

February 6, 2015

Is the Salary for Nurse Anesthetists Higher in the West than the East?

Introduction:

This observational study will examine data concerning the annual salary of nurse anesthetists from 20 randomly selected states west of the Mississippi, and 20 randomly selected states east of the Mississippi. This study will attempt to determine which side of the United States produces a higher salary per year for nurse anesthetists.

The Bureau of Labor Statistics (BLS) puts out data each year for each of the 50 states regarding the salary of nurse anesthetists. The states west of the Mississippi claim that the salaries are higher for nurse anesthetists. Some studies show that the demand for nurse anesthetists is higher in the west, due to smaller population in the Midwest. States east of the Mississippi claim that the salaries for nurse anesthetists is higher. Other studies show that since the population is denser in the northeast, the demand for nurse anesthetists would be higher.

Methodology:

The population of this study includes all average salaries from 20 randomly selected states east of the Mississippi and 20 randomly selected states west of the Mississippi. The sample will include 40 states containing the average salaries for nurse anesthetists in 2013. This is a representative sample of the population because it includes states from both the western and eastern regions of the United States. The observational unit is the states, and the data that will be used to compare the states will be the quantitative variable of *U.S. Dollars (\$)*.

To analyze the difference in salaries of nurse anesthetists, this study randomizes states east and west of the Mississippi and eliminates the states of Hawaii, Idaho, Montana, Kansas, Vermont, Rhode Island, and New Hampshire. This eliminates the possibility of error because there is no data from the BLS on these states. The units of interest used in the study will come from 20 randomly selected states from east of the Mississippi and 20 randomly selected states west of the Mississippi, excluding Hawaii, Idaho, Montana, Kansas, Vermont, Rhode Island, and New Hampshire.

Data Exploration:

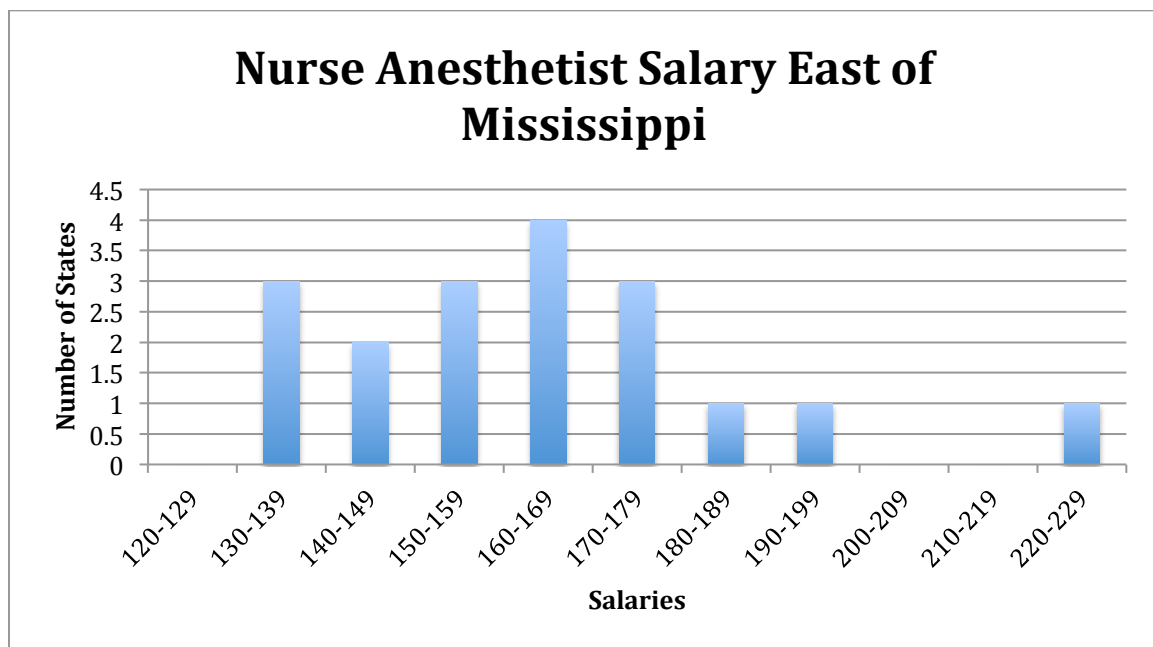


Figure 1.1 Nurse Anesthetist Salary East of Mississippi:

As figure one illustrates, the distribution of salaries by the 20 randomly selected states east of the Mississippi is skewed slightly right. The mean is \$166,692.10 with a standard deviation of \$22,281.44. The five number summary listed on a later page shows that the Median is \$165,820. Since the difference in the mean and the median is \$872, it is small enough to use either the mean or median to describe the distribution.

