

### III. BREAST CANCER

Invasive breast cancer is the most common cancer in females, accounting for approximately a third of all invasive cancers diagnosed annually in the Greater Bay Area and in the state. From 2014 through 2018, there were 27,389 new invasive breast cancers diagnosed in females in the Greater Bay Area and 136,114 in all of California. About one in eight females in the U.S. will develop invasive breast cancer within their lifetime. Risk factors include older age, family history of breast cancer, inherited genetic mutations (*BRCA1* and *BRCA2*), early age of menarche, late age of menopause, no pregnancies or pregnancies later in life (i.e., first after age 30), postmenopausal hormone therapy use, obesity and excessive weight gain, physical inactivity, alcohol consumption, and dense breast tissue (as on a mammogram). However, risk factors differ across the different subtypes of breast cancer. An estimated 30% of postmenopausal breast cancers could potentially be prevented through lifestyle changes, such as maintaining a healthy weight, being physically active, and limiting alcohol intake [4-7].

Incidence trends of invasive breast cancer in the Greater Bay Area have generally paralleled those in California with an overall decline from 1988 through 2018. The well-documented decline since 2000, especially among NH White females, follows the broad cessation of hormone therapy use [8, 9] in response to the seminal report by the Women's Health Initiative of increased breast cancer risk associated with certain formulations of hormone therapy [10]. Yet, there have been striking racial/ethnic differences in breast cancer incidence rates (**Figure 8**). For NH Black females, the annual incidence rate of invasive breast cancer has remained stable during the time period of 1988-2018. For both NH White and Hispanic

females, there was an overall annual decrease in the incidence rate of invasive breast cancer by -0.2% per year. Whereas for Asian/Pacific Islander females, the rates have steadily increased since 1988 by 1.1% per year. The underlying reasons for these increasing rates in Asian/Pacific Islander females are not well understood, but may be attributable to the changing immigration patterns and/or acculturation experiences of specific Asian American ethnic groups [11-14]. Incidence patterns differ, however, across Asian/Pacific Islander ethnicities, highly heterogeneous population groups that are well represented in the Bay Area. Although cancer registry data for detailed Asian/Pacific Islander ethnicities are available, limitations in available population estimate data preclude systematic surveillance of cancer trends in detailed ethnic groups. Population estimate data for detailed Asian/Pacific Islander ethnicities as well as other granular racial/ethnic groups are needed for surveillance of cancer burden in our diverse communities.

For the most recent time period (2014-2018), the incidence rate of breast cancer in the Greater Bay Area (126.8 per 100,000 females) was slightly higher than that for California (122.3 per 100,000) (**Table 3; Figure 9**).

Marin County has long been recognized for having high breast cancer rates, particularly in NH White females. For NH White females, the rate in Marin County (155.9 per 100,000) slightly exceeded that in San Mateo (155.5 per 100,000), and San Francisco (150.7 per 100,000) counties during the recent 5-year period (2014-2018). Perhaps the most striking regional differences in rates were for Asian/Pacific Islander females, for whom the rates in San Mateo County (131.7 per 100,000) and Marin County (132.6 per 100,000) were

significantly higher than that for Asian/Pacific Islander females in the Greater Bay Area (108.9 per 100,000) and California (106.3 per 100,000) (Table 3).

Figure 8: Age-Adjusted Incidence Rates and Trends for Female Invasive and *In Situ* Breast Cancer in the Greater Bay Area by Race/Ethnicity, 1988-2018

