAL



The **youngest age group** is twice as likely to survive lung cancer as the **oldest age group**.

SEX AND RACE & CANCER SURVIVAL

DISTANT ▶ 4%

Approximately **50%** of lung cancer cases are diagnosed at the **distant stage** of the disease.

REGIONAL ▶ 27%

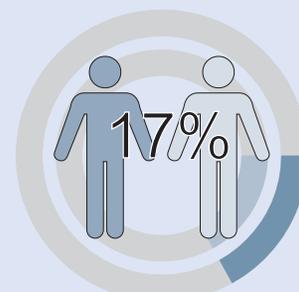
About **1/4** of patients diagnosed with lung cancer at the **regional stage** survive 5 years.

LOCALIZED ▶ 57%

Only about **20%** of lung cancers are detected at the **local stage**.



Female



Male



White



African American

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 2. Wisconsin Five-Year Relative Survival Rates, Lung and Bronchus Cancer

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	19.3 (25,488)	18.6 - 20.1	16.7 (13,478)	15.7 - 17.7	22.1 (12, 010)	21.0 - 23.2
Race						
White	19.8 (23,231)	19.1 - 20.6	17.1 (12,237)	16.1 - 18.2	22.7 (10,994)	21.6 - 23.9
African American	15.8 (1,298)	12.5 - 19.4	12.9 (735)	9.3 - 17.2	20.2 (563)	15.1 - 25.9
Stage						
Localized	57.5 (4,787)	55.3 - 59.7	53.0 (2,286)	49.7 - 56.1	61.8 (2,501)	58.9 - 64.6
Regional	27.0 (6,024)	25.3 - 28.7	25.2 (3,169)	22.9 - 27.5	28.6 (2,855)	26.1 - 31.2
Distant	3.9 (13,422)	3.4 - 4.5	3.4 (7,327)	2.7 - 4.3	4.5 (6,095)	3.7 - 5.5
Unknown	9.7 (1,555)	7.5 - 12.3	7.4 (841)	4.9 - 10.5	12.8 (714)	9.1 - 17.2
Age Group						
15-44	29.2 (450)	24.3 - 34.3	24.8 (185)	17.9 - 32.3	32.3 (265)	25.5 - 39.3
45-54	24.1 (2,323)	21.9 - 26.3	19.1 (1,166)	16.3 - 22.0	29.1 (1,157)	25.8 - 32.5
55-64	21.1 (5,442)	19.7 - 22.5	18.6 (3,007)	16.8 - 20.5	24.2 (2,435)	22.1 - 26.5
65-74	18.6 (8,199)	17.4 - 19.9	16.2 (4,360)	14.7 - 17.8	21.3 (3,839)	19.4 - 23.2
75+	14.2 (9,138)	13.0 - 15.4	12.8 (4,791)	11.2 - 14.5	15.7 (4,347)	14.0 - 17.6

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*Age Group values are not age-standardized.

Lung cancer is the leading cause of cancer deaths for men and women in Wisconsin, resulting in approximately 4,000 new cases and 2,900 deaths each year. More people die from lung cancer than from colorectal, breast and prostate cancers combined. The five-year survival rate for lung cancer is 57 percent for cases detected when the disease is still localized (within the lung). However, only 20 percent of lung cancers are detected at the local stage. When diagnosed at the distant stage, which accounts for approximately 50 percent of cases, the survival rate is 4 percent. Although lung cancer has one of the lowest survival rates across sex, race, and age groups, there are patterns of variation in that African American males have a significantly lower survival rate than white females, and the rates decline with increasing age.

Colorectal Cancer

Colorectal cancer is the **THIRD LEADING CAUSE** of cancer death for both **MEN** and **WOMEN**

However...

colorectal cancer deaths have **declined** over the past **30 YEARS**

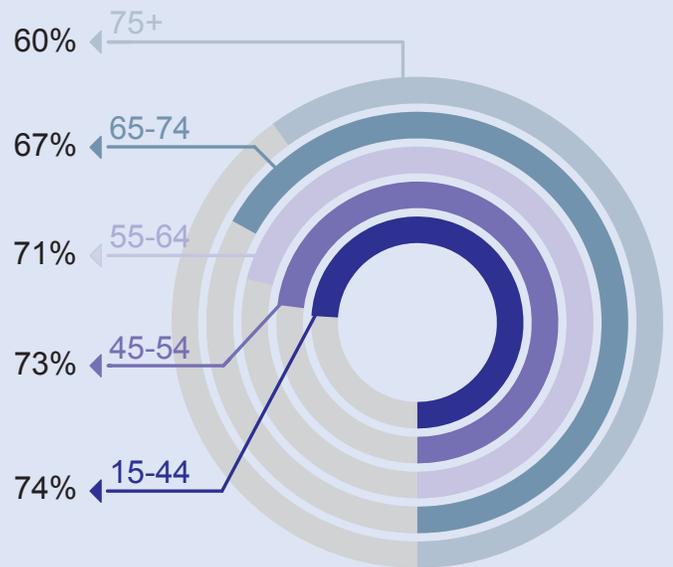
mid-1980s

improved treatment

earlier diagnosis

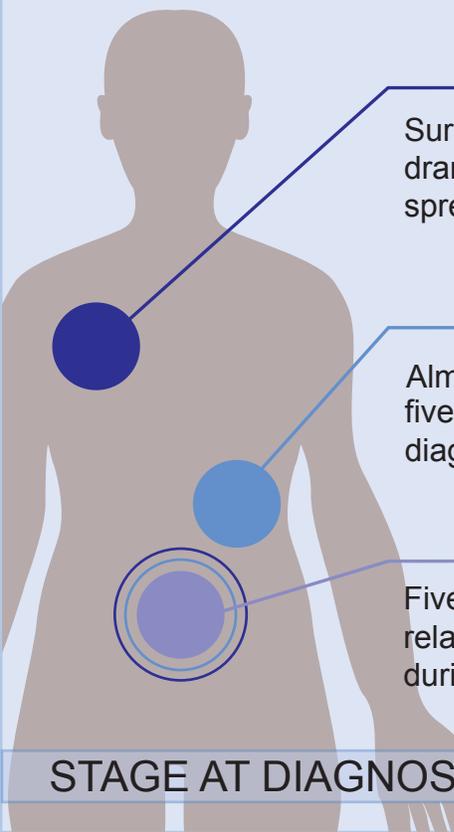
Present

AGE & CANCER SURVIVAL



Overall, **67%** of colorectal cancer patients survive **5 years**. Survival is highest for the **youngest age group**.

