

WiFi LIVE ONLINE TRAINING

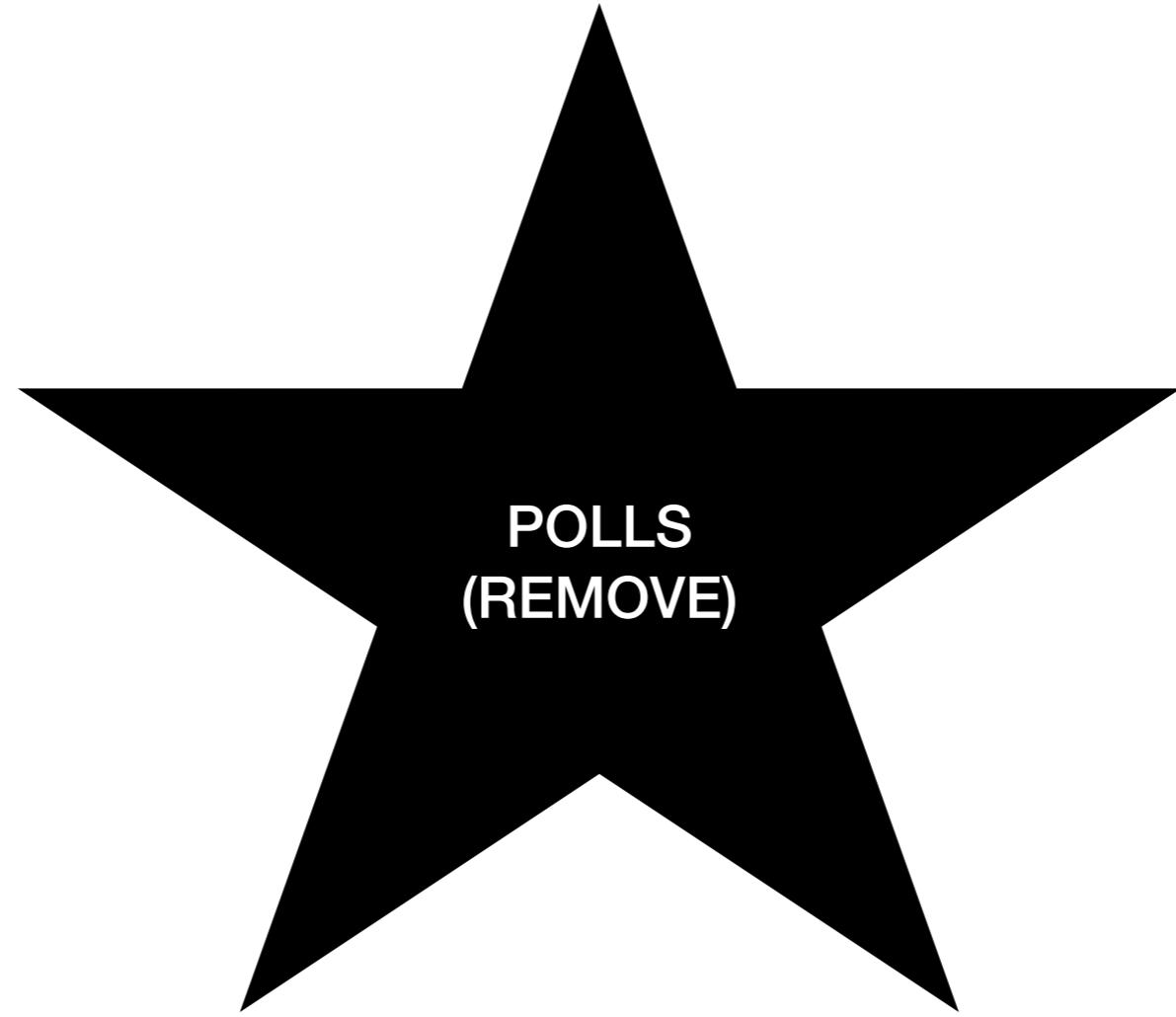
# First Steps: Visualization with Altair



