

# Burden of Cardiovascular Diseases (CVD) in Connecticut



April 2015

# What are Cardiovascular Diseases (CVD)?

- Cardiovascular diseases (CVD) include a wide variety of heart and blood vessel diseases
- The most common forms of CVD are coronary heart disease (CHD) and cerebrovascular disease (stroke)



# CVD Mortality Statistics

# Leading Causes of Death, Connecticut Residents, 2011

- Heart disease and stroke are the first and fifth leading causes of death in Connecticut
- The leading causes of death vary by age with the risk of death from heart disease increasing with age
  - 84% of all heart disease deaths were among residents aged 65 years and older
  - Nearly 50% of all heart disease deaths were among residents 85 years and older

*(Data are presented on the following slide)*

# Leading Causes of Death, Connecticut Residents, 2011

Rank	All Ages	65-74 years old	75-84 years old	85+ years old
1	Heart Diseases (7,183)	Cancer (1,567)	Cancer (1,935)	Heart Diseases (3,566)
2	Cancer (6,793)	Heart Diseases (786)	Heart Diseases (1,066)	Cancer (1,459)
3	Chronic Lower Respiratory Diseases (1,411)	Chronic Lower Respiratory Diseases (227)	Chronic Lower Respiratory Diseases (295)	Stroke (695)
4	Unintentional Injuries (1,322)	Stroke (132)	Stroke (228)	Alzheimer's Disease (584)
5	Stroke (1,308)	Diabetes (126)	Unintentional Injuries (113)	Chronic Lower Respiratory Diseases (531)

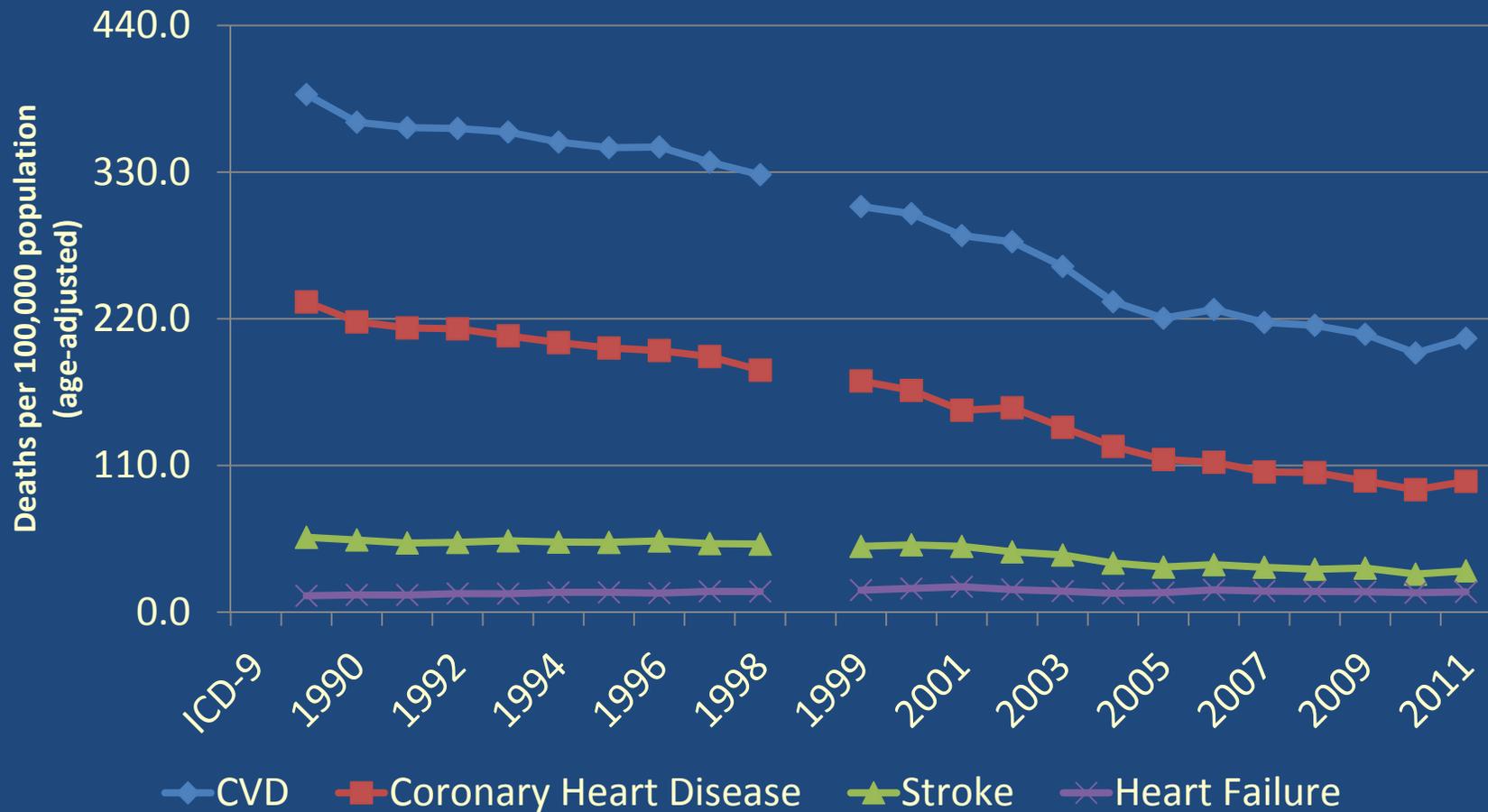
Source: CT DPH, Vital Records Mortality Files, 2011 data.

# Age-Adjusted Mortality Rates (AAMR), Connecticut, 1989-2011

- The AAMRs for CVD, coronary heart disease, heart failure, and stroke decreased from 1989 to 2011
- A trend analysis using data from 1999-2008 showed that AAMRs for CVD, coronary heart disease, heart failure, and stroke decreased significantly in that timeframe

*(Data are presented on the following slide)*

# Age-Adjusted Mortality Rates, Connecticut, 1989-2011



Source: CT DPH, Vital Records Mortality Files, 1989-2011 data.

# Notes about Race and Ethnicity

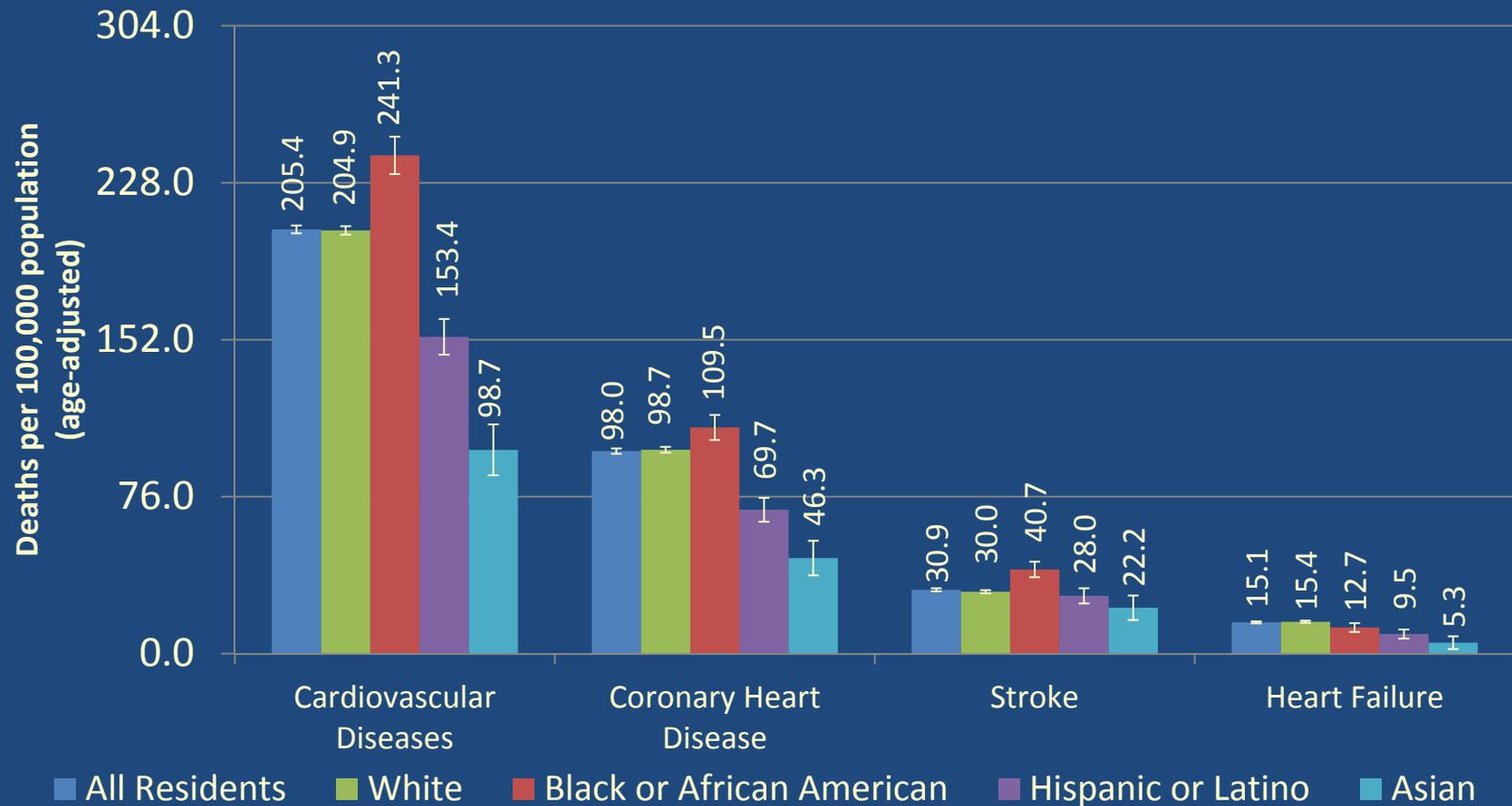
- All racial groupings (e.g., Black or African American, White, Asian) in these slides exclude persons of Hispanic ethnicity
  - A Hispanic or Latino ethnicity category is included in figures and tables reflecting data separate from race categories
  - Therefore, the modifier “Non-Hispanic or Latino” is assumed
- In some instances Asian, Pacific Islander, American Indian or Alaskan Native, other race, and multiracial adults are reported as “other” or are not reported due to the small number of respondents

# Age-Adjusted Mortality Rates by Race & Ethnicity, CT Residents, 2007-2011

- Black or African American residents have higher AAMRs compared with White, Hispanic or Latino, and Asian residents for CVD (overall), coronary heart disease, and stroke
- Asian residents have lower AAMRs of CVD and coronary heart disease than the other racial and ethnic groups
- Hispanic or Latino residents have lower AAMRs for CVD and coronary heart disease compared with White and Black or African American residents
- The differences in the AAMRs for heart failure among the racial and ethnic groups did not reach statistical significance

*(Data are presented on the following slide)*

# Age-Adjusted Mortality Rates by Race & Ethnicity, CT Residents, 2007-2011



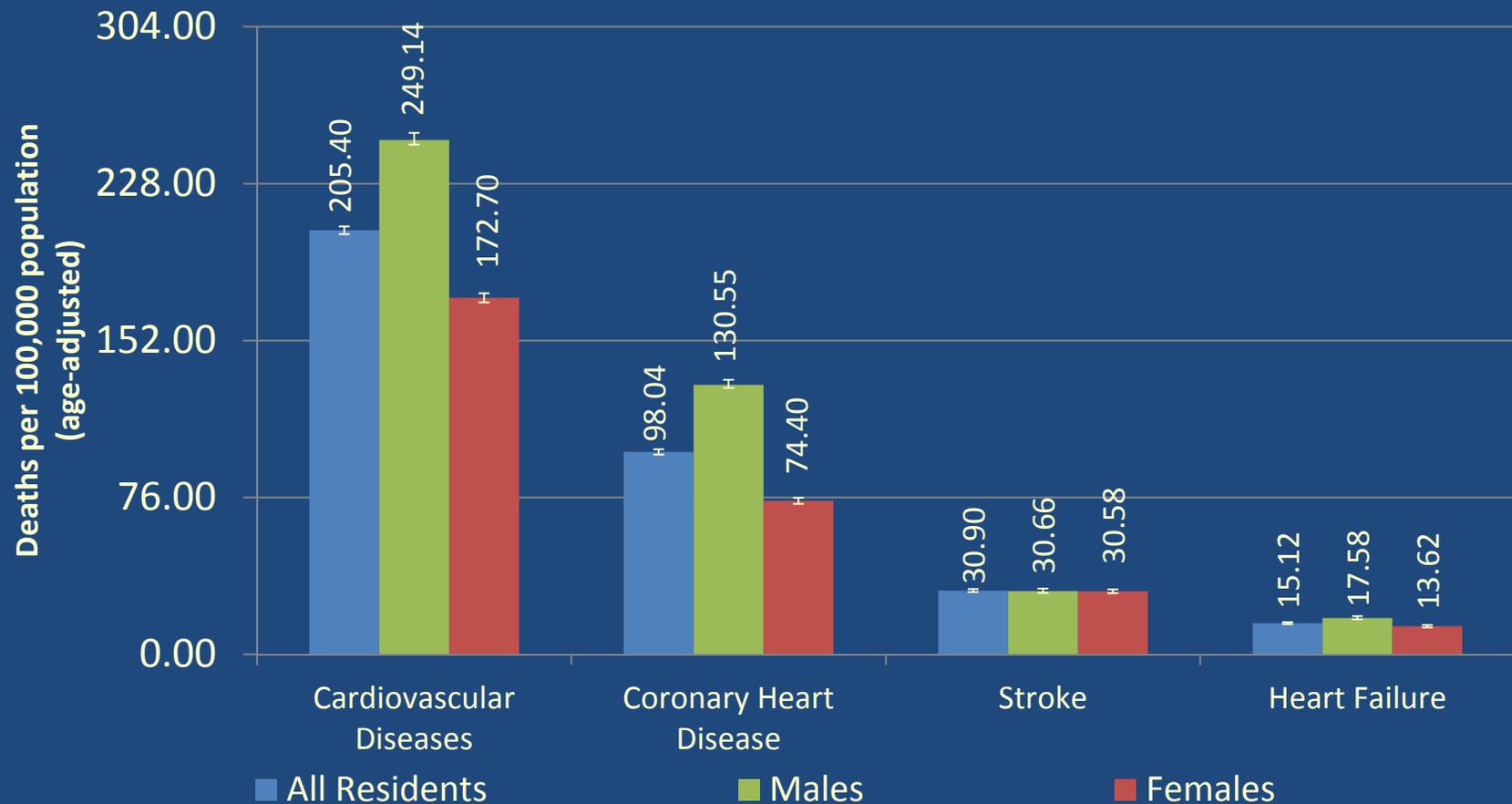
Source: CT DPH, Vital Records Mortality Files, 2007-2011 data.

