

Cancer in U.S. Hispanics/Latinos, 1995-2000

Introduction and Data Highlights

Participating U.S. Registries

Twenty-two population-based central cancer registries responded to the call for data for this monograph. Data from 19 registries are presented by individual registry in the first section of this monograph; these data reflect cancer incidence information for more than 86% of the U.S. Hispanic/Latino population. The state registries included are Alaska, Arizona, California, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, New Jersey, New Mexico, New York, North Carolina, Texas, Washington and Wyoming. The three metropolitan area registries are the Greater Bay Area (California)¹, Los Angeles (California)¹, and Detroit (Michigan). Of the three exclusions, one did not meet the NAACCR criteria for data quality. Two others, Louisiana and Massachusetts, met the inclusion criteria, however, incidence rates for Latinos appeared to be inconsistent with rates produced by other registries. The reasons for this are not yet known, but could be related to problems in agreement between population estimates (denominators) and incidence counts (numerators). Evaluation of these data is in progress, but could not be completed in time for publication, thus these two states chose to have their data excluded from this monograph.

Data from 17 central cancer registries (14 states and three metropolitan areas) met the NAACCR criteria for inclusion in the NAACCR combined cancer statistics for Latino populations, as well as the comparison white and black non-Hispanic populations. The areas covered in the NAACCR combined cancer incidence rates presented in this report represent more than 85% of the total U.S. Hispanic/Latino population.

A total of 3,645,670 cancers (all invasive and bladder in situ) were diagnosed in the 6-year study period (1995-2000) among the 17 central cancer registries comprising the NAACCR U.S. combined areas for this report. Of these, 306,918 (8.4%) were diagnosed among Hispanic/Latino populations, 2,998,532 (82.2%) among non-Hispanic white populations, and 340,220 (9.3%) among non-Hispanic black populations.

Cancer Incidence in U.S. Hispanics/Latinos - Data Highlights

Common cancers in Hispanic/Latino populations

- **Hispanic/Latino males.** The leading cancers among Latino males were prostate (27.2% of all cancers among Latino males), lung and bronchus (11.4%), colorectal (11.1%), non-Hodgkin lymphoma (5.6%), and bladder (4.1%).
- **Hispanic/Latina females.** The leading cancers among Latina females were breast (29.2% of all cancers among Latina females), colorectal (9.9%), lung and bronchus (6.8%), cervix uteri (6.2%), and corpus uteri (5.2%).

¹ California rates include the Greater Bay and Los Angeles areas, however, each registry is presented separately in the individual registries section. The total California rate is used to calculate NAACCR U.S. combined cancer rates.

Average Annual Age-adjusted Cancer Incidence Rates

- **Overall cancer rates were lower among Latino populations compared to non-Hispanic white and non-Hispanic black populations.** For the majority of cancer sites, average annual age-adjusted cancer incidence rates were lower among Hispanic males and females than their non-Hispanic counterparts. The overall rate for cancer among Latino males was 443.0 per 100,000, compared to 562.4 per 100,000 among non-Hispanic white males and 661.0 per 100,000 among non-Hispanic black males. Among Latina females, the overall cancer rate was 313.0 per 100,000, compared to 434.9 among non-Hispanic white females and 391.7 per 100,000 among non-Hispanic black females.

