



Trends in Thyroid Cancer Incidence in Wisconsin and the U.S., 1995-2016

Data Bulletin from the Wisconsin Cancer Reporting System (WCRS)

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Introduction

After rising steadily for decades, the incidence of thyroid cancer has stabilized, according to recent data. Thyroid cancer incidence increased more rapidly than any other malignant cancer in both Wisconsin and the U.S. from 1995 to 2009, according to the National Cancer Institute. This increase was largely attributable to aggressive diagnosis of small, slow-growing tumors unlikely to cause harm. Better awareness of the potential for overdiagnosis has led to more stable rates in recent years. While the number of thyroid cancer cases tripled in Wisconsin from 1995 to 2016 (from 272 to 858 cases), it made up a relatively small proportion (2.6 percent) of total cancers in 2016.

This bulletin provides data about the incidence (newly diagnosed cases) and mortality (deaths) of thyroid cancer reported to the Wisconsin Cancer Reporting System (WCRS) as of November 30, 2018. By law, all health care facilities in Wisconsin are required to report cancers to WCRS, pursuant to Wis. Stat. § 255.04 ([Cancer Reporting](#)). Incidence and mortality rate trends for 1995-2016 are presented for Wisconsin and compared to U.S. data over the same period. Data are presented to show variations in incidence by gender, race, and age. Trends in stage at diagnosis for rolling three-year averages are also presented.

Definitions

Age-adjusted rates – Incidence and mortality rates adjusted to account for the different age distributions between populations. The rates in this report are age-adjusted using the 2000 U.S. standard population. This bulletin uses the direct method of calculating rates, in which the actual age-specific rate in the Wisconsin population is weighted by the proportion of the standard U.S. population.

Age-specific rates – A crude rate showing the actual number of cancer cases or deaths found in a select age group (for example, 40-45 year olds) per 100,000 population in that age group.

Cancer incidence – The number of new invasive cancer cases that occur during a specified time period for a population at risk for developing the disease, expressed as the number of cases or as a rate per 100,000 population.

Cancer mortality – Deaths from cancer that occur during a specified time period for a population, expressed as the number of deaths or as a rate per 100,000 population.

Invasive – Malignant cancer or tumor that has invaded tissue or surrounding organs. This bulletin focuses on invasive cancer data to make state and national data comparable.

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Stage of Disease at Diagnosis

Localized – An invasive tumor (has penetrated the surrounding tissue) that is confined to the organ of origin.

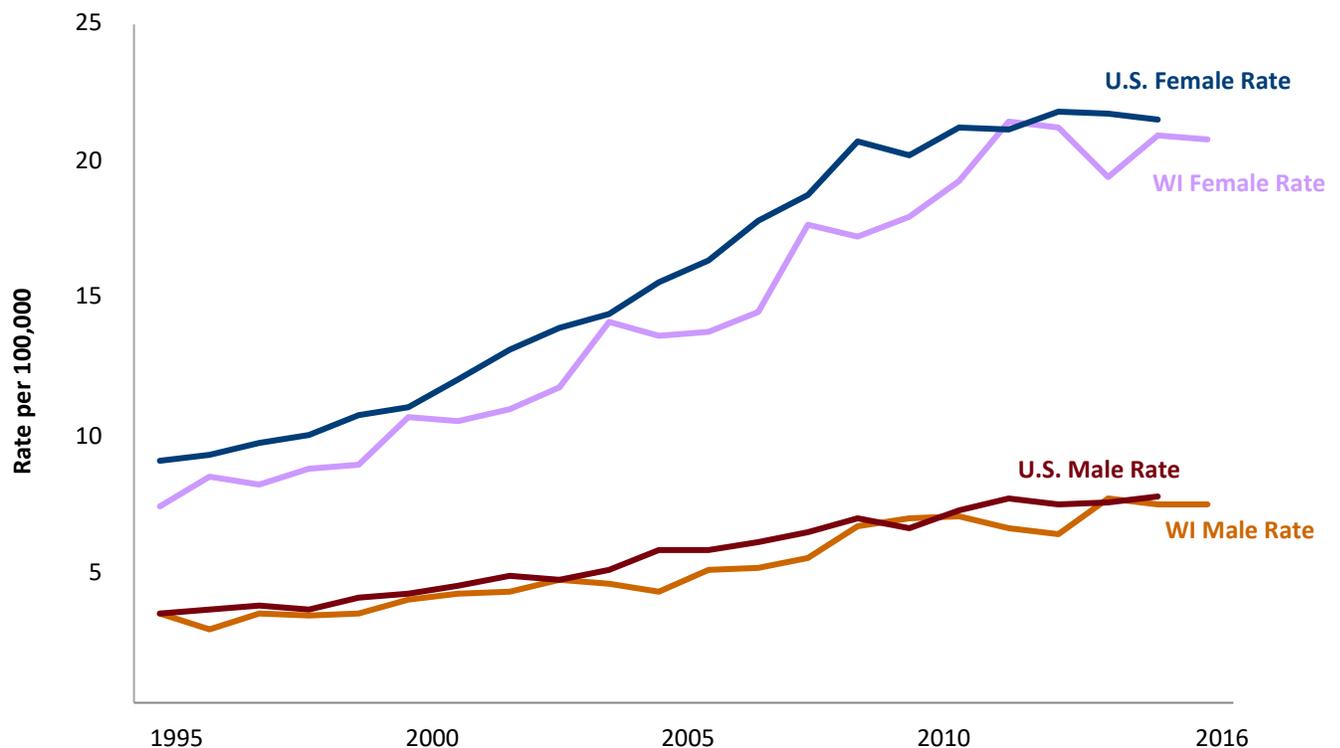
Regional – A tumor that has spread beyond the organ of origin to an adjacent organ, tissue, or lymph nodes.

