Alcohol-Associated Cancers in Texas, 2006-2015

Prepared by the Texas Cancer Registry
Texas Department of State Health Services

May 2018

Background

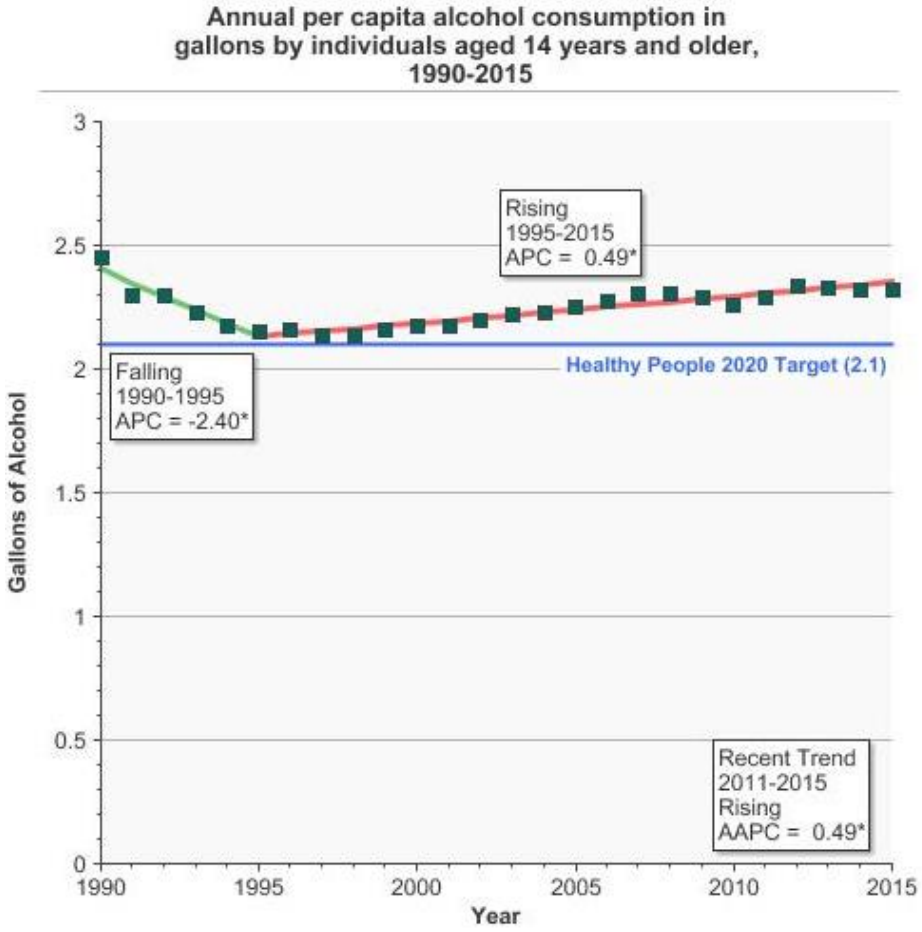
- Alcohol use is associated with an increased risk of at least six different types of cancer.
- This statistical report describes the burden of alcohol-related cancers in Texas between 2006 and 2015.

Implications for Public Health Practice

- The burden of alcohol-associated cancers can be reduced through efforts to lower alcohol consumption, in particular underage drinking, heavy drinking, and binge drinking.
- Evidence-based population-level interventions to reduce alcohol intake could help decrease the incidence of these cancers in Texas.

Alcohol Consumption in the United States

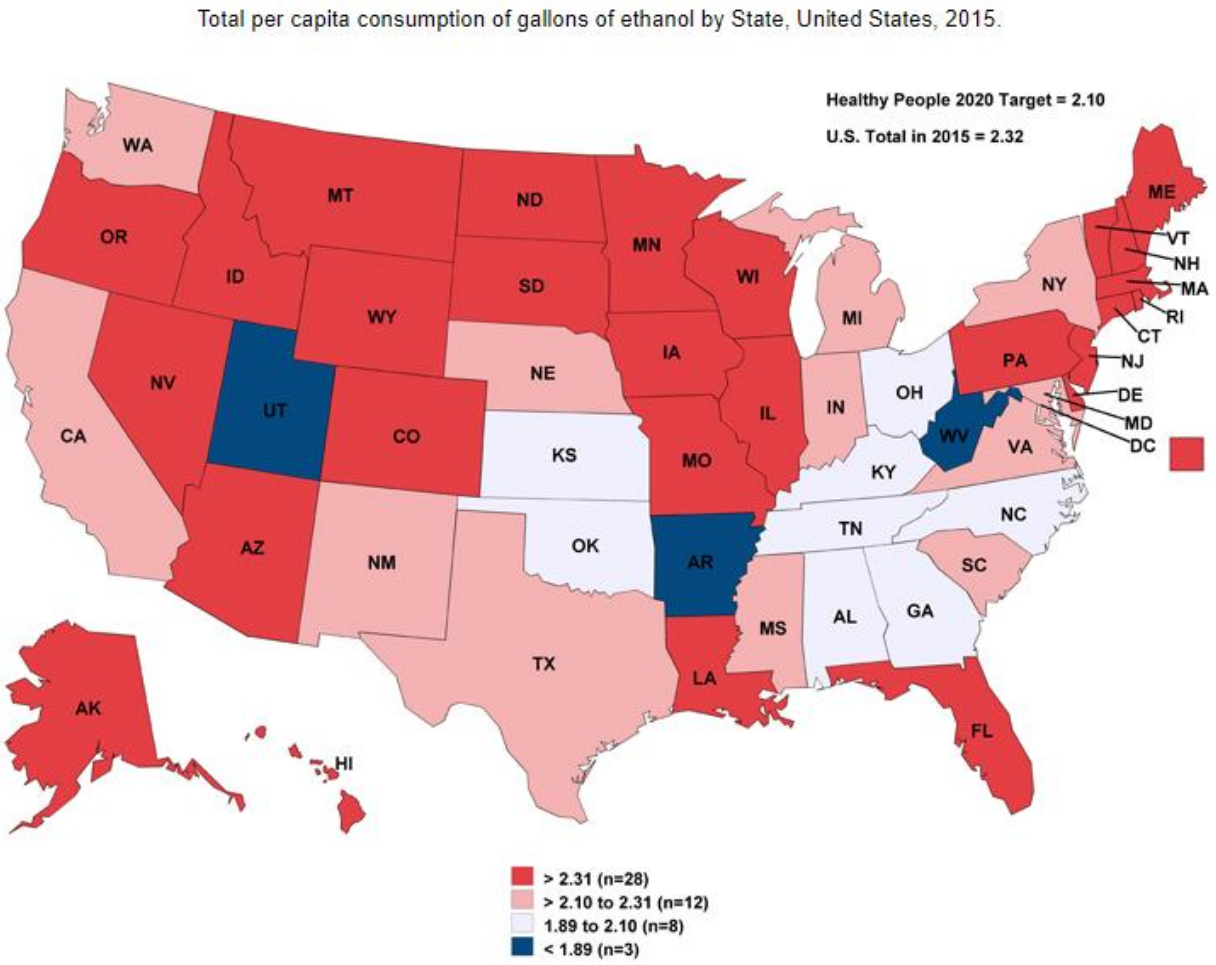
- Nationally, beverage sales have increased since 1995.[1]
- In 2016, half of Texas adults self-reported drinking alcohol in the last month, 7% reported heavy drinking, and 18% reported binge drinking.[2]
- Healthy People 2020, a U.S. Department of Health and Human Services program to promote healthy behaviors, has set a goal of reducing the average annual alcohol consumption of individuals aged 14 and older to 2.1 gallons or less by 2020.



[1] Haughwout et al. Surveillance Report #104. National Institute of Alcohol Abuse and Alcoholism (NIAAA), 2016.
[2] Behavioral Risk Factor Surveillance System (BRFSS), 2018. Heavy drinking=7 or more drinks per week; binge drinking=5 or more drinks for males and 4 or more drinks for females in one occasion. Figure: National Cancer Institute, 2018. Retrieved from https://progressreport.cancer.gov/prevention/alcohol.

Alcohol Consumption in the U.S. (continued)

In 2015, the average alcohol consumption in Texas for individuals 14 and older was between 2.10 to 2.31 gallons. This is greater than the Healthy People 2020 target of 2.1 gallons or less consumed per year.[1]

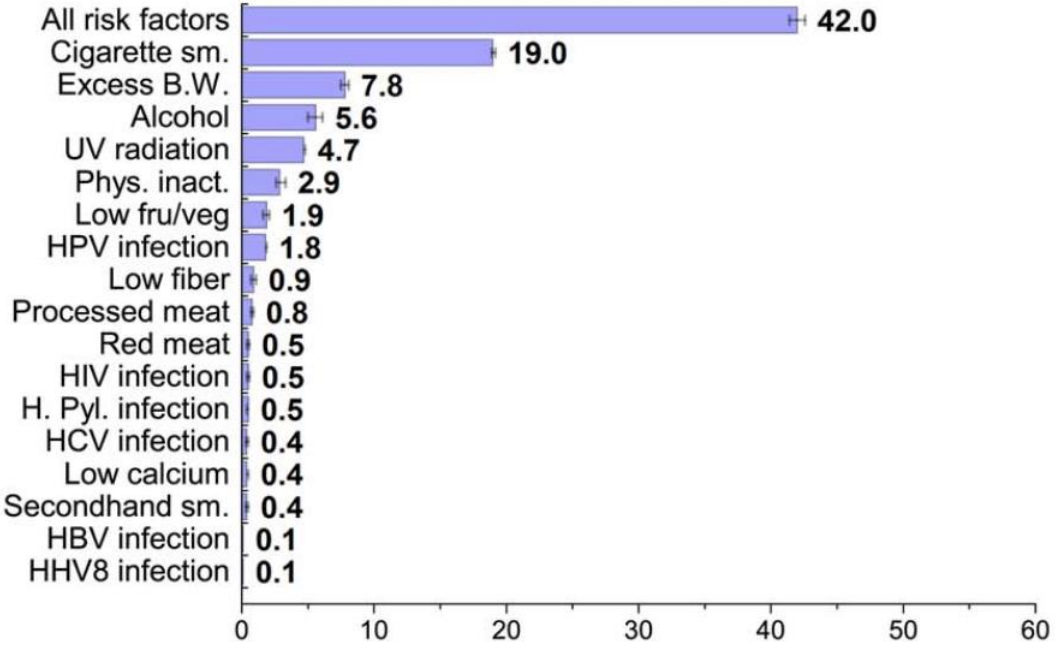


[1] National Institute on Alcohol Abuse and Alcoholism (NIAAA). Surveillance Report #108, 2017.

Alcohol and Cancer Risk

- Alcohol consumption increases the risk of the following types of cancer: **lip, oral cavity, and pharyngeal cancers, laryngeal (voice box) cancer, esophageal cancer, colorectal cancer, liver cancer, and female breast cancer**.
- Alcohol is estimated to be the 3rd largest modifiable contributor to cancer incidence; it is attributed to 5.6% of all cancer cases and 4% of all cancer deaths in the U.S.[1]

Estimated Proportion of Incident Cancer Cases Attributable to Evaluated Risk Factors in Adults Aged 30 Years and Older in the U.S. in 2014[1]



[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.

Alcohol and Cancer Risk (continued)

- Cancer risk increases with the amount of alcohol consumed, with risk generally increasing with more than 1-2 drinks per day for men and 1 drink per day for women.
- However, low to moderate alcohol consumption has been linked in some studies to reduced cardiovascular disease risk.
- Heavy alcohol use (more than 7 drinks per week for females and more than 14 drinks per week for males, or more than 3 drinks on any day) is particularly harmful and strongly linked to liver cancer.

Figure: National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2017.

Health Effects of Alcohol

- Alcohol is thought to increase cancer risk through several mechanisms:[1]
  - Directly damaging body tissue in the mouth and throat.
  - Converting to acetaldehyde, which can damage cells.
  - Interacting with harmful chemicals in tobacco smoke.
  - Increasing estrogen levels and therefore risk of breast cancer in women.
  - Reducing absorption of nutrients.
  - Increasing body weight.
- Heavy alcohol use can also cause other health problems such as inflammation and cirrhosis of the liver, increased blood pressure, heart disease and stroke, and is especially harmful for underage drinkers and pregnant women.

[1] American Cancer Society: https://www.cancer.org/cancer/cancer-causes/diet-physical-activity/alcohol-use-and-cancer.html

Definitions/Abbreviations

- **Age-adjusted incidence rate:** number of new cases diagnosed per 100,000 people per year. Numbers are age-adjusted to allow for comparison between populations with different age compositions.
- **Average annual percent change (APC):** measures the trend in rates over time, such as how quickly (or slowly) a cancer has increased or decreased in incidence over a given time period. For example, an APC of -2.0% over 10 years means that there was a 2% decrease in incidence rates per year. It is calculated by fitting a least squares regression line to the natural logarithm of the age-adjusted rates. The slope is tested for a significant difference from 0.
- **Overall rates/trends**: Where alcohol-related cancers are analyzed overall, incidence rates are presented including colorectal cancer, while APCs are presented without colorectal cancer, unless otherwise specified. Colorectal cancer rates have declined substantially in recent years due to increased screening to remove pre-cancerous polyps, therefore potentially masking overall rates changes from 2006-2015.
- **Relative risk (RR):** measures the risk (of cancer) between two groups. Here, a RR>1 means there is an increase in risk associated with alcohol consumption.
- **Racial/ethnic group acronyms:** non-Hispanic (NH), Asian/Pacific Islander (A/PI), American Indian/Alaska Native (AI/AN).
- **Note on confidence intervals (CIs):** A 95% CI around the rates at least as large as the rates itself is generally considered unstable. Results with large CIs should be interpreted with caution. Data for American Indian/Alaskan native are often not shown in this report due to unstable rates and large CIs.

Alcohol-Associated Cancer Incidence

The proportion of cases at each cancer site attributed to alcohol varies by cancer site and sex, ranging from 46% for male oral cavity & pharyngeal cancer cases, to 8% of female colorectal cancer cases.[1]

Estimated proportion of cancer cases in U.S. adults 30 years and older in 2014 attributed to alcohol consumption (PAF)

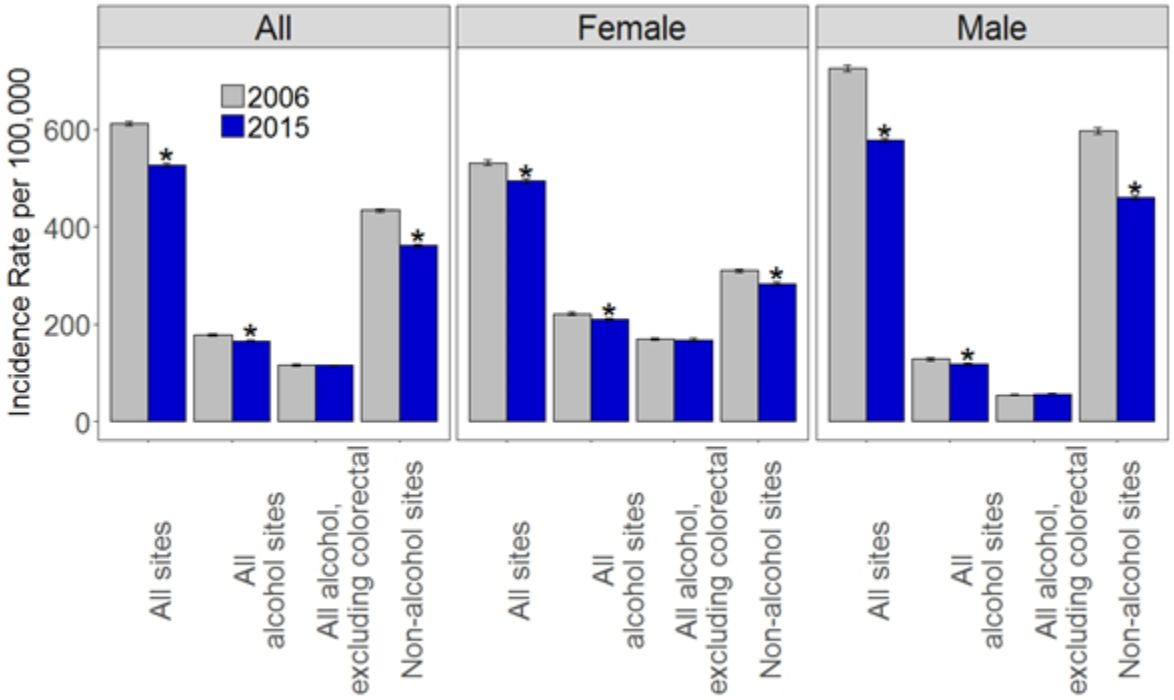
Site	PAF (%) Males	PAF (%) Females	PAF (%) All
Oral cavity & pharynx	46.3%	27.4%	40.9%
Larynx	25.6%	14.0%	23.2%
Liver	24.8%	11.9%	21.6%
Esophagus	19.0%	28.4%	21.0%
Breast	~	16.4%	16.4%
Colorectal	17.1%	8.1%	12.8%

Alcohol use is a key modifiable risk factor, contributing to approximately 5.6% of all new cancer cases (4.8% in males and 6.4% in females).[1]

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.

