SCHOOL OF SOCIAL WORK
PROGRAM EVALUATION GROUP
UNIVERSITY OF MICHIGAN

partnering with you
TO MEASURE WHAT MATTERS

The Nuts and Bolts of Evaluation for Community Organizations:

# Data Visualization

December 18, 2020

# Housekeeping

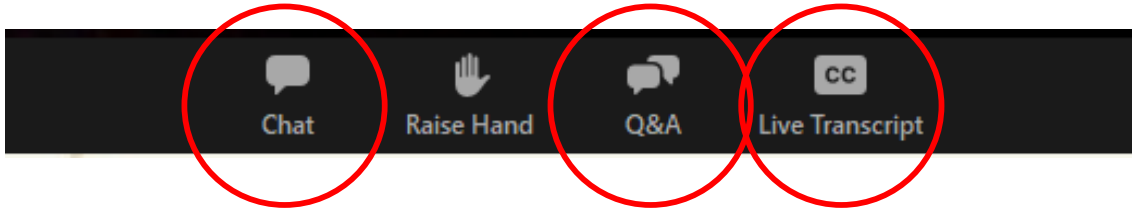
To obtain **continuing education** (CE) hours:

***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

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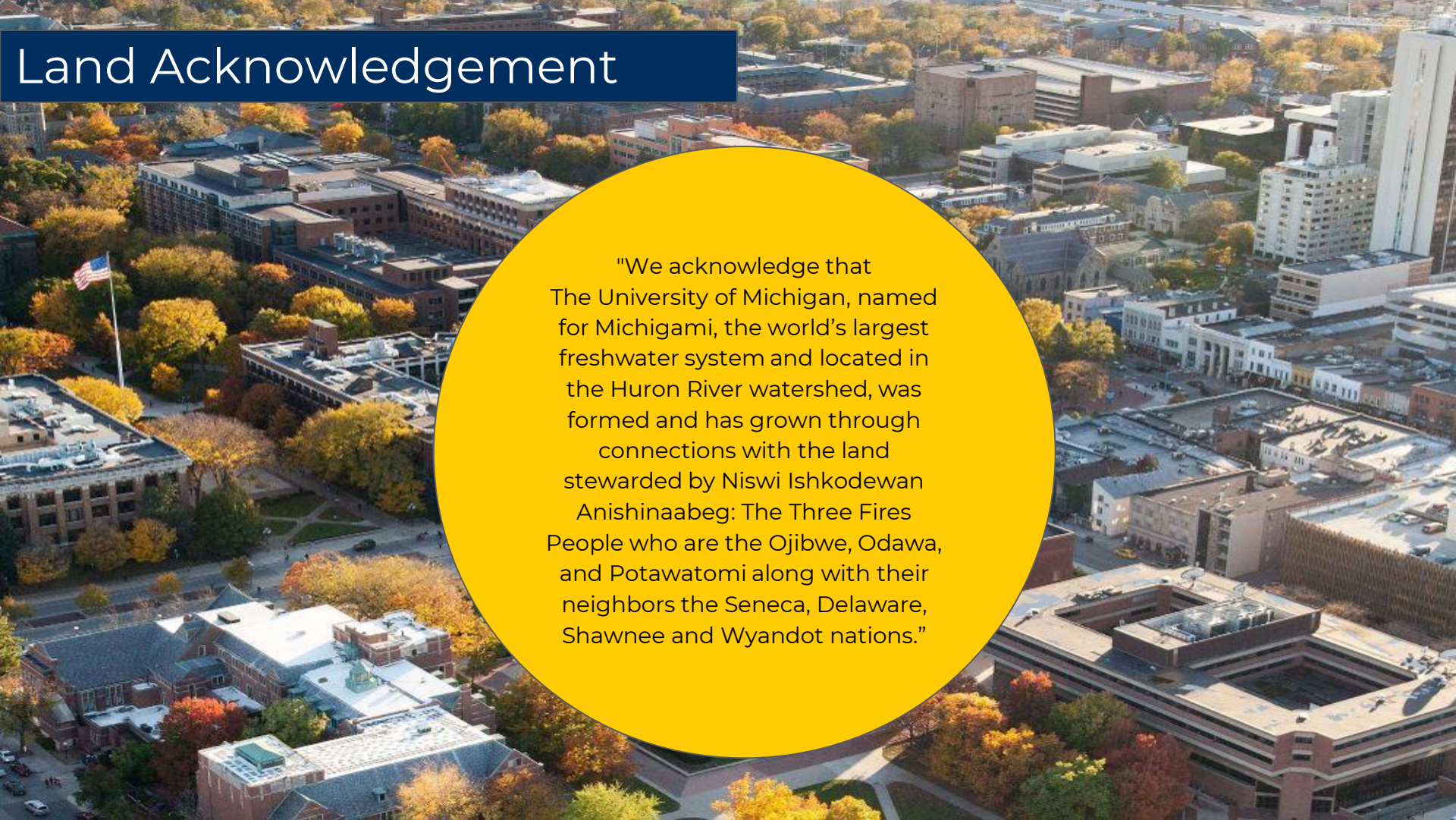
# Land Acknowledgement



"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."

