Cancer in Minnesota
1988 - 2004

Minnesota Department of Health

Minnesota Cancer Surveillance System

September 2008

Protecting, maintaining and improving the health of all Minnesotans

September 2008

Dear Colleague:

The Minnesota Department of Health (MDH) is pleased to present the ninth 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 real progress in reducing the burden of cancer in our state. The breast cancer incidence rate among women declined significantly by 12 percent between 2001 and 2004, the first time since cancer reporting was implemented in Minnesota in 1988. Incidence rates are also declining significantly for colorectal cancer for both men and women, and for lung cancer among men. 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 22 percent of cancer deaths in Minnesota in 2004.

Nonetheless, much work remains to be done. Cancer remains the leading cause of death in Minnesota, causing the deaths of 1,200 more Minnesotans than heart disease in 2004. Half of all Minnesotans will be diagnosed with a potentially serious cancer at some point during their lives. It is clear from this report that persons of color experience a disproportionate burden of cancer in our state. Of special concern are American Indians in Minnesota, whose risk of dying of cancer 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,

Sanne Magnan

Sanne Magnan, M.D., Ph.D.
Commissioner
P.O. Box 64975
St. Paul, MN 55164-0975

[This page left intentionally blank.]

Cancer in Minnesota, 1988-2004

Report to the Minnesota Legislature 2008

September 2008

For more information, contact:
Minnesota Cancer Surveillance System
Health Promotion & Chronic Disease Division
Health Improvement Bureau
Minnesota Department of Health
85 East Seventh Place
P.O. Box 64882
Saint Paul, Minnesota 55164-0882
http://www.health.state.mn.us/divs/hpcd/cdee/mcss/

Phone: (651) 201-5900
Fax: (651) 201-5926
TDD: (651) 201-5797

As requested by Minnesota Statute 3.197: This report cost approximately $22,000 to prepare, including staff time, printing, and mailing expenses.

Upon request, this publication will be made available in alternative formats, such as large print, Braille, or cassette tape.

Printed on recycled paper.

ACKNOWLEDGEMENTS

MINNESOTA DEPARTMENT OF HEALTH
Sanne Magnan, Commissioner
Jeanne M. Danaher, Deputy Commissioner

Minnesota Cancer Surveillance System Staff

Vickie Assad, RHIT
Jerryn Ballard, CTR
JoAnn Bitker, RHIT, CTR
Margee Brown, MPH
Sally Bushhouse, DVM, PhD
Elaine Collins, MA, RHIA, CTR
Nancy Dean
Lynda Diedrich, CTR
Carol Forbes-Manske, RHIT, CTR
Jackie Harte, CTR
Donna Hattenberger, RHIT, CTR
Brenda Holden
Patty Jaclyn-Doty, RHIT
Gail Kvernmoe, RHIT, CTR
Jill Kyvig
Kristine Lenser, CTR
Shannon McNamara
Carin Perkins, PhD
Alex Ryabinin
Mila Ryabinin
Ed Schneider, JD
Gene Senger, CTR
John Soler, MPH
Kirsti Taipale, CTR
Pat Thoreson, RHIT
Chris Wein
Sue Wozniak

Minnesota Cancer Surveillance System Advisory Group Members

Alan Bender, DVM, PhD
David Benson, MD
James Cerhan, MD, PhD
Aaron Folsom, MD
Laurie Griffin, CTR
Ken Joslyn, MD, MPH
Shelly Madigan, MPH
Kathleen McKeen
Charles Murray, MD
Daniel Nikcevich, MD, PhD
Geary Olsen, DVM, PhD
Julie Ross, PhD
Mark Wilkowske, MD
John L. Young, Jr, DrPH, CTR

Chronic Disease and Environmental Epidemiology Staff who contributed to this report:
Debra Lee, OAS, Int.
Dianna Roerig, OAS, Int.
Patti Stoika, Office Manager

Sincere thanks to the cancer registrars, laboratory personnel, and health care providers throughout the state whose diligence in data collection and reporting make this report possible. Collection of Minnesota cancer data was supported by Cooperative Agreement Number UC75/ CCU510693 from the Centers for Disease Control and Prevention. The contents of this work are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

On the Cover

Images taken at Vadnais Lake, Vadnais Heights, Minnesota.

SUGGESTED CITATION:
Brown M, Perkins C, Soler J, Bushhouse S. *Cancer in Minnesota, 1988-2004*. St. Paul, Minnesota: Minnesota Cancer Surveillance System, Minnesota Department of Health, September 2008.

Table of Contents

[This page left intentionally blank.]

Summary

This report summarizes the status of cancer in Minnesota, using cases reported to the Minnesota Cancer Surveillance System and deaths reported to the Minnesota Center for Health Statistics. 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 risks, early detection, and treatment.

- In 2004, 24,088 Minnesotans were diagnosed with cancer, and 9,089 Minnesotans died of these diseases.

- From 1995 to 2004, the overall cancer incidence rate among males increased significantly by 0.7 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 2004. In the biennial report on cancer occurrence through 2002, cancer incidence was increasing by 1.1 percent per year among males and 0.5 percent per year among females.

- For the first time since cancer reporting was implemented in 1988, the incidence of breast cancer among women in Minnesota declined significantly; between 2001 and 2004 the rate decreased by 12 percent.

- Prostate cancer incidence continues to fluctuate, but appears to be stabilizing. The rate decreased by nine percent between 2001 and 2004, but the trend was not statistically significant.

- Despite increasing incidence rates for a number of cancers, the overall cancer mortality rate in Minnesota declined by 1.4 percent per year for men from 1996 to 2004, and by 0.4 percent per year for women from 1988 to 2004. Mortality rates declined significantly for breast, prostate, and colorectal cancer, and for lung cancer among males.

- In 2004, lung cancer killed more Minnesotans (2,356 deaths) than the next three leading cancers combined: colorectal (796 deaths), breast (656 deaths), and prostate (558 deaths).

- Lung cancer mortality among women continues to increase by 1.3 percent each year in Minnesota, in contrast to 0.2 percent nationally.

- Heart disease is the leading cause of death in the US, but cancer has been the leading cause of death in Minnesota since 2000. In 2004, 1,200 more Minnesotans died of cancer than heart disease.

- The overall cancer incidence rate in Minnesota is similar to the national rate for all races combined, and is five percent lower for non-Hispanic whites. Nonetheless, leukemia and prostate cancer rates are significantly higher in Minnesota than nationally. Comparing non-Hispanic whites in Minnesota to those living in the geographic areas reporting to the national SEER Program, incidence rates for leukemia and prostate cancer are 13 percent and 10 percent higher in Minnesota, respectively. Comparing non-Hispanic whites in Minnesota and the US, mortality rates for leukemia and prostate cancer are 5 percent and 17 percent higher in Minnesota, respectively.

- Mesothelioma incidence rates among men are significantly higher in northeast Minnesota than in the state as a whole, while among women, the rates in northeast Minnesota are among the lowest.

- Disparities in the burden of cancer are evident in Minnesota. Nationally, American Indians have the lowest overall cancer rate, but in Minnesota they have the highest. They were 15 percent more likely to be diagnosed with cancer than non-Hispanic white Minnesotans and 55 percent more likely to die of the disease. Much of the increase in risk is due to lung and colorectal cancers.

- 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 177,940 Minnesotans, or 3.5 percent of the population, were living with a history of cancer on January 1, 2004.

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

Cancer Plan Minnesota 2005-2010 is the state's first comprehensive cancer control plan. Developed through a broad-based collaboration of public, private and non-profit organizations, the plan was released in April 2005 and serves as a common framework for action to reduce the burden of cancer for all Minnesotans. The plan includes 24 objectives and numerous strategies covering all facets of cancer control: prevention, early detection, treatment, quality of life, cancer disparities, and data and research needs.

The Minnesota Cancer Alliance was formed to implement *Cancer Plan Minnesota*. It provides 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.

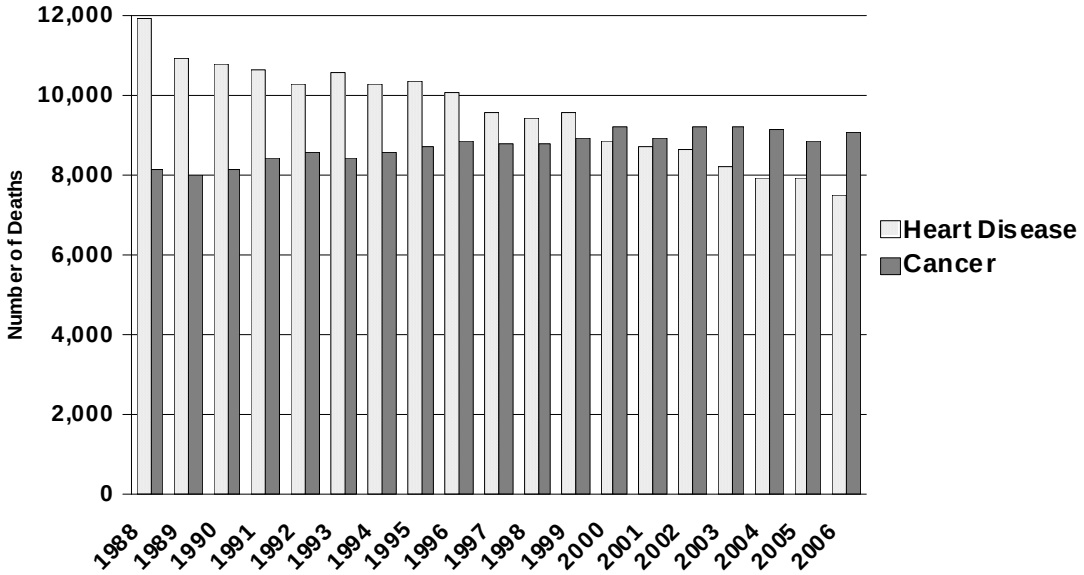
The Minnesota Cancer Surveillance System (MCSS) was essential in the development of data-driven objectives for *Cancer Plan Minnesota* and is actively involved in the Alliance. MCSS will be the key source of population-based data to assess the outcome of cancer control efforts in Minnesota.

Minnesota Cancer Alliance task forces are currently addressing the cancer plan's four initial priorities:

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

The importance of working together to reduce the suffering caused by cancer is underscored by the fact that cancer became the leading cause of death in Minnesota in 2000. Volunteers representing a broad base of stakeholders are working together in project teams to take specific action to help achieve the cancer plan's objectives. 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, 1988-2006



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

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 20 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.

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.

[This page left intentionally blank.]

Chapter I:
Introduction

[This page left intentionally blank.]

Chapter I: Introduction

This report contains information on the incidence and mortality of cancer in Minnesota from 1988-2004. 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. Incidence data are collected by the Minnesota Cancer Surveillance System (MCSS), and mortality data are collected by the Minnesota Center for Health Statistics (MCHS). MCSS prepared 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 need for accurate information about the occurrence of cancer was recognized by the Minnesota legislature 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.

To minimize repetition of discussion and materials presented in previous reports, liberal cross-referencing is employed. The eight previous reports are: *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;* and *Cancer in Minnesota 1988-2002.* These reports will be referenced as MCSS 1991, MCSS 1993, MCSS 1995, MCSS 1997, MCSS 1999, MCSS 2001, MCSS 2003, and MCSS 2005, respectively; they are available from MCSS. MCSS 1999, 2001, 2003, and 2005 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).

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

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, 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. Information about the patient, cancer, stage, and treatment that the pathology laboratory cannot provide is obtained 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 795,000 reports of cancer representing approximately 467,000 different cancers were registered with MCSS as of October 2007. For the period covered by this report, January 1, 1988 to December 31, 2004, 355,149 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 16 years ago, 17,728 cancers were included in the analyses of 1988 data. The current database for 1988 contains information on 18,010 cancers (some of the increase is because the data reported for 1988 did not include *in situ* cancers of the bladder). MCSS staff are 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 1988-2004 data included in this report was October 23, 2007.

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.[*] These represent intercensal estimates for the years 1988 and 1999. For the years 2000 through 2004, the population estimates incorporate bridged single-race estimates, which are derived from the original multiple race categories in the 2000 Census. Because of a directive from the federal Office of Management and Budget, the 2000 Census collected race information in a new way – people could select more than one race, instead of being forced to select only one. Bridged estimates attempt to re-categorize those selecting more than one race 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 according to the 2nd edition (ICD-O-2), and

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

[†] www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm

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 in *SEER Cancer Statistics Review, 1975-2004*, 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 this report. 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 1,856 diagnoses over the four-year period 2001-2004. 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 ones. 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 1999-2002, 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 1973 and from an additional four areas since 1992. 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 17% of the U.S. population, as presented in race-specific tables in their recent report, *SEER Cancer*

*Statistics Review, 1975-200*4. 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 slightly over three percent of the Minnesota population during 2000-2004 and approximately 20 percent of the overall population in the 17 SEER areas. This means that for many sites, Minnesota rates for all races combined will be higher than that 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 2000-2004, 3.7 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 3.7 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 eye and orbit (30% of cases reported as clinically diagnosed in SEER), liver (22%), pancreas (18%), brain (11%), Kaposi sarcoma (11%), 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 9.5 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 1988-2004, 4.6 percent (nearly 20,000) 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 cancers diagnosed between 1995 and 2004 (the years for which death clearance has been performed), 1.4 percent would not have been identified without the death certificate, and 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 2005 MCSS submitted a nonidentified file of its provisional data for 2003 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. Due to major staffing changes in 2006, clean-up of 2004 data was delayed; therefore a file was not submitted to NAACCR for certification of 2004 data. This delay partially accounts for the fact that this report was not completed in 2007.

Third, in July 2002 a contractor of the NPCR performed an external audit of the completeness and quality of MCSS data. Case completeness was estimated at 99.9 percent. Data accuracy was also exceptionally high, with an overall accuracy of 98.7 percent (51 errors identified out of 3,835 data items reviewed). The error rates for all audited data items were at or better than the average among other central registries funded by the NPCR, as well as those funded by the National Cancer Institute through its Surveillance, Epidemiology, and End Results program.

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 last 4 reports are available on-line at the MCSS web site. [*] Special attention has been 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.

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 7.0 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 2004 (2.8 percent before and 1.5 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 participated in this linkage project, and cancers newly diagnosed through 2004 have been linked with the IHS roster. The number of cancers in American Indians in the MCSS database increased by 44 percent as a result of the linkage. Minnesota death certificates were also linked with the IHS roster, increasing the number of cancer deaths among American

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

Indians by 9 percent. Waiting for the IHS death certificate linkage to occur accounts for much of the fact that this report was not ready in February 2007.

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. In preparation for *MCSS 2005*, MCSS investigated how to apply Hispanic surname matching to improve the available data on cancer in the Minnesota Hispanic population. 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 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 38 (0.02 percent) cases with more than one reported race.

[*] http://www.naaccr.org/filesystem/pdf/NHIA%20v2%2009-21-05.pdf

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, 2000-2004, 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 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 2005 - 2006, 20 formal presentations were made before local public health, community, academic, and regulatory groups on the occurrence of cancer in Minnesota and related topics. Examples of other activities to inform and educate are the quarterly MCSS newsletter, *MCSS Notes*,[†] the biennial *Minnesota Cancer Facts & Figures*,[‡] authored by an MCSS epidemiologist and published by the American Cancer Society, and an article in the May-June 2005 *Disease Control Newsletter.*[§] A list of publications (2005 - 2006) authored by MCSS staff is found in Table I-2a, b.

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

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

[†] www.health.state.mn.us/divs/hpcd/cdee/mcss/MCSSNotes.html

[‡] http://www.cancerplanmn.org/sites/528d17b0-2c73-45c9-894d-872fc0beac4e/uploads/MN_Facts_and_Figures_2006_2.pdf

[§] http://www.health.state.mn.us/divs/idepc/newsletters/dcn/2005/

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 29 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. It is a five-year plan, with the majority of its measurable objectives written for 2010. 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.

* www.cancerplanmn.org

Table I-1: North American Association of Central Cancer Registries certification results: quality, completeness, and timeliness of 2003 data, Minnesota Cancer Surveillance System

Registry Element	Gold Standard	Silver Standard	MCSS Measure	Standard Achieved
1. Completeness of case ascertainment	95 %	90 %	100.8 %	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 %	2.1 %	Gold
• Missing/unknown "county"	<= 2 %	<= 3 %	0.5 %	Gold
3. Death certificate only cases	<= 3 %	<= 5 %	1.4 %	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 (2005-2006)

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

Chan JK, Gomez SL, O'Malley CD, Perkins CI, Clarke CA. Validity of cancer registry medicaid status against enrollment files: implications for population-based studies of cancer outcomes. Medical Care 2006; 44(10):952-5.

O'Malley CD, Shema SJ, Clarke LS, Clarke CA, Perkins CI. Medicaid status and stage at diagnosis of cervical cancer. American Journal of Public Health. 2006; 96(12):2179-85. Epub 2006 Oct 31.

Korn JE, Perkins CI. Taking a comprehensive approach to addressing Minnesota's leading cause of death. Cancer Plan Minnesota 2005-2010. Minnesota Medicine 2005; 88(4):36-9.

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

One Vision, One Voice: The Minnesota Cancer Alliance 2006 Year-End Report.

American Cancer Society, Midwest Division. Minnesota Cancer Facts & Figures 2006. Mendota Heights, MN: American Cancer Society, Midwest Division, 2006.

Perkins C, Bushhouse S. Cancer in Minnesota, 2004: Preliminary report. Minnesota Cancer Surveillance System, St. Paul, MN, March 2006.

Perkins C, Bushhouse S. Cervical cancer control in Minnesota: assessing its effectiveness with data from the Minnesota Cancer Surveillance System. St. Paul, MN: Minnesota Department of Health, December 2005.

Table I-2c: Publications incorporating data from MCSS

Howe HL, Wu XC, Ries LA, Cokkinides V, Ahmed F, Jemal A, Miller B, Williams M, Ward E, Wingo PA, Ramirez A, Edwards BK. Annual report to the nation on the status of cancer, 1975-2003, featuring cancer among U.S. Hispanic/Latino populations. Cancer 2006;107:1711-42.

Propp JM, McCarthy BJ, Davis FG, Preston-Martin S. Descriptive epidemiology of vestibular schwannomas. Neuro-Oncology. 8(1):1-11, 2006.

Carozza SE, Howe HL. Patterns of cancer incidence among US Hispanics/Latinos, 1995-2000. Cancer Causes Control 2006;17(8):1067-75.

Boscoe FP, Schymura MJ. Solar ultraviolet-B exposure and cancer incidence and mortality in the United States, 1993-2002. BMC Cancer 2006;6:264.

Goodman MT, Tung KH, Wilkens LR. Comparative epidemiology of breast cancer among men and women in the U.S., 1996 to 2000. Cancer Causes Control 2006;17(2):127-36.

Smigal C, Jemal A, Ward E, Cokkinides V, Smith R, Howe HL, Thun M. Trends in breast cancer by race and ethnicity: update 2006. CA Cancer J Clin 2006;56(3):168-83.

Wu X, Chen VW, Ruiz B, Andrews P, Su LJ, Correa P. Incidence of esophageal and gastric cancers among American Asians/Pacific Islanders, Whites, and Blacks: subsite and histology differences. Cancer 2006;106:683-92.

Samowitz WS, Albertsen H, Sweeney C, Herrick J, Caan BJ, Anderson KE, Wolff RK, Slattery ML. Association of smoking, CpG island methylator phenotype, and V600E BRAF mutations in colon cancer. J Natl Cancer Inst. 2006 Dec 6;98(23):1731-8.

Tande AJ, Platz EA, Folsom AR. The metabolic syndrome is associated with reduced risk of prostate cancer. Am J Epidemiol. 2006 Dec 1;164(11):1094-102.

Ruder AM, Waters MA, Carreón T, Butler MA, Davis-King KE, Calvert GM, Schulte PA, Ward EM, Connally LB, Lu J, Wall D, Zivkovich Z, Heineman EF, Mandel JS, Morton RF, Reding DJ, Rosenman KD; The Brain Cancer Collaborative Study Group. The Upper Midwest Health Study: a case-control study of primary intracranial gliomas in farm and rural residents. J Agric Saf Health. 2006 Nov;12(4):255-74.

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.

Stevens VL, Rodriguez C, Pavluck AL, McCullough ML, Thun MJ, Calle EE. Folate nutrition and prostate cancer incidence in a large cohort of US men. Am J Epidemiol. 2006 Jun 1;163(11):989-96.

Stevens VL, Rodriguez C, Pavluck AL, Thun MJ, Calle EE.
Association of polymorphisms in the paraoxonase 1 gene with breast cancer incidence in the CPS-II Nutrition Cohort. Cancer Epidemiol Biomarkers Prev. 2006 Jun;15(6):1226-8.

Patel AV, Rodriguez C, Pavluck AL, Thun MJ, Calle EE. Recreational physical activity and sedentary behavior in relation to ovarian cancer risk in a large cohort of US women. Am J Epidemiol. 2006 Apr 15;163(8):709-16.

Table I-2c: Publications incorporating data from MCSS (continued)

Slattery ML, Curtin K, Wolff R, Ma KN, Sweeney C, Murtaugh M, Potter JD, Levin TR, Samowitz W. PPARgamma and colon and rectal cancer: associations with specific tumor mutations, aspirin, ibuprofen and insulin-related genes (United States). Cancer Causes Control. 2006 Apr;17(3):239-49.

Sweeney C, Curtin K, Murtaugh MA, Caan BJ, Potter JD, Slattery ML. Haplotype analysis of common vitamin D receptor variants and colon and rectal cancers. Cancer Epidemiol Biomarkers Prev. 2006 Apr;15(4):744-9.

Rodriguez C, McCullough ML, Mondul AM, Jacobs EJ, Chao A, Patel AV, Thun MJ, Calle EE. Meat consumption among Black and White men and risk of prostate cancer in the Cancer Prevention Study II Nutrition Cohort. Cancer Epidemiol Biomarkers Prev. 2006 Feb;15(2):211-6.

Jacobs EJ, Rodriguez C, Brady KA, Connell CJ, Thun MJ, Calle EE. Cholesterol-lowering drugs and colorectal cancer incidence in a large United States cohort. J Natl Cancer Inst. 2006 Jan 4;98(1):69-72.

Murtaugh MA, Sweeney C, Ma KN, Potter JD, Caan BJ, Wolff RK, Slattery ML. Vitamin D receptor gene polymorphisms, dietary promotion of insulin resistance, and colon and rectal cancer. Nutr Cancer. 2006;55(1):35-43.

Hoffman S, Propp JM, McCarthy BJ. Temportal trends in incidence of primary brain tumors in the United States, 1985-1999. Neuro-Oncology. 8(1):27-37, 2006.

Thuppal S, Propp JM, McCarthy BJ. Average years of potential life lost in those who have died from brain and CNS Tumors in the United States. Neuroepidemiology, 27(1):22-27, 2006.

CBTRUS (2005). Statistical Reprot: Primary Brain Tumors in the United States, 1998-2002. Published by the Central Brain Tumor Registry of the United States.

Wu XC, Groves FD, McLaughlin CC, Jemal A, Martin HJ, Chen VW. Cancer incidence patterns among adolescents and young adults in the United States. Cancer Causes Control 2005;16:309-320.

Carreon T, Butler MA, Ruder AM. Brain Cancer Collaborative Study Group. Gliomas and farm pesticide exposure in women. Environmental Health Perspectives 2005; 113(5): 546-551.

Patel AV, Calle EE, Pavluck AL, Feigelson HS, Thun MJ, Rodriguez C. A prospective study of XRCC1 (X-ray cross-complementing group 1) polymorphisms and breast cancer risk. Breast Cancer Res. 2005;7(6):R1168-73.

Wingo PA, Howe HL, Thun MJ, Ballard-Barbash R, Ward E, Brown ML, Sylvester J, Friedell GH, Alley L, Rowland JH, Edwards BK. A national framework for cancer surveillance in the United States. Cancer Causes and Control 2005;16:151-170.

Edwards BK, Brown ML, Wingo PA, Howe HL, Ward E, Ries LA, Schrag D, Jamison PM, Jemal A, Wu XC, Friedman C, Harlan L, Warren J, Anderson RN, Pickle LW. Annual report to the nation on the status of cancer, 1975-2002, featuring population-based trends in cancer treatment. J Natl Cancer Inst Oct 2005; 97(19):1407-27.

McLaughlin CC, Wu XC, Jemal A, Martin HJ, Roche LM, Chen VW. Incidence of noncutaneous melanomas in the United States. Cancer 2005;103:1000-7.

Joslyn SA, Foote ML, Nasseri K, Coughlin SS, Howe HL. Racial and ethnic disparities in breast cancer rates by age: NAACCR Breast Cancer Project. Breast Cancer Res Treat 2005;92(2):97-105.

Table I-2c: Publications incorporating data from MCSS (continued)

Jemal A, Ward E, Wu X, Martin HJ, McLaughlin CC, Thun MJ. Geographic patterns of prostate cancer mortality and variations in access to medical care in the United States. Cancer Epidemiol Biomarkers Prev 2005;14:590-5.

Adelman AS, McLaughlin CC, Wu XC, Chen VW, Groves FD. Urbanization and incidence of acute lymphocytic leukemia (ALL) among United States children ages 0-4. Br J Cancer 2005;92:2084-8.

McCarthy BJ, Kruchko C, and Central Brain Tumor Registry of the United States. Consensus conference on cancer registration of brain and central nervous system tumors. Neuro-Oncology. 7(2), 2005.

Mondul AM, Rodriguez C, Jacobs EJ, Calle EE. Age at natural menopause and cause-specific mortality. Am J Epidemiol. 2005 Dec 1;162(11):1089-97.

Slattery ML, Sweeney C, Murtaugh M, Ma KN, Wolff RK, Potter JD, Caan BJ, Samowitz W. Associations between ERalpha, ERbeta, and AR genotypes and colon and rectal cancer. Cancer Epidemiol Biomarkers Prev. 2005 Dec;14(12):2936-42.

McCullough ML, Rodriguez C, Diver WR, Feigelson HS, Stevens VL, Thun MJ, Calle EE. Dairy, calcium, and vitamin D intake and postmenopausal breast cancer risk in the Cancer Prevention Study II Nutrition Cohort. Cancer Epidemiol Biomarkers Prev. 2005 Dec;14(12):2898-904.

Ulrich CM, Curtin K, Samowitz W, Bigler J, Potter JD, Caan B, Slattery ML. MTHFR variants reduce the risk of G:C->A:T transition mutations within the p53 tumor suppressor gene in colon tumors. J Nutr. 2005 Oct;135(10):2462-7.

Slattery ML, Sweeney C, Murtaugh M, Ma KN, Potter JD, Levin TR, Samowitz W, Wolff R. Associations between apoE genotype and colon and rectal cancer. Carcinogenesis. 2005 Aug;26(8):1422-9.

Jacobs EJ, Rodriguez C, Mondul AM, Connell CJ, Henley SJ, Calle EE, Thun MJ. A large cohort study of aspirin and other nonsteroidal anti-inflammatory drugs and prostate cancer incidence. J Natl Cancer Inst. 2005 Jul 6;97(13):975-80.

Murtaugh MA, Ma KN, Caan BJ, Sweeney C, Wolff R, Samowitz WS, Potter JD, Slattery ML. Interactions of peroxisome proliferator-activated receptor {gamma} and diet in etiology of colorectal cancer. Cancer Epidemiol Biomarkers Prev. 2005 May;14(5):1224-9.

Robien K, Curtin K, Ulrich CM, Bigler J, Samowitz W, Caan B, Potter JD, Slattery ML. Microsomal epoxide hydrolase polymorphisms are not associated with colon cancer risk. Cancer Epidemiol Biomarkers Prev. 2005 May;14(5):1350-2.

Rodriguez C, Patel AV, Mondul AM, Jacobs EJ, Thun MJ, Calle EE. Diabetes and risk of prostate cancer in a prospective cohort of US men. Am J Epidemiol. 2005 Jan 15;161(2):147-52.

Chao A, Thun MJ, Connell CJ, McCullough ML, Jacobs EJ, Flanders WD, Rodriguez C, Sinha R, Calle EE. Meat consumption and risk of colorectal cancer. JAMA. 2005 Jan 12;293(2):172-82.

Patel AV, Rodriguez C, Jacobs EJ, Solomon L, Thun MJ, Calle EE. Recreational physical activity and risk of prostate cancer in a large cohort of U.S. men. Cancer Epidemiol Biomarkers Prev. 2005 Jan;14(1):275-9.

Table I-2c: Publications incorporating data from MCSS (continued)

Jacobs EJ, Thun MJ, Connell CJ, Rodriguez C, Henley SJ, Feigelson HS, Patel AV, Flanders WD, Calle EE. Aspirin and other nonsteroidal anti-inflammatory drugs and breast cancer incidence in a large U.S. cohort. Cancer Epidemiol Biomarkers Prev. 2005 Jan;14(1):261-4.

Castillo MS, Davis FG, Surawicz T, Bruner JM, Bigner S, Coons S, Bigner DD. Consistencey of primary brain tumor diagnoses and codes in cancer surveillance systems. Neuroepidemiology. 12(1-2):85-93, 2004.

Huang K, Whelan EA, Ruder AM. Brain Cancer Collaborative Study Group. Reproductive factors and risk of glioma in women. Cancer Epidemiology Biomarkers and Prevention 2004; 13: 1583.

Ruder AM, Waters MA, Butler MA, Brain Cancer Collaborative Study Group. Gliomas and farm pesticide exposure in men. Archives of Environmental Health 2004; 59: 650.

Young JL, Ward KC, Wingo PA, Howe HL. The incidence of malignant non-carcinomas of the female breast. Cancer Causes Control 2004;15:313-319.

Wingo PA, Jamison PM, Young JL, Gargiullo P. Population-based statistics for women diagnosed with inflammatory breast cancer. Cancer Causes Control, 2004;15:321-328.

Hotes JL, Ellison LF, Howe HL, Friesen I, Kohler B. Variation in breast cancer counts using SEER and IARC multiple primary coding rules. Cancer Causes Control, 2004;15:185-91.

Howe HL. The North American Association of Central Cancer Registries. In: Hutchison CL, Menck HR, Burch M, Gottschalk R (eds). Cancer Registry Management: Principles and Practice. Alexandria (VA): National Cancer Registrars Association, 2004; pp 387-394.

Wu XC, Chen VW, Martin HJ, Roffers SD, Groves FD, Correa CN, Hamilton-Byrd E, Jemal A. Subsite specific colorectal cancer incidence rates and stage distributions among Asians/Pacific Islanders in the United States, 1995-1999. Cancer Epidemiol Biomarkers Prev 2004;13(7):1215-22

Aldrich TE. Review: Quality assessment of CINA Deluxe, 1995-1999 morphology data, 2004. J Reg Management 2004;31(3):111.

Thyagarajan B, Brott M, Mink P, Folsom AR, Anderson KE, Oetting WS, Gross M. CYP1B1 and CYP19 gene polymorphisms and breast cancer incidence: no association in the ARIC study. Cancer Lett. 2004 Apr 30;207(2):183-9.

Howe HL and Hotes JL. Use of override flags in the 1995-1999 CINA file submission. In: Hotes JL, et al. (eds). Cancer in North America, 1996-2000, Volume Three: NAACCR Combined Incidence. Springfield (IL): North American Association of Central Cancer Registries, April 2003, pp IV-1 - IV-5.

Hall I, Jamison P, Fulton JP, Clutter G, Roffers S, Parrish P. Reporting cutaneous melanoma to cancer registries in the United States. J Am Acad Dermatol 2003;49(4):624-30.

Howe HL, Edwards BK, Young JL, Shen T, West DW, Hutton M, Correa CN. A vision for cancer surveillance in the United States. Cancer Causes Control. 2003;14:63-72.

Howe HL, Weinstein R, Schult T, Kohler B, Hotes J. Registering multiple primary tumors in central cancer registries. J Reg Management 2003;30(4):113-6.

McCullough ML, Robertson AS,Chao A, Jacobs EJ, Stampfer MJ, Jacobs DR, Diver WR, Calle EE, Thun MJ. A prospective study of whole grains, fruits, vegetables and colon cancer risk. Cancer Causes Control. 2003 Dec;14(10):959-70.

Table I-3: Applications requesting data for research; status as of January 2007

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	Periodic 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	Periodic 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)

* Year application submitted

Year*	Nature of Study	Status (Institution)
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)
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)	In process: MCSS is identifying individuals diagnosed with colorectal cancer between 1997 and 2007, who are then invited to provide information on familial cancer histories and possibly invited to participate in a national database which would 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. Completeness of treatment information was compared 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 complete ness of ascertainment for both databases. (MN Dept. of Health)
2001	American Cancer Society CPS-II Nutrition study	Periodic linkage with more than 500 Minnesotans who completed nutritional surveys to verify and update their cancer status. (American Cancer Society - National Home Office)

Year*	Nature of Study	Status (Institution)
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	In Process: MCSS is improving its geocoding information so that cancer treatment and survival can be assessed in relationship to distance from appropriate medical facilities. (University of Minnesota)
2004	Relationship of Increasing Indoor Tanning Use to Melanoma Risk	In Process: MCSS is identifying patients diagnosed with melanoma skin cancer between April 2003 and March 2008. The study is looking for associations between genetic markers, indoor tanning booth use, and other know risk factors and melanoma skin cancer. (University of Minnesota)
2005	Predictors of Adult Leukemia	In Process: MCSS is using rapid ascertainment to identify patients diagnosed with chronic or acute myelogenous or monocytic leukemia between June 2005 and November 2009. The study is looking for associations with farming exposures, nonsteroidal antiinflammatory drug use, and genetic markers. (University of Minnesota)
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: 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: (University of Minnesota)

Chapter II:
Overview

[This page left intentionally blank.]

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 17-year period 1988-2004 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 2000-2004 and the corresponding 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, 23,362 Minnesotans (12,274 males and 11,088 females) were diagnosed each year with a potentially serious cancer over the five-year period 2000-2004 (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 4.5 percent lower 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 474.2 new cases per 100,000 persons (561.7 and 412.4 for males and females, respectively).

Over the five-year period 2000-2004, an average of 9,116 Minnesotans died each year with cancer listed as the underlying cause of death on the death certificate (4,679 males and 4,437 females) (Table II-1). The age-adjusted mortality rate over the same five-year period was 182.7 deaths per 100,000 persons (224.8 for males and 155.9 for females). For the first time in 2000, cancer became the leading cause of death in Minnesota, surpassing heart disease, and 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 44 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 and kidney. The higher risk among men may be directly attributable to historically higher smoking rates among men or 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 a few common cancers: breast, thyroid, and gallbladder.

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 one third of cancers diagnosed among men and women,

respectively. Lung and bronchus cancer and cancers of the colon and rectum are the next two most commonly diagnosed cancers, and together account for about one in four cancers diagnosed among men and women in Minnesota. 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, and accounts for 25 percent of cancer deaths in the state.

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 6 percent of the cancers among females. Non-Hodgkin lymphoma is the fifth most common cancer, accounting for nearly five percent of diagnosed cancers in Minnesota. Melanoma and leukemia are among the leading cancers, and together account for seven percent of cancers. Cancers of the brain and pancreas are relatively uncommon, but are among the ten leading causes of cancer death because survival is poor.

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 2000-2004 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 500-fold from two deaths per year for each 100,000 children less than five years of age to more than 1,900 and 1,100 deaths per 100,000 men and women 80 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, 20 percent of breast cancers, 40 percent of melanomas and brain cancers, 60 percent of cervical cancers, 70 percent of Hodgkin lymphomas, and more than 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 can now be reported for the 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). 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 rare 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 2000-2004 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

During the five-year period 2000-2004, an average of 171 American Indians in Minnesota were diagnosed with cancer each year and 77 died of the disease (Table II-6). 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 15 percent more likely to be diagnosed with cancer than non-Hispanic whites and 55 percent more likely to die of the disease. The overall cancer incidence rate was seven percent higher among American Indians than blacks, but the difference was not statistically significant. However, the overall cancer mortality rate was 22 percent higher among American Indians than blacks, and this 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 2000-2004 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 nearly two times higher in Minnesota than among American Indians in the SEER Program, and the overall cancer mortality rate was more than 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 cancer 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 colorectal cancer in Minnesota, more than two-thirds higher than among non-Hispanic whites (Table II-7).

Asian/Pacific Islander

During the five-year period 2000-2004, an average of 182 Asian/Pacific Islanders in Minnesota were diagnosed with cancer each year and 88 died of the disease (Table II-6). After adjusting for population size and age distribution, Asian/Pacific Islanders had the lowest overall cancer incidence rate and the second 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 22 percent less likely to die of the disease.

The overall cancer incidence rate among Asian/Pacific Islanders over this period was 17 percent lower in Minnesota than in the SEER Program, while mortality was 23 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 the highest rates of liver and stomach cancers, for which survival tends to be poor. Asian/Pacific Islanders in Minnesota were five 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 2000-2004, an average of 429 blacks in Minnesota were diagnosed with cancer each year and 162 died of the disease (Table II-6). 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 seven percent more likely to be diagnosed with cancer than non-Hispanic whites but 27 percent more likely to die of the disease. Overall cancer incidence was somewhat higher for American Indians than blacks, but the difference was not statistically significant. However, the overall cancer mortality rate was 22 percent higher among American Indians than blacks, and this difference was 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 cancer, 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 27 percent higher than among non-Hispanic whites and 25 percent higher than among American Indians; their prostate cancer mortality rate was 99 percent higher than among non-Hispanic whites and 13 percent higher than among American Indians. The cancer incidence rate among blacks compared to non-Hispanic whites was significantly higher for four other common sites: four times higher for liver cancer, two times higher for cervix cancer, 35 percent higher for lung cancer and oral cancer.

Non-Hispanic White

During the five-year period 2000-2004, an average of 21,949 non-Hispanic white Minnesotans were diagnosed with cancer each year and 8,732 died of the disease (Table II-6). 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 2000-2004, the overall cancer incidence and mortality rates among non-Hispanic whites were five and six 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 2000-2004, an average of 177 Hispanics in Minnesota were diagnosed with cancer each year and 51 died of the disease (Table II-6). 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 mortaility rate (Table II-7 and Figure II-4). Hispanics were 28 percent less likely to be diagnosed with cancer than non-Hispanic whites and 34 percent less likely to die of the disease.

The overall cancer incidence rate among Hispanics was about five percent lower in Minnesota than in the SEER Program, while the overall cancer mortality rate was nine percent higher 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 colorectal, 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 2.5 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 twice as high as 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/index.html. 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 17-year period 1988-2004 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 17-year period, from 445.4 new cases per 100,000 persons in 1988 to 472.8 in 2004 (Figure II-6). However, due to growth and aging of the Minnesota population, the number of persons diagnosed with cancer increased by nearly 34 percent over the same period, from 18,010 new cases in 1988 to 24,088 in 2004.

In contrast, the overall age-adjusted cancer mortality rate in Minnesota decreased by twelve percent over the 17-year period, from 199.5 cancer deaths per 100,000 persons in 1988 to 176.3 in 2004 (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 9,089 in 2004. 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 3.9 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 0.7 percent per year through 2004. This increase reflects significant increases in risk for a number of less common cancer sites (such as liver, melanoma, thyroid, esophagus, kidney, non-Hodgkin lymphoma, and bladder) partially balanced by large decreases in the incidence of the three most commonly diagnosed cancers among males (lung, prostate, 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 2004 (Figure II-8). The recent stabilization largely reflects significant increases in risk for lung cancer and for many of the same cancers that are increasing among males, balanced by decreases in colorectal cancer and sharp, recent decreases in female breast cancer incidence (Figure II-12). This report is the first demonstration of a significant decrease in female breast cancer incidence since cancer reporting was implemented in Minnesota in 1988.

The decrease in the risk of dying of cancer in Minnesota described above has been more consistent over time and across cancer sites than seen for cancer incidence. Cancer mortality rates are significantly increasing for only two sites among males (liver and esophagus) and for only two sites among females (liver and lung) (Figures II-11 and II-13).

However, the decrease in cancer mortality is more rapid among men than women (Figure II-9). The overall cancer mortality rate among males decreased by 0.5 percent per year from 1988 to 1996, and then started decreasing by 1.4 percent per year. The change in pace in 1996 primarily reflects decreases in prostate cancer mortality beginning in 1995, and sharp decreases in non-Hodgkin lymphoma mortality beginning in 1998. The overall cancer mortality rate among females has been decreasing by 0.4 percent per year over the entire 17-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 1.3 percent per year among women, while it has been decreasing by 1.1 percent per year among men since 1988.

In general, cancer trends in Minnesota are very similar to what is seen nationally (Figures II-8 and II-9). Historically, cancer rates in Minnesota have been lower than that of the white population in the nine geographical regions of the SEER program and in the U.S. as a whole. However, rates in Minnesota have gradually become more similar to the nation, and in 2004 were nearly the same.

Geographic Variation in the Occurrence of Cancer in Minnesota

To evaluate geographic variation in the occurrence of cancer in Minnesota, the state was 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 2000-2004. Comparisons were made using rates for non-Hispanic whites, who constitute about 90 percent of the Minnesota population and about 95 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 2000-2004, the overall cancer incidence rate among states varied by as much as 30 percent among females and by 36 percent among males; internationally, rates differ by as much as a factor of eight. In contrast, the Minnesota region with the highest overall cancer incidence rate is only 10 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 and SC Minnesota are 14 to 17 percent below the statewide rate. This is primarily due to lower female lung cancer rates in these regions (22 to 28 percent lower), although male rates (7 to 8 percent lower) also contribute to the reduction (Figure II-20). In contrast, higher female and male lung cancer rates in NE Minnesota (12 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 (13 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 26 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 ten percent lower than the state average. Incidence in the WC region (14 percent), the NW region (14 percent), the SW region (11 percent) and the SE region (10 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 about 17 percent comparing the highest to the lowest regional rate (Figure II-22). Rates range from five percent above the state average in the Metro area to nine to ten percent below the state average in SC and SW Minnesota. However, breast cancer mortality rates in SW and SC Minnesota are not significantly different than the state average. Breast cancer mortality in the Metro region is seven percent above the state average. Mammography screening rates can affect incidence rates in that areas with higher rates of screening 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 35 percent among Minnesota regions. The incidence rate in the Metro area was significantly lower than the state average (9 percent lower), and the WC region and the Central region were significantly higher (23 and 22 percent, respectively). 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 both WC and Central Minnesota. Again, this is likely 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 could be that PSA testing as a screening device was disproportionately used in the Metro region in the early 1990s and by the late 1990s the reverse was true.

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 2000 and 2004, 43 men and 4 women in the NE region were diagnosed with mesothelioma, giving this region a significantly higher rate than the Minnesota rate. 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.

While differences 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).

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 should reassure Minnesotans that their risk of developing cancer is not dictated by where they choose 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 10.1 million Americans, or 3.5% of the U.S. population, were living with a history of cancer on January 1, 2004. This is eight times larger than the 1.3 million Americans estimated by the American Cancer Society to have been newly diagnosed with cancer during 2004.

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 nine 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 29-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. 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 2003 and 2004 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 2000-2004. 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, 29-year prevalence estimates were adjusted by completeness indexes generated in the program ComPrev version 1.0.0 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, 2004, an estimated 177,940 Minnesotans were living with a history of cancer (Table II-8), or 3.5% of the Minnesota population. An estimated 67,820 of these survivors had been diagnosed in the previous five years (Table II-9), or 1.3% of Minnesotans. By comparison, a total of 24,088 Minnesotans were diagnosed with cancer in 2004.

The number of persons living with a history of cancer for up to five years is very similar for men and women (35,080 and 32,740, respectively). However, the number of women ever diagnosed with cancer and alive on January 1, 2004 (97,100) is 20 percent larger than the number of men (80,840). 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 41,090 women) have a history of breast cancer; among male cancer survivors, two out of five (44% or 35,470 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.

[This page left intentionally blank.]

Table II-1: Number of new cases and deaths and average annual incidence and mortality rates[§] by anatomic site, all races combined, Minnesota, 2000-2004

Cancer Site	Incidence						Mortality					
	New Cases 2000-2004			Average Annual Rate			Deaths 2000-2004			Average Annual Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
All Cancer Sites Combined	61,370	55,442	116,812	561.7	412.4	474.2	23,395	22,183	45,578	224.8	155.9	182.7
Oral Cavity & Pharynx	1,734	931	2,665	15.2	6.8	10.7	371	210	581	3.4	1.4	2.3
Lip	290	91	381	2.7	0.6	1.5	6	2	8	0.1	0.0	0.0
Tongue	414	214	628	3.5	1.6	2.5	97	53	150	0.9	0.4	0.6
Salivary Gland	166	140	306	1.5	1.0	1.2	43	23	66	0.4	0.2	0.3
Floor of Mouth	121	78	199	1.0	0.6	0.8	5	4	9	0.0	0.0	0.0
Gum & Other Mouth	209	219	428	1.9	1.6	1.7	53	50	103	0.5	0.3	0.4
Nasopharynx	59	36	95	0.5	0.3	0.4	19	23	42	0.2	0.2	0.2
Tonsil	264	85	349	2.2	0.6	1.4	36	8	44	0.3	0.1	0.2
Oropharynx	57	20	77	0.5	0.1	0.3	29	10	39	0.3	0.1	0.2
Hypopharynx	129	36	165	1.1	0.3	0.7	22	11	33	0.2	0.1	0.1
Other Oral Cavity & Pharynx	25	12	37	0.2	0.1	0.2	61	26	87	0.6	0.2	0.4
Digestive System	10,735	9,559	20,294	99.1	68.3	82.0	5,647	5,088	10,735	53.6	34.4	42.8
Esophagus	913	268	1,181	8.3	1.9	4.8	851	245	1,096	7.9	1.7	4.5
Stomach	895	546	1,441	8.4	3.8	5.8	513	367	880	4.9	2.5	3.5
Small Intestine	260	237	497	2.3	1.7	2.0	63	57	120	0.6	0.4	0.5
Colon & Rectum	6,399	6,239	12,638	59.4	44.2	51.0	2,134	2,348	4,482	20.6	15.6	17.7
Colon excl. Rectum	4,488	4,872	9,360	42.1	34.2	37.7	1,761	2,039	3,800	17.1	13.5	15.0
Rectum & Rectosigmoid Junction	1,911	1,367	3,278	17.3	10	13.3	373	309	682	3.5	2.1	2.7
Anus, Anal Canal & Anorectum	108	161	269	0.9	1.2	1.1	14	20	34	0.1	0.1	0.1
Liver & Intrahepatic Bile Duct	639	255	894	5.7	1.9	3.6	651	358	1,009	6.0	2.5	4.1
Liver	567	193	760	5.0	1.4	3.1	488	175	663	4.5	1.2	2.7
Intrahepatic Bile Duct	72	62	134	0.6	0.5	0.5	163	183	346	1.5	1.3	1.4
Gallbladder	84	209	293	0.8	1.5	1.2	61	149	210	0.6	1.0	0.8
Other Biliary	194	183	377	1.8	1.3	1.5	66	97	163	0.7	0.6	0.6
Pancreas	1,143	1,119	2,262	10.5	8.2	9.2	1,240	1,298	2,538	11.7	8.9	10.2
Retroperitoneum	30	40	70	0.3	0.3	0.3	10	5	15	0.1	0.0	0.1
Peritoneum, Omentum, Mesentery	8	249	257	0.1	1.9	1.1	4	94	98	0.0	0.7	0.4
Other Digestive Organs	62	53	115	0.6	0.4	0.5	40	50	90	0.4	0.3	0.4

(Continues on next page)

Source: MCSS (October 2007). 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, 2000-2004 (continued)

Cancer Site	Incidence						Mortality					
	New Cases 2000-2004			Average Annual Rate			Deaths 2000-2004			Average Annual Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Respiratory System	8,457	6,660	15,117	78.6	50.4	62.5	6,514	5,177	11,691	61.9	38	47.9
Nose, Nasal Cavity & Middle Ear	88	59	147	0.8	0.4	0.6	28	19	47	0.3	0.1	0.2
Larynx	623	163	786	5.6	1.3	3.2	160	44	204	1.5	0.3	0.8
Lung & Bronchus	7,697	6,433	14,130	71.8	48.7	58.4	6,311	5,110	11,421	59.9	37.5	46.9
Pleura†	4	0	4	0.0	0.0	0.0	-	-	-	-	-	-
Trachea, Mediastinum & Other	45	5	50	0.4	0.0	0.2	12	4	16	0.1	0.0	0.1
Mesothelioma (all sites)‡	251	70	321	2.4	0.5	1.3	212	50	262	2.1	0.3	1.1
Bones & Joints	144	103	247	1.2	0.8	1.0	66	45	111	0.5	0.3	0.4
Soft Tissue incl. Heart	413	354	767	3.5	2.7	3.1	175	161	336	1.6	1.1	1.3
Skin	2,673	2,377	5,050	23.5	18.0	20.2	498	290	788	4.6	2.1	3.1
Melanoma of the Skin	2,391	2,127	4,518	20.9	16.2	18.0	359	232	591	3.3	1.7	2.4
Other Non-Epithelial Skin	282	250	532	2.6	1.8	2.1	139	58	197	1.4	0.4	0.8
Kaposi Sarcoma (all sites)‡	58	8	66	0.5	0.0	0.3	1	1	2	0.0	0.0	0.0
Breast	134	17,683	17,817	1.3	132.7	71.2	29	3,348	3,377	0.3	23.8	13.3
Female Genital System	-	6,724	6,724	-	50.7	26.9	-	2,208	2,209	-	15.8	8.8
Cervix Uteri	-	858	858	-	6.7	3.4	-	211	211	-	1.6	0.8
Corpus & Uterus, NOS	-	3,534	3,534	-	26.7	14.2	-	597	597	-	4.2	2.4
Ovary	-	1,754	1,754	-	13.1	7.0	-	1,231	1,231	-	8.9	4.9
Vagina	-	80	80	-	0.6	0.3	-	23	23	-	0.2	0.1
Vulva	-	381	381	-	2.7	1.5	-	95	96	-	0.6	0.4
Other Female Genital Organs	-	117	117	-	0.9	0.5	-	51	51	-	0.4	0.2
Male Genital System	21,519	-	21,519	197.6	-	89.1	2,946	-	2,946	30.5	-	11.5
Prostate	20,443	-	20,443	189.0	-	84.8	2,900	-	2,900	30.1	-	11.3
Testis	933	-	933	7.3	-	3.7	31	-	31	0.3	-	0.1
Penis	104	-	104	0.9	-	0.4	13	-	13	0.1	-	0.1
Other Male Genital Organs	39	-	39	0.4	-	0.2	2	-	2	-	-	-

(Continues on next page)

Source: MCSS (October 2007). 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 for incidence. Data are not shown for mortality due to a coding change that occurred in 1999.
‡ Mortality for Mesotheliomas and Kaposi Sarcomas are for the 4-year period 1999-2002. Category did not exist in mortality coding until 1999.
- 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, 2000-2004 (continued)

Cancer Site	Incidence						Mortality					
	New Cases 2000-2004			Average Annual Rate			Deaths 2000-2004			Average Annual Rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Urinary System	6,435	2,806	9,241	59.7	20.6	37.6	1,483	787	2,270	14.4	5.3	9.0
Urinary Bladder	4,151	1,443	5,594	39.4	10.4	22.8	760	331	1,091	7.6	2.1	4.3
Kidney & Renal Pelvis	2,163	1,264	3,427	19.2	9.5	14.0	671	427	1,098	6.3	3.0	4.4
Ureter	83	76	159	0.8	0.5	0.6	18	13	31	0.2	0.1	0.1
Other Urinary Organs	38	23	61	0.4	0.2	0.2	34	16	50	0.3	0.1	0.2
Eye & Orbit	96	49	145	0.9	0.4	0.6	8	7	15	0.1	0.0	0.1
Brain & Other Nervous System	967	690	1,657	8.2	5.4	6.7	695	508	1,203	6.0	3.8	4.9
Brain	908	642	1,550	7.7	5.0	6.3	-	-	-	-	-	-
Other Nervous System	59	48	107	0.5	0.4	0.4	-	-	-	-	-	-
Endocrine System	605	1,527	2,132	5.0	11.9	8.5	80	92	172	0.7	0.7	0.7
Thyroid	507	1,464	1,971	4.2	11.4	7.8	38	68	106	0.4	0.5	0.4
Other Endocrine incl. Thymus	98	63	161	0.8	0.5	0.6	42	24	66	0.4	0.2	0.3
Lymphoma	3,299	2,829	6,128	29.5	20.9	24.7	1,183	1,046	2,229	11.3	7.1	8.9
Hodgkin Lymphoma	439	337	776	3.6	2.6	3.1	67	51	118	0.6	0.4	0.5
Non-Hodgkin Lymphoma	2,860	2,492	5,352	25.9	18.3	21.6	1,116	995	2,111	10.7	6.7	8.4
Multiple Myeloma	730	565	1,295	6.8	4.2	5.3	518	432	950	5	3	3.8
Leukemia	2,141	1,468	3,609	19.7	10.7	14.6	1,153	887	2,040	11.2	6.1	8.1
Lymphocytic Leukemia	1,170	750	1,920	10.7	5.5	7.8	373	259	632	3.7	1.7	2.5
Acute Lymphocytic Leukemia	219	148	367	1.8	1.2	1.5	59	41	100	0.5	0.3	0.4
Chronic Lymphocytic Leukemia	871	567	1,438	8.2	4.0	5.8	291	204	495	2.9	1.3	1.9
Other Lymphocytic Leukemia	80	35	115	0.7	0.3	0.5	23	14	37	0.2	0.1	0.1
Myeloid & Monocytic Leukemia	901	649	1,550	8.4	4.7	6.2	586	454	1,040	5.6	3.2	4.2
Acute Myeloid Leukemia	535	417	952	5.0	3.1	3.8	442	345	787	4.2	2.5	3.2
Acute Monocytic Leukemia	47	39	86	0.4	0.3	0.3	6	6	12	0.1	0.0	0.0
Chronic Myeloid Leukemia	309	183	492	2.8	1.3	2.0	89	61	150	0.8	0.4	0.6
Other Myeloid/Monocytic Leukemia	10	10	20	0.1	0.1	0.1	49	42	91	0.5	0.3	0.4
Other Leukemia	70	69	139	0.7	0.5	0.5	194	174	368	1.9	1.2	1.5
Miscellaneous	979	1,039	2,018	9.2	7.3	8.1	1,815	1,844	3,659	17.7	12.5	14.5

