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Annual Report to the Nation on the Status of Cancer, 1975–2003, Featuring Cancer Among U.S. Hispanic/ Latino Populations

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COMMENTARY

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BACKGROUND. The American Cancer Society, Centers for Disease Control and Prevention, National Cancer Institute, and North American Association of Central Cancer Registries collaborate annually to provide U.S. cancer information, this year featuring the first comprehensive compilation of cancer information for U.S. Latinos.

METHODS. Cancer incidence was obtained from 90% of the Hispanic/Latino and 82% of the U.S. populations. Cancer deaths were obtained for the entire U.S. population. Cancer screening, risk factor, incidence, and mortality data were compiled for Latino and non-Latino adults and children (incidence only). Long-term (1975–2003) and fixed-interval (1995–2003) trends and comparative analyses by disease stage, urbanicity, and area poverty were evaluated.

RESULTS. The long-term trend in overall cancer death rates, declining since the early 1990s, continued through 2003 for all races and both sexes combined. However, female lung cancer incidence rates increased from 1975 to 2003, decelerating

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since 1991 and breast cancer incidence rates stabilized from 2001 to 2003. Latinos had lower incidence rates in 1999–2003 for most cancers, but higher rates for stomach, liver, cervix, and myeloma (females) than did non-Latino white populations. Latino children have higher incidence of leukemia, retinoblastoma, osteosarcoma, and germ-cell tumors than do non-Latino white children. For several common cancers, Latinos were less likely than non-Latinos to be diagnosed at localized stages.

CONCLUSIONS. The lower cancer rates observed in Latino immigrants could be sustained by maintenance of healthy behaviors. Some infection-related cancers in Latinos could be controlled by evidence-based interventions. Affordable, culturally sensitive, linguistically appropriate, and timely access to cancer information, prevention, screening, and treatment are important in Latino outreach and community networks. ***Cancer* 2006;107: 1711–42.** *Published 2006 by the American Cancer Society.**

KEYWORDS: cancer, incidence, mortality, Hispanic, Latino, NAACCR, SEER, NPCR, vital statistics, United States, health disparity, cancer inequality.

The American Cancer Society (ACS), the Centers for Disease Control and Prevention (CDC), the National Cancer Institute (NCI), and the North American Association of Central Cancer Registries (NAACCR) collaborate annually to assess the status of cancer in the United States (U.S.). The 1998 report documented the first sustained decline in cancer death rates since the 1930s. Subsequent reports updated information on trends in incidence and death rates and featured timely topics.[1–8] This report continues the annual update tradition and presents a special section on cancer among U.S. Hispanic/Latino populations, a large and diverse ethnic group whose cancer experience has not been well described until recently[9,10] as concerns about misclassification and cultural and other differences among various Latino groups and limited population data have restricted national analyses. Although challenges remain, a comprehensive compilation of cancer information for the estimated 39.9 million U.S. Latinos in 2003 is relevant to future directions in cancer control strategies.[11]

MATERIALS AND METHODS

Data Sources for Cancer Cases and Deaths

U.S. state and regional population-based cancer registries collect information on new cancer diagnoses. They participate in the NCI's Surveillance, Epidemiology, and End Results (SEER) Program, the CDC's National Program of Cancer Registries (NPCR), or both. All cancer registries are members of NAACCR. Incidence data refer to invasive cancers, excluding in situ, with the exception of bladder. Primary cancer site and histology data were coded according to the International Classification of Diseases for Oncology (ICD-O) edition in use at the time of diagnosis, converted to the Third Edition,[12] and categorized according to SEER site groups (To maximize comparability between ICD-O-2 and ICD-O-3, borderline tumors of the ovary, refractory anemias, and other myelodysplastic syndromes were excluded, and pilocytic astrocytomas were included.).[13] For persons aged 0–19 years, cancer data were categorized using the International Classification of Childhood Cancer (ICCC) based on ICD-O-3.[12,14] Statistics for men and women include persons of all ages; childhood cancers include persons aged 0–14 years, and adolescents aged 15–19 years.

U.S. cancer deaths, reported to state vital statistics offices and consolidated through the CDC's National Vital Statistics System,[15] were coded using the version of the International Classification of Diseases (ICD) in use at the time of death.[16–19] Underlying causes of cancer death for the total U.S. were grouped for maximum comparability among ICD versions.[13] Mortality data are provided by all 50 states and the District of Columbia; however, death rates for Hispanics from 5 states (Maine, Minnesota, New Hampshire, North Dakota, and Oklahoma) were excluded because of incomplete ethnicity information for at least one of the reporting years in the report.[20]

All analyses (long-term trends, fixed interval trends, and average annual rates) were based on national mortality data and varying geographic areas for incidence because incidence data are not uniformly available for all population groups, time periods, and geographic areas. (We examined data for 22 sites for incidence and 21 for cancer deaths to accommodate the top 15 cancers in each racial and ethnic population. Kaposi Sarcoma and mesothelioma were only reported as cause of death beginning in 1999 and therefore not reported separately for mortality.) Long-term (1975–2003) trends for all races combined by sex for all-sites combined and the 15 most common cancers were based on SEER incidence data covering about 10% of the U.S. population, the only source for long-term

TABLE 1
Summary Description for Data Sets Used in Cancer Incidence Analyses

Statistical measure	Trends		Incidence & rate ratios	Incidence		
	Long-term	Fixed interval		Rates		
Data source	SEER9	30 states	38 states	37 states*	37 states†	36 states*†
Time period	1975–2003	1995–2003	1999–2003	1999–2003	2001–2003	2001–2003
% Population coverage						
Total	10	73	82	82	80	80
Hispanic		88	90	90	89	89
NH		70	81			
White						
NHW			81	81	79	79
All		73	82			
Black						
NHB			79	79	75	75
All		65	80			
All API		88	92			

* Analyses using county identifiers exclude Hawaii.
† Analyses of disease stage exclude Maryland.

incidence analyses.[21] Fixed-interval trends (1995 through 2003) for 6 race/ethnic populations (white, black, American Indian/Alaska Native (AI/AN), and Asian Pacific Islander (API) race groups and Hispanic/Latino and non-Hispanic ethnic groups regardless of race), by sex, for all sites combined and the 15 most common cancers were based on 73% of the U.S. population. Data for AI/AN are not presented, despite recent linkages of registry data with the Indian Health Service patient database to improve identification, because the linkage variable was not available at the time of analysis. Average-annual (covering the 5-year period with the sum of all annual cases divided by the total annual population estimates for the same time interval) (1999–2003), sex-specific, and age-adjusted incidence rates were based on incidence data from 38 cancer registries, covering about 82% of the U.S. population, including 90% of the U.S. Latinos. All registries included in the analyses met NAACCR's standard for high quality cancer incidence data. Analyses on stage of disease excluded data from Maryland because of incomplete data, and analyses on county measures excluded data from Hawaii because a county identifier was not available on the file. Table 1 summarizes the descriptions of the cancer incidence data sets used for the various analyses.

Cancer incidence and death information is not shown for specific API and Hispanic/Latino groups because identifiers for these groups are not universally complete on reports of cases and deaths and intercensal county population estimates are not available from the U.S. Census Bureau.

Risk Factors and Screening

Data on socioeconomic status (SES), behavioral risk factors, and cancer screening by race, ethnicity, and Mexican, Puerto Rican, and Cuban groups, were obtained from the U.S. Census Bureau and the 2003 National Health Interview Survey (NHIS),[22,23] categorized according to Healthy People 2010 objectives. (In the 2003 NHIS, ~74% of eligible adults responded. Black and Hispanic/Latino persons were oversampled in the survey, and among Latinos, 63% self-identified as Mexican or Mexican American, 10% as Puerto Rican, 5% as Cuban or Cuban American, 3% as Dominican, 18% as another Hispanic descent, and 1% with multiple Hispanic origins.)[24] Cigarette smoking, physical activity, alcohol consumption, and Pap tests (women only) were asked of adults aged 18 years or older. Also asked were mammography among women aged 40 years or older, colorectal cancer screening among persons aged 50 years or older, and prostate specific antigen (PSA) testing among men aged 50 and older who reported no history of prostate cancer. Self-reported obesity prevalence was estimated among adults aged 20 years and older, as were measured obesity estimates[25] from the National Health and Nutrition Examination Survey.[26]

To describe the variation in cancer incidence by a geographic area's socioeconomic climate, we used the percent of county residents who lived below the poverty level.[27–32] County poverty rates are a composite economic characteristic of a geographic area, including a reflection of health care services.[28–31] County-level poverty data for all races combined were categorized into 3

groups according to the percent of the county population below the poverty level in 1999: <10%, 10%–19%, and ≥20% (most economically disadvantaged).[27,30]

Cancer incidence rate variations between metropolitan (metro) and nonmetropolitan (nonmetro) counties were assessed using the 2003 Urban/Rural Continuum,[33] also consistent with the Office of Management and Budget metro categories. This U.S. schema includes 813 metro counties (continuum codes 0 through 3) and 2288 nonmetro counties (codes 4 through 9).[33]

We examined the distribution of stage of disease at diagnosis for cancers of the breast, prostate, colon and rectum, lung, and cervix by county poverty groups. Cancer incident cases were staged using the 2000 SEER summary staging system. To eliminate the effect of a different staging system in use before 2001, only cases diagnosed from 2001 to 2003 were selected for cancer stage statistics.[34]

Hispanic/Latino Ethnicity Definition

Self-report provides the best and most direct approach to identify a person's race; however, this information is not always available on cancer records. NAACCR developed a standard approach to improve the identification of Latino ethnicity for cancer cases and it was used for this report. The NAACCR Hispanic/Latino Identification Algorithm, version 2 (NHIA v2), includes both direct and indirect identification of Latino cases, resulting in all persons having an ethnicity assigned. The indirect component is a hierarchical algorithm of ethnicity assignment based on race, birthplace, gender, maiden name, and surname.[35]

The terms Hispanic, Latino, or Latina, are used to refer to persons of Hispanic origin. The word Hispanic is a U.S. federal designation, used in national and state reporting systems. Latino/a is a self-designated term of ethnicity. To be parsimonious in the text and tables, the terms Latino, Hispanic, non-Hispanic white (NHW), and non-Hispanic black (NHB) are used without preference or prejudice.

Statistical Analysis

Cancer incidence and death rates are expressed for 1999–2003 per 100,000 persons and age-adjusted by 19 age groups (<1, 1–4, 5–9, . . . , 80–84, 85+) to the 2000 U.S. standard population.[13,36] (The NCHS publishes age-adjusted death rates using the established federal methodology based on 11 age groups, typically in 10-year age categories [<1, 1–4, 5–14, 15–24, . . . , 65–74, 75–84, 85+] and weights from the 2000 population projections.[36] The number of age groups [e.g., single-year, 5-year, or 10-year] used for age adjustment may affect estimated rates slightly.[21]) Cancer incidence rates for 0–19 year olds are expressed per million persons and age-adjusted within the same age categories noted earlier. Age-adjustment eliminates the age effect on statistics, facilitating comparisons of other variables of interest (e.g., ethnicity). Rates, standard errors,[37] and 95% confidence intervals (95% CI) were generated using SEER*Stat Software (www.seer.cancer.gov/seerstat/).

Long-term cancer incidence and death trends (1975 through 2003) are described using joinpoint analysis for all races combined.[38] Statistical significance was set at $P < .05$. We present the observed incidence trends and those adjusted for reporting delay (mostly affecting recent years) using models based on long-term reporting patterns in SEER.[39] Descriptions of long-term cancer incidence trends are based on the delay-adjusted rates. Annual percent change analysis (not delay-adjusted) was used to describe fixed interval trends (1995–2003). For all trends, the term increase or decrease (negative sign) was used when the slope of the trend was statistically significant; otherwise, the term stable or level was used.

Prevalence estimates for screening and risk factors were calculated using data from the 2003 NHIS sample adult file and age-adjusted to the 2000 U.S. standard population and sample-weighted using SUDAAN software to account for the complex NHIS sampling design.[40,41] This followed standard procedures for analyzing NHIS data. (A table of 95% CI is available at: www.seer.cancer.gov/report_to_nation/1975_2003/). Data were suppressed when cell counts were less than 50 persons following NHIS rules.

Incidence rate comparisons by county poverty, metro area, and disease stage among Hispanic, NHW, and NHB populations are shown by rate ratios (RR), with Hispanics/Latinos compared with NHW and NHB groups. A 95% CI is presented for RRs to show precision, in addition to stating statistical significance ($P <$ .05) of comparisons. In describing all comparisons, the terms higher (more likely) or lower (less likely) were used when the difference in the rates was statistically significant ($P <$.05). Otherwise, the RRs were described as comparable. Thus, when the RR was less than 1.0, the rate among Latinos was lower, and if greater than 1.0 the rate was higher, than the comparison group.

Since population estimates for specific Latino population groups are not available from the US Bureau of the Census by age and sex for all years (1999–2003), the proportional incidence ratio (PIR) was used to compare the proportion of all cancer cases due to a specific cancer type among a specific Latino group with the corresponding proportion among NHW persons. The PIR uses age-adjustment analogous to indirect age standardization whereby the proportions are dependent on other cancer types. The 95% CI is presented to reflect the precision of the PIR estimate.[42]

More information related to this report is available at the NCI Web site www.seer.cancer.gov/report_to_nation/1975_2003/. Additional cancer data are available from www.cancer.org (ACS); www.cdc.gov/

TABLE 2
SEER Incidence Rate Trends with Joinpoint[a] Analyses for 1975 through 2003 for the Top 15 Cancers,[b] All Races

	Joinpoint analyses (1975–2003)[c]							
	Trend 1		Trend 2		Trend 3		Trend 4	
	Years	APC[d]	Years	APC[d]	Years	APC[d]	Years	APC[d]
All Sites[e]								
Both Sexes	1975–1992	1.4[f]	1992–2003	−0.4[f]				
(Delay-adjusted)	1975–1983	0.9[f]	1983–1992	1.8[f]	1992–1995	−1.5	1995–2003	0.1
Male	1975–1989	1.3[f]	1989–1992	5.0[f]	1992–1995	−4.4[f]	1995–2003	−0.3
(Delay-adjusted)	1975–1989	1.3[f]	1989–1992	5.1[f]	1992–1995	−4.5[f]	1995–2003	0.0
Female	1975–1979	−0.2	1979–1987	1.5[f]	1987–2001	0.3[f]	2001–2003	−2.3
(Delay-adjusted)	1975–1979	−0.3	1979–1987	1.6[f]	1987–2003	0.3[f]		
Top 15 for male								
Prostate	1975–1988	2.6[f]	1988–1992	16.3[f]	1992–1995	−10.7[f]	1995–2003	0.7
(Delay-adjusted)	1975–1988	2.6[f]	1988–1992	16.4[f]	1992–1995	−10.8[f]	1995–2003	1.1[f]
Lung and Bronchus	1975–1982	1.5[f]	1982–1991	−0.5[f]	1991–2003	−1.8[f]		
(Delay-adjusted)	1975–1982	1.5[f]	1982–1991	−0.5[f]	1991–2003	−1.7[f]		
Colon and Rectum	1975–1986	1.1[f]	1986–1995	−2.1[f]	1995–1998	1.1	1998–2003	−2.8[f]
(Delay-adjusted)	1975–1986	1.1[f]	1986–1995	−2.1[f]	1995–1998	1.0	1998–2003	−2.5[f]
Urinary Bladder	1975–1987	1.0[f]	1987–1996	−0.5	1996–2000	1.5	2000–2003	−2.3[f]
(Delay-adjusted)	1975–1987	1.0[f]	1987–1995	−0.6	1995–2000	1.2	2000–2003	−1.5
Non-Hodgkin Lymphoma	1975–1991	4.3[f]	1991–2003	0.0				
(Delay-adjusted)	1975–1991	4.3[f]	1991–2003	0.2				
Melanoma of the Skin	1975–1985	5.5[f]	1985–2001	3.3[f]	2001–2003	−3.3		
(Delay-adjusted)	1975–1985	5.5[f]	1985–2001	3.4[f]	2001–2003	−0.9		
Kidney and Renal Pelvis	1975–2003	1.7[f]						
(Delay-adjusted)	1975–2003	1.8[f]						
Leukemia	1975–2001	−0.1	2001–2003	−4.4				
(Delay-adjusted)	1975–2003	0.2[f]						
Oral Cavity and Pharynx	1975–1983	−0.1	1983–2003	−1.5[f]				
(Delay-adjusted)	1975–2003	−1.2[f]						
Pancreas	1975–1981	−1.8[f]	1981–1985	1.2	1985–1989	−2.5	1989–2003	−0.1
(Delay-adjusted)	1975–1981	−1.8[f]	1981–1985	1.1	1985–1990	−2.1[f]	1990–2003	0.1
Stomach	1975–1988	−1.2[f]	1988–2003	−2.1[f]				
(Delay-adjusted)	1975–1988	−1.2[f]	1988–2003	−2.1[f]				
Liver and Intrahepatic Bile Duct	1975–1984	1.7	1984–1998	4.5[f]	1998–2003	0.9		
(Delay-adjusted)	1975–1986	2.1[f]	1986–1996	5.1[f]	1996–2003	2.4[f]		
Brain and Other Nervous System	1975–1991	1.0[f]	1991–2003	−0.7[f]				
(Delay-adjusted)	1975–1989	1.2[f]	1989–2003	−0.4				
Esophagus	1975–2003	0.7[f]						
(Delay-adjusted)	1975–2003	0.7[f]						
Myeloma	1975–2003	0.7[f]						
(Delay-adjusted)	1975–2003	0.9[f]						
Top 15 for female								
Breast	1975–1980	−0.4	1980–1987	3.7[f]	1987–2001	0.4[f]	2001–2003	−4.8
(Delay-adjusted)	1975–1980	−0.4	1980–1987	3.7[f]	1987–2001	0.5[f]	2001–2003	−4.1
Lung and Bronchus	1975–1982	5.5[f]	1982–1990	3.5[f]	1990–1998	1.0[f]	1998–2003	−0.5
(Delay-adjusted)	1975–1982	5.6[f]	1982–1991	3.4[f]	1991–2003	0.5[f]		
Colon and Rectum	1975–1985	0.3	1985–1995	−1.9[f]	1995–1998	1.7	1998–2003	−2.2[f]
(Delay-adjusted)	1975–1985	0.3	1985–1995	−1.8[f]	1995–1998	1.7	1998–2003	−1.9[f]
Corpus and Uterus, NOS	1975–1979	−6.0[f]	1979–1988	−1.7[f]	1988–1998	0.6[f]	1998–2003	−1.2[f]
(Delay-adjusted)	1975–1979	−6.0[f]	1979–1988	−1.7[f]	1988–1998	0.7[f]	1998–2003	−1.0[f]
Non-Hodgkin Lymphoma	1975–1990	2.9[f]	1990–2003	1.0[f]				
(Delay-adjusted)	1975–1990	2.8[f]	1990–2003	1.3[f]				
Melanoma of the Skin	1975–1981	5.2[f]	1981–2003	2.2[f]				
(Delay-adjusted)	1975–1981	4.9[f]	1981–2003	2.4[f]				
Ovary[e]	1975–1987	0.1	1987–2003	−0.9[f]				
(Delay-adjusted)	1975–1985	0.2	1985–2003	−0.7[f]				
Thyroid	1975–1977	6.6	1977–1980	−5.3	1980–1995	2.3[f]	1995–2003	5.9[f]
(Delay-adjusted)	1975–1981	−1.3	1981–1993	2.2[f]	1993–2000	4.6[f]	2000–2003	9.1[f]

