

Supplementary Material

Supplementary Methods

1. Cancer groups based on 5-year relative survival rate (S)

Good survival group ($S \geq 90\%$)

Melanoma of the Skin, Other Non-Epithelial Skin, Breast, Thyroid

Moderate survival group ($70\% \leq S < 90\%$)

Nose, Nasal Cavity and Middle Ear, Larynx, Bones and Joints, Soft Tissue including Heart, Corpus Uteri, Urinary Bladder, Kidney and Renal Pelvis, Ureter, Other Urinary Organs, Eye and Orbit, Lymphoma, Kaposi Sarcoma

Fair survival group ($50\% \leq S < 70\%$)

Oral Cavity and Pharynx, Small Intestine, Colorectum, Anus, Anal Canal and Anorectum, Cervix Uteri, Vagina, Vulva, Other Female Genital Organs, Myeloma, Leukemia

Poor survival group ($S < 50\%$)

Esophagus, Stomach, Liver, Intrahepatic Bile Duct, Gallbladder, Other Biliary, Pancreas, Peritoneum, Other Digestive Organs, Lung and Bronchus, Other Respiratory Organs, Ovary, Brain, Cranial Nerves Other Nervous System, Mesothelioma

2. Statistical analysis for cardiovascular disease (CVD) and all-cause mortality

The cumulative incidence function (CIF) of CVD death by racial and ethnic groups was graphed for the first 10 years of follow-up. We also fitted the same three models as for cancer mortality considering competing risk of death from non-CVD conditions. Then we conducted subgroup analysis among patients with a second breast cancer, lung cancer, colorectal cancer, and uterine cancer separately. HRs for all-cause mortality comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors overall and by cancer types were quantified.

3. Association between race and ethnicity and mortality by age category

The models for cancer and CVD mortality were stratified by age at SPC diagnosis (≤ 70 and >70 years) based on the median age in this study population as well as prior studies that have reported an increase in CVD mortality among breast cancer survivors over 70 years^{1,2}. To study whether age at SPC diagnosis modified the association between race and ethnicity and mortality, we added an interaction term between age (≤ 70 and >70 years) and race and ethnicity to model 3. Likelihood ratio test (LRT) comparing models with and without interaction term was conducted to obtain p-value for interaction.

4. Sensitivity analysis

(1) For cancer mortality, Cox model further adjusted for percent of residents below poverty (continuous) and rural/urban status (Model 4) and insurance (uninsured, Medicaid, insured) (Model 5). (2) Age was used as time scale in Cox model for cancer-specific and CVD-specific mortality (3) We used Fine and Gray competing risk models to quantify the subdistribution HRs for cancer-specific and CVD-specific mortality in fully adjusted model (model 3). (4) To reduce potential misclassification of recurrence being classified as a second primary breast cancer, analysis was restricted to women diagnosed of second breast cancer ≥ 1 year, and for ipsilateral and contralateral breast cancer separately. (5) We limited analyses to women who had local stage SPCs and quantified HRs for all-cause, cancer-specific, and CVD-specific mortality. (6) To investigate the secular trends of the racial and ethnic disparity, the association between race and ethnicity and cancer mortality was examined in each stratum of calendar years (2000-2004, 2005-2009, 2010-2014; given that we are studying multiple cancers, there is no specific cut point) among women diagnosed with SPCs within 5 years (because SPCs diagnosed between 2000-2004 were developed within 5 years by default, we applied this restriction to each period for fair comparison across calendar years). (7) Age 50 years was used as an alternative cutoff for the stratified analysis of cancer-specific mortality.

Supplementary References

1. Ramin C, Schaeffer ML, Zheng Z, et al. All-Cause and Cardiovascular Disease Mortality among Breast Cancer Survivors in CLUE II, a Long-Standing Community-Based Cohort. *J Natl Cancer Inst.* 2021;113(2):137-145. doi:10.1093/jnci/djaa096
2. Bradshaw PT, Stevens J, Khankari N, Teitelbaum SL, Neugut AI, Gammon MD. Cardiovascular Disease Mortality Among Breast Cancer Survivors. *Epidemiology.* 2016;27(1):6. doi:10.1097/EDE.0000000000000394

Supplementary Tables

Supplementary Table 1. Characteristics of the first breast cancer among survivors diagnosed with SPCs by race and ethnicity.