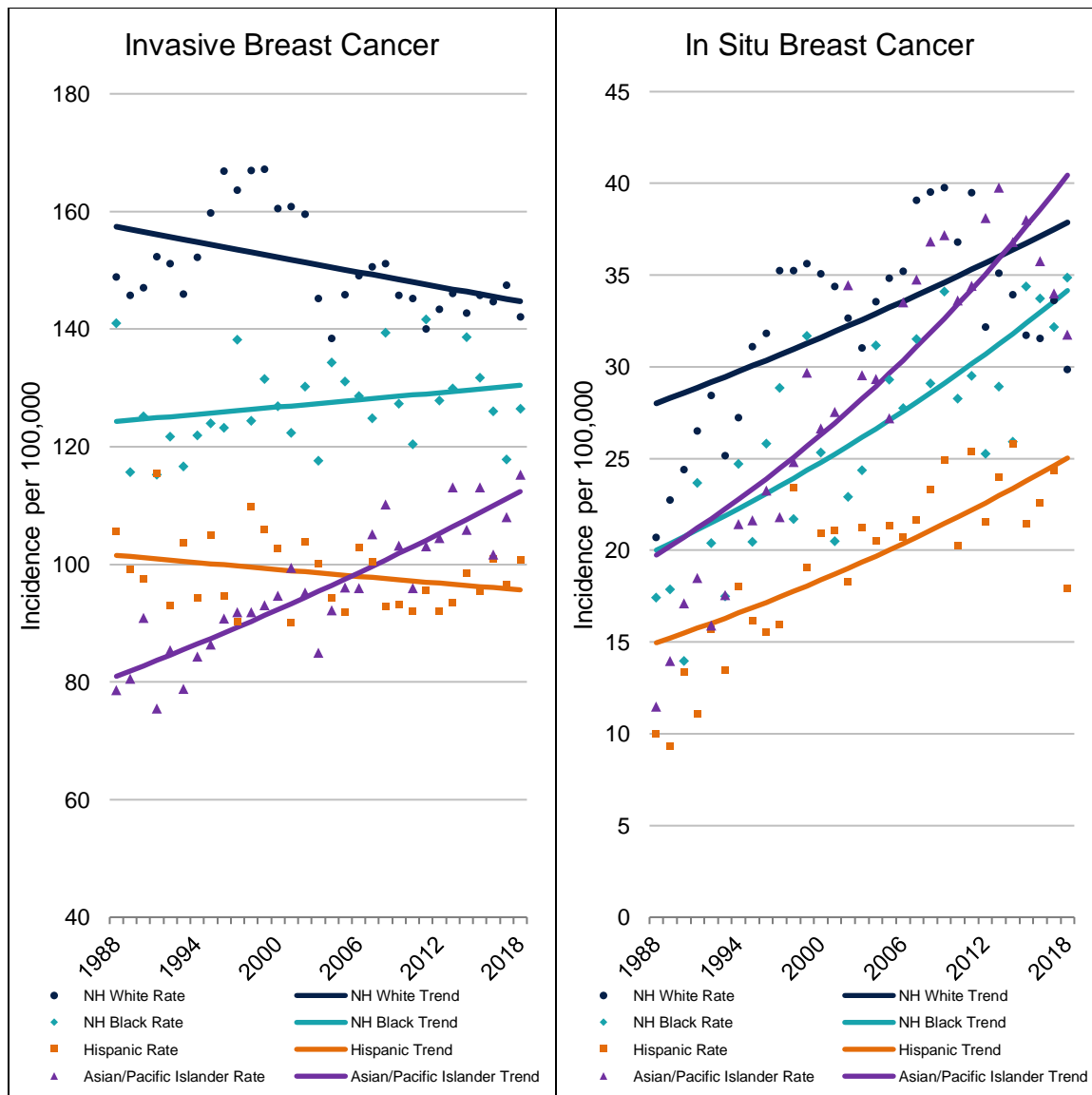
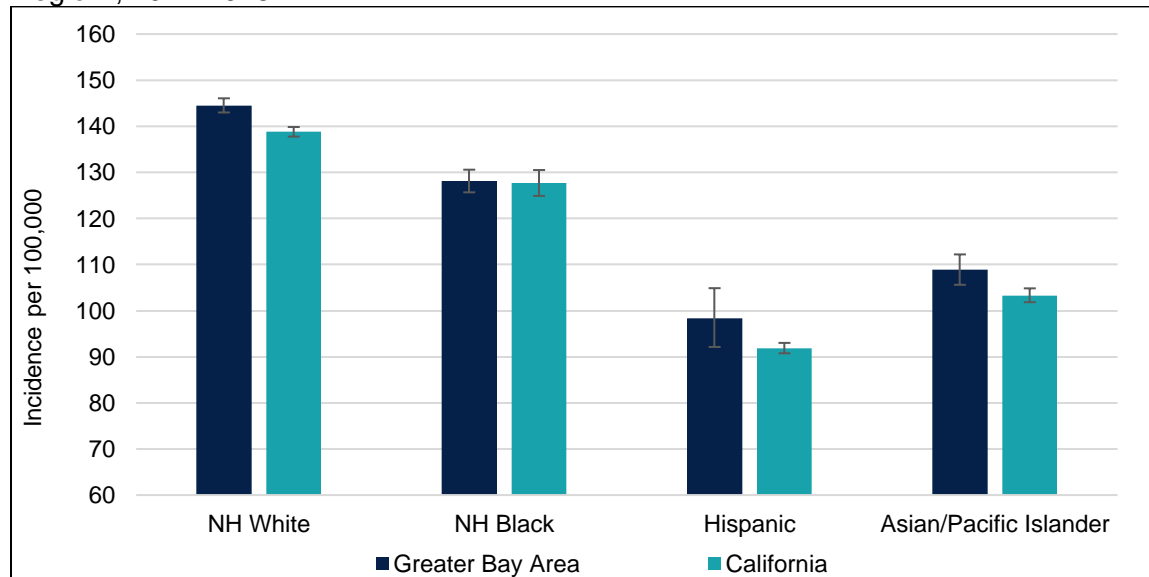


