Burden of Cancer in California

California Cancer Reporting and Epidemiologic Surveillance
Institute for Population Health Improvement
UC Davis Health
August 22, 2018

Outline

1. Incidence and Mortality
2. Trends
3. Risk Factors
4. Stage at Diagnosis
5. Cancer Control Plan Progress Summary
6. Survival
7. Childhood Cancer

Most Common Types of Cancer Incidence and Prevalence among California Males, 2015

Rank	Cancer Type	New Cases	Incidence Rate	Existing Cases
1	Prostate	17,159	84.4	271,895
2	Lung	8,248	44.7	18,847
3	Colon and Rectum	7,518	38.9	62,210
4	Melanoma of the Skin	5,586	29.2	51,709
5	Urinary Bladder	5,049	27.7	43,479
6	Non-Hodgkin Lymphoma	4,034	21.2	32,405
7	Kidney	3,896	19.8	26,911
8	Oral Cavity and Pharynx	3,010	14.9	22,053
9	Leukemia	2,721	14.5	20,428
10	Liver	2,944	14.1	6,847

Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population.

Most Common Types of Cancer Mortality among California Males, 2015

Rank	Cancer Type	Count	Rate
1	Lung	6,478	35.5
2	Prostate	3,314	19.4
3	Colon and Rectum	2,791	15.0
4	Pancreas	2,163	11.6
5	Liver	2,207	11.1
6	Leukemia	1,380	7.8
7	Non-Hodgkin Lymphoma	1,214	6.7
8	Urinary Bladder	1,155	6.6
9	Esophagus	1,058	5.5
10	Brain and Other Nervous System	1,017	5.3

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Most Common Types of Cancer Incidence and Prevalence among California Females, 2015

Rank	Cancer Type	New Cases	Incidence Rate	Existing Cases
1	Breast	26,514	119.8	321,370
2	Lung	8,397	36.9	25,534
3	Colon and Rectum	6,901	30.6	61,634
4	Uterus	5,855	25.5	61,154
5	Thyroid	3,951	19.2	49,083
6	Melanoma of the Skin	3,750	17.0	45,236
7	Non-Hodgkin Lymphoma	3,295	14.7	29,169
8	Ovary	2,530	11.5	19,981
9	Pancreas	2,382	10.4	3,388
10	Kidney	2,235	10.1	17,286

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Most Common Types of Cancer Mortality among California Females, 2015

Rank	Cancer Type	Count	Rate
1	Lung	5,829	25.3
2	Breast	4,441	19.4
3	Colon and Rectum	2,628	11.3
4	Pancreas	2,061	8.9
5	Ovary	1,582	6.9
6	Liver	1,135	4.9
7	Uterus	1,123	4.8
8	Leukemia	958	4.3
9	Non-Hodgkin Lymphoma	943	4.1
10	Brain and Other Nervous System	793	3.5

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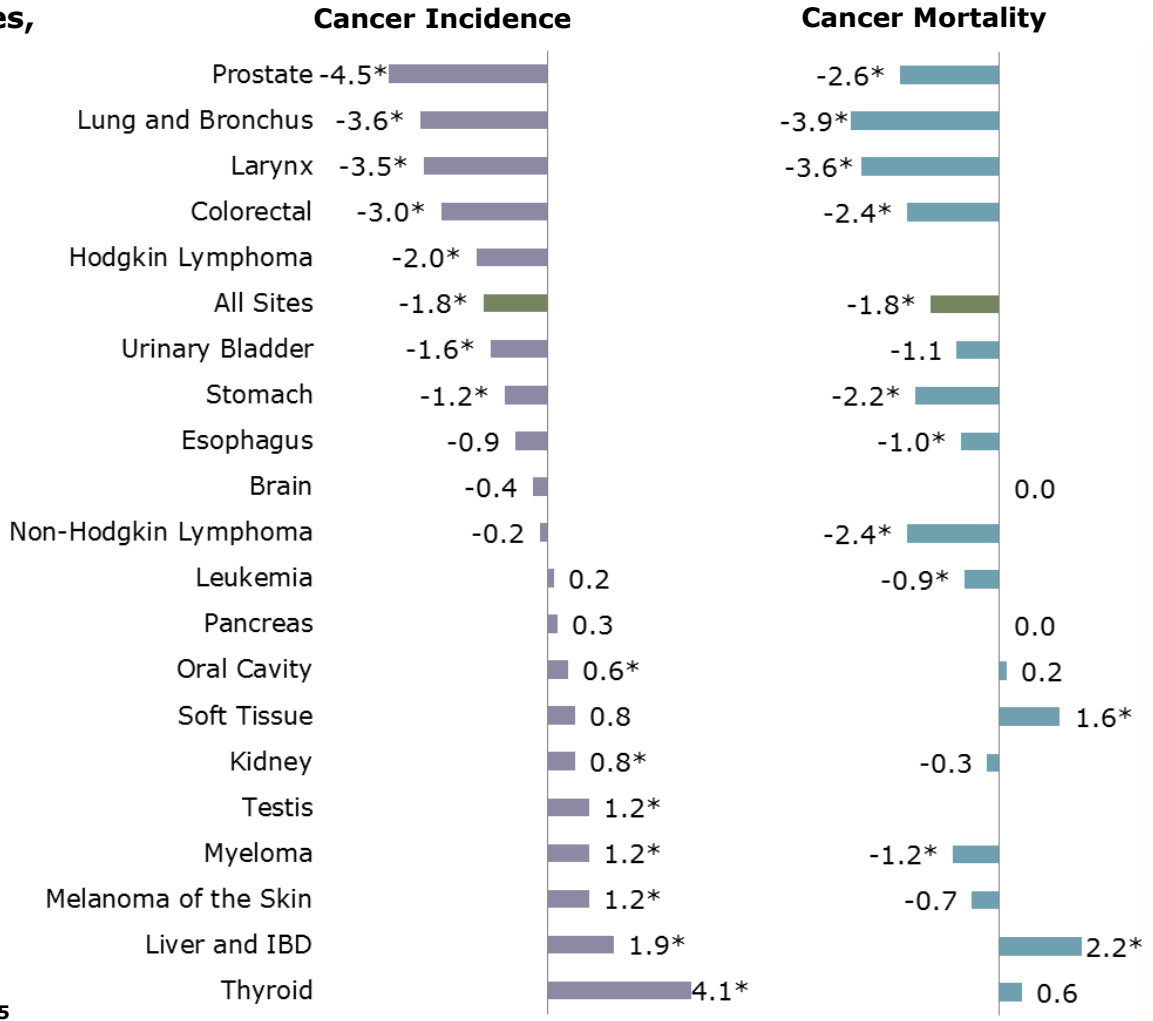

*Percent change is significantly different from zero at p<0.05

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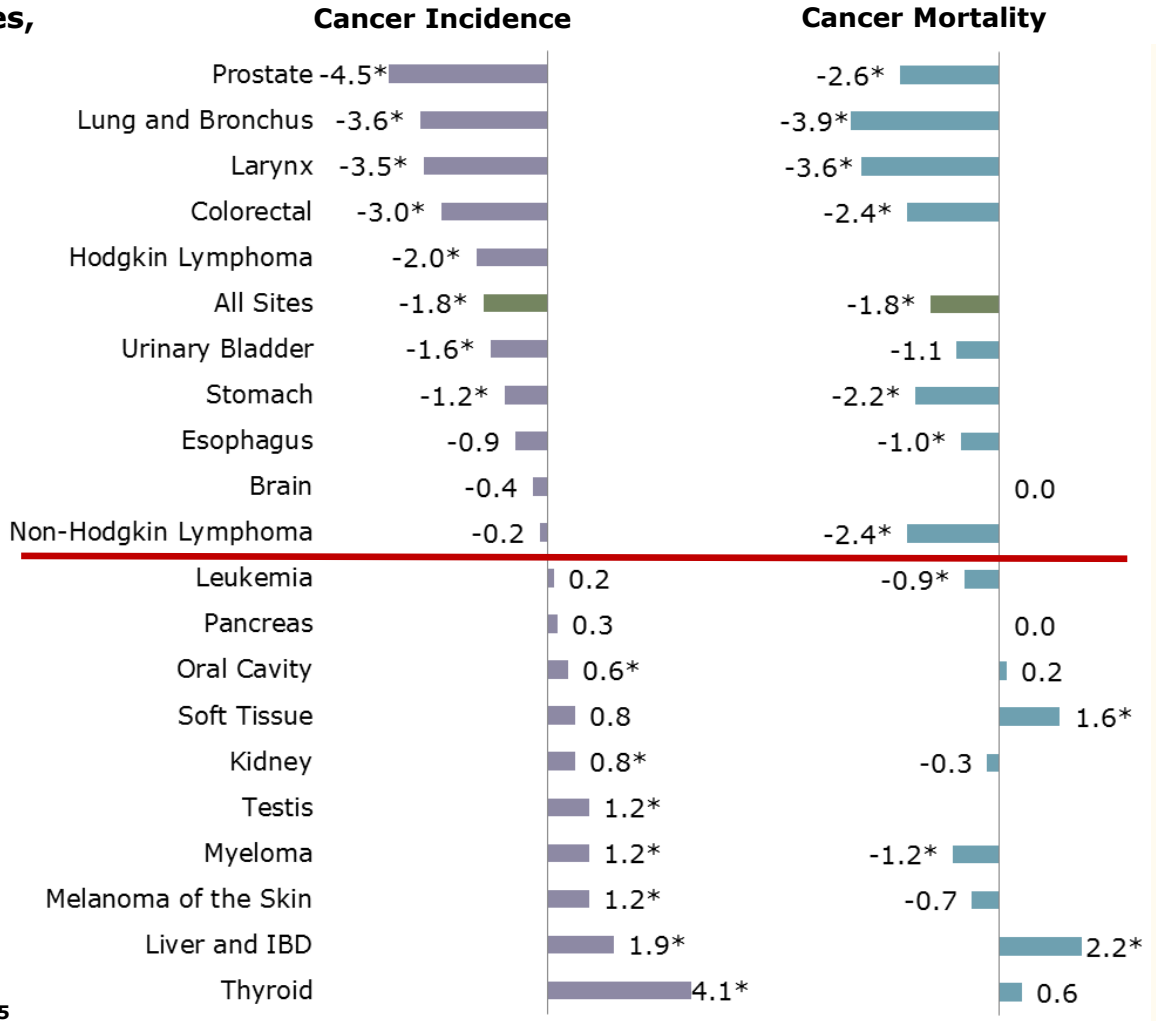

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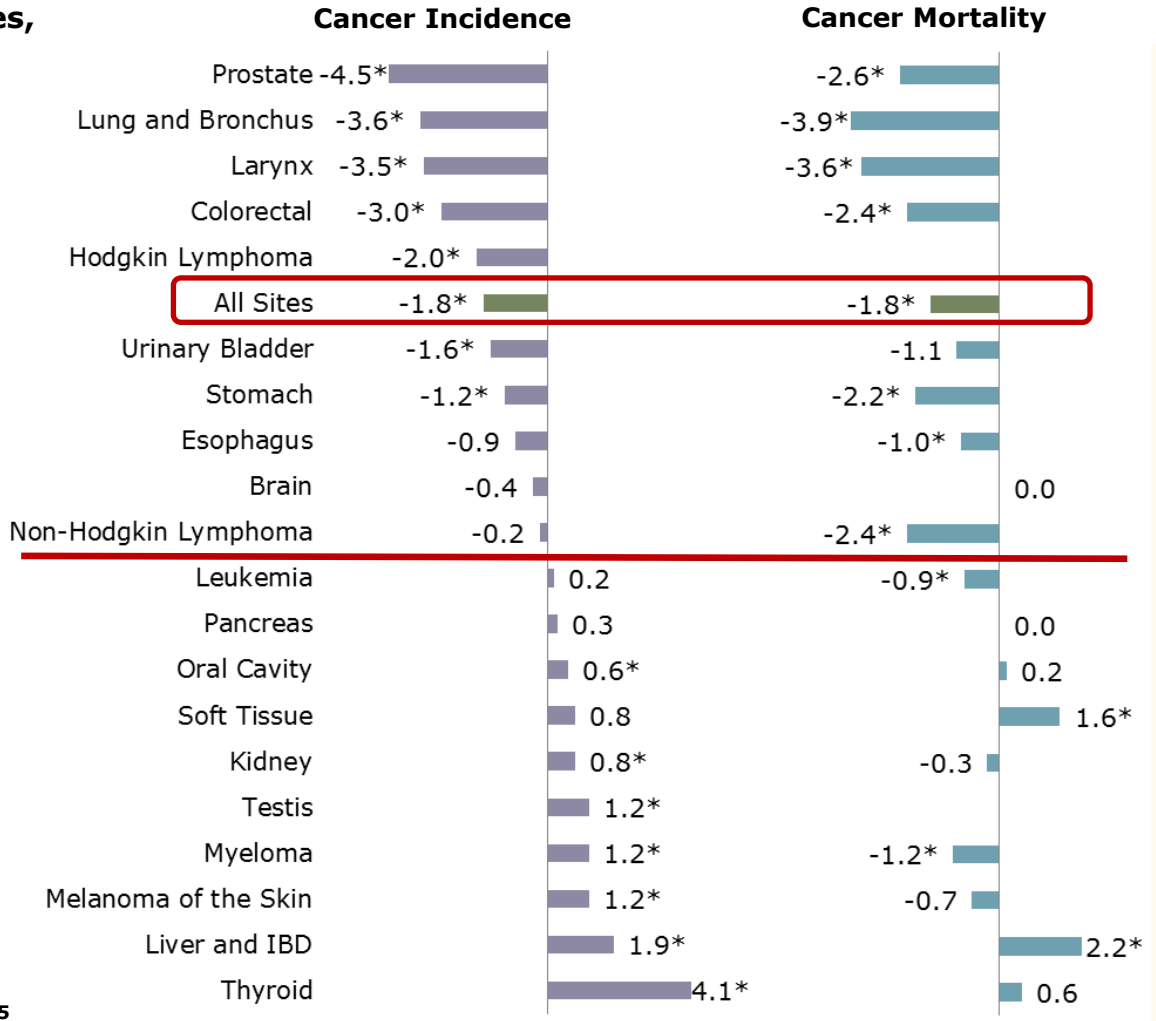

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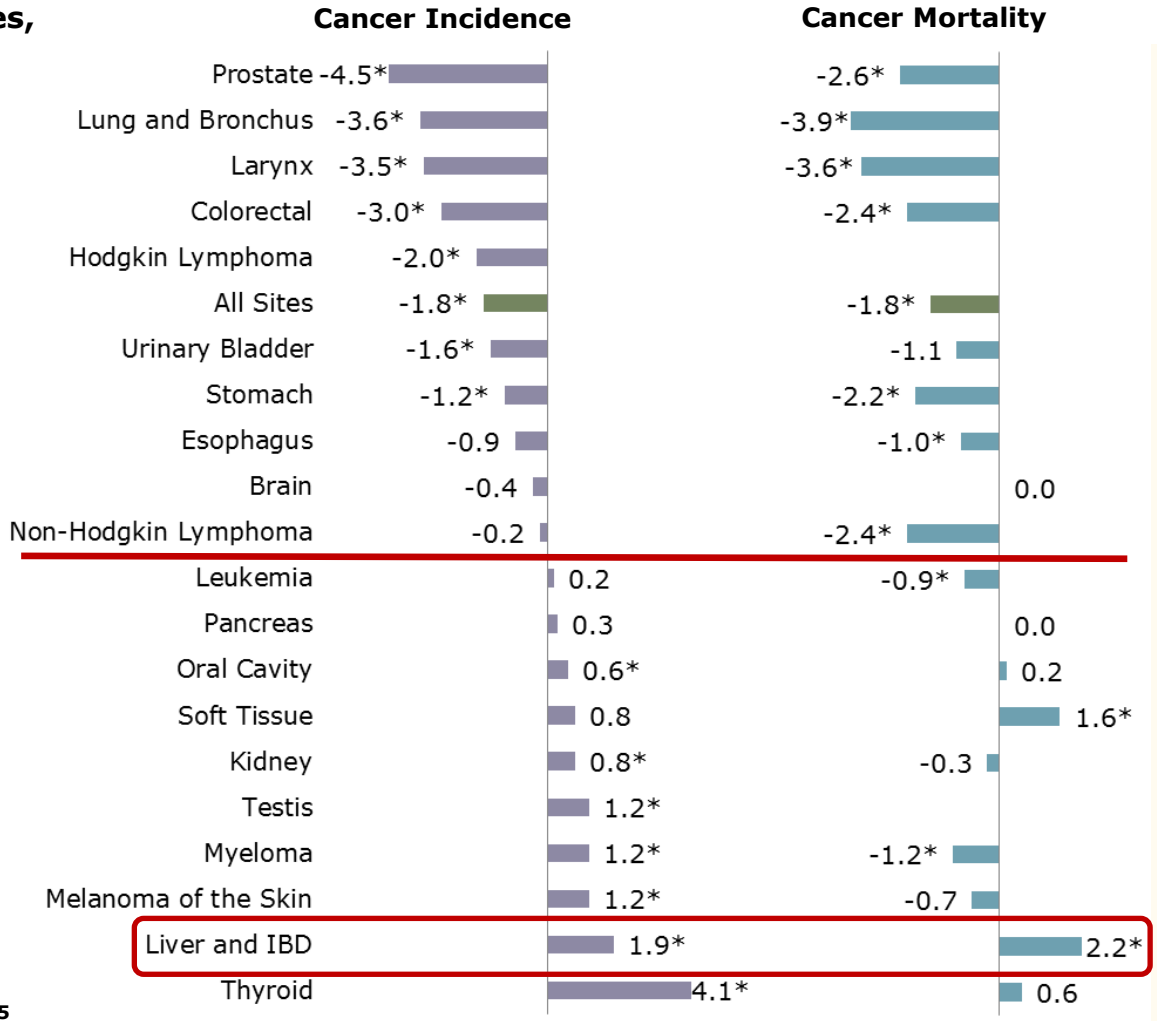

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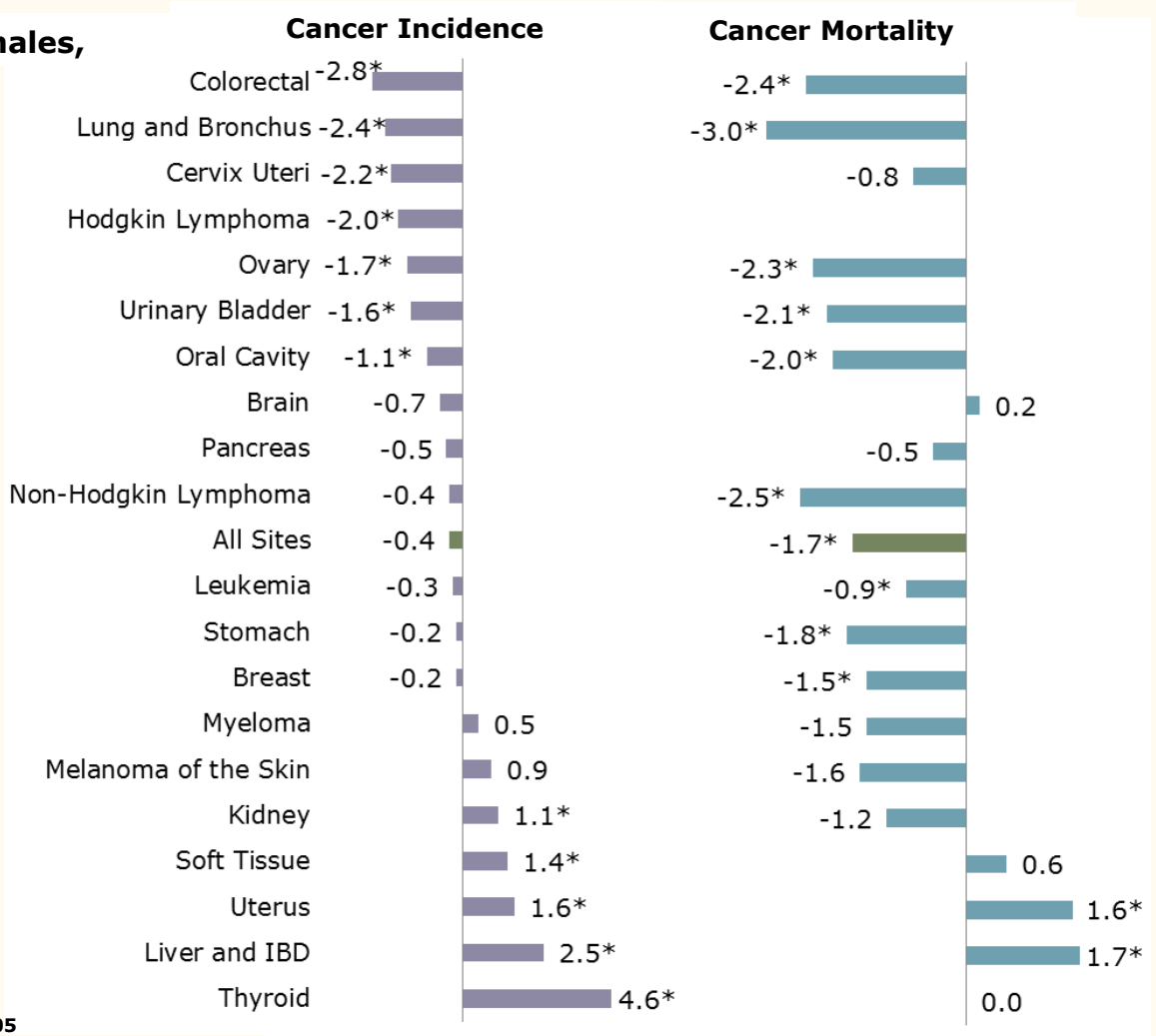

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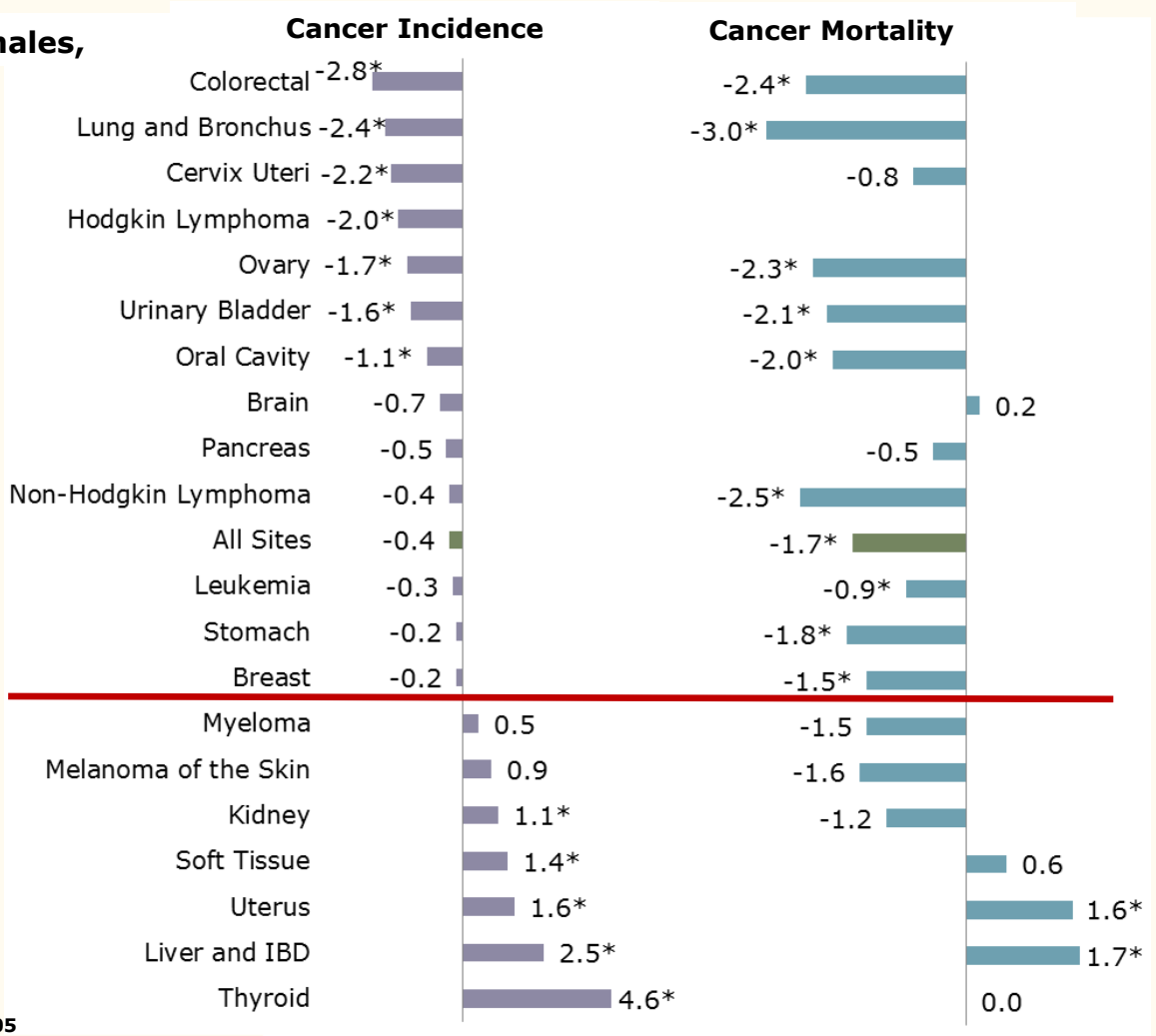

