

Unit 5 Tutorial: Exercise 19

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Hourly rates of manufacturing workers

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

Part I. 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 Massachusetts is \$15.85.

3. An unemployed worker did a job search in Massachusetts, 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 Massachusetts?

4. Suppose that a worker applies for a manufacturing job in Massachusetts, and receives the good news that she got the job and that her pay will be at least \$16.50 per hour. She would really like to be able to make at least \$17 per hour. What is the probability that she will get what she wants? Assume that the company she will be working for is a run-of-the-mill manufacturing company in Massachusetts, i.e. the distribution of the hourly wages at this company reflects the state distribution. 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?

6. If 34% of NY manufacturing workers make more than \$19/hr, what is the probability that in a random sample of 100 NY manufacturing workers less than 30% make more than \$19/hr.