University of Connecticut
MPH Student Association

Heart Disease & Stroke Prevention in CT: Surveillance and Overview of Prevention Programs at the Connecticut Department of Public Health

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Farmington, CT

Basic Terms

"Epidemiologic surveillance is the ongoing and systematic collection, analysis, and interpretation of health data in the process of describing and monitoring a health event."

Source: http://wonder.cdc.gov/wonder/prevguid/p0000112/p0000112.asp

"Chronic disease epidemiologists collect, analyze and interpret science-based data to assess the burden of chronic disease, provide information on the distribution and risk factors of chronic diseases necessary for public health program planning and implementation, and assist in evaluating the success of public health programs."

Source: **Essential Functions of Chronic Disease Epidemiology In State Health Departments**
http://www.cste.org/dnn/LinkClick.aspx?fileticket=p3mU49iaDvc%3D&tabid=175&mid=716

Basic Terms

- **Heart Disease**

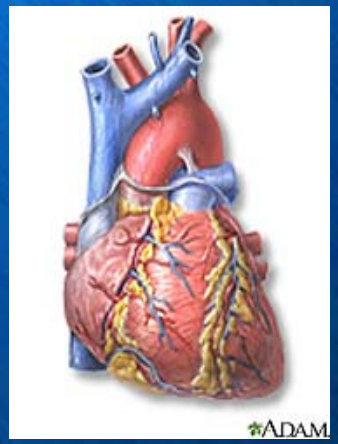
  There are many different forms of heart disease. The most common cause of heart disease is narrowing or blockage of the coronary arteries, the blood vessels that supply blood to the heart itself. This is called coronary artery disease and happens slowly over time. It's the major reason people have heart attacks.

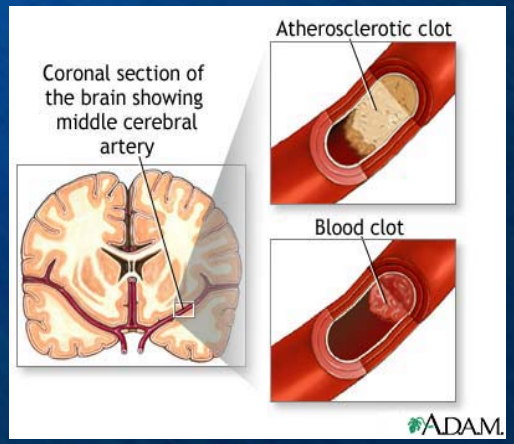
  (Source: http://www.nlm.nih.gov/medlineplus/heartdiseases.html)

- **Stroke**

  An interruption of the blood supply to any part of the brain. A stroke is sometimes called a "brain attack."

  (Source: http://www.nlm.nih.gov/medlineplus/ency/article/000726.htm





CVD Risk Factors

Modifiable Factors

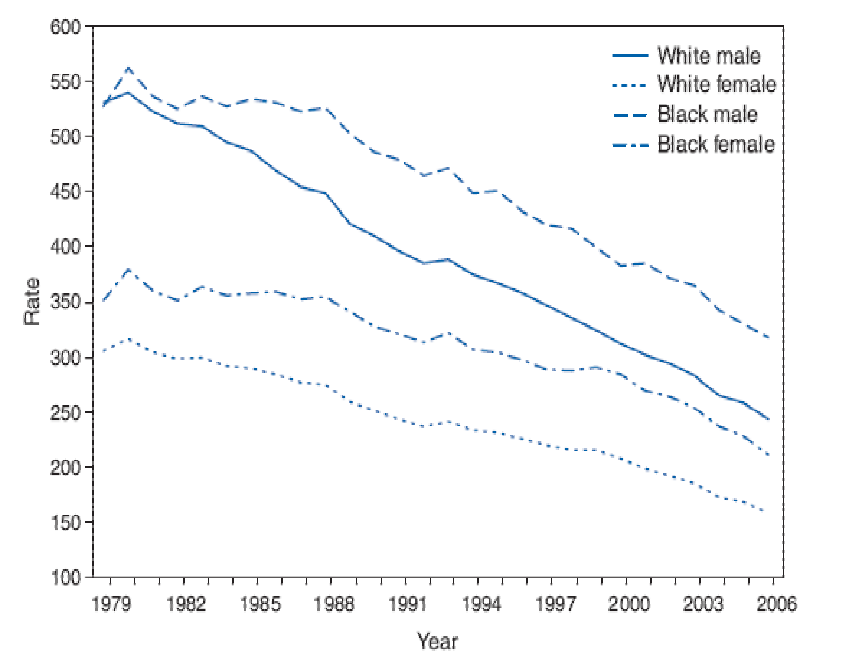
- high blood pressure
- high cholesterol
- Smoking
- Diabetes
- Obesity
- Physical inactivity

Non-Modifiable Factors

- increasing age
- family history

Source: THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

National Burden of Heart Disease



Age-Adjusted Rates* of Death from Heart Disease, by Race and Sex --- United States, 1979--2006†

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5728a6.htm

"Since 1979, age-adjusted rates of death from heart disease have declined significantly among blacks and whites for both men and women. Death rates remain highest for black males and lowest for white females, although differences by race and sex have narrowed in recent years."

National Burden of Heart Disease

- **Mortality**
  - **Number of deaths: 652,091**
  - **Deaths per 100,000 population: 222.0**
  - **Cause of death rank: 1**

Source: Deaths: Final Data for 2005, Table C

- **Morbidity**
  - **Number of noninstitutionalized adults with diagnosed heart disease: 24.1 million**
  - **Percent of noninstitutionalized adults with diagnosed heart disease: 11**

Source: Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2006, Table 1 and 2

- **Health care use**
  - **Hospital inpatient care**
  - **Number of discharges: 4.2 million**
  - **Average length of stay: 4.4 days**

Source: 2006 National Hospital Discharge Survey, Tables 2, 4

- **Home health care**
  - **Number of current patients with heart disease as primary diagnosis: 147,600**
  - **Percent of current patients with heart disease as primary diagnosis: 11**

Source: 2000 National Home and Hospice Care Survey, Table 12

National Burden of Stroke

- **Mortality**
  - **Number of deaths: 143,579**
  - **Deaths per 100,000 population: 48.4**
  - **Cause of death rank: 3**

Source: Deaths: Final Data for 2005, Table C

- **Morbidity**
  - **Number of noninstitutionalized adults who ever had a stroke: 5.6 million**
  - **Percent of noninstitutionalized adults who ever had a stroke: 2.6**

Source: Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2006, Table 1 and 2

- **Health care use**
  - **Hospital inpatient care**
  - **Number of discharges: 889,000**
  - **Average length of stay: 4.9 days**

Source: 2006 National Hospital Discharge Survey, Tables 2, 4

- **Home health care**
  - **Number of current patients with stroke as primary diagnosis: 99,400**
  - **Percent of current patients with stroke as primary diagnosis: 7.3**

Source: 2000 National Home and Hospice Care Survey, Table 12

CT Town-level Mortality Data

Diseases of the Heart 2002-2006 (Map)

Age-adjusted Mortality Rates for Connecticut - Both Sexes

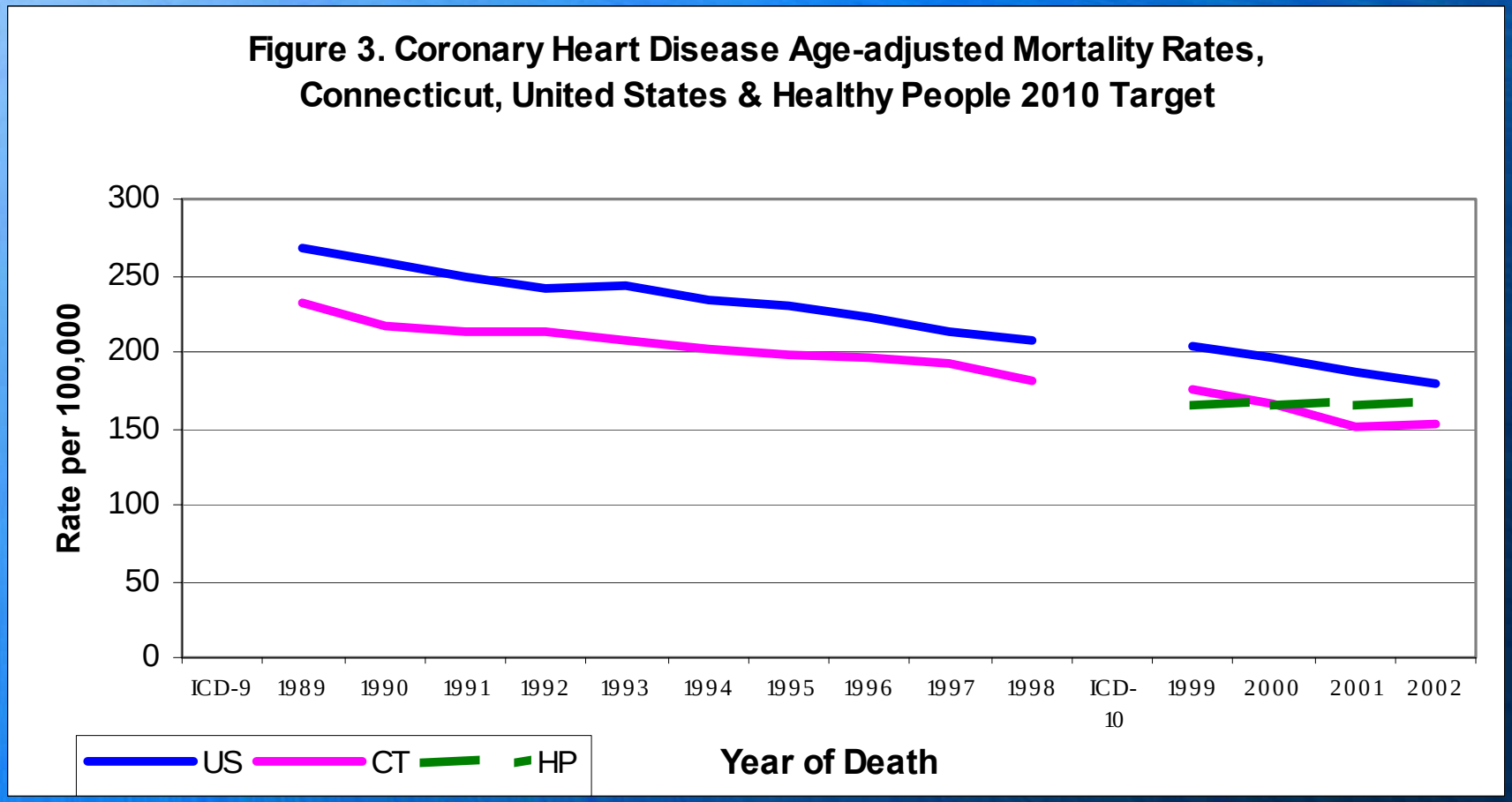
Towns that Differ Significantly from the State Rate *