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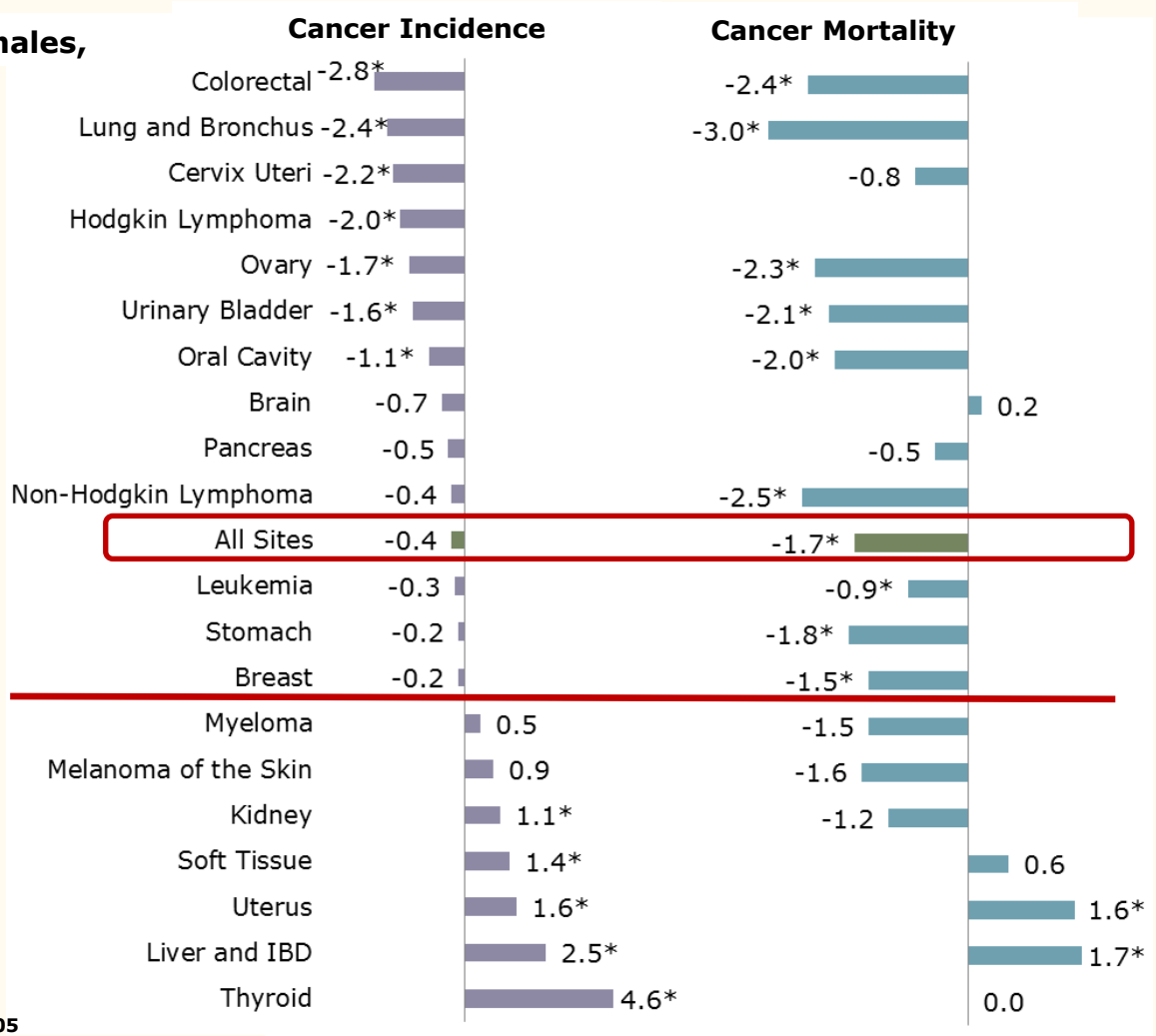

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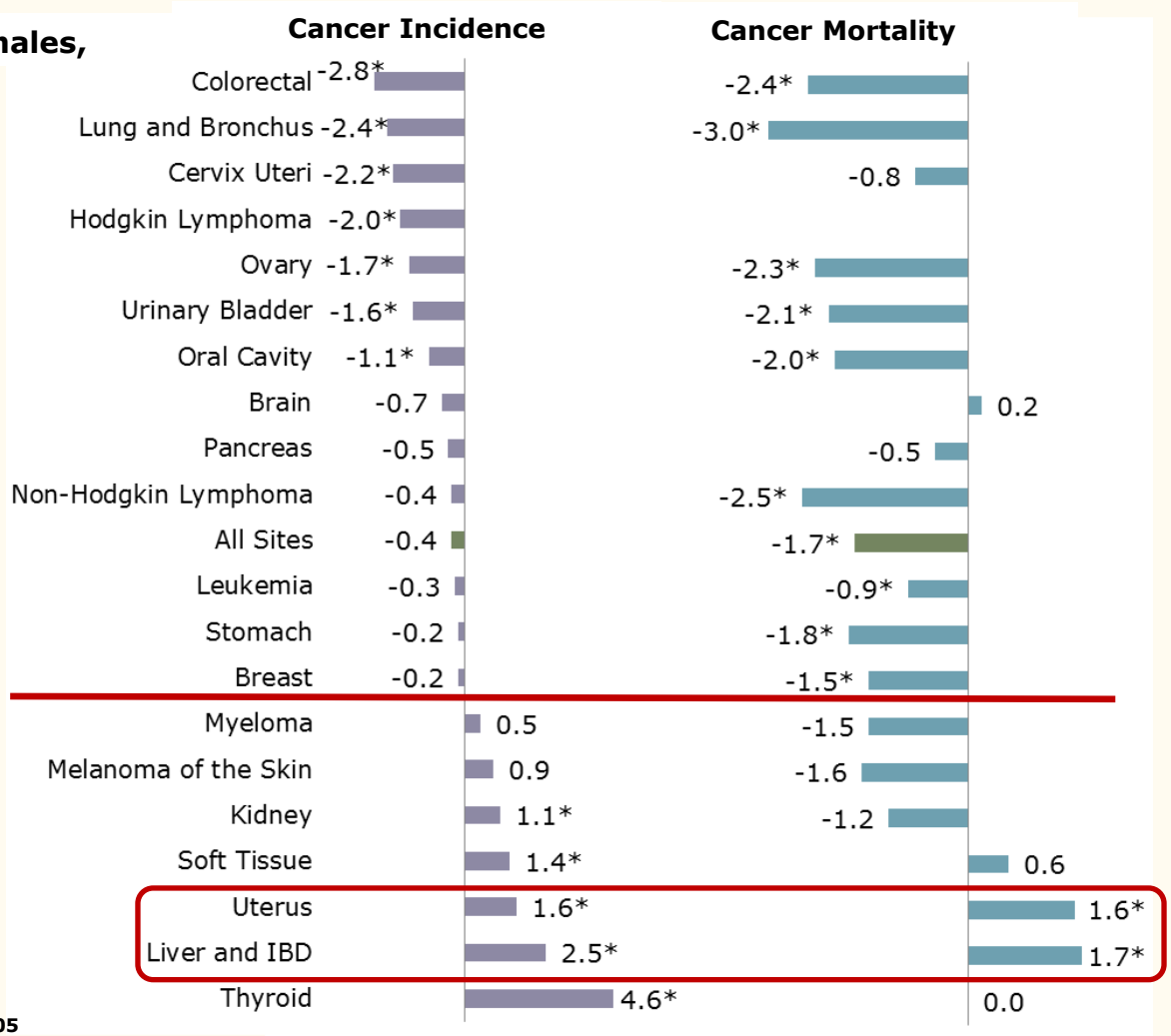

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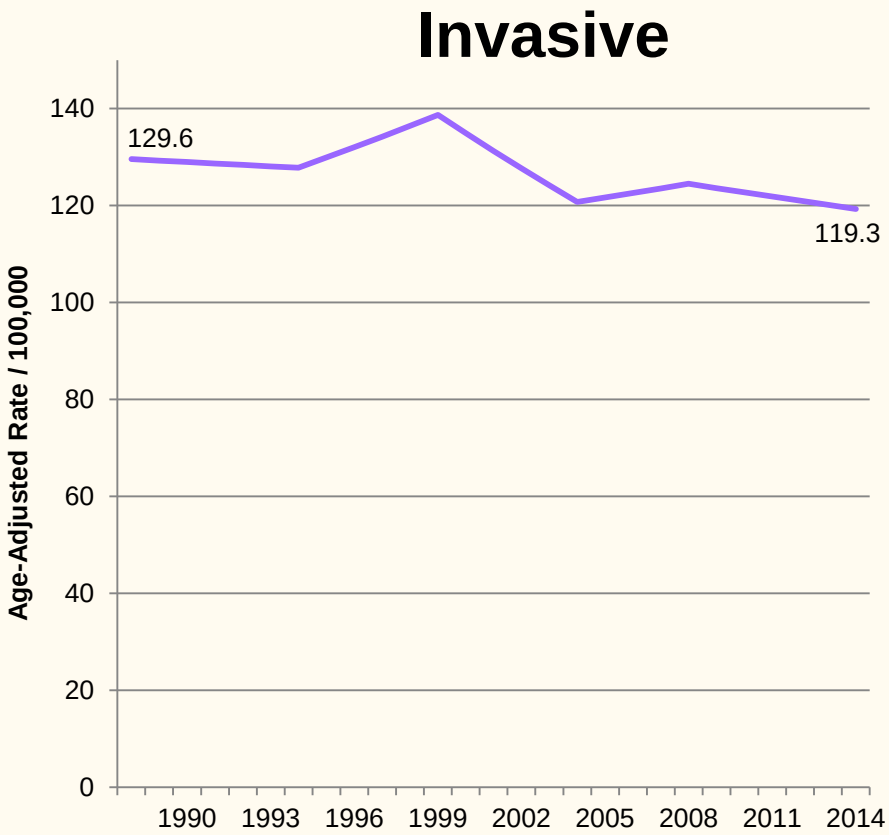
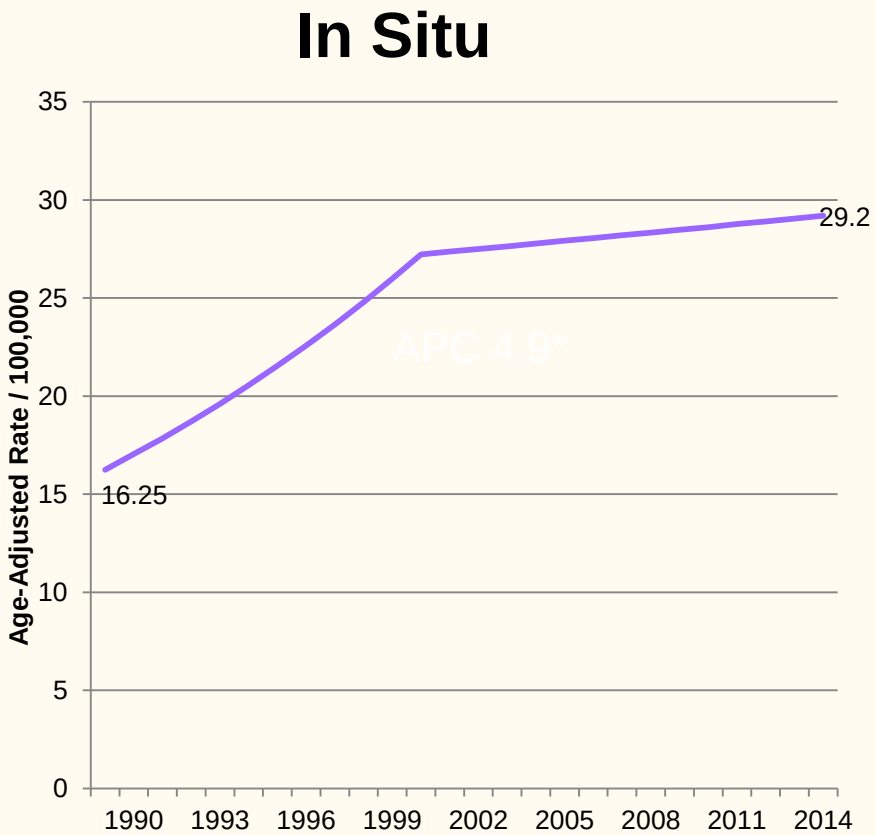
Trends in California

Incidence: 1988-2014
Mortality: 1970-2014

Breast
Prostate
Colorectal
Lung

Breast Cancer Incidence Trends, CA 1988-2014





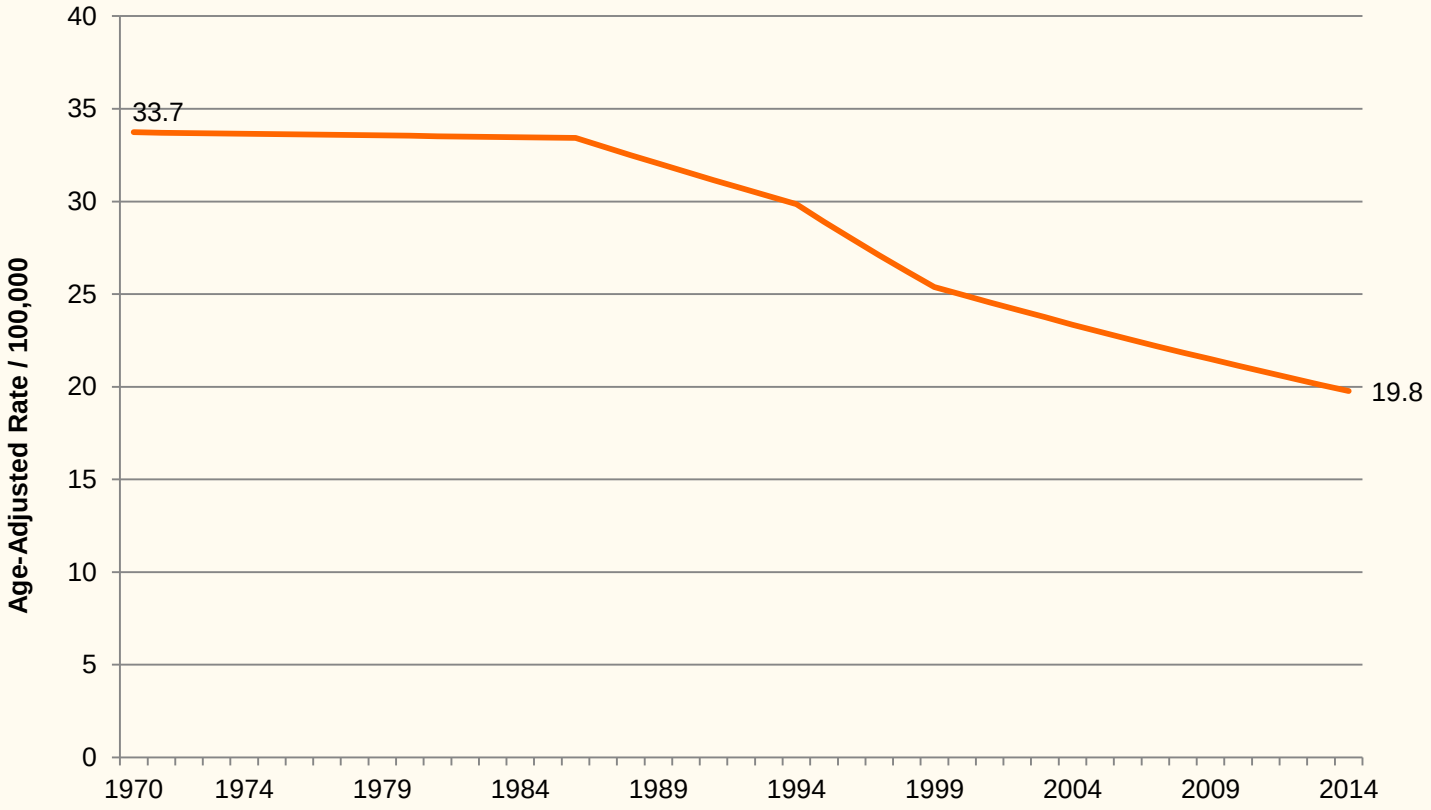
Interpreting trends: Invasive breast cancer

- Slow increase in incidence until 2000: not well understood, probably multi-factorial
- Rapid decrease in 2002 after drop in hormone replacement therapy use (women's health study)
- Rates stable after 2004 (still lower than in 1988)
- **Asian/Pacific Islanders: only group with steady increase in incidence**

Interpreting trends: In Situ breast cancer

- Fast increase in rates: screening
- Increase no longer significant after 2000

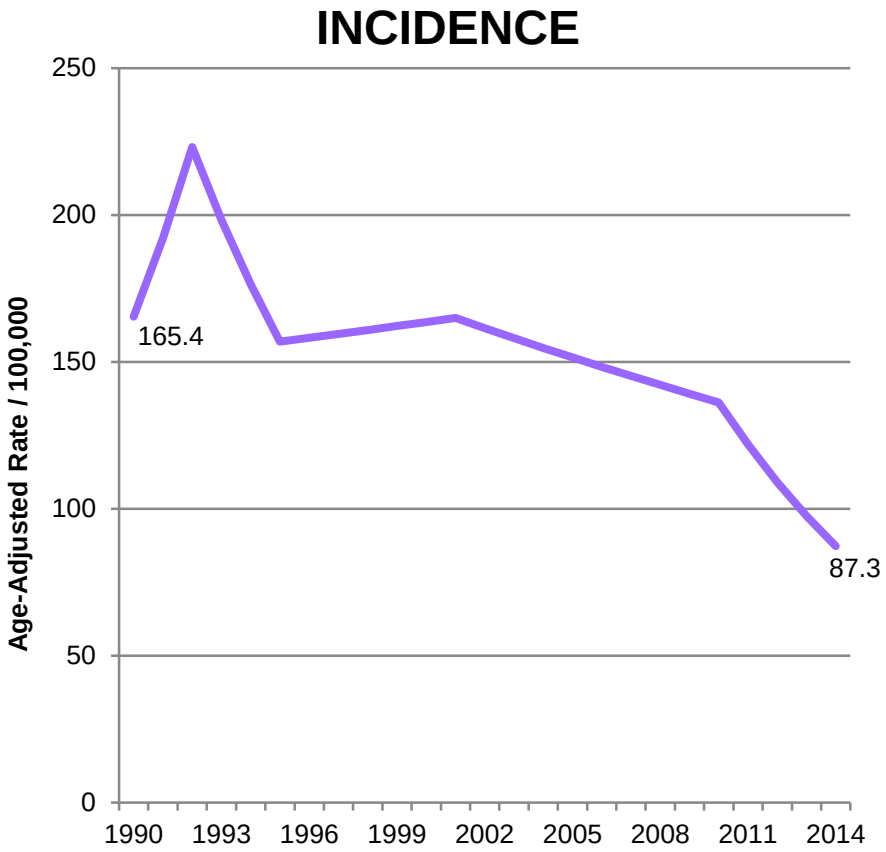
Breast Cancer Mortality Trends: CA, 1970-2014

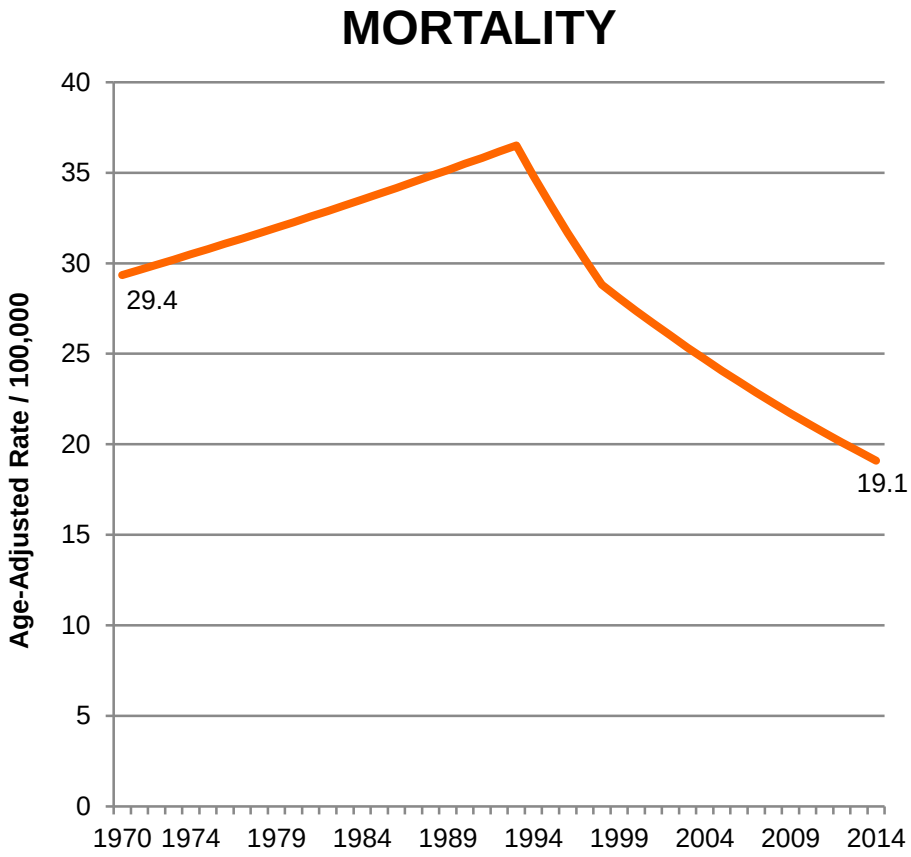


Interpreting Trends: Mortality

- **Mortality: 36% decrease since** 1986
  - Decrease in all racial/ethnic groups
  - Treatment + early detection

Prostate Cancer Trends: CA,1988-2014

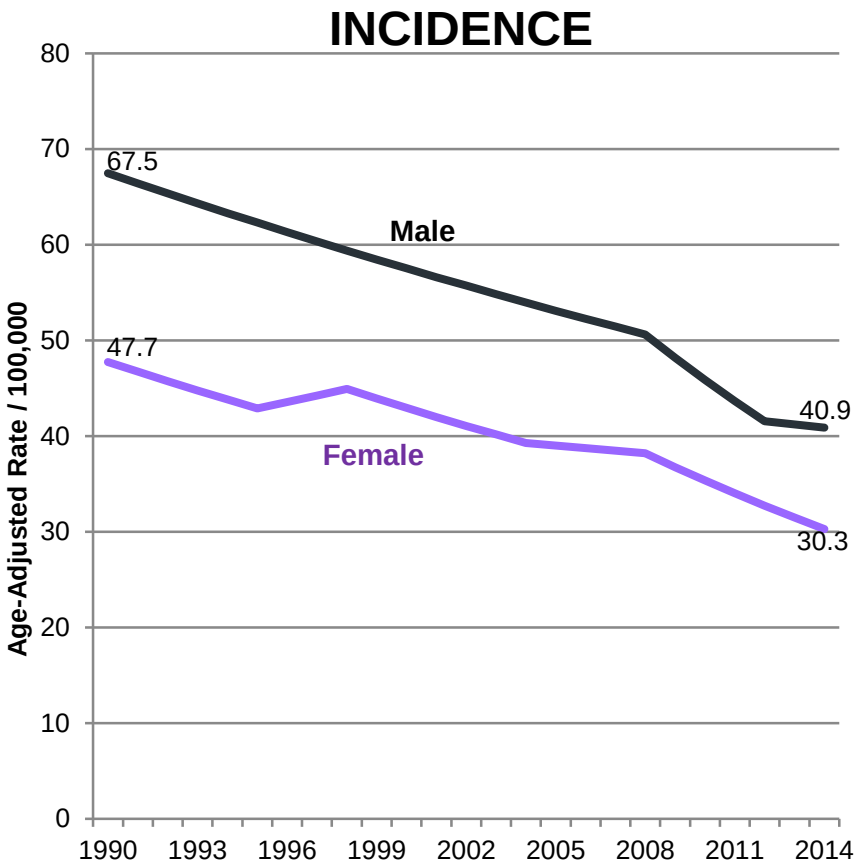


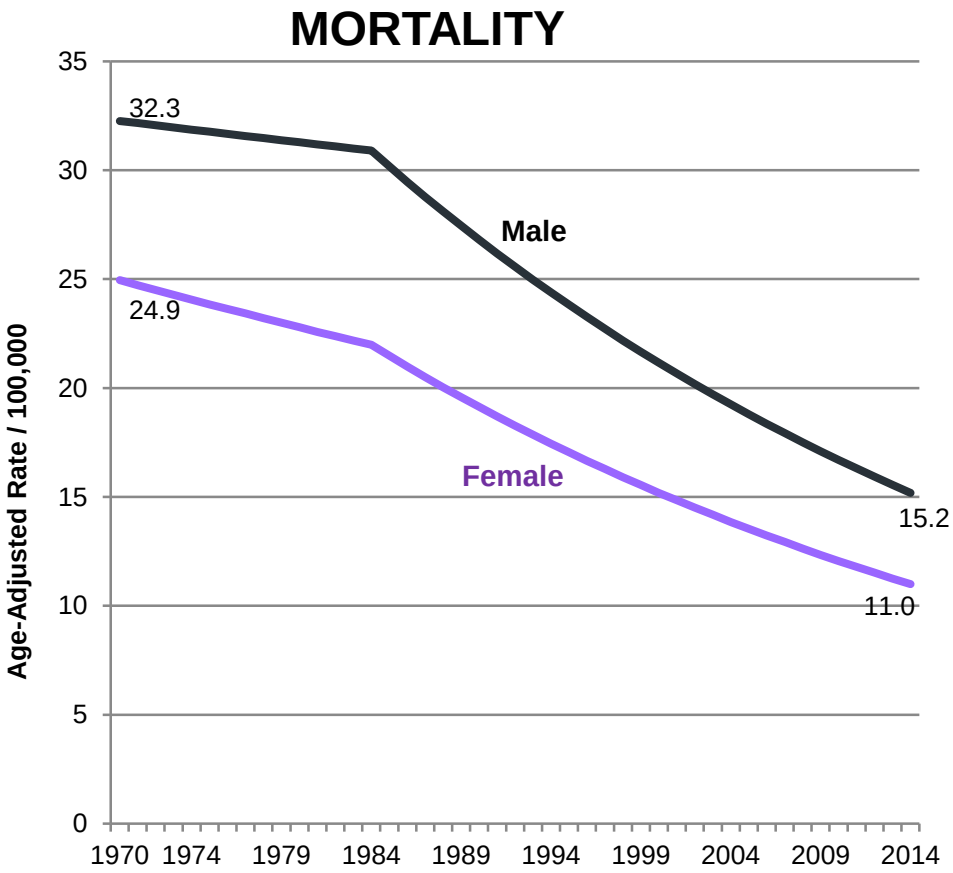


Interpreting prostate cancer trends

- Incidence peak in early 90s' consistent with introduction of screening (PSA) in population with high prevalence of undetected tumors
- Since early 2000: almost **50% decrease** in incidence (all groups)
- Since early 90s', **mortality decreased by almost 50%**: treatment, early-detection