	Hispanic (n=3197)	Non-Hispanic Asian (n=2146)	Non-Hispanic Black (n=4227)	Non-Hispanic White (n=29459)
Age at diagnosis, Mean (SD), years	57.2 (13.6)	58.5 (13.1)	58.5 (13.5)	63.6 (12.8)
Tumor stage				
Local	1883 (58.9%)	1424 (66.4%)	2509 (59.4%)	20156 (68.4%)
Regional	1158 (36.2%)	634 (29.5%)	1486 (35.2%)	8353 (28.4%)
Distant	96 (3.0%)	58 (2.7%)	130 (3.1%)	559 (1.9%)
Missing	60 (1.9%)	30 (1.4%)	102 (2.4%)	391 (1.3%)
Estrogen receptor status				
Positive	2043 (63.9%)	1505 (70.1%)	2385 (56.4%)	21255 (72.2%)
Negative	757 (23.7%)	428 (19.9%)	1231 (29.1%)	4934 (16.7%)
Missing	397 (12.4%)	213 (9.9%)	611 (14.5%)	3270 (11.1%)
Surgery				
Yes	3050 (95.4%)	2072 (96.6%)	3948 (93.4%)	28505 (96.8%)
No/unknown	147 (4.6%)	74 (3.4%)	279 (6.6%)	954 (3.2%)
Chemotherapy				
Yes	1540 (48.2%)	886 (41.3%)	1998 (47.3%)	10080 (34.2%)
No/unknown	1657 (51.8%)	1260 (58.7%)	2229 (52.7%)	19379 (65.8%)
Radiation				
Yes	1611 (50.4%)	1078 (50.2%)	2067 (48.9%)	15985 (54.3%)
No/unknown	1586 (49.6%)	1068 (49.8%)	2160 (51.1%)	13474 (45.7%)

Abbreviation: SPC, second primary cancer.

Supplementary Table 2. Hazard ratios (95% confidence intervals) of death from cancer comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors, further adjusting for county attributes and health insurance status.

	Model 4 ^a	Model 5 ^a
Hispanic	1.08 (1.00,1.16)	1.07 (0.98,1.16)
Non-Hispanic Asian	0.93 (0.85,1.01)	0.92 (0.83,1.02)
Non-Hispanic Black	1.13 (1.06,1.20)	1.14 (1.06,1.22)
Non-Hispanic White	1.00 (Reference)	1.00 (Reference)

^a Model 4: Model 3 + percent of residents below poverty and rural/urban status of the county; Model 5: Model 4 + health insurance status (uninsured, Medicaid, insured, this variable is available since 2007)

Supplementary Table 3. Hazard ratios (95% confidence intervals) of cancer death comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White breast cancer patients who did not develop a second primary cancer.

	Number of BC survivors without SPC	Person months	Number of deaths	HR (95%CI) ^a
Hispanic	61664	4780003.5	9262	1.07 (1.04,1.10)
Non-Hispanic Asian	42401	3547372	4599	0.86 (0.83,0.89)
Non-Hispanic Black	63578	4712587	15122	1.33 (1.30,1.35)
Non-Hispanic White	424584	36947005.5	62178	1.00 (Reference)

Abbreviation: BC, breast cancer; SPC, second primary cancer; HR, hazard ratio; CI, confidence interval.

^a Models adjusted for age at diagnosis, year of diagnosis, tumor stage, treatment (surgery, chemotherapy, and radiation therapy), estrogen receptor status, marital status, median household income, % <9th grade, and region of registry.

Supplementary Table 4. Hazard ratios (95% confidence intervals) of death from cancer comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors who developed a second breast cancer (BC) ≥ 1 year since first diagnosis overall and by laterality.

