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FOREWORD

This landmark report presents the most extensive information yet available on racial and ethnic differences in cancer experience. It cannot be overstated as to how important these data will be to our understanding of cancer. The cancer experience among ethnic and racial groups varies widely across the world as well as here in the United States. African-Americans for example, have higher incidence and mortality from many cancers compared with whites, and African American men, for instance, have the highest rate of prostate cancer in the world. Native Hawaiians also have high cancer incidence and mortality rates while Hispanics have generally lower rates, although for some cancers such as gall bladder their rates are higher than among whites. Today, with the wealth of new epidemiologic, biologic and genetic tools available, we are in a better position to capitalize on these data and find the sources of these differences. We look to these differences to help identify clues to cancer causation as well as to ways of detecting these cancers early, treating them, and ultimately, preventing them.

Differences outlined here are not necessarily the experience of each individual, of course, and it is important to understand that the racial and ethnic classifications are either self-reported, derived from medical records, or are reported in the 1990 census. Again, these classifications represent guides. The differences between groups may be related to a variety of factors including biology, heredity, and perhaps most important, behavior (smoking and diet being two principal cancer-related behaviors) including behaviors related to both the public's use of the health care system and health professional practices.

I wish to thank the staff members of the National Cancer Institute, and their colleagues across the United States in the Surveillance, Epidemiology and End Results Program, through whose diligence these data have been collected and collated. We all look forward to the extensive use of this information by the research community, and the contributions we are confident this will make to combating cancer.

Edward J. Sondik, Ph.D.
Deputy Director
Division of Cancer Prevention and Control
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Contracting Organization	*Principal Investigator*
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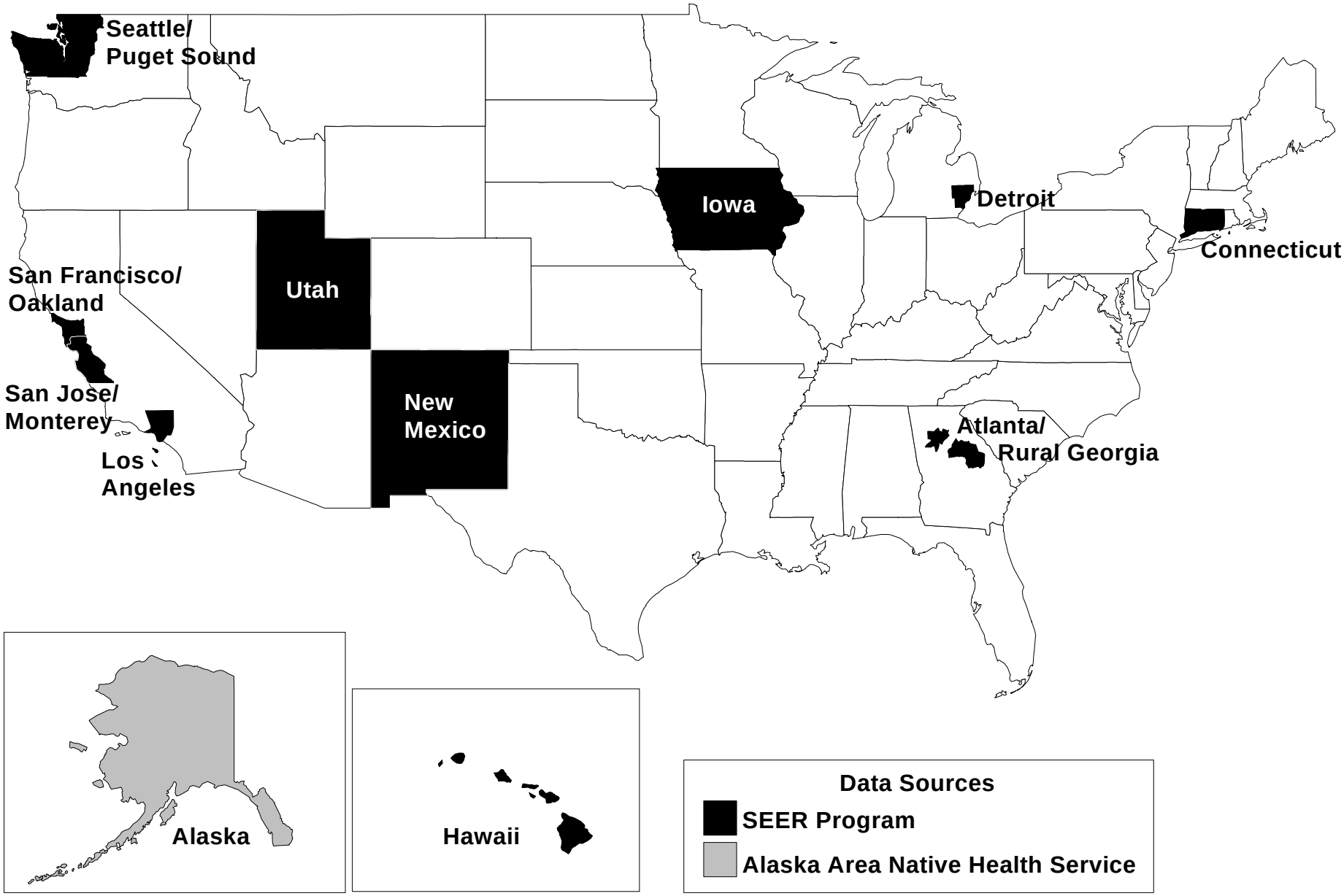
The production of this report would not have been possible without the efforts of the NCI staff who ensure the quality and completeness of the SEER data: Constance Percy, Barbara Lyles, Angela Harras, Elliott Ware, Elizabeth Davison, Carol Kosary, Barry Miller, Lynn Ries, and Benjamin Hankey of the Cancer Statistics Branch and Brenda Edwards of the Cancer Control Research Program.

Support of the quality control program is provided through a contract with the University of California at San Francisco (Dr. Calvin Zippin, principal investigator). Computer support services were provided by Information Management Services (IMS), Inc.

Figure 1. Cancer Registry Areas



INTRODUCTION

This monograph provides a concise description of the occurrence of the major cancers among several different racial/ethnic groups in the United States. Age-adjusted incidence rates are shown graphically by age group and sex for Alaska Native, American Indian (New Mexico), black, Chinese, Filipino, Hawaiian, Hispanic, Japanese, Korean, Vietnamese, white (total), white Hispanic and white non-Hispanic populations. Age-adjusted mortality rates are also shown for these groups, with the exception of Koreans and Vietnamese, for whom national data are not yet available. The Alaska Native group includes persons in Alaska who identified themselves as Aleut, Eskimo or American Indian. The remaining racial/ethnic designations in this monograph correspond to those used on the 1990 decennial census form. Incidence rates are provided by the Surveillance, Epidemiology and End Results (SEER) Program of the National Cancer Institute and are based on newly diagnosed cancers between 1988 and 1992 for a subset of the United States population. Mortality rates are provided by the National Center for Health Statistics and are based on cancer deaths between 1988 and 1992 for the entire United States population.

The cancers included in this report are organized alphabetically. They are followed by a section on cancer control efforts in special population groups and an appendix. The appendix contains tables showing the number of newly diagnosed cancers, by racial/ethnic group, in specific regions of the United States during 1988-1992. It also includes estimates for the entire country of the number of newly diagnosed cancers and the number of cancer deaths in 1990. The intent of this publication is to promote a greater understanding of the cancer problem in the United States, to identify those who can benefit most by education on the potential risks and consequences of certain behaviors and exposures, and to indicate areas where more knowledge and scientific investigation are needed to understand why cancer occurs more frequently in some groups of people than others.

The SEER Program

The National Cancer Act of 1971 mandated the collection, analysis and dissemination of data useful in the prevention, diagnosis and treatment of cancer. This mandate led to the establishment of the Surveillance, Epidemiology and End Results (SEER) Program. As a continuing project of the National Cancer Institute, the SEER Program is responsible for monitoring the impact of cancer in the general population. Participants in the SEER Program were selected for their ability to operate and maintain a population-based cancer reporting system and for the variety and size of population subgroups within their areas (e.g., racial/ethnic, urban and rural) which are of special epidemiologic interest. Information from eleven SEER geographic areas and from the Alaska Area Native Health Service are used in this report. These areas are identified in Figure 1 and include: the states of Connecticut, Hawaii, Iowa, New Mexico and Utah; and the metropolitan areas of Atlanta (including 10 rural counties), Detroit, Los Angeles, San

Francisco/Oakland, San Jose/Monterey, and Seattle/Puget Sound. These areas cover about 14% of the total United States population. The Alaska Area Native Health Service also receives support from the National Cancer Institute and provides cancer incidence data for their Alaska Native population that is compatible with the data from the SEER areas.

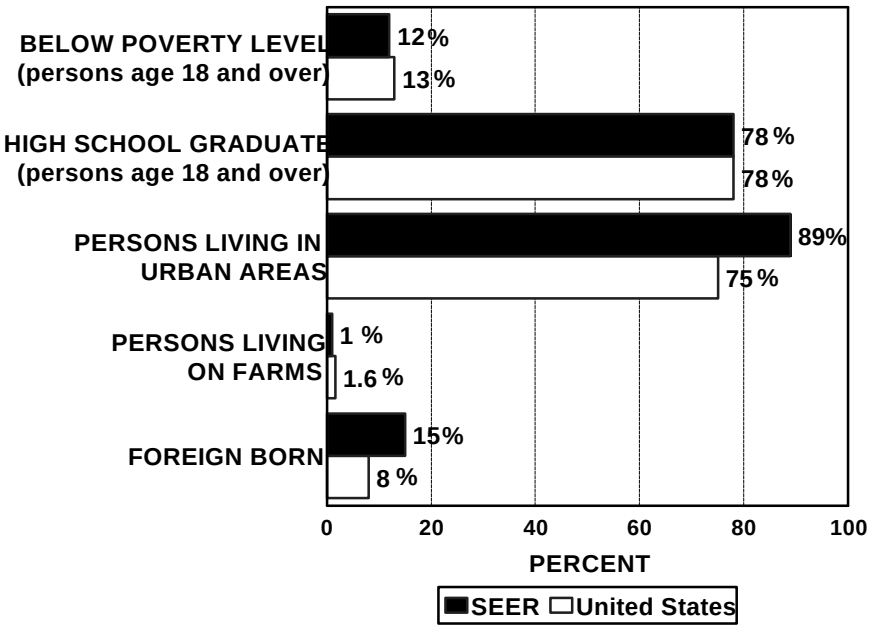
Although the SEER areas cover just 14% of the total United States population, they include 78% of the Hawaiian population, 60% of the Japanese population, 49% of the Filipino population, 43% of the Chinese population, 34% of the Korean population, 31% of the Vietnamese population, 27% of the American Indian population, and 25% of the Hispanic population in the country. Since some cancers are relatively rare, the SEER areas must include large portions of these smaller racial/ethnic populations in order to calculate reliable cancer rates. Five years of cancer diagnoses and deaths, from 1988 through 1992, were accumulated to facilitate the reporting of rates in these smaller populations.

Characteristics of the SEER Population

Characteristics of the SEER population and the total United States population are compared in Figure 2. In

FIGURE 2

POPULATION CHARACTERISTICS
SEER AREAS vs. UNITED STATES



1990, the SEER population was similar to the United States population with respect to the percentage of people living below the poverty level and the percentage of adults who graduated from high school. A larger portion of the SEER population lived in urban areas and the percentage of people in the SEER areas that were born in another country was nearly double that for the United States as a whole.

The 1990 population age distribution varies among the different racial/ethnic groups represented in the SEER Program and the Alaska Area Native Health Service (see Figure 3). Those heavily weighted in the younger age groups include Alaska Natives, American Indians in New Mexico and Hawaiians. Japanese and non-Hispanic whites are concentrated in the older age groups. Other populations are distributed between these two extremes. Unique to the Japanese population are two bulges in the age distribution at ages 20-44 years and 60-69 years. Within the Asian groups, Vietnamese are more heavily distributed in the younger ages; Koreans, Filipinos and Chinese have slightly older distributions; and Japanese clearly have the highest percentage of persons in the older age groups. Since over 90% of the Hispanic populations represented in SEER classify themselves as white, the age distribution for the total Hispanic population and the white Hispanic population are similar. The age distribution of the total white population (which is not shown) is identical to that for the non-Hispanic white population.

Population characteristics within each of the geographic areas included in this monograph are shown in the tables at the end of this section. It is apparent that the racial/ethnic populations are not equally distributed across the SEER regions. The largest concentrations of the SEER black population are in Los Angeles (28%) and Detroit (25%), with other sizable groups in Atlanta (19%), San Francisco (12%) and Connecticut (8%). Over two-thirds of the Chinese population covered by the SEER Program is equally divided between San Francisco/Oakland (36%) and Los Angeles (35%). Smaller numbers of Chinese live in the San Jose/Monterey area (10%), Hawaii (10%), and Seattle/Puget Sound (4%). Most of the Filipino population is found in the same five areas but in different proportions (32% in Los Angeles, 24% in each of San Francisco/Oakland and Hawaii, and 11% in San Jose/Monterey, and 6% in Seattle/Puget Sound).

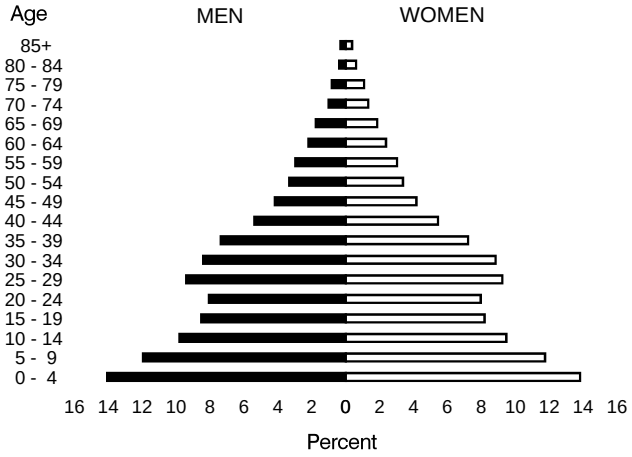
Most of the Hispanic population in SEER lives in Los Angeles (60%), followed by New Mexico (10%), San Francisco and San Jose/Monterey (9%), and Connecticut (4%). About 84% of the Hispanic population in San Jose/Monterey identified themselves as Mexican-American in the 1990 census (this information is not included in the tables). Mexican-Americans account for 76% of the Hispanic population in Los Angeles, 58% in San Francisco/Oakland and 57% in New Mexico. San Francisco/Oakland also has a sizable percentage of Puerto Rican Hispanics (4%). Over two-thirds of the Hispanic population in Connecticut is Puerto Rican, with smaller percentages of Mexican-Americans (4%) and Cubans (3%).

One-half of the total SEER Japanese population lives in Hawaii, 25% in Los Angeles, 9% in San Francisco, and 6% in each of San Jose/Monterey and Seattle/Puget Sound. Over one-half of the Korean population (54%) is found in Los Angeles, and smaller numbers live in Seattle/Puget Sound (10%), Hawaii and San Francisco (9% in each), San Jose/Monterey (7%), Atlanta (4%), and Detroit and Connecticut

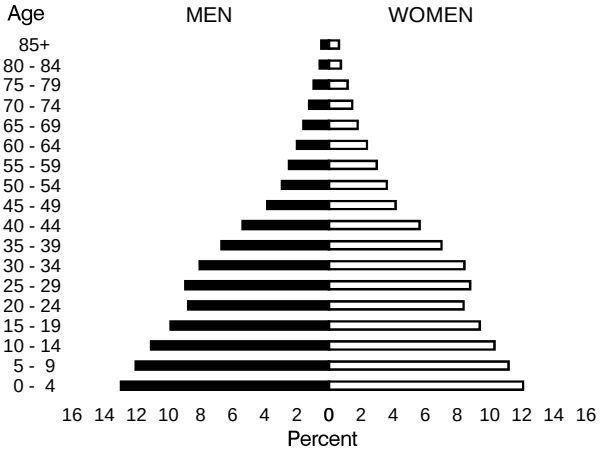
Figure 3. Population Age Distributions

by Racial/Ethnic Group and Sex, 1990

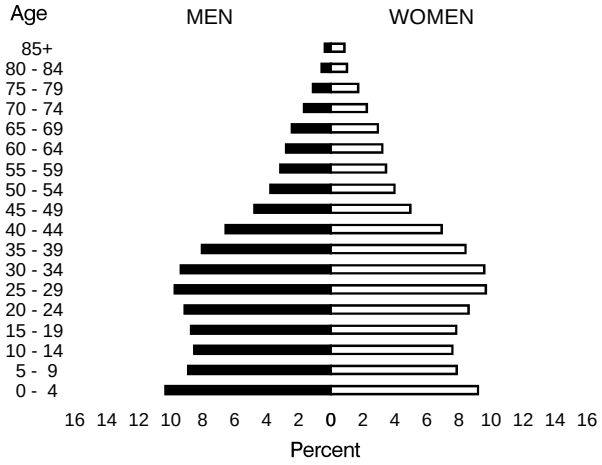
ALASKA NATIVE



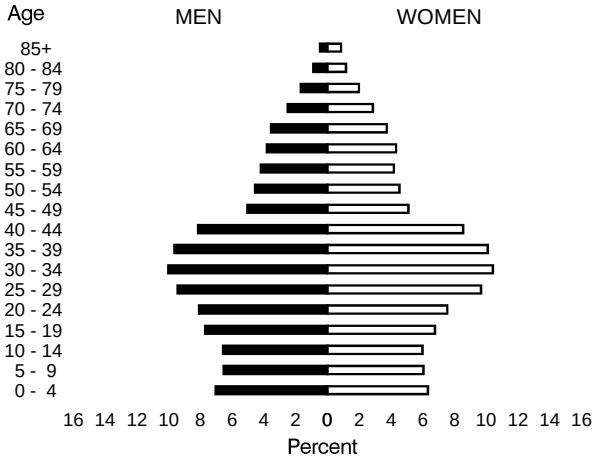
AMERICAN INDIAN (NEW MEXICO)



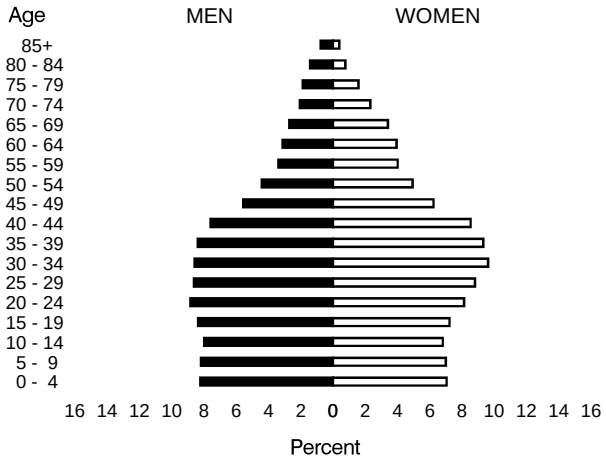
BLACK



CHINESE



FILIPINO



HAWAIIAN

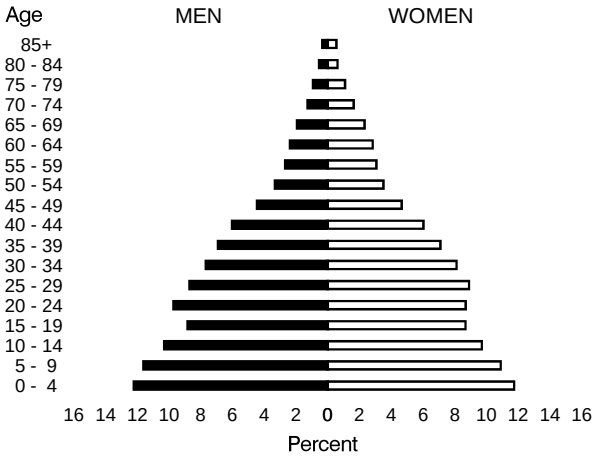
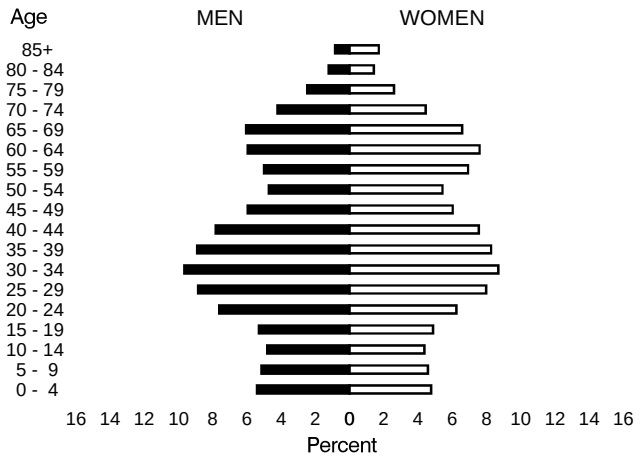


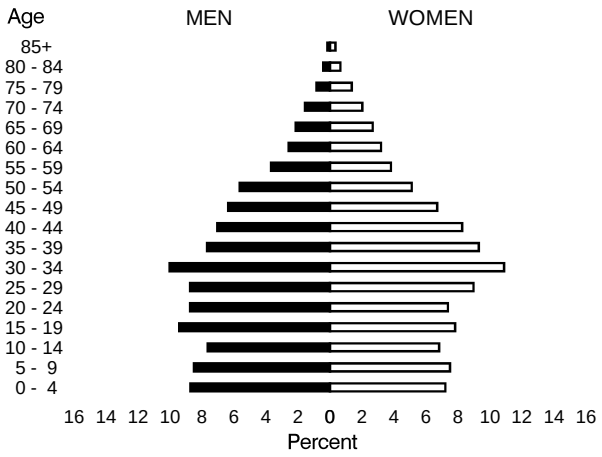
Figure 3. Population Age Distributions (cont.)

by Racial/Ethnic Group and Sex, 1990

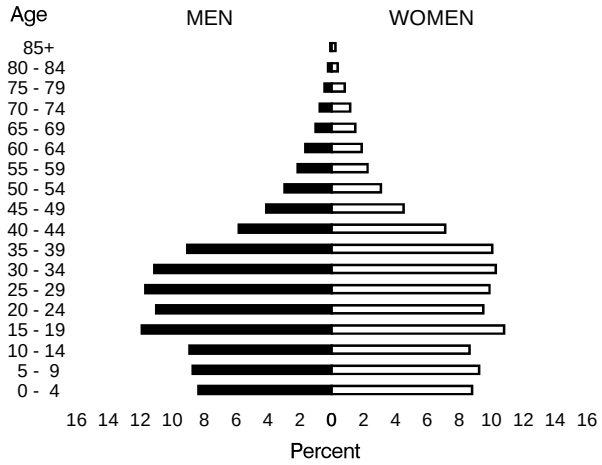
JAPANESE



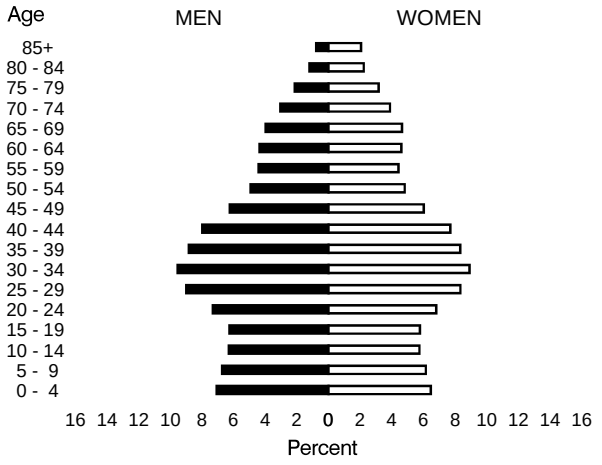
KOREAN



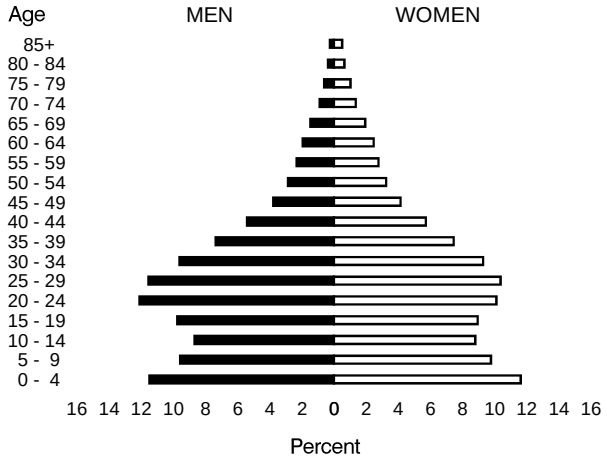
VIETNAMESE



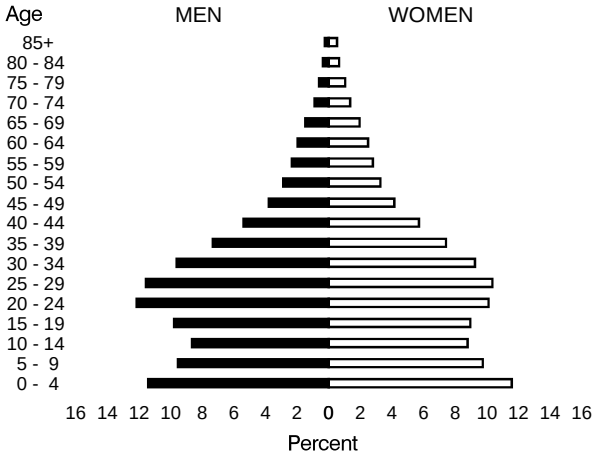
WHITE NON-HISPANIC



HISPANIC (TOTAL)



WHITE HISPANIC



(2% in each). Nearly two-thirds of the Vietnamese population is divided between Los Angeles (33%) and San Jose/Monterey (30%), 16% resides in San Francisco, 9% in Seattle/Puget Sound and 3% in each of Atlanta and Hawaii. The white population is more evenly distributed among the SEER areas with 25% in Los Angeles (which also has the largest total population of the SEER areas); 11% in each of Seattle/Puget Sound, Connecticut, and Detroit; 10% in each of Iowa and San Francisco/Oakland; and smaller percentages in the remaining areas.

Among the populations included in this monograph, Asian groups have the highest percentage of foreign born persons. This category does not include persons born in a foreign country and having at least one American parent. Of the Asian groups, Vietnamese have the largest percentage of foreign born persons in every SEER area, ranging from 71% in New Mexico to 88% in Atlanta. There are too few Vietnamese in Detroit to calculate the percentage foreign born. In Los Angeles, the high percentage of foreign born Vietnamese was matched by the percent of foreign born Koreans. In Iowa, the percentages of foreign born Chinese and Vietnamese were equal. Since a large proportion of the Vietnamese population are first generation immigrants, their cancer experience may reflect influences associated with their country of origin to a greater degree than with factors in the United States. In contrast, the percentage of foreign born Japanese tended to be among the lowest of the Asian groups in most of the SEER areas and, in Hawaii, was very low at only 8%. The percentage of foreign born Hispanics ranges from 10% to 20% in many of the SEER areas. There were higher proportions of foreign born Hispanics in Los Angeles (53%), Atlanta (48%), Connecticut (42%) and San Jose/Monterey (36%). The percentage of foreign born non-Hispanic whites ranged from one percent in Iowa to 12% in Los Angeles. The black population also had low percentages of foreign born persons, ranging from one percent in Detroit to 11% in Connecticut.

The percent of each racial/ethnic population living below the poverty level is based on answers to the income questions on the 1990 census. Households are classified by the Bureau of Census as below the poverty level when the total 1989 income of the family or householder is below the appropriate poverty threshold. The thresholds vary depending upon family size, number of children, and the age of the family householder for one and two-person households. Some studies have noted that persons living below the poverty level tend to have poorer health outcomes, including cancers more advanced at the time of diagnosis, poorer survival rates, and higher mortality rates than those living above the poverty level. Information on the percent below the poverty level is only available for American Indian, black, Hispanic (total), white (total) and Asian (total) populations.

The American Indian population in New Mexico clearly has the largest percentage of people living below the poverty level (43%). In six of the areas, black populations have the highest percentage of persons living below the poverty level, although the percentages are typically only half as large as that for American Indians in New Mexico. About one-fifth (21%) of the Alaska Native population is living below the poverty level. Hispanics have the highest percentage of their population living below the poverty level in four of the areas (Connecticut, Los Angeles, San Jose/Monterey and Hawaii). The different populations in Hawaii are very homogeneous regarding poverty level status,

with the exception of Hispanics, who have a somewhat higher percentage below the poverty level. The white population in each area has the smallest percentage below the poverty level, except in Hawaii, where they are comparable to the Asian and black populations.

Population Counts

County population estimates for July 1, 1990 were provided by the Bureau of the Census (BOC) and were used as the denominators when calculating cancer rates for American Indians, blacks, Hispanics (total, white), and whites (total, non-Hispanic) by five-year age group and sex. These populations included modifications made by the BOC to account for incomplete information from census forms regarding age, race and sex. Population counts for Chinese, Filipinos, Japanese, Koreans, and Vietnamese were obtained from unmodified 1990 census data tapes (STF2A). All of the census population data are available (or will soon be available) from the Statistical Information Office, Population Division, U.S. Bureau of the Census, Washington, D.C. 20233.

Population estimates for native Hawaiians and whites in Hawaii were provided by the Epidemiology Program of the Cancer Research Center of Hawaii. The estimates were developed from sample survey data collected by the Health Surveillance Program of the Hawaii Department of Health. The Hawaii Cancer Research Center estimates their own population figures because of a concern that their native Hawaiian population has been vastly undercounted in the last two decennial censuses due to the wording of the question on the census form regarding race. The Center staff believes that their estimates better represent the actual population size of these two groups and are based on a racial/ethnic classification more consistent with that of the cancer patients who comprise the numerators for the rate calculations. Since they do not develop estimates for all of the racial/ethnic populations in Hawaii, due to the limited size of their survey, population estimates for Hawaii are the result of a combination of BOC data and estimates derived from Hawaii's survey sample. The total Hispanic population and white Hispanic population numbers are used from the BOC. The white non-Hispanic population is derived by subtracting the BOC white Hispanic population count from Hawaii's estimate of the total white population. The black population in Hawaii is from the July 1 BOC estimate and the individual Asian populations in Hawaii are from the BOC STF2A data tapes, as they are in all of the other SEER regions.

Racial/Ethnic Differences in Cancer Rates

Differences between the cancer rates for various racial/ethnic groups included in this publication must be interpreted cautiously. Even with the over-representation of many of the groups noted above, cancer rates in smaller populations (e.g., Alaska Native, American Indian, Hawaiian, Japanese, Korean, and Vietnamese) are less precise than rates in larger populations (e.g., black, white (total), white Hispanic, white non-Hispanic). An indicator of the amount of imprecision, or variability, associated with the cancer rates is the standard error. The standard errors for the age-adjusted cancer incidence and mortality rates are not specified in this monograph, but may be estimated from a formula for the standard error (SE) of a crude (unadjusted) rate as follows:

$$SE(rate) = rate \; / \; [events]^{1/2}$$

where events refer to the number of cancer

diagnoses or deaths associated with the rate. The numbers of selected cancer diagnoses appear in Appendix table 4. Additional information concerning the variability associated with the cancer rates will be included on a CD-ROM some time after the publication of this monograph.

Another difficulty when interpreting racial/ethnic differences in cancer rates arises from the fact that the designation of race/ethnicity for the cancer cases (used as numerators in the calculation of the rates) is based upon information recorded in medical records (incidence) or death certificates (mortality), whereas these designations are self-determined via the 1990 census questionnaire for the population counts used as denominators in the calculation of the cancer rates. Specific racial/ethnic surname lists were also used by all of the SEER registries to improve the identification of Hispanic, Chinese, Filipino, Japanese and Korean cancer patients. Cancer patients whose names matched with names on one of the surname lists were added to the appropriate racial/ethnic group, along with other cases previously identified from information contained in medical records. Inconsistencies between the racial/ethnic designations from these different sources, however, may lead to either overstating or understating the true cancer rate for a particular group. In summary, the cancer rates presented in this monograph are best used to identify general racial/ethnic patterns of cancer.

An Explanation of Terms

Two primary measures associated with assessing the impact of cancer in the general population are the number of new cancers diagnosed in a specified population during a year (**incidence rate**) and the number of deaths from cancer in a population during a year (**mortality rate**). Both of these rates are presented here as the number of cancer events (diagnoses or deaths) per 100,000 people. Since cancer diagnoses and deaths are accumulated over five years (1988-1992) for this monograph, the cancer incidence and mortality rates are calculated by dividing the number of cancers (new cases or deaths) by five times the 1990 population. The resulting rate is referred to here, as in other publications, as an **average annual rate**. Cancer is a disease that is very strongly associated with age; therefore, it is possible that two populations may have different cancer rates only because of their different age structures and not because of any difference in the underlying risk. A statistical method termed **age-adjustment** is used to enable cancer incidence (or mortality) rates to be compared between two populations with different age structures. In this monograph, the 1970 United States standard million population is used to calculate the **age-adjusted rates**.

A Note about Reading the Graphs

We have followed the race/ethnicity classification scheme used in the 1990 census. That is, persons declaring Hispanic ethnicity may be of any race. This results in an overlap between the Hispanic classification and the other specific racial/ethnic groups. To remind the reader of this point, each graph is divided into an upper portion with non-overlapping racial/ethnic classifications and a lower portion which contains three racial/ethnic groups (Hispanic, white Hispanic, white non-Hispanic) which overlap the populations in the upper portion of the graph.

Alaska Native Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Alaska Native	86,594	50%	50%	35%	26%	29%	7%	3%	1%	21%

Atlanta/Rural Georgia SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

(Poverty and Foreign Born Percents DO NOT Include Rural Georgia)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	714,801	47%	53%	27%	28%	35%	7%	4%	2%	18%
Chinese	9,141	51%	49%	21%	27%	43%	6%	2%	80%	12%
Filipino	2,142	39%	61%	20%	28%	43%	6%	2%	N/A	
Japanese	3,092	48%	52%	23%	23%	47%	6%	1%	N/A	
Korean	9,488	47%	53%	24%	26%	41%	7%	2%	79%	
Vietnamese	5,556	56%	44%	25%	37%	33%	4%	1%	88%	
White	1,523,233	49%	51%	19%	24%	40%	11%	6%	3%	5%
Hispanic	51,731	55%	45%	24%	35%	33%	5%	2%	48%	16%

N/A = information not available

Connecticut SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	282,538	48%	52%	27%	29%	32%	8%	4%	11%	16%
Chinese	11,082	50%	50%	19%	28%	42%	8%	3%	69%	9%
Filipino	5,160	43%	57%	20%	27%	41%	8%	3%	65%	
Japanese	3,811	46%	54%	24%	21%	45%	8%	1%	68%	
Korean	5,126	43%	57%	34%	30%	30%	5%	2%	55%	
Vietnamese	4,085	55%	45%	23%	39%	32%	4%	1%	80%	
White	2,947,346	49%	51%	19%	22%	36%	14%	10%	7%	4%
Hispanic	214,504	49%	51%	31%	30%	30%	6%	3%	17%	21%

Detroit SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	939,915	46%	54%	26%	25%	32%	11%	6%	1%	27%
Chinese	9,413	51%	49%	22%	21%	42%	11%	5%	65%	9%
Filipino	9,472	43%	57%	20%	24%	43%	8%	5%	70%	
Japanese	5,713	48%	52%	26%	16%	46%	9%	3%	71%	
Korean	6,571	44%	56%	39%	22%	33%	4%	2%	56%	
Vietnamese	1,705	50%	50%	25%	36%	34%	3%	2%	N/A	
White	2,901,817	49%	51%	20%	22%	36%	14%	9%	6%	6%
Hispanic	78,629	50%	50%	30%	27%	30%	9%	4%	15%	16%

N/A = information not available

Hawaii SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	27,823	61%	39%	28%	41%	27%	2%	1%	4%	7%
Chinese	68,415	48%	52%	17%	22%	34%	17%	11%	29%	7%
Filipino	163,422	51%	49%	23%	25%	32%	12%	7%	44%	
Hawaiian	209,546	50%	50%	33%	27%	29%	8%	3%	<1%	
Japanese	262,015	49%	51%	14%	19%	34%	21%	12%	8%	
Korean	24,454	41%	59%	19%	21%	40%	14%	6%	55%	
Vietnamese	5,468	48%	52%	27%	30%	36%	4%	3%	75%	
White	299,919	54%	46%	18%	24%	42%	10%	6%	5%	7%
Hispanic	81,674	51%	49%	33%	28%	28%	7%	3%	11%	11%

Iowa SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	48,592	50%	50%	32%	29%	28%	8%	4%	2%	29%
Chinese	4,442	52%	48%	17%	42%	35%	4%	1%	82%	29%
Filipino	1,607	40%	60%	21%	30%	39%	8%	2%	65%	
Japanese	1,619	42%	58%	12%	46%	30%	11%	2%	66%	
Korean	4,618	44%	56%	47%	29%	21%	2%	<1%	49%	
Vietnamese	2,882	58%	42%	23%	45%	28%	4%	1%	82%	
White	2,697,464	48%	52%	22%	21%	32%	14%	11%	1%	10%
Hispanic	32,842	51%	49%	34%	30%	26%	7%	3%	19%	18%

Los Angeles SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	1,038,680	48%	52%	25%	26%	34%	10%	5%	6%	17%
Chinese	245,033	49%	51%	20%	26%	39%	10%	5%	76%	12%
Filipino	219,653	47%	53%	22%	24%	39%	9%	5%	73%	
Japanese	129,736	48%	52%	14%	22%	38%	18%	8%	31%	
Korean	145,431	48%	52%	21%	25%	40%	10%	4%	82%	
Vietnamese	62,594	52%	48%	25%	32%	34%	6%	2%	82%	
White	6,779,031	50%	50%	22%	27%	34%	11%	7%	22%	9%
Hispanic	3,367,312	52%	48%	30%	33%	29%	6%	2%	53%	20%

New Mexico SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
American Indian	138,110	48%	52%	35%	27%	28%	7%	4%	<1%	43%
Black	31,685	52%	48%	30%	27%	30%	8%	4%	3%	24%
Chinese	2,607	50%	50%	21%	24%	44%	8%	3%	66%	17%
Filipino	2,018	38%	62%	26%	29%	37%	6%	2%	52%	
Japanese	1,895	37%	63%	17%	22%	39%	20%	3%	40%	
Korean	1,464	34%	66%	30%	24%	41%	5%	<1%	62%	
Vietnamese	1,485	51%	49%	28%	34%	32%	5%	1%	71%	
White	1,334,773	49%	51%	24%	22%	34%	12%	8%	5%	14%
Hispanic	583,397	49%	51%	30%	26%	31%	9%	5%	10%	24%

San Francisco/Oakland SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	434,251	48%	52%	25%	25%	35%	10%	6%	3%	17%
Chinese	253,327	49%	51%	18%	23%	37%	14%	7%	66%	10%
Filipino	165,758	47%	53%	22%	25%	37%	11%	5%	67%	
Japanese	45,159	45%	55%	14%	20%	41%	18%	7%	31%	
Korean	23,894	45%	55%	21%	28%	38%	9%	3%	75%	
Vietnamese	29,183	52%	48%	28%	31%	34%	5%	2%	82%	
White	2,618,388	50%	50%	17%	22%	39%	12%	9%	12%	6%
Hispanic	509,260	52%	48%	26%	31%	32%	8%	4%	42%	12%

San Jose/Monterey SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	84,768	55%	45%	25%	32%	35%	6%	2%	7%	11%
Chinese	68,877	51%	49%	21%	24%	41%	9%	4%	67%	9%
Filipino	75,748	49%	51%	24%	26%	36%	10%	5%	64%	
Japanese	33,206	48%	52%	15%	21%	39%	18%	7%	27%	
Korean	19,919	45%	55%	24%	27%	39%	8%	3%	75%	
Vietnamese	56,528	54%	46%	27%	31%	35%	5%	2%	81%	
White	1,709,753	51%	49%	21%	25%	37%	11%	7%	11%	6%
Hispanic	500,229	52%	48%	30%	32%	29%	6%	2%	36%	14%

Seattle/Puget Sound SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	137,375	53%	47%	29%	29%	32%	7%	3%	3%	18%
Chinese	30,406	49%	51%	19%	26%	39%	11%	5%	69%	14%
Filipino	40,300	47%	53%	24%	25%	36%	9%	5%	60%	
Japanese	29,766	43%	57%	15%	23%	37%	19%	6%	34%	
Korean	26,629	41%	59%	27%	26%	38%	7%	3%	70%	
Vietnamese	16,301	53%	47%	26%	35%	33%	5%	2%	80%	
White	3,009,396	50%	50%	21%	22%	37%	12%	8%	4%	7%
Hispanic	101,596	52%	48%	32%	30%	31%	5%	2%	20%	15%

Utah SEER Population in 1990 by Race/Ethnicity (Source: 1990 Census)

Race/Ethnicity	Population	Sex		Age					Foreign Born	Below Poverty Level (Age 18+)
		Male	Female	0-14	15-29	30-54	55-69	70+		
Black	12,136	59%	41%	31%	32%	28%	6%	3%	5%	28%
Chinese	5,322	51%	49%	21%	33%	37%	7%	2%	68%	22%
Filipino	1,905	41%	59%	29%	28%	34%	6%	3%	49%	
Japanese	6,500	46%	54%	17%	28%	31%	16%	8%	26%	
Korean	2,629	41%	59%	32%	35%	28%	4%	1%	62%	
Vietnamese	2,797	55%	45%	28%	36%	32%	3%	1%	77%	
White	1,657,128	50%	50%	31%	25%	29%	9%	6%	2%	10%
Hispanic	85,424	51%	49%	36%	29%	27%	6%	2%	16%	20%

FIVE MOST COMMON CANCERS IN EACH RACIAL/ETHNIC GROUP

The top five cancer age-adjusted incidence rates and mortality rates are displayed for men and women in each racial/ethnic group. Rankings for the total white population are identical to those for the non-Hispanic white population and are not shown in this set of graphs. Among men, lung and bronchus, prostate and colorectal cancer appear among the top five cancer incidence rates in every racial/ethnic group.

Prostate cancer is the highest reported cancer among American Indian, black, Filipino, Japanese, non-Hispanic white and Hispanic men. Cancer of the lung and bronchus is highest among men in the remaining racial/ethnic groups. In women, breast cancer incidence rates are highest in all groups except Vietnamese, for whom cervical cancer ranks higher than breast cancer. Cancers of the breast, lung and bronchus and colon and rectum appear among the top five cancer incidence rates for women in every racial/ethnic group except American Indians, for whom lung cancer does not appear. Unique to American Indian women in New Mexico is a high incidence rate for cancer of the gallbladder. Other studies have also documented elevated gallbladder cancer rates among American Indians. Stomach cancer appears among the top five cancers for men and women in each of the Asian populations with the exception of Filipinos and Chinese women.

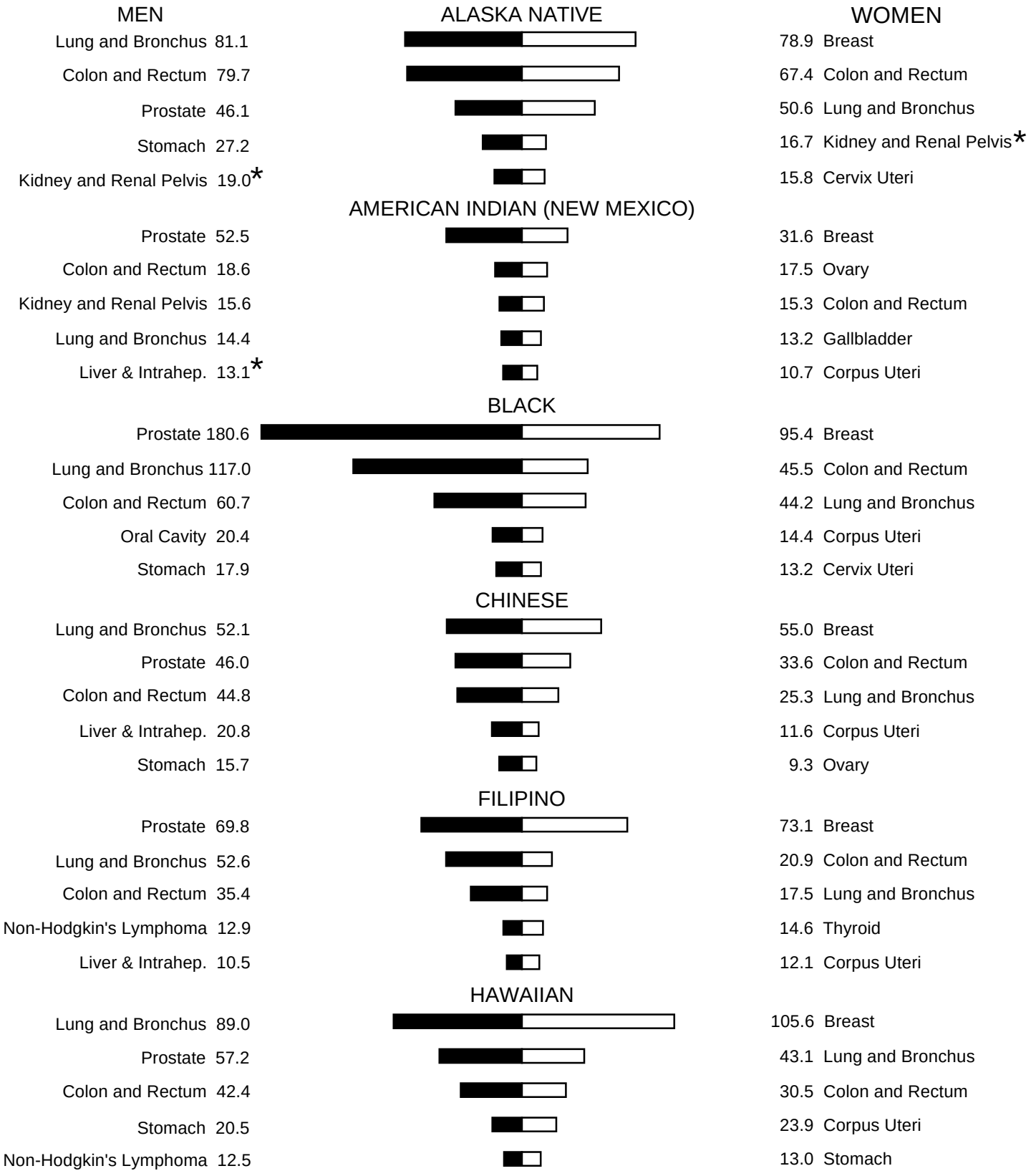
Lung cancer is the leading cause of cancer death among men in all racial/ethnic groups except American Indians, who have higher mortality from cancers of the prostate, stomach and liver. Cancer of the prostate or colon and rectum is the second leading cause of cancer death among men in most other racial/ethnic groups. The exception is Chinese men, for whom liver cancer ranks second in mortality. Stomach cancer appears in the top five causes of cancer deaths among men in all groups except blacks, Filipinos and non-Hispanic whites. Cancer of the pancreas is among the top five causes of cancer deaths in men for all groups except Alaska Natives, American Indians, and Filipinos.

Among women, the leading cause of cancer death in most racial/ethnic groups is lung cancer. Breast cancer is the leading cause of cancer death in Filipino and Hispanic women and cancer of the gallbladder ranks highest in American Indian women in New Mexico (based on 19 deaths). Breast cancer is in second place among the groups where lung cancer mortality is highest, except for Alaska Native women, who experience higher mortality from cancers of the colon and rectum. Colorectal cancer appears among the top five cancer mortality rates for all groups except American Indians and cancer of the pancreas is in the top five cancers for all groups.

FIVE MOST FREQUENTLY DIAGNOSED CANCERS

SEER INCIDENCE Rates, 1988-1992

(Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard)

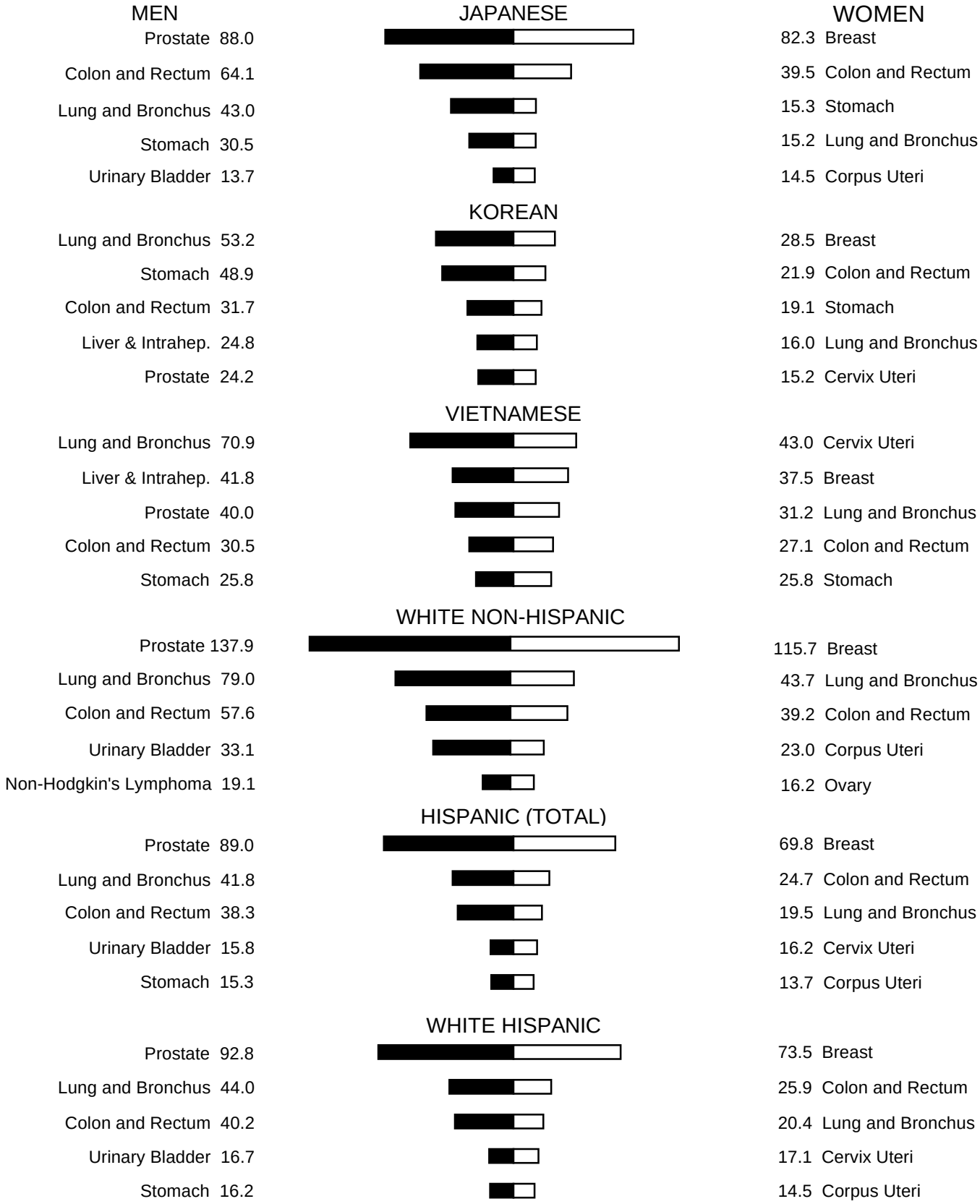


* = Rate is based on fewer than 25 cases and may be subject to greater variability than the other rates which are based on larger numbers.

FIVE MOST FREQUENTLY DIAGNOSED CANCERS

SEER INCIDENCE Rates, 1988-1992

(Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard)



FIVE MOST COMMON TYPES OF CANCER DEATHS

United States MORTALITY Rates, 1988-1992

(Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard)

ALASKA NATIVE

MEN		WOMEN
Lung and Bronchus 69.4		45.3 Lung and Bronchus
Colon and Rectum 27.2		24.0 Colon and Rectum
Stomach 18.9*		16.0 Breast*
Kidney and Renal Pelvis 13.4*		15.5 Pancreas*
Nasopharynx 11.6*		7.4 Kidney and Renal Pelvis*

AMERICAN INDIAN (NEW MEXICO)

Prostate 16.2		8.9 Gallbladder*
Stomach 11.2*		8.7 Breast*
Liver & Intrahep. 11.2*		8.0 Cervix Uteri*
Lung and Bronchus 10.4*		7.4 Pancreas*
Colon and Rectum 8.5*		7.3 Ovary*

BLACK

Lung and Bronchus 105.6		31.5 Lung and Bronchus
Prostate 53.7		31.4 Breast
Colon and Rectum 28.2		20.4 Colon and Rectum
Esophagus 14.8		10.4 Pancreas
Pancreas 14.4		6.7 Cervix Uteri

CHINESE

Lung and Bronchus 40.1		18.5 Lung and Bronchus
Liver & Intrahep. 17.7		11.2 Breast
Colon and Rectum 15.7		10.5 Colon and Rectum
Stomach 10.5		5.1 Pancreas
Pancreas 6.7		4.8 Stomach

FILIPINO

Lung and Bronchus 29.8		11.9 Breast
Prostate 13.5		10.0 Lung and Bronchus
Colon and Rectum 11.4		5.8 Colon and Rectum
Liver & Intrahep. 7.8		3.5 Pancreas
Leukemia 5.7		3.4 Ovary

* = Rate is based on fewer than 25 deaths and may be subject to greater variability than the other rates which are based on larger numbers.

FIVE MOST COMMON TYPES OF CANCER DEATHS

United States MORTALITY Rates, 1988-1992

(Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard)

MEN		WOMEN
HAWAIIAN		
Lung and Bronchus 88.9		44.1 Lung and Bronchus
Colon and Rectum 23.7		25.0 Breast
Prostate 19.9		12.8 Stomach
Stomach 14.4		11.4 Colon and Rectum
Pancreas 12.8		9.1 Pancreas
JAPANESE		
Lung and Bronchus 32.4		12.9 Lung and Bronchus
Colon and Rectum 20.5		12.5 Breast
Stomach 17.4		12.3 Colon and Rectum
Prostate 11.7		9.3 Stomach
Pancreas 8.5		6.7 Pancreas
WHITE NON-HISPANIC		
Lung and Bronchus 74.2		32.9 Lung and Bronchus
Prostate 24.4		27.7 Breast
Colon and Rectum 23.4		15.6 Colon and Rectum
Pancreas 9.8		8.2 Ovary
Leukemia 8.6		7.0 Pancreas
HISPANIC (TOTAL)		
Lung and Bronchus 32.4		15.0 Breast
Prostate 15.3		10.8 Lung and Bronchus
Colon and Rectum 12.8		8.3 Colon and Rectum
Stomach 8.4		5.2 Pancreas
Pancreas 7.1		4.8 Ovary
WHITE HISPANIC		
Lung and Bronchus 33.6		15.7 Breast
Prostate 15.9		11.2 Lung and Bronchus
Colon and Rectum 13.4		8.6 Colon and Rectum
Stomach 8.8		5.4 Pancreas
Pancreas 7.4		5.1 Ovary

ALL CANCERS COMBINED

Overall cancer incidence rates in the SEER regions are higher in men than women. Black men have the highest incidence rate of cancer. Non-Hispanic white men have the next highest rate which is 14% lower than that of black men. Rates for Alaska Native men and Hawaiian men follow those for whites and are over one-third lower than the rate for black men. The rate in white Hispanic men is similar to that for Hawaiian men. American Indians in New Mexico have the lowest overall cancer incidence rate among men, nearly two-thirds lower than the rate for black men. Among the Asian subgroups, Vietnamese men have the highest incidence rate, followed by Japanese, Chinese, Filipino and Korean men. The incidence rate for Korean men is more than 18% lower than that for Vietnamese men. The racial/ethnic pattern is similar when incidence rates are calculated for each of the three age groups.

Among women, the racial/ethnic differences in the incidence rates for all cancers are not as extreme as they are for men. The rate is highest for non-Hispanic white women, followed by Alaska Native (< 2% lower), white (2% lower), black (8% lower) and Hawaiian (9% lower) women. The lowest rates occur in American Indian women in New Mexico and Korean women. Similar to the pattern in men, rates among women are low for Koreans, Chinese and Filipinos. The incidence rate for all cancers in Vietnamese women is the highest among Asian women, and is higher than that for white Hispanic women. Alaska Natives have the highest rate among women 30-54 years and 70 years and older. Non-Hispanic white rates are highest among women in the 55-69 year old age group.

The male-to-female ratio of age-adjusted cancer incidence rates ranges from a low of 1.1 for Alaska Natives, Hawaiians, and American Indians in New Mexico to a high of 1.7 for blacks. For Koreans, the ratio is also relatively high, at 1.5. Among the remaining racial/ethnic groups, the male-to-female rate ratio ranges from 1.2 (Filipinos and Vietnamese) to 1.4 (non-Hispanic whites). Women have higher incidence rates than men in the age group 30-54 years for every racial/ethnic group. This is due to the high rates of female breast cancer and cancers of the female genital system (ovary, corpus uteri and cervix) in this age group. In the age group 55-69 years, men have higher incidence rates than women in all groups except American Indians in New Mexico.

Similar to the SEER area incidence rates, United States mortality rates are highest for blacks, non-Hispanic whites, Alaska Natives and Hawaiians, although the relative rankings among these four groups differ somewhat from the incidence rate rankings. Among men, blacks have the greatest risk of dying from cancer, whereas for women, the highest mortality rate occurs in Alaska Natives. Mortality rates are not currently available for Koreans and Vietnamese. Among groups with relatively low mortality rates, Filipino men and women rank substantially below American Indians, Japanese, Chinese and white Hispanics.

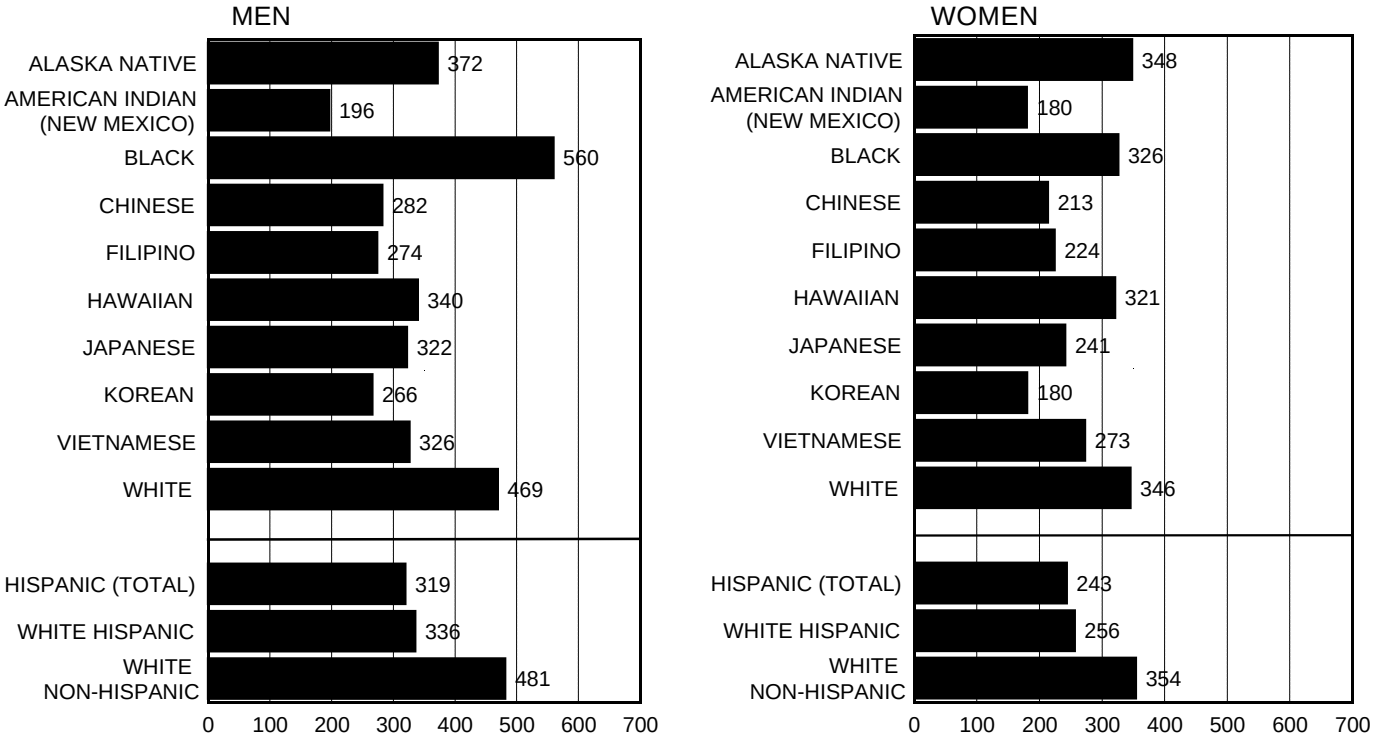
Overall cancer mortality rates shown for American Indians in New Mexico are comparable to those for all American Indians in the U.S. (125 per 100,000 in men and 88 per 100,000 in women, not shown). The New Mexico American Indian rates for specific cancers, however, are not necessarily representative of those for American Indians living in other regions of the country. Researchers have noted that rates for cancers of the lung and bronchus, colon and rectum, and female breast are substantially lower among southwestern tribes than among northern and eastern tribes (NIH Publication No. 93-3603, 1993). Regional variations in cancer rates also occur for the other racial/ethnic groups. Differences in the rates between the racial/ethnic groups remain important, however, and are the focus of this report.