SEX AND RACE & CANCER SURVIVAL



DISTANT ▶ 14%

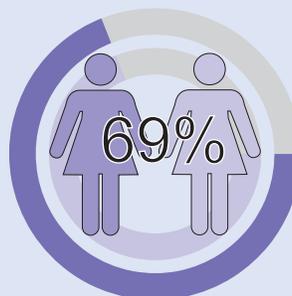
Survival rates for colorectal cancer dramatically **decrease** if the cancer spreads to the **distant stage**.

REGIONAL ▶ 72%

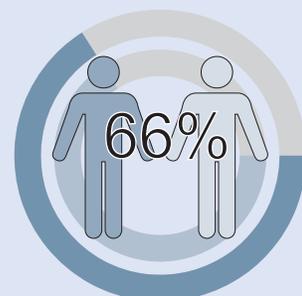
Almost **3/4** of patients survive five years if their cancer is diagnosed at the **regional stage**.

LOCALIZED ▶ 89%

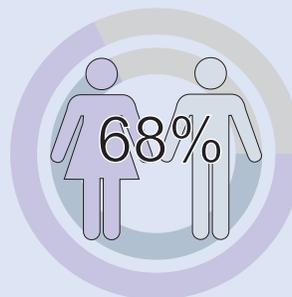
Five-year survival rates are relatively high for those diagnosed during the **local stage**.



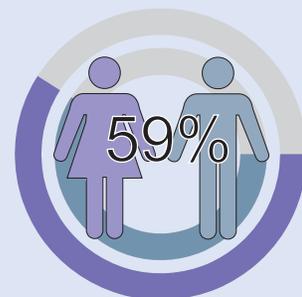
Female



Male



White



African American

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 3. Wisconsin Five-Year Relative Survival Rates, Colorectal Cancer

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	67.2 (17,824)	66.1 - 68.3	65.9 (9,017)	64.3 - 67.5	68.6 (8,807)	67.0 - 70.1
Race						
White	67.9 (16,529)	66.8 - 69.0	66.6 (8,357)	64.9 - 68.2	69.4 (8,172)	67.8 - 70.9
African American	58.6 (802)	52.6 - 64.2	53.3 (408)	44.6 - 61.4	61.3 (394)	53.1 - 68.6
Stage						
Localized	89.4 (7,429)	87.8 - 90.8	87.9 (3,794)	85.5 - 90.0	90.9 (3,635)	88.7 - 92.7
Regional	71.7 (5,821)	69.7 - 73.6	71.6 (2,914)	68.6 - 74.3	72.1 (2,907)	69.3 - 74.7
Distant	14.4 (3,326)	12.6 - 16.3	12.5 (1,730)	10.1 - 15.1	16.5 (1,596)	13.9 - 19.3
Unknown	59.0 (1,497)	55.7 - 62.1	55.9 (704)	51.2 - 60.4	62.5 (793)	57.9 - 66.7
Age Group*						
15-44	73.8 (850)	69.8 - 77.4	71.0 (442)	65.0 - 76.1	76.8 (408)	71.2 - 81.5
45-54	73.0 (2,211)	70.4 - 75.4	70.3 (1,228)	66.6 - 73.7	76.4 (983)	72.6 - 79.7
55-64	71.0 (3,119)	68.7 - 73.2	70.8 (1,872)	67.8 - 73.6	71.4 (1,247)	67.8 - 74.6
65-74	67.3 (4,236)	65.2 - 69.4	66.5 (2,305)	63.4 - 69.4	68.3 (1,931)	65.2 - 71.2
75+	60.2 (7,434)	58.0 - 62.3	58.4 (3,186)	54.9 - 61.7	61.4 (4,248)	58.5 - 64.1

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*Age Group values are not age-standardized.

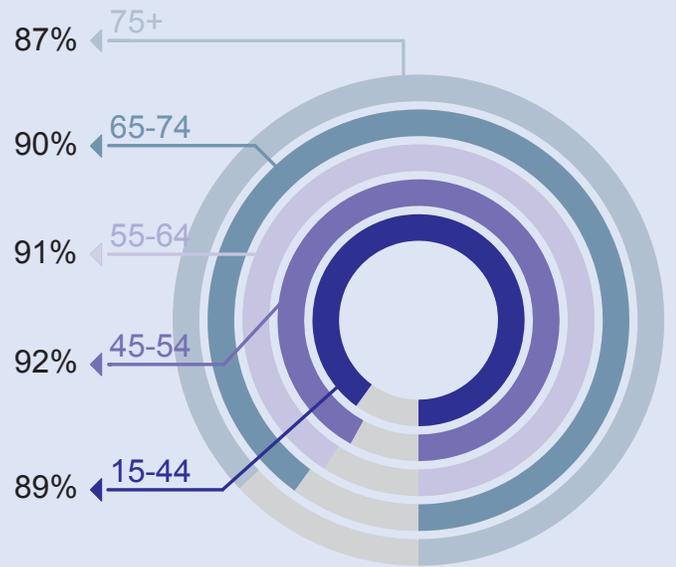
Colorectal cancer is the third leading cause of cancer death in both men and women. However, when colorectal cancer is found early, it is highly curable. The death rate from colorectal cancer has been declining since the mid-1980s because it is diagnosed earlier and treatments have improved.

The five-year survival rate for all people with colorectal cancer is 67 percent. However, survival rates for colorectal cancer vary greatly based on the stage of disease at diagnosis. The five-year survival rate of people with localized stage colorectal cancer is 89 percent. If the cancer has spread to surrounding tissues or organs and/or the regional lymph nodes, the five-year survival rate is 72 percent. If the cancer has spread to distant parts of the body, the five-year survival rate is 14 percent. African Americans are less likely than Whites to survive colorectal cancer, and the racial disparity is greater for males than for females.

Breast Cancer



AGE & CANCER SURVIVAL



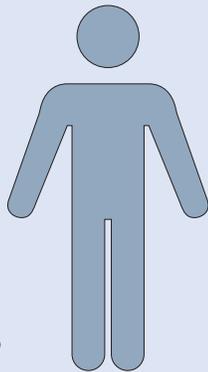
Unlike many other cancers, 5-year **breast cancer** survival varies little by age group.