# Age-Adjusted Mortality Rates by Gender, CT Residents, 2007-2011

- Male residents have significantly higher age-adjusted mortality rates compared with females for:
  - Cardiovascular diseases
  - Coronary heart disease
  - Heart failure
- The stroke AAMRs do not vary significantly by gender

*(Data are presented on the following slide)*

# Age-Adjusted Mortality Rates by Gender, CT Residents, 2007-2011



Source: CT DPH, Vital Records Mortality Files, 2007-2011 data.

# Age-Adjusted Years of Potential Life Lost ( $<75y$ )

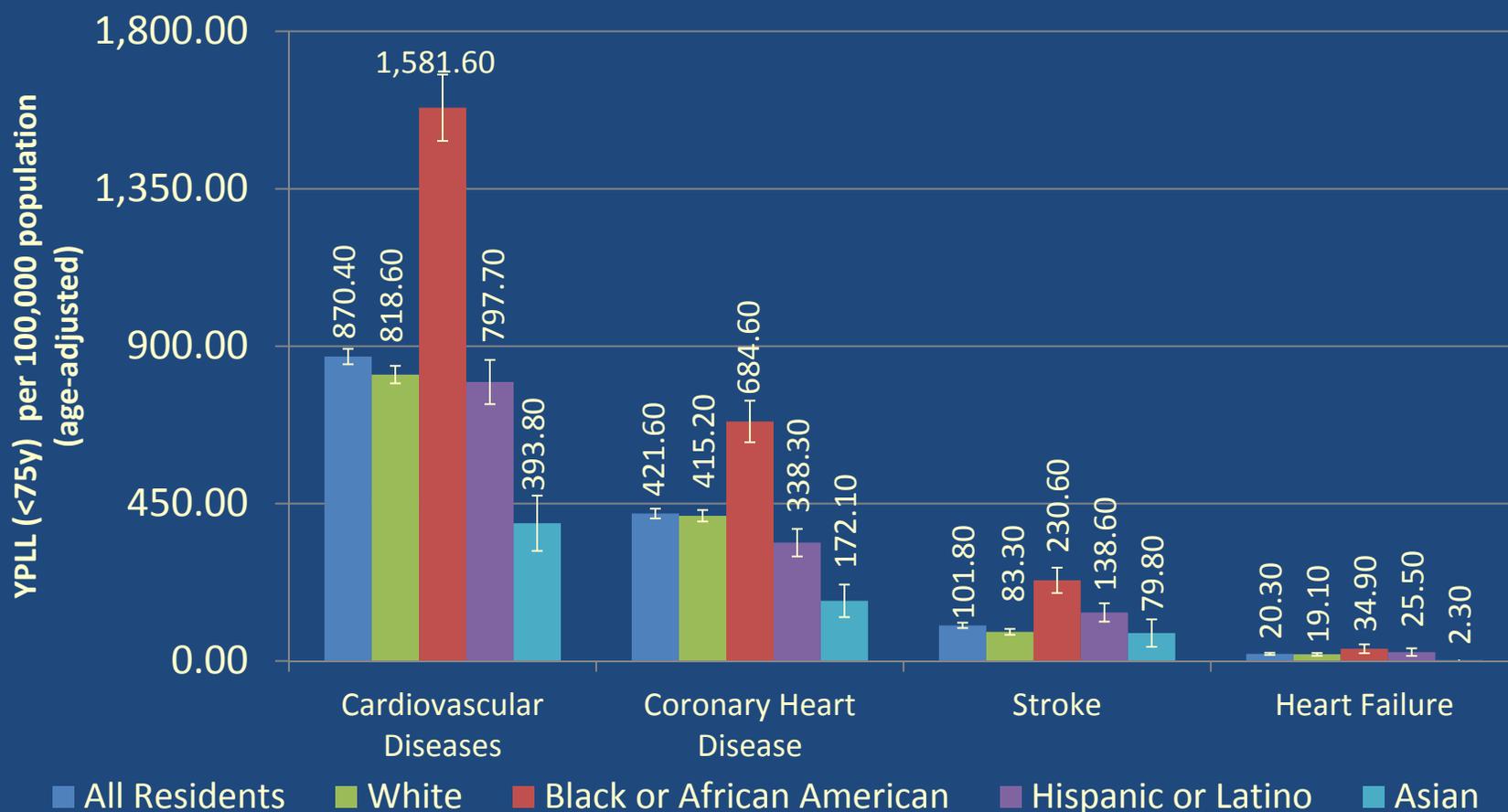
- Years of potential life lost (YPLL) is a measure of premature mortality
- It represents the number of years of potential life lost by each death before a predetermined end point (e.g., 75 years of age)
- The YPLL statistic is derived by summing age-specific years of life lost figures over all age groups up to 75 years
- YPLL is presented for persons less than 75 years of age because the average life expectancy in the United States is over 75 years
- Premature death from CVD can be reduced by preventing or treating CVD risk factors (e.g., high blood pressure, high blood cholesterol, diabetes, smoking, physical inactivity, and obesity)

## Age-Adjusted Years of Potential Life Lost (<75y) by Race & Ethnicity, CT Residents, 2007-2011

- Black or African American residents have higher age-adjusted CVD (overall), coronary heart disease, stroke, and heart failure YPLL compared with White residents
- Asian residents have the lowest age-adjusted mortality rates of CVD, coronary heart disease, and heart failure
- Hispanic or Latino residents have higher age-adjusted stroke YPLL compared with White residents. In contrast, Hispanic or Latino adults have lower age-adjusted coronary heart disease YPLL compared with White residents

*(Data are presented on the following slide)*

# Age-Adjusted Years of Potential Life Lost (<75y) by Race & Ethnicity, CT Residents, 2007-2011



Source: CT DPH, Vital Records Mortality Files, 2007-2011 data.



# CVD Hospital Discharge Data

# Acute Care Hospital Inpatient Discharge Database (HIDD)

- All 29 acute care hospitals in Connecticut are required by law to submit inpatient discharge data to the Office of Health Care Access (OHCA)
- The information is taken from medical record abstracts and hospital bills
- Although data are coded for billing, not surveillance, purposes, they can provide useful information on the burden of disease
- Hospitalizations = number of hospital discharges
  - not unduplicated patients

# Connecticut Resident Hospitalizations, 2012

- Approximately 17% of all hospital discharges in 2012 had a primary diagnosis of CVD
- Approximately 21% of all hospital charges in 2012 were associated with hospitalizations with a primary diagnosis of CVD
- Many CVD hospitalizations could be avoided through appropriate outpatient care and management in the outpatient and community settings, including blood pressure control, cholesterol control, and smoking cessation

*(Data are presented on the following slide)*

# Connecticut Resident Hospitalizations, 2012

Principal Diagnosis	Number of Discharges	Total Charges (in millions)
All discharges excluding newborn & pregnancy	327,848	\$12,708
Cardiovascular Diseases	55,248	\$2,670
Coronary Heart Disease	11,913	\$710
Congestive Heart Failure	10,269	\$424
Stroke	7,345	\$357
Diabetes	5,298	\$170
Chronic Obstructive Pulmonary Disease	10,836	\$254
Unintentional Injuries	13,832	\$536

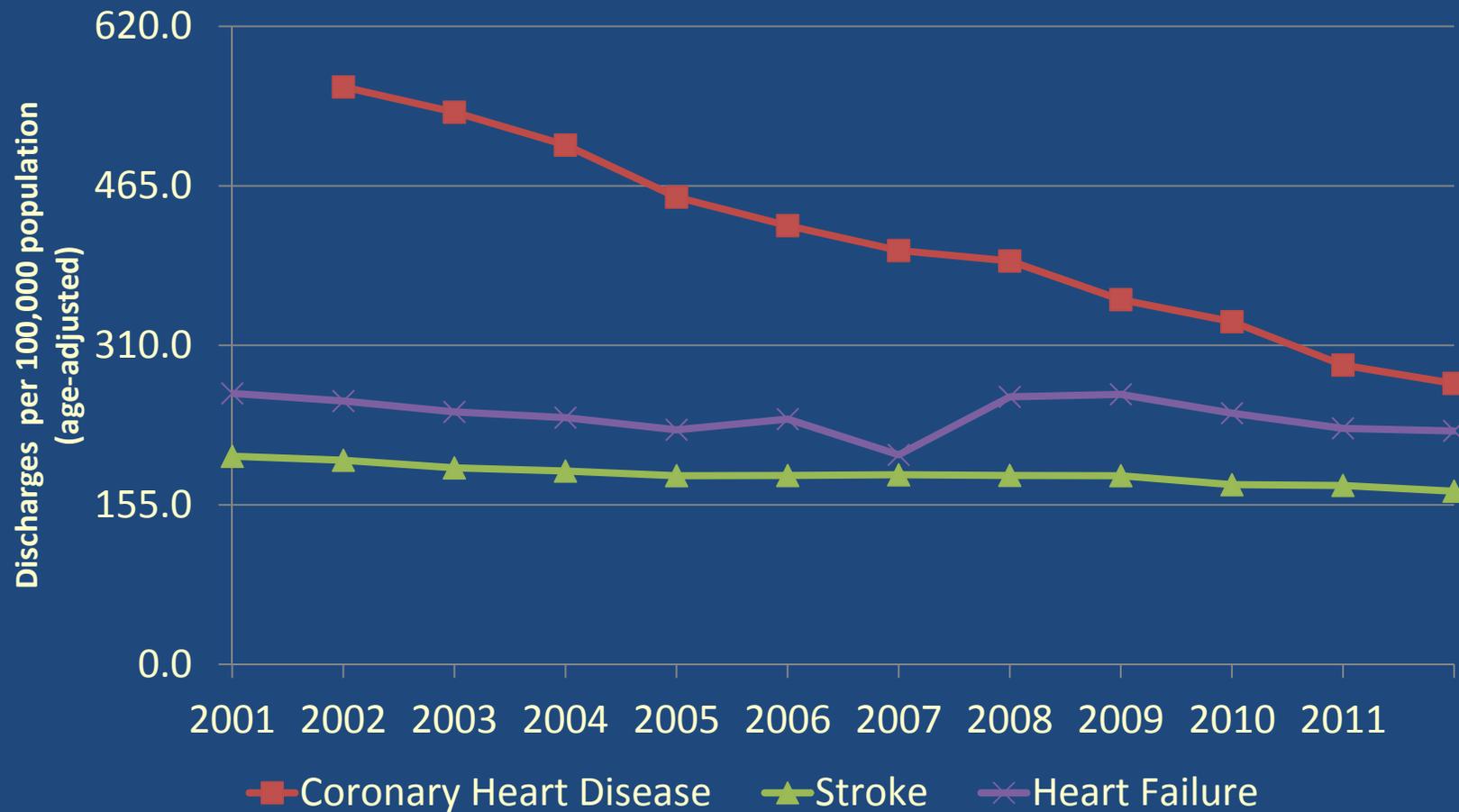
Source: CT DPH. CT Acute Care Hospital Inpatient Discharge Database, 2012 data.

