Wisconsin Cancer Data Bulletin

Wisconsin Department of Health Services
Information from the Wisconsin Cancer Reporting System

Thyroid Cancer Trends in Wisconsin and the U.S., 1995-2008

Introduction

According to the National Cancer Institute, an estimated 48,000 new cases of thyroid cancer will be reported as diagnosed across the nation in 2011. In Wisconsin in 2008, 623 cases of thyroid cancer were reported, more than double the 272 cases reported in 1995. Thyroid cancer is increasing in incidence more rapidly than any other malignant cancer in both Wisconsin and the U.S., according to the National Cancer Institute. From 1995 to 2008, thyroid cancer age-adjusted incidence rates more than doubled in Wisconsin (from 5.3 to 10.8 per 100,000 population) and in the U.S. (from 6.2 to 13.0 per 100,000 population). The incidence of most major cancers (lung, prostate, breast and colorectal) decreased at both the state and national levels during the 1995-2008 period.

This report provides data about the incidence (newly diagnosed cases) and mortality (deaths) of thyroid cancer reported to the Wisconsin Cancer Reporting System (WCRS) as of September 30, 2011. By law all health care facilities in Wisconsin are required to report cancers to WCRS, as specified by state statute 255.04, Cancer Reporting. (See www.legis.state.wi.us/rsb/Statutes.html.) Incidence and mortality rate trends for 1995-2008 are presented for Wisconsin and compared to U.S. data for 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. Thyroid cancer mortality rates for Wisconsin and the U.S. are generally low, as shown by data for years 1995-2008.

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 years) per 100,000 population in that age group.

Cancer incidence – The number of new invasive cancer cases that occur during a specified 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 period of time for a particular 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.

Stage of Disease at Diagnosis:

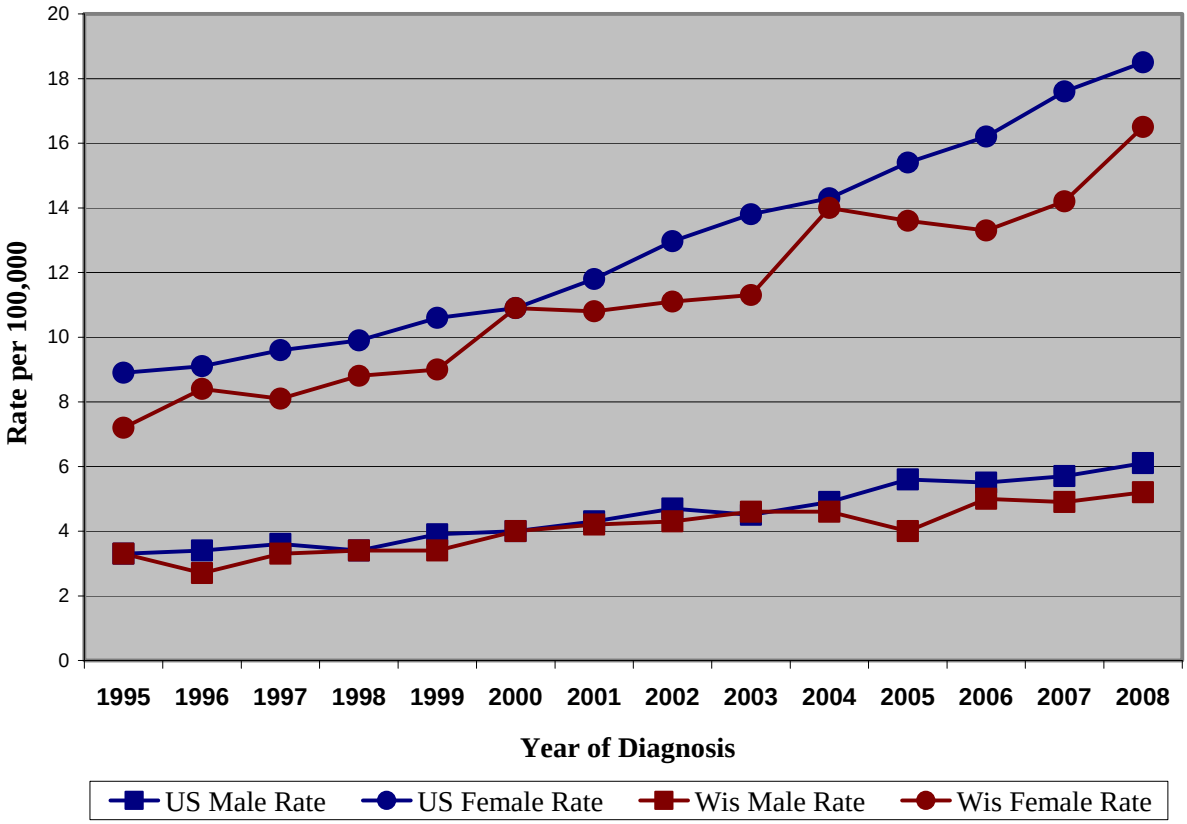
- Localized – An invasive tumor (has penetrated the surrounding tissue) that is confined to the organ of origin.
- Regional – A tumor that has spread beyond the organ of origin to an adjacent organ, tissue or lymph nodes.
- Distant – The tumor has spread beyond adjacent organs, tissue or lymph nodes, or has metastasized through the bloodstream or lymph system.
- Unknown/Unstaged – Insufficient information is available to determine the stage or extent of the tumor at the time of diagnosis.