(*continued*)

TABLE 2
(*continued*)

	Joinpoint analyses (1975–2003)[c]							
	Trend 1		Trend 2		Trend 3		Trend 4	
	Years	APC[d]	Years	APC[d]	Years	APC[d]	Years	APC[d]
Pancreas	1975–1983	1.4[f]	1983–2003	−0.2				
(Delay-adjusted)	1975–1984	1.3[f]	1984–2000	−0.3[f]	2000–2003	2.7		
Leukemia	1975–2001	0.0	2001–2003	−5.0				
(Delay-adjusted)	1975–2003	0.2[f]						
Urinary Bladder	1975–2003	0.2[f]						
(Delay-adjusted)	1975–2003	0.2[f]						
Cervix Uteri	1975–1981	−4.5[f]	1981–1997	−1.2[f]	1997–2003	−4.5[f]		
(Delay-adjusted)	1975–1981	−4.6[f]	1981–1997	−1.1[f]	1997–2003	−4.3[f]		
Kidney and Renal Pelvis	1975–2003	2.2[f]						
(Delay-adjusted)	1975–2003	2.3[f]						
Oral Cavity and Pharynx	1975–1980	2.7	1980–2003	−1.0[f]				
(Delay-adjusted)	1975–1980	2.5	1980–2003	−0.9[f]				
Stomach	1975–2003	−1.7[f]						
(Delay-adjusted)	1975–2003	−1.6[f]						

Source: SEER 9 areas covering about 10% of the U.S. population (Connecticut, Hawaii, Iowa, Utah, and New Mexico, and the metropolitan areas of San Francisco, Detroit, Atlanta, and Seattle-Puget Sound).
APC: annual percent change; NOS: not otherwise specified.
[a] Joinpoint (JP) Regression Program, Version 3.1. April 2006, National Cancer Institute.
[b] The top 15 cancers were selected based on the sex-specific age-adjusted rate for 1999–2003 for all races combined and listed in rank order.
[c] Joinpoint analyses with up to 3 joinpoints are based on rates per 100,000 age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130).
[d] APC = annual percent change based on rates that were age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130) using joinpoint regression analysis.
[e] All sites excludes myelodysplastic syndromes and borderline tumors; ovary excludes borderline tumors.
[f] APC is statistically different from zero (two-sided $P < .05$).

cancer/npcr/index.htm and www.cdc.gov/nchs/about/major/dvs/mortdata.htm (CDC); www.naaccr.org/CINAP/index.htm (NAACCR); and www.seer.cancer.gov (SEER).

RESULTS

Update on Long-term Incidence Trends for All Cancers Combined and the 15 Most Common Cancer Sites for All Races, 1975–2003

Age-adjusted cancer incidence rates for all sites, sexes, and populations combined increased from 1975 to 1983, increased at an accelerated rate from 1983 to 1992, and have been stable from 1992 through 2003 (Table 2). For men, incidence rates for all cancers combined increased from 1975 to 1989, increased at a faster rate from 1989 to 1992, decreased from 1992 to 1995, and were stable from 1995 through 2003. For women, incidence rates for all cancers combined increased from 1979 through 2003.

Among men, prostate cancer incidence increased from 1995 through 2003 (Table 2). The incidence rates for myeloma and leukemia, and cancers of the liver and intrahepatic bile duct (liver), kidney and renal pelvis (kidney), and esophagus have been increasing for 28 years (from 1975 through 2003). Incidence rates decreased for colon and rectum cancer during 1998–2003, while cancer incidence rates of the stomach and oral cavity and pharynx (oral cavity) have decreased since 1975 and those of lung and bronchus (lung) since 1982. Incidence rates were stable in the most recent joinpoint segment through 2003 for the remaining top 15 cancer sites (urinary bladder [bladder], non-Hodgkin lymphoma [NHL], melanoma of the skin [melanoma], and cancers of the pancreas and brain and other nervous system [brain]). Cancer of the larynx, on the top 15 sites for males in previous years, was replaced by myeloma in this year's ranking.

Among women, the rates for NHL, melanoma, leukemia, and cancers of the lung, bladder, and kidney have been increasing for 28 years. The cancer incidence rates decreased during the most recent segment for cancers of the colon and rectum, corpus and uterus NOS (uterine corpus), ovary, and oral cavity, while stomach and cervix uteri (cervix) cancers have declined since 1975. The incidence rates for breast cancer stabilized from 2001 through 2003, ending increases begun in the 1980s. The incidence rates for pancreatic cancer also stabilized from 2000 through 2003, after decreasing for 16 years.

In women, thyroid cancer incidence rates have increased since 1981; the rate of increase doubling in 1993; and in 2000, doubling again to 9.1% annually through 2003. The long-term rates increased in all age groups in both men and women, although the most dramatic increase in men occurred since 1996 among

TABLE 3
US Death Rate Trends with Joinpoint[a] Analyses for 1975 through 2003 for the Top 15 Cancers,[b] All Races

	Joinpoint analyses (1975–2003)[c]							
	Trend 1		Trend 2		Trend 3		Trend 4	
	Years	APC[d]	Years	APC[d]	Years	APC[d]	Years	APC[d]
All Sites								
Both Sexes	1975–1990	0.5[e]	1990–1994	−0.4	1994–2003	−1.1[e]		
Male	1975–1979	1.0[e]	1979–1990	0.3[e]	1990–1993	−0.4	1993–2003	−1.6[e]
Female	1975–1992	0.5[e]	1992–2003	−0.8[e]				
Top 15 for male								
Lung and Bronchus	1975–1978	2.4[e]	1978–1984	1.2[e]	1984–1991	0.3[e]	1991–2003	−1.9[e]
Prostate	1975–1987	0.9[e]	1987–1991	3.1[e]	1991–1994	−0.6	1994–2003	−4.0[e]
Colon and Rectum	1975–1978	0.8	1978–1984	−0.4	1984–1990	−1.3[e]	1990–2003	−2.1[e]
Pancreas	1975–1986	−0.8[e]	1986–2003	−0.3[e]				
Leukemia	1975–1995	−0.2[e]	1995–2003	−0.7[e]				
Non-Hodgkin Lymphoma	1975–1981	1.8[e]	1981–1990	3.0[e]	1990–1997	1.6[e]	1997–2003	−2.8[e]
Esophagus	1975–1985	0.7[e]	1985–1994	1.2[e]	1994–2003	0.5[e]		
Urinary Bladder	1975–1983	−1.4[e]	1983–1987	−2.8[e]	1987–1993	0.1	1993–2003	−0.7[e]
Liver and Intrahepatic Bile Duct	1975–1985	1.5[e]	1985–1995	3.8[e]	1995–2003	1.8[e]		
Stomach	1975–1987	−2.3[e]	1987–1991	−0.9	1991–2003	−3.5[e]		
Kidney and Renal Pelvis	1975–1991	1.1[e]	1991–2003	−0.1				
Brain and Other Nervous System	1975–1977	4.4	1977–1982	−0.5	1982–1990	1.5[e]	1990–2003	−0.8[e]
Myeloma	1975–1994	1.5[e]	1994–2003	−0.9[e]				
Oral Cavity and Pharynx	1975–1980	−0.8	1980–2003	−2.3[e]				
Melanoma of the Skin	1975–1991	2.1[e]	1991–2003	−0.1				
Top 15 for female								
Lung and Bronchus	1975–1982	6.0[e]	1982–1990	4.2[e]	1990–1995	1.7[e]	1995–2003	0.3[e]
Breast	1975–1990	0.4[e]	1990–1995	−1.8[e]	1995–1999	−3.1[e]	1999–2003	−1.4[e]
Colon and Rectum	1975–1984	−1.0[e]	1984–2003	−1.9[e]				
Pancreas	1975–1984	0.8[e]	1984–2003	0.1				
Ovary	1975–1982	−1.2[e]	1982–1992	0.3	1992–1998	−1.1[e]	1998–2003	0.4
Non-Hodgkin Lymphoma	1975–1995	2.2[e]	1995–1998	−0.3	1998–2003	−3.7[e]		
Leukemia	1975–1980	0.9	1980–2003	−0.5[e]				
Corpus and Uterus, NOS	1975–1991	−1.6[e]	1991–2003	−0.1				
Brain and Other Nervous System	1975–1992	0.9[e]	1992–2003	−1.0[e]				
Myeloma	1975–1993	1.5[e]	1993–2003	−0.6[e]				
Stomach	1975–1987	−2.8[e]	1987–1990	−0.5	1990–2003	−2.6[e]		
Liver and Intrahepatic Bile Duct	1975–1981	−0.1	1981–1988	1.7[e]	1988–1995	3.7[e]	1995–2003	0.7[e]
Kidney and Renal Pelvis	1975–1992	1.3[e]	1992–2003	−0.5[e]				
Cervix Uteri	1975–1982	−4.3[e]	1982–1996	−1.6[e]	1996–2003	−3.8[e]		
Urinary Bladder	1975–1986	−1.7[e]	1986–2003	−0.4[e]				

Source: National Center for Health Statistics public-use data file for the total U.S.

APC: annual percent change; NOS: not otherwise specified.

[a] Joinpoint (JP) Regression Program, Version 3.1. April 2006, National Cancer Institute.

[b] The top 15 cancers were selected based on the sex-specific age-adjusted rate for 1999–2003 for all races combined and listed in rank order.

[c] Joinpoint analyses with up to 3 joinpoints are based on rates per 100,000 age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130).

[d] APC = Annual percent change based on rates that were age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130) using joinpoint regression analysis.

[e] APC is statistically significantly different from zero (two-sided $P < .05$).

60–69 year olds (age-specific and long-term trends in males not shown).

Update on Long-term Mortality Trends for All Cancers Combined and the 15 Most Common Cancer Sites for All Races, 1975–2003

The overall cancer death rates for all race/ethnic populations together increased from 1975 to 1990, were stable from 1990 to 1994, and decreased from 1994 through 2003. The most recent rate declines were greater among men (1.6% per year from 1993 through 2003) than women (0.8% per year from 1992 through 2003) (Table 3).

In the most recent joinpoint segment, death rates decreased for 11 of the 15 most common cancers in men (i.e., lung, prostate, colon and rectum, pancreas, leuke-

mia, NHL, bladder, stomach, brain, myeloma, and oral cavity) and for 10 of the 15 most common cancers in women (i.e., breast, colon and rectum, NHL, leukemia, brain, myeloma, stomach, kidney, cervix, and bladder). Further, sustained decreases since 1975 have occurred in men for pancreatic cancer and leukemia, and among women, cancers of the colon and rectum, cervix, and bladder. Death rates increased for esophageal cancer from 1975 through 2003 in men, and for liver cancer at varying rates from 1975 through 2003 in men and 1981 through 2003 in women. Lung cancer increased from 1975 through 2003 in women; however, the rate of increase decelerated over time. Death rates were stable in men for kidney cancer and melanoma (both 1991–2003), and in women, for cancers of the pancreas (1984–2003), ovary (1998–2003), and uterine corpus (1991–2003).

Cancer Incidence and Death Rates, 1999–2003, and Fixed Interval Trends, 1995–2003

Among men, the top 3 incident cancers from 1999 through 2003 continued to be cancers of the prostate, lung, and colon and rectum in all race/ethnic populations (Table 4). Bladder cancer and NHL were the fourth and fifth most common cancers in most race/ethnic populations, with the exception of black and API men. Cancers of the kidney and bladder were the fourth and fifth most common sites in black men, and in API men, they were cancers of the liver and stomach. Incidence rates declined from 1995 through 2003 for cancers of the lung, stomach, oral cavity, and larynx and increased for thyroid cancer in all race/ethnic populations examined. Incidence rates of kidney and liver cancers increased in all race/ethnic populations except API. Colon and rectum cancer incidence rates declined in white and non-Hispanic (all races) men, but not in others. NHL incidence rates declined in all race/ethnic populations, except non-Hispanic and API. Incidence rates were stable for cancers of the prostate and bladder in all race/ethnic populations. Three of the top 15 common cancers had different 1995–2003 trends among the race/ethnic groups. Pancreatic cancer incidence rates increased in white and non-Hispanic men, but decreased in black men; esophageal cancer incidence rates decreased in Latino (all races), black, and API, but increased in white and non-Hispanic, men. Melanoma increased in non-Hispanic and white men, but decreased in black men.

Among women, cancers of the breast, colon and rectum, lung, and uterine corpus continued to be the top 4 incident cancers from 1999 through 2003 in all race/ethnic populations, although the rank order of the top 3 cancers varied (Table 4). The fifth most common cancer was NHL in women of all races and ethnicities, except black and API women. The fifth most common cancer was pancreas in black, and thyroid in API, women. Cervical cancer was the only cancer among the top 15 cancers that decreased in women of all races and ethnicities, while cancers of the kidney and thyroid were the only cancers that increased in all female populations. Lung cancer incidence rates continued to increase from 1995 through 2003 in non-Hispanic (all races) and white women, but not in women of other races or ethnicity. Incidence rates were stable for cancers of the breast and colon and rectum in all race/ethnic populations, except colon and rectal cancer in white women, for which the rates declined from 1995 through 2003. Melanoma increased in non-Hispanic, white, and API women. Incidence rates of NHL increased in non-Hispanic and black women, but not in others. Ovarian cancer incidence rates declined in women of most races and ethnicity, except black and API women. Stomach cancer incidence rates decreased in women of all races and ethnicities, except Latinas.

The fixed-interval incidence trends from 1995 to 2003 showed more sex than racial/ethnic differences. The trends in more of the top 15 cancer sites in men were decreasing for each population group than among the top 15 cancer sites in women.