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TO MEASURE WHAT MATTERS

Webinar 1: Using Technology to Collect Data

Webinar 2: Creating an Evaluation Plan

Webinar 3: Evaluation Methods

Webinar 4: Survey Design

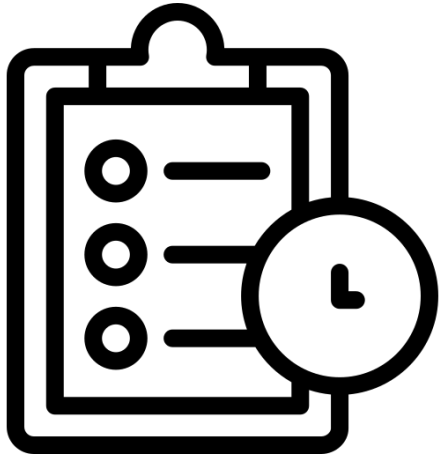
Webinar 5: Using Excel for Evaluation

Webinar 6: Data Visualization

- 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

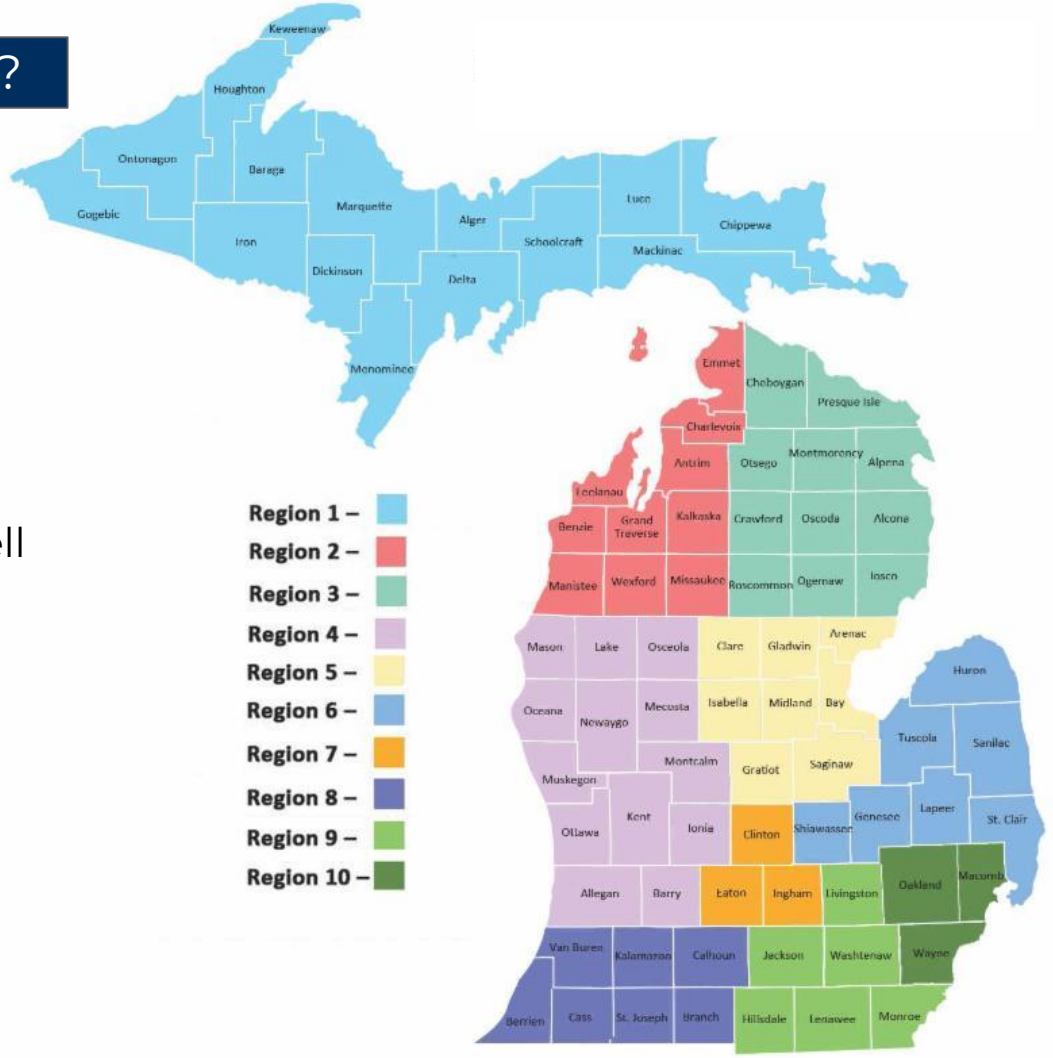
# Agenda

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

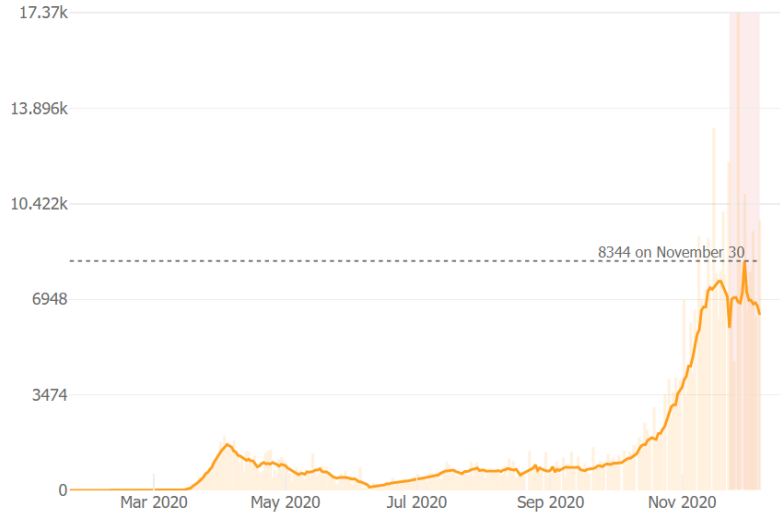
# What is data visualization?