# Age-adjusted Hospital Discharge Rates

- 2012 age-adjusted hospital discharge rates for coronary heart disease were 51% lower than the 2002 rates
- 2012 age-adjusted hospital discharge rates for stroke and heart failure were 17% and 14% lower than the 2001 rates, respectively
- A formal time-trend analysis of the hospital discharge data was not performed

*(Data are presented on the following slide)*

# Age-Adjusted Hospital Discharge Rates, Connecticut, 2001-2012



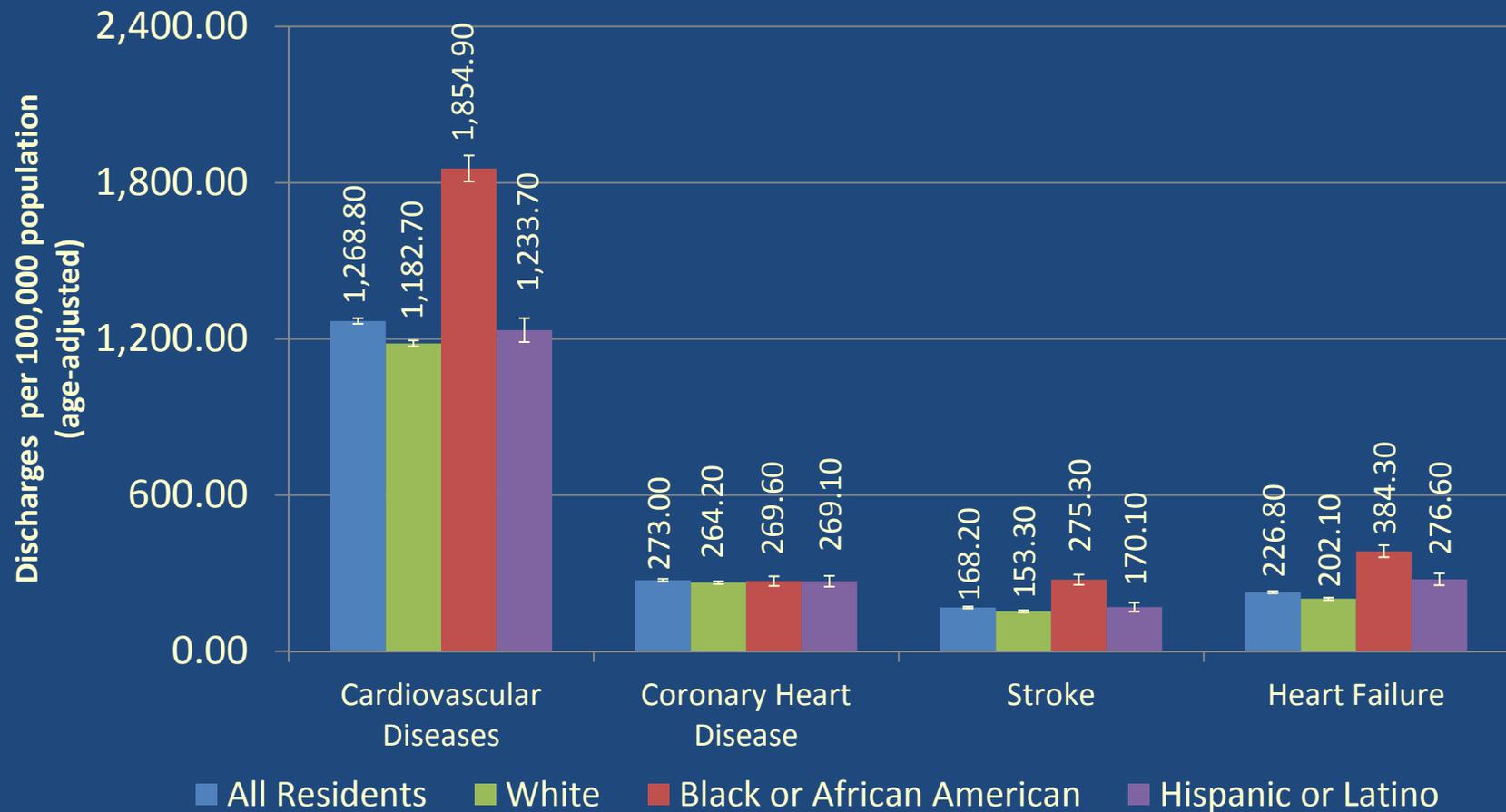
Source: CT DPH. CT Acute Care Hospital Inpatient Discharge Database, 2001-2012 data.

# Age-Adjusted CVD Hospital Discharge Rates by Race & Ethnicity, CT Residents

- Black or African American residents have significantly higher age-adjusted hospital discharge rates (AAHRs) for CVD, stroke, and heart failure compared with White and Hispanic or Latino residents
- The AAHRs for heart failure are significantly higher among Hispanic or Latino residents compared with White residents
- The differences in AAHRs for coronary heart disease among the racial and ethnic groups did not reach statistical significance
- There were too few CVD hospitalizations among Asian, Pacific Islander, and American Indian residents to calculate reliable rates

*(Data are presented on the following slide)*

# Age-Adjusted Hospital Discharge Rates by Race & Ethnicity, CT Residents, 2012



Source: CT DPH. CT Acute Care Hospital Inpatient Discharge Database, 2012 data



# CVD Prevalence

# Behavioral Risk Factor Surveillance Systems (BRFSS)

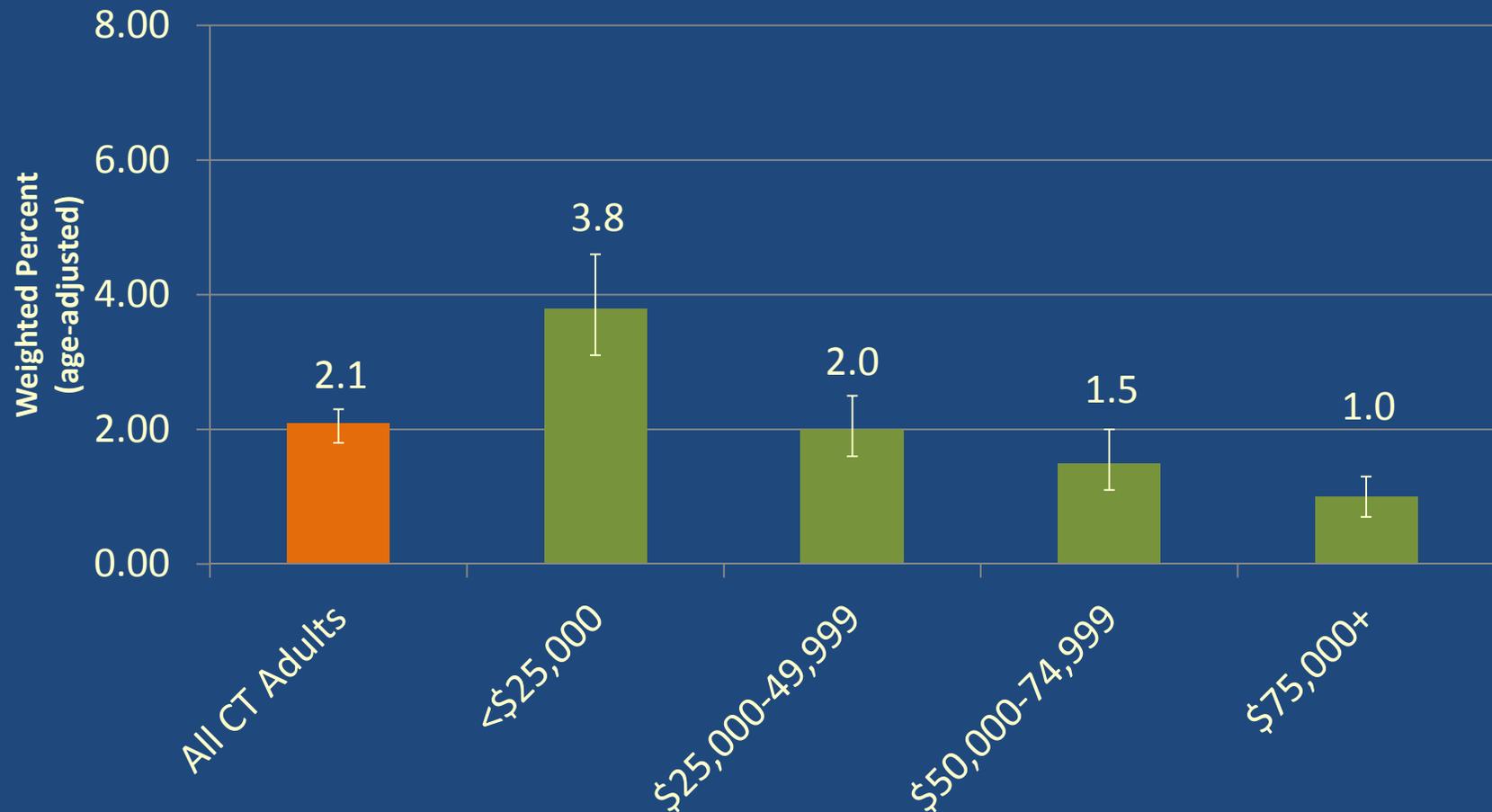
- State-based system of health surveys that generate information about health risk behaviors, clinical preventive practices, and health care access and utilization
- Sponsored by the Centers for Disease Control & Prevention (CDC)
- The world's largest telephone survey, and is conducted in all 50 states
- Respondents are randomly selected adults (aged 18 and older) within randomly selected household with landline telephones, or with cellular telephones owned by adults with no landline or who use their cellular telephones for at least 90% of their calls

# Prevalence of Stroke, CT Adults (18+years), 2011-2013

- An estimated 2.3% (or 63,300) Connecticut adults report having had a stroke (not age-adjusted)
- Adults with annual household incomes less than \$25,000 are significantly more likely to have had a stroke compared to all other adults

*(Data are presented on the following slide)*

# Prevalence of Stroke by Annual Household Income, CT Adults (18+years), 2011-2013



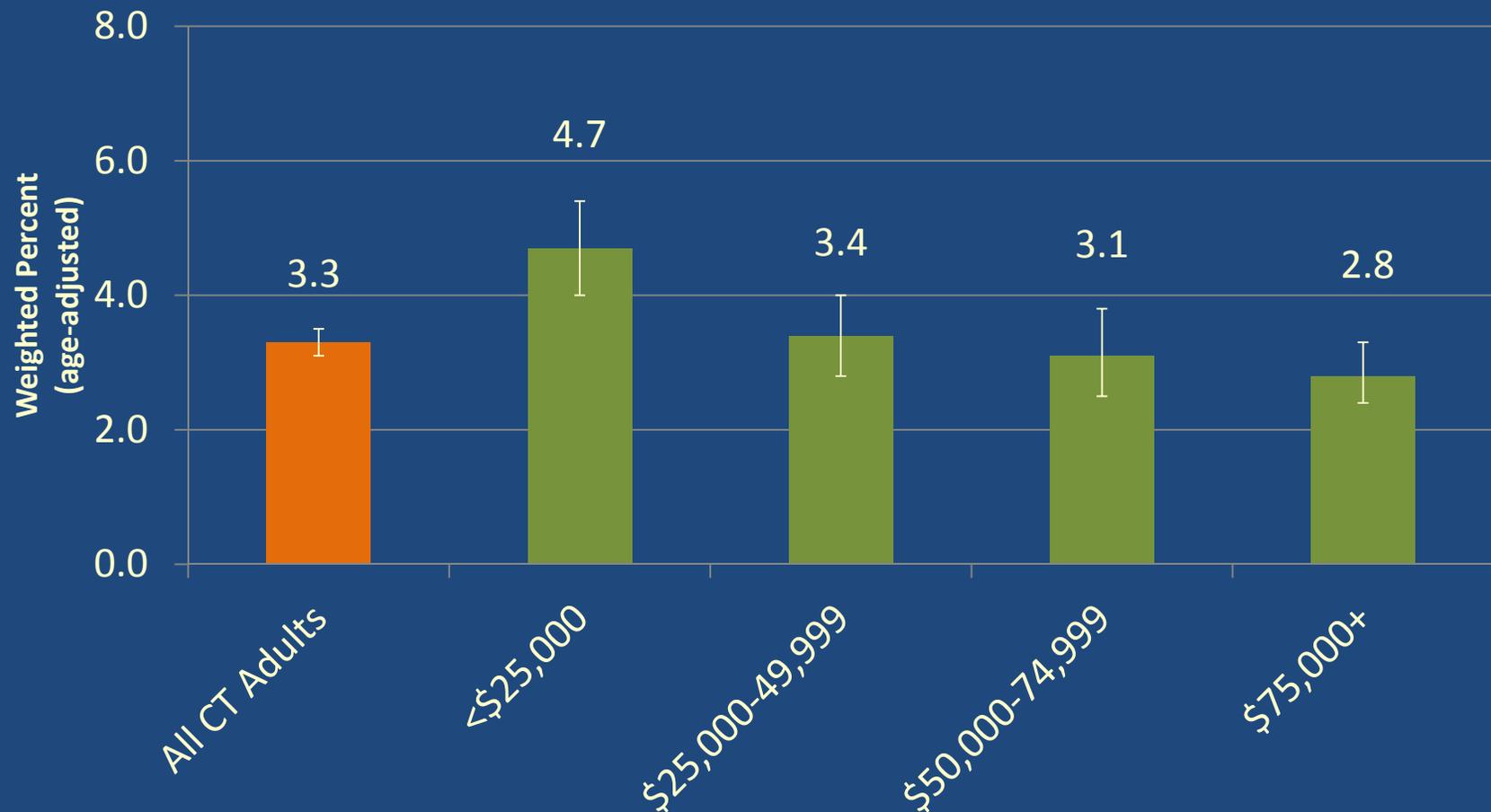
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of Coronary Heart Disease, CT Adults (18+years), 2011-2013

- An estimated 3.8% (or 104,000) Connecticut adults report having coronary heart disease (not age-adjusted)
- Adults with annual household incomes less than \$25,000 are significantly more likely to have had a stroke compared to adults with annual household incomes of \$50,000-74,999 and \$75,000 or more

*(Data are presented on the following slide)*

# Prevalence of Coronary Heart Disease by Annual Household Income, CT Adults (18+years), 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.



