



CUPH

Center for Urban
Population Health

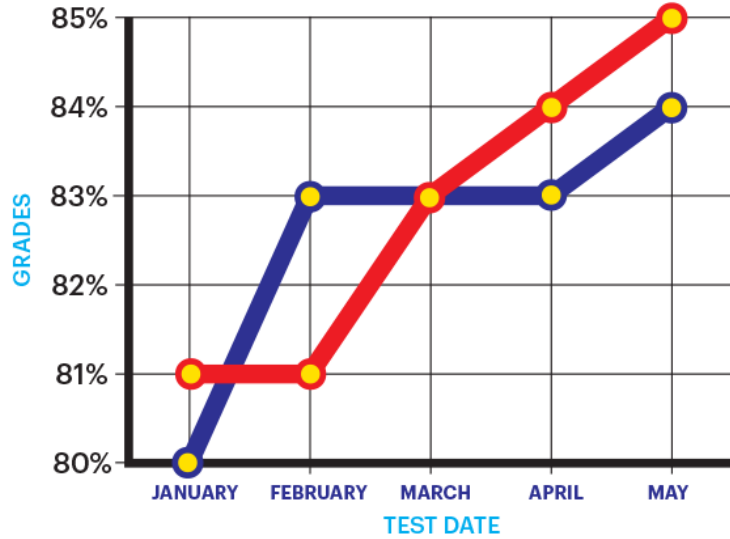
*Data-driven. Evidence-based.
Community-engaged.*

Tips for Effectively Visualizing Your Data

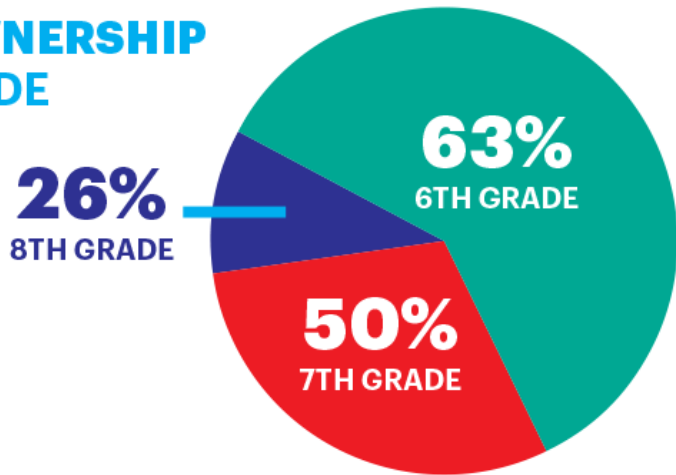
Michelle Corbett & Michelle Bunyer

Why should we care how our data is visualized?

