Guide to AAMR Town-State Comparisons

Tables & Maps Comparing Town and State Age-adjusted Mortality Rates (AAMRs)

Summary: Town-State AAMR comparisons are provided for two time periods: 1999-2001 and 2002-2006. AAMR differences are evaluated when there are at least 15 deaths within a town for a specific cause-of-death by sex table. The statistical significance of these comparisons is noted in the tables and in the town maps for Leading Causes of death*. To emphasize towns that are significantly higher or lower than the corresponding state rate, the appropriate table cells and map areas are shaded. Town-State differences that are not statistically significant are not highlighted. Two sets of tables are provided for each time period; each set offers a different level of detail. The first is a comprehensive set of comparison tables for 64 COD categories by sex (both sexes, males and females). The second set of comparison tables is limited to the Ten Leading Causes of Death and All Causes. These tables are not by sex. Maps corresponding to each table are also provided. Additional information about the time periods selected and the types of statistical tests conducted can be found below.

Selected Time Periods: The Town-State comparison tables provided are separated into two periods: 1999-2001 and 2002-2006. The first period (1999-2001) was selected to take advantage of the 7/1/2000 population estimated from the Census 2000 data. The 7/1/2000 population was used as the midpoint denominator for calculating rates. Unfortunately, even with three years of data, many towns do not have the minimum of 15 deaths to be analyzed for the Ten Leading Causes. To maximize the number of towns that would be evaluated in the second period, we used death data for the next five years. The second set of rates (2002-2006) is labeled as "**provisional**" because they rely on the 2000 population estimates as the rate denominators. We expect that the calculated rates will provide a fairly close approximation to the rates based on the actual town 2002-2006 population.

Statistical Assessments: Each comparison report applies two statistical assessments designed to answer two different questions and includes any town that differs significantly ($p < 0.10$) from the state rate via either perspective. The terms "Single test" and Multi-test" appear in the table column headings to distinguish between the two assessments described below.

The Single-Test perspective seeks to answer the question: Is my town's rate significantly different than the corresponding state rate? This question is posed from an individual town perspective in which only one town is analyzed for differences from the state rate. The table column labeled "Single-Test" contains these results.

The Multi-Test perspective** seeks to answer the question: Which of the 169 Connecticut towns has a rate that is significantly different than the corresponding state rate? This question is posed from a group perspective in which all towns are analyzed simultaneously for differences from the state rate. The last two table columns contain the multi-test results.

Maps: The maps emphasize the town-state differences that are statistically significant after adjustment for the total number of towns being compared**. Towns with significant differences are shaded and labelled with the town name. Town-state comparisons that were not significant

are labelled with an “n.s.”. Towns with less than 15 deaths for the specified cause of death were not evaluated and the corresponding town areas were left blank.

Technical notes:

***** The ten Leading Causes of Death selected for these analyses are based on the 2006 ranking of Connecticut resident deaths.

****** The evaluation of multiple statistical comparisons is a common challenge in public health surveillance and epidemiological research. The Holm method was used in this project when assessing the town-state AAMR differences. The Holm method is a valuable technique for evaluating multiple comparisons that maintains the overall alpha or type-I error rate while providing more power to detect “significant” differences than other methods. The recent inclusion of this procedure in popular statistical software (SAS, v9.2) has made it possible for us to use it systematically for a large number of comparisons.

This statistical technique is robust and seems to have achieved widespread acceptance. As one author recently stated, the Holm method is “uniformly superior to the Bonferroni method and applies in every case that the Bonferroni method does. This has led the *American Journal of Public Health* to declare this alternative as the method of choice” (Aicken, 1999). Based on the current state of knowledge, the AJPH editorial summarizing this position concludes “it will be prudent to use the universally valid Holm method as one’s first choice for assumption-free adjustment of p values for multiple comparisons” (Levin, 1996). More detailed discussions of this method are also available (Aicken, 1996; Holland, 1988).

References:

Bruce Levin, 1996. “Annotation: on the Holm, Simes, and Hochberg multiple test procedures”, AJPH, 86(5):628-629.

Mikel Aickin, Gensler, Helen 1996. “Adjusting for multiple testing when reporting research results: The Bonferroni vs Holm Methods,” AJPH, 86(5):726-728.

Mikel Aickin, 1999. “Letters- Other method for adjustment of multiple testing exists,” BMJ, 318:127.

Burt Holland, Copenhaver, Margaret DiPonzio, 1988. “Improved Bonferroni-Type multiple testing procedures,” Psychological Bulletin, 104(1): 145-149.

Last revised: 12/15/2009.