The Shaffer 4 C's of Data Visualization
"Clean" Examples

**Default in Excel**

**Remove/Lighten Gridlines and lower # of Y-Axis Tick Marks**

**Avoid Rotated Text**

**Rotate Chart Instead**

**Removed Series Name**
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- Removed tick marks on y-axis
- Ordering Data adds context unless a specific order is required.
  Ex. North, South, East, West (save alphabetical order for reference tables)
- Note - Labels in units of 10 with gridlines. Added minor gridlines and minor ticks in units of 5.

If reasonable number of bars consider data labels instead of axis labels

- 0
- 10
- 20
- 30

Category A
Category B
Category C
Category D
Category E
Category F
Category G
Category H
Category I
Category J
Category K
Category L
Category M
Category N
Category O
Category P
Category Q
Category R
Category S
Category T
Category U
Category V
Category W
Category X
Category Y
Category Z
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Fine Tune Colors (ex. Dark Gray vs. Black)

Add Context - Ex. add Target Line, Expected Value or Average

Avoid Stark Borders on Bars

Avoid Narrow Bars

Avoid 3D Bars

Avoid Connected Bars (unless distribution)

Tip - Add target lines and text at last step to avoid reformatting of chart. Using a dotted line or different color will help contrast the target line vs. a gridline.

Note - distributions are typically graphed as vertical bars, connected and with a border.
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Avoid Repeated Text. Example, if "Category" were truly repeated vs. unique names.

Example with y-axis and one highlighted data point. 3 labels vs. 10 Data points.

Example with 10 data points and no y-axis.

Add Title (tell the story)
Include Labels ($, # or %), Data Source, Date, Author, etc.

Bananas exceeded target by 7 units in 2011
(# of units sold)

Bananas

Apples

Grapes

Oranges

Target 16 units

Source - 2011 Actual Sales from BI Tool
Created by Jeffrey A. Shaffer
2/17/2011
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Sometimes it's necessary to show a % of a total. Example, Bananas as a % of total fruit. Avoid Pie Charts

Use bar charts for easier comparison and 100% stacked-bar chart for part to whole

Bananas exceeded target by 7 units in 2011
(# of units sold)

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Units Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>23</td>
</tr>
<tr>
<td>Apples</td>
<td>17</td>
</tr>
<tr>
<td>Grapes</td>
<td>14</td>
</tr>
<tr>
<td>Oranges</td>
<td>12</td>
</tr>
</tbody>
</table>

Target 16 units

Bananas represent 35% of total unit sales

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>35%</td>
</tr>
<tr>
<td>Apples</td>
<td>26%</td>
</tr>
<tr>
<td>Grapes</td>
<td>21%</td>
</tr>
<tr>
<td>Oranges</td>
<td>18%</td>
</tr>
</tbody>
</table>

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Here is an excellent example of these practices in use taken from:
TDWI Best Practices Report entitled "Transforming Finance" by Wayne Eckerson

![Graph showing survey responses to "What is your position?" and "Where are you located?"

Also shown are responses to "What are the annual revenues of your organization?" and "What industry are you from?"

A table is presented showing the degree to which respondents agree with statements about the finance department's role in driving the organization and refining strategies.

Figure 1. Less than half of survey respondents thought the finance department provides a strategic advisory role to the business to a high degree. Financial/business professionals had a more favorable opinion of finance's impact on the business than BI/IT professionals did.

A chart titled "Rate the importance and effectiveness of each BI tool below for your finance team today."

Figure 7. The finance department values many BI tools but is not very effective at implementing them, largely because a majority have yet to do so (except for financial reports and spreadsheets).