Liver cancer includes carcinomas of the liver and intrahepatic bile duct as well as a number of other rarer tumor types. Liver cancer is almost always fatal: the median survival time is less than six months, and five-year relative survival is approximately 5%[1]. Liver cancer is four to five times more common in males than females, though the reasons for this sex difference are not known[1]. In the United States, Asian groups are at particular risk for liver cancer, with incidence and mortality rates several times higher than those in whites[2].

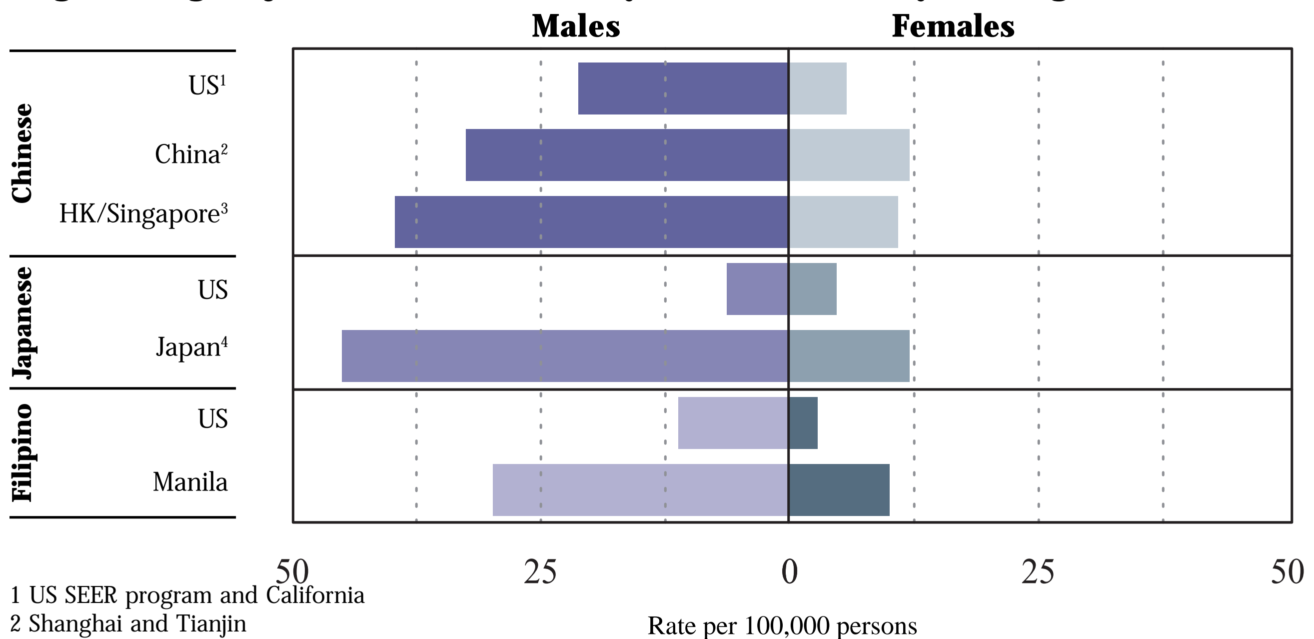
Risk Factors

The major risk factor for liver cancer is infection with the hepatitis B virus (HBV), which is detected by the presence of hepatitis B surface antigen (HbsAg) in the blood. Strong evidence for an association between HBV and liver cancer among Asians shows that 90% of liver cancer patients are HbsAg-positive in Chinese countries, compared to 26% in Japan and 10-26% in the US[3]. In addition, it is believed that early exposure to HBV has an impact on the subsequent development of liver cirrhosis and, ultimately, liver cancer[3]. Many regions in Asia have relatively high HBV infection rates, with a positivity rate for HBsAg greater than 7%. In contrast, the prevalence of HBsAg among the general US population is less than 1%[3]. Thus, lack of HBV exposure may explain why liver cancer rates are lower among succeeding generations of Asian migrants to the US[3-5]. However, liver cancer rates are still higher in US Asians than in whites; one possible explanation is vertical transmission of HBV (from mothers to children). There is also evidence that both HBV and liver cancer cluster within families[1,3].

HBV is not the only viral risk factor for liver cancer. Although HBV prevalence is lower in Japan and the number of HbsAg-positive liver cancer patients in Japan has declined over time, liver cancer rates in Japan have been increasing since 1970. Serological evidence has shown that the hepatitis C virus (HCV), rather than hepatitis B, is the major etiologic agent in Japan[3], and the incidence of HCV infection in Japan will likely increase in the next several years, accompanied by the continued increase in liver cancer incidence[1].

Aflatoxins, which are mycotoxins produced by certain types of fungi present in mold, also have been associated with liver cancer occurrence. In China, liver cancer is more common along the warm, humid, and rainy coastline, where mycotoxin and mold growth results in aflatoxin B_1 buildup around the household as well as in food[1,3]. However, because of difficulty in measuring aflatoxin levels in the environment as well as in the human body, results of studies of the relationship between aflatoxin and liver cancer in Japan, China, and the Philippines have been inconsistent[1].

