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Your *First* **STOP** for
Rural Health
INFORMATION



Rural Insights on Adult and Youth Obesity, a National and Community-based Perspective

Housekeeping

- Q & A to follow – Submit questions using Q&A area
- Slides are available at <https://www.ruralhealthinfo.org/webinars/nchs-obesity>
- Technical difficulties please call 866-229-3239

Featured Speakers



Kendra B. McDow, MD, MPH, EIS Officer, Division of Health and Nutrition Examination Surveys NCHS



Craig Hales, MD, MPH, Medical Epidemiologist, Division of Health and Nutrition Examination Surveys NCHS



Shelby Polk DNP, APRN, FNP-BC, Associate Professor and Chair of Nursing Delta State University

National Center for Health Statistics



The National Health and Nutrition Examination Survey (NHANES): An Overview

Kendra B. McDow, MD, MPH

Rural Health Information Hub Webinar
October 11, 2018

NHANES Goals

- US population-based estimates of:
 - Health conditions
 - Awareness, treatment and control of selected diseases
 - Environmental exposures
 - Nutrition status and diet behaviors
- Establish and maintain a biospecimen program



An Evolving Survey Since 1959



History of NHANES

Survey	Dates	Ages
NHES I	1959 – 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 months – 74 years
HHANES	1982 – 84	6 months – 74 years
NHANES III	1988 – 94	2 months +
NHANES	1999-2018	All Ages

Sampling Design

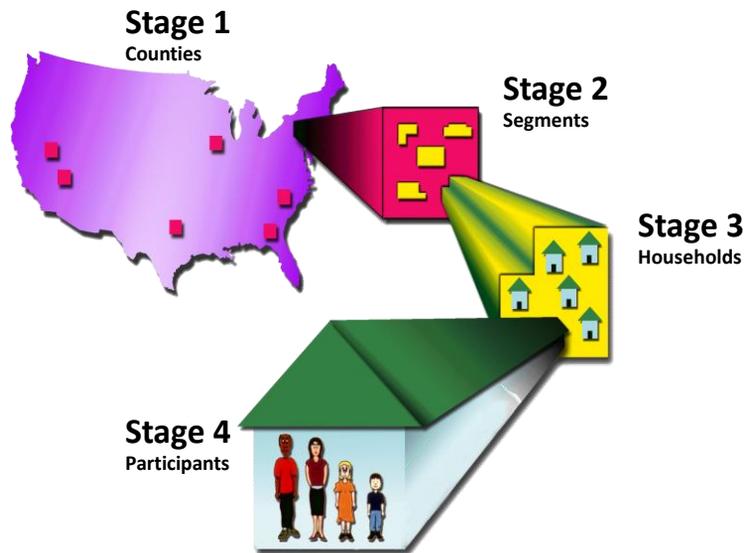
Overview

- Nationally representative
- Civilian, non-institutionalized US population
- 5,000 individuals examined annually
- Oversampled groups:
 - Non-Hispanic blacks
 - Non-Hispanic Asians
 - Hispanics
 - 80+ years of age
 - Low income whites



Sampling Design

Multistage Probability Sampling Design



Data Collection

Interviews and Physical Exams

- In-person home interview

 - Physical assessments in Mobile Exam Centers (MEC)
 - Physical exam measurements
 - Specialized testing
 - Private interviews
 - Lab specimen collection

 - Post exam assessments
-

Data Collection

Interviews and Physical Exams

- In-person home interview
- Physical assessments in Mobile Exam Centers (MEC)
 - Physical exam measurements
 - Specialized testing
 - Private interviews
 - Lab specimen collection
- Post exam assessments

Data Collection

In-Home Interview

- Demographic information
- Health conditions
- Health insurance and healthcare use
- Prescription drugs and dietary supplements use



Data Collection

Interviews and Physical Exams

- In-person home interview

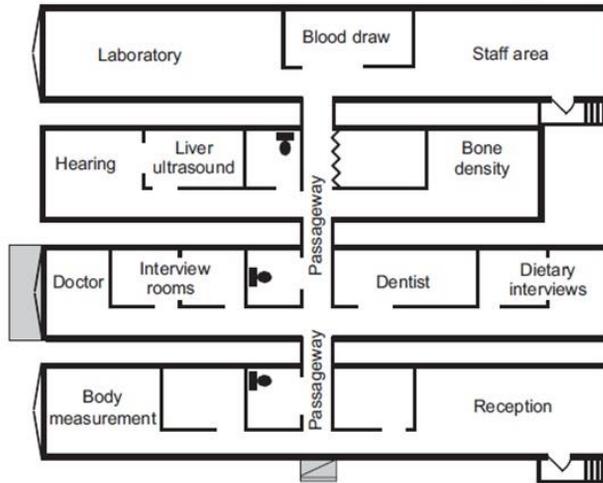
- Physical assessments in Mobile Exam Centers (MEC)
 - Physical exam measurements
 - Specialized testing
 - Private interviews
 - Lab specimen collection

- Post exam assessments

Data Collection

MEC Physical Examinations



*Data Collection***The MEC: A State-of-the Art Medical Facility****Mobile examination center diagram**

Configuration for NHANES 2017-2018

*Data Collection***MEC Reception**

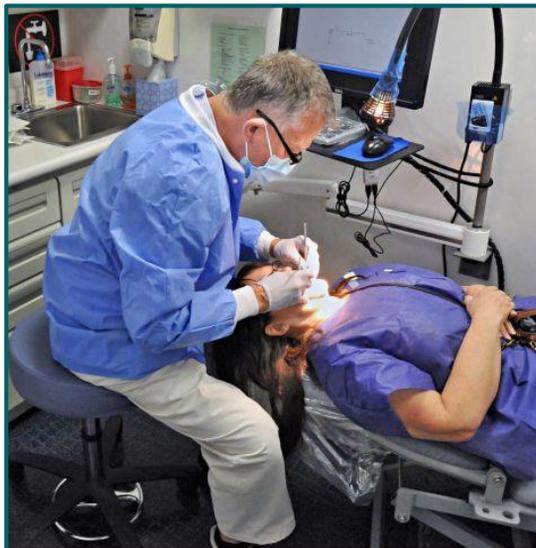
Data Collection

Cardiovascular Health



Data Collection

Oral Health

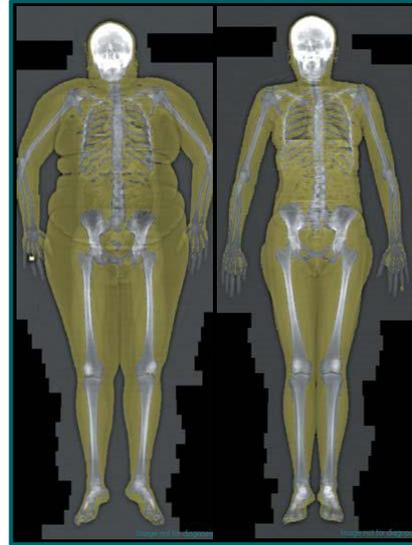


Data Collection

Body Composition



Dual-energy X-ray absorptiometry (DXA)