# Behavioral/Modifiable Risk Factors

# Risk Factors for CVD

- Risk Factors for CVD may be modifiable or non-modifiable
- Non-modifiable risk factors include increasing age and family history of CVD or its risk factors
  - Collecting and sharing one's family health history can help health care professionals assess a person's risk of developing heart disease or stroke and recommend actions to lower that risk. For more information, visit the [Department of Public Health's Genomics web page](#)

# Risk Factors for CVD

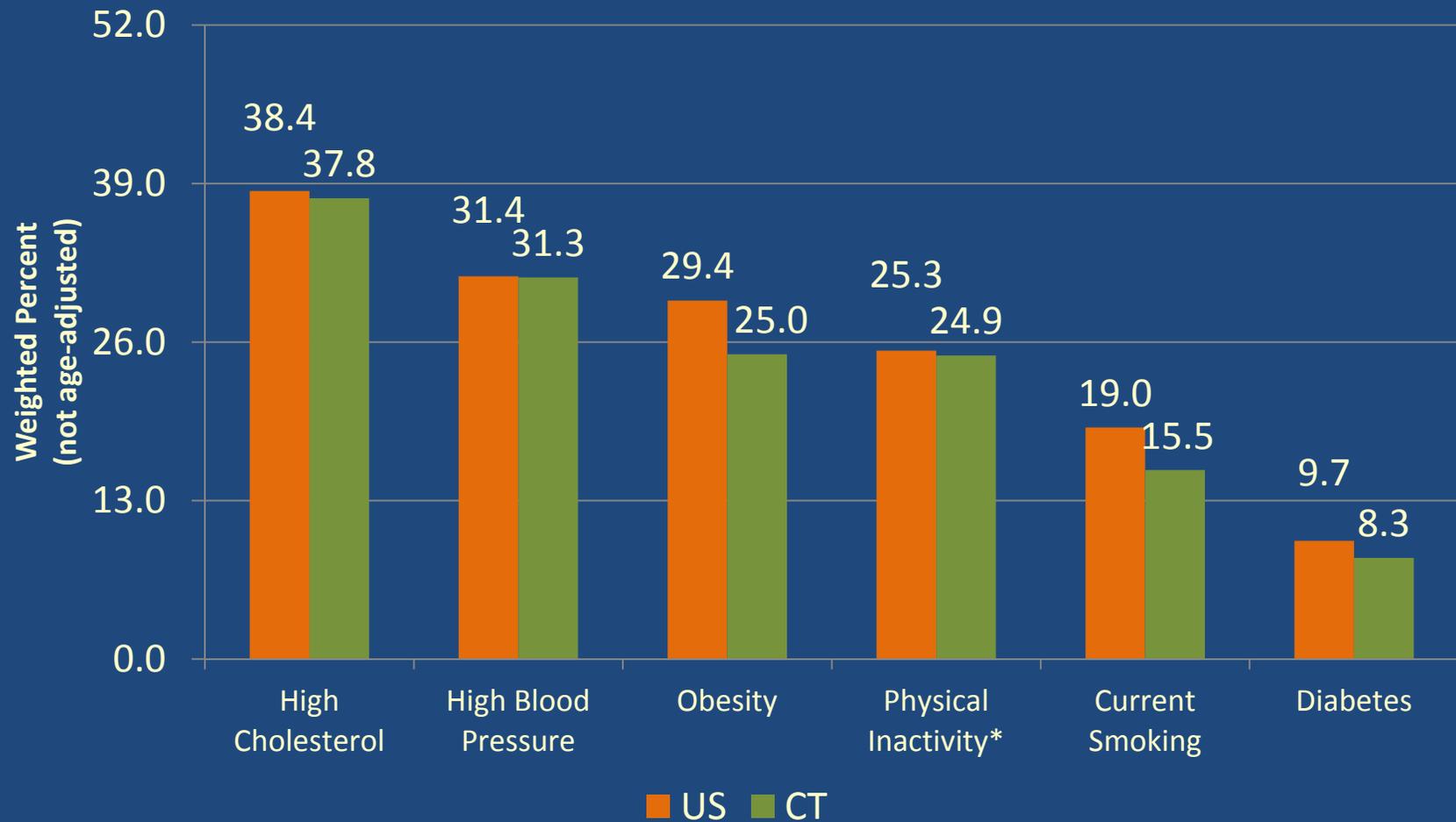
- Modifiable risk factors include high blood pressure; high LDL cholesterol or high triglycerides along with low HDL cholesterol; diabetes; obesity; and lack of physical activity

# Modifiable Risk Factors for CVD

- The rates of modifiable risk factors for CVD are comparable to national rates (significance testing not performed)

*(Data are presented on the following slide)*

# Modifiable Risk Factors for CVD among Adults (18+y), Connecticut and the US, 2013



Source: CDC, BRFSS, 2013 data.

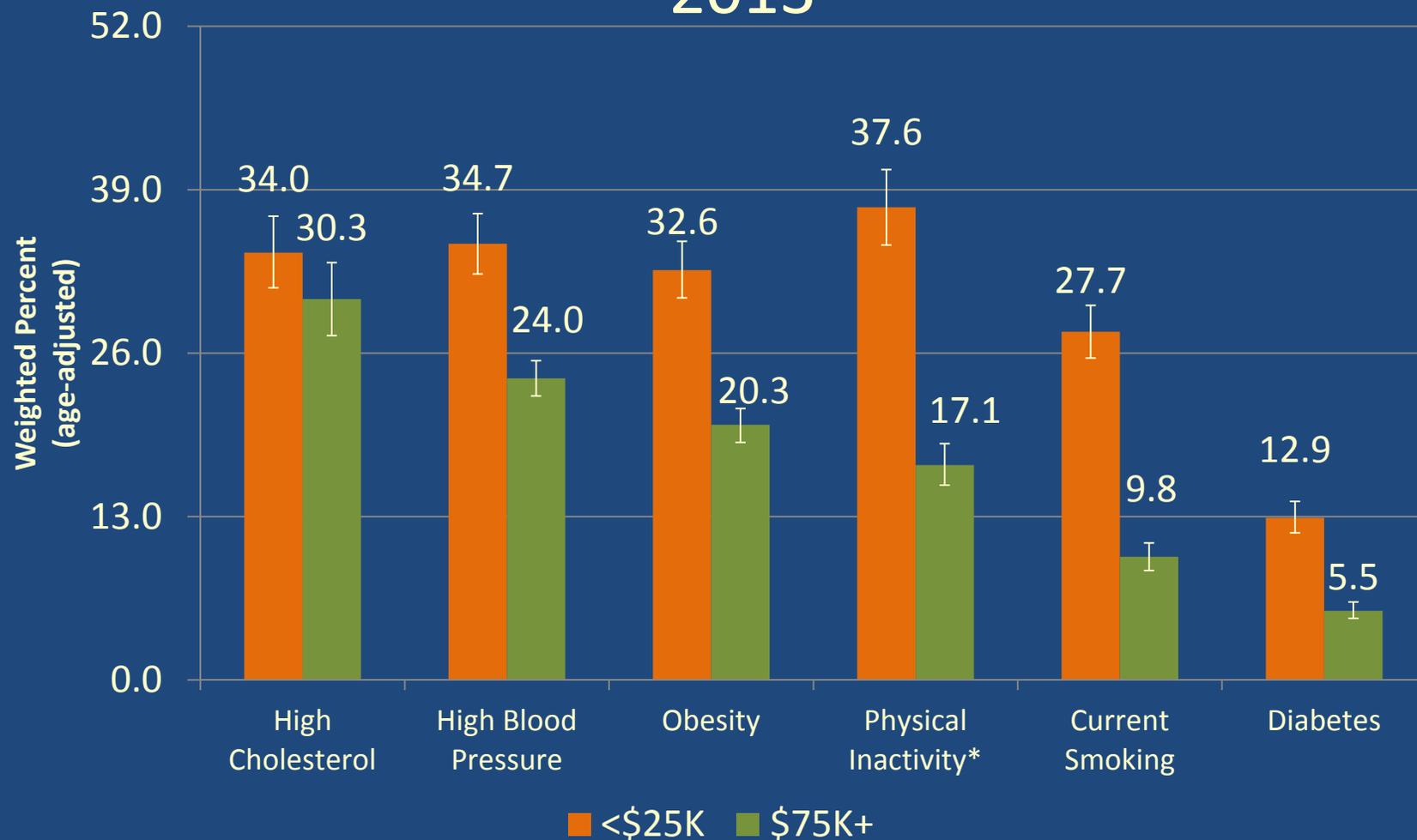
\*Participated in no physical activities in past month

## Modifiable Risk Factors among Adults (18+y) by Annual Household Income, CT, 2011-2013

- Connecticut adults with annual household incomes of less than \$25,000 generally have higher rates of modifiable risk factors compared to adults with annual household incomes of \$75,000 or more

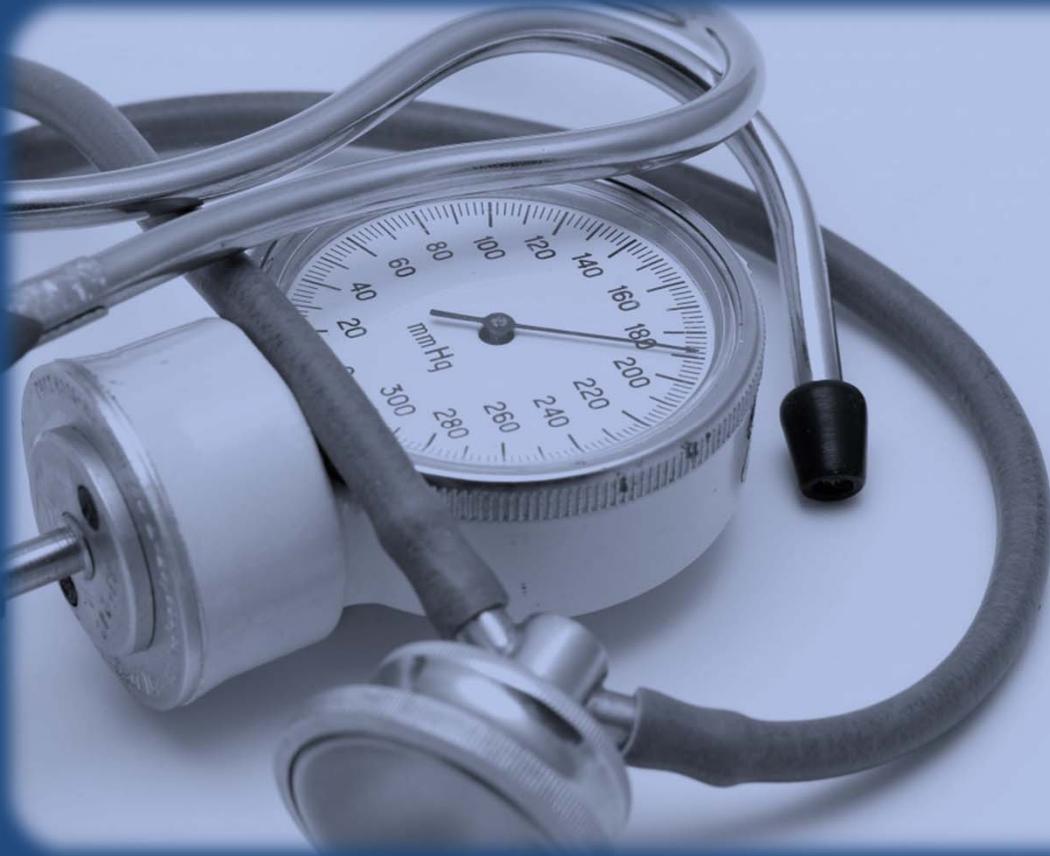
*(Data are presented on the following slide)*

# Modifiable Risk Factors among Adults (18+y) by Annual Household Income, Connecticut, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.

