



# Disparities in obesity prevalence

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***A Health Equity Approach to Obesity Efforts***  
***NASEM***

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# DEFINITIONS

## Body Mass Index (BMI)

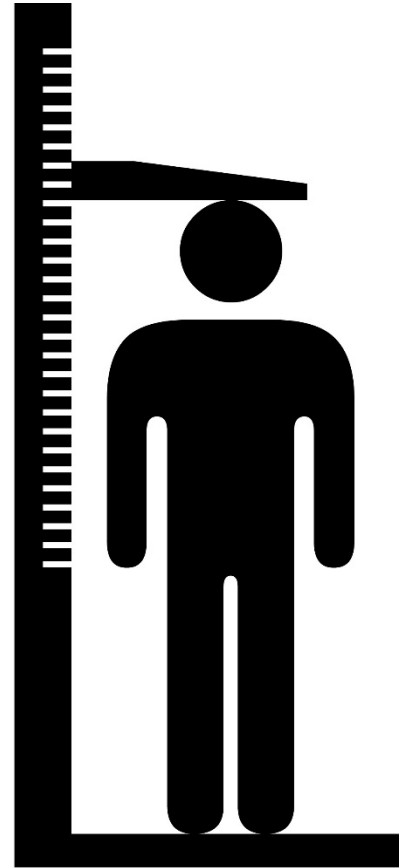
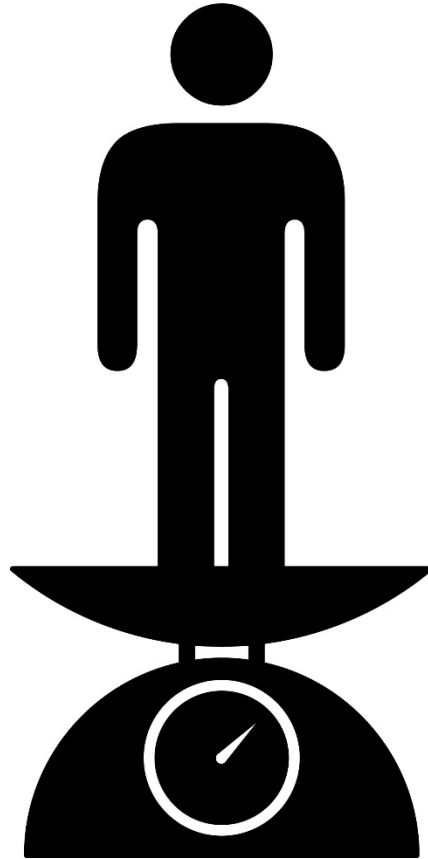
Weight(kg)/Height (m<sup>2</sup>)

### Adults

Overweight  $25 \leq \text{BMI} < 30$

Obesity  $\text{BMI} \geq 30$

Severe obesity  $\text{BMI} \geq 40$





**DATA**



- In person household survey
- ~35,000 households/year
- ~ 87,500 people/year
- Telephone survey of adults
- > 400,000 interviews/year

**Both have self reported weight and height**



Nationally  
representative



Examination  
data



10,000

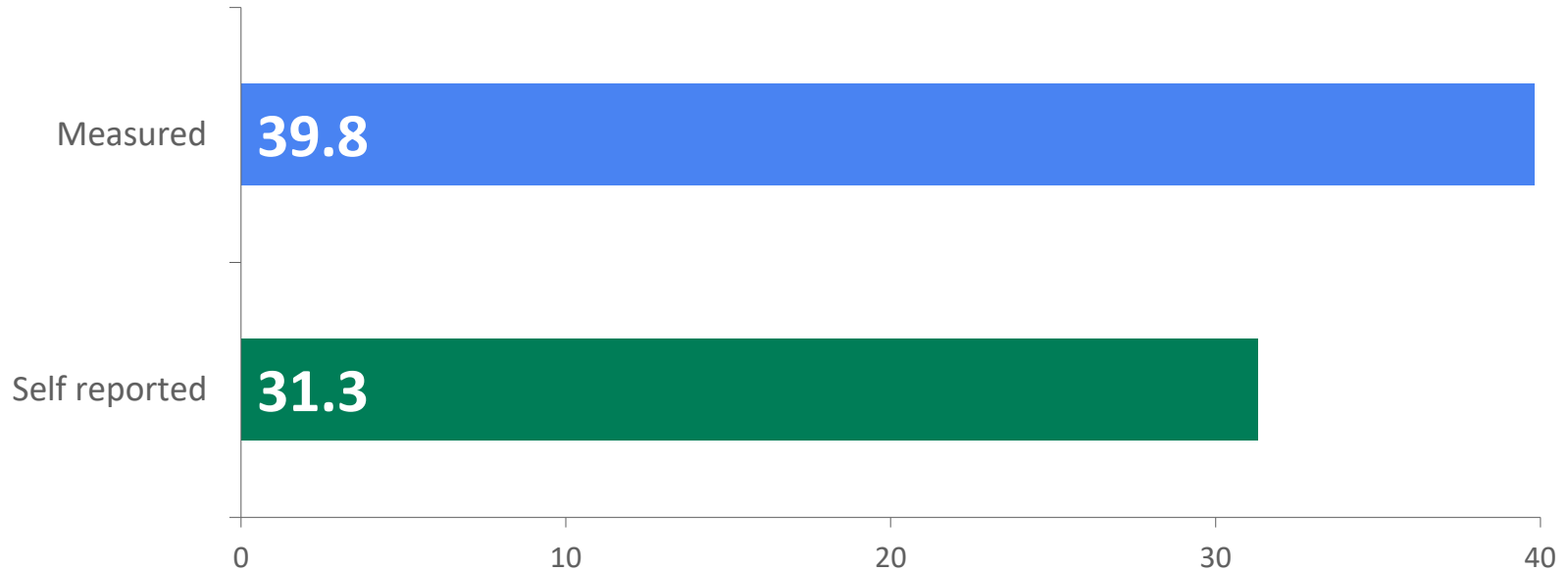


2 year cycle





# WHY IMPORTANT? MEASURED MORE ACCURATE THAN SELF REPORT



Sources: Self reported: BRFSS 2017,

[https://nccd.cdc.gov/BRFSSPrevalence/rdPage.aspx?rdReport=DPH\\_BRFSS.ExploreByTopic&isClass=CLASS14&isTopic=Topic09&isYear=2015&go=GO](https://nccd.cdc.gov/BRFSSPrevalence/rdPage.aspx?rdReport=DPH_BRFSS.ExploreByTopic&isClass=CLASS14&isTopic=Topic09&isYear=2015&go=GO)

Measured: NHANES 2015-2016, Hales et al 2017 <https://www.cdc.gov/nchs/products/databriefs/db288.htm>