	Overall ^a	Ipsilateral ^a	Contralateral ^a
Hispanic	1.22 (1.05,1.42)	1.65 (1.24,2.21)	1.08 (0.90,1.28)
Non-Hispanic Asian	0.85 (0.69,1.04)	1.00 (0.63,1.59)	0.78 (0.62,0.98)
Non-Hispanic Black	1.29 (1.14,1.46)	1.48 (1.16,1.90)	1.21 (1.05,1.40)
Non-Hispanic White	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

^a Models adjusted for age at diagnosis of second BC, year of diagnosis of second BC, tumor stage of second BC, ER status of second BC, treatment of second BC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % $< 9^{\text{th}}$ grade, region of registry at second BC diagnosis, age at diagnosis of first BC, tumor stage of first BC, estrogen receptor status of first BC, and treatment of first BC (surgery, chemotherapy, and radiation therapy).

Supplementary Table 5. Hazard ratios (95% confidence intervals) of cancer death comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors among second breast cancer patients by hormone receptor status and subtype of first and second breast cancer.

	Number of second BC	Number of deaths	Hazard ratio (95%CI) ^a
By first and second BC HR status			
First HR+, second HR+			
Hispanic	629	161	1.22 (1.01,1.48)
Non-Hispanic Asian	448	81	1.05 (0.82,1.34)
Non-Hispanic Black	712	189	1.32 (1.11,1.57)
Non-Hispanic White	5266	861	1.00 (Reference)
First HR+, second HR-			
Hispanic	147	46	1.32 (0.92,1.90)
Non-Hispanic Asian	102	18	0.99 (0.60,1.63)
Non-Hispanic Black	224	78	1.66 (1.25,2.20)
Non-Hispanic White	1023	243	1.00 (Reference)
First HR-, second HR+			
Hispanic	118	19	1.01 (0.58,1.75)
Non-Hispanic Asian	85	12	0.79 (0.42,1.50)
Non-Hispanic Black	206	45	1.24 (0.83,1.87)
Non-Hispanic White	926	138	1.00 (Reference)
First HR-, second HR-			
Hispanic	209	78	0.95 (0.70,1.29)
Non-Hispanic Asian	81	21	0.58 (0.35,0.99)
Non-Hispanic Black	368	145	0.99 (0.78,1.25)
Non-Hispanic White	743	270	1.00 (Reference)
By second BC subtype ^b			
HR+ and HER2- (Luminal A)			
Hispanic	437	73	1.32 (0.98,1.79)
Non-Hispanic Asian	308	34	1.14 (0.76,1.72)
Non-Hispanic Black	524	99	1.36 (1.03,1.79)
Non-Hispanic White	3603	358	1.00 (Reference)
HR+/- and HER2+ (HER2 positive)			
Hispanic	118	30	1.78 (1.09,2.92)
Non-Hispanic Asian	85	12	0.96 (0.47,1.97)
Non-Hispanic Black	164	40	1.13 (0.69,1.85)
Non-Hispanic White	694	114	1.00 (Reference)
HR- and HER2- (Triple negative)			
Hispanic	159	44	1.19 (0.77,1.83)
Non-Hispanic Asian	67	17	1.35 (0.76,2.40)
Non-Hispanic Black	274	75	1.21 (0.88,1.68)
Non-Hispanic White	726	151	1.00 (Reference)

Abbreviation: BC, breast cancer; HR, hormone receptor; HER2, human epidermal growth factor receptor 2; HR+, estrogen receptor positive or progesterone receptor positive; HR-, estrogen receptor negative and progesterone receptor negative.

^a Models adjusted for age at diagnosis of second BC, year of diagnosis of second BC, tumor stage of second BC, treatment of second BC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, region of registry at second BC diagnosis, age at diagnosis of first BC, tumor stage of first BC, hormone receptor status of first BC (only for models stratified by second BC subtype), and treatment of first BC (surgery, chemotherapy, and radiation therapy).

^b Limited to survivors who diagnosed of a second breast cancer ≥ 2010, when HER2 status is available.

Supplementary Table 6. Hazard ratios (95% confidence intervals) of death from specific SPC and first breast cancer comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors among 3 most common non-breast SPC patients.

