

# Characteristics and Trends of Early Onset Colorectal Cancer Incidence: Implication for Adolescents and Young Adults

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## Introduction

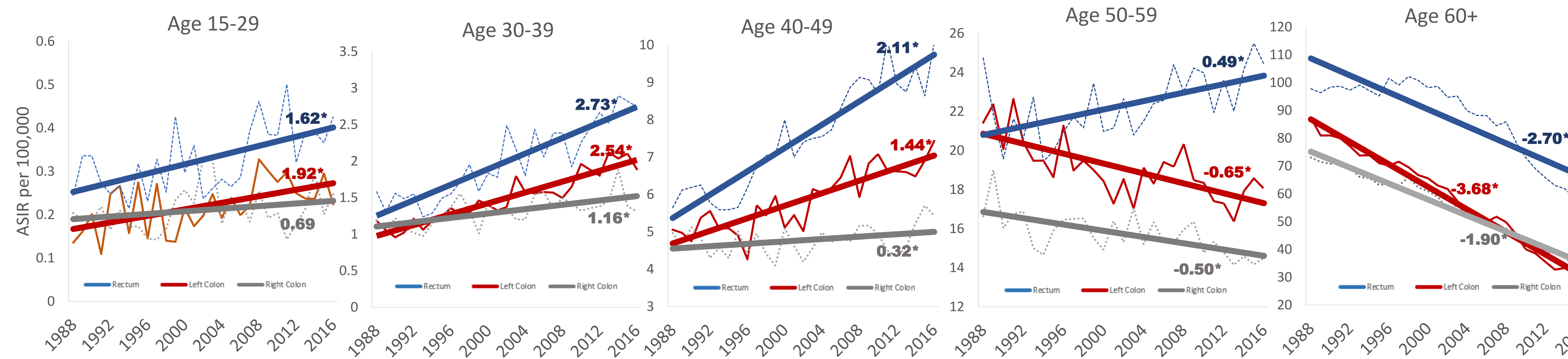
- Incidence of early onset colorectal cancer (CRC), defined as those diagnosed before age 50, has been increasing in recent years. The rise in incidence is more prominent for those aged 30-49 years old and for cancers of distal or left colon and rectum.
- For adolescents and young adults (AYA, age 15-39), CRC is considered a rare disease with poor outcome, thus the recent increasing trend of early onset CRC is of great public health concern.
- We investigated characteristics of CRC incidence across different age groups with a specific focus on the AYA population to understand factors associated with the recent increase in this young and vulnerable population.

## Methods

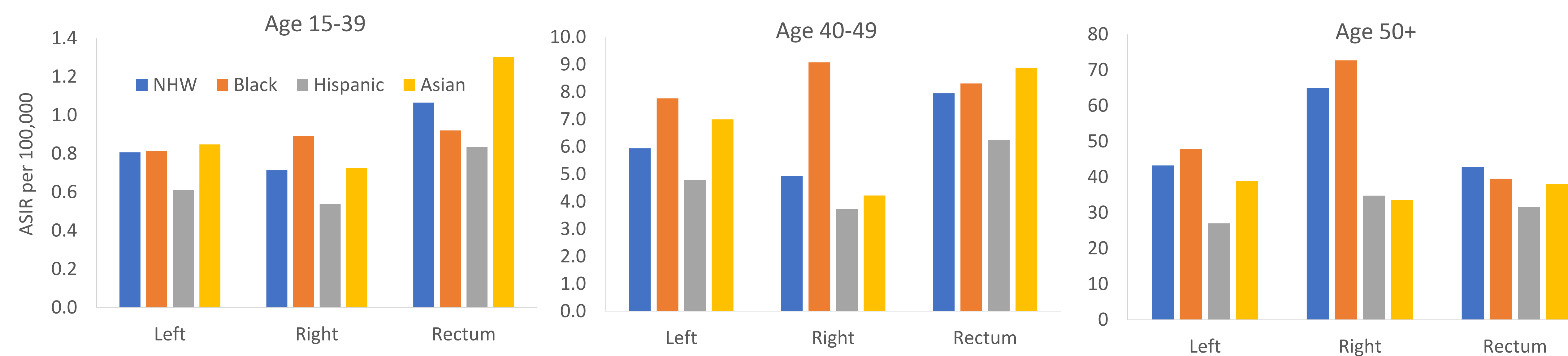
- Data Source:** From California Cancer Registry (CCR) data, we identified 170,000 patients diagnosed with CRC at age 15 or older from 1988 to 2016, using cancer registry data released on December 2018. CRC was defined as all invasive cancer located in colon and rectum except in appendix (C18.0, C18.2-C20.9) and excluding ICDO-3 histologic subtypes 9050-9055, 9140, 9590-9992.
- Statistical Analysis:** Age specific incidence rates were estimated using incident counts and underlying population of California provided by CCR by age categories at diagnosis 15-39, 40-49, and 50+. The case distribution and incidence patterns were examined separately for left colon (C18.0, C18.2-C18.4), right colon (C18.5-18.7) and rectum (C19.9-C20.9). They were further assessed by sex (male, female), socioeconomic status (SES; lowest, lower-middle, middle, upper-middle, highest), race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Asian/Pacific Islander), and tumor stage (localized, regional, distant). We used the Joinpoint Regression Program to analyze annual incidence trends in five age groups (15-29, 30-39, 40-49, 50-59, 60+).

