**Supplementary Table 1. Age-adjusted incidence rates and case counts of hepatocellular carcinoma in various Asian ethnic groups, California, 2009-2013**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Men and women | |  | Men | |  | Women | |
|  | Rate | Count |  | Rate | Count |  | Rate | Count |
| Vietnamese | 27.2 | 794 |  | 43.3 | 618 |  | 13.0 | 176 |
| Cambodian | 26.6 | 88 |  | 46.3 | 65 |  | 12.2 | 23 |
| Laotian | 25.3 | 58 |  | 39.6 | 45 |  | 10.9 | 13 |
| Hmong | 19.0 | 34 |  | 31.3 | 26 |  | 8.6 | 8 |
| Thai | 15.6 | 44 |  | 32.1 | 32 |  | 6.5 | 12 |
| Korean | 13.9 | 348 |  | 22.2 | 245 |  | 7.6 | 103 |
| Chinese | 11.3 | 894 |  | 18.2 | 657 |  | 5.6 | 237 |
| Filipino | 8.2 | 546 |  | 14.9 | 394 |  | 4.0 | 152 |
| Japanese | 6.7 | 185 |  | 9.1 | 99 |  | 4.7 | 86 |
| South Asian | 5.0 | 96 |  | 7.7 | 73 |  | 2.4 | 23 |

Note: Rates are per 100,000 and age-adjusted to the 2000 US Standard Population (18 age groups - Census P25-1130) standard.

**Supplementary Table 2. Stage-specific age-adjusted incidence rates and case counts of hepatocellular carcinoma by race/ethnicity, 2009-2013**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **SEER 18a** | | |  | **California** | | |
| **Race** | **Stage** | **Rate** | **Count** | **% of casesb** |  | **Rate** | **Count** | **% of casesb** |
| Non-Hispanic white | Localized | 2.3 | 7,611 | 54% |  | 2.6 | 2,951 | 55% |
|  | Regional | 1.3 | 4,224 | 30% |  | 1.4 | 1,594 | 29% |
|  | Distant | 0.7 | 2,248 | 16% |  | 0.8 | 861 | 16% |
| Non-Hispanic black | Localized | 3.8 | 1,893 | 49% |  | 4.6 | 566 | 52% |
|  | Regional | 2.5 | 1,264 | 33% |  | 2.7 | 343 | 31% |
|  | Distant | 1.4 | 695 | 18% |  | 1.5 | 186 | 17% |
| Non-Hispanic Asian/Pacific Islander | Localized | 5.6 | 2,398 | 56% |  | 6.1 | 1,698 | 57% |
| Regional | 2.9 | 1,258 | 29% |  | 3 | 842 | 28% |
| Distant | 1.5 | 630 | 15% |  | 1.5 | 415 | 14% |
| Hispanic | Localized | 5.1 | 3,054 | 56% |  | 5.4 | 2,327 | 57% |
|  | Regional | 2.6 | 1,558 | 29% |  | 2.7 | 1,162 | 28% |
|  | Distant | 1.4 | 808 | 15% |  | 1.5 | 614 | 15% |

Note: Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) standard.

Abbreviation: SEER, Surveillance, Epidemiology, and End Results.

a The SEER 18 Registry Database contains data from 18 registries in 2000-2013, including Atlanta, Connecticut, Detroit, Hawaii, Iowa, New Mexico, San Francisco-Oakland, Seattle-Puget Sound, Utah, Los Angeles, San Jose-Monterey, Rural Georgia, Alaska, Greater California, Greater Georgia, Kentucky, Louisiana, and New Jersey.

b Calculated as the number of cases for each stage/total number of localized, regional, or distant stage cases