BREAST CANCER IN MEN

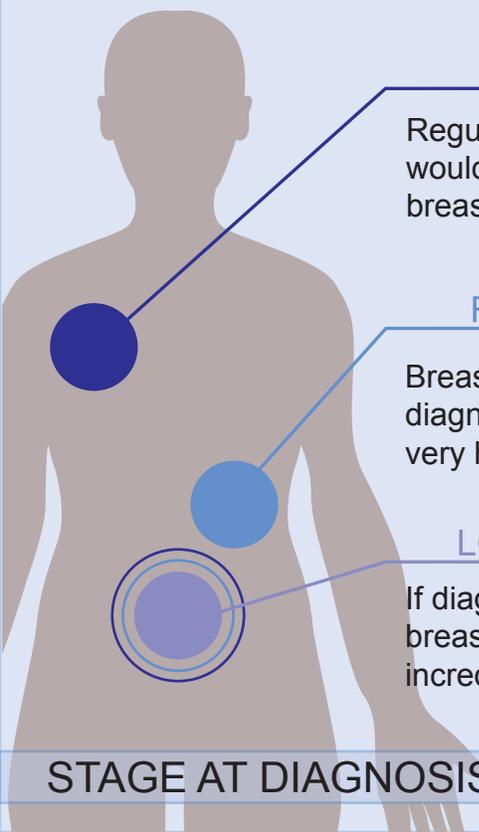
50 cases per year

10 deaths per year

Diagnosed in later stages



SEX AND RACE & CANCER SURVIVAL



DISTANT ▶ 25%

Regularly scheduled mammograms would prevent most **late stage** breast cancer diagnoses.

REGIONAL ▶ 85%

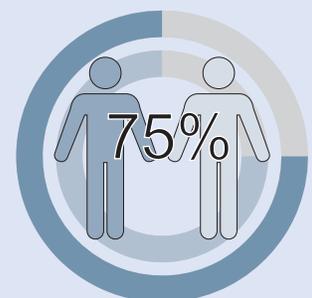
Breast cancer survival rates, when diagnosed at the **regional stage**, are very high.

LOCALIZED ▶ 98%

If diagnosed at the **local stage**, breast cancer survival rates are incredibly high!



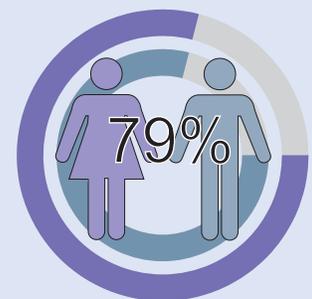
Female



Male



White



African American

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 4. Wisconsin Five-Year Relative Survival Rates, Breast Cancer

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	89.5 (27,784)	88.6 - 90.3	74.6 (280)	64.6 - 82.2	89.6 (27,504)	88.7 - 90.4
Race						
White	90.1 (26,147)	89.2 - 90.9	75.7 (255)	65.5 - 83.3	90.2 (25,892)	89.3 - 91.0
African American	78.9 (1,104)	72.3 - 84.1	83.6 (14)	20.3 - 98.0*	78.8 (1,090)	71.5 - 84.3
Stage						
Localized	97.7 (17,321)	96.5 - 98.5	86.5 (136)	71.8 - 93.8	97.8 (17,185)	96.6 - 98.6
Regional	84.9 (8,398)	83.0 - 86.6	70.1 (109)	50.9 - 83.0	85.1 (8,289)	83.2 - 86.8
Distant	24.9 (1,458)	21.3 - 28.7	-	-	25.3 (1,436)	21.6 - 29.1
Unknown	74.8 (933)	70.7 - 78.4	-	-	74.8 (920)	70.7 - 78.4
Age Group*						
15-44	89.3 (2,887)	87.6 - 90.7	90.8 (16)	43.9 - 98.9	89.3 (2,871)	87.6 - 90.7
45-54	91.8 (5,878)	90.8 - 92.8	83.7 (40)	56.2 - 94.6	91.9 (5,838)	90.8 - 92.8
55-64	90.8 (6,506)	89.6 - 91.9	82.3 (78)	63.7 - 92.0	90.9 (6,428)	89.7 - 92.0
65-74	89.9 (6,057)	88.3 - 91.3	61.5 (66)	42.5 - 76.0	90.3 (5,991)	88.7 - 91.6
75+	87.0 (6,503)	84.5 - 89.1	73.9 (80)	46.5 - 88.8	87.1 (6,428)	84.5 - 89.2

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

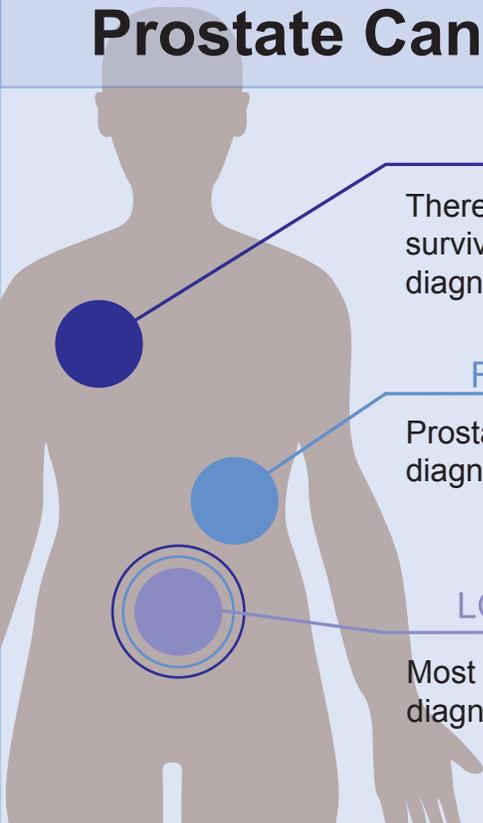
Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*African American male numbers are too small for age-standardization. Age Group values are not age-standardized.

