



UNCG Libraries Research &
Application Webinar:

FREE DATA VISUALIZATION TOOLS

for your Research Toolbelt

A hand-drawn rectangular frame with rounded corners, drawn in a dark blue ink. The frame is decorated with several elements: a zigzag line at the top center, a double line at the bottom center, an arrow pointing down on the left side, an 'x' mark on the left side, an 'x' mark on the right side, and an arrow pointing up on the right side. The text "Can you recommend any easy tools?" is written in a bold, dark red font in the center of the frame.

“Can you recommend any easy tools?”

PICKING THE RIGHT TOOL

1. What data do you work with?
2. What tools do you use to interact with your data?
3. What are you trying to create and why?

④ Digital logic

Inverter



XOR



$$X = A \oplus B$$

XNOR



$$X = \overline{A \oplus B}$$

⑥



Ex. 00100

Hexadecimal

16 ⁴	16 ³	16 ²	16 ¹	16 ⁰
65536	4096	256	16	1



LET'S LOOK AT SOME TOOLS

THE ONE YOU ALREADY HAVE

Spreadsheet programs - Excel, Numbers, Sheets

- X Multi-function
- X Tabular data (“rows and columns”)
- X Graphical User Interface (GUI) w/buttons
- X “Quick-and-easy”



THE ONE YOU ALREADY HAVE



MICROSOFT EXCEL



GOOGLE SHEETS



NUMBERS



LIBRE CALC



Popular &
versatile

Embed &
export easily

Standard on
Macs

Extensive
customization



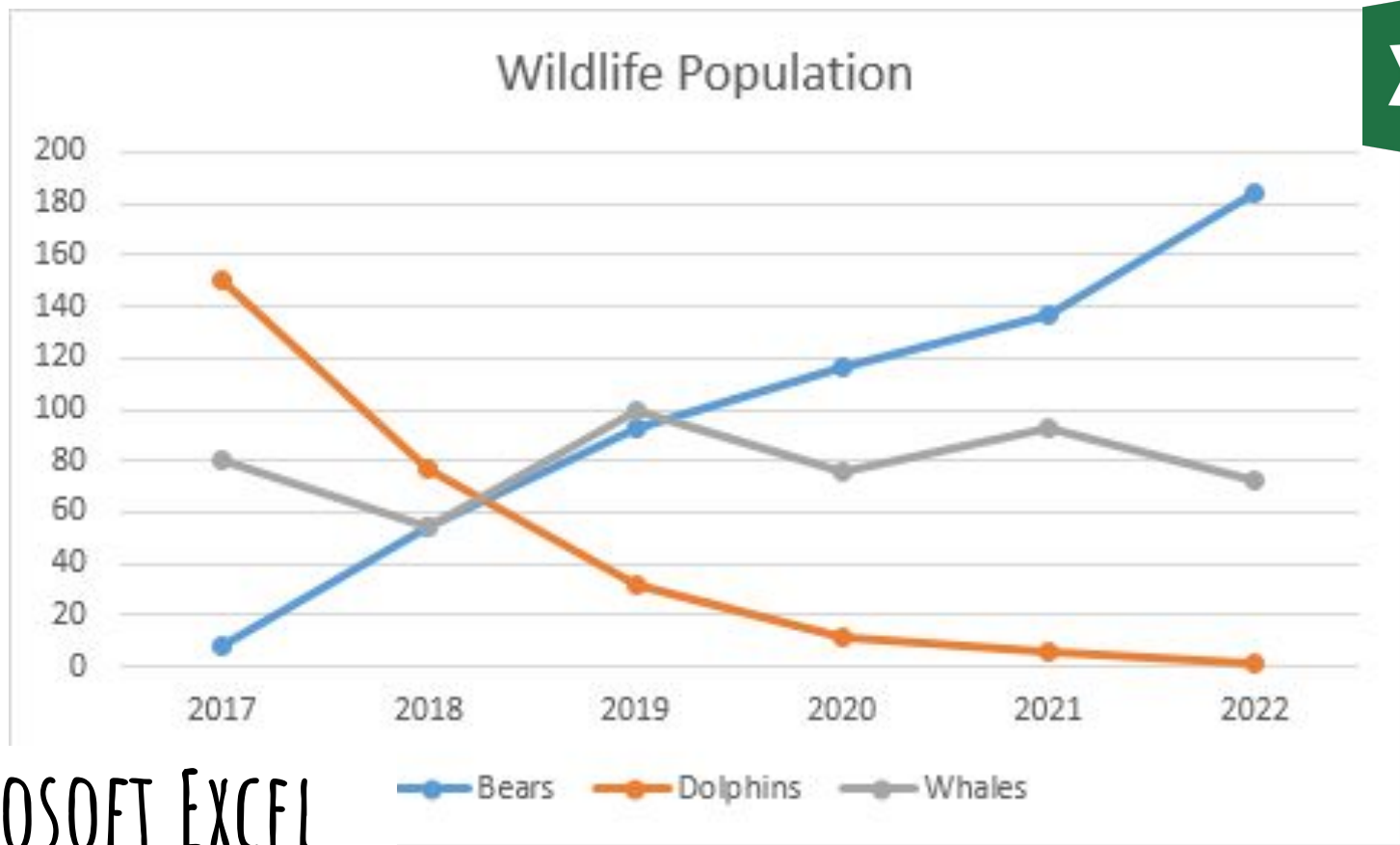
\$

Need an
account &
internet

Only
available on
Macs

Unintuitive

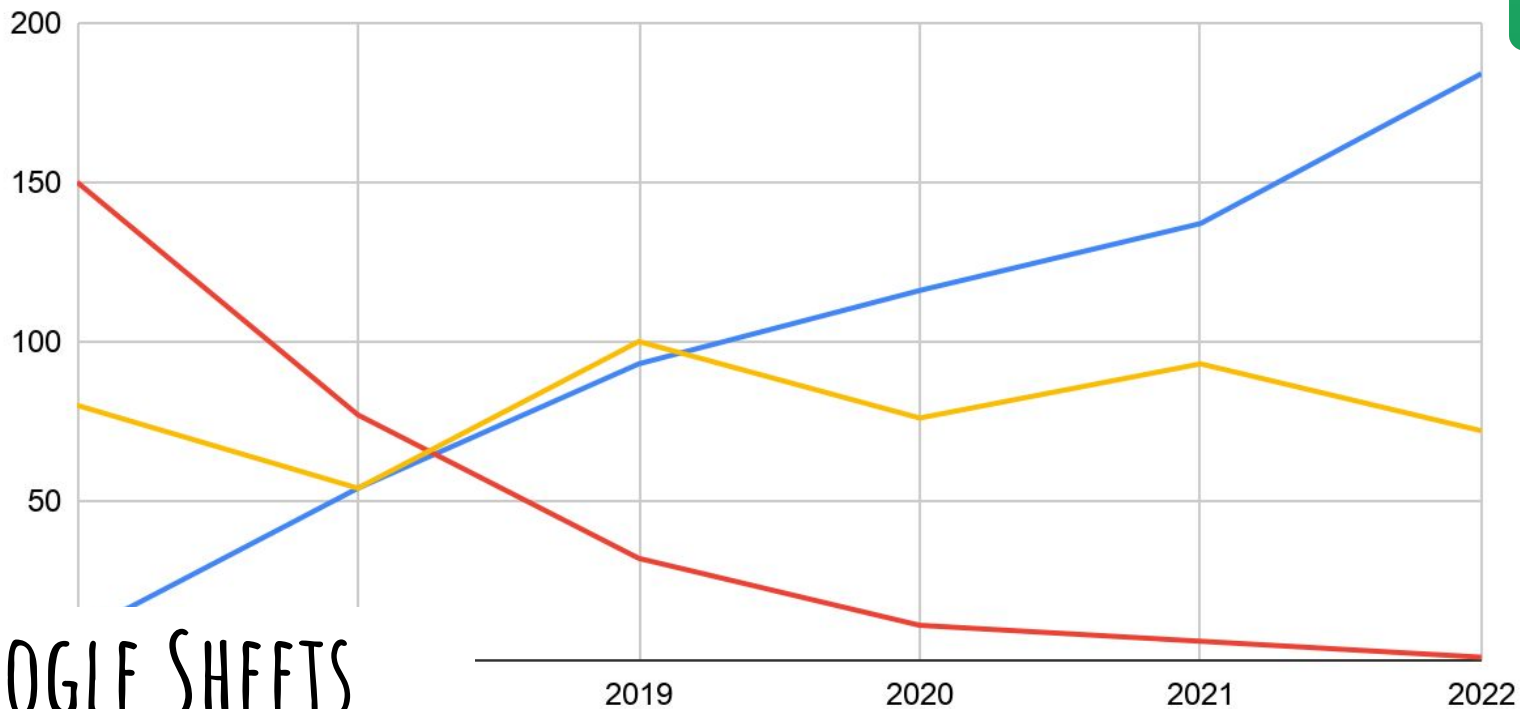




MICROSOFT EXCEL

Wildlife Population

— Bears — Dolphins — Whales



GOOGLE SHEETS

THE INFOGRAPHIC DESIGNER

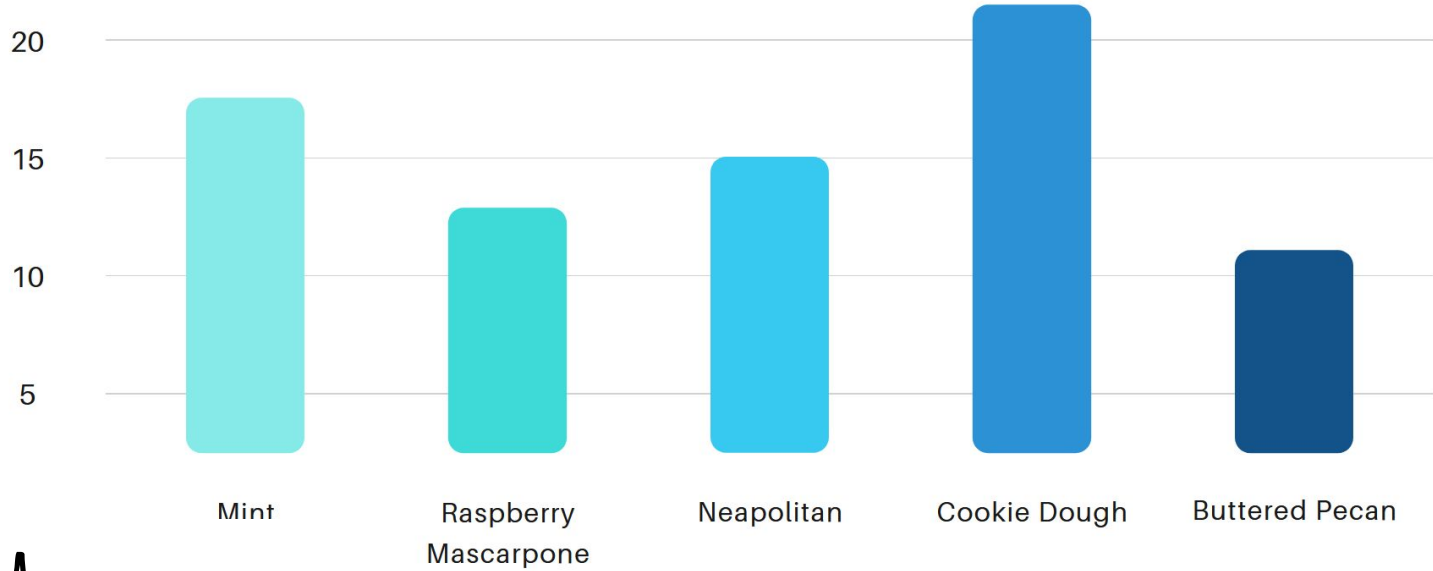
Web-based design apps: Canva, Piktochart, Infogram

- ✗ Great for marketing & outreach, creative reports, & assignments
- ✗ Graphical User Interface (GUI) w/buttons
- ✗ Canva: media (slides, flyers, infographics) (example)
- ✗ Piktochart: infographics (example)
- ✗ Infogram: infographics, reports, data dashboards (example)



What's your flavor?

