The Nuts and Bolts of Evaluation for Community Organizations:

Data Visualization

December 18, 2020
To obtain **continuing education** (CE) hours:

1. Stay for the duration of the session.
2. Demonstrate engagement by participating in chat discussion and any polls.
3. Complete the evaluation that will be distributed 1-2 business days after the session.

- Microphones are muted.
- Live Transcription is available.
- Ask questions through Q&A.
- Use the chat box to share reactions and comments.
- The recording and slide deck will be shared after today’s session.
Who We Are

Program Evaluation Group (PEG) partners with public and private organizations to provide evaluation training, consulting and data services.

https://ssw.umich.edu/research/program-evaluation
"We acknowledge that The University of Michigan, named for Michigami, the world's largest freshwater system and located in the Huron River watershed, was formed and has grown through connections with the land stewarded by Niswi Ishkodewan Anishinaabeg: The Three Fires People who are the Ojibwe, Odawa, and Potawatomi along with their neighbors the Seneca, Delaware, Shawnee and Wyandot nations."
The Nuts and Bolts of Evaluation for Community Organizations

Multi session series

June – December 2020

Practical aspects of conducting evaluation

Free continuing education credits for social workers

View past recordings

http://ssw.umich.edu/offices/program-evaluation/events
Agenda

1. Introductions
2. Why visualize
3. Data visualization basics
4. Choosing the right chart
5. Skill share
6. Questions and answers
POLL: Where do you live?

Don’t live in Michigan? Tell us where in the chat box!
POLL: What sector best describes your affiliation?

1. Business
2. Community development
3. Community member
4. Criminal justice / juvenile justice
5. Education
6. Evaluation
7. Government
8. Healthcare / public health
9. Human services
10. Other (write in the chat box!)
POLL: What is your experience level with data visualization?

- Novice
- Beginner
- Competent
- Proficient
- Expert
What is data visualization?

- The representation of data in a visual format
- A way to synthesize lots of data into easily interpretable information
- Makes meaning of data and communicates purpose
Why do we visualize data?

- Humans are highly visual learners
- Data is more persuasive if shown visually
- Allows trends, patterns, relationships to be seen
- Adds legitimacy/credibility

Confirmed Coronavirus cases in Michigan

Source: Johns Hopkins University
If you have a specific need, there is most likely a software that would be helpful.
# Microsoft Excel for Visualizing Data

## Advantages
- Widely used and widely available
- Compatible with other Microsoft products
- Lots of built in visualization tools
- Tutorials widely available
- Simple and powerful

## Disadvantages
- Manually build visualizations
- Some visualizations require more advanced Excel skillsets
This Webinar

Topics we **WILL** cover

- Basic data visualization principles
- Simple charts and graphs

Topics we will **NOT** cover

- Advanced visualizations
- Mapping functions
- Every single chart or graph offered in Excel
- Qualitative data visualizations (for the most part)
Choosing Colors

Monochromatic

- One color with multiple shades
- Provides sense of cohesion
- Don’t have to worry about matching
- Lacking in contrast
- Human eye can only process ~4 shades

Using Color

- Contrasting colors are great for calling attention
- Colors close to each other on the color wheel create harmony
- Too many colors can be hard for the eye
General Color Conventions

- Darker colors mean more
- Use intuitive colors (e.g. land is green, sea is blue)
- Warm colors advance, cool colors recede
Equity Consideration: Color Blindness

- 1 in 12 men and 1 in 200 women have some form of color blindness (Colour Blind Awareness)
- 99% have red/green color blindness

Resources

Color Blindness Simulator
https://www.colorblindness.com/coblis-colorblindness-simulator/

Color Blindness Accessible Color Palettes
https://venngage.com/blog/color-blind-friendly-palette/
Organizing Data

- Sort data in ways that make it more easily interpretable
- Time moves left to right
- Scales should stay in scale order
- Align text
Labeling Data

- Use unambiguous dates
- Percent should only go up to 100
- Decide if you need decimals
- Title so the most important information is called out
- Label what you are calling attention to
- Heavy gridlines make data hard to see
- You don’t always need labels!

Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.
Data Visualization Basics

- Color
- Length
- Angles and curvature
- Volume (3D)
- Area

Good
Not the best
<table>
<thead>
<tr>
<th>Equity Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Impairments</strong></td>
</tr>
<tr>
<td>• Large, legible fonts</td>
</tr>
<tr>
<td>• Strong contrast colors</td>
</tr>
<tr>
<td>• Lighter color for background, darker color for text</td>
</tr>
<tr>
<td>• Avoid patterned backgrounds</td>
</tr>
<tr>
<td><strong>Neurodiversity</strong></td>
</tr>
<tr>
<td>• Use simple icons</td>
</tr>
<tr>
<td>• Avoid walls of text</td>
</tr>
<tr>
<td>• Use bulleted lists</td>
</tr>
<tr>
<td>• Clean, simple backgrounds</td>
</tr>
<tr>
<td>• Large fonts</td>
</tr>
<tr>
<td><strong>Dyslexia</strong></td>
</tr>
<tr>
<td>• Use sans-serif fonts</td>
</tr>
<tr>
<td>• Double spacing between words</td>
</tr>
<tr>
<td>• Avoid italics</td>
</tr>
<tr>
<td>• Avoid asymmetry</td>
</tr>
<tr>
<td>• Read from left to right</td>
</tr>
<tr>
<td>• Simple layout</td>
</tr>
</tbody>
</table>
Sans-Serif Fonts

- Arial
- Calibri
- Century Gothic
- Franklin Gothic Book
- Gill Sans MT
- Tahoma
- Verdana

Serif Fonts

- Times New Roman
- Garamond
- Book Antiqua
- Cambria
- Century
- Georgia
- Perpetua
Pulse Check: How are you feeling?

- Confused
- Overwhelmed
- Relaxed
- Engaged
- Excited
Choosing the Right Visual

- Tells the story you want to tell
- Easiest to interpret
- Accurate interpretations

The right visual!
Chart Choosers

Chart Chooser

Comparison

What would you like to show?

Relationship

Changing Over Time

Composition

Distribution

Changing Over Time

Composition

Three or More Variables

Many Variables

One Variable

Two Variables

Three or More Variables

Many Variables

Chart Choosers

© 2020 Andrei V. Aleva, Dr. Alveta@ExtemePresentation.com
www.axteme.com
Choosing the Right Visual: Tells the Story you want to tell

This one thing is very important!

These two things are different (or the same)!

These things are related!

Here are the results from our survey!
Question: Do adults living at the senior living facility enjoy their life overall?

64% enjoy their life overall

64% enjoy
Do Not Enjoy
64% enjoy their life overall
These two things are different (or the same)!

Question: Are adults living in the senior living facility enjoying their life overall more or less than last year?

Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.
These things are related!

Question: What are some other positives seniors have when they participate in more activities?

- More activities
- Quality of life is higher
- Look forward to things more
- Enjoy life more overall
Here are the results from our survey!

Question: What did our survey tell us about seniors' quality of life?

64% enjoy their life overall.
Let’s look at some data visualizations!

Oh no! No!

Good to go!
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.

Pie charts should represent parts of a whole and we are not the best at understanding volume and angles.
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.
Number of Activities Seniors Participate in

Only sort data if it makes it easier to interpret!
Number of Activities Seniors Participate in

Easier to understand sorted by number of activities
Most seniors participate in 1-4 activities

- 63% of seniors participate in 1-4 activities
- 37% of seniors participate in 5 or more activities

Average number of activities seniors participate in:
- 4 activities

The most activities any senior participates in:
- 9 activities

Drill down into what it is you are trying to say with your data.
What activities seniors are interested in

Takes effort to make meaning from the data
Seniors are most interested in participating in walking, reading, and swimming.

Data sorted to make interpretation easier.
74% of residents identify as female

Axis is cluttered, slope graph should show change between related values, gridlines unnecessary.
74% of residents identify as female
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>64%</td>
</tr>
<tr>
<td>2019</td>
<td>99%</td>
</tr>
</tbody>
</table>
Ways Data Visualization Can Mislead

- Manipulating the Y-Axis
- Cherry Picking Data
- Using the wrong graph
- Going against conventions
When Data Visualization Misses the Mark

2016 Election Results by Surface Area

2016 Election Results by Population

Source: Karim Douieb
Pulse Check: How are you feeling?

- Confused
- Overwhelmed
- Relaxed
- Engaged
- Excited
Live Tutorial

- Pivot chart
- Formatting your chart
My Charts And Graphs Are:

- Easy to comprehend
- Fascinating
- Boring
- Hard to comprehend

My perception:
- Everyone else:
- Source: https://visme.co/blog/funny-graphs/


Write in the chat box!
Introducing a new webinar series:

The Nuts and Bolts of Evaluation for Community Organizations
Presented by the University of Michigan School of Social Work Program Evaluation Group

Stay in Touch!
SSW.PEG.Team@umich.edu
CE Questions
SSW.conted@umich.edu
Past Webinar Recordings
https://ssw.umich.edu/offices/program-evaluation/events