



Obesity and diet among US adolescents

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NCHS Conference, August, 2015

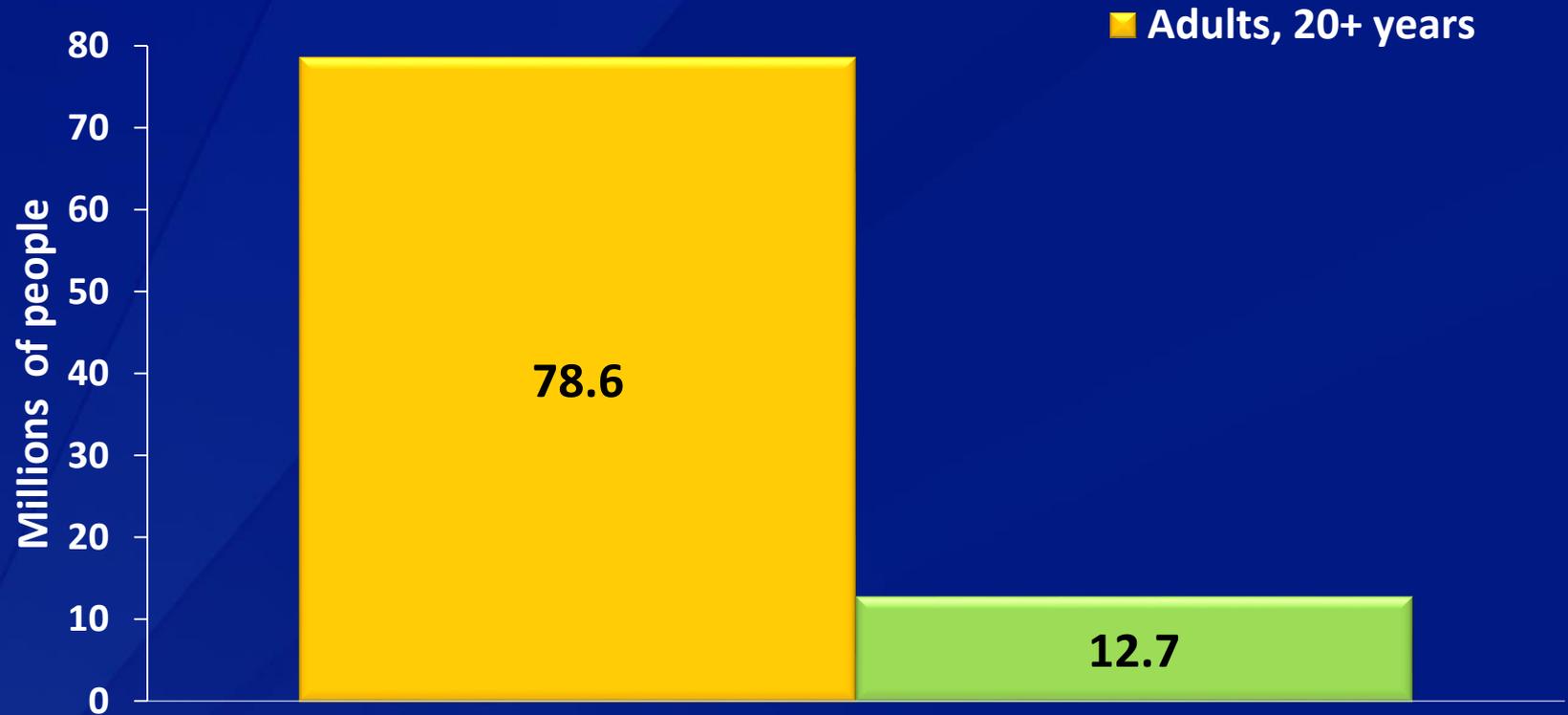
Prevalence of obesity in the US, 2011-2012

- 16.9% of children & teens 2-19 years
- 34.9% of adults ≥ 20 years



Source: CDC/NCHS, National Health and Nutrition Examination Survey, 2011-2012; Ogden et al. NCHS Data Brief 2013 and Ogden et al. JAMA 2014

90+ million obese individuals in the US



DATA SOURCE

National Health and Nutrition Examination Survey (NHANES)



Complex multi-stage probability sample of the US civilian non-institutionalized population, all estimates have confidence intervals

Approximately 5,000 people surveyed each year

Survey Periods

<i>Survey</i>	<i>Dates</i>	<i>Ages</i>
NHES I	1960-62	18-79 years
NHES II	1963-65	6-11 years
NHES III	1966-70	12-17 years
NHANES I	1971-75	1-74 years
NHANES II	1976-80	6 mo.-74 years
NHANES	1982-84	6 mo.-74 years
NHANES III	1988-94	2 mo. +