Source: MCSS (October 2007). 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, 2000-2004

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^	29	13	13	25	34	55	68	94	142	253	518	968	1,573	2,335	3,006	3,282	3326	2819
Oral Cavity & Pharynx	0.1	0.0	0.0	0.4	0.9	1.4	2.3	3.4	7.4	15.1	29.4	39.4	40.0	49.2	62.7	60.6	63.1	71.8
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	0.9	1.2	2.4	3.0	6.1	8.1	12.8	19.8	15.9	26.4
Tongue	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.6	2.0	4.6	7.6	13.3	10.4	11.1	13.4	9.1	10.8	11.0
Salivary Gland	0.0	0.0	0.0	0.2	0.4	0.4	0.4	0.3	0.7	0.9	1.7	2.1	4.4	3.8	3.7	6.9	13.1	13.9
Floor of Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	3.0	3.2	2.8	4.9	5.3	3.4	3.4	0.7
Gum & Other Mouth	0.0	0.0	0.0	0.2	0.0	0.2	0.3	0.5	0.8	1.4	3.6	4.2	4.2	5.1	6.6	7.6	11.4	13.9
Nasopharynx	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.3	0.4	0.2	0.7	1.8	1.1	2.2	1.9	2.3	1.1	0.0
Tonsil	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.6	1.9	4.4	6.9	6.6	5.7	6.8	6.9	4.2	2.3	1.5
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	1.0	2.2	1.3	1.6	3.1	1.9	1.1	0.7
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	2.3	2.9	2.5	5.1	7.5	5.0	3.4	2.9
Other Oral Cavity & Pharynx	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.2	0.2	1.5	0.5	1.6	0.4	0.6	0.7
Digestive System	1.4	0.2	0.2	0.8	1.9	3.6	6.4	12.3	23.7	51.6	104	163.4	259.4	375.1	496.6	589.9	677	666
Esophagus	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.4	1.7	4.5	9.3	17.6	25.4	38.4	42.4	46.1	47.7	38.8
Stomach	0.0	0.0	0.0	0.0	0.1	0.1	0.8	1.7	2.1	3.9	6.2	11.9	22.5	25.7	38.7	56.0	59.7	78.3
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.6	0.8	1.4	2.5	5.8	6.4	9.5	9.7	13.3	14.2	10.3
Colon & Rectum	0.0	0.0	0.0	0.5	1.2	2.7	3.1	6.7	14.6	28.7	59.9	89.5	151.7	229.1	299.4	346.4	426	434
Colon excl. Rectum	0.0	0.0	0.0	0.3	0.8	1.8	2.2	4.2	8.5	17.9	38.5	56.7	96.6	158.8	215.8	258.4	331	344
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.2	0.4	0.9	0.9	2.5	6.1	10.9	21.5	32.8	55.1	70.3	83.6	88.0	95.5	90.8
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.7	0.8	1.2	1.7	2.4	2.1	4.3	2.2	3.0	2.8	2.2
Liver & Intrahepatic Bile Duct	1.4	0.2	0.2	0.2	0.0	0.1	0.4	0.9	1.3	4.1	10.1	12.7	15.7	20.3	25.6	32.0	29.6	16.8
Liver	1.4	0.2	0.2	0.2	0.0	0.0	0.4	0.7	0.9	4.0	8.9	11.4	14.2	17.6	21.8	29.3	24.4	16.1
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.4	0.1	1.2	1.3	1.5	2.7	3.7	2.7	5.1	0.7
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.4	1.4	1.9	1.9	3.4	5.3	8.5	7.3
Other Biliary	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.5	0.9	1.3	3.4	4.2	6.2	7.8	10.7	11.4	20.5
Pancreas	0.0	0.0	0.0	0.0	0.1	0.1	0.9	0.8	1.6	5.4	12.1	18.3	28.2	37.1	61.4	69.4	67.6	53.5
Retroperitoneum	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.5	0.2	0.0	0.4	0.3	0.9	1.9	2.8	1.5
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.9	0.0	0.6	0.0
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.4	0.0	0.5	0.4	2.4	4.1	5.7	5.7	2.2

(Continues on next page)

Source: MCSS (October 2007). 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, 2000-2004 (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	0.6	0.1	0.3	0.4	1.1	1.8	1.9	5.8	11.7	29.6	59.5	120.5	224.4	353.5	495.9	544.5	499.7	309.7
Nose, Nasal Cavity & Middle Ear	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.0	0.9	1.0	1.3	2.1	2.4	3.1	5.0	4.0	2.9
Larynx	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.8	3.6	7.0	12.2	18.0	29.2	32.8	25.9	25.6	13.9
Lung & Bronchus	0.0	0.1	0.2	0.0	0.3	1.0	1.1	4.6	9.7	24.7	51.3	106.7	204.3	321	459.1	512.9	469.5	291.4
Pleura‡	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Trachea, Mediastinum & Other	0.4	0.0	0.1	0.4	0.6	0.7	0.4	0.3	0.3	0.2	0.2	0.3	0.0	0.8	0.9	0.8	0.6	0.7
Mesothelioma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.5	0.8	1.4	7.4	8.1	10.3	19.4	24.4	24.2
Bones & Joints	0.1	0.7	0.7	2.4	1.3	0.9	1.0	0.5	0.6	0.9	0.6	1.4	1.5	4.9	3.4	0.4	2.8	2.2
Soft Tissue incl. Heart	1.9	1.3	0.4	1.6	1.7	2.2	2.0	1.3	3.1	3.6	4.5	4.8	5.3	7.6	11.5	12.6	13.1	16.1
Skin	0.4	0.0	0.2	1.1	2.8	4.3	8.9	15.7	16.7	24.0	34.0	40.7	50.9	73.3	76.1	108.2	115.4	126.7
Melanoma of the Skin	0.1	0.0	0.2	1.0	2.5	3.6	7.3	14.1	15.5	22.5	31.6	37.8	47.3	66.8	67.4	94.9	93.2	103.2
Other Non-Epithelial Skin	0.2	0.0	0.0	0.1	0.2	0.7	1.7	1.5	1.2	1.5	2.4	2.9	3.6	6.5	8.7	13.3	22.2	23.4
Kaposi Sarcoma (all sites)	0.0	0.0	0.0	0.1	0.2	0.5	0.4	1.1	1.4	0.5	0.6	0.2	0.4	0.5	0.3	0.8	1.7	0.0
Breast	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.6	0.3	1.2	1.6	2.8	3.2	5.6	10.7	5.1	14.6
Female Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cervix Uteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corpus & Uterus, NOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ovary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vagina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vulva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Female Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Male Genital System	0.9	0.3	0.6	5.6	11.1	18.9	16.5	15.9	22.3	48.8	154.9	375.9	655.6	997.7	1,227	1,163	1,004	740.3
Prostate	0.1	0.1	0	0.2	0.1	0.0	0.1	0.6	7.9	39.3	148.8	369.4	649.1	991	1,219	1,156	998.2	731.5
Testis	0.8	0.2	0.5	5.4	11.0	18.9	16.2	15.0	14.2	8.4	5.1	3.0	2.3	2.4	1.2	0.8	1.1	0.0
Penis	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.6	0.7	2.7	2.5	3.8	5.6	5.0	4.0	4.4
Other Male Genital Organs	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.4	0.2	0.8	1.7	0.5	1.2	1.1	1.1	4.4

(Continues on next page)

Source: MCSS (October 2007). 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 separate group Mesothelioma for incidence.

- 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, 2000-2004 (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	3.6	0.8	0.2	0.1	0.6	1.2	3.4	7.8	16.3	25.8	50.1	97.5	154.1	231.2	307.6	373.8	420.1	392.5
Urinary Bladder	0.2	0.1	0.1	0.1	0.3	0.5	1.6	2.5	6.3	11.2	23.3	53.2	93.7	148.5	223.3	265.2	309.2	331.0
Kidney & Renal Pelvis	3.3	0.7	0.1	0.0	0.2	0.7	1.8	5.3	10.1	14.4	26.3	42.8	57	78.2	80.2	102.1	96.6	49.1
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	1.3	2.1	4.1	3.1	4.6	8.5	5.9
Other Urinary 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	1.3	0.5	0.9	1.9	5.7	6.6
Eye & Orbit	0.9	0.2	0.0	0.0	0.0	0.2	0.1	0.5	0.4	0.6	0.5	1.4	1.7	2.4	3.4	4.6	5.1	4.4
Brain & Other Nervous System	4.6	2.5	2.9	2.4	2.4	3.7	4.5	5.2	6.3	9.6	10.5	16.2	18.4	18.4	23.4	28.6	23.9	12.4
Brain	4.0	2.2	2.9	2.3	2.1	3.4	4.4	4.5	5.8	8.5	9.9	15.4	18	17.6	22.5	27.8	23.9	11.7
Other Nervous System	0.6	0.3	0.0	0.1	0.3	0.2	0.1	0.7	0.5	1.1	0.6	0.8	0.4	0.8	0.9	0.8	0.0	0.7
Endocrine System	1.8	0.3	0.8	1.0	1.7	4.3	4.6	4.9	7.2	6.6	6.6	8.6	10	10.8	9.0	12.2	14.8	4.4
Thyroid	0.1	0.1	0.5	0.6	1.6	3.7	4.5	4.5	6.1	5.4	6.0	7.4	9.1	9.2	6.9	11.1	11.4	2.9
Other Endocrine incl. Thymus	1.7	0.2	0.3	0.4	0.1	0.6	0.1	0.4	1.1	1.1	0.6	1.3	0.8	1.6	2.2	1.1	3.4	1.5
Lymphoma	1.3	1.8	3.7	5.3	6.2	8.1	11	13.7	15.6	20.6	32	45.5	65.5	90.9	109.5	143.3	181.3	164
Hodgkin Lymphoma	0.1	0.3	2.2	3.4	4.1	5.2	6.0	4.4	3.9	3.2	2.7	3.4	3.4	5.1	6.2	8.4	4.0	4.4
Non-Hodgkin Lymphoma	1.2	1.5	1.5	1.9	2.1	2.9	4.9	9.4	11.7	17.4	29.3	42.1	62.1	85.7	103.2	134.9	177.4	159.6
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	1.0	3.6	7.1	9.8	16.7	27.3	38.1	39.2	50.6	42.5
Leukemia	10.8	4.7	3.1	3.8	2.3	4.3	3.7	3.7	5.8	7.1	14.6	26.3	37.3	53.3	82.3	112.8	150.6	149.4
Lymphocytic Leukemia	8.9	4.0	2.4	2.5	0.7	1.2	0.7	1.2	2.5	4.3	8.1	14.3	23.3	33.3	46.8	54.5	76.2	68.8
Acute Lymphocytic Leukemia	8.9	4.0	2.4	2.5	0.7	1.1	0.4	0.2	0.8	0.7	0.7	0.5	1.1	0.8	1.2	0.8	1.1	0.0
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	1.2	2.8	6.6	12.5	19.9	31.6	42.7	49.9	70.5	64.4
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.8	0.7	1.3	2.3	0.8	2.8	3.8	4.5	4.4
Myeloid & Monocytic Leukemia	1.7	0.2	0.5	1.1	1.6	2.8	2.9	2.3	3.0	2.6	5.9	11.5	13.6	20.0	34.9	54.5	67.1	68.8
Acute Myeloid Leukemia	1.2	0.1	0.5	1.0	1.0	1.4	0.8	1.2	1.5	1.5	3.7	6.1	8.1	12.2	22.5	34.3	36.9	43.9
Acute Monocytic Leukemia	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.2	0.5	0.3	0.6	0.5	0.4	1.1	0.9	3.8	1.7	1.5
Chronic Myeloid Leukemia	0.4	0.1	0.0	0.0	0.6	1.4	1.9	0.9	1.0	0.7	1.6	4.8	5.1	6.8	10.9	15.6	26.7	22.0
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	0.2	0.0	0.0	0.6	0.8	1.7	1.5
Other Leukemia	0.2	0.5	0.1	0.2	0.1	0.2	0.1	0.1	0.3	0.2	0.6	0.5	0.4	0.0	0.6	3.8	7.4	11.7
Miscellaneous	0.5	0.0	0.1	0.1	0.1	0.1	1.0	1.2	1.6	4.6	7.8	14.1	22.0	28.4	43.0	57.9	73.3	78.3

Source: MCSS (October 2007). 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, 2000-2004

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	10	14	21	36	68	108	158	262	406	574	816	1,122	1,431	1,640	1,873	1,912	1,584
Oral Cavity & Pharynx	0.0	0.0	0.3	0.5	0.5	1.8	1.4	1.9	4.3	6.5	9.7	12.1	19.8	23.6	30.1	24.2	35.5	34.9
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.8	0.5	0.8	1.2	2.4	2.5	6.0	7.4
Tongue	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.5	1.7	1.4	2.2	3.5	5.4	4.9	7.1	5.4	8.1	5.8
Salivary Gland	0.0	0.0	0.3	0.2	0.0	1.0	1.0	0.3	0.8	1.4	0.8	1.1	2.4	2.7	3.9	2.8	5.6	4.9
Floor of Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.0	1.3	2.2	2.9	2.9	2.3	0.7	3.7
Gum & Other Mouth	0.0	0.0	0.0	0.1	0.0	0.3	0.1	0.5	0.5	1.6	1.8	2.2	3.4	5.1	8.4	6.5	12.0	10.4
Nasopharynx	0.0	0.0	0.0	0.2	0.3	0.4	0.0	0.3	0.1	0.2	0.4	0.2	0.6	1.5	1.0	0.6	0.7	0.3
Tonsil	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.3	2.1	2.7	2.6	1.9	2.1	1.7	1.1	1.2
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.6	1.0	0.3	1.1	1.1	0.3
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.8	1.2	1.9	1.6	0.8	0.0	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	0.4	0.5	0.5	0.6	0.4	0.3
Digestive System	0.5	0.0	0.1	0.5	1.0	3.2	7.4	10.0	21.4	39.8	58.7	100.4	162.6	246.9	334.5	423.5	522.0	472.1
Esophagus	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.5	0.7	1.3	3.8	6.9	8.8	9.2	10.4	13.0	12.0
Stomach	0.0	0.0	0.0	0.1	0.1	0.4	1.1	1.1	1.4	2.9	2.7	4.6	7.7	9.3	17.5	24.5	32.0	32.2
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.5	1.8	2.2	3.8	4.2	8.5	5.0	7.9	12.7	8.0
Colon & Rectum	0.0	0.0	0.0	0.1	0.6	2.0	4.4	6.5	13.3	25.6	37.7	61.5	95.2	152.3	215	275.8	363.0	337.2
Colon excl. Rectum	0.0	0.0	0.0	0.1	0.5	1.8	2.3	4.0	7.8	15.2	24.1	42.4	72.2	112.4	176.6	223.7	306.4	287.6
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.0	0.1	0.3	2.1	2.5	5.4	10.3	13.6	19.0	23.0	40.0	38.5	52.1	56.6	49.7
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.4	1.8	2.1	2.5	2.0	2.9	3.9	5.1	6.3	5.5
Liver & Intrahepatic Bile Duct	0.2	0.0	0.0	0.3	0.2	0.1	0.2	0.4	0.6	1.8	1.9	2.0	5.4	6.8	8.9	11.3	12.3	7.7
Liver	0.2	0.0	0.0	0.3	0.2	0.0	0.2	0.3	0.6	1.4	1.8	1.6	3.6	4.6	6.8	8.7	8.8	5.5
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	0.1	0.5	1.8	2.2	2.1	2.5	3.5	2.1
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.6	3.0	3.0	5.8	8.1	12.7	10.9	10.1
Other Biliary	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.7	0.7	1.3	4.0	6.3	7.3	8.5	11.6	5.8
Pancreas	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.7	2.6	2.6	6.5	11.9	24.4	34.1	46.8	55.5	48.5	46.6
Retroperitoneum	0.2	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.3	0.8	0.5	0.6	1.2	0.3	0.8	0.7	1.2
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	1.1	2.1	5.3	7.9	9.0	10.7	8.5	8.4	2.5
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.3	1.2	1.7	1.8	2.5	2.5	3.4

(Continues on next page)

Source: MCSS (October 2007). 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, 2000-2004 (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	0.1	0.1	0.0	0.1	0.3	0.9	1.5	5.3	11.7	26.1	49.7	100.7	174.3	246.2	295.6	299.8	252.5	114.3
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.5	1.1	0.6	1.9	2.6	2.3	2.1	1.2
Larynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	1.5	1.1	3.3	6.3	7.1	6.0	4.2	3.2	1.8
Lung & Bronchus	0.0	0.1	0.0	0.1	0.3	0.9	1.3	4.9	11.2	24.2	48.1	96.3	167.2	236.9	286.9	293	247.3	111.3
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
Trachea, Mediastinum & Other	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.3	0.0	0.0
Mesothelioma (all sites)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.1	0.2	0.6	1.4	2.2	2.6	1.7	4.9	3.7
Bones & Joints	0.1	0.4	1.0	2.2	0.9	0.3	0.8	0.5	0.5	0.3	1.1	0.8	0.0	1.0	1.6	0.8	1.8	2.5
Soft Tissue incl. Heart	2.2	0.7	0.9	0.7	1.7	1.3	1.0	2.5	1.7	3.3	3.1	3.3	6.5	4.1	7.6	5.6	13.4	7.7
Skin	0.0	0.2	0.7	2.6	9.1	14.0	17.6	20.8	22.8	26.6	25.7	29.4	29.5	37.5	35.8	49.6	44.7	51.8
Melanoma of the Skin	0.0	0.1	0.1	2.0	8.5	13.7	16.4	19.5	21.5	24.8	24.6	26.7	27.6	32.7	30.6	43.1	34.5	36.2
Other Non-Epithelial Skin	0.0	0.1	0.6	0.7	0.6	0.3	1.1	1.3	1.2	1.8	1.1	2.7	1.8	4.9	5.2	6.5	10.2	15.6
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	1.8	0.9
Breast	0.0	0.0	0.0	0.1	0.7	8.3	25.6	56.5	111.4	182.7	252.5	324.4	389.8	447.2	435.5	490.5	448.1	406.8
Female Genital System	0.4	0.2	0.8	1.7	3.1	11.4	18.4	25.1	38.1	57.8	92.9	126.2	158.4	166.5	166.9	174.7	169.2	136.7
Cervix Uteri	0.0	0.0	0.0	0.4	1.3	6.4	10.6	11.8	12.8	10.0	11.6	11.3	10.1	9.0	9.7	6.8	6.3	7.1
Corpus & Uterus, NOS	0.0	0.0	0.0	0.0	0.1	1.8	3.7	7.8	12.4	26.9	50.6	78.7	100.1	102.6	91	102	91.8	66.5
Ovary	0.1	0.2	0.7	1.2	1.4	2.5	3.0	3.8	9.8	17.5	24.6	29.1	38.1	41.2	48.1	46.5	50.6	39.5
Vagina	0.2	0.0	0.1	0.0	0.0	0.0	0.3	0.2	0.3	0.4	0.5	1.7	1.8	2.4	2.9	2.8	1.1	2.1
Vulva	0.0	0.0	0.0	0.0	0.1	0.3	0.7	1.0	2.4	2.3	4.4	3.6	5.0	8.3	10.7	13	17.2	18.7
Other Female Genital Organs	0.0	0.0	0.0	0.1	0.2	0.5	0.1	0.4	0.5	0.6	1.2	1.7	3.2	2.9	4.4	3.7	2.1	2.8
Male Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prostate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Testis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Penis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Male Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(Continues on next page)

Source: MCSS (October 2007). 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 separate group Mesothelioma for incidence.
- 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, 2000-2004 (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	2.4	0.7	0.1	0.2	0.6	0.9	1.7	3.4	6.1	13.7	19.9	35.4	53.9	89.0	99.7	121.7	125.9	101.5
Urinary Bladder	0.0	0.0	0.0	0.2	0.1	0.3	0.5	1.0	2.5	4.2	7.4	15.9	27.6	45.6	51.0	70.2	71.8	68.7
Kidney & Renal Pelvis	2.4	0.7	0.1	0.0	0.5	0.6	1.3	2.4	3.5	9.3	12.2	19.0	24.4	40.5	45.3	46.5	45.7	28.2
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.8	2.7	2.9	4.2	6.7	2.8
Other Urinary Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.2	0.5	0.8	1.8	1.8
Eye & Orbit	1.0	0.1	0.1	0.0	0.0	0.0	0.1	0.3	0.1	0.6	0.2	0.6	0.2	1.5	1.0	1.4	0.4	1.5
Brain & Other Nervous System	3.4	2.4	3.5	2.2	2.0	2.2	3.4	3.7	4.5	4.2	7.8	7.9	9.7	14.9	17.3	18.6	13.0	4.0
Brain	2.9	2.3	3.1	1.8	1.7	2.0	3.1	3.3	4.0	4.1	7.3	7.2	9.5	13.9	16.5	17.5	12.7	4.0
Other Nervous System	0.5	0.1	0.3	0.3	0.2	0.1	0.3	0.4	0.5	0.1	0.5	0.6	0.2	1.0	0.8	1.1	0.4	0.0
Endocrine System	0.7	0.4	0.6	3.5	8.6	14.1	19.2	17.5	20.1	18.8	16.8	16.8	18.0	16.6	12.8	15.2	10.2	10.1
Thyroid	0.0	0.2	0.6	3.3	8.4	13.5	19.0	17.2	19.5	18.4	16.1	15.9	17.6	15.4	11.2	14.1	9.1	10.1
Other Endocrine incl. Thymus	0.7	0.1	0.0	0.2	0.2	0.6	0.2	0.3	0.6	0.4	0.7	0.9	0.4	1.2	1.6	1.1	1.1	0.0
Lymphoma	1.1	1.1	2.6	5.5	6.7	8.0	7.7	6.4	11.6	15.1	18.3	30.6	45.4	65.8	88.1	115.8	120.3	88.6
Hodgkin Lymphoma	0.0	0.1	1.6	3.8	4.4	5.0	3.9	2.7	2.7	1.7	1.0	1.9	3.4	3.7	3.1	5.1	6.0	2.1
Non-Hodgkin Lymphoma	1.1	1.0	1.0	1.7	2.3	3.1	3.8	3.7	9.0	13.5	17.3	28.8	42.0	62.1	85.0	110.7	114.3	86.5
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.1	2.5	3.9	8.0	11.9	13.6	24.8	27	25.0	18.7
Leukemia	7.6	4.0	3.2	1.6	1.0	1.3	2.2	3.4	4.0	4.7	9.2	10.8	23.8	30.5	49.2	53.2	66.8	66.5
Lymphocytic Leukemia	5.9	2.9	1.8	0.5	0.5	0.5	0.8	0.8	1.0	2.1	4.6	5.7	12.7	17.5	28.2	23.9	32.4	34.0
Acute Lymphocytic Leukemia	5.9	2.9	1.8	0.5	0.5	0.5	0.7	0.4	0.4	0.4	0.2	0.3	0.6	1.0	2.6	1.1	1.1	0.6
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	1.1	3.8	4.6	11.5	16.3	24.8	22	30.6	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	0.6	0.8	0.6	0.2	0.8	0.8	0.7	1.8
Myeloid & Monocytic Leukemia	1.6	0.8	1.1	1.0	0.6	0.6	1.3	2.4	2.9	2.5	3.8	5.0	9.9	11.7	19.1	28.5	31.3	27.3
Acute Myeloid Leukemia	1.4	0.2	1.0	1.0	0.5	0.6	1.0	1.8	1.7	1.1	2.2	2.8	6.9	7.8	12.8	18.6	16.5	17.8
Acute Monocytic Leukemia	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.2	0.0	0.8	0.5	0.8	1.7	2.5	1.5
Chronic Myeloid Leukemia	0.0	0.4	0.0	0.0	0.1	0.0	0.2	0.6	0.7	1.3	1.3	2.2	2.2	3.2	5.2	7.6	11.3	7.4
Other Myeloid/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	0.2	0.3	0.6	1.1	0.6
Other Leukemia	0.1	0.2	0.3	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.8	0.2	1.2	1.2	1.8	0.8	3.2	5.2
Miscellaneous	0.2	0.2	0.1	0.1	0.1	0.5	0.6	0.7	2.3	3.7	5.0	7.9	17.4	24.1	36.9	49.6	56.6	62.2

Source: MCSS (October 2007). 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, 2000-2004

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	3	6	6	11	18	32	73	132	245	458	700	1078	1494	1962	2687
Oral Cavity & Pharynx	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.4	2.4	4.0	6.6	8.1	11.9	19.3	20.6	18.2	25.6
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	0.0	0.0	0.6	3.7
Tongue	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.6	1.1	2.2	1.7	2.7	7.2	3.8	4.5	3.7
Salivary Gland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.4	0.2	0.6	1.6	1.2	2.3	3.4	6.6
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	0.3	0.4	0.0	0.0	0.0	0.6	0.0
Gum & Other Mouth	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.8	1.3	1.9	2.5	4.2	1.7	5.1
Nasopharynx	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.2	0.5	0.3	2.3	1.1	0.0
Tonsil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.0	1.0	0.4	0.5	0.9	2.3	0.6	1.5
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.3	1.5	1.1	1.2	0.8	1.7	2.9
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	0.8	0.8	1.2	1.9	0.6	0.0
Other Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	1.3	1.1	2.7	4.7	3.0	3.4	2.2
Digestive System	0.5	0.0	0.2	0.2	0.7	1.0	2.2	3.9	8.7	20.9	41.7	69.2	128.8	172.3	251.7	347.5	424.0	572.6
Esophagus	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.7	0.9	3.7	6.5	13.5	27.1	33.3	40.2	46.1	50.6	49.1
Stomach	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.8	1.6	2.9	6.1	11.2	15.7	20.0	35.1	35.2	65.2
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.5	1.0	1.5	3.0	1.9	4.2	4.5	2.9
Colon & Rectum	0.0	0.0	0.0	0.0	0.3	0.7	0.9	1.2	3.6	6.6	13.0	20.8	42.4	63.8	88.0	131.8	180.8	280.4
Colon excl. Rectum	0.0	0.0	0.0	0.0	0.2	0.4	0.7	1.0	2.6	5.1	10.5	15.9	34.1	51.1	70.8	113.2	149.5	248.2
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.0	0.1	0.4	0.2	0.2	0.9	1.4	2.5	5.0	8.3	12.7	17.2	18.7	31.3	32.2
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.4	0.3	0.0	0.8	0.0	2.9
Liver & Intrahepatic Bile Duct	0.5	0.0	0.2	0.2	0.2	0.0	0.2	0.7	1.3	4.2	7.0	10.9	13.1	17.9	28.4	39.2	44.3	37.3
Liver	0.5	0.0	0.2	0.2	0.2	0.0	0.2	0.6	0.9	3.2	6.0	7.8	10.4	14.1	19.7	28.6	33.0	24.2
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.0	1.0	3.0	2.8	3.8	8.7	10.7	11.4	13.2
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.8	1.9	1.1	2.5	3.8	5.7	7.3
Other Biliary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.8	0.2	1.4	3.4	5.3	5.1	12.4
Pancreas	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	1.6	3.9	11.1	14.6	29.2	34.3	65.5	78.5	92.7	108.4
Retroperitoneum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.3	0.3	0.4	2.3	0.0
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3	1.3	1.4	1.6	2.3	2.8	6.6

(Continues on next page)

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, 2000-2004 (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	0.3	3.2	5.8	18.9	34.9	74.8	160.6	241.2	368.1	450.0	497.4	430.6
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.2	0.2	0.5	0.9	1.5	3.4	3.7
Larynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	2.4	4.9	5.1	4.7	11.8	13.6	16.1
Lung & Bronchus	0.0	0.0	0.0	0.1	0.0	0.2	0.3	3.2	5.7	18.0	33.6	72.2	155.5	235.0	362.1	435.9	479.8	407.1
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	0.7
Trachea, Mediastinum & Other	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	0.5	0.3	0.0	0.6	2.9
Mesothelioma (all sites) ‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.5	1.5	1.4	5.2	7.3	9.8	12.8	15.5	15.3
Bones & Joints	0.1	0.2	0.2	0.5	1.0	0.4	0.2	0.5	0.6	0.4	0.5	0.8	1.1	1.1	0.6	0.4	2.3	1.5
Soft Tissue incl. Heart	0.2	0.5	0.0	0.3	0.3	0.9	0.8	0.4	0.9	1.3	2.2	1.8	2.8	3.2	5.0	8.4	11.4	7.3
Skin	0.0	0.0	0.0	0.1	0.1	0.4	1.1	1.1	1.8	3.0	3.9	6.6	9.3	14.3	20.3	24.8	25.0	58.6
Melanoma of the Skin	0.0	0.0	0.0	0.1	0.1	0.4	1.0	1.1	1.5	2.5	2.8	5.1	7.6	9.2	15.9	17.5	17.6	30.0
Other Non-Epithelial Skin	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.5	1.1	1.4	1.7	5.1	4.4	7.2	7.4	28.6
Kaposi Sarcoma (all sites) ‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	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	0.8	0.8	0.8	1.2	1.1	1.7	3.7
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	0.2	0.1	0.3	0.2	0.8	0.6	3.6	8.2	25.6	52.7	102.0	211.5	351.9	749.8
Prostate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	3.4	7.5	25.2	51.9	100.4	210.3	349.6	747.6
Testis	0.0	0.0	0.0	0.1	0.2	0.1	0.3	0.2	0.7	0.4	0.2	0.3	0.2	0.3	0.9	0.4	0.6	0.0
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	0.2	0.5	0.6	0.8	1.1	1.5
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	0.6	0.7

(Continues on next page)

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.
† Data are not shown for mortality due to a coding change that occurred in 1999.
‡ Mortality for Mesotheliomas and Kaposi Sarcomas are for the 4-year period 1999-2002. Category did not exist in mortality coding until 1999.
- 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, 2000-2004 (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	0.5	0.0	0.0	0.2	0.0	0.3	0.6	1.9	5.0	6.5	15.4	26.7	43.3	63.0	96.0	131.3	203.6
Urinary Bladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.6	1.7	5.4	8.9	20.3	31.8	54.1	77.3	143.5
Kidney & Renal Pelvis	0.0	0.5	0.0	0.0	0.2	0.0	0.3	0.4	1.6	3.3	4.8	9.6	16.7	22.2	29.3	39.6	47.7	48.3
Ureter	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	0.3	0.6	0.8	4.0	3.7
Other Urinary Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3	1.1	0.5	1.2	1.5	2.3	8.1
Eye & Orbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.3	0.6	0.0	0.0	0.7
Brain & Other Nervous System	0.6	0.5	0.5	0.3	0.9	0.6	1.9	2.2	4.6	6.0	8.7	15.4	14.4	18.7	24.3	20.6	35.2	14.6
Endocrine System	0.1	0.1	0.0	0.0	0.1	0.4	0.0	0.3	0.2	0.5	0.5	1.4	1.5	1.6	3.7	4.6	6.3	2.2
Thyroid	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.8	0.8	0.5	1.9	3.0	4.0	0.7
Other Endocrine incl. Thymus	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.3	0.2	0.3	0.2	0.6	0.6	1.1	1.9	1.5	2.3	1.5
Lymphoma	0.1	0.0	0.1	0.5	1.0	0.2	1.8	2.6	2.0	4.3	6.0	11.4	21.0	33.0	50.2	73.5	106.3	129.6
Hodgkin Lymphoma	0.0	0.0	0.0	0.3	0.7	0.1	0.8	0.5	0.0	0.6	0.5	0.5	1.1	0.0	0.9	4.2	3.4	5.1
Non-Hodgkin Lymphoma	0.1	0.0	0.1	0.2	0.3	0.1	1.0	2.1	2.0	3.7	5.5	10.9	19.9	33.0	49.3	69.4	102.9	124.5
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.3	2.4	5.6	7.6	17.9	24.3	32.8	57.4	57.1
Leukemia	0.9	1.5	0.4	0.9	1.7	1.4	0.8	1.5	1.7	2.7	5.1	9.5	12.5	29.5	49.0	74.7	109.1	156.0
Lymphocytic Leukemia	0.1	1.1	0.3	0.7	0.9	0.4	0.0	0.7	0.4	0.3	0.8	2.6	3.2	9.5	16.5	18.7	34.7	66.6
Acute Lymphocytic Leukemia	0.1	1.1	0.3	0.7	0.9	0.4	0.0	0.4	0.2	0.1	0.4	0.2	0.4	0.5	0.9	0.4	2.3	2.9
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4	2.2	2.8	8.1	14.7	16.0	31.3	60.0
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.0	0.8	0.9	2.3	1.1	3.7
Myeloid & Monocytic Leukemia	0.7	0.2	0.1	0.2	0.7	0.9	0.7	0.6	1.1	2.1	3.7	5.4	6.4	16.2	24.6	42.3	53.4	57.8
Acute Myeloid Leukemia	0.6	0.1	0.1	0.2	0.7	0.7	0.6	0.4	0.6	1.7	3.0	4.2	5.3	11.1	19.3	33.5	39.8	38.1
Acute Monocytic Leukemia	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	0.0	0.3	0.8	0.0	0.7
Chronic Myeloid Leukemia	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.3	0.5	1.0	1.1	1.9	3.4	5.3	8.5	10.3
Other Myeloid/ Monocytic Leukemia	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	3.2	1.6	2.7	5.1	8.8
Other Leukemia	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	1.4	3.0	3.8	7.8	13.7	21.0	31.5
Miscellaneous	0.2	0.1	0.3	0.1	0.1	0.5	0.8	1.1	1.8	4.8	10.4	16.0	32.0	50.3	83.3	113.9	163.1	251.2

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, 2000-2004

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	3	3	3	7	12	23	38	77	127	234	360	533	755	948	1,146	1,390
Oral Cavity & Pharynx	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.5	0.2	0.6	1.3	1.7	2.6	6.1	6.8	6.2	11.3	16.6
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	0.3	0.4	0.5	1.0	1.7	1.0	1.1	4.2	3.4
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	0.0	0.5	1.1	1.1	2.5
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	0.3	0.3	0.4	0.3
Gum & Other Mouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.6	1.5	2.1	0.8	3.2	6.1
Nasopharynx	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.1	0.0	0.4	0.3	0.2	0.7	0.5	0.6	0.7	0.6
Tonsil	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	0.2	0.5	0.3	0.4	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	0.4	0.0	0.3	0.3	0.0	0.9
Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.5	0.8	0.3	0.0	0.6
Other Oral Cavity & Pharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.0	1.2	0.8	1.4	1.4	1.2
Digestive System	0.0	0.1	0.0	0.4	0.1	0.8	2.2	2.2	7.2	11.6	19.6	39.3	70.8	106.0	158.5	224.8	296.2	430.7
Esophagus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.2	1.0	2.2	6.1	5.6	7.3	13.0	12.3	16.2
Stomach	0.0	0.0	0.0	0.2	0.0	0.1	0.8	0.3	0.8	1.3	1.6	2.2	4.0	6.8	10.2	15.2	21.8	31.9
Small Intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.7	0.3	0.6	0.5	1.3	2.8	3.2	4.9
Colon & Rectum	0.0	0.0	0.0	0.2	0.1	0.5	1.0	1.1	3.4	5.0	8.8	18.5	28.2	44.8	67.5	96.1	131.9	229.3
Colon excl. Rectum	0.0	0.0	0.0	0.2	0.1	0.1	0.9	0.9	3.2	3.5	7.1	16.2	23.4	37.0	59.6	84.0	115.4	204.2
Rectum & Rectosigmoid Junction	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.2	0.2	1.5	1.7	2.4	4.8	7.8	7.8	12.1	16.5	25.1
Anus, Anal Canal & Anorectum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.2	0.5	0.5	0.8	0.7	1.5
Liver & Intrahepatic Bile Duct	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.7	1.4	1.7	2.4	5.4	8.0	13.9	17.2	24.6	19.0
Liver	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.8	1.6	2.0	3.9	6.0	7.6	10.9	12.0
Intrahepatic Bile Duct	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.5	0.8	0.8	3.4	4.1	7.8	9.6	13.7	7.1
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.6	1.1	1.8	4.1	3.9	8.7	10.9	9.2
Other Biliary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	1.1	1.2	1.7	2.9	3.9	6.0	10.1
Pancreas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.4	2.8	4.5	9.6	19.8	31.0	44.2	58.3	79.5	100.2
Retroperitoneum	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	0.5	0.0	0.4	0.0
Peritoneum, Omentum, & Mesentery	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.5	0.9	2.6	2.7	4.2	6.2	3.2	2.5
Other Digestive Organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	0.6	0.2	2.1	2.5	1.8	5.8

(Continues on next page)

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, 2000-2004 (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	0.3	0.0	0.5	2.7	6.6	15.4	28.2	60.5	112.4	164.3	228.9	254.7	250.1	180.3
Nose, Nasal Cavity & Middle Ear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.2	0.5	0.0	0.2	0.3	0.6	1.4	0.9
Larynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.5	1.0	1.2	3.7	1.1	1.1	1.5
Lung & Bronchus	0.0	0.0	0.0	0.0	0.3	0.0	0.5	2.6	6.3	15.3	27.5	59.6	111.4	162.8	224.9	252.7	247.3	177.5
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	0.3	0.4	0.3
Mesothelioma (all sites) ‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.6	1.4	0.4	0.9	1.4	2.9	3.7
Bones & Joints	0.0	0.0	0.3	0.4	0.7	0.3	0.0	0.0	0.0	0.0	0.1	0.8	0.2	0.7	1.0	1.4	1.1	2.5
Soft Tissue incl. Heart	0.1	0.1	0.0	0.1	0.2	0.5	0.3	0.0	0.6	0.3	1.6	2.8	3.0	4.1	3.9	2.5	8.4	8.9
Skin	0.0	0.0	0.0	0.0	0.2	0.6	0.9	1.2	1.1	1.9	1.8	4.6	3.6	6.1	8.4	8.5	10.6	16.6
Melanoma of the Skin	0.0	0.0	0.0	0.0	0.2	0.6	0.9	1.2	1.1	1.8	1.5	4.1	2.6	5.4	6.3	7.3	6.3	10.7
Other Non-Epithelial Skin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.5	1.0	0.7	2.1	1.1	4.2	5.8
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	0.0
Breast	0.0	0.0	0.0	0.0	0.0	0.4	3.6	7.1	11.7	21.5	34.2	50.3	55.7	72.6	90.0	113.3	131.5	190.1
Female Genital System	0.0	0.0	0.0	0.0	0.3	1.4	1.0	2.8	4.2	9.4	16.8	29.5	41.4	52.2	81.9	79.7	103.1	119.3
Cervix Uteri	0.0	0.0	0.0	0.0	0.1	0.5	0.5	1.4	1.3	2.1	3.8	3.6	3.8	2.4	5.5	3.1	4.6	8.0
Corpus & Uterus, NOS	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.5	0.7	1.3	3.6	8.2	13.3	12.7	20.7	22.3	31.7	37.1
Ovary	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.6	2.0	5.6	8.6	16.5	21.8	34.4	48.7	47.6	59.4	59.2
Vagina	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.4	0.5	0.8	0.8	1.4	1.2
Vulva	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	1.0	1.7	3.9	4.2	3.2	11.0
Other Female Genital Organs	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.4	0.6	1.0	0.5	2.4	1.7	2.8	2.8
Male Genital System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prostate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Testis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Penis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Male Genital Organs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(Continues on next page)

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.
† Data are not shown for mortality due to a coding change that occurred in 1999.
‡ Mortality for Mesotheliomas and Kaposi Sarcomas are for the 4-year period 1999-2002. Category did not exist in mortality coding until 1999.
- 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, 2000-2004 (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	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.7	1.6	2.7	5.8	7.9	18.8	23.8	35.8	48.9	69.6
Urinary Bladder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.1	1.9	2.4	5.6	10.2	12.4	22.2	37.4
Kidney & Renal Pelvis	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.5	1.0	1.6	3.8	5.4	12.7	12.8	21.1	24.6	29.4
Ureter	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	0.5	0.6	1.8	0.9
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	0.2	0.0	0.2	0.3	1.7	0.4	1.8
Eye & Orbit	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.0	0.0	0.0	0.0	0.6
Brain & Other Nervous System	0.1	1.2	1.2	0.5	0.1	0.9	0.6	2.3	1.2	4.2	5.8	6.9	9.1	12.9	14.1	20.0	16.2	9.8
Endocrine System	0.4	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.4	1.1	1.2	3.2	2.1	3.1	4.9	5.5
Thyroid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.9	1.0	2.2	1.6	2.5	4.6	4.9
Other Endocrine incl. Thymus	0.4	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.2	0.2	1.0	0.5	0.6	0.4	0.6
Lymphoma	0.1	0.0	0.0	0.2	0.2	1.1	0.3	0.6	1.0	2.5	4.2	7.2	10.1	17.5	33.2	51.0	74.9	81.2
Hodgkin Lymphoma	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.2	0.2	0.3	0.6	0.3	1.0	0.5	1.8	1.4	2.1	1.8
Non-Hodgkin Lymphoma	0.1	0.0	0.0	0.1	0.2	0.5	0.3	0.4	0.8	2.2	3.6	6.9	9.1	17.1	31.4	49.6	72.8	79.4
Multiple Myeloma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.6	1.3	3.6	5.9	11.0	14.4	22.3	29.9	29.4
Leukemia	0.9	0.4	0.9	0.7	0.5	0.6	1.0	1.8	1.6	1.9	2.9	5.7	11.5	14.4	28.5	38.9	52.1	68.1
Lymphocytic Leukemia	0.1	0.0	0.2	0.2	0.2	0.4	0.2	0.0	0.5	0.3	0.5	0.6	3.0	2.9	8.1	9.9	17.9	26.7
Acute Lymphocytic Leukemia	0.1	0.0	0.2	0.2	0.2	0.4	0.1	0.0	0.4	0.1	0.2	0.5	1.0	0.0	1.8	1.1	1.1	0.3
Chronic Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	1.8	2.9	5.8	7.9	15.8	25.1
Other Lymphocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	0.8	1.1	1.2
Myeloid & Monocytic Leukemia	0.5	0.2	0.4	0.4	0.1	0.0	0.7	1.6	1.0	1.0	2.1	3.6	6.7	8.5	14.9	21.1	24.6	27.0
Acute Myeloid Leukemia	0.5	0.2	0.4	0.3	0.1	0.0	0.5	1.3	0.7	0.9	1.5	2.8	5.0	7.1	11.5	17.2	18.6	17.2
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	0.2	0.0	0.0	0.7	0.6
Chronic Myeloid Leukemia	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.2	0.0	0.6	0.3	0.8	0.5	2.1	1.4	3.5	5.5
Other Myeloid/Monocytic Leukemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.8	0.7	1.3	2.5	1.8	3.7
Other Leukemia	0.2	0.1	0.2	0.0	0.1	0.3	0.1	0.2	0.2	0.5	0.4	1.4	1.8	2.9	5.5	7.9	9.5	14.4
Miscellaneous	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.7	1.6	2.7	5.8	7.9	18.8	23.8	35.8	48.9	69.6

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, 2000-2004

Race/Ethnicity	Males				Females			
	Cancer Site	Cases	Percent	Rate§	Cancer Site	Cases	Percent	Rate§
American Indian	Prostate	107	23.7	186.7	Breast	98	24.1	98.8
	Lung and Bronchus	76	16.9	129.0	Lung and Bronchus	91	22.4	108.8
	Colon and Rectum	70	15.5	111.1	Colon and Rectum	48	11.8	63.4
	Kidney and Renal Pelvis	23	5.1	31.0	Kidney and Renal Pelvis	21	5.2	19.3
	Leukemia	21	4.7	20.9	Cervix Uteri	18	4.4	13.4
	All Cancer Sites Combined	451	100.0	679.9	All Cancer Sites Combined	406	100.0	448.5
Asian/Pacific Islander	Prostate	63	13.5	46.0	Breast	134	23.9	55.3
	Colon and Rectum	56	12.0	34.6	Thyroid	50	8.9	15.2
	Lung and Bronchus	52	11.1	37.9	Colon and Rectum	48	8.6	28.5
	Liver and Bile Duct	48	10.3	25.0	Lung and Bronchus	42	7.5	24.5
	Oral Cavity and Pharynx	33	7.1	14.0	Corpus and Uterus, NOS	35	6.3	15.4
	All Cancer Sites Combined	467	100.0	273.2	All Cancer Sites Combined	560	100.0	252.9
Black	Prostate	380	31.1	233.0	Breast	274	29.7	103.1
	Lung and Bronchus	173	14.1	105.0	Lung and Bronchus	117	12.7	57.8
	Colon and Rectum	97	7.9	57.3	Colon and Rectum	93	10.1	45.5
	Kidney and Renal Pelvis	63	5.2	26.7	Cervix Uteri	40	4.3	11.9
	Non-Hodgkin Lymphoma	55	4.5	25.0	Corpus and Uterus, NOS	38	4.1	17.1
	All Cancer Sites Combined	1223	100.0	659.2	All Cancer Sites Combined	922	100.0	386.7
Non-Hispanic White	Prostate	19,093	33.2	184.1	Breast	16,774	32.1	132.9
	Lung and Bronchus	7,330	12.8	71.3	Lung and Bronchus	6,112	11.7	48.3
	Colon and Rectum	6,043	10.5	58.7	Colon and Rectum	5,932	11.3	43.7
	Urinary Bladder	4,004	7.0	39.6	Corpus and Uterus, NOS	3,355	6.4	26.7
	Non-Hodgkin Lymphoma	2,681	4.7	25.6	Non-Hodgkin Lymphoma	2,347	4.5	18.1
	All Cancer Sites Combined	57,467	100.0	553.1	All Cancer Sites Combined	52,279	100.0	410.1
Hispanic (all races)	Prostate	103	23.6	113.0	Breast	129	28.8	84.5
	Colon and Rectum	40	9.2	47.7	Lung and Bronchus	37	8.3	39.5
	Lung and Bronchus	32	7.3	37.6	Cervix Uteri	33	7.4	14.9
	Leukemia	25	5.7	10.6	Colon and Rectum	31	6.9	28.1
	Non-Hodgkin Lymphoma	25	5.7	19.3	Corpus and Uterus, NOS	29	6.5	21.6
	All Cancer Sites Combined	437	100.0	365.4	All Cancer Sites Combined	448	100.0	317.6

Source: MCSS (October 2007). 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.

Table II-7: Cancer incidence and mortality rates by race and ethnicity for selected cancers, Minnesota, 2000-2004

	Average Annual Incidence Rate§					Average Annual Mortality Rate§				
	Non-Hispanic White	American Indian	Asian/ Pacific Islander	Black	Hispanic (all races)	Non-Hispanic White	American Indian	Asian/ Pacific Islander	Black	Hispanic (all races)
All Sites Combined	469.1	538.2*	260.7 *	503.6*	335.4*	182.1	282.1*	141.9*	230.6*	119.7*
Female Breast	132.9	98.8*	55.3*	103.1*	84.5*	24.0	21.2	6.9*	26.1	17.6
Cervix	6.0	13.4*	12.9*	11.9*	14.9*	1.4	~	~	~	~
Colon and Rectum	50.4	84.6*	31.6*	50.4	36.9*	17.6	28.9*	13.8	24.3*	7.4*
Corpus Uteri	26.7	12.5*	15.4*	17.1*	21.6	4.2	~	~	5.0	~
Kidney and Renal Pelvis	13.7	23.2*	7.4*	17.2	11.4	4.4	9.5*	4.1	2.6	4.2
Leukemia	14.4	16.6	8.3*	9.8*	9.9	8.1	10.1	6.8	5.0*	4.8
Liver and Intrahepatic Duct	3.1	6.2	14.6*	14.4*	8.5*	3.6	9.4*	16.8*	13.2*	8.9*
Lung and Bronchus	58.0	114.0*	30.2*	78.1*	38.3*	46.7	99.4*	23.3*	62.6*	23.0*
Non-Hodgkin Lymphoma	21.4	21.4	12.8*	17.6	20.7	8.4	9.4	6.9	7.2	6.0
Oral Cavity and Pharynx	10.4	15.1	12.0	14.0*	5.2*	2.3	~	~	2.6	~
Prostate	184.1	186.7	46.0*	233.0*	113.0*	29.9	52.6	14.5*	59.4*	23.6
Thyroid	7.8	4.9	9.7	4.8*	6.3	0.4	~	~	~	~
Urinary Bladder	22.9	9.7*	6.6*	21.7	13.2*	4.3	~	~	4.3	~

Source: MCSS (October 2007). 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.

§ 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, 2004

Cancer Site	Males		Females		Total	
	Count	Percent	Count	Percent	Count	Percent
All Cancer Sites Combined	80,840	100.0%	97,100	100.0%	177,940	100.0%
Brain and Other Nervous System	1,270	1.6%	1,160	1.2%	2,430	1.4%
Breast	200	0.2%	41,090	42.3%	41,290	23.2%
Cervix Uteri	0	0.0%	3,640	3.7%	3,640	2.0%
Colon and Rectum	8,830	10.9%	9,210	9.5%	18,040	10.1%
Corpus and Uterus, NOS	0	0.0%	10,150	10.5%	10,150	5.7%
Esophagus	320	0.4%	80	0.1%	400	0.2%
Hodgkin Lymphoma	1,560	1.9%	1,330	1.4%	2,890	1.6%
Kidney and Renal Pelvis	2,740	3.4%	1,870	1.9%	4,610	2.6%
Larynx	1,170	1.4%	240	0.2%	1,410	0.8%
Leukemia	2,290	2.8%	1,660	1.7%	3,950	2.2%
Liver and Intrahepatic Bile Duct	170	0.2%	100	0.1%	270	0.2%
Lung and Bronchus	2,740	3.4%	2,760	2.8%	5,500	3.1%
Melanoma of the Skin	4,740	5.9%	5,530	5.7%	10,270	5.8%
Myeloma	500	0.6%	370	0.4%	870	0.5%
Non-Hodgkin Lymphoma	3,550	4.4%	3,350	3.5%	6,900	3.9%
Oral Cavity and Pharynx	2,760	3.4%	1,450	1.5%	4,210	2.4%
Ovary	0	0.0%	2,900	3.0%	2,900	1.6%
Pancreas	240	0.3%	230	0.2%	470	0.3%
Prostate	35,470	43.9%	0	0.0%	35,470	19.9%
Stomach	480	0.6%	320	0.3%	800	0.4%
Testis	3,620	4.5%	0	0.0%	3,620	2.0%
Thyroid	1,370	1.7%	4,390	4.5%	5,760	3.2%
Urinary Bladder	6,560	8.1%	2,350	2.4%	8,910	5.0%

† Estimated number of Minnesotans ever diagnosed with an invasive cancer and alive on January 1, 2004, rounded to the nearest ten persons, using the first malignant primary for a person. Estimates are based on 29-year prevalence percentages and completeness indexes on January 1, 2004 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.