**Supplementary Table 3. Age-specific incidence rates and case counts of hepatocellular carcinoma by race/ethnicity, 2009-2013**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **SEER 18**a | |  | **California** | |
| **Race** | **Age group (years)** | **Rate** | **Count** |  | **Rate** | **Count** |
| Non-Hispanic white | 40-44 | 0.8 | 124 |  | 1 | 44 |
|  | 45-49 | 3 | 533 |  | 2.8 | 165 |
|  | 50-54 | 8.8 | 1,688 |  | 8.9 | 573 |
|  | 55-59 | 17.8 | 3,180 |  | 20.5 | 1,254 |
|  | 60-64 | 19.6 | 3,078 |  | 23.6 | 1,287 |
|  | 65-69 | 16.8 | 2,020 |  | 18.8 | 790 |
|  | 70-74 | 18.4 | 1,605 |  | 19 | 579 |
|  | 75-79 | 20.6 | 1,391 |  | 21.6 | 514 |
|  | 80-84 | 19.8 | 1,089 |  | 18.7 | 368 |
|  | 85+ | 12.1 | 701 |  | 12 | 262 |
| Non-Hispanic black | 40-44 | 1.5 | 53 |  | 1.9 | 16 |
|  | 45-49 | 3.8 | 140 |  | 3.6 | 32 |
|  | 50-54 | 14.4 | 506 |  | 13.6 | 120 |
|  | 55-59 | 38 | 1,127 |  | 40.4 | 294 |
|  | 60-64 | 49 | 1,134 |  | 61.8 | 349 |
|  | 65-69 | 33.7 | 533 |  | 43.4 | 172 |
|  | 70-74 | 26.9 | 303 |  | 32.4 | 97 |
|  | 75-79 | 22.3 | 178 |  | 23.5 | 51 |
|  | 80-84 | 20.4 | 109 |  | 21.5 | 30 |
|  | 85+ | 16 | 80 |  | 20.6 | 28 |
| Non-Hispanic Asian/Pacific Islander | 40-44 | 3.4 | 114 |  | 3 | 63 |
|  | 45-49 | 7.7 | 239 |  | 8.1 | 161 |
|  | 50-54 | 15.2 | 447 |  | 15.6 | 297 |
|  | 55-59 | 25.7 | 675 |  | 26 | 446 |
|  | 60-64 | 32.7 | 709 |  | 33.4 | 475 |
|  | 65-69 | 41.6 | 646 |  | 45.2 | 454 |
|  | 70-74 | 51.4 | 596 |  | 57 | 438 |
|  | 75-79 | 59.2 | 513 |  | 60.7 | 355 |
|  | 80-84 | 67.3 | 420 |  | 69.9 | 292 |
|  | 85+ | 48.5 | 276 |  | 51.9 | 195 |
| Hispanic | 40-44 | 1.4 | 100 |  | 1.4 | 72 |
|  | 45-49 | 6.1 | 371 |  | 6 | 264 |
|  | 50-54 | 18.3 | 916 |  | 18.7 | 681 |
|  | 55-59 | 29.9 | 1,141 |  | 29.6 | 827 |
|  | 60-64 | 36.2 | 1,001 |  | 37 | 741 |
|  | 65-69 | 41.7 | 798 |  | 43.9 | 605 |
|  | 70-74 | 45.5 | 618 |  | 49.3 | 483 |
|  | 75-79 | 48.5 | 479 |  | 53 | 382 |
|  | 80-84 | 50.2 | 348 |  | 50 | 257 |
|  | 85+ | 36.2 | 207 |  | 35.6 | 152 |

Note: Rates are per 100,000 and age-adjusted to the 2000 US Standard Population (19 age groups - Census P25-1130) standard.

Abbreviation: SEER, Surveillance, Epidemiology, and End Results.

a The SEER 18 Registry Database contains data from 18 registries in 2000-2013, including Atlanta, Connecticut, Detroit, Hawaii, Iowa, New Mexico, San Francisco-Oakland, Seattle-Puget Sound, Utah, Los Angeles, San Jose-Monterey, Rural Georgia, Alaska, Greater California, Greater Georgia, Kentucky, Louisiana, and New Jersey.