Data Collection

Private Interviews



Dietary Recall Interviews



Computer-Assisted Personal Interviews (CAPI)

*Data Collection***MEC Laboratory***Data Collection***Laboratory Tests**

- Complete Blood Count
- Pregnancy test
- Nutritional biomarkers
- Hormone tests
- Diabetes
- Lipid profile
- Biochemistry profile
- Environmental chemicals
- Infectious diseases
 - Hepatitis viruses
 - Sexually transmitted infections

*Data Collection***Anthropometry**

NBA legend Dikembe Mutombo

*Data Collection***Interviews and Physical Exams**

- In-person home interview

- Physical assessments in Mobile Exam Centers (MEC)
 - Physical exam measurements
 - Specialized testing
 - Private interviews
 - Lab specimen collection

- Post exam assessment

Data Collection

Post Exam Assessment



Day 2 Dietary Recall

Data Release Process

- Data Release Process
 - Quality Control
 - Editing/cleanup
 - Weighting
 - Data preparation
 - Documentation
 - Confidentiality review

- Public data released in 2-year cycles

National Center for Health Statistics

National Health and Nutrition Examination Survey



National Health and Nutrition Examination Survey

- About NHANES +
- What's New +
- Questionnaires, Datasets, and Related Documentation -**
- Survey Methods and Analytic Guidelines
- Search Variables
- All Continuous NHANES +
- NHANES 2017-2018 +
- NHANES 2015-2016 +
- NHANES 2013-2014 +
- NHANES 2011-2012 +
- NHANES 2009-2010 +
- NHANES 2007-2008 +
- NHANES 2005-2006 +
- NHANES 2003-2004 +
- NHANES 2001-2002 +

CDC > National Health and Nutrition Examination Survey

Questionnaires, Datasets, and Related Documentation



Continuous NHANES Data, Questionnaires and Related Documentation

- [Search Continuous NHANES Variables](#)

- [NHANES 2017-2018](#)

- [NHANES 2015-2016](#)

- [NHANES 2013-2014](#)

- [NHANES 2011-2012](#)

- [NHANES 2009-2010](#)

- [NHANES 2007-2008](#)

- [NHANES 2005-2006](#)

- [NHANES 2003-2004](#)

- [NHANES 2001-2002](#)

- [NHANES 1999-2000](#)

Prior to 1999 Data, Questionnaires, and Related Documentation

- [NHANES III](#)

Conducted from 1988-1994, the third National Health and Nutrition Examination Survey (NHANES III) focused on oversampling many groups within the U.S. population aged 2 months and over. These oversampled groups included children aged 2 months to 5 years, persons over age 60, Mexican-American persons, and non-Hispanic black persons. This survey also concentrated on health and nutrition but additionally began to

JAMA | Original Investigation

Differences in Obesity Prevalence by Demographic Characteristics and Urbanization Level Among Adults in the United States, 2013-2016

Craig M. Hales, MD; Cheryl D. Fryar, MSPH; Margaret D. Carroll, MSPH; David S. Freedman, PhD; Yutaka Aoki, PhD; Cynthia L. Ogden, PhD

NCHS Data Brief ■ No. 213 ■ September 2015

Caloric Intake From Fast Food Among Children and Adolescents in the United States, 2011-2012

Sundeep Vikraman, M.D., M.P.H.; Cheryl D. Fryar, M.S.P.H.; and Cynthia L. Ogden, Ph.D.

US Prevalence and Trends in Tobacco Smoke Exposure Among Children and Adolescents With Asthma

AUTHORS: Brian K. Kit, MD, MPH^{1,2}; Alan E. Simon, MD,³ Dieter J. Brody, MPH,⁴ and Lara J. Akonbi, MD⁵
¹Division of Health and Nutrition Examination Surveys, and ²Office of Analysis and Epidemiology, National Center for Health Statistics, Centers for Disease Control and Prevention, Hyattsville, Maryland, and ³US Public Health Service, Rockville, Maryland

WHAT'S KNOWN ON THIS SUBJECT: Among youth with asthma, tobacco smoke exposure causes increased asthma morbidity. Little is known about changes over time in tobacco smoke exposure among youth with asthma in a national sample.
WHAT THIS STUDY ADDS: Our analysis reveals a decrease in

PREVENTING CHRONIC DISEASE
 PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
 Volume 11, E141 AUGUST 2014

ORIGINAL RESEARCH

Rural-Urban Differences in Objective and Subjective Measures of Physical Activity: Findings From the National Health and Nutrition Examination Survey (NHANES) 2003-2006

Jessie X. Fan, PhD; Ming Wen, PhD; Lori Kowaleski-Jones, PhD

NCHS Data Brief ■ No. 319 ■ September 2018

Prevalence of Total, Diagnosed, and Undiagnosed Diabetes Among Adults: United States, 2013-2016

Nicholas D. Mendola, M.P.H., Te-Ching Chen, Ph.D., Qiuping Gu, M.D., Ph.D., Mark S. Eberhardt, Ph.D., and Sharon Saydah, Ph.D.

NCHS Data Brief ■ No. 320 ■ September 2018

Beverage Consumption Among Youth in the United States, 2013-2016

Kirsten A. Herrick, Ph.D., M.Sc., Ana L. Terry, M.S., R.D., and Joseph Aful, M.S.

NCHS Data Brief ■ No. 322 ■ October 2018

Fast Food Consumption Among Adults in the United States, 2013–2016

Cheryl D. Fryar, M.S.P.H., Jeffery P. Hughes, M.P.H., Kirsten A. Herrick, Ph.D., M.Sc., and Namanjeet Ahluwalia, Ph.D.

Here's how much fast food Americans are eating

By **Jacqueline Howard, CNN**
Updated 1:26 PM ET, Wed October 3, 2018



Healthy fast food switches that will surprise you 01:22

Story highlights (CNN) — Fast food has become a major part of the American diet, and a new report from the US Centers for Disease Control and Prevention reveals just how many Americans eat fast food on any given day between 2013 and 2016.

Rx Nutrition: What Doctors Need to Know about Diet

CDC: 1 in 3 US adults eats fast food on any given day

October 3, 2018

ADD TOPIC TO EMAIL ALERTS

Approximately 36% of all U.S. adults ate fast food on any given day during 2013 to 2016, according to data just released from the CDC.

"We focused on fast food for this report because fast food has played an important role in the American diet in recent decades. Fast food has been associated with poor diet and increased risk of obesity," Cheryl Fryar, MSPH, a health statistician with the National Center for Health Statistics told *Healio Family Medicine*.