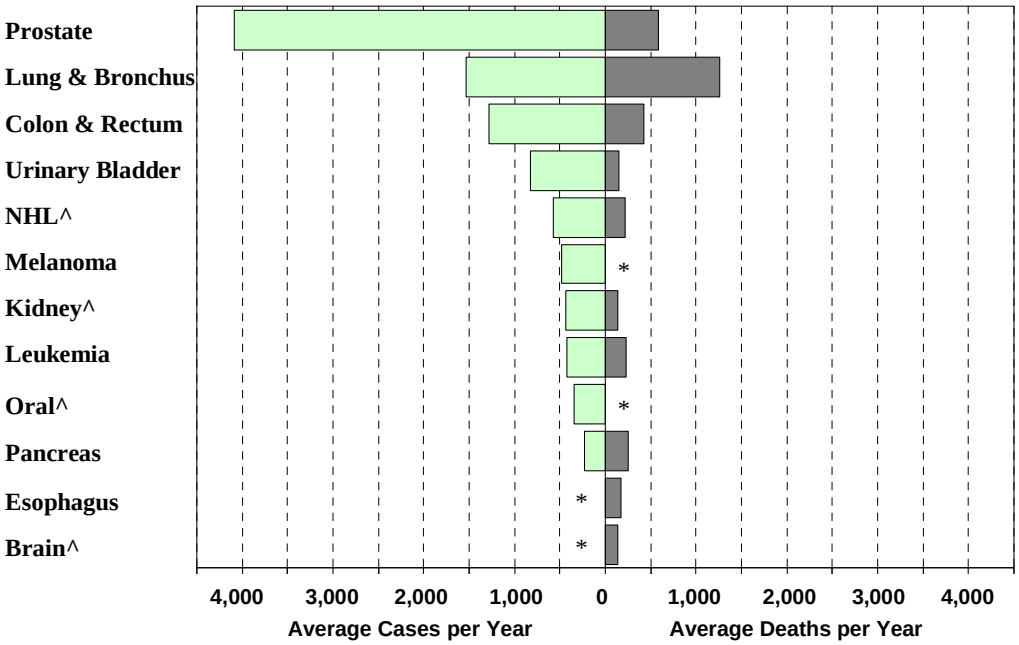
Table II-9: Estimated five-year cancer prevalence† by anatomic site and gender, Minnesota, January 1, 2004

	Males		Females		Total	
	Count	Percent	Count	Percent	Count	Percent
All Cancer Sites Combined	35,080	100.0%	32,740	100.0%	67,820	100.0%
Brain and Other Nervous System	380	1.1%	340	1.0%	720	1.1%
Breast	90	0.3%	13,850	42.3%	13,940	20.6%
Cervix Uteri	0	0.0%	670	2.0%	670	1.0%
Colon and Rectum	3,600	10.3%	3,430	10.5%	7,030	10.4%
Corpus and Uterus, NOS	0	0.0%	2,620	8.0%	2,620	3.9%
Esophagus	235	0.7%	60	0.2%	295	0.4%
Hodgkin Lymphoma	360	1.0%	280	0.9%	640	0.9%
Kidney and Renal Pelvis	1,090	3.1%	720	2.2%	1,810	2.7%
Larynx	380	1.1%	100	0.3%	480	0.7%
Leukemia	1,020	2.9%	670	2.0%	1,690	2.5%
Liver and Intrahepatic Bile Duct	130	0.4%	60	0.2%	190	0.3%
Lung and Bronchus	1,642	4.7%	1,710	5.2%	3,352	4.9%
Melanoma of the Skin	1,660	4.7%	1,690	5.2%	3,350	4.9%
Myeloma	350	1.0%	240	0.7%	590	0.9%
Non-Hodgkin Lymphoma	1,580	4.5%	1,440	4.4%	3,020	4.5%
Oral Cavity and Pharynx	960	2.7%	500	1.5%	1,460	2.2%
Ovary	0	0.0%	900	2.7%	900	1.3%
Pancreas	170	0.5%	170	0.5%	340	0.5%
Prostate	17,080	48.7%	0	0.0%	17,080	25.2%
Stomach	240	0.7%	150	0.5%	390	0.6%
Testis	860	2.5%	0	0.0%	860	1.3%
Thyroid	390	1.1%	1,210	3.7%	1,600	2.4%
Urinary Bladder	2,500	7.1%	850	2.6%	3,350	4.9%

† Estimated number of Minnesotans diagnosed with an invasive cancer during 1999-2003 and alive on January 1, 2004, rounded to the nearest ten persons, using the first malignant primary for a person. Estimates are based on prevalence percentages on January 1, 2004, 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.

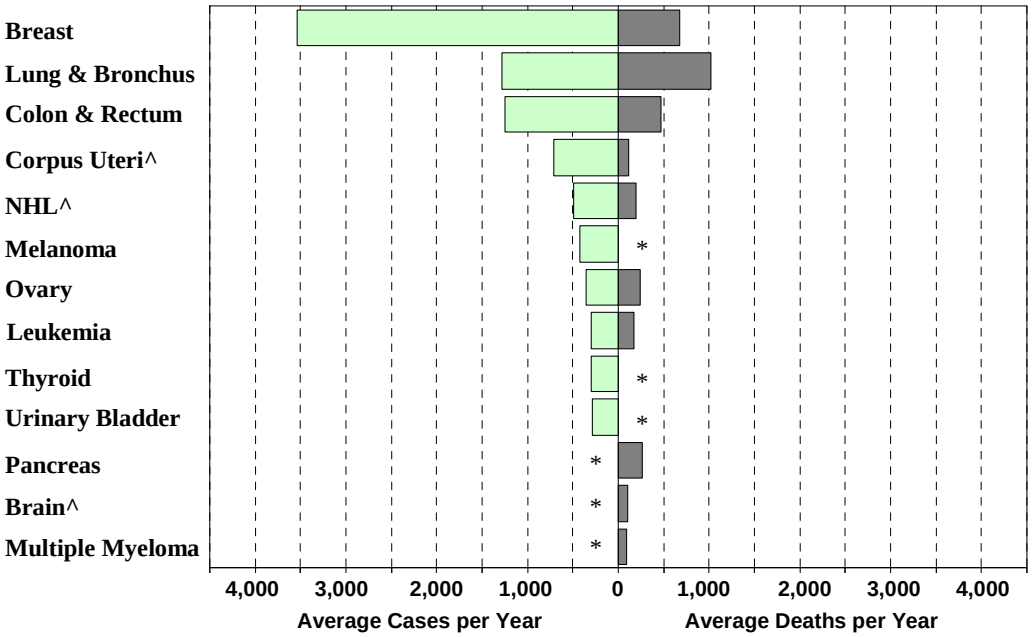
[This page left intentionally blank.]

Figure II-1: Ten Most Common Cancer Diagnoses and Deaths among Males, Minnesota, 2000-2004



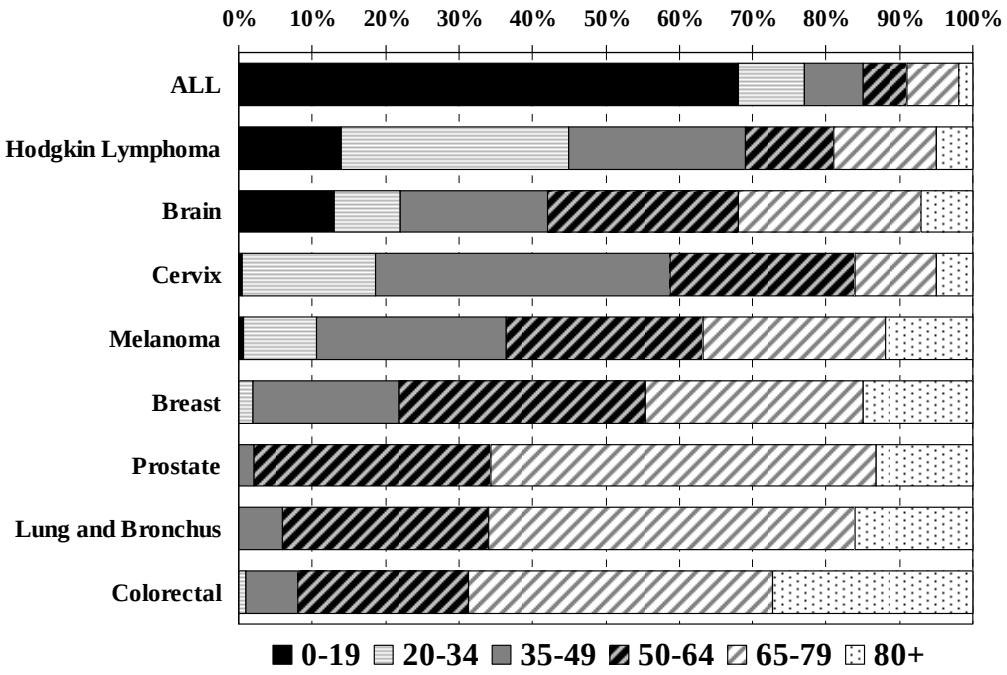
Source: MCSS (October 2007) and the Minnesota Center for Health Statistics. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
^ NHL=Non-Hodgkin Lymphoma, Kidney includes Renal Pelvis, Oral includes Oral Cavity & Pharynx, Brain includes Other Nervous System.

Figure II-2: Ten Most Common Cancer Diagnoses and Deaths among Females, Minnesota, 2000-2004



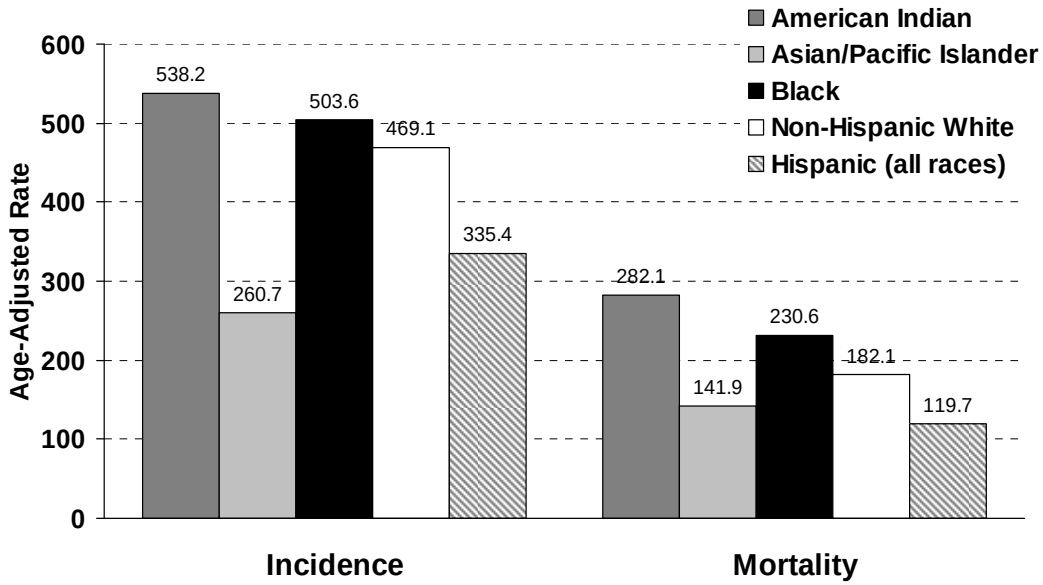
Source: MCSS (October 2007) and the Minnesota Center for Health Statistics. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
^ Corpus Uteri includes Uterus NOS, NHL=Non-Hodgkin Lymphoma, 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, 2000-2004



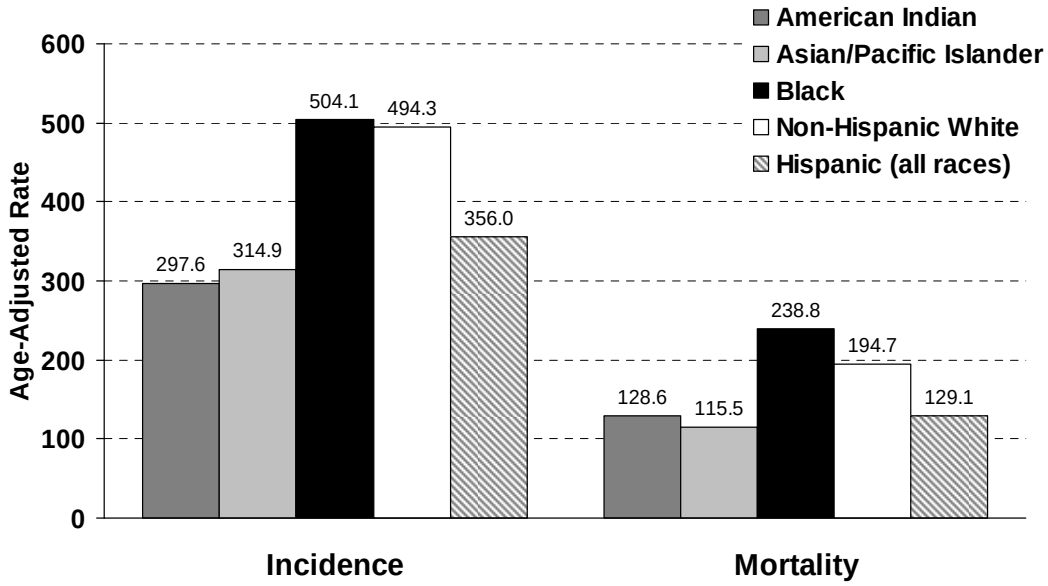
Source: MCSS (October 2007). Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS.
^Brain includes Other Nervous System, ALL=Acute Lymphocytic Leukemia

Figure II-4: Cancer Incidence and Mortality Rates by Race and Ethnicity, Minnesota, 2000-2004, All Cancer Sites Combined



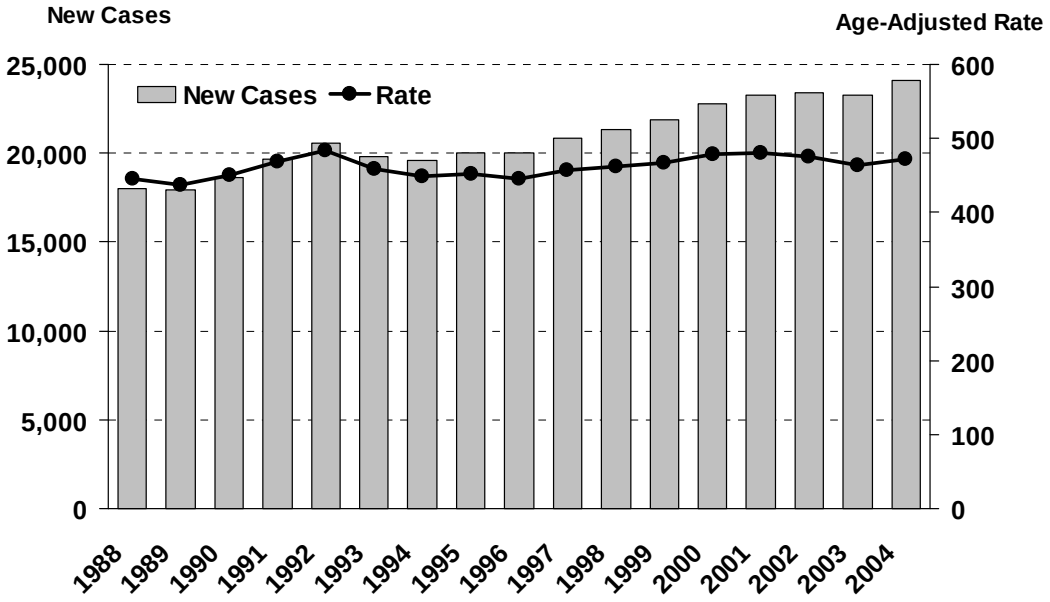
Source: MCSS (October 2007) and the Minnesota Center for Health Statistics. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. See text for comments on the accuracy of race- and ethnic-specific cancer rates. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-5: Cancer Incidence and Mortality Rates by Race and Ethnicity, SEER Program, 2000-2004, All Cancer Sites Combined



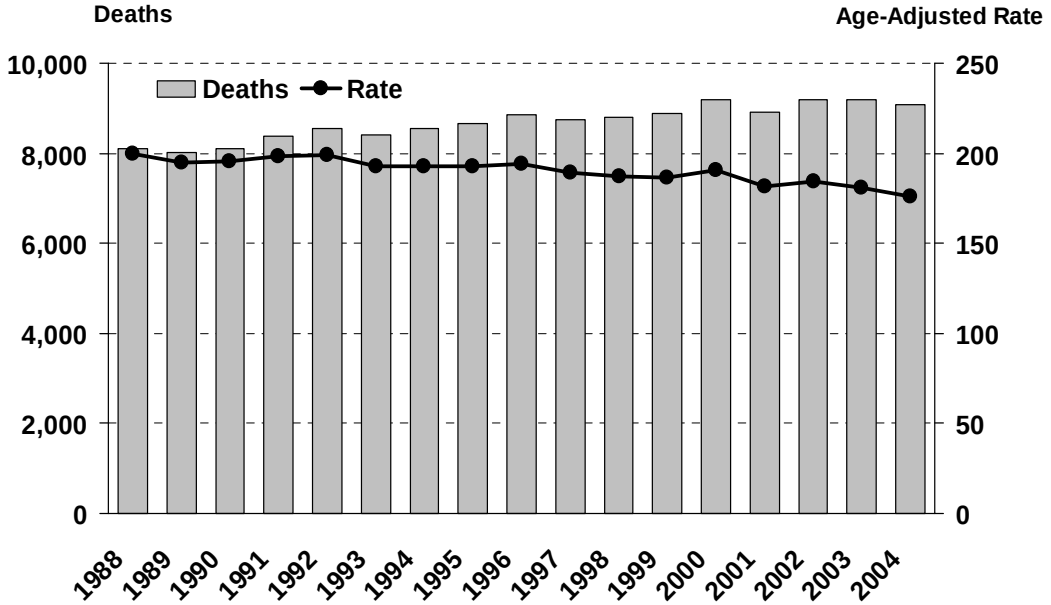
Source: *SEER Cancer Statistics Review 1975-2004*, Table II-10. Available online at http://seer.cancer.gov/csr/1975_2004. Incidence data are from the 17 SEER areas with exclusions for some race/ethnic groups. Mortality data are for the entire U.S., with exclusions for some race/ethnic groups. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-6: Cancer Incidence in Minnesota by Year, 1988-2004



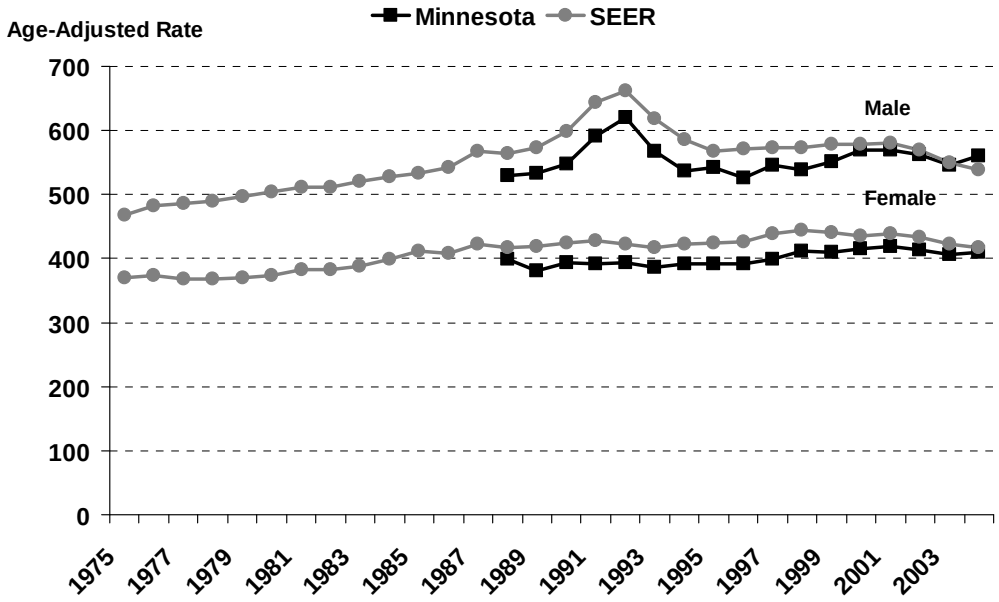
Source: MCSS (October 2007), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-7: Cancer Mortality in Minnesota by Year, 1988-2004



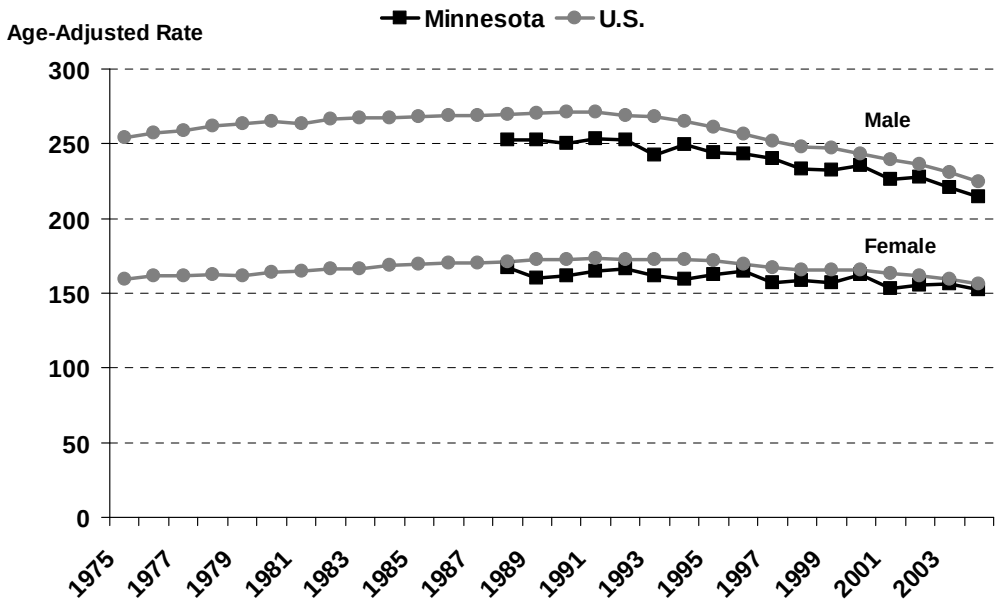
Source: Minnesota Center for Health Statistics. Deaths include all deaths with cancer specified as the underlying cause of death during the time period, regardless of year of diagnosis. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-8: Trends in Cancer Incidence by Gender, Minnesota and SEER, 1975-2004



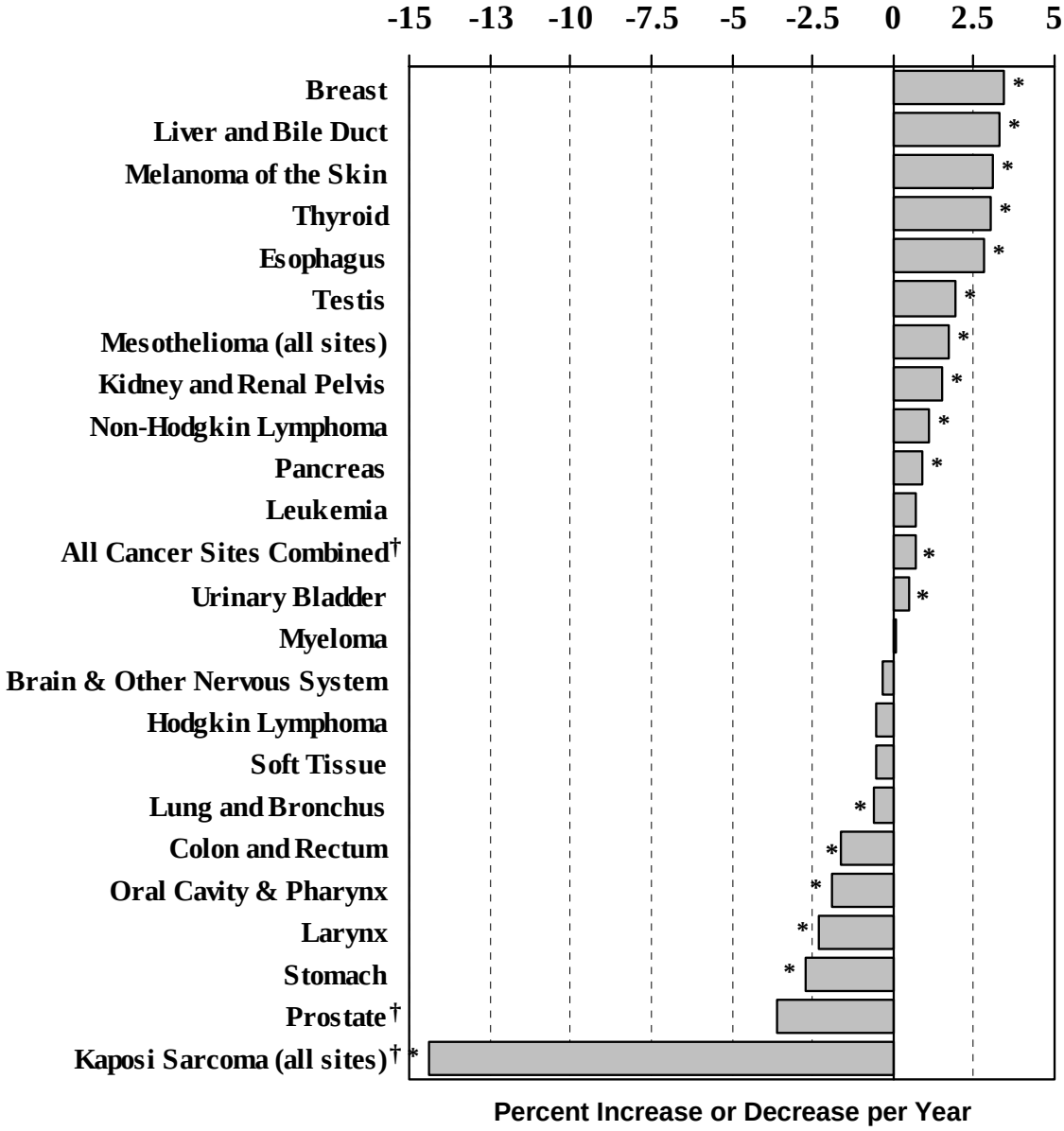
Source: MCSS (October 2007). *SEER Cancer Statistics Review 1975-2004,* available online at http://seer.cancer.gov/csr/1975_2004. For MCSS, cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. Rates for MCSS are for all races 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., 1975-2004



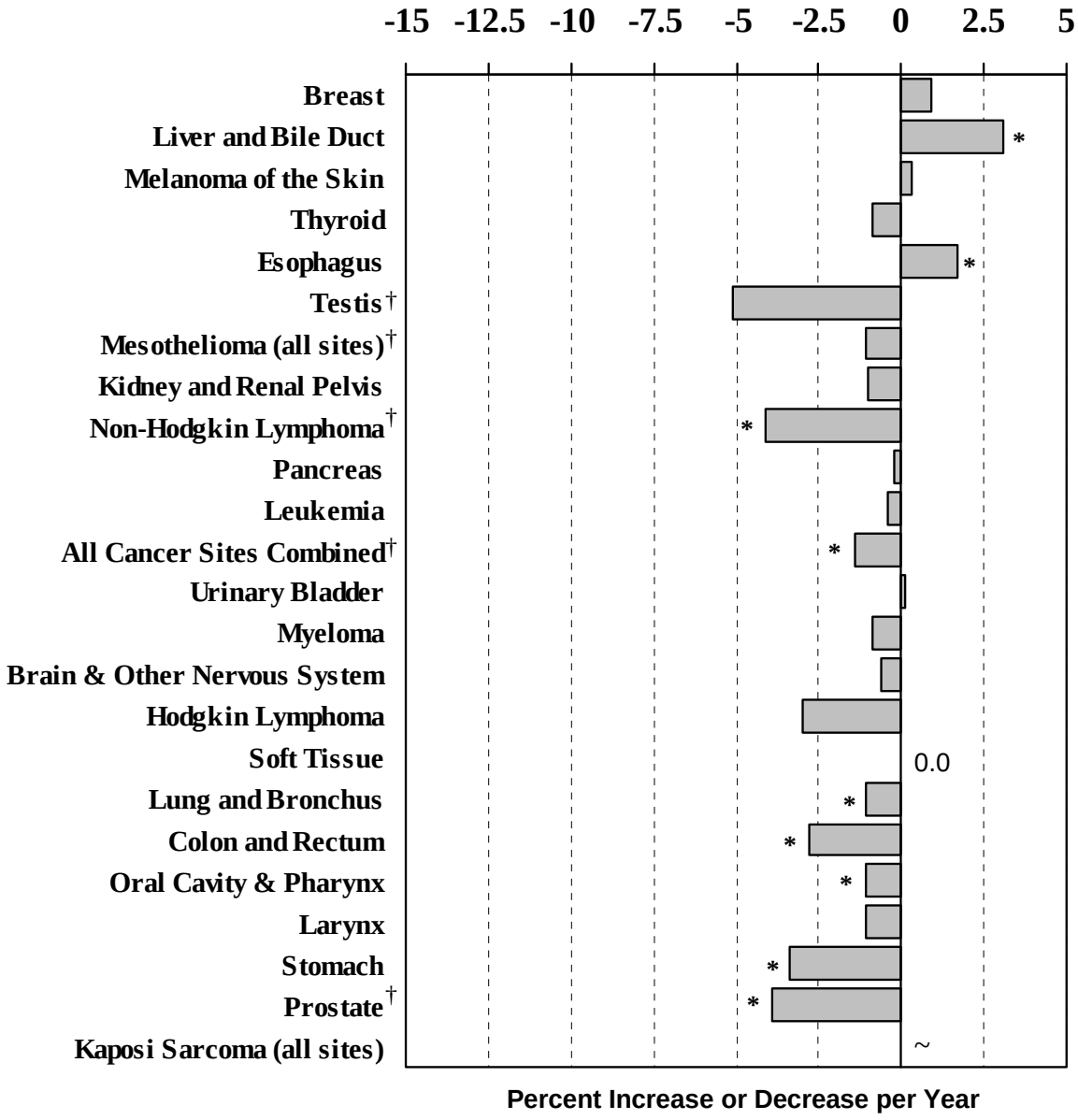
Source: Minnesota Center for Health Statistics and *SEER Cancer Statistics Review 1975-2004,* available online at http://seer.cancer.gov/csr/1975_2004. Deaths include all deaths with cancer specified as the underlying cause of death during the time period. Rates for MCSS are for all races combined. Rates 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, 1988-2004



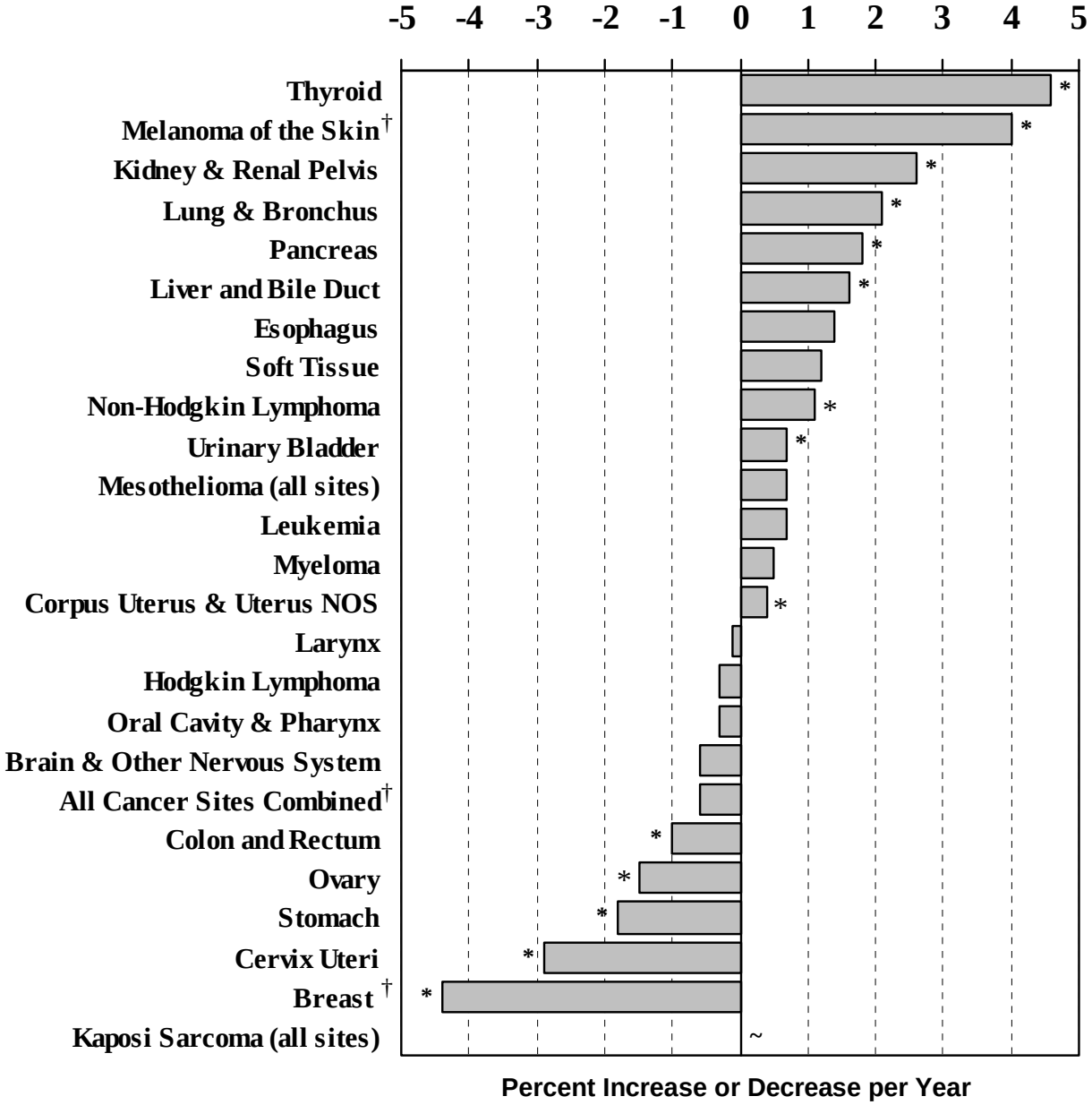
Source: MCSS (October 2007), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.
† Due to changes in trends, the average annual percent change is for the period 2001-2004 for prostate cancer, for 1995-2004 for all cancer sites combined, and for 1992-2004 for Kaposi sarcoma.
* Trend is statistically significant ($p < 0.05$).

Figure II-11: Average Annual Percent Change in Cancer Mortality among Males, Minnesota, 1988-2004



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 changes in trends, the average annual percent change is for the period 1997-2004 for testis cancer, from 1998-2004 for non-Hodgkin lymphoma, from 1996-2004 for all sites combined, and from 1995-2004 for prostate cancer. Mesothelioma was assigned a unique cause of death code in 1999, and trends are from that date.
* 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, 1988-2004



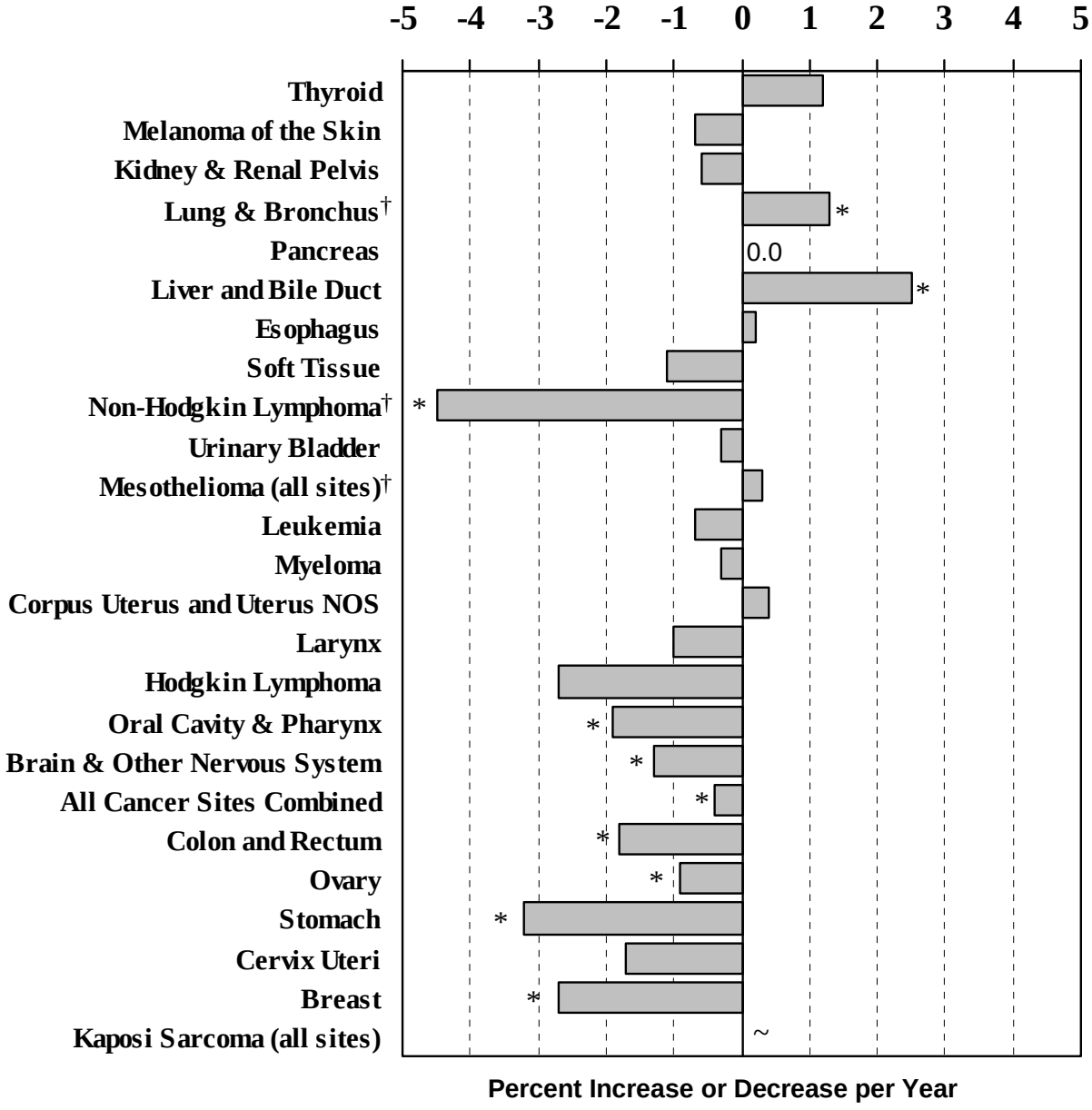
Source: MCSS (October 2007), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.

† Due to changes in trends, the average annual percent change is for the period 1991-2004 for melanoma of the skin, from 2000-2004 for all sites combined, and from 2001-2004 for breast cancer.

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

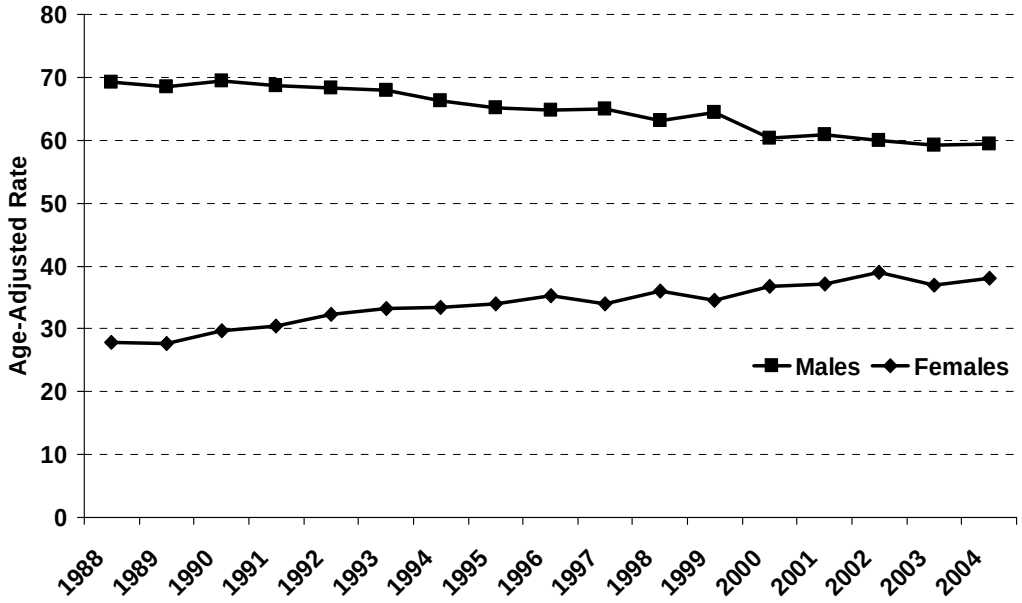
~ Average annual percent change could not be calculated because cases were not diagnosed every year.

Figure II-13: Average Annual Percent Change in Cancer Mortality among Females, Minnesota, 1988-2004



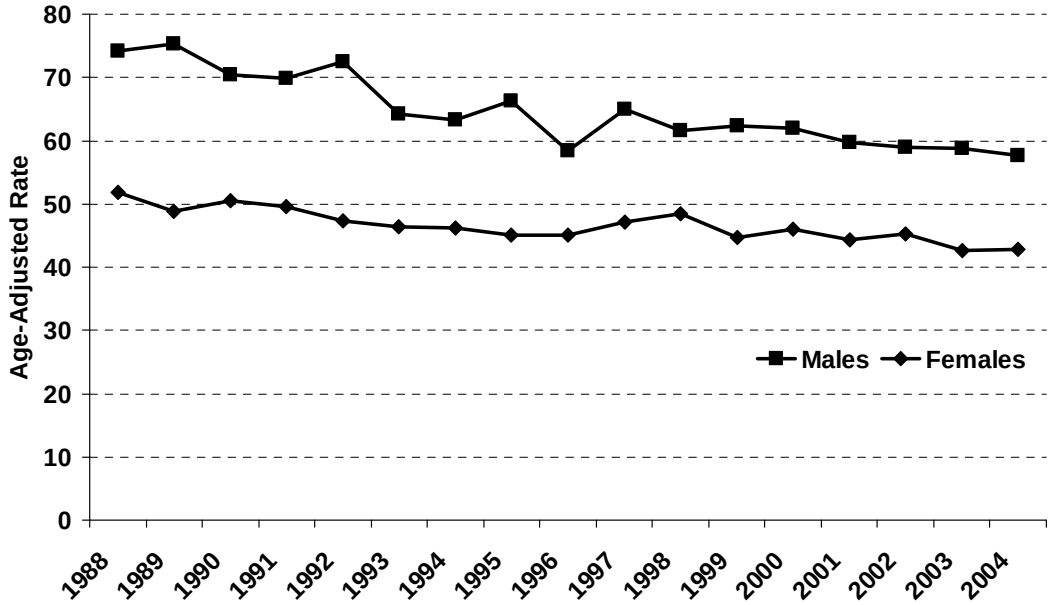
Source: Minnesota Center for Health Statistics, all races combined. All analyses were conducted by MCSS. Trends are based on annual rates per 100,000 persons age-adjusted to the 2000 U.S. population.
† Due to changes in trends, the average annual percent change is for the period 1993-2004 for lung and bronchus cancer and for 1996-2004 for non-Hodgkin lymphoma. Mesothelioma was assigned a unique cause of death code in 1999, and trends are from that date.
* 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, 1988-2004



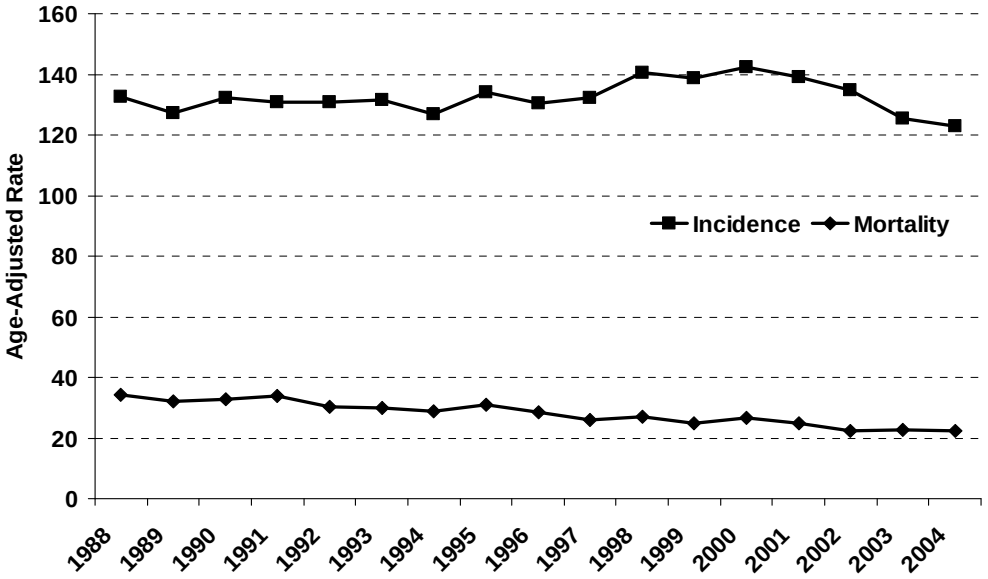
Source: Minnesota Center for Health Statistics, all races combined. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-15: Trends in Colon and Rectum Cancer Incidence by Gender, Minnesota, 1988-2004



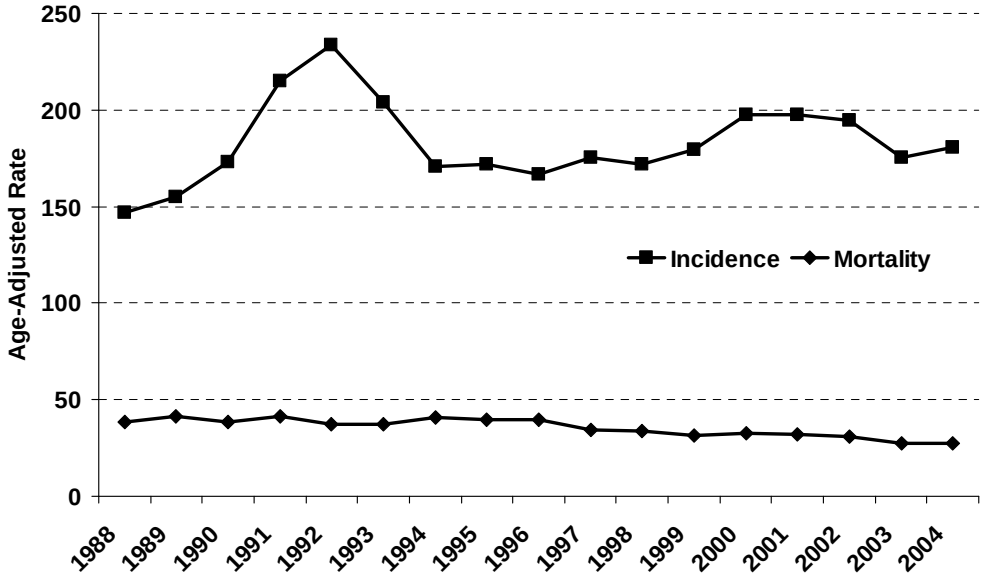
Source: MCSS (October 2007), all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-16: Trends in Female Breast Cancer Incidence and Mortality, Minnesota, 1988-2004



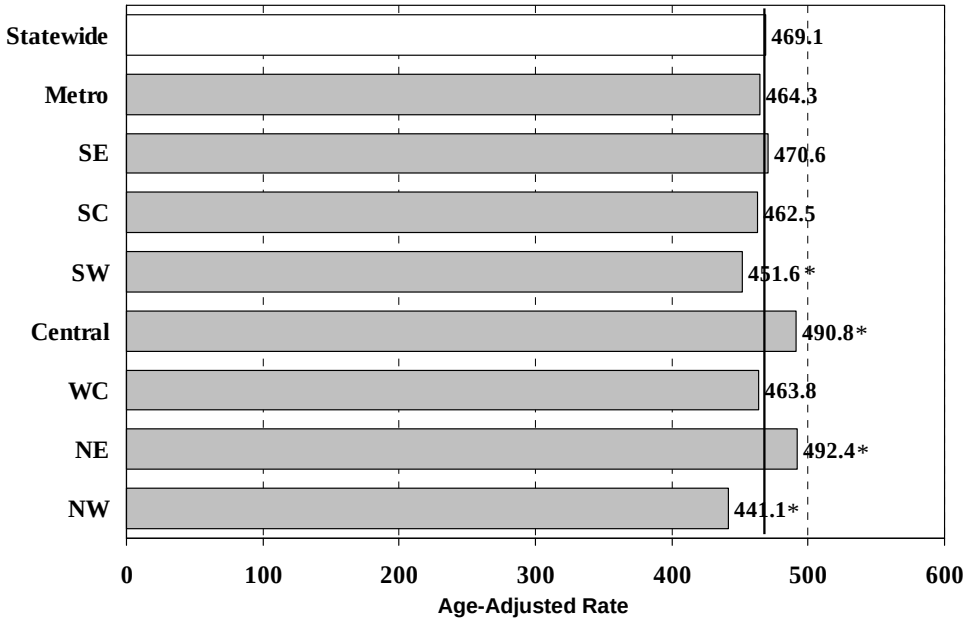
Source: MCSS (October 2007) and the Minnesota Center for Health Statistics, all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-17: Trends in Prostate Cancer Incidence and Mortality, Minnesota, 1988-2004



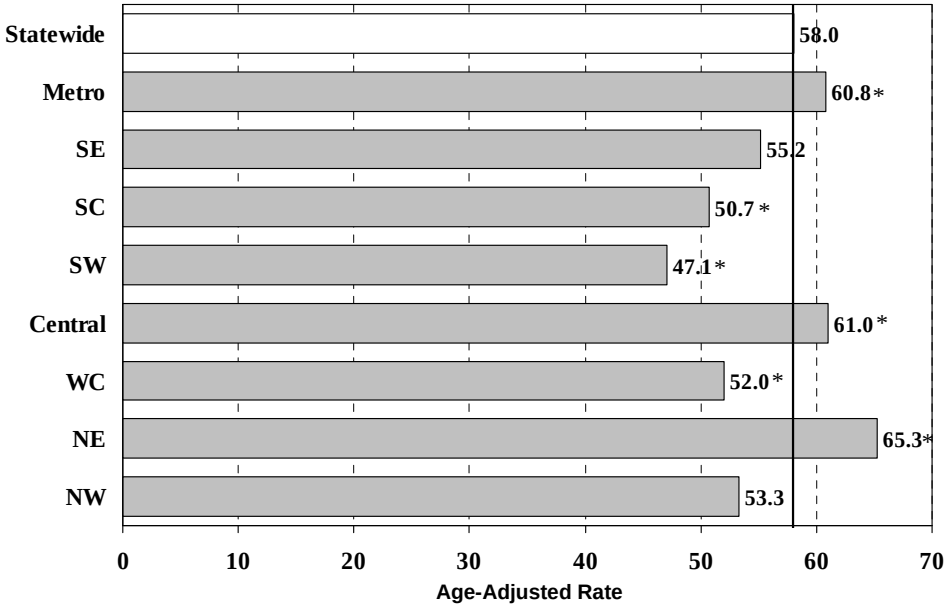
Source: MCSS (October 2007) and the Minnesota Center for Health Statistics, all races combined. Cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.

Figure II-18: Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2000-2004, All Cancer Sites Combined



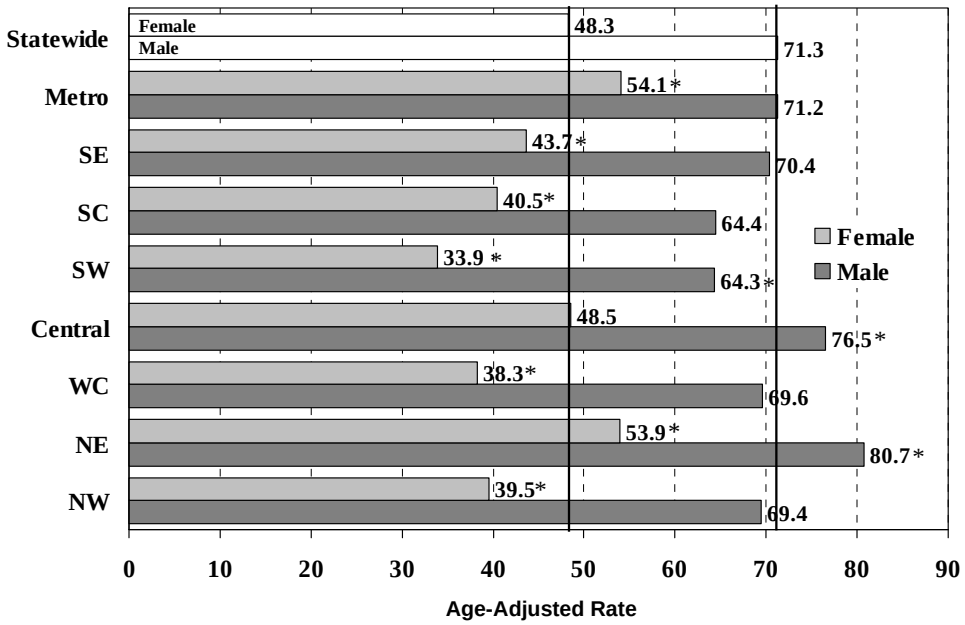
Source: MCSS (October 2007). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers except those of the bladder were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from the statewide rate.

Figure II-19: Lung and Bronchus Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2000-2004



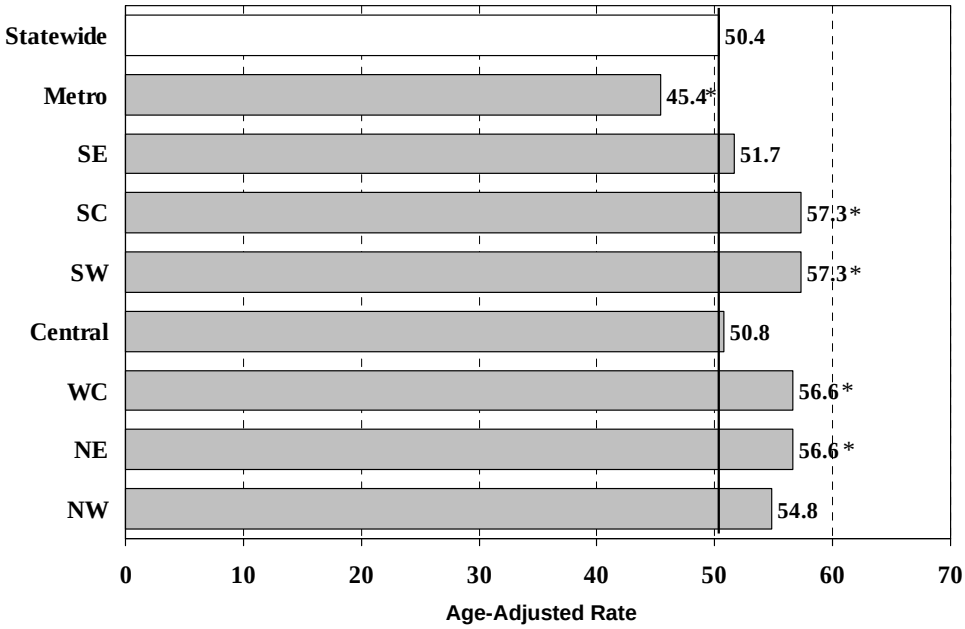
Source: MCSS (October 2007). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from statewide rates.