Note: NHES, National Health Examination Survey

Continuous NHANES, All ages

Dates

1999-2000

2001-2002

2003-2004

2005-2006

2007-2008

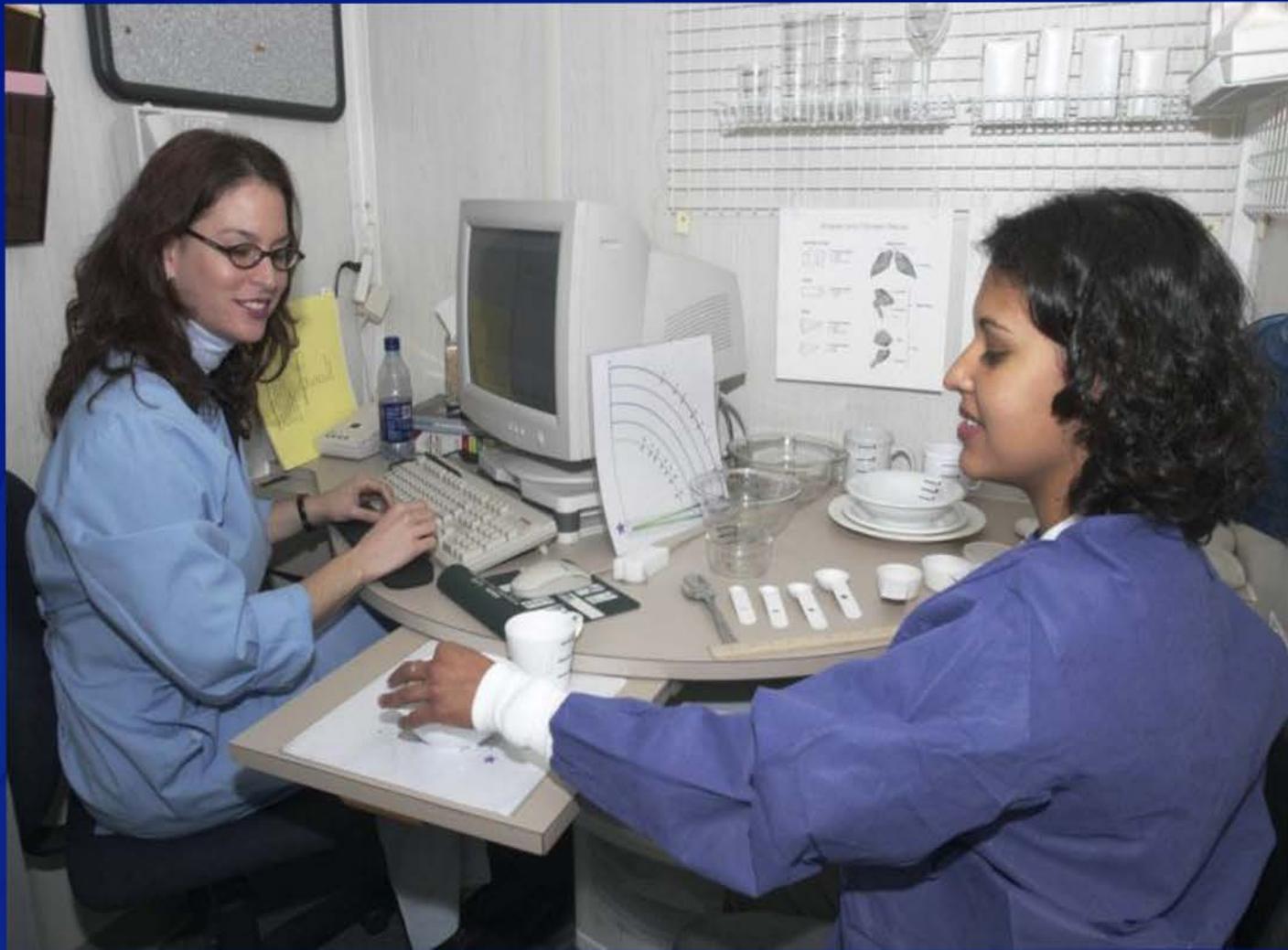
2009-2010

2011-2012

Anthropometry



Dietary information collected in interviews



DEFINITION OF OBESITY IN YOUTH

Obesity cut points for children and teens

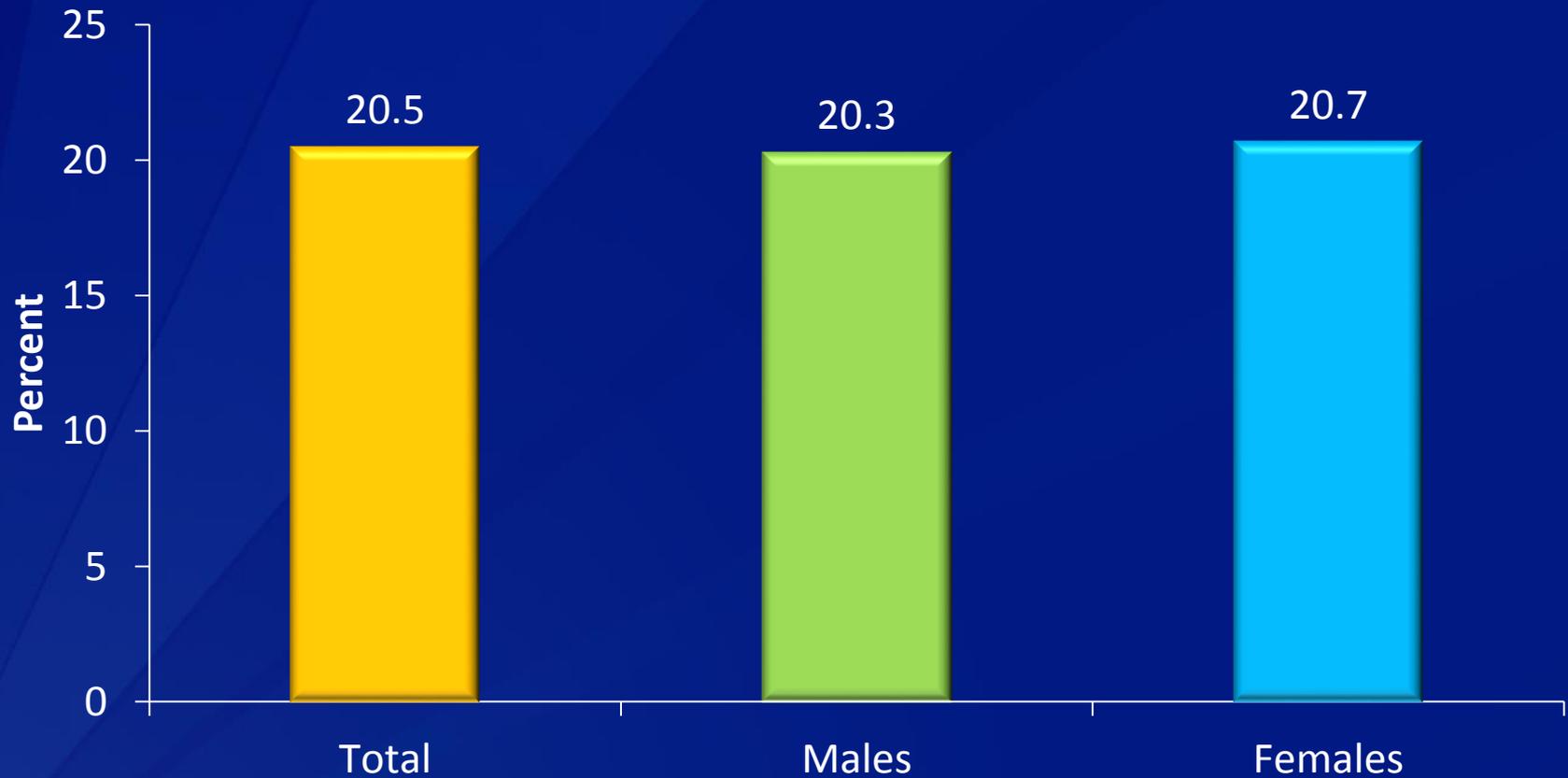
- **BMI (kg/m²) proxy for body fat**
- **No set risk-based cutoffs exist**
- **BMI varies with age and sex**
- **Statistical definition of obesity**
 - Based on BMI-for-age
 - Comparison to a reference population

CDC growth charts

- Data from US national surveys
- By definition:
 - 5% of youth each sex*age in 1960, 70, 80s were obese

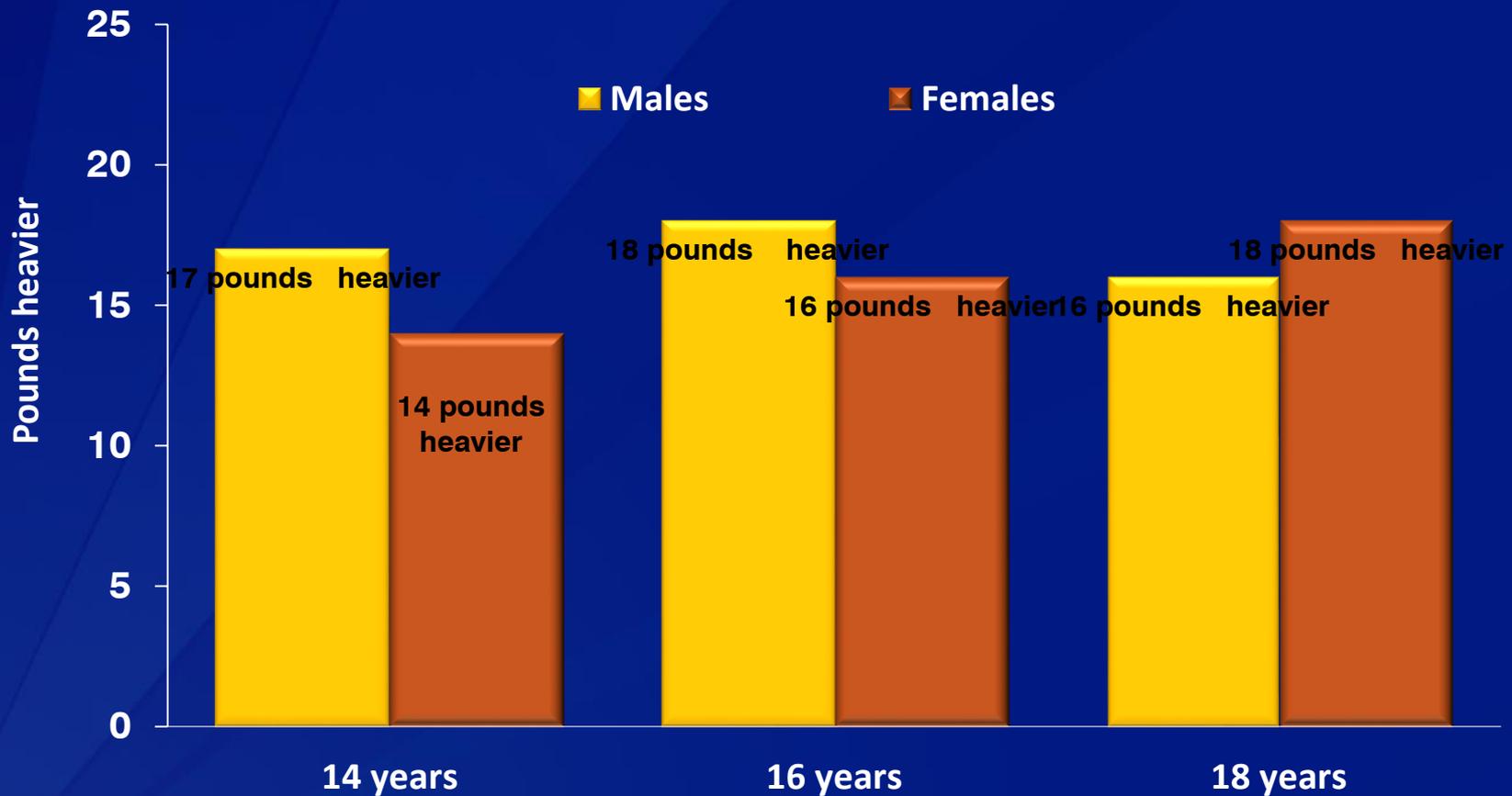
**OBESITY PREVALENCE:
ADOLESCENTS 12-19 YEARS**

