

## History 595

### Third Short Assignment Answer Key

1. You had to calculate z scores for the 3 neighborhoods for a 2000 square foot house. The equation for z:  $z = (y - \mu) / \sigma$  or  $(y - \text{y-mean}) / \text{standard deviation}$ . Rounding a bit...

East:  $(2000 - 2289) / 976 = -.296$  or  $-.30$  to 2 decimal places

Northwest:  $(2000 - 1607) / 953 = .41$

South:  $(2000 - 1051) / 601 = 1.58$ .

2. To calculate the proportion of houses in each neighborhood of 2000 sq ft or greater, use the z table.

East: since the z score is negative, i.e., to the left of the mean, one must find the appropriate probability for a z of  $-.30$ . Answer:  $.3821$ . Subtract that from 1 to get the proportion 2000 sq ft, or  $\sim 62\%$ .

Northwest: from the z table, probability is  $.3409$ , so 34% of the houses are 2000 sq ft or larger.

South: from the z table, probability is  $.0571$ , so  $\sim 6\%$  of houses are 2000 sq ft or more.

3. To do this question, you had to look at the numerical results in the original output and compare the quartile ranges with the z score estimates. So:

East: Median is 2100, so 50% is 2100 or above; 2000 is below the median, at the 38<sup>th</sup> percentile.

Northwest: 75<sup>th</sup> percentile is 2112; 2000 is 66<sup>th</sup> percentile.

South: 75<sup>th</sup> percentile is 1155; 2000 is 94<sup>th</sup> percentile.

So for the East and Northwest neighborhoods, the median or 75<sup>th</sup> percentile gives results that are fairly close to those from the z score. For the Southside, there is a huge gap between the 75<sup>th</sup> percentile (1155), and the 2000 sq ft house. The distribution on the south side is quite different from that in the other 2 neighborhoods.