Figure II-20: Lung and Bronchus Cancer Incidence among Non-Hispanic Whites by Gender and Region, Minnesota, 2000-2004



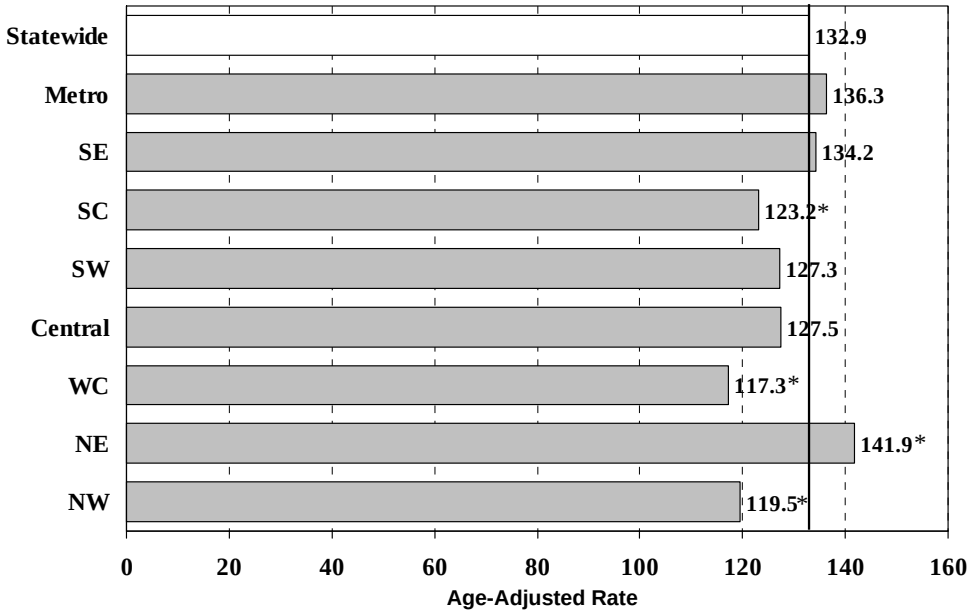
Source: MCSS (October 2007). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Sex-specific regional rate is significantly ($p < 0.05$) different from statewide rate.

Figure II-21: Colon and Rectum Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2000-2004



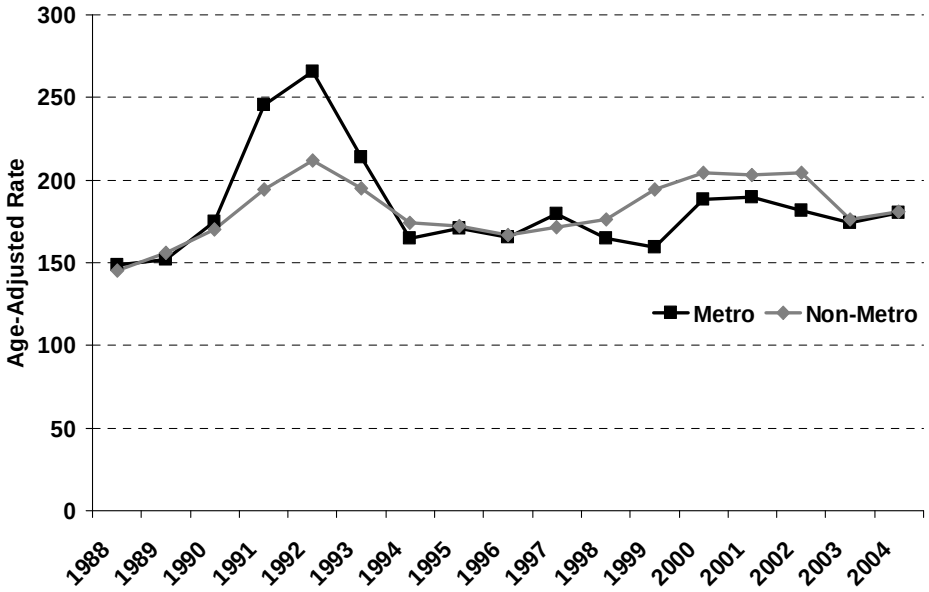
Source: MCSS (October 2007). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from statewide rate.

Figure II-22: Female Breast Cancer Incidence among Non-Hispanic Whites by Region, Minnesota, 2000-2004



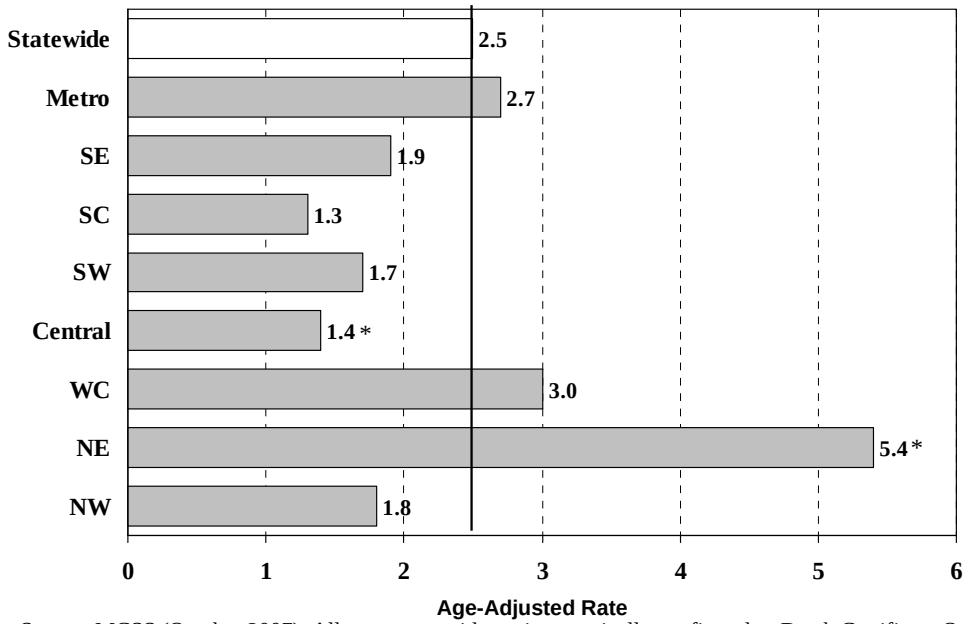
Source: MCSS (October 2007). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
*Regional rate is significantly ($p < 0.05$) different from statewide rate.

Figure II-23: Prostate Cancer Incidence Trends by Region, All Races Combined, Minnesota, 1988-2004



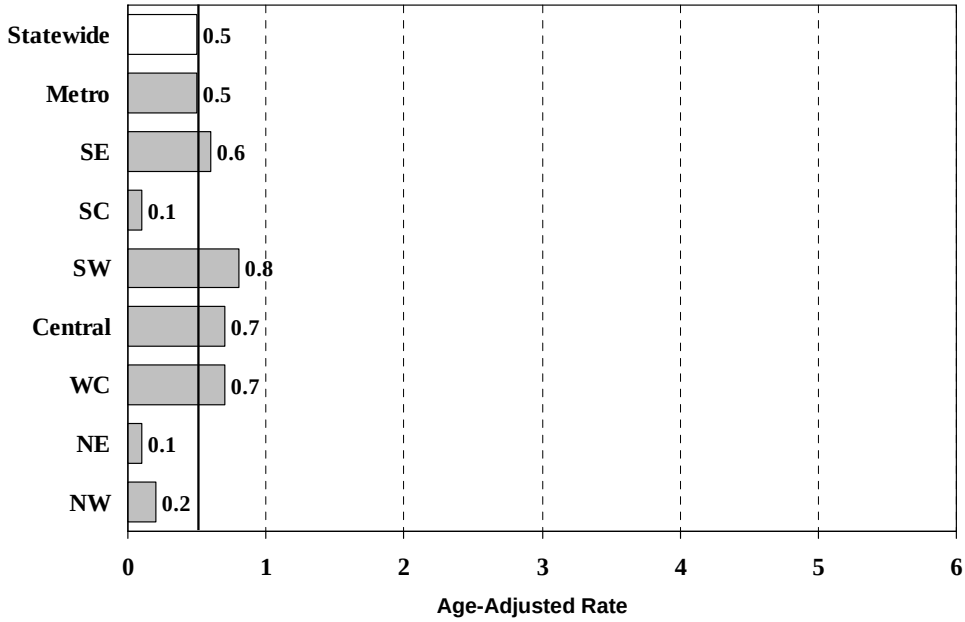
Source: MCSS (October 2007). All cases were either microscopically confirmed or Death Certificate Only. *In situ* cancers were excluded. All analyses were conducted by MCSS. Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population. The Metro region is composed of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties.

Figure II-24: Mesothelioma Incidence among Non-Hispanic Whites by Region, Minnesota, 2000-2004, Males



Source: MCSS (October 2007). 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, 2000-2004, Females



Source: MCSS (October 2007). 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.

[This page left intentionally blank.]

Chapter III:
Summary of Data for
Specific Cancers

[This page left intentionally blank.]

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, 1988-2004, 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	8,863	528.8	398.1	4,205	3,895	252.3	166.8
1989	9,336	8,583	533.3	381.4	4,220	3,789	252.5	160.4
1990	9,720	8,930	547.1	393.0	4,256	3,857	250.3	161.8
1991	10,697	8,983	590.4	390.9	4,362	4,014	253.1	164.8
1992	11,387	9,183	620.8	393.1	4,422	4,116	252.3	166.0
1993	10,649	9,146	567.8	386.7	4,317	4,088	242.7	161.7
1994	10,222	9,401	535.9	391.6	4,487	4,055	249.3	159.5
1995	10,471	9,542	542.5	391.8	4,463	4,209	243.9	162.8
1996	10,338	9,685	526.6	392.4	4,541	4,309	243.4	164.8
1997	10,828	10,000	545.7	399.2	4,556	4,178	240.5	156.7
1998	10,882	10,449	538.9	411.3	4,480	4,314	233.2	158.7
1999	11,349	10,546	551.4	410.1	4,575	4,301	232.5	156.9
2000	11,974	10,812	570.2	414.7	4,696	4,503	235.4	162.3
2001	12,177	11,077	569.7	418.6	4,610	4,296	225.9	153.3
2002	12,291	11,142	562.4	414.2	4,745	4,455	228.1	155.7
2003	12,188	11,063	546.2	406.1	4,700	4,482	221.1	156.2
2004	12,740	11,348	560.5	409.7	4,644	4,445	214.5	152.0

Table III-1.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, All Cancer Sites Combined

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	727	571	20.1	16.6	102	82	2.8	2.4
20 – 34	1,376	1,798	52.7	71.2	204	180	7.8	7.1
35 – 49	4,905	8,178	162.4	275.1	1,225	1,363	40.5	45.8
50 – 64	17,771	15,500	923.0	791.8	4,779	4,326	248.2	221.0
65 – 74	18,275	12,142	2,647.2	1,531.9	6,043	5,071	875.4	639.8
74 – 85	14,465	12,084	3,299.9	1,890.4	7,372	6,624	1681.7	1036.2
85 and older	3,851	5,169	2,819.8	1,584.6	3,670	4,535	2687.3	1390.3

Table III-1.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, All Cancer Sites Combined

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	61,370	55,442	561.7	412.4	23,395	22,181	224.8	155.8
American Indian	451	406	679.9	448.5	202	183	345.0	243.2
Asian/Pacific Isl.	467	560	273.2	252.9	237	201	171.8	118.9
Black	1,223	922	659.2	386.7	457	355	298.8	182.6
Non-Hispanic White	57,467	52,279	553.1	410.1	22,344	21,318	223.8	155.7
Hispanic (All Races)	434	448	363.5	317.6	143	114	153.8	93.7

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *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. 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

Table III-1.4: Other Minnesota cancer statistics†, 2002-2004, All Cancer Sites Combined

	Males	Females
Median Age at Diagnosis	68.0	66.0
Median Age at Death	74.0	75.0
Lifetime Risk of Diagnosis	50.3%	41.6%
Lifetime Risk of Death	25.2%	21.4%
Annual Percent Change‡		
Incidence (1995-2004 males; 2000-2004 females)	**0.7%**	-0.6%
Mortality (1996-2004 males; 1988-2004 females)	**-1.4%**	**-0.4%**

† 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-1.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, All Cancer Sites Combined

	Males	Females
Incidence		
All Races	555.8	411.3
American Indian	321.2	282.4
Asian/Pacific Islander	359.9	285.8
Black	663.7	396.9
Non-Hispanic White	573.6	439.9
Hispanic (All Races)	421.3	314.2
Mortality		
All Races	238.7	162.2
American Indian	152.2	112.0
Asian/Pacific Islander	141.7	96.7
Black	321.8	189.3
Non-Hispanic White	239.2	165.1
Hispanic (All Races)	162.2	106.7

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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, 2004

Rank	Cause of Death	Deaths	% Deaths
1	Cancer	9089	24.6
2	Heart Disease	7887	21.3
3	Cerebrovascular Disease	2540	6.9
4	Accidents	1859	5.0
5	Chronic Lung Disease	1838	5.0
6	Alzheimer's Disease	1231	3.3
7	Diabetes	1131	3.1
8	Pneumonia and Influenza	752	2.0
9	Nephritis	670	1.8
10	Suicide	522	1.4
	Other Causes and Conditions	9491	25.6
	Total Deaths	37010	100.0

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, about one out of two Minnesotans will be diagnosed with a potentially serious cancer during his or her lifetime. The overall cancer incidence rate in Minnesota is similar to that reported nationally, while the cancer mortality rate in Minnesota is five percent lower than the national rate. Cancer became the leading cause of death in Minnesota in 2000. In 2004, 1,202 more Minnesotans died of cancer than heart disease.

Trends: From 1995 to 2004, the overall cancer incidence rate in Minnesota increased significantly by 0.7 percent per year among males. Among females, the overall cancer incidence rate increased by 1.4 percent per year from 1995 to 2000, but then stabilized from 2000 to 2004. In the MCSS biennial report on cancer occurrence through 2002, cancer incidence was increasing significantly by 1.1 percent per year among males and 0.5 percent per year among females. Data through 2004 may indicate that the rate of increase in cancer incidence is slowing down in our state. Despite increasing or stabilizing incidence rates, the overall cancer mortality rate in Minnesota declined by 1.4 percent per year for men from 1996 to 2004, and by 0.4 percent per year for women from 1988 to 2004.

After adjusting for delays in reporting, the overall cancer incidence rate in the SEER Program was stable for men from 1995 to 2004 and for women from 1999 to 2004. Nationally, the decline in the overall cancer mortality rate was similar to that currently seen in Minnesota until 2002, when it began declining at a more rapid pace: 2.6 percent per year among males, and 1.8 percent per year among females. It may take longer to detect this change in cancer mortality in Minnesota because of having a smaller population with intrinsically more variable rates.

Age: The likelihood of being diagnosed with cancer increases with age. Approximately 56 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.

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 44 percent

All Cancer Sites Combined

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. For males, the overall cancer incidence rate in Minnesota is highest among American Indians and blacks. Non-Hispanic whites have the third highest incidence rate among males. American Indians also have the highest incidence rate among females, with non-Hispanic white women having the second highest rate. Cancer incidence among American Indians is about two 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 21 percent lower in Minnesota than reported by SEER, where the majority of Asian/Pacific Islanders are from California and the Pacific Northwest. In Minnesota, Asian Pacific/Islanders have the lowest rates; in SEER, American Indians have the lowest rates. 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 having a cancer-related checkup every three years from ages 20-39, and annually after age 40, 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. Information can also be obtained from the National Cancer Institute's Cancer Information Service at http://cis.nih.nci.gov or by calling 1-800-4-CANCER.

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.

Table III-2.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2004, 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	84	58	15.8	11.7	15	9	2.8	1.8
1996	89	68	16.8	13.5	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	100	80	18.6	15.6	20	8	3.7	1.5
2001	99	75	18.7	14.8	9	11	1.7	2.2
2002	105	65	20.0	12.9	13	11	2.5	2.2
2003	78	67	14.8	13.4	18	16	3.5	3.2
2004	102	85	19.5	17.0	11	10	2.1	2.0

Table III-2.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Cancers among Children less than 15 Years of Age

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 4	244	159	29.0	19.9	24	15	2.8	1.9
5 – 9	114	88	13.1	10.6	29	18	3.3	2.2
10 – 14	126	125	13.4	14.0	18	23	1.9	2.6

Table III-2.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Cancers among Children less than 15 Years of Age

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	484	372	18.3	14.7	71	56	2.7	2.2
American Indian	6	2	~	~	0	0	~	~
Asian/Pacific Isl.	21	16	16.5	12.9	5	3	~	~
Black	21	14	10.9	~	5	2	~	~
Non-Hispanic White	376	307	17.5	15.0	56	48	2.6	2.3
Hispanic (All Races)	32	26	22.2	20.0	3	4	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *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. 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, 2000-2004, 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	0.5	0.5	5	3	0.2	0.1
Brain	88	78	3.3	3.1	14	22	0.5	0.9
Hodgkin Lymphoma	25	15	0.9	0.6	0	0	0.0	0.0
Kidney	35	26	1.3	1.1	4	1	0.2	0.0
Leukemia	161	123	6.1	4.9	25	18	1.0	0.7
ALL	133	87	5.1	3.5	14	3	0.5	0.1
NHL	37	26	1.4	1.0	2	1	0.1	0.0
Soft Tissue	31	32	1.2	1.3	6	2	0.2	0.1

Source: MCSS (October 2007) and the Minnesota Center for Health Statistics. Cases were microscopically confirmed (1998-2004) or Death Certificate Only (1995-2004). *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†, 2002-2004, Cancers among Children less than 15 Years of Age

	Males	Females
Risk of Diagnosis by Age 15	0.27%	0.22%
Risk of Death by Age 15	0.04%	0.04%
Annual Percent Change‡		
Incidence (1988-2004)	-4.8%	0.0%
Mortality (1988-2004)	**-2.7%**	**-2.5%**

† 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	71.5
Brain and Other Nervous System	74.1
Hodgkin Lymphoma	95.4
Leukemia	81.3
Acute Lymphocytic	87.2
Non-Hodgkin Lymphoma	87.1
All Childhood Cancers	79.6

‡Among SEER cases diagnosed 1996-2003 followed through 2004, from *SEER Cancer Statistics Review, 1975-2004*

Table III-2.7: Average annual incidence and mortality rates§ in the United States, 2000-2004, Cancers among Children less than 15 Years of Age

	Males	Females
Incidence		
All Childhood Cancers		
All Races	15.8	14.0
White†	16.7	14.6
Bone and Joint	0.7	0.7
Brain	3.4	3.1
Hodgkin Lymphoma	0.7	0.4
Kidney	0.8	0.8
Leukemia	5.3	4.5
Acute Lymphocytic	4.1	3.5
NHL	1.1	0.6
Soft Tissue	1.0	1.0
Mortality		
All Races	2.7	2.3
White†	2.7	2.4

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% of the U.S. 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.
†All whites, including persons of Hispanic ethnicity.

Childhood Cancers

Descriptive Epidemiology

Incidence and Mortality: Each year, about 170 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 403 children will be diagnosed with cancer before age 15. Cancer is the leading cause of death from disease among children. Childhood cancer incidence rates in Minnesota are somewhat higher than those reported nationally, however mortality rates are similar to national mortality rates.

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 (31% of childhood cancers), brain cancer (18%), or lymphomas (11%). 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 rate in Minnesota has been fairly stable since cancer reporting was implemented in 1988. The overall mortality rate for childhood cancers has been decreasing by about 2.5 percent each year in Minnesota from 1988-2004, a statistically significant decrease. Nationally, the cancer incidence rate in children ages 0-14 years has increased significantly by 0.6 percent per year from 1975-2004, accompanied by a significant decline in mortality of 2.6 percent per year over the same time period.

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. Based on cancers among children reported to the SEER program from 2000-2004, Hispanic children had the highest overall cancer rates, followed by non-Hispanic white children, children of Asian/Pacific Islander origin, black children and American Indian children.

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, 1988-2004, 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	114	8.3	4.9	129	100	6.4	4.3
1995	172	128	7.8	5.5	114	103	5.7	4.3
1996	162	112	7.7	4.7	118	90	5.8	3.7
1997	165	134	7.4	5.5	119	96	5.7	3.9
1998	187	135	8.5	5.5	130	103	6.2	4.0
1999	195	152	8.6	6.2	139	104	6.4	4.2
2000	191	119	8.3	4.7	159	98	7.1	3.8
2001	189	141	8.1	5.5	147	99	6.5	3.8
2002	202	161	8.6	6.3	126	108	5.5	4.1
2003	180	134	7.3	5.2	134	105	5.5	4.0
2004	205	135	8.5	5.2	129	98	5.5	3.6

Table III-3.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Brain and Other Nervous System Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	111	98	3.1	2.8	17	27	0.5	0.8
20 – 34	92	64	3.5	2.5	30	13	1.1	0.5
35 – 49	212	123	7.0	4.1	129	75	4.3	2.5
50 – 64	275	162	14.3	8.3	236	137	12.3	7.0
65 – 74	143	127	20.7	16.0	147	107	21.3	13.5
74 – 85	117	103	26.7	16.1	116	117	26.5	18.3
85 and older	17	13	12.4	4.0	20	32	14.6	9.8

Table III-3.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Brain and Other Nervous System Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	967	690	8.2	5.4	695	508	6.0	3.8
American Indian	7	2	~	~	1	2	~	~
Asian/Pacific Isl.	10	6	3.3	~	4	1	~	~
Black	14	10	3.0	3.6	6	4	~	~
Non-Hispanic White	910	657	8.4	5.6	674	494	6.2	4.0
Hispanic (All Races)	17	8	6.5	~	7	7	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Brain and Other Nervous System Cancer

	Males	Females
Median Age at Diagnosis	53.0	54.5
Median Age at Death	60.0	65.0
Lifetime Risk of Diagnosis	0.7%	0.5%
Lifetime Risk of Death	0.5%	0.4%
Annual Percent Change‡		
Incidence (1988-2004)	-0.3%	-0.6%
Mortality (1988-2004)	-0.6%	**-1.3%**

† 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-3.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Brain and Other Nervous System Cancer

	Males	Females
Incidence		
All Races	7.7	5.4
Non-Hispanic White	8.9	6.2
Mortality		
All Races	5.4	3.6
Non-Hispanic White	6.0	4.0

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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, 2000-2004

Cell Type	Histology Codes†	Cases	%
Glioblastoma	9440-9442	729	44.0
Astrocytoma (all)	9400, 9401, 9410-9411, 9420-9421, 9423-9430	425	25.6
Oligodendroglioma	9450-51, 9460	176	10.6
Ependymoma	9391-9394	85	5.1
Mixed glioma	9382	66	4.00
Medulloblastoma	9470-9472	35	2.1
Other glioma	9380, 9381	24	1.4
All others		117	7.1
Total		1,657	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 241 deaths are caused by these cancers. They account for 1.4 percent of all new cancers diagnosed and 2.6 percent of cancer deaths in the state. Incidence and mortality rates in Minnesota are similar to those for the U.S. Based on SEER data, the 5-year relative survival rate for brain cancers diagnosed between 1996-2003 was 34.5 percent, but was considerably higher among children ages 0-14 (74.1%).
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 1.3 percent per year among women over the same period.
Age: The incidence rate for brain and nervous system cancer increases only modestly with age. The majority (56%) of brain and nervous system cancers are diagnosed between the ages of 20 and 64 years.
Gender: Brain and nervous system cancers are about 40 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 indicate that whites are at greater risk of developing and dying from these cancers than persons from 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 phone use has been studied as a possible risk factor, but has not been confirmed by the most recent studies. 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 detected once it becomes symptomatic. In most cases, the 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, 1988-2004, 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	2,772	0.7	127.2	5	716	0.3	32.0
1990	14	2,908	0.8	132.4	2	746	0.1	32.8
1991	18	2,924	1.0	130.9	6	786	0.4	33.8
1992	12	2,951	0.6	130.7	3	726	0.2	30.4
1993	15	3,022	0.8	131.4	5	732	0.3	30.0
1994	22	2,975	1.2	126.9	9	708	0.5	28.9
1995	24	3,169	1.3	133.9	4	773	0.2	31.0
1996	18	3,152	0.9	130.5	7	725	0.4	28.5
1997	16	3,238	0.9	132.2	11	678	0.6	26.1
1998	23	3,513	1.2	140.7	5	720	0.2	26.9
1999	21	3,494	1.0	138.6	4	670	0.2	24.9
2000	30	3,657	1.5	142.5	8	729	0.4	26.8
2001	26	3,643	1.3	139.2	10	685	0.5	24.8
2002	28	3,600	1.3	134.9	2	640	0.1	22.5
2003	23	3,396	1.1	125.3	8	639	0.4	22.7
2004	27	3,387	1.2	122.8	1	655	0.1	22.4

Table III-4.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Breast Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	3	294	0.1	11.6	0	34	0.0	1.3
35 – 49	11	3,465	0.4	116.6	1	398	0.0	13.4
50 – 64	33	6,081	1.7	310.7	10	878	0.5	44.9
65 – 74	30	3,500	4.3	441.6	7	642	1.0	81.0
74 – 85	37	3,015	8.4	471.7	6	776	1.4	121.4
85 and older	20	1,327	14.6	406.8	5	620	3.7	190.1

Table III-4.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Breast Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	134	17,683	1.3	132.7	29	3,348	0.3	23.8
American Indian	0	98	~	98.8	0	17	~	21.2
Asian/Pacific Isl.	1	134	~	55.3	1	15	~	6.9
Black	0	274	~	103.1	1	62	~	26.1
Non-Hispanic White	128	16,774	1.3	132.9	27	3,229	0.3	24.0
Hispanic (All Races)	3	129	~	84.5	1	25	~	17.6

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Breast Cancer

	Males	Females
Median Age at Diagnosis	70.0	62.0
Median Age at Death	72.0	70.0
Lifetime Risk of Diagnosis	0.1%	13.2%
Lifetime Risk of Death	0.0%	2.9%
Annual Percent Change‡		
Incidence (1988-2004 males; 2001-2004 females)	**3.4**%	**-4.4**%
Mortality (1988-2004)	0.9%	**-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, 2000-2004, Breast Cancer

	Males	Females
Incidence		
All Races	1.1	127.8
Non-Hispanic White†	1.3	140.2
Mortality		
All Races	0.3	25.5
Non-Hispanic White†	0.3	25.5

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	17.8	-
Localized	51.9	98.0
Regional	24.8	83.5
Distant	3.4	26.7
Unknown	2.1	56.9

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Female breast cancer rates have changed markedly since cancer reporting was implemented in Minnesota. Due to steady declines in mortality, breast cancer accounted for 15 percent of cancer deaths among women in 2004 instead of 20 percent in 1988. Breast cancer incidence among women began declining sharply in 2001, and accounted for 30 percent of cancer diagnoses among women in 2004 instead of 34 percent in 2001. However, 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. Incidence rates among non-Hispanic white women are five percent lower in Minnesota than in the SEER Program, and mortality rates among non-Hispanic white women are six percent lower in Minnesota than in the U.S.

Trends: Incidence rates for invasive breast cancer among Minnesota women decreased significantly by 4.4 percent per year from 2001-2004, while the mortality rate also decreased significantly by 2.7 percent per year from 1988 to 2004. 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 age 50 years.

Race: Although incidence rates are 22 percent lower among black compared to non-Hispanic white women, mortality rates are 9 percent higher among black women. The breast cancer incidence rate among American Indian women is 26 percent lower than among non-Hispanic white women, but the mortality rate is only 12 percent lower. These relationships indicate 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

In 2002, the U.S. Preventive Services Task Force endorsed mammography every 1-2 years for women ages 40 years and over. Screening mammography improves the likelihood for early diagnosis, increases treatment options, and improves overall survival.

Cervix Uteri

Table III-5.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2004, 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	-	200	-	8.4	-	51	-	2.2
1996	-	200	-	8.2	-	61	-	2.6
1997	-	176	-	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	-	176	-	6.8	-	48	-	1.8
2004	-	164	-	6.2	-	52	-	1.9

Table III-5.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Cervix Uteri Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	-	153	-	6.1	-	9	-	0.4
35 – 49	-	344	-	11.6	-	48	-	1.6
50 – 64	-	218	-	11.1	-	73	-	3.7
65 – 74	-	74	-	9.3	-	31	-	3.9
74 – 85	-	42	-	6.6	-	24	-	3.8
85 and older	-	23	-	7.1	-	26	-	8.0

Table III-5.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Cervix Uteri Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	-	858	-	6.7	-	211	-	1.6
American Indian	-	18	-	13.4	-	8	-	~
Asian/Pacific Isl.	-	32	-	12.9	-	7	-	~
Black	-	40	-	11.9	-	9	-	~
Non-Hispanic White	-	704	-	6.0	-	184	-	1.4
Hispanic (All Races)	-	33	-	14.9	-	3	-	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Cervix Uteri Cancer

	Males	Females
Median Age at Diagnosis	-	46.0
Median Age at Death	-	59.0
Lifetime Risk of Diagnosis	-	0.5%
Lifetime Risk of Death	-	0.2%
Annual Percent Change‡		
Incidence (1988-2004)	-	**-2.9%**
Mortality (1988-2004)	-	-1.7%

† 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-5.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Cervix Uteri Cancer

	Males	Females
Incidence		
All Races	-	8.7
Non-Hispanic White	-	7.2
Mortality		
All Races	-	2.6
Non-Hispanic White	-	2.2

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	57.7	92.0
Regional	28.6	55.7
Distant	10.0	16.5
Unknown	3.7	60.1

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*
~*In situ* cervical cancers are not collected.

Descriptive Epidemiology

Incidence and Mortality: Each year an average of 172 new cases of cervical cancer are diagnosed among women, and 42 deaths occur. Incidence rates in Minnesota are 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. The mortality rate decreased by 1.7 percent per year, but was not statistically significant. Nationally, incidence and mortality rates declined by 3.7 percent per year from 1996-2004. 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 58 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, 1988-2004, 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	1,255	1,234	74.1	51.9	507	482	31.0	19.5
1989	1,290	1,180	75.3	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	1,172	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	1,246	1,179	66.3	45.0	470	517	25.7	18.6
1996	1,118	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	1,254	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	1,261	1,235	59.8	44.3	410	458	20.3	15.4
2002	1,267	1,274	58.9	45.2	451	481	21.5	16.0
2003	1,294	1,217	58.8	42.6	473	487	22.5	16.0
2004	1,302	1,238	57.7	42.9	371	425	17.0	13.7

Table III-6.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Colon and Rectum Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	5	1	0.1	0.0	0	2	0.0	0.1
20 – 34	61	59	2.3	2.3	17	14	0.7	0.6
35 – 49	501	447	16.6	15.0	114	95	3.8	3.2
50 – 64	1,772	1,174	92.0	60.0	438	331	22.7	16.9
65 – 74	1,807	1,447	261.8	182.6	518	442	75.0	55.8
74 – 85	1,659	2,011	378.5	314.6	664	716	151.5	112.0
85 and older	594	1,100	434.9	337.2	383	748	280.4	229.3

Table III-6.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Colon and Rectum Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	6,399	6,239	59.4	44.2	2,134	2,348	20.6	15.6
American Indian	70	48	111.1	63.4	20	15	34.4	23.1
Asian/Pacific Isl.	56	48	34.6	28.5	15	24	10.0	16.1
Black	97	93	57.3	45.5	42	40	25.2	22.8
Non-Hispanic White	6,043	5,932	58.7	43.7	2,049	2,262	20.6	15.5
Hispanic (All Races)	40	31	47.7	28.1	7	6	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Colon and Rectum Cancer

	Males	Females
Median Age at Diagnosis	69.0	74.0
Median Age at Death	74.0	79.0
Lifetime Risk of Diagnosis	6.0%	5.9%
Lifetime Risk of Death	2.3%	2.3%
Annual Percent Change‡		
Incidence (1988-2004)	**-1.6%**	**-1.0%**
Mortality (1988-2004)	**-2.8%**	**-1.8%**

† 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-6.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Colon and Rectum Cancer

	Males	Females
Incidence		
All Races	60.8	44.6
Non-Hispanic White	61.2	44.7
Mortality		
All Races	23.5	16.4
Non-Hispanic White	23.3	16.2

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	4.2	-
Localized	38.9	89.8
Regional	35.9	67.7
Distant	15.8	10.3
Unknown	5.3	35.8

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Approximately 2,500 cases of invasive colon and rectum cancer are diagnosed and 900 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.
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 increasing use of hormone replacement therapy among women and increased use of aspirin to prevent heart disease, may also reduce the risk of colorectal cancer.
Age: About 68 percent of diagnoses and 77 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. Colorectal cancer mortality among American Indians in Minnesota is more than twice that of American Indians in 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. Recent 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 completely 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, CT 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, 1988-2004, 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	-	560	-	26.1	-	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	-	587	-	25.5	-	97	-	3.7
1994	-	594	-	25.3	-	89	-	3.4
1995	-	633	-	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	-	669	-	26.7	-	122	-	4.6
2000	-	628	-	24.7	-	99	-	3.5
2001	-	706	-	27.1	-	111	-	4.0
2002	-	757	-	28.5	-	114	-	3.9
2003	-	673	-	25.1	-	138	-	4.9
2004	-	770	-	28.0	-	135	-	4.7

Table III-7.2: Number of new cases and deaths and average annual incidence and mortality rates[§] by age, Minnesota, 2000-2004, Corpus Uteri and Uterus, NOS Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	-	0	-	0.0	-	0	-	0.0
20 – 34	-	47	-	1.9	-	4	-	0.2
35 – 49	-	463	-	15.6	-	24	-	0.8
50 – 64	-	1,415	-	72.3	-	148	-	7.6
65 – 74	-	769	-	97.0	-	131	-	16.5
74 – 85	-	623	-	97.5	-	169	-	26.4
85 and older	-	217	-	66.5	-	121	-	37.1

Table III-7.3: Number of new cases and deaths and average annual incidence and mortality rates[§] by race and ethnicity, Minnesota, 2000-2004, Corpus Uteri and Uterus, NOS Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	-	3,534	-	26.7	-	597	-	4.2
American Indian	-	11	-	12.5	-	4	-	~
Asian/Pacific Isl.	-	35	-	15.4	-	6	-	~
Black	-	38	-	17.1	-	10	-	5.0
Non-Hispanic White	-	3,355	-	26.7	-	574	-	4.2
Hispanic (All Races)	-	29	-	21.6	-	2	-	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Corpus Uteri and Uterus, NOS Cancer

	Males	Females
Median Age at Diagnosis	-	63.0
Median Age at Death	-	74.0
Lifetime Risk of Diagnosis	-	3.1%
Lifetime Risk of Death	-	0.6%
Annual Percent Change‡		
Incidence (1988-2004)	-	**0.4**%
Mortality (1988-2004)	-	0.4%

† 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-7.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Corpus Uteri and Uterus, NOS Cancer

	Males	Females
Incidence		
All Races	-	23.2
Non-Hispanic White	-	25.3
Mortality		
All Races	-	4.1
Non-Hispanic White	-	3.9

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	2.1	-
Localized	70.0	95.3
Regional	16.4	67.4
Distant	7.8	23.1
Unknown	3.7	55.8

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

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, 1988-2004, 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	7.6	1.7
2004	198	61	8.5	2.1	189	37	8.4	1.3

Table III-8.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Esophagus Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	4	2	0.2	0.1	3	0	0.1	0.0
35 – 49	66	13	2.2	0.4	53	8	1.8	0.3
50 – 64	307	69	15.9	3.5	266	52	13.8	2.7
65 – 74	278	71	40.3	9.0	253	51	36.6	6.4
74 – 85	205	74	46.8	11.6	210	81	47.9	12.7
85 and older	53	39	38.8	12.0	67	53	49.1	16.2

Table III-8.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Esophagus Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	913	268	8.3	1.9	852	245	7.9	1.7
American Indian	10	2	18.7	~	8	3	~	~
Asian/Pacific Isl.	5	1	~	~	6	0	~	~
Black	14	4	10.3	~	15	3	10.4	~
Non-Hispanic White	872	257	8.3	1.9	821	238	7.9	1.7
Hispanic (All Races)	6	1	~	~	2	0	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Esophagus Cancer

	Males	Females
Median Age at Diagnosis	66.0	71.5
Median Age at Death	69.0	75.0
Lifetime Risk of Diagnosis	0.9%	0.2%
Lifetime Risk of Death	0.9%	0.2%
Annual Percent Change‡		
Incidence (1988-2004)	**2.8%**	1.4%
Mortality (1988-2004)	**1.7%**	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, 2000-2004, Esophagus Cancer

	Males	Females
Incidence		
All Races	7.9	2.0
Non-Hispanic White	8.3	2.1
Mortality		
All Races	7.8	1.8
Non-Hispanic White	7.9	1.7

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	2.0	-
Localized	19.9	33.7
Regional	35.3	16.9
Distant	31.8	2.9
Unknown	11.0	10.8

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed through 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Each year, about 236 cases of esophageal cancer are diagnosed in Minnesota and about 219 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 less than 34 percent, even when diagnosed at the localized stage. Most esophageal cancers are diagnosed when the tumor has already spread to adjacent tissues (35.3%) or distant (31.8%) organs.

Trends: The incidence rate among Minnesota males has significantly increased by an average of 2.8 percent per year since cancer reporting was initiated in 1988, accompanied by a statistically significant increase in mortality of 1.7 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 less than 50 years of age.
Gender: Esophageal cancer rates are four times higher among males than females.
Race: In Minnesota, black men are nearly 32 percent more likely to die of esophageal cancer than non-Hispanic white men. There are too few cases among women of color in Minnesota to assess differences in rates. Nationally, black men and women are nearly 30 percent more likely to develop or die of esophageal cancer than non-Hispanic white men and women.

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

There are no early detection tests used in the United States 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, 1988-2004, 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	3.0	2.4	19	3	0.8	0.1
2002	78	62	3.2	2.4	12	9	0.5	0.3
2003	94	79	3.8	3.1	15	18	0.7	0.7
2004	83	69	3.3	2.7	9	9	0.4	0.3

Table III-9.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Hodgkin Lymphoma

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	58	50	1.6	1.5	3	1	0.1	0.0
20 – 34	133	111	5.1	4.4	14	5	0.5	0.2
35 – 49	115	70	3.8	2.4	11	7	0.4	0.2
50 – 64	59	37	3.1	1.9	12	12	0.6	0.6
65 – 74	39	27	5.6	3.4	3	9	0.4	1.1
74 – 85	29	35	6.6	5.5	17	11	3.9	1.7
85 and older	6	7	4.4	2.1	7	6	5.1	1.8

Table III-9.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Hodgkin Lymphoma

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	439	337	3.6	2.6	67	51	0.6	0.4
American Indian	3	2	~	~	0	0	~	~
Asian/Pacific Isl.	8	4	~	~	1	1	~	~
Black	12	6	3.2	~	2	0	~	~
Non-Hispanic White	394	311	3.6	2.7	62	49	0.6	0.4
Hispanic (All Races)	7	6	~	~	2	1	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Hodgkin Lymphoma

	Males	Females
Median Age at Diagnosis	38.0	38.5
Median Age at Death	57.5	64.0
Lifetime Risk of Diagnosis	0.3%	0.2%
Lifetime Risk of Death	0.1%	0.1%
Annual Percent Change‡		
Incidence (1988-2004)	-0.5%	-0.3%
Mortality (1988-2004)	-3.0%	-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-9.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Hodgkin Lymphoma

	Males	Females
Incidence		
All Races	3.0	2.4
Non-Hispanic White	3.5	3.0
Mortality		
All Races	0.6	0.4
Non-Hispanic White	0.6	0.4

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	89.7	93.4
45-54	80.9	87.8
55-64	67.9	77.3
65-74	54.9	59.2
75+	43.3	40.1
All Ages	82.9	86.8

‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Lymphomas are malignancies of the white blood cells. There are two kinds of malignant lymphomas: Hodgkin lymphoma, which contain Reed-Sternberg cells, and non-Hodgkin lymphoma, which do not. Lymphomas are relatively common and account for about five percent of all cancers diagnosed in Minnesota. Hodgkin lymphoma is less common, accounting for only 13 percent of lymphomas and less than one percent of all cancer diagnoses. Approximately 155 cases are diagnosed each year in Minnesota and 24 people die from the disease. Rates are similar to those reported nationally. The SEER 5-year relative survival rate for Hodgkin lymphoma is about 84 percent for both males and females, and has increased from about 70 percent among cases diagnosed in the early 1970s.
Trends: Incidence and mortality rates of Hodgkin lymphoma in Minnesota are stable or declining. Nationally, mortality rates are declining markedly. Incidence rates in areas reporting to the SEER program are generally stable or declining except among Asian/Pacific Islanders, among whom rates increased by more than six percent each year from 1995 to 2004.
Age: Approximately 69 percent of newly diagnosed cases of Hodgkin lymphoma occur in persons under the age of 50 years. Hodgkin lymphoma has a unique age-incidence curve, such that incidence peaks between 15-34 years and again after age 45, indicating that there may be two different disease etiologies.
Gender: Hodgkin lymphoma incidence rates are about 38 percent higher among males than females.
Race: Based on cases reported to SEER, incidence rates are highest among non-Hispanic whites, and rates among blacks and Hispanics are less than half that of 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, an infection caused by the Epstein-Barr virus. The risk of eventually developing Hodgkin lymphoma in people who have had infectious mononucleosis appears to be as much as 4 times higher than in people who have not had the disease. 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 clear strategies for 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, 1988-2004, 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
2000	14	1	0.6	0.0	0	0	0	0
2001	14	1	0.6	0.0	1	0	0	0
2002	11	2	0.5	0.1	0	0	0	0
2003	7	2	0.3	0.0	0	1	0	0
2004	12	2	0.5	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, 2000-2004, Kaposi Sarcoma (all sites)

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	1	0	0.0	0.0	0	0	0.0	0.0
20 – 34	10	0	0.4	0.0	0	0	0.0	0.0
35 – 49	31	0	1.0	0.0	0	0	0.0	0.0
50 – 64	8	0	0.4	0.0	1	0	0.1	0.0
65 – 74	3	0	0.4	0.0	0	0	0.0	0.0
74 – 85	5	5	1.1	0.8	0	0	0.0	0.0
85 and older	0	3	0.0	0.9	0	1	0.0	0.3

Table III-10.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Kaposi Sarcoma (all sites)

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	58	8	0.5	~	1	1	~	~
American Indian	1	0	~	~	0	0	~	~
Asian/Pacific Isl.	0	0	~	~	0	0	~	~
Black	13	0	2.4	~	1	0	~	~
Non-Hispanic White	34	8	0.3	~	0	1	~	~
Hispanic (All Races)	7	0	~	~	~	~	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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.

Kaposi Sarcoma (all sites)

Table III-10.4: Other Minnesota cancer statistics†, 2002-2004, Kaposi Sarcoma (all sites)

	Males	Females
Median Age at Diagnosis	43.0	83.5
Median Age at Death	~	~
Lifetime Risk of Diagnosis	0.0%	0.0%
Lifetime Risk of Death	0.0%	0.0%
Annual Percent Change‡		
Incidence (1992-2004 males; 1988-2004 females)	**-14.4%**	~
Mortality (1999-2004)	~	~

† 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, 2000-2004, Kaposi Sarcoma (all sites)

	Males	Females
Incidence		
All Races	1.3	0.1
Non-Hispanic White	1.1	0.1
Mortality		
All Races	~	~
Non-Hispanic White	~	~

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	52.3	42.7
45-54	53.1	35.6
55-64	69.6	-
65-74	80.5	67.2
75+	90.9	78.6
All Ages	53.1	62.4

‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*
-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, 2000-2004, an average of 13 cases of KS have been 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 80 percent lower than reported by SEER.

Trends: The incidence of KS has been dramatically affected by the AIDS epidemic. In the geographic areas covered by SEER, incidence rates increased almost 20-fold from 0.5 new cases per 100,000 men per year in 1975-1976 to 9.5 in 1989-1990, and then decreased to 1.3 in 2000-2004. 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 14.4 percent per year among males from 1992-2004.

Age: About 74 percent of KS cases in Minnesota are diagnosed among men between 20 and 64 years of age.

Gender: In Minnesota, greater than 7 times more cases of KS were diagnosed among males than among females from 2000-2004.

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.

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, 1988-2004, 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	290	164	15.9	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	345	195	17.7	8.1	113	76	6.1	2.9
1996	303	160	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	388	238	17.9	9.2	134	103	6.5	3.7
2001	404	224	18.4	8.6	117	82	5.5	3.0
2002	427	256	19.0	9.6	147	74	6.9	2.5
2003	466	273	20.2	10.2	144	77	6.7	2.7
2004	478	273	20.1	9.9	129	91	5.8	3.1

Table III-11.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Kidney and Renal Pelvis Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	35	26	1.0	0.8	4	2	0.1	0.1
20 – 34	24	20	0.9	0.8	5	2	0.2	0.1
35 – 49	299	149	9.9	5.0	53	17	1.8	0.6
50 – 64	754	343	39.2	17.5	179	64	9.3	3.3
65 – 74	546	339	79.1	42.8	176	101	25.5	12.7
74 – 85	438	295	99.9	46.1	188	145	42.9	22.7
85 and older	67	92	49.1	28.2	66	96	48.3	29.4

Table III-11.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Kidney and Renal Pelvis Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,163	1,264	19.2	9.5	671	427	6.3	3.0
American Indian	23	21	31.0	19.3	11	4	13.9	~
Asian/Pacific Isl.	14	9	5.5	~	7	5	~	~
Black	63	21	26.7	8.8	8	2	~	~
Non-Hispanic White	1,997	1,185	18.7	9.4	637	414	6.2	3.0
Hispanic (All Races)	24	13	13.1	9.1	8	2	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Kidney and Renal Pelvis Cancer

	Males	Females
Median Age at Diagnosis	63.0	67.0
Median Age at Death	72.0	77.5
Lifetime Risk of Diagnosis	2.0%	1.1%
Lifetime Risk of Death	0.7%	0.4%
Annual Percent Change‡		
Incidence (1988-2004)	**1.5%**	**2.6%**
Mortality (1988-2004)	-1.0%	-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-11.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Kidney and Renal Pelvis Cancer

	Males	Females
Incidence		
All Races	17.8	8.8
Non-Hispanic White	18.3	9.0
Mortality		
All Races	6.1	2.8
Non-Hispanic White	6.2	2.8

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	2.9	-
Localized	61.0	89.6
Regional	18.1	60.8
Distant	14.1	9.5
Unknown	3.9	35.2

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Approximately 685 cases of kidney and renal pelvis cancer are diagnosed each year in Minnesota, and 220 deaths result from this disease. Minnesota rates are similar to those reported nationally. The SEER 5-year relative survival rate for kidney and renal pelvis cancers is 89.6 percent for localized tumors. The rate drops to 60.8 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 1.5 percent each year among Minnesota men and by 2.6 percent per year 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 and renal pelvis cancer cases are diagnosed among persons age 50 years or older.
Gender: Rates of kidney and renal pelvis cancer are about twice as high in men as in women in Minnesota.
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 larger 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. Occupationally-related risks for renal pelvis cancers resemble those of bladder cancer and include exposure to certain dyes. People with advanced kidney disease, hypertension, and with certain inherited medical conditions may be at higher risk for kidney cancer.

Early Detection / Prevention

No screening tests for kidney cancer are 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. It is estimated that smoking reduction may lower rates by 50 percent and nearly one-third for renal pelvis and kidney cancers, respectively.

Larynx

Table III-12.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2004, 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	158	31	7.8	1.2	36	9	1.8	0.3
1998	137	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	115	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	1.3	30	9	1.4	0.3
2003	126	31	5.6	1.2	21	9	1.0	0.4
2004	134	35	5.9	1.3	37	7	1.6	0.2

Table III-12.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Larynx Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	0	0.1	0.0	0	0	0.0	0.0
35 – 49	57	20	1.9	0.7	5	2	0.2	0.1
50 – 64	219	61	11.4	3.1	44	11	2.3	0.6
65 – 74	213	52	30.9	6.6	34	19	4.9	2.4
74 – 85	113	24	25.8	3.8	55	7	12.5	1.1
85 and older	19	6	13.9	1.8	22	5	16.1	1.5

Table III-12.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Larynx Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	623	163	5.6	1.3	160	44	1.5	0.3
American Indian	9	2	~	~	2	0	~	~
Asian/Pacific Isl.	6	0	~	~	0	0	~	~
Black	21	10	12.5	4.2	2	2	~	~
Non-Hispanic White	564	149	5.3	1.2	156	42	1.5	0.3
Hispanic (All Races)	8	2	~	~	0	0	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Larynx Cancer

	Males	Females
Median Age at Diagnosis	67.0	63.0
Median Age at Death	71.5	70.0
Lifetime Risk of Diagnosis	0.6%	0.1%
Lifetime Risk of Death	0.1%	0.0%
Annual Percent Change‡		
Incidence (1988-2004)	**-2.3%**	-0.1%
Mortality (1988-2004)	-1.1%	-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-12.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Larynx Cancer

	Males	Females
Incidence		
All Races	6.6	1.4
Non-Hispanic White	6.4	1.4
Mortality		
All Races	2.4	0.5
Non-Hispanic White	2.2	0.5

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	8.1	-
Localized	58.5	81.1
Regional	22.5	50.0
Distant	7.7	23.9
Unknown	3.2	45.7

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: About 160 cases of laryngeal cancer are diagnosed in Minnesota each year and 40 deaths are caused by this cancer. Incidence and mortality rates in Minnesota are somewhat lower than nationally. Based on SEER data, the 5-year relative survival rate for laryngeal cancer is 81.1 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 2.3 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 about three percent and 2.5 percent each year, respectively. Similarly, laryngeal cancer mortality in the U.S. as a whole is decreasing significantly by 2.5 percent each year among males and by 2.0 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 black men in Minnesota is more than twice as high as the rate for non-Hispanic white men, but in general, there are too few cases among people of color in the state to assess racial disparities. National data indicate that incidence rates are about 60 percent higher among blacks than whites.

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. Additional molecular and epidemiological work is required to establish a possible relationship between human papilloma virus (HPV) and 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, 1988-2004, 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	208	17.7	8.8	191	174	11.0	7.2
1990	336	250	18.3	10.6	212	169	12.3	6.9
1991	305	257	16.3	10.8	214	166	12.3	6.5
1992	374	244	20.2	10.0	222	171	12.7	6.7
1993	312	243	16.4	10.0	213	155	11.9	5.7
1994	389	276	20.1	11.3	211	155	11.6	6.0
1995	368	253	18.8	10.0	260	170	14.2	6.2
1996	362	267	18.4	10.3	226	191	12.1	7.2
1997	384	259	19.4	9.6	211	166	11.1	6.0
1998	366	297	17.9	11.3	192	163	10.0	5.7
1999	375	292	18.2	11.0	244	192	12.3	6.7
2000	381	269	18.0	9.9	229	185	11.7	6.6
2001	449	289	21.2	10.7	229	156	11.4	5.4
2002	400	274	18.4	9.9	227	196	10.9	6.6
2003	421	305	19.0	11.2	236	182	11.3	6.1
2004	490	331	21.7	11.9	232	168	10.7	5.8

Table III-13.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Leukemia

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	198	138	5.5	4.0	34	24	0.9	0.7
20 – 34	89	38	3.4	1.5	33	18	1.3	0.7
35 – 49	167	120	5.5	4..0	59	52	2.0	1.7
50 – 64	461	263	23.9	13.4	160	117	8.3	6.0
65 – 74	461	313	66.8	39.5	266	168	38.5	21.2
74 – 85	561	379	128.0	59.3	388	286	88.5	44.7
85 and older	204	217	149.4	66.5	213	222	156.0	68.1

Table III-13.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Leukemia

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,141	1,468	19.7	10.7	1,153	887	11.2	6.1
American Indian	21	14	20.9	12.6	10	8	9.8	~
Asian/Pacific Isl.	29	15	13.6	4.3	15	13	9.8	4.9
Black	34	24	11.0	8.2	16	7	8.6	~
Non-Hispanic White	1,978	1,374	19.4	10.6	1,100	855	11.2	6.1
Hispanic (All Races)	25	20	10.6	9.6	11	4	8.2	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Leukemia

	Males	Females
Median Age at Diagnosis	68.0	71.0
Median Age at Death	75.0	78.0
Lifetime Risk of Diagnosis	2.1%	1.3%
Lifetime Risk of Death	1.2%	0.9%
Annual Percent Change‡		
Incidence (1988-2004)	0.7%	0.7%
Mortality (1988-2004)	-0.4%	-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-13.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Leukemia

	Males	Females
Incidence		
All Races	16.0	9.5
Non-Hispanic White	17.1	9.9
Mortality		
All Races	10.0	5.7
Non-Hispanic White	10.4	5.9

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	10.0	65.3
Chronic lymphocytic	41.3	69.0
Acute myeloid	25.5	20.7
Chronic myeloid	13.7	44.4
All other leukemia	9.5	~
Total	100.0	49.8

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*
~Data are not available

Descriptive Epidemiology

Incidence and Mortality: About 720 cases of leukemia are diagnosed each year in Minnesota, and 410 deaths occur as a result of the disease. Leukemia accounts for 3 percent of all new cancers and 5 percent of cancer deaths in the state. The most common types among adults are chronic lymphocytic (CLL) and acute myeloid leukemias. Acute lymphocytic leukemia is the most common type of leukemia among children. Among non-Hispanic whites, rates are approximately 13 percent higher than national rates and mortality rates are approximately five 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 has no symptoms and is being evaluated for another, unrelated illness. The MCSS will continue to monitor rates of CLL in Minnesota. Based on SEER cases of leukemia diagnosed between 1996 and 2003, the overall 5-year relative survival rate is 49.8 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: Rates of leukemia in Minnesota have been stable since reporting was initiated in 1988. This is consistent with national trends, which show little change in rates of leukemia overall. 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 aged 19 and under than persons age 20-34 years. Incidence increases with age after 35 years.
Gender: Incidence and mortality rates of leukemia are more than 80 percent higher among males than females, but this may vary according to subtype.
Race: Based on cases reported to SEER, leukemia rates are somewhat higher among non-Hispanic whites than persons of color.