One in 5 adolescents obese

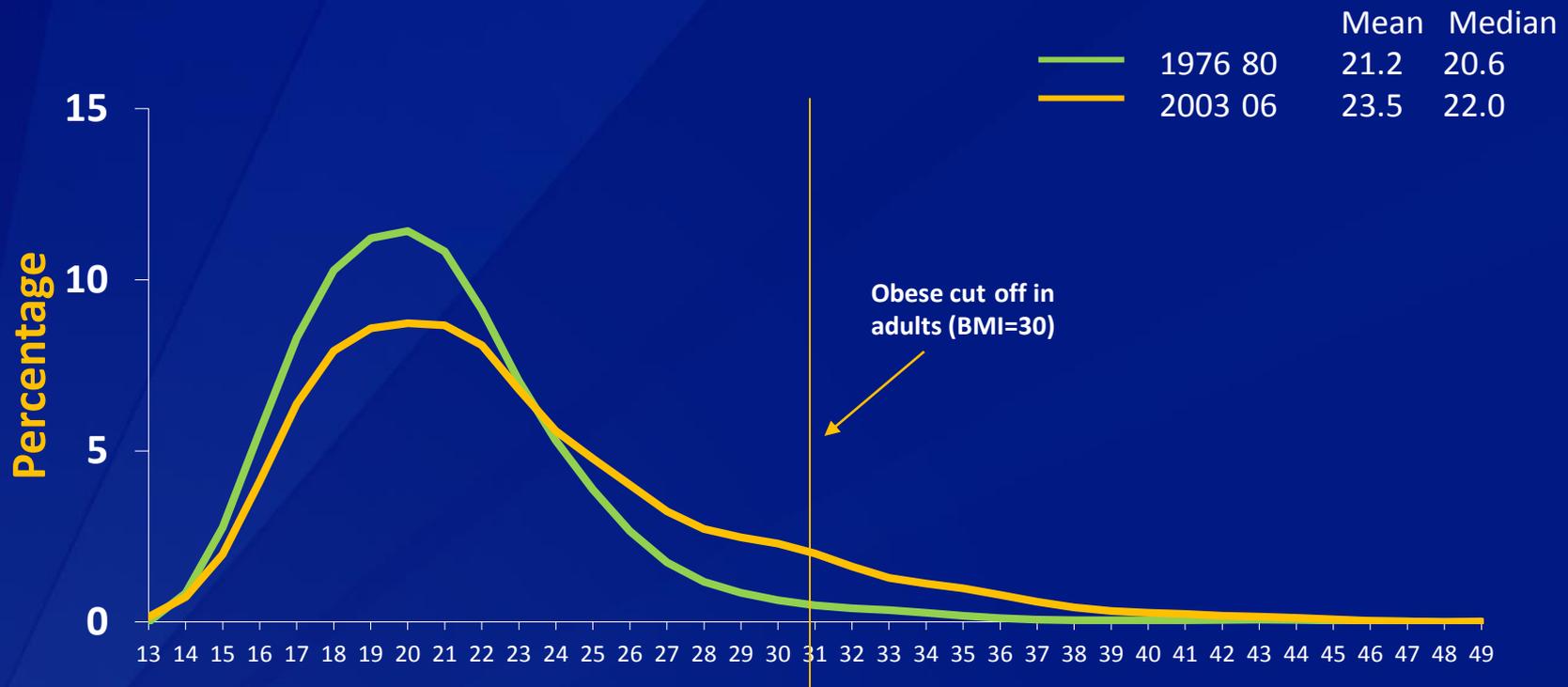


**OBESITY TRENDS:
ADOLESCENTS 12-19 YEARS**

American teens on average ~16 pounds heavier in 2007-2010 than in early 1970s

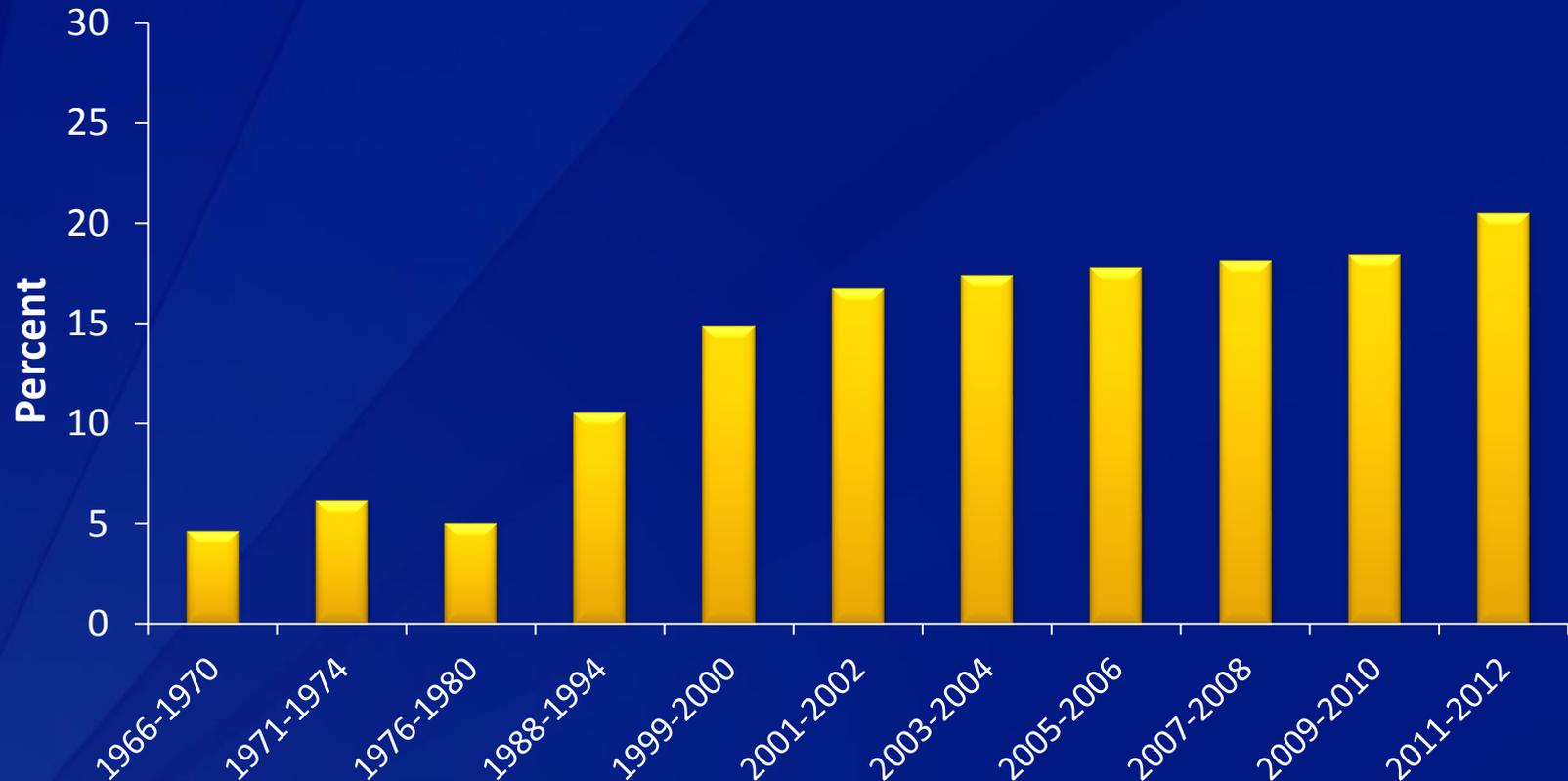


The distribution of BMI among adolescents shifted slightly to the right and became more skewed between 1976-80 and 2003-2006