Alcohol-Associated Cancer Incidence Rates in Texas by Sex, 2006 and 2015

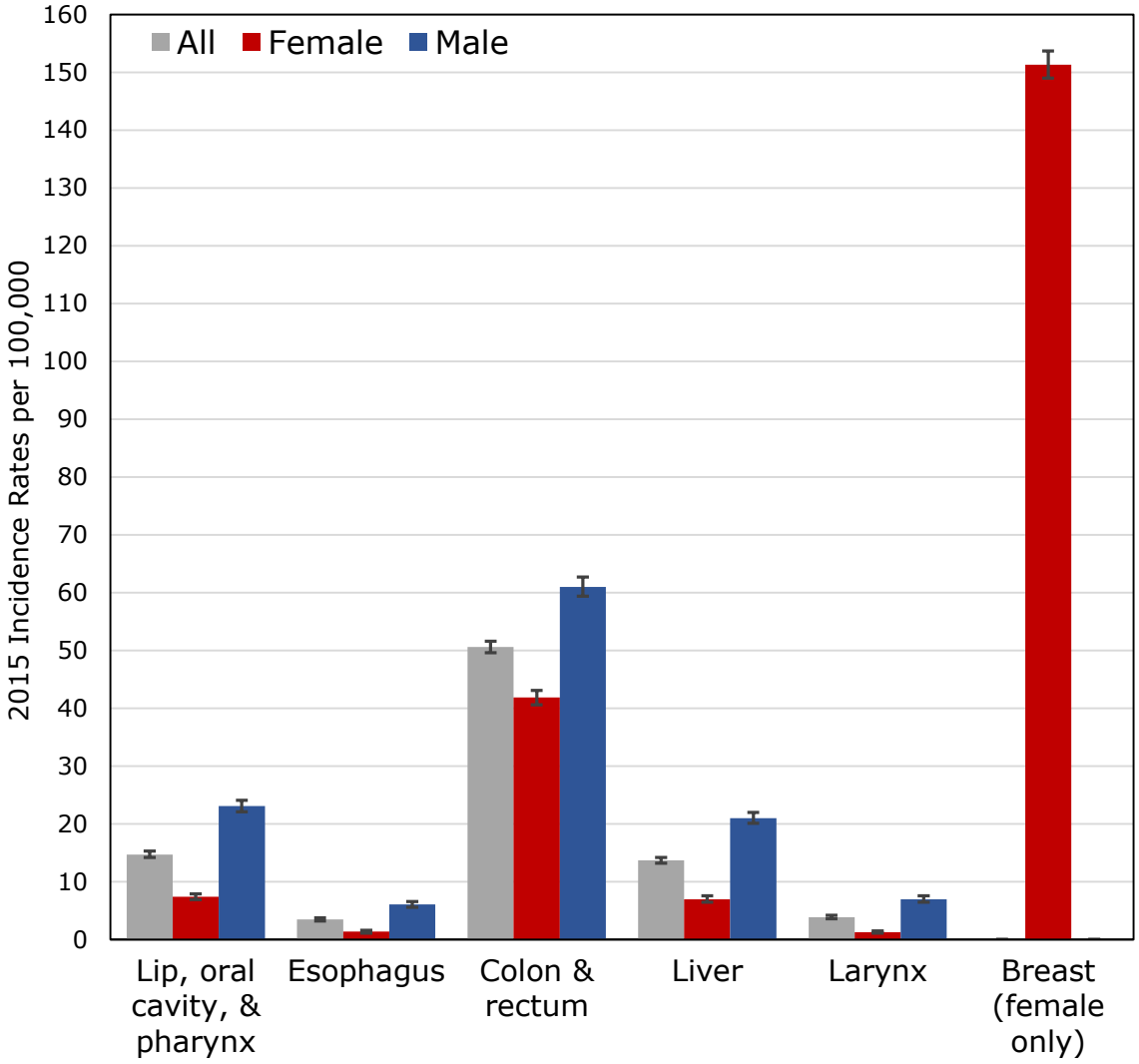
- In 2015, 32% of 105,933 new invasive cancers in adults 18 years of age and older were at alcohol-associated sites (43% of cancers in females and 22% cancers in males).
- Overall, alcohol-related cancers declined from 2006-2015 from 179/100,000 to 168/100,000. The 10-year average annual percent change (APC) was -1.0%.
- Incidence rates of non-alcohol-related cancers decreased significantly (APC -2.2%), and this decline was significantly faster in males (APC -3.2%) than females (-0.9%).



*APC from 2006-2015 was different from 0 (p<0.05)

Since colorectal cancer incidence rates have declined due to increased screening for precancerous polyps, trends were analyzed both with and without colorectal cancer. When colorectal cancer is excluded, incidence rates of alcohol-related cancers remained stable.

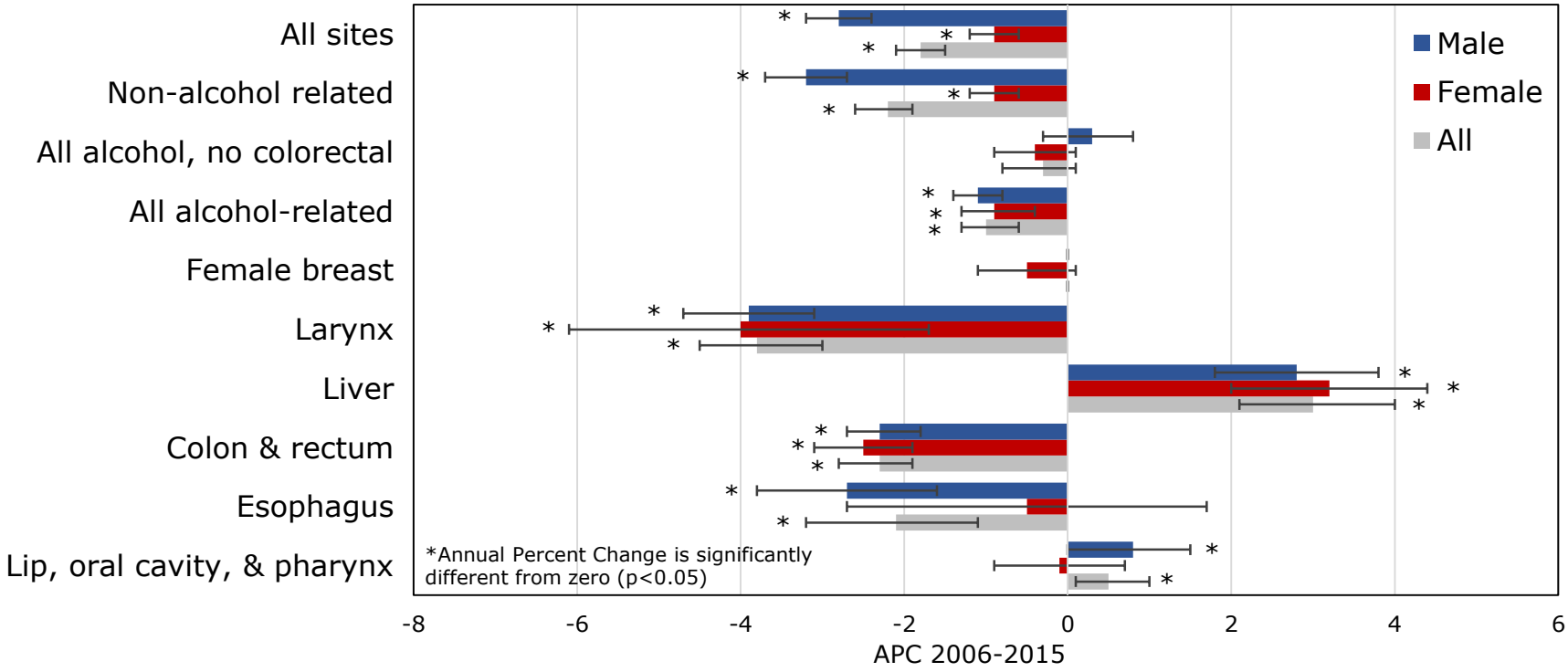
Alcohol-Associated Cancer Incidence Rates in Texas by Cancer Site and Sex, 2015



- All alcohol-related cancers (except female breast cancer) are substantially more common in males than females.
- The most common alcohol-related cancer is female breast cancer, followed by colorectal cancer. However, not all cases of these cancers can be attributed to alcohol consumption.

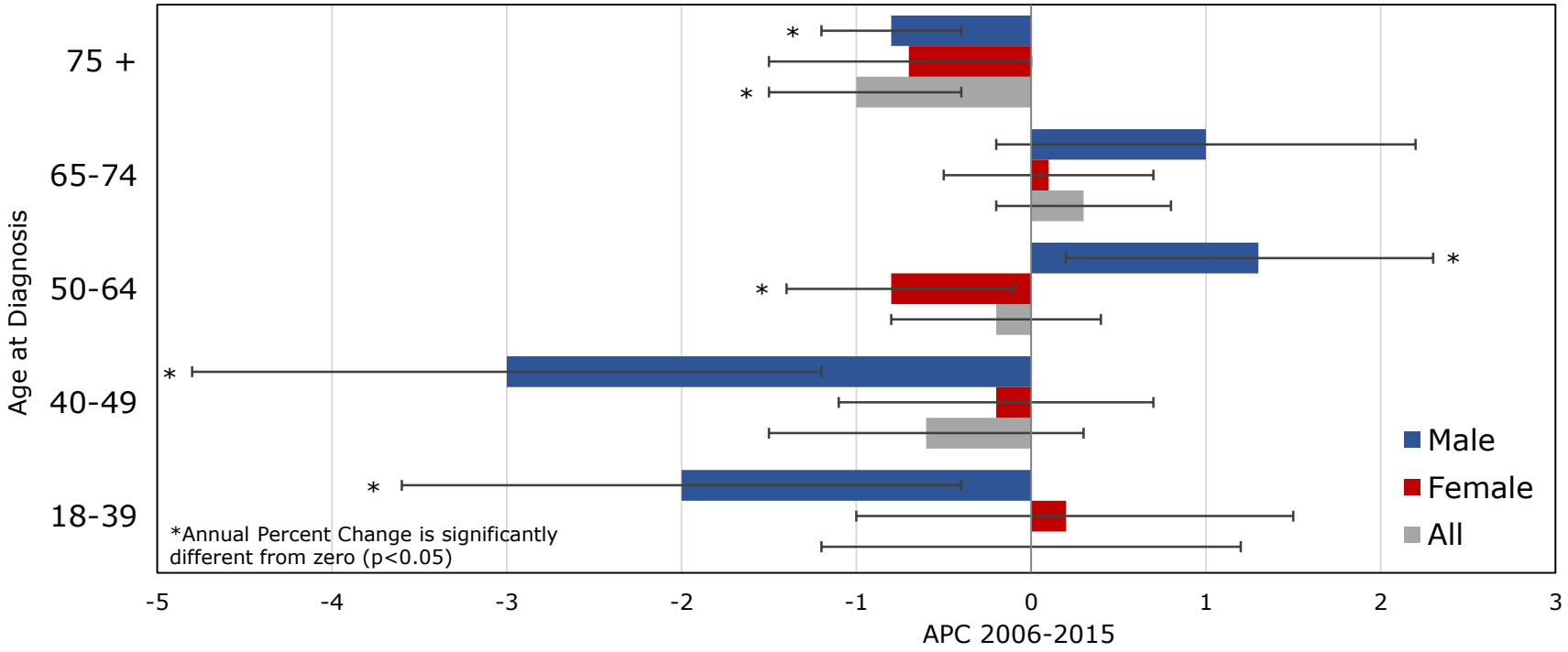
Alcohol-Associated Cancer Incidence Rate Trends by Cancer Site and Sex, 2006-2015

- Liver cancer incidence rates showed the largest significant increase (from 10.4/100,000 in 2006 to 13.7/100,000 in 2015).
- Lip, oral cavity, and pharyngeal cancer rates also increased significantly, which can be attributed to a significant increase in rates among males.
- Incidence rates of colorectal cancer, esophageal cancer (in males), and laryngeal cancer all declined significantly from 2006-2015.



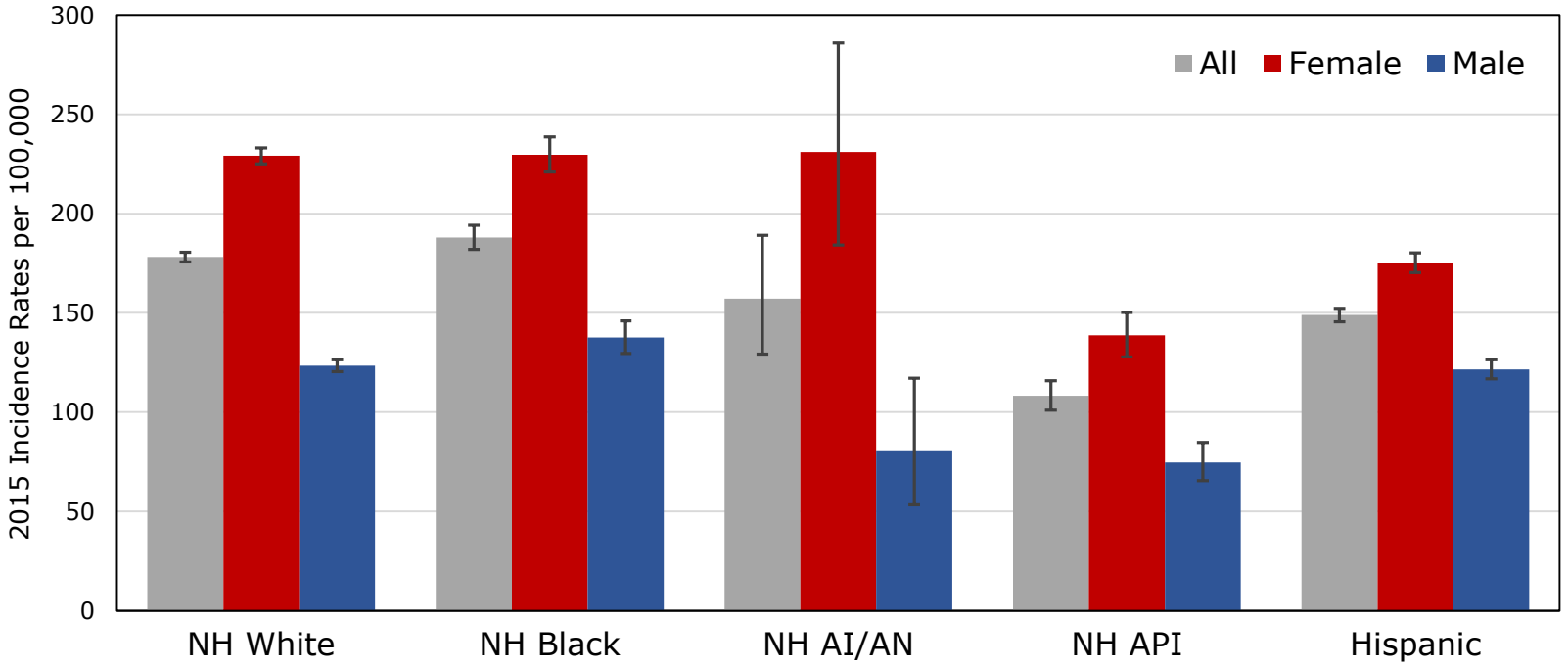
Alcohol-Associated Cancer Incidence Rates by Sex and Age at Diagnosis, 2006-2015

- After excluding colorectal cancer, incidence rates of alcohol-related cancers declined significantly in those aged 75 years and older.
- Incidence rates also declined significantly in males ages 18-39 and 40-49 and females ages 50-64 years.
- Incidence rates increased significantly in males ages 50-64. Rates also tended to increase in males ages 65-74, but not significantly so.