Comparison of common cancer sites with non-Hispanic populations

- **Liver cancer.** The liver cancer incidence rate among Latino males was 2.4 times higher than among non-Hispanic white males, and approximately 1.3 times higher than among non-Hispanic black males. Similarly, the liver cancer rate for Latina females was 2.4 and 1.4 times higher than for non-Hispanic white and non-Hispanic black females, respectively.
- **Gallbladder cancer.** The incidence rate for gallbladder cancer among Latino males was 2.0 times higher than the non-Hispanic white male rate, and 1.6 times higher than the non-Hispanic black male rate. Incidence of gallbladder cancer also was greater in Latina females, with their incidence being 2.5 times higher than the non-Hispanic white female rate, and 1.8 times higher than the non-Hispanic black female rate.
- **Stomach cancer.** The incidence rate of stomach cancer among Latino males was approximately 70% higher than that of non-Hispanic white males, but was slightly lower than the rate for non-Hispanic black males. The stomach cancer incidence rate for Latina females was almost twice as high as the non-Hispanic white female rate and slightly lower than the non-Hispanic black female rate.
- **Acute lymphocytic leukemias (ALL).** The ALL incidence rate for Latino males was 1.3 times higher than that of non-Hispanic white males and more than twice that of non-Hispanic black males. This same pattern was seen among females, with the ALL incidence rate for Latina females being 1.3 times higher than that of non-Hispanic white females, and 2.4 times that of non-Hispanic black females.
- **Cervical cancer.** Incidence rates for cervical cancer were 1.8 times higher among Latina females than non-Hispanic white females, but were nearly equivalent to rates among non-Hispanic black females.
- **Penile cancer.** The incidence rate for cancer of the penis among Latino males was 1.8 times higher than non-Hispanic white males and 1.4 times higher than non-Hispanic black males.
- **Testicular cancer.** The incidence rate for cancer of the testis among Latino males (3.4 per 100,000) fell between rates for non-Hispanic white males (6.4 per 100,000) and non-Hispanic black males (1.2 per 100,000).
- **Bladder cancer.** Incidence of bladder cancer was lower among Hispanics compared to every non-Hispanic gender group except non-Hispanic black males.

- **Ovarian cancer.** The rate of ovarian cancer was lower among Hispanic women (13.0 per 100,000) compared to non-Hispanic white women (17.9 per 100,000), but higher than the rate for non-Hispanic black women (12.0 per 100,000).
- **Uterine cancer.** Hispanic women had a lower rate of uterine cancer (17.0 per 100,000) than both non-Hispanic white (24.8 per 100,000) and non-Hispanic black women (19.7 per 100,000).
- **Buccal cavity and pharyngeal cancer.** The rate of cancers of the buccal cavity and pharynx was lower among the Hispanic population than among the non-Hispanic population, regardless of gender.

Geographic variations in average annual age-adjusted incidence

Age-adjusted incidence rates among Hispanic/Latino populations varied widely by geographic area. These geographic gradients could reflect, in part, differences in the distribution and concentration of specific Hispanic/Latino population groups (e.g. Americans of Mexican, Central American, Cuban, Puerto Rican, or other origin) and related variations in socio-economic factors, prevalence of cancer screening, and other cancer risk factors.

- **All cancers combined.** The combined average annual age-adjusted cancer incidence rate for all cancer sites was 443.0 per 100,000 among Latino males and 313.0 per 100,000 among Latina females. Rates for males ranged from 372.9 per 100,000 in North Carolina to 540.2 per 100,000 in New Jersey, with the highest rate being approximately 45% higher than the lowest rate. Among Latina females, rates ranged from 297.1 per 100,000 in Arizona to 414.9 per 100,000 in Wyoming, a 40% relative difference.
- **Female breast cancer.** The combined average annual age-adjusted rate for breast cancer among Latina females was 89.2 per 100,000. Breast cancer rates for New Mexico (90.9 per 100,000), New York (90.8 per 100,000), Illinois (88.4 per 100,000), California (88.0 per 100,000), Arizona (87.4 per 100,000), Florida (86.9 per 100,000), Texas (84.9 per 100,000) and Los Angeles (82.7 per 100,000) were similar to the combined rate. In contrast, the breast cancer rate among Latina women in Idaho, the highest rate seen among the study areas, was substantially higher at 129.5 per 100,000.
- **Cervical cancer.** The highest average annual age-adjusted rate for cervical cancer in Latina females (Los Angeles, 20.3 per 100,000) was almost 2.5 times that of the lowest rate (Wyoming, 8.3 per 100,000), although the estimate for Wyoming is not precise (i.e., wide 95% confidence intervals based on small numbers of cases). The combined average annual age-adjusted rate was 16.0 per 100,000.
- **Colorectal cancer.** The highest rates for colorectal cancer in both Hispanic males and females were seen in Wyoming (73.3 per 100,000 and 64.4 per 100,000, respectively). North Carolina had the lowest rate for Hispanic males (39.0 per 100,000) while the lowest rate for Hispanic females was found in Iowa (23.3 per 100,000). New Jersey, New York, Colorado, and Florida had among the highest colorectal cancer rates and New Mexico, California, Arizona, and Texas had among the lowest rates.
- **Lung and bronchus cancer.** Los Angeles had the lowest rates of lung and bronchus cancer for both Hispanic males and females (42.7 per 100,000 and 20.9 per 100,000, respectively). The highest rate among Hispanic males was seen in Florida (71.4 per 100,000), a relative difference of 67%. Among females, Washington had the highest rate at 43.9 per 100,000, a rate twice that

of the Los Angeles incidence rate. Latina women in Florida had the second lowest rate (22.2 per 100,000).