Among men, the 3 leading causes of cancer death from 1999 to 2003 continued to be cancers of the lung, prostate, and colon and rectum in most race/ethnic populations (Table 5), except API males, in whom they were lung, liver, and colon and rectum. Trends in death rates declined from 1995 through 2003 for cancers of the lung, prostate, and colon and rectum in all race/ethnic populations, except API and AI/AN, in whom death rates were stable for cancer of the colon and rectum. Death trends for cancers other than the 3 leading cancers varied by racial/ethnic population. Death rates of liver cancer increased from 1995 through 2003 in Latino, non-Latino, and white men and were stable in black, API, and AI/AN men. Death rates of esophageal cancer declined in Hispanic and black men, increased in non-Hispanic and white men, and were stable in API and AI/AN men. Death rates declined from 1995 through 2003 in 11 of 16 cancers in non-Latinos and 9 of 16 cancers in Latinos. Differences were observed for cancers of the bladder and brain, leukemia, and myeloma, where rates in Latinos were stable; melanoma, where rates in Latinos decreased; and esophageal cancer where rates in Latinos decreased and those in white men increased.

Among women, cancers of the breast, lung, and colon and rectum continued to be the 3 leading causes of cancer death from 1999 to 2003 in all racial and ethnic populations, although the rank of the second and third cancers varied (Table 5). Compared with men,

TABLE 4
Age-Adjusted Incidence Rates for 1999–2003 and Fixed Interval Trends for 1995–2003 for the Top 15 Cancers[a] by Sex and Race/Ethnicity, Selected Areas in the United States

	Hispanic[b]			Non-Hispanic			White			Black			API			All race/ Ethnic groups		
Sex/cancer site	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]
Male																		
All Sites[e]		444.1	−1.1[f]		571.8	−0.3		555.0	−0.4		639.8	−1.3[f]		385.5	−0.6		562.1	−0.4
Prostate	1	141.1	−0.7	1	167.0	0.2	1	156.0	0.0	1	243.0	−0.9	1	104.2	0.6	1	165.0	0.1
Lung and Bronchus	2	52.7	−2.9[f]	2	92.3	−1.6[f]	2	88.8	−1.6[f]	2	110.6	−2.8[f]	2	56.6	−1.5[f]	2	89.6	−1.7[f]
Colon and Rectum	3	52.4	−0.8	3	65.1	−1.2[f]	3	63.7	−1.4[f]	3	70.2	−0.3	3	52.6	−0.8	3	64.2	−1.3[f]
Urinary Bladder	4	22.2	−0.8	4	39.3	0.1	4	40.4	−0.1	5	18.3	0.2	6	17.8	0.8	4	38.2	−0.1
Non-Hodgkin Lymphoma	5	19.8	−1.5[f]	5	22.9	−0.2	5	23.1	−0.3[f]	8	16.6	−1.2[f]	7	17.2	0.1	5	22.6	−0.3[f]
Kidney and Renal Pelvis	6	16.9	2.2[f]	7	18.0	2.5[f]	7	18.0	2.5[f]	4	18.5	2.7[f]	11	9.8	2.2	7	17.9	2.5[f]
Stomach	7	16.1	−2.0[f]	11	10.3	−2.4[f]	11	9.7	−2.3[f]	7	17.4	−2.8[f]	5	20.0	−3.1[f]	11	10.7	−2.3[f]
Liver and Intrahepatic Bile Duct	8	14.8	2.9[f]	15	7.7	3.1[f]	15	7.2	3.4[f]	14	11.1	3.2[f]	4	22.1	−0.1	13	8.2	3.3[f]
Leukemia	9	12.2	−0.9	9	16.1	−0.5	8	16.3	−0.7	12	11.9	−1.2[f]	9	10.1	−1.2	9	15.9	−0.6
Oral Cavity and Pharynx	10	11.4	−3.0[f]	8	16.5	−0.9[f]	9	15.9	−0.7[f]	6	18.0	−3.4[f]	8	11.6	−2.7[f]	8	16.1	−1.1[f]
Pancreas	11	11.1	−0.9	10	12.9	0.4[f]	10	12.6	0.5[f]	9	15.8	−0.8[f]	10	10.0	−1.2	10	12.8	0.3
Larynx	12	6.8	−3.5[f]	14	7.7	−3.3[f]	14	7.3	−3.4[f]	13	11.9	−3.2[f]	16	3.4	−3.3[f]	15	7.6	−3.4[f]
Myeloma	13	6.5	−1.0	16	6.8	−0.5	16	6.3	−0.6	10	12.6	−0.1	15	4.1	−3.7[f]	16	6.8	−0.5
Brain and Other Nervous System	14	6.2	−0.2	13	8.1	−0.3	13	8.4	−0.5	15	4.7	0.6	12	5.0	1.4	14	7.9	−0.4
Esophagus	15	5.7	−2.5[f]	12	8.8	0.7[f]	12	8.4	1.3[f]	11	12.1	−4.7[f]	13	4.4	−4.9[f]	12	8.6	0.4
Melanoma of the Skin	16	4.6	−0.3	6	22.0	3.4[f]	6	22.5	3.2[f]	24	1.1	−4.6[f]	19	2.4	2.5	6	20.5	3.1[f]
Thyroid	18	3.3	4.6[f]	18	4.2	5.5[f]	18	4.3	5.5[f]	19	2.3	4.9[f]	14	4.2	2.9[f]	18	4.1	5.4[f]
Female																		
All Sites[e]		327.2	−0.6		422.9	0.0		421.1	−0.1		383.8	−0.3		303.3	−0.1		415.3	−0.1
Breast	1	92.6	−0.9	1	131.2	−0.4	1	130.8	−0.5	1	111.5	−0.3	1	91.2	0.7	1	128.2	−0.5
Colon and Rectum	2	37.3	−0.6	3	47.3	−0.8	3	45.9	−1.0[f]	2	53.5	−0.1	2	38.0	−0.6	3	46.7	−0.9
Lung and Bronchus	3	26.7	−0.2	2	56.9	0.6[f]	2	56.2	0.6[f]	3	50.3	0.1	3	28.7	−0.2	2	54.7	0.5[f]
Corpus and Uterus, NOS	4	18.7	0.2	4	24.2	−0.3	4	24.5	−0.4	4	19.7	1.0[f]	4	16.3	0.7[f]	4	23.8	−0.3
Non-Hodgkin Lymphoma	5	14.7	−0.2	5	16.2	0.5[f]	5	16.5	0.3	7	11.1	1.1[f]	6	11.9	1.2	5	16	0.4
Cervix Uteri	6	14.7	−4.1[f]	13	8.6	−3.9[f]	13	8.6	−3.4[f]	6	13.0	−4.9[f]	9	9.3	−6.5[f]	13	9.1	−3.7[f]
Ovary[e]	7	11.4	−1.3[f]	7	14.0	−1.7[f]	7	14.3	−1.7[f]	8	10.0	−1.2	8	10.6	−0.9	6	13.8	−1.7[f]
Thyroid	8	11.2	4.9[f]	8	11.7	7.5[f]	8	12.0	7.2[f]	13	7.2	7.1[f]	5	13.9	4.6[f]	8	11.6	7.1[f]
Kidney and Renal Pelvis	9	9.4	1.8[f]	12	9.1	2.8[f]	12	9.3	2.7[f]	9	9.5	2.8[f]	14	4.9	3.1[f]	12	9.2	2.7[f]
Pancreas	10	9.4	−0.2	10	9.9	0.7[f]	11	9.6	0.7[f]	5	13.2	−0.3	10	8.5	0.9	9	9.9	0.6[f]
Stomach	11	9.1	−0.7	16	4.8	−1.7[f]	16	4.4	−1.3[f]	11	9.0	−2.0[f]	7	11.4	−3.1[f]	16	5.1	−1.3[f]
Leukemia	12	8.4	−0.3	11	9.6	−0.4	10	9.8	−0.5	12	7.7	−0.1	12	6.5	−1.5	11	9.5	−0.4
Urinary Bladder	13	5.9	−1.6	9	10.1	0.0	9	10.3	0.0	14	6.8	−0.9	15	4.6	−0.6	10	9.8	−0.1
Liver and Intrahepatic Bile Duct	14	5.8	0.2	18	2.8	1.4[f]	18	2.7	1.3[f]	16	3.6	0.4	11	8.3	0.2	18	3	1.5[f]
Brain and Other Nervous System	15	5.0	−0.2	15	5.8	−0.3	15	6.1	−0.2	18	3.5	−0.9	16	3.5	−0.6	15	5.7	−0.4
Myeloma	16	4.9	0.3	17	4.5	−0.6	17	4.0	−0.7	10	9.3	−0.8	17	3.3	0.1	17	4.5	−0.5
Oral Cavity and Pharynx	17	4.2	−2.2	14	6.4	−1.0[f]	14	6.2	−1.1[f]	15	5.7	−2.2[f]	13	5.8	0.0	14	6.2	−1.1[f]
Melanoma of the Skin	18	4.1	1.0	6	14.2	4.1[f]	6	14.8	3.9[f]	28	0.9	1.1	19	2.0	4.4[f]	7	13.1	3.7[f]

Source: SEER and NPCR areas reported by the North American Association of Central Cancer Registries (NAACCR) as meeting high quality standards for the time periods selected.

APC: annual percent change; API: Asian/Pacific Islander; NOS: not otherwise specified.

[a] Cancers are sorted in descending order according to sex-specific rates for Hispanics/Latinos. More than 15 cancers may appear under male and female to include the top 15 cancers in every racial and ethnic group.

[b] NHIA derived Hispanic origin. White, black, and API categories include Hispanics and non-Hispanics; the race categories are not mutually exclusive of ethnicity.

[c] Rates are average annual per 100,000 age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130). The data from 38 cancer registries [Alabama, Alaska, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, West Virginia, Wisconsin] were included covering 82% of U.S. population, and 82% of the white, 80% of the black, and 92% of the API race groups, and 90% of the Hispanics (regardless of race).

[d] Annual percent change (APC) based on rates that were age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130). The data from 30 cancer registries with data from 1995–2003 [California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Texas, Utah, Washington, West Virginia, Wisconsin] were included covering 73% of the total U.S. population, and 73% of the white, 65% of the black, and 88% of the API race groups, and 88% of the Latinos (regardless of race).

[e] All sites excludes myelodysplastic syndromes and borderline tumors; ovary excludes borderline tumors.

[f] APC is statistically significantly different from zero (two-sided $P < .05$).

TABLE 5
US Death Rates (1999–2003) and Fixed Interval Trends (1995–2003) for the Top 15 Cancers[a] by Sex and Race/Ethnicity[b]

	Hispanic[b]			Non-Hispanic			White			Black			API			AI/AN			All race/ Ethnic groups		
Sex/cancer site	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]	Rank	Rate[c]	APC[d]
Male																					
All Sites		166.4	−1.6[e]		248.1	−1.5[e]		239.2	−1.4[e]		331.0	−2.4[e]		144.9	−2.1[e]		153.4	−2.9[e]		243.7	−1.6[e]
Lung and Bronchus	1	37.2	−2.3[e]	1	77.2	−1.9[e]	1	73.8	−1.8[e]	1	98.4	−2.7[e]	1	38.8	−1.3[e]	1	42.9	−5.1[e]	1	74.8	−2.0[e]
Prostate	2	22.1	−3.3[e]	2	29.4	−4.0[e]	2	26.7	−4.1[e]	2	65.1	−3.5[e]	4	11.8	−5.9[e]	2	18.0	−4.8[e]	2	29.1	−4.1[e]
Colon and Rectum	3	17.5	−1.0[e]	3	24.7	−2.1[e]	3	23.7	−2.2[e]	3	33.6	−1.1[e]	3	15.3	−1.4	3	15.9	−2.5	3	24.3	−2.1[e]
Liver and Intrahepatic Bile Duct	4	10.7	1.1[e]	9	6.8	1.7[e]	9	6.3	1.9[e]	7	9.6	1.2	2	15.5	−1.0	4	7.8	0.8	9	7.0	1.8[e]
Stomach	5	9.2	−2.6[e]	11	6.0	−3.9[e]	12	5.4	−3.9[e]	5	12.4	−3.6[e]	5	11.0	−4.2[e]	5	7.1	−1.3	10	6.1	−3.7[e]
Pancreas	6	9.0	−0.7	4	12.3	0.0	4	12.0	0.1	4	15.7	−0.8	6	7.8	−1.9[e]	7	6.2	−2.3	4	12.2	−0.1
Non-Hodgkin Lymphoma	7	7.1	−4.1[e]	6	10.0	−2.0[e]	6	10.3	−2.0[e]	11	6.8	−3.3[e]	7	6.1	−2.3	9	4.8	−5.4	6	9.9	−2.1[e]
Leukemia	8	6.5	−1.3	5	10.2	−0.7[e]	5	10.4	−0.7[e]	8	8.8	−1.9[e]	8	5.1	−1.7	10	4.7	−3.2	5	10.1	−0.8[e]
Kidney and Renal Pelvis	9	5.3	0.5	10	6.1	−0.2	10	6.2	−0.1	12	6.1	−0.3	12	2.6	−2.9	6	6.8	0.9	11	6.1	−0.2
Esophagus	10	4.3	−2.6[e]	7	8.0	0.7[e]	8	7.6	1.4[e]	6	10.7	−4.6[e]	10	3.2	−3.4	8	5.0	0.3	7	7.8	0.5[e]
Urinary Bladder	11	4.1	−0.2	8	7.7	−0.5[e]	7	7.9	−0.5[e]	13	5.5	−1.1[e]	11	2.9	1.6	13	2.6	∼	8	7.5	−0.6[e]
Myeloma	12	3.7	0.0	13	4.7	−0.9[e]	13	4.4	−0.6[e]	9	8.6	−1.9[e]	14	1.9	−5.3[e]	11	3.3	−1.9	13	4.7	−0.9[e]
Brain and Other Nervous System	13	3.4	−0.2	12	5.7	−0.7[e]	11	5.9	−0.7[e]	15	3.3	−0.3	13	2.5	3.1	14	2.4	−1.5	12	5.5	−0.8[e]
Oral Cavity and Pharynx	14	2.9	−4.1[e]	14	4.2	−2.2[e]	15	3.8	−1.9[e]	10	6.9	−4.2[e]	9	3.6	−1.7	12	3.1	−2.9	14	4.1	−2.3[e]
Larynx	15	2.0	−5.9[e]	16	2.5	−2.1[e]	16	2.2	−2.1[e]	14	5.1	−3.0[e]	15	0.9	−2.9	15	1.8	∼	16	2.4	−2.3[e]
Melanoma of the Skin	17	1.0	−3.7[e]	15	4.0	−0.4	14	4.3	−0.4	24	0.5	−1.7	19	0.5	2.4	16	0.9	∼	15	3.8	−0.5
Female																					
All Sites		108.8	−0.6[e]		167.7	−0.8[e]		163.4	−0.8[e]		192.4	−1.0[e]		98.8	−1.1[e]		111.6	−1.2[e]		164.3	−0.9[e]
Breast	1	16.3	−2.6[e]	2	26.6	−2.2[e]	2	25.4	−2.4[e]	2	34.4	−1.5[e]	2	12.6	−0.3	2	13.8	−2.2	2	26.0	−2.3[e]
Lung and Bronchus	2	14.7	−0.1	1	42.7	0.5[e]	1	42.0	0.4[e]	1	39.8	0.2	1	18.8	−1.2	1	27.0	0.7	1	41.0	0.3[e]
Colon and Rectum	3	11.4	−0.1	3	17.3	−1.9[e]	3	16.4	−2.0[e]	3	23.7	−1.3[e]	3	10.5	−1.6	3	11.1	−3.4[e]	3	17.0	−2.0[e]
Pancreas	4	7.5	0.8	4	9.4	0.2	5	9.0	0.2	4	12.5	−0.5	4	6.9	0.5	4	5.9	−0.7	4	9.2	0.1
Ovary	5	6.0	0.6	5	9.1	0.0	4	9.2	0.0	5	7.4	−0.1	7	4.9	1.4	5	5.2	3.1	5	8.9	−0.1
Stomach	6	5.2	−2.1[e]	11	3.0	−3.0[e]	13	2.7	−2.8[e]	8	6.0	−2.9[e]	6	6.7	−4.1[e]	8	3.7	−2.4	11	3.1	−2.7[e]
Non-Hodgkin Lymphoma	7	5.1	−1.6	6	6.4	−2.5[e]	6	6.7	−2.6[e]	11	4.3	−1.2	8	4.0	−1.0	7	3.9	−0.6	6	6.4	−2.5[e]
Liver and Intrahepatic Bile Duct	8	5.0	1.6[e]	12	2.9	0.4	12	2.8	0.5[e]	12	3.8	−0.1	5	6.7	1.0	6	4.0	−3.1[e]	12	3.0	0.7[e]
Leukemia	9	4.2	−0.5	7	5.9	−0.7[e]	7	5.9	−0.6[e]	9	5.3	−0.8	9	3.2	−2.3[e]	10	3.3	−1.6	7	5.8	−0.7[e]
Cervix Uteri	10	3.4	−3.6[e]	14	2.6	−3.5[e]	14	2.4	−3.2[e]	10	5.1	−4.8[e]	10	2.5	−4.2[e]	12	2.6	−4.2	14	2.7	−3.5[e]
Corpus and Uterus, NOS	11	3.2	0.2	8	4.2	0.2	9	3.9	0.0	6	7.1	0.8	11	2.3	1.3	13	2.2	−0.4	8	4.1	0.1
Myeloma	12	2.7	−0.2	10	3.2	−0.7[e]	10	2.9	−0.7[e]	7	6.4	−1.1[e]	12	1.6	0.0	11	3.0	−2.1	10	3.2	−0.8[e]
Brain and Other Nervous System	13	2.5	0.9	9	3.7	−1.2[e]	8	3.9	−1.0[e]	16	2.2	−1.2	13	1.5	−3.3	15	1.6	∼	9	3.7	−1.2[e]
Kidney and Renal Pelvis	14	2.4	0.0	13	2.8	−0.8[e]	11	2.8	−0.8[e]	15	2.8	−0.9	15	1.2	−0.6	9	3.3	−2.4	13	2.8	−0.8[e]
Gallbladder	15	1.5	−4.5[e]	20	0.8	−2.8[e]	20	0.8	−3.0[e]	19	1.0	−1.5	17	0.8	−7.0[e]	14	1.6	∼	20	0.8	−2.9[e]
Urinary Bladder	16	1.3	2.5	15	2.3	−0.5	15	2.3	−0.3	14	2.9	−1.3	16	1.0	−1.0	18	1.2	∼	15	2.3	−0.5
Esophagus	17	1.0	−1.6	17	1.8	−0.2	17	1.7	0.4	13	3.0	−3.0[e]	18	0.8	−4.1	17	1.2	∼	16	1.8	−0.4
Oral Cavity and Pharynx	19	0.9	−0.5	18	1.6	−2.7[e]	18	1.5	−2.4[e]	17	1.8	−4.7[e]	14	1.4	−0.9	16	1.4	∼	18	1.5	−2.6[e]

Source: National Center for Health Statistics public-use data file for the total U.S.