\*Participated in no physical activities in past month



# High Blood Pressure

# Prevalence of High Blood Pressure, Adults (18+y), CT, 2011-2013

- High blood pressure (HBP) is a condition where the pressure in the arteries is too high
- HBP damages or weakens the arteries increasing the risk of rupture or clog
- HBP also forces the heart to pump harder, which ultimately weakens the heart muscle

# Prevalence of High Blood Pressure, Adults (18+y), CT, 2011-2013

- An estimated 30.5% of Connecticut adults have been told by a health professional that they have HBP (not age-adjusted)
- HBP rates vary by gender, race and ethnicity, and age
  - Males have higher rates than females
  - Black or African American adults have significantly higher rates compared with other racial and ethnic groups
  - Rates of HBP increase with increasing age

*(Data are presented on slides 41 to 43)*

# Prevalence of High Blood Pressure, Adults (18+y), CT, 2011-2013

- Age-adjusted HBP rates vary by socioeconomic status
  - In terms of educational attainment, college graduates have the lowest age-adjusted rates of HBP
  - In terms of income, adults with annual household incomes of \$75,000 or more have the lowest age-adjusted rates of HBP

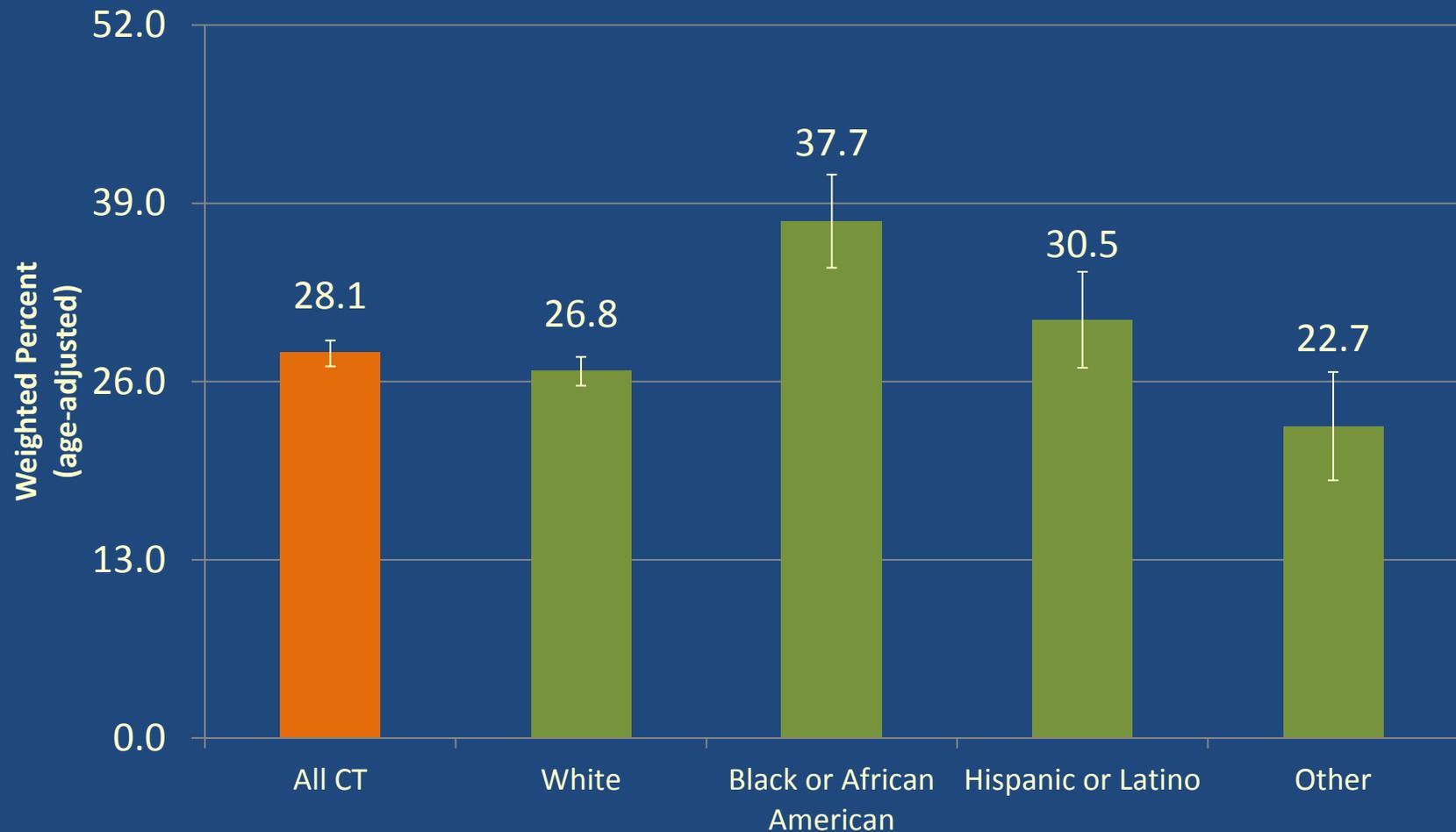
*(Data are presented on slides 44 and 45)*

# Prevalence of High Blood Pressure by Gender, Adults (18+y), CT, 2011-2013



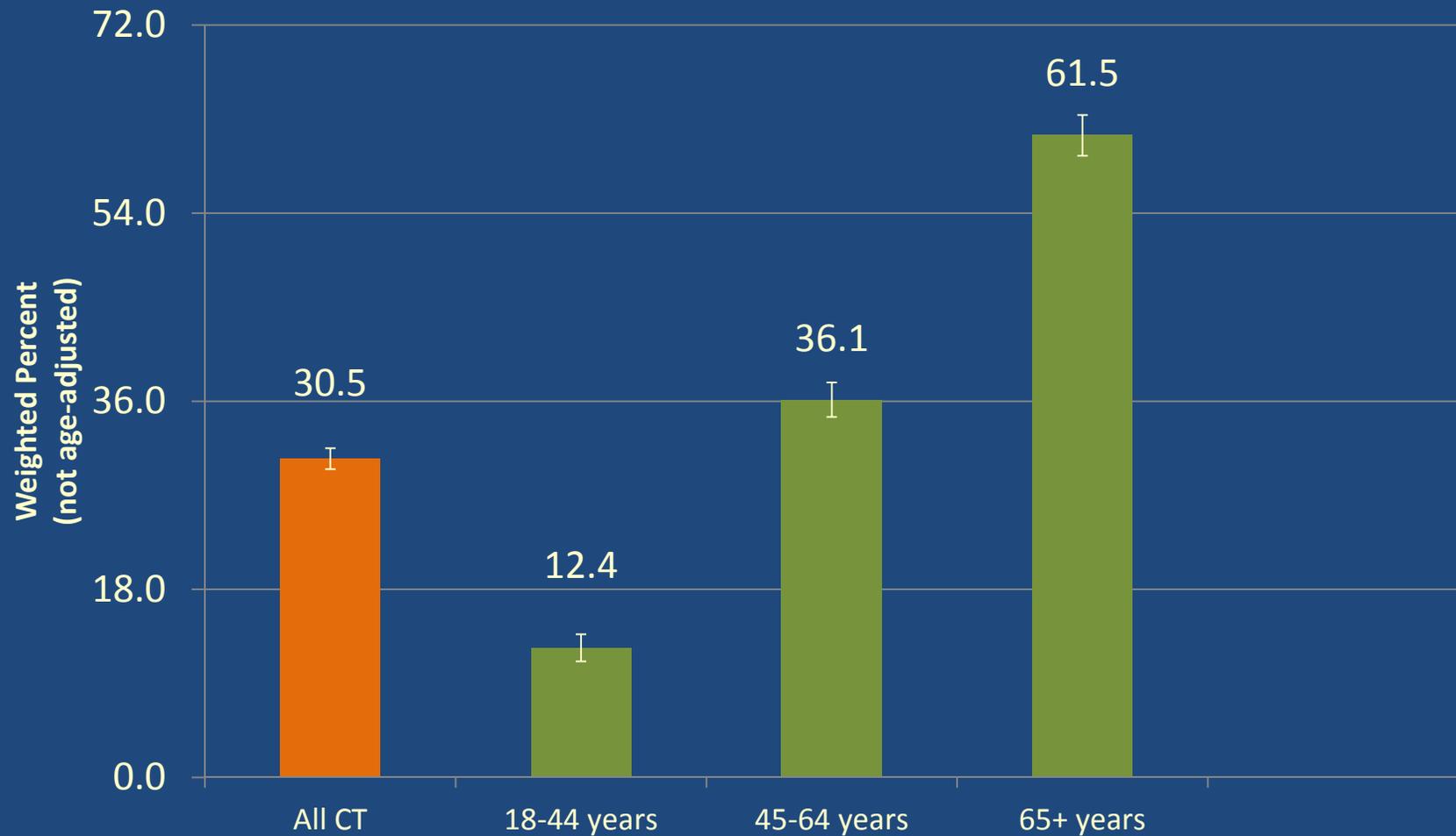
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Blood Pressure by Race & Ethnicity, Adults (18+y), CT, 2011-2013



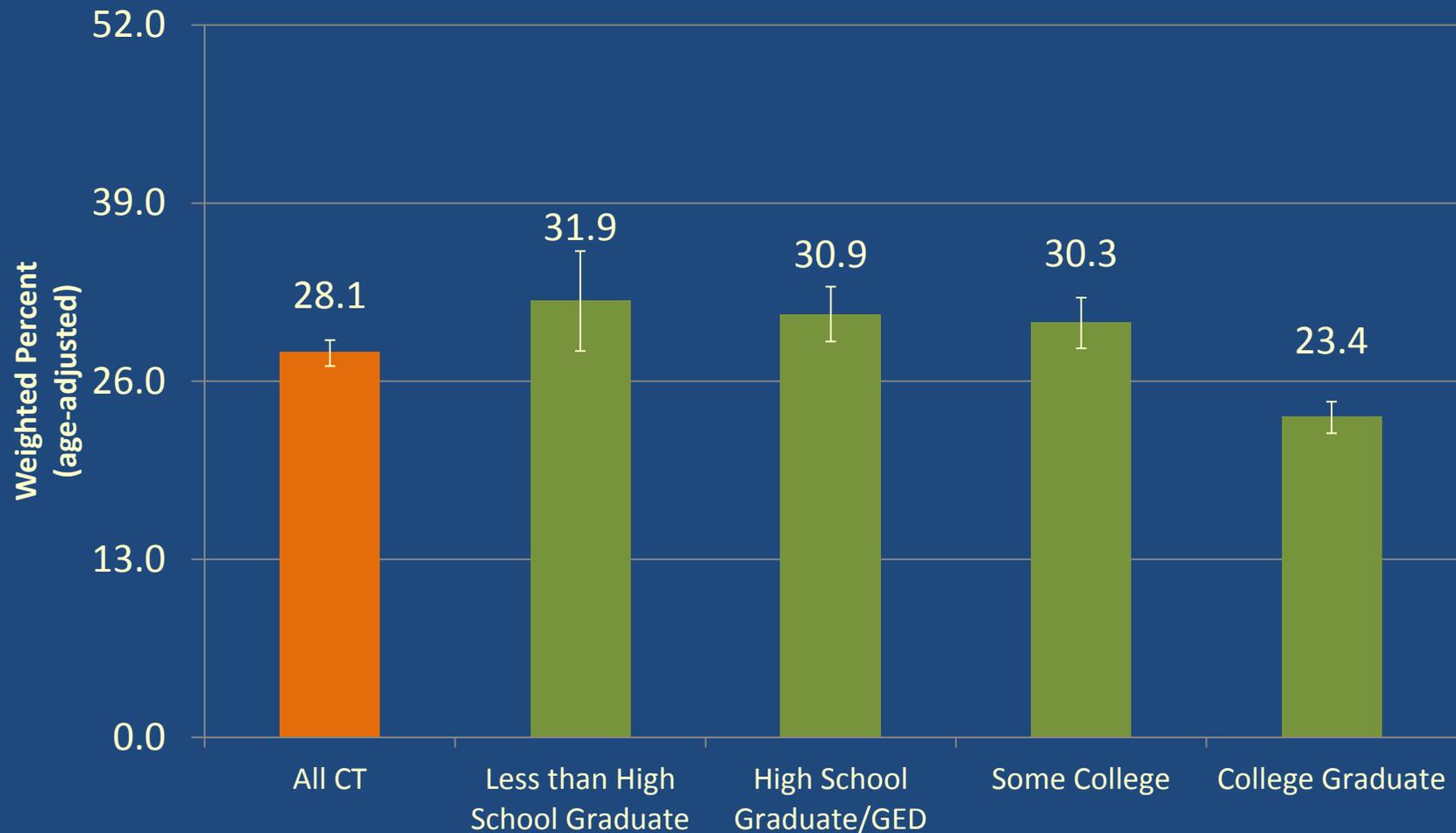
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Blood Pressure by Age, Adults (18+y), CT, 2011-2013



