What do we mean by visuals?

Visuals: the collection of images, words, and graphic elements offered in the context of inquiry, communication, or persuasion.

Negative definition: the components of written texts with communicative functions that are not characterized by continuous prose text.

Functional definition: Elements of the presentation of data used as a mode of evidence or a domain for exploration
<table>
<thead>
<tr>
<th>Class</th>
<th>Band</th>
<th>Household income per capita</th>
<th>Population</th>
<th>18 to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Motion</td>
<td>Finished secondary school</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18 to 24</td>
<td>Total</td>
</tr>
<tr>
<td>Lower</td>
<td>Less than R$ 506</td>
<td>$219</td>
<td>74.6%</td>
<td>75.2%</td>
</tr>
<tr>
<td>Middle</td>
<td>from R$ 506 to R$ 1,500</td>
<td>$822</td>
<td>19.9%</td>
<td>20.3%</td>
</tr>
<tr>
<td>Upper</td>
<td>More than R$ 1,500</td>
<td>$2,959</td>
<td>5.5%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$490</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>


Creating and captioning visuals: the principles

Determine the function or functions your visualization will serve

Determine the medium used to address the audience and its constraints on scale, color, layout, and typography

Identify the tools you can use for design (which may be the same)

Reduce or eliminate inessential information
Creating and captioning charts, graphs, and complex visuals—more principles

Determine the character of your dataset (categorical or quantitative, discrete or continuous)

Identify the central insight of your visualization (which will become the title or heading)

Determine the medium used to address the audience and its constraints on scale, color, layout and typography

Select a visualization tool suited to your central insight (description, composition, trend, correlation, distribution)
Creating and captioning charts, graphs, and complex visuals-the practices

Calculate: gather as complete a data set as is available and perform any manipulations or calculations from the raw data set that you intend to use.

Clean: determine and follow conventions of data presentation (confirm standard units of measure, significant digits, conventions for titles captions and labels)

Compose: Enter the data into your visualization tool, select typography and color palette (restraint rules)

Correct: Confirm that your visual displays your central insight, correcting for medium and mode of presentation
What insight does this chart reveal?

**FIGURE 1.16** The distribution of total revenue by percentage in a typical manufacturing organization.
Visualizing Data: Insights are Apparent

• We don’t always need to show ALL the data, just because we have it
• Relative size of categorical data should be clear
• Most appropriate chart type is used
  – Line: Data over time. Good for showing variability.
  – Column/bar: Metric comparison across categories
  – X-Y Scatter: Show relationship (or lack of relationship) between 2 variables
• Pie chart: % of total. Column/Bar chart is usually better choice
Sometimes you can put the insight in the title...

Improvements to quality impact a quarter of total revenue

- Material: 40% of Revenue
- Manufacturing Overhead and Quality: 25% of Revenue
- Operating Expense: 20% of Revenue
- Labor: 15% of Revenue
- Profit: 10% of Revenue
What insights does Chart 1 reveal? How much bigger is sample 12 than 11?

Liquid detergent bottle content

Volume (fluid ounces)

Sample

Ex3-1
Chart 2: honest but unclear

Liquid detergent bottle content

Volume (fluid ounces)
Chart 3: Line graph is useful for showing variability

Liquid detergent bottle content

Volume (fluid ounces)

Sample

1 2 3 4 5 6 7 8 9 10 11 12

Ex3-1