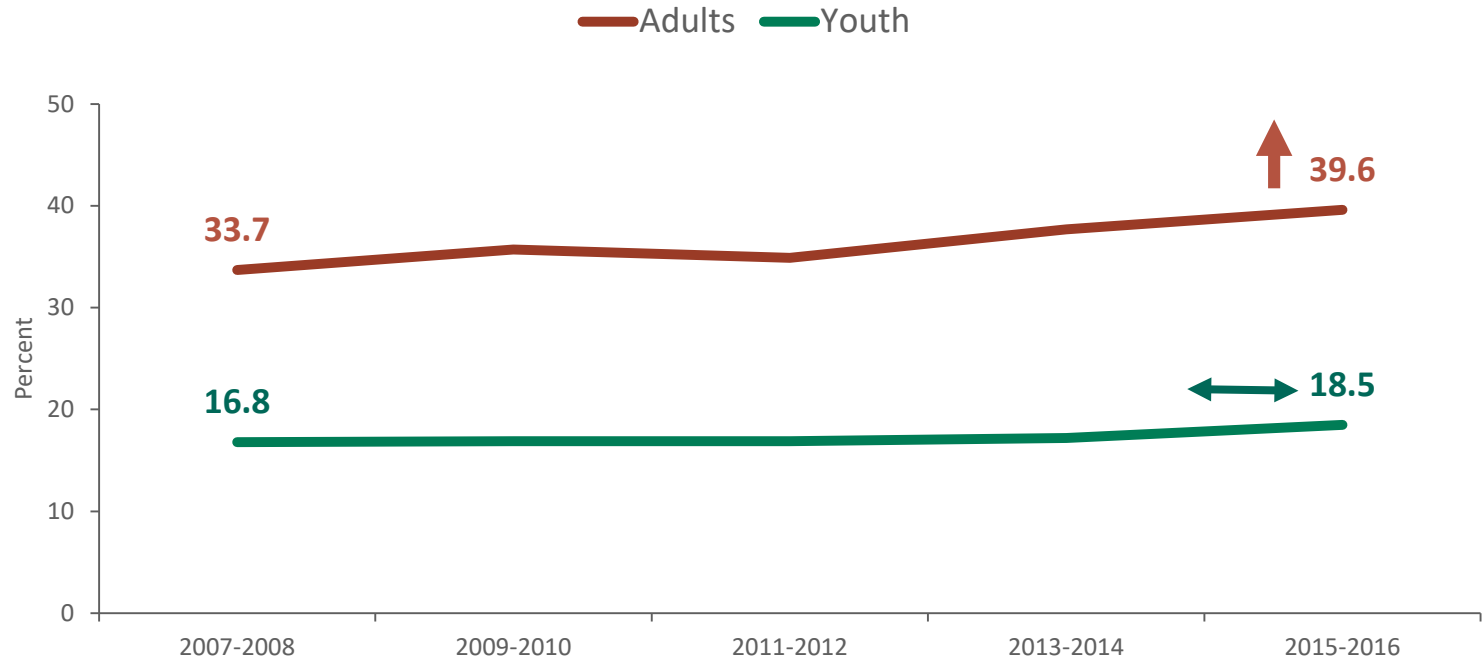
**DISPARITIES IN CONTEXT**

**+29  
pounds**



**AVERAGE MAN  
HEAVIER IN 2011-14  
THAN IN 1960s**

# ADULT OBESITY BUT NOT YOUTH INCREASED SIGNIFICANTLY OVER LAST DECADE



**13.7 million youth**  
**93.3 million adults**

**with obesity**

**DISPARITIES**



Race/Hispanic origin



Income



Education



Geography



Urban/rural



Race/Hispanic origin



Income



Education



