Exploring Rural and Urban Mortality Differences

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Rural Health Reform Policy Research Center

RHRPRC is a consortium of:

- University of North Dakota Center for Rural Health
- NORC Walsh Center for Rural Health Analysis

Research conducted by the RHRPRC informs policy makers and rural providers to:

- Increase access to health care services
- Improve overall health status of rural residents
- Assist rural communities in securing adequate, affordable, high-quality health care services

Social Determinants

World Health Organization definition:

"the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies, and politics."

Social Determinants of Health

1) Economic stability
   - Poverty, employment, food security, housing stability
2) Education
   - High school graduation, enrollment in higher education, language and literacy, early childhood education and development
3) Social and community context
   - Social cohesion, civic participation, perceptions of discrimination and equity, incarceration/institutionalization
4) Health and health care
   - Access to health care, access to primary care, health literacy
5) Neighborhood and built environment
   - Access to healthy foods, quality of housing, crime and violence, environmental conditions

Healthy People 2020 Framework. http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health

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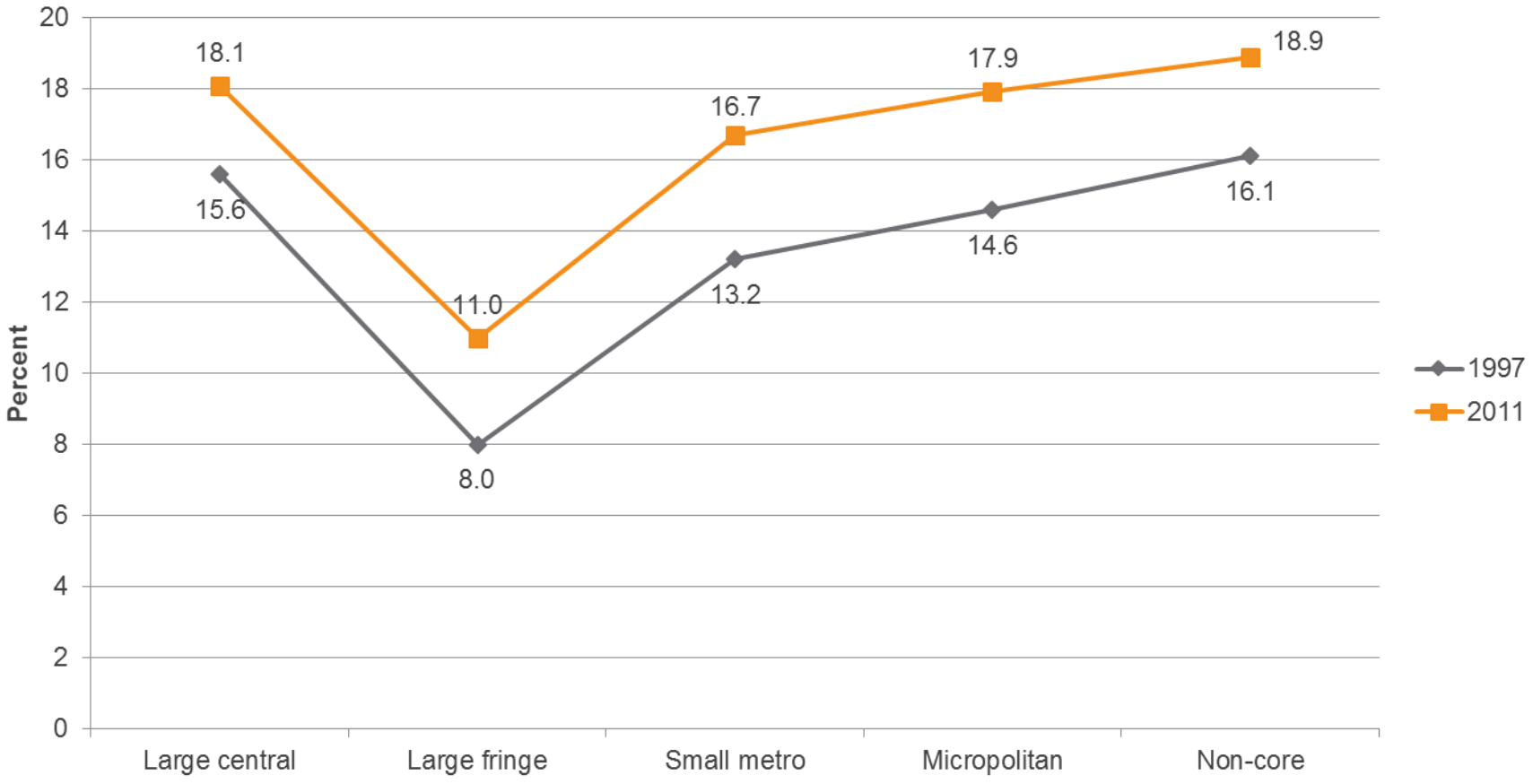
Population: Poverty

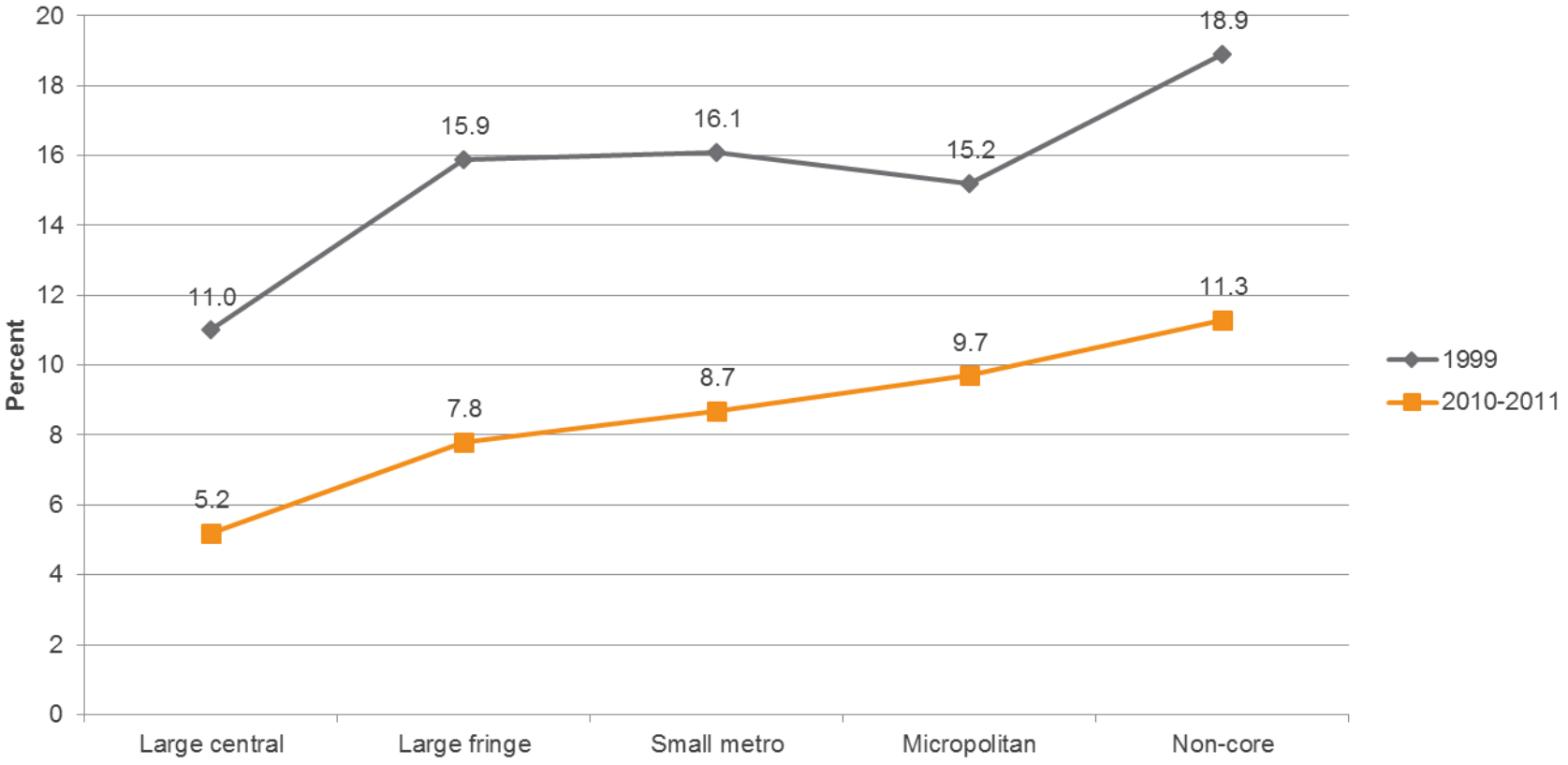
Population in poverty by rurality



Source: The 2014 Update of the Rural-Urban Chartbook, RHRPRC, 2014

Risk Factors: Adolescent Smoking

Cigarette smoking in the past month among adolescents 12-17 years of age by rurality



Source: The 2014 Update of the Rural-Urban Chartbook, RHRPRC, 2014

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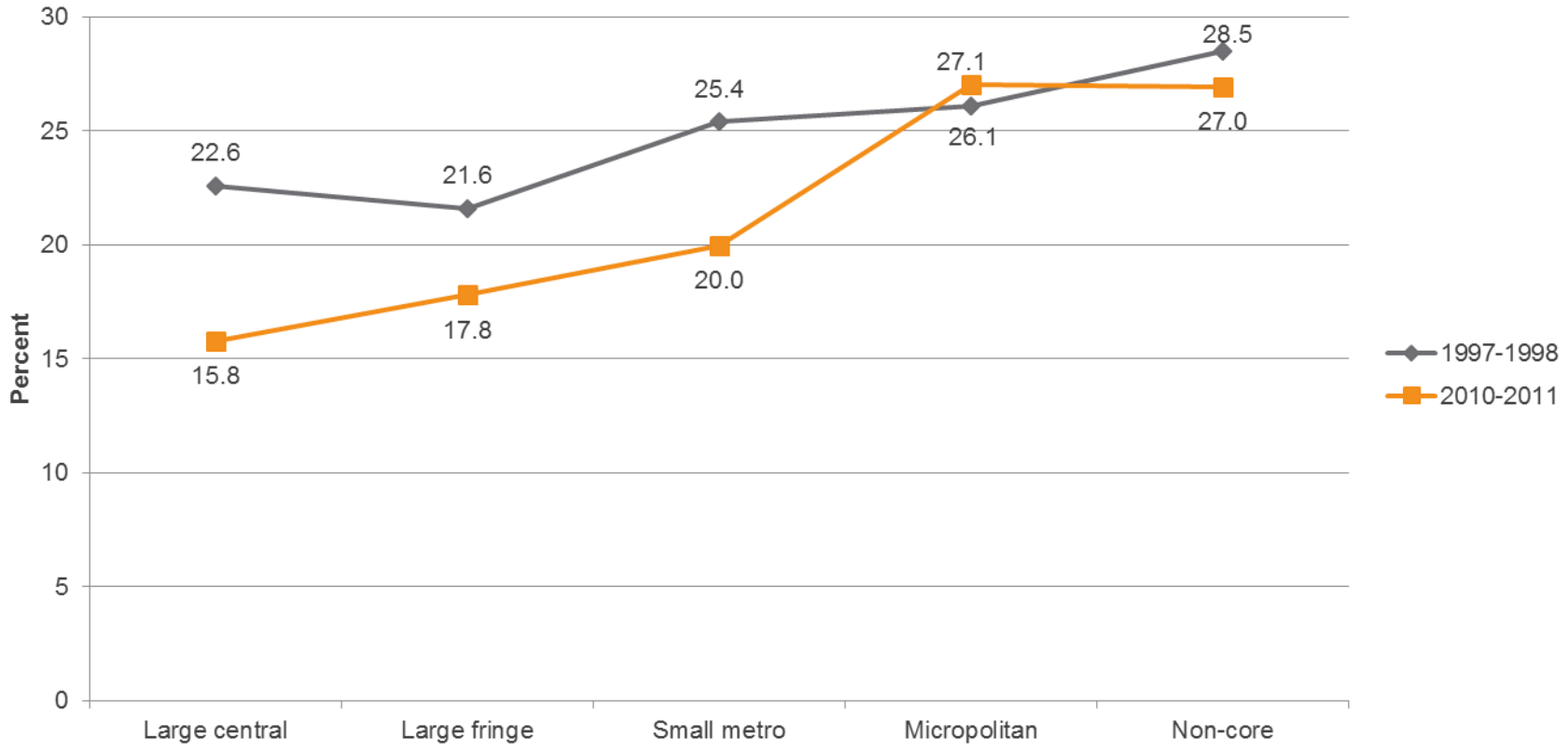
Risk Factors: Adult Smoking

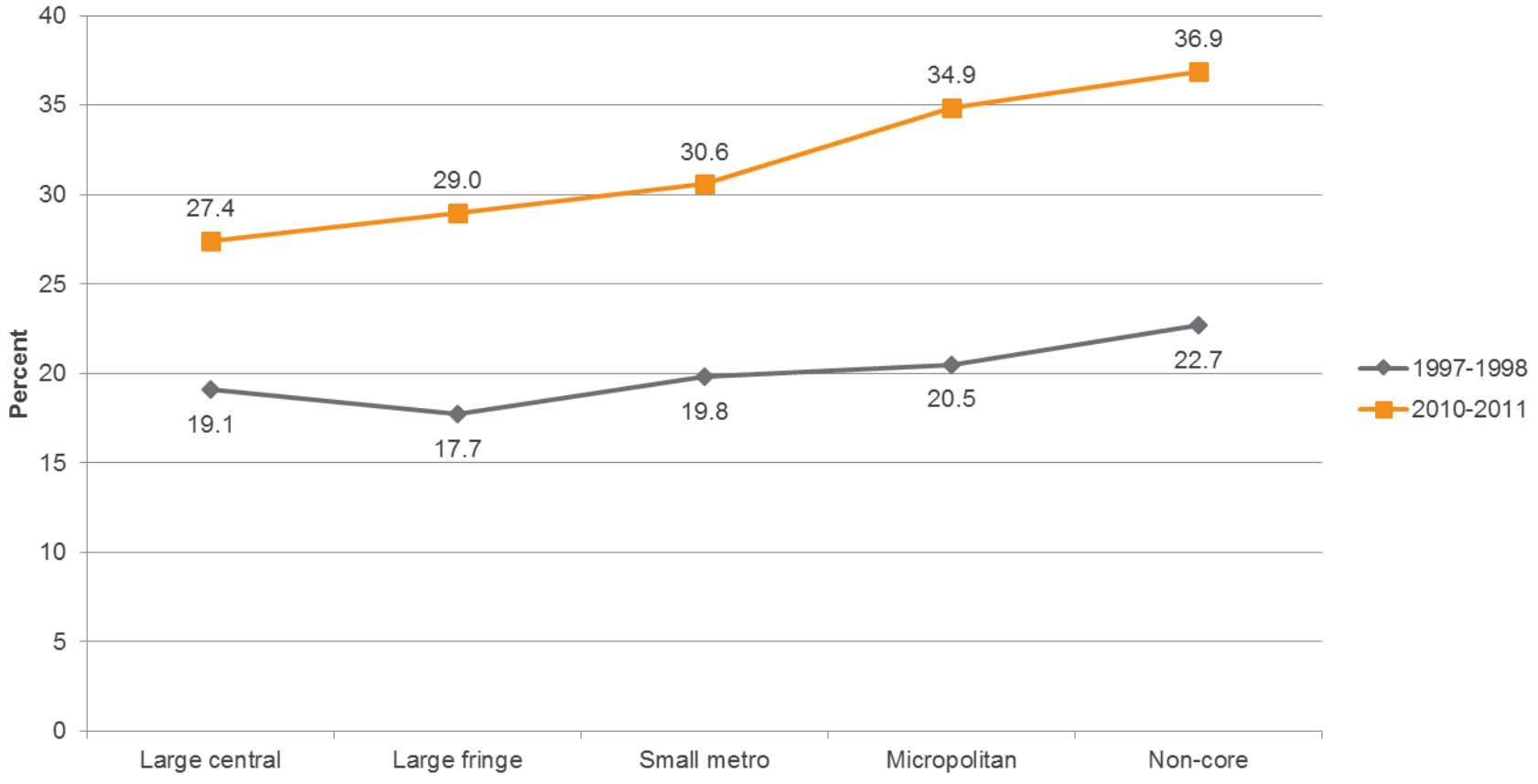
Cigarette smoking among persons 18 years of age and older by rurality



Source: The 2014 Update of the Rural-Urban Chartbook, RHRPRC, 2014

Risk Factors: Obesity

Obesity among persons 18 years of age and older by rurality



Source: The 2014 Update of the Rural-Urban Chartbook, RHRPRC, 2014

Mortality

- Cause-specific mortality is often higher in rural counties than urban counties
- Risk factors contribute to high mortality rates in rural areas
  - Smoking
  - Obesity
  - Physical inactivity
- High mortality rates and risk factors are a reflection of the physical and social environment in which people live and work

Methods

Source of Mortality data:

National Vital Statistics System (NVSS)

- Years 2011-2013

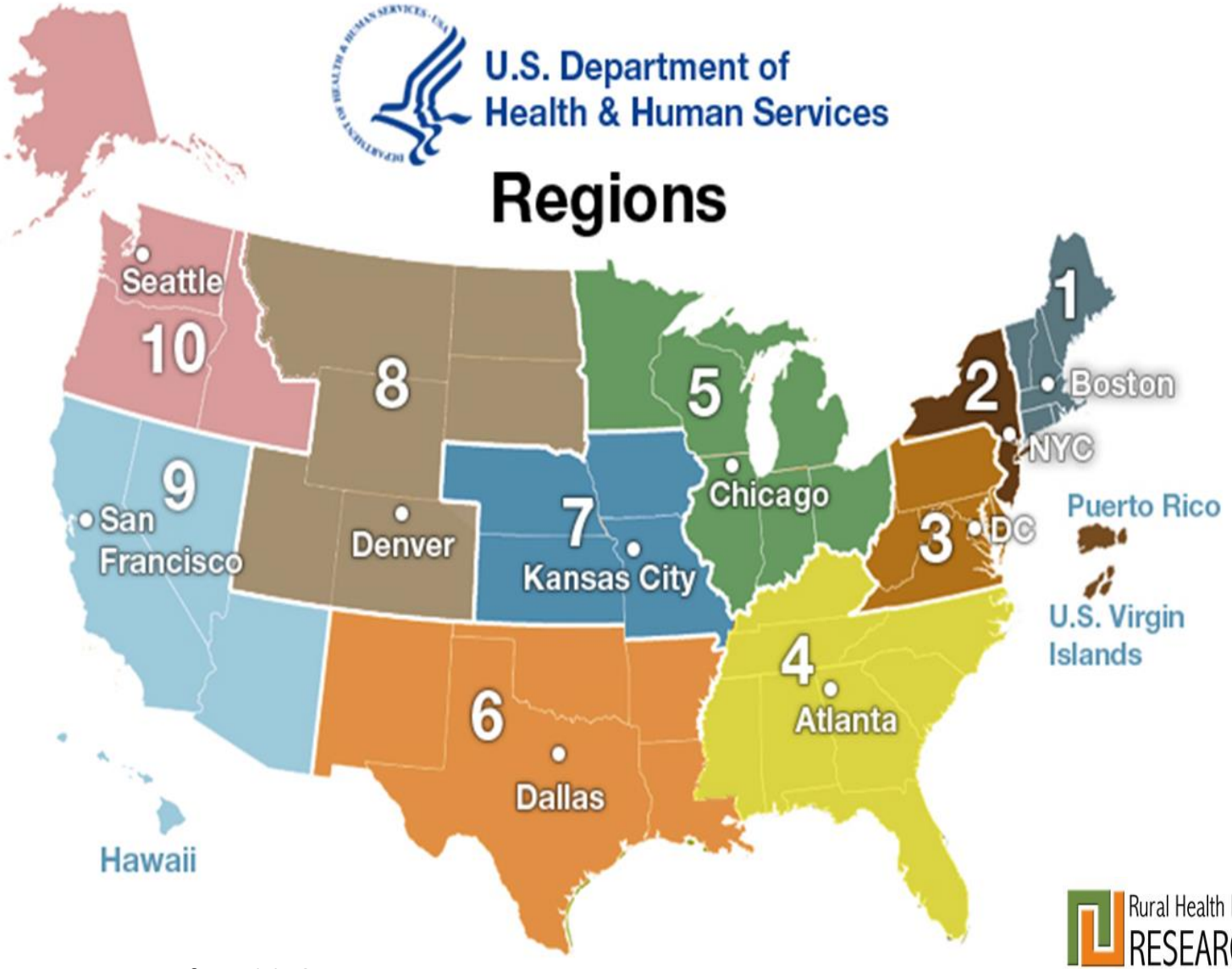
Data are grouped by:

- 2013 NCHS Urban-Rural Classification Scheme for Counties
  - (Large Central, Large Fringe, Small/Medium Metro, Micropolitan, Non-core)
- HHS Regions
- Age
- Gender
- Cause of Death
  - Top 10 Nation-wide causes of death for each age group

2013 NCHS Urban-Rural Classification Scheme for Counties

2013 NCHS Urban-Rural Classification	Definition
Large central (inner cities)	Counties in MSA of 1 million or more population that: contain the entire population of the largest principal city of the MSA; are completely contained in the largest principal city of the MSA; or contain at least 250,000 residents of any principal city of the MSA
Large Fringe (suburban)	Counties in MSAs with a population of at least 1 million residents
Small Metro	Counties in MSAs with a population of less than 1 million residents
Micropolitan (large rural)	Counties with populations of 10,000 to 49,999 residents
Non-core (small rural)	Remaining nonmetropolitan counties that are not in a micropolitan statistical area

HHS Regions



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Source: U.S. Department of Health & Human Services

HHS Regions

Region 1: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Region 2: New York, New Jersey

Region 3: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia

Region 4: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee

Region 5: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

Region 6: Arkansas, Louisiana, New Mexico, Oklahoma, Texas

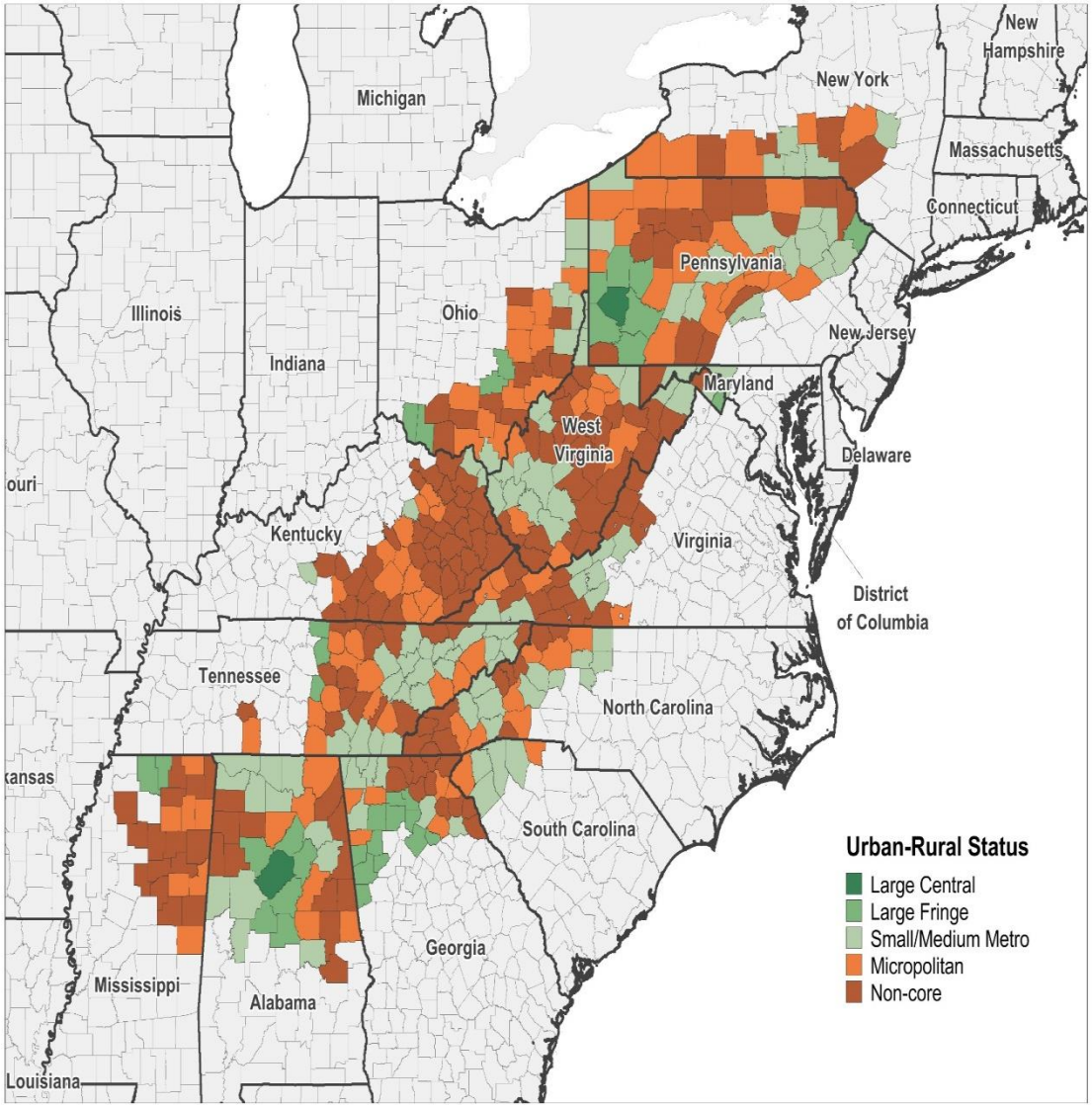
Region 7: Iowa, Kansas, Missouri, Nebraska

Region 8: Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

Region 9: Arizona, California, Hawaii, Nevada

Region 10: Alaska, Idaho, Oregon, Washington

Appalachian Region

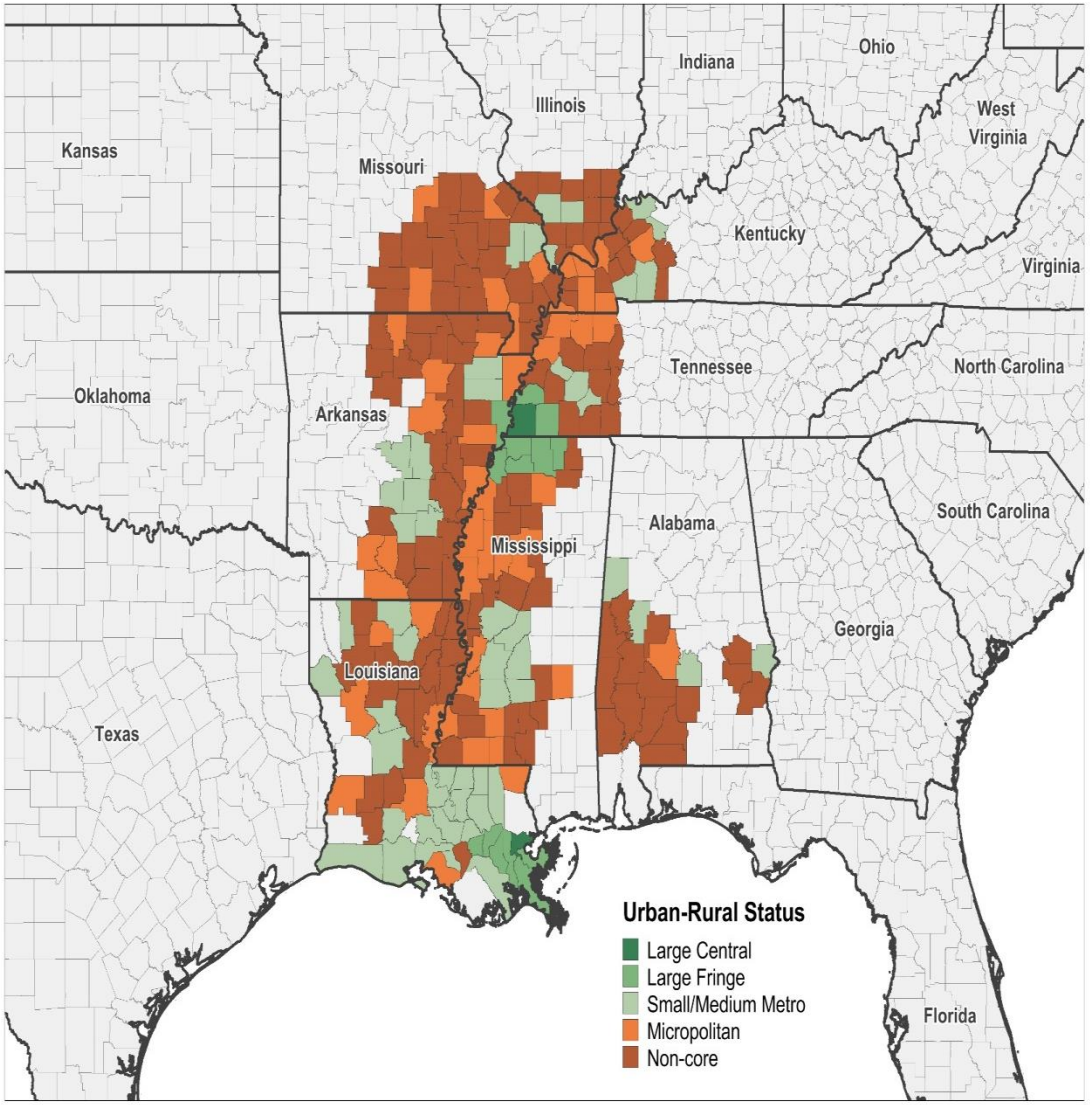


The Appalachian Region is 205,000-square-mile and spans the Appalachian Mountains from southern New York to northern Mississippi. It includes all of **West Virginia** and parts of 12 other states: **Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia**.