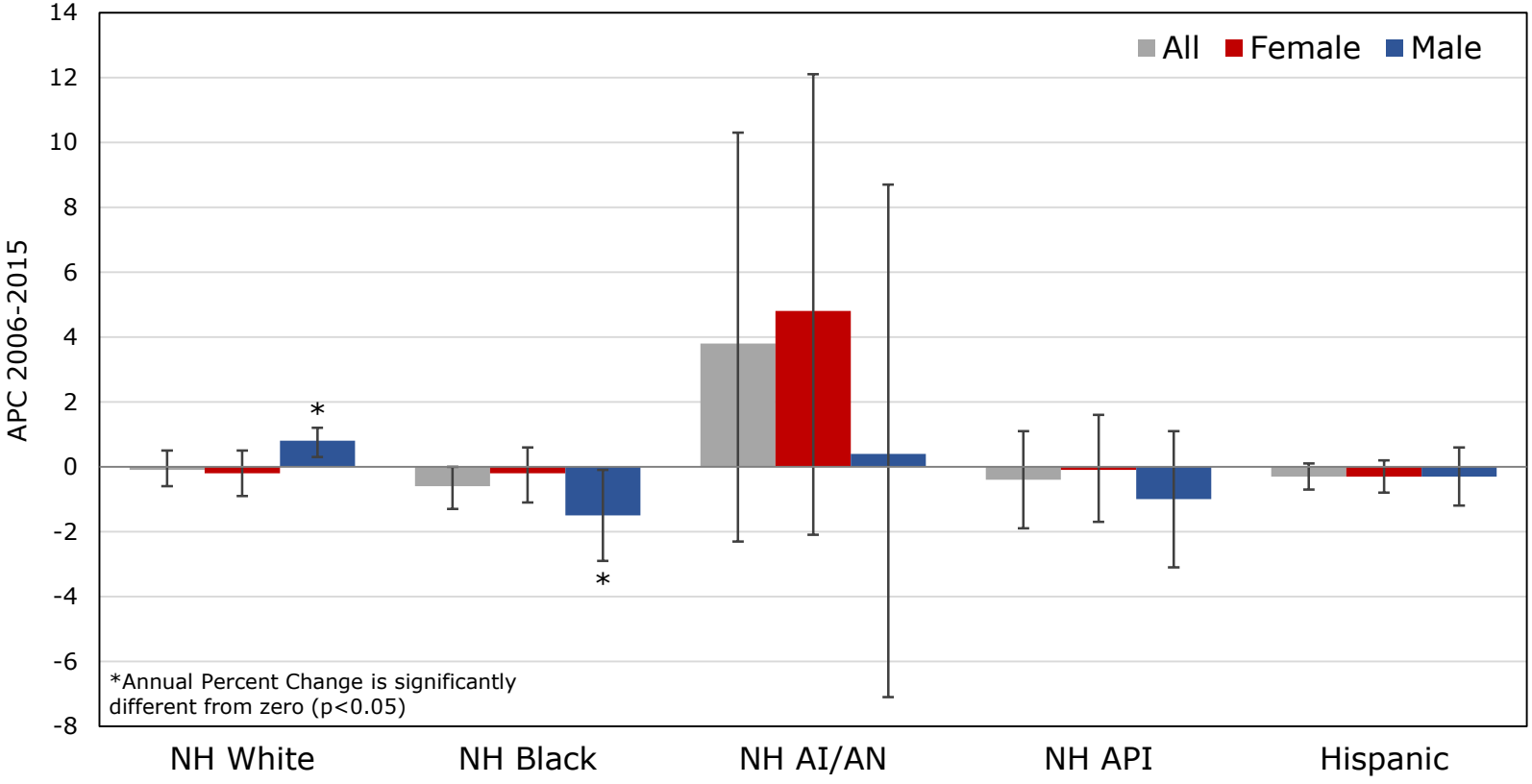
Alcohol-Associated Cancer Incidence Rates in Texas by Race/Ethnicity and Sex, 2015

- Overall, incidence rates for alcohol-associated cancers (with colorectal cancer excluded) were highest in non-Hispanic (NH) blacks, followed by NH whites.
- For females, the highest incidence rates were for NH whites and NH blacks, followed by NH American Indians/Alaska Natives (AI/AN).
- For males, rates were highest in NH blacks, while NH whites and Hispanics had similar rates.



Alcohol-Associated Cancer Incidence Rate Trends in Texas by Race/Ethnicity and Sex, 2006-2015

- After excluding colorectal cancer, incidence rates remained stable in most race/ethnicity groups.
- There was a significant increase in rates among non-Hispanic (NH) white males and a significant decrease among NH black males.



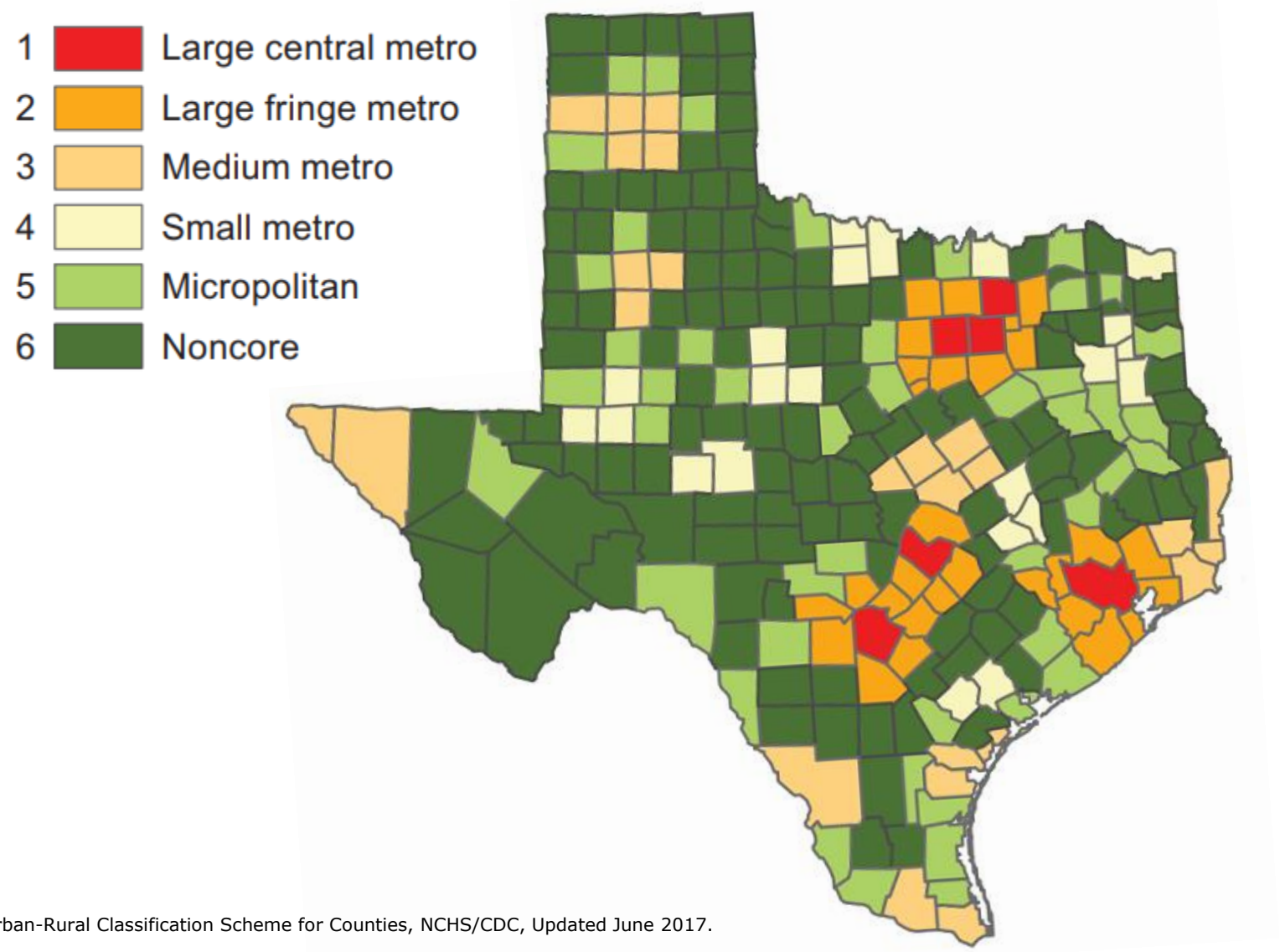
Urban-Rural Classifications

The Texas Cancer Registry uses the National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties[1] to classify population areas across the state.

Category	Definition
Metropolitan	
Large central metro	Counties in metropolitan statistical areas (MSA) with populations of 1 million or more that contain entire populations in the largest principal city, have entire populations contained in largest principal city, or contain at least 250,000 inhabitants of any principal city.
Large fringe metro	Counties in MSAs with populations of 1 million or more that do not qualify as large central metro counties.
Medium metro	Counties in MSAs of populations between 250,000 – 999,999.
Small metro	Counties in MSAs of populations less than 250,000.
Nonmetropolitan	
Micropolitan	Counties with an urban cluster population of 10,000-49,999.
Noncore	Nonmetro counties that do not qualify as micropolitan.

[1]NCHS Urban-Rural Classification Scheme for Counties, NCHS/CDC, Updated June 2017.

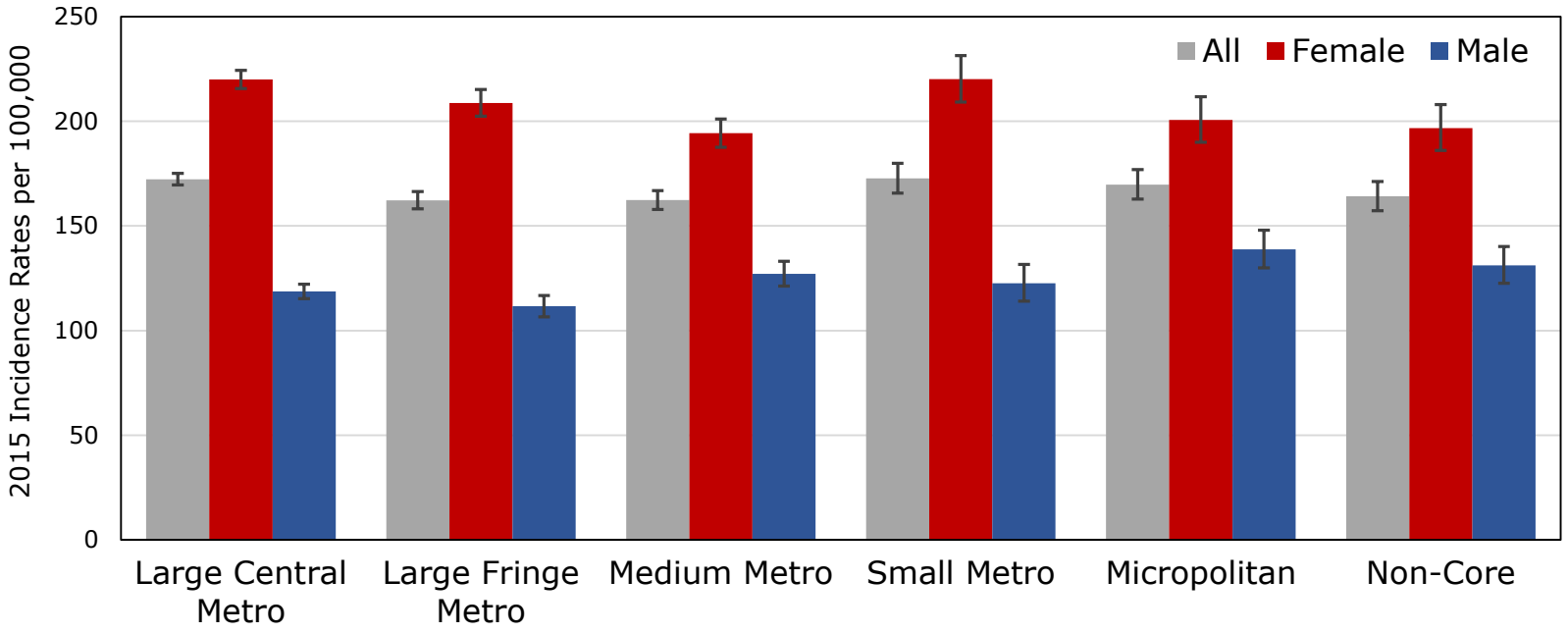
Urban-Rural Classifications of Texas Counties



NCHS Urban-Rural Classification Scheme for Counties, NCHS/CDC, Updated June 2017.

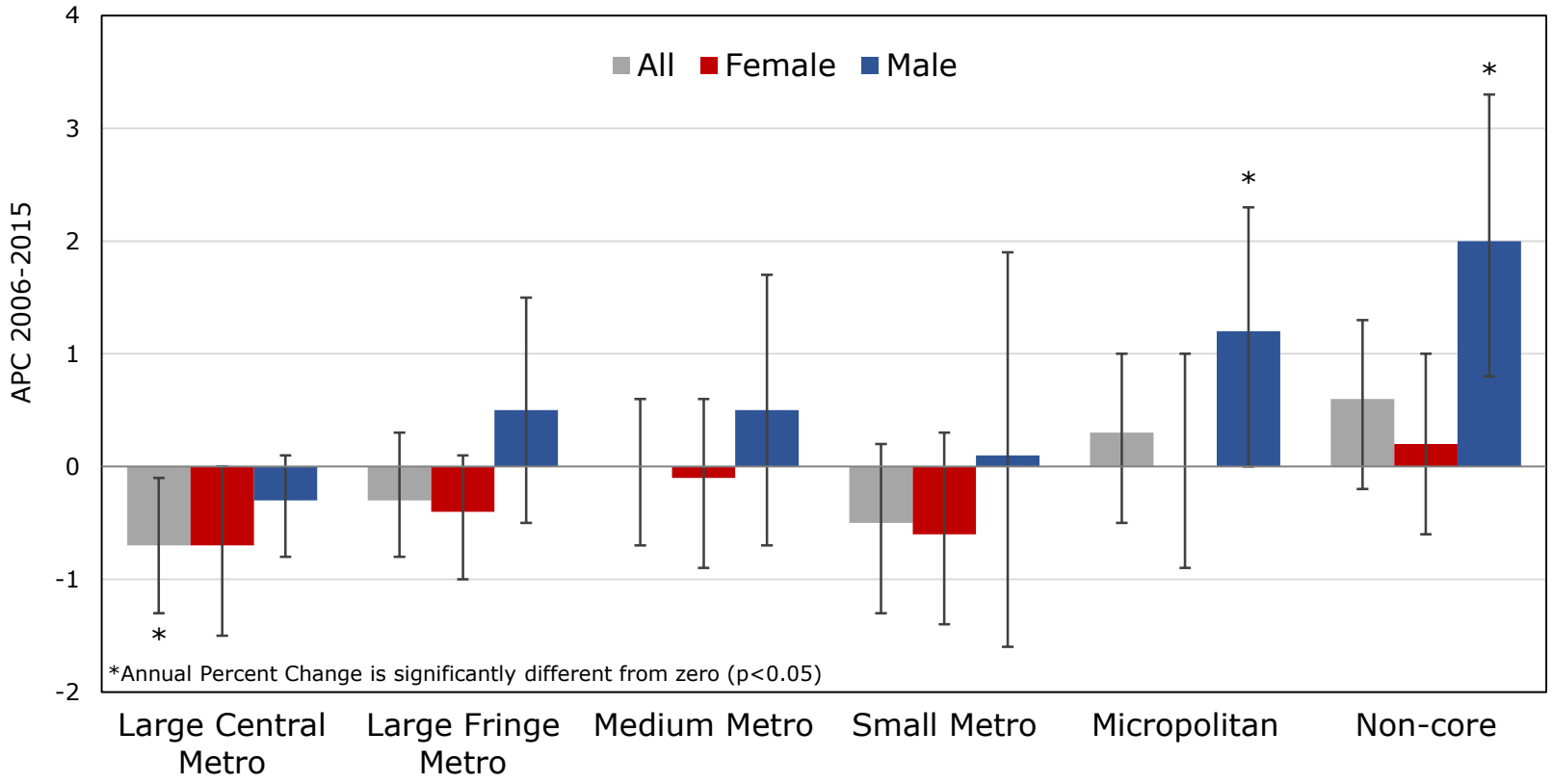
Alcohol-Associated Cancer Incidence Rates in Texas by Urban-Rural Classification and Sex, 2015

- Overall, there was not a clear relationship between incidence rates and urban-rural classification.
- However, overall incidence rates were highest in large central metro areas and small metro areas. The lowest rates were in large fringe metro and medium metro areas.
- For females, the highest rates were in small metro and large central metro areas, and the lowest were in medium metro areas.
- For males, the highest incidence rates were in micropolitan areas, and the lowest rates were in large fringe metro areas.



Alcohol-Associated Cancer Incidence Rate Trends by Urban-Rural Classification and Sex, 2006-2015

- There was a significant overall decline in incidence rates of alcohol-related cancers in large central metro areas.
- There was a significant increase in rates for males in micropolitan and non-core areas.
- Other rates remained stable but tended to increase for males and decrease for females.