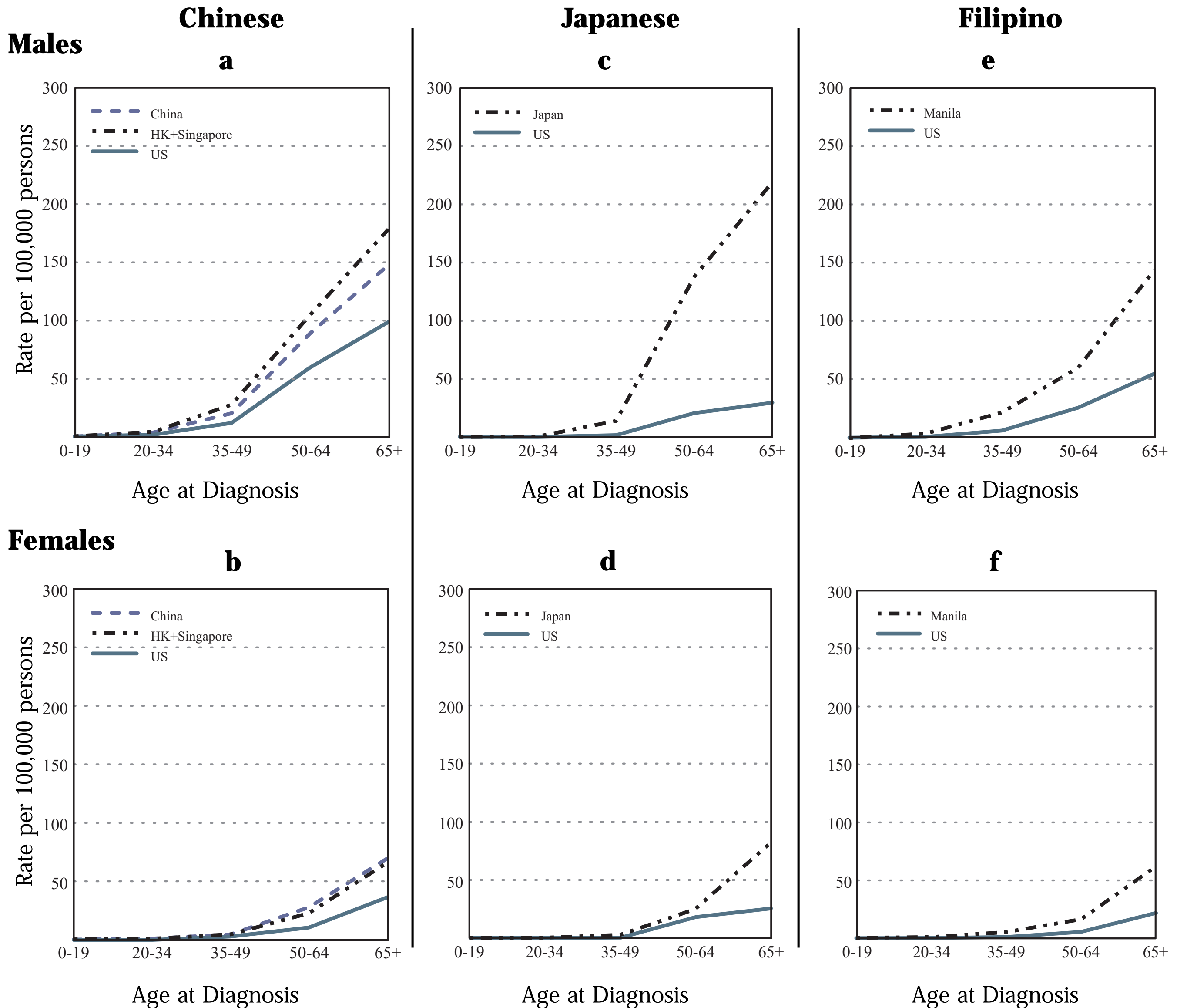
Figure 1: Age-adjusted incidence rates by sex, race/ethnicity, and region, 1988-1992



1 US SEER program and California
2 Shanghai and Tianjin
3 Hong Kong and Singapore-Chinese
4 Miyagi, Nagasaki, Osaka, Yamagata, Saga

Alcoholic cirrhosis has been highly associated with liver cancer in the US. However, studies in high liver cancer incidence areas, such as parts of Asia, have not shown any significant relationships between alcohol consumption and liver cancer[1], perhaps due to the overriding effect of the hepatitis viruses, which are so strongly linked with liver cancer occurrence. Alcohol may become a more influential risk factor in these areas in the future: a study in Japan found that 31% of liver cancer patients were heavy drinkers in 1990[3]. Other risk factors for liver cancer include exposure to Thorotrast (used in X-rays), hemochromatosis (a genetic disease of iron over-

Figure 2: Age-specific incidence rates by race/ethnicity, sex, and region, 1988-1992



load), occupational contact with vinyl chloride, use of certain types of oral contraceptives, and cigarette smoking, though results from some studies have been inconsistent. In addition, the way these factors and HBV may work together to influence liver cancer occurrence is not clear[1].

Because liver cancer incidence in Asian countries appears to be increasing, many countries have instituted public hygiene programs, and have implemented nationwide immunization for hepatitis B. These measures are expected to lead to a decrease in liver cancer incidence rates in the next 20 to 40 years[1,3].

