Exploring Rural and Urban Mortality Differences by HHS Region
RHRPRC is a consortium that combines the resources of two premier institutions:

- The 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
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Where you live should not determine whether you live, or whether you die

— Bono
Introduction

• 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
Study Purpose

- To examine the impact of rurality on mortality and to explore the regional differences in causes of death
Research Question

- What are the geographical differences in rural and urban mortality rates?
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

<table>
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<th>2013 NCHS Urban-Rural Classification</th>
<th>Definition</th>
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<td><strong>Large central</strong> (inner cities)</td>
<td>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</td>
</tr>
<tr>
<td><strong>Large Fringe</strong> (suburban)</td>
<td>Counties in MSAs with a population of at least 1 million residents</td>
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<tr>
<td><strong>Small Metro</strong></td>
<td>Counties in MSAs with a population of less than 1 million residents</td>
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<tr>
<td><strong>Micropolitan</strong> (large rural)</td>
<td>Counties with populations of 10,000 to 49,999</td>
</tr>
<tr>
<td><strong>Non-core</strong> (small rural)</td>
<td>Remaining nonmetropolitan counties that are not in a micropolitan statistical area</td>
</tr>
</tbody>
</table>
Additional Notes on the Charts

- Estimates for the top ten causes of death are shown.
- A missing dot indicates either 1) a suppressed rate or 2) identical values between an urban and rural estimate (where more urban cases cover the more rural cases). See Appendix A for list of such cases.
- Suppressed data points occur when there are fewer than 10 deaths within that population sub-group (age, sex, rural-urban status, region). Since mortality rates for individuals under the age of 25 years are lower, more suppressed and unreliable rates exist thus limiting the visuals for almost all but the top causes of death for a specific region.
- If a cause is not listed on the graph, then all data points for that cause are suppressed. A graph with fewer than 10 causes of death indicates that all points are suppressed for the missing cause(s).
- Light to dark shades represent urban to rural areas.
Additional Notes on the Charts

- Data Tables and Technical Notes are available via electronic access with explicit details including mortality rates, explanation of mortality index, age-adjustment, cause of death, etc.
- 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.
- Although large differences may be present between the national mortality rate (index = 100) and the subpopulation mortality rate (if index is not equal to 100), presentation of the index does not imply that the rates are statistically significant. Please see Excel Workbook Tables: Mortality Rates among Persons by Cause of Death, Age, Region, and Rural-Urban Status: United States, 2011-2013 for complete details on statistical comparisons provided through data tables.
Additional Notes on the Charts

Deaths of nonresidents are excluded, as are residents of:

- American Samoa
- Commonwealth of the Northern Mariana Islands
- Federated States of Micronesia
- Guam
- Marshall Islands
- Puerto Rico
- Republic of Palau
- U.S. Virgin Islands
Additional Notes on the Charts

• The graphs and accompanying text are part of a group of available information including Technical Notes and data tables corresponding to the graphed data. The Technical Notes provide information about data sources and methods.

• All data tables include the mortality rates underlying the graphics. The tables also include related data not included in the chart, as well as standard errors of estimates and results of statistical comparisons.

Electronic access:
Exploring Rural and Urban Mortality Differences by HHS Region may be accessed from the Rural Health Research Gateway website at:
http://www.ruralhealthresearch.org/.

The graphs from this presentation may be accessed at:
https://viz.norc.org/views/On-LineToolIndexforMortalityRates/Introduction?:embed=y&:display_count=no
Geographic Definitions
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, in HHS Region #1 CT, ME, MA, NH, RI, VT, 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.
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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.
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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.
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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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #1 CT, ME, MA, NH, RI, VT, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #1 CT, ME, MA, NH, RI, VT, 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.
HHS Region 2\(^1\)
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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.
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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.
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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.
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Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.

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SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
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Objects above the horizontal line where index=100 indicates mortality rates higher than the national average, below the line are values below the average.

