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Rural Health Information Hub

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

Rural Insights from the National Center for Health Statistics on Teen Births and Infant Mortality

Housekeeping

- Q & A to follow – Submit questions using Q&A area
- Slides are available at https://www.ruralhealthinfo.org/webinars/teen-birth-infant-mortality
- Technical difficulties please call 866-229-3239

Featured Speakers

- **Amy M. Branum, Ph.D., MSPH,** Deputy Associate Director for Science, National Center for Health Statistics, Centers for Disease Control and Prevention
- **Brady E. Hamilton, Ph.D.,** Demographer, Division of Vital Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention
- **Danielle M. Ely, Ph.D.,** Health Statistician, Division of Vital Statistics, National Center for Health Statistics, Centers for Disease Control and Prevention

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RHIhub Rural Health Information Hub

National Center for Health Statistics

NCHS and Urban/Rural Health

Amy M. Branum, MSPH, PhD

Deputy Associate Director of Science

RHI Webinar

June 26, 2018

What is the National Center for Health Statistics?

- YOUR health statistics agency!
  - Independent until the late 1980s then incorporated as part of CDC
  - Home to major household-based population surveys, healthcare surveys, and vital statistics for the entire United States
- Producer of dozens of statistical reports, journal articles, data files, and technical information each year

NCHS as a Federal Statistical Agency

- NCHS is one of 13 designated Federal Statistical Agencies (FSAs) in the U.S.
- FSAs have a responsibility to produce unbiased, policy neutral, transparent information for policymakers, researchers, and the general public
- NCHS meets this mission by operating under certain principles to ensure that the information we provide is accurate and unbiased

Main data products

- 3 large household-based surveys

National Health Interview Survey

National Health and Nutrition Examination Survey

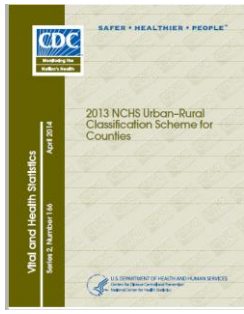
National Survey of Family Growth

- A suite of healthcare surveys
  - *National Ambulatory Care Survey*
  - *National Hospital Ambulatory Care Survey*
  - *National Hospital Care Survey*
  - *More!*
- Vital statistics
  - Birth, death, fetal death, linked infant birth and death records

Measurement of geography in NCHS data

- All data systems include some level of geography
  - Level may vary but most include information at least down to county level
- Geography not available on most publicly available data
  - Exceptions for some files may include MSA/non-MSA
- Lower levels of geography available via restricted-use data
  - Data have to be obtained or accessed under controlled procedures

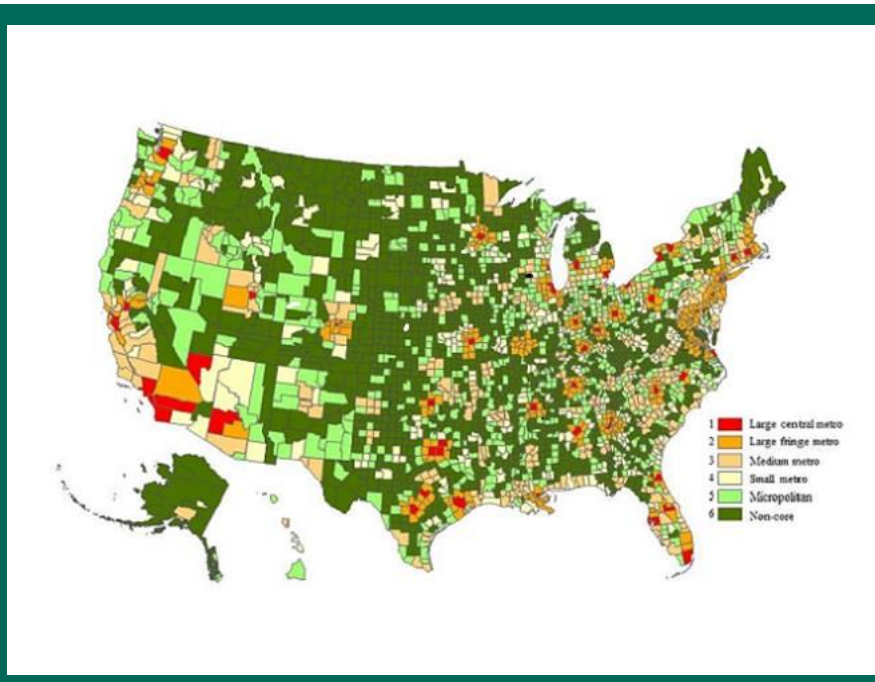
NCHS Urban Rural Scheme



- NCHS created own scheme geared towards classification that would be useful to measure health statistics
- Based on OMB's delineation of MSA and micropolitan areas

  See 2010 standards: https://www.gpo.gov/fdsys/pkg/FR-2010-06-28/pdf/2010-15605.pdf
- Key feature is the separation of large metro areas into "large central" and "large fringe"

  Important to make the distinction within urban areas since health outcomes vary according to central (inner cities) and fringe (suburbs) areas



https://www.cdc.gov/nchs/data_access/urban_rural.htm

Urban Rural Research at NCHS

- Increased focus on urban/rural status in health reports
- Since 2015, have published at least 6 NCHS Data Briefs on topics focused solely on urban/rural differences, or that incorporate urban/rural
- Very recent articles published in JAMA on differences in obesity between urban and rural areas
- MSA/non-MSA now incorporated in “Key Estimates” from the National Health Interview Survey data visualization

Two recent examples

Data Briefs

Intended to succinctly and clearly describe a public health issue

Convey data through 4-5 figures and brief text

NCHS Data Brief ■ No. 297 ■ January 2018

Urban and Rural Variation in Fertility-related Behavior Among U.S. Women, 2011–2015

Kimberly Daniels, Ph.D., Gladys M. Martinez, Ph.D., and Colleen N. Nugent, Ph.D.

Key findings

Data from the National Survey of Family Growth

NCHS Data Brief ■ No. 300 ■ February 2018

Differences Between Rural and Urban Areas in Mortality Rates for the Leading Causes of Infant Death: United States, 2013–2015

Danielle M. Ely, Ph.D., and Donna L. Hoyert, Ph.D.

Key findings

Data from the National Vital Statistics System

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

https://www.cdc.gov/nchs/products/databriefs.htm

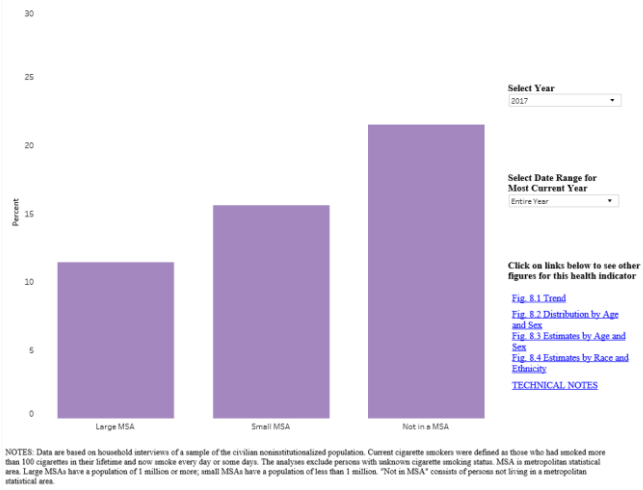
Selected estimates from the National Health Interview Survey

New data visualization tool

Replaces previous static report

Now incorporates information for each key estimate by MSA

Figure 8.5. Prevalence of current cigarette smoking among adults aged 18 and over, by metropolitan statistical area (MSA) status: United States, 2017



https://www.cdc.gov/nchs/nhis/releases/released201806.htm

Journal articles

Recent publications in JAMA

Uses data from the National Health and Nutrition Examination Survey

Examines trends in urban/rural differences in obesity among adults and youth


JAMA | Original Investigation

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

Hales CR, Fryar CD, Carroll MD, Freedman DS, Aoki Y, Ogden CL. Differences in obesity prevalence by demographic characteristics and urbanization level among adults in the United States, 2013-2016. JAMA. June 19, 2018;319(23):2419-2429


JAMA | Original Investigation

Differences in Obesity Prevalence by Demographics and Urbanization in US Children and Adolescents, 2013-2016

Ogden CL, Fryar CD, Hales CM, Carroll MD, Aoki Y, Freedman DS. Differences in obesity prevalence by demographics and urbanization in US children and adolescents, 2013-2016. JAMA. June 19, 2018;319(23):2410-2418

NCHS resources:

General NCHS website:
https://www.cdc.gov/nchs/index.htm
NCHS Surveys and Data Collection Systems:
https://www.cdc.gov/nchs/surveys.htm#tabs-2-1
NCHS Publication and Information Products:
https://www.cdc.gov/nchs/products/index.htm
NCHS Restricted Data
https://www.cdc.gov/rdc/b1datatype/dt100.htm

National Center for Health Statistics

For more information and questions please contact me:

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Thank you!