SEE ALSO

- Fast food delays time to pregnancy
- Dining out linked to increased exposure to endocrine-disrupting chemicals in foods
- US infants' sugar consumption exceeds adult recommendations

Fryar and colleagues analyzed National Health and Nutrition Examination Survey data during 2013 to 2016 and found that on any given day, among adults, fast food was consumed by:

- 36.6% of all adults;
- 42.4% of non-Hispanic blacks, 37.6% of non-Hispanic whites, 35.5% of Hispanics, and 30.6% of non-Hispanic Asians;

Thank you!

Contact: Kendra B. McDow

Email: omm9@cdc.gov

<https://www.cdc.gov/nchs/nhanes>

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.





Prevalence of Obesity and Severe Obesity among Rural vs. Urban Youth and Adults: U.S. 2001-2016

Craig M. Hales, MD, MPH, MS

Medical Epidemiologist

Division of Health and Nutrition Examination Surveys

National Center for Health Statistics, CDC

Rural Health Information Hub Webinar

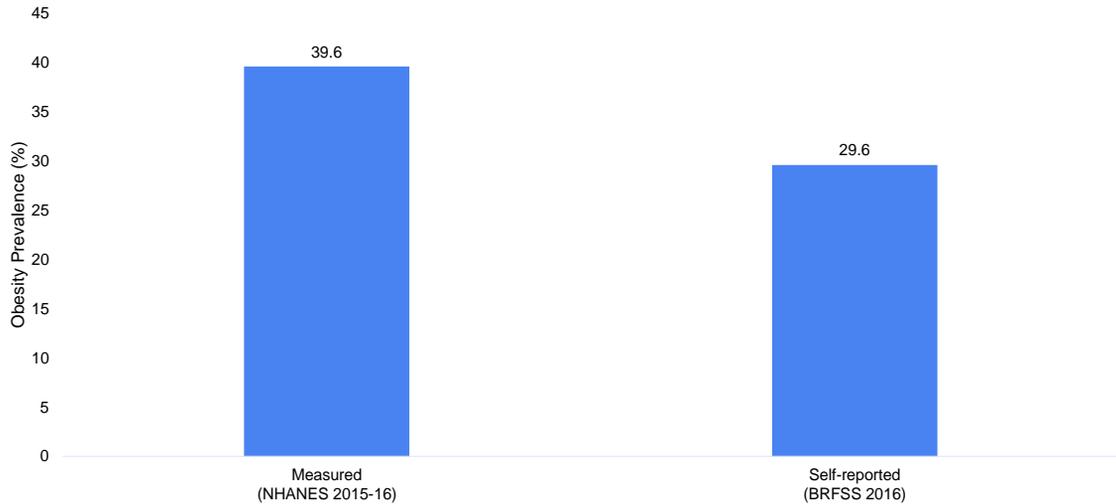
October 11, 2018

National Health and Nutrition Examination Survey (NHANES)



Standardized measurements of height and weight

Adult Obesity Prevalence is Lower Based on Self-reported Compared to Measured Height and Weight

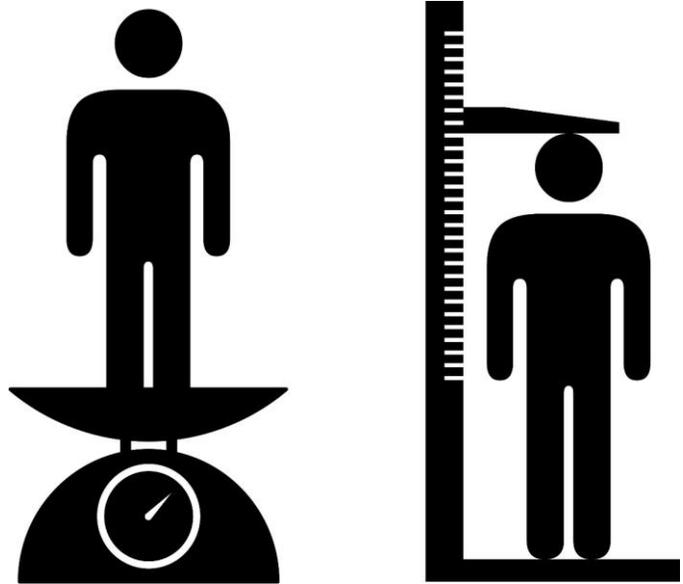


BRFSS = Behavioral Risk Factor Surveillance System

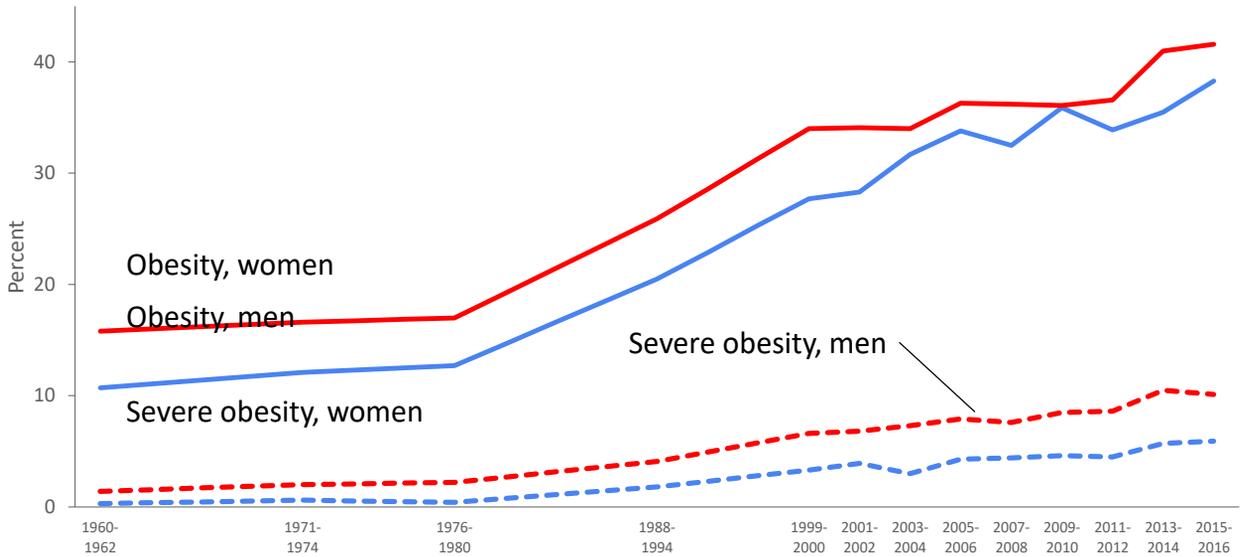
Defining Obesity

Body Mass Index (BMI)

