



## THE BURDEN OF CANCER AMONG HISPANIC/LATINOS IN CALIFORNIA

## ACKNOWLEDGEMENTS AND DISCLAIMER

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California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program  
UC Davis Comprehensive Cancer Center, UC Davis Health  
1631 Alhambra Blvd., Suite 200  
Sacramento, CA 95816  
(916) 731-2500  
<http://www.ccrca.org>

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## **PREPARED BY:**

### **CYLLENE R. MORRIS, D.V.M., PH.D.**

RESEARCH PROGRAM DIRECTOR, CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **ANI S. MOVSISYAN, M.S.**

CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **RITA M. VILLAZANA, M.P.H.**

CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **BRENDA M. HOFER, M.A.**

CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **THERESA H. M. KEEGAN, PH.D., M.S.**

PROFESSOR, DIVISION OF HEMATOLOGY AND ONCOLOGY  
PRINCIPAL INVESTIGATOR, CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **LAURA FEJERMAN, M.SC., PH.D.**

ASSOCIATE PROFESSOR, DEPARTMENT OF PUBLIC HEALTH SCIENCES  
CO-DIRECTOR WOMEN'S CANCER CARE PROGRAM, UC DAVIS COMPREHENSIVE CANCER CENTER  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **ARTI PARIKH-PATEL, PH.D., M.P.H.**

PROGRAM DIRECTOR, CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

### **THEODORE (TED) WUN, M.D. F.A.C.P.**

PROFESSOR, DIVISION OF HEMATOLOGY AND ONCOLOGY  
PRINCIPAL INVESTIGATOR, CALIFORNIA CANCER REPORTING AND EPIDEMIOLOGIC SURVEILLANCE (CALCARES) PROGRAM  
UC DAVIS HEALTH, UC DAVIS COMPREHENSIVE CANCER CENTER

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## SUMMARY

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- ❖ Between 2015 and 2019, 205,797 persons of Hispanic/Latino origin or heritage were diagnosed with cancer in California. Compared with non-Hispanic/Latino (NH) White individuals, Hispanic/Latino patients, tended to be younger, were more likely to live in disadvantaged areas (45.8 vs. 15.9 percent among NH Whites), and were significantly more often covered by Medicaid/Public insurance (27.7 vs. 7.7 percent among NH Whites). They were also more likely to be diagnosed at a late stage of disease (43.4 vs. 37.8 percent among NH Whites), and less likely to be free of comorbidities at the time of diagnosis (312.9 vs. 35.6 percent among NH Whites).
- ❖ Compared with NH Whites, incidence rates for most cancers were lower among Hispanic/Latinos. The incidence of lung cancer among Hispanic/Latinos was nearly half of the rate for NH Whites (33.1 vs. 64.0 per 100,000, respectively). Mortality rates for most cancers were also lower among Hispanic/Latinos, but were higher for liver, kidney, and stomach cancers.
- ❖ The top ten cancers among Hispanic/Latino men were prostate, colorectal, lung, kidney, liver, non-Hodgkin lymphoma, bladder, stomach, pancreatic, and oropharyngeal cancers. Compared with NH White men, mortality rates among Hispanic/Latino were higher for liver, kidney, and stomach cancers, similar for colorectal cancer, and lower for the other most common cancers.
- ❖ The top ten cancers among Hispanic/Latino women were breast, colorectal, uterine, lung, thyroid, non-Hodgkin lymphoma, kidney, ovarian, and cervical cancers. Compared with NH White women, mortality rates among Hispanic/Latinas were lower for brain, breast, lung, colorectal, and ovarian cancers, but two- and three-fold higher for liver and stomach cancers, respectively.
- ❖ Between 2010 and 2019, incidence rates for all cancers combined among Hispanic/Latino men decreased by an average of 1.7 percent per year; however, rates among Hispanic/Latinas increased by an average of 0.7 percent per year.
- ❖ Among Hispanic/Latino men, incidence rates for bladder, colorectal, esophageal, lung, prostate, and stomach cancers decreased significantly during the period, but increased for kidney, pancreatic and thyroid cancers. Mortality rates for Hispanic/Latino men declined for colorectal, esophageal, kidney, lung, non-Hodgkin lymphoma, oropharyngeal, prostate, and stomach cancers.

- ❖ Among Hispanic/Latinas, incidence rates for bladder, colorectal, lung, ovarian, and stomach cancers decreased significantly during the period, but increased for breast, kidney, liver, pancreatic and thyroid cancers. Mortality rates for Hispanic/Latinas declined for brain, breast, cervical, colorectal, esophageal, lung, esophageal, kidney, lung, non-Hodgkin lymphoma, ovarian, and stomach cancers.
- ❖ Pancreatic (men and women), thyroid (men only), liver (women only) and uterine were the only cancers for which mortality rates increased significantly among Hispanic/Latinos. Mortality rates for uterine cancer increased twice as fast among Hispanic/Latinas than among NH White women (3.1 percent vs. 1.5 percent per year, respectively).
- ❖ The sharpest declines in mortality rates among Hispanic/Latino men and women were observed for lung cancer (by 4.1 percent per year) and non-Hodgkin lymphoma (by 2.1 percent per year). Among women, the sharpest declines were seen for cervical (by 2.3 percent per year) and ovarian cancers (by 2.2 percent per year). Among men, the sharpest declines were observed for stomach (by 2.7 percent per year) and colorectal cancers (by 1.9 percent per year).
- ❖ Hispanic/Latino men were significantly more likely to be diagnosed at late-stage with any of the screen-detectable cancers (breast, cervical, colorectal, lung, melanoma, oropharyngeal, and prostate), except oropharyngeal. Hispanic/Latinas were more likely than NH White women to be diagnosed with late-stage breast, melanoma, and lung cancers.
- ❖ Hispanic/Latinos with most types of insurance were significantly more likely to be diagnosed with screen-detectable cancers at late-stage, except among those covered by Medicaid, where NH Whites were more likely to be diagnosed late.
- ❖ Compared with NH Whites, and across all neighborhood socioeconomic levels, Hispanic/Latinos were more often diagnosed with late-stage lung, melanoma, and breast cancers. For cervical cancer, Hispanic/Latinos were more likely to be diagnosed at late stage only in low SES neighborhoods. For colorectal, prostate, and oropharyngeal cancers, differences in stage at diagnosed between the two population groups were not detected.



- ❖ Hispanic/Latinos living in both urban and rural areas were more often diagnosed with late-stage breast, melanoma, and lung cancers. For colorectal cancer, Hispanic/Latinos were more likely to be diagnosed late in rural areas only, but for prostate cancer, Hispanic/Latinos were more likely to be diagnosed late in urban areas only.
- ❖ Five-year survival for all cancers and stages of cancer combined was lower among Hispanic/Latino patients than NH Whites (65.5 vs. 68.2 percent, respectively). Hispanic/Latinos had lower survival for breast, bladder, lung, non-Hodgkin lymphoma, oropharyngeal, prostate, and thyroid cancers. For most of these cancer sites, Hispanic/Latinos were also more likely to be diagnosed at late stage. On the other hand, Hispanic/Latinos had higher survival for brain and ovarian cancers than NH Whites.
- ❖ Five-year relative survival estimates by factors known to impact survival showed that, among Hispanic/Latinos, cancer survival was significantly higher for women, younger patients, those diagnosed at localized stage, residents in higher SES neighborhoods, and for patients covered by private/government insurance. Hispanic/Latinos 70 years of age and older, diagnosed at late stage, and covered by Medicaid/public insurance had the worst prognosis.
- ❖ With only sex and age considered, the risk of death for most cancer types was higher among Hispanic/Latinos compared to NH Whites. However, the hazard of cancer death comparing the risk among Hispanic/Latinos with the risk for NH White patients was also considered after accounting for the patients' sex, age, stage at diagnosis, histological confirmation, comorbidities, neighborhood SES, type of health insurance, and urban/rural residence.
- ❖ In these adjusted models, the risk of death was significantly lower among Hispanic/Latinos than among NH Whites for all cancers combined, bladder, brain, breast, cervical, esophageal, kidney, liver, lung, oropharyngeal, ovarian, pancreatic, prostate, thyroid, and uterine cancers. These results underscore opportunities for reducing disparities in cancer survival through earlier detection and efforts to address inequities in social determinants of health.

## INTRODUCTION

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California is home to the largest population of persons of Hispanic/Latino origin or heritage in the United States (US) (15,579,652 in 2020). No longer a minority group, current Census estimates show that Hispanic/Latinos represent 39.4 percent the California population, while 36.5 percent are non-Hispanic/Latino White (NH White).<sup>1</sup> The Hispanic/Latino population in California is growing at a much faster rate than the state's NH White population and is projected to comprise 43 percent of California's population by 2030.<sup>2</sup> This projected growth is within the young California Hispanic/Latino population: 33 percent of Hispanic/Latinos in California are under 20 years of age, in contrast with only 18.7 percent of the NH White population (Figure 1).<sup>3</sup>

Hispanic/Latinos are extremely diverse and include people from all racial categories and many different countries, religions, and cultural identities. In California, 82.1 percent of the Hispanic/Latino population are of Mexican origin or ancestry, 2.3 percent are Caribbean (Puerto Ricans, Cubans, and Dominicans), 9.2 percent are Central Americans (with Guatemalans and Salvadorans the two majority groups), and 2.4 percent are South Americans.<sup>4</sup> Despite most countries sharing the same language, Latino/Hispanics with Caribbean, Mexican, Central, and South American origin are culturally, socioeconomically, and genetically diverse. The large representation of Mexicans in the California's Hispanic/Latino population is due both to Mexico having governed California during part of the nineteenth century and to immigration thereafter. When California joined the union in 1850, the existing Mexican population became American citizens but lost land, status, and power over the subsequent decades. It is said that Hispanic/Latinos in California did not cross the border; the border crossed them.<sup>5</sup>

In the US, inequalities among racial or ethnic minority populations can be traced to long-term structural racism, which has led to persistent disadvantages in housing, employment, income, and, consequently, health and health care access. Neighborhood socioeconomic status (nSES) has an enormous impact on cancer, as it influences the prevalence of underlying cancer risk factors and access to health insurance, preventive care, early detection, and treatment.<sup>6</sup>

Sharp socioeconomic disparities between the NH White and Hispanic/Latino population in California persist, with Hispanic/Latinos facing financial, structural, and personal barriers to health care. A report from the Latino Legislative Caucus showed that California Hispanic/Latinos were underrepresented among higher income brackets, overrepresented at lower income brackets, and more likely to live in poverty. The income differential, with Hispanic/Latino poverty rates about 8-12 percentage points higher than the poverty rates of non-Hispanic/Latinos was observed across urban and rural areas.<sup>2</sup>

Hispanic/Latinos in California are less likely than non-Hispanic/Latinos to have health insurance or, if they have insurance, they are more likely to be covered by Medicaid or other publicly funded health program. They also are more likely to report they do not have a usual source of health care.<sup>2</sup> The implementation of the Affordable Care Act dramatically reduced the rate of uninsured

persons. However, data from the 2018 California Health Interview Survey shows that among uninsured Californians under age 65, 19.7 percent were NH White and 62.6 percent were Hispanic/Latino.<sup>7</sup>

The purpose of this report is to describe the burden of cancer in the Hispanic/Latino population in California, and to uncover disparities in cancer incidence, mortality, trends, detection, and survival among Hispanic/Latinos relative to the cancer burden in the NH White population. Unless specified, information in this report refers to adults 20 years of age and older.

The report is based on data obtained by the California Cancer Registry (CCR), the state mandated population-based cancer surveillance system in California in operation since 1988. which has collected information on all cancers diagnosed among California residents since 1988. The California Department of Public Health partners with the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program, within the University of California Davis Comprehensive Cancer Center, to manage day-to-day operations of the CCR. Data on cancer incidence, mortality, diagnosis, treatment, and follow-up are gathered through a system of regional registries and provides the foundation for a wide array of research and cancer control initiatives throughout the state.

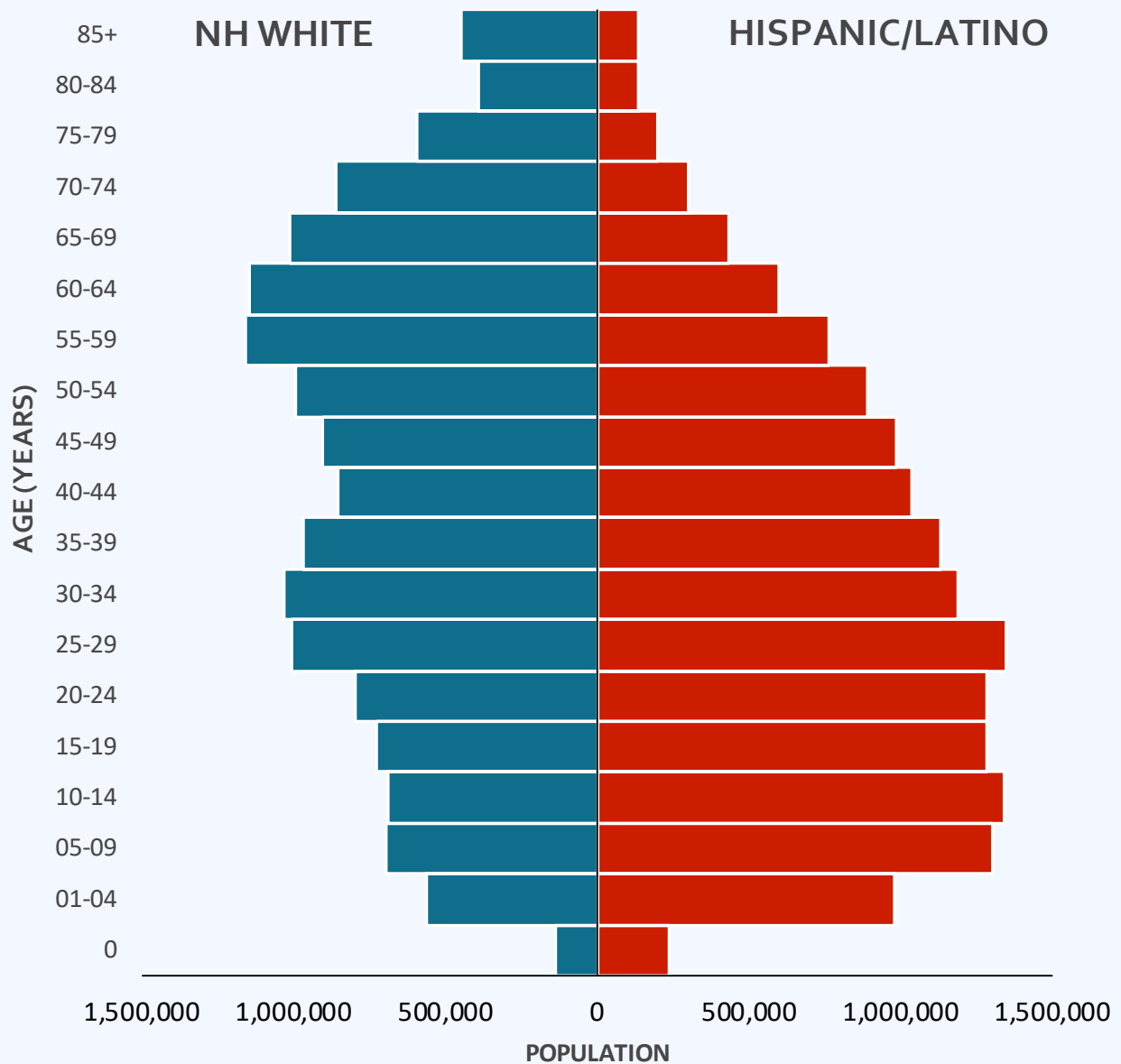
This report has some limitations. Despite the extreme diversity of the Hispanic/Latino population, most cancer data in California and the US are reported for Hispanic/Latino people in aggregate. Less than a third of Hispanic/Latinos diagnosed with cancer between 2015 and 2019 have a known country of origin or ancestry in the CCR database. As such, potential differences between groups according to nativity and country of origin could not be examined. However, by providing baseline information on the burden of cancer among Hispanic/Latinos, CalCARES hopes to emphasize the need for improvement in cancer prevention, detection, and outcomes for the population that helped build California into what it is today.