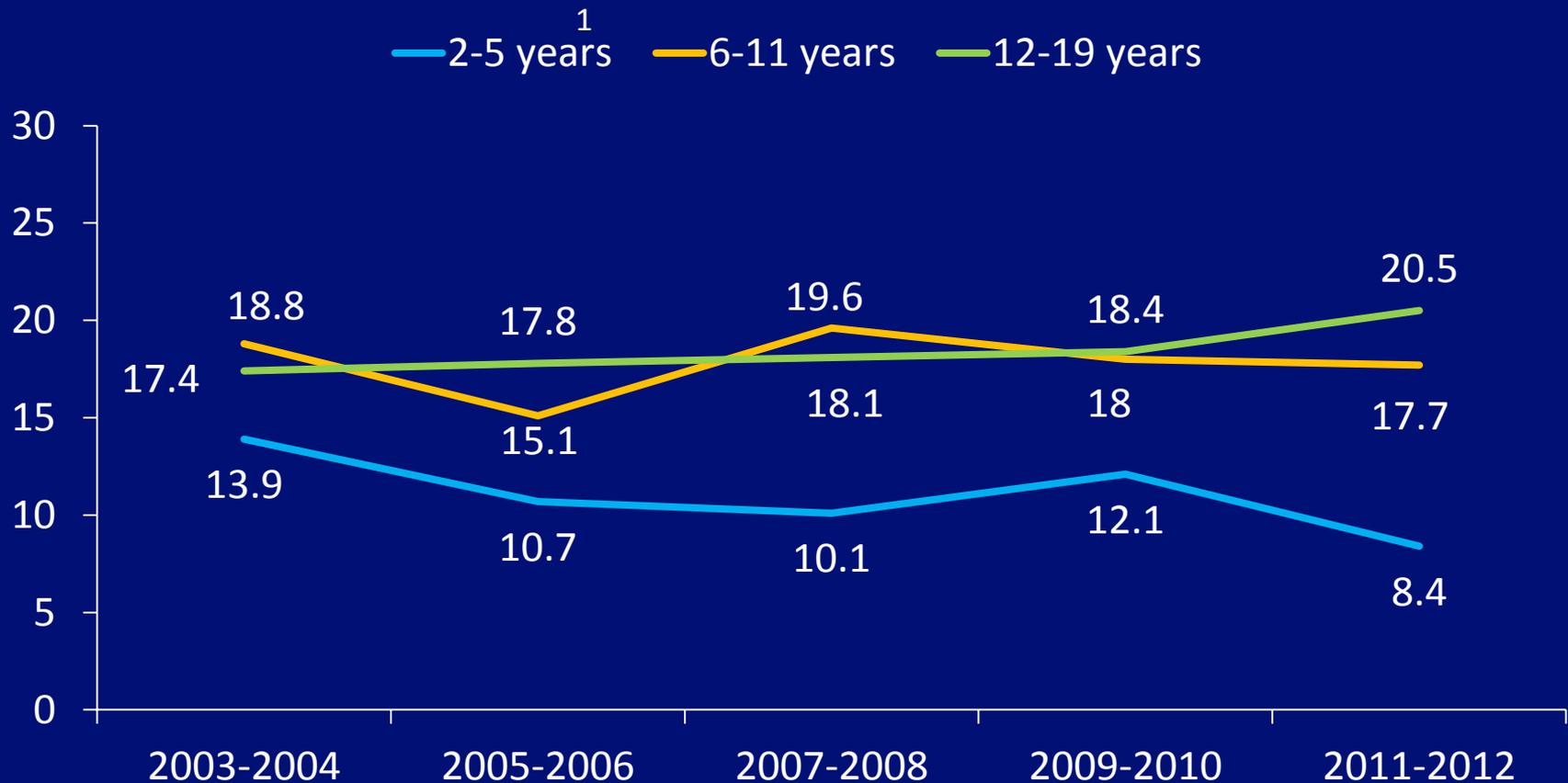
Sources: US National Health and Nutrition Examination Survey II 1976-1980; US National Health and Nutrition Examination Survey 2003-2006; Ogden et al. 2011 [Epidemiology of Obesity in Children and Adolescents; Springer Series on Epidemiology and Public Health Volume 2, pp 69-93](#)

Increase in obesity among teens in 1980s, 1990s and early 2000s



SOURCE: CDC/NCHS, National Health and Nutrition Examination Surveys;
http://www.cdc.gov/nchs/data/hestat/obesity_child_11_12/obesity_child_11_12.htm

Trends in obesity prevalence among youth 2-19 years, by age, US, 2003-2004 to 2011-2012

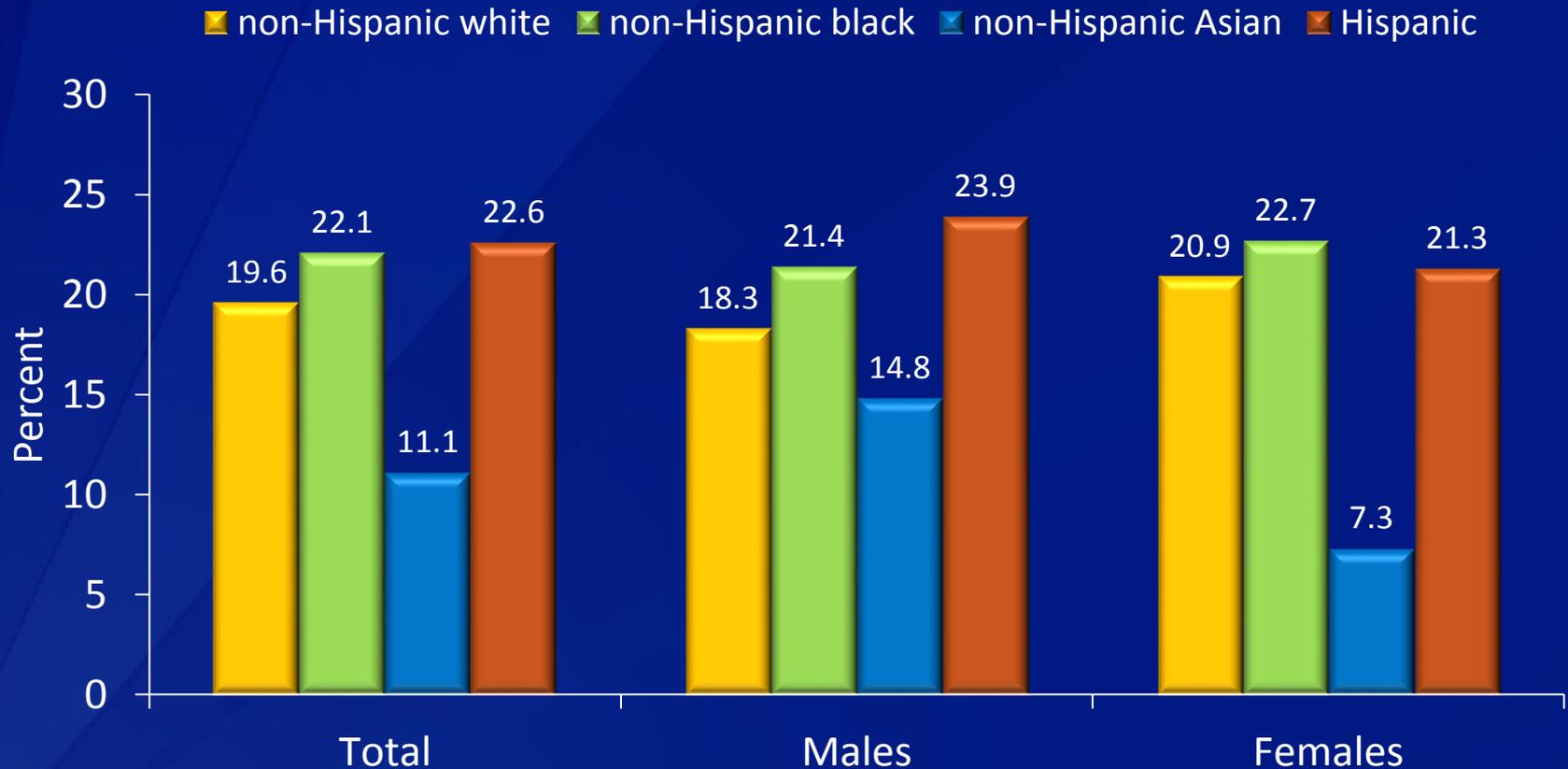


¹ p=.03 for linear trend

SOURCE: CDC/NCHS, National Health and Nutrition Examination Surveys; Ogden et al. 2014 JAMA

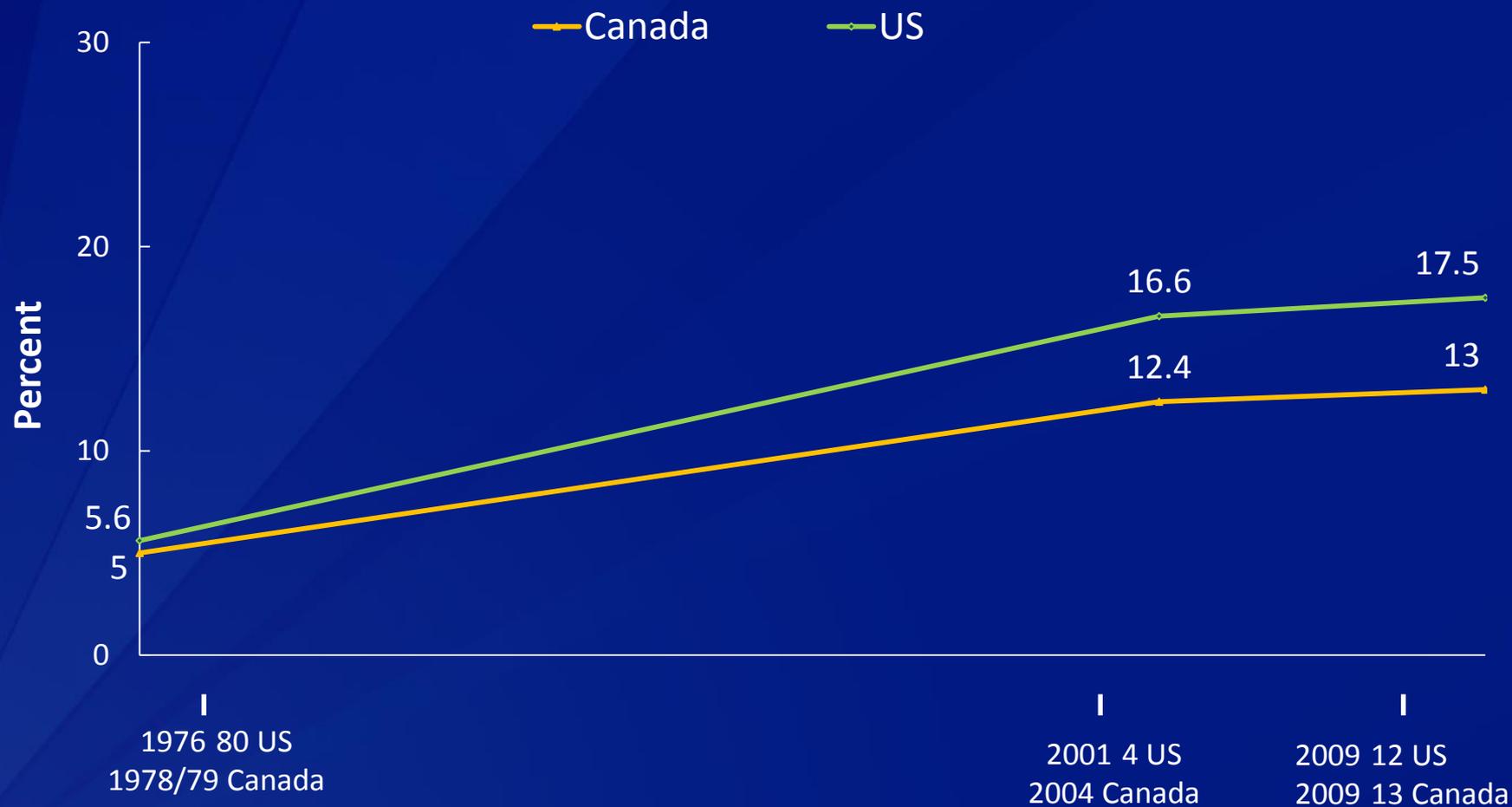
**DISPARITIES IN OBESITY PREVALENCE
AMONG US TEENS**