APC: annual percent change; API: Asian/Pacific Islander; AI/AN: American Indian/Alaska Native; NOS: not otherwise specified.

[a] Cancers are sorted in descending order according to sex-specific rates for all races. More than 15 cancers may appear under male and female to include the top 15 cancers in every racial and ethnic group.

[b] Data for Hispanics excludes Maine, Minnesota, New Hampshire, North Dakota, and Oklahoma. NHIA derived Hispanic origin. White, black, and API categories include Hispanics and non-Hispanics; the race categories are not mutually exclusive of ethnicity.

[c] Rates are per 100,000 age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130) for the time period 1999–2003.

[d] Annual percent change (APC) based on rates that were age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130).

[e] APC is statistically significantly different from zero (two-sided $P < .05$).

∼ Statistic could not be calculated. The annual percent change is based on fewer than 10 cases for at least 1 year within the time interval.

women experienced less of a decline in death rates for all cancers combined from 1995 through 2003, and Latina, white, black, and API women had fewer sites with declining death rate trends. For breast cancer, death rates declined from 1995 through 2003 in Latinas, non-Latinas, white, and black, but were stable in API and AI/AN, women. Lung cancer death rates continued to increase from 1995 through 2003 in white and non-Hispanic women, but were stable in other race/ethnic populations, although among white women it decelerated. Death rates for cancer of the colon and rectum declined in women of most races and ethnicities, except Latina and API. Death rates declined in 11 of 18 cancers in non-Latinas and 4 of 18 cancers in Latinas; the differences were seen for cancers of the colon and rectum, brain, kidney, and oral cavity, leukemia, NHL, and myeloma, where rates were stable in Latinas; liver cancer, where rates were increasing for Latinas; and lung cancer, where rates were increasing in white, but stable in Latina, women.

Cancer Among U.S. Latinos, 1999–2003

General characteristics

In the 2000 U.S. Census, 13% of the population stated they were of Hispanic/Latino origin, second in size only to the NHW population. From 1990 to 2000, the U.S. Hispanic population grew by 58%,[43] while the total U.S. population grew by 13%. The U.S. Latino population is younger (median age, 25.9 years) than the general U.S. population (median age, 35.3 years). Most U.S. Latinos live in California (28%), followed by Texas (17%).[43] The U.S. Hispanic population in 2000 was composed of Mexican (59%), Puerto Rican (10%), Central American (5%), South American (4%), Cuban (4%), and Dominican (2%) descent, with the remaining 16% all other Latinos combined.

The specific Hispanic populations are not randomly located across the U.S. For example, 31% of the Latino population in Florida is Cuban, compared with 0.7% of the Latino population in California. Nearly one-quarter of the Hispanics in Maryland are Central American, while in neighboring Pennsylvania only 2.5% are Central American, with most Latinos in this state being Puerto Rican. More state characteristics of the Latino ethnic groups are available elsewhere.[10,44]

U.S. Latinos differ not only by geography but also by socioeconomic characteristics (Table 6). (A data table of statistical test results and 95% CI is available at: www.seer.gov/report_to_nation/1975_2003/). Puerto Ricans are the most likely of any Latino or race group to live below the poverty level. Mexicans are the least likely of all race/ethnic populations to have graduated high school, and Cubans are the most linguistically isolated (i.e., no person aged 14 years or older at home speaks English very well) and most likely to be foreign-born.

Compared with non-Latinos, Latinos are more likely to speak a language other than English at home and to reside in a metropolitan area. Latinos are less likely than non-Latinos to have health care coverage, especially when they are younger than 65 years. Hispanic persons are much less likely to have a regular source of medical care than are non-Hispanic populations, with Latino men being the least likely.

Risk/Prevention/Early Detection

Cuban men and women had similar smoking rates and were more likely than any of the other Latino groups to smoke (Table 6); Puerto Rican and Mexican women were the least likely. Cuban men were the least likely to be obese and Puerto Rican women were more likely, based on self-report, to be obese than all other gender-race/ethnic groups, except NHB women. Cuban women were less likely to have leisure time physical activity while this characteristic for Puerto Rican and Mexican women was similar to NHB women. Reporting at least 1 day in the last year when 5 or more alcoholic drinks were consumed was more common among men than women, and among males, it was less common among Cubans.

The 3 major Latino population groups were less likely to have either a fecal occult blood test or an endoscopy than were NHW or NHB groups. Pap testing and mammography screening were comparable among all Latinas, but only Pap tests occurred less in Latinas than in NHW and NHB women. Latino men were less likely than NHW men to have had a PSA test in the last year.

Cancer Incidence

Latinos had lower incidence rates than NHW or NHB populations for the majority of specific cancer sites, including lung, colon and rectum, breast, and prostate cancers (Table 7). Incidence rates that were higher in Latinos than in NHW populations included cancers of the stomach and liver in both males and females and myeloma and cervical cancer in Latinas. Cancer of the liver had more than a 2-fold incidence in Latinos than in NHW persons. Incidence rates that were higher in Latinos than in NHB populations were cancers of the liver and brain, NHL, and melanoma regardless of gender; cancers of the bladder and testis in Latino men; and leukemias and cancers of the cervix, ovary, and thyroid in Latinas.

In addition to the cancer sites in Table 7, Latino men and women had lower rates than NHW men and women for cancers of the small intestine, soft tissue and heart, anus, and eye and orbit. (A data table of statistical test results and 95% CI is available at: www.

TABLE 6
Socioeconomic Characteristics, Cancer Risk Factors, and Use of Cancer Screening by Race and Ethnicity, United States[a]

	Hispanic				Non-Hispanic	
Characteristics	**All**	**Mexican**	**Puerto Rican**	**Cuban**	**White[b]**	**Black[c]**
Socioeconomic Characteristics						
% of persons with income below poverty level[d]	22.6	23.5	25.8	14.6	8.1	24.8
% of persons (age ≥ 25 yrs) graduated high school[d]	52.4	45.8	63.3	62.9	85.5	72.4
% of persons (age ≥ 25 yrs) with less than 9th grade[d]	27.8	33.8	15.7	18.5	4.6	7.8
% of household linguistic isolation[d]	26.4	27.5	18.5	34.8	1.0	1.0
% of persons foreign born[d]	40.2	41.5	1.4	68.5	3.5	5.7
% of persons with a language other than English in the home[d]	78.6	78.8	75.4	86.3	6.0	6.0
% of persons inside metropolitan area[d]	93.4	92.3	96.3	97.2	73.6	89.6
Access to Health Care Characteristics						
% of persons with no health care coverage[e]						
Age < 65 years old	35.1	38.3	—	—	12.0	18.6
Age ≥ 65 years old	5.3	6.7	—	—	0.6	2.0
% of persons (Ages 18—64) with no regular source of medical care[f]						
Male	30.0	32.7	—	—	14.9	17.5
Female	17.3	18.8	—	—	7.9	9.1
Cancer Risk Factors						
% of persons (age ≥ 18 yrs) who are current smokers[f]						
Male	21.2	22.0	26.1	29.8	24.6	25.4
Female	10.3	8.9	14.5	30.0	22.1	18.3
% of persons (age ≥ 20 yrs) who are obese, (self-report)[f#]						
Male	23.2	25.2	27.7	17.3	23.1	28.5
Female	28.0	30.7	32.0	19.0	21.3	38.5
% of persons (age ≥ 20 yrs) who are obese, (measured)[g#]						
Male	—	27.8	—	—	28.0	27.8
Female	—	38.0	—	—	30.7	48.8
% of persons (age > 18 yrs) with no leisure time physical activity[f]						
Male	50.6	51.7	49.5	57.8	31.5	45.1
Female	52.7	52.3	51.4	70.0	35.1	50.5
% of persons (age > 18 yrs) with 5 or more drinks in one day at least once in the past year[f]						
Male	24.4	26.4	22.0	12.3	29.8	17.6
Female	6.2	6.6	5.8	4.9	14.4	5.5
Use of Cancer Screening						
Use of mammography in women (age ≥ 40 yrs)[f] within the past 2 years	66.1	63.4	65.3	73.7	70.4	70.4
Use of colorectal cancer screening in adult (age ≥ 50 yrs)[f]	29.9	26.2	35.9	31.4	44.2	38.9
Fecal occult blood test within last year	11.9	11.8	12.8	10.7	16.3	16.4
Endoscopy within past five years	25.1	20.4	32.8	24.8	37.4	32.6
Use of Pap smear in women (age ≥ 18 yrs)[e] within the past 3 years	74.7	73.0	76.2	77.5	80.2	82.5
Use of PSA test in men (age ≥ 50 yrs) within one year[f]	52.7	46.3	~	~	58.0	55.6

[a] Data to assess precision of estimates are available as supplemental information at NCI website.
[b] Single race reported as white only.
[c] Single race reported as black only.
[d] Source: Tables PCT142, QTP20, PCT42, PCT1, PCT45, PCT178, and PCT2. U.S. Census Bureau, 2000 Census of Population and Housing Summary File 4.
[e] Schiller JS, Adams PF, Nelson ZC. Summary health statistics for the U.S. population: National Health Interview Survey, 2003. Vital Health Stat 10. 2005 Apr;(224):1—104.
[f] Source: National Health Interview Survey (NHIS), 2003, Sample adult file (Samadult Data), National Center for Health Statistics, Centers for Disease Control and Prevention. Available at http://www.cdc.gov/nchs/nhis.htm.
[g] National Center for Health Statistics, Health, United States 2005, with Chartbook on Trends in the Health of Americans, Hyattsville, Maryland, Table 73. NHANES: National Health and Nutrition Examination Survey, 1999–2002.
[#] Body mass index (BMI) > 30.
— No data available.
~ Data suppressed due to small numbers of less than 50 persons.

TABLE 7
Age-adjusted Incidence Rates[a] for the Top 15 Cancer Sites[b] for each Sex by Race/Ethnicity in the Selected Areas[c] in the United States, 1999–2003

			Non-Hispanic				Hispanic *c.f.*		Hispanic *c.f.*	
	Hispanic[d]		White		Black		Non-Hispanic White		Non-Hispanic Black	
Sex/cancer site	Rank	Rate	Rank	Rate	Rank	Rate	RR	95% CI	RR	95% CI
Male										
All Sites		444.1		565.6		650.2	0.79	(0.78–0.79)[e]	0.68	(0.68–0.69)[e]
Prostate	1	141.1	1	157.9	1	246.7	0.89	(0.88–0.90)[e]	0.57	(0.57–0.58)[e]
Lung and Bronchus	2	52.7	2	91.7	2	112.8	0.57	(0.57–0.58)[e]	0.47	(0.46–0.48)[e]
Colon and Rectum	3	52.4	3	64.6	3	71.3	0.81	(0.80–0.82)[e]	0.73	(0.72–0.75)[e]
Urinary Bladder	4	22.2	4	41.8	5	18.5	0.53	(0.52–0.55)[e]	1.20	(1.16–1.24)[e]
Non-Hodgkin Lymphoma	5	19.8	6	23.4	8	16.9	0.85	(0.83–0.87)[e]	1.17	(1.13–1.21)[e]
Kidney and Renal Pelvis	6	16.9	7	18.1	4	18.9	0.93	(0.91–0.96)[e]	0.89	(0.86–0.93)[e]
Stomach	7	16.1	11	9.2	7	17.6	1.75	(1.70–1.81)[e]	0.91	(0.88–0.95)[e]
Liver and Intrahepatic Bile Duct	8	14.8	16	6.5	14	11.2	2.28	(2.21–2.35)[e]	1.32	(1.27–1.38)[e]
Leukemia	9	12.2	8	16.6	13	12.1	0.74	(0.71–0.76)[e]	1.01	(0.97–1.05)
Oral Cavity and Pharynx	10	11.4	9	16.4	6	18.3	0.70	(0.68–0.72)[e]	0.62	(0.60–0.65)[e]
Pancreas	11	11.1	10	12.7	9	16.1	0.87	(0.84–0.91)[e]	0.69	(0.66–0.72)[e]
Larynx	12	6.8	14	7.4	12	12.1	0.91	(0.87–0.95)[e]	0.56	(0.53–0.59)[e]
Myeloma	13	6.5	17	6.3	10	12.8	1.04	(0.99–1.09)	0.51	(0.48–0.54)[e]
Brain and Other Nervous System	14	6.2	12	8.7	15	4.8	0.71	(0.69–0.74)[e]	1.29	(1.22–1.37)[e]
Esophagus	15	5.7	13	8.7	11	12.3	0.66	(0.63–0.70)[e]	0.47	(0.44–0.49)[e]
Melanoma of the Skin	16	4.6	5	24.4	24	1.1	0.19	(0.18–0.20)[e]	4.19	(3.75–4.69)[e]
Testis	17	3.6	15	6.5	23	1.3	0.55	(0.53–0.57)[e]	2.68	(2.48–2.90)[e]
Female										
All Sites		327.2		430.2		389.9	0.76	(0.76–0.76)[e]	0.84	(0.83–0.84)[e]
Breast	1	92.6	1	134.4	1	113.4	0.69	(0.68–0.70)[e]	0.82	(0.81–0.83)[e]
Colon and Rectum	2	37.3	3	46.5	2	54.3	0.80	(0.79–0.81)[e]	0.69	(0.67–0.70)[e]
Lung and Bronchus	3	26.7	2	58.7	3	51.3	0.46	(0.45–0.46)[e]	0.52	(0.51–0.53)[e]
Corpus and Uterus, NOS	4	18.7	4	25.0	4	19.9	0.75	(0.73–0.77)[e]	0.94	(0.91–0.97)[e]
Non-Hodgkin Lymphoma	5	14.7	5	16.7	7	11.2	0.88	(0.86–0.90)[e]	1.31	(1.26–1.35)[e]
Cervix Uteri	6	14.7	13	7.9	6	13.2	1.85	(1.80–1.89)[e]	1.11	(1.08–1.15)[e]
Ovary	7	11.4	7	14.6	8	10.2	0.78	(0.76–0.80)[e]	1.12	(1.08–1.16)[e]
Thyroid	8	11.2	8	12.3	13	7.3	0.92	(0.89–0.94)[e]	1.53	(1.48–1.59)[e]
Kidney and Renal Pelvis	9	9.4	12	9.2	9	9.6	1.02	(0.99–1.05)	0.98	(0.94–1.02)
Pancreas	10	9.4	11	9.6	5	13.4	0.98	(0.95–1.01)	0.70	(0.68–0.73)[e]
Stomach	11	9.1	16	4.0	11	9.1	2.28	(2.20–2.36)[e]	1.01	(0.96–1.05)
Leukemia	12	8.4	10	9.8	12	7.8	0.86	(0.83–0.88)[e]	1.07	(1.03–1.12)[e]
Urinary Bladder	13	5.9	9	10.6	14	6.9	0.55	(0.53–0.58)[e]	0.85	(0.81–0.90)[e]
Liver and Intrahepatic Bile Duct	14	5.8	21	2.5	16	3.7	2.37	(2.27–2.48)[e]	1.59	(1.50–1.69)[e]
Brain and Other Nervous System	15	5.0	15	6.2	18	3.6	0.81	(0.78–0.84)[e]	1.41	(1.33–1.49)[e]
Myeloma	16	4.9	17	4.0	10	9.4	1.23	(1.17–1.29)[e]	0.52	(0.49–0.54)[e]
Oral Cavity and Pharynx	17	4.2	14	6.4	15	5.8	0.66	(0.63–0.69)[e]	0.72	(0.68–0.77)[e]
Melanoma of the Skin	18	4.1	6	16.2	28	0.9	0.26	(0.24–0.27)[e]	4.36	(3.97–4.80)[e]

Source: SEER and NPCR areas reported by the North American Association of Central Cancer Registries as meeting high quality standards for 1999–2003.

