

CANCER IN NORTH AMERICA, 1994-1998

VOLUME ONE: INCIDENCE

PURPOSE

The Data Evaluation and Publication Committee, a standing committee of the North American Association of Central Cancer Registries (NAACCR), produced this monograph. The NAACCR bylaws charge the Data Evaluation and Publication Committee to gather data from member registries, review, evaluate, and compile them for publication. The year 2001 marks the eleventh release of the publication of *Cancer in North America (CINA)* and the fifth monograph to include cancer mortality data. This monograph reflects the enthusiastic participation of NAACCR member registries, with cancer incidence coverage in all Canadian provinces and territories, 43 U.S. states, the District of Columbia, and five metropolitan areas in the United States (U.S.). Two U.S. state registries (Arkansas and Missouri) submitted their incidence data for the first time. We hope this effort continues to improve the completeness, the timeliness and the quality of data collected by member registries; to promote the use of their cancer registry data; and to provide cancer statistics that are inclusive of all racial/ethnic groups and geographic coverage of the United States and Canada.

MONOGRAPH FORMAT

The *Cancer in North America (CINA), 1994-1998* monograph includes two volumes: Volume One contains cancer incidence data and Volume Two contains cancer mortality data. An electronic copy of data from both volumes of the monograph is available through the Internet (on the NAACCR web site at <http://www.naacr.org>) for downloading. README text files are also available on the web site. The README files provide record layouts, instructions, and general information about the data files. A separate README file has been prepared as supporting documentation for each of the data files (incidence, mortality, data quality indicators, population counts, and registry descriptions and technical documentation for the incidence, mortality, and pediatric files). The electronic data files are not incorporated into a software program and thus they require the use of other statistical or database software packages for data analysis. All participants in the *Call for Data 2001* consented to have their data reproduced in this electronic format.

The data in Volume One of this monograph include cancer incidence data for the years 1994 through 1998, unless indicated otherwise, for all participating registries. Volume One has four major sections as described below.

VOLUME ONE, SECTION I: Introduction and Technical Notes

This section states the purpose of the monograph, describes the monograph format, and details the various data sources and data definitions. It also provides some background information on the NAACCR and lists member rosters of the Data Evaluation and Publication Committee and its subcommittees.

VOLUME ONE, SECTION II: Registry-specific Cancer Incidence by Sex and Race, Age-adjusted to the 1970 U.S. Population and the World Standards

Incidence data are presented in this monograph for 61 central population-based registries: 49 from the United States (43 states, 5 metropolitan areas and District of Columbia) and 12 (10 provinces and 2 territories) from Canada. This represents total coverage in Canada and all but 7 states (Kansas, Maine, Minnesota, Oklahoma, South Dakota, Tennessee, and Vermont) in the U.S. None of the U.S. territories submitted their data.

The first page for each participating registry provides descriptive information about the registry, identifies the contact person(s), and summarizes several data quality and completeness indicators. This descriptive information about each registry is useful in evaluating the general data quality of the registry and the comparability of incidence rates among registries and in interpreting differences in incidence rates among them. These indicators are the percents of death certificate only (DCO) cases, duplicate records (from the NAACCR protocol), and the NAACCR estimated completeness of case ascertainment adjusted for duplicates. The NAACCR adjusted estimate of completeness could not be calculated for registries that did not submit their results for the *Protocol for Assessing Duplicate Cases* (Maryland and Quebec). To assist in data comparisons across registries, the percents of total cases that are of races other than white or black and of unknown race are also listed. The sources for case finding are included, with the diagnosis year that each was implemented (e.g., hospitals, death certificates, pathology laboratories, radiation therapy sites, interstate data exchanges, physician's offices, ambulatory surgical centers, and nursing homes or hospices).

In addition to these general quality indicators, several cancer site-specific data quality indicators are presented. These cancer sites are selected based on both their frequent occurrence and their importance in cancer control and prevention activities. For each cancer, four data quality indicators are listed: the percent of DCO cases for that cancer site; the percent of microscopically confirmed cases; and the site-specific incidence-to-mortality rate ratios for whites and for blacks. The same time periods for incidence rates (numerator) and mortality rates (denominator) are used in computing the rate ratios. Incidence-to-mortality rate ratios are suppressed when fewer than 6 cases in either numerator or denominator were reported. For cancer types occurring in only one gender, e.g., prostate and ovary, the ratios are calculated based on the rates for the specific gender.