Thyroid Cancer Incidence

Figure 1 illustrates the consistent increase in thyroid cancer age-adjusted incidence during 1995-2008. The rate per 100,000 for males in Wisconsin increased from 3.3 to 5.2, while the rate for females more than doubled, from 7.2 to 16.5. Thyroid cancer age-adjusted incidence rates were higher among females than males for all years (Figure 1). This disparity increased over time.

Wisconsin thyroid cancer incidence rates were lower than U.S. rates, and the difference was more pronounced for females than for males.

Figure 1. Thyroid Cancer Incidence Age-Adjusted Rate by Sex, Wisconsin and the U.S, 1995-2008

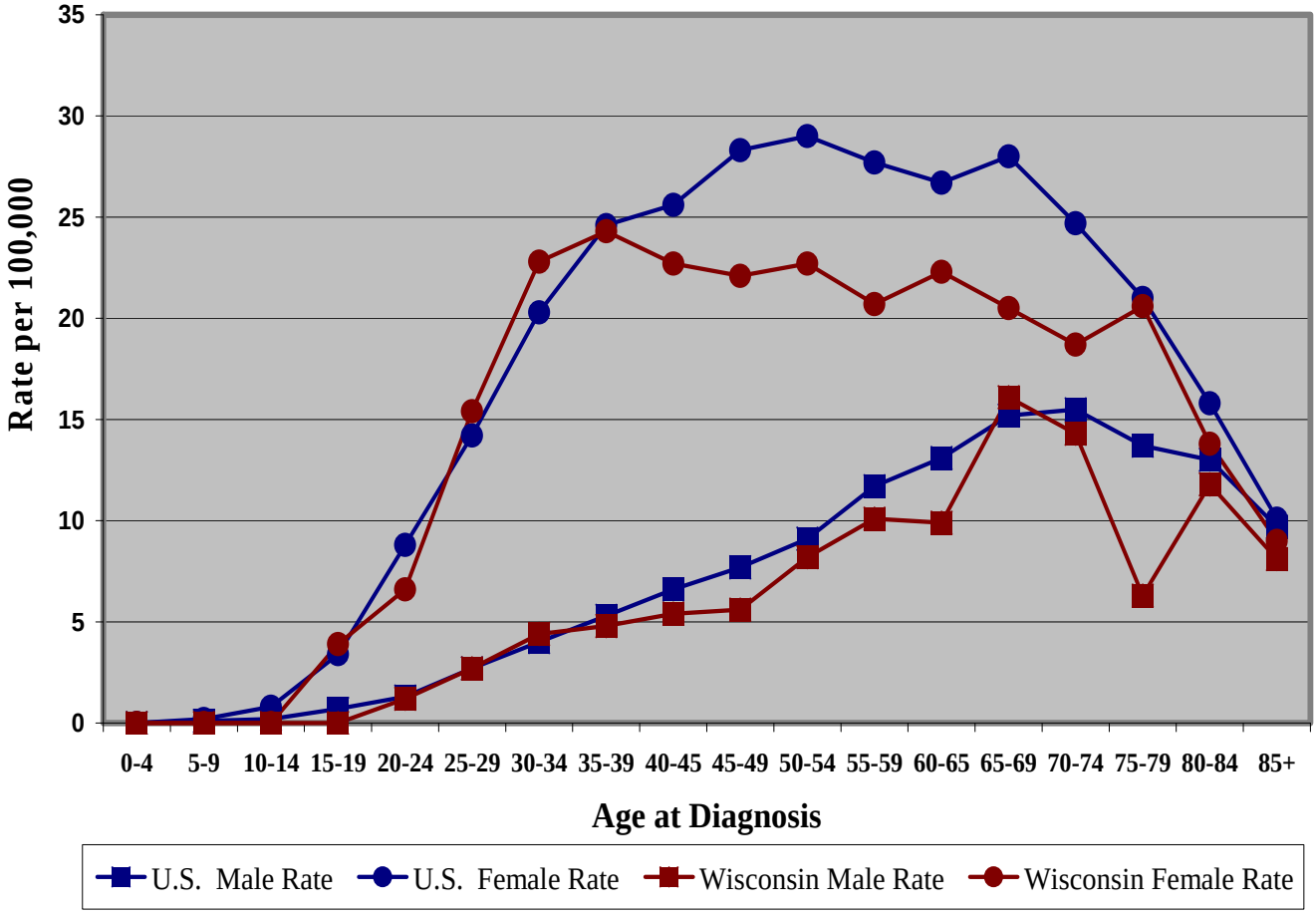


Sources: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Department of Health Services; and Surveillance, Epidemiology, and End Results (SEER) Program.