Risk Factors

The causes of most of these cancers are unknown. Occupational exposures to benzene and radiation are the most established risk factors for leukemia. Persons with certain chromosomal abnormalities, especially Down syndrome, are more likely to be diagnosed with leukemia. Cigarette smoking may be associated with leukemia. Exposure to ionizing radiation is a risk factor for several types of leukemia. Leukemia may also occur as a side effect of cancer treatment. Certain leukemias may be caused by a retrovirus, 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, 1988-2004, 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	127	55	5.5	2.0	152	71	6.9	2.5
2004	147	50	6.1	1.7	120	91	5.2	3.2

Table III-14.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Liver and Bile Duct Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	18	5	0.5	0.1	8	1	0.2	0.0
20 – 34	5	5	0.2	0.2	4	2	0.2	0.1
35 – 49	63	27	2.1	0.9	62	20	2.1	0.7
50 – 64	237	56	12.3	2.9	188	56	9.8	2.9
65 – 74	157	62	22.7	7.8	157	86	22.7	10.9
74 – 85	136	75	31.0	11.7	181	131	41.3	20.5
85 and older	23	25	16.8	7.7	51	62	37.3	19.0

Table III-14.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Liver and Bile Duct Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	639	255	5.7	1.9	651	358	6.0	2.5
American Indian	7	4	~	~	11	6	11.5	~
Asian/Pacific Isl.	48	11	25.0	5.9	48	11	29.3	6.9
Black	47	13	24.6	5.6	42	12	21.5	5.9
Non-Hispanic White	507	223	4.8	1.7	534	323	5.2	2.3
Hispanic (All Races)	22	3	15.8	~	14	6	13.7	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Liver and Bile Duct Cancer

	Males	Females
Median Age at Diagnosis	63.0	71.0
Median Age at Death	69.0	75.0
Lifetime Risk of Diagnosis	0.6%	0.2%
Lifetime Risk of Death	0.6%	0.4%
Annual Percent Change‡		
Incidence (1988-2004)	**3.3%**	**1.6%**
Mortality (1988-2004)	**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, 2000-2004, Liver and Bile Duct Cancer

	Males	Females
Incidence		
All Races	9.5	3.4
Non-Hispanic White	7.1	2.6
Mortality		
All Races	7.1	3.1
Non-Hispanic White	6.1	2.7

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	36.2	22.3
Regional	29.4	7.3
Distant	18.8	2.8
Unknown	15.6	4.4

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: About 180 cases of liver cancer are diagnosed in Minnesota each year, and an average of 200 deaths occur. Liver cancer incidence rates among non-Hispanic whites in Minnesota are nearly 50 percent lower than reported by SEER. This may reflect the fact the MCSS does not currently collect information on non-microscopically confirmed cancers which are common for this cancer site. Liver cancer mortality rates are about 15 percent lower in Minnesota than in the U.S. 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: The liver cancer mortality rate in Minnesota significantly increased by 3.1 percent per year for males and 2.5 percent per year for females. The white population in the geographic areas reporting to the SEER Program showed similar or even larger increases than Minnesota in liver cancer incidence until the late 1990s; then the rate of increase slowed down significantly among males in 1996, decreasing from 5.0 percent per year to 2.2 percent, and stabilized among females in 1999. The rate of increase of liver cancer mortality in the U.S. has also slowed down from 3.9 percent per year from 1987 to 1995 to 1.7 percent per year from 1995-2004.

Age: Approximately 53 percent of liver cancers are diagnosed among persons age 65 years or older.

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

Race: In Minnesota, liver cancer rates are highest among people of color. For males, rates among Asian/Pacific Islanders and blacks are about five times higher than rates for non-Hispanic whites. Nationally, rates for black males are about 40 percent lower than for rates for Asian/Pacific Islander males.

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, 1988-2004, 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	864	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	1,419	882	75.3	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	1,453	952	75.2	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	1,494	1,152	73.2	45.5	1,293	906	64.5	34.5
2000	1,513	1,170	73.0	45.7	1,224	971	60.3	36.7
2001	1,526	1,248	72.3	48.0	1,263	996	60.8	37.1
2002	1,528	1,300	71.4	49.3	1,261	1,066	60.0	38.9
2003	1,564	1,355	71.7	50.6	1,267	1,017	59.3	36.9
2004	1,566	1,360	70.9	49.8	1,296	1,060	59.4	38.0

Table III-15.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Lung and Bronchus Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	3	2	0.1	0.1	1	0	0.0	0.0
20 – 34	21	21	0.8	0.8	5	7	0.2	0.3
35 – 49	389	396	12.9	13.3	267	238	8.8	8.0
50 – 64	2,055	1,839	106.7	93.9	1,464	1,158	76.0	59.2
65 – 74	2,659	2,069	385.2	261.0	2,030	1,528	294.1	192.8
74 – 85	2,172	1,743	495.5	272.7	1,988	1,600	453.5	250.3
85 and older	398	363	291.4	111.3	556	579	407.1	177.5

Table III-15.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Lung and Bronchus Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	7,697	6,433	71.8	48.7	6,311	5,110	59.9	37.5
American Indian	76	91	129.0	108.8	69	67	118.8	88.5
Asian/Pacific Isl.	52	42	37.9	24.5	44	24	34.6	15.0
Black	173	117	105.0	57.8	123	93	80.3	49.6
Non-Hispanic White	7,330	6,112	71.3	48.3	6,049	4,907	59.8	37.5
Hispanic (All Races)	32	37	37.6	39.5	25	17	29.0	18.1

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Lung and Bronchus Cancer

	Males	Females
Median Age at Diagnosis	71.0	70.0
Median Age at Death	72.0	72.0
Lifetime Risk of Diagnosis	7.6%	6.0%
Lifetime Risk of Death	6.7%	5.0%
Annual Percent Change‡		
Incidence (1988-2004)	**-0.6%**	**2.1%**
Mortality (1988-2004 males; 1993-2004 females)	**-1.1%**	**1.3%**

† 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-15.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Lung and Bronchus Cancer

	Males	Females
Incidence		
All Races	81.2	52.3
Non-Hispanic White	81.2	57.1
Mortality		
All Races	73.4	41.1
Non-Hispanic White	75.4	44.3

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	19.9	49.1
Regional	27.0	15.2
Distant	47.0	3.0
Unknown	6.0	8.1

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Lung and bronchus cancer is the second most commonly diagnosed cancer among men and women in Minnesota, and is the leading cause of cancer death. It accounts for 12 percent of cancers and 25 percent of cancer deaths in Minnesota. Each year, an average of 2,830 cases of lung and bronchus cancer are diagnosed, and 2,290 deaths occur. Mortality rates among whites in Minnesota are 19 percent lower than national rates. Based on SEER data, the 5-year relative survival rate for lung and bronchus cancer is 49.1 percent for localized tumors, 15.2 percent for regional tumors, and 3.0 percent for distant tumors. Most cases are diagnosed at a regional or distant stage.
Trends: Lung and bronchus cancer mortality rates decreased significantly from 1988 to 2004 among Minnesota males, but significantly increased among women. The increase in the mortality rate for women began in slow down in 1993, but is still increasing by 1.3 percent each year. This is considerably more rapid than among women in the U.S. as a whole (0.2% per year).
Age: Incidence rates for lung and bronchus cancer increase with age. About 89 percent of cases are diagnosed between 50 and 85 years of age.
Gender: Lung and bronchus cancer incidence rates are about 47 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. About 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. 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, 1988-2004, 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	249	251	13.3	11.6	61	42	3.6	1.9
1990	261	253	14.0	11.1	51	45	2.8	2.1
1991	226	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	414	276	19.8	11.3	80	36	4.1	1.4
1997	393	345	18.8	14.1	69	43	3.6	1.6
1998	354	360	16.7	14.6	72	56	3.6	2.1
1999	428	388	19.5	15.5	67	52	3.2	1.9
2000	475	401	21.5	15.7	71	48	3.3	1.8
2001	477	447	21.2	17.2	75	45	3.5	1.7
2002	449	396	19.6	15.2	79	34	3.7	1.3
2003	465	440	20.1	16.5	62	45	2.7	1.6
2004	525	443	22.3	16.5	72	60	3.2	2.2

Table III-16.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Melanoma of the Skin

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	13	20	0.4	0.6	1	0	0.0	0.0
20 – 34	117	325	4.5	12.9	13	15	0.5	0.6
35 – 49	523	652	17.3	21.9	51	41	1.7	1.4
50 – 64	721	510	37.4	26.1	91	51	4.7	2.6
65 – 74	463	251	67.1	31.7	85	46	12.3	5.8
74 – 85	413	251	94.2	39.3	77	44	17.6	6.9
85 and older	141	118	103.2	36.2	41	35	30.0	10.7

Table III-16.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Melanoma of the Skin

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,391	2,127	20.9	16.2	359	232	3.3	1.7
American Indian	3	5	~	~	0	0	~	~
Asian/Pacific Isl.	2	4	~	~	0	1	~	~
Black	2	1	~	~	1	2	~	~
Non-Hispanic White	2,303	2,048	21.5	17.0	358	227	3.5	1.8
Hispanic (All Races)	3	4	~	~	0	2	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Melanoma of the Skin

	Males	Females
Median Age at Diagnosis	61.0	51.0
Median Age at Death	70.0	65.0
Lifetime Risk of Diagnosis	1.9%	1.5%
Lifetime Risk of Death	0.3%	0.2%
Annual Percent Change‡		
Incidence (1988-2004 males; 1991-2004 females)	**3.1%**	**4.0%**
Mortality (1988-2004)	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-16.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Melanoma of the Skin

	Males	Females
Incidence		
All Races	23.6	14.9
Non-Hispanic White	31.4	20.6
Mortality		
All Races	3.9	1.7
Non-Hispanic White	4.7	2.1

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	38.2	-
Localized	52.1	98.5
Regional	5.1	65.2
Distant	1.9	15.3
Unknown	2.7	77.0

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: In Minnesota, about 900 new cases of invasive melanoma are diagnosed each year and about 120 deaths are caused by the disease. Invasive melanoma accounts for 4 percent of cancers and 1.3 percent of cancer deaths in Minnesota. Incidence and mortality rates among non-Hispanic whites in Minnesota are lower than those reported by SEER.

Trends: Statistically significant increases in the incidence of invasive melanoma were observed in Minnesota since 1988 among both men and women, while mortality rates remained stable. Nationally, incidence rates for melanoma increased by 1.3 percent per year from 1995-2004 while mortality rates decreased by 0.9 percent per year.
Age: About 63 percent of melanoma cases are diagnosed among person 50 years of age or older. Even so, melanoma is one of the most common cancers among persons ages 20-49.
Gender: Rates of melanoma are nearly 30 percent higher among men. However, among those less than 50 years of age incidence rates are higher among 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, 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 a cancer-related checkup, including a skin examination, every three years for people ages 20 to 40 years, and annually for people 40 years and older. 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. 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, 1988-2004, 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	49	18	2.4	0.6	45	11	2.2	0.4

Table III-17.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Mesothelioma (all sites)

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	1	0.0	0.0	0	0	0.0	0.0
35 – 49	10	5	0.3	0.2	7	2	0.2	0.1
50 – 64	51	13	2.6	0.7	38	11	2.0	0.6
65 – 74	63	19	9.1	2.4	63	10	9.1	1.3
74 – 85	94	20	21.4	3.1	73	15	16.7	2.3
85 and older	33	12	24.2	3.7	31	12	22.7	3.7

Table III-17.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Mesothelioma (all sites)

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	251	70	2.4	0.5	212	50	2.1	0.3
American Indian	0	0	~	~	1	0	~	~
Asian/Pacific Isl.	1	0	~	~	2	0	~	~
Black	5	0	~	~	1	0	~	~
Non-Hispanic White	245	70	2.5	0.5	208	50	2.1	0.4
Hispanic (All Races)	0	0	~	~	~	~	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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.

Mesothelioma (all sites)

Table III-17.4: Other Minnesota cancer statistics†, 2002-2004, Mesothelioma (all sites)

	Males	Females
Median Age at Diagnosis	76.0	72.0
Median Age at Death	76.0	75.5
Lifetime Risk of Diagnosis	0.3%	0.1%
Lifetime Risk of Death	0.3%	0.1%
Annual Percent Change‡		
Incidence (1988-2004)	**1.7%**	0.7%
Mortality (1999-2004)	2.6%	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-17.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Mesothelioma (all sites)

	Males	Females
Incidence		
All Races	2.1	0.4
Non-Hispanic White	2.4	0.5
Mortality		
All Races	~	~
Non-Hispanic White	~	~

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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-17.6: Extent of disease at diagnosis and five-year relative survival, Mesothelioma (all sites)

Stage at Diagnosis	Percent of Cases† (%)	5-Year Relative Survival‡ (%)
In Situ	0.0	-
Localized	28.7	15.3
Regional	23.8	10.2
Distant	29.2	7.0
Unknown	18.3	10.9

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2002 followed into 2003, from *SEER Cancer Statistics Review, 1975-2004.*

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 similar to those reported by SEER.
Trends: The incidence of mesothelioma has increased significantly among men in Minnesota by an average of 1.7 percent per year since statewide cancer reporting was implemented in 1988. Because the delay between exposure to asbestos and development of mesothelioma is 30-50 years, it is likely that increasing rates reflect exposures that occurred before the hazards of asbestos were well known. Rates among women in Minnesota were stable. In the geographic areas covered by SEER, mesothelioma incidence rates among non-Hispanic whites may have stabilized.
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 five 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 lower among persons of color than 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, 1988-2004, 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	126	103	6.3	4.0	73	96	4.0	3.6
1999	128	101	6.2	3.8	86	91	4.5	3.2
2000	118	97	5.8	3.7	113	85	5.7	2.9
2001	149	124	7.1	4.6	89	88	4.4	3.1
2002	134	113	6.2	4.1	110	85	5.3	2.9
2003	171	111	7.7	4.0	104	89	5.0	3.1
2004	158	120	7.1	4.4	102	85	4.7	2.8

Table III-18.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Multiple Myeloma

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	6	1	0.2	0.0	0	0	0.0	0.0
35 – 49	52	43	1.7	1.4	18	9	0.6	0.3
50 – 64	199	142	10.3	7.3	91	63	4.7	3.2
65 – 74	223	151	32.3	19.1	144	100	20.9	12.6
74 – 85	192	167	43.8	26.1	187	164	42.7	25.7
85 and older	58	61	42.5	18.7	78	96	57.1	29.4

Table III-18.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Multiple Myeloma

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	730	565	6.8	4.2	518	432	5.0	3.0
American Indian	6	3	~	~	6	3	~	~
Asian/Pacific Isl.	3	5	~	~	4	1	~	~
Black	23	25	13.7	13.1	13	12	8.8	7.5
Non-Hispanic White	691	525	6.7	4.0	489	416	4.9	3.0
Hispanic (All Races)	1	2	~	~	6	0	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Multiple Myeloma

	Males	Females
Median Age at Diagnosis	69.0	71.0
Median Age at Death	75.0	78.0
Lifetime Risk of Diagnosis	0.8%	0.5%
Lifetime Risk of Death	0.6%	0.4%
Annual Percent Change‡		
Incidence (1988-2004)	0.1%	0.5%
Mortality (1988-2004)	-0.9%	-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-18.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Multiple Myeloma

	Males	Females
Incidence		
All Races	7.0	4.5
Non-Hispanic White	6.5	4.0
Mortality		
All Races	4.4	2.8
Non-Hispanic White	4.4	2.8

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	56.4	53.3
45-54	51.0	49.8
55-64	40.5	37.8
65-74	31.9	31.4
75+	17.8	18.7
All Ages	35.1	31.7

‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

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. About 260 cases of multiple myeloma are diagnosed in Minnesota each year, and 190 deaths are caused by this cancer. Mortality rates in Minnesota are similar to those reported nationally. Based on SEER data for multiple myeloma cases diagnosed between 1996 and 2003, the overall 5-year relative survival rate was 35.7 percent for males and 31.2 percent for females.
Trends: Incidence and mortality rates of multiple myeloma have been stable in Minnesota since cancer reporting was initiated in 1988. Nationally, rates of multiple myeloma have decreased among both males and females since the mid-1990s, the decrease among females is statistically significant. The reasons for the recent decline are not known.
Age: Multiple myeloma incidence rates increase dramatically with age, with only eight 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 62 percent higher among males than females.
Race: Incidence rates are two to three times higher and mortality rates are 1.8 to 2.5 times higher among blacks than non-Hispanic whites in Minnesota. This is consistent with data from SEER. Although blacks are at greater risk of developing multiple myeloma than other races, their survival rates are similar to those of whites.

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. 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, 1988-2004, 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	388	363	21.7	15.6	177	179	10.5	7.2
1990	387	371	21.4	16.0	179	163	10.7	6.5
1991	442	375	23.9	15.6	187	189	10.7	7.4
1992	429	389	23.3	15.8	192	216	10.9	8.3
1993	460	400	23.8	16.5	223	213	12.1	8.2
1994	504	418	26.0	17.2	216	210	11.8	8.1
1995	480	409	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	452	24.5	17.7	234	218	12.3	8.0
1998	525	457	25.9	17.6	259	204	13.3	7.3
1999	515	465	24.7	17.7	215	219	11.0	7.8
2000	523	485	24.4	18.2	243	216	12.0	7.6
2001	543	500	25.1	18.5	215	214	10.5	7.3
2002	594	495	26.9	18.3	231	198	11.1	6.5
2003	581	476	25.8	17.1	209	182	9.8	6.1
2004	619	536	27.1	19.4	218	185	10.1	6.2

Table III-19.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Non-Hodgkin Lymphoma

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	55	42	1.5	1.2	4	2	0.1	0.1
20 – 34	87	77	3.3	3.0	13	9	0.5	0.4
35 – 49	387	259	12.8	8.7	78	33	2.6	1.1
50 – 64	799	534	41.5	27.3	208	119	10.8	6.1
65 – 74	648	580	93.9	73.2	280	190	40.6	24.0
74 – 85	666	718	151.9	112.3	363	383	82.8	59.9
85 and older	218	282	159.6	86.5	170	259	124.5	79.4

Table III-19.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Non-Hodgkin Lymphoma

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	2,860	2,492	25.9	18.3	1,116	995	10.7	6.7
American Indian	21	15	26.3	16.7	11	3	16.0	~
Asian/Pacific Isl.	26	30	13.8	12.2	10	12	6.5	7.1
Black	55	31	25.0	11.7	16	10	8.3	5.9
Non-Hispanic White	2,681	2,347	25.6	18.1	1,071	964	10.7	6.7
Hispanic (All Races)	25	23	19.3	22.6	9	5	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Non-Hodgkin Lymphoma

	Males	Females
Median Age at Diagnosis	67.0	71.0
Median Age at Death	74.0	79.0
Lifetime Risk of Diagnosis	2.7%	2.25
Lifetime Risk of Death	1.2%	0.9%
Annual Percent Change‡		
Incidence (1988-2004)	**1.1%**	**1.1%**
Mortality (1998-2004 males; 1996-2004 females)	**-4.1%**	**-4.5%**

† 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-19.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Non-Hodgkin Lymphoma

	Males	Females
Incidence		
All Races	23.2	16.3
Non-Hispanic White	25.0	17.4
Mortality		
All Races	9.6	6.2
Non-Hispanic White	10.1	6.5

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	66.0	77.7
45-54	68.0	78.8
55-64	64.5	73.9
65-74	55.7	64.4
75+	46.4	48.9
All Ages	61.7	66.4

‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

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. NHL accounts for 5 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.

Trends: Incidence rates for NHL in Minnesota increased significantly from 1988 to 2004 by 1.1 percent each year among both men and women. However, mortality rates began decreasing significantly by 4.5 percent each year for women in 1996, and by 4.1 percent each year for men in 1998. A similar pattern 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 40 percent higher among men than women.

Race: In Minnesota, NHL incidence rates are similar for American Indians, non-Hispanic whites and blacks. Nationally, NHL rates among non-Hispanic whites are nearly 35 percent higher than persons of Hispanic ethnicity, 50 percent higher than blacks and 70 percent higher than Asian/Pacific Islanders.

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 with 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, 1988-2004, 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	336	156	16.3	6.2	80	43	4.0	1.6
1999	346	158	16.3	6.2	60	33	3.0	1.3
2000	348	172	15.8	6.6	66	36	3.1	1.2
2001	347	175	15.6	6.5	72	45	3.4	1.6
2002	342	207	15.1	7.4	81	45	3.8	1.5
2003	332	173	14.2	6.2	82	42	3.6	1.4
2004	365	204	15.2	7.4	70	42	3.2	1.4

Table III-20.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Oral Cavity and Pharynx Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	5	8	0.1	0.2	1	1	0.0	0.0
20 – 34	40	30	1.5	1.2	2	2	0.1	0.1
35 – 49	259	125	8.6	4.2	29	13	1.0	0.4
50 – 64	679	255	35.3	13.0	112	35	5.8	1.8
65 – 74	383	212	55.5	26.7	106	51	15.4	6.4
74 – 85	270	187	61.6	29.3	86	54	19.6	8.4
85 and older	98	114	71.8	34.9	35	54	25.6	16.6

Table III-20.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Oral Cavity and Pharynx Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	1,734	931	15.2	6.8	371	210	3.4	1.4
American Indian	18	6	27.1	~	3	0	~	~
Asian/Pacific Isl.	33	25	14.0	9.8	3	4	~	~
Black	52	21	22.0	7.3	9	3	~	~
Non-Hispanic White	1,598	861	14.8	6.6	353	201	3.4	1.4
Hispanic (All Races)	10	6	6	~	2	2	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Oral Cavity and Pharynx Cancer

	Males	Females
Median Age at Diagnosis	62.0	66.0
Median Age at Death	69.0	75.0
Lifetime Risk of Diagnosis	1.4%	0.8%
Lifetime Risk of Death	0.4%	0.2%
Annual Percent Change‡		
Incidence (1988-2004)	**-1.9%**	-0.3%
Mortality (1988-2004)	**-1.1%**	**-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, 2000-2004, Oral Cavity and Pharynx Cancer

	Males	Females
Incidence		
All Races	15.6	6.1
Non-Hispanic White	16.6	6.6
Mortality		
All Races	4.1	1.5
Non-Hispanic White	3.9	1.5

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	4.1	-
Localized	44.6	81.8
Regional	39.5	52.1
Distant	6.8	26.5
Unknown	5.0	46.2

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: About 530 cases of oral cavity and pharynx cancer are diagnosed each year in Minnesota, and 115 people die from this cancer annually. It accounts for 2.3 percent of all cancers and 1.3 percent of cancer deaths in the state. Incidence rates of oral cavity and pharynx cancer in Minnesota are similar to those reported by SEER, and mortality rates are slightly lower than U.S. rates. Based on SEER data, the 5-year relative survival rate for oral cavity and pharynx cancer is 81.8 percent for localized tumors. In Minnesota, 44.6 percent of these cancers are diagnosed when still localized.
Trends: Incidence rates of oral cavity and pharynx cancer in Minnesota males declined significantly by 1.9 percent per year among from 1988 to 2004. Mortality rates decreased significantly among both males and females each year during the same time period (1.1 percent 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 caner are two to three 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 are 2.7 times higher in Minnesota than 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, 1988-2004, 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	-	321	-	13.0	-	218	-	8.4
1998	-	337	-	13.6	-	252	-	9.4
1999	-	358	-	14.2	-	225	-	8.6
2000	-	326	-	12.7	-	240	-	8.8
2001	-	363	-	13.9	-	249	-	9.1
2002	-	351	-	13.3	-	237	-	8.7
2003	-	361	-	13.2	-	253	-	9.0
2004	-	353	-	12.6	-	252	-	8.8

Table III-21.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Ovary Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	-	20	-	0.6	-	0	-	0.0
20 – 34	-	58	-	2.3	-	8	-	0.3
35 – 49	-	308	-	10.4	-	81	-	2.7
50 – 64	-	577	-	29.5	-	284	-	14.5
65 – 74	-	353	-	44.5	-	327	-	41.3
74 – 85	-	309	-	48.3	-	338	-	52.9
85 and older	-	129	-	39.5	-	193	-	59.2

Table III-21.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Ovary Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	-	1,754	-	13.1	-	1,231	-	8.9
American Indian	-	9	-	~	-	5	-	~
Asian/Pacific Isl.	-	17	-	7.1	-	5	-	~
Black	-	24	-	8.6	-	5	-	~
Non-Hispanic White	-	1,663	-	13.2	-	1,204	-	9.0
Hispanic (All Races)	-	11	-	6.5	-	9	-	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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, 8472, or 8473 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. 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†, 2002-2004, Ovary Cancer

	Males	Females
Median Age at Diagnosis	-	62.0
Median Age at Death	-	72.0
Lifetime Risk of Diagnosis	-	1.5%
Lifetime Risk of Death	-	1.2%
Annual Percent Change‡		
Incidence (1988-2004)	-	**-1.5%**
Mortality (1988-2004)	-	**-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-21.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Ovary Cancer

	Males	Females
Incidence		
All Races	-	13.5
Non-Hispanic White	-	14.8
Mortality		
All Races	-	8.9
Non-Hispanic White	-	9.5

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	1.0	-
Localized	19.1	92.4
Regional	22.6	71.4
Distant	52.8	29.8
Unknown	4.5	24.8

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Ovarian cancer accounts for 3.2 percent of cancers and 5.3 percent of cancer deaths among Minnesota women. Each year, an average of 351 cases are diagnosed, and 246 deaths occur. Incidence and mortality rates are similar to national rates. Based on SEER cases diagnosed in 1996-2003, the 5-year relative survival rate is 92.4 percent for localized tumors and 71.4 percent for regional tumors. However, more than 70 percent of ovarian cancers are diagnosed when the tumor has already spread to other organs, when 5-year survival is lower (29.8%).
Trends: Since cancer reporting was initiated in Minnesota in 1988, ovarian cancer incidence and mortality rates have declined significantly in Minnesota by 1.5 percent per year and 0.9 percent per year, respectively. Nationally, incidence rates decreased significantly by 0.9 percent per year from 1987 to 2004 after adjusting for delays in reporting; the mortality rate decreased by 1.1 percent per year from 1992 to 1998 and then stabilized.
Age: The majority of ovarian cancers develop after menopause. About 78 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 of color. 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, which may be linked to mutations in the BRCA1 or BRCA2 genes.

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.

Pancreas

Table III-22.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2004, 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	7.9	257	269	12.0	9.4
2003	251	246	11.5	8.9	233	277	10.8	9.4
2004	256	219	11.3	7.6	271	239	12.4	7.9

Table III-22.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Pancreas Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	10	3	0.4	0.1	5	0	0.2	0.0
35 – 49	78	59	2.6	2.0	60	46	2.0	1.5
50 – 64	347	251	18.0	12.8	321	196	16.7	10.0
65 – 74	334	319	48.4	40.2	337	296	48.8	37.3
74 – 85	301	335	68.7	52.4	369	433	84.2	67.7
85 and older	73	152	53.5	46.6	148	327	108.4	100.2

Table III-22.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Pancreas Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	1,143	1,119	10.5	8.2	1,240	1,298	11.7	8.9
American Indian	11	10	13.3	12.4	12	10	17.1	13.7
Asian/Pacific Isl.	11	13	7.3	6.9	10	11	8.2	6.8
Black	36	27	22.0	13.6	31	22	19.2	13.4
Non-Hispanic White	1,069	1,056	10.3	8.0	1,175	1,251	11.6	8.8
Hispanic (All Races)	11	8	11.2	~	12	3	13.2	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Pancreas Cancer

	Males	Females
Median Age at Diagnosis	69.0	72.0
Median Age at Death	72.0	77.0
Lifetime Risk of Diagnosis	1.2%	1.1%
Lifetime Risk of Death	1.3%	1.3%
Annual Percent Change‡		
Incidence (1988-2004)	**0.9%**	**1.8%**
Mortality (1988-2004)	-0.2%	0.0%

† 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-22.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Pancreas Cancer

	Males	Females
Incidence		
All Races	12.9	10.1
Non-Hispanic White	13.1	9.9
Mortality		
All Races	12.2	9.2
Non-Hispanic White	12.2	9.1

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	0.6	-
Localized	7.8	20.3
Regional	32.5	8.0
Distant	48.9	1.7
Unknown	10.2	4.1

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: About 450 cases of pancreatic cancer are diagnosed and microscopically confirmed in Minnesota each year, and about 510 Minnesotans die from this disease each year. 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. Pancreatic cancer is one of the most rapidly fatal cancers and generally remains asymptomatic until well advanced. Based on SEER cases diagnosed 1996-2003, the 5-year relative survival rate is 20.3 percent for localized tumors and 8.0 percent for regional tumors. Most pancreatic cancers are diagnosed at the regional (32.5%) or distant stage (48.9%).

Trends: Incidence rates of pancreatic cancer in Minnesota increased significantly in both males (0.9%) and females (1.8%) each year from 1988-2004, while mortality rates were stable. Nationally, incidence rates appear to be stable while mortality rates are stable or declining very modestly.

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 69.0 years for men and 72.0 years for women in Minnesota.

Gender: Rates are about 30 percent higher among males than females.

Race: In Minnesota, pancreas cancer incidence and mortality rates are higher among black men and women and American Indian men and women than among non-Hispanic whites. This is consistent with national data, which shows that blacks are 32 percent more likely to be diagnosed and 31 percent more likely to die of pancreatic cancer than non-Hispanic whites.

Risk Factors

Cigarette smoking is the most consistent risk factor for pancreatic cancer, with a two-fold risk for smokers relative to nonsmokers. 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, 1988-2004, 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	2,970	-	172.8	-	607	-	38.6	-
1991	3,829	-	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	3,278	-	172.2	-	653	-	39.4	-
1996	3,229	-	166.6	-	681	-	39.5	-
1997	3,453	-	175.6	-	596	-	34.3	-
1998	3,422	-	171.9	-	598	-	33.9	-
1999	3,639	-	179.4	-	565	-	31.2	-
2000	4,083	-	197.7	-	598	-	32.6	-
2001	4,168	-	197.8	-	598	-	31.8	-
2002	4,211	-	194.5	-	601	-	31.1	-
2003	3,890	-	175.3	-	545	-	27.5	-
2004	4,091	-	180.7	-	558	-	27.6	-

Table III-23.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Prostate Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	2	-	0.1	-	0	-	0.0	-
35 – 49	473	-	15.7	-	4	-	0.1	-
50 – 64	6,603	-	342.9	-	194	-	10.1	-
65 – 74	7,573	-	1,097.0	-	514	-	74.5	-
74 – 85	4,789	-	1,092.5	-	1,167	-	266.2	-
85 and older	999	-	731.5	-	1,021	-	747.6	-

Table III-23.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Prostate Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	20,443	-	189.0	-	2,900	-	30.1	-
American Indian	107	-	186.7	-	14	-	52.6	-
Asian/Pacific Isl.	63	-	46.0	-	13	-	14.5	-
Black	380	-	233.0	-	55	-	59.4	-
Non-Hispanic White	19,093	-	184.1	-	2,803	-	29.9	-
Hispanic (All Races)	103	-	113.0	-	14	~	23.6	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Prostate Cancer

	Males	Females
Median Age at Diagnosis	68.0	-
Median Age at Death	81.0	-
Lifetime Risk of Diagnosis	20.1%	-
Lifetime Risk of Death	3.6%	-
Annual Percent Change‡		
Incidence (2001-2004)	-3.6%	-
Mortality (1995-2004)	**-3.9%**	-

† 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-23.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Prostate Cancer

	Males	Females
Incidence		
All Races	168.0	-
Non-Hispanic White	166.6	-
Mortality		
All Races	27.9	-
Non-Hispanic White	25.6	-

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	92.9	100.0
Distant	3.7	31.9
Unknown	3.4	79.1

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Prostate cancer is the most common cancer among Minnesota men, accounting for one-third of cancer diagnoses among males and 12 percent of cancer deaths. One out of five men will be diagnosed with prostate cancer in their lifetime and 1 out of 28 will die of the disease. Prostate cancer rates are significantly higher in Minnesota than nationally. Among non-Hispanic whites, the incidence rate is 11 percent higher in Minnesota than in the SEER Program while the mortality rate is 17 percent higher in Minnesota than in the US.

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 1992. Incidence in Minnesota followed a very similar pattern. The prostate cancer incidence rate in Minnesota stabilized from 2001-2004 while mortality decreased significantly by 3.9 percent per year from 1995-2004. Incidence rates reported by SEER were stable from 1995-2004 and mortality rates decreased significantly by 4.1 percent per year from 1994 to 2004.

Age: About 65 percent of all newly diagnosed prostate cancer cases 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 almost 30 percent higher than in both non-Hispanic whites and American Indians. The mortality rate among black men in Minnesota is nearly two times higher than among non-Hispanic white men, but is similar to that of American Indians. In geographic areas reporting to SEER, American Indians have the lowest prostate cancer rates, more than 60 percent lower than American Indians 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, 1988-2004, 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	58	46	2.9	1.8	27	31	1.4	1.2
1996	73	61	3.5	2.5	37	41	2.0	1.6
1997	76	65	3.6	2.6	32	35	1.6	1.4
1998	73	76	3.4	3.0	35	33	1.7	1.3
1999	57	58	2.7	2.3	32	21	1.5	0.8
2000	66	74	2.9	2.8	43	42	1.9	1.5
2001	89	63	3.8	2.4	34	36	1.5	1.3
2002	93	79	4.0	3.0	31	25	1.4	0.9
2003	75	63	3.2	2.4	37	28	1.6	1.1
2004	90	75	3.8	2.8	30	30	1.3	1.0

Table III-24.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Cancer of the Soft Tissues, including Heart

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	46	38	1.3	1.1	9	3	0.2	0.1
20 – 34	51	34	2.0	1.3	17	9	0.7	0.4
35 – 49	81	74	2.7	2.5	27	9	0.9	0.3
50 – 64	92	79	4.8	4.0	42	46	2.2	2.3
65 – 74	65	46	9.4	5.8	28	32	4.1	4.0
74 – 85	56	58	12.8	9.1	42	33	9.6	5.2
85 and older	22	25	16.1	7.7	10	29	7.3	8.9

Table III-24.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Cancer of the Soft Tissues, including Heart

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	413	354	3.5	2.7	175	161	1.6	1.1
American Indian	3	1	~	~	2	1	~	~
Asian/Pacific Isl.	7	11	~	3.3	1	1	~	~
Black	17	8	6.6	~	4	5	~	~
Non-Hispanic White	368	327	3.5	2.7	166	152	1.6	1.1
Hispanic (All Races)	9	1	~	~	2	1	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Cancer of the Soft Tissues, including Heart

	Males	Females
Median Age at Diagnosis	54.5	54.0
Median Age at Death	68.0	66.0
Lifetime Risk of Diagnosis		
Lifetime Risk of Death		
Annual Percent Change‡		
Incidence (1988-2004)	-0.5%	1.2%
Mortality (1988-2004)	0.0%	-1.1%

† 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, 2000-2004, Cancer of the Soft Tissues, including Heart

	Males	Females
Incidence		
All Races	3.7	2.6
Non-Hispanic White	3.7	2.6
Mortality		
All Races	1.6	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	64.2	~
Regional	16.8	~
Distant	10.5	~
Unknown	8.4	~

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*
~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. Approximately 153 cancers of the soft tissues are diagnosed in Minnesota each year, and 67 deaths are caused by these cancers. The incidence and mortality rates of soft tissue sarcoma in Minnesota are similar to those reported nationally. Most of these cancers are diagnosed while the tumors are localized (64.2%).
Trends: Rates of soft issue sarcomas have been fairly stable since cancer reporting was implemented in Minnesota in 1988. National rates are similar to those reported in Minnesota.
Age: Incidence rates for soft tissue sarcomas increase with age. Unlike many cancers, the majority of soft tissue sarcomas are diagnosed among persons less than 65 years of age. Approximately eleven percent are diagnosed among persons less than 20 years of age, and 54 percent between 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, 1988-2004, 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	99	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	154	118	7.6	4.3	97	73	4.9	2.5
2001	190	110	9.1	3.8	107	79	5.3	2.7
2002	182	109	8.5	3.8	95	75	4.6	2.5
2003	191	102	8.7	3.6	100	59	4.6	2.1
2004	178	107	8.0	3.7	114	81	5.2	2.6

Table III-25.2: Number of new cases and deaths and average annual incidence and mortality rates[§] by age, Minnesota, 2000-2004, Stomach Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	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	2	0.0	0.1
20 – 34	9	14	0.3	0.6	2	8	0.1	0.3
35 – 49	77	54	2.5	1.8	31	23	1.0	0.8
50 – 64	231	89	12.0	4.5	115	47	6.0	2.4
65 – 74	219	105	31.7	13.2	122	67	17.7	8.5
74 – 85	252	178	57.5	27.8	154	116	35.1	18.1
85 and older	107	105	78.3	32.2	89	104	65.2	31.9

Table III-25.3: Number of new cases and deaths and average annual incidence and mortality rates[§] by race and ethnicity, Minnesota, 2000-2004, Stomach Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	895	546	8.4	3.8	513	367	4.9	2.5
American Indian	9	7	~	~	2	7	~	~
Asian/Pacific Isl.	30	29	17.8	16.0	17	20	12.5	13.2
Black	25	12	13.4	5.4	12	9	7.9	~
Non-Hispanic White	806	484	7.9	3.5	476	329	4.8	2.3
Hispanic (All Races)	16	8	15.8	~	6	2	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Stomach Cancer

	Males	Females
Median Age at Diagnosis	70.0	75.0
Median Age at Death	74.0	78.0
Lifetime Risk of Diagnosis	0.5%	0.3%
Lifetime Risk of Death	0.5%	0.3%
Annual Percent Change‡		
Incidence (1988-2004)	**-2.8%**	**-1.8%**
Mortality (1988-2004)	**-3.4%**	**-3.2%**

† 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-25.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Stomach Cancer

	Males	Females
Incidence		
All Races	11.4	5.6
Non-Hispanic White	9.4	4.1
Mortality		
All Races	5.9	3.0
Non-Hispanic White	4.9	2.4

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	19.4	61.1
Regional	31.9	23.7
Distant	34.0	3.4
Unknown	13.7	14.5

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Stomach cancer accounts for 1.2 percent of all cancers diagnosed in Minnesota, and 1.9 percent of cancer deaths. Rates in Minnesota are 26 to 32 percent lower than those reported by SEER and for the U.S. Based on SEER data, the 5-year relative survival rate for stomach cancer is 61.1 percent for localized tumors, 23.7 percent for regional tumors, and 3.4 percent for distant tumors. Most cases in Minnesota are at the regional (31.9%) or distant (34.0%) stage.

Trends: Rates of stomach cancer in Minnesota decreased significantly by 1.8 percent to 2.8 percent each year from 1988 to 2004. This is similar to national data. The most dramatic change has been in mortality. 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. A sharp increase in stomach cancer incidence rates is observed at age 50 years. The median age at diagnosis is 70.0 years for men and 75.0 years for women.

Gender: Stomach cancer rates are two to three times higher among males than females.

Race: Incidence rates of stomach cancer are highest among people of color in Minnesota. Incidence among Asian/Pacific Islanders is three times that of non-Hispanic whites, and rates among blacks are about two times that of whites. Asian/Pacific Islanders have the highest mortality rates of stomach cancer, but in general, 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, 1988-2004, 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	122	-	5.2	-	10	-	0.5	-
1989	152	-	6.6	-	6	-	0.3	-
1990	115	-	4.9	-	6	-	0.3	-
1991	136	-	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	-	7.1	-	5	-	0.2	-
2002	181	-	7.1	-	7	-	0.3	-
2003	181	-	7.0	-	7	-	0.3	-
2004	171	-	6.6	-	5	-	0.2	-

Table III-26.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Testis Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	66	-	1.8	-	1	-	0.0	-
20 – 34	398	-	15.2	-	6	-	0.2	-
35 – 49	380	-	12.6	-	13	-	0.4	-
50 – 64	72	-	3.7	-	5	-	0.3	-
65 – 74	13	-	1.9	-	4	-	0.6	-
74 – 85	4	-	0.9	-	2	-	0.5	-
85 and older	0	-	0.0	-	0	-	0.0	-

Table III-26.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Testis Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	933	-	7.3	-	31	-	0.3	-
American Indian	10	-	6.2	-	1	-	~	-
Asian/Pacific Isl.	6	-	~	-	3	-	~	-
Black	12	-	2.1	-	0	-	~	-
Non-Hispanic White	855	-	7.7	-	27	-	0.2	-
Hispanic (All Races)	15	-	2.2	-	1	-	~	-

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Testis Cancer

	Males	Females
Median Age at Diagnosis	35.0	-
Median Age at Death	45.0	-
Lifetime Risk of Diagnosis	0.5%	-
Lifetime Risk of Death	0.0%	-
Annual Percent Change‡		
Incidence (1988-2004)	**1.9%**	-
Mortality (1997-2004)	-5.1%	-

† 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, 2000-2004, Testis Cancer

	Males	Females
Incidence		
All Races	5.3	-
Non-Hispanic White	7.3	-
Mortality		
All Races	0.3	-
Non-Hispanic White	0.3	-

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	71.2	99.3
Regional	17.5	95.8
Distant	8.8	70.0
Unknown	2.1	87.4

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Testicular cancer accounts for 1.5 percent of cancer diagnoses among Minnesota men. About 190 cases are diagnosed each year, while six deaths occur 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 1996-2003 are 99.3 percent for localized tumors and 95.8 percent for regional tumors. Most cases in Minnesota are diagnosed while the tumor is localized (71.2%).
Trends: A statistically significant increase of 1.9 percent per year of testicular cancer was observed among Minnesota men since 1988, accompanied by a decrease of 5.1 percent in mortality which was not statistically significant. 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 35.0 years. About 43 percent of cancers are diagnosed among those 20 to 34 years of age.
Race: In Minnesota, non-Hispanic white men are more than 3.5 times more likely to develop testicular cancer than blacks. 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

Cryptochidism, 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, 1988-2004, 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	156	3.3	6.8	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	180	2.7	7.7	7	11	0.4	0.4
1996	66	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	84	231	3.6	9.5	4	9	0.2	0.3
1999	89	233	3.9	9.5	7	19	0.4	0.7
2000	93	241	3.9	9.7	12	10	0.6	0.4
2001	87	275	3.7	10.8	12	14	0.6	0.5
2002	110	272	4.5	10.7	2	8	0.1	0.3
2003	100	316	4.1	12.1	7	20	0.3	0.7
2004	117	360	4.6	13.7	5	16	0.2	0.5

Table III-27.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Thyroid Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	13	37	0.4	1.1	0	0	0.0	0.0
20 – 34	84	344	3.2	13.6	1	0	0.0	0.0
35 – 49	162	547	5.4	18.4	2	3	0.1	0.1
50 – 64	139	321	7.2	16.4	11	12	0.6	0.6
65 – 74	56	106	8.1	13.4	8	15	1.2	1.9
74 – 85	49	76	11.2	11.9	15	22	3.4	3.4
85 and older	4	33	2.9	10.1	1	16	0.7	4.9

Table III-27.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Thyroid Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	507	1,464	4.2	11.4	38	68	0.4	0.5
American Indian	2	10	~	7.4	0	1	~	~
Asian/Pacific Isl.	9	50	~	15.2	2	2	~	~
Black	10	29	2.4	7.0	0	1	~	~
Non-Hispanic White	458	1,321	4.1	11.4	35	64	0.3	0.5
Hispanic (All Races)	11	18	3.7	8.6	1	0	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers 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. 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†, 2002-2004, Thyroid Cancer

	Males	Females
Median Age at Diagnosis	50.0	45.0
Median Age at Death	68.0	75.5
Lifetime Risk of Diagnosis	0.4%	1.0%
Lifetime Risk of Death	0.0%	0.1%
Annual Percent Change‡		
Incidence (1988-2004)	**3.0%**	**4.6%**
Mortality (1988-2004)	-0.9%	1.2%

† 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-27.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Thyroid Cancer

	Males	Females
Incidence		
All Races	4.3	12.5
Non-Hispanic White	5.0	13.9
Mortality		
All Races	0.5	0.5
Non-Hispanic White	0.5	0.4

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	66.0	99.7
Regional	27.5	96.9
Distant	3.3	56.0
Unknown	3.1	89.3

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Thyroid cancer accounts for 1.5 percent of cancers in Minnesota, and 0.2 percent of cancer-related deaths. About 394 cases are diagnosed each year, and about 20 deaths occur as a result of thyroid cancer. Based on SEER data, the 5-year relative survival rate for thyroid cancer is 99.7 percent for localized tumors and 96.9 percent for regional tumors. Most cases in Minnesota are diagnosed while the tumor is localized (66.0%). Rates in Minnesota are similar to those reported nationally. 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 3.0 and 4.6 percent per year were observed in males and females, respectively, in Minnesota from 1988-2004. Mortality rates were stable. Nationally, incidence rates have also increased significantly by 5.3 percent per year from 1995-2004. Mortality rate trends are similar to Minnesota.

Age: Thyroid cancer incidence does not increase dramatically with age. In Minnesota, 81.0 percent of cases were diagnosed among persons 20 to 64 years of age.

Gender: Thyroid cancer is one of the few cancers that occurs 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 that show that the highest incidence rates for thyroid cancer occur among Asian/Pacific Islander women, and are lowest among non-Hispanic white women.

Risk Factors

Several studies report associations with thyroid cancer and radiation exposure, particularly exposure during childhood. Deficiencies in dietary 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 routine health checkups, including examination of the thyroid, every three years for those between the ages of 20 and 39 years, and annually for those 40 years and older.

Urinary Bladder

Table III-28.1: Number of new cases and deaths and incidence and mortality rates§ by year, Minnesota, 1988-2004, 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	679	235	37.4	9.2	116	40	7.1	1.4
1994	673	241	36.6	9.5	132	62	7.8	2.2
1995	681	227	36.6	8.6	113	63	6.7	2.1
1996	662	274	34.9	10.6	159	60	9.0	2.1
1997	737	231	38.4	8.7	136	84	7.7	2.8
1998	752	267	38.4	10.0	133	63	7.3	2.0
1999	757	263	38.2	9.8	129	70	6.9	2.2
2000	754	256	37.3	9.5	146	63	7.8	1.9
2001	814	271	39.3	10.0	146	51	7.4	1.6
2002	840	296	39.7	10.4	164	77	8.4	2.6
2003	822	316	38.1	11.4	149	79	7.2	2.6
2004	921	304	42.4	10.7	155	61	7.5	2.0

Table III-28.2: Number of new cases and deaths and average annual incidence and mortality rates§ by age, Minnesota, 2000-2004, Urinary Bladder Cancer

Age at Diagnosis or Death (years)	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
0 – 19	5	2	0.1	0.1	0	0	0.0	0.0
20 – 34	21	7	0.8	0.3	0	0	0.0	0.0
35 – 49	201	76	6.7	2.6	19	7	0.6	0.2
50 – 64	967	299	50.2	15.3	90	33	4.7	1.7
65 – 74	1,265	382	183.2	48.2	177	62	25.6	7.8
74 – 85	1,240	453	282.9	70.9	278	107	63.4	16.7
85 and older	452	224	331.0	68.7	196	122	143.5	37.4

Table III-28.3: Number of new cases and deaths and average annual incidence and mortality rates§ by race and ethnicity, Minnesota, 2000-2004, Urinary Bladder Cancer

Race and Ethnicity†	Incidence 2000-2004				Mortality 2000-2004			
	Total Cases		Average Rate		Total Deaths		Average Rate	
	Males	Females	Males	Females	Males	Females	Males	Females
All Races	4,151	1,443	39.4	10.4	760	331	7.6	2.1
American Indian	10	3	16.6	~	2	3	~	~
Asian/Pacific Isl.	10	7	9.0	~	3	1	~	~
Black	51	21	32.2	13.4	8	6	~	~
Non-Hispanic White	4,004	1,387	39.6	10.4	744	318	7.7	2.1
Hispanic (All Races)	12	10	15.5	11.0	3	3	~	~

Source: MCSS (October 2007). Cases were microscopically confirmed (1988-2004) or Death Certificate Only (1995-2004). *In situ* cancers were not 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. 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†, 2002-2004, Urinary Bladder Cancer

	Males	Females
Median Age at Diagnosis	72.0	74.0
Median Age at Death	78.0	80.0
Lifetime Risk of Diagnosis	4.3%	1.4%
Lifetime Risk of Death	0.9%	0.4%
Annual Percent Change‡		
Incidence (1988-2004)	**0.5%**	**0.7%**
Mortality (1988-2004)	0.1%	-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-28.5: Average annual incidence and mortality rates§ in the United States, 2000-2004, Urinary Bladder Cancer

	Males	Females
Incidence		
All Races	37.3	9.4
Non-Hispanic White	43.2	10.7
Mortality		
All Races	7.5	2.3
Non-Hispanic White	8.1	2.3

Source: *SEER Cancer Statistics Review, 1975-2004.* Incidence data represent 17% 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	86.2	92.1
Regional	7.7	44.6
Distant	3.5	6.4
Unknown	2.6	59.3

†Among Minnesota cases diagnosed 2001-2004.
‡Among SEER cases diagnosed 1996-2003 followed into 2004, from *SEER Cancer Statistics Review, 1975-2004.*

Descriptive Epidemiology

Incidence and Mortality: Cancer of the urinary bladder accounts for 4.8 percent of cancers in Minnesota and 2.4 percent of cancer deaths. Approximately 1,120 cases of urinary bladder cancer are diagnosed annually, and 220 deaths occur each year as a result of this cancer. Incidence and mortality rates in Minnesota are similar to those reported by SEER and for the U.S. Based on SEER data, the 5-year relative survival rate is 92.1 percent for urinary bladder cancers diagnosed in the *in situ* or localized tumor stage. In Minnesota, about 86.2 percent of cases are diagnosed at these stages.

Trends: The incidence rate of bladder cancer in Minnesota has increased significantly but at a modest rate since 1988 among both men and women, while the mortality rate has been stable. The incidence rate among women in the SEER Program is increasing at a similar rate to that seen in Minnesota, while among men, the rate has been fluctuating, but without a significant trend. Nationally, the bladder cancer mortality rate is decreasing slowly but significantly among both men and women.

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 in Minnesota.

Race: Urinary bladder cancer rates appear to be 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 urinary 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 of urinary bladder cancer. 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 cessation of smoking.

[This page left intentionally blank.]

Chapter IV:
Occurrence of Cancer in Minnesota Counties and Regions, 2000-2004

[This page left intentionally blank.]

