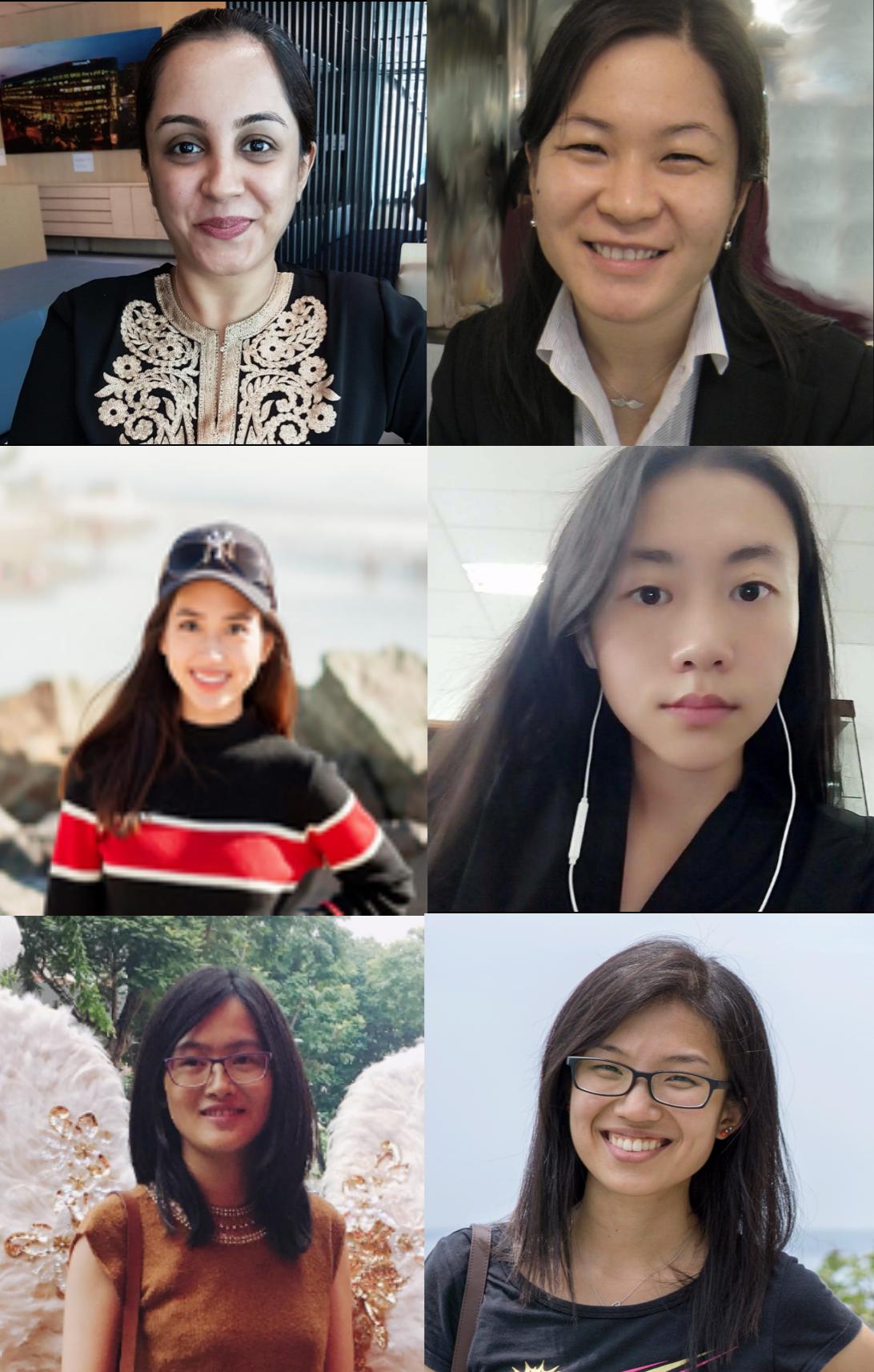




- Docker:
  - `docker pull qingemeng/rstudio:imdb`
  - and start rstudio by running `docker run -p 8787:8787 qingemeng/rstudio:imdb`
  - You can start rstudio web app at `localhost:8787`
  - username: rstudio      pwd: studio
- OR Install R & RStudio:
  - To install R(mac (<https://cran.r-project.org/bin/macosx/>)
  - or windows (<https://cran.r-project.org/bin/windows/base/>)
  - and RStudio desktop (<https://www.rstudio.com/products/rstudio/download2/>)



# WOMEN WHO CODE

## SINGAPORE

@wwcodesingapore

singapore@womenwhocode.com

[www.meetup.com/Women-Who-Code-Singapore](https://www.meetup.com/Women-Who-Code-Singapore)

[www.womenwhocode.com/singapore](http://www.womenwhocode.com/singapore)

[facebook.com/groups/wwcodesingapore](https://facebook.com/groups/wwcodesingapore)

[wwcodesg.slack.com](https://wwcodesg.slack.com)

OUR MISSION

INSPIRING  
WOMEN TO EXCEL  
IN TECHNOLOGY  
CAREERS

WOMEN WHO  
CODE



# OUR GOALS

TO PROVIDE WOMEN WITH AN **AVENUE** INTO TECH  
TO **EMPOWER** WOMEN WITH THE SKILLS THEY NEED FOR PROFESSIONAL ADVANCEMENT  
TO BUILD ENVIRONMENTS WHERE **NETWORKING** AND **MENTORSHIP** ARE VALUED  
TO CREATE A **COMMUNITY** TO SUPPORT WOMEN IN TECH

# WHAT WE DO

- Organise technical events
- Code Review (Newsletter)
- #ApplaudHer
- Scholarships
- Conference Tickets
- Job board



THANK YOU TO OUR HOST

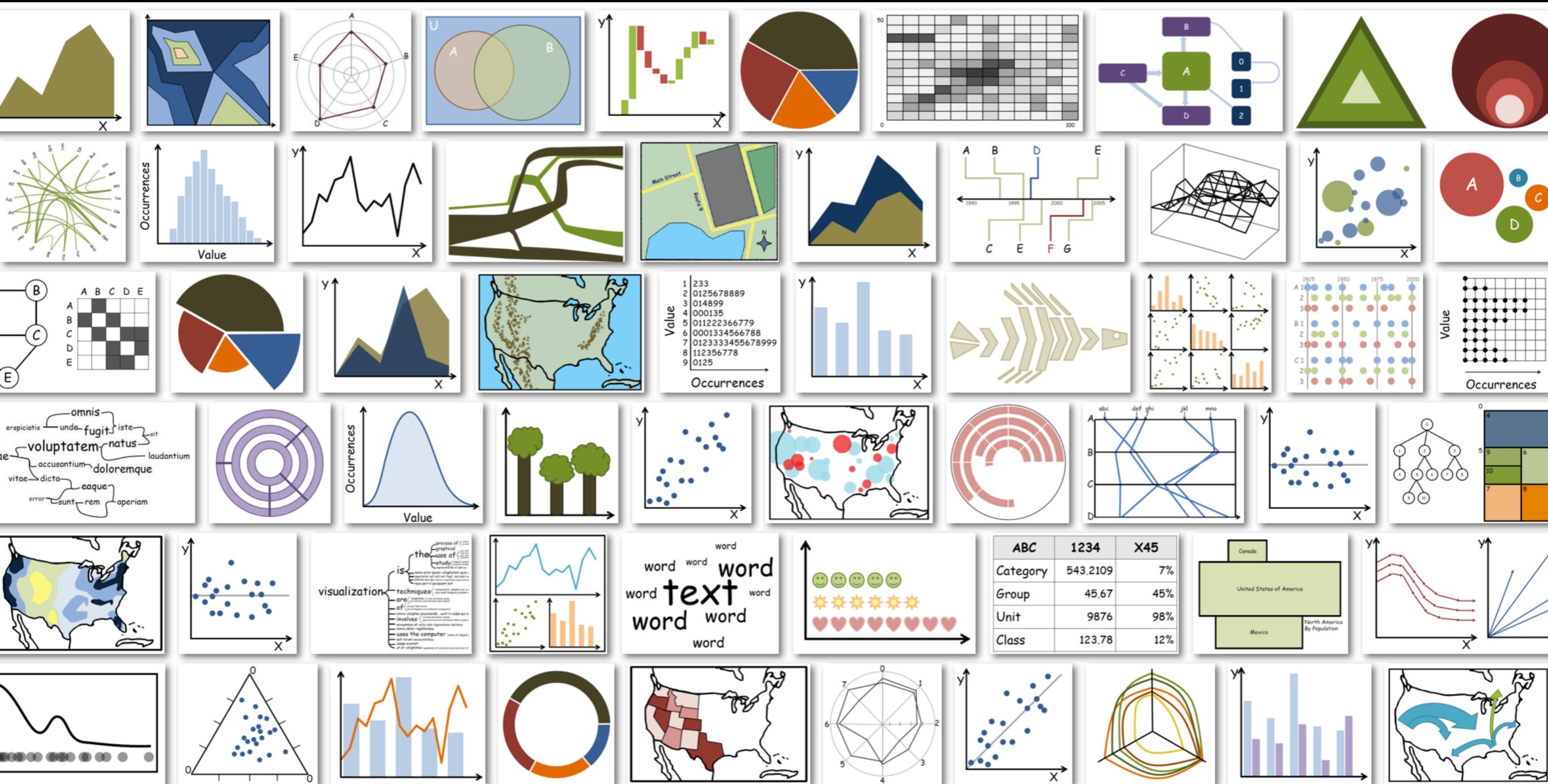


WHY DATA VISUALISATION -

A PICTURE IS WORTH A THOUSAND WORDS



# DATA VISUALISATION TAXONOMY

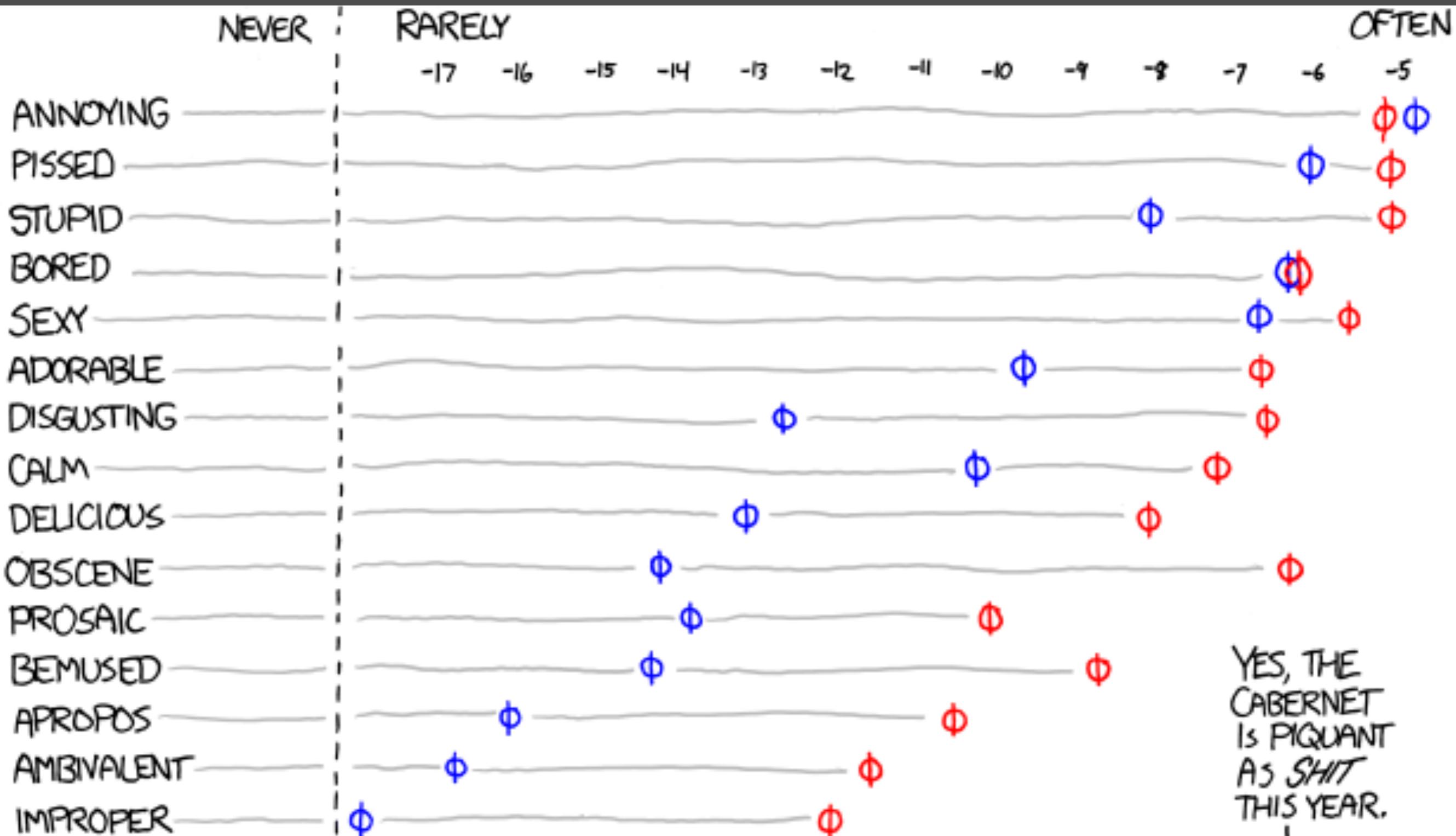


DATA: CATEGORICAL, QUANTITATIVE  
VISUAL: POSITION, COLOUR-HUE, SYMBOL

# DOT PLOT

Φ: "FUCKING \_\_\_\_"  
Φ: "\_\_\_\_ AS SHIT" SCALE: LN( $\frac{\text{HITS FOR INTENSIFIED PHRASE}}{\text{HITS FOR ADJECTIVE ALONE}}$ )

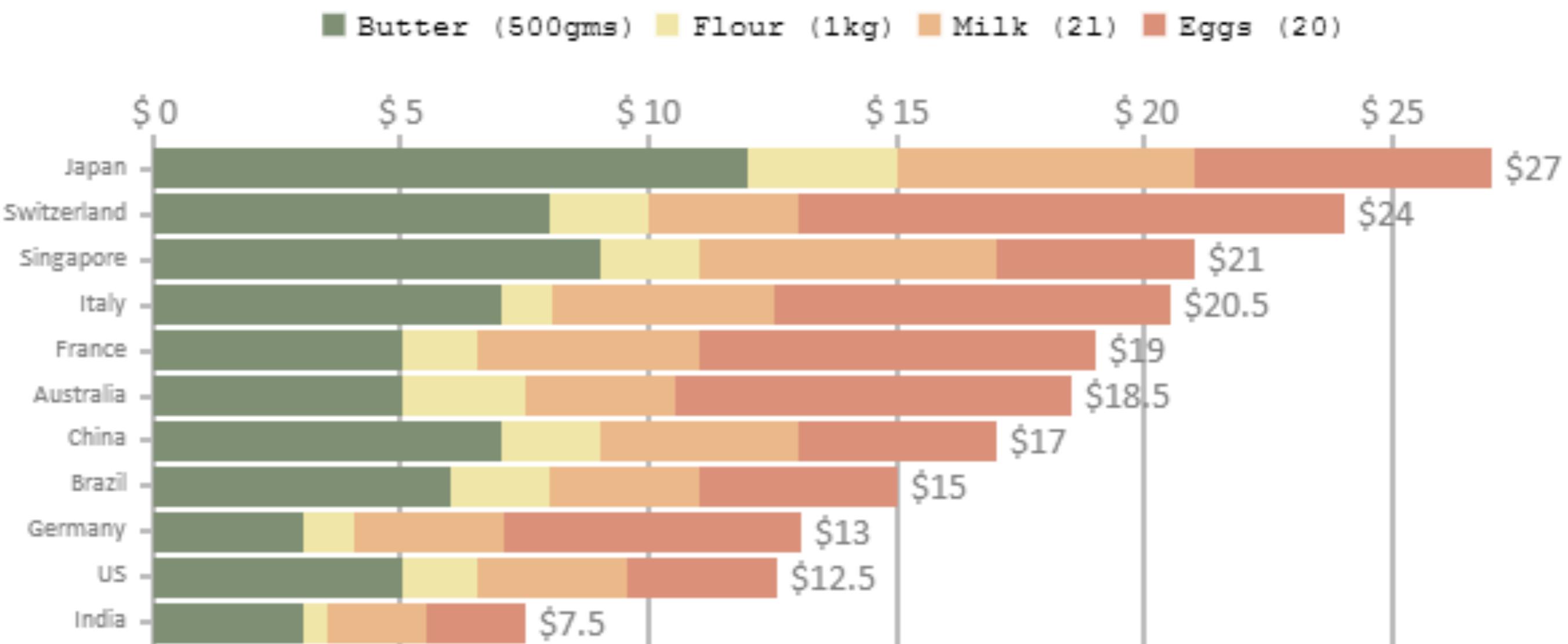
## FREQUENCY OF ADJECTIVES INTENSIFIED WITH OBSCENITIES



**DATA:** CATEGORICAL, QUANTITATIVE  
**VISUAL:** HEIGHT/LENGTH, COLOUR-HUE

# BAR CHARTS (OR COLUMN CHARTS) - STACKED

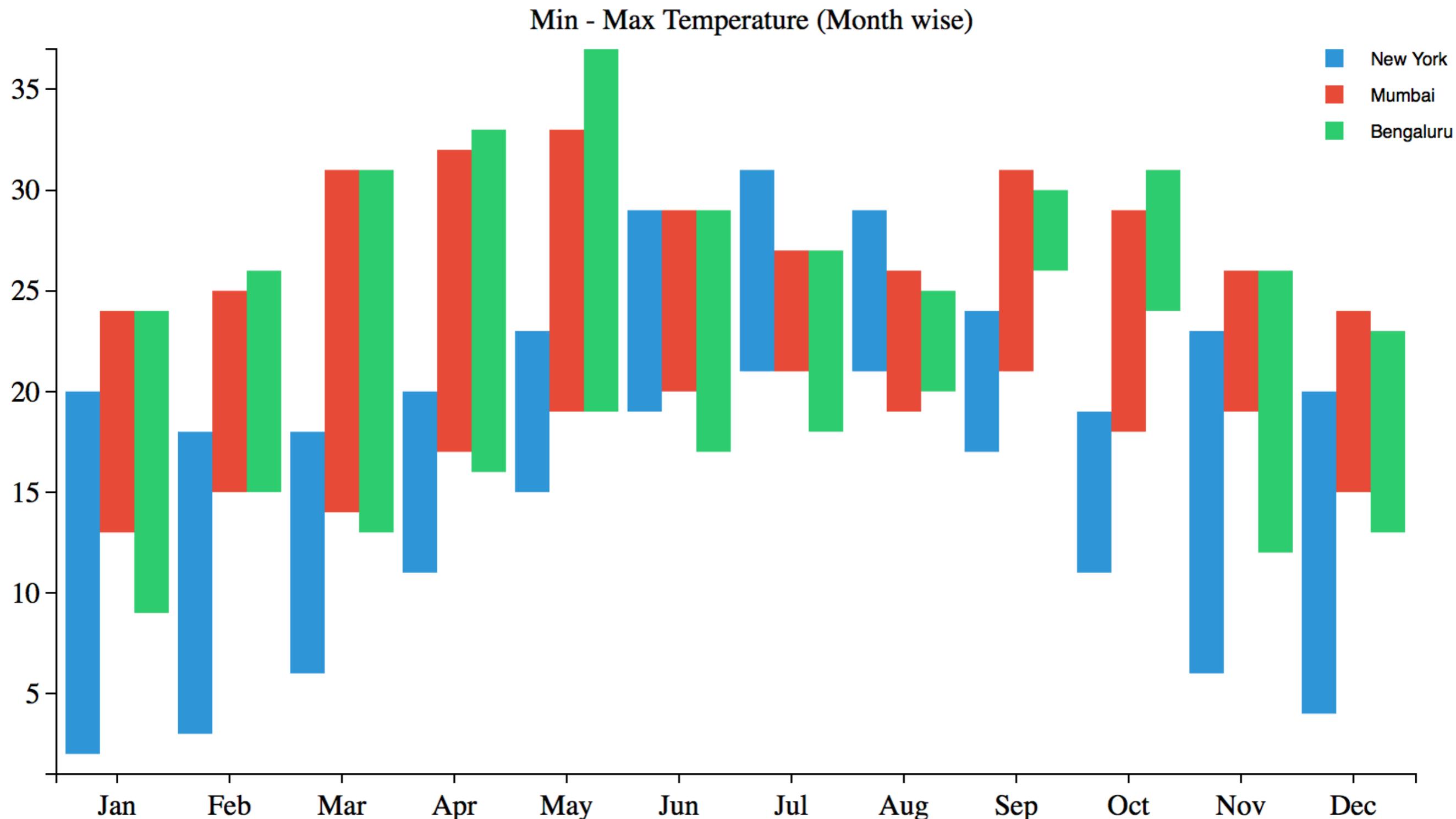
## Cost Of Pancake Ingredients, 2011



DATA: CATEGORICAL-NOMINAL, QUANTITATIVE

VISUAL: POSITION, LENGTH

# FLOATING CHART (OR GANTT CHART)



**DATA:** CATEGORICAL, QUANTITATIVE  
**VISUAL:** HEIGHT, COLOUR-HUE, SYMBOL

# PIXELATED BAR CHART

At what age did you lose your virginity?

