Cancer in Minnesota
1988 - 2006

Minnesota Department of Health
Minnesota Cancer Surveillance System

September 2010

MINNESOTA
MDH
DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

December 2010

Dear Colleague:

The Minnesota Department of Health (MDH) is pleased to present the tenth biennial report of the Minnesota Cancer Surveillance System (MCSS) on the occurrence of cancer in Minnesota, in accordance with Minnesota Statute 144.672 Subdivision 2.

This report demonstrates continued and substantial progress in reducing the burden of cancer in our state. The female breast cancer incidence rate was 13 percent lower in 2006 than in 2000, when it peaked. Incidence rates are also declining significantly for colorectal and stomach cancers among both men and women, for lung and laryngeal cancers among men, and for ovarian and cervical cancers among women. Overall, the rate of increase in cancer incidence is slowing down. Overall cancer mortality is declining significantly among both men and women in our state, primarily due to declines in colorectal, prostate, and breast cancer, which together accounted for 21 percent of cancer deaths in Minnesota in 2006.

Nonetheless, much work remains to be done. An estimated 195,250 Minnesotans are living with a history of cancer. Cancer is our leading cause of death, causing the deaths of 20 percent more Minnesotans than heart disease in 2006. Half of all Minnesotans will be diagnosed with a potentially serious cancer during their lives. Persons of color experience a disproportionate burden of cancer in our state. Of special concern are American Indians, whose risk of dying of cancer in Minnesota is twice that of American Indians in the United States as a whole.

The MCSS is a powerful tool for public health, and its value increases with each year of data collection. The MDH is an active partner in the Minnesota Cancer Alliance, a collaboration of public, private and non-profit organizations created to implement *Cancer Plan Minnesota 2005-2010*, our state's first comprehensive cancer control plan. We encourage all organizations and individuals interested in cancer control to join with us and the Alliance to reduce the burden of cancer for all Minnesotans.

This report was prepared by MCSS staff under the direction of Dr. Sally Bushhouse. Questions and comments on the report can be directed to the MCSS at 651-201-5900.

Sincerely,

Jeanne M. Danaher
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Cancer in Minnesota, 1988-2006

Report to the Minnesota Legislature 2010

September 2010

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On the Cover

Photo of the Minnesota state flower, the Pink Lady Slipper, from the State of Minnesota website, http://www.sos.state.mn.us/student/flower.html

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Table of Contents

Chapter III: Summary of Data for Specific Cancers

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Summary

This report summarizes the status of cancer in Minnesota. These data enable the Minnesota Department of Health to detect public health problems, to target goals for cancer control, and to inform citizens and health care professionals about cancer risks, early detection, and treatment.

- In 2006, 24,911 Minnesotans were diagnosed with cancer, and 9,065 Minnesotans died of this group of diseases.
- Heart disease is the leading cause of death in the U.S., but cancer has been the leading cause of death in Minnesota since 2000. In 2006, 20 percent more Minnesotans (1,559 persons) died of cancer than heart disease.
- Despite these sobering facts, the rate of increase in cancer incidence is slowing down. The overall cancer incidence rate among males was increasing by 1.1 percent per year when trends were evaluated through the end of 2002, but now is increasing by 0.5 percent per year. Among females, the overall cancer incidence rate increased by 1.4 percent per year from 1995 to 2000, but then stabilized from 2000 to 2006.
- The invasive breast cancer incidence rate among women in Minnesota declined significantly by 3.9 percent per year from 2000 to 2004, and then stabilized. Breast cancer incidence was 13 percent lower in 2006 (124.6 new cases per year per 100,000 women) than in 2000 (142.6).
- The prostate cancer incidence rate increased modestly from 1995 to 2006, but the trend was not statistically significant.
- The overall cancer mortality rate is steadily declining. Among males in Minnesota it declined by 0.8 percent per year from 1988 to 2002, and then by 2.9 percent per year from 2002 to 2006. The cancer mortality rate among men was 18 percent lower in 2006 (207.6 deaths per year per 100,000 men) than in 1988 (252.3). Overall cancer mortality among Minnesota women decreased significantly by 0.6 percent per year from 1988 to 2006; the rate was 12 percent lower in 2006 (147.3) than in 1988 (166.8).
- Mortality rates are declining significantly for many cancers, including breast, colorectal, ovary, prostate, and stomach cancers and non-Hodgkin lymphoma, and lung cancer among males.
- In 2006, lung cancer killed almost as many Minnesotans (2,353 deaths) as the next four leading cancers combined: colorectal (822), breast (614), pancreas (564), and prostate (484).
- Lung cancer mortality among women continues to increase by 0.9 percent each year in Minnesota. U.S. lung cancer mortality among women stabilized in 2002, and among non-Hispanic white women is decreasing significantly by 0.6 percent per year.
- In general, Minnesotans have a lower risk of developing or dying from most types of cancer than the nation as a whole. Over the five-year period 2002-2006, the exceptions were leukemia (both genders), non-Hodgkin lymphoma (males), and uterine and prostate cancers, which were significantly elevated among non-Hispanic whites in Minnesota compared to those in the SEER Program.
- However, among American Indians the overall cancer incidence rate in Minnesota is 68 percent higher than in the SEER Program, and overall cancer mortality is twice as high as in the U.S. as a whole. Much of the increase in risk is due to lung and colorectal cancers.
- The mesothelioma incidence rate among men is significantly higher in northeast Minnesota than in the state as a whole, while among women, the rate in northeast Minnesota is among the lowest.
- Disparities in the burden of cancer are evident in Minnesota. American Indians were 13 percent more likely to develop cancer than non-Hispanic white Minnesotans and 40 percent more likely to die of these diseases. Similarly, African Americans were 6 percent more likely to develop cancer than non-Hispanic whites and 30 percent more likely to die of cancer.
- Based on current rates, about one out of two Minnesotans will be diagnosed with a potentially serious cancer during his or her lifetime, and one out of four will die of cancer.
- An estimated 195,250 Minnesotans, or 3.8 percent of the population, were living with a history of cancer on January 1, 2006.

The Minnesota Cancer Alliance and *Cancer Plan Minnesota 2005-2010*

The state's first comprehensive cancer control plan, *Cancer Plan Minnesota 2005-2010* was developed through a broad-based collaboration of public, private and non-profit organizations. Released in April 2005 it serves as a common framework for action to reduce the burden of cancer for all Minnesotans. The plan includes objectives and strategies covering all facets of cancer control: prevention, early detection, treatment, quality of life, cancer disparities, and data and research needs. An updated version will be released in early 2011.

The Minnesota Cancer Alliance was formed to implement *Cancer Plan Minnesota*. Comprising more than 100 member organizations, it has served as a forum through which cancer control activities can be better coordinated to make optimal use of limited resources and to more fully realize opportunities for innovation.

Minnesota Cancer Alliance task forces and work groups have spent the past five years focusing on activities that address the cancer plan's four initial priority areas

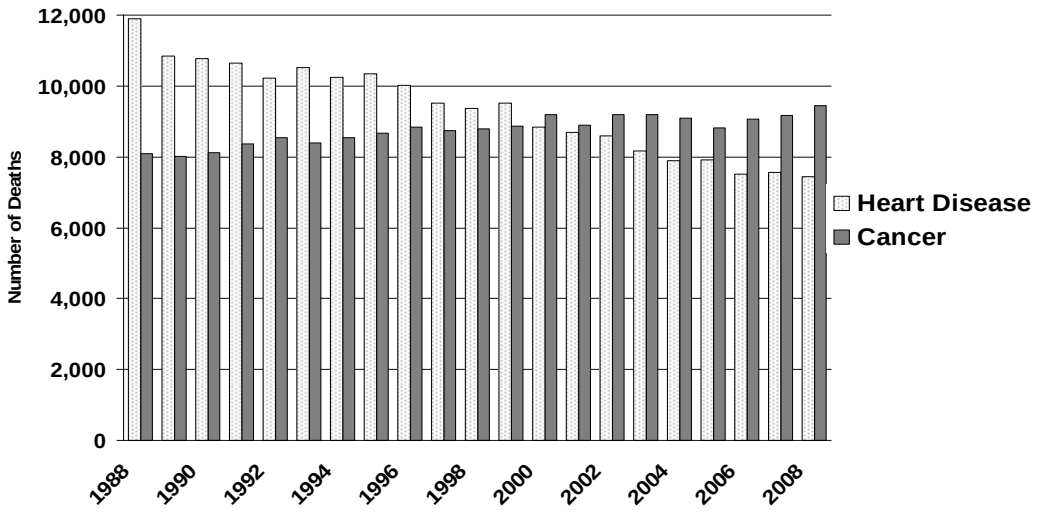
1. Increase colorectal cancer screening.
2. Promote policies to reduce the harmful effects of tobacco.
3. Reduce disparities in cancer screening and treatment.
4. Enhancing quality of life for cancer survivors and their caregivers.

Notable successes have been passing a comprehensive smoke free policy (Freedom to Breathe), securing state and federal funding to support a colorectal cancer screening program for the under and un-insured, developing a cancer training for community health workers and creating a cancer survivor care plan.

The Minnesota Cancer Surveillance System (MCSS) has been instrumental in developing data-driven objectives for *Cancer Plan Minnesota* and continues to serve as the key source of population-based data to assess the outcome of cancer control efforts in Minnesota. In addition to this biennial report, MCSS works closely with the American Cancer Society to produce *Minnesota Cancer Facts and Figures* in alternate years.

If you are interested in joining the Minnesota Cancer Alliance or one of its project teams, or to order a copy of *Cancer Plan Minnesota*, go to http://www.mncanceralliance.org or contact Elizabeth Moe, Project Coordinator, at 651-201-3608.

Deaths due to Heart Disease and Cancer, Minnesota, 1988-2008



Source: Minnesota Center for Health Statistics. Analyses were conducted by MCSS.

Questions and Answers about MCSS Data Privacy

The Minnesota Cancer Surveillance System (MCSS) is Minnesota's statewide, population-based cancer registry. It was mandated by the state legislature in 1987 to collect information on all newly diagnosed cancers among Minnesota residents. By law, new cancer cases must be reported to the MCSS, including the name, date of birth, and social security number of the person diagnosed with cancer. These data enable the Minnesota Department of Health (MDH) to protect and improve public health by monitoring cancer rates throughout the state and over time. The MCSS also benefits all Minnesotans by serving as a resource for education and research to prevent, detect, treat, and cure cancer.

Why does the MCSS need to obtain the names of individuals diagnosed with cancer? There are five primary reasons why MCSS functions depend on having information identifying individuals:

1. Most cancer cases are reported to the MCSS more than once. To determine how many new cancers have been diagnosed, multiple reports must be combined into a single summary of the case. Without personal information, separate reports from laboratories, physicians, treatment facilities, and hospitals could not be identified as representing the same case. Using patient names and other personal information to link multiple reports on the same person is essential to maintain the accuracy of the MCSS. Inaccurate data would undermine the public's investment in cancer registration and render it ineffective in protecting public health.

2. No single source of information captures all cancer diagnoses or provides all the information needed for cancer surveillance. For example, pathology reports do not contain critical information such as stage at diagnosis or treatment received. The name of the patient allows this information to be obtained from the hospital or from the physician, if the patient was not admitted to a hospital. Since an increasing number of cancer patients are treated on an outpatient basis, the ability to request additional information from physicians and treatment facilities is very important to obtain complete and unbiased data.

3. Personal identifiers are needed to link MCSS cases with death certificates. This is done to make sure that all cancer cases have been reported, and to lay the groundwork for assessing cancer survival. About two percent of MCSS cases, and a higher proportion of certain cancers, would not be identified without this linkage. The MCSS hopes to have sufficient resources in the future to evaluate cancer survival, which is a critical element in identifying disparities in cancer care. This cannot be done in a cost-effective manner without linkage to death certificates.

4. Names are needed if cancer patients are to be given the opportunity to contribute to knowledge about their disease by participating in research. The MCSS is authorized to contact cancer patients, after obtaining consent from their physician, to see if they are interested in participating in specific cancer research projects. Participation is completely voluntary. MCSS data have enabled research to be conducted on such questions as the efficacy of colorectal cancer screening, the causes of pancreatic cancer, associations between cancer and occupational exposures such as mesothelioma and mining, and the epidemiology of childhood leukemia.

5. To protect the health of Minnesotans, the MCSS must be able to evaluate whether communities or workplaces are experiencing a higher occurrence of cancer than would be expected. Although names are never released in these investigations, they are vitally important to their conduct. For example, when a concern arises in an occupational setting, names of former and current employees can be linked to the MCSS by MDH staff to determine whether workers are experiencing an excess of cancer. Because personal identifiers enable MCSS to be highly complete and accurate, as discussed above, the MDH can be confident that investigations

of cancer occurrence reflect reality, and not the artifacts of poor data collection.

Do other cancer registries obtain the names of people diagnosed with cancer? Yes. All 50 states and the District of Columbia have statewide cancer registries. All of them obtain personally identifying information on cancer cases for the reasons discussed above. Nine geographic areas (states or metropolitan areas) in the U.S. have been participating in the Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute since 1973. Each of the SEER registries has collected personally identifying information for more than three decades.

How does the MCSS protect the privacy of cancer patients? Protecting data privacy is a high priority for the MCSS and is mandated by Minnesota law. The MCSS is housed in a guarded, key-pass protected location that is not accessible to the general public. MCSS employees must sign confidentiality pledges as a condition of employment, and they are subject to criminal penalty for any breach of privacy. MCSS employees are given access to personally identifying information only as needed to perform their duties, and they are trained and monitored to keep private data secure. Data encryption, passwords, and computer firewalls are used to protect electronic data. By law, MCSS data are considered private. Data are only released in accordance with the Minnesota Government Data Practices Act. Minnesota law also protects the data from being discovered (i.e., released) during litigation without consent of the patient.

Was patient privacy taken into consideration when the legislature mandated the creation of MCSS? Yes. Prior to establishing the MCSS, the Commissioner of Health empanelled an advisory committee charged with assessing whether the benefits of statewide cancer registration to the citizens of Minnesota outweighed the potential costs to individual privacy. The committee consisted of members from the legal profession, business, labor, medicine, government, patient advocates such as the American Cancer Society, and the community. It deliberated for more than a year. Based on the importance of the proposed system to protecting public health and the ability to protect individually identifying medical data, the committee unanimously concluded that the benefits far outweighed the costs. On their recommendation, statutes that provided for both the collection of personal medical information and its stringent protection were adopted by the state.

Are patients asked for consent to have information about their cancer reported to the MCSS? No. Patient consent is not required by Minnesota statutes. Requiring consent would undermine the public's investment in cancer registration and render it ineffective in protecting public health. Federal standards require that at least 95 percent of the expected number of cases must be reported before cancer registration is complete. MCSS completeness currently meets that standard. If even 10 percent of people with cancer refused to have their information reported to the MCSS, Minnesota cancer rates would appear to be much lower than they are. In addition, persons refusing consent would likely differ from those giving consent in unknown ways, such as gender, age, race and ethnicity, location of residence, type of cancer, or year of diagnosis. Because of this, data would be biased. It would be impossible to reliably compare rates among these important factors, which is the basis of cancer surveillance. In fact, the refusal rate could be even higher, given the challenges facing patients coping with new cancer diagnoses, and the physician's need to discuss treatment, prognosis and quality of life issues with the patient. Obtaining consent for cancer reporting in this context arguably represents an unnecessary and inappropriate burden on both patients and physicians.

Do other states require informed consent for cancer registration? No. For the same reasons as discussed above, no cancer registry in the U.S. requires informed consent for cancer reporting.

How are Minnesota cancer patients given an opportunity to participate in research projects? Before a patient is invited to participate in research, his or her physician is contacted by the MCSS to determine if there is any reason why the patient or the patient's family should not be approached. This step is required by the statute

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that created the MCSS. If the physician consents, the patient is invited to participate, as specified in the study protocol. Participation is always voluntary, and the MCSS does not inform the patient's physician of his or her decision. Patients may request that they are never approached by the MCSS to participate in research by contacting the MCSS (see contact information below).

Cancer patients who are approached to participate in research are sometimes unaware that their names have been reported to the MCSS. The invitation may, therefore, come as a surprise and cause concern. Although first consulting the physician is intended to prevent patients and their families from being contacted at inappropriate times, this unfortunately can happen despite the best of intentions. Nonetheless, experience indicates that most cancer patients welcome the opportunity to contribute to knowledge about their illness.

How is data privacy protected by researchers? Data from the MCSS are only provided to a researcher whose project has been reviewed and approved both by the MCSS Peer Review Committee, which evaluates proposed studies for social and scientific merit, and by a federally approved Committee for the Protection of Human Subjects. These latter committees, also called Institutional Review Boards (IRBs), carefully review research protocols, including the provision of informed consent and methods to protect data confidentiality, to determine whether potential risks have been well explained prior to obtaining consent and are justified by potential benefits. Failure to protect confidentiality can result in the termination of the project and its funding. Research projects are reviewed annually, and complaints must be reported to the governing IRB. Researchers who receive private patient information from the MCSS are also contractually bound to protect the information under all the requirements of Minnesota law.

Does cancer reporting represent a risk to patient privacy? Yes, although the risk is small. Any time that data are exchanged, whether between individuals, between health care providers, between providers and insurers, or between providers and the MCSS, it is possible for breaches in data privacy, either inadvertent or intentional, to occur. The state legislature and MDH have taken extreme care to minimize these risks by the protections described above, with an outstanding record of success.

The underlying issue today is the same as deliberated by the Commissioner's advisory committee more than 15 years ago: "Are the benefits of cancer surveillance greater than its costs?" The answer remains an emphatic "Yes." The lifetime risk of developing a life-threatening cancer is approximately 50 percent. Thus, each of us will be affected directly or indirectly by this group of diseases. The methods used by the MCSS to collect and release data effectively balance the need to protect public health through cancer surveillance, the desire of the public for progress in preventing, detecting, and treating cancer, and the rights of individuals to privacy. The MCSS can only fulfill its legal mandates and provide the information required for cancer control and for protection of the public health through collection and protection of this critical and sensitive individual information.

Where can more information about the MCSS be obtained? More information can be obtained by visiting the MCSS website, (www.health.state.mn.us/divs/hpcd/cdee/mcss), by telephoning the MCSS office at (651) 201-5900, or by writing to MCSS, P.O. Box 64882, St. Paul, MN 55164-0882.

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Chapter I:
Introduction

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Chapter I: Introduction

This report contains information on the incidence and mortality of cancer in Minnesota from 1988-2006. Cancer incidence and mortality provide two important measures of the impact of cancer. Incidence measures how many new cases of the disease are diagnosed, while mortality measures how many people die of the disease. The Minnesota Department of Health (MDH) collects and analyzes data on both the incidence and mortality of cancer. The Minnesota Cancer Surveillance System (MCSS) collects incidence data, and the Minnesota Center for Health Statistics (MCHS) collects mortality data. MCSS conducted the analyses included in this report.

MCSS is an ongoing program within the Chronic Disease and Environmental Epidemiology Section of the MDH. The primary objectives of MCSS are to: (1) monitor the occurrence of cancer in Minnesota and describe the risks of developing cancer, (2) inform health professionals and educate citizens regarding specific cancer risks, (3) answer the public's questions and concerns about cancer, (4) promote cancer research, and (5) guide decisions about how to target cancer control resources.

The Minnesota legislature recognized the need for accurate information about the occurrence of cancer in 1981, when legislation was introduced to establish a statewide cancer surveillance system. In 1987, following a 6-year process which included consensus building, development of methods, and a feasibility study, legislation (Minnesota Statutes 144.671-144.69) was passed to establish MCSS. MCSS began operations on January 1, 1988.

MCSS receives part of its funding from the National Program of Cancer Registries (NPCR), which is administered by the U.S. Centers for Disease Control and Prevention (CDC). NPCR funding began in October 1994 and is scheduled to continue at least through June 2012. The support of the NPCR enables MCSS to collect additional information on each case of cancer, perform death clearance, perform quality control studies, provide specialized training to Minnesota professionals who collect and code cancer data, and increase the analysis and utilization of the collected data.

An attempt has been made to minimize the use of technical jargon in this report. However, because of the nature of the material and the diverse audience that this report must serve, some technical terms remain. The Glossary (Appendix D) and Appendices A, B, and E will assist those desiring more basic definitions, as well as those requiring additional detail.

Previous MCSS reports entitled, *The Occurrence of Cancer in Minnesota 1988*; *The Occurrence of Cancer in Minnesota 1988-1990: Incidence, Mortality, and Trends*; *The Occurrence of Cancer in Minnesota 1988-1992: Incidence, Mortality, and Trends*; *The Occurrence of Cancer in Minnesota 1988-1994: Incidence, Mortality, and Trends*; *The Occurrence of Cancer in Minnesota 1988-1996: Incidence, Mortality, and Trends*; *The Occurrence of Cancer in Minnesota 1992-1997; Cancer in Minnesota 1988-1999*; *Cancer in Minnesota 1988-2002*; and *Cancer in Minnesota 1988-2004* will be referenced in this document as MCSS 1991, MCSS 1993, MCSS 1995, MCSS 1997, MCSS 1999, MCSS 2001, MCSS 2003, MCSS 2005 and MCSS 2008, respectively; they are available from MCSS. MCSS 1999, 2001, 2003, 2005 and MCSS 2008 are available on the MCSS web site.[*]

Data Sources

Incidence Data

MCSS collects information on microscopically confirmed malignant and in situ tumors, as well as benign tumors occurring in the head and spinal cord. MCSS does not collect information on the most common forms of skin cancer (basal and squamous cell carcinomas), nor *in situ* carcinomas of the uterine cervix.

Enough information is collected so that MCSS can classify each new diagnosis by type of tumor (primary site, histologic cell type), tumor stage (how advanced the cancer is), and demographic characteristics of the patient (age,

[*] www.health.state.mn.us/divs/hpcd/cdee/mcss

sex, race, and residence) as of the date of diagnosis of the cancer, as well as a summary of the first course of cancer-directed treatment. MCSS obtains information about the patient, cancer, stage, and treatment that the pathology laboratory cannot provide from hospital-based cancer registries or from the patient's hospital or clinic record.

Hospitals and pathology laboratories provide data to MCSS in two main ways. Hospitals that have computerized cancer registries containing summaries for each cancer patient treated at the hospital submit computerized case reports. The remaining cancer diagnoses are reported through pathology laboratories. Pathology laboratories submit photocopies or electronic files of the pathology report, which contains information about the cancer, and the medical record face sheet or an equivalent form, which contains the patient's demographic data. More than 880,000 reports of cancer representing approximately 509,000 different cancers were registered with MCSS as of September 18, 2009. For the period covered by this report, January 1, 1988 to December 31, 2006, 404,152 newly diagnosed, invasive cancers were registered. *In situ* cancers of the urinary bladder are included with invasive cancers so that Minnesota data are consistent with national standards.

The data upon which this report is based are dynamic. That is, they are always being updated and improved. For example, in MCSS' first legislative report (MCSS 1991), filed 19 years ago, 17,728 cancers were included in the analyses of 1988 data. The current database for 1988 contains information on 18,011 cancers (some of the increase is because the initial report of data for 1988 did not include *in situ* cancers of the bladder). MCSS is constantly updating data for all years when new information becomes available. In this regard, all data are subject to change when appropriate. For purposes of analyses, the data are "frozen" (closed) in order that numbers and rates be consistent throughout the report. The date of closure for 1988-2006 data included in this report was September 18, 2009.

Mortality Data

Mortality data are obtained from death certificates. Death certificates are collected, coded, and computerized by the MCHS. Although the MCHS codes contributing causes of death as well as the underlying cause of death, only the underlying cause of death was used in calculating cancer mortality rates.

Population Data

Minnesota population estimates were obtained from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program web site.[*] They are calculated using a modified version of the annual time series of July 1 county population estimates by age, sex, race, and Hispanic origin that are produced by the Population Estimates Program of the US Census Bureau[†] with support from the NCI through an interagency agreement. Descriptions of the methodologies employed by the Census Bureau for various sets of estimates may be found on the same website. County population estimates for 2000 and later years must be bridged from 31 race categories used in Census 2000 to the four race categories specified under earlier OMB standards in order to report long-term cancer trends. Bridged estimates attempt to re-categorize those selecting more than one race on the Census form to a single race (what they would have chosen if only given one choice), based on data from other surveys. A description of the methodology used to develop the bridged single-race estimates is available on the National Center for Health Statistics web site[‡].

Data Presentation and Interpretation

Incidence Data

Cancers diagnosed prior to 1992 were originally coded according to the 1987 Field Trial Edition of the International Classification of Diseases for Oncology (ICD-O-FT), cancers diagnosed between 1992 and 2000 were originally coded

[*] www.seer.cancer.gov/popdata
[†] www.census.gov/popest/estimates.php
[‡] www.cdc.gov/nchs/nvss/bridged_race.htm

according to the 2nd edition (ICD-O-2), and cancers diagnosed from 2001 forward were coded according to the 3rd edition (ICD-O-3). All the diagnoses have been translated, using a computer algorithm either alone or in combination with review, into the ICD-O-3 standard. Cancers are presented according to grouping definitions developed by the SEER program. Following SEER reporting practices (see Appendices A and B) cases with histology defined as "borderline malignancy" under ICD-O-2 coding rules and "invasive" under ICD-O-3 coding rules are not included in data for all cancer sites combined. These histologies (9950, 9960-9962, 9980-9984, and 9989) include chronic myeloproliferative disorders and myelodysplastic syndromes); they were not collected prior to 2001 and account for a total of 2,239 diagnoses over the period 2001-2006. In addition, histologies coded as "invasive" under ICD-O-2 but as having "uncertain behavior" under ICD-O-FT and ICD-O-3 (histology codes 8442, 8451, 8462, 8472, and 8473) are not included in the current rates. Most of them are borderline ovarian tumors and account for approximately 700 diagnoses that were included in MCSS 2003 but not subsequent reports. Data are available upon request.

Most tables included in this chapter present incidence data for invasive cancers only, with the exception of *in situ* bladder cancers. Following SEER reporting practices, *in situ* bladder cancers are included in data on invasive bladder cancers and in data on all cancer sites combined because the distinction between *in situ* and invasive bladder cancer is often unclear, and some *in situ* bladder cancers may be life threatening. *In situ* cancers for other sites are only included in tables showing stage distribution for that specific site.

Mortality data

The information presented in this report includes all deaths with cancer specified as the underlying cause of death during the specified time period, regardless of the year of diagnosis. The underlying cause of death for reports from 1988 - 1998 were coded to International Classification of Diseases, Ninth Revision; for reports occurring in 1999 forward, the International Classification of Diseases, Tenth Revision was used. Cancers were grouped according to SEER's algorithm, using the ICD version that was in use at the time the death occurred.

Age-adjustment

Age-adjustment is a statistical method that minimizes differences in rates that would occur solely because the populations being compared do not have the same age distributions. Because cancer occurs more frequently with increasing age, a population with a larger proportion of elderly individuals will have more cancers occur than a younger population of the same size, even if cancer rates at any given age are exactly the same in the two groups. Age-adjustment produces a hypothetical summary rate, the rate that would occur if the group had the age distribution of a "standard" population. If cancer rates among groups being compared are age-adjusted to the same standard population, rates will not be biased by differences in age, and a determination of whether one group has a greater risk of developing or dying from cancer will be more meaningful.

All rates presented in this report were directly age-adjusted to the 2000 U.S. standard population, provided in Appendix E. A number of different population standards have been utilized in the past. Using the 2000 U.S. standard increases the absolute value of the rate, and therefore, rates in this report cannot be compared to those in MCSS reports using other standards.

Comparisons to SEER

The SEER program has collected population-based cancer incidence data from nine selected geographic areas in the U.S. since 1975. Four more areas were added in 1992, and an additional four areas in 2000. Because a cancer registry covering the entire U.S. does not exist, SEER data on cancer occurrence are widely cited as national data. The SEER incidence rates presented in tables in Chapter III for comparison to Minnesota are for the 17 SEER areas covering about 26 percent of the U.S. population, as

presented in race-specific tables in their report *SEER Cancer Statistics Review*. Consistent with SEER reporting practices, national cancer mortality rates are for the entire U.S.

For brevity, SEER/U.S. rates (except those for all cancer sites combined) are only presented for all races combined and for non-Hispanic whites. Caution should be used in comparing Minnesota and SEER/U.S. cancer rates for all races combined. Because cancer rates vary markedly by race and ethnicity, the overall risk of developing cancer in a geographic area depends in part on the relative proportion of race and ethnic groups in the population. The race and ethnic distributions of Minnesota and the 17 SEER areas are very different. In particular, Hispanics, who tend to have considerably lower cancer rates than non-Hispanic whites, comprised 3.6 percent of the Minnesota population during 2002-2006 and approximately 20 percent of the overall population in the 17 SEER areas. This means that for many sites, cancer rates for all races combined will be higher in Minnesota than reported by the 17 SEER areas. Comparison of rates among non-Hispanic whites better reflects the difference in risk of developing cancer in the two areas.

When comparing Minnesota and SEER, it is also important to recognize that rates reported by the SEER program include cases that were diagnosed based on clinical observations, while the MCSS does not currently collect information on those cases. During 2002-2006, 3.8 percent of invasive cancers in the 17 SEER registries were coded as clinical diagnoses. If all other factors were the same, one would therefore expect the overall cancer rate in Minnesota to be 3.8 percent lower than SEER simply because of the exclusion of these cases, and not because Minnesotans have a lower risk of cancer. However, there are several factors that indicate that excluding clinically diagnosed cancers from the SEER database may not make SEER and MCSS rates more comparable. First, the quality of health care in Minnesota is high, and the proportion of clinically diagnosed cancers that are sent to a laboratory for confirmation appears to be higher than in other geographical areas. Second, some cases that are originally reported to SEER based on clinical observations may eventually be confirmed microscopically, but the information is not updated in the registry. And third, audits of MCSS operations have indicated that case ascertainment is extremely high.

Nonetheless, certain types of cancer typically have a substantial proportion of clinical diagnoses, and Minnesota incidence rates may be artificially low for these sites. These include cancers of the liver (24% of cases reported as clinically diagnosed in SEER), pancreas (17%), brain (11%), Kaposi sarcoma (10%), kidney (8%), and lung and bronchus (8%). For these sites, mortality rates should be used to assess how Minnesota compares to national data.

Completeness and Quality of Data

MCSS Field Service staff first identified 9.6 percent of all the cancer diagnoses reportable to MCSS during their independent review of pathology reports. This review is an important feature of MCSS quality control in that it assures that virtually all eligible cancers are included in the data. For all of the individual cancers diagnosed during 1988-2006, 4.7 percent (over 21,000 cancers) would have been missed without this review.

MCSS data are very complete and of very high quality. This is documented by several measures of data quality. First, MCSS began performing death clearance in 1995. Death clearance is a quality control process by which cancer-related deaths are linked with the MCSS database to identify cancer cases that have not been reported by routine methods. Potentially missed cancers are then followed back to determine if the cancer indeed should have been included in the MCSS database. Unresolved cancers are included in the database as “Death Certificate Only” (DCO) cases. Death clearance can identify sources where cancer reporting might be improved. Results indicate that MCSS case ascertainment is excellent. Of all the reportable cancers diagnosed between 1995 and 2006 (the years for which death clearance has been performed), 4,290 or 1.4 percent would not have been identified without the death certificate, and another 3,874 or 1.3 percent were based solely

on a death certificate (DCO). A high-quality cancer registry should have between 1 percent and 3 percent of its cases as DCO.

Second, in December 2008 MCSS submitted a de-identified file of its provisional data through 2006 to the Registry Certification Committee of the North American Association of Central Cancer Registries (NAACCR). NAACCR is the organization in North America that develops standards and models for the collection of cancer data in central cancer registries. Table I-1 contains the results of the certification process. MCSS achieved the highest rating, the Gold Standard, for all criteria.

Third, in March-April 2008 a contractor of NPCR performed an external audit of the completeness and quality of MCSS data. Estimated case completeness was 99.7 percent, with 3 missed cases. Data accuracy was also very high, with an overall accuracy of 96.5 percent (197 errors identified out of 5,688 data items reviewed). A copy of the full report is available from MCSS.

Fourth, MCSS has completed several of its own studies of the accuracy of the data contained in the central registry. These studies indicate that MCSS data are of comparable quality to data of other central cancer registries in the U.S. (MCSS Quality Control Reports 97:2, 99:1, 00:1, 01:1, 04:1, 05:1, 05:2, and 05:3). The most recent 4 reports are available on-line at the MCSS web site.[*] Special attention was paid to the data fields that were new to MCSS in 1995, stage at diagnosis and the information on the first course of cancer therapy. MCSS has not had the resources to conduct its own audits in more recent years.

Data on Race and Ethnicity

Race is an important variable for cancer surveillance. The risk of cancer varies by race and ethnicity – the reasons for the variations have yet to be fully delineated, but most likely include cultural, economic, societal, and genetic factors – so it is important to be able to compute race-specific cancer rates. Calculating a cancer rate requires two sets of numbers: numerators, or counts of events; and denominators, or the number of people at risk. In Minnesota, there are race- and/or ethnicity-specific challenges to the accuracy of both the numerators and the denominators. MCSS has done much work to reduce the problems with numerators.

Race is not always included in the reports submitted to MCSS, and prior to the 1995 diagnosis year MCSS did not have the resources to perform active follow-up to find the missing information. This is reflected in the fact that no indication of the patient's race was reported for 6.9 percent of the cancers diagnosed during the period 1988-1994. The percentage can be improved by assuming that individuals of unknown race are white if they live in counties that had more than 95 percent of residents listed as white in the census. After making this assumption, race was "unknown" for only 3.1 percent of the cancers diagnosed during the period 1988-1994. The effect of active follow-up is demonstrated by the fact that the percent with unknown race is much lower for cancers diagnosed in 1995 through 2006 (3.1 percent before and 1.2 percent after making an assumption based on county of residence).

Another challenge with incidence data is the fact that American Indians are often not identified as such in the medical record. Beginning in 2003, NPCR has supported the linkage of state cancer registry data with the roster of American Indians enrolled in the Indian Health Service (IHS). With appropriate data privacy protections in place, MCSS has been participating in this linkage project, and cancers newly diagnosed through 2006 were linked with the IHS roster. The number of cancers in American Indians in the MCSS database for the years 1995-2006 increased by 48 percent because of the linkage. Minnesota death certificates were also linked with the IHS roster for the same years, increasing the number of cancer deaths among American Indians by 10 percent.

Despite these efforts, it is likely that cancer rates among American Indians statewide continue to be underestimated, especially outside of the IHS Contract Health Service Delivery Area

[*] www.health.state.mn.us/divs/hpcd/cdee/mcss

(CHSDA), where fewer American Indians use IHS health services and fewer are likely to be noted in the medical record as American Indian. Therefore, cancer incidence and mortality rates among American Indians are presented in this report for two geographic areas: statewide, and for residents of CHSDA counties. The IHS has designated 29 Minnesota counties as part of CHSDA. Over the five-year period 2002-2006, these counties are estimated to have included 51 percent of the American Indian population in the state. Overall cancer incidence and mortality rates are approximately 20 percent higher for American Indians in CHSDA counties than statewide. Cancer rates calculated for the CHSDA counties are thought to provide a more accurate picture of cancer rates among American Indians, but this is difficult to establish.

Ethnicity (Hispanic origin) for cancer incidence is still more difficult to collect accurately in Minnesota. Even when medical records are reviewed, usually no mention is found of whether or not a person is of Hispanic origin. Failing to count Hispanic individuals as such results in calculated rates that are lower than the true rates. MCSS adapted the NAACCR Hispanic Identification Algorithm (NHIA) to work in Minnesota. Briefly, NHIA, which is described on the NAACCR web site,* was followed except that Hispanic name matching was applied only in counties that had at least 4 percent Hispanics in the 2000 Census. Eleven counties, representing 90 percent of Hispanics in Minnesota, met this criterion. NHIA excludes individuals from Hispanic name matching if their race is Filipino or American Indian, or if they were born in a country with a high prevalence of Spanish surnames but low probability of Hispanic ethnicity. The resulting cancer incidence rates for Hispanics were more consistent both with other states' Hispanic cancer incidence data and with mortality data for Minnesota Hispanics and are therefore now included in Minnesota cancer data. After examining the effects of applying NHIA to Minnesota mortality data, it was decided that reporting of Hispanic ethnicity on the death certificate appeared complete enough without additional manipulation.

Despite recent improvements in the completeness of data on the patient's race, the ability of MCSS to evaluate racial and ethnic differences in cancer risk among Minnesotans remains limited by several factors. First, although the Minnesota population is increasingly diverse, populations of color are still relatively small. Out of a total Minnesota population of 4.9 million, the 2000 census enumerated 168,813 African Americans, 142,797 Asian/Pacific Islanders, 52,009 American Indians, 143,382 Hispanics of any race, and 75,335 persons of mixed or "other" race, together representing 12 percent of the total Minnesota population. Because all but the five most common cancers occur infrequently, only a few cases or deaths will be reported each year for most cancers from populations of color in Minnesota. This means that the random fluctuation of a few cases or deaths can cause rates for these groups to vary considerably from year to year.

Secondly, race and ethnicity as recorded in the medical record may or may not match what the individual would report on the Census form. In order to match the Census definition of race, individuals should be allowed to report their own race(s) and ethnicity. Admissions practices and forms at health care facilities do not always follow this practice; thus the race as recorded in the medical record might be from the patient's self-report, or it might be based on assumptions made by an observer at the facility.

Finally, the population estimates that are available to calculate rates may be inaccurate because they represent (1) undercounts of persons of color during the national census, (2) inaccurate population estimates during the intercensal period, and/or (3) inappropriate recoding of individuals who report more than one race into single-race categories. An example of the second, "intercensal," problem was the discovery, following completion of Census 2000, that the estimates of the Hispanic population in Minnesota for the late 1990's had been nearly 75% too low. Population estimates

*http://www.naaccr.org/DataandPublications/CallforData.aspx (click on "NHIA v2.2")

for the years between the 1990 and 2000 Censuses were subsequently revised, and thus the Minnesota Hispanic cancer mortality rates published since 2005 are different from those published in *MCSS 2003*. A potential example of the third, "recoding to single-race," problem relates to the data on American Indians. Although only 1.2 percent of Minnesotans overall reported more than one race in the 2000 Census, 32 percent of American Indians reported at least one race in addition to American Indian. The MCSS database contains only 49 (0.02 percent) cases with more than one reported race. Thus, there is a mismatch between how race is identified in the numerator (MCSS) and how it was identified in the denominator (census), especially for American Indians. As previously stated, the bridged census estimates attempt to re-categorize individuals selecting more than one race to the single race they would have chosen if only given one choice. It is not known how American Indian individuals enrolled in IHS would report their racial identity on a Census form, nor whether IHS-enrolled American Indians are any different in this respect from American Indians not enrolled in the IHS, and thus it is unknown whether the current bridging method is the appropriate one to use when calculating American Indian cancer rates after incorporating an IHS linkage.

All of these factors limit our confidence in race- and ethnic-specific cancer rates in Minnesota, and make it challenging to interpret the differences we find. Despite these limitations, we believe that identifying race and ethnic differences in cancer risks is an important function of MCSS, and is important in developing policies and interventions directed at cancer control. We have, therefore, aggregated data over the 5-year period, 2002-2006, to present cancer data by race and ethnicity. In addition, rates based on fewer than ten cases or deaths are suppressed. Nonetheless, the shortcomings discussed above should be kept in mind when evaluating race and ethnic differences in cancer rates presented in this report.

Uses of MCSS Data

As previously stated, MCSS has five primary objectives. The following is a brief summary of how MCSS is accomplishing each objective.

Monitoring the occurrence of cancer in Minnesota and describing the risks of developing cancer. Using a variety of tools, some developed in-house and some obtained from SEER,[*] MCSS epidemiologists have analyzed data and produced a series of publications describing cancer occurrence and risks (Table I-2b). Cancer mortality data have also been analyzed and included in this description of cancer occurrence in Minnesota. Estimates of cancer prevalence (the number of persons living with a diagnosis of cancer) in Minnesota, using software designed by SEER and methods developed by MCSS epidemiologists, are included as well.

MCSS provides data files without personal identifiers to the National Program of Cancer Registries, the North American Association of Central Cancer Registries, and the Central Brain Tumor Registry of the United States. These organizations combine data from multiple registries to produce publications describing cancer incidence and trends in the United States and/or North America (included in Table I-2c).

Informing health professionals and educating citizens regarding specific cancers. In 2007 - 2008, 9 formal presentations were made before local public health, community, academic, and regulatory groups on the occurrence of cancer in Minnesota and related topics. An example of other activities to inform and educate are the biennial *Minnesota Cancer Facts & Figures,*[†] authored by an MCSS epidemiologist and published by the American Cancer Society. A list of publications (2007 - 2008) authored by MCSS staff is found in Table I-2a, b.

Answering the public's questions and concerns about cancer. MCSS received over 100 requests

[*] www.seer.cancer.gov/software

[†] http://www.mncanceralliance.org/Minnesota_Cancer_Facts_and_Figures_2009.html

for information on cancer rates or cancer risks. These inquiries represent all geographic regions of the state. Although most of these inquires are from individual citizens, inquiries also frequently come from citizens' groups, schools, and workplaces, as well as the public health, scientific, and medical communities. Responses to these inquiries range from providing simple, descriptive statistics to detailed record-linkage studies of a defined cohort.

Promoting cancer research. MCSS has assisted cancer researchers by providing information and data needed for the planning and support of grant applications. MCSS has also received 41 data use applications since 1988, which are described in Table I-3. The involvement of MCSS in the approved studies has varied from providing information about the completeness of case finding to providing rapid identification of cases for case-control studies. In addition, MCSS data have been used to investigate concerns about cancer occurrence in the workplace. Many scientific articles related to cancer etiology and prevention have been published based on these studies (Table I-2c).

Guiding decisions about how to target cancer control activities. MCSS epidemiologists continued their involvement in the implementation of CancerPlan Minnesota, serving the Minnesota Cancer Alliance. This data-based strategic plan is intended to be a framework for action to effectively reduce the burden of cancer among all Minnesotans. The current plan, written for 2005-2010, is in the process of being updated for 2011-2015. Health care professionals, community and civic leaders, hospital administrators, and public health professionals use MCSS data to identify populations who would benefit from screening programs, write grant proposals to obtain funds for establishing screening programs for particular cancers, aid in deciding where satellite treatment facilities should be built and additional staff hired to serve patients who otherwise have to travel long distances to obtain treatment, and identify populations needing public education programs for cancer prevention.

Statistical Methods

The statistical methods and constructs used in this report conform to standards established by the National Cancer Institute and are described in Appendix E.

Protection of Individual Privacy

Privacy of information that could identify an individual (e.g., name and address) is strictly protected by Minnesota law. Furthermore, this information is considered privileged in that the MDH cannot be compelled by court order to release any personal data collected by MCSS.

For more details on this issue, please see "Questions and Answers about MCSS Data Privacy" following the Summary section at the beginning of this report.

Table I-1: North American Association of Central Cancer Registries certification results: quality, completeness, and timeliness of 2006 data, Minnesota Cancer Surveillance System

Registry Element	Gold Standard	Silver Standard	MCSS Measure	Standard Achieved
1. Completeness of case ascertainment	95 %	90 %	106.6 %	Gold
2. Completeness of information recorded				
• Missing/unknown "age at diagnosis"	<= 2 %	<= 3 %	0.0 %	Gold
• Missing/unknown "sex"	<= 2 %	<= 3 %	0.0 %	Gold
• Missing/unknown "race"	<= 3 %	<= 5 %	1.6 %	Gold
• Missing/unknown "county"	<= 2 %	<= 3 %	0.6 %	Gold
3. Death certificate only cases	<= 3 %	<= 5 %	1.9 %	Gold
4. Duplicate primary cases	<= 0.1 %	<= 0.2 %	0.08 %	Gold
5. Passing EDITS	100.0 %	97 %	100.0 %	Gold
6. Timeliness	Data submitted within 24 months of close of calendar year			Gold

Table I-2: Publications (2006, not previously reported; 2007; and 2008)

Table I-2a: Peer-Reviewed Publications co-authored by MCSS/MDH staff

Johnson KJ, Puumala SE, Soler JT, Spector LG. Perinatal characteristics and risk of neuroblastoma. Int J Cancer. 2008 Sep 1;123(5): 1166-72.

Spector LG, Johnson KJ, Soler JT, Puumala SE. Perinatal risk factors for helpatoblastoma. Br J Cancer. 2008 May 6;98(9):1570-3.

Puumala SE, Soler JT, Johnson KJ, Spector LG. In J Cancer. 2008 Mar 15;122(6): 1368-73.

Johnson KJ, Soler JT, Puumala SE, Ross JA, Spector LG. BMC Pediatr. 2008 Feb 25;8-7.

Table I-2b: Other Publications co-authored by MCSS/MDH staff

Perkins C, Bushhouse S. Cancer in Minnesota, 2006: Preliminary Report. Minnesota Cancer Surveillance System, St. Paul, MN, January 2009.

American Cancer Society, Midwest Division. Minnesota Cancer Facts & Figures 2009. Mendota Heights, MN: American Cancer Society, Midwest Division, 2009.

Cancer in Minnesota 1988-2004. St. Paul, Minnesota: Minnesota Cancer Surveillance System, Minnesota Department of Health, September 2008.

Cancer Incidence in Dakota and Washington Counties. St. Paul, Minnesota: Minnesota Cancer Surveillance System, Minnesota Department of Health, June 7, 2007.

Cancer in Minnesota, 2007: Preliminary report. Minnesota Cancer Surveillance System, St. Paul, MN, January 2010.

Table I-2c: Publications incorporating/based on data from MCSS

Table I-2c: Publications incorporating/based on data from MCSS

Jemal A, Thun MJ, Ries LA, Howe HL, Weir HK, Center MM, Ward E, Wu XC, Eheman C, Anderson R, Ajani UA, Kohler B, Edwards BK. Annual report to the nation on the status of cancer, 1975-2005, featuring trends in lung cancer, tobacco use, and tobacco control. J Natl Cancer Inst. 2008 Dec 3;100(23):1672-94.

Watson M, Saraiya M, Ahmed F, Cardinez CJ, Reichman ME, Weir HK, Richards TB. Using population-based cancer registry data to assess the burden of human papillomavirus-associated cancers in the United States: overview of methods. Cancer. 2008 Nov 15;113(10 Suppl):2841-54.

Ryerson AB, Peters ES, Coughlin SS, Chen VW, Gillison ML, Reichman ME, Wu X, Chaturvedi AK, Kawaoka K.Burden of potentially human papillomavirus-associated cancers of the oropharynx and oral cavity in the US, 1998-2003. Cancer. 2008 Nov 15;113(10 Suppl):2901-9.

Brunner WM, Williams AN, Bender AP. Investigation of exposures to commercial asbestos in northeastern Minnesota iron miners who developed mesothelioma. Regul Toxicol Pharmacol. 2008 Oct;52(1 Suppl) :S116-20.

Slattery ML, Wolff RK, Curtin K, Fitzpatrick F, Herrick J, Potter JD, Caan BJ, Samowitz WS. Colon tumor mutations and epigenetic changes associated with genetic polymorphism: Insight into disease pathways. Mutat Res. 2008 Oct 15.

Li J, Thompson T, Miller JW, Pollack LA, Stewart SL. Cancer incidence among children and adolescents in the United States, 2001-2003. Pediatrics. 2008 Jun;121(6):e1470-7.

Yamamoto JF, Goodman MT. Patterns of leukemia in the United States by subtype and demographic characteristics, 1997-2002. Cancer Causes Control 2008 May;19(4):379-90.

Slattery ML, Folson AR, Wolff R, Herrick J, Caan BJ, Potter JD. Transcription factor 7-like 2 polymorphism and colon cancer. Cancer Epidemiol Biomarkers Prev. 2008 Apr;17(4): 978-82.

Harper S, Lynch J, Meersman SC, Breen N, Davis WW, Reichman ME. An overview of methods for monitoring social disparities in cancer with an example using trends in lung cancer incidence by area-socioeconomic position and race-ethnicity, 1992-2004. Am J Epidemiol. 2008 Apr 15;167(8):889-99.

Carozza SE, Li B, Elgethun K, Whitworth R. Risk of childhood cancer associated with residence in agriculturally intense areas of the United States. Environ Health Perspect 2008 Apr;116(4):559-65.

Stewart SL, Wike JM, Foster SL, Michaud F. The incidence of primary fallopian tube cancer in the United States. Gynecol Oncol 2007; 107:392-397.

Stewart SL, Sabatino SA, Foster SL, Richardson LC. Decline in breast cancer incidence—United States, 1999-2003. MMWR 2007; 56(22):549-552.

Goodman MT. Descriptive study of gallbladder, extrahepatic bile duct, and ampullary cancers in the United States, 1997-2002. Cancer Causes Control 2007; 18(4):415-22.

Pickle LW, Hao Y, Jemal A, Zou Z, Tiwari R, Ward E, Hachey M, Howe HL, Feuer EJ. A new method of predicting U.S. and state-level cancer incidence counts for the current calendar year. Ca Journal for Clinicians. 2007 57(1):30-42.

Larson T, Melnikova N, Davis S, Jamison P. Incidence and descriptive epidemiology of Mesothelioma in the United States, 1999-2002. Int J Occup Environ Health 2007; 13:398-403.

Goodman MT, Hernandex BY Shvetsov YB. Demographic and pathological differences in the incidence of invasive penile cancer in the United States, 1995-2003. Cancer Epidemiol Biomarkers Prev 2007 Sep;16(9):1833-9.

Table I-2c: Publications incorporating/based on data from MCSS

Wu XC, Chen VW, Andrews PA, Ruiz B, Correa P. Incidence of esophageal and gastric cancers among Hispanics, non-Hispanic whites and non-Hispanic blacks in the United States: subsite and histology differences. Cancer Causes Control 2007 Aug;18(6):585-93.

Clegg LX, Reichman ME, Hankey BF, Miller BA, Lin YD, Johnson NJ, Schwartz SM, Bernstein L, Chen VW, Goodman MT, Gomez SL, Graff JJ, Lynch CF, Lin CC, Edwards BK. Quality of race, Hispanic ethnicity, and immigrant status in population. Cancer Causes Control. 2007 Mar;18(2):177-87.

Howe HL, Lake AJ, Shen T. Method to assess identifiability in electronic data files. Am J Epidemiol 2007 Mar 1;165(5):597-601.

Hayat MJ, Howlader N, Reichman ME, Edwards BK. Cancer statistics, trends, and multiple primary cancer analyses from the Surveillance, Epidemiology, and End Results (SEER) Program. *Oncologist*. 2007 Jan;12(1):20-37.

Eddie Reed, Faruque Ahmed, Jeannette Jackson-Thompson, Carol Friedman, Robert R. German, Sue-Min Lai, Phyllis A. Wingo. Supplement to Cancer: Descriptive Epidemiology of Colorectal Cancer in the United States, 1998-2001. Cancer 2006; 107 (S5):1101-1204.

Ahmed RI, Schmitz KH, Anderson KE, Rosamond WD, Folsom AR. The metabolic syndrome and risk of incident colorectal cancer. Cancer 2006 July 1;107(1):28-36.

Feigelson HS, Patel AV, Teras LR, Gansler T, Thun MJ, Calle EE. Adult weight gain and histopathologic characteristics of breast cancer among postmenopausal women. Cancer 2006 Jul 1;107(1):12-21.

Slattery ML, Sweeney C, Murtaugh M, Ma KN, Caan BJ, Potter JD, Wolff R. Associations between vitamin D, vitamin D receptor gene and the androgen receptor gene with colon and rectal cancer. Int J Cancer. 2006 Jun 15;118(12):3140-6.

Chao A, Connell CJ, Jacobs EJ, McCullough ML, Patel AV, Callee EE, Cokkinides VE, Thun MJ. Amount, type, and timing of recreational physical activity in relation to colon ad rectal cancer in older adults: the Cancer Prevention Study II Nutrition Cohort. Cancer Epidemiol Biomarkers Prev. 2004 Dec;13(12):2187-95.

Feigelson HS, Rodriguez C, Jacobs EJ, Diver WR, Thun MJ, Callee EE. Noassociation between the progesterone receptor gene +331G/A polymorphism and breast cancer. Cancer Epidemiology and Biomarkers Prev. 2004 Jun;13(6):1084-85.

Gloeckler Ries LA, Reichman ME, Lewis DR, Hankey BF, Edwards BK. Cancer survival and incidence from the Surveillance, Epidemiology, and End Results (SEER) program. Oncologist. 2003;8(6):541-52. Review.*

Table I-3: Applications requesting data for research as of January 2009

Year*	Nature of Study	Status (Institution)
1989	International study of the effectiveness of screening for neuroblastoma at birth	Completed: Study period 1989-1998. Minnesota was one of the control areas. (U of MN)
1990	Population-based, case-control study of the epidemiology of childhood acute lymphoblastic leukemia	Completed: MCSS provided data on the completeness of ascertainment. (U of MN)
1991	International, population-based, case-control study of renal cell carcinoma	Completed: MCSS provided rapid ascertainment for identification of cases. (U of MN)
1991	National, multi-center, population-based, case-control study of colon cancer	Completed: MCSS provided rapid ascertainment for identification of cases. (U of MN)
1993	Record linkage with a 4,000-member cohort characterized for cardiovascular disease risk factors	Biennial linkage project. Fourth linkage completed fall 2003. (U of MN)
1994	Record linkage with a 14,000-member cohort who completed a nutrition survey (American Cancer Society CPS-II Nutrition study)	Completed: Pilot linkage to estimate sensitivity and specificity of cancer identification using central cancer registries. (American Cancer Society - National Home Office)
1994	Record linkage with the list of women screened through the Minnesota Breast and Cervical Cancer Control Program	Annual linkage project. Most recent linkage completed Fall 2004. (MN Dept. of Health)
1995	Record linkage with Indian Health Service patient registries to characterize cancer incidence	Completed: Report describing cancer incidence in American Indians in Minnesota was released Fall 1996. (MN Dept. of Health)
1995	Multi-center, population-based, case-control study of gliomas in rural areas	Completed: MCSS provided rapid ascertainment for identification of cases. (U of MN)
1996	Multi-center, population-based, case-control study of proximity to toxic waste sites and occurrence of Wilms tumor	Application denied because of major methodological flaws. (Agency for Toxic Substances and Disease Registry)
1996	Randomized trial to assess whether risk-appropriate counseling increases utilization of screening by individuals with a first-degree relative who had colorectal cancer	Application withdrawn before peer review because study was not funded. (MN Dept. of Health)
1997	Multi-center, population-based, case-control study of acoustic neuromas and use of cellular phones	Application inactive because of funding issues. (U of IL - Chicago)
1997	Randomized, controlled clinical trial to deter mine whether screening for fecal occult blood reduces colorectal cancer mortality	Completed: MCSS validated cancer incidence in the 46,000 study participants via record linkage. MCSS also linked the study cohort with 1995 MCSS data. (U of MN)
1997	Population-based study of the role of aromatic amines in pancreatic cancer etiology	Completed: MCSS provided rapid ascertainment for identification and recruitment of cases. MCSS also linked the study cases with incidence and mortality data to assist in estimating response rates. (U of MN)
1997	Population-based pilot study of the quality of life in cancer survivors	Completed: MCSS identified and recruited a random sample of cases. (American Cancer Society - National Home Office)

* Year application submitted

1997	Occupational cohort linkage study to describe cancer incidence in a group of workers	Completed: MCSS linked a list of workers with MCSS data and provided aggregated results to the investigator. (3M)
1997	Occupational cohort linkage study to describe cancer incidence in two groups of workers, and to compare the results of incidence follow-up with the results of mortality follow-up	Completed: MCSS linked lists of workers with MCSS and death certificate data. (MN Dept. of Health)
1997, 2002	Identification and recruitment of families at high risk of colorectal cancer into a Familial Colorectal Cancer Registry (Re-applied in 2002 for extension of funding)	Completed: MCSS identified individuals diagnosed with colorectal cancer between 1997 and 2007, who were then invited to provide information on familial cancer histories and possibly invited to participate in a national database that will be used to investigate the genetics of colorectal cancer. (Mayo Clinic and U of MN)
1998	Evaluation of Treatment Information in the Cancer Registry through Linkage	Completed: MCSS linked the list of cancer patients diagnosed in 1995 with lists of enrollees in several sets of claims and encounter data. The study compared completeness of treatment information between the two sources. (MN Dept. of Health)
1998	Mesothelioma Incidence in the Mining Indus try: A Case Study	Completed: A list of 70,000 individuals who worked in the mining industry was linked with all individuals in MCSS who developed mesotheliomas. The goal was to ascertain if mesotheliomas among miners could be explained by occupational exposure to commercial asbestos. (MN Dept. of Health)
1999	Minnesota/Wisconsin Men's Health Study	Completed: MCSS identified individuals with prostate cancer diagnosed in 1999 and 2000. The study is looking for associations between genetic markers, exposure variables (pesticides, occupational, farming), and risk of prostate cancer. (U of MN)
1999	Pilot Test for Linking Population-Based Cancer Registries with CCG/POG Pediatric Regis tries	Completed: The MCSS list of cancer patients age 0 - 19 was linked with the CCG/POG databases for Minnesota to describe the completeness of ascertainment for both databases. (MN Dept. of Health)
2001	American Cancer Society CPS-II Nutrition study	Completed: Linkage with more than 500 Minnesotans who completed nutritional surveys to verify and update their cancer status. (American Cancer Society - National Home Office)
2001	National Quality of Life Study	Completed: MCSS identified and invited cancer survivors to participate in this study of behavioral, psychosocial, treatment, and support factors that influence quality of life and cancer survivorship in the U.S. (American Cancer Society - National Home Office)

2002	Incidence of Endometrial Adenocarcinoma Following Endometrial Ablation in a Low Risk Population	Completed: The MCSS assisted in determining how many women who underwent endometrial ablation subsequently developed endometrial cancer. (St. Luke's Roosevelt Hospital)
2002	Family Health Study/Validation of a Family History of Cancer Questionnaire for Risk Factor Surveillance	Completed: MCSS assisted with assessing the validity of self-reported family history of cancer. (National Cancer Institute)
2003	Statistical Models for Cancer Control and Epidemiology	Completed: MCSS improved its geocoding information so that cancer treatment and survival could be assessed in relationship to distance from appropriate medical facilities. (U of MN)
2004	Relationship of Increasing Indoor Tanning Use to Melanoma Risk	Completed: MCSS identified patients diagnosed with melanoma skin cancer between April 2003 and March 2008. The study looked for associations between genetic markers, indoor tanning booth use, and other know risk factors and melanoma skin cancer. (U of MN)
2005	Predictors of Adult Leukemia	Completed: MCSS used rapid ascertainment to identify patients diagnosed with chronic or acute myelogenous or monocytic leukemia between June 2005 and November 2009. The study looked for associations with farming exposures, nonsteroidal antiinflammatory drug use, and genetic markers. (U of MN)
2005	Breast and Prostate Cancer Data Quality and Patterns of Care	Completed: A collaborative agreement between CDC and seven population-based cancer registries or affiliated research institutions to determine the proportion of patients diagnosed with breast or prostate cancer who received first course of therapy in accordance with guidelines issued by the National Comprehensive Cancer Network. (MN Dept. of Health)
2005	Annual Report to the Nation on the Status of Cancer, 1975-2003, with a Special Feature on Cancer in US/Hispanic/Latino Populations, 1999-2003.	Completed: MCSS submitted data to NAACCR with a county identifier to be used to link with the Bureau of the Census files that include the percent of the county residents that live below poverty, and to the US Department of Agriculture Beale codes to designate urbanicity of the county of the patient's residence at the time of diagnosis. The data was used to facilitate the statistical comparisons among the three population groups: Hispanic/Latino; non-Hispanic White; and non-Hispanic Black.(NAACCR)
2006	Birth Factors and Childhood cancers in Minnesota: A Data Linkage Study.	Completed: A linkage study of over 2400 cases of cancer diagnosed in children in Minnesota to their birth files and additionally to select controls from the birth files to identify certain birth risk factors and the development of cancer.

2007	Mayo Mammography Health Study Linkage	Ongoing: MCSS will be linking its database at intervals with records of more than 21,000 women who received routine mammography and consented to participate in the study. The aim is to assess whether changes in breast density over time are associated with breast cancer. The secondary aim is to examine whether breast density responses that accompany HRT initiation are associated with breast cancer risk. (Mayo Clinic)
2007	Forteo Post-Approval Surveillance Study: Case Series	Ongoing: MCSS is identifying cases of adult osteosarcoma and inviting them or their next-of-kin to participate in an interview. The goal is to discover whether this type of cancer might be associated with the use of a drug called Forteo, a biosynthetic human parathyroid hormone used to treat osteoporosis. (RTI Health Solutions, for Eli Lilly)
2007	Occupational and Demographic Factors of Iron Miners that Developed Mesothelioma in Minnesota (1988-2006)	Completed: Linkage study to establish the detailed protocol for a future case-control study to evaluate the role (if any) of historical exposure to taconite dust as a factor in mesothelioma occurrence and to describe, within data privacy limitations, the miners that have developed mesothelioma. (MN Dept. of Health)
2008	American Cancer Society CPS-II Nutrition Survey	Completed: Linkage with more than 500 Minnesotans who completed nutritional surveys to verify and update their cancer status. (American Cancer Society - National Home Office)
2009	Mortality and Cancer Incidence Studies of Workers in the Minnesota Taconite Industry	In process: A cohort of taconite workers is being linked to MCSS to investigate 1) whether taconite industry workers have an increased risk of mesothelioma specifically associated with exposure to mineral fibers in the dust from mining and processing taconite, and 2) the incidence of other cancers is associated with exposure to dust from the taconite industry. (U of MN)
2009	Cancer Incidence in 3M Chemical Workers	In process: MCSS will link its database with a list of fluorochemical-exposed workers (approximately 7,500) to identify any increased cancer risks. (U of MN)
2009	Cancer Epidemiology in Adventists, a low risk group	Completed: MCSS oversaw a linkage between its database and a list of Adventists who had consented to participate in the study, to identify incident cancers among cohort members and investigate cancer risk associated with dietary and other lifestyle factors. (Loma Linda University)

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Chapter II:
Overview

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Chapter II: Overview

This chapter provides an overview of the status of cancer in Minnesota, using cases reported to the Minnesota Cancer Surveillance System (MCSS) and deaths reported to the Minnesota Center for Health Statistics (MCHS). The first section highlights the relative importance of various cancers by gender and age. Following this is a section that provides an assessment of the cancer burden in Minnesota by race and ethnicity. Changes in cancer incidence and mortality rates over the 19-year period 1988-2006 are summarized in the third section, and geographical variation in cancer occurrence is discussed in the next section. The final section presents estimates of Minnesota cancer prevalence.

Cancer surveillance plays a crucial role in the protection and improvement of public health. The data presented in this report enable the Minnesota Department of Health to identify health concerns, to target and evaluate goals for cancer control, and to inform the public and medical professionals about cancer risks.

The total number of new cases and deaths due to cancer in Minnesota over the five-year period 2002-2006 and the corresponding age-adjusted average annual incidence and mortality rates per 100,000 persons are presented in Table II-1. To calculate the average number of cases or deaths per year, divide the total number of cases or deaths over the five-year period by five. Annual counts and rates by year for the most common cancers may be found in Chapter III.

On average, 23,941 potentially serious cancers (12,646 in males and 11,295 in females) were diagnosed among Minnesotans each year over the five-year period 2002-2006 (Table II-1). These figures do not include common skin cancers or *in situ* cancers for sites other than the urinary bladder. The actual number of persons diagnosed with cancer was about 5.0 percent lower than the number of cancers diagnosed because some individuals were diagnosed with more than one cancer. The overall average annual age-adjusted incidence rate over the same five-year period was 470.4 new cases per 100,000 persons (556.4 and 408.9 for males and females, respectively).

Over the five-year period 2002-2006, an average of 9,072 Minnesotans died each year with cancer listed as the underlying cause of death on the death certificate (4,643 males and 4,429 females) (Table II-1). The age-adjusted mortality rate over the same five-year period was 176.6 deaths per 100,000 persons (215.3 for males and 151.6 for females). For the first time in 2000, cancer became the leading cause of death in Minnesota, surpassing heart disease. Cancer is responsible for about one in every four deaths.

Cancer is not a single disease, and does not have a single cause or a single cure. The more than 65 types of cancer listed in Table II-1 vary considerably in their risk factors, in frequency and prognosis, and in the age group and gender most likely to be affected.

Cancer Incidence and Mortality in Minnesota by Gender and Age

The risk of being diagnosed with and dying from cancer varies by both gender and age. In general, males are at greater risk of both developing and dying from cancer than females. The overall cancer incidence rate is 36 percent higher among males then females, and the overall cancer mortality rate is 42 percent higher. Men are at two to four times greater risk than women for a number of cancers, including cancers of the urinary bladder, esophagus, larynx, oral cavity, kidney, liver, and stomach, as well as mesothelioma and Kaposi sarcoma. The higher risk among men may be directly attributable to historically higher smoking rates among men and to occupational exposures. For many cancers, the reason for the higher rates among men is not known. Excluding the sex-specific cancers, women are at greater risk than men for only three common cancers: breast, gall bladder and thyroid.

Despite these differences in risk, the most common cancers diagnosed among men and women in Minnesota are similar (Figures II-1 and II-2). Prostate cancer is the most commonly diagnosed cancer among men, and breast cancer is the most commonly diagnosed among women. Each of these cancers accounts for approximately

one third of cancers diagnosed among men and women. Lung and bronchus cancer and cancers of the colon and rectum are the second and third most commonly diagnosed cancers among men and among women in Minnesota, accounting for roughly 12 percent and 10 percent, respectively, of diagnoses for each gender.

Although prostate cancer and breast cancer are more common, lung and bronchus cancer is the leading cause of cancer mortality for both males and females, accounting for 25 percent of cancer deaths in the state. In 2006, lung cancer killed almost as many Minnesotans (2,353 deaths) as the next four leading causes of cancer mortality combined: colorectal (822), breast (614), pancreas (564), and prostate (484).

The fourth most commonly diagnosed cancer in Minnesota is urinary bladder cancer for men and uterine cancer in women. Urinary bladder cancer accounts for about 7 percent of cancers among males and uterine cancer accounts for about 7 percent of the cancers among females. Non-Hodgkin lymphoma is the fifth most common cancer among both men and women, accounting for nearly five percent of diagnosed cancers in Minnesota. Melanoma of the skin is the sixth most commonly diagnosed cancer for each gender, accounting for four percent of cancers.

In general, cancer is a disease of the elderly. Tables II-2 through II-5 show the age-specific incidence and mortality rates for the five-year period 2002-2006 for males and females in Minnesota. The overall cancer rate increases by 80 to 150 fold with age, from approximately 20 new cases per year for each 100,000 children less than five years of age, to more than 3,000 and 1,600 per 100,000 men and women 70 years of age and older, respectively. Similarly, the overall cancer mortality rate increases by more than 675 to 1,350 fold from two deaths per year for each 100,000 children less than five years of age to more than 2,600 and 1,350 deaths per 100,000 men and women 85 years of age and older, respectively.

The relationship between cancer risk and age varies with the type of cancer (Figure II-3). While only a small percentage of prostate, lung, and colorectal cancers are diagnosed among persons under the age of 50 years, more than 20 percent of breast cancers, 30 percent of melanomas, 40 percent of brain cancers, 50 percent of cervical cancers, 60 percent of Hodgkin lymphomas, and 80 percent of acute lymphocytic leukemias are diagnosed among persons less than 50 years of age.

Race and Ethnic Disparities in Cancer in Minnesota

It is clear from national data that race and ethnic differences exist in the risk of developing and dying from cancer, and data from Minnesota are consistent with that picture. However, assessing race and ethnic disparities in the burden of cancer in Minnesota is limited by the relatively small size of populations of color in our state, incomplete or inaccurate reporting of race and ethnicity on the medical record and death certificate, and differences in the way race and ethnicity are defined and collected for cases and deaths (the numerator for rates) and population estimates (the denominator for rates). These difficulties are not unique to Minnesota and are well recognized in cancer registration.

As discussed in Chapter I, several steps to improve the classification of race and ethnicity in the MCSS have been undertaken, and cancer incidence and mortality are reported for five major race and ethnic groups in Minnesota: American Indian/Alaska Native, Asian/Pacific Islander, black/African American including African-born, non-Hispanic white, and Hispanic (all races). In addition, cancer rates for American Indians are presented for two geographic areas: statewide, and for residents of the Contract Health Service Delivery Area (CHSDA). The IHS has designated 29 Minnesota counties as part of CHSDA. Over the five-year period 2002-2006, these counties are estimated to have included 51 percent of the American Indian population in the state.

Despite improvements, it is likely that an unknown degree of misclassification and inconsistency between numerators and denominators still exists. For small populations, this may result in substantial error; therefore race

and ethnic differences in cancer rates should be interpreted cautiously.

Persons of unknown or "other" race who were not Hispanic were not assigned to a race group, but were included in data for all races combined. The category "Hispanic" used in this report combined data for the entire Hispanic population in Minnesota, regardless of race. This was done because a substantial proportion of Hispanics were not identified by race on the medical record and frequently reported themselves as "other" race on the census. Although the category "non-Hispanic white" excludes Hispanics reported as white race, Hispanics were not excluded from the other race groups. Therefore, Hispanics are not mutually exclusive from race and ethnic categories other than "non-Hispanic white". In some instances, the sum of counts by race and ethnicity could therefore exceed the total number of cases or deaths.

It should also be noted that cancer mortality data presented here differs somewhat from cancer mortality data reported by the MCHS. For data presented here, race and ethnicity reported on death certificates was supplemented with information from the Indian Health Service to better identify cancer deaths among American Indians. This process increased the overall cancer mortality rate among American Indians by approximately 14 percent, and decreased rates among other race and ethnic groups (primarily non-Hispanic whites) by a small percent. To our knowledge, MCHS has not similarly updated race classification on electronic death certificate files.

Tables in Chapter III show the total number of cases and deaths over the five-year period 2002-2006 by race and ethnicity and gender. This section provides an overview of race and ethnic disparities in the occurrence of cancer in Minnesota. To simplify the presentation, the rates referred to are for both sexes combined except for breast, cervix, uterus, and prostate cancer.

American Indian/Alaska Native

As discussed earlier, tables and figures in this report present cancer data for American Indians in two geographic regions of Minnesota: statewide, and for those living in the 29 IHS CHSDA counties. The rates for American Indians living in the CHSDA counties may better reflect the cancer experience of American Indians in Minnesota, but they are based on fewer cases, and therefore can be more affected by random variation. The overall cancer incidence and mortality rates calculated for American Indians living in the CHSDA counties are 20 percent higher than comparable rates for American Indians statewide, and the differences are statistically significant. However, rates for some sites are lower for American Indians in CHSDA counties, and when examining site-specific rates for both sexes combined, only the elevated risk of lung cancer among American Indians living in the CHSDA counties is statistically significant. In the text below, data are presented for American Indians statewide. Comparable data for American Indians living in the CHSDA counties can be found in the referenced tables and figures.

During the five-year period 2002-2006, an average of 189 American Indians in Minnesota were diagnosed with cancer each year and 76 died of the disease annually (Tables II-6 and III-1.3). After adjusting for population size and age distribution, American Indians had the highest overall cancer incidence and mortality rates compared to other race/ethnic groups in the state (Table II-7 and Figure II-4). American Indians were 13 percent more likely to be diagnosed with cancer than non-Hispanic whites and 40 percent more likely to die of the disease. The overall cancer incidence and mortality rates were seven and eight percent higher, respectively, among American Indians than blacks, but neither difference was statistically significant.

The overall cancer incidence rate among American Indians was significantly higher in Minnesota than in the geographic areas reporting to the SEER Program, where the majority of American Indian cancer cases are from cancer registries in New Mexico and Alaska. The overall cancer mortality rate among American Indians was also significantly higher in Minnesota than in the U.S. as a whole. During 2002-2006 in the SEER Program, American Indian/Alaska Native populations had the lowest overall cancer incidence rate compared to other race and ethnic

groups (Figure II-5). The overall cancer incidence rate among American Indians was more than two times higher in Minnesota than among American Indians in the SEER Program, and the overall cancer mortality rate was nearly two times higher in Minnesota than in the U.S. as a whole. In contrast, overall cancer rates among other race and ethnic groups in Minnesota were similar to or lower than comparable rates reported by the SEER Program (Figures II-4 and II-5).