Distant – The tumor has spread beyond adjacent organs, tissue or lymph nodes, or has metastasized through the bloodstream or lymph system.

Unknown or Unstaged – Insufficient information is available to determine the stage or extent of the tumor at the time of diagnosis.

Figure 1. Thyroid Cancer Age-Adjusted Incidence Rate by Sex, Wisconsin and the U.S., 1995-2016

Figure 1 illustrates the increase in thyroid cancer age-adjusted incidence rate during 1995-2016. The rate per 100,000 for males in Wisconsin more than doubled from 3.3 to 7.3, while the rate for females almost tripled, from 7.2 to 20.8. New analysis found that incidence began to level off in 2012 and remained relatively stable through 2016. Thyroid cancer age-adjusted incidence rates were higher among females than males for all years and this disparity increased over time.



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Figure 2. Thyroid Cancer, Age-Specific Incidence Rates by Sex, Wisconsin and the U.S., 2012-2016

Figure 2 shows age-specific incidence rates for thyroid cancer by gender for Wisconsin and the U.S. among males, thyroid cancer rates increase with advancing age from 15-19 to 70-74 years of age and then decline after age 75.

Among Wisconsin and U.S. females, thyroid cancer incidence rates reach a peak in the 50-54 age group and fall slowly to ages 75-79, before declining more abruptly at older ages. The incidence rate for U.S. females aged 40 to 79 years is higher compared to Wisconsin female rates in that age range.