Mortality rates by age show patterns similar to the incidence rates with a few exceptions. In contrast to the incidence patterns by age, cancer mortality rates among men in the age groups 55-69 years and 70 years and older are higher in Alaska Native men than in white men. In women aged 55-69 years, mortality among Alaska Natives exceeds that for whites, unlike the incidence pattern. Otherwise, the racial/ethnic mortality patterns by age group are generally similar to those for incidence.

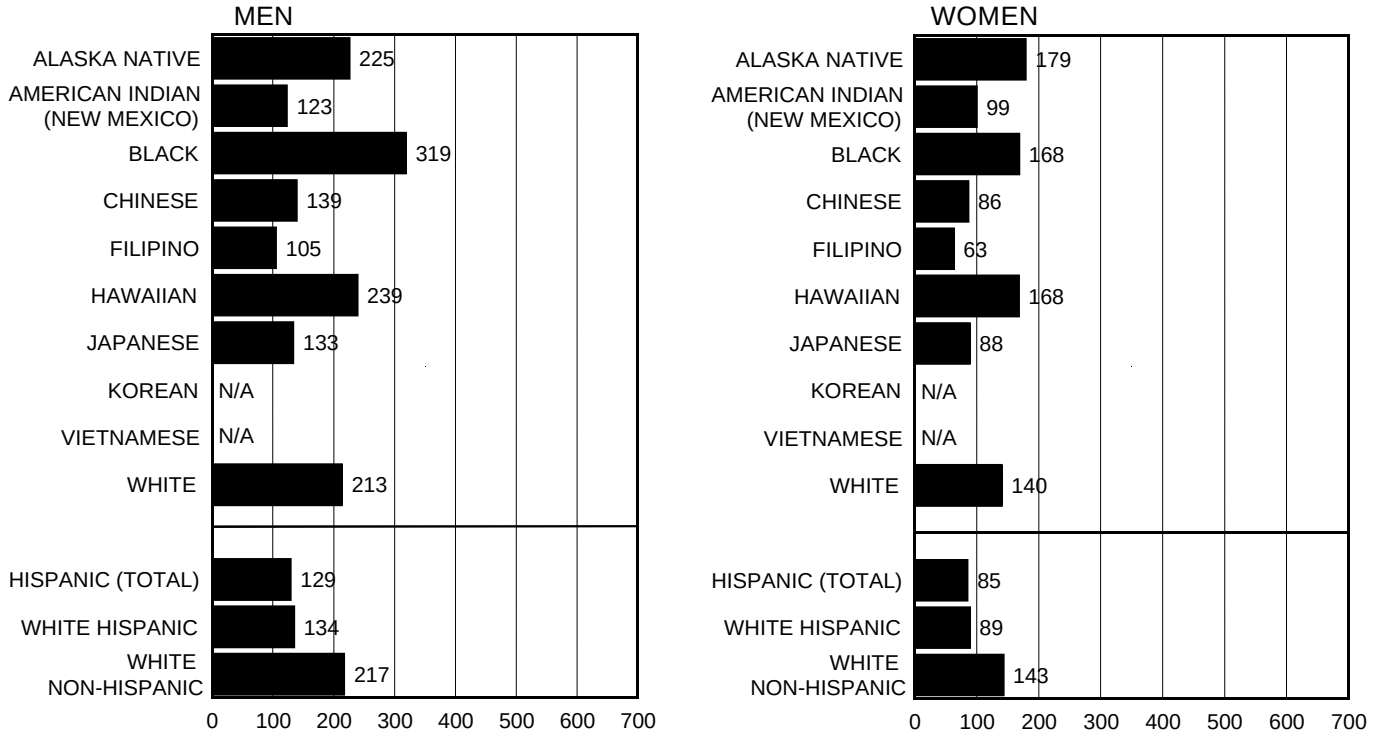
The incidence-to-mortality rate ratios for Filipinos are 2.6 for men and 3.6 for women, higher than those for any other group studied. High incidence-to-mortality ratios may reflect high survival of cancer patients. Conversely, low incidence-to-mortality ratios may reflect high case fatality. High incidence-to-mortality ratios may also result when death certificates are never located through long-term follow-up of persons diagnosed with cancer (e.g., if persons diagnosed with cancer leave the country). Another possibility is that deaths within a particular racial/ethnic group may be under ascertained due to misclassification of race/ethnicity information on the death certificate. The low incidence-to-mortality rate ratios in Hawaiian men (1.4), American Indian men (1.6) and women (1.8), Alaska Native men (1.7), and black men (1.8) likely reflect higher case fatality rates in these groups.

ALL CANCERS COMBINED

SEER INCIDENCE Rates, 1988-1992



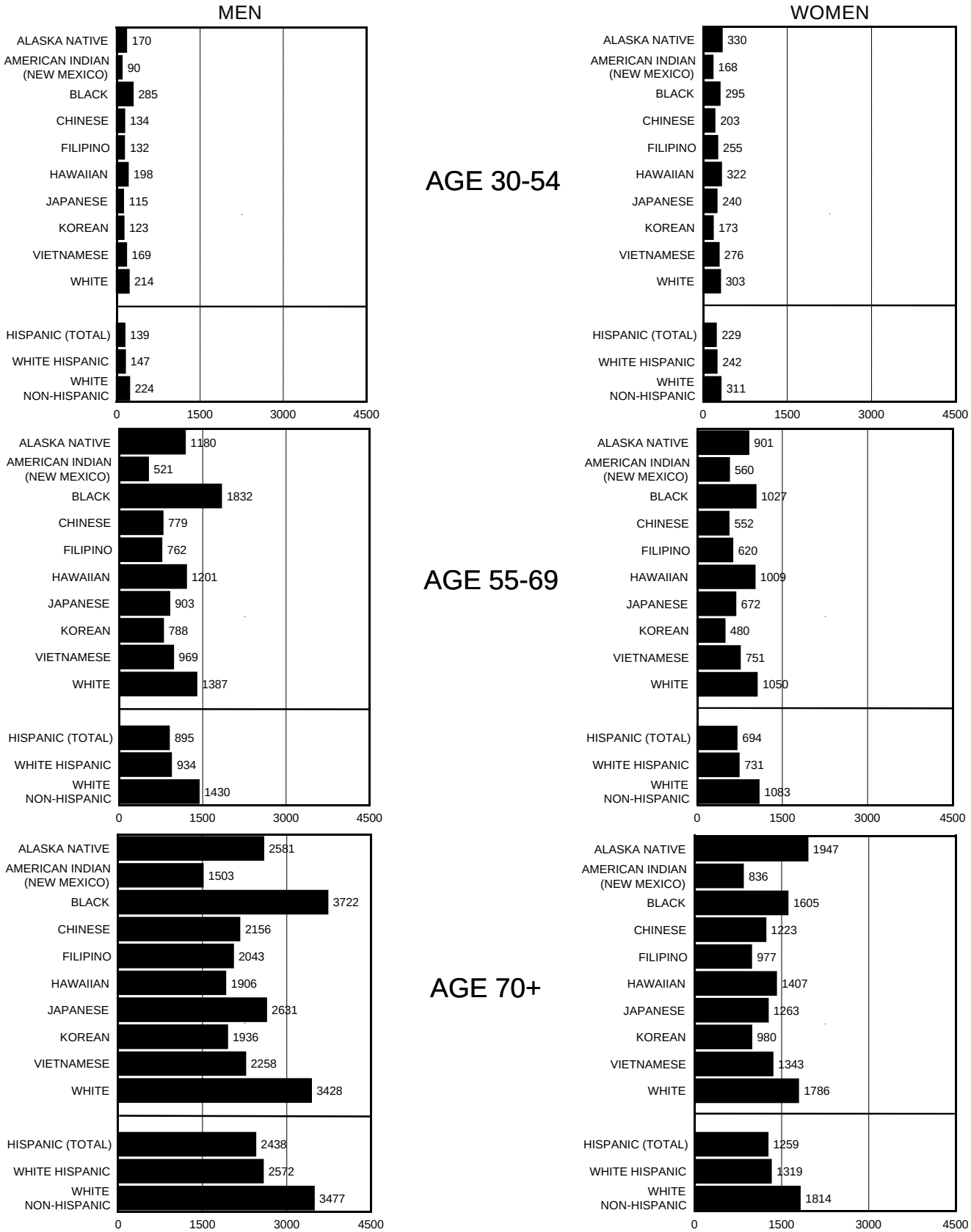
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

ALL CANCERS COMBINED

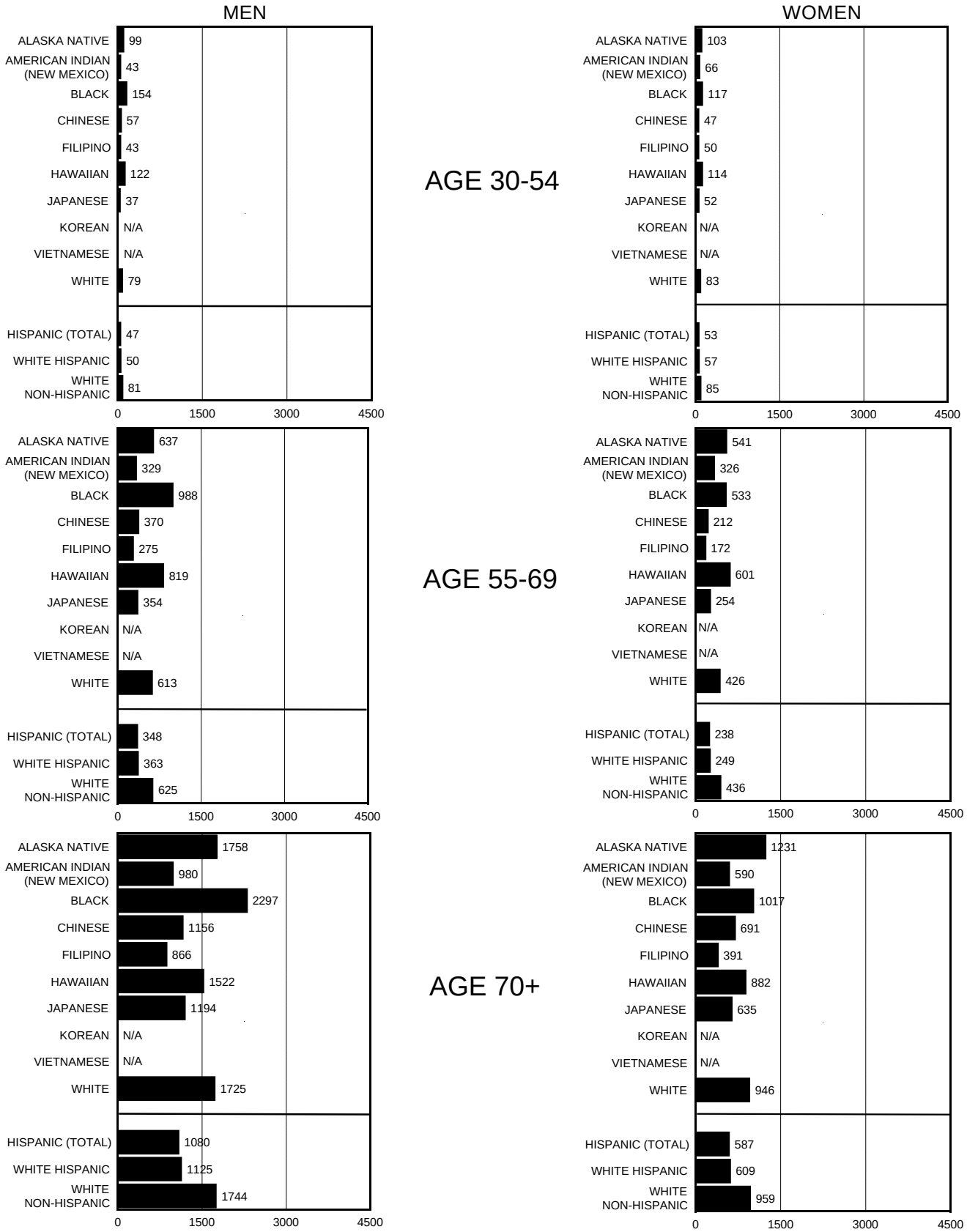
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

ALL CANCERS COMBINED

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

BRAIN AND OTHER NERVOUS SYSTEM

Comparisons of the incidence rates for cancers occurring in the brain and elsewhere in the nervous system among different populations are often difficult because of different practices regarding the inclusion or exclusion of benign tumors. Only brain and other nervous system cancers classified as malignant, however, are included in the SEER incidence data. Malignant neoplasms of the brain and other nervous system are relatively rare, occur more frequently among men than among women; and most racial/ethnic groups have a male-to-female ratio around 1.4. Children and adults have different distributions of subtypes of malignancies in the central nervous system.

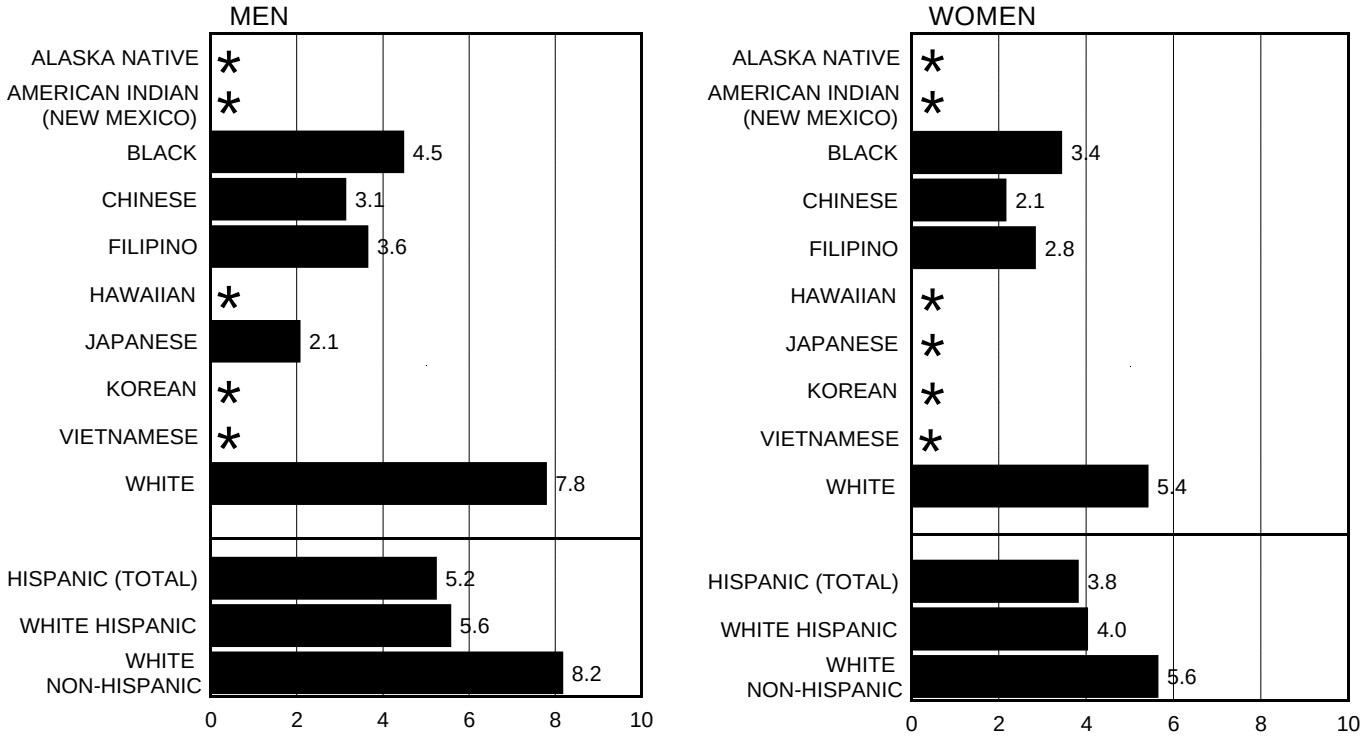
There were too few cases to calculate meaningful incidence rates for Japanese women and for men or women in the Alaska Native, American Indian, Hawaiian, Korean, and Vietnamese populations in the SEER areas. Among the remaining race-sex groups, age-adjusted incidence in men ranges from a low of 2.1 per 100,000 for Japanese and 3.1 for Chinese to a high of 7.8 for whites (8.2 for non-Hispanic white men), almost a four-fold difference in the rates. Among women, rates range from a low of 2.1 among Chinese to a high of 5.4 among whites (5.6 for non-Hispanic whites), a 2.6-fold difference. Whites and Hispanics of both sexes have the highest incidence rates. Mortality patterns by racial/ethnic group are similar to those for incidence, with incidence-to-mortality ratios ranging between 1.4 to 2.2 for each sex.

Cancers of the brain and nervous system are bimodal in distribution, with an early peak in the incidence rates during childhood followed by a steady increase in incidence through ages 70 years and older. There are generally too few cancers within the three age groupings to show incidence or mortality rates for groups other than blacks, whites, and Hispanics. In each of the three age groups for both men and women, incidence is lowest in blacks, slightly higher in Hispanics, and highest in whites. The same pattern occurs in the mortality rates for men. Among women, however, mortality rates for Hispanics and blacks are similar in each age group.

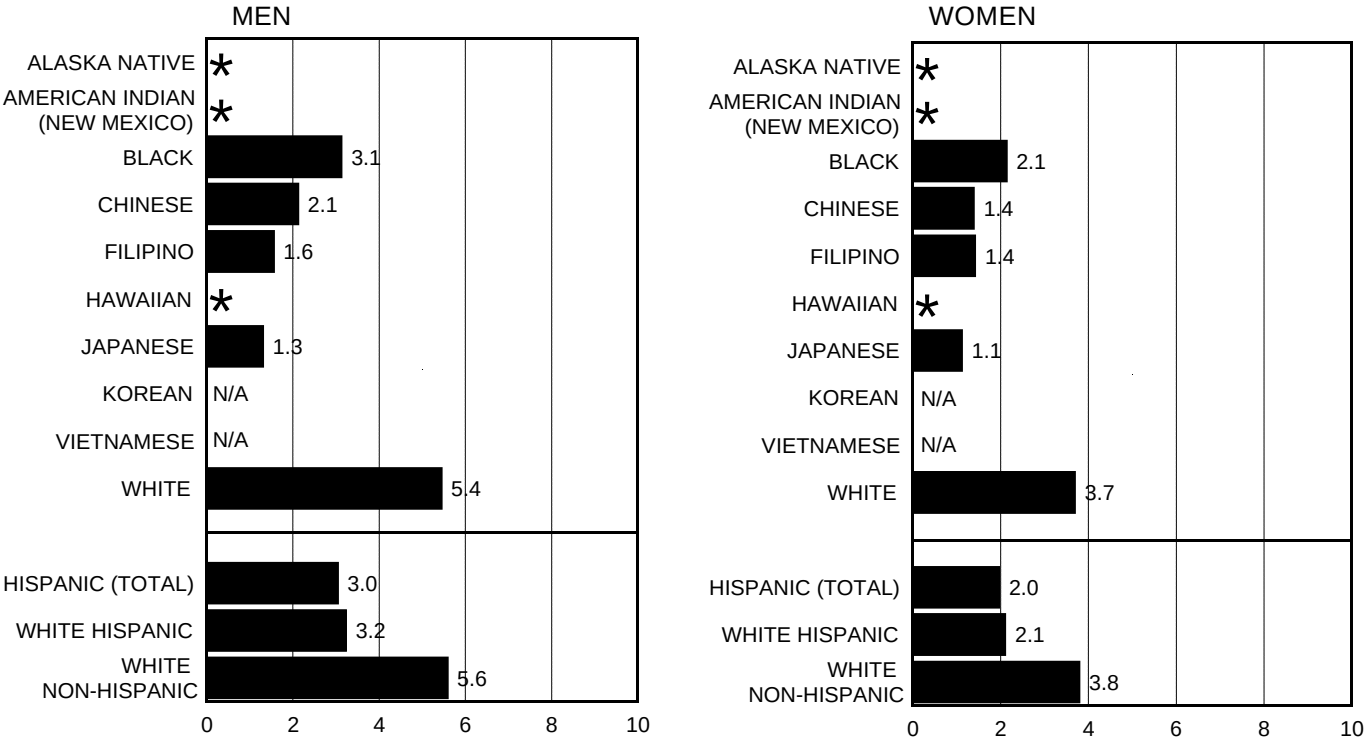
One reported risk factor for both childhood and adult central nervous system cancers is exposure to radiation. Other possible risk factors are currently under study including trauma to the head or spine, certain occupational exposures, and for childhood brain tumors, the occupational exposures of their parents.

BRAIN AND NERVOUS SYSTEM

SEER INCIDENCE Rates, 1988-1992



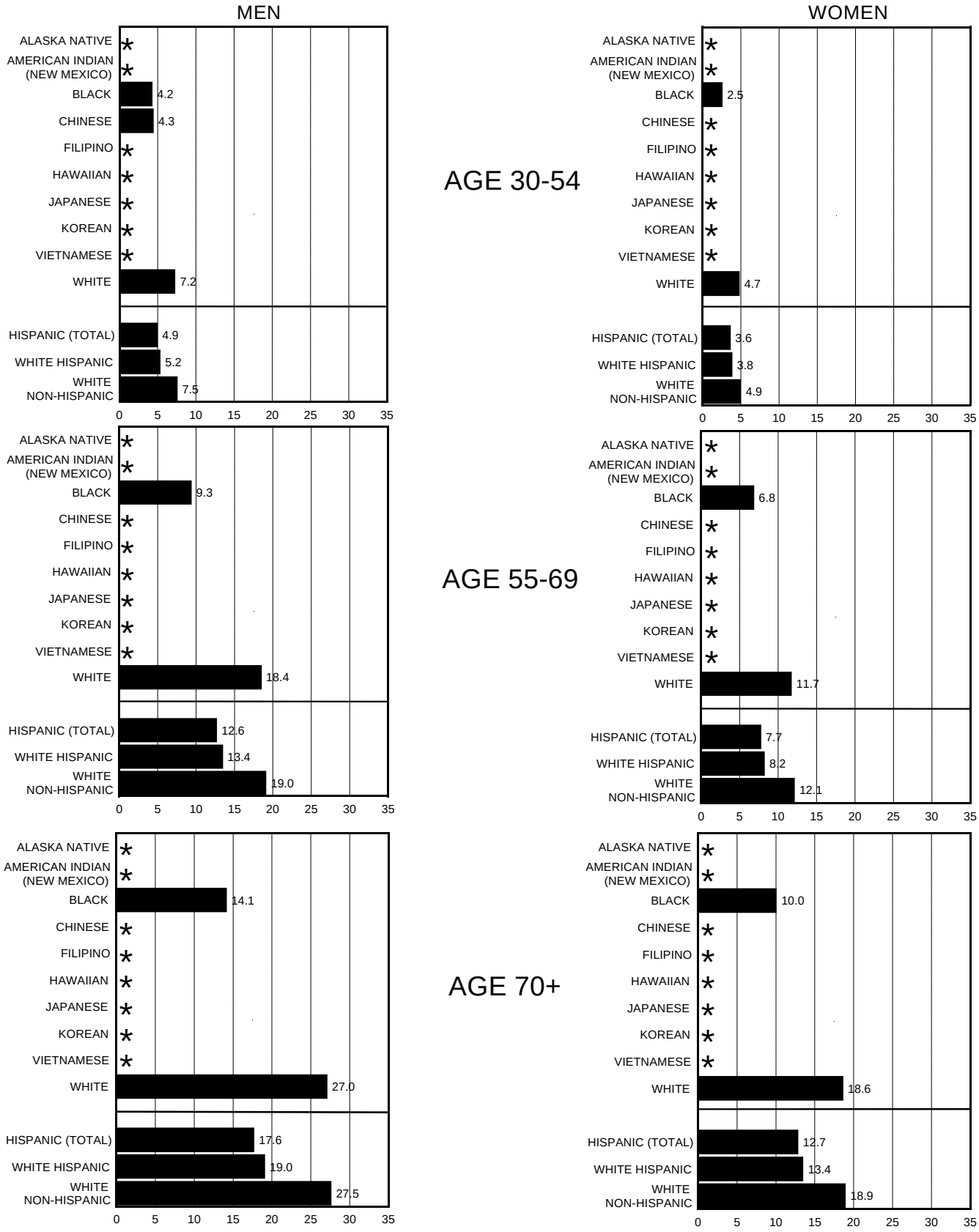
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

BRAIN AND NERVOUS SYSTEM

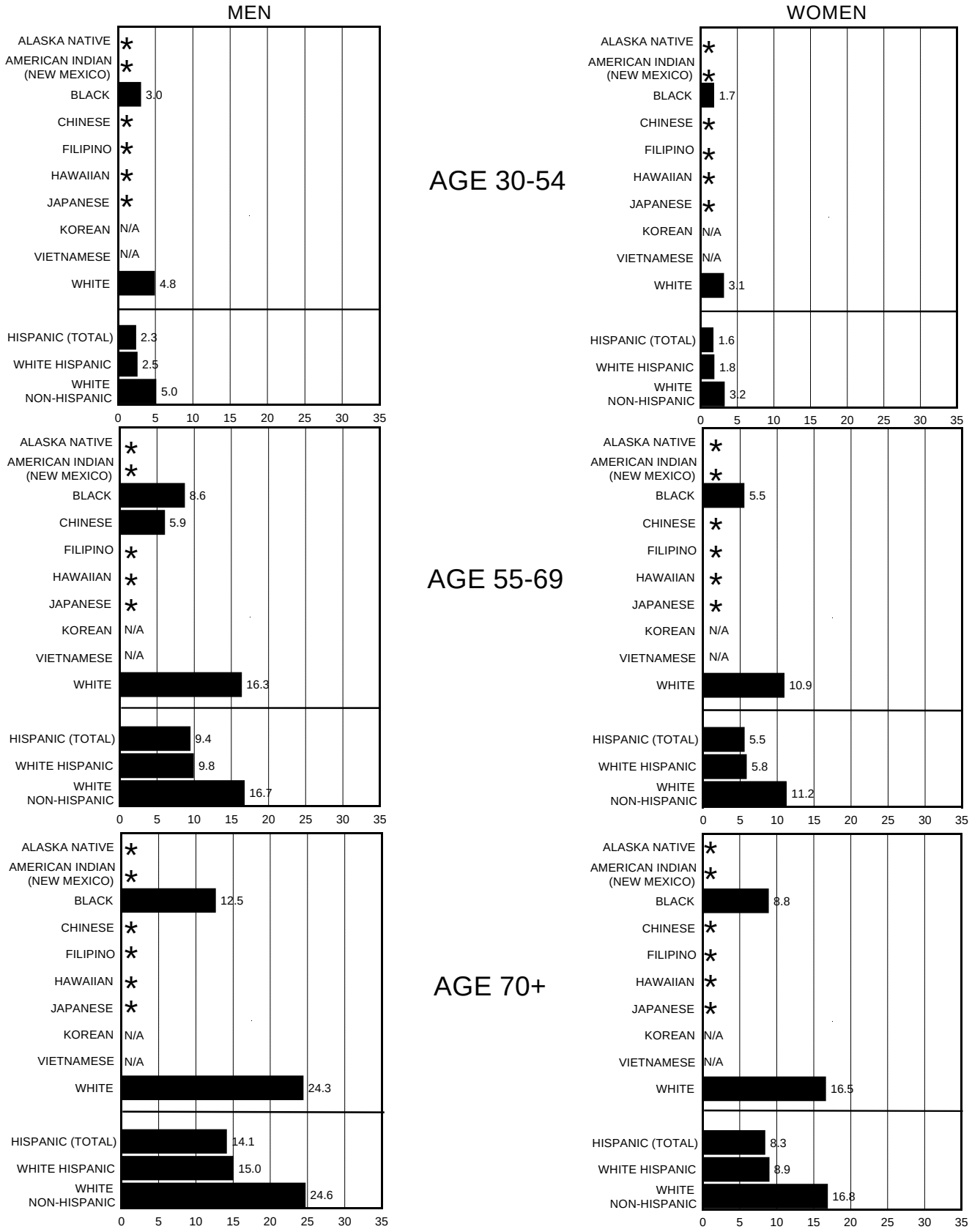
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

BRAIN AND NERVOUS SYSTEM

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

BREAST

Breast cancer is the most common form of cancer among women in the United States. The incidence of breast cancer has been rising for the past two decades, while mortality has remained relatively stable since the 1950s. Much of the increase in incidence over the past 15 years is associated with increased screening by physical examination and mammography. However, screening alone does not seem to explain all of this increase. Breast cancer occurs among both women and men, but is quite rare among men. Since the incidence rates among men are so low, there are too few cases to explore ethnic diversity. This description is limited to breast cancer among women.

The age-adjusted incidence of invasive breast cancer reveals that white, Hawaiian, and black women have the highest rates in the SEER regions. The lowest rates occur among Korean, American Indian, and Vietnamese women. The incidence rate for white non-Hispanic women is four times as high as that for the lowest group (Korean women).

In situ breast cancer occurs at much lower rates than invasive breast cancer, but has a similar racial/ethnic pattern to that for the invasive cancers. White non-Hispanic women have the highest rates, over twice the rate for Hispanic women. Rates could not be calculated for Alaska Native, American Indian, Korean, and Vietnamese women due to the small numbers of cases.

Age-specific incidence rates for invasive breast cancer present similar ethnic patterns. Among women aged 30-54 years, however, the rates among Hawaiian women are comparable to those for the white non-Hispanic women. Among women aged 55-69 years and 70 years and older, rates are highest for white, Hawaiian, and black women. *In situ* breast cancer incidence among women aged 30-54 years and 70 years and older is highest among white non-Hispanic women, followed by Japanese women, and white (total) women. At ages 55-69 years, *in situ* breast cancer is highest among white women, followed by Japanese women and black women.

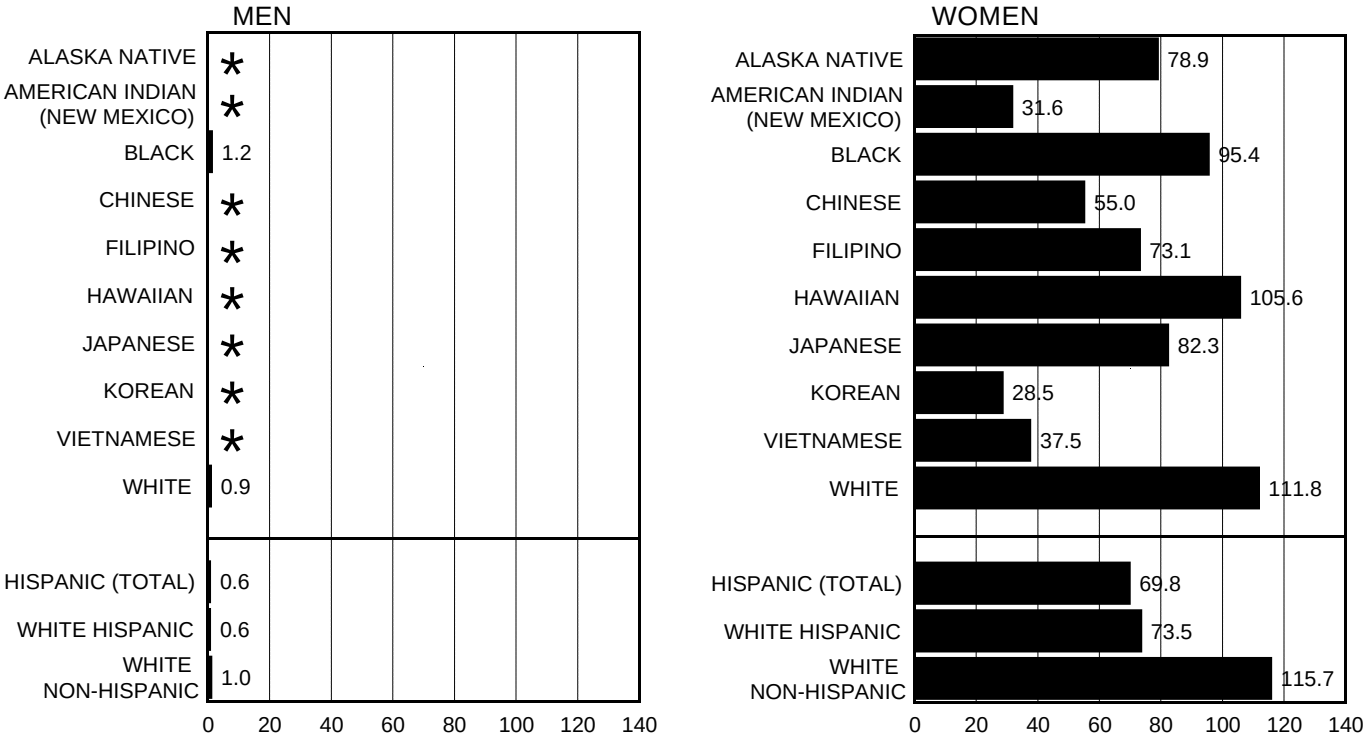
Mortality rates are much lower than incidence rates for breast cancer, ranging from just 15% of the incidence rate for Japanese women to 33% of the incidence rate for black women. Racial/ethnic patterns of mortality differ slightly from those observed for incidence. The highest age-adjusted mortality occurs among black women, followed by white, and Hawaiian women. The higher breast cancer mortality among black women is related to the fact that, relative to white women, a larger percentage of their breast cancers are diagnosed at a later, less treatable stage. In the age groups 30-54 years and 55-69 years, black women have the highest rates, followed by Hawaiian, and white non-Hispanic women. In the 70 year and older age group, the mortality rate for white women exceeds that for black women.

Important risk factors for female breast cancer include early age at onset of menarche, late age at onset of menopause, first full-term pregnancy after age 30, a

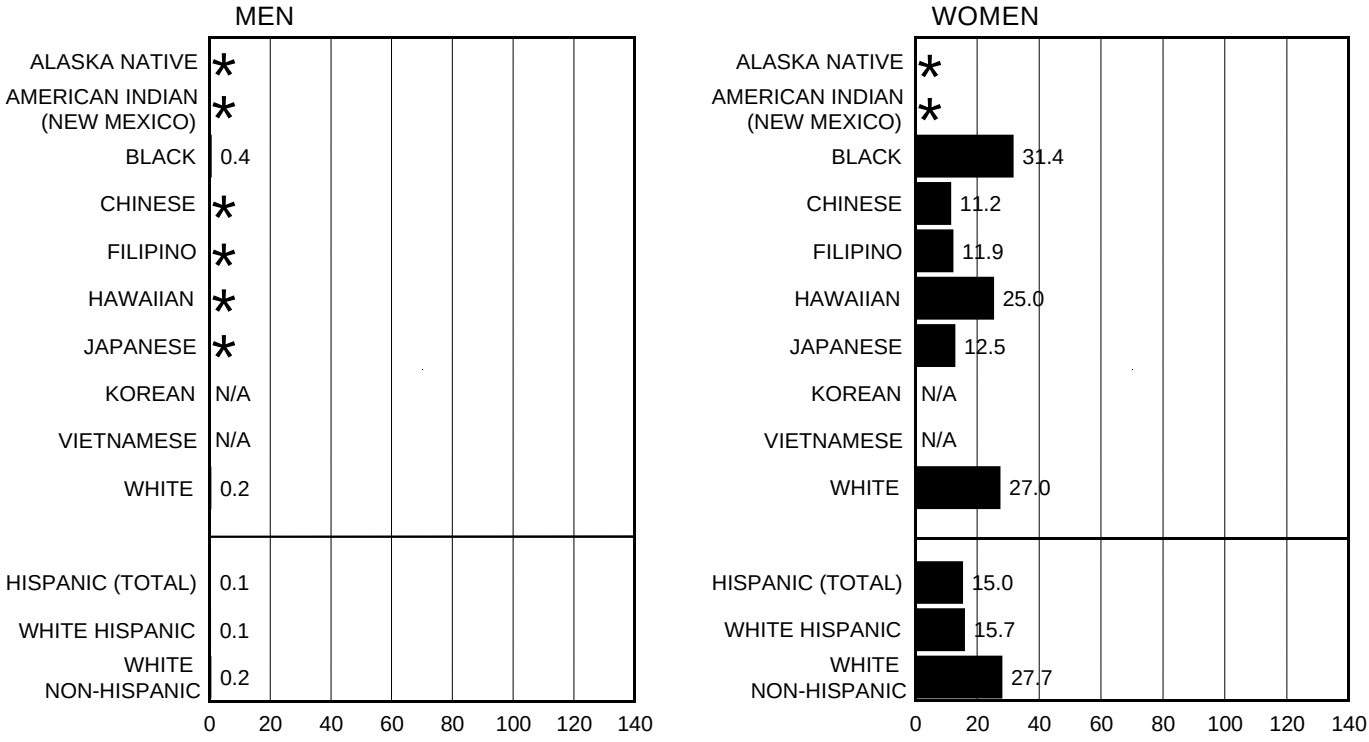
(continued on page 32)

BREAST, INVASIVE

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



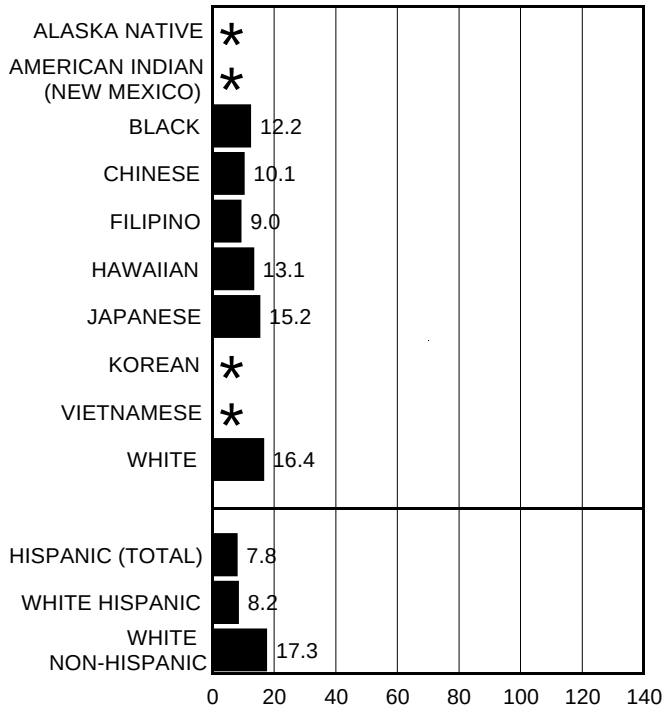
NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

history of pre-menopausal breast cancer for mother and a sister, and a personal history of breast cancer or of benign proliferative breast disease. Obesity, nulliparity, and urban residence also have been shown to be associated with increased risk of breast cancer.

Although there are no proven methods of preventing breast cancer, randomized trials are currently underway to assess the effectiveness of tamoxifen in preventing breast cancer among high risk women and to determine whether reducing the percentage of dietary fat will reduce the incidence of breast cancer. Recent studies suggest that physical activity may have preventive potential, as well.

BREAST, IN SITU

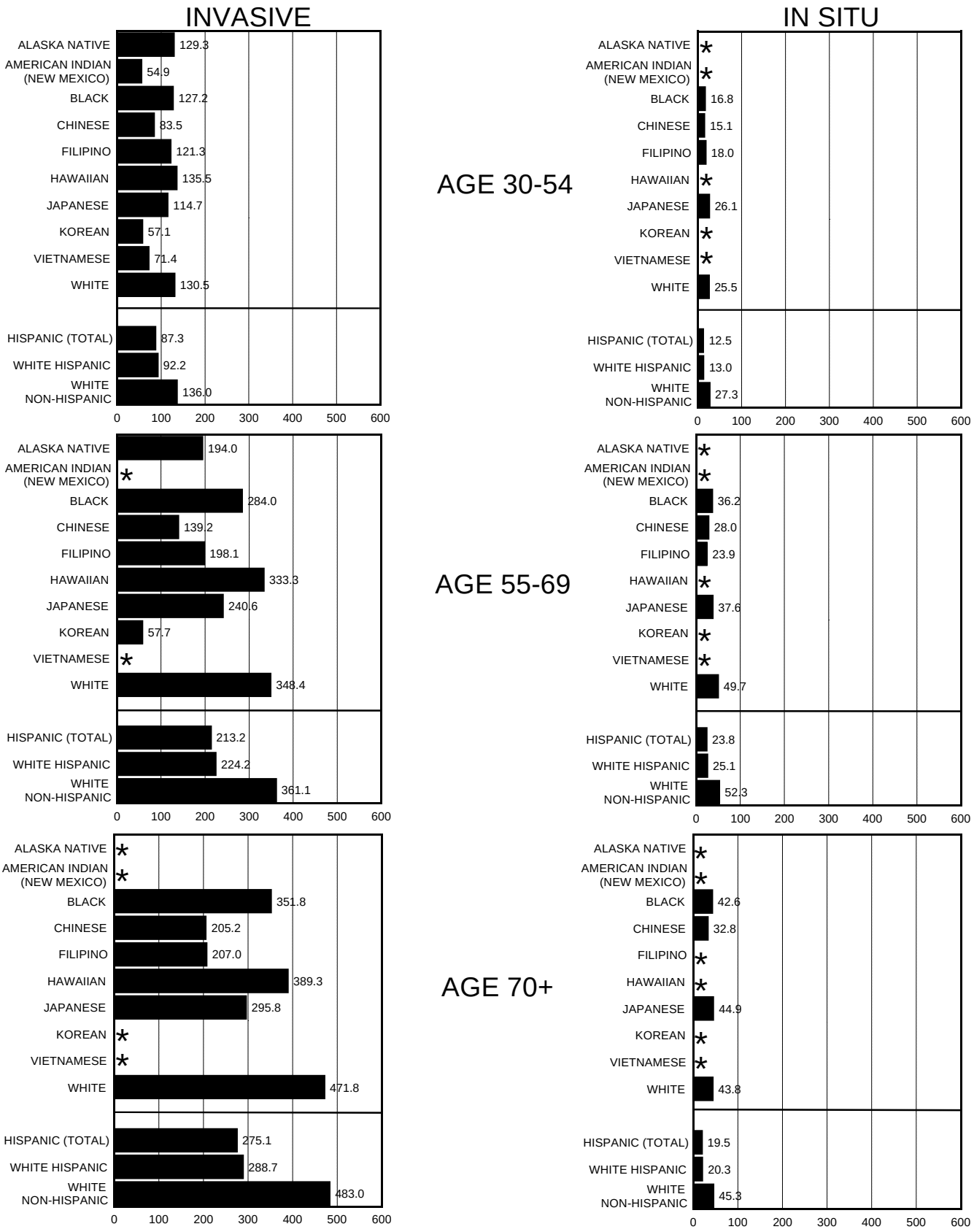
SEER INCIDENCE Rates Among Women, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

BREAST

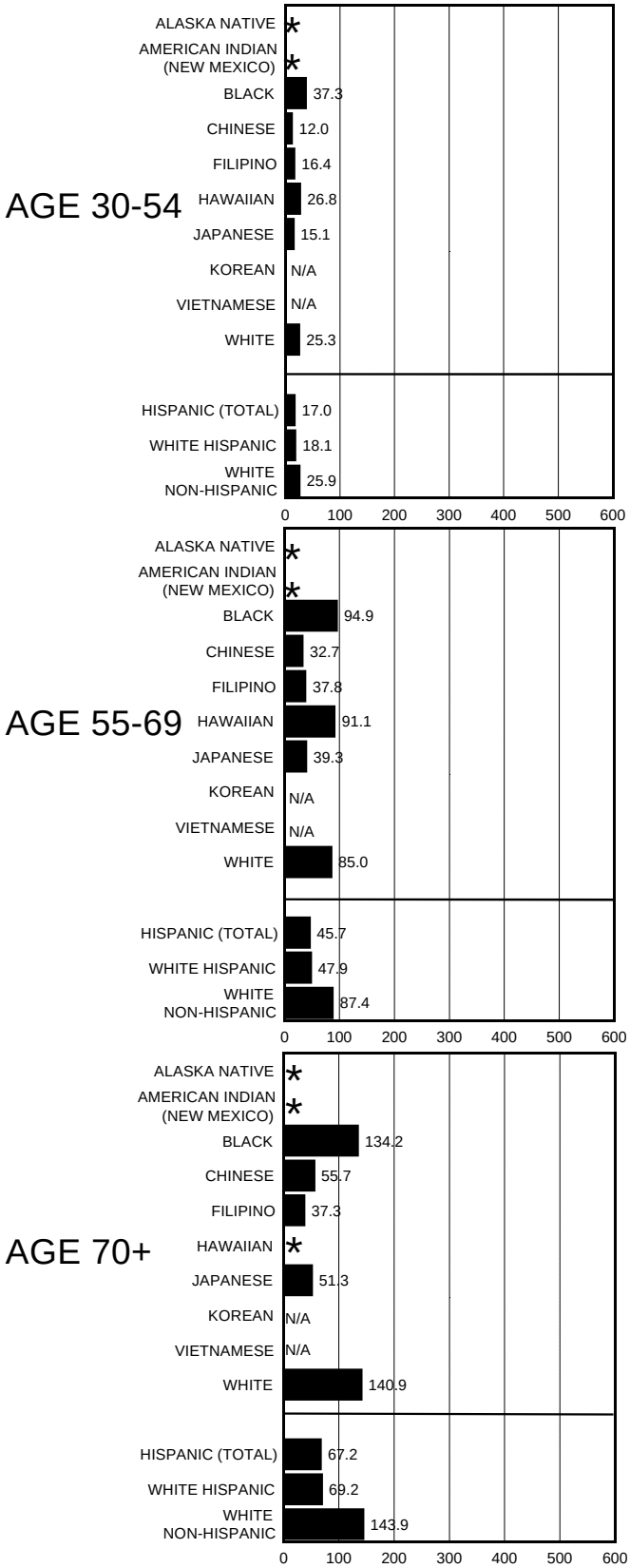
SEER INCIDENCE Rates Among Women by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

BREAST, INVASIVE

United States MORTALITY Rates Among Women by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

CERVIX UTERI

Until the early 1970s, approximately 75% to 80% of cervical cancer in the United States was invasive at the time of diagnosis. Today, about 78% of cervical cancer cases are diagnosed at the *in situ* stage. Furthermore, both incidence and mortality for invasive cervical cancer have declined about 40% since the early 1970s. Mortality began declining just before the Papanicolaou screening test became widely utilized, however, leaving a dilemma as to the relationship between the Pap test and reductions in cervical cancer mortality. Around the world, cervical cancer is often the most common type of cancer among women.

The ethnic patterns of this disease are quite different from those of any of the other female reproductive system cancers. The highest age-adjusted incidence rate in the SEER areas occurs among Vietnamese women (43 per 100,000). Their rate is 7.4 times the lowest incidence rate, 5.8 per 100,000 in Japanese women. Incidence rates of 15 per 100,000 or higher also occur among Alaska Native, Korean, and Hispanic women.

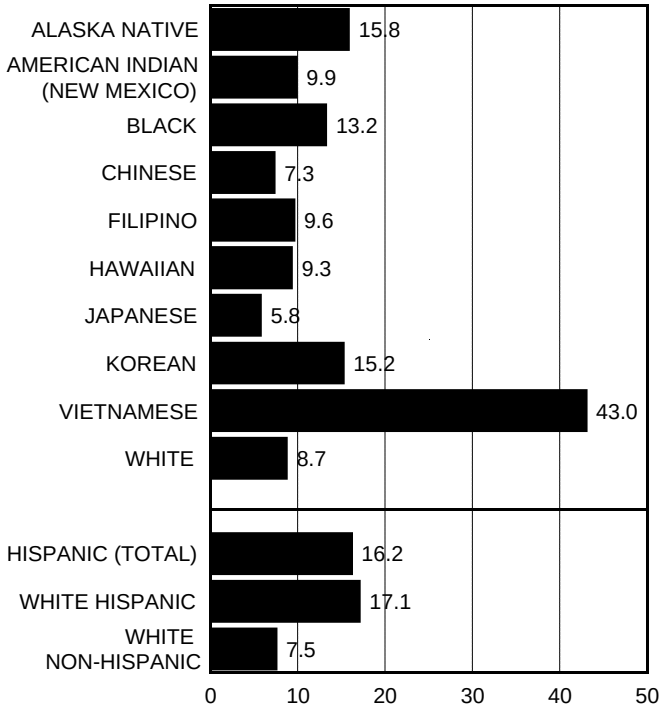
The incidence of invasive cervical cancer exhibits different ethnic patterns by age group. Among women aged 30-54 years, Vietnamese women have the highest rate, followed by Hispanic women, and black women. The rate among Vietnamese women is nearly twice as high as that of Hispanic women, and five times as high as the rate for the group with the lowest rate, Chinese women. Vietnamese women continue to have the highest incidence of invasive cervical cancer in the age group 55-69 years, with a rate that is more than three times higher than the second ranked group, Korean women. Hispanic women have the third highest incidence in this age group, and are followed by black women. There are too few cases in the 70 and older age group to assess many of the ethnic patterns.

United States mortality rates are about 50% to 80% lower than the incidence rates. The ethnic patterns in mortality differ somewhat from those seen in incidence. Black women have the highest age-adjusted mortality rate from cervical cancer, and are followed by Hispanic women. Mortality rates are not available for comparison, however, for Vietnamese, Korean, Alaska Native or American Indian (New Mexico) women. The lowest mortality from this disease occurs among Japanese women, whose rates are less than one-fourth as high as the rates among black women. Mortality patterns by age are similar, with black women having the highest mortality in each age group. Hispanic women have the second highest mortality in the two youngest age groups, while Chinese women aged 70 years and older rank second.

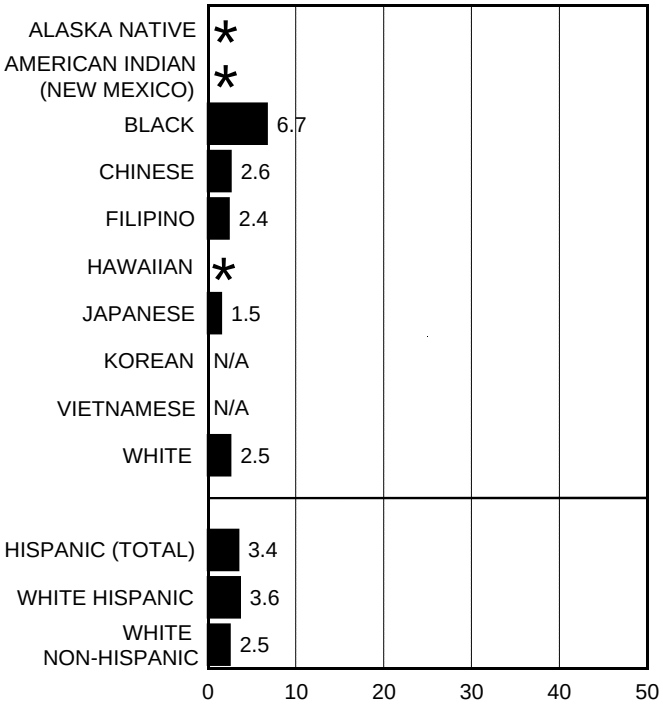
The major risk factors for cervical cancer include early age at initiation of sexual activity, multiple sexual partners, infection with human papilloma virus 16, and cigarette smoking. Therefore, primary prevention is focused mainly on modification of sexual behavior and eradication of cigarette smoking. Secondary prevention occurs through screening, using the Papanicolaou test.

CERVIX UTERI

SEER INCIDENCE Rates Among Women, 1988-1992



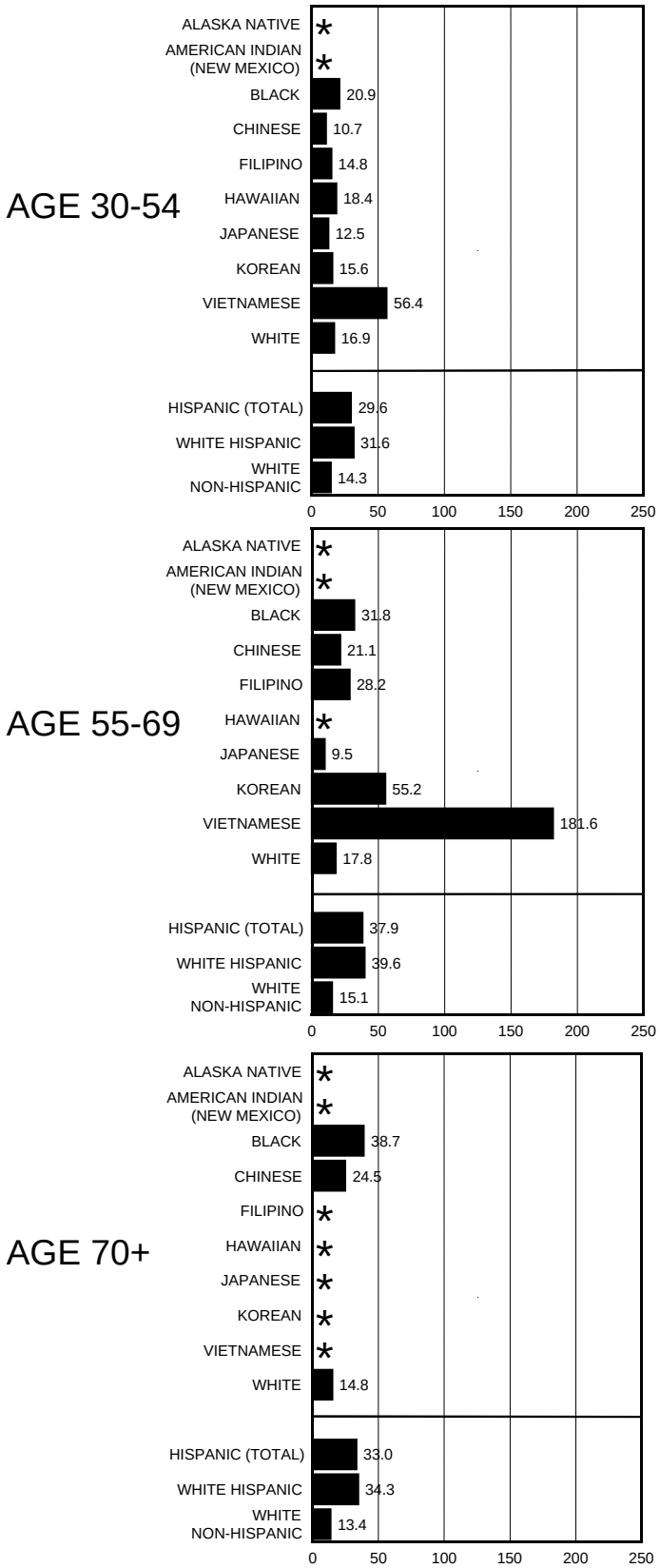
United States MORTALITY Rates Among Women, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

CERVIX UTERI

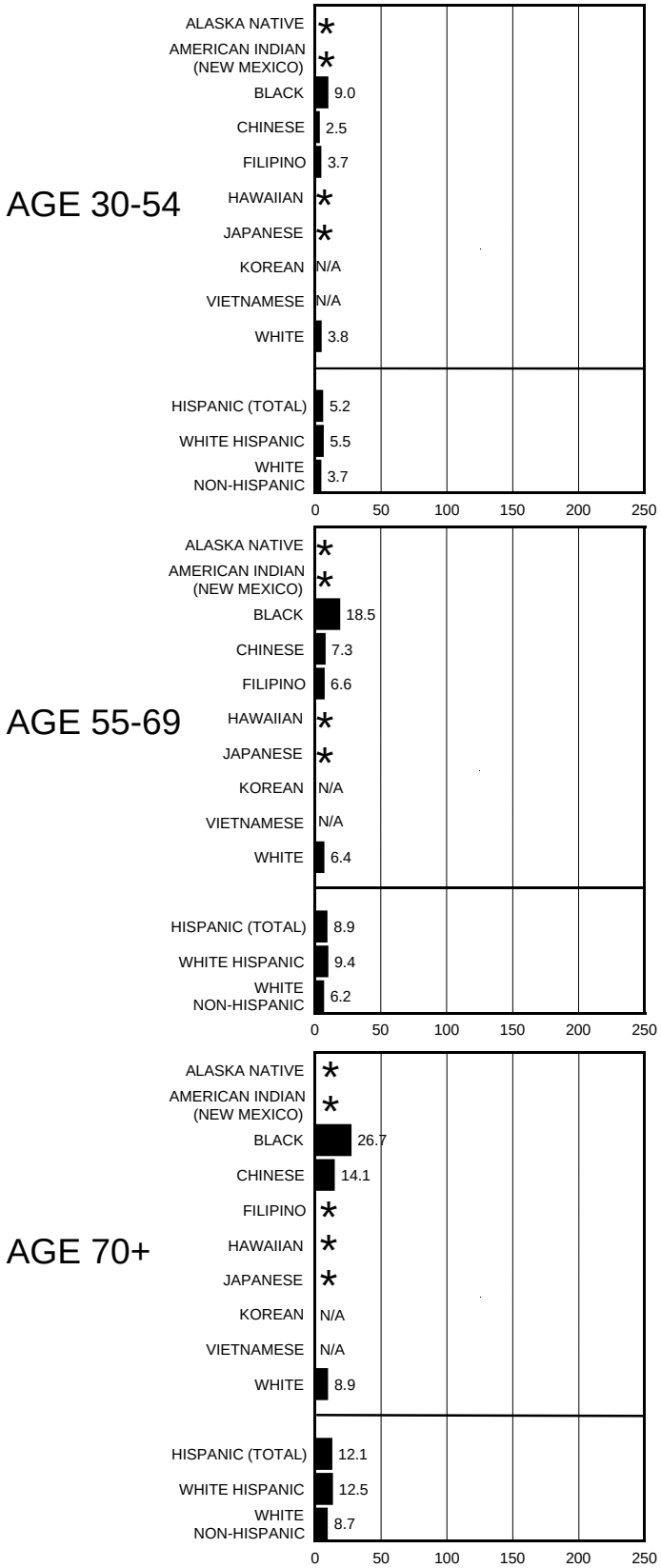
SEER INCIDENCE Rates Among Women by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

CERVIX UTERI

United States MORTALITY Rates Among Women by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

COLON AND RECTUM

Cancers of the colon and rectum are the fourth most commonly diagnosed cancers and rank second among cancer deaths in the United States. The incidence rates show wide divergence by racial/ethnic group, with rates in the Alaska Native population that are over four times as high as rates in the American Indian population (New Mexico) for both men and women. There are only minor differences, between men and women, in the order of incidence rates by racial/ethnic group. After Alaska Natives, the next highest rates in men are among Japanese, black and non-Hispanic white populations. These are followed by Chinese, Hawaiians and white Hispanics; and then Filipinos, Koreans and Vietnamese. In women, Alaska Natives are followed by black, Japanese and white non-Hispanic Americans. Next are Chinese, Hawaiians, and Vietnamese; and finally white Hispanics, Koreans, and Filipinos. Incidence rates for both men and women are substantially lower among American Indians in New Mexico (18.6 per 100,000 in men, 15.3 per 100,000 in women).