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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.
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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.
HHS Region 3
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, in HHS Region #3 DE, DC, MD, PA, VA, WV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, in HHS Region #3 DE, DC, MD, PA, VA, WV, 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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 25 to 64, in HHS Region #3 DE, DC, MD, PA, VA, WV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, in HHS Region #3 DE, DC, MD, PA, VA, WV, by Rural-Urban Status: United States, 2011-2013

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SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #3 DE, DC, MD, PA, VA, WV, 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.
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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.
HHS Region 4
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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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, in HHS Region #4 AL, FL, GA, KY, MS, NC, SC, TN, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 15 to 24, in HHS Region #4 AL, FL, GA, KY, MS, NC, SC, TN, 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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, in HHS Region #4 AL, FL, GA, KY, MS, NC, SC, TN, 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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #4 AL, FL, GA, KY, MS, NC, SC, TN, 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.
HHS Region 5
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Index for Regional Mortality Rates of Region 5, by Rural-Urban Status: United States, 2011-2013

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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.
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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.
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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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, in HHS Region #5 IL, IN, MI, MN, OH, WI, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #5 IL, IN, MI, MN, OH, WI, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #5 IL, IN, MI, MN, OH, WI, 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.
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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.
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Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, in HHS Region #6 AR, LA, NM, OK, TX, 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.
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Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, in HHS Region #6 AR, LA, NM, OK, TX, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 15 to 24, in HHS Region #6 AR, LA, NM, OK, TX, 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.
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Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 25 to 64, in HHS Region #6 AR, LA, NM, OK, TX, 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.
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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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #6 AR, LA, NM, OK, TX, by Rural-Urban Status: United States, 2011-2013

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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.
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Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #6 AR, LA, NM, OK, TX, 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.
HHS Region 7
Iowa, Kansas, Missouri, and Nebraska
Index for Regional Mortality Rates of Region 7, by Rural-Urban Status: United States, 2011-2013

Persons:

- Figure 50: Age Under 1 Years, Both Sexes
- Figure 51: Age 1 to 14 Years, Both Sexes
- Figure 52: Age 15 to 24 Years, Males
- Figure 53: Age 15 to 24 Years, Female
- Figure 54: Age 25 to 64 Years, Male
- Figure 55: Age 25 to 64 Years, Female
- Figure 56: Age ≥65 Years, Male
- Figure 57: Age ≥65 Years, Female
Figure 50

**Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age Under 1, in HHS Region #7 IA, KS, MO, NE, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, in HHS Region #7 IA, KS, MO, NE, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, in HHS Region #7 IA, KS, MO, NE, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 15 to 24, in HHS Region #7 IA, KS, MO, NE, 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.
Figure 54

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 25 to 64, in HHS Region #7 IA, KS, MO, NE, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, in HHS Region #7 IA, KS, MO, NE, 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.
Figure 56

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #7 IA, KS, MO, NE, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #7 IA, KS, MO, NE, 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.
HHS Region 8
Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming
Index for Regional Mortality Rates of Region 8, by Rural-Urban Status: United States, 2011-2013

Persons:

- Figure 58: Age Under 1 Years, Both Sexes
- Figure 59: Age 1 to 14 Years, Both Sexes
- Figure 60: Age 15 to 24 Years, Males
- Figure 61: Age 15 to 24 Years, Female
- Figure 62: Age 25 to 64 Years, Male
- Figure 63: Age 25 to 64 Years, Female
- Figure 64: Age ≥65 Years, Male
- Figure 65: Age ≥65 Years, Female
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age Under 1, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Figure 60

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 15 to 24, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Figure 62

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 25 to 64, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Figure 63

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
Figure 65

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #8 CO, MT, ND, SD, UT, WY, 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.
HHS Region 9
Arizona, California, Hawaii, and Nevada

Note: Deaths of nonresidents including those in American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and Republic of Palau are excluded.