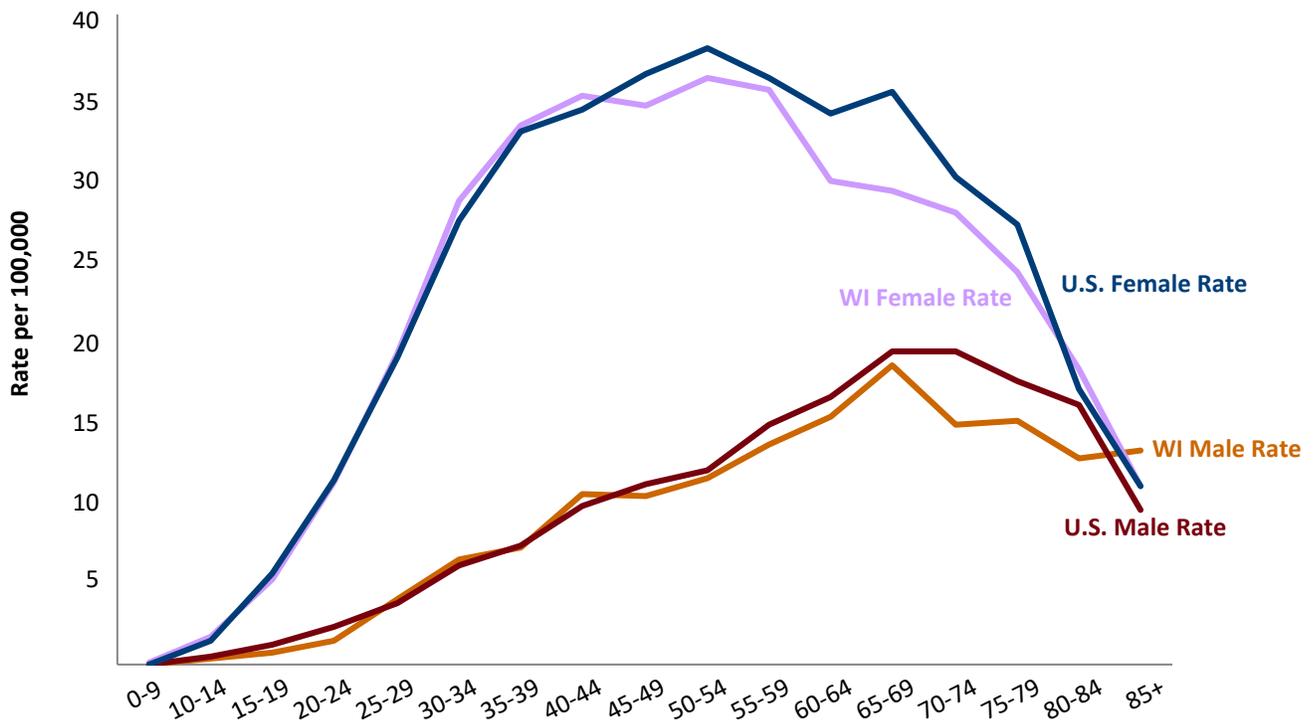


Table 1. Thyroid Cancer Incidence by Age Group and Sex, Wisconsin, 2012-2016

Age group	Male Percentage	Male Cumulative Percentage	Female Percentage	Female Cumulative Percentage
0-19 years	0.9%	0.9%	2.2%	2.2%
20-29 years	4.9%	5.9%	9.1%	11.3%
30-39 years	11.8%	17.7%	17.6%	28.9%
40-49 years	18.2%	35.9%	20.6%	49.5%
50-59 years	25.8%	60.9%	24.9%	74.4%
60 and older	39.1%	100.0%	25.6%	100.0%

Table 1 demonstrates that most thyroid cancers in Wisconsin were diagnosed in people aged 59 and younger. Among women, 50 percent of all thyroid cancers were diagnosed before age 50. Males were somewhat older at diagnosis, with 36 percent were diagnosed before age 50.



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Figure 3. Thyroid Cancer, Stage at Diagnosis, Wisconsin, 1995-2016

Trend data for Wisconsin (Figure 3) show that 61 percent of invasive thyroid cancers were diagnosed at the local stage in 1995, increasing to 66 percent in 2016.