Following the registry description, annual age- and sex-specific population estimates for all races, whites, and blacks are reproduced for each registry in the U.S. For Canadian registries, population estimates are presented for all races combined.

The cancer incidence tables show the total five-year (unless indicated otherwise) incidence counts and the average annual incidence rates age-adjusted to the 1970 U.S. population and to the World standard, by site and sex for all races, whites, and blacks for each registry in the U.S. except for Hawaii (all races only). For Canadian registries, rates are presented only for all races combined because race identifiers are not collected by Canadian cancer registries.

VOLUME ONE, SECTION III: Registry-specific Cancer Incidence by Sex, Age-adjusted to the 1991 Canadian Population and the World Standards

Age-adjusted incidence rates for all races combined were also calculated for males and females separately using the 1991 Canadian standard population (Cdn.) and the World standard for all U.S. and Canadian participating registries.

VOLUME ONE, SECTION IV: Combined Cancer Incidence Rates for the United States, Canada, and North America

The inclusion of registry data in the combined rates is reserved for those registries of highest quality, as demonstrated by meeting all criteria for completeness and high quality data. The standards for such selection are described below under Technical Notes. All cases from qualified registries were included in the calculation of combined rates. However, in states where a SEER program is located within their boundaries and when both SEER area and state (e.g., Los Angeles and Greater Bay Area in California) were qualified for inclusion, only the state (California) data were included in the combined rates.

In this section, combined rates are presented for the United States, Canada, and North America. A general description regarding the population covered and several data quality indicators (both general and cancer site-specific) are provided for each of these three geographic areas with a map showing the registries meeting inclusion criteria for the combined rates. Combined rates for the major and minor cancer site groupings are presented, using the same table format as those in Sections II and III for individual registries. For the United States, combined rates are provided for all races, whites, and blacks and are age-adjusted to the 1970 U.S. population and the World standards. For Canada, combined rates are presented for all races combined and age-adjusted to the 1991 Canadian population and the World standards. Rates for North America are provided for all races combined and are age-adjusted to the 1970 U.S., the 1991 Canadian, and World standard populations.

In addition, summary tables of sex-specific counts and incidence rates for selected major cancer sites are presented for all races, whites (U.S. only), and blacks (U.S. only) for individual registries qualified for inclusion in the combined rates. However, the counts and rates are suppressed when fewer than six cases were reported for the specified sites, although the counts are included in the total and in the combined incidence rates. Rates are age-adjusted to the 1970 U.S. population for U.S. registries, the 1991 Canadian population for Canadian registries, and both the 1970 U.S. and the 1991 Canadian populations for the North American combined rates. These summary tables facilitate comparisons among high quality registries. Before comparing rates among these registries, however, it is important to consider whether the populations are comparable by race (i.e., *percent other races* or *percent unknown race* on the registry description page in Section II). It is also important to evaluate the quality and completeness of case ascertainment, as differences in rates may be attributable to case completeness and data quality, as well as to actual regional differences in cancer incidence.

Two tables presenting the five most common cancer types for eight race groups and for persons of Hispanic origin among males and females separately are also included in the combined section for the United States, as an initial step towards providing cancer incidence statistics that are inclusive of all racial/ethnic groups in North America. Several NAACCR committees have begun to assess the reliability of identifiers for race groups other than white and black in the United States. Our intent is that this effort will enable us to expand the presentation of cancer incidence rates in future monographs for more race and ethnic groups. With the availability of national, annual population estimates for American Indians/Alaskan Natives, Asian/Pacific Islanders, and Hispanic persons, evaluation of these population identifiers will be a primary focus during the coming years.