Teen Birth Rates for Urban and Rural Areas in the United States, 2007–2016

Brady E. Hamilton, Ph.D.
Reproductive Statistics Branch
Division of Vital Statistics
National Center for Health Statistics

Rural Health Webinar
June 26, 2018

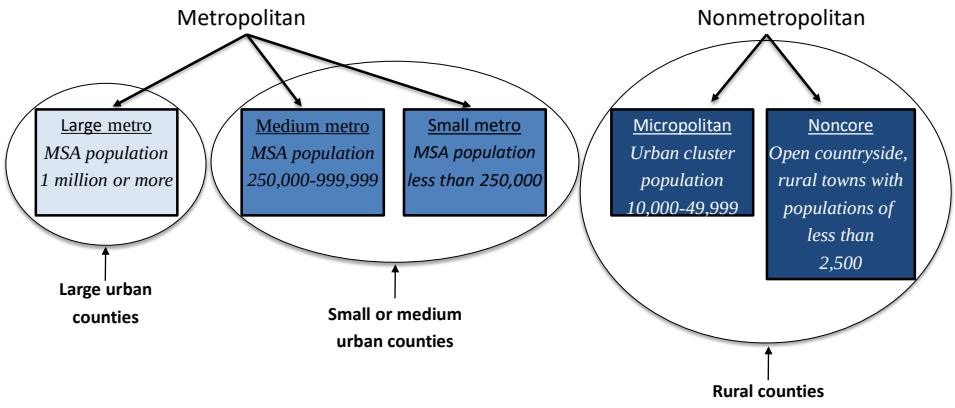
Acknowledgements

- **Amy M. Branum**
- **Lauren M. Rossen**
- **Danielle M. Ely**

Methods

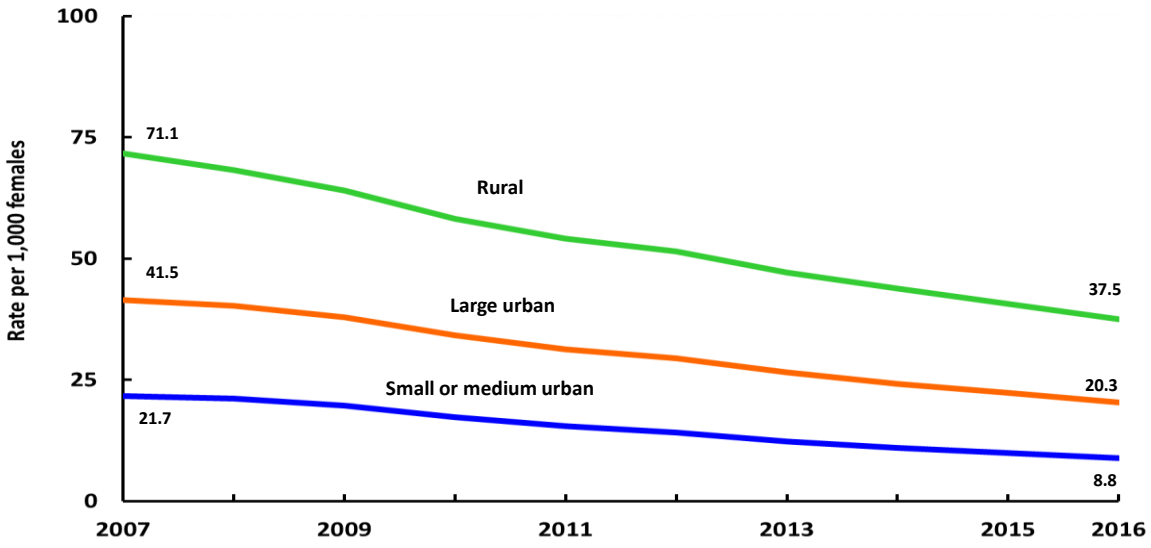
- **Data for 2007-2016 are final.**
- **Data by race for 2007-2016 are bridged to the 1977 OMB standards.**

2013 NCHS Urban-Rural Classification Scheme



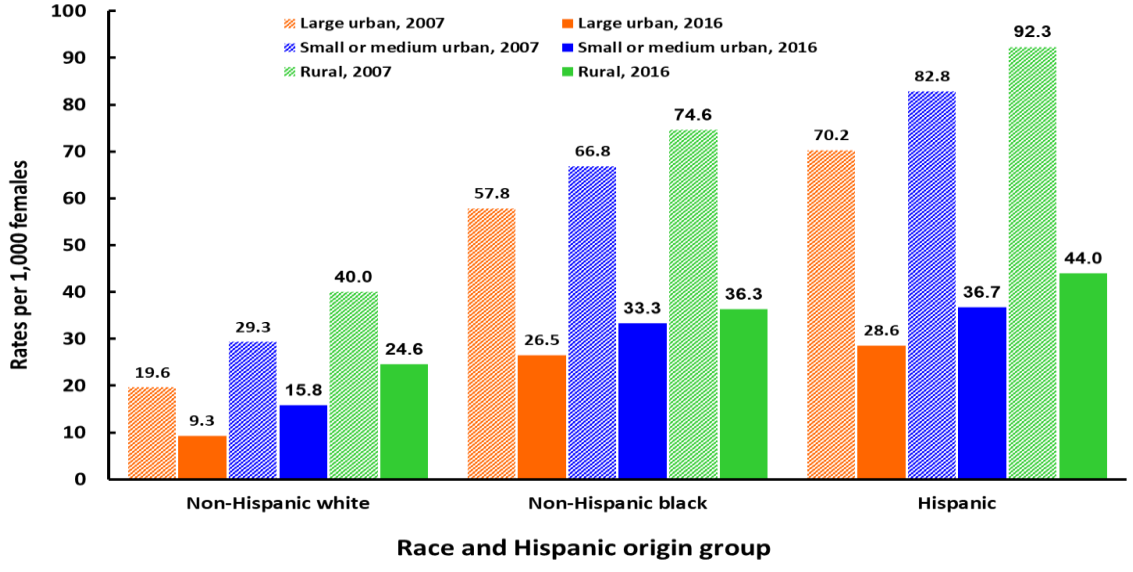
MSA is Metropolitan Statistical Area

Birth rates for females aged 15-19, by urbanization level, 2007–2016



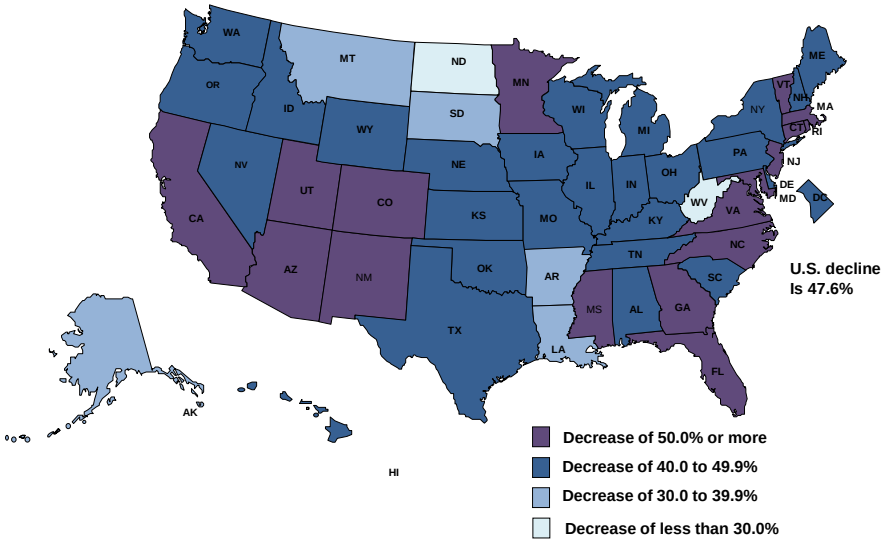
SOURCE: NCHS, National Vital Statistics System, Natality

Birth rates for females aged 15-19, by urbanization level and selected race and Hispanic origin, 2007 and 2016



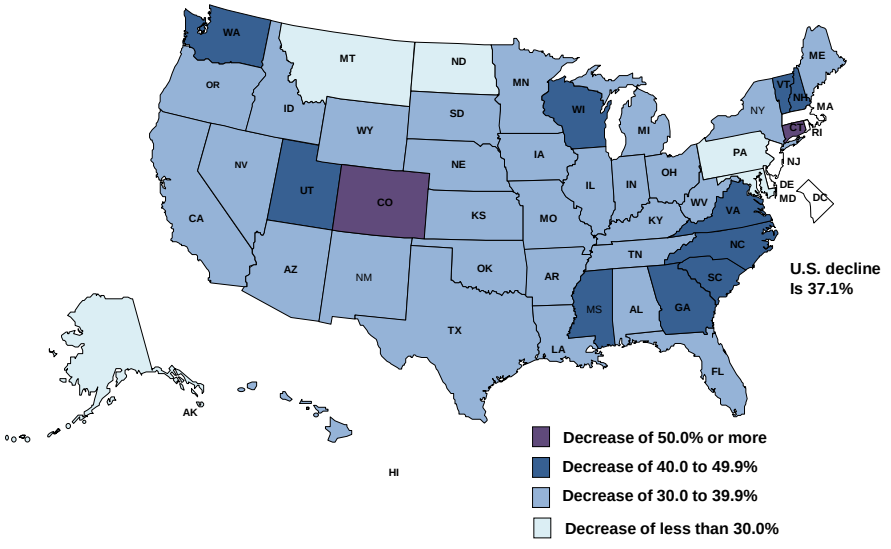
SOURCE: NCHS, National Vital Statistics System, Natality