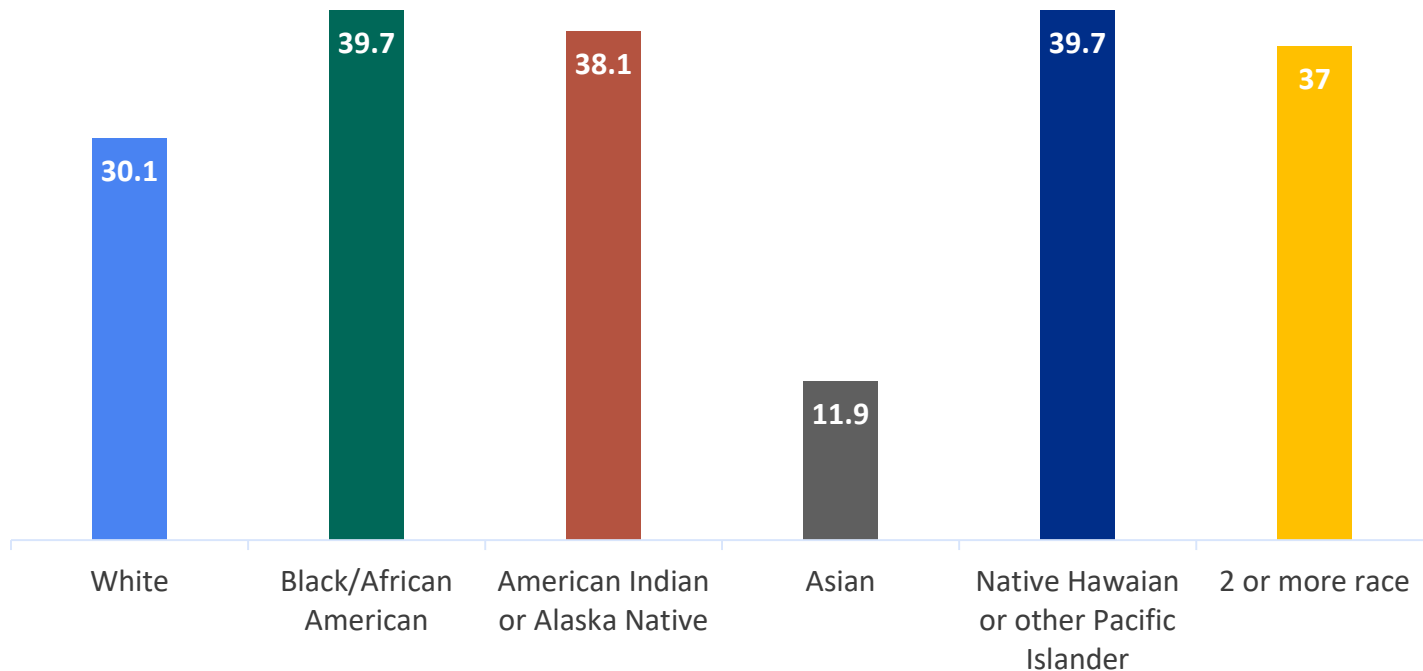
Geography



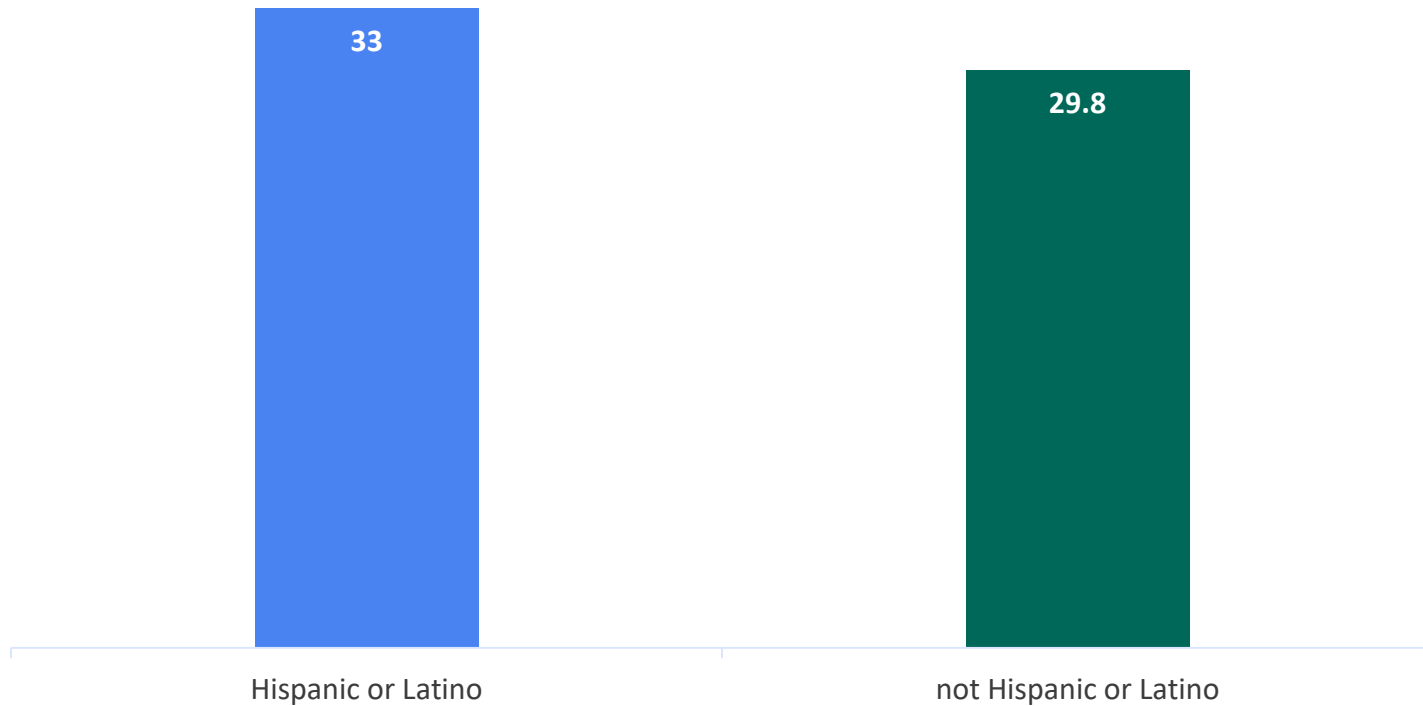
Urban/rural



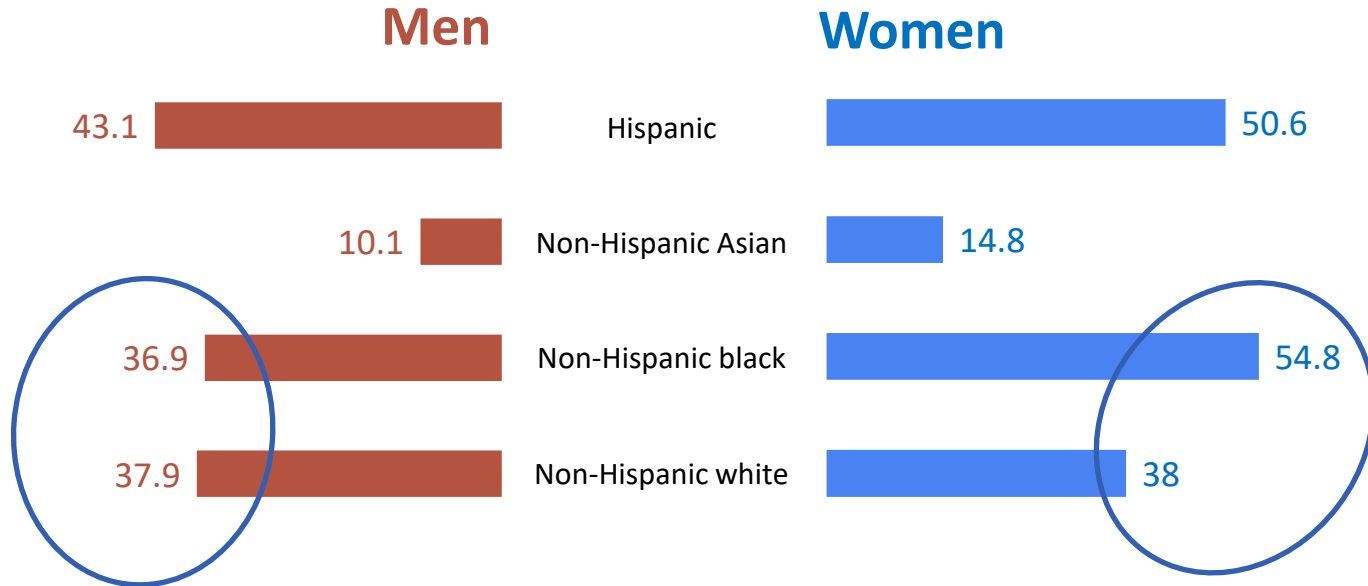
# THERE ARE DISPARITIES BY RACE IN ADULTS: LOWER PREVALENCE IN WHITES AND ASIANS



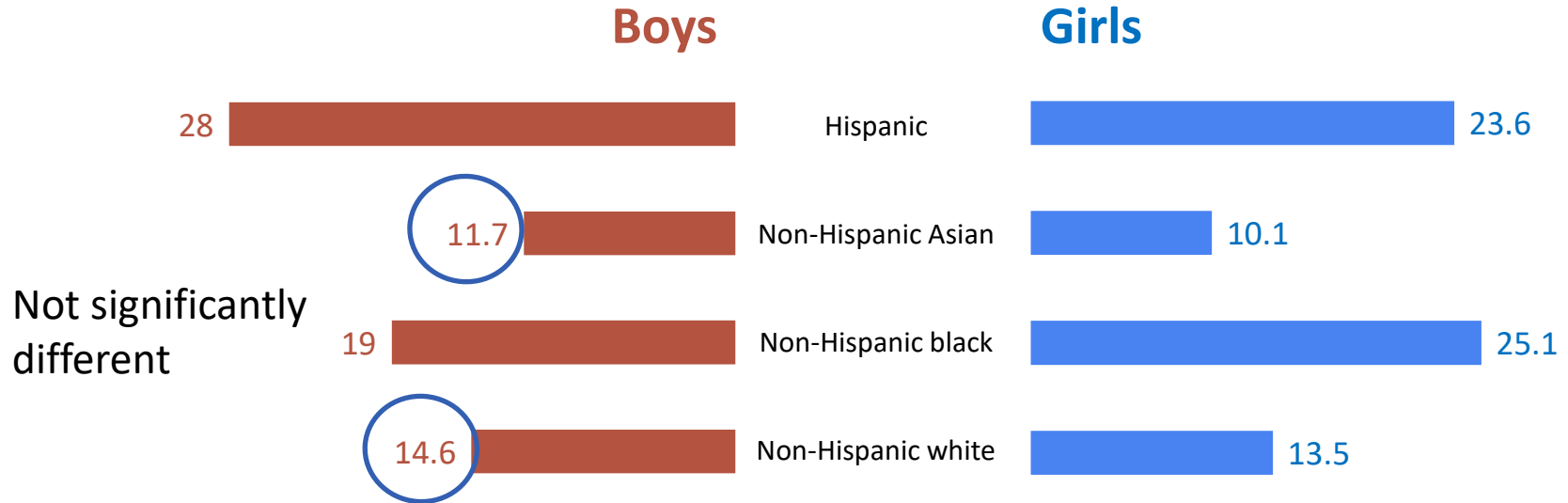
# THERE ARE DIFFERENCES BY HISPANIC ORIGIN IN ADULTS



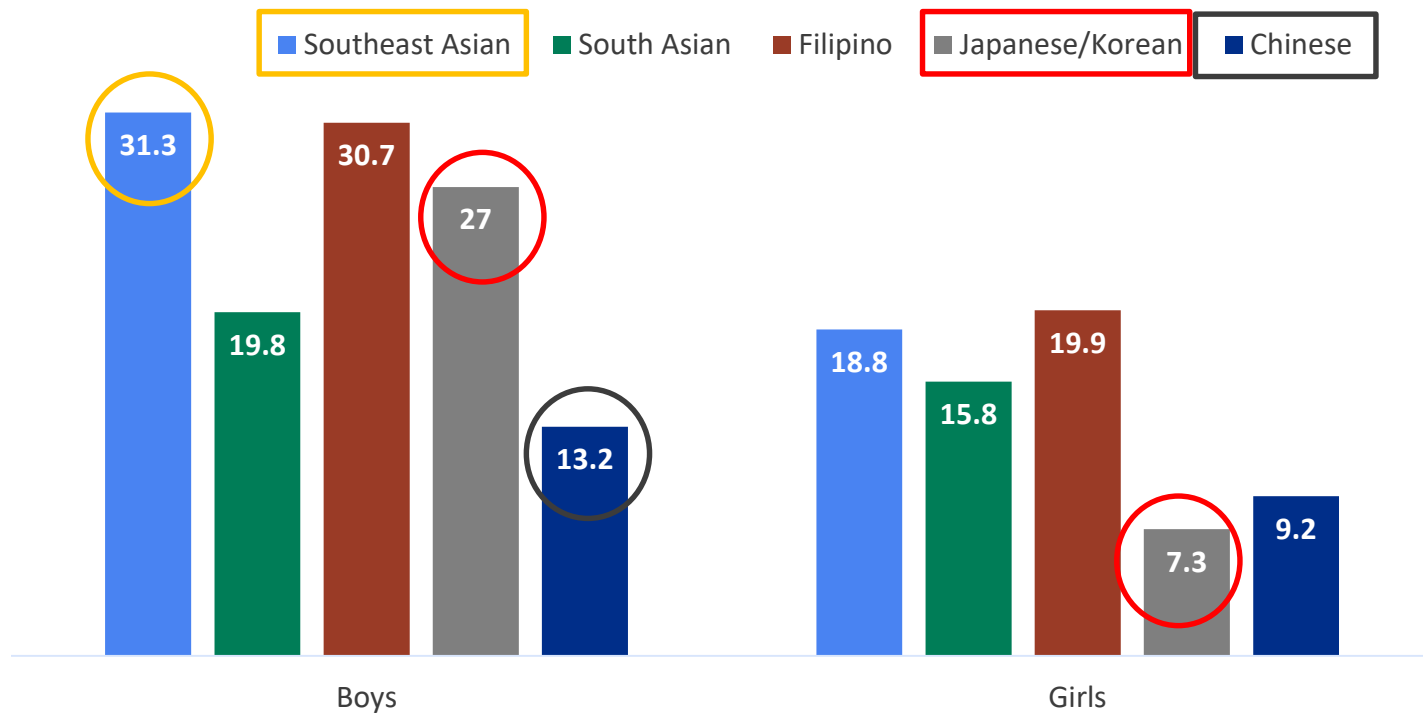
# PATTERNS ARE DIFFERENT IN MEN AND WOMEN