Prevalence of obesity by race/Hispanic origin, 12-19 years, 2011-2012



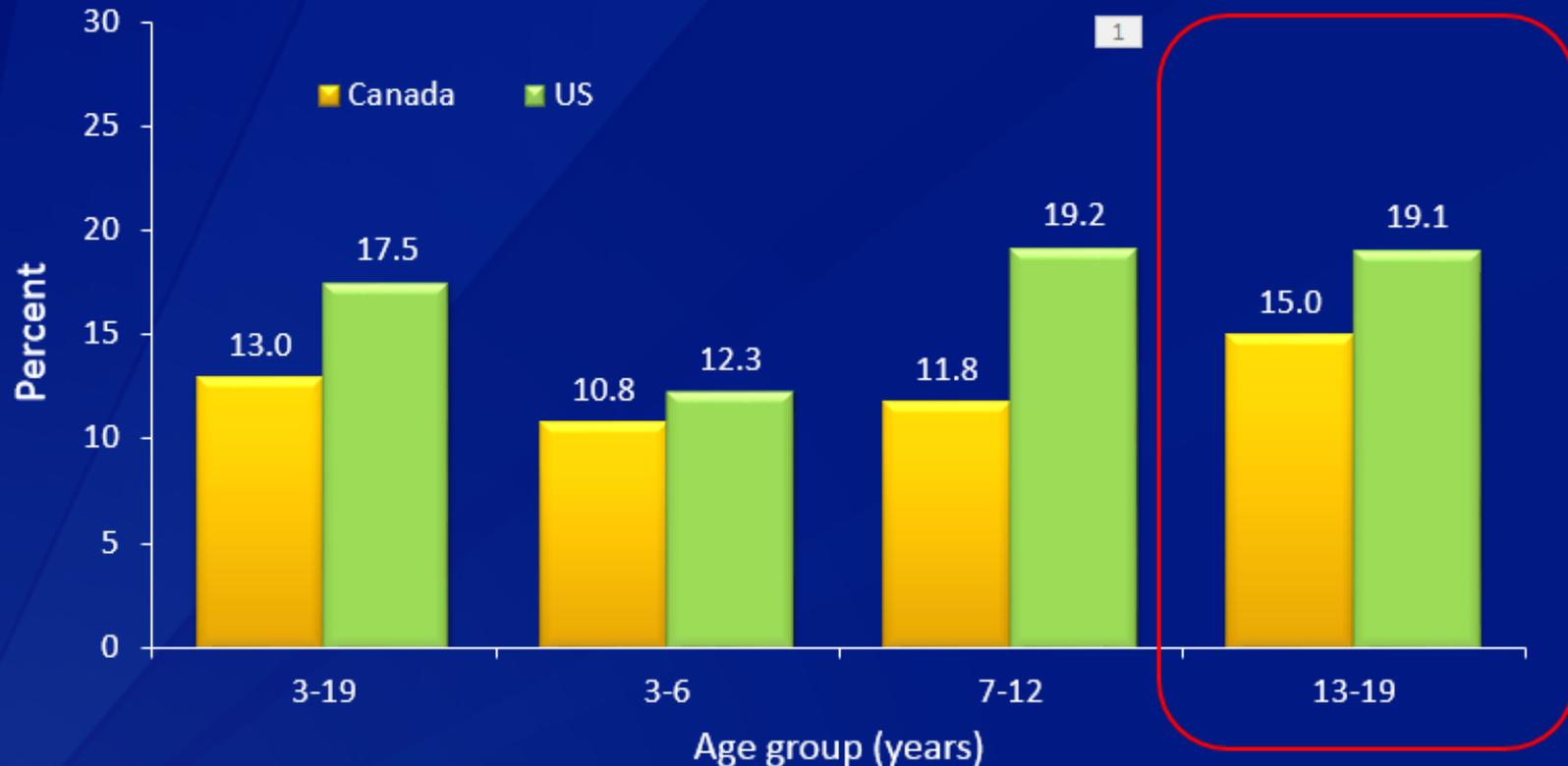
**HOW DOES THE US COMPARE TO
CANADA?**

Trends in childhood obesity prevalence, Canada and the United States, ages 3-19 years



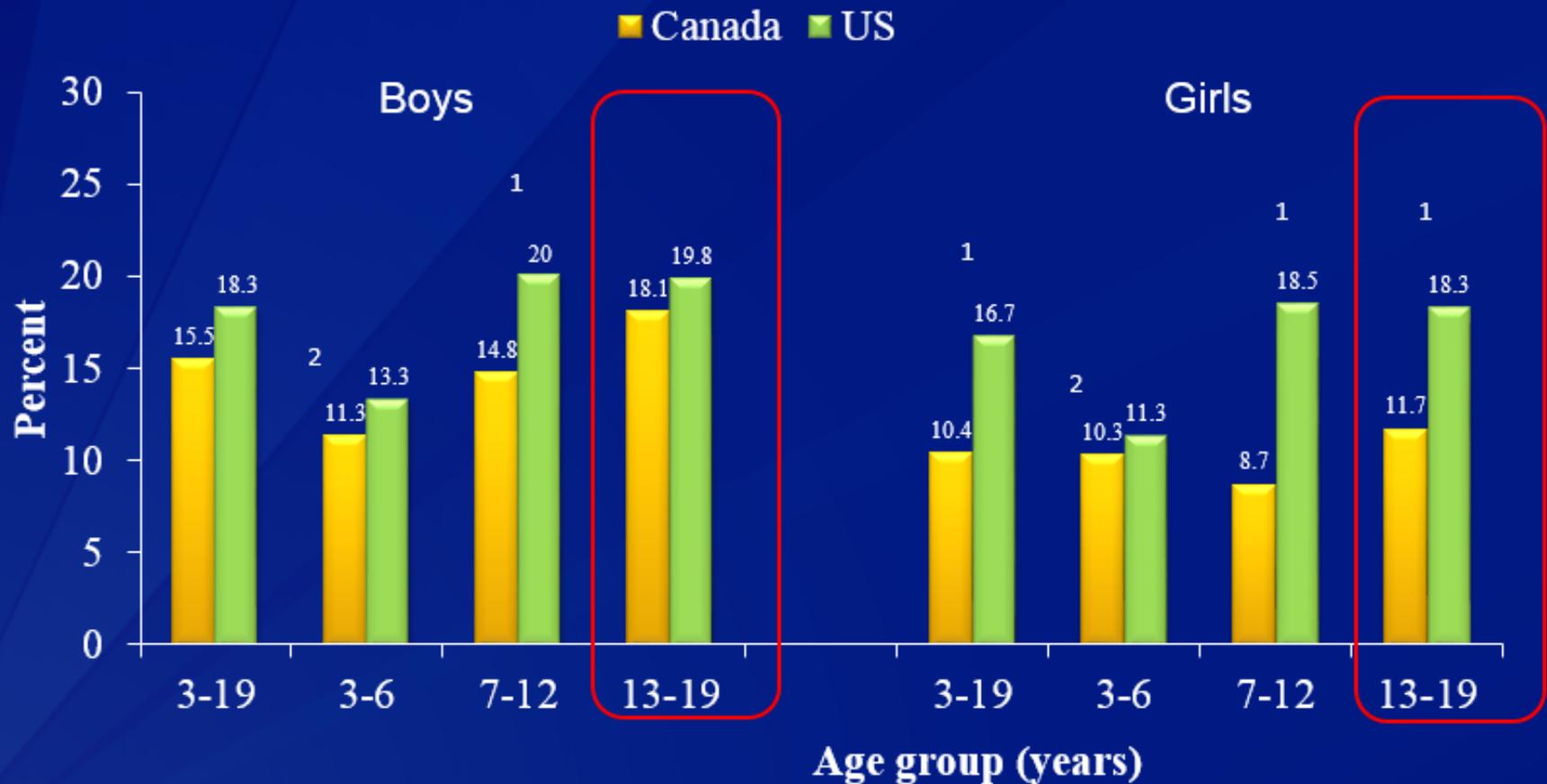
Notes: Pregnant girls are excluded. ¹Statistically significant difference compared to Canada $p < .001$ Sources: CDC/NCHS, National Health and Nutrition Examination Surveys, 1976-1980, 2001-2004, 2009-2012; Canada Health Survey 1978/79, Canadian Community Health Survey Nutrition 2004, Canadian Health Measures Surveys, 2009-2013; Carroll et al NCHS Data Brief 2015

