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Journal
American Journal of Preventive Medicine, 51(6)

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Publication Date
2016

Peer reviewed
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Word count: Abstract - 246; Text – 2,991
22 pages in document
17 pages of text including references
14 pages of text excluding references
2 tables, 2 figures, 1 supplemental figure

Authors of this manuscript have no financial disclosures to report
Abstract

Introduction: Colorectal cancer (CRC) incidence and mortality rates have decreased dramatically since 1990, both nationally and in California, except among Hispanic males. This study examined trends in CRC incidence, mortality and survival to determine likely contributing factors for the differential trends between Hispanic males and non-Hispanic white males in California.

Methods: California Cancer Registry data were used to identify 23,157 Hispanic and 114,944 white males diagnosed with CRC between 1990 and 2012. We examined joinpoint trends in incidence, mortality and five-year relative survival by age, stage at diagnosis, and tumor location. Data used in the study was extracted from the CCR database and analyzed in 2015.

Results: Both incidence and mortality rates decreased substantially among white men between 1990 and 2012, but no corresponding decrease was observed among Hispanic men. Both groups experienced similar trends in survival and stage at diagnosis over time. White men had greater declines in CRC incidence and mortality in all age groups, particularly above 50 years of age. Hispanic males had a significantly higher proportion (65%) of tumors in the distal colon than white males (59%).

Conclusions: CRC incidence and mortality rates have decreased among white men since 1990, but not among Hispanic men. Results from this study suggest - lower screening rates may be an important reason why CRC rates in California did not decline in Hispanic men. Effective strategies aimed at both Hispanics and their healthcare providers are needed to increase CRC screening among Hispanic men and reduce their colorectal cancer burden.
Introduction

Colorectal cancer (CRC) is the third most common cancer in the U.S., affecting men and women equally. Consistent with national trends, CRC mortality rates have declined substantially in California since the mid-1970s. Between 1990 and 2013, California age-adjusted CRC mortality decreased from 26.9 to 15.2 deaths per 100,000 for males, and from 18.5 to 11.3 deaths per 100,000 for females. Marked declines were reported for males and females in all four major racial/ethnic groups in California except Hispanic males. While CRC mortality declined among Hispanic women, particularly since 2005, mortality rates among Hispanic men have remained essentially unchanged since 1990. Historically, Hispanic men have had lower rates of CRC mortality compared to non-Hispanic men; however, mortality rates in the two groups are now similar and may soon crossover.

Several reasons may explain differences in CRC rates between non-Hispanic white (white) and Hispanic men. Routine screening for colorectal cancer has greatly increased since the 1980’s, and has been largely credited for the reduction in CRC incidence. However, Hispanics are less likely to be screened, less likely to be insured, and possibly less likely to utilize healthcare than other ethnic groups. According to state cancer profiles (http://statecancerprofiles.cancer.gov/risk/index.php), the percentage of Hispanic males compliant with CRC screening recommendations in 2014 was 46.2% in the US and 44.9% in California. Among white men, these percentages were much higher: 67.6% and 72.4%, respectively, in the US and in California. The U.S. Census Bureau estimates Hispanics now comprise 38.4% of California’s population, a percentage essentially identical to whites (39.0%). Exploring reasons for differences in CRC mortality between white and Hispanic males may identify opportunities for improving California’s population health.
This study sought to compare trends in CRC incidence, mortality and survival between Hispanic and white men in California. We examined trends by age, stage at diagnosis and location of tumors to assess whether screening and access to healthcare might explain different CRC trends between Hispanics and white men.

**Methods**

**Study population**

Incidence and survival analyses were based on data routinely collected by the California Cancer Registry (CCR) on all persons diagnosed with invasive colorectal cancer between January 1, 1990 and December 31, 2012. The CCR collects data on cancer patient demographics, diagnosis, tumor characteristics, treatment, and follow-up. Data are collected through three SEER-affiliated regional cancer registries in California, which together cover the entire state. Mortality data were obtained from the CDPH’s Center for Health Statistics Death Master Files, based on ICD-9/ICD-10 codes recorded as the underlying cause of death between January 1, 1990 and December 31, 2013 (2013 data was available for mortality but not for cancer incidence at the time of this analysis). Data used in the study were extracted and analyzed in November 2015.