<https://resources.oreilly.com/binderhub/first-steps-visualization-with-altair>

**June 9, 2020**

8:00am – 10:00am EDT



1. Do you actually like matplotlib?
2. Have you ever used ggplot2?

**NYC / 2016**



# PILOTCON

NYC / 2016



1 - General

2 - General

3 - R

4 - Python

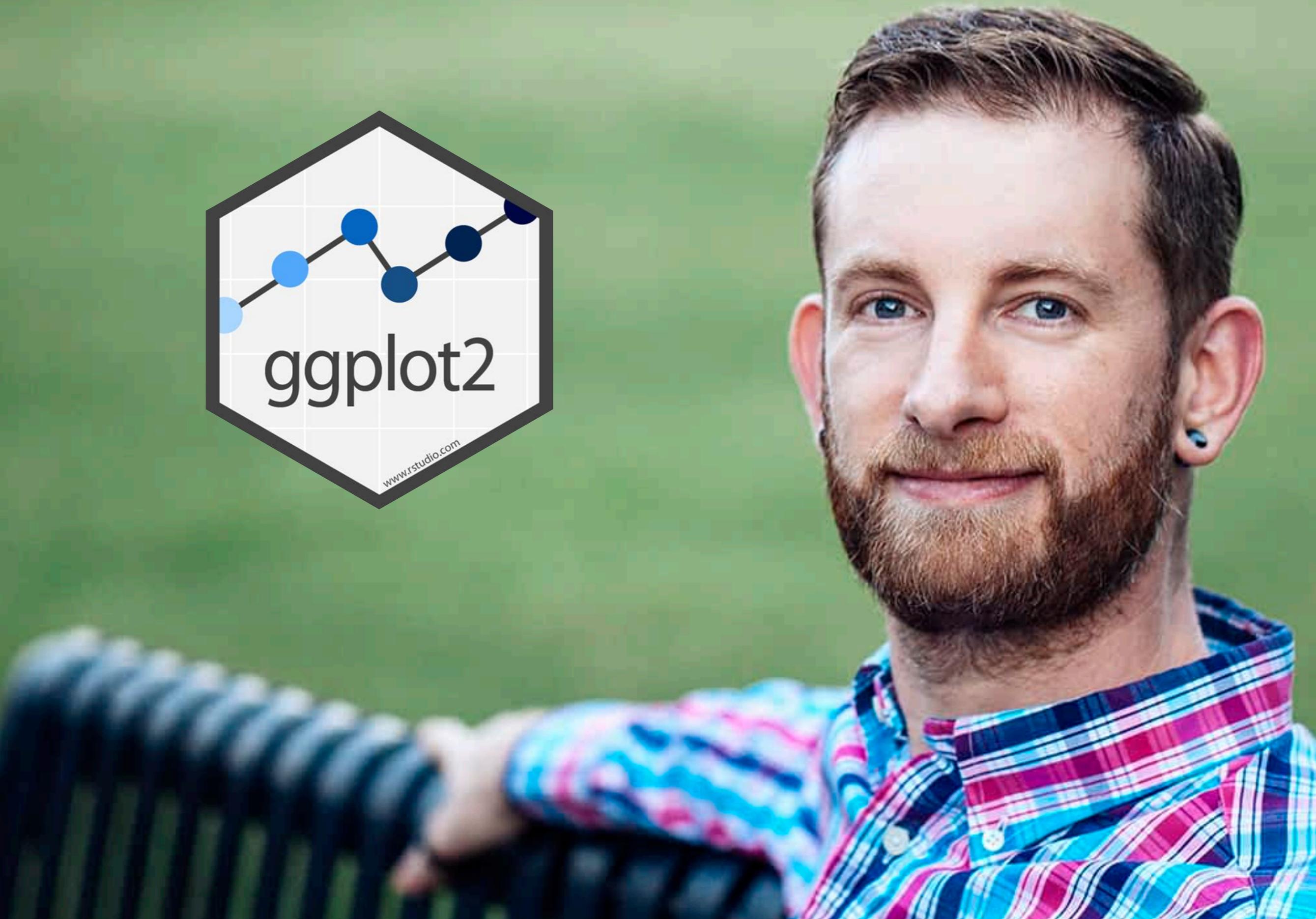
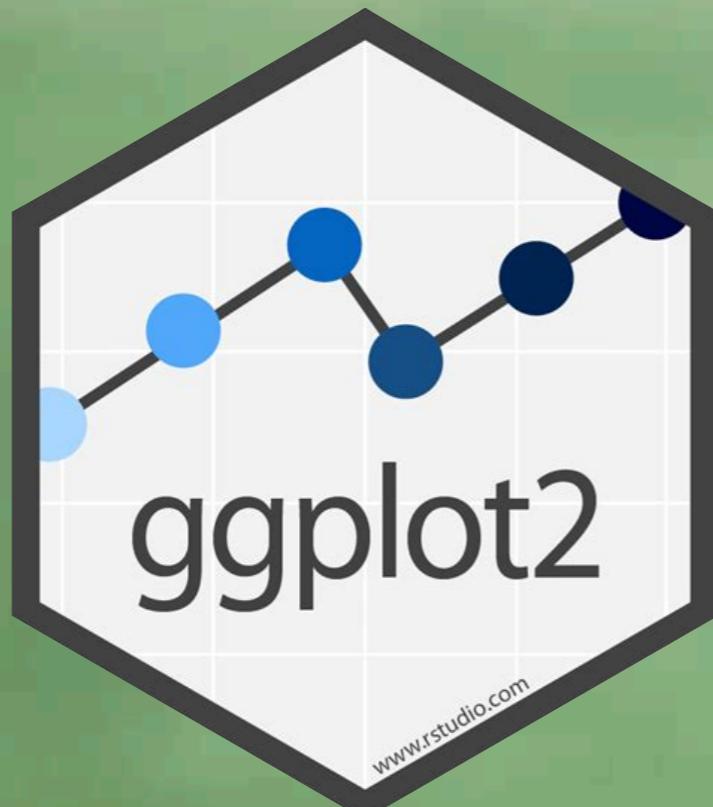