## Results

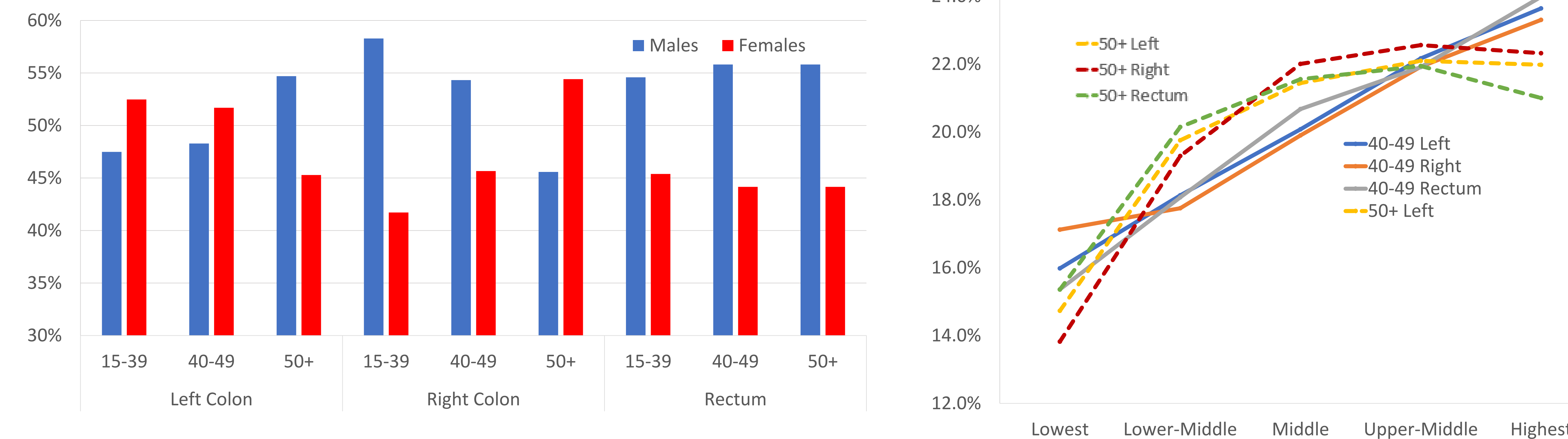
- As previously noted, statistically significant increase in incidence trend is observed for those aged 15-29, 30-39 and 40-49 in rectum and left colon, with most notable increase for those aged 40-49 (\*AAPC p<0.05).