Percent change in the teen birth rate for all urban counties: United States, each state, 2007 and 2015



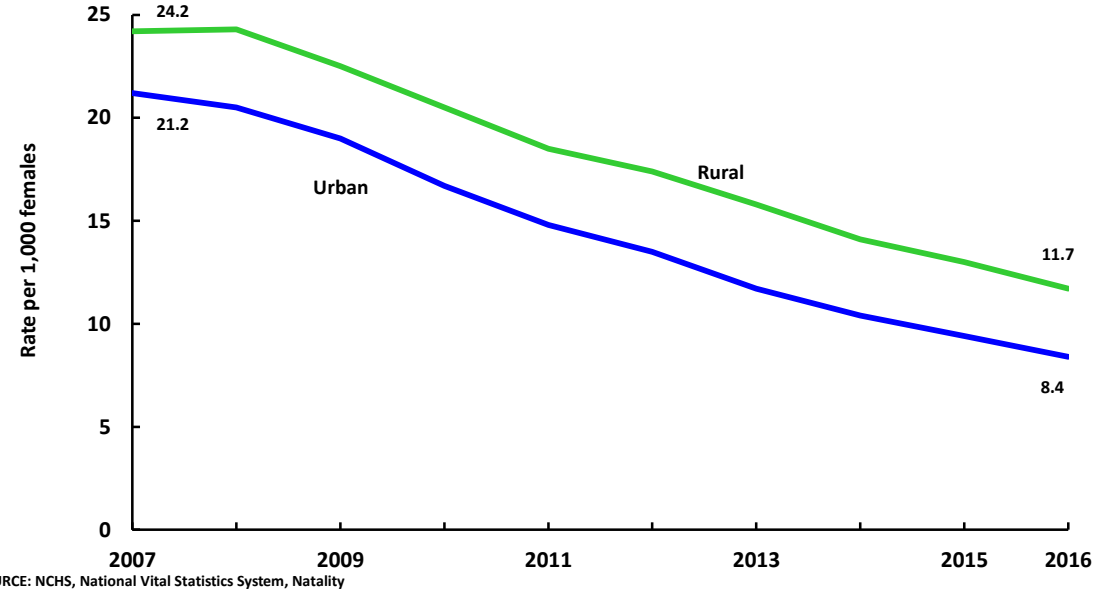
SOURCE: NCHS, National Vital Statistics System, Natality

Percent change in the teen birth rate for all rural counties: United States, each state, 2007 and 2015



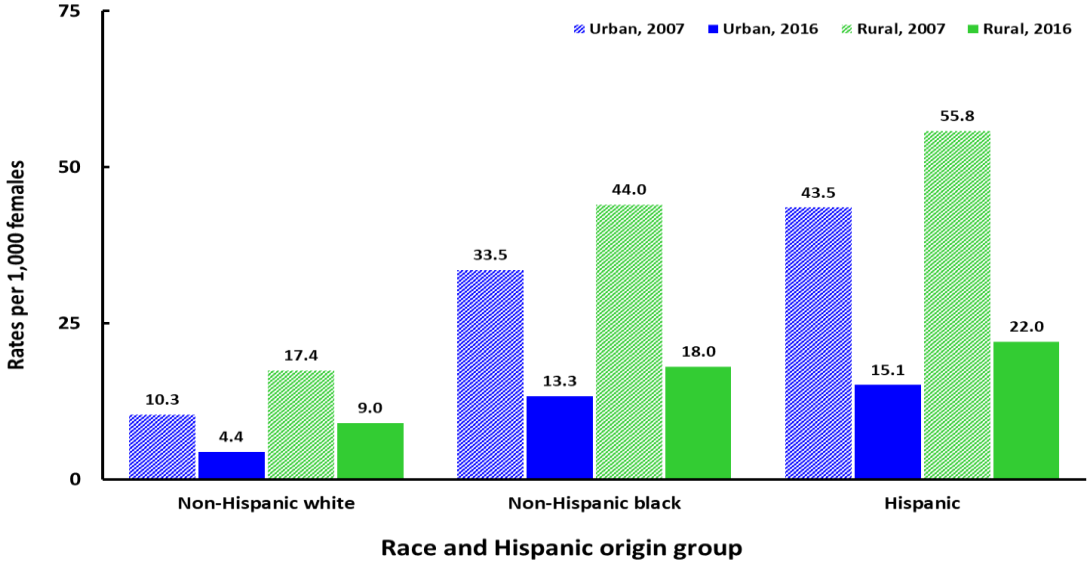
SOURCE: NCHS, National Vital Statistics System, Natality

Birth rates for females aged 15-17, by urbanization level, 2007–2016



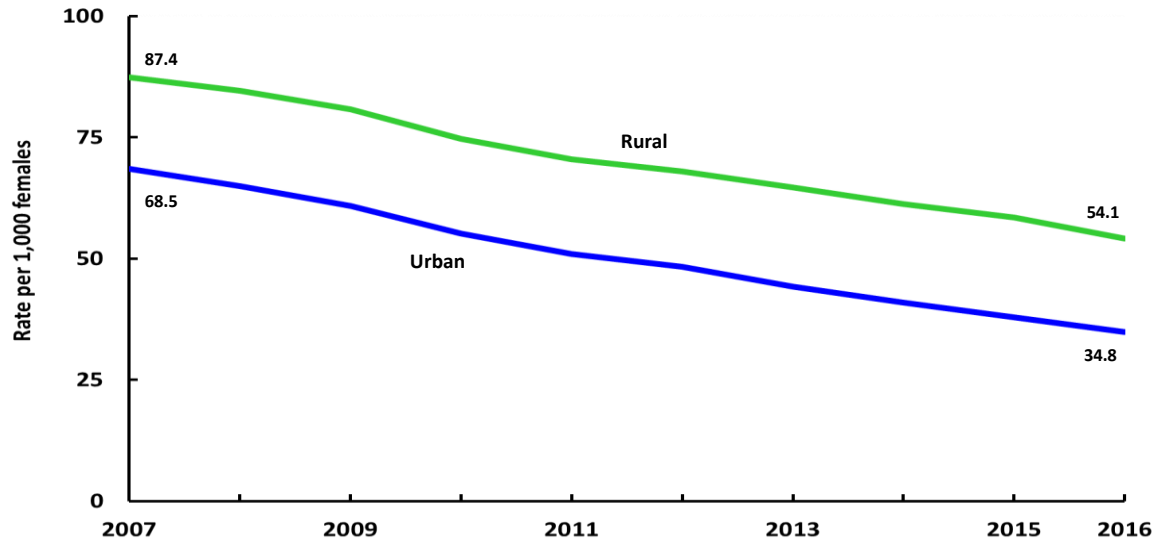
SOURCE: NCHS, National Vital Statistics System, Natality

Birth rates for females aged 15-17, by urbanization level and selected race and Hispanic origin, 2007 and 2016



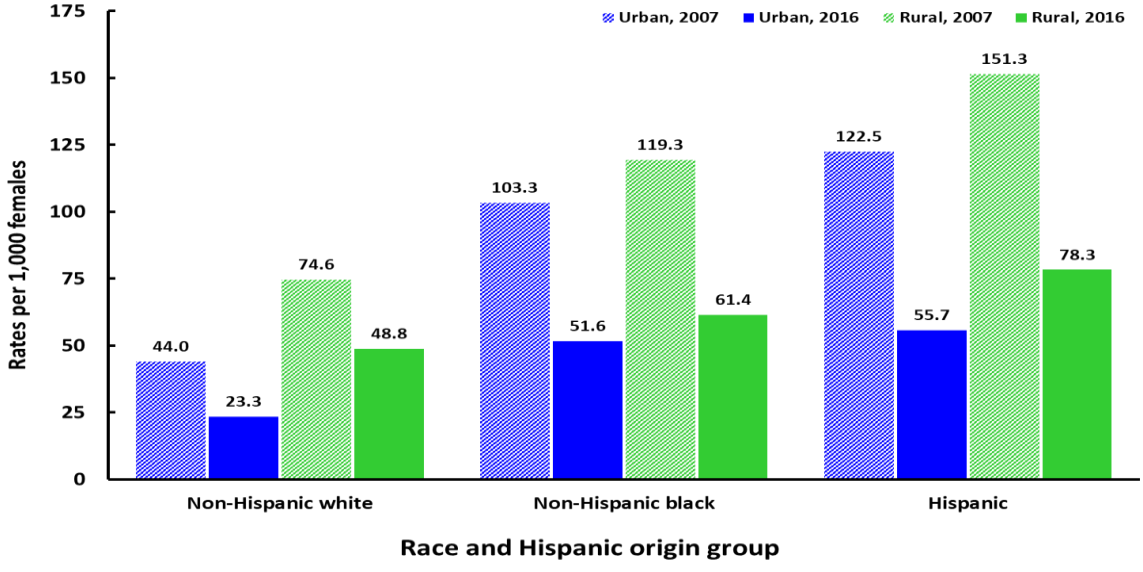
SOURCE: NCHS, National Vital Statistics System, Natality