The majority of the excess in cancer incidence among American Indians in Minnesota compared to non-Hispanic whites was due to lung cancer. The lung cancer incidence rate was twice as high among American Indians as among non-Hispanic whites, and the lung cancer mortality rate was similarly elevated (Table II-7). Colorectal and kidney/renal pelvis cancers also contributed significantly to the excess burden of cancer in the American Indian population in Minnesota. American Indians had the highest incidence and mortality rates for these two cancers in Minnesota (Table II-7).

Asian/Pacific Islander

During the five-year period 2002-2006, an average of 233 Asian/Pacific Islanders in Minnesota were diagnosed with cancer each year and 86 died of the disease annually (Tables II-6 and III-1.3). After adjusting for population size and age distribution, Asian/Pacific Islanders had the lowest overall cancer incidence rate and the lowest overall cancer mortality rate compared to other race and ethnic groups in the state (Table II-7 and Figure II-4). Asian/Pacific Islanders were 44 percent less likely to be diagnosed with cancer than non-Hispanic whites and 28 percent less likely to die of the disease.

The overall cancer incidence rate among Asian/Pacific Islanders over this period was 16 percent lower in Minnesota than in the SEER Program, while mortality was 13 percent higher than in the U.S. as a whole (Figures II-4 and II-5). Both comparisons were statistically significant.

Asian/Pacific Islanders in Minnesota and nationally have a significantly lower risk than non-Hispanic whites of being diagnosed with many common cancers such as prostate, female breast, lung, and colorectal cancer. However, they have among the highest rates of liver and stomach cancers, for which survival tends to be poor. Asian/Pacific Islanders in Minnesota were more than four times more likely than non-Hispanic whites to be diagnosed with liver cancer and two times more likely to be diagnosed with stomach cancer (Table II-7). Mortality rates for these sites were similarly elevated. Asian/Pacific Islander women in Minnesota had one of the highest incidence rates of cervical cancer, more than twice as high as the rate among non-Hispanic white women. Cervical cancer rates were also elevated among black, American Indian, and Hispanic women, and the rates among these women were not statistically different from those among Asian/Pacific Islander women.

Black/African American

During the five-year period 2002-2006, an average of 480 blacks in Minnesota were diagnosed with cancer each year and 170 died of the disease annually (Tables II-6 and III-1.3). After adjusting for population size and age distribution, blacks had the second highest overall cancer incidence and mortality rates compared to other race and ethnic groups in the state (Table II-7 and Figure II-4), second only to American Indians. Blacks were six percent more likely to be diagnosed with cancer than non-Hispanic whites but 30 percent more likely to die of the disease. Overall cancer incidence and mortality rates were somewhat higher for American Indians than blacks, but the differences were not statistically significant.

Cancer incidence and mortality rates among blacks in Minnesota over this period were nearly identical to those in the SEER Program (Figures II-4 and II-5).

Unlike nationally, where blacks had the highest incidence rate of many specific types of cancer compared to other race and ethnic groups, in Minnesota blacks only had the highest rate for prostate and liver cancers, primarily because of higher rates among American Indians in many other sites (Table II-7). The prostate cancer incidence rate among blacks in Minnesota was 23

percent higher than among non-Hispanic whites; their prostate cancer mortality rate was 90 percent higher than among non-Hispanic whites. The cancer incidence rate among blacks compared to non-Hispanic whites was significantly higher for three other common sites: six times higher for liver cancer, two times higher for cervix cancer, and 28 percent higher for lung cancer.

Non-Hispanic White

During the five-year period 2002-2006, an average of 22,490 non-Hispanic white Minnesotans were diagnosed with cancer each year and 8,688 died of the disease annually (Tables II-6 and III-1.3). After adjusting for population size and age distribution, cancer rates among non-Hispanic whites were intermediate between American Indians and blacks, who had significantly higher overall cancer incidence and mortality rates, and Asian/Pacific Islanders and Hispanics, who had significantly lower overall cancer incidence and mortality rates (Table II-7 and Figure II-4).

Over the five-year period 2002-2006, the overall cancer incidence and mortality rates among non-Hispanic whites were four and seven percent lower, respectively, in Minnesota than nationally (Figures II-4 and II-5). Although these differences are modest, both are statistically significant.

Compared to other race and ethnic groups in Minnesota, non-Hispanic whites had the highest incidence of female breast, uterus, and bladder cancers. However, blacks had the highest mortality rates for female breast and uterine cancer. Non-Hispanic whites had the lowest incidence and mortality rates for cervix, liver, and stomach cancer.

Hispanic (all races)

During the five-year period 2002-2006, an average of 219 Hispanics in Minnesota were diagnosed with cancer each year and 54 died of the disease annually (Tables II-6 and III-1.3). After adjusting for population size and age distribution, Hispanics had the second lowest overall cancer incidence rate compared to other race and ethnic groups in the state, and the lowest overall cancer mortality rate (Table II-7 and Figure II-4). Hispanics were 28 percent less likely to be diagnosed with cancer and 39 percent less likely to die of the disease than non-Hispanic whites.

The overall cancer incidence rate among Hispanics was about three percent lower in Minnesota than in the SEER Program, while the overall cancer mortality rate was 13 percent lower than in the US as a whole (Figures II-4 and II-5). However, neither difference was statistically significant.

Hispanics in Minnesota and nationally have a significantly lower risk than non-Hispanic whites of being diagnosed with prostate and female breast cancer, which are among the most common cancers diagnosed, as well as leukemia, lung, and bladder cancers. In Minnesota, cancer rates were somewhat lower among Hispanics compared to non-Hispanic whites for other cancers as well, although the differences were not statistically significant (Table II-7). However, similar to Asian/Pacific Islanders, Hispanic Minnesotans had significantly elevated rates for liver and stomach cancers, for which survival tends to be poor. Hispanics in Minnesota were three times more likely than non-Hispanic whites to be diagnosed with liver cancer, and mortality was similarly elevated. Hispanic women in Minnesota had a significantly elevated incidence of cervical cancer; the rate was nearly three times higher than among non-Hispanic white women.

Conclusions

Many of the same race and ethnic disparities in cancer that occur nationally exist in Minnesota. The most notable exception is that American Indians have the lowest cancer rates nationally, but the highest cancer rates in Minnesota. Much remains to be learned about what causes these differences in cancer incidence and mortality. It is likely that a combination of behavioral, cultural, socioeconomic, and genetic differences are involved, but the relative importance of each factor is controversial and is likely to vary by cancer site. For some cancers, research has shown that disparities are eliminated when access to quality care is equal.

Despite the marked disparities in the occurrence of cancer discussed above, many similarities exist. Cancer is the leading cause of death for each major race and ethnic group in Minnesota except American Indians, for whom heart disease is still the leading cause. Breast cancer is the most commonly diagnosed cancer among women, regardless of race and ethnicity; prostate cancer is the most commonly diagnosed cancer among men, regardless of race and ethnicity (Table II-6). Lung and colorectal cancers are among the top four cancers, regardless of race and ethnicity or gender.

Eliminating disparities in health is a priority for MDH, and a number of interventions funded by the MDH Office of Minority and Multicultural Health (OMMH) are directed toward reducing disparities in the burden of cancer described above. More information on these projects can be found on the OMMH web site http://www.health.state.mn.us/ommh/. In addition, the statewide comprehensive cancer control plan, *Cancer Plan Minnesota*, has identified reducing disparities in cancer screening and treatment as one of four top priorities for the next one to two years. More information on *Cancer Plan Minnesota*, activities related to priorities, and the Minnesota Cancer Alliance can be found at http://www.mncanceralliance.org.

Cancer Trends in Minnesota

Long-term trends in cancer incidence and mortality over the 19-year period 1988-2006 were assessed by using Joinpoint regression analysis, as discussed in Appendix E. This methodology identifies changes in trends as well as the linear trend during the interval between changes in trend. Discussions of specific cancers in Chapter III include a brief summary of trends for each site. This section provides an overview of changes in cancer rates in Minnesota.

The overall age-adjusted cancer incidence rate in Minnesota increased by six percent over the 19-year period, from 445.4 new cases per 100,000 persons in 1988 to 474.1 in 2006 (Figure II-6). However, due to growth and aging of the Minnesota population, the number of persons diagnosed with cancer increased by nearly 38 percent over the same period, from 18,010 new cases in 1988 to 24,916 in 2004.

In contrast, the overall age-adjusted cancer mortality rate in Minnesota decreased by 16 percent over the 19-year period, from 199.5 cancer deaths per 100,000 persons in 1988 to 171.4 in 2006 (Figure II-7). Despite this significant progress, the number of persons dying of cancer in the state actually increased by twelve percent over the same period, from 8,100 cancer deaths in 1988 to 9,065 in 2006. In other words, the decrease in the risk of dying of cancer was not sufficiently rapid to balance increases in the number of deaths due to Minnesota population growth and aging.

The increase in the risk of being diagnosed with cancer in Minnesota described above has not been constant over time and has not been the same for men and women. Among males, the overall cancer incidence rate increased by 3.8 percent per year from 1988 to 1992, largely driven by increases in prostate cancer detection with the prostate specific antigen test (Figure II-8). After declining modestly from 1992 to 1995, the overall cancer incidence rate among males in Minnesota increased significantly by 0.5 percent per year from 1995 to 2006. This overall increase reflects significant increases in risk for a number of less common cancers (such as thyroid, liver, kidney, melanoma, esophagus, kidney, pancreas, non-Hodgkin lymphoma, and bladder), partially balanced by substantial and long-standing decreases in the incidence of two of the most commonly diagnosed cancers (lung and colorectal cancers) (Figure II-10).

Among females, the pattern was considerably different; their overall cancer incidence rate was relatively stable from 1988 to 1995, increased by 1.4 percent per year from 1995 to 2000, and was stable again from 2000 to 2006 (Figure II-8). The recent stabilization largely reflects continued significant increases in risk for lung cancer and increases in many of the same cancers that are increasing among males, balanced by decreases in colorectal cancer and a stabilization in female breast cancer incidence after sharp decreases from 2000 to 2004 (Figure II-12).

The overall risk of dying of cancer in Minnesota has been decreasing since cancer registration was implement in 1988. Cancer mortality rates are significantly increasing for only two sites among males (liver and esophagus) and for only three sites among females (liver, lung, and mesothelioma) (Figures II-11 and II-13). Mortality data for 2007 not included in this report shows that mesothelioma mortality among both males and females is lower in 2007 than in 1999, when mesothelioma began being reported as a unique cause of death.

Nonetheless, the decrease in cancer mortality is more rapid among men than women (Figure II-9). The overall cancer mortality rate among males decreased by 0.8 percent per year from 1988 to 2002, and then started decreasing by 2.9 percent per year. The overall cancer mortality rate among females has been decreasing by 0.6 percent per year over the entire 19-year period. The primary reason that cancer mortality is not declining as rapidly for women as for men is that lung cancer, the leading cause of cancer deaths for both men and women, is increasing by 0.9 percent per year among women, while it has been decreasing by 1.1 percent per year among men since 1988.

The overall cancer incidence trends in Minnesota are somewhat different than seen among the white population in the SEER 9 area (Figure II-8). The overall incidence rate among males decreased by 1.3 percent per year from 2000 to 2006 in SEER, while it is still increasing in Minnesota. The overall incidence rate among females decreased by 0.5 percent per year from 1998 to 2006 in SEER, while it is stable in Minnesota. In general, cancer mortality trends in Minnesota are very similar to what is seen nationally (Figure II-9).

Geographic Variation in the Occurrence of Cancer in Minnesota

To evaluate geographic variation in the occurrence of cancer in Minnesota, the state is divided into eight regions. The counties included in each region are shown in Appendix C. Regions of the state are used rather than individual counties because most counties have populations which are too small to produce rates stable enough to make meaningful comparisons. In addition, regions better reflect economic, topographical and occasionally cultural differences in the state than do individual counties.

The regional names given in Appendix C are abbreviated in the text and graphs as follows:

Metro	Metropolitan Minnesota
SE	Southeastern Minnesota
SC	South Central Minnesota
SW	Southwestern Minnesota
Central	Central Minnesota
WC	West Central Minnesota
NW	Northwestern Minnesota
NE	Northeastern Minnesota

Geographic variation was assessed for the five most common cancer sites and mesotheliomas, aggregating data over the 5-year period 2002-2006. Comparisons were made using rates for non-Hispanic whites, who constitute about 87 percent of the Minnesota population and about 94 percent of the cancer cases reported to the MCSS. As discussed in a previous section, cancer rates for specific sites vary considerably by race and ethnicity. Comparing regional variation in cancer incidence and mortality among non-Hispanic whites minimizes race as a factor in observed differences.

In describing regional differences, it is important to recognize that the variation of cancer rates within Minnesota is much less than variations observed nationally and certainly internationally. Over the five-year period 2002-2006, the overall cancer incidence rate among states varied by as much as 27 percent (both sexes combined, non-hispanic whites); internationally, rates differ by as much as a factor of eight (all races, both sexes, varying years). In contrast, the Minnesota region with the highest overall cancer incidence rate is only 8 percent higher than the region with the lowest (Figure II-18). This is noteworthy, as there appears to be a common misperception that cancer rates are much higher in one part of the state than another.

It should also be noted that the MCSS only records microscopically confirmed cancers. Therefore, regional variations in medical practices pertaining to the likelihood of obtaining tissue

from suspected cancer cases will produce differences in cancer rates from region to region. With very few exceptions, this does not appear to be a significant factor in most cancer rates.

In Minnesota, there is a consistent difference in regional cancer rates of lung and bronchus cancer. Lung cancer incidence rates vary by 35 percent when comparing the highest to the lowest regional rate (Figure II-19). For both sexes combined, lung cancer rates in SW, SC and WC Minnesota are 11 to 17 percent below the statewide rate. This is primarily due to lower female lung cancer rates in these regions (10 to 27 percent lower), although male rates (8 to 11 percent lower) also contribute to the reduction (Figure II-20). In contrast, higher female and male lung cancer rates in NE Minnesota (over 10 percent higher than the statewide rate for each) give that region the highest lung cancer rate of the eight regions. Although there is a higher lung cancer rate among females in the Metro region compared to the state as a whole (10 percent higher), the Metro region male lung cancer rate differs very little from the state average. The regional differences in lung cancer incidence are very likely to be real (not an artifact of reporting or biopsy rates), since Minnesota lung cancer mortality rates closely parallel those of the incidence rates. These differences are consistent with differences in the measured smoking behaviors among the regions' populations as noted in previous reports.

Colon and rectum cancer incidence rates vary by 28 percent among Minnesota regions, and show a statistically significant difference between the Metro and non-Metro areas of Minnesota (Figure II-21). The Metro rate is seven percent lower than the state average. Incidence in the SW region (19 percent), the SC region (13 percent) and the WC region (11 percent) are all statistically significantly higher than the state average. Colorectal cancer mortality and incidence have been declining since the 1980s both in Minnesota and nationally. Some of the decline may be due to screening, which can identify and remove polyps before they become cancerous. If colorectal cancer screening is more common in residents of the Metro region than in the rest of the state, this would help to explain the observed differences between the Metro and non-Metro regions.

Female breast cancer incidence rates show only small geographic differences, varying by up to 17 percent comparing the highest to the lowest regional rate (Figure II-22). Incidence rates range from three percent above the state average in the Metro and Southeastern Regions to eight to twelve percent below the state average in Central and NW Minnesota. Breast cancer mortality rates are less than one fifth incidence rates. Here too there is little variation in the state although mortality rates in WC Minnesota were significantly lower (17 percent) than the state average. Breast cancer mortality in the Metro and SE regions are only slightly above the state average. Because survival for breast cancer on average is quite long, there may not be a strong correlation between incidence and mortality among the regions. Mammography screening rates can affect incidence rates in those areas with higher rates of screening which will identify some additional cases that would not have been identified had the cancer been allowed to take its natural course. It is not known whether this has played any role in the differences of breast cancer rates among the regions of Minnesota. Socioeconomic status is also correlated with breast cancer risk and may explain some portion of the slightly higher rates in the Metro area.

Incidence rates for prostate cancer have varied considerably over time, and have been strongly influenced by the PSA screening test that was widely implemented starting in the late 1980s (Figure II-23). Prostate cancer incidence rates vary by 22 percent among Minnesota regions which is considerably less than in previous five year periods. The incidence rate in the Metro area was significantly lower than the state average (5 percent lower). This contrasts with data from 1988-1994, when prostate cancer incidence rates were five percent higher than the state average in the Metro area and lower in Central Minnesota. Again, this may be due to varying medical practices among the regions, specifically in the use of the PSA as a screening method for prostate cancer. It has been well documented that use (or lack of use) of the PSA test as a screening device is a significant factor in determining prostate cancer rates. It is not known how this might be playing a role in Minnesota.

Another notable and consistent regional pattern in cancer occurrence has been an increased incidence of mesothelioma, or cancer of the pleura, pericardium, and peritoneum, especially in the NE region (Figure II-24). The only known cause of mesothelioma is exposure to asbestos. Latency periods for mesothelioma are typically 30 to 50 years. Between 2002 and 2006, 45 men and 3 women in the NE region were diagnosed with mesothelioma, giving this region a significantly higher rate than the Minnesota rate. Incidence rates for mesothelioma among men in NE Minnesota is twice that of the state incidence rate. No excess among females has been noticed. A higher mesothelioma rate had also been noted from 1988-1994 for males (75 percent higher than the statewide rate, based on 39 cases) but not for females (75 percent lower than the statewide rate, based on two cases), suggesting an exposure unique to males, most likely occupational exposures. This has been and continues to be part of an ongoing study examining risk factors that may be causing this excess.

While differences of the various types of cancer noted in this report may or may not reflect real differences in etiologic factors by region, they certainly demonstrate a number of cautions that should be taken when examining regional variation.

1) Comparison of numerous types of cancers by region and by sex will, by chance alone, find a number of rates that are significantly different from the state average. In general, differences are more likely to be real when they are consistent over time, are evident for both sexes (when appropriate) and across similar regions, and when the increase is found for mortality (when appropriate) as well as incidence.
2) Differences may result from regional coding practices. Although MCSS, local cancer registrars and national organizations work hard to standardize coding practices, this is an ongoing and challenging effort given the many changes in coding practices over the years.
3) Small numbers produce greater variability and less reliability. However, even with small numbers regional differences can be informative for certain cancers with clearly delineated causes, for example, mesotheliomas and Kaposi sarcomas.
4) Some differences may be the result of variations in regional medical practices and screening rates (for example, prostate cancer).
5) Differences may occur if a group of counties within a region has been growing rapidly and projected population counts are inaccurate (usually too low). This may be occurring in the counties north of the Twin Cities metro and in the rapidly growing cooridor between the Twin Cities and the St. Cloud area. These counties are part of the Central Region which has higher rates of all cancers for this report.

In summary, the overall risk of developing cancer does not vary to a large degree among Minnesota regions. The two cancers that show the most striking geographic variation in Minnesota, lung cancer and mesothelioma, have well-known causes (smoking and asbestos exposure, respectively). It is likely that the observed geographic variation in these cancers can be explained by past geographic differences in smoking rates and work-related exposure to asbestos. Cancers of the colon and rectum, prostate, and breast also vary significantly across regions of the state. Because the diagnosis of these cancers is affected by the extent to which the population is screened, it is likely that at least some of the variation is due to geographic variation in screening.

These findings indicate that the risk of developing cancer is not dictated by where one chooses to live. The MCSS will continue to monitor regional variation in cancer rates as part of ongoing surveillance of cancer in Minnesota.

Minnesota Cancer Prevalence

Cancer prevalence is the number of persons alive in a population on a specified date who were previously diagnosed with cancer. Because individuals continue to require services, support, and care beyond the year in which they were diagnosed, it is an important measure of the burden of cancer in society. The SEER Program estimates that 11.4 million Americans, or 3.8% of the U.S. population, were living with a history of

cancer on January 1, 2006. This is eight times larger than the 1.4 million Americans estimated by the American Cancer Society to have been newly diagnosed with cancer during 2006.

Cancer prevalence estimates typically exclude people diagnosed with common skin cancers or *in situ* disease. Prevalent cancers include both newly diagnosed cases and individuals who have survived their disease, whether they are considered cancer-free or are still undergoing treatment. It is affected by present and past cancer incidence, cancer survival rates, and death from other causes. Because these factors vary by age, race/ethnicity, and gender, prevalence is also affected by the demographic characteristics of the population.

Prevalence can count persons ever diagnosed with cancer and still alive (complete prevalence), or those who were diagnosed during a specified time period such as the previous five, ten, or twenty-five years (limited duration prevalence). Prevalence percents are calculated by dividing the number of prevalent cases by the total number of people in the population at the given point in time. People can be diagnosed with and survive more than one cancer. The prevalence counts presented here count a person only once, for the first cancer he or she was diagnosed with, ignoring any cancer(s) that might have developed after the first diagnosis.

Because people with a history of cancer can live a normal lifespan, few cancer registries have registered cancer patients for a sufficient length of time to directly measure complete prevalence. In the U.S., the Connecticut cancer registry has registered cancer patients since 1940, and is the source used to approximate complete prevalence. The SEER Program has registered cancer patients in nine geographic regions covering about ten percent of the U.S. population since 1975, and has nearly complete (95%) follow-up on the vital status of patients. Prevalence percents from the SEER regions can be used to estimate limited duration cancer prevalence in geographic areas such as Minnesota where cancer registries have operated for a shorter period of time or where follow-up is incomplete.

Methods

MCSS cannot directly calculate prevalence for Minnesota because MCSS has only registered cancers in Minnesota since 1988 and does not have complete follow-up information on the vital status of the individual. However, prevalence percents based on cancer registration in the SEER Program are available from SEER as part of the SEER*Stat limited duration prevalence module, and are the basis for estimating complete and five-year prevalence for Minnesota.

The age-, sex- and site-specific cancer prevalence percents (5-year and 31-year) for the white population in the nine regions participating in the SEER Program since 1975 were calculated in SEER*Stat for all sites combined and the most common cancers. Using the program ProjPrev v. 1.0.1 available from SEER, 31-year prevalence counts for Minnesota were calculated by multiplying SEER prevalence percents by the corresponding age- and sex-specific population estimates for Minnesota on January 1, 2006, obtained by averaging estimates for the mid-year of 2005 and 2006 obtained from SEER.

To adjust for generally lower cancer rates in Minnesota, the resulting numbers were multiplied by age-, sex- and site-specific rate ratios for cancer incidence in Minnesota and in the SEER 9 Region white population during 2002-2006. Age-specific estimates were summed for site and sex totals and rounded to the nearest ten persons. The prevalence estimates for males and females were summed to estimate prevalence for both sexes combined. To calculate complete prevalence, 31-year prevalence estimates were adjusted by completeness indexes generated in the program ComPrev version 1.1.0 developed by the National Cancer Institute.

Limitations

The prevalence data presented here are estimates, not actual counts of Minnesotans living with cancer. Adjusting the prevalence percents for the white population in the nine SEER regions by known differences in cancer incidence between Minnesota and SEER decreased cancer prevalence estimates for Minnesota. This is appropriate given

that overall cancer incidence has historically been lower in Minnesota than in the geographic areas participating in the SEER program.

However, other factors affecting cancer prevalence could not be adjusted for. If Minnesotans have higher cancer survival rates than the SEER 9 Region white population, our prevalence estimates will be too low. MCSS is not yet able to calculate cancer survival rates for Minnesotans because of incomplete follow-up information. However, given the recognized high quality of health care in Minnesota, higher survival rates in Minnesota may occur. Similarly, Minnesotans have a higher life expectancy than many other states, due in part to having one of the lowest heart disease mortality rates in the nation. Since Minnesotans live longer and therefore have more "opportunity" to develop cancer, these prevalence estimates may be too low. It is therefore likely that the prevalence estimates presented here represent the lower limits of actual prevalence.

Results

As of January 1, 2006, an estimated 195,250 Minnesotans were living with a history of cancer (Table II-8), or 3.8% of the Minnesota population. An estimated 69,530 of these survivors had been diagnosed in the previous five years (Table II-9), or 1.3% of Minnesotans. By comparison, a total of 24,911 Minnesotans were diagnosed with cancer in 2006.

The number of persons living with a history of cancer for up to five years is very similar for men and women (36,260 and 33,260, respectively). However, the number of women ever diagnosed with cancer and alive on January 1, 2006 (104,090) is 14 percent larger than the number of men (91,160). This reflects the fact that women live on average more than five years longer than men, and that breast cancer tends to be diagnosed at a younger age.

Among Minnesota female cancer survivors, two out of five (42% or 43,330 women) have a history of breast cancer; among male cancer survivors, two out of five (45% or 41,420 men) have a history of prostate cancer. These large numbers reflect the facts that breast and prostate cancer account for about a third of all cancers diagnosed among men and women, and that survival is very high. Lung cancer, on the other hand, accounts for 12% of cancers diagnosed but only 3% of cancer survivors because survival is poor.

Conclusions

The number of Minnesotans diagnosed with cancer in a given year is only a fraction of those who are living with a history of cancer. It is hoped that these estimates will be useful for those involved in planning and policy related to cancer control.

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Table II-1: Number of new cases and deaths and average annual incidence and mortality rates§ by anatomic site, all races combined, Minnesota, 2002-2006

Cancer Site	Incidence						Mortality					
	New Cases 2002-2006			Average Annual Rate			Deaths 2002-2006			Average Annual Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
All Cancer Sites Combined	63,232	56,473	119,705	556.4	408.9	470.4	23,214	22,145	45,359	215.3	151.6	176.5
Oral Cavity & Pharynx	1,794	1,005	2,799	15.1	7.1	10.8	385	208	593	3.4	1.4	2.3
Lip	244	90	334	2.2	0.6	1.3	6	2	8	0.1	0.0	0.0
Tongue	430	245	675	3.5	1.8	2.6	86	58	144	0.7	0.4	0.5
Salivary Gland	167	148	315	1.5	1.1	1.2	56	26	82	0.5	0.2	0.3
Floor of Mouth	132	78	210	1.1	0.5	0.8	7	1	8	0.1	0.0	0.0
Gum & Other Mouth	232	244	476	2.0	1.7	1.8	53	54	107	0.5	0.3	0.4
Nasopharynx	77	39	116	0.6	0.3	0.5	36	14	50	0.3	0.1	0.2
Tonsil	314	97	411	2.5	0.7	1.6	39	15	54	0.3	0.1	0.2
Oropharynx	49	21	70	0.4	0.1	0.3	24	9	33	0.2	0.1	0.1
Hypopharynx	126	31	157	1.1	0.2	0.6	20	5	25	0.2	0.0	0.1
Other Oral Cavity & Pharynx	23	12	35	0.2	0.1	0.1	58	24	82	0.5	0.2	0.3
Digestive System	11,000	9,517	20,517	97.3	66.5	80.3	5,723	5,038	10,761	52.1	33.3	41.6
Esophagus	1,054	265	1,319	9.1	1.9	5.2	906	237	1,143	8.0	1.6	4.5
Stomach	876	508	1,384	7.9	3.5	5.4	472	330	802	4.4	2.2	3.1
Small Intestine	287	261	548	2.5	1.9	2.1	72	50	122	0.6	0.3	0.5
Colon & Rectum	6,335	6,107	12,442	56.4	42.4	48.6	2,071	2,230	4,301	19.3	14.4	16.5
Colon excl. Rectum	4,442	4,784	9,226	40.2	32.9	36.1	1,710	1,945	3,655	16.0	12.5	14.0
Rectum & Rectosigmoid Junction	1,893	1,323	3,216	16.3	9.5	12.5	361	285	646	3.3	1.9	2.5
Anus, Anal Canal & Anorectum	102	167	269	0.8	1.2	1.0	14	28	42	0.1	0.2	0.2
Liver & Intrahepatic Bile Duct	718	272	990	6.1	2.0	3.9	716	388	1,104	6.3	2.7	4.3
Liver	640	213	853	5.4	1.5	3.3	535	195	730	4.7	1.3	2.8
Intrahepatic Bile Duct	78	59	137	0.7	0.4	0.5	181	193	374	1.6	1.3	1.5
Gallbladder	92	215	307	0.9	1.5	1.2	66	154	220	0.6	1.0	0.9
Other Biliary	194	182	376	1.8	1.3	1.5	61	83	144	0.6	0.5	0.5
Pancreas	1,244	1,198	2,442	11.0	8.5	9.6	1,289	1,383	2,672	11.7	9.2	10.4
Retroperitoneum	39	35	74	0.3	0.3	0.3	10	10	20	0.1	0.1	0.1
Peritoneum, Omentum, Mesentery	6	255	261	0.0	1.9	1.0	6	94	100	0.1	0.7	0.4
Other Digestive Organs	53	52	105	0.5	0.3	0.4	40	51	91	0.4	0.3	0.3

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Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
- Not applicable; site is sex-specific or not available.

Table II-1: Number of new cases and deaths and average annual incidence and mortality rates§ by anatomic site, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Incidence						Mortality					
	New Cases 2002-2006			Average Annual Rate			Deaths 2002-2006			Average Annual Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Respiratory System	8,559	6,969	15,528	76.8	51.3	62.2	6,583	5,293	11,876	60.5	37.8	47.2
Nose, Nasal Cavity & Middle Ear	89	64	153	0.8	0.5	0.6	23	15	38	0.2	0.1	0.1
Larynx	680	176	856	5.9	1.3	3.4	172	44	216	1.5	0.3	0.9
Lung & Bronchus	7,744	6,719	14,463	69.8	49.5	58	6,373	5,228	11,601	58.7	37.4	46.2
Pleura†	5	0	5	0.0	0.0	0.0	4	0	4	0.0	0.0	0.0
Trachea, Mediastinum & Other	41	10	51	0.3	0.1	0.2	11	6	17	0.1	0.0	0.1
Mesothelioma (all sites)	243	88	331	2.3	0.6	1.3	34	12	289	1.6	1.1	0.9
Bones & Joints	156	95	251	1.3	0.7	1.0	76	55	131	0.6	0.4	0.5
Soft Tissue incl. Heart	426	395	821	3.6	2.9	3.2	170	149	319	1.5	1.0	1.2
Skin	2,896	2,549	5,445	24.8	19.0	21.2	492	295	787	4.4	2.1	3.0
Melanoma of the Skin	2,600	2,272	4,872	22.1	17.1	19.0	358	227	585	3.2	1.6	2.3
Other Non-Epithelial Skin	296	277	573	2.7	1.9	2.2	134	68	202	1.2	0.4	0.8
Kaposi Sarcoma (all sites)	49	9	58	0.4	0.1	0.2	0	0	0	0.0	0.0	0.0
Breast	140	17,390	17,530	1.3	126.3	67.6	22	3,199	3,221	0.2	22.1	12.3
Female Genital System	-	6,911	-	-	50.5	-	-	2,286	-	-	15.9	-
Cervix Uteri	-	833	-	-	6.4	-	-	227	-	-	1.6	-
Corpus & Uterus, NOS	-	3,744	-	-	27.2	-	-	647	-	-	4.5	-
Ovary	-	1,773	-	-	12.9	-	-	1,250	-	-	8.7	-
Vagina	-	83	-	-	0.6	-	-	20	-	-	0.1	-
Vulva	-	380	-	-	2.7	-	-	97	-	-	0.6	-
Other Female Genital Organs	-	98	-	-	0.7	-	-	45	-	-	0.3	-
Male Genital System	21,961	-	-	192.8	-	-	2,730	-	-	27.3	-	-
Prostate	20,928	-	-	184.5	-	-	2,679	-	-	26.8	-	-
Testis	867	-	-	6.8	-	-	27	-	-	0.2	-	-
Penis	118	-	-	1.1	-	-	22	-	-	0.2	-	-
Other Male Genital Organs	48	-	-	0.4	-	-	2	-	-	-	-	-

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Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Mesotheliomas of the pleura are included in the separate group Mesothelioma.
- Not applicable; site is sex-specific or not available.

Table II-1: Number of new cases and deaths and average annual incidence and mortality rates§ by anatomic site, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Incidence						Mortality					
	New Cases 2002-2006			Average Annual Rate			Deaths 2002-2006			Average Annual Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Urinary System	6,857	2,972	9,829	61.4	21.2	38.8	1,507	795	2,302	14.1	8.9	8.9
Urinary Bladder	4,367	1,477	5,844	40.2	10.3	23.1	753	338	1,091	7.3	4.2	4.2
Kidney & Renal Pelvis	2,374	1,397	3,771	20.1	10.2	14.8	713	411	1,124	6.4	4.4	4.4
Ureter	77	73	150	0.7	0.5	0.6	15	23	38	0.1	0.1	0.1
Other Urinary Organs	39	25	64	0.4	0.2	0.2	26	23	49	0.2	0.2	0.2
Eye & Orbit	93	56	149	0.8	0.4	0.6	11	6	17	0.1	0.1	0.1
Brain & Other Nervous System	949	705	1,654	7.8	5.4	6.5	629	485	1,114	5.3	4.4	4.4
Brain	890	656	1,546	7.3	5.0	6.1	-	-	-	-	-	-
Other Nervous System	59	49	108	0.5	0.4	0.4	-	-	-	-	-	-
Endocrine System	692	1,763	2,455	5.6	13.6	9.6	72	114	186	0.6	0.8	0.7
Thyroid	590	1,690	2,280	4.7	13.0	8.9	35	81	116	0.3	0.5	0.5
Other Endocrine incl. Thymus	102	73	175	0.8	0.6	0.7	37	33	70	0.3	0.2	0.3
Lymphoma	3,416	2,803	6,219	29.6	20.3	24.4	1,122	952	2,074	10.4	6.3	8.0
Hodgkin Lymphoma	405	330	735	3.3	2.6	2.9	56	60	116	0.5	0.4	0.5
Non-Hodgkin Lymphoma	3,011	2,473	5,484	26.4	17.7	21.5	1,066	892	1,958	9.9	5.8	7.6
Multiple Myeloma	803	591	1,394	7.1	4.2	5.5	536	447	983	5.0	3.0	3.8
Leukemia	2,225	1,549	3,774	19.7	11.0	14.8	1,134	884	2,018	10.7	5.9	7.8
Lymphocytic Leukemia	1,283	817	2,100	11.3	5.9	8.3	391	272	663	3.7	1.8	2.5
Acute Lymphocytic Leukemia	193	146	339	1.5	1.2	1.4	62	42	104	0.5	0.3	0.4
Chronic Lymphocytic Leukemia	1,010	634	1,644	9.1	4.4	6.5	308	215	523	3.0	1.4	2.0
Other Lymphocytic Leukemia	80	37	117	0.7	0.3	0.4	21	15	36	0.2	0.1	0.1
Myeloid & Monocytic Leukemia	866	667	1,533	7.7	4.7	6.0	564	451	1,015	5.2	3.1	4.0
Acute Myeloid Leukemia	511	413	924	4.5	3.0	3.6	446	354	800	4.1	2.5	3.2
Acute Monocytic Leukemia	30	40	70	0.3	0.3	0.3	6	8	14	0.1	0.0	0.1
Chronic Myeloid Leukemia	308	203	511	2.7	1.4	2.0	58	51	109	0.5	0.3	0.4
Other Myeloid/Monocytic Leukemia	17	11	28	0.2	0.1	0.1	54	38	92	0.5	0.2	0.3
Other Leukemia	76	65	141	0.7	0.5	0.5	179	161	340	1.7	1.1	1.3
Miscellaneous	973	1,106	2,079	8.7	7.6	8.1	1,798	1,871	3,669	16.9	12.3	14.2

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
- Not applicable; site is sex-specific or not available.

Table II-2: Age-specific rates§ of newly diagnosed cancers by anatomic site, males, all races combined, Minnesota, 2002-2006

Cancer Site	Age at Diagnosis (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
All Cancer Sites Combined^	25	13	13	24	35	51	66	90	148	256	532	969	1552	2294	2929	3278	3307	2786
Oral Cavity & Pharynx	0.0	0.0	0.1	0.3	1.3	1.2	2.6	3.2	8.9	14.7	28.2	37.2	38.6	45.4	62.5	68.8	67.4	61.5
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.1	0.9	1.6	1.9	3.3	8.0	10.4	16.8	16.4	22.8
Tongue	0.0	0.0	0.0	0.0	0.1	0.4	0.3	1.0	2.8	4.0	7.6	10.2	11.2	10.3	14.1	12.6	10.4	7.6
Salivary Gland	0.0	0.0	0.0	0.2	0.9	0.2	0.5	0.4	0.7	0.9	2.0	1.4	3.5	3.1	4.7	6.5	14.2	10.4
Floor of Mouth	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.6	1.3	2.8	3.4	2.7	3.9	5.0	3.1	3.3	2.8
Gum & Other Mouth	0.0	0.0	0.0	0.1	0.0	0.1	0.5	0.6	0.4	1.2	2.7	4.9	6.1	5.2	7.9	10.3	12.0	14.5
Nasopharynx	0.0	0.0	0.1	0.0	0.3	0.1	0.6	0.3	1.0	0.2	1.1	1.7	1.0	1.8	2.2	2.7	1.6	0.0
Tonsil	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	2.2	4.7	7.5	9.5	5.3	7.2	7.9	6.5	3.8	0.7
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	1.7	1.4	1.5	2.2	2.3	1.1	0.0
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	1.2	1.7	2.1	3.3	4.1	6.6	6.9	3.8	2.1
Other Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	0.4	0.8	0.3	1.6	1.1	0.5	0.7
Digestive System	1.5	0.2	0.4	0.5	2.0	3.4	5.8	14.3	26.7	53.5	106	167.3	244.9	357.3	472.1	570.3	677	655
Esophagus	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	2.4	6.6	10.7	19.8	28.8	37.6	43.4	48.2	57.5	42.2
Stomach	0.0	0.0	0.0	0.0	0.2	0.0	0.8	1.4	2.2	4.6	5.2	12.0	19.6	26.3	33.6	49.7	59.7	73.3
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.9	2.2	3.2	5.2	5.9	9.0	11.3	14.2	18.1	9.7
Colon & Rectum	0.0	0.0	0.2	0.2	1.1	2.1	2.9	8.9	15.9	28.1	61.1	87.9	134.0	205.2	276.9	333.9	411	417
Colon excl. Rectum	0.0	0.0	0.2	0.2	0.9	1.4	2.3	6.0	9.5	17.1	36.5	54.3	86.2	143.1	202.7	248.2	322	338
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.0	0.2	0.7	0.6	2.9	6.4	11.1	24.7	33.7	47.8	62.1	74.2	85.7	88.7	78.8
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.6	0.5	0.7	1.6	2.6	2.0	4.1	1.3	4.2	1.6	3.5
Liver & Intrahepatic Bile Duct	1.4	0.1	0.2	0.2	0.1	0.5	0.7	0.9	1.5	4.3	11.2	14.6	18.4	21.7	25.1	29.5	31.2	20.0
Liver	1.4	0.1	0.2	0.2	0.1	0.2	0.7	0.6	1.1	4.1	9.7	13.3	17.2	19.6	21.4	27.2	26.8	16.6
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.4	0.2	1.6	1.3	1.2	2.1	3.8	2.3	4.4	3.5
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.3	1.1	1.2	1.8	4.4	6.9	9.3	8.3
Other Biliary	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.6	0.8	1.1	2.4	2.7	6.2	8.8	11.5	12.0	20.7
Pancreas	0.0	0.0	0.0	0.0	0.3	0.1	0.6	1.3	2.3	5.3	11.4	20.8	31.2	42.0	61.6	67.3	68.4	56.0
Retroperitoneum	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.3	0.3	0.2	0.4	0.4	1.5	1.3	1.1	3.3	0.7
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.3	0.4	0.0	0.0
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.4	0.6	1.8	4.1	3.4	4.9	3.5

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Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.

^ All Cancer Sites Combined rounded to nearest whole number.

- Not applicable; site is sex-specific or not available.

Table II-2: Age-specific rates§ of newly diagnosed cancers by anatomic site, males, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Diagnosis (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Respiratory System	0.2	0.2	0.4	0.4	0.9	1.4	1.6	4.2	11.6	27.8	59.5	112.4	219.1	331.0	466.7	565.7	503.2	327.6
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.5	0.1	0.9	1.2	1.4	1.8	2.3	2.8	5.7	3.3	2.1
Larynx	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	2.0	3.3	7.5	12.3	20.0	28.1	33.6	30.6	25.2	17.3
Lung & Bronchus	0.0	0.1	0.2	0.2	0.4	0.7	0.7	3.0	9.2	23.5	50.8	98.4	197.3	299.8	428.7	528.2	473.7	306.9
Pleura†	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.7
Trachea, Mediastinum & Other	0.2	0.1	0.1	0.2	0.3	0.7	0.6	0.4	0.3	0.0	0.0	0.3	0.0	0.8	1.6	0.8	0.5	0.7
Mesothelioma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.4	6.7	8.2	8.5	21.4	25.2	23.5
Bones & Joints	0.1	0.9	0.9	2.4	1.1	0.9	1.0	0.6	0.7	0.6	0.8	1.6	2.0	3.9	3.1	2.3	3.8	2.8
Soft Tissue incl. Heart	2.2	1.4	0.4	2.0	1.6	2.0	1.4	1.1	2.8	3.0	4.3	5.0	3.3	6.7	14.1	14.9	15.3	20.0
Skin	0.3	0.0	0.2	0.8	2.9	4.8	8.3	14.4	15.9	22.0	34.1	44.7	57.6	71.4	84.2	124.3	129.2	143.1
Melanoma of the Skin	0.2	0.0	0.2	0.8	2.8	3.7	6.5	13.5	14.4	20.3	32.4	41.5	53.7	66.3	75.7	110.2	106.8	111.3
Other Non-Epithelial Skin	0.1	0.0	0.0	0.0	0.1	1.2	1.7	1.0	1.4	1.7	1.7	3.2	3.9	5.2	8.5	14.2	22.5	31.8
Kaposi Sarcoma (all sites)	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.8	0.9	0.9	0.5	0.3	0.2	0.5	0.0	0.0	1.6	0.7
Breast	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.7	0.5	1.7	1.3	2.7	2.8	6.0	12.2	4.4	11.1
Female Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cervix Uteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corpus & Uterus, NOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ovary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vagina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vulva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Female Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Male Genital System	0.8	0.0	0.2	5.2	11.3	15.6	18.4	14.2	22.4	49.1	165.9	379.1	655.6	1000	1184.3	1092.4	935.3	673.9
Prostate	0.1	0.0	0.0	0.2	0.1	0.0	0.2	1.1	9.1	39.8	160.3	374.7	649.5	993.1	1175.5	1084.3	922.7	660.8
Testis	0.7	0.0	0.2	5.0	11.1	15.5	18.1	13.0	13.1	7.9	4.7	2.4	2.0	1.3	1.3	0.4	2.2	0.0
Penis	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	1.1	0.6	1.6	2.2	4.1	5.7	6.5	7.1	8.3
Other Male Genital Organs	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	0.4	2.0	1.5	1.9	1.1	3.3	4.8

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Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.

† Mesotheliomas of the pleura are included in the group Mesothelioma.

- Not applicable; site is sex-specific or not available.

Table II-2: Age-specific rates§ of newly diagnosed cancers by anatomic site, males, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Diagnosis (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Urinary System	3.2	0.9	0.3	0.0	0.1	2.0	3.6	6.6	16.5	27.7	49.5	97.7	150.9	232.0	321.8	400.5	441.3	405.0
Urinary Bladder	0.1	0.1	0.1	0.0	0.0	0.6	1.4	1.5	5.6	10.6	22.8	51.6	86.0	148.0	231.0	288.0	335.7	339.4
Kidney & Renal Pelvis	3.1	0.8	0.2	0.0	0.1	1.4	2.2	5.1	10.8	16.9	26.0	45.5	61.5	79.7	85.8	105.9	94.2	56.0
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.3	1.8	3.6	3.5	5.0	8.2	3.5
Other Urinary Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.6	0.8	1.6	1.5	3.3	6.2
Eye & Orbit	0.6	0.2	0.0	0.0	0.0	0.2	0.0	0.4	0.7	0.4	0.7	1.9	1.8	2.3	2.8	3.4	5.5	2.8
Brain & Other Nervous System	4.1	2.2	2.8	1.9	2.4	3.7	5.6	6.5	5.9	8.8	8.9	13.3	17.2	19.6	25.1	23.3	20.3	16.6
Brain	3.9	2.2	2.5	1.8	2.1	3.4	5.4	5.8	5.5	7.7	8.2	12.7	16.1	19.1	24.2	22.2	20.3	15.9
Other Nervous System	0.2	0.0	0.3	0.1	0.3	0.2	0.2	0.6	0.4	1.1	0.7	0.6	1.2	0.5	0.9	1.1	0.0	0.7
Endocrine System	1.7	0.7	0.7	1.2	1.9	3.7	3.8	5.8	7.5	7.5	8.3	9.5	12.3	12.6	11.0	14.9	14.8	6.9
Thyroid	0.2	0.1	0.4	0.7	1.7	3.4	3.5	5.5	6.4	6.6	7.7	8.3	11.0	10.8	9.4	13.0	10.4	6.2
Other Endocrine incl. Thymus	1.5	0.6	0.3	0.4	0.1	0.2	0.3	0.3	1.1	1.0	0.6	1.1	1.4	1.8	1.6	1.9	4.4	0.7
Lymphoma	1.0	2.0	2.6	6.3	6.1	7.8	8.3	12.2	17.1	20.8	32.4	43.1	62.1	86.4	115.0	152.2	193.3	174.9
Hodgkin Lymphoma	0.2	0.5	1.8	3.8	4.1	4.5	3.8	3.4	4.7	3.0	2.0	2.7	2.9	4.6	4.7	7.6	6.6	4.8
Non-Hodgkin Lymphoma	0.8	1.5	0.7	2.5	2.0	3.3	4.4	8.7	12.3	17.7	30.3	40.4	59.2	81.7	110.3	144.6	186.7	170.0
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.9	1.7	4.1	6.5	11.7	18.2	28.9	36.5	46.7	51.5	35.9
Leukemia	8.9	4.0	3.8	3.3	2.6	3.7	3.5	3.6	6.1	9.1	15.7	27.8	41.0	56.7	78.9	109.8	140.2	149.3
Lymphocytic Leukemia	6.4	2.8	2.5	1.9	0.8	1.5	0.9	1.2	2.7	5.2	9.4	17.0	25.9	36.4	50.3	60.4	75.6	76.7
Acute Lymphocytic Leukemia	6.4	2.8	2.5	1.9	0.8	1.2	0.8	0.2	0.6	0.5	1.1	0.6	1.4	1.3	0.9	1.1	1.6	0.0
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.4	1.5	4.0	7.6	15.0	22.9	34.3	45.9	56.2	70.1	71.2
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.6	0.7	0.7	1.4	1.6	0.8	3.5	3.1	3.8	5.5
Myeloid & Monocytic Leukemia	1.8	0.8	1.1	1.2	1.6	1.8	2.6	2.3	2.8	3.7	5.6	10.2	14.7	19.9	28.3	45.9	58.0	64.3
Acute Myeloid Leukemia	1.5	0.5	1.0	1.0	0.9	0.9	0.8	1.1	1.7	2.4	3.3	5.9	8.0	13.4	17.6	27.9	30.7	35.9
Acute Monocytic Leukemia	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.3	0.2	0.0	0.6	1.9	1.6	2.1
Chronic Myeloid Leukemia	0.3	0.2	0.1	0.0	0.8	0.8	1.6	1.1	0.8	0.9	1.8	3.9	6.5	6.4	9.4	14.5	24.1	23.5
Other Myeloid/Monocytic Leukemia	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.6	1.5	1.6	2.8
Other Leukemia	0.6	0.5	0.3	0.2	0.2	0.4	0.0	0.1	0.6	0.2	0.7	0.6	0.4	0.5	0.3	3.4	6.6	8.3
Miscellaneous	0.3	0.3	0.1	0.0	0.2	0.1	0.0	0.7	1.2	2.1	4.6	8.0	14.3	17.8	28.6	36.1	54.7	77.2

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
- Not applicable; site is sex-specific or not available.

Table II-3: Age-specific rates§ of newly diagnosed cancers by anatomic site, females, all races combined, Minnesota, 2002-2006

Cancer Site	Age at Diagnosis (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
All Cancer Sites Combined^	19	9	13	22	41	72	108	166	266	420	587	781	1064	1393	1622	1875	1904	1557
Oral Cavity & Pharynx	0.0	0.1	0.6	0.4	0.9	1.3	1.8	2.0	5.2	7.4	9.9	13.2	20.2	24.2	26.4	26.6	36.3	38.1
Lip	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.7	0.7	0.5	0.6	1.5	1.4	2.4	2.6	5.1	5.0
Tongue	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.6	1.8	1.4	2.2	4.3	5.8	5.6	7.2	5.8	7.9	8.3
Salivary Gland	0.0	0.1	0.2	0.2	0.3	0.4	0.8	0.3	1.0	1.9	0.9	1.4	2.2	3.3	3.5	3.2	5.8	3.8
Floor of Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.8	1.1	2.1	2.6	1.9	1.7	2.7	3.2
Gum & Other Mouth	0.0	0.0	0.2	0.1	0.0	0.3	0.2	0.3	0.7	1.5	1.6	2.6	2.8	5.6	6.7	9.5	11.0	15.1
Nasopharynx	0.0	0.0	0.1	0.1	0.5	0.3	0.1	0.4	0.2	0.2	0.7	0.1	0.7	1.2	0.8	0.3	0.7	0.0
Tonsil	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.7	2.4	2.3	3.6	2.1	1.9	1.2	1.4	1.2
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.4	0.5	0.8	0.6	1.0	0.6
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.6	0.9	1.4	0.8	0.9	0.3	0.6
Other Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.5	0.5	0.9	0.3	0.3
Digestive System	0.4	0.0	0.3	0.7	1.4	3.0	8.7	10.7	21.6	41.1	64.6	96.2	149.8	235.7	329.8	408.4	492.7	451.7
Esophagus	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.5	1.2	4.3	6.0	8.2	9.9	13.0	8.6	12.4
Stomach	0.0	0.0	0.1	0.0	0.2	0.4	1.2	1.1	1.4	2.1	2.9	4.1	7.3	8.0	16.0	23.1	26.7	29.8
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.5	2.1	2.2	5.5	4.3	7.3	8.5	7.2	12.7	5.6
Colon & Rectum	0.0	0.0	0.0	0.2	0.7	1.9	5.4	6.5	14.8	27.1	42.1	54.7	85.5	142.6	207.4	265.2	337.1	312.8
Colon excl. Rectum	0.0	0.0	0.0	0.1	0.7	1.6	3.0	3.7	8.6	17.1	25.5	38.3	64.3	109.5	167.7	221.4	286.4	268.8
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.1	0.0	0.3	2.4	2.8	6.2	10.0	16.6	16.3	21.1	33.1	39.7	43.9	50.7	44.0
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.2	1.8	2.5	3.5	3.4	2.8	3.7	3.5	4.1	5.0
Liver & Intrahepatic Bile Duct	0.2	0.0	0.1	0.2	0.3	0.1	0.2	0.6	0.8	1.6	2.2	2.7	6.2	7.0	9.9	9.5	10.6	8.9
Liver	0.2	0.0	0.1	0.2	0.3	0.0	0.2	0.4	0.7	1.3	1.7	2.4	4.5	5.4	7.7	7.5	7.9	6.5
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.5	0.3	1.7	1.6	2.1	2.0	2.7	2.4
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	2.6	3.0	6.6	8.0	9.5	13.4	11.5
Other Biliary	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.8	0.9	1.3	2.4	4.7	7.2	7.8	13.0	7.4
Pancreas	0.0	0.0	0.0	0.1	0.1	0.1	0.4	1.2	1.4	3.3	6.4	12.9	24.1	35.7	48.0	55.7	56.5	49.3
Retroperitoneum	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	1.0	0.1	0.6	0.5	0.5	1.4	0.7	0.6
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.4	1.0	2.1	4.3	6.4	10.8	9.9	9.8	7.5	4.1
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.3	0.7	1.6	0.8	2.6	1.7	4.1

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Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
§ Rates are per 100,000 persons.
^ All Cancer Sites Combined rounded to nearest whole number.
-Not applicable; site is sex-specific or not available.

Table II-3: Age-specific rates§ of newly diagnosed cancers by anatomic site, females, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Diagnosis (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Respiratory System	0.4	0.1	0.0	0.1	0.7	0.9	1.3	4.2	12.5	28.9	49.3	91.3	166.6	241.6	315.4	323.8	261.1	125.2
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.6	0.6	1.1	1.1	1.2	2.7	2.9	2.4	1.2
Larynx	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.3	1.8	1.7	3.1	6.7	5.6	4.3	5.5	4.5	1.8
Lung & Bronchus	0.0	0.1	0.0	0.1	0.5	0.8	1.2	3.9	11.9	26.4	46.9	86.9	158.8	234.8	308.5	315.1	254.2	122.3
Pleura†	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trachea, Mediastinum & Other	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.0
Mesothelioma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.8	0.4	1.1	2.3	2.7	3.5	4.8	5.3
Bones & Joints	0.1	0.5	0.9	1.3	0.9	0.5	0.7	0.7	0.7	0.2	0.8	0.9	0.2	1.2	1.6	1.2	1.7	0.9
Soft Tissue incl. Heart	3.1	0.8	1.2	0.4	1.1	1.6	1.4	2.3	1.4	3.5	3.0	3.1	6.5	5.9	10.1	7.2	14.0	8.6
Skin	0.0	0.2	0.5	3.2	10.4	14.9	15.6	23.1	24.1	28.9	28.2	32.8	27.5	38.2	39.2	53.1	50.7	47.9
Melanoma of the Skin	0.0	0.2	0.1	2.8	9.9	14.4	14.4	22.1	22.9	26.8	26.8	29.8	25.2	32.8	33.9	43.3	38.4	32.2
Other Non-Epithelial Skin	0.0	0.0	0.3	0.3	0.5	0.5	1.2	1.0	1.2	2.1	1.4	3.0	2.2	5.4	5.3	9.8	12.3	15.7
Kaposi Sarcoma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.9
Breast	0.0	0.0	0.0	0.2	0.9	7.9	25.8	57.5	112.9	183.5	238.3	291.9	359.0	414.7	409.5	472.1	436.1	388.2
Female Genital System	0.2	0.1	0.8	2.3	3.0	11.0	18.2	22.1	34.8	57.1	98.0	129.5	149.8	172.4	166.6	180.9	163.4	133.8
Cervix Uteri	0.0	0.0	0.0	0.4	1.4	6.8	9.6	9.7	11.3	11.1	10.8	10.5	11.0	8.7	10.4	6.1	6.9	6.8
Corpus & Uterus, NOS	0.0	0.0	0.0	0.1	0.1	1.4	3.7	6.8	12.3	27.3	56.3	82.3	94.2	109.3	95.2	100.7	95.2	63.5
Ovary	0.0	0.1	0.8	1.6	1.3	2.3	3.7	4.3	8.3	15.5	25.3	29.7	35.9	40.8	43.5	53.7	45.6	39.3
Vagina	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.8	1.7	1.5	1.6	3.5	5.2	1.4	2.1
Vulva	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.0	2.5	2.5	4.0	3.7	4.5	9.6	9.9	11.8	13.4	20.1
Other Female Genital Organs	0.0	0.0	0.0	0.1	0.2	0.4	0.1	0.2	0.2	0.7	0.8	1.6	2.6	2.3	4.3	3.5	1.0	2.1
Male Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prostate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Testis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Penis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Male Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(Continues on next page)

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
† Mesotheliomas of the pleura are included in the group Mesothelioma.
- Not applicable; site is sex-specific or not available.

Table II-3: Age-specific rates§ of newly diagnosed cancers by anatomic site, females, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Diagnosis (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Urinary System	1.9	0.6	0.1	0.3	1.0	1.4	2.7	3.5	6.6	14.4	23.4	38.0	54.0	79.5	99.7	128.1	132.9	105.2
Urinary Bladder	0.0	0.0	0.0	0.2	0.2	0.4	0.2	1.4	1.7	4.6	8.2	15.6	25.2	38.2	53.1	71.3	75.4	72.7
Kidney & Renal Pelvis	1.9	0.6	0.1	0.1	0.8	1.0	2.4	2.1	4.7	9.6	14.7	21.9	27.3	38.7	44.0	51.1	50.7	27.2
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.5	2.3	2.7	4.9	5.1	2.7
Other Urinary Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.0	0.2	0.0	0.9	1.7	2.7
Eye & Orbit	1.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.6	0.6	0.6	0.0	1.4	1.6	1.4	1.0	2.4
Brain & Other Nervous System	3.1	2.1	2.8	2.2	2.3	3.6	2.9	3.7	4.5	5.4	6.6	7.9	10.3	15.0	17.1	16.4	14.4	4.1
Brain	2.9	1.9	2.4	2.1	2.1	3.5	2.3	3.2	4.1	5.2	6.1	7.8	10.3	13.6	15.7	15.3	14.0	4.1
Other Nervous System	0.2	0.1	0.5	0.1	0.2	0.1	0.6	0.6	0.5	0.2	0.5	0.1	0.0	1.4	1.3	1.2	0.3	0.0
Endocrine System	0.6	0.4	0.9	3.3	10.3	16.2	18.7	22.4	22.7	20.9	22.3	18.5	20.4	17.8	15.2	15.6	14.7	9.5
Thyroid	0.0	0.2	0.7	3.2	9.9	15.6	18.5	21.9	22.2	20.4	21.3	17.6	19.8	16.2	14.1	14.4	12.7	9.5
Other Endocrine incl. Thymus	0.6	0.1	0.2	0.1	0.3	0.6	0.2	0.6	0.5	0.5	1.0	0.9	0.6	1.6	1.1	1.2	2.1	0.0
Lymphoma	0.5	0.8	1.6	4.7	5.8	7.8	7.4	8.8	10.7	15.5	20.8	28.8	43.9	72.7	77.1	103.3	120.6	84.8
Hodgkin Lymphoma	0.0	0.4	1.1	3.4	4.1	5.3	3.4	3.5	1.9	1.7	1.7	1.4	3.6	3.8	3.5	5.2	4.8	1.8
Non-Hodgkin Lymphoma	0.5	0.5	0.5	1.3	1.7	2.5	4.0	5.3	8.8	13.8	19.1	27.4	40.4	69.0	73.6	98.1	115.8	83.0
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.9	2.5	4.0	8.4	11.8	15.9	24.8	26.6	26.0	19.2
Leukemia	7.8	3.3	2.8	2.7	1.7	1.8	1.8	3.0	4.5	5.9	10.1	11.9	23.2	29.8	47.5	57.7	68.2	67.9
Lymphocytic Leukemia	6.0	2.3	1.7	1.3	0.6	0.5	0.7	0.8	1.0	2.8	4.9	6.4	12.9	18.8	29.1	29.1	33.9	34.0
Acute Lymphocytic Leukemia	6.0	2.3	1.7	1.3	0.6	0.5	0.7	0.3	0.4	0.5	0.2	0.3	0.6	0.7	1.3	0.9	1.0	0.6
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.8	4.4	5.4	11.8	17.6	26.9	27.7	30.8	31.6
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.3	0.7	0.6	0.5	0.8	0.6	2.1	1.8
Myeloid & Monocytic Leukemia	1.6	0.7	0.8	1.3	0.9	1.0	1.0	2.1	3.5	2.9	4.7	5.4	9.7	10.1	16.0	27.4	31.9	29.2
Acute Myeloid Leukemia	1.1	0.4	0.6	1.0	0.7	1.0	0.6	1.5	2.2	1.6	2.9	2.7	7.5	6.1	10.7	16.4	18.2	16.2
Acute Monocytic Leukemia	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.4	0.4	0.7	0.3	1.7	2.1	2.1
Chronic Myeloid Leukemia	0.4	0.2	0.0	0.3	0.2	0.0	0.4	0.6	1.0	1.1	1.5	2.3	1.7	3.0	5.1	8.4	10.3	10.3
Other Myeloid/Monocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.9	1.4	0.6
Other Leukemia	0.2	0.2	0.3	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.5	0.1	0.6	0.9	2.4	1.2	2.4	4.7
Miscellaneous	0.2	0.0	0.0	0.1	0.2	0.4	0.5	1.0	2.4	3.6	5.8	7.5	19.1	24.9	37.3	49.3	64.1	63.5

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
- Not applicable; site is sex-specific or not available.

Table II-4: Age-specific rates§ of cancer deaths by anatomic site, males, all races combined, Minnesota, 2002-2006

Cancer Site	Age at Death (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
All Cancer Sites Combined^	3	3	2	4	5	6	8	18	31	68	127	237	419	651	1028	1459	1909	2589
Oral Cavity & Pharynx	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.2	0.4	2.8	4.2	7.3	8.2	11.3	14.8	18.4	17.0	31.1
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5	2.1
Tongue	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.8	1.2	1.9	2.0	2.6	2.8	3.1	2.2	5.5
Salivary Gland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.6	0.4	1.4	0.8	2.2	1.9	4.4	9.0
Floor of Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.0	0.0	0.0	0.5	0.7
Gum & Other Mouth	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	1.0	1.2	1.3	2.5	2.7	1.1	7.6
Nasopharynx	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.4	0.7	0.7	0.4	2.1	0.9	1.9	0.5	0.0
Tonsil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.9	1.2	0.5	0.9	2.7	1.1	0.0
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.8	1.3	0.9	1.1	1.6	2.1
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.4	0.8	0.3	0.9	1.1	1.1	0.7
Other Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	1.3	0.6	2.6	3.1	3.4	3.8	3.5
Digestive System	0.5	0.1	0.3	0.2	0.4	1.5	1.7	4.8	9.5	20.2	41.4	73.5	116.8	162.2	250.8	328.9	420.0	555.0
Esophagus	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.9	1.3	4.0	6.8	13.3	26.5	29.9	41.8	47.8	55.3	52.5
Stomach	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.4	0.8	2.1	2.0	6.2	8.8	11.9	18.9	29.5	35.0	56.7
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.7	1.1	0.8	3.1	2.2	4.2	5.5	5.5
Colon & Rectum	0.0	0.0	0.1	0.0	0.2	1.1	0.6	1.7	3.7	5.9	11.7	21.5	35.3	56.2	86.1	124.3	167.6	264.7
Colon excl. Rectum	0.0	0.0	0.1	0.0	0.1	0.7	0.6	1.5	2.8	4.4	9.4	16.9	28.4	45.6	72.0	99.8	140.7	233.6
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.2	0.9	1.5	2.3	4.6	6.9	10.6	14.1	24.5	26.8	31.1
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.6	0.5	0.0	0.4	0.0	2.1
Liver & Intrahepatic Bile Duct	0.3	0.1	0.2	0.2	0.1	0.2	0.2	0.8	1.4	3.9	8.6	12.5	13.5	19.6	28.9	38.6	41.1	44.9
Liver	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.5	0.9	2.8	7.5	9.6	10.8	15.0	18.5	29.1	30.1	30.4
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	1.1	1.1	2.9	2.7	4.6	10.4	9.6	11.0	14.5
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.7	1.6	1.5	3.1	5.0	6.0	6.2
Other Biliary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	1.0	0.0	1.5	2.8	3.8	4.9	11.1
Pancreas	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.0	1.8	3.6	10.7	16.5	28.4	35.1	65.4	72.7	99.1	104.4
Retroperitoneum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	0.0	0.4	1.6	0.0
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.0	0.4	0.0	0.7
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.0	1.5	1.6	1.9	3.8	6.2

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Source: Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.

^ All Cancer Sites Combined rounded to nearest whole number.

- Not applicable; site is sex-specific or not available.

Table II-4: Age-specific rates§ of cancer deaths by anatomic site, males, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Death (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Respiratory System	0.0	0.0	0.0	0.1	0.0	0.4	0.1	2.3	5.5	16.9	33.3	73.5	150.5	216.6	354.2	458.6	514.7	447.2
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.6	0.3	0.9	0.8	3.3	3.5
Larynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.5	3.4	4.7	4.9	6.0	11.5	11.5	9.0
Lung & Bronchus	0.0	0.0	0.0	0.1	0.0	0.2	0.1	2.3	5.4	16.0	31.6	70.0	145.0	211.1	347.0	445.6	498.8	429.9
Pleura	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.4
Trachea, Mediastinum & Other	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.0	1.1	3.5
Mesothelioma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.6	4.3	7.7	9.7	19.1	23.0	24.9
Bones & Joints	0.1	0.1	0.2	0.7	0.8	0.6	0.2	0.8	0.5	0.2	0.3	0.9	1.2	1.3	0.9	1.5	3.8	2.1
Soft Tissue incl. Heart	0.1	0.3	0.0	0.4	0.3	0.5	0.6	0.4	0.5	1.3	1.4	1.9	1.8	2.6	6.3	9.6	11.5	12.4
Skin	0.1	0.0	0.0	0.2	0.0	0.5	0.7	0.8	1.6	2.8	5.2	5.4	8.6	11.6	18.2	19.9	32.3	58.1
Melanoma of the Skin	0.1	0.0	0.0	0.2	0.0	0.5	0.7	0.6	1.1	2.3	4.2	4.3	6.9	8.2	14.8	14.5	20.8	32.5
Other Non-Epithelial Skin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.6	1.0	1.1	1.8	3.4	3.5	5.4	11.5	25.6
Kaposi Sarcoma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Breast	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.5	1.3	1.1	1.6	4.1
Female Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cervix Uteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corpus & Uterus, NOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ovary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vagina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vulva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Female Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Male Genital System	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.8	0.8	2.8	7.0	22.3	51.6	90.5	193.2	299.0	678.1
Prostate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	2.6	6.3	21.7	50.5	88.3	190.9	297.3	673.9
Testis	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.5	0.4	0.2	0.4	0.2	0.3	0.9	0.4	0.0	0.7
Penis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.8	1.3	1.9	1.1	2.8
Other Male Genital Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7

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Source: Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
- Not applicable; site is sex-specific or not available.

Table II-4: Age-specific rates§ of cancer deaths by anatomic site, males, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Death (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Urinary System	0.2	0.5	0.0	0.0	0.1	0.0	0.2	0.5	1.9	4.2	6.0	15.6	25.1	43.1	64.7	94.5	125.4	201.1
Urinary Bladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	1.0	1.1	5.2	8.6	18.8	31.7	54.3	69.5	142.4
Kidney & Renal Pelvis	0.2	0.5	0.0	0.0	0.1	0.0	0.2	0.3	1.6	3.1	4.8	10.3	15.3	23.5	30.8	38.6	52.6	51.1
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.3	0.9	0.8	2.2	2.1
Other Urinary Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	1.2	0.5	1.3	0.8	1.1	5.5
Eye & Orbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.3	0.9	0.8	0.0	1.4
Brain & Other Nervous System	0.6	0.2	0.3	0.5	0.7	0.4	1.2	2.8	4.4	4.6	7.4	10.9	13.5	18.0	22.9	19.5	27.4	15.2
Endocrine System	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.4	0.8	0.3	0.7	1.8	2.3	4.1	2.7	4.9	0.7
Thyroid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.0	0.3	1.2	1.5	2.2	1.1	1.6	0.0
Other Endocrine incl. Thymus	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.6	0.8	1.9	1.5	3.3	0.7
Lymphoma	0.1	0.0	0.2	0.2	1.0	0.5	1.5	2.2	1.7	3.2	5.8	11.3	17.2	28.1	41.8	69.6	107.9	125.1
Hodgkin Lymphoma	0.0	0.0	0.0	0.1	0.5	0.2	0.3	0.5	0.0	0.4	0.2	0.3	0.6	0.8	1.6	3.4	3.3	4.1
Non-Hodgkin Lymphoma	0.1	0.0	0.2	0.1	0.4	0.2	1.2	1.6	1.7	2.8	5.6	11.0	16.7	27.3	40.2	66.2	104.6	121.0
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.2	3.7	5.7	8.6	15.5	22.6	38.2	52.0	52.5
Leukemia	1.0	1.6	0.4	0.8	1.3	1.3	0.6	1.9	1.9	2.8	5.1	7.6	12.0	27.8	48.7	66.9	103.5	150.7
Lymphocytic Leukemia	0.3	1.0	0.2	0.5	1.1	0.6	0.1	0.6	0.3	0.2	1.4	2.6	3.9	9.3	14.5	19.1	31.8	72.6
Acute Lymphocytic Leukemia	0.3	1.0	0.2	0.5	1.1	0.6	0.1	0.5	0.2	0.0	0.6	0.6	0.4	0.5	0.6	0.4	1.6	0.7
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	1.9	3.5	8.2	13.2	16.8	27.9	69.1
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.5	0.6	1.9	2.2	2.8
Myeloid & Monocytic Leukemia	0.7	0.5	0.2	0.2	0.2	0.7	0.5	1.0	1.4	2.2	3.2	4.0	6.9	15.5	26.1	35.2	50.9	50.5
Acute Myeloid Leukemia	0.6	0.3	0.2	0.2	0.2	0.7	0.5	0.6	0.9	2.1	2.7	3.3	6.1	11.9	21.7	28.7	38.9	31.8
Acute Monocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.5	1.4
Chronic Myeloid Leukemia	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.1	0.2	0.3	0.6	1.0	2.5	3.8	4.4	7.6
Other Myeloid/ Monocytic Leukemia	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	2.6	1.6	1.9	7.1	9.7
Other Leukemia	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.3	0.2	0.5	0.6	1.0	1.2	3.1	8.2	12.6	20.8	27.6
Miscellaneous	0.1	0.1	0.2	0.1	0.2	0.2	0.9	1.4	1.5	5.6	9.7	14.3	26.8	50.5	75.4	116.3	164.8	229.5

Source: Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
- Not applicable; site is sex-specific or not available.

Table II-5: Age-specific rates§ of cancer deaths by anatomic site, females, all races combined, Minnesota, 2002-2006

Cancer Site	Age at Death (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
All Cancer Sites Combined^	2	2	2	2	3	7	12	20	40	71	129	217	348	509	743	921	1148	1351
Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.6	0.6	2.4	3.6	7.3	6.9	4.0	10.6	16.0
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3
Tongue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.6	1.1	2.1	1.3	0.9	4.1	3.8
Salivary Gland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.1	0.0	0.2	0.5	1.3	1.2	1.4	1.5
Floor of Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Gum & Other Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.6	1.9	2.1	0.3	2.7	6.8
Nasopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	1.2	0.8	0.3	0.3	0.3
Tonsil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.4	0.2	0.3	0.3	0.7	0.6
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.0	0.0	0.3	0.0	0.6
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.3	0.0	0.0	0.3
Other Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.7	0.8	0.9	1.4	1.5
Digestive System	0.1	0.1	0.0	0.2	0.3	1.1	2.3	2.3	7.5	12.5	21.9	39.3	65.1	97.8	154.1	216.7	278.2	415.3
Esophagus	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.3	1.3	2.8	5.0	5.4	6.9	13.3	7.9	15.7
Stomach	0.0	0.0	0.0	0.1	0.0	0.1	0.7	0.4	0.9	1.4	1.7	1.7	3.9	5.9	8.0	14.4	17.1	27.2
Small Intestine	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.6	0.4	0.2	0.5	1.3	2.0	2.4	4.1
Colon & Rectum	0.0	0.0	0.0	0.1	0.2	0.8	1.1	1.2	3.7	6.0	10.2	14.3	25.6	38.7	60.5	86.0	123.7	214.2
Colon excl. Rectum	0.0	0.0	0.0	0.1	0.2	0.5	1.0	0.9	3.3	4.5	8.9	11.4	20.6	33.8	52.5	75.9	110.3	192.0
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.3	0.4	1.5	1.4	3.0	5.0	4.9	8.0	10.1	13.4	22.2
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.6	0.6	0.7	0.8	0.9	0.3	1.5
Liver & Intrahepatic Bile Duct	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.9	1.0	2.2	3.3	4.5	8.0	16.5	17.9	21.2	23.0
Liver	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.4	0.4	1.5	1.8	2.1	4.2	8.0	8.7	8.2	13.3
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.5	0.6	0.7	1.4	2.4	3.8	8.5	9.2	13.0	9.7
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	1.3	1.9	3.8	5.1	8.4	10.6	9.2
Other Biliary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.6	0.7	1.6	2.4	2.6	6.2	8.6
Pancreas	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.4	3.0	4.1	12.6	20.2	30.0	45.9	63.5	81.2	102.5
Retroperitoneum	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.7	0.6
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.5	1.0	1.7	2.8	4.5	5.8	4.8	2.7
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.6	0.6	0.2	1.9	1.7	2.1	6.2

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Source: Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.

