

# Advanced Data Visualization Graphics

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## **Objective**

The objective of this activity is to produce graphical representations of data or concepts to help convey information to stakeholders and the general public.

## **Summary**

Studies have shown that conveying information visually can improve communication of key concepts, enhance memory retention, and make complex information more easily understood than written text alone<sup>1</sup>. Data visualization can take a variety of forms, including info-graphics, charts, graphs and maps, and each of these forms can be either static or interactive:

- Info-graphics often use familiar objects or icons to present data in a compelling way. Info-graphics often take the form of a visual "story" and are commonly presented in a flow-chart format to depict relationships between the various elements of the graphic.
- Charts and graphs are used to present large numerical or statistical datasets in a visual way. Charts and graphs are often interactive, allowing the user to manipulate a "slider" on a computer screen to add or remove data from the visual presentation and interpret results.
- Maps are often included together with other data visualization forms, either as a component of an info-graphic or in a series of visualizations depicting data in various ways. Maps can also be utilized as part of an interactive graphic and change dynamically as the user alters the content of accompanying charts or graphs, as described above.

The examples linked below show a range of data visualizations that have been applied to economic and community development data and initiatives and include a mixture of the techniques described above.

## **Application to Consolidated Plan**

Including graphics and data visualizations can make complex information more easily understood than written text alone and is an effective way to generate directed feedback and reinforce key concepts from the Consolidated Plan narrative.

## **Target Audience/Usage**

The target usage can include community meetings and presentations, community-facing websites and blogs, public and private stakeholder consultation processes, and Consolidated Plan document narratives.

## **Logistics and Materials Needed**

Data visualization products can be created in a number of ways, as indicated by the following examples:

- The U.S. Census Bureau has created a [data visualization primer](#) that covers the use of census data to create info-graphics, flow-charts, and interactive plots and graphs.
- Free online resources such as [Piktochart](#), [infogr.am](#) and [easel.ly](#) can be used to create interactive info-graphics from numerical data, and include pre-set themes, layouts and graphic styles.
- The free statistical software, [R](#), is a powerful tool for creating data visualizations from raw data sources, such as U.S. Census Bureau data. The website Flowing Data (see below) includes tutorials on the use of R to create advanced data visualizations.

- [Flowing Data](#), a website that explores the use of data graphics by designers, statisticians, and computer scientists, has a [tutorial section](#) that covers the use of free and pay software to create a wide variety of interesting and interactive data visualization graphs, charts, and maps.

#### **Examples of Data Visualization Used in Economic Development and Urban Planning Projects**

- The state of Michigan's Department of Economic Development has launched a successful comprehensive media strategy that includes [infographics touting the department's successes](#).
- Lee County, FL has created an infographic to promote it's "Lee County Town Hall" [online forum](#), where it collects public opinions and ideas on proposed projects in southwest Florida, including the Consolidated Plan.
- The city of Portland, OR has created a [series of compelling infographics](#) that are used throughout the Portland Plan, a comprehensive [25-year plan](#) for economic, housing, and sustainability initiatives.
- The New Hampshire Office of Energy and Planning created an online visualization tool for state and local planners, [Cost of Sprawl](#) (including [case studies](#)), that incorporates land use, infrastructure, and economic data to depict the impact of future development across the state in a compelling visual report format.
- The city of Chicago, IL has created an info-graphic promoting and describing the [Chicago Cultural Plan](#), a blueprint for creating new opportunities for arts and cultural growth with a focus on economic impact, community development, and cultural leadership.
- Harvard University and UC Berkeley collaborated on a [national study](#) showing the spatial relationship between geography and income mobility. The [data is publically available](#), and has been used by the New York Times to produce an [interactive visualization](#) of income mobility by age and percentile of household income.

<sup>1</sup> [http://web.mit.edu/11.522/www/discussion\\_notes/11%20522\\_Discussion\\_notes\\_yizhu.pdf](http://web.mit.edu/11.522/www/discussion_notes/11%20522_Discussion_notes_yizhu.pdf)