The Region includes 420 counties in 13 states and has a population of 25 million people. Forty-two percent of the Region's population is rural, compared with 20 percent of the national population.

Source: Appalachian Regional Commission, http://www.arc.gov/.

Delta Region



The Delta region is comprised of 10 million people who reside in the 252 counties and parishes within eight different states: **Alabama, Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee.**

Established in 2000 by Congress, the Delta Regional Authority makes strategic investments of federal appropriations into the physical and human infrastructure of Delta communities. The 252 counties and parishes served by the Delta Regional Authority make up the most distressed area of the country.

Source: The Delta Regional Authority, http://dra.gov/.

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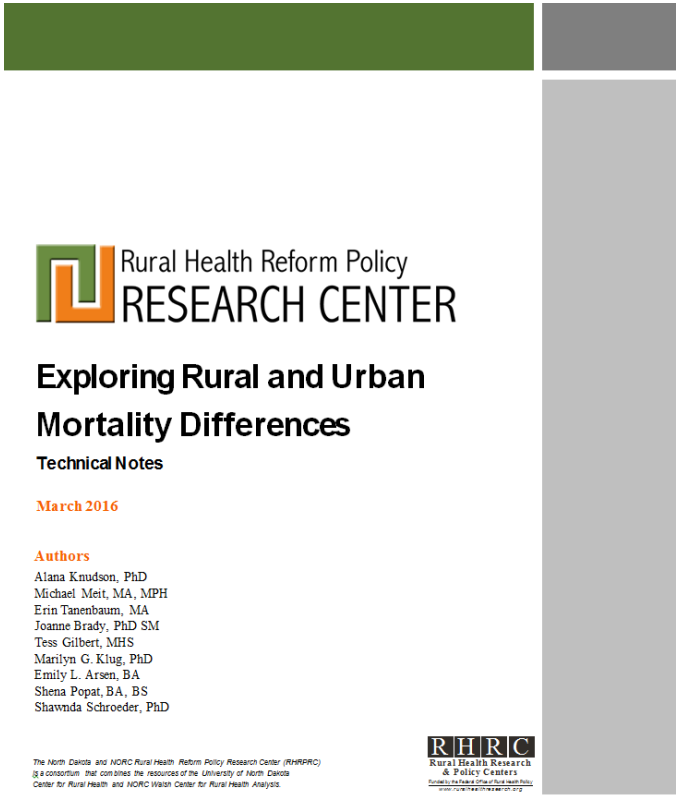
Exploring Rural and Urban Mortality Differences



https://ruralhealth.und.edu/projects/health-reform-policy-research-center/rural-urban-mortality

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Project Description
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Exploring Rural and Urban Mortality Differences

Exploring Rural and Urban Mortality Differences examines the impact of rurality on mortality and explores regional differences in mortality rates. This study used a quantitative analysis approach drawing upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER. This project builds off of the recently developed 2014 Update of the Rural-Urban Chartbook (Rural Health Reform Policy Research Center, The Rural-Urban Chartbook, October, 2014) which examined health status by level of rurality (five rural-urban statuses), sex, and region (four regions). Exploring Rural and Urban Mortality Differences contains visual aids which display indicators of mortality rates by age group, rural-urban status, region, and sex (for populations 15 years of age and older) cross-referenced to tables and statistical results. Individual data tables are available, as well as online tools which allow you to interact with the data and select variables of interest. Data and visuals are presented for 10 leading causes of death for each age group as reported by the Centers of Disease Control and Prevention.

Products

- Excel Workbook Tables: Mortality Rates among Persons by Cause of Death, Age, Region, and Rural-Urban Status: United States, 2011-2013
  Contains 5 tables that describe mortality rates for five different age groups: Infants (under 1 year of age), children (1-14 years of age), adolescents and young adults (15-24 years of age), working-age adults (25-64 years of age), and seniors (65 years of age or older). Data are presented on 10 leading causes of death for each age group as reported by the Centers of Disease Control and Prevention. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.
- Online Tool: Index for Mortality Rates by Cause Related to the National Rate among Persons by Age, Region, and Rural-Urban Status: United States, 2011-2013
  An interactive data visualization Tableau dashboard that displays the mortality rate index by age group, rural-urban status, sex (only for populations 15 years of age and older), and region (Health and Human Services Regions, Appalachia, Delta). These charts compare mortality rates in subgroups to the national average. Data are presented for the 10 leading causes of death (as reported by the Centers of Disease Control and Prevention) and figures display standardized differences between urban, rural, and national death rates. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.
- Online Tool: Mortality Rates among Persons by Cause of Death, Age, and Rural-Urban Status: United States, 2011-2013
  An interactive data visualization Tableau dashboard that maps mortality rates by age group, rural-urban status, HHS region, and sex (only for populations 15 years of age and older). These maps compare mortality rates in the 10 HHS regions to one another based on rural-urban status. Data are presented for the top 10 leading causes of death as reported by the Centers of Disease Control and Prevention. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.

- Exploring Rural and Urban Mortality Differences by HHS Region (color) | (black & white)
  A slide deck that serves as an offline and printable version of the Online Tool: Index for Mortality Rates. It contains 81 figures from the Online Tool displaying mortality rate indices by age group, rural-urban status, HHS region, and sex (only for populations 15 years of age and older). Data are presented for the top 10 leading causes of death as reported by the Centers of Disease Control and Prevention. Figures display standardized differences between urban, rural, and national death rates. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.
- Mapping Rural and Urban Mortality Differences by HHS Region (color) | (black & white)
  A slide deck that serves as an offline and printable version of the Online Tool: Mortality Rates among Persons. It contains 80 figures from the Online Tool mapping mortality rates by age group, rural-urban status, HHS region, and sex (only for populations 15 years of age and older). Data are presented for the top 10 leading causes of death as reported by the Centers of Disease Control and Prevention. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.
- Exploring Rural and Urban Mortality Differences in the Appalachian Region (color) | (black & white)
  A slide deck that serves as an offline and printable version of the Online Tool: Index for Mortality Rates in the Appalachian Region. It contains 9 figures from the Online Tool displaying mortality rate indices by age group, rural-urban status, and sex (only for populations 15 years of age and older) within the Appalachian Region. Data are presented for the top 10 national leading causes of death as reported by the Centers of Disease Control and Prevention. Figures display standardized differences between urban, rural, and national death rates. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.
- Exploring Rural and Urban Mortality Differences in the Delta Region (color) | (black & white)
  A slide deck that serves as an offline and printable version of the Online Tool: Index for Mortality Rates in the Delta Region. It contains 9 figures from the Online Tool displaying mortality rate indices by age group, rural-urban status, and sex (only for populations 15 years of age and older) within the Delta Region. Data are presented for the top 10 national leading causes of death as reported by the Centers of Disease Control and Prevention. Figures display standardized differences between urban, rural, and national death rates. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.

User Guides and Technical Notes

- Users Guide for Graph Interaction
  Index for Mortality Rates by Cause Related to the National Rate among Persons by Age, Region, and Rural-Urban Status: United States, 2011-2013 Online Tool
  This user's guide demonstrates ways to display graphs of mortality rate indices by Health and Human Services (HHS) region, cause of death, age, and rural-urban status. Graphs can be created dynamically for 10 mortalities or for a single mortality. Figures display standardized differences between urban, rural, and national death rates. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER based on the top 10 leading causes of death as reported by the Centers of Disease Control and Prevention.
- Users Guide for Map Interaction
  Mortality Rates among Persons by Cause of Death, Age, and Rural-Urban Status: United States, 2011-2013 Online Tool
  This user's guide demonstrates ways to view maps of mortality rates from the Top 10 Causes of Mortality as reported by the Centers of Disease Control and Prevention. This document guides users to create dynamic maps for a single cause of mortality by Health and Human Services (HHS) region, cause of death, age, and rural-urban status. Results draw upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER.
- Technical Notes: Exploring Rural and Urban Mortality Differences
  Review technical notes related to the study's methods and data analyses. This study examines the impact of rurality on mortality and explores regional differences in mortality rates. The study used a quantitative analysis approach drawing upon the data available from the National Vital Statistics System (NVSS) at CDC WONDER for the top 10 leading causes of death as reported by the Centers of Disease Control and Prevention.

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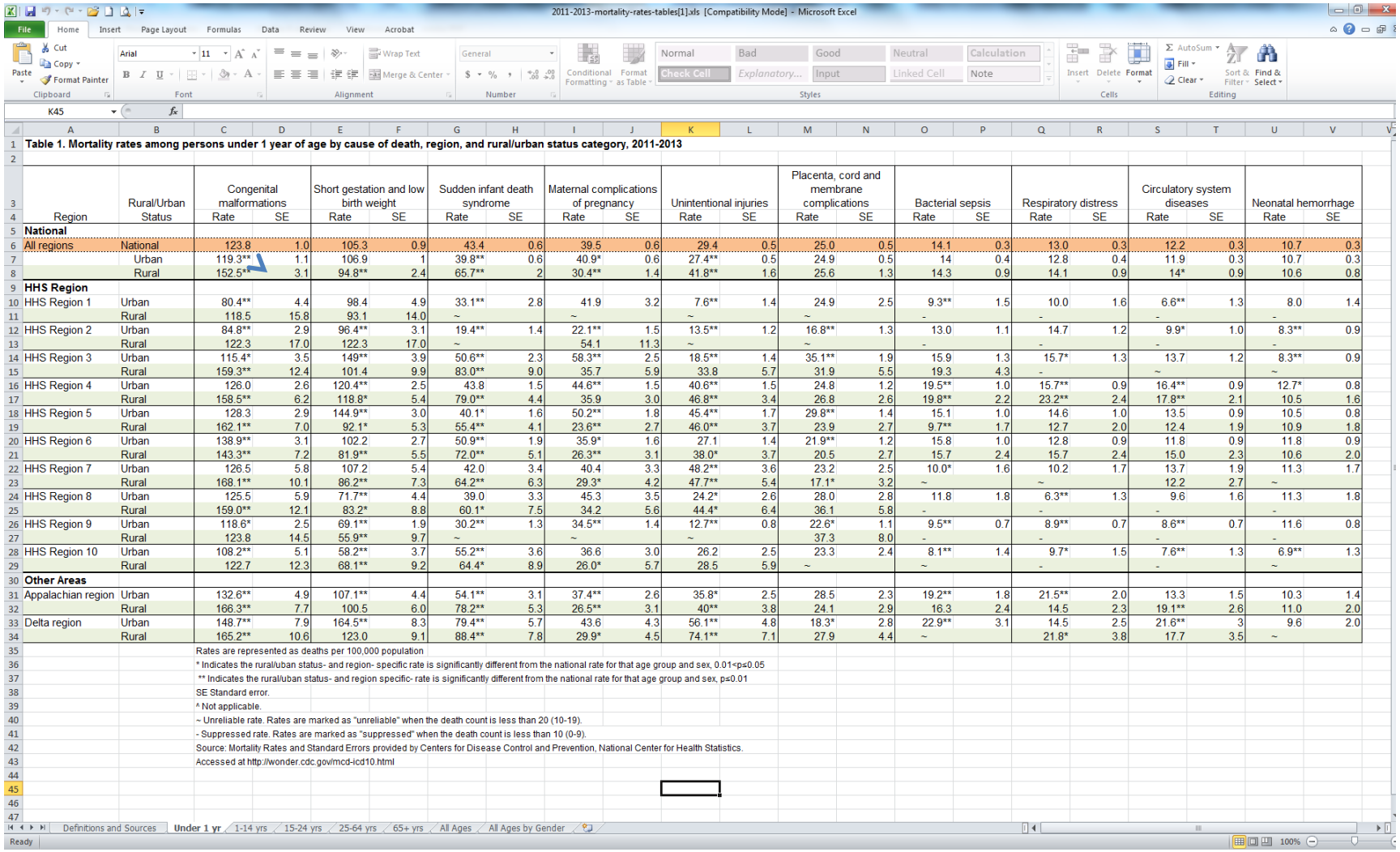
Excel Workbook Tables



2011-2013-mortality-rates-tables[1].xls [Compatibility Mode] - Microsoft Excel

Table 1. Mortality rates among persons under 1 year of age by cause of death, region, and rural/urban status category, 2011-2013

Region	Rural/Urban Status	Congenital malformations		Short gestation and low birth weight		Sudden infant death syndrome		Maternal complications of pregnancy		Unintentional injuries		Placenta, cord and membrane complications		Bacterial sepsis		Respiratory distress		Circulatory system diseases		Neonatal hemorrhage	
		Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE
National																					
All regions	National	123.8	1.0	105.3	0.9	43.4	0.6	39.5	0.6	29.4	0.5	25.0	0.5	14.1	0.3	13.0	0.3	12.2	0.3	10.7	0.3
	Urban	119.3**	1.1	106.9	1	39.8**	0.6	40.9*	0.6	27.4**	0.5	24.9	0.5	14	0.4	12.8	0.4	11.9	0.3	10.7	0.3
	Rural	152.5**	3.1	94.8**	2.4	65.7**	2	30.4**	1.4	41.8**	1.6	25.6	1.3	14.3	0.9	14.1	0.9	14*	0.9	10.6	0.8
HHS Region																					
HHS Region 1	Urban	80.4**	4.4	98.4	4.9	33.1**	2.8	41.9	3.2	7.6**	1.4	24.9	2.5	9.3**	1.5	10.0	1.6	6.6**	1.3	8.0	1.4
	Rural	118.5	15.8	93.1	14.0	~		~		~		~		-		-		-		-	
HHS Region 2	Urban	84.8**	2.9	96.4**	3.1	19.4**	1.4	22.1**	1.5	13.5**	1.2	16.8**	1.3	13.0	1.1	14.7	1.2	9.9*	1.0	8.3**	0.9
	Rural	122.3	17.0	122.3	17.0	~		54.1	11.3	~		~		-		-		-		-	
HHS Region 3	Urban	115.4*	3.5	149**	3.9	50.6**	2.3	58.3**	2.5	18.5**	1.4	35.1**	1.9	15.9	1.3	15.7*	1.3	13.7	1.2	8.3**	0.9
	Rural	159.3**	12.4	101.4	9.9	83.0**	9.0	35.7	5.9	33.8	5.7	31.9	5.5	19.3	4.3	-		~		~	
HHS Region 4	Urban	126.0	2.6	120.4**	2.5	43.8	1.5	44.6**	1.5	40.6**	1.5	24.8	1.2	19.5**	1.0	15.7**	0.9	16.4**	0.9	12.7*	0.8
	Rural	158.5**	6.2	118.8*	5.4	79.0**	4.4	35.9	3.0	46.8**	3.4	26.8	2.6	19.8**	2.2	23.2**	2.4	17.8**	2.1	10.5	1.6
HHS Region 5	Urban	128.3	2.9	144.9**	3.0	40.1*	1.6	50.2**	1.8	45.4**	1.7	29.8**	1.4	15.1	1.0	14.6	1.0	13.5	0.9	10.5	0.8
	Rural	162.1**	7.0	92.1*	5.3	55.4**	4.1	23.6**	2.7	46.0**	3.7	23.9	2.7	9.7**	1.7	12.7	2.0	12.4	1.9	10.9	1.8
HHS Region 6	Urban	138.9**	3.1	102.2	2.7	50.9**	1.9	35.9*	1.6	27.1	1.4	21.9**	1.2	15.8	1.0	12.8	0.9	11.8	0.9	11.8	0.9
	Rural	143.3**	7.2	81.9**	5.5	72.0**	5.1	26.3**	3.1	38.0*	3.7	20.5	2.7	15.7	2.4	15.7	2.4	15.0	2.3	10.6	2.0
HHS Region 7	Urban	126.5	5.8	107.2	5.4	42.0	3.4	40.4	3.3	48.2**	3.6	23.2	2.5	10.0*	1.6	10.2	1.7	13.7	1.9	11.3	1.7
	Rural	168.1**	10.1	86.2**	7.3	64.2**	6.3	29.3*	4.2	47.7**	5.4	17.1*	3.2	~		~		12.2	2.7	~	
HHS Region 8	Urban	125.5	5.9	71.7**	4.4	39.0	3.3	45.3	3.5	24.2*	2.6	28.0	2.8	11.8	1.8	6.3**	1.3	9.6	1.6	11.3	1.8
	Rural	159.0**	12.1	83.2*	8.8	60.1*	7.5	34.2	5.6	44.4*	6.4	36.1	5.8	-		-		-		-	
HHS Region 9	Urban	118.6*	2.5	69.1**	1.9	30.2**	1.3	34.5**	1.4	12.7**	0.8	22.6*	1.1	9.5**	0.7	8.9**	0.7	8.6**	0.7	11.6	0.8
	Rural	123.8	14.5	55.9**	9.7	~		~		~		37.3	8.0	-		-		-		-	
HHS Region 10	Urban	108.2**	5.1	58.2**	3.7	55.2**	3.6	36.6	3.0	26.2	2.5	23.3	2.4	8.1**	1.4	9.7*	1.5	7.6**	1.3	6.9**	1.3
	Rural	122.7	12.3	68.1**	9.2	64.4*	8.9	26.0*	5.7	28.5	5.9	~		~		-		-		~	
Other Areas																					
Appalachian region	Urban	132.6**	4.9	107.1**	4.4	54.1**	3.1	37.4**	2.6	35.8*	2.5	28.5	2.3	19.2**	1.8	21.5**	2.0	13.3	1.5	10.3	1.4
	Rural	166.3**	7.7	100.5	6.0	78.2**	5.3	26.5**	3.1	40**	3.8	24.1	2.9	16.3	2.4	14.5	2.3	19.1**	2.6	11.0	2.0
Delta region	Urban	148.7**	7.9	164.5**	8.3	79.4**	5.7	43.6	4.3	56.1**	4.8	18.3*	2.8	22.9**	3.1	14.5	2.5	21.6**	3	9.6	2.0
	Rural	165.2**	10.6	123.0	9.1	88.4**	7.8	29.9*	4.5	74.1**	7.1	27.9	4.4	~		21.8*	3.8	17.7	3.5	~	

Rates are represented as deaths per 100,000 population

* Indicates the rural/uban status- and region- specific rate is significantly different from the national rate for that age group and sex, 0.01<p≤0.05

** Indicates the rural/uban status- and region specific- rate is significantly different from the national rate for that age group and sex, p≤0.01

SE Standard error.

^ Not applicable.

~ Unreliable rate. Rates are marked as "unreliable" when the death count is less than 20 (10-19).

- Suppressed rate. Rates are marked as "suppressed" when the death count is less than 10 (0-9).

Source: Mortality Rates and Standard Errors provided by Centers for Disease Control and Prevention, National Center for Health Statistics.

Accessed at http://wonder.cdc.gov/mcd-icd10.html

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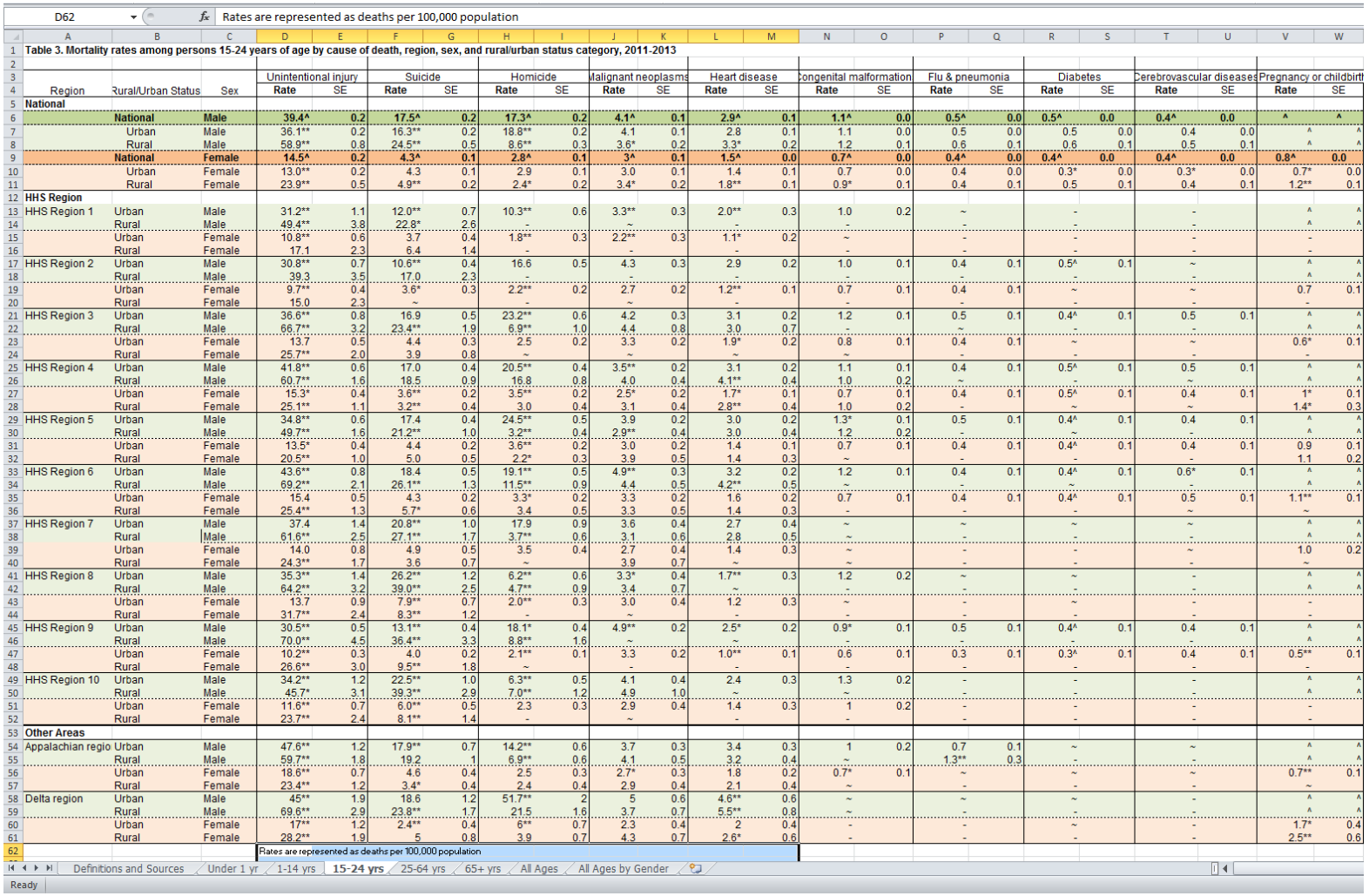


D62 | Rates are represented as deaths per 100,000 population

Table 3. Mortality rates among persons 15-24 years of age by cause of death, region, sex, and rural/urban status category, 2011-2013