BOB'S TEST SCORES IN 2017



PET OWNERSHIP BY GRADE



MOST WICKETS IN DEATH OVERTS IN ODIS

SINCE THE START OF JANUARY 2017

■ WKTS ■ AVE



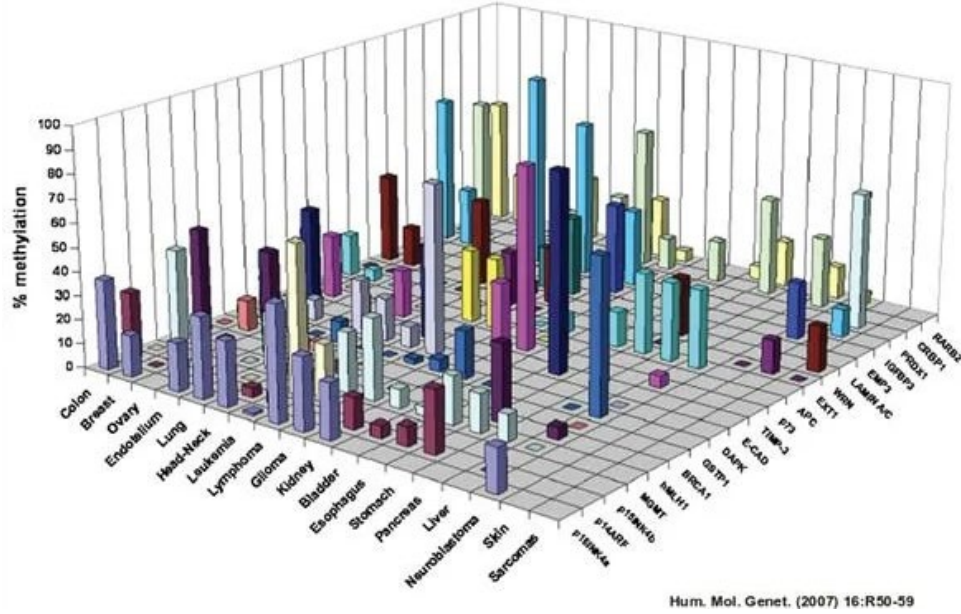
NUMBERS UPDATED TILL MAY 14, 2019



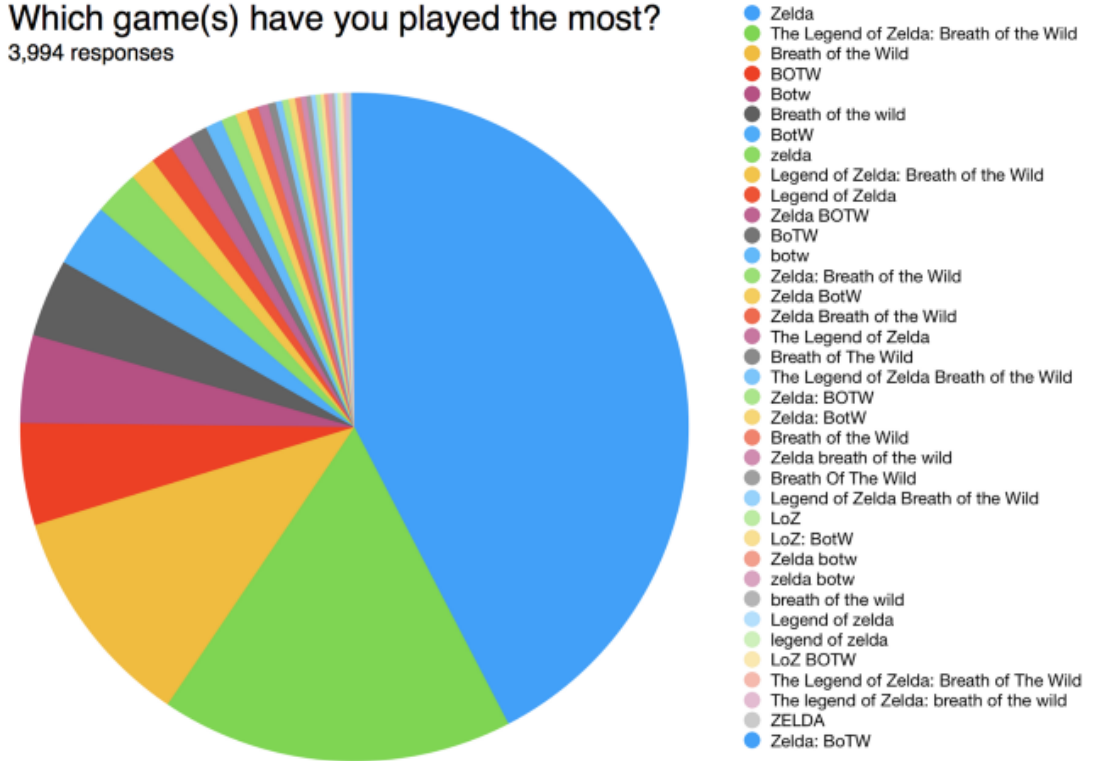
CUPH
Center for Urban
Population Health

Data-driven. Evidence-based.
Community-engaged.