## **CALIFORNIA**

**HOME TO THE LARGEST  
HISPANIC/LATINO POPULATION  
IN THE UNITED STATES**

FIGURE 1. AGE DISTRIBUTION OF THE HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) POPULATION IN CALIFORNIA, 2019



Source of data: National Center for Health Statistics.  
 California Cancer Registry, California Department of Public Health.  
 NH: Non-Hispanic/Latino

## METHODS

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### CLASSIFICATION OF HISPANIC/LATINOS

Hispanic/Latino ethnicity was assigned using the North American Association of Central Cancer Registries' Hispanic and Asian/Pacific Islander Identification Algorithm.<sup>8</sup> Cancer patients were classified as Hispanic/Latino based on race, birthplace, last name, and maiden name. Race codes were self-reported by patients and obtained through medical records. Race and ethnicity were reported as separate data items during data collection for both cases and deaths. Hispanic/Latino ethnicity may be assigned to individuals of any race, but only non-Hispanic/Latino Whites were classified as NH White.

### CANCER SITE/TYPE

Cancer sites/types included in this report were classified according to National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) site ICD-O-3/WHO 2008 recode definitions, which are based on the tumor primary site and histology ([https://seer.cancer.gov/siterecode/icdo3\\_dwhohome/index.html](https://seer.cancer.gov/siterecode/icdo3_dwhohome/index.html)). In addition to all cancers combined, cancers included in this report were defined as follows: bladder (urinary bladder site recode 29010), brain (brain and other nervous system, site recode 31010-31040), breast (female only, site recode 26000), cervical (cervix uteri, site recode 27010), colorectal (colon and rectum, site recode 21041 – 21052), esophageal (esophagus, site recode 21010), kidney (kidney and renal pelvis, site recode 29020), liver (liver and intrahepatic bile duct, site recode 21071-21072), lung (lung and bronchus, site recode 22030), non-Hodgkin lymphoma (site recode 33041-33042), oropharyngeal (oral cavity and pharynx, site recode 20010-20100), ovarian (ovary, site recode 27040), pancreas (site recode 21100), prostate (site recode 28010), stomach (site recode 21020), thyroid (site recode 32010), and uterine (corpus uteri and uterus NOS, site recode 27020-27030). Childhood cancers were classified according to the International Classification of Childhood Cancers, Third Edition (<https://seer.cancer.gov/iccc/iccc3.html>).

### INCIDENCE RATES

This report includes cancer cases diagnosed through December 31<sup>st</sup>, 2019 and reported to the California Cancer Registry (CCR) as of December 2021. Unless specified, all rates were calculated for adults 20 years of age and older. A "case" is defined as a primary cancer; if a cancer has spread from a primary site to another organ, it is not counted as a new case. Cancers were classified based on the primary site and histology of the tumor, using the SEER site recode, available at

[https://seer.cancer.gov/siterecode/icdo3\\_dwho/home/index.html](https://seer.cancer.gov/siterecode/icdo3_dwho/home/index.html). Except for the analysis of stage at diagnosis, only invasive cancers are included in this report. Incidence rates were calculated as the number of new cases in specific age groups per 100,000 persons each year and were age-adjusted to the 2000 US standard population. Age-adjusted rates are weighted averages of age-specific rates, where the weights represent the age distribution of a standard population. Such adjustment eliminates differences in rates due to differences in age distribution between population groups. Age-adjusted incidence rate ratios and respective p-values were also calculated to facilitate comparisons between rates among Hispanic/Latino and NH White persons.

## **MORTALITY RATES**

Similar to incidence rates, this report includes deaths due to cancer from January 2010 through December 2019 among California residents 20 years and older. Mortality rates were calculated as the number of California deaths due to each cancer in specific age-groups per 100,000 persons each year. Mortality rates were also age-adjusted to the 2000 US standard population.

## **TRENDS IN CANCER INCIDENCE AND MORTALITY**

Trends were estimated as the average annual percent change (AAPC), which represents the average percent increase or decrease in cancer age-adjusted incidence and mortality rates per year over a specified period. In this report, the AAPC was estimated over the ten years between January 1<sup>st</sup>, 2010, and December 31<sup>st</sup>, 2019, the most current year for which reporting was considered complete. Trends were evaluated for all cancers combined and for the 17 most commonly occurring cancers and cancer deaths among Hispanic/Latinos and Hispanic/Latinas in California. If there was less than a five percent chance that the difference in rates was the result of random variation, the trend in cancer rates was considered statistically significant.

## **STAGE AT DIAGNOSIS**

Stage at diagnosis for all cases was coded according to the SEER Summary Stage system (<https://seer.cancer.gov/tools/ssm/ssm2000/>), as follows: in-situ (non-invasive tumors that do not penetrate the basement membrane), localized (tumors confined entirely to the organ of origin), regional (tumors that extend into surrounding organs, tissues or regional lymph nodes), and distant (metastatic). For all cancer types (except cervical cancer) in situ and localized tumors were classified as early stage while regional and remote tumors were classified as late stage at diagnosis.

## COMORBIDITIES

Comorbidities were defined as serious health conditions recorded for the patient at the time of the cancer diagnosis. The comorbidity burden was measured using a previously validated Deyo and Romano adapted Charlson comorbidity index, based on a list of 16 serious pre-existing medical conditions.<sup>9</sup> Information on these conditions was obtained through linkage of CCR data with Department of Health Care Access and Information statewide hospital inpatient discharge, ambulatory surgery, and emergency encounters data files. Comorbidly burden was considered unknown if there was not a matching for the patients in any of the three discharge files.

## TYPE OF HEALTH INSURANCE

The patient's source of health insurance in the CCR database corresponds to the information recorded at the end of the first course of treatment. Source of payment was classified as private/government (HMO, PPO, fee-for-service, Military, Veterans Affairs, Tricare, and Medicare with private supplement), Medicare, Medicaid/Public (Medicaid, County funded, Medicaid/Medicare dual eligible), not insured, and unknown source of insurance.

## HEALTHY PLACES INDEX OF RESIDENTIAL AREA

Health disadvantage can be defined as the inability of people to fulfill basic human needs required for full social participation and optimal health and well-being. The Health Disadvantage Index (HDI) is a composite score that measures the health disadvantage in each census tract in California. It summarizes the conditions and the levels of key resources in a community that can foster health equity. The index was developed based on several social determinants of health such as non-medical economic, cultural, political, and environmental factors that influence physical and cognitive function, behavior, and disease.<sup>10</sup>

## NEIGHBORHOOD SOCIOECONOMIC STATUS

A nSES composite score at census tract-level was used to represent SES in the patient's neighborhood. The score was created through principal component analysis and includes the following characteristics in each census tract in California: proportion of persons 16 years and older with a blue-collar job, proportion 16 years and older in the workforce without a job, median household income, percent below 200 percent poverty level, median gross rent, median value of owner-occupied houses, and an education index.<sup>11</sup>

## CANCER SURVIVAL

Unlike mortality rates, which are calculated as the number of deaths in the population at risk, survival includes only deaths occurring among persons that were diagnosed with cancer. Survival for the top cancers among Hispanic/Latino patients is presented as relative survival and as hazard ratios, the latter representing the risk of Hispanic/Latino patients dying due to the cancer they were diagnosed, relative to the risk for NH White cancer patients. Hazard ratios were estimated after adjusting for several clinical and demographic factors that are known to impact survival.

## RELATIVE SURVIVAL

One of the measures of cancer survival in this report is relative survival, which compares the survival of people who have the cancer with those that do not. It is defined as the ratio of the observed survival rate among those who have cancer divided by the expected survival rate for people of the same sex, race/ethnicity, and age who do not have cancer, and is expressed as a percentage. A relative survival of 100 percent does not mean that everyone will survive the disease, but that cancer patients in that specific group were just as likely to survive during that time-period as persons in the general population of the same sex, race/ethnicity, and age. Because relative survival is not affected by changes in mortality from other causes, it is a useful measure to evaluate disparities in survival among different racial/ethnic groups.

## HAZARD RATIOS

Cancer survival depends on many factors related to the patients' demographic characteristics, tumor biology and the treatment received, among other factors. To partially address the complexity of estimating survival, this report presents estimates of the risk of dying obtained through Cox proportional hazards regression. This type of statistical method is widely used for investigating the simultaneous effect of different factors upon survival. Results are expressed as hazard ratios, between the risk associated with a certain characteristic compared to the risk in the comparison, or reference, group. Hazard ratios for Hispanic/Latinos in this report compare their risk of dying with the risk for NH White persons, after accounting for the other factors in the model. A hazard ratio of one means that the risk in the two groups is similar, a hazard ratio significantly ( $p < 0.05$ ) greater than one expresses a higher risk, and a ratio significantly lower than one indicates lower risk. Hazard ratios greater than one are associated with worse survival, while hazard ratios lower than one indicate higher survival. In this report, estimates are presented accounting for the patient's sex and age at diagnosis as well as accounting for sex, age at diagnosis, stage at diagnosis, histological confirmation of tumor, comorbidities, neighborhood SES, type of health insurance, and residence in urban or rural areas.



## RESULTS

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### I. POPULATION CHARACTERISTICS

Between 2015 and 2019, 205,797 persons of Hispanic/Latino ethnicity and 587,714 NH White persons were diagnosed with cancer in California. Table 1 presents characteristics of these Hispanic/Latino and NH White cancer patients and highlights differences between these two population groups. Slightly over 56 percent of Hispanic/Latino patients were female and tended to be younger than NH White patients. Of all Hispanic/Latino patients, 12.4 percent were children, adolescents, and young adults 39 years and younger, compared to less than five percent of NH Whites in this age group. The proportion of Hispanic/Latinos diagnosed at 40-54 years of age (22.2 percent) was almost double that among NH Whites (11.9 percent). Conversely, only 28.8 percent of Hispanic/Latinos were diagnosed when over 70 years of age, compared with 45.7 percent among NH Whites. The percentage of Hispanic/Latino patients diagnosed at early-stage disease was also significantly lower than that for NH White patients (44.1 vs. 52.1 percent, respectively). A larger proportion of NH White cancer patients had no comorbid diseases at the time of the cancer diagnosis (35.6 vs. 31.9 percent among Hispanic/Latinos), although compared with NH Whites, Hispanic/Latinos also had a larger proportion of patients with unknown comorbidity status.

Differences between Hispanic/Latino and NH White cancer patients with regards to social determinants of health were observed. Hispanic/Latinos were less likely to be covered by private/government insurance than NH Whites (48.3 vs. 59.5 percent). Compared with NH White cancer patients, Hispanic/Latinos were also more likely to be covered by Medicare without supplement (16.4 vs. 24.1 percent) and were also much more likely to be enrolled in Medicaid/Public insurance (27.7 vs. 7.7 percent). The proportion of uninsured patients was also higher among Hispanic/Latinos (1.4 vs. 0.6 percent). A larger proportion of Hispanic/Latino cancer patients lived in urban areas than NH White patients (87.5 vs. 83.1 percent). Disparities in nSES were evident: compared with NH White patients, Hispanic/Latinos were far more likely to live in impoverished areas (48.2 vs. 18.1 percent of NH Whites) and much less likely to live in affluent areas (17.6 vs. 46.1 percent of NH Whites). In addition, almost 46 percent of Hispanic/Latinos lived in the top third most disadvantaged areas in terms of Healthy Places Index, while only 15.9 percent of NH White patients lived in such areas.

TABLE 1: CHARACTERISTICS OF HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) CANCER PATIENTS OF ALL AGES IN CALIFORNIA, 2015-2019

Characteristic	HISPANIC/LATINO		NH WHITE		p-value
	N	%	N	%	
<b>All Cancer Patients</b>	205,797	25.9	587,714	74.1	
<b>Sex</b>					
Male	90,222	43.8	294,023	50.0	< 0.001
Female	115,575	56.2	293,691	50.0	
<b>Age at cancer Diagnosis</b>					
0 – 19	5,539	2.7	3,396	0.6	< 0.001
20 – 39	19,976	9.7	21,444	3.7	
40 – 54	45,712	22.2	70,137	11.9	
55 – 69	75,395	36.6	223,940	38.1	
70+	59,175	28.8	268,797	45.7	
<b>Cancer Stage at Diagnosis</b>					
In Situ	12,634	6.1	71,518	12.2	< 0.001
Localized	78,131	38.0	234,201	39.9	
Regional	43,105	21.0	102,211	17.4	
Distant	46,179	22.4	119,723	20.4	
Unknown	25,748	12.5	60,061	10.2	
<b>Comorbidities at Diagnosis</b>					
None	65,555	31.9	209,284	35.6	< 0.001
1	32,767	15.9	90,416	15.4	
2	15,224	7.4	47,221	8.0	
3 or More	24,672	12.0	68,285	11.6	
Unknown	67,579	32.8	172,508	29.4	
<b>Area of Residence</b>					
Urban	180,000	87.5	488,412	83.1	< 0.001
Rural	25,797	12.5	99,302	16.9	
<b>Type of Insurance</b>					
Private/Government *	99,324	48.3	349,646	59.5	< 0.001
Medicare, no Supplement	33,750	16.4	141,877	24.1	
Medicaid/Public	56,942	27.7	45,360	7.7	
Uninsured	2,943	1.4	3,302	0.6	
Unknown	12,838	6.2	47,529	8.1	
<b>Neighborhood Socioeconomic Status</b>					
Low	99,154	48.2	106,068	18.1	< 0.001
Medium	70,393	34.2	210,729	35.9	
High	36,250	17.6	270,917	46.1	
<b>Healthy Places Index</b>					
More Disadvantaged	94,321	45.8	93,603	15.9	< 0.001
Medium Disadvantage	71,483	34.7	203,910	34.7	
Less Disadvantage	36,661	17.8	280,741	47.8	
Unknown Index	3,332	1.6	9,460	1.6	

\* Private/government insurance includes HMO, PPO, fee-for service, Military, Veterans Affairs, Tricare, and Medicare with private supplement. Source of data: California Cancer Registry, California Department of Public Health.

## II. CANCER INCIDENCE AND MORTALITY

Age-adjusted incidence and mortality rates for the ten most common cancer among Hispanic/Latinos in California are shown in Tables 2-4, along with Hispanic/Latino and NH White rate ratios to facilitate comparisons of rates among the two population groups. From 2015 through 2019, the ten most commonly diagnosed cancers among Hispanic/Latinos were breast, prostate, colorectal, lung, kidney, non-Hodgkin lymphoma, liver, uterine, thyroid, and pancreatic cancers (Table 2). Compared with NH White persons, incidence rates for all cancers combined and for eight of the top ten cancer types were significantly lower. In particular, the incidence of lung cancer among Hispanic/Latinos was nearly half of the rate for NH Whites (33.1 vs. 64.0 per 100,000, respectively). On the other hand, incidence rates for liver and kidney cancers were significantly higher among Hispanic/Latinos. For liver cancer, the incidence rate among Hispanic/Latinos was almost twice as high as the rate among NH Whites (19.1 vs. 9.8 per 100,000, respectively).

The ten most frequent causes of cancer death among Hispanic/Latinos were lung, colorectal, liver, pancreatic, breast, prostate, stomach, non-Hodgkin lymphoma, kidney, and ovarian cancers. As observed with incident cancers, mortality for liver and kidney cancer was also significantly higher among Hispanic/Latinos; deaths due to stomach cancer were also higher among Hispanic/Latinos compared with NH Whites (8.1 vs. 3.3 per 100,000, respectively). Mortality due to non-Hodgkin lymphoma was similar for Hispanic/Latinos and NH Whites, while mortality rates for the other top six cancers were significantly lower among Hispanic/Latinos.

Among Hispanic/Latino men, the top ten most common cancers included bladder, stomach, oropharyngeal, prostate, colorectal, lung, kidney, liver, non-Hodgkin lymphoma, and pancreatic cancers (Table 3 and Figure 2.a). Incidence rates for eight of the ten top sites were significantly lower, while NH White rates for kidney and liver cancers were higher among Hispanic/Latino compared to NH White men. Mortality rates among Hispanic/Latino men were also higher for liver, kidney, and stomach cancers (Table 3 and Figure 2.b). Except for colorectal cancer, mortality rates for the other most frequent cancer deaths were significantly lower for Hispanic/Latino than for NH White men.

Among Hispanic/Latino women (Hispanic/Latinas), the ten most common cancers included breast, colorectal, uterine, lung, thyroid, non-Hodgkin lymphoma, kidney, ovarian, and cervical cancers (Table 4 and Figure 3.a). Compared with NH White women, incidence rates for breast, colorectal, lung, ovarian, and uterine cancers among Hispanic/Latinas were lower. However, incidence of kidney and cervical cancer was almost 40 percent higher among Hispanic/Latinas. For thyroid, non-Hodgkin lymphoma, and pancreatic cancers, rates among Hispanic/Latinas were similar to those among NH White women. Mortality rates among Hispanic/Latinas were also lower for five of the top ten cancers: brain, breast, colorectal, lung, and ovarian cancers (Table 4 and Figure 3.b). For pancreatic and uterine cancers, mortality rates among Hispanic/Latinas were comparable to rates among NH White women. Compared with NH White women, mortality rates for liver and stomach cancers were two- and three-fold higher among Hispanic/Latinas.

