Qualitative Graphs

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The same principal can be applied to datasets.

Objectives

Bar Graphs

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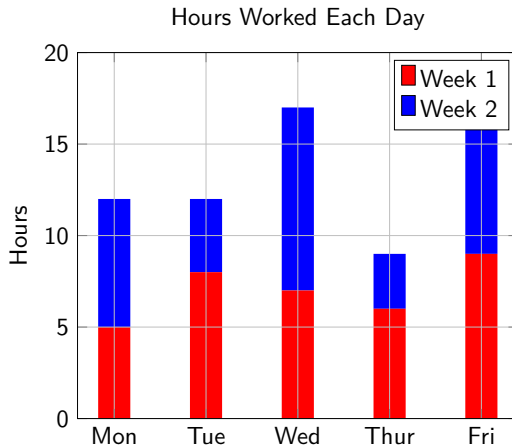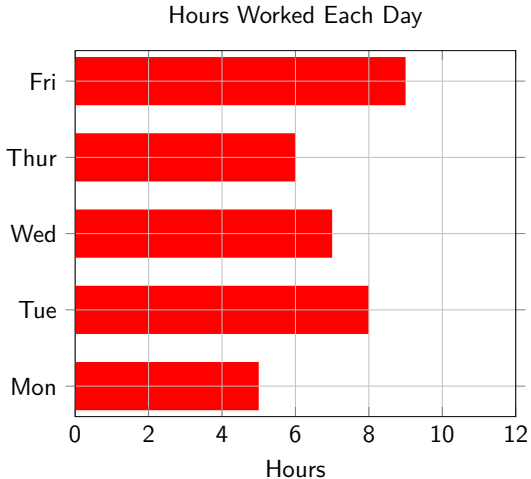

Hours Worked Each Day
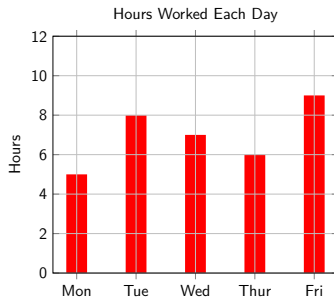
Bar Graphs

Bar graphs can be clustered:
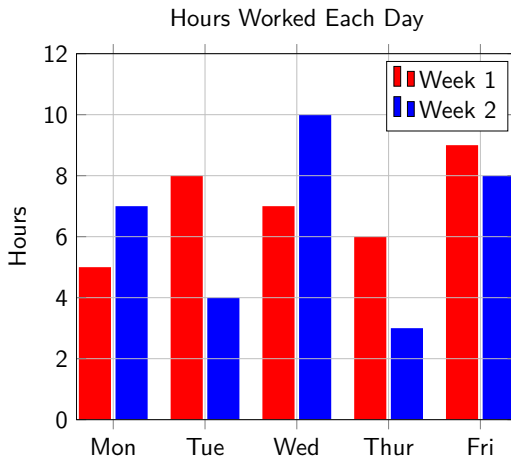
Bar Graphs

Bar graphs can be stacked:

Hours Worked Each Day

Bar Graphs

Bar graphs can be horizontal:

Hours Worked Each Day

Bar Graphs

Bar graphs can show relative frequency (percent of total):
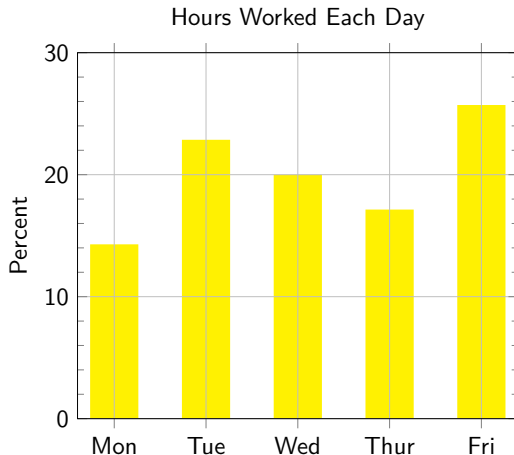
Hours Worked Each Day

Creating a Bar Graph

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Day	Hours Worked	Percent Total
Monday	5	14.29%
Tuesday	8	22.86%
Wednesday	7	20.00%
Thursday	6	17.14%
Friday	9	25.71%

Example 1

One week, a questionnaire was given to hotel guests asking them to rate their satisfaction with their experiene. The ratings ranged from 1 (not satisfied) to 5 (very satisfied). Construct a bar graph of the data below:

$$
\begin{array}{cccccc}
2 & 3 & 1 & 2 & 3 & 4 \\
1 & 5 & 5 & 2 & 2 & 4 \\
5 & 3 & 2 & 5 & 3 & 4 \\
4 & 3 & 5 & 1 & 1 & 1 \\
3 & 5 & 3 & 1 & 4 & 5
\end{array}
$$