- 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

# Data Visualization Software










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

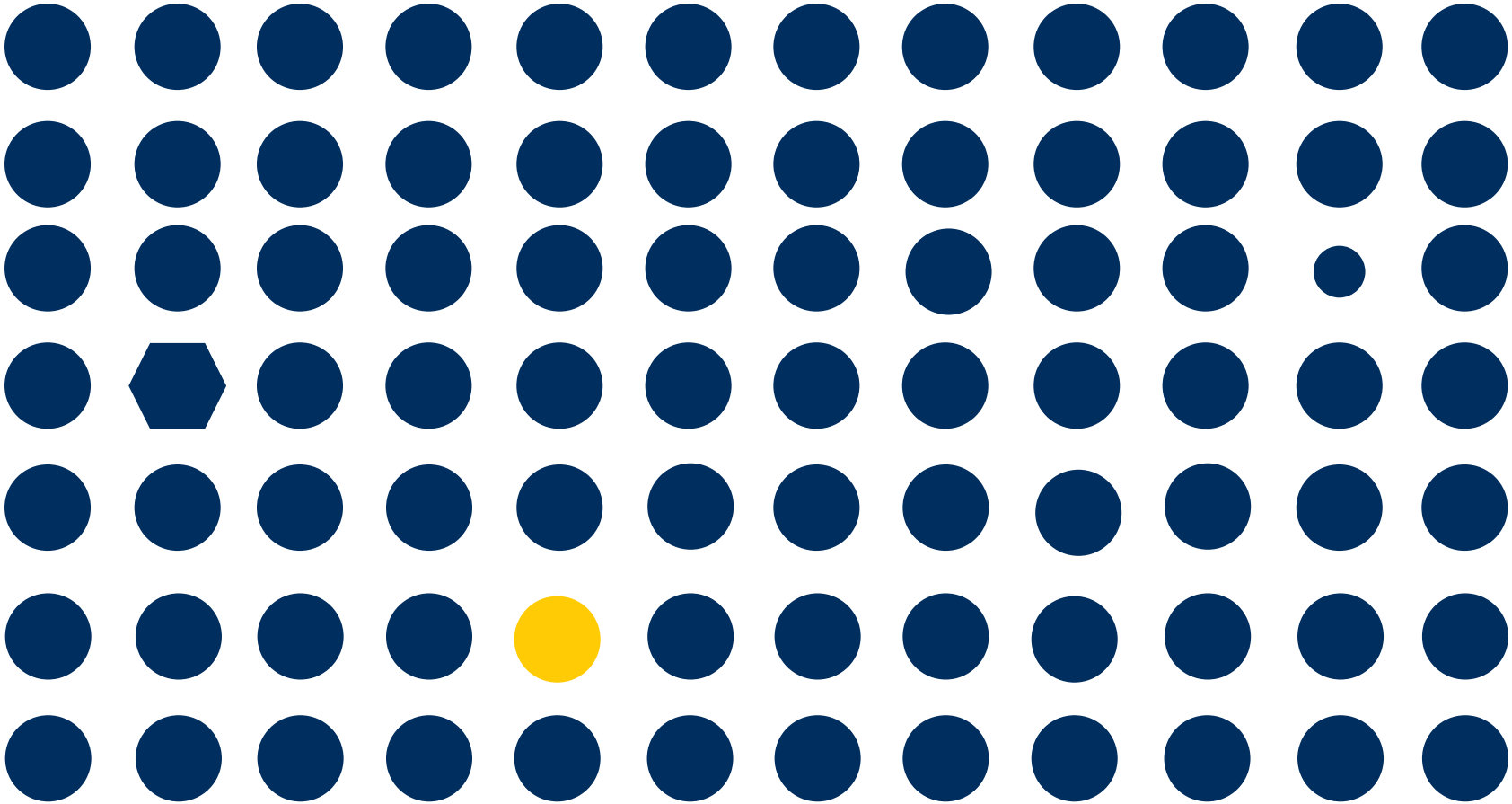
# This Webinar

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

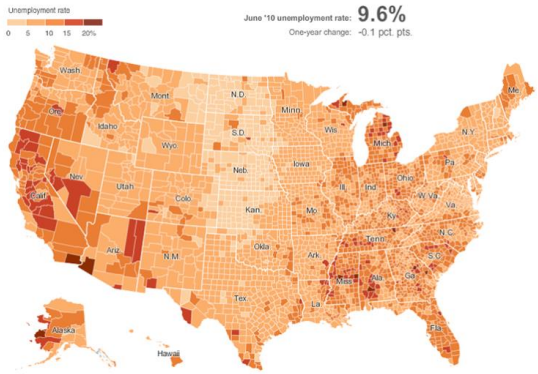
- One color with multiple shades
- Provides sense of cohesion
- Don’t have to worry about matching
- Lacking in contrast
- Human eye can only process ~4 shades

## 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

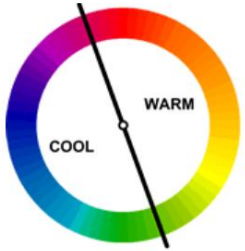
# General Color Conventions

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




Earth's Surface

Sea Land




# 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

Normal vision

Green-weak

Green-blind

**Resources**

Color Blindness Simulator

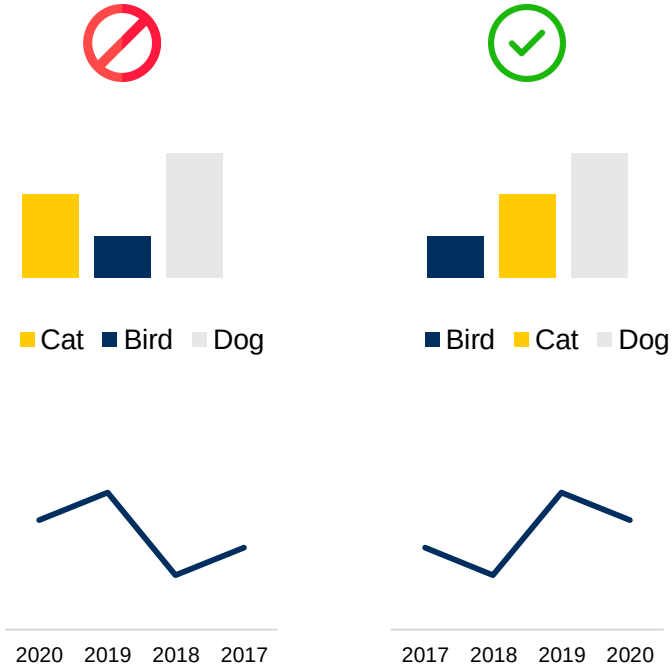
https://www.color-blindness.com/coblis-color-blindness-simulator/

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

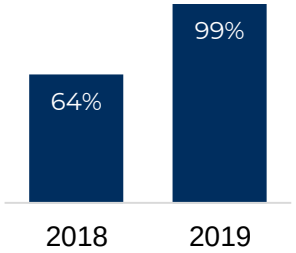


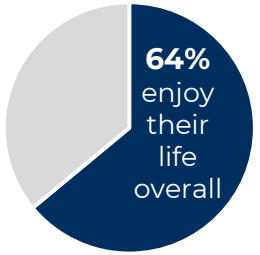
# Labeling Data

- 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!

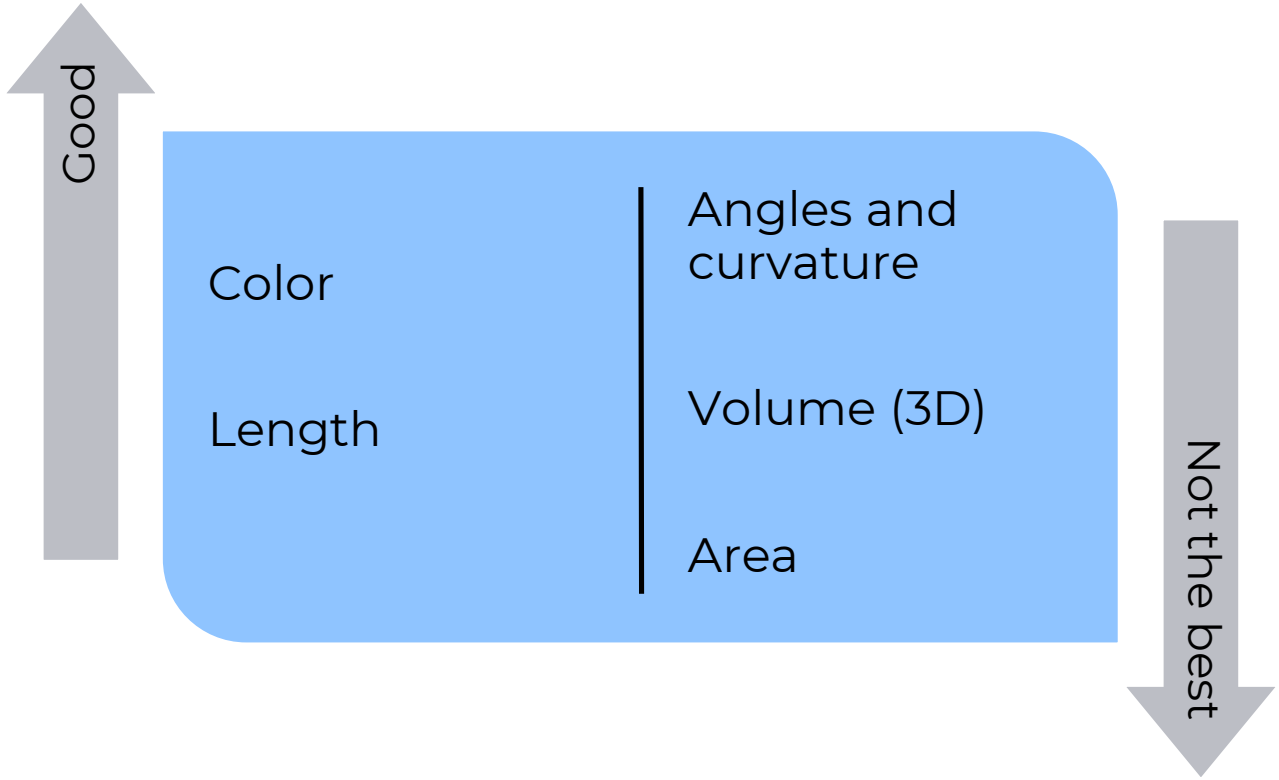
01/02 = January 2nd / February 1st / January 2002