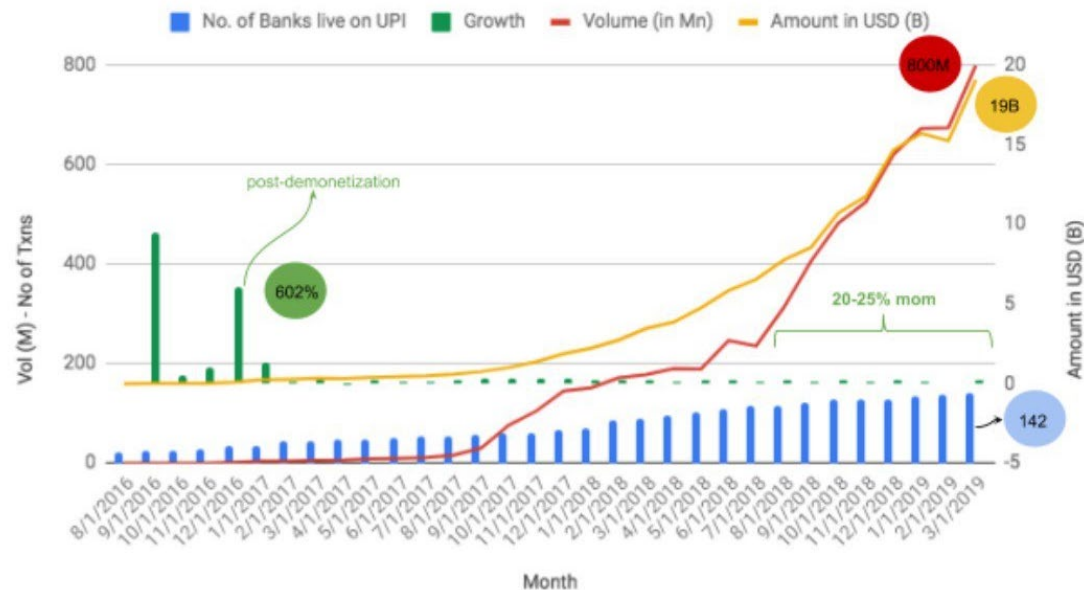
A CpG Island Hypermethylation Profile of Human Cancer



Which game(s) have you played the most? 3,994 responses



No. of Banks live on UPI, Volume (in Mn) and Amount in USD (B)



<https://badvisualisations.tumblr.com/post/185441621576/1-why-would-you-stack-bars-with-quantities-that>
<https://www.livestories.com/blog/five-ways-to-fail-data-visualization>
<https://towardsdatascience.com/why-is-this-chart-bad-5f16da298afa>

A Few Tips

- Make sure your data is clean
- Identify the purpose and your audience
- Select the right chart
- Use text and labels to clarify
- Use color to highlight, differentiate, or compare
- Avoid misleading visualizations

Select the right chart

- Keep your audience and their data literacy level in mind
- Choose a chart that everyone will understand
- Consider what you want your audience to take away, e.g., exact values, comparisons, trends

Common Chart Types by Purpose

Inform

(YOU WANT TO CONVEY A SINGLE IMPORTANT DATA POINT)



SINGLE BIG NUMBER



DONUT CHART
Simple proportion



PICTOGRAPH
Simple proportion

Compare

(YOU WANT TO COMPARE CATEGORIES OR SHOW COMPOSITION)



BAR CHART
Categories (many)



WORD CLOUD
Word frequencies



PIE CHART
Composition



STACKED BAR CHART
Composition, over time or across categories

Organize

(YOU WANT TO SHOW GROUPINGS, RANKINGS, OR PROCESSES)



LIST
Process (simple)



FLOW CHART
Process (complex)



TABLE
Many variables with different units



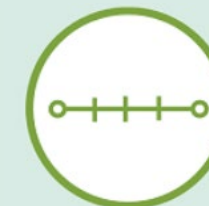
ORDERED BAR CHART
Rankings (numerical)

Change

(YOU WANT TO SHOW CHANGE OVER TIME OR BY LOCATION)