Section IV also presents combined rates for cancer in children and adolescents in the U.S., Canada, and North America. These tables present average annual age-adjusted rates per million for 0-14 year olds and 0-19 year olds as well as 5-year, age-specific rates for selected pediatric cancer types. The cases were grouped into pediatric cancer groupings using the International Classification of Childhood Cancer (“ICCC” - see Appendix B) published by the International Agency for Research on Cancer (IARC) in 1996.¹

¹Kramárová E, Stiller CA, Ferlay J, Parkin DM, Draper GJ, Michaelis J, Neglia J, and Qureshi S (eds). *International Classification of Childhood Cancer 1996*. Lyon, France: International Agency for Research on Cancer, IARC Technical Report No. 29, 1996.

TECHNICAL NOTES

Data Sources

Incidence. Each member registry provided its own incidence data for 1994 to 1998; if all five years were not available, data were provided for as many of the five years as possible. Cancer incidence data for registries in the SEER program were obtained from the SEER public use data file (August 2000 submission) produced by the National Cancer Institute (NCI). Statistics Canada provided data for all Canadian registries; the only exceptions are Manitoba and Ontario, for which the data were provided by the provincial registries.

Mortality. Mortality data for 1994 to 1998 for U.S. registry areas were obtained from the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC), as provided to NCI. For Canadian registries, the mortality data were obtained from Statistics Canada.

Population Estimates. Estimates of the population for the U.S., individual U.S. states, and all SEER areas for 1994 through 1998 were obtained from the SEER program, based on U.S. Bureau of Census population estimates for these years. Statistics Canada provided the estimates of the Canadian population for all Canadian provinces and territories, adjusted for census under-coverage and non-permanent residents.

Definitions

Cancer Sites. SEER rules were used to define cancer sites (see Appendix A)². Numbers and rates were calculated for invasive cancers only, with the exception of cancer of the bladder. Registries that did not submit bladder *in situ* cases were noted in their tables by omitting the phrase “incl. *in situ*.” Numbers and rates for carcinoma *in situ* of the breast were listed separately, when supplied by the registry. *In situ* cases of the breast were not included in the “All Sites” category. Squamous and basal cell carcinomas of the skin were excluded, except those of the lip and genital organs. Cancers in non-residents of the area and cases of unknown sex or age were omitted from all calculations, but cases of unknown race were included in the computation of cancer rates for “all races”.

²Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Edwards BK (eds). *SEER Cancer Statistics Review 1973-1997*. National Cancer Institute. Bethesda, MD, 2000.

Incidence Rates. Rates were calculated per 100,000 population and age-adjusted by the direct method to the 1970 U.S., the 1991 Canadian (Cdn.) and the World standards.³ The incidence rates are five-year averages for the period 1994 through 1998. The age distributions of the three population standards are presented below:

AGE GROUP	WORLD	1970 U.S.	1991 CDN.
0-4	12,000	8,441.6	6,946.5
5-9	10,000	9,820.4	6,945.4
10-14	9,000	10,230.4	6,803.4
15-19	9,000	9,384.5	6,849.5
20-24	8,000	8,056.1	7,501.6
25-29	8,000	6,632.0	8,994.4
30-34	6,000	5,624.9	9,240.0
35-39	6,000	5,465.6	8,338.8
40-44	6,000	5,895.8	7,606.3
45-49	6,000	5,962.2	5,953.6
50-54	5,000	5,464.3	4,764.9
55-59	4,000	4,907.7	4,404.1
60-64	4,000	4,240.3	4,232.6
65-69	3,000	3,440.6	3,857.0
70-74	2,000	2,678.9	2,966.0
75-79	1,000	1,887.1	2,212.7
80-84	500	1,124.1	1,359.5
85+	500	743.5	1,023.7
Total	100,000	100,000.0	100,000.0

Standard Errors. Standard errors (S.E.) of the rates were calculated using the formula:

$$S.E. = \sqrt{\sum \frac{w_j^2 n_j}{p_j^2}}$$

where w_j = the fraction of the standard population in age_j category, n_j = number of cases in that age category, and p_j = person-years denominator.⁴ For many registries, the S.E. of the rates are small, as the population covered is large. However, for registries that cover a small population, the S.E. may be substantial.