[a] Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) and confidence intervals (CI) are 95% for rate ratios (RR); c.f. = compared with.

[b] 15 most common cancer in Hispanic males and females.

[c] The data from 38 cancer registries [Alabama, Alaska, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, West Virginia, Wisconsin] were included covering 82% of U.S., 90% of the Hispanic, 81% of NHW and 79% of NHB populations.

[d] NHIA derived Hispanic origin.

[e] Rate ratio (RR) is statistically significant ($P < 0.05$).

seer.gov/report_to_nation/1975_2003/). Latino men and women had higher rates than NHW men and women for gallbladder cancer, hepatocellular carcinoma, and acute lymphocytic leukemia (ALL). Cancer of the vagina was higher in Latinas than in NHW women and cancer of the penis and Kaposi Sarcoma (KS) were higher among Latinos than NHW men.

Compared with NHB populations, Latinas had lower rates of cancer of the vagina and Latino males had lower rates of KS. However, Latinos had higher

rates than did NHB populations for mesothelioma; ALL; and cancers of the gallbladder, bones and joint, ureter, and eye and orbit. Latino men also had higher rates of cancer of the penis than did NHB men and Latinas had higher rates of ALL than did NHB women. Dissimilar to all other smoking-related sites, Latino men and women had higher rates of lip cancer than did NHB men and women.

Site-Specific Rates by Age

The median age at any cancer diagnosis was the youngest among Latinos at 62 years; while the median age of NHB patients was 64 years and NHW cases, 68 years, reflecting differences in the age structures of the 3 populations and the specific cancer mix. For female breast, prostate, colon and rectum, lung, and cervical cancer, the Latino cancer incidence rates were the lowest, even within age categories (i.e., 20–39, 40–49, 50–64, 65–74, 75+ years), among the 3 race/ethnic groups, with the exception of cervical cancer in Latinas younger than 65 years (highest rates among all 3 groups) and prostate cancer in Latino men, aged 75 years and older (higher than NHW, but not NHB, men). (A data table is available at: www.seer.gov/report_to_nation/1975_2003/).

Cancer in Latino Children and Adolescents

Incidence rates for all cancers combined were lower among Latino than NHW boys (aged 0–14) and Latino adolescents of each sex (aged 15–19), but rates were higher among Latinos than all NHB children and adolescents (Table 8). Cancer-specific rates among Latino children and adolescents were generally similar or higher than those of NHB groups (with the exception of renal tumors in all Latino children and soft tissue sarcomas in male adolescents), and thus comparisons that follow are limited to Latino and NHW children and adolescents.

Of the 12 major cancer groups, Latino boys had lower incidence rates for CNS tumors, neuroblastoma and other peripheral nervous cell tumors (neuroblastomas), renal tumors, and other malignant epithelial neoplasms and melanomas (epithelial neoplasms) and higher incidence rates, than did NHW boys, for leukemias, retinoblastoma, and germ-cell tumors. Incidence rates for Hodgkin lymphomas and osteosarcomas were also higher among Latino than NHW boys, although the combined rates for all lymphomas and reticuloendothelial neoplasms (lymphomas) and for all malignant bone tumors (bone tumors) were not different. The difference in leukemias incidence rates between Latino and NHW adolescents was greater than it was between children of the 2 groups. For osteosarcomas and germ-cell tumors, the differences observed in Latino, compared with NHW children, disappeared in adolescents. In contrast to these patterns, incidence rates for Hodgkin lymphomas were similar among Latino and NHW boys, but lower among Latino, than NHW male, adolescents.

Latina girls, aged 0–14 years, had lower incidence rates of CNS tumors, neuroblastomas, renal tumors, and epithelial neoplasms and higher incidence rates than did NHW girls for leukemias, retinoblastoma, and germ-cell tumors. Incidence rates of osteosarcomas were higher among Latina than NHW girls, although the rate of all bone tumors was similar. The difference in incidence rates between Latinas and NHW female adolescents disappeared for osteosarcomas, but remained for leukemias and germ-cell tumors.

County Poverty and Cancer Incidence

As county poverty increased, the cancer incidence rates of liver (including hepatocellular carcinoma in both men and women) and cervix (women) increased in Latinos, a pattern similar to other race/ethnic groups (Table 9). Cancer incidence rates of the prostate, breast (female), bladder (men and women), and uterine corpus (excluding NHB women) in all race/ethnic groups were highest in counties with less than 10% poverty. The RRs of the higher poverty compared with <10% poverty counties were lower for cancers of the colon and rectum and bladder among Latinos and Latinas and breast (Latina) than in the other 2 race/ethnic groups.

Cancer Among Latino Population Groups

After age-adjustment, the proportion of liver cancer was higher among all Latino groups when each was compared with NHW persons (Table 10); cancers of the stomach and gallbladder were proportionally higher among all groups when each was compared with the NHW population (except stomach cancer in Cuban males and gallbladder cancer in Cuban females). Prostate cancer was proportionally higher in Cubans and South/Central Americans than in NHW men, and lower in Mexicans than in NHW men. Kidney cancer was higher in Mexicans of both sexes and lower in the other specific Latino groups when compared with NHW men and women. Conversely, breast cancer in each Latina group was proportionally lower than in NHW women, as was lung cancer for both Latino men and women.

Stage of Disease at Diagnosis

Latinos were less likely to be diagnosed with localized disease (among selected cancers, i.e. breast, cervix, prostate, lung, and colon and rectum) than were

TABLE 8
Cancer Incidence Rates[a] for Selected Pediatric and Adolescent Cancer Sites by Age, Race/Ethnicity and Sex in the Selected Areas[b] in the United States, 1999–2003

		Non-Hispanic		Hispanic *c.f.*		Hispanic *c.f.*	
	Hispanic[c]	White	Black	Non-Hispanic White		Non-Hispanic Black	
Gender/cancer site	Rate	Rate	Rate	RR	95% CI	RR	95% CI
Male							
All Sites							
0–14	159.0	165.3	110.2	0.96	(0.93–1.00)[d]	1.44	(1.37–1.52)[d]
15–19	209.5	234.1	147.8	0.90	(0.85–0.95)[d]	1.42	(1.30–1.54)[d]
I. Leukemias, myeloproliferative and myelodysplastic diseases							
0–14	58.6	50.9	25.9	1.15	(1.08–1.22)[d]	2.26	(2.04–2.51)[d]
15–19	45.9	32.5	24.5	1.41	(1.24–1.60)[d]	1.87	(1.54–2.28)[d]
Lymphoid leukemias (comprised mostly of Acute Lymphocytic Leukemia)							
0–14	47.4	40.8	17.4	1.16	(1.09–1.24)[d]	2.73	(2.41–3.09)[d]
15–19	29.3	19.8	11.8	1.48	(1.26–1.74)[d]	2.49	(1.90–3.30)[d]
Acute myeloid leukemias							
0–14	07.9	07.6	06.7	1.04	(0.88–1.23)	1.18	(0.94–1.49)
15–19	11.1	09.3	09.1	1.20	(0.93–1.55)	1.22	(0.86–1.75)
II. Lymphomas and reticuloendothelial neoplasms							
0–14	20.7	20.1	15.4	1.03	(0.93–1.14)	1.35	(1.16–1.56)[d]
15–19	44.0	57.7	39.1	0.76	(0.68–0.86)[d]	1.13	(0.95–1.34)
Hodgkin lymphomas							
0–14	08.3	06.4	06.0	1.29	(1.09–1.52)[d]	1.38	(1.09–1.76)[d]
15–19	24.5	34.9	20.2	0.70	(0.60–0.82)[d]	1.21	(0.96–1.54)
Non-Hodgkin lymphomas (except Burkitt lymphoma)							
0–14	07.5	07.8	06.7	0.96	(0.81–1.13)	1.12	(0.89–1.41)
15–19	15.7	17.9	15.9	0.87	(0.71–1.07)	0.98	(0.74–1.30)
III. CNS and misc intracranial and intraspinal neoplasms							
0–14	29.5	37.6	24.4	0.78	(0.72–0.85)[d]	1.21	(1.08–1.36)[d]
15–19	20.1	25.5	14.6	0.79	(0.66–0.94)[d]	1.38	(1.05–1.81)[d]
Astrocytomas							
0–14	13.1	17.6	11.3	0.74	(0.66–0.84)[d]	1.16	(0.97–1.38)
15–19	09.1	14.0	09.1	0.65	(0.49–0.84)[d]	1.00	(0.69–1.45)
Intracranial and intraspinal embryonal tumors							
0–14	07.8	10.1	05.7	0.77	(0.65–0.90)[d]	1.38	(1.08–1.76)[d]
15–19	05.9	04.1	~	1.43	(0.99–2.05)	~	~
IV. Neuroblastoma and other peripheral nervous cell tumors							
0–14	07.7	12.9	08.5	0.60	(0.51–0.70)[d]	0.91	(0.73–1.12)
15–19	~	00.6	~	~	~	~	~
V. Retinoblastoma							
0–14	05.2	03.8	05.1	1.36	(1.11–1.68)[d]	1.02	(0.78–1.34)
15–19	00.0	00.0	~	~	~	~	~
VI. Renal tumors							
0–14	06.4	08.1	09.0	0.79	(0.66–0.94)[d]	0.71	(0.57–0.89)[d]
15–19	~	01.1	~	~	~	~	~
Nephroblastoma and other nonepithelial renal tumors							
0–14	06.1	07.7	08.3	0.79	(0.66–0.94)[d]	0.74	(0.59–0.93)[d]
15–19	~	~	00.0	~	~	~	~
VII. Hepatic tumors							
0–14	02.4	02.5	01.9	0.95	(0.71–1.27)	1.29	(0.85–2.02)
15–19	~	01.2	~	~	~	~	~

(*continued*)

TABLE 8
(*continued*)

		Non-Hispanic		Hispanic *c.f.*		Hispanic *c.f.*	
	Hispanic[c]	White	Black	Non-Hispanic White		Non-Hispanic Black	
Gender/cancer site	Rate	Rate	Rate	RR	95% CI	RR	95% CI
VIII. Malignant bone tumors							
0–14	06.9	07.2	04.8	0.96	(0.80–1.14)	1.44	(1.11–1.88)[d]
15–19	18.2	20.1	15.9	0.91	(0.75–1.10)	1.14	(0.87–1.50)
Osteosarcomas							
0–14	04.5	03.4	03.8	1.33	(1.05–1.68)[d]	1.17	(0.86–1.60)
15–19	11.4	11.7	12.4	0.97	(0.76–1.24)	0.91	(0.66–1.26)
Ewing tumor and related sarcomas of bone							
0–14	01.7	03.3	~	0.52	(0.36–0.72)[d]	~	~
15–19	05.0	06.4	~	0.77	(0.52–1.10)	~	~
IX. Soft tissue and other extraosseous sarcomas							
0–14	11.2	11.3	09.4	1.00	(0.87–1.14)	1.20	(0.99–1.45)
15–19	14.7	15.9	20.2	0.93	(0.74–1.14)	0.73	(0.56–0.95)[d]
Rhabdomyosarcomas							
0–14	05.5	06.0	05.0	0.91	(0.75–1.10)	1.10	(0.84–1.44)
15–19	03.2	04.9	05.3	0.66	(0.41–1.02)	0.61	(0.34–1.06)
X. Germ cell and trophoblastic tumors and neoplasms of gonads							
0–14	06.7	04.2	01.8	1.59	(1.31–1.92)[d]	3.74	(2.58–5.59)[d]
15–19	46.0	42.0	09.5	1.10	(0.97–1.24)	4.87	(3.67–6.57)[d]
XI. Other malignant epithelial neoplasms and melanomas							
0–14	03.2	06.0	03.6	0.53	(0.41–0.68)[d]	0.89	(0.63–1.25)
15–19	16.7	36.5	16.8	0.46	(0.38–0.55)[d]	1.00	(0.76–1.31)
Thyroid carcinomas							
0–14	00.9	01.3	~	0.73	(0.44–1.18)	~	~
15–19	04.3	06.4	~	0.67	(0.44–0.97)[d]	~	~
Other and unspecified carcinomas							
0–14	01.0	01.6	01.3	0.60	(0.37–0.95)[d]	0.73	(0.40–1.33)
15–19	07.4	10.7	08.0	0.69	(0.51–0.92)[d]	0.92	(0.62–1.39)
XII. Other and unspecified malignant neoplasms							
0–14	~	00.7	~	~	~	~	~
15–19	~	00.9	~	~	~	~	~
Female							
All Sites							
0–14	142.0	146.3	107.2	0.97	(0.93–1.01)	1.32	(1.25–1.40)[d]
15–19	163.7	216.5	135.8	0.76	(0.71–0.81)[d]	1.21	(1.10–1.32)[d]
I. Leukemias, myeloproliferative and myelodysplastic diseases							
0–14	53.5	43.1	24.8	1.24	(1.16–1.32)[d]	2.16	(1.94–2.41)[d]
15–19	28.3	21.7	17.7	1.30	(1.10–1.54)[d]	1.59	(1.25–2.04)[d]
Lymphoid leukemias (comprised mostly of Acute Lymphocytic Leukemia)							
0–14	43.0	34.1	17.0	1.26	(1.17–1.36)[d]	2.53	(2.23–2.88)[d]
15–19	15.8	10.3	06.8	1.53	(1.21–1.92)[d]	2.32	(1.60–3.43)[d]
Acute myeloid leukemias							
0–14	08.1	06.9	06.3	1.17	(0.99–1.38)	1.28	(1.01–1.63)[d]
15–19	08.4	08.7	08.7	0.97	(0.72–1.31)	0.97	(0.65–1.44)
II. Lymphomas and reticuloendothelial neoplasms							
0–14	11.1	12.1	09.3	0.92	(0.79–1.05)	1.20	(0.98–1.46)
15–19	32.6	52.5	33.6	0.62	(0.53–0.72)[d]	0.97	(0.80–1.18)

(*continued*)

TABLE 8
(*continued*)