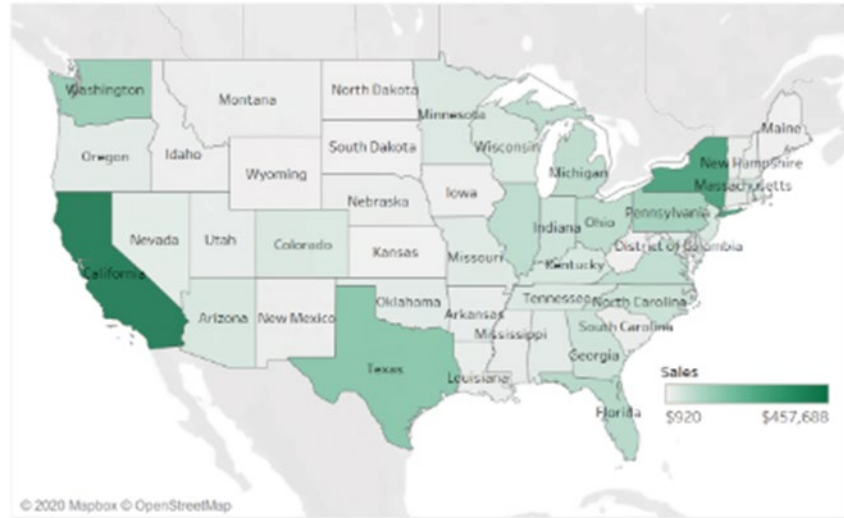
LINE CHART
Many series over time



TIMELINE
Distinct events in time



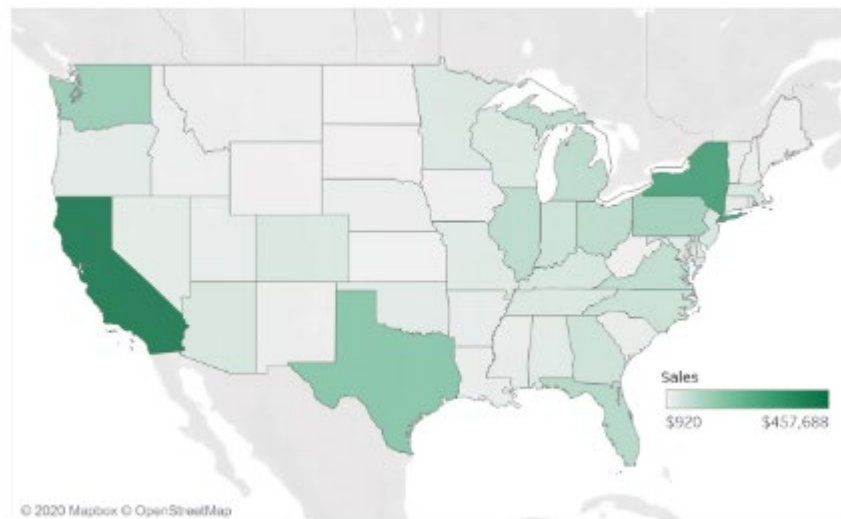
total sales map



Use Text/Labels to Clarify

- Use a simple and clear title
- Use a legend only when necessary
- Label precise values only if they matter
- Make sure text and labels are legible
- Limit the amount of text
- Highlight important points