Chapter IV: Cancer in Minnesota Counties and Regions, 2000 – 2004

Introduction

This chapter contains a profile of cancer incidence for 2000-2004 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, 2000-2004. The "expected" number of cancers was calculated by applying the 2000-2004 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 2000 - 2004 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	354.0	244	259.2	540.2	403.9
Brain & Other Nervous System	5	4.2	0	2.9	~	~
Breast	1	0.8	76	84.1	~	129.1
Cervix Uteri	-	-	3	3.0	-	~
Colon & Rectum	31	37.3	33	31.8	44.7	46.3
Corpus & Uterus, NOS	-	-	7	16.9	-	~
Esophagus	5	5.3	0	1.4	~	~
Hodgkin Lymphoma	0	1.5	0	1.1	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	14	11.7	4	5.7	25.0	~
Larynx	7	3.6	1	0.8	~	~
Leukemia	4	11.4	3	6.6	~	~
Liver & Intrahepatic Bile Duct	4	3.5	2	1.2	~	~
Lung & Bronchus	53	47.3	40	31.4	80.4	59.2
Melanoma of the Skin	14	11.8	7	7.6	22.5	~
Mesothelioma (all sites)	2	1.5	0	0.3	~	~
Myeloma	4	4.3	4	2.7	~	~
Non-Hodgkin Lymphoma	27	15.4	9	11.6	40.9	~
Oral Cavity & Pharynx	5	9.0	9	4.1	~	~
Ovary	-	-	16	8.1	-	23.0
Pancreas	10	6.7	3	5.3	16.7	~
Prostate	120	127.0	-	-	176.1	-
Soft Tissues incl. Heart	1	1.8	4	1.5	~	~
Stomach	9	5.2	2	2.7	~	~
Testis	2	2.4	-	-	~	-
Thyroid	3	2.0	6	4.1	~	~
Urinary Bladder	22	25.2	2	6.9	32.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-2: Anoka County 2000 - 2004 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	2974	2955.7	2637	2741.7	564.6	404.9
Brain & Other Nervous System	54	55.2	34	40.2	8.4	4.7
Breast	3	6.1	861	954.6	~	124.8
Cervix Uteri	-	-	45	52.0	-	5.7
Colon & Rectum	274	296.6	240	272.1	53.8	40.4
Corpus & Uterus, NOS	-	-	177	180.6	-	26.4
Esophagus	51	44.1	15	11.2	9.6	2.4
Hodgkin Lymphoma	25	26.6	15	20.1	3.2	2.0
Kaposi Sarcoma (all sites)	0	3.6	0	0.2	~	~
Kidney & Renal Pelvis	108	111.4	56	57.0	18.2	8.6
Larynx	33	31.3	9	8.2	6.2	~
Leukemia	106	102.5	73	66.1	18.1	11.8
Liver & Intrahepatic Bile Duct	34	32.3	14	11.5	6.5	2.3
Lung & Bronchus	371	355.6	385	287.6	74.2	65.0
Melanoma of the Skin	126	126.1	104	115.4	21.5	14.0
Mesothelioma (all sites)	8	10.4	3	2.5	~	~
Myeloma	33	33.7	30	24.4	6.3	5.3
Non-Hodgkin Lymphoma	144	140.6	95	113.2	27.8	15.2
Oral Cavity & Pharynx	85	90.3	39	43.0	14.7	6.2
Ovary	-	-	59	92.0	-	8.6
Pancreas	41	53.8	55	45.9	8.5	9.5
Prostate	1025	965.0	-	-	199.0	-
Soft Tissues incl. Heart	18	22.7	20	18.8	3.0	2.8
Stomach	35	40.7	26	23.6	7.6	4.4
Testis	72	60.8	-	-	8.6	-
Thyroid	26	30.1	93	78.7	3.9	11.9
Urinary Bladder	181	183.2	59	59.3	39.4	10.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-3: Becker County 2000 - 2004 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	475	489.0	351	408.3	543.8	358.2
Brain & Other Nervous System	5	6.8	2	4.9	~	~
Breast	2	1.1	100	133.7	~	104.3
Cervix Uteri	-	-	6	5.4	-	~
Colon & Rectum	62	51.2	46	49.0	70.6	42.7
Corpus & Uterus, NOS	-	-	35	26.1	-	36.2
Esophagus	8	7.3	2	2.0	~	~
Hodgkin Lymphoma	2	2.8	4	2.1	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	19	16.8	6	8.9	21.0	~
Larynx	6	5.0	1	1.2	~	~
Leukemia	15	16.4	9	10.5	17.8	~
Liver & Intrahepatic Bile Duct	4	5.0	0	1.8	~	~
Lung & Bronchus	62	63.4	42	47.0	71.2	41.6
Melanoma of the Skin	22	17.6	12	13.3	25.5	13.4
Mesothelioma (all sites)	3	2.0	0	0.4	~	~
Myeloma	3	5.9	7	4.1	~	~
Non-Hodgkin Lymphoma	23	22.0	16	18.2	28.2	15.6
Oral Cavity & Pharynx	11	13.2	3	6.5	12.4	~
Ovary	-	-	10	12.9	-	10.0
Pancreas	7	9.2	8	8.1	~	~
Prostate	144	169.3	-	-	161.2	-
Soft Tissues incl. Heart	1	2.9	4	2.5	~	~
Stomach	7	7.1	1	4.2	~	~
Testis	7	5.2	-	-	~	-
Thyroid	2	3.4	4	7.8	~	~
Urinary Bladder	42	33.9	11	10.6	46.7	10.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-4: Beltrami County 2000 - 2004 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	497	490.6	430	427.8	574.2	415.6
Brain & Other Nervous System	9	7.6	5	5.7	~	~
Breast	2	1.1	126	140.4	~	121.7
Cervix Uteri	-	-	8	6.4	-	~
Colon & Rectum	48	50.9	53	49.2	55.3	49.4
Corpus & Uterus, NOS	-	-	20	27.0	-	20.1
Esophagus	9	7.3	2	2.0	~	~
Hodgkin Lymphoma	1	3.5	2	2.9	~	~
Kaposi Sarcoma (all sites)	0	0.4	1	0.0	~	~
Kidney & Renal Pelvis	20	17.0	15	9.1	23.4	14.9
Larynx	7	5.0	1	1.2	~	~
Leukemia	21	17.2	15	11.1	24.3	13.4
Liver & Intrahepatic Bile Duct	3	5.0	2	1.9	~	~
Lung & Bronchus	60	62.0	62	47.3	68.5	61.5
Melanoma of the Skin	11	18.4	11	15.6	13.1	11.2
Mesothelioma (all sites)	1	2.0	1	0.4	~	~
Myeloma	8	5.8	3	4.2	~	~
Non-Hodgkin Lymphoma	18	22.5	16	18.9	20.6	15.5
Oral Cavity & Pharynx	18	13.6	5	6.8	20.6	~
Ovary	-	-	14	13.7	-	13.4
Pancreas	10	9.1	12	8.1	11.7	11.7
Prostate	172	165.6	-	-	198.2	-
Soft Tissues incl. Heart	5	3.3	2	2.9	~	~
Stomach	9	7.1	5	4.3	~	~
Testis	10	7.2	-	-	10.7	-
Thyroid	3	3.8	10	9.9	~	9.8
Urinary Bladder	33	33.3	10	10.6	39.5	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-5: Benton County 2000 - 2004 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	383	382.5	284	356.3	562.2	337.0
Brain & Other Nervous System	6	6.4	6	4.8	~	~
Breast	1	0.8	94	115.9	~	114.9
Cervix Uteri	-	-	3	5.8	-	~
Colon & Rectum	30	39.7	15	41.5	42.7	16.2
Corpus & Uterus, NOS	-	-	14	21.9	-	17.3
Esophagus	3	5.6	1	1.7	~	~
Hodgkin Lymphoma	3	3.2	1	2.6	~	~
Kaposi Sarcoma (all sites)	1	0.4	0	0.0	~	~
Kidney & Renal Pelvis	7	13.5	16	7.5	~	20.1
Larynx	10	3.8	0	1.0	14.5	~
Leukemia	10	13.8	15	9.4	15.6	17.0
Liver & Intrahepatic Bile Duct	3	4.0	1	1.6	~	~
Lung & Bronchus	45	47.0	31	37.8	68.3	37.0
Melanoma of the Skin	12	15.3	11	13.8	16.1	13.5
Mesothelioma (all sites)	1	1.5	1	0.4	~	~
Myeloma	4	4.5	3	3.4	~	~
Non-Hodgkin Lymphoma	18	18.1	19	15.8	25.5	22.2
Oral Cavity & Pharynx	13	10.9	5	5.7	17.9	~
Ovary	-	-	6	11.3	-	~
Pancreas	6	7.0	4	6.7	~	~
Prostate	163	124.4	-	-	244.8	-
Soft Tissues incl. Heart	0	2.8	4	2.5	~	~
Stomach	7	5.6	1	3.7	~	~
Testis	3	7.3	-	-	~	-
Thyroid	4	3.5	14	9.1	~	17.0
Urinary Bladder	21	25.6	7	8.9	33.7	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-6: Big Stone County 2000 - 2004 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	126	115.1	103	98.3	609.1	384.7
Brain & Other Nervous System	0	1.4	0	1.1	~	~
Breast	0	0.3	24	31.0	~	97.4
Cervix Uteri	-	-	1	1.1	-	~
Colon & Rectum	19	12.4	19	13.0	88.8	62.4
Corpus & Uterus, NOS	-	-	12	6.1	-	51.1
Esophagus	3	1.7	0	0.5	~	~
Hodgkin Lymphoma	1	0.5	0	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	3.8	1	2.1	~	~
Larynx	1	1.1	0	0.3	~	~
Leukemia	7	3.9	5	2.6	~	~
Liver & Intrahepatic Bile Duct	0	1.1	1	0.5	~	~
Lung & Bronchus	20	15.3	13	11.5	93.9	60.7
Melanoma of the Skin	7	3.9	4	2.8	~	~
Mesothelioma (all sites)	0	0.5	1	0.1	~	~
Myeloma	1	1.4	1	1.1	~	~
Non-Hodgkin Lymphoma	3	5.2	3	4.6	~	~
Oral Cavity & Pharynx	4	2.9	2	1.6	~	~
Ovary	-	-	1	3.0	-	~
Pancreas	0	2.2	2	2.1	~	~
Prostate	38	40.0	-	-	176.5	-
Soft Tissues incl. Heart	1	0.6	0	0.6	~	~
Stomach	4	1.8	1	1.1	~	~
Testis	0	0.8	-	-	~	-
Thyroid	0	0.7	3	1.5	~	~
Urinary Bladder	12	8.5	1	2.8	55.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-7: Blue Earth County 2000 - 2004 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	639.3	630	599.3	521.3	445.6
Brain & Other Nervous System	10	10.1	14	7.7	8.1	11.3
Breast	1	1.4	195	191.6	~	141.5
Cervix Uteri	-	-	8	8.7	-	~
Colon & Rectum	72	67.0	104	72.9	63.2	64.5
Corpus & Uterus, NOS	-	-	44	36.6	-	31.1
Esophagus	8	9.4	5	2.9	~	~
Hodgkin Lymphoma	4	5.2	3	4.3	~	~
Kaposi Sarcoma (all sites)	0	0.6	0	0.1	~	~
Kidney & Renal Pelvis	23	21.8	16	12.7	20.3	11.6
Larynx	7	6.3	0	1.7	~	~
Leukemia	15	22.9	16	15.9	12.1	11.6
Liver & Intrahepatic Bile Duct	7	6.5	3	2.7	~	~
Lung & Bronchus	66	79.8	47	65.4	59.1	34.8
Melanoma of the Skin	30	24.6	29	21.7	25.4	22.6
Mesothelioma (all sites)	0	2.7	0	0.6	~	~
Myeloma	3	7.6	5	6.0	~	~
Non-Hodgkin Lymphoma	28	29.9	24	27.2	24.5	16.0
Oral Cavity & Pharynx	12	17.7	12	9.6	10.4	8.2
Ovary	-	-	14	18.9	-	9.5
Pancreas	14	11.9	9	11.7	12.1	~
Prostate	202	209.9	-	-	181.9	-
Soft Tissues incl. Heart	5	4.5	6	4.1	~	~
Stomach	6	9.5	4	6.4	~	~
Testis	13	11.4	-	-	8.6	-
Thyroid	7	5.3	14	13.7	~	11.1
Urinary Bladder	35	43.9	14	15.5	30.8	8.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-8: Brown County 2000 - 2004 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	425.5	390	370.3	563.0	443.2
Brain & Other Nervous System	6	5.8	4	4.3	~	~
Breast	0	1.0	111	118.6	~	129.7
Cervix Uteri	-	-	8	4.7	-	~
Colon & Rectum	50	45.4	57	47.0	64.1	52.5
Corpus & Uterus, NOS	-	-	44	22.9	-	51.2
Esophagus	7	6.3	2	1.9	~	~
Hodgkin Lymphoma	2	2.4	3	1.9	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	15	14.3	3	8.0	19.5	~
Larynx	3	4.2	0	1.0	~	~
Leukemia	21	14.8	12	9.8	28.8	12.6
Liver & Intrahepatic Bile Duct	1	4.2	0	1.7	~	~
Lung & Bronchus	33	55.1	38	42.0	43.2	45.3
Melanoma of the Skin	18	15.3	11	11.7	25.2	13.8
Mesothelioma (all sites)	0	1.9	0	0.4	~	~
Myeloma	4	5.2	3	3.9	~	~
Non-Hodgkin Lymphoma	23	19.4	14	16.9	30.4	15.2
Oral Cavity & Pharynx	4	11.3	2	6.0	~	~
Ovary	-	-	10	11.5	-	13.2
Pancreas	9	8.0	8	7.5	~	~
Prostate	155	144.7	-	-	201.5	-
Soft Tissues incl. Heart	9	2.5	1	2.3	~	~
Stomach	3	6.4	4	4.1	~	~
Testis	3	4.6	-	-	~	-
Thyroid	2	2.9	16	6.7	~	23.7
Urinary Bladder	40	30.4	14	10.0	53.1	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-9: Carlton County 2000 - 2004 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	493	470.4	422	410.9	587.1	435.4
Brain & Other Nervous System	9	6.9	2	5.0	~	~
Breast	1	1.0	120	134.1	~	124.2
Cervix Uteri	-	-	3	5.6	-	~
Colon & Rectum	68	49.3	47	49.5	81.4	43.9
Corpus & Uterus, NOS	-	-	32	25.9	-	33.8
Esophagus	12	7.0	3	2.0	14.1	~
Hodgkin Lymphoma	3	3.0	2	2.2	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.0	~	~
Kidney & Renal Pelvis	18	16.4	10	8.9	20.8	10.1
Larynx	2	4.8	1	1.2	~	~
Leukemia	10	16.0	8	10.6	12.3	~
Liver & Intrahepatic Bile Duct	5	4.8	1	1.9	~	~
Lung & Bronchus	62	60.0	56	46.6	72.7	59.5
Melanoma of the Skin	20	17.8	20	13.7	23.7	23.7
Mesothelioma (all sites)	7	2.0	0	0.4	~	~
Myeloma	8	5.6	6	4.2	~	~
Non-Hodgkin Lymphoma	22	21.6	25	18.4	26.2	24.8
Oral Cavity & Pharynx	16	13.0	8	6.6	19.7	~
Ovary	-	-	12	13.0	-	12.5
Pancreas	4	8.8	10	8.1	~	10.1
Prostate	151	159.3	-	-	180.2	-
Soft Tissues incl. Heart	5	3.0	1	2.5	~	~
Stomach	9	6.9	5	4.3	~	~
Testis	4	6.1	-	-	~	-
Thyroid	6	3.6	13	8.2	~	15.7
Urinary Bladder	29	32.3	8	10.6	35.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-10: Carver County 2000 - 2004 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	568	688.5	614	642.2	468.5	395.7
Brain & Other Nervous System	10	13.2	6	9.5	7.5	~
Breast	2	1.5	202	220.9	~	124.4
Cervix Uteri	-	-	11	12.6	-	6.0
Colon & Rectum	65	70.1	57	66.0	59.0	39.9
Corpus & Uterus, NOS	-	-	31	40.5	-	20.4
Esophagus	7	10.2	0	2.6	~	~
Hodgkin Lymphoma	6	6.4	6	4.9	~	~
Kaposi Sarcoma (all sites)	0	0.9	0	0.0	~	~
Kidney & Renal Pelvis	26	25.9	14	13.2	19.2	9.5
Larynx	6	7.1	2	1.9	~	~
Leukemia	16	24.9	24	16.2	11.1	14.7
Liver & Intrahepatic Bile Duct	3	7.5	2	2.7	~	~
Lung & Bronchus	57	82.4	47	64.7	49.8	35.4
Melanoma of the Skin	33	30.0	38	27.8	19.7	21.1
Mesothelioma (all sites)	0	2.5	0	0.6	~	~
Myeloma	9	7.9	5	5.7	~	~
Non-Hodgkin Lymphoma	24	33.5	35	26.9	18.7	24.4
Oral Cavity & Pharynx	11	21.0	12	10.2	9.7	8.0
Ovary	-	-	19	21.2	-	13.2
Pancreas	12	12.6	12	10.8	10.2	8.7
Prostate	177	218.5	-	-	152.9	-
Soft Tissues incl. Heart	3	5.5	9	4.5	~	~
Stomach	9	9.8	5	5.9	~	~
Testis	17	14.7	-	-	8.9	-
Thyroid	3	7.2	28	19.1	~	14.4
Urinary Bladder	45	43.6	11	14.2	39.3	7.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-11: Cass County 2000 - 2004 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	505	528.8	355	384.6	538.4	383.3
Brain & Other Nervous System	4	6.8	3	4.6	~	~
Breast	1	1.1	105	127.3	~	112.1
Cervix Uteri	-	-	7	5.0	-	~
Colon & Rectum	57	55.1	45	44.7	61.9	47.0
Corpus & Uterus, NOS	-	-	18	25.4	-	19.2
Esophagus	7	8.0	4	1.9	~	~
Hodgkin Lymphoma	1	2.6	2	1.9	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	14	17.9	12	8.4	14.9	12.3
Larynx	4	5.5	3	1.2	~	~
Leukemia	17	17.1	6	9.6	21.3	~
Liver & Intrahepatic Bile Duct	7	5.3	3	1.7	~	~
Lung & Bronchus	78	69.6	45	45.7	79.5	45.5
Melanoma of the Skin	15	18.3	8	12.2	17.2	~
Mesothelioma (all sites)	3	2.2	1	0.4	~	~
Myeloma	8	6.4	2	3.9	~	~
Non-Hodgkin Lymphoma	16	23.2	17	16.9	17.6	17.4
Oral Cavity & Pharynx	25	13.8	6	6.1	26.0	~
Ovary	-	-	11	12.3	-	12.3
Pancreas	7	9.9	9	7.6	~	~
Prostate	176	188.3	-	-	177.9	-
Soft Tissues incl. Heart	4	2.9	4	2.3	~	~
Stomach	9	7.6	7	3.8	~	~
Testis	6	4.4	-	-	~	-
Thyroid	1	3.3	9	7.1	~	~
Urinary Bladder	22	36.7	8	9.8	23.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-12: Chippewa County 2000 - 2004 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	202	217.8	173	200.1	517.9	351.2
Brain & Other Nervous System	2	2.9	0	2.2	~	~
Breast	0	0.5	52	63.3	~	115.3
Cervix Uteri	-	-	3	2.4	-	~
Colon & Rectum	25	23.6	20	26.4	61.8	30.9
Corpus & Uterus, NOS	-	-	11	12.2	-	23.5
Esophagus	2	3.2	3	1.1	~	~
Hodgkin Lymphoma	2	1.1	1	0.9	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	4	7.2	7	4.3	~	~
Larynx	5	2.1	1	0.6	~	~
Leukemia	4	7.7	3	5.4	~	~
Liver & Intrahepatic Bile Duct	3	2.2	0	0.9	~	~
Lung & Bronchus	32	28.2	18	22.7	80.8	34.3
Melanoma of the Skin	4	7.8	3	6.0	~	~
Mesothelioma (all sites)	0	1.0	0	0.2	~	~
Myeloma	2	2.7	3	2.1	~	~
Non-Hodgkin Lymphoma	12	10.0	14	9.3	31.3	31.1
Oral Cavity & Pharynx	4	5.8	2	3.2	~	~
Ovary	-	-	7	6.1	-	~
Pancreas	3	4.2	0	4.2	~	~
Prostate	69	73.5	-	-	175.2	-
Soft Tissues incl. Heart	1	1.3	2	1.2	~	~
Stomach	1	3.4	1	2.3	~	~
Testis	3	2.0	-	-	~	-
Thyroid	0	1.4	6	3.3	~	~
Urinary Bladder	12	16.0	3	5.6	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-13: Chisago County 2000 - 2004 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	492.7	516	414.6	615.8	517.8
Brain & Other Nervous System	12	8.4	5	5.8	12.7	~
Breast	0	1.1	166	139.6	~	165.5
Cervix Uteri	-	-	5	7.3	-	~
Colon & Rectum	50	50.8	50	44.9	58.6	50.0
Corpus & Uterus, NOS	-	-	20	26.3	-	20.3
Esophagus	12	7.3	7	1.8	12.4	~
Hodgkin Lymphoma	3	4.0	8	2.9	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.0	~	~
Kidney & Renal Pelvis	25	17.7	14	8.7	26.0	13.6
Larynx	6	5.0	2	1.2	~	~
Leukemia	16	17.4	15	10.5	17.9	14.2
Liver & Intrahepatic Bile Duct	6	5.2	4	1.8	~	~
Lung & Bronchus	62	60.6	70	43.9	71.4	73.9
Melanoma of the Skin	22	20.0	25	16.6	22.6	23.5
Mesothelioma (all sites)	0	1.9	2	0.4	~	~
Myeloma	10	5.8	1	3.9	11.8	~
Non-Hodgkin Lymphoma	26	23.3	23	17.7	28.2	23.4
Oral Cavity & Pharynx	16	14.2	5	6.6	17.1	~
Ovary	-	-	21	13.5	-	20.9
Pancreas	11	9.1	8	7.4	12.3	~
Prostate	197	161.5	-	-	224.5	-
Soft Tissues incl. Heart	2	3.5	6	2.8	~	~
Stomach	8	7.1	6	3.9	~	~
Testis	9	8.8	-	-	~	-
Thyroid	1	4.5	15	11.1	~	13.7
Urinary Bladder	30	32.5	8	9.7	34.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-14: Clay County 2000 - 2004 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	636	621.1	565	573.0	577.7	416.0
Brain & Other Nervous System	10	9.5	6	7.3	8.7	~
Breast	1	1.4	172	184.6	~	129.4
Cervix Uteri	-	-	11	8.3	-	9.2
Colon & Rectum	72	65.5	87	69.2	65.8	59.2
Corpus & Uterus, NOS	-	-	27	35.1	-	20.6
Esophagus	10	9.2	4	2.8	9.2	~
Hodgkin Lymphoma	6	4.4	6	3.9	~	~
Kaposi Sarcoma (all sites)	1	0.5	0	0.1	~	~
Kidney & Renal Pelvis	13	21.3	16	12.1	11.9	12.5
Larynx	6	6.2	1	1.6	~	~
Leukemia	35	22.0	15	15.2	31.7	10.9
Liver & Intrahepatic Bile Duct	4	6.3	2	2.6	~	~
Lung & Bronchus	92	78.5	55	62.7	84.3	41.5
Melanoma of the Skin	17	23.6	17	20.5	14.8	12.9
Mesothelioma (all sites)	1	2.6	0	0.6	~	~
Myeloma	10	7.4	10	5.7	9.0	7.6
Non-Hodgkin Lymphoma	26	28.9	27	25.8	24.1	20.6
Oral Cavity & Pharynx	18	17.1	7	9.2	16.0	~
Ovary	-	-	14	18.1	-	10.7
Pancreas	9	11.6	8	11.1	~	~
Prostate	224	206.5	-	-	205.5	-
Soft Tissues incl. Heart	2	4.2	2	3.9	~	~
Stomach	8	9.2	11	6.1	~	7.0
Testis	11	9.1	-	-	8.6	-
Thyroid	2	4.8	14	12.9	~	12.4
Urinary Bladder	35	43.1	21	14.8	32.1	14.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-15: Clearwater County 2000 - 2004 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	158	144.1	94	112.2	612.4	339.9
Brain & Other Nervous System	1	1.9	1	1.3	~	~
Breast	0	0.3	32	36.5	~	114.0
Cervix Uteri	-	-	2	1.4	-	~
Colon & Rectum	22	15.4	9	13.8	86.4	~
Corpus & Uterus, NOS	-	-	9	7.1	-	~
Esophagus	3	2.2	1	0.6	~	~
Hodgkin Lymphoma	0	0.8	0	0.6	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	4.8	2	2.4	~	~
Larynx	1	1.4	0	0.3	~	~
Leukemia	2	4.9	1	2.9	~	~
Liver & Intrahepatic Bile Duct	0	1.4	0	0.5	~	~
Lung & Bronchus	24	18.6	12	12.7	91.5	46.6
Melanoma of the Skin	4	5.1	1	3.6	~	~
Mesothelioma (all sites)	1	0.6	0	0.1	~	~
Myeloma	3	1.8	0	1.1	~	~
Non-Hodgkin Lymphoma	6	6.5	3	5.0	~	~
Oral Cavity & Pharynx	4	3.8	1	1.8	~	~
Ovary	-	-	3	3.5	-	~
Pancreas	2	2.7	3	2.2	~	~
Prostate	53	49.6	-	-	200.2	-
Soft Tissues incl. Heart	2	0.8	0	0.7	~	~
Stomach	6	2.2	1	1.2	~	~
Testis	3	1.4	-	-	~	-
Thyroid	1	0.9	3	2.1	~	~
Urinary Bladder	11	10.3	0	3.0	39.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-16: Cook County 2000 - 2004 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	97.7	72	75.8	529.8	375.2
Brain & Other Nervous System	2	1.3	1	0.9	~	~
Breast	0	0.2	24	25.6	~	121.7
Cervix Uteri	-	-	1	1.0	-	~
Colon & Rectum	6	10.3	10	8.8	~	48.2
Corpus & Uterus, NOS	-	-	6	5.0	-	~
Esophagus	4	1.5	0	0.4	~	~
Hodgkin Lymphoma	1	0.5	0	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	3.4	1	1.6	~	~
Larynx	1	1.0	0	0.2	~	~
Leukemia	1	3.2	4	1.9	~	~
Liver & Intrahepatic Bile Duct	0	1.0	0	0.3	~	~
Lung & Bronchus	12	12.7	12	8.7	74.1	65.0
Melanoma of the Skin	3	3.5	1	2.5	~	~
Mesothelioma (all sites)	1	0.4	0	0.1	~	~
Myeloma	0	1.2	0	0.8	~	~
Non-Hodgkin Lymphoma	5	4.4	4	3.3	~	~
Oral Cavity & Pharynx	1	2.7	0	1.2	~	~
Ovary	-	-	2	2.4	-	~
Pancreas	0	1.8	1	1.5	~	~
Prostate	32	34.3	-	-	183.1	-
Soft Tissues incl. Heart	1	0.5	0	0.4	~	~
Stomach	0	1.4	0	0.8	~	~
Testis	1	0.9	-	-	~	-
Thyroid	2	0.7	0	1.5	~	~
Urinary Bladder	8	6.8	2	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-17: Cottonwood County 2000 - 2004 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	205	222.5	185	196.0	527.1	416.8
Brain & Other Nervous System	1	2.8	1	2.1	~	~
Breast	2	0.5	63	61.6	~	153.8
Cervix Uteri	-	-	5	2.2	-	~
Colon & Rectum	24	24.3	35	26.2	59.6	64.9
Corpus & Uterus, NOS	-	-	14	11.9	-	35.8
Esophagus	3	3.3	0	1.1	~	~
Hodgkin Lymphoma	1	1.1	1	0.9	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	7	7.3	0	4.2	~	~
Larynx	1	2.2	0	0.5	~	~
Leukemia	3	7.9	9	5.4	~	~
Liver & Intrahepatic Bile Duct	2	2.2	0	0.9	~	~
Lung & Bronchus	19	29.1	15	22.4	48.4	34.2
Melanoma of the Skin	12	7.8	2	5.7	33.4	~
Mesothelioma (all sites)	0	1.1	0	0.2	~	~
Myeloma	4	2.8	2	2.1	~	~
Non-Hodgkin Lymphoma	13	10.2	5	9.1	32.7	~
Oral Cavity & Pharynx	4	5.7	2	3.2	~	~
Ovary	-	-	1	5.9	-	~
Pancreas	1	4.2	1	4.2	~	~
Prostate	78	75.7	-	-	193.1	-
Soft Tissues incl. Heart	0	1.2	1	1.1	~	~
Stomach	4	3.5	1	2.3	~	~
Testis	1	1.8	-	-	~	-
Thyroid	3	1.3	7	3.1	~	~
Urinary Bladder	11	16.5	7	5.6	26.7	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-18: Crow Wing County 2000 - 2004 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	986	941.2	799	778.6	583.7	434.1
Brain & Other Nervous System	15	12.6	12	9.3	9.8	8.6
Breast	3	2.1	228	253.6	~	124.4
Cervix Uteri	-	-	12	10.2	-	8.4
Colon & Rectum	105	98.8	90	93.6	61.8	45.0
Corpus & Uterus, NOS	-	-	34	49.7	-	18.8
Esophagus	14	14.1	3	3.9	8.0	~
Hodgkin Lymphoma	3	5.1	3	4.0	~	~
Kaposi Sarcoma (all sites)	0	0.6	0	0.1	~	~
Kidney & Renal Pelvis	33	31.9	26	17.0	20.6	13.4
Larynx	13	9.6	4	2.3	7.3	~
Leukemia	18	31.6	16	20.0	11.2	8.5
Liver & Intrahepatic Bile Duct	9	9.4	5	3.5	~	~
Lung & Bronchus	140	123.0	115	90.5	83.1	59.8
Melanoma of the Skin	32	33.4	35	25.3	20.6	22.6
Mesothelioma (all sites)	1	4.0	0	0.8	~	~
Myeloma	7	11.3	12	8.0	~	6.1
Non-Hodgkin Lymphoma	38	42.1	30	34.8	23.1	14.8
Oral Cavity & Pharynx	25	24.8	23	12.4	15.5	12.6
Ovary	-	-	31	24.5	-	16.7
Pancreas	29	17.7	27	15.5	16.9	13.2
Prostate	380	327.3	-	-	218.7	-
Soft Tissues incl. Heart	4	5.5	8	4.7	~	~
Stomach	6	13.8	11	8.1	~	6.5
Testis	5	9.6	-	-	~	-
Thyroid	3	6.3	19	14.9	~	12.8
Urinary Bladder	63	65.9	13	20.2	36.7	5.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-19: Dakota County 2000 - 2004 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	3313	3471.6	3196	3301.2	537.0	403.7
Brain & Other Nervous System	75	64.5	56	48.2	9.7	6.8
Breast	6	7.2	1016	1146.2	~	121.1
Cervix Uteri	-	-	54	63.1	-	5.7
Colon & Rectum	315	351.4	282	332.1	53.3	39.4
Corpus & Uterus, NOS	-	-	214	214.6	-	26.5
Esophagus	49	51.7	16	13.5	7.8	2.3
Hodgkin Lymphoma	35	30.9	24	24.3	4.1	2.5
Kaposi Sarcoma (all sites)	2	4.2	0	0.2	~	~
Kidney & Renal Pelvis	122	130.2	74	68.3	17.7	9.5
Larynx	26	36.4	10	9.7	4.9	1.2
Leukemia	128	122.2	78	80.5	20.6	10.2
Liver & Intrahepatic Bile Duct	36	37.9	15	13.9	5.7	2.1
Lung & Bronchus	392	418.2	365	341.4	68.3	50.7
Melanoma of the Skin	153	148.0	149	140.0	21.8	17.3
Mesothelioma (all sites)	19	12.5	6	3.0	4.0	~
Myeloma	40	39.9	33	29.5	6.5	4.6
Non-Hodgkin Lymphoma	162	166.1	157	137.0	25.8	20.4
Oral Cavity & Pharynx	117	105.8	49	52.0	17.0	6.2
Ovary	-	-	137	110.3	-	17.1
Pancreas	53	63.5	48	55.4	8.4	6.8
Prostate	1036	1125.1	-	-	171.7	-
Soft Tissues incl. Heart	28	26.7	24	22.7	3.6	2.6
Stomach	42	48.4	31	29.0	7.8	4.2
Testis	82	70.3	-	-	8.5	-
Thyroid	32	35.0	105	95.4	3.9	11.2
Urinary Bladder	205	218.1	72	71.9	38.7	10.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-20: Dodge County 2000 - 2004 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	189	223.4	186	194.6	473.4	398.2
Brain & Other Nervous System	5	3.5	3	2.6	~	~
Breast	0	0.5	49	64.2	~	107.9
Cervix Uteri	-	-	2	3.1	-	~
Colon & Rectum	16	23.4	25	22.5	39.2	48.3
Corpus & Uterus, NOS	-	-	6	12.2	-	~
Esophagus	6	3.3	0	0.9	~	~
Hodgkin Lymphoma	1	1.6	0	1.2	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	9	7.8	6	4.1	~	~
Larynx	4	2.2	0	0.6	~	~
Leukemia	10	7.9	10	5.1	25.3	20.3
Liver & Intrahepatic Bile Duct	1	2.3	2	0.9	~	~
Lung & Bronchus	28	28.0	20	21.1	72.0	45.9
Melanoma of the Skin	10	8.7	17	7.2	25.2	37.4
Mesothelioma (all sites)	0	0.9	0	0.2	~	~
Myeloma	0	2.7	1	1.9	~	~
Non-Hodgkin Lymphoma	12	10.5	14	8.6	28.7	26.5
Oral Cavity & Pharynx	8	6.3	4	3.1	~	~
Ovary	-	-	1	6.2	-	~
Pancreas	2	4.2	5	3.7	~	~
Prostate	61	73.8	-	-	155.9	-
Soft Tissues incl. Heart	0	1.5	1	1.3	~	~
Stomach	1	3.3	0	2.0	~	~
Testis	0	3.4	-	-	~	-
Thyroid	1	1.8	7	4.6	~	~
Urinary Bladder	9	15.3	5	4.8	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-21: Douglas County 2000 - 2004 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	668	562.3	458	474.5	665.3	402.6
Brain & Other Nervous System	10	7.5	4	5.5	10.7	~
Breast	0	1.3	150	152.6	~	140.4
Cervix Uteri	-	-	7	6.0	-	~
Colon & Rectum	55	59.9	57	59.3	53.5	44.5
Corpus & Uterus, NOS	-	-	23	29.7	-	19.7
Esophagus	12	8.4	2	2.4	11.8	~
Hodgkin Lymphoma	5	3.1	1	2.4	~	~
Kaposi Sarcoma (all sites)	0	0.4	1	0.0	~	~
Kidney & Renal Pelvis	13	18.8	9	10.3	14.1	~
Larynx	7	5.6	1	1.4	~	~
Leukemia	14	19.2	18	12.4	13.6	14.5
Liver & Intrahepatic Bile Duct	0	5.6	4	2.2	~	~
Lung & Bronchus	86	72.9	50	54.7	84.4	41.9
Melanoma of the Skin	21	20.1	15	15.0	22.6	15.4
Mesothelioma (all sites)	4	2.5	0	0.5	~	~
Myeloma	10	6.8	9	4.9	9.7	~
Non-Hodgkin Lymphoma	19	25.4	20	21.5	20.3	16.3
Oral Cavity & Pharynx	13	14.8	9	7.6	12.5	~
Ovary	-	-	15	14.7	-	12.5
Pancreas	13	10.6	10	9.6	13.5	8.7
Prostate	253	193.1	-	-	247.5	-
Soft Tissues incl. Heart	4	3.3	4	2.9	~	~
Stomach	14	8.5	6	5.1	13.6	~
Testis	8	5.8	-	-	~	-
Thyroid	2	3.7	5	8.6	~	~
Urinary Bladder	74	40.1	17	12.7	73.6	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-22: Faribault County 2000 - 2004 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	269	295.3	221	262.0	515.9	361.4
Brain & Other Nervous System	4	3.7	2	2.8	~	~
Breast	0	0.7	53	82.7	~	79.6
Cervix Uteri	-	-	3	2.9	-	~
Colon & Rectum	40	31.9	31	34.7	73.5	37.5
Corpus & Uterus, NOS	-	-	17	16.1	-	29.9
Esophagus	3	4.4	2	1.4	~	~
Hodgkin Lymphoma	1	1.4	2	1.1	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	3	9.7	9	5.7	~	~
Larynx	0	2.9	0	0.7	~	~
Leukemia	9	10.2	7	7.1	~	~
Liver & Intrahepatic Bile Duct	1	2.9	0	1.2	~	~
Lung & Bronchus	34	38.7	28	30.3	63.4	48.1
Melanoma of the Skin	11	10.3	11	7.6	24.9	21.7
Mesothelioma (all sites)	1	1.4	0	0.3	~	~
Myeloma	2	3.6	3	2.8	~	~
Non-Hodgkin Lymphoma	13	13.4	15	12.2	27.4	21.3
Oral Cavity & Pharynx	4	7.7	4	4.3	~	~
Ovary	-	-	3	7.9	-	~
Pancreas	8	5.6	1	5.6	~	~
Prostate	89	101.3	-	-	166.4	-
Soft Tissues incl. Heart	1	1.7	0	1.5	~	~
Stomach	2	4.6	1	3.0	~	~
Testis	2	2.5	-	-	~	-
Thyroid	3	1.8	11	4.1	~	25.3
Urinary Bladder	22	21.6	6	7.4	40.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-23: Fillmore County 2000 - 2004 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	361.9	321	308.2	546.2	441.4
Brain & Other Nervous System	6	4.8	3	3.5	~	~
Breast	0	0.8	107	98.2	~	148.1
Cervix Uteri	-	-	1	3.7	-	~
Colon & Rectum	39	38.9	33	39.8	59.2	35.2
Corpus & Uterus, NOS	-	-	24	19.0	-	33.4
Esophagus	4	5.4	3	1.6	~	~
Hodgkin Lymphoma	4	1.9	2	1.5	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	11	12.1	6	6.6	17.8	~
Larynx	1	3.6	0	0.9	~	~
Leukemia	20	12.6	10	8.3	30.1	12.7
Liver & Intrahepatic Bile Duct	5	3.6	1	1.4	~	~
Lung & Bronchus	52	47.1	27	35.1	78.9	35.7
Melanoma of the Skin	10	12.9	11	9.5	16.9	19.7
Mesothelioma (all sites)	0	1.6	1	0.3	~	~
Myeloma	7	4.4	2	3.2	~	~
Non-Hodgkin Lymphoma	15	16.5	22	14.2	24.1	30.1
Oral Cavity & Pharynx	10	9.5	9	5.0	16.7	~
Ovary	-	-	9	9.4	-	~
Pancreas	8	6.9	5	6.4	~	~
Prostate	114	123.4	-	-	176.5	-
Soft Tissues incl. Heart	0	2.1	1	1.8	~	~
Stomach	3	5.5	3	3.5	~	~
Testis	6	3.5	-	-	~	-
Thyroid	0	2.3	10	5.3	~	19.7
Urinary Bladder	19	26.2	8	8.5	28.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-24: Freeborn County 2000 - 2004 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	538	556.5	418	480.1	542.2	368.2
Brain & Other Nervous System	4	7.3	3	5.5	~	~
Breast	2	1.2	122	153.9	~	109.3
Cervix Uteri	-	-	7	5.9	-	~
Colon & Rectum	61	59.3	60	60.8	61.3	45.4
Corpus & Uterus, NOS	-	-	27	30.0	-	24.9
Esophagus	10	8.3	2	2.5	10.3	~
Hodgkin Lymphoma	4	2.9	2	2.3	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.0	~	~
Kidney & Renal Pelvis	18	18.7	13	10.4	18.4	12.3
Larynx	8	5.6	0	1.4	~	~
Leukemia	18	19.0	11	12.7	19.2	11.2
Liver & Intrahepatic Bile Duct	8	5.6	2	2.2	~	~
Lung & Bronchus	52	72.6	35	55.5	51.1	29.8
Melanoma of the Skin	20	19.8	25	14.8	20.7	25.6
Mesothelioma (all sites)	1	2.5	2	0.5	~	~
Myeloma	4	6.8	7	5.0	~	~
Non-Hodgkin Lymphoma	29	25.2	17	21.9	29.6	14.2
Oral Cavity & Pharynx	11	14.7	7	7.7	11.6	~
Ovary	-	-	13	14.8	-	11.9
Pancreas	5	10.6	8	9.9	~	~
Prostate	198	191.1	-	-	194.8	-
Soft Tissues incl. Heart	6	3.2	5	2.8	~	~
Stomach	10	8.4	5	5.3	9.8	~
Testis	4	5.3	-	-	~	-
Thyroid	2	3.7	10	8.3	~	11.2
Urinary Bladder	40	39.8	9	13.0	39.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-25: Goodhue County 2000 - 2004 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	643	640.9	600	571.3	563.6	438.5
Brain & Other Nervous System	11	9.3	11	6.9	9.5	9.7
Breast	0	1.4	186	186.8	~	136.3
Cervix Uteri	-	-	10	7.9	-	8.0
Colon & Rectum	62	67.7	77	69.5	54.2	48.4
Corpus & Uterus, NOS	-	-	46	35.7	-	35.5
Esophagus	6	9.6	0	2.8	~	~
Hodgkin Lymphoma	4	4.0	9	3.1	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	25	22.2	10	12.1	22.2	7.8
Larynx	9	6.5	2	1.6	~	~
Leukemia	23	22.1	18	14.9	20.6	13.2
Liver & Intrahepatic Bile Duct	7	6.6	3	2.6	~	~
Lung & Bronchus	79	81.7	49	63.4	69.4	36.5
Melanoma of the Skin	25	24.1	30	19.3	21.7	23.4
Mesothelioma (all sites)	4	2.7	2	0.6	~	~
Myeloma	9	7.7	3	5.8	~	~
Non-Hodgkin Lymphoma	38	29.6	19	25.5	32.7	13.6
Oral Cavity & Pharynx	16	17.7	13	9.2	13.9	8.9
Ovary	-	-	12	17.9	-	9.8
Pancreas	9	12.0	16	11.2	~	10.2
Prostate	224	216.3	-	-	196.4	-
Soft Tissues incl. Heart	7	4.0	6	3.5	~	~
Stomach	7	9.5	4	6.1	~	~
Testis	8	7.8	-	-	~	-
Thyroid	6	4.8	21	11.5	~	16.8
Urinary Bladder	34	44.5	14	14.8	29.7	9.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-26: Grant County 2000 - 2004 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	125	123.0	100	101.8	581.1	382.5
Brain & Other Nervous System	0	1.5	1	1.1	~	~
Breast	0	0.3	28	31.9	~	118.9
Cervix Uteri	-	-	1	1.1	-	~
Colon & Rectum	16	13.4	19	13.6	79.1	57.9
Corpus & Uterus, NOS	-	-	4	6.2	-	~
Esophagus	0	1.8	1	0.6	~	~
Hodgkin Lymphoma	0	0.6	0	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	4	4.0	3	2.2	~	~
Larynx	3	1.2	0	0.3	~	~
Leukemia	6	4.3	4	2.8	~	~
Liver & Intrahepatic Bile Duct	1	1.2	0	0.5	~	~
Lung & Bronchus	14	16.2	11	11.8	66.7	51.9
Melanoma of the Skin	3	4.2	1	3.0	~	~
Mesothelioma (all sites)	0	0.6	1	0.1	~	~
Myeloma	0	1.5	2	1.1	~	~
Non-Hodgkin Lymphoma	8	5.6	6	4.8	~	~
Oral Cavity & Pharynx	6	3.1	1	1.7	~	~
Ovary	-	-	3	3.1	-	~
Pancreas	2	2.3	2	2.2	~	~
Prostate	45	42.2	-	-	198.4	-
Soft Tissues incl. Heart	1	0.7	1	0.6	~	~
Stomach	3	1.9	0	1.2	~	~
Testis	1	1.0	-	-	~	-
Thyroid	0	0.7	0	1.6	~	~
Urinary Bladder	8	9.2	4	2.9	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-27: Hennepin County 2000 - 2004 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	12452	12549.4	12256	12174.4	557.3	418.4
Brain & Other Nervous System	195	209.0	137	159.5	7.6	4.8
Breast	44	27.3	3985	4065.1	2.0	136.5
Cervix Uteri	-	-	187	198.1	-	6.3
Colon & Rectum	1166	1301.1	1220	1377.2	53.1	40.3
Corpus & Uterus, NOS	-	-	730	771.7	-	25.4
Esophagus	181	185.9	52	55.5	8.1	1.8
Hodgkin Lymphoma	106	98.8	79	77.9	3.8	2.7
Kaposi Sarcoma (all sites)	43	13.0	2	1.1	1.5	~
Kidney & Renal Pelvis	463	450.0	252	255.7	20.1	8.7
Larynx	131	127.4	40	34.7	5.6	1.4
Leukemia	431	441.8	342	308.9	19.2	11.6
Liver & Intrahepatic Bile Duct	160	132.3	63	53.8	6.8	2.2
Lung & Bronchus	1508	1551.6	1511	1308.5	70.3	53.2
Melanoma of the Skin	556	507.0	504	462.2	23.2	16.9
Mesothelioma (all sites)	54	49.9	14	12.0	2.7	0.5
Myeloma	155	147.9	115	117.0	7.1	4.0
Non-Hodgkin Lymphoma	604	592.8	525	529.6	26.7	17.7
Oral Cavity & Pharynx	407	363.5	227	193.9	16.7	7.6
Ovary	-	-	402	391.8	-	13.8
Pancreas	264	233.0	261	224.4	12.0	8.8
Prostate	3925	4108.7	-	-	180.6	-
Soft Tissues incl. Heart	88	89.0	74	79.3	3.5	2.5
Stomach	196	182.1	110	121.0	9.0	3.7
Testis	221	220.7	-	-	7.3	-
Thyroid	107	112.9	322	296.6	4.0	10.9
Urinary Bladder	856	834.4	339	295.2	40.6	11.4

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-28: Houston County 2000 - 2004 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	262	303.8	229	260.3	482.9	374.1
Brain & Other Nervous System	3	4.2	6	3.1	~	~
Breast	0	0.7	76	84.6	~	126.6
Cervix Uteri	-	-	5	3.5	-	~
Colon & Rectum	37	32.4	22	32.1	68.0	33.7
Corpus & Uterus, NOS	-	-	20	16.2	-	31.1
Esophagus	8	4.5	2	1.3	~	~
Hodgkin Lymphoma	3	1.7	0	1.4	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	7	10.4	5	5.6	~	~
Larynx	3	3.0	1	0.7	~	~
Leukemia	8	10.5	0	6.8	~	~
Liver & Intrahepatic Bile Duct	0	3.1	0	1.2	~	~
Lung & Bronchus	23	39.0	22	29.1	42.6	36.6
Melanoma of the Skin	12	11.2	9	8.6	21.7	~
Mesothelioma (all sites)	1	1.3	0	0.3	~	~
Myeloma	4	3.7	4	2.7	~	~
Non-Hodgkin Lymphoma	15	14.0	12	11.7	27.5	20.3
Oral Cavity & Pharynx	14	8.3	4	4.2	25.0	~
Ovary	-	-	16	8.1	-	26.0
Pancreas	2	5.7	2	5.2	~	~
Prostate	80	102.6	-	-	147.7	-
Soft Tissues incl. Heart	0	1.9	0	1.6	~	~
Stomach	3	4.6	1	2.8	~	~
Testis	1	3.3	-	-	~	-
Thyroid	2	2.1	4	5.1	~	~
Urinary Bladder	15	21.5	5	6.8	27.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-29: Hubbard County 2000 - 2004 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	336	347.5	249	264.5	541.5	385.6
Brain & Other Nervous System	1	4.5	1	3.1	~	~
Breast	2	0.8	71	87.2	~	113.2
Cervix Uteri	-	-	4	3.4	-	~
Colon & Rectum	51	36.4	31	31.3	87.4	44.0
Corpus & Uterus, NOS	-	-	7	17.3	-	~
Esophagus	7	5.2	0	1.3	~	~
Hodgkin Lymphoma	2	1.7	2	1.3	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	4	11.8	7	5.8	~	~
Larynx	4	3.6	1	0.8	~	~
Leukemia	15	11.3	7	6.6	24.9	~
Liver & Intrahepatic Bile Duct	1	3.5	2	1.2	~	~
Lung & Bronchus	53	45.7	44	31.2	79.7	64.9
Melanoma of the Skin	9	12.1	12	8.4	~	22.7
Mesothelioma (all sites)	2	1.5	0	0.3	~	~
Myeloma	4	4.2	4	2.7	~	~
Non-Hodgkin Lymphoma	15	15.3	17	11.7	24.6	23.6
Oral Cavity & Pharynx	10	9.1	8	4.2	15.6	~
Ovary	-	-	7	8.4	-	~
Pancreas	9	6.5	2	5.3	~	~
Prostate	97	122.9	-	-	145.8	-
Soft Tissues incl. Heart	5	1.9	1	1.6	~	~
Stomach	6	5.1	1	2.7	~	~
Testis	3	2.9	-	-	~	-
Thyroid	3	2.2	1	4.8	~	~
Urinary Bladder	26	24.3	7	6.8	41.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-30: Isanti County 2000 - 2004 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	394.4	289	348.3	499.4	344.5
Brain & Other Nervous System	7	6.4	8	4.6	~	~
Breast	2	0.9	93	117.0	~	110.8
Cervix Uteri	-	-	5	5.7	-	~
Colon & Rectum	36	41.1	24	38.9	54.5	25.7
Corpus & Uterus, NOS	-	-	26	22.2	-	31.9
Esophagus	2	5.9	0	1.6	~	~
Hodgkin Lymphoma	2	3.0	1	2.3	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.0	~	~
Kidney & Renal Pelvis	17	14.1	4	7.3	23.3	~
Larynx	3	4.0	0	1.0	~	~
Leukemia	9	13.8	4	8.8	~	~
Liver & Intrahepatic Bile Duct	4	4.1	2	1.5	~	~
Lung & Bronchus	46	48.6	40	37.2	70.1	51.1
Melanoma of the Skin	14	15.8	8	13.3	19.5	~
Mesothelioma (all sites)	2	1.6	1	0.3	~	~
Myeloma	4	4.7	1	3.3	~	~
Non-Hodgkin Lymphoma	10	18.6	13	15.0	12.3	15.1
Oral Cavity & Pharynx	9	11.4	6	5.5	~	~
Ovary	-	-	11	11.2	-	12.5
Pancreas	5	7.3	8	6.4	~	~
Prostate	120	130.1	-	-	177.6	-
Soft Tissues incl. Heart	3	2.7	3	2.3	~	~
Stomach	4	5.8	1	3.4	~	~
Testis	7	6.5	-	-	~	-
Thyroid	7	3.4	5	8.6	~	~
Urinary Bladder	19	26.4	8	8.4	27.2	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-31: Itasca County 2000 - 2004 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	728	758.7	594	604.8	541.2	414.6
Brain & Other Nervous System	11	10.2	9	7.2	8.9	~
Breast	0	1.7	193	199.8	~	136.8
Cervix Uteri	-	-	11	8.0	-	9.4
Colon & Rectum	89	80.0	80	71.8	66.6	50.5
Corpus & Uterus, NOS	-	-	40	39.1	-	28.3
Esophagus	8	11.4	3	3.0	~	~
Hodgkin Lymphoma	5	4.0	5	3.0	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.0	~	~
Kidney & Renal Pelvis	21	25.9	10	13.1	15.9	7.0
Larynx	9	7.8	2	1.8	~	~
Leukemia	21	25.3	18	15.2	17.2	12.4
Liver & Intrahepatic Bile Duct	8	7.7	1	2.7	~	~
Lung & Bronchus	120	98.6	72	69.8	86.0	48.4
Melanoma of the Skin	24	27.2	19	19.6	18.0	14.8
Mesothelioma (all sites)	6	3.2	1	0.6	~	~
Myeloma	8	9.2	4	6.1	~	~
Non-Hodgkin Lymphoma	38	34.1	21	26.8	28.6	13.6
Oral Cavity & Pharynx	17	20.5	11	9.6	13.2	8.0
Ovary	-	-	13	19.3	-	10.4
Pancreas	12	14.4	17	11.9	8.8	10.9
Prostate	230	263.5	-	-	165.9	-
Soft Tissues incl. Heart	1	4.4	0	3.6	~	~
Stomach	18	11.2	5	6.2	14.2	~
Testis	6	7.2	-	-	~	-
Thyroid	3	5.0	12	11.4	~	9.5
Urinary Bladder	47	53.0	15	15.5	34.6	10.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-32: Jackson County 2000 - 2004 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	180	199.7	130	167.5	505.3	290.0
Brain & Other Nervous System	3	2.6	1	1.9	~	~
Breast	0	0.5	28	53.2	~	63.5
Cervix Uteri	-	-	6	2.0	-	~
Colon & Rectum	25	21.7	18	21.7	67.6	35.4
Corpus & Uterus, NOS	-	-	13	10.3	-	30.4
Esophagus	5	3.0	2	0.9	~	~
Hodgkin Lymphoma	0	1.0	2	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	6.6	3	3.6	~	~
Larynx	0	1.9	0	0.5	~	~
Leukemia	2	7.0	1	4.5	~	~
Liver & Intrahepatic Bile Duct	1	2.0	0	0.8	~	~
Lung & Bronchus	22	26.0	15	19.2	58.6	35.1
Melanoma of the Skin	5	7.1	9	5.1	~	~
Mesothelioma (all sites)	1	0.9	0	0.2	~	~
Myeloma	3	2.5	0	1.8	~	~
Non-Hodgkin Lymphoma	9	9.2	6	7.7	~	~
Oral Cavity & Pharynx	1	5.2	2	2.7	~	~
Ovary	-	-	5	5.1	-	~
Pancreas	2	3.8	3	3.5	~	~
Prostate	69	67.4	-	-	194.1	-
Soft Tissues incl. Heart	0	1.2	2	1.0	~	~
Stomach	3	3.1	1	1.9	~	~
Testis	0	1.9	-	-	~	-
Thyroid	0	1.3	2	2.8	~	~
Urinary Bladder	20	14.7	3	4.6	52.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-33: Kanabec County 2000 - 2004 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	229	233.1	159	183.7	552.9	360.3
Brain & Other Nervous System	4	3.3	1	2.3	~	~
Breast	0	0.5	47	60.9	~	109.6
Cervix Uteri	-	-	2	2.7	-	~
Colon & Rectum	21	24.3	16	21.0	52.6	33.7
Corpus & Uterus, NOS	-	-	18	11.9	-	40.3
Esophagus	3	3.5	1	0.9	~	~
Hodgkin Lymphoma	2	1.4	1	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	11	8.1	5	4.0	24.5	~
Larynx	4	2.4	1	0.6	~	~
Leukemia	5	7.8	8	4.6	~	~
Liver & Intrahepatic Bile Duct	2	2.4	1	0.8	~	~
Lung & Bronchus	40	30.0	19	21.0	92.7	41.1
Melanoma of the Skin	4	8.6	1	6.4	~	~
Mesothelioma (all sites)	1	1.0	0	0.2	~	~
Myeloma	3	2.8	2	1.8	~	~
Non-Hodgkin Lymphoma	5	10.5	5	8.1	~	~
Oral Cavity & Pharynx	2	6.4	3	2.9	~	~
Ovary	-	-	3	5.9	-	~
Pancreas	5	4.4	2	3.5	~	~
Prostate	77	80.3	-	-	184.9	-
Soft Tissues incl. Heart	1	1.4	1	1.1	~	~
Stomach	3	3.4	2	1.8	~	~
Testis	3	2.7	-	-	~	-
Thyroid	3	1.7	4	3.9	~	~
Urinary Bladder	20	15.9	2	4.5	50.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-34: Kandiyohi County 2000 - 2004 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	559	596.7	532	521.4	525.5	429.6
Brain & Other Nervous System	5	8.5	3	6.3	~	~
Breast	1	1.3	173	170.1	~	141.0
Cervix Uteri	-	-	7	7.1	-	~
Colon & Rectum	49	63.4	72	63.4	45.7	53.8
Corpus & Uterus, NOS	-	-	38	32.7	-	30.7
Esophagus	8	8.9	3	2.6	~	~
Hodgkin Lymphoma	0	3.6	3	2.8	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	16	20.3	7	11.2	14.7	~
Larynx	3	6.0	0	1.5	~	~
Leukemia	21	20.8	13	13.6	20.1	10.4
Liver & Intrahepatic Bile Duct	5	6.1	3	2.4	~	~
Lung & Bronchus	65	76.3	51	58.4	61.2	40.5
Melanoma of the Skin	20	22.1	19	17.4	19.0	18.0
Mesothelioma (all sites)	2	2.6	3	0.5	~	~
Myeloma	11	7.2	5	5.3	10.6	~
Non-Hodgkin Lymphoma	27	27.5	21	23.4	25.4	16.2
Oral Cavity & Pharynx	12	16.3	12	8.4	11.3	9.2
Ovary	-	-	16	16.4	-	13.3
Pancreas	9	11.2	9	10.3	~	~
Prostate	210	201.4	-	-	196.4	-
Soft Tissues incl. Heart	3	3.7	6	3.2	~	~
Stomach	8	9.0	7	5.5	~	~
Testis	7	7.0	-	-	~	-
Thyroid	7	4.3	19	10.3	~	18.8
Urinary Bladder	42	42.0	12	13.5	39.8	8.9

