



Forum Guide to Data Visualization: A Resource for Education Agencies

Data Visualization Handouts

Given the detailed data that are collected about the inputs, processes, and outcomes of the education enterprise, it is not surprising that discerning the meaning of data is a challenge for education stakeholders, including practitioners, policymakers, researchers, parents, and the general public.

The ability to create customized, audience-specific data visualizations can become a fundamental and powerful aspect of a broader organization-wide analytical and communications strategy. Data visualization focuses on presenting information in a way that is not only accurate and appropriately comprehensive, but also understandable and actionable for each of your intended audiences.

When applied effectively, the sound data visualization approaches below will improve a viewer's ability to understand, analyze, and retain information and, subsequently, use that knowledge to make decisions.

Four Key Principles for Effective Data Visualization

- Key Principle 1: Show the data.
- Key Principle 2: Reduce the clutter.
- Key Principle 3: Integrate text and images.
- Key Principle 4: Portray data meaning accurately and ethically.

Education organizations share data with stakeholders because the information is judged to be of value. Providing clear and accurate information about education settings, processes, and performance is a fair, necessary, empowering, and healthy component of our education system.

Seven Recommended Practices for Data Visualization

- Recommendation 1: Capitalize on consistency.
- Recommendation 2: Data that should not be compared should not be presented side by side.
- Recommendation 3: Don't limit your design choices to default graphing programs.
- Recommendation 4: Focus on the take-home message for the target audience.
- Recommendation 5: Minimize jargon, acronyms, and technical terms.
- Recommendation 6: Choose a font that is easy to read and will reproduce well.
- Recommendation 7: Recognize the importance of color and the benefits of Section 508 compliance.

Six-Step Process for Data Visualization

- Step 1. Question: Someone Needs Information
- Step 2. Research: Data Exploration and Analysis
- Step 3. Findings: Data Meaning/Answer
- Step 4. Customization: Audience-Specific Messaging
- Step 5. Visualization: Present Data Meaning Clearly and Accurately
- Step 6. User Feedback: Review and Refine Efforts

For more information about these data visualization processes, principles, and recommended practices, download the free *Forum Guide to Data Visualization: A Resource for Education Agencies* at <http://nces.ed.gov/forum/publications.asp>.

Data Visualization

Display (or show) the data (Key Principle 1)

Avoid or reduce clutter (Key Principle 2)

Text and images must be integrated (Key Principle 3)

Accurately and ethically portray data meaning (Key Principle 4)

Verify quality of data

Invest in more than default programs

Side-by-side presentations only when comparison is intended

Use a format that is easy to read

Avoid multiple fonts

Less is more

Images distinguishable by contrast not color

Z patterns and **F** patterns are effective

Accessibility necessitates Section 508 compliance

Take-home message is the priority

Insight is preferable to hindsight

Observe size and position hierarchy to indicate importance

Not all data need to be visualized

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