Incidence rates for the most common cancers diagnosed in Hispanic/Latino children and adolescents (birth to 19 years old) were mostly comparable to rates for NH White individuals of the same age (table 5). Incidence of lymphoid leukemia and gonadal germ cell tumors were significantly higher for Hispanic/Latino compared with NH White children and adolescents. On the other hand, incidence rates for astrocytoma, Hodgkin lymphoma, and neuroblastomas were lower among Hispanic/Latino children and adolescents.

**TEN MOST  
FREQUENT CAUSES  
OF CANCER DEATH  
AMONG  
HISPANIC/LATINOS**

- LUNG
- COLORECTAL
- LIVER
- PANCREATIC
- BREAST
- PROSTATE
- STOMACH
- NON-HODGKIN LYMPHOMA
- KIDNEY
- OVARIAN

TABLE 2: AGE-ADJUSTED INCIDENCE AND MORTALITY RATES WITH RATE RATIOS FOR THE TOP 10 CANCERS AMONG ADULT\* HISPANIC/LATINOS (HL) IN CALIFORNIA, 2015-2019: MALES AND FEMALES

Cancer Site/Type †	Hispanic/Latino		NH White		Rate Ratio	
	Rate	N	Rate	N	HL/NH White	p-value
<b>CANCER INCIDENCE</b>						
All Cancers	455.5	178,109	614.4	498,177	0.74	< 0.001
Breast	71.2	29,642	102.0	78,578	0.70	< 0.001
Prostate	51.0	18,928	65.0	58,170	0.78	< 0.001
Colorectal	45.4	17,717	49.6	39,578	0.92	< 0.001
Colon	30.7	11,639	34.7	28,109	0.88	< 0.001
Rectum	14.7	6,078	14.9	11,469	0.99	0.590
Lung	33.1	10,914	64.0	55,296	0.52	< 0.001
Kidney	24.9	9,936	20.9	16,867	1.19	< 0.001
Non-Hodgkin Lymphoma	24.0	9,090	27.2	21,974	0.88	< 0.001
Liver	19.1	7,247	9.8	8,702	1.94	< 0.001
Uterine	18.9	8,136	19.7	16,451	0.96	0.007
Thyroid	17.6	8,316	18.7	11,957	0.94	< 0.001
Pancreas	15.9	5,612	17.8	15,194	0.90	< 0.001
<b>CANCER MORTALITY</b>						
All Cancers	166.6	57,811	204.4	176,352	0.82	< 0.001
Lung	22.0	6,992	42.8	37,354	0.51	< 0.001
Colorectal	16.0	5,703	17.4	14,793	0.92	< 0.001
Liver	15.0	5,307	8.1	7,147	1.86	< 0.001
Pancreas	13.6	4,569	14.9	13,014	0.91	< 0.001
Breast	11.4	4,369	15.9	13,258	0.72	< 0.001
Prostate	10.1	2,998	12.5	11,219	0.81	< 0.001
Stomach	8.1	3,001	3.3	2,773	2.49	< 0.001
Non-Hodgkin Lymphoma	7.2	2,373	7.3	6,308	0.99	0.703
Kidney	5.5	1,917	4.6	3,944	1.21	< 0.001
Ovarian	4.7	1,714	5.5	4,714	0.84	< 0.001

\* Adults: 20 years of age and older. In Situ tumors are excluded. NH: Non-Hispanic/Latino

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

Source of data: California Cancer Registry, California Department of Public Health.

TABLE 3: AGE-ADJUSTED INCIDENCE AND MORTALITY RATES WITH RATE RATIOS FOR THE TOP 10 CANCERS AMONG ADULT\* HISPANIC/LATINOS (HL) IN CALIFORNIA, 2015-2019: MALES

Cancer Site/Type †	Hispanic/Latino		NH White		Rate Ratio	
	Rate	N	Rate	N	HL/NH White	p-value
<b>CANCER INCIDENCE</b>						
All Cancers	473.5	81,252	649.6	254,648	0.73	< 0.001
Prostate	114.0	18,927	136.5	58,169	0.83	< 0.001
Colorectal	53.3	9,525	54.6	20,764	0.96	0.003
Colon	34.3	5,911	36.9	14,108	0.91	< 0.001
Rectum	19.1	3,614	17.5	6,656	1.06	0.004
Lung	39.8	5,583	67.0	26,914	0.59	< 0.001
Kidney	32.8	5,998	28.7	11,203	1.12	< 0.001
Liver	27.8	4,970	14.2	6,166	1.92	< 0.001
Non-Hodgkin Lymphoma	27.7	4,807	32.8	12,568	0.83	< 0.001
Bladder	22.9	3,247	49.9	19,793	0.45	< 0.001
Stomach	17.3	2,885	9.8	3,907	1.71	< 0.001
Pancreas	17.1	2,728	20.1	8,154	0.83	< 0.001
Oropharyngeal	12.5	2,250	27.6	11,118	0.45	< 0.001
<b>CANCER MORTALITY</b>						
All Cancers	195.3	29,061	238.6	92,913	0.82	< 0.001
Lung	28.9	3,876	47.9	18,853	0.60	< 0.001
Prostate	24.8	2,998	29.3	11,217	0.85	< 0.001
Liver	20.5	3,367	11.3	4,721	1.81	< 0.001
Colorectal	19.5	3,099	19.8	7,587	0.99	0.548
Pancreas	14.7	2,228	17.4	6,880	0.85	< 0.001
Stomach	10.1	1,650	4.6	1,760	2.19	< 0.001
Non-Hodgkin Lymphoma	8.8	1,285	9.4	3,598	0.93	0.047
Kidney	8.0	1,235	6.7	2,624	1.20	< 0.001
Esophageal	5.6	873	9.2	3,683	0.60	< 0.001
Bladder	5.4	665	11.7	4,493	0.46	< 0.001

\* Adults: 20 years of age and older. In Situ tumors are excluded. NH: Non-Hispanic/Latino.

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

Source of data: California Cancer Registry, California Department of Public Health.

TABLE 4: AGE-ADJUSTED INCIDENCE AND MORTALITY RATES WITH RATE RATIOS FOR THE TOP 10 CANCERS AMONG ADULT\* HISPANIC/LATINOS (HL) IN CALIFORNIA, 2015-2019: FEMALES

Cancer Site/Type †	Hispanic/Latina		NH White		Rate Ratio	
	Rate	N	Rate	N	HL/NH White	p-value
<b>CANCER INCIDENCE</b>						
All Cancers	453.0	96,857	591.1	243,529	0.77	< 0.001
Breast	134.1	29,499	196.4	77,904	0.68	< 0.001
Colorectal	39.1	8,192	44.2	18,814	0.88	< 0.001
Colon	27.9	5,728	32.2	14,001	0.87	< 0.001
Rectum	11.2	2,464	12.1	4,813	0.93	0.003
Uterine	36.1	8,136	38.1	16,451	0.95	< 0.001
Lung	28.5	5,331	61.1	28,382	0.46	< 0.001
Thyroid	27.0	6,588	26.8	8,243	1.02	0.677
Non-Hodgkin Lymphoma	21.0	4,283	21.7	9,406	0.97	0.098
Kidney	18.4	3,938	13.3	5,664	1.38	< 0.001
Pancreas	15.0	2,884	15.3	7,040	0.98	0.419
Ovarian	14.5	3,183	16.1	6,458	0.91	< 0.001
Cervical	12.7	2,977	9.2	2,763	1.38	< 0.001
<b>CANCER MORTALITY</b>						
All Cancers	147.3	28,750	178.6	83,439	0.82	< 0.001
Breast	20.7	4,341	29.4	13,125	0.70	< 0.001
Lung	17.1	3,116	38.8	18,501	0.44	< 0.001
Colorectal	13.3	2,604	15.3	7,206	0.87	< 0.001
Pancreas	12.6	2,341	12.7	6,134	0.99	0.7245
Liver	10.4	1,940	5.1	2,426	2.03	< 0.001
Ovarian	8.5	1,714	10.4	4,714	0.82	< 0.001
Uterine	6.9	1,409	6.8	3,191	1.01	0.891
Stomach	6.7	1,351	2.2	1,013	3.08	< 0.001
Non-Hodgkin Lymphoma	6.0	1,088	5.5	2,710	1.08	0.043
Brain	4.0	821	5.9	2,514	0.68	< 0.001

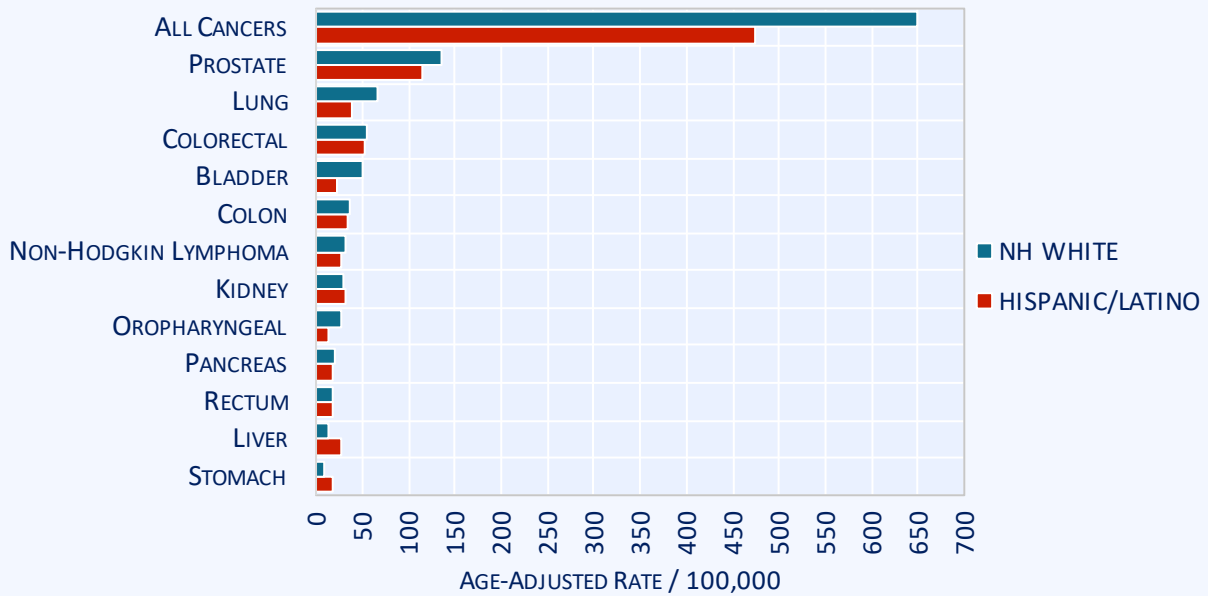
\* Adults: 20 years of age and older. In Situ tumors are excluded. NH: Non-Hispanic/Latino.

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

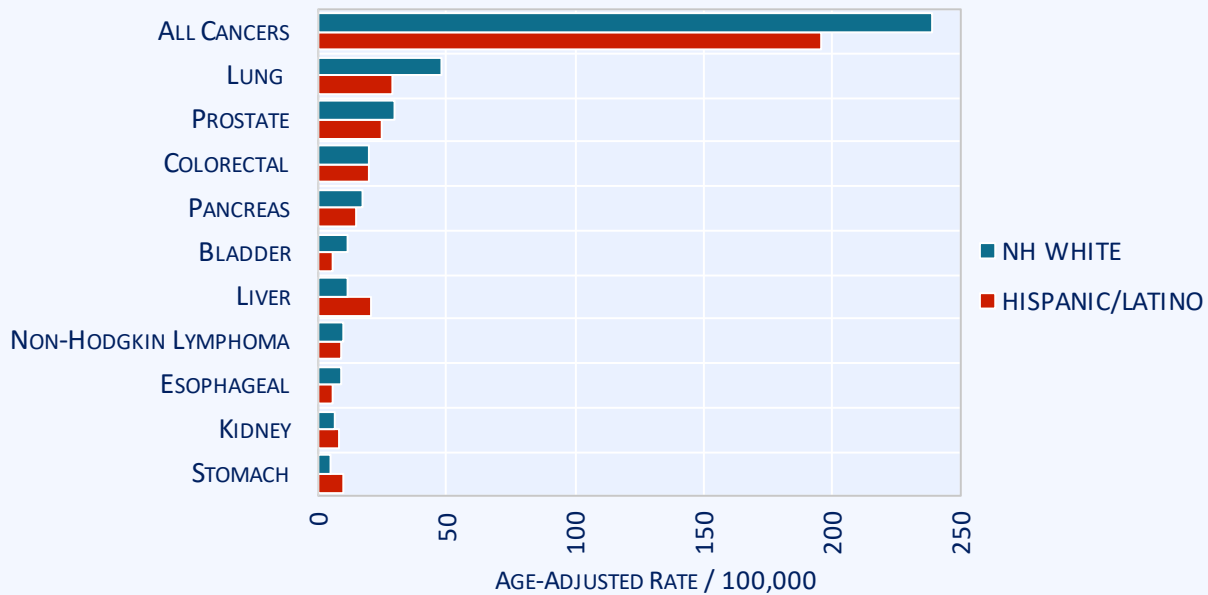
Source of data: California Cancer Registry, California Department of Public Health.

FIGURE 2.A AND 2.B: AGE-ADJUSTED INCIDENCE AND MORTALITY RATES AMONG ADULT\* HISPANIC/LATINO AND NON-HISPANIC/LATINO (NH WHITE) MALES IN CALIFORNIA, 2015-2019

### 2.A INCIDENCE



### 2.B MORTALITY

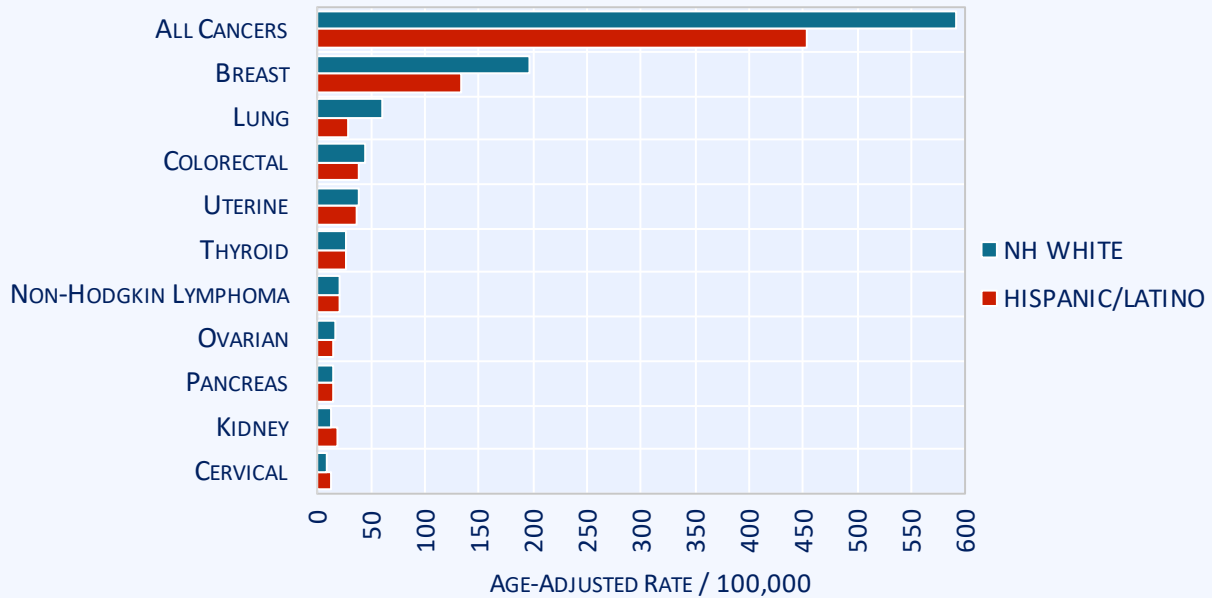


\* Adults: 20 years of age and older. Cancer site/type based on SEER Site Recodes, see Methods section for definitions. Source of data: California Cancer Registry, California Department of Public Health.