**ggplot2**

>>>>>



**matplotlib**



# FiveThirtyEight

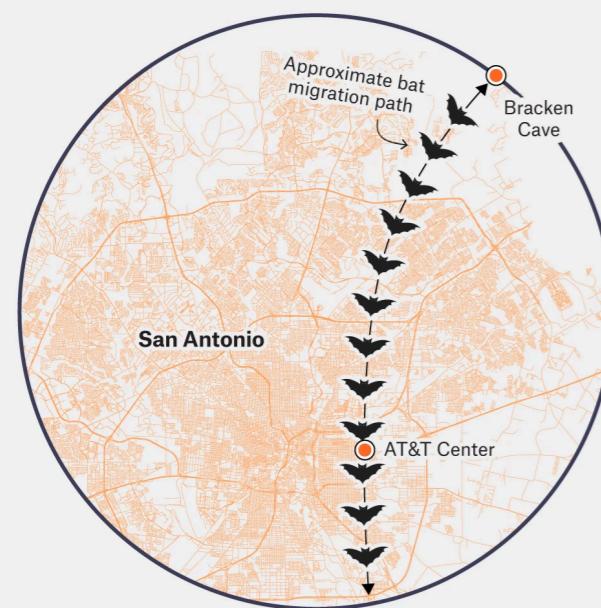
Politics   Sports   Science & Health   Economics   **Culture**

DEC. 27, 2019, AT 6:00 AM

## The 56 Best — And Weirdest — Charts We Made In 2019

### The Spurs' biggest fans are a bunch of bats

AT&T Center stands in the migration path of millions of bats, who fly to Mexico in the fall before returning to Bracken Cave

