



# Disparities in Cancer Incidence and Stage at Diagnosis

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<https://schs.dph.ncdhhs.gov/units/ccr/>



NC DEPARTMENT OF  
HEALTH AND HUMAN SERVICES



Who is the NC Central Cancer Registry  
(NC CCR)?

# Cancer is a Reportable Disease in NC

## General Statute Chapter 130A-209 Article 7

- ▶ The NC CCR was established in 1945 with legislation making cancer a reportable disease as of 1990.
- ▶ All health care providers are required by law to report eligible cases to the NC CCR within 6 months of diagnosis.
- ▶ Law authorizes the NC CCR to release cancer data for research
- ▶ NC Advisory Committee on Cancer Coordination & Control is the Advisory Board for CCR
  - ▶ Advisory Board receives updates on CCR activities
  - ▶ Advisory Board approves requests for patient contact research
  - ▶ Research with no patient contact approved by CCR & SCHS Directors

# Data Sources

Hospitals: 120 (80 with registries)

Cancer treatment facilities (22)

Physicians(150+)  
(Urologists/Dermatologist/Oncologists)

Data exchange with other states

Death certificates

Pathology laboratories

Nursing homes & Hospice

 ~1.5 million cancer cases from 1990–2019 diagnosis year

 About 80,000 reports each year

 About 50,000 unique cases each year

 All 100 counties

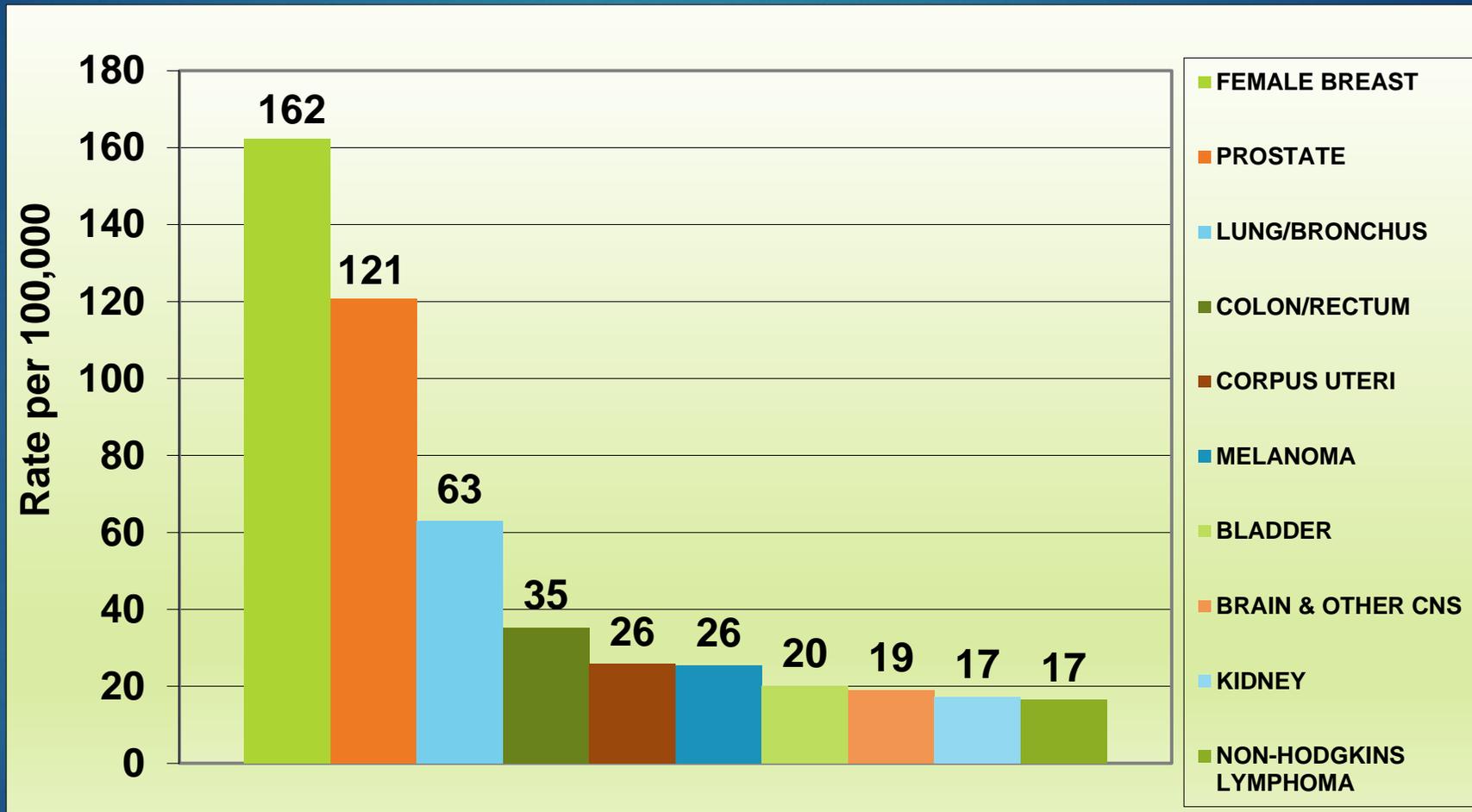
 All cancer sites

 Treatment

 Demographics

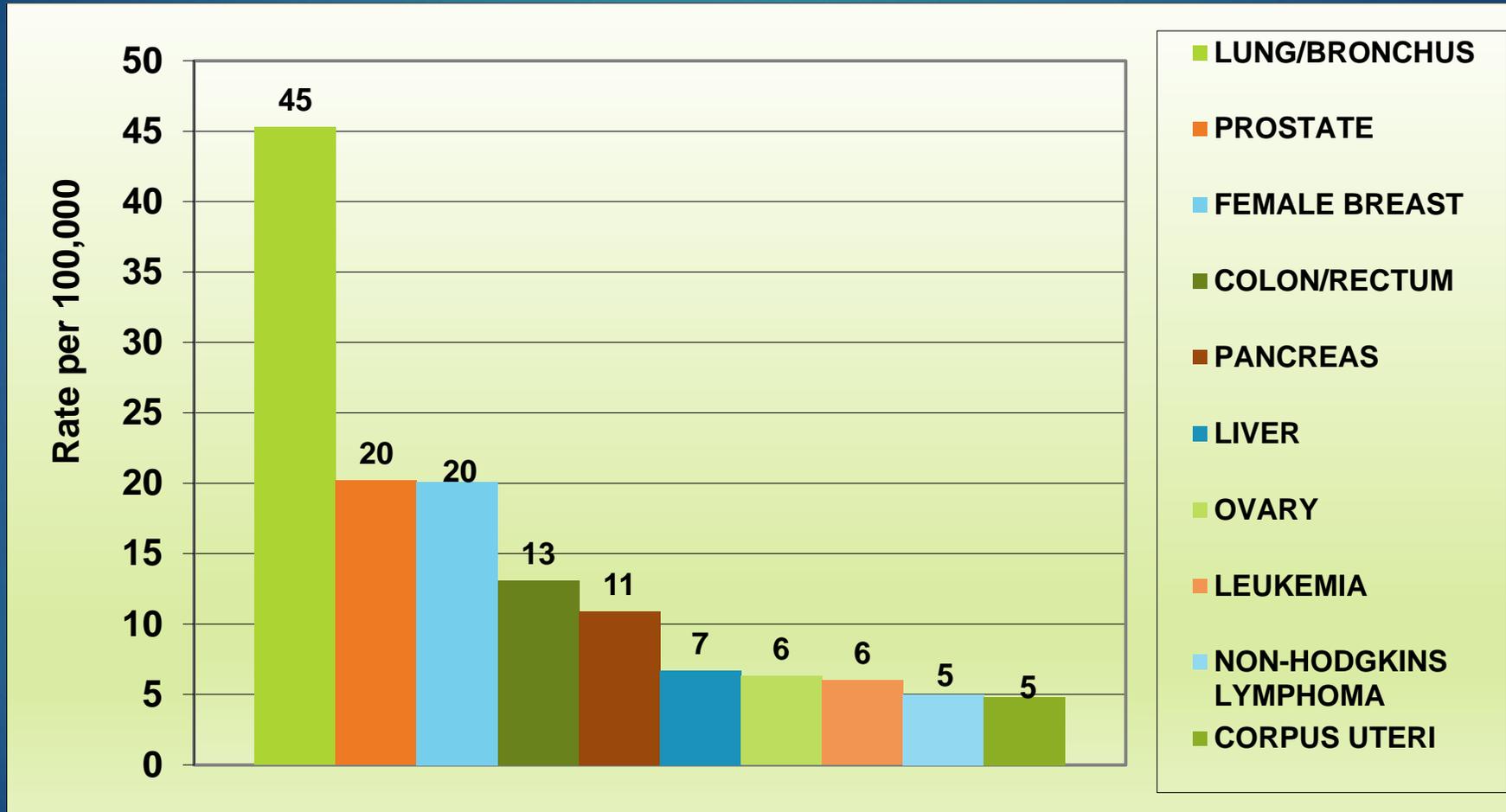
 Stage at Diagnosis

# Top Ten, Cancer Incidence Rates in 2017\*



\* Top Ten are chosen by rates

# Top Ten, Cancer Mortality Rates in 2018\*



\*Top Ten are chosen by rates

# NC Cancer Registry Data

## Incidence Data

- 2017
- 5-year Aggregated: 2013-2017

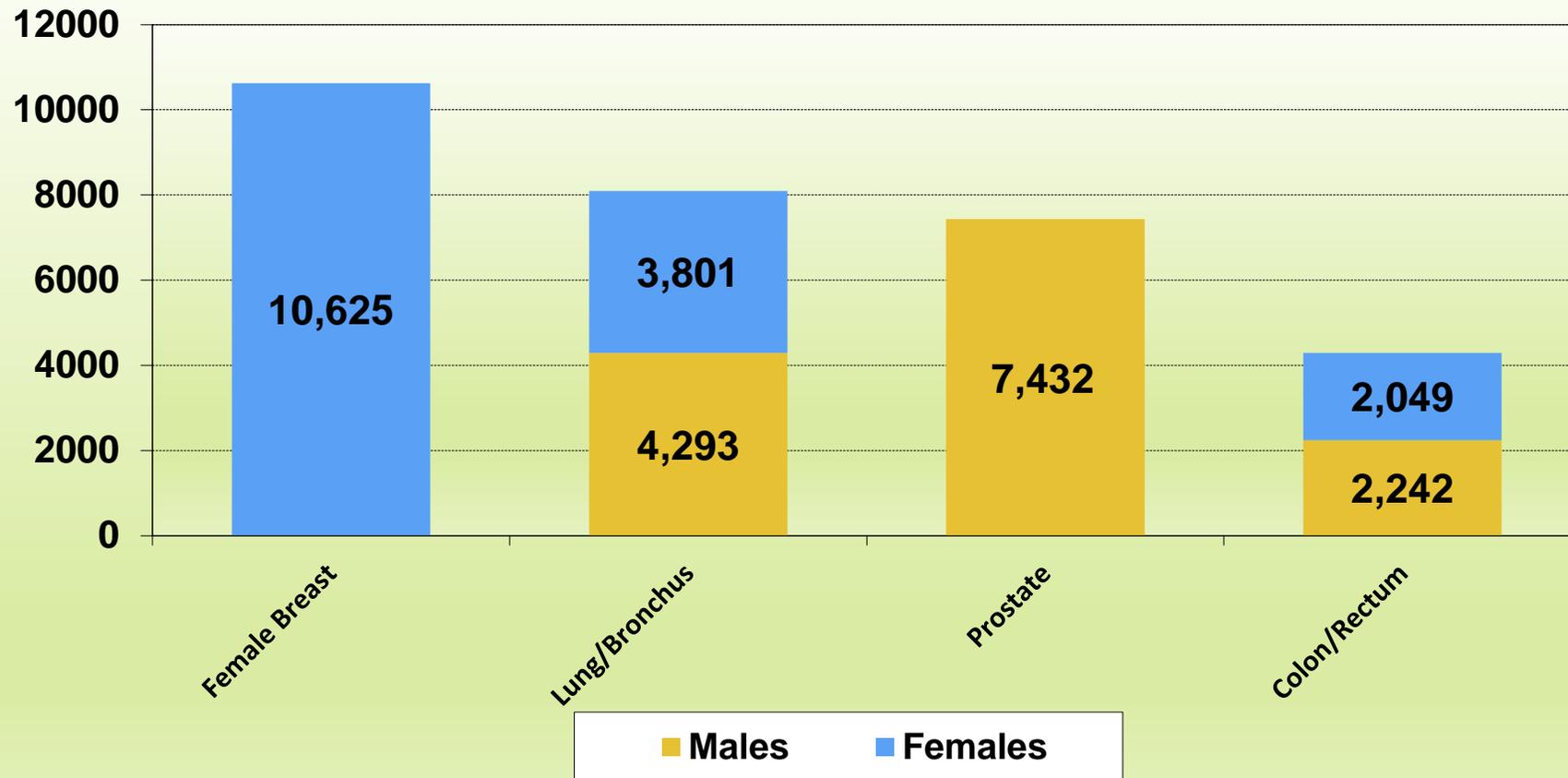
## Mortality Data

- 2018
- 5-Year Aggregated: 2014-2018

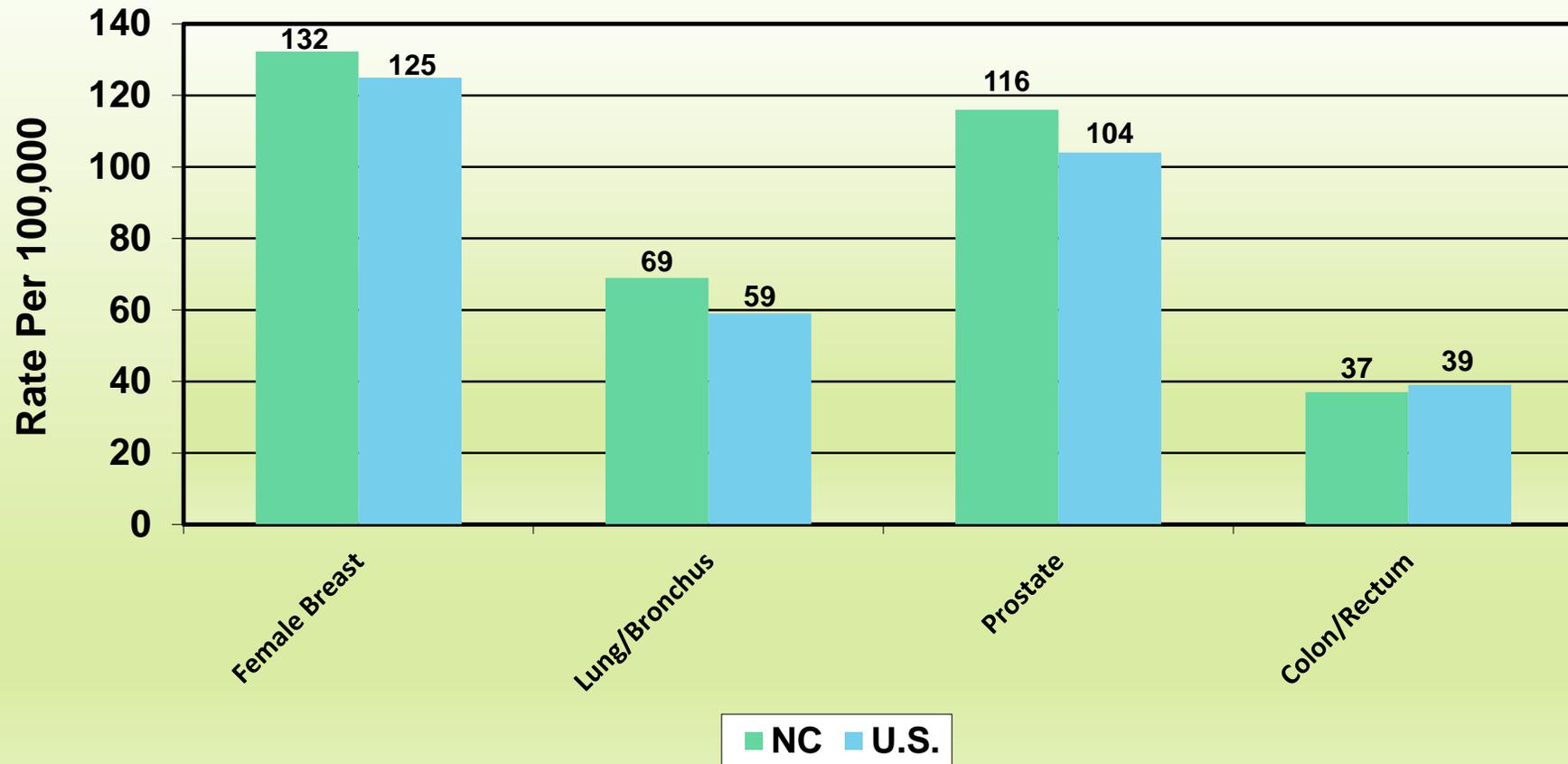
## Top 4 Sites

- Female Breast (includes in situ)
- Prostate
- Lung/Bronchus
- Colon/Rectum

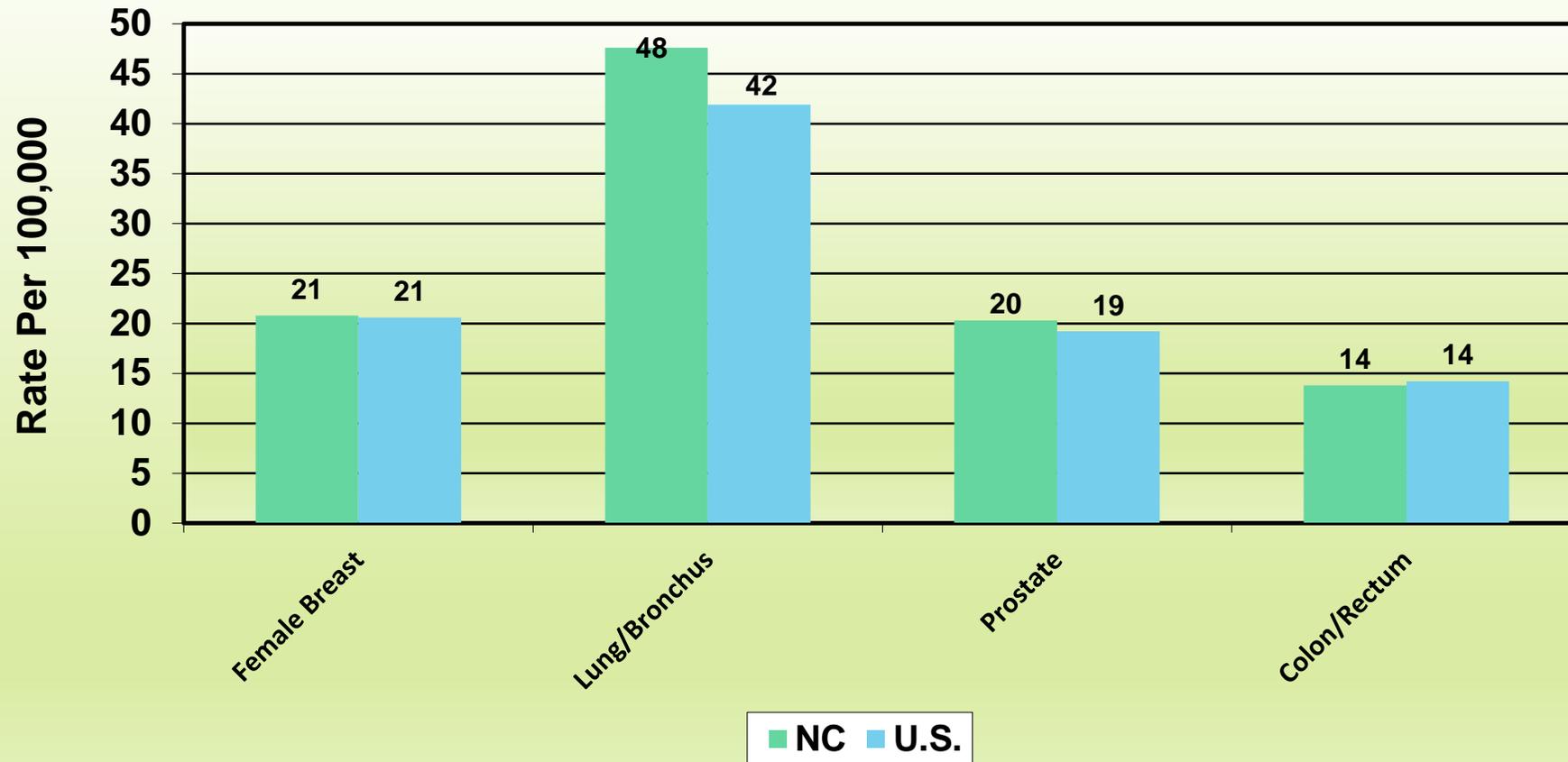
# Number of New Cases Diagnosed in North Carolina in 2017