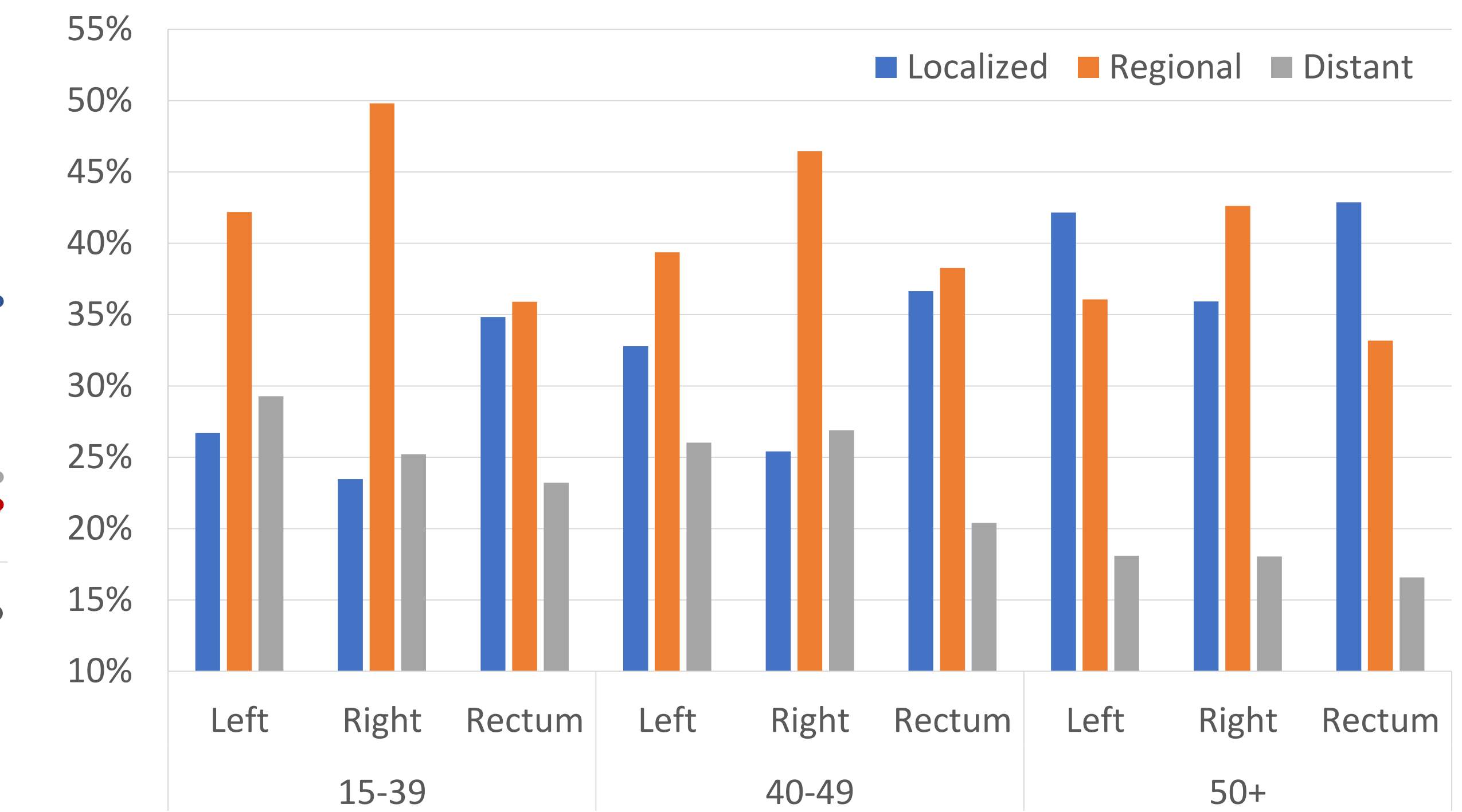
- Asians have highest rate of early onset rectal cancer, highest rate of left colon cancer in 15-39 year olds and second highest in 40-49 year olds. Incidence rates for Asians over age 50 are generally lower than other groups. Asians aged 15-39 with rectal cancer are most often diagnosed with localized disease, followed by regional and distant (data not shown).



- Slight female dominance exists in incidence of cancer in the left colon for age 15-39 and 40-49, but for 50+, higher proportion are males. For right colon, the sex pattern is reversed; male dominance for those under age 49, and female for 50+. For rectal cancer, clear male dominance exists for all age.
- For ages 40-49, proportion of cases increases with higher SES, whereas in older adults, the trend is only true among lower income patients. Among 15-39 year olds, there is no trend by SES.



- Early onset colorectal cancer occurs predominantly as regional stage disease. But older adult CRC tends to be localized disease.



## Conclusions

- Increasing trend of cancer incidence in distal colon and rectum in the young adult population highly implicate the role of environmental factors such as obesity and exercise.**
- Our findings suggest that females and Asians, and those with regional disease make up larger proportion of excess cases with left colon cancer in the younger age group.**
- Racial/ethnic, sex, SES, and tumor stage for early onset CRC follow a distinctively different pattern than those of older adults.**

## Acknowledgements

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