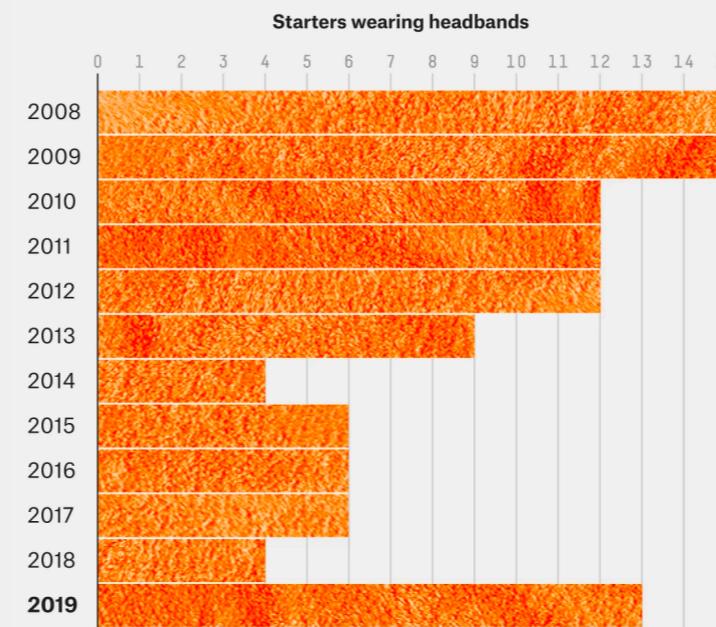


FiveThirtyEight

SOURCE: CITY OF SAN ANTONIO

### Playoff headbands are back

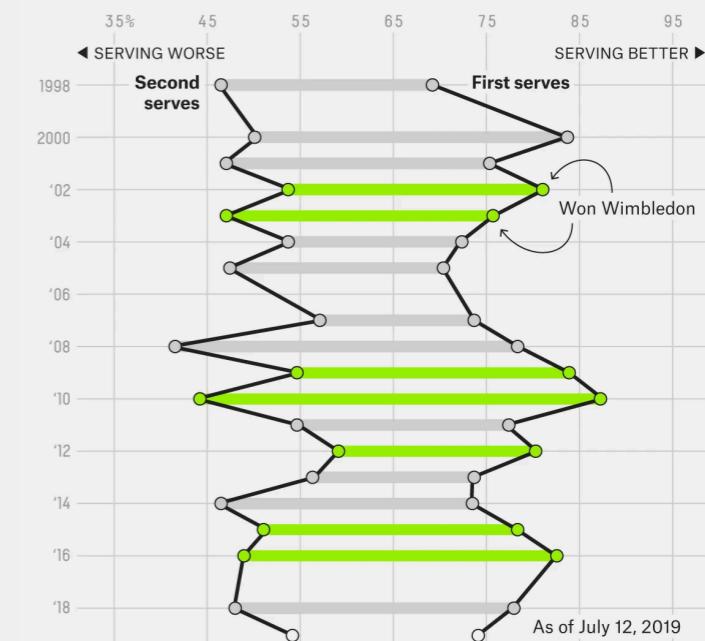
Number of players to start at least one playoff game wearing a headband, 2008-19