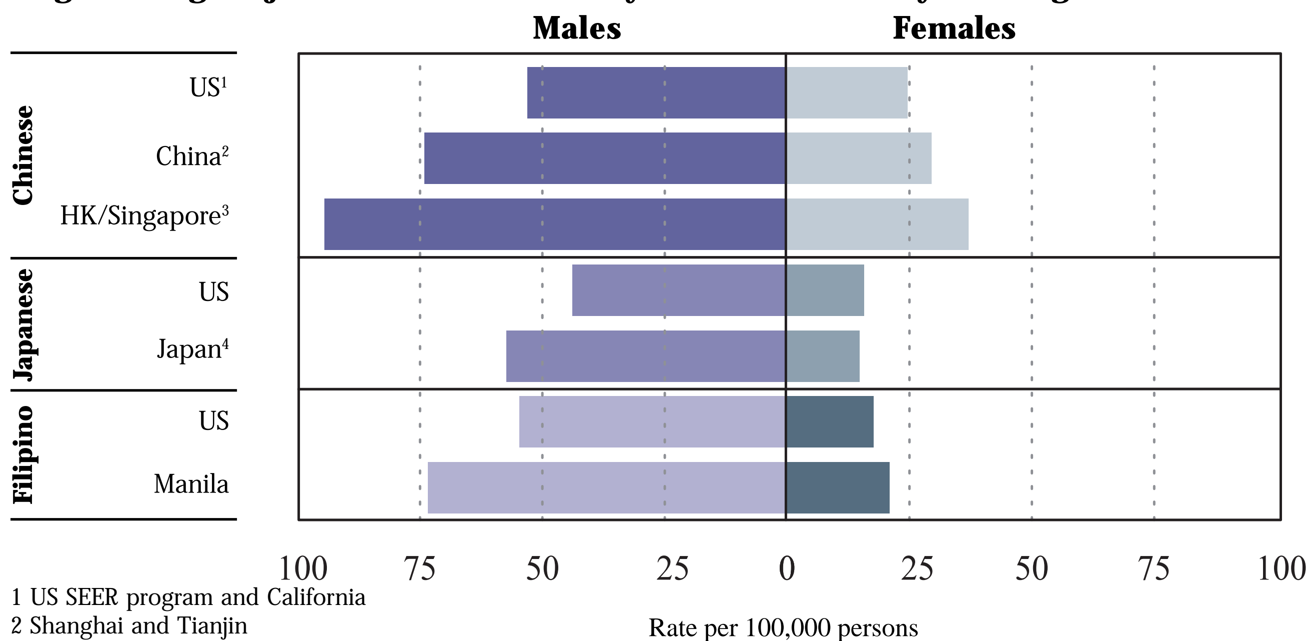
Incidence

Liver cancer was more common among Asians living in Asia than among their counterparts in the US (Figure 1). Together, all registries in China reported one of the highest rates of liver cancer in the world for the time period 1988-1992, with more than 40% of the world's cases[1,6]. These statistics largely reflect the geographic differences in exposure to the hepatitis viruses. However, although males generally experienced considerably higher liver cancer incidence rates than females, US Japanese males and females had similarly low rates during this time period - a pattern not evident among Japanese in Japan (Figure 1).

Risk of liver cancer increased with age, with the highest risk among those aged 65 years and older (Figures 2a-2f). Rates among males generally increased exponentially with age after age 35. Among Japanese males, incidence rates were relatively constant after age 50 in the US, but increased exponentially in Japan (Figure 2c), such that the rates among males aged 65 and older were more than seven times higher in Japan than in the US. Reasons for the rate similarities for US Japanese males and females, which reflect the low incidence of liver cancer among older US Japanese men, have not been explored (Figure 2d).

Between 1988 and 1992, lung cancer was the most commonly diagnosed cancer in Chinese males in Asia and the United States, and in Filipino males in Manila[1]. Among Chinese and Filipino females in Asia and the US, only breast cancer was more common. Lung cancer incidence varies widely among populations, ranging from very low rates in Fijians (less than 6 cases per 100,000 population per year) to very high rates in Chinese males (more than 100 cases per 100,000 population per year)[1]. Geographic variation in lung cancer incidence is largely, but not entirely, explained by inter-population differences in smoking rates. Of the main histologic types, squamous-cell and small-cell carcinomas are more strongly associated with smoking than adenocarcinomas, although adenocarcinomas are becoming more common relative to squamous-cell carcinomas[1]. Cell type and stage at diagnosis are important prognostic indicators; five-year survival ranges from 5% for small-cell lung cancer[2] to 69% for localized squamous cell and adenocarcinomas[3]. Encouragingly, the proportion of lung cancers diagnosed while still localized increased from 21% to 44% between the late 1970s and the late 1980s[4].

Figure 1: Age-adjusted incidence rates by sex, race/ethnicity, and region, 1988-1992



1 US SEER program and California
2 Shanghai and Tianjin
3 Hong Kong and Singapore-Chinese
4 Miyagi, Nagasaki, Osaka, Yamagata, Saga

Risk Factors

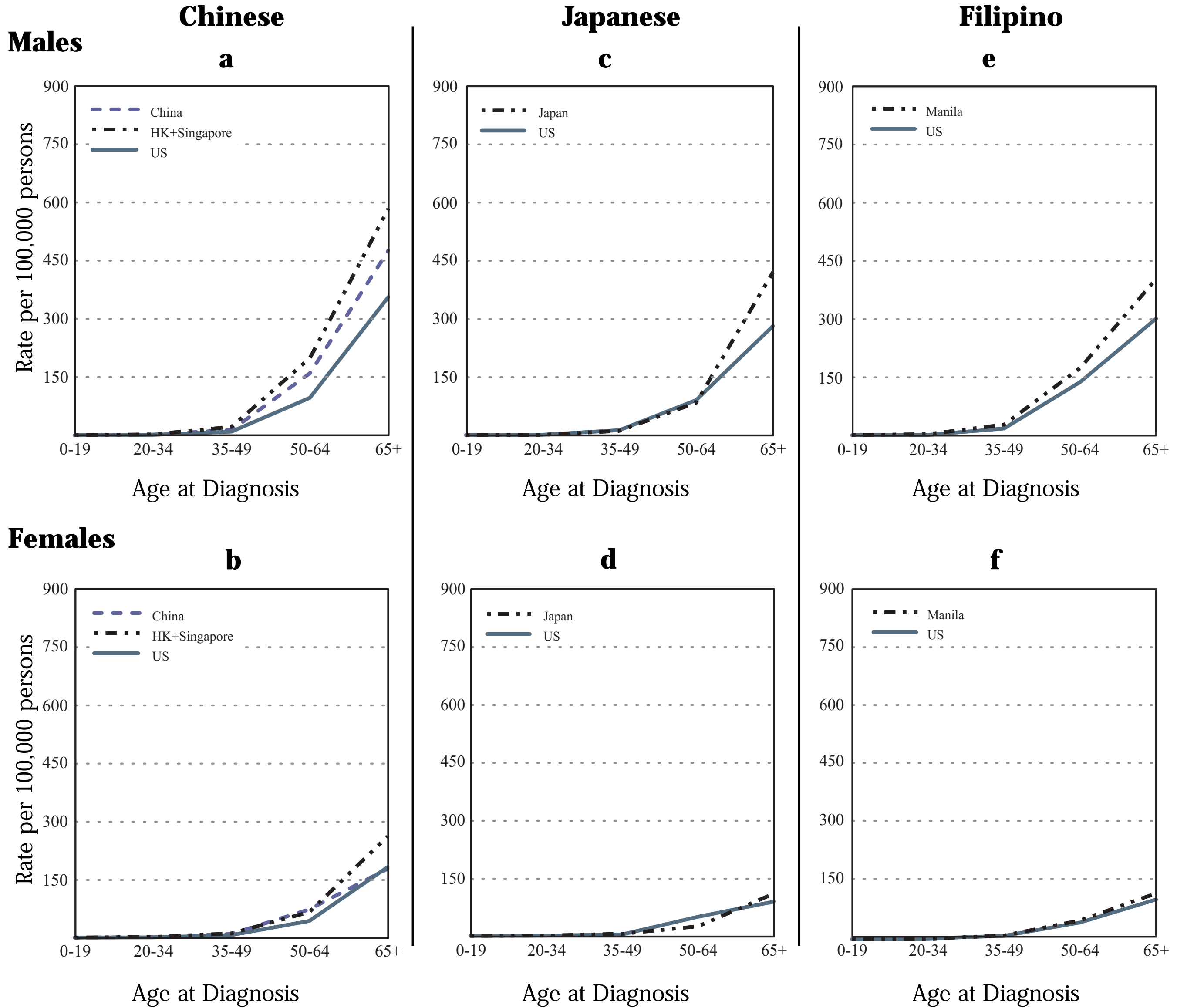
Cigarette smoking is a strong and well-established risk factor for lung cancer. Lung cancer risk increases with the quantity and duration of smoking, and decreases following cessation of smoking[5]. Furthermore, the magnitude of the lung cancer risk linked to smoking varies with race/ethnicity. Smoking confers a ten-fold increase in risk of lung cancer in Western countries and in Singapore, a five-fold increase in risk in Japan and a doubling of risk in China[5-7]. Additionally, exposure to environmental tobacco smoke (passive smoking) is associated with a 20-25% increased risk of lung cancer[8].

