

FREE TOOLS FOR USING DATA TO TELL A STORY

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Abstract

It is important to see how data can shape effective decisions, playing a key role in regulatory decisions, statewide policy decisions, programmatic decisions on service delivery and staffing, and even family decisions about program enrollment. For 15 years, the Illinois Early Childhood Asset Map (IECAM) has equipped its users with the necessary tools to harness education and demographic data. Presenters will demonstrate how IECAM uses these tools to present data for its users. Participants will have the opportunity to (1) engage with the storytelling tools, (2) ask questions about education and demographic data, and (3) start talking about how data can connect families, local programs, policymakers, educators, and researchers using readily available online resources. Participants will be able to use their devices (laptops) to interact with open source tools, and they will learn how they can create visualizations to tell the story about their data. Participants also will be able to interact with the presenters, explore the arc of a story, delve into what is needed to tell that story, and gain a comprehensive perspective on the significance of the data. There will be a maximum of 25 participants for the workshop. Anyone interested in using data to tell significant stories is welcome.

Keywords: *Data, education, visualization, research.*

1. Introduction

Despite the growth of connectivity, software, and advanced analysis tools, it can be a challenge to find reliable, free tools for data analysis and visualization. Educators and researchers who are not members of institutions with licenses for data analysis tools, or who do not have deep experience with more sophisticated (and expensive) data software, can still make insightful and attractive data visualizations.

In this workshop we identify and demonstrate a few accessible, free data tools that require a relatively low level of technical expertise. Making use of reliable data tools will help draw legitimate conclusions and allow transparent presentation of the data on which these conclusions are based. This workshop is geared toward education researchers and advocates who already know their data but who are in need of basic data visualization tools. For example, a policy advocate may want to know what social variables are associated with teacher and staff vacancies. A classroom teacher may use test scores to self-evaluate their teaching practices based on student performance. A government agency official may want to know what areas of the state exhibit the greatest need for increased preschool funding. A school administrator may use classroom test scores to determine changes in academic policy or make employment decisions regarding faculty. Such questions can be addressed using interactive charts and graphs and/or a web map. With this in mind, the purpose of this workshop is to provide explanation and demonstration of a few free tools to empower people to use data to tell their stories.

Numerous professional-grade software options exist for creating maps and visualizations. However, because of their complexity, beginners often find them overwhelming. When faced with several options, users may struggle to articulate their ideas and become lost in the process. The objective of this workshop is to introduce two user-friendly tools available online that are suitable for beginners and can be used to answer research questions and tell a story. Additionally, we will demonstrate one advanced tool to showcase its capabilities and empower attendees to explore the potential of these tools.

2. Workshop

This workshop will begin with a brief introduction of the Illinois Early Childhood Asset Map and the presenting team, followed by a short explanation of three free data tools: My Maps by Google, Datawrapper, and Dash Python (Plotly). The presenters will then engage with workshop participants in an

interactive demonstration of these tools with provided data using participants’ laptops. Presenters will be available to answer questions and provide some guidance. The workshop will end with a short recap and acknowledgment.