Alcohol-Associated Cancer Incidence Trends by Site and Urban-Rural Classification, 2006-2015

Four alcohol-associated cancer sites saw a significant ***decrease*** in incidence rates in some population areas.

- Esophageal cancer incidence rates significantly decreased in all metro areas except small metro areas.
- Colorectal cancer rates significantly decreased in all areas except micropolitan areas, which showed a non-significant tendency to decline.
- Laryngeal cancer rates significantly decreased in all areas except non-core areas, which showed a non-significant tendency to decline.
- Female breast cancer rates decreased significantly in large central metro areas only, but these areas still had the highest rates in 2015. Rates in most other areas were stable, but tended to decline in some metro areas.

	Large Central Metro		**Large Fringe Metro**		**Medium Metro**		**Small Metro**		**Micropolitan**		**Non-core**	
	Rate	*APC*	*Rate*	*APC*	*Rate*	*APC*	*Rate*	*APC*	*Rate*	*APC*	*Rate*	*APC*
Lip, oral cavity, & pharynx	14.4	0.2	15.4	0.8	12.4	0.2	15.7	0.6	17.8	2.2*	16.6	1.3*
Esophagus	4.8	-2.5*	5.5	-2.1*	4.4	-3.2*	7.2	0.3	6.3	-1.2	6.6	1.7
Colon & rectum	49.4	-2.5*	46.8	-2.9*	49.4	-2.4*	55.5	-1.9*	60.1	-0.7	56.2	-1.5*
Liver	15.2	2.4*	10.3	3.4*	15.4	3.2*	11.1	3.9*	14.3	4.2*	11.7	4.6*
Larynx	3.6	-4.5*	3.5	-4.2*	4.1	-2.3*	4.3	-4.3*	4.2	-3.5*	5.8	-0.8
Female breast	159.0	-0.9*	153.7	-0.5	143.0	-0.2	149.6	-0.8	130.8	-0.2	132.1	0.1

* Annual Percent Change significantly different from 0 — Significantly decreased from 2006-2015 — Significantly increased from 2006-2015

Alcohol-Associated Cancer Incidence Trends by Site and Urban-Rural Classification, 2006-2015

Two cancer sites associated with alcohol use saw a significant ***increase*** in incidence rates in some population areas.

- Lip, oral cavity, & pharyngeal cancer incidence rates remained stable in metro areas but increased significantly in non-metro areas. By 2015, non-metro areas had the highest incidence rates.
- Liver cancer rates increased significantly across all areas and at a faster rates in non-core areas.

	Large Central Metro		Large Fringe Metro		Medium Metro		Small Metro		Micropolitan		Non-core	
	Rate	*APC*	*Rate*	*APC*	*Rate*	*APC*	*Rate*	*APC*	*Rate*	*APC*	*Rate*	*APC*
Lip, oral cavity, & pharynx	14.4	0.2	15.4	0.8	12.4	0.2	15.7	0.6	17.8	2.2*	16.6	1.3*
Esophagus	4.8	-2.5*	5.5	-2.1*	4.4	-3.2*	7.2	0.3	6.3	-1.2	6.6	1.7
Colon & rectum	49.4	-2.5*	46.8	-2.9*	49.4	-2.4*	55.5	-1.9*	60.1	-0.7	56.2	-1.5*
Liver	15.2	2.4*	10.3	3.4*	15.4	3.2*	11.1	3.9*	14.3	4.2*	11.7	4.6*
Larynx	3.6	-4.5*	3.5	-4.2*	4.1	-2.3*	4.3	-4.3*	4.2	-3.5*	5.8	-0.8
Female breast	159.0	-0.9*	153.7	-0.5	143.0	-0.2	149.6	-0.8	130.8	-0.2	132.1	0.1

* Annual Percent Change significantly different from 0 — Significantly decreased from 2006-2015 — Significantly increased from 2006-2015

Alcohol-Associated Cancers in Texas, 2006-2015

Site-Specific Incidence Rate Trends

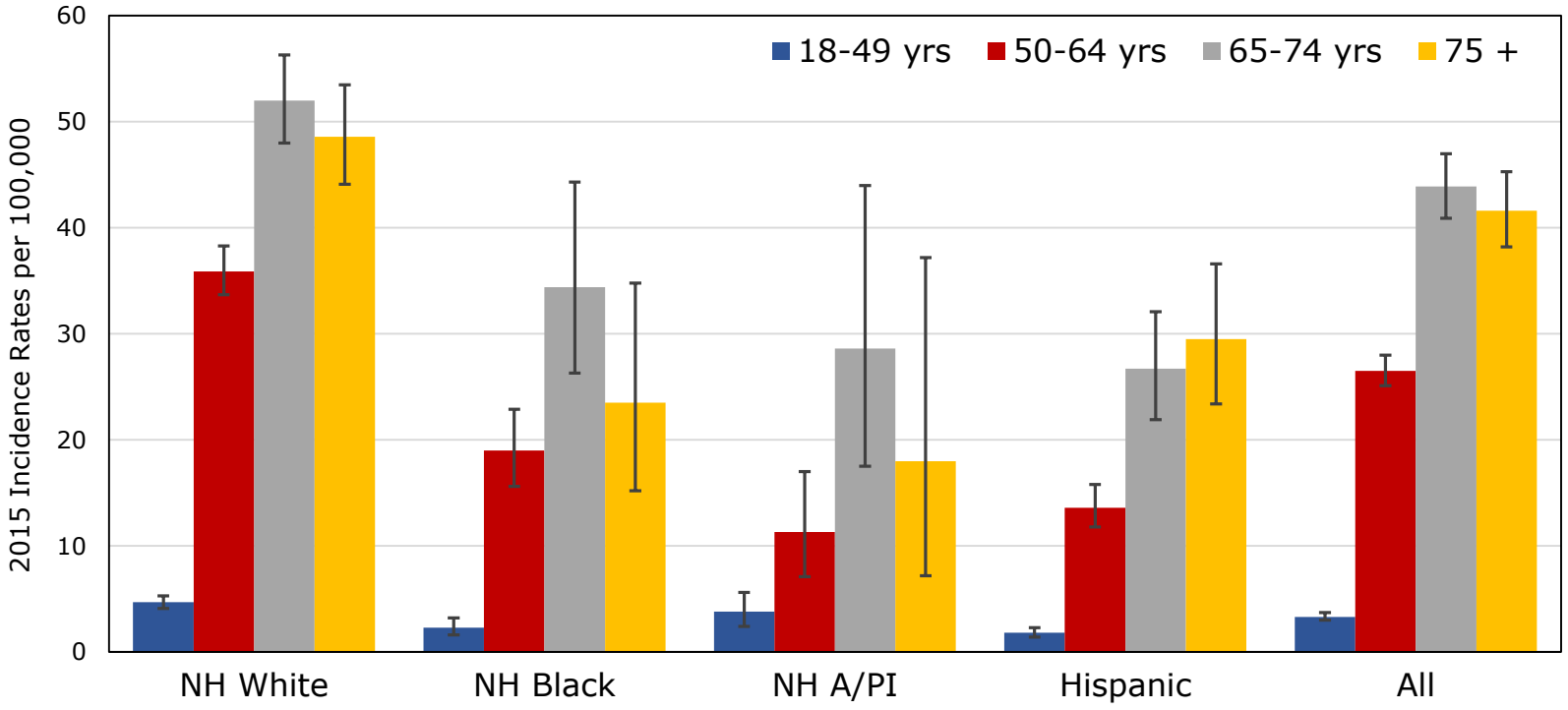
Lip, Oral Cavity, and Pharyngeal Cancer and Alcohol

- By site, the proportion of cases attributable to alcohol is highest for lip, oral cavity, and pharyngeal cancer, with 41% of cases generally attributed to alcohol.[1]
- When compared to nondrinkers and occasional drinkers, the relative risk of lip, oral cavity, and pharyngeal cancer varies based on how much alcohol is consumed. [2]
  - For those consuming 12.6-50 grams of alcohol per day, the relative risk increases by 100%.
  - For those consuming more than 50 grams of alcohol per day, the relative risk increases by over 400%.
- The risk is higher if tobacco is also used.[3]

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.
[2] Bagnardi et al. Br J Cancer. 2015;112(3):580-593.
[3] Hashibe et al. Cancer Epidemiol Biomarkers Prev. 2009;18(2):541-550.

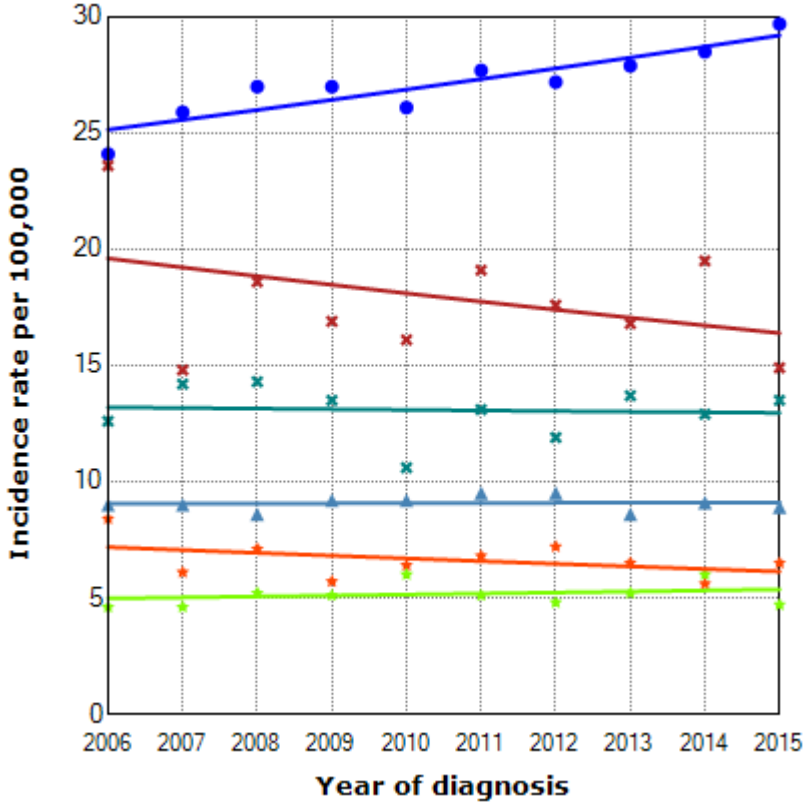
Lip, Oral Cavity, and Pharyngeal Cancer Incidence Rates by Race/Ethnicity and Age at Diagnosis, 2015

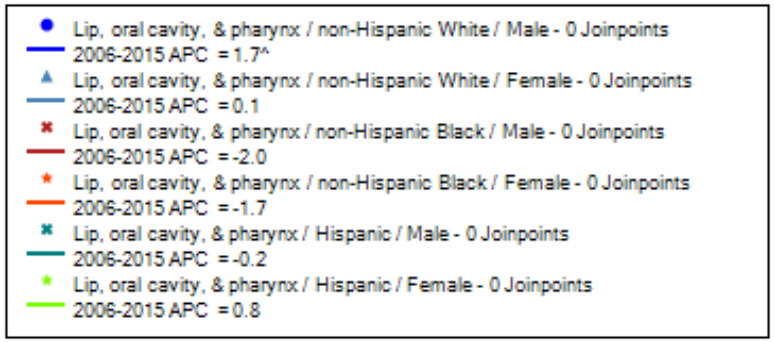
- Incidence rates peak at ages 65-74 years, except for Hispanics where rates are highest in those aged 75 years and older.
- The highest rates for all age groups were in non-Hispanic (NH) whites.
- Incidence rates were higher in NH whites aged 50-64 years than NH blacks, NH Asian/Pacific Islanders (A/PI), and Hispanics of any age.



Lip, Oral Cavity, and Pharyngeal Cancer Incidence Rate Trends by Race/Ethnicity and Sex, 2006-2015

- Incidence rates significantly increased in non-Hispanic (NH) white males.
- Rates for NH blacks tended to decrease (although non-significantly), while the other rates remained stable.
- Overall, incidence rates for males are 3 times higher than for females.

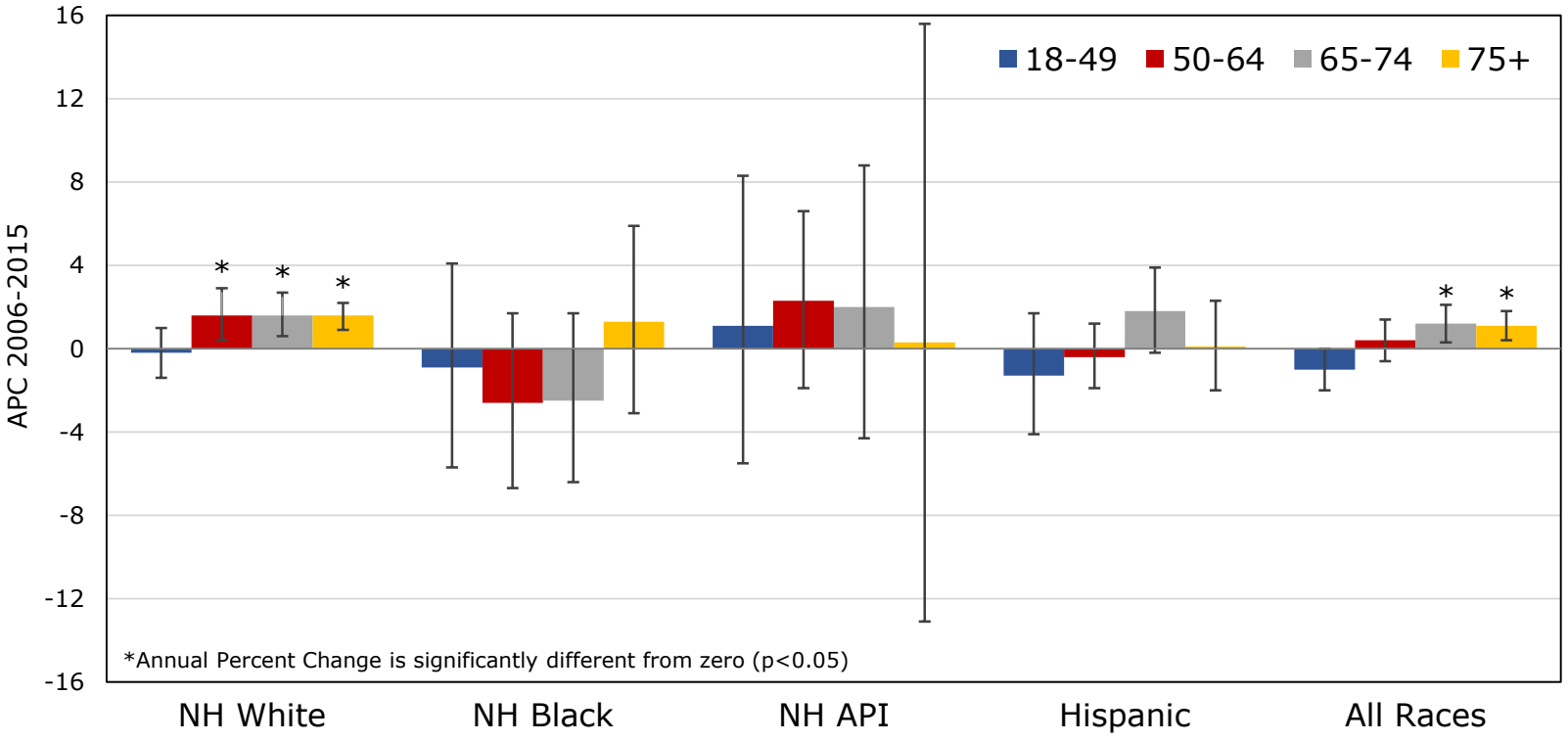




^ APC is significantly different from zero ($p<0.05$)

Lip, Oral Cavity, and Pharyngeal Cancer Incidence Rate Trends by Race/Ethnicity and Age, 2006-2015

- Incidence rates significantly increased in non-Hispanic (NH) whites aged 50 years and older.
- Rates tended to decrease in NH blacks aged 18-49, 50-64, and 65-74 and increase in NH Asian/Pacific Islander males in the same age groups but not significantly so.