Current smoking patterns in China are similar to those seen in the United States in the 1950s: approximately 60% of Chinese males over 15 years of age smoke[9], compared to only 7% of Chinese females[10]. Despite their low smoking rates, however, Chinese females have among the highest rates of lung cancer in the world. Several epidemiologic studies have identified exposure to cooking oil vapors and smoky cooking conditions as important factors in the development of lung cancer in females in China[11] and in Taiwan[12].

Risk of lung cancer is also increased by a history of certain respiratory diseases, including tuberculosis[12], asbestos and silicosis[13]. Occupational exposures to chromium, nickel and radon have also been identified as risk factors[1]. When these agents interact with other factors, particularly cigarette smoke, their carcinogenic potential is enhanced[1].

Studies are increasingly identifying molecular markers for lung cancer[14]; some of these genes affect the way tobacco smoke products are metabolized. Differences in the distribution of these markers may explain some of the variation in susceptibility to lung cancer among individuals and populations with similar expo-

Figure 2: Age-specific incidence rates by race/ethnicity, sex, and region, 1988-1992



sure histories. Clustering of lung cancer in families is particularly evident when the disease develops before 45 years of age, indicating a genetic component to early-onset disease[15]. Genetic markers are also thought to influence lung cancer prognosis[16].

High dietary intake of fresh fruit and vegetables is associated with a lower risk of lung cancer[17]. However, dietary supplements of beta-carotene, initially thought to help prevent lung cancer, have not been shown to be protective and may actually increase disease risk[18].

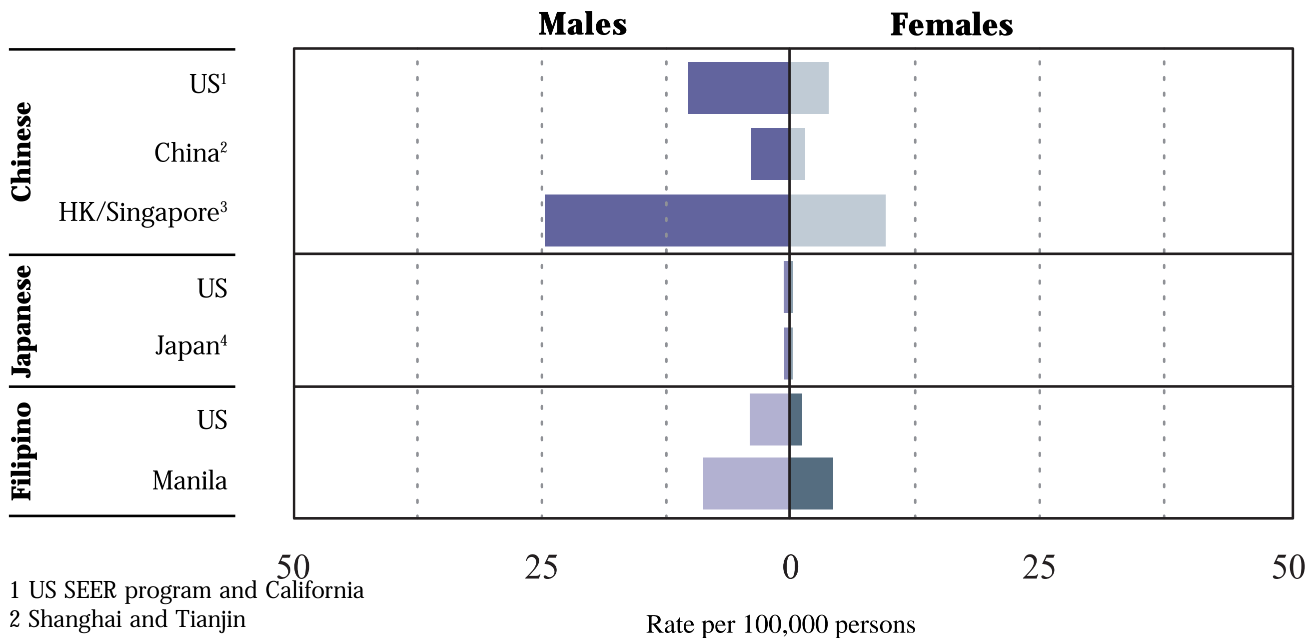
Incidence

Rates of lung cancer were high in all the populations examined here. In general, age-adjusted lung cancer incidence rates were two and one-half to three times greater in males than females in all Asian groups (Figure 1), predominantly reflecting a higher prevalence of smoking among males. Lung cancer incidence was higher in Asian populations in Asia than in the US, though this effect was less marked in females. The highest lung cancer incidence rates occurred in Chinese in Hong Kong/Singapore (94 cases per 100,000 males and 37 cases per 100,000 females), while the lowest rates were seen in US Japanese males and females (43 cases and 15 cases per 100,000 respectively). These differences in lung cancer incidence between Asia and the US are due in large part to lower smoking rates in US Asians. In each racial/ethnic group, lung cancer incidence rose sharply after 65 years of age, particularly in males (Figures 2a-f). This increase in lung cancer occurrence in the elderly reflects in part the long lag time (20-40 years) between exposure to lung cancer carcinogens and development of the disease.