The Scoop Group Ice Cream Survey



CANVA

SOCIAL MEDIA PLATFORMS



Facebook
60%



Instagram
20%



Twitter
80%



Google +
10%

RESPONSES



Like

Share

Did Nothing

PIKTOCHART

INFOGRAM

LAST UPDATE: 18 JAN 2018

NEW CUSTOMERS

+9%
LAST 30 DAYS



REVENUE YTD

\$1,213,136

+22%
VS LAST YEAR



EMPLOYEE SATISFACTION

81%

-2%
LAST 30 DAYS



NPS SCORE

35

-6
LAST 30 DAYS



CONVERSION RATE



WEBSITE VISITORS

213,136

+9%
LAST 30 DAYS

MONTHLY ACTIVE USERS

78,136

+2%
LAST 30 DAYS

NUMBER OF TRIALS

7,085

+14%
LAST 30 DAYS

CUSTOMER ACQUISITION COST

\$840

-7%
LAST 30 DAYS

SALES & CUSTOMERS BY REGION

SALES

CUSTOMERS



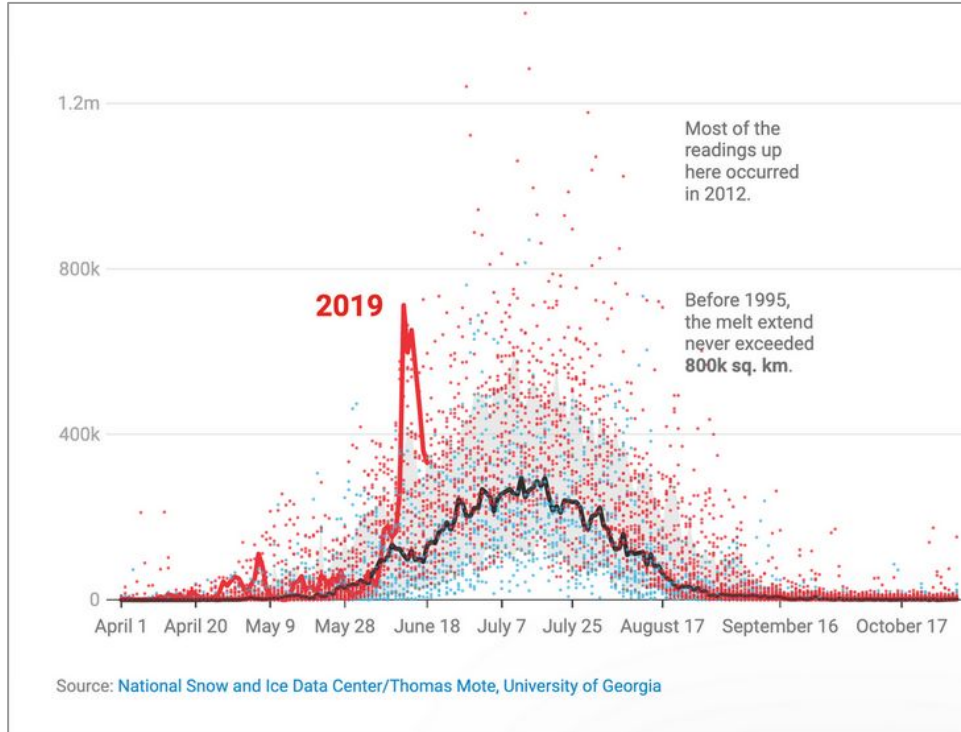