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

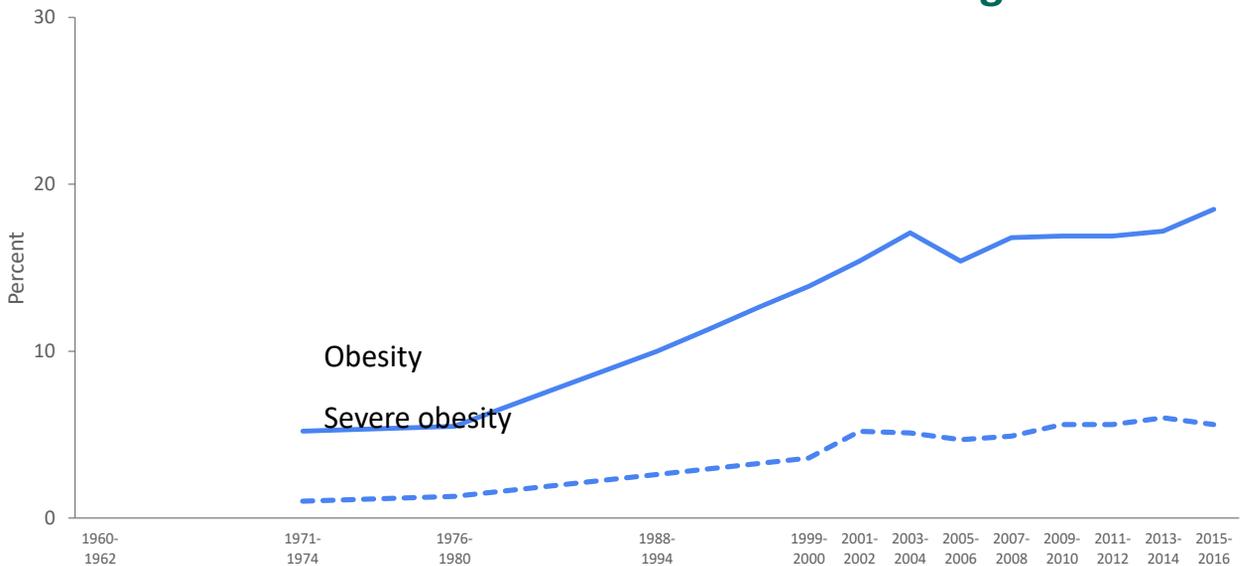


Obesity and Severe Obesity Prevalence Among U.S. Adults Continues to Increase



Source: National Health and Nutrition Examination Survey, Fryar et

Obesity and Severe Obesity Prevalence Among U.S. Youth Has Leveled Off But Continues To Be High

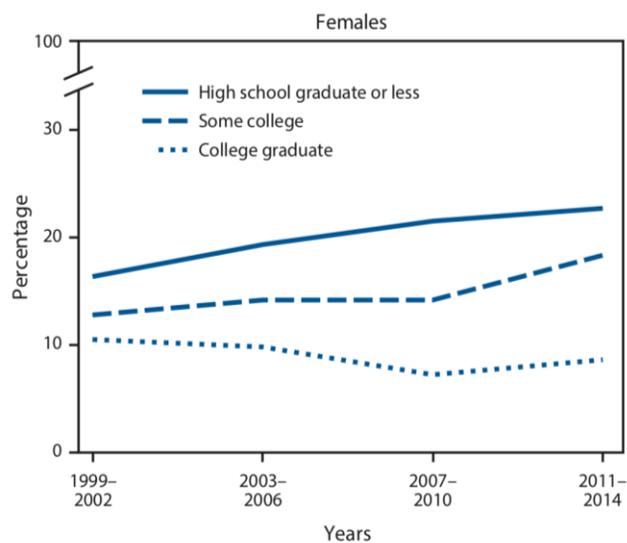


Source: National Health and Nutrition Examination Survey, Fryar et

Disparities in Obesity Prevalence

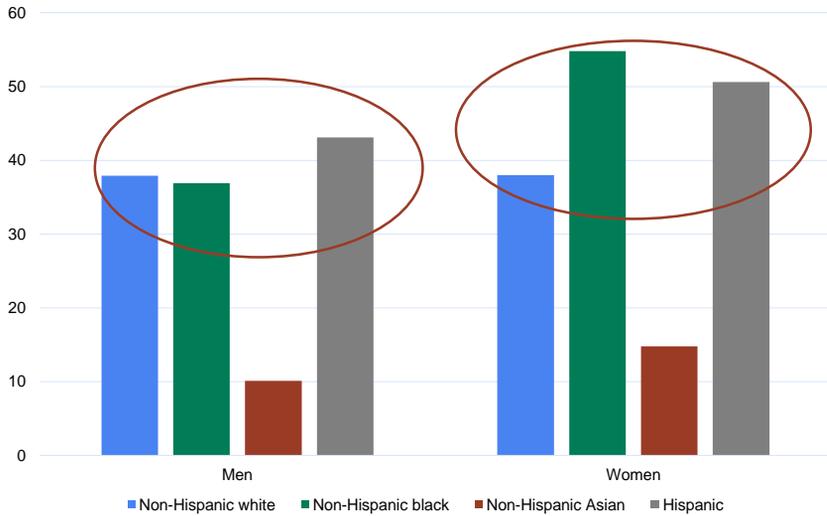
- Socioeconomic status
- Race and ethnicity
- Geographic location (state)

Obesity Prevalence Higher and Increasing Among Girls in Households with Lower Education



