Heart Disease & Stroke In Utah, 2010

Robert T. Rolfs, MD, MPH
Director, Div. Disease Control and Prevention

State Epidemiologist
Utah Department of Health

Key Points

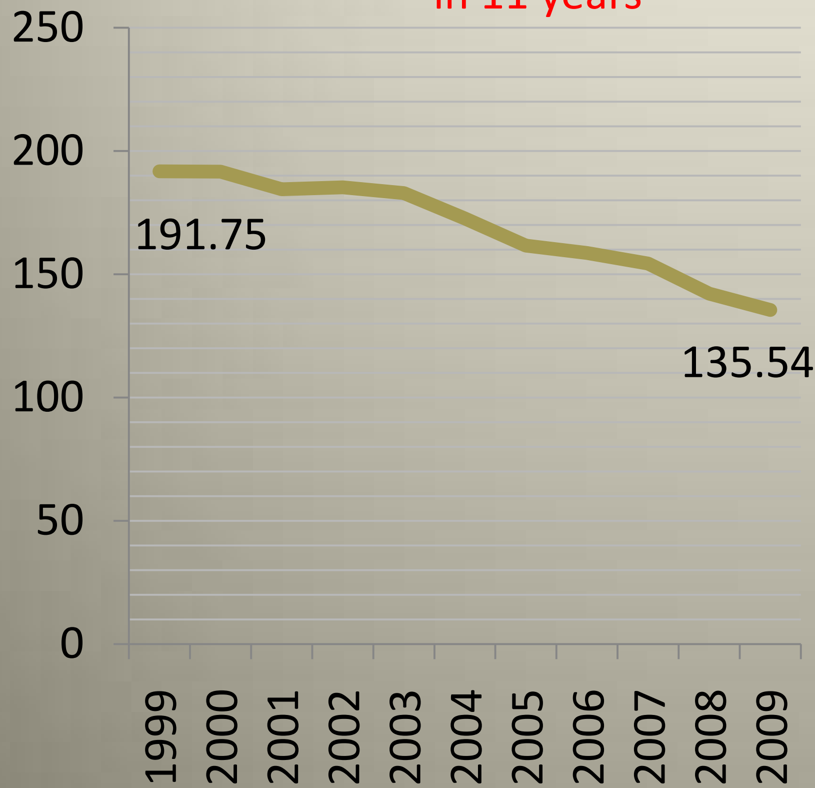
1. Utah and the US have experienced significant declines in mortality from heart disease and stroke. Some factors that contribute to this include population-wide lifestyle changes, such as increased physical activity and decreased cigarette smoking.
2. High blood pressure patients have a higher prevalence of risk factors and co-morbidities compared to the general population. The health care system is not adequately controlling high blood pressure, despite widely available and relatively inexpensive treatment options.
3. Sodium is emerging as an important for controlling high blood pressure.

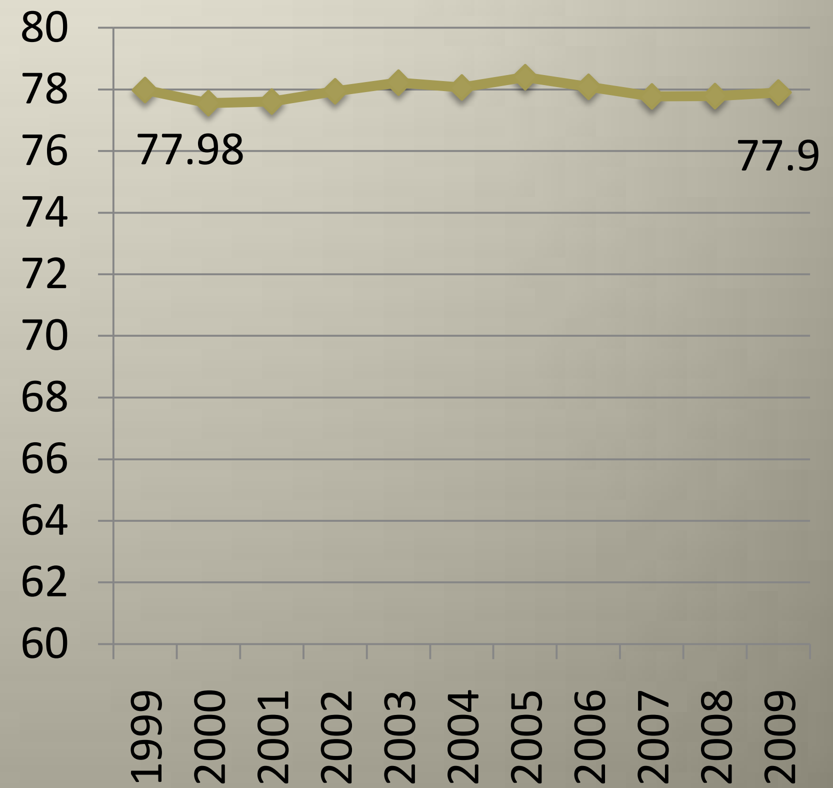
Burden of Heart Disease & Stroke in Utah

- In 2008, 3,562 Utahns died of cardiovascular disease, the leading cause of death in Utah.
- Average age at death from heart disease and stroke:
  - Males: 76 years old
  - Females: 81 years old

Source: Utah Death Certificate Database, ICD 10 Codes I00-I78. Age-adjusted to the 2000 U.S Standard Population

Utah Heart Disease Deaths, 1999-2009



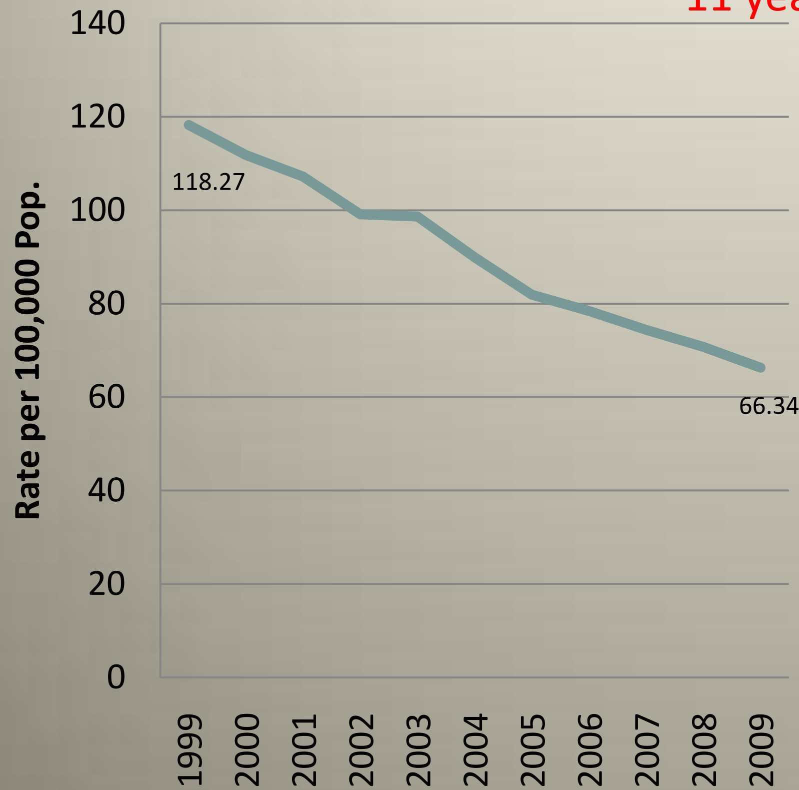


Source: Utah Death Certificate Database, ICD 10 Codes I00-I09, I11, I13, I20-I51. Age-adjusted to the 2000 U.S Standard Population