**Supplementary Table 4. List of hepatocellular carcinoma hot spots for all racial/ethnic groups combined in California**

|  |  |  |
| --- | --- | --- |
| MSSA ID | MSSA Name | County |
| 10 | Oroville/Palermo/Thermalito | Butte |
| 105 | King City/San Lucas | Monterey |
| 107 | Chualar/Gonzalez/Greenfield/Soledad | Monterey |
| 108 | Carmel Valley/Castroville/Marina/Moss Landing/Ord | Monterey |
| 109.2 | Salinas/Spreckels | Monterey |
| 116i | Garden Grove South/Santa Ana West | Orange |
| 116r | Garden Grove North/Stanton | Orange |
| 116s | Huntington Beach North/Seal Beach East/Westminster | Orange |
| 139f | Florin/Fruitridge/Oak Park/Parkway/South Sacramento | Sacramento |
| 139j | Capitol Park/Del Paso Heights/Downtown/Gardenland/North Sacramento | Sacramento |
| 139k | Freeport/Meadowview | Sacramento |
| 151g | Muscoy/San Bernardino Central | San Bernardino |
| 151k | Highland/San Bernardino East | San Bernardino |
| 161c | Downtown/Golden Hill/Logan Heights | San Diego |
| 161d | Chollas Creek/City Heights/East San Diego/North Park/Oak Park/South Park | San Diego |
| 161g | Encanto/Lemon Grove Northwest/Lincoln Acres/National City East/Paradise Hills Southwest | San Diego |
| 161j | Castle Park/Chula Vista Southwest/Imperial Beach West/Nestor East/Palm City/San Ysidro/South San Diego | San Diego |
| 161k | Chula Vista Central and Northwest/National City West | San Diego |
| 161s | Cockatoo Grove/Eastlake Greens/Otay Mesa | San Diego |
| 162a | Chinatown/Civic Center/Inner Mission/North Beach/South of Market/Tenderloin/Western Addition | San Francisco |
| 162b | Cow Hollow/Financial District/Marina/Nob Hill/Pacific Heights/Russian Hill/Seacliff | San Francisco |
| 162c | Bernal Heights/Mission District/Potrero Hill | San Francisco |
| 162d | Excelsior/Glen Park/Ingleside/Lake Merced/Merced Heights/Ocean Beach South/Park Merced/Saint Francis Wood/Westwood Park | San Francisco |
| 162f | Bayview/Candlestick/Hunters Point/Portola/Visitacion Valley | San Francisco |
| 162h | Laurel Heights/Ocean Beach North/Richmond/Sutro Heights | San Francisco |
| 169a | Stockton North Central/Stockton Northeast | San Joaquin |
| 169b | French Camp/Stockton South/Stockton Southeast | San Joaquin |
| 176a | Brisbane/Burlingame Northeast/Colma/Daly City East/Millbrae East/San Bruno/South San Francisco | San Mateo |
| 176d | Broadmoor Village/Daly City West/San Bruno Northwest/Serramonte/Westborough | San Mateo |
| 183b | Berryessa/East San Jose/Milpitas East | Santa Clara |
| 183d | Downtown San Jose | Santa Clara |
| 183e | Alum Rock South/San Jose East | Santa Clara |
| 183h | San Jose Southeast | Santa Clara |
| 183o | Milpitas West/Santa Clara Northeast | Santa Clara |
| 18d | Antioch North and West/Nichols/Pittsburg Central and East/West Pittsburg | Contra Costa |
| 202a | Vacaville | Solano |
| 234.1 | Chinese Camp | Tuolumne |
| 245 | Bryte/Broderick/Clarksburg/Riverview/West Sacramento | Yolo |
| 27 | Coalinga | Fresno |
| 2c | Oakland West Central | Alameda |
| 2d | Fruitvale/Melrose/Oakland Airport | Alameda |
| 2h | Ashland/Brookfield Village/Castro Valley South/Elmhurst/Hayward Northeast/San Leandro North Central/San Lorenzo East | Alameda |
| 35c | Fresno West Central | Fresno |
| 35d | Fresno East Central | Fresno |
| 35e | Fresno South and West | Fresno |
| 38 | Hoopa/Willow Creek | Humboldt |
| 49 | Calexico/Ocotillo | Imperial |
| 60 | Delano/McFarland | Kern |
| 67 | Avenal | Kings |
| 70.2 | Lucerne/Nice/Upper Lake | Lake |
| 78.2d | City Terrace East/East Los Angeles | Los Angeles |
| 78.2ddd | Bell Southwest/Cudahy/Vernon | Los Angeles |
| 78.2ffff | Boyle Heights Northwest/Chinatown/Downtown Northwest/Little Tokyo/Westlake | Los Angeles |
| 78.2gg | Angeles National Forest West/Kagel Canyon/Lake View Terrace/San Fernando East/Sylmar | Los Angeles |
| 78.2h | Boyle Heights Central/City Terrace West | Los Angeles |
| 78.2i | El Sereno North/Highland Park/Montecito Heights/Monterey Hills | Los Angeles |
| 78.2iii | North Long Beach | Los Angeles |
| 78.2jjj | Long Beach West Central | Los Angeles |
| 78.2oo | El Monte/Five Points | Los Angeles |
| 78.2p | Long Beach Port/San Pedro East/Wilmington | Los Angeles |
| 78.2qq | Asuza/Charter Oak/Covina | Los Angeles |
| 78.2qqq | Rosemead/San Gabriel South/South El Monte West/Temple City West | Los Angeles |
| 78.2ss | Pomona East and South | Los Angeles |
| 78.2ww | Pico Rivera/Santa Fe Springs Northwest | Los Angeles |
| 78.2yyy | Bassett/Industry West/La Puente | Los Angeles |
| 79.2 | Chowchilla | Madera |