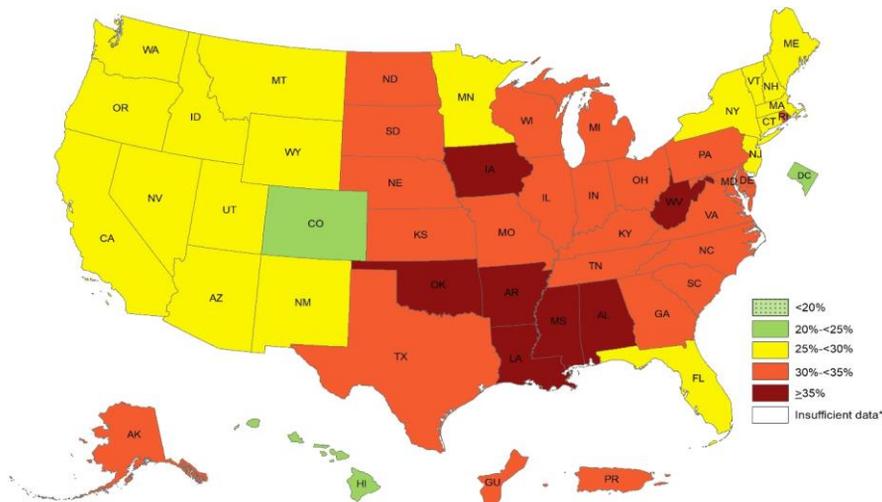
Source: Ogden CL, et al

Disparities in Obesity Prevalence by Race and Ethnicity Vary by Sex



Source: Hales et al. Data Brief 2017

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

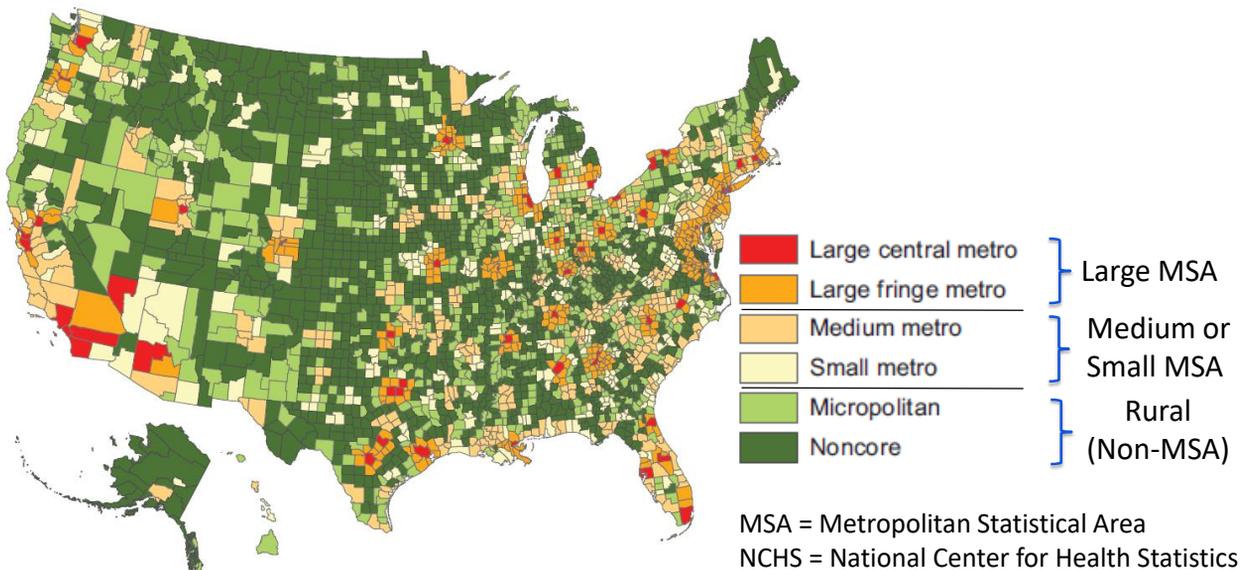


BRFSS = Behavioral Risk Factor Surveillance System

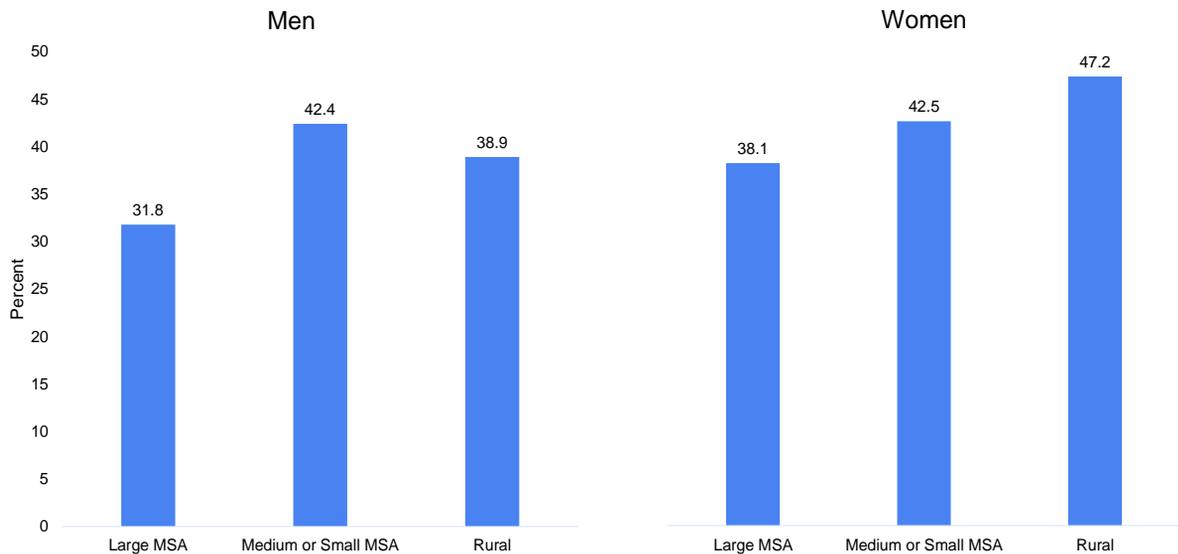


Urban/Rural Disparities in Obesity and Severe Obesity Prevalence using NHANES

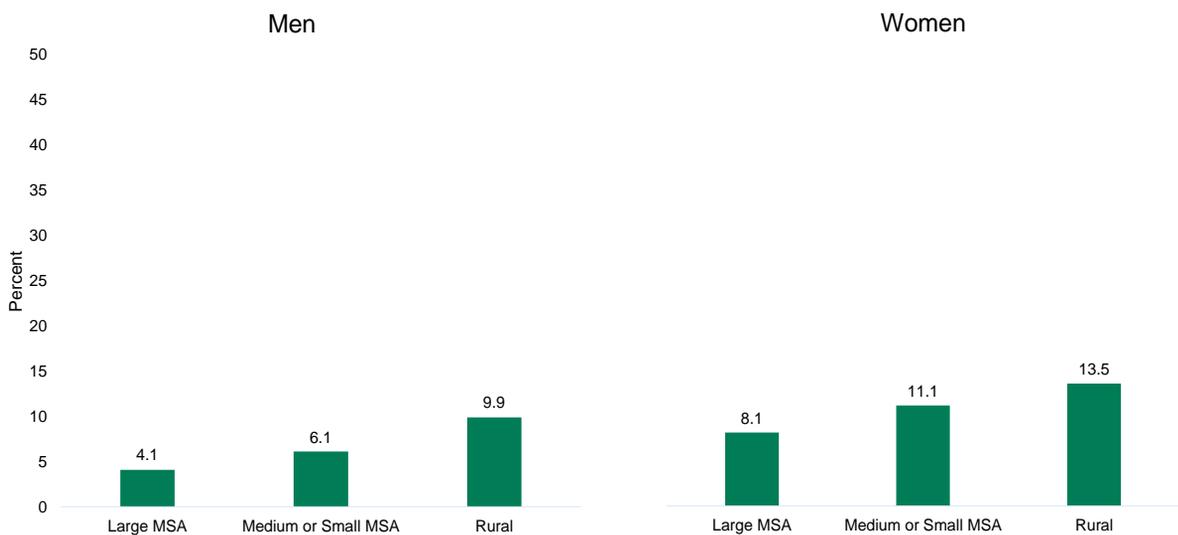
NCHS Urban-Rural Classification Scheme for Counties