Prevalence of childhood obesity, by age, 3-19 years, Canada (2009-2013) and the United States (2009-2012)



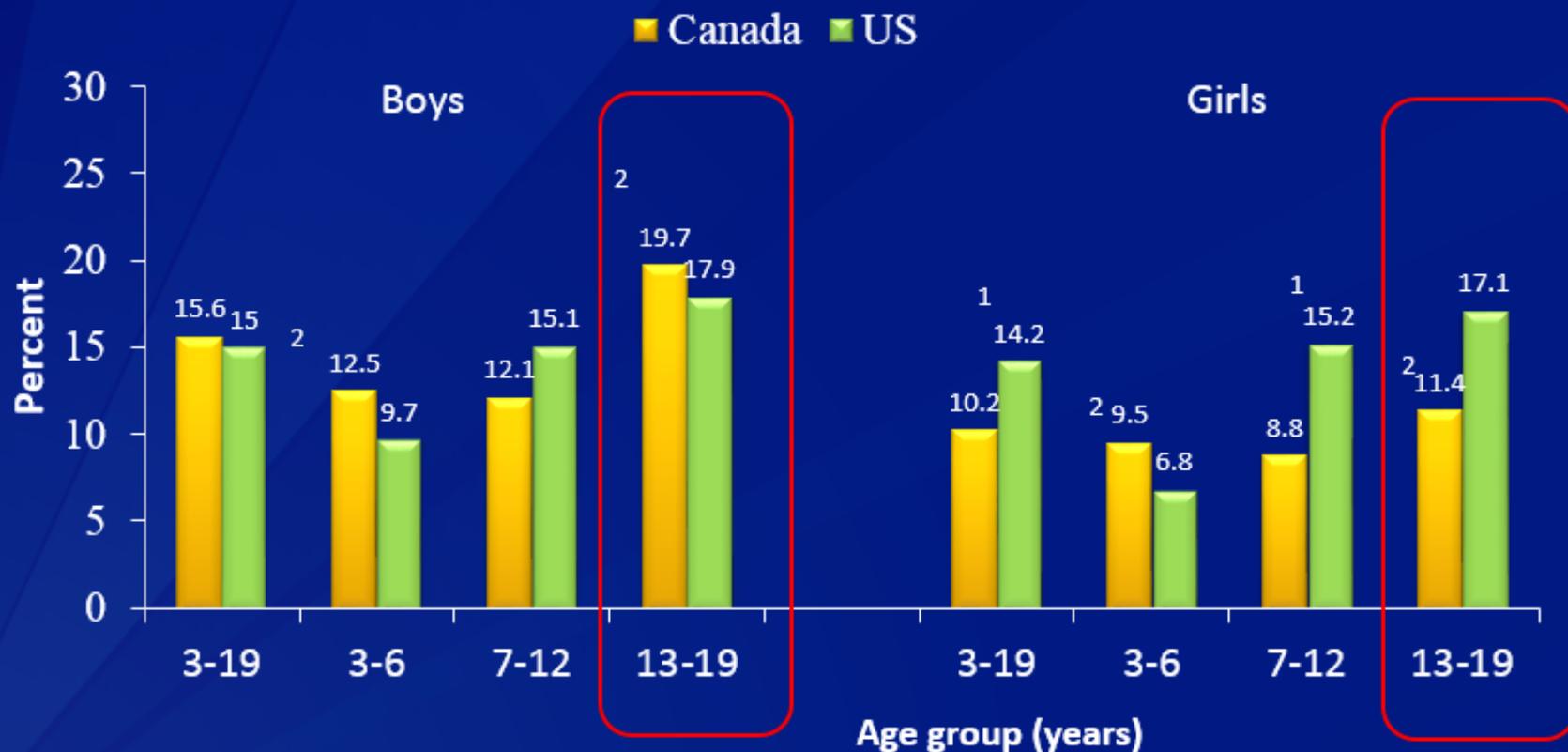
Notes: Pregnant girls are excluded. ¹Statistically significant difference compared to Canada p<.001. Sources: CDC/NCHS, National Health and Nutrition Examination Survey, 2009-2012; Canadian Health Measures Survey 2009-2013. Carroll et al NCHS Data Brief 2015

Prevalence of childhood obesity, by sex and age, 3-19 years, Canada (2009-2013) and the United States (2009-2012)



Notes: Pregnant girls are excluded.¹Statistically significant difference compared to Canada $p < .001$ ²Use with caution (coefficient of variation 16.6%–33.3%, For the Canadian Health Measures Survey). Sources: CDC/NCHS, National Health and Nutrition Examination Survey, 2009–2012; Canadian Health Measures Survey 2009–2013; Carroll et al NCHS Data Brief 2015

Prevalence of childhood obesity, non-Hispanic whites, by sex and age, 3-19 years, Canada (2009-2013) and the United States (2009-2012)



Notes: Pregnant girls are excluded. ¹Statistically significant difference compared to Canada $p < .001$ ²Use with caution (coefficient of variation 16.6% 33.3%).
 Sources: CDC/NCHS, National Health and Nutrition Examination Survey, 2009-2012; Canadian Health Measures Survey 2009-2013; Carroll et al NCHS Data Brief 2015