Index for Regional Mortality Rates of Region 9, by Rural-Urban Status: United States, 2011-2013

Persons:

• Figure 66: Age Under 1 Years, Both Sexes
• Figure 67: Age 1 to 14 Years, Both Sexes
• Figure 68: Age 15 to 24 Years, Males
• Figure 69: Age 15 to 24 Years, Female
• Figure 70: Age 25 to 64 Years, Male
• Figure 71: Age 25 to 64 Years, Female
• Figure 72: Age ≥65 Years, Male
• Figure 73: Age ≥65 Years, Female
Figure 66

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age Under 1, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 15 to 24, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 25 to 64, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, in HHS Region #9 AZ, CA, HI, NV, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, in HHS Region #9 AZ, CA, HI, NV, 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.
HHS Region 10
Alaska, Idaho, Oregon, and Washington
Index for Regional Mortality Rates of Region 10, by Rural-Urban Status: United States, 2011-2013

Persons:

- Figure 74: Age Under 1 Years, Both Sexes
- Figure 75: Age 1 to 14 Years, Both Sexes
- Figure 76: Age 15 to 24 Years, Males
- Figure 77: Age 15 to 24 Years, Female
- Figure 78: Age 25 to 64 Years, Male
- Figure 79: Age 25 to 64 Years, Female
- Figure 80: Age ≥65 Years, Male
- Figure 81: Age ≥65 Years, Female
Figure 74

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age Under 1, 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.
Figure 75

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Both sexes) Age 1 to 14, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 15 to 24, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 15 to 24, 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.
Figure 78

Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 25 to 64, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 25 to 64, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Male) Age 65 and older, 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.
Index for Mortality Rates for Cause Related to the National Mortality Rate among Persons (Female) Age 65 and older, 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.
Summary: New England and the Mid-Atlantic States

- Cause-specific, rural mortality rates worse than the nation in:
  - Region 1, CT, ME, MA, NH, RI, VT
    - Unintentional injuries, suicide, 15-24 years of age, males.
  - Region 2, NY, NJ
    - Unintentional Injuries, 1 to 14 years.
    - Lower respiratory disease, 25 to 64 years of age, males.
  - Region 3, DE, DC, MD, PA, VA, WV
    - Congenital malformations, Sudden infant death syndrome, <1 year of age.
    - Congenital malformations, homicide, 1 to 14 years of age.
    - Unintentional injuries, 1 to 14 and 15 to 24 years of age.
    - Malignant neoplasms, heart disease, unintentional injuries, suicide, diabetes, lower respiratory, 25 to 64 years of age.
Summary: The South

• Cause-specific, rural mortality rates worse than the nation in:
  – All top-ten causes of death, 25 to 64 years and 65 or more years of age (region 4 & 6).
  – Region 4, AL, FL, GA, KY, MS, NC, SC, TN
    • Congenital malformations, sudden infant death syndrome, and respiratory distress <1 year of age.
    • Unintentional injuries, heart disease, 1 to 14 years and 15 to 24 years of age.
  – Region 6, AR, LA, NM, OK, TX
    • Congenital malformations, sudden infant death syndrome, <1 year of age.
    • Unintentional injuries, homicide, lower respiratory, 1 to 14 years of age.
    • Unintentional injuries, suicide, 15 to 24 years of age.
Summary: The Midwest

- Cause-specific, rural mortality rates worse than the nation in:
  - Region 5, IL, IN, MI, MN, OH, WI
    - Unintentional injuries, <1 year of age, 1 to 14 and 15 to 24 years of age.
    - Malignant neoplasm, unintentional injuries, lower respiratory, 25 to 64 years of age.
Summary: The Plains, and Rockies