Region	Rural/Urban Status	Sex	Unintentional injury		Suicide		Homicide		Malignant neoplasms		Heart disease		Congenital malformation		Flu & pneumonia		Diabetes		Cerebrovascular diseases		Pregnancy or childbirth	
			Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE	Rate	SE
National																						
	National	**Male**	**39.4^**	**0.2**	**17.5^**	**0.2**	**17.3^**	**0.2**	**4.1^**	**0.1**	**2.9^**	**0.1**	**1.1^**	**0.0**	**0.5^**	**0.0**	**0.5^**	**0.0**	**0.4^**	**0.0**	**^**	**^**
	Urban	Male	36.1**	0.2	16.3**	0.2	18.8**	0.2	4.1	0.1	2.8	0.1	1.1	0.0	0.5	0.0	0.5	0.0	0.4	0.0	^	^
	Rural	Male	58.9**	0.8	24.5**	0.5	8.6**	0.3	3.6*	0.2	3.3*	0.2	1.2	0.1	0.6	0.1	0.6	0.1	0.5	0.1	^	^
	National	**Female**	**14.5^**	**0.2**	**4.3^**	**0.1**	**2.8^**	**0.1**	**3^**	**0.1**	**1.5^**	**0.0**	**0.7^**	**0.0**	**0.4^**	**0.0**	**0.4^**	**0.0**	**0.4^**	**0.0**	**0.8^**	**0.0**
	Urban	Female	13.0**	0.2	4.3	0.1	2.9	0.1	3.0	0.1	1.4	0.1	0.7	0.0	0.4	0.0	0.3*	0.0	0.3*	0.0	0.7*	0.0
	Rural	Female	23.9**	0.5	4.9**	0.2	2.4*	0.2	3.4*	0.2	1.8**	0.1	0.9*	0.1	0.4	0.1	0.5	0.1	0.4	0.1	1.2**	0.1
HHS Region																						
HHS Region 1	Urban	Male	31.2**	1.1	12.0**	0.7	10.3**	0.6	3.3**	0.3	2.0**	0.3	1.0	0.2	~		-		-		^	^
	Rural	Male	49.4**	3.8	22.8*	2.6	-		~		-		-		-		-		-		^	^
	Urban	Female	10.8**	0.6	3.7	0.4	1.8**	0.3	2.2**	0.3	1.1*	0.2	~		-		-		-		-	
	Rural	Female	17.1	2.3	6.4	1.4	-		-		-		-		-		-		-		-	
HHS Region 2	Urban	Male	30.8**	0.7	10.6**	0.4	16.6	0.5	4.3	0.3	2.9	0.2	1.0	0.1	0.4	0.1	0.5^	0.1	~		^	^
	Rural	Male	39.3	3.5	17.0	2.3	-		-		-		-		-		-		-		^	^
	Urban	Female	9.7**	0.4	3.6*	0.3	2.2**	0.2	2.7	0.2	1.2**	0.1	0.7	0.1	0.4	0.1	~		~		0.7	0.1
	Rural	Female	15.0	2.3	~		-		~		-		-		-		-		-		-	
HHS Region 3	Urban	Male	36.6**	0.8	16.9	0.5	23.2**	0.6	4.2	0.3	3.1	0.2	1.2	0.1	0.5	0.1	0.4^	0.1	0.5	0.1	^	^
	Rural	Male	66.7**	3.2	23.4**	1.9	8.9**	1.0	4.4	0.8	3.0	0.7	-		~		-		-		^	^
	Urban	Female	13.7	0.5	4.4	0.3	2.5	0.2	3.3	0.2	1.9*	0.2	0.8	0.1	0.4	0.1	~		~		0.6*	0.1
	Rural	Female	25.7**	2.0	3.9	0.8	~		~		~		~		-		-		-		-	
HHS Region 4	Urban	Male	41.8**	0.6	17.0	0.4	20.5**	0.4	3.5**	0.2	3.1	0.2	1.1	0.1	0.4	0.1	0.5^	0.1	0.5	0.1	^	^
	Rural	Male	60.7**	1.6	18.5	0.9	16.8	0.8	4.0	0.4	4.1**	0.4	1.0	0.2	~		-		~		^	^
	Urban	Female	15.3*	0.4	3.6**	0.2	3.5**	0.2	2.5*	0.2	1.7*	0.1	0.7	0.1	0.4	0.1	0.5^	0.1	0.4	0.1	1*	0.1
	Rural	Female	25.1**	1.1	3.2**	0.4	3.0	0.4	3.1	0.4	2.8**	0.4	1.0	0.2	-		~		~		1.4*	0.3
HHS Region 5	Urban	Male	34.8**	0.6	17.4	0.4	24.5**	0.5	3.9	0.2	3.0	0.2	1.3*	0.1	0.5	0.1	0.4^	0.1	0.4	0.1	^	^
	Rural	Male	49.7**	1.6	21.2**	1.0	3.2**	0.4	2.9**	0.4	3.0	0.4	1.2	0.2	-		~		-		^	^
	Urban	Female	13.5*	0.4	4.4	0.2	3.6**	0.2	3.0	0.2	1.4	0.1	0.7	0.1	0.4	0.1	0.4^	0.1	0.4	0.1	0.9	0.1
	Rural	Female	20.5**	1.0	5.0	0.5	2.2*	0.3	3.9	0.5	1.4	0.3	~		-		-		-		1.1	0.2
HHS Region 6	Urban	Male	43.6**	0.8	18.4	0.5	19.1**	0.5	4.9**	0.3	3.2	0.2	1.2	0.1	0.4	0.1	0.4^	0.1	0.6*	0.1	^	^
	Rural	Male	69.2**	2.1	26.1**	1.3	11.5**	0.9	4.4	0.5	4.2**	0.5	~		-		~		-		^	^
	Urban	Female	15.4	0.5	4.3	0.2	3.3*	0.2	3.3	0.2	1.6	0.2	0.7	0.1	0.4	0.1	0.4^	0.1	0.5	0.1	1.1**	0.1
	Rural	Female	25.4**	1.3	5.7*	0.6	3.4	0.5	3.3	0.5	1.4	0.3	-		-		-		~		~	
HHS Region 7	Urban	Male	37.4	1.4	20.8**	1.0	17.9	0.9	3.6	0.4	2.7	0.4	~		~		~		~		^	^
	Rural	Male	61.6**	2.5	27.1**	1.7	3.7**	0.6	3.1	0.6	2.8	0.5	~		-		-		-		^	^
	Urban	Female	14.0	0.8	4.9	0.5	3.5	0.4	2.7	0.4	1.4	0.3	~		-		-		~		1.0	0.2
	Rural	Female	24.3**	1.7	3.6	0.7	~		3.9	0.7	~		~		-		-		-		~	
HHS Region 8	Urban	Male	35.3**	1.4	26.2**	1.2	6.2**	0.6	3.3*	0.4	1.7**	0.3	1.2	0.2	~		~		-		^	^
	Rural	Male	64.2**	3.2	39.0**	2.5	4.7**	0.9	3.4	0.7	~		-		-		-		-		^	^
	Urban	Female	13.7	0.9	7.9**	0.7	2.0**	0.3	3.0	0.4	1.2	0.3	~		-		~		-		-	
	Rural	Female	31.7**	2.4	8.3**	1.2	-		~		-		-		-		-		-		-	
HHS Region 9	Urban	Male	30.5**	0.5	13.1**	0.4	18.1*	0.4	4.9**	0.2	2.5*	0.2	0.9*	0.1	0.5	0.1	0.4^	0.1	0.4	0.1	^	^
	Rural	Male	70.0**	4.5	36.4**	3.3	8.8**	1.6	~		~		-		-		-		-		^	^
	Urban	Female	10.2**	0.3	4.0	0.2	2.1**	0.1	3.3	0.2	1.0**	0.1	0.6	0.1	0.3	0.1	0.3^	0.1	0.4	0.1	0.5**	0.1
	Rural	Female	26.6**	3.0	9.5**	1.8	~		-		-		-		-		-		-		-	
HHS Region 10	Urban	Male	34.2**	1.2	22.5**	1.0	6.3**	0.5	4.1	0.4	2.4	0.3	1.3	0.2	-		-		-		^	^
	Rural	Male	45.7*	3.1	39.3**	2.9	7.0**	1.2	4.9	1.0	~		~		-		-		-		^	^
	Urban	Female	11.6**	0.7	6.0**	0.5	2.3	0.3	2.9	0.4	1.4	0.3	1	0.2	-		-		-		-	
	Rural	Female	23.7**	2.4	8.1**	1.4	-		~		-		-		-		-		-		-	
Other Areas																						
Appalachian regio	Urban	Male	47.6**	1.2	17.9**	0.7	14.2**	0.6	3.7	0.3	3.4	0.3	1	0.2	0.7	0.1	~		~		^	^
	Rural	Male	59.7**	1.8	19.2	1	6.9**	0.6	4.1	0.5	3.2	0.4	~		1.3**	0.3	-		-		^	^
	Urban	Female	18.6**	0.7	4.6	0.4	2.5	0.3	2.7*	0.3	1.8	0.2	0.7*	0.1	~		~		~		0.7**	0.1
	Rural	Female	23.4**	1.2	3.4*	0.4	2.4	0.4	2.9	0.4	2.1	0.4	~		-		-		-		~	
Delta region	Urban	Male	45**	1.9	18.6	1.2	51.7**	2	5	0.6	4.6**	0.6	~		~		~		-		^	^
	Rural	Male	69.6**	2.9	23.8**	1.7	21.5	1.6	3.7	0.7	5.5**	0.8	~		-		-		-		^	^
	Urban	Female	17**	1.2	2.4**	0.4	6**	0.7	2.3	0.4	2	0.4	-		-		~		-		1.7*	0.4
	Rural	Female	28.2**	1.9	5	0.8	3.9	0.7	4.3	0.7	2.6*	0.6	-		-		-		-		2.5**	0.6

Rates are represented as deaths per 100,000 population

Definitions and Sources | Under 1 yr | 1-14 yrs | **15-24 yrs** | 25-64 yrs | 65+ yrs | All Ages | All Ages by Gender

Ready

Exploring Rural and Urban Mortality Differences by Region

10 HHS Regions

Appalachia

Delta

Please select:

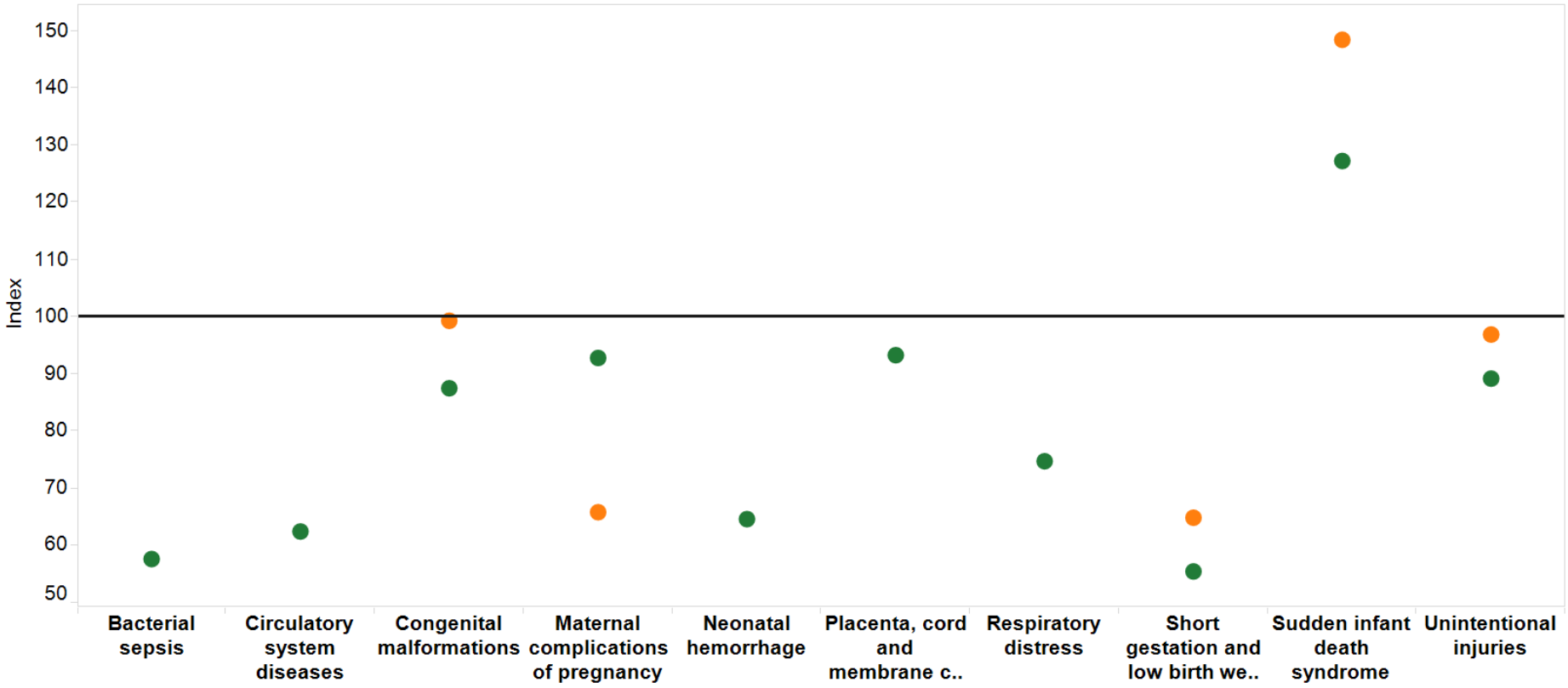
Age Under 1 Year

Sex Both Sexes

Region HHS Region 10 (AK, ID, OR, WA)

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both Sexes) Age Under 1 Year, in HHS Region 10 (AK, ID, OR, WA), by Rural-Urban Status: United States, 2011-2013

Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Please select:

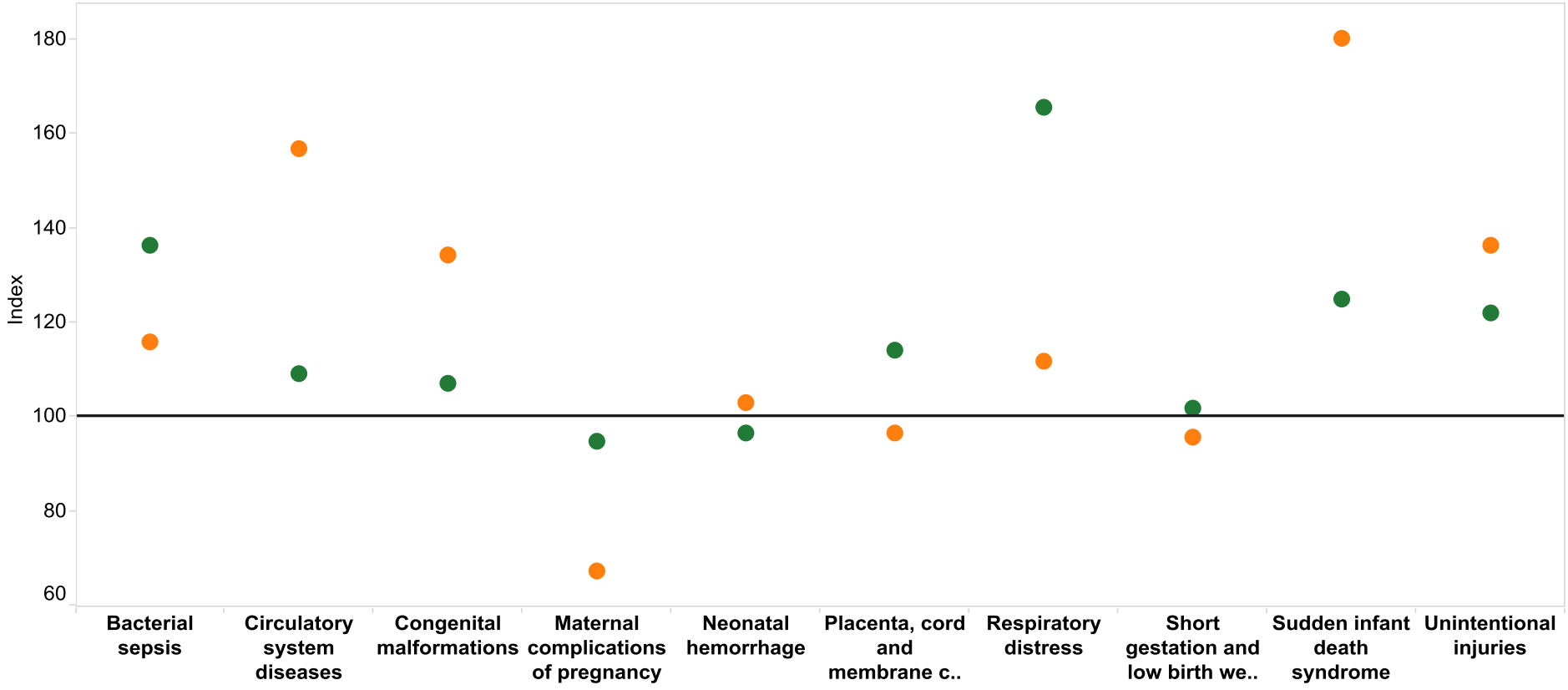
Age Under 1 Year

Sex Both Sexes

Region Appalachia Region

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both Sexes) Age Under 1 Year, in Appalachia Region, by Rural-Urban Status: United States, 2011-2013

Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Please select:

Age Under 1 Year

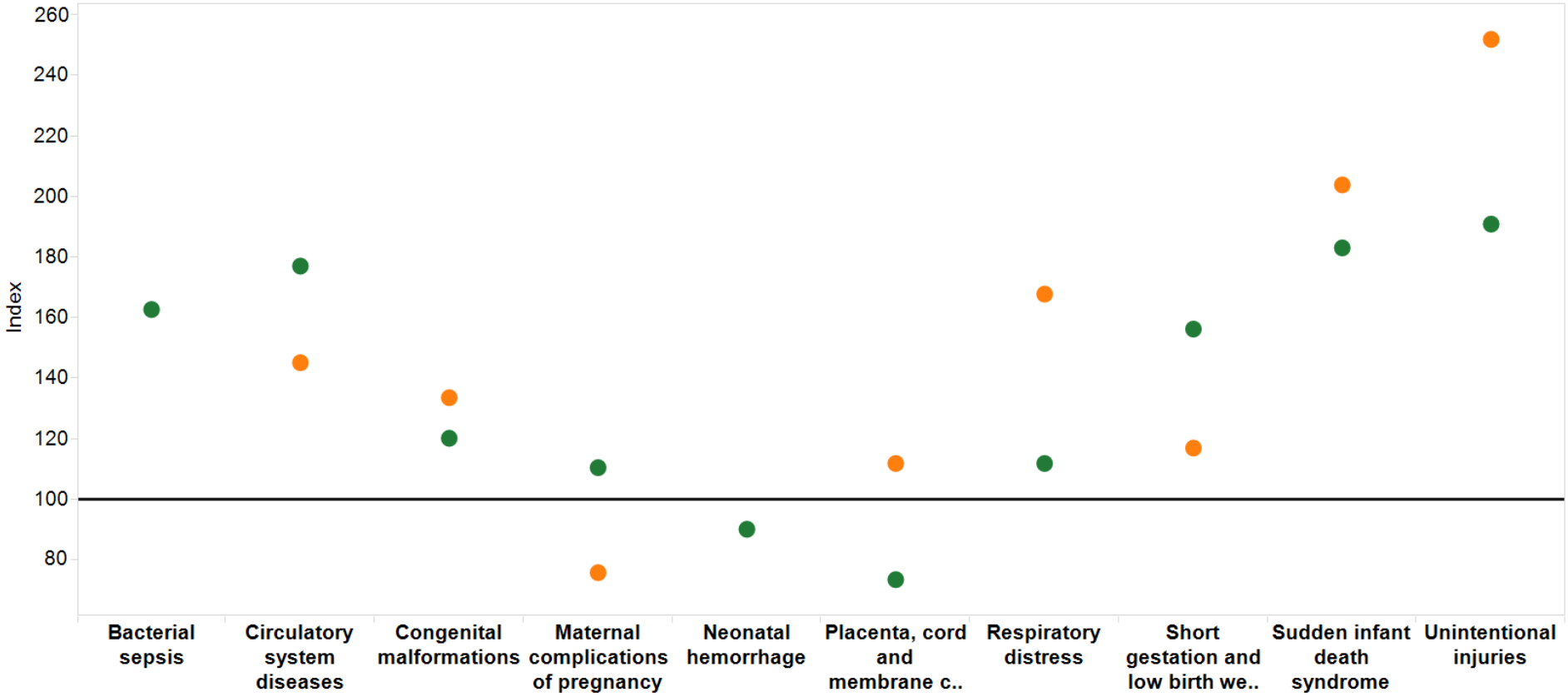
Sex Both Sexes

Region Delta Region

Rural-Urban Status
Rural
Urban

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both Sexes) Age Under 1 Year, in Delta Region, by Rural-Urban Status: United States, 2011-2013

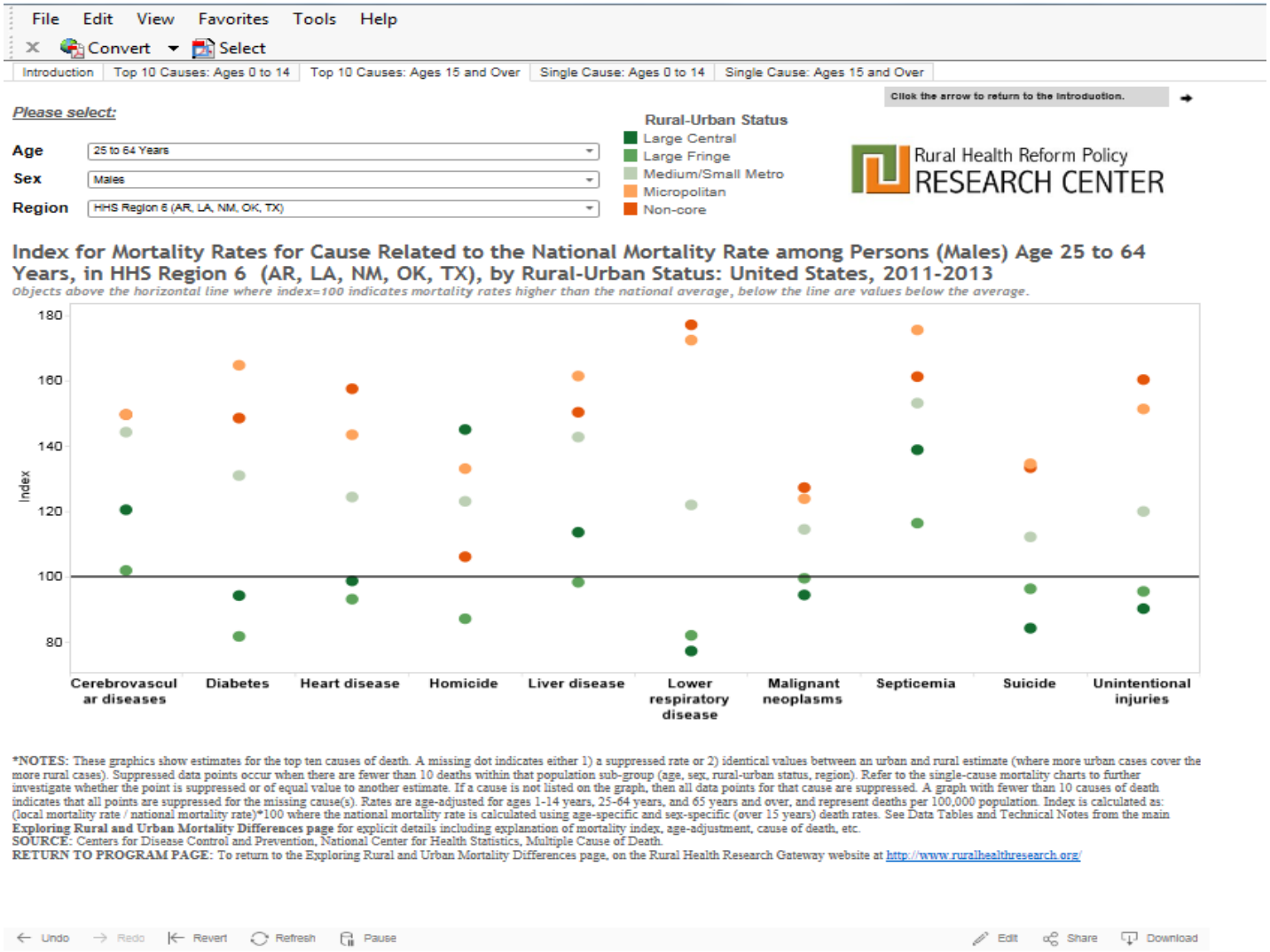
Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