	Death from SPC				Death from first BC			
	Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a	Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a
Second lung cancer								
Hispanic	109	0.85 (0.70,1.03)	0.77 (0.63,0.95)	0.75 (0.59,0.95)	59	1.67 (1.28,2.19)	1.41 (1.04,1.90)	1.16 (0.82,1.65)
Non-Hispanic Asian	72	0.67 (0.53,0.84)	0.59 (0.45,0.77)	0.62 (0.47,0.82)	34	1.04 (0.74,1.48)	1.02 (0.69,1.49)	0.89 (0.57,1.38)
Non-Hispanic Black	203	0.91 (0.79,1.05)	0.73 (0.63,0.86)	0.73 (0.62,0.87)	93	1.52 (1.22,1.89)	1.10 (0.86,1.41)	1.05 (0.80,1.38)
Non-Hispanic White	2221	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	566	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Second colorectal cancer								
Hispanic	51	1.18 (0.89,1.57)	1.23 (0.91,1.67)	1.13 (0.81,1.59)	15	1.00 (0.59,1.70)	1.06 (0.61,1.86)	1.34 (0.76,2.37)
Non-Hispanic Asian	37	0.94 (0.68,1.32)	1.04 (0.73,1.50)	1.11 (0.77,1.61)	6	0.39 (0.17,0.87)	0.48 (0.21,1.09)	0.56 (0.25,1.29)
Non-Hispanic Black	103	1.41 (1.14,1.74)	1.17 (0.93,1.47)	1.13 (0.88,1.45)	42	1.60 (1.14,2.24)	1.32 (0.91,1.91)	1.19 (0.78,1.80)
Non-Hispanic White	647	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	207	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Second uterine cancer								
Hispanic	26	1.26 (0.84,1.88)	1.33 (0.85,2.08)	1.12 (0.68,1.85)	13	1.41 (0.79,2.50)	1.29 (0.66,2.52)	0.84 (0.38,1.87)
Non-Hispanic Asian	26	1.14 (0.76,1.71)	1.13 (0.72,1.77)	0.90 (0.53,1.52)	10	1.04 (0.54,1.98)	1.18 (0.59,2.39)	0.87 (0.39,1.92)
Non-Hispanic Black	57	1.81 (1.36,2.41)	1.26 (0.90,1.74)	1.31 (0.91,1.89)	24	1.91 (1.23,2.97)	1.43 (0.87,2.37)	1.26 (0.72,2.21)
Non-Hispanic White	303	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	134	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

Abbreviation: SPC, second primary cancer; BC, breast cancer; HR, hazard ratio; CI, confidence interval.

^a Model 1 adjusted for age at diagnosis of SPC, and year of diagnosis of SPC; Model 2: Model 1 + tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, and region of registry at SPC diagnosis; Model 3: Model 2 + age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, treatment of first breast cancer (surgery, chemotherapy, and radiation therapy)

Supplementary Table 7. Hazard ratios (95% confidence intervals) of death from all causes comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors overall by type of SPCs.

	Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a
All SPCs				
Hispanic	1471	1.20 (1.14,1.27)	1.12 (1.05,1.19)	1.08 (1.01,1.15)
Non-Hispanic Asian	826	0.86 (0.80,0.92)	0.90 (0.83,0.97)	0.89 (0.82,0.97)
Non-Hispanic Black	2289	1.46 (1.40,1.53)	1.20 (1.14,1.26)	1.13 (1.07,1.19)
Non-Hispanic White	14614	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Second breast cancer ^b				
Hispanic	498	1.41 (1.28,1.55)	1.19 (1.06,1.34)	1.17 (1.03,1.33)
Non-Hispanic Asian	218	0.83 (0.72,0.95)	0.82 (0.70,0.96)	0.78 (0.66,0.92)
Non-Hispanic Black	847	1.76 (1.63,1.90)	1.30 (1.18,1.42)	1.30 (1.17,1.44)
Non-Hispanic White	3199	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Second lung cancer				
Hispanic	202	1.06 (0.92,1.22)	0.95 (0.81,1.11)	0.90 (0.76,1.07)
Non-Hispanic Asian	126	0.76 (0.63,0.91)	0.69 (0.57,0.84)	0.69 (0.56,0.86)
Non-Hispanic Black	363	1.09 (0.98,1.21)	0.85 (0.75,0.95)	0.82 (0.72,0.93)
Non-Hispanic White	3331	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Second colorectal cancer				
Hispanic	110	1.24 (1.02,1.50)	1.25 (1.01,1.54)	1.23 (0.98,1.55)
Non-Hispanic Asian	62	0.74 (0.58,0.96)	0.79 (0.60,1.04)	0.80 (0.60,1.06)
Non-Hispanic Black	208	1.39 (1.20,1.61)	1.18 (1.01,1.39)	1.14 (0.95,1.36)
Non-Hispanic White	1405	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Second uterine cancer				
Hispanic	54	1.22 (0.92,1.61)	1.26 (0.93,1.72)	0.97 (0.68,1.37)
Non-Hispanic Asian	53	1.07 (0.81,1.42)	1.11 (0.82,1.51)	0.86 (0.60,1.23)
Non-Hispanic Black	115	1.72 (1.41,2.10)	1.30 (1.04,1.62)	1.27 (0.99,1.63)
Non-Hispanic White	734	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

Abbreviation: SPC, second primary cancer.

^a Model 1 adjusted for age at diagnosis of SPC, year of diagnosis of SPC, and type of SPC (4 cancer groups based on 5-year relative survival rate. This is only for all SPC model); Model 2: Model 1 + tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, and region of registry at SPC diagnosis; Model 3: Model 2 + age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, treatment of first breast cancer (surgery, chemotherapy, and radiation therapy)

^b Models 2&3 further adjusted for estrogen receptor status of the second breast cancer

Supplementary Table 8. Subdistribution hazard ratios (95% confidence intervals) from fully adjusted models ^a.

	Cancer	CVD
Hispanic	1.05 (0.97,1.14)	0.98 (0.76,1.26)
Non-Hispanic Asian	0.91 (0.83,1.00)	0.87 (0.65,1.18)
Non-Hispanic Black	1.11 (1.04,1.18)	1.39 (1.17,1.68)
Non-Hispanic White	1.00 (Reference)	1.00 (Reference)

Abbreviation: CVD, cardiovascular disease

^a Models adjusted for age at diagnosis of SPC, year of diagnosis of SPC, 4 cancer groups based on 5-year relative survival rate, tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, region of registry at SPC diagnosis, age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, and treatment of first breast cancer (surgery, chemotherapy, and radiation therapy).

Supplementary Table 9. Hazard ratios (95% confidence intervals) using age as time scale ^a.

	Cancer	CVD
Hispanic	1.05 (0.98,1.13)	1.00 (0.78,1.28)
Non-Hispanic Asian	0.92 (0.84,1.01)	0.84 (0.62,1.14)
Non-Hispanic Black	1.12 (1.05,1.19)	1.43 (1.19,1.73)
Non-Hispanic White	1.00 (Reference)	1.00 (Reference)

Abbreviation: CVD, cardiovascular disease

^a Models adjusted for year of diagnosis of SPC, 4 cancer groups based on 5-year relative survival rate, tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, region of registry at SPC diagnosis, age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, and treatment of first breast cancer (surgery, chemotherapy, and radiation therapy).

Supplementary Table 10. Hazard ratios (95% confidence intervals) of death overall, death from cancer, and death from cardiovascular disease (CVD) comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors who developed a local stage SPC.