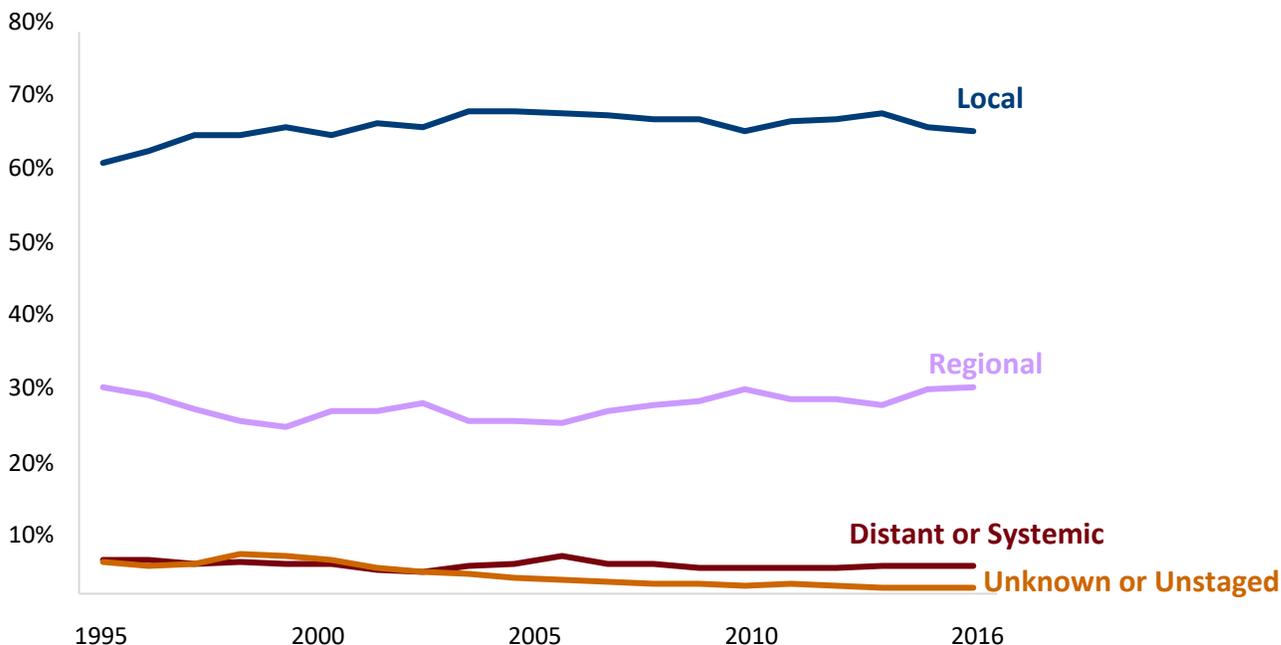


Figure 4. Thyroid Cancer Age-Adjusted Incidence Rates by Sex and Race, Wisconsin and the U.S., 2012-2016

Overall, the thyroid cancer incidence rate for both sexes combined in Wisconsin was 13.8 compared with the U.S. rate of 14.4. Thyroid cancer age-adjusted incidence rates among females were greater than those among males for each race group (Figure 4).

At the state and national level for both sexes, the highest incidence rates were found among White and Asian or Pacific Islander groups. In both Wisconsin and the U.S., African Americans and American Indians had comparatively lower incidence rates of thyroid cancer.

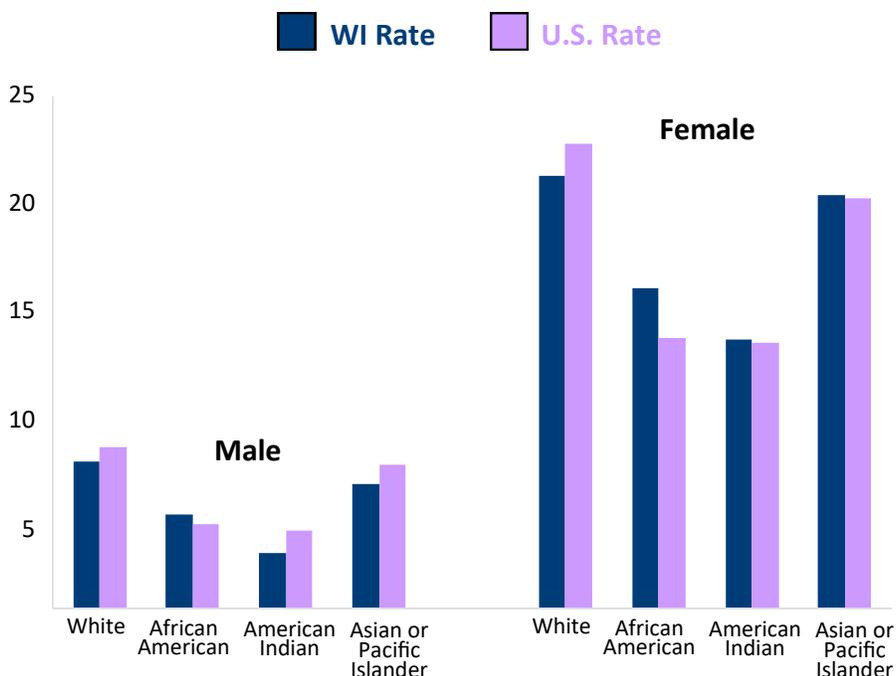


Table 2. Thyroid Cancer Age-Adjusted Mortality Rates, Wisconsin and the United States, 1995-2016

Table 2 shows the age-adjusted mortality rates per 100,000 for thyroid cancer according by gender. Mortality rates for thyroid cancer are low, with the highest rate being 0.7 per 100,000 population. Although thyroid cancer incidence rates are much higher among females (Figure 4), thyroid cancer mortality rates do not significantly differ by gender.