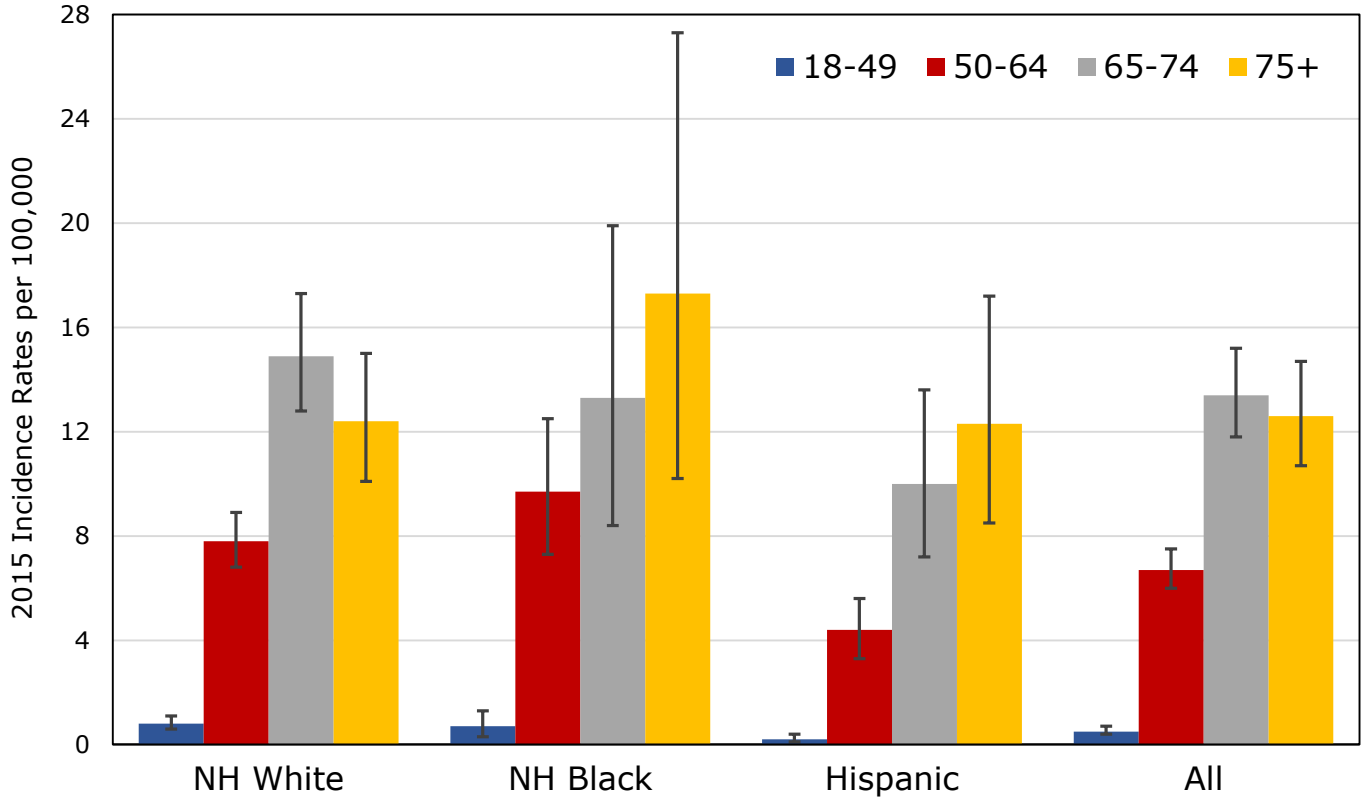
Laryngeal Cancer and Alcohol

- 23% of laryngeal cancer cases are attributed to alcohol.[1]
- When compared to nondrinkers and occasional drinkers, the relative risk of laryngeal cancer varies based on how much alcohol is consumed.[2]
  - For those consuming 12.6-50 grams of alcohol per day, the relative risk increases about 50%.
  - For those consuming more than 50 grams of alcohol per day, the relative risk increases by 200%.
- Incidence rates are higher in males (7.0 per 100,000) than females (1.3 per 100,0000).

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.
[2] Bagnardi et al. Br J Cancer. 2015;112(3):580-593.

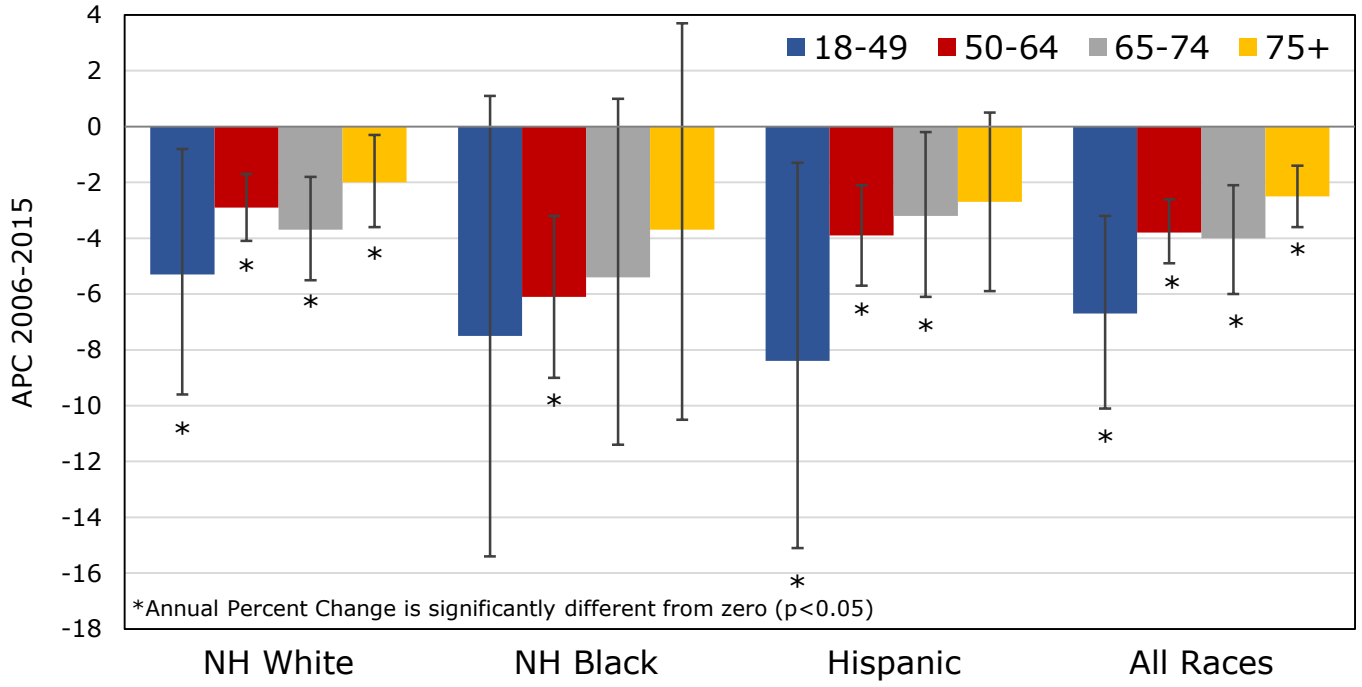
Laryngeal Cancer Incidence Rates in Texas by Race/Ethnicity and Age at Diagnosis, 2015

- The highest rates were observed for ages 50-64 years and 75 years and older in non-Hispanic (NH) blacks and for ages 65-74 years in NH whites.
- For NH blacks and Hispanics, the age group with the highest incidence rate was 75 years and older; for NH whites, it was highest for those aged 65-74.

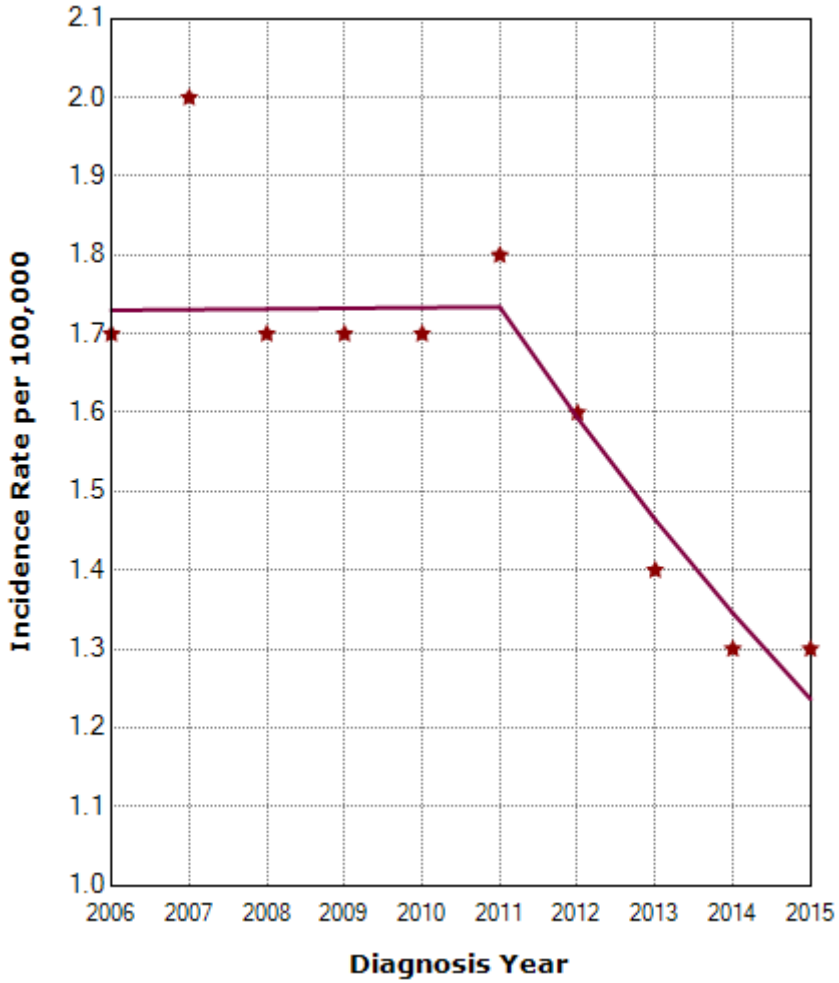


Laryngeal Cancer Incidence Rate Trends in Texas by Race/Ethnicity and Age, 2006-2015

- Overall, incidence rates declined significantly for all non-Hispanic (NH) white age groups.
- Incidence rates declined significantly for NH blacks aged 50-64 years and tended to decrease non-significantly for other age groups.
- Incidence rates declined significantly for all Hispanic age groups except 75 years and older which tended to decrease non-significantly.



Laryngeal Cancer Incidence Rate Trends Among Women in Texas, 2006-2015



In women, incidence rates for laryngeal cancer remained stable from 2006-2011, then rapidly declined from 2011-2015.

Larynx / Female - 1 Joinpoint
2006-2011 APC = 0.0
2011-2015 APC = -8.1^

*Annual Percent Change is significantly different from zero ($p<0.05$)

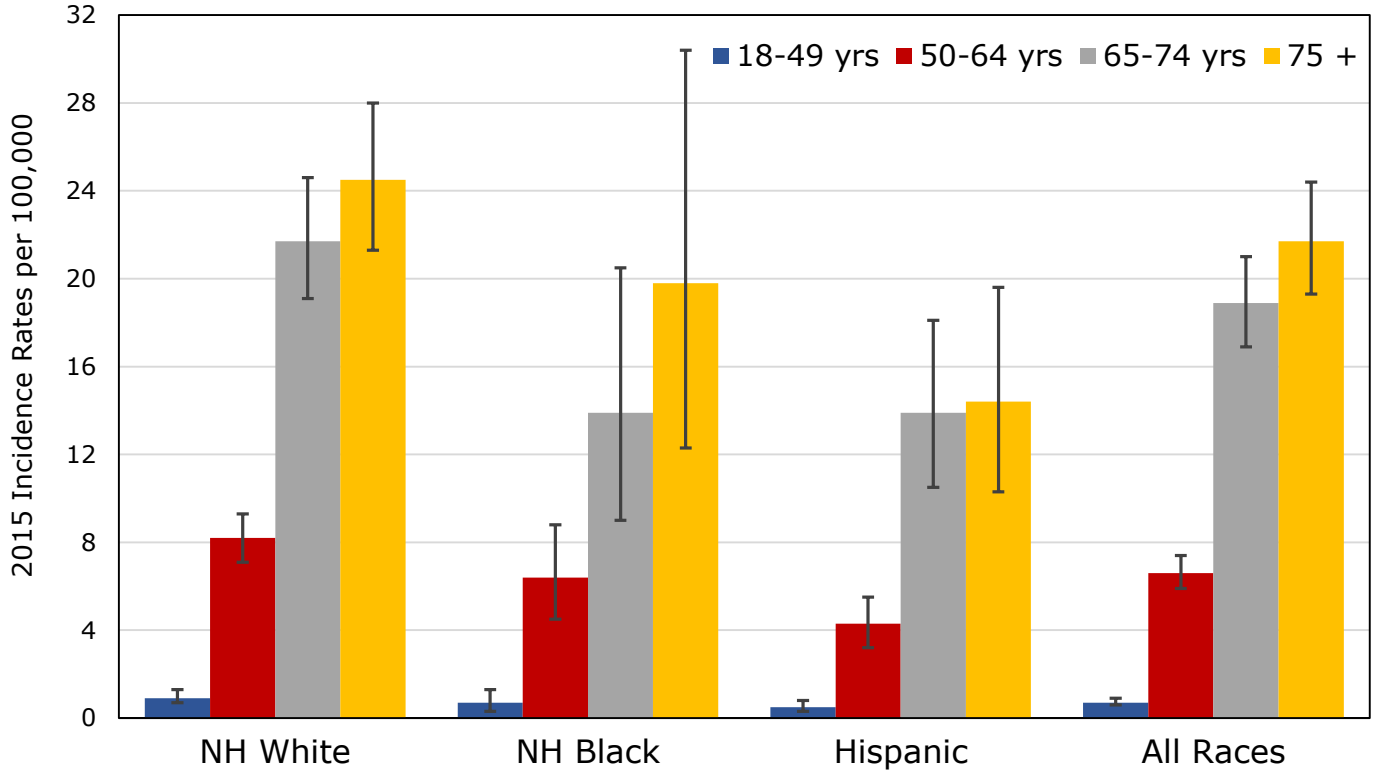
Esophageal Cancer and Alcohol

- 21% of esophageal cancer cases are attributed to alcohol.[1]
- When compared to nondrinkers and occasional drinkers, the relative risk of esophageal cancer varies based on how much alcohol is consumed. [2]
  - For those consuming 12.5 grams or less of alcohol per day, the relative risk increases 30%.
  - For those consuming 12.6-50 grams of alcohol per day, the relative risk increases 120%.
  - For those consuming more than 50 grams of alcohol per day, the relative risk increases by more than 400%.
- Incidence rates are higher in males (6.1 per 100,000) than females (1.4 per 100,0000).

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.
[2] Bagnardi et al. Br J Cancer. 2015;112(3):580-593.

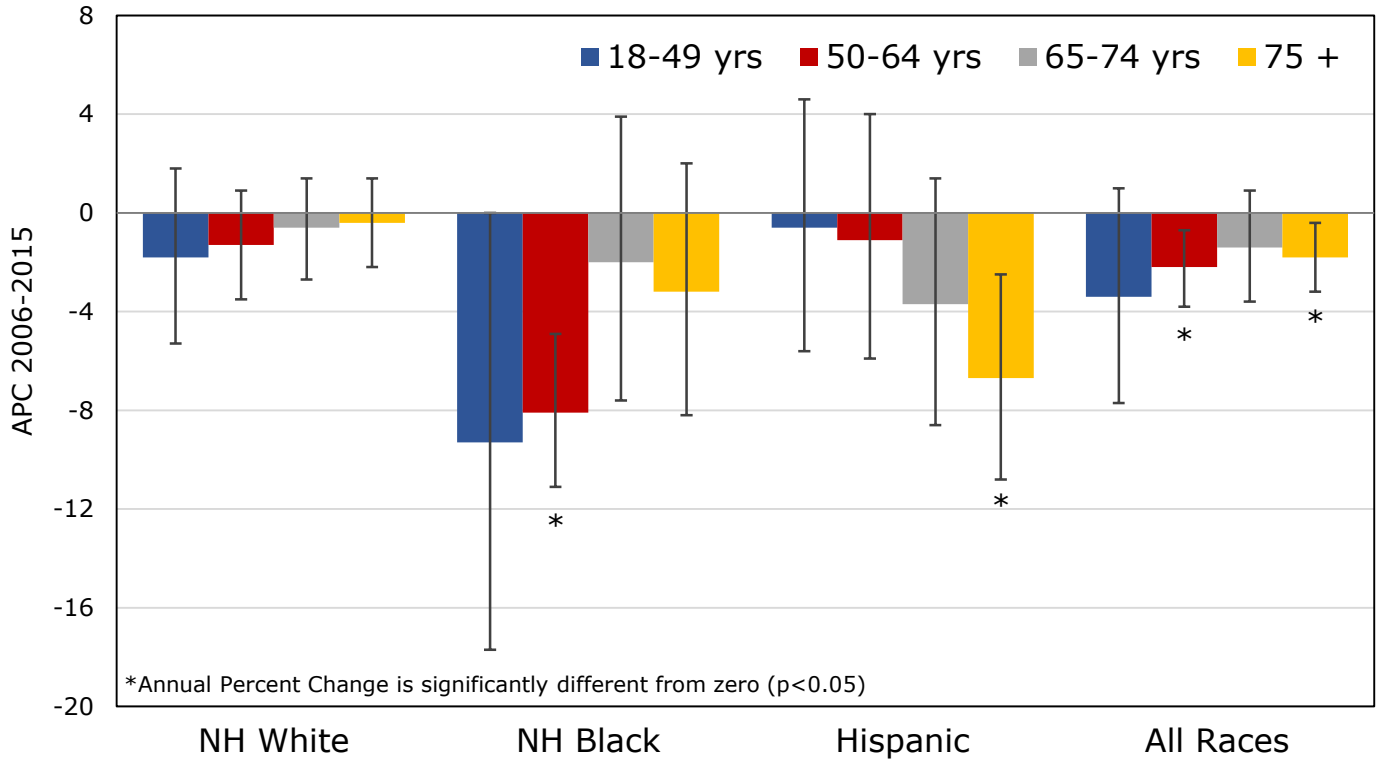
Esophageal Cancer Incidence Rates in Texas by Race/Ethnicity and Age at Diagnosis, 2015

- The highest incidence rates for each age group were for non-Hispanic (NH) whites.
- For all race/ethnicity groups, incidence rates increased with age, but in Hispanics the rates were similar among ages 65-74 years and 75 years and older.



