# Chart picker

<table>
<thead>
<tr>
<th></th>
<th>PIE</th>
<th>BAR</th>
<th>STACKED BAR</th>
<th>DIVIDED BAR</th>
<th>LINE</th>
<th>AREA</th>
<th>STACKED AREA</th>
<th>DIVIDED AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small data set</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large data set</td>
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<td></td>
<td></td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Compare subsets of a total</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Subsets show percent</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Subsets show number</td>
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<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Compare real values or totals</td>
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<td>●</td>
<td>●</td>
<td>●</td>
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<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Change in single value (rate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Compare related data sets</td>
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<td></td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Single point in time</td>
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<td></td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Trend over time</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Baseline of zero</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Baseline not required</td>
<td></td>
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<tr>
<td>Show percent change</td>
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<td>●</td>
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<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Forecast trends</td>
<td></td>
<td></td>
<td></td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
Chart types

Pie chart
Pie charts illustrate the relationships between the parts of a total at a single point in time.

- Use percentages to label the chart
- Limit chart to five slices (use a table, list or treemap if you have more)
- Use something else to...
  - Compare exact values
  - Rank your data
  - Or if your values exceed 100%

Bar charts
Bar charts compare consecutive totals over time to illustrate a trend. Vertical bars, called columns, are the most frequently used.

- If you have a small data set (with a minimum of three data points).
- To compare exact values
- To rank data
- Use real values (a number)
- Use for percent change
- Baseline must start at zero

GROUPED BARS: Compare related sets of data with multiple columns (use sparingly).

STACKED BARS: Compare subsets (numbers) of a total over time.

- Subsets are cumulative.
- Subset on baseline is easiest to compare.
- Other subsets are more difficult to compare.

DIVIDED BARS: Compare relation of subsets (percentage) of a total over time.

- Better than multiple pie charts because portions are easier to understand.

Line chart
Illustrates how a single value changes over time.

- Use for a rate or index
- Baseline does not have to be zero (as long as data is not exaggerated to point of misrepresentation).
- Use to compare trends of several values (multiple lines)
- Straight lines connect real data points.
- Use curves to interpolate data between data points
- Curves "smooth" large sets of data.
- Use if X-axis has sequential or numeric data (years, etc.)
- Use if you must forecast trends in data

NOTE: Lines can be used for very large data sets comprised of totals to improve user understanding. But a scatter plot is usually a better solution for these cases.
**Chart types**

**Area charts**
This is a cross between stacked/divided bars, pie charts and line charts.

- Illustrates changes in totals over time.
- Can show multiple data sets

**STACKED:** Compare subsets (numbers) of a total over time.

- Subsets are cumulative.
- Subset on baseline is easiest to compare.
- Other subsets are difficult to compare.
- Use when actual totals are most important

**DIVIDED:** Compare relation (percentage) of subsets of a total over time.

- Uses percentages where the sum always equals 100
- Use when relationship to the whole is more important.

**One-dimensional scatter plot**
Scatter plots are dots plotted above a baseline that show trends in data

- Use to display large data sets of totals
- Use a baseline of zero (where bars would be hard to read)

**Two-dimensional scatter plot**
This scatter plot is used to show correlations when a data set has two variables (columns). One variable is plotted on the X-axis and the second variable is plotted on the Y-axis. If the variables are strongly related, the data points will form a shape.

- Use when you have a large data set.
- Use to compare variables
- Use when you need to know the presence of outliers.