Birth rates for females aged 18-19, by urbanization level, 2007–2016



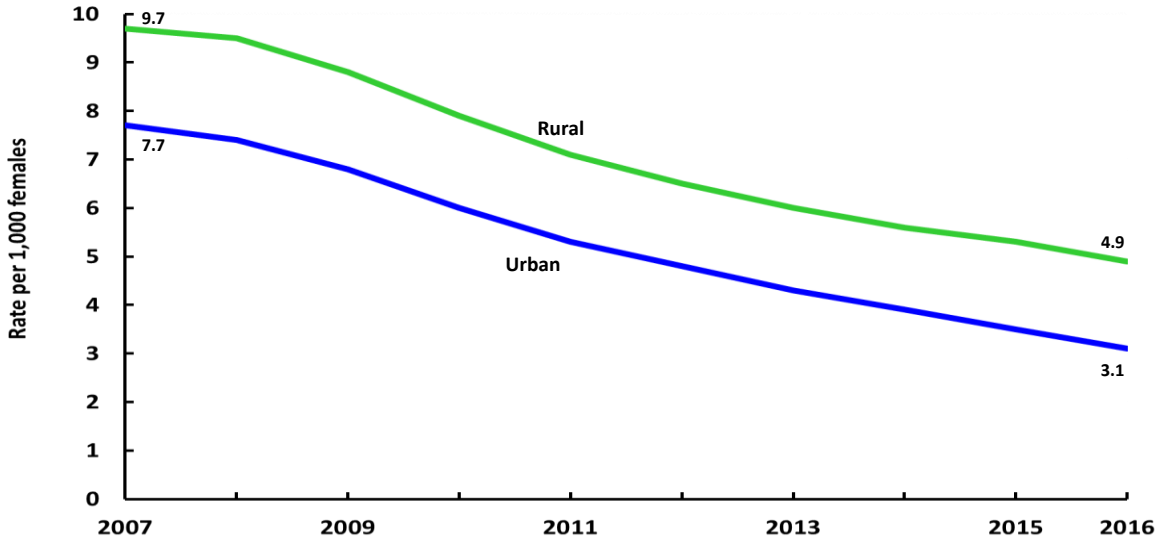
SOURCE: NCHS, National Vital Statistics System, Natality

Birth rates for females aged 18-19, by urbanization level and selected race and Hispanic origin, 2007 and 2016



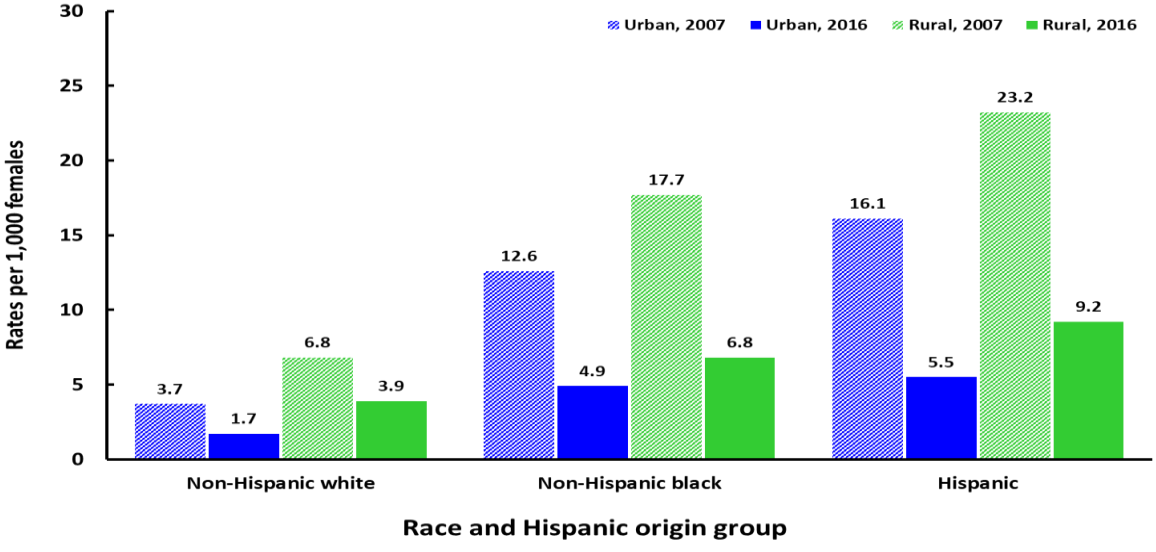
SOURCE: NCHS, National Vital Statistics System, Natality

Second and higher-order birth rates for females aged 15-19, by urbanization level, 2007–2016



SOURCE: NCHS, National Vital Statistics System, Natality

Second and higher-order birth rates for females aged 15-19, by urbanization level and selected race and Hispanic origin, 2007 and 2016



SOURCE: NCHS, National Vital Statistics System, Natality

Summary

- **Birth rates for females aged 15-19, 15-17, and 18-19 years declined in each urbanization area from 2007 through 2016.**

- **Birth rates for females aged 15-19, 15-17, and 18-19 years by race and Hispanic origin declined in each urbanization area from 2007 to 2016.**

- **Differences in teen childbearing rates by race and Hispanic origin and by urbanization area continue from 2007 through 2016.**

Thank you

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Urban-Rural Differences in Infant Mortality

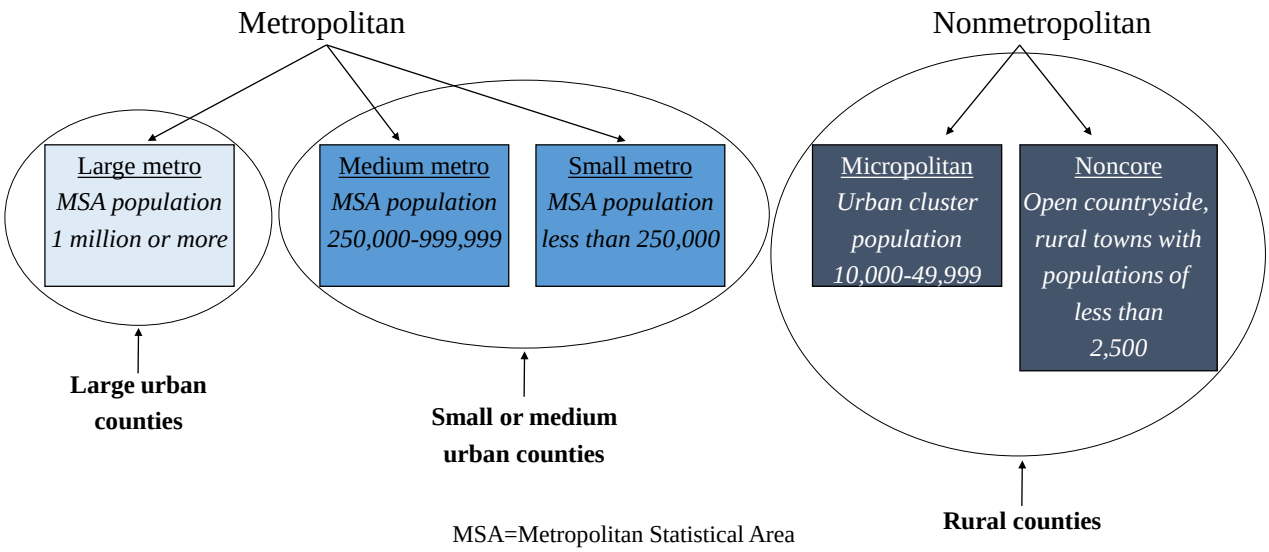
Danielle Ely, Ph.D.
National Center for Health Statistics

Definitions

- Infant mortality rate: Number of infant (aged under 1 year) deaths per 1,000 live births.
- Large urban: MSA population of 1 million or more
- Small or medium urban: MSA population of less than 250,000 or of 250,000 to less than 1 million
- Rural: Micropolitan urban population of 10,000 to less than 50,000 and noncore areas

MSA=Metropolitan Statistical Area

2013 NCHS Urban-Rural Classification Scheme



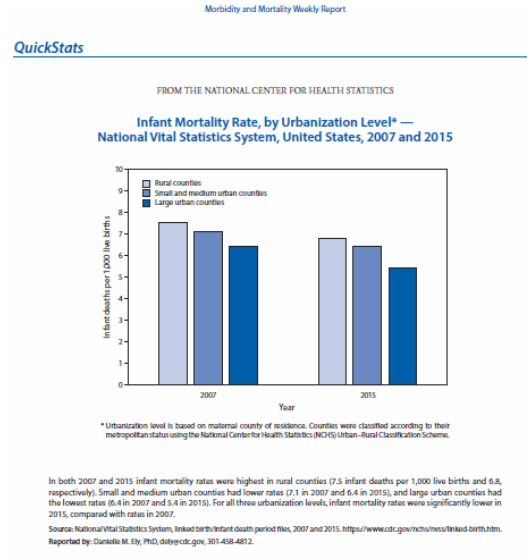
MSA=Metropolitan Statistical Area

Infant mortality by urbanization level

- Infant mortality rates
- Infant mortality rates by race and Hispanic origin group
- Mortality rates for the leading causes of infant death

Infant mortality rates

- 2007 and 2015 data
- Period linked birth/infant death file
- Previously published