http://www.ct.gov/dph/lib/dph/hisr/hcqsar/mortality/pdf/lcod_2002-2006_aamr.pdf

Connecticut 2002-2006 Provisional Town Age-Adjusted Death Rates & State Rates

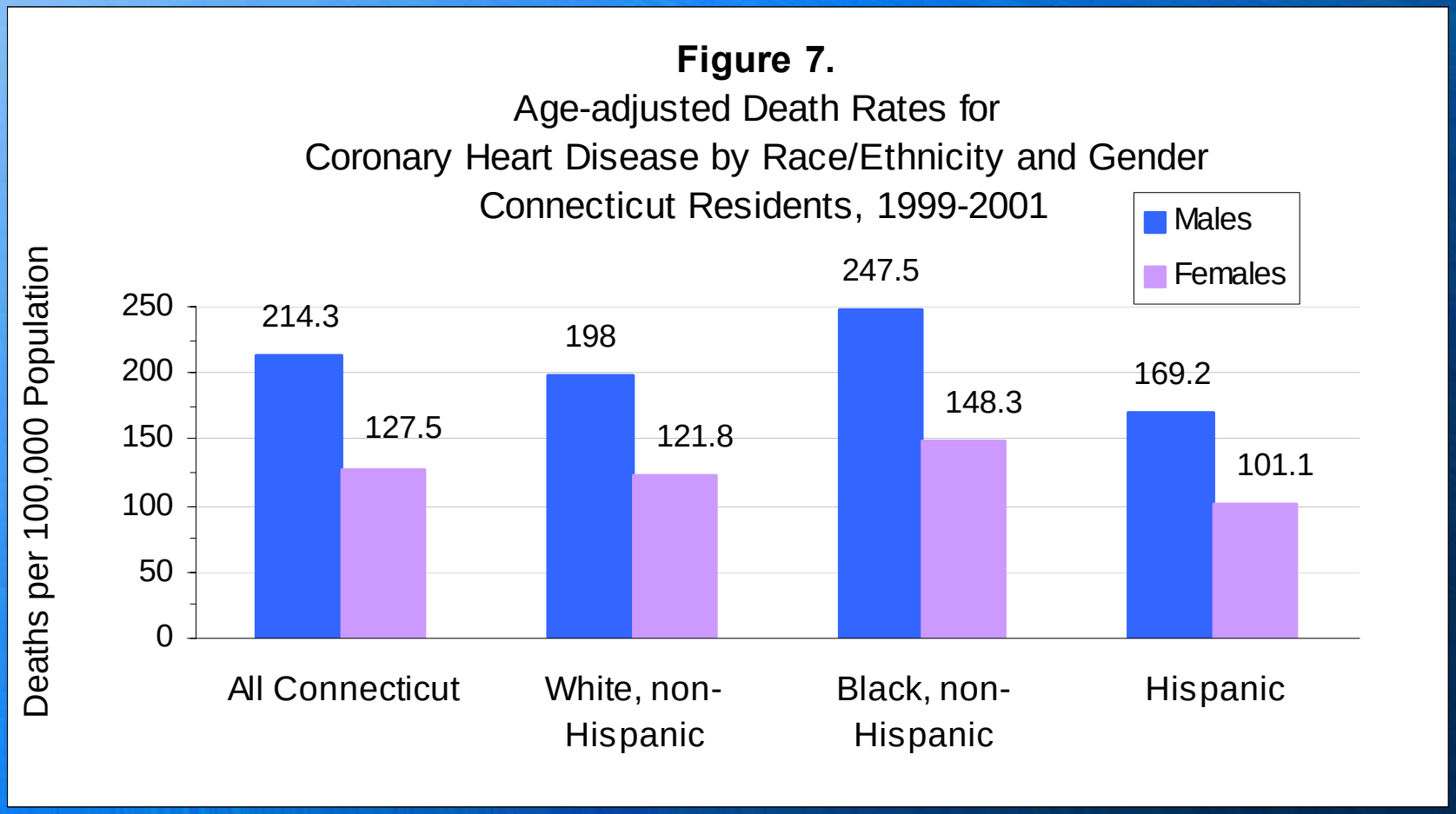
http://www.ct.gov/dph/lib/dph/hisr/hcqsar/mortality/pdf/aamr_comparisons_2002_2006.pdf

Connecticut Coronary Heart Disease Mortality



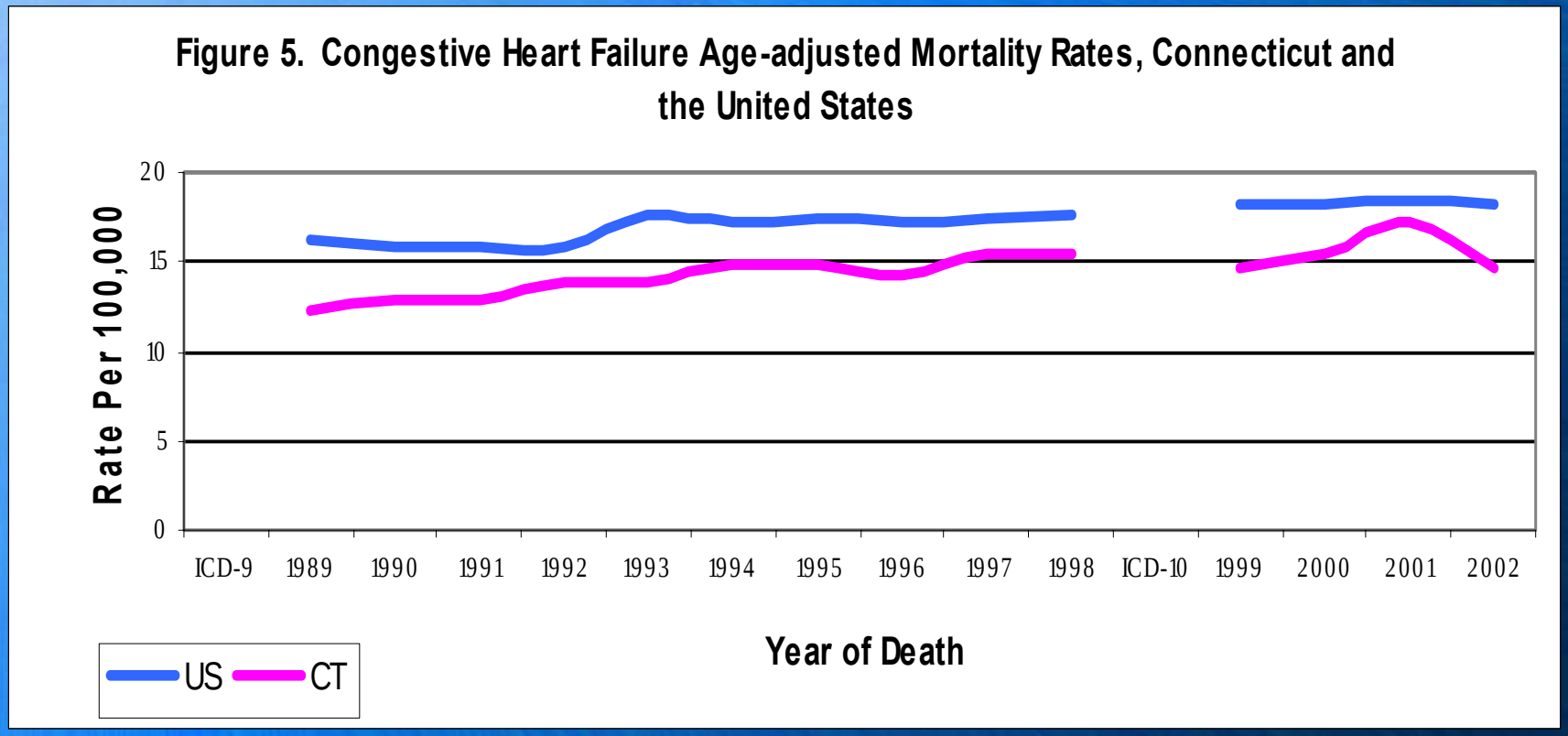
Sources: Centers for Disease Control and Prevention, 2005; Connecticut Department of Public Health, 2005. Note: Rates are adjusted to the 2000 US standard million population. Classification includes deaths with ICD-9 codes: 402,410-414, 429.2 (1989 to 1998); ICD-10 codes: I11, I20-25 (1999 to 2002). THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Connecticut Coronary Heart Disease Mortality



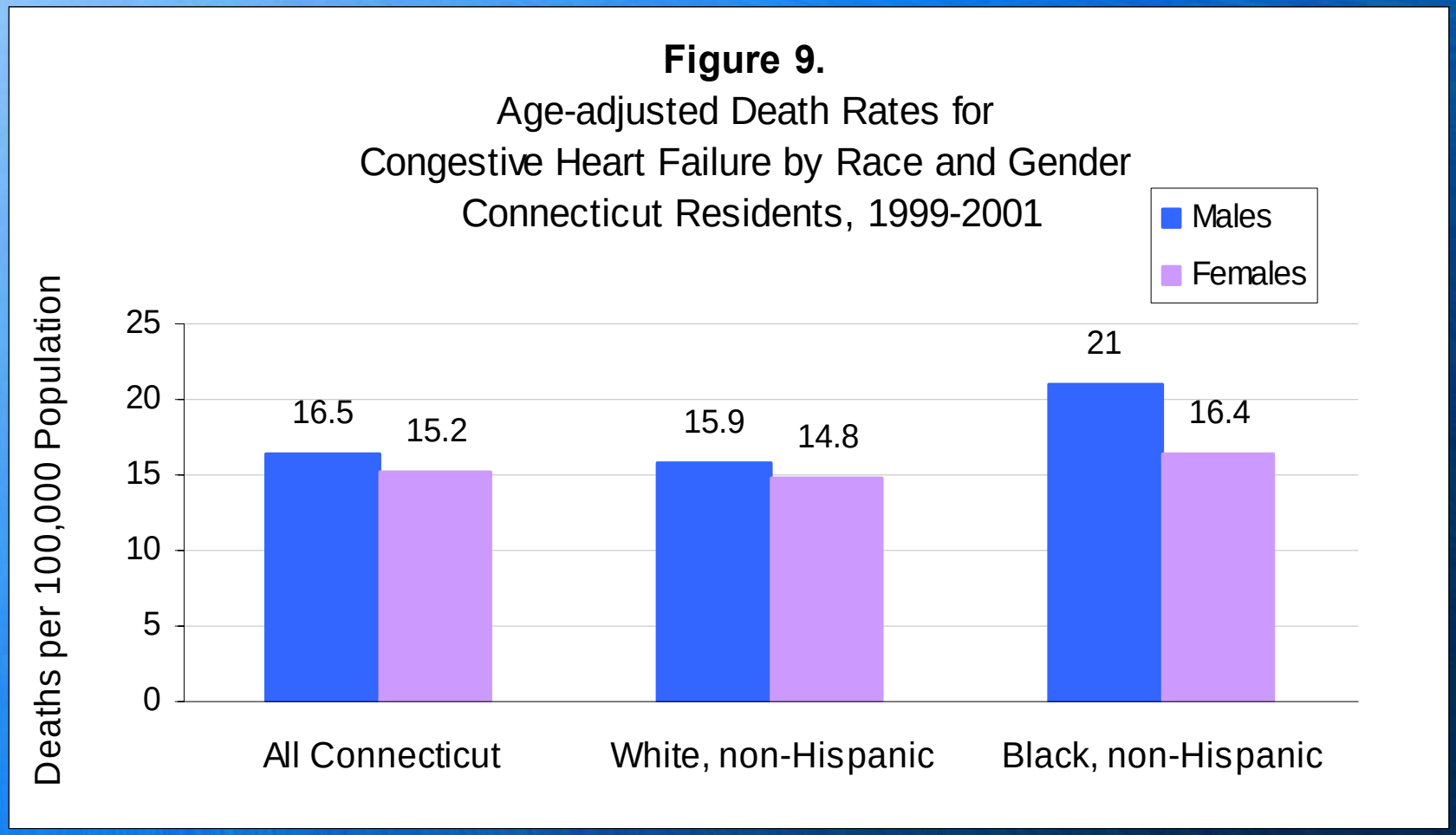
Source: Connecticut Department of Public Health, Vital Records Mortality Files, 2005.
THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Connecticut Heart Failure Mortality