Breast cancer is the most common cancer among women, accounting for nearly one-third of their cancers, or approximately 4,300 cases each year. It is the second leading cause of cancer death among women, causing over 750 deaths each year. For all female breast cancer, the five-year survival rate is 90 percent and the relatively high rate is found among all ages. Approximately 50 men are diagnosed with breast cancer and 10 men die from the disease annually. Men tend to be diagnosed at a later stage than women and have a lower survival rate of 75 percent. Survival rates for African American women are lower than for white women, 79 percent compared with 90 percent, respectively. By stage at diagnosis, the survival rate is 98 percent for female breast cancer diagnosed at the local stage, in contrast to 25 percent if the cancer has spread to a distant part of the body.

Prostate and Testicular Cancer

Prostate Cancer



DISTANT ▶ 25%

There is a sharp drop off in survival if prostate cancer is diagnosed at the **distant stage**.

REGIONAL ▶ 95%

Prostate cancer survival is still high if diagnosed during the **regional stage**.

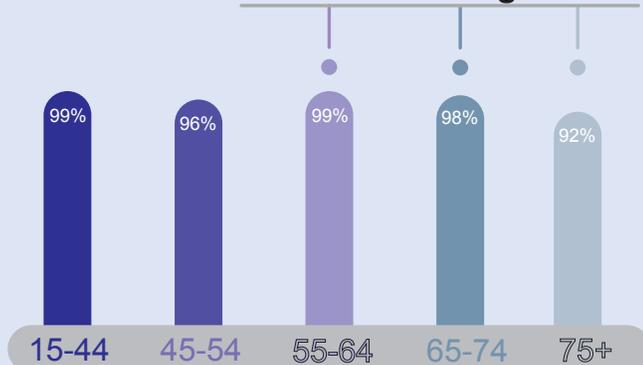
LOCALIZED ▶ 99%

Most prostate cancer cases are diagnosed during the **local stage**.



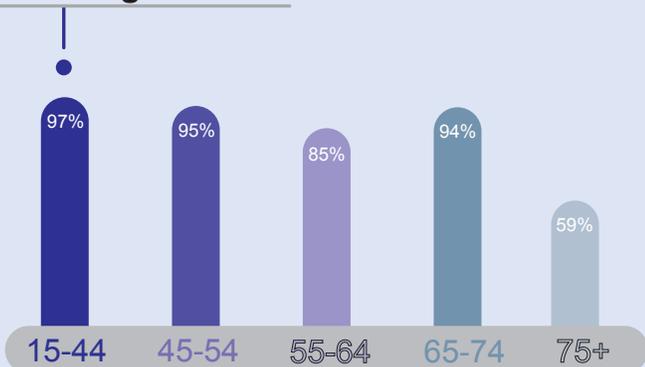
Most common male cancer

Usually diagnosed in men over the age of 55



Fewer than **10 deaths per year**

Most common in men ages 15-35



Testicular Cancer

81% ◀ **DISTANT**

Even at the **distant stage**, testicular cancer survival is relatively high.

97% ◀ **REGIONAL**

Testicular cancer survival is high if diagnosed during the **regional stage**.

95% ◀ **LOCALIZED**

One of the most treatable and survivable cancers if diagnosed at the **local stage**.

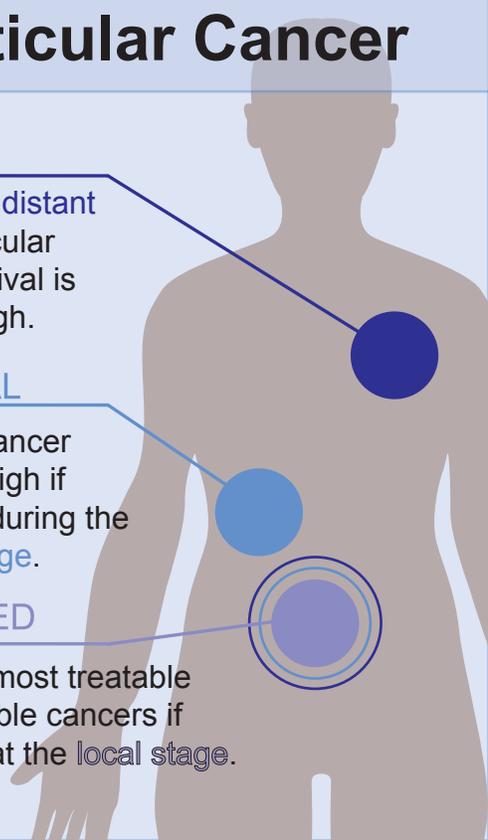


Table 5. Wisconsin Five-Year Relative Survival Rates, Prostate and Testicular Cancer

	Prostate Cancer RSR	95% CI	Testicular Cancer RSR	95% CI
Total	96.2 (29,449)	95.3 - 97.0	91.8 (1,284)	85.8 - 95.3
Race				
White	96.6 (27,183)	95.7 - 97.4	91.8 (1,227)	85.7 - 95.4
African American	92.2 (1,567)	84.6 - 96.1	87.8 (19)	58.3 - 96.9*
Stage				
Localized	99.8 (22,552)	99.2 - 100.0	95.0 (880)	82.0 - 98.7
Regional	95.1 (4,044)	90.9 - 97.4	96.9 (264)	93.1 - 98.6
Distant	25.4 (1,502)	21.7 - 29.3	80.7 (110)	70.8 - 87.5
Unknown	87.2 (1,352)	83.9 - 89.8	89.0 (35)	70.4 - 96.2*
Age Group*				
15-44	98.6 (149)	84.0 - 99.9	97.4 (1,008)	95.9 - 98.4
45-54	96.4 (3,086)	95.1 - 97.4	95.1 (197)	88.6 - 98.0
55-64	98.6 (9,651)	97.9 - 99.0	85.1 (48)	64.2 - 94.3
65-74	98.3 (10,364)	96.9 - 99.1	94.2 (20)	29.6 - 99.7
75+	91.5 (6,198)	88.8 - 93.7	59.1 (11)	15.6 - 86.2

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*Number is too small for age-standardization. Age Group values are not age-standardized.

Prostate cancer is the most commonly diagnosed cancer and second leading cause of cancer death among men, typically men aged 55 or older. Reflected in the high five-year survival rate, the majority of prostate cancers are diagnosed at the early local stage; prostate cancer is commonly slow to grow and may never be life-threatening. Survival approaches 100 percent for localized prostate cancers. However, the survival rate drops to 25 percent for distant stage prostate cancers. There are more than 600 prostate cancer deaths each year in Wisconsin.