NEXT QUESTION ▾

1000 / 1000 People

FILTERS

CLEAR FILTERS X

GENDER

AGE

LOCATION

MARITAL STATUS

SEXUALITY

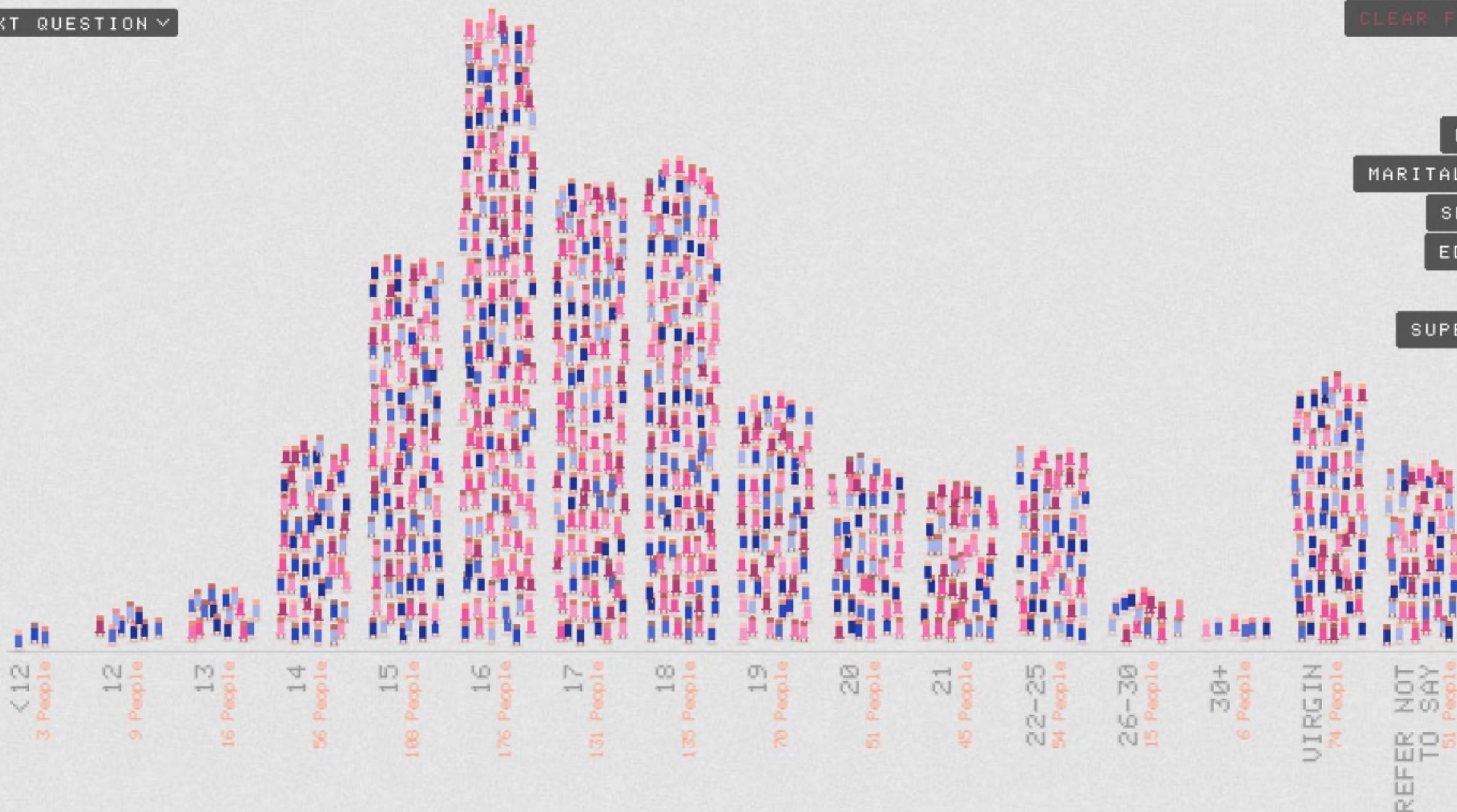
EDUCATION

CAR

SUPERMARKET

MUSIC

PHONE



DATA: QUANTITATIVE-INTERVAL, QUANTITATIVE-RATIO

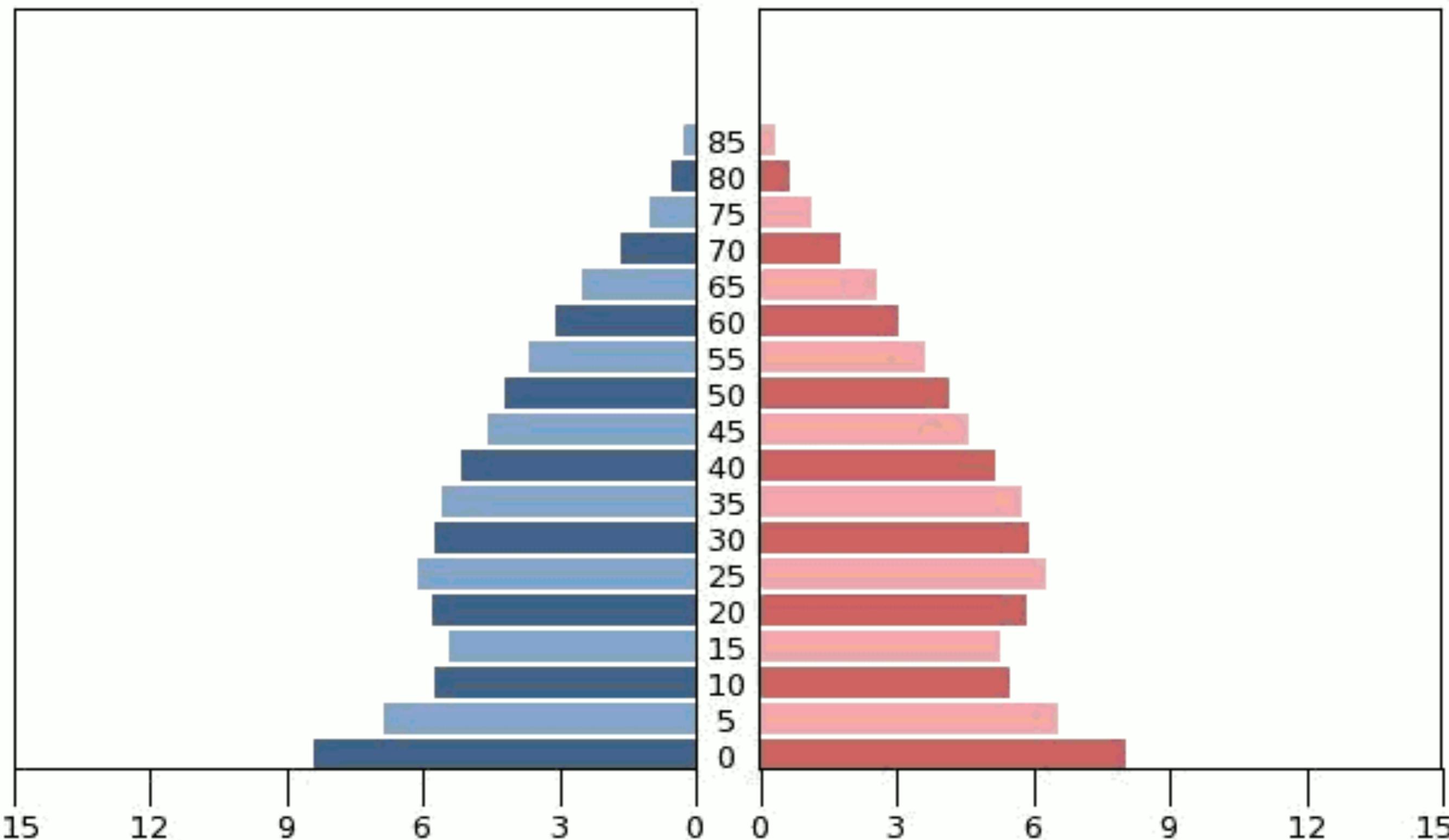
VISUAL: HEIGHT/LENGTH, WIDTH

# HISTOGRAM

Male

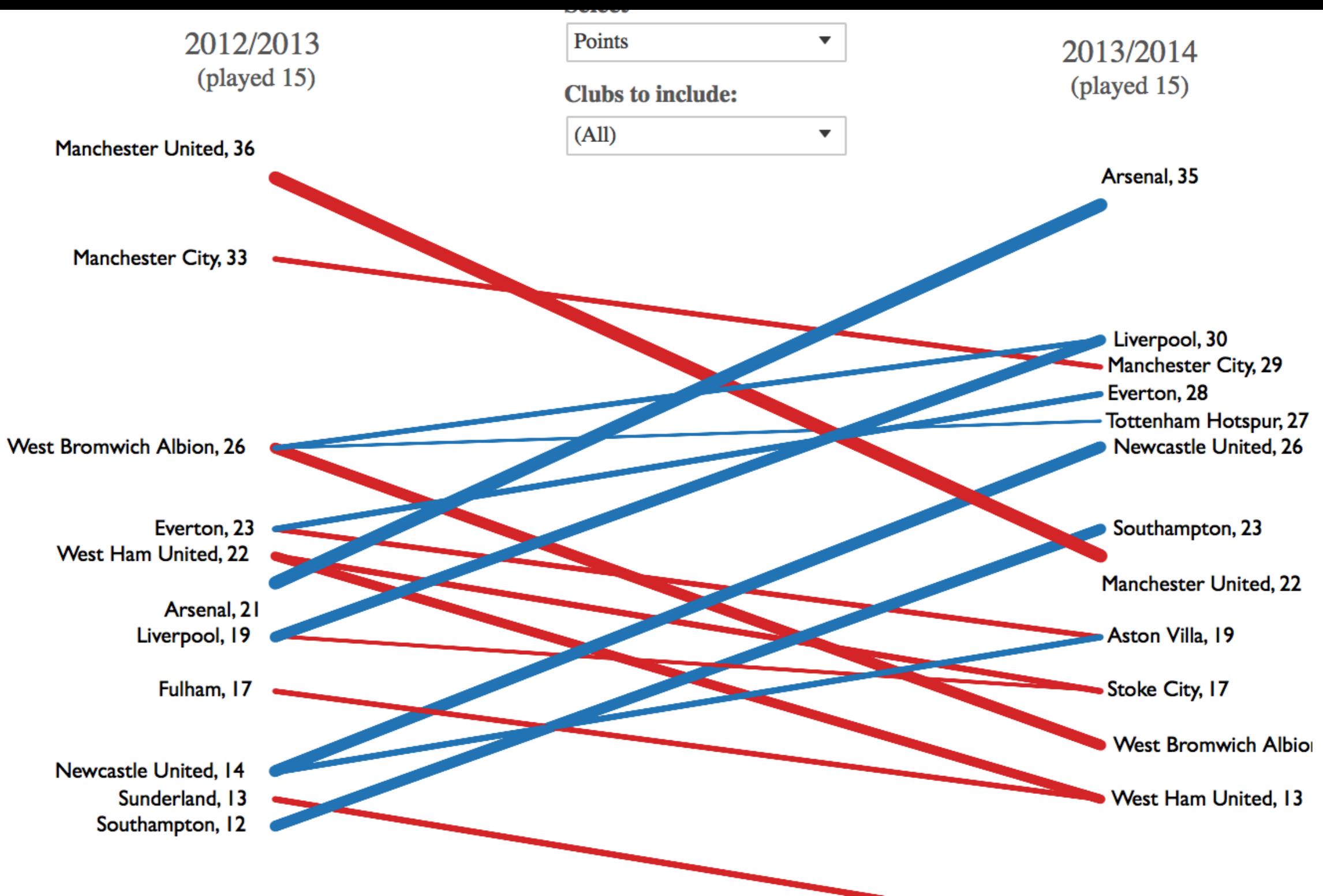
United States - 1950

Female



DATA: CATEGORICAL, QUANTITATIVE  
VISUAL: POSITION, COLOUR-HUE, CONNECTION

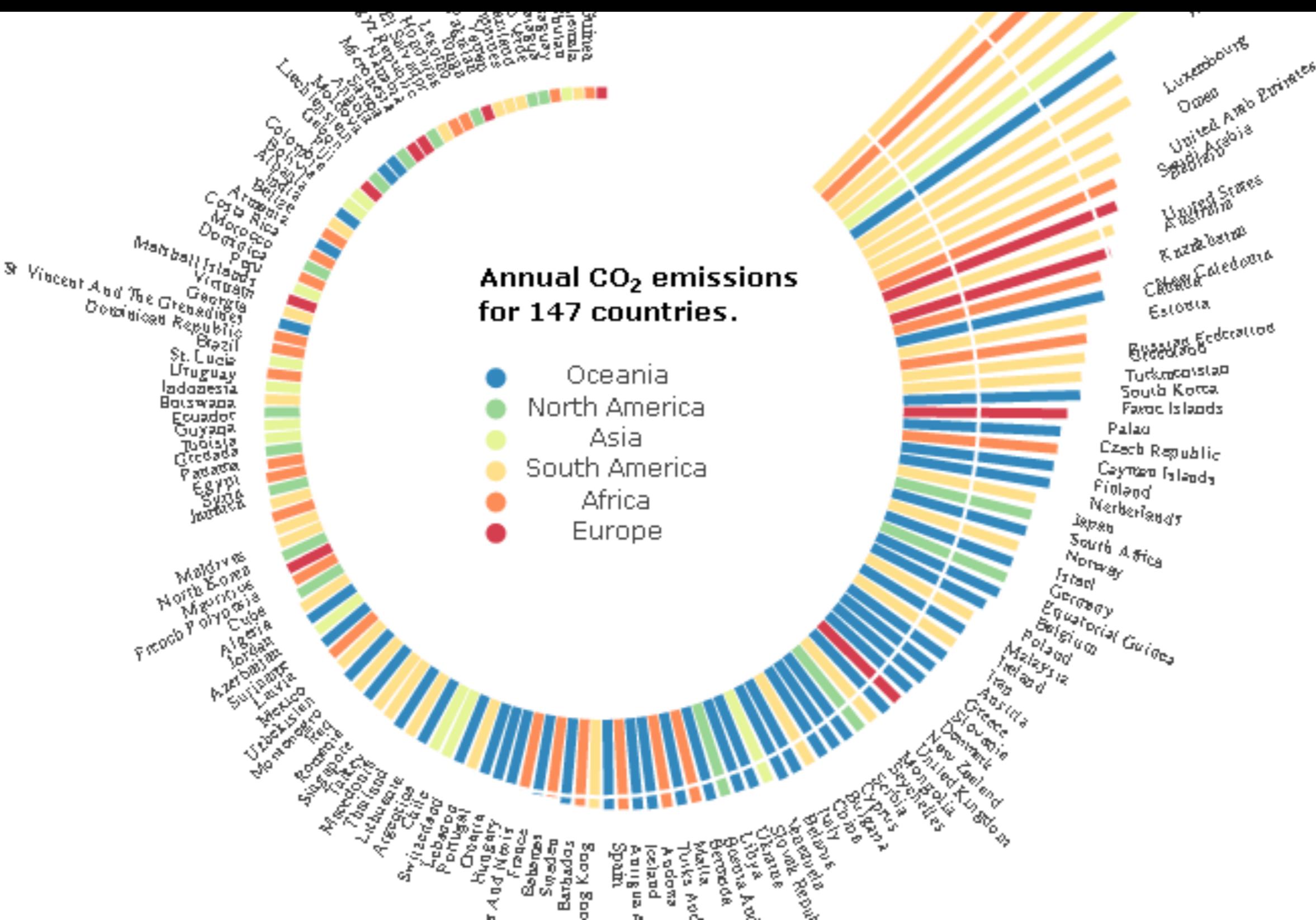
# SLOPE GRAPH



## DATA: CATEGORICAL, ORDINAL

**VISUAL:** POSITION, COLOUR-HUE, COLOR-SATURATION/LIGHTNESS, TEXTURE, LENGTH

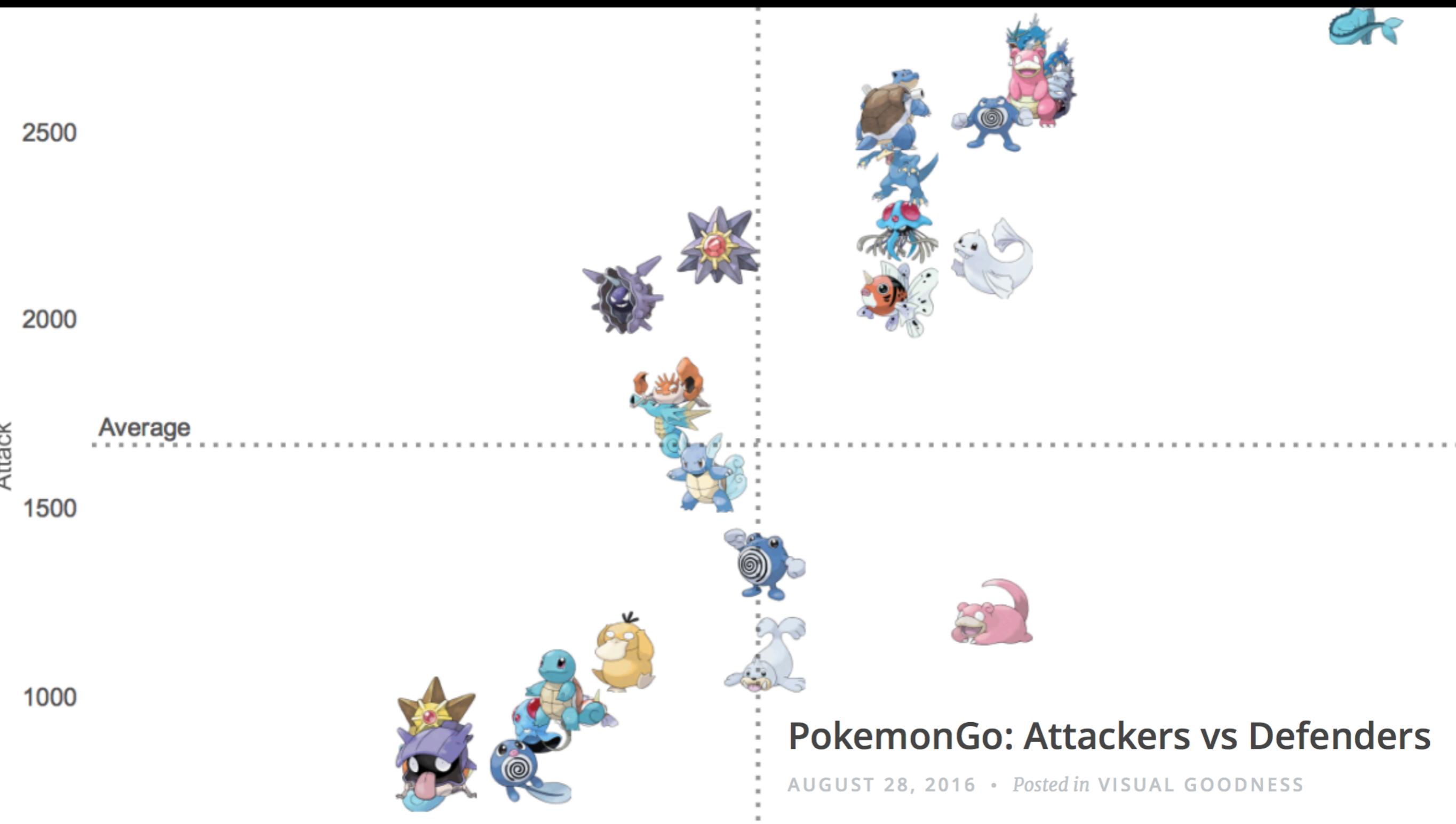
# RADIAL CHART



DATA: CATEGORICAL, QUANTITATIVE

VISUAL: POSITION, SYMBOL

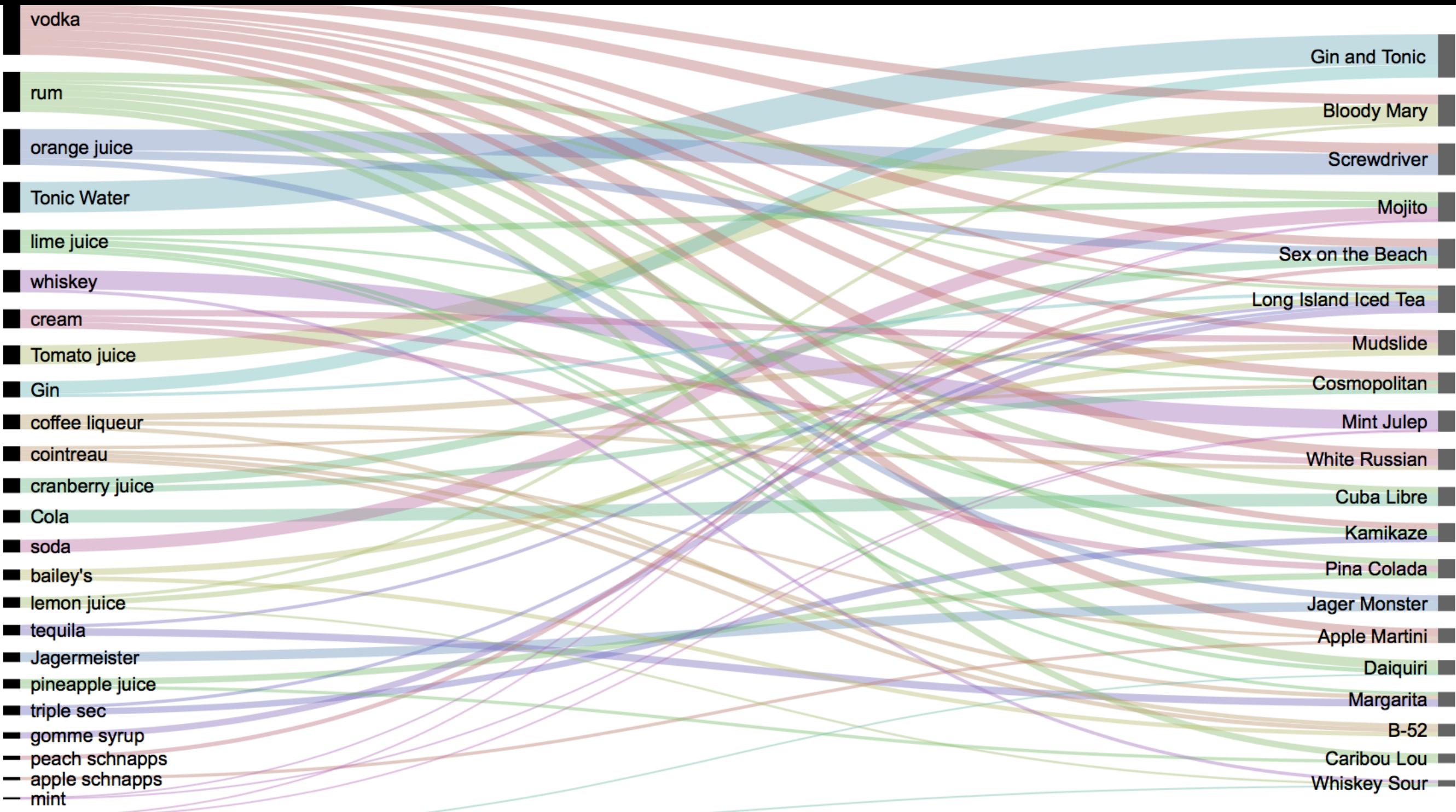
# GLYPH CHART



DATA: CATEGORICAL, QUANTITATIVE-RATIO

VISUAL: AREA, COLOUR-HUE, LINK, WIDTH

# SANKEY DIAGRAM



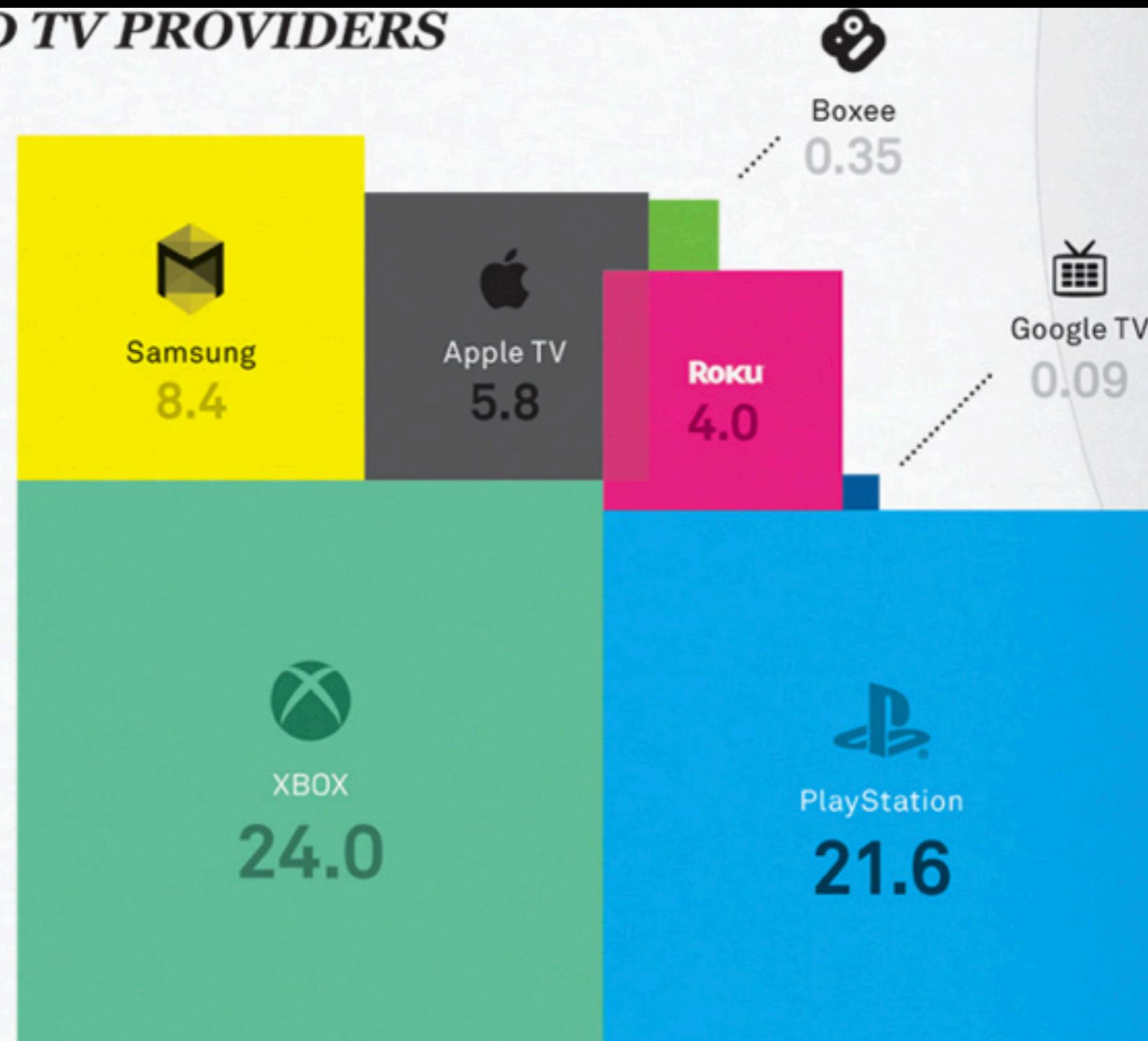
**DATA:** CATEGORICAL, QUANTITATIVE-RATIO

**VISUAL:** AREA, COLOUR-HUE

# AREA SIZE CHART

## CONNECTED TV PROVIDERS

Game consoles are the most common method for bringing internet content to the TV set. All-in-one devices from manufacturers like Samsung and Apple TV should grow as connected TVs become the only type of TV sold. Standalone boxes will be low-cost options.