# DIFFERENCES BY RACE/HISPANIC ORIGIN ALSO IN YOUTH; PATTERNS SLIGHTLY DIFFERENT THAN ADULTS



# ASIAN SUBGROUP IS DIVERSE: OVERWEIGHT/OBESITY IN YOUTH VARIES BY SEX AND SUBGROUP





Race/Hispanic origin



Income



Education

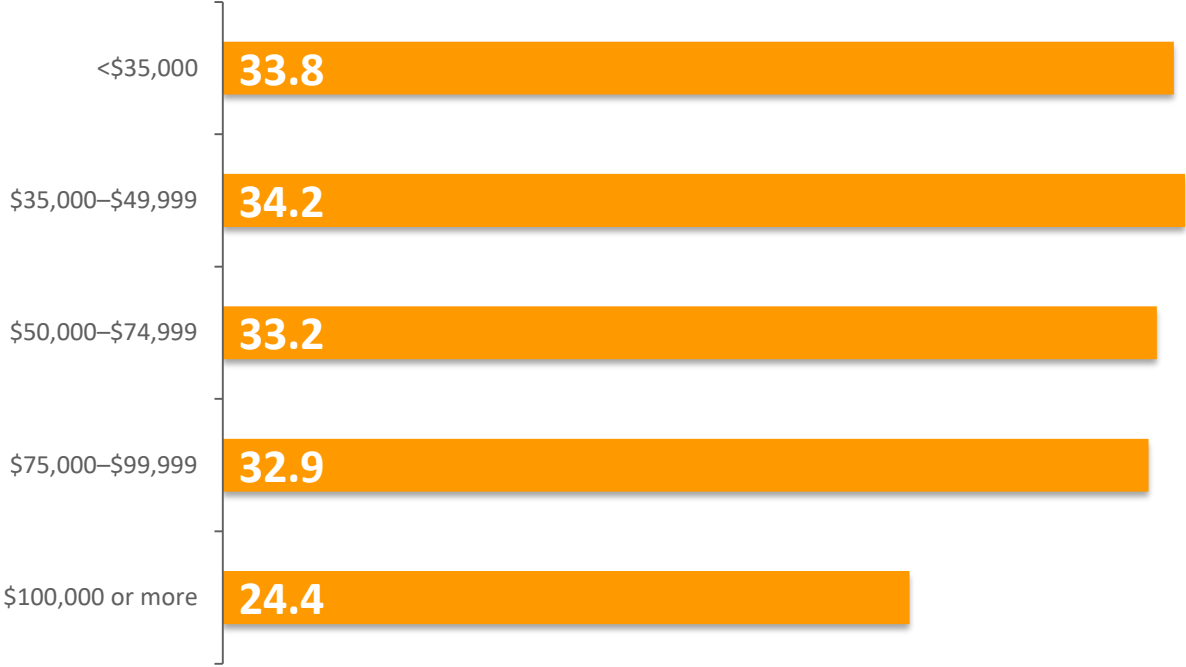


Geography



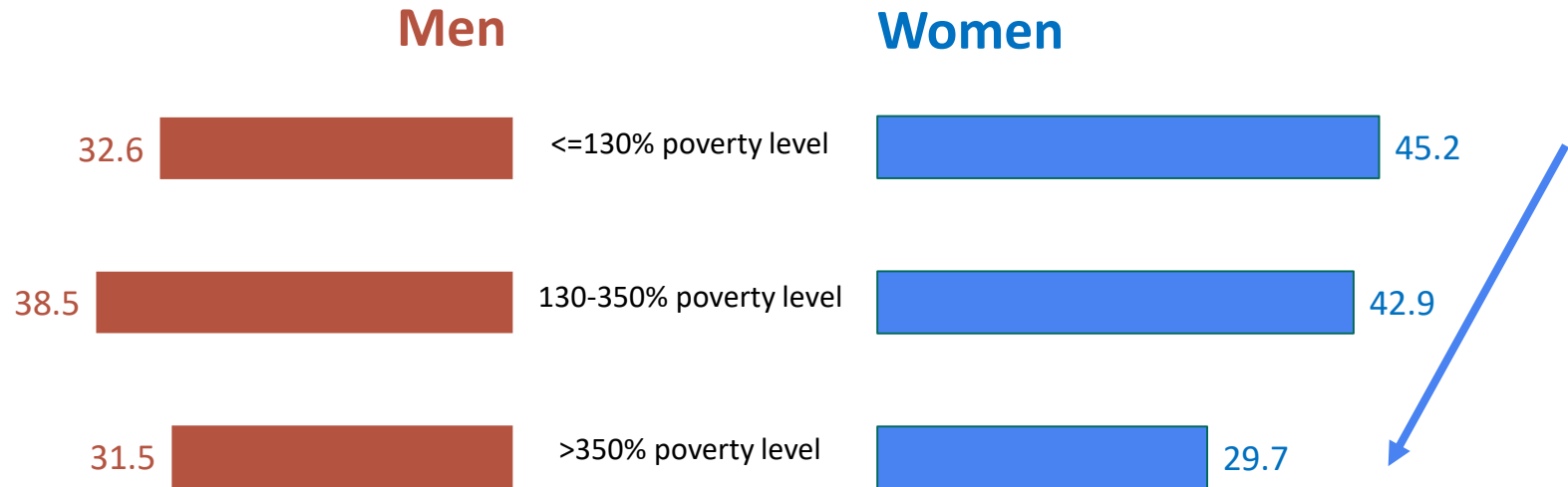
Urban/rural

# OVERALL OBESITY LOWER AT FAMILY INCOME $\geq$ \$100,000



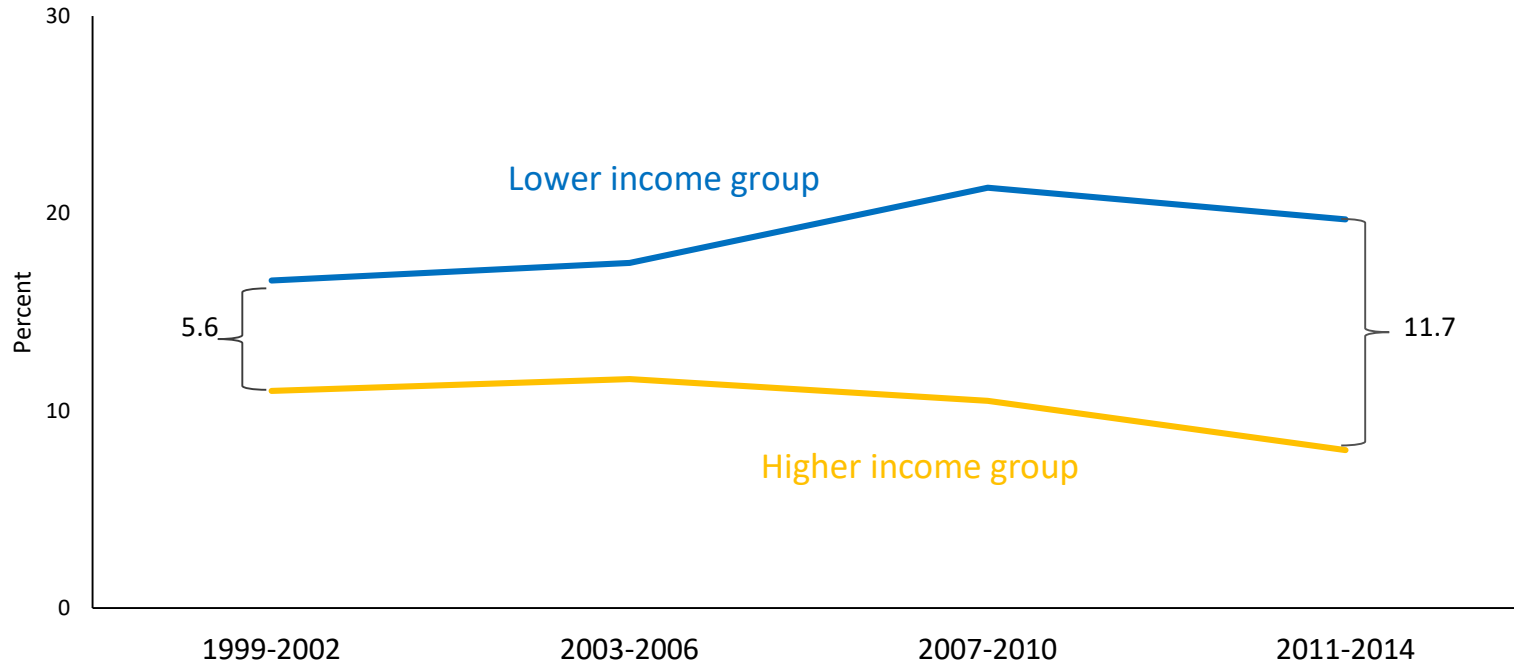
Source: Self reported data, NHIS 2017; <https://www.cdc.gov/nchs/nhis/shs/tables.htm>