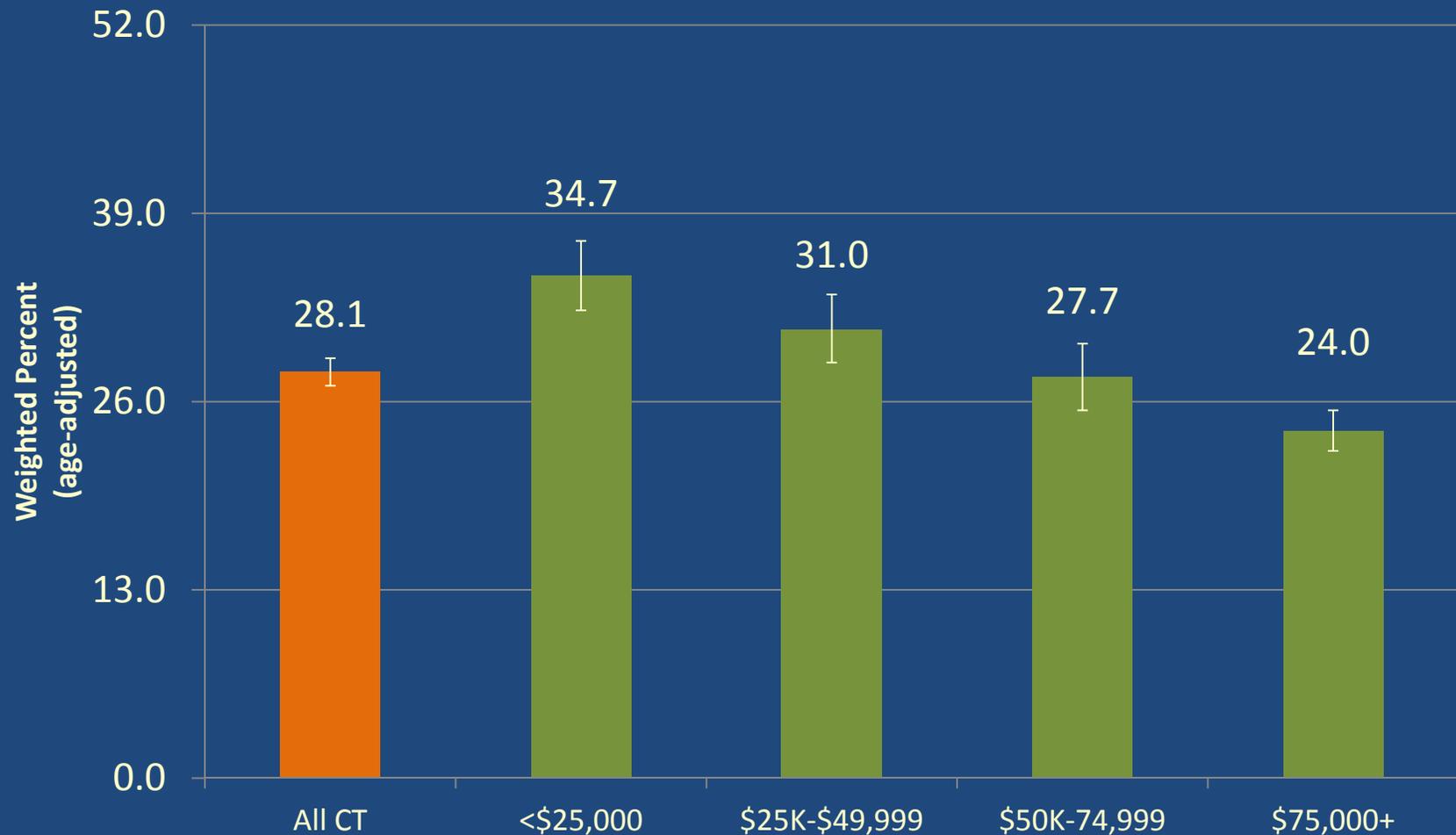
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Blood Pressure by Education, Adults (18+y), CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Blood Pressure by Annual Household Income (18+y), CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.



# High Blood Cholesterol and Ever Had Cholesterol Tested

# Prevalence of Ever Had Cholesterol Tested, Adults (18+y), CT, 2011-2013

- Excess cholesterol can lead to the build-up of plaque which narrows and hardens the arteries, and results in coronary heart disease
- An estimated 84.9% of Connecticut adults report ever having had their cholesterol tested (not age-adjusted)
- Rates of ever having had cholesterol tested vary by race and ethnicity and age
  - Hispanic or Latino adults have significantly lower rates compared with other racial and ethnic groups
  - Adults age 65 years and older have significantly higher rates than adults 18-44 and 45-64 years old
  - Rates do not vary significantly by gender

*(Data are presented on slides 51 to 53)*

# Prevalence of Ever Had Cholesterol Tested, Adults (18+y), CT, 2011-2013

- Rates of ever having cholesterol tested vary by socioeconomic status
  - College graduates have the significantly higher rates of ever having had cholesterol tested compared to adults with lower educational attainment levels
  - Adults with annual household incomes of \$75,000 or more have higher age-adjusted rates of ever having had cholesterol tested compared to adults with annual household incomes of less than \$25,000 or \$25,000-49,999

*(Data are presented on slides 54 to 55)*

# Prevalence of High Cholesterol, Adults (18+y), CT, 2011-2013

- An estimated 37.0% of Connecticut adults report that they have high cholesterol (not age-adjusted)
- Rates of high cholesterol vary by gender and age
  - Males have significantly higher rates compared with females
  - Adults age 65 years and older have significantly higher rates than adults 18-44 and 45-64 years old
  - The differences in rates among the racial and ethnic groups did not reach statistical significance

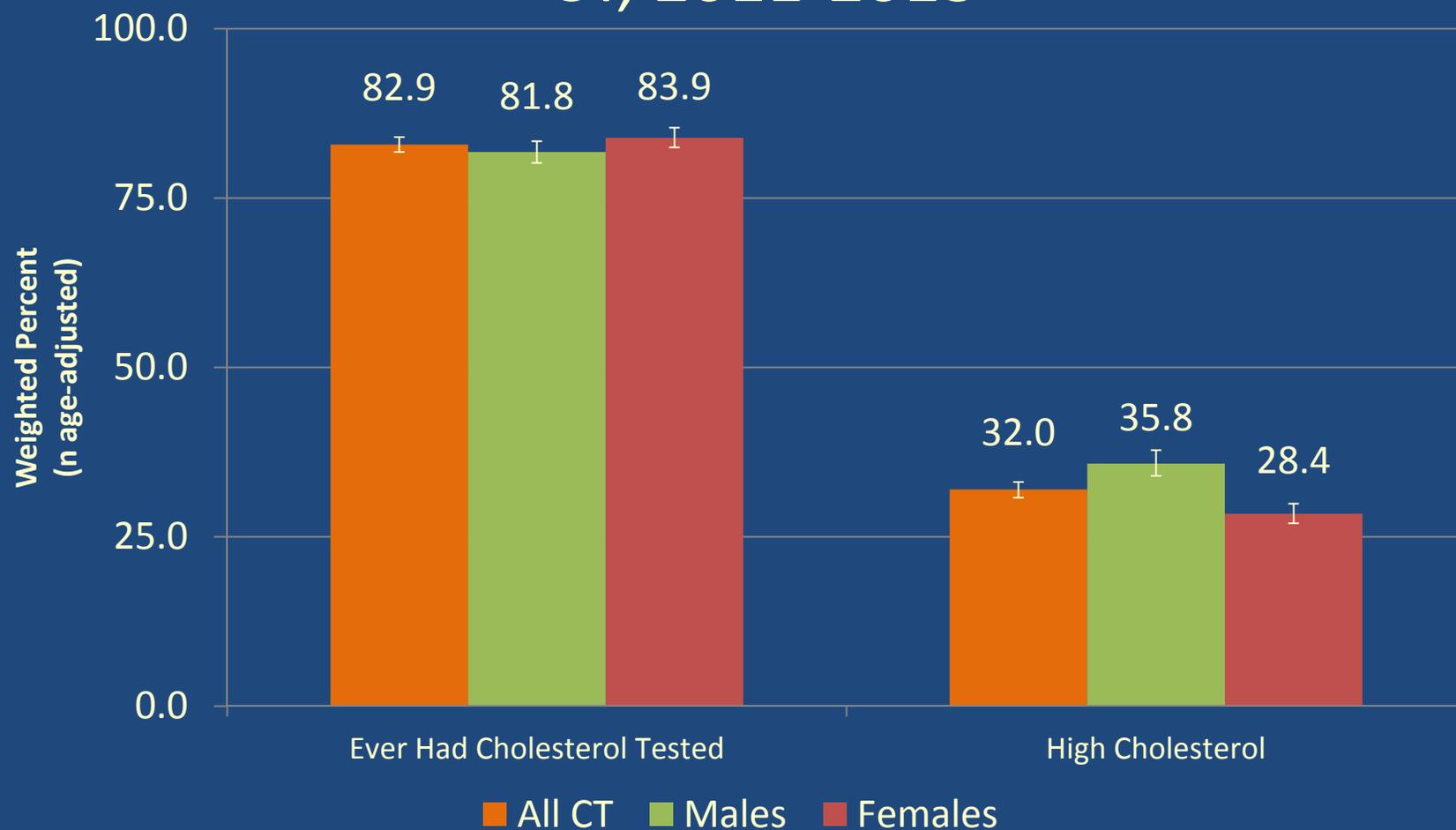
*(Data are presented on slides 51 to 53)*

# Prevalence of High Cholesterol, Adults (18+y), CT, 2011-2013

- Rates of high cholesterol vary by socioeconomic status
  - In terms of educational attainment, college graduates have the lowest rates of high cholesterol
  - The differences in rates among the income categories did not reach statistical significance

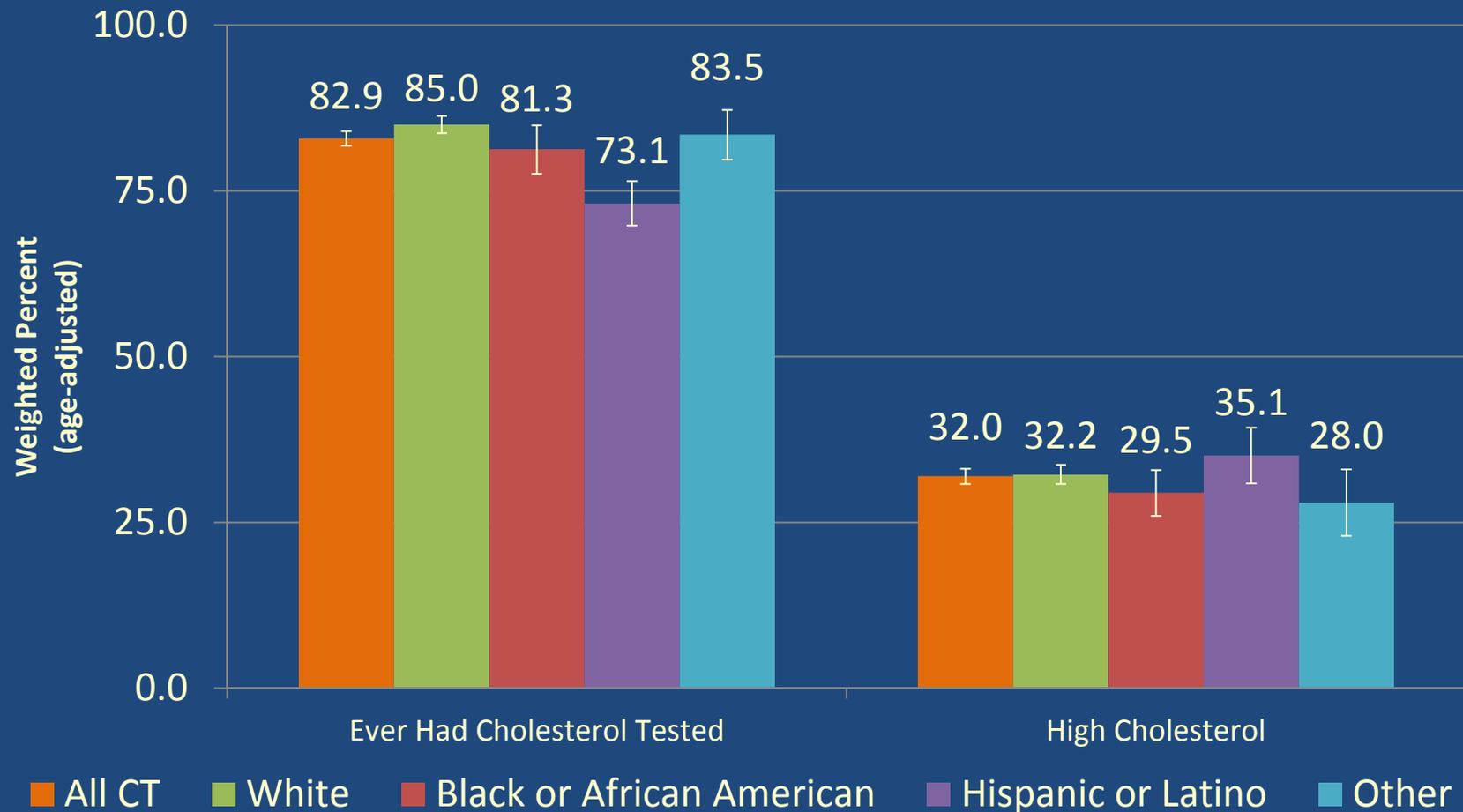
*(Data are presented on slides 54 to 55)*