Colorectal cancer was defined according to International Classification of Diseases – Oncology (ICD-O) 3rd edition codes for tumor site (C180-C189, C199, C209, and C260) excluding histology codes 9050-9055, 9140 and 9590-9992 and non-microscopically confirmed cases. Hispanic ethnicity was assigned using the North American Association of Central Cancer
Registries’ Hispanic and Asian/Pacific Islander Identification Algorithm (NAPIIA). NAPIIA classifies cases as Hispanic based on race, birthplace, last name and maiden name. Hispanic ethnicity may be assigned to persons of any race, but only non-Hispanic whites are classified as white. Age at diagnosis was categorized as <50 years, 50-64, 65-75 and over 75. These age groups were chosen to reflect screening recommendations, eligibility for Medicare, and effects of aging on CRC. Tumor subsite was classified as either distal colon and rectum (C185, C186, C187, C199, and C209) or proximal colon (C180, C181, C182, C183, and C184). Previous studies have shown distal colon cancer to be more sensitive to screening, so differences in tumor location may reflect differences in screening. SEER Extent of Disease and Collaborative Stage system codes were converted to the American Joint Committee on Cancer (AJCC) staging system, based on existing guidelines at the time of diagnosis. Source of health insurance (available for cases diagnosed after 1995) was categorized as private/military (HMO, PPO, fee-for service, Military, Veterans Affairs, and Medicare with private supplement), Medicare, Medicaid/Public (Medicaid, Public Health Service, County funded), not insured, and unknown source. Information on poverty level and percent of High School graduates at the patient’s census tract of residence was obtained from the US Census.

**Statistical analysis**

Differences in proportions for all study variables were evaluated using R version 3.1.1. (http://www.r-project.org/), with a significance threshold of 0.05. Changes over time in the percent distribution of CRC cases by stage at diagnosis were evaluated graphically. SEER*Stat version 8.1.5 (http://seer.cancer.gov/seerstat/) was used to calculate CRC incidence and mortality rates age-adjusted to the 2000 U.S. standard population, as well as to estimate relative survival.
Joinpoint regression ([http://surveillance.cancer.gov/joinpoint/](http://surveillance.cancer.gov/joinpoint/)) was used to evaluate trends in incidence and mortality for white and Hispanic males by age, stage at diagnosis, and location of tumor. In this analysis, a statistical algorithm detects points in time (“joinpoints”) where the slope of the regression line significantly changes, with APCs being estimated for each time period. Five-year relative survival was calculated as the ratio of the observed versus expected survival rates, using the Ederer-II\(^1\) method and California-specific life tables. Relative survival is a measure of excess mortality among cancer patients without requiring cause of death information (which may be misclassified for CRC).\(^1\)\(^4\) Estimates were obtained stratified by race/ethnicity, stage, and age at diagnosis. Patient’s vital status was based on the follow-up date of last contact (or death).

**Results**

Between 1990 and 2012, 23,157 (16.8%) Hispanic and 114,944 (83.2%) white men were diagnosed with CRC in California. Hispanic men tended to be younger, more likely to have Medicaid or other publicly-funded health insurance, and more likely to have a tumor located in the distal colon (Table 1). Hispanic males were also more likely to live in neighborhoods characterized by low SES and lower levels of educational attainment.