Nasopharyngeal cancer (NPC) is primarily comprised of carcinomas (tumors arising in epithelial cells) of the nasopharynx, although lymphomas and sarcomas (tumors arising in blood cells and connective tissue cells) also can occur at this site[1]. While NPC is generally rare in Western countries (less than one case per 100,000 persons per year), this malignancy is common in southern China, where the annual age-adjusted incidence rates have been reported to be as high as 55 cases per 100,000 persons among the Tanka, a southern Chinese population[2]. Rates of NPC are also high among Chinese residing in Singapore and in the Philippines. Unfortunately, survival from NPC is fairly poor; in the United States, only 25% of persons survive the disease for five years or more[3].

Studies among Chinese immigrants to Western countries have shown that rates of NPC decline significantly with acculturation[4-6]. However, although incidence rates are lower in immigrants and their descendants than in homeland Chinese, they are still higher than rates observed among whites within the population. This variation in the occurrence of NPC within ethnically homogeneous populations underscores the influence of environmental factors on NPC carcinogenesis.

Figure 1: Age-adjusted incidence rates by sex, race/ethnicity, and region, 1988-1992



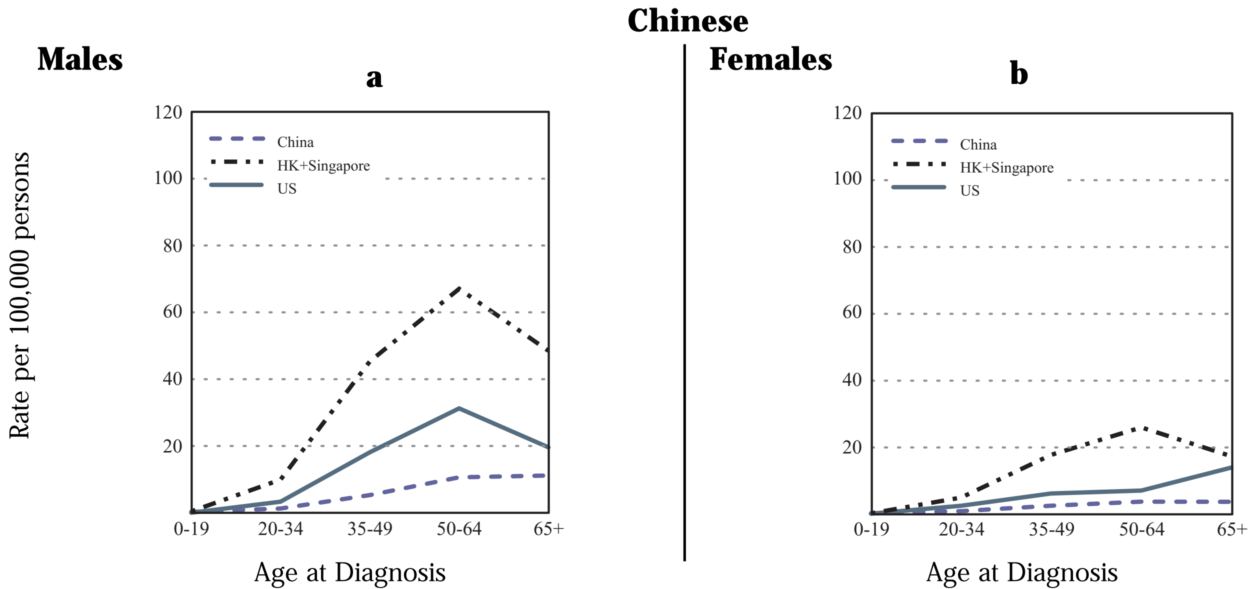
1 US SEER program and California
2 Shanghai and Tianjin
3 Hong Kong and Singapore-Chinese
4 Miyagi, Nagasaki, Osaka, Yamagata, Saga

Risk Factors

In China, seroepidemiologic and molecular studies consistently have demonstrated a strong association between NPC and the ubiquitous Epstein-Barr virus (EBV). EBV has been identified in over 95% of NPC tumors[7,8], and anti-EBV antibody titers have been associated with total tumor burden and long-term survival[8]. NPC also has been associated strongly with dietary consumption of salted or fermented foods, particularly childhood consumption of Cantonese-style salted fish[3]. In fact, it has been estimated that over 90% of NPC cases in Cantonese Chinese are related to this exposure[4]. The presence of volatile nitrosamines in many salted foods, their consistent association with human cancer, and their ability to induce nasal tumors in rats have pointed to a causal role for nitrosamines or their metabolites (such as formaldehyde) in NPC carcinogenesis[3]. Cantonese-style salted fish also contains substances capable of reactivating latently infected EBV cells in laboratory cell cultures[1,9]. Thus, early and prolonged exposure to nitrosamines may result in cellular changes associated with malignant transformation[10].