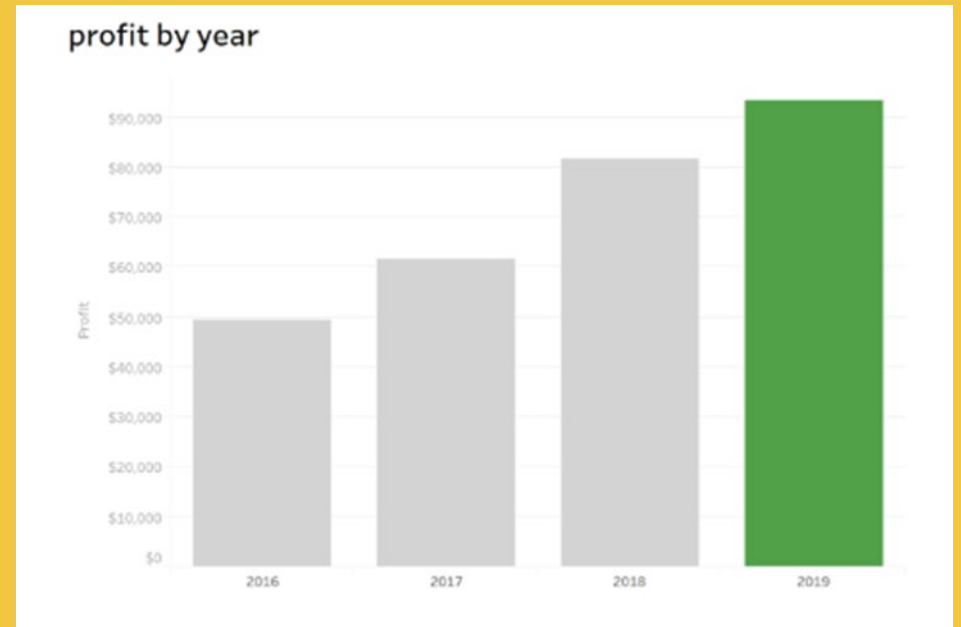
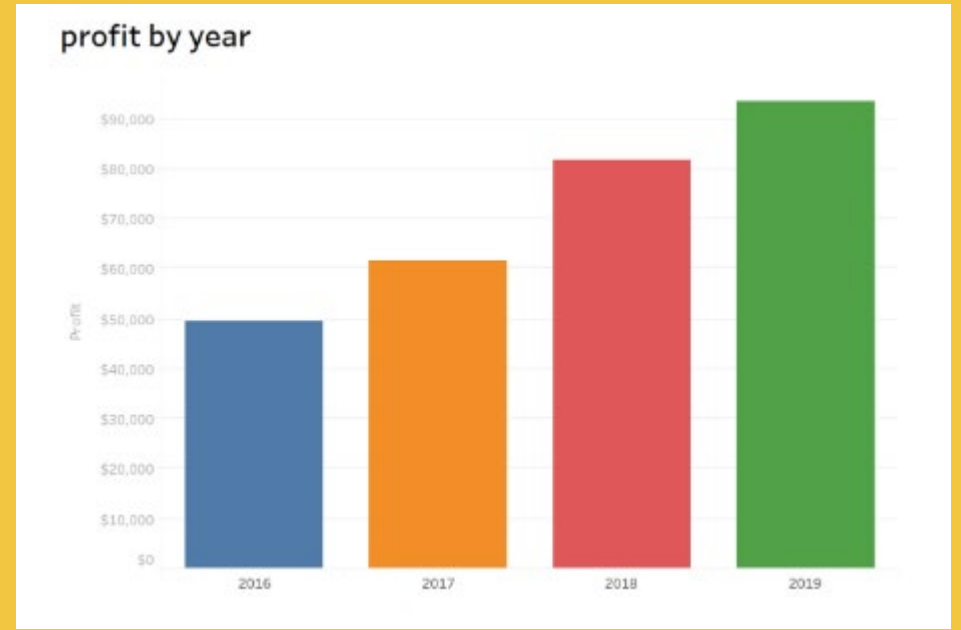
total sales map



Use Color

- To highlight your point
- To compare different data sets
- To show outliers or anomalies

- Use colors intuitively, e.g., light = less, dark = more
- Use complementary colors
- Make sure it's legible when printed in black and white
- Make sure it's legible for the colorblind



CUPH

Center for Urban
Population Health

Data-driven. Evidence-based.
Community-engaged.

<https://blog.csgsolutions.com/6-tips-for-creating-effective-data-visualizations>

Avoid Misleading Visualizations

- Always start with 0 on your axes
- Never change the aspect ratio
- Don't hide important data
- Don't display too much information
- Only group elements that relate to each other
- Don't use colors that mislead