Overall CRC age-adjusted incidence rates in the study period were higher among white men than Hispanic men (Figure 1); however, the two groups exhibited very different incidence trends. Incidence among white men declined from 71.5 in 1990 to 49.1 in 2009, and to 41.3 in 2012 (APC 1990-2009 = -1.9, p < 0.001 and APC 2009-2012 = -6.2, p = 0.016). During the same
period, incidence rates among Hispanic men increased from 43.2 in 1990 to 49.1 in 2008, declining afterwards to 39.1 in 2012 (APC 1990-2008 = 0.1, p = 0.563 and APC 2008-2012 = -4.8, p = 0.043). CRC incidence increased with age in both groups. Men under 50 years of age had the lowest incidence rate (5.3 per 100,000), and men 75 years of age and older had the highest (383.6 per 100,000, data not shown). Incidence for men under 50 years of age increased significantly between 1990 and 2012 for both Hispanics and whites (APC = 2.5 and 1.9, respectively; Table 2). Among white men, incidence in each age group over 50 years of age decreased. For Hispanics, however, CRC incidence increased among men 50-64 years old (APC = 0.5, p = 0.018) and decreased only after age 65, at a slower rate than among white men of the same age (Table 2).

The distribution of tumor location by subsite differed between the two groups: the proportion of tumors in the distal colon and rectum was higher among Hispanic men, while the proportion of proximal colon tumors was higher in white men (Table 1). Incidence rates for both the proximal and distal colon declined substantially for whites, especially near the end of the period examined. Among Hispanics, incidence of distal colon tumors decreased at a slower rate than among whites, but rates for proximal colon CRC did not change.

White males tended to be diagnosed at an earlier stage than Hispanics: 25% of tumors were diagnosed at stage I among white men, versus 22% for Hispanics (Table 1, p < 0.001). Changes in CRC stage percent distribution over time were noticed among both white and Hispanic men, with an increase in stage I and a decline in stage II disease (Figure S1). The direction and magnitude of changes in percent distribution were similar in both groups of men. However,
while the distribution of tumors by stage for white and Hispanic males remained similar over
time, trends in age-adjusted incidence rates by stage differed between the two groups. Incidence
rates among white men declined for each individual stage, with the largest decrease observed
among stage II tumors diagnosed after 2000 (APC = -3.8, \( p < 0.001 \)) (Table 2). Incidence of
Stage II tumors also declined for Hispanic men (APC = -1.9, \( p < 0.001 \)), while there was little
change in the incidence of tumors diagnosed at stage I (APC = 0.6, \( p = 0.16 \)), stage III (APC =
0.1, \( p = 0.58 \)), and stage IV (APC = 0.0, \( p = 0.40 \)).

Much like incidence, the CRC mortality rate among men in 1990 was higher among whites than
Hispanics (28.2 per 100,000 versus 18.8 per 100,000), but decreased substantially through 2013
among whites while remaining flat for Hispanics (Table 2). Among men 50 years of age, CRC
mortality rates increased for Hispanics (APC = 1.6, \( p < 0.001 \)), but showed no statistically
significant change for whites. Mortality rates for white men over 50 years of age declined
significantly, while among Hispanic men a decline was detected only in men 65-74 years of age,
and at a lower rate than for white men of the same age.

Five-year relative survival for CRC increased significantly in both groups, from 60.4% in 1994-
1996 (95% CI: 59.4, 61.5) to 66.3% in 2006-2008 (95% CI 65.3, 67.3) among whites and from
58.0% (95% CI: 55.3, 60.6) to 63.9% (95% CI 62.0, 65.8) among Hispanics in 1990-1994 and
2006-2008, respectively. However, as 95% confidence intervals for each time period and within
each stage at diagnosis overlapped, none of the differences in five-year survival between white
and Hispanic men were statistically significant (results not shown).
Discussion

Trends in colorectal cancer mortality differed greatly between white and Hispanic men in California between 1990 and 2013, declining by 46% among white men but only minimally among Hispanic men. Although mortality was initially higher among white men, by 2011 mortality rates crossed over and were actually higher among Hispanic men. Possible reasons for decreased mortality include increased survival (due to earlier detection or improved treatments) and/or decreased incidence rates. Our findings suggest the difference in mortality trends may be primarily due to changes in incidence. CRC incidence among white men decreased significantly over the study period, while incidence among Hispanic men remained flat until 2008, declining afterwards. Higher screening rates among whites than Hispanics may have resulted in greater removal of polyps that could have eventually become malignant, thus contributing to lower CRC incidence rates.