Colorectal Cancer Trends: CA 1988-2014





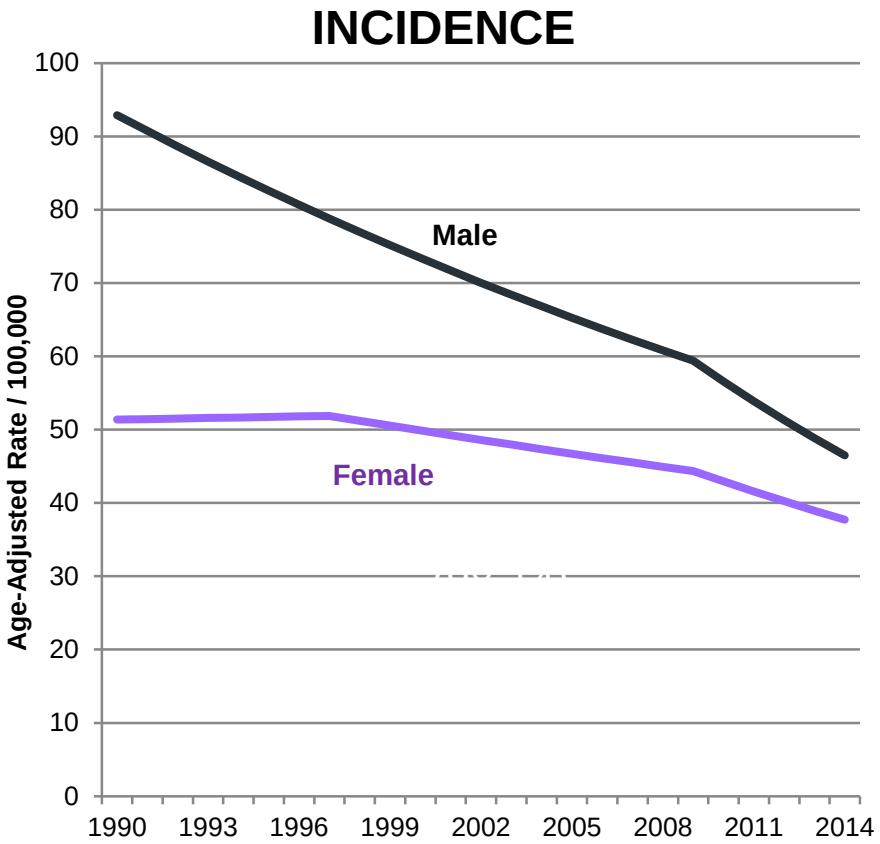
Colorectal Cancer Trends

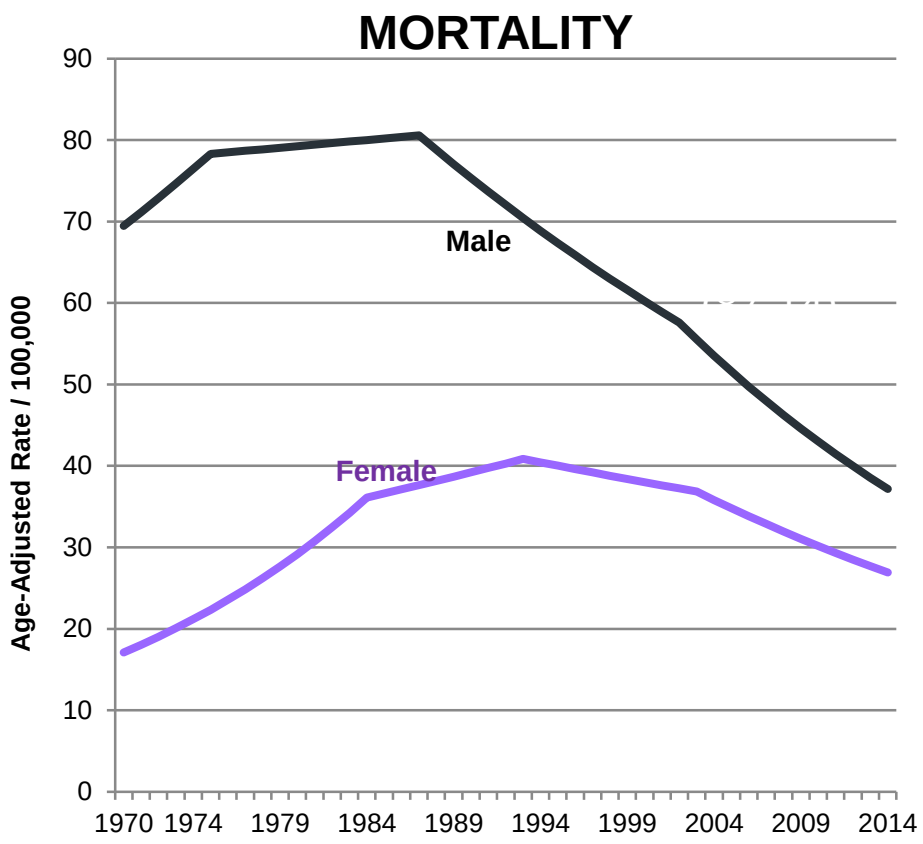
- Incidence decreased by about 40% (M and F)
- Sharper decrease in mortality (after mid 80s'): rates now 50% lower than in 1984

  Exception: Hispanic men!

- Trends consistent with screening effect : decrease in incidence + shift to earlier stage at diagnosis

Lung Cancer Trends: California, 1988-2014





Interpreting lung cancer trends

- Female lung cancer declined in mid-late 90s', faster decline after 2010 (CA earlier than rest of US)
- Male lung cancer incidence and mortality declining, tide changed in mid 80s'
- Decline in adult smoking prevalence in CA: 23.7% in 1988 to 11.7% in 2016

  CA: state with highest smoking in the 60s-70s
- BUT: SES & racial/ethnic disparities in smoking

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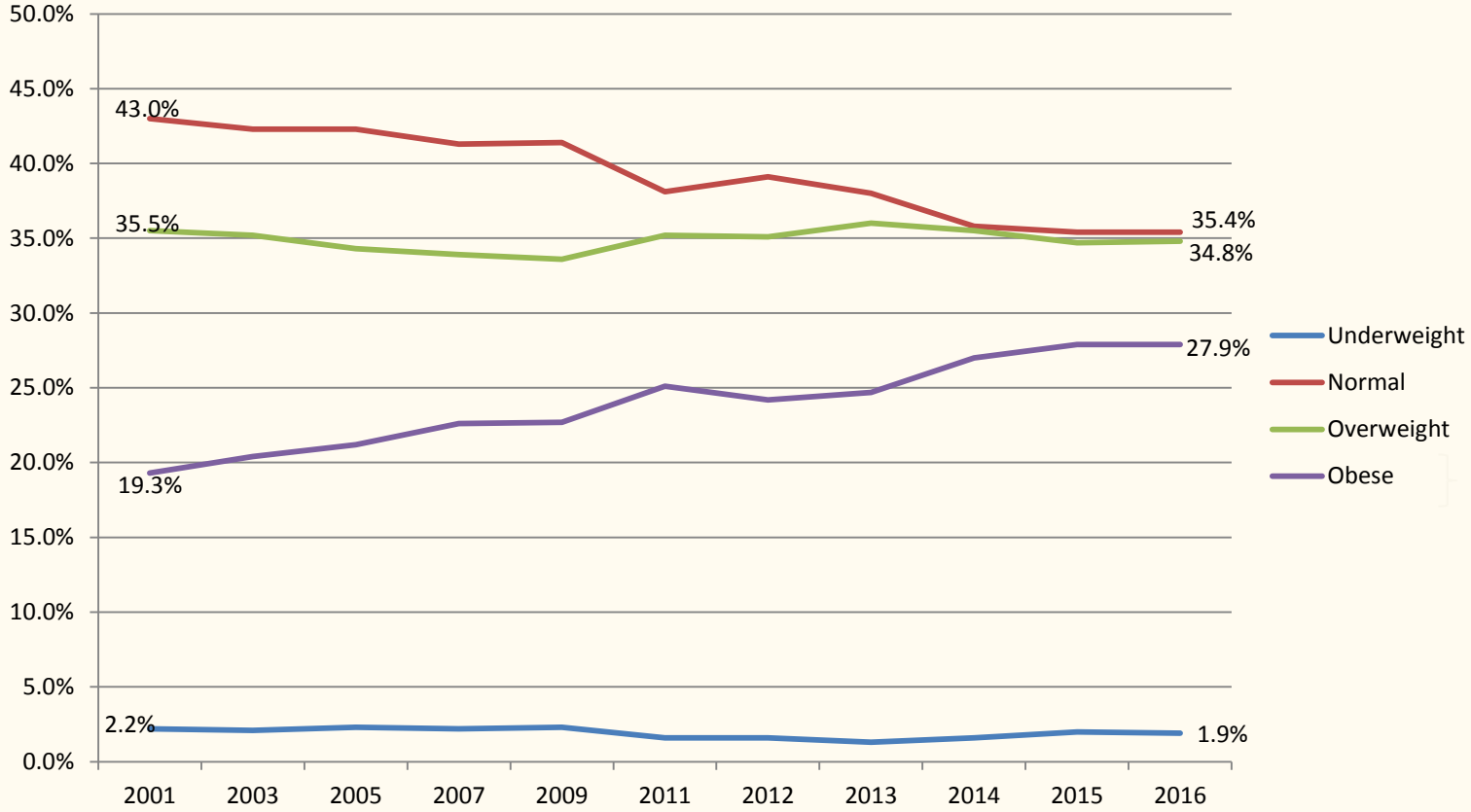
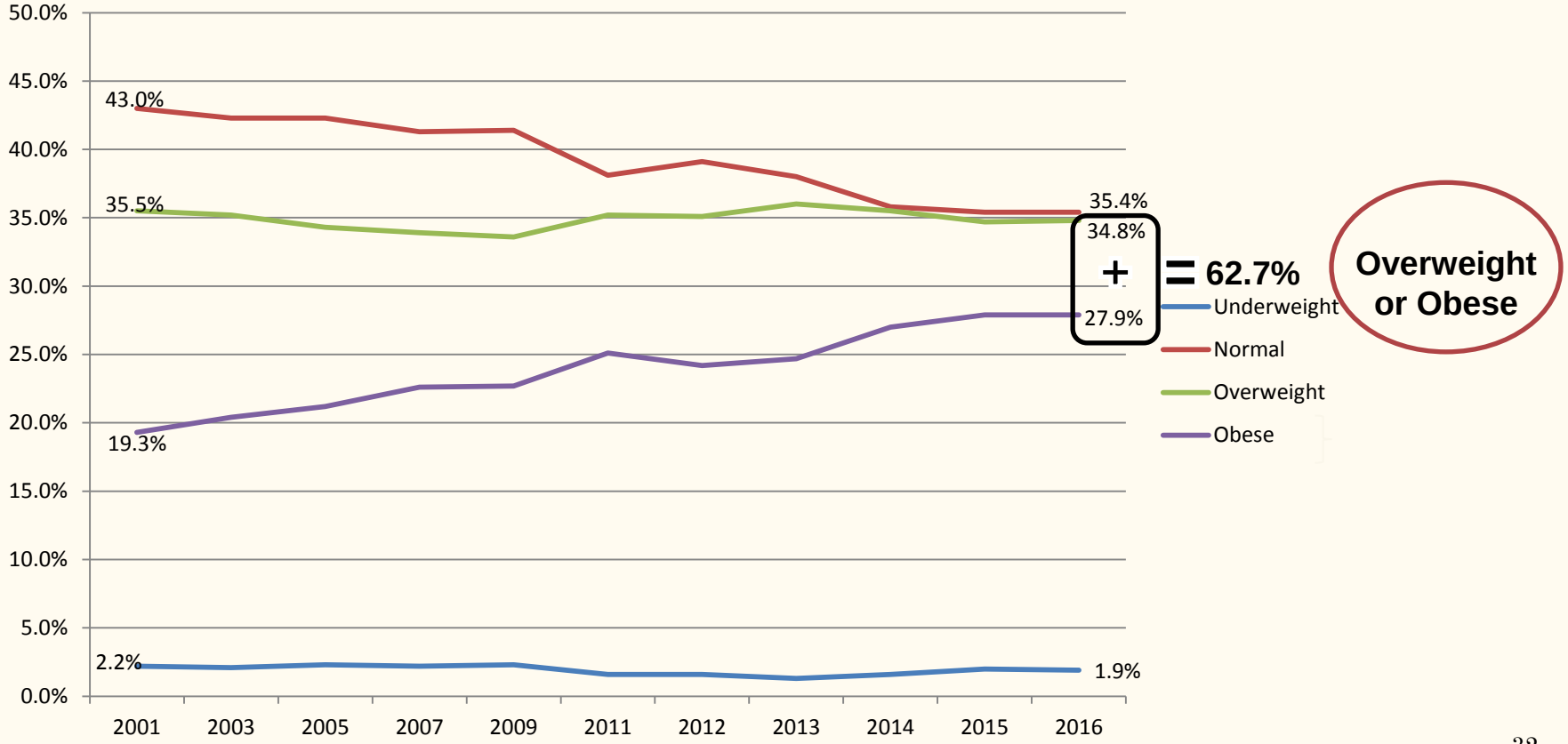
Body Mass Index Trends for California Adults



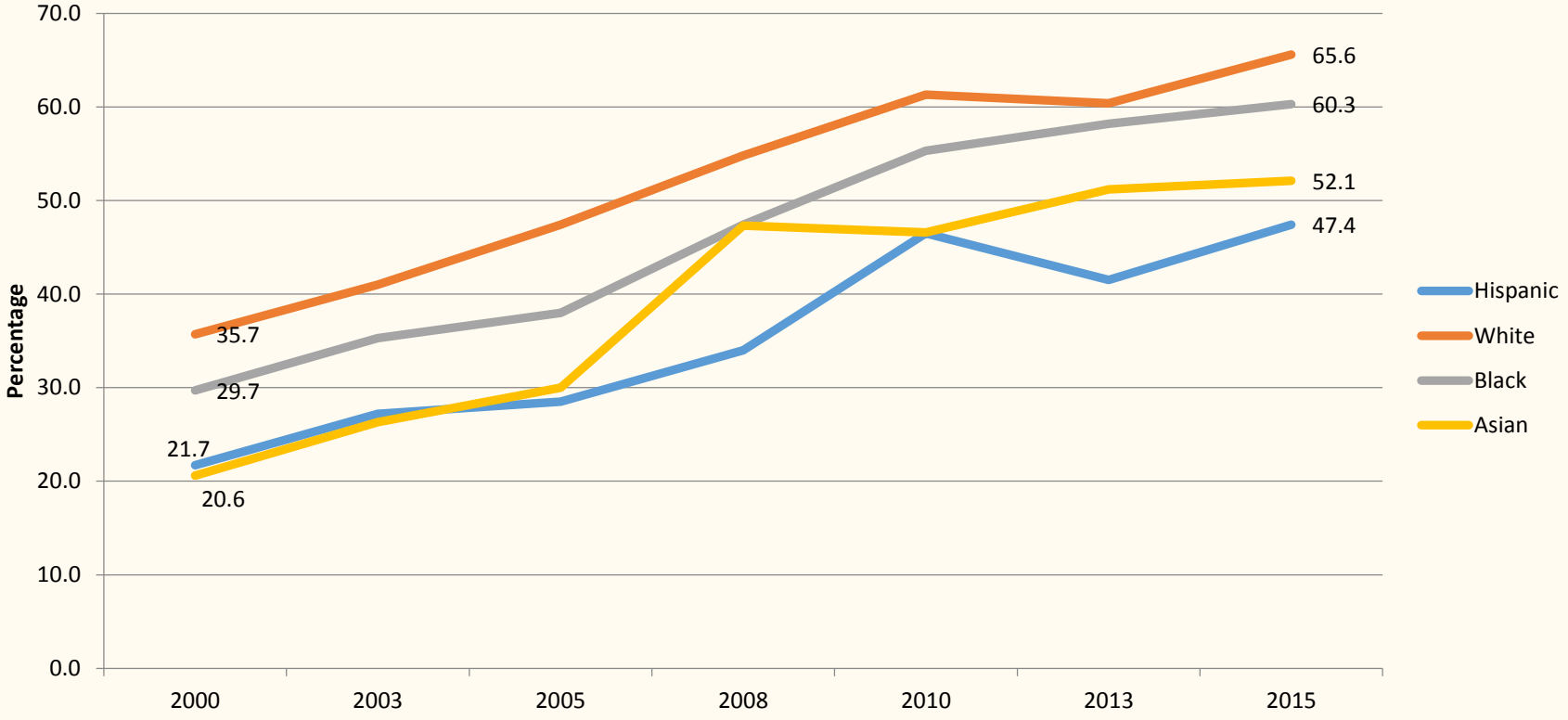
Source: CHIS

Body Mass Index Trends for California Adults



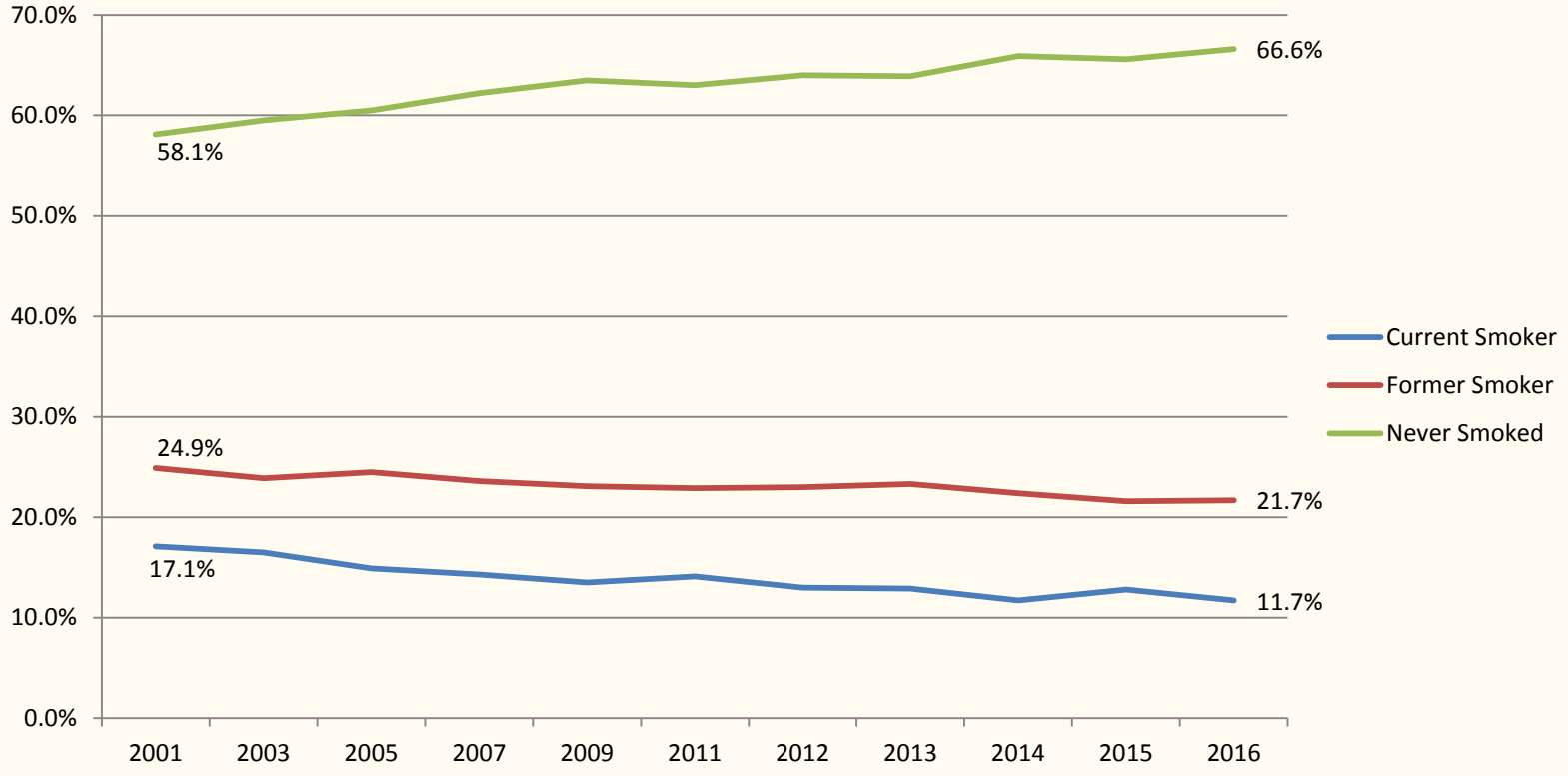
Source: CHIS

Use of colorectal screening tests by race/ethnicity, adults ages 50-75, U.S.