³ Waterhouse J, Muir C, Correa P, Powell J (eds). *Cancer Incidence in Five Continents, Volume III*. Lyon, France: International Agency for Research on Cancer, IARC Scientific Publications No. 15, 1976.

⁴Breslow NE and Day NE. *Statistical Methods in Cancer Research, vol. II*, Lyon, France: IARC, 1987, p. 59.

Comparison of Rates. The S.E. of adjusted rates can be used to evaluate the statistical significance of rate differences among comparable populations. For example, if the adjusted rates in two populations are R_1 and R_2 and their standard errors $S.E._1$ and $S.E._2$, an approximate confidence interval for the rate ratio can be calculated using the following formula:

$$(R_1/R_2)^{1 \pm z/x}$$

where $x = (R_1 - R_2) / \sqrt{(S.E._1)^2 + (S.E._2)^2}$ and $z = 1.96$ for 95% confidence limits.⁵ If this interval does not include one, the two rates are statistically significantly different at a p value of 0.05. This test can be inaccurate for rates based on fewer than 10 cases.

It should be emphasized that this kind of comparison of adjusted rates must be undertaken with caution as misleading conclusions may be drawn if the ratios of the age-specific rates in the two populations are not constant in all age groups. In these circumstances, the ratios of the adjusted rates will vary according to the standard populations used.

While it is possible to compare incidence rates among populations in various individual registries, it is important to consider whether the groups are comparable by race (*i.e.*, *percent other races* or *percent unknown race* from Section II). One should also consider the registries' quality and completeness as differences can be related to both true underlying differences and differences in reporting completeness and data quality. Interpretation without consideration of these factors may contribute to misleading or inaccurate conclusions.

Combined Rates for the United States, Canada, and North America. For inclusion in the combined rates, registries had to meet the following four criteria:

The first criterion was that data for all five years, 1994 to 1998, were submitted.

The second criterion was that a registry had to complete and submit the results for the *Protocol for Assessing Duplicate Cases*, developed by the Data Evaluation and Publication Committee. If a registry had an estimate of duplicates that exceeded one per 1,000 records or 0.1 percent, given its required sample size, the registry was not eligible for inclusion in the combined rates. The estimate for duplicate reports was also used to adjust the estimate of the completeness of case ascertainment described below.

The third criterion for inclusion was that a registry had to run all of its case records for 1994 to 1998 against the *Call for Data* metafile prepared for the EDITS software and to have made all corrections. This metafile identified records that did not pass all intra-field and inter-field edits on data elements used in preparation of the monograph. All identified errors and warnings had to be resolved or reconciled before the final data file was submitted.

The fourth criterion for inclusion was the completeness of case ascertainment. Several modifications have been made to this year's NAACCR estimation of completeness. An ad hoc Work Group for High Quality for Data Use was convened to evaluate the previous NAACCR method of estimating completeness of case-ascertainment. After careful theoretical and empirical review the work group determined that several changes would improve the model and the resulting estimates of completeness. These modifications, incorporated into this year's model for estimating completeness, are listed in the following:

⁵ Parkin DM, Muir CS, Whelan SL (eds). *Cancer Incidence in Five Continents, Volume VI*. Lyon, France: International Agency for Research on Cancer, IARC Scientific Pub No 120, 1992, p.869.

1. The inclusion of an adjustment factor which allows for the variation in case fatality among geographic areas. The adjustment factor was applied to each sex-, site- and race-specific estimate of completeness. The adjustment was set at 0.2, in other words, 20 percent of a difference in mortality rates could be attributed to different case fatality while 80% of the difference would be attributed to under-ascertainment. The previous model assumed stable case-fatality among all registries and that 100 percent of the difference was attributed to ascertainment.
2. Inclusion of breast cancer cases in the model of estimating completeness for females. The rationale is that recent data suggest that the impact of mammography screening on breast cancer case fatality has stabilized.
3. Inclusion of all eleven SEER areas rather than the original nine SEER areas in the incidence estimate for the standard SEER-incidence-to-U.S.-mortality rate ratio. The rationale is that the total SEER areas are more representative of the North American population.
4. Inclusion of both white and black populations in the model for estimating of completeness. The results from each of the two estimates (white and black) are weighed in the overall estimate in proportion to the sum of the white and black populations. This rule was not applied to Canadian registries (no race identifiers) or Hawaii, where the rate ratio standard was still based on white population and applied to all races combined.