Five-year relative survival estimates by year of diagnosis were not significantly better among white men. Consistent with previous studies, we found an increase in relative survival for both white and Hispanic men. Improvements in relative survival within each AJCC stage at diagnosis were similar for both groups. Therefore, differences in survival between white and Hispanic men cannot explain the observed differences in mortality trends.

Lower mortality may also be caused by shifts in the stage at which cancer is diagnosed. Even when survival within each stage remains constant, a larger proportion of patients diagnosed at an earlier stage of disease may lead to overall decreases in mortality. Previous research has shown there may be an overall shift toward earlier stage CRC due to increased screening. However,
this study did not show a substantial shift in stage over time. Only a slight decrease in the proportion of tumors diagnosed at stage II and a slight increase in the proportion diagnosed at stage I, III or IV were observed (Figure S1). Changes in stage distribution were similar in both whites and Hispanics; therefore, shifts in the stage at diagnosis are also unlikely to explain differences in mortality trends between the two groups.

Since the difference in mortality trends cannot be readily explained by improved survival or shifts in stage at diagnosis, it is likely changes in mortality were mostly driven by trends in incidence. This hypothesis is supported by observed declines in CRC incidence rates since 1990. Rates among Hispanics did not decline until 2008 (Table 2). Trends by age group also support the hypothesis that trends in incidence were driven mostly by differential screening. Guidelines do not recommend screening before age 50, and incidence rates between 1990 and 2012 increased for both whites and Hispanics under age 50 (although incidence rates for this age group are much lower compared to older age groups). However, from 50 to 64 years of age, white men saw a large decrease in incidence and mortality, while Hispanic men saw no significant change in mortality and only a small, statistically significant change in incidence. Both Hispanic and white men 65 to 74 years of age, when Medicare coverage begins, experienced decreases in incidence and mortality, although the decline was much greater among white men.

Location of the tumor within the colon and rectum may be partly explained by differential screening. Endoscopy is more sensitive to tumors in the distal colon than the proximal colon, and is more likely to reduce incidence and mortality of tumors in the distal colon. We found
Hispanic men more likely to have distal tumors than white men, and the incidence of distal
tumors decreased less among Hispanics than whites. Both of these findings are consistent with
lower screening rates among Hispanic men.

Several reasons may explain why incidence and mortality declined more rapidly for whites than
Hispanics. Most of the decline in CRC incidence has been attributed to increased rates of
screening through colonoscopy and sigmoidoscopy, although changes in risk factors and better
treatments likely contributed to the decline. These types of screening, which includes the
removal of adenomatous polyps, have been shown to reduce both CRC incidence and mortality.

Despite evidence of its effectiveness, Hispanic men are less likely than white men to undergo
endoscopic screening, and Hispanic men in California are no exception. Data from the
California Health Interview Survey show lower screening compliance among recent immigrants
(48%) and respondents who spoke limited English (44%). Differences in CRC screening
between Hispanic and non-Hispanic Californian men have been well documented. CRC
screening rates among Mexican and South and Central American Hispanic males, the main
Hispanic subgroups in California, are the lowest of any race/ethnic group in the country (39%
and 35% respectively).