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



# Data Visualization Basics



# Equity Considerations

## Visual Impairments

- Large, legible fonts
- Strong contrasting colors
- Lighter color for background, darker color for text
- Avoid patterned backgrounds

## Neurodiversity

- Use simple icons
- Avoid walls of text
- Use bulleted lists
- Clean, simple backgrounds
- Large fonts

## Dyslexia

- Use sans-serif fonts
- Double spacing between words
- Avoid italics
- Avoid asymmetry
- Read from left to right
- Simple layout

# Fonts

**Sans-Serif Fonts**

Arial

Calibri

Century Gothic

Franklin Gothic Book

Gill Sans MT

Tahoma

Verdana


Times New Roman

Garamond

Book Antigua

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

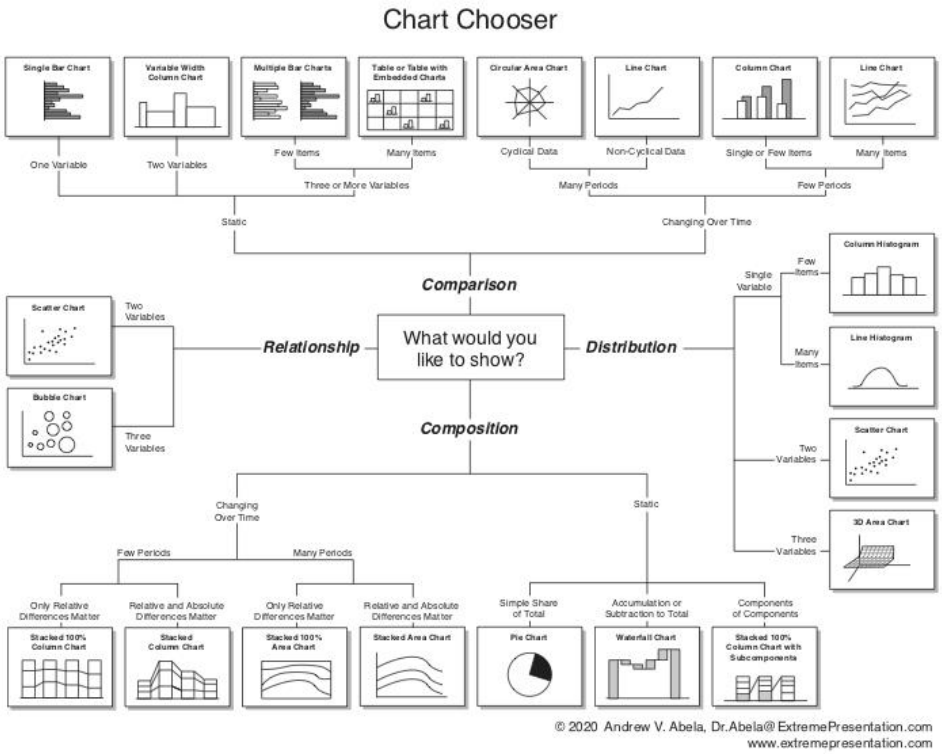
Easiest to interpret

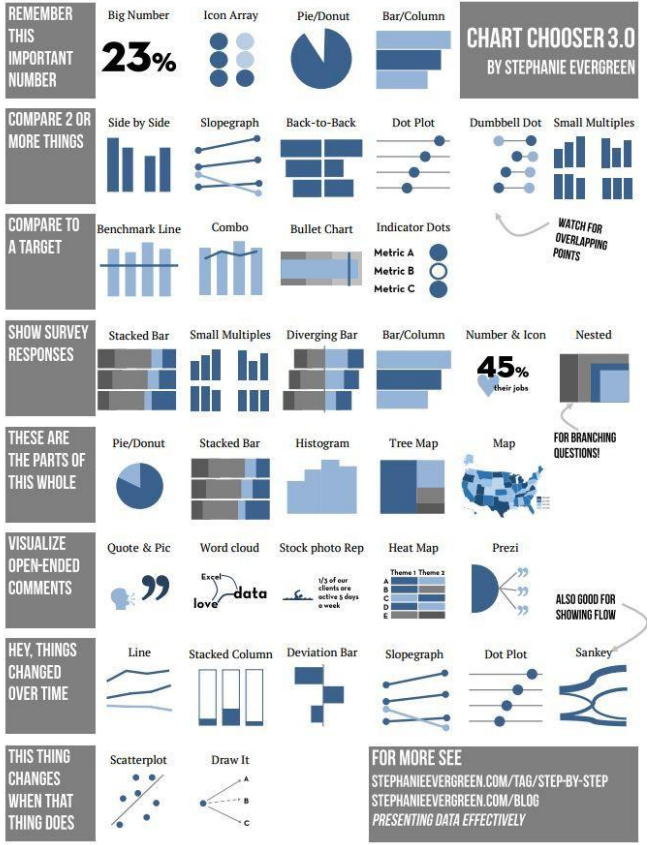
Accurate interpretations

=

The right visual!

# Chart Choosers



# 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!

# Choosing the Right Visuals

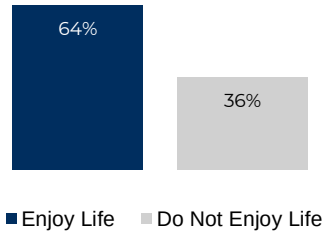
**This one thing is very important!**

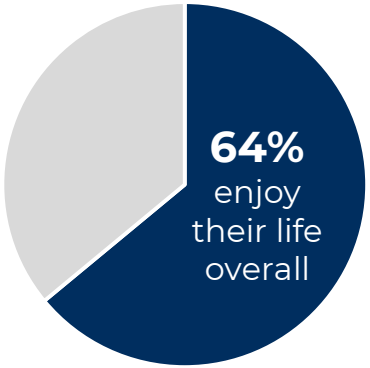
Question: Do adults living at the senior living facility enjoy their life overall?

**64%**

enjoy their life overall

**64%** enjoy their life overall



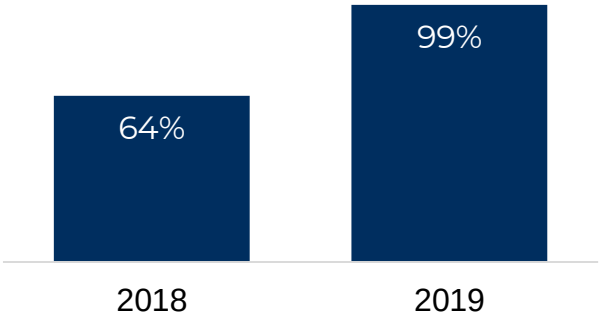



# Choosing the Right Visuals

**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.

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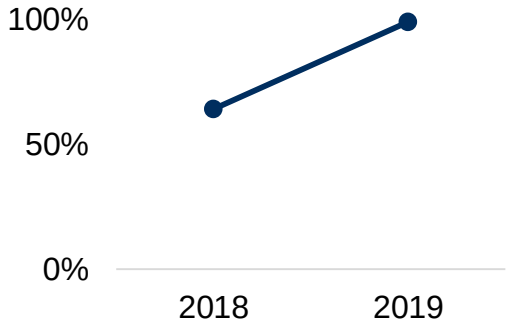