**DATA:** CATEGORICAL, QUANTITATIVE  
**VISUAL:** POSITION, OTHER VISUAL VARIABLE

# SMALL MULTIPLES (OR TRELLIS/LATTICE/GRID/PANEL CHART)



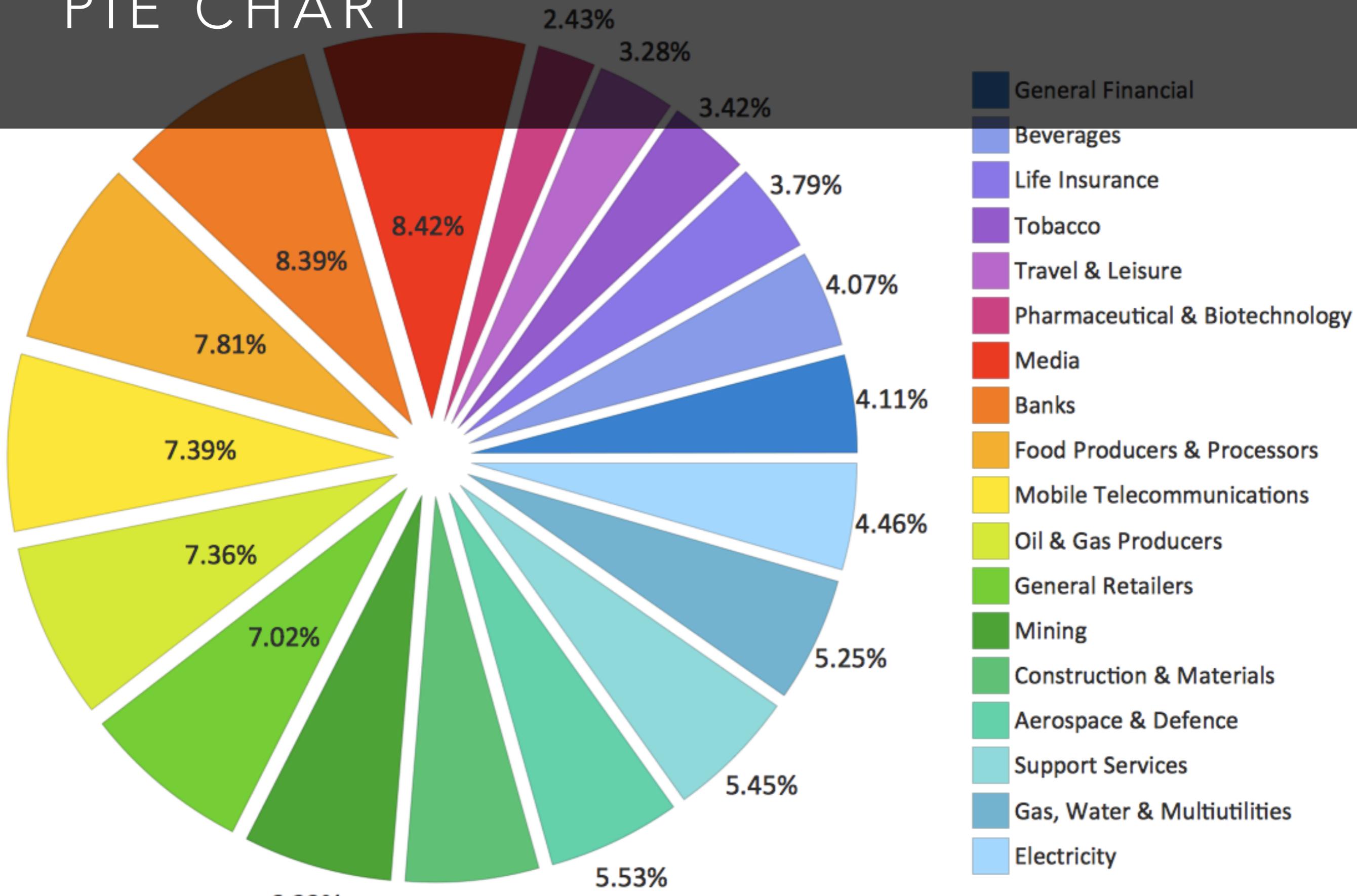
## DATA: CATEGORICAL, QUANTITATIVE

## VISUAL: SIZE

# WORD CLOUD

DATA: CATEGORICAL, QUANTITATIVE  
VISUAL: ANGLE, COLOUR-HUE, AREA

# PIE CHART

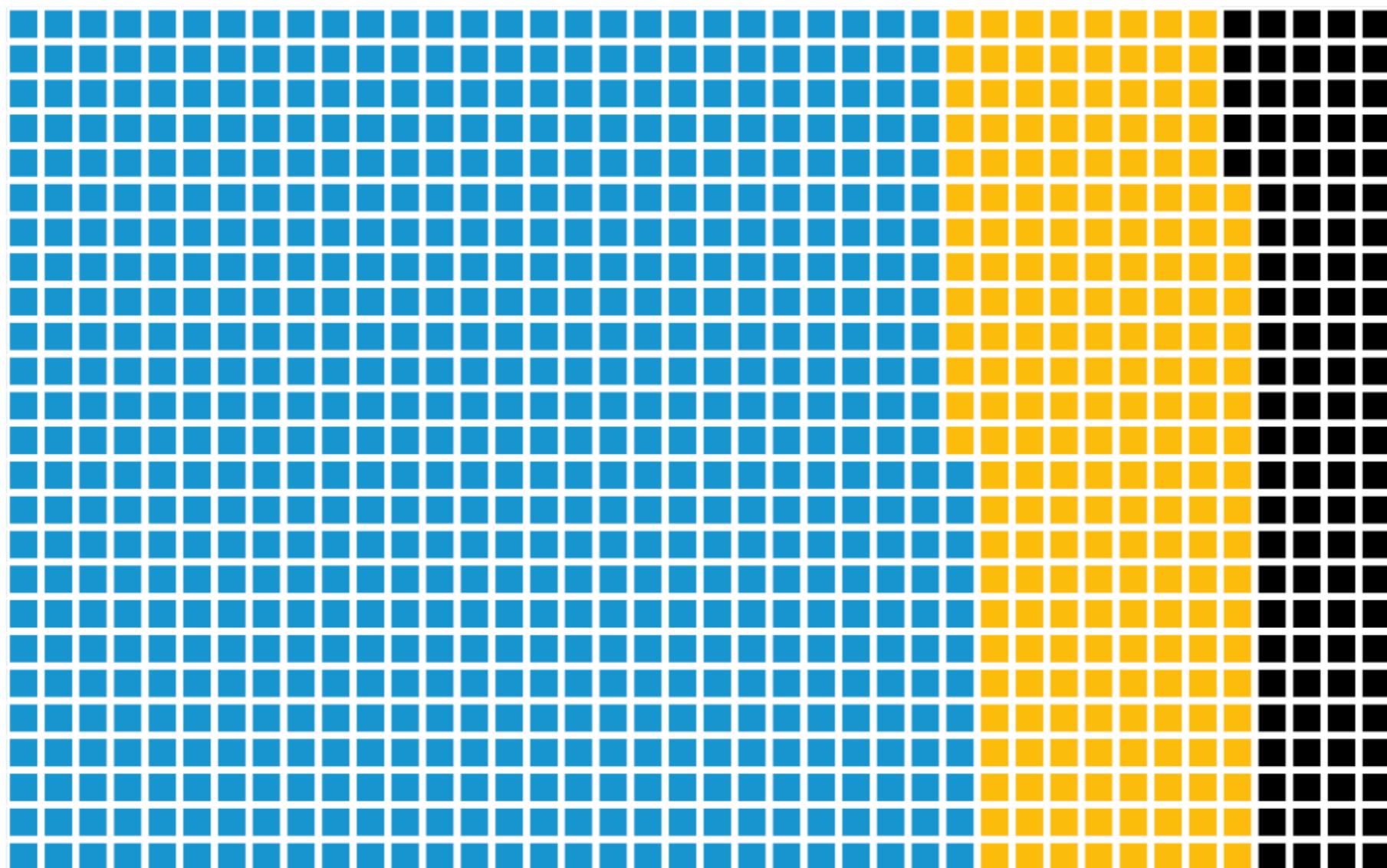


**DATA:** CATEGORICAL, QUANTITATIVE  
**VISUAL:** POSITION, COLOUR-HUE, SYMBOL

# SQUARE PIE (OR UNIT CHART OR WAFFLE CHART)

Free Clinics in the D.C.-Maryland-Virginia Area

1 Square == 1 Clinic



■ Virginia Clinics ■ Maryland Clinics ■ D.C. Clinics

DATA: CATEGORICAL-NOMINAL, QUANTITATIVE-RATIO  
VISUAL: AREA, POSITION, COLOR-HUE, COLOR-SATURATION/LIGHTNESS

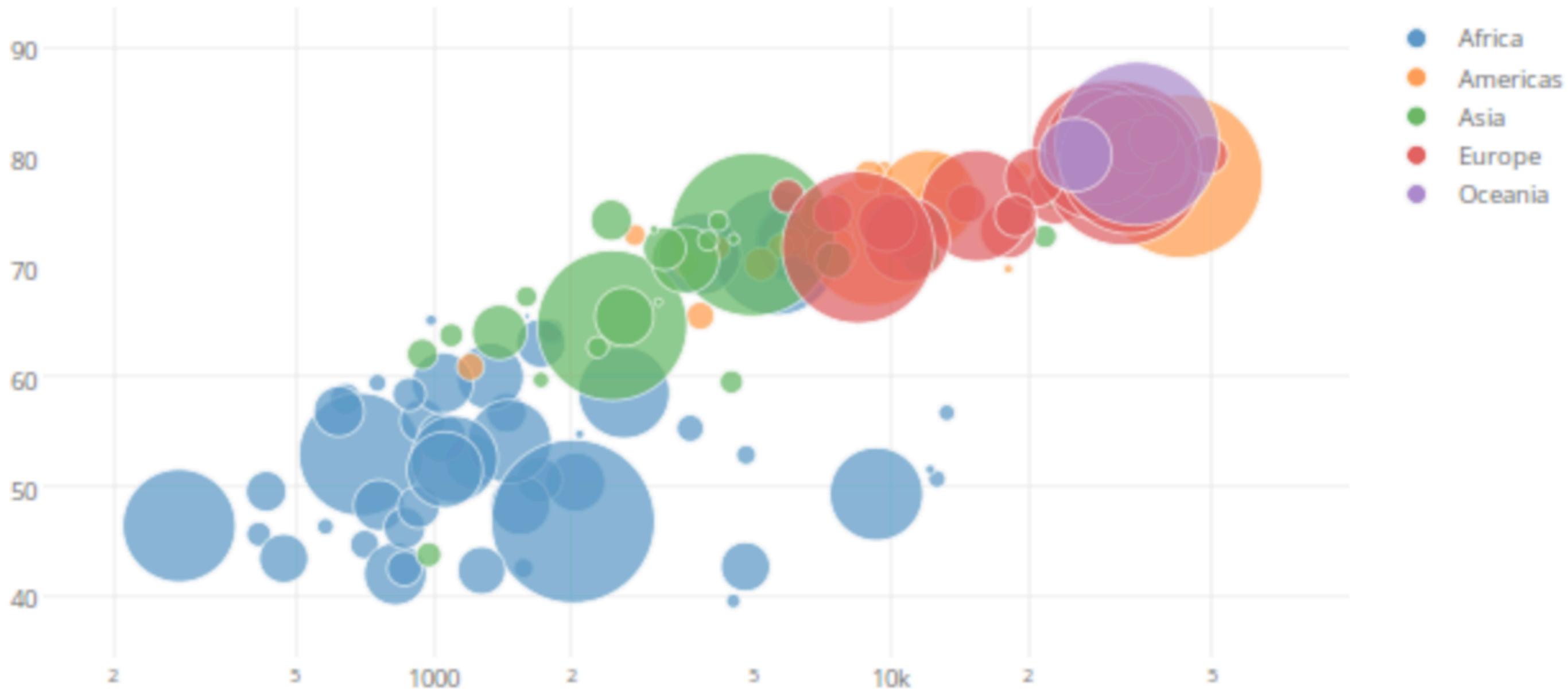
# TREE MAP



DATA: CATEGORICAL, QUANTITATIVE  
VISUAL: AREA, POSITION, COLOR-HUE

# BUBBLE PLOT

LIFE EXPECTANCY V. PER CAPITA GDP. 2007



DATA: CATEGORICAL, QUANTITATIVE-RATIO  
VISUAL: AREA, POSITION, COLOR-HUE

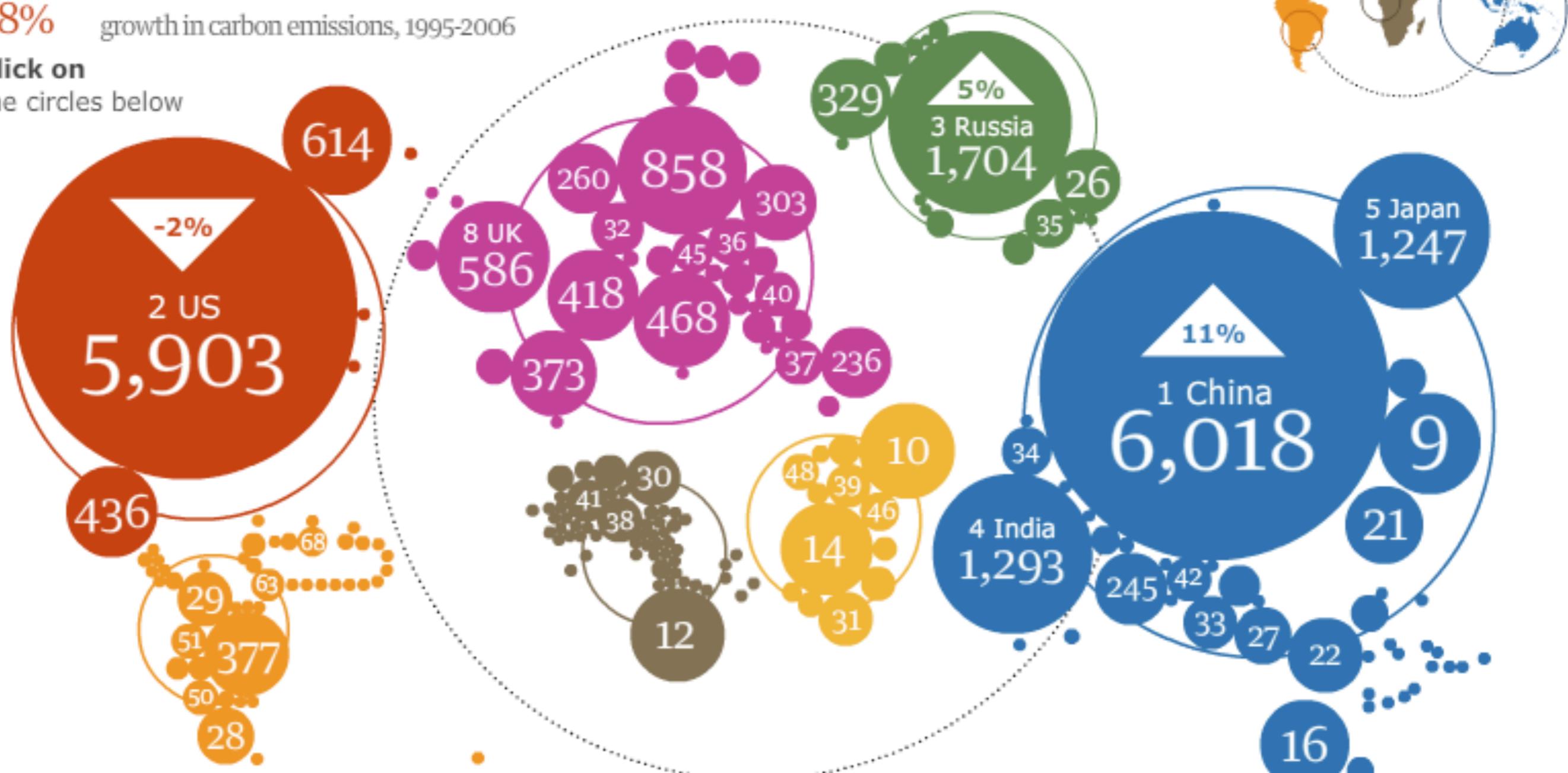
# CIRCLE PACKING DIAGRAM

World

**29,195** million tonnes of CO<sub>2</sub>

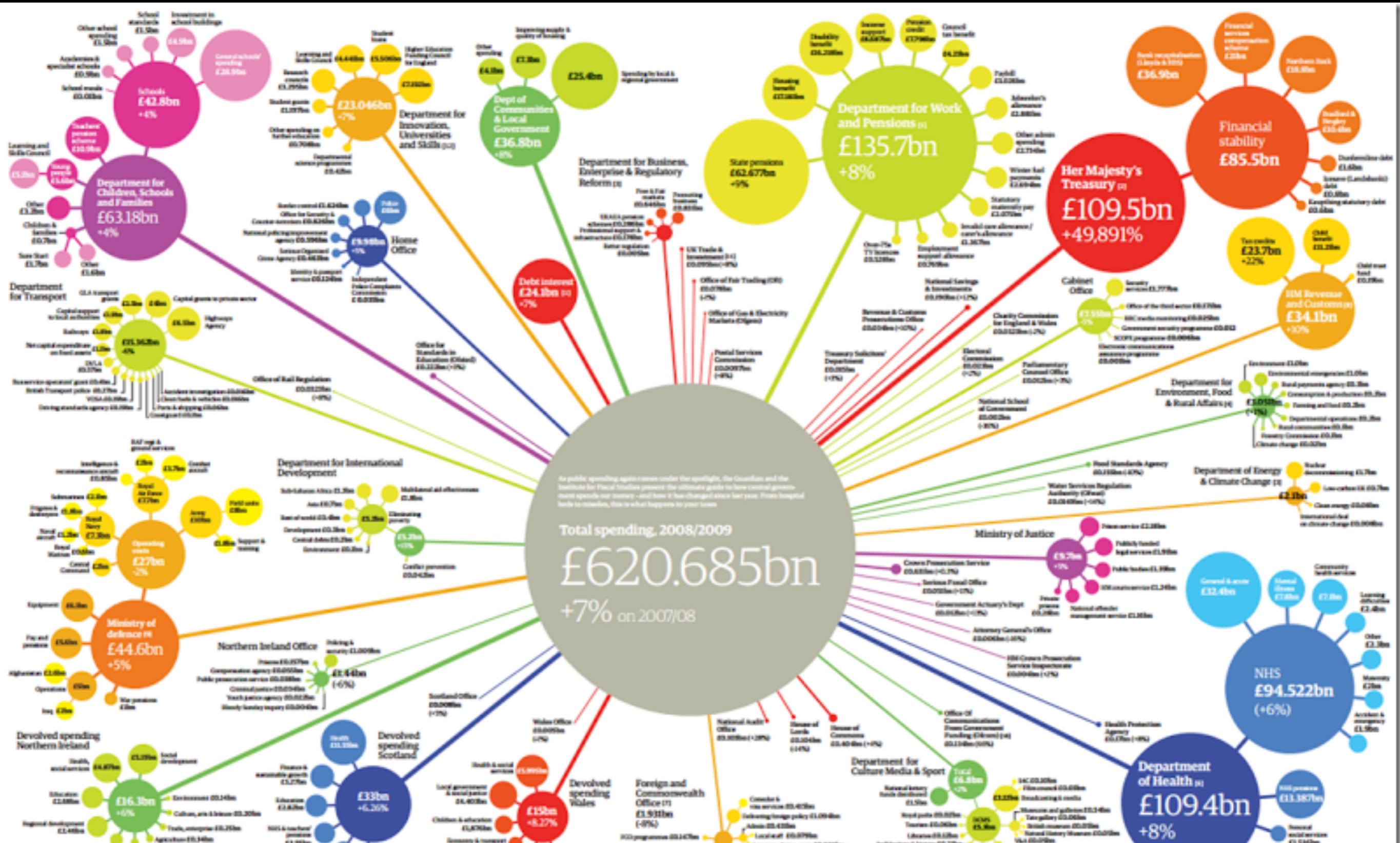
**28%** growth in carbon emissions, 1995-2006