Utah Coronary Heart Disease Deaths, 1999-2009

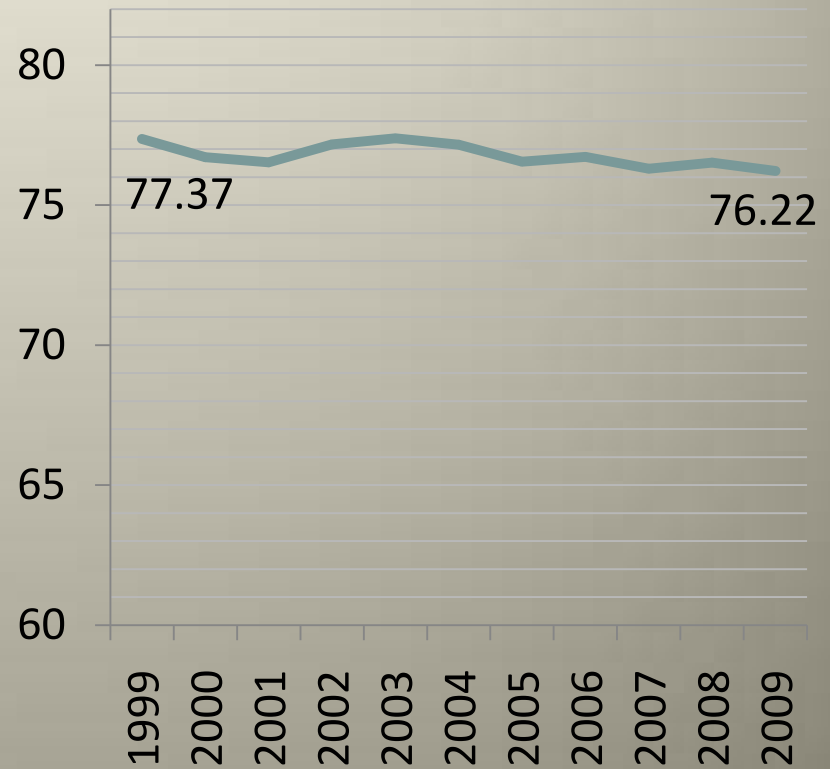
Mortality Rate

Decreased by 44% in 11 years



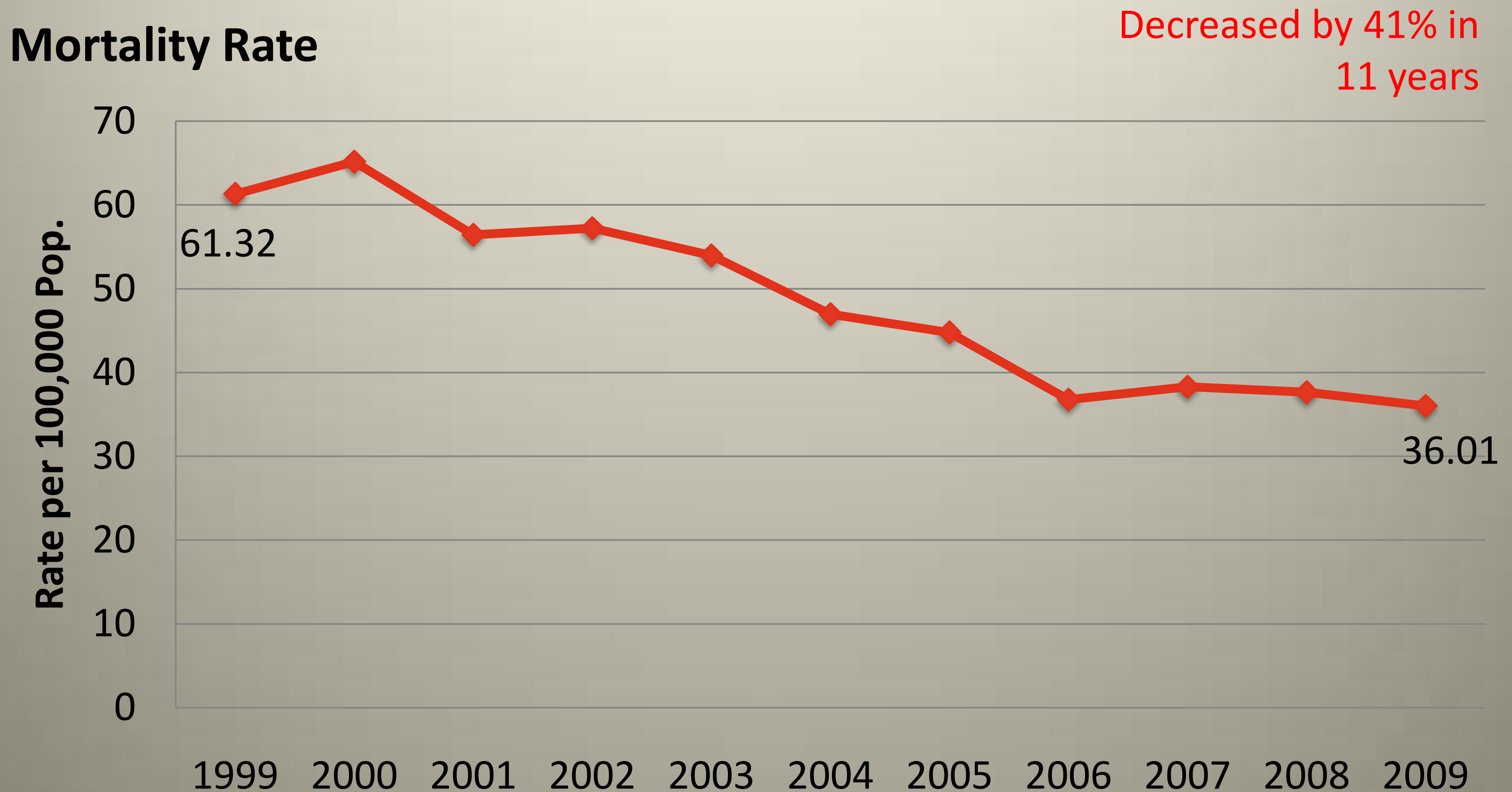
Average Age at CHD Death

No change



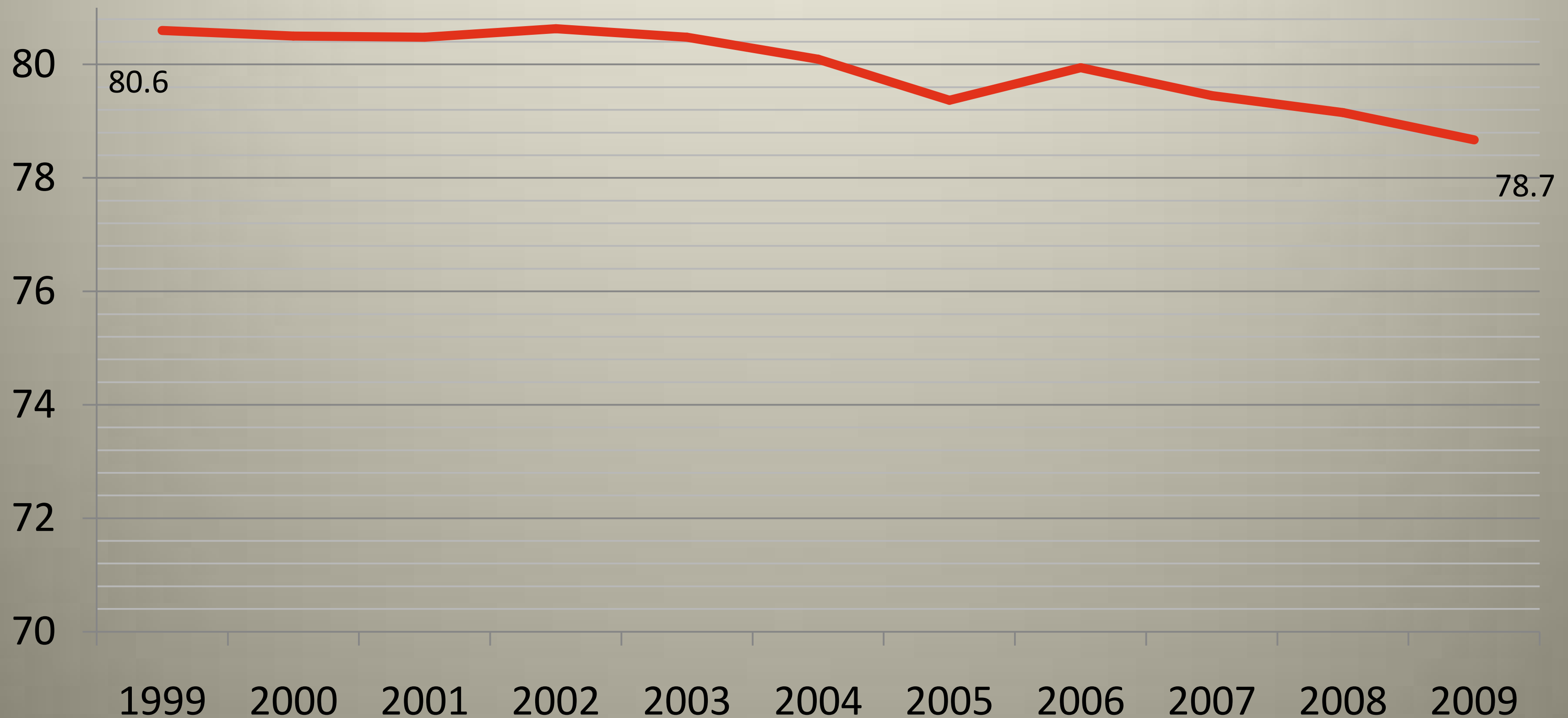
Source: Utah Death Certificate Database, ICD 10 Codes I20-I25, I11. Age-adjusted to the 2000 U.S Standard Population

Utah Stroke Deaths, 1999-2009

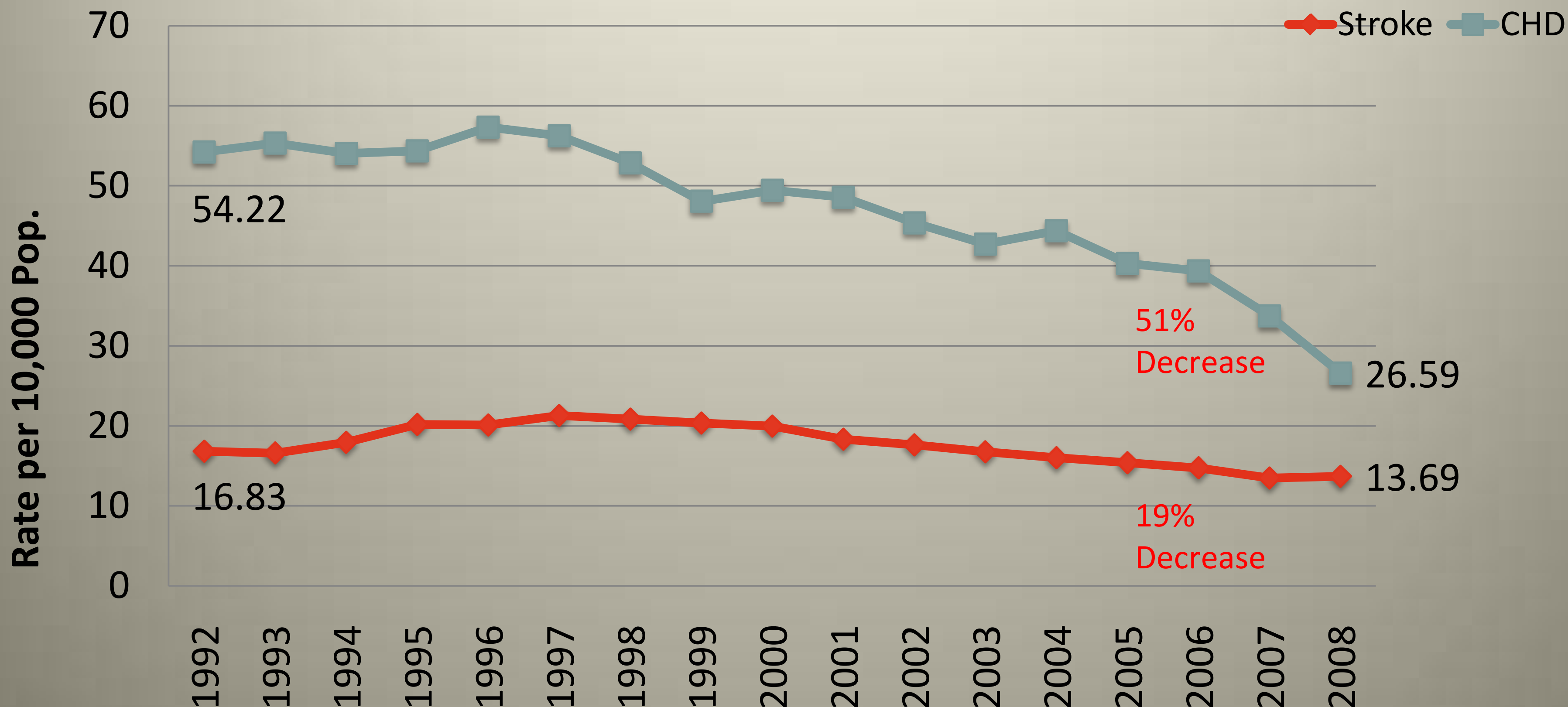


Source: Utah Death Certificate Database, ICD 10 Codes I60-I69. Age-adjusted to the 2000 U.S Standard Population