^ All Cancer Sites Combined rounded to nearest whole number.

- Not applicable; site is sex-specific or not available.

Table II-5: Age-specific rates§ of cancer deaths by anatomic site, females, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Death (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Respiratory System	0.0	0.0	0.0	0.0	0.2	0.1	0.7	2.0	6.8	14.3	29.1	55.9	108.1	154.6	233.6	259.2	261.1	187.0
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.5	0.3	0.6	1.0	0.6
Larynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4	0.6	2.1	2.7	2.0	0.7	1.5
Lung & Bronchus	0.0	0.0	0.0	0.0	0.2	0.1	0.7	2.0	6.7	14.1	28.5	55.2	107.3	152.0	230.6	256.0	258.7	184.6
Pleura	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trachea, Mediastinum & Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.6	0.7	0.3
Mesothelioma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.6	0.7	1.9	2.1	2.3	3.4	5.9
Bones & Joints	0.0	0.1	0.2	0.4	0.6	0.3	0.2	0.0	0.0	0.0	0.5	0.7	0.7	0.7	1.1	2.6	1.7	1.5
Soft Tissue incl. Heart	0.0	0.1	0.0	0.1	0.2	0.5	0.5	0.0	0.5	0.4	1.3	2.3	2.8	4.5	3.2	3.8	5.5	7.7
Skin	0.0	0.0	0.0	0.0	0.1	0.5	1.1	1.4	0.6	1.3	2.1	4.1	5.2	5.2	8.3	8.7	12.7	16.0
Melanoma of the Skin	0.0	0.0	0.0	0.0	0.1	0.5	1.1	1.4	0.6	1.3	1.8	3.7	3.6	4.5	6.1	7.2	7.5	9.2
Other Non-Epithelial Skin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	1.7	0.7	2.1	1.4	5.1	6.8
Kaposi Sarcoma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Breast	0.0	0.0	0.0	0.0	0.1	0.6	2.4	6.1	12.3	17.7	32.1	45.4	51.4	69.7	86.9	103.0	131.9	169.9
Female Genital System	0.0	0.0	0.0	0.0	0.2	1.6	1.6	2.6	4.6	9.1	18.6	29.8	44.1	52.5	78.9	82.2	103.1	112.5
Cervix Uteri	0.0	0.0	0.0	0.0	0.1	0.6	0.6	1.0	1.8	1.7	3.3	3.8	4.1	3.8	6.7	4.6	4.8	6.5
Corpus & Uterus, NOS	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.9	0.7	1.5	4.8	8.1	14.4	11.3	21.9	24.5	35.3	34.0
Ovary	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.7	1.8	5.6	9.4	16.6	23.6	34.9	44.3	45.9	57.2	57.6
Vagina	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.6	0.0	0.3	1.2	1.0	1.2
Vulva	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.7	0.6	0.6	0.9	3.5	4.9	2.7	11.5
Other Female Genital Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.6	0.9	1.6	2.4	1.2	2.1	1.8
Male Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prostate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Testis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Penis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Male Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Source: Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
- Not applicable; site is sex-specific or not available.

Table II-5: Age-specific rates§ of cancer deaths by anatomic site, females, all races combined, Minnesota, 2002-2006 (continued)

Cancer Site	Age at Death (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Urinary System	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.9	1.1	3.1	4.8	6.5	16.4	26.4	35.8	49.7	69.7
Urinary Bladder	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.6	1.3	1.6	2.6	4.7	12.5	13.3	20.6	35.4
Kidney & Renal Pelvis	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.8	0.5	1.8	2.7	3.9	10.6	13.1	19.6	25.0	30.7
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.5	1.4	2.4	1.8
Other Urinary Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7	0.3	1.4	1.7	1.8
Eye & Orbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.9
Brain & Other Nervous System	0.1	1.0	0.8	0.8	0.0	0.5	0.5	1.5	1.4	3.8	5.1	5.8	9.9	12.7	13.3	17.6	17.5	9.7
Endocrine System	0.5	0.0	0.2	0.0	0.0	0.1	0.1	0.1	0.3	0.3	1.3	1.0	0.9	3.5	2.9	3.5	4.8	7.1
Thyroid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.6	0.7	0.6	2.8	2.1	2.9	4.8	5.9
Other Endocrine incl. Thymus	0.5	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.3	0.7	0.3	0.4	0.7	0.8	0.6	0.0	1.2
Lymphoma	0.1	0.0	0.0	0.1	0.2	1.0	0.7	0.8	1.0	2.8	2.4	5.0	9.9	17.1	27.2	42.1	68.5	76.5
Hodgkin Lymphoma	0.0	0.0	0.0	0.1	0.2	0.6	0.1	0.2	0.1	0.5	0.3	0.4	1.3	0.9	2.1	2.0	2.1	1.5
Non-Hodgkin Lymphoma	0.1	0.0	0.0	0.0	0.0	0.4	0.6	0.6	0.9	2.3	2.1	4.5	8.6	16.2	25.1	40.1	66.5	75.0
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.7	1.8	3.1	6.4	9.9	16.5	22.2	30.8	28.1
Leukemia	0.8	0.5	1.0	0.7	0.7	0.4	0.6	1.1	1.8	1.6	2.9	4.5	9.2	15.0	28.0	38.4	54.5	68.5
Lymphocytic Leukemia	0.2	0.1	0.5	0.3	0.3	0.1	0.0	0.0	0.5	0.2	0.5	0.6	2.1	3.8	9.3	11.3	17.8	26.6
Acute Lymphocytic Leukemia	0.2	0.1	0.5	0.3	0.3	0.1	0.0	0.0	0.5	0.1	0.2	0.3	0.4	0.5	1.1	1.4	1.0	0.6
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	1.5	3.3	7.7	9.2	16.1	23.9
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.5	0.6	0.7	2.1
Myeloid & Monocytic Leukemia	0.2	0.2	0.5	0.3	0.2	0.1	0.5	1.0	1.3	1.2	2.0	2.8	5.4	8.9	13.3	19.9	26.7	28.9
Acute Myeloid Leukemia	0.2	0.2	0.5	0.2	0.2	0.1	0.4	0.7	1.1	1.0	1.6	2.3	5.0	8.0	10.9	17.0	20.6	17.7
Acute Monocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	0.9
Chronic Myeloid Leukemia	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.5	1.6	1.2	3.1	5.3
Other Myeloid/Monocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.2	0.5	0.8	1.4	2.1	5.0
Other Leukemia	0.4	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.5	1.1	1.7	2.3	5.3	7.2	9.9	13.0
Miscellaneous	0.2	0.1	0.1	0.1	0.3	0.4	0.8	1.1	2.1	4.9	6.0	11.6	23.0	40.8	53.1	79.1	114.1	158.0

Source: Deaths were from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons.
- Not applicable; site is sex-specific or not available.

Table II-6: The five most commonly diagnosed cancers by race and ethnicity and gender, Minnesota, 2002-2006

Race/Ethnicity	Males				Females			
	Cancer Site	Cases	Percent	Rate§	Cancer Site	Cases	Percent	Rate§
American Indian Statewide	Prostate	125	26.0	171.7	Breast	105	22.6	92.5
	Lung and Bronchus	91	19.0	135.1	Lung and Bronchus	93	20.0	98.3
	Colon and Rectum	53	11.0	69.9	Colon and Rectum	50	10.8	59.6
	Kidney and Renal Pelvis	41	8.5	44.5	Kidney and Renal Pelvis	27	5.8	23.0
	Leukemia	22	4.6	26.4	Corpus and Uterus, NOS	25	5.4	23.2
	All Cancer Sites Combined	480	100.0	627.0	All Cancer Sites Combined	465	100.0	457.8
American Indian CHSDA‡	Prostate	80	25.5	194.3	Lung and Bronchus	72	24.3	139.7
	Lung and Bronchus	66	21.0	169.3	Breast	57	19.3	95.5
	Colon and Rectum	41	13.1	99.6	Colon and Rectum	35	11.8	71.8
	Kidney and Renal Pelvis	27	8.6	52.4	Kidney and Renal Pelvis	19	6.4	30.9
	Leukemia	14	4.5	29.7	Corpus and Uterus, NOS	16	5.4	28.0
	All Cancer Sites Combined	314	100.0	746.9	All Cancer Sites Combined	296	100.0	540.8
Asian/Pacific Islander	Prostate	86	16.0	57.0	Breast	150	23.8	50.8
	Colon and Rectum	65	12.1	36.5	Colon and Rectum	62	9.9	29.7
	Lung and Bronchus	54	10.1	33.2	Thyroid	54	8.6	15.0
	Liver and Bile Duct	47	8.8	22.3	Lung and Bronchus	49	7.8	24.0
	Oral Cavity and Pharynx	37	6.9	13.2	Corpus and Uterus, NOS	40	6.4	16.2
	All Cancer Sites Combined	536	100.0	284.5	All Cancer Sites Combined	629	100.0	245.4
Black	Prostate	440	31.8	223.5	Breast	290	28.6	98.6
	Lung and Bronchus	178	12.9	96.1	Lung and Bronchus	127	12.5	56.6
	Colon and Rectum	118	8.5	56.3	Colon and Rectum	91	9.0	38.9
	Liver and Bile Duct	69	5.0	32.4	Corpus and Uterus, NOS	46	4.5	20.3
	Kidney and Renal Pelvis	66	4.8	25.4	Cervix Uteri	45	4.4	13.4
	All Cancer Sites Combined	1,385	100.0	644.8	All Cancer Sites Combined	1,014	100.0	378.5
Non-Hispanic White	Prostate	19,642	33.1	181.4	Breast	16,479	31.0	127.1
	Lung and Bronchus	7,350	12.4	69.4	Lung and Bronchus	6,374	12.0	49.2
	Colon and Rectum	5,980	10.1	56.1	Colon and Rectum	5,777	10.9	41.8
	Urinary Bladder	4,215	7.1	40.5	Corpus and Uterus, NOS	3,545	6.7	27.3
	Non-Hodgkin Lymphoma	2,853	4.8	26.5	Non-Hodgkin Lymphoma	2,306	4.3	17.4
	All Cancer Sites Combined	59,345	100.0	551.5	All Cancer Sites Combined	53,103	100.0	407.5

(Continues on next page)

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. See text for comments on the accuracy of race- and ethnic-specific cancer rates.

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

‡ CHSDA = resident of IHS Contract Health Service Delivery Area county.

Table II-6: The five most commonly diagnosed cancers by race and ethnicity and gender, Minnesota, 2002-2006 (continued)

Race/Ethnicity	Males				Females			
	Cancer Site	Cases	Percent	Rate§	Cancer Site	Cases	Percent	Rate§
Hispanic (all races)	Prostate	117	22.5	103.5	Breast	154	26.7	88.7
	Colon and Rectum	49	9.4	43.7	Colon and Rectum	49	8.5	35.8
	Lung and Bronchus	36	6.9	30.9	Lung and Bronchus	44	7.6	35.4
	Liver and Bile Duct	34	6.6	18.0	Corpus and Uterus, NOS	41	7.1	24.2
	Kidney and Renal Pelvis	29	5.6	15.3	Cervix Uteri	39	6.8	16.9
	All Cancer Sites Combined	519	100.0	340.5	All Cancer Sites Combined	577	100.0	344.2

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. See text for comments on the accuracy of race- and ethnic-specific cancer rates.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
‡ CHSDA = resident of IHS Contract Health Service Delivery Area county.

Table II-7: Cancer incidence and mortality rates by race and ethnicity‡ for selected cancers, Minnesota, 2002-2006

	Average Annual Incidence Rate§						Average Annual Mortality Rate§					
	NH-White	AI/AN Statewide	AI/AN CHSDA	A/PI	Black	Hispanic	NH-White	AI/AN Statewide	AI/AN CHSDA	A/PI	Black	Hispanic
All Sites Combined	467.6	527.7*	628.1*	259.9*	494.5*	338.2*	176.0	246.9*	296.3*	126.1*	228.0*	108.0*
Female Breast	127.1	92.5*	95.5*	50.8*	98.6*	88.7*	22.2	13.3	~	7.9*	27.5	22.4
Cervix	5.8	12.4*	14.3*	12.9*	13.4*	16.9*	1.5	~	~	6.0	~	~
Colon and Rectum	48.2	65.1*	84.3*	32.9*	46.5	39.2	16.4	27.5*	35.6*	13.3*	21.4*	7.5*
Corpus Uteri†	27.3	23.2	28.0	16.2*	20.3	24.2	4.4	~	~	~	5.5	~
Kidney†	14.6	32.1*	40.4*	4.9*	16.5	12.9	4.4	8.3	13.2*	~	3.9	3.7
Leukemia	14.7	16.6	20.4	7.4*	11.5	9.3*	7.9	6.4	~	6.1	4.4*	4.9
Liver†	3.2	9.3*	~	14.3*	19.0*	10.0	3.7	13.7*	~	18.8*	19.1*	8.0*
Lung and Bronchus	57.6	112.7*	151.0*	28.0*	74.0*	33.0*	46.2	89.4*	112.9*	20.9*	57.2*	18.8*
NHL†	21.4	16.8	10.6*	12.0*	15.5*	21.8	7.6	6.0	~	4.6	6.2	4.6
Oral Cavity†	10.6	14.0	14.7	11.7	13.4	6.2	2.2	~	~	3.1	~	~
Prostate	181.4	171.7	194.3	57.0*	223.5*	103.5*	26.8	~	~	11.9*	50.8*	18.2
Thyroid	8.9	6.0	~	10.5	4.6*	6.4	0.4	~	~	~	~	~
Urinary Bladder	23.3	12.2*	17.7	9.7*	22.1	11.0*	4.2	~	~	~	3.9	~

Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. Cancer sites selected were in the top five sites for any race/sex group listed in Table II-6. All analyses were conducted by MCSS. See text for comments on the accuracy of race- and ethnic-specific cancer rates.

‡ AI/AN=American Indian/Alaska Native, CHSDA=resident in Contract Health Services Delivery Area, A/PI=Asian/Pacific Islander, NH=Non-Hispanic, Hispanic=Hispanic (all races).
† Corpus Uteri includes Uterus, NOS; Kidney include renal pelvis; Liver includes intrahepatic bile duct; NHL=Non-Hodgkin lymphoma; Oral cavity includes pharynx.
§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
* Rate is significantly different from rate among non-Hispanic whites ($p < 0.05$).
~ Rate is based on fewer than ten cases or deaths.

Table II-8: Estimated complete cancer prevalence† by anatomic site and gender, Minnesota, January 1, 2006

Cancer Site	Males		Females		Total	
	Count	Percent	Count	Percent	Count	Percent
All Cancer Sites Combined	91,160	100.0%	104,090	100.0%	195,250	100.0%
Brain and Other Nervous System	1,260	1.4%	1,020	1.0%	2,280	1.2%
Breast	220	0.2%	43,330	41.6%	43,550	22.3%
Cervix Uteri	0	0.0%	3,860	3.7%	3,860	2.0%
Colon and Rectum	9,410	10.3%	9,530	9.2%	18,940	9.7%
Corpus and Uterus, NOS	0	0.0%	10,900	10.5%	10,900	5.6%
Esophagus	420	0.5%	110	0.1%	530	0.3%
Hodgkin Lymphoma	1,490	1.6%	1,360	1.3%	2,850	1.5%
Kidney and Renal Pelvis	3,010	3.3%	2,020	1.9%	5,030	2.6%
Larynx	1,210	1.3%	290	0.3%	1,500	0.8%
Leukemia	2,720	3.0%	1,900	1.8%	4,620	2.4%
Liver and Intrahepatic Bile Duct	200	0.2%	100	0.1%	300	0.2%
Lung and Bronchus	2,670	2.9%	2,940	2.8%	5,610	2.9%
Melanoma of the Skin	5,320	5.8%	6,060	5.8%	11,380	5.8%
Myeloma	560	0.6%	400	0.4%	960	0.5%
Non-Hodgkin Lymphoma	4,060	4.5%	3,530	3.4%	7,590	3.9%
Oral Cavity and Pharynx	2,700	3.0%	1,670	1.6%	4,370	2.2%
Ovary	0	0.0%	2,920	2.8%	2,920	1.5%
Pancreas	230	0.3%	220	0.2%	450	0.2%
Prostate	41,420	45.4%	0	0.0%	41,420	21.2%
Stomach	470	0.5%	330	0.3%	800	0.4%
Testis	4,000	4.4%	0	0.0%	4,000	2.0%
Thyroid	1,410	1.5%	4,620	4.4%	6,030	3.1%
Urinary Bladder	7,100	7.8%	2,500	2.4%	9,600	4.9%

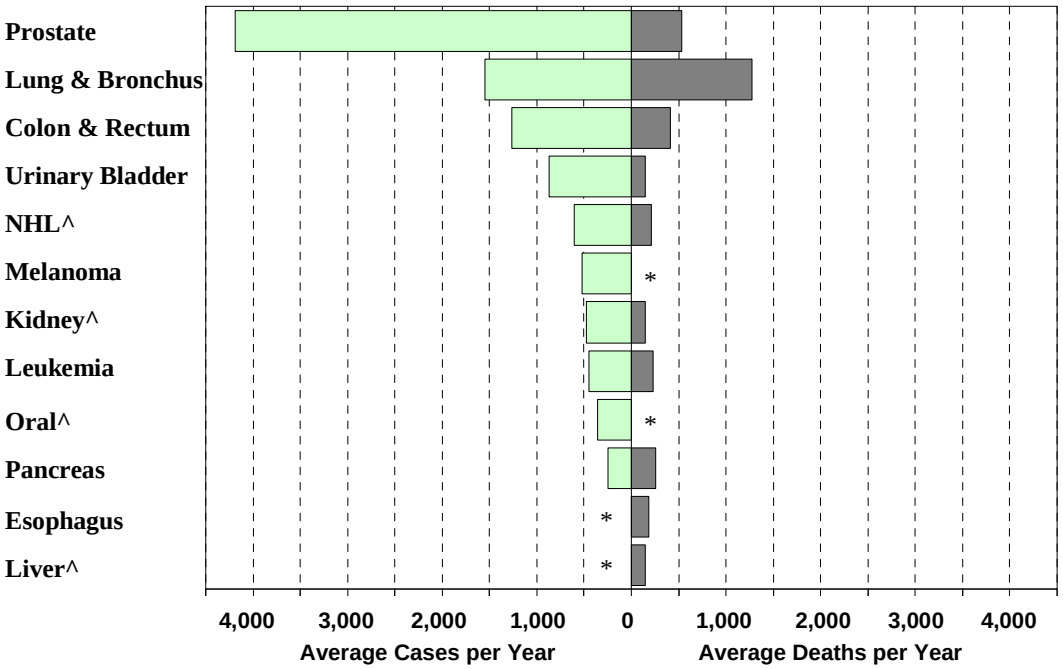
† Estimated number of Minnesotans ever diagnosed with an invasive cancer and alive on January 1, 2006, rounded to the nearest ten persons, using the first malignant primary for a person. Estimates are based on 31-year prevalence percentages and completeness indexes on January 1, 2006 for the white population in the nine geographic areas participating in the SEER program since 1975, adjusted for differences in cancer incidence between Minnesota and SEER.

Table II-9: Estimated five-year cancer prevalence† by anatomic site and gender, Minnesota, January 1, 2006

	Males		Females		Total	
	Count	Percent	Count	Percent	Count	Percent
All Cancer Sites Combined	36,260	100.0%	33,270	100.0%	69,530	100.0%
Brain and Other Nervous System	390	1.1%	310	0.9%	700	1.0%
Breast	90	0.2%	13,480	40.5%	13,570	19.5%
Cervix Uteri	0	0.0%	620	1.9%	620	0.9%
Colon and Rectum	3,630	10.0%	3,360	10.1%	6,990	10.1%
Corpus and Uterus, NOS	0	0.0%	2,750	8.3%	2,750	4.0%
Esophagus	290	0.8%	70	0.2%	360	0.5%
Hodgkin Lymphoma	320	0.9%	270	0.8%	590	0.8%
Kidney and Renal Pelvis	1,300	3.6%	790	2.4%	2,090	3.0%
Larynx	400	1.1%	100	0.3%	500	0.7%
Leukemia	1,150	3.2%	750	2.3%	1,900	2.7%
Liver and Intrahepatic Bile Duct	160	0.4%	60	0.2%	220	0.3%
Lung and Bronchus	1,580	4.4%	1,700	5.1%	3,280	4.7%
Melanoma of the Skin	1,790	4.9%	1,780	5.4%	3,570	5.1%
Myeloma	370	1.0%	270	0.8%	640	0.9%
Non-Hodgkin Lymphoma	1,710	4.7%	1,470	4.4%	3,180	4.6%
Oral Cavity and Pharynx	1,000	2.8%	540	1.6%	1,540	2.2%
Ovary	0	0.0%	930	2.8%	930	1.3%
Pancreas	170	0.5%	160	0.5%	330	0.5%
Prostate	17,410	48.0%	0	0.0%	17,410	25.0%
Stomach	250	0.7%	150	0.5%	400	0.6%
Testis	810	2.2%	0	0.0%	810	1.2%
Thyroid	420	1.2%	1,390	4.2%	1,810	2.6%
Urinary Bladder	2,570	7.1%	860	2.6%	3,430	4.9%

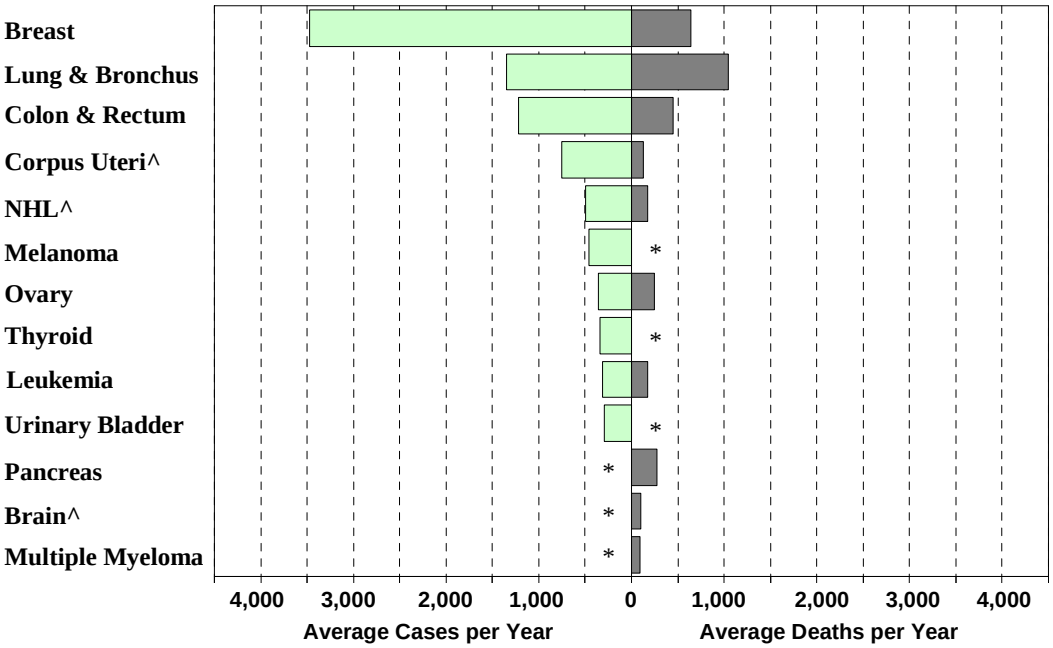
† Estimated number of Minnesotans diagnosed with an invasive cancer during 2001-20065and alive on January 1, 2006, rounded to the nearest ten persons, using the first malignant primary for a person. Estimates are based on prevalence percentages on January 1, 2006, for the white population in the nine geographic areas participating in the SEER program since 1975, adjusted for differences in cancer incidence between Minnesota and SEER.

Figure II-1: Ten Most Common Cancer Diagnoses and Deaths among Males, Minnesota, 2002-2006



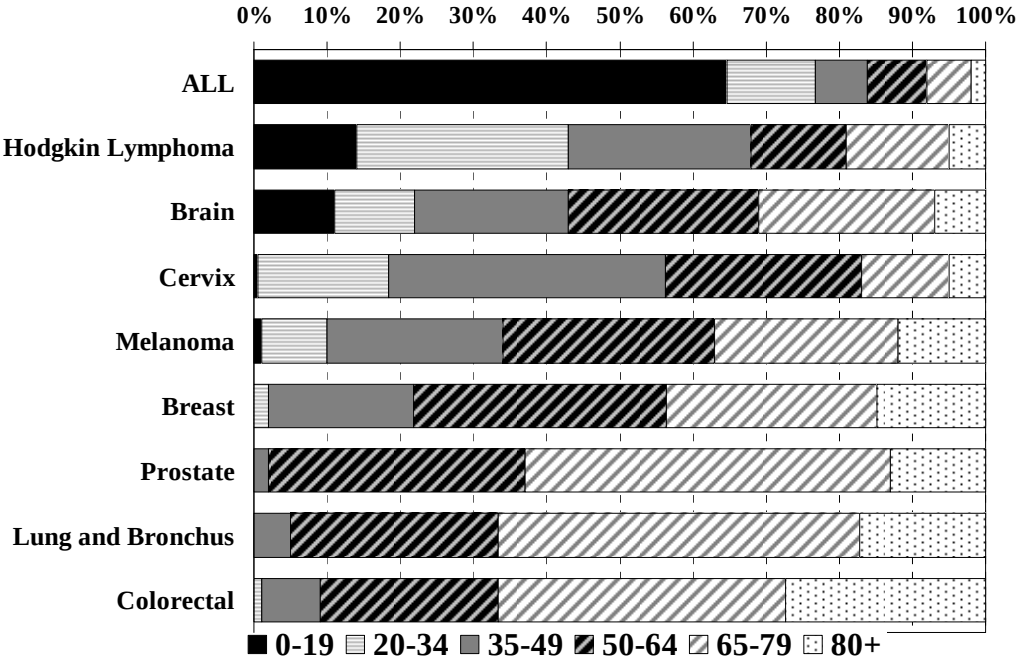
Source: MCSS (September 2009) and the Minnesota Center for Health Statistics. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
^ NHL=Non-Hodgkin Lymphoma, Kidney includes Renal Pelvis, Oral includes Oral Cavity & Pharynx, Liver includes Intrahepatic Bile Duct.
* Not among the ten leading causes.

Figure II-2: Ten Most Common Cancer Diagnoses and Deaths among Females, Minnesota, 2002-2006



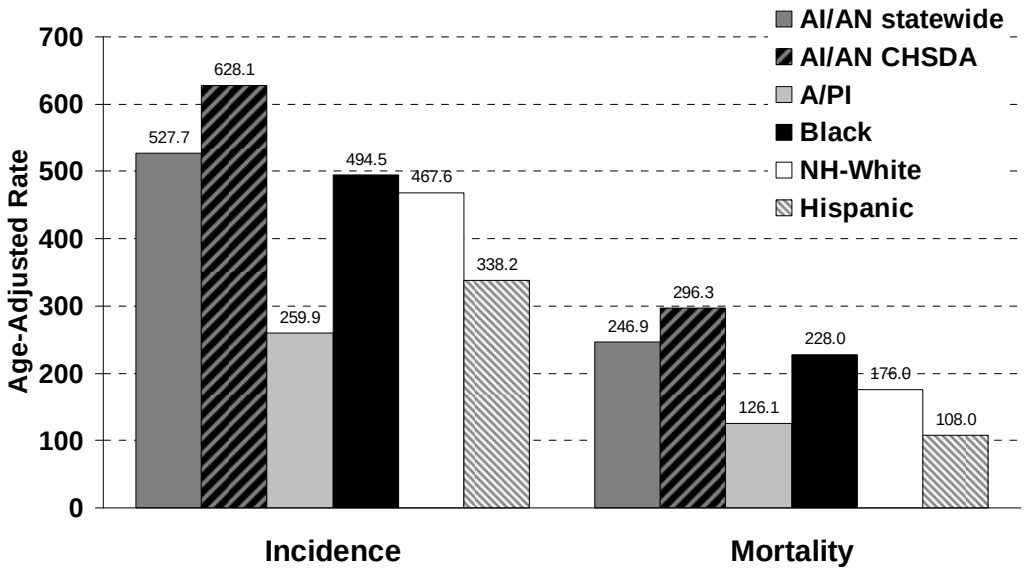
Source: MCSS (September 2009) and the Minnesota Center for Health Statistics. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
^ Corpus Uteri includes Uterus NOS, NHL=Non-Hodgkin Lymphoma, Brain includes Other Nervous System.
* Not among the ten leading causes.

Figure II-3: Percent of Cancers Diagnosed by Age Category among Selected Cancers, Minnesota, 2002-2006



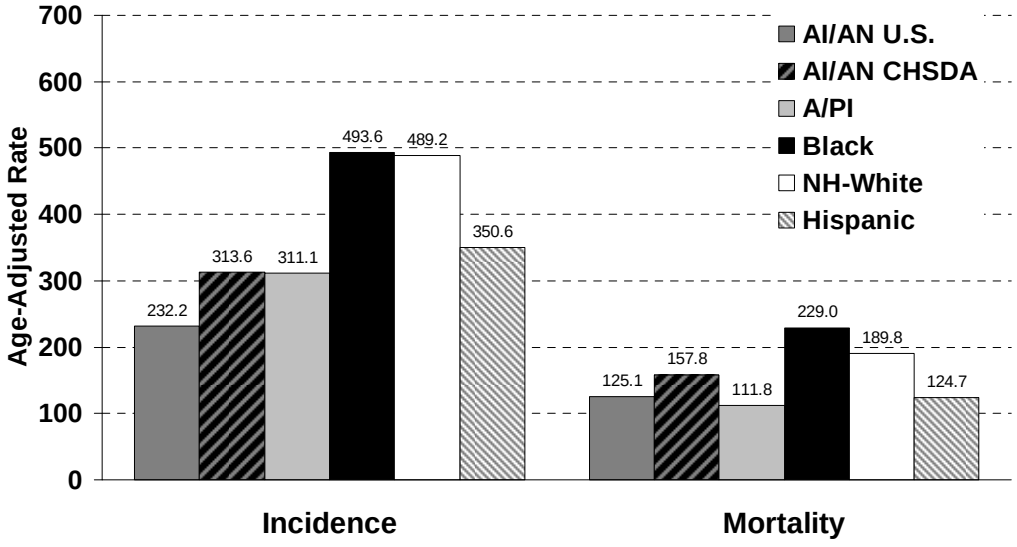
Source: MCSS (September 2009). Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
^Brain includes Other Nervous System, ALL=Acute Lymphocytic Leukemia

Figure II-4: Cancer Incidence and Mortality Rates by Race and Ethnicity,‡ Minnesota, 2002-2006, All Cancer Sites Combined



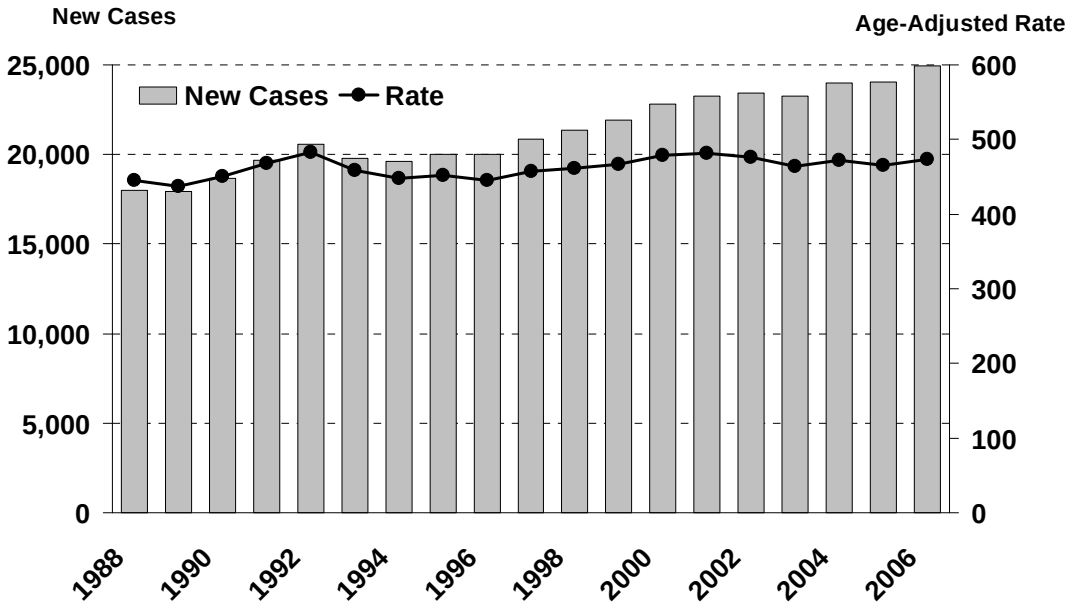
Source: MCSS (September 2009) and the Minnesota Center for Health Statistics. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. See text for comments on the accuracy of race- and ethnic-specific cancer rates. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
‡AI/AN=American Indian/Alaska Native, CHSDA=resident in Contract Health Services Delivery Area, A/PI=Asian/Pacific Islander, NH=Non-Hispanic, Hispanic=Hispanic (all races).

Figure II-5: Cancer Incidence and Mortality Rates by Race and Ethnicity,‡ SEER Program, 2002-2006, All Cancer Sites Combined



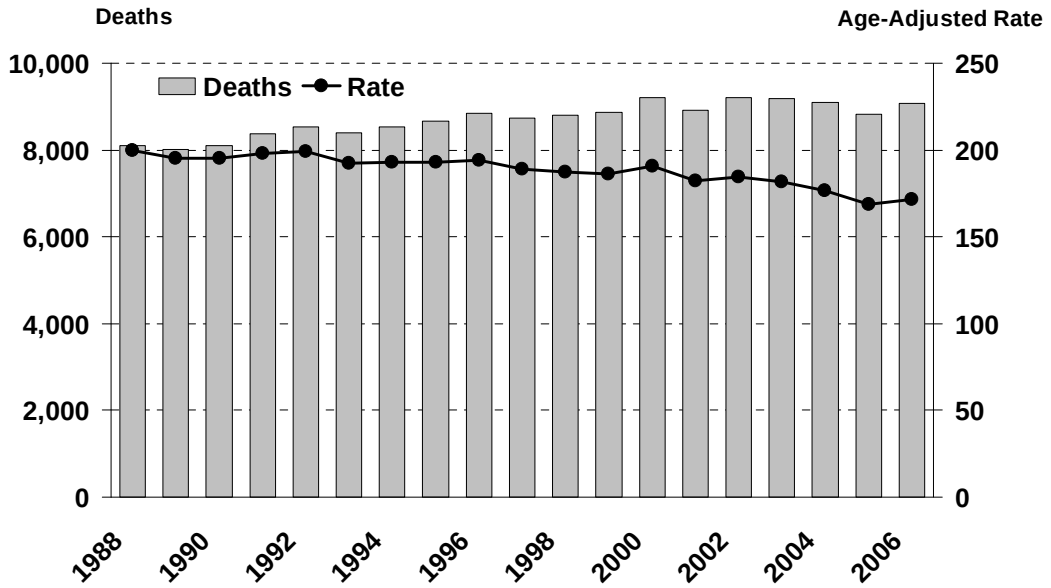
Source: *SEER Cancer Statistics Review 1975-2006*, Table 2.12. Available online at http://seer.cancer.gov/csr/1975_2006. Incidence data are from the 17 SEER areas. Mortality data are for the entire U.S. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
‡AI/AN=American Indian/Alaska Native, CHSDA=resident in Contract Health Services Delivery Area, A/PI=Asian/Pacific Islander, NH=Non-Hispanic, Hispanic=Hispanic (all races).

Figure II-6: Cancer Incidence in Minnesota by Year, 1988-2006



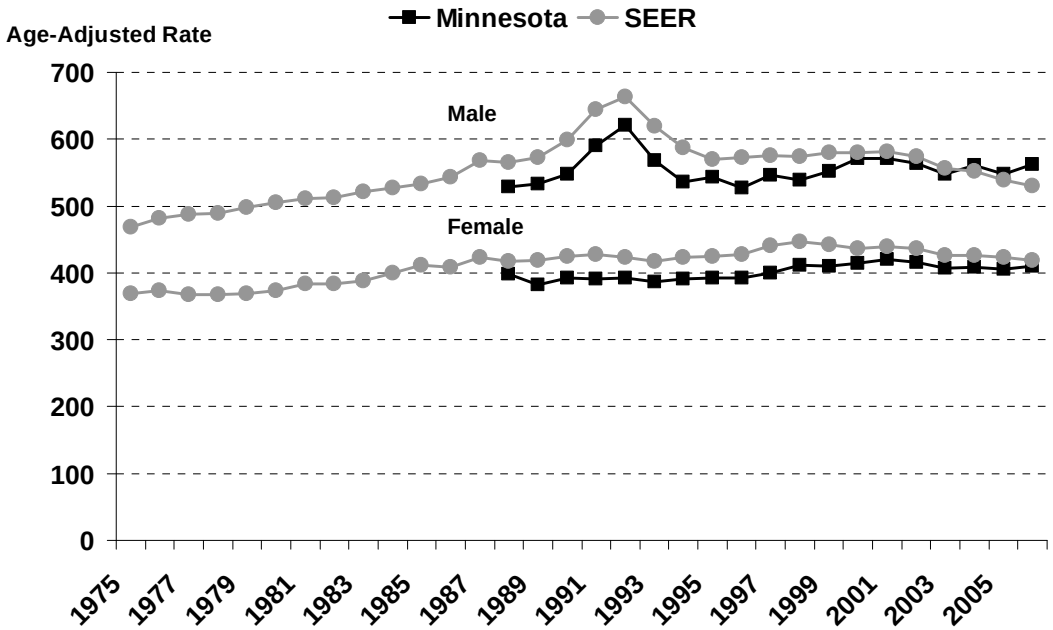
Source: MCSS (September 2009), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-7: Cancer Mortality in Minnesota by Year, 1988-2006



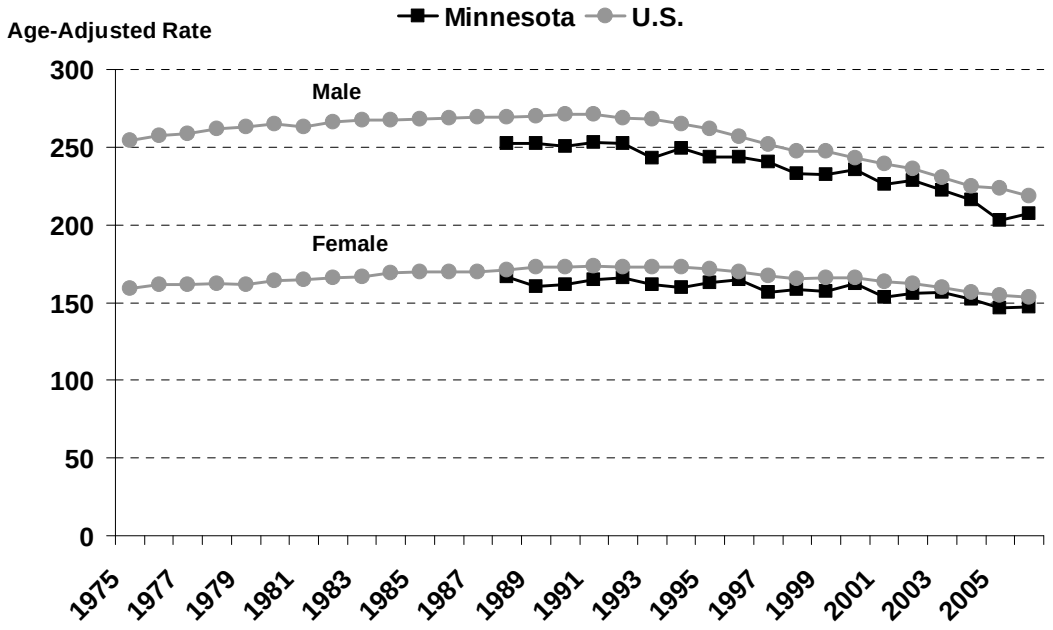
Source: Minnesota Center for Health Statistics. Deaths include all deaths with cancer specified as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-8: Trends in Cancer Incidence by Gender, Minnesota and SEER, 1975-2006



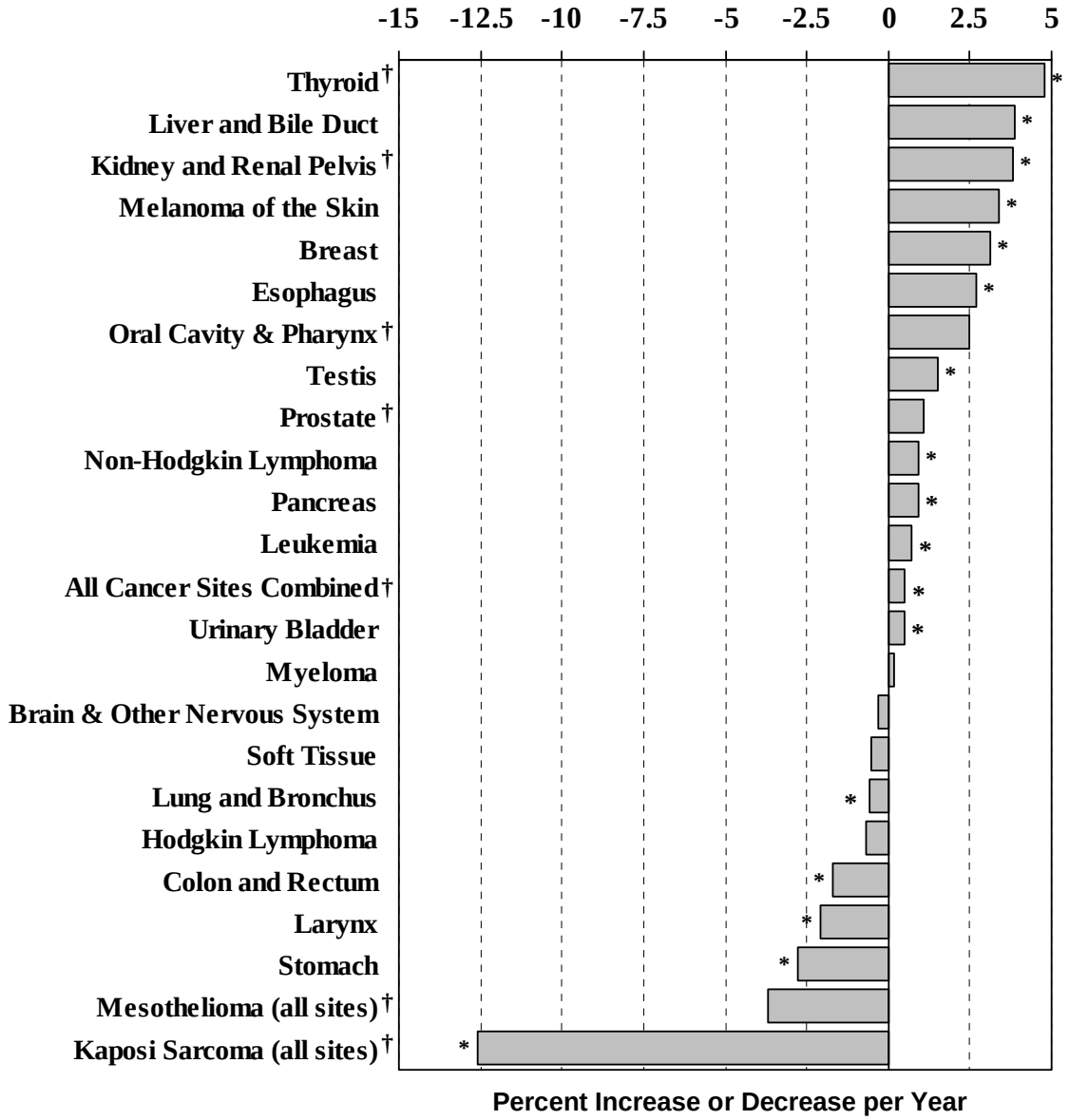
Source: MCSS (September 2009). *SEER Cancer Statistics Review 1975-2006,* available online at http://seer.cancer.gov/csr/1975_2006. For MCSS, cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. Rates for MCSS are for all races combined. SEER is the Surveillance, Epidemiology and End Results Program. Rates for SEER are for white persons, including Hispanics. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-9: Trends in Cancer Mortality by Gender, Minnesota and the U.S., 1975-2006



Source: Minnesota Center for Health Statistics and *SEER Cancer Statistics Review 1975-2006,* available online at http://seer.cancer.gov/csr/1975_2006. Deaths include all deaths with cancer specified as the underlying cause of death during the time period. Rates for MCSS are for all races combined. Rates for U.S. are for white persons, including Hispanics. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-10: Average Annual Percent Change in Cancer Incidence among Males, Minnesota, 1988-2006

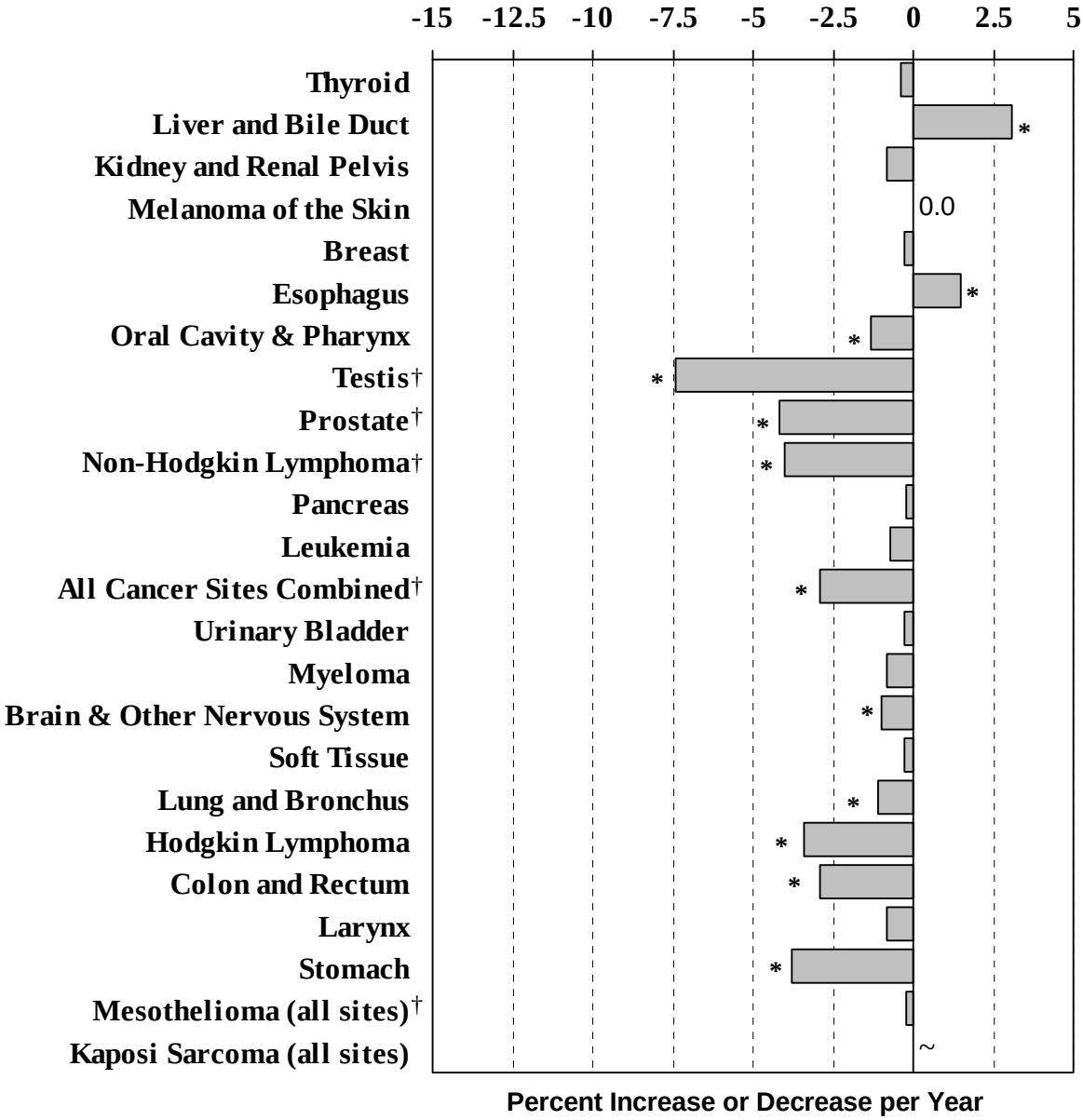


Source: MCSS (September 2009), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.

† Due to a change in trend during the period 1988-2006, the average annual percent change is for the interval (year) to 2006 for the following sites: Kaposi sarcoma (1991); all sites combined, prostate, thyroid (1995); kidney (1998); mesothelioma (1999); oral cavity (2003).

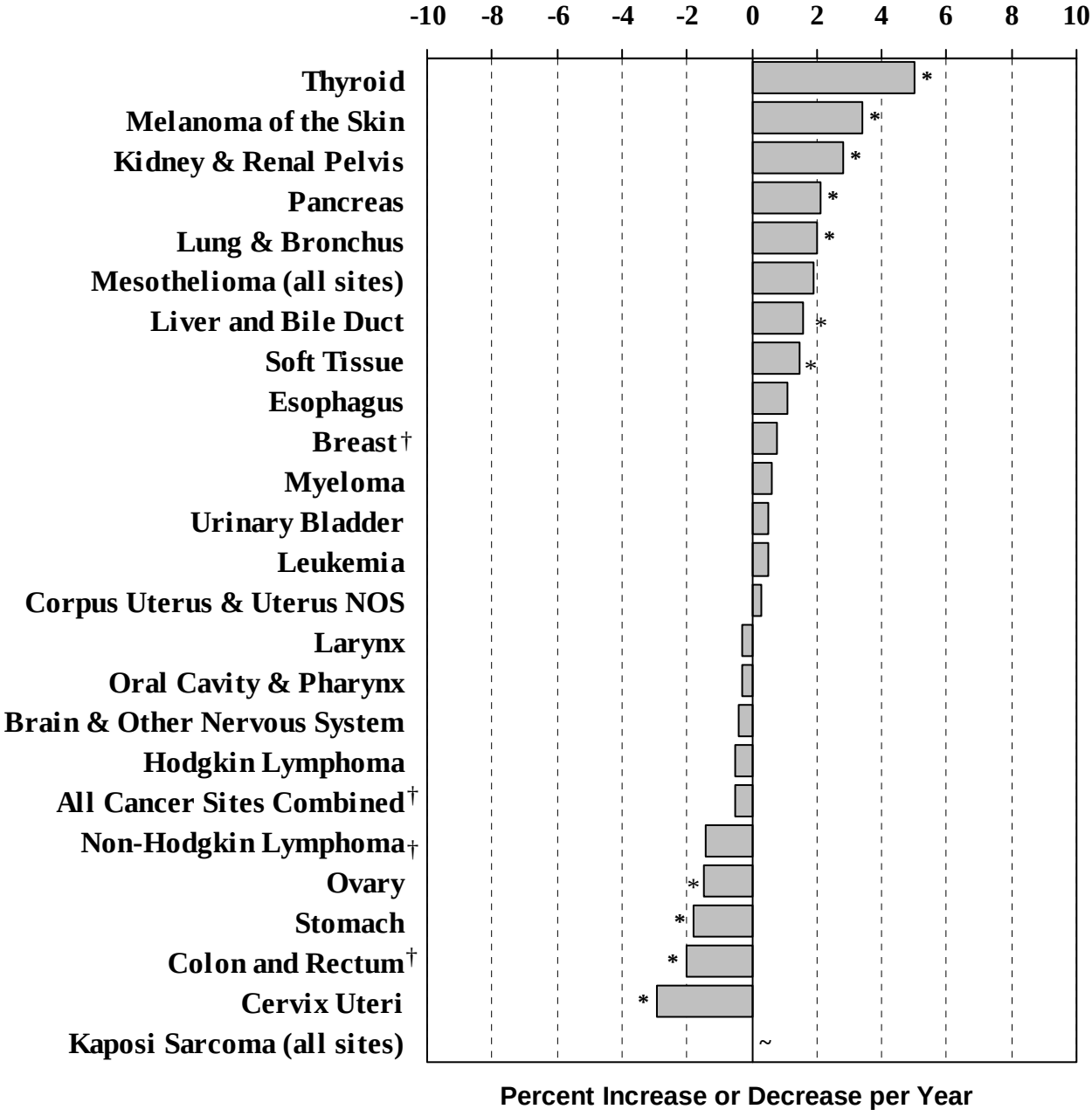
* Trend is statistically significant ($p < 0.05$).

Figure II-11: Average Annual Percent Change in Cancer Mortality among Males, Minnesota, 1988-2006



Source: Minnesota Center for Health Statistics, all races combined. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.
† Due to a change in trend during the period 1988-2006, the average annual percent change is for the interval (year) to 2006 for the following sites: prostate (1995); testis (1997); non-Hodgkin lymphoma (1998); all sites combined (2002). Because mesothelioma was first assigned a unique cause of death code in 1999, the trend interval begins in that year.
* Trend is statistically significant ($p < 0.05$).
~ Average annual percent change could not be calculated because deaths did not occur in every year.

Figure II-12: Average Annual Percent Change in Cancer Incidence among Females, Minnesota, 1988-2006



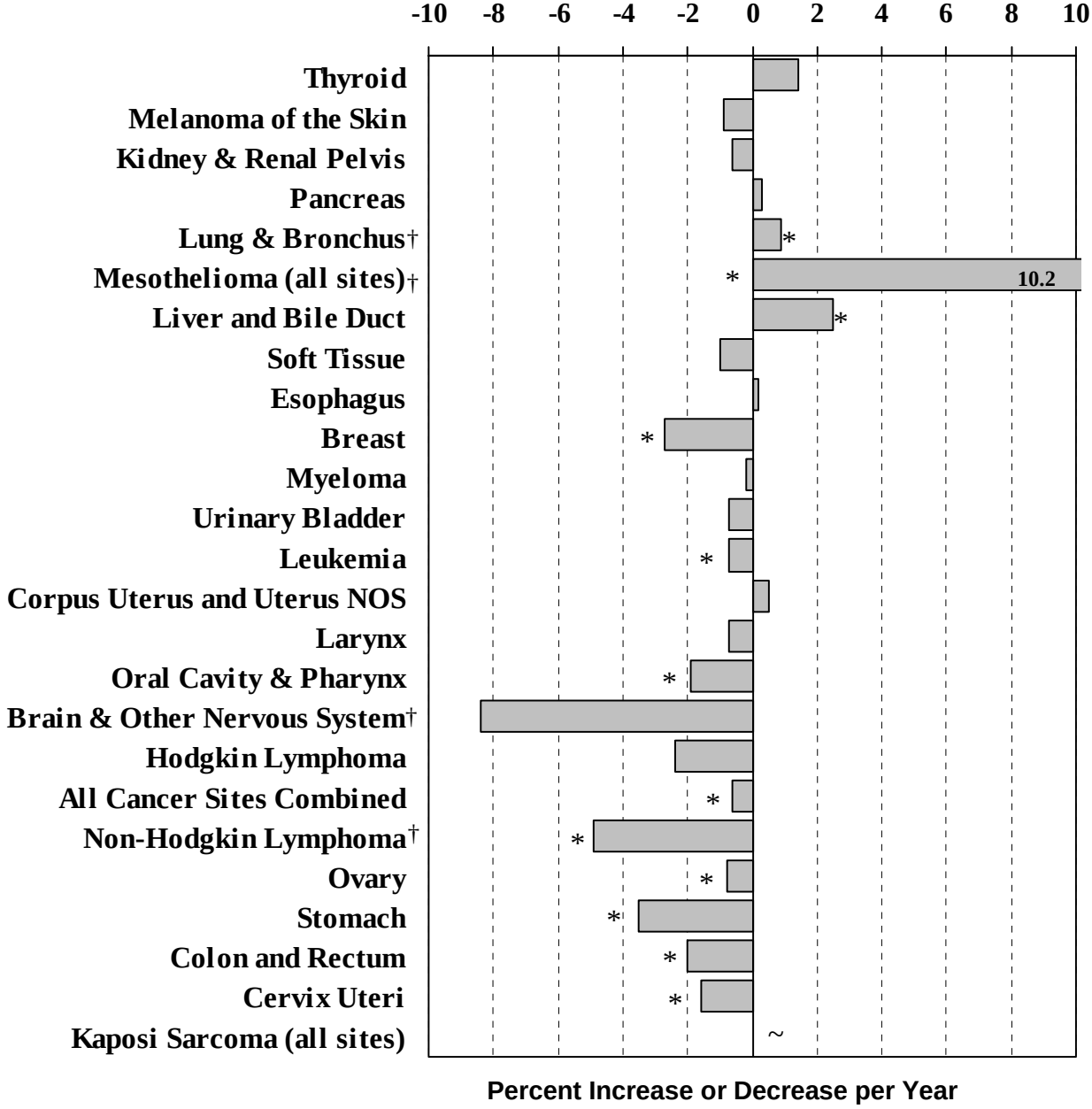
Source: MCSS (September 2009), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.

† Due to a change in trend during the period 1988-2006, the average annual percent change is for the interval (year) to 2006 for the following sites: colon and rectum (1998); all sites combined (2000); non-Hodgkin lymphoma (2001); breast (2004).

* Trend is statistically significant ($p < 0.05$).

~ Average annual percent change could not be calculated because cases were not diagnosed every year.

Figure II-13: Average Annual Percent Change in Cancer Mortality among Females, Minnesota, 1988-2006



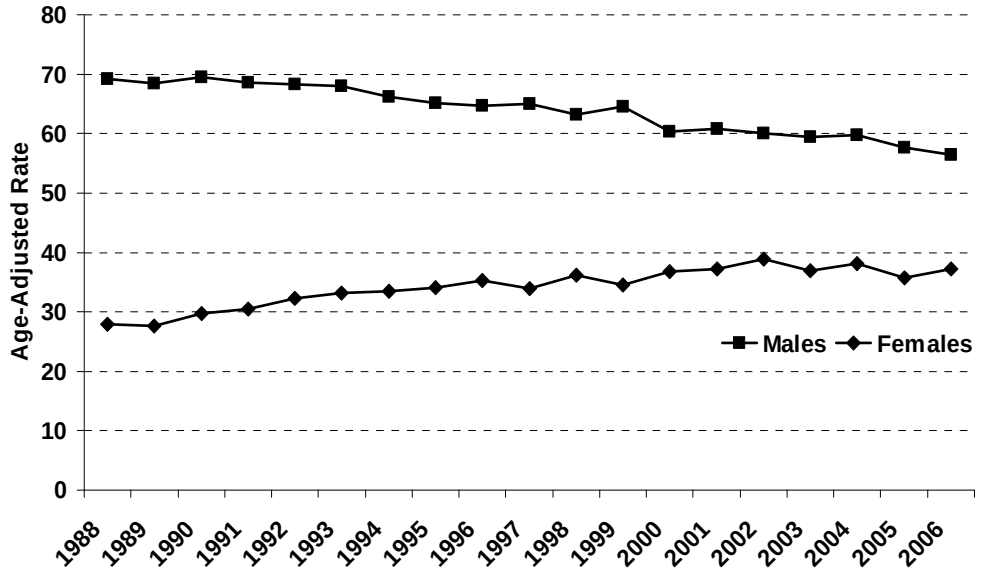
Source: Minnesota Center for Health Statistics, all races combined. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.

† Due to a change in trend during the period 1988-2006, the average annual percent change is for the interval (year) to 2006 for the following sites: lung and bronchus (1994); non-Hodgkin lymphoma (1996); brain (2003). Because mesothelioma was first assigned a unique cause of death code in 1999, the trend interval begins in that year.

* Trend is statistically significant ($p < 0.05$).

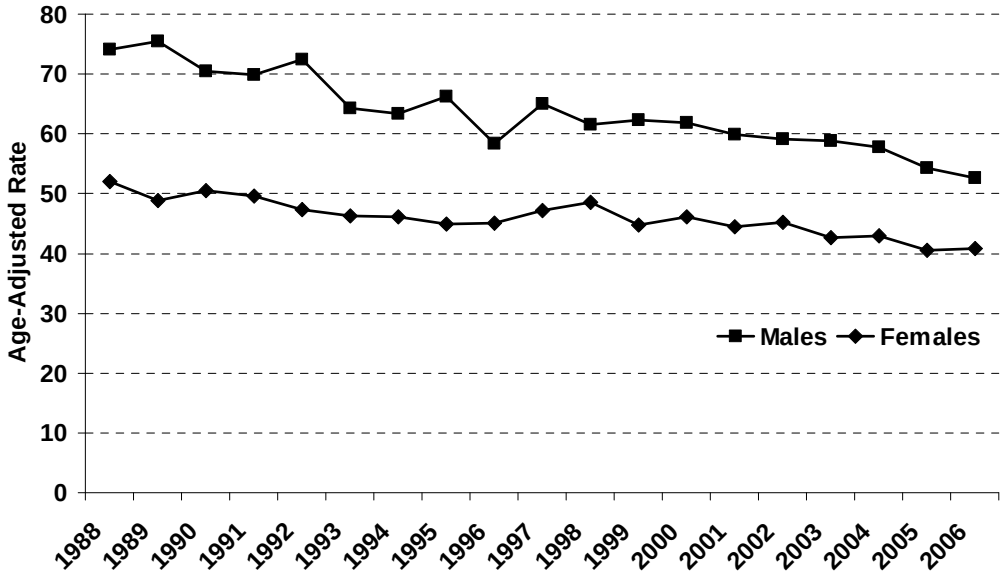
~ Average annual percent change could not be calculated because deaths did not occur in every year.

Figure II-14: Trends in Lung and Bronchus Cancer Mortality by Gender, Minnesota, 1988-2006



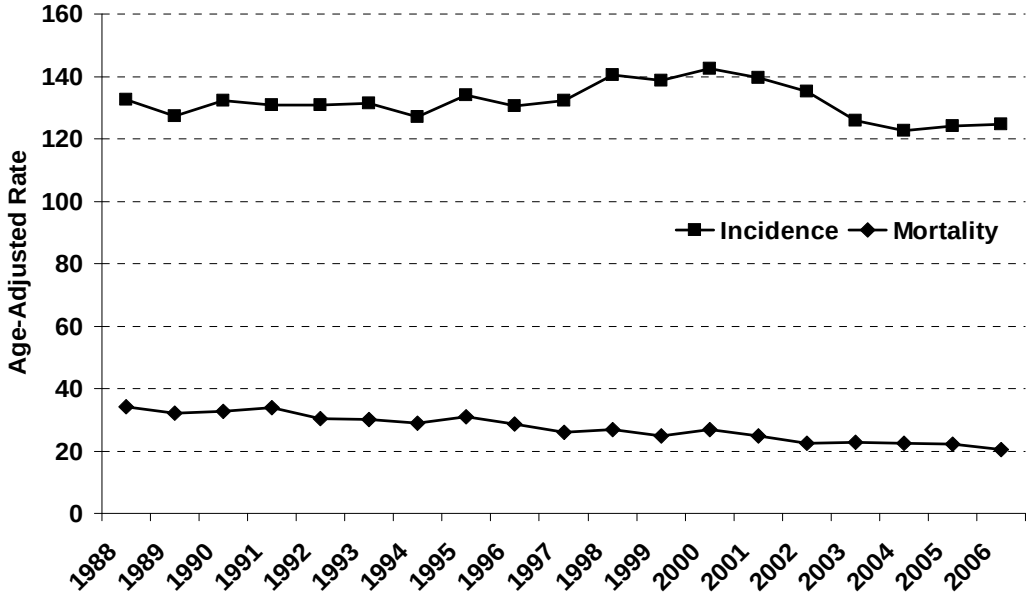
Source: Minnesota Center for Health Statistics, all races combined. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-15: Trends in Colon and Rectum Cancer Incidence by Gender, Minnesota, 1988-2006



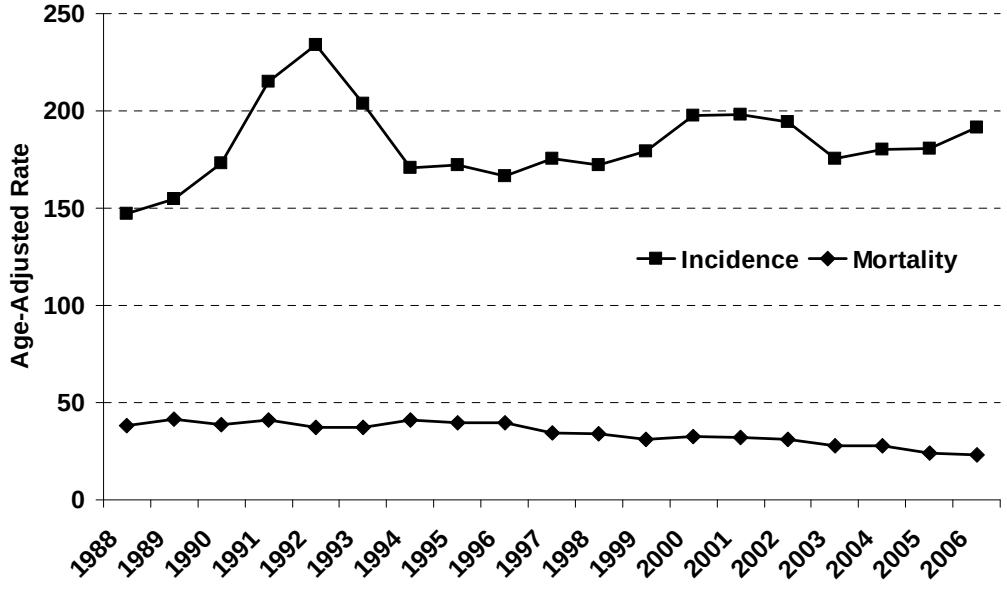
Source: MCSS (September 2009), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-16: Trends in Female Breast Cancer Incidence and Mortality, Minnesota, 1988-2006



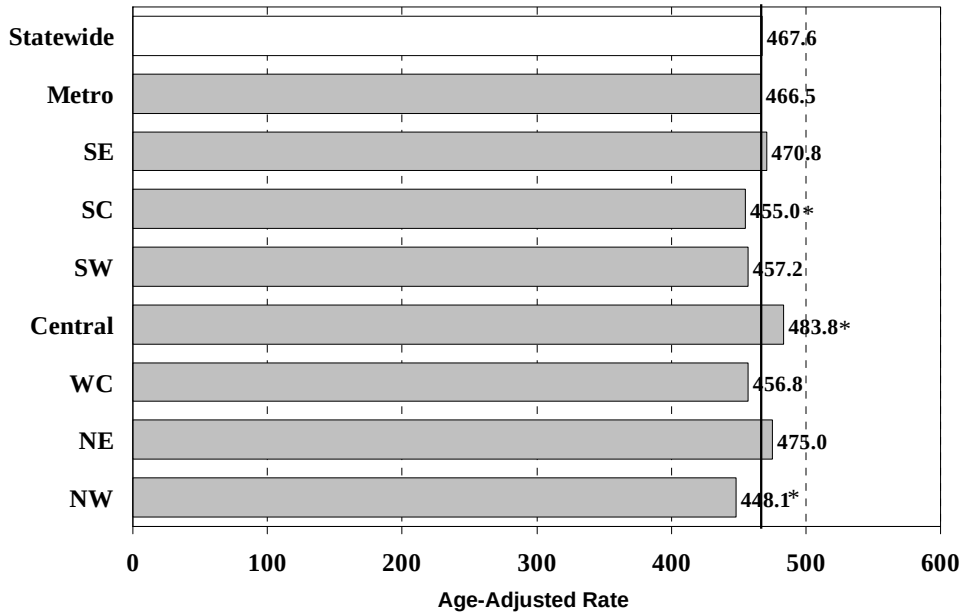
Source: MCSS (September 2009) and the Minnesota Center for Health Statistics, all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-17: Trends in Prostate Cancer Incidence and Mortality, Minnesota, 1988-2006



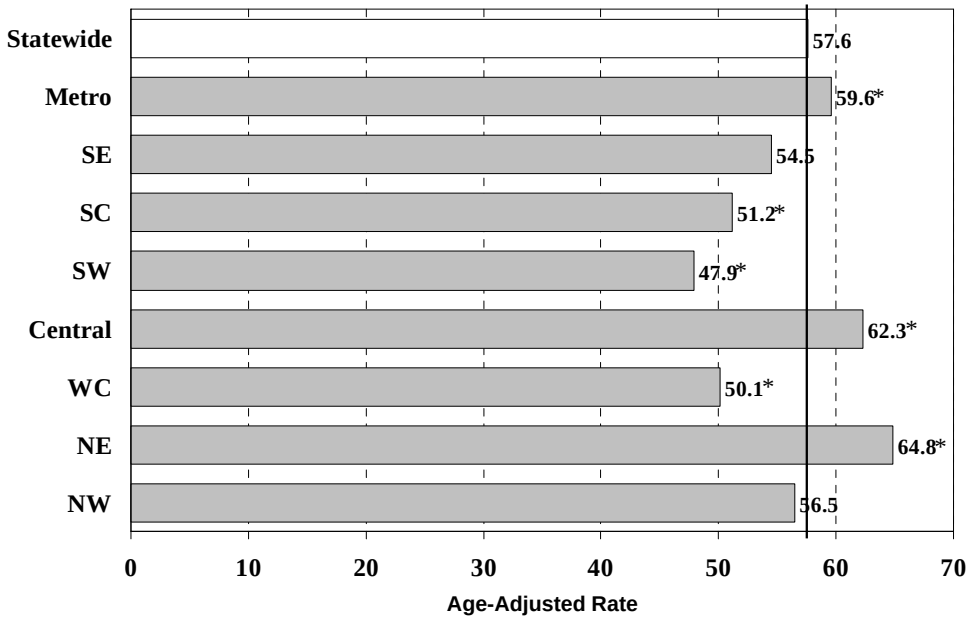
Source: MCSS (September 2009) and the Minnesota Center for Health Statistics, all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-18: Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2002-2006, All Cancer Sites Combined



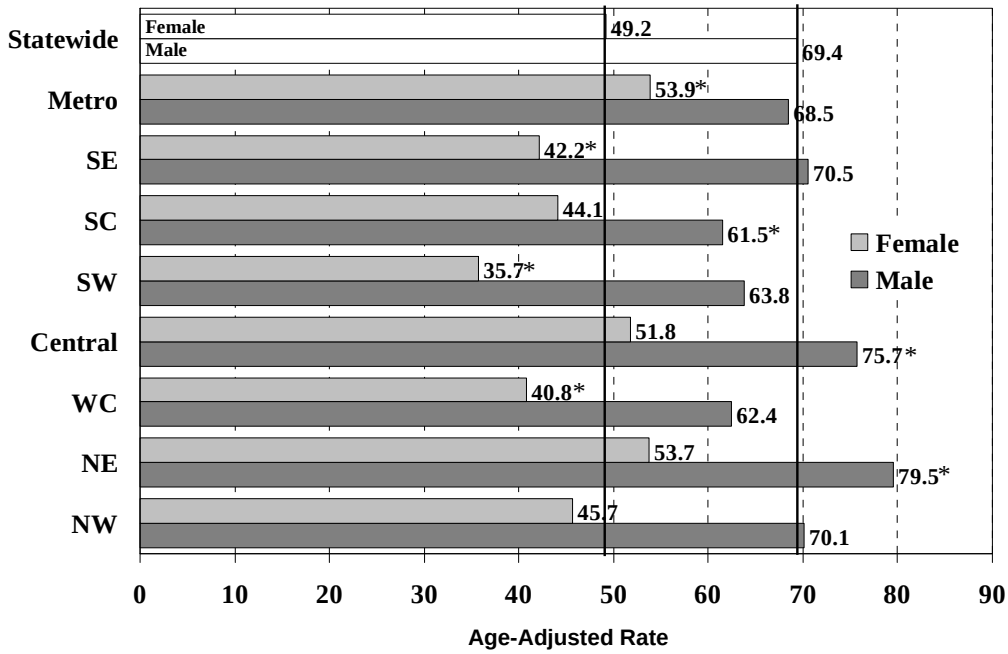
Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from the statewide rate.