The race-specific completeness of case ascertainment was computed using incidence-to-mortality rate ratios that were standardized for age, sex, and site of primary tumor for either whites or blacks. Thus, the estimates were calculated using the following formulae:

$$Expected I_s = (M_s) \left(\frac{I_{SEER}}{M_{U.S.}} \right)$$

$$Expected T_s = \sum_{i=1}^2 \sum_{j=1}^N Expected I_s$$

where I = Age-adjusted (1970 U.S.) incidence rate in gender i and site j category for race k 1994 to 1998; M = Age-adjusted (1970 U.S.) mortality rate in gender i and site j category for race k 1994-1998; s = State, SEER area, province or territory; $SEER$ = Combined eleven areas in SEER program;⁶ $U.S.$ = United States; T = Age-adjusted (1970 U.S.) incidence rate for total sites.⁷

⁶ Includes Atlanta, Connecticut, Detroit, Greater Bay Area (San Francisco/Oakland and San Jose/Monterey), Hawaii, Iowa, Los Angeles, New Mexico, Seattle/Puget Sound and Utah.

⁷The cancer sites included in this calculation were oral cavity, esophagus, stomach, colorectum, liver, pancreas, lung, melanoma, female breast, cervix, uterus, ovary, bladder, kidney, nervous system, Hodgkin's Disease, non-Hodgkin's lymphoma, myeloma, and leukemia. Cancer of the prostate were not included due to the lack of stability in the incidence-to-mortality rate ratios caused by the dramatic increase in screening for these diseases in some regions.

The race-specific percent completeness was calculated by dividing the observed (or reported) age-adjusted (1970 U.S.) incidence rates for total sites⁷ for both genders for a specified race group (Observed T_s) by the expected age-adjusted (1970 U.S.) incidence rate for total sites for both genders for that specified race group (Expected T_s).

This method of estimating completeness assumes that site-specific incidence-to-mortality rate ratios are relatively stable within sex for a specified race group, given a 20% difference in case fatality variation. The race-specific incidence-to-mortality rate ratio standard to which all registries were adjusted was the ratio of the combined cancer incidence rates for the 11 SEER areas⁶ for 1994 to 1998 to the U.S. mortality rates during the same time interval. This method is the current NAACCR standard for estimating completeness of case ascertainment for the U.S. The race-specific standard rate ratio is applied to death rates for that specified race group for all registry jurisdictions. The race-specific completeness estimates were further weighted in direct proportion to their percentage in the population to obtain the overall estimate of completeness. The exceptions to the NAACCR method are Hawaii and Canadian registries (no race identifiers). In both situations, the SEER incidence to U.S. mortality rate ratio standard was based on the white population only and the standard was applied to the entire population (all races combined).

Because mortality rates were only available for Canada through 1997, the 5-year average annual age-adjusted mortality rates for 1993 through 1997 were used to estimate the incidence rates for Canadian registries.

Based on the percent completeness estimate, expected number of cancer cases for all sites (C) in the registry was computed as follows:

$$Expected C_s = \frac{Observed C_s}{\% Completeness}$$

where C = cancer counts for all sites; s = State, SEER area, province or territory.

The number of duplicate records in the data set was calculated using the NAACCR estimate of duplicates, based on the registry's results from completing the *Protocol for Assessing Duplicate Cases*. The NAACCR completeness estimate was further adjusted for duplicates using the following equation:

$$Adjusted \% completeness = \left(\frac{Observed C_s - D_s}{Expected C_s} \right) \times 100\%$$

Where $Observed C_s$ = number of cancer cases for all sites in the registry; $Expected C_s$ = estimated number of cancer cases for all sites if completeness is 100%; D_s = number of duplicate records. For registries that did not complete the *Protocol for Assessing Duplicate Cases*, the NAACCR adjusted estimate for completeness is omitted from the registry description in Section II.