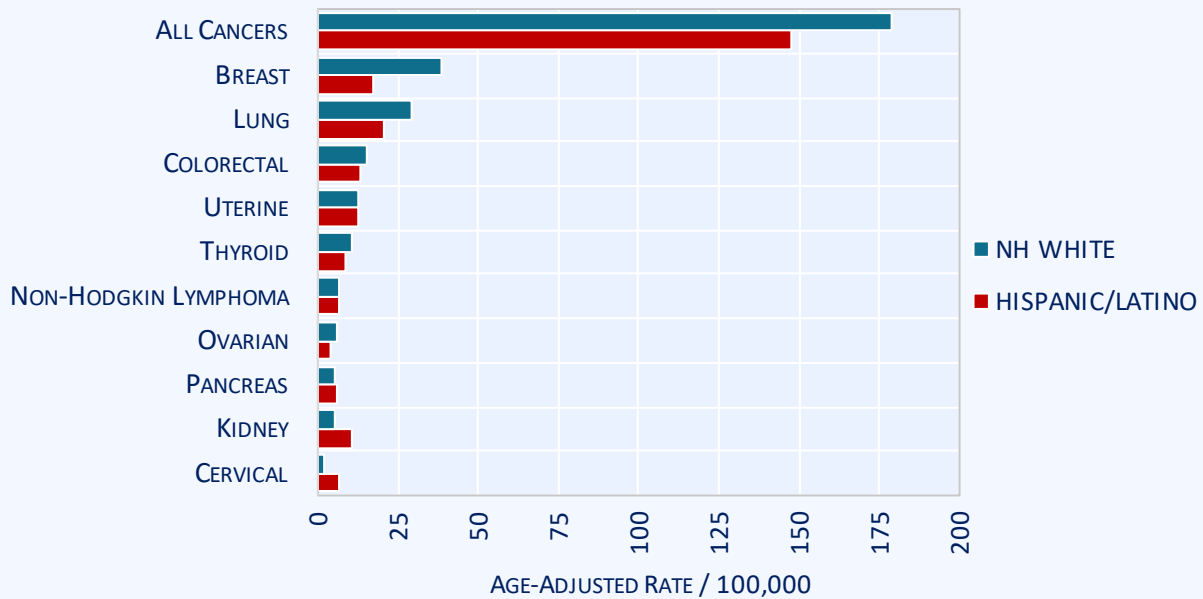


FIGURE 3.A AND 3.B: AGE-ADJUSTED INCIDENCE AND MORTALITY RATES AMONG ADULT\* HISPANIC/LATINO AND NON-HISPANIC/LATINO (NH WHITE) FEMALES IN CALIFORNIA, 2014-2018

### 3.A INCIDENCE



### 3.B MORTALITY



\* Adults: 20 years of age and older. Cancer site/type based on SEER Site Recodes, see Methods section for definitions. Source of data: California Cancer Registry, California Department of Public Health.

TABLE 5: AGE-ADJUSTED INCIDENCE RATES FOR THE TOP CANCERS<sup>a</sup> AMONG HISPANIC/LATINO CHILDREN AND ADOLESCENTS (BIRTH TO 19 YEARS OLD) IN CALIFORNIA, 2015-2019

Cancer Type *	Hispanic/Latino		NH White		Rate Ratio	
	Rate	N	Rate	N	HL/W	P-value
Lymphoid leukemia	4.7	1,228	3.8	548	1.24	< 0.001
Gonadal germ cell tumors	1.3	327	0.7	106	1.77	< 0.001
Thyroid carcinoma	1.1	289	1.1	168	0.98	0.882
Astrocytoma	1.1	277	1.7	242	0.63	< 0.001
Non-Hodgkin lymphoma (except Burkitt lymphoma)	1.0	254	1.0	137	1.03	0.818
Acute myeloid leukemia	0.9	236	0.7	106	1.25	0.059
Hodgkin lymphoma	0.9	220	1.6	230	0.54	< 0.001
Osteosarcoma	0.6	147	0.6	80	1.01	0.990
Nephroblastoma and other nonepithelial renal tumors	0.5	140	0.6	92	0.84	0.231
Neuroblastoma and ganglioneuroblastoma	0.5	130	0.9	134	0.55	< 0.001

\* Cancer/site type based on International Classification of Childhood Cancers, Third Edition.

Source of data: California Cancer Registry, California Department of Public Health.

NH: Non-Hispanic/Latino.

### III. TRENDS IN CANCER INCIDENCE AND MORTALITY

The average annual percent change (AAPC) was estimated to evaluate trends in cancer incidence (Table 6 and Figures 4.a - 4.r) and mortality rates (Table 7 and Figures 4.a – 4.r) from 2010 through 2019. Among Hispanic/Latino men, incidence rates for all cancers combined decreased by an average of 1.7 percent per year; however, rates among Hispanic/Latinas increased by an average of 0.7 percent per year.

Among Hispanic/Latino men, incidence rates decreased for bladder, colorectal, esophageal, lung, prostate, and stomach (Table 6). The decline in prostate and lung cancer incidence was sharp, by 4.0 and 3.1 percent per year, respectively. However, incidence rates increased for kidney, pancreatic, and thyroid cancer (by 1.3, 0.5, and 3.8 percent per year, respectively).

Mortality rates among Hispanic/Latino men declined for most cancer sites, but the decline was sharpest for lung and stomach cancers, by 3.9 and 2.7 percent per year, respectively (Table 7). The only cancer type for which mortality increased among Hispanic/Latino men during the 2010-2019 period was thyroid cancer, by 2.0 percent per year. Both incidence and mortality for thyroid cancer increased among NH White men as well, but to a lesser extent.

Among Hispanic/Latinas, the incidence of brain, colorectal, lung, ovarian, and stomach cancers decreased during the period, although the decreases were not as marked as those noted among Hispanic/Latino men (Table 6). However, during the same period, incidence rates for kidney, liver, pancreatic, thyroid, and uterine cancers increased significantly. While liver cancer incidence among men did not increase, rates increased markedly among women, by 2.5 percent (Hispanic/Latinas) and 2.9 percent (NH Whites) per year.

On the other hand, more positive changes were detected for mortality among Hispanic/Latinas, with rates declining for brain, breast, cervical, colorectal, esophageal, lung, non-Hodgkin lymphoma, ovarian, and stomach cancers (Table 7). The sharpest declines in mortality were observed for lung and cervical cancers, by 4.2 and 2.3 percent per year, respectively. The only cancers for which mortality increased among Hispanic/Latinas were liver and uterine cancers, in parallel with the increase in incidence for the same two cancers. Similar increases in mortality rates were also observed among HW White women, although rates for uterine cancer increased twice as fast among Hispanic/Latinas than among NH White women (3.1 percent vs. 1.5 percent per year, respectively).

TABLE 6. AVERAGE ANNUAL PERCENT CHANGE (AAPC) IN AGE-ADJUSTED INCIDENCE RATES FOR THE MOST COMMON CANCERS AMONG ADULT\* HISPANIC/LATINOS IN CALIFORNIA, 2010-2019

Cancer Site/Type †	Hispanic/Latino						NH White					
	All	Male		Female		All	Male		Female			
	AAPC	AAPC	AAPC	AAPC	AAPC	AAPC	AAPC	AAPC	AAPC	AAPC		
All Cancers	-0.5 ≈	-1.7 ↓	0.7 ↑		-0.9 ↓	-1.5 ↓	-0.5 ↓					
Bladder	-1.4 ↓	-1.9 ↓	-0.9 ↓		-1.9 ↓	-2.0 ↓	-1.9 ↓					
Brain	-0.3 ↓	-0.3 ≈	-0.3 ≈		-0.1 ↓	-0.1 ≈	-0.1 ≈					
Breast	0.8 ↑	0 ≈	1.0 ↑		-0.1 ≈	0.2 ≈	0.1 ≈					
Cervical	-1.0 ≈	...	...	-0.8 ≈	-0.6 ↓	...	...	-0.5 ≈				
Colorectal	-1.2 ↓	-1.3 ↓	-0.6 ↓		-1.8 ↓	-1.9 ↓	-1.7 ↓					
Esophageal	-0.8 ↓	-0.9 ↓	-0.8 ≈		-0.5 ↓	-0.6 ↓	-0.9 ↓					
Kidney	1.8 ↑	1.3 ↑	2.3 ↑		0.1 ≈	0 ≈	-0.1 ≈					
Liver	0.5 ≈	-0.4 ≈	2.5 ↑		0.4 ≈	-0.3 ≈	2.9 ↑					
Lung	-2.4 ↓	-3.1 ↓	-0.9 ↓		-3.0 ↓	-3.6 ↓	-2.4 ↓					
NH Lymphoma	0.2 ≈	0.1 ≈	0.2 ≈		-0.8 ↓	-0.9 ↓	-0.6 ↓					
Oropharyngeal	0 ≈	0.2 ≈	-0.2 ≈		0.3 ↑	0.9 ↑	-0.2 ≈					
Ovarian	-0.6 ↓	...	...	-0.5 ↓	-2.6 ↓	...	...	-2.4 ↓				
Pancreas	0.4 ↑	0.5 ↑	0.3 ↑		0.8 ↑	0.9 ↑	0.6 ↑					
Prostate	-3.8 ↓	-4.0 ↓	...	...	-2.8 ↓	-3.0 ↓	...	...				
Stomach	-1.4 ↓	-1.7 ↓	-1.0 ↓		-0.9 ↓	-1.3 ↓	-0.5 ≈					
Thyroid	2.7 ↑	3.8 ↑	2.5 ↑		-0.5 ≈	1.2 ↑	-0.5 ≈					
Uterine	3.3 ↑	...	...	3.5 ↑	0.9 ↑	...	...	1.1 ↑				

\* Adults: 20 years of age and older. In Situ tumors are excluded. NH: Non-Hispanic/Latino.

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

AAPC: Average annual percent change in rates. A positive AAPC means rates increased; a negative AAPC means rates declined over the period.

↑ Statistically significant increase; ↓ Statistically significant decrease;

≈ Change in rate was not statistically significant.

Source of data: California Cancer Registry, California Department of Public Health.

TABLE 7. AVERAGE ANNUAL PERCENT CHANGE (AAPC) IN AGE-ADJUSTED MORTALITY RATES FOR THE MOST COMMON CAUSES OF CANCER DEATHS AMONG ADULT\* HISPANIC/LATINOS IN CALIFORNIA, 2010-2019

Cancer Site/Type †	Hispanic/Latino						NH White					
	All		Male		Female		ALL		Male		Female	
	AAPC		AAPC		AAPC		AAPC		AAPC		AAPC	
All Cancers	-1.3	↓	-1.4	↓	-1.3	↓	-1.8	↓	-1.7	↓	-1.9	↓
Bladder	0	≈	0.1	≈	-0.4	≈	0.2	≈	0	≈	-0.2	≈
Brain	0.1	≈	0	≈	-0.7	↓	0.6	↑	0	≈	0.8	≈
Breast	-1.4	↓	...	...	-1.4	↓	-1.7	↓	2.2	≈	-1.4	↓
Cervical	-2.4	↓	...	...	-2.3	↓	0	≈	...	...	0.1	≈
Colorectal	-1.4	↓	-1.9	↓	-1.2	↓	-1.9	↓	-2.6	↓	-2.2	↓
Esophageal	-0.8	↓	-0.7	↓	-1.6	↓	-0.9	↓	-0.8	↓	-1.7	↓
Kidney	-0.6	↓	-0.4	↓	-0.4	≈	-1.3	≈	-1.8	↓	-1.1	↓
Liver	0.5	≈	0.2	≈	1.3	↑	1.0	≈	0.5	≈	2.1	↑
Lung	-4.1	↓	-3.9	↓	-4.2	↓	-4.7	↓	-4.9	↓	-4.6	↓
NH Lymphoma	-2.1	↓	-1.9	↓	-2.1	↓	-2.7	↓	-2.5	↓	-2.0	↓
Oropharyngeal	-0.9	↓	-1.1	↓	-0.5	≈	0.2	≈	0.8	↑	-0.4	≈
Ovarian	-2.2	↓	...	...	-1.9	↓	-2.6	↓	...	...	-2.4	↓
Pancreas	0.2	↑	0.3	≈	0.1	≈	0.1	≈	0.1	≈	0	≈
Prostate	-1.5	↓	-1.9	↓	...	...	0.3	≈	-0.2	≈	...	...
Stomach	-1.9	↓	-2.7	↓	-1.7	↓	-3.1	↓	-2.3	↓	-2.8	↓
Thyroid	1.7	≈	2.0	↑	0.2	≈	1.0	↑	1.2	↑	0.8	↑
Uterine	2.8	↑	...	...	3.1	↑	1.5	↑	...	...	1.5	↑

\* Adults: 20 years of age and older. In Situ tumors are excluded. NH: Non-Hispanic/Latino.

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

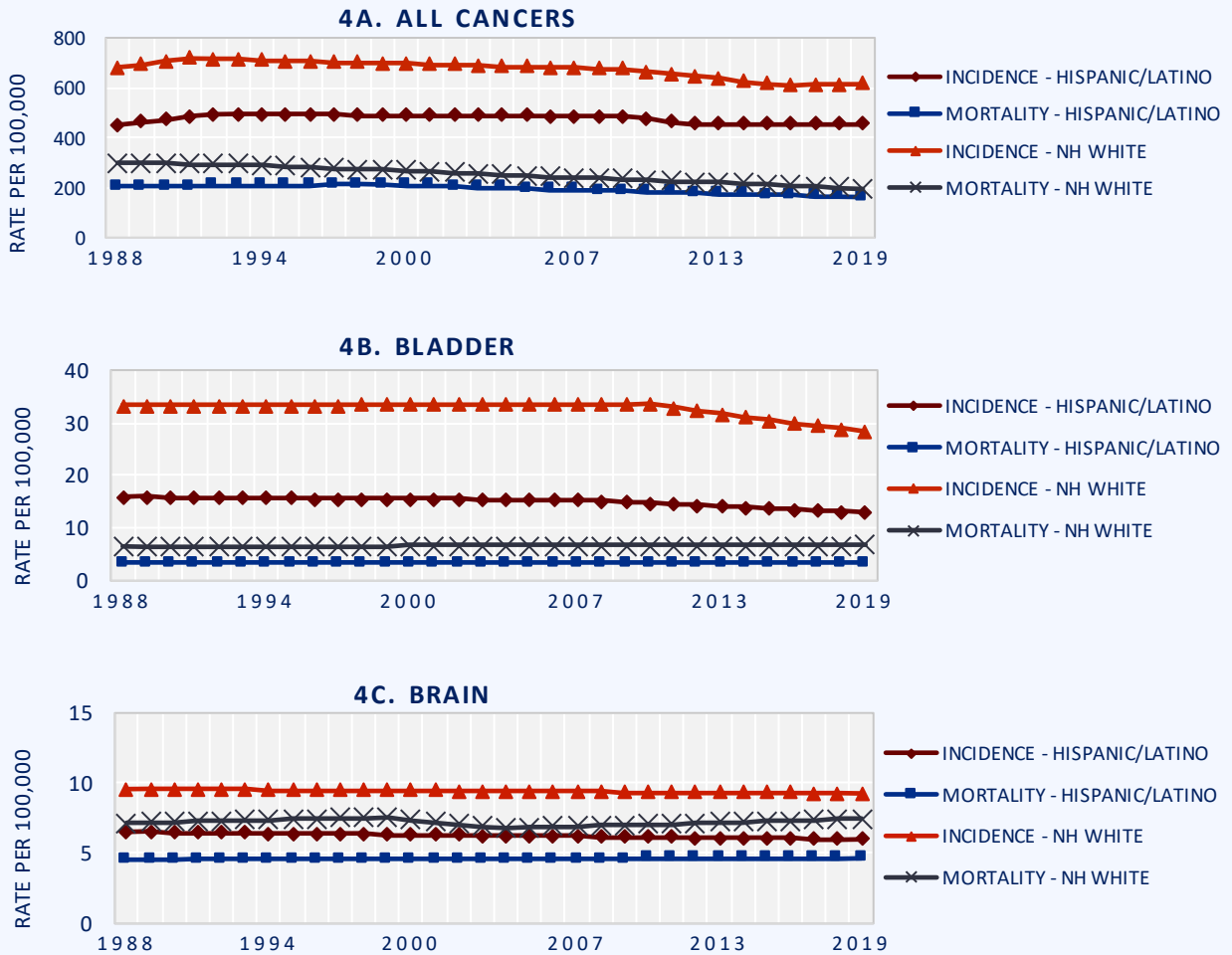
AAPC: Average annual percent change in rates. A positive AAPC means rates increased; a negative AAPC means rates declined over the period.