# Choosing the Right Visuals

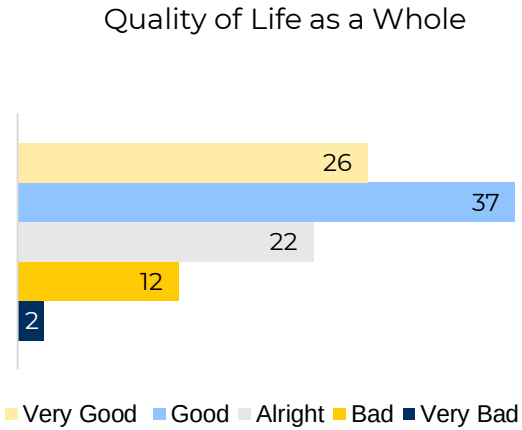
**These things are related!**

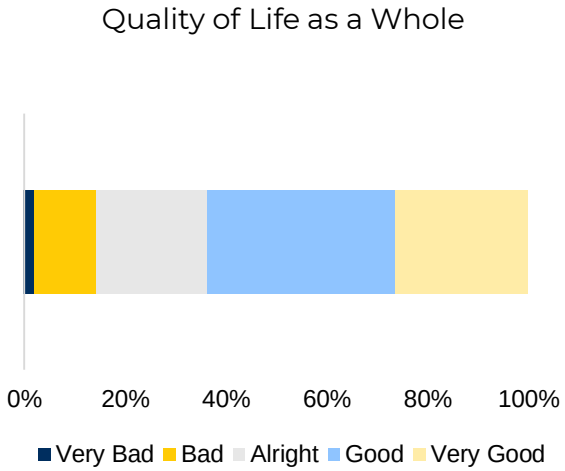
Question: What are some other positives seniors have when they participate in more activities?

# Choosing the Right Visuals

**Here are the results from our survey!**

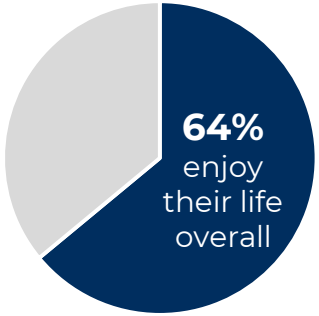
Question: What did our survey tell us about seniors quality of life?




**64%**

enjoy their life overall

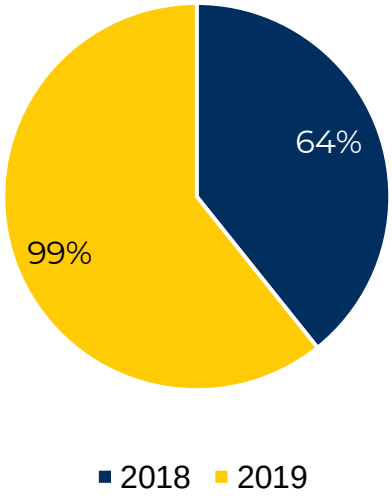


# Let’s look at some data visualizations!

Oh no! No!

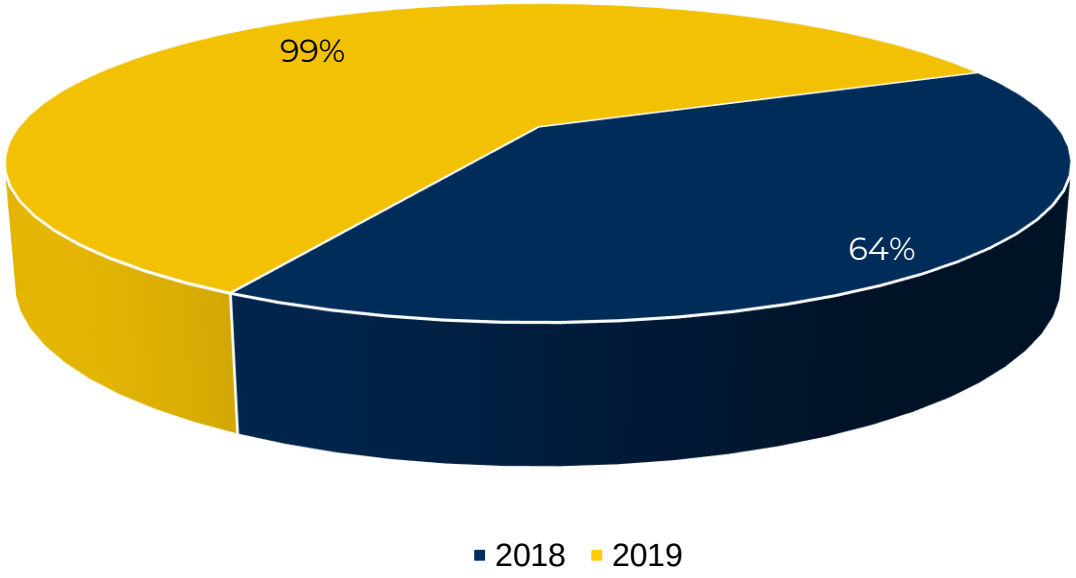
Good to go!

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



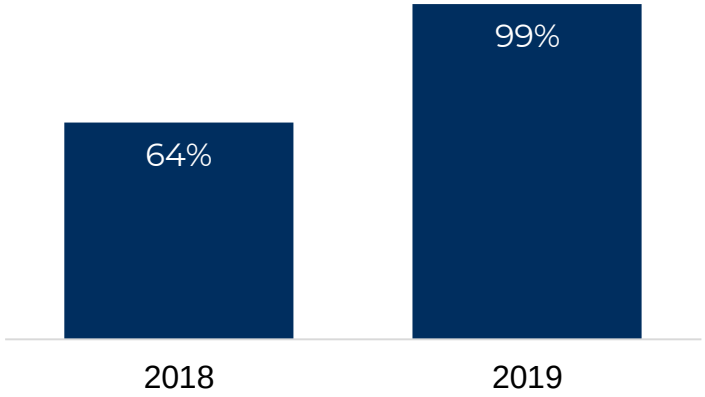

Pie charts should represent parts of a whole

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

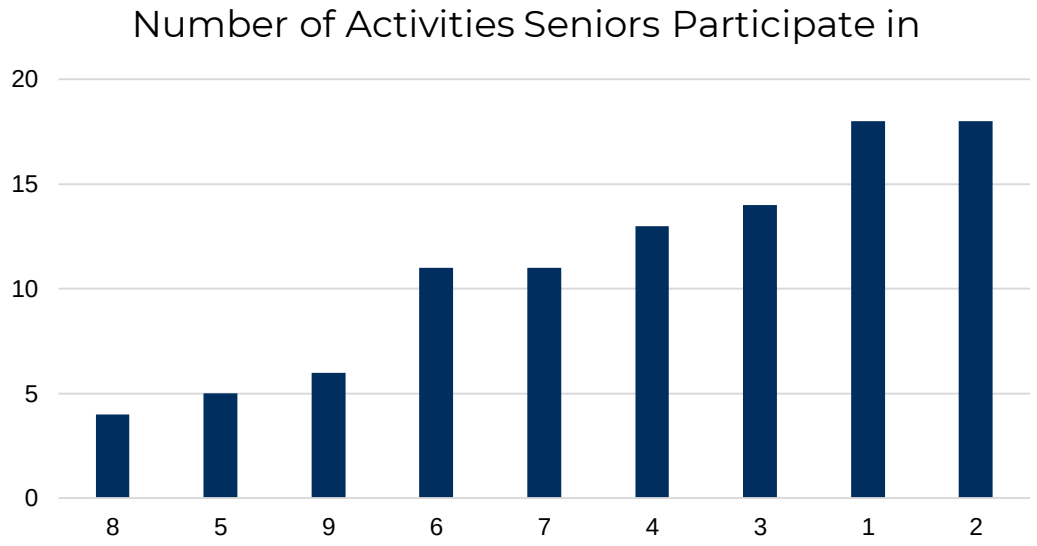



Pie charts should represent parts of a whole and we are not the best at understanding volume and angles