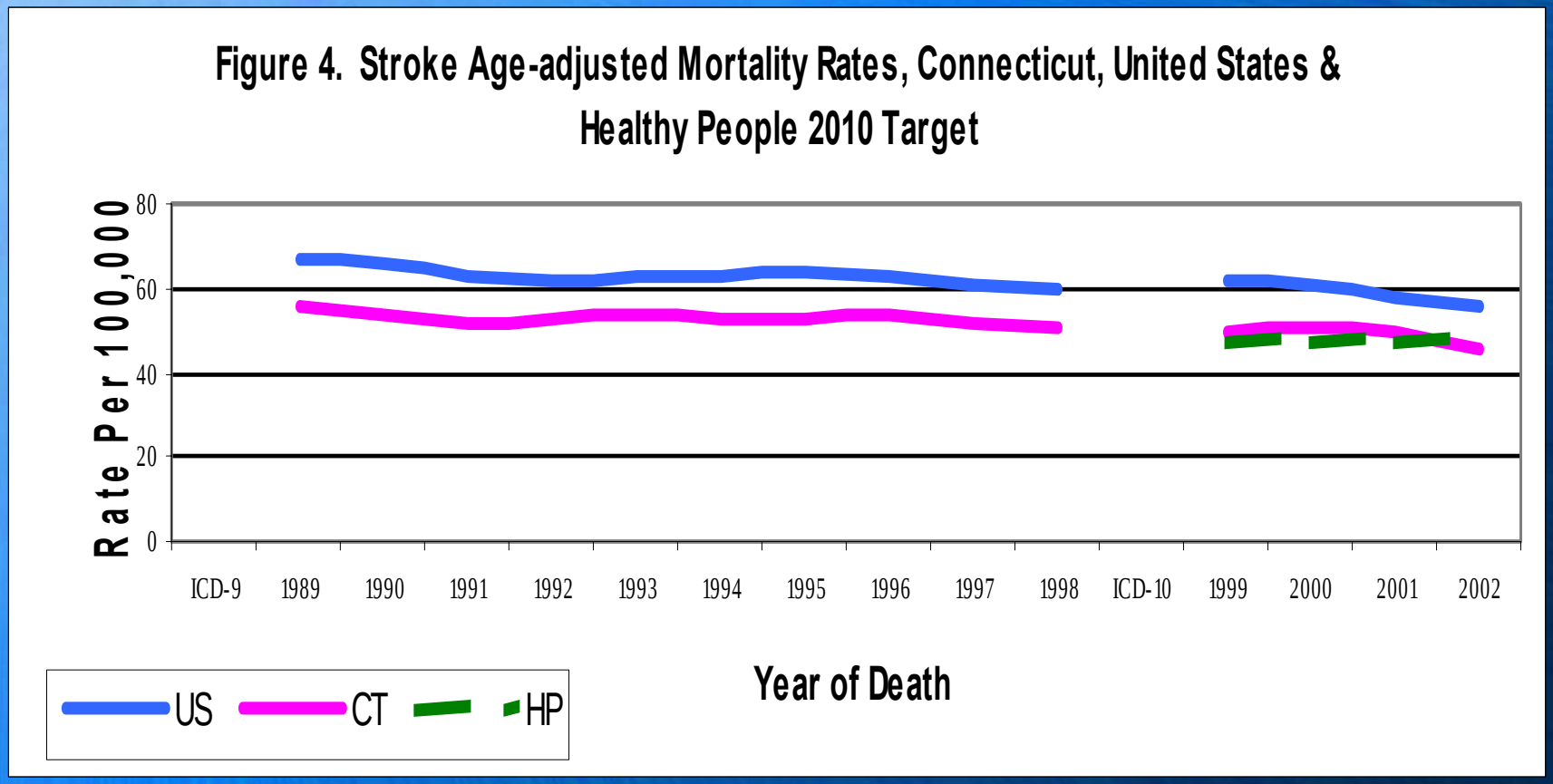
Sources: Centers for Disease Control and Prevention, 2005; Connecticut Department of Public Health, 2005. Note: Rates are adjusted to the 2000 US standard million population. Classification includes deaths with ICD-9 code: 428.0 (1989 to 1998); ICD-10 codes: I50.0 (1999 to 2002). THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Connecticut Heart Failure Mortality



Source for Figures 8 and 9: Connecticut Department of Public Health, Vital Records Mortality Files, 2005. **THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report**

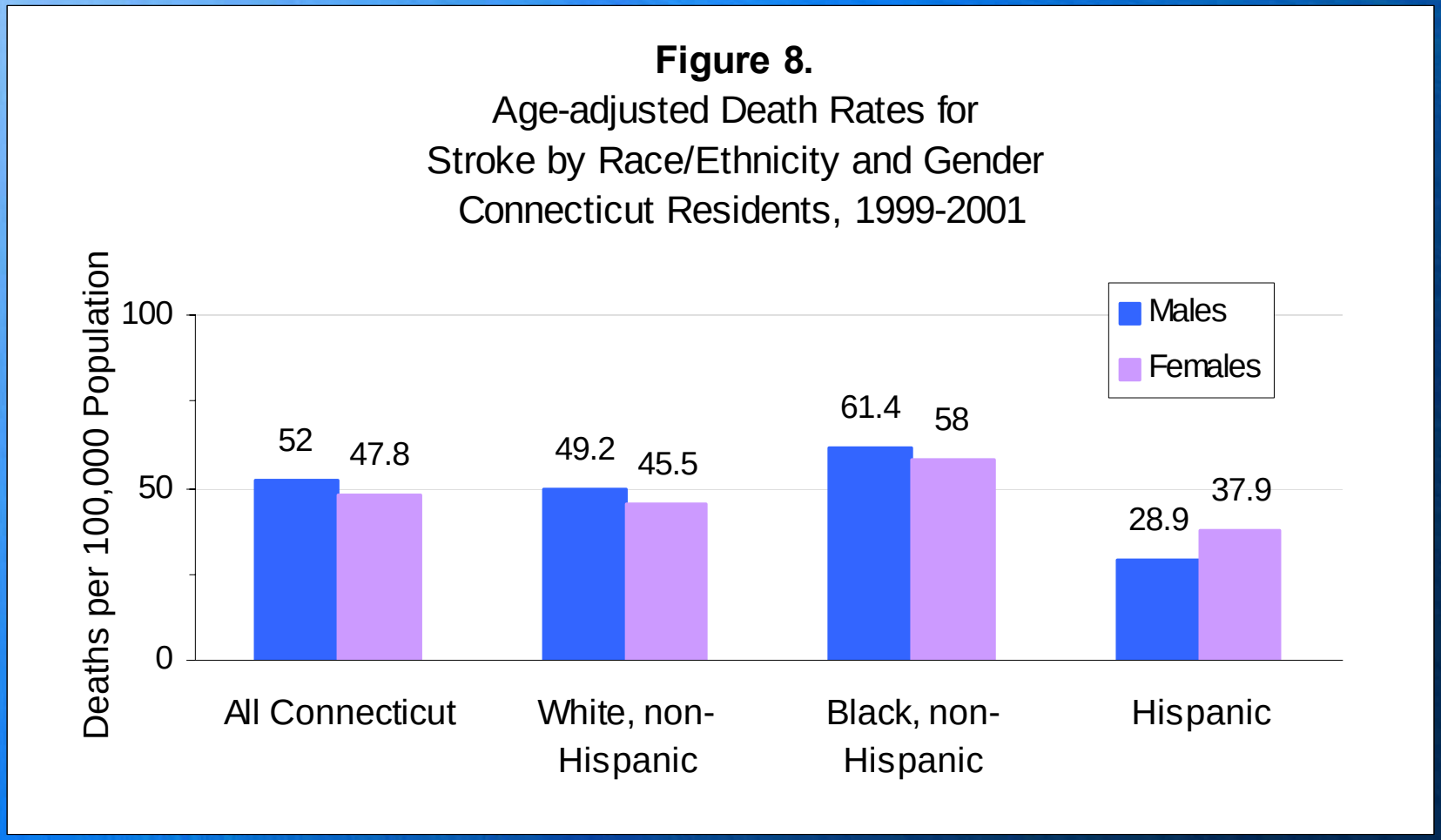
Connecticut Stroke Mortality



Sources: Centers for Disease Control and Prevention, 2005; Connecticut Department of Public Health, 2005.

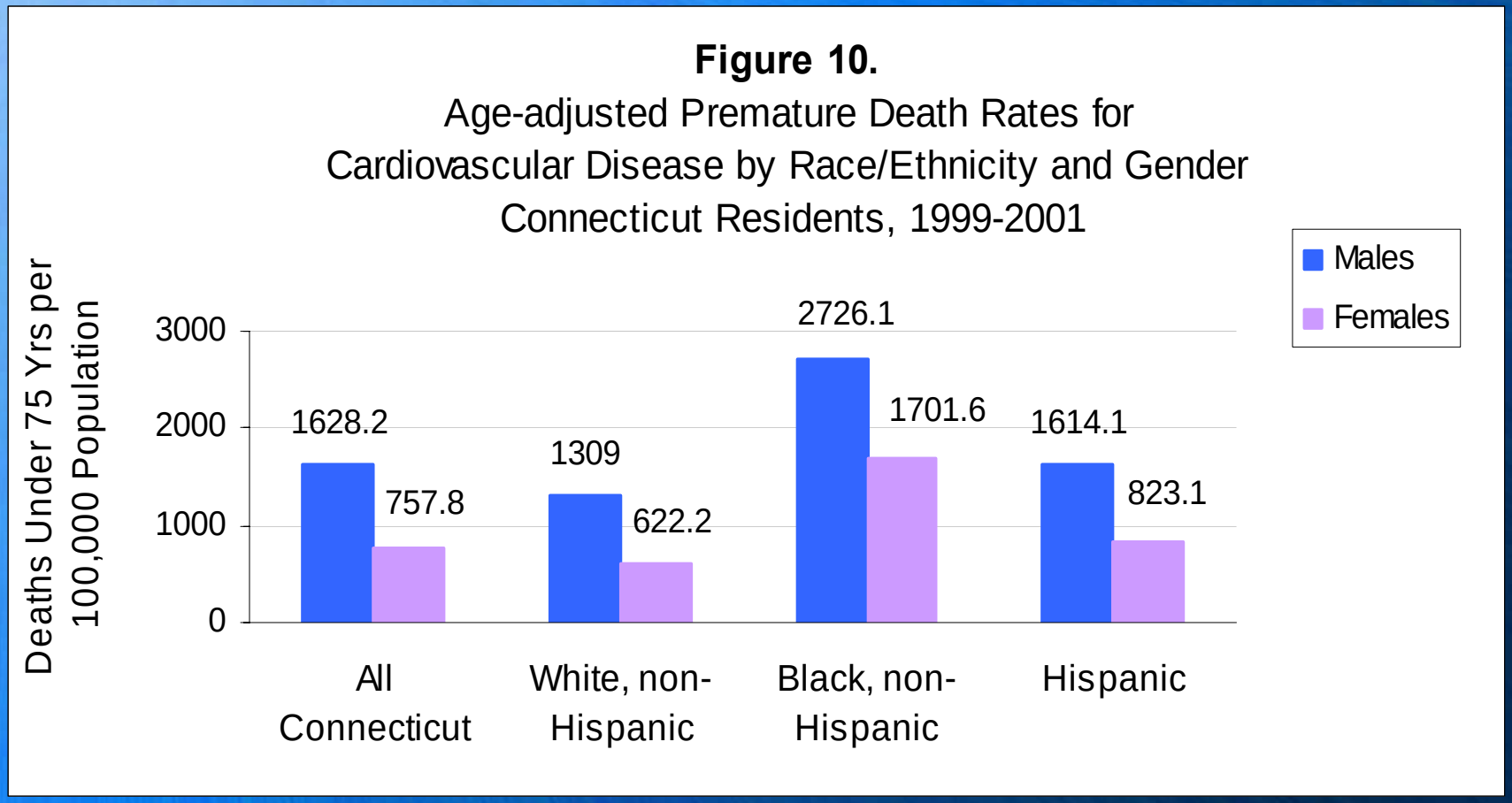
Note: Rates are adjusted to the 2000 US standard million population. Classification includes deaths with ICD-9 codes: 430-438 (1989 to 1998); ICD-10 codes: I60-69 (1999 to 2002). THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Connecticut Stroke Mortality