# 2012-2016 Cancer Incidence Rates NC vs U.S



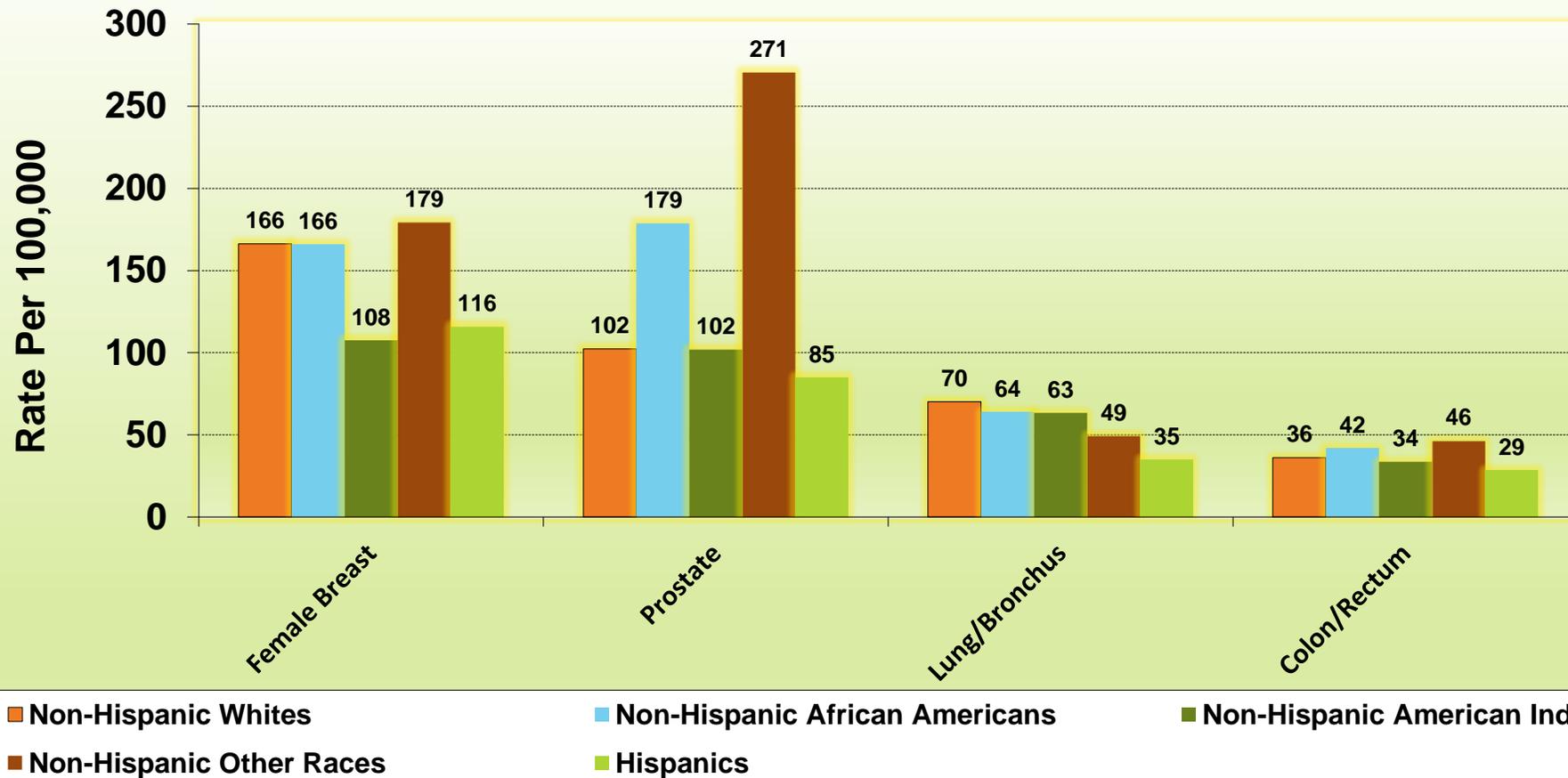
# 2012-2016 Cancer Mortality Rates NC vs U.S



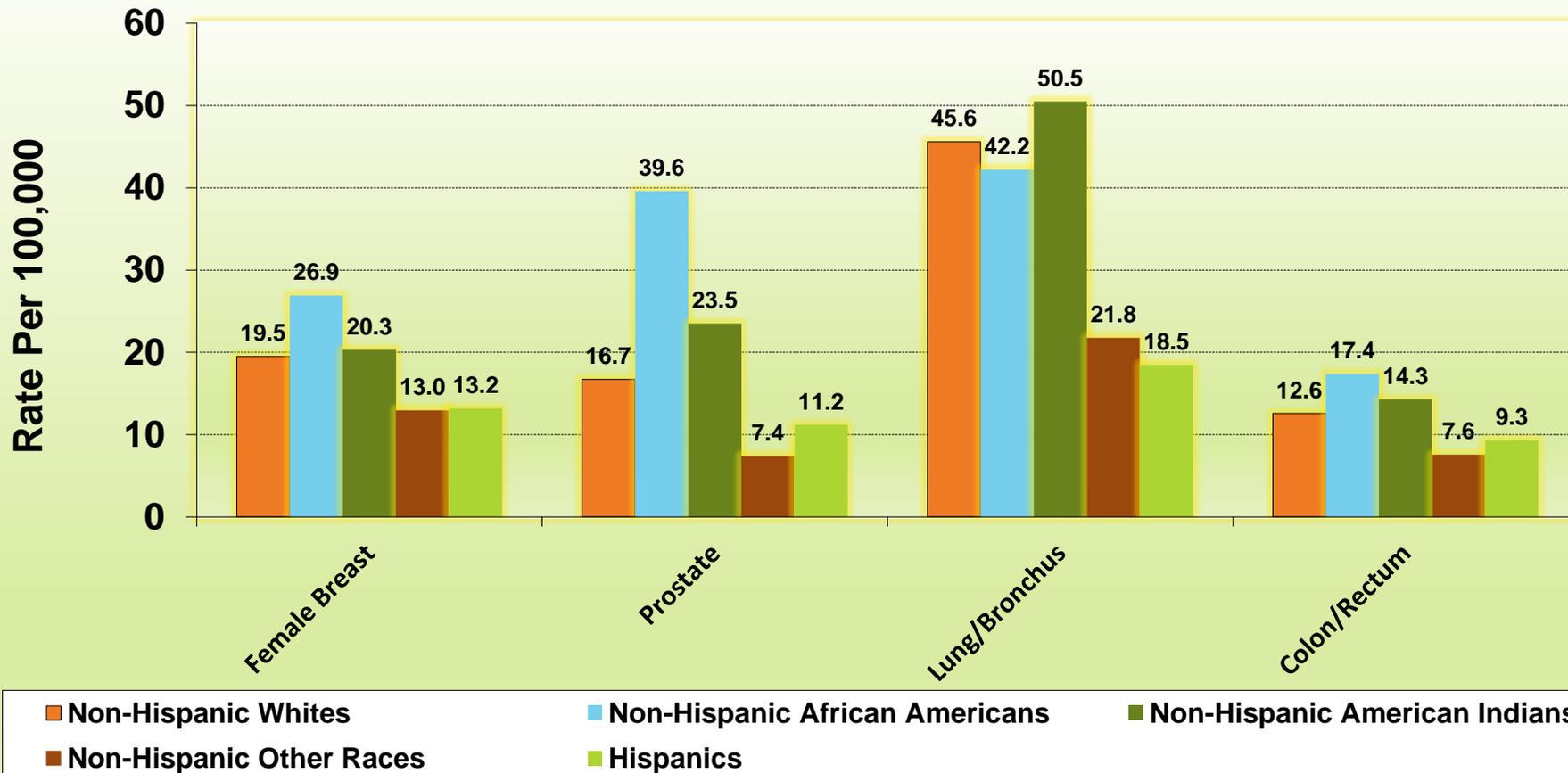
# NC Cancer Registry Data

- ▶ All numbers are for North Carolina residents at the time of diagnosis
- ▶ All rates are age-adjusted unless otherwise indicated
- ▶ Standard population is US 2000 Census
- ▶ Rates by Race and Ethnicity
  - ▶ Non-Hispanic Whites
  - ▶ Non-Hispanic African Americans
  - ▶ Non-Hispanic American Indians
  - ▶ Non-Hispanic Other Races (includes unknown race)
  - ▶ Hispanics