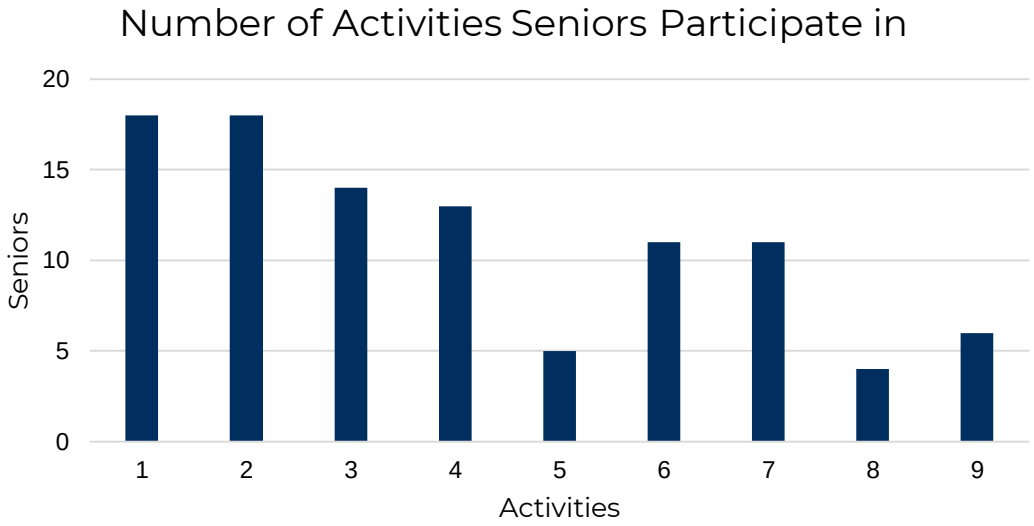
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.




Time moves left to right, easily compare two numbers.

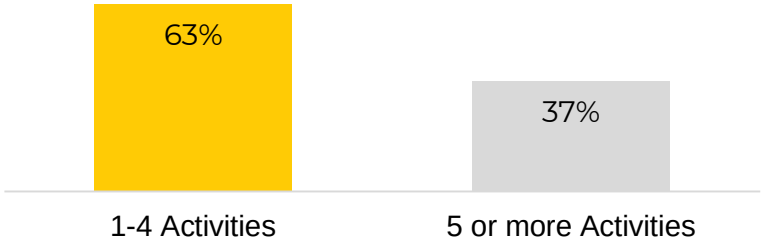



Only sort data if it makes it easier to interpret!