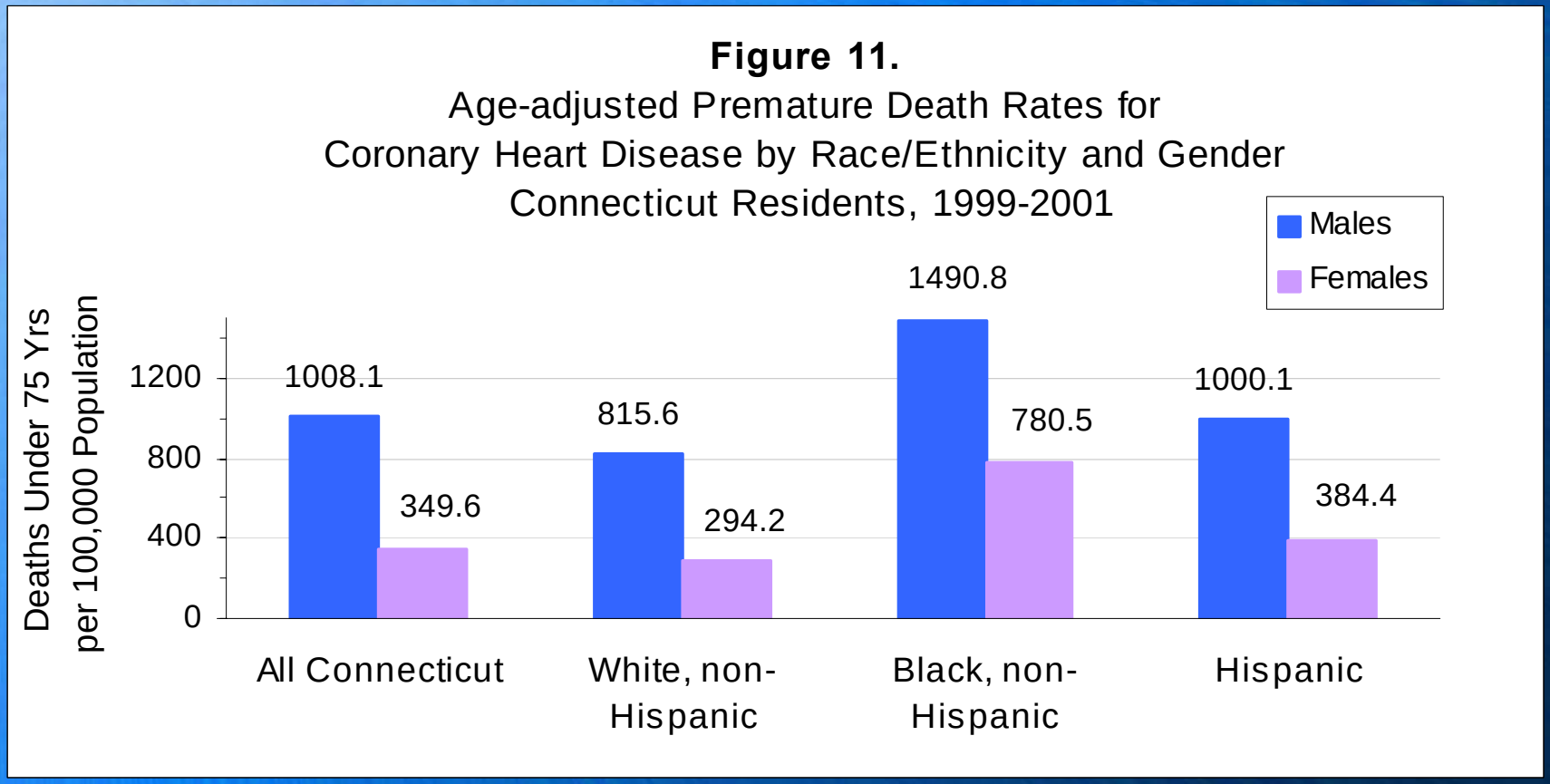
Source for Figures 8 and 9: Connecticut Department of Public Health, Vital Records Mortality Files, 2005.

CVD Premature Death Rates



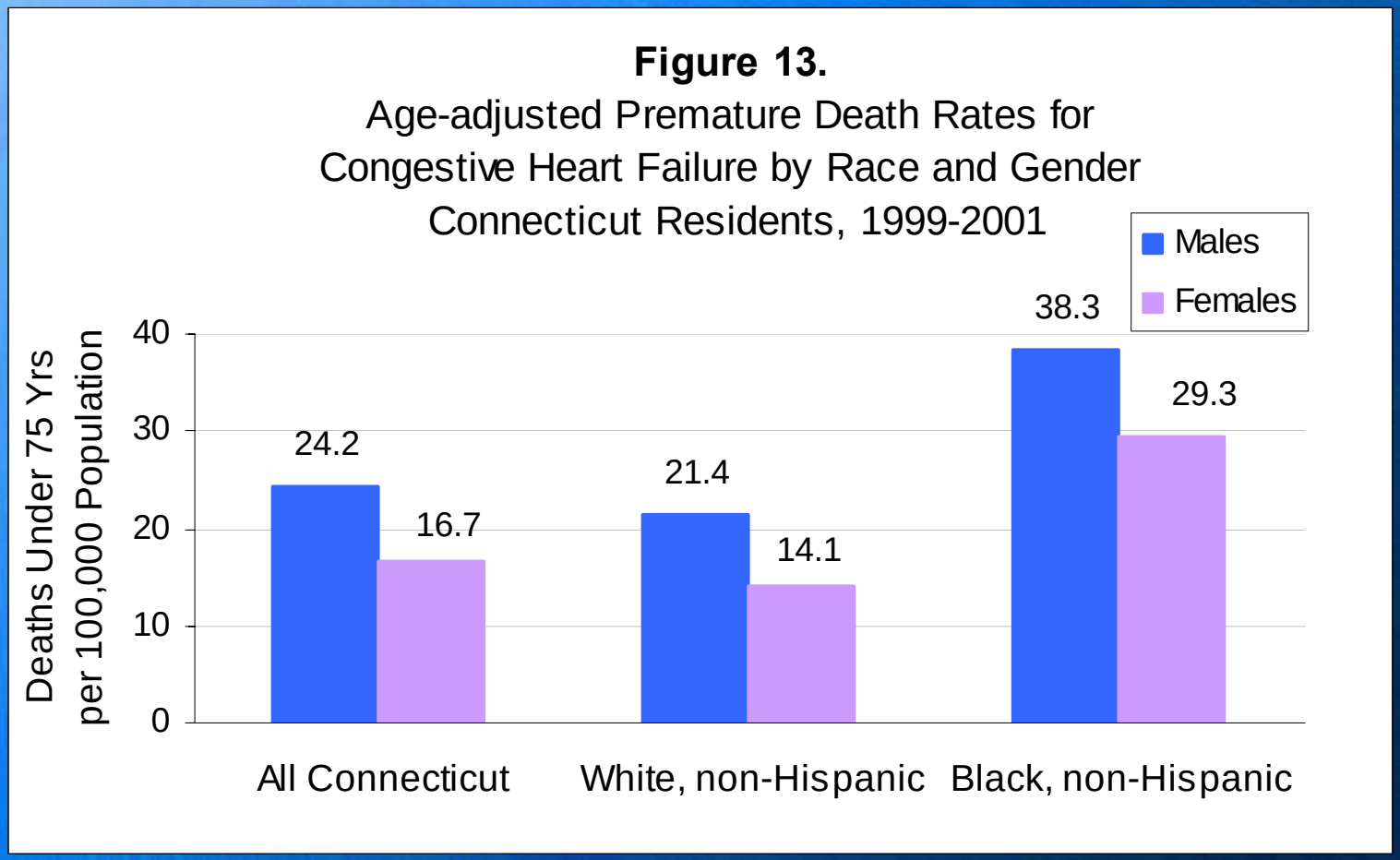
Source: Connecticut Department of Public Health, Vital Records Mortality Files, 2005. **THE BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report**

Coronary Heart Disease Premature Deaths



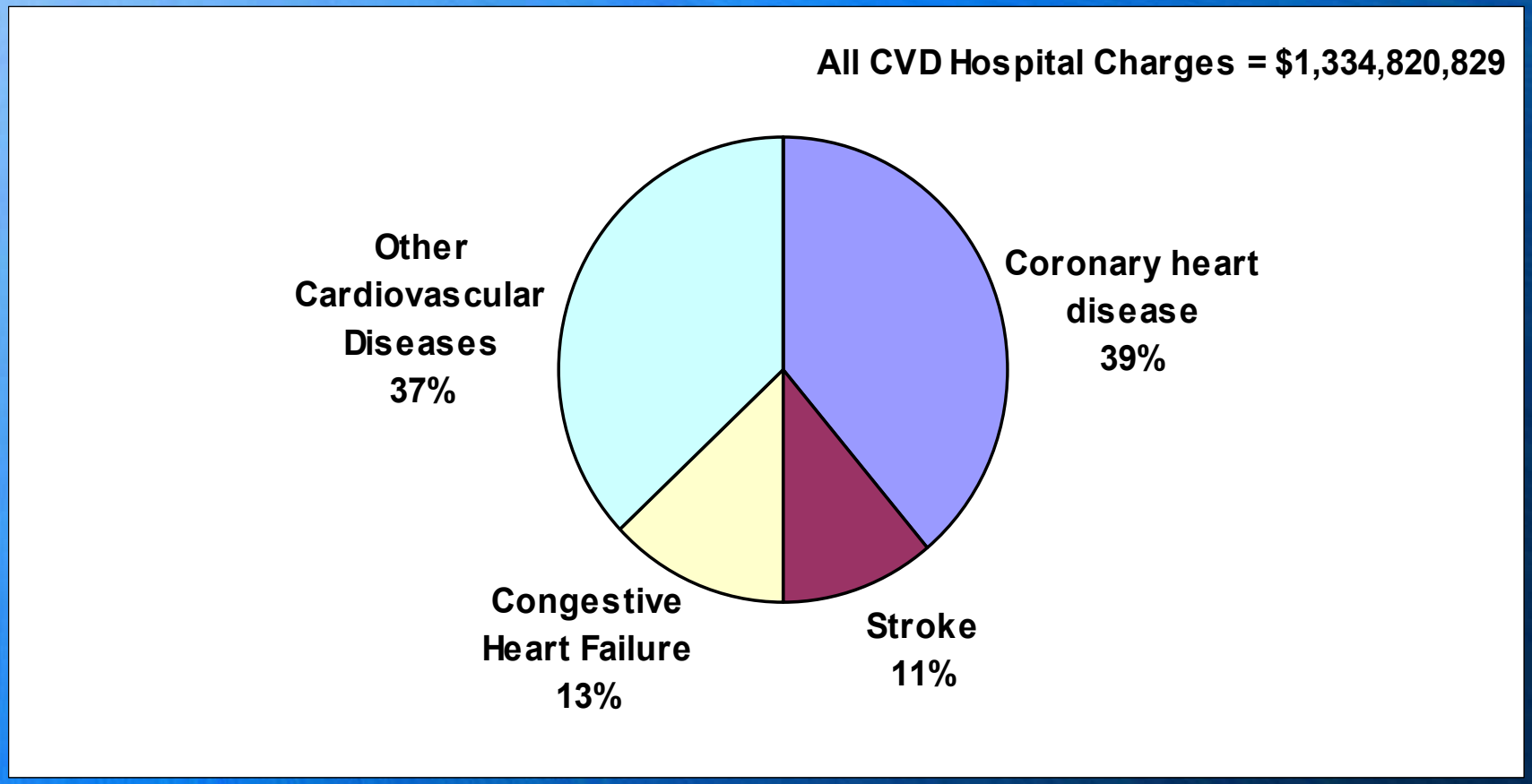
Source: Connecticut Department of Public Health, Vital Records Mortality Files, 2005. **BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report**