Abbreviation: MSSA, Medical Service Study Area

Note: The geographic unit in this analysis is the Medical Service Study Area (MSSA), aggregations of census tracts (typically 20-30) that provide a good basis for needs assessment analysis, healthcare planning, and healthcare policy development. Hot spots are MSSAs with at least 50% higher HCC incidence than that expected in the average California population. This table provides results for all racial/ethnic groups combined.

**Supplementary Table 5. List of race/ethnicity-specific hepatocellular carcinoma hot spots in California**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MSSA ID | MSSA Name | County | Hot spot for non-Hispanic white? | Hot spot for non-Hispanic black? | Hot spot for non-Hispanic Asian/Pacific Islander? | Hot spot for Hispanic? |
| 161d | Chollas Creek/City Heights/East San Diego/North Park/Oak Park/South Park | San Diego | Y | Y | Y | Y |
| 162a | Chinatown/Civic Center/Inner Mission/North Beach/South of Market/Tenderloin/Western Addition | San Francisco | Y | Y | Y | Y |
| 151k | Highland/San Bernardino East | San Bernardino | Y | Y | Y |  |
| 162f | Bayview/Candlestick/Hunters Point/Portola/Visitacion Valley | San Francisco | Y | Y | Y |  |
| 2c | Oakland West Central | Alameda | Y | Y | Y |  |
| 139j | Capitol Park/Del Paso Heights/Downtown/Gardenland/North Sacramento | Sacramento | Y | Y |  | Y |
| 161c | Downtown/Golden Hill/Logan Heights | San Diego | Y | Y |  | Y |
| 162c | Bernal Heights/Mission District/Potrero Hill | San Francisco | Y | Y |  | Y |
| 162g | Buena Vista/Castro/Eureka Valley/Forest Hill/Haight-Ashbury/Noe Valley/West of Twin Peaks | San Francisco | Y | Y |  | Y |
| 162d | Excelsior/Glen Park/Ingleside/Lake Merced/Merced Heights/Ocean Beach South/Park Merced/Saint Francis Wood/Westwood Park | San Francisco | Y |  | Y | Y |
| 78.2jjj | Long Beach West Central | Los Angeles | Y |  | Y | Y |
| 116r | Garden Grove North/Stanton | Orange | Y |  | Y |  |
| 116s | Huntington Beach North/Seal Beach East/Westminster | Orange | Y |  | Y |  |
| 139f | Florin/Fruitridge/Oak Park/Parkway/South Sacramento | Sacramento | Y |  | Y |  |
| 162b | Cow Hollow/Financial District/Marina/Nob Hill/Pacific Heights/Russian Hill/Seacliff | San Francisco | Y |  | Y |  |
| 161k | Chula Vista Central and Northwest/National City West | San Diego | Y |  |  | Y |
| 245 | Bryte/Broderick/Clarksburg/Riverview/West Sacramento | Yolo | Y |  |  | Y |
| 78.2i | El Sereno North/Highland Park/Montecito Heights/Monterey Hills | Los Angeles | Y |  |  | Y |
| 2d | Fruitvale/Melrose/Oakland Airport | Alameda |  | Y | Y |  |