Figure II-19: Lung and Bronchus Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2002-2006



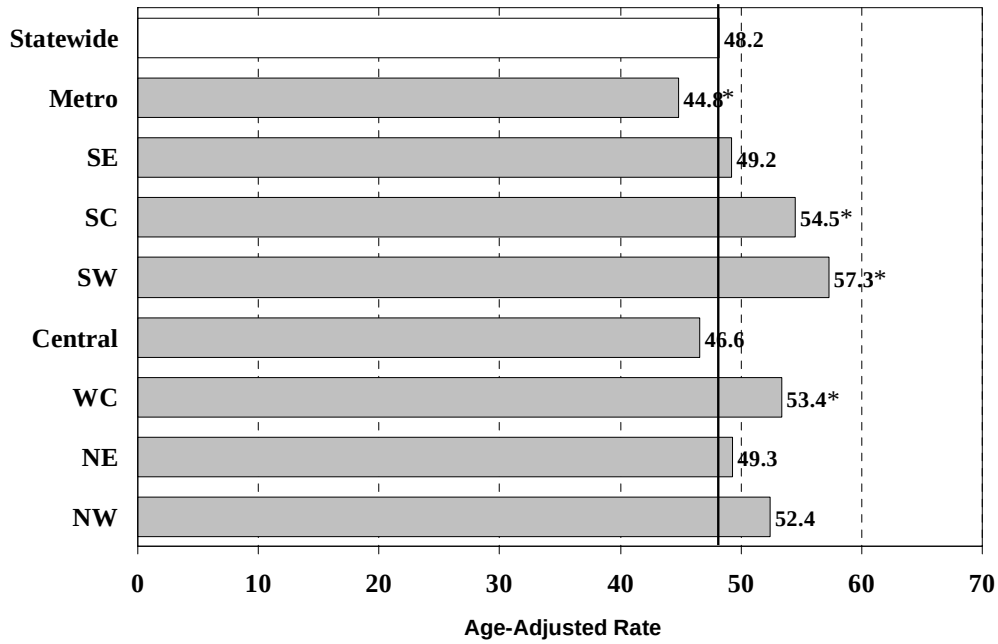
Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from statewide rates.

Figure II-20: Lung and Bronchus Cancer Incidence among Non-Hispanic Whites by Gender and Region, Minnesota, 2002-2006



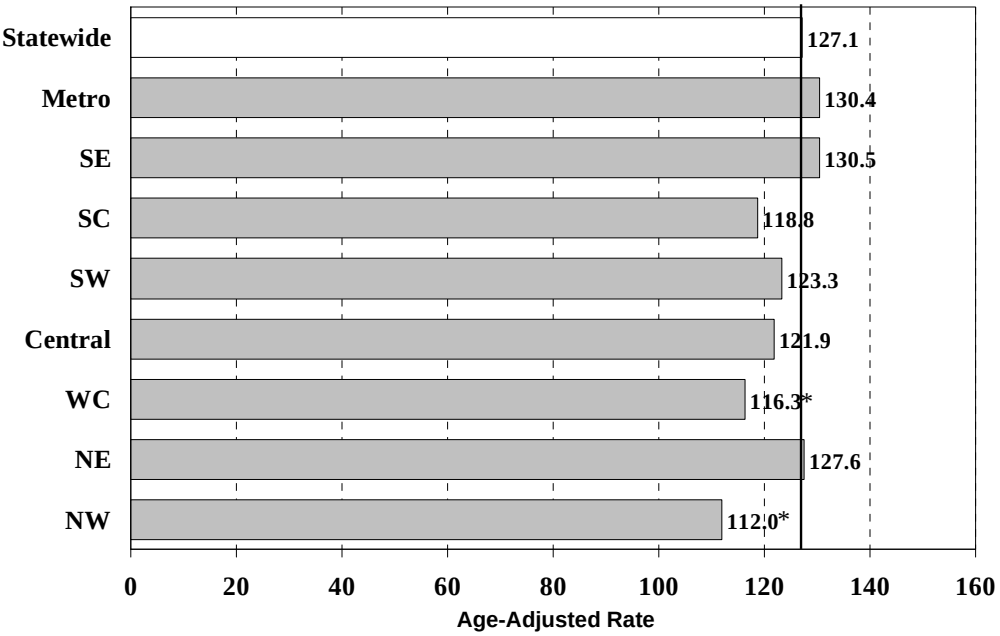
Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Sex-specific regional rate is significantly ($p < 0.05$) different from statewide rate.

Figure II-21: Colon and Rectum Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2002-2006



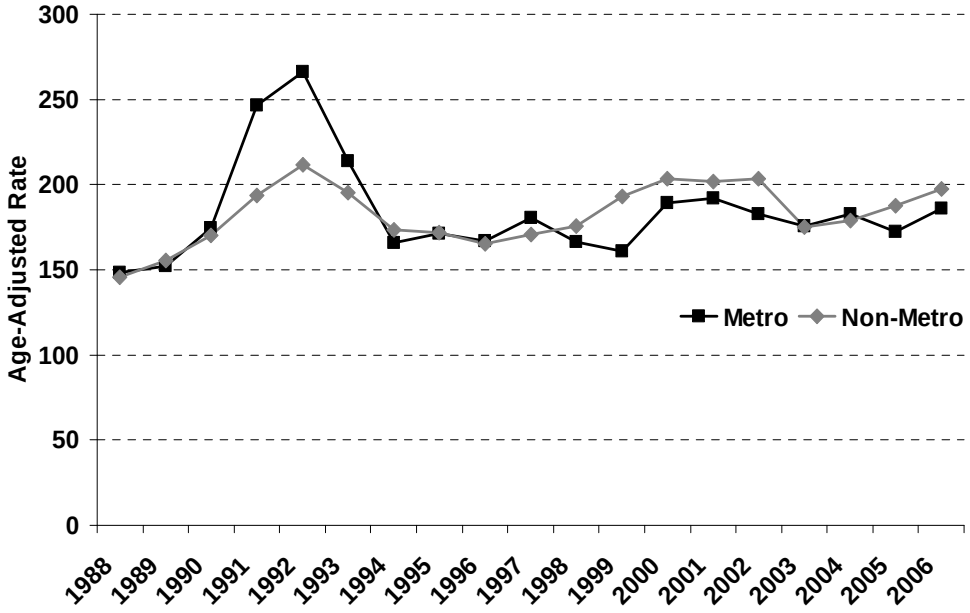
Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from statewide rate.

Figure II-22: Female Breast Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2002-2006



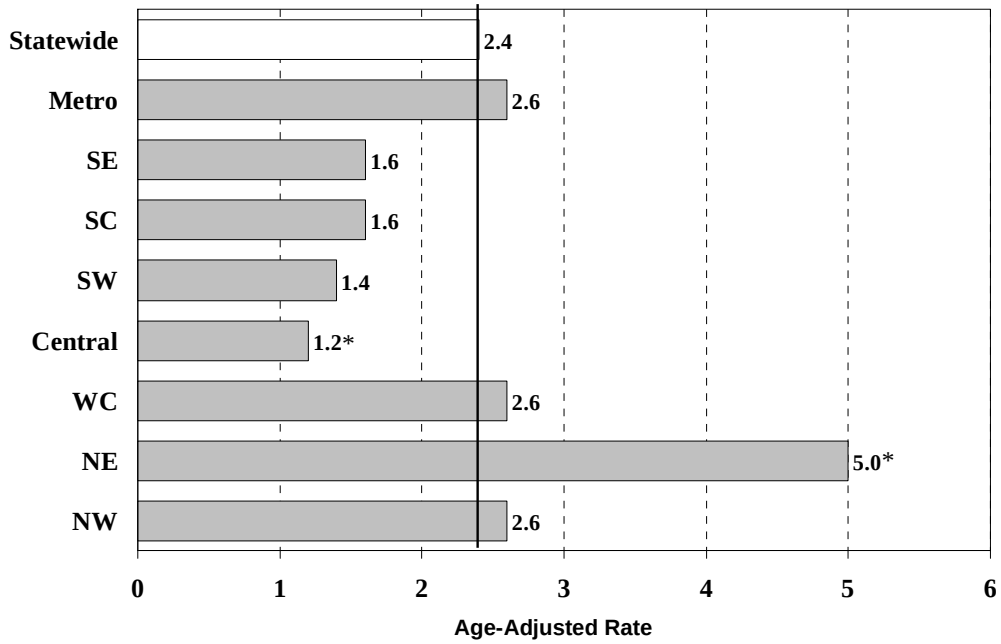
Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population. *Regional rate is significantly ($p < 0.05$) different from statewide rate.

Figure II-23: Prostate Cancer Incidence Trends by Region, All Races Combined, Minnesota, 1988-2006



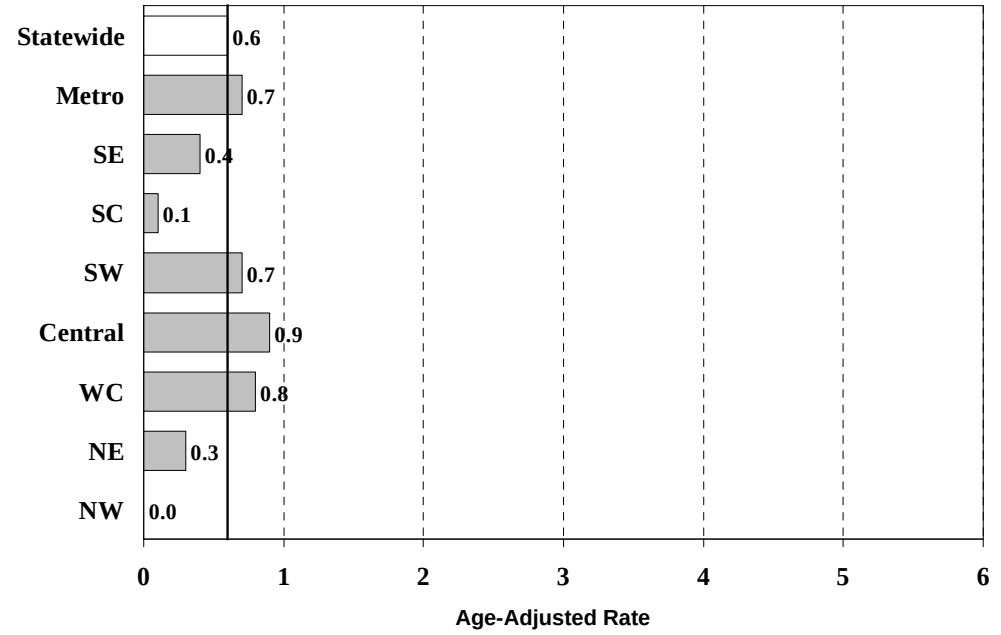
Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population. The Metro region is composed of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties.

Figure II-24: Mesothelioma Incidence among Non-Hispanic Whites by Region, Minnesota, 2002-2006, Males



Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population. *Regional rate is significantly ($p < 0.05$) different from statewide rate for males.

Figure II-25: Mesothelioma Incidence among Non-Hispanic Whites by Region, Minnesota, 2002-2006, Females



Source: MCSS (September 2009). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population. *Regional rate is significantly ($p < 0.05$) different from statewide rate for females.

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Chapter III:
Summary of Data for
Specific Cancers

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Chapter III: Summary of Data for Specific Cancers

This chapter provides detailed information on the most common cancers, using cases reported to the Minnesota Cancer Surveillance System (MCSS) and deaths reported to the Minnesota Center for Health Statistics (MCHS). For comparison, incidence rates from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program and mortality rates for the United States are provided. See Chapter I, Introduction, for more information about data sources and other information about interpreting the data. See also the Glossary (Appendix D) and Statistical Methods (Appendix E).

All Cancer Sites Combined

Table III-1.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, All Cancer Sites Combined

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	9,147	8,864	528.8	398.2	4,205	3,895	252.3	166.8
1989	9,337	8,584	533.3	381.5	4,220	3,789	252.5	160.4
1990	9,722	8,926	547.2	392.8	4,256	3,857	250.3	161.8
1991	10,695	8,984	590.3	391.0	4,362	4,014	253.1	164.8
1992	11,387	9,185	620.8	393.1	4,422	4,116	252.3	166.0
1993	10,646	9,151	567.6	386.9	4,317	4,088	242.7	161.7
1994	10,224	9,402	536.0	391.7	4,487	4,055	249.3	159.5
1995	10,479	9,547	542.9	392.1	4,463	4,209	243.9	162.8
1996	10,337	9,689	526.5	392.6	4,541	4,309	243.4	164.8
1997	10,832	10,005	545.9	399.4	4,556	4,178	240.5	156.7
1998	10,889	10,447	539.2	411.2	4,480	4,314	233.2	158.7
1999	11,359	10,548	551.8	410.2	4,575	4,301	232.5	156.9
2000	11,982	10,811	570.9	415.0	4,696	4,503	235.5	162.4
2001	12,187	11,081	570.4	419.8	4,610	4,296	226.3	153.6
2002	12,299	11,151	563.4	415.2	4,745	4,455	228.8	155.8
2003	12,199	11,051	548.0	406.4	4,700	4,482	222.2	156.3
2004	12,714	11,302	560.4	409.0	4,644	4,445	215.8	152.2
2005	12,713	11,360	547.5	405.2	4.464	4,359	203.2	146.6
2006	13,307	11,609	562.9	409.5	4,661	4,404	207.6	147.3

Table III-1.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, All Cancer Sites Combined

Age at Diagnosis or Death (years)	Incidence 2000-2006				Mortality 2000-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	685	549	18.9	15.9	103	75	2.8	2.2
20 – 34	1,318	1,827	50.2	73.0	169	182	6.4	7.3
35 – 49	5,006	8,444	166.8	286.8	1,190	1,309	39.6	44.5
50 – 64	19,364	16,274	927.2	771.8	4,910	4,506	235.1	213.7
65 – 74	18,219	12,018	2,580.3	1,499.6	5,796	4,957	820.9	618.5
74 – 85	14,609	12,055	3,289.8	1,888.3	7,300	6,543	1643.9	1024.9
85 and older	4,031	5,271	2,786.3	1,557.0	3,746	4,573	2,589.3	1350.9

Table III-1.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, All Cancer Sites Combined

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	63,232	56,473	556.4	408.9	23,214	22,145	215.3	151.6
American Indian								
Statewide	480	465	627.0	457.8	196	183	278.7	224.8
CHSDA Counties	314	296	746.9	540.8	128	128	323.8	277.7
Asian/Pacific Isl.	536	629	284.5	245.4	231	201	149.0	109.8
Black	1,385	1,014	644.8	378.5	497	355	294.3	183.8
Non-Hispanic White	59,345	53,103	551.5	407.5	22,122	21,318	214.7	151.4
Hispanic (All Races)	512	573	338.4	342.7	154	116	135.4	85.0

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.
~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

All Cancer Sites Combined

Descriptive Epidemiology

Incidence and Mortality: Cancer is very common, even after excluding cancers that are rarely life threatening, such as basal and squamous cell carcinomas of the skin and most *in situ* cancers. Based on current rates, five out of ten Minnesota males (51%) and four out of ten Minnesota females (41%) will be diagnosed with a potentially serious cancer during his or her lifetime. Cancer became the leading cause of death in Minnesota in 2000. In 2006, 1,559 more Minnesotans died of cancer than heart disease.

When differences in the racial composition of the populations are not taken into consideration, the overall cancer incidence rate in Minnesota is somewhat higher for males and about the same for females as in the 17 geographic areas participating in the SEER Program. However, when the comparison is limited to the non-Hispanic white populations, Minnesota cancer incidence is two percent lower among males and seven percent lower among females. The cancer mortality rate in Minnesota is four to six percent lower than the national rate for all races combined, and six to seven percent lower for non-Hispanic whites.

Trends: Based on the results of Joinpoint regression, the overall cancer incidence rate among males in Minnesota increased significantly from 1995 to 2006 by 0.5 percent per year. Among females, the overall cancer incidence rate has been stable since 2000. On the other hand, the overall cancer mortality rate among males in Minnesota has been declining since 1988, and since 2002 it has been declining more sharply, by 2.9 percent per year. Among women statewide, the overall cancer mortality rate has been declining steadily by 0.6 percent per year since 1988.

In contrast, the overall cancer incidence rate is declining significantly among both men and women living in the nine geographic areas participating since the early 1970s in the SEER Program; cancer incidence among white males declined by 1.5 percent per year from 1995 to 2006, and among white females declined by 0.5 percent per year from 1998 to 2006. Nationally, the overall cancer mortality rate among whites is declining at a pace similar to what is seen in Minnesota—by 1.8 percent per year among males from 2001 to 2006, and by 1.4 percent per year among females from 2001 to 2006.

Age: The likelihood of being diagnosed with cancer increases with age. Approximately 55 percent of cancers in Minnesota occur among persons age 65 years and older and about 73 percent of cancer deaths occur in this age group. However, as discussed in the sections that follow, the age at which cancer is most likely to occur depends on the type of cancer.

Table III-1.4: Other Minnesota cancer statistics†, 2004-2006, All Cancer Sites Combined

	Males	Females
Median Age at Diagnosis	67.0	65.0
Median Age at Death	74.0	75.0
Lifetime Risk of Diagnosis	50.8%	41.3%
Lifetime Risk of Death	24.7%	21.1%
Annual Percent Change‡		
Incidence (1995-2006 males; 2000-2006 females)	**0.5%**	-0.5%
Mortality (2002-2006 males; 1988-2006 females)	**-2.9%**	**-0.6%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-1.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, All Cancer Sites Combined

	Males	Females
Incidence		
All Races	541.8	408.5
American Indian	331.0	302.2
Asian/Pacific Islander	349.1	287.5
Black	633.7	398.9
Non-Hispanic White	564.4	437.4
Hispanic (All Races)	409.7	312.5
Mortality		
All Races	229.9	157.8
American Indian	183.3	140.1
Asian/Pacific Islander	135.4	95.1
Black	304.2	183.7
Non-Hispanic White	231.8	161.2
Hispanic (All Races)	154.7	103.9

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-1.6: Causes of death, Minnesota, 2006

Rank	Cause of Death	Deaths	% Deaths
1	Cancer	9,065	24.5
2	Heart Disease	7,506	20.3
3	Cerebrovascular Disease	2,215	6.0
4	Accidents	1,913	5.2
5	Chronic Lung Disease	1,770	4.8
6	Alzheimer's Disease	1,298	3.5
7	Diabetes	1,153	3.1
8	Pneumonia and Influenza	629	1.7
9	Nephritis	694	1.9
10	Suicide	550	1.5
	Other Causes and Conditions	10,170	27.5
	Total Deaths	36,963	100.0

All Cancer Sites Combined

Gender: The overall cancer incidence rate in Minnesota is 36 percent higher among men than women. Men are at greater risk than women for developing most types of cancer; the only common cancers that occur more frequently among women are those of breast, gallbladder, and thyroid. The overall cancer mortality rate in Minnesota is about 42 percent higher among men than women. The gender differences in Minnesota are similar to those reported for the nation.

Race: Cancer risk varies by race and ethnicity. Among both men and women in Minnesota, overall cancer incidence is highest among American Indians living in CHSDA counties and lowest among Hispanics and Asian/Pacific Islanders. Among males, the overall cancer incidence rate is higher among blacks and American Indians statewide than among non-Hispanic whites. Among females, the overall cancer incidence rate is higher among American Indians statewide than non-Hispanic whites, and higher among non-Hispanic whites than blacks.

Cancer incidence among American Indians is about one and a half times higher in Minnesota than in the geographic areas covered by the SEER Program, where the majority of American Indians are from the Southwest. On the other hand, rates among Asian/Pacific Islanders are about 20 percent lower in Minnesota than reported by SEER, where the majority of Asian/Pacific Islanders are from California and the Pacific Northwest. The reasons for these differences are not clear.

Risk Factors

Cancer deaths in the United States are thought to be caused by:

- Tobacco use (approximately 30%);
- Diet and obesity in adults (another 30%). A diet that reduces cancer risk is high in fruits and vegetables, high in legumes and grains (including bread, pasta, and cereals), and low in red meat, salt, and saturated animal fat;
- Sedentary lifestyle, occupational factors, a family history of cancer, infectious agents, and prenatal factors and growth (about 5% each);
- Reproductive factors, socioeconomic status, and alcohol (about 3% each);
- Environmental pollution and ionizing and ultraviolet radiation (about 2% each);
- Prescription drugs and medical procedures (about 1%); and
- Salt and other food additives or contaminants (about 1%).

Early Detection / Prevention

Cancers detected at an early stage of development are more likely to be cured. However, there are relatively few types of cancer for which screening has been shown to be effective in reducing mortality among asymptomatic persons with an average risk of developing the cancer, and not all organizations are in agreement about screening recommendations. The U.S. Preventive Services Task Force (http://www.ahrq.gov/clinic/uspstfix.htm), an independent panel of experts, recommends routine screening for cancers of the colon and rectum, female breast, and cervix. The American Cancer Society (ACS) (http://www.cancer.org) also recommends that people ages 20 and over having periodic health exams should receive a cancer-related checkup, and suggests that men age 50 and older should discuss screening for prostate cancer with their physician. Recommended screening ages and intervals can be found on the ACS web site.

Prompt reporting of symptoms may also lead to earlier diagnosis of cancer. The resources above also provide information on the early warning signs of cancer.

Childhood Cancers

Table III-2.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Cancers among Children less than 15 Years of Age

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	95	69	19.4	14.7	19	10	3.8	2.2
1989	92	74	18.3	15.6	17	12	3.4	2.4
1990	92	68	17.7	13.6	15	12	2.9	2.5
1991	82	72	15.6	14.4	16	13	3.1	2.6
1992	81	65	15.3	12.9	12	13	2.3	2.6
1993	86	66	16.2	13.1	12	10	2.2	2.0
1994	98	75	18.4	14.8	12	13	2.2	2.6
1995	85	58	16.0	11.7	15	9	2.8	1.8
1996	89	69	16.8	13.7	19	7	3.6	1.4
1997	78	71	14.7	14.2	15	13	2.8	2.6
1998	90	71	16.9	14.0	9	12	1.7	2.3
1999	74	69	13.7	13.4	12	7	2.2	1.4
2000	99	79	18.3	15.4	20	8	3.7	1.5
2001	99	75	18.4	14.5	9	11	1.7	2.2
2002	105	65	19.6	12.7	13	11	2.4	2.2
2003	78	67	14.5	13.1	18	16	3.4	3.1
2004	102	84	19.1	16.4	11	10	2.1	2.0
2005	82	66	15.4	12.9	11	7	2.1	1.4
2006	84	66	15.8	12.9	17	9	3.2	1.7

Table III-2.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Cancers among Children less than 15 Years of Age

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 4	218	161	25.1	19.4	27	16	3.1	1.9
5 – 9	112	76	13.0	9.2	26	16	3.0	1.9
10 – 14	121	111	12.9	12.5	17	21	1.8	2.4

Table III-2.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Cancers among Children less than 15 Years of Age

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	451	348	16.9	13.6	70	53	2.6	2.1
American Indian								
Statewide	6	3	~	~	1	0	~	~
CHSDA Counties	3	1	~	~	1	0	~	~
Asian/Pacific Isl.	24	21	17.8	16.4	7	4	~	~
Black	23	22	10.7	11.4	6	3	~	~
Non-Hispanic White	350	274	16.4	13.4	52	44	2.5	2.1
Hispanic (All Races)	32	29	19.2	19.2	2	3	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.
~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Childhood Cancers

Table III-2.4: Number of new cases and deaths and incidence and mortality rates§ by type of cancer, Minnesota, 2002-2006, Cancers among Children less than 15 Years of Age

Cancer Type†	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
Bone & Joint	14	13	0.6	0.5	4	3	0.1	0.1
Brain	81	68	3.0	2.7	10	16	0.4	0.6
Hodgkin Lymphoma	23	13	0.8	0.5	0	0	0.0	0.0
Kidney	36	22	1.3	0.9	6	0	0.2	0.0
Leukemia	148	117	5.5	4.6	27	20	1.0	0.8
ALL	103	84	3.9	3.3	14	7	0.5	0.3
NHL	27	12	1.0	0.5	3	1	0.1	0.0
Soft Tissue	35	44	1.3	1.7	4	1	0.2	0.0

Source: MCSS (September 2009) and the Minnesota Center for Health Statistics. Cases were microscopically confirmed (1998-2004) or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.

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

† Brain includes other nervous system; Kidney includes renal pelvis; ALL is acute lymphocytic leukemia; NHL is non-Hodgkin lymphoma.

Table III-2.5: Other Minnesota cancer statistics†, 2004-2006, Cancers among Children less than 15 Years of Age

	Males	Females
Risk of Diagnosis by Age 15	0.3%	0.2%
Risk of Death by Age 15	< 0.0%	< 0.0%
Annual Percent Change‡		
Incidence (1988-2006)	-0.2%	-0.2%
Mortality (1988-2006)	-1.1%	-1.4%

† See Appendix D or E for definition of terms.

‡The average *annual percent change* in the age-adjusted rate during the segment ending in 2004 from Joinpoint regression.

Statistically significant ($P < 0.05$) trends are in **bold**.

Table III-2.6: Five-year relative survival, Cancers among Children less than 15 Years of Age

Cancer Type	5-Year Relative Survival‡ (%)
Bone and Joint	71.8
Brain and Other Nervous System	73.8
Hodgkin Lymphoma	95.4
Leukemia	83.6
Acute Lymphocytic	89.0
Non-Hodgkin Lymphoma	86.3
All Childhood Cancers	81.3

‡Among SEER 9 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Table III-2.7: Average annual incidence and mortality rates§ in the United States, 2002-2006, Cancers among Children less than 15 Years of Age

	Males	Females
Incidence†		
All Childhood Cancers		
All Races	16.1	14.0
White‡	16.9	14.6
Bone and Joint	0.7	0.7
Brain	3.4	3.0
Hodgkin Lymphoma	0.7	0.4
Kidney	0.7	0.8
Leukemia	5.5	4.5
Acute Lymphocytic	4.4	3.5
NHL	1.1	0.6
Soft Tissue	1.1	1.0
Mortality		
All Races	2.6	2.2
White‡	2.7	2.3

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

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

† Brain includes other nervous system; Kidney includes renal pelvis; NHL is non-Hodgkin lymphoma.

‡All whites, including persons of Hispanic ethnicity.

Childhood Cancers

Descriptive Epidemiology

Incidence and Mortality: Each year, about 160 children under 15 years of age are diagnosed with cancer in Minnesota, and 25 children die of cancer each year. Of all cancers diagnosed in the state, 0.7 percent or seven out of every 1,000 are in children. Based on current incidence and mortality rates in Minnesota, it is estimated that one of every 400 children will be diagnosed with cancer before age 15. Cancer is the leading cause of death from disease among children. The overall childhood cancer rate in Minnesota is similar or somewhat lower than nationally.

Cancer Types: The cancers diagnosed among children are different than those diagnosed among adults. While breast, prostate, lung cancer, and colorectal are the most common among adults, children with cancer are more likely to be diagnosed with leukemia (33% of childhood cancers), brain cancer (19%), or lymphomas (9%). The rates and distribution of specific cancer types among children in Minnesota are similar to what is seen nationally.

Trends: The overall childhood cancer incidence and mortality rates in Minnesota have been fairly stable or decreasing since cancer reporting was implemented in 1988. Nationally, the overall cancer incidence rate in children ages 0-14 years increased significantly by 0.6 percent per year from 1975 to 2006. In contrast, the U.S. childhood cancer mortality rate declined by 2.9 percent per year from 1975 to 1997, and by 0.9 percent per year from 1997 to 2006.

Age: The overall cancer incidence rate is nearly twice as high among children under five years of age compared to those five to 14 years old. However, the age distribution varies by cancer type.

Gender: Boys are somewhat more likely to develop childhood cancer than girls.

Race: There are too few cases of childhood cancer among children of color in Minnesota to meaningfully assess race differences in childhood cancer rates in the state.

Risk Factors

Despite active research, the causes of most childhood cancers remain unknown. Although genetics and ionizing radiation have been associated with increased risk for certain childhood cancers, it is likely that these factors only account for a small percentage of cases. Burkitt's lymphoma, a form of non-Hodgkin lymphoma that is common among children in Africa, has been associated with Epstein-Barr virus. Because childhood leukemia has sometimes been reported to cluster geographically and temporally, it too, has been suspected of being associated directly or indirectly with exposure to a virus. However, a viral agent has yet to be identified, and the theory remains controversial. Recent research funded by the National Cancer Institute has not found an association between childhood cancer and radon, ultrasound during pregnancy, residential magnetic field exposure from power lines, or specific occupational exposures of parents.

Early Detection / Prevention

There are no screening methods to detect cancer in asymptomatic children, and cancer is often difficult to diagnose in children until they are quite ill. Sudden, unexplained symptoms such as loss of energy, bruising, persistent localized pain or limping, rapid weight loss, or frequent headaches with vomiting should be brought to the attention of a physician.

Brain and Other Nervous System

Table III-3.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Brain and Other Nervous System Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	161	132	8.4	6.1	129	103	7.0	4.7
1989	147	115	7.4	5.1	100	94	5.4	4.3
1990	168	136	8.4	6.2	124	96	6.6	4.2
1991	168	127	8.4	5.7	119	100	6.5	4.4
1992	174	114	8.5	5.0	122	104	6.4	4.5
1993	172	136	8.4	5.9	126	120	6.4	5.1
1994	179	113	8.3	4.8	129	100	6.4	4.3
1995	173	129	7.9	5.5	114	103	5.7	4.3
1996	162	113	7.7	4.8	118	90	5.8	3.7
1997	165	134	7.4	5.5	119	96	5.7	3.9
1998	188	134	8.5	5.4	130	103	6.2	4.0
1999	195	152	8.6	6.2	139	104	6.4	4.2
2000	192	118	8.4	4.7	159	98	7.2	3.8
2001	189	141	8.1	5.5	147	99	6.5	3.8
2002	204	162	8.6	6.4	126	108	5.5	4.1
2003	180	134	7.3	5.2	134	105	5.5	4.0
2004	202	135	8.4	5.2	129	98	5.5	3.6
2005	165	118	6.7	4.4	112	90	4.8	3.2
2006	198	156	8.0	5.8	128	84	5.3	2.9

Table III-3.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Brain and Other Nervous System Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	99	88	2.7	2.5	15	23	0.4	0.7
20 – 34	101	73	3.8	2.9	19	8	0.7	0.3
35 – 49	212	135	7.1	4.6	119	67	4.0	2.3
50 – 64	259	168	12.4	8.0	210	138	10.1	6.5
65 – 74	156	128	22.1	16.0	143	104	20.3	13.0
74 – 85	98	99	22.1	15.5	101	112	22.7	17.5
85 and older	24	14	16.6	4.1	22	33	15.2	9.7

Table III-3.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Brain and Other Nervous System Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	949	705	7.8	5.4	629	485	5.3	3.6
American Indian								
Statewide	3	5	~	~	0	2	~	~
CHSDA Counties	1	2	~	~	0	2	~	~
Asian/Pacific Isl.	12	9	3.5	~	6	5	~	~
Black	23	13	4.8	4.2	6	5	~	~
Non-Hispanic White	883	663	8.0	5.6	609	469	5.5	3.7
Hispanic (All Races)	21	12	6.9	3.2	6	4	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Brain and Other Nervous System

Table III-3.4: Other Minnesota cancer statistics†, 2004-2006, Brain and Other Nervous System Cancer

	Males	Females
Median Age at Diagnosis	53.0	55.0
Median Age at Death	64.0	66.0
Lifetime Risk of Diagnosis	0.7%	0.5%
Lifetime Risk of Death	0.5%	0.4%
Annual Percent Change‡		
Incidence (1988-2006)	-0.3%	-0.4%
Mortality (1988-2006 males; 2003-2006 females)	**-1.0%**	-8.4%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-3.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Brain and Other Nervous System Cancer

	Males	Females
Incidence		
All Races	7.6	5.4
Non-Hispanic White	8.9	6.3
Mortality		
All Races	5.3	3.5
Non-Hispanic White	5.9	4.0

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-3.6: Distribution of Brain and Other Nervous System Cancer cell types, Minnesota, 2002-2006

Cell Type	Histology Codes†	Cases	%
Glioblastoma	9440-9442	720	43.5
Astrocytoma (all)	9400, 9401, 9410-9411, 9420-9421, 9423-9430	457	27.6
Oligodendroglioma	9450-51, 9460	129	7.8
Ependymoma	9391-9394	88	5.3
Mixed glioma	9382	76	4.6
Medulloblastoma	9470-9472	41	2.5
Other glioma	9380, 9381	18	1.1
All others		125	7.6
Total		1,654	100.0

†International Classification of Diseases for Oncology, 3rd edition.

Descriptive Epidemiology

Incidence and Mortality: An average of 331 cases of invasive brain and other nervous system cancer are diagnosed in Minnesota each year, and 223 deaths are caused by these cancers. They account for 1.4 percent of all new cancers diagnosed and 2.5 percent of cancer deaths in the state. Incidence and mortality rates in Minnesota are similar to those for the U.S. for all races combined, but are significantly lower for non-Hispanic whites. Based on SEER data, the 5-year relative survival rate for brain cancers diagnosed between 1990-2005 was 35.5 percent, but was considerably higher among children ages 0-14 (73.8%).

Trends: The incidence of invasive brain and other nervous system cancer in Minnesota has been stable since cancer reporting was implemented in 1988. The mortality rate declined significantly by 1.2 percent per year among women until 2003.

Age: The incidence rate for brain and nervous system cancer increases only modestly with age. The majority (57%) of brain and nervous system cancers are diagnosed between the ages of 20 and 64 years.

Gender: Brain and nervous system cancers are about 44 percent more common among males than females.

Race: There are too few cases of brain cancer in Minnesota among persons of color to assess racial disparities. National data show that non-Hispanic whites are at higher risk of developing and dying from these cancers than those of other racial/ethnic groups.

Risk Factors

The causes of most brain cancers are unknown. Ionizing radiation is the only well-established environmental risk factor for brain and nervous system cancers. Cell phones, which use radio waves, have been studied as a possible risk factor for brain cancers, but a consistent link has not been found. Information on this subject can be found on the NCI factsheet "Cell Phones and Cancer Risk" (http://www.cancer.gov/cancertopics/factsheet/risk/cellphones). Occupational exposure to vinyl chloride and exposure to electromagnetic fields have been proposed as potential risk factors for brain cancers, but research is not conclusive. These types of cancers are difficult to investigate due in part to their morphologic, genetic, and etiologic diversity.

Early Detection / Prevention

Brain cancer is usually only detected once it becomes symptomatic. In most cases, the histologic type and location of the tumor is more important than early detection.

Breast

Table III-4.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Breast Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	16	2,861	0.9	132.6	6	765	0.4	34.3
1989	13	2,773	0.7	127.3	5	716	0.3	32.0
1990	14	2,906	0.8	132.3	2	746	0.1	32.8
1991	18	2,923	1.0	130.8	6	786	0.4	33.8
1992	12	2,951	0.6	130.7	3	726	0.2	30.4
1993	15	3,024	0.8	131.5	5	732	0.3	30.0
1994	22	2,978	1.2	127.1	9	708	0.5	28.9
1995	24	3,170	1.3	133.9	4	773	0.2	31.0
1996	18	3,154	0.9	130.5	7	725	0.4	28.5
1997	16	3,239	0.9	132.2	11	678	0.6	26.1
1998	23	3,509	1.2	140.5	5	720	0.2	26.9
1999	21	3,493	1.0	138.6	4	670	0.2	24.9
2000	30	3,655	1.5	142.6	8	729	0.4	26.8
2001	27	3,643	1.3	139.6	10	685	0.5	24.9
2002	27	3,604	1.2	135.3	2	640	0.1	22.6
2003	22	3,399	1.0	125.7	8	639	0.4	22.8
2004	25	3,377	1.1	122.7	1	655	0.1	22.4
2005	36	3,474	1.6	124.2	6	656	0.3	22.3
2006	30	3,536	1.4	124.6	5	609	0.2	20.5

Table III-4.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Breast Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	2	0.0	0.1	0	0	0.0	0.0
20 – 34	3	285	0.1	11.4	0	26	0.0	1.0
35 – 49	13	3,528	0.4	119.8	1	359	0.0	12.2
50 – 64	38	6,048	1.8	286.8	13	874	0.1	41.5
65 – 74	30	3,304	4.2	412.3	6	623	0.8	77.7
74 – 85	40	2,909	9.0	455.7	6	742	1.4	116.2
85 and older	16	1,314	11.1	388.2	6	575	4.1	169.9

Table III-4.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Breast Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	140	17,390	1.3	126.3	22	3,199	0.2	22.1
American Indian								
Statewide	0	105	~	92.5	0	14	~	13.3
CHSDA Counties	0	57	~	95.5	0	7	~	~
Asian/Pacific Isl.	2	150	~	50.8	1	19	~	7.9
Black	0	290	~	98.6	1	75	~	27.5
Non-Hispanic White	136	16,479	1.3	127.1	20	3,062	0.2	22.2
Hispanic (All Races)	2	154	~	88.7	1	29	~	22.4

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Breast

Table III-4.4: Other Minnesota cancer statistics†, 2004-2006, Breast Cancer

	Males	Females
Median Age at Diagnosis	72.0	61.0
Median Age at Death	76.0	70.0
Lifetime Risk of Diagnosis	0.2%	12.8%
Lifetime Risk of Death	< 0.0%	2.9%
Annual Percent Change‡		
Incidence (1988-2006 males; 2004-2006 females)	**3.1%**	0.8%
Mortality (1988-2006)	-0.3%	**-2.7%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-4.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Breast Cancer

	Males	Females
Incidence		
All Races	1.2	123.8
Non-Hispanic White†	1.2	134.0
Mortality		
All Races	0.3	24.5
Non-Hispanic White†	0.3	24.5

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

†Data for males are based on all whites, including persons of Hispanic ethnicity.

Table III-4.6: Extent of disease at diagnosis and five-year relative survival, Breast Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	18.7	-
Localized	50.0	98.3
Regional	25.4	83.5
Distant	3.9	23.3
Unknown	2.0	57.7

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Breast cancer is the most commonly diagnosed cancer among women. Based on current rates, 1 out of 8 women will be diagnosed with this disease. Nonetheless, female breast cancer rates have changed markedly since cancer reporting was implemented in Minnesota in 1988. Due to steady declines in mortality, breast cancer accounted for 14 percent of cancer deaths among women in 2006 instead of 20 percent in 1988. Breast cancer incidence among women began declining sharply around 2001, and accounted for 30 percent of cancer diagnoses among women in 2006 instead of 34 percent in 2001. Among non-Hispanic white women, incidence rates are five percent lower in Minnesota than in the SEER Program, and mortality rates are six percent lower in Minnesota than in the U.S.

Trends: Incidence rates for invasive breast cancer among Minnesota women decreased significantly by 3.9 percent per year from 2000-2004 and then stabilized, while the mortality rate decreased significantly by 2.7 percent per year from 1988 to 2006. The sharp decrease in mortality among women has resulted from a combination of increased breast cancer screening with mammography and improvement in the medical management of this disease.

Age: Breast cancer risk increases with age. Almost 80 percent of cases are diagnosed after 50 years of age.

Race: Although incidence rates are 22 percent lower among black compared to non-Hispanic white women, mortality rates are 24 percent higher among black women. The breast cancer incidence rate among Hispanic women is 30 percent lower than among non-Hispanic white women, but the mortality rate is slightly higher. This indicates disparities in survival from breast cancer among populations of color.

Risk Factors

Cumulative exposure of the breast tissue to estrogen is a strong predictor of risk. Therefore, early age at menarche, late onset of menopause, late childbearing, and having fewer children increase risk. Studies have indicated that use of hormone replacement therapy increases risk for breast cancer, while use of tamoxifen, an anti-estrogen, reduces risk among high-risk women. Other risk factors include benign breast disease with atypical hyperplasia, obesity, alcohol consumption, physical inactivity, and higher socioeconomic status. Family history, especially of premenopausal breast cancer, is strongly associated with increased breast cancer risk. Mutations in the BRCA1 or BRCA2 gene are specific inherited risk factors. Known risk factors account for only 30 to 50 percent of breast cancers.

Early Detection / Prevention

The U.S. Preventive Services Task Force (USPSTF) revised its recommendations on mammography in 2009. It recommends that biennial screening begin at age 50, and that younger women discuss the benefits and harms of screening with their physician to make an informed decision. More information on the rationale for this change can be found on the USPSTF web site (http://www.ahrq.gov/clinic/uspstf/uspsbrca.htm).

Cervix Uteri

Table III-5.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Cervix Uteri Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	-	213	-	9.9	-	46	-	2.1
1989	-	204	-	9.3	-	43	-	2.0
1990	-	248	-	11.1	-	51	-	2.4
1991	-	202	-	9.2	-	41	-	1.8
1992	-	167	-	7.3	-	44	-	1.9
1993	-	198	-	8.7	-	36	-	1.5
1994	-	205	-	8.9	-	46	-	2.0
1995	-	201	-	8.4	-	51	-	2.2
1996	-	200	-	8.2	-	61	-	2.6
1997	-	175	-	7.3	-	45	-	1.8
1998	-	142	-	5.8	-	37	-	1.5
1999	-	176	-	7.0	-	49	-	1.9
2000	-	173	-	6.9	-	42	-	1.5
2001	-	175	-	6.9	-	35	-	1.3
2002	-	170	-	6.7	-	34	-	1.3
2003	-	173	-	6.7	-	48	-	1.8
2004	-	162	-	6.2	-	52	-	1.9
2005	-	169	-	6.3	-	48	-	1.7
2006	-	159	-	6.1	-	45	-	1.6

Table III-5.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Cervix Uteri Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	-	4	-	0.1	-	0	-	0.0
20 – 34	-	146	-	5.8	-	11	-	0.4
35 – 49	-	316	-	10.7	-	45	-	1.5
50 – 64	-	227	-	10.8	-	78	-	3.7
65 – 74	-	76	-	9.5	-	41	-	5.1
74 – 85	-	41	-	6.4	-	30	-	4.7
85 and older	-	23	-	6.8	-	22	-	6.5

Table III-5.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Cervix Uteri Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	-	833	-	6.4	-	227	-	1.6
American Indian								
Statewide	-	18	-	12.4	-	8	-	~
CHSDA Counties	-	10	-	14.3	-	5	-	~
Asian/Pacific Isl.	-	32	-	12.9	-	10	-	6.0
Black	-	45	-	13.4	-	8	-	~
Non-Hispanic White	-	681	-	5.8	-	196	-	1.5
Hispanic (All Races)	-	39	-	16.9	-	5	-	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Cervix Uteri

Table III-5.4: Other Minnesota cancer statistics†, 2004-2006, Cervix Uteri Cancer

	Males	Females
Median Age at Diagnosis	-	48.0
Median Age at Death	-	60.0
Lifetime Risk of Diagnosis	-	0.5%
Lifetime Risk of Death	-	0.2%
Annual Percent Change‡		
Incidence (1988-2006)	-	**-2.9%**
Mortality (1988-2006)	-	**-1.6%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-5.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Cervix Uteri Cancer

	Males	Females
Incidence		
All Races	-	8.2
Non-Hispanic White	-	7.1
Mortality		
All Races	-	2.5
Non-Hispanic White	-	2.1

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-5.6: Extent of disease at diagnosis and five-year relative survival, Cervix Uteri Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	~	-
Localized	48.8	91.5
Regional	32.9	57.7
Distant	13.5	17.2
Unknown	4.9	56.7

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

~*In situ* cervical cancers are not collected.

Descriptive Epidemiology

Incidence and Mortality: Each year in Minnesota an average of 167 new cases of cervical cancer are diagnosed among women, and 45 deaths occur. Incidence rates in Minnesota are 20 percent lower than those reported by SEER. Minnesota has one of the lowest cervical cancer mortality rates in the U.S., nearly 40 percent lower than those reported nationally.

Trends: The invasive cervical cancer incidence rate has decreased significantly by 2.9 percent per year in Minnesota since 1988 while the mortality rate decreased significantly by 1.6 percent per year. Nationally, the incidence rate declined by 3.5 percent per year from 1996 to 2006, and mortality declined by 2.3 percent per year from 1990 to 2006. These declines are attributed to the widespread adoption of cervical cancer screening with the Pap test.

Age: The incidence rate for invasive cervical cancer increases with age beginning at age 20, and starts to decrease after age 50. Approximately 56 percent of diagnoses are among women less than 50 years of age. The median age at diagnosis for cervical cancer is one of the youngest of all cancers.

Race: Cervical cancer incidence is highest among women of color, both in Minnesota and nationally. Although based on relatively small numbers of cases, women of color in Minnesota are more than two times more likely to be diagnosed with invasive cervical cancer than non-Hispanic white women, and disparities in the mortality rate may be even greater. Women of color are also less likely than non-Hispanic white women to be diagnosed before the cancer has spread to lymph nodes or other organs.

Risk Factors

Up to 95 percent of cervical cancers are caused by the human papilloma virus (HPV), a sexually transmitted infection. HPV infections appear to be very common, usually regressing without any symptoms. However, in a small percentage of women the infection becomes persistent, and abnormalities develop that can eventually become malignant. Because Pap tests can identify lesions in a pre-malignant state when they can be removed with minimally invasive procedures, any factors interfering with routine screening, such as low socioeconomic status and lack of access to medical care, increase risk for this cancer.

Early Detection / Prevention

Cervical cancer can be prevented through screening with the Pap test. The U.S. Preventive Services Task Force issued guidelines in January 2003 recommending that women should receive regular Pap tests starting at age 21 or within 3 years of the onset of sexual activity, whichever comes first. In June 2006, the FDA approved a vaccine to prevent infection with two HPV strains causing about 70 percent of cervical cancers. It is the first vaccine targeted specifically to preventing cancer. For more information on the HPV vaccine, visit the MDH web site at http://www.health.state.mn.us/divs/idepc/dtopics/vpds/hpv.

Colon and Rectum

Table III-6.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Colon and Rectum Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	1,254	1,235	74.1	52.0	507	482	31.0	19.5
1989	1,291	1,179	75.4	48.8	515	518	30.9	20.5
1990	1,218	1,229	70.4	50.5	497	462	29.4	18.3
1991	1,230	1,218	69.8	49.6	482	496	28.6	19.3
1992	1,291	1,179	72.5	47.3	464	522	27.4	20.0
1993	1,176	1,174	64.3	46.3	416	473	23.6	17.5
1994	1,181	1,190	63.3	46.2	446	432	24.9	15.7
1995	1,245	1,178	66.2	44.9	470	517	25.7	18.6
1996	1,117	1,180	58.4	45.0	454	461	24.6	16.3
1997	1,250	1,259	65.0	47.2	466	461	25.0	16.3
1998	1,216	1,304	61.6	48.5	462	498	24.3	17.4
1999	1,253	1,223	62.3	44.7	426	475	22.1	16.6
2000	1,275	1,275	61.9	46.1	429	497	21.7	17.1
2001	1,263	1,236	59.9	44.4	410	458	20.3	15.4
2002	1,269	1,272	59.1	45.2	451	481	21.5	16.0
2003	1,293	1,215	58.9	42.6	473	487	22.5	16.0
2004	1,299	1,234	57.8	42.9	371	425	17.0	13.7
2005	1,250	1,191	54.3	40.5	383	408	17.6	12.7
2006	1,224	1,195	52.7	40.9	393	429	17.6	13.8

Table III-6.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Colon and Rectum Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	4	2	0.1	0.1	1	1	0.0	0.0
20 – 34	53	66	2.0	2.6	16	17	0.7	0.7
35 – 49	537	483	17.9	16.4	115	109	3.8	3.7
50 – 64	1,836	1,208	87.9	57.3	433	327	22.7	15.5
65 – 74	1,677	1,386	237.5	172.9	492	392	75.0	48.9
74 – 85	1,624	1,903	365.7	298.1	631	659	151.5	103.2
85 and older	604	1,059	417.5	312.8	383	725	280.4	214.2

Table III-6.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Colon and Rectum Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	6,335	6,107	56.4	42.4	2,071	2,230	19.3	14.4
American Indian								
Statewide	53	50	69.9	59.6	26	14	36.2	19.0
CHSDA Counties	41	35	99.6	71.8	18	10	46.7	25.6
Asian/Pacific Isl.	65	62	36.5	29.7	19	26	12.8	13.5
Black	118	91	56.3	38.9	39	39	24.0	19.6
Non-Hispanic White	5,980	5,777	56.1	41.8	1,975	2,145	19.2	14.4
Hispanic (All Races)	49	49	43.7	35.8	11	6	11.5	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented

Colon and Rectum

Table III-6.4: Other Minnesota cancer statistics†, 2004-2006, Colon and Rectum Cancer

	Males	Females
Median Age at Diagnosis	69.0	74.0
Median Age at Death	74.0	79.5
Lifetime Risk of Diagnosis	5.8%	5.3%
Lifetime Risk of Death	2.1%	2.1%
Annual Percent Change‡		
Incidence (1988-2006 males, 1998-2006 females)	**-1.7%**	**-2.0%**
Mortality (1988-2006)	**-2.9%**	**-2.0%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-6.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Colon and Rectum Cancer

	Males	Females
Incidence		
All Races	57.3	42.8
Non-Hispanic White	58.1	43.3
Mortality		
All Races	21.9	15.4
Non-Hispanic White	21.7	15.1

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-6.6: Extent of disease at diagnosis and five-year relative survival, Colon and Rectum Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	3.2	-
Localized	42.8	90.8
Regional	32.2	69.5
Distant	15.7	11.3
Unknown	6.1	38.4

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Approximately 2,500 cases of invasive colon and rectum cancer are diagnosed and 860 deaths occur each year in Minnesota. Minnesota rates are slightly lower than national rates. Colorectal cancer is the second leading cause of cancer-related death in Minnesota; only lung cancer kills more Minnesotans.

Trends: Colon and rectum cancer rates have declined sharply over the last decade in Minnesota and nationally. Research indicates that these declines may be due in part to increased screening and polyp removal, which may prevent the progression of polyps to invasive cancers. Other factors, such as use of hormone replacement therapy among women and use of aspirin to prevent heart disease, may also reduce the risk of colorectal cancer.

Age: About 65 percent of diagnoses and 75 percent of deaths occur among persons 65 years and older.

Gender: Colorectal cancer rates are about 34 percent higher among men than women.

Race: In Minnesota, American Indians have the highest incidence and mortality rates. Among American Indians, colorectal cancer rates in Minnesota are more than twice that of the U.S. as a whole.

Risk Factors

A personal or family history of colorectal cancer, adenomatous polyposis coli or inflammatory bowel disease increases colorectal cancer risk. Other risk factors include obesity, physical inactivity, alcohol consumption, tobacco, high fat and low fiber diets, as well as a diet low in fruits and vegetables. Because screening can prevent colorectal cancer by removing precancerous polyps, not being screened is actually a risk factor for the disease. Studies suggest that estrogen and progestin hormone therapy and nonsteroidal anti-inflammatory drugs, such as aspirin, may reduce colorectal cancer risk.

Early Detection / Prevention

Many colorectal cancers could be prevented through screening. For asymptomatic persons at average risk, screening is recommended to begin at age 50 with one of several options. In March 2008, the American Cancer Society revised their screening guidelines for this cancer to separate the available tests into those that can prevent colorectal cancer by finding precancerous polyps (sigmoidoscopy, colonoscopy, colonography, and double contrast barium enema), and those whose primary benefit is finding cancer at an early stages (fecal occult blood test, fecal immunochemical test, and stool DNA test). They recommend screening tests that can find precancerous polyps if these tests are available and you are willing to have a more invasive test at longer intervals. For more information, talk to your doctor or view the ACS guidelines at http://www.cancer.org.

Corpus Uteri

Table III-7.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Corpus Uteri and Uterus, NOS Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	-	561	-	26.2	-	115	-	4.8
1989	-	547	-	25.3	-	96	-	4.0
1990	-	551	-	25.2	-	82	-	3.3
1991	-	588	-	27.0	-	117	-	4.8
1992	-	585	-	25.8	-	104	-	4.1
1993	-	586	-	25.4	-	97	-	3.7
1994	-	594	-	25.3	-	89	-	3.4
1995	-	632	-	26.9	-	99	-	3.9
1996	-	635	-	26.6	-	114	-	4.2
1997	-	648	-	26.6	-	96	-	3.5
1998	-	650	-	26.5	-	112	-	4.1
1999	-	670	-	26.8	-	122	-	4.6
2000	-	628	-	24.7	-	99	-	3.5
2001	-	705	-	27.2	-	111	-	4.0
2002	-	759	-	28.7	-	114	-	3.9
2003	-	670	-	25.0	-	138	-	4.9
2004	-	771	-	28.1	-	135	-	4.6
2005	-	783	-	28.0	-	120	-	4.2
2006	-	761	-	26.4	-	140	-	4.7

Table III-7.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Corpus Uteri and Uterus, NOS Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	-	1	-	0.0	-	0	-	0.0
20 – 34	-	43	-	1.7	-	8	-	0.3
35 – 49	-	462	-	15.7	-	30	-	1.0
50 – 64	-	1,573	-	74.6	-	176	-	8.3
65 – 74	-	823	-	102.7	-	130	-	16.2
74 – 85	-	627	-	98.2	-	188	-	29.4
85 and older	-	215	-	63.5	-	115	-	34.0

Table III-7.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Corpus Uteri and Uterus, NOS Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	-	3,744	-	27.2	-	647	-	4.5
American Indian								
Statewide	-	25	-	23.2	-	4	-	~
CHDA Counties	-	16	-	28.0	-	2	-	-
Asian/Pacific Isl.	-	40	-	16.2	-	8	-	~
Black	-	46	-	20.3	-	12	-	5.5
Non-Hispanic White	-	3,545	-	27.3	-	618	-	4.4
Hispanic (All Races)	-	40	-	23.8	-	3	-	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Corpus Uteri

Table III-7.4: Other Minnesota cancer statistics†, 2004-2006, Corpus Uteri and Uterus, NOS Cancer

	Males	Females
Median Age at Diagnosis	-	62.0
Median Age at Death	-	74.0
Lifetime Risk of Diagnosis	-	3.1%
Lifetime Risk of Death	-	0.6%
Annual Percent Change‡		
Incidence (1988-2006)	-	0.3%
Mortality (1988-2006)	-	0.5%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-7.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Corpus Uteri and Uterus, NOS Cancer

	Males	Females
Incidence		
All Races	-	23.3
Non-Hispanic White	-	25.0
Mortality		
All Races	-	4.1
Non-Hispanic White	-	3.9

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-7.6: Extent of disease at diagnosis and five-year relative survival, Corpus Uteri and Uterus, NOS Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	2.0	-
Localized	70.9	95.7
Regional	15.9	67.4
Distant	7.3	17.4
Unknown	4.0	56.1

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Cancer of the corpus uteri is often referred to as endometrial cancer, since the cells of the lining of the uterus, or endometrium, are the most likely to become malignant. About 710 cases of uterine cancer are diagnosed among women in Minnesota each year and about 120 women die from the disease. Rates in Minnesota are somewhat higher than what is reported nationally. It should be noted that the risk of developing uterine cancer among women with a uterus is actually higher than rates presented for all women because the number of women who have had hysterectomies is not known, and therefore has not been subtracted from the denominator used for calculating rates.

Trends: Uterine cancer incidence rates increased significantly by 0.4 percent per year from 1988-2004 while mortality rates remained stable.

Age: Nearly 46 percent of diagnoses and 70 percent of deaths occur among women 65 years of age or older.

Race: In Minnesota, uterine cancer incidence rates are highest among non-Hispanic white women. Race-specific incidence rates are similar to those reported by SEER. There are too few deaths due to uterine cancer among women of color in Minnesota to assess disparities. However, black women in the U.S. have the highest mortality rate, reflecting a marked disparity in survival between white and black women. Based on SEER data, the 5-year relative survival rate for uterine cancer is 85 percent for white women, and only 61 percent for black women.

Risk Factors

A high cumulative exposure to estrogen is the major risk factor for uterine cancer. Estrogen exposure may be increased by estrogen replacement therapy, tamoxifen, early menarche, late menopause, never having children, a history of failure to ovulate, and obesity. Increased production of endogenous estrogens due to estrogen-secreting ovarian tumors or polycystic ovarian syndrome also increases risk. Other factors associated with an increased likelihood of developing uterine cancer include obesity, high body mass, and a high fat diet. Hormone replacement therapy (HRT), which is a combination of progesterone and estrogen replacement therapy, is thought to largely offset the increased risk related to HRT using only estrogen. Research has not implicated estrogen exposures in the development of the other types of uterine corpus cancer, which are more aggressive and have a poorer prognosis. Other risk factors for uterine cancer include infertility and hereditary nonpolyposis colon cancer (HNPCC). Pregnancy and use of oral contraceptives provide protection against endometrial cancer.

Early Detection / Prevention

There are no proven screening methods for detecting asymptomatic uterine cancer. However, vaginal bleeding or other abnormal discharge after menopause is a warning sign and should be promptly reported to a physician.

Esophagus

Table III-8.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Esophagus Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	106	31	6.2	1.4	94	46	5.5	2.0
1989	110	50	6.1	2.1	129	31	7.6	1.2
1990	123	44	7.0	1.8	98	44	5.6	1.8
1991	106	37	5.9	1.5	129	41	7.2	1.5
1992	104	41	5.6	1.6	110	47	6.0	1.8
1993	118	29	6.2	1.2	116	29	6.3	1.2
1994	121	37	6.4	1.5	116	32	6.2	1.2
1995	139	51	7.1	2.0	155	40	8.1	1.6
1996	149	46	7.6	1.8	138	43	7.2	1.6
1997	142	46	7.2	1.7	145	46	7.3	1.6
1998	156	41	7.7	1.6	160	44	8.1	1.6
1999	174	54	8.4	1.9	140	40	6.9	1.4
2000	157	52	7.5	1.9	179	53	8.6	1.9
2001	158	62	7.4	2.2	140	51	6.6	1.7
2002	200	47	9.3	1.7	174	56	8.1	1.9
2003	200	46	8.8	1.7	170	48	7.7	1.7
2004	200	61	8.6	2.1	189	37	8.4	1.3
2005	236	59	10.0	2.0	189	46	8.3	1.5
2006	218	52	8.9	1.8	184	50	7.8	1.7

Table III-8.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Esophagus Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	0	0.0	0.0	1	0	0.0	0.0
20 – 34	3	1	0.1	0.0	3	1	0.1	0.0
35 – 49	96	8	3.2	0.3	63	7	2.1	0.2
50 – 64	379	72	18.1	3.4	288	58	13.8	2.8
65 – 74	284	72	40.2	9.0	249	49	35.3	6.1
74 – 85	231	70	52.0	11.0	226	69	50.9	10.8
85 and older	61	42	42.2	12.4	76	53	52.5	15.7

Table III-8.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Esophagus Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	1,054	265	9.1	1.9	906	237	8.0	1.6
American Indian								
Statewide	9	4	~	~	6	2	~	~
CHSDA Counties	9	3	~	~	5	1	~	~
Asian/Pacific Isl.	6	1	~	~	8	0	~	~
Black	26	5	12.8	~	16	4	9.3	~
Non-Hispanic White	1,001	250	9.1	1.8	874	228	8.1	1.7
Hispanic (All Races)	6	2	~	~	2	0	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Esophagus

Table III-8.4: Other Minnesota cancer statistics†, 2004-2006, Esophagus Cancer

	Males	Females
Median Age at Diagnosis	65.0	73.0
Median Age at Death	68.0	75.0
Lifetime Risk of Diagnosis	1.0%	0.3%
Lifetime Risk of Death	0.9%	0.2%
Annual Percent Change‡		
Incidence (1988-2006)	**2.7%**	1.1%
Mortality (1988-2006)	**1.5%**	0.2%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-8.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Esophagus Cancer

	Males	Females
Incidence		
All Races	7.7	2.0
Non-Hispanic White	8.3	2.0
Mortality		
All Races	7.8	1.7
Non-Hispanic White	8.1	1.7

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-8.6: Extent of disease at diagnosis and five-year relative survival, Esophagus Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	1.2	-
Localized	17.5	37.1
Regional	34.1	18.5
Distant	35.5	3.1
Unknown	11.7	11.7

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Each year, about 265 cases of esophageal cancer are diagnosed in Minnesota and about 230 deaths result from this disease. Rates are similar to those reported by SEER. Based on SEER data, the 5-year relative survival rate for esophageal cancer is 17 percent overall, and 37 percent when diagnosed at the localized stage. Most esophageal cancers are diagnosed when the tumor has already spread to adjacent tissues (34.1%) or distant (35.5%) organs.

Trends: The incidence rate among Minnesota males has significantly increased by an average of 2.7 percent per year since cancer reporting was initiated in 1988, accompanied by a statistically significant increase in mortality of 1.5 percent per year. Rates among Minnesota females have also increased during this same time period, although the increases are not statistically significant.

Age: In Minnesota, less than 10 percent of esophageal cancer cases are diagnosed among persons younger than 50 years of age.

Gender: Esophageal cancer rates are five times higher among males than females.

Race: In Minnesota, there are too few cases among persons of color to assess race/ethnic differences in esophagus cancer rates. Nationally, black men have the highest incidence and mortality rates among males, and black women have the highest incidence and mortality rates among females.

Risk Factors

Cigarette smoking and long-term alcohol consumption are major risk factors for this disease and are thought to be responsible for 80 to 90 percent of squamous cell carcinomas of the esophagus in the U.S. Chronic gastric reflux, including Barrett's esophagus, is a major risk factor as well, especially for adenocarcinomas of the esophagus. In epidemiologic studies of esophageal adenocarcinoma, elevated body mass index (BMI) has been consistently shown to be a significant risk factor. Chronic injury to the esophagus through ingestion of hot food or beverages or accidental ingestion of caustic substances like lye may also increase risk. Research suggests that nutritional deficiencies related to lack of fresh fruits and vegetables and overall deficiencies of certain vitamins and minerals, including vitamins A and C, iron, and riboflavin are associated with increased risk of disease, and may explain some of the wide international variation in the occurrence of this cancer.

Early Detection / Prevention

No screening tests are recommended to screen the general population for esophageal cancer. However, persons who are at high risk for esophageal cancer, such as those with Barrett esophagus, should be followed closely to determine the advisability of having regular endoscopic examinations.

Hodgkin Lymphoma

Table III-9.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Hodgkin Lymphoma

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	77	69	3.9	2.9	14	15	0.7	0.6
1989	72	58	3.3	2.6	18	13	1.0	0.6
1990	88	53	4.1	2.3	14	16	0.8	0.7
1991	72	70	3.4	3.1	17	12	0.9	0.5
1992	74	73	3.4	3.1	23	11	1.1	0.4
1993	78	72	3.6	3.0	22	18	1.2	0.7
1994	85	62	3.8	2.6	13	13	0.7	0.5
1995	78	48	3.5	2.0	8	13	0.4	0.5
1996	75	67	3.2	2.8	11	11	0.6	0.4
1997	72	63	3.1	2.6	7	15	0.3	0.6
1998	83	68	3.5	2.8	19	9	0.9	0.3
1999	80	80	3.4	3.2	18	12	0.9	0.5
2000	111	67	4.6	2.7	12	12	0.6	0.5
2001	73	60	3.1	2.4	19	3	0.9	0.1
2002	77	63	3.2	2.5	12	9	0.5	0.3
2003	94	79	3.8	3.1	15	18	0.7	0.7
2004	85	70	3.4	2.7	9	9	0.4	0.3
2005	77	65	3.1	2.5	8	11	0.3	0.4
2006	72	53	2.9	2.1	12	13	0.6	0.5

Table III-9.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Hodgkin Lymphoma

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	59	44	1.6	1.3	1	1	0.0	0.0
20 – 34	109	106	4.2	4.2	10	8	0.4	0.3
35 – 49	113	69	3.8	2.3	9	8	0.3	0.3
50 – 64	52	44	2.5	2.1	7	13	0.3	0.6
65 – 74	33	29	4.7	3.6	8	12	1.1	1.5
74 – 85	32	32	7.2	5.0	15	13	3.4	2.0
85 and older	7	7	4.8	1.8	6	5	4.1	1.5

Table III-9.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Hodgkin Lymphoma

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	405	330	3.3	2.6	56	60	0.5	0.4
American Indian								
Statewide	2	3	~	~	0	1	~	~
CHSDA Counties	1	2	~	~	0	0	~	~
Asian/Pacific Isl.	6	6	~	~	1	1	~	~
Black	7	8	~	~	2	0	~	~
Non-Hispanic White	368	302	3.4	2.7	50	57	0.5	0.5
Hispanic (All Races)	12	5	5.1	~	2	3	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Hodgkin Lymphoma

Table III-9.4: Other Minnesota cancer statistics†, 2004-2006, Hodgkin Lymphoma

	Males	Females
Median Age at Diagnosis	41.0	35.0
Median Age at Death	72.0	69.0
Lifetime Risk of Diagnosis	0.3%	0.2%
Lifetime Risk of Death	0.1%	0.1%
Annual Percent Change‡		
Incidence (1988-2006)	-0.7%	-0.5%
Mortality (1988-2006)	**-3.4%**	-2.4%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-9.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Hodgkin Lymphoma

	Males	Females
Incidence		
All Races	3.1	2.5
Non-Hispanic White	3.6	3.0
Mortality		
All Races	0.5	0.4
Non-Hispanic White	0.6	0.4

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-9.6: Five-year relative survival‡ by gender and age at diagnosis, Hodgkin Lymphoma

Age at Diagnosis (years)	Males (%)	Females (%)
< 45	90.5	93.2
45-54	80.0	87.3
55-64	69.2	80.1
65-74	53.8	60.3
75+	35.7	41.2
All Ages	83.0	86.7

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Lymphomas are malignancies of the white blood cells. There are two kinds of malignant lymphomas: Hodgkin lymphoma contains Reed-Sternberg cells, and non-Hodgkin lymphoma does not. Hodgkin lymphoma is less common, accounting for only 12 percent of lymphomas and 0.6 percent of all cancer diagnoses. Approximately 150 cases are diagnosed each year in Minnesota and 23 people die from the disease. Rates are similar to those reported nationally. The SEER 5-year relative survival rate for Hodgkin lymphoma is about 85 percent for both males and females.

Trends: The incidence rate of Hodgkin lymphoma in Minnesota has been stable among both men and women since cancer reporting was implemented in 1988. In the SEER 9 areas, incidence rates are significantly increasing among women and significantly decreasing among men. The mortality rate of Hodgkin lymphoma is declining sharply among both men and women in Minnesota, although the decrease is not statistically significant among women. The is similar to national mortality trends.

Age: Approximately 68 percent of newly diagnosed cases of Hodgkin lymphoma occur in persons less than 50 years old. Hodgkin lymphoma has a unique age distribution -- incidence peaks at about age 30, declines until age 55, and then increases to a second peak at age 75. This indicates that there may be two different etiologies for this cancer.

Gender: As with many cancers, the incidence of Hodgkin lymphoma is about 30 percent higher among males than females.

Race: Based on cases reported to SEER, the incidence rate of Hodgkin lymphoma is highest among non-Hispanic whites; rates among blacks and Hispanics are 25 percent lower than among non-Hispanic whites.

Risk Factors

No major risk factors for Hodgkin lymphoma have been identified, although the unusual epidemiologic patterns of the disease suggest that Hodgkin lymphoma pathogenesis may involve an infectious agent. An increased rate of Hodgkin lymphoma has been noted among people who have had infectious mononucleosis, caused by the Epstein-Barr virus. The risk of developing Hodgkin lymphoma appears to be as much as 4 times higher in people who have had mononucleosis than in people who have not. Research suggests that risk is also increased among individuals with certain primary immunodeficiencies. Siblings of persons with Hodgkin lymphoma have an increased risk of the disease that does not appear to be genetic, but may be due to the same childhood exposures, such as infections. There does not appear to be a connection between Hodgkin lymphoma and lifestyle factors such as smoking, diet, exercise, and alcohol intake. Hodgkin lymphoma occurs at a higher rate in people with a higher socioeconomic background.

Early Detection / Prevention

No strategies for the early detection of Hodgkin lymphoma have been identified.

Kaposi Sarcoma (all sites)

Table III-10.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Kaposi Sarcoma (all sites)

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	24	4	1.2	0.1	0	0	-	-
1989	35	2	1.6	0.1	0	0	-	-
1990	35	3	1.5	0.1	0	0	-	-
1991	41	0	2.0	0.0	0	0	-	-
1992	46	2	2.0	0.1	0	0	-	-
1993	37	1	1.5	0.0	0	0	-	-
1994	36	1	1.5	0.0	0	0	-	-
1995	36	6	1.5	0.2	0	0	-	-
1996	16	0	0.8	0.0	0	0	-	-
1997	20	0	0.9	0.0	0	0	-	-
1998	9	1	0.4	0.0	0	0	-	-
1999	8	0	0.3	0.0	0	0	0.0	0.0
2000	14	1	0.6	0.0	0	0	0.0	0.0
2001	14	1	0.6	0.0	1	0	0.0	0.0
2002	11	2	0.5	0.1	0	0	0.0	0.0
2003	7	2	0.3	0.0	0	1	0.0	0.0
2004	12	2	0.5	0.1	0	0	0.0	0.0
2005	9	2	0.3	0.1	1	0	0.0	0.0
2006	10	1	0.4	0.0	0	1	0.0	0.0

Table III-10.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Kaposi Sarcoma (all sites)

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	0	0.0	0.0	0	0	0.0	0.0
20 – 34	11	2	0.4	0.1	0	0	0.0	0.0
35 – 49	25	0	0.8	0.0	1	0	0.0	0.0
50 – 64	7	0	0.3	0.0	0	0	0.0	0.0
65 – 74	2	0	0.3	0.0	0	0	0.0	0.0
74 – 85	3	4	0.7	0.6	0	0	0.0	0.0
85 and older	1	3	0.7	0.9	0	2	0.0	0.6

Table III-10.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Kaposi Sarcoma (all sites)

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	49	9	0.4	~	1	2	~	~
American Indian								
Statewide	0	0	~	~	0	0	~	~
CHSDA Counties	0	0	~	~	0	0	~	~
Asian/Pacific Isl.	0	0	~	~	0	0	~	~
Black	11	0	3.6	~	0	0	~	~
Non-Hispanic White	30	8	0.3	~	1	2	~	~
Hispanic (All Races)	7	1	~	~	~	~	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

- Data not available. Kaposi sarcoma did not have a unique cause of death code until 1999.

Kaposi Sarcoma (all sites)

Table III-10.4: Other Minnesota cancer statistics†, 2004-2006, Kaposi Sarcoma (all sites)

	Males	Females
Median Age at Diagnosis	44.0	81.0
Median Age at Death	47.0	95.0
Lifetime Risk of Diagnosis	< 0.0%	< 0.0%
Lifetime Risk of Death	< 0.0%	< 0.0%
Annual Percent Change‡		
Incidence (1991-2006 males)	**-12.6%**	~
Mortality (1988-2006)	~	~

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-10.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Kaposi Sarcoma (all sites)

	Males	Females
Incidence		
All Races	1.2	0.1
Non-Hispanic White	0.9	0.1
Mortality		
All Races	~	~
Non-Hispanic White	~	~

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

~ Data not available

Table III-10.6: Five-year relative survival‡ by gender and age at diagnosis, Kaposi Sarcoma (all sites)

Age at Diagnosis (years)	Males (%)	Females (%)
< 45	56.8	38.3
45-54	58.9	-
55-64	72.7	-
65-74	82.9	71.0
75+	89.2	76.5
All Ages	59.6	62.0

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

-Data not available.

Descriptive Epidemiology

Incidence and Mortality: Kaposi sarcoma (KS) is a cancer of the connective tissue that typically causes raised, dark lesions on the skin. When these become widespread and affect other organs, the disease can be fatal. KS used to be extremely rare, primarily occurring in elderly men of Jewish or Italian descent or in persons taking immunosuppressive medications. However, infection with the human immunodeficiency virus (HIV) greatly increases the risk of developing KS, and in fact, the unusual development of KS among young men was one of the first signs of the AIDS epidemic. Over the most recent 5-year period, 2002-2006, an average of 12 cases of KS were diagnosed in Minnesota each year. Deaths from KS cannot be readily assessed because those associated with AIDS are likely to have AIDS listed as the underlying cause of death rather than KS. Incidence rates among non-Hispanic white males in Minnesota are two-thirds lower than reported by SEER.