In each racial/ethnic group, incidence rates for cancers of the colon and rectum among women are lower than those among men. Although the pattern of incidence rates by race/ethnicity is similar for each sex, the ratio of male-to-female rates varies. Among Filipinos and Japanese, men experience an excess of greater than 60%, while among American Indians, Alaska Natives and Vietnamese the male excess is much lower at only 13-22%. It is interesting that, although the Alaska Natives have the highest colorectal cancer incidence rates of all groups and the American Indians experience the lowest, the gender ratios of these two native American groups are similar.

Mortality patterns by race/ethnicity for cancers of the colon and rectum are similar to those for incidence, with several notable exceptions. Black, Alaska Native, and white non-Hispanic men and women, as well as Hawaiian and Japanese men, have comparatively high mortality rates. The high mortality rates among Alaska Natives and Japanese men are consistent with the high incidence rates in these groups. However, the mortality rates among white non-Hispanic and black men and women, and among Hawaiian men, appear disproportionately high.

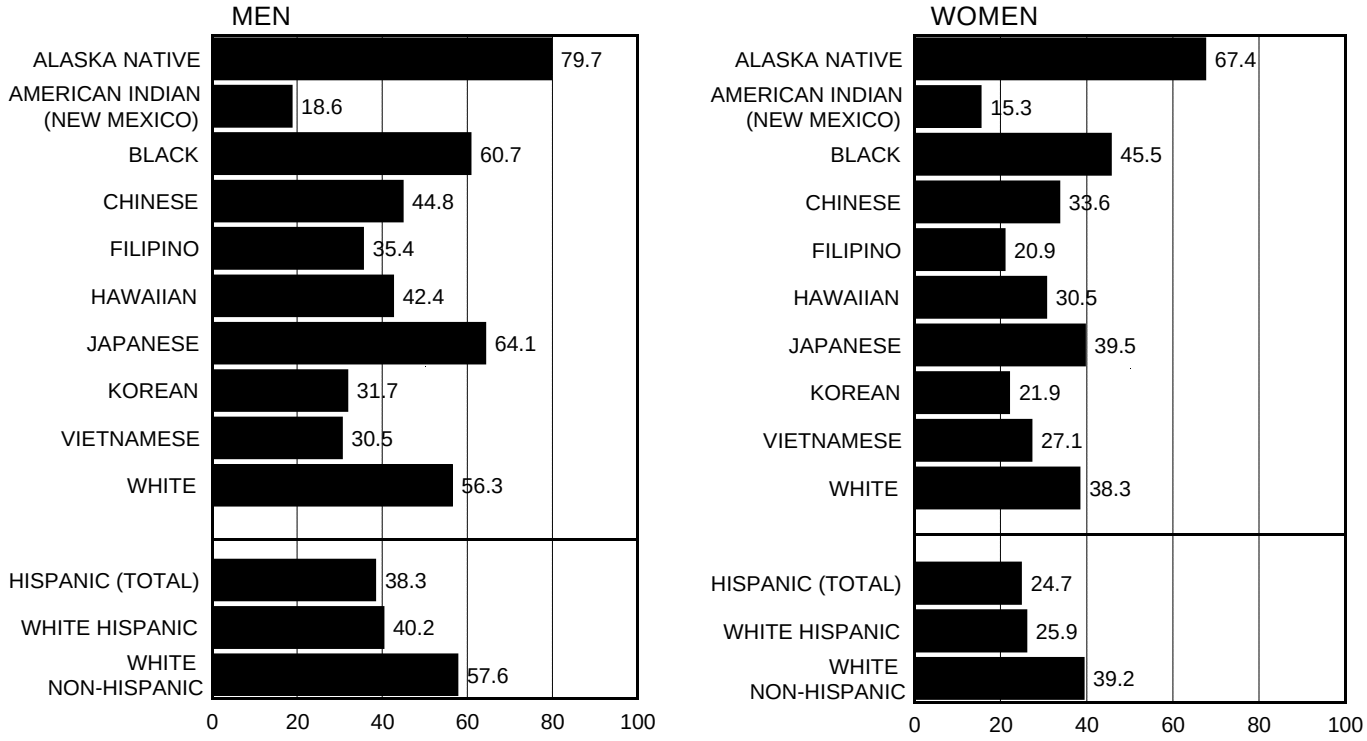
Colon cancer accounts for 59% (Korean men) to 81% (Alaska Native men) of the combined colon and rectum cancer incidence rates. This is reflected in an racial/ethnic pattern for colon cancer incidence rates that is quite similar to the pattern for both sites combined. Incidence and mortality rates for cancers of the colon and rectum increase with age. Interestingly, the incidence rate for Hawaiian men is highest in the 55-69 year age group, and their mortality rate is second only to black men in this age group.

Migrant and other studies have provided very strong evidence that colorectal cancer risk is modifiable, and that differences in population rates may therefore be explained by lifestyle or environmental

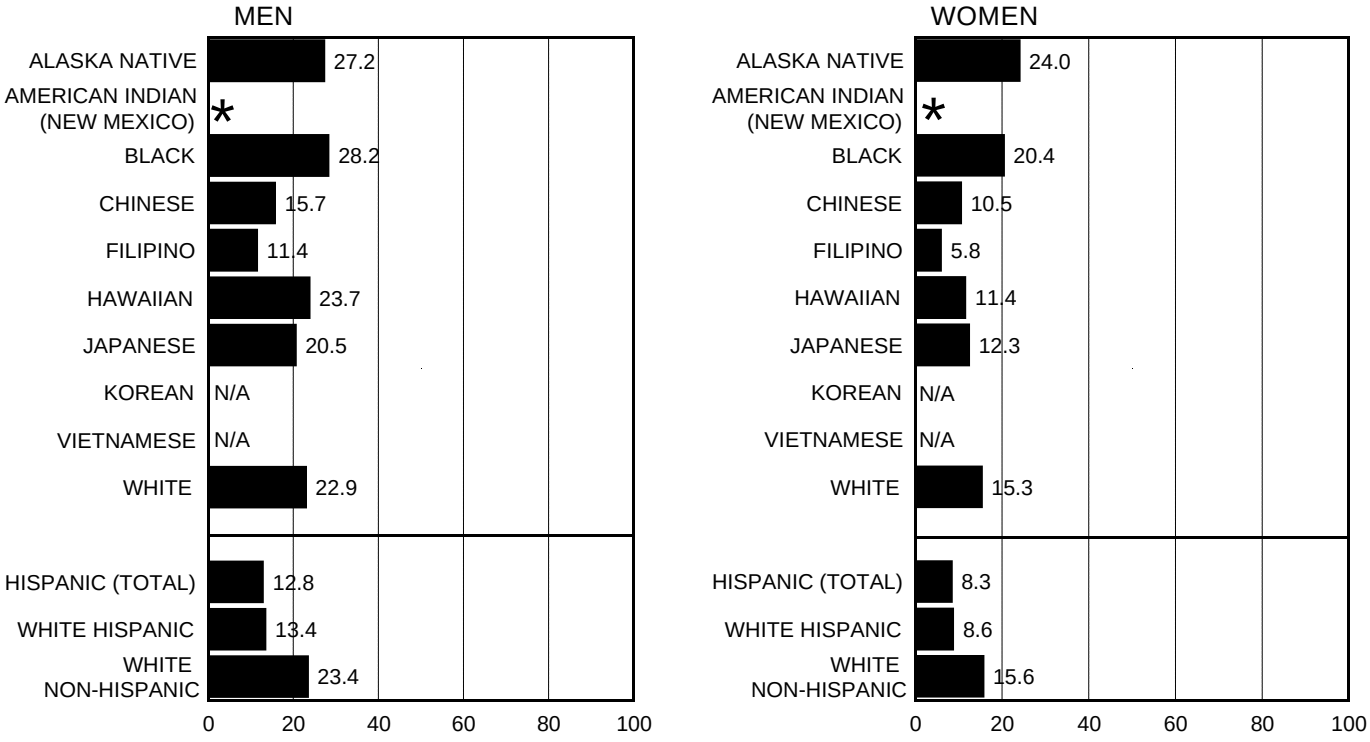
(continued on page 42)

COLON AND RECTUM

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992

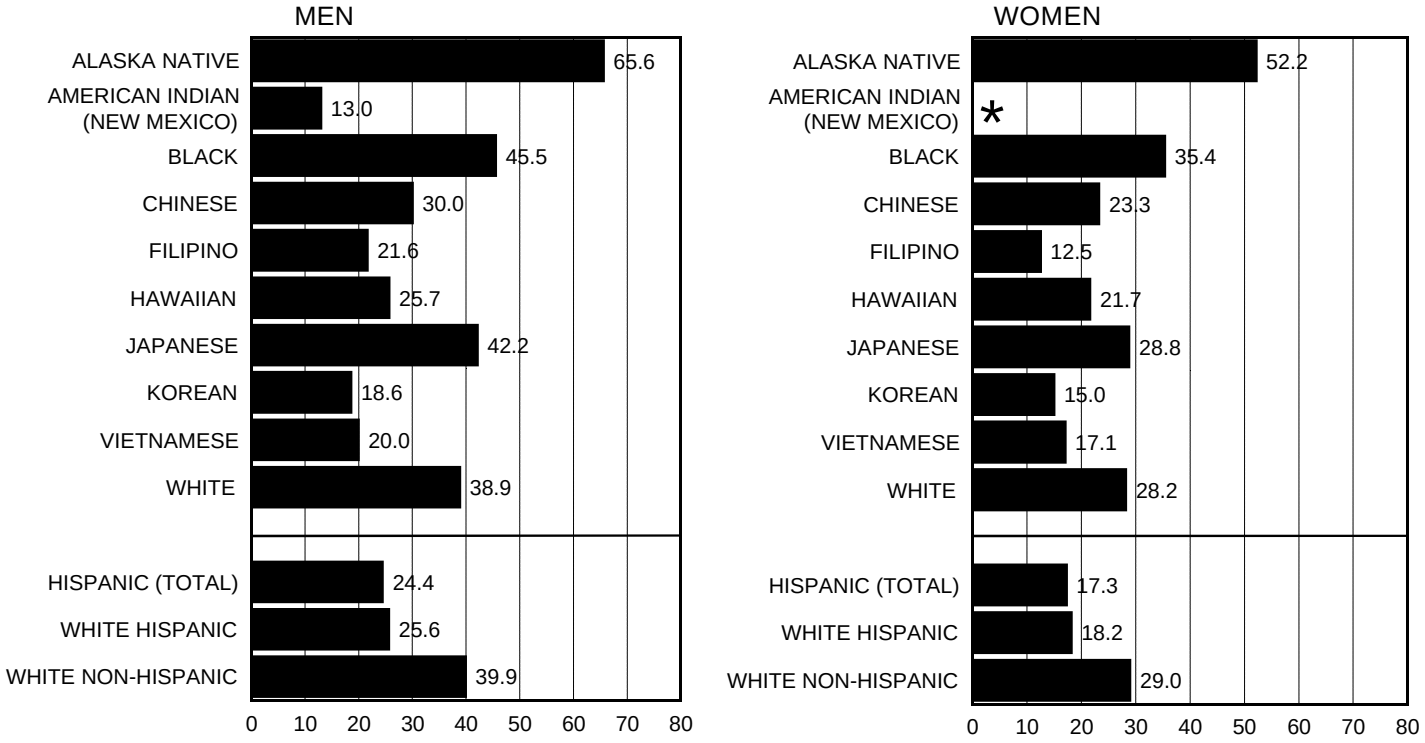


NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

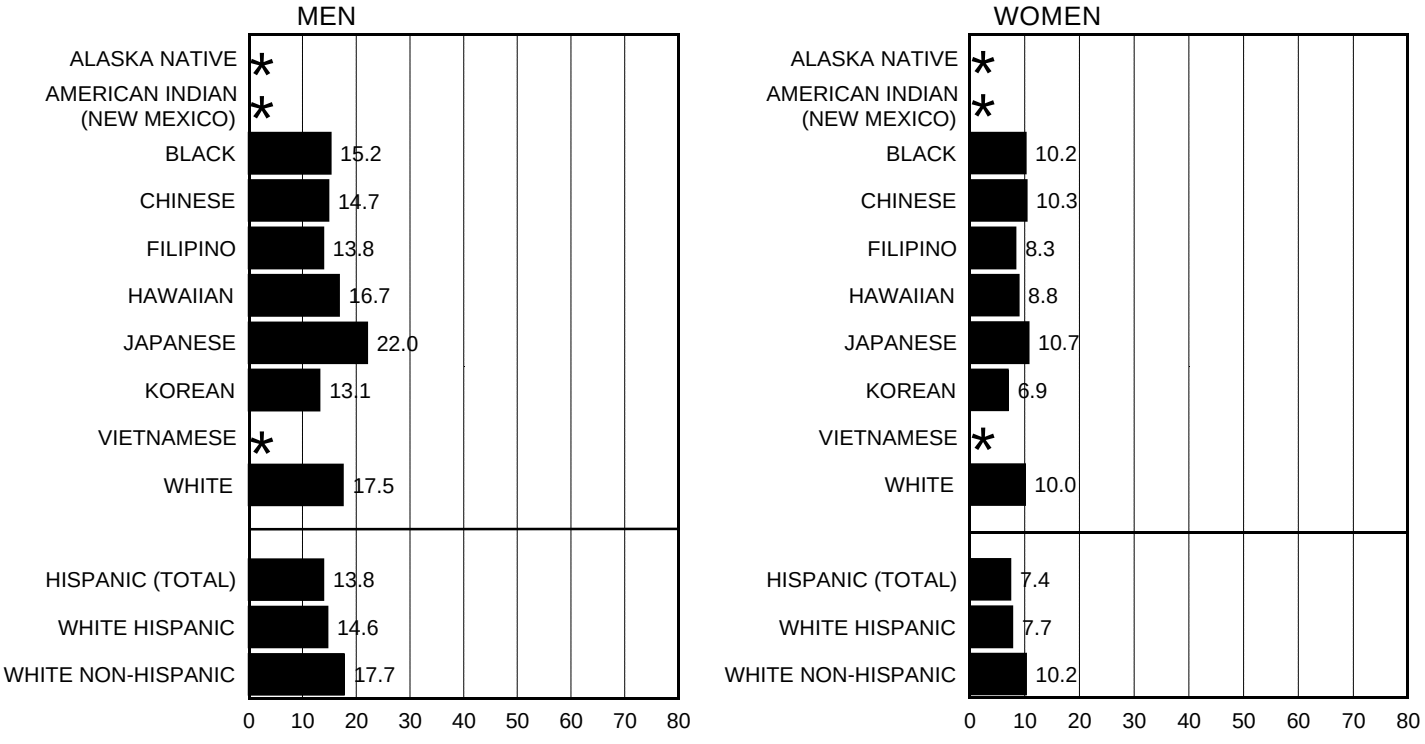
factors. Dietary factors and exercise appear to be very important. Migrants to the United States (from Japan and other countries where rates of colon and rectal cancer are lower than in the U.S.) have higher rates than do those who remain in their native country. Studies have shown that first and second generation American offspring from these migrant groups develop these cancers at rates reaching or exceeding those of the United States white population.

SEER INCIDENCE Rates, 1988-1992

COLON



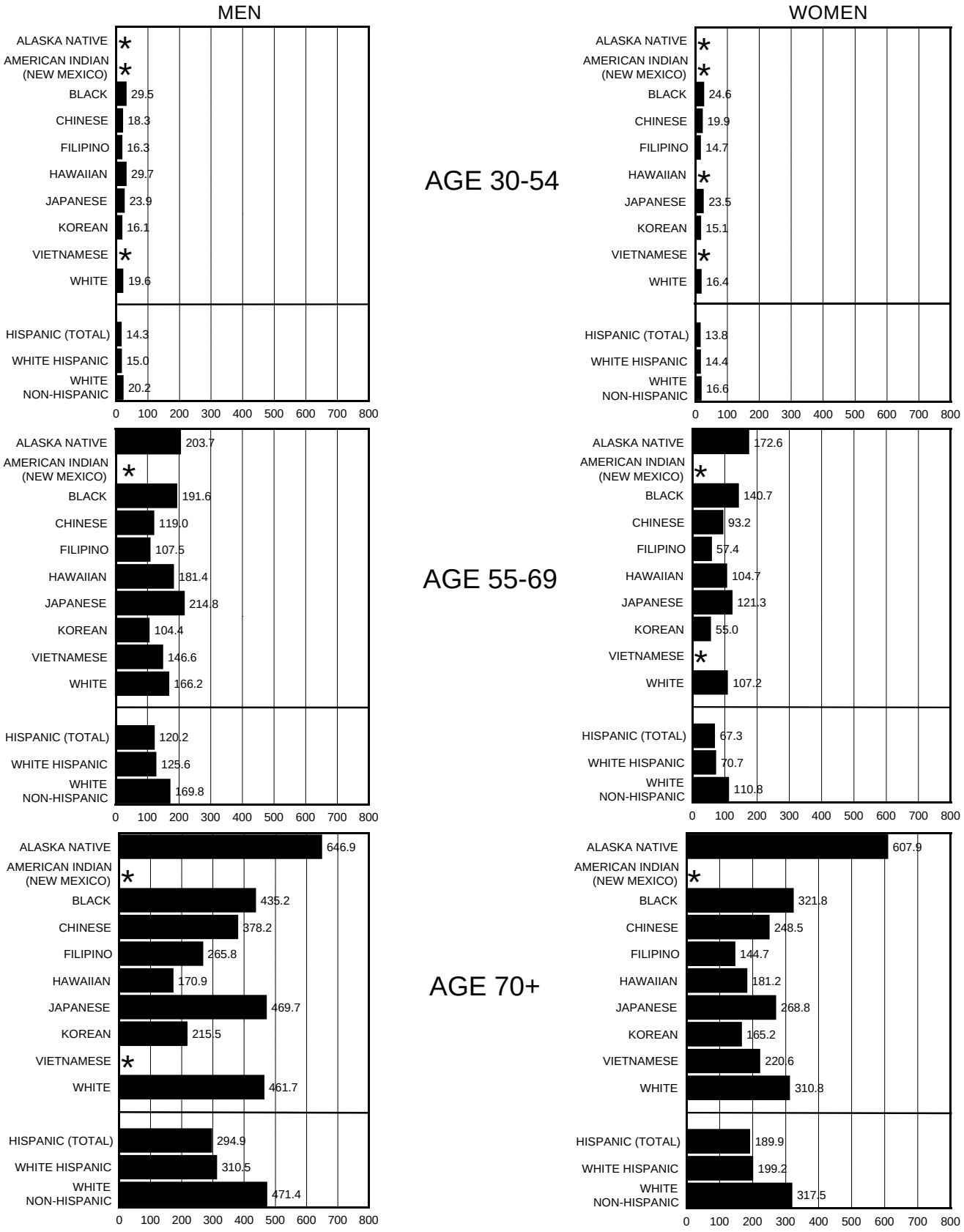
RECTUM



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

COLON AND RECTUM

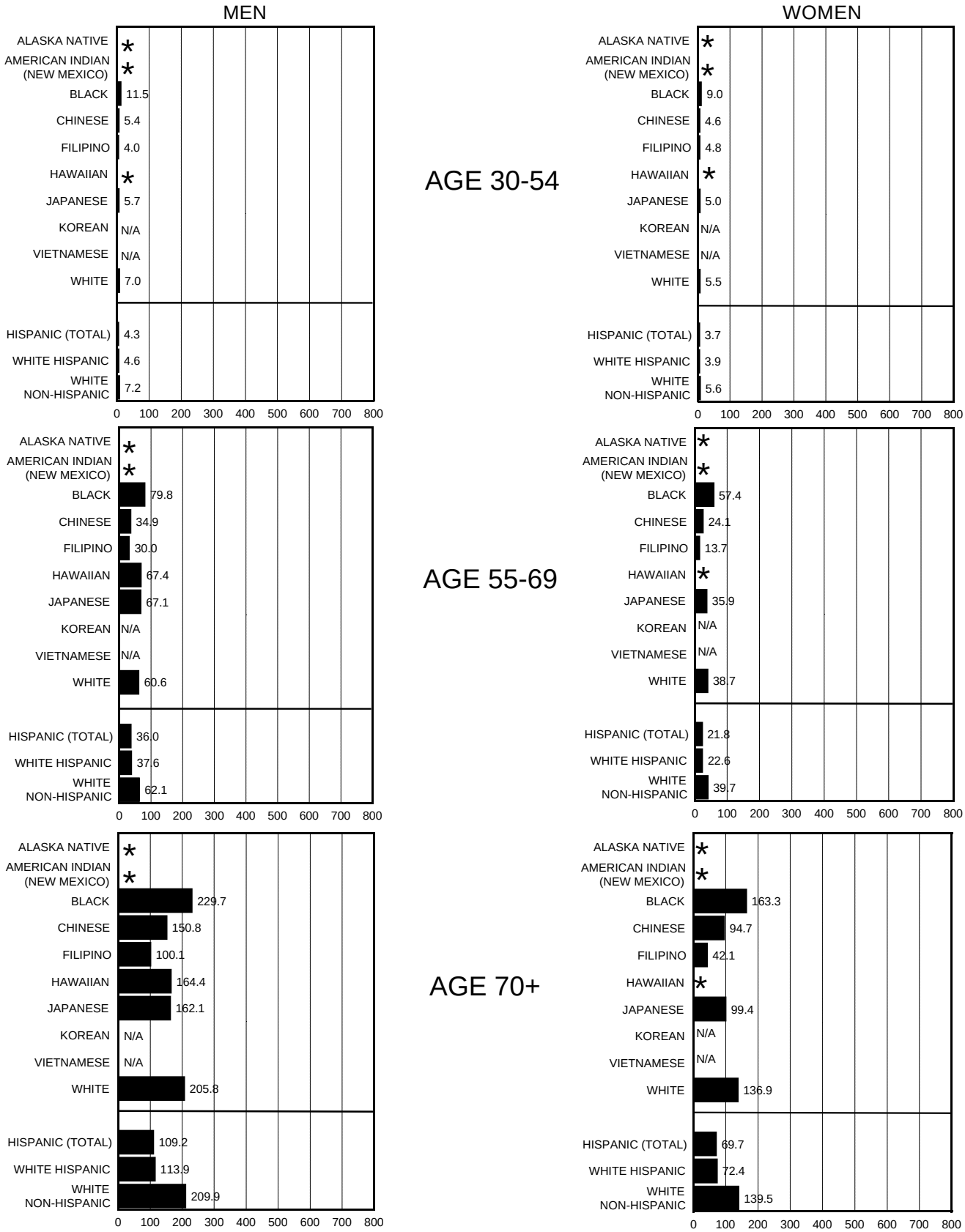
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

COLON AND RECTUM

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

CORPUS UTERI

Cancer of the corpus uteri, or endometrium, is the fourth most common cancer among women in the United States. The racial and ethnic diversity of endometrial cancer follows a pattern similar to that of breast cancer. Women with the highest age-adjusted incidence of endometrial cancer in the SEER areas include Hawaiians, whites, Japanese and blacks. The lowest rates occur among Korean, Vietnamese, and American Indian women.

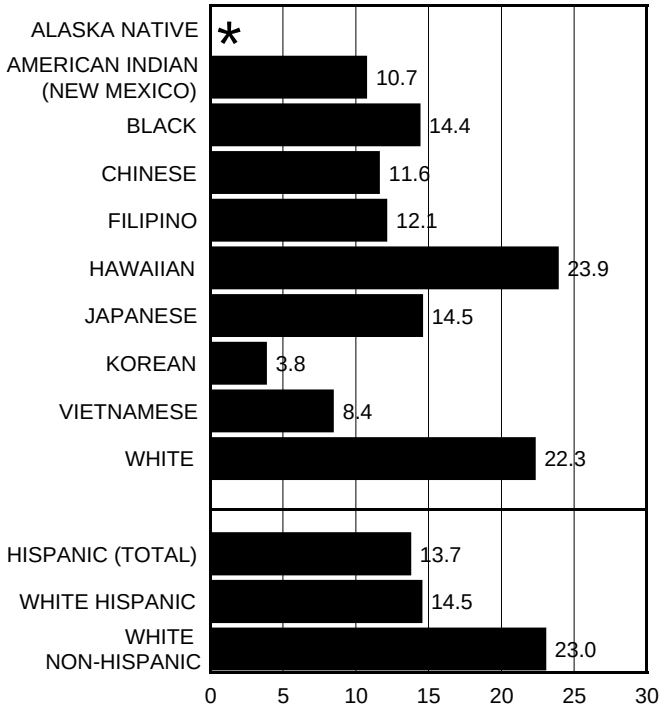
Endometrial cancer increases with advancing age in most, but not all, racial/ethnic groups. Exceptions to this general pattern are Chinese and Filipino women, among whom the highest rates occur at ages 55-69 years. In younger women, ages 30-54 at diagnosis, endometrial cancer is most common among Hawaiians, Japanese, and whites. At ages 55-69 years, endometrial cancer rates are highest for white, Hawaiian, and black women. At ages 70 years and older, rates are highest among white, black, and Japanese women. There were too few cases in Hawaiian women ages 70 years and older to calculate a rate.

Age-adjusted mortality rates in the United States are highest among Hawaiian women, followed by black women. Mortality among white, Hispanic, Chinese, Japanese and Filipino women is less than one-half the rate for Hawaiian women. Age-specific mortality is highest among black women in each of the three age groups (there were too few deaths among Hawaiian women to calculate rates by age). The ratio of incidence to mortality for black women is slightly over two and for Hawaiian women it is nearly three. Chinese women have incidence rates about five times higher than mortality, for white women the ratio is seven, for Japanese women it is nearly eight, and for Filipino women it is about nine. The smaller incidence-to-mortality ratios among black and Hawaiian women suggest that access to care may be a more acute problem for them.

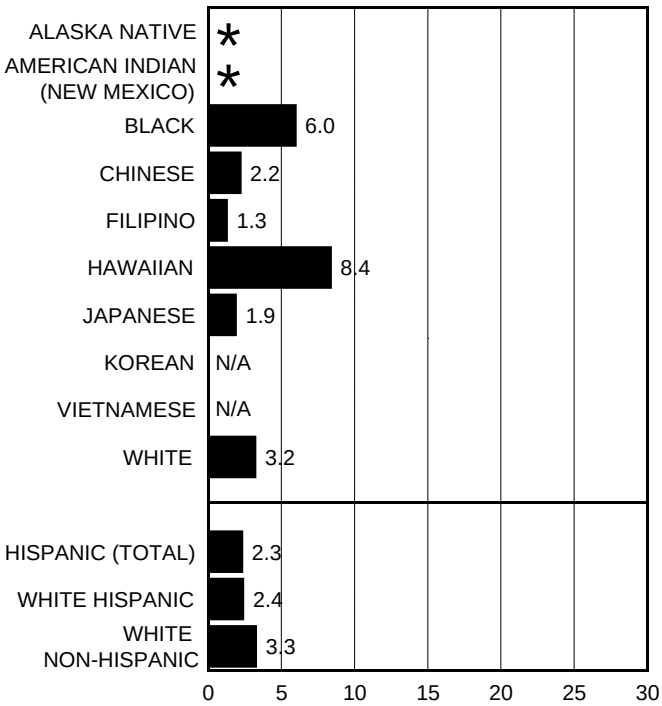
Endometrial cancer is associated with obesity and, possibly, with abnormal glucose tolerance and diabetes. The predominant risk factor for this cancer is the use of exogenous menopausal estrogens. When menopausal estrogens are taken with progesterone, the elevation in risk is greatly reduced. Tamoxifen, a drug that is widely used to treat breast cancer, appears to have estrogen-like effects on the uterus, and may also be associated with increased risk of endometrial cancer. Excepting these risk factors, the epidemiology of endometrial cancer is not well defined.

CORPUS UTERI

SEER INCIDENCE Rates Among Women, 1988-1992



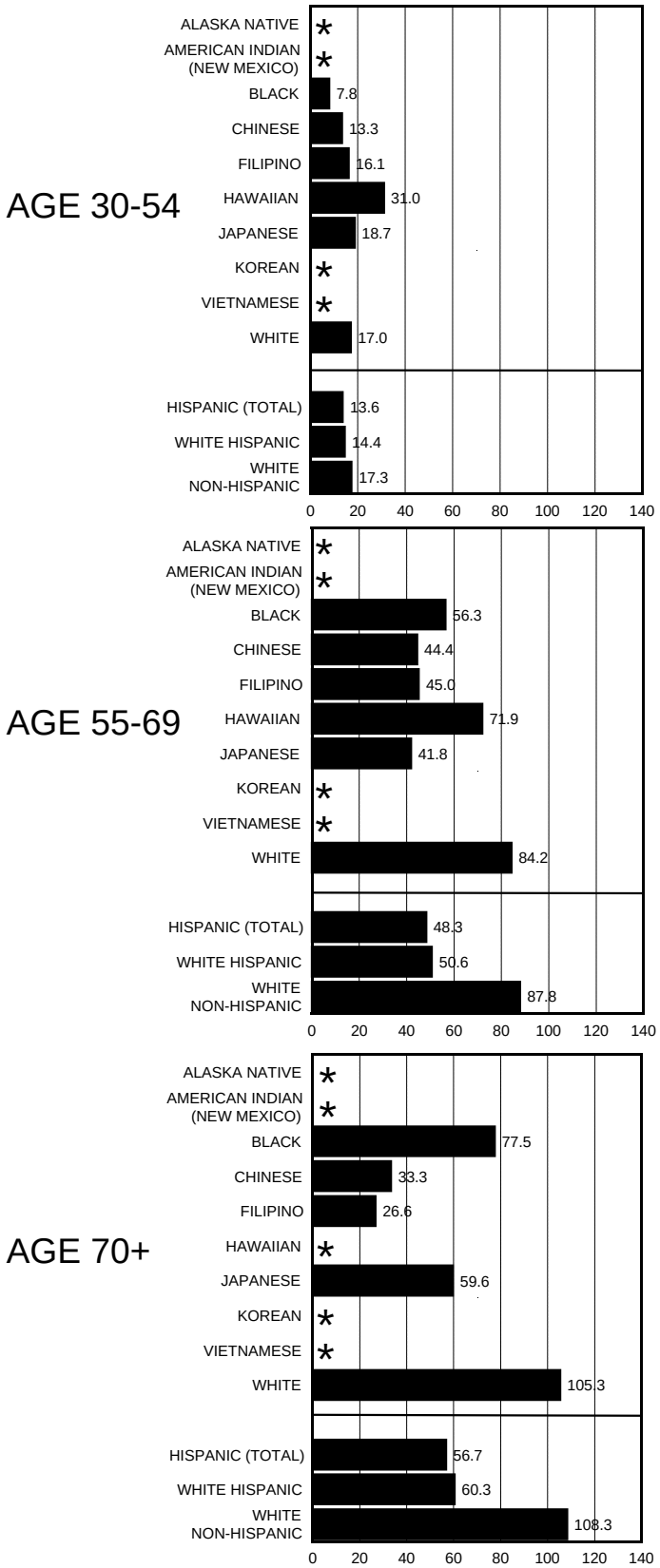
United States MORTALITY Rates Among Women, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

CORPUS UTERI

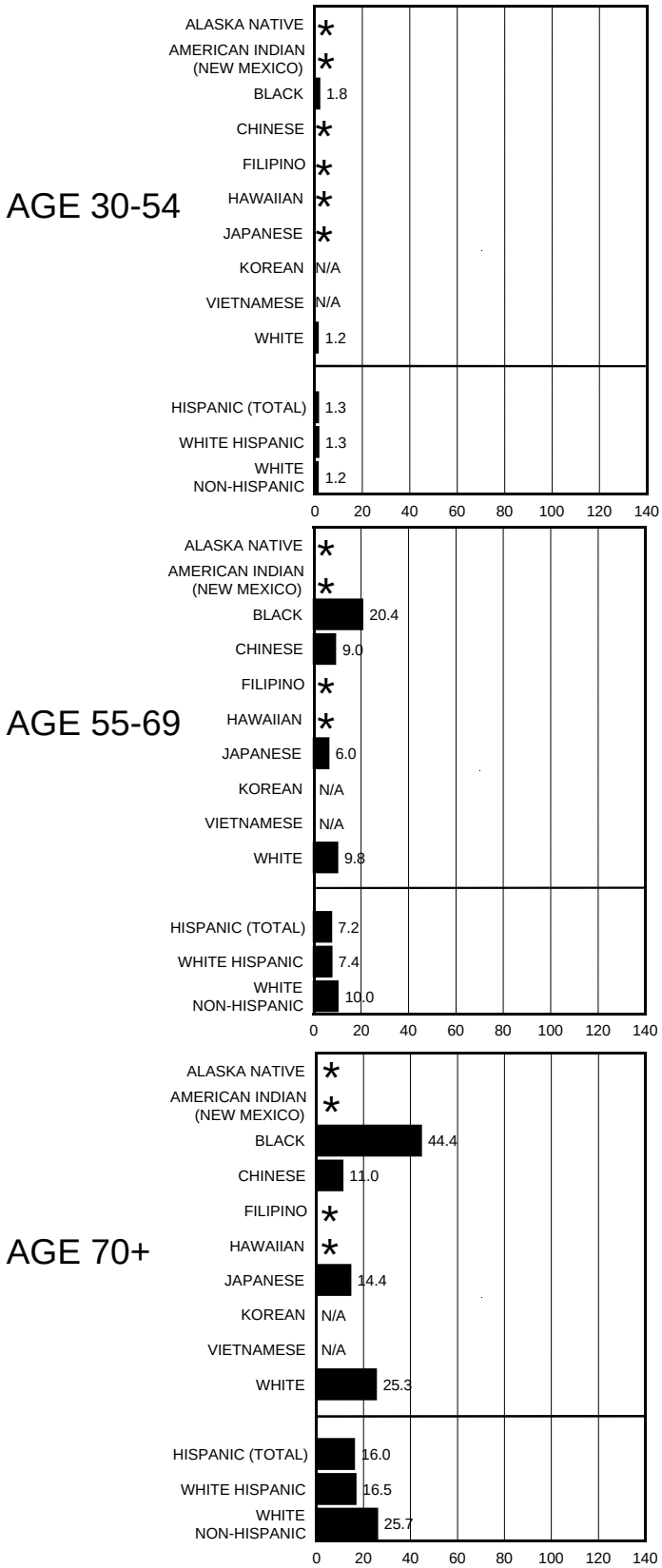
SEER INCIDENCE Rates Among Women by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

CORPUS UTERI

United States MORTALITY Rates Among Women by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

ESOPHAGUS

Cancer of the esophagus is a common cancer in developing areas of the world (Asia, Africa and Latin America), but is less common in the United States. Historically, most esophageal cancers were squamous cell tumors. Recently, however, there has been a marked increase in adenocarcinoma of the esophagus, primarily among white men, in developed countries of the world, including the United States. In fact, among white men, rates of adenocarcinoma of the esophagus nearly equal those of squamous cell tumors.

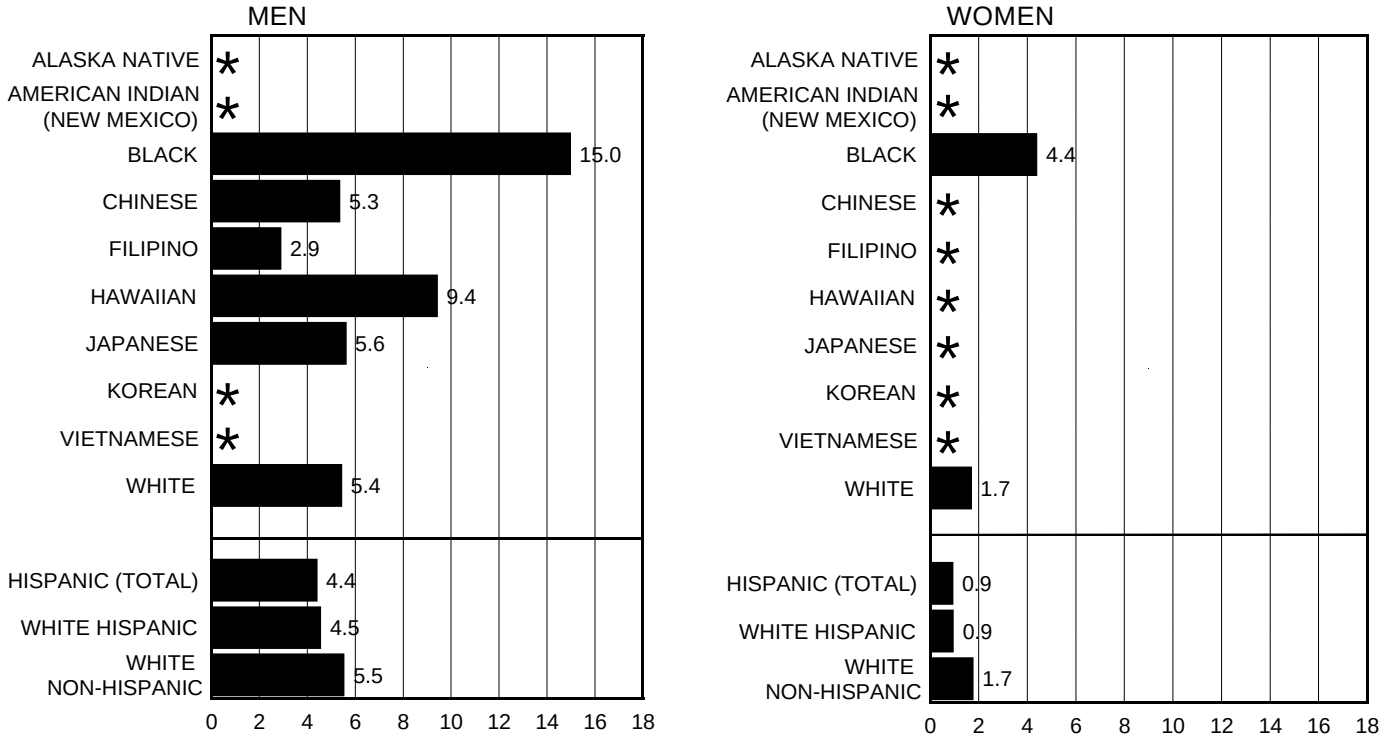
There is a five-fold range in the age-adjusted incidence rates for esophageal cancer among the racial/ethnic groups in the SEER regions. Men are three to five times more likely than women to be diagnosed with esophageal cancer. Among men, blacks have the highest rate (15.0 per 100,000) and Filipinos have the lowest (2.9 per 100,000). The incidence rate for black men is 60% higher than that for Hawaiians and more than 2.7 times greater than the rate for non-Hispanic white men. The rates for Chinese, Japanese and non-Hispanic white men are similar to each other (within the range of 5.3 to 5.6 per 100,000 men) and are modestly higher than the rate for white Hispanic men. Limited data are available for women. Hispanic and non-Hispanic white women have lower rates than black women. Incidence rates generally increase with age in all racial/ethnic groups. In black men, however, the incidence rate for the 55-69 year age group is close to the rate for the 70 and over age group. In black women aged 55-69 years, the incidence rate is slightly higher than for the 70 years and older age group.

United States mortality rates for esophageal cancer are nearly as high as incidence rates in the SEER regions, reflecting the generally poor survival for patients with this cancer. Among black and Hawaiian populations, the incidence-to-mortality rate ratio is less than 1.1. It is 1.1 for non-Hispanic whites, Japanese and Filipinos and 1.3 for Chinese and white Hispanics. Mortality patterns by age are similar to those seen in the incidence rates.

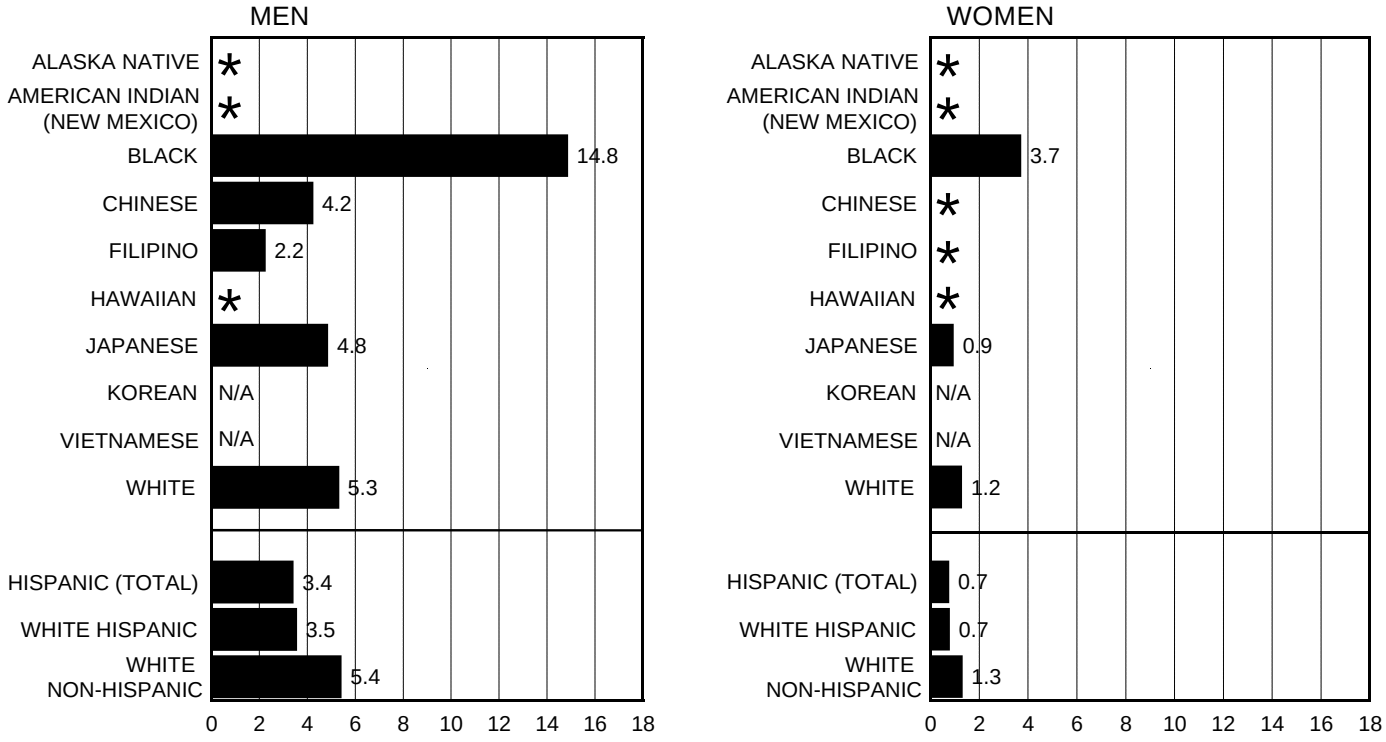
Heavy alcohol consumption, cigarette smoking, and, possibly, other types of tobacco use each substantially increase the risk of esophageal cancer among persons in developed countries. The use of tobacco and alcohol, in combination, results in even larger elevations in risk. In developing countries, nutritional deficiencies related to lack of fresh fruit and vegetables, drinking hot beverages, and a range of chewing and smoking habits are also important risk factors.

ESOPHAGUS

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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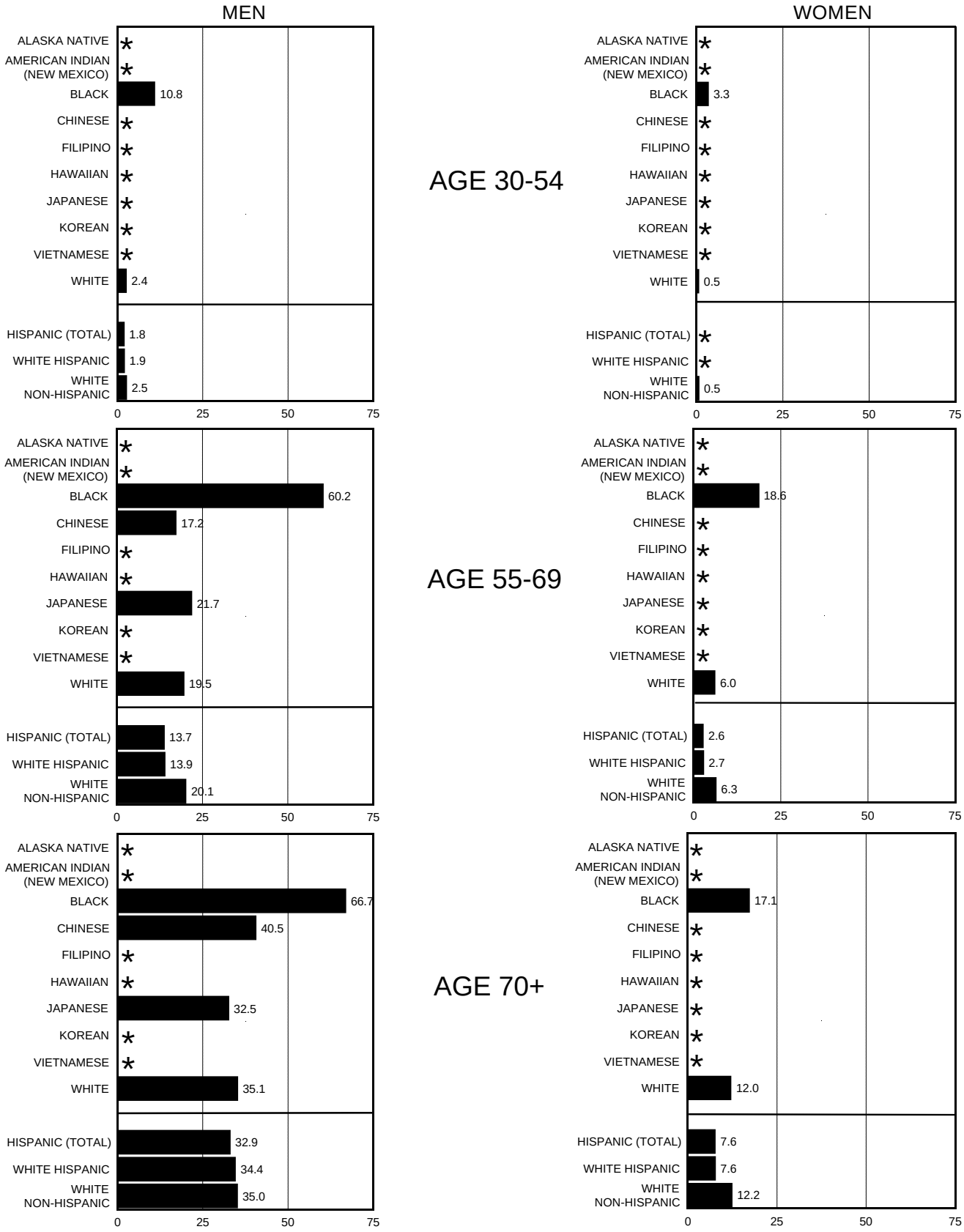
ESOPHAGUS

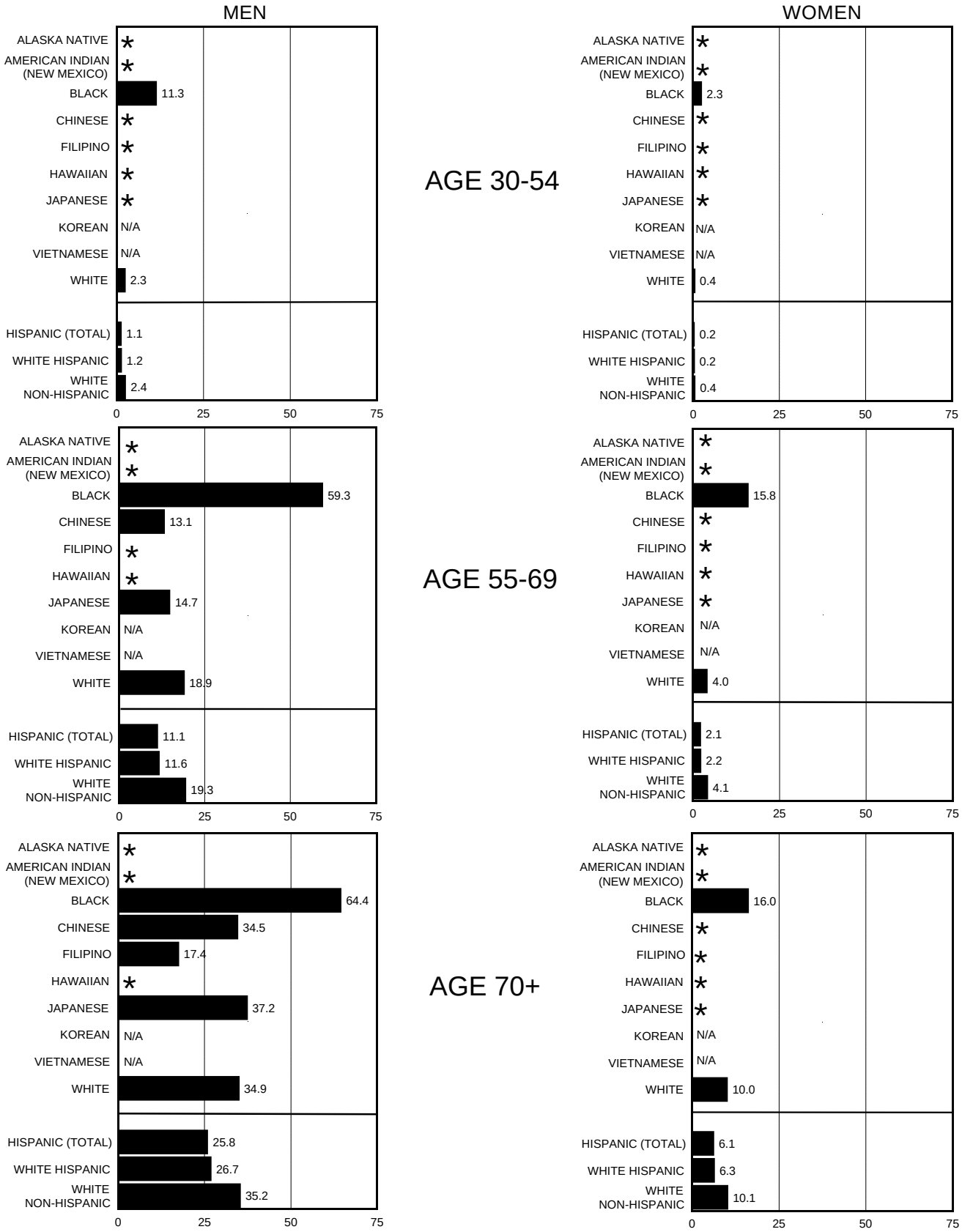
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

ESOPHAGUS

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

KAPOSI'S SARCOMA

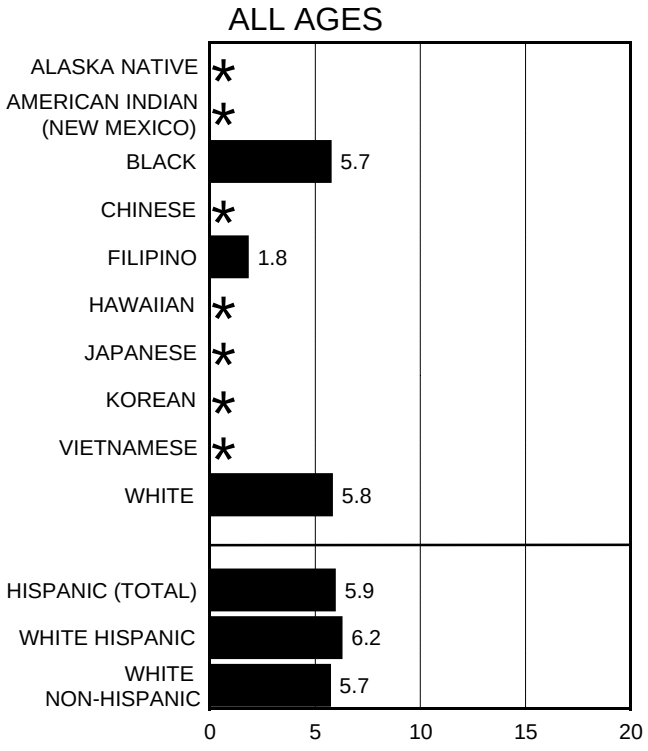
Kaposi's sarcoma is a soft tissue sarcoma that was rarely diagnosed in the United States before the AIDS epidemic. It occurs primarily on the skin but may also be found in other parts of the body such as the oral cavity, esophagus, and anal canal. A small number of cases occur in organs such as the lung and stomach. Rates reported here are for all cases of Kaposi's sarcoma, regardless of the site or organ in which the disease arose. Patients with multiple skin lesions are reported only once. Mortality data for this cancer are not separately identifiable through current conventional mortality coding practices.

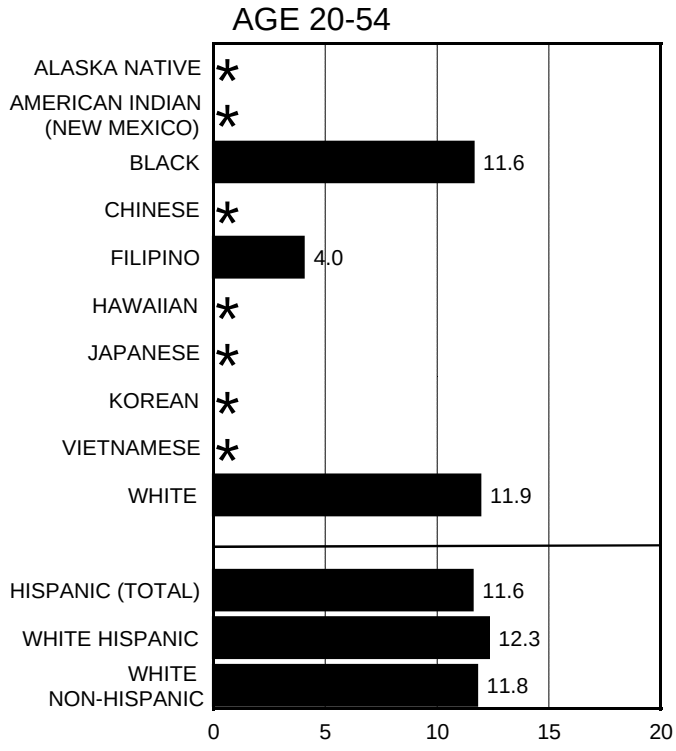
Age-adjusted incidence rates are calculated only for white, black, and Hispanic populations and for Filipino men due to small numbers of cases in other groups. Rates among white, black and Hispanic men are essentially equal, 5.7 to 5.9 per 100,000, while the rate among Filipino men is lower, at 1.8. Rates among women are negligible, 0.3 or less, and are not shown. Incidence rates for Kaposi's sarcoma are highest in the youngest age group (20-54 years), are considerably lower in 55-69 year age group and remain low in the 70 year and older age group.

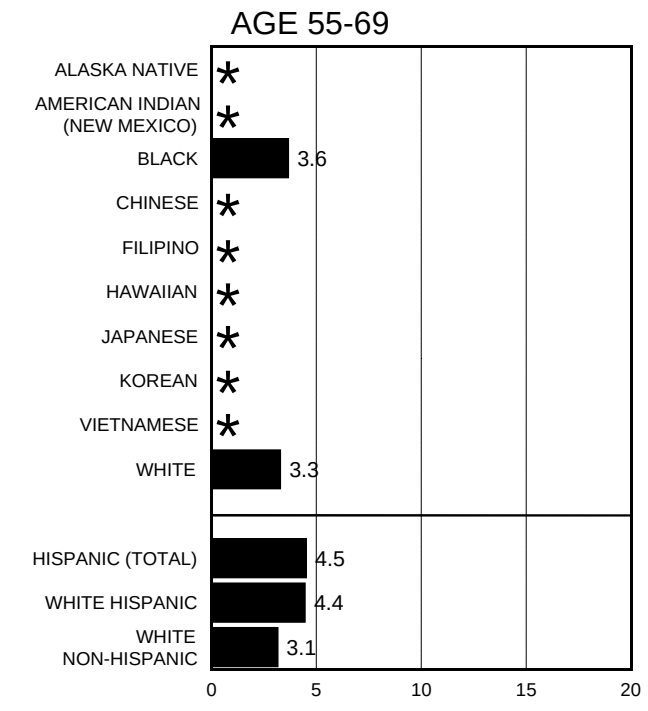
In the age group 20-54 years, Kaposi's sarcoma is most frequently diagnosed among persons who test positive for the human immunovirus (HIV). In fact, Kaposi's sarcoma is currently such a widely recognized part of the AIDS sequelae that the incidence may be under reported because skin lesions are easily recognizable to the naked eye, may not be biopsied for pathologic confirmation, and therefore, may not be reported to a cancer registry. Before the AIDS epidemic, Kaposi's sarcoma was most commonly diagnosed in older white men of eastern European and middle eastern origin.

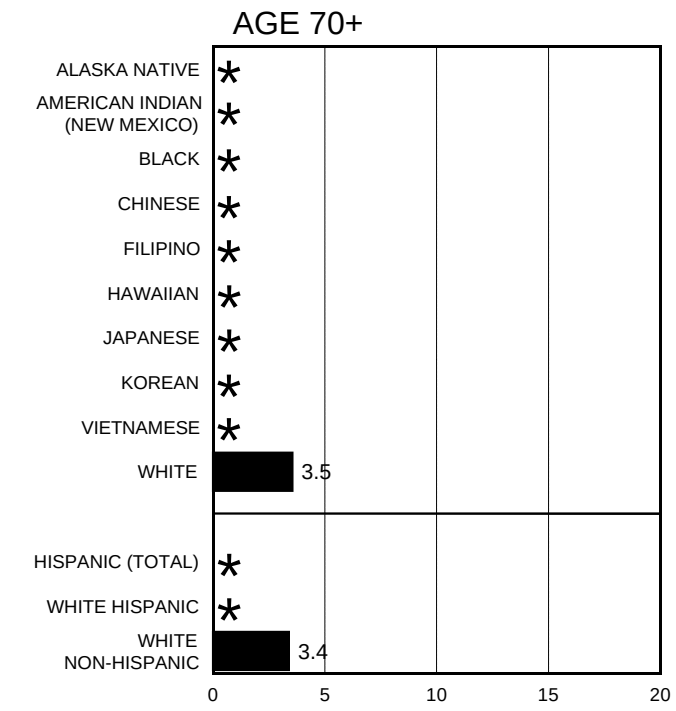
KAPOSI'S SARCOMA

SEER INCIDENCE Rates Among Men by Age at Diagnosis, 1988-1992









NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

KIDNEY AND RENAL PELVIS

Historically, incidence rates for kidney cancer have included cancers of the renal cells (in the main part of the kidney) and the renal pelvis (the lower part of the kidney where urine collects before entering the ureter and continuing to the bladder), although there is evidence that these cancers have different characteristics. They are presented together here for continuity. About one of five kidney cancers occur in the renal pelvis. Internationally, the highest incidence rates occur in the United States, Canada, Northern Europe, Australia, and New Zealand. The lowest rates are in Thailand, China, and the Philippines. Rates in these countries are about one-third the rates in the high risk countries.