A role for genetic factors in NPC development is suggested by the wide racial/ethnic variation in incidence rates, and by familial aggregation of malignancy. In southern Chinese populations, human leukocyte antigen (HLA) type has been linked to risk of developing NPC[3]. The HLA complex, which varies by race/ethnicity, is an important part of the immune response to viral infection, and persons of certain HLA types or those lacking certain HLA types may be at altered risk for developing cancer. Other factors less consistently associated with increased risk of NPC include cigarette smoking, use of certain types of herbal medicines, alcohol consumption, occupational exposure to chemi-

Figure 2: Age-specific incidence rates by sex and region, 1988-1992
Chinese



cals related to woodworking (such as formaldehyde), use of antimosquito coils, incense burning and malarial infection[1,3].

Incidence

Remarkable variation in NPC incidence rates has been observed within Chinese populations. The incidence of NPC in the northern-most provinces of China is estimated to be 10-fold lower than that observed in the southern province of Guangdong[3]. The Tianjin and Shanghai registries used as sources for the Chinese data presented here are not located in southern China, possibly accounting for the low rates of NPC (5 cases per 100,000 males and 2 cases per 100,000 females, Figure 1) compared to rates for Hong Kong/Singapore and US Chinese. The highest incidence rates among these populations occurred among Chinese residing in Hong Kong/Singapore, where the rate of NPC for males was over two times the rate for US Chinese males and over six times the rate of Chinese males residing in China. Elevated risk was also evident in Chinese females residing in Hong Kong/Singapore, although the magnitude of the international differences was less. The high incidence rates in China and Hong Kong/Singapore may be due to an increased genetic susceptibility in these populations, but are more likely due to some environmental factor present in these areas[3].

As NPC is quite uncommon in Japanese and Filipinos, only the Chinese populations are included in the age-specific graphs. In Hong Kong/Singapore, incidence rates of NPC in Chinese peaked at ages 50-64, and thereafter declined in both sexes (Figure 2a, 2b). This age pattern, which is younger than for many other cancers, is suggestive of an early exposure to environmental risk factors, a reduced susceptibility with older age, and/or a genetic susceptibility to disease[1].

Five-Year Counts, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals by Registry Group and Sex, 1988-1992[1]

Registry Group	Count	US Standard		World Standard	
		Rate	95% CI	Rate	95% CI
TOTAL					
Chinese					
US[2]	528	13.0	11.9-14.2	10.5	9.6-11.5
China[3]	12238	21.7	21.3-22.1	17.8	17.4-18.1
HK[4]/Singapore	8561	24.8	24.2-25.3	20.5	20.0-20.9
Japanese					
US	246	5.5	4.7-6.2	4.3	3.7-4.9
Japan[5]	23736	26.7	26.4-27.0	21.5	21.2-21.8
Filipino					
US	287	6.7	5.9-7.5	5.4	4.7-6.0
Manila	1774	18.8	17.8-19.9	15.2	14.5-16.0
MALES					
Chinese					
US	405	21.0	18.9-23.2	17.1	15.4-18.9
China	8725	32.3	31.5-33.0	26.5	26.0-27.1
HK/Singapore	6579	39.4	38.4-40.4	32.6	31.8-33.4
Japanese					
US	118	6.2	5.0-7.4	4.9	4.0-5.9
Japan	17636	44.6	44.0-45.3	36.1	35.6-36.7
Filipino					
US	219	11.0	9.5-12.6	9.1	7.8-10.4
Manila	1306	29.5	27.6-31.5	23.9	22.5-25.3
FEMALES					
Chinese					
US	123	5.8	4.8-7.0	4.4	3.6-5.3
China	3513	12.1	11.7-12.5	9.6	9.2-9.9
HK/Singapore	1982	11.0	10.5-11.5	8.6	8.2-9.0
Japanese					
US	128	4.8	3.9-5.8	3.8	3.1-4.5
Japan	6100	12.1	11.8-12.4	9.3	9.0-9.5
Filipino					
US	68	2.9	2.2-3.7	2.2	1.7-2.8
Manila	468	10.1	9.2-11.2	8.0	7.2-8.7

1 Data are not shown for rates based on fewer than 5 cases.
2 US = SEER + California
3 China = Shanghai + Tianjin
4 HK = Hong Kong + Singapore Chinese
5 Japan = Miyaki, Osaka, Saga, Yamagata, Nagasaki

Five-Year Counts, Average Annual Age-Specific Incidence Rates and 95% Confidence Intervals by Registry Group, Age, and Sex, 1988-1992[1]

Age Group	MALES			FEMALES		
	Count	Rate	95% CI	Count	Rate	95% CI
US[2]-Chinese						
0-19	<5	-	-	<5	-	-
20-34	11	1.9	1.0-3.4	<5	-	-
35-49	57	12.0	9.1-15.6	15	2.9	1.6-4.8
50-64	154	59.5	50.4-69.6	29	10.6	7.1-15.2
65+	181	98.5	84.7-114.0	79	36.3	28.7-45.2
China[3]						
0-19	23	0.4	0.2-0.6	14	0.2	0.1-0.4
20-34	309	3.8	3.4-4.2	82	1.1	0.9-1.4
35-49	1295	20.2	19.2-21.4	269	4.6	4.1-5.2
50-64	3755	88.7	85.9-91.6	1236	27.8	26.3-29.4
65+	3343	147.4	142.5-152.5	1912	69.4	66.3-72.6
Hong Kong/Singapore Chinese						
0-19	36	0.6	0.4-0.8	25	0.5	0.3-0.7
20-34	257	4.4	3.9-5.0	59	1.0	0.8-1.3
35-49	1170	27.7	26.1-29.3	182	4.7	4.1-5.5
50-64	2702	104.5	100.6-108.5	543	22.8	20.9-24.8
65+	2414	178.1	171.0-185.3	1173	65.8	62.1-69.7
US-Japanese						
0-19	<5	-	-	<5	-	-
20-34	<5	-	-	<5	-	-
35-49	6	1.8	0.7-3.9	<5	-	-
50-64	47	20.8	15.3-27.6	61	18.0	13.7-23.1
65+	63	29.8	22.9-38.1	66	25.4	19.6-32.3
Japan[4]						
0-19	23	0.2	0.1-0.3	20	0.2	0.1-0.3
20-34	49	0.7	0.5-0.9	17	0.2	0.1-0.4
35-49	1185	14.0	13.2-14.9	226	2.6	2.3-3.0
50-64	9084	138.1	135.3-141.0	1716	24.7	23.6-25.9
65+	7295	219.6	214.6-224.7	4121	81.3	78.9-83.9
US-Filipino						
0-19	5	0.6	0.2-1.5	<5	-	-
20-34	8	1.4	0.6-2.7	<5	-	-
35-49	33	6.7	4.6-9.5	6	1.0	0.4-2.2
50-64	64	26.4	20.3-33.7	17	5.4	3.2-8.7
65+	109	55.6	45.6-67.0	44	21.8	15.8-29.2
Manila						
0-19	17	0.4	0.2-0.6	14	0.3	0.2-0.5
20-34	135	4.2	3.5-4.9	34	0.9	0.7-1.3
35-49	375	22.2	20.0-24.6	89	5.2	4.2-6.5
50-64	439	60.6	55.1-66.6	131	16.3	13.6-19.3
65+	340	144.6	129.6-160.8	200	62.0	53.7-71.3