THE DATA-VIZ DESIGNER

Web-based data viz design apps: Datawrapper & RAWGraphs

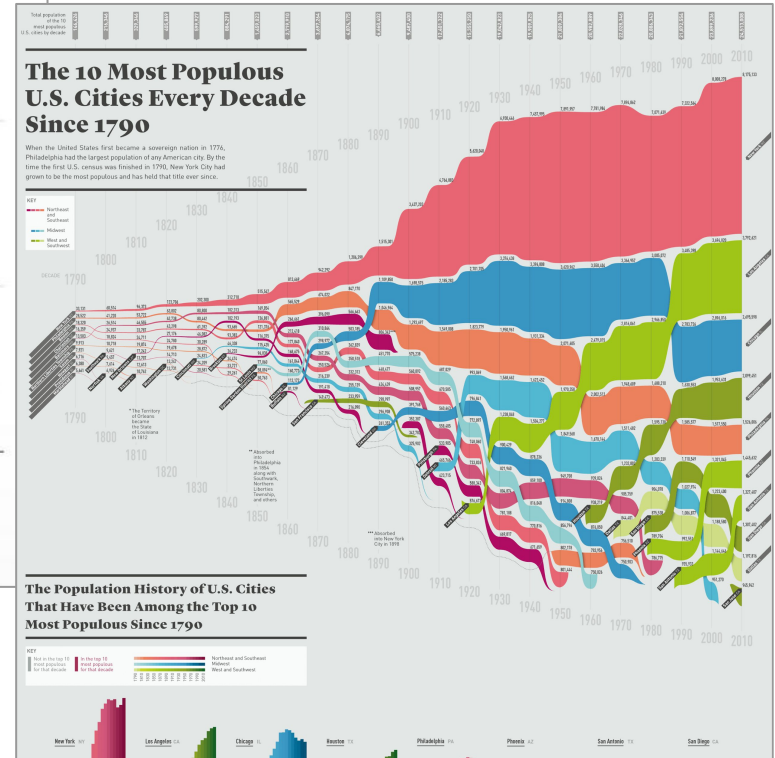
- ✗ Graphical User Interface (GUI) w/buttons
- ✗ Variety of chart types: maps, more complex viz
- ✗ Variety of export options
- ✗ Datawrapper example; Datawrapper
- ✗ RAWGraphs example; RAWGraphs



RAWGRAPH



DATAWRAPPER



THE DATA-VIZ WHIZ

Data viz design software: Tableau Public

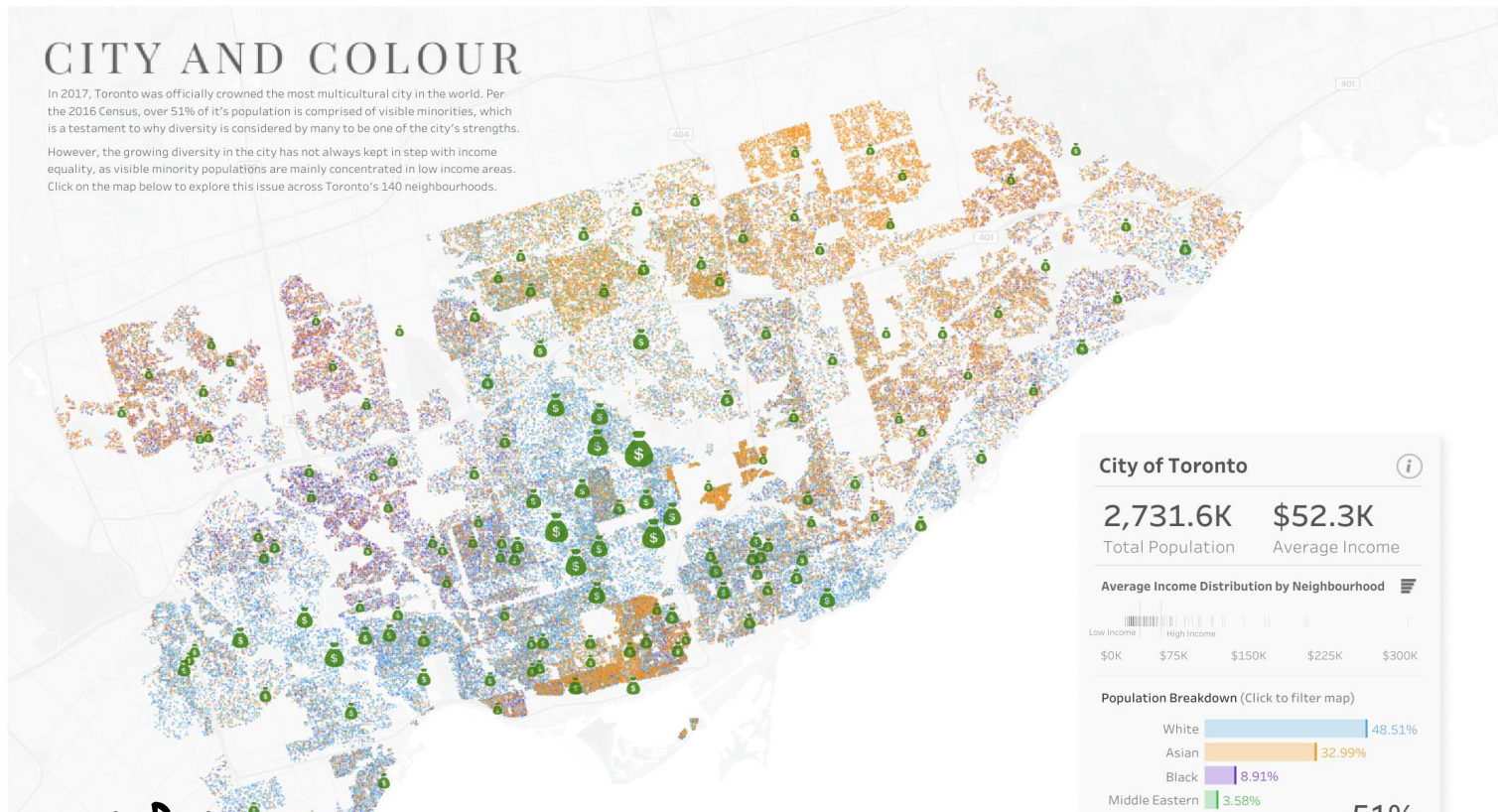
- ✗ Graphical User Interface (GUI) w/buttons
- ✗ Variety of chart types: maps, more complex viz
- ✗ Variety of export options
- ✗ Limited features vs full version
- ✗ Tableau Public example; Tableau Public