Example 1

First, create a frequency distribution:

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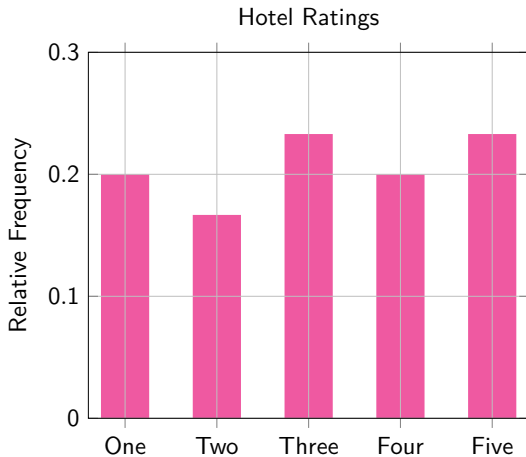| Rating	Frequency
One	6
Two	5
Three	7
Four	5
Five	7

Example 1
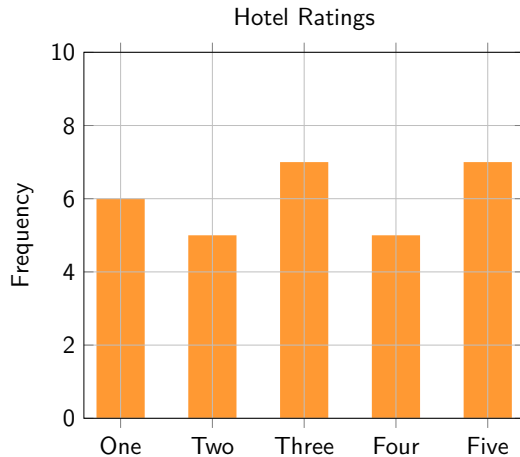
Example 2

Construct a relative frequency bar graph of the hotel ratings.

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| Rating	Frequency	Relative Frequency
One	6	1/5
Two	5	1/6
Three	7	7/30
Four	5	1/6
Five	7	7/30

Example 2

Example 3

Seeing the results of the questionnaires, the hotel made some changes and the following month, asked 40 new guests to rate their experience. The results, along with the previous results are listed:

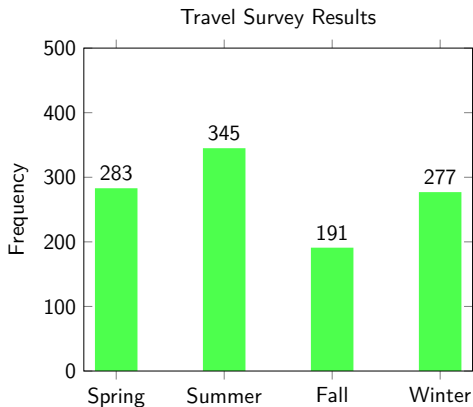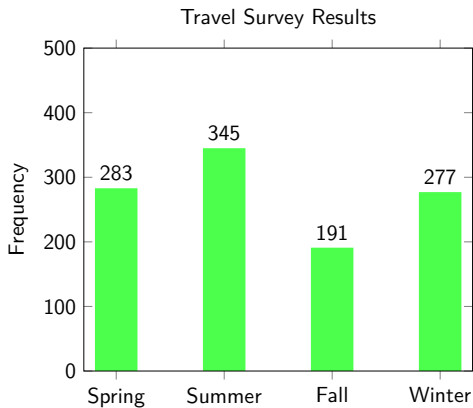| Rating	Frequency (Sample 1)	Frequency (Sample 2)
One	6	4
Two	5	3
Three	7	12
Four	5	10
Five	7	12

Construct a stacked bar graph of the results.