Cultural values and access to healthcare may explain lower rates of cancer screening among
Hispanics in California. Hispanic men are more likely to be uninsured or have Medicaid health
insurance, and are less likely to have a primary care provider, all of which decrease the
likelihood of CRC screening. Limited language proficiency may be an additional barrier.
Hispanics who speak English well are more likely to undergo screening than those with limited
English proficiency; a finding even more pronounced among Hispanic men than Hispanic women.\textsuperscript{20, 27}

Several intervention strategies may be effective in increasing knowledge and uptake of screening guidelines. Two recent reviews described successful intervention strategies for Hispanic CRC screening,\textsuperscript{28, 29} including the use of bilingual navigators who are members of the targeted community, educational interventions aimed at providers, and culturally sensitive printed materials.\textsuperscript{29, 30} However, even identifying unscreened individuals may be difficult since Hispanics are less likely to have a regular source of medical care.\textsuperscript{26, 30}

Lower screening among Hispanics was associated with disparities in CRC incidence and mortality among Hispanics in Florida,\textsuperscript{31, 32} Puerto Rico,\textsuperscript{31} and New Mexico.\textsuperscript{34} In several states with large Hispanic populations, rates of CRC have declined faster among whites, who now have lower CRC incidence and mortality than Hispanic men.\textsuperscript{35} Despite these similarities, California’s Hispanic population differs from the rest of the U.S. in several ways: California has a larger proportion of Hispanics of Mexican descent, a higher proportion born outside the United States, and a higher proportion speaking a language other than English at home. Tailoring interventions to the needs of these specific groups will be important in creating effective CRC prevention strategies.\textsuperscript{23, 36}

Factors other than screening may explain some of the disparities in mortality and incidence between white and Hispanic men. CRC is associated with several lifestyle factors, including alcohol consumption, smoking, diabetes and obesity.\textsuperscript{37-40} Recent Hispanic immigrants are less
likely to smoke and consume excessive alcohol and are more likely to have healthy dietary habits than US-born Hispanics. However, as Hispanics become more acculturated they become less likely to maintain many aspects of a healthy lifestyle which may offset any improvement from increased screening.

This study has some limitations. Although the NAACCR algorithm to classify Hispanic ethnicity has been adopted by most cancer registries in the US, residual misclassification is a possibility. Misclassification has been reported for CRC as the underlying cause of death, although most of inaccuracies were due to death certificates assigning colon as the cause of death for rectal cancer patients, due to the interchangeable use of the terms colon and colorectal. In addition, screening quality may differ between whites and Hispanics, which could attenuate the preventive effect of polyp removal. Despite these limitations, the size and diversity of the California population and the quality of CCR data are important factors in bringing to light the disparities uncovered in this study.

While CRC incidence and mortality rates have remained relatively flat for Hispanic men in California, CRC incidence in 2012 was lower than in any year since 1990, following three consecutive years of decline. It remains to be seen if this trend continues, translating into lower mortality in the future. Rates of screening among Hispanic men in age groups where screening is recommended are also increasing, from 42% in 2003 to 59% in 2009. Despite these positive signs, more effective strategies aimed at both Hispanics and their healthcare providers are needed to increase CRC screening among Hispanic men and reduce their colorectal cancer burden.
Acknowledgement

The collection of cancer incidence data used in this study was supported by California Department of Public Health as part of the statewide cancer reporting program mandated by the California Health and Safety Code Section 103885; the National Cancer Institute’s Surveillance, Epidemiology and End Results Program under contracts awarded to the Cancer Prevention Institute of California, the University of Southern California, and the Public Health Institute; and the Centers for Disease Control and Prevention’s National Program of Cancer Registries, under agreement awarded to the California Department of Public Health. The ideas and opinions expressed herein are those of the author(s) and endorsement by the State of California, Department of Public Health, the National Cancer Institute, the Centers for Disease Control and Prevention, or their Contractors and Subcontractors is not intended nor should be inferred. No financial disclosures were reported by the authors of this paper.
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Use File, 2009.
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Figure 1. Colorectal cancer age-adjusted incidence\textsuperscript{a} and mortality rates in California: non-Hispanic white and Hispanic males\textsuperscript{b}

\textit{a}: \textit{In situ} cancers are excluded.