# Prevalence of High Cholesterol & Ever Had Cholesterol Tested by Gender, Adults (18+y), CT, 2011-2013



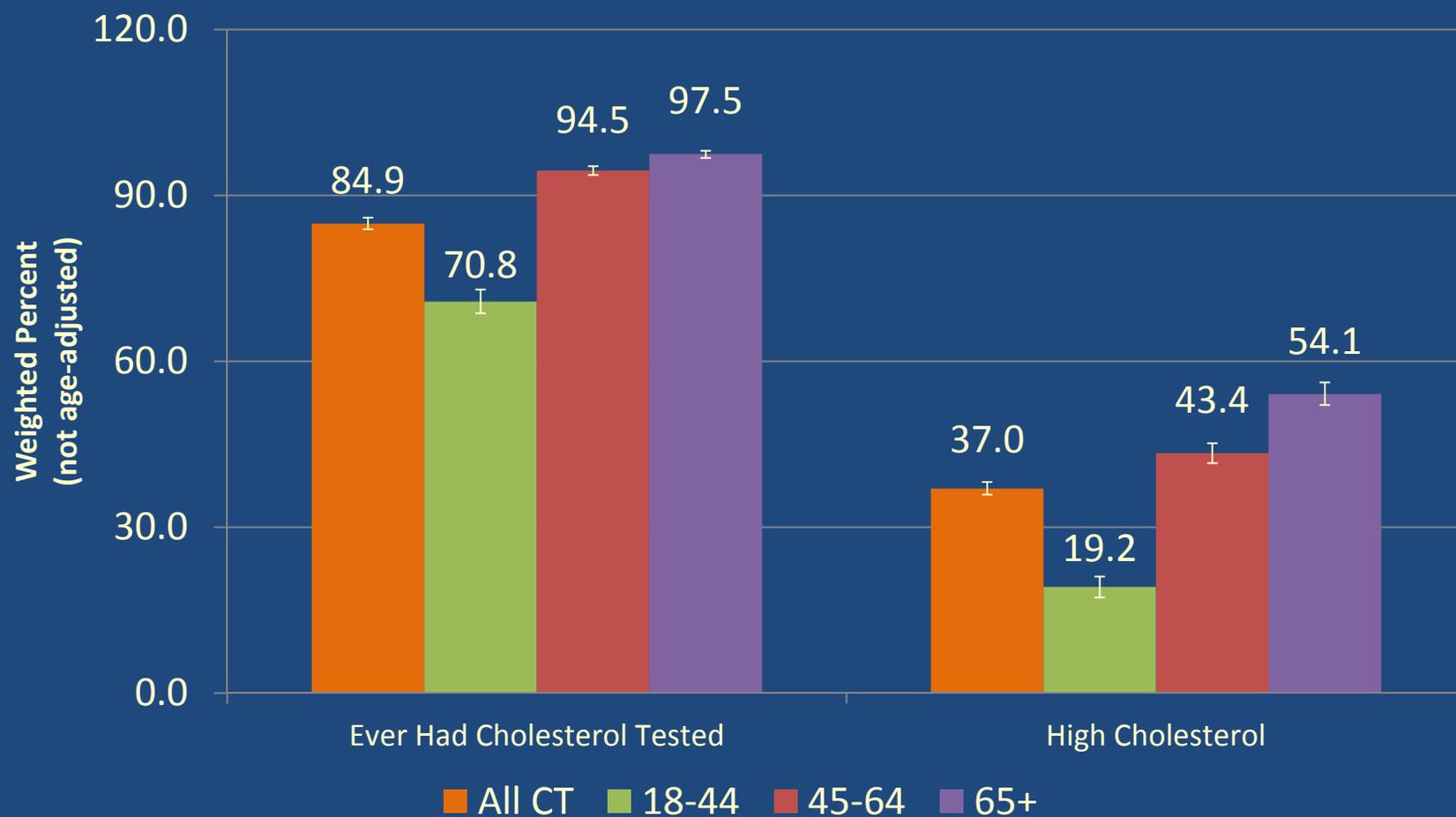
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Cholesterol & Ever Had Cholesterol Tested by Race & Ethnicity, Adults (18+y), CT, 2011-2013



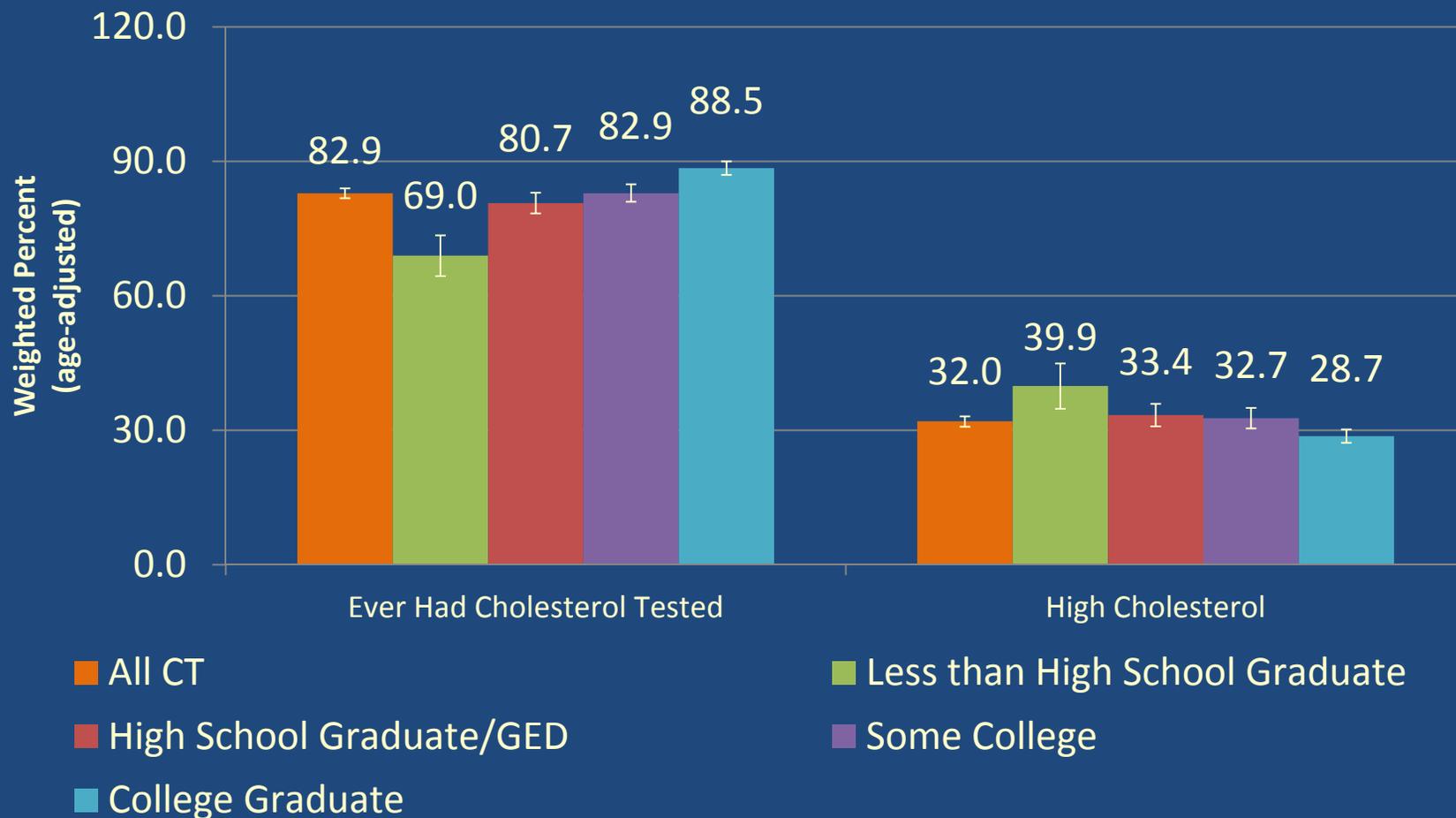
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Cholesterol & Ever Had Cholesterol Tested by Age, Adults (18+y), CT, 2011-2013



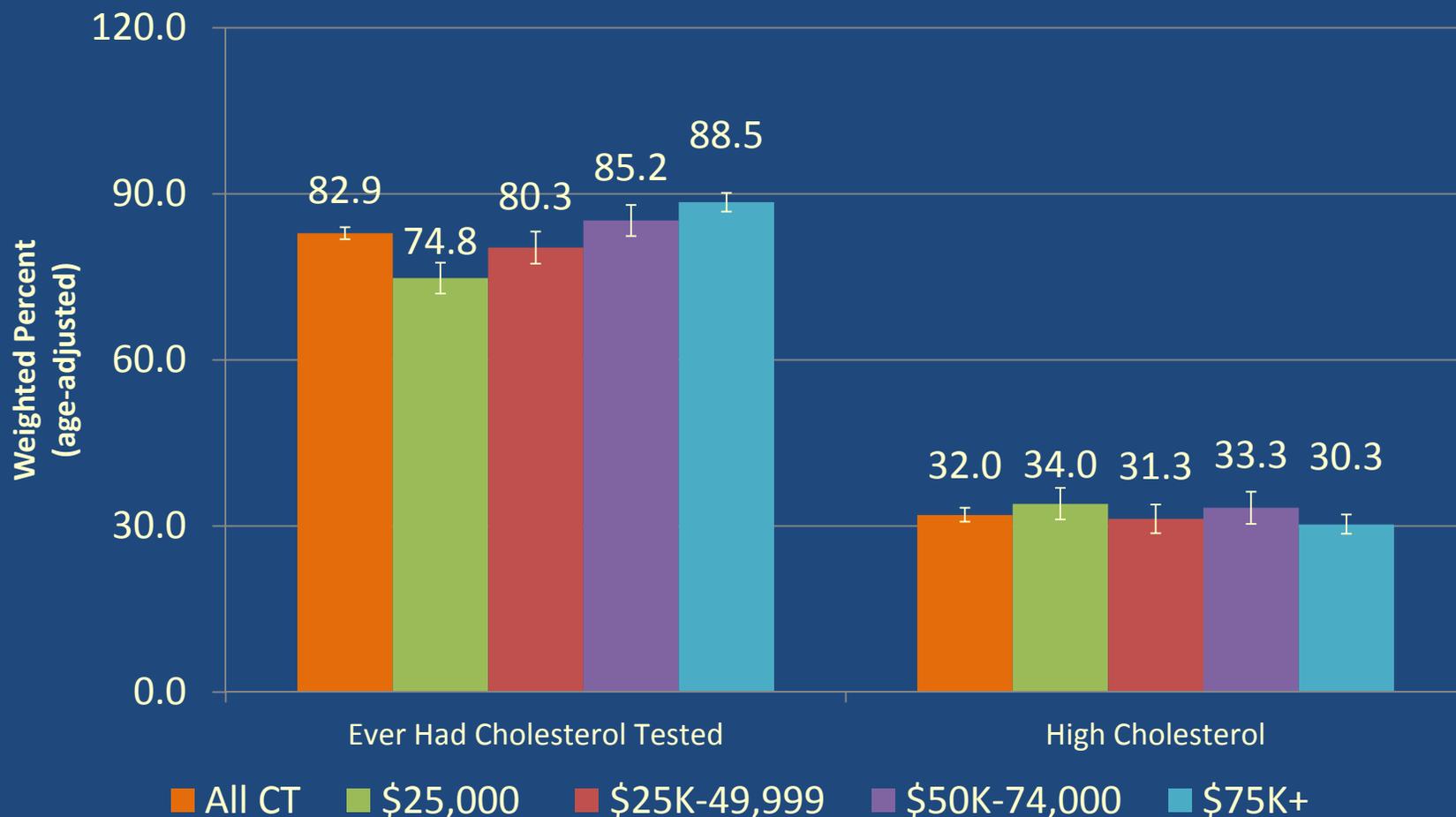
Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Cholesterol & Ever Had Cholesterol Tested by Education, Adults (18+y), CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.

# Prevalence of High Cholesterol & Ever Had Cholesterol Tested by Annual Household Income, Adults (18+y), CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.