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-35: Kittson County 2000 - 2004 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	95	97.8	68	81.0	576.0	359.7
Brain & Other Nervous System	1	1.2	0	0.9	~	~
Breast	0	0.2	24	25.6	~	131.3
Cervix Uteri	-	-	0	0.9	-	~
Colon & Rectum	12	10.7	9	10.7	65.9	~
Corpus & Uterus, NOS	-	-	3	4.9	-	~
Esophagus	0	1.5	0	0.4	~	~
Hodgkin Lymphoma	1	0.5	1	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	2	3.2	0	1.8	~	~
Larynx	0	1.0	1	0.2	~	~
Leukemia	5	3.4	4	2.2	~	~
Liver & Intrahepatic Bile Duct	0	1.0	0	0.4	~	~
Lung & Bronchus	17	12.7	7	9.4	104.9	~
Melanoma of the Skin	2	3.5	0	2.4	~	~
Mesothelioma (all sites)	0	0.5	0	0.1	~	~
Myeloma	1	1.2	0	0.9	~	~
Non-Hodgkin Lymphoma	7	4.5	2	3.7	~	~
Oral Cavity & Pharynx	2	2.6	2	1.3	~	~
Ovary	-	-	3	2.5	-	~
Pancreas	2	1.9	2	1.7	~	~
Prostate	28	33.3	-	-	165.8	-
Soft Tissues incl. Heart	1	0.5	0	0.5	~	~
Stomach	2	1.5	2	0.9	~	~
Testis	2	0.8	-	-	~	-
Thyroid	0	0.6	3	1.3	~	~
Urinary Bladder	4	7.3	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-36: Koochiching County 2000 - 2004 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	281	246.6	199	208.3	636.8	405.2
Brain & Other Nervous System	4	3.3	1	2.4	~	~
Breast	3	0.5	53	67.9	~	112.5
Cervix Uteri	-	-	6	2.6	-	~
Colon & Rectum	42	26.1	23	25.5	96.0	38.7
Corpus & Uterus, NOS	-	-	17	13.3	-	37.5
Esophagus	3	3.7	0	1.1	~	~
Hodgkin Lymphoma	1	1.3	0	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	14	8.4	7	4.5	33.2	~
Larynx	1	2.5	1	0.6	~	~
Leukemia	5	8.2	5	5.3	~	~
Liver & Intrahepatic Bile Duct	1	2.5	0	1.0	~	~
Lung & Bronchus	48	32.2	28	24.3	105.6	53.4
Melanoma of the Skin	9	8.8	3	6.5	~	~
Mesothelioma (all sites)	4	1.1	0	0.2	~	~
Myeloma	3	3.0	7	2.2	~	~
Non-Hodgkin Lymphoma	10	11.1	8	9.3	23.4	~
Oral Cavity & Pharynx	10	6.6	5	3.3	25.2	~
Ovary	-	-	5	6.5	-	~
Pancreas	1	4.7	3	4.2	~	~
Prostate	85	85.5	-	-	185.0	-
Soft Tissues incl. Heart	0	1.4	0	1.2	~	~
Stomach	5	3.6	2	2.2	~	~
Testis	3	2.3	-	-	~	-
Thyroid	0	1.6	2	3.7	~	~
Urinary Bladder	20	17.3	8	5.5	47.0	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-37: Lac Qui Parle County 2000 - 2004 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	159.2	123	131.4	469.8	404.4
Brain & Other Nervous System	0	1.9	1	1.4	~	~
Breast	0	0.4	37	41.4	~	127.4
Cervix Uteri	-	-	1	1.4	-	~
Colon & Rectum	15	17.4	25	17.6	51.2	71.8
Corpus & Uterus, NOS	-	-	13	8.0	-	51.2
Esophagus	2	2.4	0	0.7	~	~
Hodgkin Lymphoma	0	0.7	0	0.5	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	2	5.2	2	2.8	~	~
Larynx	3	1.5	0	0.4	~	~
Leukemia	7	5.6	3	3.6	~	~
Liver & Intrahepatic Bile Duct	0	1.6	0	0.6	~	~
Lung & Bronchus	18	20.9	5	15.1	63.5	~
Melanoma of the Skin	5	5.6	2	3.8	~	~
Mesothelioma (all sites)	1	0.8	0	0.1	~	~
Myeloma	3	2.0	5	1.4	~	~
Non-Hodgkin Lymphoma	3	7.3	5	6.1	~	~
Oral Cavity & Pharynx	6	4.1	2	2.1	~	~
Ovary	-	-	7	4.0	-	~
Pancreas	2	3.1	1	2.8	~	~
Prostate	55	54.2	-	-	193.1	-
Soft Tissues incl. Heart	0	0.9	0	0.8	~	~
Stomach	1	2.5	2	1.6	~	~
Testis	1	1.2	-	-	~	-
Thyroid	1	0.9	4	2.0	~	~
Urinary Bladder	5	11.9	1	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-38: Lake County 2000 - 2004 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	216	218.3	148	166.5	545.7	373.9
Brain & Other Nervous System	3	2.8	4	1.9	~	~
Breast	0	0.5	49	54.1	~	125.0
Cervix Uteri	-	-	2	2.1	-	~
Colon & Rectum	27	23.0	21	20.4	69.1	44.7
Corpus & Uterus, NOS	-	-	9	10.6	-	~
Esophagus	2	3.3	1	0.9	~	~
Hodgkin Lymphoma	0	1.0	0	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	7.4	3	3.7	~	~
Larynx	3	2.2	1	0.5	~	~
Leukemia	7	7.1	1	4.3	~	~
Liver & Intrahepatic Bile Duct	2	2.2	1	0.8	~	~
Lung & Bronchus	36	29.0	18	19.7	89.8	42.3
Melanoma of the Skin	12	7.6	7	5.2	29.2	~
Mesothelioma (all sites)	1	0.9	0	0.2	~	~
Myeloma	1	2.7	2	1.7	~	~
Non-Hodgkin Lymphoma	7	9.6	4	7.5	~	~
Oral Cavity & Pharynx	8	5.7	4	2.7	~	~
Ovary	-	-	2	5.2	-	~
Pancreas	5	4.2	3	3.4	~	~
Prostate	73	76.8	-	-	180.2	-
Soft Tissues incl. Heart	1	1.2	1	1.0	~	~
Stomach	4	3.2	0	1.7	~	~
Testis	1	1.8	-	-	~	-
Thyroid	0	1.4	3	2.9	~	~
Urinary Bladder	14	15.4	2	4.4	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 2000 - 2004 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 2000 - 2004 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	69	81.6	60	62.6	476.6	401.7
Brain & Other Nervous System	2	1.1	1	0.7	~	~
Breast	0	0.2	20	20.5	~	137.0
Cervix Uteri	-	-	1	0.8	-	~
Colon & Rectum	10	8.8	7	7.5	69.6	~
Corpus & Uterus, NOS	-	-	4	4.0	-	~
Esophagus	1	1.2	0	0.3	~	~
Hodgkin Lymphoma	0	0.4	1	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	2	2.8	1	1.4	~	~
Larynx	2	0.8	1	0.2	~	~
Leukemia	2	2.8	1	1.6	~	~
Liver & Intrahepatic Bile Duct	0	0.8	0	0.3	~	~
Lung & Bronchus	13	10.5	10	7.3	87.9	59.7
Melanoma of the Skin	0	3.0	0	2.0	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	0	1.0	1	0.6	~	~
Non-Hodgkin Lymphoma	0	3.7	3	2.8	~	~
Oral Cavity & Pharynx	4	2.2	2	1.0	~	~
Ovary	-	-	1	2.0	-	~
Pancreas	0	1.5	0	1.3	~	~
Prostate	22	28.0	-	-	153.0	-
Soft Tissues incl. Heart	0	0.5	1	0.4	~	~
Stomach	1	1.2	0	0.6	~	~
Testis	0	0.7	-	-	~	-
Thyroid	0	0.5	1	1.1	~	~
Urinary Bladder	4	5.8	3	1.6	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-40: Le Sueur County 2000 - 2004 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	378	369.2	287	316.2	579.5	380.8
Brain & Other Nervous System	9	5.4	4	3.9	~	~
Breast	0	0.8	77	103.8	~	106.6
Cervix Uteri	-	-	4	4.5	-	~
Colon & Rectum	43	38.8	38	37.7	65.0	46.7
Corpus & Uterus, NOS	-	-	23	20.0	-	30.0
Esophagus	7	5.5	0	1.5	~	~
Hodgkin Lymphoma	3	2.3	2	1.8	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	14	12.8	13	6.7	20.3	17.6
Larynx	4	3.7	1	0.9	~	~
Leukemia	12	12.7	4	8.2	18.7	~
Liver & Intrahepatic Bile Duct	6	3.8	1	1.4	~	~
Lung & Bronchus	67	46.9	35	35.2	103.6	46.8
Melanoma of the Skin	18	14.0	8	10.8	27.5	~
Mesothelioma (all sites)	1	1.6	0	0.3	~	~
Myeloma	4	4.4	2	3.2	~	~
Non-Hodgkin Lymphoma	18	17.0	14	14.0	26.9	16.2
Oral Cavity & Pharynx	10	10.3	4	5.1	14.2	~
Ovary	-	-	11	10.0	-	13.3
Pancreas	2	6.9	2	6.1	~	~
Prostate	100	124.7	-	-	155.2	-
Soft Tissues incl. Heart	1	2.3	2	2.0	~	~
Stomach	6	5.5	3	3.3	~	~
Testis	7	4.7	-	-	~	-
Thyroid	3	2.8	6	6.6	~	~
Urinary Bladder	22	25.4	8	8.1	34.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-41: Lincoln County 2000 - 2004 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	130	129.7	106	108.3	550.5	427.2
Brain & Other Nervous System	0	1.5	0	1.1	~	~
Breast	0	0.3	32	33.5	~	132.7
Cervix Uteri	-	-	4	1.1	-	~
Colon & Rectum	19	14.1	15	14.8	74.8	35.8
Corpus & Uterus, NOS	-	-	9	6.6	-	~
Esophagus	2	1.9	1	0.6	~	~
Hodgkin Lymphoma	0	0.6	3	0.4	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	4.2	3	2.4	~	~
Larynx	2	1.3	0	0.3	~	~
Leukemia	4	4.5	4	3.0	~	~
Liver & Intrahepatic Bile Duct	1	1.2	1	0.5	~	~
Lung & Bronchus	19	17.2	8	12.6	79.6	~
Melanoma of the Skin	2	4.4	2	3.0	~	~
Mesothelioma (all sites)	0	0.6	0	0.1	~	~
Myeloma	2	1.6	2	1.2	~	~
Non-Hodgkin Lymphoma	1	5.9	3	5.1	~	~
Oral Cavity & Pharynx	4	3.3	1	1.8	~	~
Ovary	-	-	2	3.2	-	~
Pancreas	0	2.5	4	2.4	~	~
Prostate	54	44.6	-	-	219.2	-
Soft Tissues incl. Heart	2	0.7	0	0.6	~	~
Stomach	2	2.0	0	1.3	~	~
Testis	0	1.0	-	-	~	-
Thyroid	0	0.7	3	1.6	~	~
Urinary Bladder	6	9.7	0	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-42: Lyon County 2000 - 2004 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	338	330.7	291	304.4	571.9	405.1
Brain & Other Nervous System	4	4.8	2	3.7	~	~
Breast	0	0.8	90	97.2	~	127.5
Cervix Uteri	-	-	9	4.1	-	~
Colon & Rectum	39	35.3	55	38.3	65.3	70.7
Corpus & Uterus, NOS	-	-	18	18.5	-	29.0
Esophagus	3	4.9	0	1.5	~	~
Hodgkin Lymphoma	1	2.2	1	1.8	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	12	11.2	6	6.5	21.0	~
Larynx	4	3.2	0	0.8	~	~
Leukemia	15	11.8	6	8.2	24.5	~
Liver & Intrahepatic Bile Duct	3	3.3	0	1.4	~	~
Lung & Bronchus	39	42.0	24	33.5	66.6	36.8
Melanoma of the Skin	12	12.4	7	10.3	20.1	~
Mesothelioma (all sites)	1	1.5	1	0.3	~	~
Myeloma	5	4.0	3	3.1	~	~
Non-Hodgkin Lymphoma	17	15.4	20	13.9	28.8	24.3
Oral Cavity & Pharynx	7	9.0	4	4.9	~	~
Ovary	-	-	9	9.4	-	~
Pancreas	8	6.2	4	6.1	~	~
Prostate	102	110.0	-	-	176.8	-
Soft Tissues incl. Heart	4	2.1	1	2.0	~	~
Stomach	2	5.0	5	3.4	~	~
Testis	6	4.4	-	-	~	-
Thyroid	4	2.5	6	6.2	~	~
Urinary Bladder	23	23.4	5	8.1	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-43: McLeod County 2000 - 2004 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	461	470.1	379	428.9	554.0	367.4
Brain & Other Nervous System	7	7.0	6	5.3	~	~
Breast	2	1.0	123	139.3	~	121.5
Cervix Uteri	-	-	12	6.1	-	12.7
Colon & Rectum	47	49.6	55	51.9	56.2	49.0
Corpus & Uterus, NOS	-	-	30	26.8	-	31.0
Esophagus	6	7.0	0	2.1	~	~
Hodgkin Lymphoma	3	3.1	1	2.4	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.0	~	~
Kidney & Renal Pelvis	13	16.3	9	9.2	15.1	~
Larynx	7	4.7	0	1.2	~	~
Leukemia	15	16.6	6	11.3	18.8	~
Liver & Intrahepatic Bile Duct	4	4.8	1	2.0	~	~
Lung & Bronchus	48	59.4	27	47.8	58.1	27.1
Melanoma of the Skin	23	17.8	15	14.7	27.0	16.5
Mesothelioma (all sites)	0	2.0	0	0.4	~	~
Myeloma	4	5.6	2	4.3	~	~
Non-Hodgkin Lymphoma	23	21.8	21	19.2	28.2	18.0
Oral Cavity & Pharynx	12	13.0	4	6.9	14.6	~
Ovary	-	-	9	13.4	-	~
Pancreas	7	8.8	8	8.4	~	~
Prostate	161	157.2	-	-	193.7	-
Soft Tissues incl. Heart	1	3.0	1	2.7	~	~
Stomach	7	7.0	4	4.6	~	~
Testis	7	6.4	-	-	~	-
Thyroid	4	3.6	14	8.9	~	16.2
Urinary Bladder	42	32.6	6	11.1	50.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-44: Mahnomen County 2000 - 2004 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	95	83.2	84	69.2	648.9	533.8
Brain & Other Nervous System	2	1.1	2	0.8	~	~
Breast	0	0.2	29	22.3	~	186.5
Cervix Uteri	-	-	2	0.9	-	~
Colon & Rectum	11	8.8	7	8.7	75.1	~
Corpus & Uterus, NOS	-	-	7	4.4	-	~
Esophagus	0	1.2	0	0.4	~	~
Hodgkin Lymphoma	1	0.4	0	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	2	2.8	2	1.5	~	~
Larynx	1	0.8	0	0.2	~	~
Leukemia	8	2.9	6	1.9	~	~
Liver & Intrahepatic Bile Duct	3	0.8	1	0.3	~	~
Lung & Bronchus	13	10.7	10	7.8	90.0	60.0
Melanoma of the Skin	2	3.0	0	2.2	~	~
Mesothelioma (all sites)	1	0.4	0	0.1	~	~
Myeloma	1	1.0	2	0.7	~	~
Non-Hodgkin Lymphoma	2	3.8	7	3.1	~	~
Oral Cavity & Pharynx	4	2.2	0	1.1	~	~
Ovary	-	-	0	2.1	-	~
Pancreas	1	1.6	2	1.4	~	~
Prostate	32	28.7	-	-	205.7	-
Soft Tissues incl. Heart	0	0.5	0	0.4	~	~
Stomach	1	1.2	0	0.8	~	~
Testis	0	0.8	-	-	~	-
Thyroid	1	0.5	0	1.2	~	~
Urinary Bladder	8	5.9	4	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-45: Marshall County 2000 - 2004 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	180	180.6	122	143.2	564.2	344.7
Brain & Other Nervous System	2	2.4	3	1.7	~	~
Breast	0	0.4	41	46.3	~	119.6
Cervix Uteri	-	-	3	1.8	-	~
Colon & Rectum	26	19.3	22	17.8	81.0	56.8
Corpus & Uterus, NOS	-	-	5	9.0	-	~
Esophagus	7	2.7	0	0.7	~	~
Hodgkin Lymphoma	1	0.9	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	2	6.1	0	3.1	~	~
Larynx	2	1.8	0	0.4	~	~
Leukemia	10	6.2	6	3.7	30.6	~
Liver & Intrahepatic Bile Duct	0	1.8	0	0.7	~	~
Lung & Bronchus	23	23.6	9	16.7	70.0	~
Melanoma of the Skin	5	6.4	2	4.4	~	~
Mesothelioma (all sites)	0	0.8	0	0.2	~	~
Myeloma	2	2.2	0	1.5	~	~
Non-Hodgkin Lymphoma	8	8.2	7	6.5	~	~
Oral Cavity & Pharynx	8	4.8	1	2.3	~	~
Ovary	-	-	3	4.5	-	~
Pancreas	3	3.4	2	2.9	~	~
Prostate	54	61.7	-	-	168.8	-
Soft Tissues incl. Heart	1	1.0	1	0.8	~	~
Stomach	4	2.7	4	1.5	~	~
Testis	1	1.7	-	-	~	-
Thyroid	0	1.2	2	2.5	~	~
Urinary Bladder	13	13.0	2	3.8	40.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-46: Martin County 2000 - 2004 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	352	366.1	321	335.5	543.2	384.0
Brain & Other Nervous System	2	4.8	6	3.7	~	~
Breast	1	0.8	93	106.8	~	115.1
Cervix Uteri	-	-	2	3.9	-	~
Colon & Rectum	36	39.4	49	43.8	54.5	48.3
Corpus & Uterus, NOS	-	-	18	20.6	-	24.3
Esophagus	5	5.5	0	1.8	~	~
Hodgkin Lymphoma	2	1.9	1	1.5	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	17	12.3	4	7.2	27.3	~
Larynx	3	3.6	1	0.9	~	~
Leukemia	16	12.6	11	9.0	25.5	12.7
Liver & Intrahepatic Bile Duct	3	3.7	3	1.6	~	~
Lung & Bronchus	39	47.5	29	38.3	58.3	34.2
Melanoma of the Skin	17	13.1	15	10.1	28.1	19.8
Mesothelioma (all sites)	3	1.6	0	0.4	~	~
Myeloma	1	4.5	0	3.6	~	~
Non-Hodgkin Lymphoma	10	16.7	15	15.5	15.6	19.5
Oral Cavity & Pharynx	5	9.8	5	5.4	~	~
Ovary	-	-	10	10.2	-	14.2
Pancreas	5	7.0	7	7.0	~	~
Prostate	130	125.0	-	-	196.1	-
Soft Tissues incl. Heart	4	2.1	3	2.0	~	~
Stomach	2	5.6	10	3.8	~	8.5
Testis	5	3.4	-	-	~	-
Thyroid	0	2.4	5	5.5	~	~
Urinary Bladder	29	26.3	14	9.3	43.2	16.0

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-47: Meeker County 2000 - 2004 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	307	353.6	267	299.0	490.5	373.7
Brain & Other Nervous System	6	5.0	1	3.5	~	~
Breast	0	0.8	76	96.8	~	113.3
Cervix Uteri	-	-	2	3.9	-	~
Colon & Rectum	33	37.5	38	37.2	52.4	47.6
Corpus & Uterus, NOS	-	-	15	18.6	-	21.7
Esophagus	7	5.3	1	1.5	~	~
Hodgkin Lymphoma	1	2.1	2	1.5	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	10	12.0	8	6.4	15.8	~
Larynx	2	3.5	0	0.8	~	~
Leukemia	8	12.2	13	7.9	~	16.6
Liver & Intrahepatic Bile Duct	3	3.6	1	1.4	~	~
Lung & Bronchus	40	45.4	27	33.5	62.9	37.3
Melanoma of the Skin	6	13.0	10	9.8	~	17.0
Mesothelioma (all sites)	0	1.5	1	0.3	~	~
Myeloma	4	4.3	3	3.1	~	~
Non-Hodgkin Lymphoma	10	16.2	15	13.5	16.2	19.6
Oral Cavity & Pharynx	7	9.6	4	4.8	~	~
Ovary	-	-	10	9.3	-	15.7
Pancreas	6	6.7	8	6.0	~	~
Prostate	108	120.2	-	-	170.0	-
Soft Tissues incl. Heart	3	2.2	0	1.8	~	~
Stomach	3	5.3	3	3.3	~	~
Testis	4	4.0	-	-	~	-
Thyroid	3	2.5	9	5.7	~	~
Urinary Bladder	27	24.9	5	7.9	42.8	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-48: Mille Lacs County 2000 - 2004 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	435	351.9	312	304.6	691.7	429.0
Brain & Other Nervous System	2	4.9	5	3.7	~	~
Breast	1	0.8	97	98.7	~	139.4
Cervix Uteri	-	-	4	4.1	-	~
Colon & Rectum	45	37.1	36	37.1	72.0	47.1
Corpus & Uterus, NOS	-	-	26	19.1	-	36.3
Esophagus	5	5.2	4	1.5	~	~
Hodgkin Lymphoma	1	2.1	0	1.7	~	~
Kaposi Sarcoma (all sites)	1	0.3	0	0.0	~	~
Kidney & Renal Pelvis	16	12.0	5	6.6	25.7	~
Larynx	6	3.5	1	0.9	~	~
Leukemia	12	12.1	7	8.0	19.4	~
Liver & Intrahepatic Bile Duct	1	3.5	2	1.4	~	~
Lung & Bronchus	54	45.3	40	34.6	85.7	56.0
Melanoma of the Skin	14	12.9	8	10.1	22.9	~
Mesothelioma (all sites)	2	1.5	2	0.3	~	~
Myeloma	3	4.2	5	3.1	~	~
Non-Hodgkin Lymphoma	14	16.0	9	13.7	22.6	~
Oral Cavity & Pharynx	9	9.4	3	4.9	~	~
Ovary	-	-	7	9.5	-	~
Pancreas	7	6.6	7	6.1	~	~
Prostate	177	120.1	-	-	277.9	-
Soft Tissues incl. Heart	4	2.1	0	1.9	~	~
Stomach	6	5.2	2	3.2	~	~
Testis	2	4.2	-	-	~	-
Thyroid	1	2.5	9	6.0	~	~
Urinary Bladder	37	24.6	11	8.0	57.8	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-49: Morrison County 2000 - 2004 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	553	473.5	399	403.0	655.6	417.1
Brain & Other Nervous System	10	6.8	5	4.9	12.2	~
Breast	1	1.0	134	130.4	~	142.7
Cervix Uteri	-	-	2	5.4	-	~
Colon & Rectum	63	50.0	46	49.2	75.0	40.7
Corpus & Uterus, NOS	-	-	24	25.2	-	27.6
Esophagus	5	7.0	2	2.0	~	~
Hodgkin Lymphoma	3	2.9	1	2.2	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.0	~	~
Kidney & Renal Pelvis	25	16.2	9	8.7	29.7	~
Larynx	5	4.8	5	1.2	~	~
Leukemia	23	16.4	10	10.6	27.6	11.2
Liver & Intrahepatic Bile Duct	1	4.8	2	1.8	~	~
Lung & Bronchus	69	60.9	44	45.8	80.6	43.8
Melanoma of the Skin	14	17.4	16	13.3	16.7	20.0
Mesothelioma (all sites)	0	2.0	0	0.4	~	~
Myeloma	7	5.7	2	4.1	~	~
Non-Hodgkin Lymphoma	15	21.7	13	18.1	17.8	13.8
Oral Cavity & Pharynx	15	12.8	5	6.5	17.9	~
Ovary	-	-	15	12.6	-	14.5
Pancreas	7	8.9	5	8.0	~	~
Prostate	209	160.8	-	-	244.6	-
Soft Tissues incl. Heart	5	2.9	3	2.5	~	~
Stomach	14	7.0	6	4.3	17.1	~
Testis	4	5.7	-	-	~	-
Thyroid	3	3.4	11	7.9	~	14.4
Urinary Bladder	38	33.1	7	10.5	45.2	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-50: Mower County 2000 - 2004 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	690	634.2	559	567.5	616.3	418.9
Brain & Other Nervous System	13	8.4	3	6.4	12.5	~
Breast	0	1.5	175	179.0	~	133.2
Cervix Uteri	-	-	8	6.8	-	~
Colon & Rectum	70	68.2	60	73.9	61.5	39.3
Corpus & Uterus, NOS	-	-	38	34.6	-	28.3
Esophagus	12	9.4	4	3.0	11.1	~
Hodgkin Lymphoma	3	3.5	5	2.7	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.1	~	~
Kidney & Renal Pelvis	17	21.1	16	12.3	15.7	11.3
Larynx	5	6.2	2	1.6	~	~
Leukemia	23	22.4	15	15.4	20.3	11.2
Liver & Intrahepatic Bile Duct	5	6.3	1	2.7	~	~
Lung & Bronchus	95	82.5	77	65.2	84.5	57.3
Melanoma of the Skin	18	22.6	24	17.4	16.9	22.0
Mesothelioma (all sites)	4	2.9	1	0.6	~	~
Myeloma	7	7.8	3	6.0	~	~
Non-Hodgkin Lymphoma	27	29.0	33	26.2	24.1	25.2
Oral Cavity & Pharynx	14	16.6	5	9.2	13.5	~
Ovary	-	-	7	17.3	-	~
Pancreas	13	12.1	9	11.9	12.0	~
Prostate	264	214.7	-	-	233.6	-
Soft Tissues incl. Heart	2	3.8	1	3.4	~	~
Stomach	11	9.7	2	6.5	10.1	~
Testis	6	6.5	-	-	~	-
Thyroid	4	4.2	14	9.8	~	13.0
Urinary Bladder	48	46.0	14	15.7	41.0	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-51: Murray County 2000 - 2004 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	157	173.6	125	142.9	514.1	334.9
Brain & Other Nervous System	1	2.2	1	1.6	~	~
Breast	0	0.4	32	45.5	~	89.4
Cervix Uteri	-	-	0	1.6	-	~
Colon & Rectum	24	18.7	24	18.4	86.9	53.1
Corpus & Uterus, NOS	-	-	5	8.9	-	~
Esophagus	3	2.6	0	0.8	~	~
Hodgkin Lymphoma	0	0.8	0	0.6	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	5.7	3	3.1	~	~
Larynx	1	1.7	0	0.4	~	~
Leukemia	10	5.9	5	3.8	32.0	~
Liver & Intrahepatic Bile Duct	1	1.7	0	0.7	~	~
Lung & Bronchus	24	22.7	9	16.7	78.5	~
Melanoma of the Skin	2	6.1	4	4.2	~	~
Mesothelioma (all sites)	1	0.8	1	0.2	~	~
Myeloma	2	2.1	1	1.5	~	~
Non-Hodgkin Lymphoma	4	7.8	11	6.6	~	25.2
Oral Cavity & Pharynx	4	4.5	2	2.3	~	~
Ovary	-	-	2	4.4	-	~
Pancreas	1	3.3	3	3.0	~	~
Prostate	48	59.9	-	-	147.7	-
Soft Tissues incl. Heart	2	1.0	0	0.8	~	~
Stomach	5	2.7	3	1.6	~	~
Testis	1	1.4	-	-	~	-
Thyroid	1	1.1	3	2.3	~	~
Urinary Bladder	14	12.6	6	3.9	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-52: Nicollet County 2000 - 2004 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	322	346.9	307	310.4	517.9	410.7
Brain & Other Nervous System	5	5.6	2	4.1	~	~
Breast	1	0.7	94	102.9	~	127.2
Cervix Uteri	-	-	8	4.8	-	~
Colon & Rectum	36	36.0	41	35.1	61.8	50.5
Corpus & Uterus, NOS	-	-	20	19.7	-	27.7
Esophagus	3	5.2	4	1.4	~	~
Hodgkin Lymphoma	2	2.7	1	2.2	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	13	12.3	7	6.5	17.5	~
Larynx	1	3.5	0	0.9	~	~
Leukemia	14	12.1	8	7.9	22.4	~
Liver & Intrahepatic Bile Duct	3	3.6	1	1.4	~	~
Lung & Bronchus	36	43.0	38	33.8	58.1	51.5
Melanoma of the Skin	17	13.6	12	11.7	26.7	16.2
Mesothelioma (all sites)	1	1.4	0	0.3	~	~
Myeloma	1	4.1	3	3.0	~	~
Non-Hodgkin Lymphoma	16	16.2	8	13.6	24.2	~
Oral Cavity & Pharynx	13	10.0	7	4.9	19.2	~
Ovary	-	-	7	10.1	-	~
Pancreas	2	6.4	5	5.8	~	~
Prostate	102	115.2	-	-	166.7	-
Soft Tissues incl. Heart	1	2.4	2	2.1	~	~
Stomach	5	5.0	2	3.1	~	~
Testis	9	5.7	-	-	~	-
Thyroid	3	2.9	7	7.5	~	~
Urinary Bladder	31	23.1	7	7.6	52.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-53: Nobles County 2000 - 2004 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	295	316.0	259	281.1	524.7	380.6
Brain & Other Nervous System	5	4.4	3	3.3	~	~
Breast	0	0.7	71	89.6	~	107.8
Cervix Uteri	-	-	3	3.5	-	~
Colon & Rectum	36	33.7	47	36.1	63.4	56.6
Corpus & Uterus, NOS	-	-	17	17.3	-	27.7
Esophagus	4	4.7	1	1.5	~	~
Hodgkin Lymphoma	0	1.8	3	1.4	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	9	10.7	7	6.0	~	~
Larynx	2	3.1	0	0.8	~	~
Leukemia	10	11.1	5	7.6	17.1	~
Liver & Intrahepatic Bile Duct	1	3.2	1	1.3	~	~
Lung & Bronchus	36	40.6	20	31.6	64.0	26.5
Melanoma of the Skin	14	11.5	14	8.9	25.0	25.3
Mesothelioma (all sites)	0	1.4	0	0.3	~	~
Myeloma	3	3.8	3	2.9	~	~
Non-Hodgkin Lymphoma	11	14.5	13	12.8	19.5	16.3
Oral Cavity & Pharynx	10	8.4	4	4.5	17.7	~
Ovary	-	-	10	8.6	-	16.9
Pancreas	2	6.0	5	5.8	~	~
Prostate	110	106.8	-	-	194.8	-
Soft Tissues incl. Heart	2	1.9	3	1.7	~	~
Stomach	4	4.8	2	3.2	~	~
Testis	4	3.6	-	-	~	-
Thyroid	1	2.2	4	5.0	~	~
Urinary Bladder	17	22.5	4	7.7	29.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-54: Norman County 2000 - 2004 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	130	134.7	110	111.3	544.4	398.2
Brain & Other Nervous System	0	1.7	2	1.2	~	~
Breast	0	0.3	38	35.4	~	152.8
Cervix Uteri	-	-	1	1.3	-	~
Colon & Rectum	9	14.4	14	14.4	~	40.6
Corpus & Uterus, NOS	-	-	3	6.9	-	~
Esophagus	3	2.0	1	0.6	~	~
Hodgkin Lymphoma	1	0.7	0	0.5	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	4	4.5	1	2.4	~	~
Larynx	2	1.3	0	0.3	~	~
Leukemia	7	4.6	6	3.0	~	~
Liver & Intrahepatic Bile Duct	2	1.3	2	0.5	~	~
Lung & Bronchus	12	17.7	12	12.9	49.5	38.9
Melanoma of the Skin	2	4.7	1	3.3	~	~
Mesothelioma (all sites)	0	0.6	0	0.1	~	~
Myeloma	2	1.7	3	1.2	~	~
Non-Hodgkin Lymphoma	8	6.1	3	5.1	~	~
Oral Cavity & Pharynx	2	3.5	1	1.8	~	~
Ovary	-	-	4	3.4	-	~
Pancreas	4	2.6	3	2.3	~	~
Prostate	56	46.5	-	-	223.8	-
Soft Tissues incl. Heart	0	0.8	0	0.7	~	~
Stomach	1	2.0	1	1.3	~	~
Testis	1	1.2	-	-	~	-
Thyroid	1	0.8	0	1.8	~	~
Urinary Bladder	8	9.8	6	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-55: Olmsted County 2000 - 2004 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	1535	1482.7	1414	1385.6	578.3	423.6
Brain & Other Nervous System	38	24.2	24	18.2	12.9	7.6
Breast	1	3.2	479	463.4	~	146.1
Cervix Uteri	-	-	15	22.5	-	4.5
Colon & Rectum	134	153.4	119	156.2	51.2	34.3
Corpus & Uterus, NOS	-	-	87	88.0	-	25.9
Esophagus	27	22.0	6	6.3	9.4	~
Hodgkin Lymphoma	11	11.1	7	8.8	3.5	~
Kaposi Sarcoma (all sites)	3	1.5	0	0.1	~	~
Kidney & Renal Pelvis	70	52.9	39	29.1	26.1	12.3
Larynx	22	15.1	3	4.0	7.9	~
Leukemia	60	51.8	40	35.3	23.4	11.3
Liver & Intrahepatic Bile Duct	33	15.5	7	6.1	12.2	~
Lung & Bronchus	192	184.6	154	149.1	76.0	47.5
Melanoma of the Skin	74	58.7	67	52.4	26.7	19.7
Mesothelioma (all sites)	3	5.9	2	1.4	~	~
Myeloma	22	17.5	12	13.3	8.7	3.6
Non-Hodgkin Lymphoma	83	69.3	62	60.0	30.5	18.7
Oral Cavity & Pharynx	43	42.2	21	22.1	15.4	6.4
Ovary	-	-	46	44.6	-	13.5
Pancreas	39	27.4	28	25.5	16.1	8.5
Prostate	432	492.1	-	-	163.3	-
Soft Tissues incl. Heart	9	10.3	10	9.0	~	3.0
Stomach	18	21.4	13	13.7	7.4	3.6
Testis	18	24.2	-	-	5.4	-
Thyroid	30	12.8	59	33.6	9.6	17.1
Urinary Bladder	101	98.9	37	33.6	40.8	11.2

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-56: Otter Tail County 2000 - 2004 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	1011	1025.3	685	841.5	549.3	338.0
Brain & Other Nervous System	19	13.3	10	9.6	11.4	6.6
Breast	2	2.3	205	271.9	~	103.6
Cervix Uteri	-	-	12	10.3	-	7.6
Colon & Rectum	117	109.4	85	105.1	62.3	38.3
Corpus & Uterus, NOS	-	-	49	53.2	-	26.4
Esophagus	12	15.3	5	4.3	6.4	~
Hodgkin Lymphoma	6	5.2	4	3.9	~	~
Kaposi Sarcoma (all sites)	0	0.7	0	0.1	~	~
Kidney & Renal Pelvis	28	34.2	15	18.2	15.2	7.9
Larynx	5	10.3	3	2.5	~	~
Leukemia	31	34.8	14	22.0	17.6	6.7
Liver & Intrahepatic Bile Duct	9	10.2	6	3.9	~	~
Lung & Bronchus	110	133.6	65	97.4	59.1	30.6
Melanoma of the Skin	29	36.3	26	26.0	16.4	14.6
Mesothelioma (all sites)	8	4.5	2	0.9	~	~
Myeloma	13	12.5	7	8.7	6.8	~
Non-Hodgkin Lymphoma	40	46.2	27	38.0	22.9	12.3
Oral Cavity & Pharynx	23	27.0	17	13.5	13.4	7.2
Ovary	-	-	24	26.1	-	11.5
Pancreas	17	19.4	17	17.2	9.5	7.8
Prostate	402	354.6	-	-	213.0	-
Soft Tissues incl. Heart	5	5.8	2	4.9	~	~
Stomach	16	15.5	7	9.1	9.1	~
Testis	2	9.3	-	-	~	-
Thyroid	4	6.5	8	14.7	~	~
Urinary Bladder	82	73.4	31	22.6	45.0	13.4

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-57: Pennington County 2000 - 2004 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	172	196.4	182	181.1	495.2	423.7
Brain & Other Nervous System	4	2.8	3	2.1	~	~
Breast	0	0.4	55	58.6	~	130.2
Cervix Uteri	-	-	3	2.4	-	~
Colon & Rectum	19	20.9	24	22.5	52.6	50.9
Corpus & Uterus, NOS	-	-	18	11.3	-	37.4
Esophagus	3	2.9	1	0.9	~	~
Hodgkin Lymphoma	0	1.2	2	0.9	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	6	6.7	4	3.9	~	~
Larynx	1	2.0	0	0.5	~	~
Leukemia	8	6.9	7	4.8	~	~
Liver & Intrahepatic Bile Duct	1	2.0	0	0.8	~	~
Lung & Bronchus	18	25.0	13	20.3	51.3	30.0
Melanoma of the Skin	12	7.3	7	5.9	35.0	~
Mesothelioma (all sites)	0	0.9	0	0.2	~	~
Myeloma	3	2.4	1	1.9	~	~
Non-Hodgkin Lymphoma	5	9.1	4	8.2	~	~
Oral Cavity & Pharynx	8	5.4	2	2.9	~	~
Ovary	-	-	5	5.6	-	~
Pancreas	6	3.7	5	3.6	~	~
Prostate	44	66.1	-	-	127.8	-
Soft Tissues incl. Heart	1	1.2	1	1.1	~	~
Stomach	1	3.0	2	2.0	~	~
Testis	4	2.4	-	-	~	-
Thyroid	0	1.4	3	3.5	~	~
Urinary Bladder	16	13.9	5	4.8	44.9	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-58: Pine County 2000 - 2004 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	438	426.0	340	334.4	570.1	421.9
Brain & Other Nervous System	6	6.1	1	4.1	~	~
Breast	3	0.9	97	110.1	~	119.7
Cervix Uteri	-	-	5	4.6	-	~
Colon & Rectum	43	44.3	48	39.2	57.2	57.4
Corpus & Uterus, NOS	-	-	19	21.5	-	23.7
Esophagus	7	6.4	2	1.6	~	~
Hodgkin Lymphoma	3	2.6	1	1.8	~	~
Kaposi Sarcoma (all sites)	0	0.3	1	0.0	~	~
Kidney & Renal Pelvis	17	14.7	12	7.2	21.8	14.6
Larynx	6	4.4	4	1.0	~	~
Leukemia	14	14.2	5	8.5	18.7	~
Liver & Intrahepatic Bile Duct	2	4.3	3	1.5	~	~
Lung & Bronchus	81	54.9	51	38.5	103.0	62.9
Melanoma of the Skin	13	15.7	5	11.2	16.8	~
Mesothelioma (all sites)	2	1.8	1	0.3	~	~
Myeloma	4	5.1	3	3.4	~	~
Non-Hodgkin Lymphoma	17	19.2	10	14.7	23.5	10.8
Oral Cavity & Pharynx	11	11.5	5	5.3	13.7	~
Ovary	-	-	12	10.6	-	15.3
Pancreas	4	8.0	10	6.5	~	11.7
Prostate	134	146.8	-	-	172.6	-
Soft Tissues incl. Heart	2	2.6	2	2.1	~	~
Stomach	8	6.2	2	3.4	~	~
Testis	5	5.2	-	-	~	-
Thyroid	2	3.1	8	6.7	~	~
Urinary Bladder31 29.2	14	8.5	41.5	16.0		

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-59: Pipestone County 2000 - 2004 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	176	169.9	161	156.3	566.9	432.0
Brain & Other Nervous System	6	2.2	4	1.7	~	~
Breast	0	0.4	52	48.9	~	142.3
Cervix Uteri	-	-	2	1.8	-	~
Colon & Rectum	23	18.5	34	20.9	73.2	80.3
Corpus & Uterus, NOS	-	-	10	9.4	-	26.8
Esophagus	2	2.5	1	0.8	~	~
Hodgkin Lymphoma	0	0.9	1	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	7	5.6	4	3.4	~	~
Larynx	1	1.6	0	0.4	~	~
Leukemia	7	6.0	2	4.3	~	~
Liver & Intrahepatic Bile Duct	0	1.7	1	0.7	~	~
Lung & Bronchus	18	22.2	11	17.9	55.4	30.0
Melanoma of the Skin	2	6.0	2	4.6	~	~
Mesothelioma (all sites)	3	0.8	0	0.2	~	~
Myeloma	3	2.1	1	1.7	~	~
Non-Hodgkin Lymphoma	5	7.8	8	7.3	~	~
Oral Cavity & Pharynx	2	4.4	3	2.5	~	~
Ovary	-	-	2	4.7	-	~
Pancreas	5	3.2	3	3.3	~	~
Prostate	68	57.7	-	-	216.4	-
Soft Tissues incl. Heart	0	1.0	0	0.9	~	~
Stomach	4	2.7	1	1.8	~	~
Testis	2	1.5	-	-	~	-
Thyroid	0	1.1	4	2.5	~	~
Urinary Bladder	9	12.6	5	4.4	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-60: Polk County 2000 - 2004 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	466	480.3	388	427.9	547.3	385.5
Brain & Other Nervous System	5	6.6	5	4.9	~	~
Breast	0	1.1	123	136.8	~	123.6
Cervix Uteri	-	-	5	5.4	-	~
Colon & Rectum	81	51.4	59	54.7	95.2	54.0
Corpus & Uterus, NOS	-	-	27	26.3	-	26.7
Esophagus	11	7.1	1	2.2	12.9	~
Hodgkin Lymphoma	3	2.8	1	2.2	~	~
Kaposi Sarcoma (all sites)	1	0.3	0	0.0	~	~
Kidney & Renal Pelvis	22	16.2	11	9.2	25.8	11.0
Larynx	3	4.8	0	1.2	~	~
Leukemia	17	16.8	7	11.5	19.6	~
Liver & Intrahepatic Bile Duct	5	4.8	0	2.0	~	~
Lung & Bronchus	55	61.8	34	48.1	64.7	31.6
Melanoma of the Skin	10	17.5	7	13.6	12.4	~
Mesothelioma (all sites)	3	2.1	0	0.5	~	~
Myeloma	3	5.9	1	4.5	~	~
Non-Hodgkin Lymphoma	15	22.1	25	19.6	18.0	23.0
Oral Cavity & Pharynx	16	12.9	5	6.9	18.6	~
Ovary	-	-	10	13.2	-	9.6
Pancreas	6	9.1	7	8.7	~	~
Prostate	145	162.5	-	-	169.2	-
Soft Tissues incl. Heart	3	2.9	5	2.6	~	~
Stomach	5	7.3	8	4.8	~	~
Testis	7	5.2	-	-	~	-
Thyroid	2	3.3	7	7.7	~	~
Urinary Bladder	31	34.4	14	11.6	34.9	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-61: Pope County 2000 - 2004 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	217	205.9	192	176.4	580.7	461.8
Brain & Other Nervous System	5	2.6	3	1.9	~	~
Breast	0	0.5	48	56.0	~	127.2
Cervix Uteri	-	-	5	2.0	-	~
Colon & Rectum	36	22.2	33	23.0	92.4	68.1
Corpus & Uterus, NOS	-	-	15	10.9	-	32.6
Esophagus	2	3.1	0	0.9	~	~
Hodgkin Lymphoma	1	1.0	0	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	1	0.0	~	~
Kidney & Renal Pelvis	3	6.8	3	3.8	~	~
Larynx	3	2.0	1	0.5	~	~
Leukemia	6	7.1	8	4.7	~	~
Liver & Intrahepatic Bile Duct	2	2.0	0	0.8	~	~
Lung & Bronchus	28	27.0	18	20.3	72.1	37.8
Melanoma of the Skin	7	7.2	8	5.3	~	~
Mesothelioma (all sites)	0	0.9	1	0.2	~	~
Myeloma	4	2.5	1	1.9	~	~
Non-Hodgkin Lymphoma	3	9.3	10	8.1	~	20.6
Oral Cavity & Pharynx	2	5.4	2	2.9	~	~
Ovary	-	-	8	5.4	-	~
Pancreas	3	3.9	5	3.7	~	~
Prostate	69	70.6	-	-	189.7	-
Soft Tissues incl. Heart	0	1.2	3	1.0	~	~
Stomach	2	3.1	1	2.0	~	~
Testis	1	1.8	-	-	~	-
Thyroid	1	1.3	1	2.9	~	~
Urinary Bladder	20	15.0	5	4.9	53.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-62: Ramsey County 2000 - 2004 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	5722	5699.7	5849	5763.7	562.3	425.1
Brain & Other Nervous System	85	92.1	71	74.4	7.6	5.5
Breast	10	12.5	1913	1892.8	1.0	141.0
Cervix Uteri	-	-	94	87.9	-	7.3
Colon & Rectum	552	593.2	588	674.9	54.8	40.4
Corpus & Uterus, NOS	-	-	369	361.1	-	27.4
Esophagus	80	84.4	25	27.3	7.8	1.8
Hodgkin Lymphoma	36	42.9	39	36.4	3.0	2.9
Kaposi Sarcoma (all sites)	6	5.5	0	0.5	~	~
Kidney & Renal Pelvis	216	201.2	121	122.0	20.6	8.9
Larynx	57	57.5	24	16.3	5.5	1.8
Leukemia	204	201.9	126	149.6	19.8	8.9
Liver & Intrahepatic Bile Duct	82	59.5	27	25.9	7.6	1.9
Lung & Bronchus	780	711.0	733	628.2	78.6	53.9
Melanoma of the Skin	202	223.8	188	210.2	19.1	14.0
Mesothelioma (all sites)	26	23.1	7	5.8	2.7	~
Myeloma	73	67.5	64	56.6	7.3	4.5
Non-Hodgkin Lymphoma	283	266.8	279	255.2	27.7	19.4
Oral Cavity & Pharynx	153	161.6	112	92.1	14.3	8.3
Ovary	-	-	194	183.4	-	14.4
Pancreas	98	106.0	127	109.4	9.5	9.0
Prostate	1864	1883.5	-	-	185.7	-
Soft Tissues incl. Heart	50	39.6	35	37.5	4.5	2.6
Stomach	87	83.1	64	59.3	8.6	4.4
Testis	84	92.7	-	-	6.6	-
Thyroid	56	48.4	147	132.4	4.8	11.1
Urinary Bladder	370	384.2	150	144.4	38.2	10.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-63: Red Lake County 2000 - 2004 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	60	74.8	48	60.5	448.9	335.0
Brain & Other Nervous System	2	1.0	0	0.7	~	~
Breast	0	0.2	15	19.4	~	92.7
Cervix Uteri	-	-	3	0.8	-	~
Colon & Rectum	11	8.0	3	7.7	81.1	~
Corpus & Uterus, NOS	-	-	3	3.8	-	~
Esophagus	2	1.1	0	0.3	~	~
Hodgkin Lymphoma	1	0.4	0	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	2	2.5	0	1.3	~	~
Larynx	0	0.7	0	0.2	~	~
Leukemia	2	2.6	2	1.6	~	~
Liver & Intrahepatic Bile Duct	0	0.7	0	0.3	~	~
Lung & Bronchus	9	9.7	9	6.9	~	~
Melanoma of the Skin	2	2.7	1	1.9	~	~
Mesothelioma (all sites)	0	0.3	0	0.1	~	~
Myeloma	1	0.9	0	0.6	~	~
Non-Hodgkin Lymphoma	4	3.4	5	2.8	~	~
Oral Cavity & Pharynx	1	2.0	2	1.0	~	~
Ovary	-	-	1	1.9	-	~
Pancreas	1	1.4	1	1.2	~	~
Prostate	18	25.5	-	-	133.5	-
Soft Tissues incl. Heart	1	0.4	0	0.4	~	~
Stomach	0	1.1	0	0.7	~	~
Testis	0	0.7	-	-	~	-
Thyroid	0	0.5	0	1.1	~	~
Urinary Bladder	1	5.4	2	1.6	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-64: Redwood County 2000 - 2004 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	290	286.7	244	245.3	567.8	408.5
Brain & Other Nervous System	4	3.7	2	2.7	~	~
Breast	0	0.7	84	77.8	~	149.9
Cervix Uteri	-	-	0	2.9	-	~
Colon & Rectum	34	31.1	37	32.1	63.8	52.1
Corpus & Uterus, NOS	-	-	19	15.1	-	37.1
Esophagus	4	4.3	0	1.3	~	~
Hodgkin Lymphoma	3	1.5	0	1.1	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	9	9.5	4	5.3	~	~
Larynx	3	2.8	0	0.7	~	~
Leukemia	9	10.1	10	6.7	~	11.7
Liver & Intrahepatic Bile Duct	2	2.8	0	1.2	~	~
Lung & Bronchus	38	37.1	23	27.9	71.7	37.7
Melanoma of the Skin	8	10.2	5	7.4	~	~
Mesothelioma (all sites)	0	1.3	1	0.3	~	~
Myeloma	3	3.5	3	2.6	~	~
Non-Hodgkin Lymphoma	12	13.1	12	11.3	23.5	18.9
Oral Cavity & Pharynx	4	7.5	7	4.0	~	~
Ovary	-	-	7	7.5	-	~
Pancreas	7	5.4	3	5.1	~	~
Prostate	117	97.5	-	-	228.7	-
Soft Tissues incl. Heart	0	1.7	1	1.4	~	~
Stomach	3	4.5	7	2.8	~	~
Testis	6	2.7	-	-	~	-
Thyroid	0	1.8	5	4.1	~	~
Urinary Bladder	12	21.0	7	6.8	22.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-65: Renville County 2000 - 2004 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	288.7	249	245.7	508.5	416.7
Brain & Other Nervous System	3	3.8	4	2.8	~	~
Breast	0	0.7	76	77.9	~	128.5
Cervix Uteri	-	-	6	3.0	-	~
Colon & Rectum	39	31.2	36	31.9	75.9	53.0
Corpus & Uterus, NOS	-	-	15	15.1	-	27.1
Esophagus	3	4.3	0	1.3	~	~
Hodgkin Lymphoma	4	1.5	2	1.2	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	12	9.6	7	5.3	24.3	~
Larynx	4	2.8	1	0.7	~	~
Leukemia	14	10.1	3	6.6	26.9	~
Liver & Intrahepatic Bile Duct	3	2.9	1	1.2	~	~
Lung & Bronchus	25	37.4	26	28.2	48.1	42.8
Melanoma of the Skin	8	10.3	8	7.5	~	~
Mesothelioma (all sites)	3	1.3	0	0.3	~	~
Myeloma	3	3.6	3	2.6	~	~
Non-Hodgkin Lymphoma	13	13.2	9	11.3	24.3	~
Oral Cavity & Pharynx	9	7.6	3	4.0	~	~
Ovary	-	-	7	7.5	-	~
Pancreas	6	5.5	9	5.1	~	~
Prostate	75	98.0	-	-	143.2	-
Soft Tissues incl. Heart	3	1.7	0	1.5	~	~
Stomach	3	4.4	3	2.8	~	~
Testis	0	2.8	-	-	~	-
Thyroid	1	1.9	7	4.2	~	~
Urinary Bladder	15	21.0	5	6.8	28.7	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-66: Rice County 2000 - 2004 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	677.9	593	605.2	552.5	408.9
Brain & Other Nervous System	10	10.9	7	7.9	7.6	~
Breast	3	1.5	171	198.6	~	120.6
Cervix Uteri	-	-	10	9.2	-	7.5
Colon & Rectum	97	70.2	95	70.2	81.1	60.2
Corpus & Uterus, NOS	-	-	32	38.1	-	22.4
Esophagus	15	10.0	6	2.9	12.2	~
Hodgkin Lymphoma	5	5.3	2	4.1	~	~
Kaposi Sarcoma (all sites)	0	0.6	0	0.1	~	~
Kidney & Renal Pelvis	20	23.8	21	12.8	16.6	14.6
Larynx	7	6.9	1	1.7	~	~
Leukemia	30	23.7	22	15.7	25.4	15.5
Liver & Intrahepatic Bile Duct	7	7.0	4	2.7	~	~
Lung & Bronchus	85	84.5	62	66.2	71.5	44.2
Melanoma of the Skin	24	26.5	13	22.1	18.8	8.5
Mesothelioma (all sites)	2	2.7	1	0.6	~	~
Myeloma	10	8.0	5	5.9	8.6	~
Non-Hodgkin Lymphoma	31	31.5	28	26.7	24.9	18.9
Oral Cavity & Pharynx	16	19.1	11	9.7	12.5	7.8
Ovary	-	-	18	19.4	-	13.2
Pancreas	12	12.5	10	11.4	10.9	6.9
Prostate	188	225.6	-	-	155.3	-
Soft Tissues incl. Heart	3	4.7	2	4.1	~	~
Stomach	14	9.8	5	6.1	12.1	~
Testis	12	11.3	-	-	7.6	-
Thyroid	8	5.7	14	14.1	~	10.4
Urinary Bladder	42	45.5	13	15.1	37.3	9.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-67: Rock County 2000 - 2004 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	156	164.9	130	144.9	523.7	375.1
Brain & Other Nervous System	1	2.2	1	1.6	~	~
Breast	0	0.4	53	45.7	~	160.0
Cervix Uteri	-	-	1	1.7	-	~
Colon & Rectum	16	17.8	17	19.0	54.6	39.0
Corpus & Uterus, NOS	-	-	11	8.8	-	36.3
Esophagus	2	2.4	0	0.8	~	~
Hodgkin Lymphoma	3	0.9	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	5.5	3	3.1	~	~
Larynx	1	1.6	0	0.4	~	~
Leukemia	5	5.8	2	3.9	~	~
Liver & Intrahepatic Bile Duct	2	1.6	0	0.7	~	~
Lung & Bronchus	16	21.5	5	16.6	55.5	~
Melanoma of the Skin	4	5.9	4	4.4	~	~
Mesothelioma (all sites)	0	0.8	0	0.2	~	~
Myeloma	6	2.0	0	1.5	~	~
Non-Hodgkin Lymphoma	9	7.6	9	6.7	~	~
Oral Cavity & Pharynx	1	4.3	0	2.3	~	~
Ovary	-	-	5	4.4	-	~
Pancreas	1	3.2	1	3.0	~	~
Prostate	54	55.9	-	-	177.2	-
Soft Tissues incl. Heart	1	1.0	0	0.9	~	~
Stomach	1	2.5	2	1.7	~	~
Testis	0	1.5	-	-	~	-
Thyroid	2	1.1	4	2.4	~	~
Urinary Bladder	16	12.0	2	4.0	51.3	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-68: Roseau County 2000 - 2004 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	217.8	156	175.5	516.9	369.5
Brain & Other Nervous System	1	3.3	3	2.2	~	~
Breast	1	0.5	51	57.8	~	121.0
Cervix Uteri	-	-	4	2.7	-	~
Colon & Rectum	22	23.1	21	20.8	56.6	46.4
Corpus & Uterus, NOS	-	-	13	11.0	-	30.7
Esophagus	4	3.2	1	0.8	~	~
Hodgkin Lymphoma	0	1.4	0	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	7	7.6	2	3.7	~	~
Larynx	1	2.2	1	0.5	~	~
Leukemia	6	7.7	6	4.6	~	~
Liver & Intrahepatic Bile Duct	2	2.2	0	0.8	~	~
Lung & Bronchus	25	27.4	8	18.9	67.0	~
Melanoma of the Skin	10	8.4	8	6.3	23.6	~
Mesothelioma (all sites)	0	0.9	0	0.2	~	~
Myeloma	3	2.6	3	1.7	~	~
Non-Hodgkin Lymphoma	6	10.2	7	7.7	~	~
Oral Cavity & Pharynx	7	6.0	4	2.8	~	~
Ovary	-	-	2	5.5	-	~
Pancreas	5	4.1	2	3.3	~	~
Prostate	70	72.2	-	-	185.6	-
Soft Tissues incl. Heart	2	1.4	4	1.1	~	~
Stomach	1	3.3	0	1.8	~	~
Testis	4	3.0	-	-	~	-
Thyroid	2	1.7	3	3.9	~	~
Urinary Bladder	11	15.1	6	4.4	28.7	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-69: St Louis County 2000 - 2004 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	3058	2950.5	2911	2682.7	583.9	454.6
Brain & Other Nervous System	41	41.9	25	31.7	8.2	4.3
Breast	7	6.6	945	871.1	~	150.7
Cervix Uteri	-	-	48	35.4	-	9.5
Colon & Rectum	361	312.9	340	330.5	68.5	49.2
Corpus & Uterus, NOS	-	-	188	167.9	-	30.1
Esophagus	38	44.1	16	13.4	7.0	2.1
Hodgkin Lymphoma	23	17.8	18	14.3	4.7	3.3
Kaposi Sarcoma (all sites)	0	2.2	1	0.3	~	~
Kidney & Renal Pelvis	90	101.3	61	57.4	16.8	9.5
Larynx	25	29.7	9	7.6	4.7	~
Leukemia	100	101.4	71	69.7	19.5	10.3
Liver & Intrahepatic Bile Duct	32	30.2	15	12.3	6.1	2.1
Lung & Bronchus	415	377.3	358	301.8	78.9	55.3
Melanoma of the Skin	91	109.7	77	88.3	17.3	13.7
Mesothelioma (all sites)	27	12.6	0	2.8	5.2	~
Myeloma	31	35.7	35	27.4	5.8	5.5
Non-Hodgkin Lymphoma	148	135.6	121	121.1	28.1	18.2
Oral Cavity & Pharynx	93	81.3	49	43.1	17.6	7.7
Ovary	-	-	95	84.2	-	15.0
Pancreas	79	55.8	74	53.4	14.9	10.7
Prostate	946	998.3	-	-	180.6	-
Soft Tissues incl. Heart	18	18.3	11	16.5	3.3	1.8
Stomach	59	44.0	38	28.9	11.2	5.0
Testis	38	34.8	-	-	8.3	-
Thyroid	21	21.3	50	52.0	4.2	10.2
Urinary Bladder	228	206.3	83	70.5	43.6	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-70: Scott County 2000 - 2004 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	807	843.4	786	772.6	545.8	417.6
Brain & Other Nervous System	21	17.2	12	12.3	8.1	5.8
Breast	0	1.7	273	267.4	~	141.5
Cervix Uteri	-	-	13	16.8	-	4.5
Colon & Rectum	83	84.4	74	74.7	58.7	44.9
Corpus & Uterus, NOS	-	-	53	49.1	-	29.9
Esophagus	9	12.4	6	3.0	~	~
Hodgkin Lymphoma	7	8.8	5	6.7	~	~
Kaposi Sarcoma (all sites)	0	1.2	0	0.1	~	~
Kidney & Renal Pelvis	25	32.2	19	15.8	16.1	10.9
Larynx	7	8.7	1	2.2	~	~
Leukemia	26	30.9	16	19.3	19.1	7.4
Liver & Intrahepatic Bile Duct	9	9.3	4	3.2	~	~
Lung & Bronchus	101	98.9	88	76.1	75.0	52.1
Melanoma of the Skin	40	37.8	54	36.1	23.6	22.1
Mesothelioma (all sites)	2	3.0	1	0.7	~	~
Myeloma	8	9.5	6	6.6	~	~
Non-Hodgkin Lymphoma	49	41.4	37	31.7	29.4	21.6
Oral Cavity & Pharynx	30	26.1	6	12.2	17.4	~
Ovary	-	-	18	25.8	-	8.9
Pancreas	12	15.2	12	12.4	6.9	7.6
Prostate	245	264.6	-	-	179.7	-
Soft Tissues incl. Heart	6	7.1	4	5.7	~	~
Stomach	13	11.7	4	6.7	8.8	~
Testis	19	20.9	-	-	6.5	-
Thyroid	15	9.5	26	25.8	7.4	9.5
Urinary Bladder	44	51.7	18	16.1	33.3	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-71: Sherburne County 2000 - 2004 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	726	631.2	562	568.1	627.6	410.9
Brain & Other Nervous System	16	12.2	10	8.6	11.1	6.4
Breast	1	1.3	172	193.3	~	122.0
Cervix Uteri	-	-	8	11.3	-	~
Colon & Rectum	66	63.5	50	58.6	60.8	37.3
Corpus & Uterus, NOS	-	-	39	35.8	-	30.0
Esophagus	10	9.3	3	2.3	6.9	~
Hodgkin Lymphoma	5	6.3	6	4.7	~	~
Kaposi Sarcoma (all sites)	0	0.8	0	0.0	~	~
Kidney & Renal Pelvis	27	23.5	13	11.6	20.0	10.4
Larynx	6	6.5	1	1.6	~	~
Leukemia	25	22.8	12	14.5	20.9	8.1
Liver & Intrahepatic Bile Duct	5	6.8	1	2.4	~	~
Lung & Bronchus	80	75.3	73	56.9	72.8	59.4
Melanoma of the Skin	32	27.2	25	25.0	24.5	14.5
Mesothelioma (all sites)	3	2.3	1	0.5	~	~
Myeloma	8	7.2	5	5.0	~	~
Non-Hodgkin Lymphoma	26	30.4	30	23.9	21.6	22.9
Oral Cavity & Pharynx	24	19.0	7	9.0	21.7	~
Ovary	-	-	19	18.7	-	15.4
Pancreas	12	11.4	6	9.6	10.4	~
Prostate	270	201.5	-	-	241.0	-
Soft Tissues incl. Heart	5	5.1	5	4.1	~	~
Stomach	7	8.8	6	5.2	~	~
Testis	13	14.7	-	-	6.6	-
Thyroid	9	6.7	16	17.4	~	9.0
Urinary Bladder	46	39.4	19	12.6	47.6	15.6