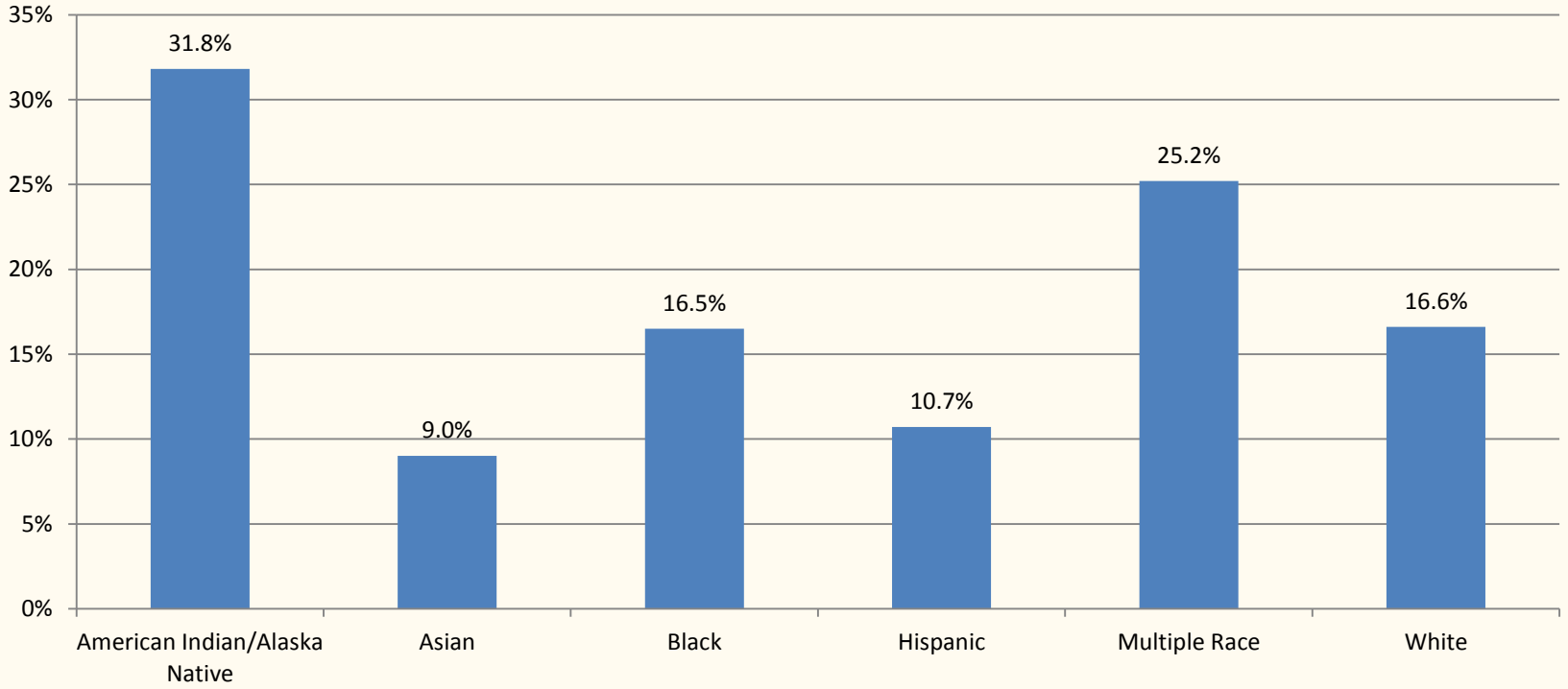
Source: NHIS

Smoking Status Trends Among California Adults



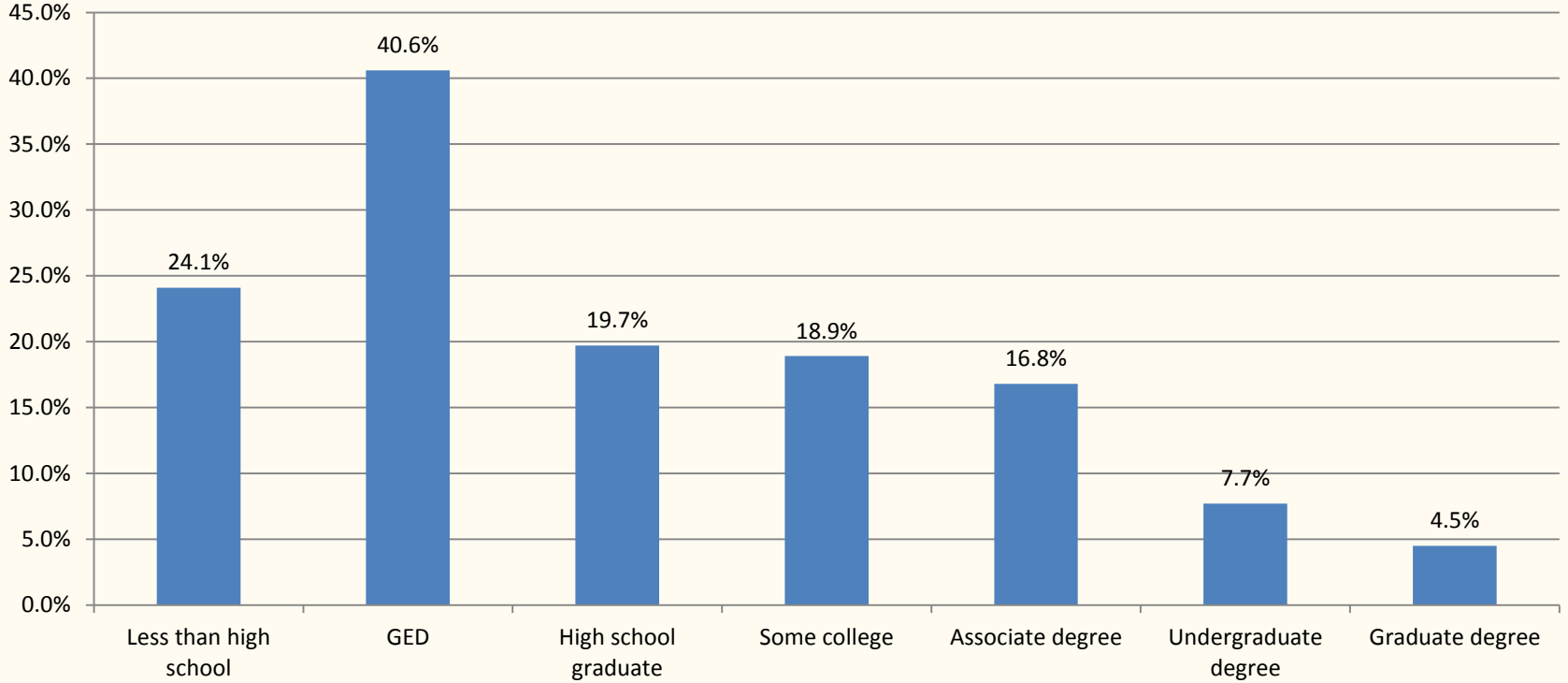
Source: CHIS

Cigarette smoking by race/ethnicity among U.S. adults, 2016



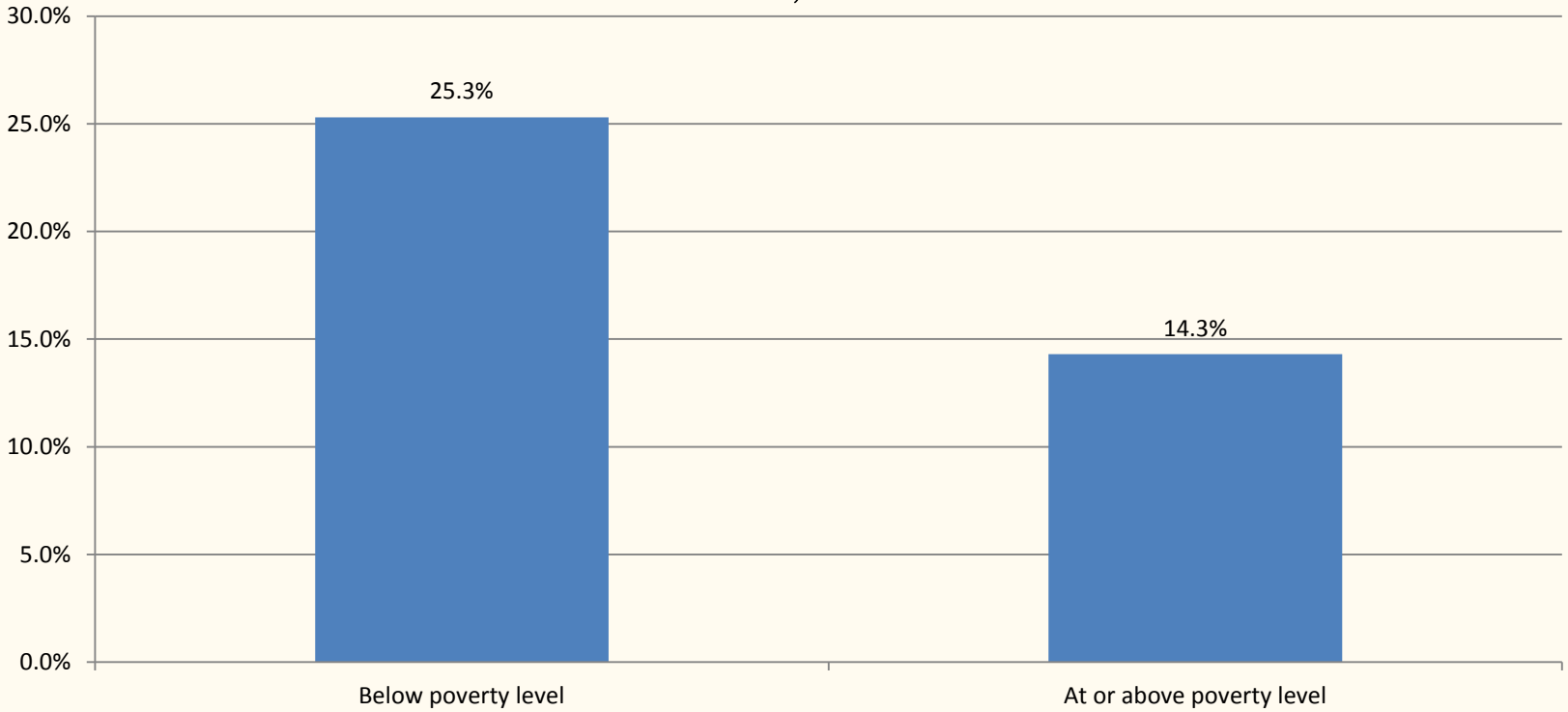
Source: CDC

Cigarette smoking by education among U.S. adults, 2016



Source: CDC

Cigarette smoking by poverty level among U.S. adults, 2016



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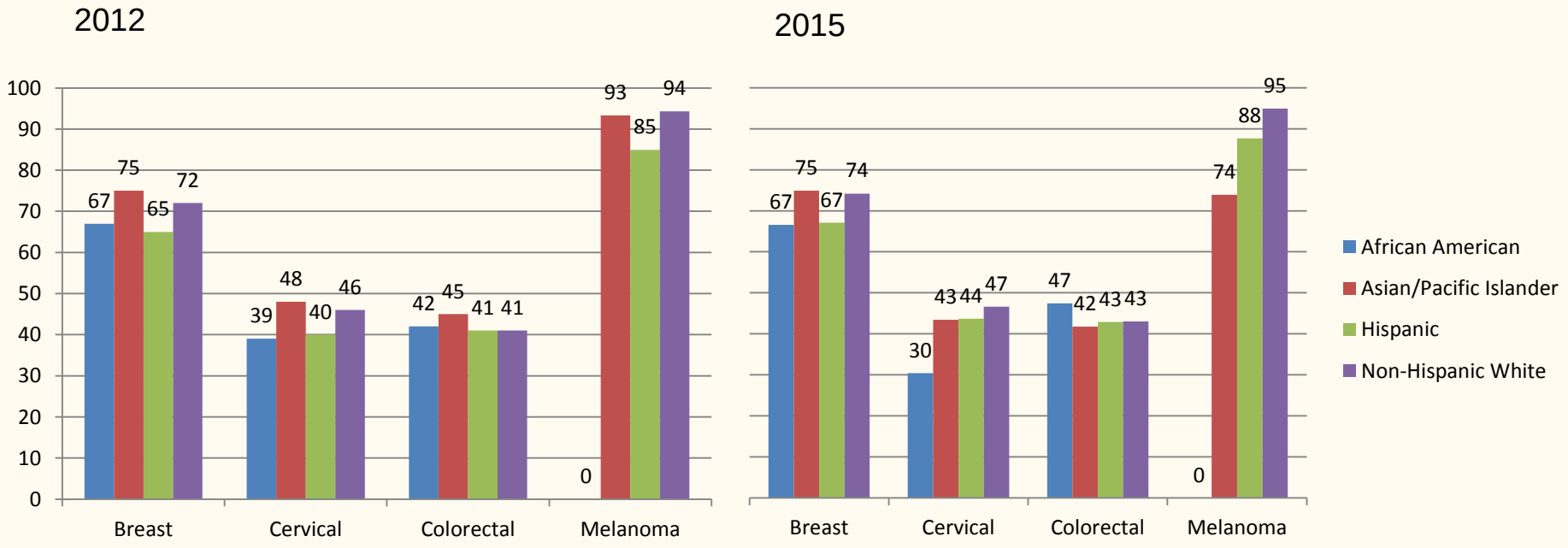
Percent of cancer cases diagnosed at early stage, by racial/ethnic group, California

Females



Early stage=in situ or localized

Percent of cancer cases diagnosed at early stage, by racial/ethnic group, California

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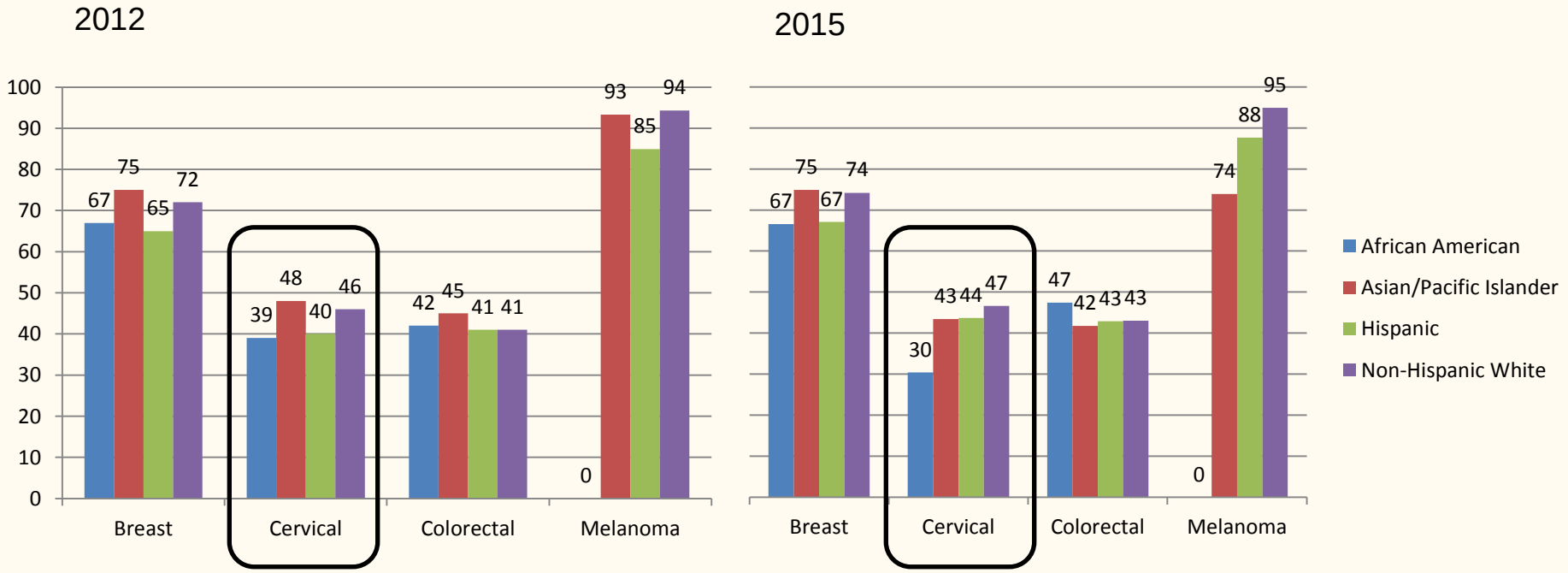

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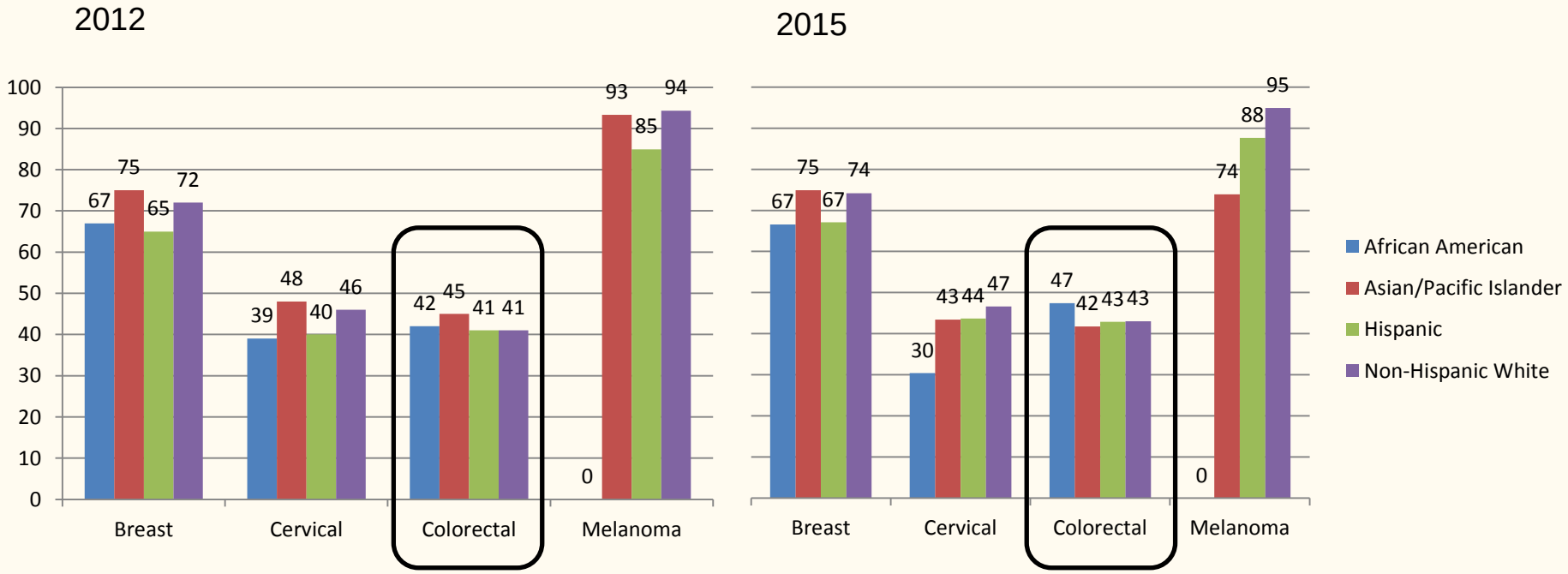

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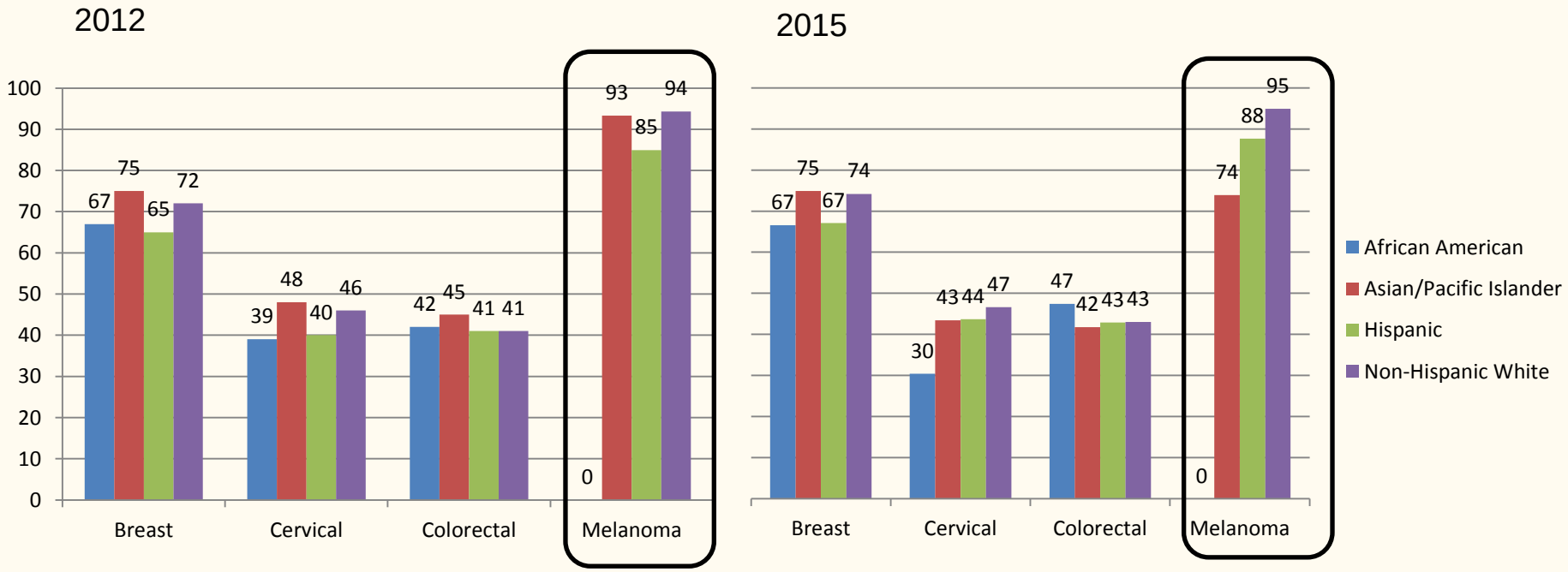

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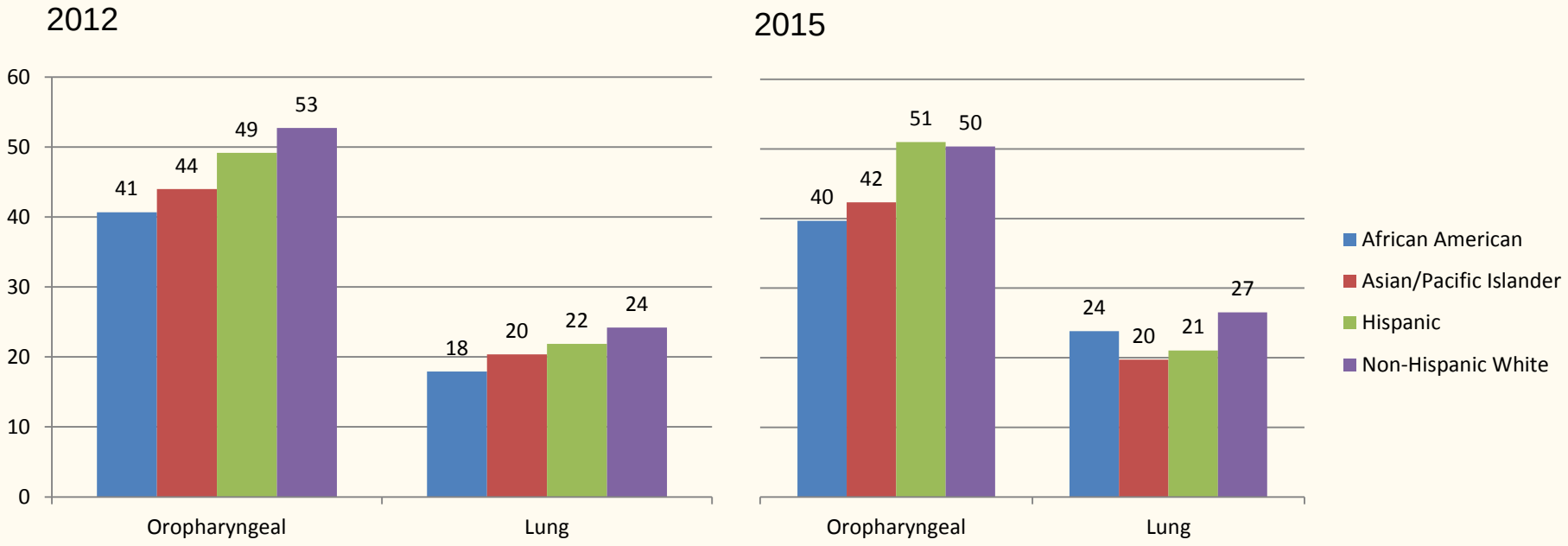

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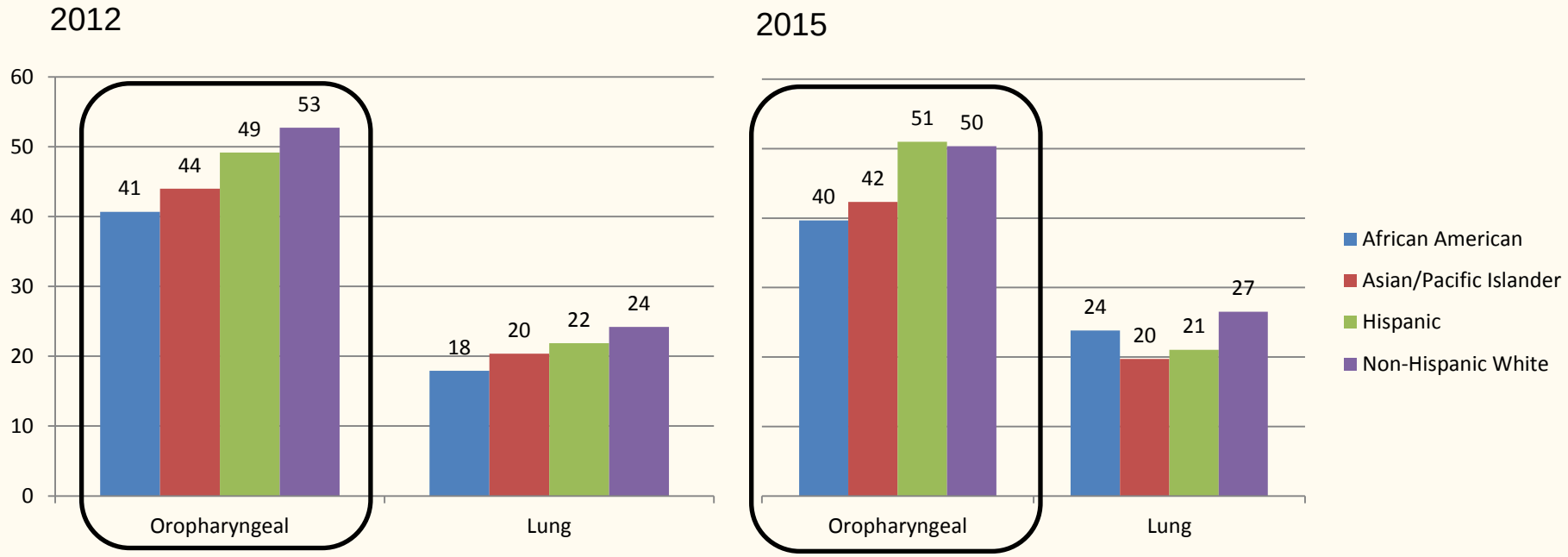

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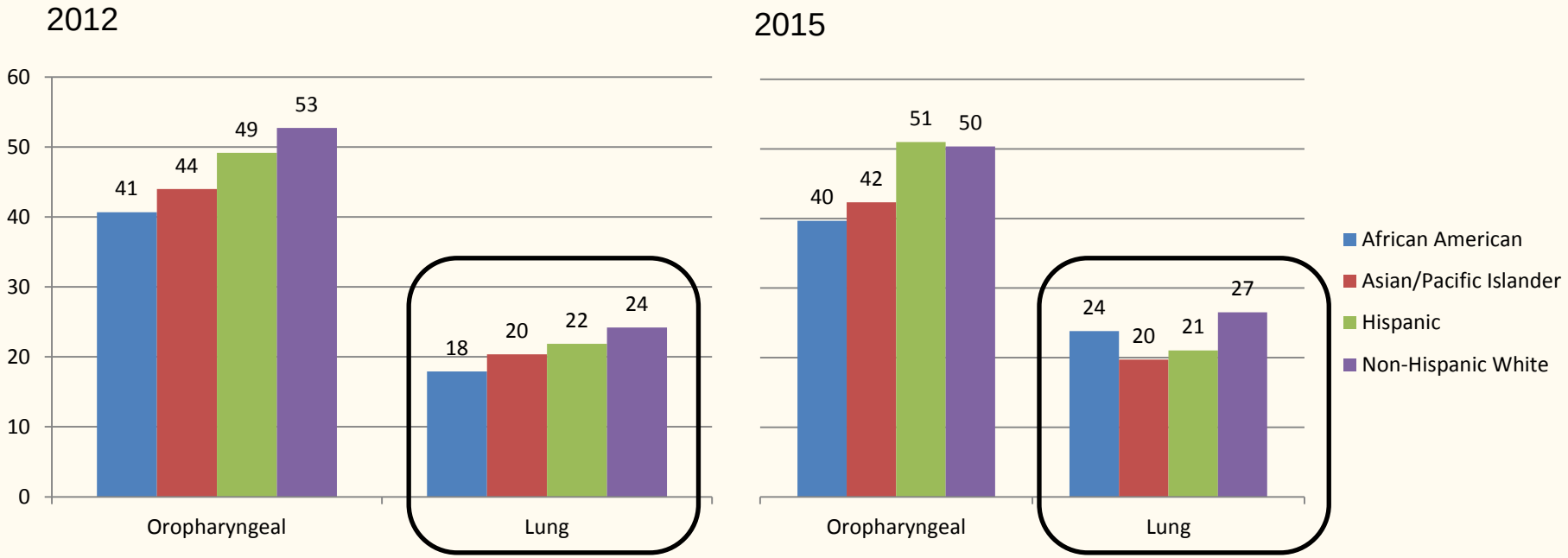

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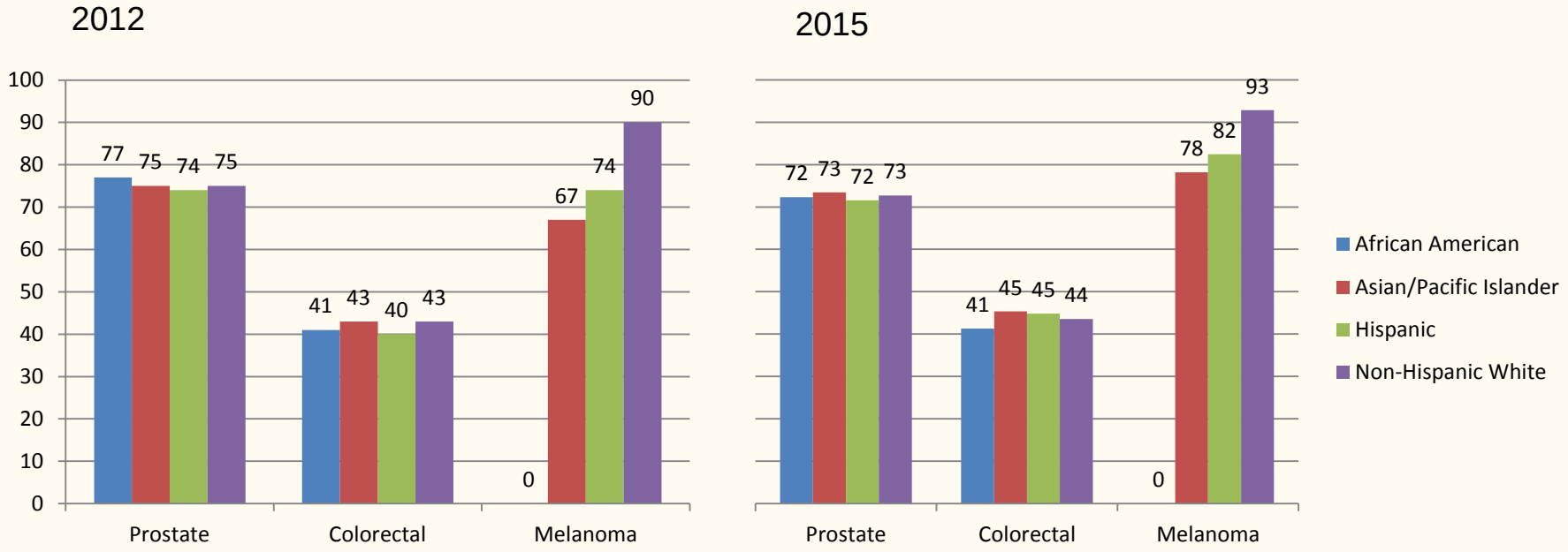