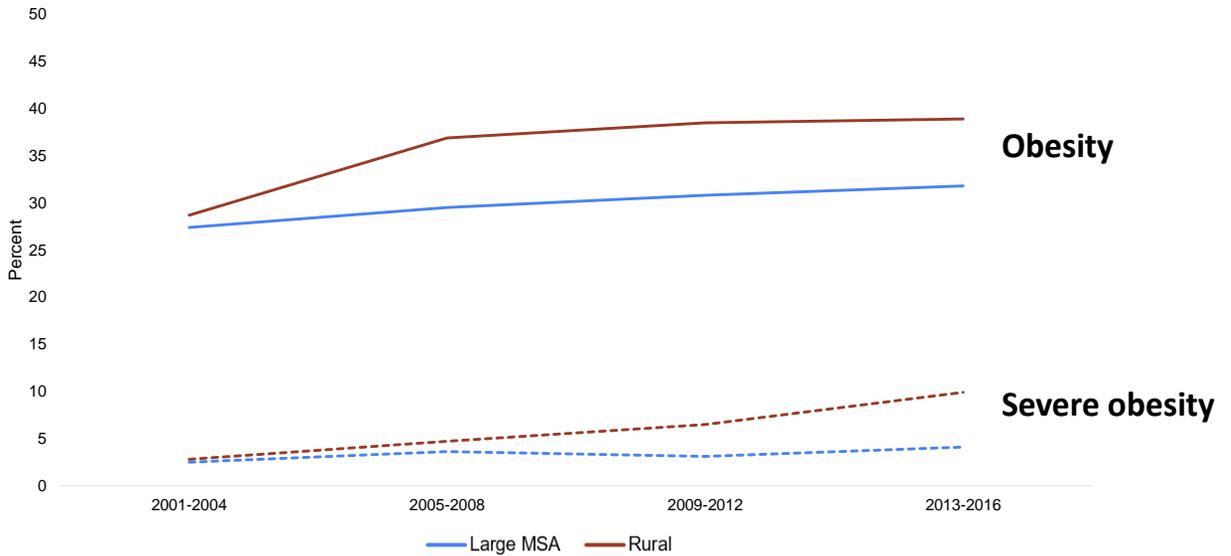
Adults: Increasing Obesity Prevalence from Urban to Rural Areas, 2013-2016



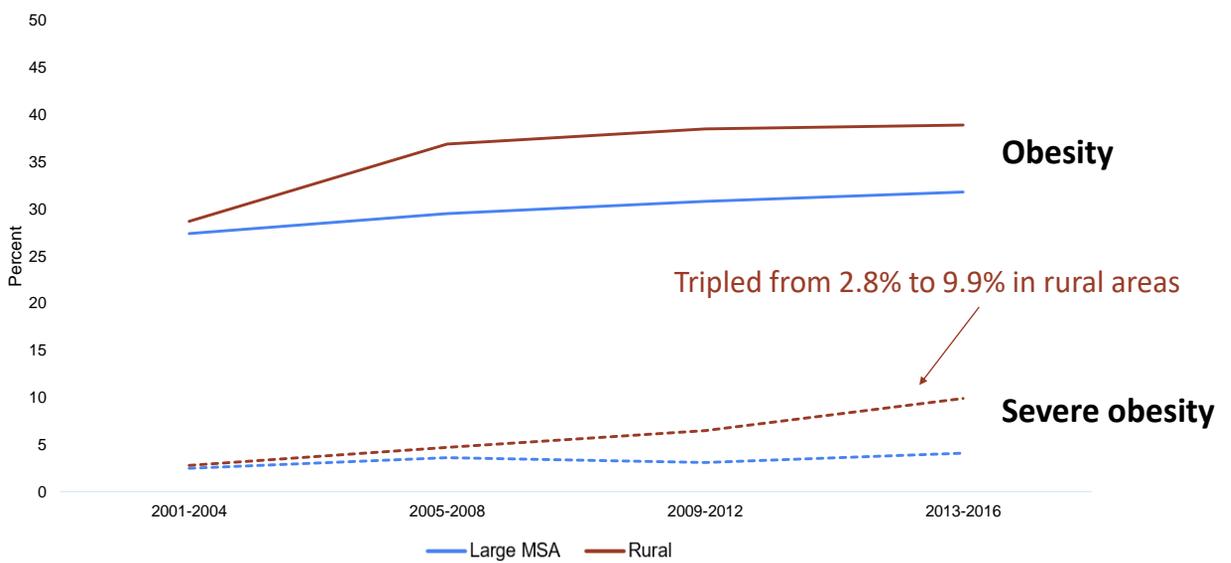
Adults: Increasing Severe Obesity Prevalence from Urban to Rural Areas, 2013-2016



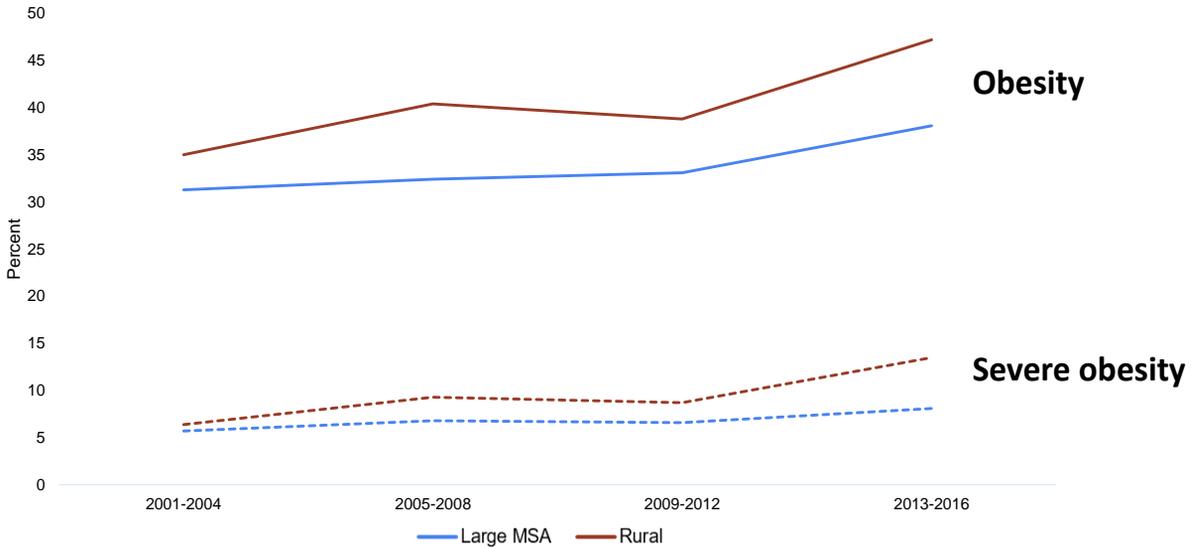
MEN: Obesity and Severe Obesity Prevalence Increased in Urban and Rural Areas 2001-2016