CITY AND COLOUR

In 2017, Toronto was officially crowned the most multicultural city in the world. Per the 2016 Census, over 51% of its population is comprised of visible minorities, which is a testament to why diversity is considered by many to be one of the city's strengths.

However, the growing diversity in the city has not always kept in step with income equality, as visible minority populations are mainly concentrated in low income areas. Click on the map below to explore this issue across Toronto's 140 neighbourhoods.



City of Toronto

2,731.6K

Total Population

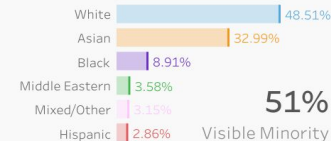
\$52.3K

Average Income

Average Income Distribution by Neighbourhood



Population Breakdown (Click to filter map)



● Average Income per Person (SCAD Pre-Tax)
● Equivalent to 20 People (Randomly Plotted)

Data Source: 2016 Census, Toronto Open Data Portal | Designed By: @jrcopreros

TABLEAU PUBLIC

THE NETWORK ANALYST

Network analysis software and web-based tools

- ✗ Graphical User Interface (GUI) w/buttons
- ✗ Focus on network & relationships
- ✗ Variety of export options
- ✗ Gephi - software; large networks (example)
- ✗ Kumu - web-based app; infographic style (example)
- ✗ Palladio - web-based app; historic networks (example)