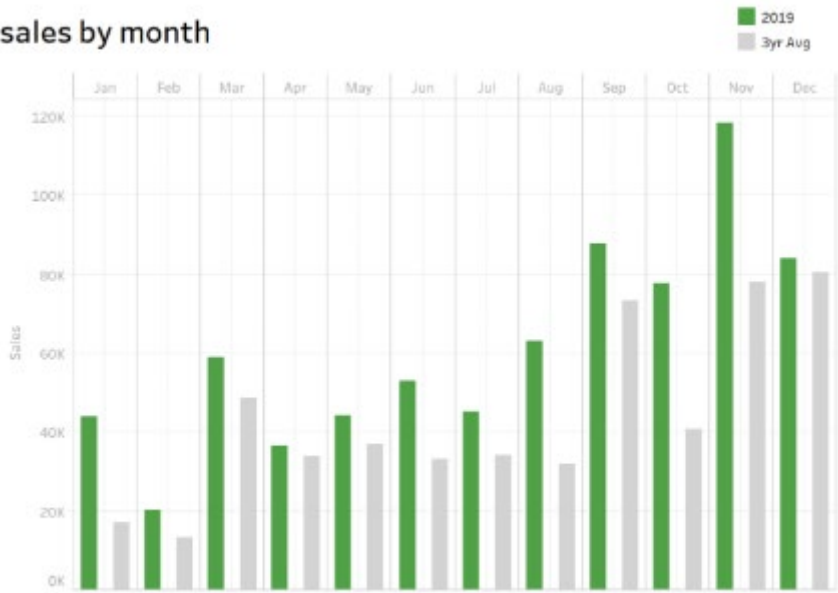
average days to ship



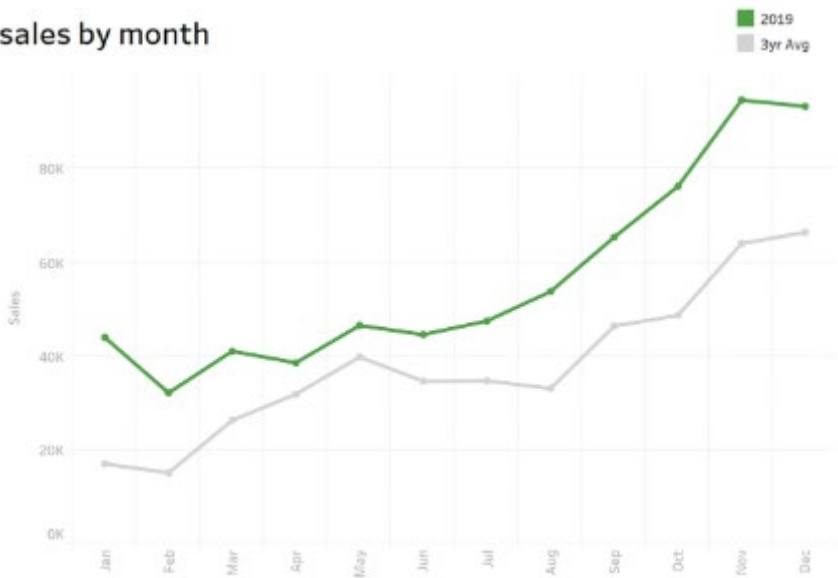
average days to ship



sales by month



sales by month



Keep it Simple

- Remove what isn't meaningful
- Don't clutter with extra design elements
- Stick with 2D



Review Your Visualizations

- Look with fresh eyes
- Get a co-worker's opinion
- Get the opinion of someone who isn't familiar with the data
- Rate them against this checklist - https://stephanieevergreen.com/wp-content/uploads/2016/10/DataVizChecklist_May2016.pdf