- Cause-specific, rural mortality rates worse than the nation in:
  - Unintentional injuries, all ages (region 7 & 8).
  - Congenital malformation, sudden infant death, <1 year of age (region 7 & 8).
  - Suicide, 15 to 24 years of age, males (region 7 & 8), females (region 8).
  - Region 7, IA, KS, MO, NE
    - Malignant neoplasms, heart disease, suicide, lower respiratory, 25 to 64 years of age.
    - Heart disease, malignant neoplasms, lower respiratory, cerebrovascular diseases, Alzheimer's, flu & pneumonia, nephritis, 65 years or more.
  - Region 8, CO, MT, ND, SD, UT, WY
    - Suicide, liver disease, 25 to 64 years of age.
    - Lower respiratory, cerebrovascular diseases, Alzheimer's, 65 years of age or more.
Summary: The West Coast

- Cause-specific, rural mortality rates worse than the nation in:
  - Suicide, 15 to 24, 25 to 64 years of age (region 9 & 10).
  - Lower respiratory, 65 years or more of age (region 9 & 10).
  - Region 9, AZ, CA, HI, NV
    - Unintentional injuries, 1 to 14, 15 to 24, and 25 to 64 years of age.
    - Liver disease, 25 to 64 years of age.
  - Region 10, AK, ID, OR, WA
    - Sudden infant death syndrome, <1 year of age.
    - Unintentional injuries, age 1 or more.
    - Liver disease, lower respiratory, 25 to 64 years of age.
    - Cerebrovascular diseases, Alzheimer's, 65 years or more of age.
Summary

• Place matters
  • Cause-specific mortality varies by region
  • Regional differences that may impact mortality include:
    • Culture
    • Demographics
    • Health behaviors
    • Morbidity
• Sparsely populated areas have high mortality rates
Appendix A: Overlapping Point

• Graphs with less than two (0 to 24 years of age) or five points (25+ years of age) indicate either 1) overlapping data or 2) suppressed or unreliable data.
• Appendix A lists all overlapping points allowing users to ascertain the suppressed and unreliable estimates.
• Overlapping points do not imply equality between two mortality rates. Please see the data tables for exact rates.
• Numbers are used to indicate overlap as more than one overlap may be present within an Age, Sex, Region, Disease combination.
### Appendix A: Overlapping Points by Region and Disease, Under 1 Year of Age

<table>
<thead>
<tr>
<th>Region</th>
<th>Disease</th>
<th>Rural-Urban Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td>HHS 6</td>
<td>Bacteria Septicemia</td>
<td>1</td>
</tr>
</tbody>
</table>

Bacterial Septicemia, Age <1, Region 6 values are relatively close and almost appear to overlap. As such, we indicate the overlap with a value of 1 across the row.
## Appendix A: Overlapping Points by Region and Disease, 1 to 14 Years of Age

<table>
<thead>
<tr>
<th>Region</th>
<th>Disease</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHS 4</td>
<td>Benign Neoplasms</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HHS 4</td>
<td>Flu and Pneumonia</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Homicide</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Flu and Pneumonia</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HHS 6</td>
<td>Heart Disease</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HHS 7</td>
<td>Congenital Malformations</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Overlapping points are represented across the rows, not the columns. For example, Region 4 has an overlapping point at Benign Neoplasms.
### Appendix A: Overlapping Points by Region, Sex, Disease, 15 to 24 Years of Age

<table>
<thead>
<tr>
<th>Region</th>
<th>Sex</th>
<th>Disease</th>
<th>Rural-Urban Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Males</td>
<td>Heart Disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Females</td>
<td>Heart Disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 6</td>
<td>Females</td>
<td>Malignant Neoplasms</td>
<td>1</td>
</tr>
</tbody>
</table>

Overlapping points are represented across the rows, not the columns. For example, Region 5, Males has an overlapping point at Heart Disease.
Appendix A: Overlapping Points by Region, Sex, Disease, 25 to 64 years of age, Region 1 to 5