**Click on**  
the circles below



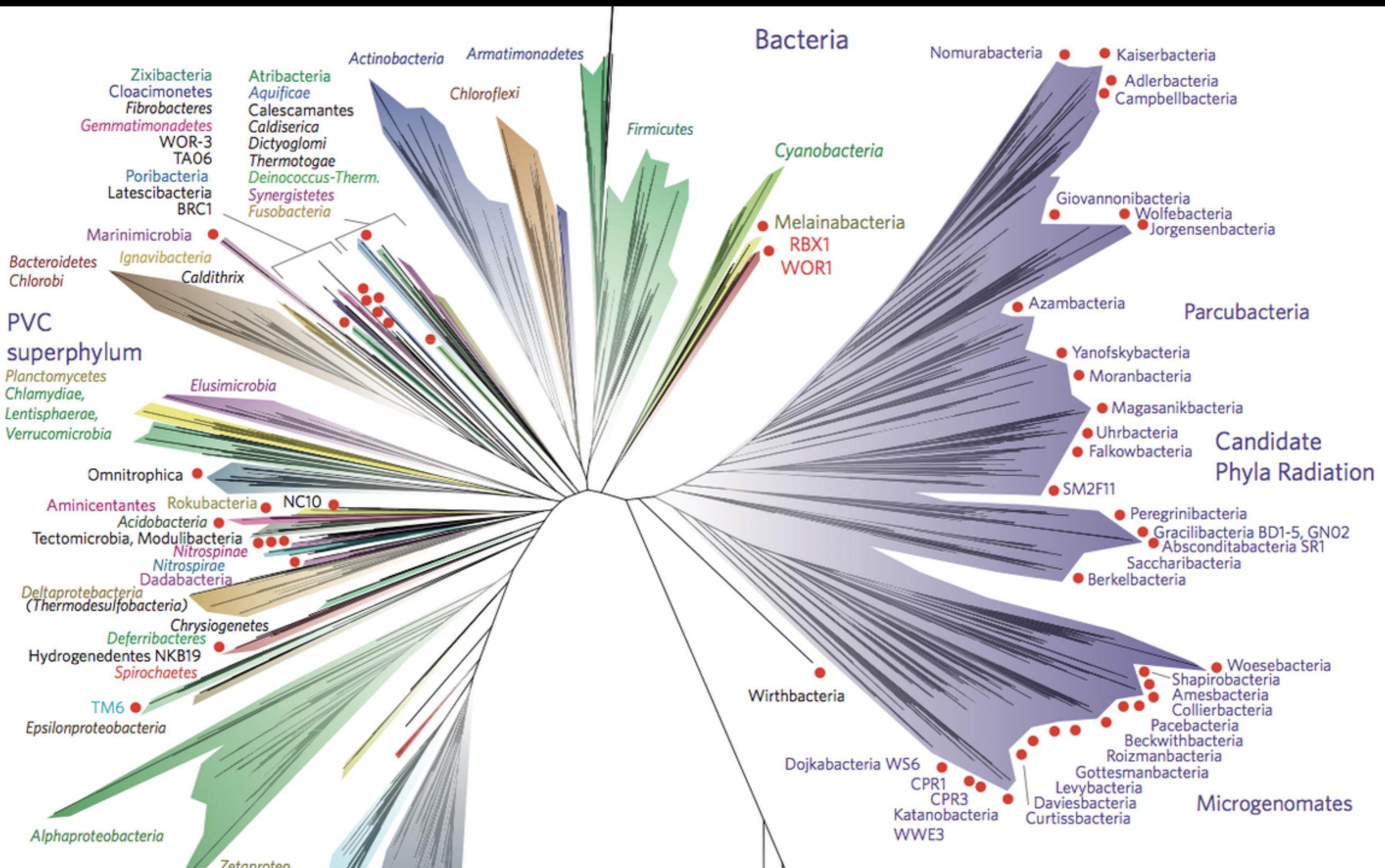
DATA: CATEGORICAL, QUANTITATIVE-RATIO  
VISUAL: AREA, POSITION, COLOR-HUE

# BUBBLE HIERARCHY



DATA: CATEGORICAL, QUANTITATIVE-RATIO  
VISUAL: ANGLE/AREA, POSITION, COLOR-HUE

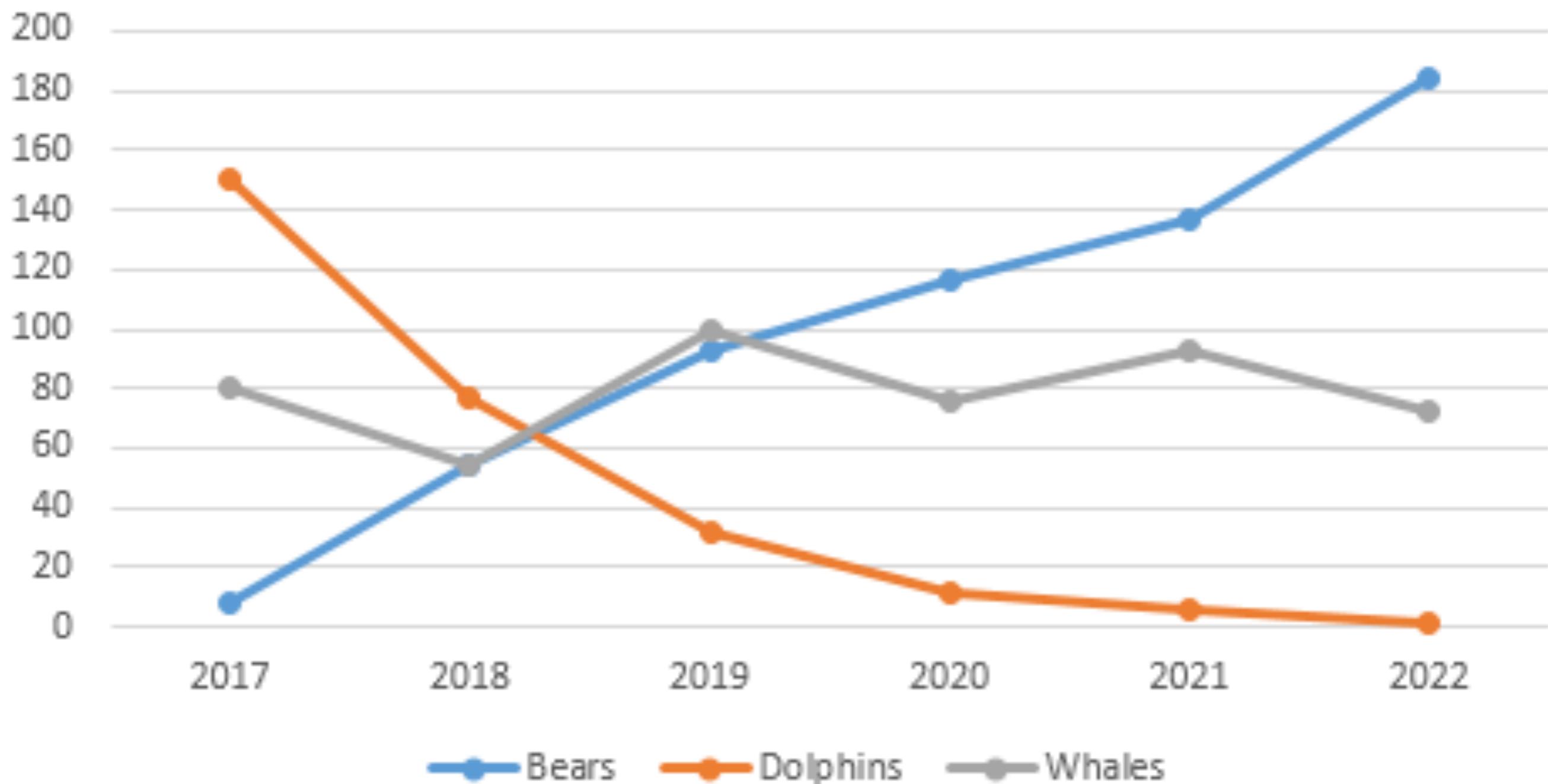
# TREE HIERARCHY



DATA: CATEGORICAL, QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: SLOPE, POSITION, COLOR-HUE

# LINE CHART

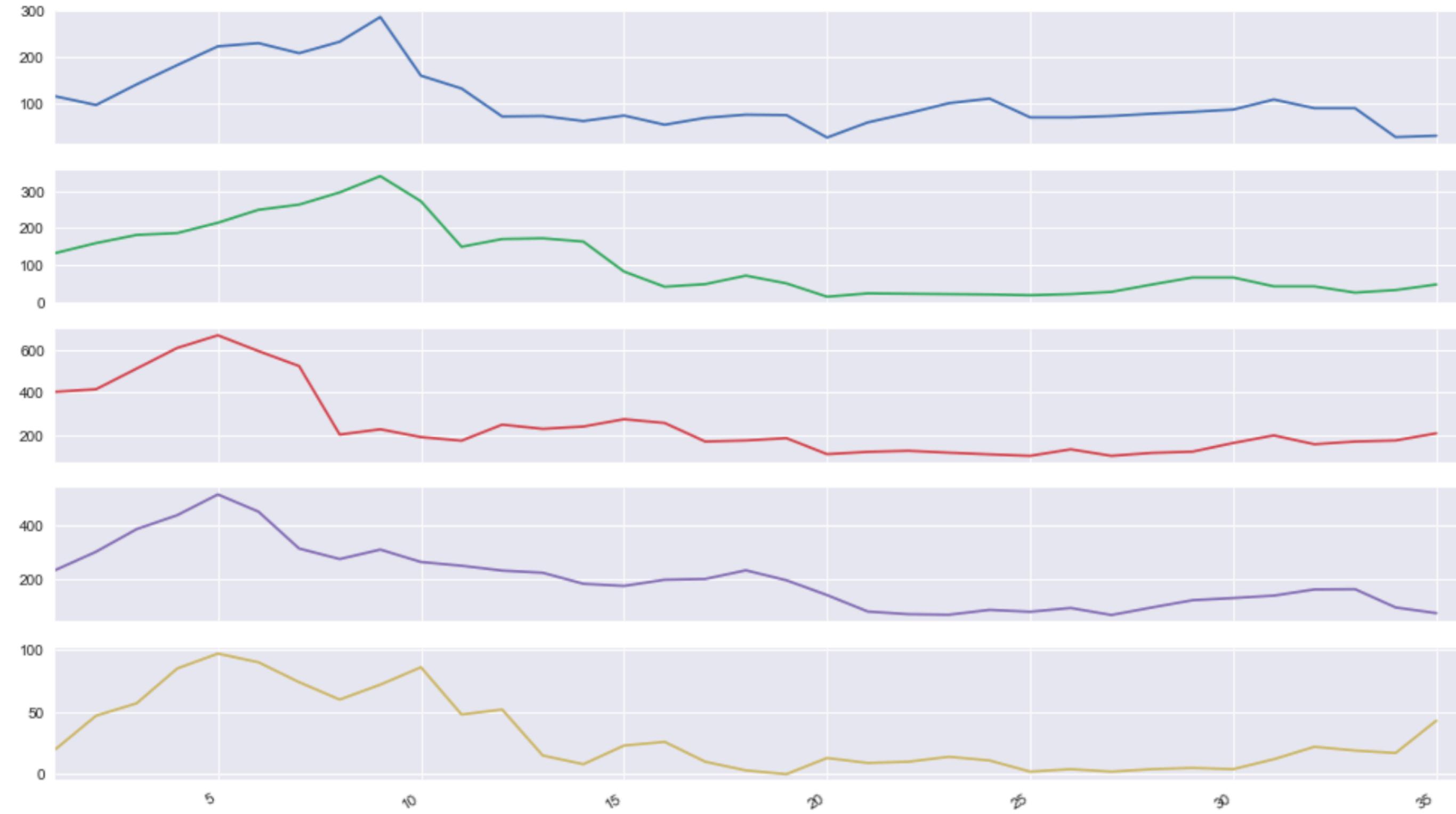
## Wildlife Population



DATA: CATEGORICAL, QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: SLOPE, POSITION, COLOR-HUE

# SPARKLINES

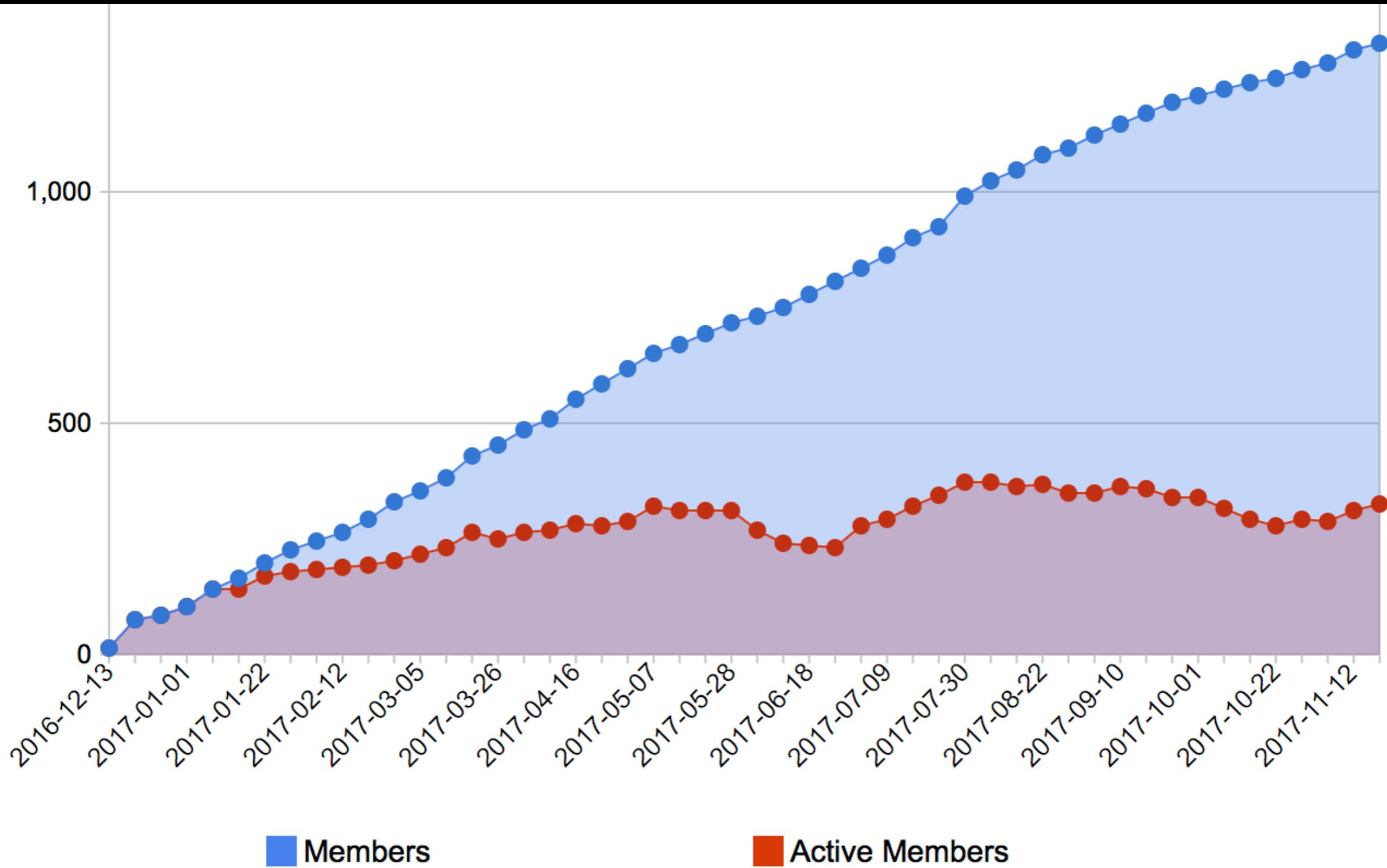
## SINGAPORE WEEKLY DENGUE CASES BY REGION



DATA: CATEGORICAL, QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: SLOPE, POSITION, COLOR-HUE, HEIGHT

# AREA CHART

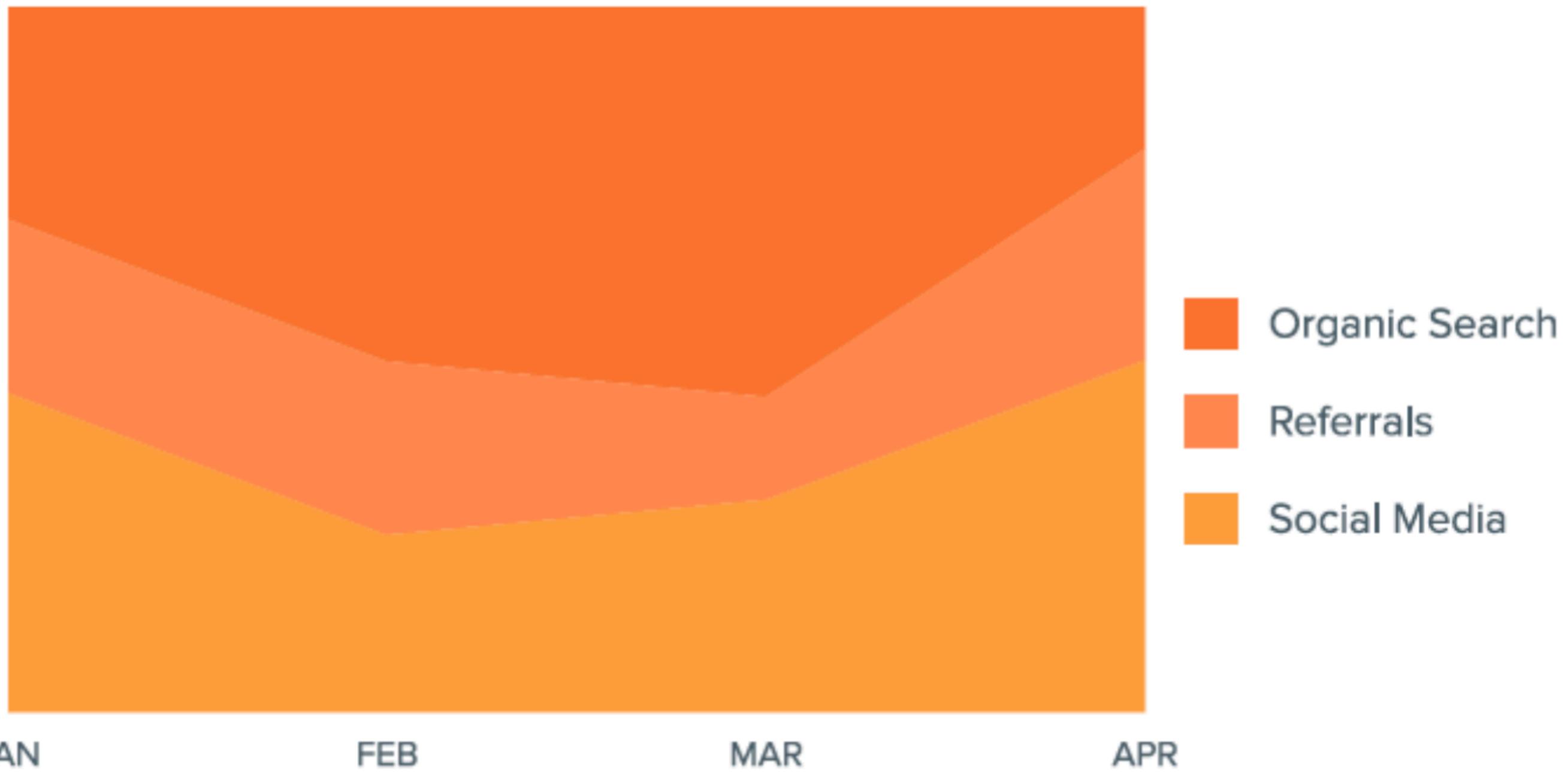
WOMEN WHO CODE SINGAPORE MEETUP'S TOTAL AND ACTIVE MEMBERS



DATA: CATEGORICAL, QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: AREA, COLOR-HUE, HEIGHT

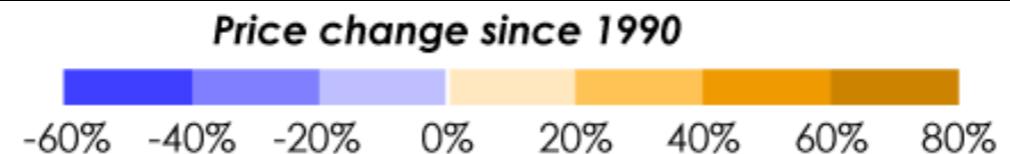
# AREA CHART - STACKED

## NEW CONTACTS, BY SOURCE



DATA: CATEGORICAL, QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: SLOPE, POSITION, COLOUR-HUE, HEIGHT, AREA, COLOUR-SATURATION/LIGHTNESS

# HORIZON CHART



Flour, white, all purpose, per lb.