Trends: The incidence of KS has been dramatically affected by the AIDS epidemic. In the SEER 9 areas, incidence rates increased more than 20-fold from 0.4 new cases per 100,000 men per year in 1975-1979 to 12.6 in 1990-1991, and then decreased to 1.2 in 2004-2006. Decreases in incidence are thought to be due to the introduction of medications that better protect the immune system once HIV infection has occurred. KS incidence rates in Minnesota have followed a somewhat similar pattern with a statistically significant decrease of 12.6 percent per year among males from 1991-2006.

Age: About 75 percent of men diagnosed with KS in Minnesota are between 20 and 49 years of age.

Gender: In Minnesota, 5 times more cases of KS were diagnosed among males than among females.

Race: Based on a fairly limited number of cases, it appears that KS incidence rates in Minnesota are considerably higher among black males than non-Hispanic white males. This is similar to what is reported by the SEER 17 areas.

Risk Factors

Research indicates that the vast majority of KS cases are caused by infection with a virus in the herpes family, called human herpesvirus 8 (HHV-8). This virus is spread by sexual contact, as is HIV. Although as many as 10 percent of the U.S. population are infected with HHV-8, researchers believe that only those with suppressed immune systems will go on to develop KS.

Early Detection / Prevention

There is no test to identify persons with KS before the lesions develop. The best protection against KS is to avoid behaviors that increase risk for HIV infection, such as unprotected sexual intercourse and needle-sharing.

Kidney and Renal Pelvis

Table III-11.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Kidney and Renal Pelvis Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	284	160	16.2	7.3	136	65	7.9	2.8
1989	257	147	14.6	6.5	90	70	5.3	2.9
1990	289	164	15.8	7.0	116	72	6.8	2.9
1991	308	148	16.7	6.3	141	86	8.0	3.5
1992	311	200	16.7	8.6	132	98	7.4	4.0
1993	282	159	14.9	6.7	128	78	7.0	3.1
1994	336	175	17.4	7.3	114	79	6.2	3.1
1995	347	195	17.8	8.1	113	76	6.1	2.9
1996	304	161	15.2	6.6	126	87	6.6	3.2
1997	290	209	14.4	8.4	141	90	7.3	3.4
1998	323	213	15.5	8.4	102	89	5.2	3.2
1999	340	224	16.0	8.9	129	68	6.4	2.4
2000	389	237	18.0	9.2	134	103	6.5	3.7
2001	406	224	18.5	8.6	117	82	5.5	3.0
2002	428	256	19.1	9.6	147	74	6.9	2.5
2003	466	274	20.3	10.2	144	77	6.7	2.7
2004	479	269	20.1	9.8	129	91	5.8	3.1
2005	467	295	19.4	10.6	135	81	5.8	2.6
2006	534	303	21.7	10.8	158	88	6.7	2.9

Table III-11.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Kidney and Renal Pelvis Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	36	23	1.0	0.7	6	0	0.2	0.0
20 – 34	32	35	1.2	1.4	3	1	0.1	0.0
35 – 49	333	164	11.1	5.6	52	15	1.7	0.5
50 – 64	861	428	41.2	20.3	192	56	9.2	2.7
65 – 74	582	330	82.4	41.2	189	94	26.8	11.7
74 – 85	449	325	101.1	50.9	197	141	44.4	22.1
85 and older	81	92	56.0	27.2	74	104	51.1	30.7

Table III-11.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Kidney and Renal Pelvis Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,374	1,397	20.1	10.2	713	411	6.4	2.8
American Indian								
Statewide	41	27	44.5	23.0	10	4	13.3	~
CHSDA Counties	27	19	52.4	30.9	9	3	~	~
Asian/Pacific Isl.	11	7	5.0	~	4	2	~	~
Black	66	26	25.4	8.6	9	6	~	~
Non-Hispanic White	2,202	1,305	19.9	10.1	682	397	6.4	2.8
Hispanic (All Races)	29	18	15.3	10.0	8	2	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Kidney and Renal Pelvis

Table III-11.4: Other Minnesota cancer statistics†, 2004-2006, Kidney and Renal Pelvis Cancer

	Males	Females
Median Age at Diagnosis	63.0	65.0
Median Age at Death	69.0	77.0
Lifetime Risk of Diagnosis	2.1%	1.2%
Lifetime Risk of Death	0.7%	0.4%
Annual Percent Change‡		
Incidence (1998-2006 males; 1988-2006 females)	**3.8%**	**2.8%**
Mortality (1988-2006)	-0.8%	-0.8%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-11.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Kidney and Renal Pelvis Cancer

	Males	Females
Incidence		
All Races	18.6	9.5
Non-Hispanic White	19.4	9.9
Mortality		
All Races	6.0	2.7
Non-Hispanic White	6.1	2.8

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-11.6: Extent of disease at diagnosis and five-year relative survival, Kidney and Renal Pelvis Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	2.7	-
Localized	60.7	90.4
Regional	17.9	62.3
Distant	14.5	10.4
Unknown	4.2	37.5

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Approximately 750 cases of kidney and renal pelvis cancer are diagnosed each year in Minnesota, and 225 deaths result from this disease. Minnesota rates are slightly higher than those reported nationally, but the differences are not statistically significant for either incidence or mortality. The SEER 5-year relative survival rate for kidney and renal pelvis cancers is 90.4 percent for localized tumors. The rate drops to 62.3 percent for tumors diagnosed at the regional stage. More than half of all kidney and renal pelvis cancers are diagnosed while in the localized stage in Minnesota.

Trends: Incidence rates increased significantly by 3.8 percent each year from 1998 to 2006 among Minnesota men and by 2.8 percent per year from 1988-2006 among women. Mortality rates remained relatively stable for both genders. These trends are similar to those reported by the SEER Program.

Age: About 84 percent of kidney cancers are diagnosed among persons 50 years of age or older.

Gender: Rates of kidney and renal pelvis cancer are about twice as high in men as in women.

Race: Incidence rates of kidney and renal pelvis cancer in Minnesota are highest among American Indian males and females and African American males, and are considerably higher in these groups than among non-Hispanic whites of the same sex. Although this is similar to the pattern seen nationally, the increase in risk among these groups compared to non-Hispanic whites is much greater in Minnesota than seen in the SEER Program. The relatively small number of deaths from kidney and renal pelvis cancer among persons who are not non-Hispanic white in Minnesota makes race/ethnic comparisons of mortality risk difficult.

Risk Factors

Cigarette smoking is strongly related to kidney and renal pelvis cancers. Smokers have twice the risk for kidney cancer and four times the risk for renal pelvis cancer compared to nonsmokers. Obesity is also positively associated with kidney cancer, but relationships to dietary factors are not well established. Hypertension and/or the medications used to treat it may increase risk for kidney cancer, but the cause-effect relationships have not been clearly identified. Occupationally-related risks for renal pelvis cancers resemble those of bladder cancer and include exposure to certain dyes and organic solvents such as trichloroethylene. People with advanced kidney disease and with certain inherited medical conditions may be at higher risk for kidney cancer.

Early Detection / Prevention

Screening for kidney cancer is not recommended. It is often difficult for a physical examination to detect asymptomatic tumors until they are quite large. Smoking cessation is the best step in preventing cancers of the kidney and renal pelvis.

Larynx

Table III-12.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Larynx Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	154	23	8.7	1.1	33	4	1.9	0.2
1989	152	26	8.6	1.2	31	8	1.8	0.3
1990	134	38	7.3	1.7	38	12	2.3	0.5
1991	132	28	7.1	1.3	35	11	1.9	0.4
1992	137	24	7.4	1.1	30	9	1.6	0.4
1993	123	26	6.6	1.2	38	7	2.1	0.3
1994	150	38	7.8	1.7	32	13	1.8	0.5
1995	135	30	7.0	1.3	27	4	1.4	0.2
1996	122	33	6.2	1.4	33	7	1.8	0.3
1997	157	31	7.8	1.2	36	9	1.8	0.3
1998	136	31	6.7	1.3	51	8	2.6	0.3
1999	136	29	6.6	1.2	45	10	2.2	0.4
2000	116	30	5.3	1.2	27	7	1.4	0.3
2001	125	32	5.7	1.3	45	12	2.2	0.5
2002	123	35	5.5	1.4	30	9	1.4	0.3
2003	126	31	5.6	1.2	21	9	1.0	0.4
2004	136	35	5.9	1.3	37	7	1.7	0.2
2005	146	41	5.9	1.5	39	11	1.7	0.4
2006	149	34	6.2	1.2	45	8	1.8	0.3

Table III-12.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Larynx Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	0	0.0	0.0	0	0	0.0	0.0
20 – 34	2	1	0.1	0.0	0	0	0.0	0.0
35 – 49	57	24	1.9	0.8	9	3	0.3	0.1
50 – 64	254	73	12.2	3.5	61	8	2.9	0.4
65 – 74	216	40	30.6	5.0	38	19	5.4	2.4
74 – 85	126	32	28.4	5.0	51	9	11.5	1.4
85 and older	25	6	17.3	1.8	13	5	9.0	1.5

Table III-12.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Larynx Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	680	176	5.9	1.3	172	44	1.5	0.3
American Indian								
Statewide	12	4	15.5	~	4	0	~	~
CHSDA Counties	7	4	~	~	3	0	~	~
Asian/Pacific Isl.	7	0	~	~	0	0	~	~
Black	19	12	8.7	4.6	6	2	~	~
Non-Hispanic White	623	158	5.7	1.2	160	42	1.5	0.3
Hispanic (All Races)	8	2	~	~	0	0	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Larynx

Table III-12.4: Other Minnesota cancer statistics†, 2004-2006, Larynx Cancer

	Males	Females
Median Age at Diagnosis	65.0	62.5
Median Age at Death	68.0	70.0
Lifetime Risk of Diagnosis	0.6%	0.2%
Lifetime Risk of Death	0.2%	< 0.0%
Annual Percent Change‡		
Incidence (1988-2006)	**-2.1%**	-0.3%
Mortality (1988-2006)	-0.8%	-0.7%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-12.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Larynx Cancer

	Males	Females
Incidence		
All Races	6.2	1.3
Non-Hispanic White	6.4	1.4
Mortality		
All Races	2.3	0.5
Non-Hispanic White	2.1	0.5

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-12.6: Extent of disease at diagnosis and five-year relative survival, Larynx Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	8.3	-
Localized	59.6	77.9
Regional	16.6	42.1
Distant	11.8	32.4
Unknown	3.7	45.6

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: About 170 cases of laryngeal cancer are diagnosed in Minnesota each year and 43 deaths are caused by this cancer. Incidence and mortality rates in Minnesota are significantly lower by 10-30 percent than nationally. Based on SEER data, the 5-year relative survival rate for laryngeal cancer is 77.9 percent when diagnosed at an early stage. Survival decreases significantly when the cancer has progressed to involve nearby tissues or lymph nodes.

Trends: The laryngeal cancer incidence rate in Minnesota decreased significantly by 2.1 percent each year among males, but did not decrease significantly among women. Nationally, incidence of this cancer is decreasing significantly among both men and women, by 2.7 percent and 2.5 percent each year, respectively. Similarly, laryngeal cancer mortality in the U.S. as a whole is decreasing significantly by 2.3 percent each year among males and by 1.8 percent among females, compared to much lower and non-significant declines in Minnesota. This pattern echoes what is being seen for lung and bronchus cancer, also strongly related to tobacco use, where progress in Minnesota is not keeping up with the nation.

Age: Incidence rates for laryngeal cancer generally increase with age, with nearly 90 percent of cases occurring among those age 50 years and older.

Gender: Incidence and mortality rates for laryngeal cancer are more than four times higher among males than females in Minnesota.

Race: The laryngeal cancer incidence rate in American Indian men in Minnesota is more than twice as high as among non-Hispanic white men, but in general, there are too few cases among people of color in the state to assess racial disparities. Nationally, black males have the highest incidence rate, about 60 percent higher than whites, and American Indians have among the lowest.

Risk Factors

Smoking and alcohol use are the best established risk factors for laryngeal cancer, and research shows that these exposures act synergistically to increase risk. Smokers have an almost ten-fold greater risk of developing this cancer than nonsmokers, and risk increases with increased smoking. Heavy drinkers have two to five times greater risk of laryngeal cancer than nondrinkers. Occupational exposure to asbestos, nickel, and mustard gas may increase risk of laryngeal cancer. Recent studies indicate that human papilloma virus (HPV) may be associated with certain head and neck cancers, including laryngeal cancer.

Early Detection / Prevention

There are no methods to detect laryngeal cancer early in asymptomatic individuals. However, risk of developing the disease can be reduced by cessation of smoking and heavy alcohol use.

Leukemia

Table III-13.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Leukemia

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	302	259	17.1	11.2	167	154	10.2	6.4
1989	314	209	17.7	8.9	191	174	11.0	7.2
1990	336	250	18.3	10.6	212	169	12.3	6.9
1991	305	258	16.3	10.8	214	166	12.3	6.5
1992	374	246	20.2	10.1	222	171	12.7	6.7
1993	313	244	16.5	10.0	213	155	11.9	5.7
1994	390	276	20.1	11.3	211	155	11.6	6.0
1995	368	254	18.8	10.0	260	170	14.2	6.2
1996	361	267	18.4	10.3	226	191	12.1	7.2
1997	388	261	19.6	9.7	211	166	11.1	6.0
1998	366	298	17.9	11.4	192	163	10.0	5.7
1999	380	295	18.4	11.1	244	192	12.3	6.7
2000	384	269	18.2	9.9	229	185	11.7	6.6
2001	452	290	21.3	10.7	229	156	11.4	5.5
2002	409	277	18.9	10.0	227	196	11.0	6.6
2003	428	305	19.4	11.2	236	182	11.3	6.1
2004	483	326	21.4	11.7	232	168	10.8	5.8
2005	424	332	18.3	11.7	203	186	9.5	6.2
2006	481	309	20.3	10.6	236	152	10.7	5.0

Table III-13.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Leukemia

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	179	142	4.9	4.1	33	25	0.9	0.7
20 – 34	85	44	3.2	1.8	28	13	1.1	0.5
35 – 49	190	133	6.3	4..5	58	38	1.9	1.3
50 – 64	541	296	25.9	14.0	146	97	7.0	4.6
65 – 74	471	305	66.7	38.1	235	156	33.3	19.5
74 – 85	543	399	122.3	62.5	325	264	73.2	41.4
85 and older	216	230	149.3	67.9	191	194	132.0	57.3

Table III-13.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Leukemia

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,225	1,549	19.7	11.0	1,134	884	10.7	5.9
American Indian								
Statewide	22	10	26.4	8.7	8	6	~	~
CHSDA Counties	14	7	29.7	~	4	3	~	~
Asian/Pacific Isl.	29	18	11.2	4.7	14	13	8.3	4.7
Black	45	28	13.7	8.9	16	8	5.2	~
Non-Hispanic White	2,062	1,444	19.5	10.9	1,081	854	10.7	6.0
Hispanic (All Races)	19	25	7.3	9.5	11	3	8.3	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.
~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Leukemia

Table III-13.4: Other Minnesota cancer statistics†, 2004-2006, Leukemia

	Males	Females
Median Age at Diagnosis	66.0	70.0
Median Age at Death	76.0	77.0
Lifetime Risk of Diagnosis	2.1%	1.4%
Lifetime Risk of Death	1.2%	0.8%
Annual Percent Change‡		
Incidence (1988-2006)	**0.7%**	0.5%
Mortality (1988-2006)	-0.7%	**-0.9%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-13.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Leukemia

	Males	Females
Incidence		
All Races	15.8	9.5
Non-Hispanic White	16.9	9.9
Mortality		
All Races	9.8	5.5
Non-Hispanic White	10.3	5.7

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-13.6: Distribution of cancer type and five-year relative survival, Leukemia

	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
Acute lymphocytic	9.0	66.3
Chronic lymphocytic	43.6	78.8
Acute myeloid	24.5	23.4
Chronic myeloid	13.5	53.3
All other leukemia	9.4	~
Total	100.0	54.0

†Among Minnesota cases diagnosed 2002-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

~Data are not available

Descriptive Epidemiology

Incidence and Mortality: About 750 cases of leukemia are diagnosed each year in Minnesota, and 405 deaths occur annually as a result of the disease. Leukemias account for 3 percent of all new cancers and 4 percent of cancer deaths. The most common types among adults are chronic lymphocytic (CLL) and acute myeloid leukemias. Among non-Hispanic whites, the incidence rate in Minnesota is 13 percent higher than in the SEER 17 areas and the mortality rate is approximately four percent higher. Almost all of the excess is due to higher rates of CLL in Minnesota. Geographic variation in CLL is very hard to interpret, since rates are strongly affected by medical practices. About 20 percent of CLL is discovered while the person is being evaluated for another illness. Based on SEER cases of leukemia diagnosed between 1999 and 2005, the overall 5-year relative survival rate is 54.0 percent. Leukemias are a diverse group of cancers that should be considered individually based on histopathologic type. Each subtype has different etiology, treatment, and prognosis.

Trends: The leukemia incidence rate in Minnesota has increased somewhat since reporting was initiated in 1988. Small but steady and statistically significant increases in the incidence of leukemia are also seen in the SEER 9 areas once trends are adjusted for delays in reporting. Conversely, the leukemia mortality rate in Minnesota has decreased somewhat since 1988. This is also consistent with national trends, which show a statistically significant decrease in leukemia mortality from 2001 to 2006. Mortality rates among children decreased dramatically since the 1960s, primarily due to treatment advances.

Age: While leukemia is the most common childhood cancer, over 90 percent of cases occur in adults. Leukemia incidence is higher among children ages 19 and under than among persons age 20-34 years, and then increases steadily with age.

Gender: Leukemia rates are more than 80 percent higher among males than females, but this may vary according to subtype.

Race: Although based on relatively small numbers, American Indian males have the highest incidence of leukemia in Minnesota, considerably higher than among non-Hispanic whites. In the SEER 17 area non-Hispanic whites have the highest incidence rate.

Risk Factors

The causes of most of these cancers are unknown. Occupational exposures to benzene and radiation are the most established risk factors. Persons with certain chromosomal abnormalities are more likely to be diagnosed with leukemia. Cigarette smoking and ionizing radiation may be associated with leukemia. Leukemia may also occur as a side effect of cancer treatment. Certain leukemias may be caused by human T-cell lymphotropic virus type I (HTLV-I).

Early Detection / Prevention

Symptoms of leukemia often resemble those of less serious health conditions, making early detection difficult.

Liver and Bile Duct

Table III-14.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Liver and Bile Duct Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	57	32	3.1	1.4	59	44	3.5	1.9
1989	66	45	3.7	2.0	71	24	4.1	1.0
1990	73	32	4.0	1.5	86	57	4.9	2.4
1991	74	32	4.1	1.3	58	51	3.3	2.1
1992	79	45	4.3	1.9	74	52	4.1	2.1
1993	55	38	3.0	1.5	85	52	4.8	2.0
1994	71	38	3.6	1.5	87	57	4.6	2.3
1995	77	38	4.0	1.5	95	49	5.0	1.9
1996	85	42	4.2	1.6	96	52	4.9	2.0
1997	78	44	3.9	1.8	105	61	5.3	2.3
1998	82	41	3.9	1.6	85	71	4.3	2.6
1999	106	52	4.9	2.0	103	53	5.0	1.9
2000	118	51	5.5	2.0	119	64	5.8	2.3
2001	117	50	5.4	1.9	124	71	5.8	2.6
2002	130	49	5.8	1.8	136	61	6.2	2.1
2003	125	55	5.4	2.0	152	71	6.9	2.5
2004	148	51	6.2	1.8	120	91	5.2	3.2
2005	127	64	5.2	2.3	156	88	6.8	2.9
2006	188	53	7.5	1.9	152	77	6.3	2.6

Table III-14.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Liver and Bile Duct Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	17	5	0.5	0.1	8	1	0.2	0.0
20 – 34	11	6	0.4	0.2	5	3	0.2	0.1
35 – 49	68	29	2.3	1.0	62	20	2.1	0.7
50 – 64	295	71	14.1	3.4	232	66	11.1	3.1
65 – 74	164	67	23.2	8.4	168	66	23.8	12.0
74 – 85	134	64	30.2	10.0	176	124	39.6	19.4
85 and older	29	30	20.0	8.9	65	78	44.9	23.0

Table III-14.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Liver and Bile Duct Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	718	272	6.1	2.0	716	388	6.3	2.7
American Indian								
Statewide	10	7	8.6	~	11	9	13.3	~
CHSDA Counties	4	4	~	~	4	4	~	~
Asian/Pacific Isl.	47	16	22.3	7.5	54	22	29.2	10.7
Black	69	20	32.4	7.9	67	16	33.8	7.1
Non-Hispanic White	553	224	5.0	1.7	567	335	5.3	2.4
Hispanic (All Races)	34	4	18.0	~	15	6	11.1	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Liver and Bile Duct

Table III-14.4: Other Minnesota cancer statistics†, 2004-2006, Liver and Bile Duct Cancer

	Males	Females
Median Age at Diagnosis	62.0	67.0
Median Age at Death	67.0	74.0
Lifetime Risk of Diagnosis	0.7%	0.3%
Lifetime Risk of Death	0.7%	0.4%
Annual Percent Change‡		
Incidence (1988-2006)	**3.9%**	**1.6%**
Mortality (1988-2006)	**3.1%**	**2.5%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-14.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Liver and Bile Duct Cancer

	Males	Females
Incidence		
All Races	10.2	3.6
Non-Hispanic White	7.5	2.6
Mortality		
All Races	7.5	3.2
Non-Hispanic White	6.4	2.8

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-14.6: Extent of disease at diagnosis and five-year relative survival, Liver and Bile Duct Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.0	-
Localized	37.4	25.7
Regional	31.4	8.5
Distant	17.9	2.4
Unknown	13.3	5.8

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Unlike the SEER Program, MCSS does not register cancers that are diagnosed based on clinical observation only (ie., are not microscopically confirmed)(see Chapter I). Since data from the SEER Program show that about 20 percent of liver cancers are not microscopically confirmed, Minnesota incidence rates cannot be reliably compared to those reported by SEER. Mortality data, however, are comparable. On average, about 220 Minnesotans die of liver cancer each year. Liver cancer mortality rates among non-Hispanic whites are about 15 percent lower in Minnesota than in the U.S., and the difference is statistically significant The liver is a common site of metastasis for tumors originating in other tissues. Mortality rates should be interpreted with caution because cause of death can be misclassified in secondary liver cancers.

Trends: Liver cancer is one of the few anatomic sites where both the incidence and mortality rate are significantly increasing. This is seen in both Minnesota and nationally. The liver cancer mortality rate in Minnesota significantly increased since 1988 by 3.1 percent per year for males and 2.5 percent per year for females, with similar trends for incidence.

Age: Nearly 50 percent of liver cancers are diagnosed among persons age 65 years or older.

Gender: Rates of liver and bile duct cancer are roughly three times higher among males than females.

Race: Both in Minnesota and nationally, non-Hispanic whites are at the lowest risk of liver cancer, while each of the other race/ethnic groups has higher risk. The rank ordering of risk among race/ethnic groups is somewhat different in Minnesota than nationally. This may reflect relatively small numbers of cases among some race/ethnic groups in Minnesota, or differences in the risk factors for race/ethnic groups in Minnesota and nationally.

Risk Factors

Hepatitis B and C infections are the most important risk factors for liver cancer worldwide. Cirrhosis, often caused by chronic alcohol intake or infection with hepatitis B and C, increases risk. Aflatoxins produced by a fungus that contaminates wheat, peanuts, soybeans, corn, and rice are strongly associated with liver cancer. Industrial exposure to vinyl chloride or exposure to thorium dioxide (previously used in X-ray dye) increases the risk of developing liver and bile duct cancer. Studies examining drinking water contaminated with arsenic have also reported elevated risk of liver cancer.

Early Detection / Prevention

There are no screening tests for liver cancer in asymptomatic individuals. In the U.S., government agencies have worked to reduce exposure to certain chemicals and aflatoxins. Vaccination against hepatitis B is recommended, particularly in early infancy. There is currently no vaccine for hepatitis C.

Lung and Bronchus

Table III-15.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Lung and Bronchus Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	1,394	776	78.9	35.4	1,193	618	69.2	27.9
1989	1,344	779	75.4	35.3	1,182	627	68.4	27.6
1990	1,419	829	77.9	37.4	1,223	684	69.5	29.7
1991	1,346	863	73.7	38.2	1,222	708	68.6	30.5
1992	1,397	921	75.7	40.5	1,233	772	68.3	32.3
1993	1,418	882	75.2	38.1	1,244	797	68.0	33.2
1994	1,359	1,023	71.3	43.4	1,226	812	66.2	33.4
1995	1,454	953	75.3	39.8	1,228	839	65.2	34.0
1996	1,402	1,071	71.5	44.3	1,238	884	64.7	35.3
1997	1,477	1,033	75.1	42.3	1,259	859	65.0	33.9
1998	1,474	1,094	73.3	43.7	1,242	929	63.2	36.1
1999	1,496	1,150	73.2	45.4	1,293	906	64.5	34.5
2000	1,513	1,171	73.0	45.8	1,224	971	60.3	36.8
2001	1,526	1,247	72.3	48.0	1,263	996	60.8	37.2
2002	1,529	1,301	71.5	49.4	1,261	1,066	60.1	38.9
2003	1,560	1,353	71.7	50.6	1,267	1,017	59.5	36.9
2004	1,562	1,355	70.9	49.7	1,296	1,060	59.7	38.1
2005	1,596	1,325	70.4	48.4	1,272	1,009	57.6	35.7
2006	1,497	1,385	64.7	49.5	1,277	1,076	56.5	37.2

Table III-15.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Lung and Bronchus Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	5	2	0.1	0.1	1	0	0.0	0.0
20 – 34	16	20	0.6	0.8	3	9	0.1	0.4
35 – 49	365	422	12.2	14.3	241	228	8.0	7.7
50 – 64	2,141	1,869	102.5	88.6	1,507	1,211	72.2	57.4
65 – 74	2,527	2,158	357.9	269.3	1,923	1,513	272.4	188.8
74 – 85	2,246	1,834	505.8	287.3	2,076	1,642	467.5	257.2
85 and older	444	414	306.9	122.3	622	625	429.9	184.6

Table III-15.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Lung and Bronchus Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	7,744	6,719	69.8	49.5	6,373	5,228	58.7	37.4
American Indian								
Statewide	91	93	135.1	98.3	66	69	101.6	82.6
CHSDA Counties	66	72	169.3	139.7	45	55	115.8	113.6
Asian/Pacific Isl.	54	49	33.2	24.0	43	26	29.9	14.4
Black	178	127	96.1	56.6	131	95	75.9	43.5
Non-Hispanic White	7,350	6,374	69.4	49.2	6,105	5,019	58.7	37.4
Hispanic (All Races)	36	44	30.9	35.4	27	15	24.8	13.7

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Lung and Bronchus

Table III-15.4: Other Minnesota cancer statistics†, 2004-2006, Lung and Bronchus Cancer

	Males	Females
Median Age at Diagnosis	70.0	70.0
Median Age at Death	72.0	72.0
Lifetime Risk of Diagnosis	7.5%	6.0%
Lifetime Risk of Death	6.7%	5.0%
Annual Percent Change‡		
Incidence (1988-2006)	**-0.6%**	**2.0%**
Mortality (1988-2006 males; 1994-2006 females)	**-1.1%**	**0.9%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-15.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Lung and Bronchus Cancer

	Males	Females
Incidence		
All Races	77.7	52.5
Non-Hispanic White	82.2	59.0
Mortality		
All Races	70.5	40.9
Non-Hispanic White	72.9	44.2

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-15.6: Extent of disease at diagnosis and five-year relative survival, Lung and Bronchus Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.1	-
Localized	18.6	52.7
Regional	24.3	23.7
Distant	51.9	3.5
Unknown	5.1	8.5

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Lung and bronchus cancer is the second most commonly diagnosed cancer among men and among women, and is the leading cause of cancer death for each gender. It accounts for 12 percent of cancers and 26 percent of cancer deaths in Minnesota. Over the five-year period 2002-2006, an average of 2,893 Minnesotans were diagnosed with lung and bronchus cancer each year, and 2,320 deaths occurred annually. Mortality rates among non-Hispanic whites in Minnesota are 20 percent lower than national rates for men, and 15 percent lower for women. Based on SEER data, the 5-year relative survival rate for lung and bronchus cancer is 52.7 percent for localized tumors, 23.7 percent for regional tumors, and 3.5 percent for distant tumors. Most cases (51.9% in Minnesota) are diagnosed at the distant stage.

Trends: Lung cancer trends are markedly different for men and women. Lung cancer mortality rates in Minnesota have been decreasing significantly since 1988 among males, but continue to increase significantly among women. The increase in the mortality rate for women began in slow down in 1994, but is still increasing significantly by 0.9 percent each year. Among white women in the U.S. as a whole, female lung cancer mortality decreased significantly by 0.6 percent per year from 2002 to 2006.

Age: The incidence rate for lung and bronchus cancer increases with age. About 90 percent of cases are diagnosed between 50 and 85 years of age.

Gender: Lung and bronchus cancer mortality rates are about 60 percent higher among men than women.

Race: In Minnesota, American Indian males and females and black males have the highest incidence and mortality rates of lung and bronchus cancer, while Asian/Pacific Islander men and women have the lowest. Nationally, incidence rates are lowest among Hispanics and Asian/Pacific Islanders and highest in blacks.

Risk Factors

Smoking is the leading cause of lung and bronchus cancer worldwide, accounting for 80 to 90 percent of all lung cancers. Radon, an invisible, odorless gas has been recognized by the National Academy of Sciences as the second leading cause of lung cancer in the U.S. Passive smoking also contributes to development of the disease among nonsmokers. Occupational exposure to asbestos, arsenic, chromium, and metal dust, and environmental exposures to air pollution also increase risk of lung and bronchus cancer.

Early Detection / Prevention

Smoking cessation is the best way to prevent lung and bronchus cancer. An estimated 35 percent of homes in Minnesota have elevated levels of radon. Homeowners are encouraged to test their homes for radon. If it is present, a qualified contractor can usually mitigate the problem. For more information, contact the MDH Indoor Air Unit at (651) 201-4601 (or toll free at 1-800-798-9050). Screening for lung and bronchus cancer has not yet been proven to improve survival, even among smokers.

Melanoma of the Skin

Table III-16.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Melanoma of the Skin

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	259	254	14.3	11.7	49	52	2.8	2.4
1989	250	251	13.4	11.6	61	42	3.6	1.9
1990	261	253	14.0	11.1	51	45	2.8	2.1
1991	225	237	11.7	10.7	62	32	3.5	1.4
1992	292	232	14.8	9.9	54	43	3.0	1.9
1993	330	274	16.8	11.8	59	44	3.1	1.8
1994	302	269	15.4	11.4	58	36	3.0	1.5
1995	352	297	17.5	12.3	72	38	3.7	1.5
1996	413	276	19.7	11.3	80	36	4.1	1.4
1997	395	345	18.9	14.1	69	43	3.6	1.6
1998	355	360	16.7	14.6	72	56	3.6	2.1
1999	427	388	19.5	15.5	67	52	3.2	1.9
2000	475	402	21.5	15.8	71	48	3.3	1.8
2001	477	448	21.2	17.3	75	45	3.6	1.7
2002	449	397	19.6	15.3	79	34	3.7	1.3
2003	466	439	20.2	16.6	62	45	2.7	1.6
2004	527	443	22.4	16.6	72	60	3.3	2.2
2005	525	475	21.9	17.7	62	44	2.7	1.5
2006	633	518	26.2	19.2	83	44	3.5	1.5

Table III-16.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Melanoma of the Skin

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	12	29	0.3	0.8	3	0	0.1	0.0
20 – 34	113	321	4.3	12.8	10	14	0.4	0.6
35 – 49	484	706	16.1	24.0	41	32	1.4	1.1
50 – 64	849	578	40.7	27.4	102	61	4.9	2.9
65 – 74	498	267	70.5	33.3	79	42	11.2	5.2
74 – 85	483	262	108.8	41.0	76	47	17.1	7.4
85 and older	161	109	111.3	32.2	47	31	32.5	9.2

Table III-16.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Melanoma of the Skin

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,600	2,272	22.1	17.1	358	227	3.2	1.6
American Indian								
Statewide	2	3	~	~	0	0	~	~
CHSDA Counties	2	1	~	~	0	0	~	~
Asian/Pacific Isl.	6	10	~	3.6	1	1	~	~
Black	2	3	~	~	2	1	~	~
Non-Hispanic White	2,537	2,191	23.0	18.1	354	222	3.3	1.7
Hispanic (All Races)	1	10	~	4.9	0	3	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Melanoma of the Skin

Table III-16.4: Other Minnesota cancer statistics†, 2004-2006, Melanoma of the Skin

	Males	Females
Median Age at Diagnosis	62.0	51.0
Median Age at Death	68.0	66.0
Lifetime Risk of Diagnosis	2.2%	1.6%
Lifetime Risk of Death	0.3%	0.2%
Annual Percent Change‡		
Incidence (1988-2006)	**3.4%**	**3.4%**
Mortality (1988-2006)	< 0.0%	-0.9%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-16.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Melanoma of the Skin

	Males	Females
Incidence		
All Races	25.0	15.8
Non-Hispanic White	33.2	22.0
Mortality		
All Races	3.9	1.7
Non-Hispanic White	4.8	2.1

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-16.6: Extent of disease at diagnosis and five-year relative survival, Melanoma of the Skin

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	39.3	-
Localized	50.8	98.1
Regional	5.4	61.9
Distant	1.7	15.3
Unknown	2.8	75.4

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, an average of 975 new cases of invasive melanoma of the skin were diagnosed each year in Minnesota, and about 120 deaths were caused by the disease annually. Invasive melanoma accounts for 4.1 percent of cancers and 1.3 percent of cancer deaths in Minnesota. Incidence and mortality rates among non-Hispanic whites are about 25 percent lower in Minnesota than nationally, and the differences are statistically significant for both males and females.

Trends: The incidence of invasive melanoma of the skin in Minnesota has been increasing significantly by 3.4 percent per year since 1988 among both men and women, while mortality rates have remained stable. Nationally, the incidence rate for melanoma increased by 2.5 percent per year from 1981-2006, while mortality rates were stable from 1990 to 2006.

Age: About 65 percent of melanomas are diagnosed among persons 50 years of age or older. Even so, melanoma is one of the most common cancers among persons ages 20-49.

Gender: The incidence rate of melanoma of the skin is 35 percent higher among men than women. However, until age 50, the incidence rate is higher for women.

Race: Melanoma of the skin is primarily a cancer of white populations. Ethnic background is a determinant of melanoma incidence among white populations.

Risk Factors

Excessive exposure to sunlight and other sources of ultraviolet radiation, including tanning beds, particularly intense intermittent exposure early in life, is the primary risk factor for melanoma. Pigmentary traits, such as fair skin and light eyes, and genetic conditions of dysplastic nevi are associated with melanoma. Individuals with a personal or family history of melanoma or who are immunosuppressed also have increased risk of developing melanomas.

Early Detection / Prevention

The most effective way to identify early melanoma is through the recognition of changes in skin growth or appearance of new growths. The American Cancer Society recommends that people ages 20 and over having periodic health exams should receive a cancer-related checkup, including a skin examination. The ABCD rule can outline warning signals of melanoma: **A**symmetry: one half of the mole does not match the other half: **B**order irregularity: mole edges are ragged or notched; **C**olor: mole pigmentation is not uniform; and, **D**iameter: diameter of the mole is greater than six millimeters (about ¼ inch). Sudden or progressive changes in the size, shape, or color of moles should be examined by a physician. The risk of developing melanoma is reduced by avoiding prolonged exposure to intense sunlight. If it isn't possible to stay in the shade, wear protective clothing, sunglasses, and sunscreen. It is especially important that parents protect their children from excess sun exposure.

Mesothelioma (all sites)

Table III-17.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Mesothelioma (all sites)

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	26	8	1.5	0.4	-	-	-	-
1989	34	8	1.9	0.3	-	-	-	-
1990	33	11	1.9	0.5	-	-	-	-
1991	39	13	2.1	0.6	-	-	-	-
1992	33	15	1.8	0.6	-	-	-	-
1993	41	14	2.2	0.6	-	-	-	-
1994	39	9	2.1	0.4	-	-	-	-
1995	47	9	2.5	0.4	-	-	-	-
1996	48	5	2.4	0.2	-	-	-	-
1997	39	17	2.0	0.7	-	-	-	-
1998	57	12	2.9	0.4	-	-	-	-
1999	57	9	2.8	0.4	51	7	2.6	0.3
2000	58	14	2.9	0.5	44	8	2.2	0.3
2001	40	7	1.9	0.3	36	6	1.7	0.2
2002	52	14	2.5	0.5	34	12	1.6	0.4
2003	52	17	2.5	0.6	53	13	2.6	0.4
2004	48	18	2.3	0.6	45	11	2.2	0.4
2005	49	16	2.2	0.5	41	15	1.9	0.4
2006	42	23	2.0	0.8	50	15	2.4	0.5

Table III-17.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Mesothelioma (all sites)

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	0	0.0	0.0	0	0	0.0	0.0
20 – 34	0	0	0.0	0.0	0	0	0.0	0.0
35 – 49	7	8	0.2	0.3	4	2	0.1	0.1
50 – 64	41	16	2.0	0.8	30	10	1.5	0.5
65 – 74	59	20	8.4	2.5	61	16	8.7	2.0
74 – 85	102	26	23.0	4.1	92	18	20.7	2.8
85 and older	34	18	23.5	5.3	36	20	24.9	5.9

Table III-17.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Mesothelioma (all sites)

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	243	88	2.3	0.6	223	66	2.1	0.3
American Indian								
Statewide	1	0	~	~	1	0	~	~
CHSDA Counties	0	0	~	~	0	0	~	~
Asian/Pacific Isl.	0	0	~	~	0	0	~	~
Black	3	1	~	~	0	0	~	~
Non-Hispanic White	239	87	2.4	0.6	222	66	2.2	0.5
Hispanic (All Races)	0	0	~	~	~	~	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

- Data not available. Mesothelioma did not have a unique cause of death code until 1999.

Mesothelioma (all sites)

Table III-17.4: Other Minnesota cancer statistics†, 2004-2006, Mesothelioma (all sites)

	Males	Females
Median Age at Diagnosis	77.0	76.0
Median Age at Death	77.0	78.0
Lifetime Risk of Diagnosis	0.3%	0.1%
Lifetime Risk of Death	0.3%	0.1%
Annual Percent Change‡		
Incidence (1999-2006 males; 1988-2006 females)	-3.7%	1.9%
Mortality (1999-2006)	-0.2%	**10.2%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-17.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Mesothelioma (all sites)

	Males	Females
Incidence		
All Races	2.0	0.4
Non-Hispanic White	2.2	0.5
Mortality		
All Races	~	~
Non-Hispanic White	~	~

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

~ Data not available

Table III-19.6: Five-year relative survival‡ by gender and age at diagnosis, Mesothelioma

Age at Diagnosis (years)	Males (%)	Females (%)
< 45	36.8	43.7
45-54	10.7	24.9
55-64	7.0	17.5
65-74	5.9	4.5
75+	2.4	4.2
All Ages	5.6	14.3

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Mesothelioma is a cancer of the lining of the chest and abdominal cavity. About 65 Minnesotans are diagnosed with mesothelioma each year. The average survival time after diagnosis with mesothelioma is about one year. Mesothelioma incidence rates in Minnesota are somewhat higher than those reported by SEER, but the differences are not statistically significant.

Trends: The incidence of mesothelioma among males increased significantly in Minnesota by an average of 4.5 percent per year from 1988 to 1999, and then began to decrease. Although the decline is not yet statistically significant, it appears that rates for this cancer may have peaked. In the SEER 9 area, mesothelioma incidence rates among males peaked in 1992. Because the delay between exposure to asbestos and development of mesothelioma is 30-50 years, it is likely that increasing rates reflected exposures that occurred before the hazards of asbestos were well known. Incidence rates among women in Minnesota have been stable. Although mesothelioma mortality among Minnesota women showed a statistically significant increase from 1999 to 2006, it is likely that this reflects random variation in small numbers.

Age: About 75 percent of mesotheliomas diagnosed in Minnesota are among persons age 65 years and older. This reflects both the long delay between exposure and diagnosis, and the fact that asbestos use in the U.S. has dropped by 98 percent since the early 1970s.

Gender: Mesothelioma is about four times more common among men than women, reflecting that most exposures to asbestos occurred occupationally in jobs primarily held by men.

Race: National data indicate that mesothelioma incidence is highest among non-Hispanic whites.

Risk Factors

Mesothelioma is thought to be caused almost exclusively by inhalation of asbestos fibers, which can damage mesothelial tissues. Asbestos was widely used in manufacturing during and following World War II. Occupations which may have involved exposure to asbestos include mining, ship building, and railroad, factory, and construction work. Family members of people working with asbestos are also at increased risk because fibers may be brought into the home on work clothes. Persons exposed to asbestos are also at greater risk of developing lung cancer. The combination of exposure to asbestos and smoking is associated with a 50-90 fold increase in the risk of lung cancer. More asbestos information can be found on the Minnesota Department of Health web site (http://www.health.state.mn.us/divs/eh/asbestos) and on fact sheets developed by the National Cancer Institute (http://cis.nci.nih.gov).

Early Detection / Prevention

There are no effective screening tests for mesothelioma in the general population.

Multiple Myeloma

Table III-18.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Multiple Myeloma

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	135	89	7.9	3.7	77	72	4.6	3.0
1989	112	84	6.5	3.5	74	70	4.4	2.9
1990	105	85	6.1	3.6	99	80	6.2	3.3
1991	126	103	7.0	4.4	98	72	5.8	2.9
1992	136	103	7.7	4.2	119	85	6.8	3.4
1993	122	114	6.6	4.6	89	92	4.9	3.5
1994	112	96	6.2	3.8	111	89	6.4	3.2
1995	109	91	5.8	3.7	86	90	4.7	3.5
1996	132	96	7.0	3.9	91	96	5.0	3.6
1997	122	130	6.3	5.1	107	77	5.7	2.9
1998	125	103	6.2	4.0	73	96	4.0	3.6
1999	128	100	6.2	3.8	86	91	4.5	3.2
2000	118	98	5.8	3.7	113	85	5.7	2.9
2001	148	124	7.1	4.6	89	88	4.4	3.2
2002	133	113	6.2	4.1	110	85	5.4	2.9
2003	173	111	7.8	4.1	104	89	5.0	3.1
2004	158	120	7.1	4.4	102	85	4.7	2.8
2005	164	123	7.2	4.3	108	88	4.9	3.0
2006	175	124	7.4	4.2	112	100	5.0	3.3

Table III-18.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Multiple Myeloma

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	0	0.0	0.0	0	0	0.0	0.0
20 – 34	7	2	0.3	0.1	0	0	0.0	0.0
35 – 49	68	38	2.3	1.3	16	9	0.5	0.3
50 – 64	232	157	11.1	7.4	117	72	5.6	3.4
65 – 74	228	161	32.3	20.1	132	104	18.7	13.0
74 – 85	216	168	48.6	26.3	195	167	43.9	26.2
85 and older	52	65	35.9	19.2	76	95	52.5	28.1

Table III-18.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Multiple Myeloma

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	803	591	7.1	4.2	536	447	5.0	3.0
American Indian								
Statewide	4	8	~	~	5	5	~	~
CHSDA Counties	3	5	~	~	3	3	~	~
Asian/Pacific Isl.	4	8	~	~	2	4	~	~
Black	34	24	18.5	10.5	15	12	8.4	6.9
Non-Hispanic White	743	534	6.9	4.0	510	422	5.0	3.0
Hispanic (All Races)	7	8	~	~	4	2	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Multiple Myeloma

Table III-18.4: Other Minnesota cancer statistics†, 2004-2006, Multiple Myeloma

	Males	Females
Median Age at Diagnosis	69.0	72.0
Median Age at Death	75.0	77.0
Lifetime Risk of Diagnosis	0.8%	0.6%
Lifetime Risk of Death	0.6%	0.5%
Annual Percent Change‡		
Incidence (1988-2006)	0.2%	0.6%
Mortality (1988-2006)	-0.8%	-0.2%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-18.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Multiple Myeloma

	Males	Females
Incidence		
All Races	7.1	4.6
Non-Hispanic White	6.6	4.0
Mortality		
All Races	4.5	3.0
Non-Hispanic White	4.3	2.7

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-18.6: Five-year relative survival‡ by gender and age at diagnosis, Multiple Myeloma

Age at Diagnosis (years)	Males (%)	Females (%)
< 45	61.3	58.6
45-54	52.2	53.3
55-64	45.1	43.5
65-74	32.6	35.0
75+	20.3	20.3
All Ages	38.3	35.7

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Multiple myeloma is a malignancy of the plasma cells, a component of the immune system, which can lead to the formation of multiple tumors in the bone marrow. Over the five-year period 2002-2006, about 280 cases of multiple myeloma were diagnosed in Minnesota each year, and 195 deaths were caused by this cancer annually. Incidence rates in Minnesota are similar to those reported nationally, but mortality is significantly higher by 13 percent for both sexes combined. Based on SEER data for multiple myeloma cases diagnosed between 1999 and 2005, the overall 5-year relative survival rate was 38.3 percent for males and 35.7 percent for females.

Trends: Incidence and mortality rates of multiple myeloma have been stable in Minnesota since cancer reporting was initiated in 1988. Long-term trends reported by SEER show a steady and statistically significant increase in myeloma incidence since 1975, but a significant decrease in mortality starting in the mid-1990s for males, and in 2001 for females. Decreasing mortality may reflect recent improvements in treatment for this cancer.

Age: Multiple myeloma incidence rates increase dramatically with age, with less than ten percent of cases occurring among those less than 50 years of age. The median age at diagnosis is about 70 years.

Gender: Rates of multiple myeloma are about 70 percent higher among males than females.

Race: Both in Minnesota and nationally, blacks are at the greatest risk for multiple myeloma, with rates than are roughly twice those of each of the other race/ethnic groups.

Risk Factors

Very little is known about the etiology of this cancer. Approximately 20 percent of individuals with monoclonal gammopathy of unknown significance or extramedullary plasmacytoma will go on to develop multiple myeloma. Certain autoimmune conditions and chronic immune system stimulation may increase risk of multiple myeloma. Specific viruses, particularly those that cause immunosuppression, may play a role in myeloma risk. Exposure to ionizing radiation and various occupational exposures have been linked with this cancer, but are likely to account for only a small percentage of cases.

Early Detection / Prevention

There are currently no proven screening methods for detecting multiple myeloma in asymptomatic individuals. The manifestations of multiple myeloma are variable and can be very difficult to diagnose. There are often no symptoms in the early stages of the disease. However, some common early symptoms of multiple myeloma include bone pain, anemia, kidney failure, and increased susceptibility to infection.

Non-Hodgkin Lymphoma

Table III-19.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Non-Hodgkin Lymphoma

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	401	346	23.0	15.0	174	183	10.3	7.4
1989	387	363	21.7	15.6	177	179	10.5	7.2
1990	387	370	21.4	15.9	179	163	10.7	6.5
1991	441	376	23.8	15.7	187	189	10.7	7.4
1992	429	389	23.3	15.8	192	216	10.9	8.3
1993	460	401	23.8	16.5	223	213	12.1	8.2
1994	505	418	26.0	17.2	216	210	11.8	8.1
1995	481	410	24.3	16.2	215	210	11.6	7.9
1996	494	418	24.8	16.5	232	261	12.1	9.7
1997	499	453	24.5	17.7	234	218	12.3	8.0
1998	525	457	25.9	17.6	259	204	13.3	7.3
1999	517	465	24.8	17.7	215	219	11.0	7.8
2000	523	486	24.4	18.3	243	216	12.0	7.6
2001	542	502	25.0	18.7	215	214	10.5	7.3
2002	594	495	26.9	18.3	231	198	11.2	6.5
2003	582	475	25.9	17.0	209	182	9.9	6.1
2004	618	531	27.1	19.2	218	185	10.2	6.2
2005	610	476	26.1	16.8	193	173	8.7	5.6
2006	607	496	26.0	17.1	215	154	9.7	4.9

Table III-19.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Non-Hodgkin Lymphoma

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	51	24	1.4	0.7	4	1	0.1	0.1
20 – 34	84	68	3.2	2.7	16	8	0.6	0.3
35 – 49	392	277	13.1	9.4	62	37	2.1	1.3
50 – 64	851	575	40.7	27.3	211	96	10.1	4.6
65 – 74	668	570	94.6	71.1	234	163	33.1	20.3
74 – 85	719	678	161.9	106.2	364	333	82.0	52.2
85 and older	246	281	170.0	83.0	175	254	121.0	75.0

Table III-19.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Non-Hodgkin Lymphoma

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	3,011	2,473	26.4	17.7	1,066	892	9.9	6.7
American Indian								
Statewide	16	15	18.3	15.1	7	3	~	~
CHSDA Counties	6	6	~	~	4	1	~	~
Asian/Pacific Isl.	23	36	9.4	14.1	5	10	~	5.9
Black	53	38	18.9	12.9	17	9	8.7	~
Non-Hispanic White	2,853	2,306	26.5	17.4	1,029	864	10.0	5.9
Hispanic (All Races)	27	35	15.8	27.8	8	4	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Non-Hodgkin Lymphoma

Table III-19.4: Other Minnesota cancer statistics†, 2004-2006, Non-Hodgkin Lymphoma

	Males	Females
Median Age at Diagnosis	67.0	69.0
Median Age at Death	75.0	80.0
Lifetime Risk of Diagnosis	2.8%	2.2%
Lifetime Risk of Death	1.1%	0.9%
Annual Percent Change‡		
Incidence (1988-2006 males; 2001-2006 females)	**0.9%**	-1.4%
Mortality (1998-2006.00 males; 1996-2006 females)	**-4.0%**	**-4.9%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-19.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Non-Hodgkin Lymphoma

	Males	Females
Incidence		
All Races	23.5	16.4
Non-Hispanic White	25.2	17.5
Mortality		
All Races	9.0	5.7
Non-Hispanic White	9.5	6.0

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-19.6: Five-year relative survival‡ by gender and age at diagnosis, Non-Hodgkin Lymphoma

Age at Diagnosis (years)	Males (%)	Females (%)
< 45	71.0	80.4
45-54	71.4	80.9
55-64	68.2	76.4
65-74	61.1	67.9
75+	51.1	52.4
All Ages	65.2	69.4

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Lymphomas are malignancies of the white blood cells, also called lymphocytes, and are of two types: Hodgkin lymphoma and non-Hodgkin lymphoma (NHL). NHL is more common, accounting for over 85 percent of lymphomas. Many subtypes of NHL have been identified which vary in both the specific type of lymphocyte involved and in prognosis. Over the five-year period 2002-2006, NHL accounted for about four percent of all new cancers and cancer deaths in the state. Incidence and mortality rates in Minnesota are almost the same as those reported nationally among women, but are a statistically significant five percent higher for men.

Trends: The incidence rate for NHL in Minnesota increased significantly among men by 0.9 percent each year from 1988 to 2006. NHL incidence increased similarly among women until 2001, when it appears to have stabilized. However, mortality rates have been decreasing significantly by 4.9 percent each year for women since 1996, and by 4.0 percent each year for men since 1998. A similar pattern in mortality is seen nationally. NHL incidence rates in the geographic areas reporting to the SEER Program increased by almost 80 percent from 1975 to the mid-1990s, making it one of the fastest increasing cancers. The recent sharp decline in mortality in the face of continuing increases in incidence is thought to be due to improved treatment with monoclonal antibodies and radioimmunotherapy.

Age: The majority of NHL is diagnosed among persons ages 65 years and older. However, it is one of the most common forms of childhood cancer.

Gender: NHL rates are about 50 percent higher among men than women.

Race: Non-Hispanic white males are at greatest risk for NHL, both in Minnesota and nationally.

Risk Factors

The causes of NHL are relatively unknown, and most patients with NHL have no known risk factors. Congenital immunodeficiency, immunosuppression following organ transplantation, and certain autoimmune diseases are associated with increased risk for NHL. Similarly, persons infected with the human immunodeficiency virus, the cause of AIDS, are 60 times more likely to develop certain types of NHL. Other infectious agents have been associated with NHL in Japan, the Caribbean, and Africa, but appear to play a minor role in the U.S. *Helicobacter pylori* bacteria has been identified as causing some lymphomas of the stomach. Chemotherapy and radiation therapy for other cancers may also increase risk for NHL. Herbicides, pesticides, and nitrates in drinking water have been studied, but their causal association with NHL is still unclear.

Early Detection / Prevention

There are no established methods to detect NHL early through population-based screening.

Oral Cavity and Pharynx

Table III-20.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Oral Cavity and Pharynx Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	340	168	19.6	7.6	70	44	4.1	1.8
1989	365	169	21.0	7.5	59	38	3.3	1.7
1990	377	177	20.8	7.5	83	41	4.7	1.6
1991	359	167	19.9	7.2	69	57	3.8	2.3
1992	326	160	17.4	7.0	72	44	4.0	1.8
1993	327	143	17.6	6.0	64	43	3.5	1.8
1994	329	195	17.2	8.2	66	39	3.5	1.5
1995	348	155	17.8	6.3	66	37	3.5	1.4
1996	328	184	16.5	7.6	67	39	3.4	1.5
1997	342	147	16.8	5.8	77	50	3.8	1.9
1998	337	156	16.3	6.2	80	43	4.0	1.6
1999	347	158	16.4	6.2	60	33	3.0	1.3
2000	349	172	15.9	6.6	66	36	3.1	1.2
2001	349	175	15.7	6.5	72	45	3.4	1.6
2002	342	207	15.1	7.4	81	45	3.8	1.5
2003	329	174	14.1	6.2	82	42	3.6	1.4
2004	363	205	15.2	7.5	70	42	3.2	1.4
2005	370	206	15.1	7.3	77	35	3.1	1.1
2006	390	213	15.8	7.3	75	44	3.1	1.5

Table III-20.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Oral Cavity and Pharynx Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	4	10	0.1	0.3	1	0	0.0	0.0
20 – 34	44	33	1.7	1.3	4	0	0.2	0.0
35 – 49	274	146	9.1	5.0	35	11	1.2	0.4
50 – 64	705	287	33.8	13.6	130	41	6.2	1.9
65 – 74	375	202	53.1	25.2	91	57	12.9	7.1
74 – 85	303	198	68.2	31.0	79	45	17.8	7.0
85 and older	89	129	61.5	38.1	45	54	31.1	16.0

Table III-20.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Oral Cavity and Pharynx Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	1,794	1,005	15.1	7.1	385	208	3.4	1.4
American Indian								
Statewide	19	9	20.5	~	4	1	~	~
CHSDA Counties	12	4	26.1	~	2	1	~	~
Asian/Pacific Isl.	37	27	13.2	9.9	12	1	6.1	~
Black	50	27	19.9	8.1	5	4	~	~
Non-Hispanic White	1,662	919	14.8	6.9	360	198	3.3	1.4
Hispanic (All Races)	13	11	4.1	7.4	3	4	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Oral Cavity and Pharynx

Table III-20.4: Other Minnesota cancer statistics†, 2004-2006, Oral Cavity and Pharynx Cancer

	Males	Females
Median Age at Diagnosis	61.0	65.0
Median Age at Death	66.0	72.0
Lifetime Risk of Diagnosis	1.5%	0.8%
Lifetime Risk of Death	0.4%	0.2%
Annual Percent Change‡		
Incidence (2003-2006 males; 1988-2006 females)	2.5%	-0.3%
Mortality (1988-2006)	**-1.3%**	**-1.9%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-20.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Oral Cavity and Pharynx Cancer

	Males	Females
Incidence		
All Races	15.4	6.1
Non-Hispanic White	16.7	6.5
Mortality		
All Races	3.9	1.5
Non-Hispanic White	3.8	1.5

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-20.6: Extent of disease at diagnosis and five-year relative survival, Oral Cavity and Pharynx Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	4.0	-
Localized	39.6	82.7
Regional	37.6	54.3
Distant	11.8	31.8
Unknown	7.0	53.4

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, an average of 560 cases of oral cavity and pharynx cancer were diagnosed each year in Minnesota, and 120 people died from this cancer annually. It accounts for 2.3 percent of all cancers and 1.3 percent of cancer deaths in the state. The incidence rate of oral cavity and pharynx cancer in Minnesota is significantly lower than those reported by SEER among males, but not females. The mortality rate in Minnesota is significantly lower than the U.S. rate. Based on SEER data, the 5-year relative survival rate for oral cavity and pharynx cancer is 82.7 percent for localized tumors. In Minnesota, about 40 percent of these cancers are diagnosed when still localized.

Trends: The incidence rate of oral cavity and pharynx cancer in Minnesota has been stable among women; among males, the rate declined significantly from 1988 to 2003, and then increased slightly. Mortality rates decreased significantly among both males and females each year from 1988 to 2006 (1.3 percent per year for males and 1.9 percent for females). These are similar to national trends.

Age: Less than 20 percent of cases of oral cavity and pharynx cancer are diagnosed among those less than 50 years of age. Incidence rates steadily increase with age.

Gender: Rates of oral cavity and pharynx cancer are two times higher among males than females.

Race: Among Minnesota males, American Indians have the highest incidence rates of cancer of the oral cavity and pharynx, followed by blacks, non-Hispanic whites and Asian/Pacific Islanders. Rates among American Indians living in CHSDA counties in Minnesota are nearly three times higher than among American Indians in the geographic areas covered by SEER. This may reflect different levels of tobacco use among Northern Plains Indians compared to those in the Southwest U.S., where the majority of American Indians reported by SEER are located.

Risk Factors

Tobacco use and heavy alcohol consumption are the most important risk factors for development of oral cavity and pharynx cancer, accounting for nearly 75 percent of cases in the U.S. Human papillomaviruses (HPV) may be an etiologic factor for certain types of oral cancer. Diets low in fruits and vegetables are also associated with increased risk of disease.

Early Detection / Prevention

Most cases of oral cavity and pharynx cancer are preventable. The single most effective measure to lowering risk of developing this cancer is to reduce exposure to tobacco and alcohol.

Ovary

Table III-21.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Ovary Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	-	345	-	16.0	-	238	-	10.5
1989	-	354	-	16.3	-	239	-	10.3
1990	-	328	-	15.0	-	198	-	8.7
1991	-	356	-	15.9	-	240	-	9.9
1992	-	352	-	15.4	-	230	-	9.7
1993	-	346	-	15.1	-	221	-	9.1
1994	-	377	-	16.4	-	237	-	9.6
1995	-	389	-	16.6	-	217	-	8.8
1996	-	346	-	14.6	-	252	-	10.0
1997	-	322	-	13.1	-	218	-	8.4
1998	-	338	-	13.6	-	252	-	9.4
1999	-	358	-	14.2	-	225	-	8.6
2000	-	325	-	12.6	-	240	-	8.8
2001	-	364	-	14.0	-	249	-	9.1
2002	-	350	-	13.3	-	237	-	8.7
2003	-	360	-	13.2	-	253	-	9.0
2004	-	355	-	12.7	-	252	-	8.8
2005	-	364	-	13.2	-	261	-	8.9
2006	-	344	-	12.1	-	247	-	8.3

Table III-21.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Ovary Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	-	23	-	0.7	-	0	-	0.0
20 – 34	-	60	-	2.4	-	8	-	0.3
35 – 49	-	280	-	9.5	-	81	-	2.8
50 – 64	-	621	-	29.5	-	325	-	15.4
65 – 74	-	337	-	42.1	-	315	-	39.3
74 – 85	-	319	-	50.0	-	326	-	51.1
85 and older	-	133	-	39.3	-	195	-	57.6

Table III-21.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Ovary Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	-	1,773	-	12.9	-	1,250	-	8.7
American Indian								
Statewide	-	11	-	12.5	-	5	-	~
CHSDA Counties	-	7	-	~	-	4	-	~
Asian/Pacific Isl.	-	15	-	4.4	-	5	-	~
Black	-	25	-	8.1	-	15	-	7.2
Non-Hispanic White	-	1,685	-	13.0	-	1,217	-	8.9
Hispanic (All Races)	-	16	-	8.6	-	6	-	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS. Cases with borderline malignancy or histologies 8442, 8451, 8462, 8472, and 8373 were excluded.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.
~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Ovary

Table III-21.4: Other Minnesota cancer statistics†, 2004-2006, Ovary Cancer

	Males	Females
Median Age at Diagnosis	-	61.0
Median Age at Death	-	71.0
Lifetime Risk of Diagnosis	-	1.4%
Lifetime Risk of Death	-	1.2%
Annual Percent Change‡		
Incidence (1988-2006)	-	**-1.5%**
Mortality (1988-2006)	-	**-0.8%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-21.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Ovary Cancer

	Males	Females
Incidence		
All Races	-	13.1
Non-Hispanic White	-	14.1
Mortality		
All Races	-	8.8
Non-Hispanic White	-	9.3

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-21.6: Extent of disease at diagnosis and five-year relative survival, Ovary Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.7	-
Localized	15.9	93.8
Regional	22.7	72.8
Distant	54.8	28.2
Unknown	6.0	27.3

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Ovarian cancer accounts for 3.1 percent of cancers and 5.6 percent of cancer deaths among Minnesota women. Over the five-year period 2002-2006, an average of 355 cases were diagnosed each year, and 250 deaths occurred annually. Among non-Hispanic white women, the incidence rate was a statistically significant eight percent lower in Minnesota than in the SEER 17 area, and mortality was five percent lower in Minnesota than in the U.S., but the difference was not statistically significant. Based on SEER cases diagnosed in 1999-2005, the 5-year relative survival rate is 93.8 percent for localized tumors and 72.8 percent for regional tumors. However, more than half of ovarian cancers are diagnosed when the tumor has already spread to other organs, when 5-year survival is lower (28.2%).

Trends: Since cancer reporting was initiated in Minnesota in 1988, ovarian cancer incidence and mortality rates have declined significantly by 1.5 percent per year and 0.8 percent per year, respectively. This is consistent with national trends.

Age: The majority of ovarian cancers develop after menopause. About 80 percent of cases in Minnesota are diagnosed in women age 50 years or older.

Race: In Minnesota, ovarian cancer incidence rates are highest among non-Hispanic white women and are between 25 and 50 percent lower among women in each of the other race/ethnic groups. Too few deaths from ovarian cancer occurred among women of color in Minnesota to calculate reliable mortality rates. Based on mortality rates in the U.S., non-Hispanic white women are the most likely to die of ovarian cancer.

Risk Factors

As with breast cancer, the risk for ovarian cancer is somewhat higher among women who begin menstruating at an early age, have no children or have their first child after the age of 30 years, or begin menopause after the age of 50 years. Infertility, use of fertility drugs, and use of unopposed estrogen replacement therapy may also increase risk for ovarian cancer, but research studies have shown conflicting results. On the other hand, long-term use of oral contraceptives reduces risk. Women who have had breast cancer or have a family history of breast or ovarian cancer are at increased risk for ovarian cancer, which may be linked to mutations in the BRCA1 or BRCA2 genes. A family history of colorectal cancer may also increase risk for ovarian cancer.

Early Detection / Prevention

Routine pelvic examination can help detect abnormalities in the size, shape, and consistency of the ovaries, and is recommended for all women age 18 years and older. However, most early stage ovarian tumors cannot be palpated. Screening is not recommended for women without strong known risk factors. Several large studies are underway to learn the best ways to find ovarian cancer in its earliest stage.

Pancreas

Table III-22.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Pancreas Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	177	156	10.2	6.8	201	221	11.9	9.1
1989	158	159	8.9	6.9	211	211	12.4	8.5
1990	153	137	8.8	5.8	200	223	11.9	8.9
1991	161	142	8.7	6.0	187	220	10.6	8.8
1992	207	172	11.2	7.2	231	236	13.0	9.2
1993	167	154	9.0	6.4	217	228	12.3	8.8
1994	173	152	9.0	6.3	242	238	13.2	9.0
1995	180	163	9.3	6.6	211	240	11.2	9.0
1996	208	181	10.7	7.1	234	233	12.4	8.7
1997	184	170	9.3	6.6	230	247	11.9	8.9
1998	209	192	10.4	7.2	261	258	13.4	9.0
1999	210	183	10.1	6.9	232	268	11.6	9.4
2000	221	232	10.6	8.6	242	270	11.9	9.4
2001	207	207	9.8	7.8	237	243	11.6	8.4
2002	208	215	9.4	8.0	257	269	12.0	9.4
2003	251	246	11.5	8.9	233	277	10.9	9.3
2004	255	219	11.3	7.6	271	239	12.5	7.9
2005	264	260	11.2	9.1	265	297	11.8	9.7
2006	266	258	11.4	8.9	263	301	11.4	9.8

Table III-22.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Pancreas Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	1	0.0	0.0	0	0	0.0	0.0
20 – 34	9	5	0.3	0.2	4	1	0.2	0.0
35 – 49	90	59	3.0	2.0	65	45	2.2	1.5
50 – 64	404	276	19.3	13.1	354	233	16.9	11.1
65 – 74	359	332	50.8	41.4	344	300	48.7	37.4
74 – 85	301	358	67.8	56.1	371	457	83.5	71.6
85 and older	81	167	56.0	49.3	151	347	104.4	102.5

Table III-22.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Pancreas Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	1,244	1,198	11.0	8.5	1,289	1,383	11.7	9.2
American Indian								
Statewide	8	11	~	11.5	9	11	~	14.0
CHSDA Counties	4	7	~	~	5	8	~	~
Asian/Pacific Isl.	16	16	11.7	8.3	9	9	~	~
Black	42	37	21.5	17.0	35	25	20.4	13.6
Non-Hispanic White	1,157	1,120	10.7	8.3	1,227	1,335	11.7	9.3
Hispanic (All Races)	15	8	9.4	~	9	2	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Pancreas

Table III-22.4: Other Minnesota cancer statistics†, 2004-2006, Pancreas Cancer

	Males	Females
Median Age at Diagnosis	68.0	73.0
Median Age at Death	72.0	78.0
Lifetime Risk of Diagnosis	1.3%	1.2%
Lifetime Risk of Death	1.4%	1.4%
Annual Percent Change‡		
Incidence (1988-2006)	**1.2%**	**2.1%**
Mortality (1988-2006)	-0.2%	0.3%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-22.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Pancreas Cancer

	Males	Females
Incidence		
All Races	13.1	10.4
Non-Hispanic White	13.3	10.2
Mortality		
All Races	12.3	9.3
Non-Hispanic White	12.4	9.2

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-22.6: Extent of disease at diagnosis and five-year relative survival, Pancreas Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.3	-
Localized	7.3	22.2
Regional	34.6	8.7
Distant	49.0	1.8
Unknown	8.8	4.9

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, about 490 cases of pancreatic cancer were diagnosed and microscopically confirmed in Minnesota each year, and about 535 Minnesotans died from this disease annually. Incidence rates in Minnesota are about 10 percent lower than those reported by SEER, most likely because clinically diagnosed cases are not included in MCSS rates. Mortality rates for this cancer are similar in Minnesota and the U.S. Pancreatic cancer is one of the most rapidly fatal cancers and generally remains asymptomatic until well advanced. Based on SEER cases diagnosed 1999-2005, the 5-year relative survival rate is 22.2 percent for localized tumors and 8.7 percent for regional tumors. Most pancreatic cancers are diagnosed at the regional (34.6%) or distant stage (49.0%).

Trends: The incidence rate of pancreatic cancer in Minnesota increased significantly each year in both males (1.2%) and females (2.1%) from 1988-2006, while mortality rates were stable. Nationally, both incidence and mortality rates have increased significantly in the past decade among non-Hispanic whites, but trends vary by race/ethnicity and geographic area.

Age: Pancreatic cancer is extremely rare in early life. Incidence rates increase sharply after age 50 years and continue to increase steadily with age. The median age at diagnosis is 68 years for men and 73 years for women in Minnesota.

Gender: Rates are about 30 percent higher among males than females.

Race: In Minnesota, pancreatic cancer incidence and mortality rates are two times higher among black men and women than among non-Hispanic whites. Nationally, blacks are about 30 percent more likely to be diagnosed or die of pancreatic cancer than non-Hispanic whites.

Risk Factors

Cigarette smoking is the most consistent risk factor for pancreatic cancer, with a two- to three-fold risk for smokers relative to nonsmokers. An estimated 20 to 30 percent of pancreas cancers are caused by smoking. Little is known about the etiology of this disease, but research has suggested that obesity, diabetes mellitus, and occupational exposures to certain chemicals and petroleum can increase risk of developing pancreatic cancer. Data suggest an increased risk for pancreas cancer associated with meat consumption, and this may in part be due to cooking and processing methods such as grilling and frying.

Early Detection / Prevention

At present, only biopsy yields a certain diagnosis. Because of the "silent" early course of the disease, the need for biopsy may become obvious only with advanced disease. Researchers are focusing on ways to diagnose pancreatic cancer before symptoms occur.

Prostate

Table III-23.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Prostate Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	2,457	-	147.1	-	586	-	38.2	-
1989	2,626	-	154.8	-	636	-	41.5	-
1990	2,973	-	173.0	-	607	-	38.6	-
1991	3,830	-	214.9	-	646	-	41.1	-
1992	4,241	-	233.9	-	611	-	37.5	-
1993	3,777	-	203.9	-	604	-	37.2	-
1994	3,211	-	170.8	-	673	-	40.9	-
1995	3,279	-	172.2	-	653	-	39.4	-
1996	3,229	-	166.6	-	681	-	39.5	-
1997	3,453	-	175.6	-	596	-	34.3	-
1998	3,424	-	172.0	-	598	-	33.9	-
1999	3,640	-	179.4	-	565	-	31.2	-
2000	4,083	-	197.7	-	598	-	32.6	-
2001	4,169	-	197.9	-	598	-	31.9	-
2002	4,210	-	194.5	-	601	-	31.3	-
2003	3,892	-	175.7	-	545	-	27.8	-
2004	4,083	-	180.4	-	558	-	27.9	-
2005	4,197	-	180.7	-	491	-	24.2	-
2006	4,546	-	191.3	-	484	-	23.3	-

Table III-23.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Prostate Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	3	-	0.1	-	0	-	0.0	-
20 – 34	3	-	0.1	-	0	-	0.0	-
35 – 49	512	-	17.1	-	7	-	0.2	-
50 – 64	7,342	-	351.5	-	178	-	8.5	-
65 – 74	7,592	-	1,075.2	-	477	-	67.6	-
74 – 85	4,520	-	1,017.9	-	1,042	-	234.6	-
85 and older	956	-	660.8	-	975	-	673.9	-

Table III-23.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Prostate Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	20,928	-	184.5	-	2,679	-	26.8	-
American Indian								
Statewide	125	-	171.7	-	9	-	~	-
CHSDA Counties	80	-	194.3	-	8	-	~	-
Asian/Pacific Isl.	86	-	57.0	-	12	-	11.9	-
Black	440	-	223.5	-	52	-	50.8	-
Non-Hispanic White	19,642	-	181.4	-	2,593	-	26.8	-
Hispanic (All Races)	117	-	103.5	-	13	-	18.2	-

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Prostate

Table III-23.4: Other Minnesota cancer statistics†, 2004-2006, Prostate Cancer

	Males	Females
Median Age at Diagnosis	68.0	-
Median Age at Death	81.0	-
Lifetime Risk of Diagnosis	20.6%	-
Lifetime Risk of Death	3.3%	-
Annual Percent Change‡		
Incidence (1995-2006)	1.1%	-
Mortality (1995-2006)	**-4.2%**	-

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-23.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Prostate Cancer

	Males	Females
Incidence		
All Races	159.3	-
Non-Hispanic White	156.1	-
Mortality		
All Races	25.6	-
Non-Hispanic White	23.7	-

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-23.6: Extent of disease at diagnosis and five-year relative survival, Prostate Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.0	-
Localized/Regional	93.8	100.0
Distant	3.3	30.2
Unknown	2.9	72.8

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Prostate cancer is the most common cancer among Minnesota men, accounting for one out of every three cancers diagnosed and 12 percent of cancer deaths among males. Based on current rates, one out of five men will be diagnosed with prostate cancer in their lifetime and 1 out of 30 will die of the disease. Prostate cancer rates are significantly higher in Minnesota than nationally. Among non-Hispanic whites, the incidence rate is 16 percent higher in Minnesota than in the SEER Program, while the mortality rate is 13 percent higher in Minnesota than in the U.S. The reason for this increased risk for prostate cancer among Minnesota men is unknown.