# Health Care Coverage

# Adults (18-64y) without Health Care Coverage, Connecticut, 2011-2013

- Access to health care is crucial to the prevention, diagnosis, treatment, and management of CVD
- An estimated 13.3% of Connecticut adults were uninsured prior to health insurance expansion (not age-adjusted)
- Provisions of the Patient Protection and Affordable Care Act (ACA) that went into effect on January 1, 2014, expanded health care coverage in many states, including Connecticut.
  - Access Health CT reports that the percent of uninsured Connecticut residents was halved in the first year of implementation of the ACA ([8 Key Facts](#), August 6, 2014)

# Adults (18-64y) without Health Care Coverage, Connecticut, 2011-2013

- Age-adjusted rates of not having health insurance vary by gender and race and ethnicity
  - Adult males are less likely to have health insurance than adult females
  - In terms of race and ethnicity, Hispanic or Latino adults are least likely to have health insurance.
  - Black or African American adults are less likely than White adults to have health insurance

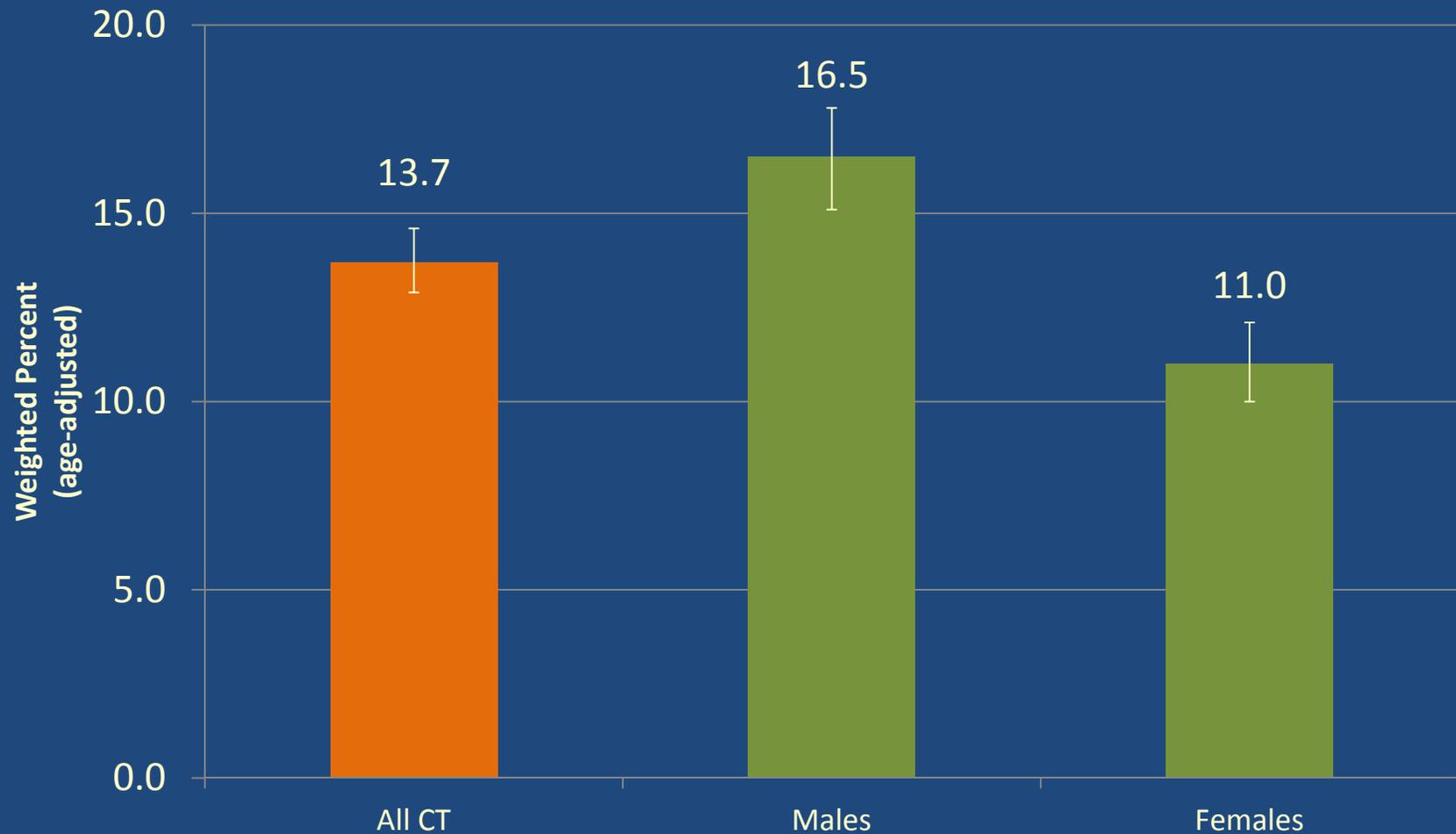
*(Data are presented on slides 60 to 61)*

# Adults (18-64y) without Health Care Coverage, Connecticut, 2011-2013

- Age-adjusted rates of not having health insurance vary by socioeconomic status
  - The rates of uninsured decrease with increasing educational attainment levels
  - Adults with annual household incomes of less than \$25,000 are 11 times more likely to not have health insurance compared to adults with annual household incomes of \$75,000 or more

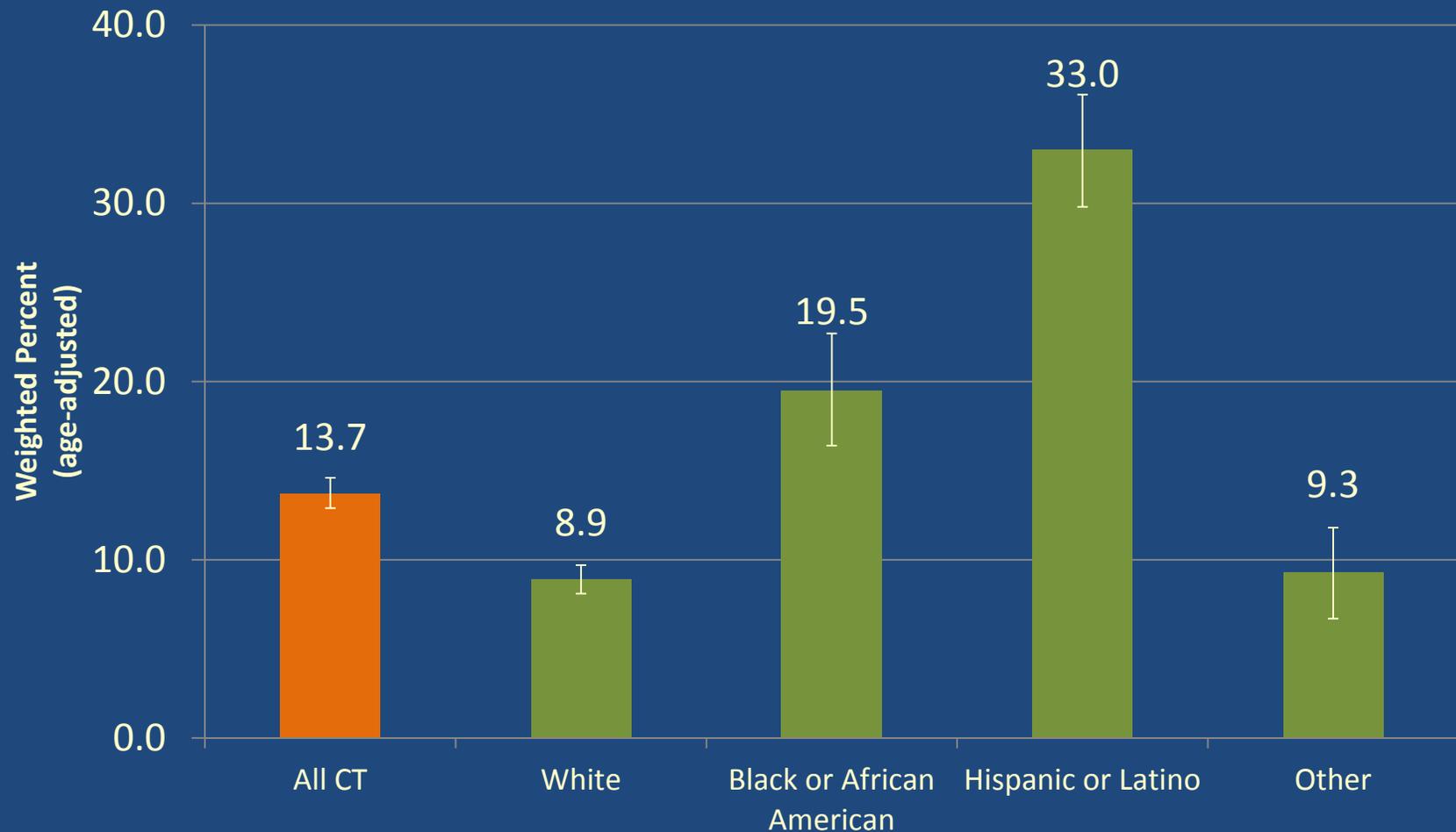
*(Data are presented on slides 62 to 63)*

# Adults (18-64y) without Health Care Coverage, by Gender, CT, 2011-2013



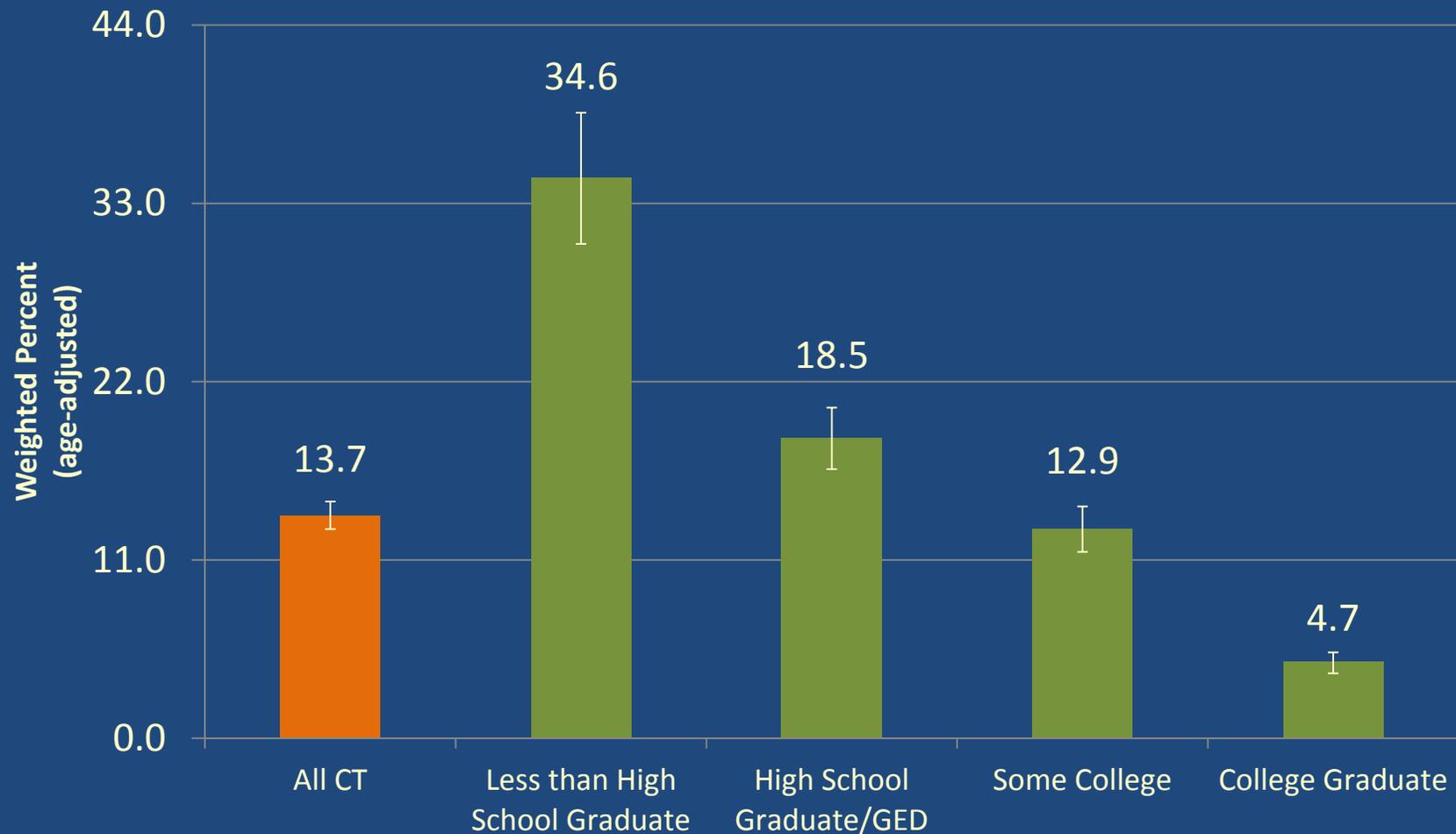
Source: CT DPH, BRFSS, 2011-2013 data.

# Adults (18-64y) without Health Care Coverage by Race & Ethnicity, CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.

# Adults (18-64y) without Health Care Coverage by Education, CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.

# Adults (18-64y) without Health Care Coverage by Annual Household Income, CT, 2011-2013



Source: CT DPH, BRFSS, 2011-2013 data.



# Prevention and Control of CVD

# Prevention and Control of CVD

- The Centers for Disease Control and Prevention (CDC) recommends addressing CVD and related risk factors through policies, systems, and environmental changes with the potential for broad reach and impact on the general population and high-risk populations

# Prevention and Control of CVD

- Examples of these policies, systems, and environmental changes are:
  - Promoting healthy eating and active living in schools, early childhood education centers, worksites, state and local government agencies, and community setting
  - Expanding access to healthy choices for people of all ages related to diabetes, cardiovascular health, physical activity, healthy foods and beverages, obesity, and breastfeeding
  - Improving the delivery and use of quality clinical and other health services aimed at preventing and managing high blood pressure and diabetes
  - Increasing links between community and clinical organizations to support prevention, self-management and control of diabetes, high blood pressure, and obesity

# Prevention and Control of CVD

- The Connecticut Department of Public Health works with partners (e.g., Regional Extension Center, UCONN School of Pharmacy, community pharmacists, and healthcare systems) to:
  - Increase electronic health record (EHR) adoption and the use of health information technology to prevent and manage high blood pressure and diabetes;
  - Assist health care systems in the implementation of self-blood pressure monitoring programs; and
  - Implement Medication Therapy Management (MTM) in pharmacies

# Questions or Comments?

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For more information visit:

[www.ct.gov/dph/HeartStrokeData](http://www.ct.gov/dph/HeartStrokeData)

[www.ct.gov/dph/ChronicDisease](http://www.ct.gov/dph/ChronicDisease)