Morbidity and Mortality Weekly Report

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Infant Mortality Rate, by Urbanization Level* — National Vital Statistics System, United States, 2007 and 2015

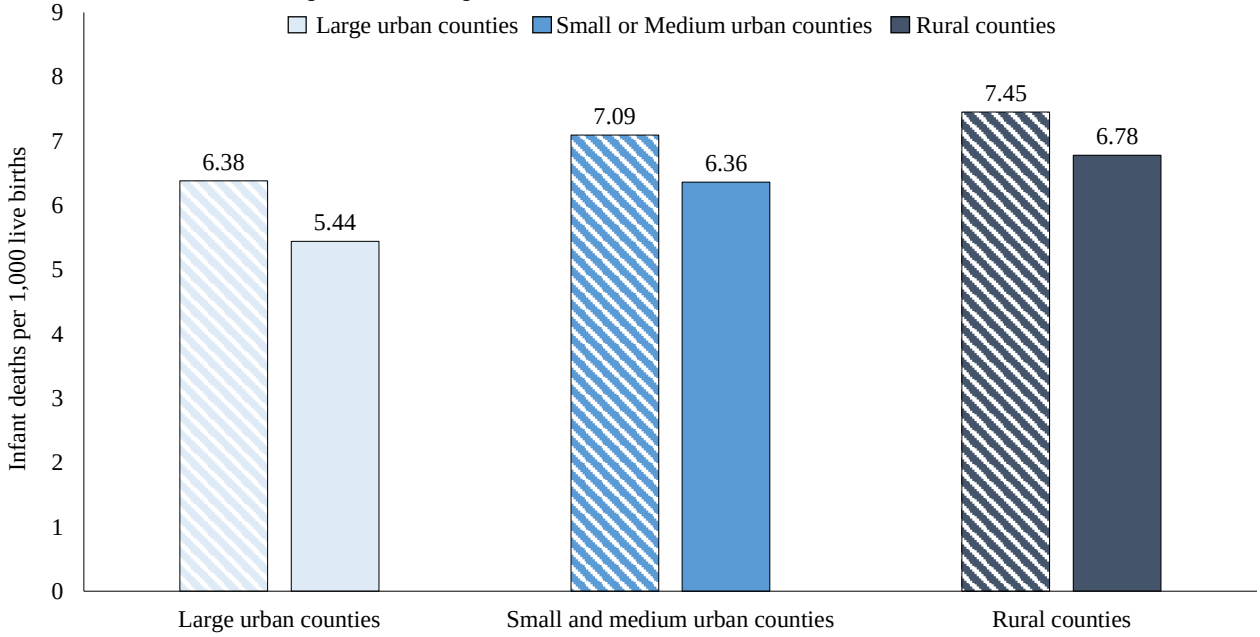
* Urbanization level is based on maternal county of residence. Counties were classified according to their metropolitan status using the National Center for Health Statistics (NCHS) Urban–Rural Classification Scheme.

In both 2007 and 2015 infant mortality rates were highest in rural counties (7.5 infant deaths per 1,000 live births and 6.8, respectively). Small and medium urban counties had lower rates (7.1 in 2007 and 6.4 in 2015), and large urban counties had the lowest rates (6.4 in 2007 and 5.4 in 2015). For all three urbanization levels, infant mortality rates were significantly lower in 2015, compared with rates in 2007.

Source: National Vital Statistics System, linked birth/infant death period files, 2007 and 2015. https://www.cdc.gov/nchs/nvss/linked-birth.htm.

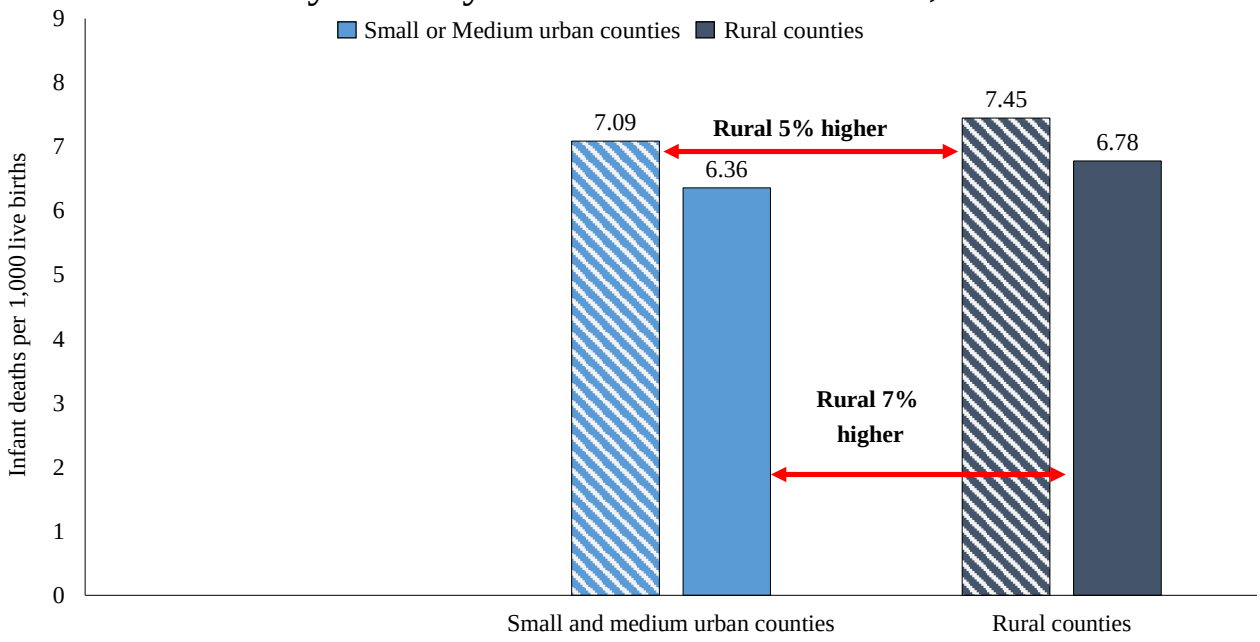
Reported by: Danielle M. Ely, PhD, dely@cdc.gov, 301-458-4812.

Infant mortality rates by urbanization level: U.S., 2007 and 2015



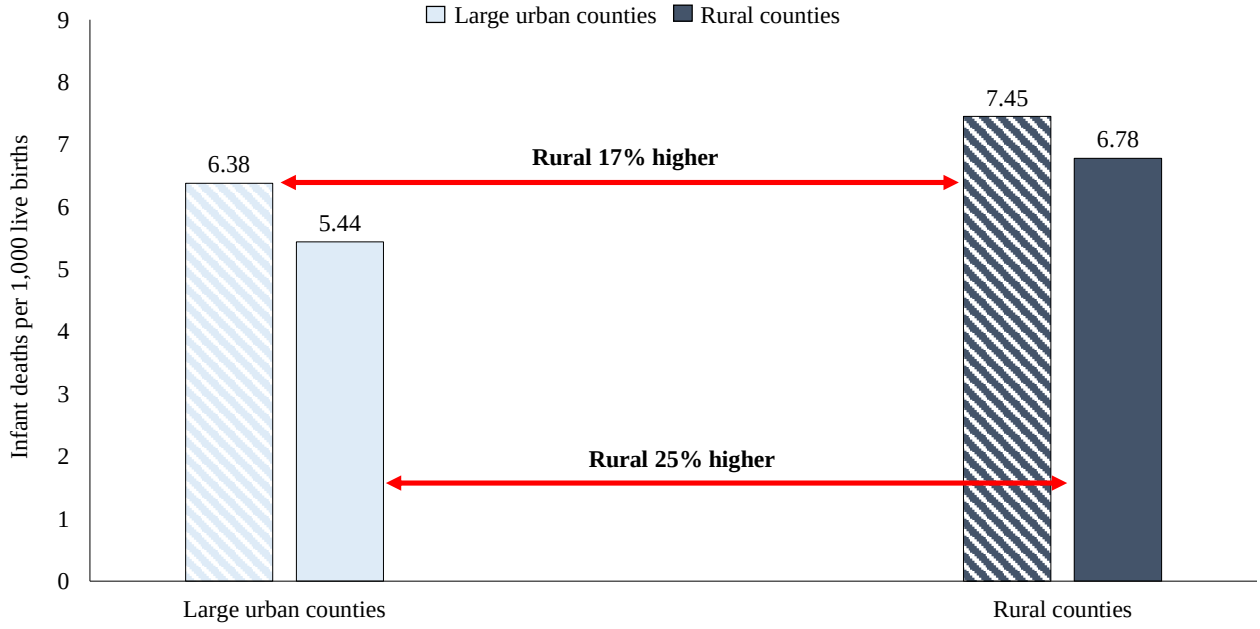
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level: U.S., 2007 and 2015



SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level: U.S., 2007 and 2015



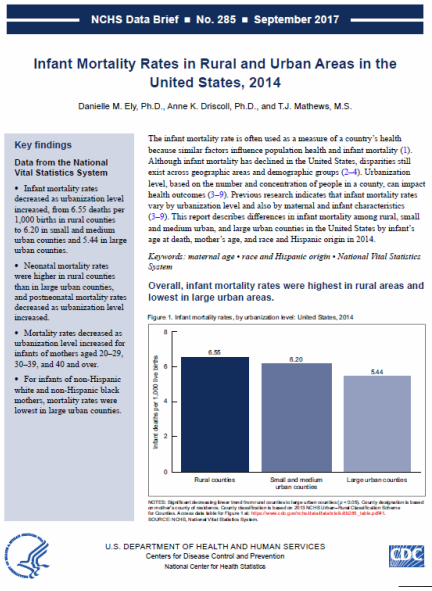
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level from 2007 to 2015

- Decreased infant mortality rates across urbanization levels between 2007 and 2015
- Differences between rural and urban counties widened from 2007 to 2015

Infant mortality rates by race and Hispanic origin

- 2014 data
- Period linked birth/infant death file
- Previously published



NCHS Data Brief ■ No. 285 ■ September 2017

Infant Mortality Rates in Rural and Urban Areas in the United States, 2014

Danielle M. Ely, Ph.D., Anne K. Driscoll, Ph.D., and T.J. Mathews, M.S.