Figure 9: Female Invasive Breast Cancer Age-Adjusted Incidence Rates<sup>1</sup> by Race/Ethnicity and Region<sup>2</sup>, 2014-2018



<sup>1</sup> Error bars (in black at the top of the bars) indicate 95% confidence intervals for the corresponding incidence rates.

<sup>2</sup> The two regions represented include: (1) the Greater Bay Area (nine-county region) and (2) all of California (including the nine-county Greater Bay Area region).

Table 3. Female Invasive Breast Cancer Age-Adjusted Incidence Rates (per 100,000 females) by Race/Ethnicity and County/Region, 2014-2018

Geographic Location	NH White	NH Black	Hispanic	Asian/ Pacific Islander
California	138.9	126.7	93.2	106.3
Greater Bay Area	126.7	128.1	98.4	108.9
Alameda County	139.3	127.2	90.0	106.1
Contra Costa County	144.1	132.4	103.0	115.0
Marin County	155.9	121.7	110.4	132.6
San Francisco County	150.7	131.3	87.5	108.0
San Mateo County	155.5	114.5	99.2	131.7
Santa Clara County	142.7	131.6	106.9	99.8
Monterey County	131.7	102.9	90.7	118.3
San Benito County	126.8	96.3	99.9	120.7
Santa Cruz County	137.4	^	102.8	128.8

^ Statistic not displayed due to fewer than 11 cases.

*In situ* carcinomas of the breast, specifically ductal carcinoma *in situ* (DCIS) and lobular carcinoma *in situ* (LCIS), reflect cancer cells of the milk ducts or milk-making glands, respectively, that do not spread to surrounding healthy breast tissue. DCIS, the most common, is thought to have the potential to progress to invasive breast cancer [15] and is captured by cancer registries as a reportable cancer. Incidence rates of *in situ* breast carcinomas in the Greater Bay Area increased significantly from 1988 through 2018 by an average of 1.5% per year. Incidence rates for *in situ* breast cancer have increased significantly from 1988 through 2018 for all racial/ethnic groups with the largest average increase per year seen in Asian/Pacific Islander females (3.0%), followed by Hispanic females (2.8%), NH Black females (1.8%), and NH White females (1.1%; **Figure 8**). The incidence rate of *in situ* carcinomas for the Greater Bay Area (31.6 per 100,000) was significantly higher than the rate for California (27.6 per 100,000).

Mortality rates for invasive breast cancer declined significantly in all racial/ethnic groups from 1988 through 2018, with the largest average declines per year seen in NH White females (-2.3% per year), followed by Hispanic females (-1.9%), NH Black females (-1.6%), and Asian/Pacific Islander females (-1.0%; **Figure 10**). From 2014 through 2018, breast cancer mortality rates varied by race/ethnicity, with the highest rates in NH Black females (25.6 per 100,000) followed by NH White females (19.1 per 100,000), Hispanic females (13.5 per 100,000) and Asian/Pacific Islander females (11.8 per 100,000) in the Greater Bay Area (**Figure 11**). The breast cancer mortality rate for all racial/ethnic groups together was significantly lower in the Greater Bay Area (16.8 per 100,000) than in California (19.3 per 100,000).

**Figure 10: Age-Adjusted Mortality Rates and Trends for Female Invasive Breast Cancer in the Greater Bay Area by Race/Ethnicity, 1988-2018**