↑ Statistically significant increase; ↓ Statistically significant decrease;

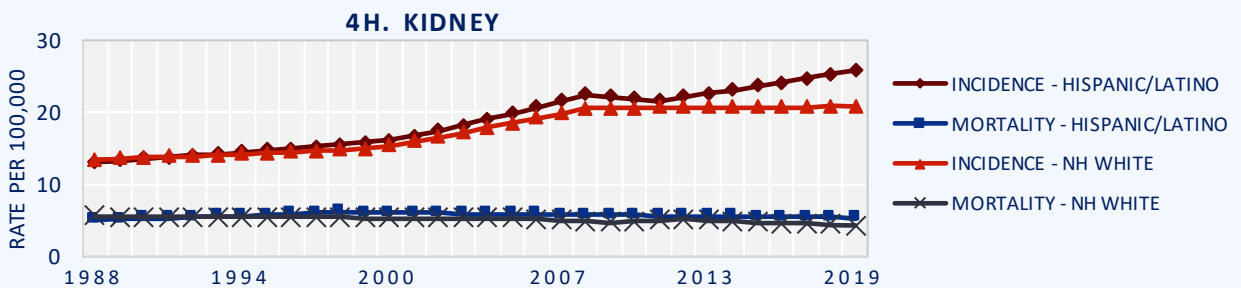
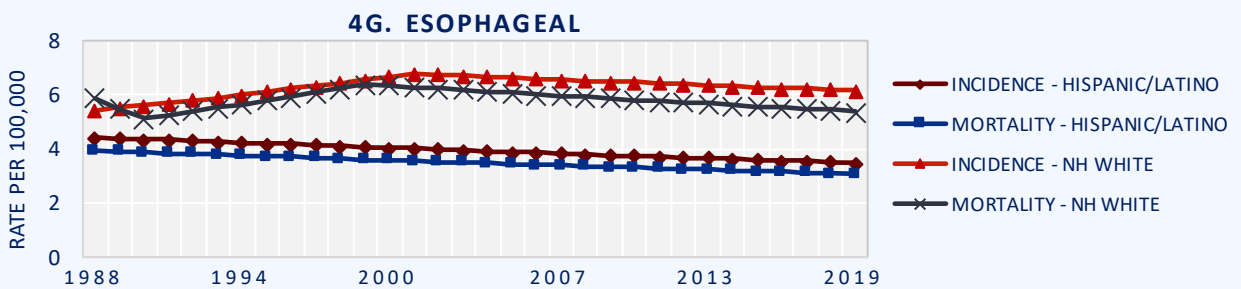
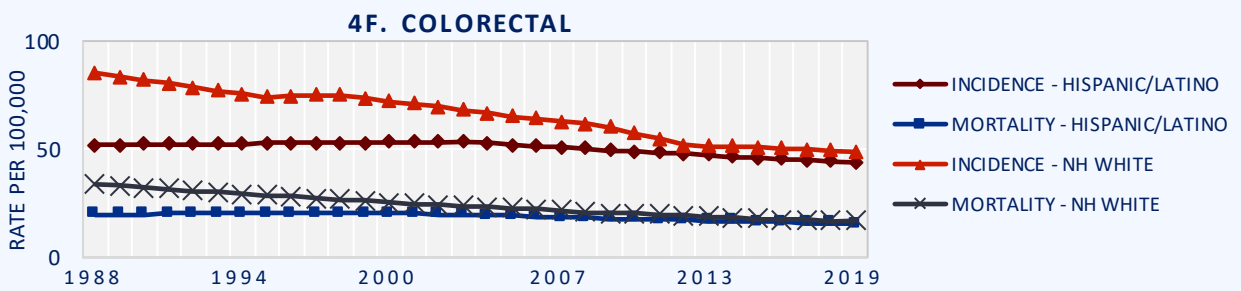
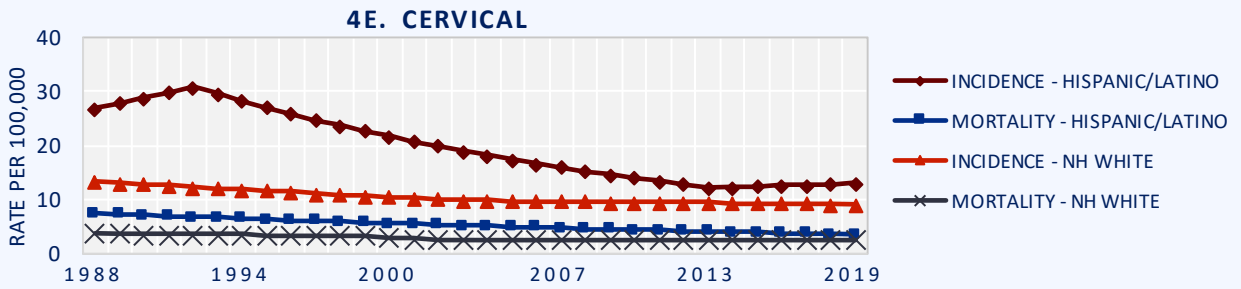
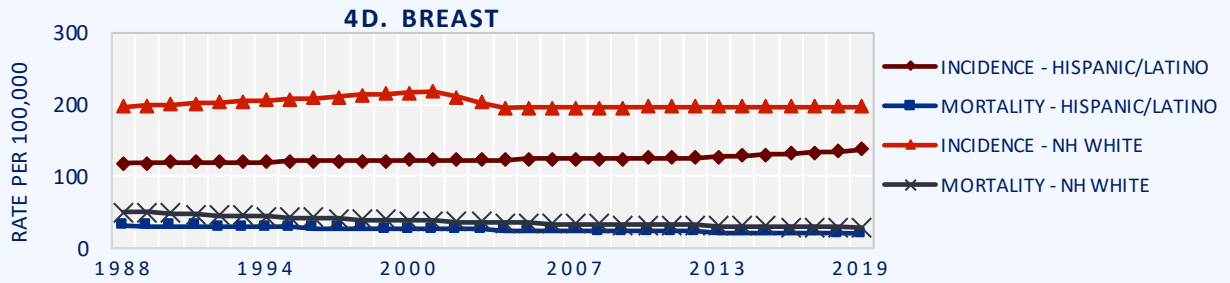
≈ Change in rate was not statistically significant.

Source of data: California Cancer Registry, California Department of Public Health.

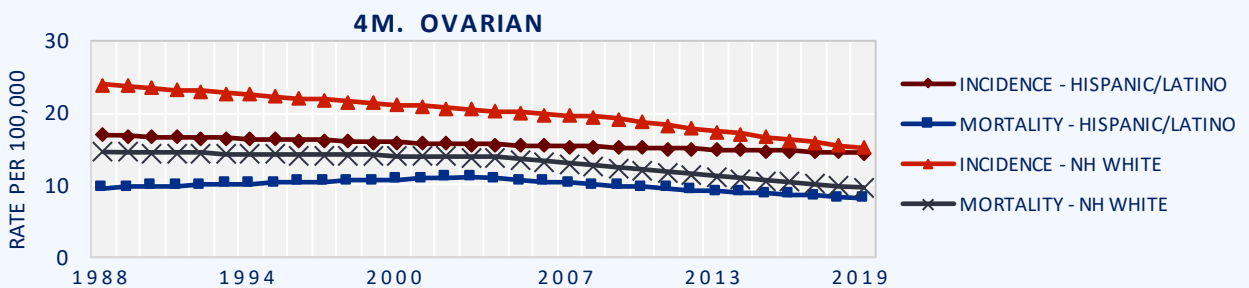
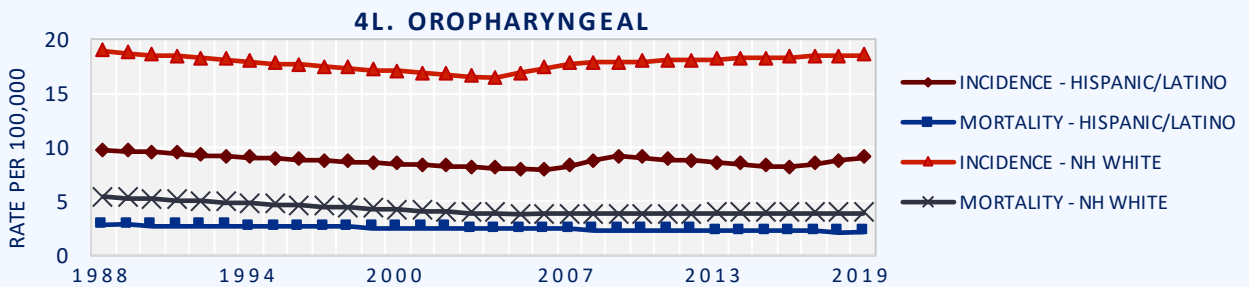
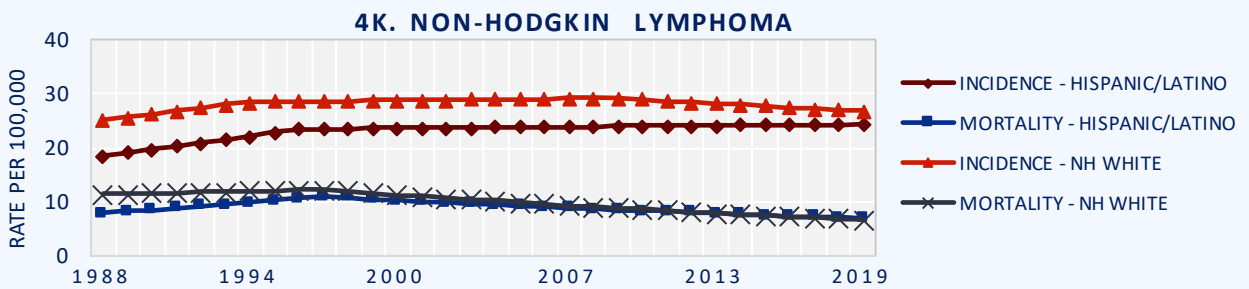
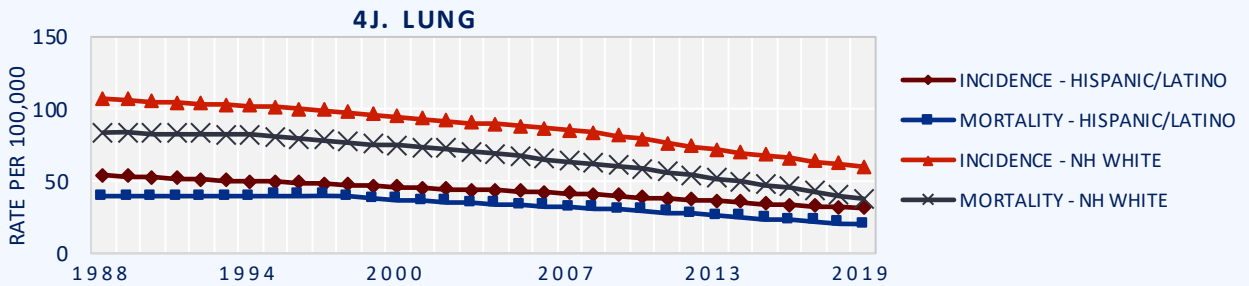
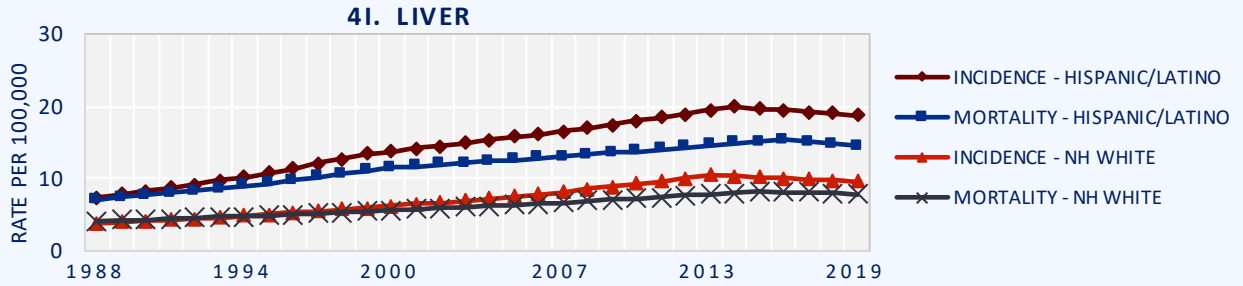
FIGURE 4.A – 4.R. TRENDS IN AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES AMONG ADULTS\* HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) MALES AND FEMALES IN CALIFORNIA, 1988-2019



\* Adults: 20 years of age and older. Cancer site/type based on SEER Site Recodes, see Methods section for definitions. Source of data: California Cancer Registry, California Department of Public Health

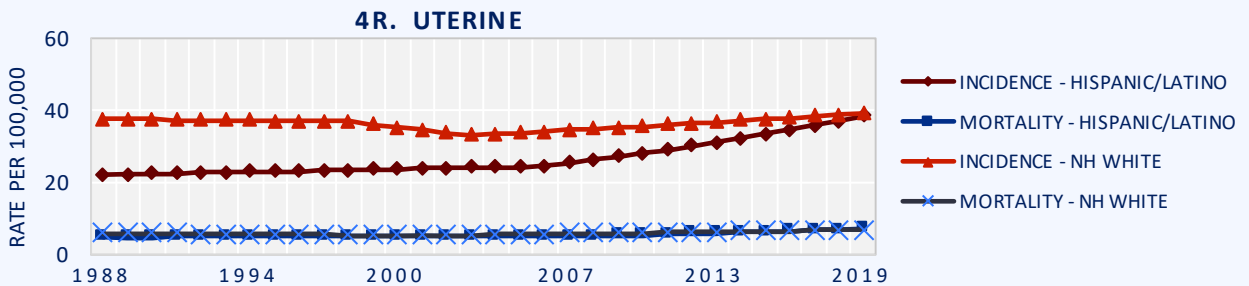
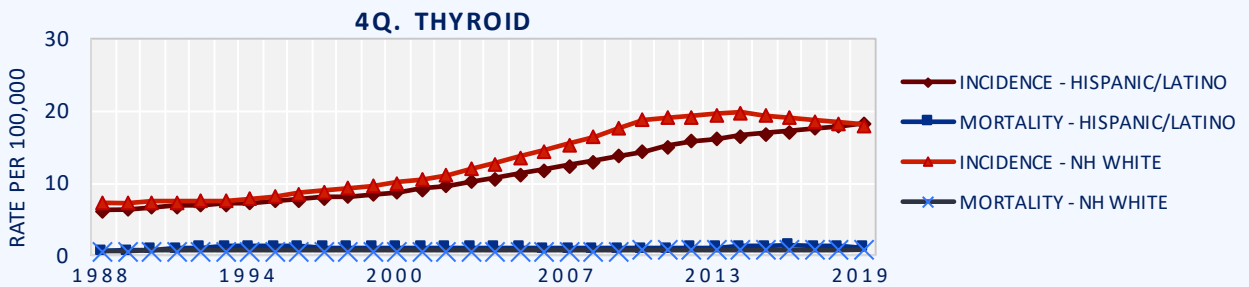
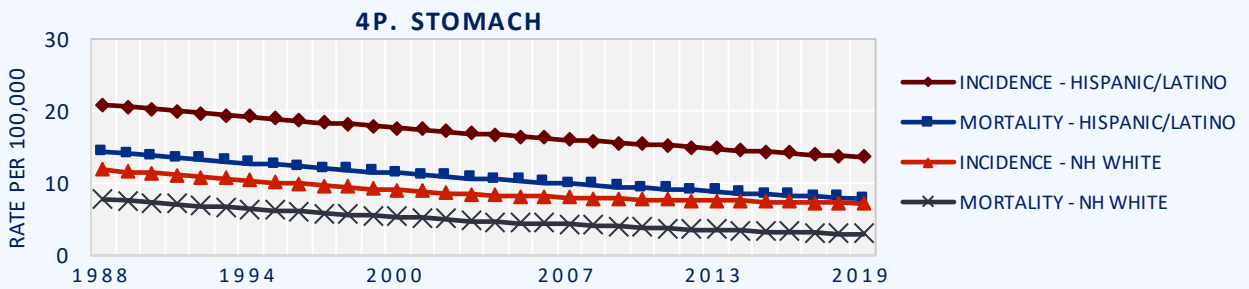
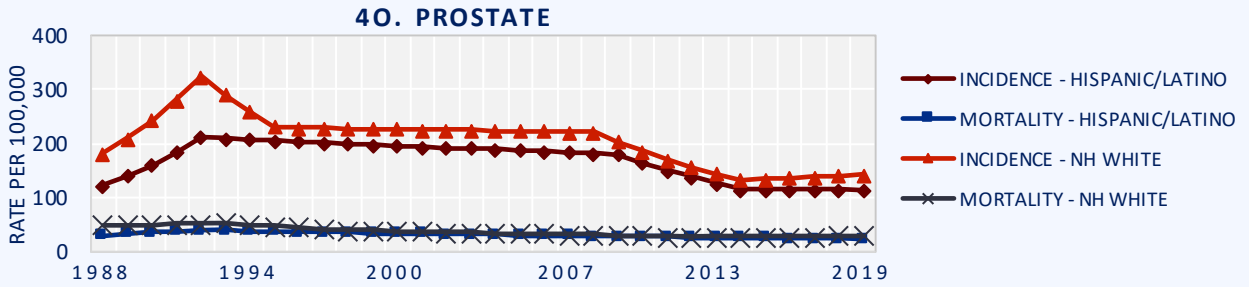
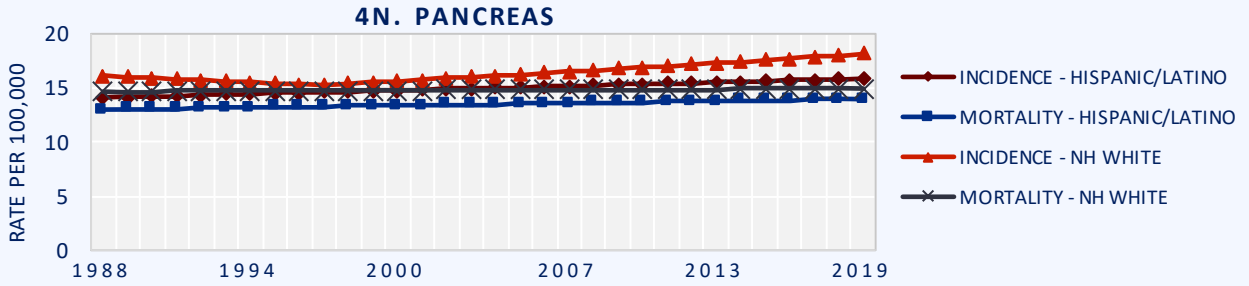