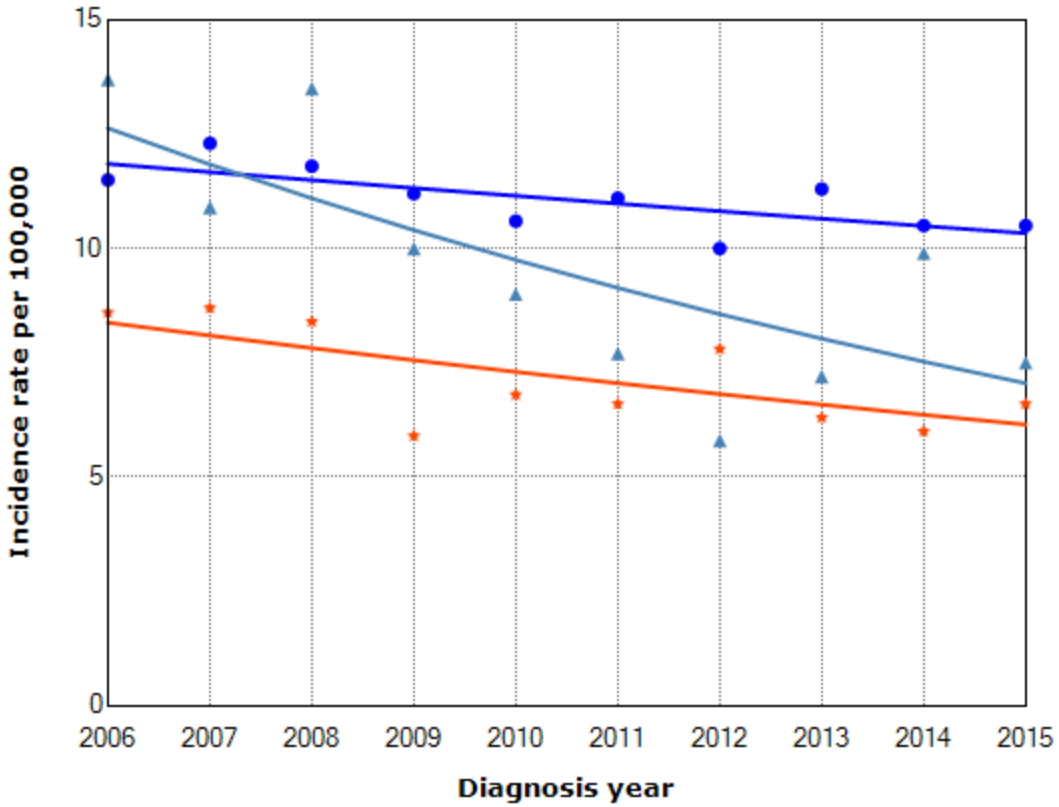
Esophageal Cancer Incidence Rate Trends in Texas by Race/Ethnicity and Age, 2006-2015

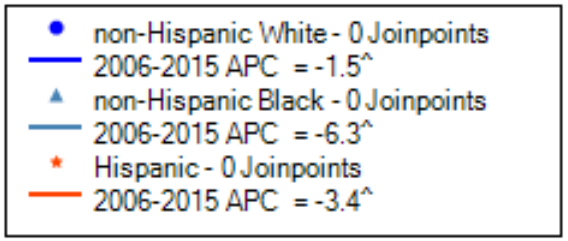
- Overall, incidence rates decreased significantly for those aged 50-64 years and 75 years and older.
- Incidence rates decreased significantly in non-Hispanic (NH) blacks aged 50-64 years, and Hispanics aged over 74 years. Rates tended to decline non-significantly for other groups.



Esophageal Cancer Incidence Rate Trends among Men by Race/Ethnicity, 2006-2015

- Incidence rates declined rapidly in non-Hispanic (NH) black males from 2006-2015, by an average of 6.3% per year.
- Incidence rates in Hispanic males and NH white males also showed significant declines but at a slower rate.





*Annual Percent Change is significantly different from zero ($p<0.05$)

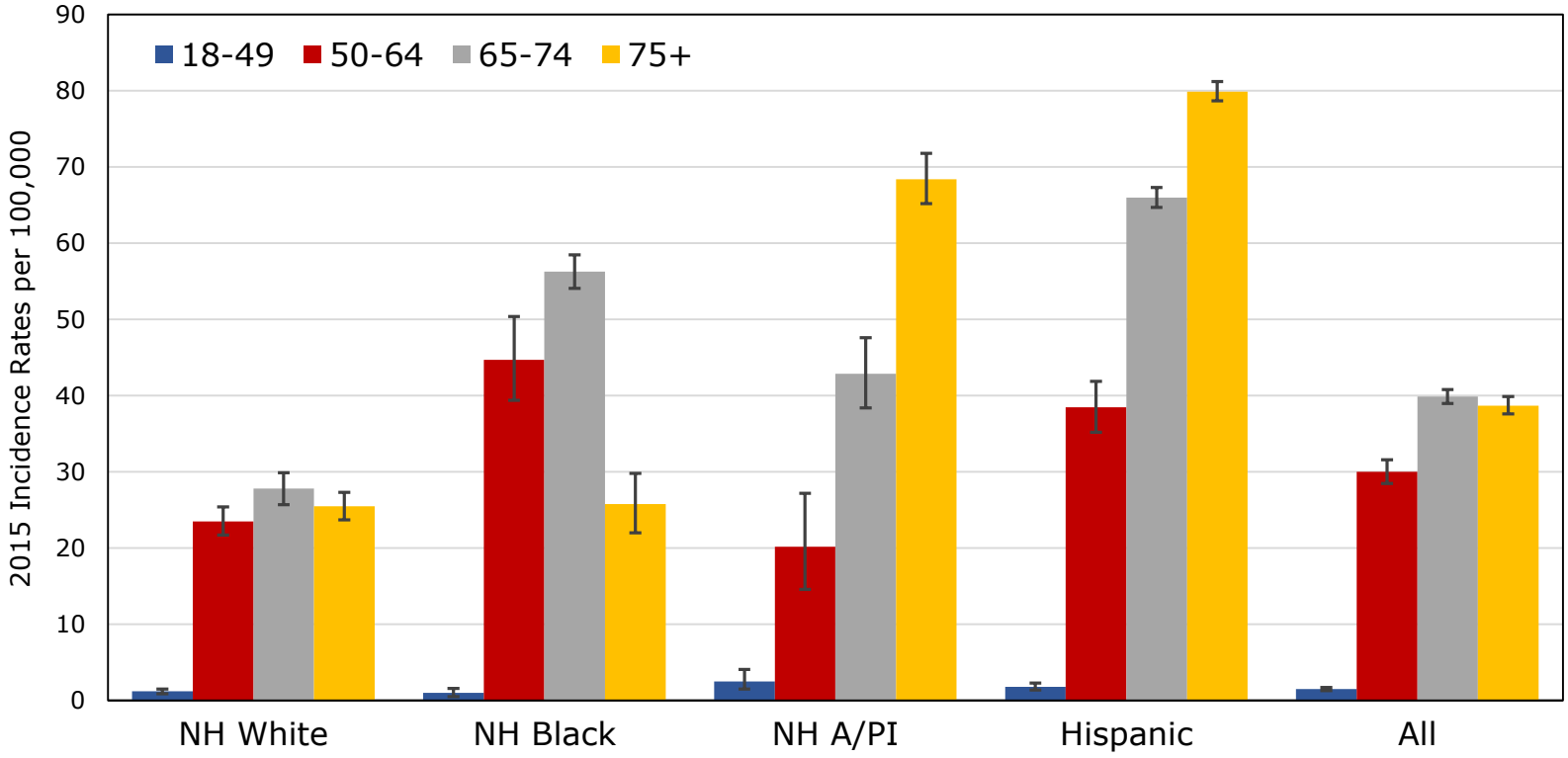
Liver Cancer and Alcohol

- 22% of liver cancer cases are attributed to alcohol,[1] with alcohol a primary cause of liver cancer.
- When compared to nondrinkers and occasional drinkers, the relative risk of liver cancer varies based on the person's sex and how much alcohol is consumed. [2]
  - For those consuming more than 50 grams of alcohol per day, the relative risk for females increases 300% but only 60% for males.
- In males, liver cancer is the 10th most commonly diagnosed cancer and 5th leading cause of cancer mortality in males.[3]
- The 5-year relative survival rates is 18%.[3]

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.
[2] Bagnardi et al. Br J Cancer. 2015;112(3):580-593.
[3] American Cancer Society. Cancer Facts and Figures 2018.

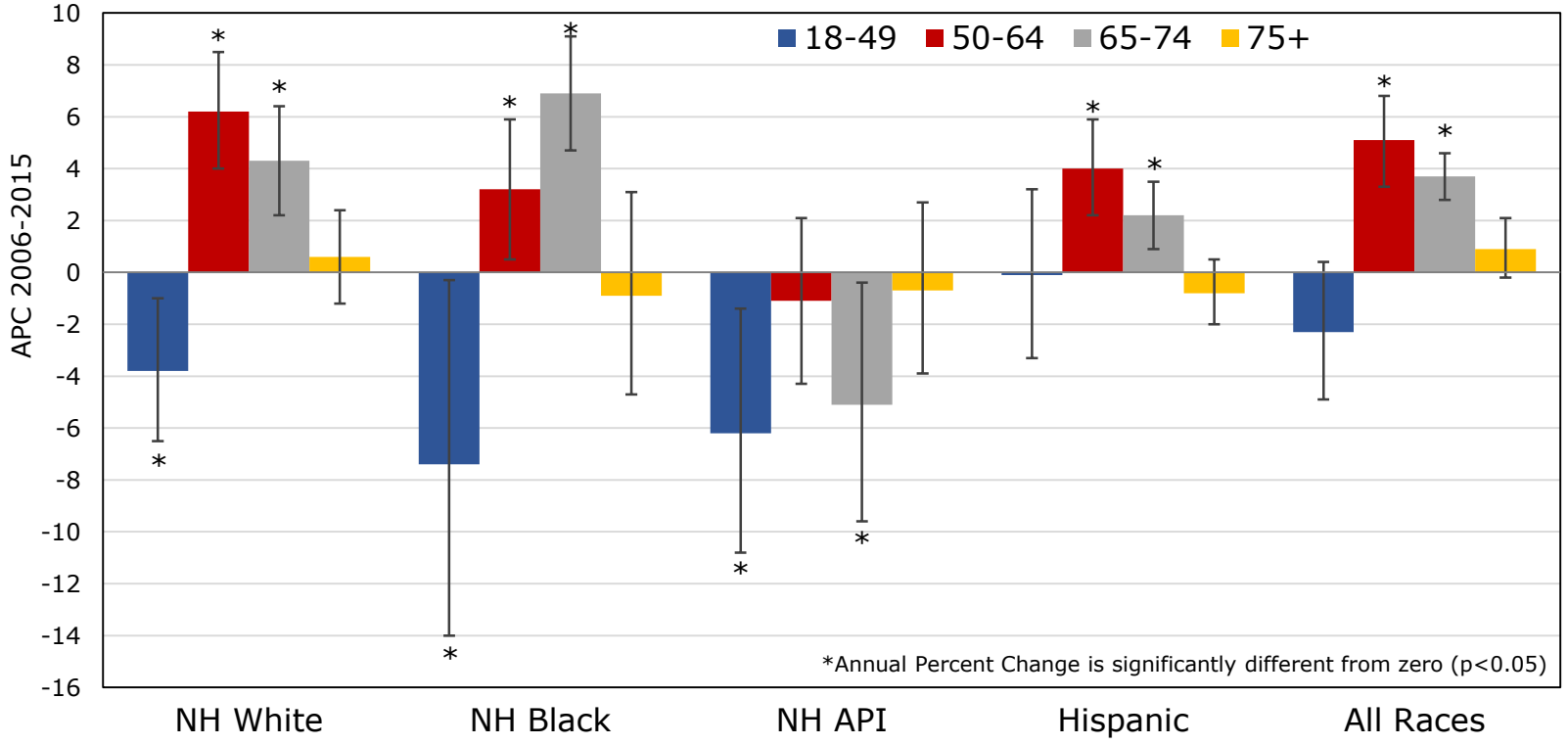
Liver Cancer Incidence Rates in Texas by Race/Ethnicity and Age at Diagnosis, 2015

- The highest incidence rates for liver cancer were for Hispanics aged 75 years and older, then non-Hispanic (NH) Asian/Pacific Islanders (A/PI) aged 75 years and older.
- For NH whites and NH blacks, incidence rates increased with age until age 75 and older, when incidence rates decreased.



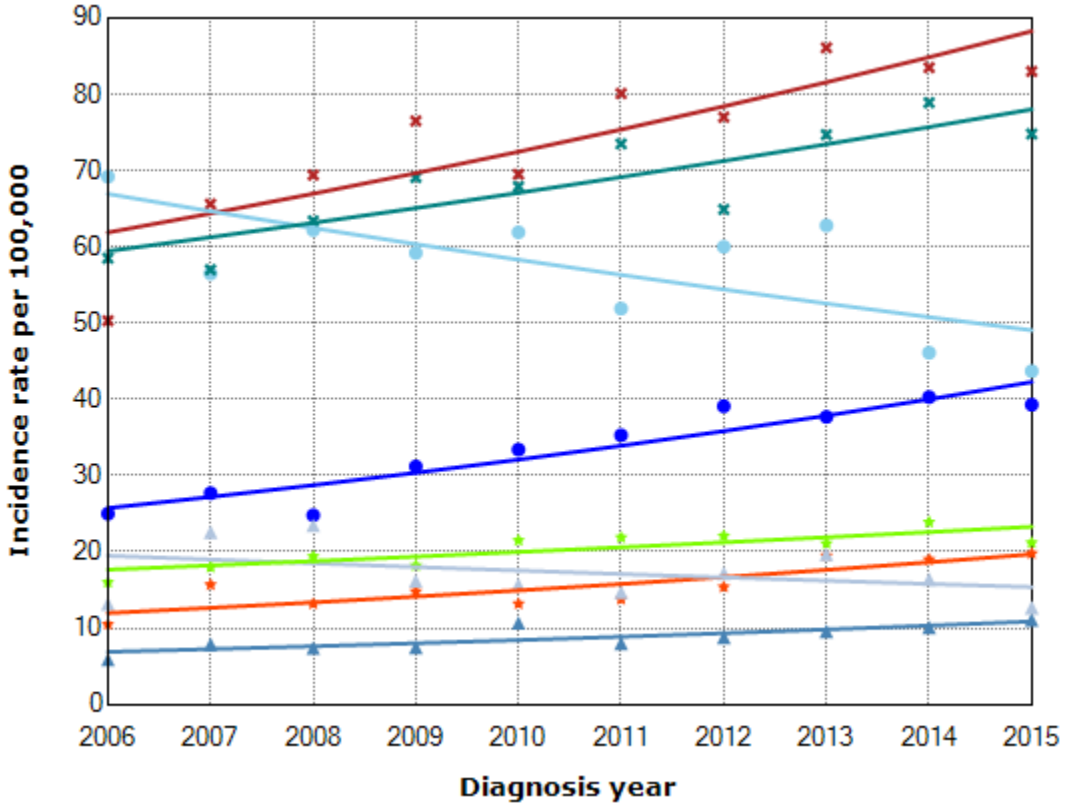
Liver Cancer Incidence Rate Trends in Texas by Race/Ethnicity and Age, 2006-2015

- Liver cancer incidence rates decreased significantly in ages 18-49 years for non-Hispanic (NH) whites, NH blacks, and NH Asian/Pacific Islands (A/PI), but not Hispanics.
- There were significant increases in incidence rates for ages 50-64 years and 65-74 years for NH whites, NH blacks and Hispanics.