Every registry included in the combined rates had an adjusted completeness estimate of at least 90 percent. The computed completeness estimate for all registries included in the combined incidence rates for the U.S. was about 100 percent; for Canada, about 92 percent; and for North America, about 99 percent.

In the United States, 30 registries (25 states and 5 metropolitan areas in the SEER program) met all the criteria for inclusion in the U.S. combined rates. These were Arizona, California, the Greater Bay Area and Los Angeles in California, Colorado, Connecticut, Delaware, Florida, Metropolitan Atlanta in Georgia, Hawaii, Idaho, Illinois, Iowa, Kentucky, Louisiana, Metropolitan Detroit in Michigan, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, Pennsylvania, Rhode Island, Utah, Washington, Seattle/Puget Sound in Washington, West Virginia, Wisconsin and Wyoming. Since both California and its SEER areas of Los Angeles and Greater Bay Area were qualified for inclusion, only the state (California) data were included in the calculation of combined rates.

In Canada, eight registries met all the criteria for inclusion in the Canadian combined rates. These were Alberta, British Columbia, Manitoba, New Brunswick, Northwest Territories, Nova Scotia, Prince Edward Island and Saskatchewan.

Although all cases from qualified registries were included in computation of combined rates, counts and incidence rates were suppressed in the summary tables of selected major cancer sites if they had fewer than six cases. Suppression rules were also applied to the tables of pediatric cancer.

Data Interpretation

Race-specific Rates. Race-specific (either white or black) incidence rates are presented only when more than five cases were recorded. Cases of unknown race are included in the all races category. Because of limited reliability assessment regarding the misclassification of both case counts and population estimates for races other than white or black, no race-specific rates are presented for any other race groups for individual registries. As noted above, two summary tables presenting the top five cancers among eight race/ethnic groups have been added to Section IV. Canadian data are presented for all races only, as are the data for Hawaii. To facilitate comparisons among registries of similar race distribution, the proportion of *unknown race* and *races other than black or white* is reported in the Registry Description at the beginning of each registry's section.

Percent DCOs. The proportion of cases identified by Death Certificate Only has been used as a rough guide to assess completeness of case ascertainment. Only invasive cancer cases are included in the denominator used to calculate this rate. However, this statistic can be artificially lowered by intensive follow-back to identify the incident report for a death certificate only case. Many registries do not distinguish between DCOs following routine case-finding and DCOs following intensive follow-back.

For many new registries, DCO follow-back is postponed until the registry has matured and it has become reasonable that a DCO case had a diagnosis date following the onset of the registry program. This decision may be related to the expense and difficulty in conducting death clearance programs. DCOs may inflate cancer incidence during the first several years of registry operations. The data for registries that did not use death certificates as a source for case ascertainment in 1994 to 1998 are indicated in the Registry Description at the beginning of each registry section.

Percent of Microscopic Confirmation. The proportion of total cases with microscopic confirmation can also be used as an indicator of the quality of data collection. SEER registries ranged from 92 to 96 percent microscopic confirmation of all reported cases. A rate that is higher or lower could suggest problems in case ascertainment and registry quality. However, the proportion varies by cancer site. For sites that rely mostly on a clinical diagnosis, e.g., cancers of the pancreas and brain, confirmation rates that are too high may suggest that the clinically-diagnosed cases are missing. Also, registries that do not use death certificates for case finding may have a higher proportion of microscopically confirmed cases and yet not be the most complete in case ascertainment.

Values of Zero (“0”) and “-” in the Tables

When the incidence rate or count for certain sex- race- and site-specific group is 0.0 or 0, this indicates either only a few cases existed in the specific group, producing a rate less than 0.05 per 100,000, or that no cases were reported for that category.

“-” is used when the data were not available or when the category was not applicable. An example would be breast *in situ* when a registry did not provide the data. Another example would be incidence rates for female cancers in the columns for males, and *vice versa*.

“-” is also used when fewer than six cases were recorded for a specific cancer site and both count and the rate were suppressed.