\* Adults: 20 years of age and older. Cancer site/type based on SEER Site Recodes, see Methods section for definitions. Source of data: California Cancer Registry, California Department of Public Health



\* Adults: 20 years of age and older. Cancer site/type based on SEER Site Recodes, see Methods section for definitions. Source of data: California Cancer Registry, California Department of Public Health





\* Adults: 20 years of age and older. Cancer site/type based on SEER Site Recodes, see Methods section for definitions. Source of data: California Cancer Registry, California Department of Public Health

## IV. CANCER DETECTION AND STAGE AT DIAGNOSIS

The stage of disease at the time of the cancer diagnosis is the most important predictor of mortality, and guides treatment decisions and patients' choices. In this report, stage at diagnosis was classified according to SEER Summary Stage rules (<https://seer.cancer.gov/tools/ssm/>). Cancers diagnosed at *in situ* or localized stages have not spread outside the organ where the cancer originates and were classified as "early-stage", otherwise the cancer was considered to have been diagnosed at late stage. The proportion of cases diagnosed at late stage was examined for the most common cancers among Hispanic/Latinos and, in detail, for five types of cancer for which recommended screening guidelines are in place (female breast, cervical, colorectal, prostate, and lung) and for another two types of cancer that can potentially be detected during physical exams (melanoma and oropharyngeal).

Overall, Hispanic/Latinos were significantly more often diagnosed with late-stage bladder, breast, colorectal, esophageal, lung, melanoma, non-Hodgkin lymphoma, prostate, stomach, thyroid, and liver cancers than NH White persons (Table 8). Ovarian cancer was the only type of cancer for which Hispanic/Latinas were more often diagnosed at early-stage than NH White women (74.4 vs. 80.4 percent, respectively). For cervical, kidney, oropharyngeal, pancreatic, and uterine cancers, there was no difference in the proportion of late-stage diagnosis between the two population groups.

For screen-detectable cancers (breast, cervical, colorectal, lung, melanoma, oropharyngeal, prostate), melanoma was the type of cancer for which Hispanic/Latinos were more likely to be diagnosed at late stage than NH Whites, regardless of sex, age, neighborhood SES, rural/urban area, and type of health insurance. This suggests less awareness that melanomas can occur among Hispanic/Latinos as well as among NH White persons. Hispanic/Latino men were significantly more likely to be diagnosed at late-stage with any screen-detectable cancer, except oropharyngeal (Figure 5), while Hispanic/Latinas were more likely than NH White women to be diagnosed with late-stage breast, melanoma, and lung cancers.

When stage at diagnosis was examined by age (Figure 6), lung and colorectal were the only two cancers for which Hispanic/Latinos were just as likely to be diagnosed late as NH White. For the other five cancers, Hispanic/Latinos were more frequently diagnosed with late-stage disease than NH Whites. Compared with NH Whites, Hispanic/Latinos in the 50-64 and 65 and older age groups were also more frequently diagnosed with late-stage breast, melanoma, and lung cancers, and also prostate cancer (50-64 years old only) and oropharyngeal cancer (65 years and older only).

Cancer detection was also associated with nSES (Figure 7), in that the proportion of late-stage diagnoses tended to be higher in disadvantaged areas. However, Hispanic/Latinos were more likely to be diagnosed late with breast, melanoma, and lung cancers than NH Whites across all nSES levels, while the proportion of late stage for colorectal, oropharyngeal, and prostate cancers in all nSES levels was not different between the two groups. In low SES neighborhoods, NH White

women were more often diagnosed with late-stage cervical cancer than Hispanic/Latinas (63.5 vs. 55.6 percent, respectively), a finding that was also noted when stage at diagnosis was examined by Healthy Places Index. Patients living in middle and high SES areas had similar likelihood of a late diagnosis of cervical cancer. Results obtained when stage at diagnosis was examined by Healthy Places Index were virtually identical to those observed for neighborhood SES and are not shown.

Hispanic/Latinos, in both urban and rural areas, were more likely than NH Whites to be diagnosed late with breast, melanoma, and lung cancers (Figure 8). For cervical and oropharyngeal cancers, Hispanic/Latinos and NH Whites living in urban or rural areas were just as likely to be diagnosed late. For colorectal cancers, Hispanic/Latinos were more likely to be diagnosed late in rural areas only, while for prostate cancer, the disparity was significant in urban areas only.

Type of insurance had a marked impact on whether screen-detectable cancers were diagnosed at late-stage (Figure 9). Compared with NH White persons, late-stage diagnosis was significantly more frequent among Hispanic/Latinos covered by almost any type of insurance: private insurance (39.3 vs. 34.3 percent late stage), Medicare (44.9 vs. 38.1 percent late stage), without insurance (56.7 vs. 48.5 percent late stage), or with unknown type of insurance (23.2 vs. 10.5 percent late stage). On the other hand, NH White persons covered by Medicaid were significantly more likely to be diagnosed late than their Hispanic/Latino counterparts (55.2 vs. 52.9 percent late stage).

**HISPANIC/LATINO PEOPLE ARE MORE OFTEN  
DIAGNOSED WITH **LATE-STAGE****

**BLADDER, BREAST, COLORECTAL, ESOPHAGEAL, LUNG, MELANOMA, NON-  
HODGKIN LYMPHOMA, PROSTATE, STOMACH, THYROID, AND LIVER CANCERS  
THAN NON-HISPANIC/LATINO WHITE PEOPLE**

TABLE 8. PERCENT OF ADULT\* HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) PATIENTS DIAGNOSED WITH THE MOST COMMON AND WITH SCREEN-DETECTABLE CANCERS AT LATE-STAGE IN CALIFORNIA, 2015-2019

Cancer Type	Hispanic/Latino		NH White		p-value
	N	% Late	N	% Late	
Bladder	4,124	16.6	24,105	13.0	< 0.001
<b>Breast (Female)</b>	34,885	32.3	91,235	25.7	< 0.001
<b>Cervical</b>	2,764	54.5	2,610	54.7	0.890
<b>Colorectal</b>	16,834	60.8	37,665	59.6	0.012
Esophageal	1,128	80.2	4,678	75.7	0.001
Kidney	9,650	31.1	16,475	30.5	0.385
Liver	6,180	50.4	7,287	52.1	0.051
<b>Lung</b>	9,951	77.4	51,078	71.6	< 0.001
<b>Melanoma</b>	4,216	16.1	73,758	7.2	< 0.001
Non-Hodgkin Lymphoma	8,225	74.4	19,942	72.4	0.001
<b>Oropharyngeal</b>	3,117	67.6	14,598	66.5	0.208
Ovarian	3,094	74.4	6,135	80.4	< 0.001
Pancreatic	5,087	83.8	13,814	83.7	0.880
<b>Prostate</b>	16,520	29.0	54,377	28.0	0.016
Stomach	4,625	72.3	5,351	65.0	< 0.001
Thyroid	8,047	42.5	11,702	34.5	< 0.001
Uterine	7,758	30.4	15,850	29.2	0.066

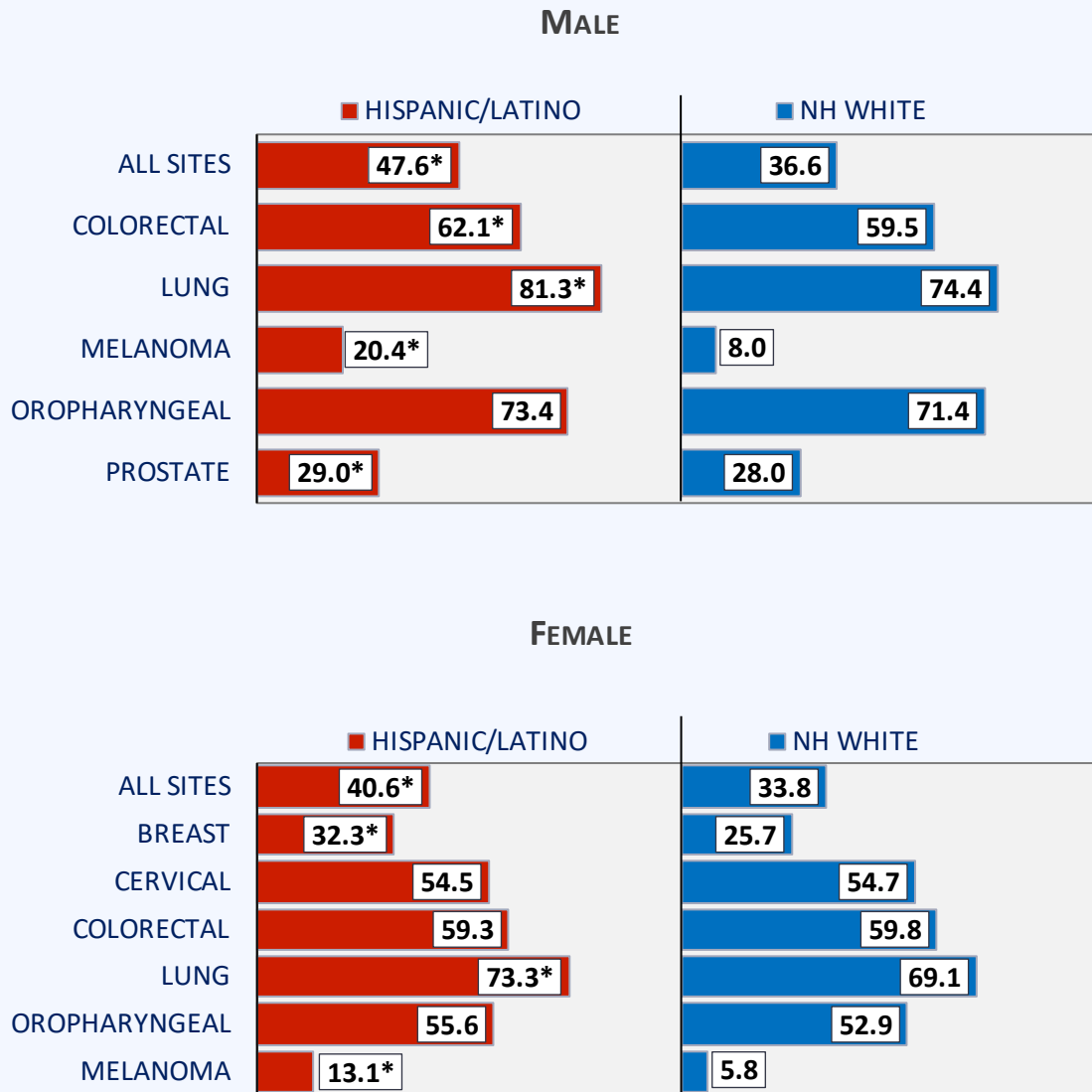
\* Adults: 20 years of age and older. Brain cancers not included due to a high proportion of cases missing staging data.

In bold: screen-detectable cancers.

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

Source of data: California Cancer Registry, California Department of Public Health.

FIGURE 5: PERCENT OF HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) PERSONS DIAGNOSED WITH A SCREEN-DETECTABLE CANCER AT A LATE STAGE, BY SEX AND TYPE OF CANCER, 2015-2019



\* Significant difference ( $p < 0.05$ ).

Cancer site/type based on SEER Site Recodes, see Methods section for definitions.  
 Source of data: California Cancer Registry, California Department of Public Health.

FIGURE 6: PERCENT OF HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) PERSONS DIAGNOSED WITH A SCREEN-DETECTABLE CANCER AT A LATE STAGE, BY AGE AND TYPE OF CANCER, 2015-2019

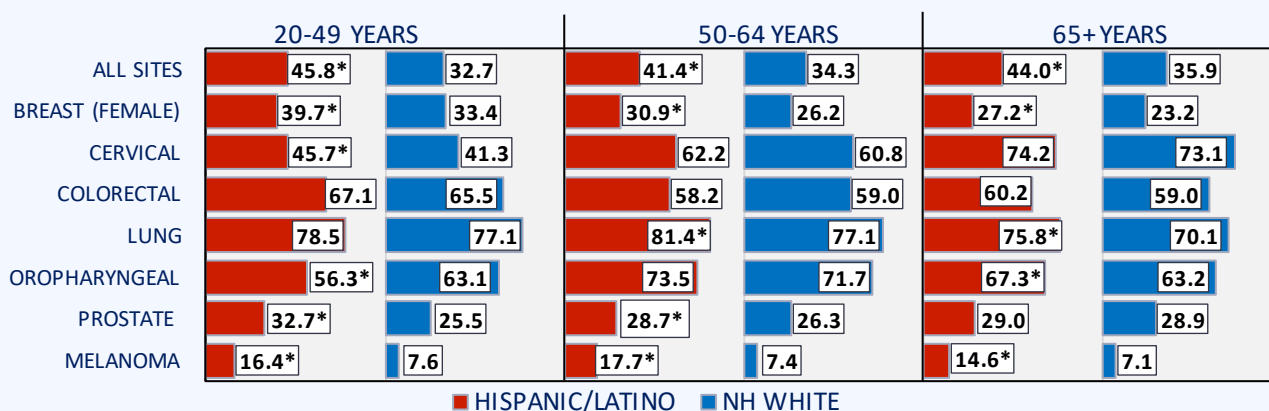
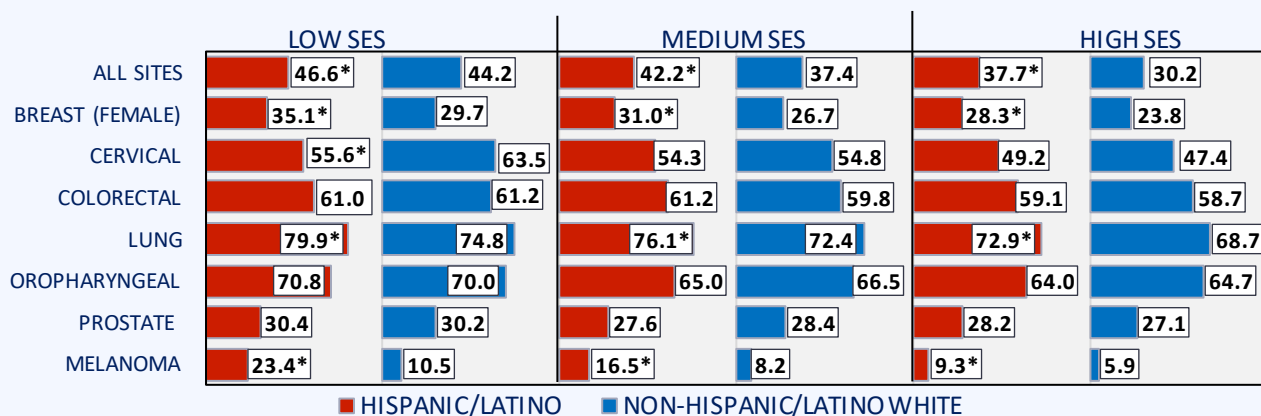


FIGURE 7: PERCENT OF HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) PERSONS DIAGNOSED WITH A SCREEN-DETECTABLE CANCER AT A LATE STAGE, BY NEIGHBORHOOD SOCIOECONOMIC STATUS (NSES) AND TYPE OF CANCER, 2015-2019



\* Significant difference ( $p < 0.05$ ).