Liver Cancer Incidence Rate Trends for Ages 50-74 Years by Race/Ethnicity and Sex, 2006-2015

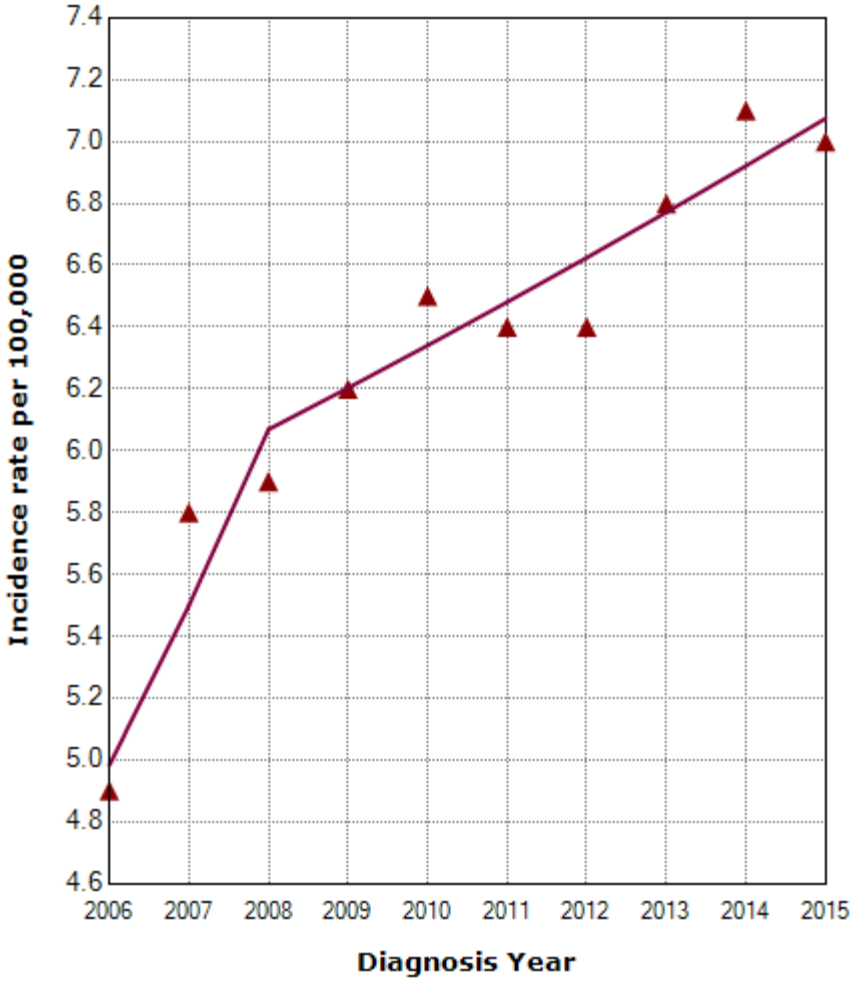
- There have been large increases in incidence for ages 50-74 years, which has been linked to hepatitis C infection in people born from 1945-1965.
- The highest rates were in non-Hispanic (NH) black males, followed by Hispanic males.
- There are large average annual percent changes (APC of 4 or more) for NH white males and females, and NH black males and females.



NH White / Male - 0 Joinpoints
2006-2015 APC = 5.7^
NH White / Female - 0 Joinpoints
2006-2015 APC = 5.2^
NH Black / Male - 0 Joinpoints
2006-2015 APC = 4.0^
NH Black / Female - 0 Joinpoints
2006-2015 APC = 5.7^
NH API / Male - 0 Joinpoints
2006-2015 APC = -3.4^
NH API / Female - 0 Joinpoints
2006-2015 APC = -2.6
Hispanic / Male - 0 Joinpoints
2006-2015 APC = 3.1^
Hispanic / Female - 0 Joinpoints
2006-2015 APC = 3.1^

*Annual Percent Change is significantly different from zero ($p<0.05$)

Liver Cancer Incidence Rate Trends among women in Texas, 2006-2015



For liver cancer in females, incidence rates increased rapidly from 2006-2008, then more slowly from 2008-2015.

Liver / Female - 1 Joinpoint
2006-2008 APC = 10.4^
2008-2015 APC = 2.2^

*Annual Percent Change is significantly different from zero ($p<0.05$)

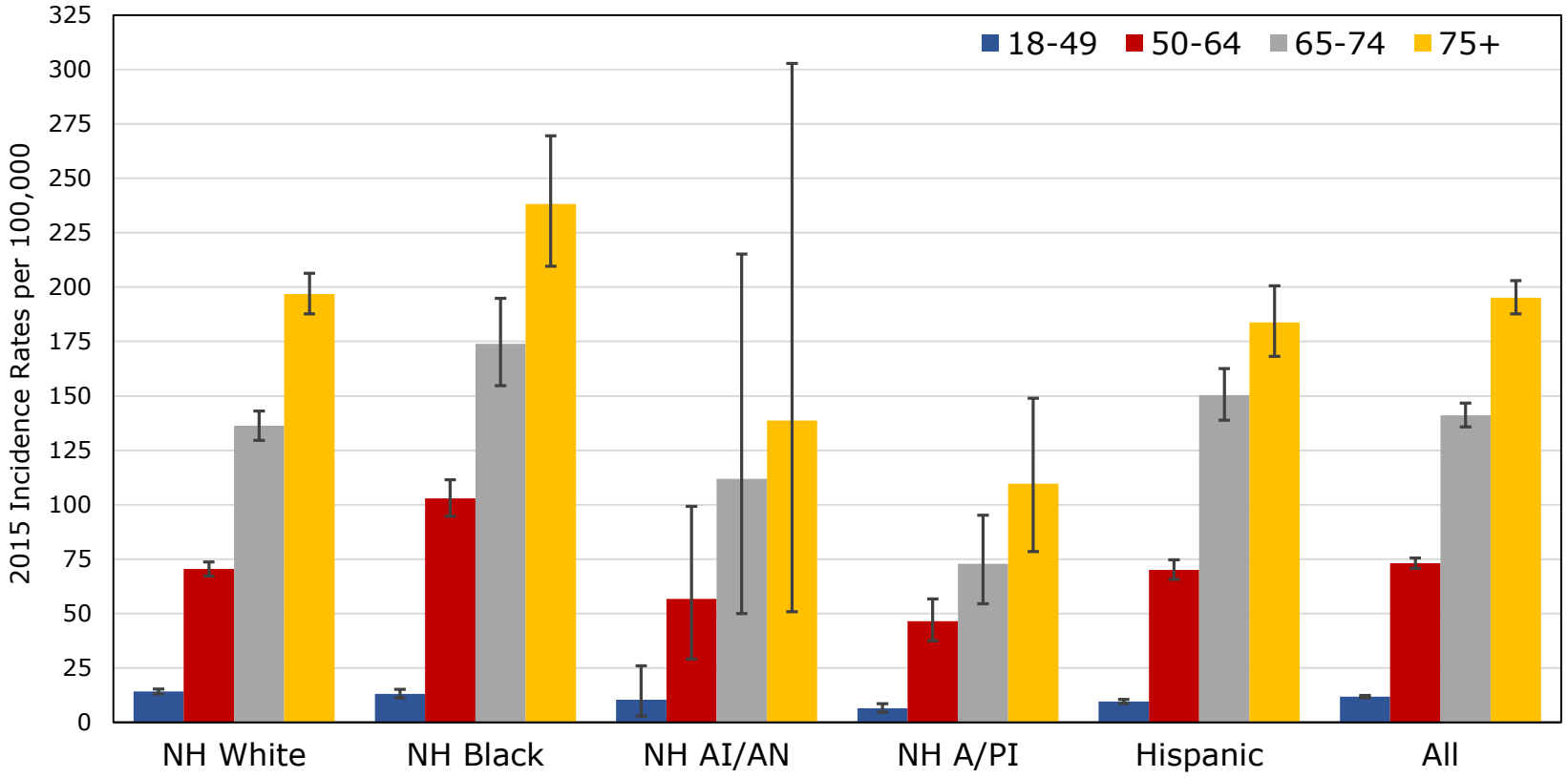
Colorectal Cancer and Alcohol

- 13% of colorectal cancer cases are attributed to alcohol.[1]
- When compared to nondrinkers and occasional drinkers, the relative risk of colorectal cancer varies based on how much alcohol is consumed. [2]
  - For those consuming 12.6-50 grams of alcohol per day, the relative risk increases 20%.
  - For those consuming more than 50 grams of alcohol per day, the relative risk increases by 30%.
- Colorectal cancer is the 3rd most common type of cancer diagnosed in males and females and is the 3rd leading cause of cancer death in both sexes.[3]

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.
[2] Bagnardi et al. Br J Cancer. 2015;112(3):580-593.
[3] American Cancer Society. Cancer Facts and Figures 2018.

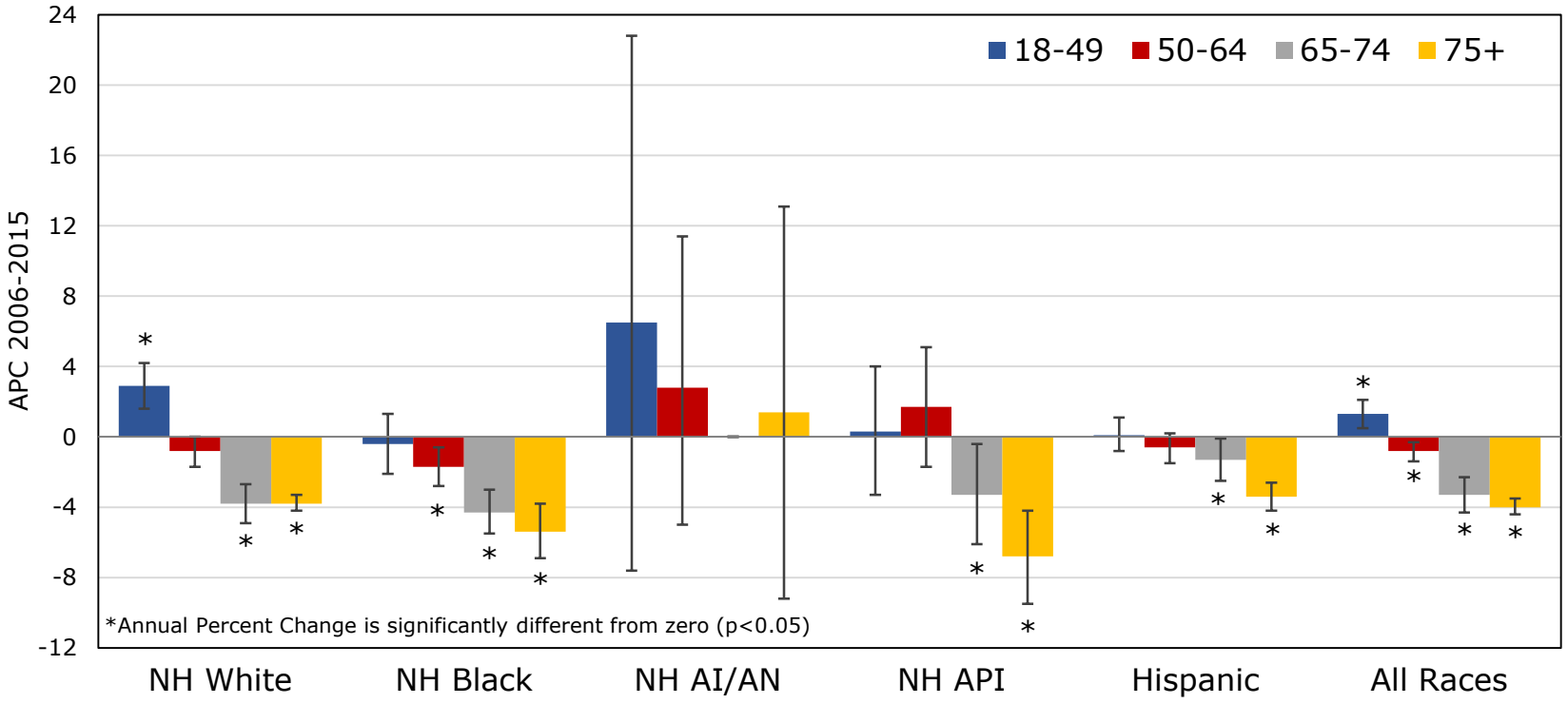
Colorectal Cancer Incidence Rates in Texas by Race/Ethnicity and Age at Diagnosis, 2015

- For all race/ethnic groups, incidence rates were highest for those aged 75 years and older.
- The highest incidence rates were for non-Hispanic (NH) blacks aged 75 years and older, then NH whites aged 75 years and older.



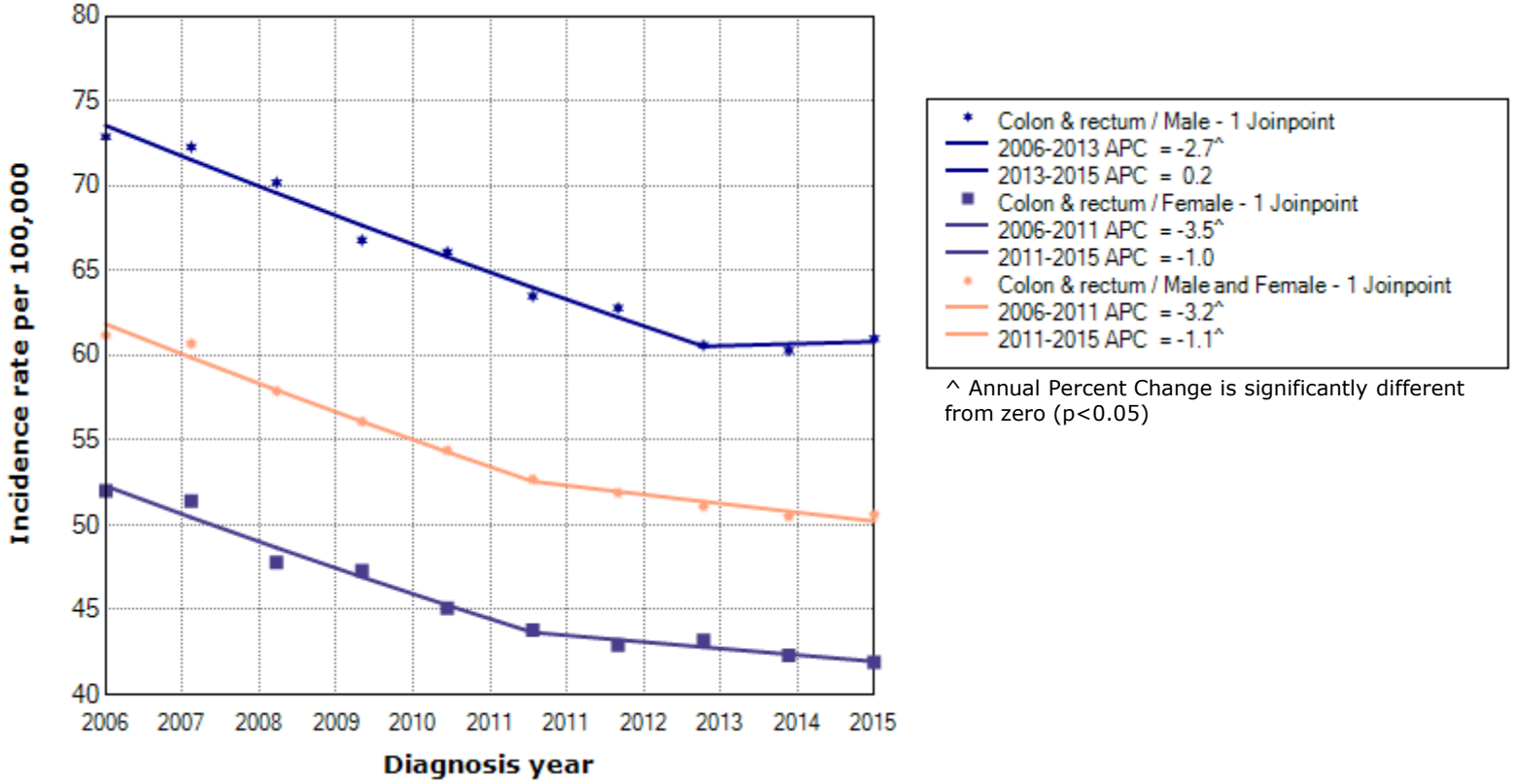
Colorectal Cancer Incidence Rate Trends in Texas by Race/Ethnicity and Age, 2006-2015

- Incidence rates declined significantly for all ages 65 years and older, except for non-Hispanic (NH) American Indian/Alaskan Natives (AI/AN).
- Incidence rates increased significantly in NH whites aged 18-49 years.
- Rates did not decrease significantly in NH whites or Hispanics aged 50-64 years; rates did decline significantly in NH blacks in this age group.