Testicular cancer by contrast is relatively rare and tends to occur in younger men; it is the most common cancer in men ages 15 to 35. Like prostate cancer, testicular cancer is one of the most treatable and survivable cancers, with a five-year survival rate of 95 percent for localized disease. Unique among cancers, the five-year survival for distant metastatic testicular cancer is impressive at over 80 percent. There are fewer than 10 testicular cancer deaths annually in Wisconsin.

Brain and Nervous System Cancer

29%

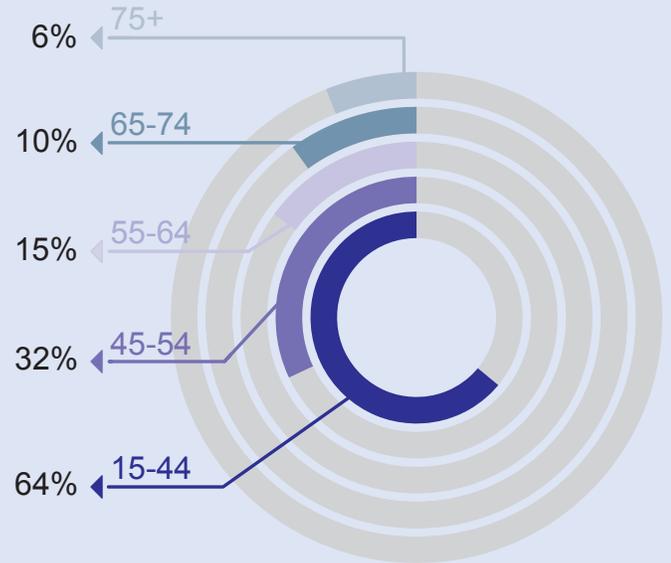
of people with **brain** and **nervous system** cancers survive **5 YEARS** after being diagnosed.

BRAIN CANCER IMPACT

Can interfere with essential brain and nervous system function

Surgery to remove brain tumors can be risky and cause complications

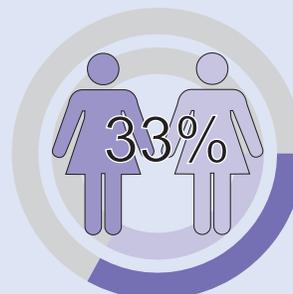
AGE & CANCER SURVIVAL



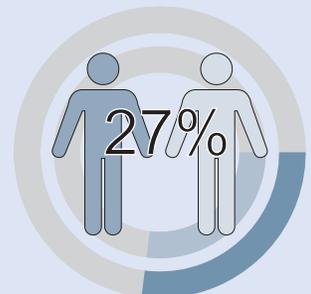
Brain cancer survival is **highly** related to age. 64% of people in the **youngest age group** survive 5 years, compared to 6% in the **oldest**.

SEX AND RACE & CANCER SURVIVAL

While **brain** and **spinal cord** tumors can spread to other parts of the **nervous system** they rarely spread to **other organs.**



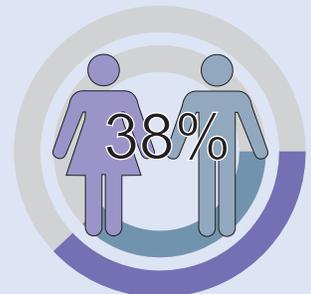
Female



Male



White



African American

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 6. Wisconsin Five-Year Relative Survival Rates, Brain and Nervous System Cancer

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	29.3 (2,812)	27.3 - 31.3	26.5 (1,598)	23.9 - 29.1	32.8 (1,214)	29.7 - 35.9
Race						
White	29.8 (2,635)	27.7 - 31.9	26.8 (1,499)	24.1 - 29.6	33.5 (1,136)	30.3 - 36.7
African American	38.2 (63)*	23.0 - 53.3	47.5 (36)	28.3 - 64.5*	30.3 (27)	10.3 - 53.5*
Age Group*						
15-44	64.2 (585)	58.9 - 69.0	62.2 (337)	54.8 - 68.8	66.6 (248)	58.6 - 73.4
45-54	31.9 (489)	26.8 - 37.1	28.5 (289)	22.2 - 35.1	36.5 (200)	28.1 - 44.9
55-64	14.7 (619)	11.1 - 18.8	11.3 (356)	7.0 - 16.6	19.3 (263)	13.6 - 25.7
65-74	9.9 (553)	6.8 - 13.6	6.5 (326)	3.2 - 11.4	14.0 (227)	9.0 - 20.2
75+	6.0 (566)	3.6 - 9.2	3.7 (290)	1.4 - 8.0	7.9 (276)	4.6 - 12.3

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*African American numbers are too small for age-standardization. Age Group values are not age-standardized.

Tumors of the brain and spinal cord differ in some important ways from other cancers. One of the dangers of other cancers is that they can spread throughout the body. Although tumors starting in the brain or spinal cord can spread to other parts of the central nervous system, they rarely spread to other organs. Because tumors in the brain or spinal cord rarely spread to other parts of the body, there is not a reliable formal staging system; survival data by stage are not available for this analysis. These tumors are dangerous because they can interfere with essential functions of the brain and nervous system, and surgery for tumor removal poses risks and complications. Survival is highly related to age at diagnosis, ranging from 64 percent among those between the ages of 15 and 45 to only 6 percent among those aged 75 and older.