Cancer site/type based on SEER Site Recodes, see Methods section for definitions.  
Source of data: California Cancer Registry, California Department of Public Health.

FIGURE 8: PERCENT OF HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) PERSONS DIAGNOSED WITH A SCREEN-DETECTABLE CANCER AT A LATE STAGE, BY RURAL/URBAN AREA OF RESIDENCE AND TYPE OF CANCER, 2015-2019

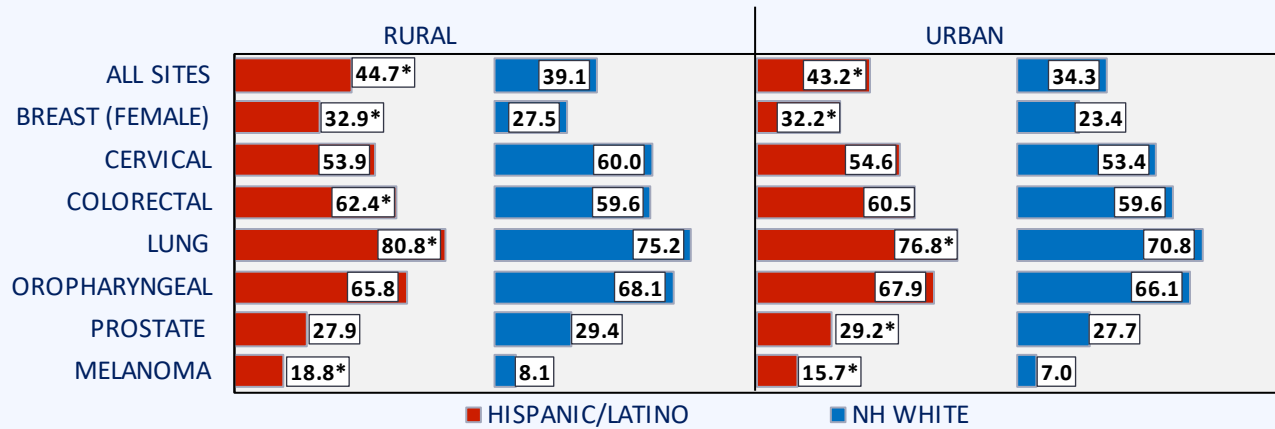
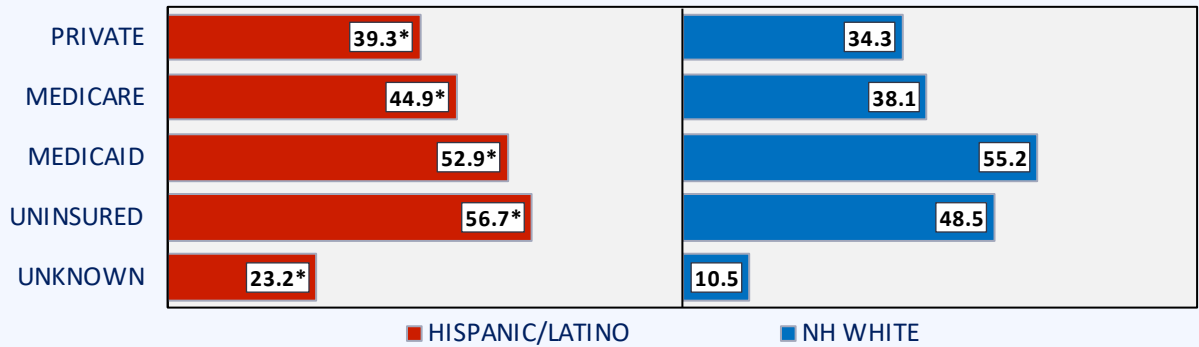


FIGURE 9: PERCENT OF HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) PERSONS DIAGNOSED WITH A SCREEN-DETECTABLE CANCER AT A LATE STAGE, BY TYPE OF HEALTH INSURANCE, 2015-2019



\* Significant difference ( $p < 0.05$ ).

Cancer site/type based on SEER Site Recodes, see Methods section for definitions.  
Source of data: California Cancer Registry, California Department of Public Health.

## V. CANCER SURVIVAL

For all cancers and stages of cancer combined, five-year relative survival was lower among Hispanic/Latino patients than NH Whites (65.5 vs. 68.2 percent, respectively) (Table 9, Figure 10.a-b and Figure 11.a-b). Hispanic/Latinos had lower survival than NH Whites for breast, bladder, lung, non-Hodgkin lymphoma, oropharyngeal, prostate, and thyroid cancers. For all these sites, except oropharyngeal cancers, Hispanic/Latinos were also more likely to be diagnosed at late-stage disease. The only types of cancer for which five-year survival was higher among Hispanic/Latinos than among NH Whites were brain and ovarian cancers (30.8 vs. 23.8 percent and 53.6 vs. 46.8 percent, respectively). Ovarian cancer was also one of the few cancers for which Hispanic/Latinos were more likely to be diagnosed at early stage. Survival for the remaining cancer sites was comparable for Hispanic/Latino and NH White patients.

With five-year relative survival estimated by factors that are known to impact survival (Table 10), survival among Hispanic/Latinos was significantly higher for women, younger patients, those diagnosed at localized stage, residents in higher SES neighborhoods, and for patients covered by private/government insurance (including Medicare with private supplement). Patients 70 years of age and older, diagnosed at late stage and covered by Medicaid/public insurance had the worst five-year relative survival. The same associations were observed among NH White patients, although their survival was significantly better regardless of sex, age, and early-stage diagnosis. It should be noted that in neighborhoods of medium and low SES, five-year relative survival was significantly higher among Hispanic/Latinos than among NH Whites, while in affluent neighborhoods survival was better for NH Whites. Among patients with private/Government insurance, survival was similar for Hispanic/Latinos and NH Whites. However, NH White patients covered by Medicare without supplement had better outcomes than Hispanic/Latino patients: 60.5 vs. 57.1 percent survival, respectively. The opposite was observed for patients covered by Medicaid/public insurance, where five-year relative survival was higher among Hispanic/Latinos than NH Whites: 55.9 vs. 49.6 percent, respectively.

Hazard Ratios, expressing the risk of dying after a cancer diagnosis among Hispanic/Latinos relative to the risk among NH White persons, are shown in Table 11 and Figure 12. The risk of death was estimated as a ratio, adjusting for, or taking into account, the simultaneous effect of factors that impact survival. Estimates of the hazard, or risk of death, are presented adjusting for sex and age at diagnosis only (sex-age adjusted) and after accounting for the following factors: sex, age at diagnosis, stage at diagnosis, histological confirmation of tumor, comorbidities, neighborhood SES, type of health insurance, and residence in urban or rural area (fully adjusted). Because of the existing overlap between nSES and Healthy Places Index, only the SES measure was included in the model. Hazard ratios with only sex and age considered show that the overall risk of death was significantly higher among Hispanic/Latinos. Hazard ratio estimates were also higher for ten of the cancer types examined, and lower for only brain and prostate cancer; for



colorectal, kidney, liver, pancreatic and uterine cancers hazard ratios were not statistically significant.

However, with all other factors accounted for, the overall risk of death was significantly lower among Hispanic/Latinos than among NH Whites. Hazard Ratios were also smaller than one for bladder, brain, breast, cervical, esophageal, kidney, liver, lung, oropharyngeal, ovarian, pancreatic, prostate, thyroid, and uterine cancers. Thus, while Hispanic/Latinos had worse five-year relative survival and higher risk of death for several cancers examined, estimates obtained after accounting for some modifiable factors indicated a lower risk of death for almost all the most common cancers. For Hispanic/Latino patients, the risk of death was higher than for NH White patients only for non-Hodgkin lymphoma and colorectal cancer. These results underscore opportunities for reducing disparities in cancer survival through earlier detection and efforts to address inequities in social determinants of health.

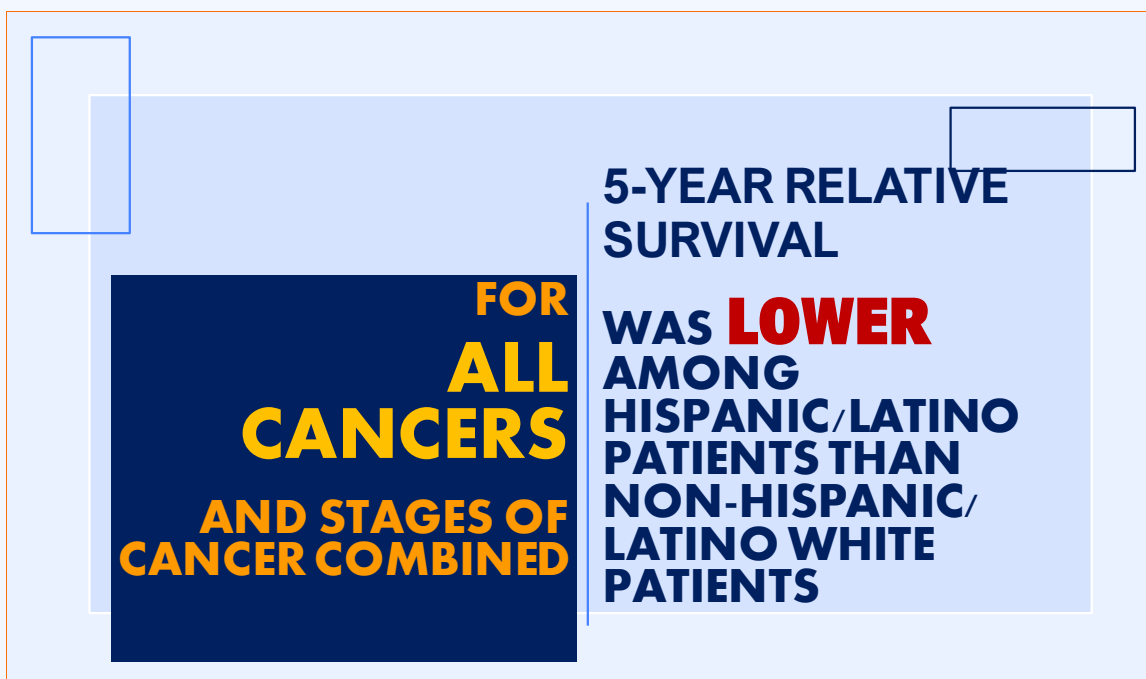


TABLE 9. FIVE-YEAR RELATIVE SURVIVAL AND 95% CONFIDENCE INTERVALS (CI) FOR THE MOST COMMON CANCERS AMONG ADULT\* HISPANIC/LATINOS IN CALIFORNIA, 2010-2014

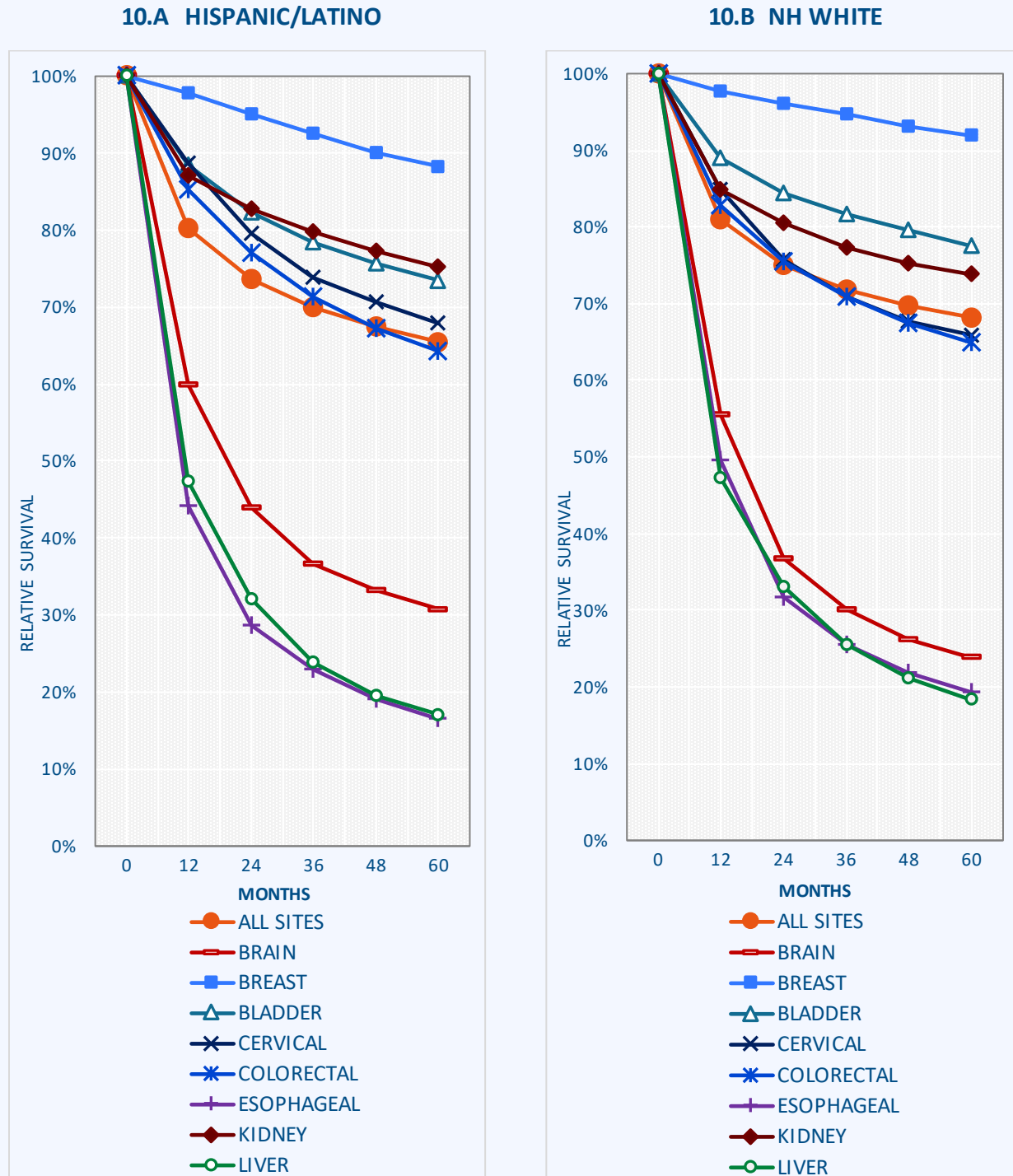
Cancer Site/Type †	Hispanic/Latino			NH White		
	N	Survival	95% CI (%)	N	Survival	95% CI (%)
<b>All Cancers</b>	125,814	65.5%	65.2 - 65.8	379,467	68.2%	68.0 - 68.3
Bladder	20,131	88.3%	87.8 - 88.9	59,369	91.9%	91.5 - 92.2
Brain	1,877	30.8%	28.6 - 33.0	5,619	23.8%	22.7 - 25.0
Breast	2,939	73.5%	71.4 - 75.5	18,123	77.5%	76.6 - 78.3
Cervical	2,488	67.9%	65.8 - 69.9	2,593	65.9%	64.0 - 67.8
Colorectal	12,159	64.3%	63.3 - 65.2	31,884	64.9%	64.3 - 65.6
Esophageal	867	16.5%	13.9 - 19.2	3,900	19.3%	17.9 - 20.7
Kidney	5,999	75.2%	73.9 - 76.4	11,655	73.8%	72.9 - 74.8
Liver	5,167	17.1%	16.1 - 18.2	6,574	18.3%	17.3 - 19.3
Lung	7,462	18.3%	17.3 - 19.3	41,226	19.7%	19.3 - 20.1
Non-Hodgkin Lymphoma	6,418	67.6%	66.3 - 68.9	16,257	73.6%	72.7 - 74.4
Oropharyngeal	2,353	62.6%	60.4 - 64.7	10,689	68.7%	67.6 - 69.7
Ovarian	2,437	53.6%	51.4 - 55.7	5,744	46.8%	45.4 - 48.2
Pancreas	3,628	9.9%	8.9 - 11.0	10,464	9.6%	9.0 - 10.2
Prostate	16,480	94.9%	94.3 - 95.5	54,187	97.2%	96.8 - 97.5
Stomach	3,887	28.0%	26.5 - 29.6	4,626	30.5%	29.0 - 32.0
Thyroid	5,799	96.7%	96.0 - 97.3	10,347	98.2%	97.9 - 98.5
Uterine	5,097	80.8%	79.5 - 82.0	12,952	83.0%	82.2 - 83.8

\* Adults: 20 years of age and older. NH: Non-Hispanic/Latino.