Bread, white, pan, per lb.



Eggs, grade A, large, per doz.



Bananas, per lb.



Potatoes, white, per lb.



Sugar, white, all sizes, per lb.



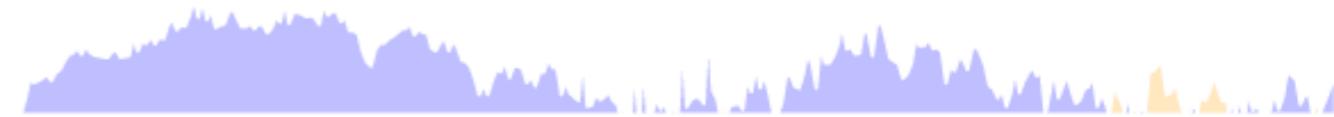
Spaghetti and macaroni, per lb.



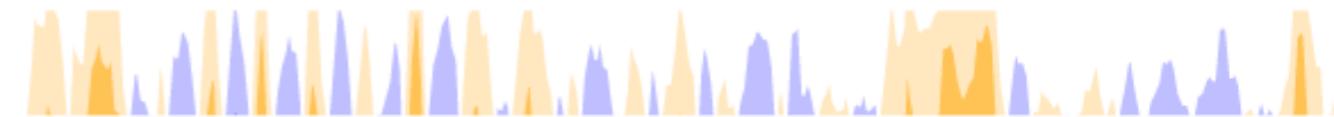
Cookies, chocolate chip, per lb.



Ice cream, prepackaged, bulk, regular, per 1/2 gal.



Lemons, per lb.



Orange juice, frozen concentrate, 12 oz. can, per 16 oz.



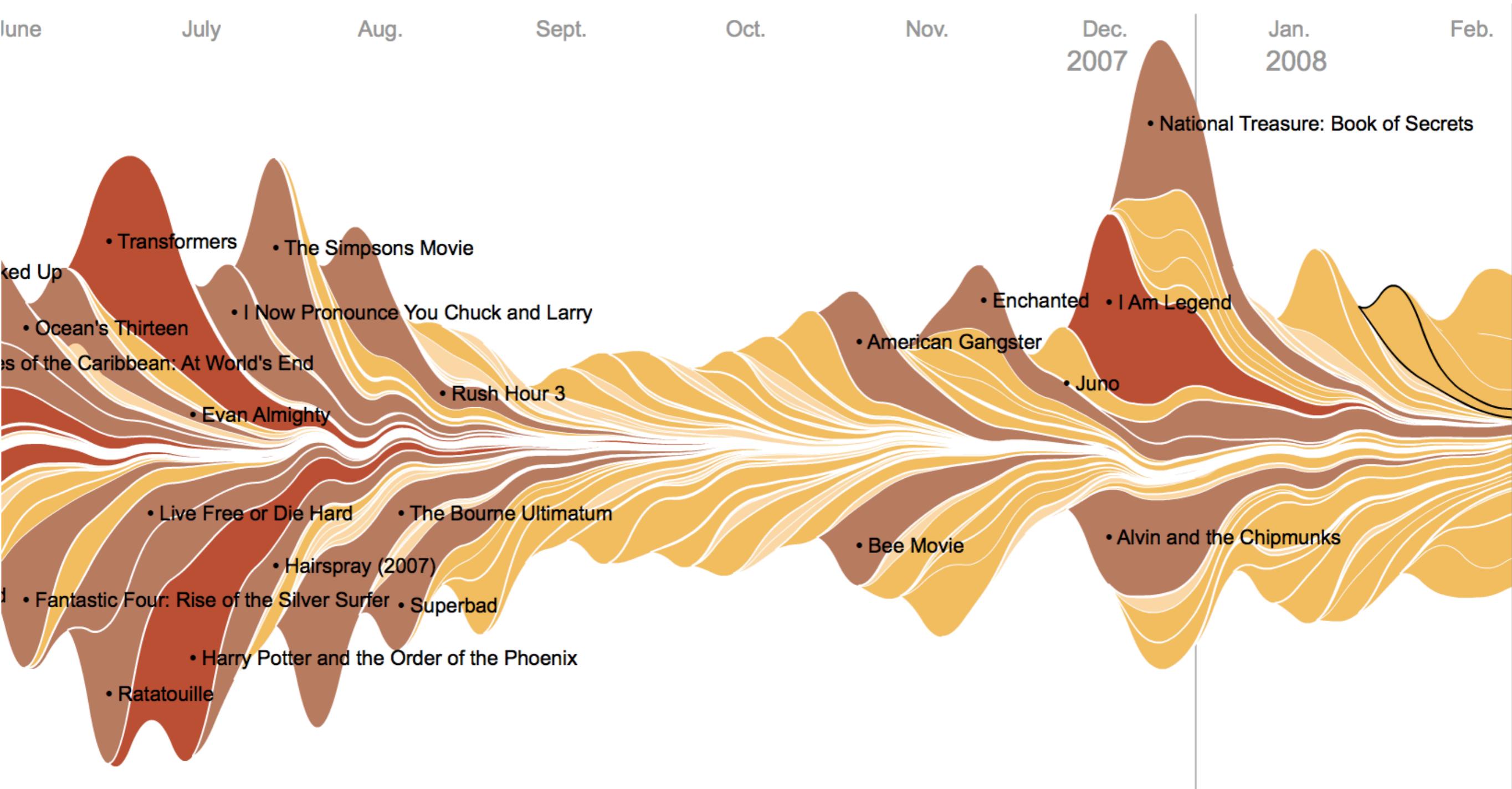
Sugar, white, 33-80 oz. pkg, per lb.



DATA: CATEGORICAL, QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: COLOUR-HUE, HEIGHT, AREA, COLOUR-SATURATION/LIGHTNESS

# STREAM GRAPH

## EBB & FLOW OF MOVIES



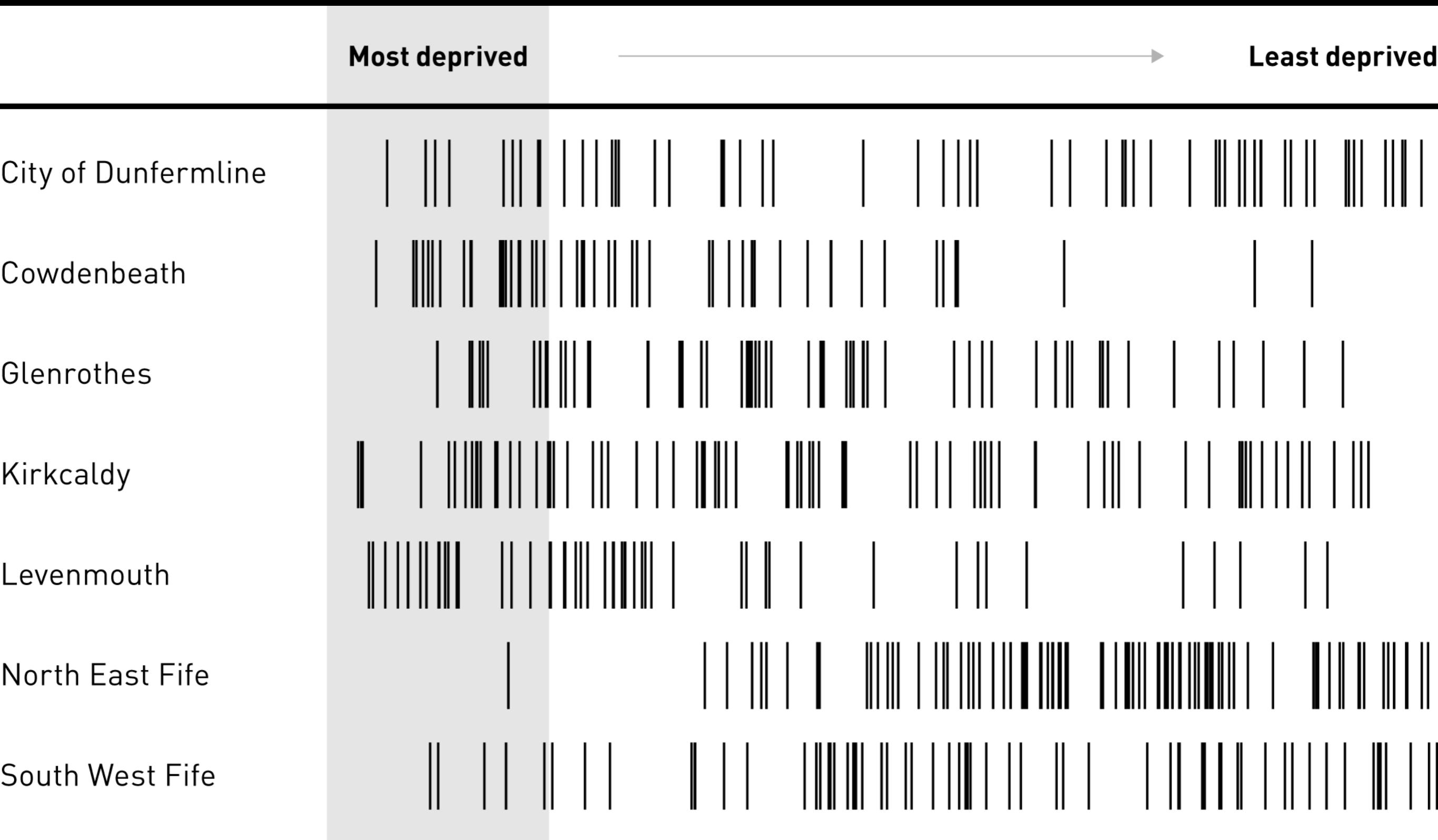
DATA: QUANTITATIVE-RATIO, QUANTITATIVE=INTERVAL  
VISUAL: POSITION, COLOUR-HUE, HEIGHT

# CANDLESTICK CHART (OR BOX AND WHISKERS PLOT, OHLC CHART)



DATA: CATEGORICAL, QUANTITATIVE-INTERVAL  
VISUAL: POSITION, COLOUR-HUE, HEIGHT/WIDTH

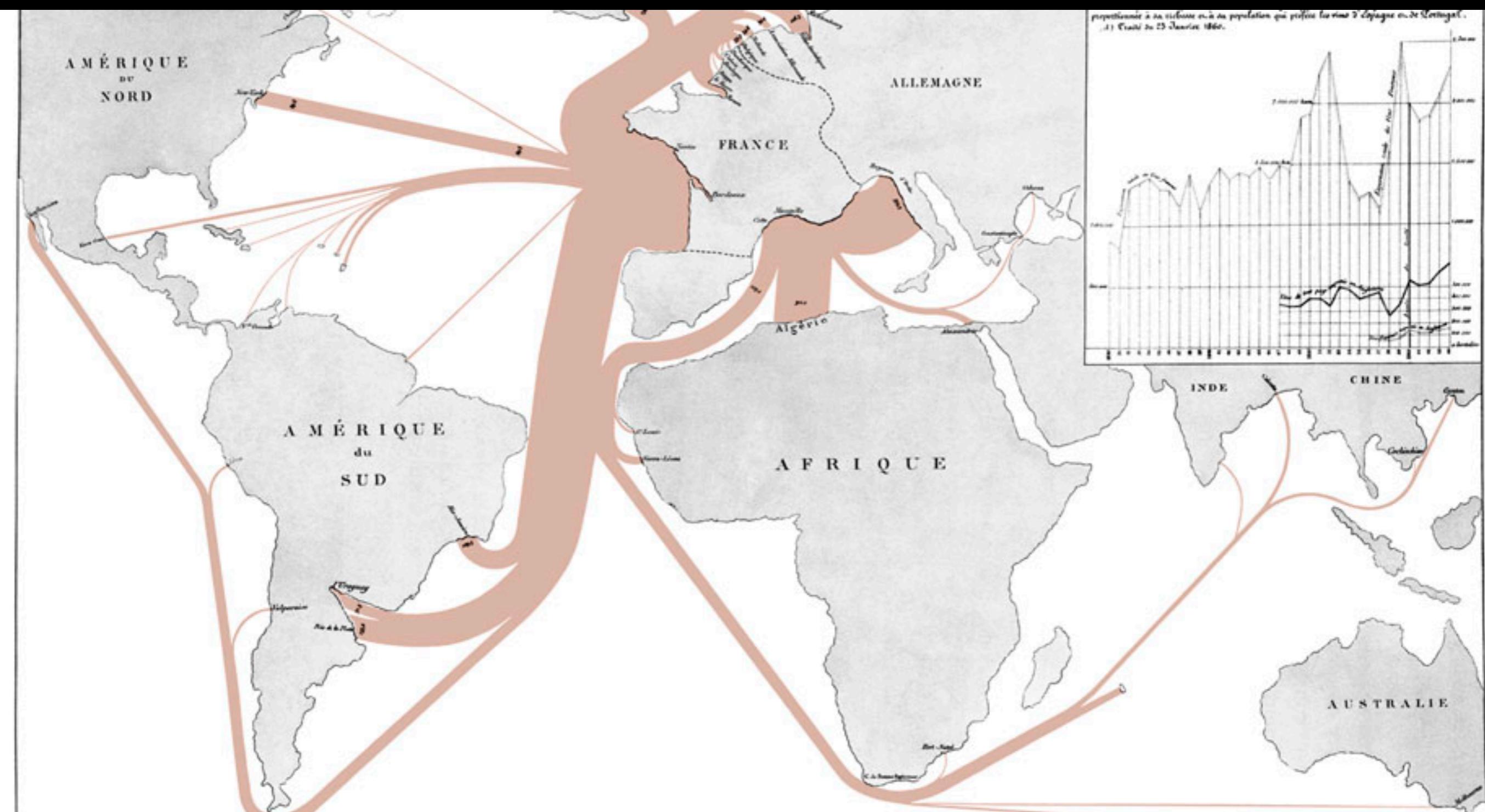
# BARCODE CHART



DATA: CATEGORICAL, QUANTITATIVE-INTERVAL  
VISUAL: POSITION, COLOUR-HUE, HEIGHT/WIDTH

# FLOW MAP

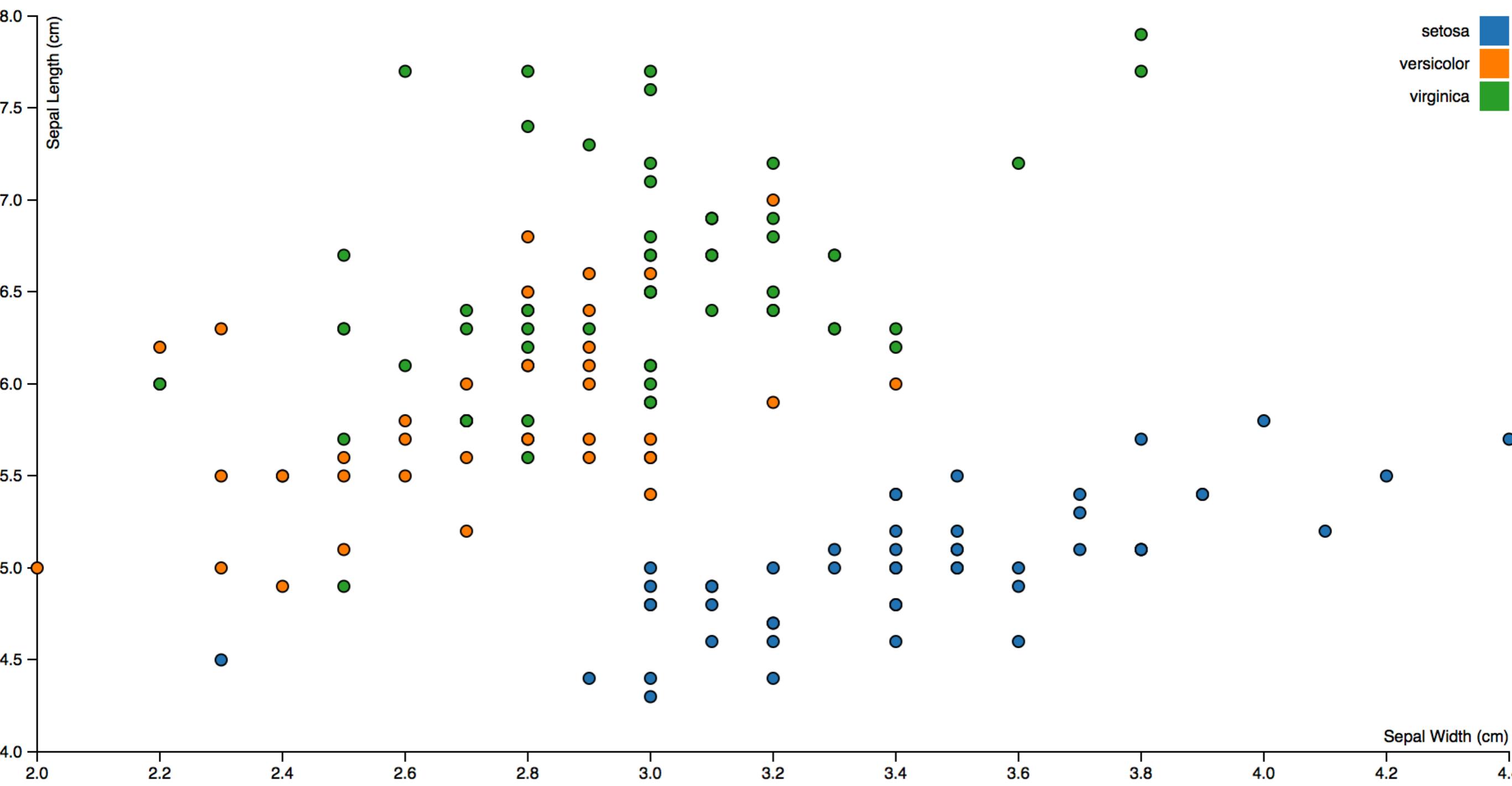
CHARLES JOSEPH MINARD'S MAP OF FRENCH WINE EXPORTS FOR 1864