		Non-Hispanic		Hispanic *c.f.*		Hispanic *c.f.*	
	Hispanic[c]	White	Black	Non-Hispanic White		Non-Hispanic Black	
Gender/cancer site	Rate	Rate	Rate	RR	95% CI	RR	95% CI
Hodgkin lymphomas							
0–14	04.0	05.0	03.3	0.80	(0.63–1.02)	1.22	(0.87–1.72)
15–19	21.5	40.3	21.0	0.53	(0.44–0.63)[d]	1.02	(0.80–1.31)
Non-Hodgkin lymphomas (except Burkitt lymphoma)							
0–14	04.5	04.5	04.4	1.00	(0.80–1.25)	1.03	(0.76–1.39)
15–19	08.3	10.7	11.6	0.77	(0.57–1.03)	0.71	(0.49–1.03)
III. CNS and misc intracranial and intraspinal neoplasms							
0–14	25.7	32.9	22.6	0.78	(0.71–0.85)[d]	1.14	(1.00–1.29)
15–19	13.5	20.9	12.8	0.65	(0.51–0.81)[d]	1.05	(0.77–1.45)
Astrocytomas							
0–14	10.9	17.1	10.5	0.64	(0.56–0.73)[d]	1.04	(0.86–1.26)
15–19	07.0	12.1	06.7	0.58	(0.42–0.79)[d]	1.05	(0.67–1.64)
Intracranial and intraspinal embryonal tumors							
0–14	06.5	06.3	04.5	1.03	(0.85–1.24)	1.45	(1.10–1.91)[d]
15–19	~	02.7	~	~	~	~	~
IV. Neuroblastoma and other peripheral nervous cell tumors							
0–14	07.1	12.5	07.3	0.57	(0.48–0.67)[d]	0.98	(0.78–1.24)
15–19	~	00.7	~	~	~	~	~
V. Retinoblastoma							
0–14	04.8	03.6	03.6	1.34	(1.08–1.67)[d]	1.35	(0.99–1.85)
15–19	00.0	~	00.0	~	~	~	~
VI. Renal tumors							
0–14	07.3	09.5	11.6	0.77	(0.65–0.91)[d]	0.63	(0.52–0.77)[d]
15–19	~	01.1	~	~	~	~	~
Nephroblastoma and other nonepithelial renal tumors							
0–14	07.1	09.2	11.0	0.77	(0.65–0.91)[d]	0.65	(0.53–0.79)[d]
15–19	00.0	~	~	~	~	~	~
VII. Hepatic tumors							
0–14	02.0	01.8	01.2	1.08	(0.77–1.51)	1.70	(1.01–2.99)
15–19	~	01.2	~	~	~	~	~
VIII. Malignant bone tumors							
0–14	07.5	06.7	05.9	1.12	(0.93–1.33)	1.27	(0.99–1.63)
15–19	10.5	11.8	07.7	0.89	(0.68–1.16)	1.37	(0.93–2.03)
Osteosarcomas							
0–14	04.6	03.4	05.0	1.36	(1.07–1.72)[d]	0.92	(0.69–1.23)
15–19	06.5	05.9	05.5	1.11	(0.78–1.57)	1.19	(0.74–1.94)
Ewing tumor and related sarcomas of bone							
0–14	02.2	03.0	~	0.73	(0.53–1.00)	~	~
15–19	~	04.2	~	~	~	~	~
IX. Soft tissue and other extraosseous sarcomas							
0–14	09.8	09.5	10.4	1.03	(0.89–1.20)	0.94	(0.77–1.15)
15–19	14.4	14.1	13.7	1.02	(0.80–1.28)	1.05	(0.77–1.43)
Rhabdomyosarcomas							
0–14	04.7	04.6	04.8	1.02	(0.81–1.26)	0.97	(0.73–1.30)
15–19	03.1	02.5	~	1.23	(0.71–2.03)	~	~
X. Germ cell and trophoblastic tumors and neoplasms of gonads							
0–14	06.6	05.3	05.0	1.25	(1.03–1.51)[d]	1.32	(1.01–1.73)[d]
15–19	19.7	13.6	16.6	1.45	(1.18–1.78)[d]	1.19	(0.91–1.56)

(*continued*)

TABLE 8
(*continued*)

Gender/cancer site	Hispanic[c] Rate	Non-Hispanic White Rate	Non-Hispanic Black Rate	Hispanic *c.f.* Non-Hispanic White RR	Hispanic *c.f.* Non-Hispanic White 95% CI	Hispanic *c.f.* Non-Hispanic Black RR	Hispanic *c.f.* Non-Hispanic Black 95% CI
XI. Other malignant epithelial neoplasms and melanomas							
0–14	06.0	08.6	05.1	0.70	(0.58–0.84)[d]	1.18	(0.90–1.55)
15–19	41.4	77.0	28.0	0.54	(0.47–0.61)[d]	1.48	(1.22–1.81)[d]
Thyroid carcinomas							
0–14	03.0	03.4	01.7	0.88	(0.66–1.16)	1.80	(1.15–2.85)[d]
15–19	24.7	35.1	08.9	0.70	(0.59–0.83)[d]	2.79	(2.03–3.88)[d]
Other and unspecified carcinomas							
0–14	01.7	02.0	02.2	0.85	(0.58–1.23)	0.74	(0.46–1.18)
15–19	12.0	13.3	15.0	0.90	(0.70–1.15)	0.80	(0.58–1.09)
XII. Other and unspecified malignant neoplasms							
0–14	~	00.7	~	~	~	~	~
15–19	~	01.8	~	~	~	~	~

Source: SEER and NPCR areas reported by the North American Association of Central Cancer Registries as meeting high quality standards for 1999–2003.

[a] Rates for all ages 0–14 or 15–19 are per 1,000,000 and age-adjusted to the 2000 US Std Population.

[b] The data from 38 cancer registries [Alabama, Alaska, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, West Virginia, Wisconsin] were included covering 82% of U.S., 90% of the Hispanic, 81% of NHW and 79% of NHB populations.

[c] NHIA derived Hispanic origin.

[d] Rate ratio (RR) is statistically significant ($P < 0.05$).

~ Count and rates suppressed when cell frequency was <16.

NHW, and about the same as NHB men (Table 11). Latinas, however, were the least likely to be diagnosed with cervical cancer in a distant stage, while all Latinos were the most likely to be diagnosed with lung cancer in a distant stage. NHW persons had the highest proportion of cases diagnosed in a localized stage for all 5 cancer sites. The proportion of the cancers of regional and distant stage combined was similar across county poverty levels, except breast and cervical cancer among Latinas, where the combined percent of regional and distant stages increased with increasing county poverty. Compared with NHW men and women, Latinos were more likely to be diagnosed in the combined group of regional and distant stages within each of the county poverty levels, although NHB women had the highest proportion of cases diagnosed at a distant stage among the 3 racial and ethnic groups.

Regardless of ethnicity or race, the proportion of cases diagnosed with an unknown stage for the selected common cancer sites increased as the county poverty level increased. Latino cases residing in counties of <10% poverty had the lowest proportions of unstaged cases among the 3 populations, but in 20%+ poverty counties, the proportion of unstaged cases exceeded that of NHW and NHB persons (e.g., cancers of the colon and rectum, prostate, and breast).

Metropolitan and Nonmetropolitan Areas

The RRs between age-adjusted incidence rates were higher in metropolitan than in nonmetropolitan counties among the Latino, NHW, and NHB race/ethnic groups for cancers of the bladder, colon and rectum, liver, and stomach for both men and women, and higher for prostate cancer. (A data table is available at: www.seer.gov/report_to_nation/1975_2003/). Lung cancer rates were lower for metro NHW and NHB males, but not in Latino males; while in females, the nonmetro Latina lung cancer rates were higher than those of metro Latinas, opposite of the pattern observed for NHW and NHB women. For cancers of the uterine corpus, cervix, and breast, the metro/nonmetro gradient was not observed for Latinas, while the metro rates were higher than nonmetro rates for the other 2 race/ethnic female populations. Rate ratios for gallbladder cancer did not suggest a metro/nonmetro gradient for any race/ethnic group.

DISCUSSION

The overall decline in cancer death rates, first noticed in the early 1990s,[1] has continued through 2003. In

TABLE 9
Age-adjusted Incidence Rates[a] and Rate Ratios for Selected Cancer Sites[b] by Race/Ethnicity, County Poverty, and Sex in Selected Areas[c] of the United States, 1999–2003

	County poverty[d]	Hispanic[e]		Non-Hispanic White		Non-Hispanic Black	
Sex/cancer site	(%)	Rate	RR (95% CI)	Rate	RR (95% CI)	Rate	RR (95% CI)
Male							
Colon and Rectum							
	<10	56.3	1.00	64.2	1.00	70.1	1.00
	10–19	51.6	0.92 (0.88–0.96)[f]	64.7	1.01 (1.00–1.02)	72.1	1.03 (0.99–1.06)
	≥20	52.0	0.92 (0.87–0.97)[f]	66.6	1.04 (1.02–1.05)[f]	70.3	1.00 (0.96–1.04)
Gallbladder							
	<10	1.2	1.00	0.8	1.00	0.9	1.00
	10–19	1.4	1.16 (0.84–1.61)	0.7	0.94 (0.88–1.02)	0.9	0.96 (0.70–1.33)
	≥20	1.5	1.29 (0.88–1.88)	0.8	1.00 (0.85–1.18)	1.0	1.13 (0.78–1.62)
Liver and Intrahepatic Bile Duct	<10	12.9	1.00	6.1	1.00	9.7	1.00
	10–19	14.4	1.12 (1.02–1.22)[f]	6.8	1.12 (1.09–1.15)[f]	11.4	1.17 (1.07–1.27)[f]
	≥20	18.0	1.39 (1.26–1.54)[f]	7.5	1.24 (1.18–1.30)[f]	12.5	1.28 (1.16–1.41)[f]
Hepatocellular							
	<10	10.2	1.00	4.1	1.00	7.4	1.00
	10–19	11.1	1.10 (0.99–1.21)	4.6	1.12 (1.09–1.16)[f]	8.6	1.16 (1.06–1.27)[f]
	≥20	14.6	1.44 (1.29–1.61)[f]	5.3	1.28 (1.20–1.36)[f]	9.5	1.28 (1.15–1.43)[f]
Lung and Bronchus							
	<10	55.2	1.00	84.4	1.00	99.5	1.00
	10–19	51.6	0.93 (0.89–0.98)[f]	96.2	1.14 (1.13–1.15)[f]	117.3	1.18 (1.15–1.21)[f]
	≥20	54.6	0.99 (0.94–1.04)	103.3	1.22 (1.21–1.24)[f]	112.8	1.13 (1.10–1.17)[f]
Non-Hodgkin Lymphoma							
	<10	21.5	1.00	23.7	1.00	17.2	1.00
	10–19	19.6	0.91 (0.85–0.98)[f]	23.3	0.99 (0.97–1.00)[f]	16.5	0.96 (0.90–1.02)
	≥20	19.6	0.91 (0.84–0.99)[f]	22.0	0.93 (0.90–0.96)[f]	17.8	1.03 (0.96–1.11)
Prostate							
	<10	155.4	1.00	164.3	1.00	256.3	1.00
	10–19	137.5	0.89 (0.86–0.91)[f]	154.6	0.94 (0.94–0.95)[f]	243.0	0.95 (0.93–0.96)[f]
	≥20	141.1	0.91 (0.88–0.94)[f]	140.8	0.86 (0.85–0.87)[f]	246.3	0.96 (0.94–0.98)[f]
Stomach							
	<10	16.3	1.00	9.1	1.00	16.4	1.00
	10–19	15.6	0.96 (0.88–1.04)	9.1	1.00 (0.98–1.02)	17.9	1.09 (1.02–1.18)[f]
	≥20	17.3	1.06 (0.96–1.17)	9.6	1.05 (1.00–1.10)[f]	18.2	1.11 (1.02–1.21)[f]
Urinary Bladder							
	<10	27.7	1.00	42.9	1.00	19.8	1.00
	10–19	22.3	0.80 (0.75–0.86)[f]	41.4	0.97 (0.96–0.98)[f]	18.5	0.94 (0.87–1.00)
	≥20	17.4	0.63 (0.57–0.69)[f]	37.7	0.88 (0.86–0.90)[f]	17.6	0.89 (0.82–0.96)[f]
Female							
Cervix Uteri							
	<10	13.5	1.00	7.2	1.00	11.2	1.00
	10–19	14.7	1.09 (1.03–1.16)[f]	8.5	1.18 (1.15–1.21)[f]	13.0	1.16 (1.09–1.24)[f]
	≥20	15.9	1.18 (1.09–1.27)[f]	9.3	1.30 (1.24–1.36)[f]	15.5	1.39 (1.29–1.49)[f]
Colon and Rectum							
	<10	41.3	1.00	46.7	1.00	54.0	1.00
	10–19	37.2	0.90 (0.86–0.94)[f]	46.3	0.99 (0.98–1.00)	54.9	1.02 (0.99–1.05)
	≥20	34.5	0.83 (0.79–0.88)[f]	47.6	1.02 (1.00–1.04)[f]	53.2	0.99 (0.95–1.02)
Corpus and Uterus, NOS							
	<10	19.8	1.00	26.3	1.00	19.8	1.00
	10–19	18.5	0.94 (0.88–0.99)[f]	24.1	0.92 (0.91–0.93)[f]	19.5	0.99 (0.94–1.04)
	≥20	18.6	0.94 (0.87–1.01)	23.5	0.90 (0.87–0.92)[f]	21.0	1.06 (1.00–1.13)[f]
Female breast							
	<10	105.4	1.00	136.6	1.00	115.4	1.00
	10–19	91.8	0.87 (0.85–0.89)[f]	133.4	0.98 (0.97–0.98)[f]	114.7	0.99 (0.97–1.01)
	≥20	85.0	0.81 (0.78–0.83)[f]	126.5	0.93 (0.92–0.94)[f]	108.1	0.94 (0.91–0.96)[f]

(*continued*)

TABLE 9
(*continued*)

Sex/cancer site	County poverty[d] (%)	Hispanic[e] Rate	Hispanic[e] RR (95% CI)	Non-Hispanic White Rate	Non-Hispanic White RR (95% CI)	Non-Hispanic Black Rate	Non-Hispanic Black RR (95% CI)
Gallbladder							
	<10	3.0	1.00	1.3	1.00	1.5	1.00
	10–19	3.1	1.04 (0.88–1.22)	1.2	0.94 (0.90–0.99)[f]	1.6	1.05 (0.87–1.27)
	≥20	2.9	0.98 (0.81–1.20)	1.3	1.00 (0.90–1.11)	2.1	1.35 (1.10–1.67)[f]
Liver and Intrahepatic Bile Duct	<10	4.7	1.00	2.3	1.00	3.4	1.00
	10–19	5.8	1.25 (1.10–1.43)[f]	2.5	1.10 (1.06–1.14)[f]	3.6	1.07 (0.95–1.21)
	≥20	6.8	1.45 (1.25–1.68)[f]	3.0	1.29 (1.20–1.39)[f]	4.0	1.17 (1.02–1.35)[f]
Hepatocellular							
	<10	2.8	1.00	1.1	1.00	1.9	1.00
	10–19	3.7	1.31 (1.11–1.56)[f]	1.3	1.10 (1.05–1.16)[f]	2.1	1.11 (0.95–1.31)
	≥20	4.7	1.67 (1.39–2.02)[f]	1.4	1.23 (1.10–1.37)[f]	2.7	1.41 (1.18–1.69)[f]
Lung and Bronchus							
	<10	32.7	1.00	56.5	1.00	51.1	1.00
	10–19	26.2	0.80 (0.76–0.84)[f]	60.3	1.07 (1.06–1.08)[f]	52.1	1.02 (0.99–1.05)
	≥20	23.6	0.72 (0.68–0.77)[f]	60.2	1.07 (1.05–1.08)[f]	49.7	0.97 (0.94–1.01)
Stomach							
	<10	9.8	1.00	3.9	1.00	8.2	1.00
	10–19	8.9	0.90 (0.83–0.99)[f]	4.0	1.02 (0.99–1.05)	9.1	1.12 (1.03–1.21)[f]
	≥20	9.5	0.97 (0.87–1.08)	4.7	1.20 (1.13–1.26)[f]	9.5	1.16 (1.06–1.27)[f]
Urinary Bladder							
	<10	8.0	1.00	11.1	1.00	7.3	1.00
	10–19	5.7	0.72 (0.64–0.80)[f]	10.4	0.94 (0.92–0.95)[f]	6.9	0.94 (0.86–1.03)
	≥20	4.8	0.60 (0.53–0.69)[f]	10.0	0.90 (0.87–0.93)[f]	6.7	0.91 (0.82–1.01)

Source: SEER and NPCR areas reported by the North American Association of Central Cancer Registries as meeting high quality standards for 1999–2003.

[a] Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census p25-1130) standard and confidence intervals (CI) are 95% for rate ratios (RR).

[b] Top 5 common cancers regardless of race/ethnicity and the selected cancer sites for which Hispanic persons have the higher incidence rates than non-Hispanic white persons.

[c] The data from 37 cancer registries [Alabama, Alaska, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, West Virginia, Wisconsin] were included covering 82% of U.S., 90% of the Hispanic, 81% of NHW and 79% of NHB populations. No county identifiers were available for Hawaii.

[d] Percent (%) of county population below poverty in 1999.

[e] NHIA derived Hispanic origin.

[f] Rate ratio is statistically significantly ($P < 0.05$).