Heart Failure Premature Deaths



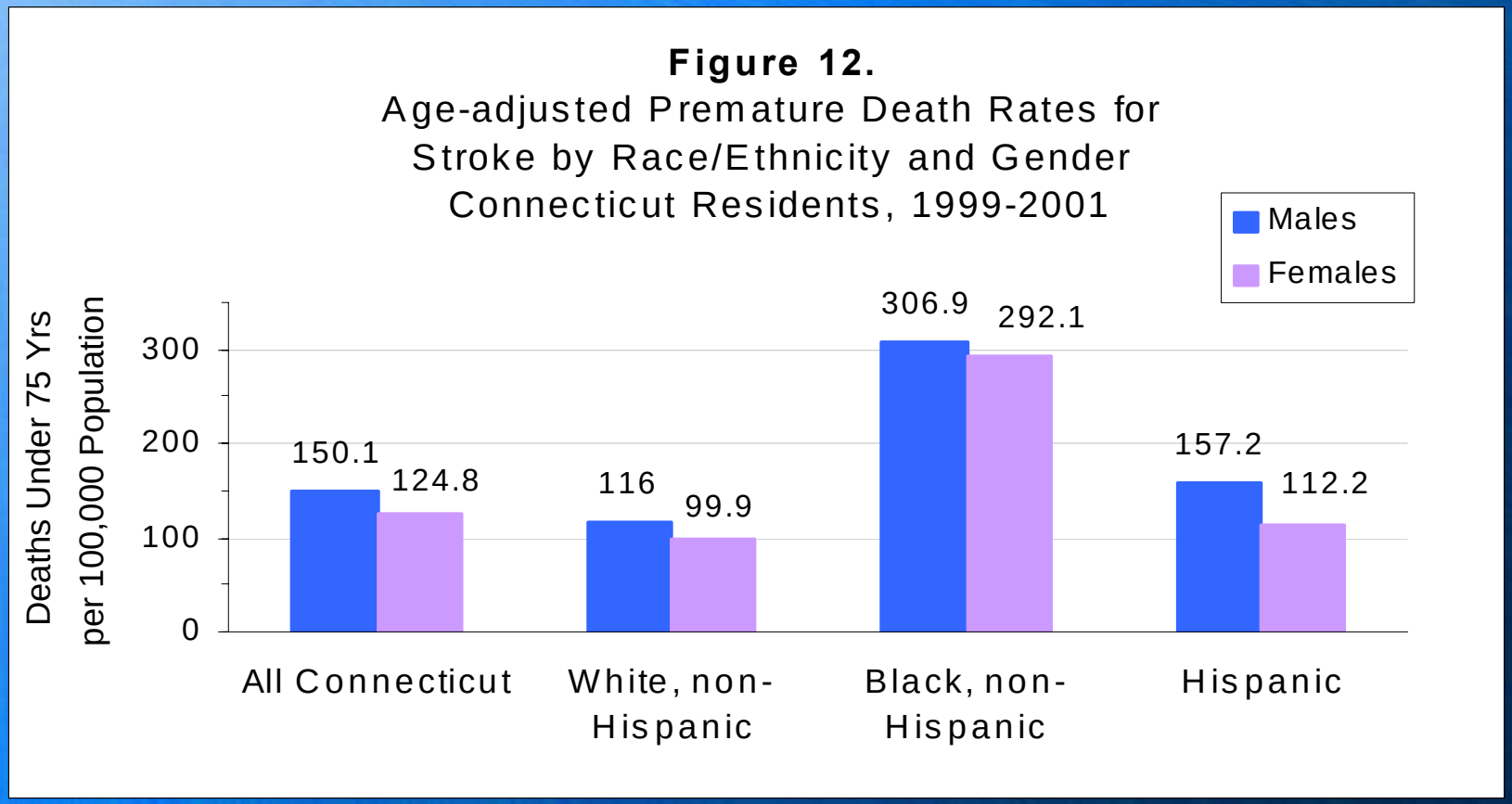
Source for Figures 13: Connecticut Department of Public Health, Vital Records Mortality Files, 2005. **BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report**

Cardiovascular Disease (CVD) Hospitalizations



Source: Connecticut Department of Public Health, Connecticut Hospital Discharge Abstract and Billing Data Base, 2005.
BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Stroke Premature Deaths



Source for Figures 12: Connecticut Department of Public Health, Vital Records Mortality Files, 2005. BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Connecticut Stroke Hospitalizations
Medicare Beneficiaries Ages 65 and Older, 1995 - 2002

Category	Total Strokes	Percent of Total	Rate Per 100,000	U.S. Rate per 100,000
Total	43,340	100	13.4	17.2
Ischemic	31,941	73.7	9.9	11.5
Hemorrhagic	5,460	12.6	1.7	2.0
Ill-Defined	5,634	13.0	1.7	3.5
Late Effects	270	0.7	0.1	0.2

Source: 2008 Atlas of Stroke Hospitalizations Among Medicare Beneficiaries

http://www.cdc.gov/DHDSP/library/stroke_atlas/appendix_a.htm

Connecticut Stroke Hospitalizations Rates, By Race/Ethnicity, Per 100,000 Medicare Beneficiaries Ages 65 and Older, 1995 – 2002

Category	All	Black	Hispanic	White
US Total	17.2	21.9	16.0	17.0
CT Total	13.4	17.6	13.1	13.5
Ischemic	9.9	12.4	10.1	10.0
Hemorrhagic	1.7	2.3	1.3	1.7
Ill-Defined	1.7	2.5	1.5	1.7
Late Effects	0.1	0.4	NA	0.1

Source: 2008 Atlas of Stroke Hospitalizations Among Medicare Beneficiaries

http://www.cdc.gov/DHDSP/library/stroke_atlas/appendix_a.htm

Percentage of Connecticut Stroke Hospitalizations, By Discharge Status Medicare Beneficiaries Ages 65 and Older, 1995 - 2002

Status	US	CT
Home	51.0	44.9
Skilled Nursing Facility	21.1	30.7
Other Facilities	17.6	13.2
Died	8.8	9.9
Other Discharge (AMA, UNK)	1.5	1.3

Source: 2008 Atlas of Stroke Hospitalizations Among Medicare Beneficiaries

http://www.cdc.gov/DHDSP/library/stroke_atlas/appendix_a.htm

Connecticut Stroke Hospitalizations, With Selected Comorbidities Medicare Beneficiaries Ages 65 and Older, 1995 - 2002

Comorbidity	% US Population	% CT Population
Atrial Fibrillation (AF)	18.7	23.0
Diabetes	24.7	24.3
Hypertension (HT)	61.3	63.1
Hypertension & AF	10.6	13.4
Hypertension & Diabetes	17.1	16.9
AF, Diabetes, HT	2.5	2.9

Source: 2008 Atlas of Stroke Hospitalizations Among Medicare Beneficiaries

http://www.cdc.gov/DHDSP/library/stroke_atlas/appendix_a.htm

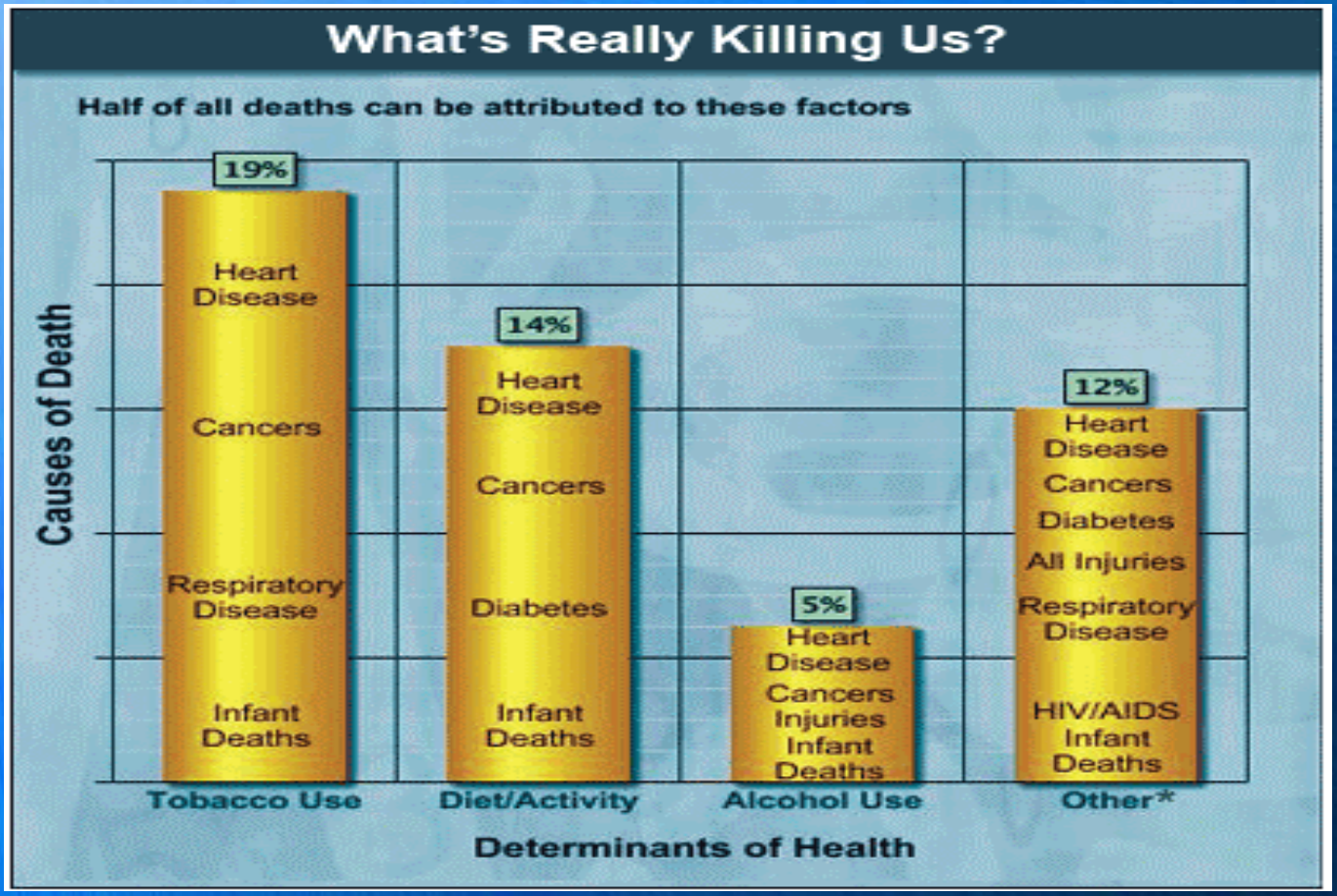
Number of Connecticut Health Care Facilities, Neurologists and Neurosurgeons, 2002

Total Connecticut Hospitals	31
Short-term General Hospitals with neurology services	22
STGH with Emergency Departments	27
STGH with Rehabilitation Care	9
Stroke Specialists: neurologists	190
Stroke Specialists: neurosurgeons	80

Source: 2008 Atlas of Stroke Hospitalizations Among Medicare Beneficiaries

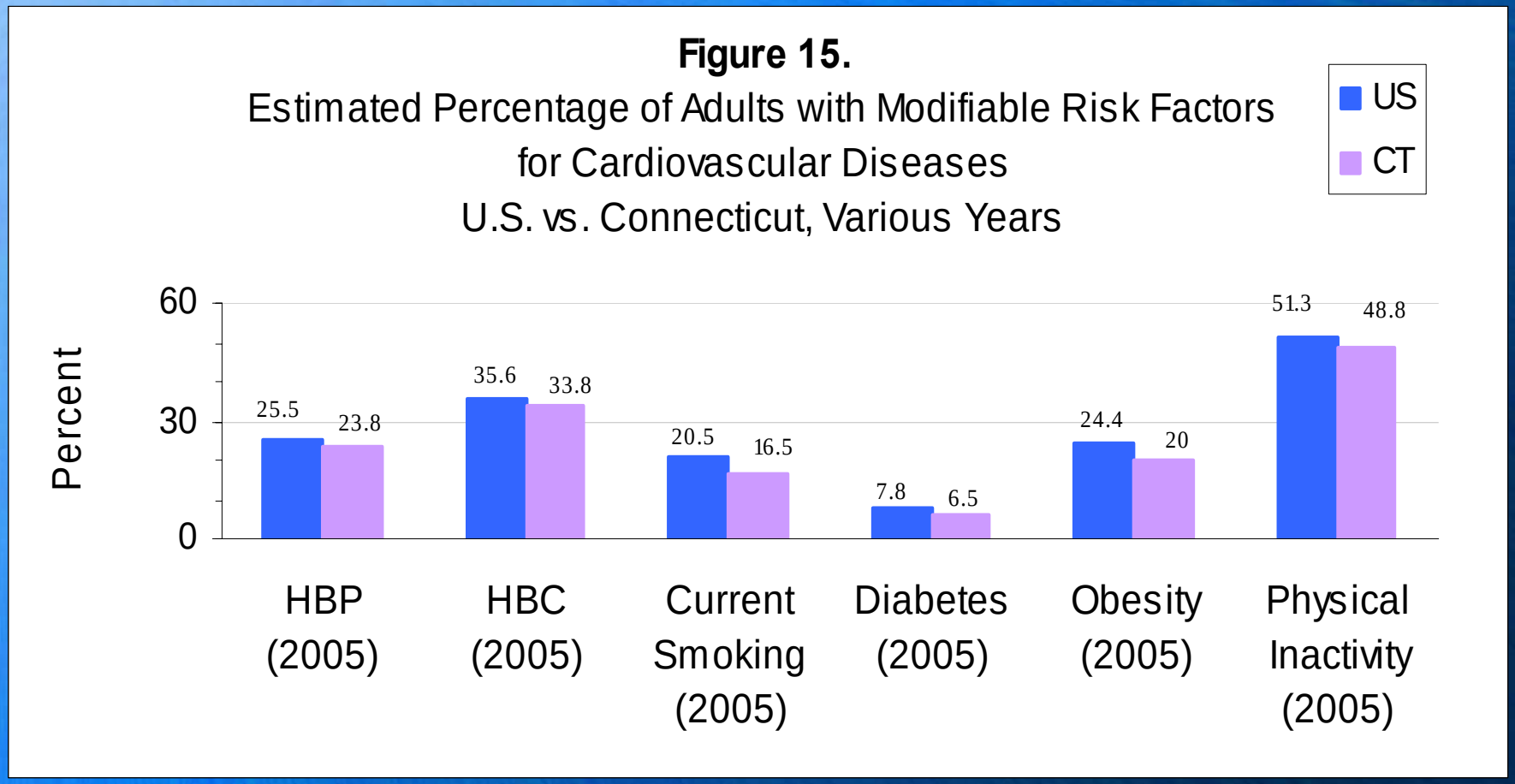
http://www.cdc.gov/DHDSP/library/stroke_atlas/appendix_a.htm