Comparisons Among Registries. All registries responding to the 2001 *Call for Data* are included in Sections II and III. In making valid comparisons among registries, it is important to review the data quality indicators for each registry before attributing rate differences to regional variation. Data quality can be an important contributor to observed differences in rates. Selected site-specific rates from the registries of highest quality are included in the tables in Section IV. In addition to data quality, it is important to consider differences in the racial composition of the populations being compared before conclusions are drawn about variations in regional rates.⁸

NAACCR BACKGROUND

Founded in 1987, the North American Association of Central Cancer Registries (NAACCR) is a professional association of cancer registries, programs, and organizations and of individuals interested in the development and application of cancer registration. In April 1994, the name of the organization was officially changed from the American Association of Central Cancer Registries (AACCR) to the North American Association of Central Cancer Registries by vote of the membership to include Canadian registries and others throughout North America. NAACCR promotes the use of central cancer registry data in studies of defined populations and in cancer control programs in the United States and Canada. NAACCR welcomes membership from all cancer information in identifying target populations for cancer control interventions and in conducting surveillance of cancer incidence and evaluation of cancer control programs. Membership is also desirable for national organizations involved in cancer control, prevention, and research and other organizations and individuals interested in cancer registration or cancer control activities.

The mission of NAACCR includes: develops and promotes uniform data standards for cancer registration; provides education and training; certifies population-based registries; aggregates and publishes data from central cancer registries; and promotes the use of cancer surveillance data and systems for cancer control and epidemiologic research, public health programs, and patient care to reduce the burden of cancer in North America.

⁸Chen, VW. Should we or shouldn't we compare cancer incidence rates among registries? in Howe HL (ed.) *Cancer Incidence in North America, 1988-1991*. Sacramento, CA: North American Association of Central Cancer Registries, April 1995, V-1 to V-6.

Data Evaluation and Publication Committee Members, 2000-2001

John P. Fulton, Rhode Island, *Chair, as of February 2001*
Vivien W. Chen, Louisiana, *Chair, April 2000-January 2001*
Irene Hall, Centers for Disease Control and Prevention
Judith Klotz, New Jersey
Carol Kosary, National Cancer Institute
Andy Lake, Information Management Services, Inc.
Yang Mao, Health Canada
Steven D. Roffers, Georgia
David Roney, Information Management Services, Inc.
Andrews K. Stewart, American College of Surgeons
Jon Tonita, Saskatchewan
Ghislaine Villeneuve, Statistics Canada
Nancy S. Weiss, Texas
Dee West, California
Xiao Cheng Wu, Louisiana
Holly L. Howe, *ex officio*, Executive Director, NAACCR
Joellyn Hotes, NAACCR Staff

Canadian/U.S. Comparison of Cancer Statistics Subcommittee

Jon Tonita, Saskatchewan, *Canadian Co-Chair*
John P. Fulton, Rhode Island, *U.S. Co-Chair*
Glenn Copeland, Michigan
Juanita Hatcher, Alberta
Eric Holowaty, Ontario
Joellyn Hotes, NAACCR
Yang Mao, Health Canada
Mary McBride, British Columbia
Kathleen McDavid, Centers for Disease Control and Prevention
Cyril Nair, Statistics Canada
Richard S. Porter, Arizona
Brenda Smith, Arizona
Ghislaine Villeneuve, Statistics Canada
Brad Wholer-Torres, Florida

Cancer Incidence in North America (CINA) Production Subcommittee

Joellyn Hotes, NAACCR, *Chair*
Katie Berman, Information Management Services, Inc.
Vivien W. Chen, Louisiana
Catherine N. Correa, Louisiana
Rick Firth, Information Management Services, Inc.
Ingrid Freisen, Statistics Canada
Holly L. Howe, NAACCR
Carol Kosary, National Cancer Institute
Andrew Lake, Information Management Services, Inc.
Dave Roney, Information Management Services, Inc.
Hannah Weir, Centers for Disease Control and Prevention
Xiao Cheng Wu, Louisiana

Cancer Staging Subcommittee

Steven D. Roffers, Georgia, *Chair*
Mohammed N. Ahmed, Louisiana
Lori Armstrong, Centers for Disease Control and Prevention
Gayle Clutter, Centers for Disease Control and Prevention
Dan Curran, California
Holly L. Howe, NAACCR
Carol Kosary, National Cancer Institute
Andrew Lake, Information Management Services, Inc.
Pamela Logan, Centers for Disease Control and Prevention
Carin Perkins, California
David Roney, Information Management Services, Inc.