Melanoma of the Skin

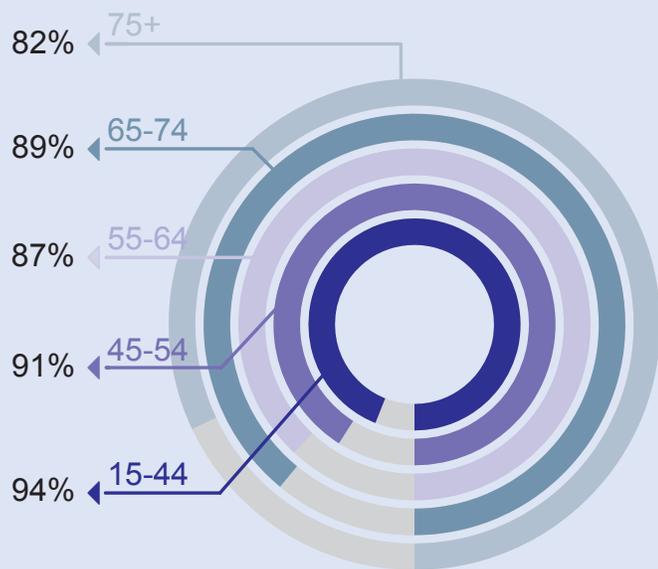
Melanoma is one of the fastest-growing cancers, with the number of cases

INCREASING

250%

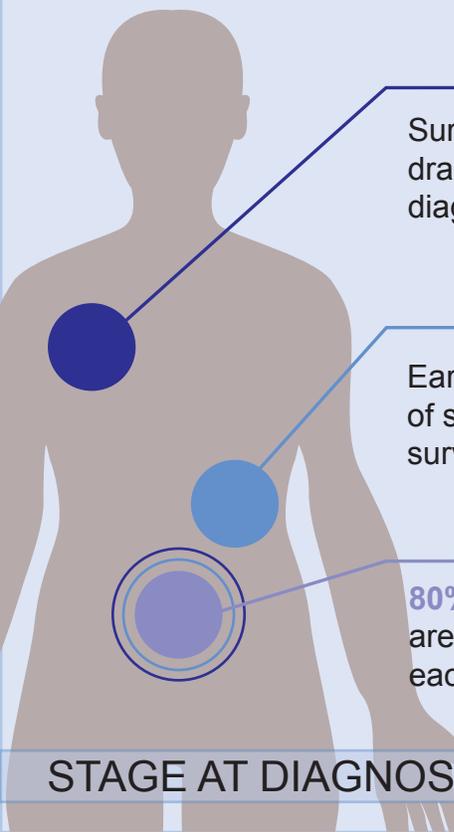
from **1995** to **2013**

AGE & CANCER SURVIVAL



As with many cancers, survival rates increase in the **younger age groups**.

SEX AND RACE & CANCER SURVIVAL



DISTANT ▶ 25%

Survival rates drop off dramatically if melanoma isn't diagnosed until the **distant stage**.

REGIONAL ▶ 60%

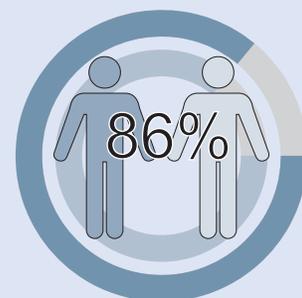
Earlier diagnosis increases chance of survival. About $\frac{3}{5}$ of people survive at the **regional stage**.

LOCALIZED ▶ 96%

80% to 84% of melanoma cases are diagnosed at the **local stage** each year.



Female



Male



White

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 7. Wisconsin Five-Year Relative Survival Rates, Melanoma of the Skin

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	89.4 (7,608)	88.0 - 90.6	85.8 (4,228)	83.7 - 87.6	93.2 (3,380)	91.4 - 94.6
Race						
White	89.3 (7,256)	87.9 - 90.5	85.6 (4,053)	83.5 - 87.5	93.1 (3,203)	91.4 - 94.6
Stage						
Localized	95.8 (5,027)	94.1 - 97.1	93.8 (2,725)	91.2 - 95.7	97.2 (2,302)	95.1 - 98.4
Regional	60.3 (779)	54.8 - 65.4	52.1 (496)	44.7 - 58.9	72.8 (283)	64.9 - 79.3
Distant	25.3 (301)	17.3 - 34.0	20.1 (217)	13.4 - 27.8	22.8 (84)	13.8 - 33.3
Unknown	92.6 (1,595)	90.1 - 94.5	91.4 (851)	87.7 - 94.0	93.4 (744)	89.4 - 95.9
Age Group*						
15-44	93.8 (1,482)	92.0 - 95.3	88.7 (523)	84.4 - 91.8	96.7 (959)	94.9 - 97.9
45-54	91.4 (1,471)	89.1 - 93.3	87.0 (736)	83.1 - 90.0	96.1 (735)	93.1 - 97.8
55-64	87.5 (1,578)	84.5 - 89.9	85.3 (952)	81.3 - 88.5	90.8 (626)	86.2 - 93.9
65-74	88.7 (1,445)	84.8 - 91.7	84.7 (976)	79.3 - 88.7	95.7 (469)	89.4 - 98.3
75+	81.8 (1,653)	75.6 - 86.5	80.8 (1,055)	72.5 - 86.9	82.6 (598)	74.6 - 88.4

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

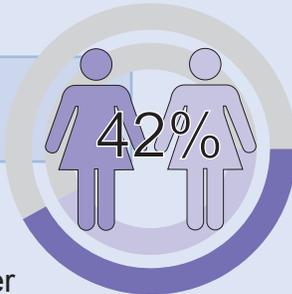
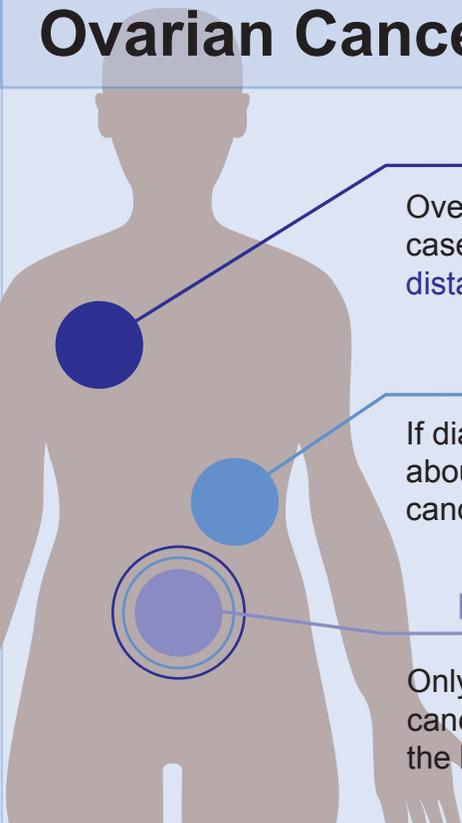
*Age Group values are not age-standardized.