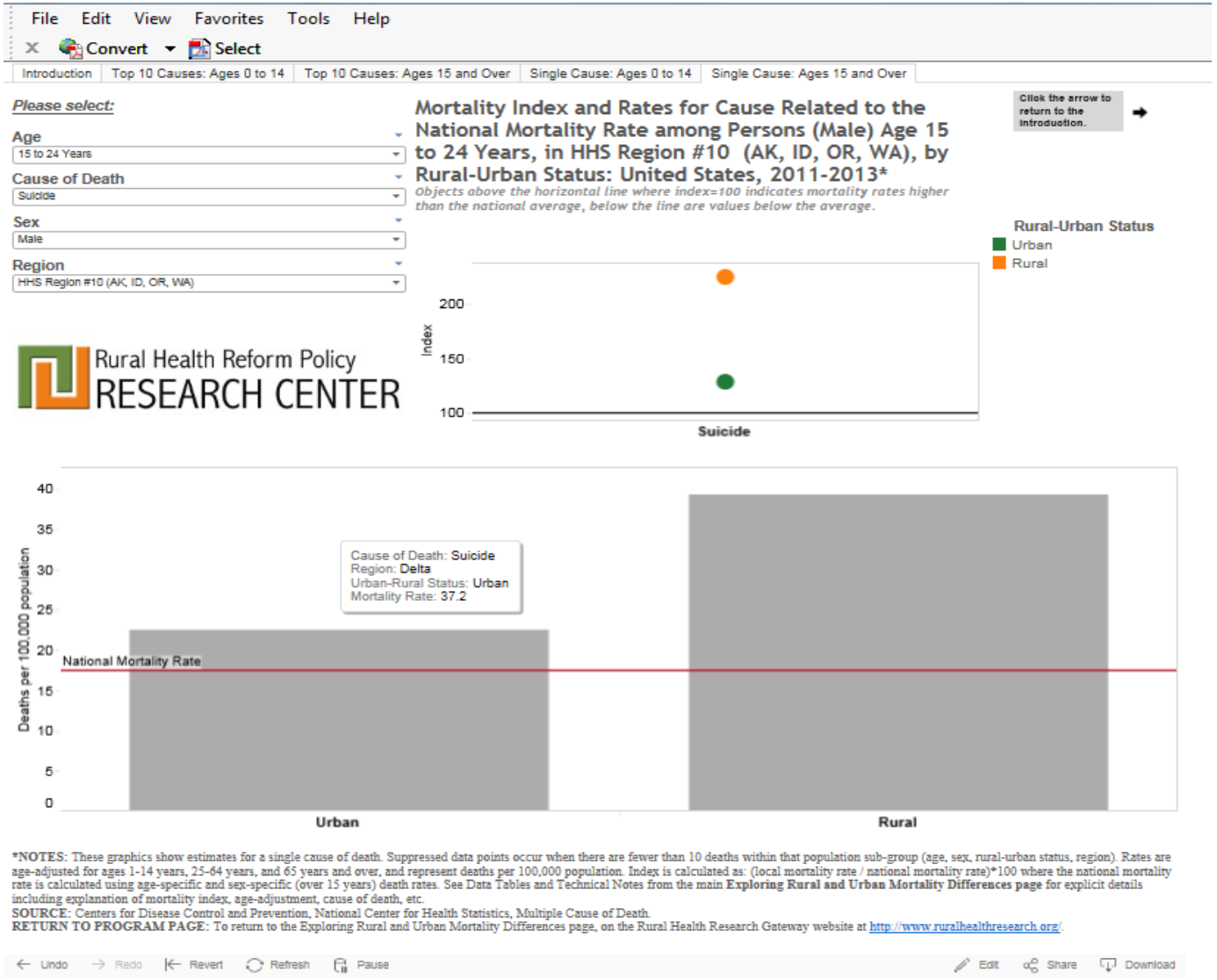
Rural Health Reform Policy
RESEARCH CENTER

Online Tool – Top 10 Causes of Death



Rural Health Reform Policy
RESEARCH CENTER

Online Tool – Single Cause of Death



Please select:

Age 25 to 64 Years

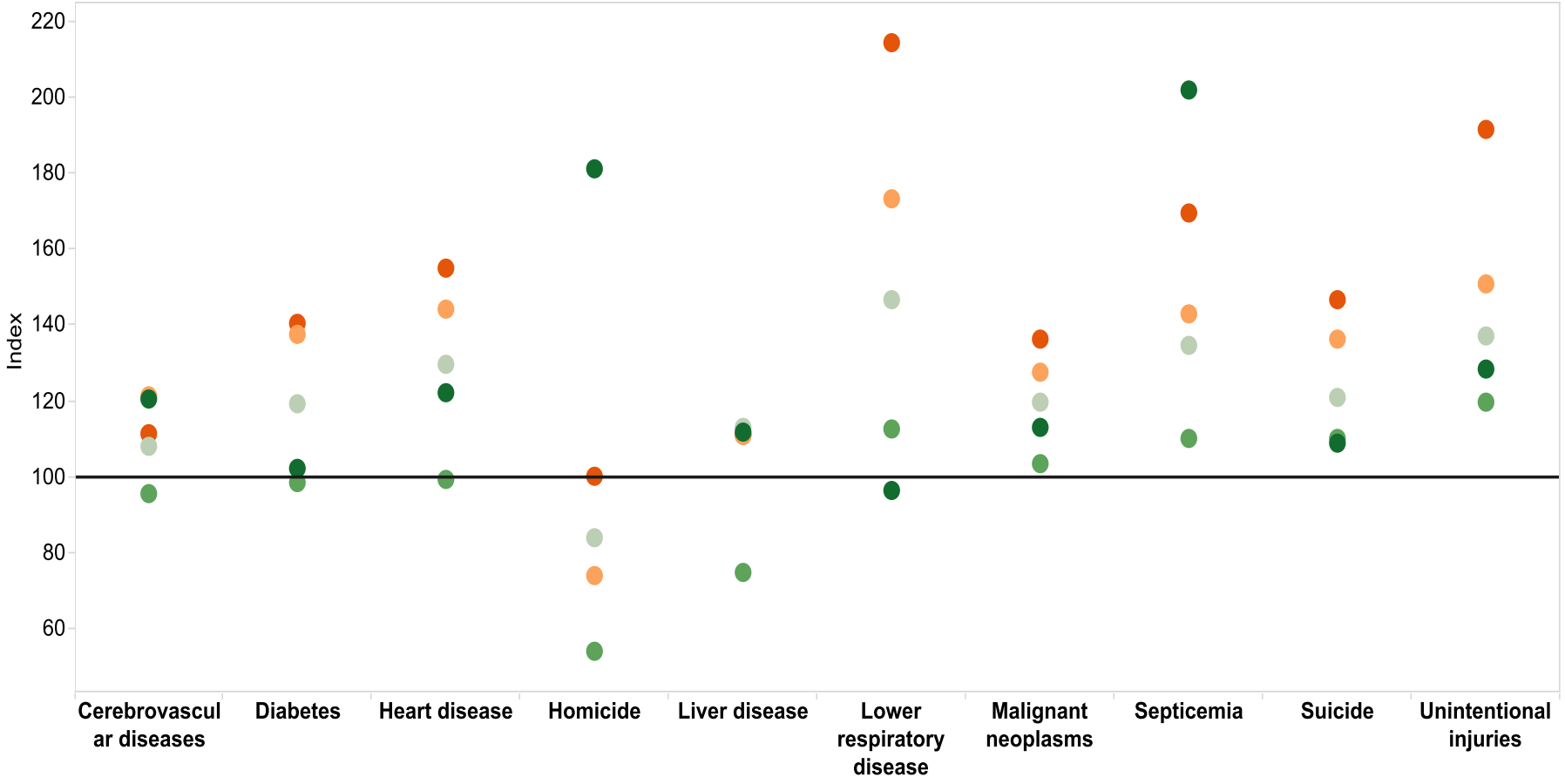
Sex Males

Region Appalachia Region

Rural-Urban Status
- Large Central
- Large Fringe
- Medium/Small Metro
- Micropolitan
- Non-core

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Males) Age 25 to 64 Years, in Appalachia Region, by Rural-Urban Status: United States, 2011-2013

Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Please select:

Age 25 to 64 Years

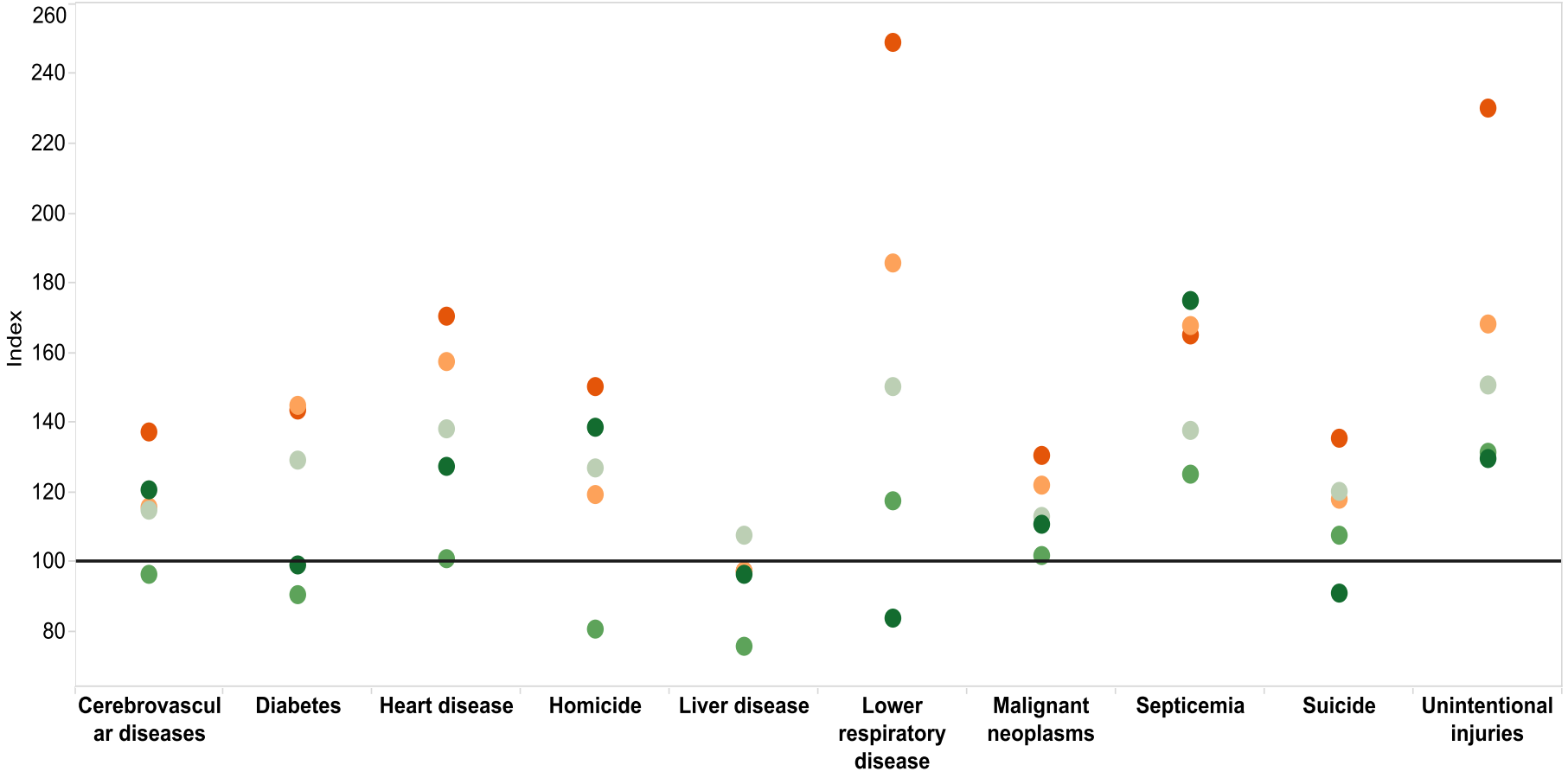
Sex Females

Region Appalachia Region

Rural-Urban Status
- Large Central
- Large Fringe
- Medium/Small Metro
- Micropolitan
- Non-core

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Females) Age 25 to 64 Years, in Appalachia Region, by Rural-Urban Status: United States, 2011-2013

Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Please select:

Age
25 to 64 Years

Cause of Death
Lower respiratory

Sex
Female

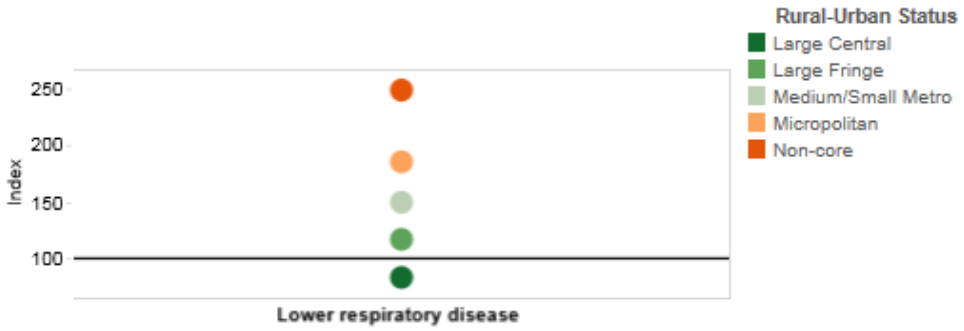
Region
Appalachia

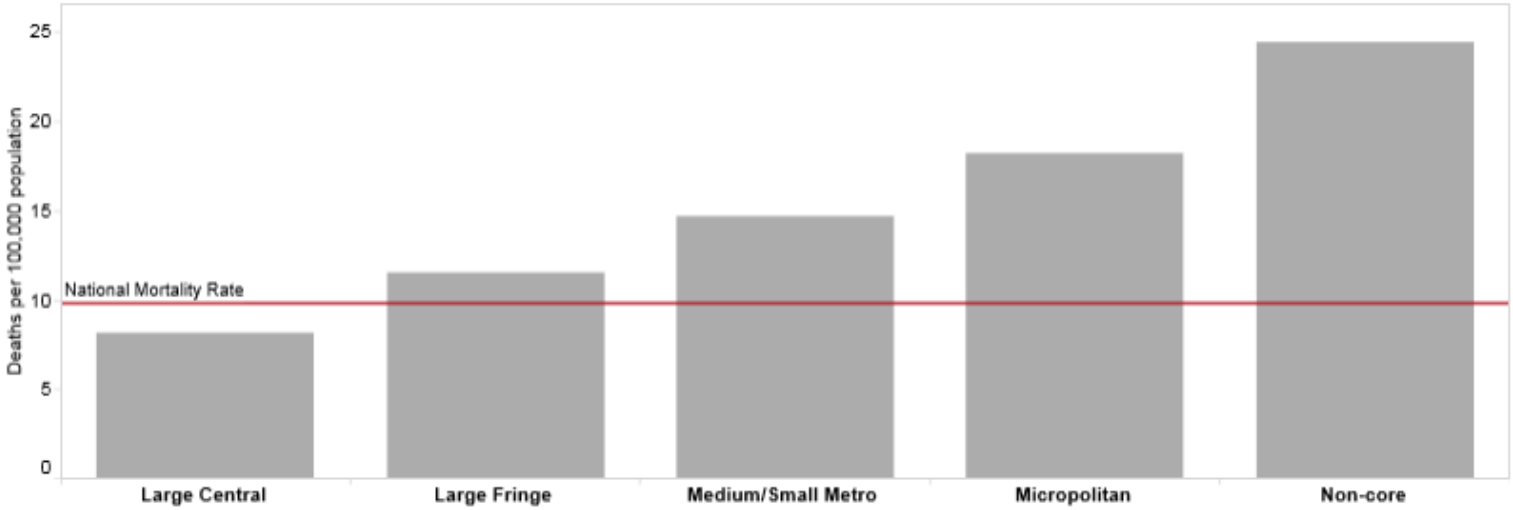
Rural Health Reform Policy RESEARCH CENTER

Mortality Index and Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64 Years, in Appalachia, by Rural-Urban Status: United States, 2011-2013*

Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.

Click the arrow to return to the Introduction. ➡





*NOTES: These graphics show estimates for a single cause of death. Suppressed data points occur when there are fewer than 10 deaths within that population sub-group (age, sex, rural-urban status, region). Rates are age-adjusted for ages 1-14 years, 25-64 years, and 65 years and over, and represent deaths per 100,000 population. Index is calculated as: (local mortality rate / national mortality rate)*100 where the national mortality rate is calculated using age-specific and sex-specific (over 15 years) death rates. See Data Tables and Technical Notes from the main **Exploring Rural and Urban Mortality Differences page** for explicit details including explanation of mortality index, age-adjustment, cause of death, etc.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.

RETURN TO PROGRAM PAGE: To return to the Exploring Rural and Urban Mortality Differences page, on the Rural Health Research Gateway website at http://www.ruralhealthresearch.org/.

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Mapping Rural and Urban Mortality by Regions
10 HHS Regions
Appalachia
Delta

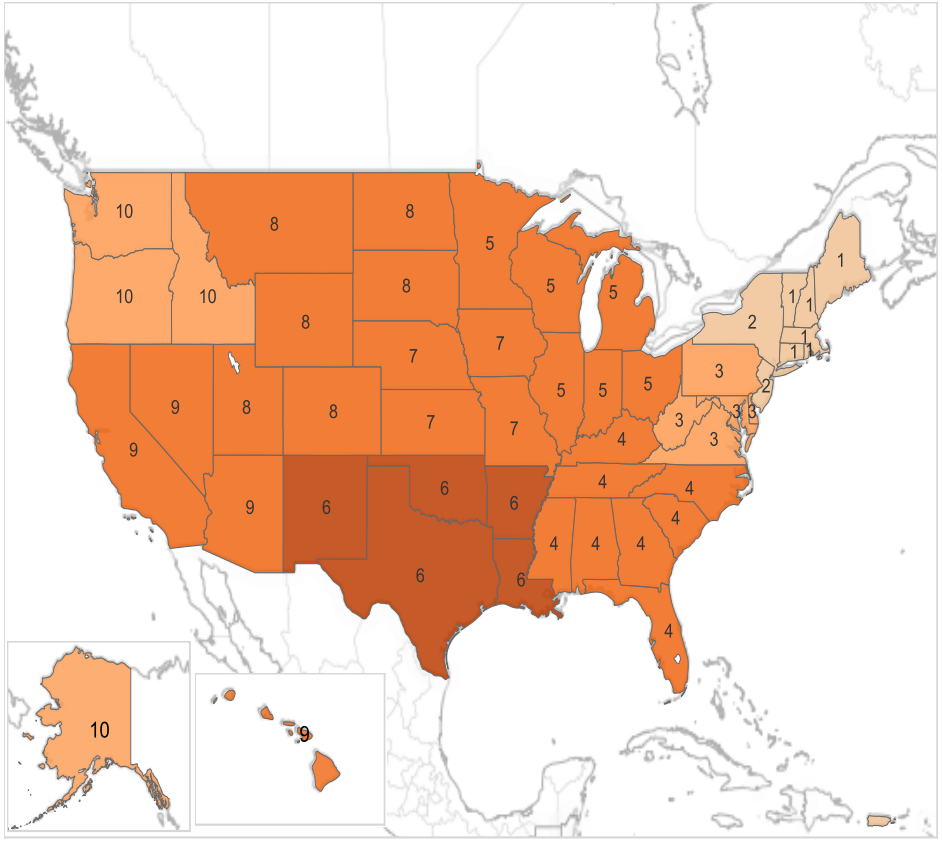
Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: Under 1; Cause of Death: Congenital malformations; Sex: Combined Sexes

Age
Under 1

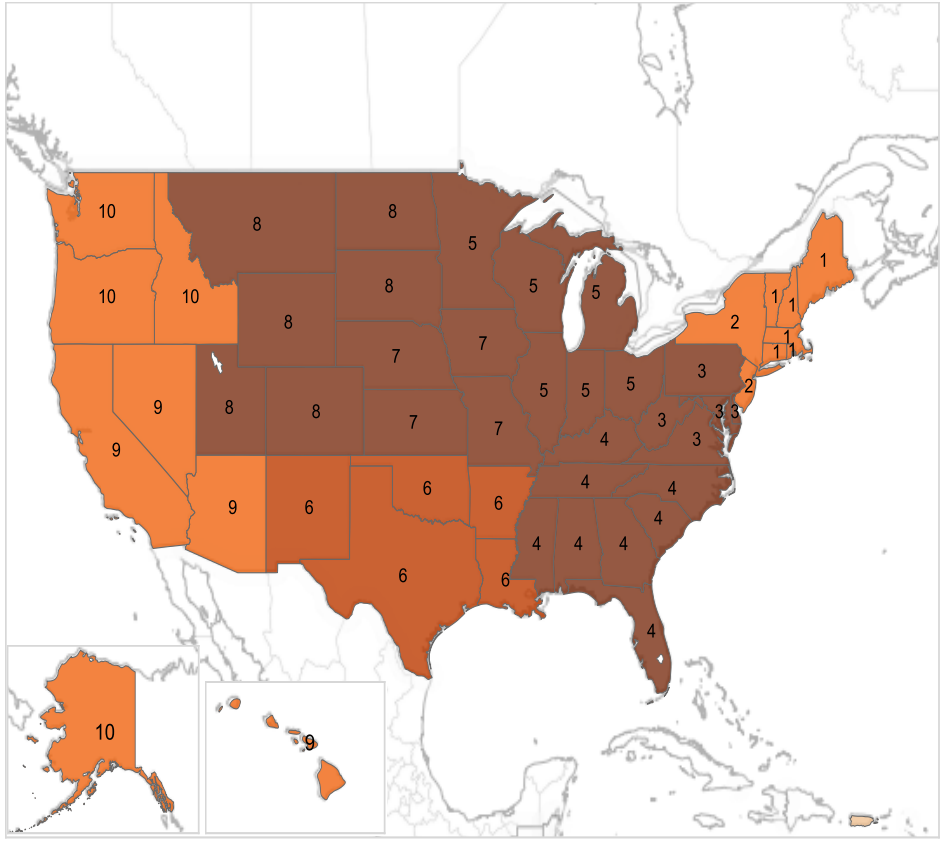
Cause of Death
Congenital malformations

Mortality Rate (per 100,000 pop)
80.4 — 168.1
(Numbers indicate HHS Regions)

URBAN (Large Fringe, Large Central, Small/Medium Metro)



RURAL (Micropolitan, Non-Core)



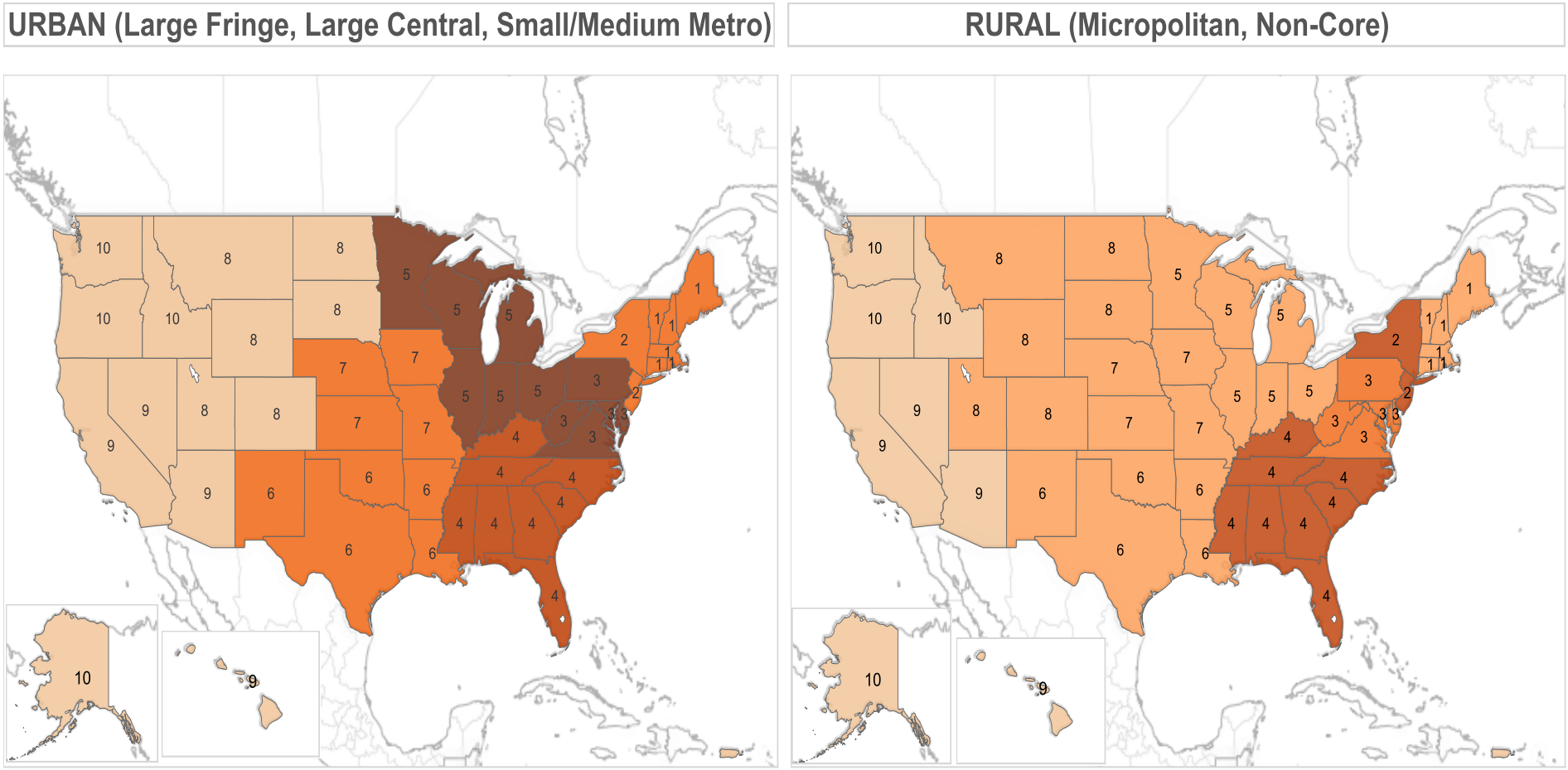
SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: Under 1; Cause of Death: Short gestation and low birth weight; Sex: Combined Sexes

Age
Under 1

Cause of Death
Short gestation and low birth weight

Mortality Rate (per 100,000 pop)
55.9 — 149.0
(Numbers indicate HHS Regions)