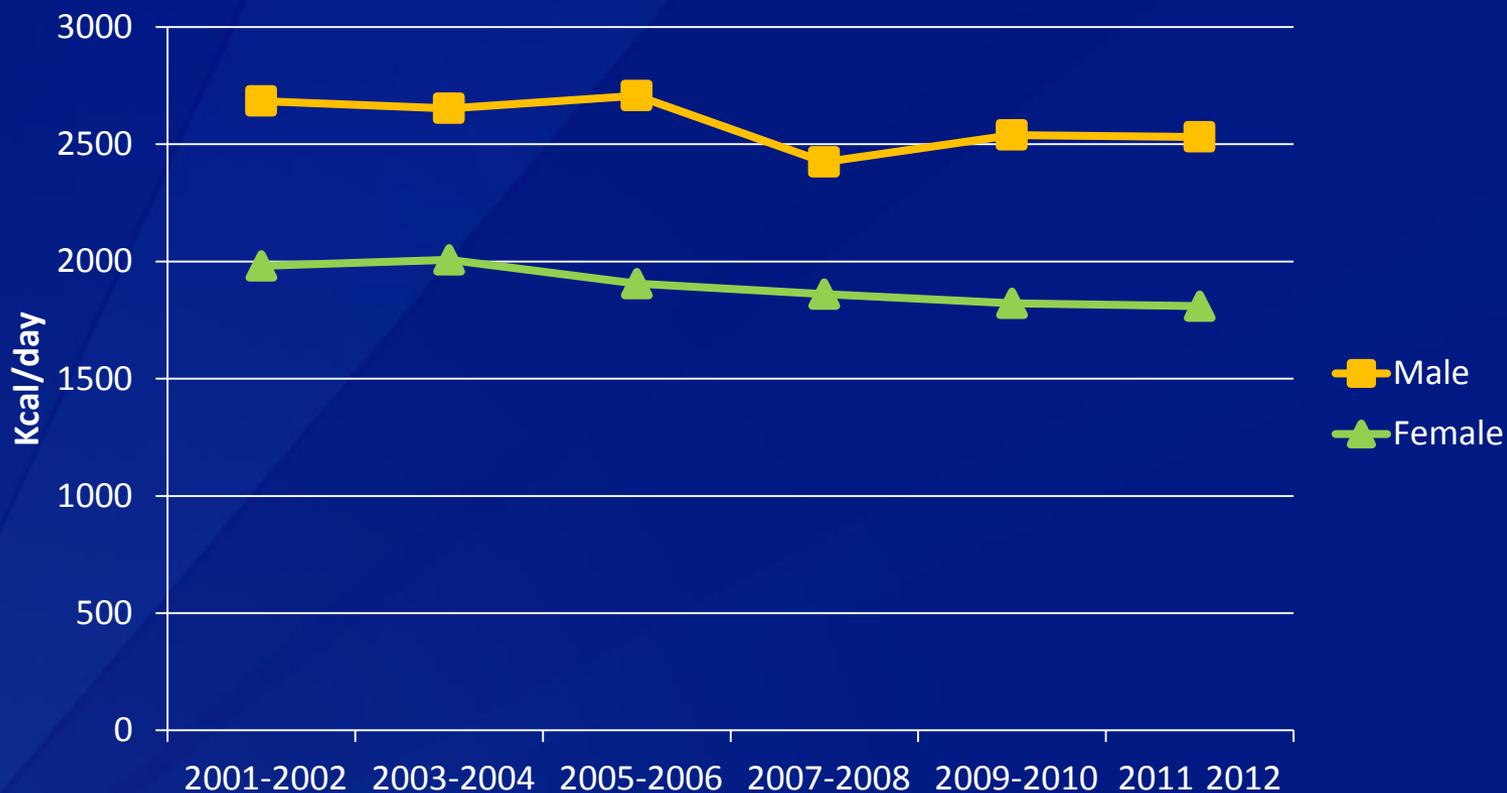
DIET



Per capita availability of calories



Trends in mean kilocalories, 12-19 years



Non-Hispanic white adolescents consume more than 40% of calories away from home

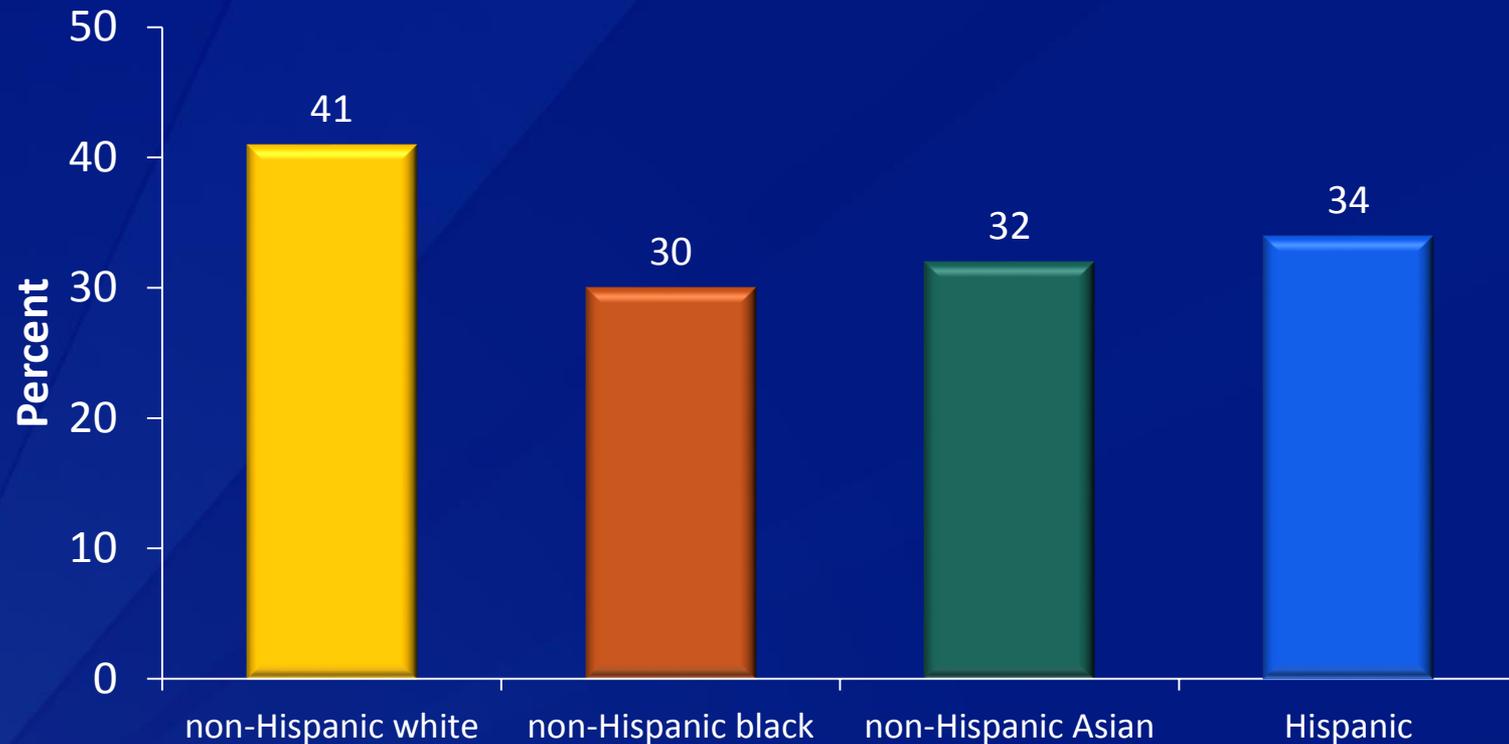
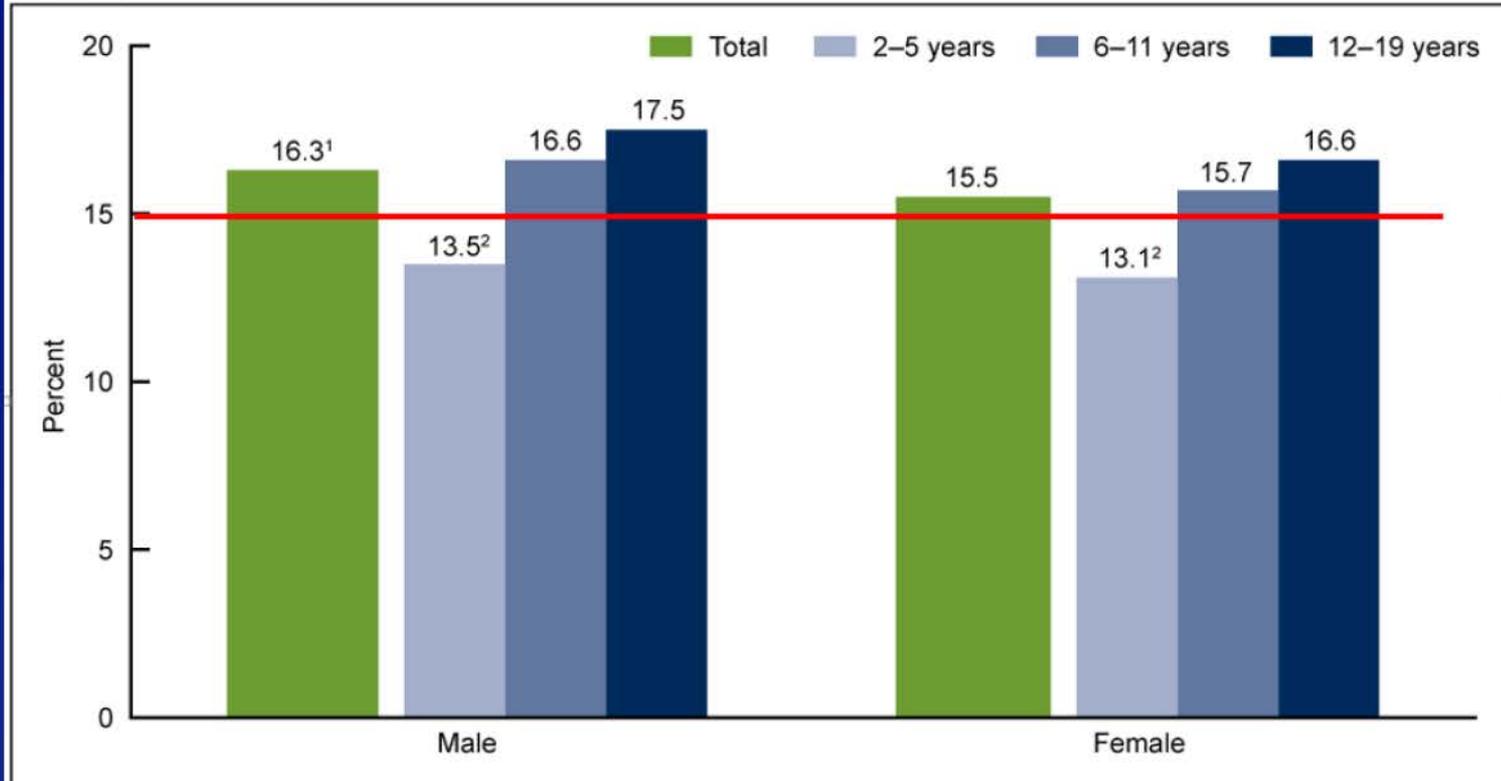