<table>
<thead>
<tr>
<th>Region</th>
<th>Sex</th>
<th>Disease</th>
<th>Rural-Urban Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Large Central</td>
</tr>
<tr>
<td>HHS 1</td>
<td>Males</td>
<td>Heart Disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 1</td>
<td>Males</td>
<td>Suicide</td>
<td></td>
</tr>
<tr>
<td>HHS 1</td>
<td>Females</td>
<td>Homicide</td>
<td>1</td>
</tr>
<tr>
<td>HHS 2</td>
<td>Males</td>
<td>Cerebrovascular diseases</td>
<td>1</td>
</tr>
<tr>
<td>HHS 2</td>
<td>Males</td>
<td>Heart Disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 2</td>
<td>Males</td>
<td>Suicide</td>
<td></td>
</tr>
<tr>
<td>HHS 2</td>
<td>Females</td>
<td>Unintentional injuries</td>
<td>1</td>
</tr>
<tr>
<td>HHS 3</td>
<td>Males</td>
<td>Homicide</td>
<td>1</td>
</tr>
<tr>
<td>HHS 3</td>
<td>Males</td>
<td>Liver disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 3</td>
<td>Females</td>
<td>Lower respiratory disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 3</td>
<td>Females</td>
<td>Septicemia</td>
<td>1</td>
</tr>
<tr>
<td>HHS 4</td>
<td>Females</td>
<td>Malignant Neoplasms</td>
<td>1</td>
</tr>
<tr>
<td>HHS 4</td>
<td>Females</td>
<td>Septicemia</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Males</td>
<td>Diabetes</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Males</td>
<td>Heart Disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Males</td>
<td>Liver disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Males</td>
<td>Lower respiratory disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Males</td>
<td>Malignant Neoplasms</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Females</td>
<td>Diabetes</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Females</td>
<td>Lower respiratory disease</td>
<td>1</td>
</tr>
<tr>
<td>HHS 5</td>
<td>Females</td>
<td>Septicemia</td>
<td>1</td>
</tr>
</tbody>
</table>

Overlapping points are represented across the rows, not the columns. For example, Region 1, Males has an overlapping point at Heart Disease.
Appendix A: Overlapping Points by Region, Sex, Disease, 25 to 64 years of age, Region 6 to 7

<table>
<thead>
<tr>
<th>Region</th>
<th>Sex</th>
<th>Disease</th>
<th>Rural-Urban Status</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HHS 6</td>
<td>Males</td>
<td>Cerebrovascular diseases</td>
<td>Large Central</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>HHS 6</td>
<td>Females</td>
<td>Malignant Neoplasms</td>
<td>Large Fringe</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>HHS 7</td>
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Overlapping points are represented across the rows, not the columns. For example, Region 6, Males has an overlapping point at Cerebrovascular diseases. Numbers are used to indicate overlap as more than one overlap may be present within an Age, Sex, Region, Disease combination.
## Appendix A: Overlapping Points by Region, Sex, Disease, 25 to 64 years of age, Region 8 to 10

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### Appendix A: Overlapping Points by Region, Sex, Disease, 65+ years of age, Region 1 to 3

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Appendix A: Overlapping Points by Region, Sex, Disease, 65+ years of age, Region 4 to 6

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Overlapping points are represented across the rows, not the columns. For example, Region 4, Males has an overlapping point at Heart Disease. Numbers are used to indicate overlap as more than one overlap may be present within an Age, Sex, Region, Disease combination.
## Appendix A: Overlapping Points by Region, Sex, Disease, 65+ years of age, Region 7 to 8

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Overlapping points are represented across the rows, not the columns. For example, Region 7, Males has an overlapping point at Cerebrovascular diseases (Large Fringe and Medium/Small Metro). Numbers are used to indicate overlap as more than one overlap may be present within an Age, Sex, Region, Disease combination.
# Appendix A: Overlapping Points by Region, Sex, Disease, 65+ years of age, Region 9 to 10

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Overlapping points are represented across the rows, not the columns. For example, Region 9, Males has an overlapping point at Diabetes (Large Fringe and Medium/Small Metro). Numbers are used to indicate overlap as more than one overlap may be present within an Age, Sex, Region, Disease combination.
For state specific mortality rates, contact the state health department’s vital records department.