DATA VISUALIZATION & R WORKSHOP

October 17, 2019 | 9a – 5p | Washington, DC

OVERVIEW

Data visualization—the study of the visual representation of data—plays a crucial role in the work of researchers and analysts. Organizations tasked with producing, releasing, and analyzing large amounts of data can more effectively evaluate and communicate their work by understanding how to better visualize their data. Often, however, visualizing research results is an afterthought, and that ultimately limits the effective relay of information.

In this workshop, attendees learn the core principles of data visualization—how we perceive visual information, an array of different graph types, and best practices for creating effective visuals. Attendees put those principles to work in the R programming language by learning practical R skills that will improve the quality of their work and discover approaches to programming away the mundane. R instruction begins with a clear motivation, followed by an explanation of the approach and code, and ends with hands-on examples.

Taught by two leaders in the field — Jonathan Schwabish and Aaron Williams — this full-day workshop will inspire you to create great, effective data visualizations. Working individually and in groups, you will learn what makes a great visualization and how to create those visualizations in R.

CONTENT

- What is data visualization? Why is it important and what is its function?
- How do we perceive visual information?
- What are data visualization best practices and strategies?
- What is R and how does it work?
- How to you read, write, and organize your data in R?
- How do you create data visualizations in R?
WHO THIS WORKSHOP IS FOR

This course is for anyone interested in data visualization and who wants to create data visualizations in the R programming language, including:

- **People working with and analyzing data** including government analysts, scholars, and researchers interested in improving how they communicate their work.
- **Communication designers and other creatives** looking to expand their communication design skillset
- **Publishers and content creators** who want to explore visual approaches to communicating their company's message
- **New programmers and coders** who want to learn the R programming language and create sophisticated data visualizations.

Please note that this is an *introductory* course and is designed for people who have never used R. Instructors will send sample data to registered attendees prior to the workshop.

BY THE END OF THE WORKSHOP, ATTENDEES WILL

- Be familiar with different kinds of data visualizations.
- Learn, and exchange ideas about, visualization best practices.
- Be able to read, write, organize their data in R.
- Create various basic data visualizations in R.

WHAT ATTENDEES GET


WHAT YOU NEED TO BRING

Attendees should bring a computer with R and RStudio already installed (installation instructions will be sent to registered attendees). The morning session will be completely analog and will not require a computer. In the afternoon, attendees will work on the computer to learn how to read, write, organize their data, and create data visualizations in R.

WHERE IS IT LOCATED?

This workshop is being held at the Urban Institute at 500 L'Enfant Plaza, Washington, DC 20024. Urban's new office is directly connected to the L'Enfant Plaza Metro Station, which serves the Blue, Orange, Silver, Green, and Yellow lines. Use the *L’Enfant Plaza (D & 9th Street) exit*, located on the upper Yellow/Green line platform toward Huntington/Branch Ave. After the escalators, go through the glass doors into the food court. Walk straight, and Urban is at the end of the long corridor to the right of Five Guys. More directions by car and taxi/rideshare service can be found on the [Urban Institute website](#).

Snacks and drinks will be served at this workshop, but you are on your own for breakfast and lunch. Urban is adjacent to the L’Enfant Plaza food court, which is home to multiple dining options.
# AGENDA

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>9:00a-9:15a</td>
<td>Introductions</td>
<td></td>
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<tr>
<td>9:15a-10:15a</td>
<td><strong>Data Representation: Types of Visualizations</strong></td>
<td>An overview of different graphic types and how they relate to one another.</td>
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<tr>
<td>10:00a-10:15a</td>
<td>Exercise: Identify preattentive attributes</td>
<td>Explore some simple visualizations and identify the preattentive attributes.</td>
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<tr>
<td>10:15a-11:00a</td>
<td><strong>Data Representation: Types of Visualizations</strong></td>
<td>An overview of different graphic types and how they relate to one another.</td>
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<tr>
<td>11:00a-11:15a</td>
<td>Break</td>
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<tr>
<td>11:15a-12:30p</td>
<td><strong>Introduction to Data Visualization Best Practices</strong></td>
<td>An introduction to best practices and strategies for creating visualizations that effectively communicate information &amp; data.</td>
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<tr>
<td>12:30p-1:30p</td>
<td>Lunch on your own</td>
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<tr>
<td>1:30p-2:00p</td>
<td><strong>Installing R and Setting up the Workspace</strong></td>
<td>Get guided through the various set-up, workspace, and common shortcut features of R and RStudio.</td>
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<tr>
<td>2:00p-3:30p</td>
<td><strong>The Grammar of Graphics</strong></td>
<td>A hands-on journey through Leland Wilkinson's grammar of graphics and Hadley Wickham's layered grammar of graphics.</td>
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<tr>
<td>3:30p-3:45p</td>
<td>Break</td>
<td></td>
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<tr>
<td>3:45p-5:00p</td>
<td><strong>Putting it All Together</strong></td>
<td>Work with R to build your own data visualizations that incorporate the day’s lessons.</td>
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INSTRUCTOR BIOS

Jonathan Schwabish is a PhD economist who is passionate about helping people working with data improve the way they communicate their work to a wider audience. Founder of the data visualization and presentation skills firm, PolicyViz, and a Senior Fellow at the Urban Institute, a nonprofit research institution in Washington, DC, Schwabish helps nonprofits, research institutions, and governments at all levels improve how they communicate their work and findings to their partners, constituents, and citizens.

Dr. Schwabish is considered a leader in the data visualization field and is a leading voice for clarity and accessibility in research. He has written on various aspects of how to best visualize data including technical aspects of creation, design best practices, and how to communicate data analysis and research in more accessible ways.

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Aaron R. Williams is a data scientist who is passionate about using data to improve public policy and to strengthen social and economic policy research. A Data Scientist at the Urban Institute, a nonprofit research institution in Washington, DC, Williams uses computer programming, statistics, machine learning, and data visualization to understand and communicate insights about retirement policy and tax policy.

Williams has authored and co-authored several R packages for data visualization and communication, he leads the Urban Institute’s R Users Group, and he collaborates with researchers across the institute on projects that use R programming.

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