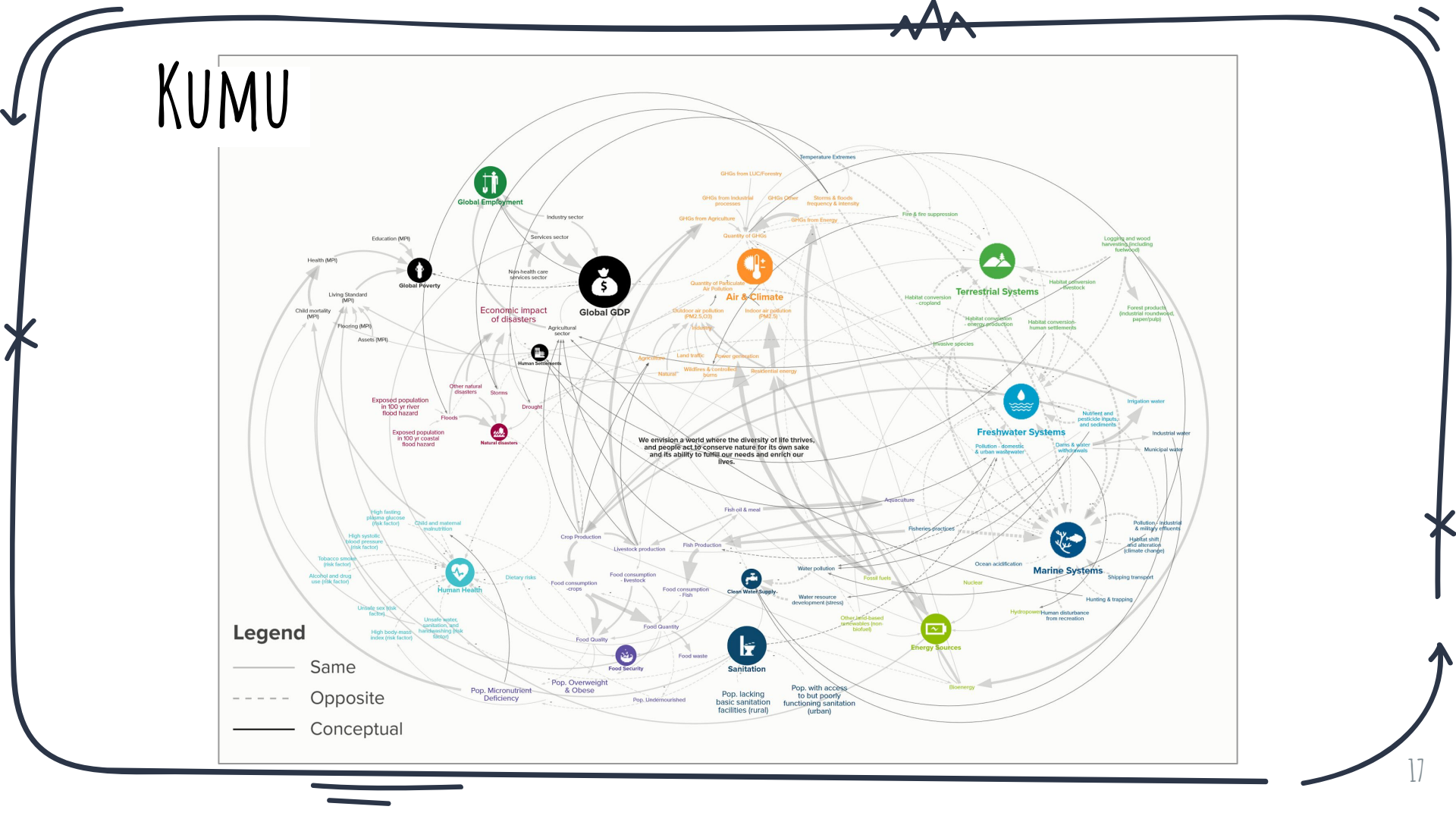


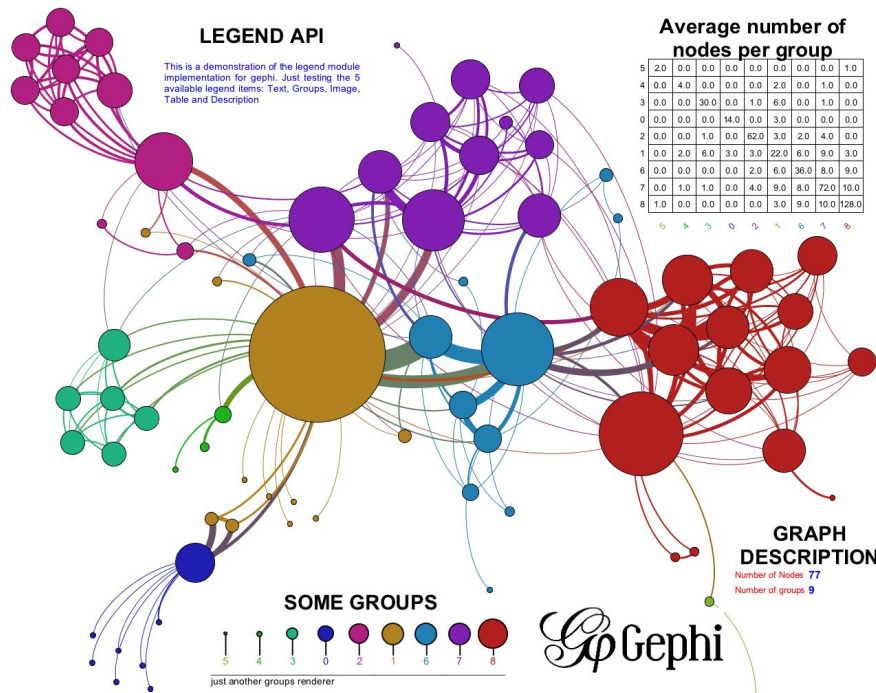
KUMU

We envision a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives.