Trends: Incidence rates for this cancer have been strongly influenced by the PSA screening test. After its widespread introduction in the late 1980s, the prostate cancer incidence rate in the U.S. increased by an unprecedented 70 percent over a five-year period, peaking in 1992. Minnesota followed a very similar pattern during the period of PSA uptake. However, the prostate cancer incidence rate in Minnesota has continued to increase modestly from 1995 to 2006, while among white males living in the SEER 9 areas, it decreased significantly from 2001 to 2006 by an average of 3.4 percent per year. Prostate cancer mortality decreased significantly in both the U.S. and Minnesota over the last decade, and at a similar pace.

Age: About 60 percent of all newly diagnosed prostate cancers and over 90 percent of deaths occur among men age 65 years and older.

Race: Prostate cancer incidence and mortality rates are highest among black men, both in Minnesota and nationally. In Minnesota, the incidence rate for black men is about 25 percent higher than in non-Hispanic whites. The mortality rate among black men in Minnesota is nearly two times higher than among non-Hispanic white men. In the SEER 17 areas, American Indians have the lowest prostate cancer rates, about 55 percent lower than American Indians statewide in Minnesota.

Risk Factors

Men with a family history of prostate cancer are at increased risk for developing the disease. It is unknown whether this association is genetically related or due to shared behaviors. Other strong risk factors for this disease remain elusive.

Early Detection / Prevention

Prostate cancer can often be detected early by PSA screening. However, it has yet to be shown to lower the prostate cancer mortality rate. The dilemma is that the PSA test cannot distinguish between slow-growing tumors that would never become life-threatening and aggressive tumors that would become symptomatic. Treatment for prostate cancer can result in marked decrease in quality of life because of incontinence and impotence. The American Cancer Society recommends that men 50 years of age or older discuss the risks and benefits of PSA testing with their physicians before deciding whether or not to be screened.

Soft Tissues

Table III-24.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Cancer of the Soft Tissues, including Heart

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	73	57	4.0	2.6	26	26	1.5	1.0
1989	59	42	3.1	1.9	24	26	1.3	1.3
1990	68	57	3.5	2.5	33	34	1.8	1.5
1991	84	67	4.4	2.9	27	20	1.4	0.9
1992	72	48	3.7	2.0	23	36	1.4	1.5
1993	88	59	4.6	2.5	39	26	2.0	1.1
1994	77	67	3.8	2.8	26	44	1.4	1.8
1995	59	46	3.0	1.8	27	31	1.4	1.2
1996	73	61	3.5	2.5	37	41	2.0	1.6
1997	76	66	3.6	2.7	32	35	1.6	1.4
1998	73	75	3.4	2.9	35	33	1.7	1.3
1999	57	58	2.7	2.3	32	21	1.5	0.8
2000	67	72	2.9	2.8	43	42	1.9	1.5
2001	88	62	3.8	2.4	34	36	1.5	1.3
2002	94	78	4.0	3.0	31	25	1.4	0.9
2003	75	63	3.2	2.4	37	28	1.6	1.1
2004	88	73	3.8	2.7	30	30	1.3	1.0
2005	78	83	3.3	3.0	36	31	1.6	1.0
2006	91	98	3.8	3.6	36	35	1.6	1.2

Table III-24.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Cancer of the Soft Tissues, including Heart

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	54	48	1.5	1.4	8	2	0.2	0.1
20 – 34	44	35	1.7	1.4	12	10	0.5	0.4
35 – 49	71	71	2.4	2.4	22	9	0.7	0.3
50 – 64	90	83	4.3	3.9	34	42	1.6	2.0
65 – 74	71	63	10.1	7.9	30	31	4.2	3.9
74 – 85	67	66	15.1	10.3	46	29	10.4	4.5
85 and older	29	29	20.0	8.6	18	26	12.4	7.7

Table III-24.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Cancer of the Soft Tissues, including Heart

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	426	395	3.6	2.9	170	149	1.5	1.1
American Indian								
Statewide	5	3	~	~	3	1	~	~
CHSDA Counties	4	0	~	~	3	1	~	~
Asian/Pacific Isl.	13	12	3.5	3.3	1	1	~	~
Black	18	9	5.2	~	2	5	~	~
Non-Hispanic White	376	362	3.5	2.9	162	141	1.5	1.0
Hispanic (All Races)	8	5	~	~	2	1	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Soft Tissues

Table III-24.4: Other Minnesota cancer statistics†, 2004-2006, Cancer of the Soft Tissues, including Heart

	Males	Females
Median Age at Diagnosis	57.0	59.5
Median Age at Death	71.5	69.0
Lifetime Risk of Diagnosis	0.4%	0.3%
Lifetime Risk of Death	0.2%	0.2%
Annual Percent Change‡		
Incidence (1988-2006)	-0.5%	**1.5%**
Mortality (1988-2006)	-0.3%	-1.0%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-24.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Cancer of the Soft Tissues, including Heart

	Males	Females
Incidence		
All Races	3.8	2.7
Non-Hispanic White	4.0	2.7
Mortality		
All Races	1.4	1.1
Non-Hispanic White	1.5	1.1

Source: Surveillance Research Program, National Cancer Institute SEER*Stat software. Incidence – SEER 17 Regs Limited-Use, Nov 2006 Sub (2000-2004).Underlying mortality data provided by NCHS.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-24.6: Extent of disease at diagnosis and five-year relative survival, Cancer of the Soft Tissues, including Heart

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.0	-
Localized	59.5	~
Regional	21.7	~
Distant	11.9	~
Unknown	6.9	~

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

~Data not available.

Descriptive Epidemiology

Incidence and Mortality: Cancers of the soft tissues are malignant tumors that develop from mesenchymal tissues such as fat, muscle, nerve, joint, blood vessel, and deep skin tissues, and are predominantly sarcomas. About 50 percent of these tumors develop in the extremities. Soft tissue cancers are relatively uncommon. Over the five-year period 2002-2006, an average of 165 cancers of the soft tissues were diagnosed in Minnesota each year, and 65 deaths were caused by these cancers annually. The incidence and mortality rates of soft tissue sarcoma in Minnesota are similar to national rates. Most of these cancers are diagnosed while the tumors are localized (59.5%).

Trends: Incidence and mortality rates of soft issue sarcomas have been fairly stable since cancer reporting was implemented in Minnesota in 1988. The exception is incidence among females, which increased significantly by 1.5 percent per year over the 19 year period. National trends for this cancer were not reported by SEER.

Age: Incidence rates for soft tissue sarcomas increase only moderately with age. Unlike many cancers, the majority of soft tissue sarcomas are diagnosed among persons less than 65 years of age. Approximately 12 percent are diagnosed among persons less than 20 years of age, and 48 percent between the ages of 20 and 64. Rhabdomyosarcoma is the most common type of soft tissue sarcoma in children.

Gender: Rates of soft tissue sarcomas are similar between males and females until age 65 years of age, when rates are higher among males than females.

Race: There are too few cases of soft tissue sarcomas among persons of color in Minnesota to assess racial disparities. National data indicate that both incidence and mortality rates appear to be similar between whites and blacks**.**

Risk Factors

Ionizing radiation accounts for a small number, less than five percent, of soft tissue sarcomas. Research has linked occupational exposures of dioxin, phenoxyacetic acid, which is found in herbicides, and chlorophenols in wood preservatives to increased risk of disease, particularly angiosarcomas. Genetic conditions can lead to development of soft tissue sarcomas. Researchers have investigated the role of retroviruses in the development of sarcomas, particularly Kaposi's sarcoma which often occurs in AIDS patients, and found that immunosuppression increases disease risk.

Early Detection / Prevention

There are no direct measures currently available to detect soft tissue sarcomas early in development.

Stomach

Table III-25.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Stomach Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	204	121	12.0	5.0	143	100	8.7	4.1
1989	210	114	12.7	4.7	116	99	7.1	3.9
1990	176	110	10.2	4.4	120	85	7.2	3.4
1991	187	102	10.8	4.0	103	89	6.0	3.5
1992	226	125	12.9	5.0	141	82	7.9	3.1
1993	195	94	10.8	3.7	120	87	6.8	3.3
1994	205	116	11.3	4.4	130	82	7.4	3.0
1995	173	100	9.3	3.7	123	88	6.7	3.2
1996	195	98	10.2	3.6	115	77	6.3	2.8
1997	187	104	9.8	4.0	114	57	6.2	2.1
1998	189	104	9.6	3.9	91	76	4.8	2.7
1999	204	112	10.2	3.9	106	74	5.3	2.6
2000	155	118	7.7	4.3	97	73	4.9	2.5
2001	190	110	9.1	3.8	107	79	5.3	2.7
2002	182	109	8.6	3.8	95	75	4.6	2.5
2003	191	101	8.7	3.5	100	59	4.6	2.1
2004	178	107	8.0	3.7	114	81	5.3	2.6
2005	153	94	6.8	3.1	78	64	3.5	2.1
2006	172	97	7.3	3.4	85	51	3.8	1.7

Table III-25.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Stomach Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	0	1	0.0	0.0	0	1	0.0	0.0
20 – 34	9	15	0.3	0.6	4	7	0.2	0.3
35 – 49	83	46	2.8	1.6	33	27	1.1	0.9
50 – 64	230	93	11.0	4.4	106	48	5.1	2.3
65 – 74	209	94	29.6	11.7	106	55	15.0	6.9
74 – 85	239	158	53.8	24.7	141	100	31.8	15.7
85 and older	106	101	73.3	29.8	82	92	56.7	27.2

Table III-25.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Stomach Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	876	508	7.9	3.5	472	330	4.4	2.2
American Indian								
Statewide	12	12	18.2	11.9	6	6	~	~
CHSDA Counties	9	8	~	~	4	4	~	~
Asian/Pacific Isl.	32	19	16.8	9.6	13	17	7.7	9.6
Black	25	15	11.5	5.2	16	10	8.7	3.3
Non-Hispanic White	779	450	7.4	3.2	429	294	4.1	2.0
Hispanic (All Races)	18	9	15.1	~	8	3	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Stomach

Table III-25.4: Other Minnesota cancer statistics†, 2004-2006, Stomach Cancer

	Males	Females
Median Age at Diagnosis	70.0	75.0
Median Age at Death	73.0	77.0
Lifetime Risk of Diagnosis	0.8%	0.5%
Lifetime Risk of Death	0.5%	0.3%
Annual Percent Change‡		
Incidence (1988-2006)	**-2.8%**	**-1.8%**
Mortality (1988-2006)	**-3.8%**	**-3.5%**

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-25.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Stomach Cancer

	Males	Females
Incidence		
All Races	11.0	5.5
Non-Hispanic White	9.0	4.0
Mortality		
All Races	5.5	2.8
Non-Hispanic White	4.5	2.2

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-25.6: Extent of disease at diagnosis and five-year relative survival, Stomach Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	1.0	-
Localized	22.3	62.5
Regional	31.6	26.6
Distant	31.0	3.4
Unknown	14.1	16.8

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, stomach cancer accounted for 1.2 percent of all cancers diagnosed in Minnesota, and 1.8 percent of cancer deaths. Among non-Hispanic whites, the incidence of stomach cancer in Minnesota is about 20 percent lower than in the SEER 17 areas, and mortality is about 10 percent lower; both differences are statistically significant for both sexes combined. Based on SEER data, the 5-year relative survival rate for stomach cancer is 62.5 percent for localized tumors, 26.6 percent for regional tumors, and 3.4 percent for distant tumors. Most cases in Minnesota are diagnosed at the regional (31.6%) or distant (31.0%) stage.

Trends: Rates of stomach cancer in Minnesota decreased significantly by 1.8 percent to 3.8 percent each year from 1988 to 2006. This is similar to national trends. Stomach cancer was the leading cause of cancer-related deaths in the U.S. in 1930. Since then, mortality has dropped to one-fifth that rate.

Age: Rates of stomach cancer increase steadily with age. The median age at diagnosis is 70.0 years for men and 75.0 years for women.

Gender: Stomach cancer rates are about two times higher among males than females.

Race: Incidence rates of stomach cancer are highest among people of color in Minnesota. American Indians have the highest rates, somewhat higher than those among Asian/Pacific Islanders in Minnesota, and also somewhat higher than American Indians in the SEER 17 areas. Incidence among Asian/Pacific Islanders is three times that of non-Hispanic whites, and rates among blacks are about two times that of whites. Too few deaths from stomach cancer occurred among people of color occurred in Minnesota to calculate reliable mortality rates. Nationally, blacks have the highest mortality rates from stomach cancer, followed by Asian/Pacific Islanders.

Risk Factors

Several medical conditions have been linked to the development of stomach cancer. Infection with *Helicobacter pylori*, chronic active gastritis, and gastric adenomatous polyps can increase risk of disease. Individuals with a family history of stomach cancer are at greater risk of developing this cancer than those without a family history. Increased risk of stomach cancer is associated with consumption of salted, smoked, or pickled foods and diets low in fruits and vegetables. Cigarette smoking has also been shown to increase risk of stomach cancer. The sharp decline in stomach cancer since the 1940s is thought to be associated with widespread use of refrigeration and freezing to preserve foods, rather than pickling, salting, and smoking.

Early Detection / Prevention

Endoscopy is sometimes used to screen for stomach cancer. However, there is insufficient evidence to show that screening would result in a decrease in mortality from stomach cancer in a population such as the U.S., where the disease is relatively rare.

Testis

Table III-26.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Testis Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	123	-	5.2	-	10	-	0.5	-
1989	152	-	6.6	-	6	-	0.3	-
1990	115	-	4.9	-	6	-	0.3	-
1991	135	-	5.7	-	7	-	0.3	-
1992	141	-	6.0	-	5	-	0.2	-
1993	128	-	5.3	-	4	-	0.2	-
1994	151	-	6.2	-	3	-	0.1	-
1995	138	-	5.6	-	3	-	0.1	-
1996	150	-	6.1	-	6	-	0.3	-
1997	151	-	6.0	-	9	-	0.4	-
1998	156	-	6.3	-	6	-	0.3	-
1999	172	-	6.9	-	6	-	0.2	-
2000	218	-	8.7	-	7	-	0.3	-
2001	182	-	7.2	-	5	-	0.2	-
2002	181	-	7.1	-	7	-	0.3	-
2003	181	-	7.1	-	7	-	0.3	-
2004	171	-	6.7	-	5	-	0.2	-
2005	189	-	7.4	-	4	-	0.1	-
2006	145	-	5.6	-	4	-	0.2	-

Table III-26.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Testis Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	56	-	1.5	-	1	-	0.0	-
20 – 34	389	-	14.8	-	4	-	0.2	-
35 – 49	340	-	11.3	-	10	-	0.3	-
50 – 64	68	-	3.3	-	6	-	0.3	-
65 – 74	9	-	1.3	-	4	-	0.6	-
74 – 85	5	-	1.1	-	1	-	0.2	-
85 and older	0	-	0.0	-	1	-	0.7	-

Table III-26.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Testis Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	867	-	6.8	-	27	-	0.2	-
American Indian								
Statewide	8	-	~	-	1	-	~	-
CHSDA Counties	4	-	~	-	0	-	~	-
Asian/Pacific Isl.	5	-	~	-	2	-	~	-
Black	7	-	~	-	0	-	~	-
Non-Hispanic White	807	-	7.4	-	24	-	0.2	-
Hispanic (All Races)	19	-	2.5	-	0	-	~	-

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Testis

Table III-26.4: Other Minnesota cancer statistics†, 2004-2006, Testis Cancer

	Males	Females
Median Age at Diagnosis	34.0	-
Median Age at Death	50.0	-
Lifetime Risk of Diagnosis	0.4%	-
Lifetime Risk of Death	< 0.0%	-
Annual Percent Change‡		
Incidence (1988-2006)	**1.5%**	-
Mortality (1997-2006)	**-7.4%**	-

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-26.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Testis Cancer

	Males	Females
Incidence		
All Races	5.4	-
Non-Hispanic White	7.1	-
Mortality		
All Races	0.3	-
Non-Hispanic White	0.3	-

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-26.6: Extent of disease at diagnosis and five-year relative survival, Testis Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.4	-
Localized	70.2	99.2
Regional	19.7	95.9
Distant	8.9	71.0
Unknown	0.8	87.4

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, testicular cancer accounted for 1.5 percent of cancer diagnoses among Minnesota men. About 175 cases were diagnosed each year, while five deaths occurred annually as a result of testicular cancer. Incidence and mortality rates for testicular cancer among non-Hispanic whites are about the same in Minnesota as nationally. The 5-year relative survival rates reported by SEER among cases diagnosed 1999-2005 are 99.2 percent for localized tumors and 95.9 percent for regional tumors. Most cases in Minnesota are diagnosed while the tumor is localized (70.2%).

Trends: A statistically significant increase of 1.5 percent per year in the incidence of testicular cancer was observed among Minnesota men since 1988, accompanied by a significant decrease of 7.4 percent in mortality starting in 1997. Nationally, among all races, incidence increased significantly by 1.4 percent per year since the mid-1970s, while mortality decreased through the mid-1990s, and then began to level off.

Age: Testicular cancer is most commonly diagnosed between the ages of 20 and 49 years, with the median age at diagnosis being 34.0 years. About 45 percent of cancers are diagnosed among those 20 to 34 years of age.

Race: In Minnesota, too few cases occurred among men of color to assess race/ethnic differences in the risk of testicular cancer. In the U.S., non-Hispanic white men have over five times the risk of developing testicular cancer compared to blacks, more than four times the risk of Asian/Pacific Islanders and nearly two times the risk of American Indian and Hispanic men.

Risk Factors

Cryptorchidism, or undescended testicle(s), is the main risk factor for testicular cancer, accounting for about 14 percent of cases. Personal or family history of testicular cancer and exposure to exogenous hormones *in utero* has been linked to increased risk of disease. Excesses of testicular cancer have been reported among men with certain occupations, including miners, leather or utility workers, and oil and gas workers. However, studies have not yet defined specific chemicals related to risk. Several studies have examined injury and vasectomy as risk factors for testicular cancer, but have not found an increased risk associated with these exposures.

Early Detection / Prevention

Testicular cancer can be found in the early stages of development, and most cancers are found through self-examination. The American Cancer Society recommends testicular examination at routine cancer-related checkups.

Thyroid

Table III-27.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Thyroid Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	55	158	2.9	7.1	5	11	0.3	0.4
1989	60	137	3.2	6.0	4	10	0.3	0.4
1990	66	155	3.3	6.7	9	12	0.6	0.5
1991	62	145	3.0	6.2	9	13	0.5	0.5
1992	70	179	3.6	7.7	8	11	0.5	0.4
1993	69	171	3.2	7.3	8	15	0.4	0.5
1994	65	179	3.1	7.7	9	14	0.5	0.6
1995	58	181	2.7	7.7	7	11	0.4	0.4
1996	67	200	3.0	8.2	6	17	0.3	0.6
1997	87	225	3.9	9.2	13	21	0.6	0.7
1998	85	232	3.7	9.5	4	9	0.2	0.3
1999	89	233	3.9	9.5	7	19	0.4	0.7
2000	93	242	3.9	9.8	12	10	0.6	0.4
2001	87	276	3.7	10.9	12	14	0.6	0.5
2002	108	274	4.4	10.8	2	8	0.1	0.3
2003	104	315	4.3	12.2	7	20	0.3	0.7
2004	115	360	4.5	13.8	5	16	0.2	0.5
2005	126	334	5.0	12.9	10	19	0.4	0.6
2006	137	407	5.4	15.6	11	18	0.4	0.6

Table III-27.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Thyroid Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	14	37	0.4	1.1	0	0	0.0	0.0
20 – 34	75	364	2.9	14.5	0	0	0.0	0.0
35 – 49	185	633	6.2	21.5	8	4	0.3	0.1
50 – 64	182	415	8.7	19.7	8	13	0.4	0.6
65 – 74	72	122	10.2	15.2	13	20	1.8	2.5
74 – 85	53	87	11.9	13.6	6	24	1.4	3.8
85 and older	9	32	6.2	9.5	0	20	0.0	5.9

Table III-27.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Thyroid Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	590	1,690	4.7	13.0	35	81	0.3	0.5
American Indian								
Statewide	2	14	~	9.9	1	1	~	~
CHSDA Counties	0	6	~	~	0	1	~	~
Asian/Pacific Isl.	14	54	5.7	15.0	1	3	~	~
Black	12	28	2.5	6.4	0	2	~	~
Non-Hispanic White	539	1,524	4.8	13.1	32	75	0.3	0.5
Hispanic (All Races)	12	28	3.3	10.0	1	0	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Thyroid

Table III-27.4: Other Minnesota cancer statistics†, 2004-2006, Thyroid Cancer

	Males	Females
Median Age at Diagnosis	52.0	45.0
Median Age at Death	67.0	77.0
Lifetime Risk of Diagnosis	0.4%	1.2%
Lifetime Risk of Death	< 0.0%	0.1%
Annual Percent Change‡		
Incidence (1995-2006 males; 1988-2006 females)	**4.8%**	**5.0%**
Mortality (1988-2006)	-0.4%	1.4%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-27.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Thyroid Cancer

	Males	Females
Incidence		
All Races	4.9	14.2
Non-Hispanic White	5.7	15.7
Mortality		
All Races	0.5	0.5
Non-Hispanic White	0.5	0.5

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-27.6: Extent of disease at diagnosis and five-year relative survival, Thyroid Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.0	-
Localized	65.3	99.8
Regional	28.5	97.0
Distant	3.4	59.0
Unknown	2.9	89.4

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, thyroid cancer accounted for 1.9 percent of cancers in Minnesota, and 0.3 percent of cancer-related deaths. About 455 cases were diagnosed each year, and about 25 deaths occurred annually as a result of thyroid cancer. Based on SEER data, the 5-year relative survival rate for thyroid cancer is 99.8 percent for localized tumors and 97.0 percent for regional tumors. Most cases in Minnesota are diagnosed while the tumor is localized (65.3%). Among non-Hispanic whites, incidence rates in Minnesota are significantly lower than in the SEER 17 areas for both men and women, while mortality is only significantly lower among males. In general, incidence rates reflect young women with papillary or follicular carcinomas, while mortality reflects elderly persons with undifferentiated carcinomas.

Trends: Statistically significant increases in thyroid cancer incidence rates of about 5.0 percent per year were observed in both males and females in Minnesota. Despite these marked increases, mortality rates were stable. Nationally, incidence rates have also increased significantly by 6.5 percent per year from 1997-2006. U.S. mortality rates increased significantly by an average of 0.7 percent per year over the last two decades among whites, but not blacks.

Age: Thyroid cancer incidence does not increase dramatically with age. In Minnesota, 81 percent of cases were diagnosed among persons 20 to 64 years of age.

Gender: Thyroid cancer is one of the few cancers that occur more often in women than men. Until age 65, rates among women are two to three times higher than those of men in the same age category.

Race: The incidence rate of thyroid cancer in Minnesota is highest among Asian/Pacific Islander women, followed by non-Hispanic white women. Incidence rates in black women are about 60 percent lower than rates for non-Hispanic white women. There are too few deaths among people of color in Minnesota to assess racial or ethnic disparities in thyroid cancer mortality. National data show a similar race/ethnic pattern as Minnesota.

Risk Factors

The increasing incidence of thyroid cancer is felt to be at least partially explained by the increased use of thyroid ultrasound, which can identify small thyroid nodules that might otherwise have gone undetected. Radiation exposure is a proven risk factor for thyroid cancer, particularly exposure during childhood. Diets low in iodine, which is essential in thyroid gland regulation, can increase risk of developing thyroid cancer. Heritable conditions and family history of thyroid cancer also increase risk.

Early Detection / Prevention

The American Cancer Society recommends that people ages 20 and over having periodic health exams should receive a cancer-related checkup, including a thyroid examination.

Urinary Bladder

Table III-28.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2006, Urinary Bladder Cancer

Year of Diagnosis or Death	Incidence				Mortality			
	New Cases		Annual Rate		Deaths		Annual Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
1988	605	220	35.5	9.4	130	68	8.4	2.7
1989	640	224	37.6	9.3	123	51	8.0	2.0
1990	617	239	35.8	9.9	97	56	6.0	2.1
1991	731	213	42.1	8.8	110	74	6.8	2.7
1992	683	268	38.3	10.9	132	60	7.9	2.1
1993	678	235	37.3	9.2	116	40	7.1	1.4
1994	673	241	36.6	9.5	132	62	7.8	2.2
1995	683	226	36.7	8.5	113	63	6.7	2.1
1996	662	274	34.9	10.6	159	60	9.0	2.1
1997	736	231	38.3	8.7	136	84	7.7	2.8
1998	752	268	38.4	10.0	133	63	7.3	2.0
1999	757	263	38.2	9.8	129	70	6.9	2.2
2000	753	256	37.3	9.5	146	63	7.8	1.9
2001	814	271	39.4	10.0	146	51	7.4	1.6
2002	840	296	39.7	10.4	164	77	8.4	2.6
2003	826	313	38.5	11.3	149	79	7.3	2.6
2004	927	302	42.9	10.7	155	61	7.6	2.0
2005	876	296	39.9	10.1	137	59	6.6	1.8
2006	898	270	40.0	9.2	148	62	6.9	1.9

Table III-28.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2002-2006, Urinary Bladder Cancer

Age at Diagnosis or Death (years)	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	3	2	0.1	0.1	0	0	0.0	0.0
20 – 34	17	7	0.6	0.3	0	1	0.0	0.0
35 – 49	181	77	6.0	2.6	14	8	0.5	0.3
50 – 64	1000	316	47.9	15.0	90	36	4.3	1.7
65 – 74	1,309	362	185.4	45.2	174	67	24.6	8.4
74 – 85	1,366	467	307.6	73.2	269	106	60.6	16.6
85 and older	491	246	339.4	72.7	206	120	142.4	35.4

Table III-28.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2002-2006, Urinary Bladder Cancer

Race and Ethnicity†	Incidence 2002-2006				Mortality 2002-2006			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	4,367	1,477	40.2	10.3	753	338	7.3	2.2
American Indian								
Statewide	11	6	19.5	~	1	5	~	~
CHSDA Counties	8	6	~	~	0	3	~	~
Asian/Pacific Isl.	23	6	19.3	~	0	2	~	~
Black	61	22	35.2	12.2	6	7	~	~
Non-Hispanic White	4,215	1,427	40.5	10.4	742	321	7.5	2.1
Hispanic (All Races)	15	8	15.3	~	4	3	~	~

Source: MCSS (Sept 2009). Cases were microscopically confirmed or Death Certificate Only (1995+). *In situ* cancers except those of the bladder were excluded. Deaths were from the Minnesota Center for Health Statistics. All analyses were conducted by MCSS.

§ Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

† Non-Hispanic persons reported with unknown or other race are included in all races combined, but are excluded from race-specific data. Hispanic includes persons of any race. CHSDA is Contract Health Services Delivery Area, as defined by the Indian Health Services (see Appendix C). See text for comments on the accuracy of race- and ethnic-specific cancer rates.

~ Race-specific rates based on fewer than 10 cases or deaths are not presented.

Urinary Bladder

Table III-28.4: Other Minnesota cancer statistics†, 2004-2006, Urinary Bladder Cancer

	Males	Females
Median Age at Diagnosis	73.0	74.0
Median Age at Death	78.0	82.0
Lifetime Risk of Diagnosis	4.6%	1.3%
Lifetime Risk of Death	0.9%	0.3%
Annual Percent Change‡		
Incidence (1988-2006)	**0.5%**	0.5%
Mortality (1988-2006)	-0.3%	-0.7%

† See Methods section for definition of terms.

‡The average *annual percent change* in the age-adjusted rate over the time period. Statistically significant ($P < 0.05$) trends are in **bold.**

Table III-28.5: Average annual incidence and mortality rates§ in the United States, 2002-2006, Urinary Bladder Cancer

	Males	Females
Incidence		
All Races	37.1	9.3
Non-Hispanic White	42.9	10.5
Mortality		
All Races	7.5	2.2
Non-Hispanic White	8.2	2.3

Source: *SEER Cancer Statistics Review, 1975-2006*. Incidence data are from the SEER 17 regions, accounting for 26% of the US population, while mortality data are for the entire nation.

§Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Table III-28.6: Extent of disease at diagnosis and five-year relative survival, Urinary Bladder Cancer

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ/ Localized	86.8	~
In Situ	~	92.7
Localized	~	74.3
Regional	7.3	36.2
Distant	3.3	5.8
Unknown	2.7	56.0

†Among Minnesota cases diagnosed 2004-2006.

‡Among SEER 17 cases diagnosed 1999-2005 followed into 2006, from *SEER Cancer Statistics Review, 1975-2006*.

~ Data not available.

Descriptive Epidemiology

Incidence and Mortality: Over the five-year period 2002-2006, cancer of the urinary bladder accounted for 4.9 percent of newly diagnosed cancers in Minnesota and 2.4 percent of cancer deaths. Approximately 1,170 cases of urinary bladder cancer were diagnosed annually, and 220 deaths occurred each year as a result of this cancer. Among non-Hispanic whites, incidence and mortality rates in Minnesota are significantly lower among males and similar among females to those reported by SEER and for the U.S. Based on SEER data, the 5-year relative survival rate is 92.7 percent for urinary bladder cancers diagnosed in the *in situ* stage and 74.3 percent for those diagnosed at the localized stage. In Minnesota, about 86.8 percent of cases are diagnosed at these stages.

Trends: The incidence rate of bladder cancer in Minnesota has increased by 0.5 percent a year since 1988 among both men and women, while the mortality rate has been stable. In the SEER 9 areas, incidence has been stable among males for two decades, but has increased significantly among women by 0.2 percent per year since 1975. Nationally, the bladder cancer mortality rate is decreasing slowly but significantly among women. Among U.S. males, mortality decreased significantly from 1993-2003, and then stabilized.

Age: Urinary bladder cancer incidence rates increase sharply with age. About 60 percent of cancers are diagnosed among those 65 to 84 years of age.

Gender: Incidence and mortality rates of urinary bladder cancer are three to four times higher in men than women.

Race: Urinary bladder cancer rates are highest among non-Hispanic white males in Minnesota, followed by black men. There are too few cases among people of color in the state to adequately assess disparities in urinary bladder mortality. Nationally, the highest rates among men are in non-Hispanic whites, and black men and Hispanic men have similar rates, which are about half that of whites.

Risk Factors

Cigarette smoking is a strongly established risk factor for bladder cancer**.** It accounts for 50 percent of cases among men and about 25 percent among women. Occupational exposures to cyclic chemicals, such as benzene derivatives and arylamines, are known to increase risk. Diets low in fruits and/or vegetables have also been linked to this disease. Chronic bladder inflammation, personal history of bladder cancer, and certain birth defects involving the bladder increase the risk of developing urinary bladder cancer.

Early Detection / Prevention

Screening for cancer of the urinary bladder in the general population is currently not recommended because research has not shown a clear benefit. The most effective way of preventing development of urinary bladder cancer or decreasing risk of disease is not to smoke.

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Chapter IV:
Occurrence of Cancer in Minnesota Counties and Regions, 2002-2006

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Chapter IV: Cancer in Minnesota Counties and Regions, 2002 – 2006

Introduction

This chapter contains a profile of cancer incidence for 2002-2006 for each county and each region in Minnesota. A precise definition of these cancers is given in Appendix A. The profile is presented for males and females separately. The "observed" numbers of cancers are those that were first diagnosed in residents of the county during the 5-year period, 2002-2006. The "expected" number of cancers was calculated by applying the 2002-2006 age- and sex-specific incidence rates for the entire state to the estimated 5-year population of the county. Another way of stating this is that the expected number of cancers for a county is the number that would have occurred if the incidence rates for the county and the state were identical. The county/region-specific results represent nearly 5,000 different analyses. It is informative to quickly page through these data noting the large number of occasions in which fewer than five cancers were observed, and the extremely variable relationship between the observed and expected numbers. There are many combinations of observed and expected cancers that are very similar, many combinations where the observed number appears larger than expected, and many others where the expected number appears larger than the observed. This variability is inherent in cancer incidence data for areas with smaller populations.

When there were at least ten cancers of a given type, the average annual age-adjusted incidence rate is also provided. Because of the year-to-year variability in the occurrence of cancer, which is especially noticeable in smaller populations, average annual rates that appear to be different between counties may actually be statistically indistinguishable.

The purpose of these data is to provide the reader with a description of cancer occurrence in each county; to provide a quantitative indication about how many cancers, on average, would be expected to occur; and to reinforce the sense of natural variability of these data. Therefore, no statistical tests of differences between the observed and expected numbers are provided.

Table IV-1: Aitkin County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	369	357.4	246	257.2	928.0	629.6
Brain & Other Nervous System	4	4.0	0	2.8	~	~
Breast	0	0.8	77	76.6	~	197.1
Cervix Uteri	-	-	4	2.8	-	~
Colon & Rectum	34	36.1	28	29.8	85.5	71.7
Corpus & Uterus, NOS	-	-	10	17.3	-	25.6
Esophagus	4	5.9	0	1.4	~	~
Hodgkin Lymphoma	0	1.4	1	1.1	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	16	12.4	1	6.5	40.2	~
Larynx	6	3.8	1	0.8	~	~
Leukemia	4	11.8	4	7.0	~	~
Liver & Intrahepatic Bile Duct	2	3.7	2	1.3	~	~
Lung & Bronchus	53	46.9	42	34.4	133.3	107.5
Melanoma of the Skin	14	12.9	6	8.3	35.2	~
Mesothelioma (all sites)	2	1.5	0	0.4	~	~
Myeloma	7	4.6	4	3.0	~	~
Non-Hodgkin Lymphoma	21	16.1	15	11.7	52.8	38.4
Oral Cavity & Pharynx	10	9.0	4	4.6	25.2	~
Ovary	-	-	13	7.8	-	33.3
Pancreas	11	7.1	5	6.1	27.7	~
Prostate	122	125.8	-	-	306.8	-
Soft Tissues incl. Heart	3	1.9	3	1.6	~	~
Stomach	8	5.0	3	2.4	~	~
Testis	4	2.2	-	-	~	-
Thyroid	3	2.3	8	5.4	~	~
Urinary Bladder	28	26.6	5	7.4	70.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-2: Anoka County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

Cancer Site	Males		Females		Avg. Annual Rate§	
	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	3311	3178.7	2962	2856.0	414.8	377.3
Brain & Other Nervous System	48	55.5	32	39.9	6.0	4.1
Breast	4	6.7	926	922.7	~	118.0
Cervix Uteri	-	-	44	50.9	-	5.6
Colon & Rectum	315	307.3	258	269.8	39.5	32.9
Corpus & Uterus, NOS	-	-	182	197.9	-	23.2
Esophagus	67	53.7	15	12.1	8.4	1.9
Hodgkin Lymphoma	23	24.5	21	19.5	2.9	2.7
Kaposi Sarcoma (all sites)	2	3.2	0	0.3	~	~
Kidney & Renal Pelvis	130	127.1	75	70.6	16.3	9.6
Larynx	39	35.4	8	9.3	4.9	~
Leukemia	110	111.1	84	73.4	13.8	10.7
Liver & Intrahepatic Bile Duct	52	38.1	15	13.1	6.5	1.9
Lung & Bronchus	410	373.0	417	322.9	51.4	53.1
Melanoma of the Skin	146	139.2	126	130.4	18.3	16.1
Mesothelioma (all sites)	12	10.4	7	3.8	1.5	~
Myeloma	52	39.5	34	27.5	6.5	4.3
Non-Hodgkin Lymphoma	169	151.8	121	118.2	21.2	15.4
Oral Cavity & Pharynx	84	96.4	59	50.0	10.5	7.5
Ovary	-	-	82	93.1	-	10.4
Pancreas	63	61.9	62	53.8	7.9	7.9
Prostate	1090	1047.9	-	-	136.6	-
Soft Tissues incl. Heart	18	23.1	24	21.0	2.3	3.1
Stomach	49	41.6	25	22.3	6.1	3.2
Testis	67	56.8	-	-	8.4	-
Thyroid	40	35.4	123	104.0	5.0	15.7
Urinary Bladder	200	199.3	71	64.8	25.1	9.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-3: Becker County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

Cancer Site	Males		Females		Avg. Annual Rate§	
	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	510	497.7	348	410.3	652.6	443.9
Brain & Other Nervous System	7	6.6	7	4.8	~	~
Breast	2	1.1	97	124.1	~	123.7
Cervix Uteri	-	-	3	5.2	-	~
Colon & Rectum	56	49.9	42	46.2	71.7	53.6
Corpus & Uterus, NOS	-	-	21	27.3	-	26.8
Esophagus	7	8.3	2	2.0	~	~
Hodgkin Lymphoma	3	2.5	2	2.1	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	15	18.1	9	10.3	19.2	~
Larynx	7	5.4	3	1.3	~	~
Leukemia	16	17.0	11	11.3	20.5	14.0
Liver & Intrahepatic Bile Duct	4	5.5	0	2.0	~	~
Lung & Bronchus	56	63.1	46	51.6	71.7	58.7
Melanoma of the Skin	20	19.2	13	14.9	25.6	16.6
Mesothelioma (all sites)	2	2.0	0	0.7	~	~
Myeloma	5	6.4	7	4.5	~	~
Non-Hodgkin Lymphoma	26	23.0	17	18.4	33.3	21.7
Oral Cavity & Pharynx	26	13.4	1	7.3	33.3	~
Ovary	-	-	12	12.7	-	15.3
Pancreas	10	9.9	9	9.2	12.8	~
Prostate	158	170.2	-	-	202.2	-
Soft Tissues incl. Heart	1	3.0	3	2.7	~	~
Stomach	11	6.9	1	3.8	14.1	~
Testis	7	4.9	-	-	~	-
Thyroid	4	4.0	7	10.4	~	~
Urinary Bladder	45	35.5	9	11.3	57.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-4: Beltrami County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

Cancer Site	Males		Females		Avg. Annual Rate§	
	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	524	507.7	425	441.3	505.4	397.1
Brain & Other Nervous System	6	7.5	4	5.7	~	~
Breast	2	1.1	124	134.1	~	115.8
Cervix Uteri	-	-	11	6.4	-	10.3
Colon & Rectum	49	50.5	56	47.8	47.3	52.3
Corpus & Uterus, NOS	-	-	25	29.1	-	23.4
Esophagus	10	8.4	3	2.1	9.6	~
Hodgkin Lymphoma	5	3.3	3	2.9	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	22	18.7	11	11.0	21.2	10.3
Larynx	8	5.4	1	1.4	~	~
Leukemia	17	17.9	11	12.3	16.4	10.3
Liver & Intrahepatic Bile Duct	4	5.7	0	2.1	~	~
Lung & Bronchus	73	62.8	72	53.2	70.4	67.3
Melanoma of the Skin	11	20.2	7	17.8	10.6	~
Mesothelioma (all sites)	2	2.0	0	0.7	~	~
Myeloma	7	6.4	7	4.6	~	~
Non-Hodgkin Lymphoma	16	23.8	9	19.4	15.4	~
Oral Cavity & Pharynx	18	14.1	6	7.8	17.4	~
Ovary	-	-	13	13.8	-	12.1
Pancreas	10	10.0	10	9.4	9.6	9.3
Prostate	194	170.2	-	-	187.1	-
Soft Tissues incl. Heart	4	3.4	1	3.1	~	~
Stomach	12	7.0	6	4.0	11.6	~
Testis	5	6.8	-	-	~	-
Thyroid	2	4.5	11	13.3	~	10.3
Urinary Bladder	27	35.2	6	11.6	26.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-5: Benton County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

Cancer Site	Males		Females		Avg. Annual Rate§	
	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	434	398.9	373	365.0	457.1	391.2
Brain & Other Nervous System	8	6.5	4	4.8	~	~
Breast	0	0.9	105	110.4	~	110.1
Cervix Uteri	-	-	4	5.9	-	~
Colon & Rectum	37	39.8	30	39.8	39.0	31.5
Corpus & Uterus, NOS	-	-	17	23.4	-	17.8
Esophagus	6	6.6	6	1.7	~	~
Hodgkin Lymphoma	5	3.0	3	2.6	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	17	15.0	21	8.9	17.9	22.0
Larynx	8	4.2	2	1.1	~	~
Leukemia	12	14.5	16	10.4	12.6	16.8
Liver & Intrahepatic Bile Duct	2	4.5	2	1.7	~	~
Lung & Bronchus	46	47.8	44	41.9	48.4	46.1
Melanoma of the Skin	18	16.9	21	15.8	19.0	22.0
Mesothelioma (all sites)	0	1.5	1	0.6	~	~
Myeloma	6	5.0	0	3.7	~	~
Non-Hodgkin Lymphoma	20	19.3	23	16.0	21.1	24.1
Oral Cavity & Pharynx	16	11.4	8	6.5	16.9	~
Ovary	-	-	4	11.4	-	~
Pancreas	6	7.8	8	7.7	~	~
Prostate	164	128.7	-	-	172.7	-
Soft Tissues incl. Heart	0	2.9	4	2.7	~	~
Stomach	3	5.5	3	3.4	~	~
Testis	7	7.1	-	-	~	-
Thyroid	7	4.1	17	12.2	~	17.8
Urinary Bladder	31	27.2	8	9.5	32.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-6: Big Stone County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

Cancer Site	Males		Females		Avg. Annual Rate§	
	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	105	112.5	103	95.3	781.9	730.1
Brain & Other Nervous System	1	1.3	0	1.0	~	~
Breast	0	0.3	22	27.8	~	156.0
Cervix Uteri	-	-	1	1.0	-	~
Colon & Rectum	19	11.7	19	11.8	141.5	134.7
Corpus & Uterus, NOS	-	-	11	6.1	-	78.0
Esophagus	3	1.9	0	0.5	~	~
Hodgkin Lymphoma	0	0.5	0	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	1	3.9	2	2.4	~	~
Larynx	0	1.2	0	0.3	~	~
Leukemia	5	3.9	6	2.8	~	~
Liver & Intrahepatic Bile Duct	0	1.2	1	0.5	~	~
Lung & Bronchus	14	14.7	10	12.4	104.3	70.9
Melanoma of the Skin	5	4.2	2	3.0	~	~
Mesothelioma (all sites)	0	0.5	1	0.2	~	~
Myeloma	2	1.5	0	1.1	~	~
Non-Hodgkin Lymphoma	4	5.3	3	4.4	~	~
Oral Cavity & Pharynx	5	2.9	2	1.7	~	~
Ovary	-	-	2	2.9	-	~
Pancreas	1	2.3	5	2.3	~	~
Prostate	28	38.1	-	-	208.5	-
Soft Tissues incl. Heart	2	0.6	1	0.6	~	~
Stomach	2	1.7	0	1.0	~	~
Testis	0	0.7	-	-	~	-
Thyroid	0	0.7	4	1.9	~	~
Urinary Bladder	10	8.7	2	2.9	74.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-7: Blue Earth County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	621	653.9	570	600.0	424.6	395.0
Brain & Other Nervous System	9	10.0	9	7.5	~	~
Breast	1	1.5	172	178.2	~	119.2
Cervix Uteri	-	-	7	8.4	-	~
Colon & Rectum	70	65.8	87	68.1	47.9	60.3
Corpus & Uterus, NOS	-	-	43	38.3	-	29.8
Esophagus	8	10.7	5	2.9	~	~
Hodgkin Lymphoma	3	4.9	3	4.1	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	26	23.8	8	14.7	17.8	~
Larynx	6	6.8	2	1.8	~	~
Leukemia	17	23.7	14	17.2	11.6	9.7
Liver & Intrahepatic Bile Duct	5	7.3	2	2.9	~	~
Lung & Bronchus	74	79.6	55	71.3	50.6	38.1
Melanoma of the Skin	35	26.8	28	24.3	23.9	19.4
Mesothelioma (all sites)	2	2.6	0	1.0	~	~
Myeloma	7	8.3	10	6.4	~	6.9
Non-Hodgkin Lymphoma	25	31.4	16	27.0	17.1	11.1
Oral Cavity & Pharynx	10	18.3	14	10.8	6.8	9.7
Ovary	-	-	17	18.6	-	11.8
Pancreas	7	12.8	6	13.2	~	~
Prostate	214	212.1	-	-	146.3	-
Soft Tissues incl. Heart	4	4.7	10	4.2	~	6.9
Stomach	9	9.2	4	5.7	~	~
Testis	10	11.1	-	-	6.8	-
Thyroid	7	6.2	13	18.0	~	9.0
Urinary Bladder	47	45.9	12	16.5	32.1	8.3

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-8: Brown County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	394	430.5	385	364.2	599.6	578.9
Brain & Other Nervous System	6	5.5	6	4.1	~	~
Breast	0	1.0	99	108.3	~	148.9
Cervix Uteri	-	-	9	4.4	-	~
Colon & Rectum	43	44.2	56	43.1	65.4	84.2
Corpus & Uterus, NOS	-	-	39	23.5	-	58.6
Esophagus	9	7.1	0	1.9	~	~
Hodgkin Lymphoma	2	2.2	4	1.8	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	13	15.3	7	9.0	19.8	~
Larynx	3	4.5	0	1.1	~	~
Leukemia	21	15.1	10	10.4	32.0	15.0
Liver & Intrahepatic Bile Duct	0	4.6	0	1.8	~	~
Lung & Bronchus	31	54.7	44	45.6	47.2	66.2
Melanoma of the Skin	25	16.6	14	12.8	38.0	21.1
Mesothelioma (all sites)	0	1.9	0	0.6	~	~
Myeloma	6	5.6	4	4.1	~	~
Non-Hodgkin Lymphoma	21	20.3	16	16.6	32.0	24.1
Oral Cavity & Pharynx	3	11.5	4	6.5	~	~
Ovary	-	-	12	11.1	-	18.0
Pancreas	12	8.6	6	8.4	18.3	~
Prostate	136	144.2	-	-	207.0	-
Soft Tissues incl. Heart	6	2.6	2	2.4	~	~
Stomach	3	6.2	3	3.6	~	~
Testis	3	4.1	-	-	~	-
Thyroid	3	3.3	14	8.7	~	21.1
Urinary Bladder	29	31.9	13	10.5	44.1	19.5

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-9: Carlton County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	506	479.4	407	412.7	597.8	499.2
Brain & Other Nervous System	5	6.8	2	4.8	~	~
Breast	0	1.1	111	124.9	~	136.1
Cervix Uteri	-	-	3	5.4	-	~
Colon & Rectum	56	48.2	44	46.7	66.2	54.0
Corpus & Uterus, NOS	-	-	28	27.1	-	34.3
Esophagus	11	8.0	5	2.0	13.0	~
Hodgkin Lymphoma	4	2.8	1	2.1	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	18	17.7	11	10.3	21.3	13.5
Larynx	4	5.2	1	1.3	~	~
Leukemia	18	16.6	9	11.5	21.3	~
Liver & Intrahepatic Bile Duct	6	5.4	1	2.0	~	~
Lung & Bronchus	67	59.7	62	51.0	79.2	76.0
Melanoma of the Skin	20	19.2	18	15.3	23.6	22.1
Mesothelioma (all sites)	7	1.9	0	0.7	~	~
Myeloma	5	6.1	4	4.5	~	~
Non-Hodgkin Lymphoma	20	22.6	23	18.5	23.6	28.2
Oral Cavity & Pharynx	12	13.3	7	7.4	14.2	~
Ovary	-	-	8	12.8	-	~
Pancreas	6	9.5	11	9.2	~	13.5
Prostate	167	160.7	-	-	197.3	-
Soft Tissues incl. Heart	2	3.1	3	2.7	~	~
Stomach	10	6.7	4	3.8	11.8	~
Testis	7	5.7	-	-	~	-
Thyroid	5	4.2	14	10.9	~	17.2
Urinary Bladder	36	33.7	7	11.3	42.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-10: Carver County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	744	754.4	695	688.3	365.6	343.9
Brain & Other Nervous System	18	13.6	15	9.8	8.8	7.4
Breast	0	1.7	228	220.7	~	112.8
Cervix Uteri	-	-	13	12.6	-	6.4
Colon & Rectum	70	74.2	52	67.0	34.4	25.7
Corpus & Uterus, NOS	-	-	41	45.8	-	20.3
Esophagus	9	12.7	0	2.9	~	~
Hodgkin Lymphoma	4	6.1	8	4.9	~	~
Kaposi Sarcoma (all sites)	1	0.8	0	0.1	~	~
Kidney & Renal Pelvis	32	30.2	16	16.7	15.7	7.9
Larynx	7	8.2	1	2.1	~	~
Leukemia	20	27.5	28	18.5	9.8	13.9
Liver & Intrahepatic Bile Duct	4	9.0	3	3.2	~	~
Lung & Bronchus	77	87.9	56	75.0	37.8	27.7
Melanoma of the Skin	41	33.8	41	32.3	20.1	20.3
Mesothelioma (all sites)	0	2.6	0	1.0	~	~
Myeloma	8	9.4	6	6.5	~	~
Non-Hodgkin Lymphoma	34	37.0	32	28.7	16.7	15.8
Oral Cavity & Pharynx	17	23.1	15	12.2	8.4	7.4
Ovary	-	-	32	22.2	-	15.8
Pancreas	16	14.6	16	12.9	7.9	7.9
Prostate	257	240.5	-	-	126.3	-
Soft Tissues incl. Heart	4	5.8	8	5.3	~	~
Stomach	13	10.1	7	5.6	6.4	~
Testis	16	14.2	-	-	7.9	-
Thyroid	6	8.7	31	26.0	~	15.3
Urinary Bladder	48	48.2	10	15.9	23.6	4.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-11: Cass County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	560	531.0	401	384.0	785.7	568.8
Brain & Other Nervous System	4	6.5	5	4.5	~	~
Breast	0	1.1	98	116.9	~	139.0
Cervix Uteri	-	-	6	4.8	-	~
Colon & Rectum	52	52.8	58	42.0	73.0	82.3
Corpus & Uterus, NOS	-	-	20	26.2	-	28.4
Esophagus	12	8.8	2	1.9	16.8	~
Hodgkin Lymphoma	1	2.4	5	1.9	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	28	19.0	12	9.7	39.3	17.0
Larynx	7	5.8	3	1.3	~	~
Leukemia	16	17.5	7	10.3	22.4	~
Liver & Intrahepatic Bile Duct	8	5.7	4	1.9	~	~
Lung & Bronchus	86	68.3	59	49.8	120.7	83.7
Melanoma of the Skin	18	19.7	12	13.6	25.3	17.0
Mesothelioma (all sites)	3	2.2	1	0.6	~	~
Myeloma	6	6.8	3	4.2	~	~
Non-Hodgkin Lymphoma	21	23.9	20	17.0	29.5	28.4
Oral Cavity & Pharynx	18	13.9	9	6.8	25.3	~
Ovary	-	-	13	12.0	-	18.4
Pancreas	7	10.6	11	8.6	~	15.6
Prostate	202	186.8	-	-	283.4	-
Soft Tissues incl. Heart	4	3.0	4	2.5	~	~
Stomach	8	7.3	8	3.4	~	~
Testis	6	4.2	-	-	~	-
Thyroid	2	3.9	11	9.5	~	15.6
Urinary Bladder	28	38.0	8	10.4	39.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-12: Chippewa County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	222	213.8	186	194.6	714.3	576.0
Brain & Other Nervous System	2	2.7	1	2.1	~	~
Breast	0	0.5	57	57.3	~	176.5
Cervix Uteri	-	-	5	2.2	-	~
Colon & Rectum	33	22.2	21	23.9	106.2	65.0
Corpus & Uterus, NOS	-	-	10	12.3	-	31.0
Esophagus	2	3.5	3	1.0	~	~
Hodgkin Lymphoma	2	1.0	0	0.9	~	~
Kaposi Sarcoma (all sites)	1	0.1	0	0.0	~	~
Kidney & Renal Pelvis	8	7.6	5	4.8	~	~
Larynx	3	2.2	1	0.6	~	~
Leukemia	4	7.6	5	5.7	~	~
Liver & Intrahepatic Bile Duct	2	2.3	0	1.0	~	~
Lung & Bronchus	26	27.2	21	24.4	83.7	65.0
Melanoma of the Skin	4	8.3	3	6.5	~	~
Mesothelioma (all sites)	0	1.0	0	0.3	~	~
Myeloma	4	2.8	1	2.2	~	~
Non-Hodgkin Lymphoma	11	10.2	9	9.0	35.4	~
Oral Cavity & Pharynx	6	5.7	3	3.5	~	~
Ovary	-	-	8	5.9	-	~
Pancreas	2	4.3	2	4.6	~	~
Prostate	76	71.0	-	-	244.5	-
Soft Tissues incl. Heart	1	1.3	1	1.2	~	~
Stomach	2	3.1	3	2.0	~	~
Testis	1	1.9	-	-	~	-
Thyroid	1	1.6	7	4.3	~	~
Urinary Bladder	20	16.1	3	5.8	64.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-13: Chisago County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	550	523.7	492	432.7	451.1	427.5
Brain & Other Nervous System	8	8.6	7	5.9	~	~
Breast	0	1.1	150	135.4	~	130.3
Cervix Uteri	-	-	7	7.3	-	~
Colon & Rectum	49	51.9	50	44.0	40.2	43.4
Corpus & Uterus, NOS	-	-	21	28.7	-	18.2
Esophagus	13	8.7	3	1.9	10.7	~
Hodgkin Lymphoma	3	3.8	5	2.9	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	26	20.1	15	10.7	21.3	13.0
Larynx	6	5.6	0	1.3	~	~
Leukemia	20	18.8	12	11.7	16.4	10.4
Liver & Intrahepatic Bile Duct	5	6.0	4	2.0	~	~
Lung & Bronchus	77	62.8	73	49.9	63.2	63.4
Melanoma of the Skin	14	22.2	22	19.0	11.5	19.1
Mesothelioma (all sites)	2	1.9	2	0.6	~	~
Myeloma	6	6.6	3	4.3	~	~
Non-Hodgkin Lymphoma	28	25.2	19	18.5	23.0	16.5
Oral Cavity & Pharynx	15	15.1	8	7.6	12.3	~
Ovary	-	-	14	13.7	-	12.2
Pancreas	13	10.2	8	8.6	10.7	~
Prostate	188	171.0	-	-	154.2	-
Soft Tissues incl. Heart	2	3.7	5	3.2	~	~
Stomach	6	7.2	3	3.7	~	~
Testis	13	8.6	-	-	10.7	-
Thyroid	1	5.4	17	14.9	~	14.8
Urinary Bladder	33	35.1	10	10.6	27.1	8.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-14: Clay County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	603	633.8	558	574.1	472.3	411.1
Brain & Other Nervous System	10	9.2	3	7.1	7.8	~
Breast	2	1.4	166	172.1	~	122.3
Cervix Uteri	-	-	6	7.9	-	~
Colon & Rectum	64	64.3	74	64.8	50.1	54.5
Corpus & Uterus, NOS	-	-	30	36.8	-	22.1
Esophagus	17	10.5	4	2.8	13.3	~
Hodgkin Lymphoma	5	4.2	6	3.7	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	16	23.1	18	14.1	12.5	13.3
Larynx	6	6.7	1	1.7	~	~
Leukemia	29	22.8	16	16.4	22.7	11.8
Liver & Intrahepatic Bile Duct	6	7.0	0	2.8	~	~
Lung & Bronchus	82	78.3	52	68.6	64.2	38.3
Melanoma of the Skin	20	25.7	18	22.9	15.7	13.3
Mesothelioma (all sites)	1	2.6	2	0.9	~	~
Myeloma	14	8.1	13	6.1	11.0	9.6
Non-Hodgkin Lymphoma	23	30.4	30	25.7	18.0	22.1
Oral Cavity & Pharynx	16	17.6	9	10.3	12.5	~
Ovary	-	-	16	17.8	-	11.8
Pancreas	15	12.5	7	12.6	11.7	~
Prostate	181	207.5	-	-	141.8	-
Soft Tissues incl. Heart	3	4.3	2	4.0	~	~
Stomach	6	9.0	4	5.4	~	~
Testis	16	8.7	-	-	12.5	-
Thyroid	2	5.6	21	16.8	~	15.5
Urinary Bladder	44	45.2	24	15.7	34.5	17.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-15: Clearwater County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	153	143.0	100	110.8	736.1	486.1
Brain & Other Nervous System	3	1.8	1	1.3	~	~
Breast	0	0.3	35	33.3	~	170.1
Cervix Uteri	-	-	4	1.4	-	~
Colon & Rectum	17	14.6	14	12.8	81.8	68.0
Corpus & Uterus, NOS	-	-	6	7.3	-	~
Esophagus	5	2.4	1	0.6	~	~
Hodgkin Lymphoma	0	0.7	0	0.5	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	7	5.1	1	2.8	~	~
Larynx	2	1.5	0	0.3	~	~
Leukemia	5	5.0	2	3.1	~	~
Liver & Intrahepatic Bile Duct	2	1.5	0	0.5	~	~
Lung & Bronchus	26	18.2	12	13.8	125.1	58.3
Melanoma of the Skin	3	5.5	3	3.9	~	~
Mesothelioma (all sites)	2	0.6	0	0.2	~	~
Myeloma	3	1.8	0	1.2	~	~
Non-Hodgkin Lymphoma	8	6.7	4	5.0	~	~
Oral Cavity & Pharynx	4	3.8	1	2.0	~	~
Ovary	-	-	2	3.4	-	~
Pancreas	2	2.8	3	2.5	~	~
Prostate	42	48.6	-	-	202.1	-
Soft Tissues incl. Heart	3	0.8	0	0.7	~	~
Stomach	3	2.0	1	1.1	~	~
Testis	2	1.3	-	-	~	-
Thyroid	1	1.1	1	2.7	~	~
Urinary Bladder	9	10.5	1	3.1	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-16: Cook County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	88	99.6	71	76.5	662.9	537.1
Brain & Other Nervous System	2	1.3	0	0.9	~	~
Breast	0	0.2	17	23.8	~	128.6
Cervix Uteri	-	-	2	1.0	-	~
Colon & Rectum	6	10.0	7	8.3	~	~
Corpus & Uterus, NOS	-	-	9	5.3	-	~
Esophagus	3	1.7	0	0.4	~	~
Hodgkin Lymphoma	1	0.4	1	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	1	3.6	3	1.9	~	~
Larynx	1	1.1	0	0.3	~	~
Leukemia	2	3.3	4	2.0	~	~
Liver & Intrahepatic Bile Duct	0	1.1	2	0.4	~	~
Lung & Bronchus	9	12.6	12	9.6	~	90.8
Melanoma of the Skin	3	3.8	3	2.8	~	~
Mesothelioma (all sites)	1	0.4	0	0.1	~	~
Myeloma	1	1.3	1	0.8	~	~
Non-Hodgkin Lymphoma	4	4.6	1	3.4	~	~
Oral Cavity & Pharynx	0	2.7	0	1.4	~	~
Ovary	-	-	1	2.4	-	~
Pancreas	2	2.0	2	1.7	~	~
Prostate	34	34.6	-	-	256.1	-
Soft Tissues incl. Heart	1	0.6	0	0.5	~	~
Stomach	0	1.4	0	0.7	~	~
Testis	2	0.8	-	-	~	-
Thyroid	2	0.8	0	1.9	~	~
Urinary Bladder	9	7.1	1	2.0	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-17: Cottonwood County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	212	217.1	173	187.5	735.6	576.1
Brain & Other Nervous System	3	2.6	1	2.0	~	~
Breast	0	0.5	56	54.7	~	186.5
Cervix Uteri	-	-	4	2.0	-	~
Colon & Rectum	24	22.8	29	23.4	83.3	96.6
Corpus & Uterus, NOS	-	-	12	11.9	-	40.0
Esophagus	3	3.6	1	1.0	~	~
Hodgkin Lymphoma	0	1.0	1	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	7.5	2	4.6	~	~
Larynx	0	2.2	0	0.6	~	~
Leukemia	5	7.7	8	5.5	~	~
Liver & Intrahepatic Bile Duct	5	2.3	0	0.9	~	~
Lung & Bronchus	24	27.9	16	23.7	83.3	53.3
Melanoma of the Skin	10	8.2	3	6.1	34.7	~
Mesothelioma (all sites)	0	1.0	0	0.3	~	~
Myeloma	3	2.8	2	2.2	~	~
Non-Hodgkin Lymphoma	11	10.3	4	8.8	38.2	~
Oral Cavity & Pharynx	2	5.6	3	3.4	~	~
Ovary	-	-	3	5.6	-	~
Pancreas	1	4.3	0	4.5	~	~
Prostate	81	72.2	-	-	281.0	-
Soft Tissues incl. Heart	0	1.3	2	1.2	~	~
Stomach	6	3.2	2	2.0	~	~
Testis	0	1.6	-	-	~	-
Thyroid	2	1.5	4	3.9	~	~
Urinary Bladder	15	16.7	4	5.7	52.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-18: Crow Wing County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	1023	963.8	793	783.4	705.0	529.4
Brain & Other Nervous System	16	12.4	15	9.2	11.0	10.0
Breast	3	2.1	222	235.4	~	148.2
Cervix Uteri	-	-	9	10.0	-	~
Colon & Rectum	90	97.1	83	88.6	62.0	55.4
Corpus & Uterus, NOS	-	-	45	51.8	-	30.0
Esophagus	20	15.9	1	3.9	13.8	~
Hodgkin Lymphoma	3	4.8	0	4.0	~	~
Kaposi Sarcoma (all sites)	0	0.6	0	0.1	~	~
Kidney & Renal Pelvis	39	34.5	27	19.6	26.9	18.0
Larynx	14	10.3	3	2.5	9.6	~
Leukemia	19	33.0	14	21.7	13.1	9.3
Liver & Intrahepatic Bile Duct	9	10.4	7	3.9	~	~
Lung & Bronchus	136	123.4	110	99.5	93.7	73.4
Melanoma of the Skin	29	36.7	41	28.4	20.0	27.4
Mesothelioma (all sites)	1	4.0	2	1.3	~	~
Myeloma	7	12.4	10	8.6	~	6.7
Non-Hodgkin Lymphoma	40	44.5	33	35.2	27.6	22.0
Oral Cavity & Pharynx	27	25.4	17	13.9	18.6	11.3
Ovary	-	-	20	24.1	-	13.4
Pancreas	29	19.1	26	17.7	20.0	17.4
Prostate	395	329.2	-	-	272.2	-
Soft Tissues incl. Heart	2	5.8	9	5.2	~	~
Stomach	7	13.5	10	7.3	~	6.7
Testis	6	9.2	-	-	~	-
Thyroid	8	7.4	25	19.9	~	16.7
Urinary Bladder	72	70.1	21	21.7	49.6	14.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-19: Dakota County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	3711	3712.7	3607	3440.7	397.7	379.0
Brain & Other Nervous System	71	64.7	52	47.9	7.6	5.5
Breast	9	8.0	1150	1111.1	~	120.8
Cervix Uteri	-	-	59	61.9	-	6.2
Colon & Rectum	349	362.1	350	328.5	37.4	36.8
Corpus & Uterus, NOS	-	-	253	236.1	-	26.6
Esophagus	55	62.7	22	14.5	5.9	2.3
Hodgkin Lymphoma	38	28.4	27	23.5	4.1	2.8
Kaposi Sarcoma (all sites)	1	3.8	0	0.4	~	~
Kidney & Renal Pelvis	157	148.0	83	84.7	16.8	8.7
Larynx	39	41.0	8	11.0	4.2	~
Leukemia	136	131.4	102	89.2	14.6	10.7
Liver & Intrahepatic Bile Duct	45	44.5	20	15.8	4.8	2.1
Lung & Bronchus	432	435.7	401	383.7	46.3	42.1
Melanoma of the Skin	169	162.9	171	158.2	18.1	18.0
Mesothelioma (all sites)	17	12.3	10	4.7	1.8	1.1
Myeloma	39	46.4	29	33.0	4.2	3.0
Non-Hodgkin Lymphoma	200	178.8	167	142.6	21.4	17.5
Oral Cavity & Pharynx	129	112.8	66	60.4	13.8	6.9
Ovary	-	-	136	112.0	-	14.3
Pancreas	69	72.4	65	64.7	7.4	6.8
Prostate	1166	1213.2	-	-	124.9	-
Soft Tissues incl. Heart	30	27.3	32	25.5	3.2	3.4
Stomach	48	49.2	28	27.3	5.1	2.9
Testis	70	65.4	-	-	7.5	-
Thyroid	36	41.0	132	126.3	3.9	13.9
Urinary Bladder	223	235.8	62	78.5	23.9	6.5

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-20: Dodge County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	211	230.7	191	197.2	447.0	399.0
Brain & Other Nervous System	2	3.5	0	2.5	~	~
Breast	0	0.5	51	60.6	~	106.5
Cervix Uteri	-	-	2	3.0	-	~
Colon & Rectum	18	23.3	23	21.3	38.1	48.0
Corpus & Uterus, NOS	-	-	6	12.9	-	~
Esophagus	7	3.8	0	0.9	~	~
Hodgkin Lymphoma	1	1.5	1	1.2	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	13	8.6	9	4.9	27.5	~
Larynx	3	2.5	0	0.6	~	~
Leukemia	7	8.3	10	5.5	~	20.9
Liver & Intrahepatic Bile Duct	2	2.6	2	0.9	~	~
Lung & Bronchus	37	28.2	15	23.2	78.4	31.3
Melanoma of the Skin	14	9.5	17	8.0	29.7	35.5
Mesothelioma (all sites)	1	0.9	0	0.3	~	~
Myeloma	2	2.9	1	2.0	~	~
Non-Hodgkin Lymphoma	11	11.1	11	8.7	23.3	23.0
Oral Cavity & Pharynx	11	6.5	3	3.5	23.3	~
Ovary	-	-	5	6.2	-	~
Pancreas	1	4.5	2	4.2	~	~
Prostate	61	75.5	-	-	129.2	-
Soft Tissues incl. Heart	0	1.6	1	1.4	~	~
Stomach	0	3.2	0	1.8	~	~
Testis	1	3.2	-	-	~	-
Thyroid	2	2.1	10	6.0	~	20.9
Urinary Bladder	15	16.2	11	5.1	31.8	23.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-21: Douglas County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	670	575.8	435	478.5	776.5	500.6
Brain & Other Nervous System	14	7.3	6	5.4	16.2	~
Breast	3	1.3	141	141.9	~	162.3
Cervix Uteri	-	-	4	5.8	-	~
Colon & Rectum	73	58.8	50	56.2	84.6	57.5
Corpus & Uterus, NOS	-	-	30	31.0	-	34.5
Esophagus	6	9.5	1	2.5	~	~
Hodgkin Lymphoma	4	2.9	3	2.4	~	~
Kaposi Sarcoma (all sites)	0	0.3	1	0.1	~	~
Kidney & Renal Pelvis	23	20.4	7	11.9	26.7	~
Larynx	4	6.1	1	1.5	~	~
Leukemia	15	20.0	15	13.5	17.4	17.3
Liver & Intrahepatic Bile Duct	4	6.2	4	2.4	~	~
Lung & Bronchus	81	73.3	54	60.6	93.9	62.1
Melanoma of the Skin	23	22.0	10	16.9	26.7	11.5
Mesothelioma (all sites)	4	2.5	0	0.8	~	~
Myeloma	11	7.4	7	5.4	12.7	~
Non-Hodgkin Lymphoma	27	26.9	19	21.8	31.3	21.9
Oral Cavity & Pharynx	17	15.2	6	8.6	19.7	~
Ovary	-	-	19	14.6	-	21.9
Pancreas	11	11.4	8	11.1	12.7	~
Prostate	228	194.5	-	-	264.3	-
Soft Tissues incl. Heart	3	3.5	2	3.1	~	~
Stomach	8	8.2	5	4.6	~	~
Testis	9	5.6	-	-	~	-
Thyroid	3	4.4	1	11.6	~	~
Urinary Bladder	77	42.6	13	13.7	89.2	15.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-22: Faribault County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	273	288.0	230	250.9	714.9	592.7
Brain & Other Nervous System	3	3.5	3	2.6	~	~
Breast	0	0.7	62	73.4	~	159.8
Cervix Uteri	-	-	4	2.7	-	~
Colon & Rectum	37	29.9	35	31.1	96.9	90.2
Corpus & Uterus, NOS	-	-	14	16.0	-	36.1
Esophagus	4	4.8	0	1.3	~	~
Hodgkin Lymphoma	1	1.3	3	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	6	10.1	10	6.2	~	25.8
Larynx	3	3.0	0	0.8	~	~
Leukemia	12	10.1	7	7.3	31.4	~
Liver & Intrahepatic Bile Duct	1	3.1	0	1.3	~	~
Lung & Bronchus	30	37.1	24	32.1	78.6	61.8
Melanoma of the Skin	7	10.9	13	8.1	~	33.5
Mesothelioma (all sites)	1	1.3	0	0.5	~	~
Myeloma	2	3.8	2	2.9	~	~
Non-Hodgkin Lymphoma	14	13.5	7	11.7	36.7	~
Oral Cavity & Pharynx	6	7.5	2	4.6	~	~
Ovary	-	-	7	7.5	-	~
Pancreas	6	5.8	5	6.1	~	~
Prostate	95	96.8	-	-	248.8	-
Soft Tissues incl. Heart	0	1.7	1	1.6	~	~
Stomach	2	4.2	2	2.6	~	~
Testis	1	2.2	-	-	~	-
Thyroid	4	2.0	7	5.2	~	~
Urinary Bladder	23	21.9	9	7.6	60.2	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-23: Fillmore County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	356	357.1	311	300.5	680.1	582.3
Brain & Other Nervous System	4	4.5	3	3.3	~	~
Breast	0	0.8	103	88.8	~	192.8
Cervix Uteri	-	-	2	3.5	-	~
Colon & Rectum	54	36.8	35	36.2	103.2	65.5
Corpus & Uterus, NOS	-	-	24	19.3	-	44.9
Esophagus	4	5.9	1	1.6	~	~
Hodgkin Lymphoma	2	1.7	2	1.4	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.1	~	~
Kidney & Renal Pelvis	12	12.6	10	7.4	22.9	18.7
Larynx	3	3.7	0	0.9	~	~
Leukemia	17	12.6	10	8.7	32.5	18.7
Liver & Intrahepatic Bile Duct	3	3.8	2	1.5	~	~
Lung & Bronchus	46	45.6	22	37.6	87.9	41.2
Melanoma of the Skin	8	13.7	11	10.3	~	20.6
Mesothelioma (all sites)	0	1.6	1	0.5	~	~
Myeloma	7	4.6	4	3.4	~	~
Non-Hodgkin Lymphoma	17	16.8	16	13.8	32.5	30.0
Oral Cavity & Pharynx	4	9.4	5	5.4	~	~
Ovary	-	-	7	9.1	-	~
Pancreas	3	7.1	5	7.0	~	~
Prostate	123	119.5	-	-	235.0	-
Soft Tissues incl. Heart	0	2.2	2	2.0	~	~
Stomach	7	5.2	7	3.0	~	~
Testis	3	3.2	-	-	~	-
Thyroid	2	2.7	11	7.0	~	20.6
Urinary Bladder	19	26.7	6	8.8	36.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-24: Freeborn County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	547	550.8	393	468.4	698.7	488.9
Brain & Other Nervous System	5	6.9	3	5.2	~	~
Breast	1	1.2	113	138.9	~	140.6
Cervix Uteri	-	-	6	5.5	-	~
Colon & Rectum	55	56.4	51	55.5	70.2	63.4
Corpus & Uterus, NOS	-	-	24	30.4	-	29.9
Esophagus	13	9.1	4	2.4	16.6	~
Hodgkin Lymphoma	3	2.6	3	2.1	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	16	19.7	11	11.7	20.4	13.7
Larynx	9	5.8	2	1.4	~	~
Leukemia	27	19.1	6	13.3	34.5	~
Liver & Intrahepatic Bile Duct	6	6.0	1	2.3	~	~
Lung & Bronchus	65	70.4	34	59.8	83.0	42.3
Melanoma of the Skin	20	21.1	30	16.0	25.5	37.3
Mesothelioma (all sites)	1	2.4	2	0.8	~	~
Myeloma	6	7.1	8	5.3	~	~
Non-Hodgkin Lymphoma	26	25.8	13	21.5	33.2	16.2
Oral Cavity & Pharynx	11	14.6	4	8.4	14.0	~
Ovary	-	-	10	14.2	-	12.4
Pancreas	7	11.0	8	10.9	~	~
Prostate	193	186.2	-	-	246.5	-
Soft Tissues incl. Heart	3	3.3	4	3.0	~	~
Stomach	4	7.9	4	4.6	~	~
Testis	5	4.8	-	-	~	-
Thyroid	3	4.2	12	10.8	~	14.9
Urinary Bladder	49	40.7	11	13.6	62.6	13.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-25: Goodhue County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	656	658.5	585	571.2	583.3	515.4
Brain & Other Nervous System	13	9.1	10	6.7	11.6	8.8
Breast	0	1.5	194	173.4	~	170.9
Cervix Uteri	-	-	9	7.6	-	~
Colon & Rectum	61	66.7	80	65.0	54.2	70.5
Corpus & Uterus, NOS	-	-	36	37.3	-	31.7
Esophagus	8	11.0	1	2.8	~	~
Hodgkin Lymphoma	5	3.6	8	2.9	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	19	24.2	10	14.1	16.9	8.8
Larynx	8	7.0	2	1.8	~	~
Leukemia	18	22.9	15	16.0	16.0	13.2
Liver & Intrahepatic Bile Duct	6	7.3	4	2.8	~	~
Lung & Bronchus	83	82.2	52	69.5	73.8	45.8
Melanoma of the Skin	29	26.2	25	21.3	25.8	22.0
Mesothelioma (all sites)	5	2.6	0	0.9	~	~
Myeloma	7	8.4	4	6.2	~	~
Non-Hodgkin Lymphoma	24	31.1	24	25.5	21.3	21.1
Oral Cavity & Pharynx	20	18.2	9	10.2	17.8	~
Ovary	-	-	16	17.7	-	14.1
Pancreas	16	13.1	11	12.7	14.2	9.7
Prostate	225	220.5	-	-	200.1	-
Soft Tissues incl. Heart	10	4.2	6	3.8	8.9	~
Stomach	10	9.2	2	5.4	8.9	~
Testis	10	7.3	-	-	8.9	-
Thyroid	7	5.6	16	15.1	~	14.1
Urinary Bladder	42	46.9	14	15.8	37.3	12.3