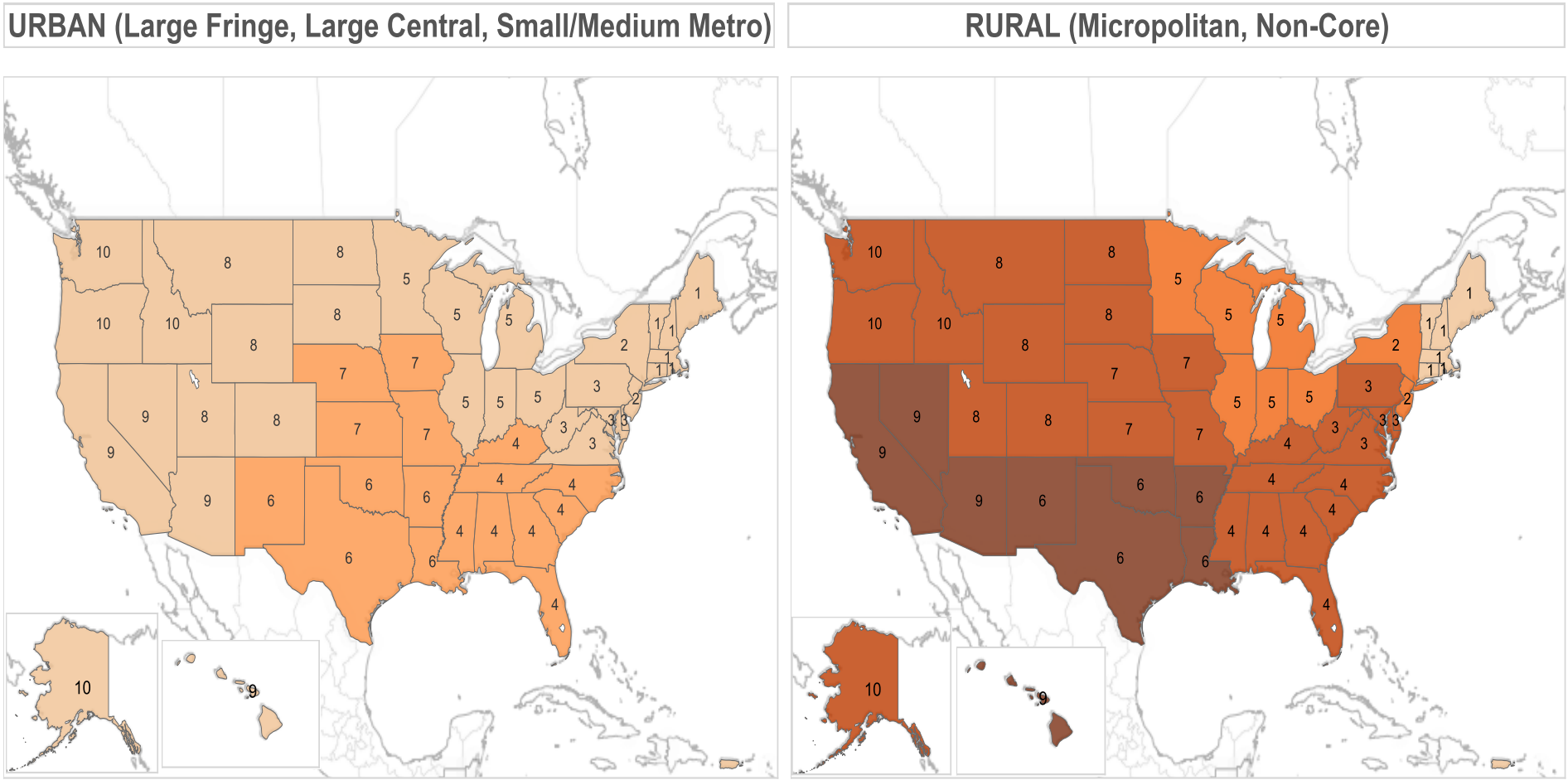
SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 1 to 14; Cause of Death: Unintentional injuries; Sex: Combined Sexes

Age
1 to 14

Cause of Death
Unintentional injuries

Mortality Rate (per 100,000 pop)
2.4 — 13.1
(Numbers indicate HHS Regions)



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

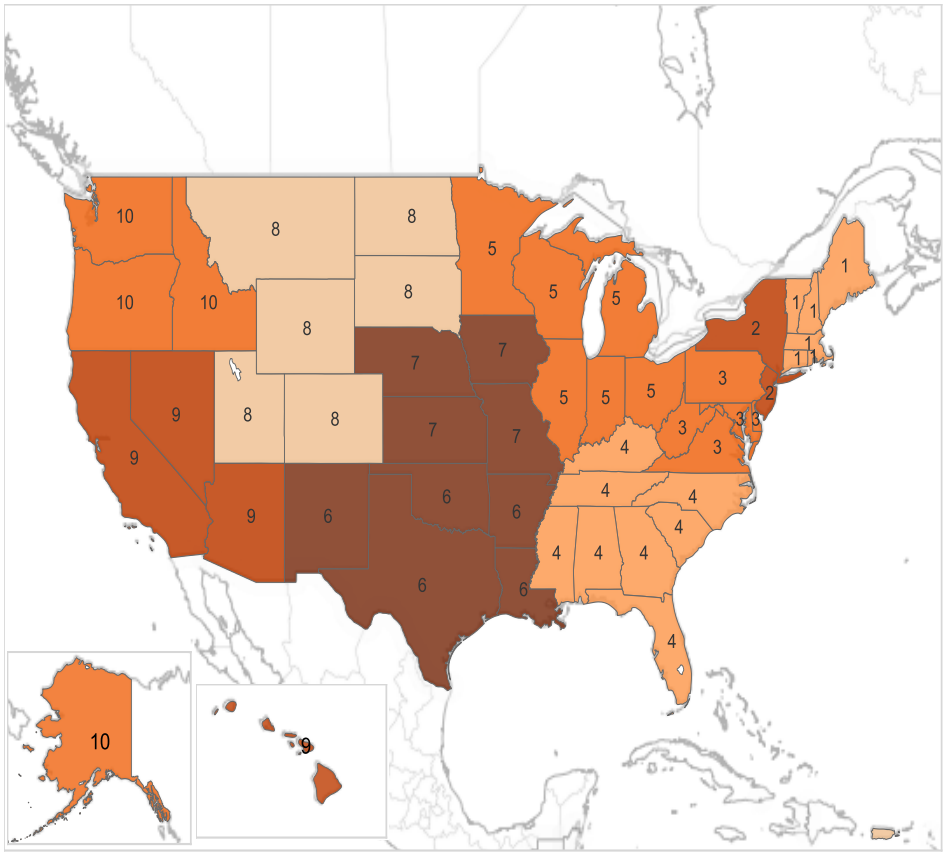
Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 1 to 14; Cause of Death: Malignant neoplasms; Sex: Combined Sexes

Age
1 to 14

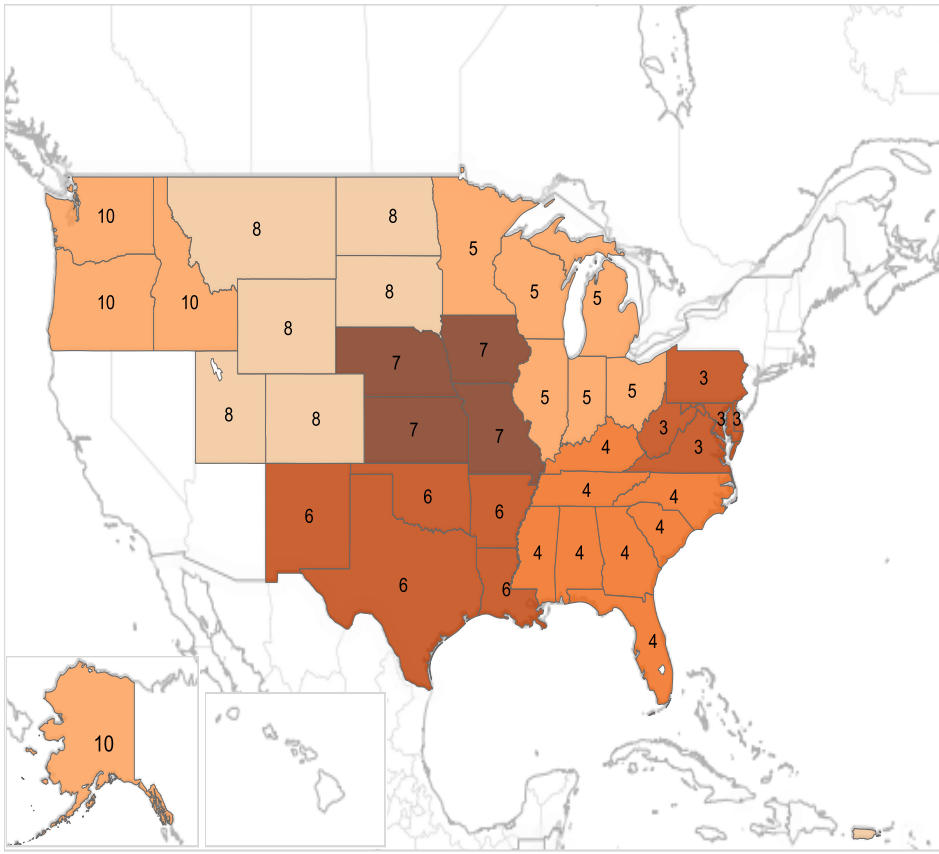
Cause of Death
Malignant neoplasms

Mortality Rate (per 100,000 pop)
1.7 — 2.6
(Numbers indicate HHS Regions)

URBAN (Large Fringe, Large Central, Small/Medium Metro)



RURAL (Micropolitan, Non-Core)



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

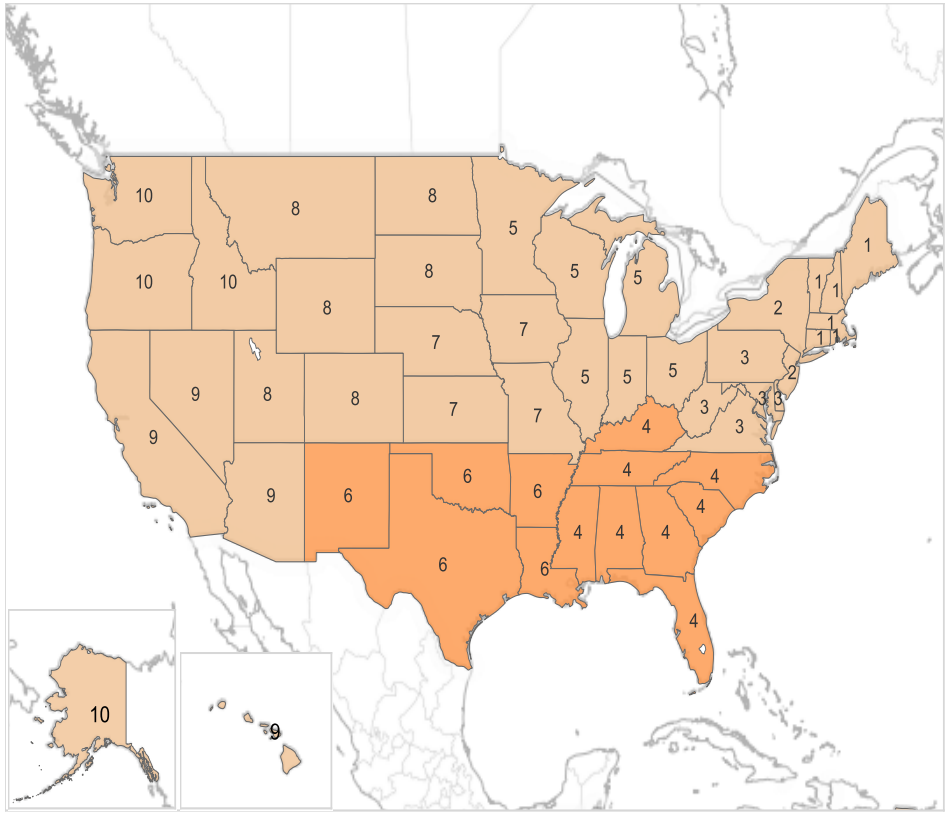
Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 15 to 24; Cause of Death: Unintentional injuries; Sex: Male

Sex
Male

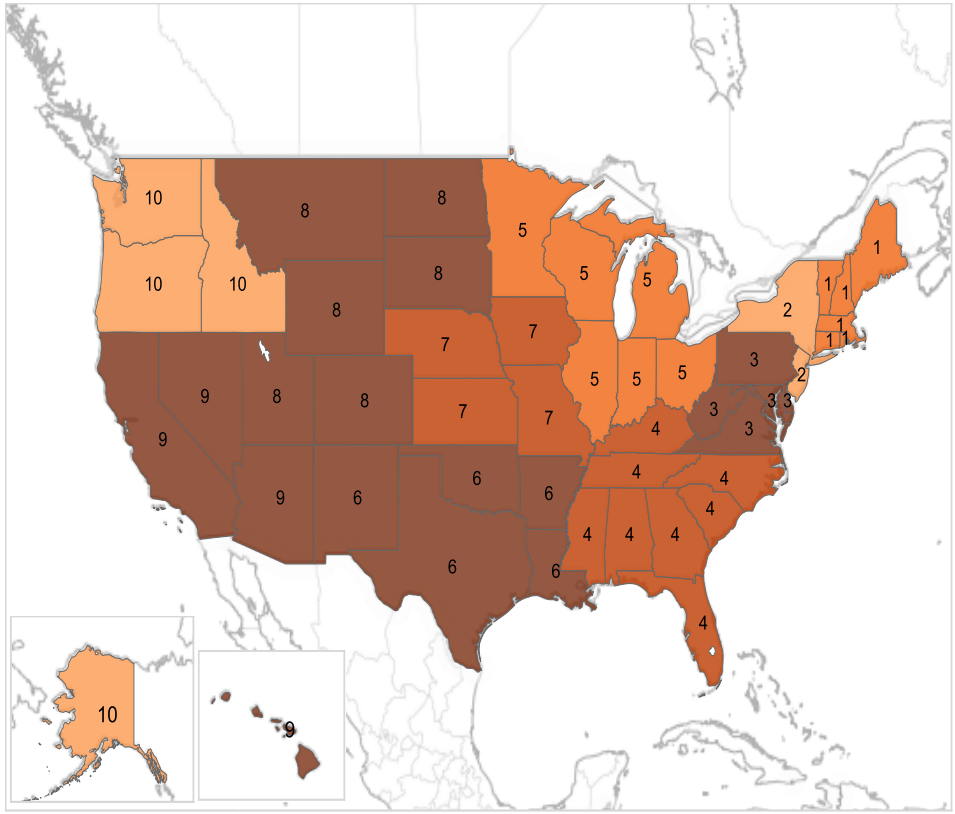
Cause of Death
Unintentional injuries

Mortality Rate (per 100,000 pop)
30.5 — 70.0
(Numbers indicate HHS Regions)

URBAN (Large Fringe, Large Central, Small/Medium Metro)



RURAL (Micropolitan, Non-Core)



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

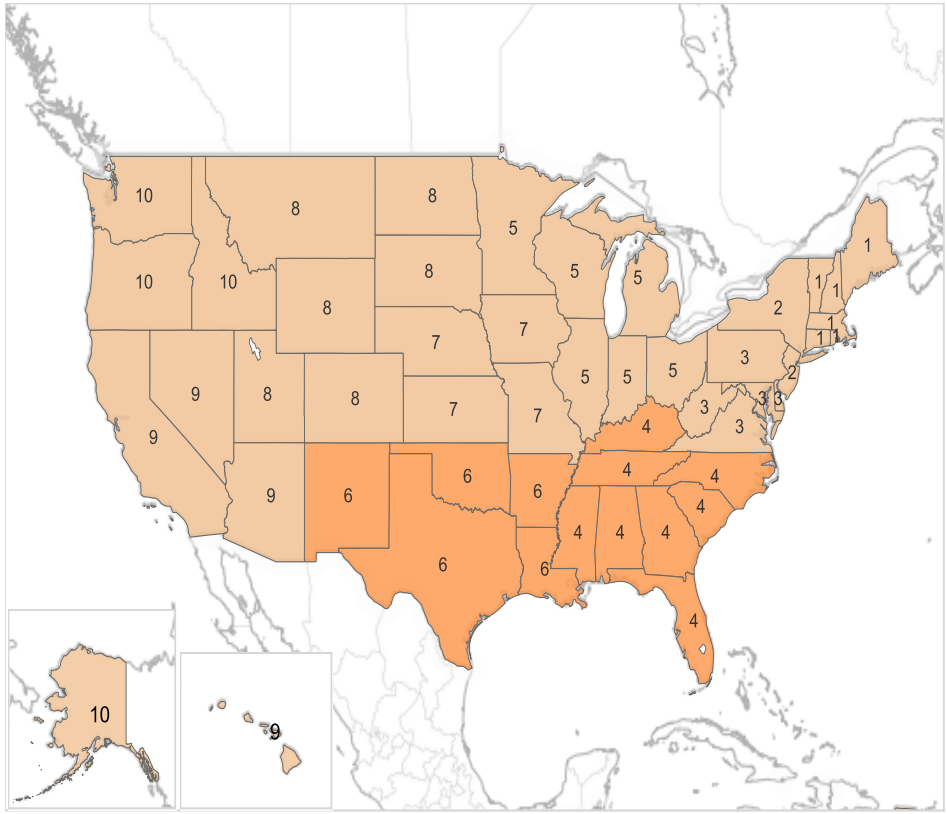
Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 15 to 24; Cause of Death: Unintentional injuries; Sex: Female

Sex
Female

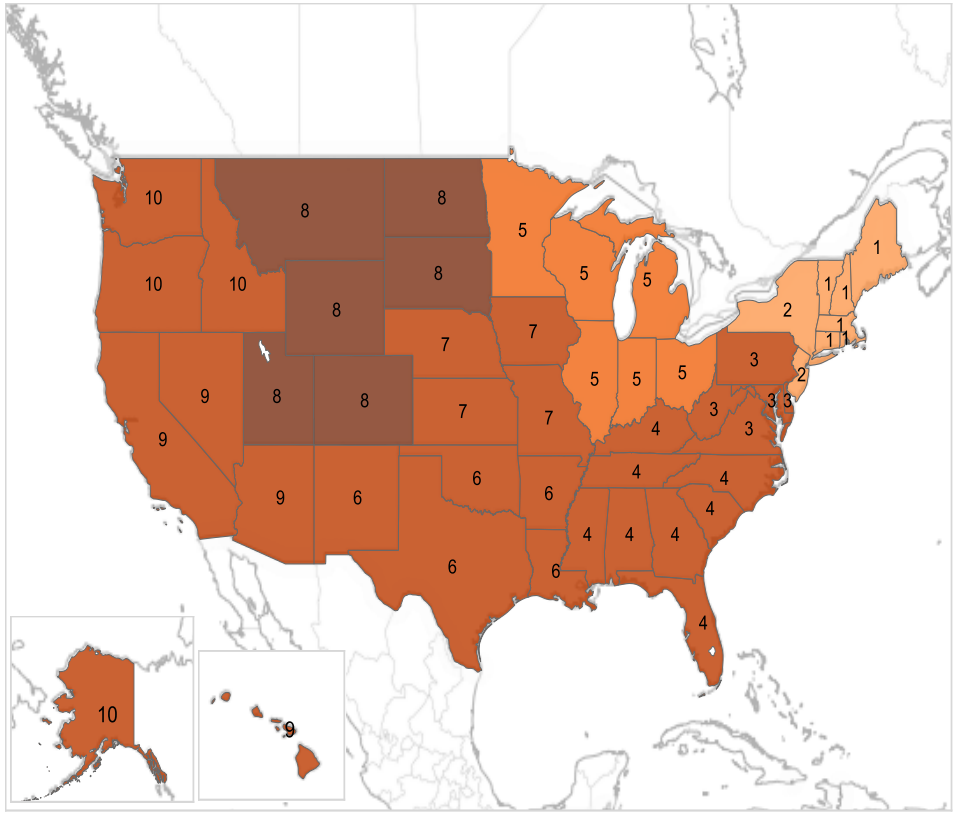
Cause of Death
Unintentional injuries

Mortality Rate (per 100,000 pop)
9.7 — 31.7
(Numbers indicate HHS Regions)

URBAN (Large Fringe, Large Central, Small/Medium Metro)



RURAL (Micropolitan, Non-Core)



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

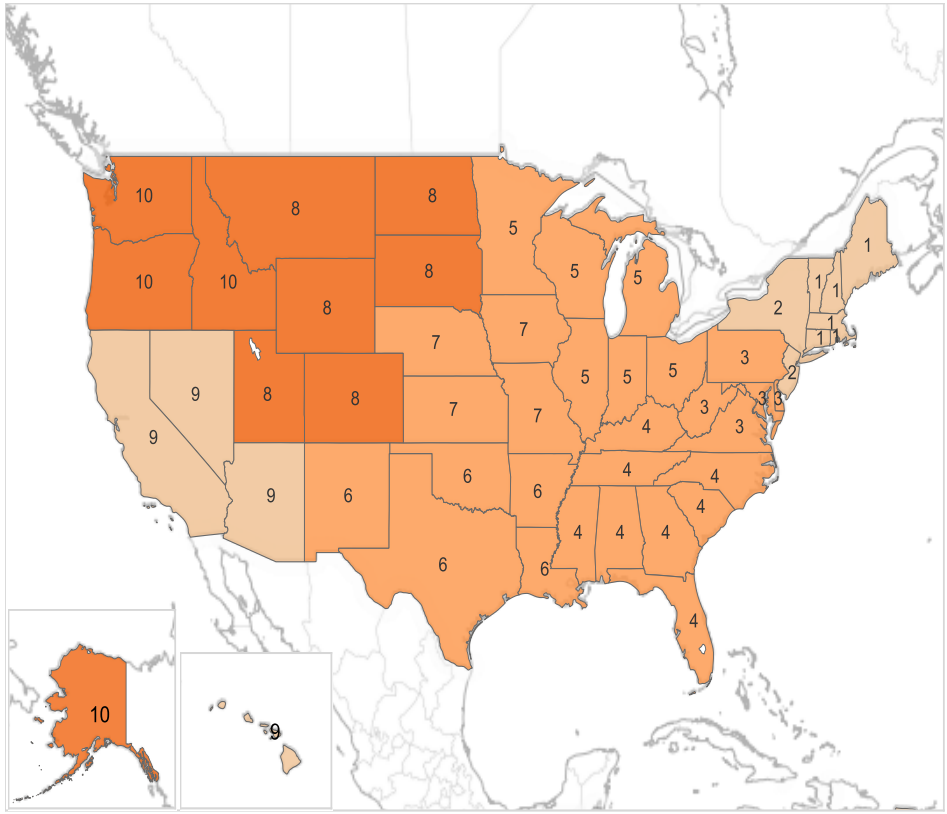
Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 15 to 24; Cause of Death: Suicide; Sex: Male

Sex
Male

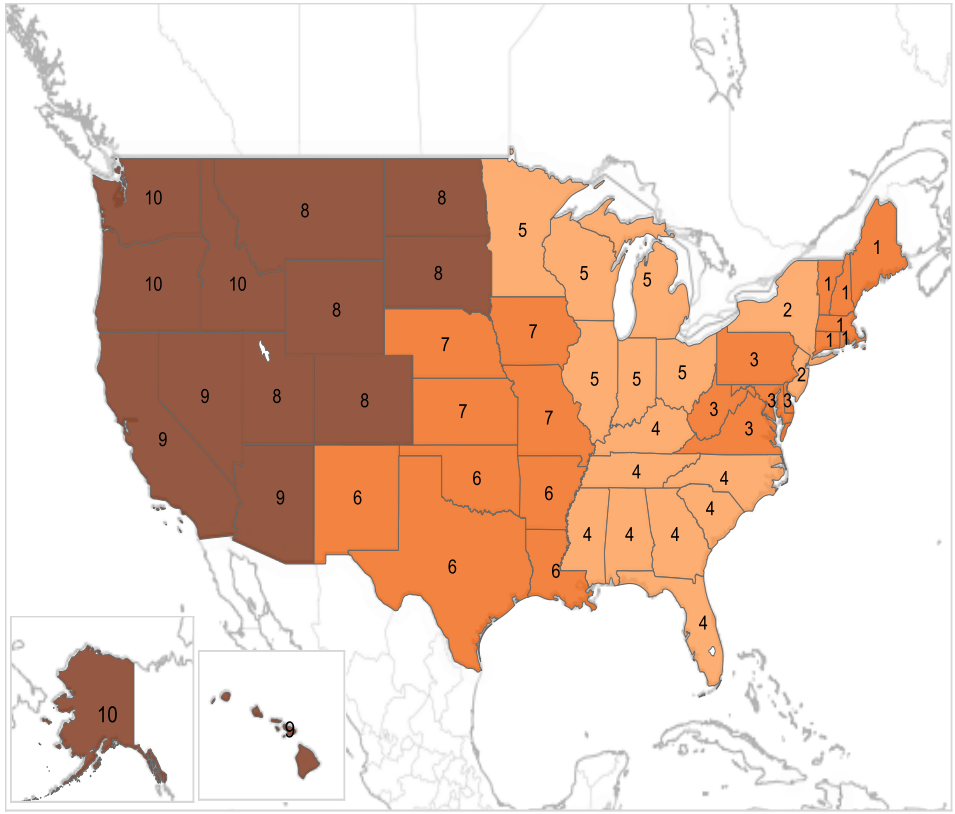
Cause of Death
Suicide

Mortality Rate (per 100,000 pop)
10.6 — 39.3
(Numbers indicate HHS Regions)

URBAN (Large Fringe, Large Central, Small/Medium Metro)



RURAL (Micropolitan, Non-Core)



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

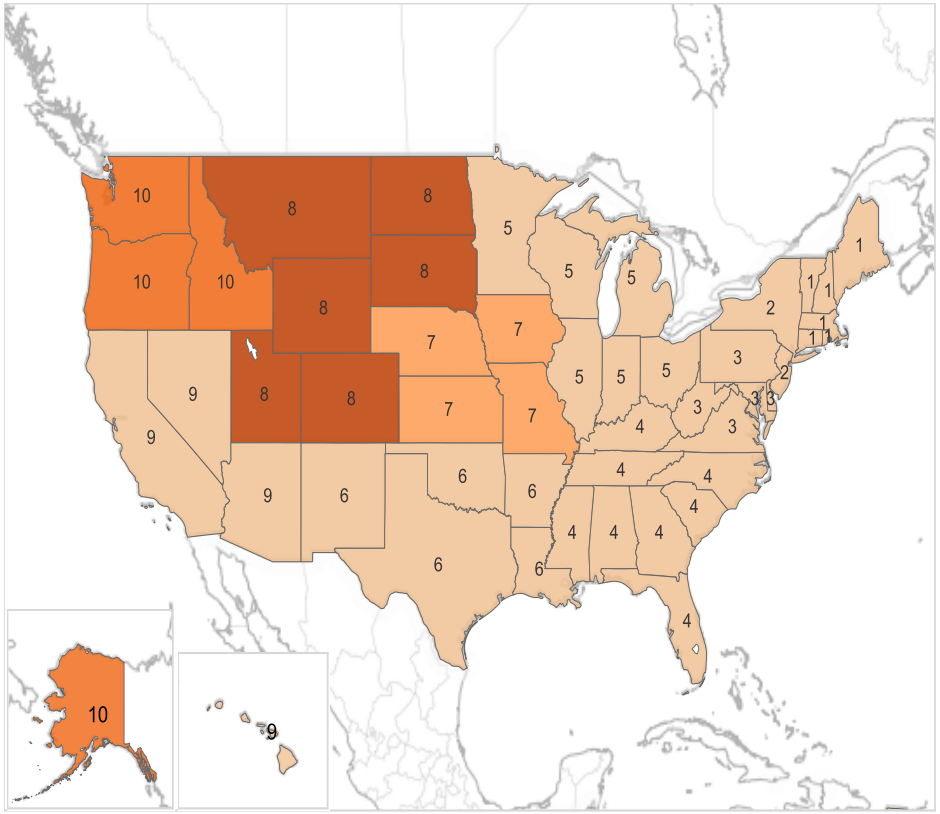
Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 15 to 24; Cause of Death: Suicide; Sex: Female