NOS: Not otherwise specified.

addition, many cancer sites have declining death and incidence rates. These are attributable in part to successful cancer prevention efforts to reduce exposure to tobacco and other cancer risk factors, earlier detection of disease through screening, improved prognosis through more effective treatment, and reduction in inequalities in cancer care through more widespread access to effective diagnostic and treatment regimens by the general population. These all point to the success of the nation's dedication and focus on reducing the burden of cancer in the U.S. Continued success will depend on maintaining and enhancing these efforts.[45]

Overall Cancer Incidence and Mortality Trends in the United States

Some site-specific trends are more variable, affecting annual interpretation of incidence statistics. The joinpoint regression model suggests a small increase in the female lung cancer incidence rate from 1991 through 2003, a change from previous estimates,[7,8] where rates from 1998 through 2002 appeared stable.[8] Using the fixed-interval (1995–2003) lung cancer trend to compare age-specific trends, rates were increasing in women for all age groups 65 years and older, decreasing among women aged 45–64 years, and stable in women younger than 45 years. In men, however, lung cancer rates were decreasing in all age groups. Women in the oldest cohort, with the highest proportion of long-term smokers, will continue to have the greatest impact on the trends, until the younger cohorts move into the age groups of highest lung cancer incidence.[46,47]

This year the previously reported increase[8] in breast cancer incidence rates stabilized. Most regis-

TABLE 10
The Proportional Incidence Ratio (PIR) for Selected Cancers among Hispanic Subgroups using the Age-specific Proportions among the Non-Hispanic White Population as the Reference, Selected Areas[a] in the United States, 1999–2003

	Non-Hispanic White	Mexican	Puerto Rican	Cuban	South or Central American	Hispanic of other/ Unknown origin[b]
PIR with 95% CI for Males						
Hispanic subgroup distribution (%)		17.3	7.6	6.1	6.7	62.3
Stomach	1.00	3.03 (2.87–3.20)	2.22 (2.02–2.43)	1.11 (0.95–1.28)	4.31 (4.00–4.63)	2.06 (1.99–2.13)
Colon and Rectum	1.00	0.92 (0.89–0.95)	1.11 (1.06–1.16)	1.02 (0.96–1.07)	0.93 (0.88–0.99)	1.12 (1.10–1.14)
Lung and Bronchus	1.00	0.86 (0.84–0.89)	0.80 (0.76–0.84)	0.93 (0.89–0.98)	0.63 (0.59–0.67)	0.63 (0.62–0.64)
Liver and Intrahepatic Bile Duct	1.00	3.81 (3.61–4.02)	4.05 (3.75–4.37)	1.58 (1.37–1.83)	2.14 (1.90–2.40)	2.86 (2.77–2.95)
Hepatocellular	1.00	4.02 (3.77–4.28)	4.77 (4.39–5.19)	1.65 (1.39–1.96)	2.33 (2.04–2.66)	3.44 (3.32–3.57)
Gallbladder	1.00	3.26 (2.68–3.96)	2.14 (1.50–3.06)	1.99 (1.35–2.95)	3.95 (2.94–5.30)	2.18 (1.92–2.47)
Prostate	1.00	0.90 (0.88–0.91)	0.97 (0.94–1.00)	1.10 (1.07–1.13)	1.13 (1.10–1.16)	1.18 (1.17–1.19)
Bladder	1.00	0.53 (0.50–0.56)	0.70 (0.64–0.75)	0.75 (0.69–0.81)	0.52 (0.47–0.58)	0.69 (0.67–0.71)
Kidney	1.00	1.26 (1.19–1.33)	0.76 (0.68–0.84)	0.88 (0.79–0.99)	1.04 (0.94–1.15)	1.33 (1.29–1.37)
PIR with 95% CI for Females						
Hispanic subgroup distribution (%)		18.1	5.8	4.5	8.4	63.2
Stomach	1.00	3.53 (3.31–3.77)	3.65 (3.27–4.08)	1.26 (1.03–1.54)	5.07 (4.66–5.50)	2.80 (2.69–2.92)
Colon and Rectum	1.00	0.84 (0.80–0.87)	1.18 (1.12–1.25)	1.27 (1.20–1.34)	0.94 (0.89–0.99)	1.12 (1.10–1.14)
Lung and Bronchus	1.00	0.62 (0.59–0.64)	0.74 (0.70–0.79)	0.58 (0.53–0.62)	0.49 (0.46–0.52)	0.59 (0.58–0.60)
Female Breast	1.00	0.89 (0.88–0.91)	0.80 (0.77–0.83)	0.93 (0.90–0.97)	0.87 (0.85–0.89)	0.95 (0.94–0.96)
Liver and Intrahepatic Bile Duct	1.00	4.23 (3.92–4.56)	3.31 (2.85–3.84)	2.46 (2.05–2.97)	3.09 (2.70–3.54)	2.51 (2.38–2.64)
Hepatocellular	1.00	4.77 (4.31–5.29)	4.51 (3.76–5.40)	2.52 (1.93–3.28)	3.51 (2.94–4.19)	3.60 (3.38–3.83)
Gallbladder	1.00	4.62 (4.15–5.14)	2.95 (2.36–3.69)	1.36 (0.96–1.92)	6.30 (5.49–7.23)	2.81 (2.61–3.03)
Cervix	1.00	2.76 (2.65–2.87)	2.35 (2.15–2.58)	2.01 (1.77–2.30)	3.02 (2.85–3.19)	1.94 (1.89–1.99)
Bladder	1.00	0.63 (0.57–0.70)	0.76 (0.65–0.88)	0.69 (0.58–0.81)	0.55 (0.47–0.64)	0.75 (0.71–0.78)
Kidney	1.00	1.34 (1.25–1.43)	0.97 (0.85–1.12)	0.91 (0.78–1.07)	0.97 (0.86–1.09)	1.43 (1.38–1.48)

Source: SEER and NPCR areas reported by NAACCR as meeting high quality standards for 1999–2003.

[a] The data from 38 cancer registries [Alabama, Alaska, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, West Virginia, Wisconsin] were included covering 82% of U.S., 90% of the Hispanic, 81% of NHW and 79% of NHB populations.

[b] Category includes Other specific Hispanic origin, Spanish/Hispanic/Latino NOS, and NHIA surname match only.

Abbreviations: CI = confidence interval.

tries in the SEER regions, upon which the long-term trends statistics are based, reported a steep decline in the number of 2003 breast cancer cases; rates were lower in all but 2 of the 30 states included in the 1995–2003 fixed-interval trend statistics (data not shown). The factors that influence breast cancer incidence are complex, including changes in reproductive risks, obesity, age-cohort effects, and the prevalence of mammography screening, among others. Recent reports hypothesize about the impact of the rapid discontinuation of hormone replacement therapy (HRT) on breast cancer incidence.[48,49] HRT is a known risk factor for breast cancer.[48,49] Change, even stabilization, in mammography screening prevalence also affects incidence trends.[48] Whether this first indication of a changing trend is real or a random fluctuation cannot be determined until data reporting in the next few years is complete.

The fixed interval incidence trend of thyroid cancer has increased in both men and women, with long-term increases in women doubling twice in the last 10 years. Increases are observed in all U.S. racial and ethnic populations and all age groups, as well as globally.[50–54] Although not in the top 15 causes of death, long-term thyroid cancer death rate trends decreased in men from 1975 to 1983 and in women from 1975 to 1988. They have increased in men from 1983 through 2003 and have been stable in women from 1988 to 2003.[13] Changes in diagnostic procedures, including the introduction and greater use of ultrasonography and fine-needle aspiration biopsy, likely contribute to the incidence increase.[50,51,55,56] Radiation exposure in childhood and adolescence is also a recognized risk factor.[57,58] More research on the relation among temporal trends, diagnostic procedures, and exposure to radiation and other potential risk factors is needed.

TABLE 11
The Stage Distributions[a] of Cases for Selected Common Cancer Sites[b] and Age Groups by Race/Ethnicity,[c] County Poverty,[d] and Sex in Selected Areas[e] of the United States, 2001–2003

	Hispanic				Non-Hispanic White				Non-Hispanic Black			
	County Poverty				County Poverty				County Poverty			
Cancer site	<10	10–19	≥20	All	<10	10–19	≥20	All	<10	10–19	≥20	All
Stage[a]	%	%	%	%	%	%	%	%	%	%	%	%
Male												
Colon and Rectum (Aged 50 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	37.3	36.3	36.6	36.5	41.9	41.9	40.0	41.8	34.8	37.7	34.9	36.7
Regional	41.6	44.1	42.4	43.4	40.8	40.3	42.1	40.6	39.4	38.5	39.8	38.9
Distant	21.0	19.6	21.0	20.1	17.3	17.8	17.9	17.6	25.8	23.8	25.3	24.4
Unknown	(6.0)	(9.8)	(10.9)	(9.4)	(6.8)	(7.8)	(8.7)	(7.4)	(7.1)	(8.4)	(10.6)	(8.7)
Lung and Bronchus (Aged 20 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	15.7	14.5	15.4	14.9	18.7	19.2	19.3	19.0	15.0	16.0	14.1	15.4
Regional	24.8	24.0	25.4	24.4	28.1	27.8	28.2	28.0	28.5	28.0	27.4	28.0
Distant	59.5	61.5	59.2	60.7	53.1	53.0	52.5	53.0	56.6	56.0	58.5	56.6
Unknown	(9.1)	(13.3)	(16.5)	(13.2)	(9.7)	(11.7)	(12.4)	(11.0)	(9.4)	(9.7)	(11.5)	(10.0)
Prostate (Aged 50 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	84.5	83.8	82.6	83.7	86.9	86.1	86.1	86.5	85.2	83.5	84.4	83.9
Regional	10.9	10.8	11.0	10.9	9.6	10.1	9.3	9.8	9.5	9.7	7.8	9.3
Distant	4.6	5.4	6.4	5.4	3.5	3.8	4.6	3.7	5.3	6.8	7.8	6.8
Unknown	(6.0)	(8.6)	(13.9)	(9.2)	(6.5)	(8.7)	(9.2)	(7.8)	(6.4)	(8.0)	(10.3)	(8.2)
Female												
Breast (Aged 40 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	60.6	58.3	55.7	58.3	66.4	66.2	64.5	66.2	56.5	54.6	54.4	54.9
Regional	35.3	36.6	37.9	36.6	29.3	29.3	30.5	29.4	36.8	37.6	37.1	37.4
Distant	4.1	5.2	6.4	5.2	4.3	4.5	5.0	4.4	6.7	7.8	8.5	7.8
Unknown	(3.2)	(5.9)	(7.6)	(5.7)	(3.5)	(4.4)	(5.1)	(4.1)	(4.6)	(5.3)	(6.4)	(5.4)
Cervix (Aged 20 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	55.7	53.5	48.9	53.0	56.7	55.4	57.9	56.1	44.3	47.5	45.1	46.5
Regional	36.7	37.2	41.7	37.9	32.9	34.0	32.4	33.5	42.9	40.8	40.9	41.1
Distant	7.6	9.3	9.4	9.1	10.4	10.6	9.8	10.5	12.8	11.8	14.0	12.4
Unknown	(4.7)	(6.5)	(12.0)	(7.2)	(6.3)	(7.9)	(8.0)	(7.3)	(6.6)	(7.8)	(10.2)	(8.2)
Colon and Rectum (Aged 50 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	35.1	39.9	36.2	38.4	39.7	40.5	38.7	40.1	35.6	36.7	35.5	36.3
Regional	46.3	41.7	43.0	42.7	43.3	42.2	43.3	42.7	42.6	41.4	42.4	41.8
Distant	18.5	18.4	20.7	18.8	17.0	17.3	18.0	17.2	21.8	21.9	22.1	22.0
Unknown	(6.4)	(9.7)	(9.9)	(9.2)	(7.3)	(8.3)	(8.8)	(7.9)	(7.1)	(8.8)	(11.5)	(9.1)
Lung and Bronchus (Aged 20 and Older)												
All (Known)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Localized	19.2	19.1	18.2	19.0	22.6	22.4	21.3	22.4	18.1	18.1	16.7	17.8
Regional	25.9	24.9	26.0	25.3	27.1	27.1	27.0	27.1	27.9	27.8	27.5	27.8
Distant	54.9	56.0	55.7	55.7	50.3	50.4	51.7	50.5	54.0	54.1	55.8	54.4
Unknown	(9.8)	(12.6)	(17.0)	(12.8)	(10.1)	(12.6)	(13.0)	(11.6)	(8.9)	(10.0)	(12.0)	(10.3)

Source: SEER and NPCR areas reported by the North American Association of Central Cancer Registries as meeting high quality standards for 1999–2003.

[a] The 2000 SEER Summary Staging System.

[b] Common cancers for age groups selected based on available tests for diagnosis in early stages of disease progression. Cases excluded when based on death certificate information only.

[c] NHIA derived Hispanic origin.

[d] Percent (%) of county population below poverty in 1999.

[e] The data from 36 cancer registries [Alabama, Alaska, California, Colorado, Connecticut, Delaware, District Of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, West Virginia, Wisconsin, but excludes Hawaii and Maryland data] were included covering 80% of U.S., 89% of the Hispanic, 79% of NHW, and 75% of NHB populations.

Incidence rates of kidney cancer have steadily increased for 28 years in both men and women. However, death rates from kidney cancer stabilized in men and declined in women over the last decade. Trends in stage-specific incidence rates of kidney cancer suggest that increasing detection of presymptomatic tumors by ultrasonography, computer tomography, and magnetic resonance imaging procedures is affecting the trends. However, it does not fully explain the steady increases.[59] Other factors such as smoking, obesity, and hypertension may also be contributing.[60]

Incidence rates of leukemia steadily increased since 1975 in both men and women, while death rates declined since 1975 in men and 1980 in women. A study using SEER data from 1973 to 1998 suggested that leukemia incidence decreased among persons aged 65 years and older, but increased among persons younger than 20 years.[61] The trends also varied by subtype of leukemia.[61] The decline in leukemia death rates can indicate improvements in leukemia treatment.

Melanoma incidence in women continued the increase begun in 1975, but stabilized in men from 2001 to 2003. The fixed interval trends (1995–2003) increased in both white and non-Hispanic men and women and API women. Melanoma case reporting is challenging because diagnosis and treatment often occur outside the hospital-based cancer-reporting infrastructure. Although identification of cases has improved, the number of cases is most likely still underestimated.[39,62,63] Although long-term increases in melanoma incidence are influenced by early detection and improved case reporting, increasing trends are not confined to early stage tumors and may also be influenced by historical changes in sun exposure.[63]

The statistics for cervical cancer are remarkable, in that both incidence and mortality rates have been decreasing for all race/ethnic groups since 1975. Although the data for specific race and ethnic groups are not available back to the 1970s, the fixed-interval rates since 1995 show that both incidence and death rates are declining in white, black, API, Hispanic, and non-Hispanic women. The improvements in screening have had a measurable impact on this disease.[64,65] Despite these accomplishments, disparities in the trends by socioeconomic strata prevail.[66]

Cancer in Latinos

This report is based on 90% of the U.S. Latino population, the most comprehensive coverage of cancer information for this large and rapidly growing ethnic group. Although incidence rates for Latinos of specific origins could not be calculated, the data on screening and known cancer risk factors among specific Latino groups suggest several general points: first, not all Hispanic populations in the U.S. are alike;[67] second, data reported from various studies on Hispanic populations may not be comparable if the underlying Hispanic populations do not share the same origins, cultural traditions, and immigration status;[68–72] and third, collection of specific Hispanic origin needs to be increased in general population and demographic statistics as well as in the records of persons diagnosed and dying from cancer.[68,73]

The cancer incidence data reported here on 90% of U.S. Latinos mirror findings of many other studies on various Latino groups or areas,[45,68,71,74–81] with a few exceptions. Rate estimates (Trapido et al. reported higher rates of cancers of the oral cavity and thyroid in white Latinas[81] and lower rates of stomach cancer in white Latinos,[80] compared with white non-Hispanic women and men, respectively), rank order of top cancer sites (Trapido et al.[79] reported for the U.S. that the top 5 cancer sites for Latinos were prostate, lung, colon, stomach, and rectum and for Latinas, cancers of the breast, colon, lung, cervix, and uterine corpus. Canto and Chu[68] found stomach cancer to be in the top 5 for both genders; we report bladder cancer in males and NHLs in females in the top 5 and not stomach cancer in either gender) and trends varied (both Cress et al.[75] and Eidson et al.[82] reported time trends for years that primarily preceded the 1995–2003 period reported in this article). Some differences may be attributed to variation in time periods under study,[68,75,79,81,82] the specific geographies and thus varying origins of the local Hispanic population,[67,72] or limited statistical power to detect differences.[71,83]