# Disparities in 2013-2017 Cancer Incidence by Race/Ethnicity



# Disparities in 2014-2018 Cancer Mortality by Race/Ethnicity



# What is Staging?

- ▶ Answers basic questions about the extent of disease AT THE TIME INITIAL DIAGNOSIS:
  - ▶ Where did the cancer start (the primary site)?
  - ▶ Where did the cancer go (extent of disease)?
  - ▶ How did the cancer get to the other organ or structure?
    - ▶ Continuous line of cancer cells from the primary site (direct extension)
    - ▶ Cancer cells break away from primary cancer and travel through blood stream or body fluids (distant metastasis)
- ▶ Related information is grouped into broad categories that share similar prognosis
- ▶ The higher the stage, the greater the extent of involvement, and in general, the lower the survival

# Why Stage Cancer Cases?

- ▶ Allows for easier communication about the disease
- ▶ Selection of primary & adjuvant treatment
- ▶ Estimate prognosis
- ▶ Evaluate results of treatment
- ▶ **Analyze and compare groups of patients**
- ▶ Contribute to the continuing investigation of human cancers

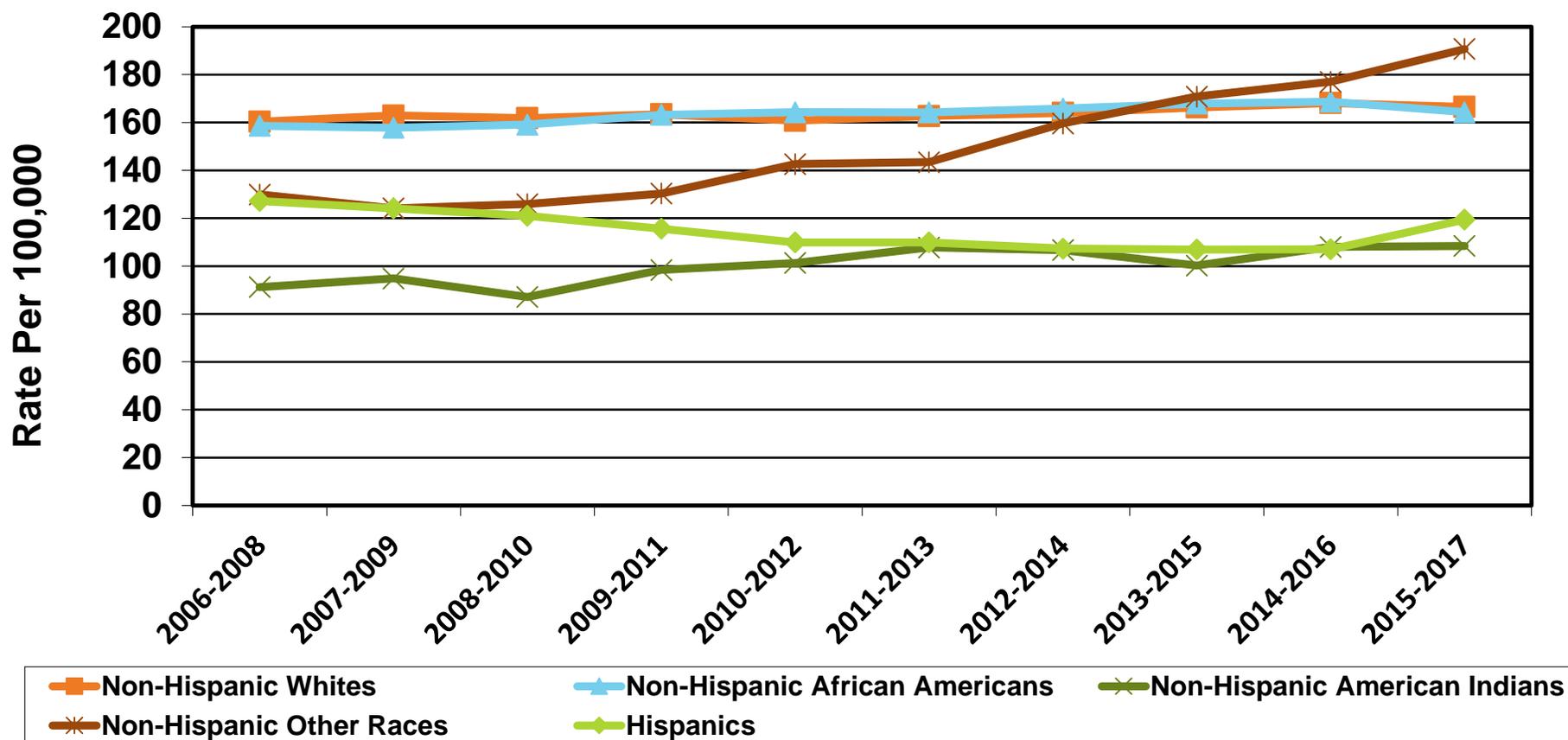
# Summary Stage

- ▶ A basic way of categorizing how far a cancer has spread from its point of origin
- ▶ General categories of in situ, local, regional and distant
- ▶ Codes range from 0 – 9
- ▶ Combines best clinical and pathological documentation
- ▶ Applies to all histologies

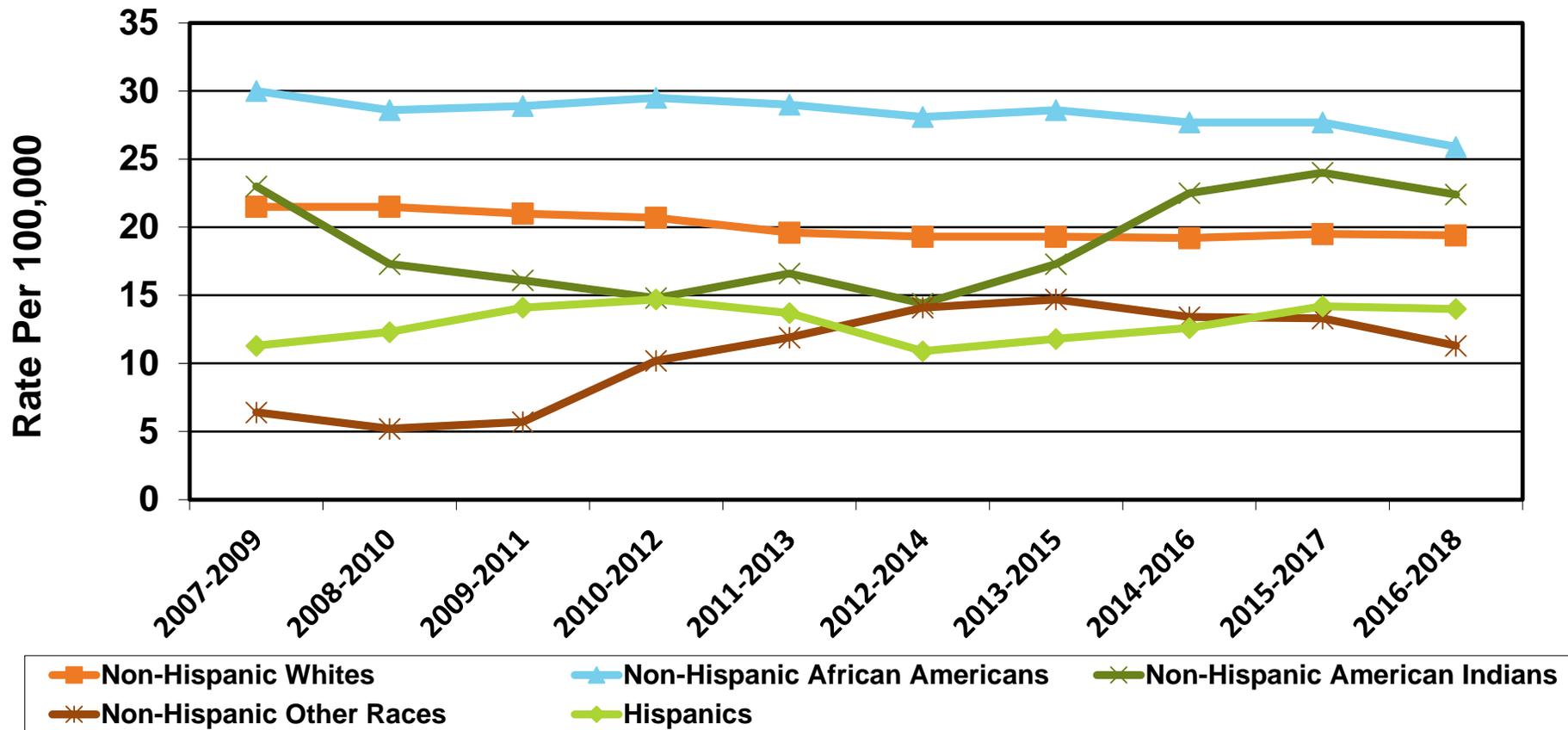
# Stage at Diagnosis

- 0 → In situ
- 1 → Local
- 2 → Regional by Direct Extension
- 3 → Regional Lymph Nodes only involved
- 4 → Regional by both D.E. and to Reg Nodes
- 5 → Regional, NOS
- 7 → Distant Sites and/or Distant Nodes
- 9 → Unknown or Not Applicable