| 183d | Downtown San Jose | Santa Clara |  |  | Y | Y |
| 10 | Oroville/Palermo/Thermalito | Butte | Y |  |  |  |
| 107 | Chualar/Gonzalez/Greenfield/Soledad | Monterey | Y |  |  |  |
| 108 | Carmel Valley/Castroville/Marina/Moss Landing/Ord | Monterey | Y |  |  |  |
| 139a | Elverta/Natomas/North Highlands/Rio Linda | Sacramento | Y |  |  |  |
| 156a | Encinitas Central/Leucadia/Oceanside North and West/San Luis Rey/South Oceanside | San Diego | Y |  |  |  |
| 159 | Buckman Springs/Canyon City/Jacumba/Morena Village/Tecate | San Diego | Y |  |  |  |
| 161s | Cockatoo Grove/Eastlake Greens/Otay Mesa | San Diego | Y |  |  |  |
| 162h | Laurel Heights/Ocean Beach North/Richmond/Sutro Heights | San Francisco | Y |  |  |  |
| 166 | Lodi | San Joaquin | Y |  |  |  |
| 176a | Brisbane/Burlingame Northeast/Colma/Daly City East/Millbrae East/San Bruno/South San Francisco | San Mateo | Y |  |  |  |
| 183n | Santa Clara South and West | Santa Clara | Y |  |  |  |
| 185.1 | Aptos/Capitola/Live Oak/Rio del Mar/Santa Cruz | Santa Cruz | Y |  |  |  |
| 185.4 | Boulder Creek | Santa Cruz | Y |  |  |  |
| 202a | Vacaville | Solano | Y |  |  |  |
| 204 | Vallejo | Solano | Y |  |  |  |
| 210.1 | Santa Rosa | Sonoma | Y |  |  |  |
| 27 | Coalinga | Fresno | Y |  |  |  |
| 29 | Biola/Herndon/Highway City/Kerman | Fresno | Y |  |  |  |
| 2h | Ashland/Brookfield Village/Castro Valley South/Elmhurst/Hayward Northeast/San Leandro North Central/San Lorenzo East | Alameda | Y |  |  |  |
| 2n | Hayward Central | Alameda | Y |  |  |  |
| 63 | Alta Sierra/Bodfish/Glennville/Kernville/Lake Isabella/Weldon/Wofford Heights | Kern | Y |  |  |  |
| 70.2 | Lucerne/Nice/Upper Lake | Lake | Y |  |  |  |
| 78.2bbbb | Gardena West/Hawthorne | Los Angeles | Y |  |  |  |
| 78.2mmm | Downtown Southeast/Florence North | Los Angeles | Y |  |  |  |
| 18d | Antioch North and West/Nichols/Pittsburg Central and East/West Pittsburg | Contra Costa |  | Y |  |  |
| 71.1 | Clearlake/Clearlake Oaks | Lake |  | Y |  |  |
| 78.2f | Hollywood Hills/Hollywood West/Mount Olympus/West Hollywood | Los Angeles |  | Y |  |  |
| 80 | Madera | Madera |  | Y |  |  |
| 116i | Garden Grove South/Santa Ana West | Orange |  |  | Y |  |
| 139k | Freeport/Meadowview | Sacramento |  |  | Y |  |
| 161a | Clairemont/Fiesta Shores/Linda Vista/Mission Beach/Sorrento/University City | San Diego |  |  | Y |  |
| 161e | College Heights/Hillcrest Southeast/Kensington/Rolando North/University Heights | San Diego |  |  | Y |  |
| 161f | La Mesa/Rolando South | San Diego |  |  | Y |  |
| 169a | Stockton North Central/Stockton Northeast | San Joaquin |  |  | Y |  |