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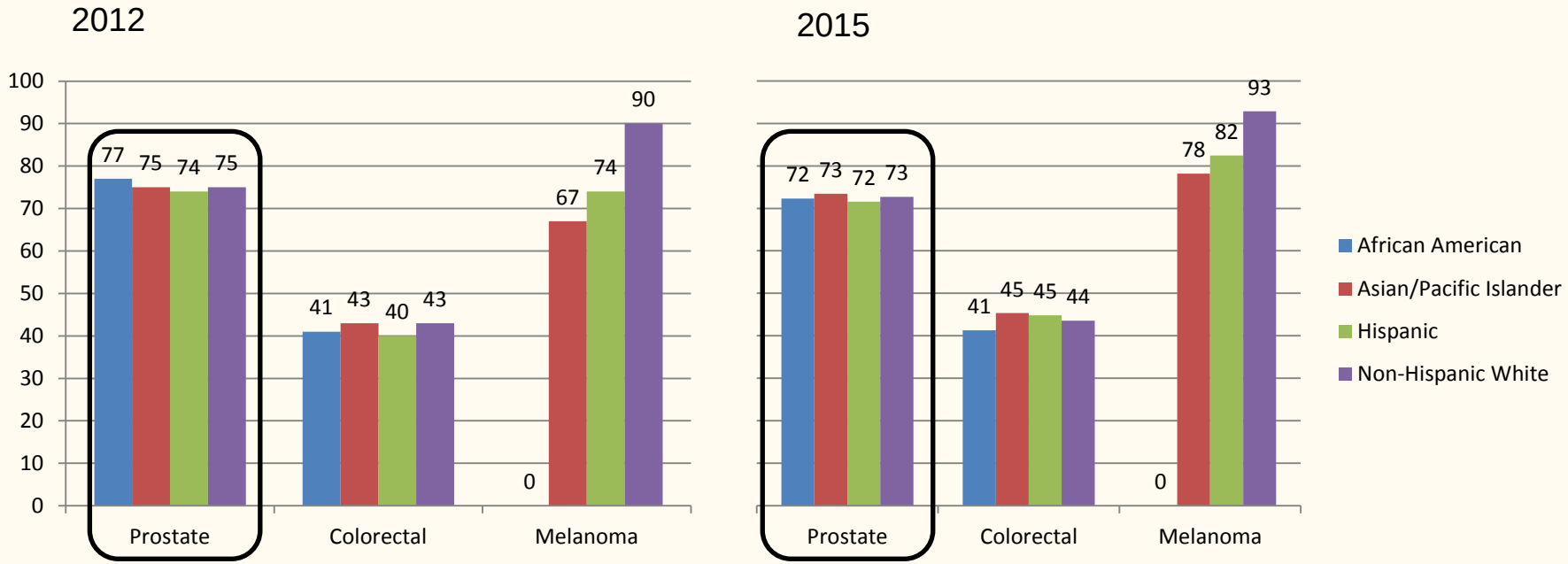

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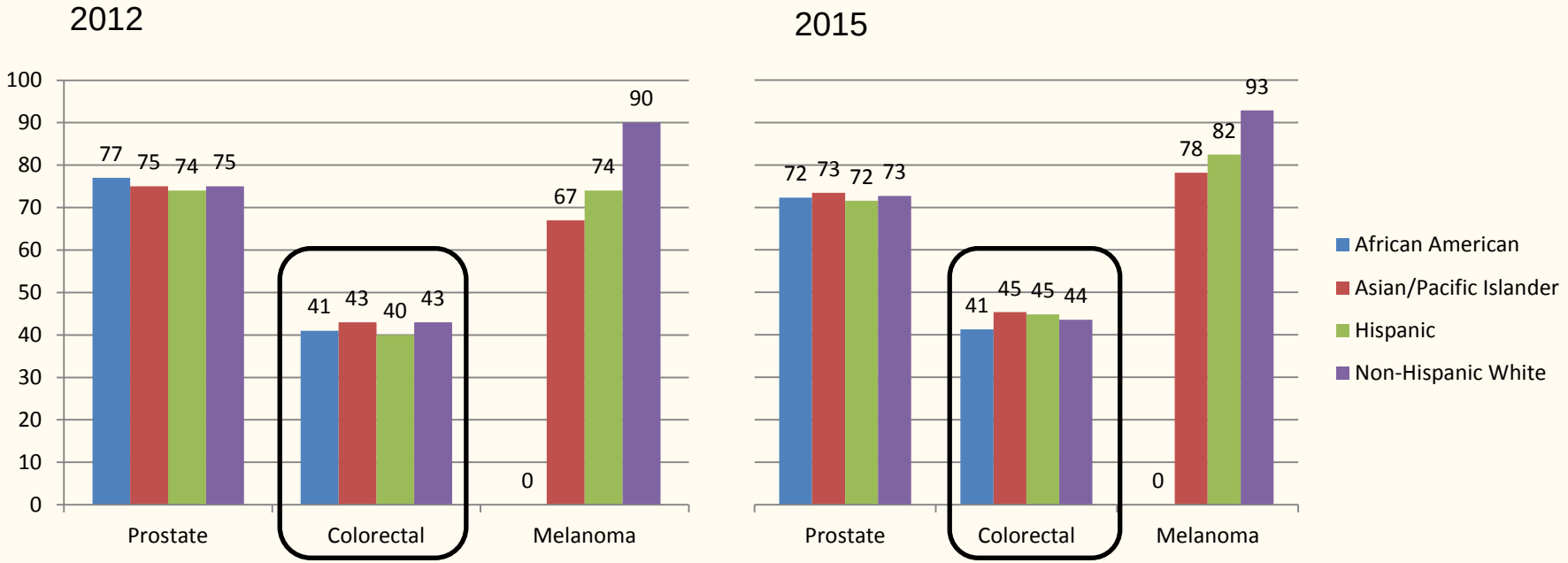

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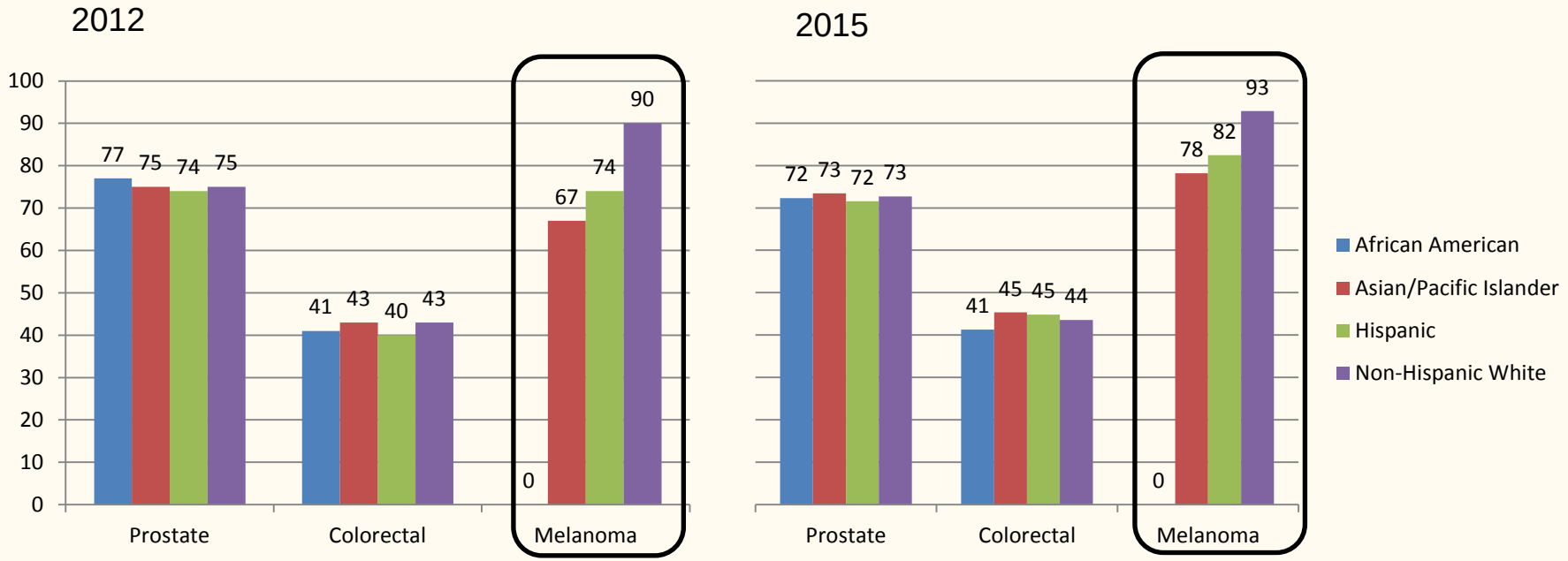

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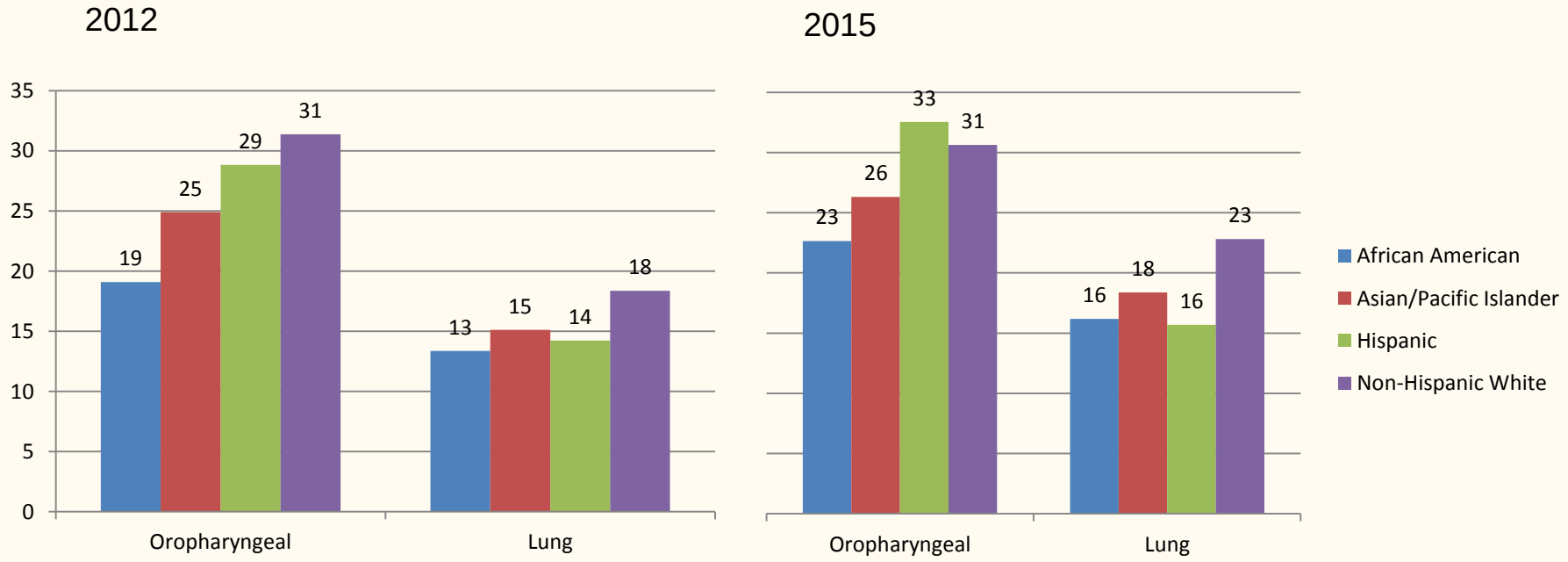

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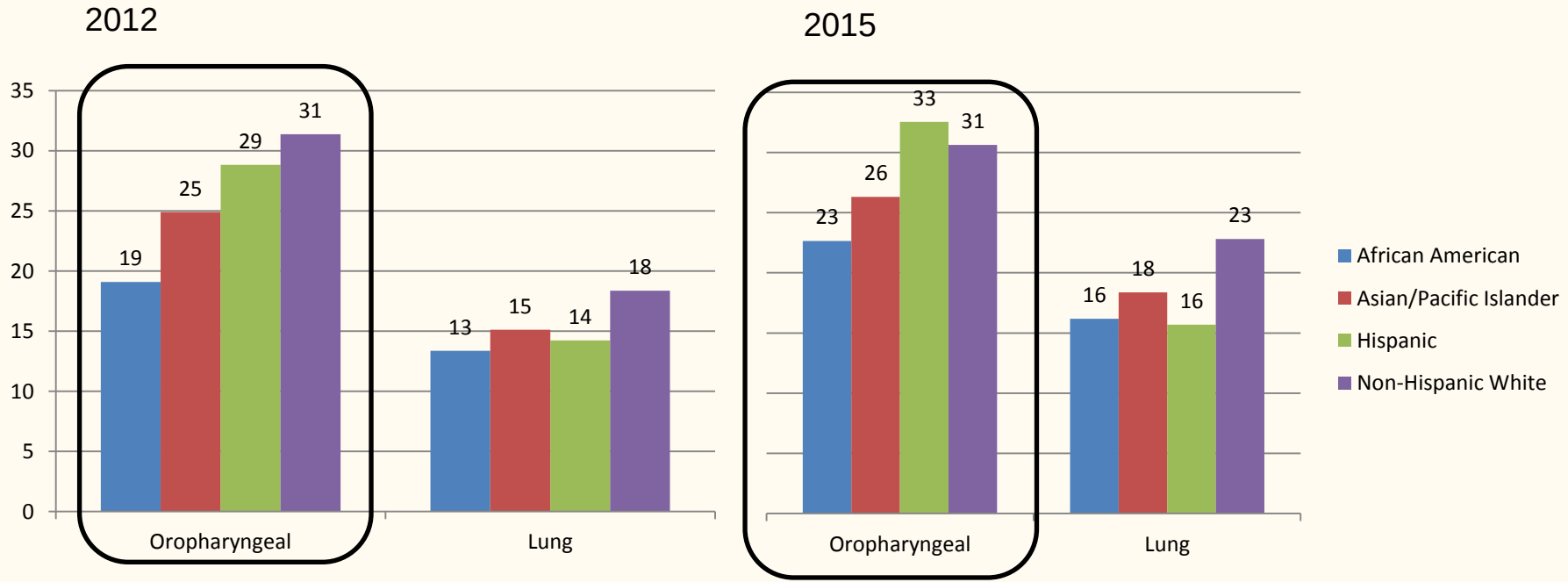

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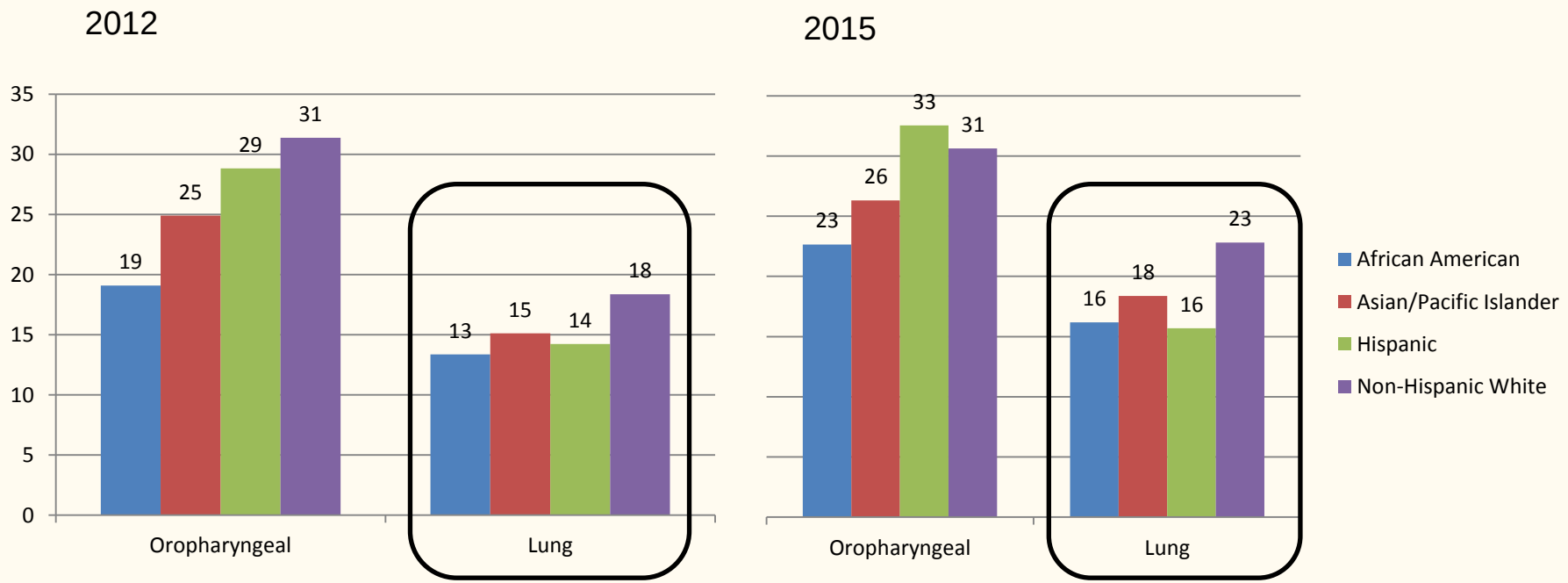
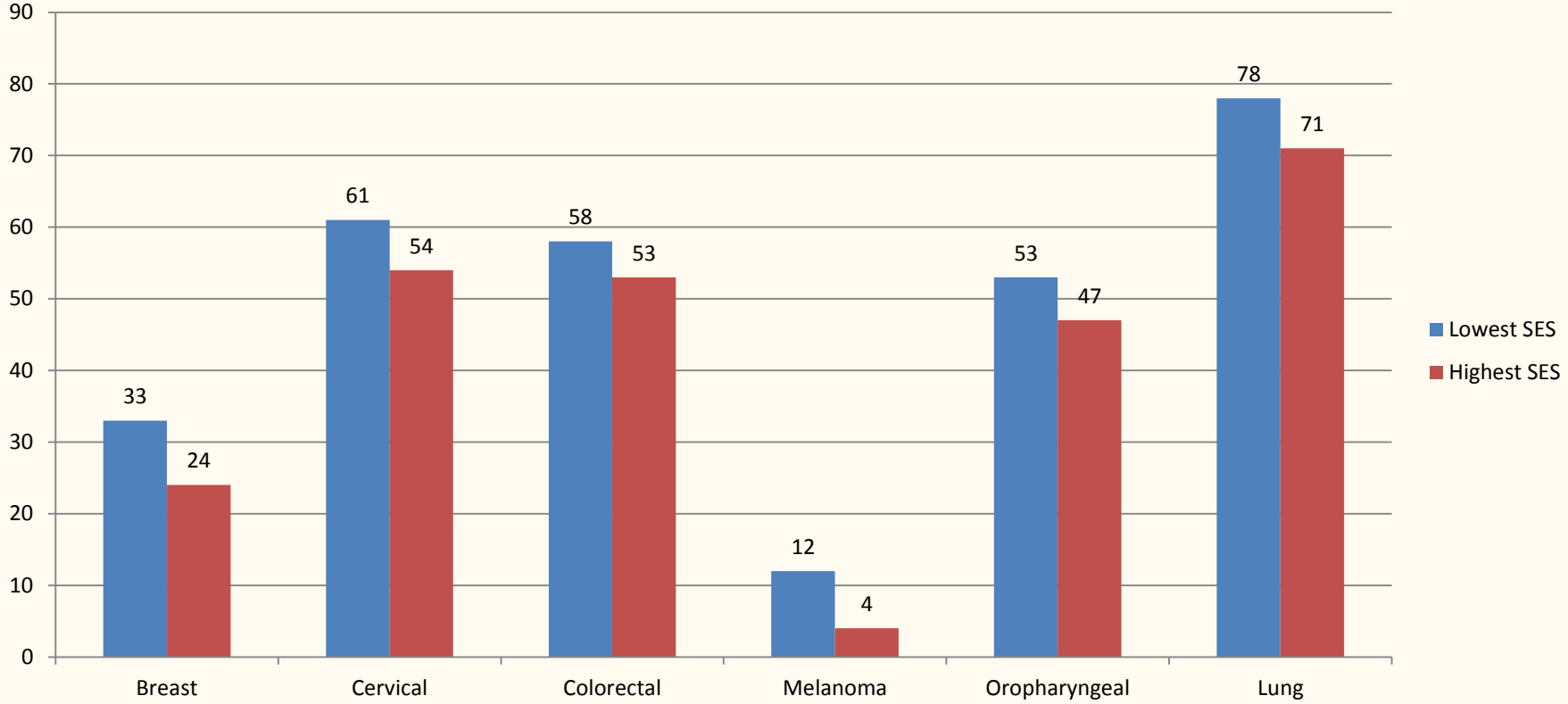


Early stage=in situ or localized

Percent of cancer cases diagnosed at late stage, by socioeconomic status (SES), California

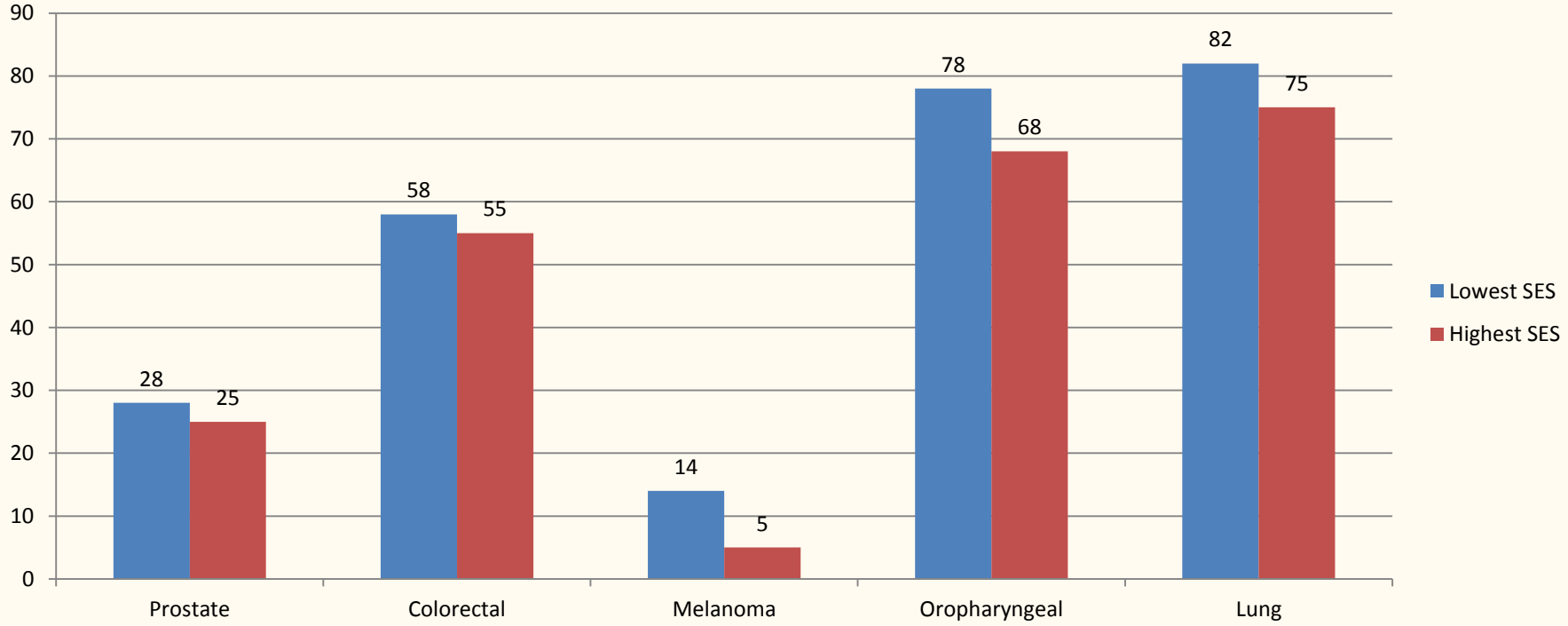
Females, 2015



Late stage=regional or distant

Percent of cancer cases diagnosed at late stage, by socioeconomic status (SES), California

Males, 2015



Late stage=regional or distant

Outline

1. Incidence and Mortality
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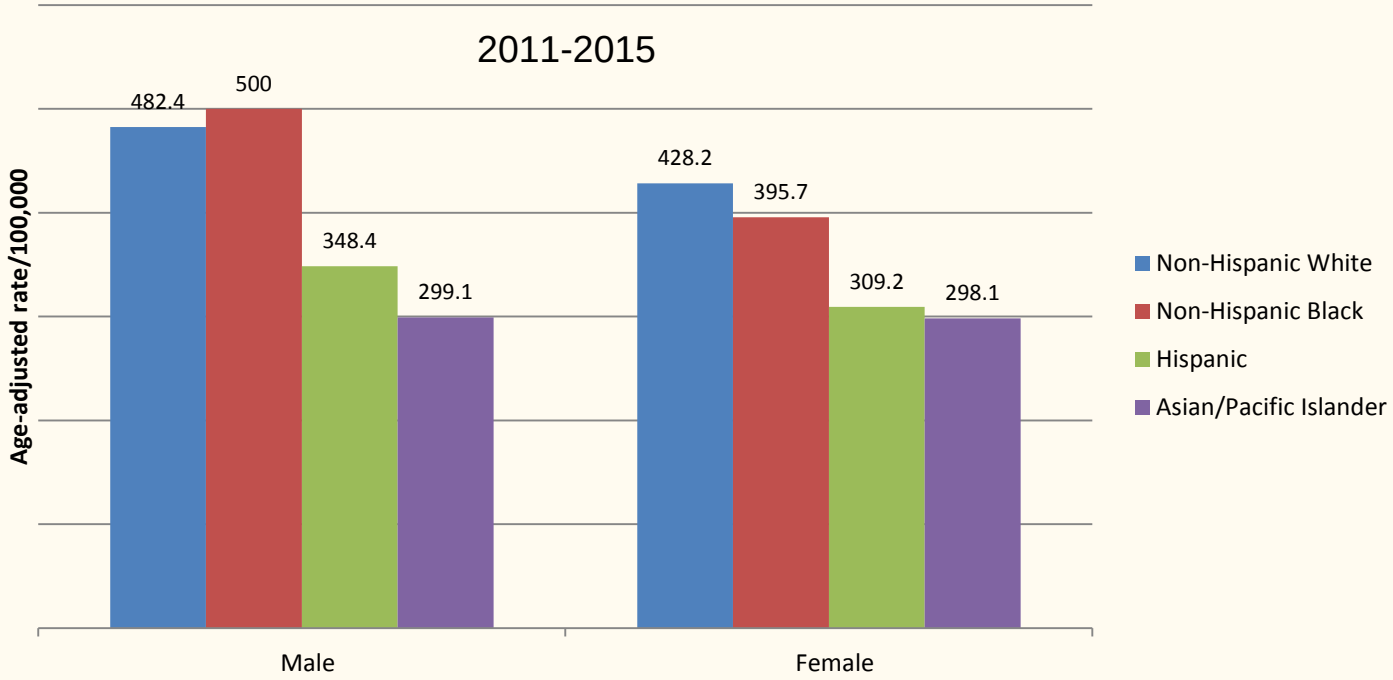
California's Comprehensive Cancer Control Plan, 2011-2015
Did we meet our targets?