DATA: QUANTITATIVE  
VISUAL: POSITION, COLOUR

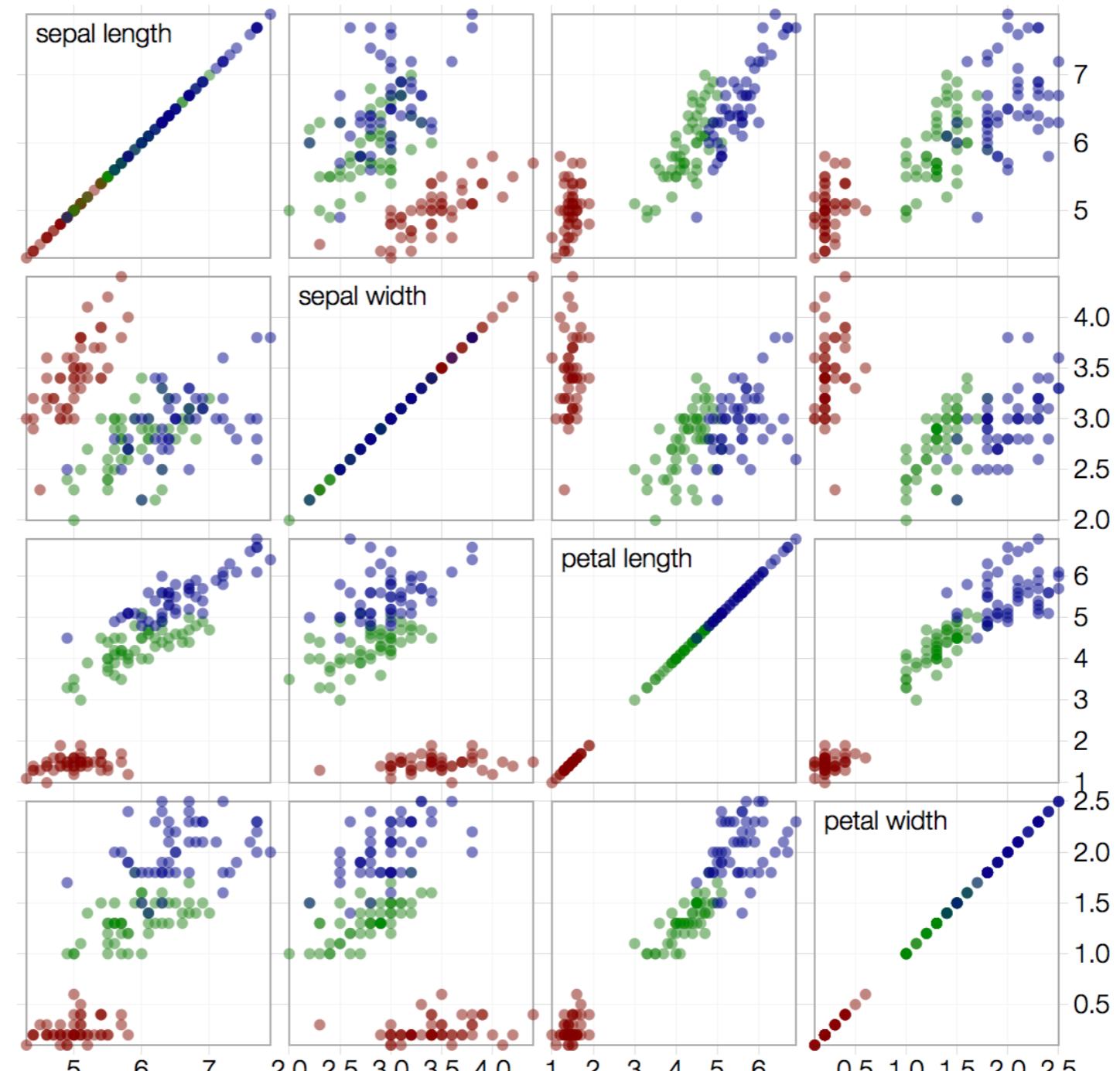
# SCATTER PLOT

IRIS DATASET, SEPAL LENGTH AND WIDTH



DATA: QUANTITATIVE  
VISUAL: POSITION, COLOUR

# SCATTER PLOT - MATRIX



- *Iris setosa*
- *Iris versicolor*
- *Iris virginica*

Edgar Anderson's *Iris* data set  
scatterplot matrix

Thu  
Fri  
Sat  
Sun

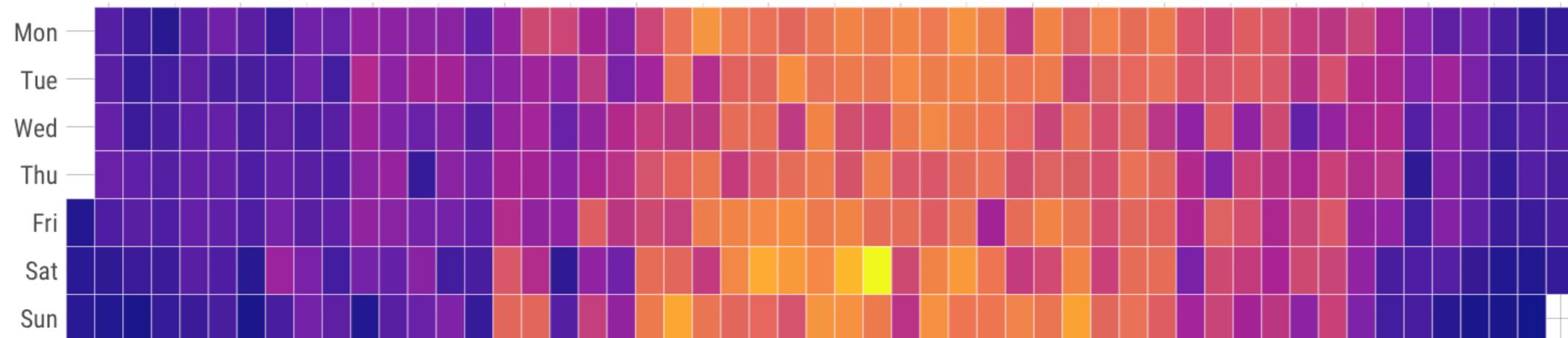
DATA: QUANTITATIVE-RATIO, CATEGORICAL  
VISUAL: POSITION, COLOUR-SATURATION

# HEATMAP (OR MATRIX CHART)

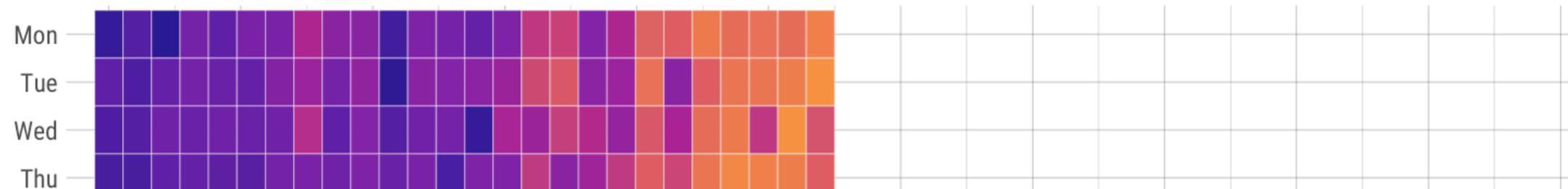
2015



2016



2017

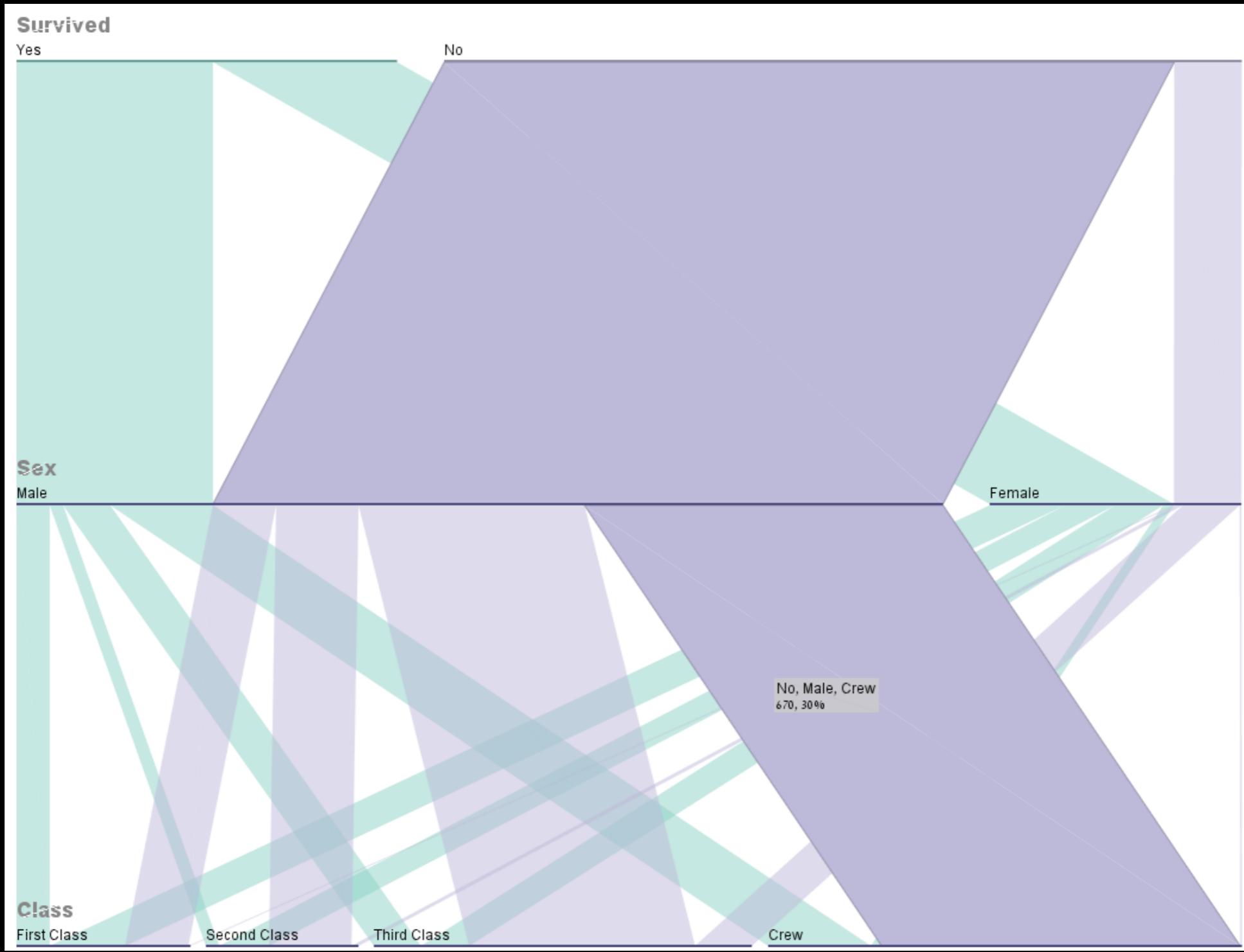


Divvy Rides

20000  
15000  
10000  
5000

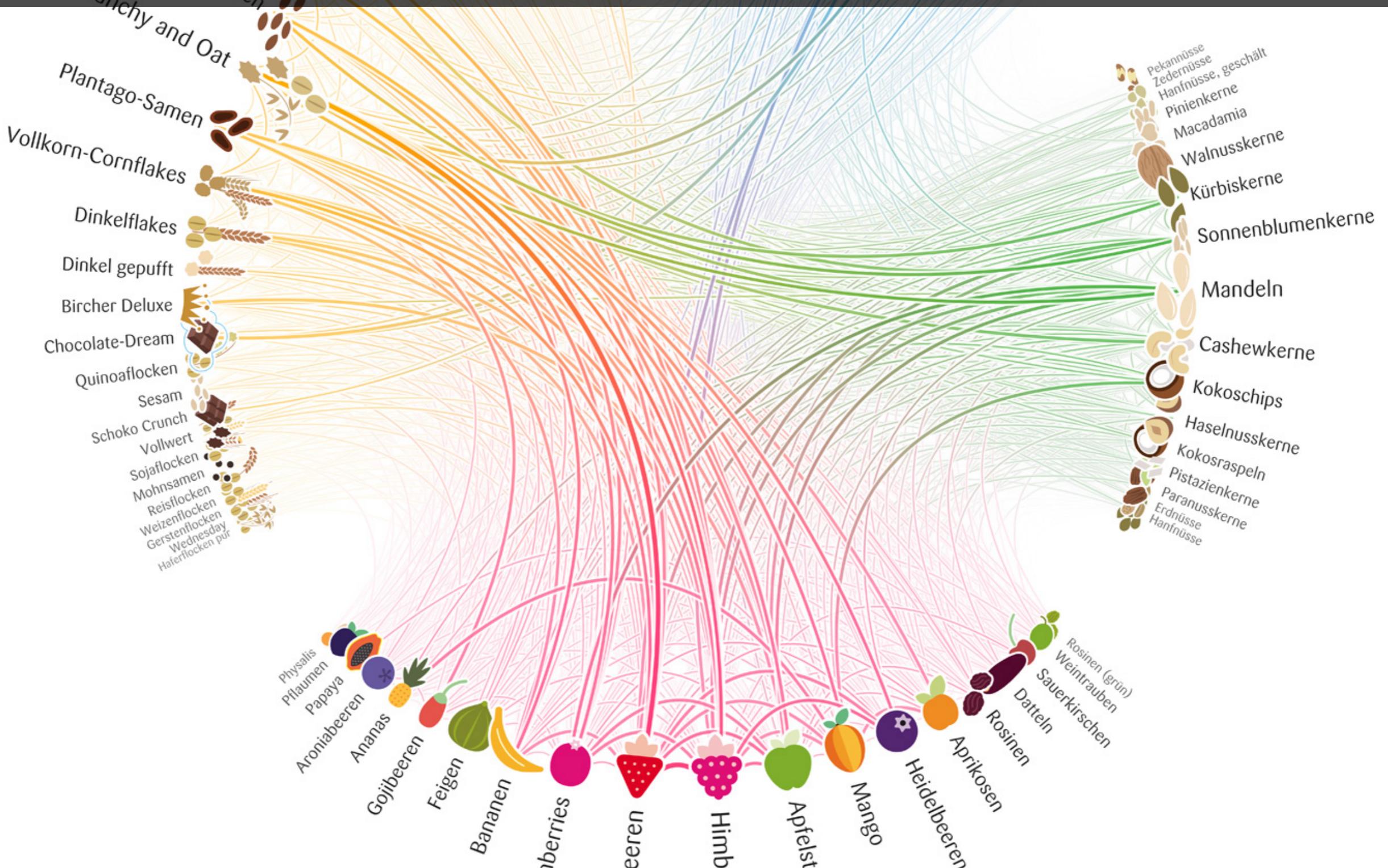
**DATA:** CATEGORICAL, QUANTITATIVE-RATIO  
**VISUAL:** POSITION, WIDTH, LINK, COLOUR-HUE

# PARALLEL SETS (OR PARALLEL COORDINATES)



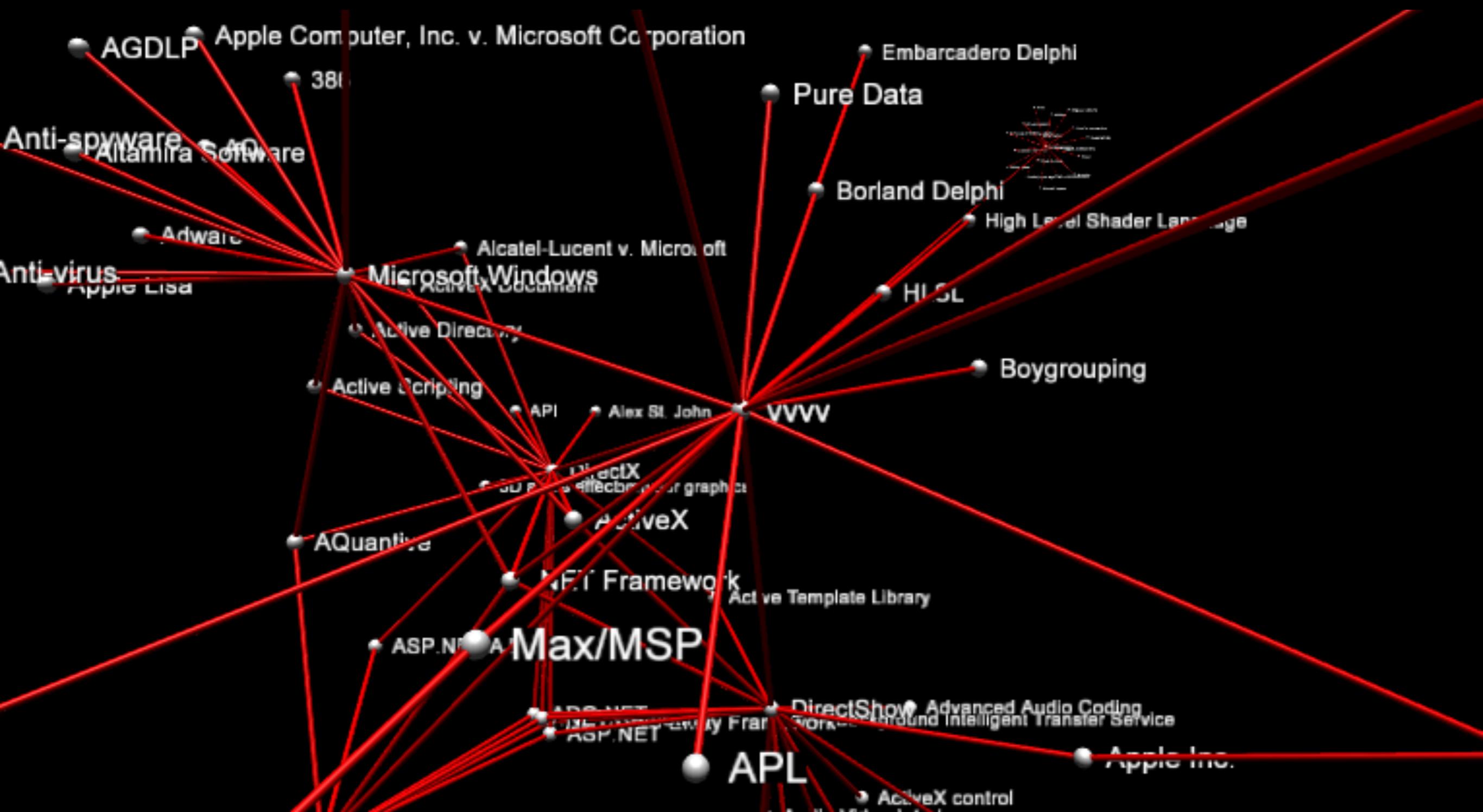
DATA: CATEGORICAL, QUANTITATIVE-RATIO  
VISUAL: POSITION, CONNECTION, WIDTH, COLOUR-HUE, COLOUR-LIGHTNESS, SYMBOL, SIZE

# RADIAL NETWORK (OR CHORD DIAGRAM)



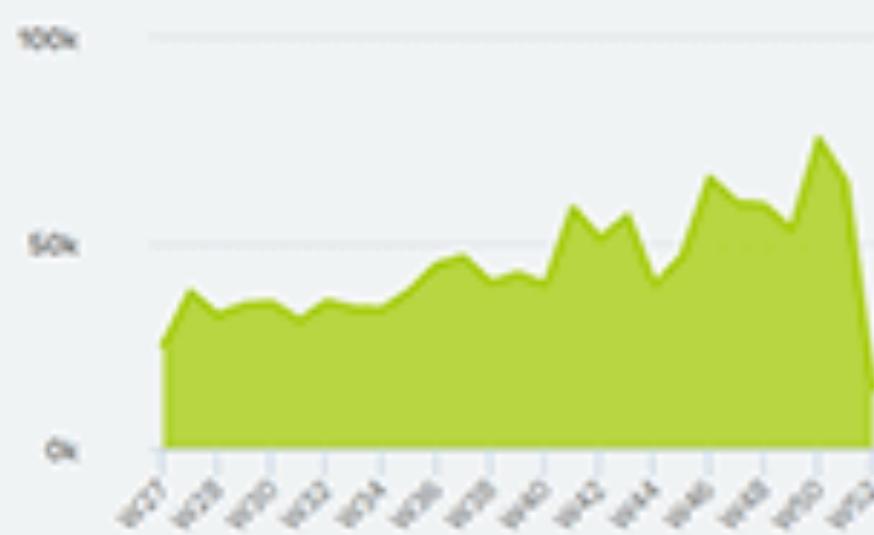
**DATA:** CATEGORICAL-NOMINAL, QUANTITATIVE-RATIO  
**VISUAL:** POSITION, CONNECTION, AREA, COLOUR-HUE

# NETWORK DIAGRAM (OR FORCE-DIRECTED/NODE-LINK NETWORK)

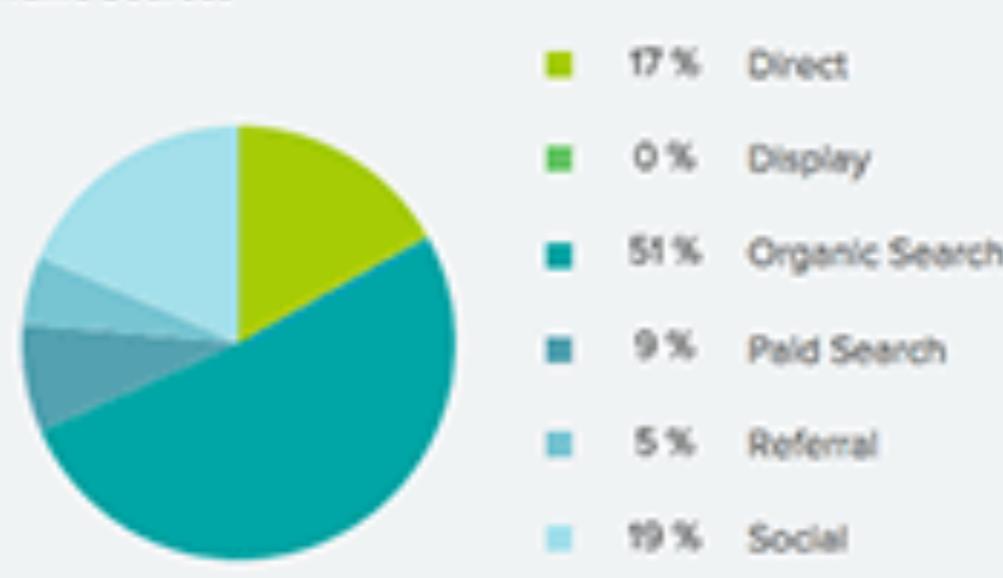


# DASHBOARDS

Sessions by Week of Year



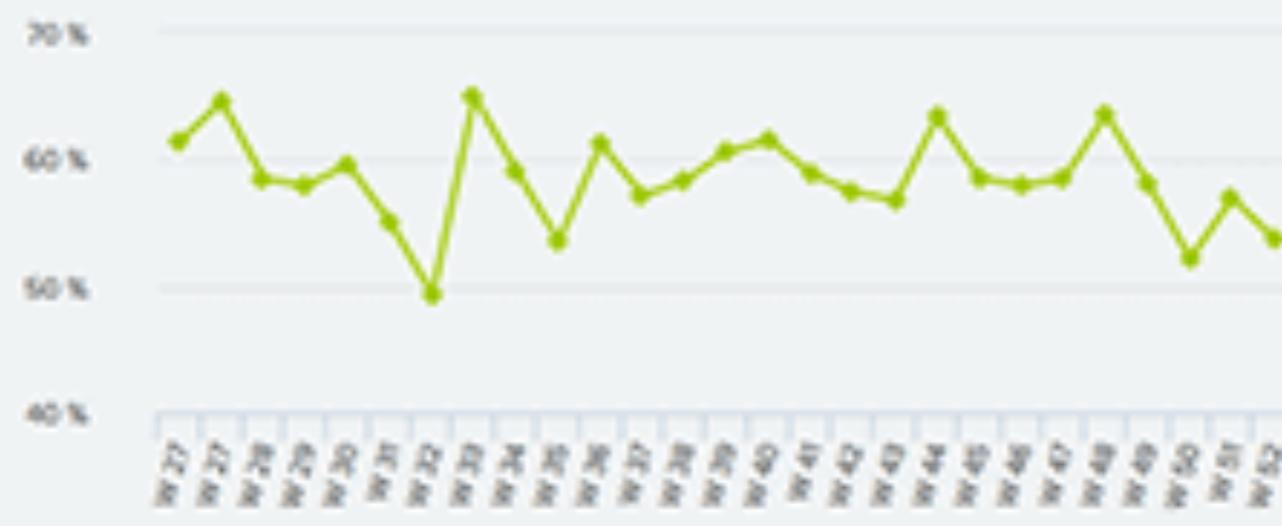
Traffic Sources



Visitors by User Type



Bounce Rate by Week of Year



Conversion Rates

Channel (Top 3 vs. Bottom 3)