Key findings

Data from the National Vital Statistics System

- Infant mortality rates decreased as urbanization level increased, from 6.55 deaths per 1,000 births in rural counties to 6.20 in small and medium urban counties and 5.44 in large urban counties.
- Neonatal mortality rates were higher in rural counties than in large urban counties, and postneonatal mortality rates decreased as urbanization level increased.
- Mortality rates decreased as urbanization level increased for infants of mothers aged 20–29, 30–39, and 40 and over.
- For infants of non-Hispanic white and non-Hispanic black mothers, mortality rates were lowest in large urban counties.

The infant mortality rate is often used as a measure of a country's health because similar factors influence population health and infant mortality (1). Although infant mortality has declined in the United States, disparities still exist across geographic areas and demographic groups (2–4). Urbanization level, based on the number and concentration of people in a county, can impact health outcomes (3–9). Previous research indicates that infant mortality rates vary by urbanization level and also by maternal and infant characteristics (3–9). This report describes differences in infant mortality among rural, small and medium urban, and large urban counties in the United States by infant's age at death, mother's age, and race and Hispanic origin in 2014.

Keywords: maternal age • race and Hispanic origin • National Vital Statistics System

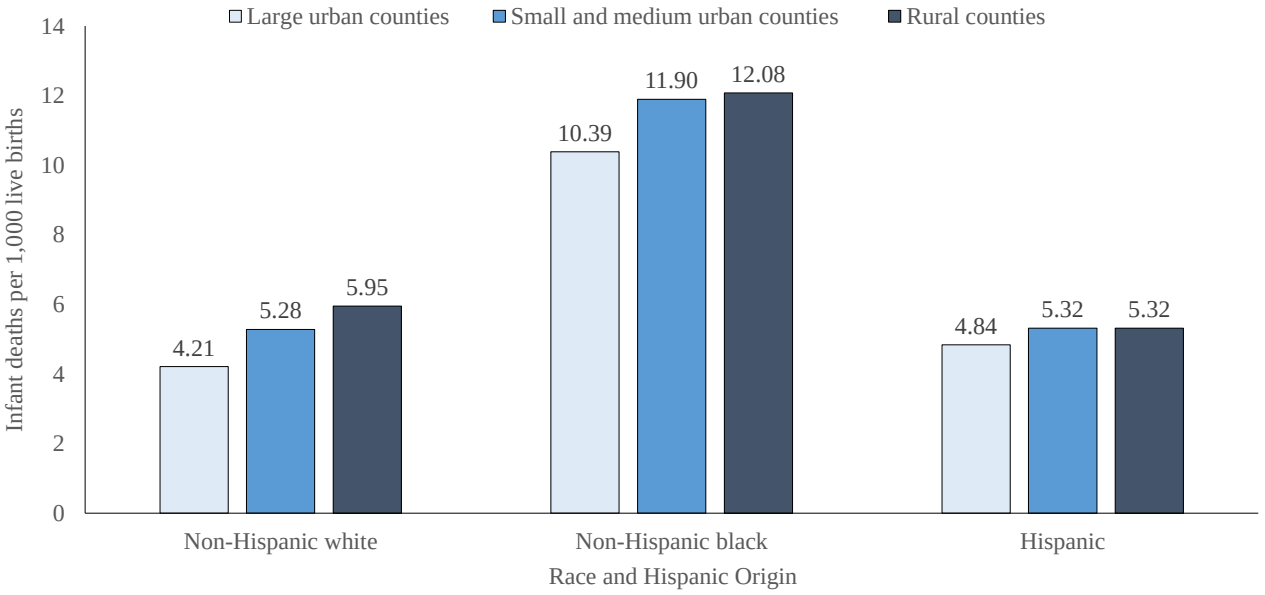
Overall, infant mortality rates were highest in rural areas and lowest in large urban areas.

Figure 1. Infant mortality rates, by urbanization level: United States, 2014

NOTES: Significant decreasing linear trend from rural counties to large urban counties ($p < 0.05$). County designation is based on residence of decedent. County classification is based on 2013 NCHS Urban–Rural Classification Scheme for Counties. Access data table for Figure 1 at: https://www.cdc.gov/nchs/data/databriefs/db285_table.pdf#1.
SOURCE: NCHS, National Vital Statistics System.

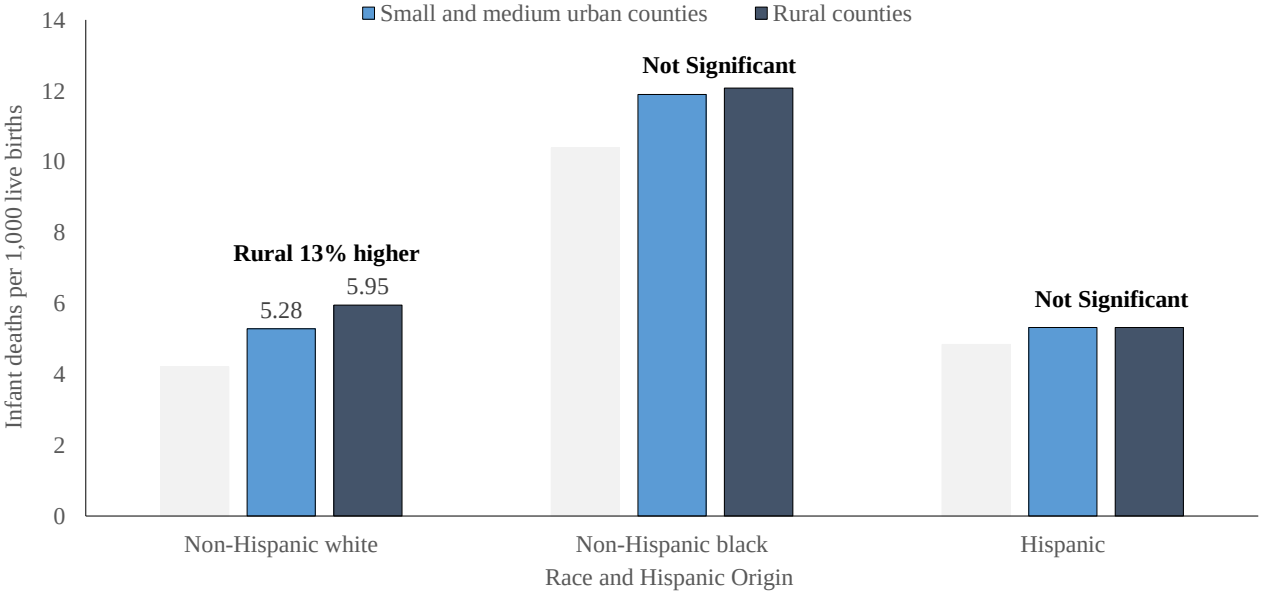
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

Infant mortality rates by urbanization level and race and Hispanic origin: U.S., 2014



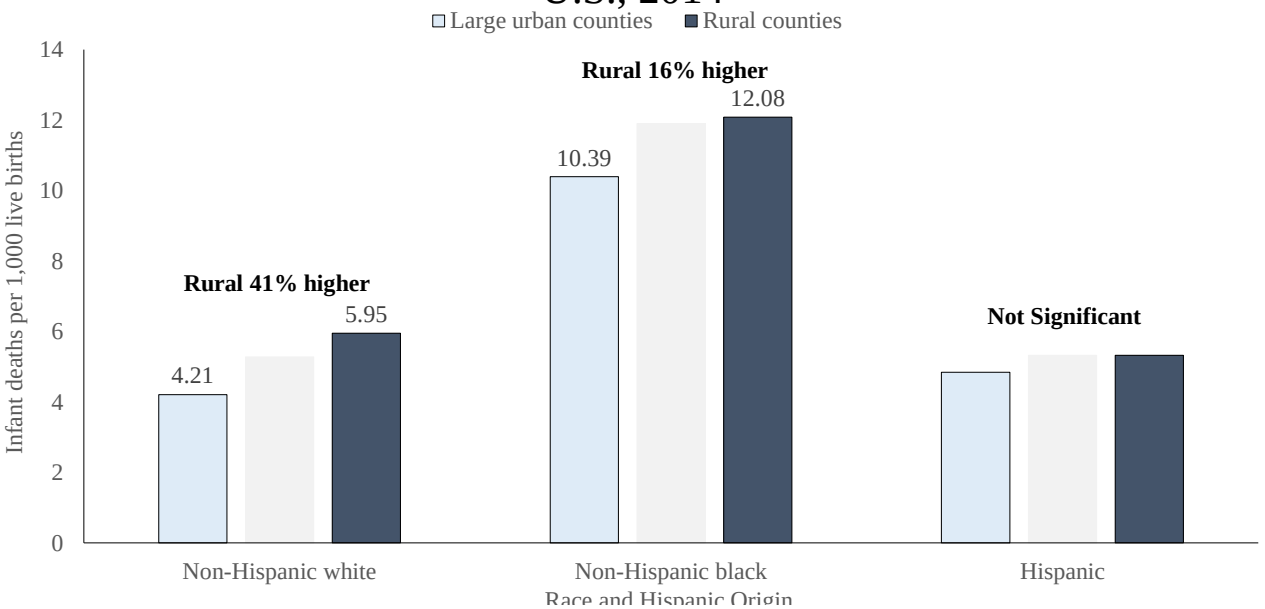
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level and race and Hispanic origin: U.S., 2014



SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level and race and Hispanic origin: U.S., 2014



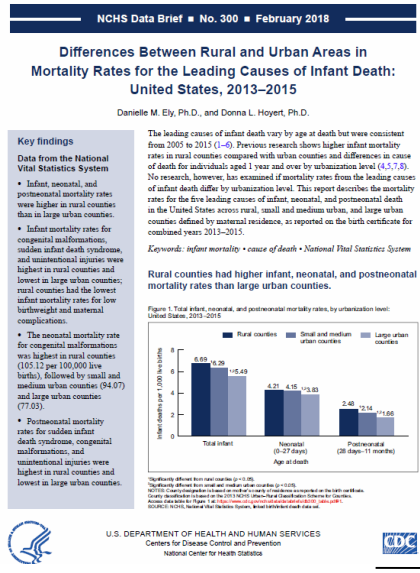
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by race and Hispanic origin

- For non-Hispanic white and non-Hispanic black infants, mortality rates higher in rural counties than urban counties
- Largest different in infant mortality rates for non-Hispanic white infants between rural and large urban counties

Five leading causes of infant death

- 2013-2015 data combined
- Period linked birth/infant death file
- Previously published



NCHS Data Brief ■ No. 300 ■ February 2018

Differences Between Rural and Urban Areas in Mortality Rates for the Leading Causes of Infant Death: United States, 2013–2015

Danielle M. Ely, Ph.D., and Donna L. Hoyert, Ph.D.

Key findings

Data from the National Vital Statistics System

- Infant, neonatal, and postneonatal mortality rates were higher in rural counties than in large urban counties.
- Infant mortality rates for congenital malformations, sudden infant death syndrome, and unintentional injuries were highest in rural counties and lowest in large urban counties; rural counties had the lowest infant mortality rates for low birthweight and maternal complications.
- The neonatal mortality rate for congenital malformations was highest in rural counties (105.12 per 100,000 live births), followed by small and medium urban counties (94.07) and large urban counties (77.03).
- Postneonatal mortality rates for sudden infant death syndrome, congenital malformations, and unintentional injuries were highest in rural counties and lowest in large urban counties.

The leading causes of infant death vary by age at death but were consistent from 2005 to 2015 (1–6). Previous research shows higher infant mortality rates in rural counties compared with urban counties and differences in cause of death for individuals aged 1 year and over by urbanization level (4,5,7,8). No research, however, has examined if mortality rates from the leading causes of infant death differ by urbanization level. This report describes the mortality rates for the five leading causes of infant, neonatal, and postneonatal death in the United States across rural, small and medium urban, and large urban counties defined by maternal residence, as reported on the birth certificate for combined years 2013–2015.

Keywords: infant mortality • cause of death • National Vital Statistics System

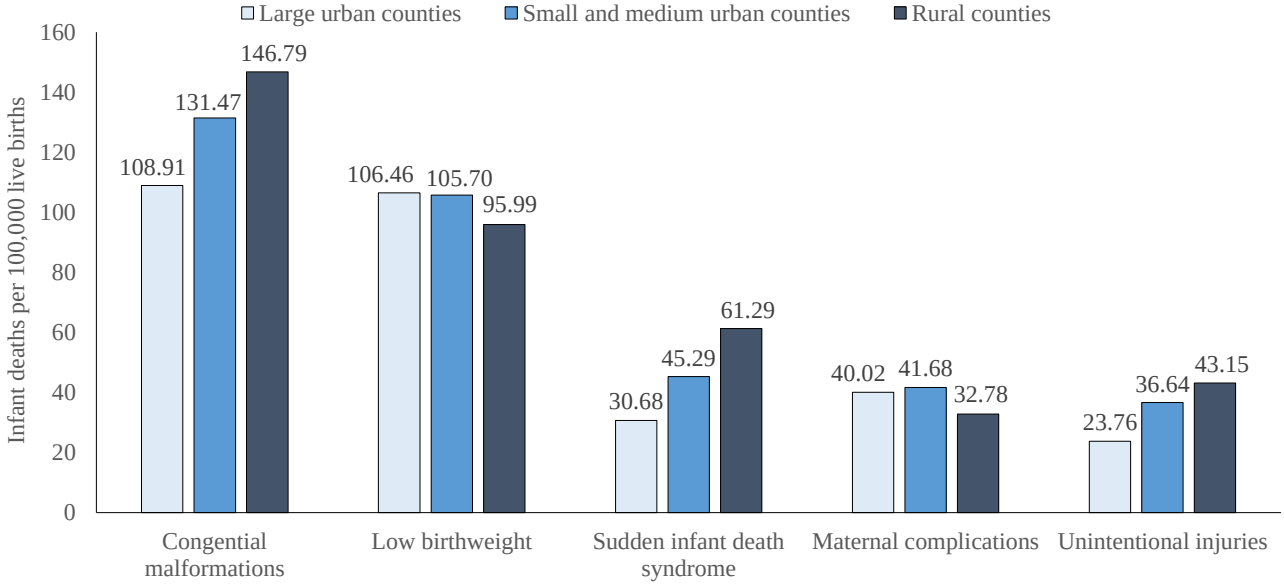
Rural counties had higher infant, neonatal, and postneonatal mortality rates than large urban counties.

Figure 1. Total infant, neonatal, and postneonatal mortality rates, by urbanization level: United States, 2013–2015

*Significantly different from rural counties ($p < 0.05$).
†Significantly different from small and medium urban counties ($p < 0.05$).

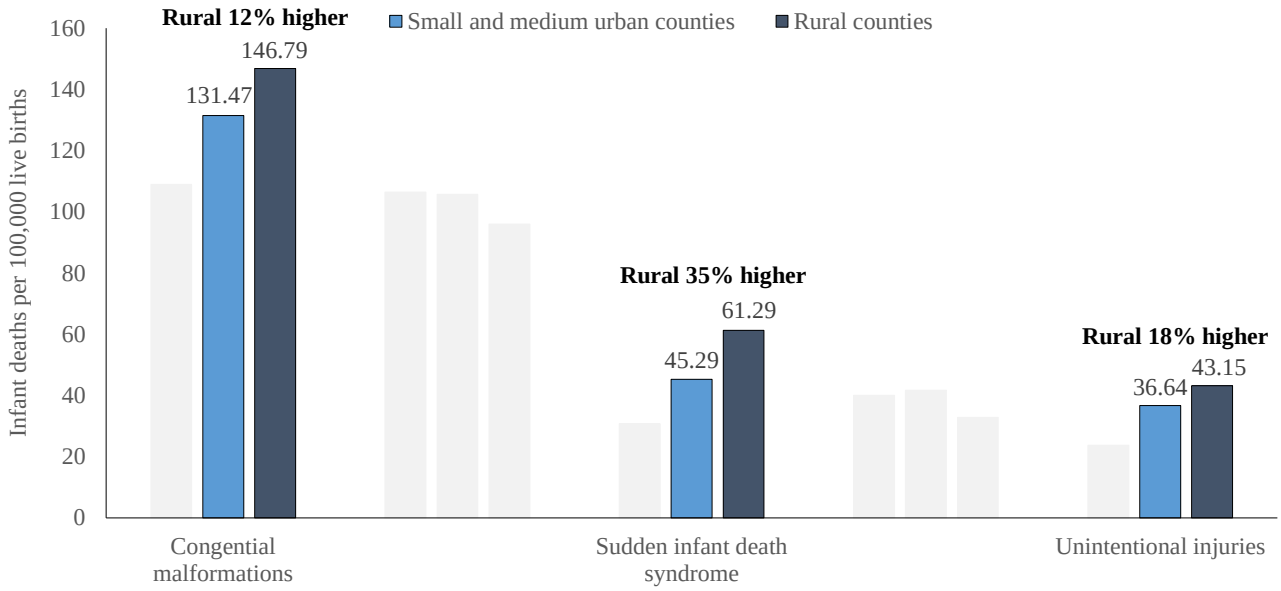
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

Infant mortality rates by urbanization level for the five leading causes of infant death: U.S., 2013-2015