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-72: Sibley County 2000 - 2004 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	232.6	190	196.4	476.4	404.5
Brain & Other Nervous System	5	3.3	3	2.3	~	~
Breast	0	0.5	49	63.3	~	106.7
Cervix Uteri	-	-	4	2.6	-	~
Colon & Rectum	24	24.7	33	24.3	57.5	65.6
Corpus & Uterus, NOS	-	-	15	12.2	-	32.7
Esophagus	2	3.5	1	1.0	~	~
Hodgkin Lymphoma	2	1.4	1	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	4	7.9	8	4.2	~	~
Larynx	0	2.3	1	0.6	~	~
Leukemia	8	8.1	5	5.2	~	~
Liver & Intrahepatic Bile Duct	3	2.3	0	0.9	~	~
Lung & Bronchus	20	29.9	21	22.3	47.2	44.9
Melanoma of the Skin	7	8.5	5	6.4	~	~
Mesothelioma (all sites)	0	1.0	1	0.2	~	~
Myeloma	0	2.8	1	2.0	~	~
Non-Hodgkin Lymphoma	8	10.7	9	8.8	~	~
Oral Cavity & Pharynx	4	6.2	1	3.2	~	~
Ovary	-	-	7	6.1	-	~
Pancreas	7	4.4	4	3.9	~	~
Prostate	72	78.9	-	-	172.3	-
Soft Tissues incl. Heart	4	1.4	0	1.2	~	~
Stomach	3	3.5	2	2.1	~	~
Testis	4	2.7	-	-	~	-
Thyroid	0	1.6	6	3.8	~	~
Urinary Bladder	10	16.5	3	5.2	24.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-73: Stearns County 2000 - 2004 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	1737	1588.4	1422	1369.2	615.4	432.9
Brain & Other Nervous System	18	25.3	19	18.5	5.7	5.8
Breast	5	3.4	453	449.9	~	140.0
Cervix Uteri	-	-	12	21.5	-	3.7
Colon & Rectum	158	164.5	163	155.4	56.2	48.0
Corpus & Uterus, NOS	-	-	80	86.1	-	25.2
Esophagus	25	23.4	10	6.4	9.0	3.0
Hodgkin Lymphoma	15	12.4	10	9.7	4.3	2.8
Kaposi Sarcoma (all sites)	0	1.5	0	0.1	~	~
Kidney & Renal Pelvis	52	55.3	40	29.2	17.9	12.2
Larynx	17	16.0	3	4.0	5.9	~
Leukemia	42	55.8	34	35.2	15.0	10.3
Liver & Intrahepatic Bile Duct	12	16.3	8	6.1	4.1	~
Lung & Bronchus	188	199.6	122	150.6	68.8	37.5
Melanoma of the Skin	57	61.4	57	51.4	18.8	17.2
Mesothelioma (all sites)	2	6.4	0	1.4	~	~
Myeloma	17	18.8	16	13.3	6.1	4.8
Non-Hodgkin Lymphoma	82	73.7	76	60.3	29.6	22.7
Oral Cavity & Pharynx	34	44.2	18	21.8	11.6	5.2
Ovary	-	-	48	44.2	-	14.9
Pancreas	31	29.4	39	25.6	11.0	11.6
Prostate	752	528.4	-	-	268.2	-
Soft Tissues incl. Heart	10	11.0	8	9.3	3.5	~
Stomach	14	22.9	14	13.5	5.2	4.1
Testis	26	26.6	-	-	7.2	-
Thyroid	10	13.3	47	33.3	3.1	14.3
Urinary Bladder	103	107.1	46	33.5	37.7	14.1

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-74: Steele County 2000 - 2004 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	430	440.1	371	402.8	551.2	382.3
Brain & Other Nervous System	3	6.7	5	5.1	~	~
Breast	1	1.0	106	132.1	~	111.0
Cervix Uteri	-	-	4	5.9	-	~
Colon & Rectum	41	46.3	54	47.6	53.3	51.5
Corpus & Uterus, NOS	-	-	27	25.3	-	28.2
Esophagus	7	6.5	1	1.9	~	~
Hodgkin Lymphoma	3	3.0	2	2.3	~	~
Kaposi Sarcoma (all sites)	0	0.4	0	0.0	~	~
Kidney & Renal Pelvis	19	15.3	7	8.6	24.3	~
Larynx	7	4.4	0	1.2	~	~
Leukemia	20	15.5	7	10.5	25.8	~
Liver & Intrahepatic Bile Duct	1	4.5	4	1.8	~	~
Lung & Bronchus	42	55.5	43	44.7	54.1	44.6
Melanoma of the Skin	16	16.9	17	14.2	19.8	19.6
Mesothelioma (all sites)	1	1.8	0	0.4	~	~
Myeloma	2	5.3	4	4.0	~	~
Non-Hodgkin Lymphoma	27	20.5	21	17.9	34.5	22.3
Oral Cavity & Pharynx	12	12.3	4	6.4	14.9	~
Ovary	-	-	8	12.8	-	~
Pancreas	5	8.2	6	7.8	~	~
Prostate	147	146.8	-	-	189.0	-
Soft Tissues incl. Heart	1	2.9	2	2.6	~	~
Stomach	9	6.5	3	4.2	~	~
Testis	3	6.2	-	-	~	-
Thyroid	4	3.5	6	8.7	~	~
Urinary Bladder	32	30.3	12	10.2	41.7	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-75: Stevens County 2000 - 2004 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	136	143.7	102	128.1	541.8	330.7
Brain & Other Nervous System	2	1.9	3	1.5	~	~
Breast	0	0.3	22	40.0	~	86.2
Cervix Uteri	-	-	0	1.6	-	~
Colon & Rectum	21	15.5	14	16.7	83.0	39.0
Corpus & Uterus, NOS	-	-	10	7.7	-	31.1
Esophagus	2	2.1	0	0.7	~	~
Hodgkin Lymphoma	1	0.9	1	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	6	4.7	4	2.8	~	~
Larynx	1	1.4	0	0.3	~	~
Leukemia	8	5.2	5	3.5	~	~
Liver & Intrahepatic Bile Duct	1	1.4	0	0.6	~	~
Lung & Bronchus	14	18.5	9	14.4	52.7	~
Melanoma of the Skin	4	5.2	3	4.1	~	~
Mesothelioma (all sites)	1	0.7	1	0.1	~	~
Myeloma	2	1.8	0	1.4	~	~
Non-Hodgkin Lymphoma	5	6.6	2	6.0	~	~
Oral Cavity & Pharynx	3	3.8	2	2.1	~	~
Ovary	-	-	4	3.9	-	~
Pancreas	1	2.7	1	2.7	~	~
Prostate	44	48.0	-	-	176.7	-
Soft Tissues incl. Heart	1	0.9	2	0.8	~	~
Stomach	3	2.2	1	1.5	~	~
Testis	1	1.7	-	-	~	-
Thyroid	1	1.0	4	2.4	~	~
Urinary Bladder	10	10.5	5	3.5	38.4	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-76: Swift County 2000 - 2004 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	185	189.6	180	164.6	551.8	468.1
Brain & Other Nervous System	3	2.7	6	1.8	~	~
Breast	0	0.4	60	51.5	~	167.3
Cervix Uteri	-	-	4	1.9	-	~
Colon & Rectum	21	20.5	22	22.1	60.1	51.5
Corpus & Uterus, NOS	-	-	6	10.0	-	~
Esophagus	0	2.8	2	0.9	~	~
Hodgkin Lymphoma	0	1.2	0	0.7	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	6	6.4	5	3.6	~	~
Larynx	0	1.8	0	0.4	~	~
Leukemia	4	6.7	2	4.5	~	~
Liver & Intrahepatic Bile Duct	3	1.9	0	0.8	~	~
Lung & Bronchus	31	24.1	17	18.9	95.8	43.3
Melanoma of the Skin	6	7.2	7	4.8	~	~
Mesothelioma (all sites)	0	0.9	0	0.2	~	~
Myeloma	2	2.3	2	1.8	~	~
Non-Hodgkin Lymphoma	12	8.9	11	7.7	35.5	26.1
Oral Cavity & Pharynx	2	5.1	5	2.7	~	~
Ovary	-	-	6	5.0	-	~
Pancreas	3	3.6	2	3.5	~	~
Prostate	55	62.5	-	-	166.5	-
Soft Tissues incl. Heart	0	1.2	2	1.0	~	~
Stomach	5	2.9	0	1.9	~	~
Testis	2	2.5	-	-	~	-
Thyroid	4	1.4	3	2.6	~	~
Urinary Bladder	15	13.7	7	4.7	45.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-77: Todd County 2000 - 2004 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	407	389.5	267	316.7	584.5	344.5
Brain & Other Nervous System	6	5.4	3	3.8	~	~
Breast	3	0.9	70	103.3	~	94.4
Cervix Uteri	-	-	6	4.1	-	~
Colon & Rectum	46	41.0	35	38.4	68.1	42.0
Corpus & Uterus, NOS	-	-	22	20.1	-	29.5
Esophagus	5	5.8	1	1.6	~	~
Hodgkin Lymphoma	3	2.2	2	1.6	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	11	13.3	5	6.8	15.8	~
Larynx	6	4.0	0	0.9	~	~
Leukemia	11	13.2	6	8.2	16.3	~
Liver & Intrahepatic Bile Duct	2	3.9	1	1.4	~	~
Lung & Bronchus	69	50.4	36	36.3	98.0	42.8
Melanoma of the Skin	6	14.1	8	10.2	~	~
Mesothelioma (all sites)	1	1.7	2	0.3	~	~
Myeloma	4	4.7	2	3.2	~	~
Non-Hodgkin Lymphoma	16	17.6	10	14.2	23.5	13.3
Oral Cavity & Pharynx	8	10.5	4	5.1	~	~
Ovary	-	-	14	10.0	-	18.6
Pancreas	11	7.3	6	6.3	16.1	~
Prostate	149	134.3	-	-	209.2	-
Soft Tissues incl. Heart	0	2.3	1	1.9	~	~
Stomach	5	5.7	5	3.3	~	~
Testis	1	4.1	-	-	~	-
Thyroid	2	2.7	3	6.0	~	~
Urinary Bladder	26	27.1	5	8.2	36.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-78: Traverse County 2000 - 2004 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	88.2	60	70.6	579.9	362.0
Brain & Other Nervous System	0	1.0	3	0.7	~	~
Breast	0	0.2	16	21.8	~	116.9
Cervix Uteri	-	-	1	0.7	-	~
Colon & Rectum	12	9.7	12	9.8	81.0	56.8
Corpus & Uterus, NOS	-	-	3	4.2	-	~
Esophagus	1	1.3	0	0.4	~	~
Hodgkin Lymphoma	0	0.4	0	0.3	~	~
Kaposi Sarcoma (all sites)	0	0.0	0	0.0	~	~
Kidney & Renal Pelvis	2	2.8	1	1.5	~	~
Larynx	0	0.8	0	0.2	~	~
Leukemia	4	3.1	2	2.0	~	~
Liver & Intrahepatic Bile Duct	0	0.8	1	0.3	~	~
Lung & Bronchus	9	11.8	9	8.2	~	~
Melanoma of the Skin	5	2.9	1	2.0	~	~
Mesothelioma (all sites)	0	0.4	0	0.1	~	~
Myeloma	1	1.1	0	0.8	~	~
Non-Hodgkin Lymphoma	1	4.0	3	3.3	~	~
Oral Cavity & Pharynx	4	2.2	0	1.2	~	~
Ovary	-	-	1	2.1	-	~
Pancreas	1	1.7	0	1.5	~	~
Prostate	34	30.4	-	-	205.3	-
Soft Tissues incl. Heart	1	0.5	2	0.4	~	~
Stomach	1	1.4	0	0.9	~	~
Testis	0	0.6	-	-	~	-
Thyroid	1	0.5	0	1.0	~	~
Urinary Bladder	8	6.7	2	2.1	~	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-79: Wabasha County 2000 - 2004 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	299	334.8	284	273.8	507.8	429.9
Brain & Other Nervous System	2	4.7	6	3.4	~	~
Breast	0	0.7	93	90.0	~	142.0
Cervix Uteri	-	-	1	3.8	-	~
Colon & Rectum	43	35.5	29	32.7	72.1	39.4
Corpus & Uterus, NOS	-	-	14	17.4	-	20.4
Esophagus	7	5.0	2	1.3	~	~
Hodgkin Lymphoma	1	2.0	0	1.5	~	~
Kaposi Sarcoma (all sites)	0	0.3	0	0.0	~	~
Kidney & Renal Pelvis	12	11.5	3	5.8	20.6	~
Larynx	3	3.4	0	0.8	~	~
Leukemia	18	11.5	15	7.1	29.9	21.4
Liver & Intrahepatic Bile Duct	4	3.4	3	1.2	~	~
Lung & Bronchus	42	42.9	34	30.7	69.9	53.1
Melanoma of the Skin	14	12.3	15	9.2	23.7	27.3
Mesothelioma (all sites)	2	1.4	0	0.3	~	~
Myeloma	5	4.1	1	2.8	~	~
Non-Hodgkin Lymphoma	8	15.4	17	12.2	~	24.2
Oral Cavity & Pharynx	8	9.1	6	4.4	~	~
Ovary	-	-	10	8.6	-	15.6
Pancreas	2	6.3	6	5.3	~	~
Prostate	75	113.8	-	-	125.7	-
Soft Tissues incl. Heart	2	2.0	0	1.7	~	~
Stomach	2	5.0	2	2.8	~	~
Testis	6	3.8	-	-	~	-
Thyroid	7	2.4	6	5.6	~	~
Urinary Bladder	24	23.5	6	7.0	40.1	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-80: Wadena County 2000 - 2004 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	308	241.3	210	206.2	728.1	422.2
Brain & Other Nervous System	4	3.1	3	2.3	~	~
Breast	0	0.5	60	65.2	~	128.2
Cervix Uteri	-	-	1	2.4	-	~
Colon & Rectum	26	25.8	40	26.6	62.0	71.8
Corpus & Uterus, NOS	-	-	18	12.7	-	40.0
Esophagus	5	3.6	0	1.1	~	~
Hodgkin Lymphoma	1	1.2	1	1.0	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	8	8.0	5	4.5	~	~
Larynx	3	2.4	0	0.6	~	~
Leukemia	12	8.3	8	5.5	28.0	~
Liver & Intrahepatic Bile Duct	4	2.4	0	1.0	~	~
Lung & Bronchus	32	31.6	21	24.2	74.1	42.9
Melanoma of the Skin	10	8.4	4	6.2	24.9	~
Mesothelioma (all sites)	1	1.1	1	0.2	~	~
Myeloma	4	3.0	1	2.2	~	~
Non-Hodgkin Lymphoma	25	10.8	6	9.6	62.9	~
Oral Cavity & Pharynx	4	6.2	3	3.3	~	~
Ovary	-	-	8	6.3	-	~
Pancreas	9	4.6	6	4.3	~	~
Prostate	112	83.3	-	-	257.4	-
Soft Tissues incl. Heart	2	1.4	1	1.2	~	~
Stomach	3	3.7	1	2.3	~	~
Testis	3	2.2	-	-	~	-
Thyroid	4	1.5	5	3.4	~	~
Urinary Bladder	23	17.5	7	5.7	51.2	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-81: Waseca County 2000 - 2004 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	263	263.7	221	228.6	557.6	405.1
Brain & Other Nervous System	13	4.0	0	2.8	25.3	~
Breast	0	0.6	66	74.2	~	121.6
Cervix Uteri	-	-	1	3.1	-	~
Colon & Rectum	27	27.9	27	27.9	56.5	44.8
Corpus & Uterus, NOS	-	-	18	14.2	-	35.8
Esophagus	5	3.9	0	1.1	~	~
Hodgkin Lymphoma	0	1.9	1	1.3	~	~
Kaposi Sarcoma (all sites)	0	0.2	0	0.0	~	~
Kidney & Renal Pelvis	14	9.2	4	4.9	30.4	~
Larynx	2	2.6	1	0.6	~	~
Leukemia	4	9.4	8	6.0	~	~
Liver & Intrahepatic Bile Duct	4	2.7	2	1.1	~	~
Lung & Bronchus	35	33.2	22	25.5	74.3	39.8
Melanoma of the Skin	10	10.3	11	7.7	20.8	25.0
Mesothelioma (all sites)	1	1.1	0	0.2	~	~
Myeloma	2	3.2	2	2.3	~	~
Non-Hodgkin Lymphoma	14	12.4	12	10.3	29.9	22.6
Oral Cavity & Pharynx	8	7.4	1	3.7	~	~
Ovary	-	-	7	7.2	-	~
Pancreas	5	4.9	8	4.5	~	~
Prostate	76	86.6	-	-	166.0	-
Soft Tissues incl. Heart	4	1.8	2	1.4	~	~
Stomach	4	4.0	2	2.4	~	~
Testis	2	4.0	-	-	~	-
Thyroid	2	2.1	3	4.6	~	~
Urinary Bladder	16	18.3	6	6.0	33.5	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-82: Washington County 2000 - 2004 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	2169	2123.7	2040	1951.7	583.2	436.9
Brain & Other Nervous System	31	38.4	27	28.1	6.2	5.2
Breast	5	4.4	751	683.1	~	152.8
Cervix Uteri	-	-	36	36.2	-	7.0
Colon & Rectum	197	214.6	184	195.3	57.0	43.2
Corpus & Uterus, NOS	-	-	126	128.9	-	26.8
Esophagus	33	32.0	7	8.0	9.1	~
Hodgkin Lymphoma	19	17.7	8	13.5	3.4	~
Kaposi Sarcoma (all sites)	0	2.4	0	0.1	~	~
Kidney & Renal Pelvis	101	80.0	43	40.5	25.7	9.2
Larynx	23	22.6	4	5.8	6.3	~
Leukemia	88	72.9	54	47.0	23.9	11.9
Liver & Intrahepatic Bile Duct	20	23.4	5	8.2	4.7	~
Lung & Bronchus	220	257.3	222	204.4	64.1	52.7
Melanoma of the Skin	108	89.5	101	80.6	25.9	20.5
Mesothelioma (all sites)	8	7.6	1	1.8	~	~
Myeloma	27	24.4	27	17.5	7.6	6.2
Non-Hodgkin Lymphoma	114	100.6	83	80.5	30.4	17.8
Oral Cavity & Pharynx	51	65.0	28	30.7	11.5	5.7
Ovary	-	-	70	65.5	-	14.5
Pancreas	50	39.0	21	32.8	13.9	5.3
Prostate	718	699.2	-	-	194.7	-
Soft Tissues incl. Heart	21	15.8	16	13.1	5.2	3.3
Stomach	25	29.4	12	16.9	6.3	2.8
Testis	48	39.1	-	-	9.0	-
Thyroid	18	20.6	60	54.2	3.5	11.3
Urinary Bladder	145	132.9	45	42.5	44.4	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-83: Watonwan County 2000 - 2004 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	173	192.7	190	166.9	500.7	467.5
Brain & Other Nervous System	2	2.6	3	1.9	~	~
Breast	0	0.4	65	52.8	~	164.1
Cervix Uteri	-	-	2	2.0	-	~
Colon & Rectum	16	20.6	26	21.6	45.3	58.0
Corpus & Uterus, NOS	-	-	14	10.2	-	34.4
Esophagus	0	2.9	0	0.9	~	~
Hodgkin Lymphoma	4	1.0	3	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	6.4	2	3.6	~	~
Larynx	0	1.9	3	0.5	~	~
Leukemia	2	6.7	2	4.5	~	~
Liver & Intrahepatic Bile Duct	1	1.9	2	0.8	~	~
Lung & Bronchus	25	25.0	13	19.2	70.7	34.8
Melanoma of the Skin	6	6.8	9	5.1	~	~
Mesothelioma (all sites)	0	0.9	0	0.2	~	~
Myeloma	2	2.4	3	1.8	~	~
Non-Hodgkin Lymphoma	6	8.7	7	7.7	~	~
Oral Cavity & Pharynx	3	5.1	3	2.7	~	~
Ovary	-	-	3	5.1	-	~
Pancreas	3	3.6	2	3.5	~	~
Prostate	71	66.0	-	-	199.3	-
Soft Tissues incl. Heart	2	1.1	1	1.0	~	~
Stomach	6	2.9	2	1.9	~	~
Testis	3	1.8	-	-	~	-
Thyroid	1	1.2	4	2.9	~	~
Urinary Bladder	11	13.9	4	4.6	31.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-84: Wilkin County 2000 - 2004 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	108	103.6	102	91.7	587.5	440.5
Brain & Other Nervous System	1	1.5	0	1.1	~	~
Breast	0	0.2	31	29.7	~	141.7
Cervix Uteri	-	-	0	1.2	-	~
Colon & Rectum	25	10.9	18	11.5	135.8	66.9
Corpus & Uterus, NOS	-	-	3	5.7	-	~
Esophagus	2	1.5	0	0.5	~	~
Hodgkin Lymphoma	0	0.6	0	0.5	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	3	3.6	3	1.9	~	~
Larynx	1	1.0	0	0.3	~	~
Leukemia	5	3.5	1	2.5	~	~
Liver & Intrahepatic Bile Duct	0	1.0	0	0.4	~	~
Lung & Bronchus	13	13.4	16	10.1	71.1	71.6
Melanoma of the Skin	2	3.8	1	3.0	~	~
Mesothelioma (all sites)	1	0.4	0	0.1	~	~
Myeloma	0	1.3	0	0.9	~	~
Non-Hodgkin Lymphoma	6	4.7	5	4.1	~	~
Oral Cavity & Pharynx	6	2.8	2	1.5	~	~
Ovary	-	-	4	2.8	-	~
Pancreas	5	1.9	2	1.8	~	~
Prostate	27	35.3	-	-	143.6	-
Soft Tissues incl. Heart	0	0.6	0	0.6	~	~
Stomach	4	1.5	4	1.0	~	~
Testis	0	1.2	-	-	~	-
Thyroid	1	0.7	1	1.7	~	~
Urinary Bladder	6	7.3	4	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-85: Winona County 2000 - 2004 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	630	622.2	566	564.7	569.2	421.2
Brain & Other Nervous System	7	9.3	8	7.1	~	~
Breast	2	1.4	200	181.9	~	154.1
Cervix Uteri	-	-	10	7.9	-	8.9
Colon & Rectum	75	65.3	85	68.6	68.4	56.1
Corpus & Uterus, NOS	-	-	41	34.9	-	31.7
Esophagus	8	9.2	6	2.8	~	~
Hodgkin Lymphoma	5	4.4	5	3.7	~	~
Kaposi Sarcoma (all sites)	0	0.5	0	0.1	~	~
Kidney & Renal Pelvis	19	21.4	11	12.0	17.1	9.2
Larynx	7	6.3	2	1.6	~	~
Leukemia	25	21.7	14	14.9	22.7	10.6
Liver & Intrahepatic Bile Duct	5	6.3	2	2.6	~	~
Lung & Bronchus	95	78.8	60	62.3	85.6	44.7
Melanoma of the Skin	23	23.4	11	19.8	21.0	8.7
Mesothelioma (all sites)	2	2.6	1	0.6	~	~
Myeloma	7	7.4	4	5.7	~	~
Non-Hodgkin Lymphoma	26	28.7	17	25.5	23.1	11.1
Oral Cavity & Pharynx	18	17.2	5	9.1	16.0	~
Ovary	-	-	14	17.8	-	11.0
Pancreas	15	11.6	12	11.0	13.5	8.9
Prostate	191	209.0	-	-	172.0	-
Soft Tissues incl. Heart	3	4.1	4	3.8	~	~
Stomach	10	9.1	3	6.0	9.3	~
Testis	8	9.0	-	-	~	-
Thyroid	10	4.8	8	12.3	8.5	~
Urinary Bladder	41	42.8	12	14.6	38.2	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-86: Wright County 2000 - 2004 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	1008	993.7	805	878.8	575.4	381.0
Brain & Other Nervous System	16	17.6	9	12.7	7.4	~
Breast	2	2.1	258	296.7	~	120.6
Cervix Uteri	-	-	8	15.9	-	~
Colon & Rectum	99	101.4	92	93.7	60.1	44.3
Corpus & Uterus, NOS	-	-	43	55.9	-	20.7
Esophagus	18	14.7	3	3.8	10.4	~
Hodgkin Lymphoma	11	8.5	3	6.5	4.6	~
Kaposi Sarcoma (all sites)	0	1.1	1	0.1	~	~
Kidney & Renal Pelvis	34	36.3	27	18.3	18.2	13.1
Larynx	10	10.2	2	2.5	5.2	~
Leukemia	44	35.3	26	22.4	26.4	11.9
Liver & Intrahepatic Bile Duct	8	10.6	1	3.8	~	~
Lung & Bronchus	114	121.3	98	92.2	67.1	49.1
Melanoma of the Skin	49	40.9	33	35.9	24.3	14.6
Mesothelioma (all sites)	1	3.8	0	0.8	~	~
Myeloma	14	11.5	7	8.1	9.8	~
Non-Hodgkin Lymphoma	46	47.1	36	37.5	24.7	17.0
Oral Cavity & Pharynx	30	29.1	11	13.9	16.8	5.3
Ovary	-	-	29	28.7	-	13.9
Pancreas	17	18.2	16	15.4	10.3	8.1
Prostate	344	325.0	-	-	199.5	-
Soft Tissues incl. Heart	6	7.4	5	6.1	~	~
Stomach	5	14.1	8	8.2	~	~
Testis	17	18.9	-	-	6.5	-
Thyroid	12	9.4	24	24.2	5.5	9.8
Urinary Bladder	72	64.2	19	20.2	45.9	9.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-87: Yellow Medicine County 2000 - 2004 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	181	189.4	155	167.4	541.5	421.8
Brain & Other Nervous System	3	2.5	4	1.8	~	~
Breast	1	0.4	53	52.7	~	147.9
Cervix Uteri	-	-	2	1.9	-	~
Colon & Rectum	30	20.5	15	22.3	85.0	40.6
Corpus & Uterus, NOS	-	-	9	10.2	-	~
Esophagus	2	2.8	1	0.9	~	~
Hodgkin Lymphoma	0	1.0	0	0.8	~	~
Kaposi Sarcoma (all sites)	0	0.1	0	0.0	~	~
Kidney & Renal Pelvis	5	6.3	8	3.6	~	~
Larynx	1	1.9	0	0.5	~	~
Leukemia	6	6.6	2	4.6	~	~
Liver & Intrahepatic Bile Duct	0	1.9	0	0.8	~	~
Lung & Bronchus	20	24.6	15	19.0	60.7	40.3
Melanoma of the Skin	3	6.7	5	5.0	~	~
Mesothelioma (all sites)	1	0.9	0	0.2	~	~
Myeloma	0	2.3	4	1.8	~	~
Non-Hodgkin Lymphoma	6	8.7	7	7.8	~	~
Oral Cavity & Pharynx	6	5.0	4	2.7	~	~
Ovary	-	-	5	5.0	-	~
Pancreas	3	3.6	5	3.5	~	~
Prostate	67	64.4	-	-	200.2	-
Soft Tissues incl. Heart	1	1.1	1	1.0	~	~
Stomach	4	2.9	0	2.0	~	~
Testis	1	1.7	-	-	~	-
Thyroid	0	1.2	3	2.7	~	~
Urinary Bladder	14	13.8	2	4.7	41.6	~

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-88: Northwestern Region 2000 - 2004 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	2456	2529.4	1991	2116.9	545.4	389.9
Brain & Other Nervous System	30	35.1	26	25.5	7.3	5.6
Breast	5	5.6	625	686.8	~	123.9
Cervix Uteri	-	-	36	28.0	-	8.9
Colon & Rectum	322	268.3	259	259.2	71.3	47.0
Corpus & Uterus, NOS	-	-	119	133.0	-	23.7
Esophagus	50	37.7	7	10.6	10.9	~
Hodgkin Lymphoma	11	14.7	9	11.3	2.6	~
Kaposi Sarcoma (all sites)	1	1.8	1	0.2	~	~
Kidney & Renal Pelvis	78	85.9	45	45.5	17.5	9.1
Larynx	24	25.4	5	6.1	5.3	~
Leukemia	103	87.3	68	55.5	23.3	12.9
Liver & Intrahepatic Bile Duct	17	25.5	7	9.7	3.9	~
Lung & Bronchus	322	325.5	230	239.6	70.8	44.7
Melanoma of the Skin	69	92.0	50	69.5	15.6	11.4
Mesothelioma (all sites)	8	11.0	1	2.2	~	~
Myeloma	31	30.6	18	21.6	6.9	3.2
Non-Hodgkin Lymphoma	94	115.4	99	95.2	20.8	18.6
Oral Cavity & Pharynx	84	68.0	33	34.0	18.8	6.2
Ovary	-	-	53	66.3	-	10.4
Pancreas	49	47.6	41	42.2	11.1	7.6
Prostate	791	862.8	-	-	172.8	-
Soft Tissues incl. Heart	21	15.3	15	13.1	4.8	3.1
Stomach	37	37.8	24	22.6	8.1	4.6
Testis	35	27.9	-	-	8.9	-
Thyroid	13	17.5	33	41.0	3.1	7.9
Urinary Bladder	166	178.4	62	55.5	36.7	11.7

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-89: Northeastern Region 2000 - 2004 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	5220	5096.2	4590	4408.3	575.8	437.0
Brain & Other Nervous System	75	70.5	42	51.9	8.9	4.5
Breast	12	11.2	1460	1436.7	1.3	141.8
Cervix Uteri	-	-	74	57.7	-	8.9
Colon & Rectum	624	538.8	554	538.3	68.8	47.7
Corpus & Uterus, NOS	-	-	299	278.7	-	29.2
Esophagus	72	76.4	23	22.0	7.8	2.0
Hodgkin Lymphoma	33	29.1	25	22.7	4.0	3.0
Kaposi Sarcoma (all sites)	0	3.7	1	0.4	~	~
Kidney & Renal Pelvis	163	174.4	96	94.9	17.8	9.1
Larynx	48	51.7	15	12.7	5.2	1.5
Leukemia	148	172.7	110	113.6	16.9	10.0
Liver & Intrahepatic Bile Duct	52	51.9	20	20.2	5.7	1.7
Lung & Bronchus	746	657.0	584	502.3	81.2	54.6
Melanoma of the Skin	173	186.3	134	143.4	19.2	14.8
Mesothelioma (all sites)	48	21.8	1	4.6	5.3	~
Myeloma	55	61.7	58	45.1	6.0	5.4
Non-Hodgkin Lymphoma	257	231.8	192	198.0	28.4	17.6
Oral Cavity & Pharynx	150	138.8	86	70.6	16.6	8.2
Ovary	-	-	145	138.7	-	14.1
Pancreas	111	96.3	111	87.8	12.2	9.9
Prostate	1637	1744.7	-	-	178.2	-
Soft Tissues incl. Heart	27	30.6	17	26.7	3.0	1.8
Stomach	104	75.5	52	46.7	11.6	4.3
Testis	55	55.3	-	-	7.4	-
Thyroid	35	35.6	86	83.8	4.2	10.5
Urinary Bladder	368	356.3	120	115.3	40.8	10.6

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-90: West Central Region 2000 - 2004 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	3464	3362.1	2615	2865.9	577.6	378.8
Brain & Other Nervous System	52	45.5	32	33.7	9.1	5.2
Breast	5	7.6	772	922.2	~	117.4
Cervix Uteri	-	-	43	36.6	-	8.1
Colon & Rectum	416	357.6	371	357.2	68.8	47.9
Corpus & Uterus, NOS	-	-	169	178.8	-	24.9
Esophagus	49	50.1	14	14.6	8.1	1.8
Hodgkin Lymphoma	21	19.0	16	15.1	3.8	3.1
Kaposi Sarcoma (all sites)	1	2.4	2	0.3	~	~
Kidney & Renal Pelvis	91	113.0	60	61.8	15.4	8.9
Larynx	32	33.6	7	8.2	5.5	~
Leukemia	124	115.6	76	75.5	21.1	10.4
Liver & Intrahepatic Bile Duct	21	33.6	13	13.1	3.5	1.7
Lung & Bronchus	428	435.2	275	326.6	70.7	39.0
Melanoma of the Skin	110	121.0	84	92.1	19.1	13.5
Mesothelioma (all sites)	18	14.8	5	3.1	3.0	~
Myeloma	43	40.9	36	29.6	7.0	4.9
Non-Hodgkin Lymphoma	131	152.7	116	129.8	22.5	16.0
Oral Cavity & Pharynx	86	89.4	43	46.1	14.6	5.7
Ovary	-	-	83	89.2	-	12.1
Pancreas	58	63.4	53	57.9	9.8	7.4
Prostate	1242	1150.1	-	-	203.7	-
Soft Tissues incl. Heart	15	20.0	20	17.6	2.7	3.0
Stomach	58	50.5	31	31.2	9.7	3.7
Testis	31	35.7	-	-	6.4	-
Thyroid	14	22.7	37	53.6	2.6	7.4
Urinary Bladder	285	239.1	100	76.5	47.3	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-91: Central Region 2000 - 2004 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	8612	8068.1	6719	6847.0	598.3	408.0
Brain & Other Nervous System	126	125.4	90	90.1	8.2	5.6
Breast	23	17.4	2074	2261.9	1.7	127.2
Cervix Uteri	-	-	80	106.1	-	5.1
Colon & Rectum	845	837.5	750	782.9	59.6	43.6
Corpus & Uterus, NOS	-	-	401	433.9	-	24.8
Esophagus	121	119.8	41	32.1	8.4	2.4
Hodgkin Lymphoma	56	57.5	40	43.8	3.4	2.5
Kaposi Sarcoma (all sites)	2	7.3	2	0.6	~	~
Kidney & Renal Pelvis	297	282.4	193	145.8	20.0	11.8
Larynx	99	82.1	26	20.0	6.8	1.6
Leukemia	258	279.6	172	175.6	18.2	10.3
Liver & Intrahepatic Bile Duct	66	83.0	34	30.4	4.5	2.0
Lung & Bronchus	1098	1018.1	805	755.2	77.2	49.4
Melanoma of the Skin	294	309.3	244	251.0	19.9	15.3
Mesothelioma (all sites)	20	32.9	12	6.9	1.4	0.7
Myeloma	97	95.6	62	66.7	6.9	3.7
Non-Hodgkin Lymphoma	354	372.3	297	300.2	24.5	17.8
Oral Cavity & Pharynx	225	224.2	104	109.1	15.4	6.1
Ovary	-	-	235	219.4	-	14.4
Pancreas	161	149.8	153	128.9	11.2	9.0
Prostate	3260	2712.2	-	-	226.5	-
Soft Tissues incl. Heart	48	53.8	51	44.8	3.2	3.2
Stomach	99	116.9	72	68.2	7.2	4.2
Testis	104	120.8	-	-	6.3	-
Thyroid	62	65.3	189	159.7	3.9	12.0
Urinary Bladder	551	545.4	174	168.6	39.5	10.4

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-92: Southwestern Region 2000 - 2004 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	4340	4574.1	3792	4003.2	532.7	395.3
Brain & Other Nervous System	54	61.9	40	46.1	7.2	5.1
Breast	6	10.5	1179	1277.3	~	127.9
Cervix Uteri	-	-	68	49.7	-	9.5
Colon & Rectum	518	491.4	584	513.4	62.5	53.0
Corpus & Uterus, NOS	-	-	265	246.3	-	29.6
Esophagus	61	67.9	15	20.8	7.5	1.4
Hodgkin Lymphoma	19	25.6	20	19.7	2.6	2.5
Kaposi Sarcoma (all sites)	0	3.3	0	0.4	~	~
Kidney & Renal Pelvis	138	153.3	87	86.1	17.2	8.9
Larynx	41	45.0	2	11.2	5.1	~
Leukemia	151	160.5	94	107.6	18.4	8.7
Liver & Intrahepatic Bile Duct	34	45.6	10	18.6	4.2	1.0
Lung & Bronchus	530	589.9	329	453.7	64.7	34.3
Melanoma of the Skin	143	165.8	122	125.4	18.3	15.2
Mesothelioma (all sites)	13	20.6	8	4.3	1.6	~
Myeloma	61	55.9	43	41.9	7.4	3.9
Non-Hodgkin Lymphoma	190	210.2	193	183.5	23.4	17.8
Oral Cavity & Pharynx	99	121.7	63	64.7	12.4	5.8
Ovary	-	-	111	122.9	-	12.6
Pancreas	66	86.6	71	82.2	8.1	6.4
Prostate	1538	1546.9	-	-	187.6	-
Soft Tissues incl. Heart	24	27.4	20	24.1	3.2	2.3
Stomach	64	70.0	43	45.1	7.6	3.8
Testis	45	48.4	-	-	6.9	-
Thyroid	31	30.9	106	71.2	4.2	14.2
Urinary Bladder	312	329.5	81	109.1	37.3	7.2

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-93: South Central Region 2000 - 2004 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	2978	3131.3	2757	2785.5	534.7	412.7
Brain & Other Nervous System	56	45.3	38	33.6	10.2	6.8
Breast	3	7.0	803	896.8	~	122.9
Cervix Uteri	-	-	40	37.3	-	7.5
Colon & Rectum	344	331.9	406	345.0	61.7	52.8
Corpus & Uterus, NOS	-	-	213	172.5	-	32.9
Esophagus	40	46.5	14	14.0	7.1	2.2
Hodgkin Lymphoma	20	20.2	17	15.8	3.6	2.9
Kaposi Sarcoma (all sites)	0	2.5	0	0.3	~	~
Kidney & Renal Pelvis	108	106.7	66	59.6	19.5	10.0
Larynx	20	31.2	7	7.9	3.6	~
Leukemia	101	109.5	73	73.8	18.1	10.8
Liver & Intrahepatic Bile Duct	29	31.7	12	12.8	5.2	1.8
Lung & Bronchus	355	399.0	271	312.0	63.8	41.3
Melanoma of the Skin	134	116.7	111	92.8	24.3	18.6
Mesothelioma (all sites)	7	13.5	1	2.9	~	~
Myeloma	19	37.8	22	28.5	3.4	3.3
Non-Hodgkin Lymphoma	136	144.5	118	126.2	24.4	16.9
Oral Cavity & Pharynx	63	85.3	39	44.8	11.1	5.9
Ovary	-	-	72	86.9	-	11.0
Pancreas	55	58.8	46	55.6	9.8	6.2
Prostate	997	1052.2	-	-	179.5	-
Soft Tissues incl. Heart	31	19.9	17	17.5	5.4	2.4
Stomach	37	46.9	30	30.3	6.5	3.8
Testis	48	40.7	-	-	8.5	-
Thyroid	21	23.1	72	55.4	3.8	13.4
Urinary Bladder	216	219.6	76	73.6	38.8	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 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-94: Southeastern Region 2000 - 2004 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	6237	6278.4	5541	5613.9	557.6	412.4
Brain & Other Nervous System	102	93.5	79	69.7	9.0	6.5
Breast	9	13.9	1764	1832.7	~	134.1
Cervix Uteri	-	-	73	80.3	-	6.1
Colon & Rectum	675	660.7	659	673.8	60.7	44.2
Corpus & Uterus, NOS	-	-	362	351.3	-	27.5
Esophagus	110	93.3	32	27.4	9.7	2.2
Hodgkin Lymphoma	44	41.3	34	32.6	3.8	2.8
Kaposi Sarcoma (all sites)	3	5.3	0	0.5	~	~
Kidney & Renal Pelvis	227	217.1	137	119.5	20.1	10.5
Larynx	76	63.2	11	16.0	6.7	0.9
Leukemia	255	218.8	162	146.5	23.0	11.6
Liver & Intrahepatic Bile Duct	76	64.2	29	25.4	6.7	1.9
Lung & Bronchus	785	797.1	583	622.3	70.6	43.8
Melanoma of the Skin	246	237.2	239	194.5	21.8	19.3
Mesothelioma (all sites)	20	26.5	10	5.8	1.8	0.6
Myeloma	77	75.3	46	56.2	6.9	3.3
Non-Hodgkin Lymphoma	311	290.2	262	250.4	27.7	19.2
Oral Cavity & Pharynx	170	172.9	89	90.0	14.8	6.6
Ovary	-	-	154	177.0	-	11.7
Pancreas	112	117.5	107	109.3	10.1	7.6
Prostate	1974	2109.2	-	-	176.5	-
Soft Tissues incl. Heart	33	40.5	32	35.6	3.0	2.4
Stomach	88	92.9	41	59.1	8.0	2.8
Testis	72	84.3	-	-	6.2	-
Thyroid	74	48.1	159	118.8	6.4	13.2
Urinary Bladder	405	434.3	135	144.2	36.8	9.6

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Table IV-95: Metropolitan Region 2000 - 2004 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	28005	28332.0	27378	27347.6	555.5	417.2
Brain & Other Nervous System	471	489.6	343	372.1	7.9	5.3
Breast	70	60.6	9001	9230.2	1.5	135.3
Cervix Uteri	-	-	440	466.8	-	6.3
Colon & Rectum	2652	2911.3	2645	2992.4	54.1	40.4
Corpus & Uterus, NOS	-	-	1700	1746.6	-	26.0
Esophagus	410	420.5	121	121.0	8.2	1.9
Hodgkin Lymphoma	234	232.1	176	183.8	3.6	2.6
Kaposi Sarcoma (all sites)	51	30.7	2	2.2	0.8	~
Kidney & Renal Pelvis	1061	1030.9	579	572.5	20.0	9.0
Larynx	283	291.0	90	78.8	5.5	1.4
Leukemia	999	997.0	713	687.6	19.5	10.9
Liver & Intrahepatic Bile Duct	344	302.1	130	119.2	6.4	2.0
Lung & Bronchus	3429	3475.0	3351	2910.9	71.5	53.6
Melanoma of the Skin	1218	1162.1	1138	1072.4	22.2	16.6
Mesothelioma (all sites)	117	109.1	32	26.4	2.7	0.5
Myeloma	345	330.9	280	257.3	7.1	4.4
Non-Hodgkin Lymphoma	1380	1341.9	1211	1174.1	27.0	18.5
Oral Cavity & Pharynx	854	833.4	473	434.1	15.4	7.2
Ovary	-	-	899	890.1	-	13.6
Pancreas	530	523.0	536	491.1	10.7	8.3
Prostate	8990	9264.7	-	-	182.6	-
Soft Tissues incl. Heart	214	206.4	182	181.6	3.6	2.7
Stomach	407	405.2	252	262.3	8.4	3.9
Testis	543	519.2	-	-	7.6	-
Thyroid	257	263.7	781	702.1	4.1	11.2
Urinary Bladder	1846	1848.1	694	643.6	39.7	10.8

§ Rates are per 100,000 persons and are age-adjusted to the 2000 U.S. population.
† Expected number of cancers based on State 2000 - 2004 incidence
~ Rates based on fewer than 10 cases are not presented.
- Not applicable; site is sex-specific.

Appendices

[This page left intentionally blank.]

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

[This page left intentionally blank.]

Appendix C: Definition of Minnesota Regions

For purposes of evaluating geographic variation in cancer rates, Minnesota counties have been grouped into regions as shown below. The abbreviations adopted for the text and graphs are shown in parentheses.

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	

[This page left intentionally blank.]

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 6.4.4. 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.

$$agerate_{-j} = \sum_{i=a}^{b}\left[\left(\frac{count}{pop}\right) \times 100{,}000 \times \left(\frac{stdmil_i}{\sum_{j=a}^{b} stdmil_j}\right)\right]$$

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 3.3, 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 2004 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 2002-2004. It represents the estimated percentage of newborns in Minnesota in 2002-2004 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 2002-2004.

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 29-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 6.4.4 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 2003 and 2004 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 2000-2004. 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 CanPrev (http://srab.cancer.gov/canprev) and applied to the 29-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.