Campaign (Top 3 vs. Bottom 3)



Landing Page (Top 3 vs. Bottom 3)



# ANIMATED VISUALISATION

Crowdsourced Data of 2013 Deaths by Shooting

U.S. GUN DEATHS IN

2013 2010

11,419

PEOPLE KILLED

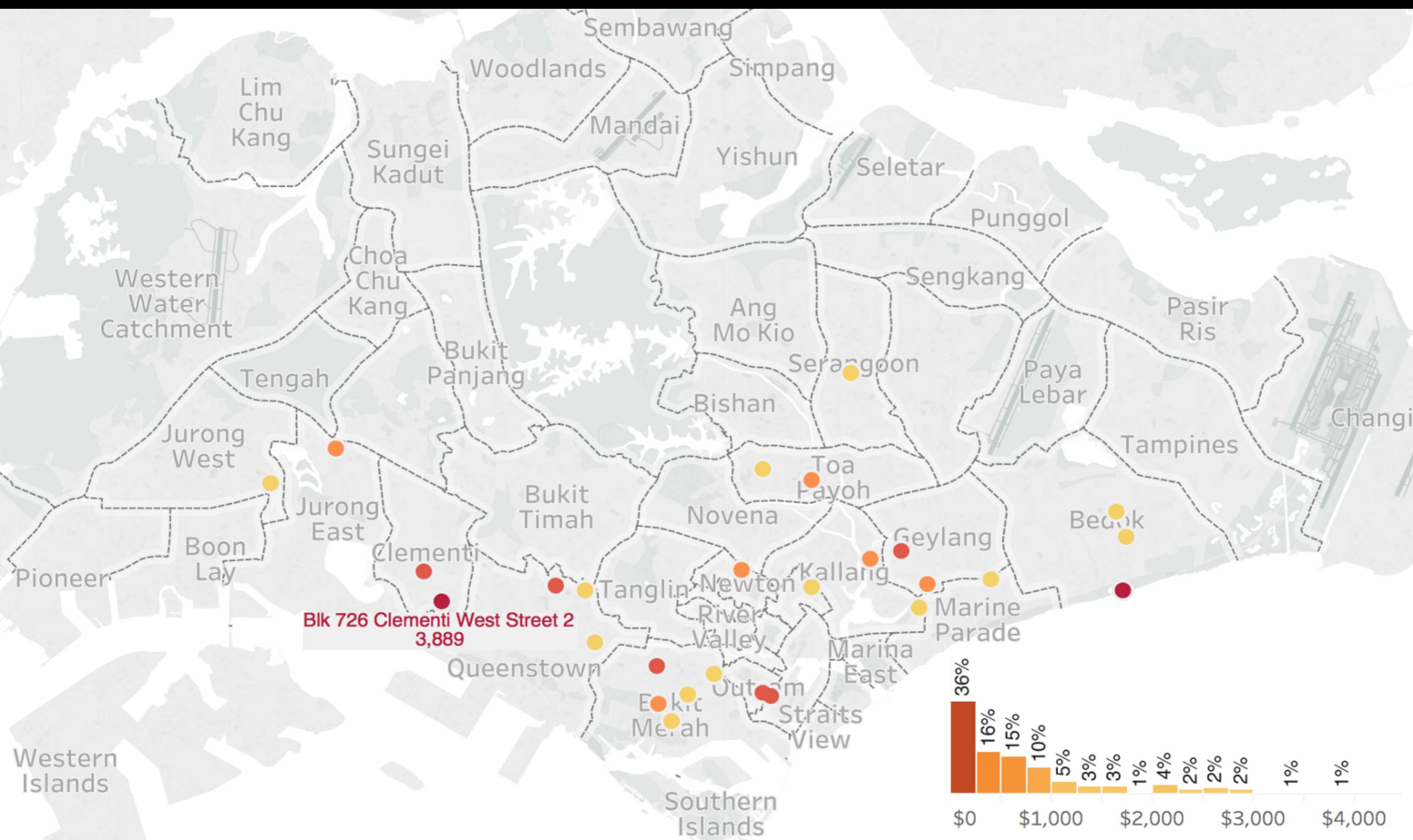
5



AGE 0

# USED SINCE PREHISTORICAL ERA

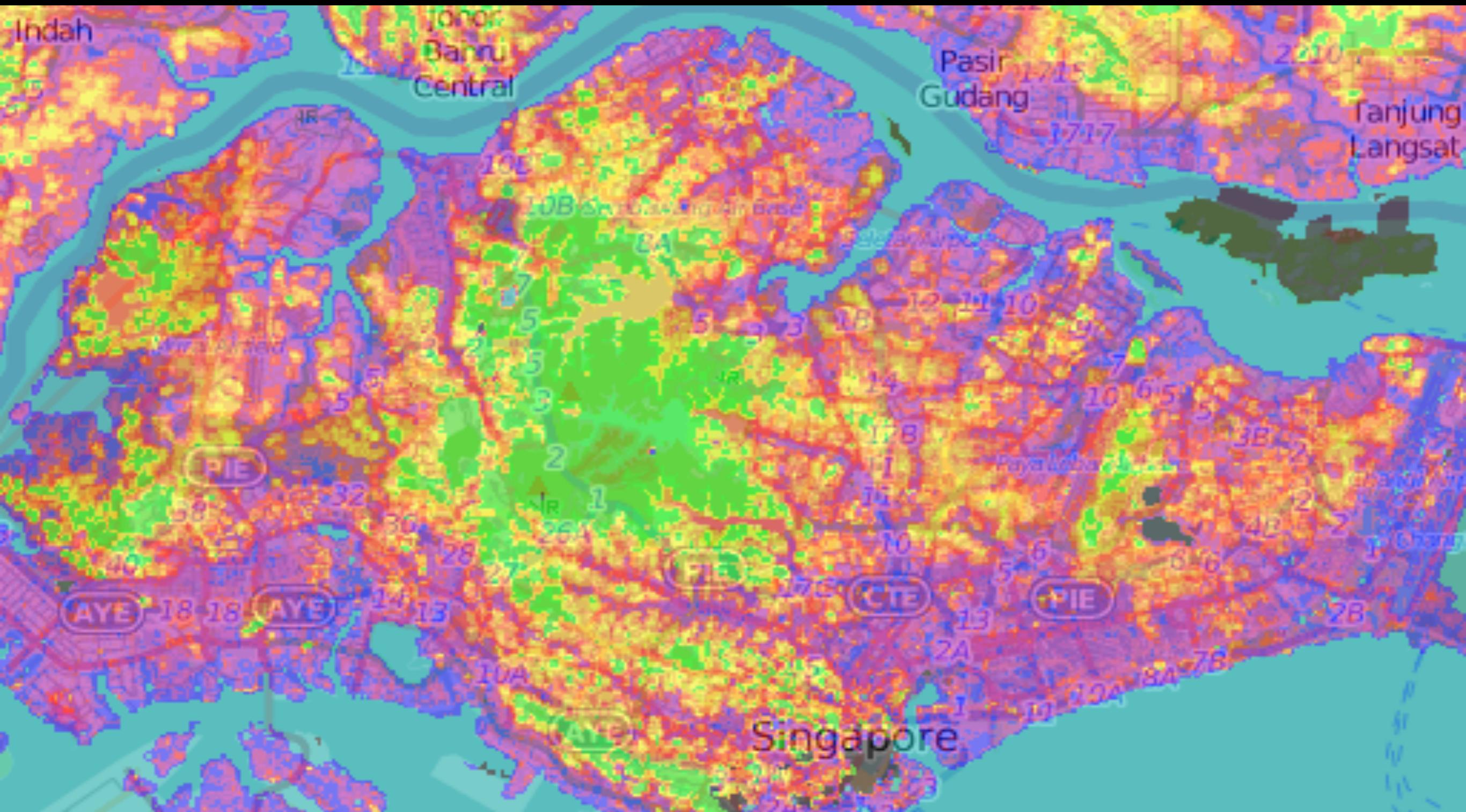
# MAPS



**DATA:** CATEGORICAL, QUANTITATIVE

**VISUAL:** POSITION, COLOUR-HUE, COLOUR-SATURATION, COLOUR-DARKNESS

# TOPOLOGICAL MAP (OR CONTOUR MAP OR ISARITHMIC MAP)

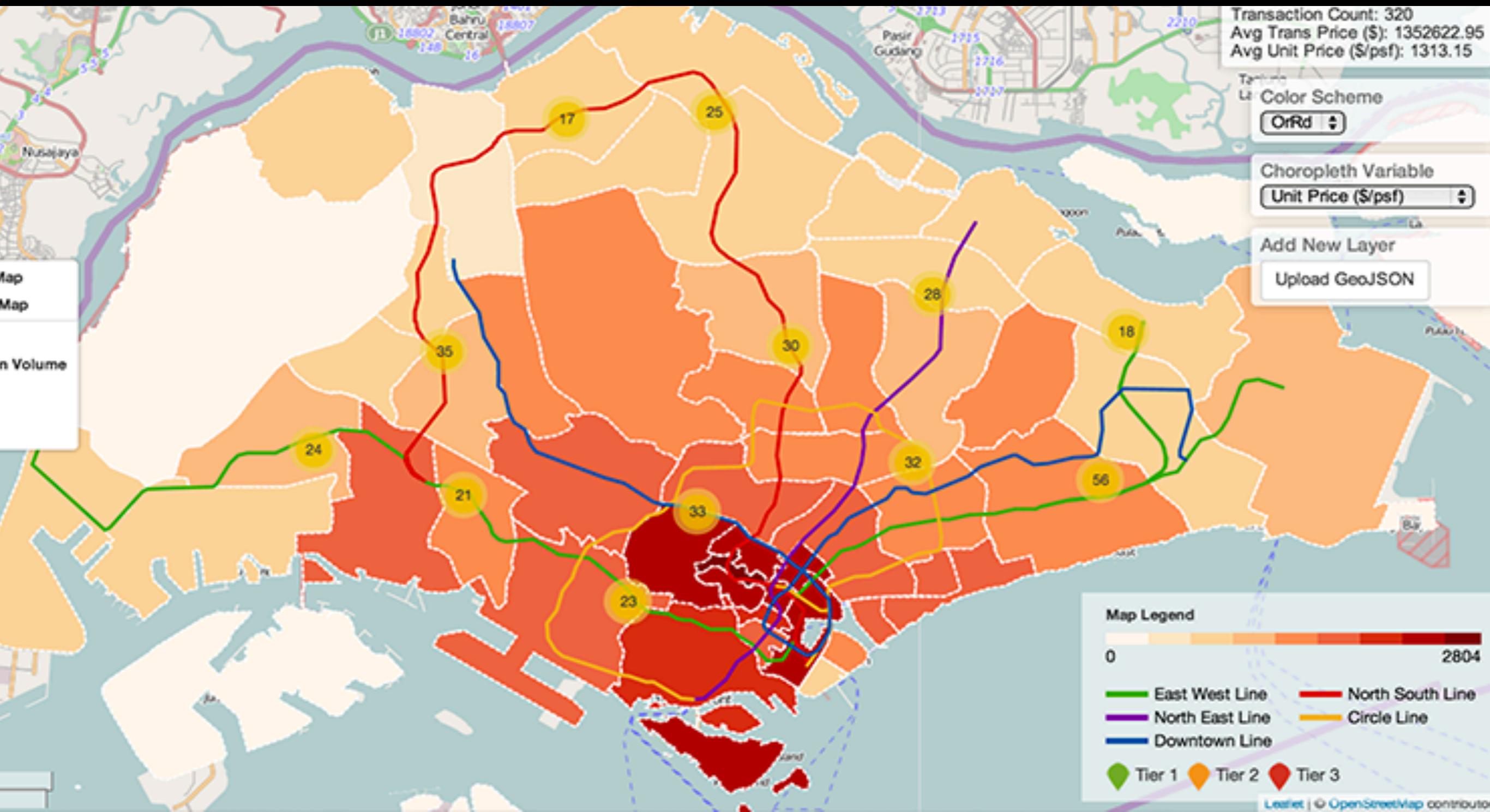


DATA: CATEGORICAL, QUANTITATIVE

VISUAL: POSITION, COLOUR-HUE, COLOUR-SATURATION, COLOUR-DARKNESS

# CHOROPLETH MAP

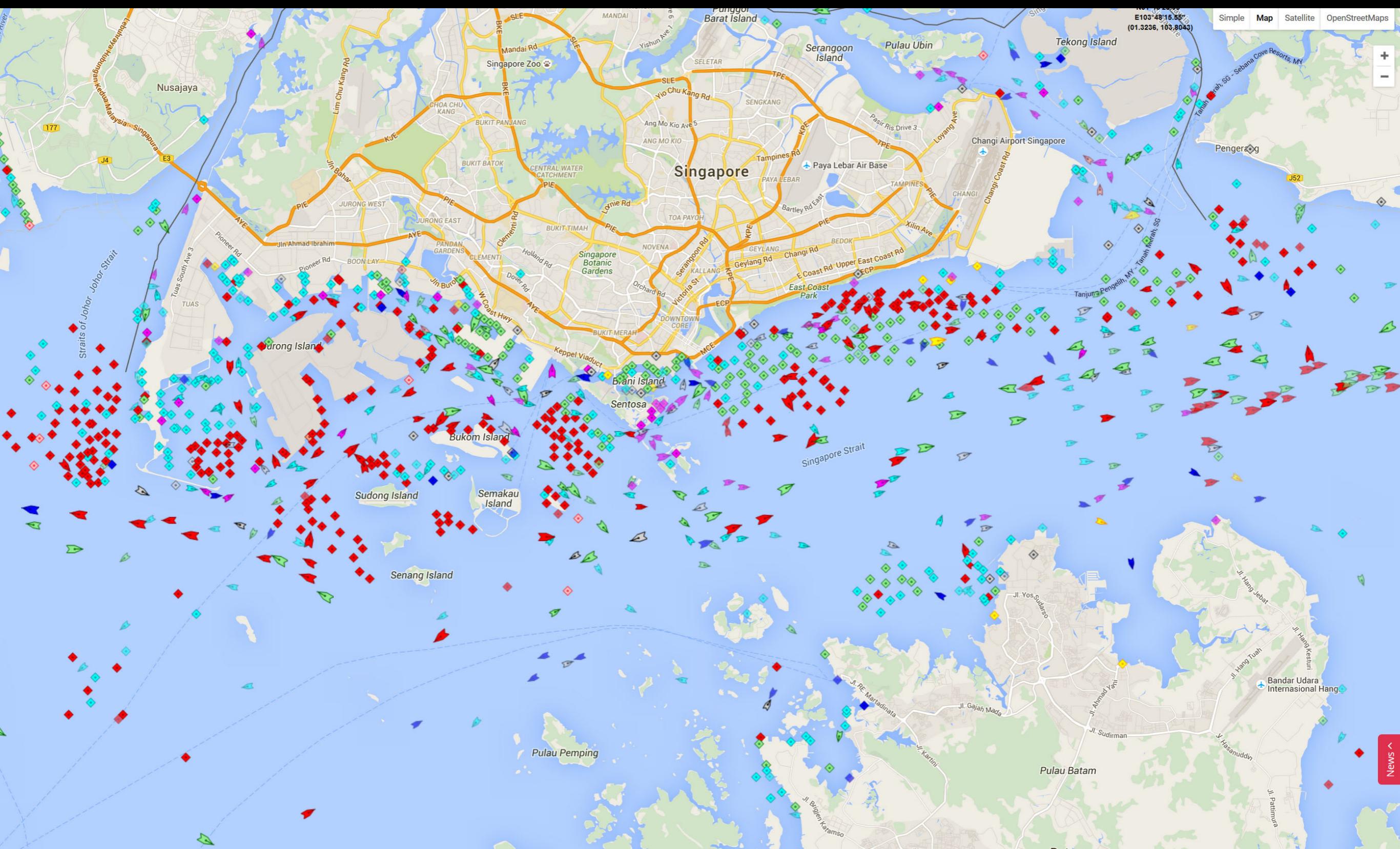
## SINGAPORE PROPERTY PRICES



DATA: QUANTITATIVE-INTERVAL

VISUAL: POSITION

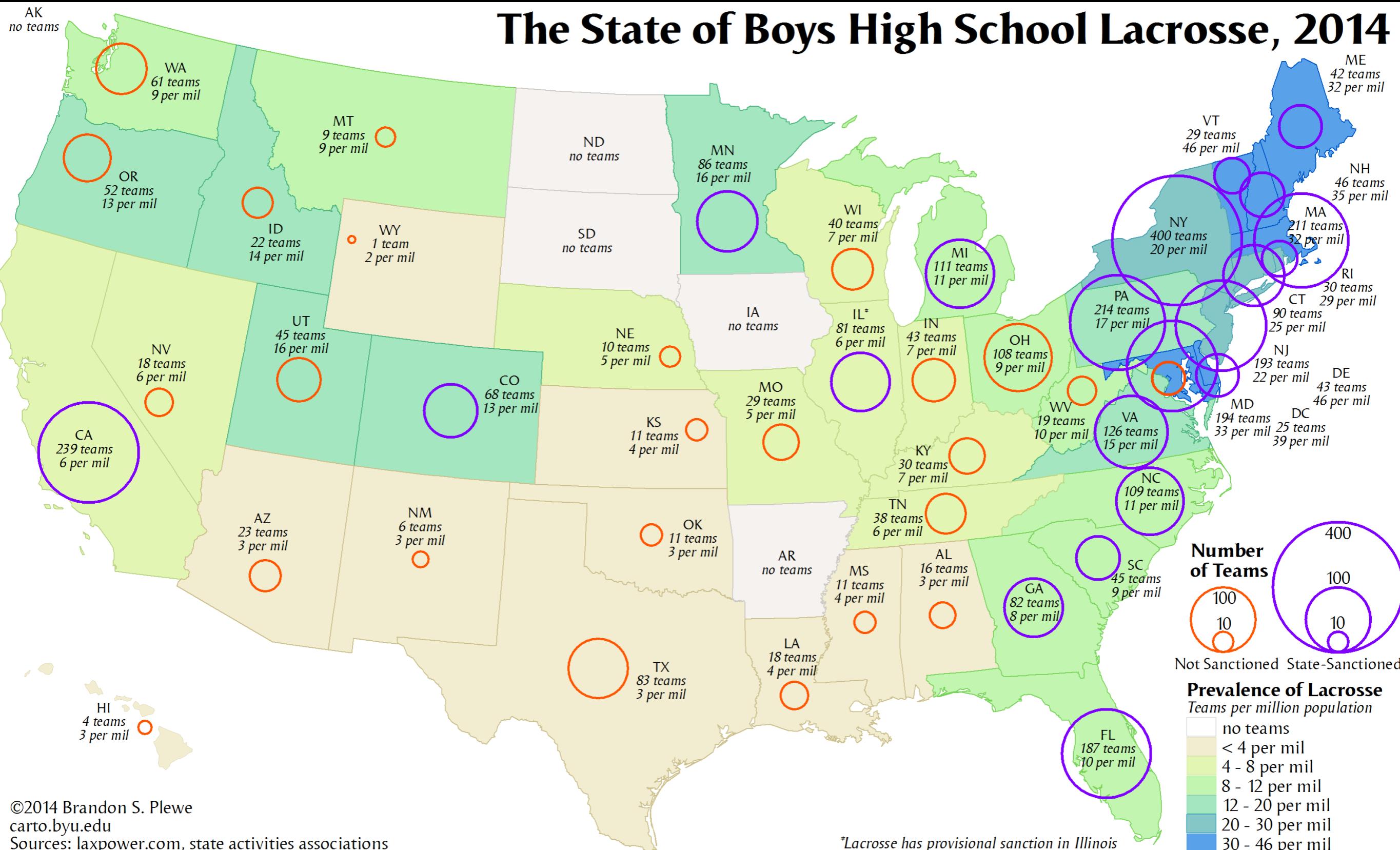
# DOT PLOT MAP



**DATA:** CATEGORICAL-NOMINAL, QUANTITATIVE-INTERVAL, QUANTITATIVE-RATIO  
**VISUAL:** POSITION, COLOUR-HUE, AREA

# BUBBLE PLOT MAP

## The State of Boys High School Lacrosse, 2014



DATA: QUANTITATIVE