Easier to understand sorted by number of activities

Most seniors participate in 1-4 activities



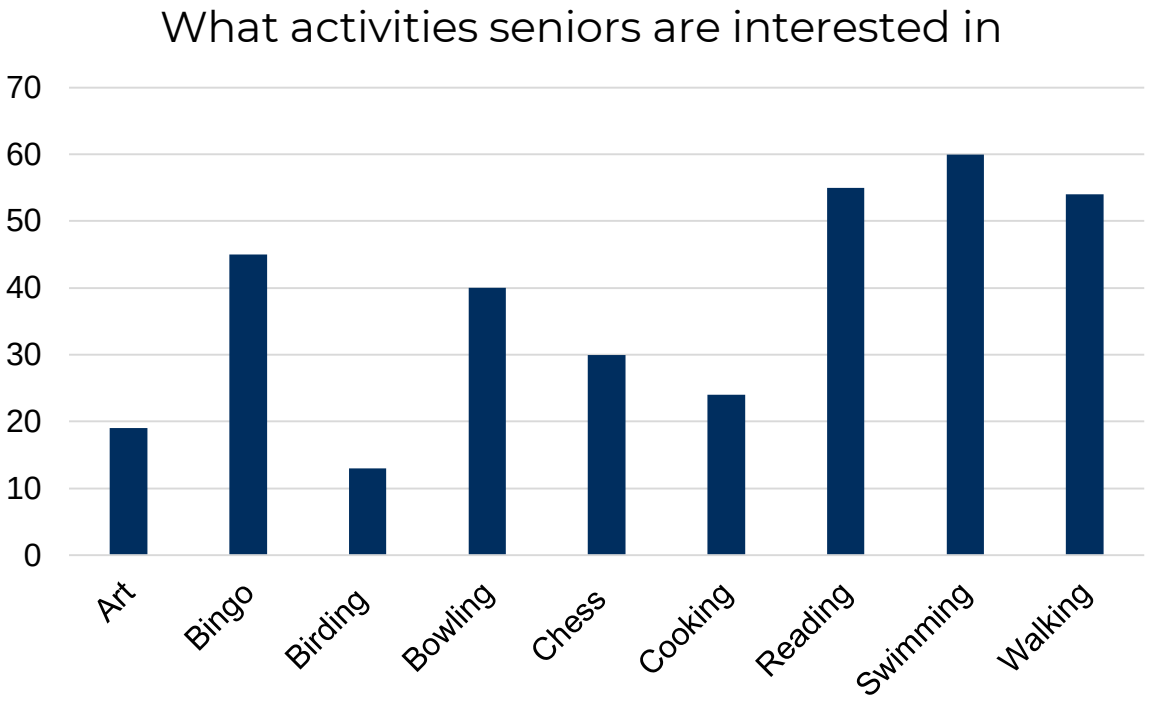

**4**

Average number of activities seniors participate in

**9**

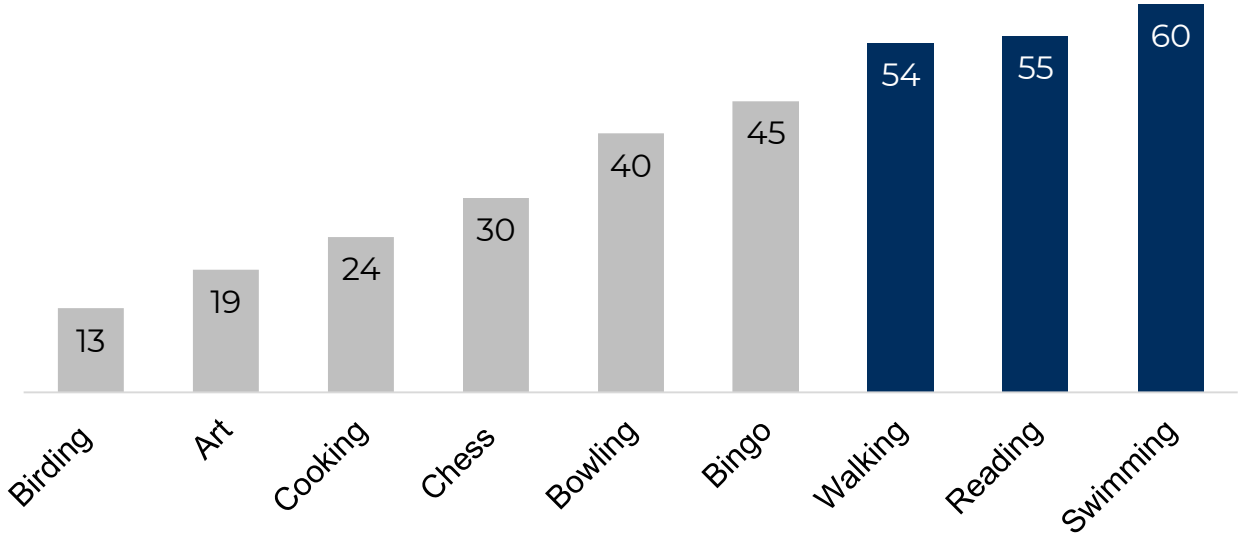
The most activities any senior participates in

Drill down into what it is you are trying to say with your data

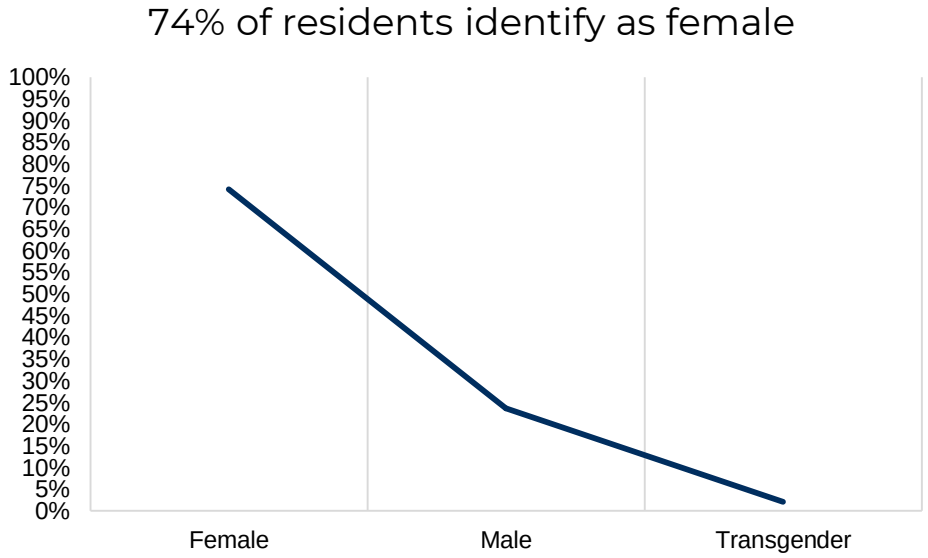



Takes effort to make meaning from the data

Seniors are most interested in participating in walking, reading, and swimming.

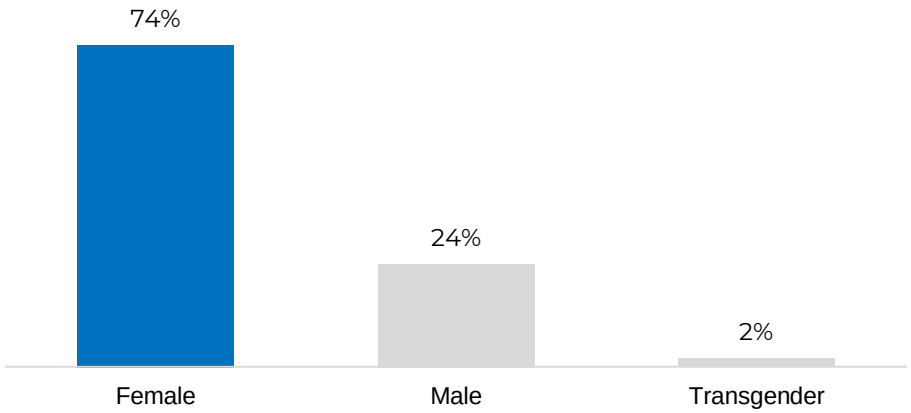



Data sorted to make interpretation easier



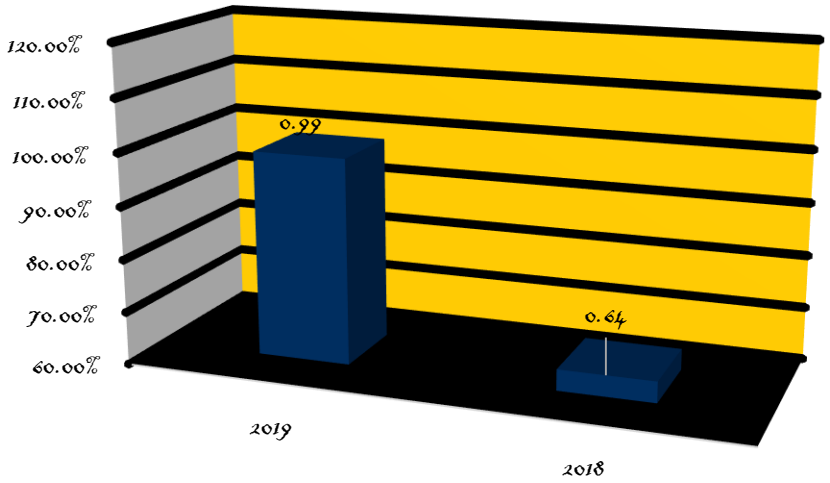

Axis is cluttered, slope graph should show change between related values, gridlines unnecessary

74% of residents identify as female



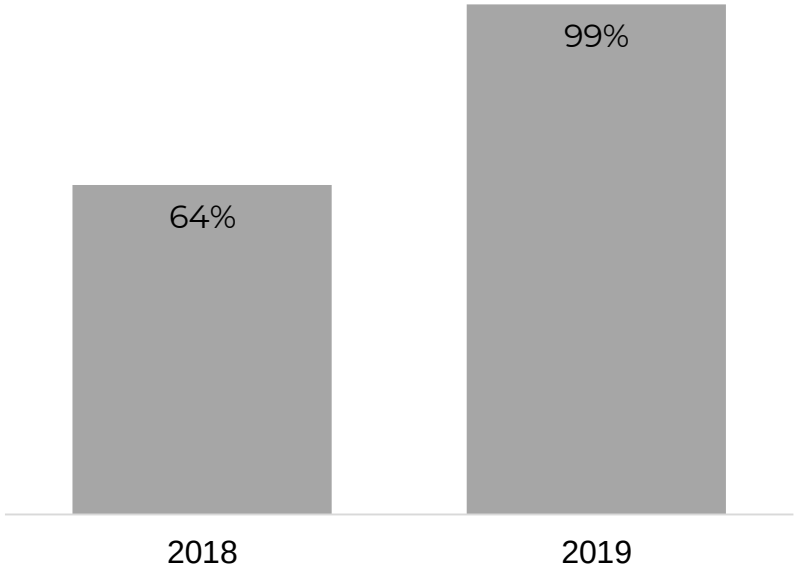

Color used to draw attention, data clearly labeled, sorted highest to lowest

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




Hard to read, decimals, percentages, axis labels, gridlines, volume, angles... etc.