Legend

- Same
- - - Opposite
- Conceptual





GEPHI

PALLADIO



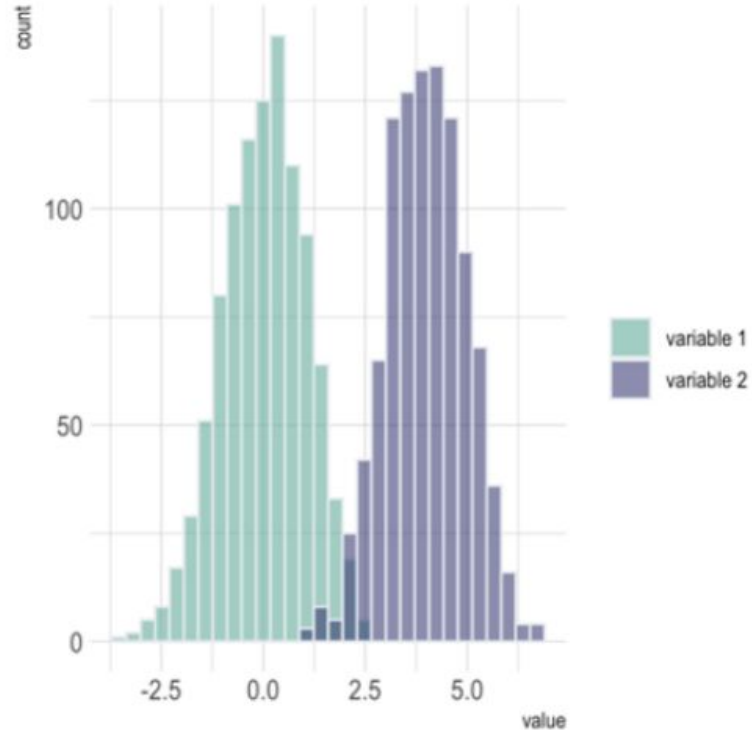
THE CODER

Command-line style text-interface tools R & Python

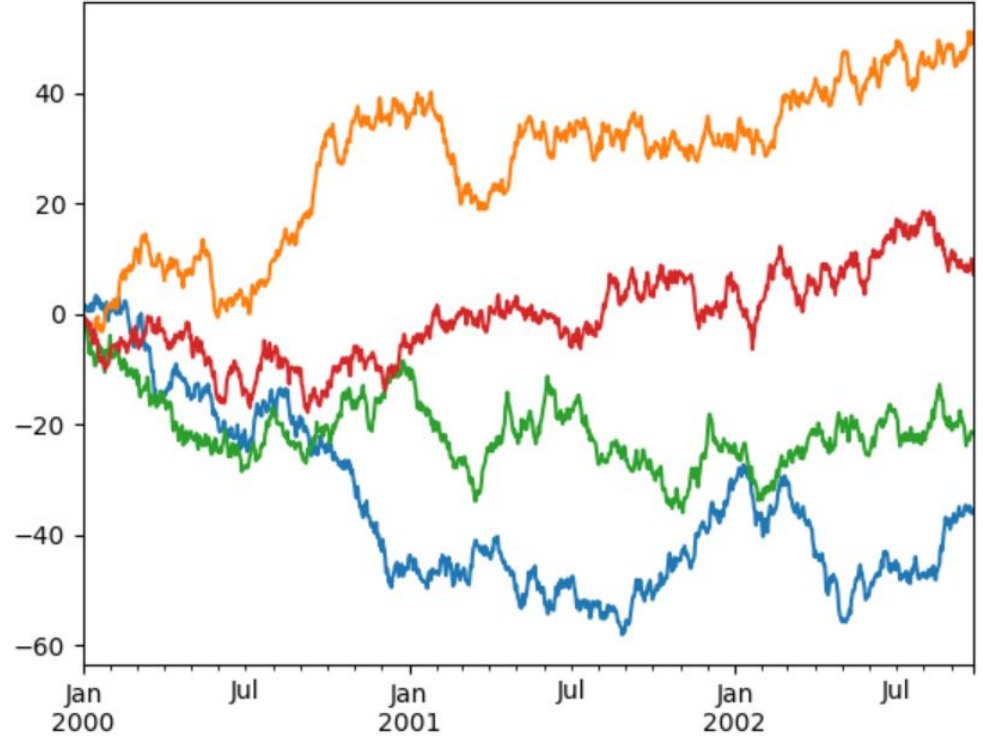
- ✗ Text-interface programs with GUI options available (R & ggplot, Python & pandas)
- ✗ Multi-use - plugins like ggplot & pandas add data viz functionality
- ✗ Variety of data import options and export formats
- ✗ Examples of charts created in R
- ✗ Example of charts created in Plotly for Python



PYTHON & PANDAS



R & GGPlot



THE WEB DEVELOPER

Javascript libraries D3 and Leaflet

- ✗ Command-line and javascript are a must
- ✗ D3: wide variety of viz types, including interactive and animated (example)
- ✗ Leaflet: maps & place data (example for Maptime Boston)