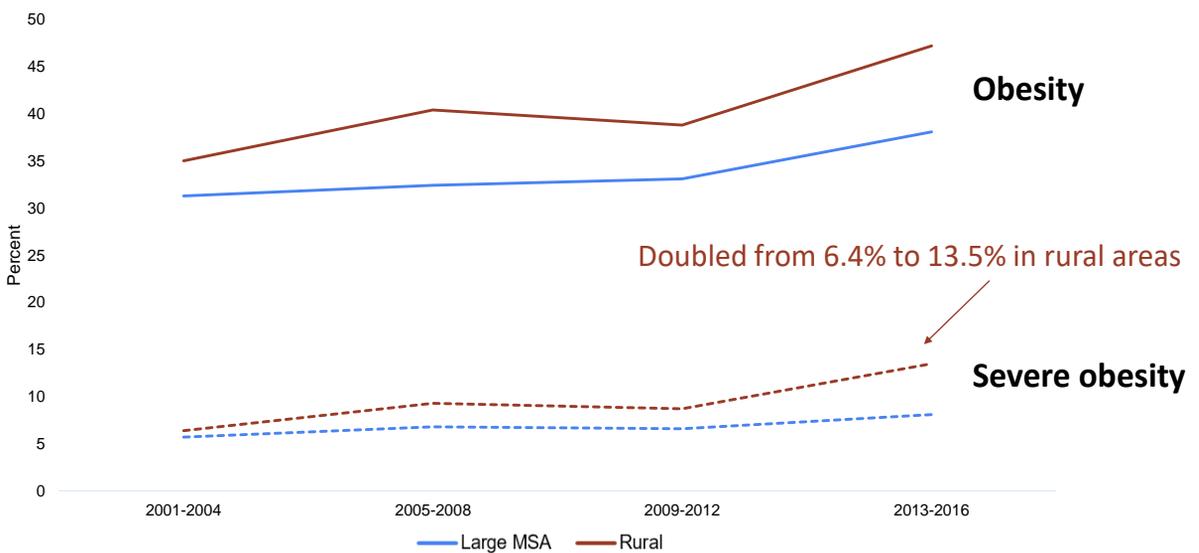
MEN: Obesity and Severe Obesity Prevalence Increased in Urban and Rural Areas 2001-2016



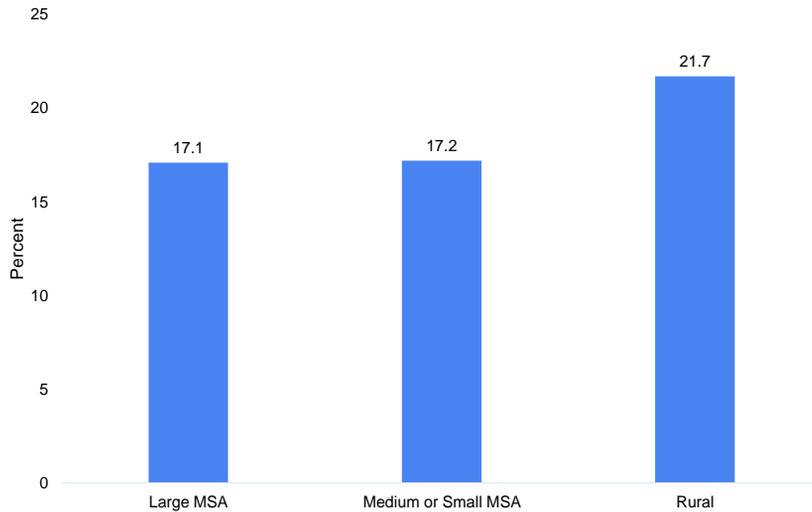
WOMEN: Obesity and Severe Obesity Prevalence Increased in Urban and Rural Areas 2001-2016



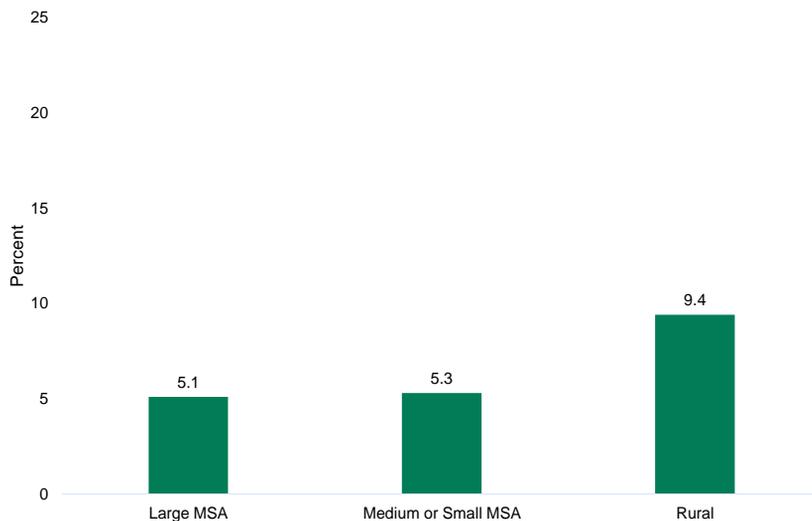
WOMEN: Obesity and Severe Obesity Prevalence Increased in Urban and Rural Areas 2001-2016



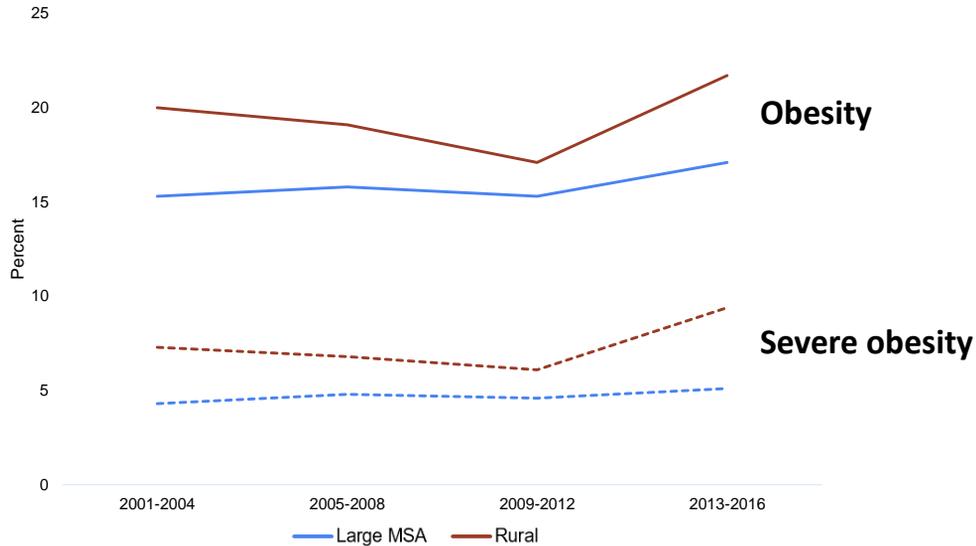
Youth: Obesity Prevalence in Rural and Urban Areas, 2013-2016



Youth: Higher Severe Obesity in Rural Compared to Urban Areas, 2013-2016



Youth: No Increasing Trends in Obesity or Severe Obesity in Urban or Rural Areas 2001-2016



Disparities in Obesity Prevalence: Rural vs. Urban



VS.