FiveThirtyEight

### Serena Williams has made a living off her first serve

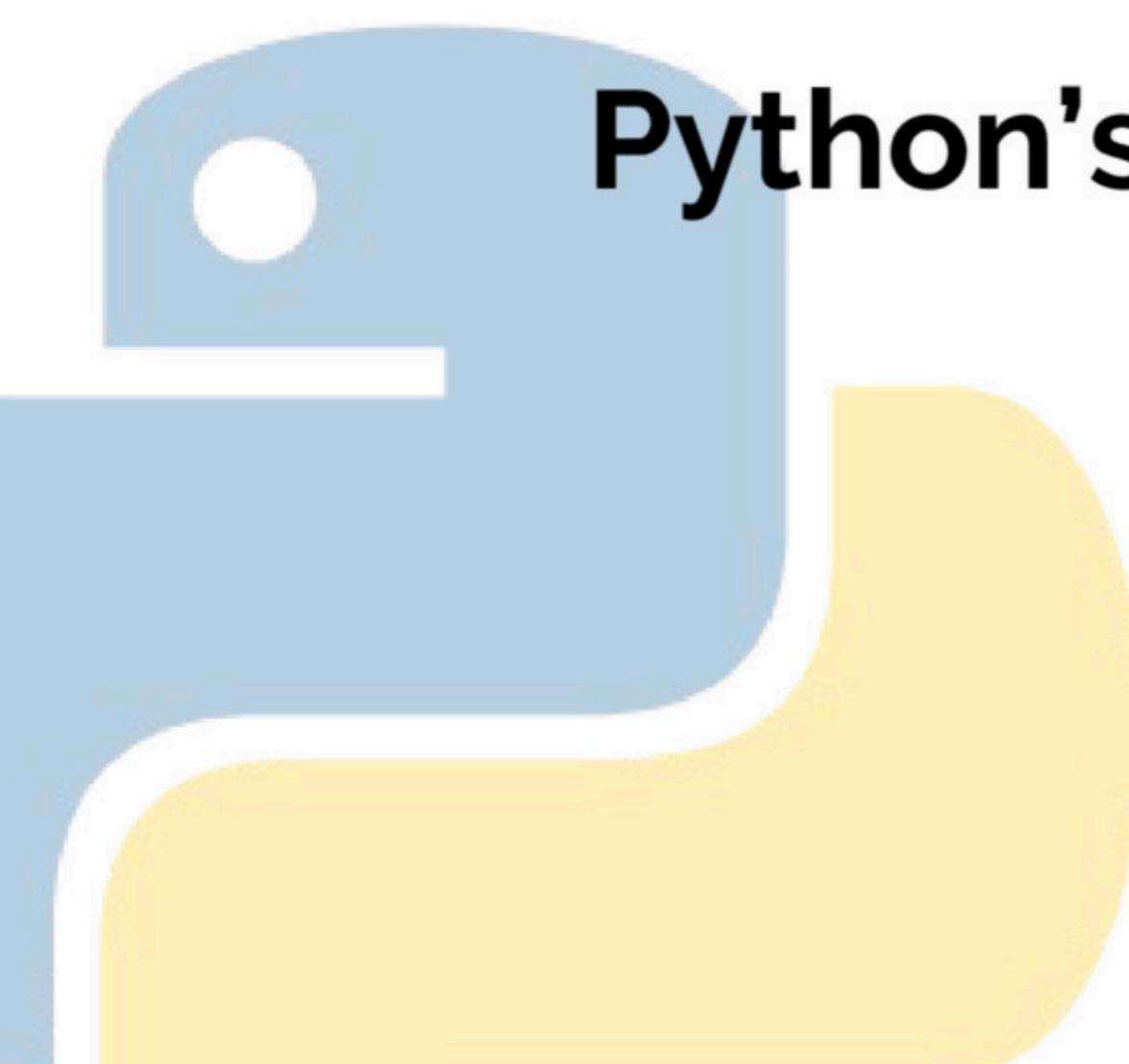
Share of first and second serves won by Serena Williams at Wimbledon



FiveThirtyEight

SOURCE: IBM/WIMBLEDON

<https://fivethirtyeight.com/features/the-56-best-and-weirdest-charts-we-made-in-2019>



# Python's Visualization Landscape

Jake VanderPlas  
@jakevdp #PyCon2017

# [Python's Visualization Landscape]

*From the abstract:*

"In this talk I'll give an overview of the landscape of dataviz tools in Python . . ."



**Jake VanderPlas** @jakevdp · Apr 10

My @pycon talk is a survey of Python viz tools. Any others I should check out?