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 females, thyroid cancer incidence rates reach a peak in the 35-39 age group, and fall slowly to ages 75-79 before declining more abruptly at older ages. The incidence rate for U.S. females peaks later, at ages 50-54, and is higher among all age groups between 40 and 79 years compared to Wisconsin rates.

Figure 2. Thyroid Cancer, Age-specific Incidence Rates, by Sex, Wisconsin and the U.S., 2004-2008



Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Department of Health Services.

Most thyroid cancers in Wisconsin were diagnosed in people aged 59 and younger (Table 1). By gender, 57 percent of all thyroid cancers in women were diagnosed before age 50. Males were somewhat older when diagnosed; cumulatively, 38 percent were diagnosed before age 50.

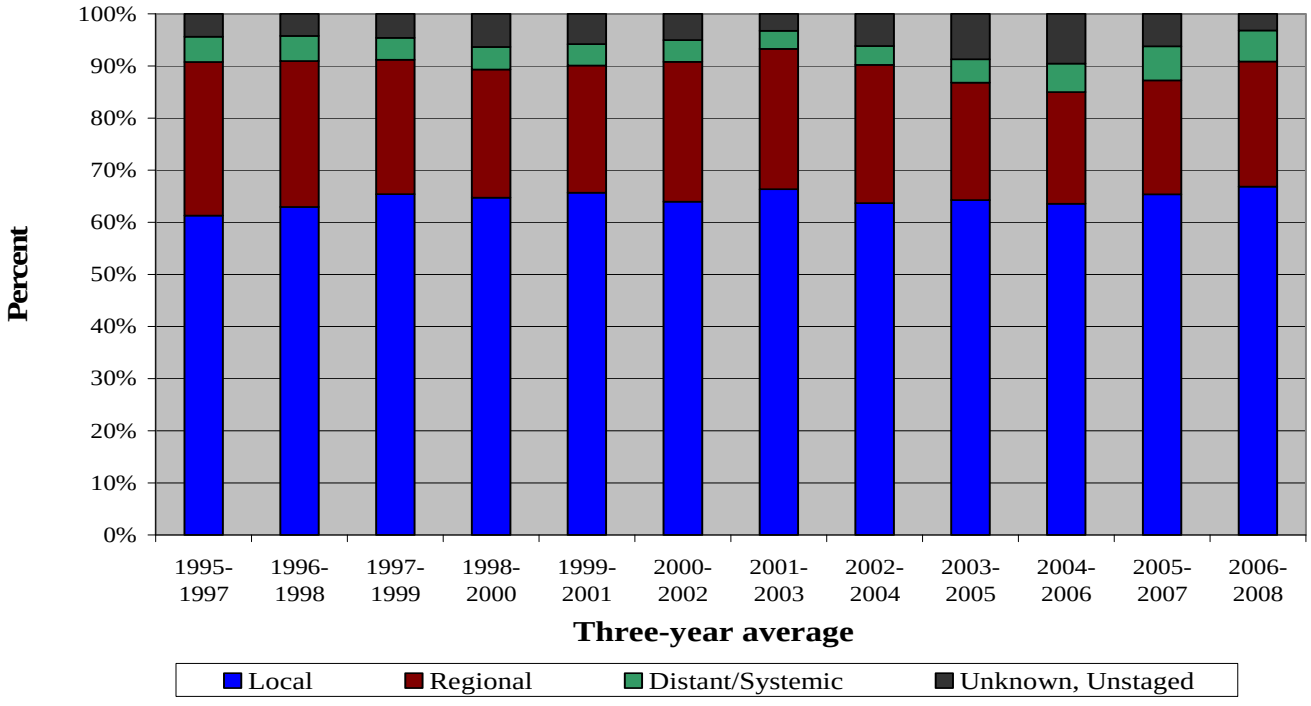
Table 1. Thyroid Cancer Incidence by Age Group and Sex, Wisconsin, 2004-2008