| 176c | Atherton/Lindenwood/Menlo Oaks/Menlo Park/Redwood City Central/Sharon Heights/West Menlo Park/Woodside/Woodside Hills | San Mateo |  |  | Y |  |
| 183h | San Jose Southeast | Santa Clara |  |  | Y |  |
| 183k | Evergreen/San Jose East Central | Santa Clara |  |  | Y |  |
| 78.2e | Country Club Park/Koreatown/Mid-City East | Los Angeles |  |  | Y |  |
| 78.2gg | Angeles National Forest West/Kagel Canyon/Lake View Terrace/San Fernando East/Sylmar | Los Angeles |  |  | Y |  |
| 105 | King City/San Lucas | Monterey |  |  |  | Y |
| 109.2 | Salinas/Spreckels | Monterey |  |  |  | Y |
| 151a | Chino Hills/Chino West Central/Los Serranos/Sleepy Hollow | San Bernardino |  |  |  | Y |
| 151g | Muscoy/San Bernardino Central | San Bernardino |  |  |  | Y |
| 161g | Encanto/Lemon Grove Northwest/Lincoln Acres/National City East/Paradise Hills Southwest | San Diego |  |  |  | Y |
| 169b | French Camp/Stockton South/Stockton Southeast | San Joaquin |  |  |  | Y |
| 179 | Lompoc/Mission Hills/Vandenberg | Santa Barbara |  |  |  | Y |
| 183c | Sunnyvale South | Santa Clara |  |  |  | Y |
| 183e | Alum Rock South/San Jose East | Santa Clara |  |  |  | Y |
| 183o | Milpitas West/Santa Clara Northeast | Santa Clara |  |  |  | Y |
| 249 | Marysville | Yuba |  |  |  | Y |
| 35b | Clovis West/Fresno East | Fresno |  |  |  | Y |
| 35c | Fresno West Central | Fresno |  |  |  | Y |
| 35d | Fresno East Central | Fresno |  |  |  | Y |
| 35e | Fresno South and West | Fresno |  |  |  | Y |
| 35f | Fresno North Central | Fresno |  |  |  | Y |
| 4 | Ione/Jackson/Pine Grove/Sutter Creek | Amador |  |  |  | Y |
| 49 | Calexico/Ocotillo | Imperial |  |  |  | Y |
| 60 | Delano/McFarland | Kern |  |  |  | Y |
| 77.1c | Lancaster Central/Palmdale North Central | Los Angeles |  |  |  | Y |
| 78.2ffff | Boyle Heights Northwest/Chinatown/Downtown Northwest/Little Tokyo/Westlake | Los Angeles |  |  |  | Y |
| 78.2j | Baldwin Hills/Culver City South/Fox Hills/Ladera Heights/Marina del Rey/View Park/Windsor Hills | Los Angeles |  |  |  | Y |
| 78.2qq | Asuza/Charter Oak/Covina | Los Angeles |  |  |  | Y |
| 78.2ww | Pico Rivera/Santa Fe Springs Northwest | Los Angeles |  |  |  | Y |

Abbreviation: MSSA, Medical Service Study Area

Note: The geographic unit in this analysis is the Medical Service Study Area (MSSA), aggregations of census tracts (typically 20-30) that provide a good basis for needs assessment analysis, healthcare planning, and healthcare policy development. Hot spots are MSSAs with at least 50% higher HCC incidence than that expected in the average California population. This table provides results for each of the four race/ethnic groups examined, respectively.