Thyroid cancer mortality rates for Wisconsin vary somewhat annually due to the relatively small number of deaths (41 deaths in 2016 compared with 2,042 deaths in the U.S. that year). The overall thyroid cancer mortality rate is 0.5 per 100,000 population for both the state and the nation.

Year	Wisconsin			United States		
	Total	Male	Female	Total	Male	Female
1995	0.3	0.3	0.2	0.4	0.4	0.4
1997	0.4	0.2	0.6	0.5	0.4	0.5
1999	0.4	0.6	0.3	0.5	0.4	0.5
2000	0.6	0.6	0.6	0.5	0.5	0.5
2002	0.4	0.3	0.5	0.5	0.5	0.5
2004	0.5	0.4	0.5	0.5	0.5	0.5
2006	0.6	0.4	0.7	0.5	0.5	0.5
2008	0.5	0.4	0.5	0.5	0.5	0.5
2010	0.6	0.5	0.7	0.5	0.5	0.5
2012	0.4	0.6	0.3	0.5	0.5	0.5
2014	0.5	0.5	0.4	0.5	0.5	0.5
2016	0.5	0.5	0.5	0.5	0.5	0.5

Thyroid Cancer Trends Summary

The incidence of thyroid cancer in Wisconsin and the U.S. began to rise during the early 1990s, with incidence in 2013 triple that of 30 years earlier. The current analysis found that incidence began to level off in 2012 and remained relatively stable through 2016.

Why, after decades of increasing, has the incidence rate of thyroid cancer stabilized? The reasons for the shift are generally attributed to less aggressive diagnosis and treatment of small indolent thyroid nodules. The stabilization occurred due to growing awareness of the increased potential for overdiagnosing very small, slow-growing thyroid tumors that are unlikely to cause harm, usually detected through screening and the use of technologies such as ultrasound. The rapidly rising incidence of thyroid cancer in the United States has been recognized as an “epidemic of diagnosis more than an epidemic of disease.”

In 2009, the American Thyroid Association issued new guidelines that discourage the biopsy of smaller and more benign-looking nodules. Most recently in 2016, an international panel of experts reclassified a type of papillary thyroid tumor and removed the word “carcinoma” from its name to reduce the treatment of these slow-growing tumors.



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Thyroid Cancer Trends Summary (cont.)

According to the National Cancer Institute, an estimated 52,000 new cases of thyroid cancer will be diagnosed in 2019. Thyroid cancer often requires surgery, and frequently radioactive iodine, as standard treatment, so the increasing incidence has implications for the most appropriate health care and medical costs. Thyroid cancer is usually successfully treated, with a national survival rate of 98 percent at five years.

Continuing surveillance of thyroid cancer incidence will indicate whether incidence rates continue to stabilize. The incidence trends will have ramifications for public health and help determine the appropriate level for detecting and treating thyroid cancers.

Data Sources

Wisconsin Cancer Reporting System (WCRS):

WCRS is part of the Division of Public Health, Wisconsin Department of Health Services. WCRS collects all newly diagnosed cancer cases for Wisconsin residents from hospitals, clinics, physician offices, selected Minnesota hospitals, and other out-of-state registries. This bulletin and other WCRS reports are available at <https://www.dhs.wisconsin.gov/wcrs/data-pubs.htm>

Surveillance, Epidemiology and End Results (SEER):

National data on cancer incidence are from the National Cancer Institute's SEER Program. The SEER incidence rate data in this report are from SEER registries, and accessed using SEER*Stat software version 8.3.5 (www.seer.cancer.gov/seerstat)

National Center for Health Statistics:

Cancer mortality data are from the National Center for Health Statistics, Centers for Disease Control and Prevention. The public-use mortality data are based on the underlying cause of death, and accessed using SEER*Stat software version 8.3.5.

Citation for graphs and charts

Sources: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Department of Health Services; and Surveillance, Epidemiology, and End Results (SEER) Program.

More Information about Thyroid Cancer

National Cancer Institute - Thyroid Cancer:

<https://www.cancer.gov/types/thyroid>

American Cancer Society - Learn about Cancer - Thyroid Cancer:

<http://www.cancer.org/Cancer/ThyroidCancer/index>

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