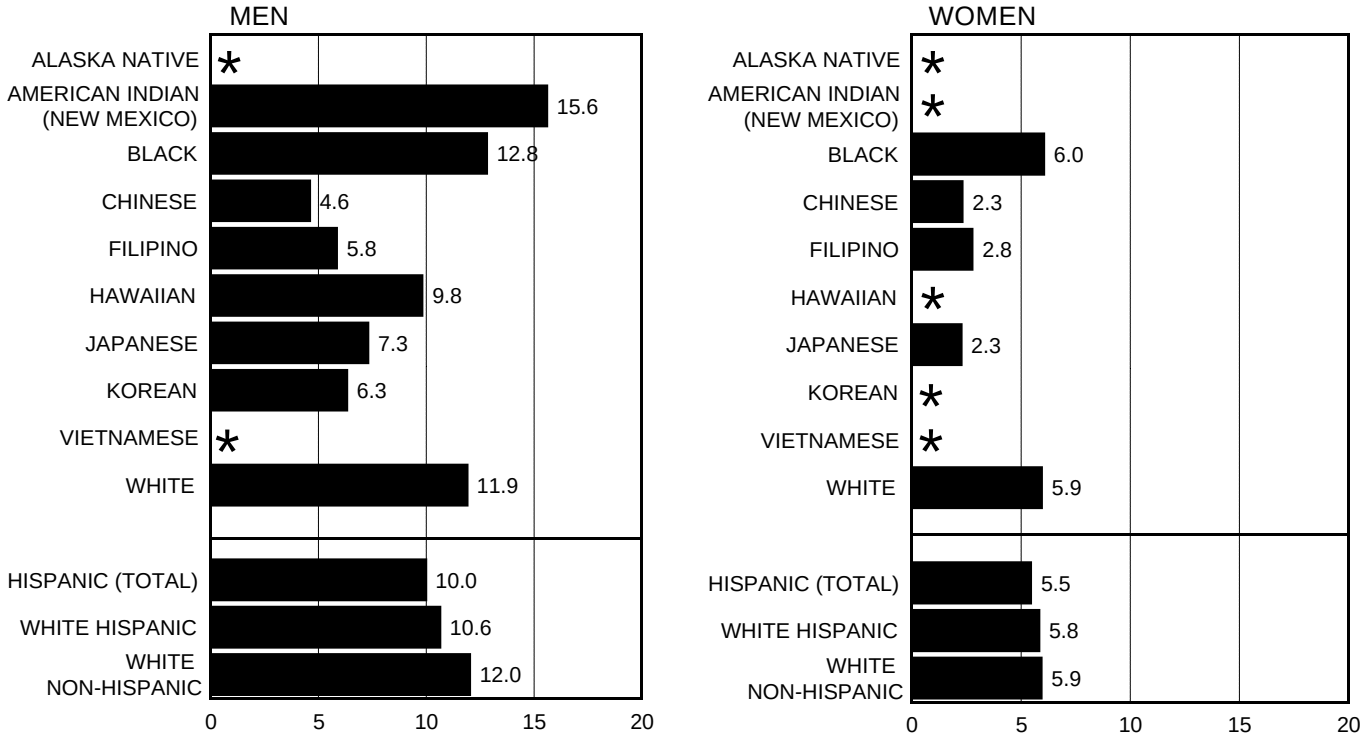
During the years 1988 to 1992, in the SEER regions, the incidence rates for kidney cancers are about twice as high in men as in women. The highest rates in the SEER regions are in American Indian men in New Mexico. Rates are somewhat lower in blacks, Hispanics and white non-Hispanics (ranging from 10 to 13 per 100,000 for men and about six per 100,000 for women). The lowest incidence rates occur in the Asian populations. There were too few cases among Alaska Native and Vietnamese populations to calculate rates. Age-specific incidence rates for kidney cancer demonstrate a small, temporary peak in early childhood due to Wilm's tumor, an uncommon tumor of the kidney with a good prognosis. Rates then decline with age and remain low until they finally surpass the early peak at around age 40. The racial/ethnic patterns for ages 55-69 years and 70 years and over are similar to those for all ages combined. In the 30-54 year old age group, racial/ethnic differences are slight.

Kidney cancer has a relatively high mortality rate in all racial/ethnic populations. Following the incidence pattern, mortality rates are about twice as high in men as in women, regardless of age. There are too few deaths among American Indian (New Mexico), Alaska Native and Hawaiian populations to calculate reliable rates. Mortality rates for blacks are comparable to those for white non-Hispanics. Rates for the other races are lower. In all racial/ethnic groups the mortality rates increase with age.

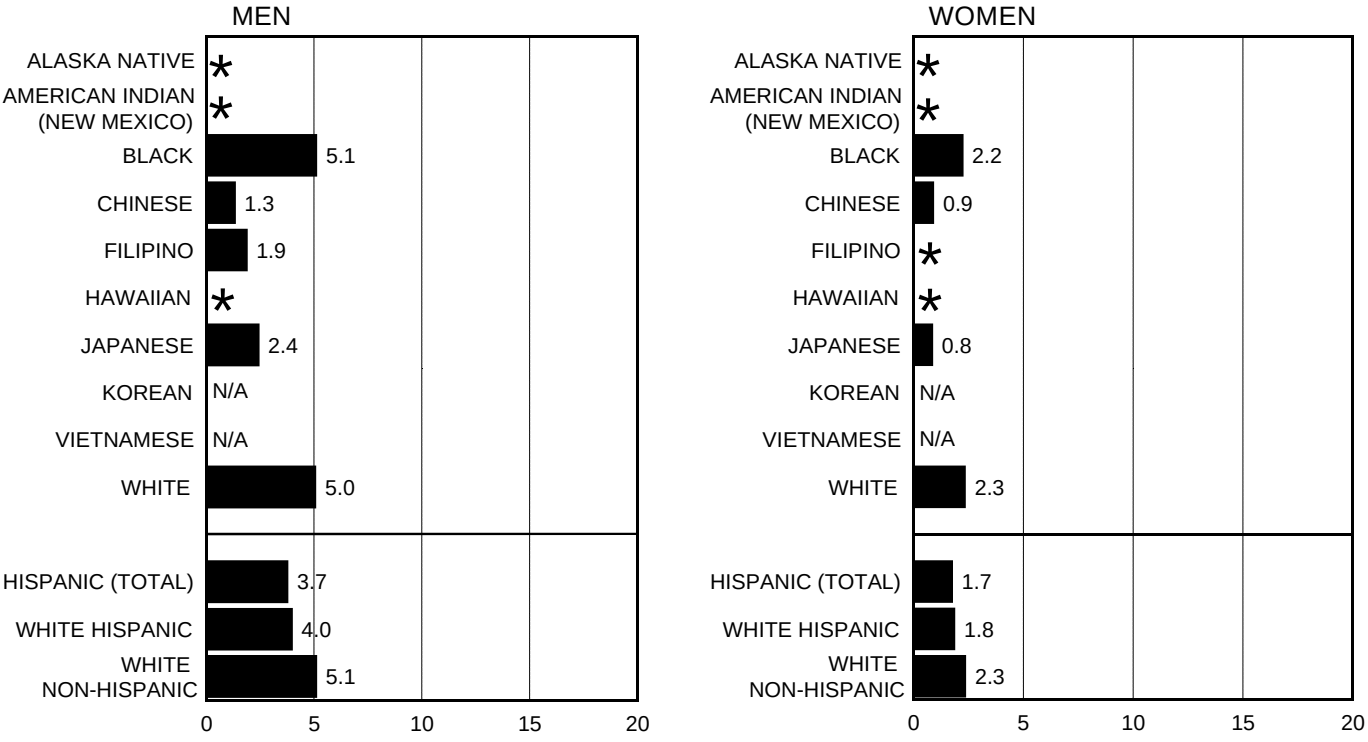
Cancers of the kidney and renal pelvis share many risk factors although the strengths of the associations differ. For both types of cancer the only well-established risk factor is cigarette smoking. Compared to nonsmokers, smokers have about twice the risk for renal cell cancer and about four times the risk for renal pelvis cancer than nonsmokers. Other probable risk factors include obesity and, especially for cancer of the renal pelvis, heavy long-term use of analgesics (medications used to relieve pain). Cessation of cigarette smoking is the best single step in preventing these cancers. It is estimated that this measure alone would reduce by one-half the number of renal pelvis cancers and by one-third the number of renal cell cancers.

KIDNEY AND RENAL PELVIS

SEER INCIDENCE Rates, 1988-1992



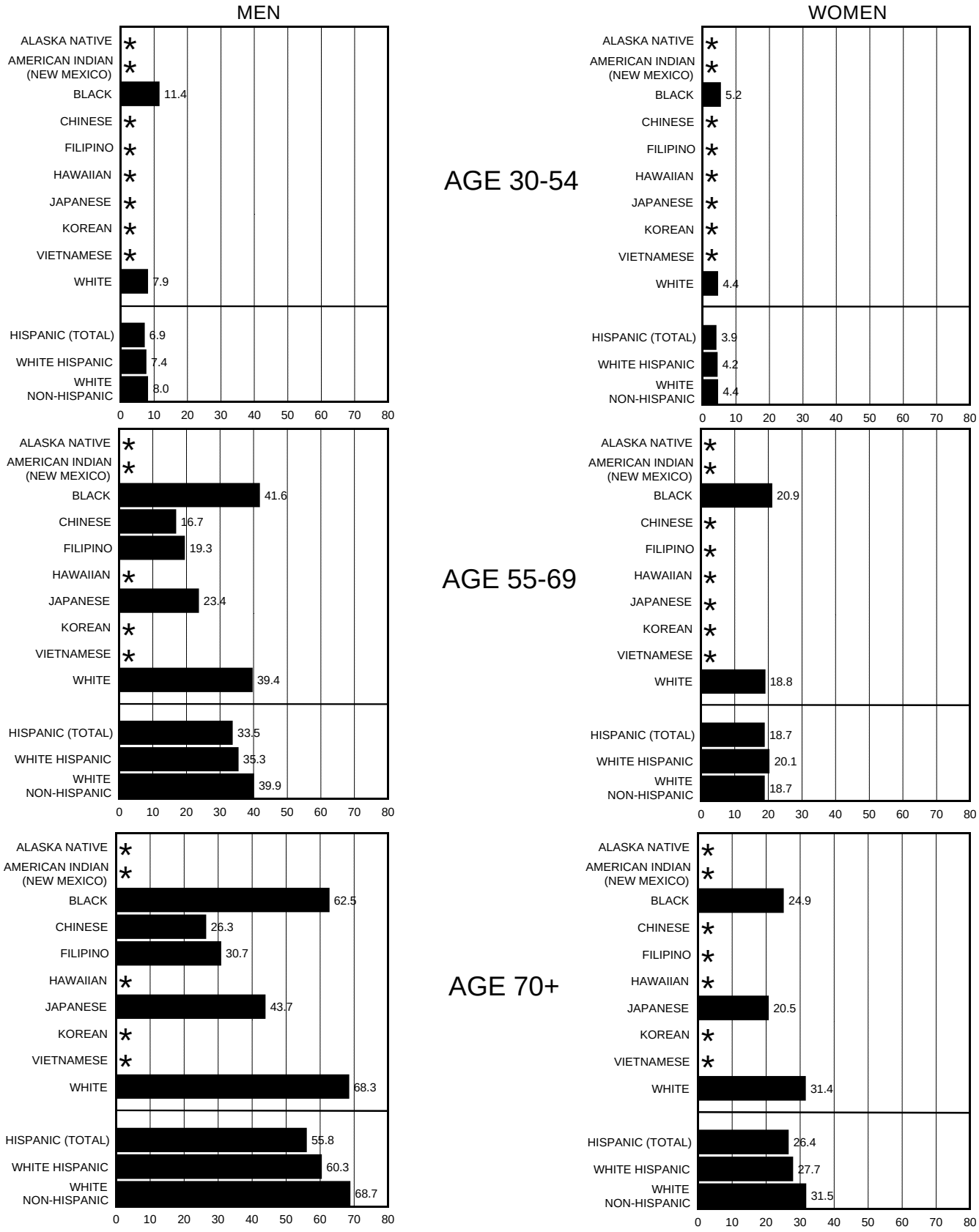
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

KIDNEY AND RENAL PELVIS

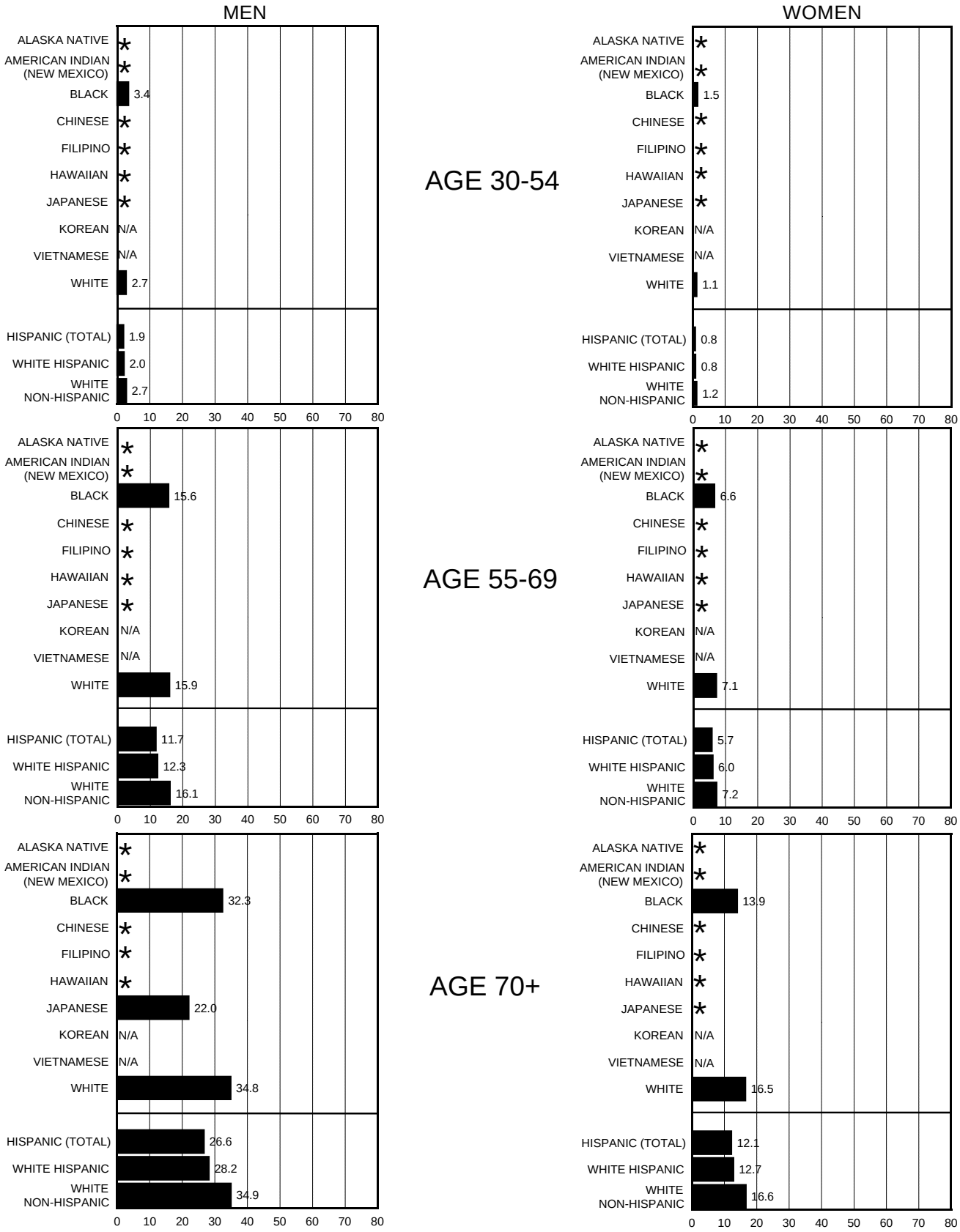
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

KIDNEY AND RENAL PELVIS

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

LARYNX

Laryngeal cancer is relatively rare in the United States. Age-adjusted incidence rates for laryngeal cancer are not calculated for all population groups in the SEER regions due to the small number of cases in several categories, especially among women. Rates (per 100,000) among men range from a low of 2.4 among Filipinos, 2.5 in Japanese and 2.8 in Chinese to a high of 12.7 in blacks. Rates for whites and Hispanics are intermediate. Laryngeal cancer is much less common in women, with rates ranging from a low of 0.7 among Hispanics to a high of 2.5 among blacks. Rates for white women fall between these two extremes at 1.5. The male-to-female ratio of the incidence rates is approximately five to one for blacks and whites and seven to one for Hispanics. Laryngeal cancer is uncommon in the youngest age group. Incidence rates are similar in the two older age groups, 55-69 years and 70 years and older. Within each broad age group, the incidence rate for blacks exceeds the rates for whites and Hispanics.

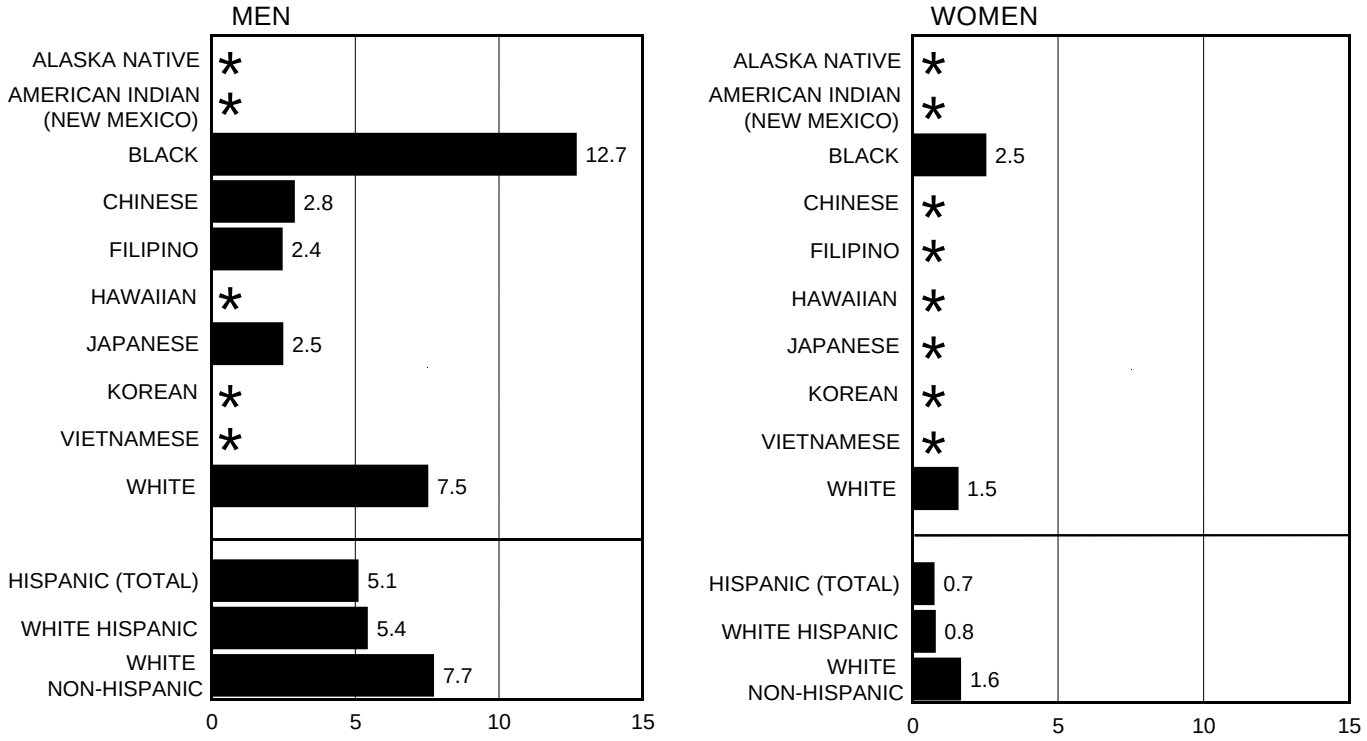
Age-adjusted laryngeal cancer mortality rates follow the same racial/ethnic patterns as those for incidence. Mortality rates are calculated for only a few groups, however, because of small numbers of deaths. As seen in the incidence rates, mortality rates by age group tend to be highest in black populations. An exception is the comparable mortality rate for both white women and black women aged 70 years and older.

Fortunately, the symptoms of laryngeal cancer are usually recognized early in the course of the disease leading to early treatment. Among men, incidence-to-mortality rate ratios are approximately three for whites and Hispanics, and are slightly lower for blacks, at 2.3. Among women there is more consistency with each group having ratios of approximately three.

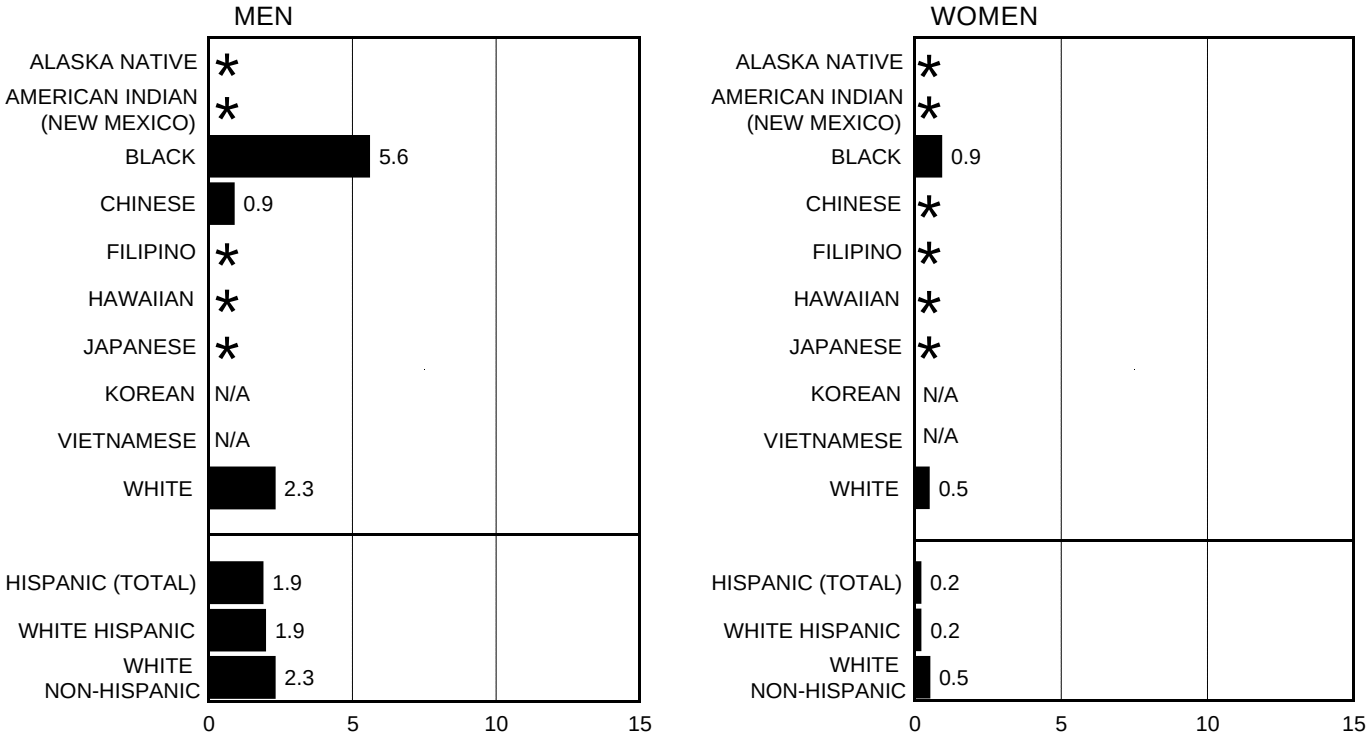
Smoking is the most important cause of laryngeal cancer, and risk is compounded with alcohol use. Risk is the highest among heavy smokers who are also heavy users of alcohol. Occupational exposures to asbestos and to some chemicals and dusts have been reported to increase the risk of cancer of the larynx, although these relationships have not been found consistently in all studies and are likely to account for only a small fraction of all laryngeal cancer cases.

LARYNX

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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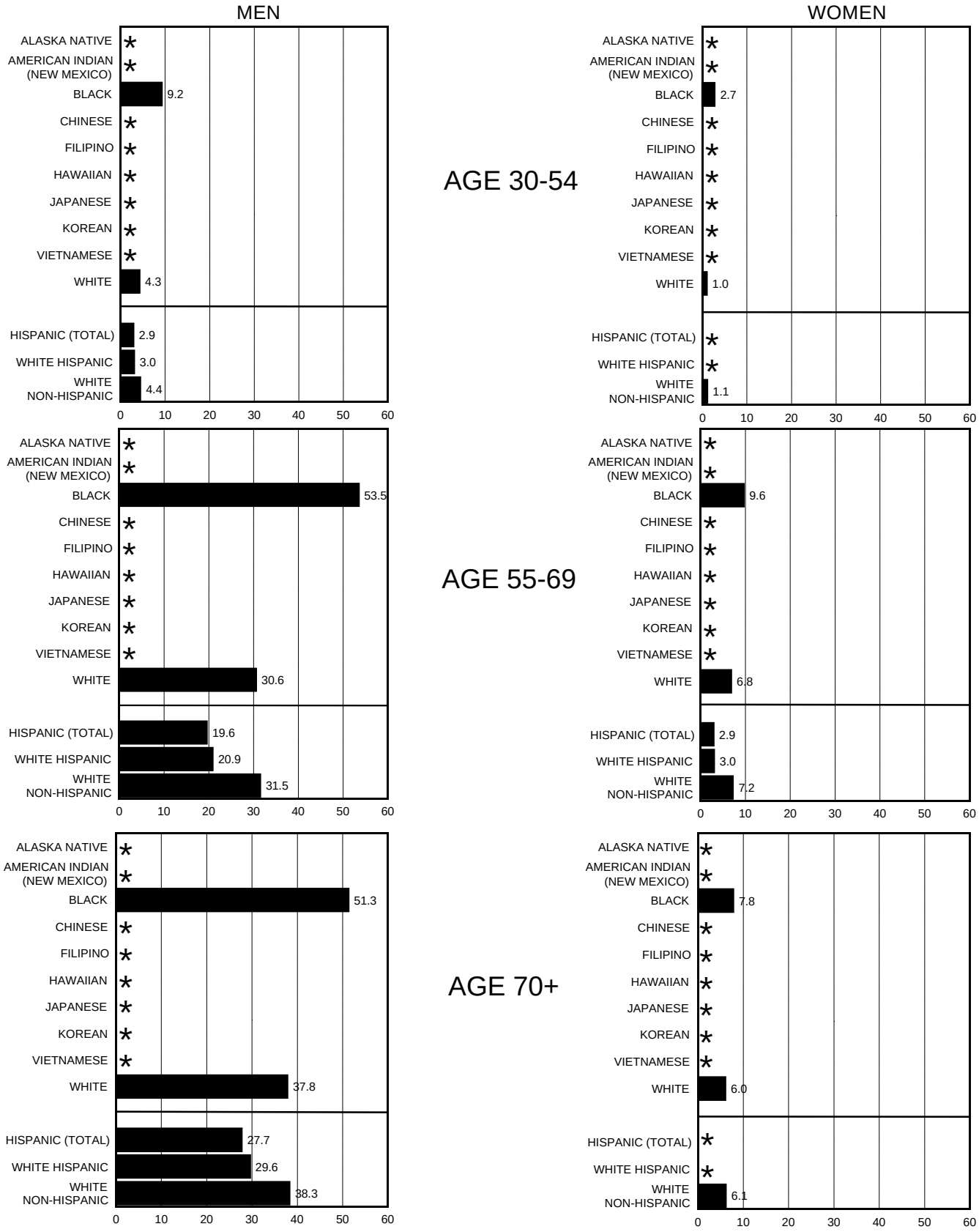
LARYNX

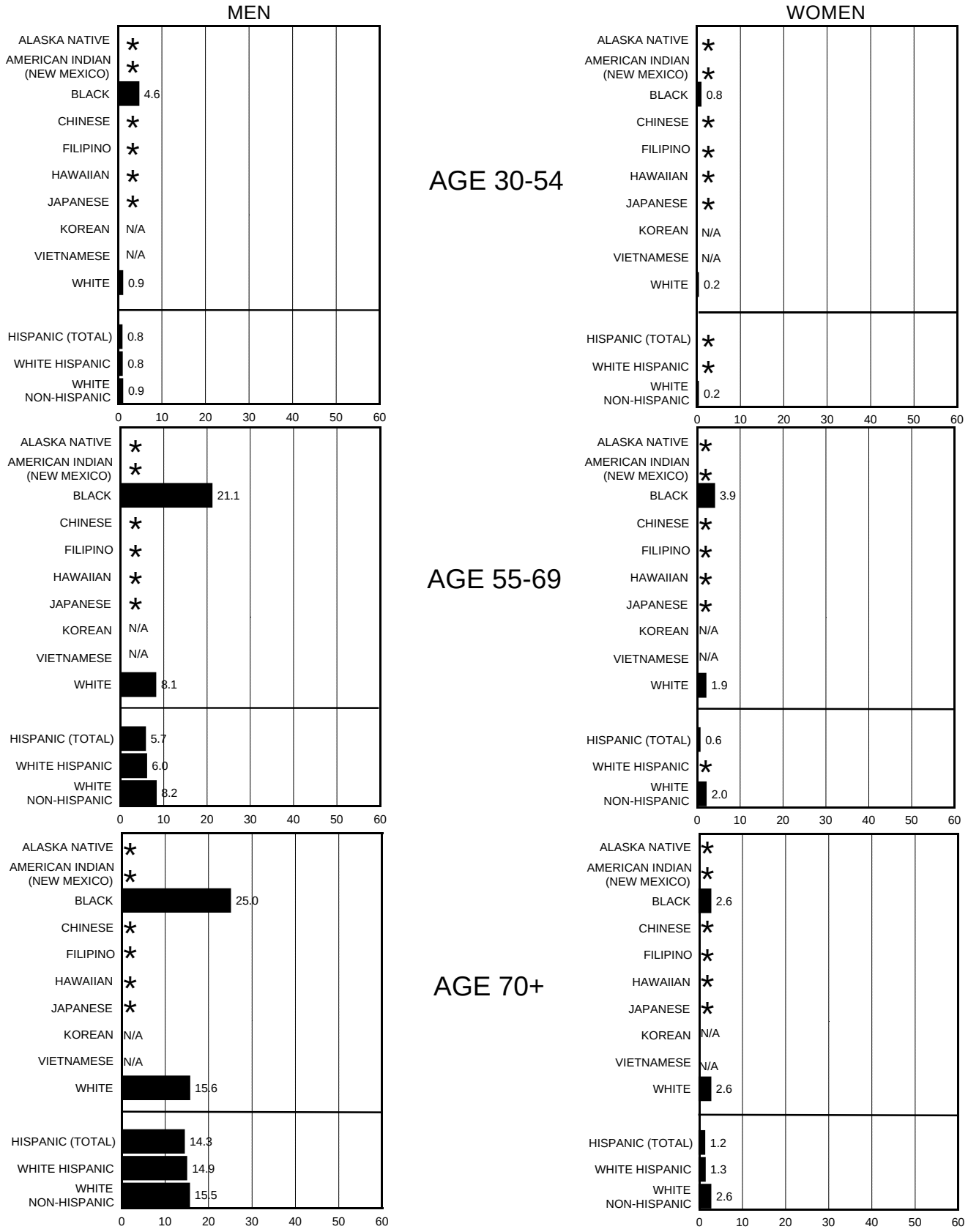
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

LARYNX

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

LEUKEMIAS

Leukemias are cancers of the blood-forming tissues. They may be subdivided according to the particular cell type involved, the major types being lymphocytic and myelocytic (granulocytic) leukemias. Leukemias are also classified by their behavior, as either "acute" or "chronic." Childhood leukemias are mostly acute, with the lymphocytic form predominating. Both acute and chronic leukemias occur among adults; most lymphocytic leukemias among adults are chronic.

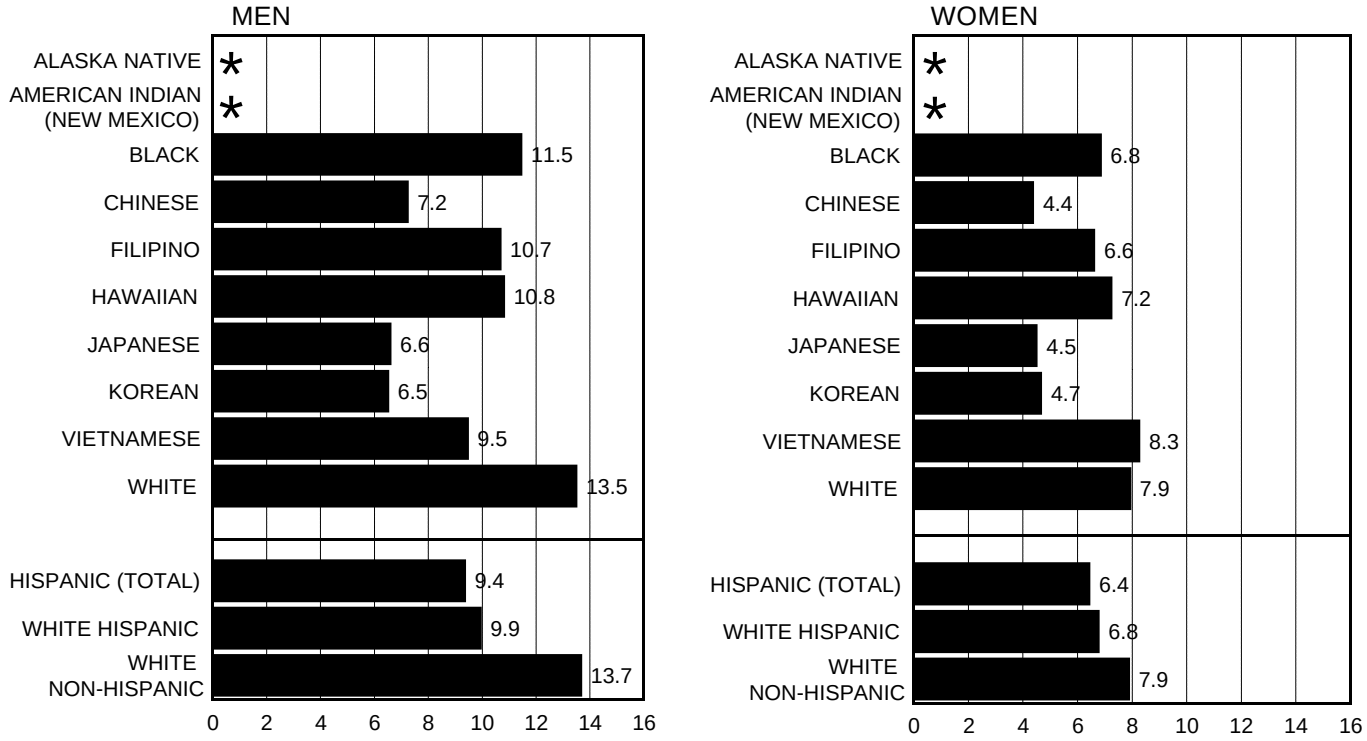
In both men and women, leukemia incidence is highest among whites and lowest among Chinese, Japanese, and Koreans. Incidence rates are shown for all leukemia types combined, but it can be noted that the ethnic patterns are generally similar to those seen when incidence is calculated separately for the lymphocytic and non-lymphocytic forms of the disease. The incidence in men is about 50% higher than in women for all racial/ethnic groups except Vietnamese, among whom the male rates are only slightly higher. Ethnic differences in the incidence rates are small in the youngest adult age group (30-54 years), but become more evident in each of the older age groups. Data for childhood leukemia (0-14 years) are not shown separately in the figures. However, we found that childhood leukemia rates are highest among Filipinos, followed by white Hispanics, non-Hispanic whites and blacks. Reliable rates could not be computed for children in the remaining racial/ethnic groups.

United States mortality rates are shown for all leukemia types combined. The mortality rates for men are generally 50% to 100% higher than those for women for all ages combined, ages 55-69 years and ages 70 years and older. Leukemia mortality rates are highest in white and black populations and in Hawaiian men. Rates among Asian populations are noticeably lower. The ratio of mortality-to-incidence rates is higher for adult leukemias than for childhood leukemias. Because treatment for childhood leukemias is quite successful, mortality from this cancer is comparatively low among children.

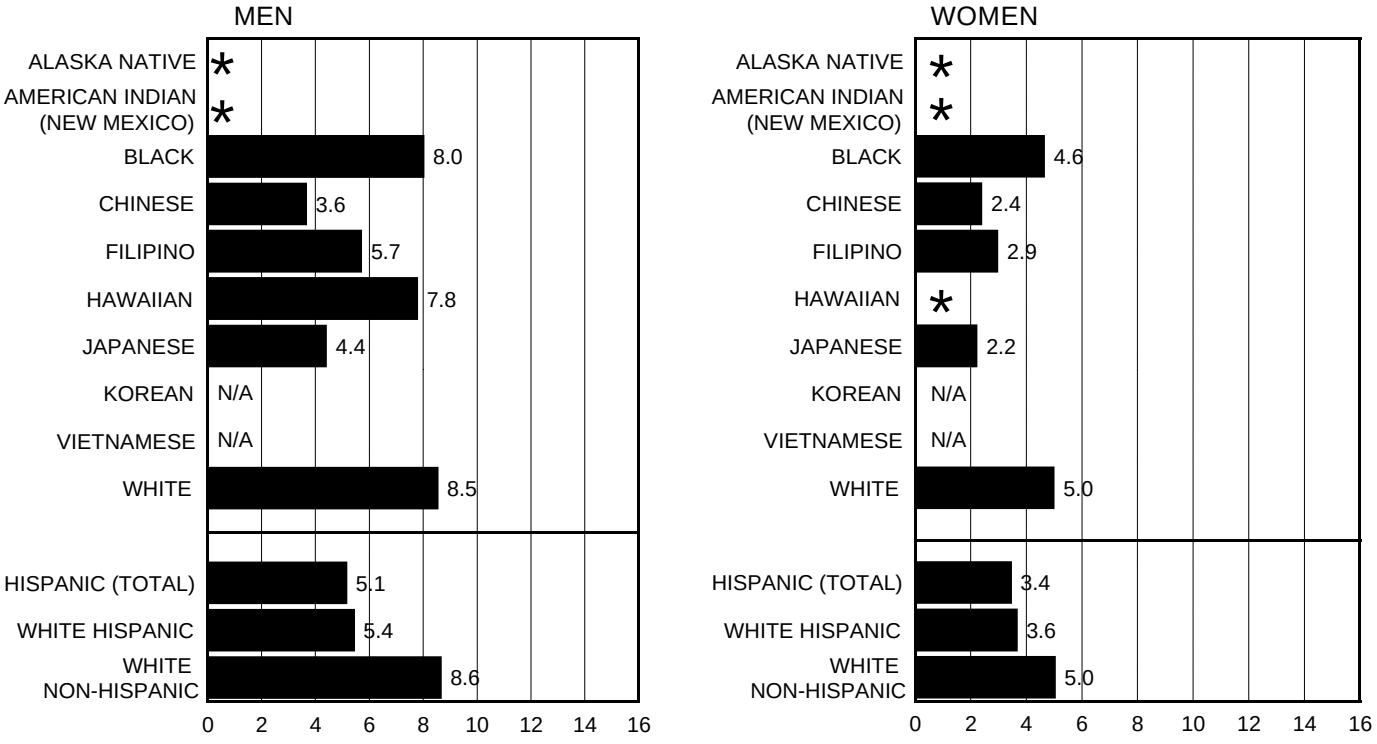
Established causes of leukemia include ionizing radiation (such as occurs from x-irradiation), certain drugs used in the treatment of cancer, and some chemicals (most notably benzene) used largely in industrial settings. Ionizing radiation has been associated with all forms of leukemia except the chronic lymphocytic form. It is suspected that many childhood leukemias may result from parental exposures before the time of conception or during early fetal development.

LEUKEMIAS

SEER INCIDENCE Rates, 1988-1992



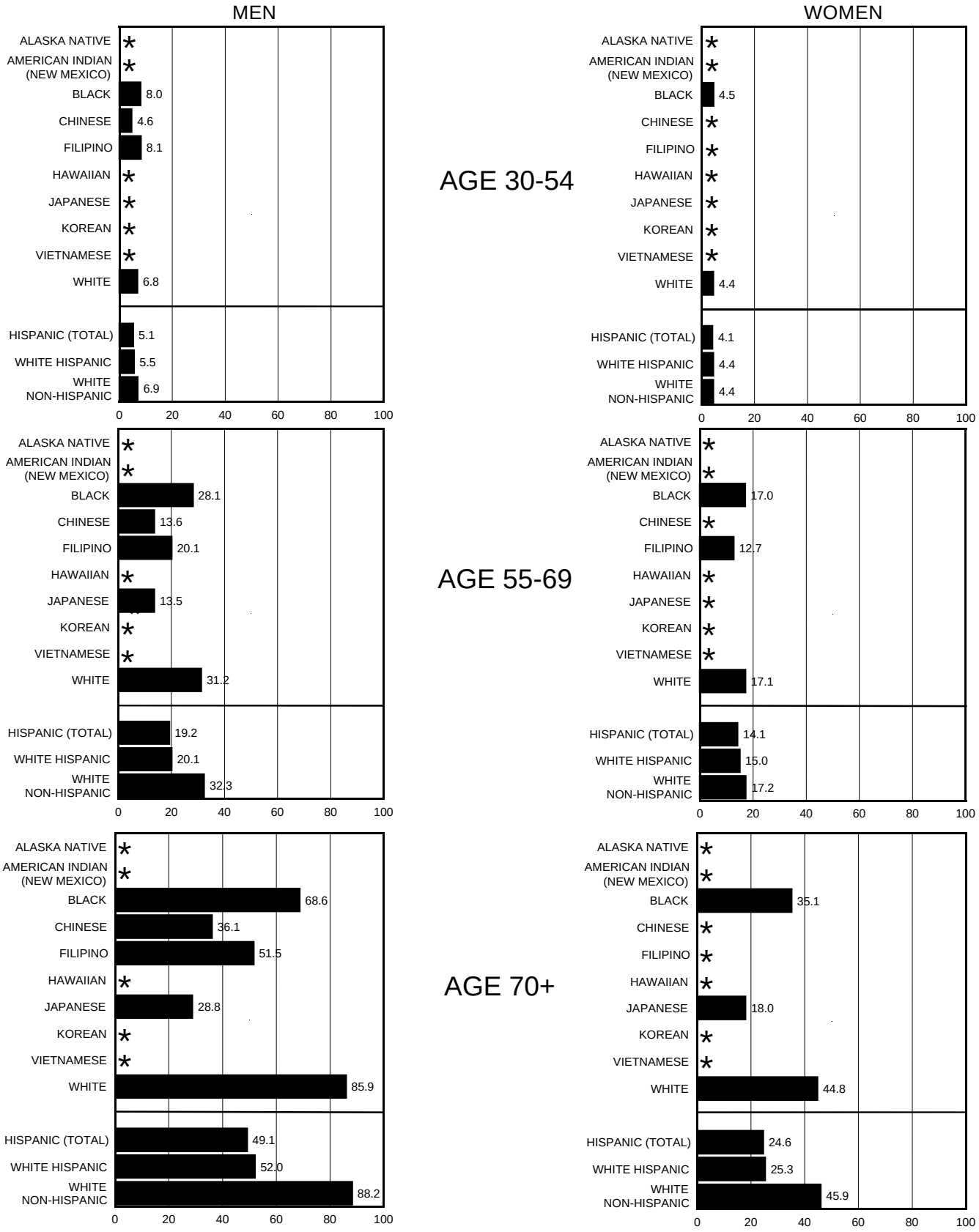
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

LEUKEMIAS

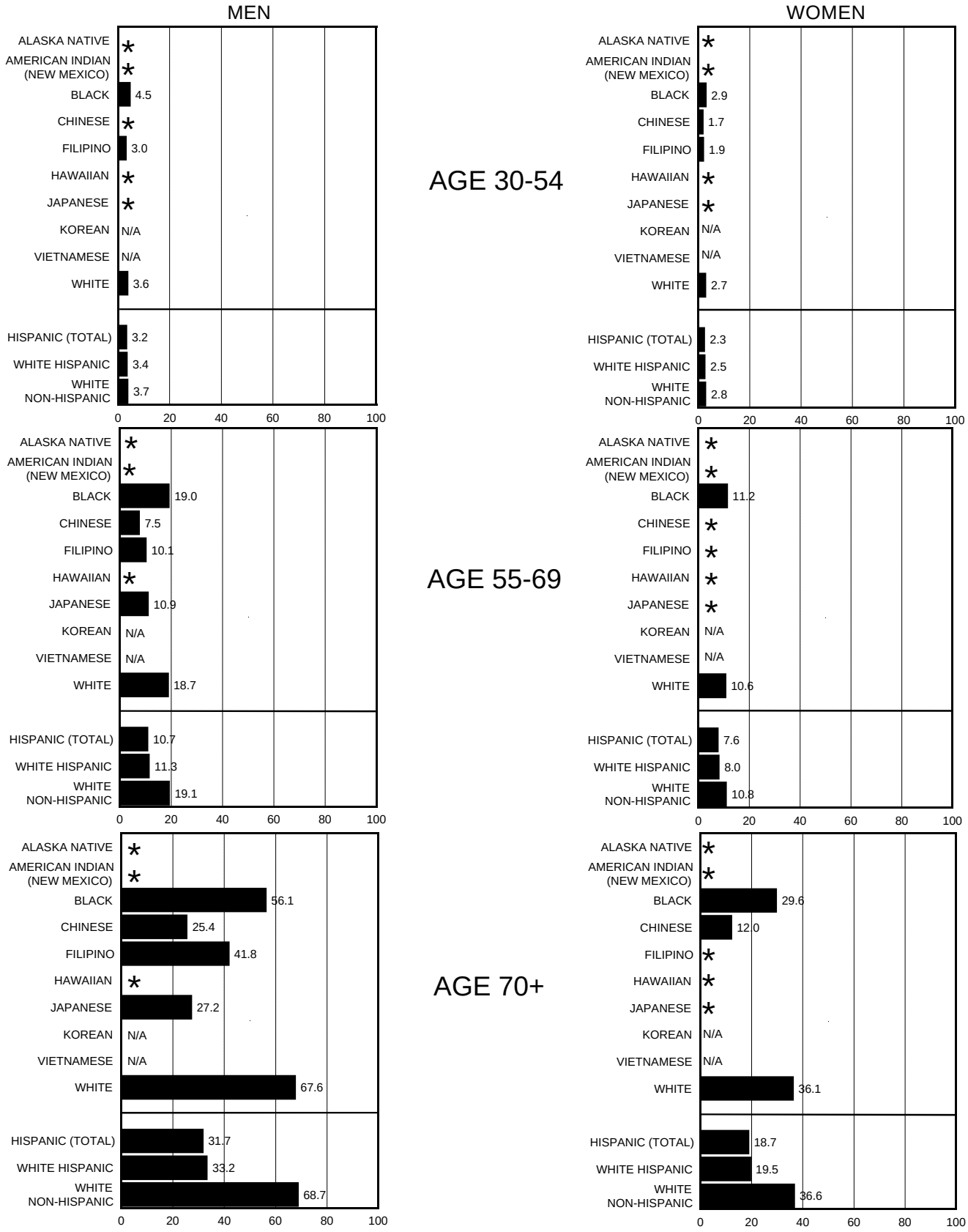
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

LEUKEMIAS

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

LIVER AND INTRAHEPATIC BILE DUCT

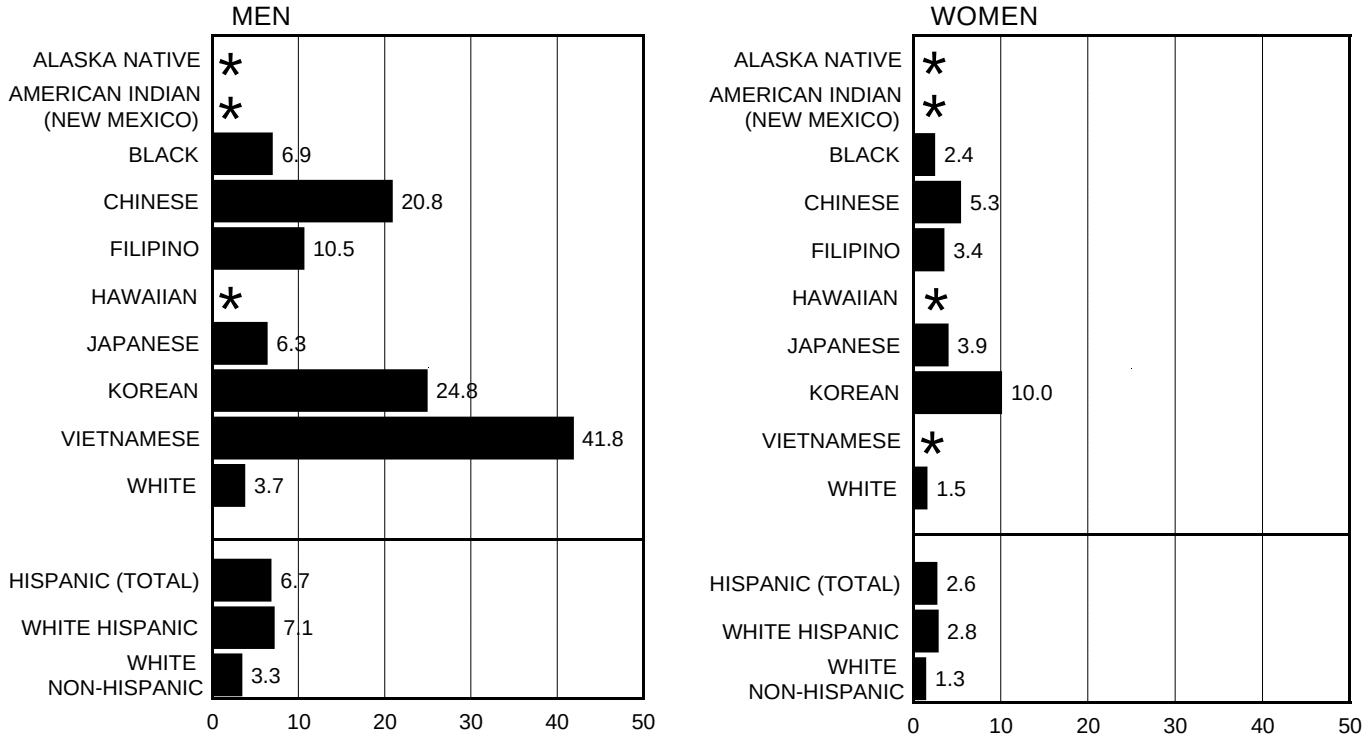
Primary cancers of the liver and intrahepatic bile ducts are far more common in regions of Africa and Asia than in the United States, where they only account for about 1.5% of all cancer cases. Five-year survival rates are very low in the United States, usually less than 10%. Reported statistics for these cancers often include mortality rates that equal or exceed the incidence rates. This discrepancy (more deaths than cases) occurs when the cause of death is misclassified as "liver cancer" for some patients whose cancer originated as a primary cancer in another organ and spread (metastasized) to become a "secondary" cancer in the liver.

Non-Hispanic white men and women have the lowest age-adjusted incidence rates (SEER areas) and mortality rates (United States) for primary liver cancer. Rates in the black populations and Hispanic populations are roughly twice as high as the rates in whites. The highest incidence rate is in Vietnamese men (41.8 per 100,000), probably reflecting risks associated with the high prevalence of viral hepatitis infections in their homeland. Other Asian-American groups also have liver cancer incidence and mortality rates several times higher than the white population. Age-adjusted mortality rates among Chinese populations are the highest of all groups for which there are sufficient numbers to calculate rates. There were too few cases among Alaska Native and American Indian populations to calculate incidence or mortality rates. Most cases of liver cancer occur in the two older age groups, but younger adults are often affected in the high risk racial/ethnic groups.

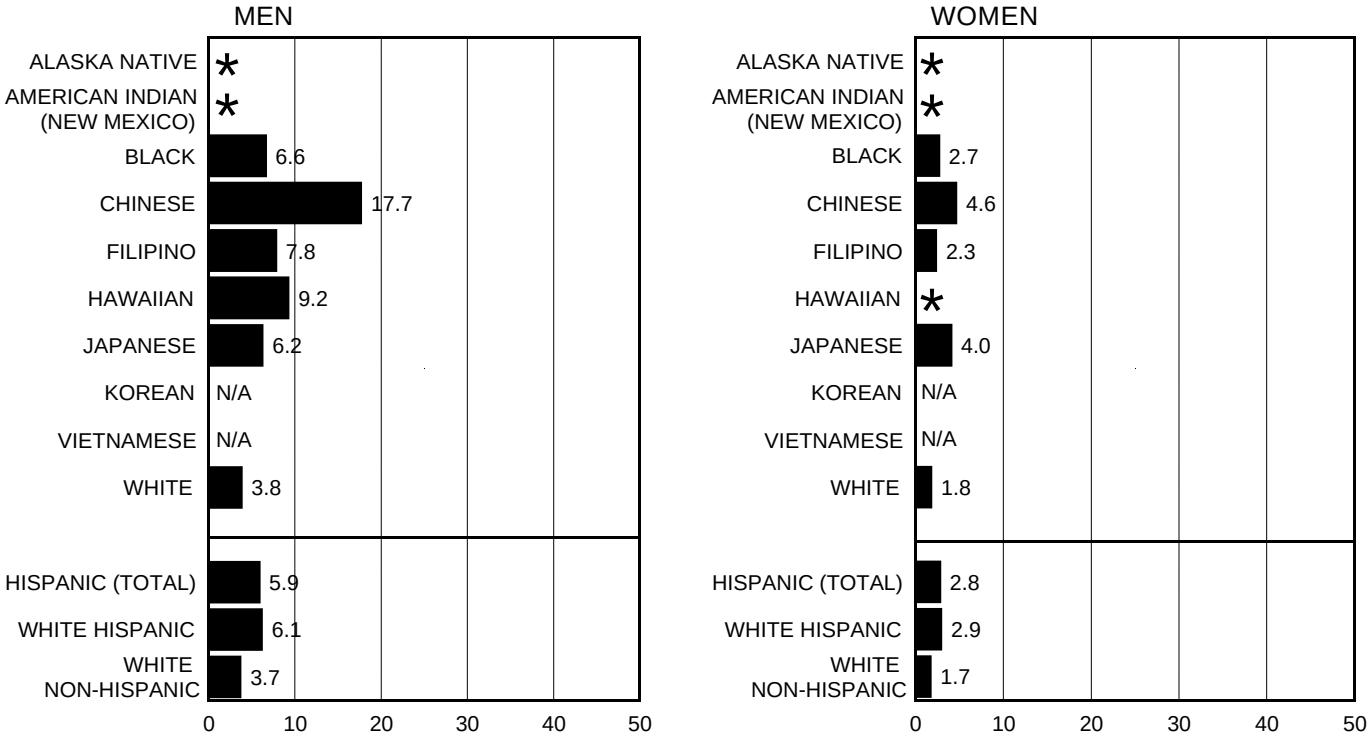
About two-thirds of liver cancers are hepatocellular carcinomas (HCC), which is the cancer type most clearly associated with hepatitis B and hepatitis C viral infections and cirrhosis. Certain molds that grow on stored foods are recognized risk factors in parts of Africa and Asia. HCC occurs more frequently in men than in women by a ratio of two-to-one. About one-in-five liver cancers are cholangiocarcinomas, arising from branches of the bile ducts that are located within the liver. Certain liver parasites are recognized risk factors for this type of liver cancer, especially in parts of southeast Asia. Angiosarcomas are rare cancers that can arise from blood vessels, including the blood vessels within the liver. They account for about 1% of primary liver cancers and some of them have been associated with industrial exposures to vinyl chloride.