Utah Stroke Deaths

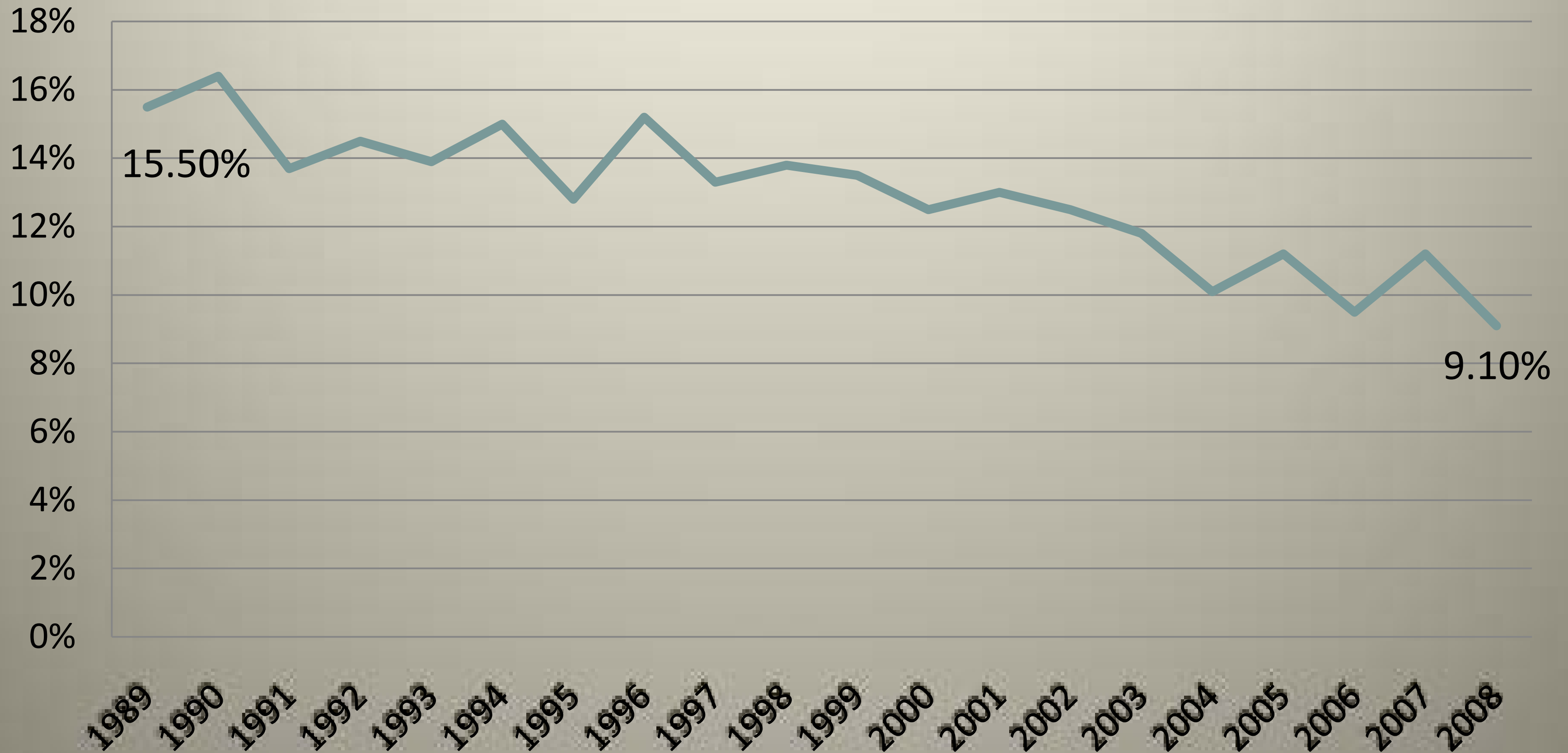


Utah Hospital Discharges



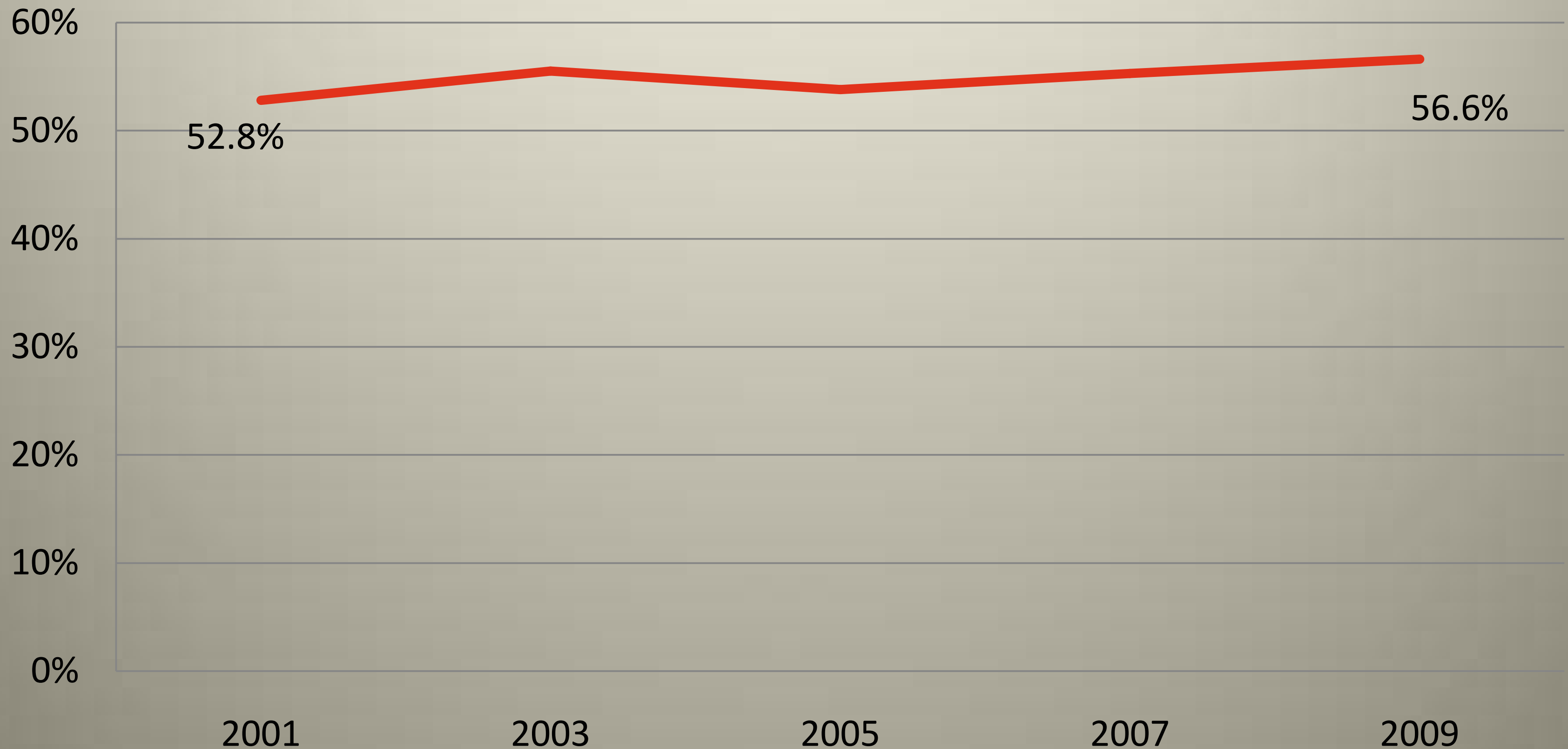
Source: Utah Death Certificate Database, ICD 9 Codes 430-434, 436-438 (cerebrovascular disease), 410-414, 429.2 (CHD), 428 (HF) . Age-adjusted to the 2000 U.S Standard Population

Status of Risk Factors in Utah



Age-adjusted to 2000 U.S. Population. Source: Utah Behavioral Risk Factor Surveillance System

Status of Risk Factors in Utah

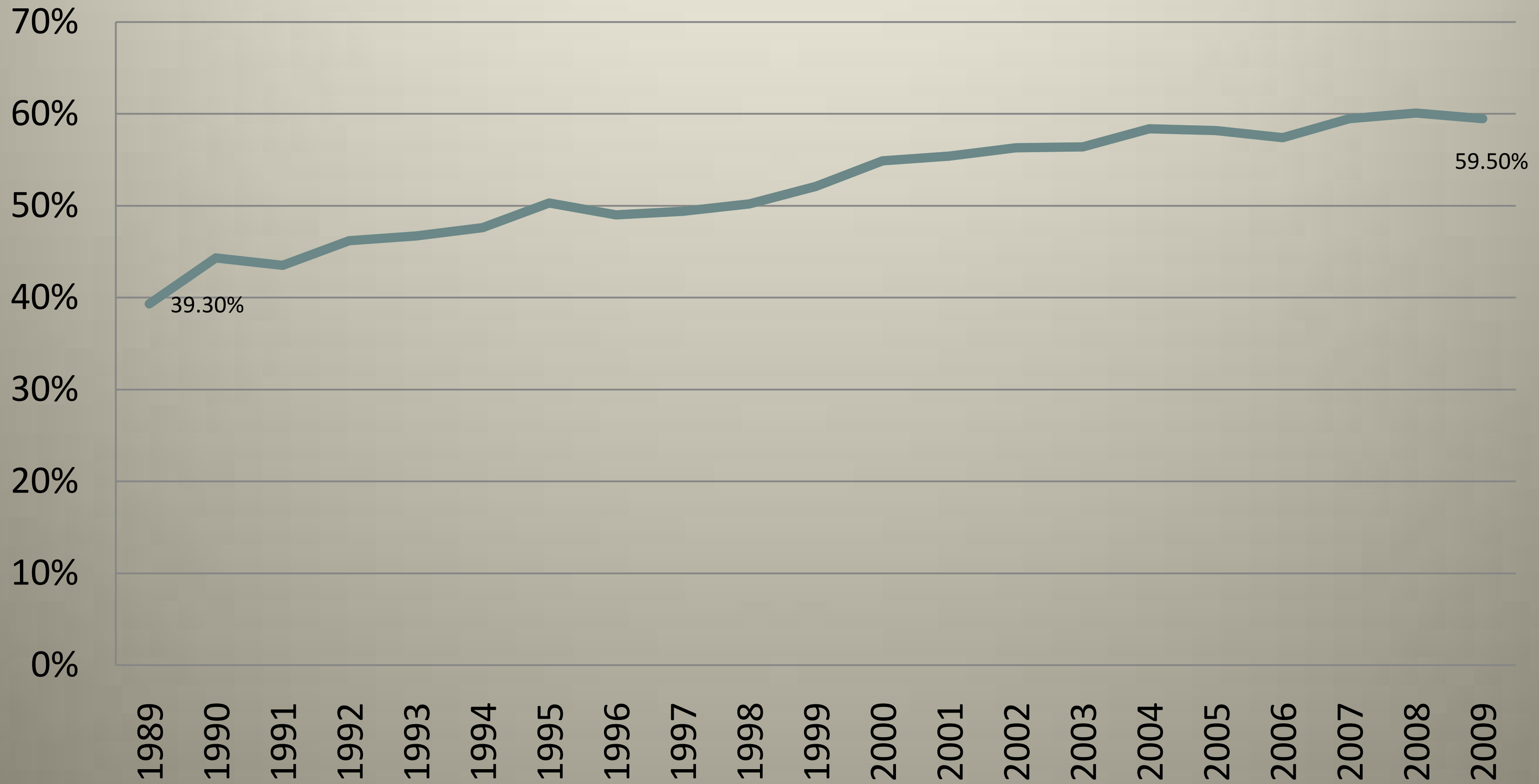


Age-adjusted to 2000 U.S. Population. Source: Utah Behavioral Risk Factor Surveillance System

Status of Risk Factors in Utah

Overweight or Obesity

Increased by 51.4% in 20 years



Years 1989-2009

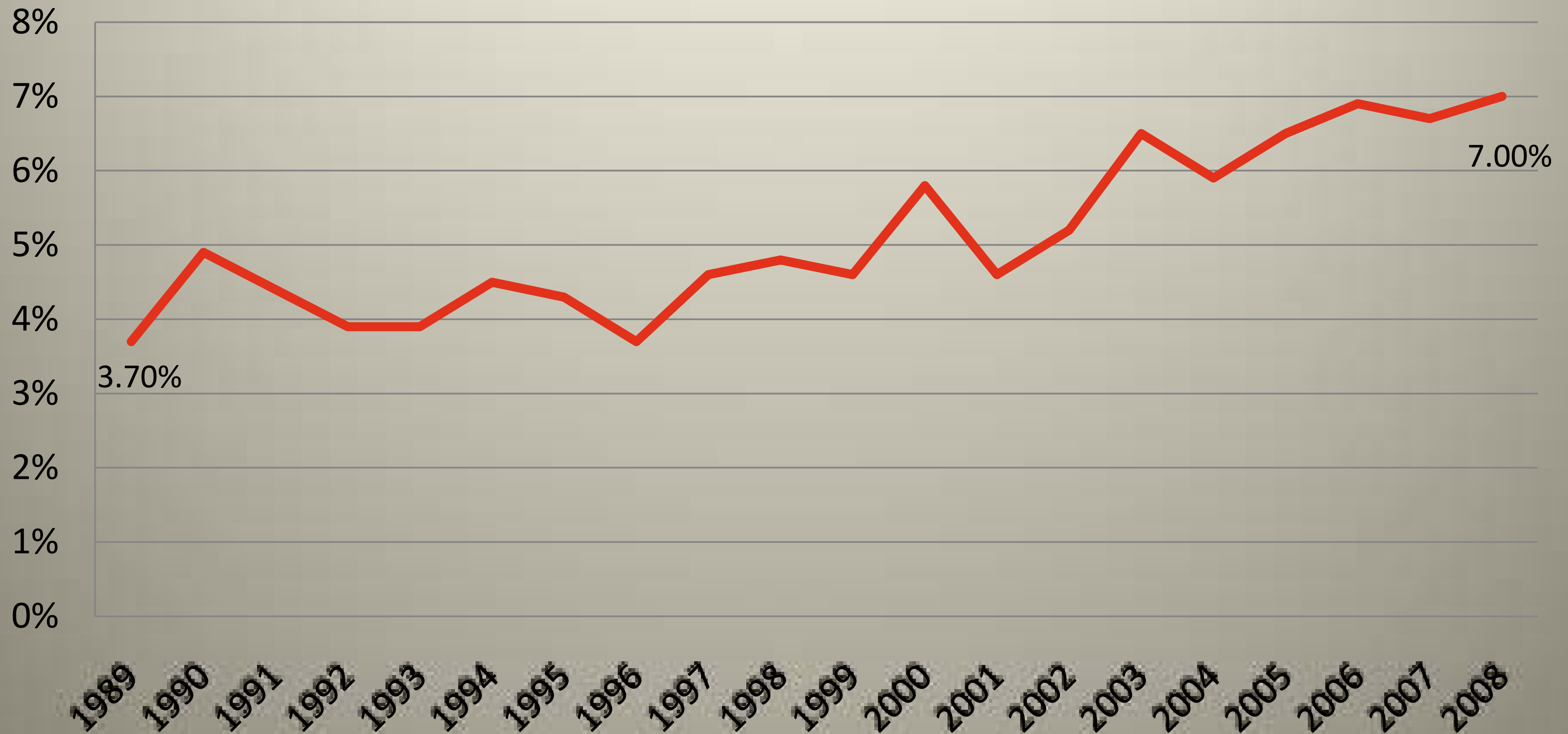
Years 1989-2008.