Age Group	Male Percent	Male Cumulative Percent	Female Percent	Female Cumulative Percent
0-19 years	0.9%	0.9%	2.3%	2.3%
20-29 years	5.7%	6.6%	9.7%	12.1%
30-39 years	12.8%	19.4%	20.5%	32.6%
40-49 years	18.5%	37.9%	24.1%	56.7%
50-59 years	25.8%	63.7%	20.1%	76.8%
60 and older	36.3%	100.0%	23.3%	100.0%

Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Department of Health Services.

Trend data for Wisconsin (Figure 3) show that 61 percent of invasive thyroid cancers were diagnosed at the local stage during 1995-1997, increasing to 67 percent during 2006-2008.

Figure 3. Thyroid Cancer, Stage at Diagnosis, Wisconsin, 1995-2008

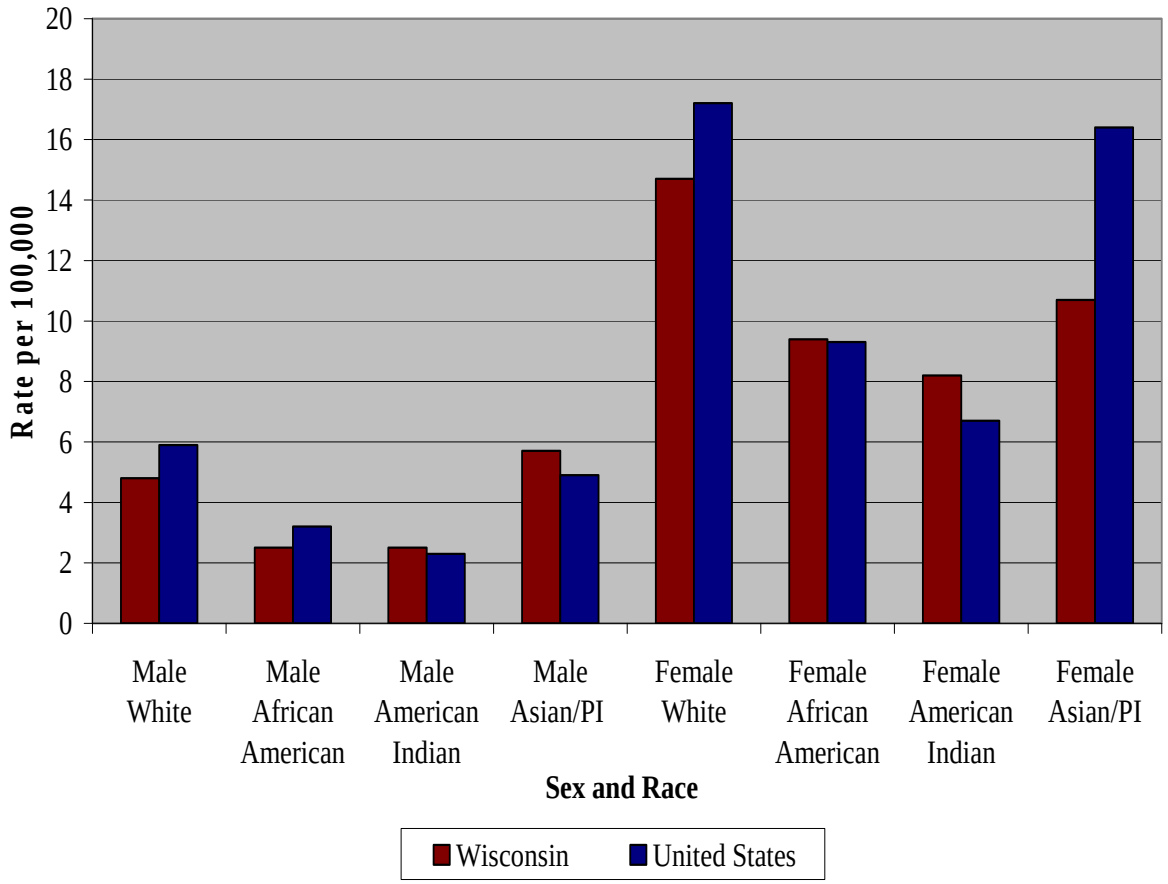


Source: Wisconsin Cancer Reporting System, Office of Health Informatics, Division of Public Health, Department of Health Services.