Risk Factors for Heart Disease



Source: http://www.communityhealth.hhs.gov/homepage.aspx?j=1

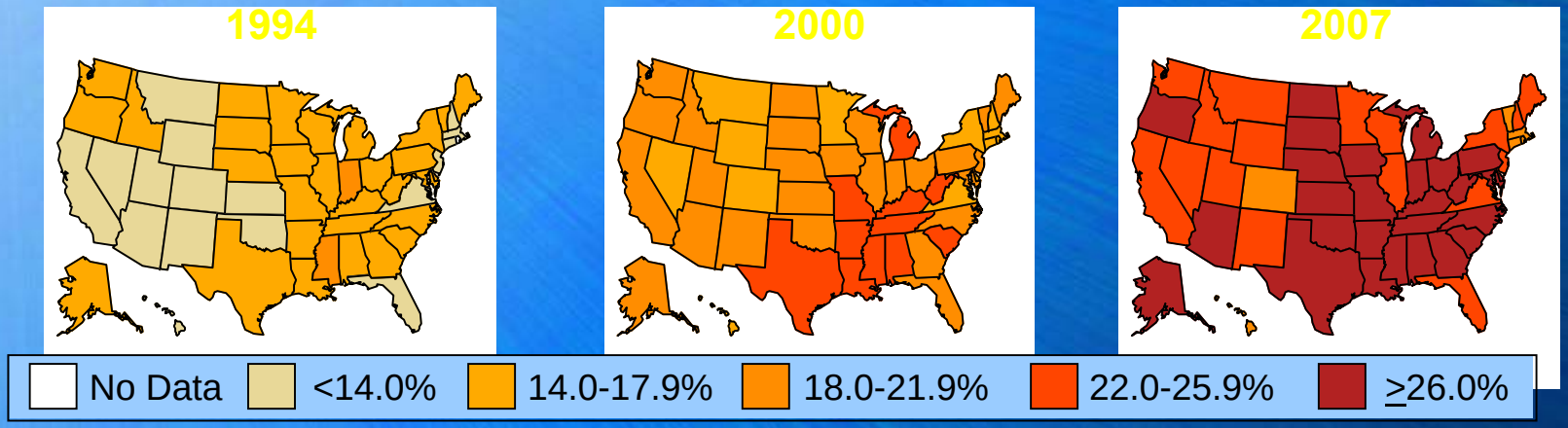
Prevalence of Risk Factors



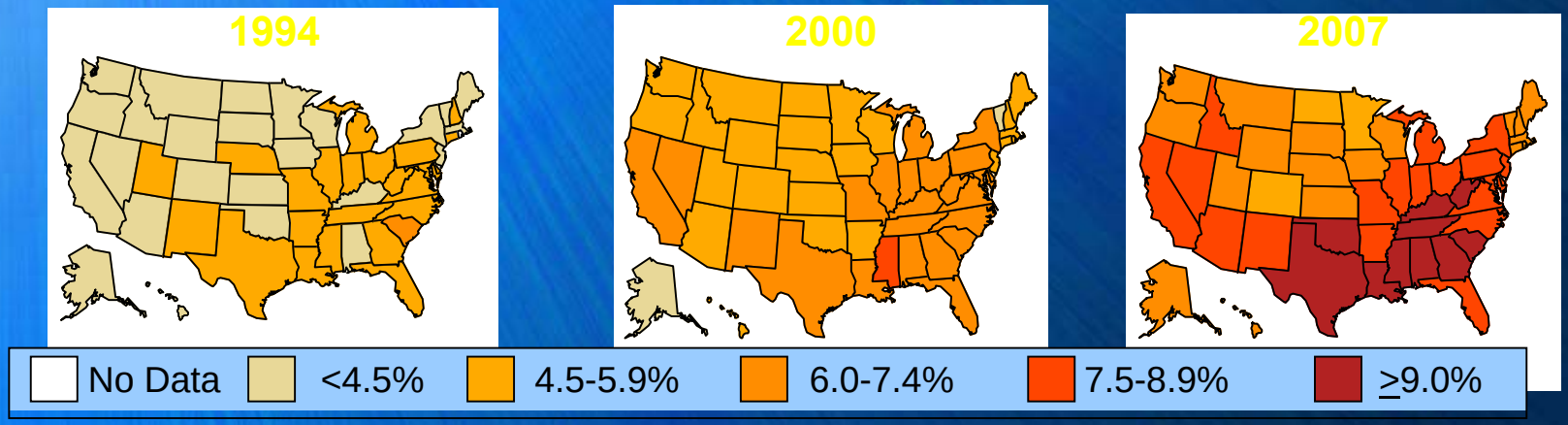
Source for Figures 15 and 16: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2005. BURDEN OF CARDIOVASCULAR DISEASE IN CONNECTICUT 2006 Surveillance Report

Age-adjusted Percentage of U.S. Adults Who Were Obese or Who Had Diagnosed Diabetes

Obesity (BMI ≥30 kg/m^2)



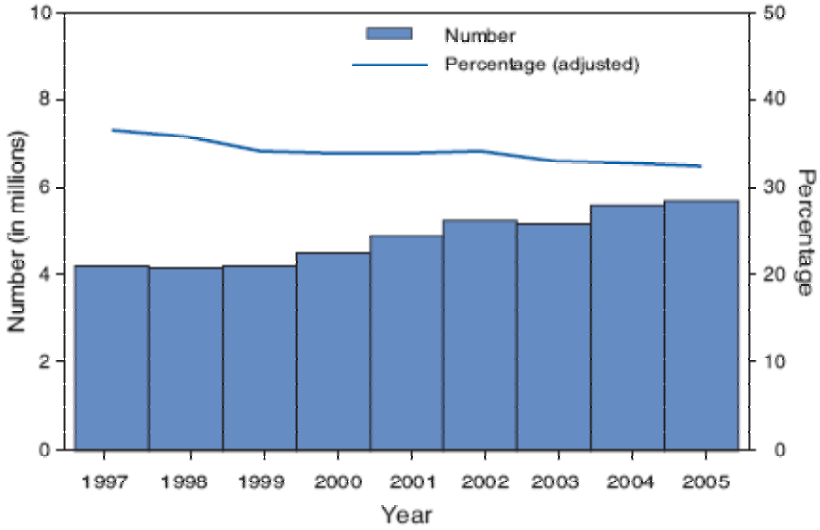
Diabetes



CDC's Division of Diabetes Translation. National Diabetes Surveillance System available at http://www.cdc.gov/diabetes/statistics

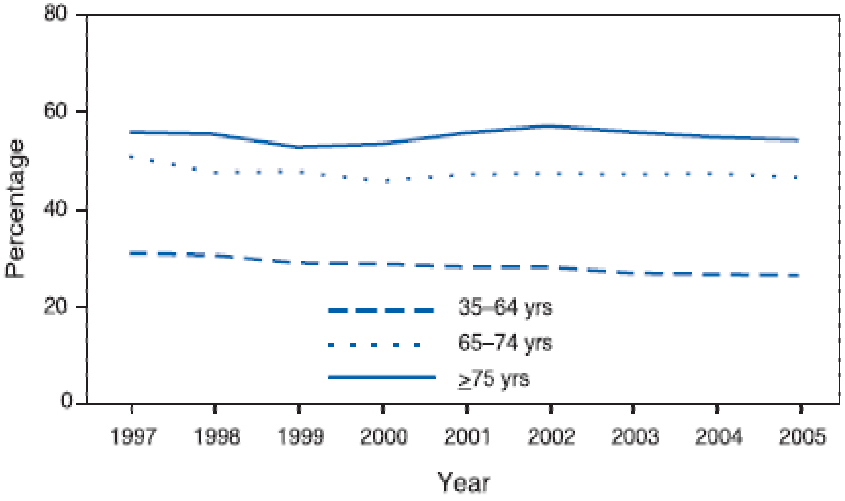
Diabetes as risk factor for Cardiovascular Disease

FIGURE 1. Estimated number of persons with and prevalence* of self-reported cardiovascular disease† among persons aged ≥35 years with diagnosed diabetes — National Health Interview Survey, United States, 1997–2005



* 3-year averages for 1998–2004, 2-year averages for 1997 and 2005. Age adjusted based on the 2000 U.S. standard population.
† Coronary heart disease, angina, myocardial infarction, any other kind of heart condition, or stroke.

FIGURE 2. Estimated prevalence* of self-reported cardiovascular disease† among persons aged ≥35 years with diagnosed diabetes, by age group — National Health Interview Survey, United States, 1997–2005



* 3-year averages for 1998–2004, 2-year averages for 1997 and 2005.
† Coronary heart disease, angina, myocardial infarction, any other kind of heart condition, or stroke.

Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5643a2.htm

Disease Awareness Surveillance, 2007

BRFSS question	U.S. Prevalence	CT Prevalence
Ever told you had a heart attack (myocardial infarction)?	4.2%	3.6%
Ever told you had angina or coronary heart disease?	4.1%	3.5%
Ever told you had a stroke?	2.6%	1.7%
Ever told you had diabetes?	8.0%	7.3%