1 Data are not shown for rates based on fewer than 5 cases.
2 US = SEER + California
3 China = Shanghai + Tianjin
4 Japan = Miyaki, Osaka, Saga, Yamagata, Nagasaki

Five-Year Counts, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals by Registry Group and Sex, 1988-1992[1]

Registry Group	Count	US Standard		World Standard	
		Rate	95% CI	Rate	95% CI
TOTAL					
Chinese					
US[2]	1503	37.6	35.6-39.7	28.1	26.6-29.6
China[3]	27333	49.6	49.0-50.2	38.9	38.4-39.3
HK[4]/Singapore	20836	63.3	62.4-64.1	48.7	48.0-49.3
Japanese					
US	1259	28.3	26.6-30.0	21.7	20.5-23.0
Japan[5]	28197	32.2	31.8-32.6	23.9	23.6-24.2
Filipino					
US	1407	34.5	32.7-36.4	27.3	25.8-28.8
Manila	3709	44.2	42.7-45.8	35.6	34.4-36.8
MALES					
Chinese					
US	954	52.4	48.9-56.0	39.1	36.5-41.7
China	18575	73.3	72.2-74.4	56.5	55.7-57.3
HK/Singapore	14112	93.7	92.1-95.3	71.9	70.7-73.1
Japanese					
US	845	43.2	40.1-46.4	32.9	30.5-35.3
Japan	20423	56.6	55.8-57.4	41.3	40.7-41.8
Filipino					
US	1008	54.0	50.6-57.4	43.3	40.5-46.2
Manila	2753	72.6	69.6-75.7	58.5	56.2-60.9
FEMALES					
Chinese					
US	549	25.0	22.8-27.2	18.6	16.9-20.3
China	8758	29.9	29.2-30.5	23.7	23.2-24.2
HK/Singapore	6724	37.4	36.5-38.3	27.9	27.2-28.6
Japanese					
US	414	16.1	14.5-17.9	12.7	11.4-14.1
Japan	7774	15.2	14.9-15.6	11.3	11.0-11.5
Filipino					
US	399	18.0	16.1-19.9	14.2	12.8-15.7
Manila	956	21.3	19.9-22.8	16.7	15.6-17.8

1 Data are not shown for rates based on fewer than 5 cases.
2 US = SEER + California
3 China = Shanghai + Tianjin
4 HK = Hong Kong + Singapore Chinese
5 Japan = Miyaki, Osaka, Saga, Yamagata, Nagasaki

Five-Year Counts, Average Annual Age-Specific Incidence Rates and 95% Confidence Intervals by Registry Group, Age, and Sex, 1988-1992[1]

Age Group	MALES			FEMALES		
	Count	Rate	95% CI	Count	Rate	95% CI
US[2]-Chinese						
0-19	<5	-	-	<5	-	-
20-34	6	1.0	0.4-2.3	<5	-	-
35-49	44	9.3	6.7-12.4	33	6.4	4.4-9.0
50-64	250	96.5	84.9-109.3	118	42.9	35.5-51.4
65+	654	356.0	329.2-384.4	395	181.5	164.1-200.3
China[3]						
0-19	<5	-	-	<5	-	-
20-34	145	1.8	1.5-2.1	97	1.3	1.1-1.6
35-49	869	13.6	12.7-14.5	538	9.3	8.5-10.1
50-64	6763	159.7	155.9-163.6	3235	72.8	70.3-75.3
65+	10794	476.1	467.1-485.1	4886	177.4	172.4-182.4
Hong Kong/Singapore Chinese						
0-19	8	0.1	0.1-0.3	<5	-	-
20-34	131	2.2	1.9-2.7	96	1.7	1.4-2.0
35-49	917	21.7	20.3-23.1	413	10.7	9.7-11.8
50-64	5143	198.9	193.5-204.5	1570	65.8	62.6-69.2
65+	7913	583.7	570.9-596.7	4641	260.5	253.1-268.1
US-Japanese						
0-19	<5	-	-	<5	-	-
20-34	<5	-	-	<5	-	-
35-49	43	12.8	9.3-17.2	13	3.6	1.9-6.2
50-64	204	90.2	78.3-103.5	168	49.5	42.3-57.6
65+	594	280.8	258.6-304.3	231	88.9	77.8-101.2
Japan[4]						
0-19	<5	-	-	<5	-	-
20-34	50	0.7	0.5-0.9	47	0.6	0.5-0.8
35-49	929	11.0	10.3-11.7	457	5.4	4.9-5.9
50-64	5503	83.7	81.5-85.9	1703	24.6	23.4-25.8
65+	13940	419.7	412.8-426.8	5563	109.8	106.9-112.7
US-Filipino						
0-19	<5	-	-	<5	-	-
20-34	<5	-	-	10	1.5	0.7-2.8
35-49	84	17.1	13.7-21.2	51	8.4	6.3-11.1
50-64	331	136.7	122.3-152.2	133	42.6	35.7-50.5
65+	589	300.3	276.5-325.5	205	101.4	88.0-116.3
Manila						
0-19	10	0.2	0.1-0.4	<5	-	-
20-34	89	2.8	2.2-3.4	35	1.0	0.7-1.4
35-49	456	27.0	24.6-29.6	156	9.2	7.8-10.8
50-64	1251	172.7	163.3-182.6	385	47.9	43.2-52.9
65+	947	402.6	377.4-429.1	378	117.3	105.7-129.7