# NC Female Breast Cancer Incidence (2006-2017)



# NC Female Breast Cancer Mortality (2007-2018)



# Female Breast Cancer Summary

21

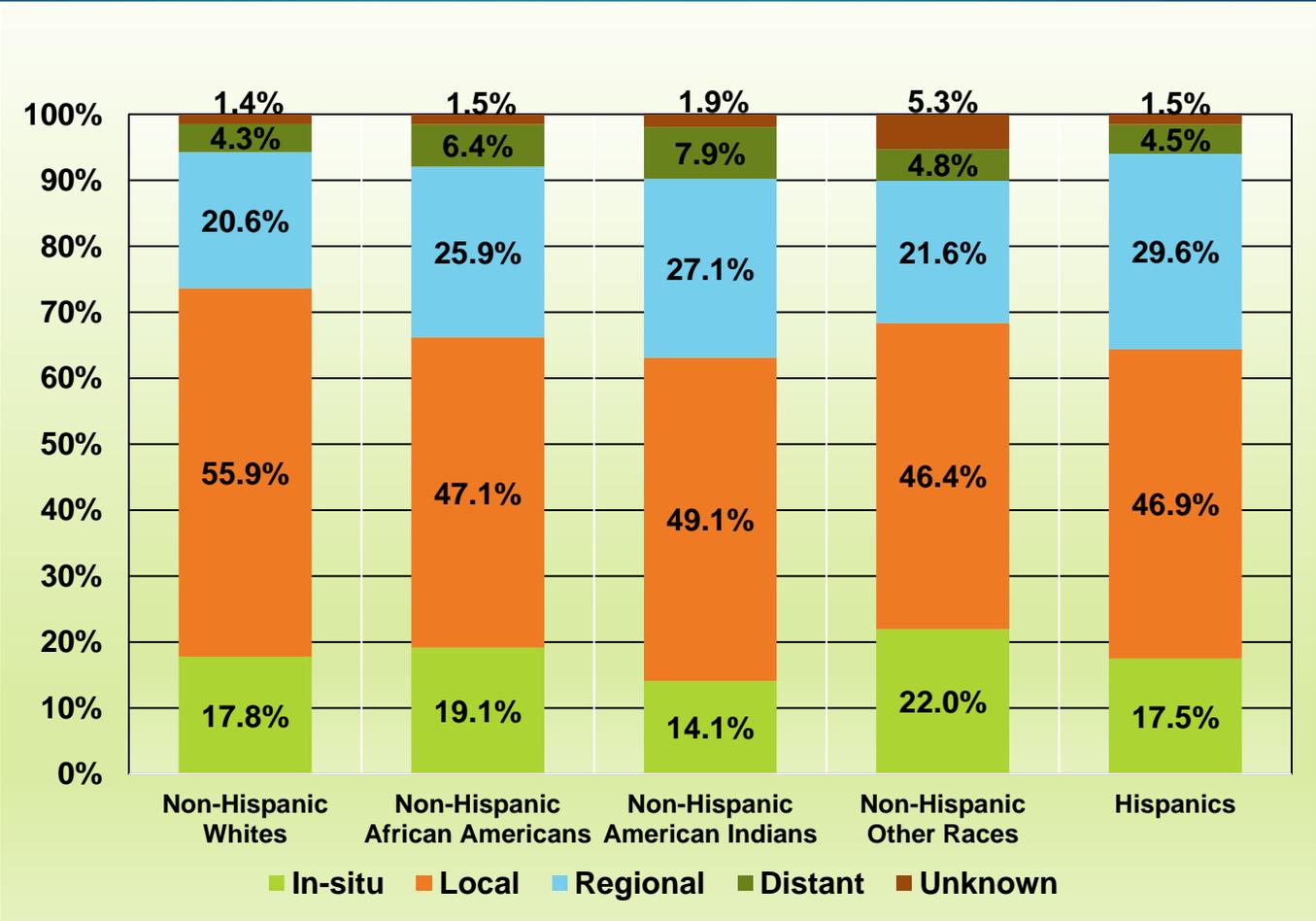
## Incidence Rates:

- Increased in NH Other Races
- Declined in Hispanics
- Remained Fairly stable for others

## Mortality Rates:

- Increased in Other Races and Hispanics
- Remained stable/decreasing in NH Whites African Americans and AI

# Disparities in Female Breast Cancer Stage at Diagnosis by Race/Ethnicity

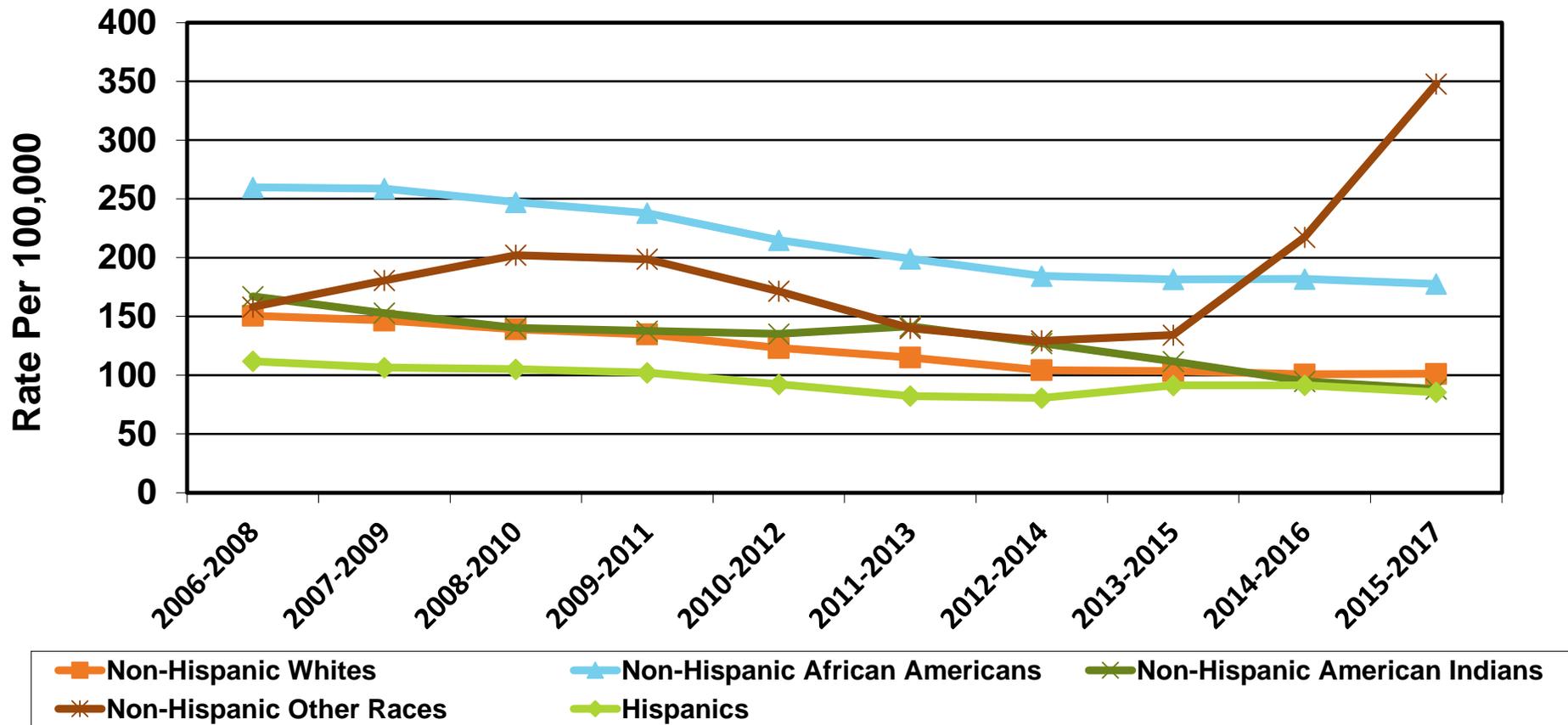


# Stage at Diagnosis

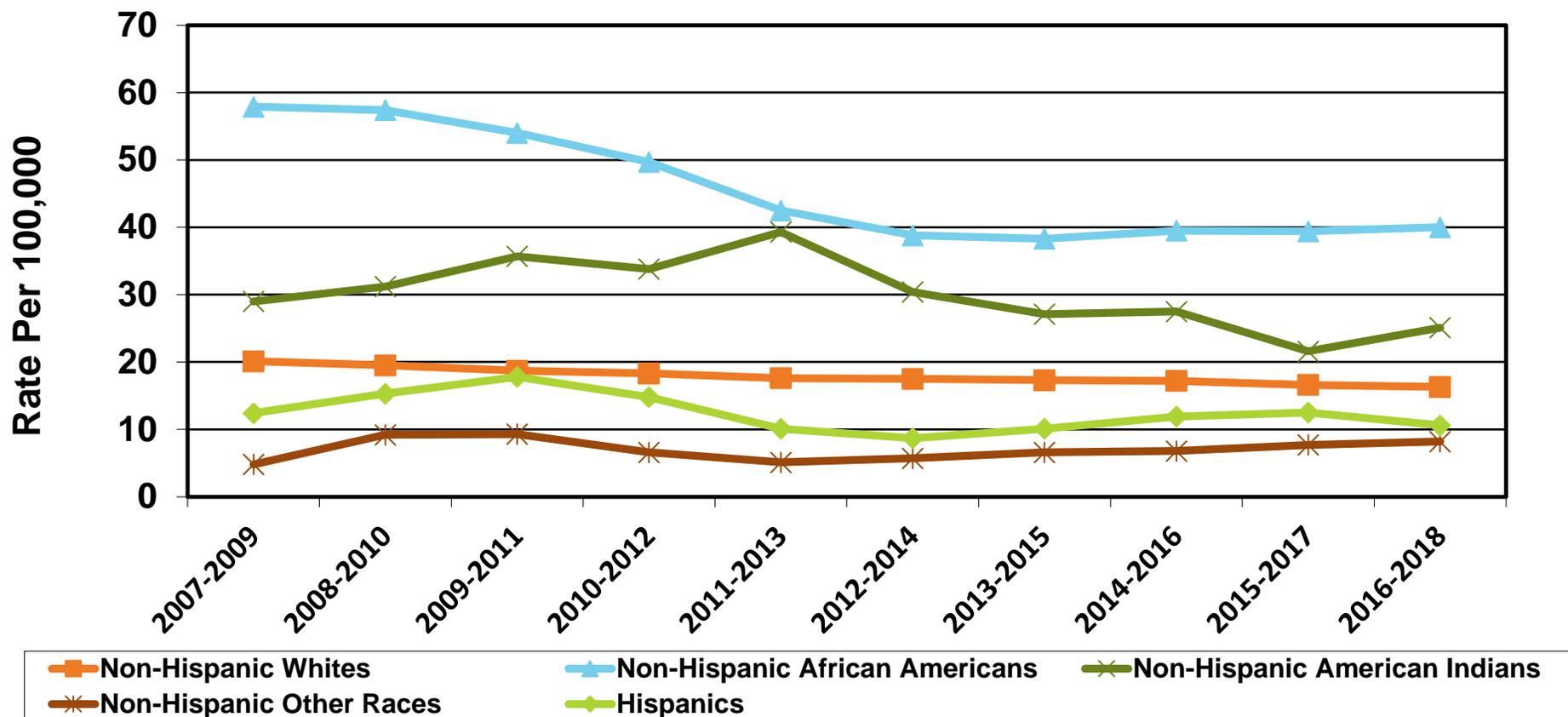
## Female Breast Cancer:

- Consistent across all races - More patients diagnosed at Local Stage
- More NH Whites diagnosed at local stage than other races

# NC Prostate Cancer Incidence (2006-2017)



# NC Prostate Cancer Mortality (2007-2018)



# Prostate Cancer Summary

26

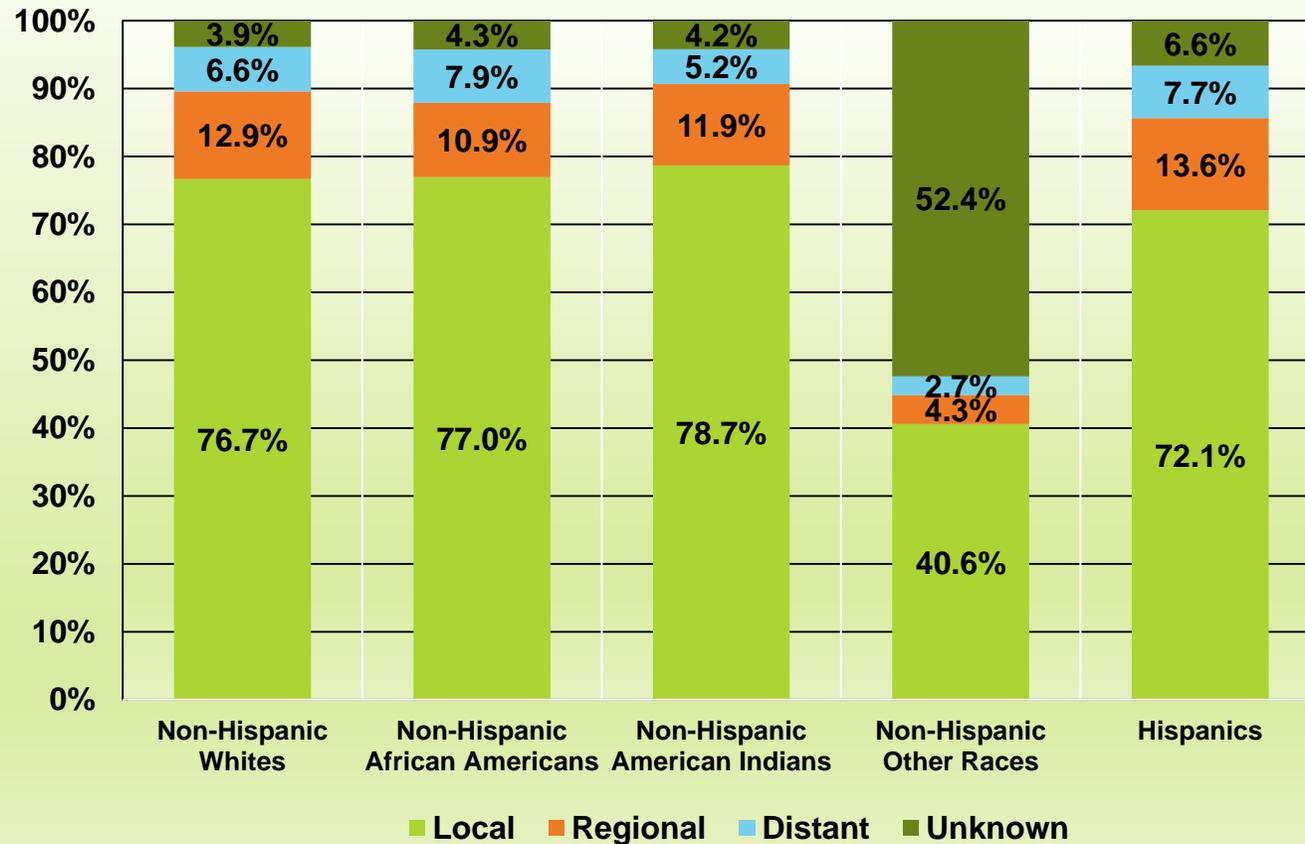
## Incidence Rates:

- Increased for NH Other Races
- Decreased for everyone else

## Mortality Rates:

- Decreased for all except NH Other Races which had a slight increase

# Disparities in Prostate Cancer Stage at Diagnosis by Race/Ethnicity

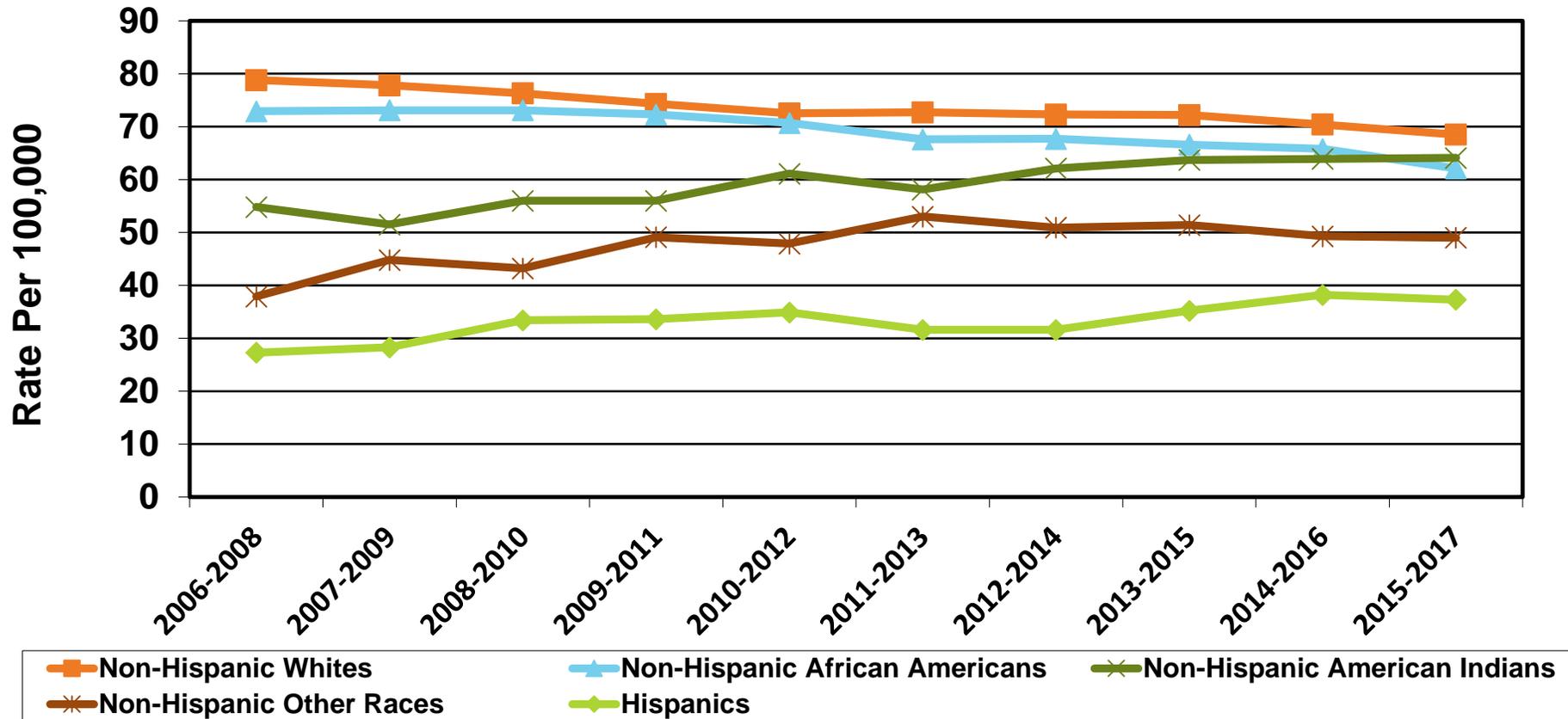


# Stage at Diagnosis

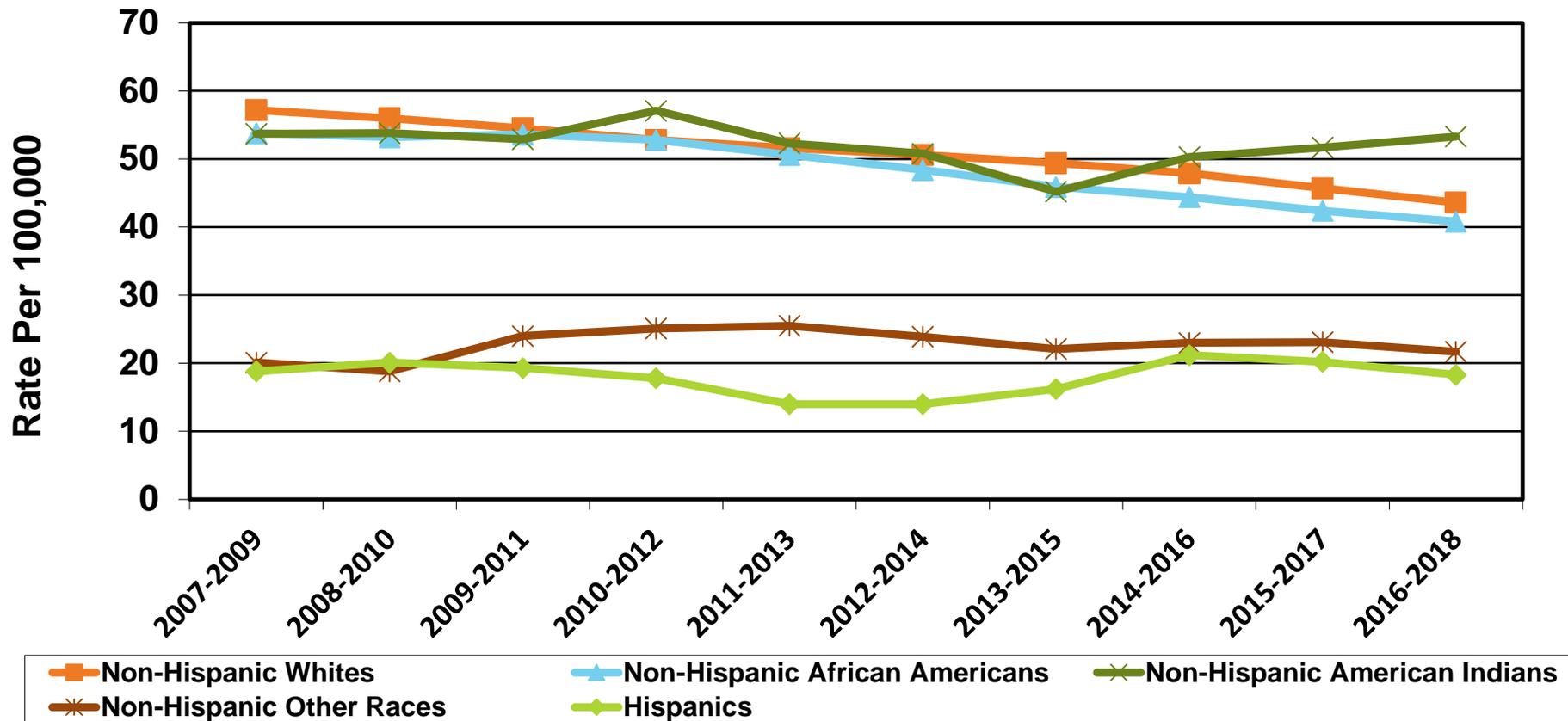
## Prostate Cancer :

- Consistent across all races (except NH Others\*)
- More patients diagnosed at Local Stage
  - \* NH Others: More patients have Unknown Stage (Could be due to lack of stage data)

# NC Lung/Bronchus Cancer Incidence (2006-2017)



# NC Lung/Bronchus Cancer Mortality (2007-2018)



# Lung/Bronchus Cancer Summary

31

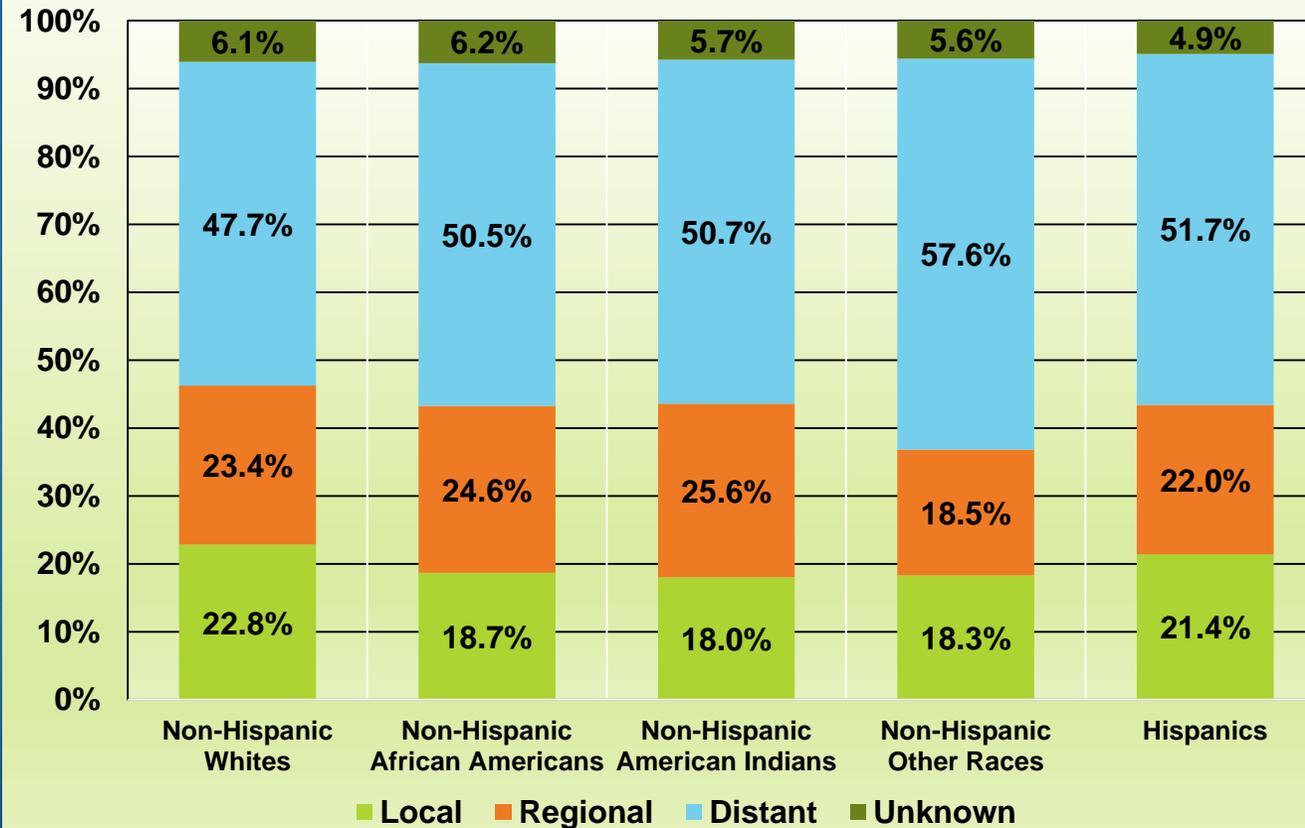
## Incidence Rates:

- Decreased NH Whites and African Americans
- Increased for everyone else

## Mortality Rates:

- Decreased for NH Whites and African Americans
- Remained Stable for others

# Disparities in Lung/Bronchus Cancer Stage at Diagnosis by Race/Ethnicity

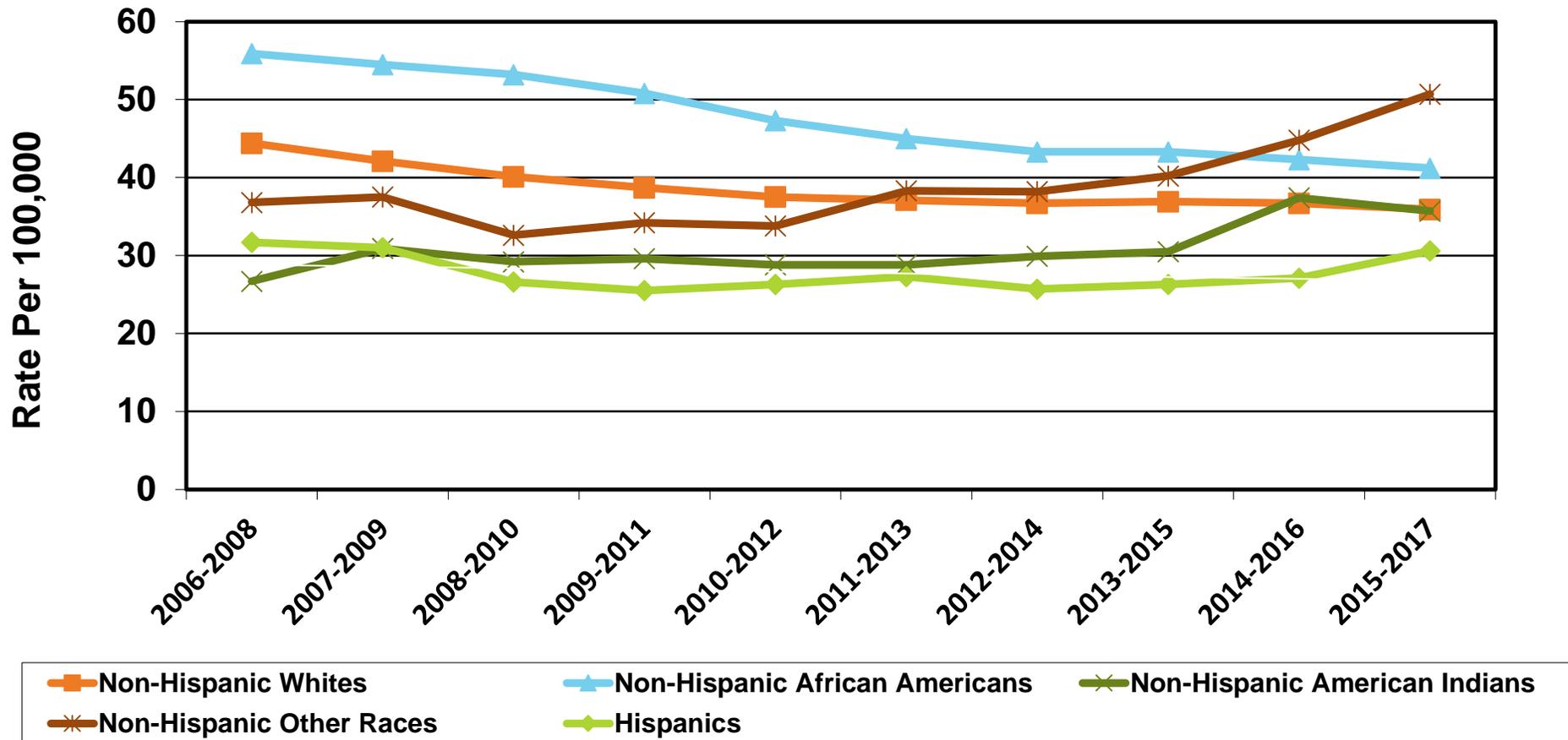


# Stage at Diagnosis

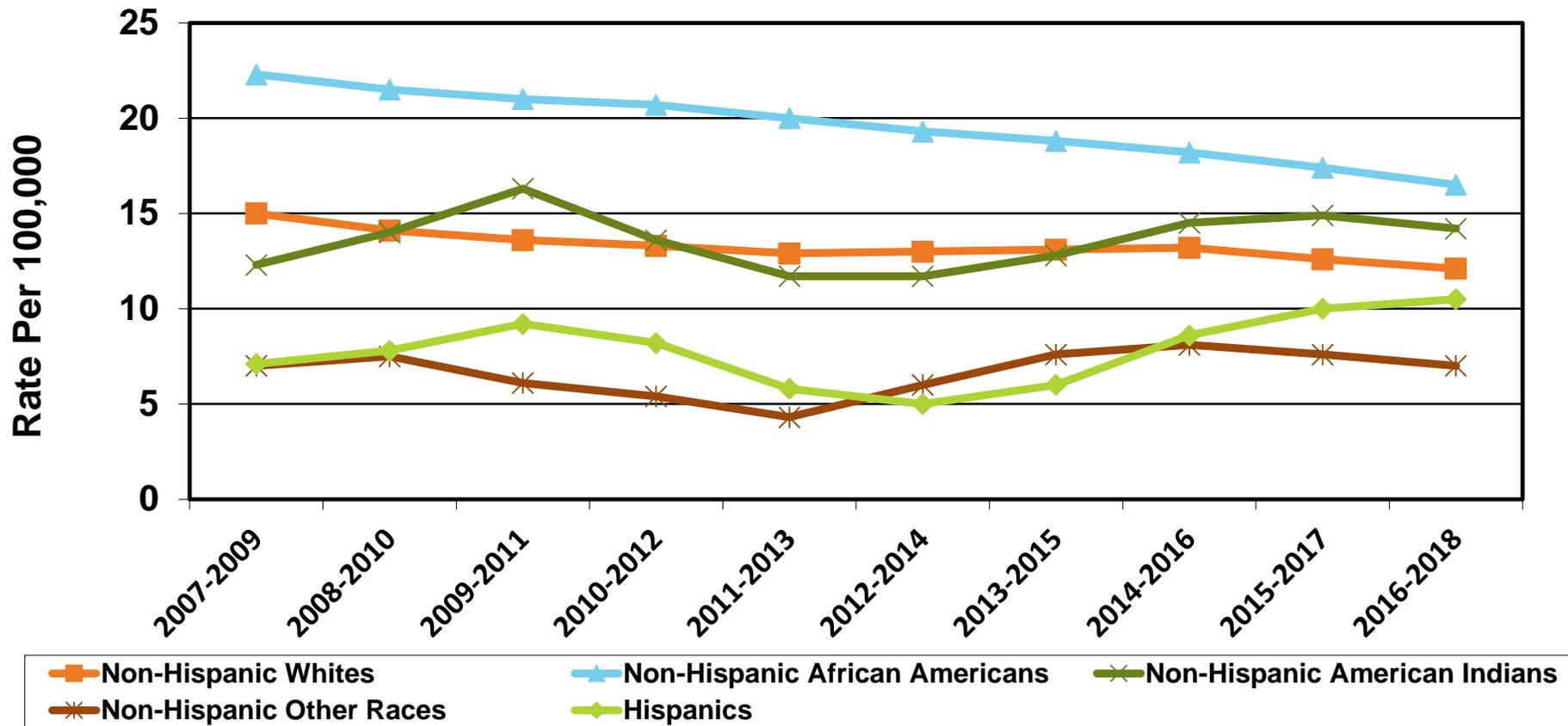
## Lung/Bronchus Cancer:

- More patients diagnosed at Distant Stage for all races
- More Whites diagnosed at local stage than other races

# NC Colon/Rectum Cancer Incidence (2006-2017)



# NC Colon/Rectum Cancer Mortality (2007-2018)



# Colon/Rectum Cancer Summary

36

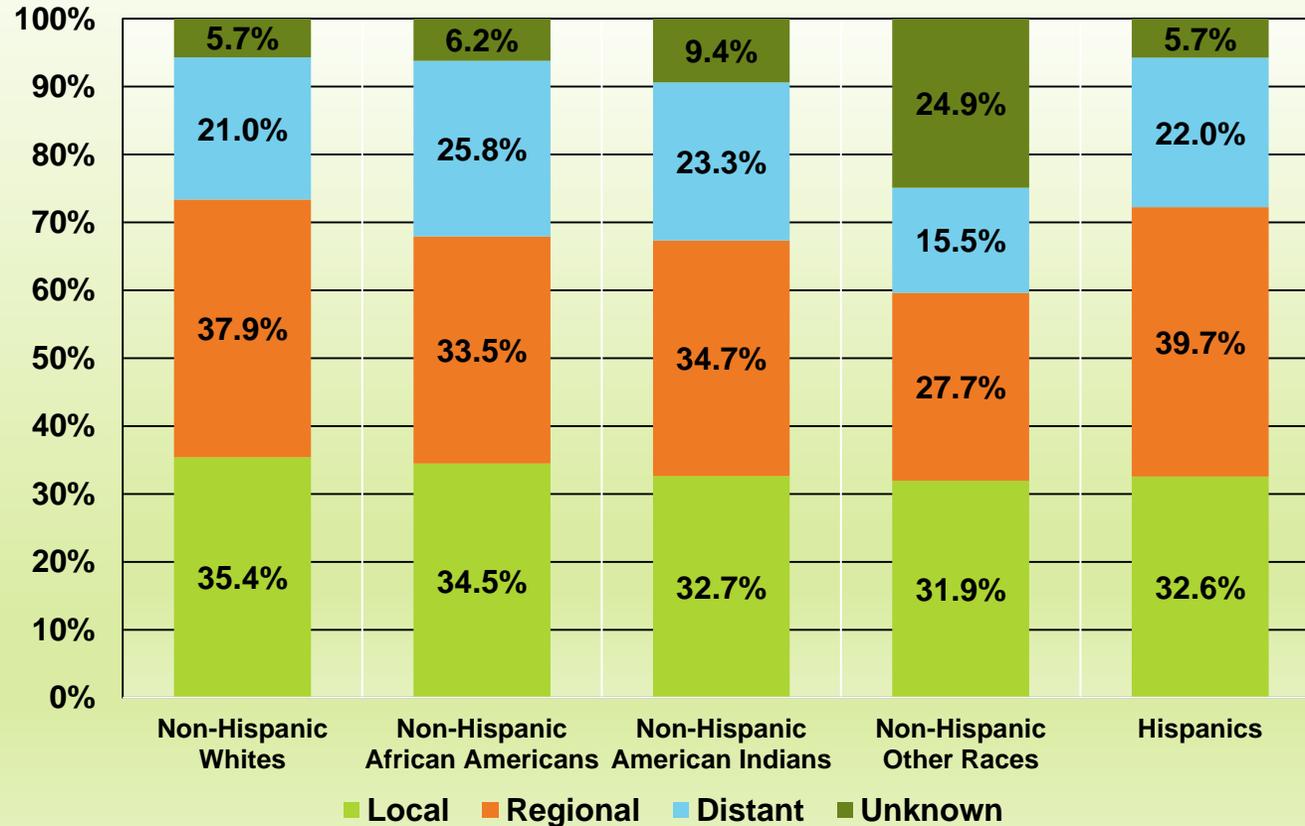
## Incidence Rates:

- Decreased NH Whites and African Americans
- Increased for AI and NH Other races
- Remained stable for Hispanics

## Mortality Rates:

- Decreased for NH Whites and African Americans
- Increased for AI and Hispanics
- Remained Stable for NH other Races

# Disparities in Colon/Rectum Cancer Stage at Diagnosis by Race/Ethnicity



# Stage at Diagnosis

38

## Colon/Rectum Cancer:

- Patients diagnosed at local and regional stages
- More NH Others have unknown stage

# Potential Uses of CCR Data

Statewide cancer control planning and intervention

Health care policy and decision making

Data requests...

- county/race/ethnicity/age/stage at diagnosis
- Patient contact studies (Rapid Case Ascertainment)
- Epidemiologic research: ex. Case control studies
- Data linkages for research studies

"Suspected" cancer cluster investigations

North American Association of Central Cancer Registries (NAACCR)

Center for Disease Control & Prevention (CDC)

- National Program of Cancer Registries (NPCR)

# Data Use – CCR Publications

40

Cancer Profiles for  
all 100 Counties

Cancer Incidence  
by County & by  
Primary Sites  
(MAPS)

Cancer Incidence  
Annual Report for  
NC

Age-adjusted  
Cancer Incidence  
Rates

Age-adjusted  
Cancer Mortality  
Rates

Cancer Projections  
for North Carolina

Cancer Survival for  
Selected Sites

Cancer Fact  
Sheets

# National Recognition for Submitting Timely, Complete, High-Quality Data



**CDC-NPCR**  
Registry of Excellence  
Registry of Distinction  
Registry of Surveillance



**NAACCR**  
Gold Certification

# Acknowledgements

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The content is solely the responsibility of the authors and does not necessarily represent the official views of the Centers for Disease Control and Prevention.

NC CCR Staff for their analysis.



# THANK YOU!

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