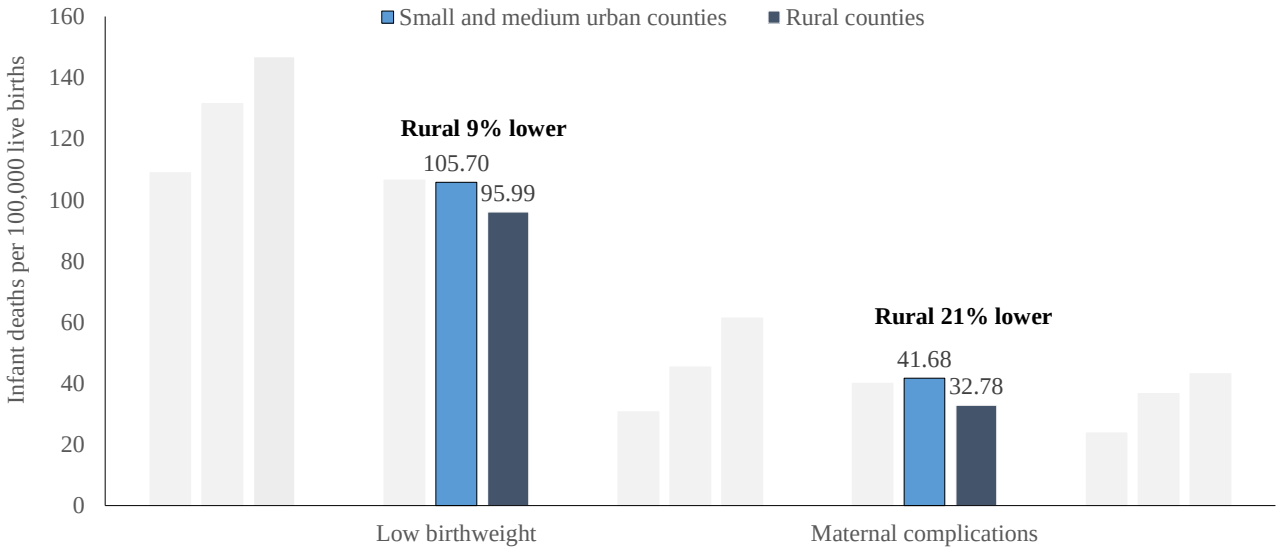
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level for the five leading causes of infant death: U.S., 2013-2015



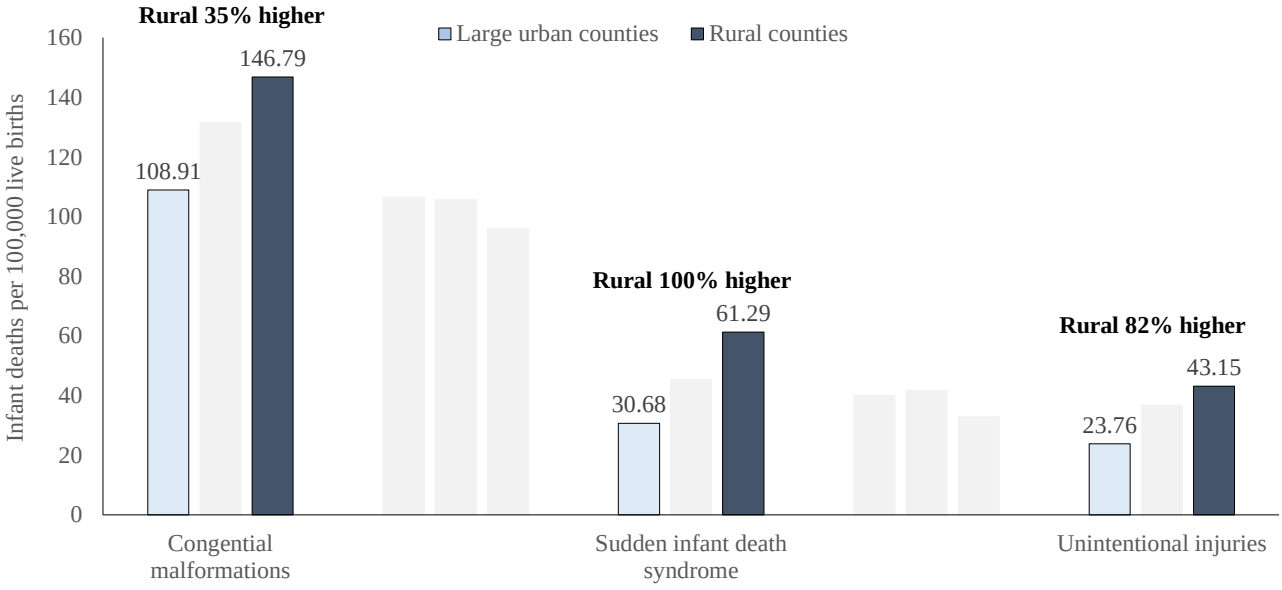
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level for the five leading causes of infant death: U.S., 2013-2015



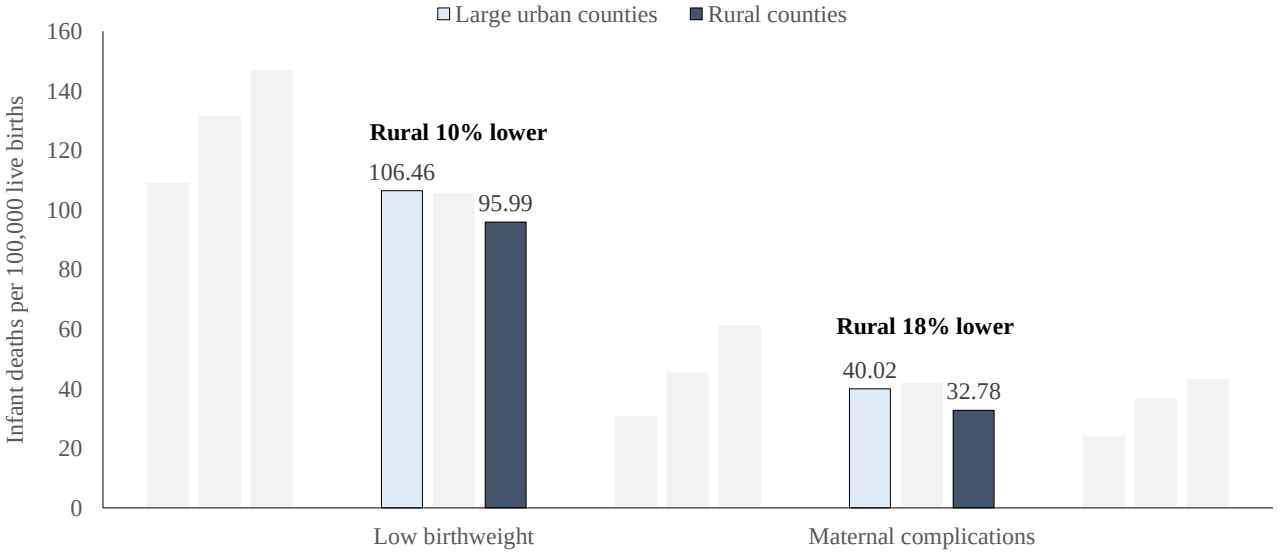
SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level for the five leading causes of infant death: U.S., 2013-2015



SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality rates by urbanization level for the five leading causes of infant death: U.S., 2013-2015

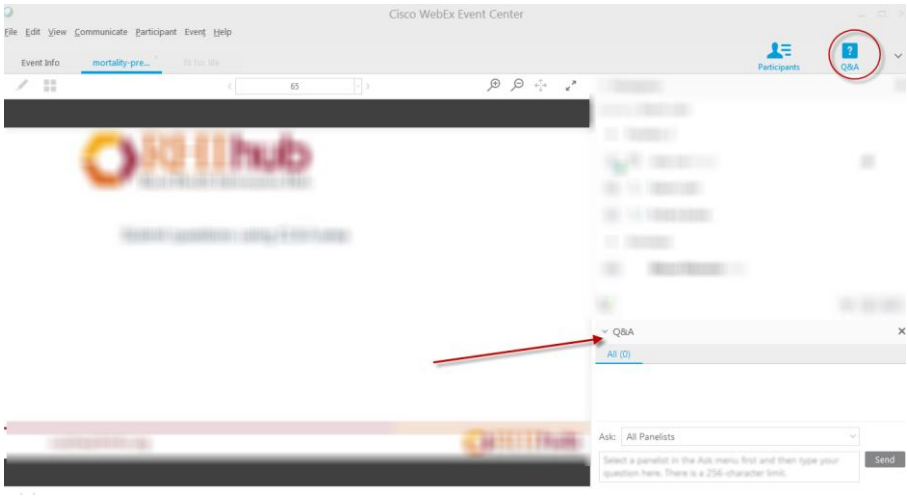


SOURCE: NCHS, National Vital Statistics System, Linked birth/infant death data set.

Infant mortality by urbanization level, summary

- Rural counties, compared with urban counties, have...
  - higher overall infant mortality rates
    - consistently higher infant mortality for all race and Hispanic origin groups
  - higher infant mortality rates for 3 of 5 leading causes of death
    - congenital malformations, SIDS, and unintentional injuries
  - lower infant mortality rates for 2 of 5 leading causes of death
    - low birthweight and maternal complications

Questions?



Thank you!

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