Application exercise 2.3: Normal distribution

Submit your responses on Sakai, under the appropriate assignment. Only one submission per team is required. One team will be randomly selected and their responses will be discussed.

In this activity we'll work with data on average hourly wage for manufacturing workers, in the United States as well as in North Carolina. The data come from the The 2012 Statistical Abstract.[1] Assume that the distributions of the manufacturing wage rates, nationwide and in North Carolina, can be approximated by a normal distribution.

Part 1: Government data indicates that the average hourly wage for manufacturing workers in the United States is $18.61, with a standard deviation of $1.35.

1. What percent of manufacturing workers make more than $20/hour?
2. What percent of manufacturing workers make between $18 - $20/hour?

Part 2: Government data also indicates that the average hourly wage for manufacturing workers in North Carolina is $15.85.

3. An unemployed worker did a job search in North Carolina, and found that 15% of the manufacturing jobs paid more than $17 per hour. What is the standard deviation of the distribution of hourly wage for manufacturing workers in North Carolina?
4. Suppose that a manufacturing company located in North Carolina is advertising that the minimum hourly wage they pay is $16.50. What percent of employees at this company earn at least $17 per hour? *Hint:* This is a conditional probability.

Part 3: Government data also indicates that the average hourly wage for manufacturing workers in New York is $18.39, with a standard deviation of $1.5.

5. Who is doing better within their state: a NC manufacturing worker who makes $17/hr or a NY manufacturing worker who makes $19/hr?

[1] Source: U.S. Bureau of Labor Statistics, Current Employment Statistics, "State and Metro Area Employment, Hours, and Earnings (SAE), March, 2010, http://www.bls.gov/sae/#data.htm and http://www.census.gov/compendia/statab/2012/tables/12s1016.pdf.