U.S. Latinos have lower rates of several cancers that are higher in affluent, industrialized countries where tobacco use, obesity, and physical inactivity may be more prevalent. Several cancer sites with higher incidence rates in Latinos have infectious etiologies: human papilloma virus (HPV) in cervical cancer, *Helicobacter pylori* (*H. pylori*) in stomach cancer,[84] and Hepatitis B virus (HBV) and Hepatitis C virus (HCV) in liver cancer (and hepatocellular carcinoma).[85–88] Explanations vary by site and may include higher prevalence or different age patterns of infection in the countries of origin (HPV), chronic infection (HBV and HCV), poor sanitary conditions (*H. pylori*), or varied availability and use of preventive measures.[89] Further, relative to the NHW populations, the proportion of new site-specific cancer cases, in relation to all cancer cases, varied among 4 Latino groups, suggesting that risks may be different for Latinos of different origin and that cancer risks may not be generalizable from one Latino group to another based on Hispanic ethnicity alone, as found in a comparison of age-adjusted mortality rates among foreign-born Latino groups in New York City.[67]

Children and Adolescents

The incidence of specific cancers differed substantially among Latino and non-Latino children and adolescents. Incidence rates for leukemia, retinoblastoma, and germ-cell tumors were higher among Latinos and rates for CNS tumors, neuroblastoma, renal tumors, and epithelial tumors were generally lower. Latino boys had a higher incidence rate of Hodgkin lymphoma than did non-Latino boys while all Latino adolescents had lower incidence rates than did NHW adolescents. Latino boys and girls had higher incidence rates of germ-cell tumors than did NHW children, an observation also seen for Latinos and NHW female adolescents. These findings are consistent with those of other studies.[90–92]

The incidence of ALL is generally high in economically developed countries and low in developing countries; however, the highest rates in the world are reported in Costa Rica and among Latinos in Los Angeles,[93] although geographic variations in incidence are unexplained. Variation in possible etiologic factors for childhood leukemias, such as paternal smoking, occupational exposure to benzene, household solvents, home use of pesticides, radiation, maternal diet, child's diet, infection, and genetic susceptibility have been investigated with inconsistent results.[85,94–97]

For Hodgkin lymphoma, incidence is low in children and high in adolescents and young adults in developed countries, while in developing countries, rates are high in childhood, then low until old age.[93] Age-related differences in histological subtypes have been observed.[98] Children with Hodgkin lymphoma are more likely to be positive for Epstein–Barr virus (EBV) than are adolescent and young adult patients.[99] Hodgkin lymphoma among adolescents and young adults may result from a delayed reaction to a common infectious exposure (not EBV) late in adolescence.[100]

Higher incidence rates among Latino children and adolescents, than their NHW counterparts, were also observed for retinoblastoma, germ-cell tumors, and osteosarcoma. Incidence rates of retinoblastoma in Central and South America are somewhat higher than rates in North America and Europe.[93] Approximately 40% of children with retinoblastoma have a heritable gene mutation. Increased risk for retinoblastoma and osteosarcoma includes treatment with ionizing radiation or alkylating agents, Paget disease, hereditary retinoblastoma, and Li-Fraumeni syndrome. Germ-cell tumors and osteosarcoma are heterogeneous in histology, site, and behavior, and show relatively little variation internationally.[93]

Among the cancers that have lower incidence in Latino children and adolescents, CNS tumors, neuroblastoma, and renal tumors have lower incidence rates in Central and South America than in North America.[93] Many questions are unanswered regarding cancer etiology in children and adolescents, exposure differences, and genetic predisposition between Latinos and non-Latinos. The diversity and large numbers of Latino immigrants to the U.S. provide a unique opportunity to study childhood and adolescent cancers.

Cancer Risk Factors

The county poverty rate can be a useful indicator of the availability and accessibility to health services. Access to state-of-the-art, quality cancer care is known to be unequal and to exacerbate existing disparities in cancer outcomes.[101–105] The variation in incidence rates for cancers of the prostate and breast may be partly related to different rates of screening for these diseases in counties with more poverty,[106] and the higher incidence rates of cancers of the liver, stomach, and cervix may be related to higher infection rates in populations of counties with more poverty. When available, examination of small geographic areas, such as census tracts with greater population homogeneity, could be useful.[28,30,31] For an earlier time period, 1988–1992 in San Francisco Bay, Krieger and colleagues[83] used census block group statistics to measure economic environment and found that breast cancer incidence increased with increasing area affluence only for Latinas, unlike the gradient reported here which was observed for all race/ethnic groups. Cervical cancer incidence increased for all women with increasing area deprivation, as did cancers of the prostate and colorectum in both men and women.[83]

Unlike county poverty rates, metropolitan disparities were fairly similar among all 3 race/ethnic populations, suggesting that shared etiologies, a differential mix of Hispanic groups in metro/nonmetro areas, or perhaps, the imprecision of some estimates for Hispanics may be more influential factors. This is in contrast to a report from Texas, that did not find an urban/rural gradient, particularly among Latinas;[107] however, it was based on regional data from the early 1980s and a different classification for metro/nonmetro areas.

Overall, Latino men and women were more likely to be diagnosed with regional/distant disease than were NHW men and women, consistent with other reports.[69,76,108–110] Similar to data presented here, research demonstrates that Latina women are underscreened and the extent of underscreening varies by specific ethnicity and U.S. region of residence.[111–118] Results vary of studies examining reasons for lower screening rates among Latinas. In New York City and California, when sociodemographic factors were controlled, the effect of ethnicity disappeared.[111,119] However, Northern California Latinos with no direct

financial barrier were still less likely than NHW persons to obtain screening for breast, colorectal, and cervical cancers.[120] In New York City, the extent of acculturation had a positive linear association with breast cancer screening.[113] Among Mexican Latinas in Texas, socioeconomic status (SES) and acculturation were not related to screening behaviors.[121,122] Zambrana et al.[118] concluded from their analysis of NHIS data that access factors and screening history were more important than language and ethnic factors, as did Selvin and Brett.[123]

Talavera et al.[124] found, from a survey of Latinos in 8 U.S. cities, that access to a healthcare plan/insurance predicted digital rectal screening for colorectal and prostate cancer for Mexican and Central American Latinos and English language use was a predictor for Mexicans and Cubans, but not Puerto Ricans. They posit that the differences may be associated with the local availability of Spanish-speaking health practitioners. Among a rural Hispanic population in Washington, mostly originating from Mexico, support was mixed for the association of SES and cancer screening.[125] Compared with NHW persons, breast and colorectal screening differences disappeared after controlling for SES, and yet differences in cervical cancer screening and smoking behavior persisted.[125] In the study area, sliding fee health services were available for all low income persons and yet, regardless of ethnicity, the authors suggested that access barriers, such as long wait-times at the clinic, may dissuade persons to avail themselves of screening.[125]

Latino Outreach and Community Programs

Health disparities among U.S. populations are a focus for increased research and interventions. *Redes En Acción*, the National Latino Cancer Research Network is in the vanguard of U.S. programs seeking to bridge cancer disparity issues in Latinos.[126,127] As one of the NCI's Community Networks Programs, *Redes En Acción* represents a strong effort to coalesce a broad range of forces—NCI cancer centers, academic institutions, governmental entities, national organizations and foundations, and community-based groups—to address diverse Latino cancer issues. While scientific endeavor is paramount, *Redes En Acción* recognizes that the challenges cannot be met by research alone. Through collaboration, the initiative applies a translational approach, establishing pipelines from national entities through regional and local groups to the public, and confronts issues through a combined research, professional training, and public education continuum.[127]

Accomplishing the mission of these networks relies on accurate and timely data to elucidate differences in risk factors, site-specific incidence and mortality, and stage-specific data, potentially related to differences in access to timely cancer diagnosis and care. Similar to other groups, lung cancer is the leading cause of cancer death among Latinos; hence smoking prevention and cessation efforts are vital in reducing this and other tobacco-associated cancers. Important considerations in developing health interventions, including comprehensive cancer control, outreach, and care for Latinos, are higher incidence of some infection-related cancers in adults; elevated exposures to environmental risk factors in Latino living and work places; lower education, health literacy, and income; limited English proficiency; reduced use of screening services; poorer access to health care often due to no insurance; and less information available regarding possible genetic predispositions.[70,102,114] Also, this population experiences unique cultural and language barriers to health services, in addition to the multitude of institutional, environmental, logistical, sociodemographic and personal barriers characteristic of all U.S. minority groups.[101,127]

The Cancer Prevention and Control Research Network (CPCRN) is a national network of academic, public health, and community partnerships recently established to accelerate the adoption of evidence-based cancer prevention and control in communities, particularly those evaluated by the Community Guide.[128] The Network is engaged in research and practice activities that span the translation continuum from discovery to the dissemination and adoption of effective interventions. In particular, the Network engages in large-scale efforts to reach underserved populations. The Latinos in a Network for Cancer Control is one of the CPCRN sites whose purpose is to maintain and further develop a Cancer Prevention and Control Network for Texas and surrounding states along the U.S.–Mexico Border. The network collaborators are broad-based and include a CDC Prevention Research Center at the University of Texas School of Public Health, community-based organizations such as the National Center for Farmworker Health; health departments, practice settings, *Redes En Acción*, and the NCI-supported cancer research center at M.D. Anderson. The Racial and Ethnic Approaches to Community Health (REACH) initiative is another important federal initiative that supports community coalitions in designing, implementing, and evaluating community driven strategies to eliminate disparities experienced by Latinos and other minority populations.[129]

Several examples of other national networks for community programs include the National Breast and Cervical Cancer Early Detection Program.[130,131] The Guide to Community Preventive Services evaluates research on the effectiveness of community interventions to reduce cancer risk factors and increase

screening and makes recommendations about effective interventions,[128] including their effectiveness in low income and minority populations.

Despite limited progress in recent years, according to the 2005 DHHS National Health Disparities Report, health disparities between Latino and NHW populations have generally increased.[132] The *Redes En Acción* Latino Cancer Report emphasizes the continued need to improve access to cancer screening and care, reduce tobacco use, improve communication of cancer risk, expand research on cancers linked to infections and cancer-related survivorship and quality of life, and enhance efforts to educate, train, and reach out to Latinos for cancer prevention and control.[126]

Further, addressing Latino cancer issues requires research on disseminating effective treatments, educational programs to promote healthier lifestyles, and use of screening services; greater access to prompt and appropriate care; clarification of genetic susceptibilities and genetic–environmental interactions; and improved cultural competency among all cancer care givers, including physicians.[44,69,111,113,114,118] Public health interventions that may reduce infection-related cancers among U.S. Hispanic populations include immunization against Hepatitis B and the most common oncogenic strains of HPV, screening and counseling for Hepatitis B and C, and screening for cervical cancer.[89] In addition, despite the existence of strong cultural protective factors, cancer-related health disparities affecting Latinos will continue to worsen if the social and economic disparities noted earlier are not also addressed.

Issues in Data Interpretation

The data reflect a substantial proportion of the U.S. population in general, and each of the race/ethnic groups in particular. It is an achievement that beginning with 1995, cancer rates can now be generated by site and sex for most of the U.S. population stratified by ethnicity and 3 major race groups. The cancer incidence surveillance infrastructure has reached a major benchmark: high quality data that can be used for cross-sectional rates and short-term, fixed interval trends.

Some limitations may influence interpretations of the data. Direct and even self-identification of ethnicity is preferred, yet still inconsistent and under-reported on medical records and death certificates.[133–138] Indirect methods to enhance this information have been employed by cancer registries in the past, but with great regional variation in definition and application.[35,139] Efforts are in progress to improve the completeness of self-identification in medical records, but until that is achieved, all cancer registries can now use a standard method to enhance identification through NHIA v2, a method that enhances direct identification with indirect measures.[35] The agencies involved in this report are also working to improve the identification of AI/AN and API cancer cases in cancer registries.

Cancer statistics are commonly reported according to the major racial and ethnic populations—white, black, API, AI/AN, and Hispanic/Latino. As suggested by statistics for Latinos here and by others,[140] broad racial and ethnic groupings may mask wide variations in the cancer burden for specific API,[141,142] AI/AN, black, or even white, persons, and by cultural characteristics that define high risk populations such as urbanicity, economic deprivation (both personal and area-based), or recent immigration.[101,143–145] A PIR, although not a measure of risk, is the best available measure to look at data for specific Latino and other groups when neither annual population estimates nor specific Latino group identification in medical records are available to compute age-standardized rates.

We used 2 different statistical methods to describe cancer trends. A joinpoint model was used to characterize long-term patterns for all races combined. A simple linear model was used to describe trends for a fixed time period to facilitate comparisons in cancer incidence and death rates by race/ethnicity, sex, and cancer sites. In some circumstances, these approaches may yield different information, leading to different, even conflicting, interpretations due to the nature of trends summarized by the 2 models and to the different geographic coverage to which each was applied. The joinpoint method is more flexible and accurate in identifying the years in which there were significant changes in trends. The long-term incidence trends are based on the SEER data covering 10% of the population for 1975–2003 (delay-adjusted), and in geographic areas that are more urban than the U.S. as a whole. Fixed-interval incidence trends for 1995–2003 are based on the data reported to NAACCR from SEER and NPCR registries, covering about 73% of the population for 1995–2003 (not delay-adjusted).

A county-based economic measure should not be used to impute individual economic achievement, being a function of both social and aggregated individual characteristics. Moreover, in large metropolitan U.S. counties, such as Los Angeles, Cook (Chicago), or New York (Manhattan), even a single county measure does not accurately reflect the wide variation of area economic characteristics within the county. Measures for smaller areas, such as Census block groups, would be preferable for inferring social or individual economic characteristics.[83,105] However, identification of cancer cases by these small geographic areas is difficult to obtain in a multi-registry-aggregated data file because of concerns of patient privacy. Most NAACCR member

registries are not yet comfortable, even if permitted by law, to release these small area identifiers. We expect that when permitted by law, these barriers will be overcome as both incidence and population estimates improve (minimizing misinterpretation of small area statistics) and researchers can assure patient privacy.

The percentage of unknown stage cases varied from 3% to 17% for different race and ethnicity, cancer site, and county poverty categories. The large variation in the percentage of unknown stage cases may bias comparisons of stage by race, ethnicity, or county poverty.

Finally, anecdotal reports that Hispanic immigrants return to their country of origin after a cancer diagnosis would cause an underestimate of deaths and potentially death rates. Generational changes in this practice could also impact death trends. Empirically assessing this phenomenon is difficult without complete follow-up of cancer patients migrating out of the country and without the ability to link on an individual level, information on foreign-born status from the U.S. Census and health, cancer, and death data.

Future Directions

The purpose of this report is to provide an overview of the most current information on the status of the cancer burden in the U.S. and to spotlight a cancer topic of interest. To produce the most comprehensive report, detailed explanations of any one aspect covered in the report are not feasible. Only reference to recent research or suggestions for future directions can be provided for the reader to gain a greater understanding. This was the first year that detailed cancer risk, early detection, and mortality information were featured with incidence data for 90% of U.S. Latinos. Description of cancer risks included not only traditional demographic variables but also urbanicity and economic environment. Our results raised many questions: How do the changing race/ethnic demographic characteristics of the U.S. affect declining trends? Can they be attributable, even in part, to rapid growth in the population of persons of lower cancer risk, like Latino populations? Or, What is driving the accelerated increase in trend for thyroid cancer in women, now that the radiation risk affecting older cohorts is no longer a common practice? Is there a new emerging risk or can it be explained by better medical surveillance of other conditions that lead to the observed increase? And also, If we improve cancer care through early diagnosis and tumor staging in high poverty areas, could we improve cancer prognosis and mortality in these areas, thereby eliminating this inequality? Given the general observation that adolescents and young adults have not realized comparable gains in survival and mortality as have children and older adults,[7] is there an additional disparity by race or ethnicity? These and other questions need to be addressed in special studies.

By 2050, the U.S. population will be older; only half will be white and the greatest growth will occur among Latino and Asian populations.[146] As these populations age and grow in size, they may influence the cancer types, prevention and diagnostic practices, and relative demand for stage-specific treatments and general access to timely care that will face this nation. Further, we expect that health care costs will continue to escalate. Awareness of these issues must stimulate action to eliminate known inequalities before they worsen and are further exacerbated by the aging of the population and inflationary health care costs.[101,103,104,147–150]

The inequalities in cancer risk, incidence, and prognosis between Latino and non-Latino populations can be reduced by eliminating exposure to infectious agents that cause cancer; with acculturation in the U.S., preventing Latinos from adopting traditionally avoided high risk cancer behaviors;[71,72,74,151–154] increasing use of effective clinical prevention services; and assuring that every person diagnosed with cancer has affordable and timely access to state-of-the-art, quality cancer care.[102–104,148] We need the continued support and leadership of all the organizations collaborating on this report and the interest of researchers and cancer control specialists throughout the country to focus on continued methodologic and classification improvements in surveillance approaches and to study the issues and determine effective intervention methods for diverse populations.[155,156] Truly, the public, as well, must continue to insist that the highest priority be maintained to reduce the burden of cancer so that we all can continue to work effectively toward the elimination of inequalities in the burden of this disease among all persons in the U.S.

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