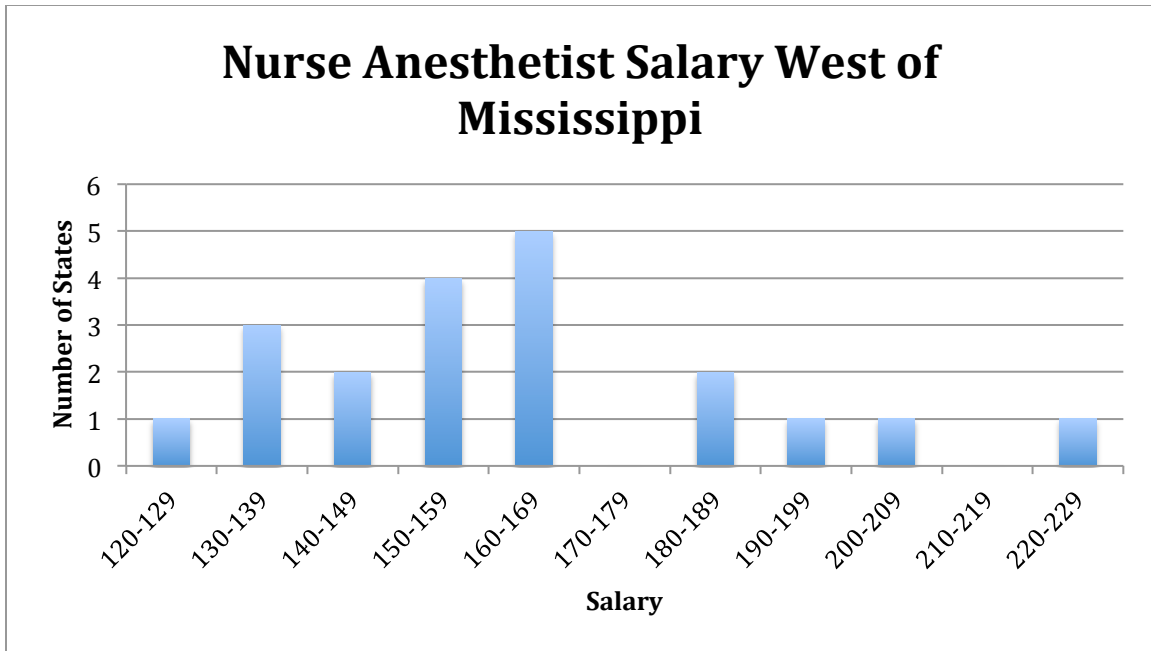


Figure 2.1 Nurse Anesthetist Salary West of Mississippi:

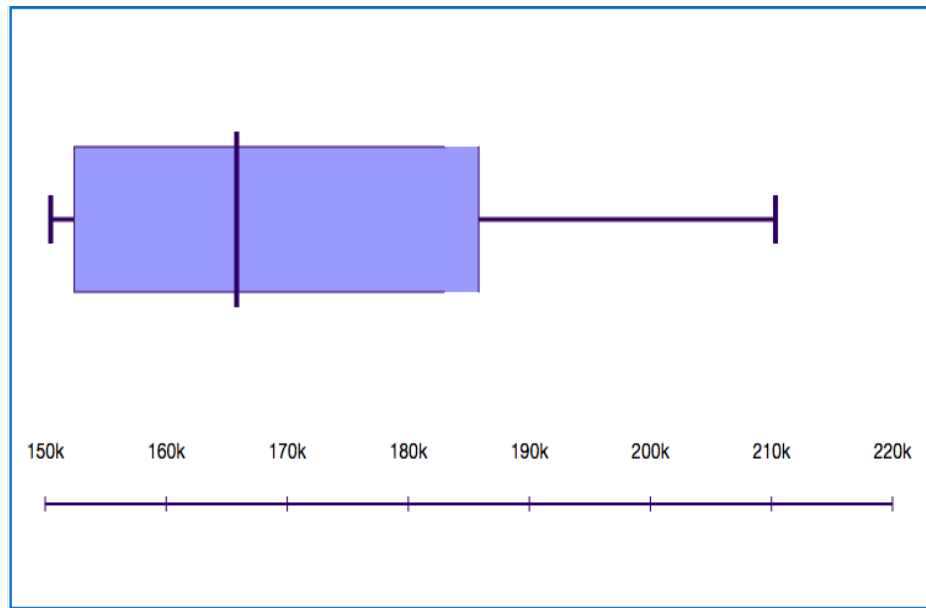
As figure two illustrates, the distribution of salaries of 20 randomly selected states west of the Mississippi is skewed slightly to the right. The mean is \$168,840 with a standard deviation of \$23,440. The five number summary listed on a later page shows that the median is \$167,500. The difference between the mean and the median is \$1,340, which is small enough to use both for describing the distribution.

	Min	Q1	M	Q3	Max
East	150460	152400	165820	185820	210340
West	145530	153100	167500	177500	221240

Table 1: Five number summary for Eastern and Western States

For this study, the mean was selected as the measure of center. The five number summary shows a good visualization of the data.

Nurse Anesthetist Salaries East of Mississippi:



Nurse Anesthetist Salaries West of Mississippi:

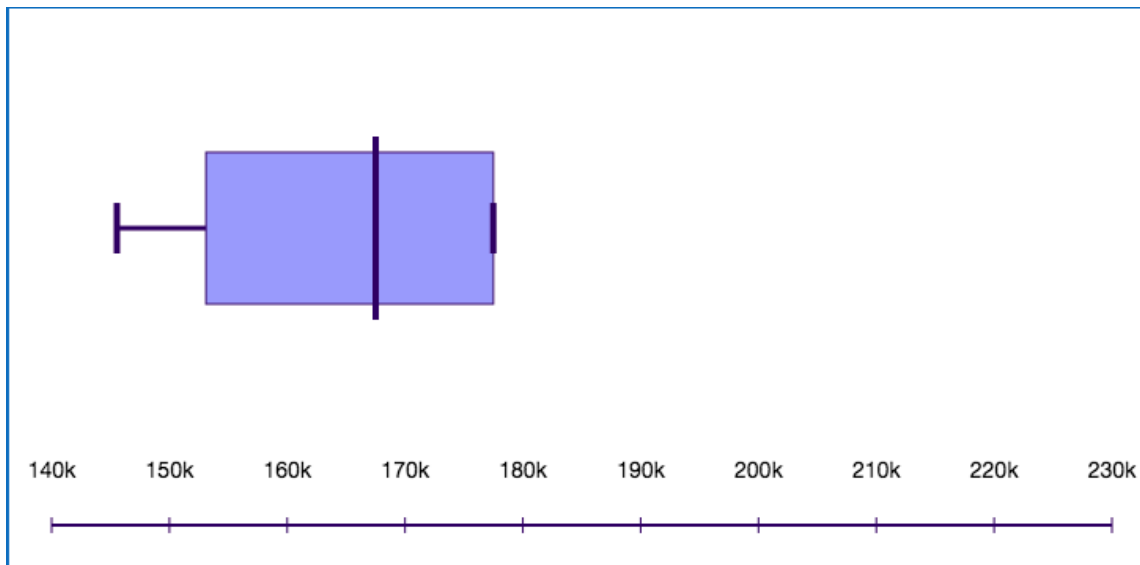


Figure 3: Boxplots compare the salaries from Eastern and Western States

Figure 3 shows the spread of salaries from 20 randomized states East of the Mississippi and 20 randomly selected states from West of the Mississippi. Based on the boxplots and five number summaries, it gives a good visualization that the salaries for nurse anesthetists in the West make more money on average per year than that of those working in the Eastern states.