Objective	Target for 2015	2015
The Cancer Burden: Objective 1 Decrease combined cancer incidence	392.4	384.0
The Cancer Burden: Objective 2 Decrease combined cancer mortality	148.6	142.1

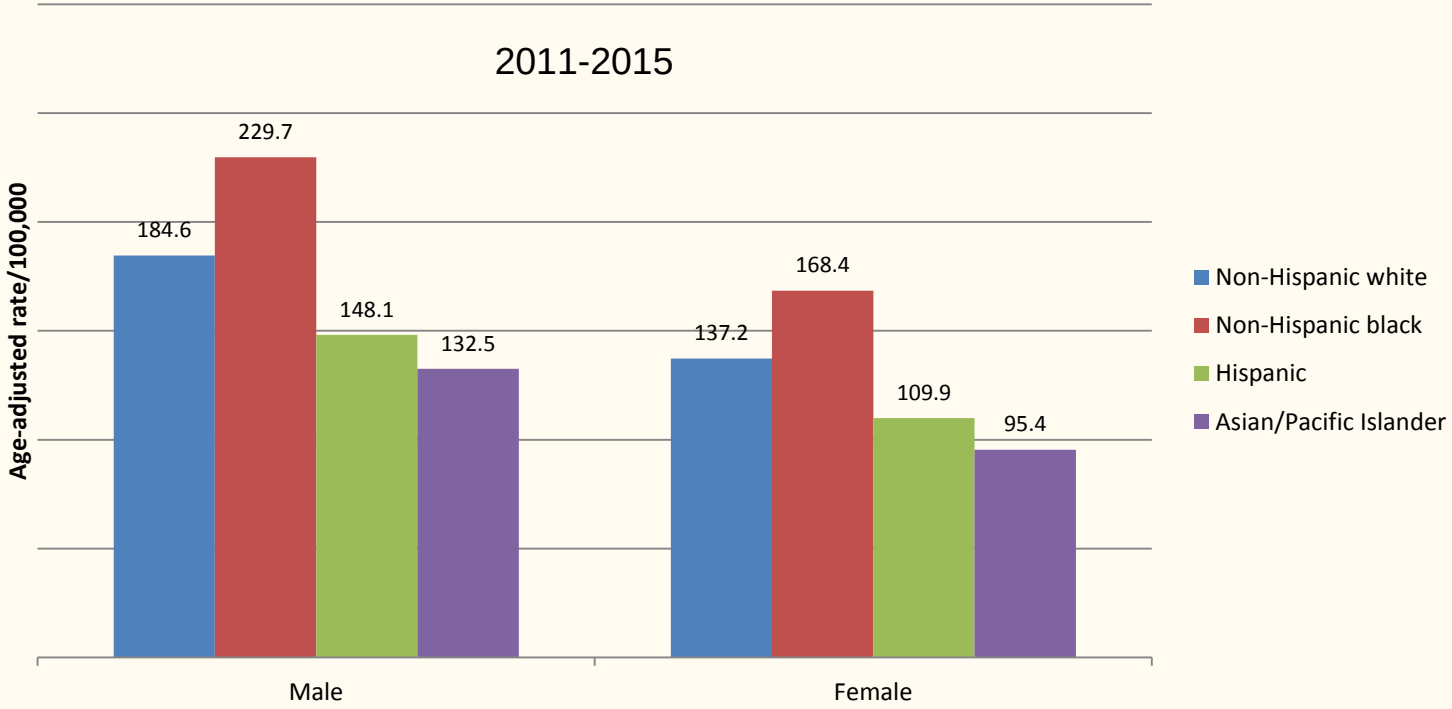
Incidence and mortality rates are per 100,000

Five-year, age-adjusted incidence rates by race/ethnicity and sex, all cancers



Decreases in all groups since 2008-2012, more pronounced in males

Five-year, age-adjusted mortality rates by race/ethnicity and sex, all cancers



Decreases in all groups since 2008-2012

California's Comprehensive Cancer Control Plan, 2011-2015
Did we meet our targets?

Objective	Target for 2015	2015
Reduce the breast cancer mortality rate	19.3	19.4
Reduce the cervical cancer incidence rate	7.0	7.0
Reduce the colorectal cancer mortality rate	12.0	12.9
Reduce the incidence of melanoma	22.2	22.3
Reduce the mortality rate due to melanoma	2.3	2.2
Reduce the mortality rate of ovarian cancer	6.9	6.9
Decrease the mortality rate for prostate cancer	19.5	19.4
Decrease the mortality rate for prostate cancer among African American males	46.4	43.4

Rates are per 100,000

California's Comprehensive Cancer Control Plan, 2011-2015
Did we meet our targets?

Objective	Target for 2015	2015
Breast Cancer: Objective 2: Increase early diagnoses of breast cancer (in situ and localized)	89%	72.1%
Colorectal Cancer: Objective 2: Decrease late-stage diagnoses of CRC (Regional and Distant)-including in situ in the total	40%	56.1%
Colorectal Cancer: Objective 3: Decrease late-stage diagnoses of CRC for African Americans and Asian/Pacific Islanders-including in situ in the total	AA-41.2% API-41.4%	AA-55.7% API-56.4%
Melanoma: Objective 1: Decrease late-stage diagnoses of melanoma (regional and distant)- including in situ in the total	5.2%	6.1%
Ovarian Cancer: Objective 1: Decrease distant-stage diagnoses of ovarian cancer	55.4%	52.9%
Excluded unstaged cases		

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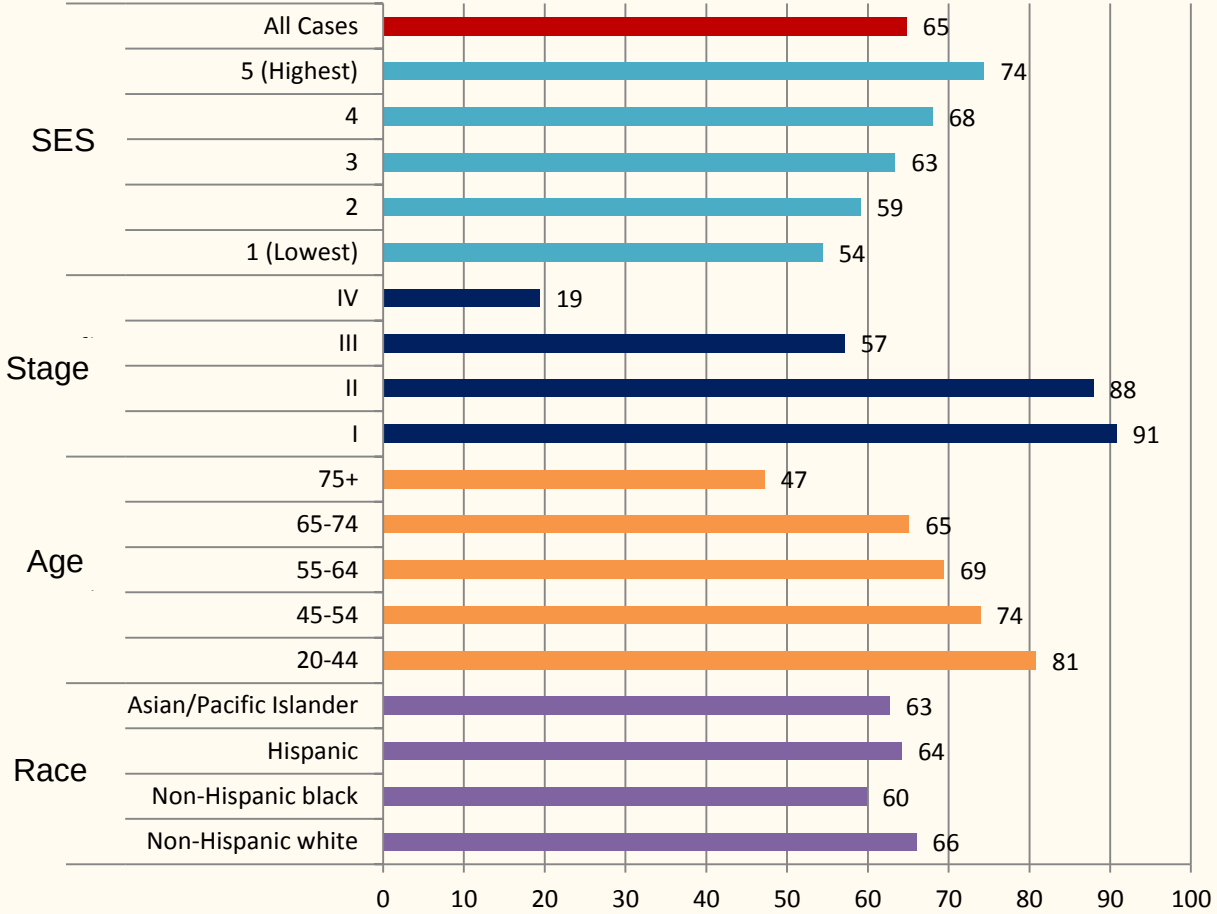
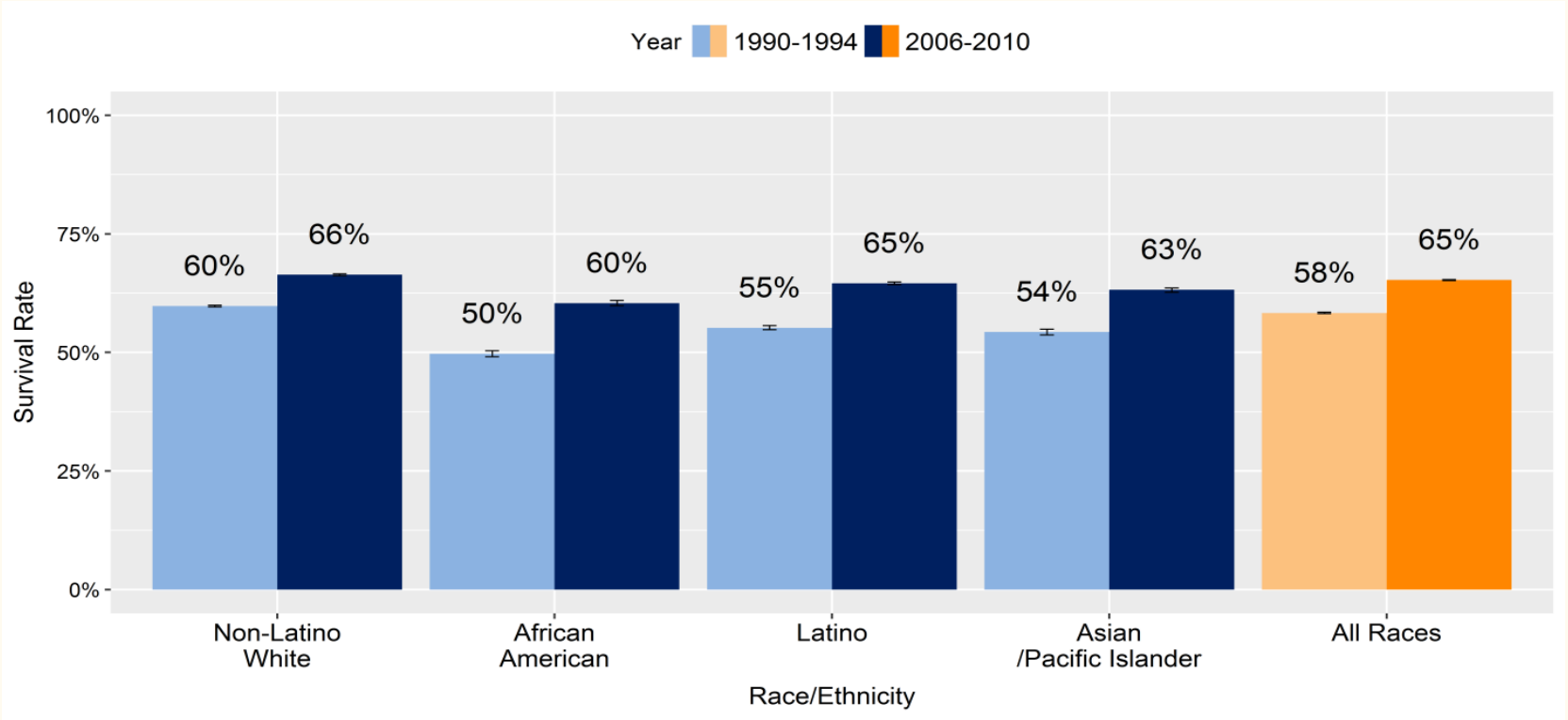
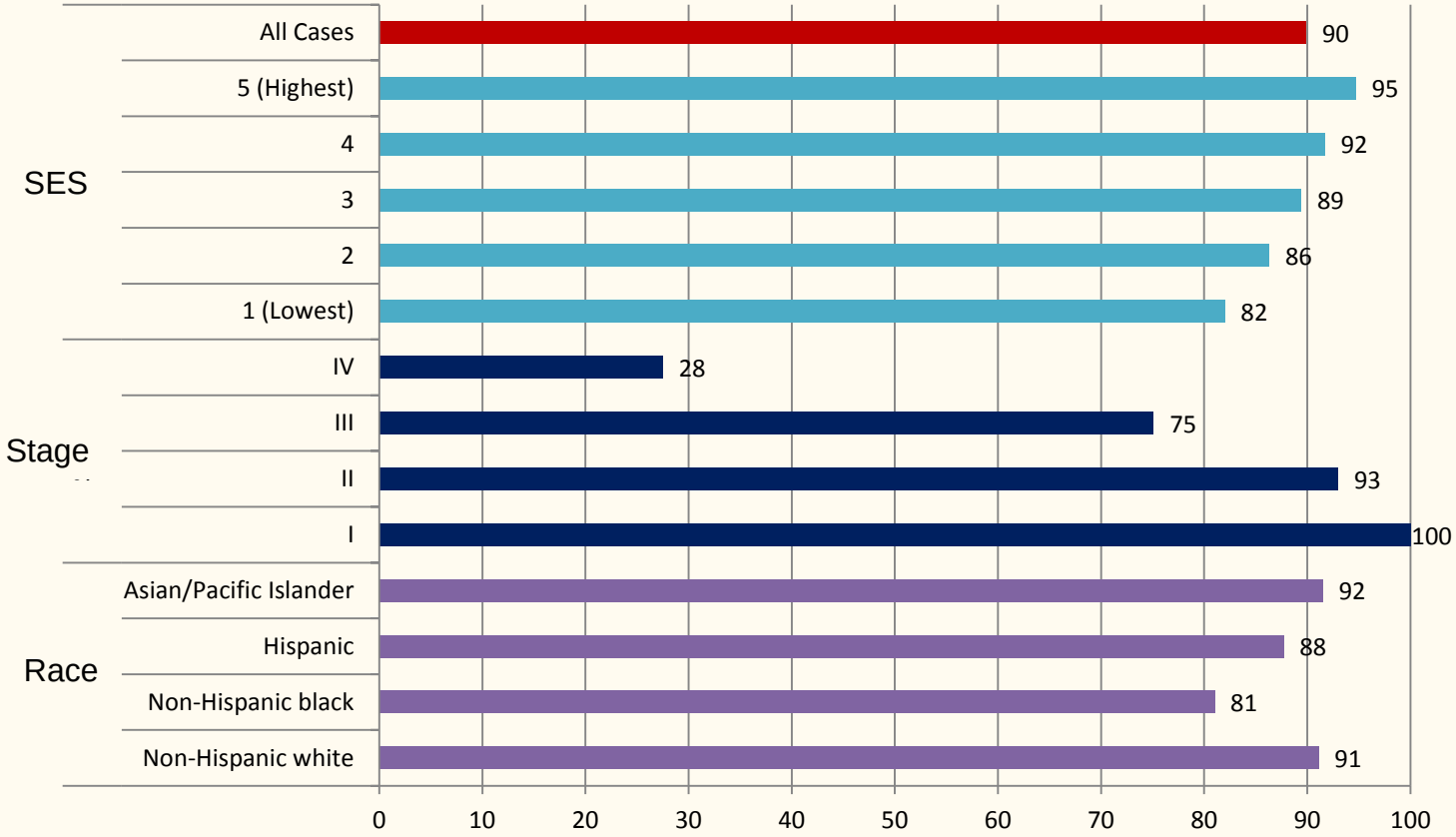
Five-year Relative Survival (%), California, 2004-2015, All Cancers



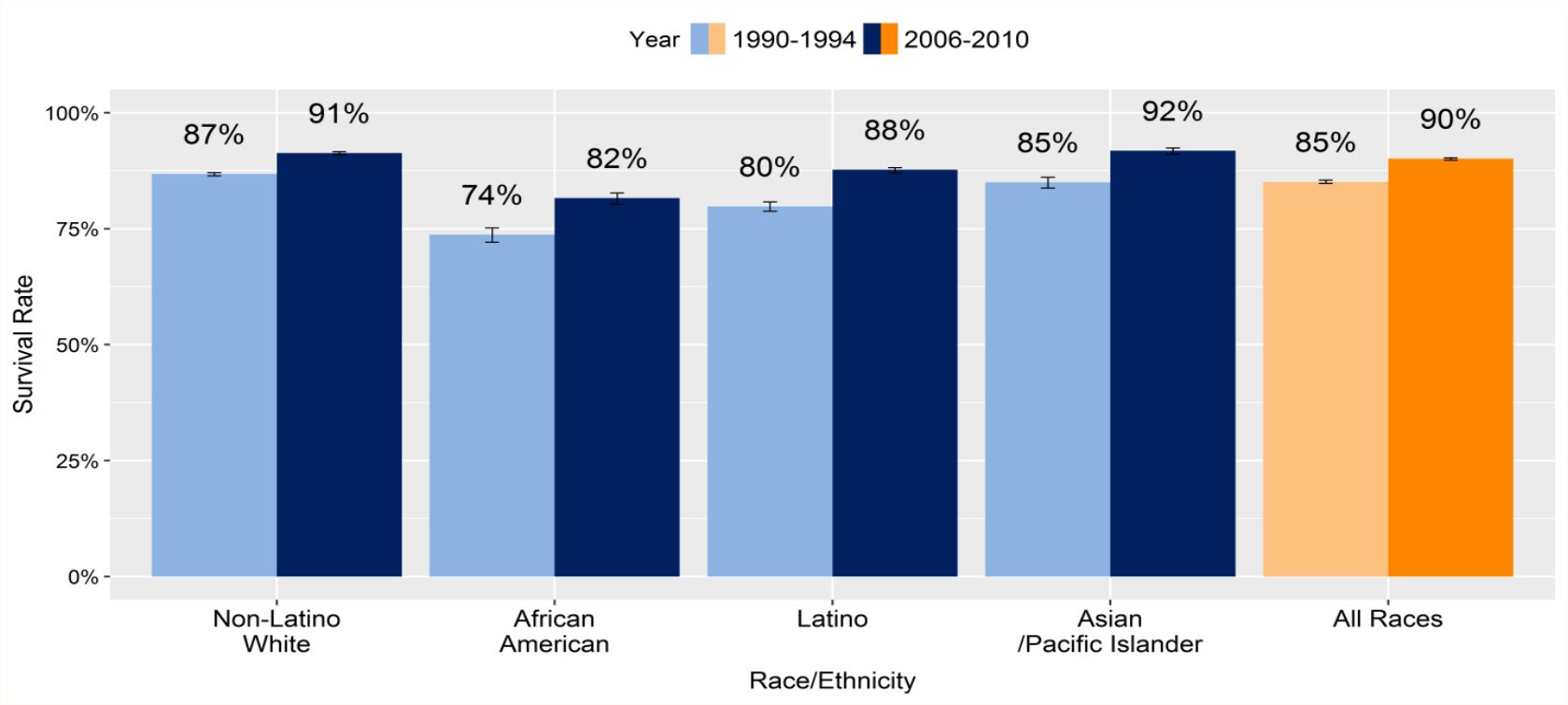
Change in Five-Year Relative Survival by Race/Ethnicity: All Cancers



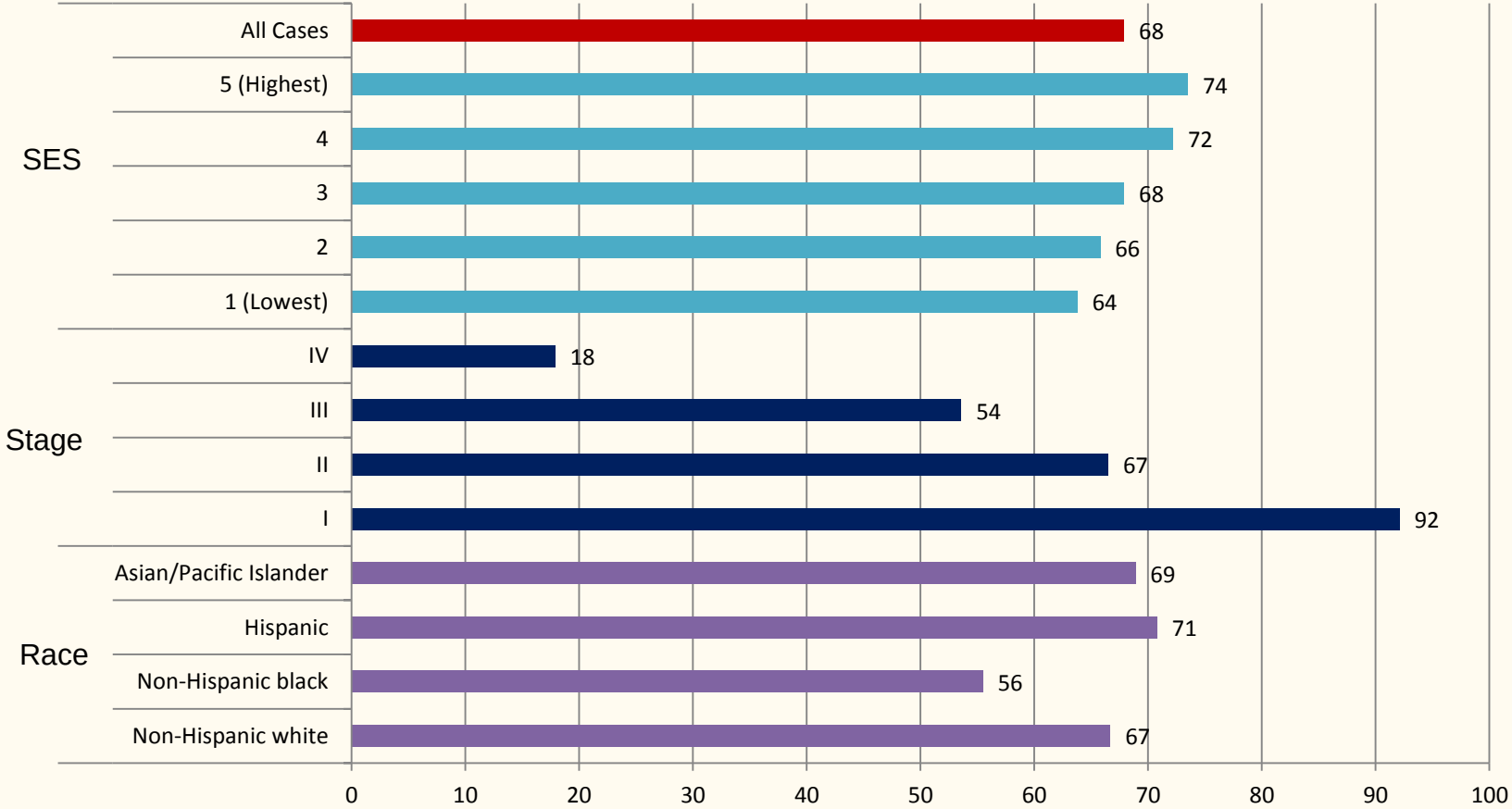
Five-year Relative Survival (%), California, 2004-2015, Female Breast Cancer



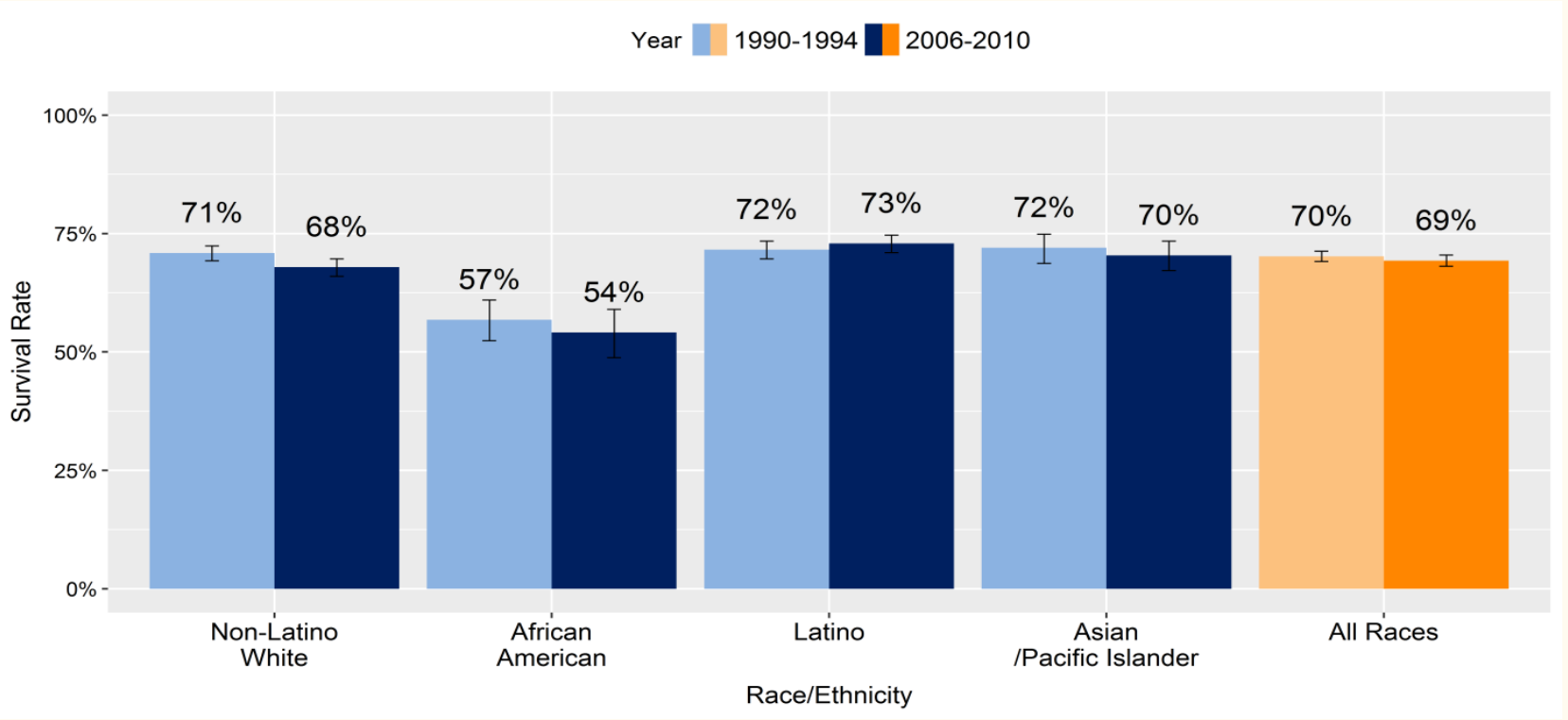
Change in Five-Year Relative Survival by Race/Ethnicity: Female Breast Cancer