# SIMILAR TO RACE/HISPANIC ORIGIN, THERE ARE DIFFERENCES IN MEN AND WOMEN





# DISPARITY BY INCOME WIDENING AMONG GIRLS



Source: NHANES 2011-2014; <https://www.cdc.gov/mmwr/volumes/67/wr/mm6706a3.htm>; Ogden et al MMWR 2018;; lower income group  $\leq 130\%$  poverty level; higher  $> 350\%$  poverty level



Race/Hispanic origin



Income



Education

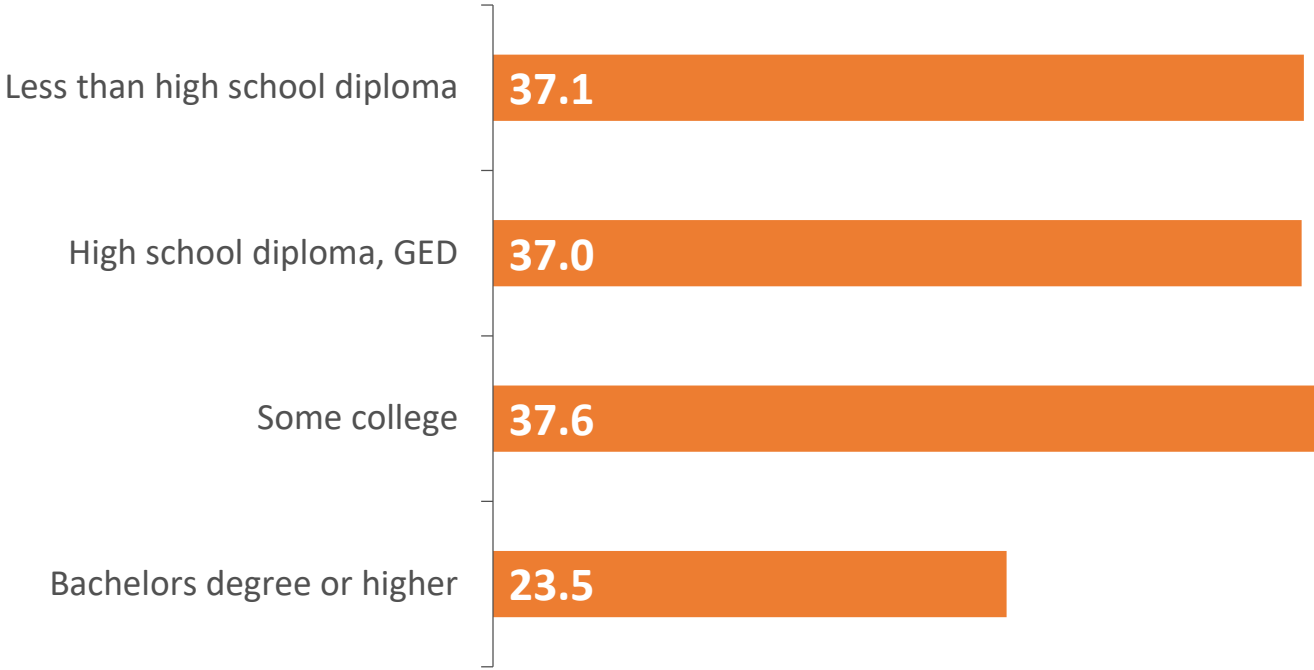


Geography



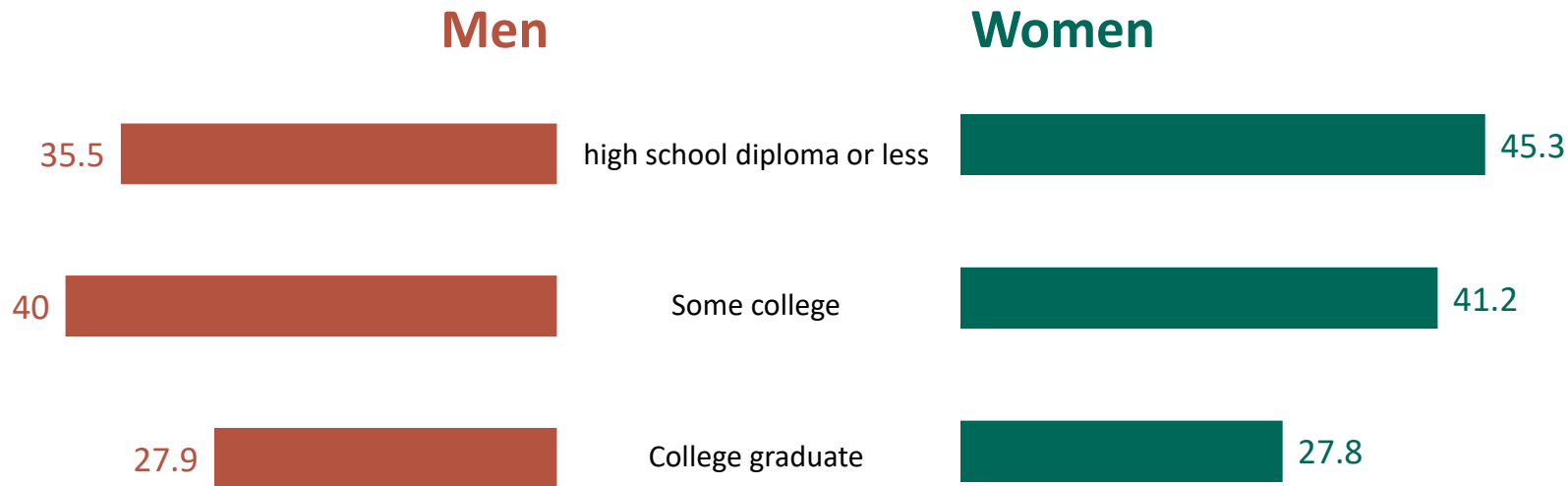
Urban/rural

# OVERALL OBESITY LOWER WITH COLLEGE DEGREE



Source: Adults 18 years + Self reported data, NHIS 2017; <https://www.cdc.gov/nchs/nhis/shs/tables.htm>