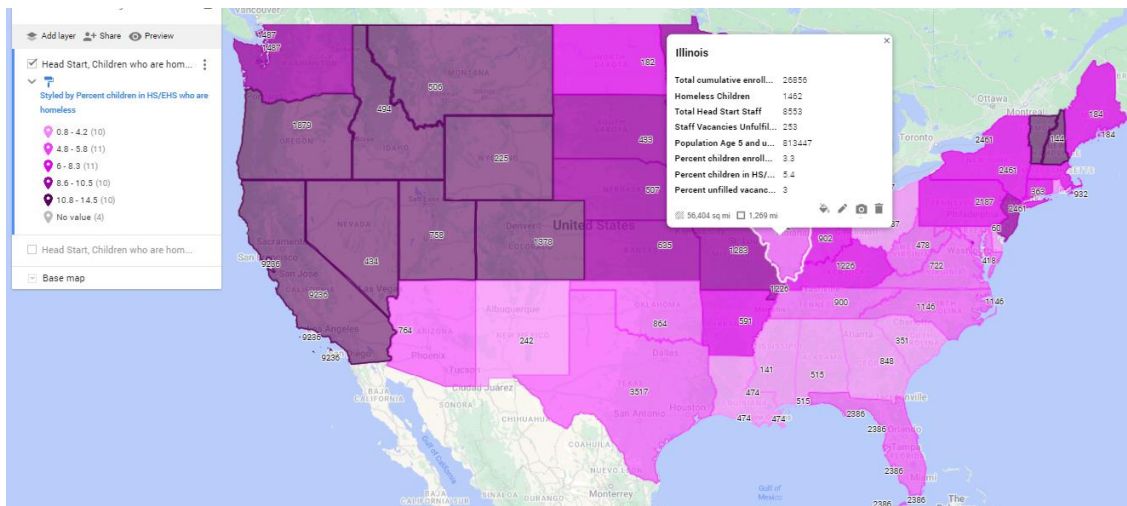
We will provide a sample dataset from the U.S. federal early childhood and preschool program, Head Start. We will seek to answer some basic questions about these data and visualize state comparisons.

2.1. My Maps

Google’s My Maps is a free platform where users can create sharable maps merged with any available tabular data. The prerequisite for this demonstration is an active (free) Google account. Some familiarity with Google Drive also would be helpful. The resulting map will include symbolization, popup boxes for each feature, text labels, and the option to further configure with images and additional layers. The demonstration involves connecting two distinct files to My Maps: a spatial dataset of states and the tabular Head Start data. Multiple interactive layers can be produced in a relatively short amount of time. With some stylization and popup configurations, a sharable web map can show data with clarity (see Figure 1).

The platform is unfortunately limited by a 5 MB spatial dataset maximum upload. There are only a few options for configuring styles and color ramps, so design features are also limited. Despite such limitations, there is considerable potential for such tools to prompt deeper questions and spur further research.

Figure 1. Mapped, styled Head Start data using My Maps.



2.2. Datawrapper

Sometimes you need to create a simple visualization where you need to display some trends from your data or create a bar chart to summarize information. There are many applications you could use, such as Excel, Python, or the statistical software R. However, some of them require programming knowledge or a very expensive subscription. In this workshop participants will learn how to create a bar chart from the provided data using Datawrapper. Within Datawrapper, users can create simple data visualizations and even complex ones, which may require some knowledge or further experience with the software. Datawrapper is usable simply by pasting data into a prompt or uploading a Microsoft Excel workbook or Google Sheet. It is capable of taking current data and quickly creating a variety of results for any audience. Limitations for Datawrapper include Internet connectivity and lack of detailed statistical features, such as geospatial analysis. However, the user-friendly capabilities provide for simple data visualization at no cost.

2.3. Dash Python (Plotly)

Finally, users with programming knowledge could explore Dash Python (Plotly) as an option for data visualizations. In this section, we will show the possibilities for displaying data with open source software such as Python and Dash. Two years ago, IECAM was asked to create a summary data report for a select few regions in the state. This summary webpage format became in demand among the early childhood community in the state, so IECAM decided to create a dashboard with information about the state, counties, Birth to Five Action Council areas, and local school districts. When users select any of these regions via our online tool, the dashboard shows up-to-date data from our database. Users can also create a full report and export it to a PDF file.

3. Conclusions

The objective of this workshop is to provide users with free, readily accessible tools. Further, these tools are useful with a variety of data to create a wide array of data visualizations to suit the needs of the user. With the brief introduction to these tools, we also provide data for workshop participants to use to build competence and confidence in using these tools for their needs. Lastly, we implemented this workshop with the hope that anyone, with or without knowledge of data tools, could freely access these tools to use their data to present their data in a variety of ways without extensive knowledge or resources.

References

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