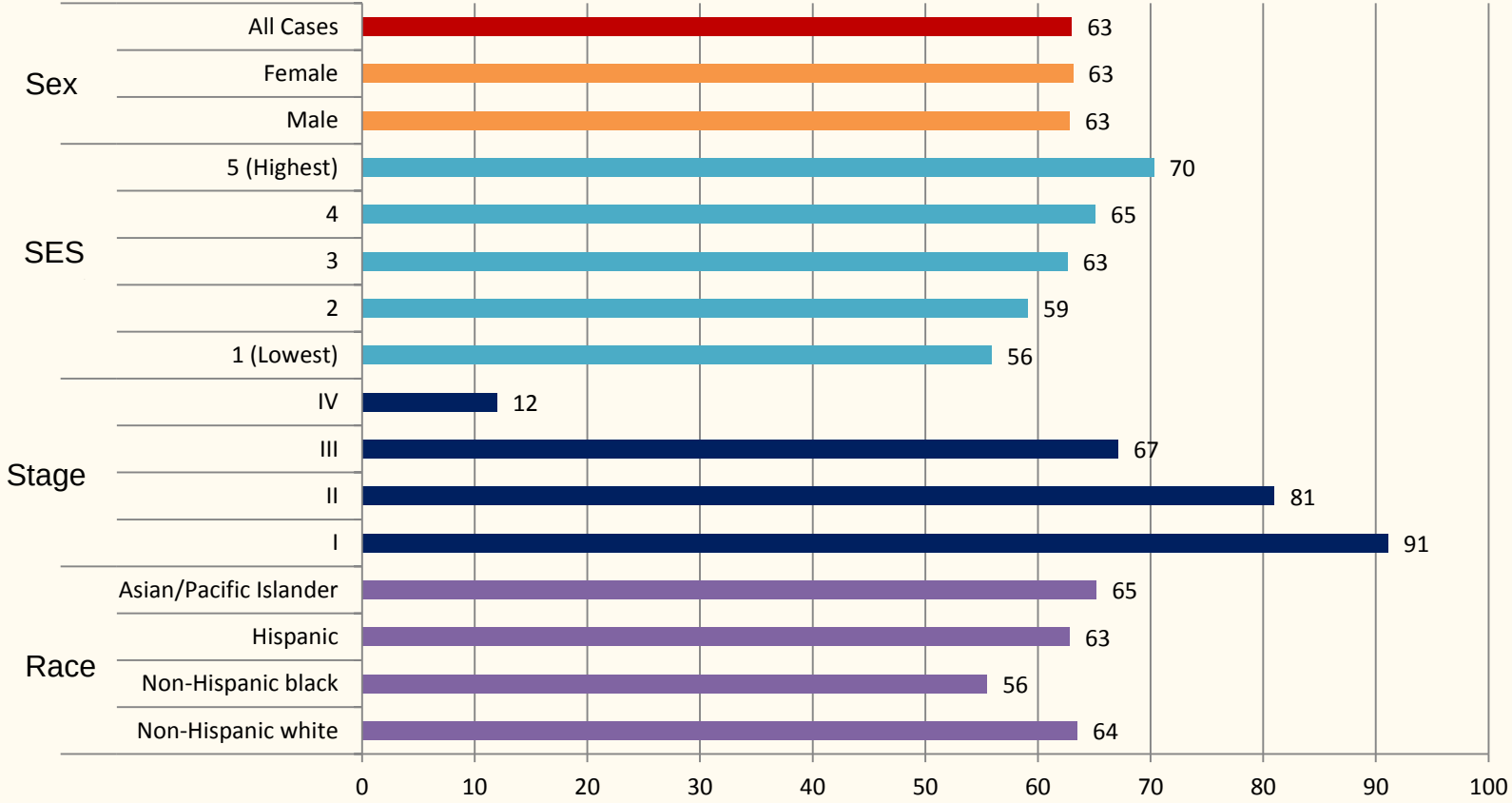
Five-year Relative Survival (%), California, 2004-2015, Cervical Cancer



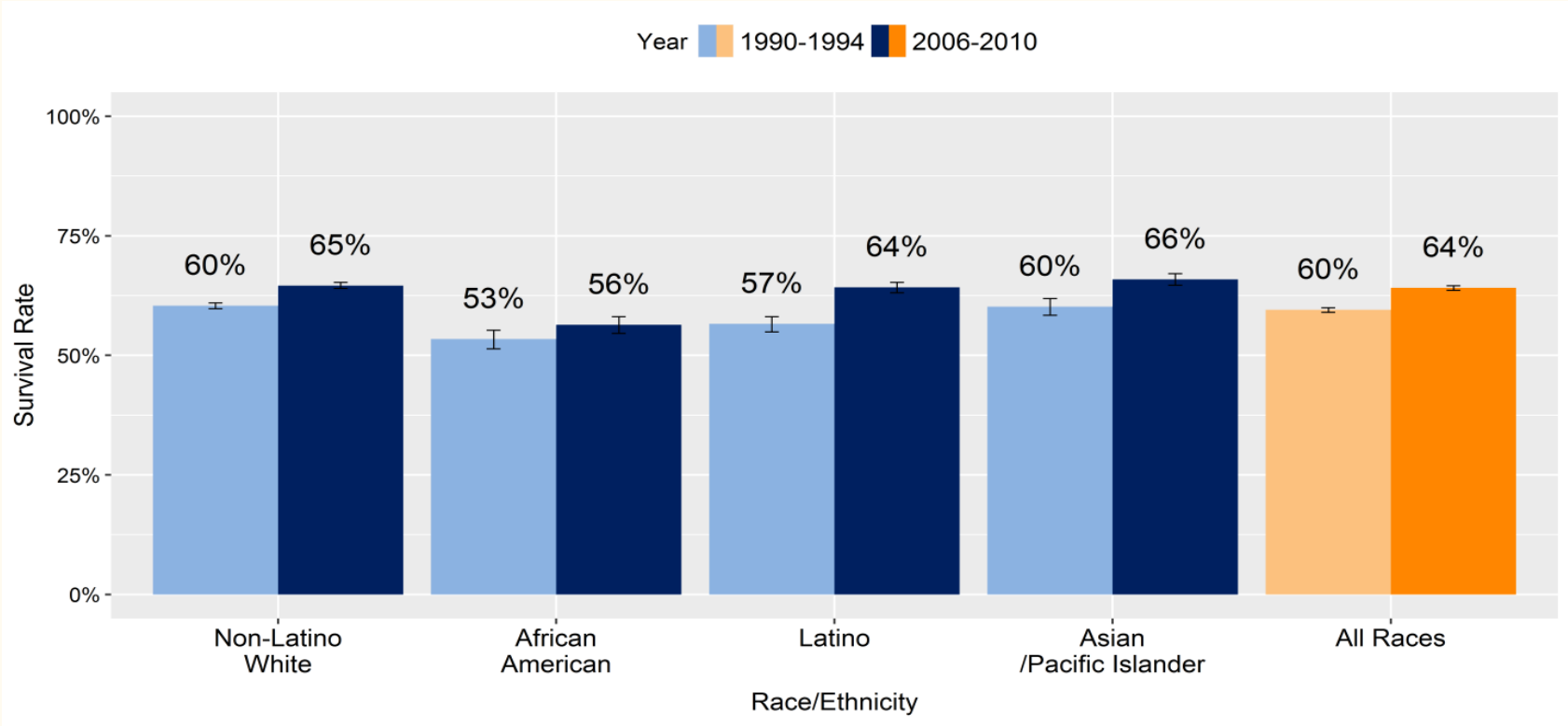
Change in Five-Year Relative Survival by Race/Ethnicity: Cervical Cancer



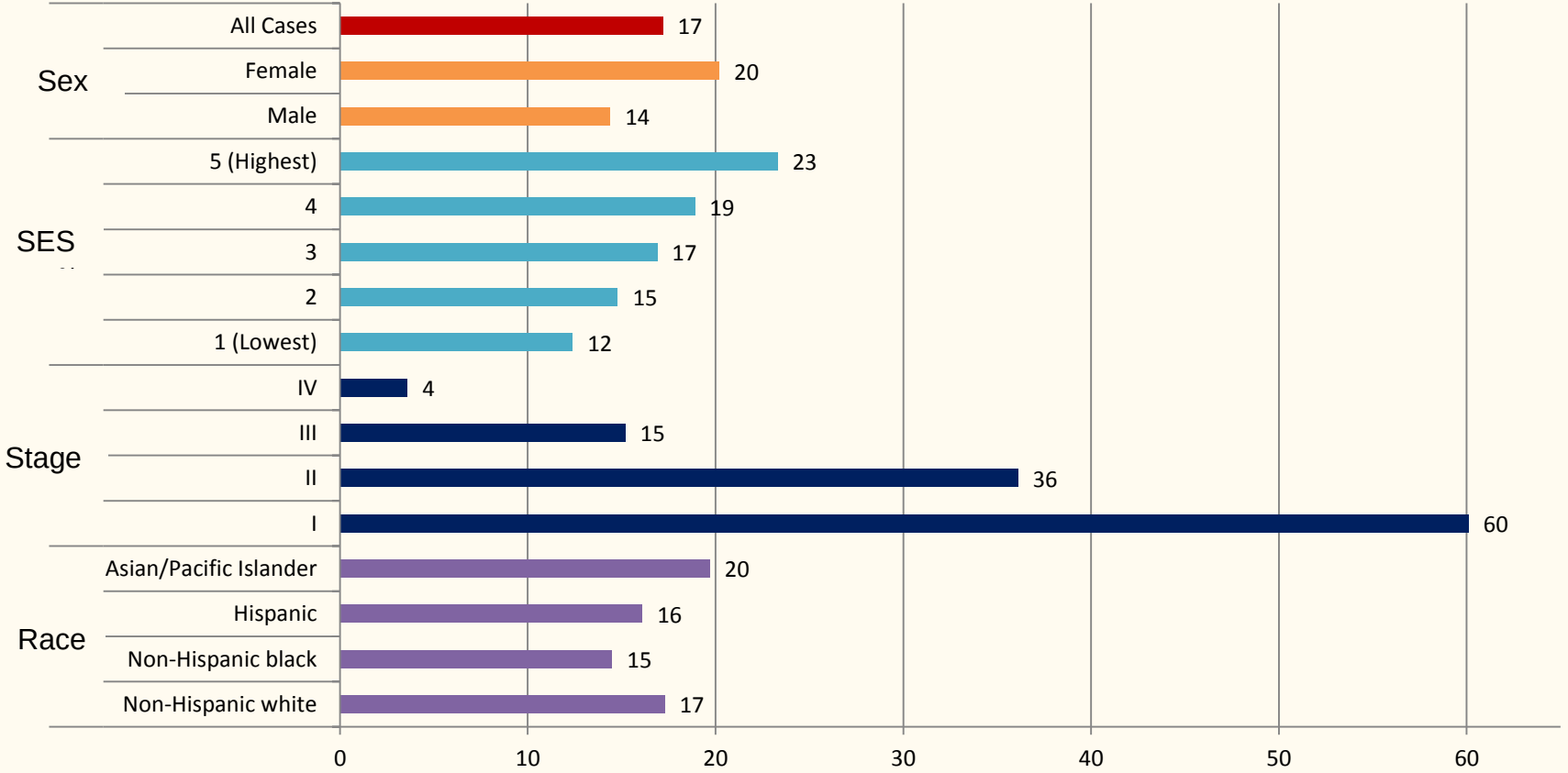
Five-year Relative Survival (%), California, 2004-2015, Colorectal Cancer



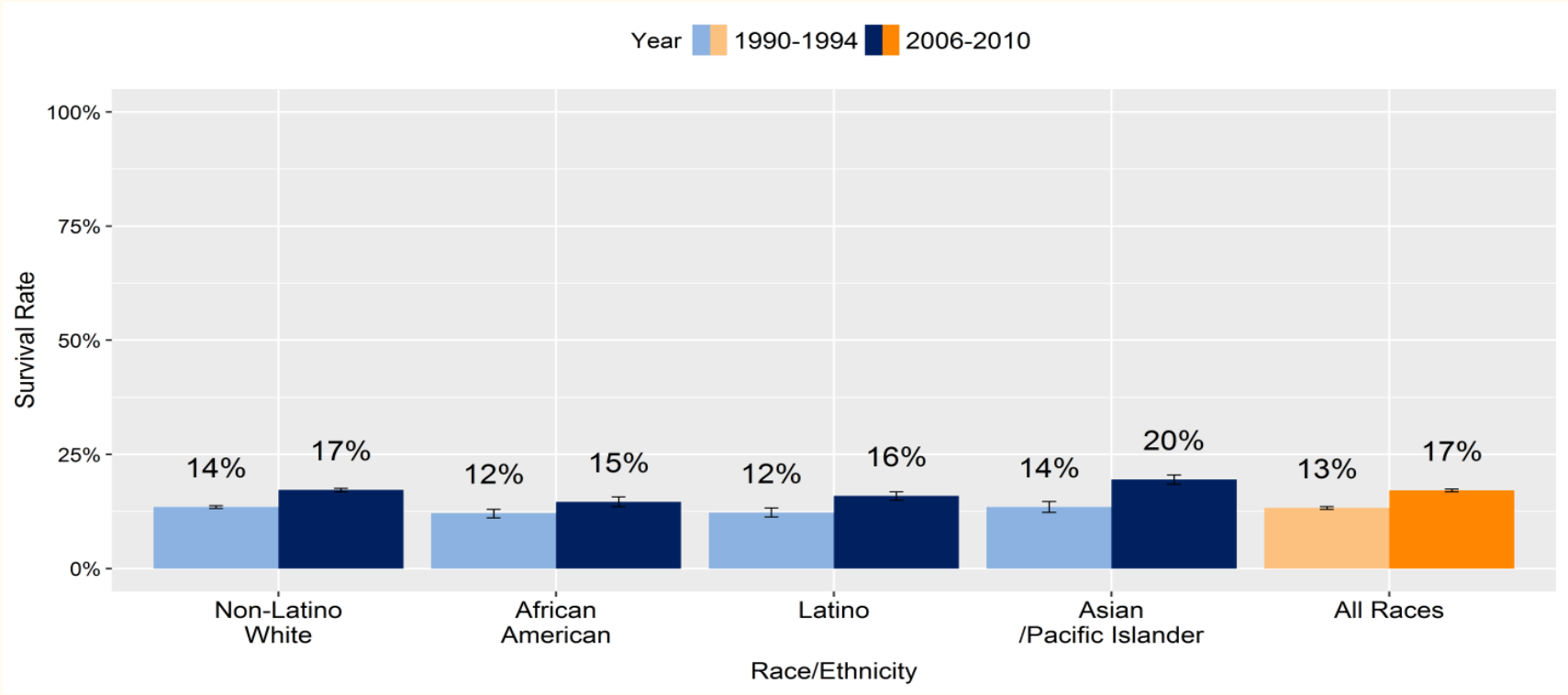
Change in Five-Year Relative Survival by Race/Ethnicity: Colorectal Cancer



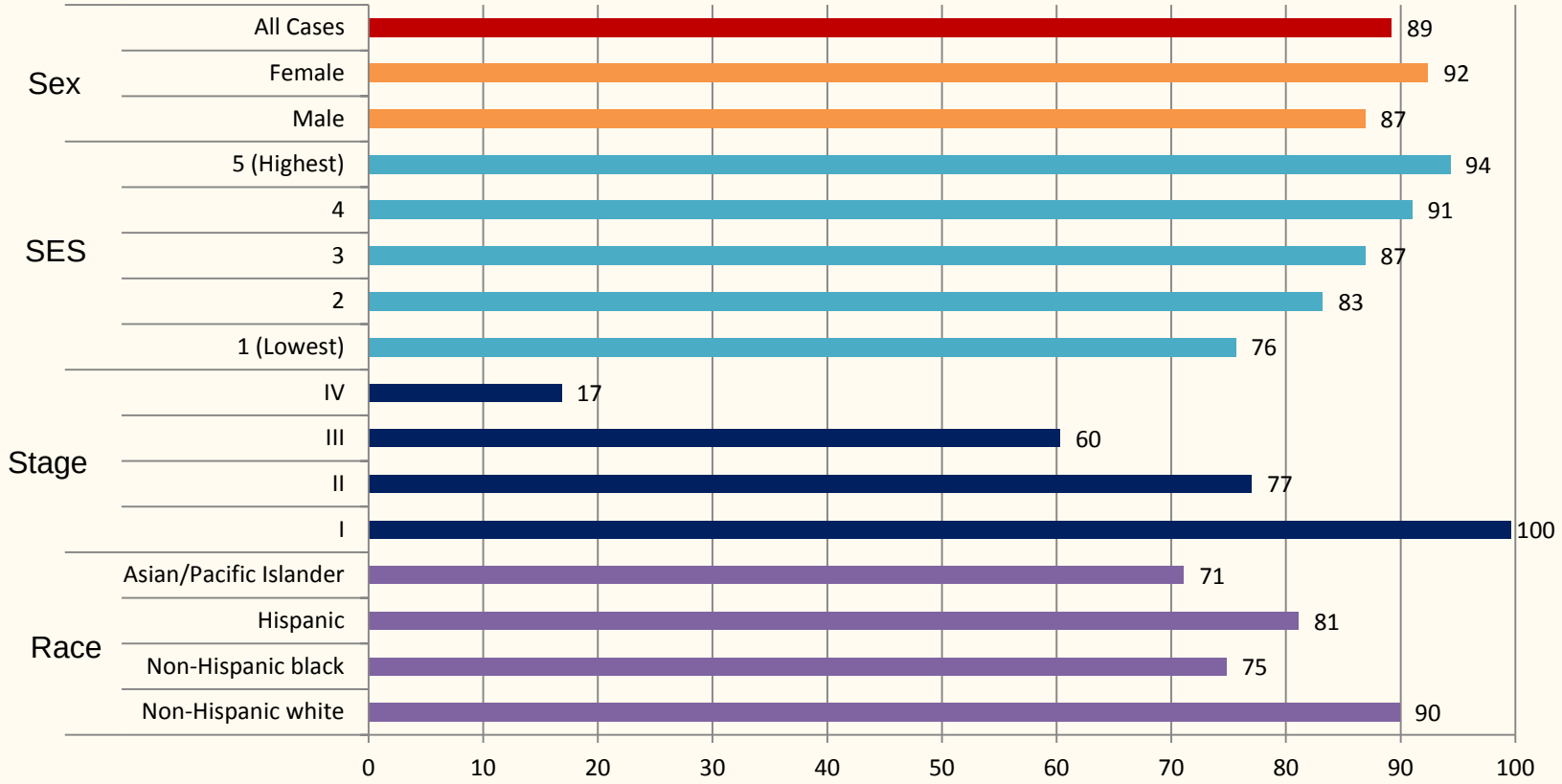
Five-year Relative Survival (%), California, 2004-2015, Lung Cancer



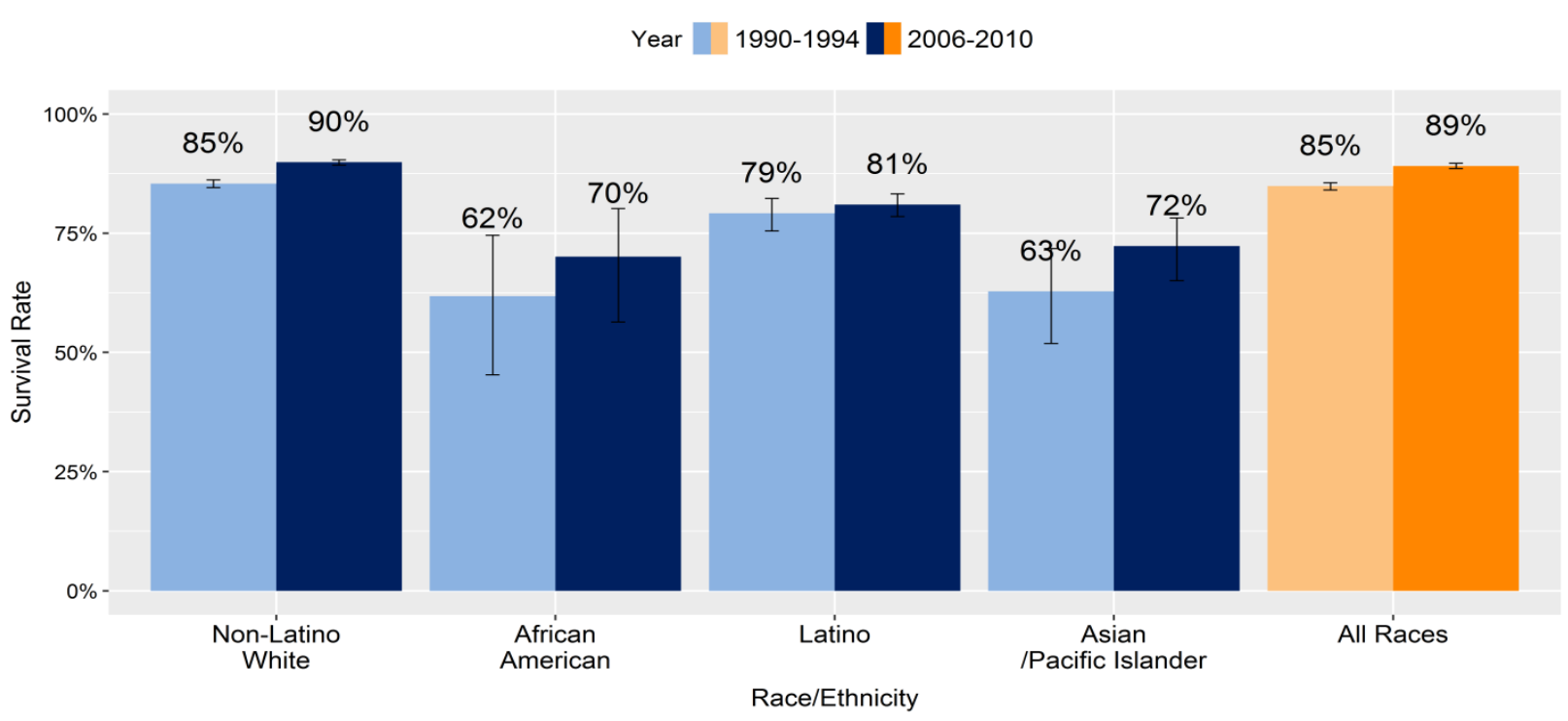
Change in Five-Year Relative Survival by Race/Ethnicity: Lung Cancer



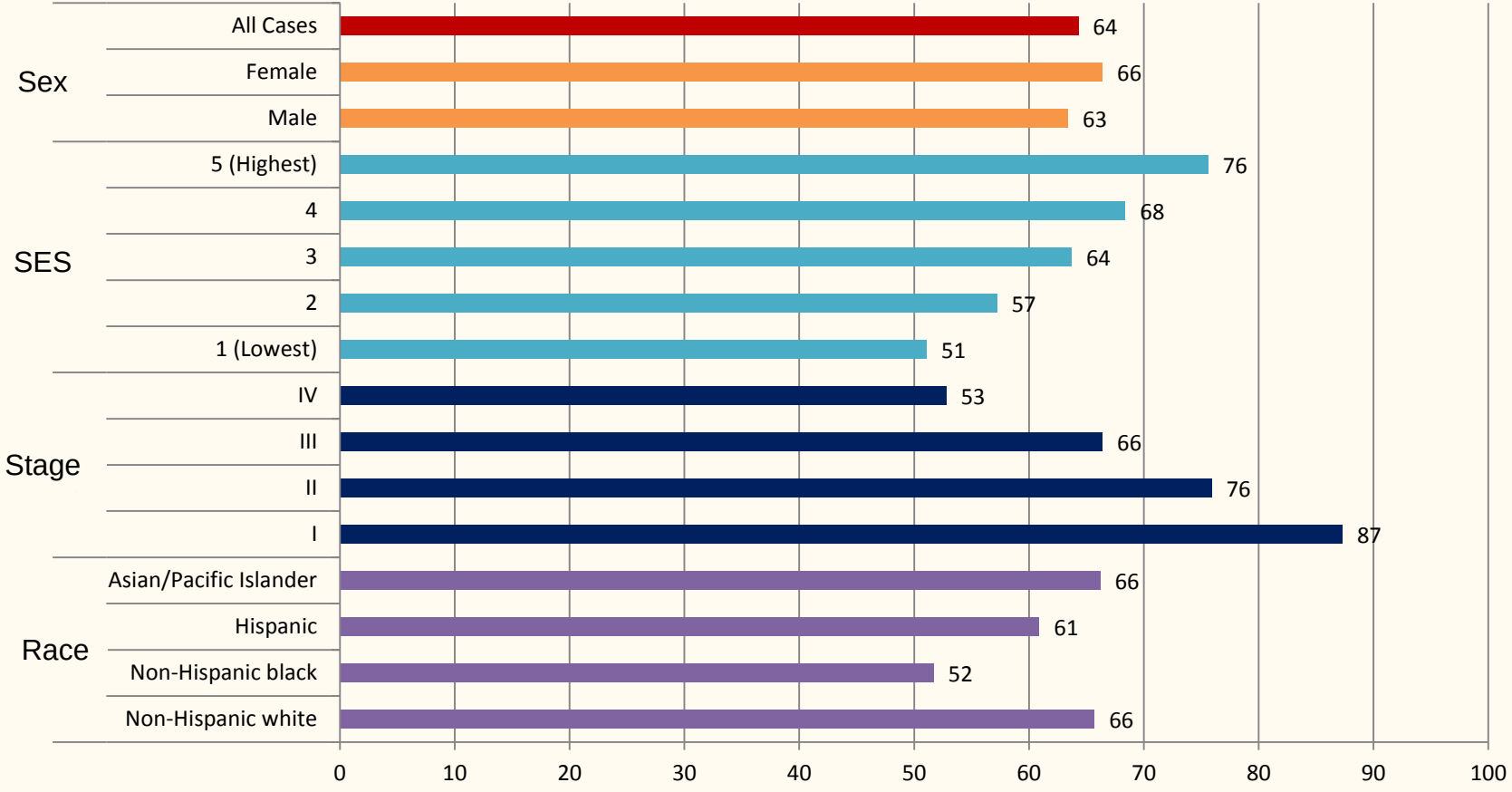
Five-year Relative Survival (%), California, 2004-2015, Melanoma