# COLLEGE GRADUATES: LOWER OBESITY IN BOTH MEN AND WOMEN



# SAME PATTERN SEEN IN:

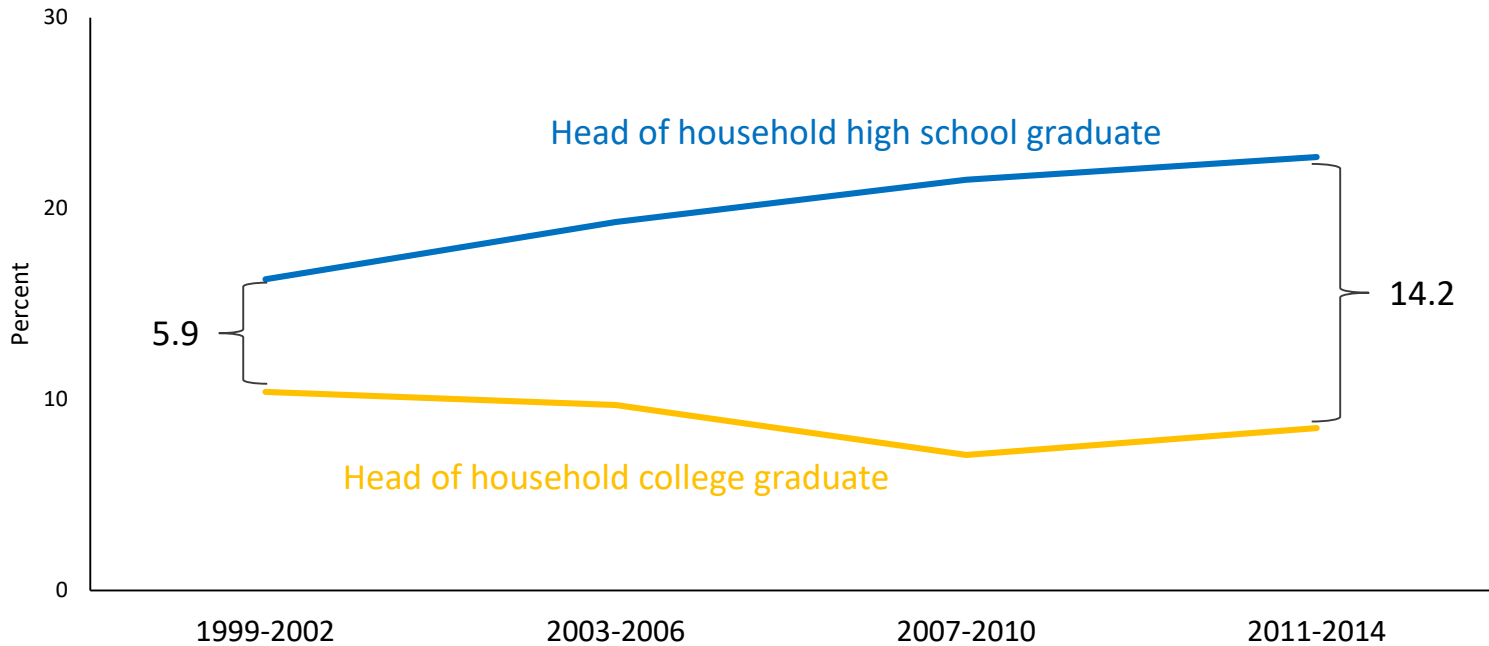
All youth

Non-Hispanic  
white men and  
women

Non-Hispanic  
black women

Hispanic women

# WIDENING GAP AMONG GIRLS 2-19 YEARS





Race/Hispanic origin



Income



Education

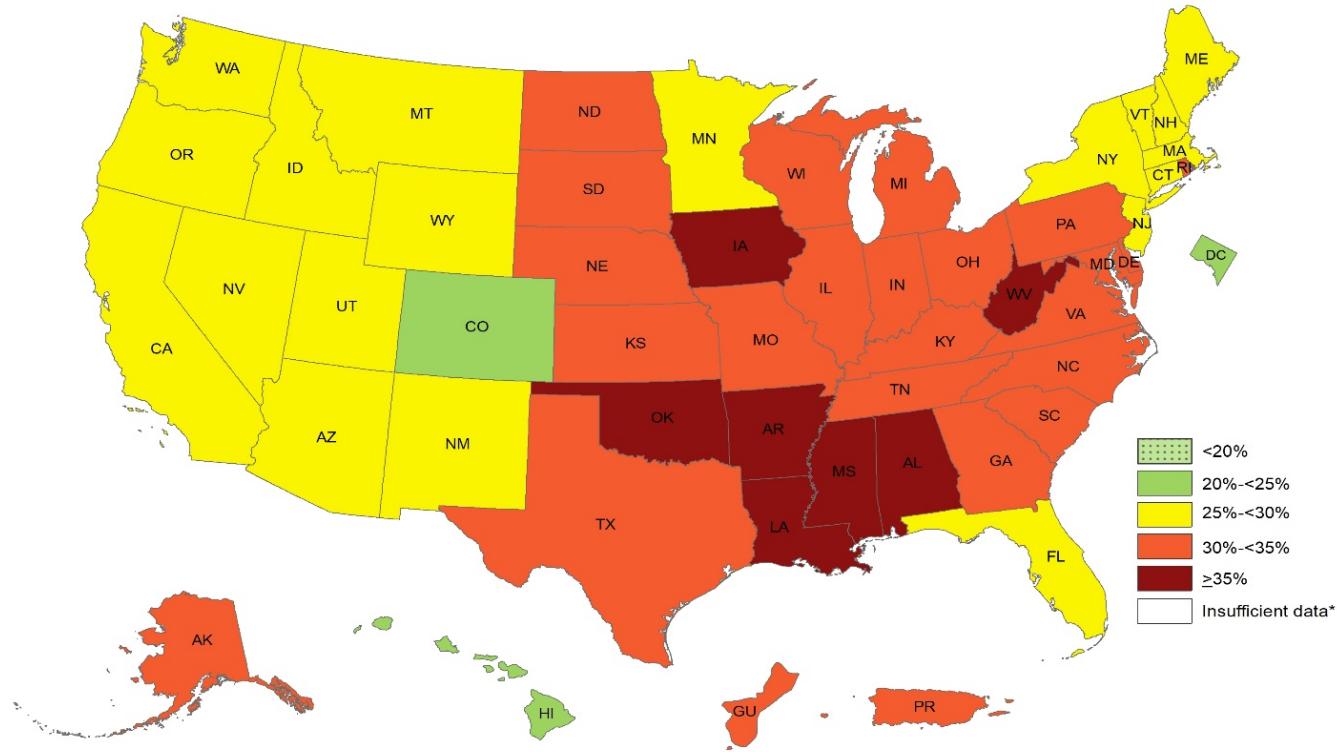


Geography



Urban/rural

# Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2017