LIVER AND INTRAHEPATIC BILE DUCT

SEER INCIDENCE Rates, 1988-1992



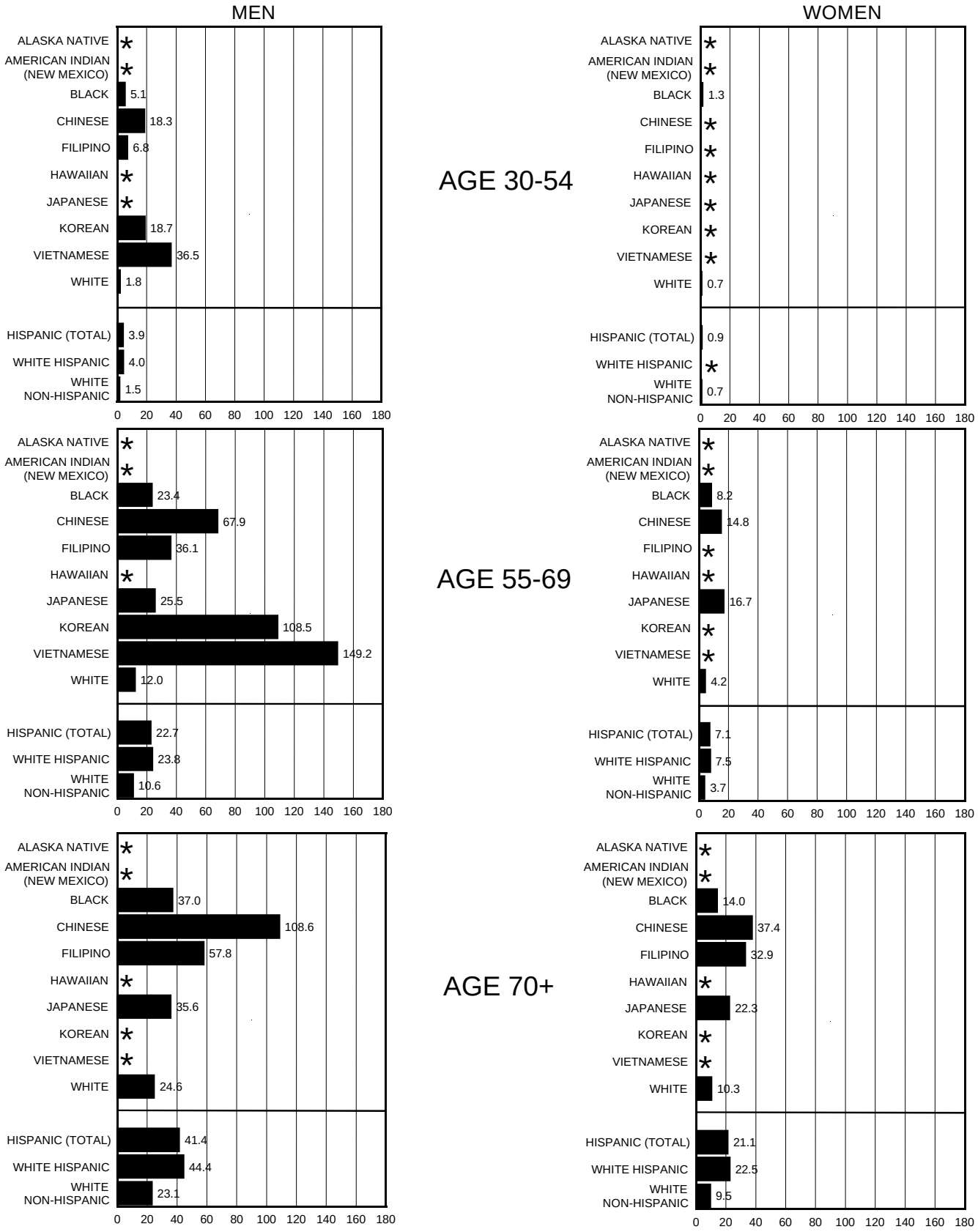
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

LIVER AND INTRAHEPATIC BILE DUCT

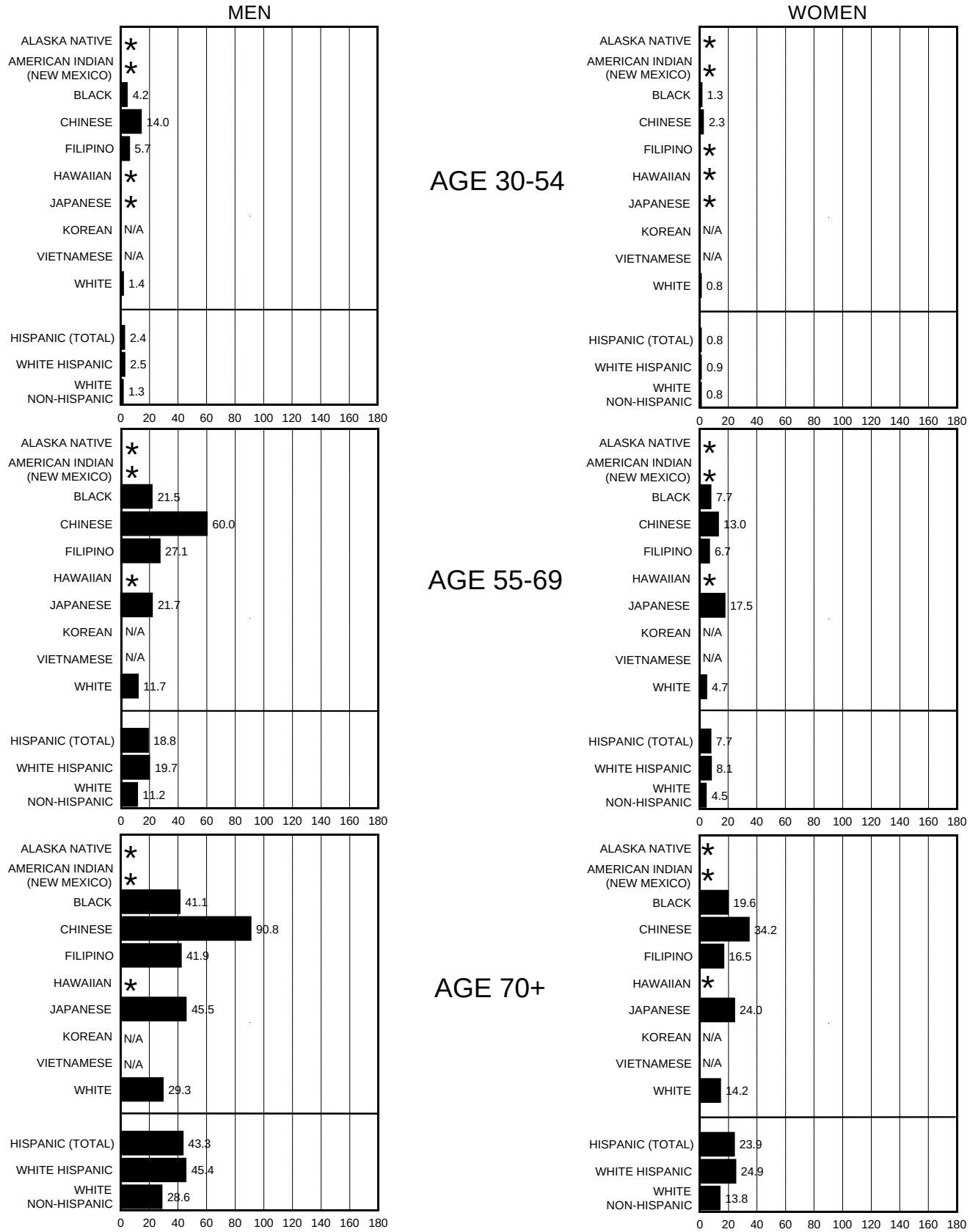
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

LIVER AND INTRAHEPATIC BILE DUCT

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

LUNG AND BRONCHUS

Cancer of the lung and bronchus (hereafter, lung cancer) is the second most common cancer among both men and women and is the leading cause of cancer death in both sexes. Among men, age-adjusted lung cancer incidence rates (per 100,000) range from a low of about 14 among American Indians to a high of 117 among blacks, an eight-fold difference. Between these two extremes, rates fall into two groups ranging from 42 to 53 for Hispanics, Japanese, Chinese, Filipinos, and Koreans and from 71 to 89 for Vietnamese, whites, Alaska Natives and Hawaiians. The range among women is much narrower, from a rate of about 15 among Japanese to nearly 51 among Alaska Natives, only a three-fold difference. Rates for the remaining female populations fall roughly into two groups with low rates of 16 to 25 for Korean, Filipino, Hispanic and Chinese women, and rates of 31 to 44 among Vietnamese, white, Hawaiian and black women. The rates among men are about two to three times greater than the rates among women in each of the racial/ethnic groups.

In the 30-54 year age group, incidence rates among men are double those among women in most of the racial/ethnic groups. In white non-Hispanics and white Hispanics, however incidence rates for women are closer to those for men. This suggests that smoking cessation and prevention programs may have been especially successful among white men and/or that such programs have not been as effective among white women.

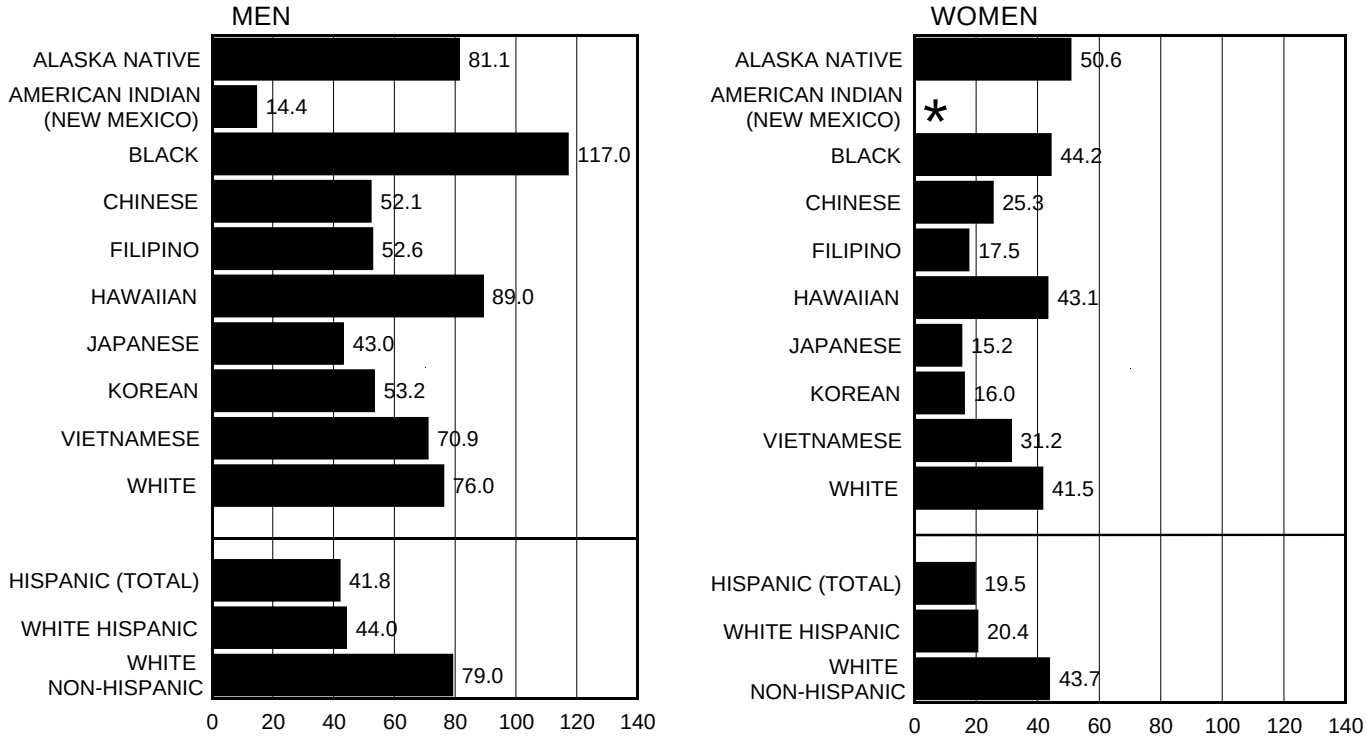
Age-adjusted mortality rates follow similar racial/ethnic patterns to those for the incidence rates. Among men, the incidence and mortality rates are very similar. Filipino men are an exception, with an incidence rate nearly twice as large as their mortality rate. Incidence rates are also similar to mortality rates among women, with the exception of Filipinos and Hispanics. In these two groups, incidence rates are nearly twice as large as mortality rates. Among Hawaiian women, the mortality rate actually exceeds the incidence rate. This may be due to differences in the accuracy of race classification on medical records versus death certificates.

Racial/ethnic patterns are generally consistent within each age group for both incidence and mortality. An exception is the high incidence and mortality rate in Chinese women aged 70 years and older. This group tends to have low incidence and mortality rates in the younger age groups.

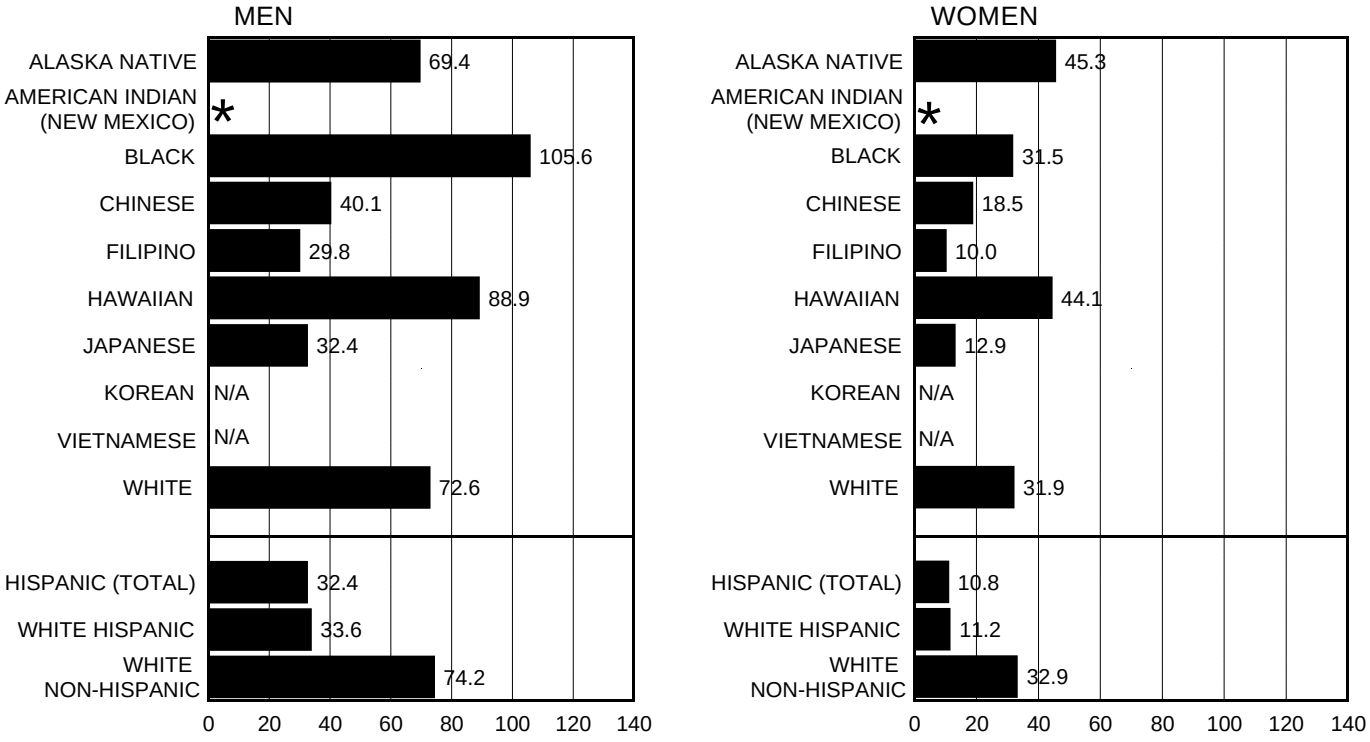
Cigarette smoking accounts for nearly 90% of all lung cancers. Passive smoking also contributes to the development of lung cancer among nonsmokers. Certain occupational exposures such as asbestos exposure are also known to cause lung cancer. Air pollution is a probable cause, but makes a relatively small contribution to incidence and mortality rates. In certain geographic areas of the United States, indoor exposure to radon may also make a small contribution to the total incidence of lung cancer.

LUNG AND BRONCHUS

SEER INCIDENCE Rates, 1988-1992



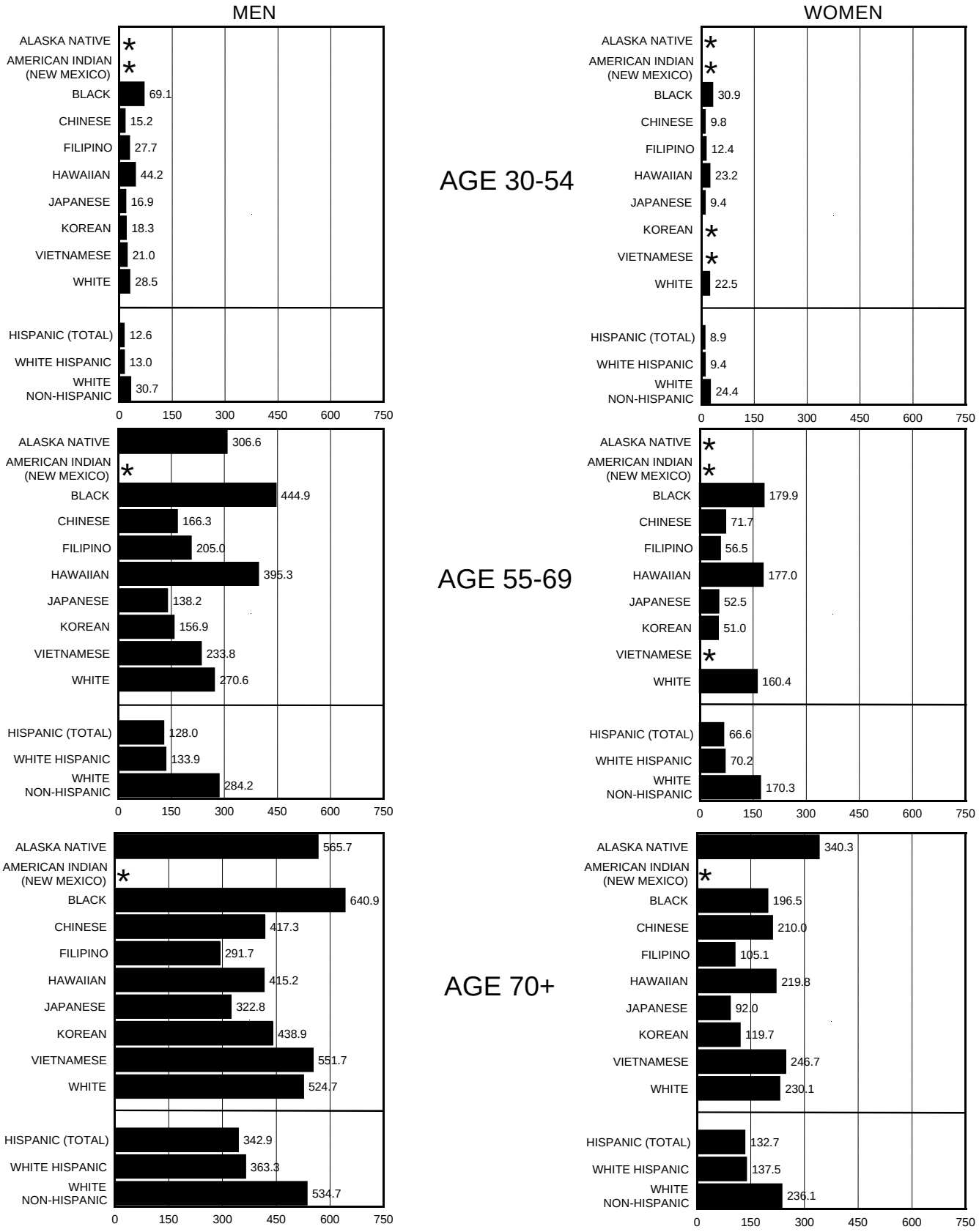
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

LUNG AND BRONCHUS

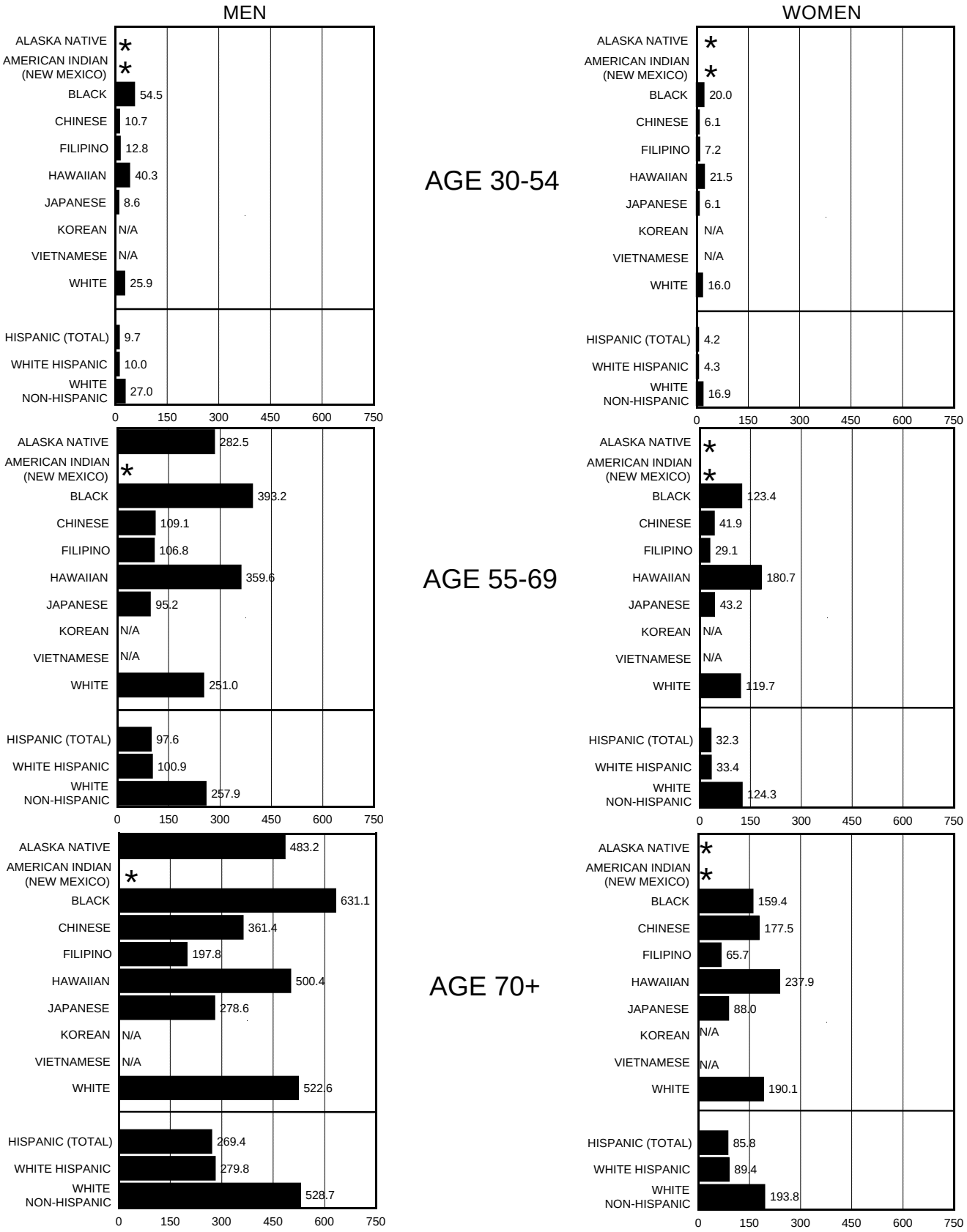
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

LUNG AND BRONCHUS

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

LYMPHOMAS

Lymphomas, which include Hodgkin's disease and non-Hodgkin's lymphoma, are the fifth most common type of cancer diagnosed and the sixth most common cancer cause of death in the United States. Of the two basic lymphoma types, non-Hodgkin's lymphoma is the more common and will be discussed first.

Non-Hodgkin's Lymphoma

The age-adjusted incidence rates for non-Hodgkin's lymphoma are higher among men than women in every racial/ethnic group except Koreans, in which there is a slight preponderance among women. In both men and women, non-Hodgkin's lymphoma incidence rates are highest among non-Hispanic whites (19.1 and 12.0 per 100,000 men and women, respectively) and lowest among Koreans (5.8 and 6.0 per 100,000). This corresponds to a high to low ratio of the rates (white non-Hispanic to Korean) of 3.3 for men, and 2.0 for women. Vietnamese men have the second highest rates (after whites), followed by white Hispanic, black, Filipino, Hawaiian, Chinese and Japanese men. There were too few cases diagnosed in Alaska Native and American Indian (New Mexico) men to calculate reliable rates. Among women, white Hispanics accounted for the second highest rates, followed by Filipino, Japanese, black and Chinese women. There are insufficient numbers of lymphoma cases diagnosed in Alaska Native, American Indian (New Mexico), Hawaiian and Vietnamese women to estimate their rates reliably.

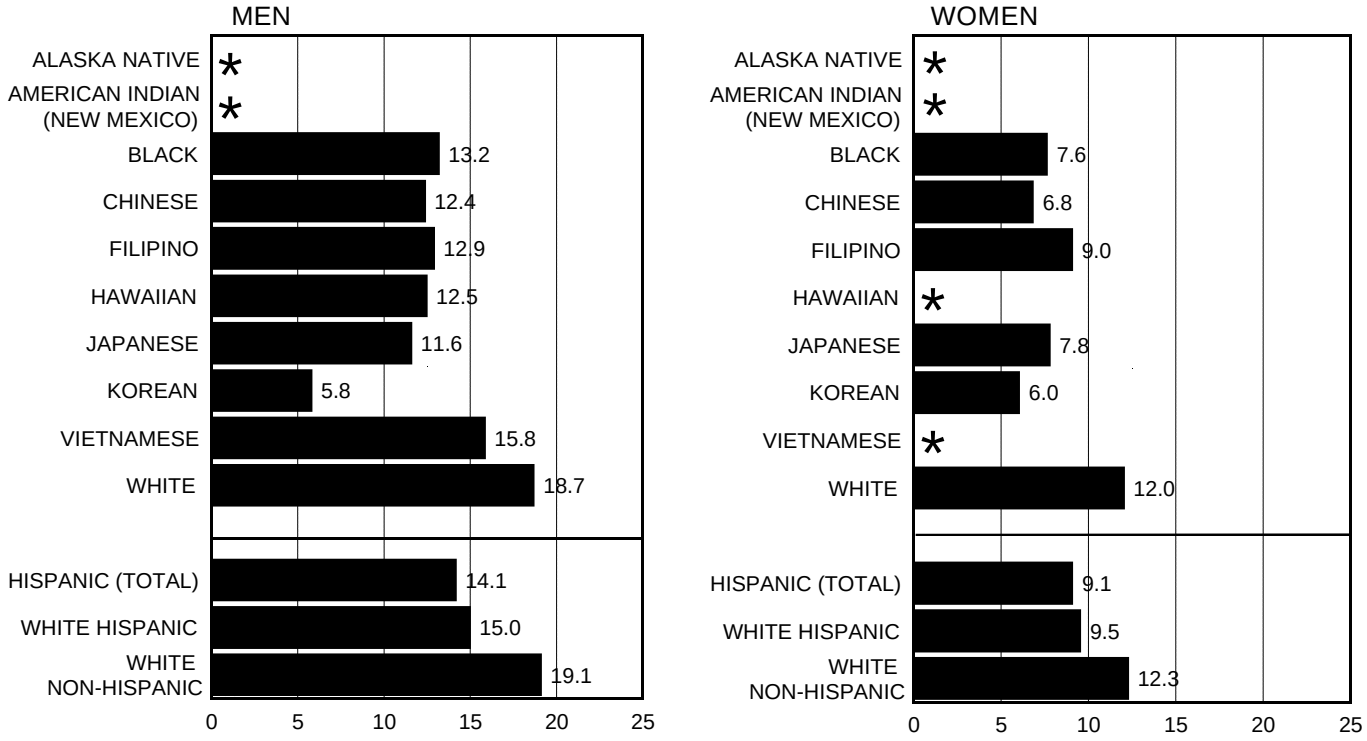
Age-adjusted mortality rates of non-Hodgkin's lymphoma are consistent with the incidence rates with one exception: the mortality rate for Hawaiian men (8.8 per 100,000) exceeds that of any other group, even though the corresponding incidence rate is considerably lower than that of white non-Hispanics. There are an insufficient number of deaths from non-Hodgkin's lymphoma among Hawaiian women to reliably assess the mortality rate for that group.

In every group, incidence rates increase with age, however the magnitude of this increase varies by racial/ethnic group. For example, from ages 30-54 years to ages 70 years and older, the incidence of non-Hodgkin's lymphoma increases about five-fold among white non-Hispanic men, but 11-fold among Filipino men. Among women, the comparable rates increase eight-fold among white non-Hispanics, but 16-fold among Filipinos. These differences reflect high incidence rates among older Filipinos, similar to those of white non-Hispanics. These high rates are not reflected, however, in the mortality data for Filipinos. Among those aged 30-54 years rates among black men and women are close to those among white non-Hispanics. Rates among black men and women aged 70 years and older, however, are only about one-half those of white non-Hispanics.

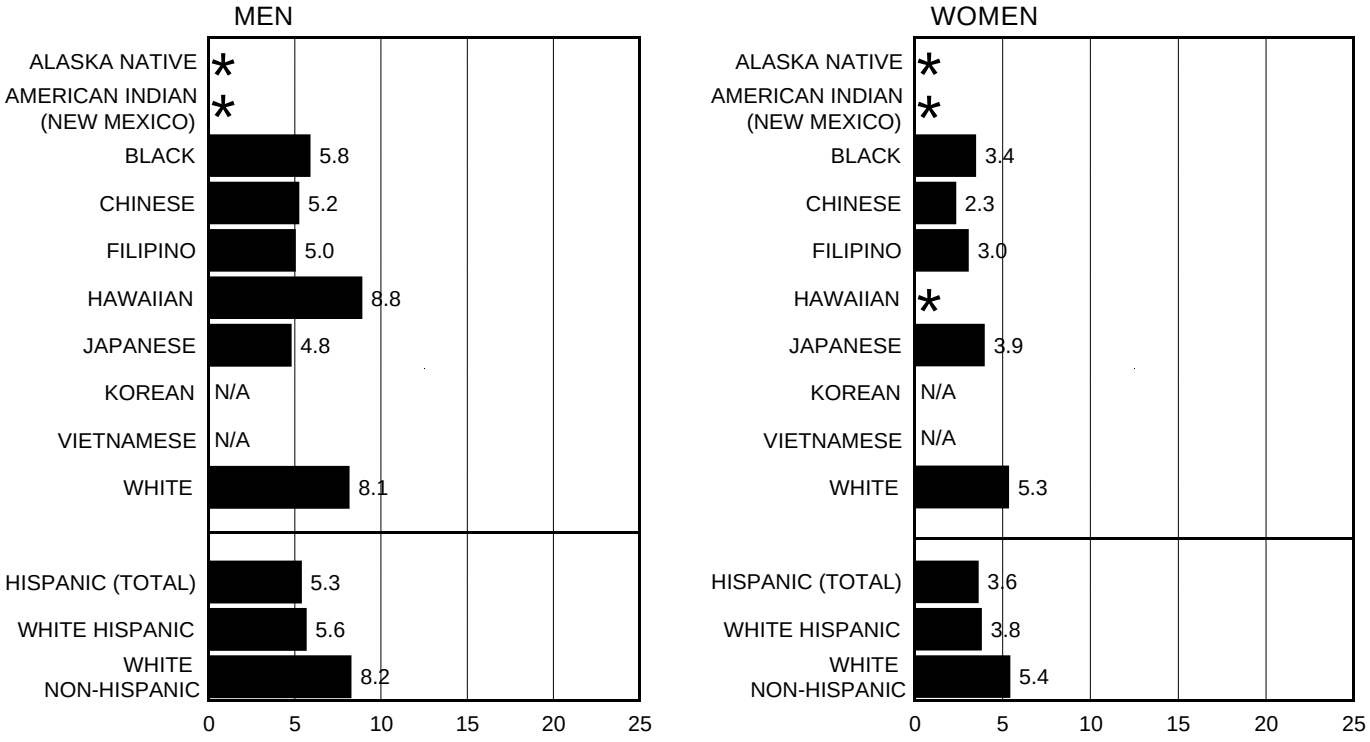
(continued on page 80)

LYMPHOMAS: Non-Hodgkin's Lymphoma

SEER INCIDENCE Rates, 1988-1992



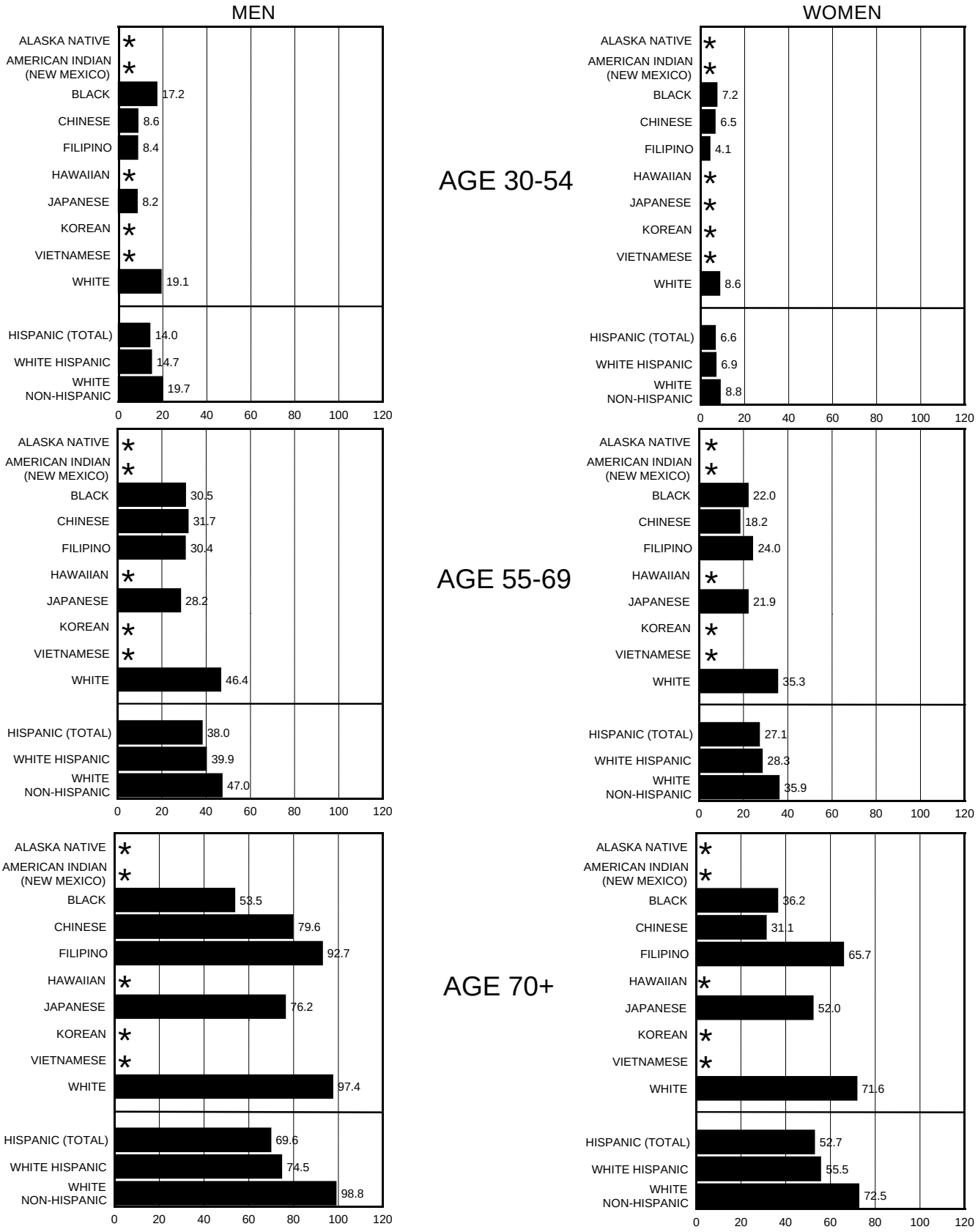
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

LYMPHOMAS: Non-Hodgkin's Lymphoma

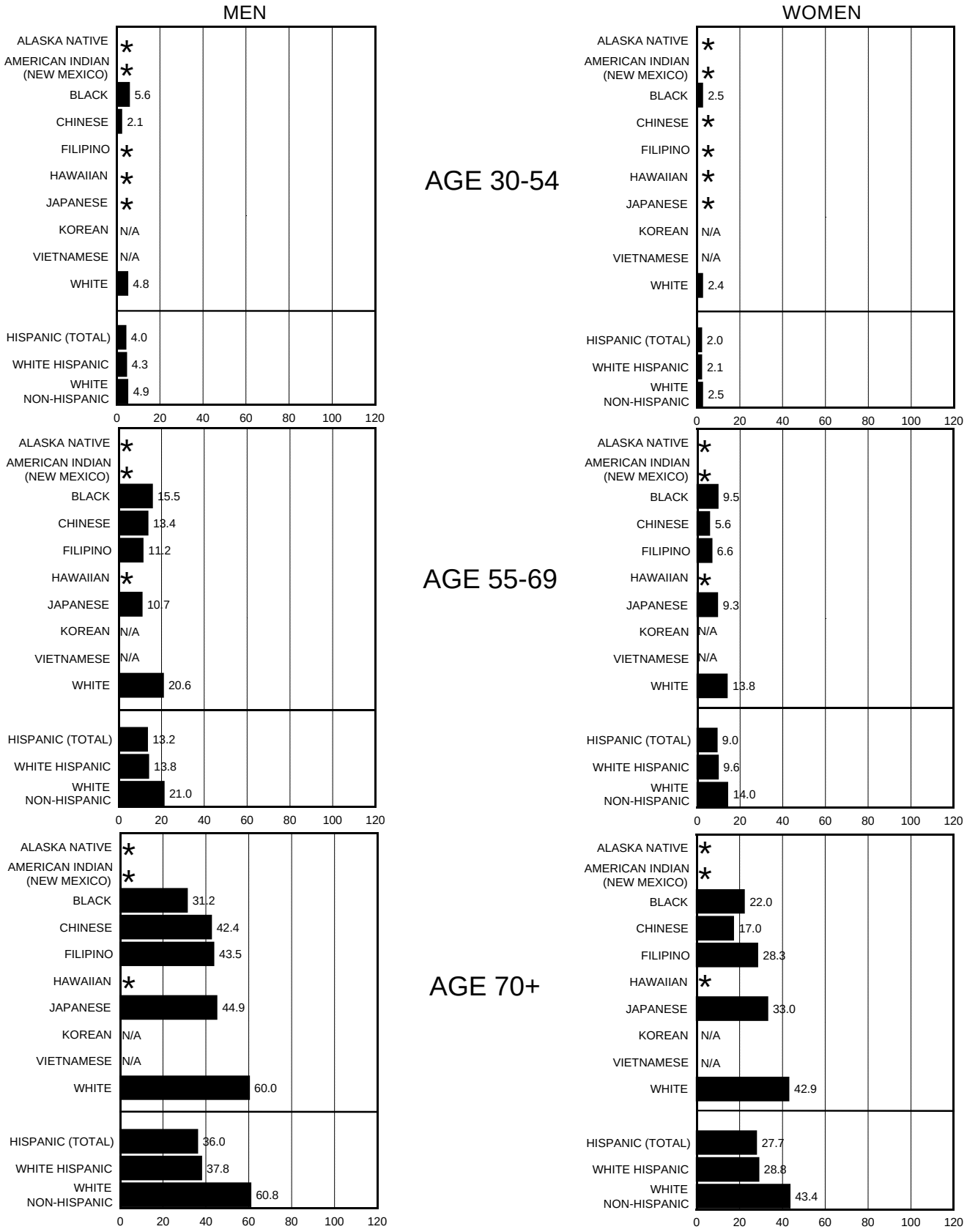
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

LYMPHOMAS: Non-Hodgkin's Lymphoma

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

Hodgkin's Disease

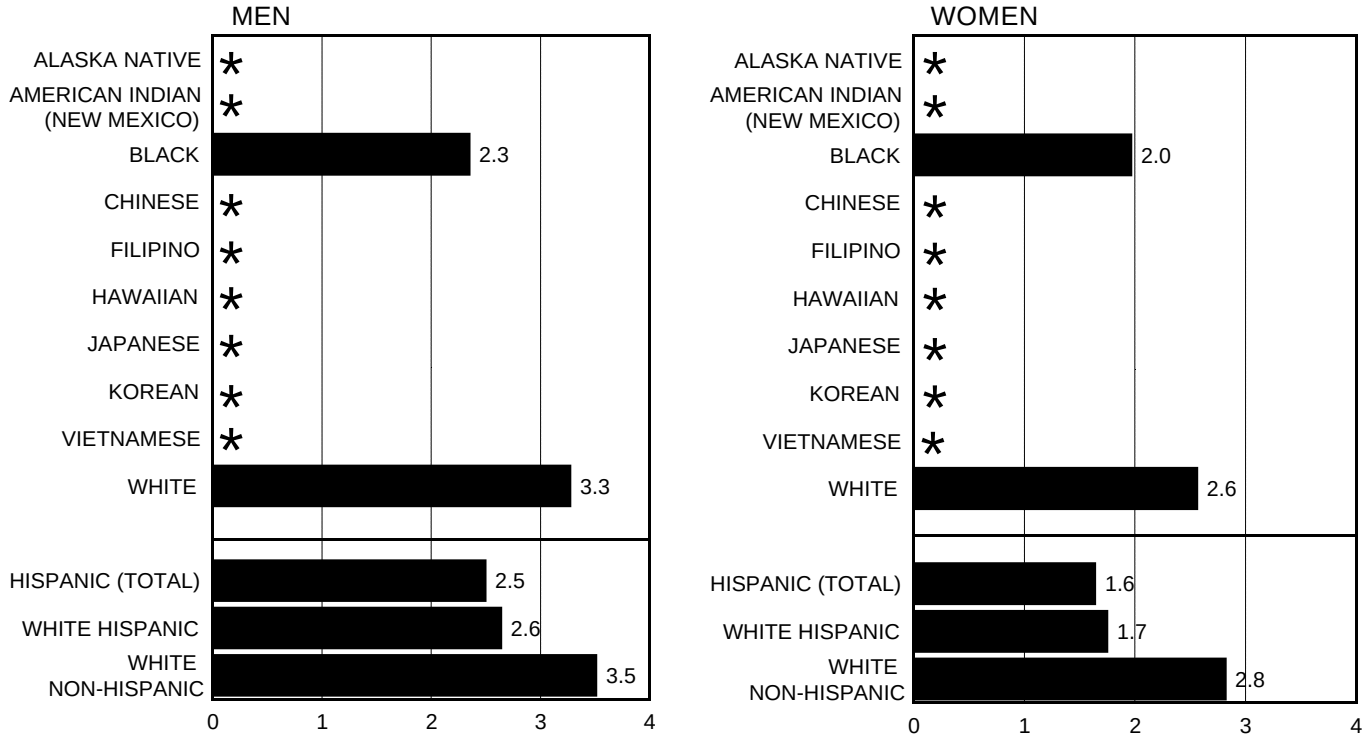
Hodgkin's disease is considerably less common than non-Hodgkin's lymphoma. As a result, reliable incidence and mortality rates are available only for black, Hispanic and white populations. In both men and women, overall age-adjusted incidence rates are highest among white non-Hispanics, and considerably lower in black and Hispanic populations. Incidence rates are higher in men, compared to women, in each racial/ethnic group.

Among women 30-54 years of age, Hodgkin's disease rates are highest in the white non-Hispanic population, slightly lower in the black population, and considerably lower among Hispanics. Only in the white population are reliable rates available in the other age groups. Rates among white non-Hispanic women aged 70 years and older are about 50% greater than in the two younger groups. The rates among black men and white non-Hispanic men are similar in both the 30-54 and 55-69 year age groups. The rate in white Hispanic men aged 55-69 years (5.1 per 100,000), however, is almost double that of the younger white Hispanics (2.7 per 100,000). Rates for men over age 70 years are available only for the white population and are about one-third higher than those for the younger age groups.

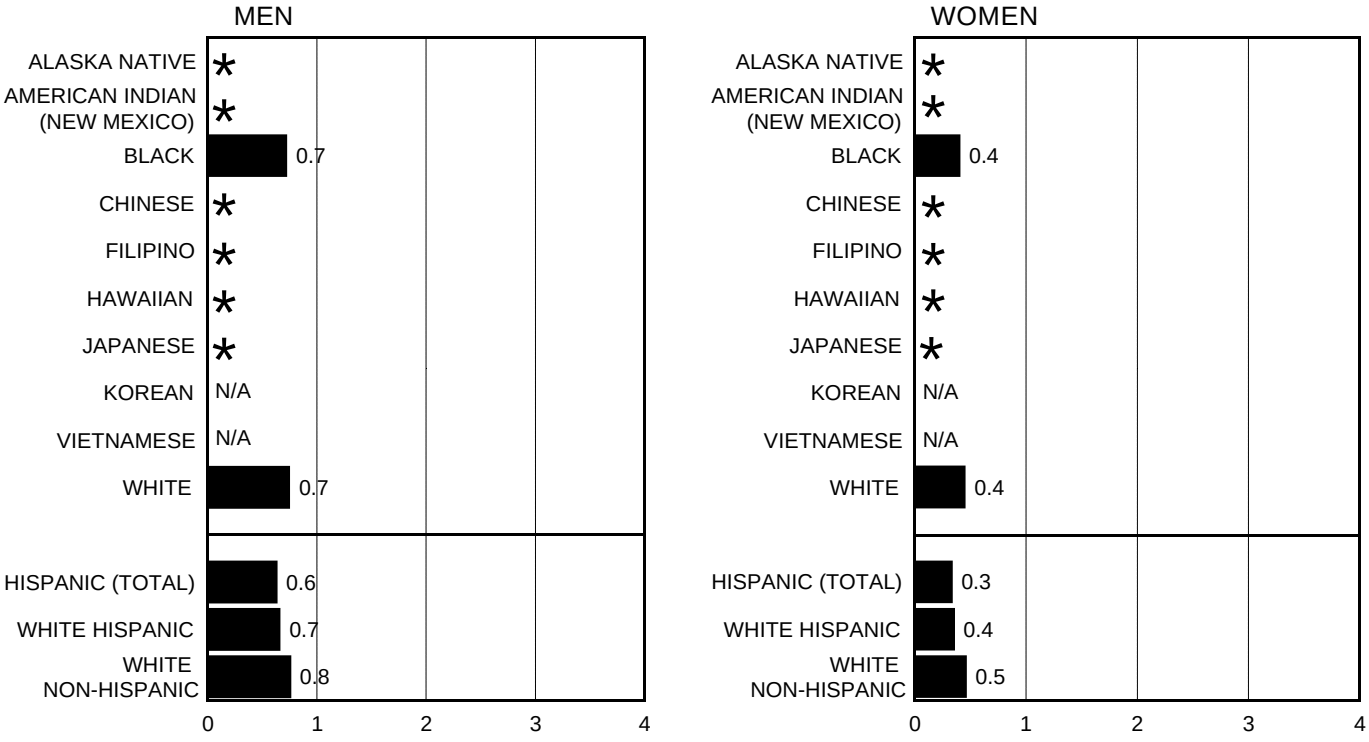
Risk factors for both Hodgkin's disease and non-Hodgkin's lymphomas are largely unknown. Altered immune function, whether due to exposure to specific viruses (such as HIV and HTLV-I), or due to other causes, clearly puts people at higher risk. Herbicides and other chemicals may also increase the risk of these diseases.

LYMPHOMAS: Hodgkin's Disease

SEER INCIDENCE Rates, 1988-1992



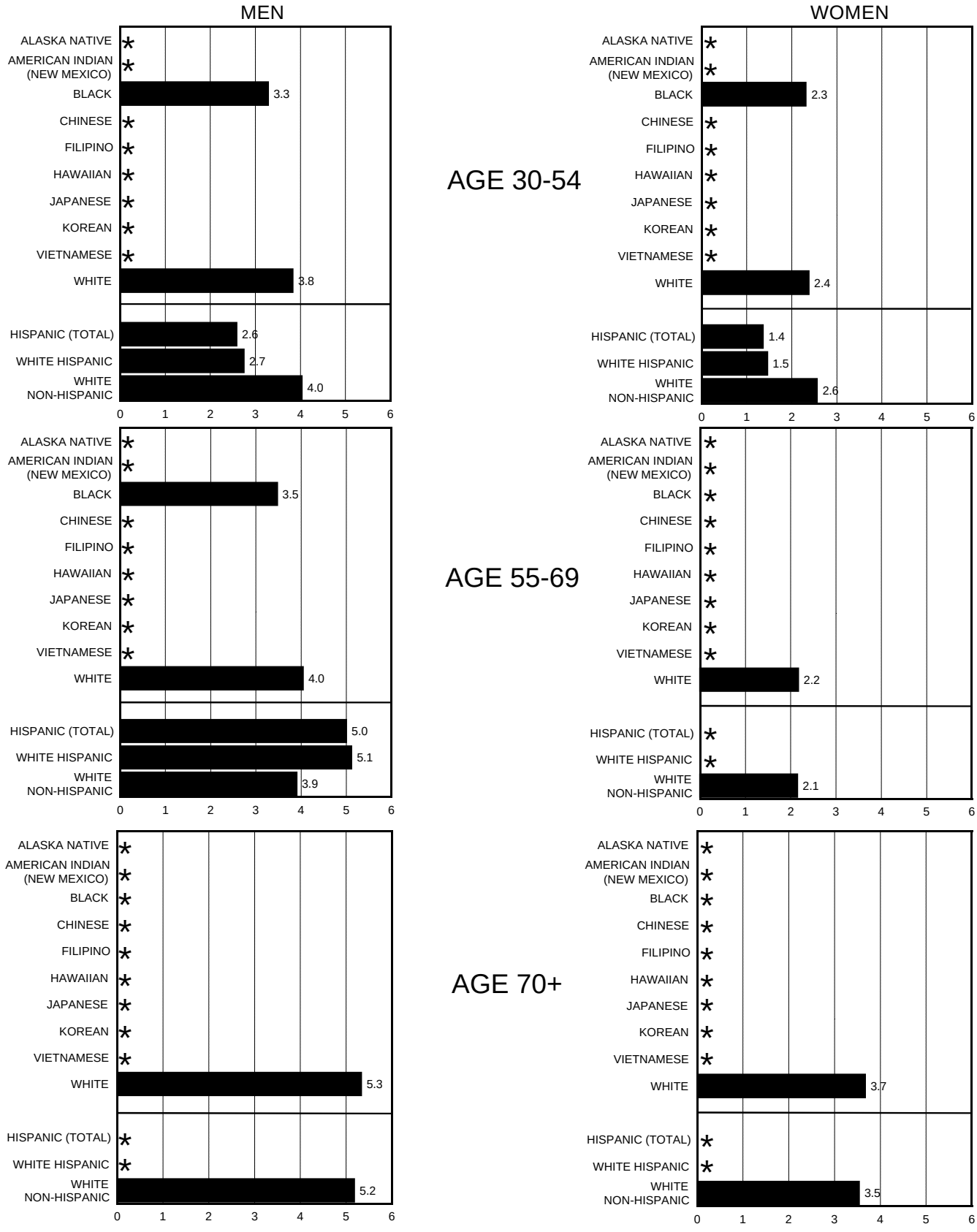
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

LYMPHOMAS: Hodgkin's Disease

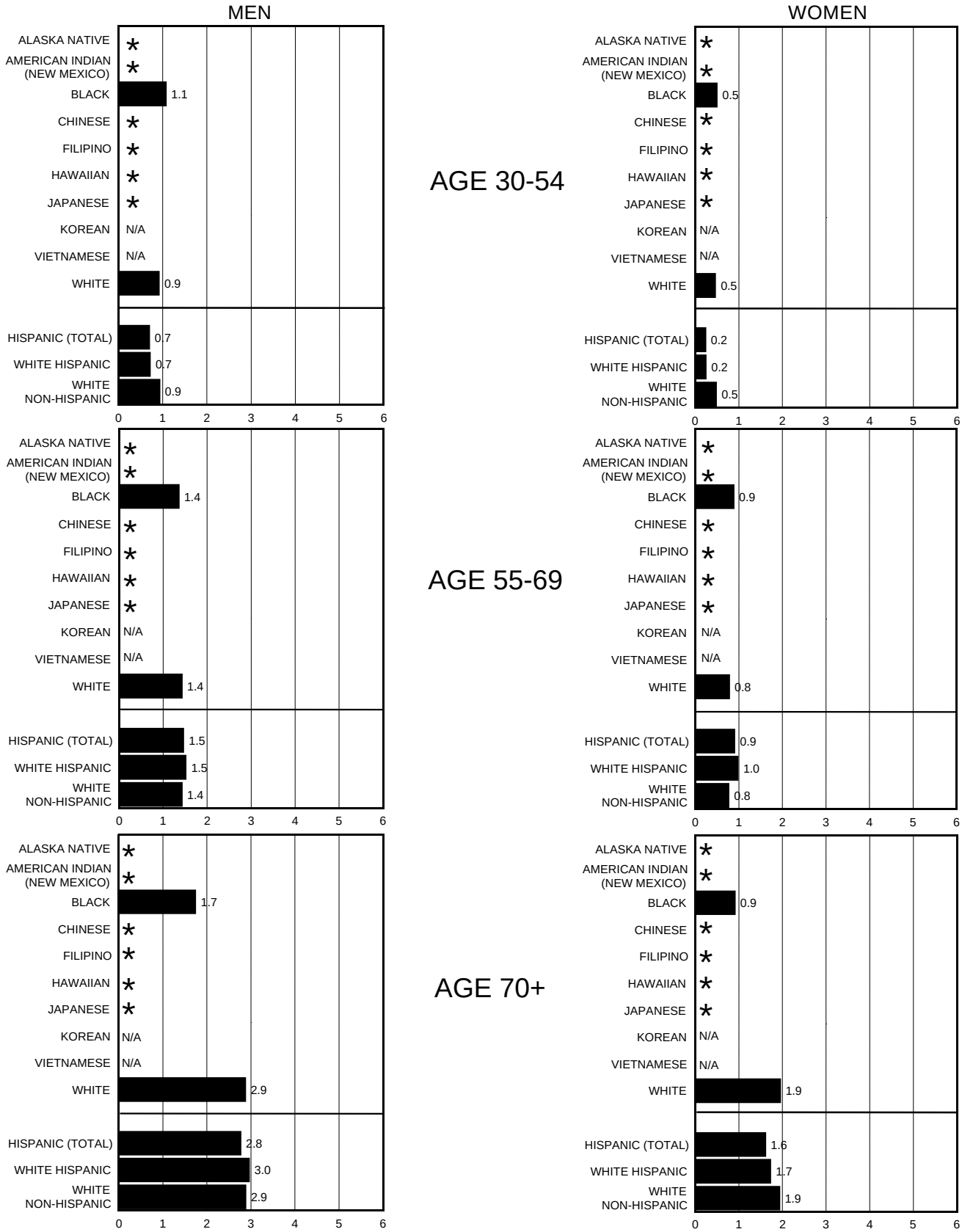
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

LYMPHOMAS: Hodgkin's Disease

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

MELANOMA

Malignant melanoma incidence rates show substantial international variation. This variation is related to racial composition and the intensity of sunlight exposure in different geographic areas. Rates are low in races with the most skin pigmentation, such as blacks and Asians, and are high in whites. Among whites, rates are lowest in England and Scotland, about twice as high in the United States, Canada, Norway, Switzerland, and Israel and about four times higher in Australia and New Zealand. In almost every white population, but especially in Australia and the United States, malignant melanoma incidence rates have been increasing faster than nearly every other cancer. In the SEER regions, the incidence of this cancer increased rapidly during the 1970's and less so in the late 1980's. This suggests that rates may become more stable in the future.

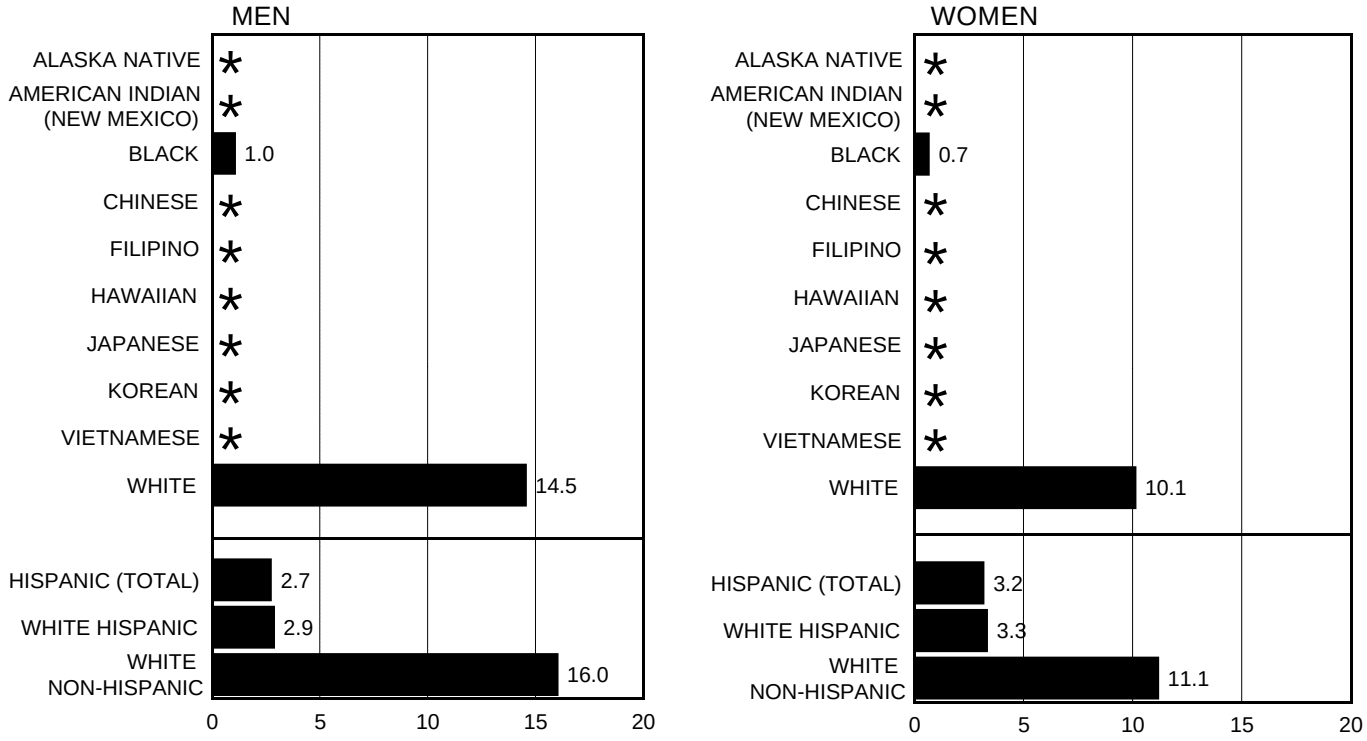
During 1988 to 1992, there are very few cases of malignant melanoma among nonwhites, so incidence rates are very low and for many races the rates could not be calculated. Among whites, age-adjusted incidence rates are over five times higher in non-Hispanic compared to Hispanic men and over three times higher in non-Hispanic women compared to Hispanics.

The incidence rates among whites increase with age in both men and women. The size of this increase is over three-fold in men and only 62% in women. In the 30-54 year age group the difference in the rates between men and women is small. Incidence rates are nearly twice as high in men aged 55-69 years, however, and 2.3 times higher in men 70 years of age or older. Mortality rates are about 20% of the incidence rates and show a similar pattern by race (where rates can be calculated), sex, and age.

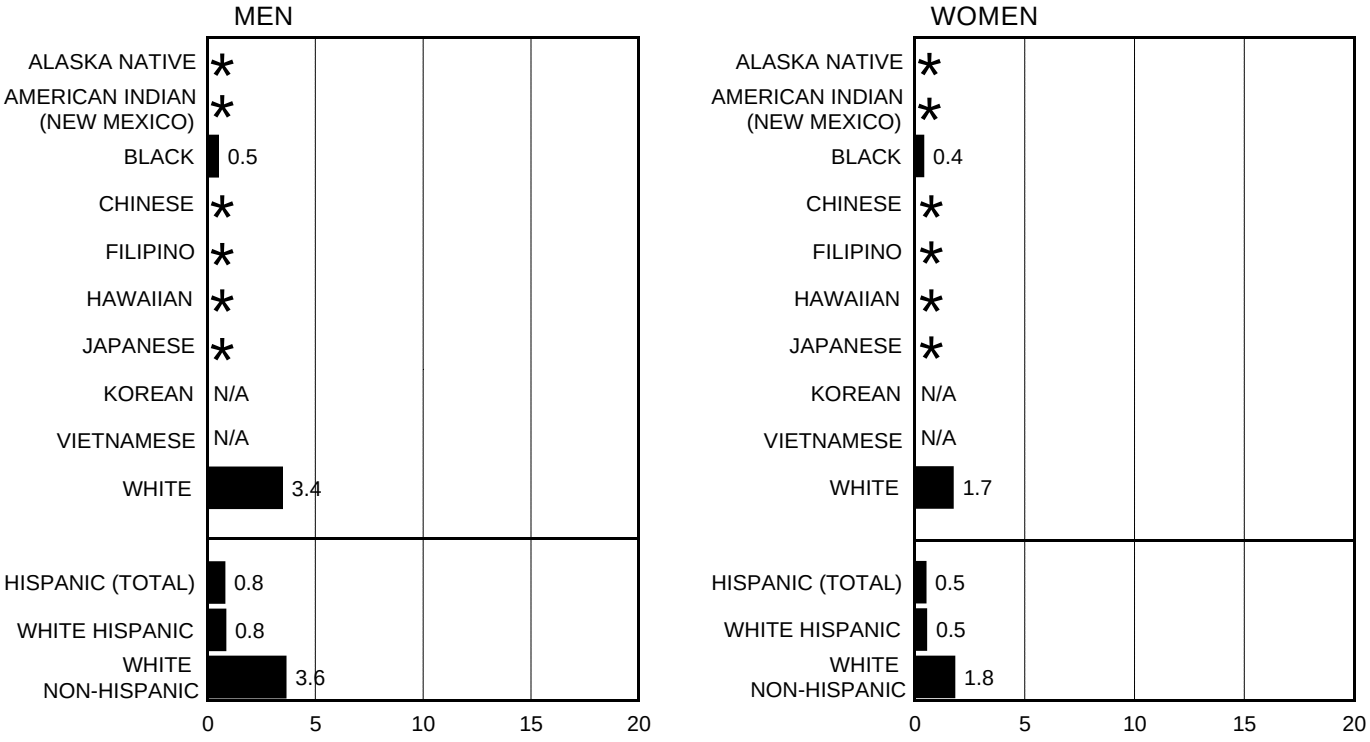
The anatomic distribution of malignant melanoma differs for men and women. Men are more likely to have melanoma on the head, neck and trunk and women are more likely to have melanoma on the lower limbs. Among white populations, the risk for malignant melanoma is highest for fair-skinned people, especially those who lack the ability to tan when exposed to sun. Risk is also higher for individuals with the highest concentration of moles on the body. The process by which sunlight is associated with the development of the disease is not well understood. However, the increasing incidence of the disease seems related to increases in voluntary sun exposure and the use of tanning devices. There is also some indication that severe burning or strong intermittent exposure, especially in childhood, may be especially high risk patterns for the disease. An excess of this cancer has been reported in family members of cases, but it is not clear if this is due to inherited genes or due to common skin type or sun exposure patterns. Currently the most established method to prevent the disease is to avoid sun exposure through use of sun screens or protective clothing when in the sun.