-matplotlib

-seaborn

-bokeh

-bqplot

-ggpy

-altair

-chaco

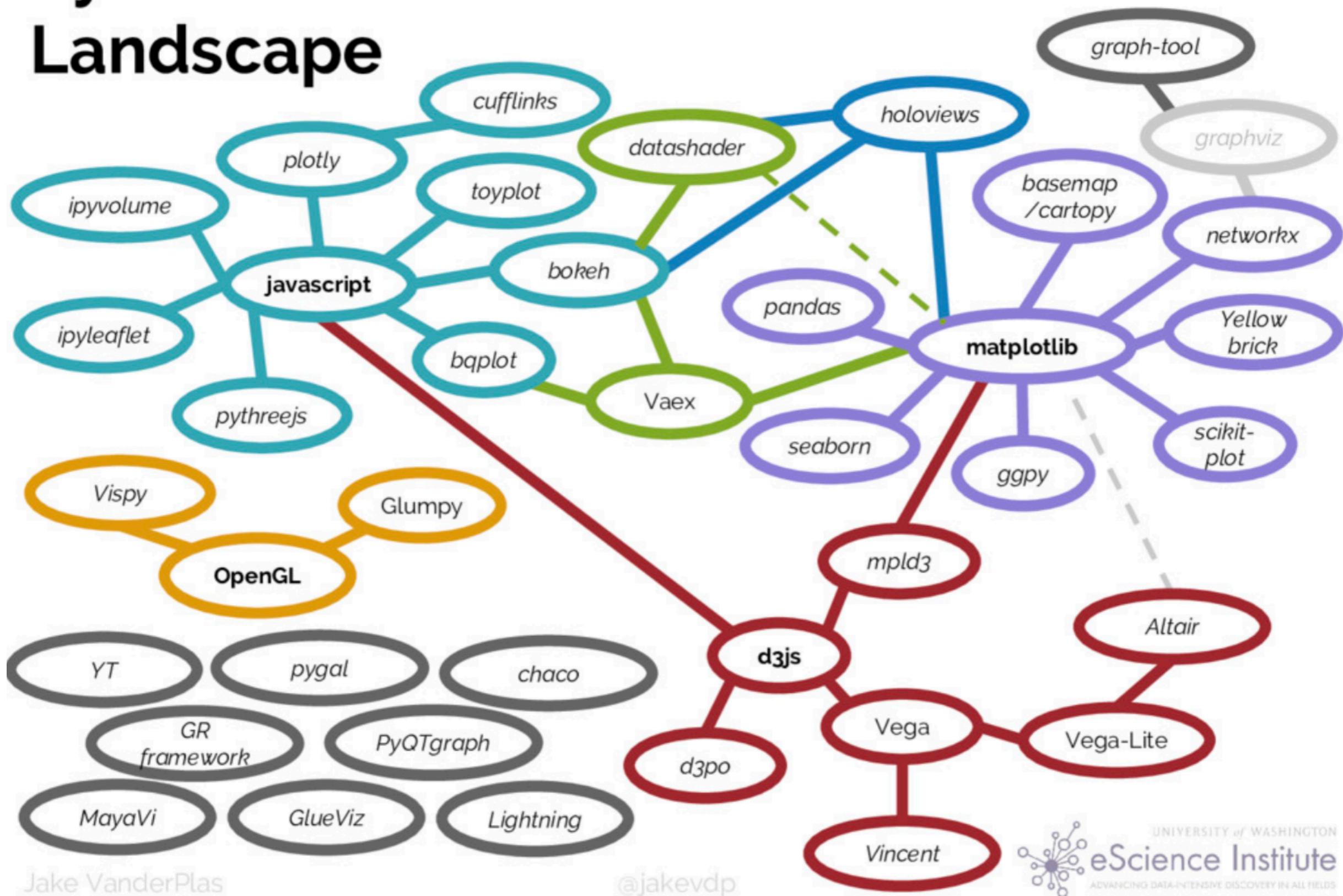
53

30

146



# Python's Visualization Landscape





**PYCON2018**

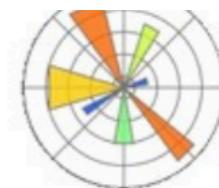


# Exploratory Data Visualization with Altair

Jake VanderPlas @jakevdp  
PyCon 2018

Materials at <http://github.com/altair-viz/altair-tutorial>

# Plotting with Matplotlib



## Strengths:

- Designed like MatLab: switching was easy
- Many rendering backends
- Can reproduce just about any plot with a bit of effort
- Well-tested, standard tool for 15 years

## Weaknesses:

- API is imperative & often overly verbose
- Poor/no support for interactive/web graphs

# Toward a well-motivated *Declarative Visualization*

## Imperative

- Specify *How* something should be done.
- Specification & Execution intertwined.
- “*Put a red circle here and a blue circle here*”

## Declarative

- Specify *What* should be done.
- Separates Specification from Execution
- “*Map  $x$  to a position, and  $y$  to a color*”

Declarative visualization lets you think about **data** and **relationships**, rather than incidental details.

Latest release

v4.1.0  
cc14c36

Compare ▾

# Version 4.1.0



jakevdp released this on Apr 1 · 38 commits to master since this release

- Minimum Python version is now 3.6
- Update Vega-Lite to version 4.8.1; many new features and bug fixes from Vega-Lite versions 4.1 through 4.8; see [Vega-Lite Release Notes](#).