- **Prostate cancer.** The combined average annual age-adjusted incidence rate for prostate cancer in Latino males was 135.2 per 100,000. Iowa had the lowest incidence of prostate cancer in Latino males at 80.1 per 100,000 and the highest rate, 188.7 per 100,000, was seen in New Jersey, a rate 2.4 times that of the lowest rate.

Cancers among Hispanic/Latino Children (ages 0-14) and Adolescents (ages 15-19)

- **Common cancers.** The five most commonly diagnosed cancers in Latino children were leukemias (39.1% of the total cancers among children), central nervous system tumors (17.0%), lymphomas (10.2%), soft-tissue sarcomas (6.1%) and sympathetic nervous system tumors (5.6%). Leukemias were the most common cancers diagnosed among adolescents as well, however, they accounted for only 19.9% of the total cancers among adolescents. The incidence of lymphomas was higher among adolescents than children, accounting for 19.4% of the total cancers. The remaining leading cancers for adolescents differed from those in children and included germ cell tumors (18.9%), carcinomas and other malignant epithelial neoplasms (14.9%) and malignant bone tumors (8.6%).
- **Patterns by gender.** For all cancer sites and a majority of individual cancers, incidence rates were greater among male Latino children and adolescents than among female Latina children and adolescents. Among children, this differential was greatest for lymphomas, with rates in Latino boys being 1.9 times those of Latina girls. Among adolescents, rates of malignant bone tumors in Latino males were 1.8 times those of Latina females. In contrast, rates of cancers for the group of carcinomas and other malignant epithelial neoplasms were substantially higher among adolescent Latina females than adolescent Latino males, most likely due to higher rates of thyroid cancers among females.
- **Comparison of incidence rates in Hispanic/Latino children and adolescents and non-Hispanic white and non-Hispanic black children and adolescents.** For all cancer sites combined, male and female Latino children and adolescents had lower incidence than their non-Hispanic white counterparts and higher rates than non-Hispanic black children and adolescents. Latino children and adolescents had higher rates of leukemias than either non-Hispanic white or non-Hispanic black children and adolescents, regardless of gender. Of the lymphomas, incidence of Hodgkin lymphoma among Latino children was higher than both non-Hispanic white and non-Hispanic black children, but only for males. Rates for retinoblastoma among Latino children also were greater than those for non-Hispanic children.

Technical Notes

This monograph is a product of a special NAACCR Research Group on Hispanic/Latino Identification and the active participation of NAACCR member registries, groups who share an enthusiastic interest in the utility of high-quality cancer incidence data to inform public health research and practice.

Data Quality

To be included in combined rates, a registry's data had to meet or exceed six quality criteria for each single year, 1995 through 2000. This standard includes the following data quality measures:

- 1) Data were submitted for each of the six years, 1995 through 2000.
- 2) Duplicate cases did not exceed 2 per 1,000 records, using NAACCR's *Protocol for Assessing Duplicate Cases*.¹
- 3) 97% of cases passed all internal consistency checks defined by NAACCR's EDITS metafile, Version 9.1.8.
- 4) The code for "unknown" was used to describe:
 - sex in less than 3% of the cases;
 - age in less than 3% of the cases;
 - county of residence in less than 3% of the cases; and
 - race in less than 5% of the cases.
- 5) Cases registered with information abstracted from death certificates only (DCOs) comprised less than 5% of all cases for each of the six years' data submitted.
- 6) Case ascertainment was estimated to be 90% or higher for each of the six years' data submitted.

The performance of each registry on registry-specific data quality indicators (% duplicated primary case; % of cases passing edits; % records missing sex, age, county and race; % of death certificate only cases; and completeness of case ascertainment) is presented on the first page of each registry in Section II. Taken together, the data quality information can be used to evaluate the general quality of the registry data and the comparability of incidence rates across the registries. For more information on the interpretation of these data quality criteria, see Tucker et al. (1999).[3]

In addition to these general data quality indicators, information on the percent of cases with microscopic confirmation of diagnosis is presented for each registry for specific cancer sites. These sites were selected based on both their frequent occurrence and their importance in cancer control and prevention activities. In particular, this information may be useful for assessing possible misclassification for that specific cancer site (i.e., with lower percent microscopic confirmation for a specific cancer site possibly being indicative of the potential for metastatic cancers being classified as primary cancers).

