

Pie Chart

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Pie Chart

Pie charts are different from most of the common types of graphs and charts. They do not plot data against axes; instead they plot the data in a circle. They are most suited to displaying frequency data of a single categorical variable. Each slice of the pie represents a different category, and the size of the slice represents the proportion of values in the sample within that category. Figure 1 shows an example from a class of undergraduate students who had to think aloud about when they would complete an essay. Their thoughts were categorized, and the resulting frequencies are shown in the figure. Each slice of the pie is labeled.

As with all graphs, it is important to include all the information that is necessary to understand the data being presented. For Figure 1, the percentage and/or number of cases could be included. In some circumstances, it may be beneficial to have more than one pie chart to represent the data. The diameter of each chart can be varied to provide an extra dimension of information. For instance, if we had a measure of the number of days it took students to complete the essay we could display this in separate pie charts where the diameter of the chart represented completion time.

Most commentators argue that pie charts are inferior for displaying data compared with other

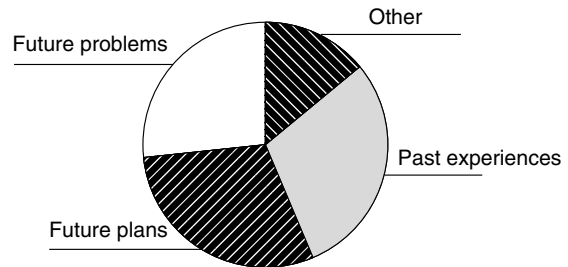


Figure 1 Distribution of students' reported thoughts when estimating the completion time of an academic assignment

methods such as tables and **bar charts** [1]. This is because people have difficulty comparing the size of different angles and therefore difficulty knowing the relative magnitudes of the different slices. Pie charts are common in management and business documents but not in scientific documents. It is usually preferable to use a table or a bar chart.

Reference

- [1] Cleveland, W.S. & McGill, R. (1987). Graphical perception: the visual decoding of quantitative material when on graphical displays of data, *Journal of the Royal Statistical Society. Series A* **150**, 192–229.

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