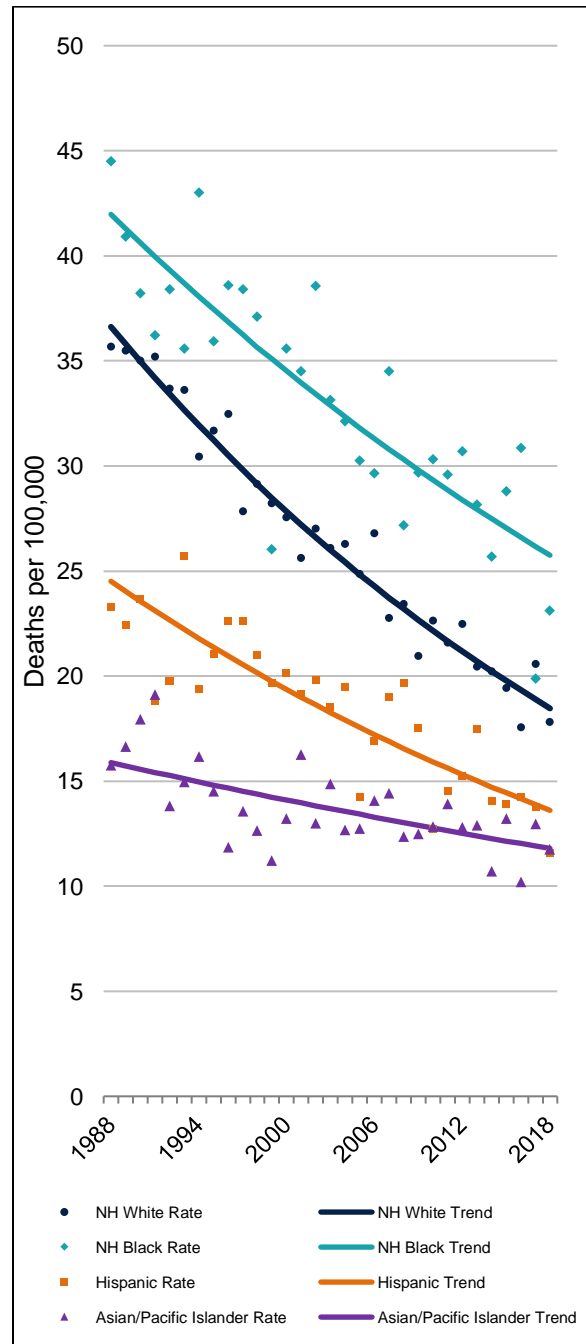
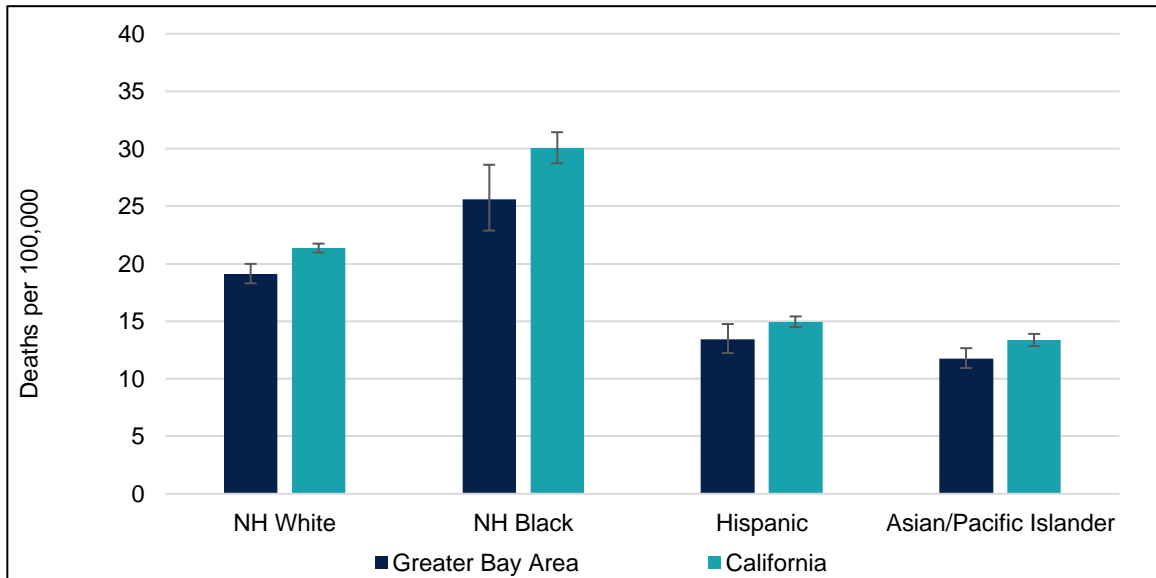


Figure 11: Female Invasive Breast Cancer Age-Adjusted Mortality Rates<sup>1</sup> by Race/Ethnicity and Region<sup>2</sup>, 2014-2018



<sup>1</sup> Error bars (in black at the top of the bars) indicate 95% confidence intervals for the corresponding mortality rates.

<sup>2</sup> The two regions represented include: (1) the Greater Bay Area (nine-county region) and (2) all of California (including the nine-county Greater Bay Area region).