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-26: Grant County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	122	121.8	99	99.1	814.6	632.2
Brain & Other Nervous System	0	1.4	2	1.0	~	~
Breast	0	0.3	32	28.8	~	204.3
Cervix Uteri	-	-	1	1.1	-	~
Colon & Rectum	17	12.8	13	12.4	113.5	83.0
Corpus & Uterus, NOS	-	-	9	6.2	-	~
Esophagus	1	2.0	0	0.5	~	~
Hodgkin Lymphoma	0	0.5	0	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	4	4.2	3	2.5	~	~
Larynx	2	1.3	0	0.3	~	~
Leukemia	7	4.3	2	2.9	~	~
Liver & Intrahepatic Bile Duct	2	1.3	0	0.5	~	~
Lung & Bronchus	16	15.8	11	12.7	106.8	70.2
Melanoma of the Skin	4	4.6	3	3.2	~	~
Mesothelioma (all sites)	0	0.6	0	0.2	~	~
Myeloma	0	1.6	1	1.1	~	~
Non-Hodgkin Lymphoma	5	5.7	4	4.6	~	~
Oral Cavity & Pharynx	2	3.1	0	1.8	~	~
Ovary	-	-	3	3.0	-	~
Pancreas	4	2.4	3	2.4	~	~
Prostate	39	40.8	-	-	260.4	-
Soft Tissues incl. Heart	1	0.7	3	0.6	~	~
Stomach	2	1.8	0	1.0	~	~
Testis	2	0.9	-	-	~	-
Thyroid	0	0.8	2	2.1	~	~
Urinary Bladder	8	9.5	2	3.0	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-27: Hennepin County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	12544	12908.0	12257	12217.3	450.1	431.4
Brain & Other Nervous System	201	205.3	130	154.4	7.2	4.6
Breast	40	28.5	3850	3804.7	1.4	135.5
Cervix Uteri	-	-	178	191.2	-	6.3
Colon & Rectum	1170	1288.2	1174	1291.5	42.0	41.3
Corpus & Uterus, NOS	-	-	809	816.4	-	28.5
Esophagus	209	216.1	48	56.1	7.5	1.7
Hodgkin Lymphoma	91	88.5	68	73.4	3.3	2.4
Kaposi Sarcoma (all sites)	35	11.7	4	1.9	1.3	~
Kidney & Renal Pelvis	482	494.8	266	301.4	17.3	9.4
Larynx	140	139.0	42	38.0	5.0	1.5
Leukemia	471	457.2	370	329.4	16.9	13.0
Liver & Intrahepatic Bile Duct	178	149.7	74	57.9	6.4	2.6
Lung & Bronchus	1465	1554.0	1526	1422.9	52.6	53.7
Melanoma of the Skin	590	548.4	523	509.4	21.2	18.4
Mesothelioma (all sites)	47	47.9	18	18.5	1.7	0.6
Myeloma	169	163.6	140	125.2	6.1	4.9
Non-Hodgkin Lymphoma	633	621.6	500	528.7	22.7	17.6
Oral Cavity & Pharynx	412	376.9	243	216.9	14.8	8.6
Ovary	-	-	385	387.0	-	13.5
Pancreas	270	253.3	278	252.0	9.7	9.8
Prostate	3916	4212.4	-	-	140.5	-
Soft Tissues incl. Heart	107	89.7	80	85.6	3.8	2.8
Stomach	161	177.6	96	107.7	5.8	3.4
Testis	175	202.5	-	-	6.3	-
Thyroid	127	129.8	350	386.9	4.6	12.3
Urinary Bladder	855	871.3	338	310.8	30.7	11.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-28: Houston County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	270	306.9	244	259.7	553.5	489.9
Brain & Other Nervous System	3	4.1	7	3.0	~	~
Breast	0	0.7	82	78.2	~	164.6
Cervix Uteri	-	-	3	3.3	-	~
Colon & Rectum	36	31.5	23	30.1	73.8	46.2
Corpus & Uterus, NOS	-	-	23	16.8	-	46.2
Esophagus	4	5.1	2	1.3	~	~
Hodgkin Lymphoma	3	1.6	2	1.3	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	11	11.1	6	6.4	22.5	~
Larynx	5	3.3	0	0.8	~	~
Leukemia	10	10.7	0	7.3	20.5	~
Liver & Intrahepatic Bile Duct	0	3.4	1	1.3	~	~
Lung & Bronchus	22	38.6	26	31.9	45.1	52.2
Melanoma of the Skin	11	12.1	9	9.5	22.5	~
Mesothelioma (all sites)	0	1.3	0	0.4	~	~
Myeloma	5	4.0	3	2.8	~	~
Non-Hodgkin Lymphoma	15	14.5	15	11.7	30.7	30.1
Oral Cavity & Pharynx	9	8.4	5	4.7	~	~
Ovary	-	-	10	8.0	-	20.1
Pancreas	5	6.1	6	5.8	~	~
Prostate	91	102.4	-	-	186.5	-
Soft Tissues incl. Heart	0	1.9	0	1.7	~	~
Stomach	2	4.4	3	2.5	~	~
Testis	1	3.0	-	-	~	-
Thyroid	1	2.5	7	6.6	~	~
Urinary Bladder	21	22.4	2	7.3	43.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-29: Hubbard County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	350	354.0	301	264.4	754.6	646.0
Brain & Other Nervous System	3	4.3	7	3.0	~	~
Breast	2	0.8	86	80.1	~	184.6
Cervix Uteri	-	-	1	3.2	-	~
Colon & Rectum	35	35.6	37	29.5	75.5	79.4
Corpus & Uterus, NOS	-	-	13	17.9	-	27.9
Esophagus	7	5.9	0	1.3	~	~
Hodgkin Lymphoma	2	1.6	2	1.2	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	4	12.6	10	6.7	~	21.5
Larynx	5	3.8	1	0.9	~	~
Leukemia	14	11.8	9	7.2	30.2	~
Liver & Intrahepatic Bile Duct	4	3.8	2	1.3	~	~
Lung & Bronchus	49	45.7	48	34.2	105.6	103.0
Melanoma of the Skin	15	13.2	7	9.2	32.3	~
Mesothelioma (all sites)	3	1.5	0	0.4	~	~
Myeloma	6	4.6	7	2.9	~	~
Non-Hodgkin Lymphoma	16	16.1	15	11.8	34.5	32.2
Oral Cavity & Pharynx	13	9.2	8	4.7	28.0	~
Ovary	-	-	13	8.2	-	27.9
Pancreas	8	7.1	4	6.0	~	~
Prostate	108	123.5	-	-	232.8	-
Soft Tissues incl. Heart	4	2.0	0	1.7	~	~
Stomach	5	4.9	1	2.4	~	~
Testis	4	2.7	-	-	~	-
Thyroid	3	2.5	4	6.4	~	~
Urinary Bladder	32	25.8	6	7.3	69.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-30: Isanti County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	379	415.5	329	361.5	418.1	365.5
Brain & Other Nervous System	4	6.6	5	4.7	~	~
Breast	2	0.9	109	112.8	~	121.1
Cervix Uteri	-	-	6	5.8	-	~
Colon & Rectum	31	41.4	27	37.6	34.2	30.0
Corpus & Uterus, NOS	-	-	29	24.2	-	32.2
Esophagus	5	7.0	2	1.6	~	~
Hodgkin Lymphoma	3	2.9	3	2.3	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	21	15.8	4	8.9	23.2	~
Larynx	5	4.5	1	1.1	~	~
Leukemia	10	14.7	7	9.8	11.0	~
Liver & Intrahepatic Bile Duct	4	4.8	1	1.7	~	~
Lung & Bronchus	51	49.8	44	41.8	56.3	48.9
Melanoma of the Skin	16	17.5	8	15.4	17.7	~
Mesothelioma (all sites)	2	1.5	1	0.5	~	~
Myeloma	5	5.2	2	3.7	~	~
Non-Hodgkin Lymphoma	18	19.9	12	15.6	19.9	13.3
Oral Cavity & Pharynx	7	12.0	7	6.5	~	~
Ovary	-	-	12	11.5	-	13.3
Pancreas	7	8.1	7	7.4	~	~
Prostate	126	136.7	-	-	139.0	-
Soft Tissues incl. Heart	2	2.9	4	2.6	~	~
Stomach	6	5.7	0	3.1	~	~
Testis	7	6.4	-	-	~	-
Thyroid	6	4.1	11	11.9	~	12.2
Urinary Bladder	23	28.0	11	9.1	25.4	12.2

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-31: Itasca County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	747	768.7	611	601.2	678.4	554.7
Brain & Other Nervous System	13	9.7	6	6.9	11.8	~
Breast	0	1.7	196	183.5	~	178.0
Cervix Uteri	-	-	12	7.6	-	10.9
Colon & Rectum	95	77.5	81	67.0	86.3	73.5
Corpus & Uterus, NOS	-	-	38	40.6	-	34.5
Esophagus	9	12.8	4	3.0	~	~
Hodgkin Lymphoma	5	3.6	4	2.9	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	22	27.8	17	15.1	20.0	15.4
Larynx	10	8.3	1	1.9	9.1	~
Leukemia	25	25.9	17	16.3	22.7	15.4
Liver & Intrahepatic Bile Duct	9	8.4	1	3.0	~	~
Lung & Bronchus	111	97.9	61	76.0	100.8	55.4
Melanoma of the Skin	18	29.4	21	21.6	16.3	19.1
Mesothelioma (all sites)	6	3.1	1	1.0	~	~
Myeloma	7	9.9	3	6.6	~	~
Non-Hodgkin Lymphoma	37	35.4	26	26.7	33.6	23.6
Oral Cavity & Pharynx	15	20.7	11	10.7	13.6	10.0
Ovary	-	-	21	18.8	-	19.1
Pancreas	18	15.3	15	13.4	16.3	13.6
Prostate	244	264.5	-	-	221.6	-
Soft Tissues incl. Heart	1	4.5	0	3.9	~	~
Stomach	13	10.7	5	5.5	11.8	~
Testis	5	6.6	-	-	~	-
Thyroid	4	5.9	14	15.0	~	12.7
Urinary Bladder	50	55.2	14	16.4	45.4	12.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-32: Jackson County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	168	196.9	117	162.2	605.5	429.2
Brain & Other Nervous System	4	2.4	2	1.7	~	~
Breast	0	0.5	28	47.9	~	102.7
Cervix Uteri	-	-	5	1.8	-	~
Colon & Rectum	20	20.7	18	19.7	72.1	66.0
Corpus & Uterus, NOS	-	-	13	10.3	-	47.7
Esophagus	2	3.3	3	0.8	~	~
Hodgkin Lymphoma	2	0.9	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	9	6.9	3	4.0	~	~
Larynx	0	2.0	0	0.5	~	~
Leukemia	2	7.0	1	4.7	~	~
Liver & Intrahepatic Bile Duct	2	2.1	0	0.8	~	~
Lung & Bronchus	20	25.1	10	20.5	72.1	36.7
Melanoma of the Skin	5	7.6	6	5.5	~	~
Mesothelioma (all sites)	1	0.9	0	0.3	~	~
Myeloma	1	2.6	1	1.8	~	~
Non-Hodgkin Lymphoma	10	9.4	7	7.5	36.0	~
Oral Cavity & Pharynx	1	5.2	1	2.9	~	~
Ovary	-	-	3	4.9	-	~
Pancreas	4	3.9	3	3.8	~	~
Prostate	52	65.1	-	-	187.4	-
Soft Tissues incl. Heart	1	1.2	1	1.0	~	~
Stomach	3	2.9	2	1.6	~	~
Testis	2	1.7	-	-	~	-
Thyroid	2	1.5	1	3.6	~	~
Urinary Bladder	22	15.0	2	4.8	79.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-33: Kanabec County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	264	240.0	173	185.6	661.3	441.6
Brain & Other Nervous System	3	3.3	2	2.3	~	~
Breast	0	0.5	48	56.9	~	122.5
Cervix Uteri	-	-	5	2.6	-	~
Colon & Rectum	24	23.9	10	20.0	60.1	25.5
Corpus & Uterus, NOS	-	-	17	12.5	-	43.4
Esophagus	9	4.0	1	0.9	~	~
Hodgkin Lymphoma	3	1.3	1	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	16	8.8	8	4.7	40.1	~
Larynx	2	2.6	1	0.6	~	~
Leukemia	7	8.2	4	5.0	~	~
Liver & Intrahepatic Bile Duct	3	2.7	1	0.9	~	~
Lung & Bronchus	44	30.3	22	23.1	110.2	56.2
Melanoma of the Skin	5	9.4	5	7.1	~	~
Mesothelioma (all sites)	1	0.9	0	0.3	~	~
Myeloma	3	3.1	2	2.0	~	~
Non-Hodgkin Lymphoma	3	11.1	3	8.2	~	~
Oral Cavity & Pharynx	2	6.5	3	3.3	~	~
Ovary	-	-	3	5.8	-	~
Pancreas	3	4.8	2	4.0	~	~
Prostate	86	82.0	-	-	215.4	-
Soft Tissues incl. Heart	0	1.5	3	1.3	~	~
Stomach	7	3.3	3	1.6	~	~
Testis	4	2.6	-	-	~	-
Thyroid	6	2.0	4	5.2	~	~
Urinary Bladder	24	16.9	3	4.9	60.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-34: Kandiyohi County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	550	602.2	558	515.2	542.5	539.2
Brain & Other Nervous System	8	8.1	5	6.1	~	~
Breast	2	1.4	164	155.8	~	158.5
Cervix Uteri	-	-	13	6.7	-	12.6
Colon & Rectum	56	61.5	72	58.7	55.2	69.6
Corpus & Uterus, NOS	-	-	49	33.8	-	47.4
Esophagus	5	10.0	1	2.5	~	~
Hodgkin Lymphoma	1	3.3	2	2.7	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	22	21.8	10	12.8	21.7	9.7
Larynx	6	6.4	2	1.6	~	~
Leukemia	14	21.2	13	14.5	13.8	12.6
Liver & Intrahepatic Bile Duct	6	6.6	4	2.5	~	~
Lung & Bronchus	63	75.5	55	63.2	62.1	53.2
Melanoma of the Skin	26	23.7	23	19.0	25.6	22.2
Mesothelioma (all sites)	3	2.5	2	0.8	~	~
Myeloma	7	7.7	4	5.6	~	~
Non-Hodgkin Lymphoma	25	28.5	25	23.1	24.7	24.2
Oral Cavity & Pharynx	11	16.4	13	9.2	10.8	12.6
Ovary	-	-	13	15.9	-	12.6
Pancreas	7	11.9	8	11.5	~	~
Prostate	200	200.9	-	-	197.3	-
Soft Tissues incl. Heart	3	3.8	6	3.5	~	~
Stomach	9	8.6	6	4.8	~	~
Testis	9	6.4	-	-	~	-
Thyroid	6	4.9	16	13.4	~	15.5
Urinary Bladder	40	43.7	13	14.2	39.5	12.6

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-35: Kittson County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	80	96.4	65	78.0	668.9	536.6
Brain & Other Nervous System	1	1.1	0	0.8	~	~
Breast	0	0.2	27	23.0	~	222.9
Cervix Uteri	-	-	0	0.8	-	~
Colon & Rectum	15	10.1	5	9.6	125.4	~
Corpus & Uterus, NOS	-	-	5	5.0	-	~
Esophagus	0	1.6	0	0.4	~	~
Hodgkin Lymphoma	0	0.4	0	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.0	0	0.0	~	~
Kidney & Renal Pelvis	1	3.4	1	1.9	~	~
Larynx	0	1.0	1	0.2	~	~
Leukemia	4	3.4	2	2.3	~	~
Liver & Intrahepatic Bile Duct	0	1.0	0	0.4	~	~
Lung & Bronchus	15	12.3	7	9.9	125.4	~
Melanoma of the Skin	1	3.7	1	2.5	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	0	1.3	0	0.9	~	~
Non-Hodgkin Lymphoma	5	4.5	2	3.6	~	~
Oral Cavity & Pharynx	1	2.5	2	1.4	~	~
Ovary	-	-	1	2.4	-	~
Pancreas	1	1.9	1	1.9	~	~
Prostate	23	32.4	-	-	192.3	-
Soft Tissues incl. Heart	1	0.6	1	0.5	~	~
Stomach	2	1.4	2	0.8	~	~
Testis	2	0.7	-	-	~	-
Thyroid	0	0.7	1	1.6	~	~
Urinary Bladder	5	7.4	3	2.3	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-36: Koochiching County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	273	247.2	212	206.9	801.5	608.6
Brain & Other Nervous System	2	3.1	2	2.3	~	~
Breast	1	0.5	55	62.3	~	157.9
Cervix Uteri	-	-	7	2.5	-	~
Colon & Rectum	38	25.1	27	23.9	111.6	77.5
Corpus & Uterus, NOS	-	-	20	13.7	-	57.4
Esophagus	3	4.1	1	1.1	~	~
Hodgkin Lymphoma	1	1.1	1	0.9	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	12	8.9	9	5.2	35.2	~
Larynx	2	2.7	1	0.7	~	~
Leukemia	7	8.4	5	5.7	~	~
Liver & Intrahepatic Bile Duct	0	2.7	1	1.0	~	~
Lung & Bronchus	56	31.6	33	26.5	164.4	94.7
Melanoma of the Skin	8	9.5	3	7.1	~	~
Mesothelioma (all sites)	4	1.0	0	0.3	~	~
Myeloma	3	3.2	7	2.3	~	~
Non-Hodgkin Lymphoma	11	11.4	5	9.3	32.3	~
Oral Cavity & Pharynx	5	6.6	2	3.7	~	~
Ovary	-	-	4	6.4	-	~
Pancreas	4	4.9	4	4.8	~	~
Prostate	84	84.8	-	-	246.6	-
Soft Tissues incl. Heart	0	1.4	0	1.3	~	~
Stomach	5	3.5	3	2.0	~	~
Testis	0	2.0	-	-	~	-
Thyroid	0	1.9	3	4.8	~	~
Urinary Bladder	17	17.9	8	5.9	49.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-37: Lac Qui Parle County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	154	154.0	138	125.4	815.0	725.7
Brain & Other Nervous System	0	1.8	1	1.3	~	~
Breast	0	0.4	41	36.7	~	215.6
Cervix Uteri	-	-	1	1.3	-	~
Colon & Rectum	19	16.2	27	15.7	100.6	142.0
Corpus & Uterus, NOS	-	-	11	8.0	-	57.8
Esophagus	2	2.6	0	0.7	~	~
Hodgkin Lymphoma	0	0.6	0	0.5	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	5.3	1	3.1	~	~
Larynx	1	1.6	0	0.4	~	~
Leukemia	7	5.4	4	3.7	~	~
Liver & Intrahepatic Bile Duct	0	1.6	0	0.6	~	~
Lung & Bronchus	23	19.9	6	15.9	121.7	~
Melanoma of the Skin	4	5.8	5	4.0	~	~
Mesothelioma (all sites)	0	0.7	0	0.2	~	~
Myeloma	4	2.0	5	1.4	~	~
Non-Hodgkin Lymphoma	9	7.3	7	5.9	~	~
Oral Cavity & Pharynx	3	4.0	3	2.3	~	~
Ovary	-	-	7	3.8	-	~
Pancreas	2	3.1	3	3.0	~	~
Prostate	68	51.3	-	-	359.9	-
Soft Tissues incl. Heart	0	0.9	0	0.8	~	~
Stomach	1	2.3	2	1.3	~	~
Testis	0	1.1	-	-	~	-
Thyroid	1	1.1	5	2.5	~	~
Urinary Bladder	4	11.9	1	3.8	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-38: Lake County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	198	219.1	152	163.6	722.7	551.8
Brain & Other Nervous System	2	2.6	4	1.8	~	~
Breast	0	0.5	41	49.1	~	148.8
Cervix Uteri	-	-	1	1.9	-	~
Colon & Rectum	21	22.2	25	18.8	76.7	90.8
Corpus & Uterus, NOS	-	-	13	10.8	-	47.2
Esophagus	1	3.6	0	0.8	~	~
Hodgkin Lymphoma	0	0.9	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	7.8	2	4.1	~	~
Larynx	2	2.3	0	0.5	~	~
Leukemia	5	7.3	2	4.5	~	~
Liver & Intrahepatic Bile Duct	3	2.3	1	0.8	~	~
Lung & Bronchus	28	28.5	18	21.2	102.2	65.3
Melanoma of the Skin	9	8.2	7	5.6	~	~
Mesothelioma (all sites)	0	0.9	0	0.3	~	~
Myeloma	1	2.8	1	1.8	~	~
Non-Hodgkin Lymphoma	9	10.0	5	7.4	~	~
Oral Cavity & Pharynx	4	5.8	2	2.9	~	~
Ovary	-	-	3	5.0	-	~
Pancreas	7	4.4	3	3.8	~	~
Prostate	80	75.4	-	-	292.0	-
Soft Tissues incl. Heart	0	1.2	2	1.0	~	~
Stomach	4	3.1	2	1.5	~	~
Testis	1	1.6	-	-	~	-
Thyroid	1	1.6	5	3.8	~	~
Urinary Bladder	10	16.2	4	4.6	36.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-39: Lake of the Woods County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	103	83.0	58	61.8	955.4	542.8
Brain & Other Nervous System	2	1.0	1	0.7	~	~
Breast	0	0.2	18	18.7	~	168.4
Cervix Uteri	-	-	2	0.7	-	~
Colon & Rectum	15	8.5	10	7.0	139.1	93.6
Corpus & Uterus, NOS	-	-	0	4.1	-	~
Esophagus	4	1.4	0	0.3	~	~
Hodgkin Lymphoma	0	0.4	0	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.0	0	0.0	~	~
Kidney & Renal Pelvis	3	3.0	1	1.6	~	~
Larynx	2	0.9	1	0.2	~	~
Leukemia	2	2.8	0	1.7	~	~
Liver & Intrahepatic Bile Duct	0	0.9	0	0.3	~	~
Lung & Bronchus	7	10.5	11	7.9	~	102.9
Melanoma of the Skin	1	3.2	4	2.1	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	1	1.1	1	0.7	~	~
Non-Hodgkin Lymphoma	5	3.9	3	2.8	~	~
Oral Cavity & Pharynx	7	2.2	2	1.1	~	~
Ovary	-	-	0	1.9	-	~
Pancreas	2	1.7	0	1.4	~	~
Prostate	35	28.4	-	-	324.6	-
Soft Tissues incl. Heart	0	0.5	0	0.4	~	~
Stomach	1	1.2	0	0.6	~	~
Testis	1	0.6	-	-	~	-
Thyroid	2	0.6	1	1.5	~	~
Urinary Bladder	8	6.1	2	1.7	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-40: Le Sueur County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	347	380.1	295	318.0	515.4	441.0
Brain & Other Nervous System	7	5.3	3	3.8	~	~
Breast	0	0.8	87	96.8	~	130.1
Cervix Uteri	-	-	4	4.4	-	~
Colon & Rectum	38	38.3	42	35.3	56.4	62.8
Corpus & Uterus, NOS	-	-	19	21.0	-	28.4
Esophagus	6	6.3	1	1.5	~	~
Hodgkin Lymphoma	1	2.2	0	1.7	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	17	14.0	11	7.9	25.3	16.4
Larynx	1	4.1	0	1.0	~	~
Leukemia	18	13.2	4	8.8	26.7	~
Liver & Intrahepatic Bile Duct	3	4.3	0	1.6	~	~
Lung & Bronchus	54	47.2	32	38.8	80.2	47.8
Melanoma of the Skin	17	15.2	12	12.1	25.3	17.9
Mesothelioma (all sites)	1	1.5	0	0.5	~	~
Myeloma	3	4.9	3	3.4	~	~
Non-Hodgkin Lymphoma	13	17.9	13	14.1	19.3	19.4
Oral Cavity & Pharynx	6	10.6	5	5.7	~	~
Ovary	-	-	11	9.9	-	16.4
Pancreas	7	7.5	3	7.0	~	~
Prostate	106	127.5	-	-	157.4	-
Soft Tissues incl. Heart	1	2.4	2	2.2	~	~
Stomach	5	5.3	1	2.9	~	~
Testis	5	4.4	-	-	~	-
Thyroid	2	3.3	7	8.8	~	~
Urinary Bladder	21	26.8	7	8.6	31.2	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-41: Lincoln County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	116	125.1	87	103.2	776.1	564.9
Brain & Other Nervous System	0	1.4	1	1.0	~	~
Breast	0	0.3	25	29.7	~	162.3
Cervix Uteri	-	-	4	1.0	-	~
Colon & Rectum	13	13.1	12	13.2	87.0	77.9
Corpus & Uterus, NOS	-	-	6	6.5	-	~
Esophagus	1	2.1	1	0.6	~	~
Hodgkin Lymphoma	0	0.5	1	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	4.3	2	2.5	~	~
Larynx	3	1.3	0	0.3	~	~
Leukemia	4	4.4	2	3.1	~	~
Liver & Intrahepatic Bile Duct	0	1.3	1	0.5	~	~
Lung & Bronchus	21	16.3	8	13.3	140.5	~
Melanoma of the Skin	7	4.6	2	3.2	~	~
Mesothelioma (all sites)	0	0.6	0	0.2	~	~
Myeloma	0	1.6	1	1.2	~	~
Non-Hodgkin Lymphoma	0	5.9	6	4.9	~	~
Oral Cavity & Pharynx	2	3.2	1	1.9	~	~
Ovary	-	-	1	3.1	-	~
Pancreas	0	2.5	2	2.6	~	~
Prostate	47	42.0	-	-	314.4	-
Soft Tissues incl. Heart	1	0.7	1	0.6	~	~
Stomach	1	1.9	0	1.1	~	~
Testis	2	0.9	-	-	~	-
Thyroid	0	0.8	3	2.0	~	~
Urinary Bladder	5	9.8	0	3.2	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-42: Lyon County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	321	330.0	285	298.1	527.1	453.6
Brain & Other Nervous System	4	4.6	4	3.5	~	~
Breast	0	0.8	84	88.7	~	133.7
Cervix Uteri	-	-	6	3.9	-	~
Colon & Rectum	30	33.8	45	35.0	49.3	71.6
Corpus & Uterus, NOS	-	-	22	18.9	-	35.0
Esophagus	2	5.4	1	1.5	~	~
Hodgkin Lymphoma	1	2.0	0	1.7	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.1	~	~
Kidney & Renal Pelvis	10	11.9	7	7.3	16.4	~
Larynx	5	3.4	1	0.9	~	~
Leukemia	13	11.9	8	8.6	21.3	~
Liver & Intrahepatic Bile Duct	4	3.6	0	1.5	~	~
Lung & Bronchus	41	41.1	28	36.0	67.3	44.6
Melanoma of the Skin	16	13.2	8	11.2	26.3	~
Mesothelioma (all sites)	2	1.4	2	0.5	~	~
Myeloma	2	4.2	3	3.2	~	~
Non-Hodgkin Lymphoma	17	15.8	15	13.5	27.9	23.9
Oral Cavity & Pharynx	7	9.0	6	5.4	~	~
Ovary	-	-	8	9.1	-	~
Pancreas	9	6.5	4	6.7	~	~
Prostate	103	108.4	-	-	169.1	-
Soft Tissues incl. Heart	3	2.2	2	2.0	~	~
Stomach	2	4.8	2	2.9	~	~
Testis	3	4.0	-	-	~	-
Thyroid	3	2.8	9	7.9	~	~
Urinary Bladder	23	24.0	4	8.4	37.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-43: McLeod County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	463	481.3	408	430.1	516.9	449.5
Brain & Other Nervous System	5	6.9	7	5.2	~	~
Breast	0	1.1	132	129.6	~	145.4
Cervix Uteri	-	-	9	5.9	-	~
Colon & Rectum	47	48.7	55	48.8	52.5	60.6
Corpus & Uterus, NOS	-	-	27	28.0	-	29.7
Esophagus	8	8.0	2	2.1	~	~
Hodgkin Lymphoma	4	2.9	0	2.3	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	11	17.7	12	10.7	12.3	13.2
Larynx	5	5.1	0	1.3	~	~
Leukemia	13	17.1	10	12.2	14.5	11.0
Liver & Intrahepatic Bile Duct	3	5.3	1	2.1	~	~
Lung & Bronchus	52	59.6	29	52.4	58.1	32.0
Melanoma of the Skin	20	19.3	15	16.3	22.3	16.5
Mesothelioma (all sites)	1	1.9	0	0.7	~	~
Myeloma	5	6.2	4	4.6	~	~
Non-Hodgkin Lymphoma	21	22.9	25	19.3	23.4	27.5
Oral Cavity & Pharynx	9	13.3	6	7.7	~	~
Ovary	-	-	9	13.3	-	~
Pancreas	9	9.5	6	9.5	~	~
Prostate	177	159.6	-	-	197.6	-
Soft Tissues incl. Heart	1	3.1	2	2.9	~	~
Stomach	7	6.8	3	4.1	~	~
Testis	7	5.9	-	-	~	-
Thyroid	7	4.2	15	11.8	~	16.5
Urinary Bladder	40	34.2	11	11.8	44.7	12.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-44: Mahnomen County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	93	84.5	67	68.5	730.3	527.0
Brain & Other Nervous System	1	1.1	0	0.8	~	~
Breast	0	0.2	25	20.6	~	196.6
Cervix Uteri	-	-	0	0.8	-	~
Colon & Rectum	15	8.6	5	7.9	117.8	~
Corpus & Uterus, NOS	-	-	6	4.5	-	~
Esophagus	0	1.4	0	0.4	~	~
Hodgkin Lymphoma	1	0.4	1	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.0	0	0.0	~	~
Kidney & Renal Pelvis	3	3.0	3	1.7	~	~
Larynx	2	0.9	0	0.2	~	~
Leukemia	8	2.9	4	1.9	~	~
Liver & Intrahepatic Bile Duct	2	0.9	1	0.3	~	~
Lung & Bronchus	16	10.7	6	8.6	125.6	~
Melanoma of the Skin	3	3.2	1	2.4	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	0	1.1	2	0.8	~	~
Non-Hodgkin Lymphoma	3	3.9	4	3.1	~	~
Oral Cavity & Pharynx	3	2.3	1	1.2	~	~
Ovary	-	-	1	2.1	-	~
Pancreas	1	1.7	1	1.6	~	~
Prostate	28	28.9	-	-	219.9	-
Soft Tissues incl. Heart	0	0.5	0	0.4	~	~
Stomach	0	1.2	0	0.7	~	~
Testis	0	0.7	-	-	~	-
Thyroid	0	0.6	2	1.6	~	~
Urinary Bladder	5	6.1	1	1.9	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-45: Marshall County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	171	180.1	129	140.6	685.2	535.2
Brain & Other Nervous System	1	2.2	2	1.6	~	~
Breast	0	0.4	39	42.0	~	161.8
Cervix Uteri	-	-	1	1.6	-	~
Colon & Rectum	24	18.6	27	16.5	96.2	112.0
Corpus & Uterus, NOS	-	-	8	9.2	-	~
Esophagus	5	3.0	1	0.7	~	~
Hodgkin Lymphoma	0	0.8	0	0.6	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	6.4	2	3.5	~	~
Larynx	1	1.9	0	0.4	~	~
Leukemia	9	6.3	6	3.9	~	~
Liver & Intrahepatic Bile Duct	2	1.9	0	0.7	~	~
Lung & Bronchus	22	23.1	12	18.0	88.2	49.8
Melanoma of the Skin	4	6.9	2	4.8	~	~
Mesothelioma (all sites)	0	0.8	0	0.2	~	~
Myeloma	1	2.3	0	1.6	~	~
Non-Hodgkin Lymphoma	4	8.5	6	6.4	~	~
Oral Cavity & Pharynx	9	4.8	2	2.5	~	~
Ovary	-	-	0	4.3	-	~
Pancreas	2	3.6	4	3.3	~	~
Prostate	59	60.5	-	-	236.4	-
Soft Tissues incl. Heart	2	1.1	2	0.9	~	~
Stomach	3	2.6	3	1.3	~	~
Testis	1	1.5	-	-	~	-
Thyroid	0	1.3	1	3.2	~	~
Urinary Bladder	9	13.5	2	4.0	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-46: Martin County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	349	368.4	357	327.6	683.1	670.9
Brain & Other Nervous System	2	4.6	6	3.5	~	~
Breast	0	0.8	103	96.7	~	193.6
Cervix Uteri	-	-	7	3.6	-	~
Colon & Rectum	39	38.1	55	40.1	76.3	103.4
Corpus & Uterus, NOS	-	-	19	20.9	-	35.7
Esophagus	4	6.1	1	1.7	~	~
Hodgkin Lymphoma	1	1.7	1	1.4	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.1	~	~
Kidney & Renal Pelvis	19	13.1	7	8.1	37.2	~
Larynx	5	3.9	1	1.0	~	~
Leukemia	20	12.8	14	9.5	39.1	26.3
Liver & Intrahepatic Bile Duct	3	4.0	3	1.6	~	~
Lung & Bronchus	36	47.0	36	41.3	70.5	67.6
Melanoma of the Skin	18	14.1	14	10.9	35.2	26.3
Mesothelioma (all sites)	2	1.6	0	0.6	~	~
Myeloma	2	4.8	1	3.7	~	~
Non-Hodgkin Lymphoma	12	17.3	16	15.2	23.5	30.1
Oral Cavity & Pharynx	4	9.8	1	5.9	~	~
Ovary	-	-	14	9.9	-	26.3
Pancreas	5	7.4	9	7.8	~	~
Prostate	125	124.0	-	-	244.7	-
Soft Tissues incl. Heart	2	2.2	3	2.1	~	~
Stomach	4	5.3	7	3.3	~	~
Testis	3	3.0	-	-	~	-
Thyroid	2	2.7	6	7.1	~	~
Urinary Bladder	29	27.5	12	9.7	56.8	22.5

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-47: Meeker County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	331	356.1	276	296.1	567.7	484.4
Brain & Other Nervous System	4	4.8	2	3.4	~	~
Breast	0	0.8	75	88.9	~	131.6
Cervix Uteri	-	-	2	3.7	-	~
Colon & Rectum	33	36.3	43	34.5	56.6	75.5
Corpus & Uterus, NOS	-	-	13	19.2	-	22.8
Esophagus	8	5.9	3	1.5	~	~
Hodgkin Lymphoma	3	1.9	2	1.5	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.1	~	~
Kidney & Renal Pelvis	16	12.9	10	7.3	27.4	17.6
Larynx	3	3.8	0	0.9	~	~
Leukemia	7	12.5	16	8.4	~	28.1
Liver & Intrahepatic Bile Duct	3	3.9	1	1.5	~	~
Lung & Bronchus	44	44.8	26	36.4	75.5	45.6
Melanoma of the Skin	7	14.0	9	10.7	~	~
Mesothelioma (all sites)	0	1.5	0	0.5	~	~
Myeloma	7	4.6	1	3.3	~	~
Non-Hodgkin Lymphoma	13	16.8	13	13.4	22.3	22.8
Oral Cavity & Pharynx	9	9.7	5	5.3	~	~
Ovary	-	-	6	9.1	-	~
Pancreas	5	7.1	5	6.7	~	~
Prostate	116	119.4	-	-	199.0	-
Soft Tissues incl. Heart	2	2.2	0	2.0	~	~
Stomach	6	5.1	2	2.9	~	~
Testis	2	3.7	-	-	~	-
Thyroid	4	2.9	12	7.5	~	21.1
Urinary Bladder	21	25.8	7	8.4	36.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-48: Mille Lacs County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	409	362.0	317	311.4	666.3	504.0
Brain & Other Nervous System	2	4.9	6	3.7	~	~
Breast	0	0.8	98	93.3	~	155.8
Cervix Uteri	-	-	6	4.1	-	~
Colon & Rectum	35	36.6	31	35.5	57.0	49.3
Corpus & Uterus, NOS	-	-	20	20.3	-	31.8
Esophagus	7	6.0	2	1.6	~	~
Hodgkin Lymphoma	0	2.0	2	1.7	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.1	~	~
Kidney & Renal Pelvis	19	13.1	9	7.7	31.0	~
Larynx	4	3.8	1	1.0	~	~
Leukemia	13	12.6	8	8.8	21.2	~
Liver & Intrahepatic Bile Duct	2	3.9	4	1.5	~	~
Lung & Bronchus	64	45.5	47	38.7	104.3	74.7
Melanoma of the Skin	17	14.2	4	11.5	27.7	~
Mesothelioma (all sites)	2	1.5	3	0.5	~	~
Myeloma	2	4.6	4	3.4	~	~
Non-Hodgkin Lymphoma	12	17.0	9	14.0	19.5	~
Oral Cavity & Pharynx	8	9.7	4	5.6	~	~
Ovary	-	-	9	9.6	-	~
Pancreas	5	7.2	6	7.0	~	~
Prostate	158	121.9	-	-	257.4	-
Soft Tissues incl. Heart	3	2.3	0	2.1	~	~
Stomach	4	5.1	2	2.9	~	~
Testis	2	4.1	-	-	~	-
Thyroid	1	3.0	9	8.2	~	~
Urinary Bladder	36	26.1	10	8.7	58.6	15.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-49: Morrison County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	542	474.4	389	400.5	664.2	484.3
Brain & Other Nervous System	8	6.5	5	4.7	~	~
Breast	1	1.1	118	120.1	~	146.9
Cervix Uteri	-	-	5	5.2	-	~
Colon & Rectum	58	48.0	33	45.9	71.1	41.1
Corpus & Uterus, NOS	-	-	27	26.0	-	33.6
Esophagus	6	7.9	1	2.0	~	~
Hodgkin Lymphoma	4	2.6	1	2.1	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	29	17.2	7	10.0	35.5	~
Larynx	9	5.0	5	1.2	~	~
Leukemia	18	16.6	9	11.3	22.1	~
Liver & Intrahepatic Bile Duct	2	5.2	2	2.0	~	~
Lung & Bronchus	70	59.6	54	49.8	85.8	67.2
Melanoma of the Skin	12	18.7	16	14.7	14.7	19.9
Mesothelioma (all sites)	0	1.9	0	0.7	~	~
Myeloma	9	6.1	3	4.4	~	~
Non-Hodgkin Lymphoma	21	22.3	8	18.1	25.7	~
Oral Cavity & Pharynx	14	12.9	9	7.2	17.2	~
Ovary	-	-	13	12.3	-	16.2
Pancreas	7	9.4	6	9.0	~	~
Prostate	189	159.0	-	-	231.6	-
Soft Tissues incl. Heart	4	3.0	3	2.7	~	~
Stomach	10	6.7	3	3.8	12.3	~
Testis	3	5.2	-	-	~	-
Thyroid	3	3.9	18	10.4	~	22.4
Urinary Bladder	44	34.1	11	11.2	53.9	13.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-50: Mower County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	683	622.2	505	549.8	718.6	521.3
Brain & Other Nervous System	11	7.9	8	6.1	11.6	~
Breast	0	1.4	155	160.7	~	160.0
Cervix Uteri	-	-	4	6.4	-	~
Colon & Rectum	72	64.4	46	67.0	75.7	47.5
Corpus & Uterus, NOS	-	-	34	34.7	-	35.1
Esophagus	15	10.2	2	2.9	15.8	~
Hodgkin Lymphoma	1	3.1	4	2.6	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	22	22.0	12	13.6	23.1	12.4
Larynx	4	6.4	1	1.6	~	~
Leukemia	18	22.2	14	16.1	18.9	14.5
Liver & Intrahepatic Bile Duct	5	6.7	2	2.8	~	~
Lung & Bronchus	82	79.5	71	69.5	86.3	73.3
Melanoma of the Skin	18	24.0	20	18.8	18.9	20.6
Mesothelioma (all sites)	3	2.8	1	1.0	~	~
Myeloma	9	8.1	1	6.3	~	~
Non-Hodgkin Lymphoma	32	29.6	26	25.5	33.7	26.8
Oral Cavity & Pharynx	14	16.5	9	9.9	14.7	~
Ovary	-	-	6	16.5	-	~
Pancreas	14	12.4	8	13.0	14.7	~
Prostate	256	206.0	-	-	269.3	-
Soft Tissues incl. Heart	3	3.8	2	3.6	~	~
Stomach	12	9.1	2	5.6	12.6	~
Testis	5	5.9	-	-	~	-
Thyroid	7	4.7	14	12.6	~	14.5
Urinary Bladder	50	46.9	15	16.3	52.6	15.5

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-51: Murray County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	164	171.0	145	139.1	750.1	653.7
Brain & Other Nervous System	2	2.0	1	1.5	~	~
Breast	1	0.4	36	41.0	~	162.3
Cervix Uteri	-	-	1	1.5	-	~
Colon & Rectum	21	17.6	29	16.8	96.1	130.7
Corpus & Uterus, NOS	-	-	12	9.0	-	54.1
Esophagus	1	2.8	0	0.7	~	~
Hodgkin Lymphoma	0	0.7	0	0.6	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	9	6.0	3	3.5	~	~
Larynx	1	1.8	0	0.4	~	~
Leukemia	8	5.9	6	4.0	~	~
Liver & Intrahepatic Bile Duct	1	1.8	1	0.7	~	~
Lung & Bronchus	20	22.0	14	18.0	91.5	63.1
Melanoma of the Skin	2	6.4	1	4.6	~	~
Mesothelioma (all sites)	1	0.8	1	0.2	~	~
Myeloma	3	2.2	1	1.6	~	~
Non-Hodgkin Lymphoma	7	8.0	9	6.4	~	~
Oral Cavity & Pharynx	2	4.5	2	2.5	~	~
Ovary	-	-	2	4.2	-	~
Pancreas	2	3.4	4	3.3	~	~
Prostate	47	58.1	-	-	215.0	-
Soft Tissues incl. Heart	2	1.0	0	0.9	~	~
Stomach	7	2.5	3	1.4	~	~
Testis	2	1.2	-	-	~	-
Thyroid	1	1.2	4	2.9	~	~
Urinary Bladder	18	12.9	4	4.1	82.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-52: Nicollet County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	349	366.3	313	316.2	451.5	406.9
Brain & Other Nervous System	5	5.6	4	4.1	~	~
Breast	1	0.8	85	97.2	~	110.5
Cervix Uteri	-	-	6	4.7	-	~
Colon & Rectum	38	36.4	38	33.7	49.2	49.4
Corpus & Uterus, NOS	-	-	17	21.0	-	22.1
Esophagus	5	6.1	2	1.5	~	~
Hodgkin Lymphoma	3	2.5	1	2.1	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	9	13.7	8	7.8	~	~
Larynx	1	4.0	0	1.0	~	~
Leukemia	10	12.9	8	8.7	12.9	~
Liver & Intrahepatic Bile Duct	3	4.2	0	1.5	~	~
Lung & Bronchus	41	44.4	40	37.7	53.0	52.0
Melanoma of the Skin	20	15.1	11	13.0	25.9	14.3
Mesothelioma (all sites)	1	1.4	0	0.5	~	~
Myeloma	5	4.6	4	3.3	~	~
Non-Hodgkin Lymphoma	12	17.4	14	13.8	15.5	18.2
Oral Cavity & Pharynx	13	10.5	8	5.6	16.8	~
Ovary	-	-	15	10.0	-	19.5
Pancreas	4	7.2	12	6.6	~	15.6
Prostate	113	121.7	-	-	146.2	-
Soft Tissues incl. Heart	4	2.5	4	2.2	~	~
Stomach	6	5.0	1	2.8	~	~
Testis	7	5.4	-	-	~	-
Thyroid	1	3.5	8	9.8	~	~
Urinary Bladder	38	24.9	5	8.2	49.2	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-53: Nobles County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	298	314.3	286	271.3	584.5	566.2
Brain & Other Nervous System	2	4.2	4	3.0	~	~
Breast	0	0.7	72	80.4	~	142.5
Cervix Uteri	-	-	5	3.2	-	~
Colon & Rectum	40	32.2	53	32.4	78.5	104.9
Corpus & Uterus, NOS	-	-	17	17.4	-	33.7
Esophagus	3	5.2	2	1.4	~	~
Hodgkin Lymphoma	0	1.6	1	1.3	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.1	~	~
Kidney & Renal Pelvis	10	11.3	9	6.7	19.6	~
Larynx	3	3.3	1	0.8	~	~
Leukemia	8	11.1	8	7.9	~	~
Liver & Intrahepatic Bile Duct	1	3.4	1	1.4	~	~
Lung & Bronchus	35	39.7	27	33.7	68.7	53.5
Melanoma of the Skin	14	12.3	12	9.5	27.5	23.8
Mesothelioma (all sites)	0	1.3	0	0.5	~	~
Myeloma	6	4.1	3	3.0	~	~
Non-Hodgkin Lymphoma	10	14.9	18	12.4	19.6	35.6
Oral Cavity & Pharynx	7	8.4	3	4.9	~	~
Ovary	-	-	11	8.2	-	21.8
Pancreas	2	6.2	7	6.3	~	~
Prostate	109	104.7	-	-	213.8	-
Soft Tissues incl. Heart	3	2.0	1	1.8	~	~
Stomach	3	4.5	2	2.7	~	~
Testis	7	3.2	-	-	~	-
Thyroid	2	2.5	8	6.4	~	~
Urinary Bladder	17	23.1	4	7.9	33.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-54: Norman County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	132	131.4	114	107.5	759.8	648.8
Brain & Other Nervous System	0	1.6	1	1.2	~	~
Breast	1	0.3	36	31.7	~	204.9
Cervix Uteri	-	-	2	1.2	-	~
Colon & Rectum	10	13.5	5	13.0	57.6	~
Corpus & Uterus, NOS	-	-	5	6.9	-	~
Esophagus	4	2.2	2	0.6	~	~
Hodgkin Lymphoma	1	0.6	0	0.5	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	4.6	1	2.7	~	~
Larynx	2	1.4	0	0.3	~	~
Leukemia	2	4.5	5	3.1	~	~
Liver & Intrahepatic Bile Duct	1	1.4	3	0.5	~	~
Lung & Bronchus	21	17.0	17	13.8	120.9	96.8
Melanoma of the Skin	4	5.0	4	3.6	~	~
Mesothelioma (all sites)	0	0.6	0	0.2	~	~
Myeloma	2	1.7	3	1.2	~	~
Non-Hodgkin Lymphoma	9	6.1	3	5.0	~	~
Oral Cavity & Pharynx	4	3.4	4	1.9	~	~
Ovary	-	-	3	3.2	-	~
Pancreas	4	2.6	1	2.6	~	~
Prostate	49	44.5	-	-	282.1	-
Soft Tissues incl. Heart	1	0.8	0	0.7	~	~
Stomach	2	1.9	1	1.1	~	~
Testis	0	1.0	-	-	~	-
Thyroid	0	0.9	0	2.3	~	~
Urinary Bladder	3	9.9	7	3.2	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-55: Olmsted County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	1729	1564.9	1493	1427.4	524.8	442.4
Brain & Other Nervous System	35	24.3	28	18.2	10.6	8.3
Breast	1	3.4	476	442.9	~	141.1
Cervix Uteri	-	-	18	22.1	-	5.3
Colon & Rectum	148	155.9	118	151.5	44.9	35.0
Corpus & Uterus, NOS	-	-	94	94.8	-	27.9
Esophagus	25	26.1	8	6.6	7.6	~
Hodgkin Lymphoma	12	10.4	10	8.6	3.6	3.0
Kaposi Sarcoma (all sites)	3	1.3	0	0.2	~	~
Kidney & Renal Pelvis	80	59.3	49	35.2	24.3	14.5
Larynx	21	16.8	1	4.4	6.4	~
Leukemia	65	55.4	47	39.0	19.7	13.9
Liver & Intrahepatic Bile Duct	36	17.8	11	6.8	10.9	3.3
Lung & Bronchus	204	190.4	156	167.1	61.9	46.2
Melanoma of the Skin	88	65.0	87	59.1	26.7	25.8
Mesothelioma (all sites)	3	5.9	2	2.2	~	~
Myeloma	26	19.8	14	14.7	7.9	4.1
Non-Hodgkin Lymphoma	83	74.6	62	62.0	25.2	18.4
Oral Cavity & Pharynx	59	44.5	22	25.4	17.9	6.5
Ovary	-	-	38	45.0	-	11.3
Pancreas	40	30.7	36	29.6	12.1	10.7
Prostate	498	516.4	-	-	151.2	-
Soft Tissues incl. Heart	9	10.7	9	10.1	~	~
Stomach	17	21.5	15	12.6	5.2	4.4
Testis	16	22.9	-	-	4.9	-
Thyroid	33	15.1	64	44.8	10.0	19.0
Urinary Bladder	141	106.8	36	36.5	42.8	10.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-56: Otter Tail County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	1043	1025.0	751	828.1	727.2	525.8
Brain & Other Nervous System	20	12.7	10	9.1	13.9	7.0
Breast	1	2.3	226	247.2	~	158.2
Cervix Uteri	-	-	8	9.7	-	~
Colon & Rectum	136	104.9	93	97.1	94.8	65.1
Corpus & Uterus, NOS	-	-	45	54.3	-	31.5
Esophagus	17	16.9	5	4.3	11.9	~
Hodgkin Lymphoma	5	4.8	3	3.8	~	~
Kaposi Sarcoma (all sites)	0	0.6	0	0.1	~	~
Kidney & Renal Pelvis	31	36.3	19	20.6	21.6	13.3
Larynx	11	10.9	4	2.6	7.7	~
Leukemia	35	35.3	14	23.3	24.4	9.8
Liver & Intrahepatic Bile Duct	5	11.0	1	4.1	~	~
Lung & Bronchus	106	131.1	84	105.5	73.9	58.8
Melanoma of the Skin	31	38.9	34	28.4	21.6	23.8
Mesothelioma (all sites)	7	4.4	3	1.4	~	~
Myeloma	20	13.2	14	9.3	13.9	9.8
Non-Hodgkin Lymphoma	35	47.6	34	37.7	24.4	23.8
Oral Cavity & Pharynx	24	27.0	17	14.9	16.7	11.9
Ovary	-	-	22	25.3	-	15.4
Pancreas	18	20.4	13	19.2	12.5	9.1
Prostate	412	348.8	-	-	287.2	-
Soft Tissues incl. Heart	4	6.0	7	5.3	~	~
Stomach	13	14.7	12	8.0	9.1	8.4
Testis	2	8.6	-	-	~	-
Thyroid	1	7.6	10	19.1	~	7.0
Urinary Bladder	83	76.0	34	23.8	57.9	23.8

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-57: Pennington County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	197	196.0	158	177.5	584.6	458.4
Brain & Other Nervous System	3	2.7	3	2.0	~	~
Breast	0	0.4	41	53.2	~	119.0
Cervix Uteri	-	-	1	2.3	-	~
Colon & Rectum	21	20.0	19	20.6	62.3	55.1
Corpus & Uterus, NOS	-	-	17	11.5	-	49.3
Esophagus	4	3.3	2	0.9	~	~
Hodgkin Lymphoma	0	1.1	1	0.9	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	4	7.1	3	4.4	~	~
Larynx	1	2.1	0	0.5	~	~
Leukemia	5	6.9	3	5.0	~	~
Liver & Intrahepatic Bile Duct	1	2.2	2	0.9	~	~
Lung & Bronchus	27	24.4	17	21.7	80.1	49.3
Melanoma of the Skin	12	7.8	5	6.5	35.6	~
Mesothelioma (all sites)	0	0.8	0	0.3	~	~
Myeloma	3	2.5	1	1.9	~	~
Non-Hodgkin Lymphoma	5	9.3	7	8.0	~	~
Oral Cavity & Pharynx	14	5.3	3	3.2	41.5	~
Ovary	-	-	3	5.5	-	~
Pancreas	6	3.9	3	4.0	~	~
Prostate	58	65.2	-	-	172.1	-
Soft Tissues incl. Heart	1	1.3	0	1.2	~	~
Stomach	1	2.8	4	1.7	~	~
Testis	3	2.2	-	-	~	-
Thyroid	1	1.6	3	4.5	~	~
Urinary Bladder	19	14.2	7	5.0	56.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-58: Pine County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	427	432.9	351	335.1	592.7	526.0
Brain & Other Nervous System	6	5.9	1	4.0	~	~
Breast	1	1.0	97	101.8	~	145.4
Cervix Uteri	-	-	9	4.4	-	~
Colon & Rectum	44	43.2	45	37.1	61.1	67.4
Corpus & Uterus, NOS	-	-	26	22.3	-	39.0
Esophagus	8	7.2	4	1.6	~	~
Hodgkin Lymphoma	3	2.4	2	1.8	~	~
Kaposi Sarcoma (all sites)	0	0.3	1	0.0	~	~
Kidney & Renal Pelvis	19	15.8	10	8.4	26.4	15.0
Larynx	9	4.7	3	1.1	~	~
Leukemia	10	14.7	5	9.2	13.9	~
Liver & Intrahepatic Bile Duct	3	4.7	0	1.6	~	~
Lung & Bronchus	66	54.7	54	42.1	91.6	80.9
Melanoma of the Skin	9	16.9	5	12.5	~	~
Mesothelioma (all sites)	1	1.7	1	0.5	~	~
Myeloma	4	5.5	2	3.6	~	~
Non-Hodgkin Lymphoma	17	20.1	13	14.9	23.6	19.5
Oral Cavity & Pharynx	14	11.7	7	6.0	19.4	~
Ovary	-	-	10	10.4	-	15.0
Pancreas	3	8.6	12	7.4	~	18.0
Prostate	134	147.2	-	-	186.0	-
Soft Tissues incl. Heart	2	2.7	1	2.2	~	~
Stomach	8	6.0	3	3.0	~	~
Testis	6	4.9	-	-	~	-
Thyroid	1	3.6	4	8.9	~	~
Urinary Bladder	35	30.6	16	9.1	48.6	24.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-59: Pipestone County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	192	165.9	171	151.9	840.8	700.9
Brain & Other Nervous System	4	2.0	4	1.6	~	~
Breast	0	0.4	67	44.1	~	274.6
Cervix Uteri	-	-	2	1.6	-	~
Colon & Rectum	24	17.4	30	19.0	105.1	123.0
Corpus & Uterus, NOS	-	-	10	9.5	-	41.0
Esophagus	3	2.7	1	0.8	~	~
Hodgkin Lymphoma	1	0.8	1	0.6	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	8	5.8	4	3.8	~	~
Larynx	1	1.7	0	0.4	~	~
Leukemia	10	5.9	2	4.5	43.8	~
Liver & Intrahepatic Bile Duct	2	1.7	0	0.8	~	~
Lung & Bronchus	22	21.3	11	19.4	96.3	45.1
Melanoma of the Skin	5	6.3	3	5.0	~	~
Mesothelioma (all sites)	2	0.8	0	0.3	~	~
Myeloma	2	2.2	2	1.8	~	~
Non-Hodgkin Lymphoma	10	7.9	7	7.1	43.8	~
Oral Cavity & Pharynx	3	4.3	2	2.8	~	~
Ovary	-	-	6	4.5	-	~
Pancreas	3	3.3	0	3.7	~	~
Prostate	61	55.2	-	-	267.1	-
Soft Tissues incl. Heart	1	1.0	0	1.0	~	~
Stomach	6	2.5	2	1.6	~	~
Testis	2	1.3	-	-	~	-
Thyroid	1	1.2	3	3.2	~	~
Urinary Bladder	14	12.8	4	4.6	61.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-60: Polk County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	442	471.3	400	417.9	580.6	514.5
Brain & Other Nervous System	4	6.2	4	4.7	~	~
Breast	1	1.1	115	124.1	~	147.9
Cervix Uteri	-	-	4	5.0	-	~
Colon & Rectum	55	48.4	77	49.9	72.2	99.0
Corpus & Uterus, NOS	-	-	21	26.8	-	27.0
Esophagus	10	7.8	2	2.1	13.1	~
Hodgkin Lymphoma	1	2.5	1	2.0	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	20	16.9	9	10.3	26.3	~
Larynx	3	5.0	1	1.3	~	~
Leukemia	18	16.6	12	12.1	23.6	15.4
Liver & Intrahepatic Bile Duct	5	5.1	0	2.1	~	~
Lung & Bronchus	54	59.4	35	51.5	70.9	45.0
Melanoma of the Skin	7	18.4	10	14.7	~	12.9
Mesothelioma (all sites)	5	2.0	0	0.7	~	~
Myeloma	5	6.1	3	4.6	~	~
Non-Hodgkin Lymphoma	22	22.4	20	19.1	28.9	25.7
Oral Cavity & Pharynx	12	12.7	7	7.6	15.8	~
Ovary	-	-	13	12.7	-	16.7
Pancreas	9	9.4	6	9.7	~	~
Prostate	136	156.9	-	-	178.7	-
Soft Tissues incl. Heart	3	3.0	4	2.7	~	~
Stomach	7	6.8	6	4.2	~	~
Testis	6	4.8	-	-	~	-
Thyroid	2	3.7	6	10.1	~	~
Urinary Bladder	33	34.7	16	12.1	43.3	20.6

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-61: Pope County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	207	203.7	159	174.2	753.7	564.4
Brain & Other Nervous System	2	2.5	1	1.8	~	~
Breast	0	0.5	33	51.1	~	117.1
Cervix Uteri	-	-	5	1.9	-	~
Colon & Rectum	29	21.1	22	21.3	105.6	78.1
Corpus & Uterus, NOS	-	-	17	11.1	-	60.3
Esophagus	1	3.4	0	0.9	~	~
Hodgkin Lymphoma	1	0.9	1	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	1	0.0	~	~
Kidney & Renal Pelvis	4	7.1	3	4.3	~	~
Larynx	5	2.1	0	0.5	~	~
Leukemia	5	7.1	7	5.0	~	~
Liver & Intrahepatic Bile Duct	1	2.2	0	0.9	~	~
Lung & Bronchus	24	26.2	21	22.1	87.4	74.5
Melanoma of the Skin	5	7.7	4	5.8	~	~
Mesothelioma (all sites)	1	0.9	1	0.3	~	~
Myeloma	3	2.7	1	2.0	~	~
Non-Hodgkin Lymphoma	6	9.6	8	8.1	~	~
Oral Cavity & Pharynx	5	5.3	2	3.2	~	~
Ovary	-	-	6	5.2	-	~
Pancreas	6	4.1	8	4.2	~	~
Prostate	67	68.3	-	-	243.9	-
Soft Tissues incl. Heart	0	1.2	0	1.1	~	~
Stomach	5	3.0	3	1.8	~	~
Testis	1	1.6	-	-	~	-
Thyroid	2	1.5	2	3.8	~	~
Urinary Bladder	17	15.4	5	5.2	61.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-62: Ramsey County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	5867	5856.0	5729	5789.5	482.5	440.8
Brain & Other Nervous System	88	89.5	69	71.5	7.2	5.3
Breast	10	13.0	1753	1767.9	0.8	134.9
Cervix Uteri	-	-	97	84.2	-	7.5
Colon & Rectum	539	586.8	595	636.8	44.3	45.8
Corpus & Uterus, NOS	-	-	384	380.6	-	29.5
Esophagus	94	97.5	17	27.5	7.7	1.3
Hodgkin Lymphoma	40	38.4	33	34.1	3.3	2.5
Kaposi Sarcoma (all sites)	5	4.8	1	1.0	~	~
Kidney & Renal Pelvis	220	220.0	143	143.1	18.1	11.0
Larynx	59	62.6	26	17.7	4.9	2.0
Leukemia	210	208.2	125	160.4	17.3	9.6
Liver & Intrahepatic Bile Duct	99	66.8	28	27.9	8.1	2.2
Lung & Bronchus	736	714.1	709	688.7	60.5	54.6
Melanoma of the Skin	221	242.2	178	231.4	18.2	13.7
Mesothelioma (all sites)	24	22.5	10	9.1	2.0	0.8
Myeloma	66	74.4	60	61.0	5.4	4.6
Non-Hodgkin Lymphoma	290	279.9	257	255.5	23.8	19.8
Oral Cavity & Pharynx	149	166.7	119	103.2	12.3	9.2
Ovary	-	-	191	181.1	-	14.7
Pancreas	114	115.1	135	124.0	9.4	10.4
Prostate	1986	1926.7	-	-	163.3	-
Soft Tissues incl. Heart	50	40.0	37	40.1	4.1	2.8
Stomach	90	81.1	55	53.1	7.4	4.2
Testis	80	83.9	-	-	6.6	-
Thyroid	57	55.4	169	171.4	4.7	13.0
Urinary Bladder	362	403.8	156	153.8	29.8	12.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-63: Red Lake County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	72	73.1	52	57.5	674.5	494.7
Brain & Other Nervous System	1	0.9	0	0.6	~	~
Breast	0	0.2	14	17.1	~	133.2
Cervix Uteri	-	-	1	0.7	-	~
Colon & Rectum	9	7.5	5	6.8	~	~
Corpus & Uterus, NOS	-	-	3	3.7	-	~
Esophagus	2	1.2	0	0.3	~	~
Hodgkin Lymphoma	0	0.4	0	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.0	0	0.0	~	~
Kidney & Renal Pelvis	1	2.6	0	1.4	~	~
Larynx	0	0.8	0	0.2	~	~
Leukemia	3	2.5	1	1.6	~	~
Liver & Intrahepatic Bile Duct	0	0.8	0	0.3	~	~
Lung & Bronchus	5	9.3	11	7.2	~	104.7
Melanoma of the Skin	3	2.8	1	2.0	~	~
Mesothelioma (all sites)	0	0.3	0	0.1	~	~
Myeloma	2	0.9	0	0.6	~	~
Non-Hodgkin Lymphoma	3	3.4	4	2.6	~	~
Oral Cavity & Pharynx	5	1.9	3	1.0	~	~
Ovary	-	-	1	1.8	-	~
Pancreas	1	1.5	2	1.3	~	~
Prostate	24	24.6	-	-	224.8	-
Soft Tissues incl. Heart	1	0.4	0	0.4	~	~
Stomach	1	1.1	0	0.6	~	~
Testis	0	0.7	-	-	~	-
Thyroid	1	0.6	1	1.4	~	~
Urinary Bladder	6	5.4	3	1.7	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-64: Redwood County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	270	281.4	229	237.0	674.7	572.2
Brain & Other Nervous System	3	3.5	4	2.5	~	~
Breast	0	0.7	80	69.8	~	199.9
Cervix Uteri	-	-	0	2.7	-	~
Colon & Rectum	33	29.3	26	29.0	82.5	65.0
Corpus & Uterus, NOS	-	-	20	15.2	-	50.0
Esophagus	4	4.7	1	1.2	~	~
Hodgkin Lymphoma	2	1.3	0	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	9	9.9	4	5.9	~	~
Larynx	2	2.9	0	0.7	~	~
Leukemia	7	10.0	9	6.9	~	~
Liver & Intrahepatic Bile Duct	2	3.0	0	1.2	~	~
Lung & Bronchus	37	35.8	22	29.7	92.5	55.0
Melanoma of the Skin	6	10.8	5	7.9	~	~
Mesothelioma (all sites)	0	1.3	1	0.4	~	~
Myeloma	7	3.6	2	2.7	~	~
Non-Hodgkin Lymphoma	7	13.3	9	11.0	~	~
Oral Cavity & Pharynx	5	7.4	7	4.3	~	~
Ovary	-	-	7	7.2	-	~
Pancreas	6	5.6	3	5.6	~	~
Prostate	102	94.2	-	-	254.9	-
Soft Tissues incl. Heart	0	1.7	1	1.5	~	~
Stomach	5	4.2	4	2.4	~	~
Testis	5	2.4	-	-	~	-
Thyroid	2	2.1	3	5.2	~	~
Urinary Bladder	16	21.3	5	7.0	40.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-65: Renville County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	282	281.6	258	236.4	676.7	623.4
Brain & Other Nervous System	1	3.6	3	2.6	~	~
Breast	1	0.7	72	69.7	~	174.0
Cervix Uteri	-	-	6	2.7	-	~
Colon & Rectum	37	29.3	37	28.6	88.8	89.4
Corpus & Uterus, NOS	-	-	19	15.1	-	45.9
Esophagus	4	4.7	0	1.2	~	~
Hodgkin Lymphoma	2	1.4	1	1.1	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	12	9.9	6	5.9	28.8	~
Larynx	6	2.9	1	0.7	~	~
Leukemia	14	10.0	4	6.9	33.6	~
Liver & Intrahepatic Bile Duct	4	3.0	0	1.2	~	~
Lung & Bronchus	31	35.7	29	29.7	74.4	70.1
Melanoma of the Skin	7	10.9	7	8.0	~	~
Mesothelioma (all sites)	2	1.2	1	0.4	~	~
Myeloma	5	3.6	3	2.7	~	~
Non-Hodgkin Lymphoma	11	13.4	14	10.9	26.4	33.8
Oral Cavity & Pharynx	8	7.5	5	4.3	~	~
Ovary	-	-	8	7.1	-	~
Pancreas	7	5.6	8	5.6	~	~
Prostate	95	93.7	-	-	228.0	-
Soft Tissues incl. Heart	1	1.7	2	1.5	~	~
Stomach	3	4.1	5	2.4	~	~
Testis	1	2.5	-	-	~	-
Thyroid	2	2.1	3	5.4	~	~
Urinary Bladder	17	21.2	4	6.9	40.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-66: Rice County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	671	701.4	577	614.6	443.2	389.0
Brain & Other Nervous System	8	10.8	13	7.8	~	8.8
Breast	4	1.5	177	187.1	~	119.3
Cervix Uteri	-	-	4	8.9	-	~
Colon & Rectum	71	69.8	75	67.0	46.9	50.6
Corpus & Uterus, NOS	-	-	36	40.3	-	24.3
Esophagus	21	11.6	2	2.9	13.9	~
Hodgkin Lymphoma	4	4.9	3	4.0	~	~
Kaposi Sarcoma (all sites)	0	0.6	0	0.1	~	~
Kidney & Renal Pelvis	19	26.2	13	15.2	12.5	8.8
Larynx	7	7.5	1	1.9	~	~
Leukemia	30	24.8	17	17.2	19.8	11.5
Liver & Intrahepatic Bile Duct	9	7.9	1	3.0	~	~
Lung & Bronchus	90	85.3	62	73.0	59.4	41.8
Melanoma of the Skin	27	28.9	15	25.0	17.8	10.1
Mesothelioma (all sites)	1	2.7	1	1.0	~	~
Myeloma	8	8.8	6	6.4	~	~
Non-Hodgkin Lymphoma	33	33.3	26	27.1	21.8	17.5
Oral Cavity & Pharynx	20	19.9	8	11.0	13.2	~
Ovary	-	-	20	19.3	-	13.5
Pancreas	17	13.7	13	13.1	11.2	8.8
Prostate	190	231.8	-	-	125.5	-
Soft Tissues incl. Heart	1	4.9	2	4.3	~	~
Stomach	12	9.6	5	5.6	7.9	~
Testis	8	10.7	-	-	~	-
Thyroid	9	6.7	17	18.6	~	11.5
Urinary Bladder	54	48.1	17	16.2	35.7	11.5

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-67: Rock County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	137	161.3	125	140.2	586.3	517.1
Brain & Other Nervous System	0	2.0	1	1.5	~	~
Breast	0	0.4	40	41.0	~	165.5
Cervix Uteri	-	-	2	1.6	-	~
Colon & Rectum	14	16.7	18	17.2	59.9	74.5
Corpus & Uterus, NOS	-	-	12	8.9	-	49.6
Esophagus	1	2.7	1	0.7	~	~
Hodgkin Lymphoma	2	0.8	0	0.6	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	5.7	3	3.5	~	~
Larynx	0	1.7	0	0.4	~	~
Leukemia	3	5.7	2	4.1	~	~
Liver & Intrahepatic Bile Duct	1	1.7	0	0.7	~	~
Lung & Bronchus	18	20.7	5	17.7	77.0	~
Melanoma of the Skin	7	6.2	2	4.7	~	~
Mesothelioma (all sites)	0	0.7	0	0.2	~	~
Myeloma	3	2.1	1	1.6	~	~
Non-Hodgkin Lymphoma	8	7.6	12	6.5	~	49.6
Oral Cavity & Pharynx	3	4.3	0	2.5	~	~
Ovary	-	-	9	4.2	-	~
Pancreas	1	3.2	1	3.3	~	~
Prostate	44	53.6	-	-	188.3	-
Soft Tissues incl. Heart	2	1.0	0	0.9	~	~
Stomach	1	2.4	1	1.4	~	~
Testis	1	1.4	-	-	~	-
Thyroid	1	1.2	5	3.1	~	~
Urinary Bladder	14	12.2	3	4.2	59.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-68: Roseau County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	226	217.2	138	173.7	546.3	351.5
Brain & Other Nervous System	1	3.2	3	2.1	~	~
Breast	1	0.5	38	53.4	~	96.8
Cervix Uteri	-	-	2	2.5	-	~
Colon & Rectum	21	22.1	15	19.2	50.8	38.2
Corpus & Uterus, NOS	-	-	11	11.4	-	28.0
Esophagus	3	3.6	1	0.8	~	~
Hodgkin Lymphoma	0	1.3	0	1.0	~	~
Kaposi Sarcoma (all sites)	1	0.2	0	0.0	~	~
Kidney & Renal Pelvis	10	8.1	2	4.3	24.2	~
Larynx	1	2.3	1	0.5	~	~
Leukemia	5	7.7	4	4.9	~	~
Liver & Intrahepatic Bile Duct	1	2.4	0	0.8	~	~
Lung & Bronchus	22	26.7	15	20.4	53.2	38.2
Melanoma of the Skin	13	8.9	5	6.8	31.4	~
Mesothelioma (all sites)	0	0.9	0	0.3	~	~
Myeloma	2	2.8	3	1.8	~	~
Non-Hodgkin Lymphoma	10	10.4	9	7.7	24.2	~
Oral Cavity & Pharynx	8	6.1	1	3.1	~	~
Ovary	-	-	2	5.4	-	~
Pancreas	4	4.3	1	3.7	~	~
Prostate	82	71.5	-	-	198.2	-
Soft Tissues incl. Heart	3	1.4	2	1.2	~	~
Stomach	2	3.1	2	1.6	~	~
Testis	5	2.7	-	-	~	-
Thyroid	1	2.0	7	5.1	~	~
Urinary Bladder	15	15.3	7	4.6	36.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-69: St Louis County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	2971	2956.0	2701	2627.5	608.5	538.7
Brain & Other Nervous System	46	39.8	27	30.0	9.4	5.4
Breast	8	6.7	810	792.8	~	161.5
Cervix Uteri	-	-	40	33.3	-	8.0
Colon & Rectum	309	300.4	259	302.1	63.3	51.7
Corpus & Uterus, NOS	-	-	193	172.3	-	38.5
Esophagus	51	49.4	12	13.1	10.4	2.4
Hodgkin Lymphoma	15	16.2	16	13.5	3.1	3.2
Kaposi Sarcoma (all sites)	0	1.9	1	0.4	~	~
Kidney & Renal Pelvis	89	107.9	63	65.2	18.2	12.6
Larynx	33	31.6	13	8.1	6.8	2.6
Leukemia	103	102.5	64	73.2	21.1	12.8
Liver & Intrahepatic Bile Duct	30	32.9	17	12.9	6.1	3.4
Lung & Bronchus	419	369.5	361	323.3	85.8	72.0
Melanoma of the Skin	96	117.2	82	96.4	19.7	16.4
Mesothelioma (all sites)	25	12.0	2	4.3	5.1	~
Myeloma	34	37.9	28	28.8	7.0	5.6
Non-Hodgkin Lymphoma	143	139.4	122	118.3	29.3	24.3
Oral Cavity & Pharynx	98	81.8	54	47.1	20.1	10.8
Ovary	-	-	98	81.3	-	19.5
Pancreas	69	58.7	79	59.0	14.1	15.8
Prostate	898	990.6	-	-	183.9	-
Soft Tissues incl. Heart	22	18.6	13	17.1	4.5	2.6
Stomach	56	41.7	33	25.0	11.5	6.6
Testis	39	31.8	-	-	8.0	-
Thyroid	21	24.5	49	67.4	4.3	9.8
Urinary Bladder	212	211.7	84	73.3	43.4	16.8

