Best Practices for Data Visualization

Data visualization presents quantitative information in a meaningful way to communicate important facts and concepts. It can be presented as a line graph, bar chart, pie chart, scatter plot, map or something else. Best practices will determine the best way to effectively present visual data.

Large numbers are generally difficult for people to put into context. Big numbers are completely useless, if they are not understood in a meaningful way. That's why data visualization is important in the criminal justice system. It can present:

- **Number of arrests**
    - Arrests in city
    - Arrest in county
    - Arrests in state
    - Arrests rates based on race
    - Locations of arrests
- **Number of burglaries**
    - Burglary clearance rates
    - Number of burglaries resulting in an arrest
- **Locations of crimes**
    - Highest crime locations
    - Lowest crime locations
- **Number of prosecutions of arrestees**
    - Number of cases adjudicated guilty
    - Number of cases dropped
    - Number of cases found not guilty
- **And so on…**

Data visualization helps decision-makers to understand big numbers in a contextual way, which enables them to make better decisions. Your audience may include police chiefs, county sheriffs, state patrol directors, state legislators, city or county commissioners, community stakeholders and the public. Understanding large data sets is necessary, to make informed decisions.

Define a Clear Purpose

Data visualization should answer strategic questions to help solve real-world problems. It may include using:

- Scatter Plots
- Line Charts
- Bar Charts
- Pie Charts
- Etc.

Keep It Organized and Coherent

- Font choice and size affect readability
- The order in which data is displayed
- Amount of data presented
- Size of a chart
- Colors used
- Etc.

Data Visualization Keys

1. The best visualizations will make it easy to quickly understand complex data sets, just by looking at the picture.

2. Good visualizations take complex information and simplifies it, to allow your audience to understand it – and to enable them to make informed decisions.

3. Using best practices for data visualization makes understanding the data effortless. Asking questions like the following ensure clarity in what is being presented:

    - Does the data visualization have a complete chart title?
    - What about the presence of axis titles?
    - Does the line graph contain time series data on the x-axis?
    - Is the pie chart convoluted with data making "slices" difficult to see?
    - Are the bar colors on the bar chart too similar?

Edward R. Tuftie noted the following:

The essential test of design is how well it assists the understanding of the content, not how stylish it is.	Clutter and confusion are not attributes of data - they are shortcomings of design.

References

Gomes, M. M. (2020). *Data visualization: Best practices and foundations*. Toptal. https://www.toptal.com/designers/data-visualization/data-visualization-best-practices

Tufte, E. R. (2001). *The visual display of quantitative information* (2nd ed.). Graphics Press.