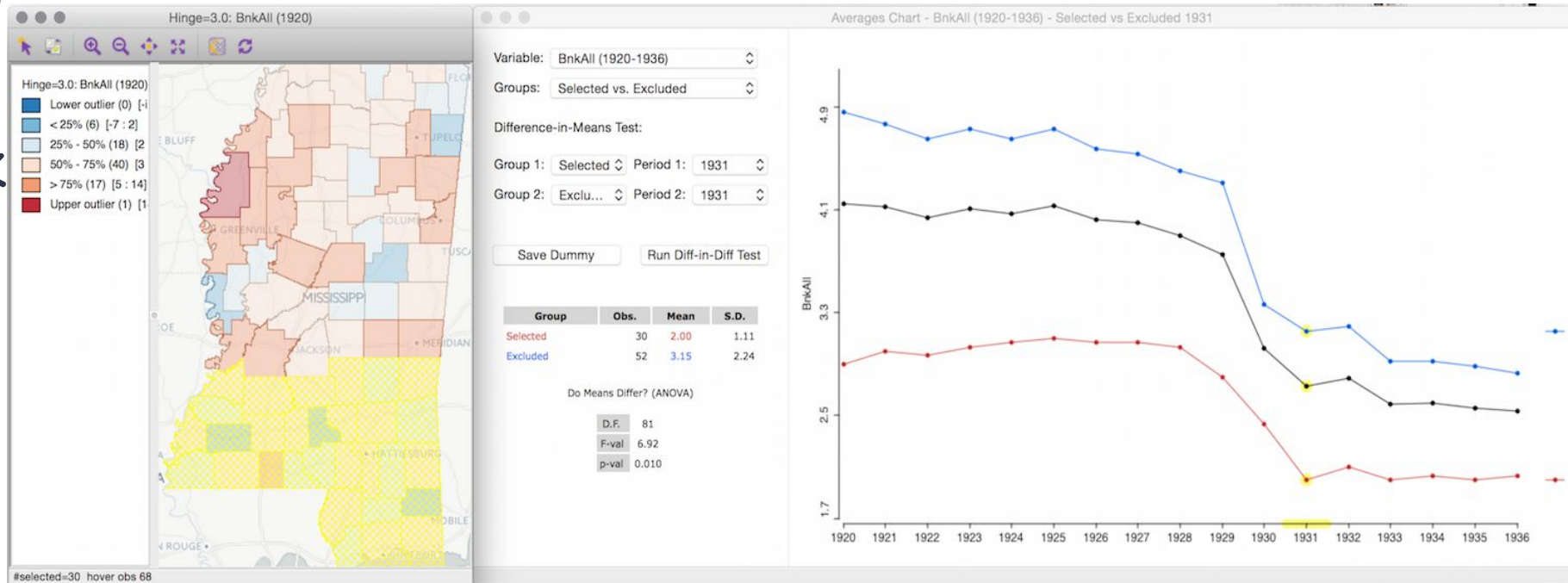
THE HELLA SPECIFIC

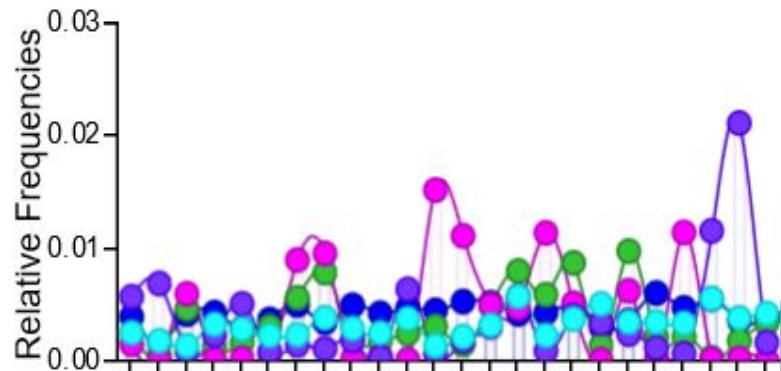
A few specific tools for specific jobs

- X GeoDa: software for spatial data analysis
- X Voyant Tools: web-based app for text data analysis
- X Integrated Genome Browser: genome data!

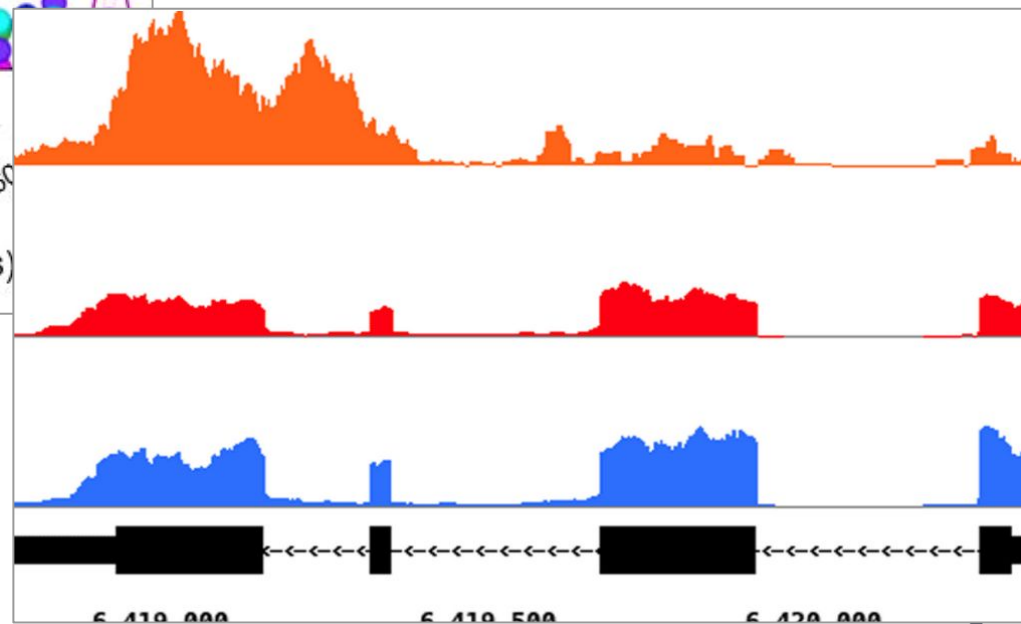


GEODA





INTEGRATED GENOME BROWSER



VOYANT TOOLS

OTHER RESOURCES

- ✗ Learn and practice data viz techniques with [Storytelling with Data](#)
- ✗ Get help picking the right chart with the [Data Visualisation Catalogue](#)
- ✗ Learn more about data viz and find more information at [UNC University Libraries' Learn Data Viz site](#)
- ✗ Examples from tool websites linked directly on slides except: [Excel example chart and data](#) (slide 7)



THANKS!

Any questions?

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