\textit{b}: Race/ethnicity is mutually exclusive; Hispanic males may be of any race.
Figure 2. Percent distribution of colorectal cancer cases by AJCC\textsuperscript{a} stage at diagnosis: non-Hispanic white and Hispanic males\textsuperscript{b}

\textit{Hispanic}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2_hispanic}
\caption{Percent distribution of colorectal cancer cases by AJCC stage at diagnosis: Hispanic males.}
\end{figure}

\textit{Non-Hispanic White}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2_non_hispanic}
\caption{Percent distribution of colorectal cancer cases by AJCC stage at diagnosis: non-Hispanic white males.}
\end{figure}

\textsuperscript{a} American Joint Committee on Cancer (AJCC) stage at diagnosis available only for cases diagnosed in 1994 forward.

\textsuperscript{b} Race/ethnicity is mutually exclusive; Hispanic males may be of any race.
Figure S1. Five-year colorectal cancer relative survival by AJCC\textsuperscript{a} stage at diagnosis: non-Hispanic white and Hispanic males\textsuperscript{b}

\textbf{Stage I}

\textbf{Stage II}

\textbf{Stage III}

\textbf{Stage IV}

\begin{itemize}
\item \textit{a}: American Joint Committee on Cancer (AJCC) stage at diagnosis available only for cases diagnosed in 1994 forward.
\item \textit{b}: Race/ethnicity is mutually exclusive; Hispanic males may be of any race.
\end{itemize}
Table 1. Characteristics of non-Hispanic white and Hispanic\textsuperscript{a} males diagnosed with colorectal cancer: California, 1990-2012

<table>
<thead>
<tr>
<th>Age at Diagnosis</th>
<th>Hispanic (N = 23,157)</th>
<th>Non-Hispanic White (N = 114,944)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>&lt; 50</td>
<td>3,647</td>
<td>16%</td>
<td>8,055</td>
</tr>
<tr>
<td>50-64</td>
<td>7,647</td>
<td>33%</td>
<td>29,359</td>
</tr>
<tr>
<td>65-74</td>
<td>6,322</td>
<td>27%</td>
<td>33,725</td>
</tr>
<tr>
<td>75+</td>
<td>5,541</td>
<td>24%</td>
<td>43,805</td>
</tr>
<tr>
<td>AJCC Stage (1994 +) \textsuperscript{b}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>4,062</td>
<td>20%</td>
<td>21,503</td>
</tr>
<tr>
<td>II</td>
<td>4,920</td>
<td>25%</td>
<td>22,918</td>
</tr>
<tr>
<td>III</td>
<td>4,723</td>
<td>24%</td>
<td>20,125</td>
</tr>
<tr>
<td>IV</td>
<td>4,028</td>
<td>20%</td>
<td>16,369</td>
</tr>
<tr>
<td>Unknown</td>
<td>2,286</td>
<td>11%</td>
<td>9,739</td>
</tr>
<tr>
<td>Insurance\textsuperscript{c}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Insured</td>
<td>789</td>
<td>4%</td>
<td>1,081</td>
</tr>
<tr>
<td>Private/Military</td>
<td>11,278</td>
<td>58%</td>
<td>59,378</td>
</tr>
<tr>
<td>Medicare</td>
<td>2,970</td>
<td>15%</td>
<td>15,104</td>
</tr>
<tr>
<td>Medicaid/Other Public</td>
<td>3,579</td>
<td>18%</td>
<td>4,928</td>
</tr>
<tr>
<td>Unknown</td>
<td>819</td>
<td>4%</td>
<td>2,987</td>
</tr>
<tr>
<td>Subsite</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Distal Colon and Rectum</td>
<td>15,028</td>
<td>65%</td>
<td>68,309</td>
</tr>
<tr>
<td>Proximal Colon</td>
<td>7,305</td>
<td>32%</td>
<td>42,440</td>
</tr>
<tr>
<td>Not Specified</td>
<td>824</td>
<td>4%</td>
<td>4,195</td>
</tr>
<tr>
<td>Poverty\textsuperscript{d}</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt; 15%</td>
<td>3,127</td>
<td>14%</td>
<td>36,383</td>
</tr>
<tr>
<td>16% - 30%</td>
<td>5,762</td>
<td>25%</td>
<td>40,390</td>
</tr>
<tr>
<td>&gt; %30</td>
<td>14,268</td>
<td>62%</td>
<td>38,171</td>
</tr>
<tr>
<td>High School graduates\textsuperscript{e}</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&gt;= 75%</td>
<td>10,477</td>
<td>45%</td>
<td>90,369</td>
</tr>
<tr>
<td>&lt; 75%</td>
<td>12,680</td>
<td>55%</td>
<td>24,575</td>
</tr>
<tr>
<td>Age-Adjusted Rates</td>
<td>Incidence</td>
<td>Mortality</td>
<td>Incidence</td>
</tr>
<tr>
<td>1990</td>
<td>43.2</td>
<td>18.8</td>
<td>71.5</td>
</tr>
<tr>
<td>1993</td>
<td>42.0</td>
<td>16.3</td>
<td>65.2</td>
</tr>
<tr>
<td>1996</td>
<td>47.1</td>
<td>18.7</td>
<td>63.6</td>
</tr>
<tr>
<td>1999</td>
<td>47.9</td>
<td>19.4</td>
<td>61.9</td>
</tr>
<tr>
<td>2002</td>
<td>45.6</td>
<td>16.7</td>
<td>57.3</td>
</tr>
<tr>
<td>2005</td>
<td>46.5</td>
<td>18.0</td>
<td>52.4</td>
</tr>
<tr>
<td>2008</td>
<td>49.1</td>
<td>16.1</td>
<td>50.4</td>
</tr>
<tr>
<td>2012</td>
<td>39.1</td>
<td>15.3</td>
<td>41.3</td>
</tr>
</tbody>
</table>
Note: Boldface indicates statistical significance ($p<0.05$).