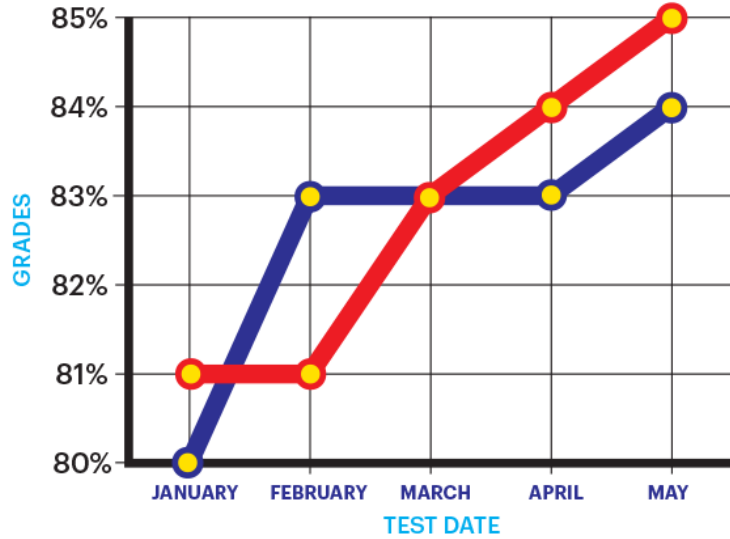


CUPH

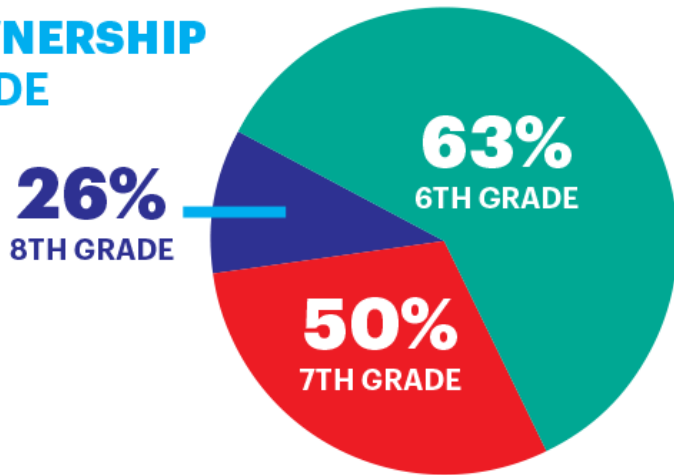
Center for Urban
Population Health

*Data-driven. Evidence-based.
Community-engaged.*

BOB'S TEST SCORES IN 2017



PET OWNERSHIP BY GRADE



MOST WICKETS IN DEATH OVERTS IN ODIS

SINCE THE START OF JANUARY 2017

■ WKTS ■ AVE



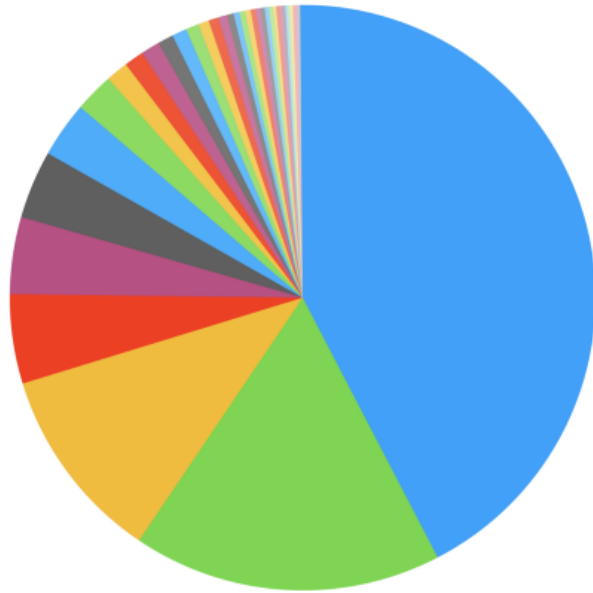
NUMBERS UPDATED TILL MAY 14, 2019



CUPH
Center for Urban
Population Health

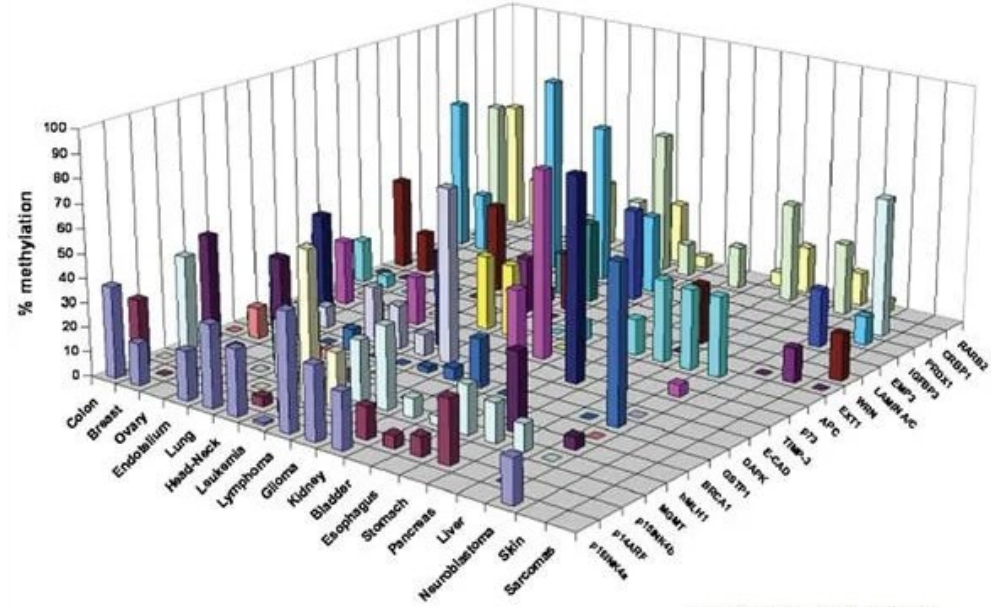
Data-driven. Evidence-based.
Community-engaged.