Figure 2. Mean percent of kilocalories from added sugars among children and adolescents aged 2–19 years, by sex and age group: United States, 2005–2008

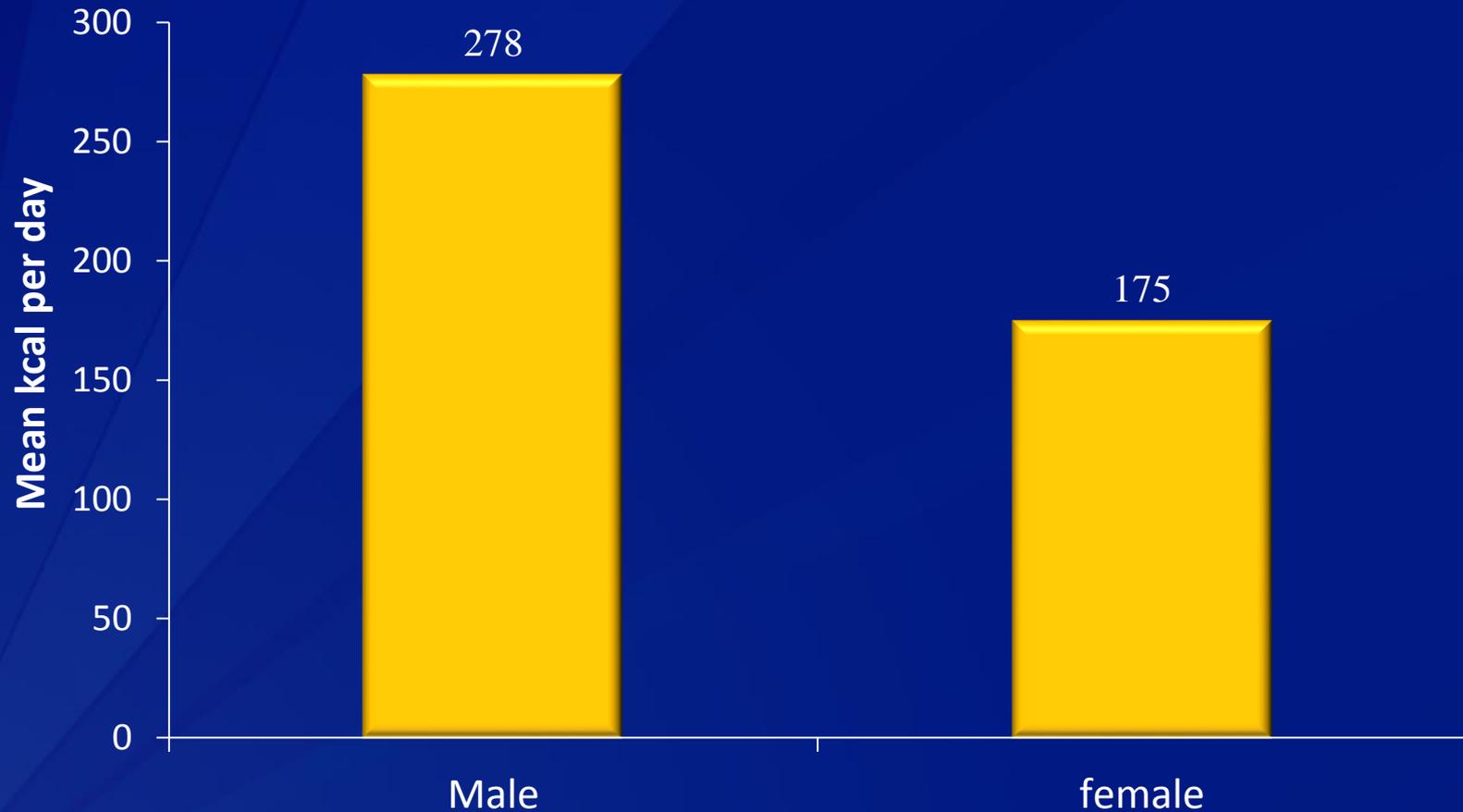


¹Significantly different from females, $p < 0.05$.

²Significant linear trend by age, $p < 0.05$.

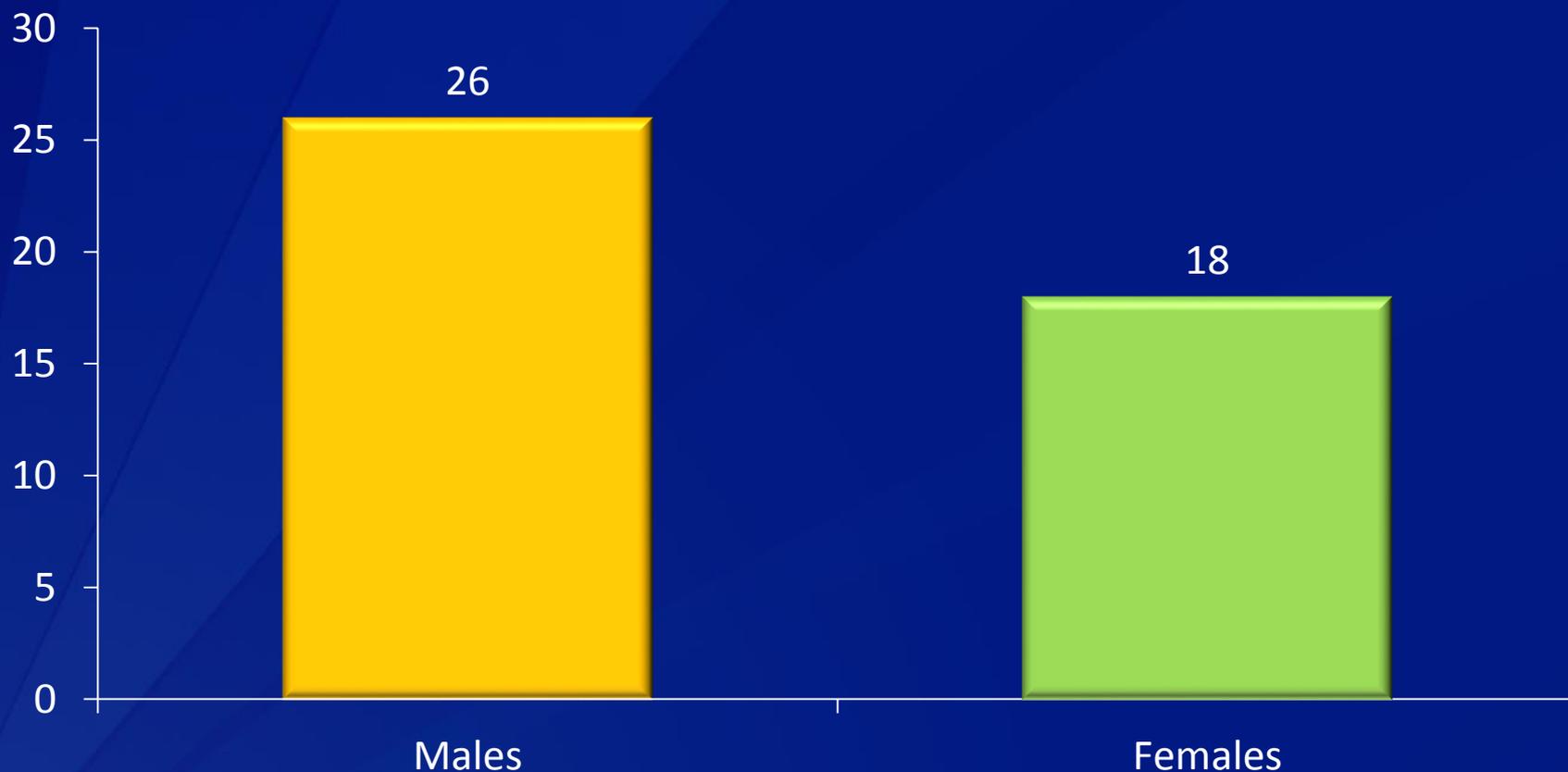
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2005–2008.

On average male teens consume 278 kcal a day from sugar sweetened beverages – almost 2 cans of cola



Source: CDC/NCHS, National Health and Nutrition Examination Survey, 2009-2010; Kit et al 2013 AJCN; http://ajcn.nutrition.org/content/98/1/180/T1_expansion.html

One quarter of adolescent males consume pizza on a given day



obesity and diet

Adolesce

- **Obesity**

- One in 5 teens
- Disparities, prevalence lowest among Asian Americans
- Trends: since 1980 large increases
- NHANES 2013-2014 will help clarify recent trends
 - 2 year data are limited for subgroup analysis

- **Diet**

- Not much change in calories recently
- High consumption of added sugars, SSB, pizza

The findings and conclusions in this presentation are those of the author and not necessarily of CDC

DISCLAIMER

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Margaret Carroll, MSPH

THANK YOU TO MY COLLEAGUES