MELANOMA OF THE SKIN

SEER INCIDENCE Rates, 1988-1992



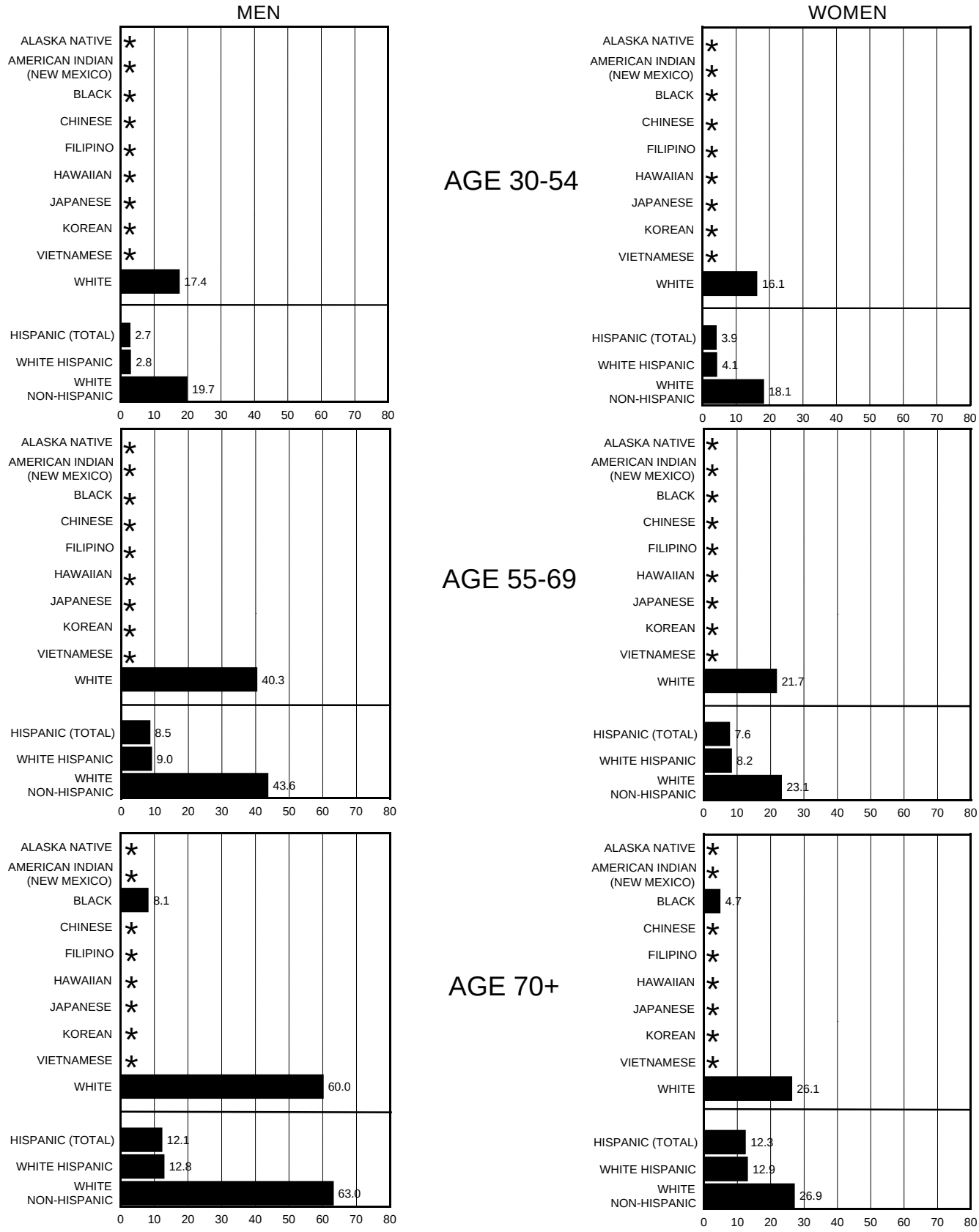
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

MELANOMA OF THE SKIN

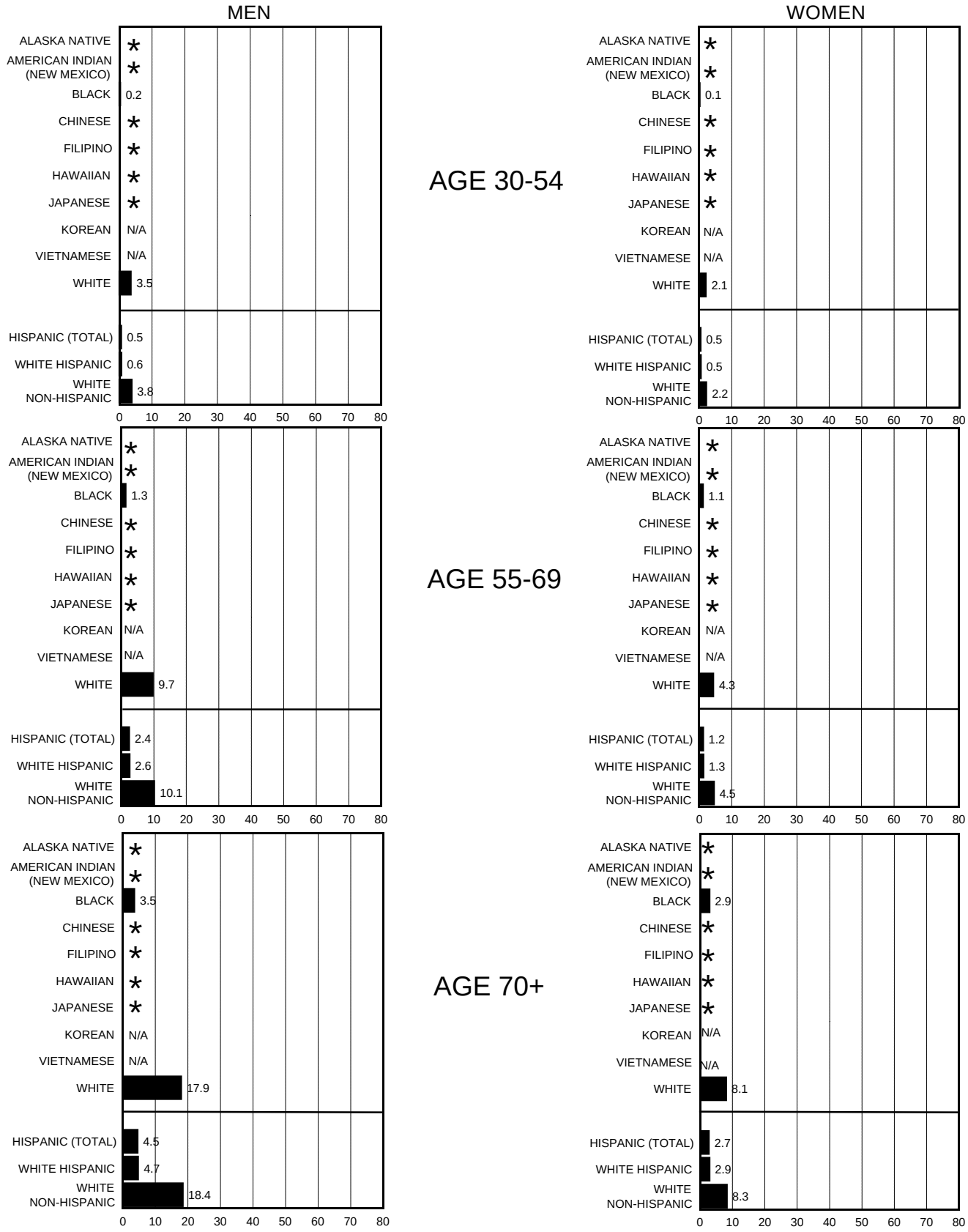
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

MELANOMA OF THE SKIN

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

MULTIPLE MYELOMA

Multiple myeloma, sometimes called plasma cell myeloma, arises in bone marrow and involves the plasma cells, a type of blood cell that normally plays a crucial role in the immune response by producing antibodies. It is classified as a lymphoproliferative disease and is therefore related to the lymphomas. In some early classification schemes, multiple myelomas were included in statistics on lymphomas.

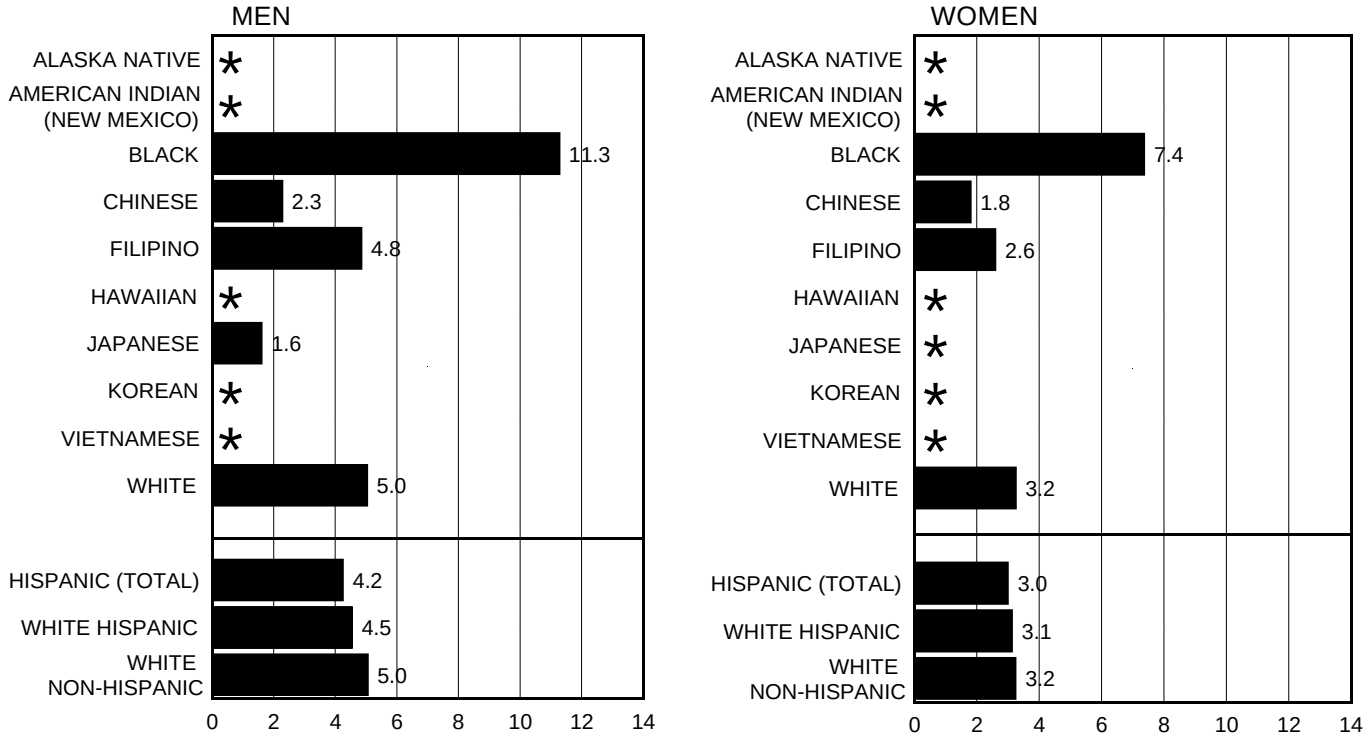
There is considerable variation in the incidence of the disease. Among men, age-adjusted incidence rates (per 100,000) range from a low of 1.6 among Japanese to a high of 11.3 among blacks, a seven-fold difference. This difference is particularly interesting since the opposite relationship holds for Ewing's sarcoma, a type of bone tumor that is extremely rare among blacks but high among Japanese. The second highest rate in men occurs among whites (5.0), a rate less than half that for black men. There are too few cases among Japanese women to calculate a meaningful rate. However, rates range from a low of 1.8 among Chinese to a high of 7.4 among black women, a four-fold difference. The second highest rate among women is in whites (3.2), still less than half that for black women. Incidence rates in men are approximately 50% higher than rates in women for all racial/ethnic groups, with the exception of Filipinos, where men have an 80% excess. Reasons for the excess among black men and women and among men in general are unknown. Multiple myeloma rarely occurs in the 30-54 year age group. However, in every age group, blacks have rates that are double those for whites among both men and women.

Mortality patterns by race are similar to those for incidence with blacks having the highest rates, approximately double those for whites. The incidence-to-mortality rate ratios for men and women are less than two, except among Filipinos, where the ratios are 2.2 for men and 2.6 for women. It is unknown whether this results from an under-ascertainment of the death certificates for Filipinos or from a true difference in survival for this group. Racial/ethnic mortality patterns by age group are similar to those noted for incidence.

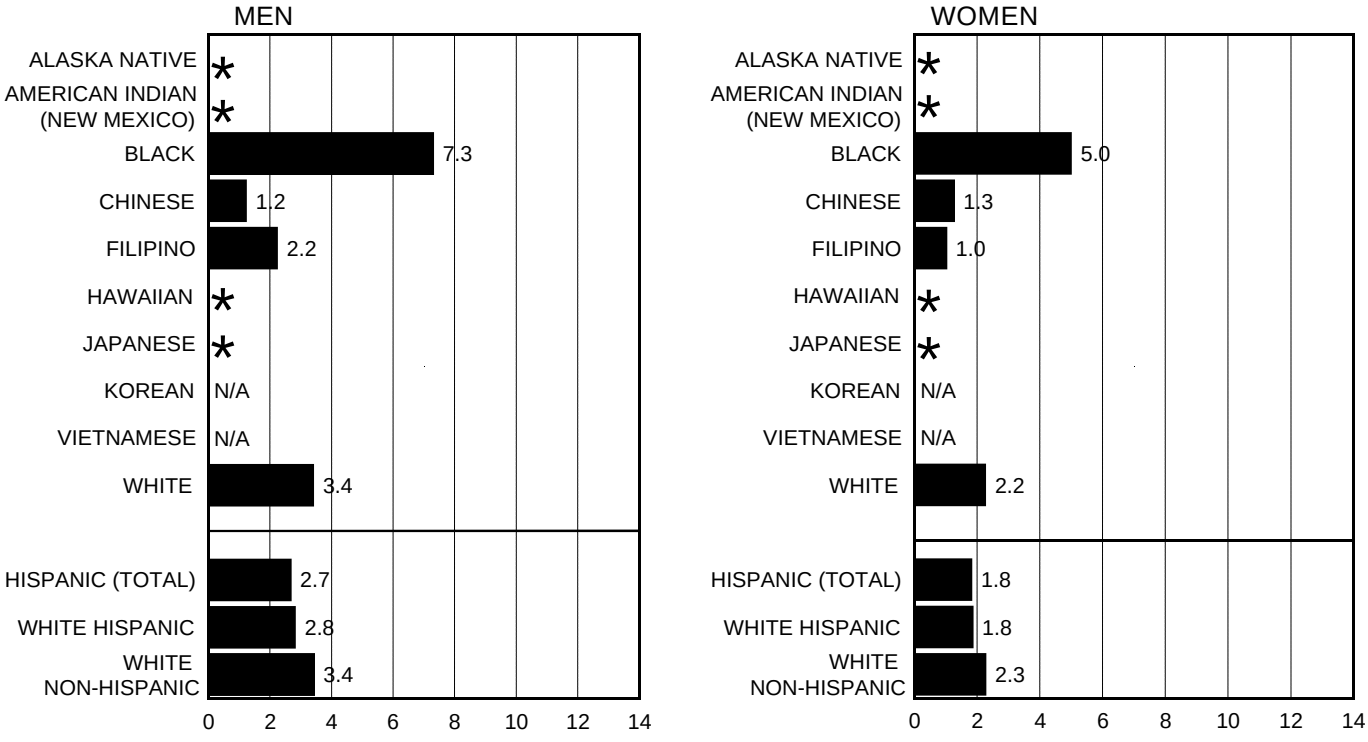
Little is known about the causes of multiple myeloma. Ionizing radiation, chemical exposures in the workplace, and hormonal influences have been suggested as factors. The possible roles of genetic factors and past medical history, especially involving inflammatory diseases, are other hypotheses under active study.

MULTIPLE MYELOMA

SEER INCIDENCE Rates, 1988-1992



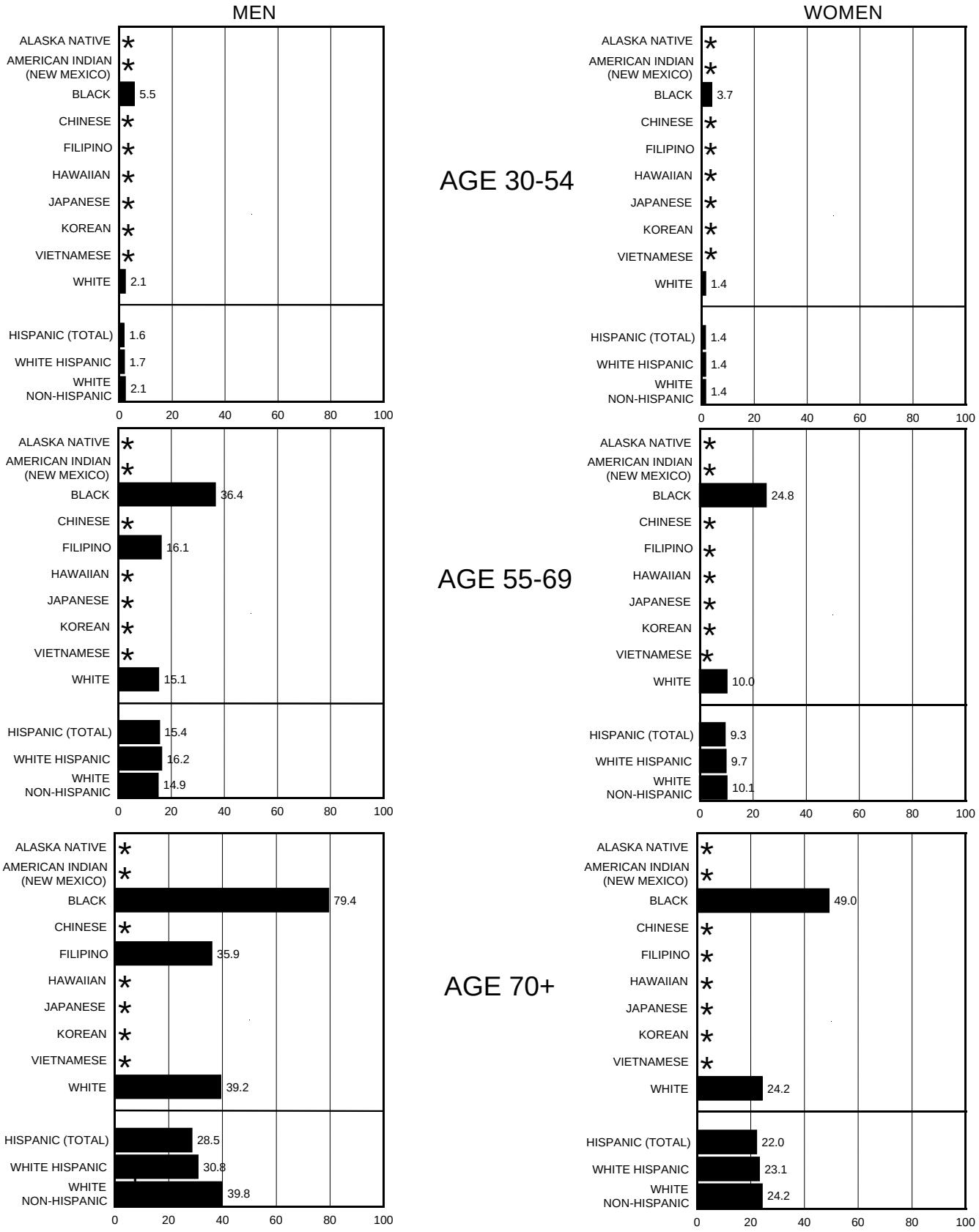
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

MULTIPLE MYELOMA

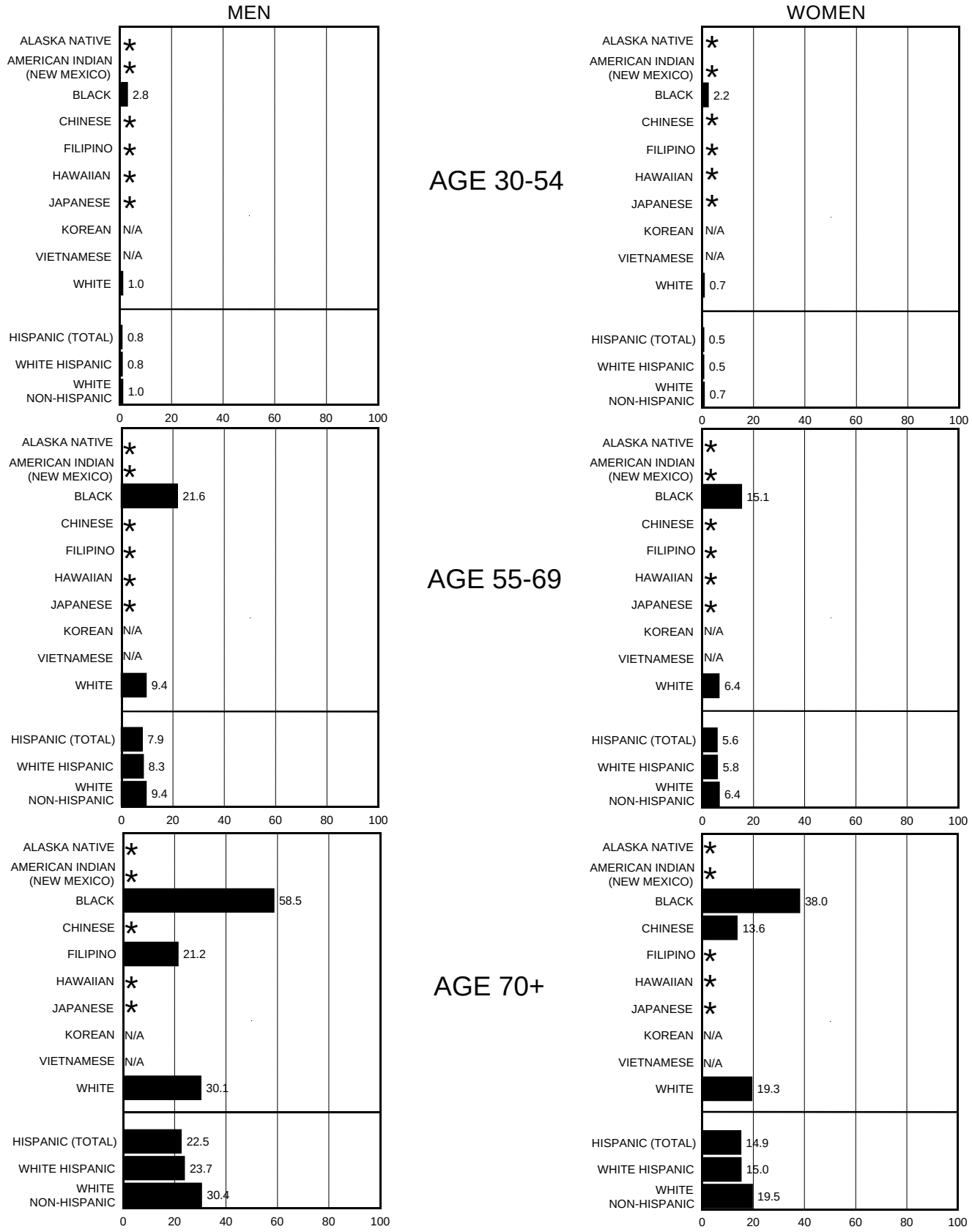
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

MULTIPLE MYELOMA

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

NASOPHARYNX

Cancer of the nasopharynx is a rare neoplasm in most countries. However, it occurs at high frequencies in China and Southeast Asia. The highest incidence rates in the SEER regions occur among the Chinese. Rates are also high in Vietnamese and Filipino men, two groups that include persons of Chinese heritage. Incidence rates of nasopharyngeal cancer are also available for black, Hispanic and white men and for white women in the SEER areas. There were too few nasopharyngeal cancers diagnosed between 1988 and 1992 in the other racial/ethnic groups to provide meaningful incidence rates.

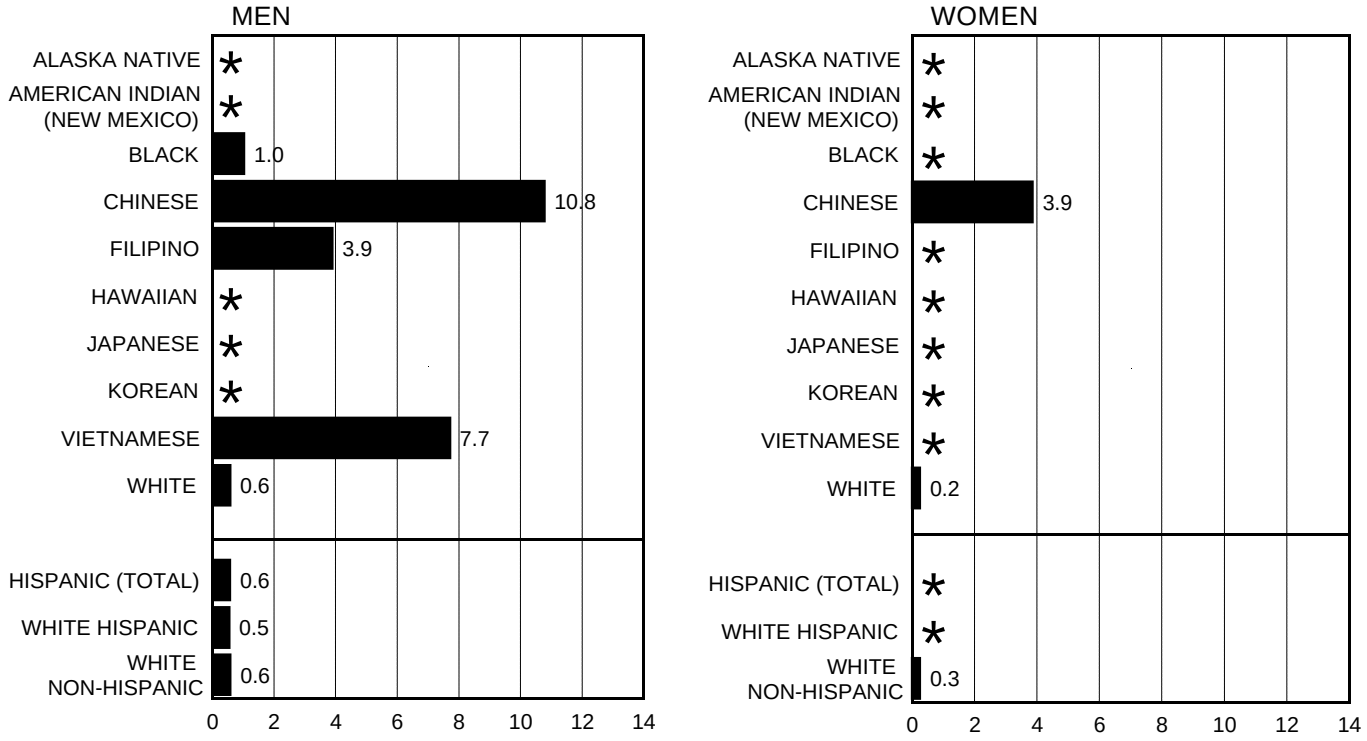
The average annual age-adjusted incidence rate of nasopharyngeal cancer in Chinese men, 10.8 per 100,000, is 1.4 times greater than that of Vietnamese men and nearly 2.8 times greater than that of Filipino men. In fact, the rate among Filipino men, although relatively high, is the same as that for Chinese women. Rates of one per 100,000 and lower occur in black men, Hispanic and non-Hispanic white men and non-Hispanic white women.

The United States mortality rates for cancer of the nasopharynx reflect patterns similar to those for SEER incidence rates. Mortality is highest in Chinese, lower in Filipinos and lowest among blacks, Hispanics and non-Hispanic whites. No mortality rates are currently available for Vietnamese. Incidence-to-mortality rate ratios vary, with Chinese and Filipinos having higher incidence relative to mortality (2.3 for men in both groups and 3.2 for Chinese women) than other groups (ranging from about 1.7 for white Hispanic men to two for non-Hispanic white men). Incidence and mortality rates for nasopharyngeal cancer increase through the oldest age group, although the small number of cases precluded the calculation of reliable rates for many populations.

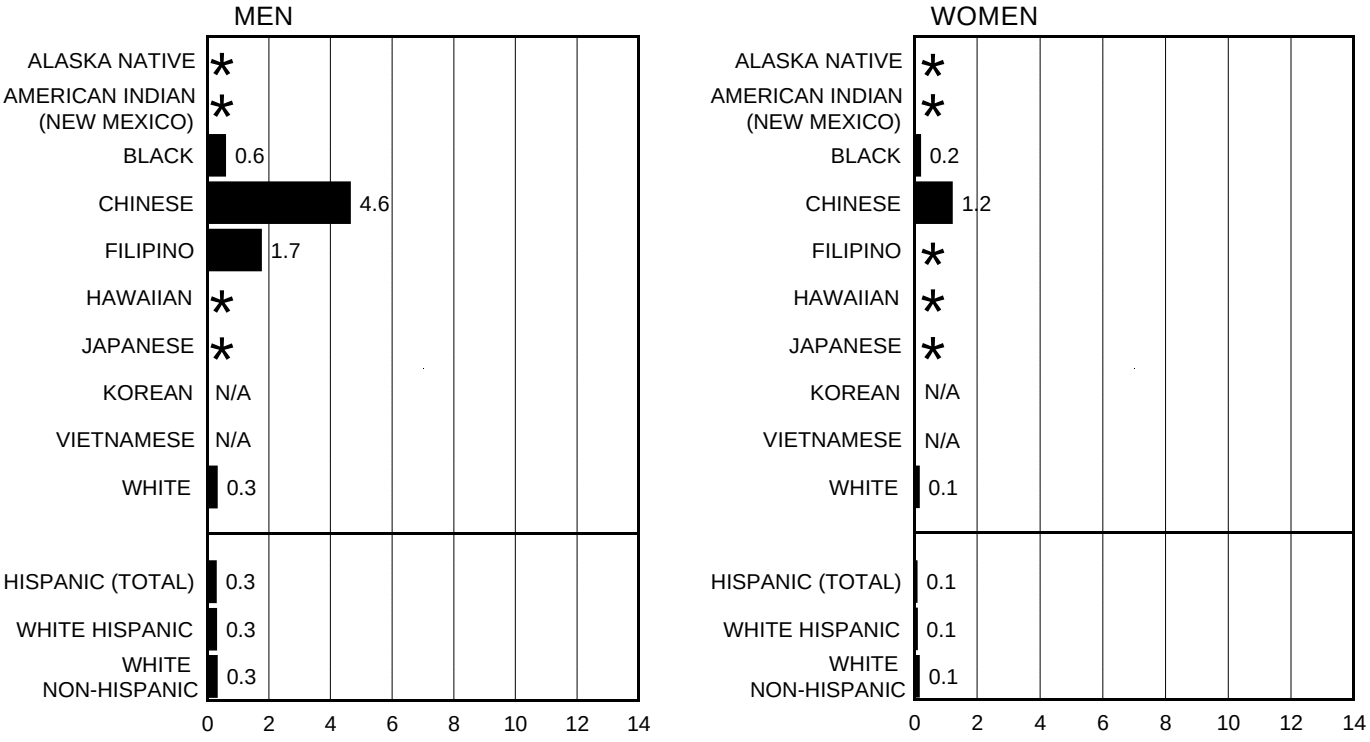
The major modifiable risk factor identified for cancer of the nasopharynx is the consumption of Cantonese salted fish, which is a common food item eaten from early infancy onward by groups with high risk of this disease. Other possible risk factors include extensive exposures to dusts and smoke and regular consumption of other fermented foods. The role of Epstein-Barr virus in the development of nasopharyngeal cancer continues to be explored.

NASOPHARYNX

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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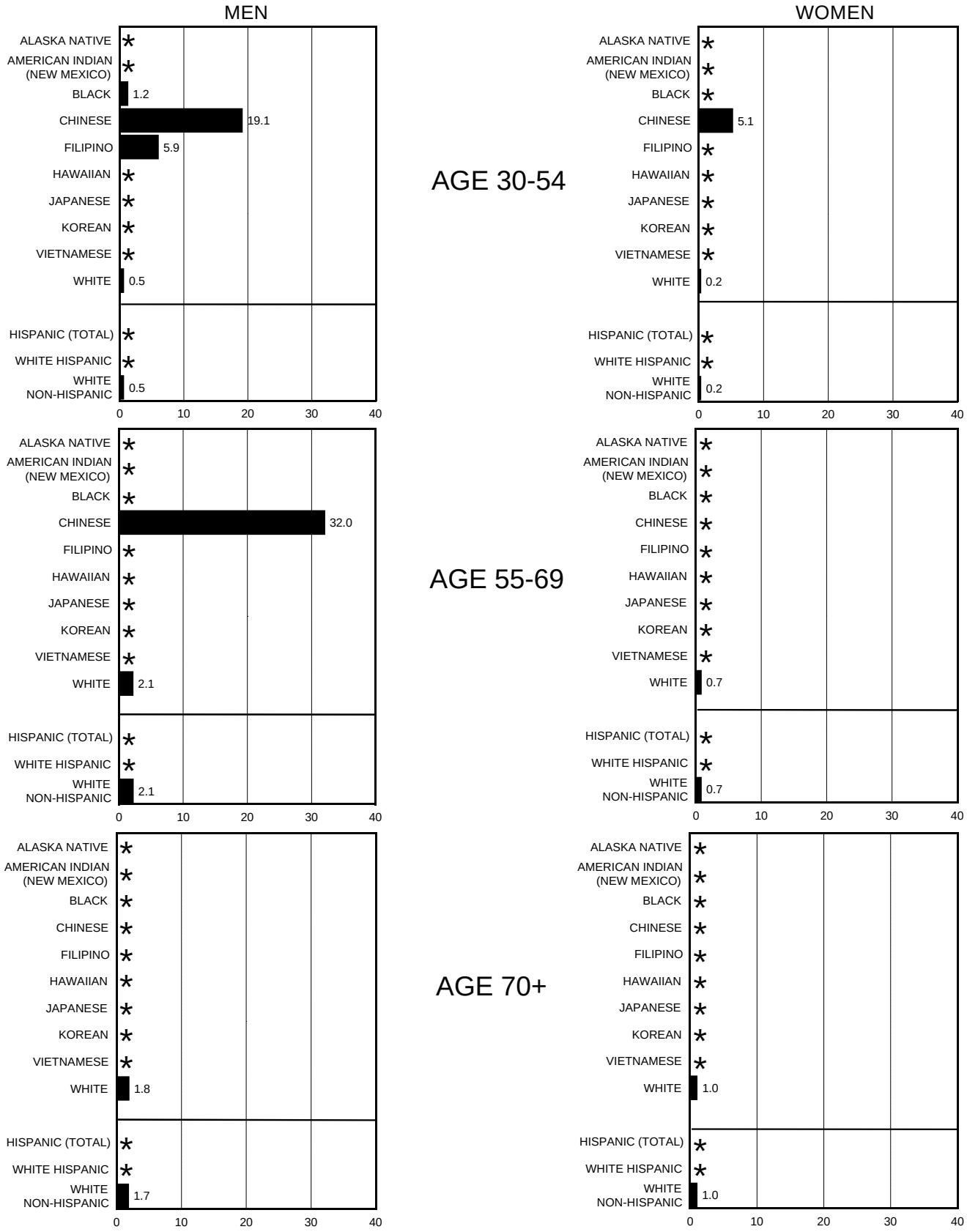
NASOPHARYNX

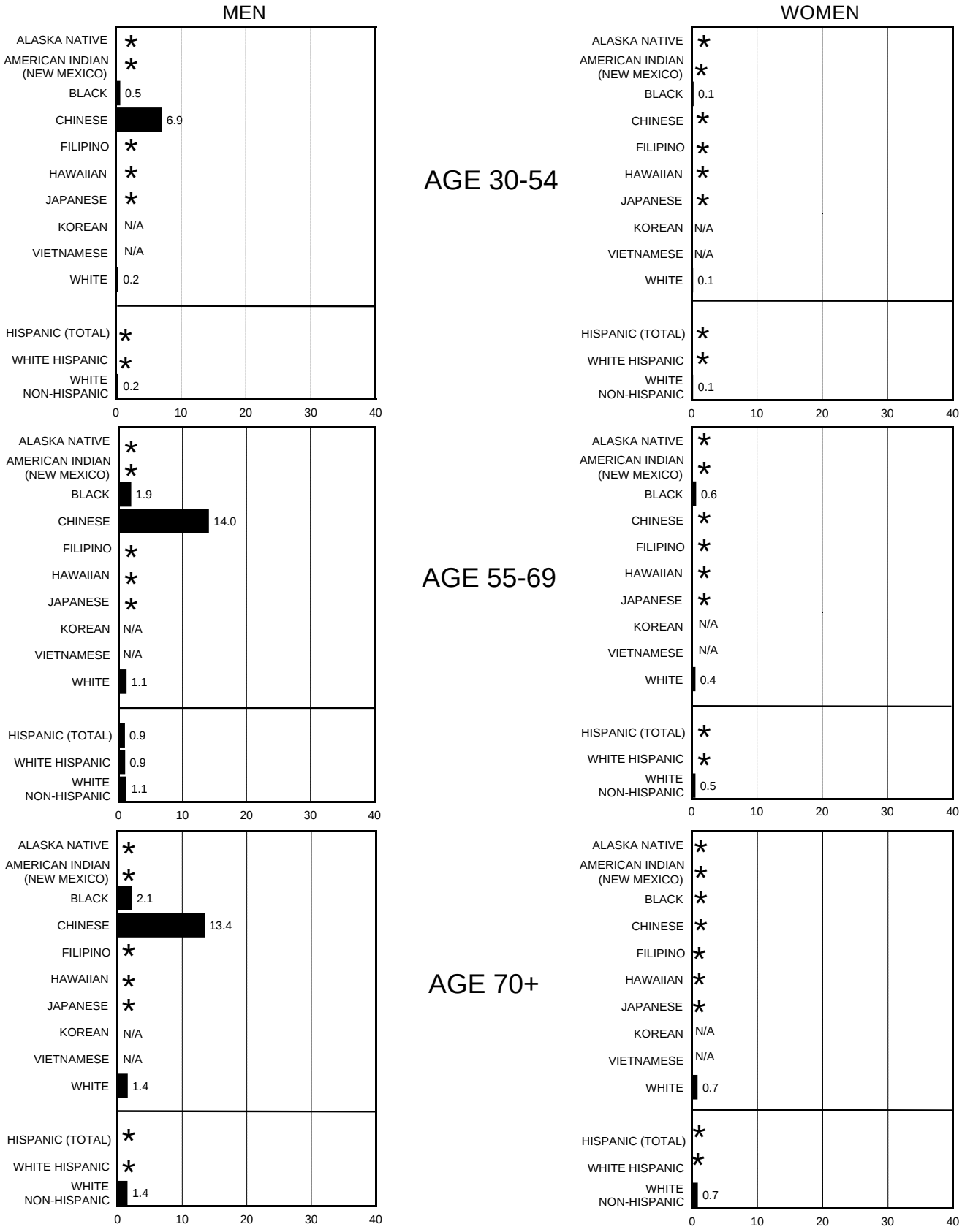
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

NASOPHARYNX

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

ORAL CAVITY

Cancer of the oral cavity includes the following subsites: lip (excluding skin of the lip), tongue,salivary glands, gum, mouth, pharynx,oropharynx, and hypopharynx. Cancer of the nasopharynx is treated separately in this publication, since its epidemiologic patterns are distinct from the others in this group.

For the SEER areas, incidence rates for oral cavity cancer are two to four times higher among men than women for all racial/ethnic groups except Filipinos, among whom the rates for the two sexes are similar. Too few cases occurred among Alaska Natives, American Indians, Koreans, and Vietnamese women for the calculation of reliable rates. Across racial/ethnic groups, the incidence rates vary by a factor of four in men and about three in women. Among men, the highest rates are in blacks, followed by whites (especially non-Hispanic whites), Vietnamese, and native Hawaiians. Less variation occurs in women, among whom high rates occur in non-Hispanic whites, blacks and Filipinos. Although reasons for these racial/ethnic and sex differences have not been established, differences in the extent of exposure to risk factors for oral cavity cancer (see below) are presumably largely responsible.

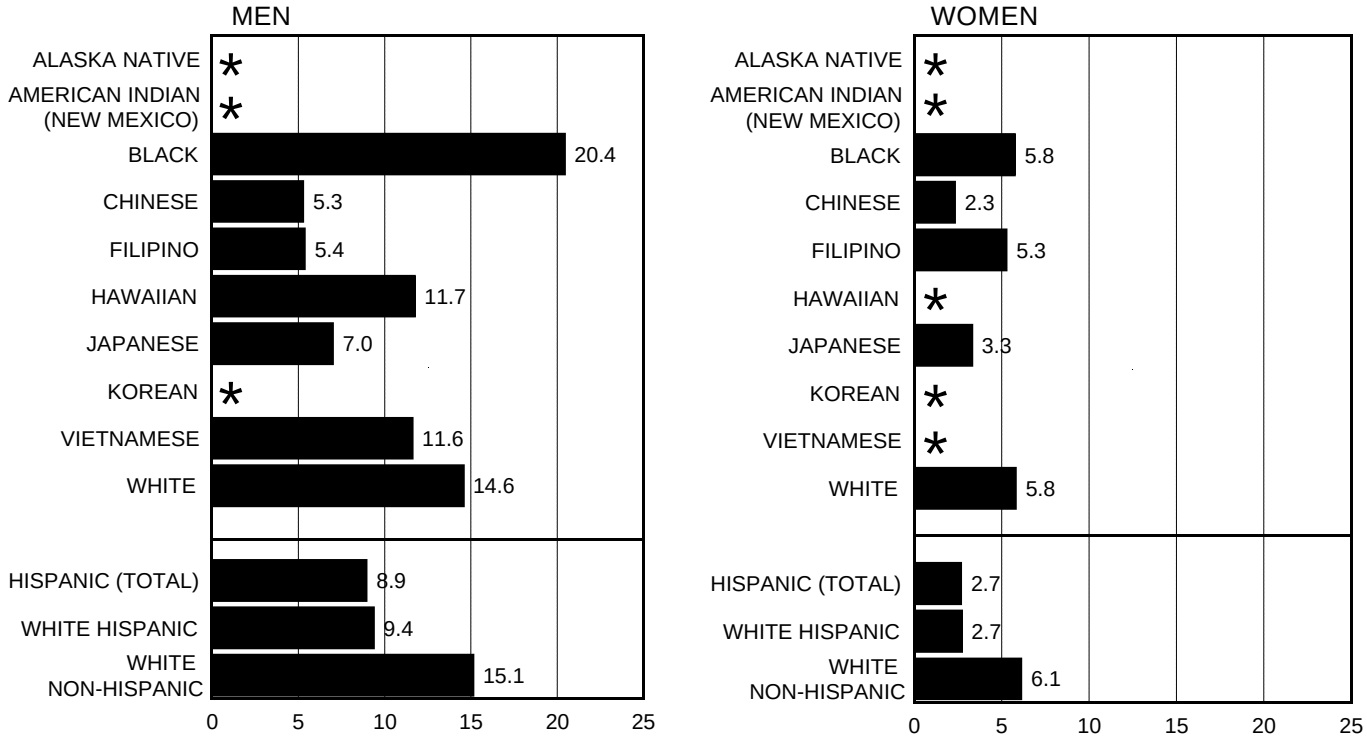
Incidence rates for oral cavity cancer increase with age in all groups except the oldest age group of black men and women. The greatest increase in rates occurs between the 30-54 year old group and the 55-69 year old group. For several racial/ethnic and sex groups, the numbers of cases were too few to compute reliable rates by age category.

Mortality rates for oral cavity cancer are substantially lower than incidence rates, reflecting the reasonably high survival rates for this cancer site. The mortality rates increase with age in all groups except black men and women aged 70 years and older.

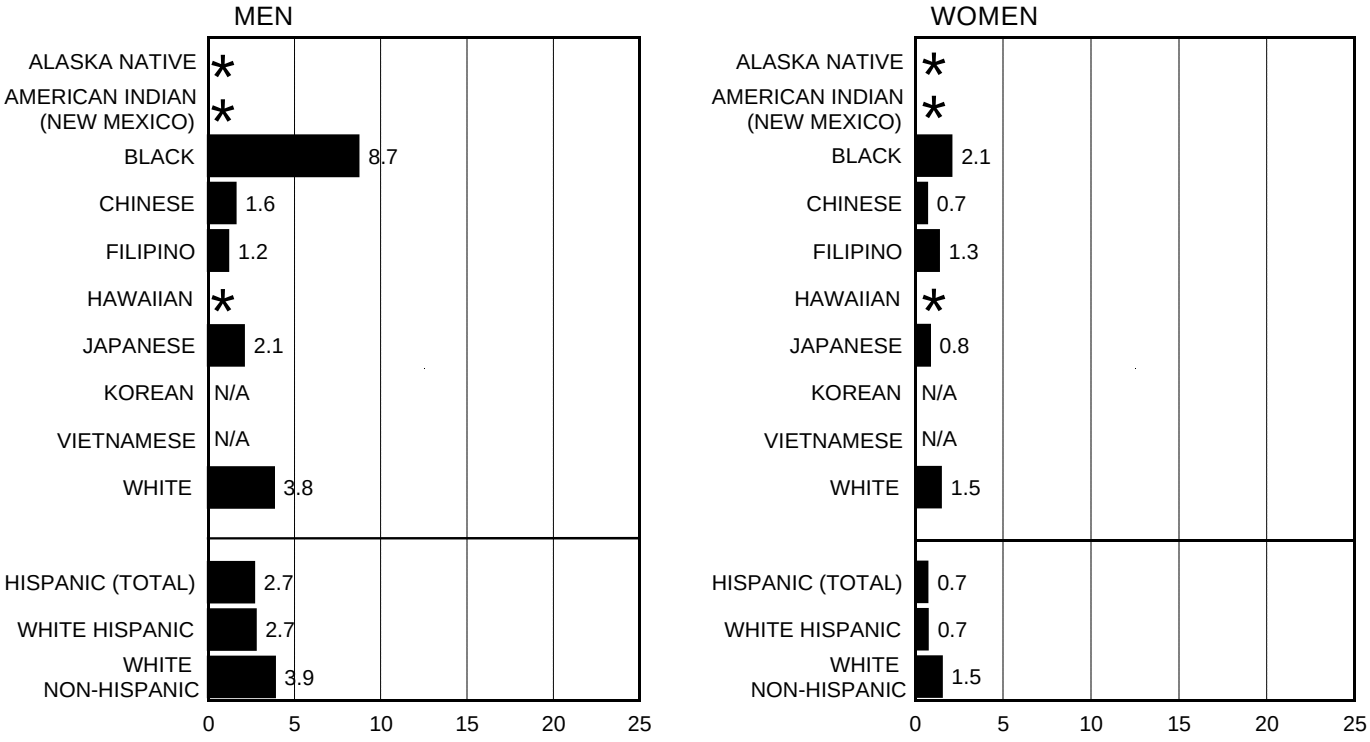
Tobacco use, including pipes, cigars, cigarettes, and chewing tobacco are well-established causes of cancers of the oral cavity. Chewing of betel nut, not a common practice in the United States but a widespread habit in some parts of the world, is also a known cause. Alcohol consumption, especially when combined with cigarette smoking, is an established risk factor. Both factors together interact synergistically. Finally, some evidence suggests that diets high in fruits and vegetables reduce the risk of developing this cancer.

ORAL CAVITY (excluding Nasopharynx)

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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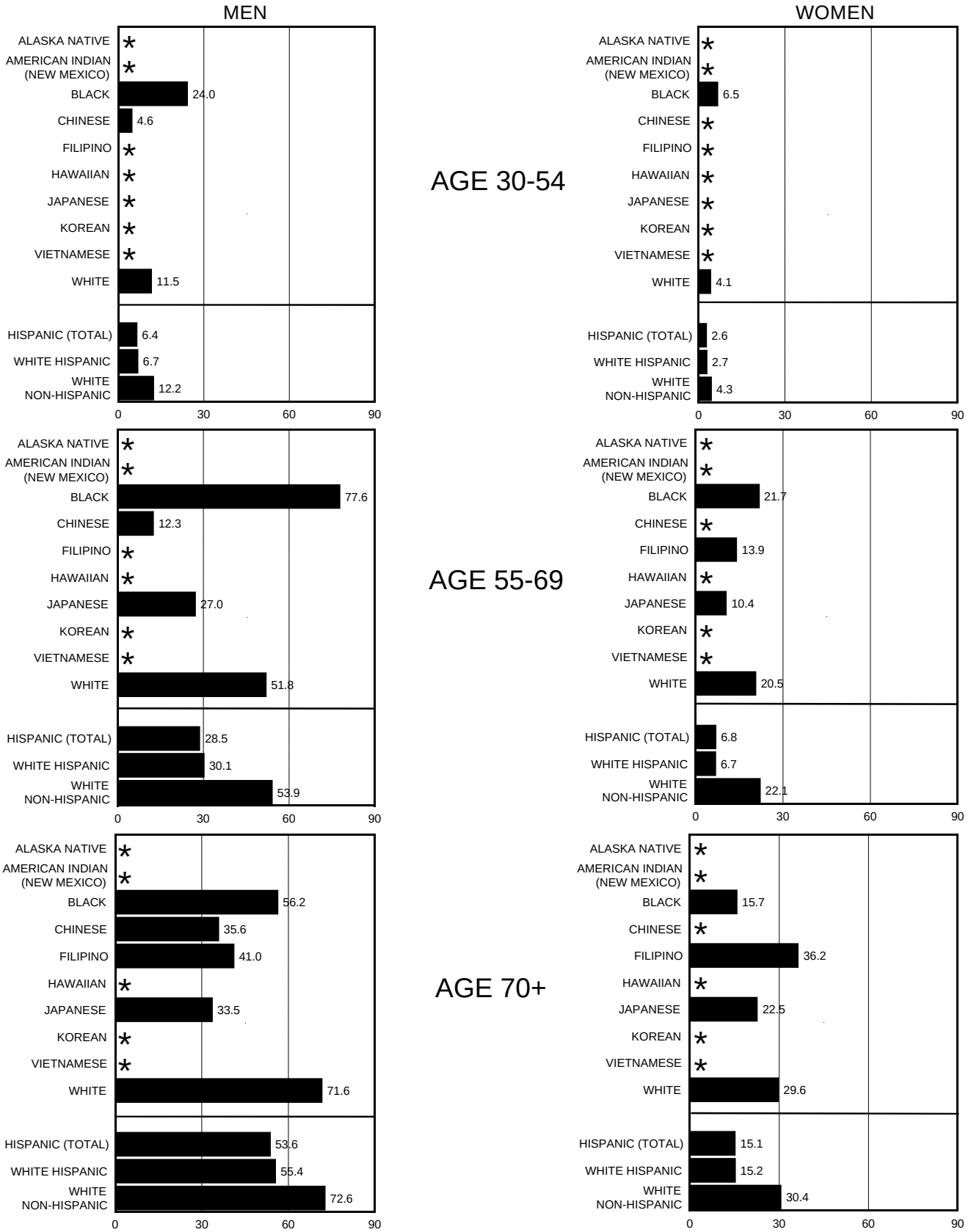
ORAL CAVITY (excluding Nasopharynx)

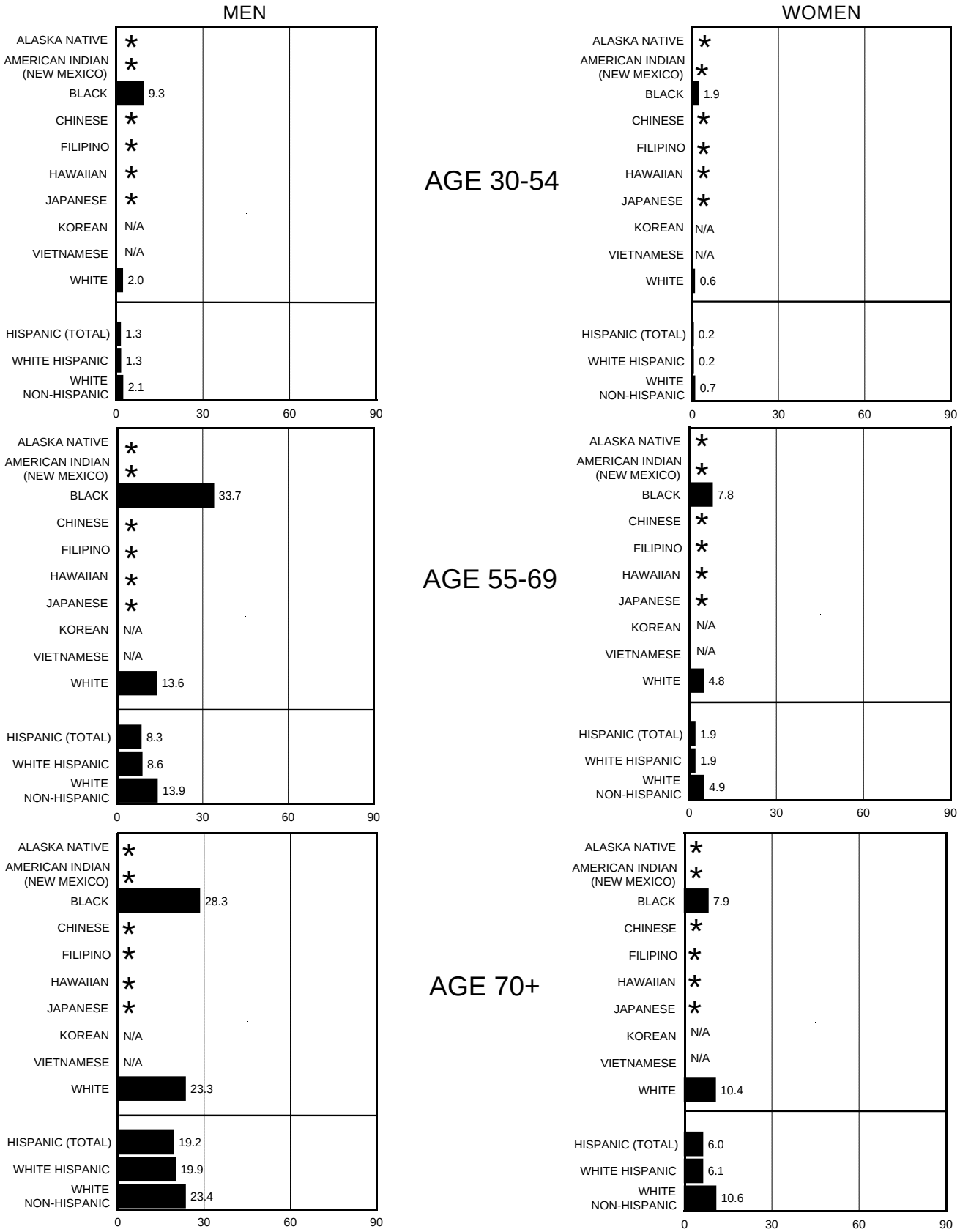
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

ORAL CAVITY (excluding Nasopharynx)

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

OVARY

Among women in the United States, cancer of the ovary ranks fifth in incidence. There are no proven methods of prevention and it often is a rapidly fatal disease.

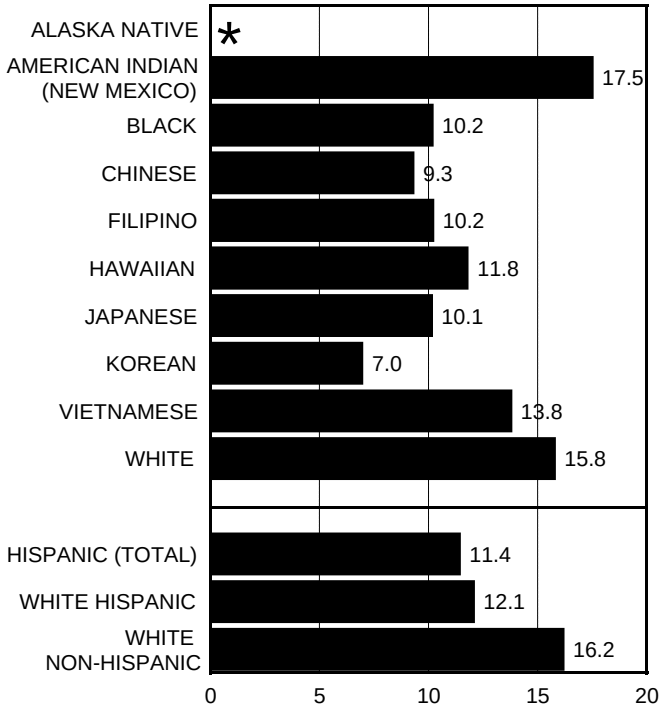
Age-adjusted incidence rates in the SEER areas are highest among American Indian women, followed by white, Vietnamese, white Hispanic, and Hawaiian women. Rates are lowest among Korean and Chinese women. There are too few cases among Alaska Native women to calculate an incidence rate. Among women for whom there are sufficient numbers of cases to calculate rates by age, incidence in the age group 30-54 years is highest in whites, followed by Japanese, Hispanics, and Filipinos. For ages 55-69 years, the highest rates occur in whites, then Hispanics, and Japanese. Among women 70 and older, the highest rate occurs among white women followed by black and Hispanic women.

The ovarian cancer mortality patterns by racial/ethnic group differ from the incidence patterns. The age-adjusted mortality rate is highest among white women, followed by Hawaiian women, and black women. White women have the highest age-specific ovarian cancer mortality rate in each of the three age groups. The ratio of incidence to mortality rates ranges from 1.5 among black women to 3.0 among Filipino women.