Collaborative Research Working Group (CRWG)

Vivien W. Chen, Louisiana, *Chair*
Brenda Edwards, National Cancer Institute
Holly L. Howe, NAACCR
Betsy Kohler, New Jersey
Carol Kosary, National Cancer Institute
Kathleen M. McKeen, Iowa
Barry Miller, National Cancer Institute
Lynn Ries, National Cancer Institute
Gopal K. Singh, National Cancer Institute
Thomas Tucker, Kentucky
Kirsten Unger-Hu, California
Hannah Weir, Centers for Disease Control and Prevention
Dee West, California
Phyllis Wingo, Centers for Disease Control and Prevention

Comparative Analysis of Incidence Rates (CAIR) Subcommittee

Judith Klotz, New Jersey, *Chair as of December 2000*
Vivien W. Chen, Louisiana, *Chair April-November 2000*
Catherine N. Correa, Louisiana
John P. Fulton, Rhode Island
Irene Hall, Centers for Disease Control and Prevention
Joellyn Hotes, NAACCR
Mary D. Hutton, Centers for Disease Control and Prevention
Aisha Jumaan, Centers for Disease Control and Prevention
Pamela Logan, Centers for Disease Control and Prevention
Bernardo Ruiz, Louisiana
Brooke Steele, Centers for Disease Control and Prevention
Xiao Cheng Wu, Louisiana

Data Quality Indicator (DQI) Subcommittee

John P. Fulton, Rhode Island, *Chair*
Gayle Clutter, Centers for Disease Control and Prevention
Catherine N. Correa, Louisiana
Irene Hall, Centers for Disease Control and Prevention
Nancy Jackson, Centers for Disease Control and Prevention
Missy Jamison, Centers for Disease Control and Prevention
Lilia O'Connor, California
Pam Parrish, Illinois
Carin Perkins, California
Steven D. Roffers, Georgia

Ovarian Cancer Workgroup

Marc Goodman, *Chair*
Robin Bott, Colorado
Vivien W. Chen, Louisiana
Catherine N. Correa, Louisiana
Tim Cote, National Cancer Institute
Steven S. Coughlin, Centers for Disease Control and Prevention
J. Wanzer Drane, South Carolina
Lois Hall, Ohio
Joellyn Hotes, NAACCR
Holly L. Howe, NAACCR
Carol Johnson, National Cancer Institute
Jeff Killeen, Hawaii
Betsy Kohler, New Jersey
Pam Logan, Centers for Disease Control and Prevention
Pat Lillquist, New York
Barry Miller, National Cancer Institute
Steve Peace, Florida
Steven D. Roffers, Georgia
Bernardo Ruiz, Louisiana
Jennifer Stewart, Washington, DC
Jenny Tung, Hawaii
Rachel Weinstein, New Jersey
Xiao Cheng Wu, Louisiana
John Young, Georgia

ToolKit Subcommittee

Joellyn Hotes, NAACCR, *Chair*
Toshi Abe, New Jersey
Susan Capron, Illinois
Jim Enders, Centers for Disease Control and Prevention
Ken Hill, Oregon
Holly L. Howe, NAACCR
Betsy Kohler, New Jersey
Carol Kosary, National Cancer Institute

Please address all comments and suggestions about the monograph to:

NAACCR
Attention: Data Evaluation and Publication Committee
2121 West White Oaks Drive, Suite C
Springfield, IL 62704-6495
(217) 698-0800
(217) 698-0188 (FAX)

For a copy, please contact NAACCR at the above address. The monograph can also be downloaded or viewed from the NAACCR web site (<http://www.naacr.org>).

April 2001