Colorectal Cancer Incidence Rate Trends in Texas by Sex, 2006-2015

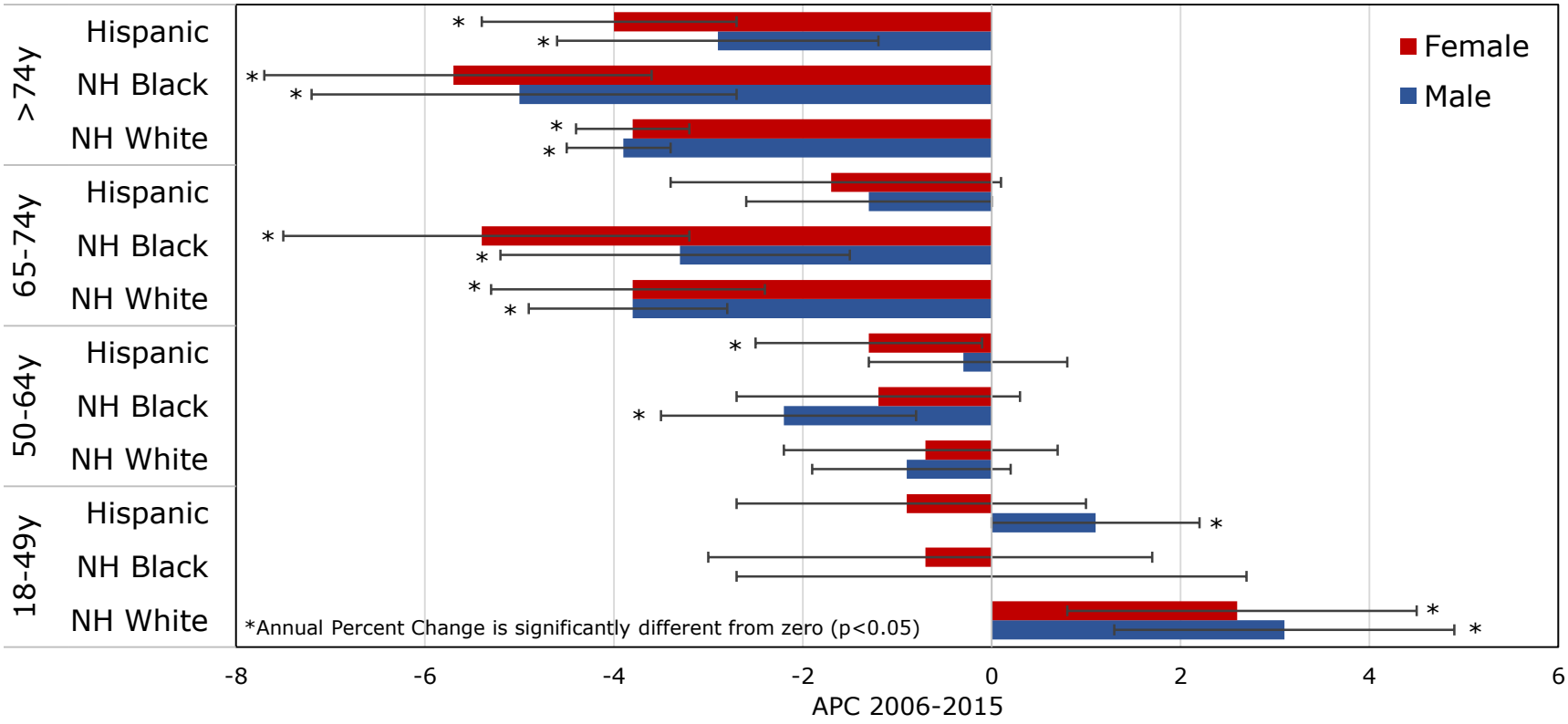
For colorectal cancer, the overall incidence rates declined from 2006-2013, then stabilized. For males and females, rates declined at a faster rate from 2006-2011 than from 2011-2015.



^ Annual Percent Change is significantly different from zero ($p<0.05$)

Colorectal Cancer Incidence Rate Trends in Texas by Age, Race/Ethnicity and Sex, 2006-2015

- Among those aged 18-49 years, incidence rates increased significantly in both male and females non-Hispanic (NH) whites and male Hispanics.
- Among those aged 50 years and older, incidence rates significantly decreased for all groups except female NH blacks and male Hispanics aged 50-64 years and Hispanics aged 65-74 years, which saw a non-significant decrease.



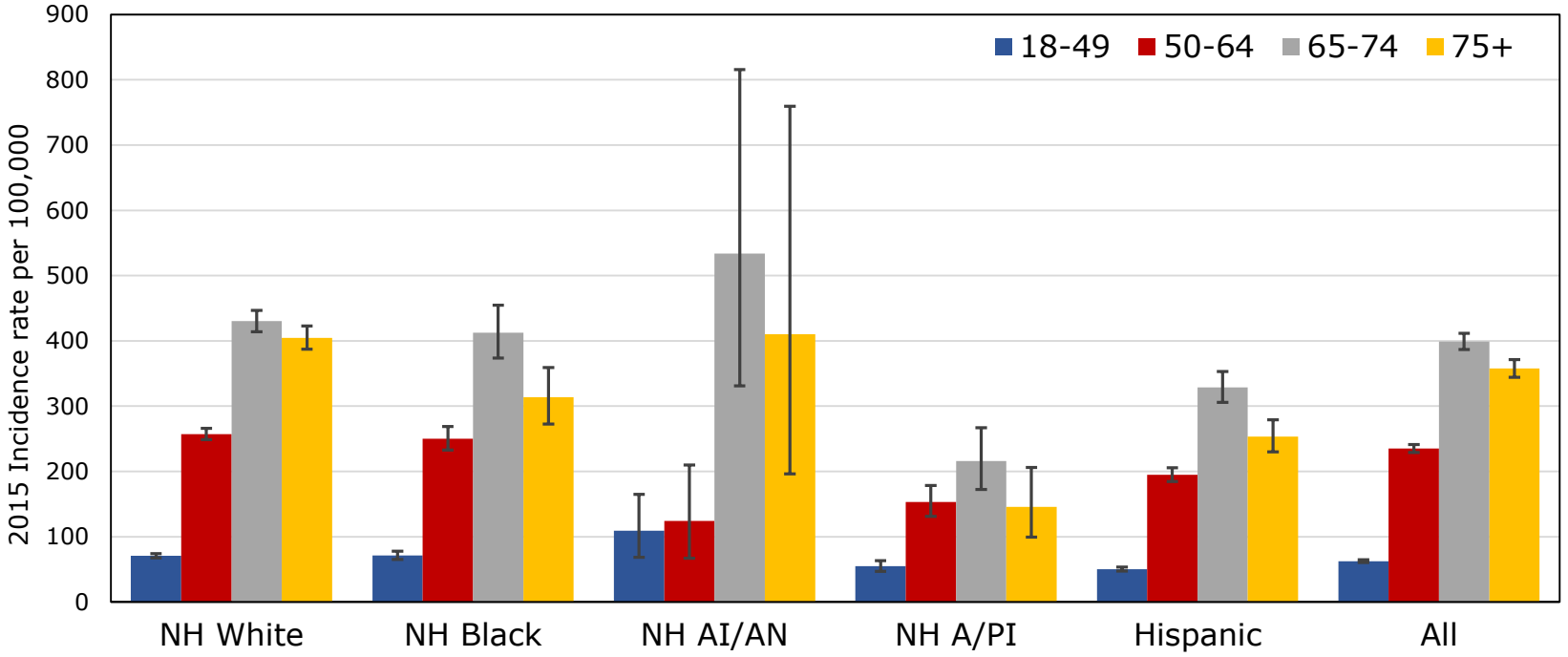
Female Breast Cancer and Alcohol

- 16% of female breast cancer cases are attributed to alcohol.[1]
- When compared to nondrinkers and former drinkers, the relative risk of female breast cancer varies based on how much alcohol is consumed.[2]
  - For females who consume 15 or more drinks per week, the relative risk increases 50%.
  - Each increase of 10 grams of alcohol a day increases relative risk by 12%.
- In females, breast cancer is the most common type of cancer diagnosed and the 2nd leading cause of cancer death.[3]

[1] Islami et al. CA Cancer J Clin. 2018;68(1):31-54.
[2] Allen et al. J Natl Can Inst. 2009;101(5):296-305.
[3] American Cancer Society. Cancer Facts and Figures 2018.

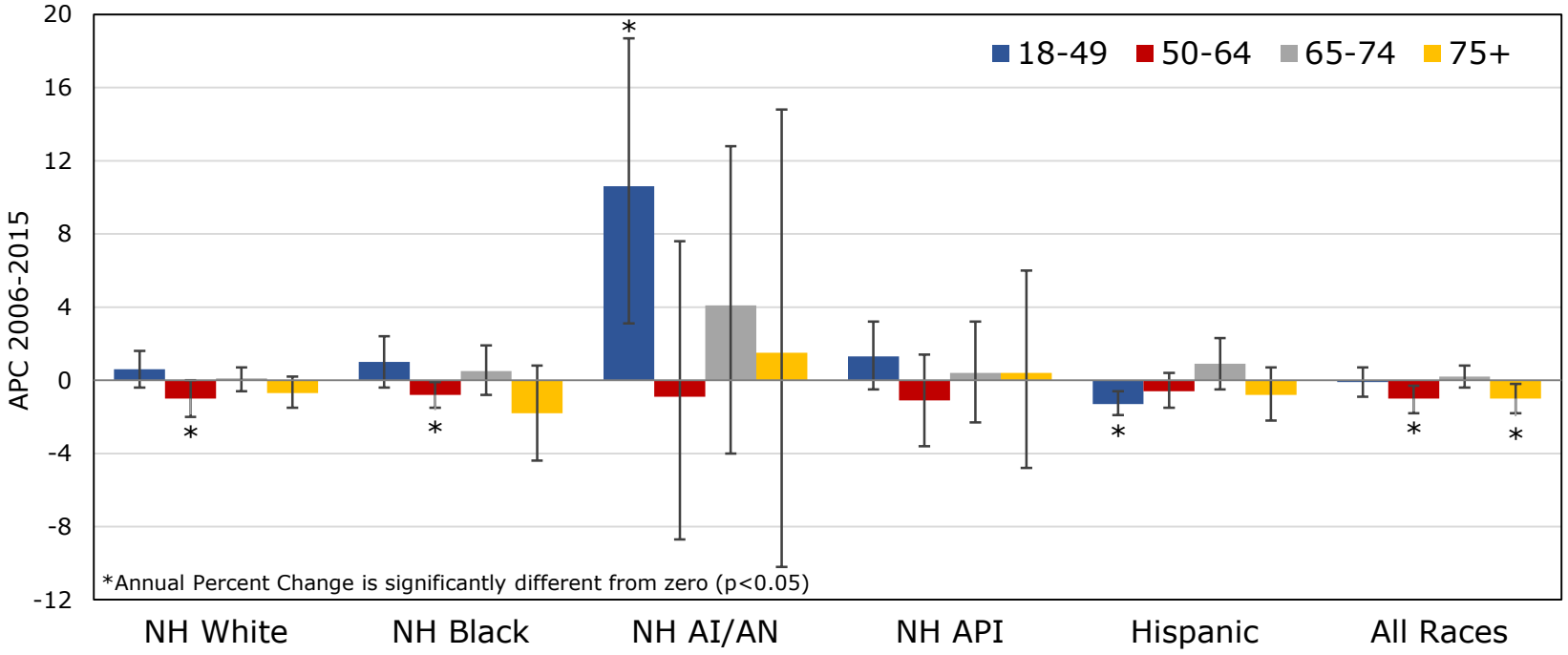
Female Breast Cancer Incidence Rates in Texas by Race/Ethnicity and Age at Diagnosis, 2015

- Breast cancer incidence rates were higher in non-Hispanic (NH) whites and NH blacks compared to Hispanics across all age groups.
- The highest incidence rates were for NH American Indian/Alaska Native (AI/AN) females aged 65-74 years.
- For all race/ethnic groups, incidence rates were highest for females aged 65-74 years.



Female Breast Cancer Incidence Rate Trends in Texas by Race/Ethnicity and Age, 2006-2015

- Incidence rates declined significantly in non-Hispanic (NH) whites and NH blacks aged 50-64 years, and in Hispanics aged 18-49 years.
- Incidence rates significantly increased in NH American Indians and Alaska Natives (AI/AN) aged 18-49 years.
- There was a non-significant tendency for rates to increase in NH whites and NH blacks ages 18-49 years and for NH blacks and Hispanics ages 65-74.



Technical Notes

- Data Source: Texas Cancer Registry (www.dshs.state.tx.us/tcr) SEER*Stat Database, Incidence - Texas, 1995-2015, statewide, Texas Department of State Health Services, created January 2018, based on NPCR-CSS Submission, cut-off 11/13/17.
- All incidence rates are age-adjusted to the 2000 U.S. Standard population in 2000 (Single Ages to 84 - User standard).
- Adults aged 18 years and older were included in analyses.
- Annual Percent Change (APC) was calculated using SEER*Stat by fitting a least squares regression line to the natural logarithm of the age-adjusted rates, with calendar year as the regressor variable. Joinpoint was also used to determine whether the APC changed over the assessed time period (i.e. whether there was a joinpoint that resulted 2 lines of different slope) and to plot changes in incidence rates over time.
- Error bars represent 95% confidence intervals around rates.
- The CDC's National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties was used in this report. This scheme is a six-level urban-rural classification scheme for U.S. counties. The most urban category consists of "central" counties of large metropolitan areas; the most rural category consists of nonmetropolitan "noncore" counties. (Source: NCHS Urban-Rural Classification Scheme for Counties, NCHS/CDC, Updated June 2017. Accessed April 2018. https://www.cdc.gov/nchs/data_access/urban_rural.htm).

References

- Baan R, Straif K, Grosse Y, et al. Carcinogenicity of alcoholic beverages. *Lancet Oncology*. 2007;8(4):292-293.
- Bagnardi V, Blangiard M, Vecchia CL, Corrao G. Alcohol consumption and the risk of cancer: A meta-analysis. *British Journal of Cancer.* 2001;85(11);1700-1705.
- Bagnardi V, Rota M, Botteri E, et al. Alcohol consumption and site-specific cancer risk: a comprehensive dose-response meta-analysis. *British Journal of Cancer.* 2015;112:580-593.
- Fedirko V, Tramacere I, Bagnardi V, et al. Alcohol drinking and colorectal cancer risk: an overall and dose-response meta-analysis of published studies. *Annals of Oncology*. 2011;22(9):1958-1972.
- Hashibe M, Brennan P, Chuang SC, et al. Interaction between Tobacco and Alcohol Use and the Risk of Head and Neck Cancer: Pooled Analysis in the International Head and Neck Cancer Epidemiology Consortium. *Cancer Epidemiology, Biomarkers, & Prevention*. 2009;18(2):541-550.
- Islami F, Goding Sauer A, Miller, KD, et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. *CA: A Cancer Journal for Clinicians.* 2018;68(1):31-54.

Useful Links

- Alcohol Consumption, National Institutes of Health: https://progressreport.cancer.gov/prevention/alcohol#field_most_recent_estimates
- Alcohol Use and Cancer, American Cancer Society: https://www.cancer.org/cancer/cancer-causes/diet-physical-activity/alcohol-use-and-cancer.html
- Alcohol and Cancer Risk, National Cancer Institute: https://www.cancer.gov/about-cancer/causes-prevention/risk/alcohol/alcohol-fact-sheet

Acknowledgment

The Texas Cancer Registry recognizes the following whose financial support is essential to accomplishing the Texas Cancer Registry mission for our State.

Federal Grant Funding

- We acknowledge the Centers for Disease Control and Prevention (CDC) for its financial support under Cooperative Agreement #1NU58DP006308.

State Agency Funding

- Texas Department of State Health Services
- Texas Health and Human Services Commission
- Cancer Prevention and Research Institute of Texas

The TCR also wants to thank all cancer reporters for their hard work and collaboration. Cancer reporters help us meet national high quality and timeliness standards, and enable us to serve as the primary source of cancer data in Texas.