Sex
Female

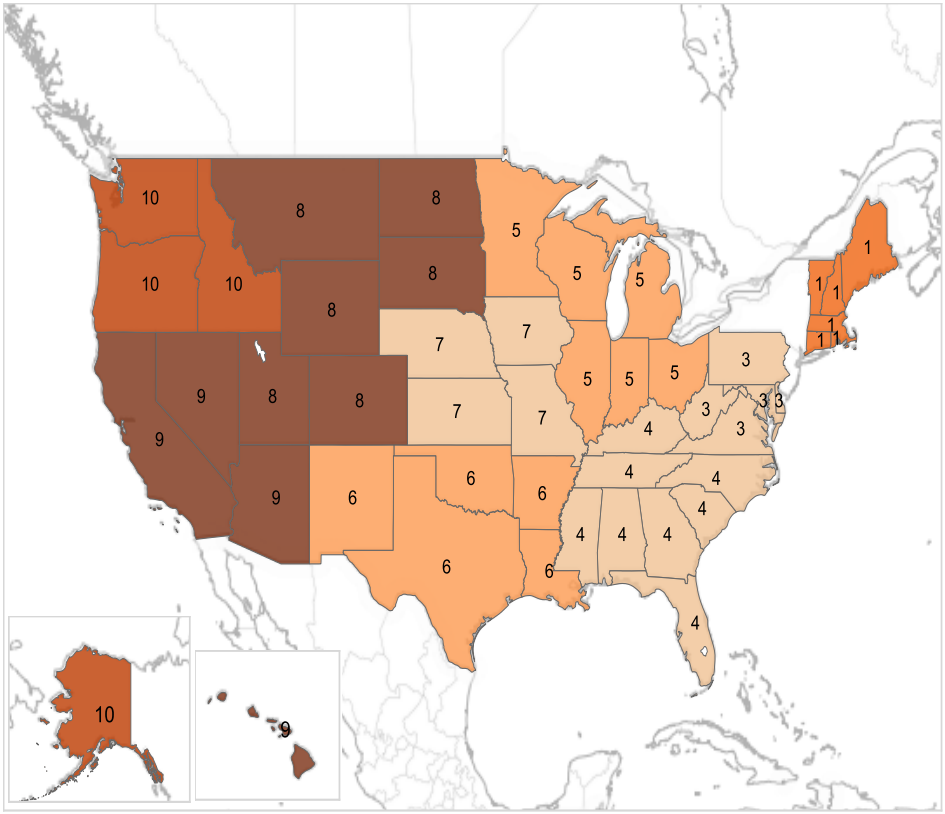
Cause of Death
Suicide

Mortality Rate (per 100,000 pop)
3.2 — 9.5
(Numbers indicate HHS Regions)

URBAN (Large Fringe, Large Central, Small/Medium Metro)



RURAL (Micropolitan, Non-Core)



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Malignant neoplasms; Sex: Male

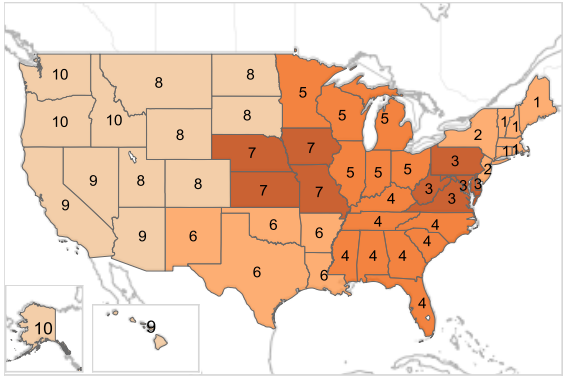
Age
25 to 64

Cause of Death
Malignant neoplasms

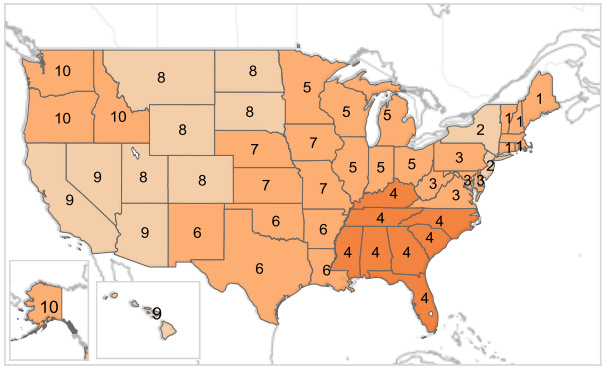
Sex
Male

Mortality Rate (per 100,000 pop)
65.1 — 141.6
(Numbers indicate HHS Regions)

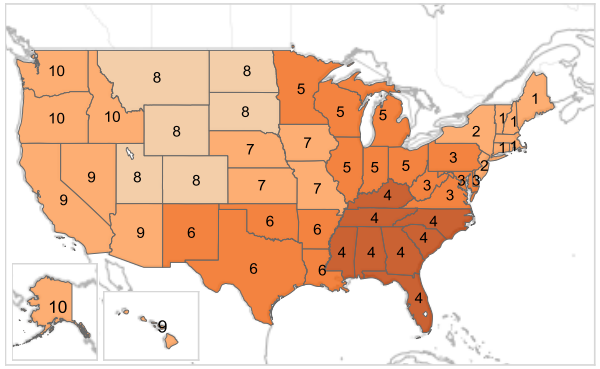
LARGE CENTRAL



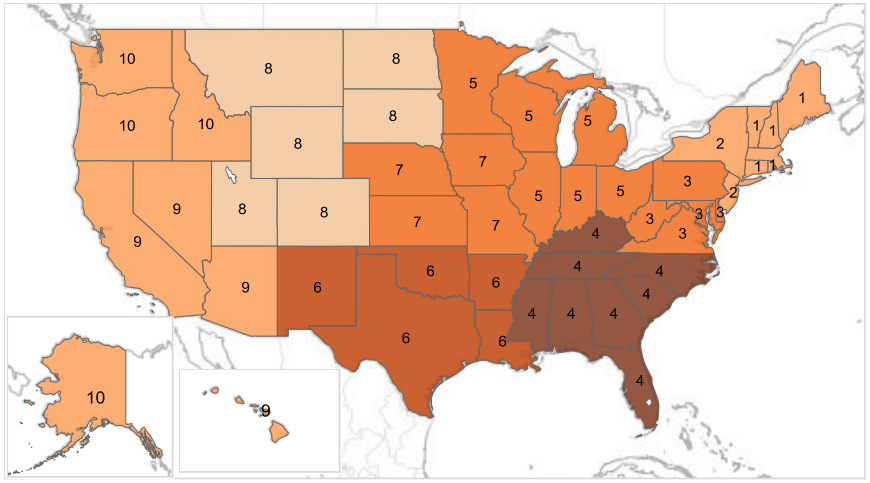
LARGE FRINGE



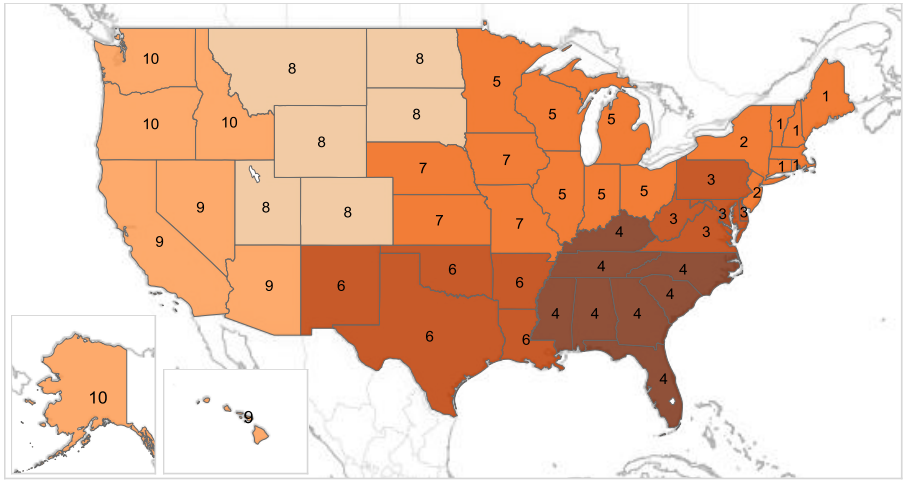
SMALL/MEDIUM METROPOLITAN



MICROPOLITAN



NON-CORE



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Malignant neoplasms; Sex: Female

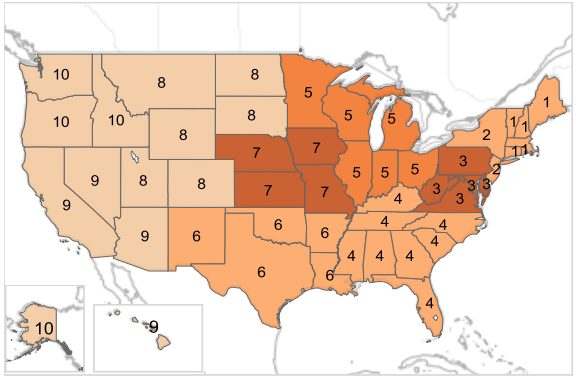
Age
25 to 64

Cause of Death
Malignant neoplasms

Sex
Female

Mortality Rate
(per 100,000 pop)
63.8 — 113.4
(Numbers indicate HHS Regions)

LARGE CENTRAL



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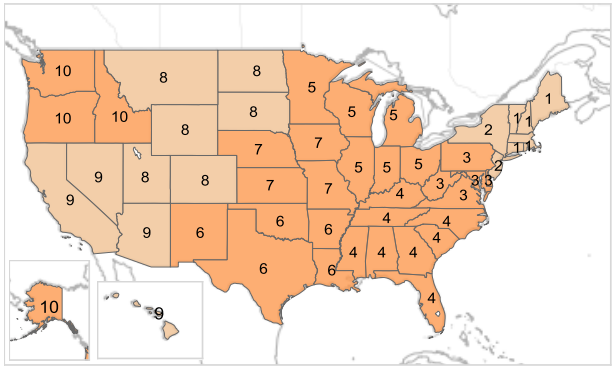
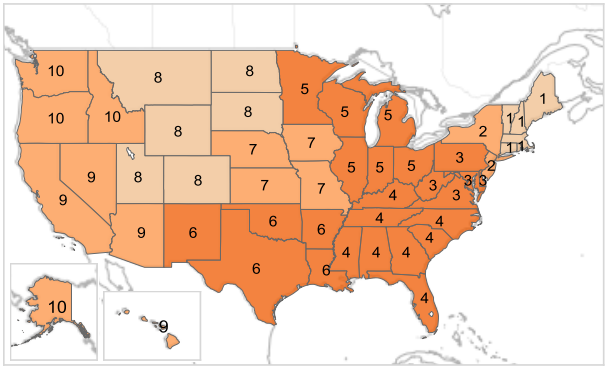


SMALL/MEDIUM METROPOLITAN



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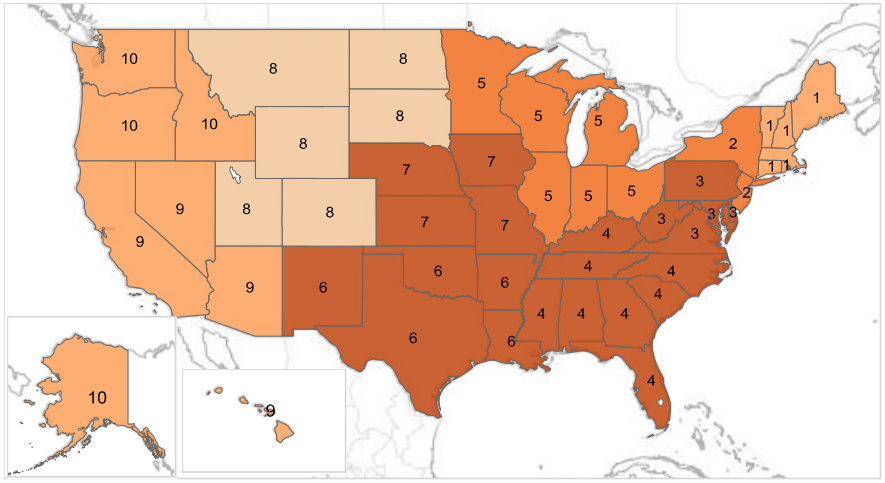
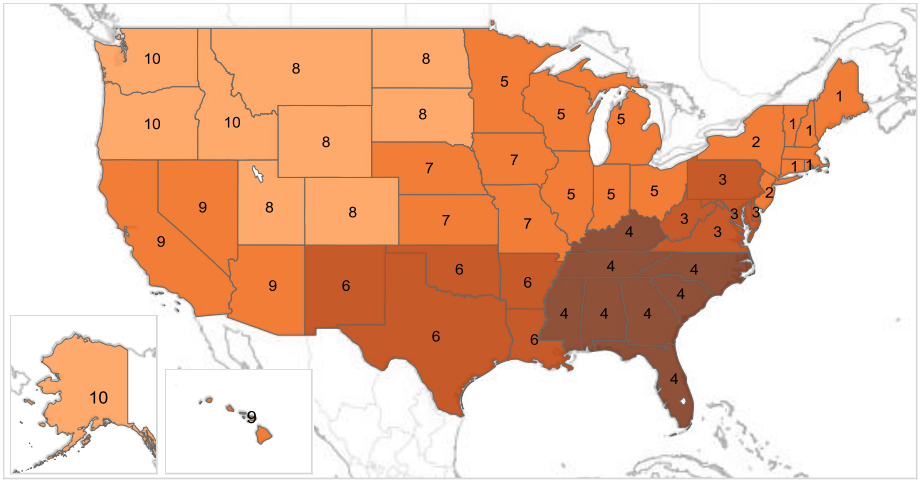


NON-CORE



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Heart disease; Sex: Male

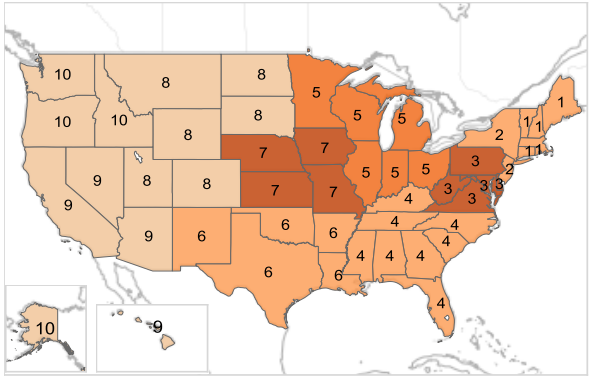
Age
25 to 64

Cause of Death
Heart disease

Sex
Male

Mortality Rate (per 100,000 pop)
53.3 — 154.2
(Numbers indicate HHS Regions)

LARGE CENTRAL



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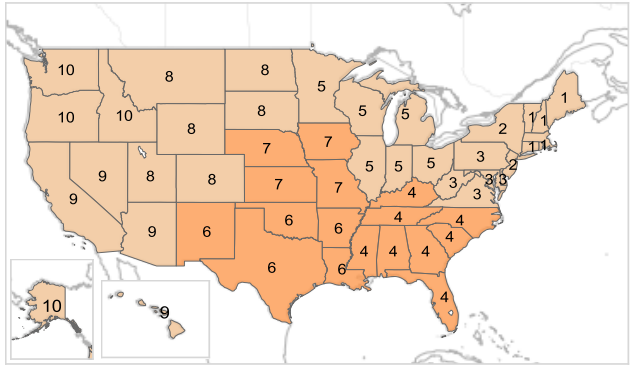
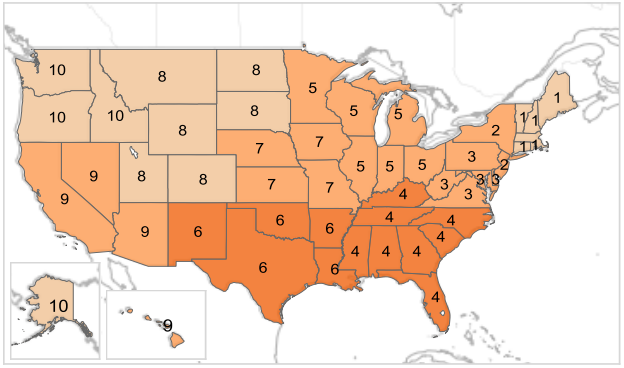


SMALL/MEDIUM METROPOLITAN



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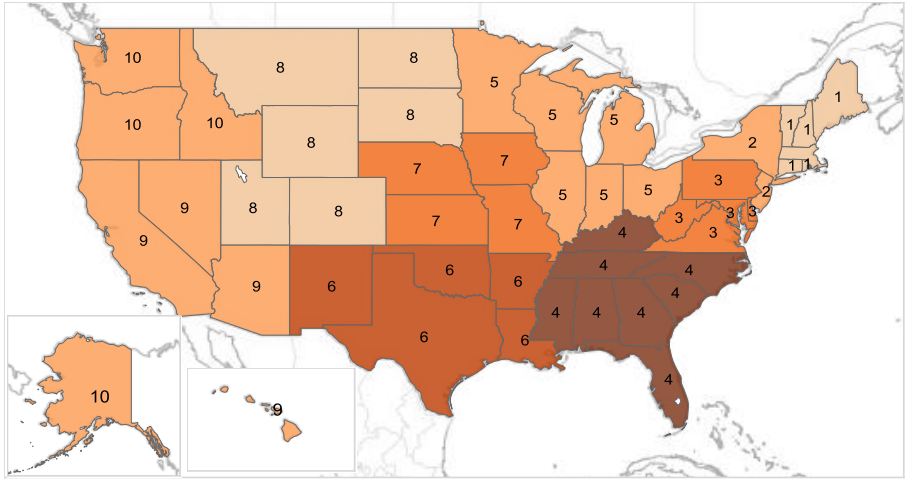
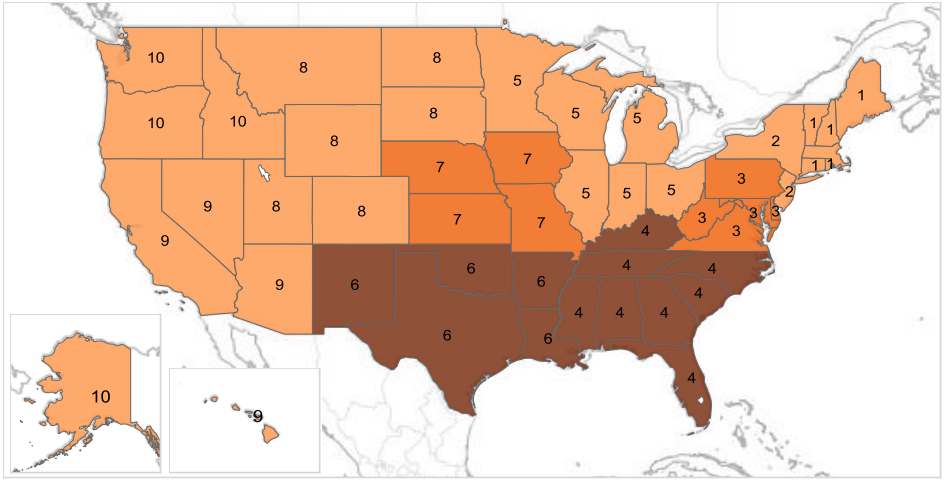


NON-CORE



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Heart disease; Sex: Female

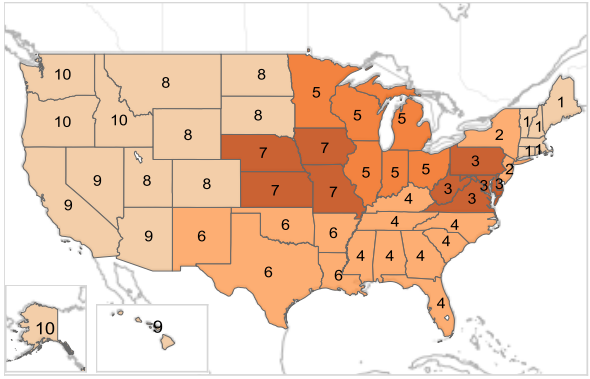
Age
25 to 64

Cause of Death
Heart disease

Sex
Female

Mortality Rate (per 100,000 pop)
18.0 — 73.6
(Numbers indicate HHS Regions)

LARGE CENTRAL



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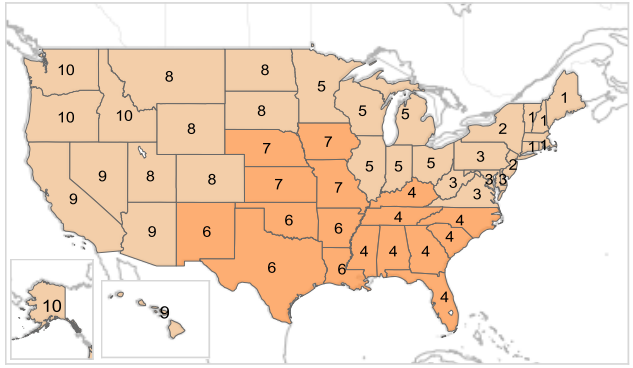
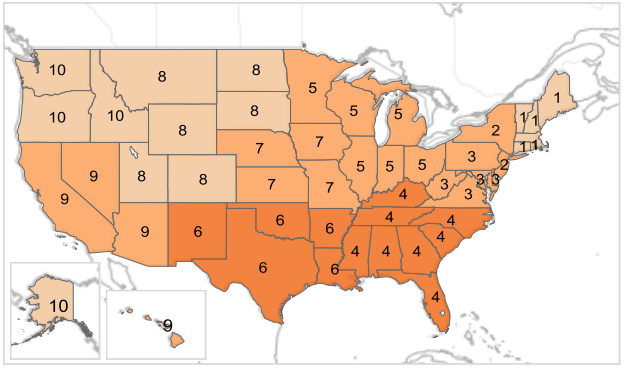


SMALL/MEDIUM METROPOLITAN



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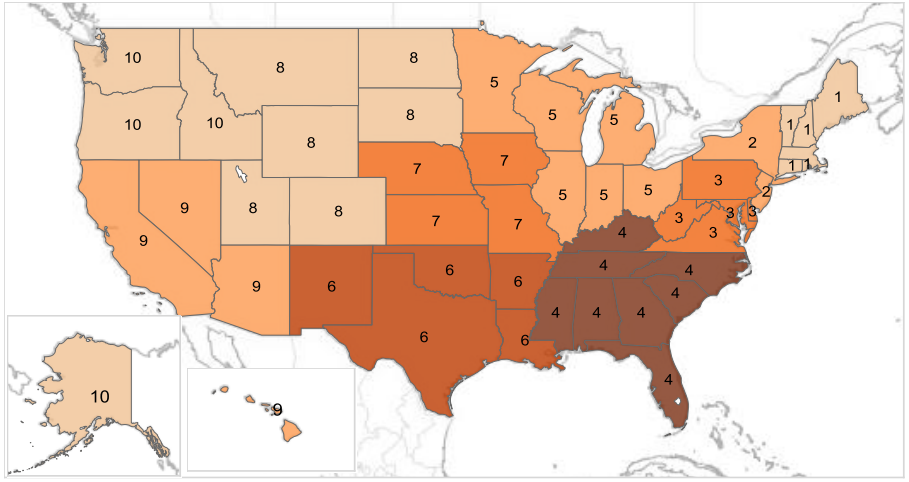

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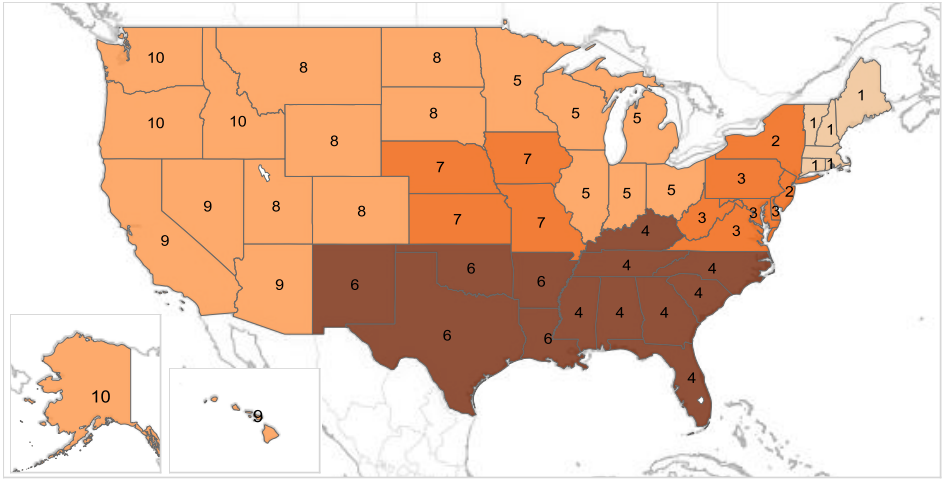


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Unintentional injuries; Sex: Male