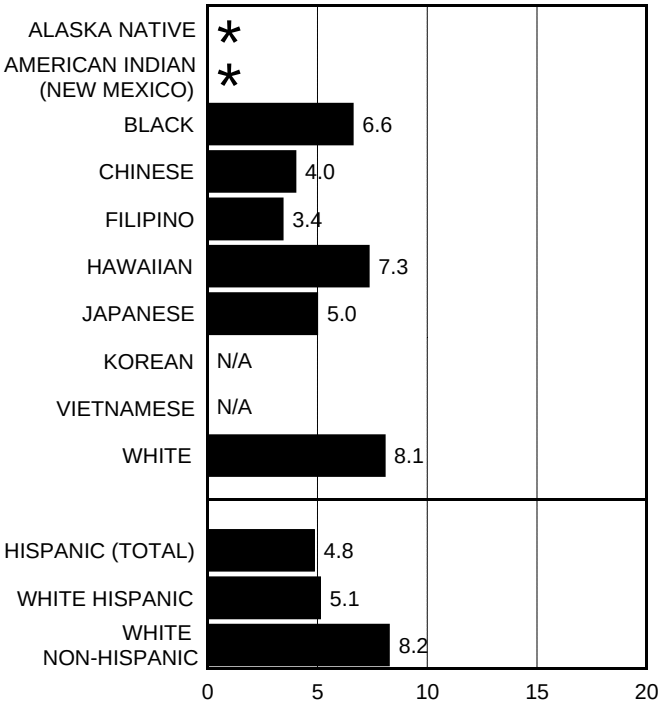
Although the epidemiology of ovarian cancer is not well understood, hormonal and reproductive risk factors are implicated in the etiology of this disease. There is an inverse relationship between parity and the occurrence of ovarian cancer, with parous women having the lowest risk of this disease. The risk of cancer of the ovary also decreases with increasing length of use of oral contraceptives and there is some suggestion of a protective effect of hysterectomy.

OVARY

SEER INCIDENCE Rates Among Women, 1988-1992



United States MORTALITY Rates Among Women, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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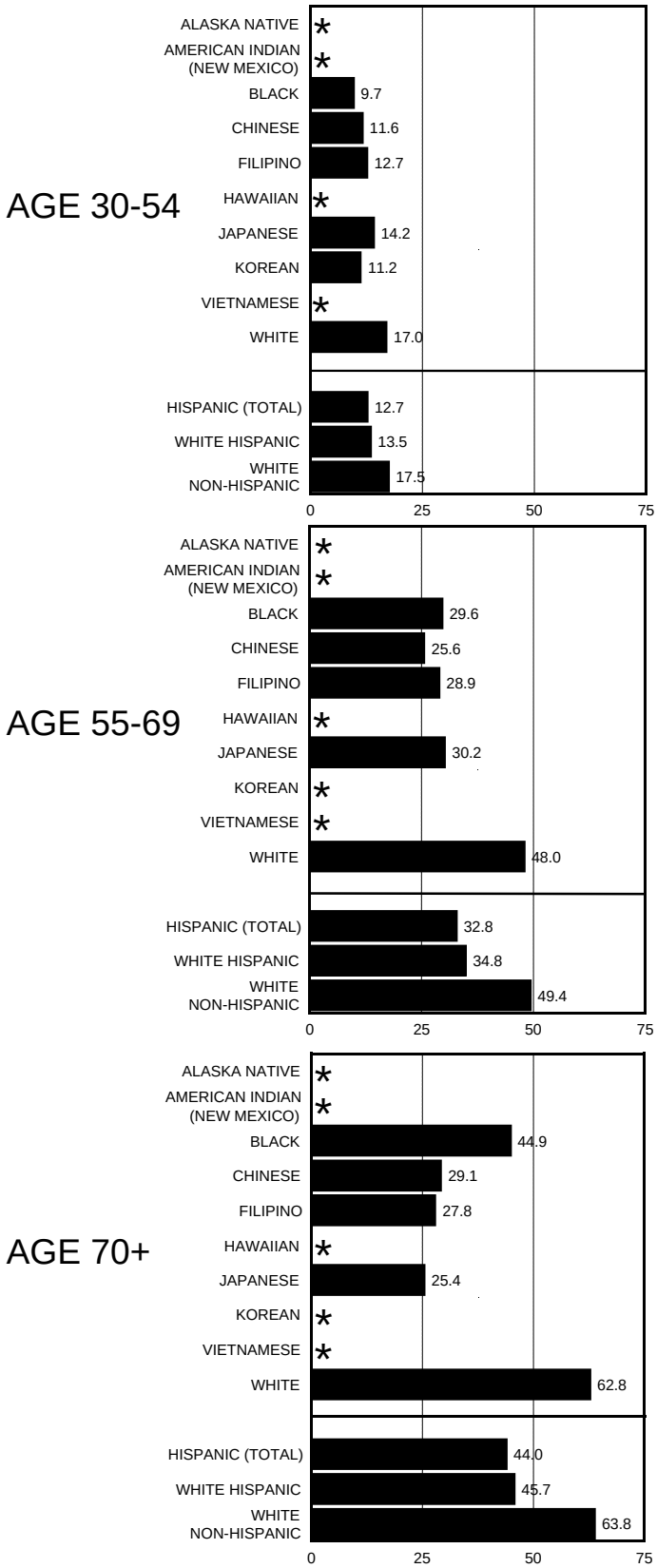
OVARY

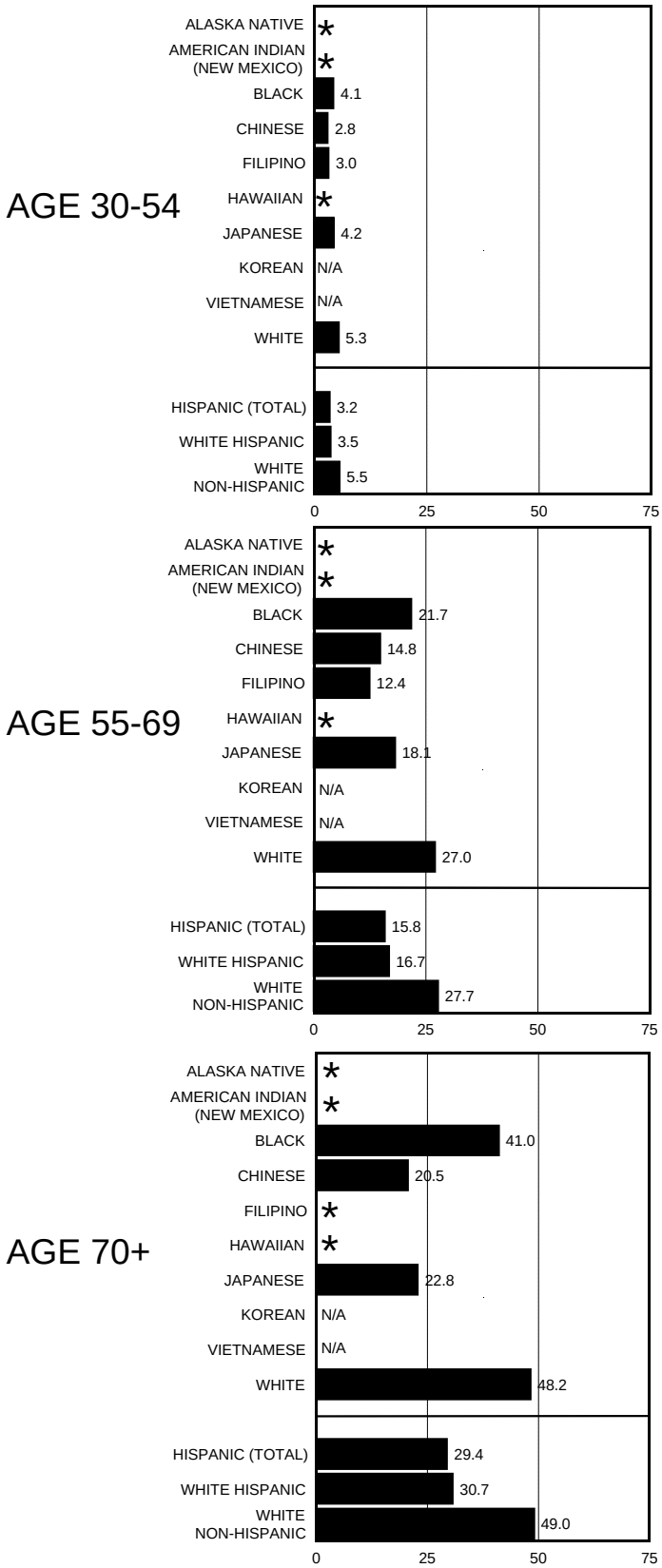
SEER INCIDENCE Rates Among Women by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

OVARY

United States MORTALITY Rates Among Women by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

PANCREAS

Cancer of the pancreas stands out as a highly lethal disease with the poorest likelihood of survival among all of the major malignancies. It accounts for only 2% of all newly diagnosed cancers in the United States each year, but 5% of all cancer deaths. Most pancreatic cancers are adenocarcinomas arising from the pancreatic ductal system. The disease is often far advanced by the time symptoms occur and the diagnosis is established. As indicated by five-year survival rates of less than 5%, successful treatment is rare. Islet cell carcinomas have a better prognosis, but account for less than 2% of all pancreatic cancers. Relatively few cancers arise from the enzyme-producing acinar (glandular) cells that form the bulk of the pancreas.

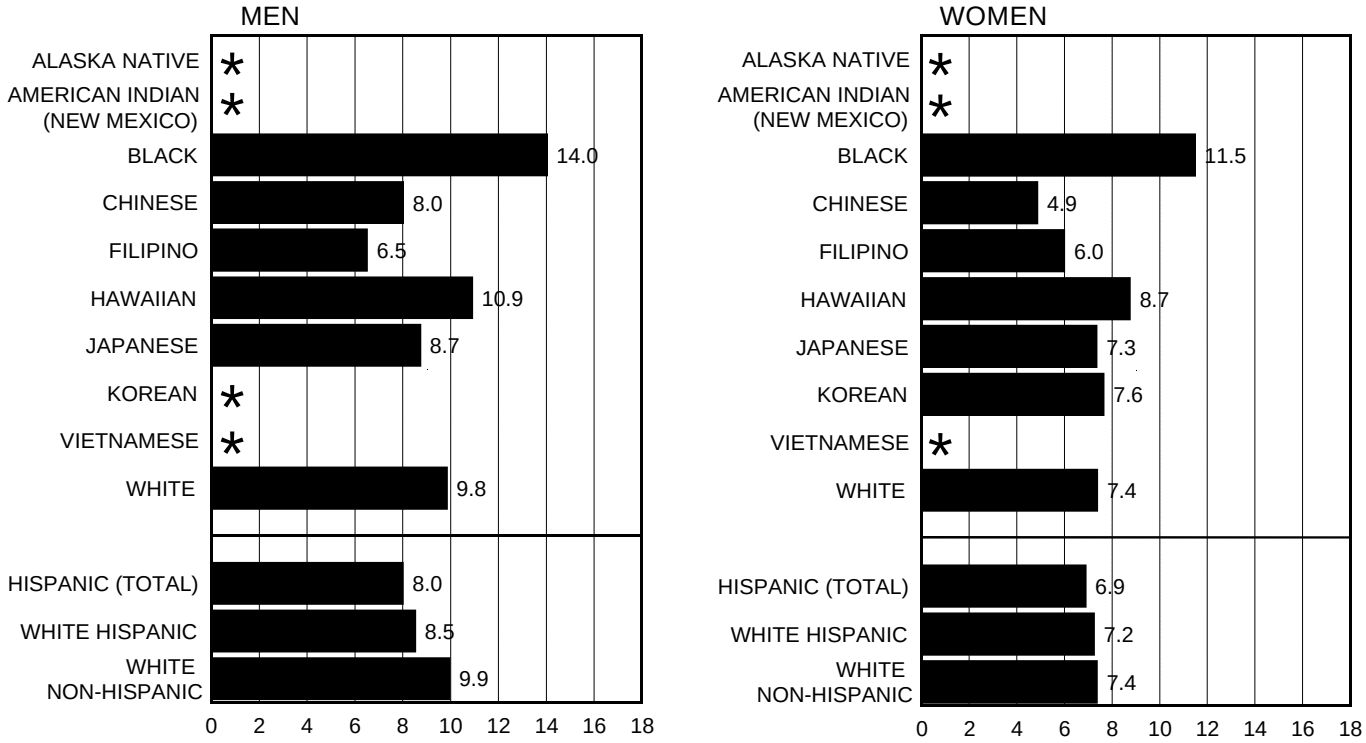
Men have higher incidence and mortality rates for pancreatic cancer than women in each racial/ethnic group. Black men and women have incidence and mortality rates that are about 50% higher than the rates for whites. Rates for native Hawaiians are somewhat higher than the rates for whites, whereas rates for Hispanics and the Asian-American groups are generally lower. There were too few cases among Alaska Native and American Indian populations to calculate rates.

Pancreatic cancer is rare in the 30-54 years age group. In the 55-69 years age group, incidence rates in the black populations exceed those for whites by about 60%. This difference diminishes somewhat among persons aged 70 years and older. Incidence rates for Japanese men and women exceed those for the white population in the oldest age group. Racial/ethnic patterns in mortality rates by age group closely follow those seen in the incidence rates.

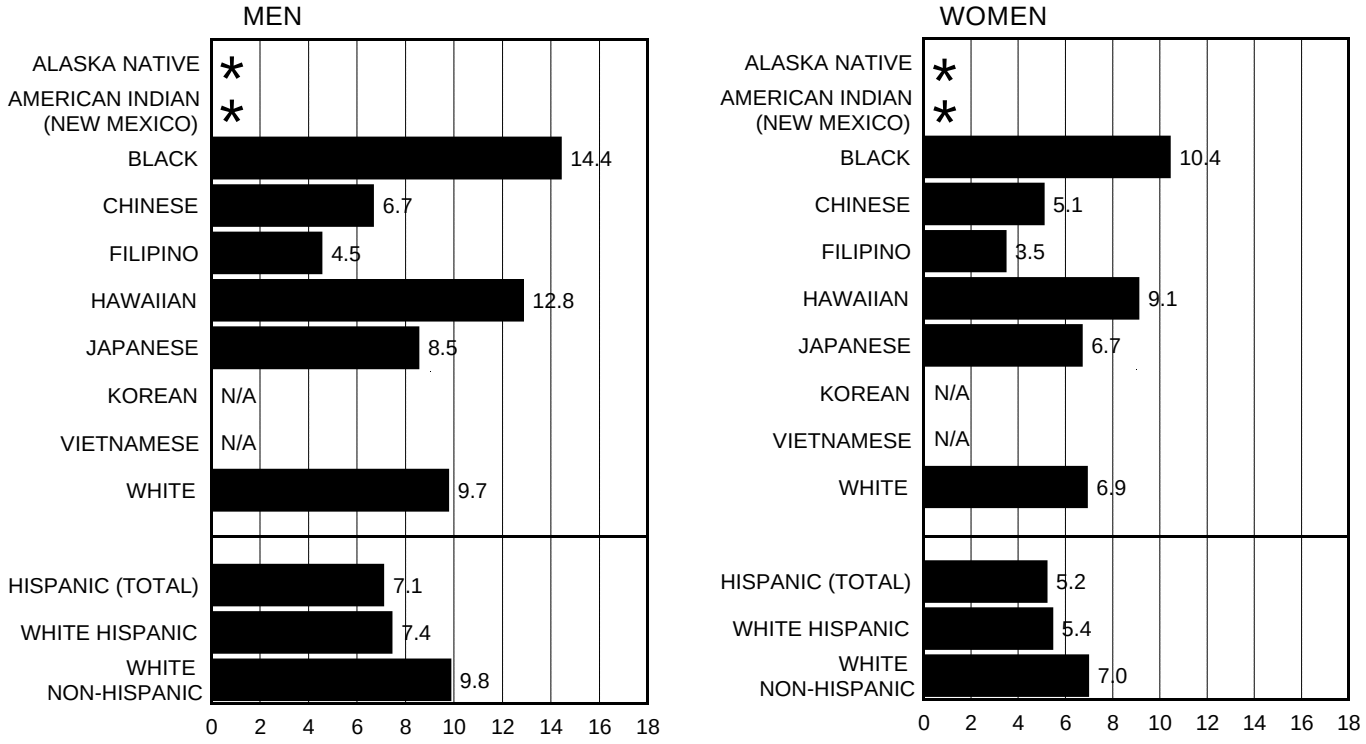
Cigarette smoking has been identified consistently as an important risk factor for cancer of the pancreas. Other risk factors which have been suggested, but not confirmed include coffee drinking, high fat diets, diabetes mellitus and some occupations.

PANCREAS

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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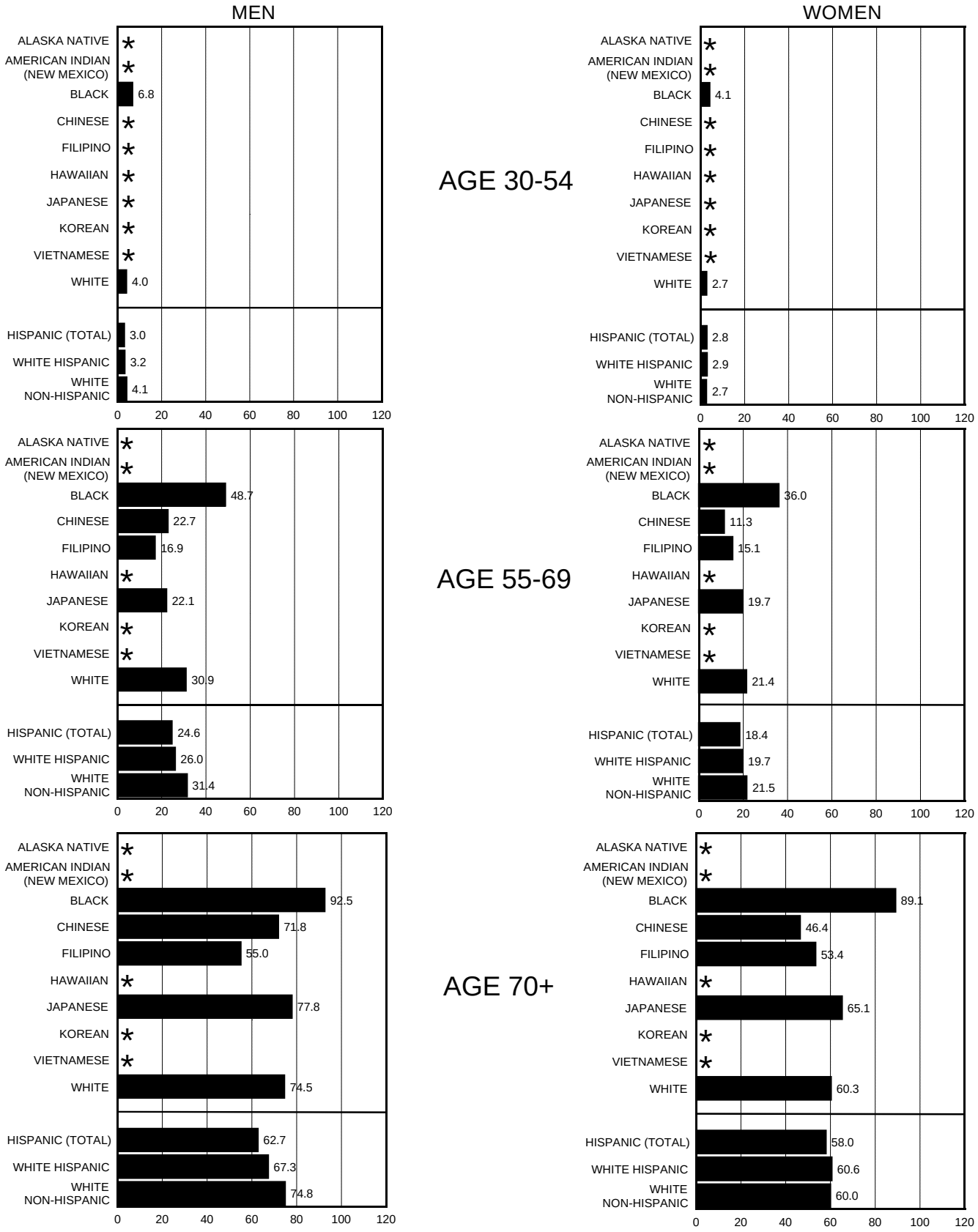
PANCREAS

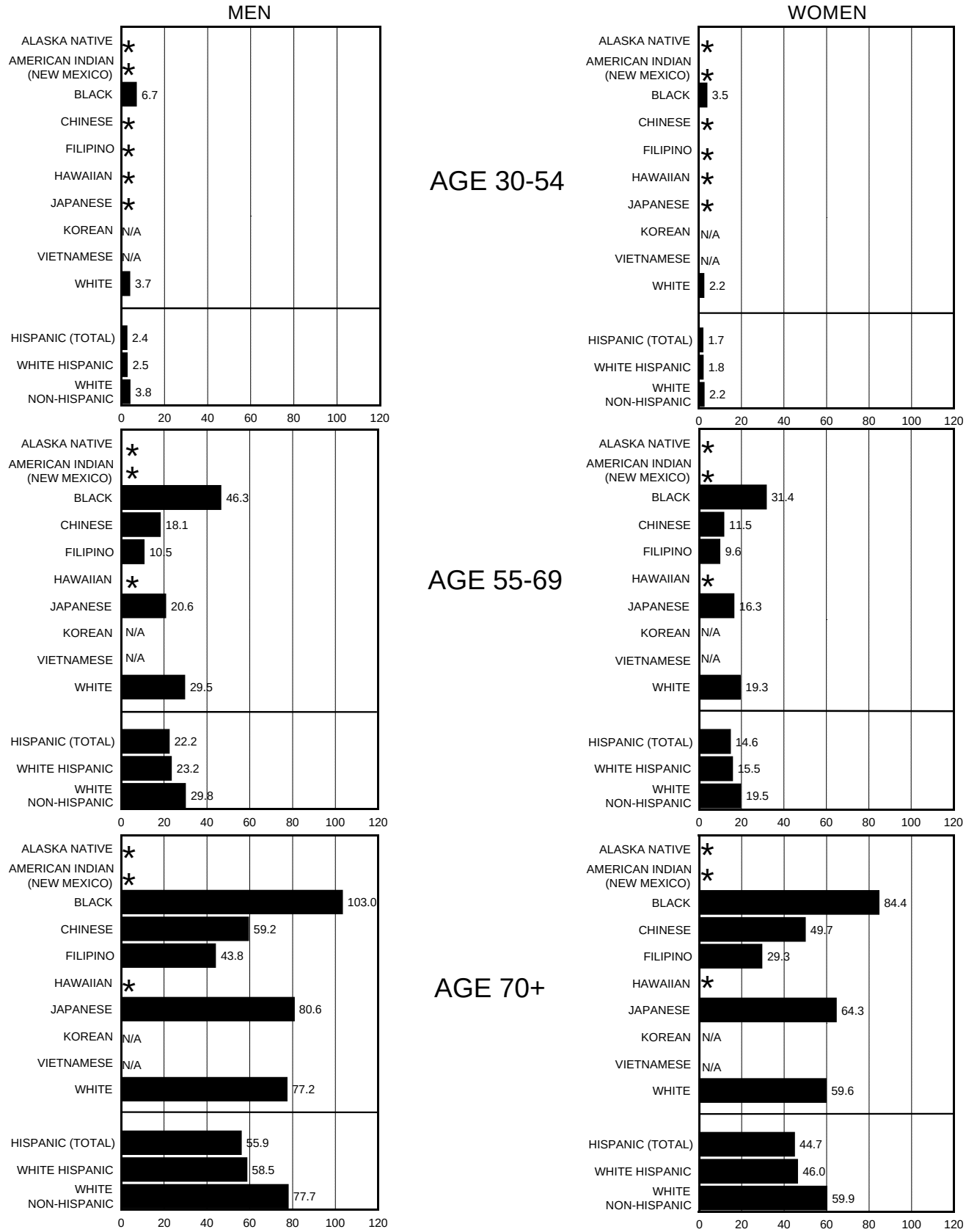
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

PANCREAS

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

PROSTATE

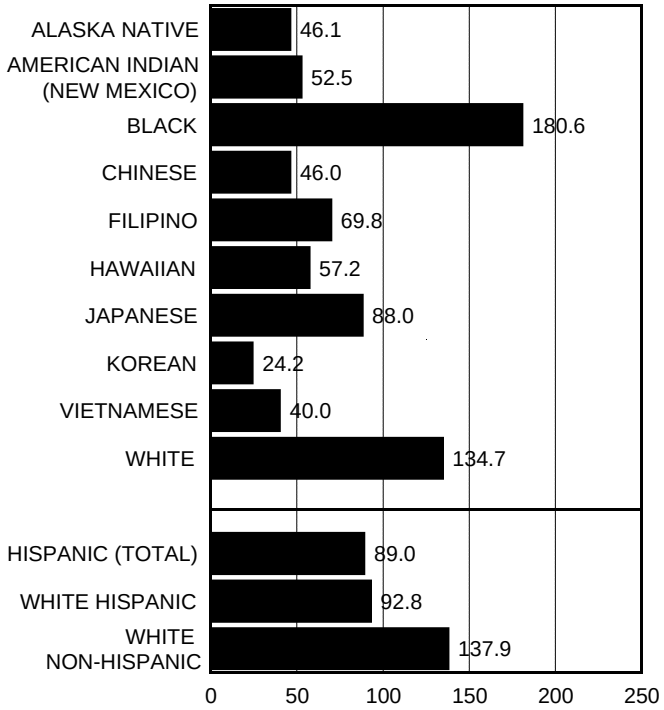
Prostate cancer is the leading cancer diagnosed among men in the United States. However, racial/ethnic variations in the SEER data are striking: the incidence rate among black men (180.6 per 100,000) is more than seven times that among Koreans (24.2). Indeed, blacks in the U.S. have the highest rates of this cancer in the world. Although the incidence among whites is quite high, it is distinctly lower than among blacks. Asian and native American men have the lowest rates. The very low rate in Korean men probably reflects the fact that most of the Koreans in the SEER areas are recent immigrants from Asia, where rates are lower than in the United States.

Age-specific incidence rates show dramatic increases between age categories. The remarkably sharp increase in incidence with age is a hallmark of this cancer. Sixty percent of all newly diagnosed prostate cancer cases and almost 80% of all deaths occur in men 70 years of age and older. Mortality rates for prostate cancer are much lower than the incidence rates, because survival for men with this cancer is generally quite high.

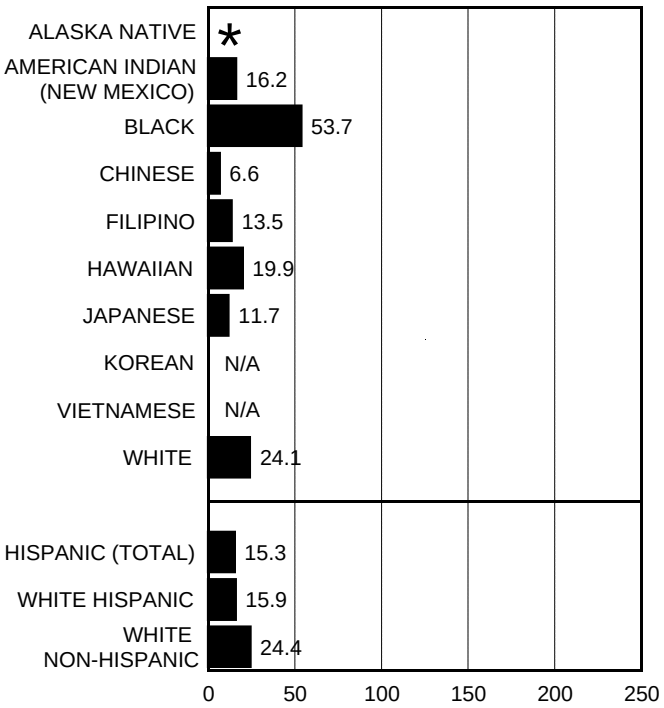
Prostate cancer incidence has been increasing rapidly in recent years. Most of this increase has been attributed to the greater use of screening modalities, and especially the widespread introduction of the prostate-specific antigen (PSA) test. The causes of prostate cancer are not known. Men with a family history of prostate cancer are at increased risk, but whether this is genetic or due to shared environmental influences, or both, is not known. It is thought that whatever the causal factors are, they act by altering the balance of male hormones in the body. Some research has suggested that diets high in fat and red meats increase risk, while a high intake of fruits and vegetables may offer some protection. There is current interest in the possibility that the low risk of prostate cancer in certain Asian populations may result from their high intake of soy products.

PROSTATE

SEER INCIDENCE Rates Among Men, 1988-1992



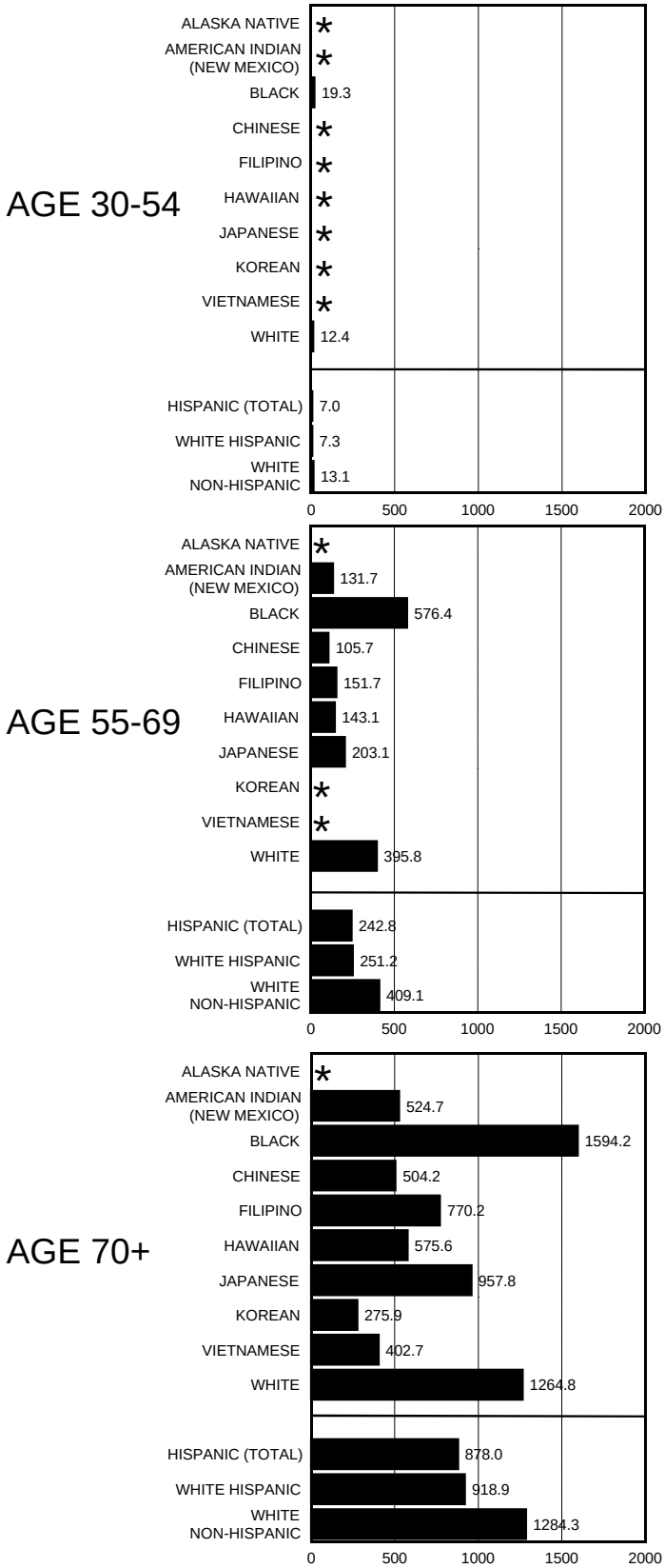
United States MORTALITY Rates Among Men, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

PROSTATE

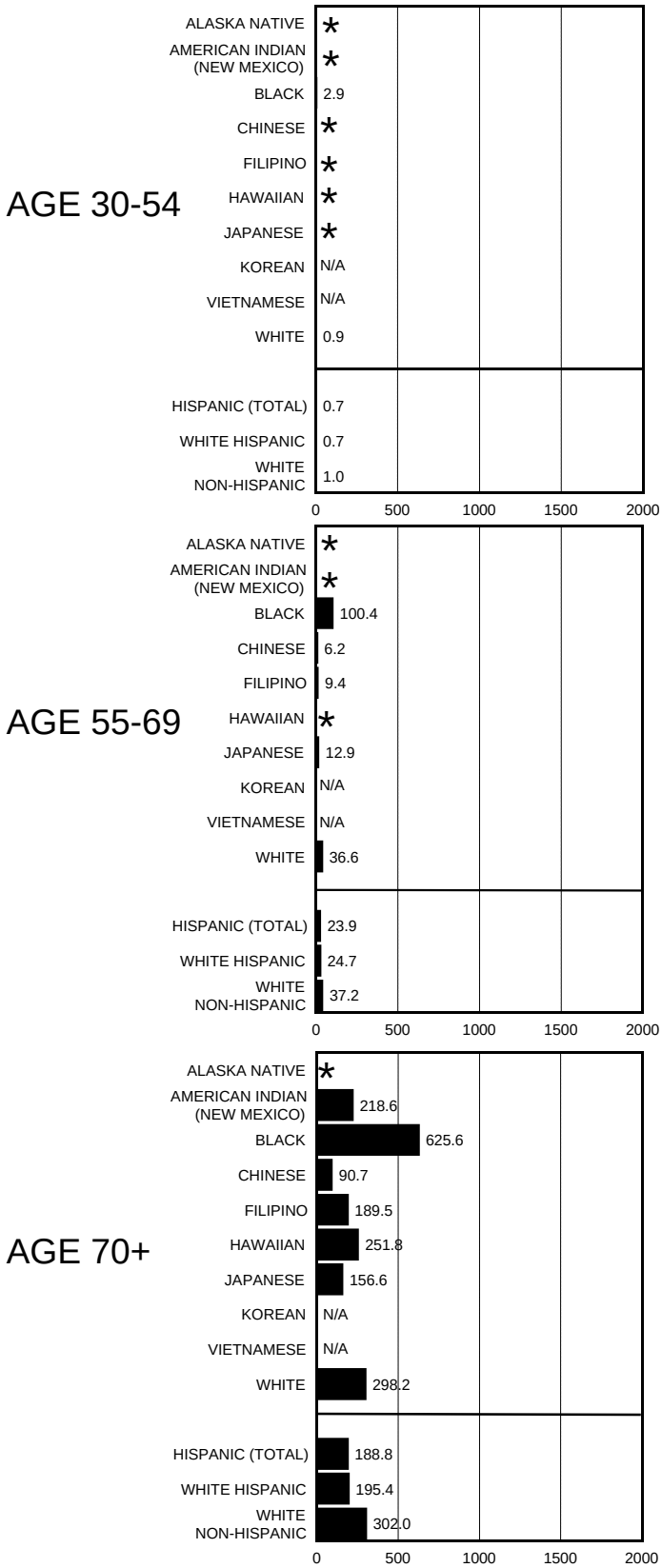
SEER INCIDENCE Rates Among Men by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

PROSTATE

United States MORTALITY Rates Among Men by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

STOMACH

Stomach cancer was the most common form of cancer in the world in the 1970s and early 1980s, and is probably now only surpassed by lung cancer. Stomach cancer incidence rates show substantial variation internationally. Rates are highest in Japan and eastern Asia, but other areas of the world have high stomach cancer incidence rates including eastern Europe and parts of Latin America. Incidence rates are generally lower in western Europe and the United States. Stomach cancer incidence and mortality rates have been declining for several decades in most areas of the world. For one subsite of the stomach, the cardia, incidence rates appear to be increasing, particularly among white men.

Stomach cancer incidence rates for the racial/ethnic populations in the SEER regions can be grouped broadly into three levels. Those with high age-adjusted incidence rates are Koreans, Vietnamese, Japanese, Alaska Natives and Hawaiians. Those with intermediate incidence rates are white Hispanic, Chinese, and black populations. Filipinos and non-Hispanic whites have substantially lower incidence rates than the other groups. These patterns hold for both men and women when rates are available for both sexes.

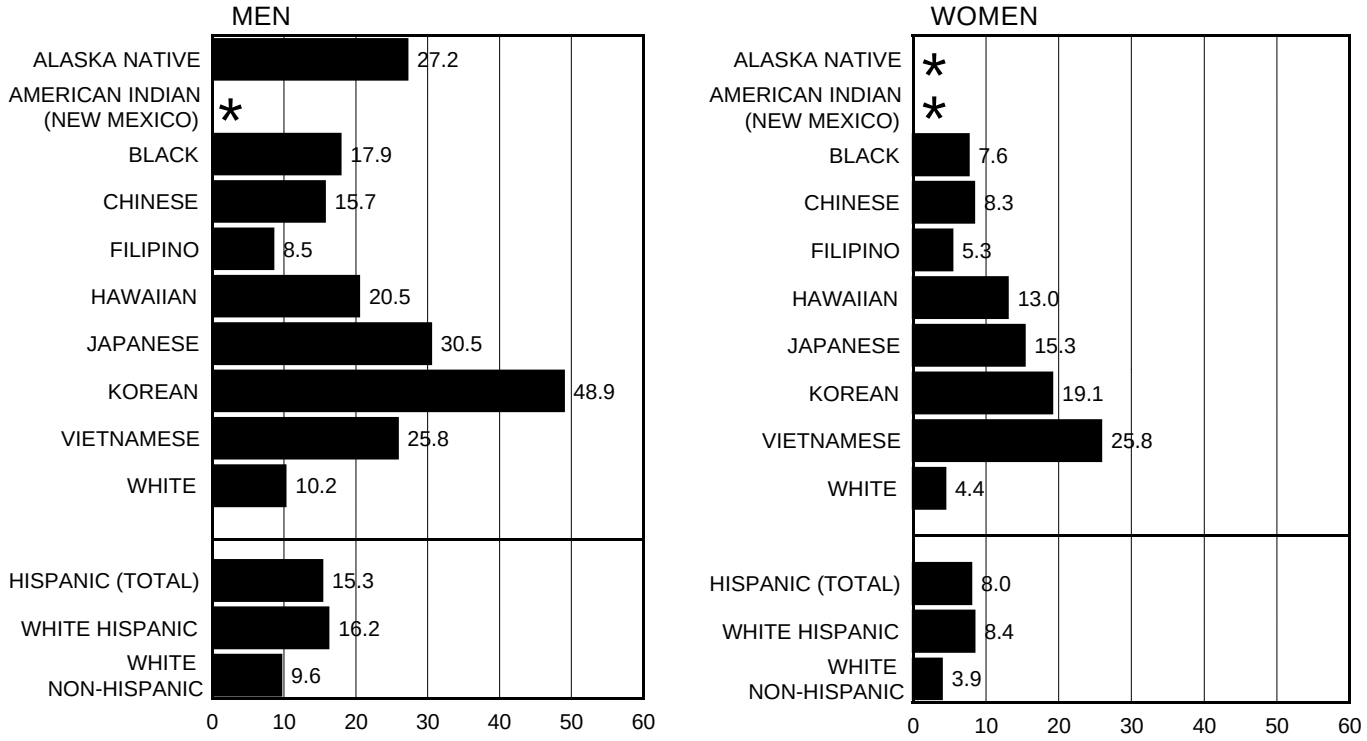
The incidence rate for Korean men is 1.6 times the rate in Japanese men, the group with the second highest rate, and is 2.4 times the rate in Hawaiians. The range in incidence rates is narrower among the groups in the intermediate level. The incidence rate for Korean men is nearly 5.8 times greater than the rate in Filipino men, the group with the lowest incidence rate. Among women, the highest incidence rate is in the Vietnamese population and is nearly 6.6 times greater than the rate in non-Hispanic whites. The male-to-female ratio of age-adjusted incidence rates is highest for Koreans (2.6) and followed closely by non-Hispanic whites and blacks (2.5 and 2.4, respectively). The ratio is less than two for other racial-ethnic groups. Notably, the incidence rates for Vietnamese men and women are the same.

The racial/ethnic patterns of stomach cancer mortality in the United States are similar to those for incidence. These patterns remain when incidence and mortality rates are calculated for the three age groups. There are some differences in the ratios of incidence rates to mortality rates. Filipinos show relatively high ratios of incidence to mortality (greater than 2); Japanese, Alaska Natives, white Hispanics, Chinese, and non-Hispanic whites show intermediate ratios (1.5-1.9); blacks and Hawaiians show low ratios of incidence to mortality rates (1.0-1.4).

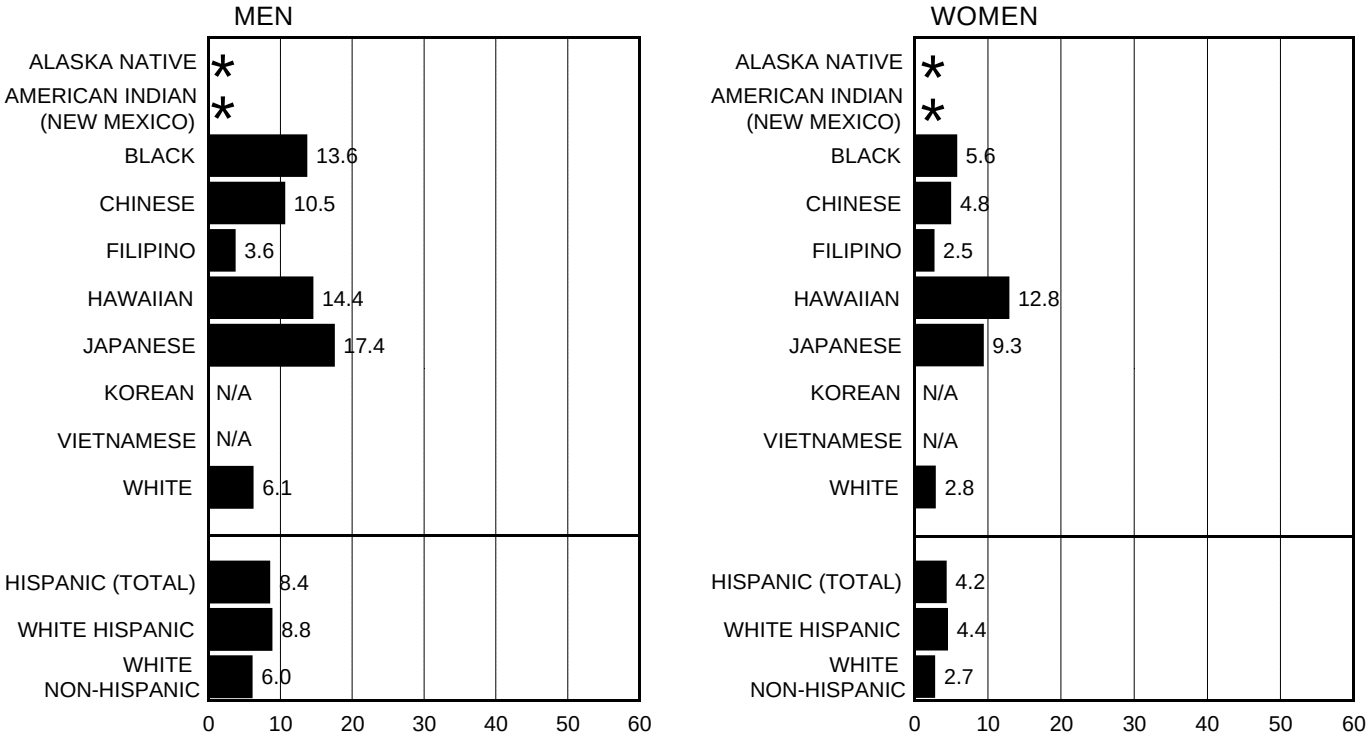
Better techniques for food preservation and storage are often cited as reasons for the decline in stomach cancer incidence worldwide. Refrigeration has resulted in lower intake of salted, smoked and pickled foods and greater availability of fresh fruits and vegetables. Evidence is strong that salt intake is a major determinant of stomach cancer risk. Cigarette smoking may also play a role. Infection with helicobacter pylori, the major cause of chronic active gastritis, also appears to be important in the development of stomach cancer.

STOMACH

SEER INCIDENCE Rates, 1988-1992



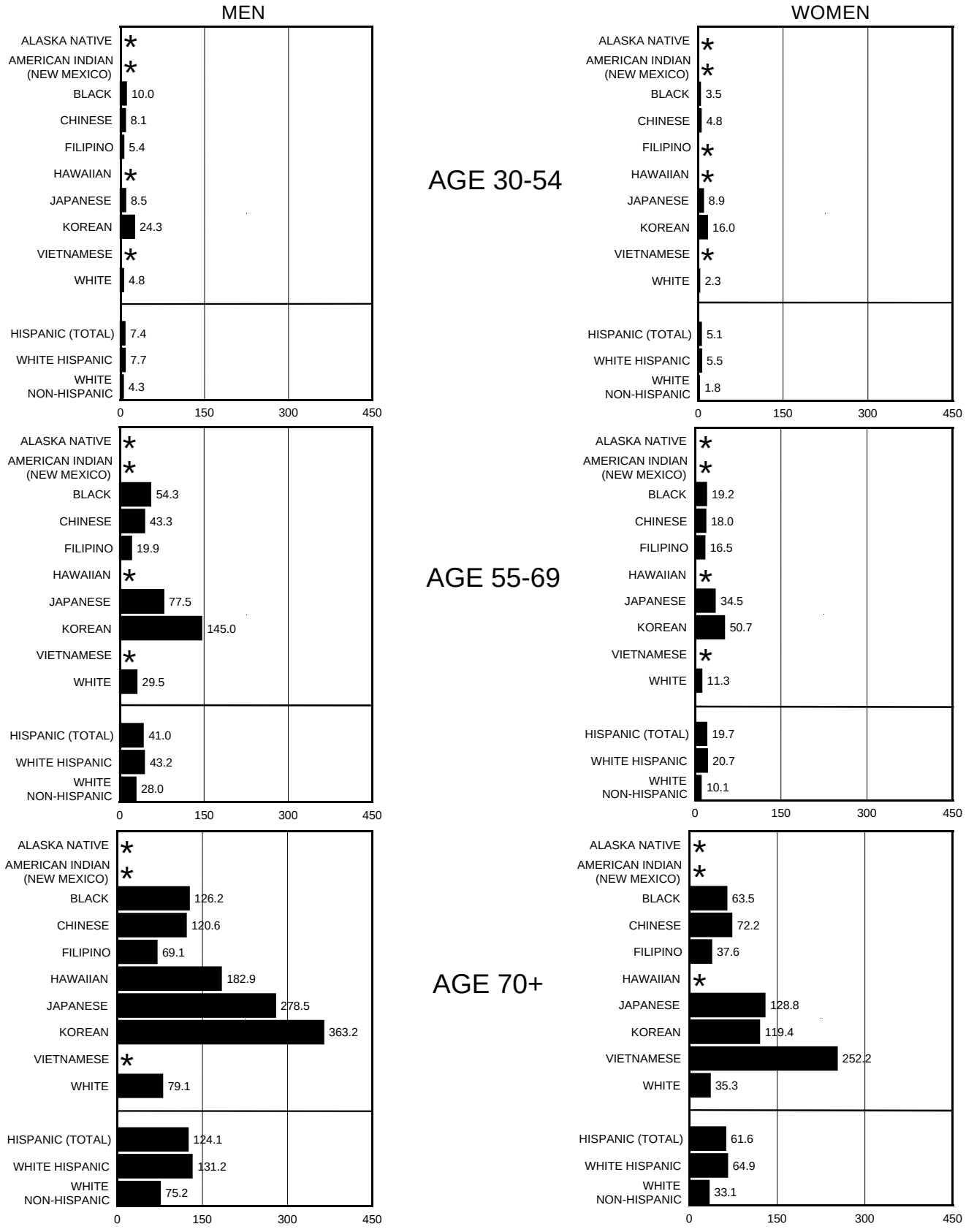
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

STOMACH

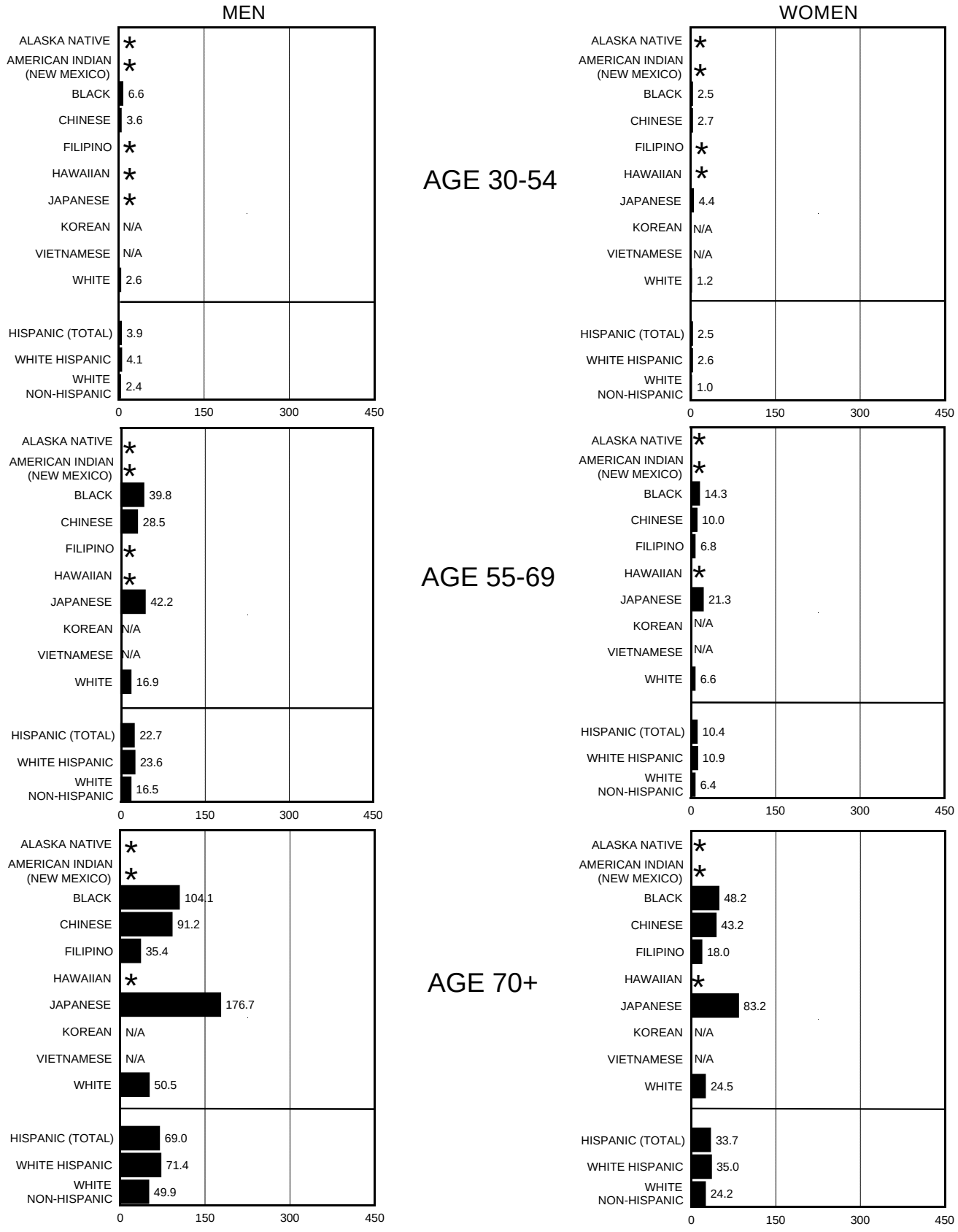
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

STOMACH

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

TESTIS

Testicular cancer is relatively rare and accounts foronly 1% of all cancers in men. World-wide, incidence is lower in Asians and blacks than in whites. The highest rates are in Northern Europe where they are about twice as high as in the United States, Canada, England and Australia. The lowest rates are in Japan, Thailand and Spain. In young men living in the SEER areas, the incidence rate of this cancer has increased about 2% per year since 1973.

Testicular cancer incidence rates vary widely among the racial/ethnic populations in the SEER regions for the years 1988 to 1992. The rate of 5.4 per 100,000 for white non-Hispanic men is almost seven times higher than the rate for black men. The reason for this is unknown. Although in this analysis the number of cases among Asians is small, their rate is intermediate between whites and Blacks. Incidence rates for white Hispanics are about one-half the rate for white non-Hispanics.

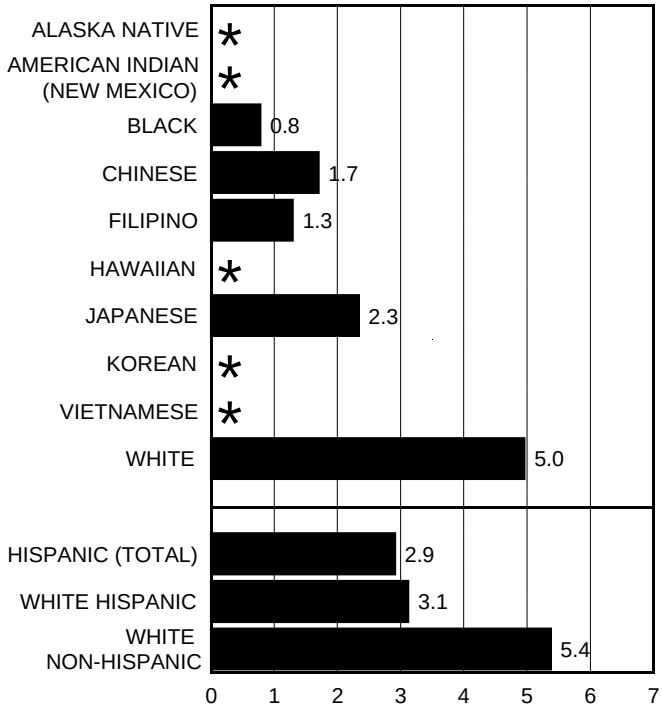
Testicular cancer, unlike most cancers, occurs predominantly in young men, especially those 20-34 years of age. The figures in this publication do not specifically show the high rate in this young population. In the age group 20-54 years, which is shown, the incidence rate for non-Hispanic whites is almost five times higher than the 55-69 year age group and nine times higher than the 70 year and older group.

Treatment advances for testicular cancer have been dramatic. In the mid-1970's some very effective combinations of drugs were used for patients with advanced disease. Within three years from the time that the effectiveness of this treatment was demonstrated there was a dramatic decrease in mortality and an improvement in survival. Due to this treatment breakthrough the mortality rate for this cancer is only about 5% to 10% of the incidence rate. Black men have mortality rates about one half that of white men, but considering that their incidence rate is seven times lower, the percentage of black men who die of their disease is much higher than for white men.

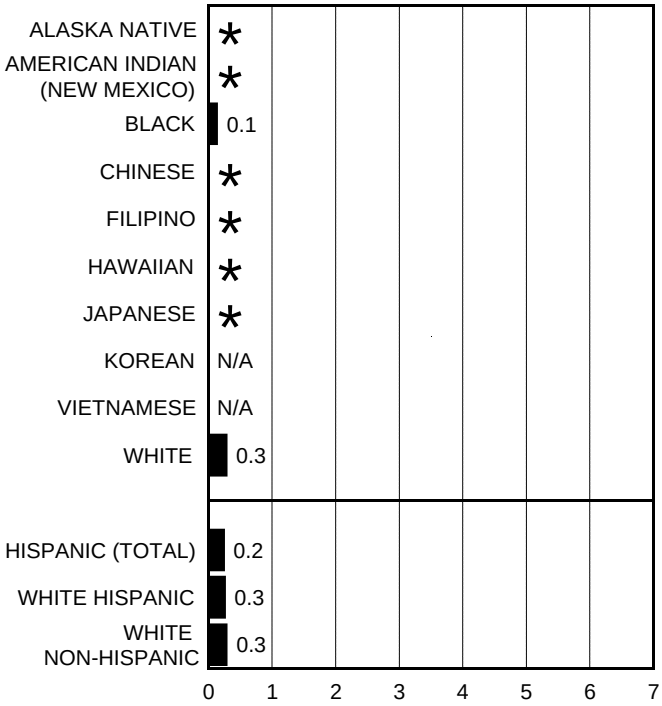
The major identified risk factor for testicular cancer is an undescended testis (testis that does not descend into the scrotum). About 10% of all testicular cancer patients have this condition. Since testicular descent is controlled by hormones and normally occurs before birth, maternal hormone patterns during the pregnancy may play a role in this cancer. In this regard, prenatal factors such as severe nausea, unusual bleeding, low birth weight, and early birth order have been associated with risk in some studies. Testicular cancer often can be identified early by self-examination of the testis. This procedure is recommended for men beginning in their twenties.