Seventeen registries are included in the combined rates for U.S. Hispanics/Latinos. The cancer incidence data from these registries combined reflects the experience of more than 85% of all Hispanic/Latino populations in the United States. In making valid comparisons among registries, it is important to consider differences in the race-ethnic composition of the populations being compared before conclusions are drawn about variations in regional rates.[4] Also it should be noted that while these data represent 85.5% of the total U.S. Hispanic population, only 45.2% of the U.S.

¹ Available on-line at http://www.naacr.org/index.asp?Col_SectionKey=6&Col_ContentID=177

non-Hispanic white population and 47.2% of the U.S. non-Hispanic black population is covered by the registries providing these data.

Data Sources

Incidence. Each member registry provided its own incidence data for 1995 to 2000. If all six years were not available, data were provided for as many of the years as possible. However, data for all six years were required for inclusion in the NAACCR combined rates.

Population Estimates. Estimates of the population for the U.S., individual U.S. states, and participating SEER areas for 1995 through 2000 were obtained from the SEER program, based on U.S. Bureau of Census population estimates for these years. These population estimates represent a modification of the annual time series of population estimates produced by the Population Estimates Program of the Bureau of the Census with support from the NCI. Please refer to the *SEER Cancer Statistics Review, 1975-2000*² and its methodologies for specific documentation regarding modifications made by the NCI to the Census Bureau estimates.

NAACCR Best Practice Guideline for Identification of Hispanic Persons. Hispanic ethnicity was assigned to these data through the standardized use of the NAACCR Hispanic Identification Algorithm (NHIA).[5] NHIA uses a combination of NAACCR variables to directly or indirectly classify cases as Hispanic for analytic purposes. Cases reported as having Spanish/Hispanic Origin (as indicated by NAACCR data element 190 values 1-6) are directly identified as Hispanic in the dataset. Cases reported as non-Spanish/non-Hispanic, Spanish surname only or unknown whether Spanish (item 190 values 0, 7 and 9) are evaluated for possible Hispanic ethnicity through indirect identification. The ultimate goal of the algorithm is to classify these cases as Hispanic or non-Hispanic based on an evaluation of the strength of the birthplace, race, and/or surname associations with Hispanic ethnicity status. After applying NHIA, cases not ultimately classified as Hispanic are classified as non-Hispanic, leaving no cases with “unknown” Hispanic status.

A description of the NHIA algorithm is provided in Appendix E. All registries used the NHIA algorithm to assign Hispanic ethnicity for this monograph. Registries either created their own program to execute the steps in the algorithm based on the narrative provided in the NAACCR Hispanic Identification Report, or they utilized the computerized version that NAACCR designed and made available to all registries.

Definitions

Primary Cancer Sites. SEER rules were used to define cancer sites for all ages combined, and cancers in children and adolescents (ages 0-19 years) were classified using the International Classification of Childhood Cancers (ICCC) groups (see Appendix A and B for both classification systems).[6] Numbers and rates include invasive cancers only, with the exception of cancer of the bladder, for which invasive and *in situ* cases were included in the counts and rates. 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 (see Appendix). Cancers among non-residents of the area and cases with unknown sex or age were omitted from all calculations, but cases with unknown race were included in the computation of total cancer counts and rates.

² http://www.seer.cancer.gov/csr/1975_2000/
<http://seer.cancer.gov/popdata/methods.pdf>

Incidence Rates. Rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 U.S. and the World population standards.[7] The incidence rates are annual averages for the period 1995 through 2000. (Note: Not all registries submitted data for all six years; their rates are annual averages for the years submitted.) The age distributions of the two population standards are presented below:

AGE GROUP	2000 U.S.	WORLD
0-4	6,913.5	12,000
5-9	7,253.3	10,000
10-14	7,303.2	9,000
15-19	7,216.9	9,000
20-24	6,647.8	8,000
25-29	6,452.9	8,000
30-34	7,104.4	6,000
35-39	8,076.2	6,000
40-44	8,185.1	6,000
45-49	7,211.8	6,000
50-54	6,271.6	5,000
55-59	4,845.4	4,000
60-64	3,879.3	4,000
65-69	3,426.4	3,000
70-74	3,177.3	2,000
75-79	2,699.9	1,000
80-84	1,784.2	500
85+	1,550.8	500
Total	100,000.0	100,000

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 group (5-year age interval), n_j = number of cases in that age group, and p_j = person-years denominator.[8] For many registries, the standard error of the rates is small, as the population covered is large. However, for registries that cover a small population, the standard error may be substantial.