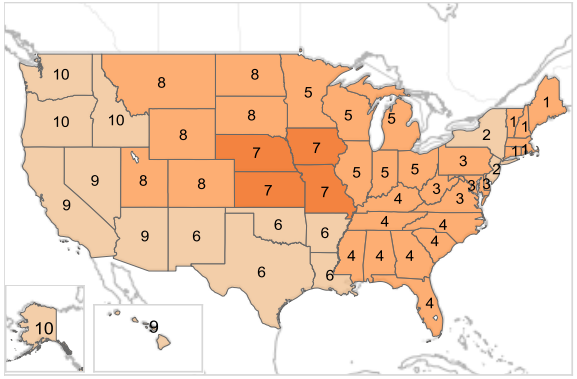
Age
25 to 64

Cause of Death
Unintentional injuries

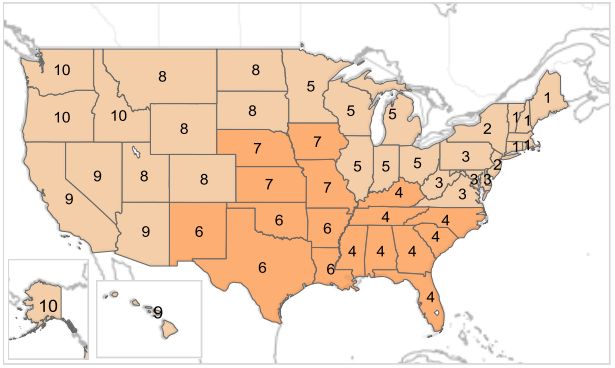
Sex
Male

Mortality Rate (per 100,000 pop)
37.6 — 112.3
(Numbers indicate HHS Regions)

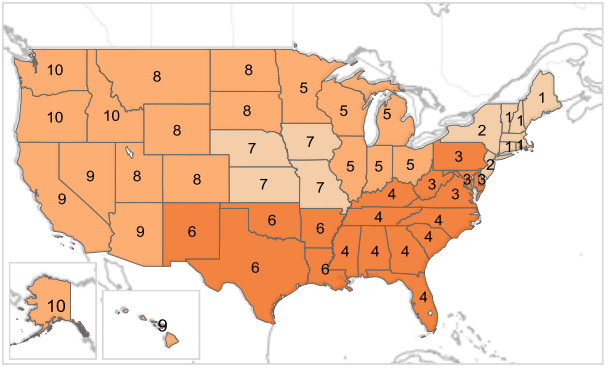
LARGE CENTRAL



LARGE FRINGE



SMALL/MEDIUM METROPOLITAN



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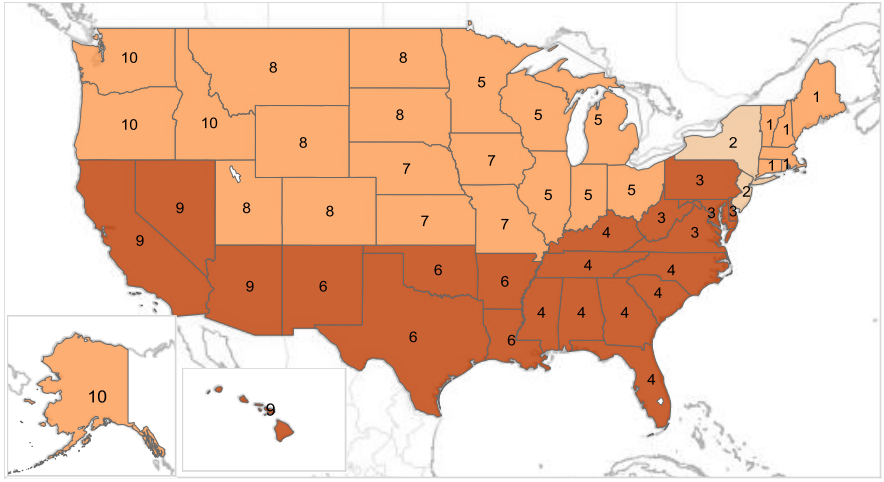

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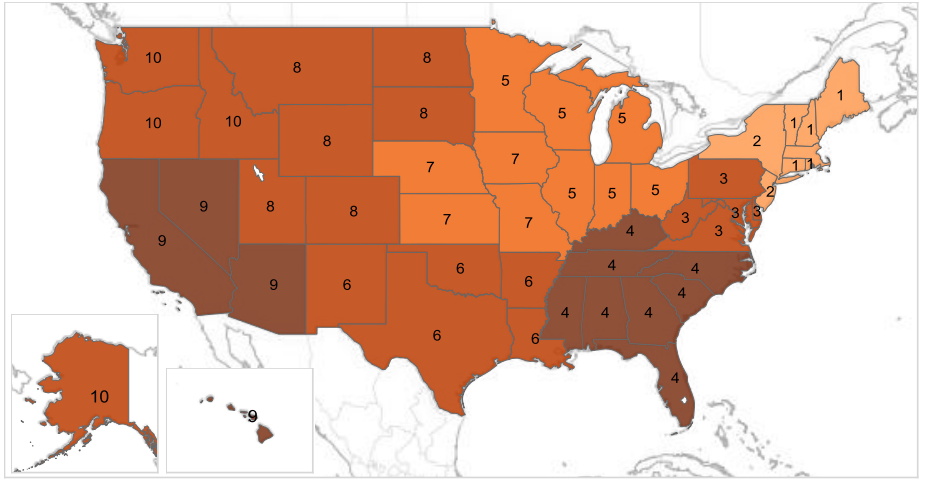


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Unintentional injuries; Sex: Female

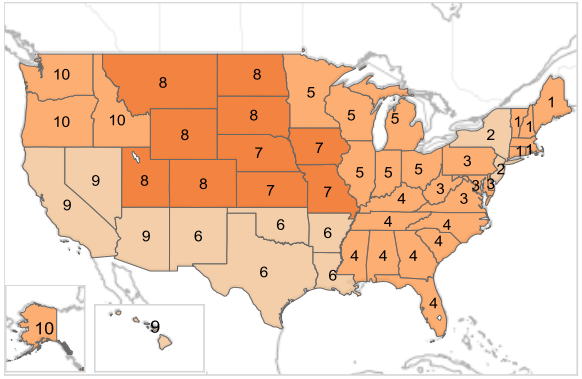
Age
25 to 64

Cause of Death
Unintentional injuries

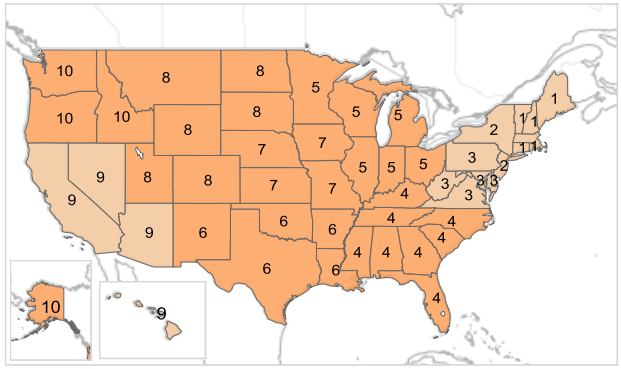
Sex
Female

Mortality Rate (per 100,000 pop)
12.5 — 50.7
(Numbers indicate HHS Regions)

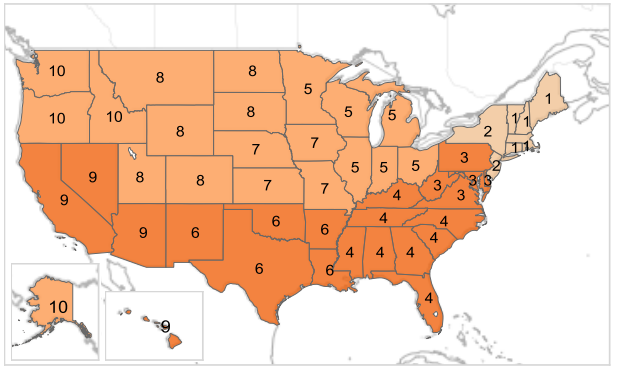
LARGE CENTRAL



LARGE FRINGE



SMALL/MEDIUM METROPOLITAN



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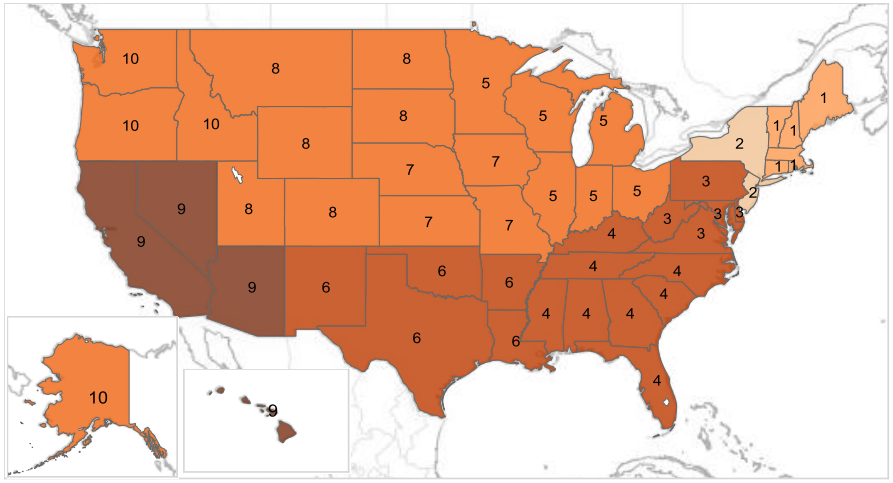
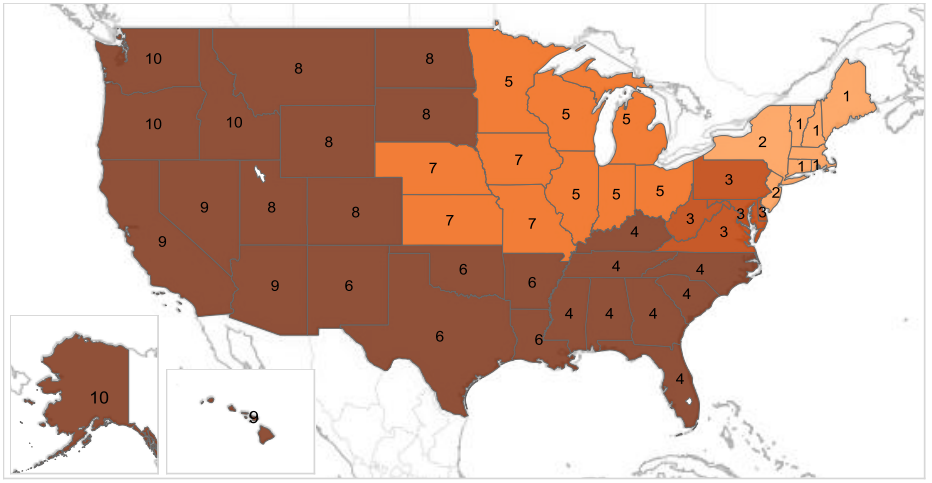


NON-CORE



SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Suicide; Sex: Male

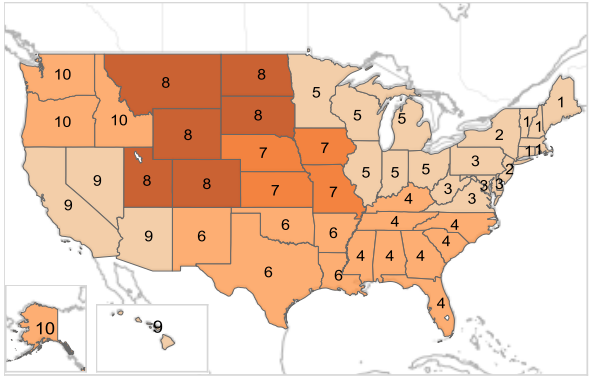
Age
25 to 64

Cause of Death
Suicide

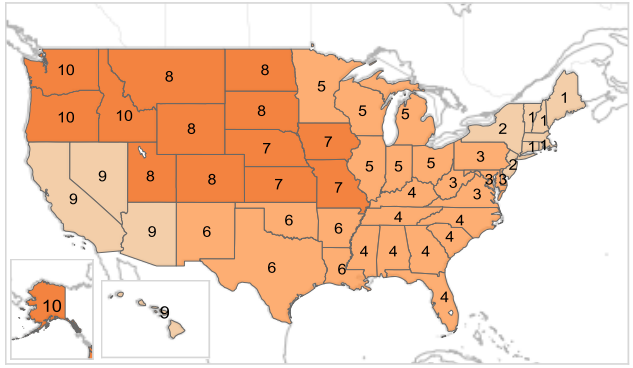
Sex
Male

Mortality Rate (per 100,000 pop)
13.4 — 54.2
(Numbers indicate HHS Regions)

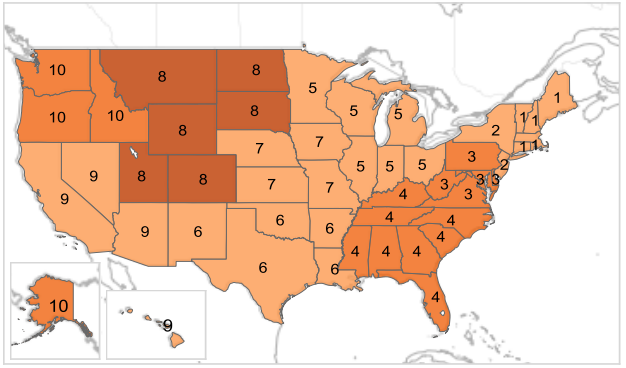
LARGE CENTRAL



LARGE FRINGE



SMALL/MEDIUM METROPOLITAN



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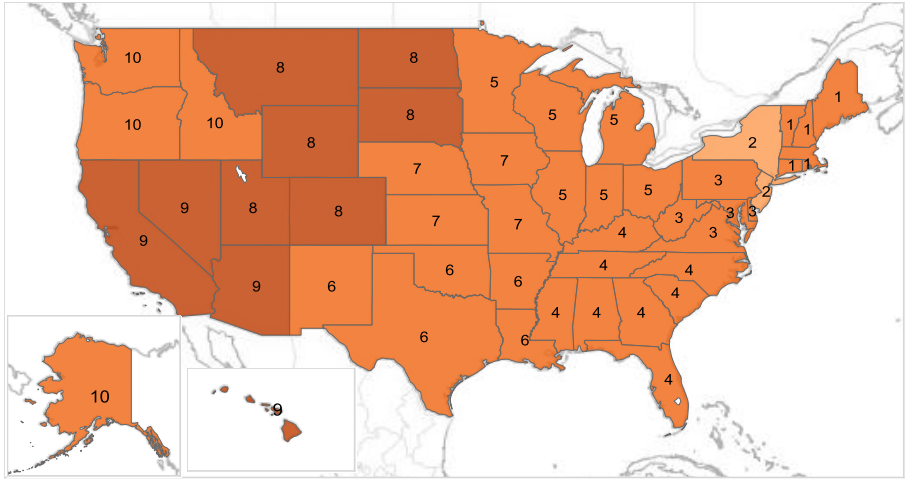

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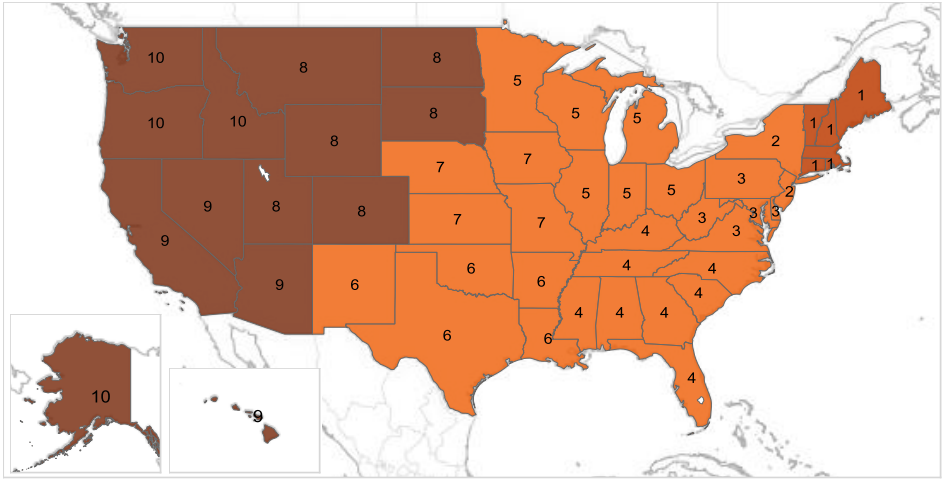


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 25 to 64; Cause of Death: Suicide; Sex: Female

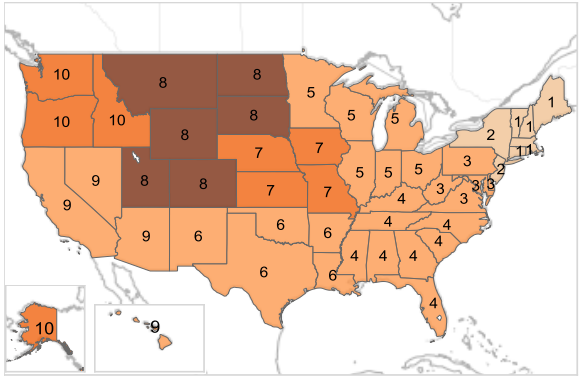
Age
25 to 64

Cause of Death
Suicide

Sex
Female

Mortality Rate (per 100,000 pop)
4.1 — 14.4
(Numbers indicate HHS Regions)

LARGE CENTRAL



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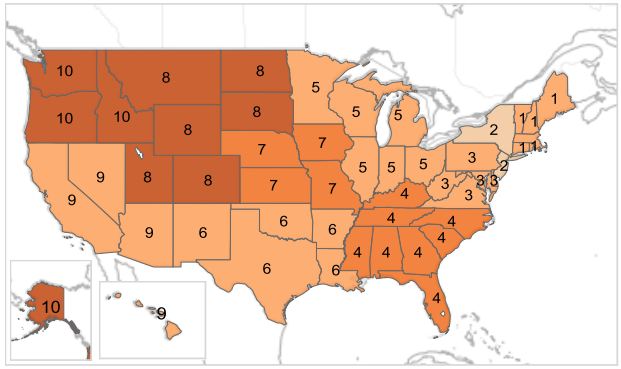
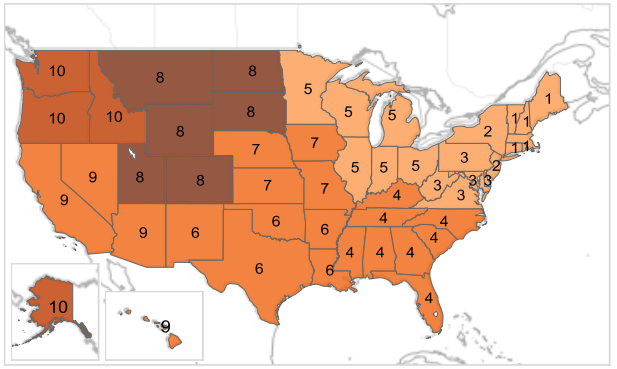
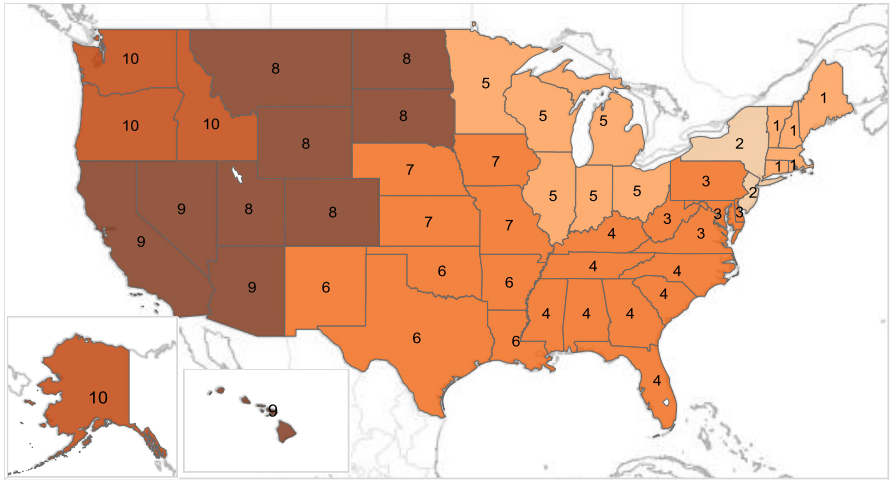


SMALL/MEDIUM METROPOLITAN



MICROPOLITAN



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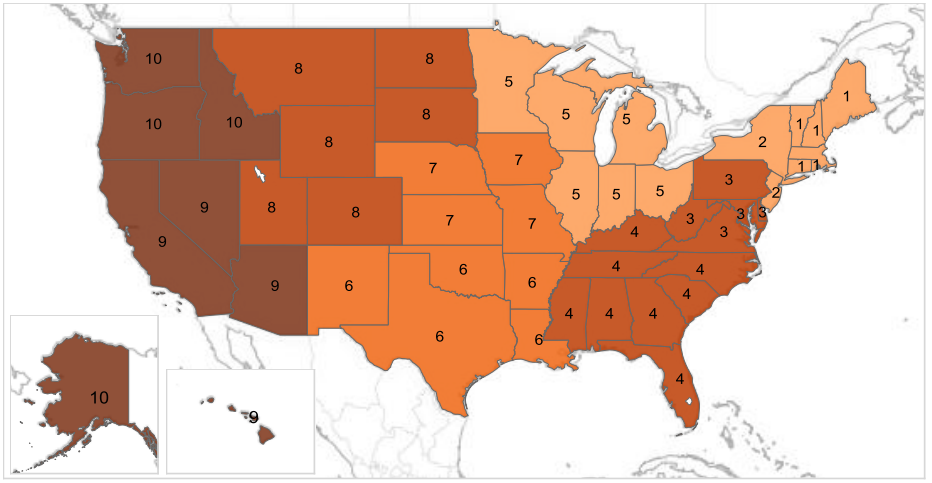


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 65 and older; Cause of Death: Heart disease; Sex: Male

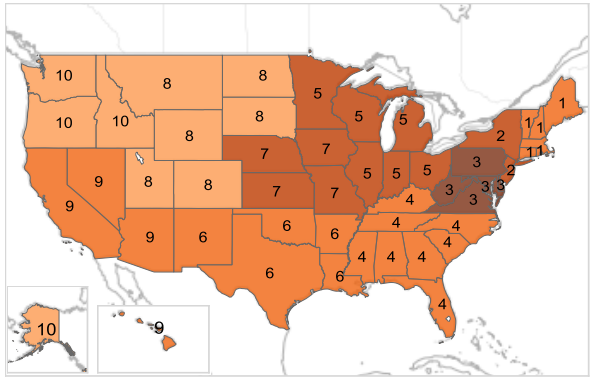
Age
65 and older

Cause of Death
Heart disease

Sex
Male

Mortality Rate (per 100,000 pop)
938.5 — 1,665.6
(Numbers indicate HHS Regions)

LARGE CENTRAL



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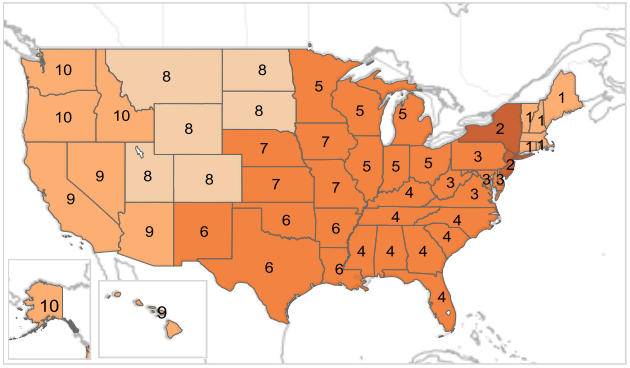
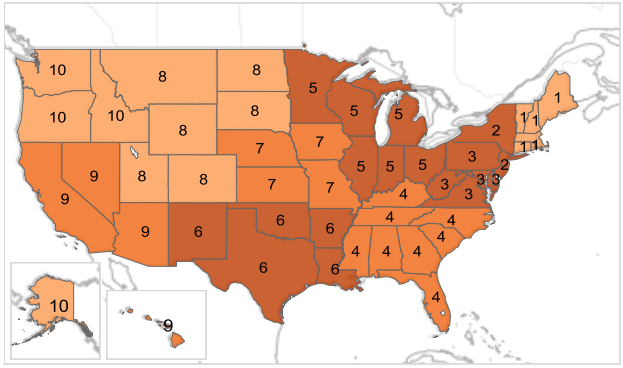


SMALL/MEDIUM METROPOLITAN



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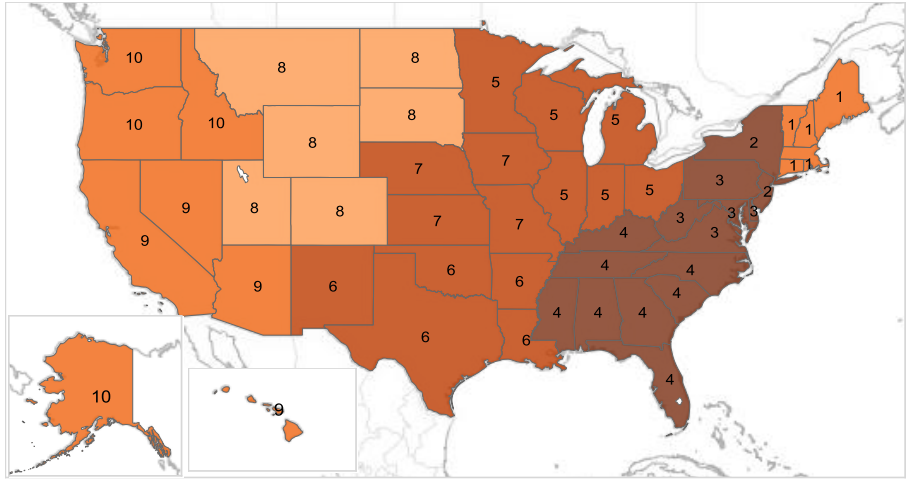

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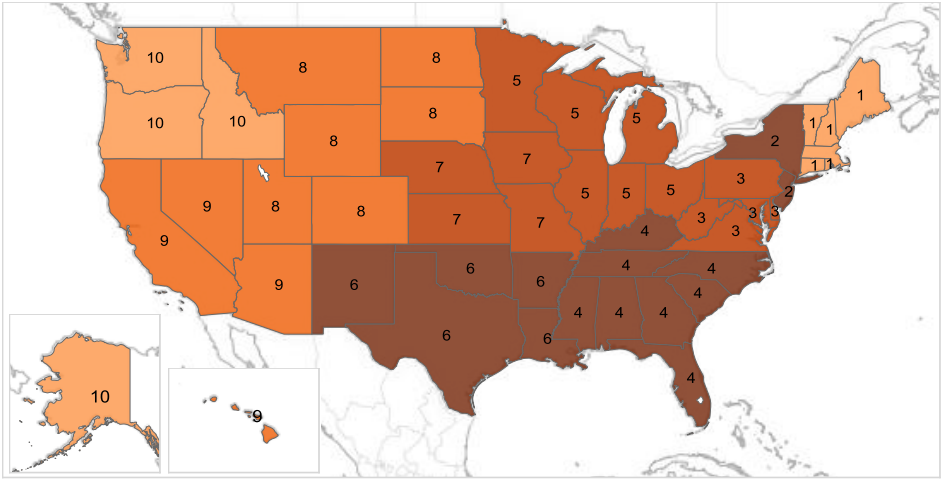