† Cancer/site type based on SEER Site Recodes, see Methods section for definitions.

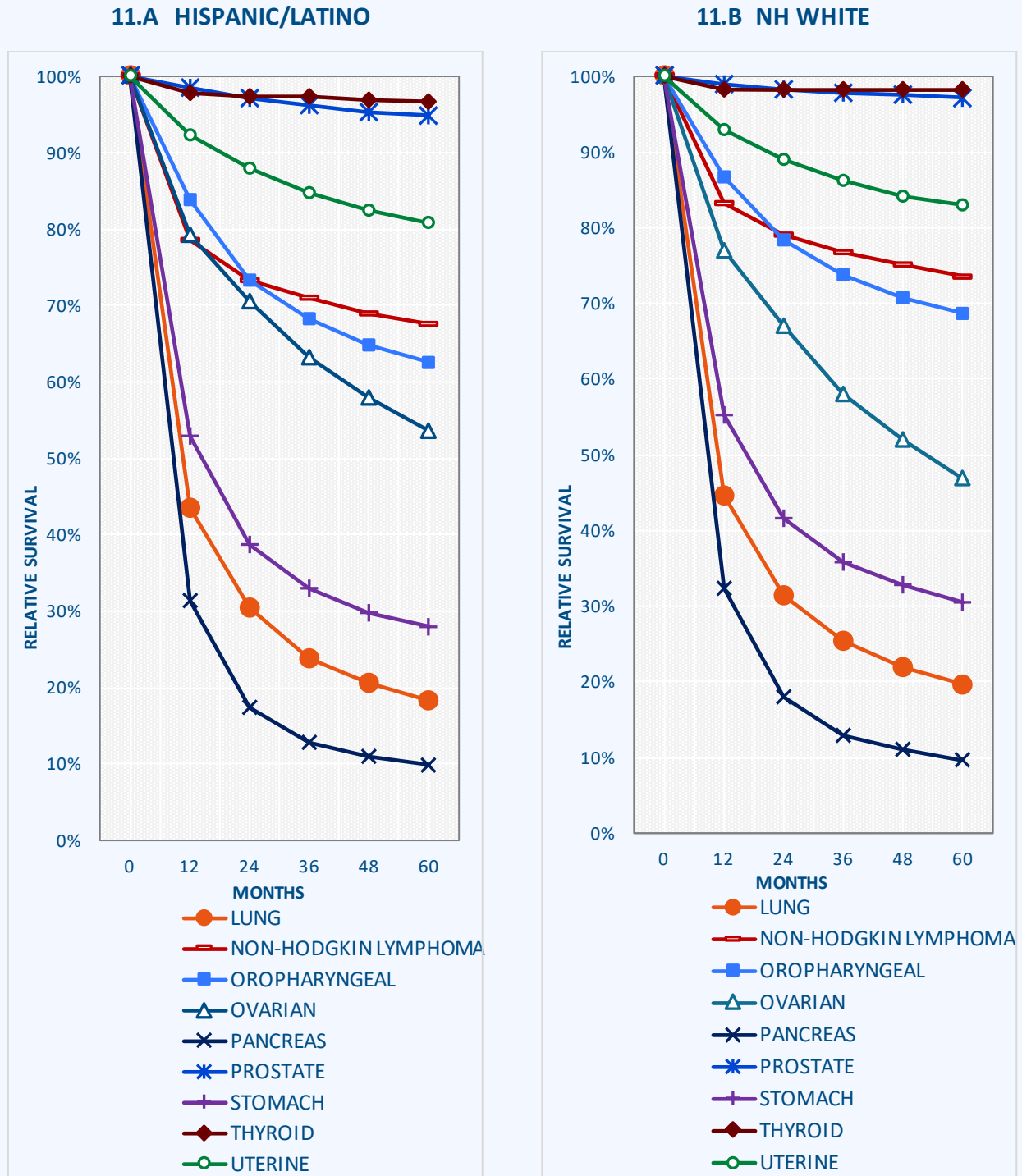
Source of data: California Cancer Registry, California Department of Public Health.

FIGURE 10. FIVE-YEAR RELATIVE SURVIVAL AMONG HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) CALIFORNIANS, 2010-2014: ALL CANCER COMBINED, BLADDER, BRAIN, BREAST, CERVICAL, COLORECTAL, ESOPHAGEAL, KIDNEY, AND LIVER CANCERS



Cancer type based on SEER Site Recodes, see Methods section for definitions.  
 Source of data: California Cancer Registry, California Department of Public Health

FIGURE 11. FIVE-YEAR RELATIVE SURVIVAL AMONG HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) CALIFORNIANS, 2010-2014: LUNG, NON-HODGKIN LYMPHOMA, OROPHARYNGEAL, OVARIAN, PANCREATIC, PROSTATE, STOMACH, THYROID, AND UTERINE CANCERS



Cancer type based on SEER Site Recodes, see Methods section for definitions.  
 Source of data: California Cancer Registry, California Department of Public Health

TABLE 10: FIVE-YEAR RELATIVE SURVIVAL AMONG ADULT\* HISPANIC/LATINO AND NON-HISPANIC/LATINO WHITE (NH WHITE) CANCER PATIENTS IN CALIFORNIA, 2010-2014: ALL CANCERS COMBINED

	Hispanic/Latino			NH White		
	N	Survival	95% CI (%)	N	Survival	95% CI (%)
<b>All Cancers</b>	125,814	65.5%	65.2-65.8	379,467	68.2%	68.0- 68.3
<b>Sex</b>						
Male	59,883	62.4%	62.0-62.8	195,354	67.3%	67.0-67.5
Female	65,931	68.3%	67.9-68.7	184,113	69.1%	69.9-69.4
<b>Age</b>						
20-39	13,506	79.8%	79.1-80.5	15,908	87.5%	87.0-88.0
40-54	31,037	73.7%	73.1-74.2	60,286	79.5%	79.2-79.9
55-69	46,325	66.8%	66.4-67.3	155,898	72.0%	71.8-72.3
70+	34,946	50.6%	50.0-51.3	147,375	56.9%	56.5-57.2
<b>Stage at Diagnosis</b>						
Localized	55,155	88.3%	87.9-88.6	180,689	91.2%	91.0-91.4
Regional	30,243	67.6%	67.0-68.2	79,969	67.4%	67.0-67.8
Distant	30,393	28.2%	27.7-28.8	86,914	27.3%	27.0-27.6
<b>Socioeconomic Status</b>						
Low	61,318	61.7%	61.2-62.1	73,287	57.1%	56.7-57.5
Medium	42,642	67.1%	66.6-67.6	136,952	65.7%	65.4-66.0
High	21,854	72.8%	72.1-73.5	169,228	75.0%	74.7-75.2
<b>Health Insurance</b>						
Private/Government	63,815	73.2%	72.8-73.6	252,279	73.7%	73.5-73.9
Medicare, no Supplement	17,277	57.1%	56.2-57.9	73,406	60.5%	60.1-61.0
Medicaid/Public	35,234	55.9%	55.3-56.4	33,164	49.6%	49.0-50.2
Uninsured	4,255	60.6%	58.9-62.2	4,527	56.4%	54.9-57.4
Unknown	5,233	63.2%	61.6-64.7	16,091	57.1%	56.2-58.0

\* Adults: 20 years of age and older. NH: Non-Hispanic/Latino.

Source of data: California Cancer Registry, California Department of Public Health.

TABLE 11. FULLY ADJUSTED\* AND AGE-SEX ADJUSTED† HAZARD RATIO ESTIMATES AND 95% CONFIDENCE INTERVALS (CI) FOR ADULT‡ HISPANIC/LATINO CANCER PATIENTS IN CALIFORNIA, 2010-2019, BY CANCER TYPE

Cancer Type	Fully Adjusted		Sex-Age Adjusted	
	Hazard Ratio	95% CI	Hazard Ratio	95% CI
All Cancers	0.92	0.92 - 0.93	1.15	1.12 - 1.15
Bladder	0.94	0.89 - 0.98	1.07	1.02 - 1.12
Brain	0.85	0.82 - 0.88	0.95	0.92 - 0.98
Breast	0.9	0.87 - 0.92	1.12	1.10 - 1.15
Cervical	0.87	0.81 - 0.94	1.04	1.04 - 1.04
Colorectal	1.07	1.05 - 1.08	1.01	0.99 - 1.03
Esophageal	0.94	0.89 - 0.99	1.06	1.01 - 1.12
Kidney	0.83	0.80 - 0.86	0.99	0.96 - 1.02
Liver	0.95	0.92 - 0.97	0.99	0.96 - 1.02
Lung	0.90	0.88 - 0.91	1.03	1.01 - 1.05
Non-Hodgkin Lymphoma	1.06	1.03 - 1.10	1.30	1.26 - 1.34
Oropharyngeal	0.96	0.91 - 1.01	1.22	1.17 - 1.27
Ovarian	0.94	0.90 - 0.99	1.05	1.01 - 1.10
Pancreas	0.94	0.92 - 0.97	1.03	1.00 - 1.05
Prostate	0.75	0.73 - 0.78	0.96	0.94 - 0.99
Stomach	0.98	0.94 - 1.01	1.10	1.06 - 1.13
Thyroid	0.84	0.77 - 0.91	1.23	1.14 - 1.33
Uterine	0.86	0.74 - 0.99	0.97	0.85 - 1.11

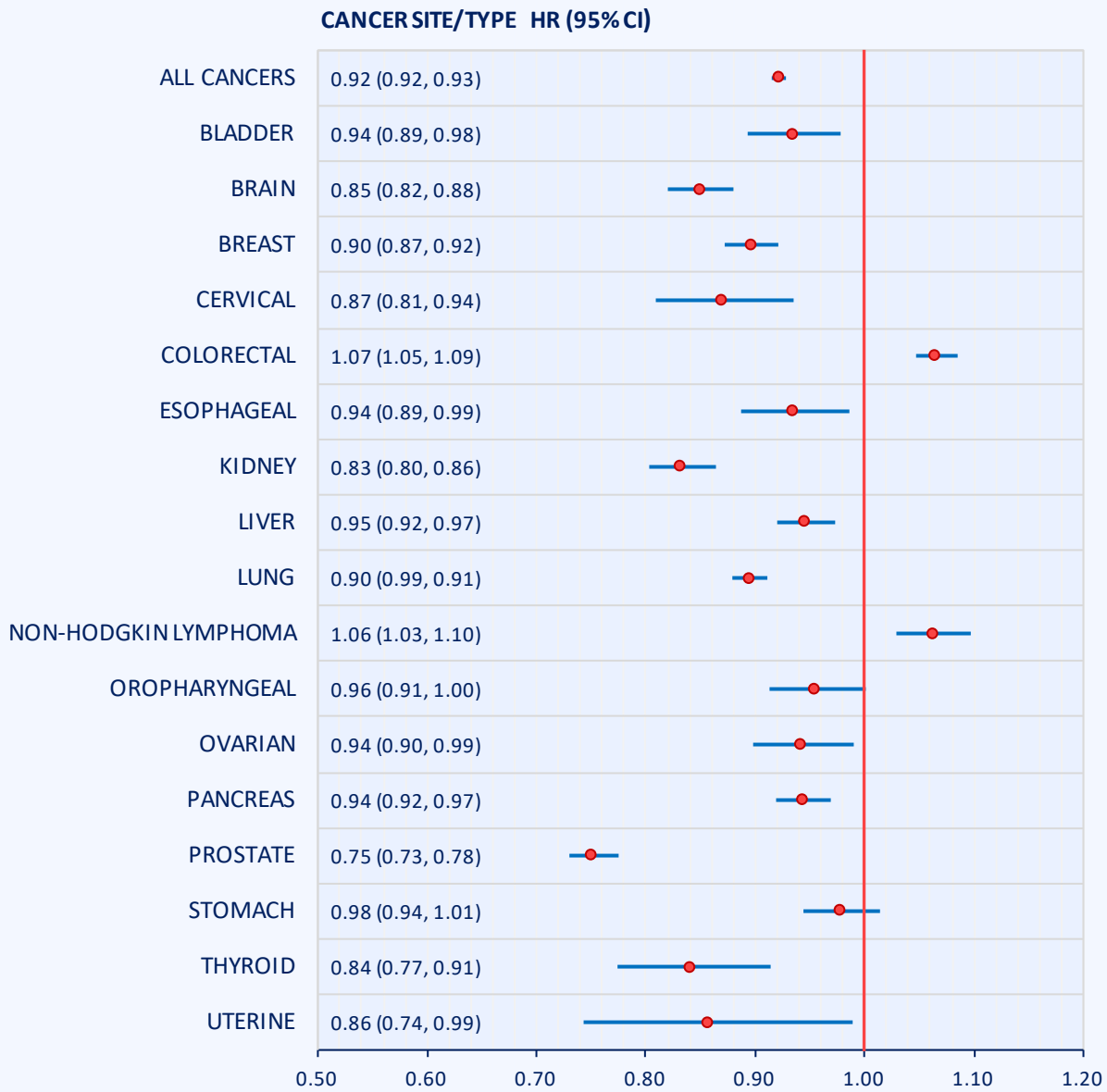
\*Fully adjusted: estimates accounting for sex, age, stage, histological confirmation, comorbidities, neighborhood socioeconomic status, type of health insurance, healthy places index, and urban/rural residence.

See Methods section for interpreting Hazard Ratios.

† Sex-Age adjusted: estimates accounting for the patient's sex and age only.

‡ Adults: 20 years of age and older.

FIGURE 12. ADJUSTED<sup>a</sup> HAZARD RATIOS (HR) AND 95% CONFIDENCE INTERVAL (CI) ESTIMATES FOR THE RISK OF DEATH AMONG HISPANIC/LATINO COMPARED WITH NON-HISPANIC/LATINO WHITE (NH WHITE) CANCER PATIENTS IN CALIFORNIA BY TYPE OF CANCER, 2010-2019



## CONCLUSIONS

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This report found significant disparities in social determinants of health among Hispanic/Latinos diagnosed with cancer in California. Compared with non-Hispanic/Latino Whites, Hispanic/Latino patients were more likely to live in disadvantaged areas and were more often covered by Medicaid/Public insurance. These factors are known to be associated with cancer stage at diagnosis and survival, which this report reflects.

Overall, Hispanic/Latino individuals in California were more likely to be diagnosed at a late stage of disease, have comorbidities at the time of diagnosis, and have lower relative five-year survival for many cancer types compared to NH White individuals.

The burden of late-stage cancer in the Hispanic/Latino population was substantial. In two thirds of the cancers examined in this report, Hispanic/Latinos were more likely to be diagnosed at late-stage disease, including five of the seven screen-detectable cancers: breast, prostate, colorectal, lung, and melanoma. Despite having lower incidence and mortality rates than NH Whites for several of the most common cancers, mortality rates for liver and stomach cancers among Hispanic/Latinas were two- and three-fold higher.

The impact of inequities in social determinants of health on cancer survival was clear. Compared with NH White patients, Hispanic/Latinos had lower overall five-year relative survival. Estimates of the hazards of death for most cancers, with only sex and age considered, were higher among Hispanic/Latino than among NH White patients. However, a different picture emerged when hazard of death estimates obtained after adjusting for some modifiable factors (stage at diagnosis, comorbidities, nSES, type of health insurance, and urban/rural residence), with the hazard of cancer death significantly lower among Hispanic/Latinos than among NH Whites for all cancers combined, bladder, brain, breast, cervical, esophageal, kidney, liver, lung, oropharyngeal, ovarian, pancreatic, prostate, thyroid, and uterine cancers. The only cancers that still had worse survival among Hispanic/Latinos were non-Hodgkin lymphoma and colorectal cancer.

The nature of cancer registry data does not allow for definite conclusions on the reasons for the observed disparities. The effect of nativity, age at migration, and years living in the US, which can lead to important differences in risk factors and behaviors, as well as potential differences in cancer clinical management and treatment could not be addressed in this report. Addressing structural inequities, including racism, and facilitating access and utilization of health services are necessary steps to eliminate cancer health disparities.<sup>12</sup> However, results from this report underscore opportunities for reducing disparities in cancer outcomes through earlier detection and efforts to address inequities in social determinants of health. Reducing racial/ethnic disparities in cancer survival and achieving equitable health care for all Californians are both imperative and possible.



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