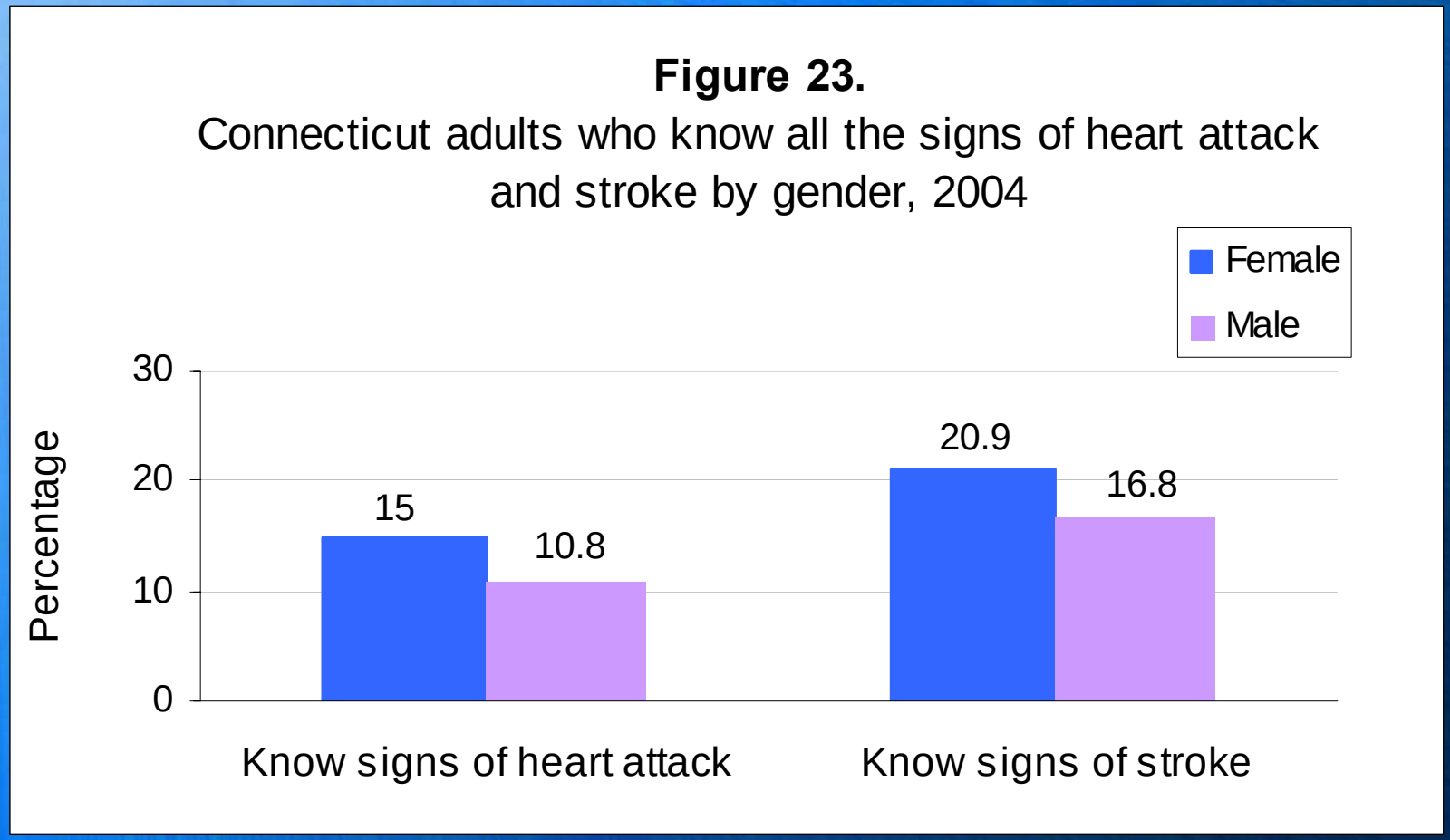
Source: http://www.cdc.gov/brfss

Risk Factor Surveillance, 2007

Risk Factor (>18 yrs)	U.S. Prevalence	Connecticut Prevalence
High blood pressure (HBP) awareness	27.8%	26.2%
Taking medicine for HBP	79.6%	80.1%
Cholesterol Screening last 5 years	74.8%	82.6%
Cholesterol Screening – ever checked	78.7%	85.4%
Cholesterol Screening – told it was high	37.6%	38.3%

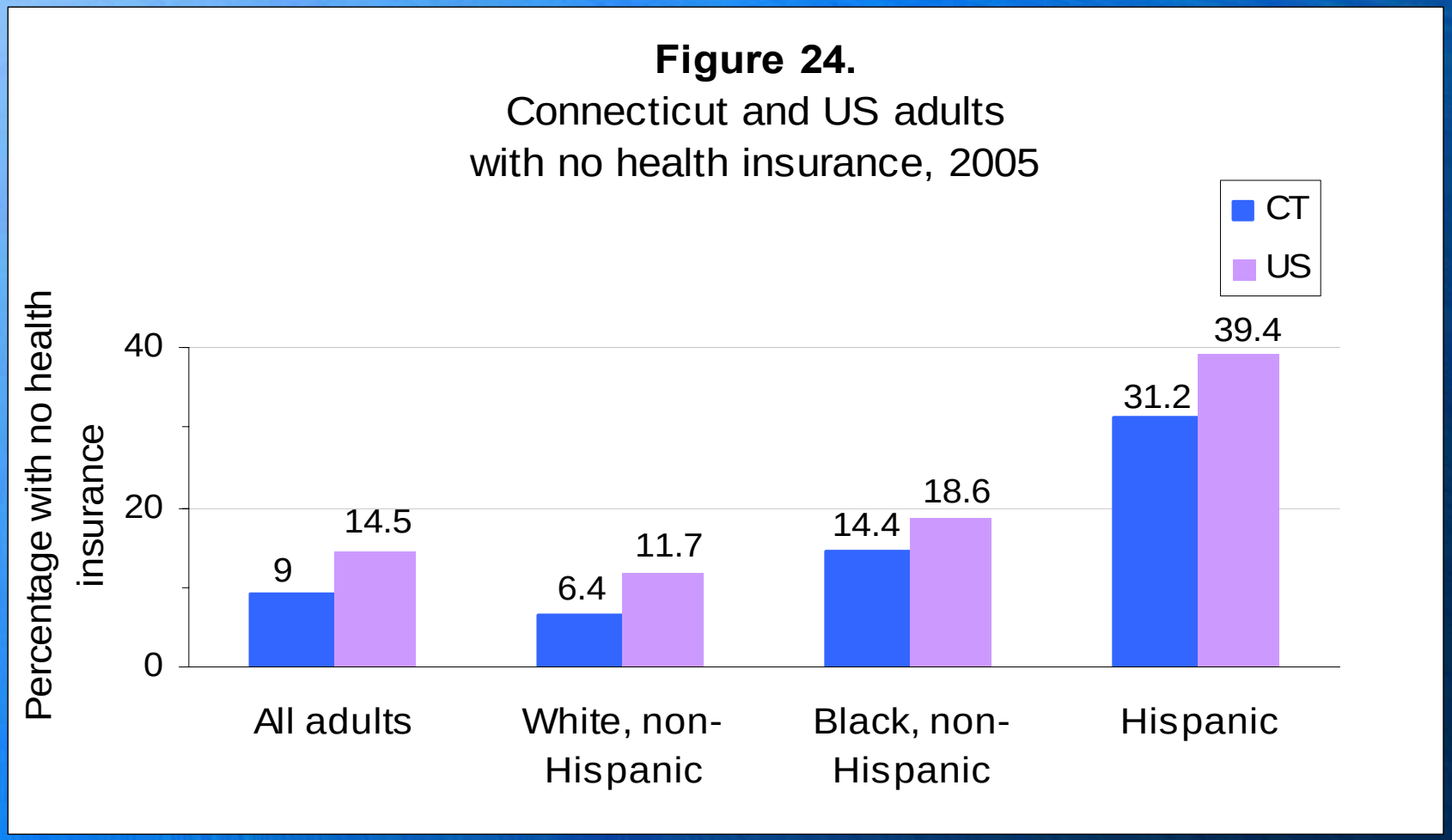
Source: http://www.cdc.gov/brfss

Knowledge of Signs of Heart Attack and Stroke



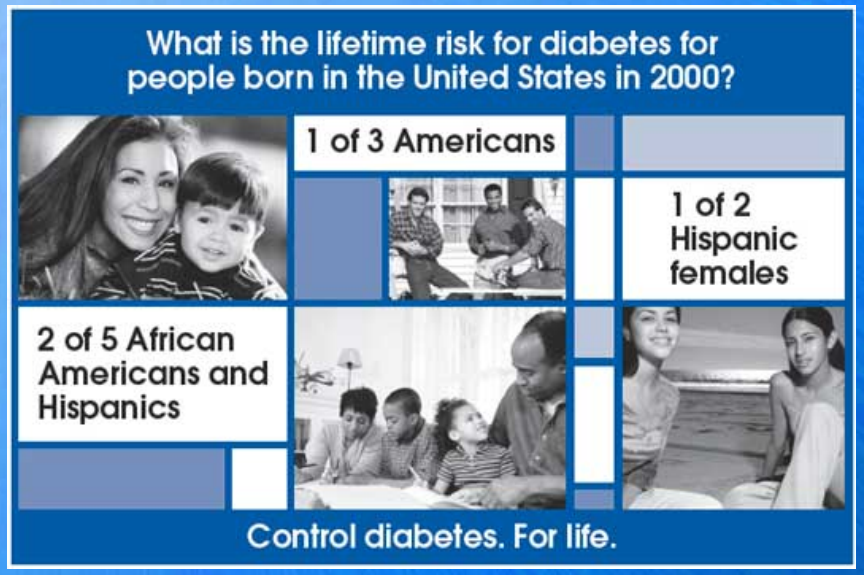
Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2005.

Health Insurance Status



Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2006.

Strategies for Addressing Cardiovascular Disease - Diabetes



Graphic Source:
http://www.cdc.gov/nccdphp/publications/aag/ddt.htm

"Adults with diabetes are at greater risk for dying from heart disease than adults without diabetes. Heart disease and stroke account for approximately 65% of deaths among persons with diabetes."

(Source: Prevalence of Self-Reported Cardiovascular Disease Among Persons Aged ≥35 Years with Diabetes --- United States, 1997—2005

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5643a2.htm)

Risk Factor Surveillance, 2007

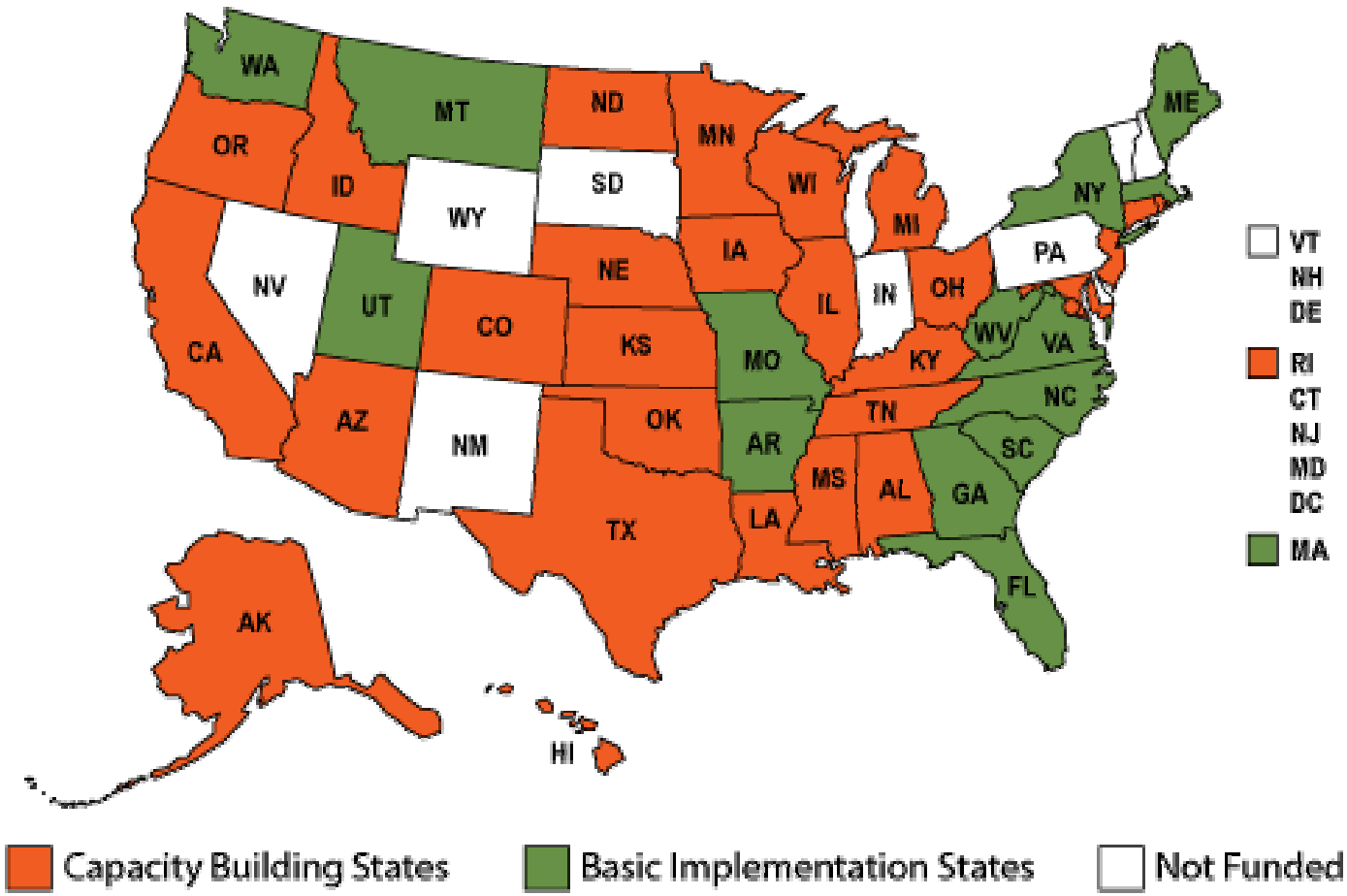
Risk Factor	U.S. Prevalence	Connecticut Prevalence
Current Smoker	19.8%	15.4%
Any exercise the past month?	77.4%	80.3%
Moderate (30 min x 5 days) to rigorous activity (20 min x 3 days)	50.5%	47.6%
Overweight (BMI 25 to 29.9)	36.6%	37.5%
Obese (BMI 30 and over)	26.3%	21.7%
Fruits & vegetables (5 or more/day)	24.4%	28.5%