Age-adjusted to 2000 U.S. Population, adults 18+ only. Source: Utah Behavioral Risk Factor Surveillance System

Status of Risk Factors in Utah

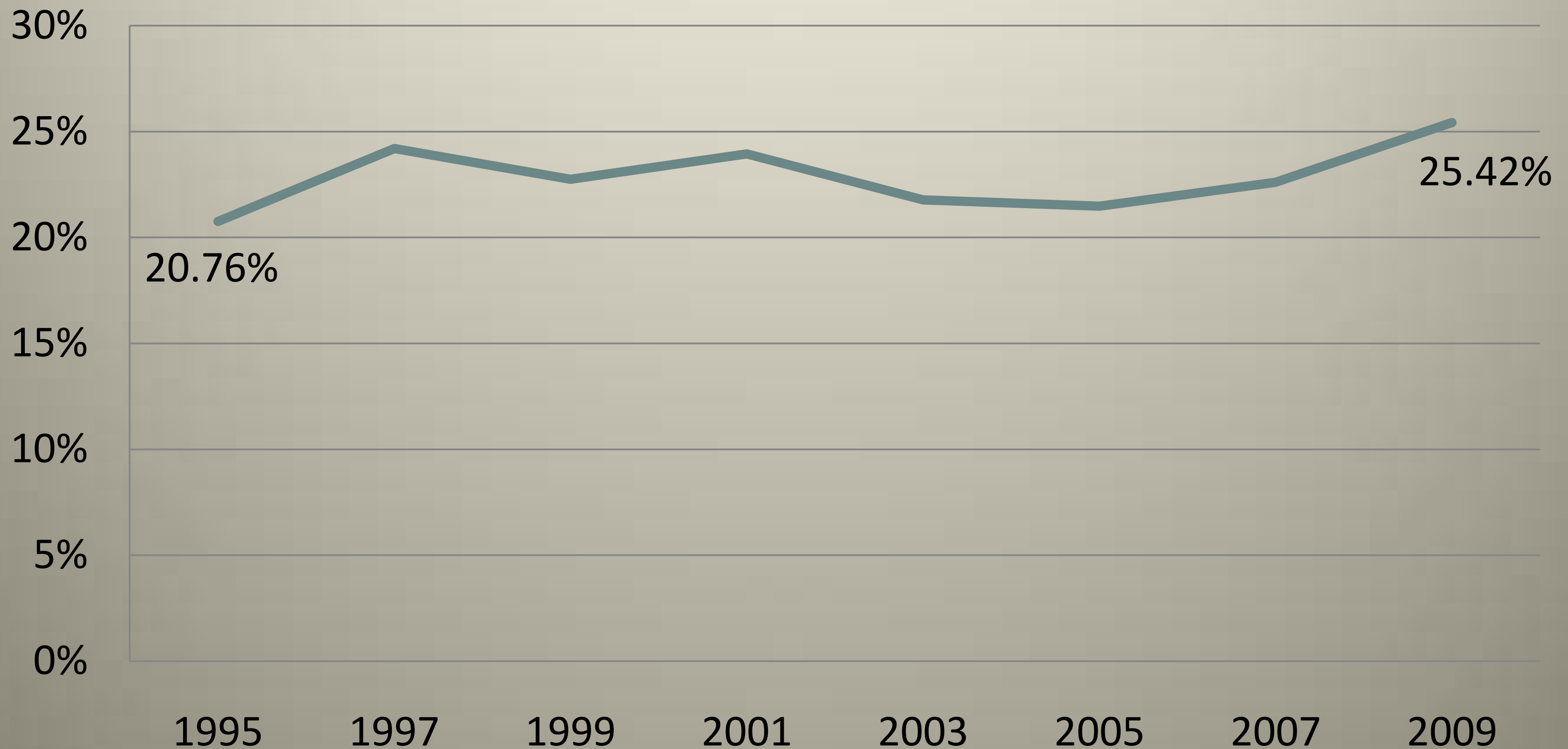
Diabetes

Increased by 89.2% in 19 years



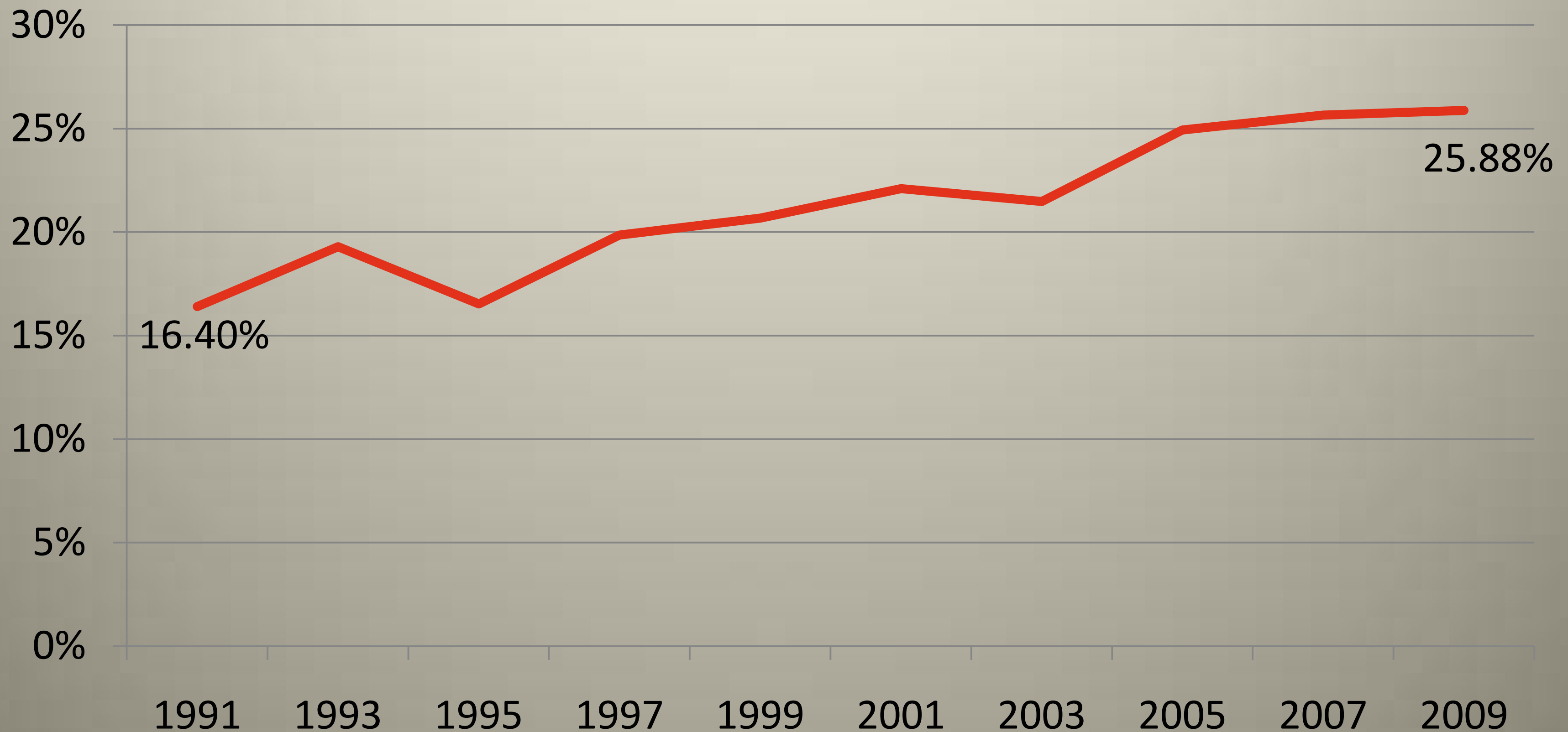
Age-adjusted to 2000 U.S. Population. Source: Utah Behavioral Risk Factor Surveillance System

Status of Risk Factors in Utah



Age-adjusted to 2000 U.S. Population. Source: Utah Behavioral Risk Factor Surveillance System

Status of Risk Factors in Utah



Age-adjusted to 2000 U.S. Population. Source: Utah Behavioral Risk Factor Surveillance System

The Institute of Medicine Report on Hypertension

"A NEGLECTED DISEASE": HIGH BLOOD PRESSURE

High Blood Pressure

- Most common primary care diagnosis in the US
- Affects about 23% of Utah adults
- Contributes to 45% of all cardiovascular deaths in the US
- Accounts for 1 in 6 all US adult deaths
- Estimated direct and indirect costs, 2009: $73.4 billion

Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

A “Neglected Disease”

- The health impact and cost of high blood pressure is well-documented.
- The risk factors that contribute to HBP are highly prevalent.
- Evidence-based interventions to control HBP are well established and relatively cheap.
- We are failing to translate our public health and clinical knowledge into effective prevention, treatment, and control.

Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

Inadequate Primary Care

"Lack of physician adherence to HBP treatment guidelines is a major problem and significant reason for the lack of awareness, lack of pharmacological treatment, and lack of hypertension control in the United States."

Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

Inadequate Primary Care

- HBP control is inadequate even when patients have access to health care and a usual place of care.
- 86% of individuals with uncontrolled HBP have a usual source of care and average 4.3 physician visits per year.
- Few physicians encourage patients to make lifestyle modifications, such as healthy diet and exercise, to control their HBP.

Inadequate Primary Care

- Physicians are unlikely to treat or to intensify treatment for mild to moderate systolic HBP (<165mmHg) if the DBP <90mmHg
- In one study, of those with a 24-month avg. BP >140/90, 25% not diagnosed with HBP. 2/3 were not diagnosed if BP was 140-59/<90.
- Of those on meds, the avg BP was 147/86, and only 24% had HBP<140/90
- Few physicians encourage patients to make lifestyle modifications that are known to be effective in controlling HBP.

Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

Patient Nonadherence

- 50% of patients discontinue drug treatment after 1 year.
- Noncompliance with HBP meds = increased hospital admissions.
- Continuous HBP medications = statistically significant reductions in hospital expenditures per patient that are greater than the accompanying drug costs.

Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

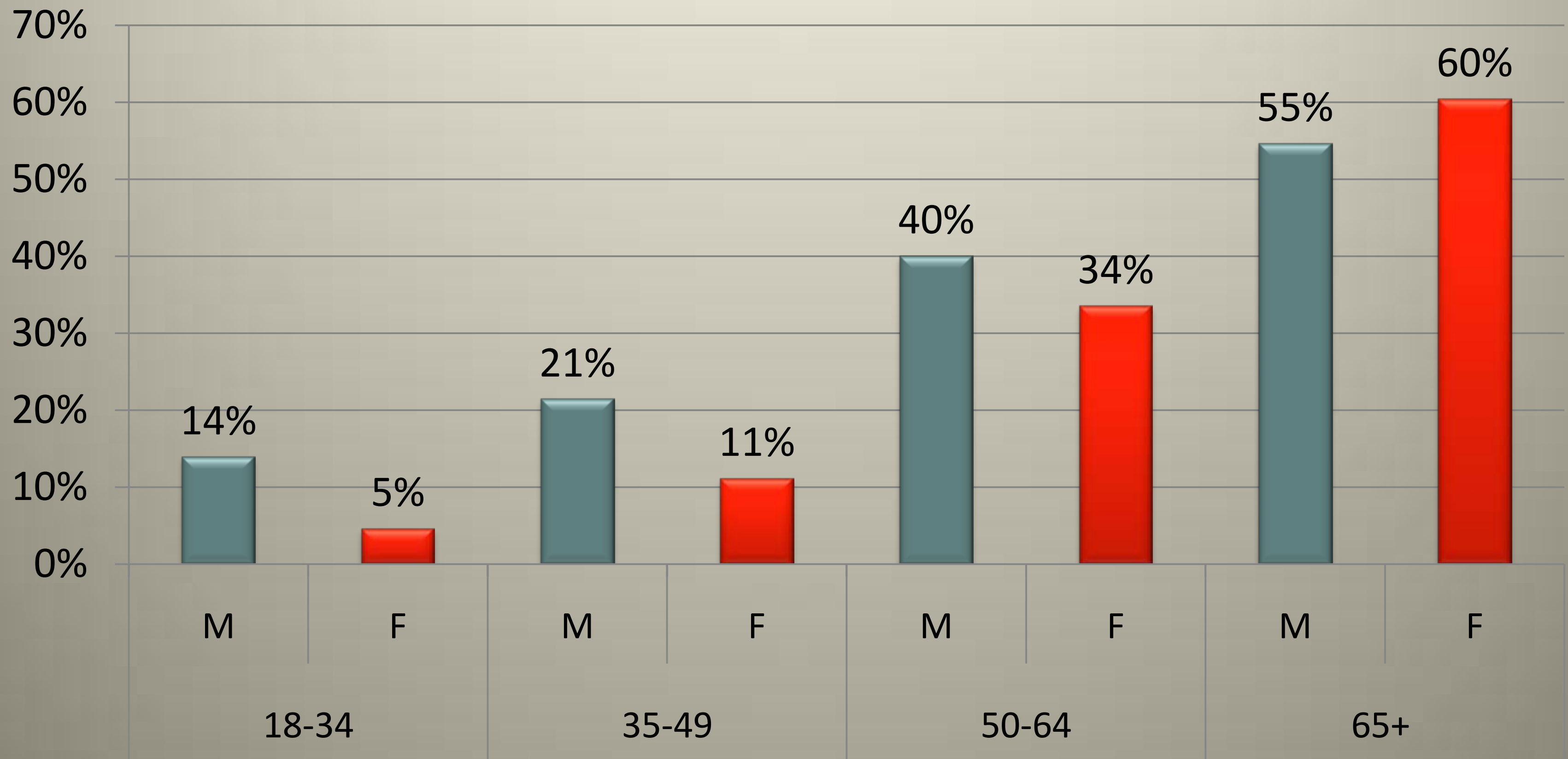
Patient Nonadherence

- 92% of persons with uncontrolled HBP have insurance.
- Income and high out-of-pocket costs = underuse of HBP medications
- Increased attention from providers in identifying barriers to medication adherence could help to address this.

Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

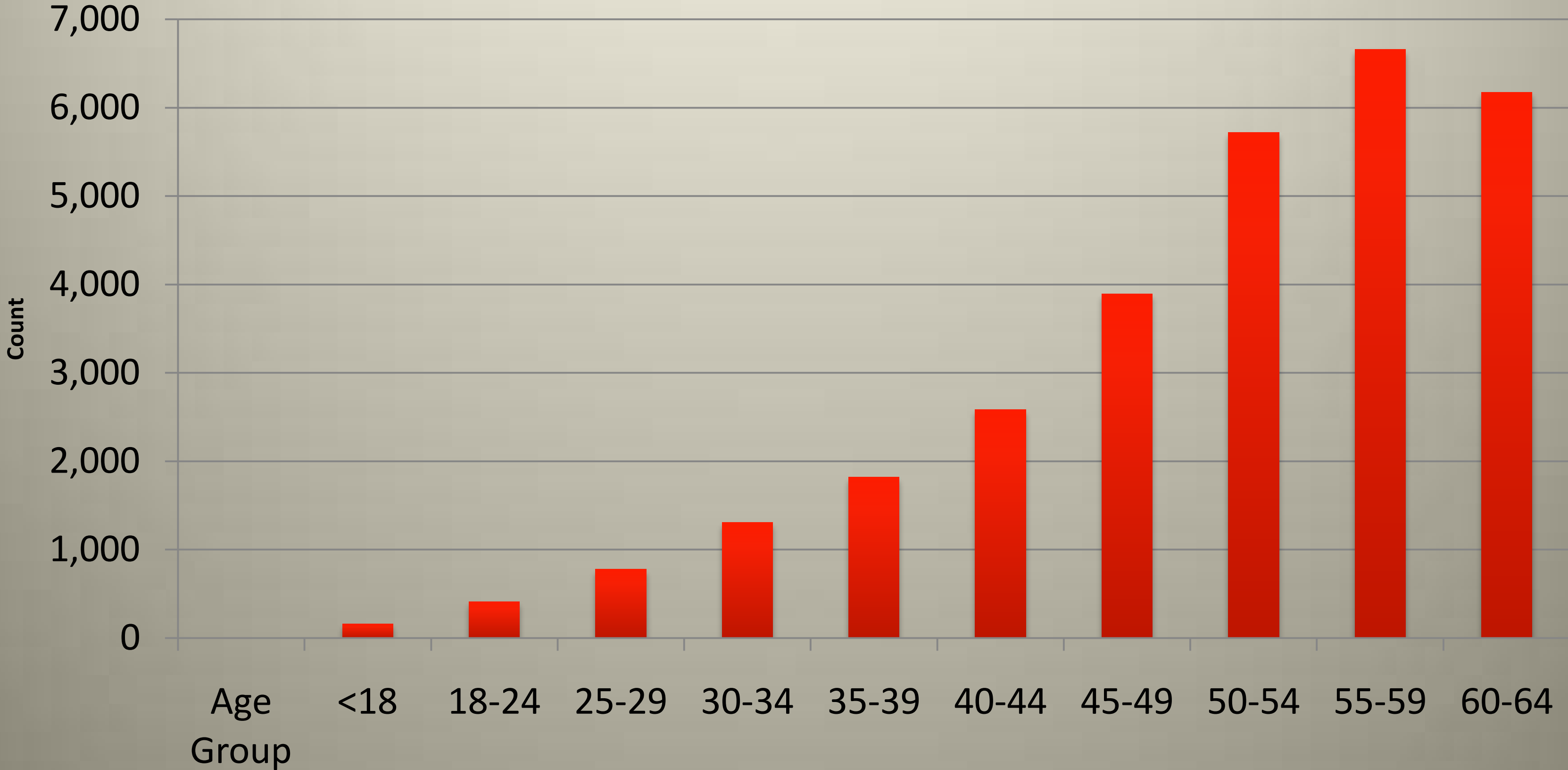
HIGH BLOOD PRESSURE: THE BURDEN IN UTAH

High Blood Pressure Prevalence



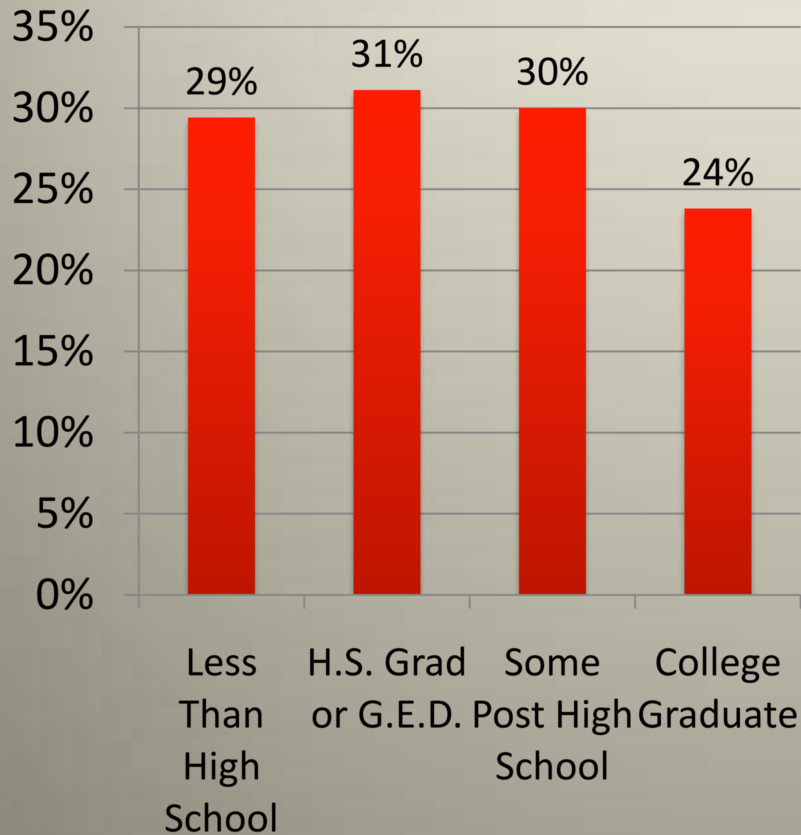
Source: Utah Behavioral Risk Factor Surveillance Survey