Which game(s) have you played the most? 3,994 responses



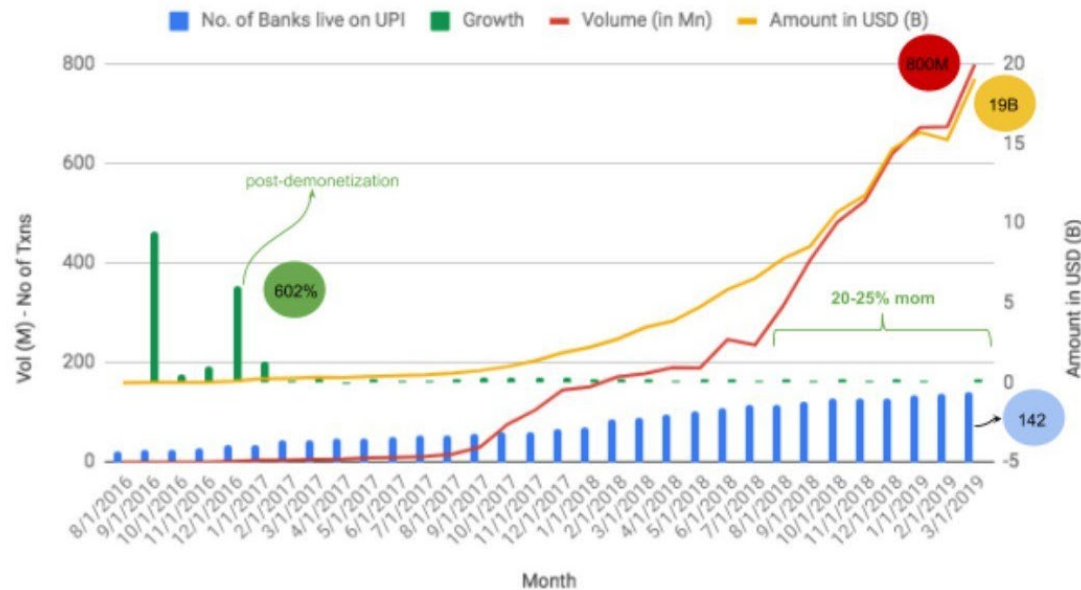
- Zelda
- The Legend of Zelda: Breath of the Wild
- Breath of the Wild
- BOTW
- Botw
- Breath of the wild
- BotW
- zelda
- Legend of Zelda: Breath of the Wild
- Legend of Zelda
- Zelda BOTW
- BoTW
- botw
- Zelda: Breath of the Wild
- Zelda BotW
- Zelda Breath of the Wild
- The Legend of Zelda
- Breath of The Wild
- The Legend of Zelda Breath of the Wild
- Zelda: BOTW
- Zelda: BotW
- Breath of the Wild
- Zelda breath of the wild
- Breath Of The Wild
- Legend of Zelda Breath of the Wild
- LoZ
- LoZ: BotW
- Zelda botw
- zelda botw
- breath of the wild
- legend of zelda
- legend of zelda
- LoZ BOTW
- The Legend of Zelda: Breath of The Wild
- The legend of Zelda: breath of the wild
- ZELDA
- Zelda: BotW

A CpG Island Hypermethylation Profile of Human Cancer



Hum. Mol. Genet. (2007) 16:R50-59

No. of Banks live on UPI, Volume (in Mn) and Amount in USD (B)



<https://badvisualisations.tumblr.com/post/185441621576/1-why-would-you-stack-bars-with-quantities-that>
<https://www.livestories.com/blog/five-ways-to-fail-data-visualization>
<https://towardsdatascience.com/why-is-this-chart-bad-5f16da298afa>



CUPH

**Center for Urban
Population Health**

*Data-driven. Evidence-based.
Community-engaged.*

Michelle Bunyer – bunyer@uwm.edu

Michelle Corbett – amcorbett2@wisc.edu