Race/Hispanic origin



Income



Education

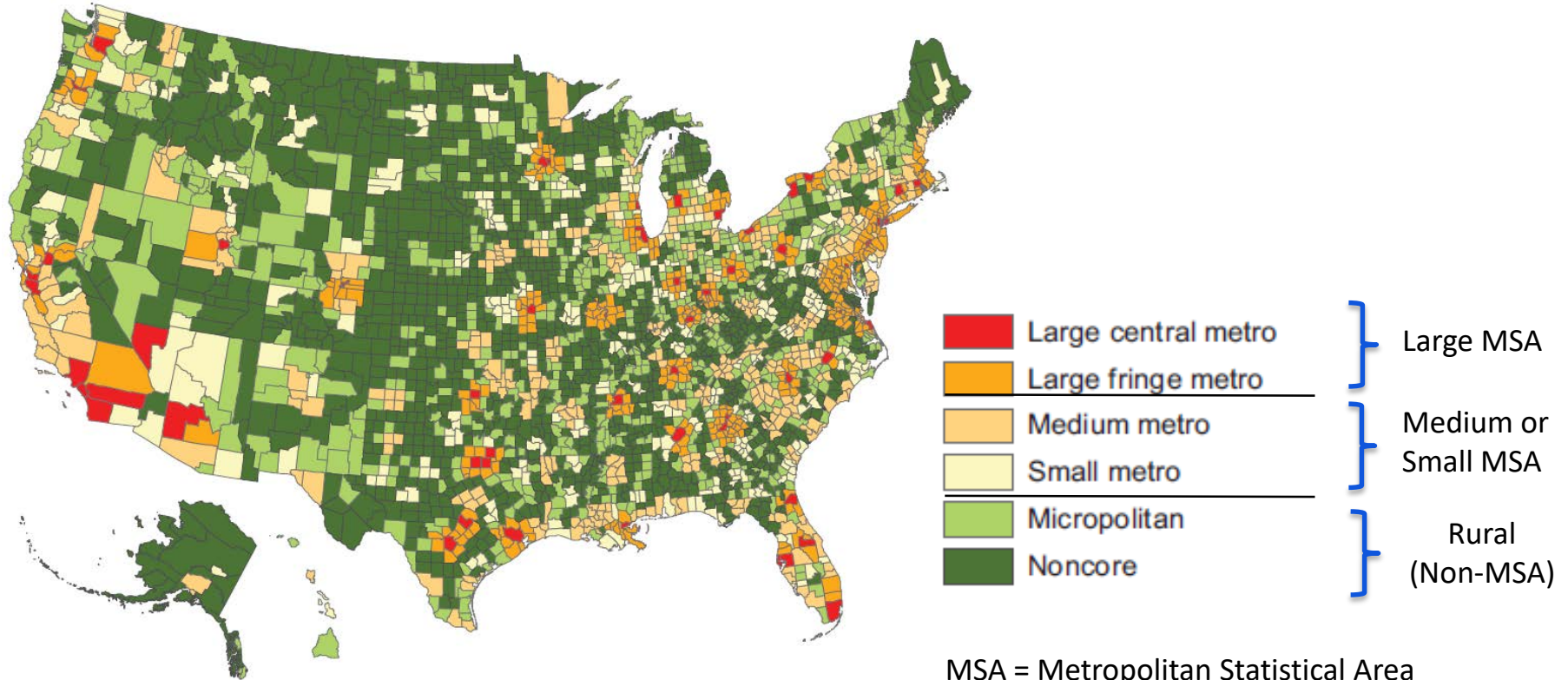


Geography



Urban/rural

# NCHS Urban-Rural Classification Scheme for Counties

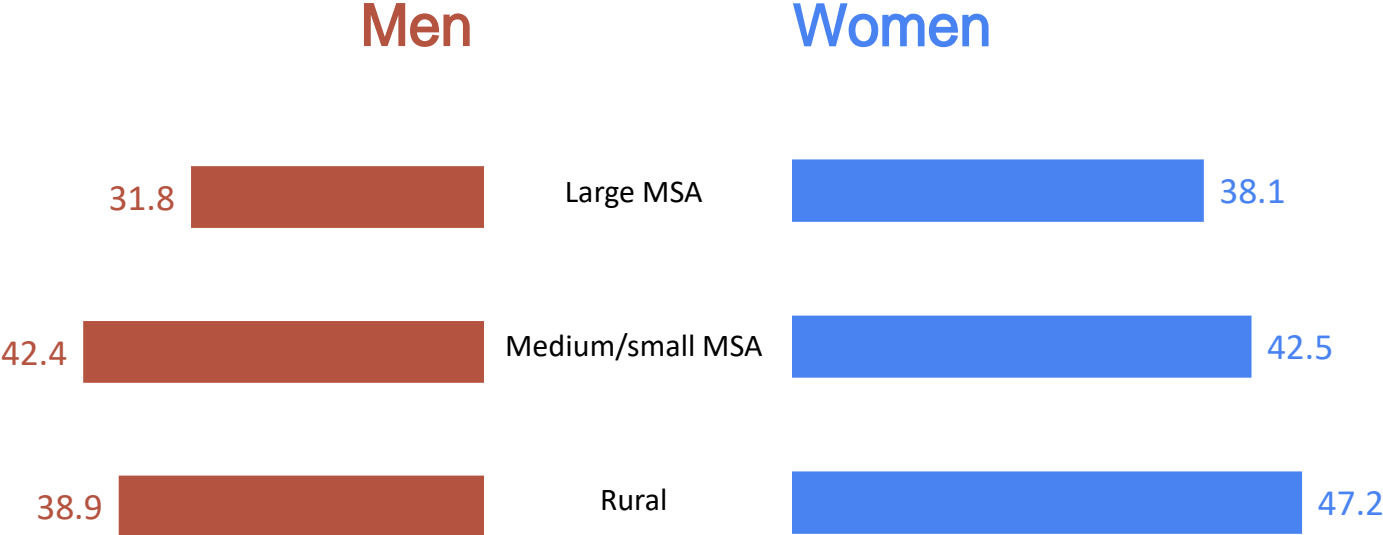


Source: [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm)

MSA = Metropolitan Statistical Area

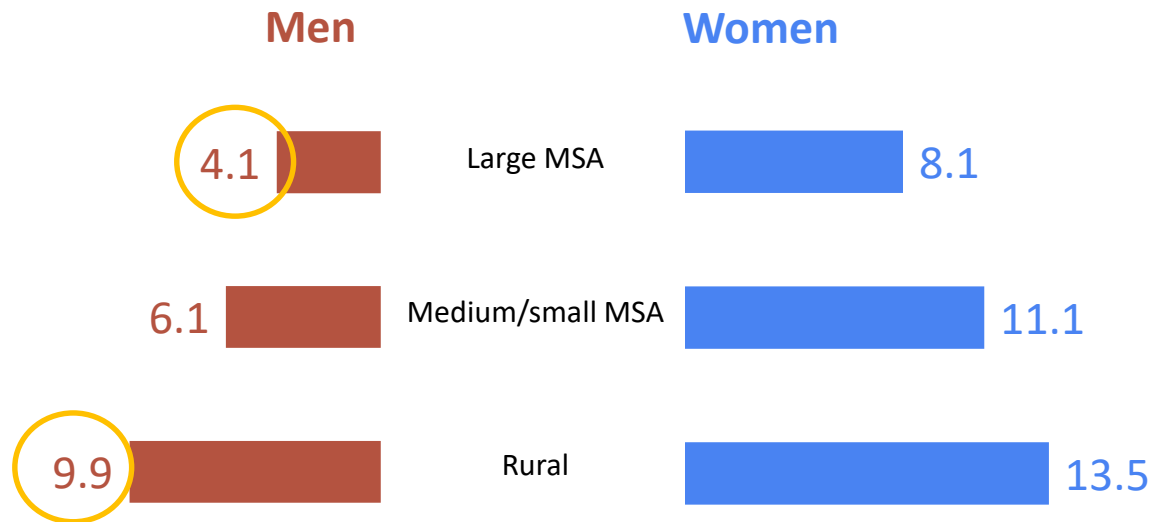
NCHS = National Center for Health Statistics