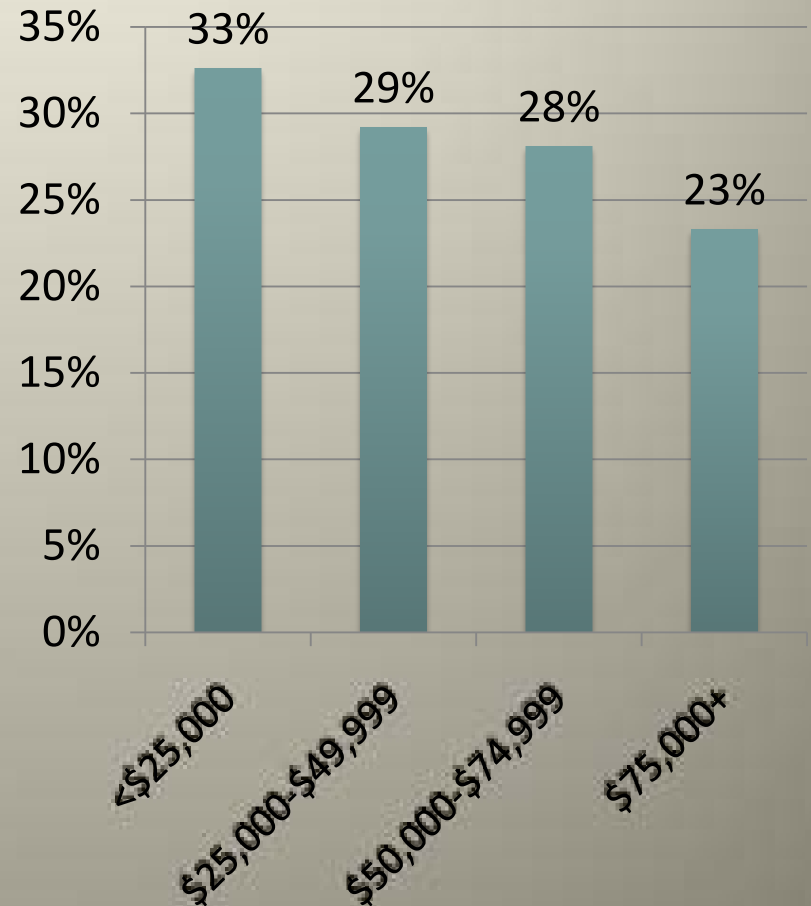
High Blood Pressure Diagnoses



Source: Utah All-Payer Database, ICD 9 Codes 401-405

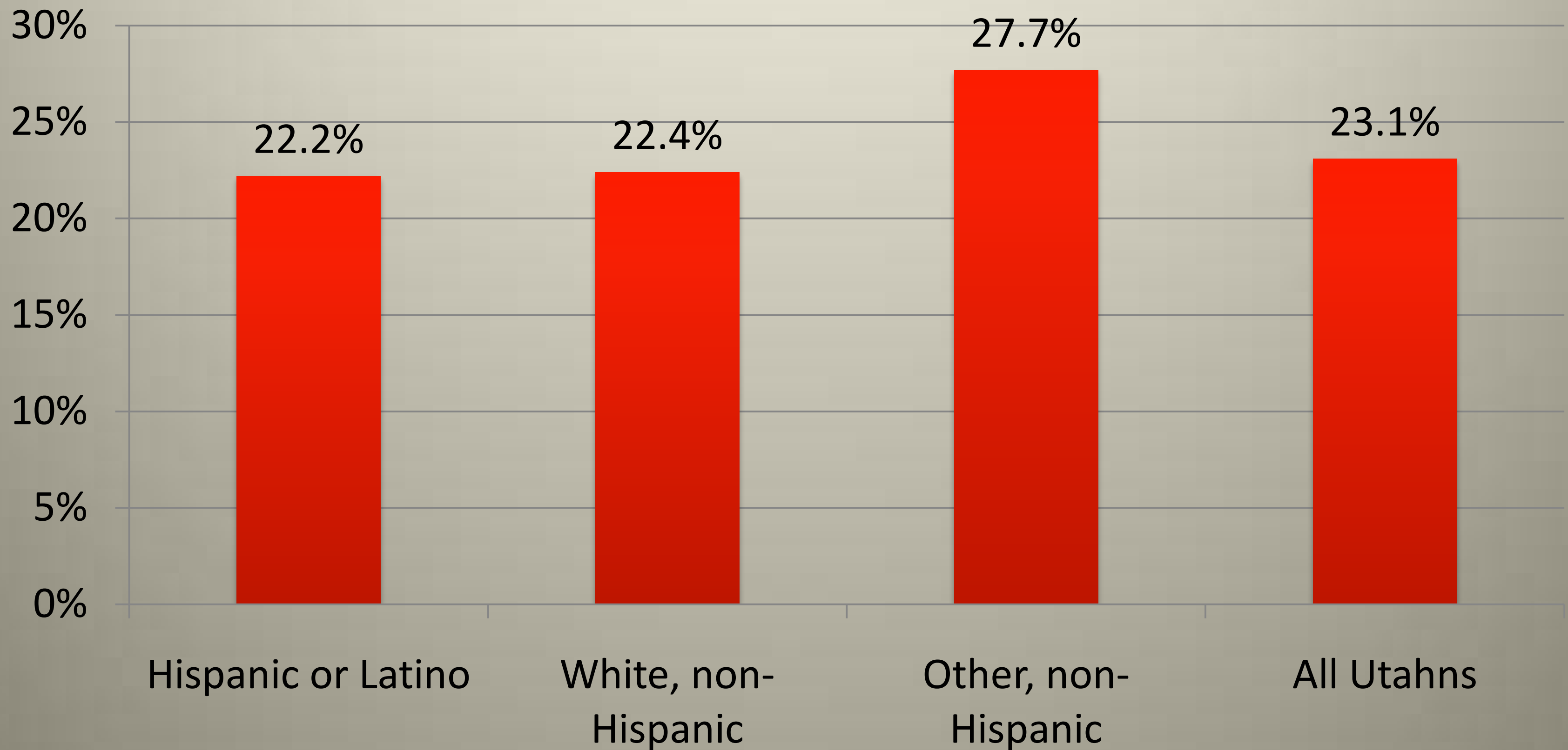
High Blood Pressure Prevalence





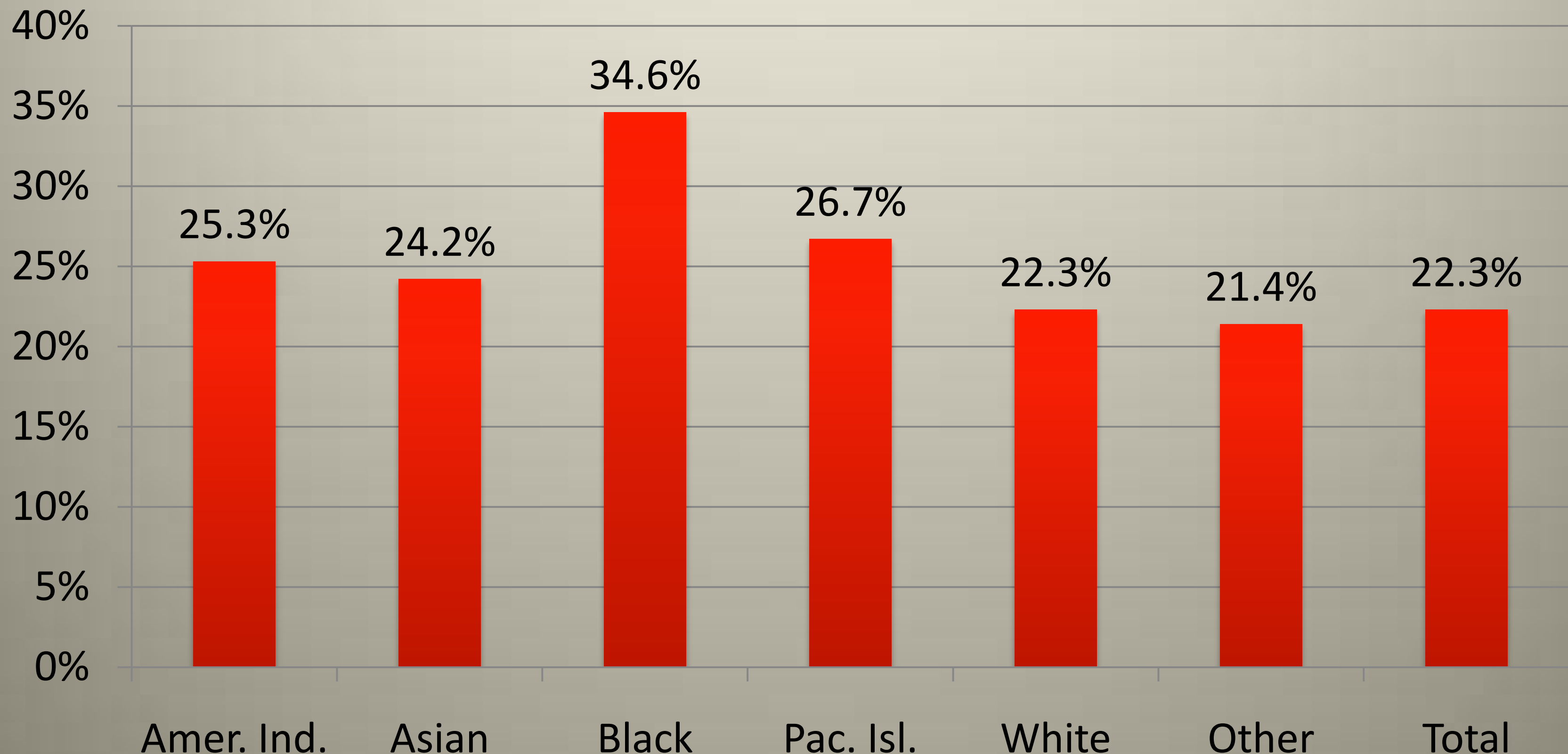
Source: Utah Behavioral Risk Factor Surveillance Survey. Age-adjusted to 2000 U.S. Standard Population.

High Blood Pressure Prevalence



Source: Utah Behavioral Risk Factor Surveillance Survey. Age-adjusted to 2000 U.S. Standard Population.

High Blood Pressure Prevalence



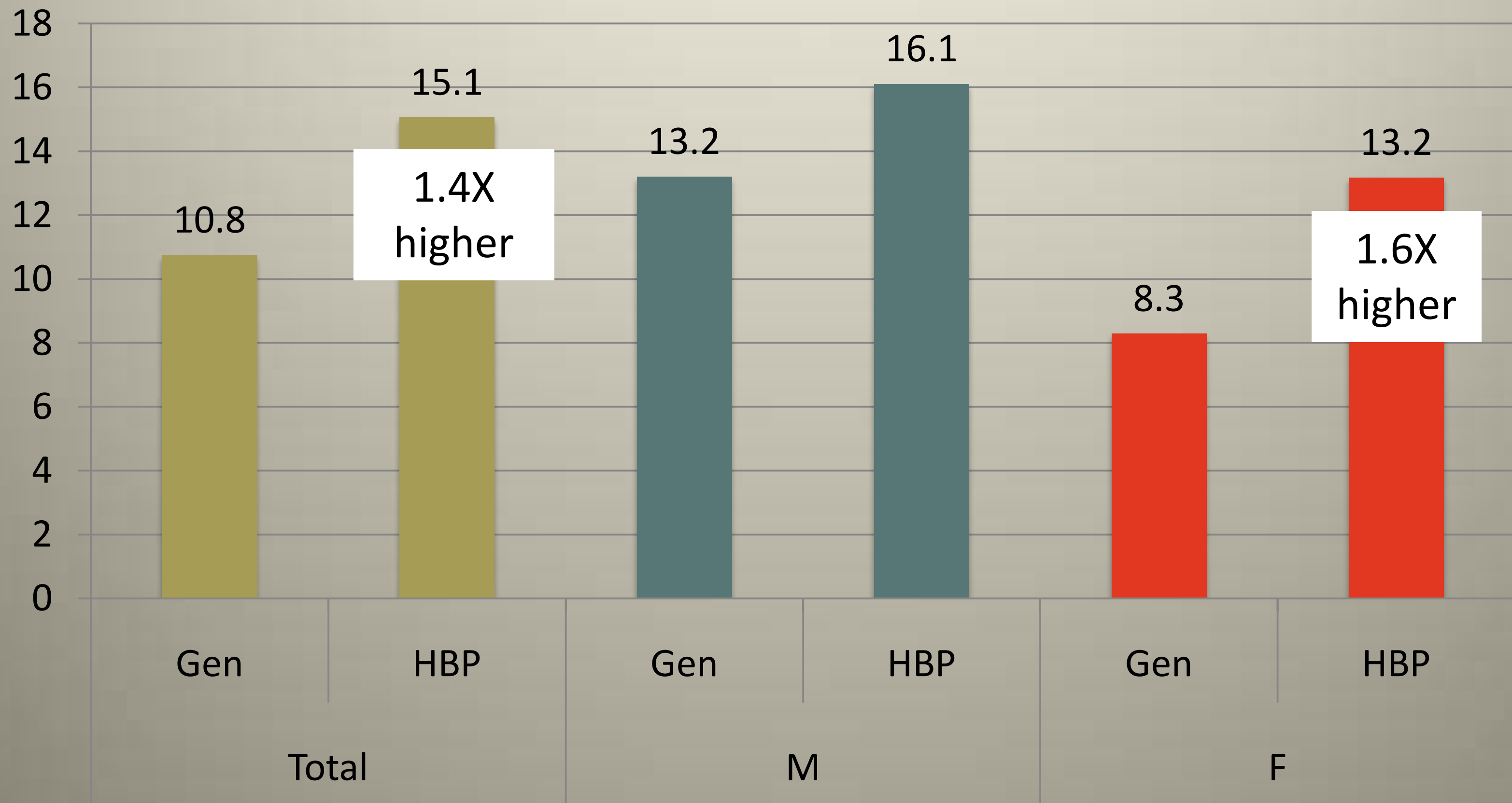
Source: Utah Behavioral Risk Factor Surveillance Survey. Age-adjusted to 2000 U.S. Standard Population.