The number of melanoma cases in Wisconsin, and nationally, is dramatically increasing. From 1995 through 2013, the number of melanomas diagnosed annually in Wisconsin increased from 576 to 1,405. Although melanoma accounts for less than 5 percent of all skin cancers, it causes the vast majority of skin cancer deaths. For the years covered in this analysis, 2005-2011, there were approximately 180 melanoma deaths each year.

Fortunately, melanoma is often curable if detected and treated at an early stage. Over 93 percent of people survive five years or more, consistent with early diagnosis. The percent of melanomas diagnosed at the localized stage has remained high during 2009-2013, ranging from 80 to 84 percent each year. Females have higher relative survival than males, and this holds true regardless of age and stage of disease at diagnosis.

Ovarian and Cervical Cancer

Ovarian Cancer



Difficult to detect until the cancer has spread **OUTSIDE** of the **ovary**

DISTANT ▶ 27%

Over **50%** of ovarian cancer cases are diagnosed at the distant stage.

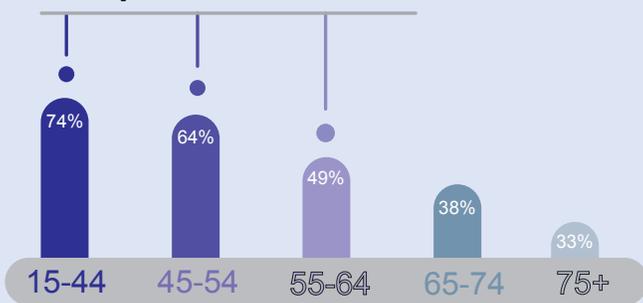
REGIONAL ▶ 72%

If diagnosed at the regional stage, about $\frac{3}{4}$ of people with ovarian cancer survive 5 years.

LOCALIZED ▶ 85%

Only about **20%** of ovarian cancer cases are detected at the local stage.

Age has a significant impact on survival

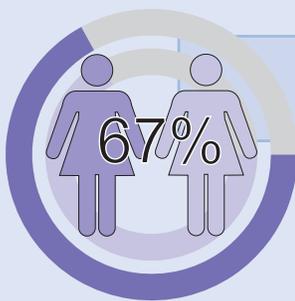


Routine screening and vaccination can help prevent cervical cancer

Routine screening and vaccination can help prevent cervical cancer

• Pap tests

• HPV tests & HPV vaccines



Cervical Cancer

18% ◀ **DISTANT**

Survival drops dramatically if diagnosed at the distant stage.

63% ◀ **REGIONAL**

About $\frac{3}{5}$ survive 5 years if diagnosed at the regional stage.

83% ◀ **LOCALIZED**

Survival is very high if cervical cancer is diagnosed at the local stage.

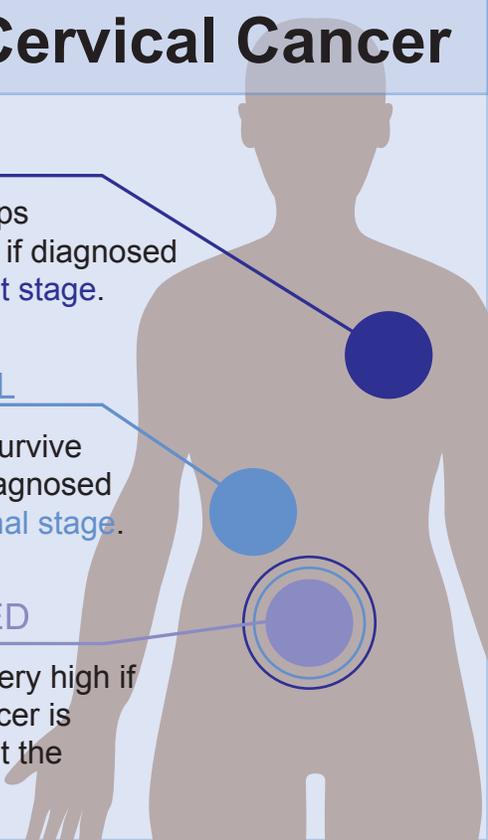


Table 8. Wisconsin Five-Year Relative Survival Rates, Ovarian and Cervical Cancer

	Ovarian Cancer RSR	95%CI	Cervical Cancer RSR	95% CI
Total	42.3 (2,989)	39.7 - 44.9	66.6 (1,193)	62.4 - 70.5
Race				
White	43.2 (2,830)	40.5 - 45.8	68.6 (1,001)	64.0 - 72.8
African American	39.6 (79)	25.2 - 53.7*	56.7 (108)	41.4 - 69.5*
Stage				
Localized	84.8 (433)	73.2 - 91.6	83.3 (578)	73.1 - 89.9
Regional	71.6 (605)	64.4 - 77.7	63.2 (423)	56.5 - 69.2
Distant	26.8 (1,739)	23.8 - 29.9	18.1 (146)	11.0 - 26.8
Unknown	33.4 (214)	25.0 - 42.0	84.8 (47)	66.8 - 95.2
Age Group*				
15-44	73.8 (349)	67.1 - 79.3	85.0 (463)	80.6 - 88.5
45-54	63.6 (601)	58.1 - 68.5	76.5 (296)	69.9 - 81.8
55-64	49.3 (705)	44.0 - 54.5	69.1 (221)	60.6 - 76.1
65-74	37.8 (566)	32.0 - 43.5	49.1 (128)	36.1 - 60.9
75+	24.9 (768)	20.2 - 29.8	39.0 (86)	23.0 - 54.7

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*African American numbers are too small for age standardization. Age Group values are not age-standardized.

For ovarian cancer, the five-year survival rate is 42 percent. If ovarian cancer is diagnosed before the cancer has spread outside the ovary, the survival rate is 85 percent. However, only approximately 20 percent of ovarian cases are found at this early stage, and over 50 percent are found at the distant stage of disease. Women diagnosed at younger ages have significantly higher survival rates than older women.

Unlike ovarian cancer, most cases of cervical cancer are easily preventable by routine vaccination and screening, and by treatment of precancerous lesions. Pap smears, in addition to HPV tests and vaccines, are recommended for the prevention of virtually all cervical lesions. Of all women diagnosed with invasive cancer of the cervix, 67 percent will survive for five years or more. When detected at the early localized stage, the five-year survival rate for invasive cervical cancer is 83 percent, but if the cancer has spread to a distant stage, the survival rate is 18 percent.