Example 3
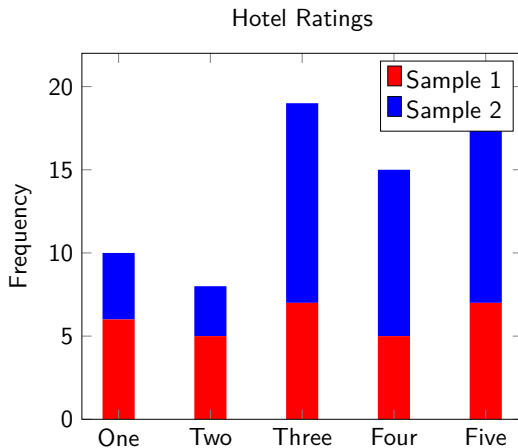
Example 4

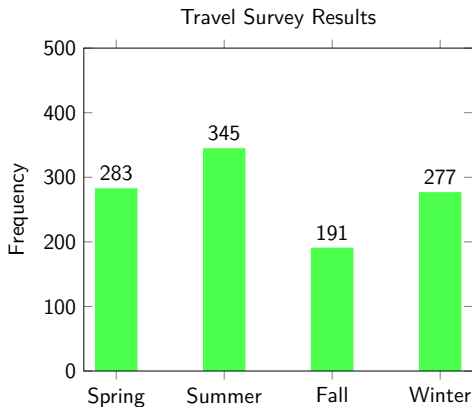Given the bar graph below, find the percent of people who travel in the summer.

Travel Survey Results

Example 4

Given the bar graph below, find the percent of people who travel in the summer.

Travel Survey Results

Total: 1096

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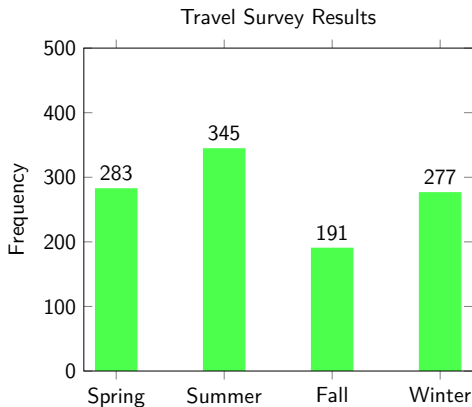Total: 1096

345/1096

Example 4

Given the bar graph below, find the percent of people who travel in the summer.

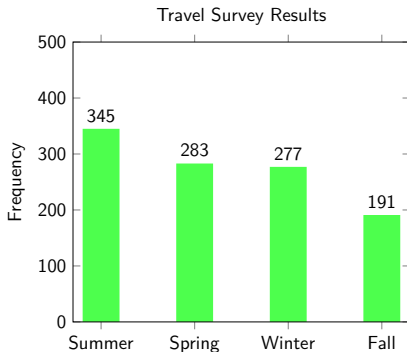Total: 1096

$345/1096$

$\approx 31.48\%$

Pareto Charts

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Travel Survey Results

1 Create and interpret bar graphs

2 Interpret pie graphs

Bar Graphs vs. Pie Graphs

A good visual display of qualitative information, especially when dealing with relative frequency (percent), is the pie graph.
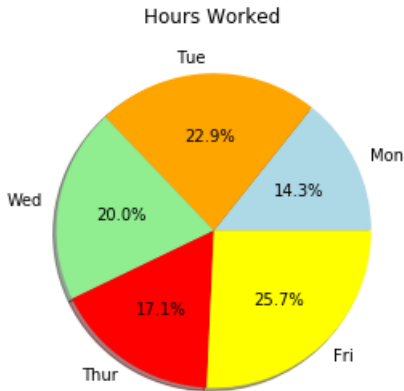
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Each slice of the pie (the central angle) is proportional to the percentage that slice is of the whole.
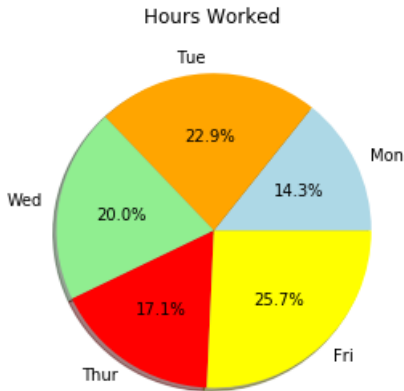
Example 5

The pie chart below represents the hours worked each day as a percentage of the week. What total percent of the week was spent working on Monday and Tuesday?
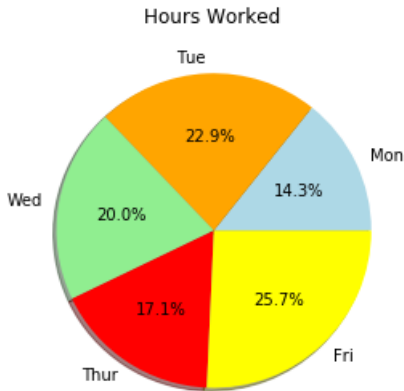

Hours Worked

Example 5

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Hours Worked

$14.3\% + 22.9\%$

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$$14.3\% + 22.9\%$$

$$= 37.2\%$$