

ap statistics

How can we tell if a set of data is (approx) normal??

✓ **Plot the data.**

- Make a dotplot, stemplot, or histogram and see if the graph is approximately symmetric and bell-shaped.

✓ **Check whether the data follow the 68-95-99.7 rule.**

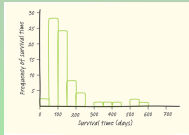
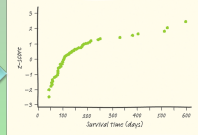
- Count how many observations fall within one, two, and three standard deviations of the mean and check to see if these percents are close to the 68%, 95%, and 99.7% targets for a Normal distribution.

"It is the mark of a truly intelligent person to be moved by statistics." - George Bernard Shaw

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If the points on a **Normal probability plot** lie close to a straight line, the plot indicates that the data are Normal. Systematic deviations from a straight line indicate a non-Normal distribution. Outliers appear as points that are far away from the overall pattern of the plot.

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Are the data close to Normal?

Let's start by examining data on unemployment rates in the 50 states in November 2009. Here are the data arranged from lowest (North Dakota's 4.1%) to highest (Michigan's 14.7%).¹¹

4.1	4.5	5.0	6.3	6.3	6.4	6.4	6.6	6.7	6.7	6.7	6.9	7.0
7.0	7.2	7.4	7.4	7.4	7.8	8.0	8.0	8.2	8.2	8.4	8.5	8.5
8.6	8.7	8.8	8.9	9.1	9.2	9.5	9.6	9.6	9.7	10.2	10.3	10.5
10.6	10.6	10.8	10.9	11.1	11.5	12.3	12.3	12.3	12.7	14.7		

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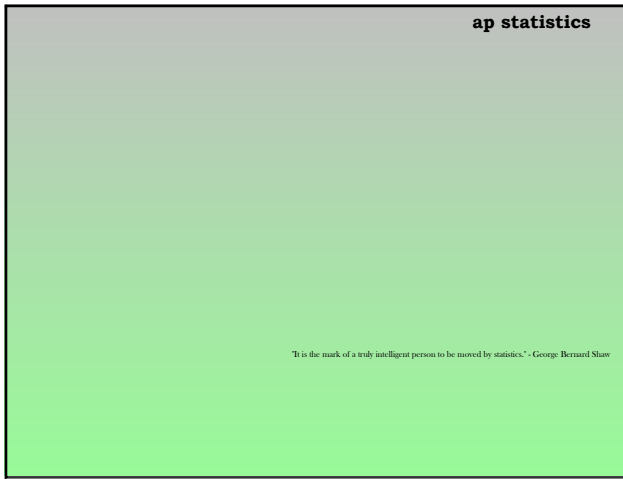
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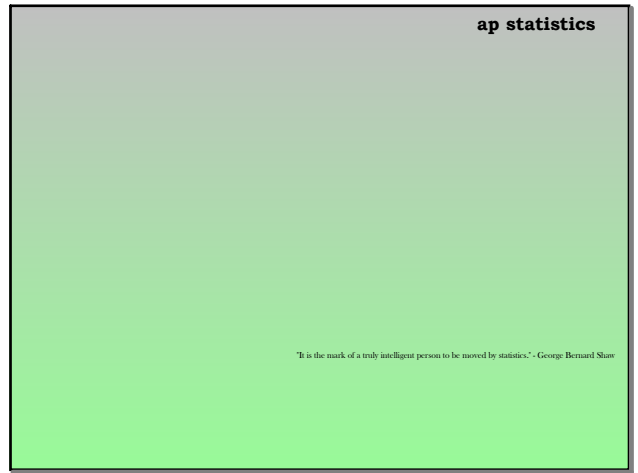
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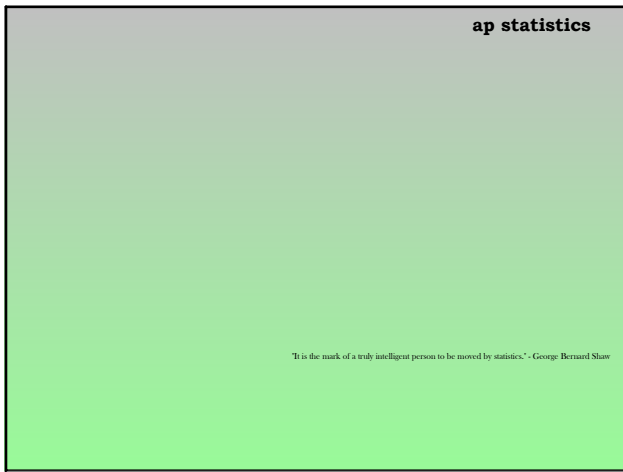
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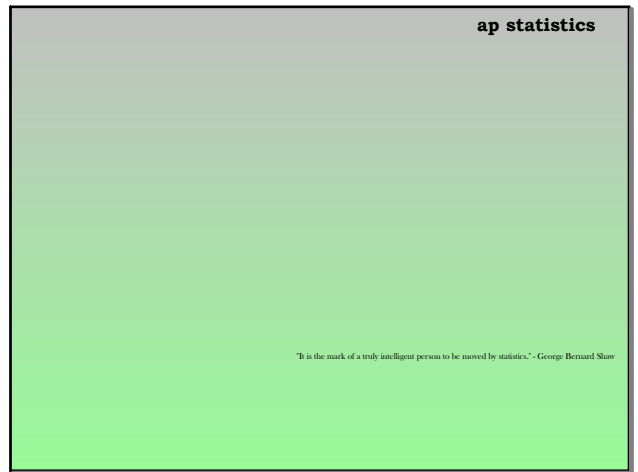
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Matching Histograms and Summary Statistics

Match each histogram to the set of summary statistics.

	<p>A.</p> <p>mean: 10.5</p> <p>standard deviation: 1.4</p> <p>median: 10.7</p> <p>IQR: 2.0</p>
	<p>B.</p> <p>mean: 10.1</p> <p>standard deviation: 2.7</p> <p>median: 10.1</p> <p>IQR: 4.2</p>
	<p>C.</p> <p>mean: 10.2</p> <p>standard deviation: 2.1</p> <p>median: 10.5</p> <p>IQR: 2.5</p>
	<p>D.</p> <p>mean: 10.2</p> <p>standard deviation: 4.1</p> <p>median: 11.9</p> <p>IQR: 6.8</p>
	<p>E.</p> <p>mean: 8.0</p> <p>standard deviation: 2.0</p> <p>median: 8.0</p> <p>IQR: 1.9</p>