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 65 and older; Cause of Death: Heart disease; Sex: Female

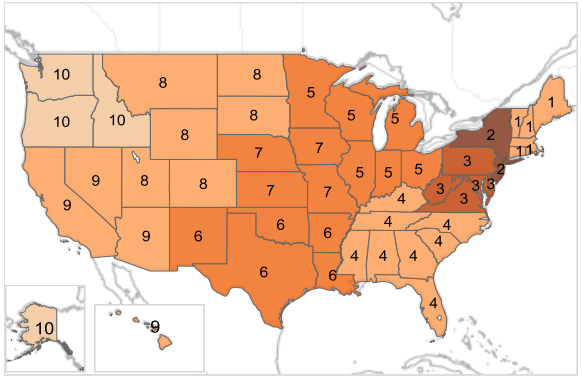
Age
65 and older

Cause of Death
Heart disease

Sex
Female

Mortality Rate (per 100,000 pop)
665.8 — 1,170.1
(Numbers indicate HHS Regions)

LARGE CENTRAL



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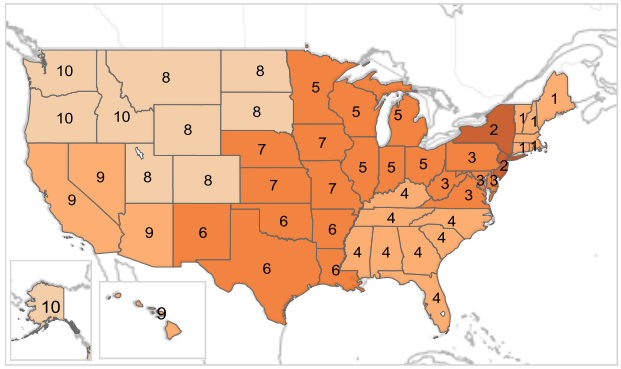
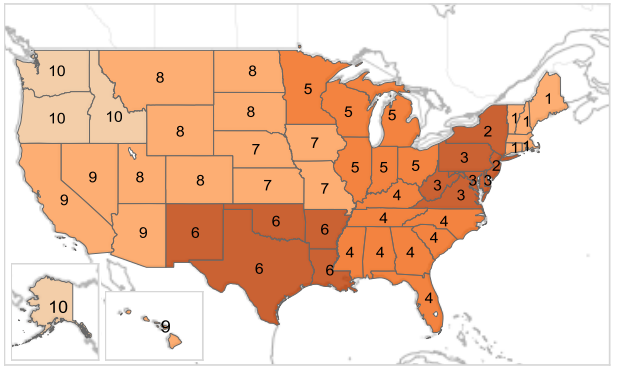


SMALL/MEDIUM METROPOLITAN



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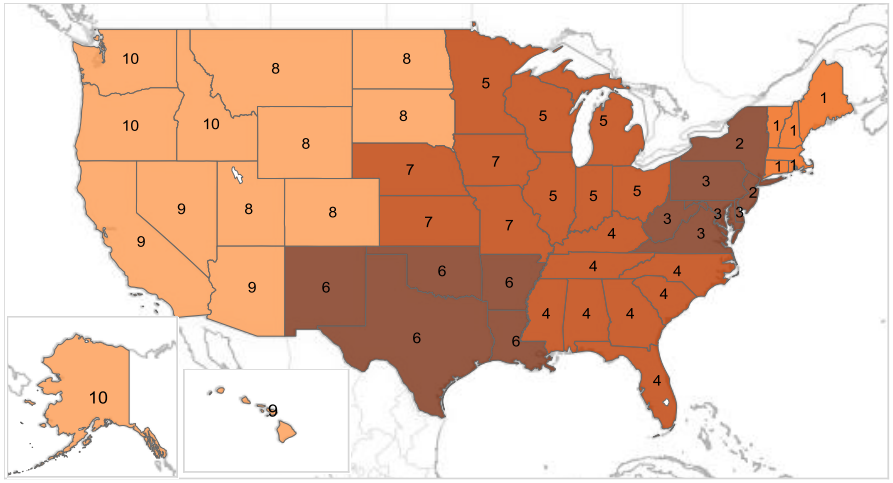

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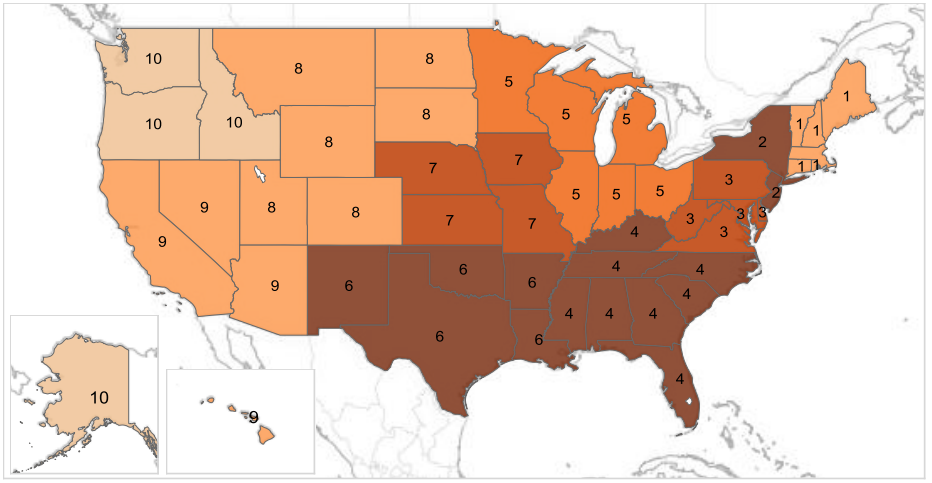


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 65 and older; Cause of Death: Malignant neoplasms; Sex: Male

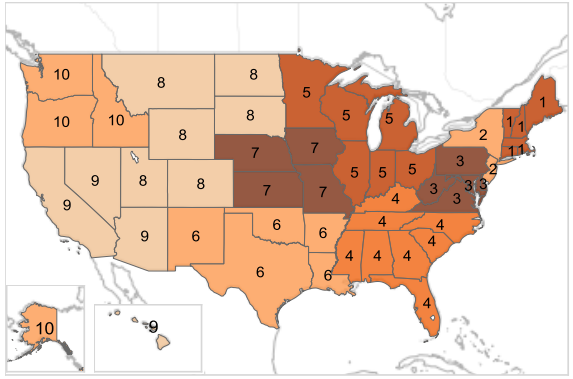
Age
65 and older

Cause of Death
Malignant neoplasms

Sex
Male

Mortality Rate
(per 100,000 pop)
1,012.4 — 1,381.8
(Numbers indicate HHS Regions)

LARGE CENTRAL



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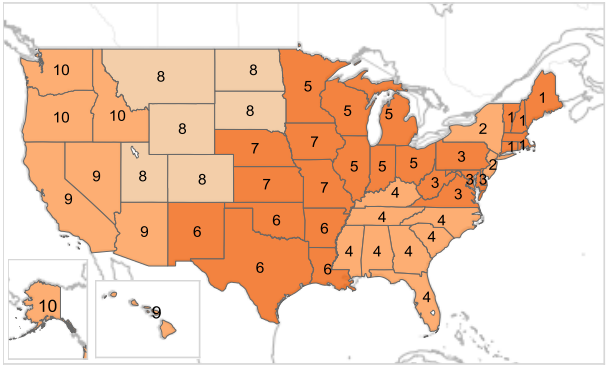

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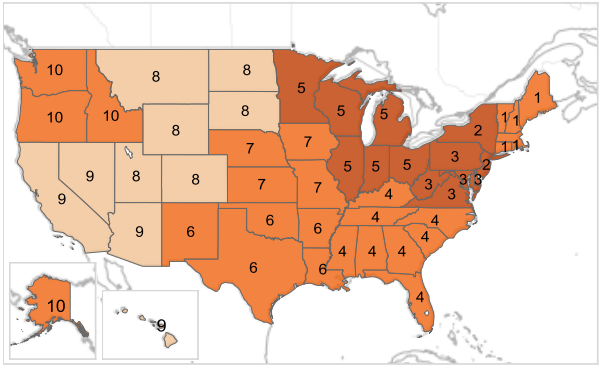

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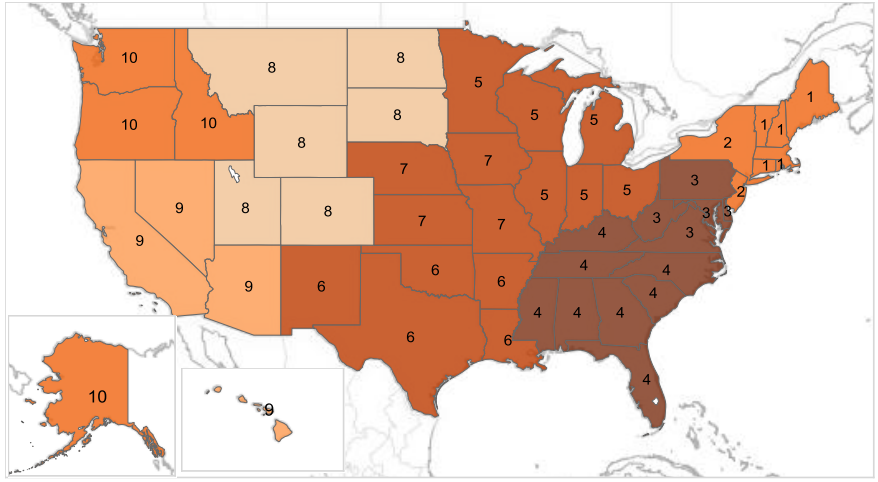

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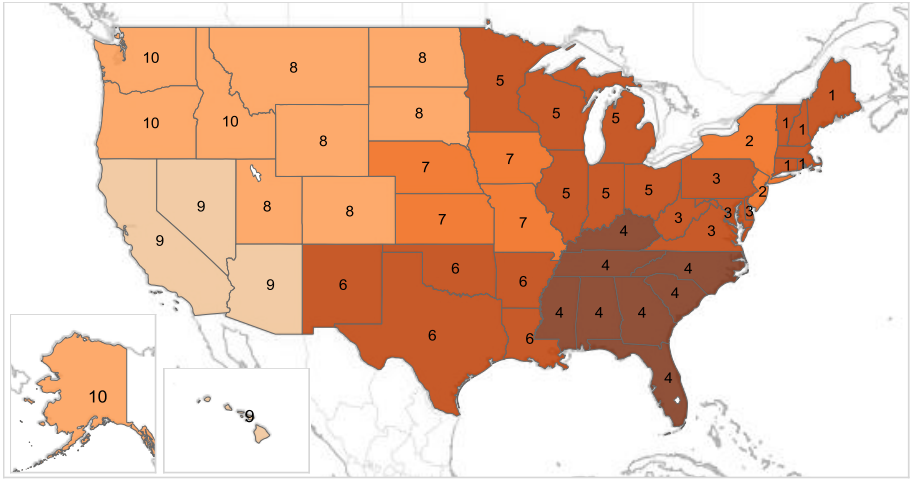


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Mortality Rates by HHS Region and Urban-Rural Status: United States, 2011-2013; Age: 65 and older; Cause of Death: Malignant neoplasms; Sex: Female

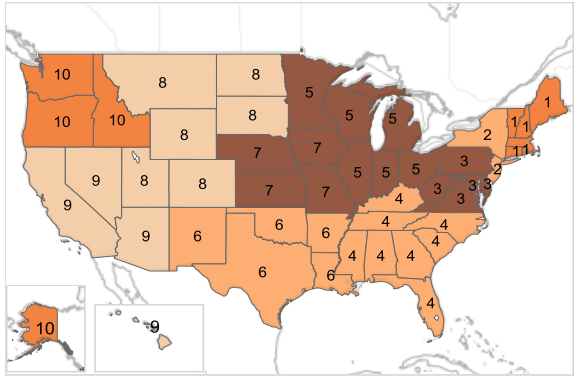
Age
65 and older

Cause of Death
Malignant neoplasms

Sex
Female

Mortality Rate (per 100,000 pop)
681.7 — 892.6
(Numbers indicate HHS Regions)

LARGE CENTRAL



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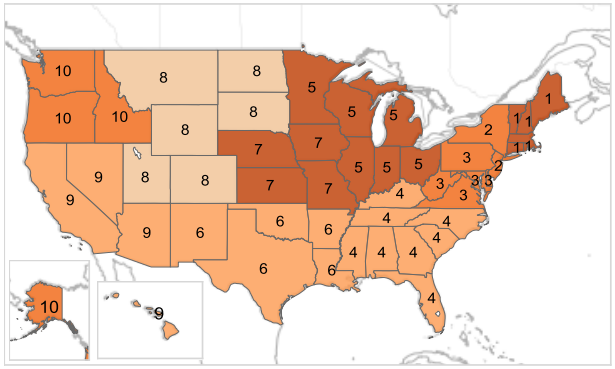

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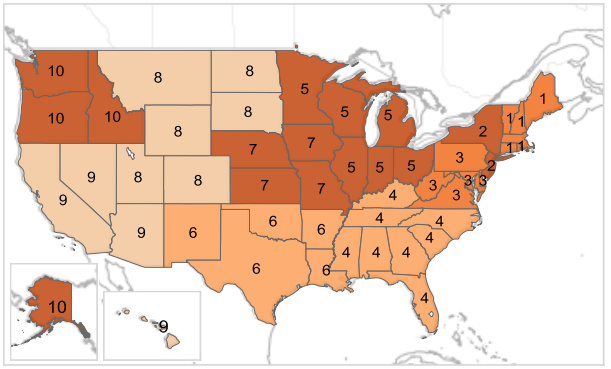

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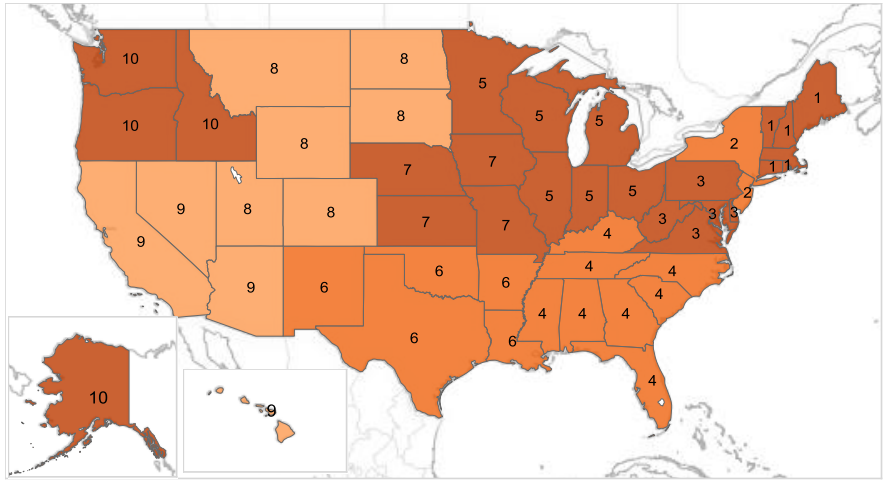

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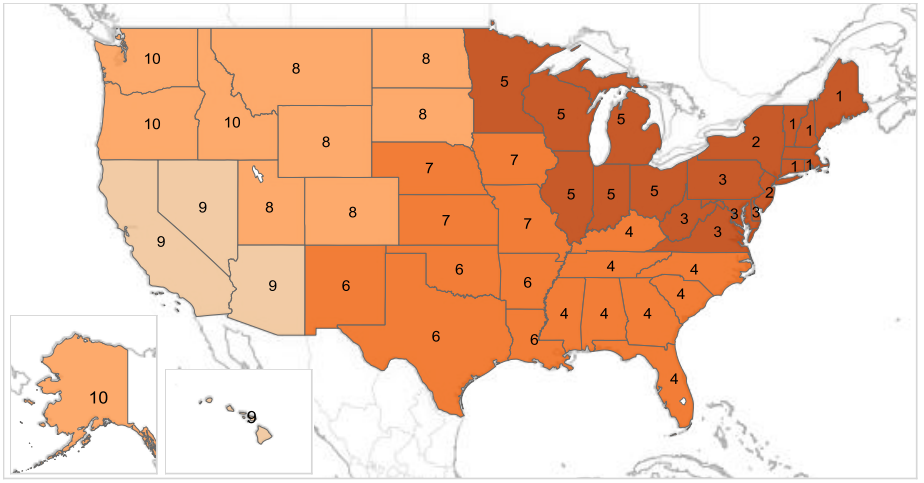
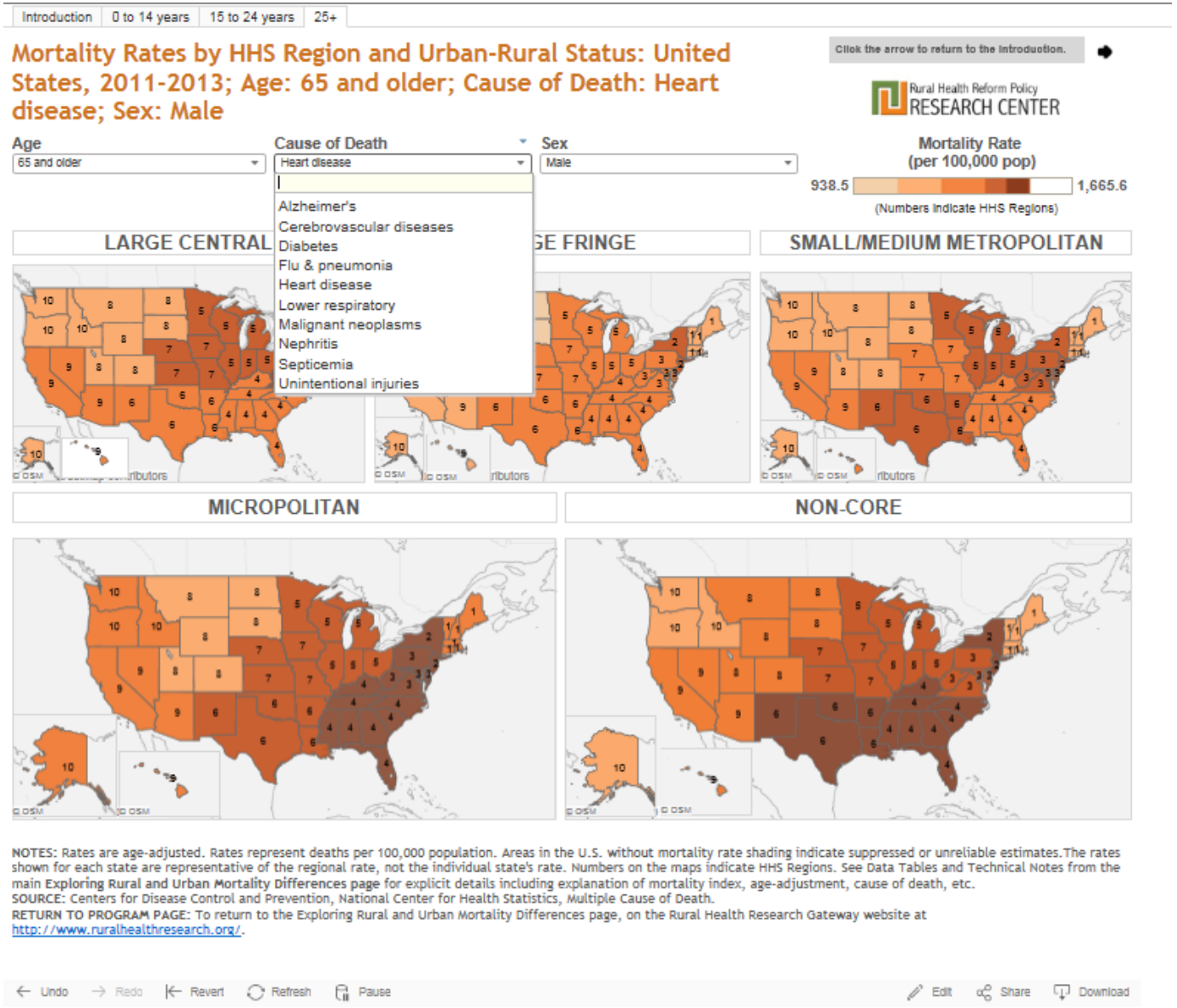


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
SUGGESTED CITATION: Rural Health Reform Policy Research Center. Exploring Rural and Urban Mortality Differences, August 2015 Bethesda, MD. 2015.

Online Tool: Mortality Rates among Persons by Cause of Death, Age, and Rural-Urban Status: United States, 2011-2013



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Rural Health Models and Innovations

Browse Rural Project Examples

- Browse by Level of Evidence
- Browse by Topic
- Browse by State
- Browse by Source

Recently Added

- Total HEALTH
- The Maryland Faith Community Health Network (MFCHN)
- Naloxone Education Empowerment Distribution Program

More Resources

Many organizations, including federal agencies and national organizations, curate lists of effective programs. Some may have sections specific to rural and many have approaches that could be adapted to rural:

- Other Collections of Program Examples

Share Your Story

RHIhub is looking for project examples to share with rural service providers.
Tell us about:

- Your program's successes
- Program results demonstrated in formal program evaluations or research studies

ABOUT RURAL HEALTH MODELS AND INNOVATIONS

The Rural Health Information Hub collects and shares stories about rural health programs and interventions. This collection includes approaches that have demonstrated success in research studies and program evaluations, as well as anecdotal accounts.

Read about the criteria and evidence-base for programs included in *Rural Health Models and Innovations*.

USING AND ADAPTING PROGRAM EXAMPLES

Each rural community should consider whether a particular project or approach is a good match for their community's needs and capacity. While it is sometimes possible to adapt program components to match your resources, keep in mind that changes to the program design may impact results. Programs listed in this section are not endorsed by the Rural Health Information Hub or the Federal Office of Rural Health Policy.

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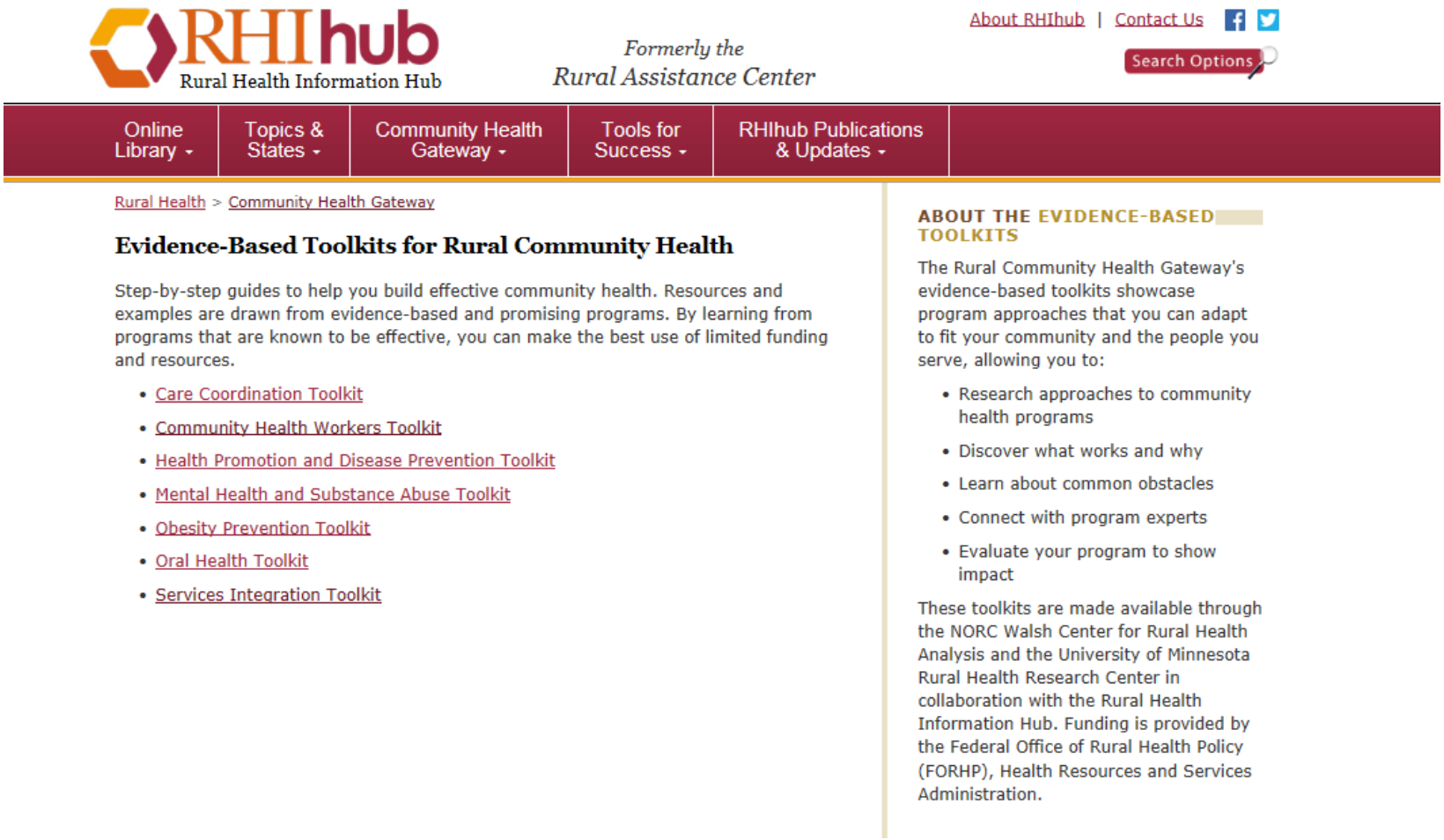
Building the Evidence…



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