Comparison of Rates. The standard error 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 are $S.E._1$ and $S.E._2$, an approximate test to compare the two rates can be calculated using the formula $x = (R_1 - R_2) / \sqrt{(S.E._1^2 + S.E._2^2)}$, where x is a Z (standard normal) statistic. If the absolute value of x is greater than 1.96, 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 and it should not be used for rates based on fewer than six cases.[9, 10]

An approximate confidence interval for the rate ratio can be calculated using the following formula:

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

where $x = (R_1 - R_2) / \sqrt{(S.E._1^2 + S.E._2^2)}$ and $z = 1.96$ for 95% confidence limits.[11] 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 16 cases, and it should not be used for rates based on fewer than six 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.[12]

Completeness of Case Ascertainment. NAACCR uses a site-specific incidence-to-mortality rate ratio approach to assess completeness of case ascertainment relative to a standard rate ratio. The method assumes that cancer death data are complete, and that the ratio of age-adjusted cancer incidence rates to age-adjusted cancer death rates by sex, race, and site vary little by geographical area in the United States. The following are features of this method for evaluating completeness of reporting:

- It is assumed that 20 percent of any difference observed between analogous race-sex-site-specific, age-adjusted incidence-to-mortality rate ratios from two geographic areas can be attributed to differential case fatality, while 80% of the difference can be attributed to under-ascertainment of cases in one of the jurisdictions.
- Of the major cancer types, prostate cancer cases are excluded due to regional variation in incidence attributable to screening penetrance.
- 11 SEER (14% of the U.S. population) areas are used to construct the model's standard, SEER-incidence-to-U.S. mortality rate ratios.
- Data for both whites and blacks (weighted in proportion to their share of the population) are used to construct incidence-to-mortality rate ratios.

Race-specific completeness of case ascertainment in jurisdiction s (C_{sk}) is computed by dividing the *observed* race-specific (white; black) age-adjusted (2000 U.S.) incidence rate for both sexes and all cancer sites combined [12] (“Observed T”) by the *expected* race-specific (white; black) age-adjusted (2000 U.S.) incidence rate for both sexes and all cancer sites combined [12] (“Expected T”):

$$C_{sk} = \frac{ObservedT_{sk}}{ExpectedT_{sk}}$$

The *expected* incidence rate for jurisdiction s is computed from jurisdiction race-sex-site-specific age-adjusted (2000 U.S.) death rates and incidence-to-mortality rate ratios computed from SEER race-sex-site-specific age-adjusted (2000 U.S.) incidence rates and U.S. race-sex-site-specific age-adjusted (2000 U.S.) death rates, thus:

$$ExpectedI_{skij} = (M_{skij}) \left(\frac{I_{SEERkij}}{M_{U.S.kij}} \right)$$

$$ExpectedT_{sk} = \sum_{i=1}^2 \sum_{j=1}^N ExpectedI_{skij}$$

where:

I = Age-adjusted (2000 U.S.) incidence rate for race k , sex i , site j , 1995 to 2000

M = Age-adjusted (2000 U.S.) mortality rate for race k , sex i , site j , 1995 to 2000

s = State or SEER area

$SEER$ = Combined eleven SEER areas³

$U.S.$ = United States

T = Age-adjusted (2000 U.S.) incidence rate for total sites⁴

Overall completeness of case ascertainment in jurisdiction s (C_s) is calculated by adding weighted estimates of race-specific completeness of case ascertainment in jurisdiction s (C_{sk}), using the proportion of the population in each of the race groups (P_{sk}) as weights:

$$C_s = \sum_{k=1}^2 C_{sk} \times P_{sk}$$

This method of estimating completeness assumes that race-sex-site-specific incidence-to-mortality rate ratios are relatively stable (within 20% limits). The incidence-to-mortality rate ratio standard to which all registries are adjusted, using SEER incidence rates and U.S. death rates, is the current NAACCR standard for this purpose.