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-70: Scott County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	910	942.8	916	848.4	318.8	325.9
Brain & Other Nervous System	21	18.4	8	13.0	7.4	~
Breast	3	2.0	303	273.8	~	107.8
Cervix Uteri	-	-	16	17.4	-	5.7
Colon & Rectum	89	91.2	93	77.7	31.2	33.1
Corpus & Uterus, NOS	-	-	49	56.8	-	17.4
Esophagus	12	15.7	6	3.4	4.2	~
Hodgkin Lymphoma	10	8.5	5	6.9	3.5	~
Kaposi Sarcoma (all sites)	0	1.2	0	0.1	~	~
Kidney & Renal Pelvis	31	38.4	22	20.6	10.9	7.8
Larynx	8	10.3	4	2.6	~	~
Leukemia	26	34.9	27	22.7	9.1	9.6
Liver & Intrahepatic Bile Duct	9	11.5	5	3.8	~	~
Lung & Bronchus	109	107.4	106	89.5	38.2	37.7
Melanoma of the Skin	51	43.3	60	43.0	17.9	21.3
Mesothelioma (all sites)	1	3.0	1	1.1	~	~
Myeloma	10	11.6	5	7.7	3.5	~
Non-Hodgkin Lymphoma	56	46.5	32	34.6	19.6	11.4
Oral Cavity & Pharynx	36	29.2	14	14.9	12.6	5.0
Ovary	-	-	28	27.6	-	10.0
Pancreas	24	18.1	14	15.1	8.4	5.0
Prostate	252	298.0	-	-	88.3	-
Soft Tissues incl. Heart	7	7.6	6	6.9	~	~
Stomach	15	12.4	8	6.6	5.3	~
Testis	28	20.9	-	-	9.8	-
Thyroid	17	11.7	38	36.0	6.0	13.5
Urinary Bladder	49	58.0	18	18.3	17.2	6.4

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-71: Sherburne County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	746	697.6	600	615.7	374.2	313.8
Brain & Other Nervous System	14	12.9	7	9.0	7.0	~
Breast	2	1.5	189	195.1	~	98.9
Cervix Uteri	-	-	5	11.6	-	~
Colon & Rectum	56	67.6	46	59.9	28.1	24.1
Corpus & Uterus, NOS	-	-	45	40.8	-	23.5
Esophagus	13	11.6	2	2.6	6.5	~
Hodgkin Lymphoma	4	6.1	7	4.8	~	~
Kaposi Sarcoma (all sites)	0	0.8	0	0.1	~	~
Kidney & Renal Pelvis	19	27.7	18	15.0	9.5	9.4
Larynx	6	7.6	0	1.9	~	~
Leukemia	26	25.5	19	16.8	13.0	9.9
Liver & Intrahepatic Bile Duct	4	8.3	1	2.8	~	~
Lung & Bronchus	74	81.0	75	66.5	37.1	39.2
Melanoma of the Skin	39	31.0	28	29.6	19.6	14.6
Mesothelioma (all sites)	3	2.3	2	0.9	~	~
Myeloma	12	8.6	4	5.8	6.0	~
Non-Hodgkin Lymphoma	39	33.9	32	25.7	19.6	16.7
Oral Cavity & Pharynx	28	21.0	10	10.9	14.0	5.2
Ovary	-	-	21	19.8	-	11.0
Pancreas	11	13.4	9	11.6	5.5	~
Prostate	278	223.8	-	-	139.5	-
Soft Tissues incl. Heart	6	5.5	5	4.8	~	~
Stomach	9	9.2	4	5.1	~	~
Testis	15	14.7	-	-	7.5	-
Thyroid	12	8.1	26	24.2	6.0	13.6
Urinary Bladder	51	44.0	15	14.2	25.6	7.8

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-72: Sibley County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	206	229.5	195	191.1	539.3	522.7
Brain & Other Nervous System	3	3.1	3	2.2	~	~
Breast	0	0.5	54	57.2	~	144.8
Cervix Uteri	-	-	4	2.4	-	~
Colon & Rectum	19	23.4	28	22.1	49.7	75.1
Corpus & Uterus, NOS	-	-	10	12.4	-	26.8
Esophagus	1	3.8	1	1.0	~	~
Hodgkin Lymphoma	1	1.2	1	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	6	8.3	9	4.7	~	~
Larynx	0	2.4	0	0.6	~	~
Leukemia	4	8.1	4	5.4	~	~
Liver & Intrahepatic Bile Duct	1	2.5	1	0.9	~	~
Lung & Bronchus	26	28.9	27	23.8	68.1	72.4
Melanoma of the Skin	14	9.0	5	6.9	36.7	~
Mesothelioma (all sites)	1	1.0	1	0.3	~	~
Myeloma	1	3.0	2	2.1	~	~
Non-Hodgkin Lymphoma	12	10.8	14	8.6	31.4	37.5
Oral Cavity & Pharynx	6	6.2	0	3.4	~	~
Ovary	-	-	2	5.8	-	~
Pancreas	8	4.5	6	4.3	~	~
Prostate	72	76.6	-	-	188.5	-
Soft Tissues incl. Heart	4	1.4	0	1.3	~	~
Stomach	2	3.3	3	1.8	~	~
Testis	2	2.4	-	-	~	-
Thyroid	0	1.9	4	4.9	~	~
Urinary Bladder	11	16.7	6	5.4	28.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-73: Stearns County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	1751	1676.7	1449	1411.1	491.3	413.2
Brain & Other Nervous System	21	25.4	20	18.4	5.9	5.7
Breast	10	3.7	459	430.0	2.8	130.9
Cervix Uteri	-	-	10	21.0	-	2.9
Colon & Rectum	166	167.3	141	151.0	46.6	40.2
Corpus & Uterus, NOS	-	-	85	92.7	-	24.2
Esophagus	27	27.6	11	6.6	7.6	3.1
Hodgkin Lymphoma	12	11.7	5	9.4	3.4	~
Kaposi Sarcoma (all sites)	0	1.3	0	0.2	~	~
Kidney & Renal Pelvis	60	62.0	45	35.0	16.8	12.8
Larynx	18	17.8	5	4.4	5.1	~
Leukemia	52	59.5	42	39.1	14.6	12.0
Liver & Intrahepatic Bile Duct	16	18.7	4	6.8	4.5	~
Lung & Bronchus	197	206.3	149	169.2	55.3	42.5
Melanoma of the Skin	75	68.4	68	58.5	21.0	19.4
Mesothelioma (all sites)	1	6.5	0	2.2	~	~
Myeloma	21	21.3	13	14.7	5.9	3.7
Non-Hodgkin Lymphoma	85	79.7	79	61.9	23.8	22.5
Oral Cavity & Pharynx	39	46.9	14	25.0	10.9	4.0
Ovary	-	-	43	44.3	-	12.3
Pancreas	29	32.9	29	29.8	8.1	8.3
Prostate	686	552.6	-	-	192.5	-
Soft Tissues incl. Heart	6	11.6	10	10.1	~	2.9
Stomach	16	23.1	9	12.5	4.5	~
Testis	18	25.3	-	-	5.1	-
Thyroid	15	15.7	67	44.2	4.2	19.1
Urinary Bladder	109	116.4	42	36.6	30.6	12.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-74: Steele County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	476	450.4	381	404.8	547.1	429.8
Brain & Other Nervous System	5	6.6	4	5.0	~	~
Breast	1	1.0	109	123.3	~	123.0
Cervix Uteri	-	-	7	5.7	-	~
Colon & Rectum	36	45.5	63	44.8	41.4	71.1
Corpus & Uterus, NOS	-	-	28	26.5	-	31.6
Esophagus	14	7.5	0	1.9	16.1	~
Hodgkin Lymphoma	3	2.7	2	2.3	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.1	~	~
Kidney & Renal Pelvis	21	16.7	11	10.0	24.1	12.4
Larynx	4	4.8	0	1.2	~	~
Leukemia	19	16.0	13	11.3	21.8	14.7
Liver & Intrahepatic Bile Duct	1	5.1	2	2.0	~	~
Lung & Bronchus	47	55.6	37	49.0	54.0	41.7
Melanoma of the Skin	21	18.3	19	15.8	24.1	21.4
Mesothelioma (all sites)	0	1.8	0	0.6	~	~
Myeloma	3	5.7	6	4.3	~	~
Non-Hodgkin Lymphoma	28	21.5	14	18.0	32.2	15.8
Oral Cavity & Pharynx	12	12.6	7	7.2	13.8	~
Ovary	-	-	9	12.6	-	~
Pancreas	8	8.9	5	8.8	~	~
Prostate	176	148.8	-	-	202.3	-
Soft Tissues incl. Heart	0	3.0	4	2.8	~	~
Stomach	8	6.3	1	3.7	~	~
Testis	3	5.7	-	-	~	-
Thyroid	4	4.0	8	11.5	~	~
Urinary Bladder	32	31.7	15	10.8	36.8	16.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-75: Stevens County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	99	145.4	122	124.8	415.9	482.0
Brain & Other Nervous System	1	1.9	3	1.4	~	~
Breast	0	0.3	34	36.1	~	134.3
Cervix Uteri	-	-	0	1.4	-	~
Colon & Rectum	11	15.2	14	15.2	46.2	55.3
Corpus & Uterus, NOS	-	-	11	7.8	-	43.5
Esophagus	2	2.4	1	0.6	~	~
Hodgkin Lymphoma	1	0.8	2	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	5.1	4	3.1	~	~
Larynx	1	1.5	0	0.4	~	~
Leukemia	4	5.3	6	3.7	~	~
Liver & Intrahepatic Bile Duct	1	1.5	0	0.6	~	~
Lung & Bronchus	11	18.5	9	15.6	46.2	~
Melanoma of the Skin	3	5.6	5	4.5	~	~
Mesothelioma (all sites)	1	0.7	0	0.2	~	~
Myeloma	1	1.9	0	1.4	~	~
Non-Hodgkin Lymphoma	5	7.0	4	5.8	~	~
Oral Cavity & Pharynx	1	3.9	2	2.3	~	~
Ovary	-	-	2	3.8	-	~
Pancreas	2	2.9	2	2.9	~	~
Prostate	33	47.6	-	-	138.6	-
Soft Tissues incl. Heart	1	0.9	0	0.8	~	~
Stomach	1	2.1	1	1.3	~	~
Testis	2	1.6	-	-	~	-
Thyroid	0	1.1	5	3.1	~	~
Urinary Bladder	9	11.0	5	3.7	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-76: Swift County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	187	186.3	195	157.7	604.0	775.2
Brain & Other Nervous System	1	2.5	3	1.7	~	~
Breast	0	0.4	63	45.8	~	250.4
Cervix Uteri	-	-	3	1.7	-	~
Colon & Rectum	26	19.4	31	19.8	84.0	123.2
Corpus & Uterus, NOS	-	-	10	9.9	-	39.8
Esophagus	1	3.1	3	0.8	~	~
Hodgkin Lymphoma	0	1.1	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	9	6.7	1	3.9	~	~
Larynx	1	1.9	0	0.5	~	~
Leukemia	1	6.7	4	4.6	~	~
Liver & Intrahepatic Bile Duct	2	2.0	1	0.8	~	~
Lung & Bronchus	21	23.2	14	20.1	67.8	55.7
Melanoma of the Skin	4	7.5	5	5.1	~	~
Mesothelioma (all sites)	0	0.8	0	0.3	~	~
Myeloma	3	2.4	3	1.8	~	~
Non-Hodgkin Lymphoma	17	9.0	13	7.4	54.9	51.7
Oral Cavity & Pharynx	2	5.1	3	2.9	~	~
Ovary	-	-	6	4.7	-	~
Pancreas	3	3.7	1	3.8	~	~
Prostate	63	60.4	-	-	203.5	-
Soft Tissues incl. Heart	1	1.2	3	1.0	~	~
Stomach	5	2.7	0	1.6	~	~
Testis	2	2.3	-	-	~	-
Thyroid	3	1.6	4	3.3	~	~
Urinary Bladder	12	13.8	8	4.8	38.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-77: Todd County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	399	389.2	254	308.8	653.6	426.4
Brain & Other Nervous System	3	5.1	3	3.6	~	~
Breast	5	0.9	71	93.3	~	119.2
Cervix Uteri	-	-	4	3.9	-	~
Colon & Rectum	61	39.2	40	35.0	99.9	67.1
Corpus & Uterus, NOS	-	-	18	20.5	-	30.2
Esophagus	8	6.5	0	1.5	~	~
Hodgkin Lymphoma	3	2.0	2	1.5	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	11	14.1	7	7.7	18.0	~
Larynx	3	4.2	0	1.0	~	~
Leukemia	6	13.3	8	8.6	~	~
Liver & Intrahepatic Bile Duct	2	4.3	1	1.5	~	~
Lung & Bronchus	55	49.4	31	38.8	90.1	52.0
Melanoma of the Skin	1	15.1	3	11.1	~	~
Mesothelioma (all sites)	0	1.6	1	0.5	~	~
Myeloma	4	5.0	5	3.4	~	~
Non-Hodgkin Lymphoma	18	18.1	12	13.9	29.5	20.1
Oral Cavity & Pharynx	10	10.5	2	5.5	16.4	~
Ovary	-	-	11	9.5	-	18.5
Pancreas	6	7.7	6	7.0	~	~
Prostate	145	132.6	-	-	237.5	-
Soft Tissues incl. Heart	2	2.4	3	2.0	~	~
Stomach	7	5.4	4	2.9	~	~
Testis	3	3.8	-	-	~	-
Thyroid	4	3.1	3	7.7	~	~
Urinary Bladder	26	27.9	3	8.6	42.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-78: Traverse County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	87	87.5	56	68.4	919.9	572.7
Brain & Other Nervous System	0	0.9	3	0.7	~	~
Breast	1	0.2	16	19.5	~	163.6
Cervix Uteri	-	-	0	0.7	-	~
Colon & Rectum	9	9.3	11	8.9	~	112.5
Corpus & Uterus, NOS	-	-	3	4.2	-	~
Esophagus	2	1.4	0	0.4	~	~
Hodgkin Lymphoma	1	0.3	1	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.0	0	0.0	~	~
Kidney & Renal Pelvis	2	2.9	0	1.7	~	~
Larynx	0	0.9	0	0.2	~	~
Leukemia	5	3.1	2	2.1	~	~
Liver & Intrahepatic Bile Duct	0	0.9	0	0.4	~	~
Lung & Bronchus	10	11.5	7	8.9	105.7	~
Melanoma of the Skin	5	3.2	1	2.1	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	0	1.2	1	0.8	~	~
Non-Hodgkin Lymphoma	2	4.1	2	3.2	~	~
Oral Cavity & Pharynx	3	2.2	0	1.3	~	~
Ovary	-	-	1	2.0	-	~
Pancreas	2	1.8	1	1.7	~	~
Prostate	32	29.1	-	-	338.3	-
Soft Tissues incl. Heart	1	0.5	1	0.4	~	~
Stomach	2	1.3	0	0.7	~	~
Testis	0	0.5	-	-	~	-
Thyroid	1	0.5	1	1.3	~	~
Urinary Bladder	6	7.1	4	2.2	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-79: Wabasha County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	296	338.8	269	272.0	541.1	493.6
Brain & Other Nervous System	4	4.5	5	3.2	~	~
Breast	0	0.8	86	82.9	~	157.8
Cervix Uteri	-	-	2	3.6	-	~
Colon & Rectum	37	34.5	31	30.5	67.6	56.9
Corpus & Uterus, NOS	-	-	13	18.0	-	23.9
Esophagus	5	5.6	4	1.3	~	~
Hodgkin Lymphoma	2	1.8	1	1.4	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	8	12.3	7	6.8	~	~
Larynx	3	3.6	0	0.9	~	~
Leukemia	16	11.8	11	7.5	29.3	20.2
Liver & Intrahepatic Bile Duct	4	3.7	2	1.3	~	~
Lung & Bronchus	49	42.5	32	33.3	89.6	58.7
Melanoma of the Skin	18	13.3	14	10.1	32.9	25.7
Mesothelioma (all sites)	2	1.4	0	0.4	~	~
Myeloma	4	4.4	0	2.9	~	~
Non-Hodgkin Lymphoma	11	16.0	14	12.1	20.1	25.7
Oral Cavity & Pharynx	12	9.2	5	4.9	21.9	~
Ovary	-	-	8	8.5	-	~
Pancreas	5	6.7	5	6.0	~	~
Prostate	67	113.7	-	-	122.5	-
Soft Tissues incl. Heart	2	2.1	2	1.8	~	~
Stomach	2	4.8	1	2.5	~	~
Testis	6	3.4	-	-	~	-
Thyroid	8	2.7	5	7.2	~	~
Urinary Bladder	24	24.5	8	7.4	43.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-80: Wadena County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	278	239.1	208	203.1	834.8	611.4
Brain & Other Nervous System	3	2.9	1	2.2	~	~
Breast	0	0.5	61	59.2	~	179.3
Cervix Uteri	-	-	1	2.2	-	~
Colon & Rectum	23	24.6	32	24.7	69.1	94.1
Corpus & Uterus, NOS	-	-	19	12.9	-	55.9
Esophagus	5	3.9	0	1.1	~	~
Hodgkin Lymphoma	0	1.1	1	0.9	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	10	8.3	4	5.1	30.0	~
Larynx	1	2.5	0	0.6	~	~
Leukemia	12	8.3	10	5.9	36.0	29.4
Liver & Intrahepatic Bile Duct	2	2.5	1	1.0	~	~
Lung & Bronchus	37	30.8	17	26.3	111.1	50.0
Melanoma of the Skin	15	9.0	7	6.7	45.0	~
Mesothelioma (all sites)	0	1.1	1	0.4	~	~
Myeloma	2	3.1	0	2.3	~	~
Non-Hodgkin Lymphoma	17	11.1	8	9.5	51.0	~
Oral Cavity & Pharynx	6	6.2	1	3.6	~	~
Ovary	-	-	12	6.1	-	35.3
Pancreas	8	4.8	5	4.9	~	~
Prostate	91	81.0	-	-	273.3	-
Soft Tissues incl. Heart	1	1.4	2	1.3	~	~
Stomach	3	3.5	1	2.0	~	~
Testis	3	2.0	-	-	~	-
Thyroid	2	1.7	6	4.4	~	~
Urinary Bladder	22	18.0	8	6.0	66.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-81: Waseca County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	260	263.4	225	226.1	511.3	488.4
Brain & Other Nervous System	9	3.9	0	2.7	~	~
Breast	1	0.6	63	68.3	~	136.7
Cervix Uteri	-	-	3	3.0	-	~
Colon & Rectum	27	26.9	29	25.8	53.1	62.9
Corpus & Uterus, NOS	-	-	18	14.7	-	39.1
Esophagus	5	4.4	1	1.1	~	~
Hodgkin Lymphoma	0	1.7	1	1.2	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	11	9.7	5	5.6	21.6	~
Larynx	3	2.8	1	0.7	~	~
Leukemia	5	9.4	6	6.4	~	~
Liver & Intrahepatic Bile Duct	3	3.0	1	1.1	~	~
Lung & Bronchus	30	32.3	25	27.6	59.0	54.3
Melanoma of the Skin	12	10.9	9	8.4	23.6	~
Mesothelioma (all sites)	1	1.1	0	0.4	~	~
Myeloma	4	3.4	1	2.5	~	~
Non-Hodgkin Lymphoma	16	12.8	14	10.1	31.5	30.4
Oral Cavity & Pharynx	6	7.4	2	4.0	~	~
Ovary	-	-	6	7.0	-	~
Pancreas	7	5.2	9	5.0	~	~
Prostate	76	85.5	-	-	149.5	-
Soft Tissues incl. Heart	6	1.8	3	1.5	~	~
Stomach	6	3.8	3	2.2	~	~
Testis	2	3.6	-	-	~	-
Thyroid	2	2.4	3	6.0	~	~
Urinary Bladder	19	18.8	6	6.3	37.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-82: Washington County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	2328	2281.9	2092	2034.2	433.8	388.4
Brain & Other Nervous System	36	38.4	31	27.8	6.7	5.8
Breast	7	4.8	717	660.7	~	133.1
Cervix Uteri	-	-	31	35.4	-	5.8
Colon & Rectum	220	221.5	183	193.5	41.0	34.0
Corpus & Uterus, NOS	-	-	144	141.8	-	26.7
Esophagus	43	38.8	9	8.6	8.0	~
Hodgkin Lymphoma	13	16.3	11	13.1	2.4	2.0
Kaposi Sarcoma (all sites)	0	2.1	0	0.2	~	~
Kidney & Renal Pelvis	109	91.1	49	50.3	20.3	9.1
Larynx	26	25.6	3	6.6	4.8	~
Leukemia	105	79.0	57	52.1	19.6	10.6
Liver & Intrahepatic Bile Duct	26	27.4	7	9.4	4.8	~
Lung & Bronchus	229	269.6	234	230.1	42.7	43.4
Melanoma of the Skin	130	98.7	121	91.1	24.2	22.5
Mesothelioma (all sites)	12	7.5	0	2.7	2.2	~
Myeloma	29	28.5	18	19.7	5.4	3.3
Non-Hodgkin Lymphoma	113	108.4	92	84.1	21.1	17.1
Oral Cavity & Pharynx	49	69.1	28	35.7	9.1	5.2
Ovary	-	-	72	66.5	-	13.4
Pancreas	41	44.7	31	38.5	7.6	5.8
Prostate	784	759.7	-	-	146.1	-
Soft Tissues incl. Heart	19	16.1	13	14.7	3.5	2.4
Stomach	21	30.0	13	15.9	3.9	2.4
Testis	41	36.3	-	-	7.6	-
Thyroid	19	24.3	66	71.7	3.5	12.3
Urinary Bladder	160	144.2	55	46.5	29.8	10.2

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-83: Watonwan County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	165	190.7	170	161.4	590.5	585.4
Brain & Other Nervous System	3	2.4	2	1.8	~	~
Breast	0	0.4	56	47.4	~	192.9
Cervix Uteri	-	-	0	1.8	-	~
Colon & Rectum	15	19.6	24	19.5	53.7	82.7
Corpus & Uterus, NOS	-	-	13	10.2	-	44.8
Esophagus	0	3.1	0	0.8	~	~
Hodgkin Lymphoma	5	0.9	1	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	6.7	2	4.0	~	~
Larynx	0	2.0	2	0.5	~	~
Leukemia	2	6.7	0	4.7	~	~
Liver & Intrahepatic Bile Duct	1	2.0	1	0.8	~	~
Lung & Bronchus	20	24.4	17	20.4	71.6	58.5
Melanoma of the Skin	5	7.3	8	5.5	~	~
Mesothelioma (all sites)	0	0.8	0	0.3	~	~
Myeloma	1	2.5	2	1.8	~	~
Non-Hodgkin Lymphoma	8	8.9	8	7.5	~	~
Oral Cavity & Pharynx	7	5.0	3	2.9	~	~
Ovary	-	-	3	4.9	-	~
Pancreas	4	3.8	4	3.8	~	~
Prostate	60	64.4	-	-	214.7	-
Soft Tissues incl. Heart	2	1.1	1	1.1	~	~
Stomach	3	2.7	1	1.6	~	~
Testis	3	1.6	-	-	~	-
Thyroid	1	1.4	4	3.7	~	~
Urinary Bladder	14	14.2	2	4.8	50.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-84: Wilkin County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	94	102.2	99	88.2	564.3	582.3
Brain & Other Nervous System	1	1.4	0	1.0	~	~
Breast	0	0.2	31	26.6	~	182.3
Cervix Uteri	-	-	1	1.1	-	~
Colon & Rectum	17	10.4	18	10.2	102.0	105.9
Corpus & Uterus, NOS	-	-	3	5.7	-	~
Esophagus	2	1.7	0	0.4	~	~
Hodgkin Lymphoma	0	0.5	0	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	3.7	3	2.2	~	~
Larynx	2	1.1	0	0.3	~	~
Leukemia	6	3.6	3	2.5	~	~
Liver & Intrahepatic Bile Duct	0	1.1	0	0.4	~	~
Lung & Bronchus	7	12.9	17	10.8	~	100.0
Melanoma of the Skin	4	4.0	0	3.2	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	2	1.3	1	1.0	~	~
Non-Hodgkin Lymphoma	7	4.8	5	4.0	~	~
Oral Cavity & Pharynx	2	2.8	0	1.6	~	~
Ovary	-	-	3	2.7	-	~
Pancreas	3	2.0	2	2.0	~	~
Prostate	24	34.2	-	-	144.1	-
Soft Tissues incl. Heart	0	0.6	0	0.6	~	~
Stomach	4	1.4	3	0.9	~	~
Testis	0	1.0	-	-	~	-
Thyroid	2	0.8	1	2.2	~	~
Urinary Bladder	8	7.4	3	2.5	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-85: Winona County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	597	634.5	595	561.1	493.2	469.7
Brain & Other Nervous System	7	9.0	10	6.8	~	7.9
Breast	1	1.4	208	167.6	~	164.2
Cervix Uteri	-	-	7	7.5	-	~
Colon & Rectum	76	64.1	82	63.9	62.8	64.7
Corpus & Uterus, NOS	-	-	46	36.2	-	36.3
Esophagus	10	10.5	4	2.7	8.3	~
Hodgkin Lymphoma	1	4.0	4	3.5	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	16	23.1	12	13.8	13.2	9.5
Larynx	8	6.7	5	1.7	~	~
Leukemia	23	22.4	13	16.0	19.0	10.3
Liver & Intrahepatic Bile Duct	5	7.0	2	2.8	~	~
Lung & Bronchus	81	78.4	67	67.6	66.9	52.9
Melanoma of the Skin	23	25.4	14	21.9	19.0	11.1
Mesothelioma (all sites)	2	2.5	1	0.9	~	~
Myeloma	6	8.1	5	6.0	~	~
Non-Hodgkin Lymphoma	23	30.1	17	25.2	19.0	13.4
Oral Cavity & Pharynx	17	17.5	3	10.1	14.0	~
Ovary	-	-	18	17.4	-	14.2
Pancreas	12	12.5	12	12.4	9.9	9.5
Prostate	192	211.0	-	-	158.6	-
Soft Tissues incl. Heart	4	4.2	2	3.8	~	~
Stomach	7	8.9	5	5.3	~	~
Testis	8	8.3	-	-	~	-
Thyroid	8	5.5	9	15.9	~	~
Urinary Bladder	42	45.0	15	15.5	34.7	11.8

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-86: Wright County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	1086	1071.7	861	927.6	406.7	327.1
Brain & Other Nervous System	18	18.3	10	13.0	6.7	3.8
Breast	2	2.3	261	291.3	~	99.1
Cervix Uteri	-	-	12	16.2	-	4.6
Colon & Rectum	93	105.1	87	92.6	34.8	33.0
Corpus & Uterus, NOS	-	-	49	61.8	-	18.6
Esophagus	10	17.8	3	4.0	3.7	~
Hodgkin Lymphoma	12	8.2	6	6.6	4.5	~
Kaposi Sarcoma (all sites)	0	1.1	0	0.1	~	~
Kidney & Renal Pelvis	42	41.7	32	22.8	15.7	12.2
Larynx	9	11.6	3	2.9	~	~
Leukemia	50	38.6	18	25.3	18.7	6.8
Liver & Intrahepatic Bile Duct	10	12.5	1	4.3	3.7	~
Lung & Bronchus	131	127.3	119	104.8	49.1	45.2
Melanoma of the Skin	41	46.0	43	41.9	15.4	16.3
Mesothelioma (all sites)	2	3.8	1	1.3	~	~
Myeloma	18	13.4	7	9.1	6.7	~
Non-Hodgkin Lymphoma	51	51.5	30	39.4	19.1	11.4
Oral Cavity & Pharynx	36	31.4	18	16.4	13.5	6.8
Ovary	-	-	30	29.6	-	11.4
Pancreas	21	20.8	17	18.1	7.9	6.5
Prostate	383	349.8	-	-	143.4	-
Soft Tissues incl. Heart	5	7.9	7	7.1	~	~
Stomach	6	14.4	9	7.8	~	~
Testis	22	18.8	-	-	8.2	-
Thyroid	12	11.4	34	33.4	4.5	12.9
Urinary Bladder	63	70.1	16	22.2	23.6	6.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-87: Yellow Medicine County 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	175	185.6	147	160.0	670.0	560.1
Brain & Other Nervous System	3	2.3	3	1.7	~	~
Breast	1	0.4	45	46.8	~	171.5
Cervix Uteri	-	-	2	1.8	-	~
Colon & Rectum	24	19.3	17	19.9	91.9	64.8
Corpus & Uterus, NOS	-	-	9	10.1	-	~
Esophagus	2	3.1	1	0.9	~	~
Hodgkin Lymphoma	0	0.9	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	6.5	7	3.9	~	~
Larynx	1	1.9	1	0.5	~	~
Leukemia	7	6.6	5	4.7	~	~
Liver & Intrahepatic Bile Duct	2	2.0	0	0.8	~	~
Lung & Bronchus	18	23.8	14	20.1	68.9	53.3
Melanoma of the Skin	0	7.1	3	5.3	~	~
Mesothelioma (all sites)	0	0.8	0	0.3	~	~
Myeloma	1	2.4	3	1.8	~	~
Non-Hodgkin Lymphoma	10	8.8	12	7.4	38.3	45.7
Oral Cavity & Pharynx	4	4.9	3	2.9	~	~
Ovary	-	-	4	4.8	-	~
Pancreas	1	3.7	4	3.8	~	~
Prostate	71	61.9	-	-	271.8	-
Soft Tissues incl. Heart	1	1.1	2	1.0	~	~
Stomach	2	2.7	0	1.7	~	~
Testis	1	1.5	-	-	~	-
Thyroid	0	1.4	3	3.4	~	~
Urinary Bladder	12	14.0	1	4.8	45.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-88: Northeastern Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	5152	5127.4	4400	4345.6	646.0	544.7
Brain & Other Nervous System	74	67.3	41	49.6	9.3	5.1
Breast	9	11.5	1307	1313.0	~	161.8
Cervix Uteri	-	-	69	54.5	-	8.5
Colon & Rectum	559	519.4	471	496.6	70.1	58.3
Corpus & Uterus, NOS	-	-	311	287.1	-	38.5
Esophagus	82	85.6	22	21.7	10.3	2.7
Hodgkin Lymphoma	26	26.5	24	21.6	3.3	3.0
Kaposi Sarcoma (all sites)	0	3.2	1	0.7	~	~
Kidney & Renal Pelvis	164	186.2	106	108.3	20.6	13.1
Larynx	58	55.0	17	13.6	7.3	2.1
Leukemia	164	175.8	105	120.1	20.6	13.0
Liver & Intrahepatic Bile Duct	50	56.6	25	21.4	6.3	3.1
Lung & Bronchus	743	646.7	589	542.1	93.2	72.9
Melanoma of the Skin	168	200.2	140	157.3	21.1	17.3
Mesothelioma (all sites)	45	21.0	3	7.1	5.6	~
Myeloma	58	65.9	48	47.8	7.3	5.9
Non-Hodgkin Lymphoma	245	239.5	197	195.4	30.7	24.4
Oral Cavity & Pharynx	144	140.0	80	77.7	18.1	9.9
Ovary	-	-	148	134.5	-	18.3
Pancreas	117	102.0	119	97.8	14.7	14.7
Prostate	1629	1736.3	-	-	204.3	-
Soft Tissues incl. Heart	29	31.2	21	28.1	3.6	2.6
Stomach	96	72.0	50	40.9	12.0	6.2
Testis	58	50.8	-	-	7.3	-
Thyroid	36	41.0	93	109.3	4.5	11.5
Urinary Bladder	362	368.4	123	121.0	45.4	15.2

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-89: Northwestern Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	2543	2537.8	2007	2099.3	619.5	485.5
Brain & Other Nervous System	26	33.6	26	24.4	6.3	6.3
Breast	7	5.7	598	631.4	~	144.7
Cervix Uteri	-	-	29	26.6	-	7.0
Colon & Rectum	286	258.0	275	240.7	69.7	66.5
Corpus & Uterus, NOS	-	-	120	137.5	-	29.0
Esophagus	54	42.1	12	10.5	13.2	2.9
Hodgkin Lymphoma	10	13.4	8	10.9	2.4	~
Kaposi Sarcoma (all sites)	1	1.6	0	0.4	~	~
Kidney & Renal Pelvis	83	91.4	44	52.1	20.2	10.6
Larynx	27	27.0	6	6.5	6.6	~
Leukemia	92	88.5	59	59.1	22.4	14.3
Liver & Intrahepatic Bile Duct	22	27.7	8	10.4	5.4	~
Lung & Bronchus	337	320.1	263	260.2	82.1	63.6
Melanoma of the Skin	77	98.7	50	76.5	18.8	12.1
Mesothelioma (all sites)	12	10.6	0	3.5	2.9	~
Myeloma	32	32.6	27	23.0	7.8	6.5
Non-Hodgkin Lymphoma	106	119.0	86	94.6	25.8	20.8
Oral Cavity & Pharynx	98	68.4	40	37.7	23.9	9.7
Ovary	-	-	52	64.7	-	12.6
Pancreas	50	50.3	36	47.3	12.2	8.7
Prostate	838	855.1	-	-	204.1	-
Soft Tissues incl. Heart	23	15.7	10	13.9	5.6	2.4
Stomach	39	36.0	26	19.9	9.5	6.3
Testis	29	25.6	-	-	7.1	-
Thyroid	13	20.2	38	53.7	3.2	9.2
Urinary Bladder	171	184.1	61	58.6	41.7	14.8

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-90: Central Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	8848	8416.7	6990	7025.5	521.7	418.9
Brain & Other Nervous System	118	125.8	91	90.0	7.0	5.5
Breast	26	18.5	2086	2151.8	1.5	125.0
Cervix Uteri	-	-	89	104.8	-	5.3
Colon & Rectum	819	838.6	713	753.8	48.3	42.7
Corpus & Uterus, NOS	-	-	438	464.0	-	26.2
Esophagus	149	139.3	38	33.0	8.8	2.3
Hodgkin Lymphoma	56	54.3	43	43.5	3.3	2.6
Kaposi Sarcoma (all sites)	0	6.6	1	1.1	~	~
Kidney & Renal Pelvis	356	313.3	219	174.1	21.0	13.1
Larynx	101	90.3	27	21.9	6.0	1.6
Leukemia	271	295.8	179	193.9	16.0	10.7
Liver & Intrahepatic Bile Duct	72	94.3	33	33.9	4.2	2.0
Lung & Bronchus	1134	1036.9	898	842.2	66.9	53.8
Melanoma of the Skin	309	341.6	283	285.9	18.2	17.0
Mesothelioma (all sites)	18	32.5	16	10.8	1.1	1.0
Myeloma	105	106.9	58	73.4	6.2	3.5
Non-Hodgkin Lymphoma	390	397.5	301	307.8	23.0	18.0
Oral Cavity & Pharynx	240	234.8	117	124.7	14.2	7.0
Ovary	-	-	215	220.2	-	12.9
Pancreas	155	165.3	152	148.8	9.1	9.1
Prostate	3225	2802.2	-	-	190.2	-
Soft Tissues incl. Heart	39	56.5	60	49.7	2.3	3.6
Stomach	100	115.7	62	62.5	5.9	3.7
Testis	115	116.8	-	-	6.8	-
Thyroid	80	77.4	252	215.0	4.7	15.1
Urinary Bladder	597	582.5	182	182.6	35.2	10.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-91: West Central Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	3435	3392.9	2627	2845.5	650.7	486.7
Brain & Other Nervous System	55	43.9	35	32.5	10.4	6.5
Breast	9	7.7	776	847.6	~	143.8
Cervix Uteri	-	-	28	34.8	-	5.2
Colon & Rectum	412	346.7	337	332.3	78.0	62.4
Corpus & Uterus, NOS	-	-	169	184.5	-	31.3
Esophagus	55	56.1	13	14.5	10.4	2.4
Hodgkin Lymphoma	20	17.6	18	14.5	3.8	3.3
Kaposi Sarcoma (all sites)	0	2.0	2	0.5	~	~
Kidney & Renal Pelvis	101	120.9	66	70.6	19.1	12.2
Larynx	38	35.8	9	8.7	7.2	~
Leukemia	122	118.4	76	80.7	23.1	14.1
Liver & Intrahepatic Bile Duct	23	36.6	5	14.2	4.4	~
Lung & Bronchus	393	430.6	301	356.3	74.4	55.8
Melanoma of the Skin	115	130.9	88	101.8	21.8	16.3
Mesothelioma (all sites)	16	14.5	6	4.8	3.0	~
Myeloma	56	43.7	45	31.6	10.6	8.3
Non-Hodgkin Lymphoma	136	159.2	123	129.3	25.8	22.8
Oral Cavity & Pharynx	96	90.5	37	51.2	18.2	6.9
Ovary	-	-	84	87.1	-	15.6
Pancreas	71	67.4	53	65.3	13.4	9.8
Prostate	1174	1140.9	-	-	222.4	-
Soft Tissues incl. Heart	14	20.9	18	18.6	2.7	3.3
Stomach	52	48.5	29	27.5	9.9	5.4
Testis	39	33.3	-	-	7.4	-
Thyroid	15	26.3	50	70.3	2.8	9.3
Urinary Bladder	297	249.6	99	81.0	56.3	18.3

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-92: Southwestern Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	4347	4536.4	3887	3901.2	618.4	550.4
Brain & Other Nervous System	47	58.7	47	43.3	6.7	6.7
Breast	5	10.4	1159	1155.5	~	164.1
Cervix Uteri	-	-	71	46.3	-	10.1
Colon & Rectum	513	468.1	582	467.4	73.0	82.4
Corpus & Uterus, NOS	-	-	283	250.0	-	40.1
Esophagus	55	75.1	24	20.1	7.8	3.4
Hodgkin Lymphoma	20	23.1	9	18.4	2.8	~
Kaposi Sarcoma (all sites)	1	2.8	0	0.7	~	~
Kidney & Renal Pelvis	159	161.4	91	96.6	22.6	12.9
Larynx	41	47.4	7	11.7	5.8	~
Leukemia	132	160.6	113	112.7	18.8	16.0
Liver & Intrahepatic Bile Duct	40	49.0	11	19.5	5.7	1.6
Lung & Bronchus	530	574.1	345	486.4	75.4	48.9
Melanoma of the Skin	149	176.4	114	135.7	21.2	16.1
Mesothelioma (all sites)	12	19.7	8	6.8	1.7	~
Myeloma	65	58.7	40	43.7	9.2	5.7
Non-Hodgkin Lymphoma	201	215.2	208	179.0	28.6	29.5
Oral Cavity & Pharynx	89	121.3	68	70.5	12.7	9.6
Ovary	-	-	113	118.5	-	16.0
Pancreas	65	90.2	66	90.8	9.2	9.3
Prostate	1540	1509.8	-	-	219.1	-
Soft Tissues incl. Heart	25	28.0	25	25.5	3.6	3.5
Stomach	71	65.9	39	38.9	10.1	5.5
Testis	47	43.7	-	-	6.7	-
Thyroid	38	35.2	109	92.0	5.4	15.4
Urinary Bladder	320	337.2	80	113.5	45.5	11.3

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-93: South Central Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	2964	3170.7	2740	2755.4	526.6	490.1
Brain & Other Nervous System	47	43.8	36	32.2	8.4	6.4
Breast	3	7.1	781	823.4	~	139.7
Cervix Uteri	-	-	44	35.3	-	7.9
Colon & Rectum	326	322.5	394	319.0	57.9	70.5
Corpus & Uterus, NOS	-	-	192	177.9	-	34.3
Esophagus	42	52.5	11	13.8	7.5	2.0
Hodgkin Lymphoma	17	18.6	15	15.0	3.0	2.7
Kaposi Sarcoma (all sites)	0	2.2	0	0.5	~	~
Kidney & Renal Pelvis	112	114.9	67	68.2	19.9	12.0
Larynx	22	33.5	6	8.4	3.9	~
Leukemia	109	112.0	67	78.4	19.4	12.0
Liver & Intrahepatic Bile Duct	20	34.9	8	13.6	3.6	~
Lung & Bronchus	342	395.7	300	338.6	60.8	53.7
Melanoma of the Skin	153	125.9	114	102.1	27.2	20.4
Mesothelioma (all sites)	9	13.1	1	4.6	~	~
Myeloma	31	40.6	29	30.2	5.5	5.2
Non-Hodgkin Lymphoma	133	150.4	118	124.6	23.6	21.1
Oral Cavity & Pharynx	61	86.8	39	49.5	10.8	7.0
Ovary	-	-	87	84.7	-	15.6
Pancreas	60	62.7	60	62.2	10.7	10.7
Prostate	997	1052.8	-	-	177.1	-
Soft Tissues incl. Heart	29	20.5	26	18.5	5.2	4.7
Stomach	40	45.0	25	26.5	7.1	4.5
Testis	36	37.8	-	-	6.4	-
Thyroid	22	26.7	66	72.1	3.9	11.8
Urinary Bladder	231	228.5	72	77.4	41.0	12.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-94: Southeastern Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	6492	6416.2	5544	5626.5	551.2	463.0
Brain & Other Nervous System	97	91.2	91	67.7	8.2	7.6
Breast	8	14.3	1754	1704.5	~	146.5
Cervix Uteri	-	-	64	77.0	-	5.3
Colon & Rectum	664	648.9	627	632.9	56.4	52.4
Corpus & Uterus, NOS	-	-	364	367.3	-	30.4
Esophagus	126	106.5	28	27.4	10.7	2.3
Hodgkin Lymphoma	37	38.0	40	31.3	3.1	3.3
Kaposi Sarcoma (all sites)	3	4.7	0	0.9	~	~
Kidney & Renal Pelvis	237	235.6	150	139.1	20.1	12.5
Larynx	75	68.2	12	17.3	6.4	1.0
Leukemia	250	226.1	156	157.7	21.2	13.0
Liver & Intrahepatic Bile Duct	77	71.3	30	27.5	6.5	2.5
Lung & Bronchus	806	796.8	574	681.5	68.4	47.9
Melanoma of the Skin	277	257.4	261	215.9	23.5	21.8
Mesothelioma (all sites)	18	25.9	8	9.1	1.5	~
Myeloma	83	82.1	52	60.4	7.0	4.3
Non-Hodgkin Lymphoma	303	304.3	238	251.0	25.7	19.9
Oral Cavity & Pharynx	189	177.4	80	100.8	16.0	6.7
Ovary	-	-	147	174.4	-	12.3
Pancreas	128	126.7	111	123.6	10.9	9.3
Prostate	2072	2131.8	-	-	175.9	-
Soft Tissues incl. Heart	32	41.8	34	38.3	2.7	2.8
Stomach	81	90.2	45	52.6	6.9	3.8
Testis	66	78.4	-	-	5.6	-
Thyroid	84	55.8	173	156.2	7.1	14.4
Urinary Bladder	489	455.8	150	153.3	41.5	12.5

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-95: Metropolitan Region 2002 - 2006 observed and expected numbers of cancers and average annual incidence rates for selected sites, all races combined

	Males		Females		Avg. Annual Rate§	
Cancer Site	Observed	Expected†	Observed	Expected†	Males	Females
All Sites	27087	27352.5	26166	25840.2	435.3	411.4
Brain & Other Nervous System	447	447.0	306	336.6	7.2	4.8
Breast	66	59.8	8210	8100.8	1.1	129.1
Cervix Uteri	-	-	407	418.2	-	6.4
Colon & Rectum	2532	2709.7	2522	2671.4	40.7	39.6
Corpus & Uterus, NOS	-	-	1718	1733.5	-	27.0
Esophagus	446	458.4	108	116.4	7.2	1.7
Hodgkin Lymphoma	206	194.5	162	162.2	3.3	2.5
Kaposi Sarcoma (all sites)	44	25.5	5	3.8	0.7	~
Kidney & Renal Pelvis	1052	1058.6	605	637.1	16.9	9.5
Larynx	292	296.6	89	80.7	4.7	1.4
Leukemia	973	970.2	736	693.7	15.6	11.6
Liver & Intrahepatic Bile Duct	387	319.5	145	121.7	6.2	2.3
Lung & Bronchus	3229	3272.1	3215	2982.8	51.9	50.5
Melanoma of the Skin	1218	1169.8	1099	1104.7	19.6	17.3
Mesothelioma (all sites)	101	98.7	46	38.2	1.6	0.7
Myeloma	344	344.9	274	260.8	5.5	4.3
Non-Hodgkin Lymphoma	1382	1315.6	1109	1108.4	22.2	17.4
Oral Cavity & Pharynx	827	805.1	516	457.6	13.3	8.1
Ovary	-	-	854	822.9	-	13.4
Pancreas	556	535.4	570	522.5	8.9	9.0
Prostate	8667	8938.7	-	-	139.3	-
Soft Tissues incl. Heart	216	193.6	187	184.4	3.5	2.9
Stomach	376	372.1	219	222.7	6.0	3.4
Testis	436	443.7	-	-	7.0	-
Thyroid	283	282.0	843	850.5	4.5	13.3
Urinary Bladder	1737	1816.3	655	642.1	27.9	10.3

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2002 - 2006 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Appendices

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Appendix A: Definitions for Cancer Incidence Data

MCSS collects information on all microscopically confirmed malignant and *in situ* tumors diagnosed in Minnesota residents, with the exception of basal and squamous cell carcinomas of non-genital skin sites and *in situ* cancers of the cervix. *In situ* cancers except those of the bladder are only included in stage-specific tables in Chapter III, and are excluded from all other tables. *In situ* bladder cancers are included with invasive bladder cancers and counts of all cancers sites combined because the distinction between *in situ* and invasive bladder cancers is often unclear, and some *in situ* bladder cancers can be life-threatening.

The anatomic site and histologic type reported for the cancer in the medical record or pathology report is coded according to the International Classification of Diseases for Oncology (ICD-O), developed by the World Health Organization. Cases diagnosed in 1988-1991 were coded to the first edition of ICD-O, cases diagnosed in 1992-2000 according to the second edition (ICD-O-2), and those cases diagnosed in 2001-2004 according to the third edition (ICD-O-3). These codes were then grouped according to conventions developed by the Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Registry.

Cancer	Anatomic site (ICD-O-3)	Histologic Type (ICD-O-3)
Oral Cavity and Pharynx		Excluding 9590-9989, 9050-9055, 9140
Lip	C000-C009	
Tongue	C019-C029	
Salivary Gland	C079-C089	
Floor of Mouth	C040-C049	
Gum and Other Mouth	C030-C039, C050-C059, C060-C069	
Nasopharynx	C110-C119	
Tonsil	C090-C099	
Oropharynx	C100-C109	
Hypopharynx	C129, C130-C139	
Other Oral Cavity and Pharynx	C140, C142-C148	
Digestive System		Excluding 9590-9989, 9050-9055, 9140
Esophagus	C150-C159	
Stomach	C160-C169	
Small Intestine	C170-C179	
Colon excluding Rectum	C180-C189, C260	
Rectum and Rectosigmoid Junction	C199, C209	
Anus, Anal Canal, and Anorectum	C210-C212, C218	
Liver and Intrahepatic Bile Duct	C220, C221	

Gallbladder	C239	
Other Biliary	C240-C249	
Pancreas	C250-C259	
Retroperitoneum	C480	
Peritoneum, Omentum, and Mesentery	C481-C482	
Other Digestive Organs	C268-C269, C488	
Respiratory System		Excluding 9590-9989, 9050-9055, 9140
Nose, Nasal Cavity and Middle Ear	C300-C301, C310-C319	
Larynx	C320-C329	
Lung and Bronchus	C340-C349	
Pleura	C384	
Trachea, Mediastinum and Other Respiratory Organs	C339, C381-C383, C388, C390, C398, C399	
Mesothelioma	All sites	9050-9055
Bones and Joints	C400-C419	Excluding 9590-9989, 9050-9055, 9140
Soft Tissue including Heart	C380, C470-C479, C490-C499	Excluding 9590-9989, 9050-9055, 9140
Skin excluding Basal and Squamous		
Melanoma of the Skin	C440-C449	8720 – 8790
Other Non-Epithelial Skin	C440-C449	Excluding 8000-8005, 8010-8045, 8050-8084, 8090-8110, 8720-8790, 9590-9989, 9050-9055, 9140
Kaposi Sarcoma	All sites	9140
Breast	C500-C509	Excluding 9590-9989, 9050-9055, 9140
Female Genital System		Excluding 9590-9989, 9050-9055, 9140
Cervix Uteri	C530-C539	
Corpus and Uterus, NOS	C540-C549, C559	
Ovary	C569	
Vagina	C529	
Vulva	C510-C519	
Other Female Genital Organs	C570-C589	
Male Genital System		Excluding 9590-9989, 9050-9055, 9140
Prostate	C619	

Testis	C620-C629	
Penis	C600-C609	
Other Male Genital Organs	C630-C639	
Urinary System		Excluding 9590-9989, 9050-9055, 9140
Urinary Bladder	C670-C679	
Kidney and Renal Pelvis	C649, C659	
Ureter	C669	
Other Urinary Organs	C680-C689	
Eye and Orbit	C690-C699	Excluding 9590-9989, 9050-9055, 9140
Brain and Other Nervous System		
Brain	C710-C719	Excluding 9530-9539, 9590-9989, 9050-9055, 9140
Other Nervous System	C710-C719	9530-9539
	C700-C709, C720-C729	Excluding 9590-9989, 9050-9055, 9140
Endocrine System		Excluding 9590-9989, 9050-9055, 9140
Thyroid	C739	
Other Endocrine including Thymus	C379, C740-C749, C750-C759	
Lymphoma		
Hodgkin Lymphoma	All sites	9650-9667
Non-Hodgkin Lymphoma	C024, C098-C099, C111, C142, C379, C422, C770-C779	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729, 9823, 9827
	All sites except C024, C098-C099, C111, C142, C379, C422, C770-C779	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729
	All sites, except C024, C098-C099, C111, C142, C379, C420-C422, C424, C770-C779	9823, 9827
Multiple Myeloma	All sites	9731-9732, 9734
Leukemia		
Lymphocytic Leukemia		
Acute Lymphocytic Leukemia	All sites	9826, 9835-9837

Chronic Lymphocytic Leukemia	C420-C421, C424	9823
Other Lymphocytic Leukemia	All sites	9820, 9832-9834, 9940
Myeloid and Monocytic Leukemia		
Acute Myeloid Leukemia	All sites	9840, 9861, 9866, 9867, 9871-9874, 9895-9897, 9910, 9920
Acute Monocytic Leukemia	All sites	9891
Chronic Myeloid Leukemia	All sites	9863, 9875, 9876, 9945, 9946
Other Myeloid/Monocytic Leukemia	All sites	9860, 9930
Other Leukemia		
Other Acute Leukemia	All sites	9801, 9805, 9931
Aleukemic, Subleukemic and NOS	All sites	9733, 9742, 9800, 9831, 9870, 9948, 9963, 9964
	C420-C421,C424	9827
Miscellaneous	All sites	9740-9741, 9750-9758, 9760-9769, 9950, 9960-9962, 9970, 9975, 9980, 9982-9987, 9989
	C420-C424, C760-C768, C770-C779, C809	Excluding 9590-9989, 9050-9055, 9140

Appendix B: Definitions for Cancer Mortality Data

Cancer mortality data on Minnesota residents were obtained from death certificates reported to the Minnesota Center for Health Statistics. The underlying cause of death was coded according to the Manual of the International Classification of Diseases (ICD), developed by the World Health Organization. From 1988 to 1998, the ninth revision of ICD was used, and starting with deaths occurring in 1999, the tenth revision was used. These codes are then grouped according to conventions developed by the Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Registry, given below.

Cancer	Anatomic site (ICD-9)	Anatomic site (ICD-10)
Oral Cavity and Pharynx		
Lip	140	C00
Tongue	141	C01-C02
Salivary Gland	142	C07-C08
Floor of Mouth	144	C04
Gum and Other Mouth	143, 145	C03, C05-C06
Nasopharynx	147	C11
Tonsil	146.0-146.2	C09
Oropharynx	146.3-146.9	C10
Hypopharynx	148	C12-C13
Other Oral Cavity and Pharynx	149	C14
Digestive System		
Esophagus	150	C15
Stomach	151	C16
Small Intestine	152	C17
Colon excluding Rectum	153,159.0	C18, C26.0
Rectum and Rectosigmoid Junction	154.0-154.1	C19-C20
Anus, Anal Canal, and Anorectum	154.2-154.3, 154.8	C21
Liver	155.0, 155.2	C22.0, C22.2-C22.4, C22.7, C22.9
Intrahepatic Bile Duct	155.1	C22.1
Gallbladder	156.0	C23
Other Biliary	156.1-156.2, 156.8-156.9	C24
Pancreas	157	C25
Retroperitoneum	158.0	C48.0
Peritoneum, Omentum, and Mesentery	158.8-158.9	C48.1-C48.2
Other Digestive Organs	159.8-159.9	C26.8-C26.9, C48.8

Respiratory System		
Nose, Nasal Cavity, and Middle Ear	160	C30-C31
Larynx	161	C32
Lung and Bronchus	162.2-162.5, 162.8-162.9	C34
Pleura	163	C38.4
Trachea, Mediastinum, and Other Respiratory Organs	162.0, 164.2-164.3, 164.8-164.9, 165	C33, C38.1-C38.3, C38.8, C39
Mesothelioma	N/A	C45
Bones and Joints	170	C40-C41
Soft Tissue including Heart	164.1, 171	C47, C49, C38.0
Skin excluding Basal and Squamous		
Melanoma of the Skin	172	C43
Other Non-Epithelial Skin	173	C44
Kaposi Sarcoma	N/A	C46
Breast	174-175	C50
Female Genital System		
Cervix Uteri	180	C53
Corpus and Uterus, NOS	179, 182	C54-C55
Ovary	183.0	C56
Vagina	184.0	C52
Vulva	184.1-184.4	C51
Other Female Genital Organs	181, 183.2-183.5, 183.8-183.9, 184.8-184.9	C57-C58
Male Genital System		
Prostate	185	C61
Testis	186	C62
Penis	187.1-187.4	C60
Other Male Genital Organs	187.5-187.9	C63
Urinary System		
Bladder	188	C67
Kidney and Renal Pelvis	189.0-189.1	C64-C65
Ureter	189.2	C66
Other Urinary Organs	189.3-189.4, 189.8-189.9	C68

Eye and Orbit	190	C69
Brain and Other Nervous System	191, 192	C70, C71, C72
Endocrine System		
Thyroid	193	C73
Other Endocrine, including Thymus	164.0, 194	C37, C74-C75
Lymphoma		
Hodgkin Lymphoma	201	C81
Non-Hodgkin Lymphoma	200, 202.0-202.2, 202.8-202.9	C82-C85, C96.3
Multiple Myeloma	203.0, 238.6	C90.0, C90.2
Leukemia		
Lymphocytic Leukemia		
Acute Lymphocytic Leukemia	204.0	C91.0
Chronic Lymphocytic Leukemia	204.1	C91.1
Other Lymphocytic Leukemia	202.4, 204.2, 204.8-204.9	C91.2-C91.4, C91.7, C91.9
Myeloid and Monocytic Leukemia		
Acute Myeloid Leukemia	205.0, 207.0, 207.2	C92.0, C92.4-C92.5, C94.0, C94.2
Acute Monocytic Leukemia	206.0	C93.0
Chronic Myeloid Leukemia	205.1	C92.1
Other Myeloid/Monocytic Leukemia	205.2-205.3, 205.8-205.9, 206.1-206.2, 206.8-206.9	C92.2-C92.3, C92.7, C92.9, C93.1-C93.2, C93.7, C93.9
Other Leukemia		
Other Acute Leukemia	208.0	C94.4, C94.5, C95.0
Aleukemic, Subleukemic and NOS	203.1, 207.1, 207.8, 208.1-208.2, 208.8-208.9	C90.1, C91.5, C94.1, C94.3, C94.7, C95.1, C95.2, C95.7, C95.9
Miscellaneous	159.1, 195-199, 202.3, 202.5-202.6, 203.8	C26.1, C76-C80, C88, C96.0-C96.2, C96.7, C96.9, C97

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Appendix C: Definition of Minnesota Regions and Minnesota counties included in the Indian Health Service's Contract Health Service Delivery Area (CHSDA)

Table 1: Minnesota Regions

Region	Counties			
Metropolitan Minnesota (Metro)	Anoka	Dakota	Ramsey	Washington
	Carver	Hennepin	Scott	
Southeastern Minnesota (SE)	Dodge	Goodhue	Olmsted	Wabasha
	Fillmore	Houston	Rice	Winona
	Freeborn	Mower	Steele	
South Central Minnesota (SC)	Blue Earth	Le Sueur	Nicollet	Waseca
	Brown	Martin	Sibley	Watonwan
	Faribault			
Southwestern Minnesota (SW)	Big Stone	Lac Qui Parle	Murray	Rock
	Chippewa	Lincoln	Nobles	Swift
	Cottonwood	Lyon	Pipestone	Yellow Medicine
	Jackson	McLeod	Redwood	
	Kandiyohi	Meeker	Renville	
Central Minnesota (Central)	Benton	Isanti	Pine	Wadena
	Cass	Kanabec	Sherburne	Wright
	Chisago	Mille Lacs	Stearns	
	Crow Wing	Morrison	Todd	
West Central Minnesota (WC)	Becker	Grant	Pope	Traverse
	Clay	Otter Tail	Stevens	Wilkin
	Douglas			
Northwestern Minnesota (NW)	Beltrami	Kittson	Marshall	Polk
	Clearwater	Lake of the Woods	Norman	Red Lake
	Hubbard	Mahnomen	Pennington	Roseau
Northeastern Minnesota (NE)	Aitkin	Cook	Koochiching	St. Louis
	Carlton	Itasca	Lake	

Table 2: Minnesota CHSDA Counties

Aitkin	Hubbard	Pine
Becker	Itasca	Polk
Beltrami	Kanabec	Redwood
Carlton	Koochiching	Renville
Cass	Lake of the Woods	Roseau
Chippewa	Mahnomen	St. Louis
Clearwater	Marshall	Scott
Cook	Mille Lacs	Traverse
Goodhue	Norman	Yellow Medicine
Houston	Pennington	

Appendix D: Glossary

Age-Adjusted Rate: A rate that has been adjusted to control for differences in age distribution between populations. It is a weighted average of age-specific rates, with the proportion of individuals in the corresponding age groups of the standard population functioning as the weights. All age-adjusted rates in this report are age-adjusted to the 2000 U.S. population and are expressed per 100,000 persons.

Age-Specific Rate: The rate of occurrence of a cancer for a specific age group (the number of cancers occurring during a specified period of time in a particular age group divided by the total number of individuals in the age group and time period).

Annual Percent Change (APC): The average percent change in the age-adjusted rate each year over a specified period of time. See also Appendix E.

Artifact: Any artificial product. In epidemiology, any observation that has been introduced by the methods used for data collection or data analysis.

Benign: A tumor or abnormal cell growth that is not malignant and unlikely to metastasize.

Cancer: A group of diseases characterized by rapid, uncontrolled cell growth, with a tendency to spread throughout the body.

Cancer Incidence: The number of new cases of cancer diagnosed during a specified period of time.

Cancer Incidence Rate: The rate at which newly diagnosed cancers occur in a population (the number of cancers occurring in a defined period of time divided by the total number of people in the population during that period of time).

Cancer Mortality: The number of deaths due to cancer during a specified period of time, regardless of when the disease was diagnosed.

Cancer Mortality Rate: The rate at which cancer-related deaths occur in a population (the number of deaths occurring in a defined period of time divided by the total number of people in the population during that period of time).

Cancer Registry: An ongoing system for the registration and follow-up of patients who develop cancer.

- **Hospital-Based Cancer Registry:** A cancer registry that uses hospital records as the primary data source for identification of cases.
- **Pathology-Based Cancer Registry:** A cancer registry that uses pathology laboratory records as the primary data source for identification of cases.
- **Population-Based Cancer Registry:** A cancer registry that attempts to collect information on at least 95 percent of the incident cancers occurring in the individuals residing within a defined geopolitical region. The MCSS is a population-based cancer registry.

Carcinoma: A malignant tumor of epithelial origin.

Case-Control Study: A study in which individuals with a particular condition such as cancer (referred to as cases) are selected for comparison with individuals in whom the condition is absent (controls). Cases and controls are compared with respect to past exposures, risk factors, or attributes thought to be relevant to the development of the condition under study.

CDC: Centers for Disease Control and Prevention.

Clinical Diagnosis: Cancers that are not histologically confirmed, but are instead diagnosed through other means—for example, through imaging procedures such as CT scans. The MCSS does not collect information on cancers that are only clinically diagnosed and have no microscopic confirmation.

Cumulative Lifetime Risk of Cancer: As calculated in this report, this is the estimated percentage of newborns in Minnesota in 2000-2002 who would be diagnosed with cancer over their entire lifetime, if cancer incidence and mortality and all-cause mortality rates do not change from those in 2000-2002. See also Appendix E.

Death Clearance: A quality control activity that links the MCSS database of incident cancers with Minnesota cancer-related death certificates. Any death certificates that do not have a corresponding match in the MCSS database indicate a cancer that may have been missed. MCSS staff members follow up on each of these cases to see if the cancer should have been included in the database.

Epidemiology: The study of health conditions (e.g., cancers, injuries, etc.) by looking for patterns of occurrence by time, place, or person in the hopes of finding causes or identifying control measures for the condition.

Etiology: The study or theory of the causation of any disease; the sum of knowledge regarding causes.

Expected Number of Cases: The number of cases (of a cancer) expected in a given population in a given time period if the incident rates for that cancer were the same as the rates in a comparison population, adjusting for age differences of the two populations.

Five-year Relative Survival: The estimated proportion of persons who will be alive five years following diagnosis, after adjusting for expected mortality from other causes.

Histology: The type of tissue in which a tumor originated, e.g., glandular tissue, connective tissue, etc.

ICD-9 and ICD-10: The ninth and tenth revisions of the International Classification of Diseases used to code and classify underlying cause of death.

ICD-O-FT, ICD-O-2 and ICD-O-3: The 1987 Field Trial, second and third revisions of the International Classifications of Diseases for Oncology used to code and classify anatomic site and histologic type of cancer cases.

Invasive: The tendency of a tumor to spread to adjacent healthy tissues. Technically, “invasive” means the carcinoma has penetrated the basement membranes and is close to blood vessels.

Malignant: Tending to become progressively worse, to spread, and invade other tissues.

MCHS: Minnesota Center for Health Statistics.

MCSS: Minnesota Cancer Surveillance System.

MDH: Minnesota Department of Health.

Median Age: As calculated in this report, the midpoint of the age distribution of group of persons diagnosed with or dying of cancer during the 3-year period 2000-2002; that is, the age at which 50 percent of cases or deaths are younger and 50 percent are older.

Microscopic Confirmation: A tumor of which at least a piece has been examined microscopically and diagnosed by a pathologist or other specialist.

NAACCR: North American Association of Central Cancer Registries.

NPCR: National Program of Cancer Registries.

Observed Number of Cases: The actual (also called crude) number of cases of a cancer recorded for a given population for a given period of time.

Pathology: The branch of medicine that studies the essential nature of disease, especially the structural changes in tissues or organs associated with disease.

Prevalence: The number of people alive on a certain date who have been diagnosed with cancer at any time in their lives. Prevalence considers both newly diagnosed and previously diagnosed cancers.

Primary Site (cancer site): The place in the body where the cancer first arose.

Quality Control: The steps taken to avoid making errors and to find and correct errors before the data are added to the master database.

Record Linkage: The process of comparing two records from different sources, deciding if the records correspond to the same individual or entity, and then taking some action based on that decision.

Risk Factor: An attribute or exposure that is associated with an increased probability of developing a condition or disease, but does not necessarily imply cause and effect.

SEER (Surveillance, Epidemiology, and End Results): An ongoing, population-based cancer surveillance system sponsored by the National Cancer Institute that monitors cancer incidence, treatment, and follow-up in nine or thirteen U.S. regions comprising approximately 10 or 14 percent of the U.S. population depending on which years of data are examined. Since a cancer registry covering the entire U.S. does not exist, cancer incidence data from SEER are widely cited as national data.

Stage at diagnosis: The extent to which the cancer has spread at the time of diagnosis. Two well-known staging systems include the General Summary Stage system, developed for the SEER Program, and the TNM staging system, developed by the American Joint Committee on Cancer. For this report, the following terms describing cancer stage are used:

- ***In situ*:** earliest stage of cancer development in which the tumor has not infiltrated the tissue of the organ in which they are growing;
- **Localized:** tumor has invaded the tissue of the organ, but has not spread beyond the organ in which the tumor originated;
- **Regional:** tumor has spread beyond the organ in which the tumor originated to adjacent lymph nodes or tissues;
- **Distant:** most advanced stage of cancer development in which the tumor has spread, or metastasized, beyond the organ in which the tumor originated to organs in other parts of the body;
- **Unknown:** unstaged tumors due to insufficient information recorded in the medical record to determine the extent of the tumor at the time of diagnosis.

Surveillance: The systematic collection, analysis, and interpretation of data pertaining to the occurrence of specific diseases (in this report, cancer).

- **Active Surveillance:** The reporters of disease are contacted at regular intervals and specifically asked about the occurrence of the disease under surveillance. This is considered the most ideal and complete form of surveillance.
- **Passive Surveillance:** Reporting of the disease in question is initiated by the reporting source.

Tumor: A mass resulting from the abnormal growth of cells. Tumors may either be benign (with little tendency to spread throughout the body) or malignant (with a tendency to spread throughout the body). Malignant tumors are synonymous with cancer.

Underlying Cause of Death: The disease or injury that initiated events resulting in death.

Appendix E: Statistical Methods

Age-Adjusted Rates

Age-adjusted rates were calculated using the Surveillance Research Program, National Cancer Institute SEER*Stat software (http://seer.cancer.gov/seerstat/index.html) version 6.6.2. Cases diagnosed with histology defined as a "borderline malignancy" under ICD-O-2 coding rules and "invasive" under ICD-O-3 were not included under data for All Cancer Sites Combined or Miscellaneous cancers. These histologies (9950, 9960-9962, and 9980-9989) are miscellaneous myeloproliferative and lymphoproliferative disorders and myelodysplastic syndromes; they accounted for a total of 1,631 diagnoses over the four-year period 2001-2004.

$$aarate_{-y} = \sum_{i=r}^{r}\left[\left(\frac{count_i}{pop_i}\right) \times 100{,}000 \times \left(\frac{stdmil_i}{\sum_{j=r}^{r} stdmil_j}\right)\right]$$

Standard Population

2000 U.S. Standard Million Population

Age group (years)	Population
0	13,818
1-4	55,317
5-9	72,533
10-14	73,032
15-19	72,169
20-24	66,478
25-29	64,529
30-34	71,044
35-39	80,762
40-44	81,851
45-49	72,118
50-54	62,716
55-59	48,454
60-64	38,793
65-69	34,264
70-74	31,773
75-79	26,999
80-84	17,842
85+	15,508

Trends/Annual Percent Change

All Minnesota trends were calculated using the Surveillance Research Program, National Cancer Institute Joinpoint Regression Program (http://srab.cancer.gov/joinpoint) version 3.4.3, with a maximum of three joinpoints (i.e. four line segments). Joinpoint takes annual age-adjusted cancer rates and their standard errors and identifies points in time where trends change direction and calculates the Annual Percent Change (APC) during the intervals between these points, called a segment. Only the APC for the segment ending in 2006 is presented.

Cumulative Lifetime Risk

Cumulative lifetime risk was calculated using DevCan (http://srab.cancer.gov/devcan) version 6.3.0, using site-, sex-, and age-specific incidence, cancer mortality and all cause mortality in Minnesota for 2004-2006. It represents the estimated percentage of newborns in Minnesota in 2004-2006 who would develop cancer during their lifetimes, if cancer incidence and mortality rates and all cause mortality rates in the state do not change from those in 2004-2006.

Statistical Significance

Statistical significance was determined at the p = 0.05 level using methods incorporated into SEER*Stat software programs.

Prevalence

MCSS cannot directly calculate prevalence for Minnesota because MCSS has only registered cancers in Minnesota since 1988 and does not have complete follow-up information on the vital status of the individual.

To estimate Minnesota cancer prevalence, the age-, sex- and site-specific cancer prevalence percents (5-year and 31-year) for the white population in the nine regions participating in the SEER Program since 1975 were calculated in limited duration prevalence sessions in SEER*Stat version 6.6.2 for all sites combined and the most common cancers. Prevalence percents were multiplied by the corresponding age- and sex-specific population estimates for Minnesota on January 1, 2004, obtained by averaging estimates for the mid-year of 2005 and 2006 obtained from SEER.

To adjust for generally lower cancer rates in Minnesota, the resulting numbers were multiplied by age-, sex- and site-specific rate ratios for cancer incidence in Minnesota and in the SEER 9 Region white population during 2002-2006. Age-specific estimates were summed for site and sex totals and rounded to the nearest ten persons. The prevalence estimates for males and females were summed to estimate prevalence for both sexes combined. Completeness indexes for SEER 9 whites were estimated in ComPrev (http://srab.cancer.gov/comprev) and applied to the 31-year estimates for complete prevalence.

The prevalence data presented here are estimates, not actual counts of Minnesotans living with cancer. Adjusting the prevalence percents for the white population in the nine SEER regions by known differences in cancer incidence between Minnesota and SEER decreased cancer prevalence estimates for Minnesota. This is appropriate given that overall cancer incidence has historically been lower in Minnesota than in the geographic areas participating in the SEER program.

However, other factors affecting cancer prevalence could not be adjusted for. If Minnesotans have higher cancer survival rates than the SEER 9 Region white population, our prevalence estimates will be too low. MCSS is not yet able to calculate cancer survival rates for Minnesotans because of incomplete follow-up information. However, given the recognized high quality of health care in Minnesota, higher survival rates in Minnesota may occur. Similarly, Minnesotans have a higher life expectancy than many other states, due in part to having the lowest heart disease mortality rate in the nation. Since Minnesotans live longer and therefore have more “opportunity” to develop cancer, these prevalence estimates may be too low. It is therefore likely that the prevalence estimates presented here represent the lower limits of actual prevalence.