# OBESITY HIGHER IN RURAL AREAS THAN IN LARGE URBAN AREAS AMONG BOTH MEN AND WOMEN

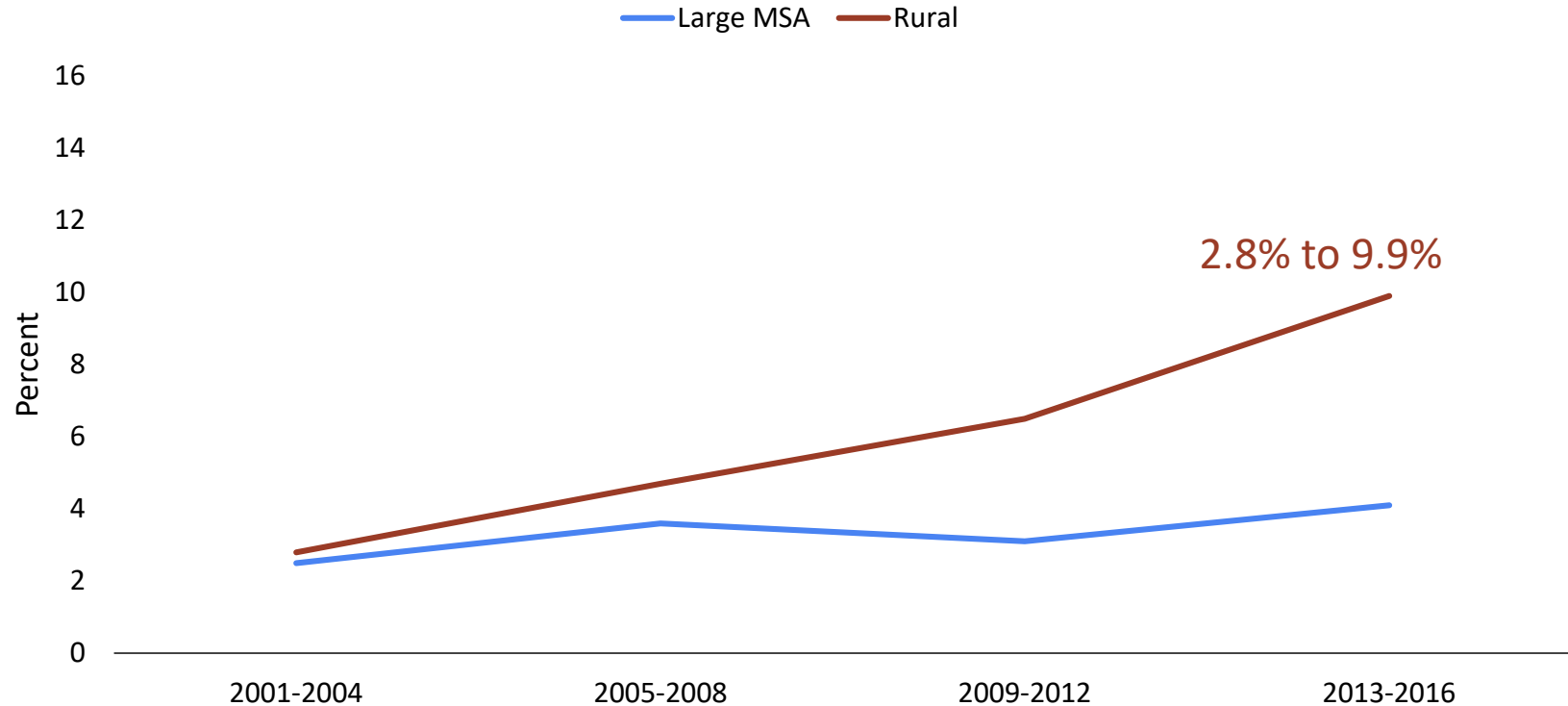


Source: NHANES 2011-2016, Hales et al JAMA 2018

# SEVERE OBESITY HIGHER IN RURAL AREAS AMONG MEN DOUBLE IN RURAL AREAS

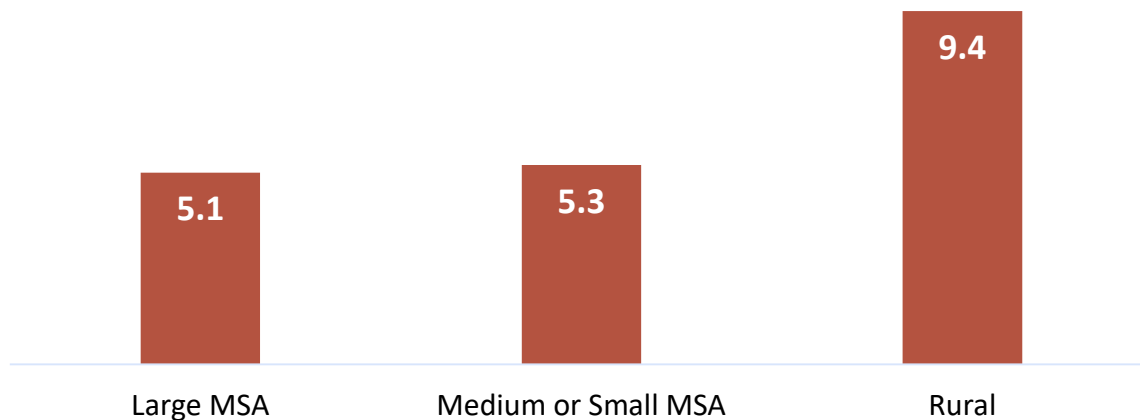


# SEVERE OBESITY INCREASED IN URBAN AND RURAL AREAS BUT TRIPLED IN RURAL MEN 2001-2016



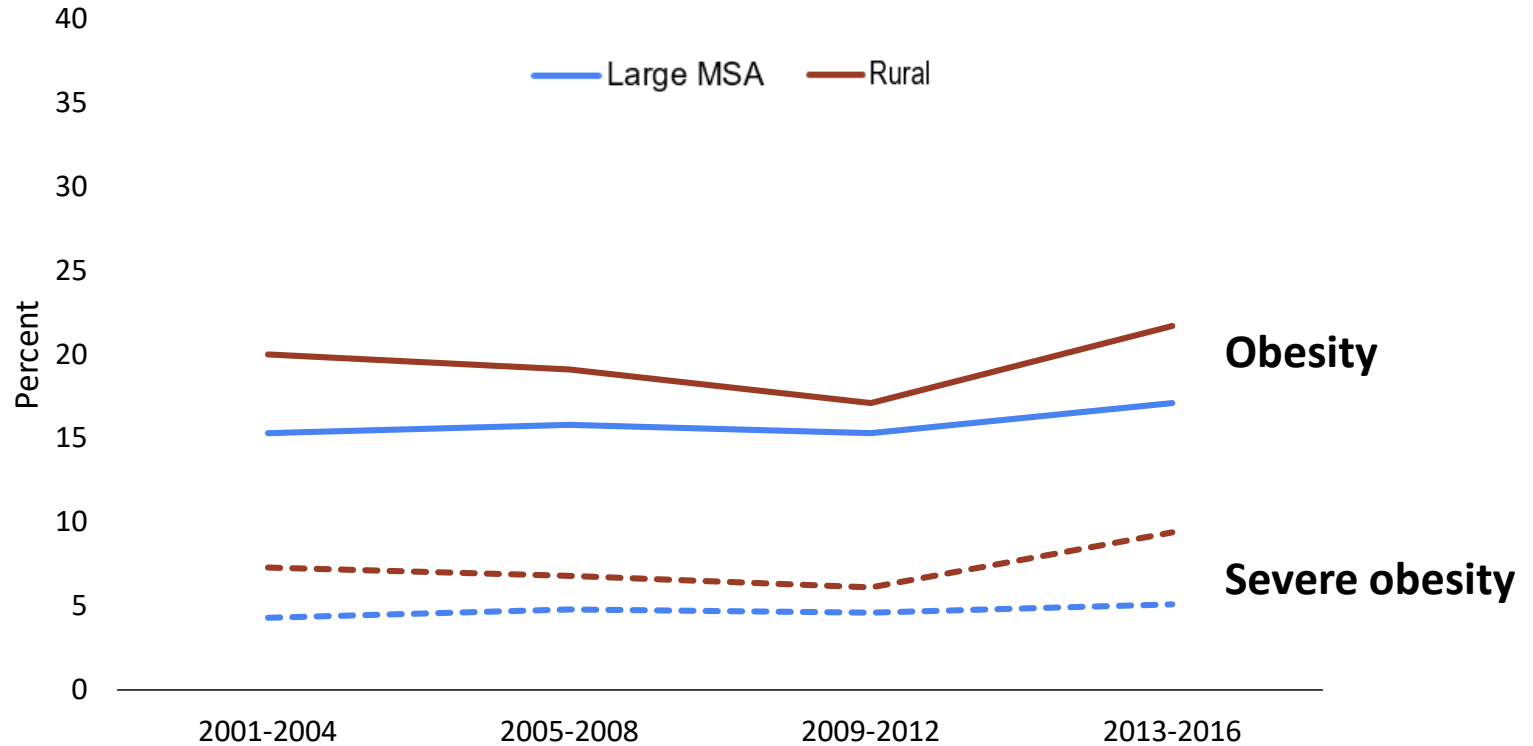
Source: NHANES 2013-2016, Hales et al JAMA 2018; Significant trends after adjustment for race/Hispanic origin

# AMONG YOUTH SEVERE OBESITY ALSO HIGHER IN RURAL AREAS



Source: NHANES 2013-2016, Ogden et al JAMA 2018

# NO SIGNIFICANT TRENDS IN YOUTH 2001-2016



Source: NHANES 2013-2016, Ogden et al JAMA 2018; no significant trends even after adjustment for race/Hispanic origin

# DISPARITIES ARE COMPLEX

- **Disparities vary by sex, age, race/Hispanic origin**
- BMI imperfect in distinguishing body fat and risk for some groups
- Generally lower prevalence above family income of \$100,000
  - White women strong decrease with income
- Generally college graduates lower prevalence
- Rural areas higher prevalence
- Increasing disparities:
  - Urban/rural in men
  - By income, education in girls