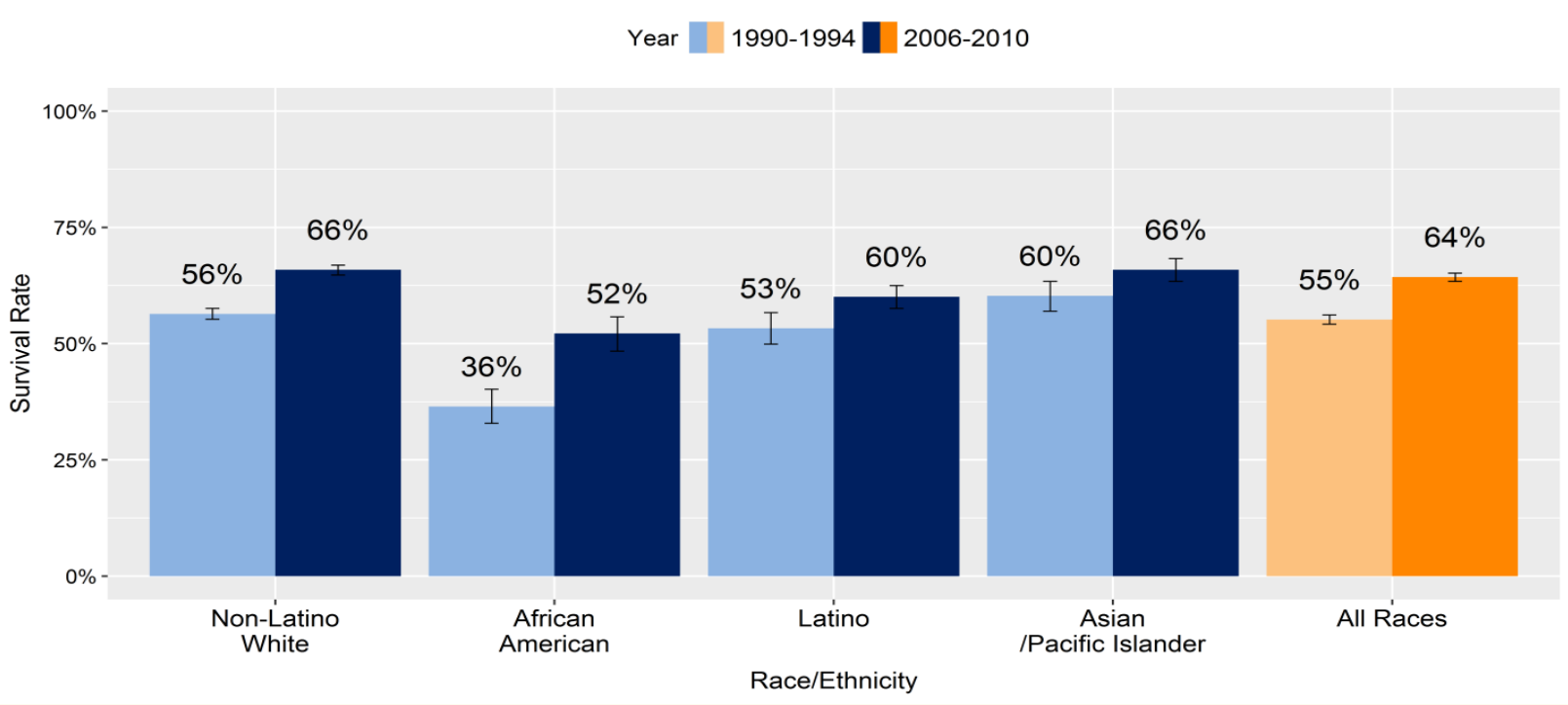
Change in Five-Year Relative Survival by Race/Ethnicity: Melanoma



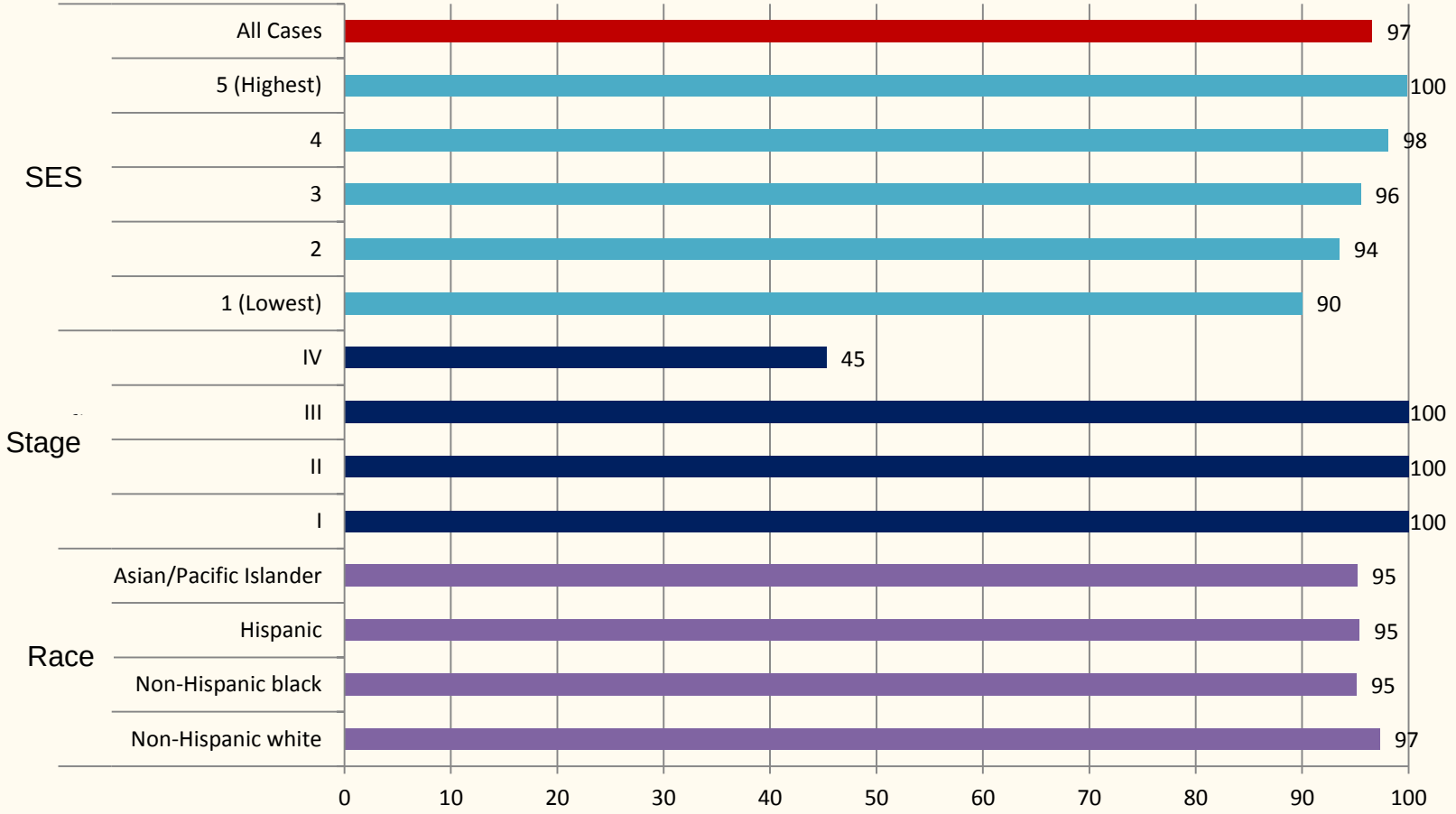
Five-year Relative Survival (%), California, 2004-2015, Oropharyngeal Cancer



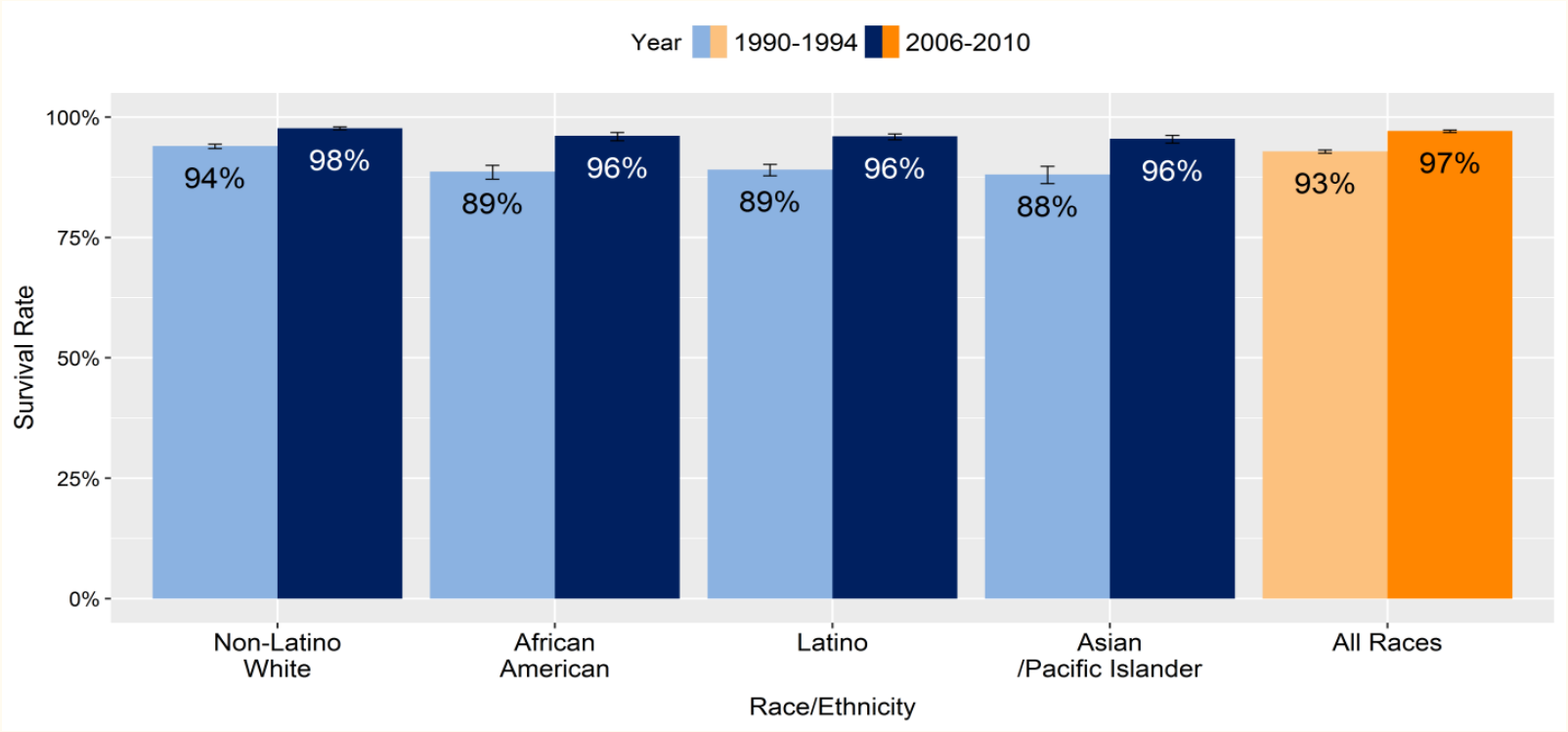
Change in Five-Year Relative Survival by Race/Ethnicity: Oropharyngeal Cancer



Five-year Relative Survival (%), California, 2004-2015, Prostate Cancer



Change in Five-Year Relative Survival by Race/Ethnicity: Prostate Cancer



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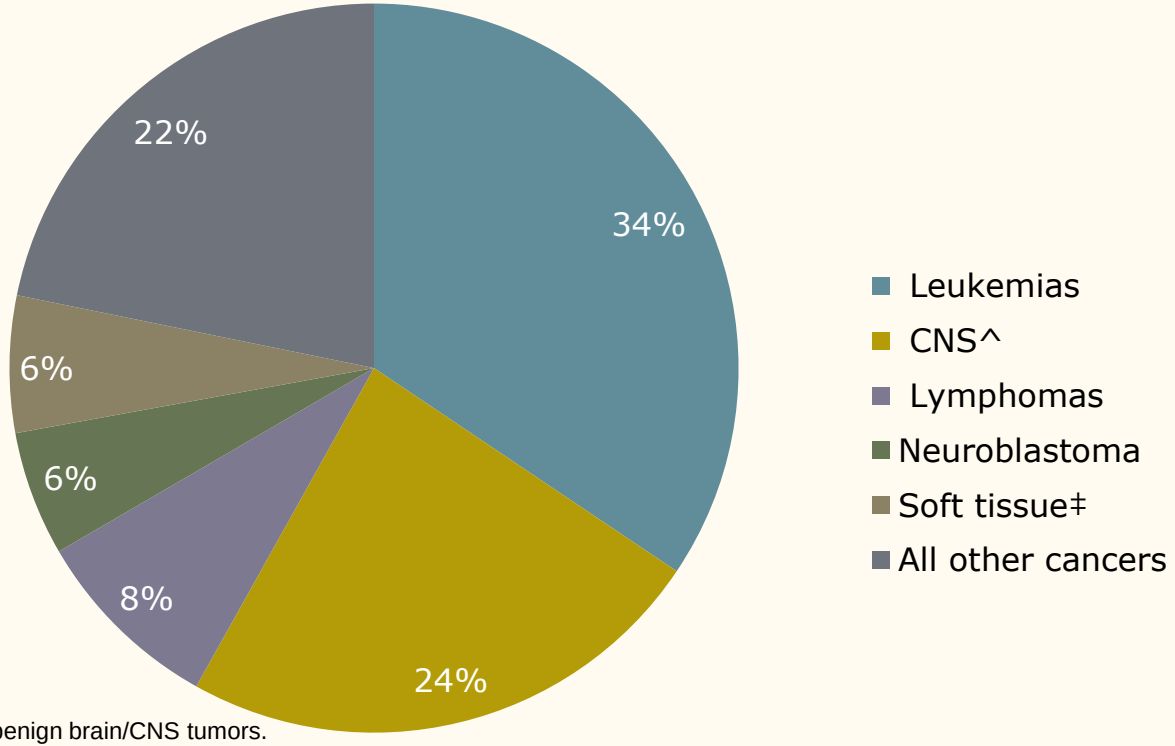
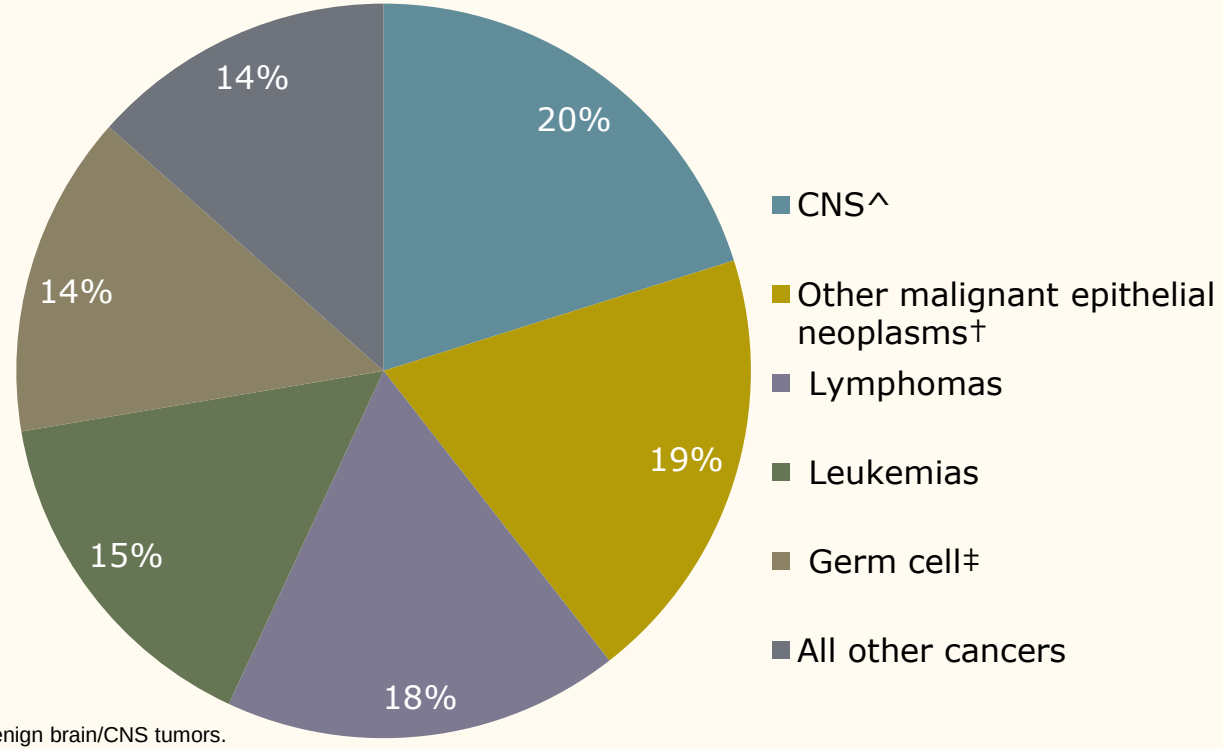
Distribution of Cancer Types among children ages 0-14, California, 2011-2015



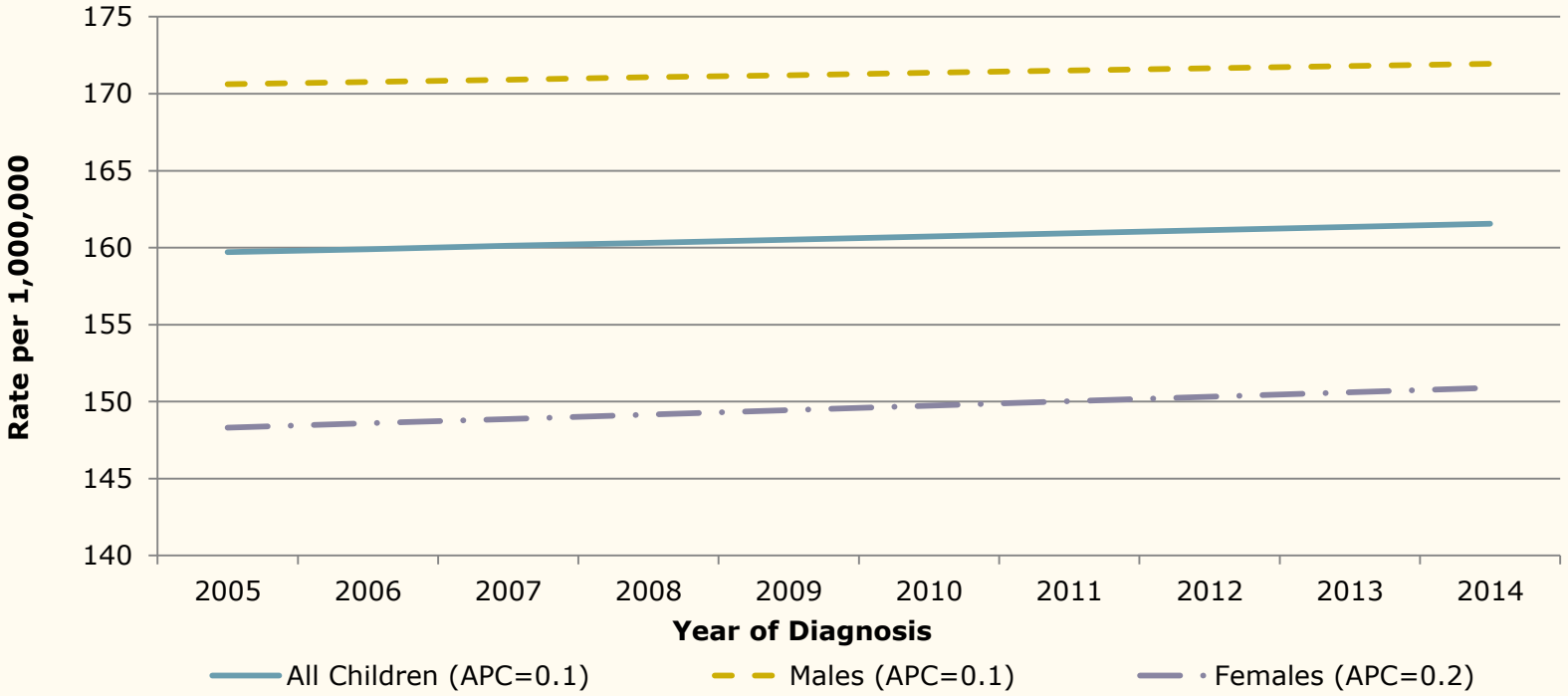
Includes myelodysplastic syndromes and benign brain/CNS tumors.
^Includes miscellaneous intracranial and intraspinal neoplasms.
‡Includes other extraosseous sarcomas.

Distribution of Cancer Types among Adolescents ages 15-19, California, 2011-2015



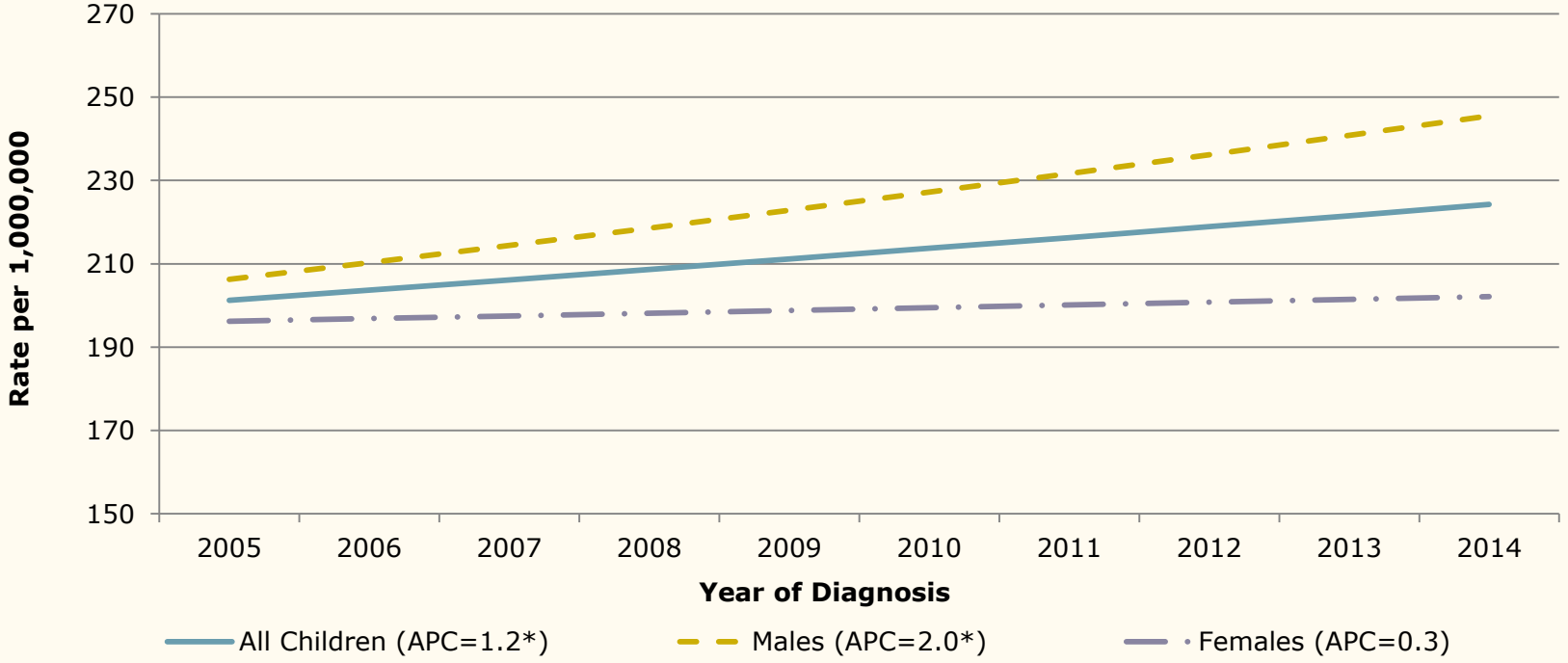
Includes myelodysplastic syndromes and benign brain/CNS tumors.
^Includes miscellaneous intracranial and intraspinal neoplasms.
†Includes melanomas.
‡Includes trophoblastic tumors and neoplasms of gonads.

Age-Adjusted Incidence Trends for children ages 0-14 by Sex, California, 2005-2014



Excludes myelodysplastic syndromes and benign brain/CNS tumors.
*The annual percent change (APC) is significantly different from zero at $p < 0.05$

Age-Adjusted Incidence Trends for adolescents ages 15-19 by Sex, California, 2005-2014



Excludes myelodysplastic syndromes and benign brain/CNS tumors.
* The annual percent change (APC) is significantly different from zero at $p < 0.05$.

Summary

- Good news:
  - Overall decrease in cancer incidence and mortality
  - Overall increase in 5 year survival
- Bad news:
  - Significant disparities by race/ethnicity and SES
  - Cervical cancer: no increases in survival, decreases in early stage diagnosis for blacks and Asians

Thank you!

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Questions