Source: http://www.cdc.gov/brfss

Connecticut Heart Disease & Stroke Prevention Program

- Funded by CDC HDSP Program and Preventive Services Block Grant
- CT HDSP housed in the Public Health Initiatives Branch, under the AIDS & Chronic Disease Section
- Cardiovascular Epidemiology housed in the Planning Branch, under Health and Information Systems Reporting Section

States Funded by CDC for Heart Disease and Stroke Prevention Programs, 2008



CDC Charge for States

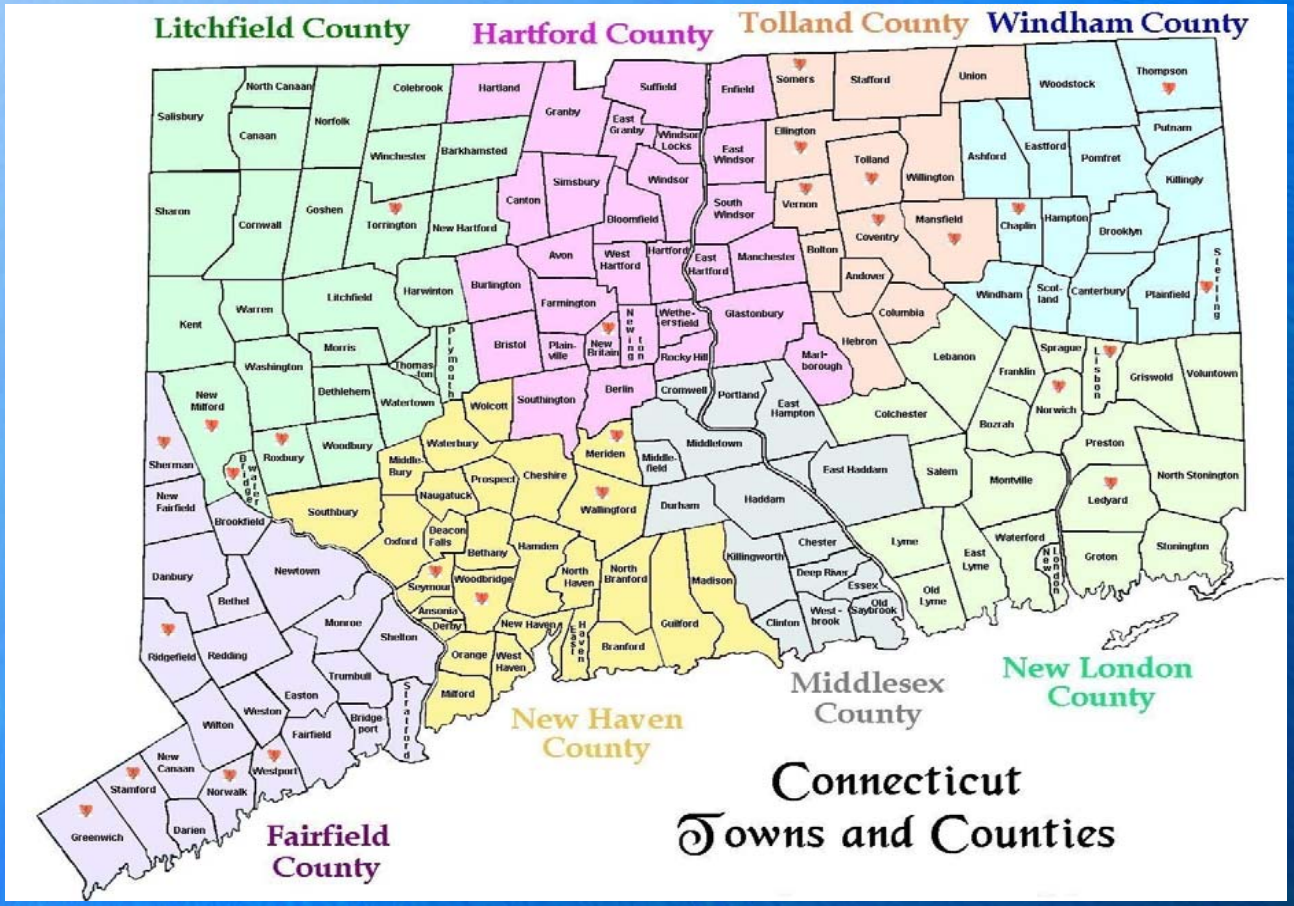
- **The CDC priorities for heart disease and stroke prevention are:**
  - **Controlling high blood pressure**
  - **Controlling high blood cholesterol**
  - **Knowing the signs and symptoms, importance of calling 9-1-1**
  - **Improving emergency response**
  - **Improving quality of care**
  - **Eliminating disparities**

Source:
http://www.ct.gov/dph/cwp/view.asp?a=3135&q=387022&dphNav_GID=1601&dphPNavCtr=|#47042

Connecticut Heart Disease & Stroke Prevention Program Activities

- Heart Disease and Stroke Surveillance
- Heart Disease
  - African American Outreach
  - HeartSafe Communities
  - Cardiovascular Disease State Plan to be developed
- Stroke
  - Primary Stroke Center Certification
  - State-wide Stroke Plan being developed

Connecticut HEARTSafe Communities



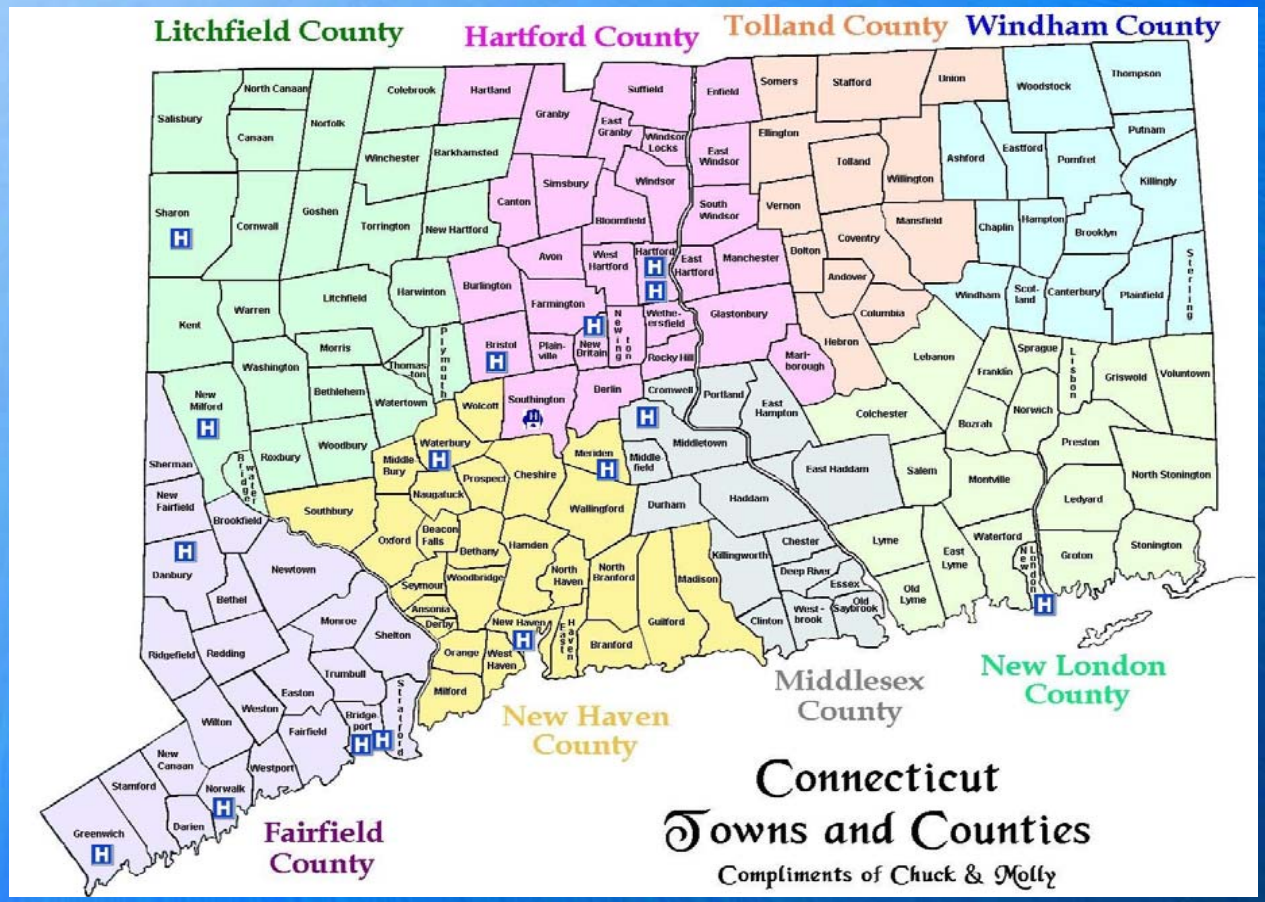
- Early access to emergency care
- Early advanced care
- Early cardiopulmonary resuscitation (CPR)
- Early defibrillation

- Started in 2006
  - 2006 – 3 joined
  - 2007 – 13 joined
  - 2008 – 9 joined
  - 2009 – 2 so far

27 HEARTSafe Communities (1/2009)

Source: http://www.ct.gov/dph/lib/dph/aids_and_chronic/chronic_disease/pdf/heartsafe_communities.pdf

Primary Stroke Center Designation Program



- "… a quality initiative that addresses the public health need for acute care hospitals to ensure rapid diagnostic evaluation and treatment of stroke patients.
- To be designated a Primary Stroke Center a hospital must demonstrate the capacity to meet criteria adapted from the American Stroke Association practice standards and recommendations from the Brain Attack Coalition.
- The goal of the program is to decrease premature deaths and disabilities associated with stroke."

16 Primary Stroke Centers; 1 Satellite PSC (1/2009)

Source: http://www.ct.gov/dph/cwp/view.asp?a=3135&q=387022&dphNav_GID=1601&dphPNavCtr=|#47042

Heart Disease & Stroke Surveillance

Heart Disease & Stroke Surveillance System

http://www.ct.gov/dph/cwp/view.asp?a=3132&q=388110&dphNav_GID=1601&dphPNavCtr=|46973|#46997

Connecticut Diabetes Surveillance System

http://www.ct.gov/dph/cwp/view.asp?a=3132&q=388098&dphNav_GID=1601&dphPNavCtr=|46973|#46994

Heart Disease & Stroke Program Activities

Heart Disease & Stroke Prevention Program (HDSP)

http://www.ct.gov/dph/cwp/view.asp?a=3135&q=387022&dphNav_GID=1601&dphPNavCtr=|#47042

Connecticut Diabetes Prevention and Control Program (DPCP)

http://www.ct.gov/dph/cwp/view.asp?a=3135&q=397524&dphPNavCtr=|#47041

Public Health Practice Resources

- **Competencies for Chronic Disease**
  - http://www.chronicdisease.org/i4a/pages/index.cfm?pageid=3290
- **Competency Assessment Tool**
  - http://www.chronicdisease.org/files/public/Final_Competencies_Assessment_Tool.pdf
- **Competency-based Job Description Templates**
  - http://www.chronicdisease.org/files/public/NACDDCompetencies_JobDescriptionTemplates.doc

Thank you for your kind attention!!!

Questions & Answers