Obesity

- Higher among adults

Severe obesity

- 2x higher among adults and youth
- 2001-2016 rural trends:
 - 3x ↑ in men
 - 2x ↑ in women

See Full Reports:

JAMA 2018; 319(23)
June 19

Research
JAMA | Original Investigation
Differences in Obesity Prevalence by Demographics and Urbanization in US Children and Adolescents, 2013-2016
Cynthia L. Ogden, PhD; Cheryl D. Fryar, MSPH; Craig M. Hales, MD; Margaret D. Carroll, MSPH; Yutaka Aoki, PhD; David S. Freedman, PhD

IMPORTANCE Differences in childhood obesity by demographics and urbanization have been reported.

OBJECTIVE To present data on obesity and severe obesity among US youth by demographics and urbanization and to investigate trends by urbanization.

DESIGN, SETTING, AND PARTICIPANTS Measured weight and height among youth aged 2 to 19 years in the 2001-2016 National Health and Nutrition Examination Surveys, which are serial, cross-sectional, nationally representative surveys of the civilian, noninstitutionalized population.

EXPOSURES Sex, age, race and Hispanic origin, education of household head, and urbanization, as assessed by metropolitan statistical areas (MSAs; large: ≥ 1 million population).

MAIN OUTCOMES AND MEASURES Prevalence of obesity (body mass index [BMI] $\geq 100\%$ of 95th percentile) by subgroups in 2013-2016 and obesity (BMI $\geq 120\%$ of 95th percentile) by subgroups in 2013-2016 and urbanization between 2001-2004 and 2013-2016.

Related article
Supplemental content

Research
JAMA | Original Investigation
Differences in Obesity Prevalence by Demographic Characteristics and Urbanization Level Among Adults in the United States, 2013-2016
Craig M. Hales, MD; Cheryl D. Fryar, MSPH; Margaret D. Carroll, MSPH; David S. Freedman, PhD; Yutaka Aoki, PhD; Cynthia L. Ogden, PhD

IMPORTANCE Differences in obesity by sex, age group, race and Hispanic origin among US adults have been reported, but differences by urbanization level have been less studied.

OBJECTIVES To provide estimates of obesity by demographic characteristics and urbanization level and to examine trends in obesity prevalence by urbanization level.

DESIGN, SETTING, AND PARTICIPANTS Serial cross-sectional analysis of measured height and weight among adults aged 20 years or older in the 2001-2016 National Health and Nutrition Examination Survey, a nationally representative survey of the civilian, noninstitutionalized US population.

EXPOSURES Sex, age group, race and Hispanic origin, education level and urbanization level as assessed by metropolitan statistical areas (MSAs; large: ≥ 1 million population).

Related article page 2410
Supplemental content

Acknowledgements

- Cynthia L. Ogden, PhD
- Cheryl D. Fryar, MSPH
- Margaret D. Carroll, MSPH
- David S. Freedman, PhD
- Yutaka Aoki, PhD



National Health and Nutrition Examination Survey

Thank you!

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

chales@cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



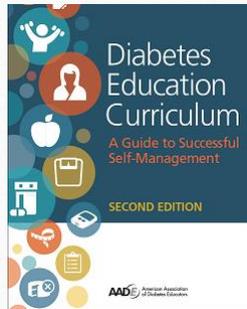
HRSA Delta State Rural Development Network Grant Program (DELTA)

DELTA STATE UNIVERSITY

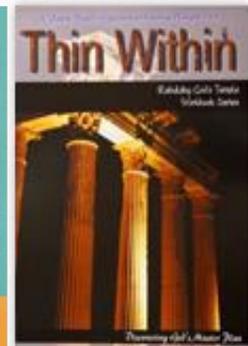
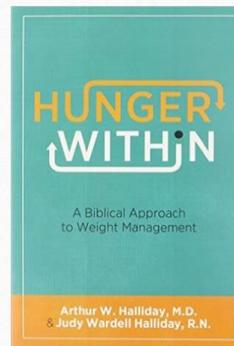
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Evidenced-Based Programs



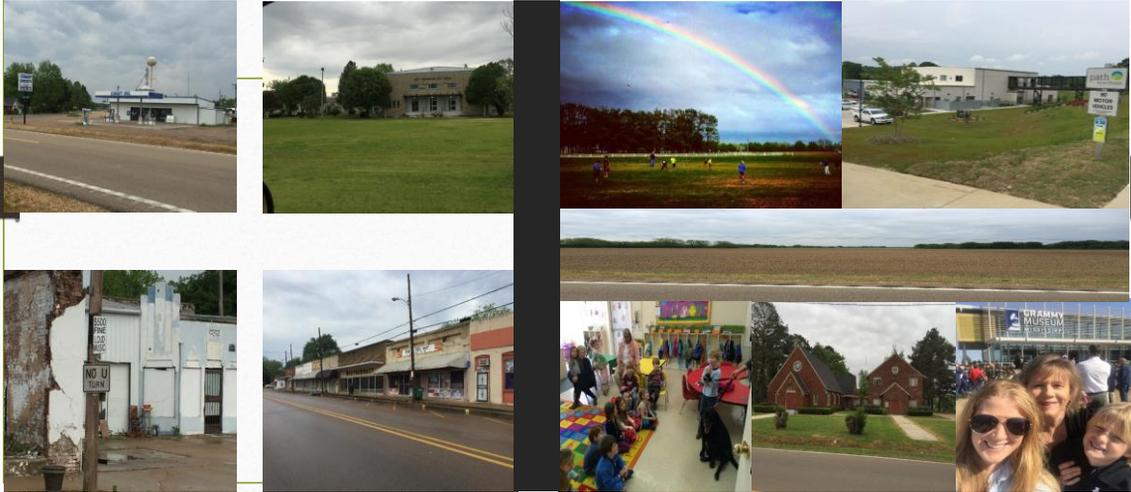
National Diabetes Prevention Program



Weight Loss Pilot Programs

- SHAPEDOWN
 - 10 Weeks
 - 2 hour sessions
 - 1 hour education
 - 1 hour physical activity
- Structured Weight Loss Program
 - CMS Intensive Behavioral Therapy for Obesity

What Was Learned?



GAPS

- Research
- Practice
- Program Development



How Do We Deepen Rural Engagement?

- Communities

- Change the “NORM”
 - Healthy Living Where We
 - *Live, Work, Learn, & Play*
- Train People Living in the Community



Questions?

The screenshot shows a Cisco Webex Events window. The main content area displays the RHI Hub logo and a map of the United States. A red arrow points from the bottom navigation bar, specifically to a question icon, towards the Q&A panel on the right. The Q&A panel is titled "Q&A" and shows "All (0)" questions. Below the panel, there is a text input field with the instruction "Select a question, and then type your answer here. There is a 256-character limit." and two buttons: "Send" and "Send Privately...".

Thank you!

- Contact us at ruralhealthinfo.org with any questions
- Please complete webinar survey
- Recording and transcript will be available on RHIhub website