VISUAL: POSITION, DIRECTION, THICKNESS, SPEED

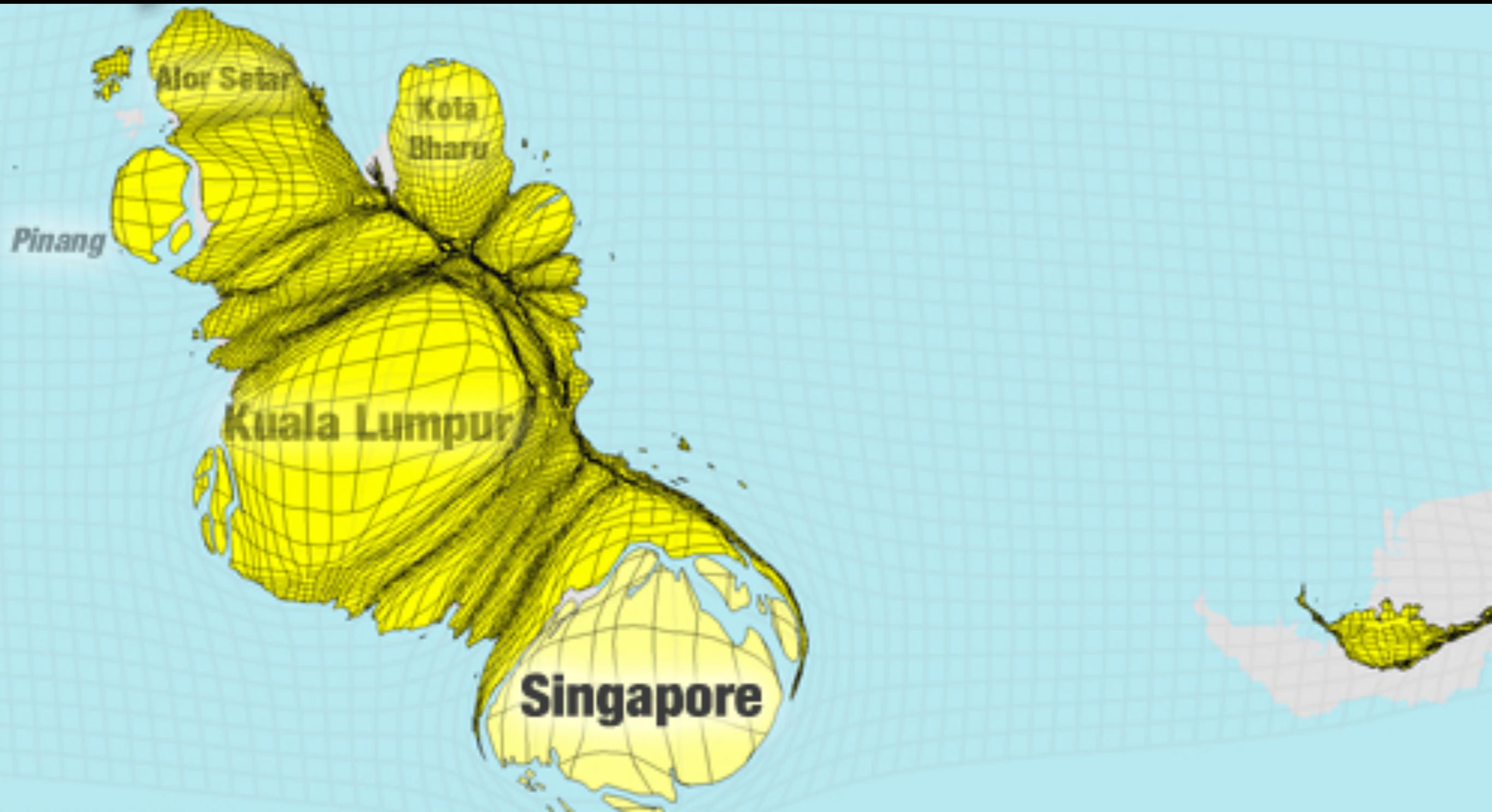
# PARTICLE FLOW MAP



**DATA:** QUANTITATIVE-INTERVAL, QUANTITATIVE-RATIO

**VISUAL:** POSITION, SIZE

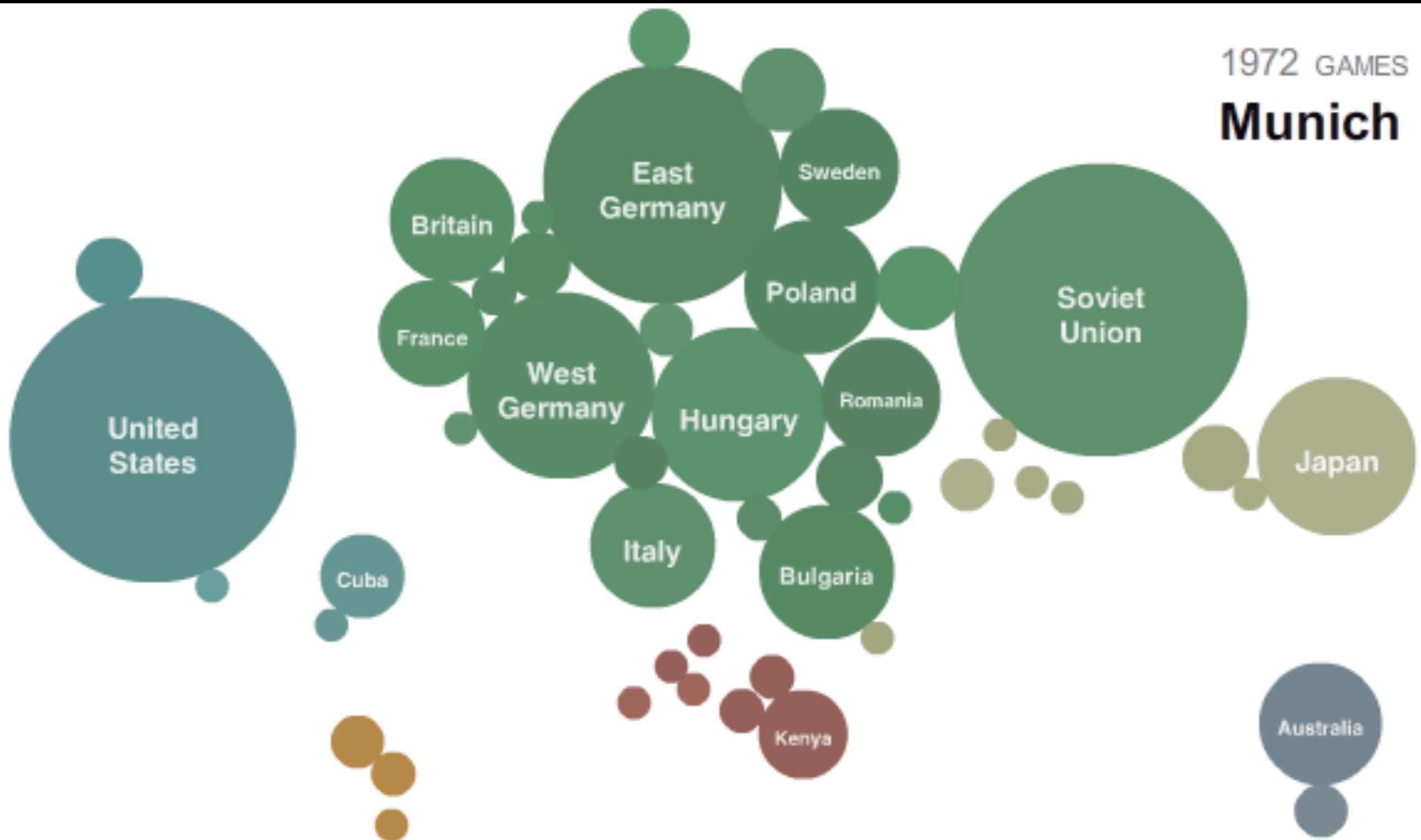
# CARTOGRAM



## **DATA: CATEGORICAL, QUANTITATIVE-RATIO**

**VISUAL:** POSITION, COLOUR-HUE, SIZE

# DORLING CARTOGRAM



DATA: CATEGORICAL-NOMINAL, QUANTITATIVE-INTERVAL

VISUAL: POSITION, COLOUR-HUE, LINK

# NETWORK CONNECTION MAP

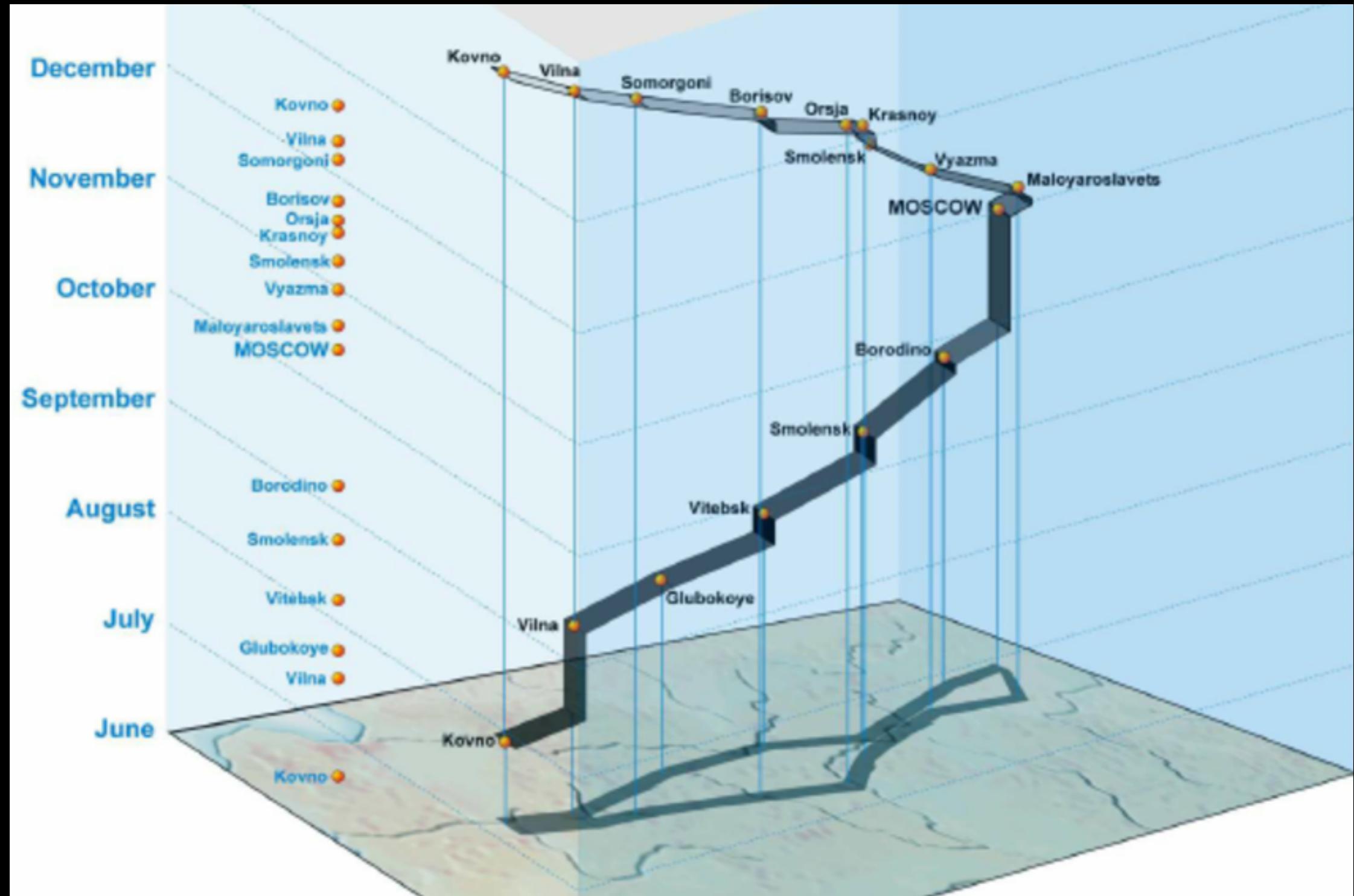


Virgin Australia and Singapore Airlines Alliance

NOVEMBER 2016

# SPATIAL-TEMPORAL CUBE VISUALISATION

NAPOLEON'S MARCH IN RUSSIA 1812



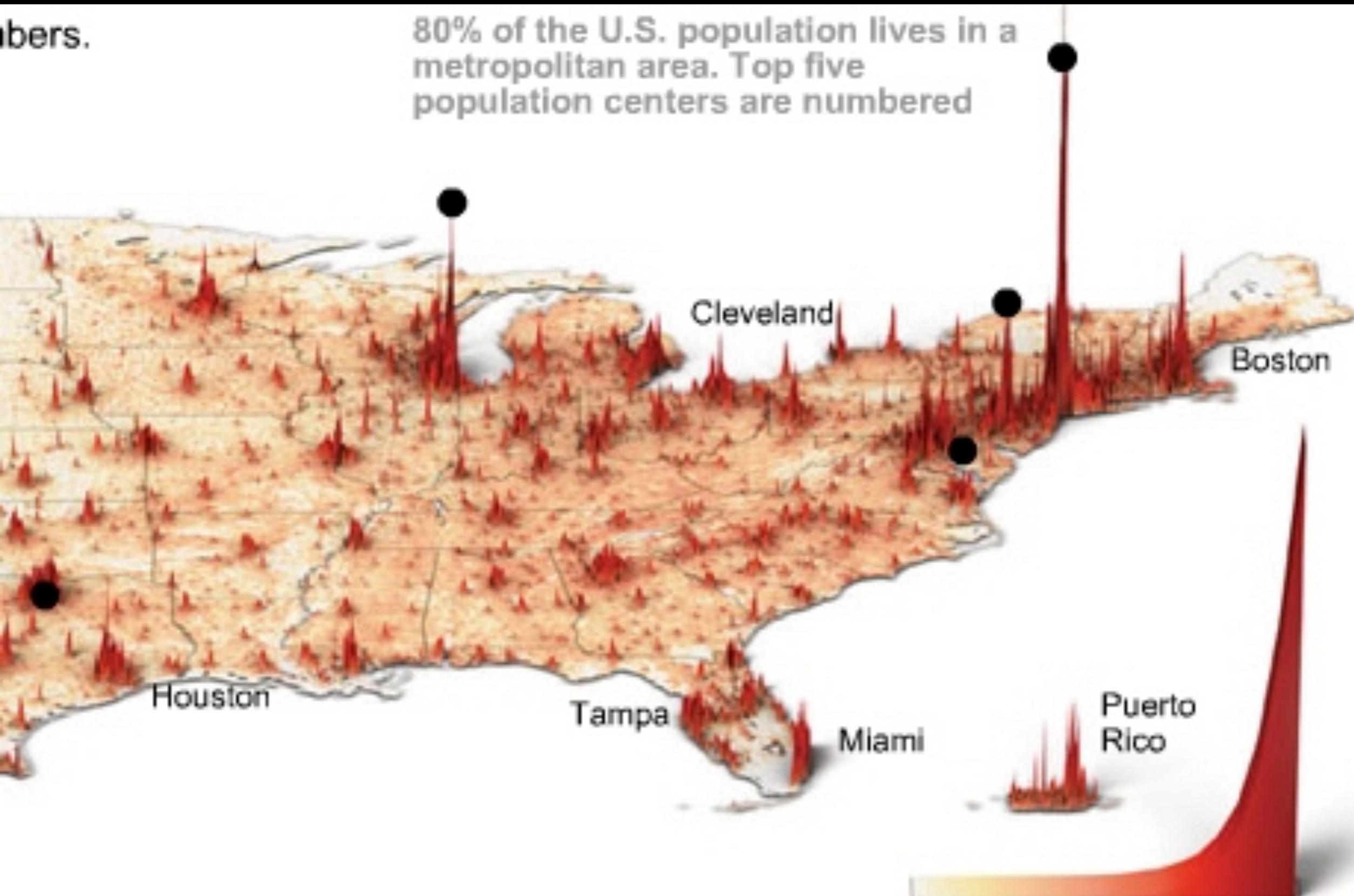
# ANIMATED MAP



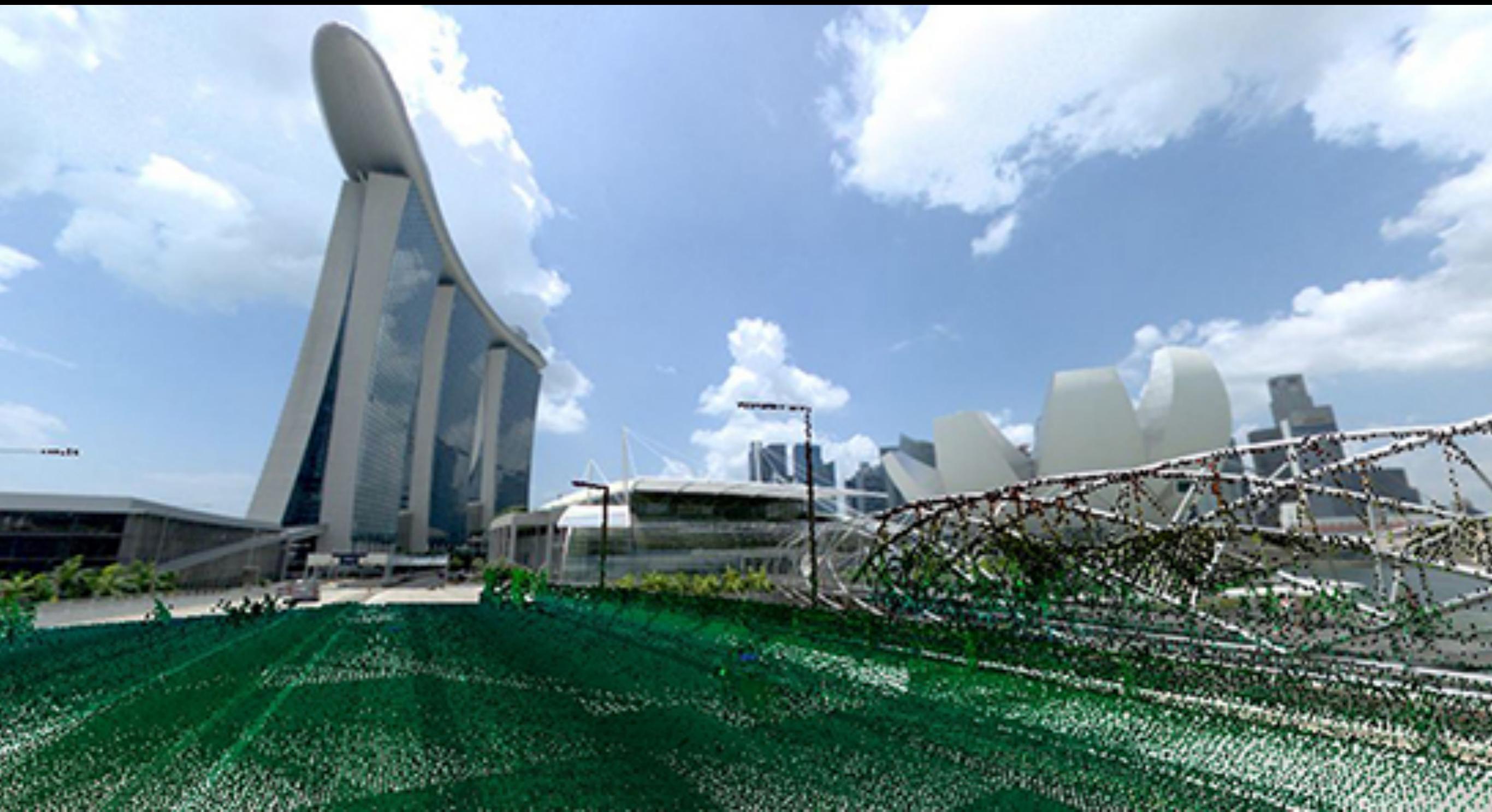
# 3D MAP

bers.

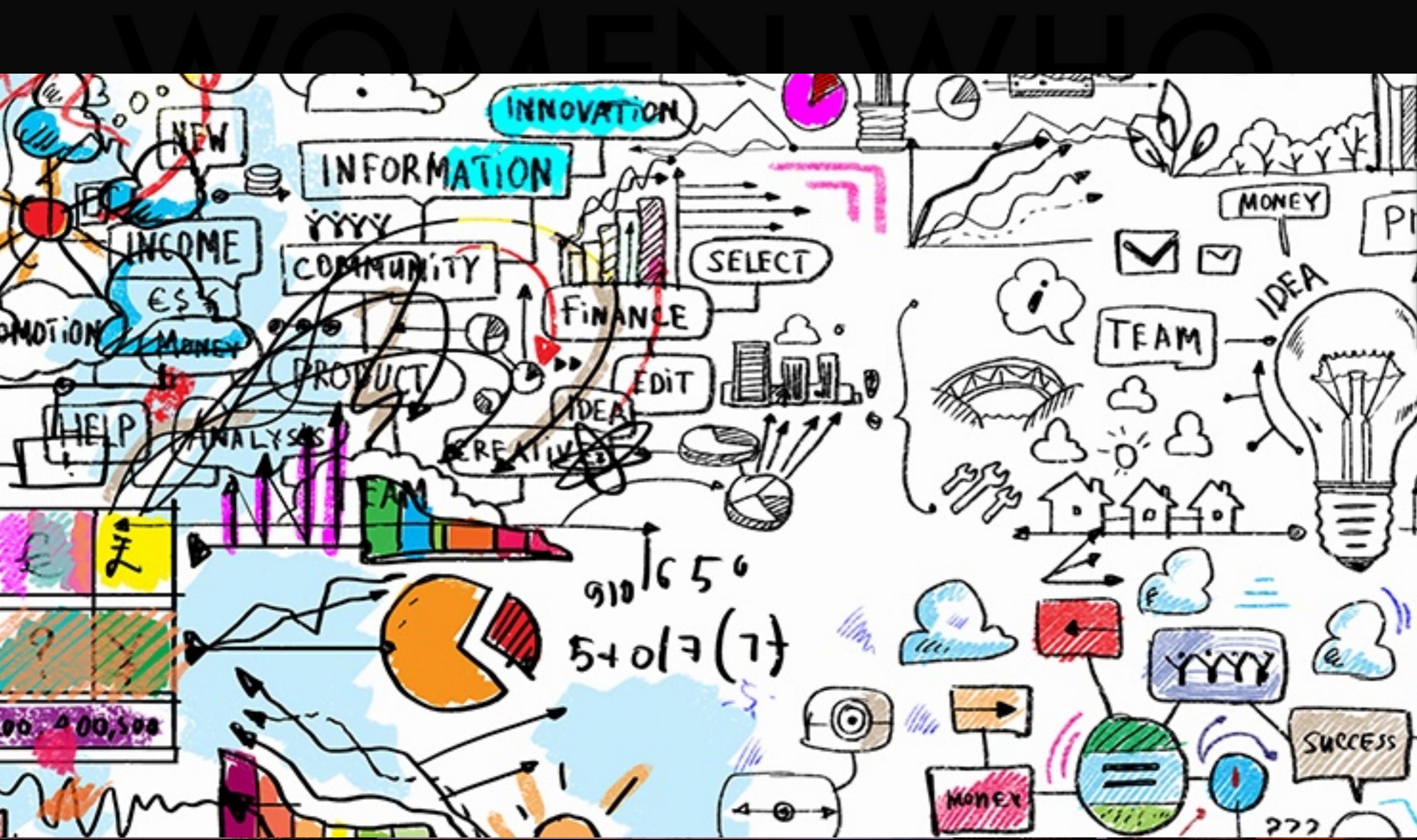
80% of the U.S. population lives in a metropolitan area. Top five population centers are numbered



# VIRTUAL REALITY



Thank you !  



# Coming soon ...

Our next event:

**Python 101**

Weekly session:

**Social Coding Monday**