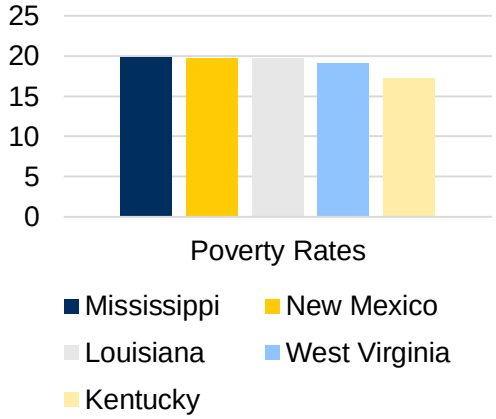
Overall, adults in the senior living facility enjoy their life more in 2019 than they did in 2018.

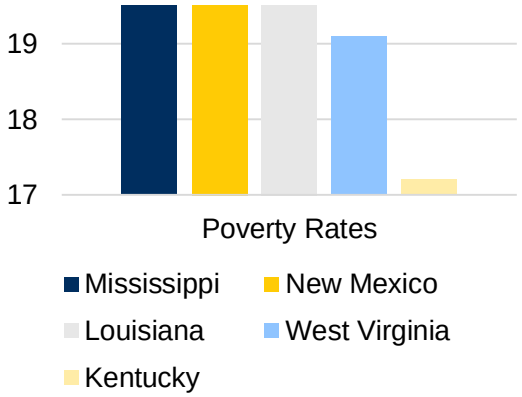



Easy to read, easy to interpret, time moves left to right, no gridlines

# Ways Data Visualization Can Mislead

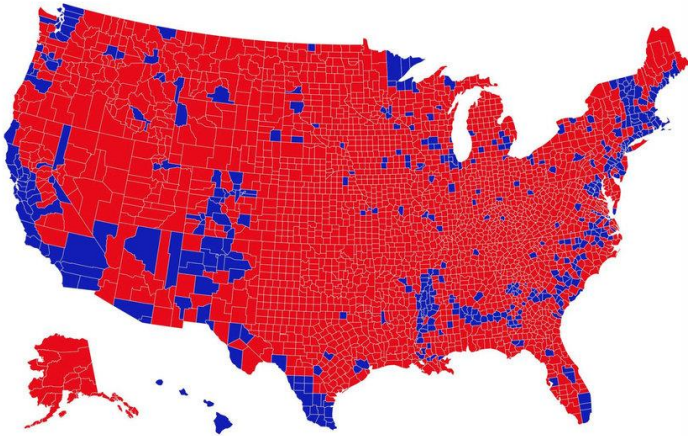
- Manipulating the Y-Axis
- Cherry Picking Data
- Using the wrong graph
- Going against conventions



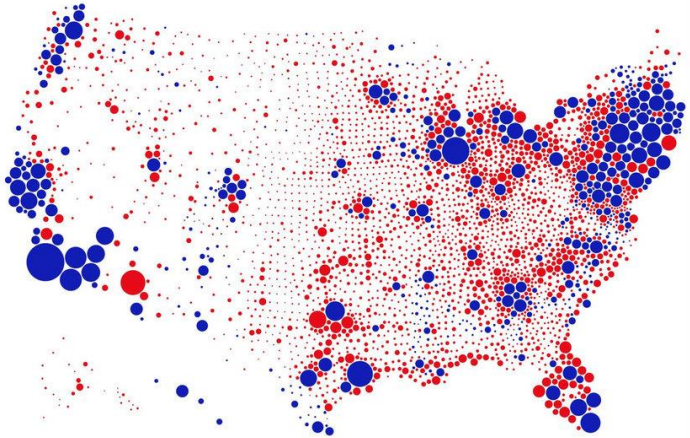



# When Data Visualization Misses the Mark

2016 Election Results by Surface Area



2016 Election Results by Population



Source: Karim Douïeb

# Pulse Check: How are you feeling?

Confused

Overwhelmed

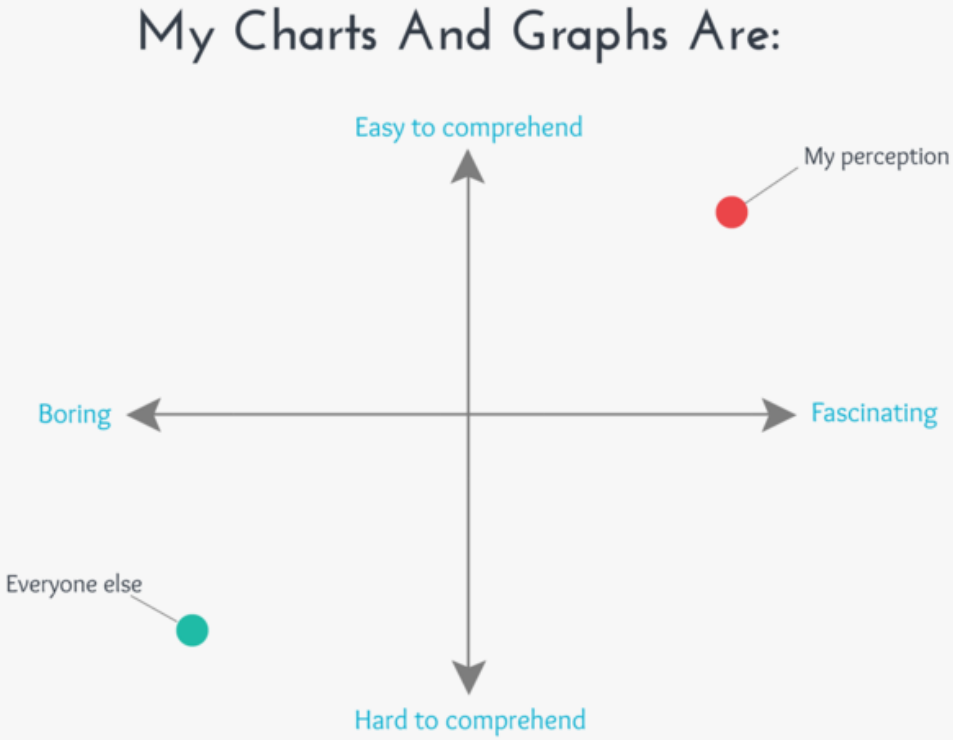
Relaxed

Engaged

Excited

# Live Tutorial

- Pivot chart
- Formatting your chart




Source: https://visme.co/blog/funny-graphs/

# Literature Reviewed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# What additional support would you like from us in the future?

**Nuts and Bolts of Evaluation Session 1**

Webinar 1: Using Technology to Collect Data

Webinar 2: Creating an Evaluation Plan

Webinar 3: Evaluation Methods

Webinar 4: Survey Design

Webinar 5: Using Excel for Evaluation

Webinar 6: Data Visualization

Write in the chat box!

# Questions and Feedback

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!

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## CE Questions

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## Past Webinar Recordings

https://ssw.umich.edu/offices/program-evaluation/events