Overall, the thyroid cancer incidence rate for both sexes combined in Wisconsin was 10.8 compared with the U.S. rate of 12.4. 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/Pacific Islander groups. In both Wisconsin and the U.S., African Americans and American Indians had comparatively lower incidence rates of thyroid cancer.

Figure 4. Thyroid Cancer Age-Adjusted Incidence Rates by Sex and Race, Wisconsin and the U.S., 2004-2008



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.

Table 2 shows the age-adjusted mortality rates for thyroid cancer according to year of death (1995-2008) by gender. Mortality rates for thyroid cancer are low, with the highest rate being 0.6 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 sex.

Thyroid cancer mortality rates for Wisconsin vary somewhat annually due to the relatively small number of deaths (28 deaths in 2008 compared with 1,649 deaths in the U.S. that year). The overall thyroid cancer mortality rate is approximately 0.5 per 100,000 population for both the state and the nation.

Table 2. Thyroid Cancer Age-Adjusted Mortality Rates, Wisconsin and the United States, 1995-2008

	Wisconsin			United States		
Year	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
1995	**0.3**	**0.3**	**0.2**	**0.4**	**0.4**	**0.4**
1996	**0.4**	**0.3**	**0.5**	**0.5**	**0.4**	**0.5**
1997	**0.4**	**0.2**	**0.6**	**0.5**	**0.4**	**0.5**
1998	**0.6**	**0.5**	**0.6**	**0.4**	**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**
2001	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
2002	**0.4**	**0.3**	**0.5**	**0.5**	**0.5**	**0.5**
2003	**0.5**	**0.4**	**0.5**	**0.4**	**0.4**	**0.5**
2004	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
2005	**0.4**	**0.3**	**0.6**	**0.5**	**0.5**	**0.5**
2006	**0.6**	**0.4**	**0.7**	**0.5**	**0.5**	**0.5**
2007	**0.7**	**0.7**	**0.7**	**0.5**	**0.5**	**0.5**
2008	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**

Source: National Center for Health Statistics public use mortality file, analyzed using SEER*Stat software.

Conclusion

According to the National Cancer Institute, an estimated 48,000 new cases of thyroid cancer will be reported as diagnosed in 2011. The national incidence of thyroid cancer increased at a rate of 6.4 percent a year from 1997 to 2008, making it the fastest increasing cancer among both men and women. Although increasing in incidence, thyroid cancer is usually successfully treated, with a national survival rate of 97 percent at five years. Thyroid cancer is a disease that requires surgery, and frequently radio active iodine, as standard treatment, so the rapidly increasing incidence has implications for health care and medical costs at the state and national level.

Why are more people being diagnosed with thyroid cancer? According to one major study, the apparent increase in incidence is the result of increased detection from more sensitive diagnostic tests (Journal of the American Medical Association, May 2006). Other studies using National Cancer Institute data have raised the question of whether the worldwide increase and detection at various stages are also indicative of an authentic rise in thyroid cancer (Cancer Epidemiology and Biomarkers and Prevention, March 2009). Future research might examine biologic characteristics of thyroid cancer among different racial and ethnic groups, trends in early detection and screening, and optimal treatment of small thyroid tumors, among other more detailed analyses.

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, and out-of-state registries and selected Minnesota hospitals. This bulletin and other WCRS reports are available at http://dhs.wisconsin.gov/wcrs/

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 7.0.5 (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 7.0.5. (www.seer.cancer/seerstat)

More Information about Thyroid Cancer

For more information about risk factors, diagnostic tests, treatment and survival:

National Cancer Institute - What You Need to Know About Thyroid Cancer:
http://www.cancer.gov/cancertopics/wyntk/thyroid/
American Cancer Society - Learn about Cancer - Thyroid Cancer:
http://www.cancer.org/Cancer/ThyroidCancer/index

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