1 Data are not shown for rates based on fewer than 5 cases.
2 US = SEER + California
3 China = Shanghai + Tianjin
4 Japan = Miyaki, Osaka, Saga, Yamagata, Nagasaki

Five-Year Counts, Average Annual Age-Adjusted Incidence Rates and 95% Confidence Intervals by Registry Group and Sex, 1988-1992[1]

Registry Group	Count	US Standard		World Standard	
		Rate	95% CI	Rate	95% CI
TOTAL					
Chinese					
US[2]	316	7.0	6.2-7.8	6.4	5.7-7.1
China[3]	1617	2.7	2.6-2.9	2.5	2.3-2.6
HK[4]/Singapore	6794	17.3	16.8-17.7	16.1	15.7-16.4
Japanese					
US	19	0.5	0.3-0.7	0.4	0.2-0.6
Japan[5]	364	0.4	0.4-0.5	0.4	0.3-0.4
Filipino					
US	117	2.5	2.1-3.0	2.3	1.9-2.7
Manila	748	6.3	5.8-6.9	5.5	5.1-5.9
MALES					
Chinese					
US	222	10.3	8.9-11.7	9.5	8.2-10.8
China	1160	4.0	3.7-4.2	3.6	3.4-3.8
HK/Singapore	4915	24.7	24.0-25.4	22.9	22.2-23.5
Japanese					
US	13	0.7	0.3-1.1	0.6	0.3-1.0
Japan	258	0.6	0.6-0.7	0.6	0.5-0.6
Filipino					
US	87	4.1	3.2-5.0	3.7	3.0-4.6
Manila	489	8.7	7.8-9.7	7.6	6.8-8.3
FEMALES					
Chinese					
US	94	3.8	3.1-4.7	3.5	2.8-4.2
China	457	1.5	1.4-1.7	1.4	1.3-1.5
HK/Singapore	1879	9.6	9.1-10.0	8.9	8.5-9.3
Japanese					
US	6	0.3	0.1-0.5	0.2	0.1-0.5
Japan	106	0.2	0.2-0.3	0.2	0.2-0.2
Filipino					
US	30	1.2	0.8-1.7	1.1	0.7-1.5
Manila	259	4.3	3.7-4.9	3.7	3.2-4.2

1 Data are not shown for rates based on fewer than 5 cases.
2 US = SEER + California
3 China = Shanghai + Tianjin
4 HK = Hong Kong + Singapore Chinese
5 Japan = Miyaki, Osaka, Saga, Yamagata, Nagasaki

Five-Year Counts, Average Annual Age-Specific Incidence Rates and 95% Confidence Intervals by Registry Group, Age, and Sex, 1988-1992[1]

Age Group	MALES			FEMALES		
	Count	Rate	95% CI	Count	Rate	95% CI
US[2]-Chinese						
0-19	<5	-	-	<5	-	-
20-34	19	3.3	2.0-5.2	14	2.4	1.3-4.0
35-49	86	18.1	14.5-22.4	31	6.0	4.1-8.6
50-64	81	31.3	24.8-38.9	19	6.9	4.2-10.8
65+	36	19.6	13.7-27.1	30	13.8	9.3-19.7
China[3]						
0-19	15	0.2	0.1-0.4	5	0.1	0.0-0.2
20-34	104	1.3	1.0-1.5	56	0.8	0.6-1.0
35-49	338	5.3	4.7-5.9	138	2.4	2.0-2.8
50-64	450	10.6	9.7-11.7	160	3.6	3.1-4.2
65+	253	11.2	9.8-12.6	98	3.6	2.9-4.3
Hong Kong/Singapore Chinese						
0-19	24	0.4	0.3-0.6	5	0.1	0.0-0.2
20-34	580	9.9	9.1-10.7	276	4.8	4.3-5.4
35-49	1918	45.4	43.3-47.4	677	17.6	16.3-19.0
50-64	1735	67.1	64.0-70.3	615	25.8	23.8-27.9
65+	658	48.5	44.9-52.4	306	17.2	15.3-19.2
US-Japanese						
0-19	<5	-	-	<5	-	-
20-34	<5	-	-	<5	-	-
35-49	<5	-	-	<5	-	-
50-64	<5	-	-	<5	-	-
65+	6	2.8	1.0-6.2	<5	-	-
Japan[4]						
0-19	9	0.1	0.0-0.2	<5	-	-
20-34	12	0.2	0.1-0.3	<5	-	-
35-49	58	0.7	0.5-0.9	22	0.3	0.2-0.4
50-64	105	1.6	1.3-1.9	38	0.5	0.4-0.8
65+	74	2.2	1.7-2.8	42	0.8	0.6-1.1
US-Filipino						
0-19	<5	-	-	<5	-	-
20-34	14	2.4	1.3-4.0	5	0.8	0.2-1.8
35-49	32	6.5	4.5-9.2	12	2.0	1.0-3.5
50-64	23	9.5	6.0-14.2	11	3.5	1.8-6.3
65+	18	9.2	5.4-14.5	<5	-	-
Manila						
0-19	18	0.4	0.2-0.6	5	0.1	0.0-0.2
20-34	79	2.4	1.9-3.0	34	0.9	0.7-1.3
35-49	176	10.4	9.0-12.1	78	4.6	3.6-5.7
50-64	148	20.4	17.3-24.0	96	11.9	9.7-14.6
65+	68	28.9	22.5-36.7	46	14.3	10.4-19.0

1 Data are not shown for rates based on fewer than 5 cases.
2 US = SEER + California
3 China = Shanghai + Tianjin
4 Japan = Miyaki, Osaka, Saga, Yamagata, Nagasaki