	Number of SPC	Person months	All-cause				Cancer				CVD			
			Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a	Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a	Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a
Hispanic	1516	87084	383	1.18 (1.07,1.31)	1.06 (0.95,1.18)	1.02 (0.90,1.15)	275	1.28 (1.13,1.45)	1.08 (0.94,1.23)	1.02 (0.88,1.18)	50	1.14 (0.85,1.51)	1.03 (0.76,1.39)	0.97 (0.69,1.35)
Non-Hispanic Asian	1119	74801.5	202	0.70 (0.61,0.81)	0.75 (0.65,0.87)	0.73 (0.62,0.85)	131	0.70 (0.59,0.84)	0.75 (0.62,0.90)	0.77 (0.63,0.93)	35	0.84 (0.60,1.17)	0.87 (0.61,1.25)	0.69 (0.45,1.05)
Non-Hispanic Black	1907	107730	618	1.55 (1.43,1.69)	1.28 (1.17,1.41)	1.23 (1.11,1.36)	415	1.56 (1.41,1.74)	1.25 (1.11,1.40)	1.19 (1.05,1.35)	90	1.66 (1.33,2.07)	1.48 (1.17,1.86)	1.49 (1.15,1.93)
Non-Hispanic White	14894	938016	4542	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	2670	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	804	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

Abbreviation: SPC, second primary cancer.

^a Model 1 adjusted for age at diagnosis of SPC, year of diagnosis of SPC, and type of SPC (4 cancer groups based on 5-year relative survival rate); Model 2: Model 1 + tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, and region of registry at SPC diagnosis; Model 3: Model 2 + age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, treatment of first breast cancer (surgery, chemotherapy, and radiation therapy)

Supplementary Table 11. Hazard ratios (95% confidence intervals) of death from cancer comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors by calendar time of SPC diagnosis ^a.

	2000-2004	2005-2009	2010-2014
Hispanic	0.90 (0.73,1.11)	1.12 (0.98,1.28)	1.13 (0.97,1.31)
Non-Hispanic Asian	0.77 (0.60,0.99)	0.86 (0.72,1.02)	0.98 (0.81,1.18)
Non-Hispanic Black	1.10 (0.93,1.31)	1.24 (1.10,1.40)	1.14 (1.01,1.29)
Non-Hispanic White	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

Abbreviation: SPC, second primary cancer.

^a Models adjusted for age at diagnosis of SPC, year of diagnosis of SPC, 4 cancer groups based on 5-year relative survival rate, tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, region of registry at SPC diagnosis, age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, and treatment of first breast cancer (surgery, chemotherapy, and radiation therapy).

Supplementary Table 12. Hazard ratios (95% confidence intervals) of death from cancer comparing Hispanic, Non-Hispanic Asian, and Non-Hispanic Black to Non-Hispanic White survivors among women diagnosed of SPCs ≤50 years and >50 years of age.

	Number of SPC	Person months	Number of deaths	Model 1 ^a	Model 2 ^a	Model 3 ^a
≤50 years						
Hispanic	706	35765.5	266	1.54 (1.34,1.78)	1.21 (1.03,1.42)	1.09 (0.92,1.29)
Non-Hispanic Asian	385	25573	106	0.88 (0.72,1.08)	0.90 (0.72,1.13)	0.91 (0.71,1.15)
Non-Hispanic Black	768	43157	309	1.53 (1.34,1.75)	1.25 (1.08,1.45)	1.17 (0.99,1.38)
Non-Hispanic White	2662	176002.5	794	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
>50 years						
Hispanic	2491	109207.5	987	1.17 (1.09,1.24)	1.09 (1.01,1.17)	1.03 (0.95,1.12)
Non-Hispanic Asian	1761	87829.5	591	0.90 (0.83,0.98)	0.94 (0.85,1.02)	0.93 (0.85,1.03)
Non-Hispanic Black	3459	139333.5	1565	1.43 (1.35,1.51)	1.17 (1.11,1.24)	1.11 (1.04,1.18)
Non-Hispanic White	26797	1261086	10499	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

Abbreviation: SPC, second primary cancer.

^a Model 1 adjusted for age at diagnosis of SPC, year of diagnosis of SPC, and type of SPC (4 cancer groups based on 5-year relative survival rate); Model 2: Model 1 + tumor stage of SPC, treatment of SPC (surgery, chemotherapy, and radiation therapy), marital status, median household income, % <9th grade, and region of registry at SPC diagnosis; Model 3: Model 2 + age at diagnosis of first breast cancer, tumor stage of first breast cancer, estrogen receptor status of first breast cancer, treatment of first breast cancer (surgery, chemotherapy, and radiation therapy)