AMS 5/4/7/06

Today: Histograms, Stemplots

Monday: Measures of center & spread

Books (DD) reader ready Mon

Relationships: Some are casual, others are not available!

- i.e. Smoking causes lung cancer & heart disease. [drinking soda causes polio]

Statistics is the study of uncertainty: Incomplete Information

- how to measure it

- make decisions

Science - (knowledge for its own sake)

Decision making: Making a choice w/ incomplete information.

<table>
<thead>
<tr>
<th>Time of year</th>
<th>Amount of soda sold</th>
<th># of cases of polio</th>
</tr>
</thead>
<tbody>
<tr>
<td>summer</td>
<td>hi</td>
<td>hi</td>
</tr>
<tr>
<td>autumn</td>
<td>med</td>
<td>med</td>
</tr>
<tr>
<td>winter</td>
<td>lo</td>
<td>lo</td>
</tr>
<tr>
<td>spring</td>
<td>med</td>
<td>med</td>
</tr>
</tbody>
</table>


- Not necessarily a cause & effect

- Association between relationship:

- soda pop sales & polio

Decision making: Predicting the future.

Data-gathering: Experimental Design & Sample Survey

Descriptive Measures: Graphical (i.e. histograms)

- Numerical (i.e. mean, mode, standard deviation)

Counter-factual Data: "What if"

Graphical

Descriptive Measure

"Interest Rate" & "Currencies"

Example on pg. 12 is experimental design.
Case Study 1

Examples 8-10

Variables - things of interest that may vary from one subject to another.

Subjects - people or things on which variables are measured.

Test score

\[
\begin{array}{c}
61 \\
48 \\
38 \\
\vdots \\
49 \\
\end{array}
\]

\[n = \text{Sample size} \quad \begin{array}{c}
26 \\
27 \\
27 \\
\vdots \\
95 \\
\end{array}
\]

Data was sorted from smallest to largest.

\[n = 233\]

[Graph showing frequency distribution]

<table>
<thead>
<tr>
<th>Value</th>
<th>Raw Frequency (count)</th>
<th>Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>1</td>
<td>0.43%</td>
</tr>
<tr>
<td>27</td>
<td>4</td>
<td>1.79%</td>
</tr>
<tr>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
<tr>
<td>95</td>
<td>2</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

223

- Look at right of graph at 25

Big gap, all jobs in right tail

Exactly 15 people in right tail. 15 jobs.