a: Race/ethnicity is mutually exclusive; Hispanic males may be of any race.

b: American Joint Committee on Cancer (AJCC) stage at diagnosis available only for cases diagnosed in 1994 forward (Hispanic = 20,019 and white = 90,654). *In situ* cancers are excluded.

c: Insurance information available only for cases diagnosed in 1996 forward (Hispanic=19,435 and white=83,478).

d: percentage of persons in census tract under 200% of poverty level.

e: percentage of persons 25 years and older in census tract with a high school diploma or equivalent.
Table 2: Annual percent change (APC) in male colorectal cancer age-adjusted mortality and incidence rates in California

<table>
<thead>
<tr>
<th></th>
<th>Hispanic* Males</th>
<th>Non-Hispanic White Males</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Years</strong></td>
<td>APC</td>
</tr>
<tr>
<td><strong>MORTALITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>1990 - 2013</td>
<td>-0.4</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 50</td>
<td>1990 - 2013</td>
<td>1.6</td>
</tr>
<tr>
<td>50-64</td>
<td>1990 - 2013</td>
<td>-0.2</td>
</tr>
<tr>
<td>65-75</td>
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<td>-1.2</td>
</tr>
<tr>
<td>2004 - 2013</td>
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<tr>
<td>75 +</td>
<td>1990 - 2013</td>
<td>-0.3</td>
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<td><strong>INCIDENCE</strong></td>
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<tr>
<td>Overall</td>
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<tr>
<td></td>
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<td>-4.8</td>
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<td>-0.7</td>
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<tr>
<td>Proximal Colon</td>
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<tr>
<td><strong>Stage at Diagnosis (1994 +)</strong></td>
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<td>Stage III</td>
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<tr>
<td>Stage IV</td>
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*Note: Boldface indicates statistical significance (p<0.05).*

a: Race/ethnicity is mutually exclusive; Hispanic males may be of any race.
b: American Joint Committee on Cancer (AJCC) stage at diagnosis available only for cases diagnosed in 1994 forward (Hispanic = 18,495 and white = 85,805). *In situ* cancers are excluded.