A Sentinel Indicator for Disparities

- Nationally, high blood pressure is associated with racial and ethnic health disparities.
- These disparities occur along the entire spectrum from risk factors to the delivery of medical care.
- Targeting interventions toward a general population historically do not correct these inequities and can even worsen them.
- Because HBP is so closely linked to other risk factors associated with race and class, it can be useful in measuring the effectiveness of approaches to reduce health disparities.

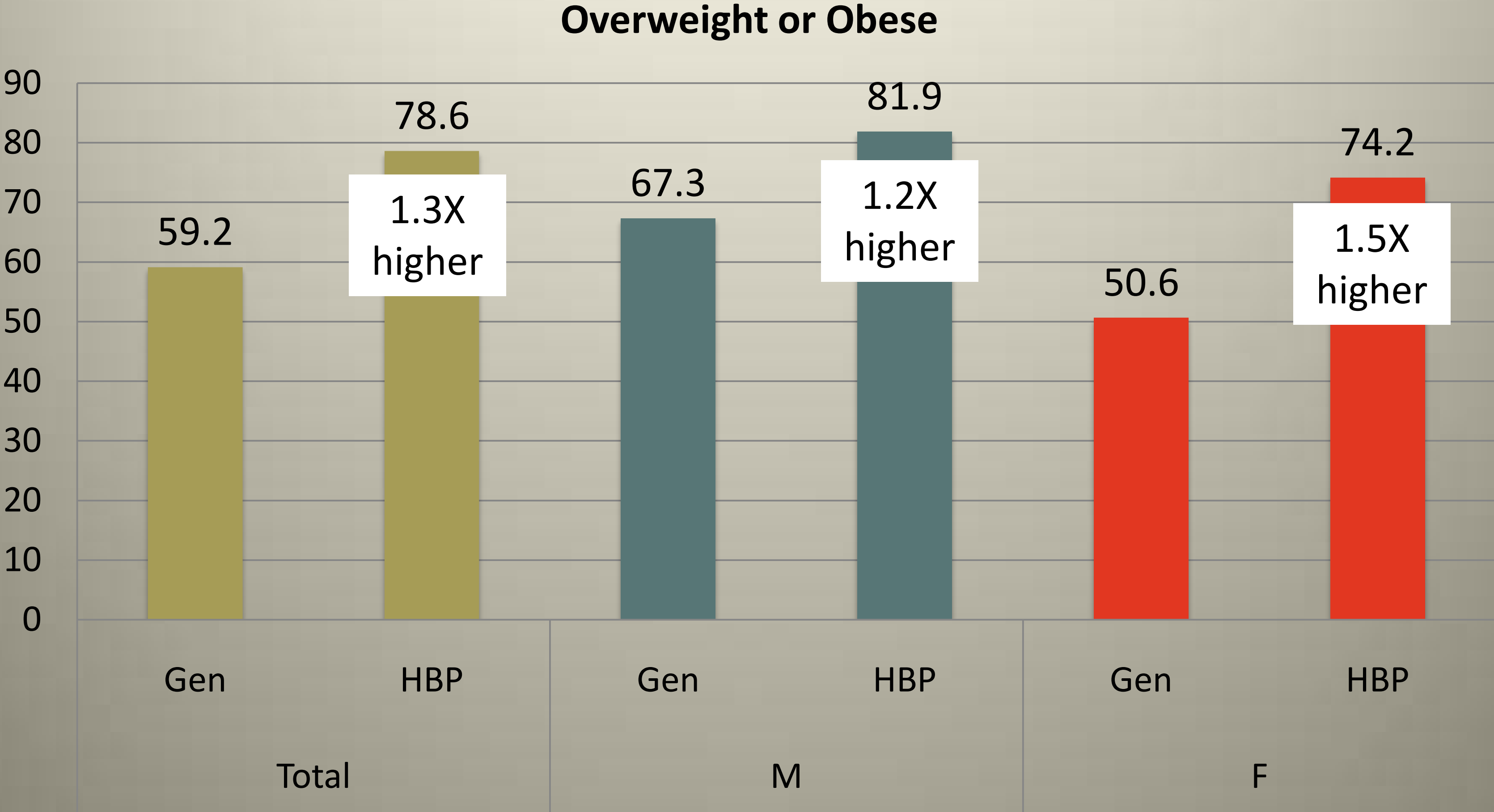
Source: IOM (Institute of Medicine). 2010. *A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington, DC: The National* Academies Press.

HBP and Co-Occurring Risk Behaviors



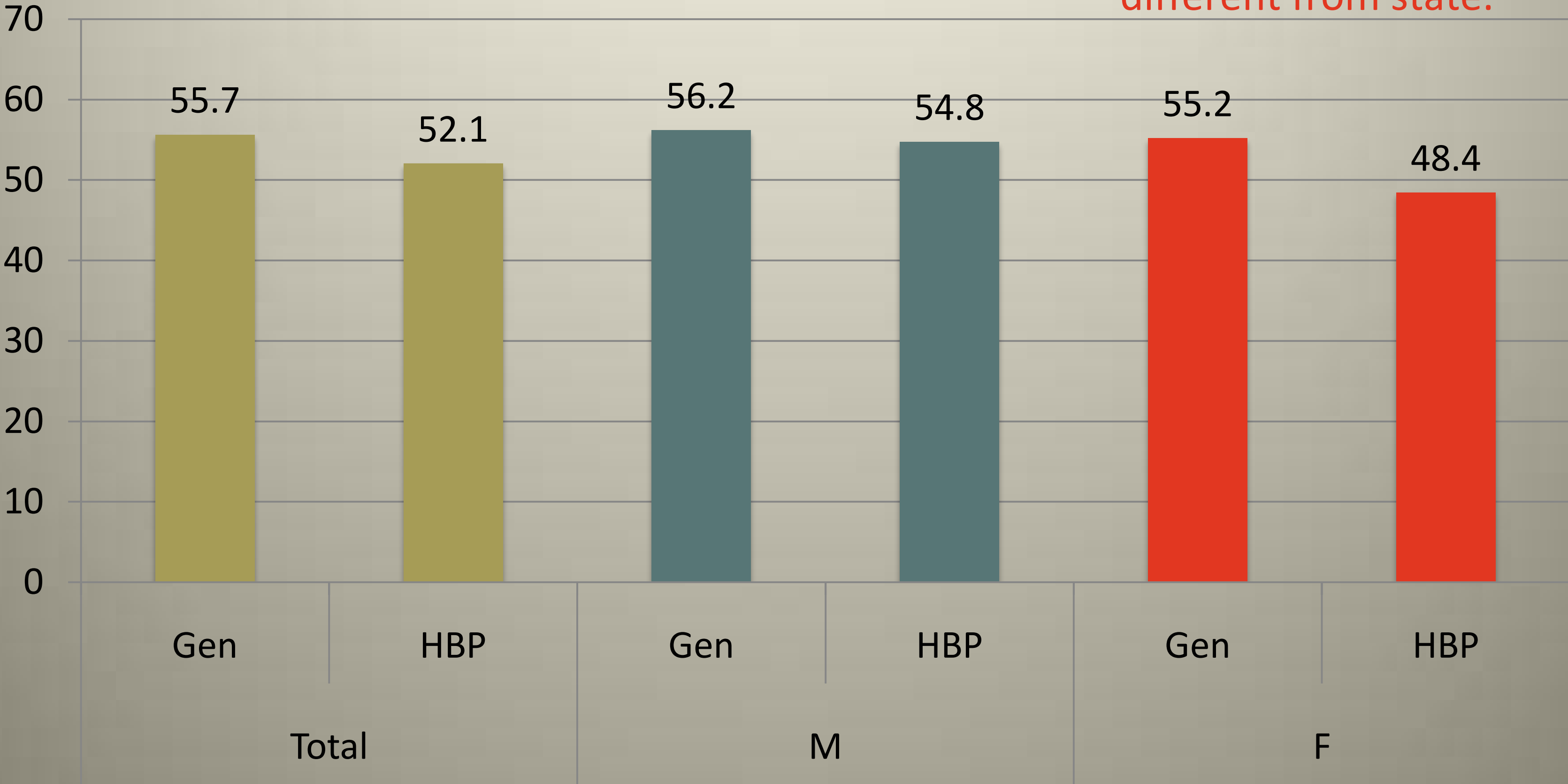
Source: Utah Behavioral Risk Factor Surveillance Survey, 2005, 2007, and 2009 combined years. Age-adjusted rates.

HBP and Co-Occurring Risk Behaviors



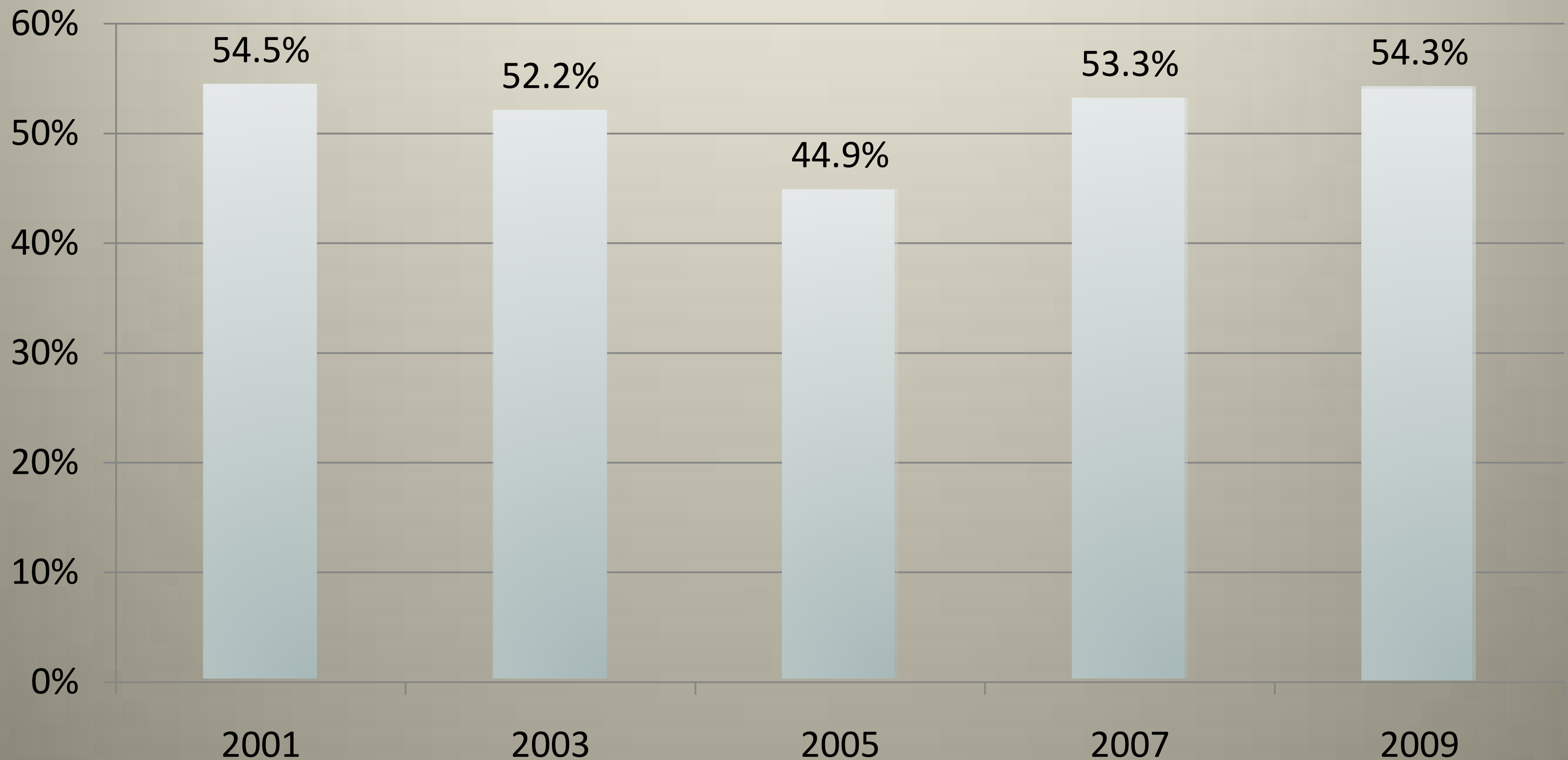
Source: Utah Behavioral Risk Factor Surveillance Survey, 2005, 2007, and 2009 combined years. Age-adjusted rates.