Pancreas Cancer

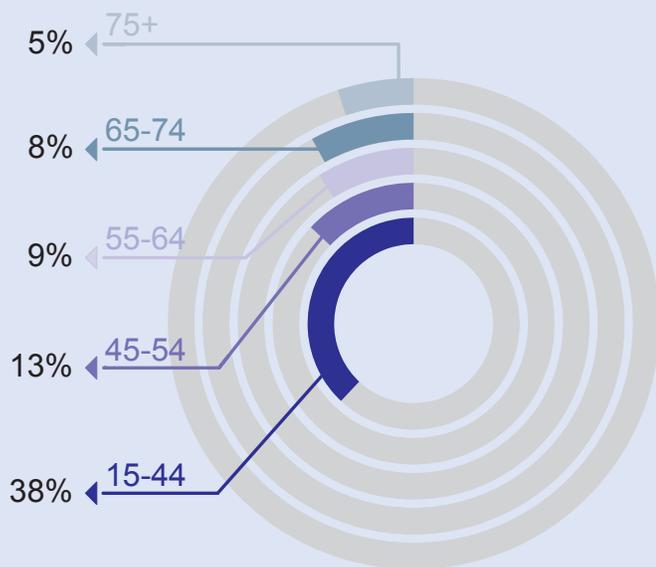
Overall,
of people diagnosed with
PANCREATIC CANCER
survive 5 years.

2nd lowest survival
rate in Wisconsin

4th most common
cause of cancer death



AGE & CANCER SURVIVAL



While **younger people** have higher survival rates, about **88%** of pancreatic cancer cases are diagnosed in those **55 years and older**.

SEX AND RACE & CANCER SURVIVAL

DISTANT ▶ 4%

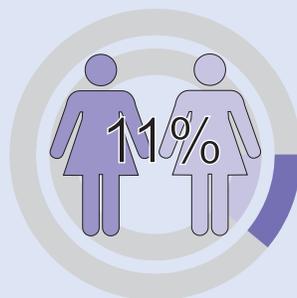
Approximately **50%** of pancreatic cancer cases are diagnosed at the **distant stage**.

REGIONAL ▶ 15%

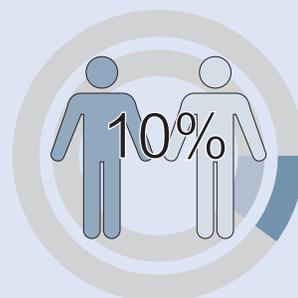
If diagnosed at the **regional stage**, pancreatic cancer survival percentage drops down into the teens.

LOCALIZED ▶ 35%

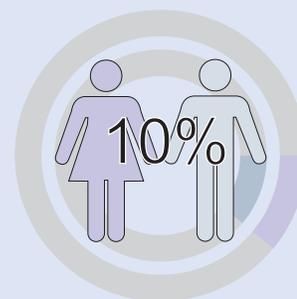
Local stage diagnosis gives people the greatest chance of surviving pancreatic cancer.



Female



Male



White

STAGE AT DIAGNOSIS & CANCER SURVIVAL

Table 9. Wisconsin Five-Year Relative Survival Rates, Pancreas Cancer

	RSR (N) Total	95% CI	RSR (N) Males	95% CI	RSR (N) Females	95% CI
Total	10.0 (5,096)	8.7 - 11.4	9.6 (2,602)	8.0 - 11.5	10.5 (2,494)	8.6 - 12.7
Race						
White	10.6 (4,647)	9.2 - 12.0	10.4 (2,391)	8.6 - 12.4	10.8 (2,256)	8.8 - 13.1
African American	-	-	-	-	-	-
Stage						
Localized	34.6 (486)	27.8 - 41.5	31.5 (226)	21.7 - 41.8	28.8 (260)	21.3 - 36.6
Regional	15.3 (1,501)	12.7 - 18.1	16.8 (736)	13.1 - 20.8	14.0 (765)	10.6 - 17.8
Distant	4.2 (2,260)	3.1 - 5.4	3.4 (1,439)	2.3 - 4.8	4.2 (1,221)	2.6 - 6.3
Unknown	2.7 (449)	1.1 - 5.6	2.8 (201)	0.8 - 7.0	2.8 (248)	0.7 - 7.4
Age Group*						
15-44	37.8 (585)	26.8 - 48.7	32.3 (337)	19.1 - 46.1	42.3 (248)	23.7 - 59.8
45-54	13.4 (489)	9.7 - 17.7	11.4 (289)	7.0 - 16.9	16.2 (200)	10.2 - 23.4
55-64	8.9 (619)	6.7 - 11.5	8.7 (356)	6.0 - 12.0	9.2 (263)	5.9 - 13.4
65-74	7.7 (553)	5.8 - 10.1	8.1 (326)	5.4 - 11.4	7.6 (227)	4.9 - 11.1
75+	5.1 (566)	3.6 - 6.8	5.8 (290)	3.7 - 8.5	4.4 (276)	2.7 - 6.8

Source: North American Association of Central Cancer Registries (NAACCR) calculations based on data from Wisconsin Cancer Reporting System.

Notes: Rates are for cancers diagnosed in 2005-2011, and follow-up of patients through 2011. RSR=relative survival rates, expressed in percent. CI = Confidence Intervals. Confidence Intervals are 95% for rates. N=number of cancer cases in calculation.

Rates are age-standardized using the International Cancer Survival Standards (ICSS).

*Age Group values are not age-standardized.

- Counts are suppressed when fewer than 10 cases were reported, the standard error was greater than or equal to 10%, or when the difference of the upper and lower confidence interval is greater than 40%.

Pancreatic cancer is the fourth most common cause of cancer death in Wisconsin. While pancreatic cancer survival rates have been improving, the disease is still considered largely incurable and has the lowest survival rate of all cancers in the U.S. and second lowest (to Mesothelioma) in Wisconsin. For all pancreatic cancers, the five-year survival rate is 11 percent. The low survival rate is attributable to the majority of cases being diagnosed at more advanced stages; approximately 50 percent of cases are diagnosed at the distant stage. The survival rate is as high as 35 percent if the pancreatic cancer is found at the local stage. People of younger ages also have an advantage in survival, but 88 percent of people diagnosed with pancreatic cancer in Wisconsin are 55 years of age or older.

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Division of Public Health
Office of Health Informatics
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