C_s was adjusted for the presence of duplicate records in the data of jurisdiction s (CA_s) thus:

$$CA_s = C_s \times U_s$$

where:

CA = Adjusted overall completeness of ascertainment

C = Unadjusted overall completeness of ascertainment

s = State or SEER area

U = Proportion of unduplicated records, based on NAACCR's *Protocol for Assessing Duplicate Cases*.

For more information on the completeness estimate method, consult the following reference: Holly L. Howe. Conclusions of the Work Group for High Quality Criteria for Data Use. NAACCR Narrative [serial online] 2001; Winter:8 (On-line) Available at URL: http://www.naacr.org/index.asp?Col_SectionKey=6&Col_ContentID=9; Last accessed December 2, 2003.

³ 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.

⁴ The cancer sites included in this calculation were buccal cavity and pharynx, esophagus, stomach, colorectum, liver, pancreas, lung and bronchus, melanoma of the skin (white only), female breast (excl. *in situ*), cervix uteri, corpus uteri and uterus, NOS, ovary, urinary bladder (incl. *in situ*), kidney and renal pelvis, brain and other nervous system, Hodgkin's disease, non-Hodgkin's lymphoma, multiple myeloma, and leukemia. Cancer of the prostate was not included because differential screening across regions has caused instability in prostate cancer incidence-to-mortality rate ratios.

Every registry included in the combined rates had an adjusted completeness estimate of at least 90 percent for each year of the six years' data submitted. Seventeen registries met all the criteria for inclusion in the combined rates, including fourteen states and three metropolitan areas.

Cell Suppression, Values of Zero (“0”) and “-” in the Tables. Although all cases from qualified registries were included in the 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 pediatric cancer tables.

When the incidence rate *or* count for a specific group is presented as 0.0 or 0, this indicates either 1) that the rate is less than 0.05 per 100,000, or 2) that no cases were reported for the group. “-” is used when the count and rate were suppressed because fewer than six cases were found for the group in question. “-” is also used when data were not available for analysis or to signify “not applicable”, as in the case of female cancer of the prostate, an impossibility.

References

1. O'Brien K, Cokkinides V, Jemal A, Cardinez CJ, Murray T, Samuels A, Ward E, and Thun MJ. Cancer statistics for Hispanics, 2003. *CA Cancer J Clin*, 2003. 53(4): p. 208-26.
2. Huerta EE. Cancer statistics for Hispanics, 2003: good news, bad news, and the need for a health system paradigm change. *CA Cancer J Clin*, 2003. 53(4): p. 205-7.
3. Tucker TC, Howe HL, and Weir HK. Certification for population-based cancer registries. *J Registry Management*, 1999. 26(1): p. 24-27.
4. Chen VW. Should we or shouldn't we compare cancer incidence rates among registries?, in *Cancer Incidence in North America, 1988-1991*, H.L. Howe, Editor. 1995, North American Association of Central Cancer Registries: Sacramento, CA.
5. NAACCR. Report of the NAACCR Expert Panel on Hispanic Identification 2003. North American Association of Central Cancer Registries: Springfield, IL.
6. Ries LA, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, and Edwards BK, eds. *SEER Cancer Statistics Review, 1973-1998*. National Cancer Institute, Bethesda, MD.
7. Waterhouse J, Muir C, Correa P, and Powell J. *Cancer Incidence in Five Continents, Volume III*. International Agency for Research on Cancer: Lyon, France.
8. Breslow NE and Day NE. *Statistical Methods in Cancer Research. Vol. II*. 1987, Lyon, France: IARC.
9. Ries L, Eisner M, Kosary C, Hankey B, Miller B, Clegg L, Mariotta A, Fay M, Feuer E, and Edwards B. *SEER Cancer Statistics Review, 1975-2000*. National Cancer Institute: Bethesda, MD.
10. Ries L, Eisner M, Kosary C, Hankey B, Miller B, Clegg L, and Edwards B. *SEER Cancer Statistics Review, 1973-1997*. National Cancer Institute: Bethesda, MD.
11. Parkin DM, Muir C, and Whelan SL. *Cancer Incidence in Five Continents. Vol. VI*. 1992, Lyon, France: IARC.
12. Esteve J, Benhamou E, and Raymond L. *Statistical Methods in Cancer Research. Vol. V*. 1994, Lyon, France: IARC.