HBP and Co-Occurring Risk Behaviors



HBP and Co-Occurring Risk Behaviors

Taking Medication to Control HBP



Source: Utah Behavioral Risk Factor Surveillance System. Age-adjusted to 2000 U.S. Standard Population.

HBP in Utah: Conclusions

- Although HBP is associated with age, many factors influence its distribution across other demographic groups. Older, lower-income, less-educated, and racial and ethnic minority populations bear a higher burden. Approaches targeting the "general" population are unlikely to resolve disparities.
- The health care system must use comprehensive evidence-based approaches to support lifestyle change and medical management to adequately address the high prevalence of co-occurring risk factors and co-morbid conditions among people with HBP.
- Public health agencies and partners must continue to advocate for policies and processes that improve high blood pressure prevention and control.

HBP in Utah: Conclusions

- HBP continues to be a challenging area for state-level surveillance. We need to push for increased access to clinic-level data, such as blood pressure levels, in order to truly estimate the prevalence and control of high blood pressure.

"Knowing is not enough; we must apply.
Willing is not enough; we must do."

-Goethe

Sodium Reduction: State and Local Action Opportunities to Reform the Norm

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Sodium Reduction: A Public Health Imperative

- Excess sodium intake is a primary risk factor for high blood pressure.
- Most of the sodium in our food supply is invisible in processed and restaurant foods. Consumers have little control over the amount of sodium in their diet.
- It can be difficult for even the most motivated consumer to reduce sodium intake.

IOM (Institute of Medicine). 2005. Dietary Reference Intakes for Water, Potassium, Sodium Chloride, and Sulfate. Washington, DC: The National Academies Press.

Sodium and High Blood Pressure

- Increased sodium in the diet → increased blood pressure → increased risk for heart attack and stroke.
  - Generally, lower consumption of salt means lower blood pressure.
  - Within weeks on average, most people experience a reduction in blood pressure when salt intake is reduced.
- Even people with blood pressure in the optimal range benefit from sodium reduction and reduced risk for heart attack and stroke.
- Reducing sodium = reducing mortality.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Sodium Reduction: A Public Health Imperative

- Sodium reduction can have a significant impact on reducing disparities and cardiovascular disease events.

- Reducing sodium in the food supply is the best population-based strategy to reduce the prevalence of high blood pressure.

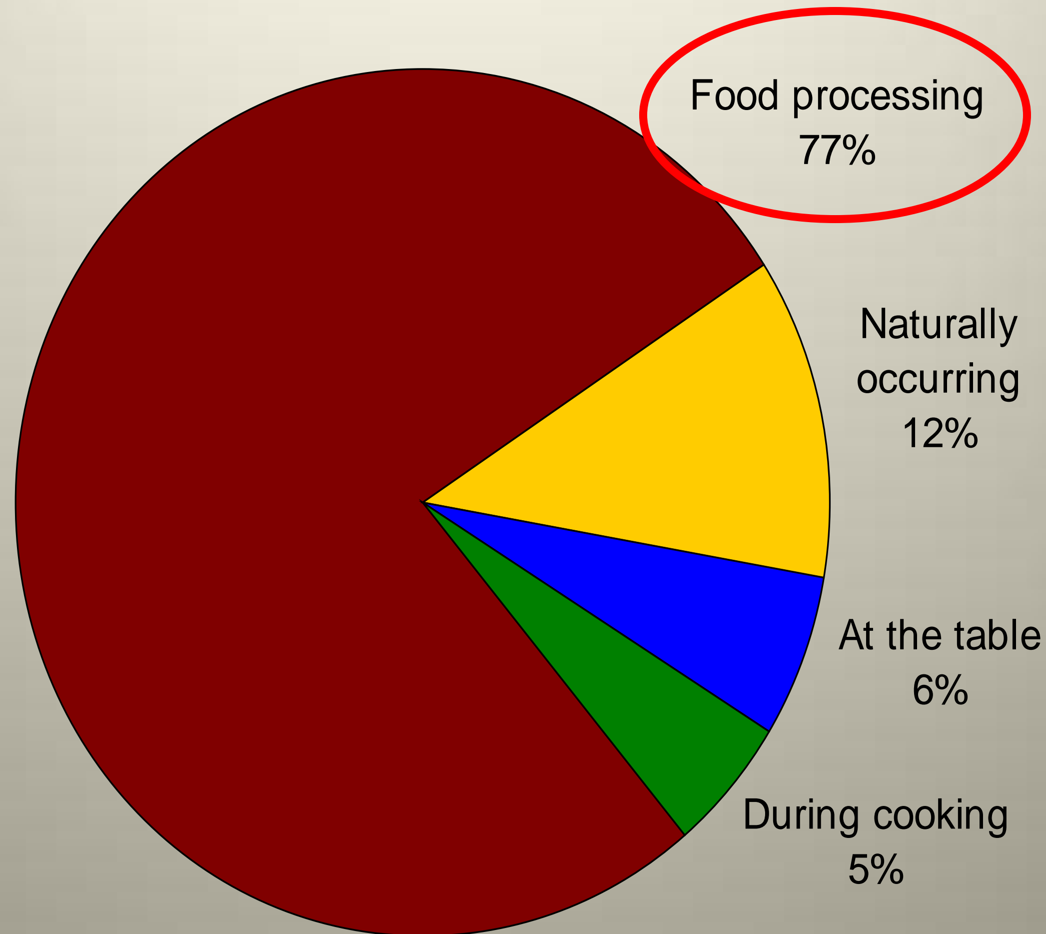
From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Sodium Intake Recommendations

- The 2005 *Dietary Guidelines for Americans* recommend less than 2,300 mg per day for the general population.
  - For specific populations—70 percent of U.S. adults—limit intake to 1,500 mg per day.
- Average daily sodium intake for U.S. adults is more than 3,400 mg per day.

IOM (Institute of Medicine). 2005. Dietary Reference Intakes for Water, Potassium, Sodium Chloride, and Sulfate. Washington, DC: The National Academies Press. Centers for Disease Control and Prevention. Application of lower sodium intake recommendations to adults—United States,1999–2006. MMWR. 2009;58(11):281–3. U.S. Department of Agriculture. What we eat in America. Available from http://www.ars.usda.gov/service/docs.htm?docid=15044

Sources of Sodium



Mattes RD, Donnelly, D. Relative contributions of dietary-sodium sources. J Am Coll Nutr. 1991 Aug;10(4):383-93.

Why Action is Needed at State and Local Levels

- Strong scientific evidence supports the need for population-wide sodium reduction due to the harmful impact of sodium on blood pressure.
- Individual behavior change is difficult.
- The most effective population approach to reducing sodium intake is to reduce the sodium content of restaurant and processed foods, which contribute the vast majority of sodium in the food supply.
- All current approaches are voluntary.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Estimated Effects on HBP Prevalence and Related Costs from Sodium Reduction

- Reducing average population intake to 2,300 mg per day (current recommended limit) may…
  - Reduce cases of HBP by 11 million.
  - Save $18 billion in health care spending.
  - Gain 312,000 quality-adjusted life years (QALYs).
- Even fewer cases of HBP and more dollars saved if intake was reduced to 1,500 mg per day (recommended maximum level for "specific populations").

Palar K, Sturm R. Potential societal savings from reduced sodium consumption in the U.S. adult population. Am J Health Promot. 2009 Sep-Oct;24(1):49-57.

Global Sodium Reduction

- Not just a public health issue for the United States.
  - HBP is the primary contributor globally to heart disease and stroke.
- Reformulation of products has occurred in other countries.
  - Sodium content of identical products in other countries can be significantly lower.
- Some countries, such as the United Kingdom, Australia, and Canada, are leading the way in sodium-reduction efforts.
- Sodium reduction and tobacco control = recommendations to improve health in developing countries .

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

International: Product Variability

Burger King Double Whopper

	Sodium per serving	Sodium per 100 gm
Brazil	1,300 mg	349 mg
Australia	1,153 mg	321 mg
US	1,090 mg	291 mg
Germany	1,010 mg	285 mg
Canada	980 mg	263 mg
UK	875 mg	246 mg
Italy	819 mg	231 mg

Kellogg's Special K

	Sodium per serving	Sodium per 100 gm
Canada	270 mg	931 mg
Mexico	260 mg	867 mg
US	220 mg	710 mg
France	200 mg	450 mg
Italy	200 mg	450 mg
UK	100 mg	450 mg
Turkey	200 mg	400 mg

World Action on Salt and Health.

What Has Been Done to Reform the Norm Abroad?

Several countries have taken action on sodium reduction.

- **Finland:** The country's initiatives have resulted in a significant decrease in average population salt intake.
- **United Kingdom:** Average sodium intake in the population has already been reduced by 360 mg.
- **Australia:** Salt database that includes more than 7,000 items identified large variations in the salt content of similar products offered by different companies.
- **Canada:** Sodium Working Group formed in 2007 to work on a national strategy to reduce sodium consumption.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

National Salt Reduction Initiative

- New York City Department of Health and Mental Hygiene has launched a nationwide effort to reduce the level of salt in processed and restaurant foods.
- The partnership includes more than 40 cities, states, and public health organizations.
- The department is working with food industry representatives on a voluntary framework to reduce the salt in their products.
- Initial sodium reduction benchmarks have been set for 61 categories of packaged foods and 25 categories of restaurant foods.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

What Has Been Done to Reform the Norm in the United States?

- State and local activity:
  - Communities Putting Prevention to Work.
  - Los Angeles County.
- Baltimore City: Salt Reduction Task Force.
- Massachusetts and New York City: Procurement policies.
- Seattle/King County and others: Menu labeling.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Sodium Landscape

- IOM's "Strategies to Reduce Sodium in the United States".
  - Lay the groundwork for action.
- Food and Drug Administration to review IOM recommendations and work with other agencies and organizations.
- Enhanced surveillance of sodium in foods and foods consumed.
- Fiscal Year 2009 congressional language.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Potential State and Local Strategies

- Procurement policies (federal, state, local, organizational).
- Support voluntary reduction efforts that include benchmarks and accountability (such as NYC).
- Labeling requirements.
- Venue-based approaches.
- Consumer awareness campaigns.
- Letter-writing campaigns.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Healthier Food Environment = Healthier Population

- Changing the food environment gives consumers a broader range of healthful foods from which to choose.
- Policy and environment strategies are effective at the state and local level and help drive demand for federal action.
- One of the most promising strategies to decrease the prevalence of heart disease and stroke is to lower sodium content of processed and restaurant foods.
- Sodium reduction will benefit most Americans.

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Additional Resources

- CDC's Division for Heart Disease and Stroke Prevention Salt Web page
  http://www.cdc.gov/salt

- Institute of Medicine, *Strategies to Reduce Sodium in the United States*
  http://www.iom.edu/sodiumstrategies

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.

Additional Resources

- NYC's National Salt Reduction Initiative
  http://www.nyc.gov/html/doh/html/cardio/cardio-salt-initiative.shtml

- Baltimore City's Salt Reduction Task Force Recommendations
  http://www.baltimorehealth.org/info/2009_09_30_SaltTaskForceReport.pdf

- Seattle/King County's Nutrition Labeling
  http://www.kingcounty.gov/healthservices/health/nutrition/healthyeating/menu.aspx

From Centers for Disease and Control (2010). Sodium Reduction Awareness Tool.