TESTIS

SEER INCIDENCE Rates Among Men, 1988-1992



United States MORTALITY Rates Among Men, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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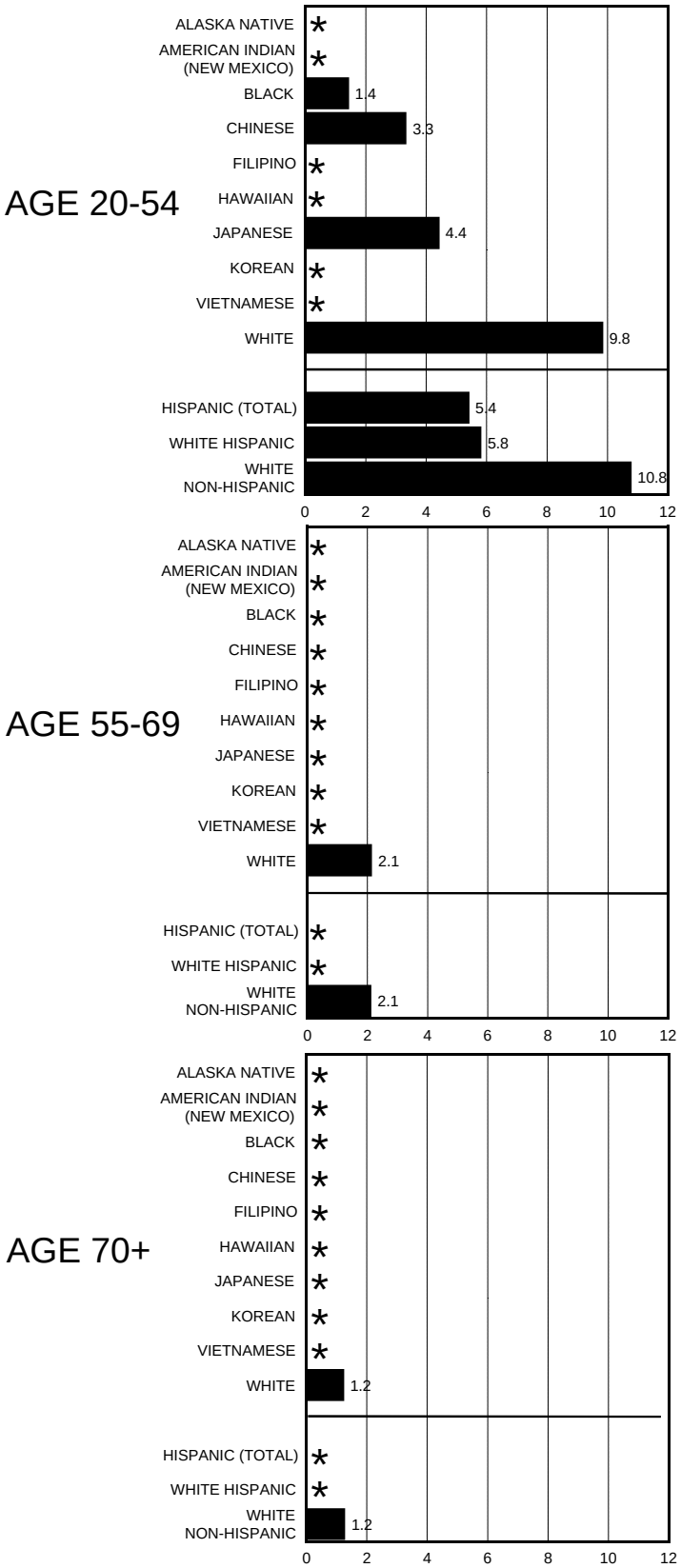
TESTIS

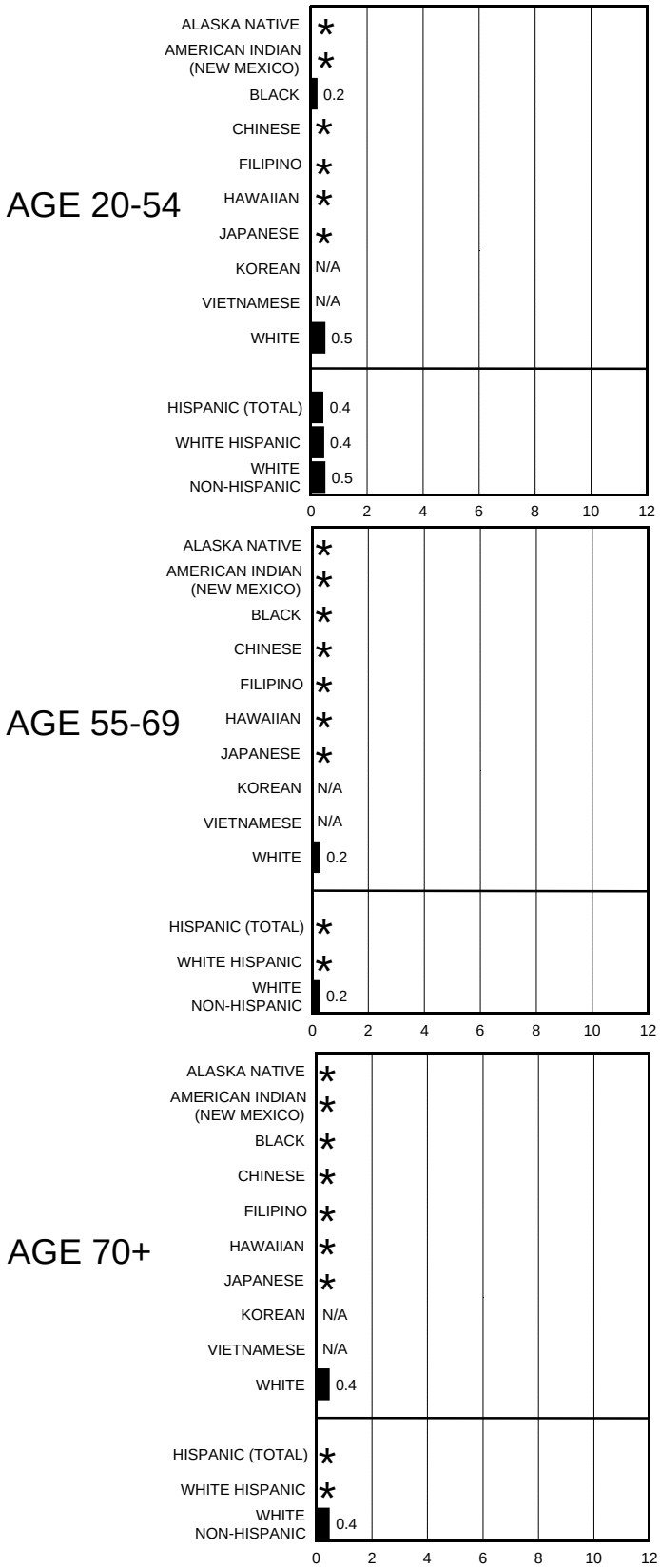
SEER INCIDENCE Rates Among Men by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

TESTIS

United States MORTALITY Rates Among Men by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

THYROID

Tiny and usually insignificant carcinomas can be found in five to 10% or more of all thyroid glands that are carefully examined under the microscope at autopsy, but relatively few of them grow or spread to produce symptoms that lead to their detection during a person's lifetime. The thyroid cancers that are diagnosed each year represent about 1% of all cancers in the U.S. population. Most types of thyroid cancer rank quite high in terms of successful treatment and long term survival. However, some rare subtypes may have a poor prognosis.

The highest incidence rates for thyroid cancer in the SEER regions occur in women, particularly in the Pacific Island and Southeast Asian populations living in California and Hawaii. The rates are highest among Filipino women (14.6 per 100,000), Vietnamese women (10.5) and Hawaiian women (9.1), and lowest among black women (3.3). Within each racial/ethnic group, incidence rates in women consistently exceed incidence rates in men by a factor of about three. Among men, highest rates occur in the Filipino population (4.1) and lowest in the black (1.4) and Japanese (1.6) populations.

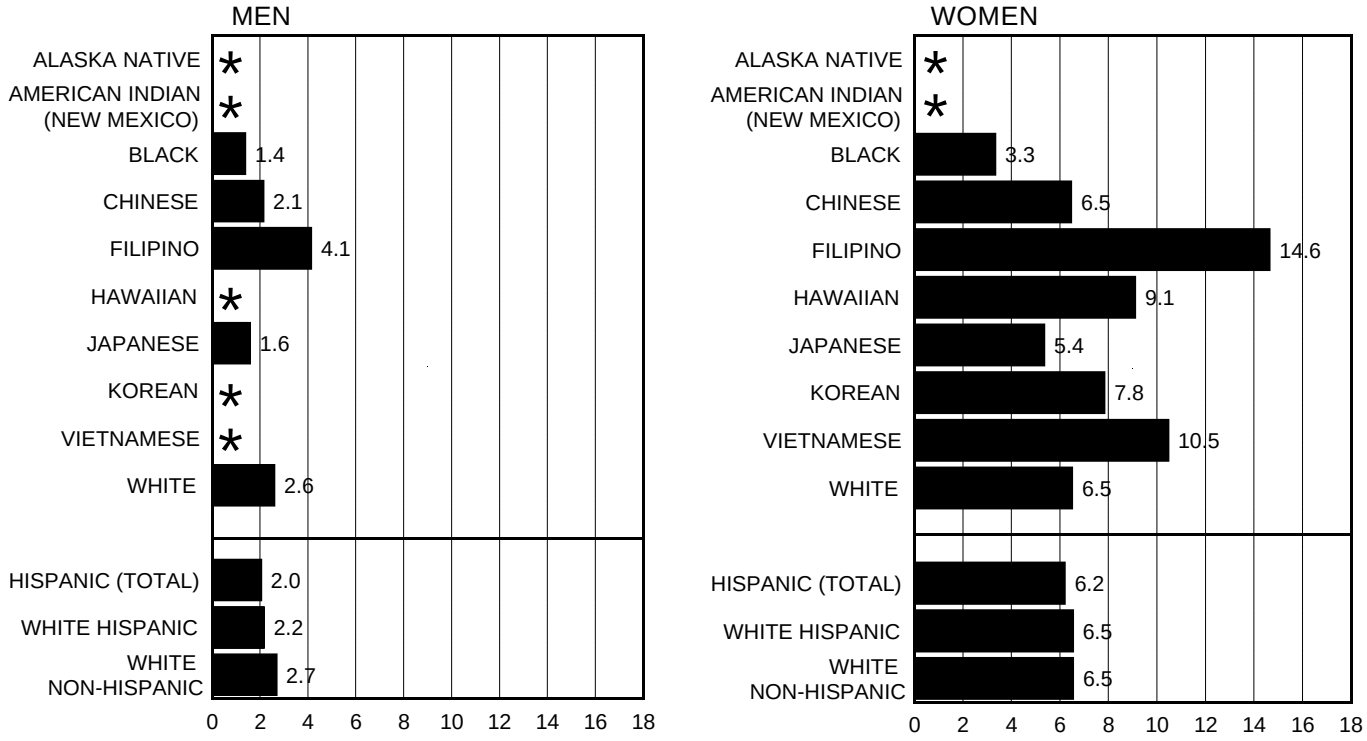
Mortality rates are lower than incidence rates by a factor of about five to ten in men and eight to twenty in women. Although women have three-fold higher incidence rates than men, the gender difference for mortality is smaller, reflecting somewhat better survival rates for women than for men. Most deaths due to thyroid cancer occur in the older age groups and may occur more than ten years after diagnosis.

Thyroid cancers occur in all age groups. Whereas the incidence of most other cancers increases markedly with age, in most of the racial/ethnic groups, thyroid cancer reaches its highest incidence in young adults and remains fairly constant throughout the rest of life. Hispanic men are an exception, with incidence rates which rise from 2.3 in the 30-54 year age group to 4.5 in the 55-69 year age group and 9.2 in the 70 year and older age group.

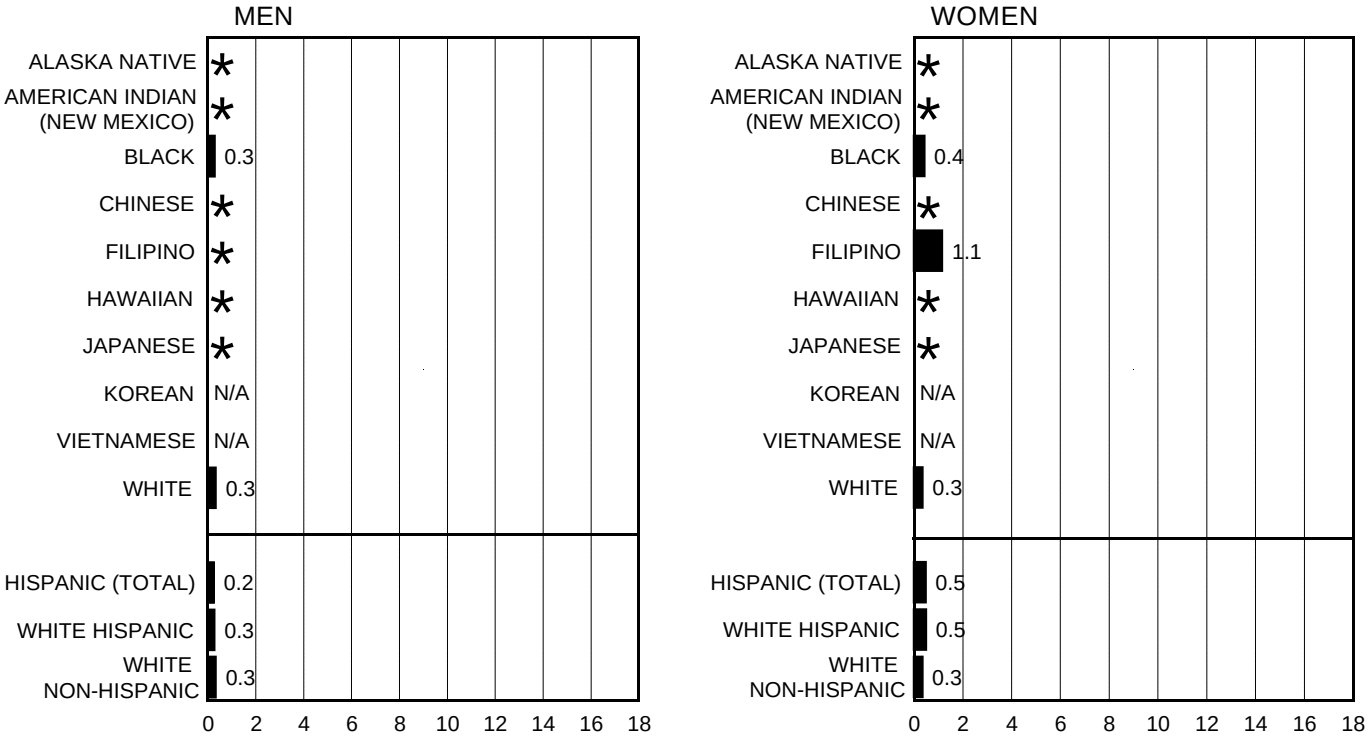
Many studies report an association between thyroid cancer and radiation exposure. In the 1930s and 1940s, X-rays were often used in the treatment of skin diseases and other benign conditions such as enlarged thymus or tonsils. Increased risks have been described in Japanese atomic bomb survivors and in persons exposed to fallout from atomic testing in the Marshall Islands. Populations exposed to radioactive fallout from the nuclear processing facility in Hanford, Washington and from the vicinity of the Chernobyl nuclear plant disaster in the Ukraine are currently being studied. Goiter and other thyroid diseases, as well as diets high or low in iodine, have been suspected risk factors. Medullary carcinomas of the thyroid, which account for about 3% of cases, are often a part of an inherited disease complex called the Multiple Endocrine Neoplasia (MEN) Syndrome.

THYROID

SEER INCIDENCE Rates, 1988-1992



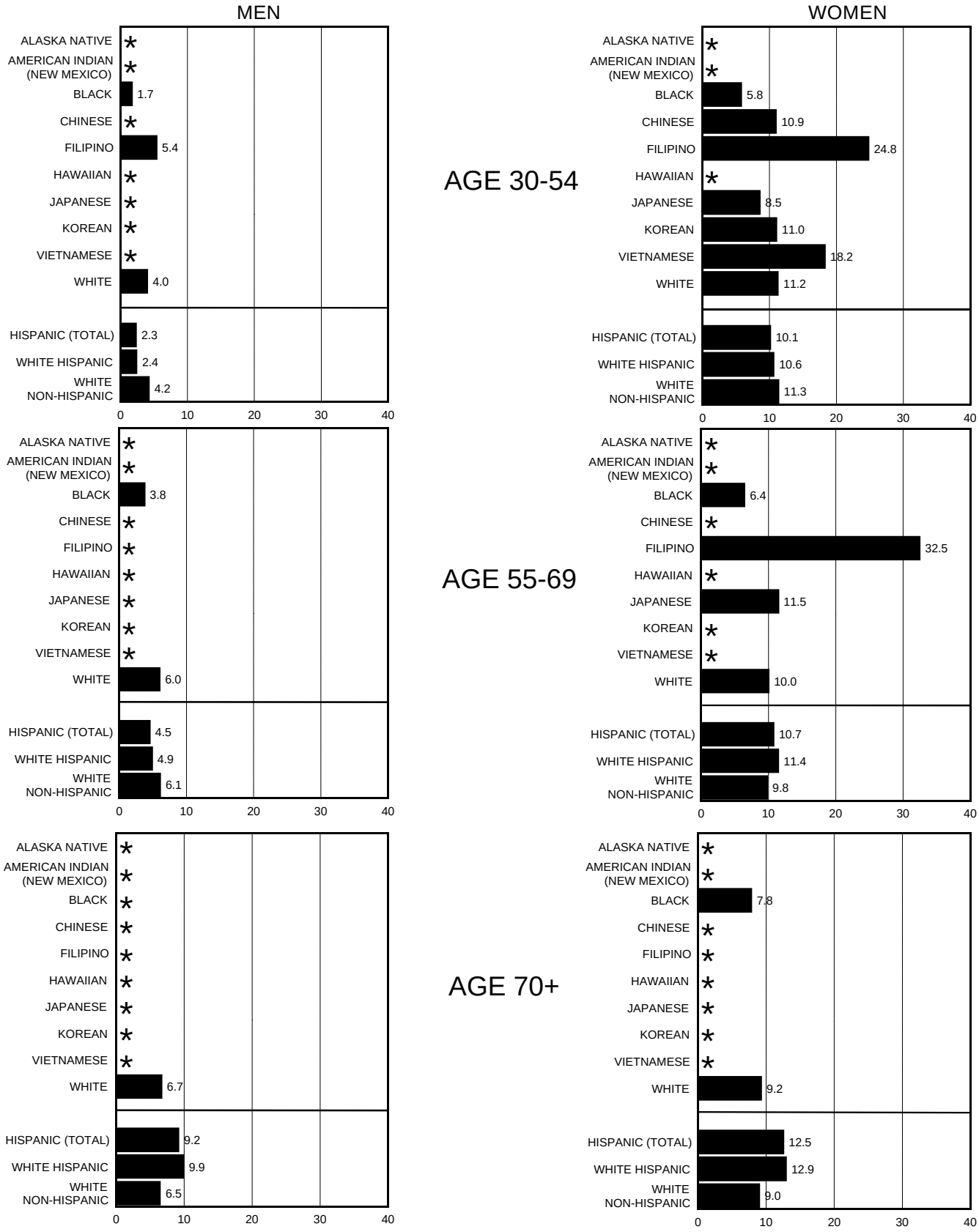
United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
* = rate not calculated when fewer than 25 cases.

THYROID

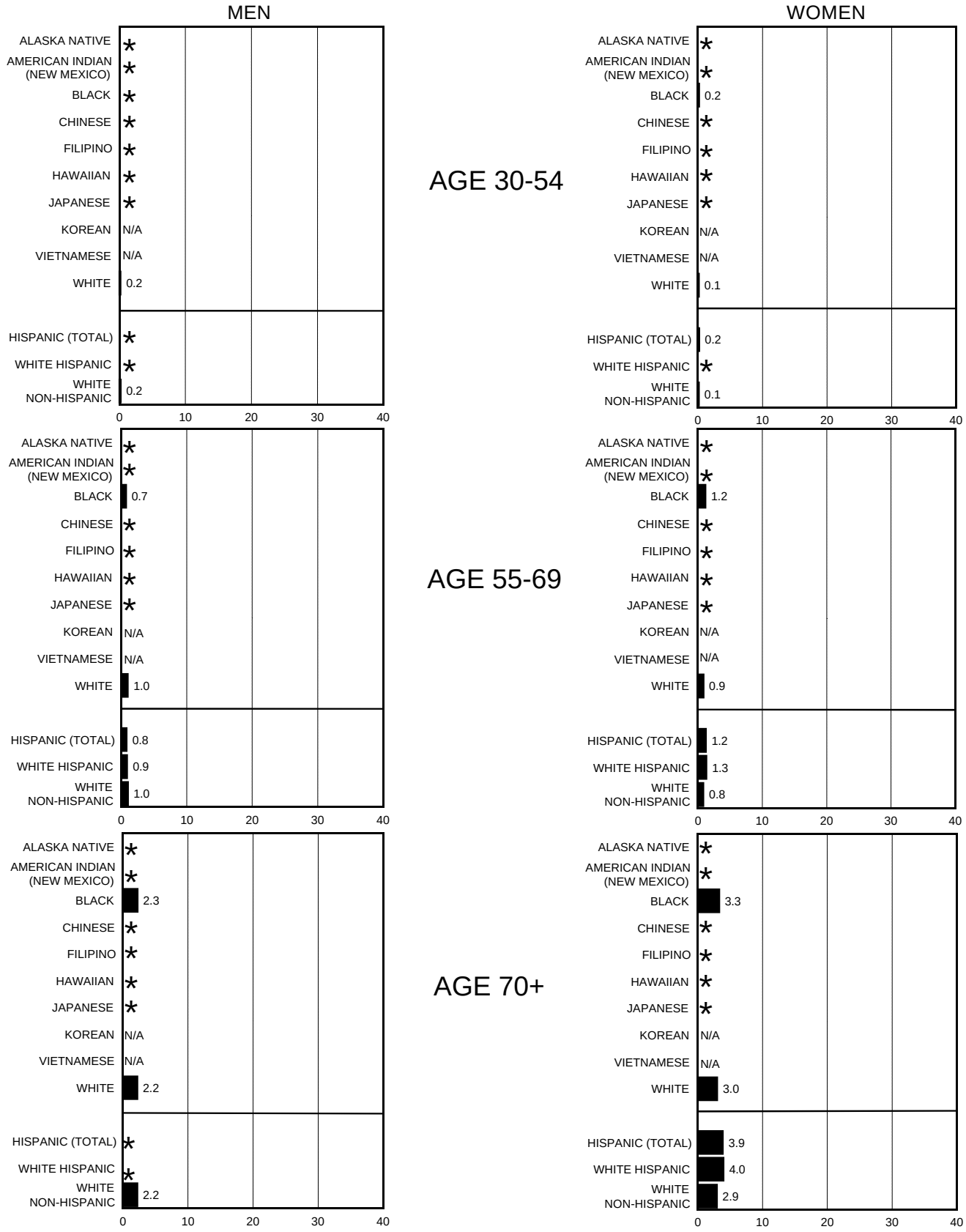
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

THYROID

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

URINARY BLADDER

The highest incidence rates for bladder cancer are found in industrialized countries such as the United States, Canada, France, Denmark, Italy, and Spain. Rates are lower in England, Scotland, and Eastern Europe. The lowest rates are in Asia and South America, where the incidence is only about 30% as high as in the United States. In all countries the rates are higher for men than women.

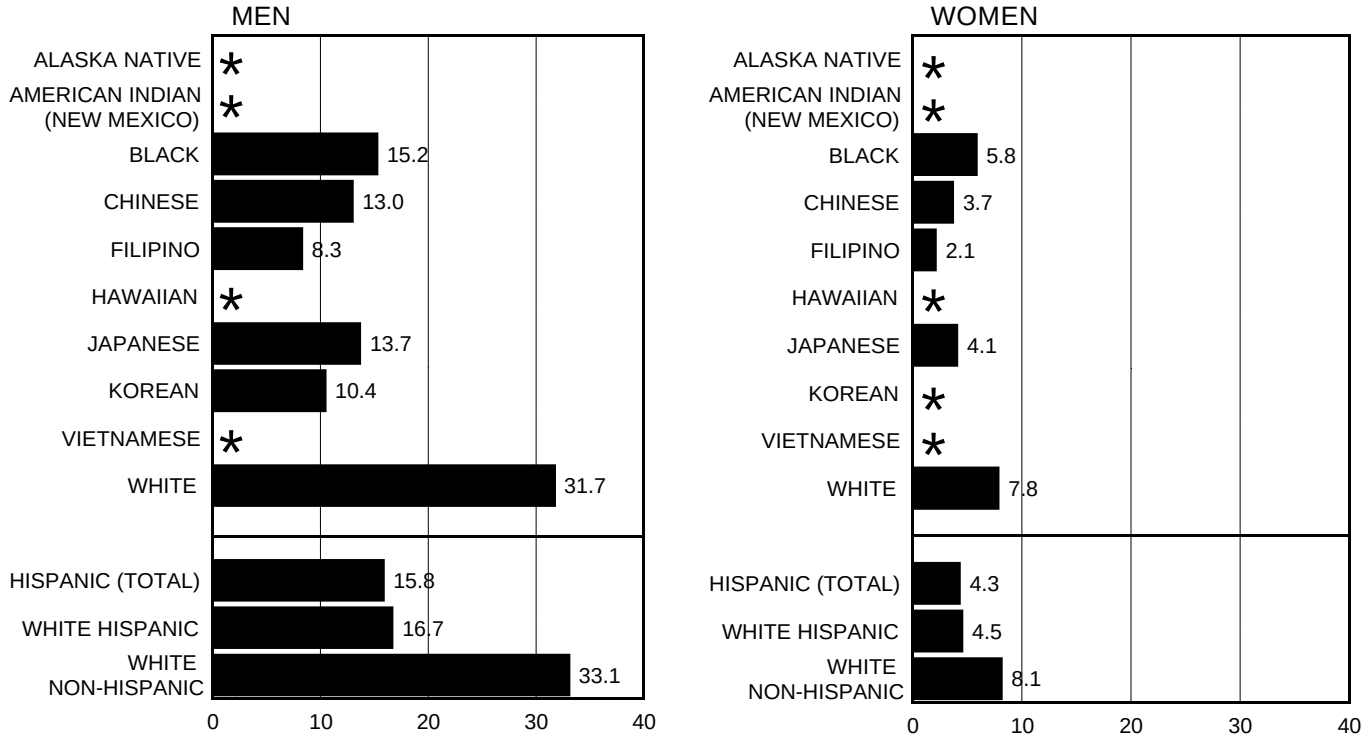
In the SEER regions, for the period 1988 to 1992, the incidence rates are generally three to four times higher in men than in women. Among men, the highest rates are in white non-Hispanics (33.1 per 100,000). The rates for black men and Hispanic men are similar and are about one-half the white non-Hispanic rate. The lowest rates are in the Asian populations. For women, the highest rates are also in white non-Hispanics and are about twice the rate for Hispanics. Black women, however, have higher rates than Hispanic women. The incidence of bladder cancer increases dramatically with age among men and women in all populations. Rates in those aged 70 years and older are approximately two to three times higher than those aged 55-69 years, and about 15 to 20 times higher than those aged 30-54 years.

Mortality rates are two to three times higher for men than women. While incidence rates in the white population exceed those for the black population, such is not the case for mortality where the rates are much closer together. Black women who have a lower incidence of bladder cancer than white women actually die from the disease at a greater rate. This difference in survival between black and white populations reflects the fact that in whites a larger proportion of these cancers are diagnosed at an early more treatable stage. Mortality rates for Hispanic and Asian men and women are only about one-half those for whites and blacks.

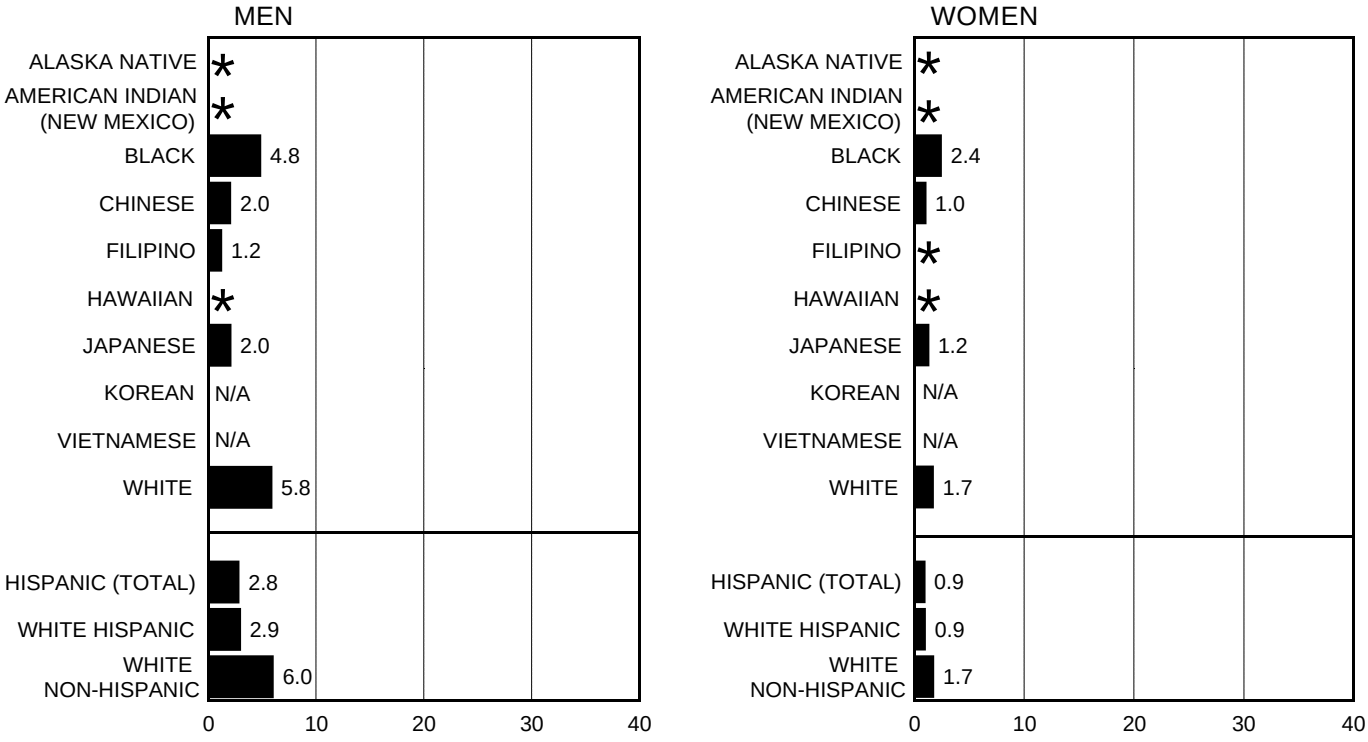
Cigarette smoking is an established risk factor for urinary bladder cancer. It is estimated that about 50% of these cancers in men and 30% in women are due to smoking. Occupational exposures may account for up to 25% of all urinary bladder cancers. Most of the occupationally accrued risk is due to exposure to a group of chemicals known as arylamines. Occupations with high exposure to arylamines include dye workers, rubber workers, leather workers, truck drivers, painters, and aluminum workers. Because of this association with bladder cancer, some arylamines have been eliminated or greatly reduced in occupational settings. Coffee, alcohol, and artificial sweeteners have all been studied as risk factors for bladder cancer, but associations, if they exist, are weak. The greatest prevention strategy is reduction in the consumption of cigarettes. Cigarette use increases one's risk for bladder cancer by two to five times. When cigarette smokers quit, their risk declines in two to four years.

URINARY BLADDER

SEER INCIDENCE Rates, 1988-1992



United States MORTALITY Rates, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = information not available;
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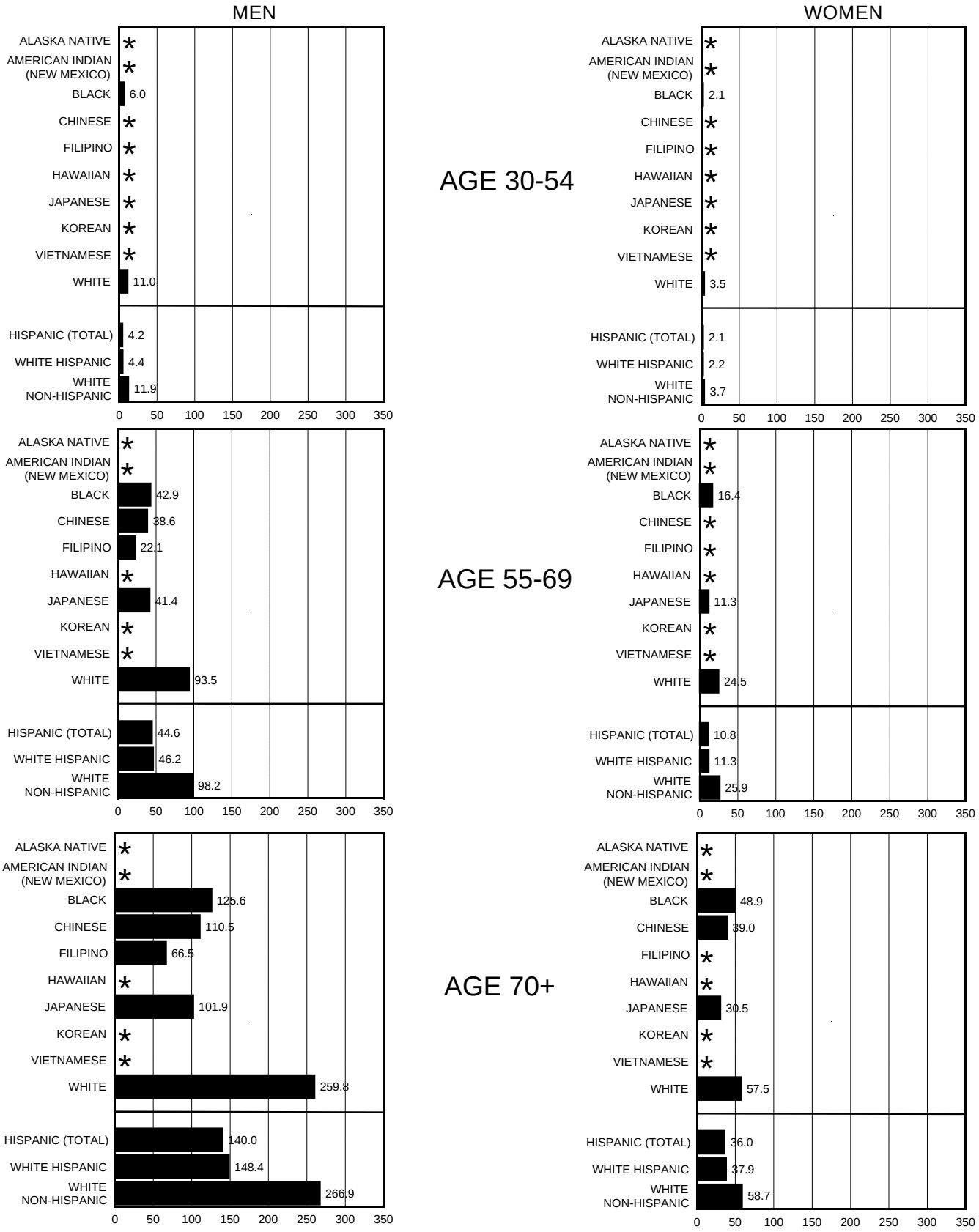
URINARY BLADDER

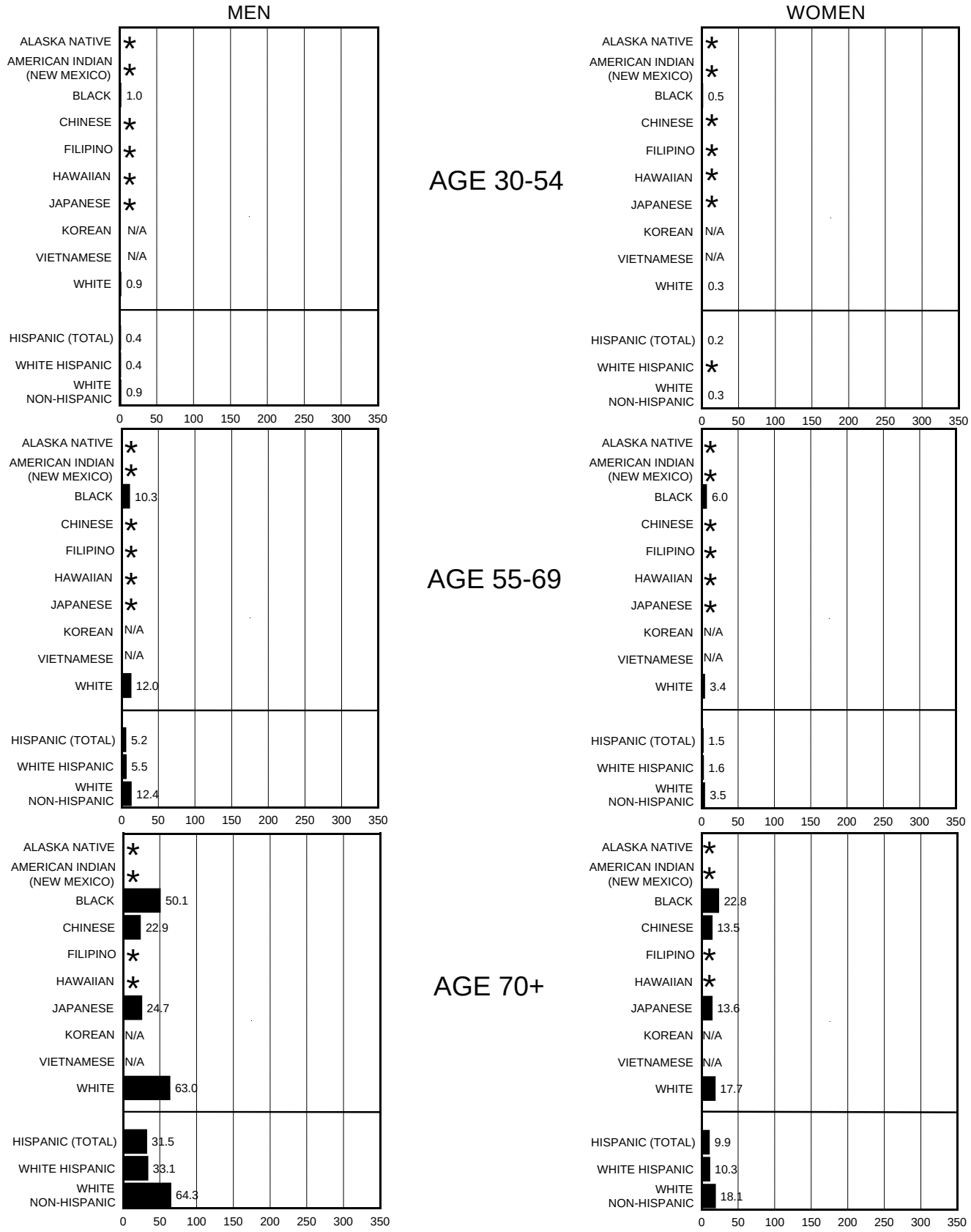
SEER INCIDENCE Rates by Age at Diagnosis, 1988-1992



NOTE: Rates are per 100,000 population, age-adjusted to 1970 U.S. standard; * = rate not calculated when fewer than 25 cases.

URINARY BLADDER

United States MORTALITY Rates by Age at Death, 1988-1992



NOTE: Rates are "average annual" per 100,000 population, age-adjusted to 1970 U.S. standard; N/A = data unavailable; * = fewer than 25 deaths.

CANCER CONTROL IN MINORITY AND UNDERSERVED POPULATIONS

Cancer affects various population subgroups in the United States in distinct ways. The statistics in this monograph show that black men have the highest incidence rate of cancer, due to excesses of prostate and lung and bronchus cancers, while American Indian men in New Mexico have the lowest rate. Among women, non-Hispanic white women have the highest incidence rate, due mainly to their excess of breast cancer, while American Indian women in New Mexico and Korean women have the lowest rates. Interestingly, the five most commonly diagnosed cancers among men in every racial/ethnic group include lung and bronchus, prostate and colorectal cancers. Oral cancers, however, are among the five most frequently diagnosed cancers only in black men and cancers of the kidney and renal pelvis are uniquely among the top five cancers in Alaska Native and American Indian (New Mexico) men. In women, cancer of the breast, lung and bronchus, and colon and rectum are among the top five cancers in every racial/ethnic group except American Indians (New Mexico). The high incidence of cervical cancer in Vietnamese women is a matter for concern and suggests a need to focus prevention and control efforts on this group. Cancers of the kidney and renal pelvis are uniquely high in Alaska Native women, mirroring the high rates seen in Alaska Native men.

Achieving better cancer control within minority and underserved populations in the United States is an important goal of the National Cancer Institute (NCI). Cancer control has been defined as the reduction of cancer incidence, mortality, and morbidity through an ordered sequence of research and interventions designed to alter cancer rates. Knowledge gained through research on specific interventions to improve cancer rates must be applied toward reducing the burden of cancer among minority populations. Specific activities supported by the NCI, include: 1) cancer surveillance, including special tracking of cancer rates among minority populations; 2) recruiting members of minority populations into clinical trials; 3) increasing and improving research targeting minority populations and increasing the participation of members of minority populations in the fields of biomedical research and medical practice; and 4) instituting community-based national education and outreach initiatives which target specific minority and underserved populations.

Cancer Surveillance

Cancer surveillance encompasses the collection, analysis and dissemination of data useful in the prevention, diagnosis, and treatment of cancer. As described in the introduction to this monograph, the SEER Program collects and reports statistics on the impact of cancer on major racial/ethnic populations in the United States. Since the composition of the United States population has changed over time, the SEER Program has adjusted its coverage of specific population subgroups to meet new needs. In 1992, to increase its coverage of minority populations, especially Hispanics, the SEER Program expanded to include Los Angeles County and the San Jose/Monterey area in California. The need for increased coverage of Hispanics arose from the tremendous

influx of Hispanics into the United States during the last decade.

Recruitment to Clinical Trials

Applicants for clinical research grants and cooperative agreements from the NCI are required to include minority group representation in their study populations. Each proposal must address racial, ethnic and gender issues in the overall research design, in the rationale for the selection of the proposed study population, and in sample size calculations. Applicants are urged to carefully assess the feasibility of including the broadest possible representation of minority groups. In accordance with this policy, the representation of black, Hispanic and white populations in NCI-sponsored cancer treatment trials has closely paralleled the incident burden of disease in these groups. In some instances, minority population accrual to treatment trials has exceeded proportionality. Although there has also been a small increase in the participation of minority populations in cancer prevention trials due to outreach efforts by the NCI, these groups remain largely under-represented in such studies. Additional efforts are needed to improve minority group participation in cancer prevention trials with the goal of reaching levels seen in treatment trials.

Research and Education

It is particularly important to direct the benefits from cancer prevention, early detection, and treatment toward minority and/or underserved populations that traditionally experience a heavy burden of cancer. The Special Populations Studies Branch of the Division of Cancer Prevention and Control, NCI currently funds four programs whose objectives are to increase research addressing the etiology, prevention, control and treatment of cancer in minority populations in the United States and to increase the pool of minority researchers. The long term goal of these programs is to reduce cancer rates in minority populations. The four programs are: the National Cancer Control Research Network; the National Hispanic Cancer Control Research Network; the Network for Cancer Control Research Among American Indian and Alaska Native Populations; and the Native Hawaiian and American Samoan Cancer Control Network. The Science Enrichment Program, an educational program aimed at encouraging minority high school students to pursue biomedical careers, is an example of a successful NCI-supported program to increase the potential pool of minority investigators.

Community-Based Outreach Initiatives

The Special Populations Studies Branch supports two outreach programs which use lay and professional leaders and coalitions to help reduce the risks of cancer among specific groups of Americans in their respective communities. These are: 1) The National Black Leadership Initiative on Cancer; and 2) The National Hispanic Leadership Initiative on Cancer. The Appalachian Leadership Initiative on Cancer is an outreach program sponsored by the Public Health Applications Research Branch, NCI. This project targets a specific geographic area, namely rural, low-income residents of the Appalachian region, rather than a racial/ethnic group.

Sources for additional information on cancer in minority and underserved populations are included in the Appendix.

APPENDICES

1. Sources for Additional Information on Cancer in Minority and Underserved Populations: NCI Programs and Resources

2. Estimated Number of New Cases of Selected Cancers in the United States by Racial/ Ethnic Group, 1990

3. Number of Deaths from Selected Cancers in the United States by Racial/Ethnic Group, 1990

4. Number of New Cases of Selected Cancers in SEER Regions and the State of Alaska Over Five Years (1988-1992) by Racial/Ethnic Group

APPENDIX 1. Sources for Additional Information on Cancer in Minority and Underserved Populations: NCI Programs and Resources

To learn more about cancer or other cancer-related community programs and resources contact:

Appalachia Leadership Initiative on Cancer
National Cancer Institute
Roselyn P. Epps, M.D., M.P.H.
301-496-0273

National Black Leadership Initiative on Cancer
National Cancer Institute
Frank Jackson
301-496-8589

National Hispanic Leadership Initiative on Cancer
National Cancer Institute
Elva Ruiz
301-496-8589

Public Inquiries Office
National Cancer Institute
301-496-5583

Cancer Information Service
National Cancer Institute
1-800-4-CANCER

APPENDIX 2. Estimated Number of New Cases of Selected Cancers in the United States by Racial/Ethnic Group, 1990 - Men

(Estimates derived by multiplying "average annual" age-specific incidence rates for the SEER regions, 1988-92, by the United States population in 1990 for each racial/ethnic group.)

Cancer Type	Alaska Native	American Indian (NM)	Black	Chinese	Filipino	Hawaiian	Japanese	Korean	Vietnamese	White*	Hispanic (Total)	White Hispanic	White Non-Hispanic
All Cancers	85	73	56,703	1,877	1,467	209	1,426	454	407	515,607	18,799	18,323	486,160
Brain & Other Nervous System	0	2	552	25	21	4	9	8	12	8,236	435	424	7,713
Colon & Rectum	17	7	6,028	288	186	26	285	55	38	61,537	2,075	2,023	58,099
Colon	14	5	4,505	190	114	16	186	31	24	42,559	1,305	1,271	40,391
Rectum	3	2	1,524	98	72	10	99	24	14	18,978	769	752	17,708
Esophagus	2	1	1,492	34	15	6	25	9	4	5,824	236	227	5,454
Hodgkin's Disease	0	0	346	7	9	1	4	1	2	3,638	239	232	3,412
Kaposi's Sarcoma	1	0	959	6	15	2	7	1	2	7,565	749	721	6,554
Kidney & Renal Pelvis	4	5	1,325	31	30	6	32	12	4	12,765	597	589	11,825
Larynx	1	0	1,274	18	12	3	11	9	7	8,003	287	283	7,554
Leukemia	1	4	1,251	52	63	8	26	17	21	14,337	746	729	13,231
Liver & Intrahepatic Bile Duct	2	4	710	145	57	4	28	52	59	4,015	392	381	3,338
Lung & Bronchus	17	5	11,656	334	260	52	193	80	72	82,457	2,211	2,160	78,932
Melanoma of Skin	0	1	111	3	5	1	3	1	2	16,048	191	184	16,024
Multiple Myeloma	1	1	1,119	14	26	3	7	4	4	5,478	235	233	5,077
Nasopharynx	4	0	118	91	23	2	4	2	17	610	36	32	561
Non-Hodgkin's Lymphoma	2	2	1,581	87	71	9	51	14	25	20,662	1,029	1,003	19,188
Oral Cavity	3	1	2,136	38	30	7	31	10	19	15,701	542	526	14,926
Pancreas	1	3	1,388	50	35	6	39	9	10	10,691	430	424	9,969
Prostate	9	18	17,417	279	370	31	389	29	32	149,631	4,391	4,266	141,935
Stomach	7	4	1,802	103	45	11	134	82	28	11,113	847	830	9,652
Testis	2	2	132	19	10	4	12	3	2	6,224	416	407	5,844
Thyroid	0	1	164	18	25	2	7	5	7	2,931	166	159	2,722
Urinary Bladder	1	1	1,502	82	44	3	59	15	10	34,699	831	811	33,368

* Includes cases among whites for whom Hispanic ethnicity is unknown in addition to cases among white Hispanics and white non-Hispanics.

APPENDIX 2. Estimated Number of New Cases of Selected Cancers in the United States by Racial/Ethnic Group, 1990 - Women

(Estimates derived by multiplying "average annual" age-specific incidence rates for the SEER regions, 1988-92, by the United States population in 1990 for each racial/ethnic group.)

Cancer Type	Alaska Native	American Indian (NM)	Black	Chinese	Filipino	Hawaiian	Japanese	Korean	Vietnamese	White*	Hispanic (Total)	White Hispanic	White Non-Hispanic
All Cancers	97	88	48,221	1,677	1,550	239	1,470	565	456	480,135	19,151	18,602	450,425
Brain & Other Nervous System	0	1	519	16	19	3	8	7	9	6,667	346	336	6,225
Breast	23	16	14,048	453	548	79	506	116	77	149,180	5,456	5,287	141,038
Cervix Uteri	7	5	2,090	60	76	8	36	49	73	11,252	1,526	1,476	8,763
Colon & Rectum	16	7	6,781	251	127	21	246	60	37	60,166	1,787	1,739	57,076
Colon	13	5	5,289	174	73	15	178	38	24	45,119	1,246	1,216	42,945
Rectum	4	2	1,493	77	53	6	68	22	13	15,047	541	523	14,131
Corpus & Uterus	2	5	2,087	89	85	18	89	12	16	29,949	1,029	1,002	28,373
Esophagus	1	0	603	7	3	1	4	0	3	2,507	63	60	2,408
Hodgkin's Disease	0	0	328	5	7	2	5	1	3	2,975	162	158	2,849
Kaposi's Sarcoma	0	0	37	0	0	0	0	0	0	215	26	26	164
Kidney & Renal Pelvis	5	4	880	17	18	2	14	9	5	8,139	419	412	7,445
Larynx	0	0	344	2	4	1	2	2	1	1,988	51	49	1,920
Leukemia	2	3	1,054	34	42	6	20	16	18	10,992	592	574	10,076
Liver & Intrahepatic Bile Duct	1	1	354	39	19	2	25	27	10	2,187	194	189	1,841
Lung & Bronchus	12	2	6,226	185	109	29	96	41	39	57,215	1,367	1,325	55,179
Melanoma of Skin	0	1	101	9	5	1	4	2	2	13,146	279	269	12,982
Multiple Myeloma	0	2	1,079	13	15	4	5	3	3	4,904	210	203	4,541
Nasopharynx	1	0	36	34	8	0	2	2	9	318	19	18	288
Non-Hodgkin's Lymphoma	2	2	1,151	54	56	4	46	18	12	17,205	689	667	16,110
Oral Cavity	2	1	815	19	32	3	21	2	3	7,970	210	198	7,678
Ovary	4	9	1,528	79	73	9	62	27	26	20,854	931	906	19,480
Pancreas	3	3	1,721	35	33	6	45	19	11	11,525	490	477	10,652
Stomach	2	5	1,166	64	33	9	93	59	33	6,913	599	586	5,818
Thyroid	3	2	532	61	123	8	32	32	27	8,057	631	611	7,188
Urinary Bladder	0	0	889	27	12	3	25	7	5	11,947	305	298	11,440

* Includes cases among whites for whom Hispanic ethnicity is unknown in addition to cases among white Hispanics and white non-Hispanics.

APPENDIX 3. Number of Deaths from Selected Cancers in the United States by Racial/Ethnic Group, 1990 - Men

(Source: National Center for Health Statistics mortality data tape)

Cancer Type	Alaska Native	American Indian (NM)	Black	Chinese	Filipino	Hawaiian	Japanese	White*	Hispanic (Total)	White Hispanic	White Non-Hispanic
All Cancers	51	37	31,989	886	592	161	600	232,599	7,398	7,134	217,763
Brain & Other Nervous System	1	1	372	24	12	4	7	5,890	219	214	5,482
Colon & Rectum	12	2	2,879	88	60	11	102	25,233	746	727	23,760
Esophagus	2	2	1,433	41	12	6	27	5,661	171	164	5,336
Hodgkin's Disease	0	0	96	2	2	1	0	853	54	53	785
Kidney & Renal Pelvis	3	3	542	10	11	4	7	5,449	223	218	5,035
Larynx	0	0	499	6	1	5	4	2,447	114	108	2,255
Leukemia	2	4	862	23	40	7	14	9,279	394	379	8,566
Liver & Intrahepatic Bile Duct	0	3	653	122	51	9	27	4,124	328	324	3,669
Lung & Bronchus	13	4	10,621	238	158	56	148	79,420	1,823	1,756	74,791
Melanoma of Skin	0	1	50	1	4	0	1	3,778	54	53	3,600
Multiple Myeloma	0	1	742	8	13	0	3	3,747	145	140	3,480
Nasopharynx	5	0	63	32	12	0	1	295	14	13	273
Non-Hodgkin's Lymphoma	1	3	644	31	35	3	17	8,921	351	336	8,312
Oral Cavity	0	0	937	10	5	3	13	4,220	159	149	3,928
Pancreas	0	3	1,442	32	24	9	42	10,581	409	399	9,888
Prostate	1	2	5,181	42	67	20	56	26,915	727	695	25,381
Stomach	3	2	1,341	75	23	7	70	6,689	465	446	6,038
Testis	0	0	15	0	3	0	0	322	29	28	280
Thyroid	0	0	25	1	0	1	0	330	13	13	306
Urinary Bladder	0	0	466	11	4	3	7	6,403	143	139	6,083

* Includes deaths among whites for whom Hispanic ethnicity is unknown in addition to deaths among white Hispanics and white non-Hispanics.

APPENDIX 3. Number of Deaths from Selected Cancers in the United States by Racial/Ethnic Group, 1990 - Women

(Source: National Center for Health Statistics mortality data tape)

Cancer Type	Alaska Native	American Indian(NM)	Black	Chinese	Filipino	Hawaiian	Japanese	White*	Hispanic (Total)	White Hispanic	White Non-Hispanic
All Sites	54	50	25,077	641	391	115	522	208,971	6,599	6,367	196,085
Brain & Other Nervous System	1	0	319	11	8	1	7	4,924	157	153	4,610
Breast	6	2	4,659	88	90	16	79	38,284	1,246	1,202	35,913
Cervix Uteri	3	5	972	22	20	1	12	3,511	296	287	3,117
Colon & Rectum	7	3	3,158	78	37	5	66	25,213	659	638	23,849
Corpus & Uterus	0	1	893	14	7	6	14	5,065	165	156	4,792
Esophagus	0	1	541	4	6	0	5	1,938	62	59	1,814
Hodgkin's Disease	0	0	52	0	2	0	3	618	26	25	574
Kidney & Renal Pelvis	4	3	346	2	4	0	5	3,405	123	119	3,143
Larynx	0	0	132	0	0	0	1	598	8	7	570
Leukemia	0	3	740	24	20	4	13	7,583	343	339	7,003
Liver & Intrahepatic Bile Duct	0	1	438	29	9	3	26	2,775	204	196	2,484
Lung & Bronchus	9	4	4,503	144	58	36	75	45,112	787	744	42,884
Melanoma of Skin	0	0	55	1	1	1	2	2,512	35	34	2,390
Multiple Myeloma	1	3	705	7	6	4	3	3,598	127	121	3,349
Nasopharynx	1	0	24	13	1	0	1	181	9	9	167
Non-Hodgkin's Lymphoma	1	3	518	14	11	2	21	8,136	252	242	7,639
Oral Cavity	1	0	287	5	6	2	8	2,222	50	46	2,109
Ovary	2	3	959	29	27	6	21	11,469	377	367	10,770
Pancreas	7	3	1,581	33	15	4	35	11,146	385	376	10,415
Stomach	2	3	917	42	15	7	62	4,619	346	330	4,151
Thyroid	0	0	64	0	7	1	2	584	29	29	540
Urinary Bladder	1	0	381	10	0	1	5	3,026	67	64	2,878

* Includes deaths among whites for whom Hispanic ethnicity is unknown in addition to deaths among white Hispanics and white non-Hispanics.

APPENDIX 4. Number of New Cases of Selected Cancers in SEER Regions and the State of Alaska Over Five Years (1988-1992) by Racial/Ethnic Group - Men

Cancer Type	Alaska Native	American Indian(NM)	Black	Chinese	Filipino	Hawaiian	Japanese	Korean	Vietnamese	White*	Hispanic (Total)	White Hispanic	White Non-Hispanic
All Cancers	423	367	33,619	4,518	4,109	1,046	5,410	1,026	656	309,045	21,352	20,828	287,180
Brain & Other Nervous System	2	9	338	54	55	19	31	16	18	5,197	525	515	4,675
Colon & Rectum	85	36	3,549	701	525	129	1,082	126	62	36,470	2,307	2,248	34,103
Colon	69	25	2,643	465	322	79	708	72	39	25,178	1,448	1,409	23,681
Rectum	16	11	906	236	203	50	374	54	23	11,292	859	839	10,422
Esophagus	9	5	898	82	42	28	94	21	6	3,473	262	252	3,217
Hodgkin's Disease	2	1	218	15	24	4	14	2	3	2,418	296	290	2,122
Kaposi's Sarcoma	3	1	624	13	38	10	21	2	3	5,170	944	919	4,240
Kidney & Renal Pelvis	21	27	800	73	84	28	120	26	6	7,710	676	668	7,028
Larynx	5	2	769	45	34	13	42	22	12	4,803	320	316	4,476
Leukemia	7	20	749	118	169	41	93	33	33	8,761	899	884	7,853
Liver & Intrahepatic Bile Duct	12	22	427	339	156	22	104	111	95	2,407	442	430	1,969
Lung & Bronchus	87	25	6,962	820	723	260	731	190	117	48,957	2,447	2,386	46,411
Melanoma of Skin	0	4	66	7	13	4	10	1	3	10,030	223	216	9,763
Multiple Myeloma	4	7	660	35	73	14	28	9	7	3,257	262	260	2,987
Nasopharynx	19	0	72	199	62	9	13	3	27	378	41	37	339
Non-Hodgkin's Lymphoma	11	9	979	204	198	44	187	29	39	12,817	1,212	1,187	11,597
Oral Cavity	13	7	1,312	90	84	37	116	23	30	9,554	616	600	8,930
Pancreas	5	16	819	123	98	32	148	21	16	6,351	477	471	5,863
Prostate	47	89	10,059	708	1,075	154	1,517	75	54	87,501	4,797	4,642	82,515
Stomach	34	20	1,067	248	126	57	511	185	45	6,629	948	928	5,688
Testis	11	10	85	39	27	20	37	5	3	4,306	540	535	3,750
Thyroid	2	3	101	41	67	12	25	10	11	1,885	200	193	1,686
Urinary Bladder	7	7	877	202	123	16	224	35	16	20,564	920	896	19,594

* Includes cases among whites for whom Hispanic ethnicity is unknown in addition to cases among white Hispanics and white non-Hispanics.

APPENDIX 4. Number of New Cases of Selected Cancers in SEER Regions and the State of Alaska Over Five Years (1988-1992) by Racial/Ethnic Group - Women

Cancer Type	Alaska Native	American Indian(NM)	Black	Chinese	Filipino	Hawaiian	Japanese	Korean	Vietnamese	White*	Hispanic (Total)	White Hispanic	White Non-Hispanic
All Cancers	484	440	28,119	4,067	3,877	1,194	4,841	1,143	734	288,528	22,099	21,628	265,836
Brain & Other Nervous System	2	7	309	38	48	16	24	14	14	4,118	416	407	3,704
Breast	115	80	8,343	1,063	1,334	393	1,613	215	122	90,154	6,285	6,140	83,650
Cervix Uteri	34	27	1,268	141	184	42	108	100	116	7,167	1,823	1,781	5,369
Colon & Rectum	81	35	3,858	629	330	104	839	128	62	35,488	2,015	1,973	33,386
Colon	63	23	3,004	436	193	73	611	84	40	26,583	1,402	1,376	25,114
Rectum	18	12	854	193	137	31	228	44	22	8,905	613	597	8,272
Corpus & Uterus	12	25	1,201	213	212	91	284	25	25	17,835	1,176	1,154	16,626
Esophagus	4	1	349	18	7	4	14	1	4	1,474	71	68	1,403
Hodgkin's Disease	1	1	202	10	18	11	15	2	4	1,932	198	195	1,735
Kaposi's Sarcoma	0	0	22	0	0	0	0	0	0	131	31	31	98
Kidney & Renal Pelvis	23	21	515	43	46	11	48	19	9	4,869	481	477	4,374
Larynx	1	0	201	4	10	3	7	4	2	1,182	57	56	1,123
Leukemia	9	13	612	80	105	31	66	30	28	6,662	712	697	5,946
Liver & Intrahepatic Bile Duct	7	7	203	98	51	11	84	58	17	1,299	220	216	1,078
Lung & Bronchus	62	12	3,601	473	284	147	322	91	66	33,773	1,534	1,496	32,157
Melanoma of Skin	1	3	58	21	12	5	11	4	3	8,260	330	321	7,888
Multiple Myeloma	2	10	614	34	40	18	19	6	5	2,887	235	229	2,649
Nasopharynx	5	2	22	79	19	2	5	3	14	192	22	21	170
Non-Hodgkin's Lymphoma	10	12	677	128	147	22	159	36	20	10,285	789	769	9,478
Oral Cavity	11	4	482	46	84	13	69	4	5	4,758	243	231	4,507
Ovary	22	45	898	182	180	45	191	49	41	12,673	1,086	1,065	11,567
Pancreas	16	17	972	90	90	31	159	41	18	6,781	549	538	6,217
Stomach	12	23	659	162	86	46	326	121	55	4,094	681	671	3,408
Thyroid	15	12	325	135	293	41	97	60	42	5,186	769	752	4,414
Urinary Bladder	2	2	499	69	33	15	86	16	8	7,057	342	337	6,694

* Includes cases among whites for whom Hispanic ethnicity is unknown in addition to cases among white Hispanics and white non-Hispanics.