## Enhancements

- `strokeDash` encoding can now be used to control line styles (Example: [Multi Series Line Chart](#))
- `chart.save()` now relies on [altair\\_saver](#) for more flexibility ([#1943](#)).
- New `chart.show()` method replaces `chart.serve()`, and relies on [altair\\_viewer](#) to allow offline viewing of charts ([#1988](#)).

## Bug Fixes

- Support Python 3.8 ([#1958](#))
- Support multiple views in JupyterLab ([#1986](#))
- Support numpy types within specifications ([#1914](#))
- Support pandas nullable ints and string types ([#1924](#))

## ##Maintenance

- Altair now uses [black](#) and [flake8](#) for maintaining code quality & consistency.

1

Basics

2

Customization

3

Layering

4

Interactivity

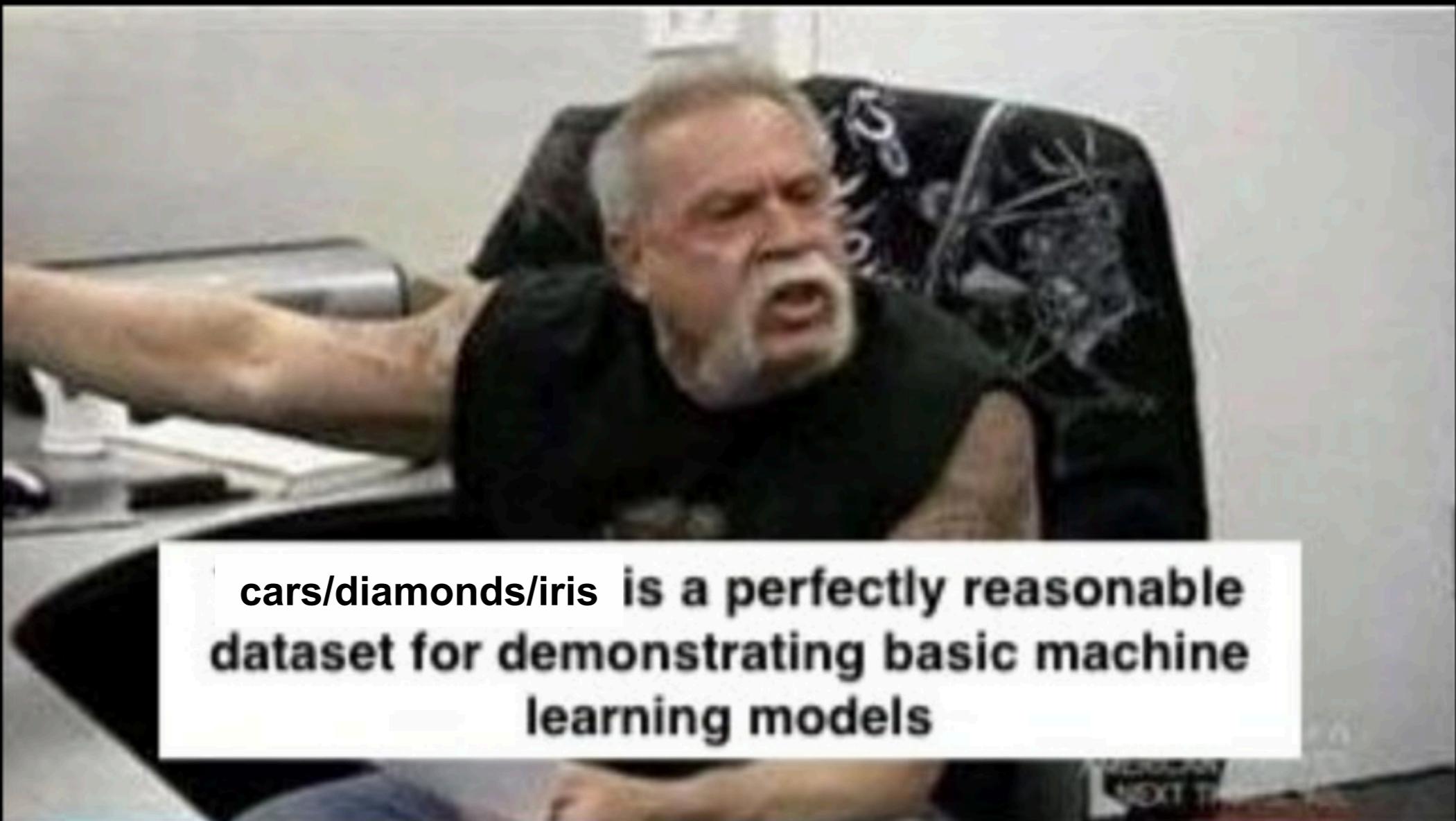
But first



DATA

Full  
stack  
developer





**cars/diamonds/iris** is a perfectly reasonable  
dataset for demonstrating basic machine  
learning models



**It lulls beginners into falsely  
thinking working with data is  
easy**



**EVERYONE NEEDS TO START  
SOMEWHERE**

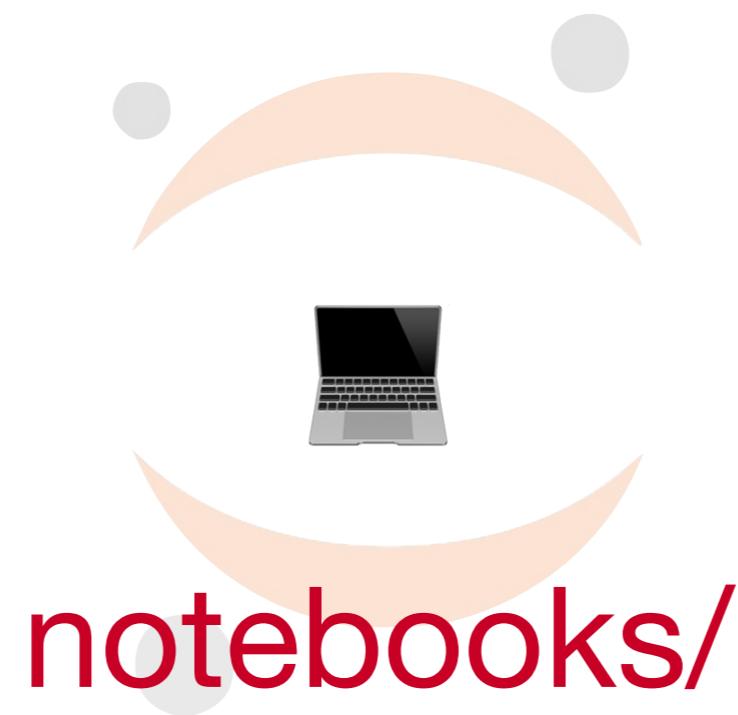
IT'S THE WRONG  
PLACE FOR  
BEGINNERS TO  
START

AMERICAN DREAM  
NEXT THURSDAY



**YOU DON'T  
REMEMBER  
WHAT IT'S LIKE  
TO BE A  
BEGINNER**



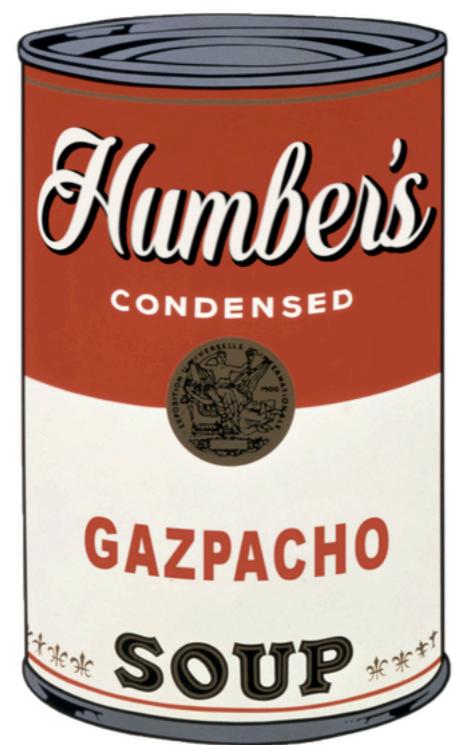


notebooks/

Q&A

*That's all Folks!*

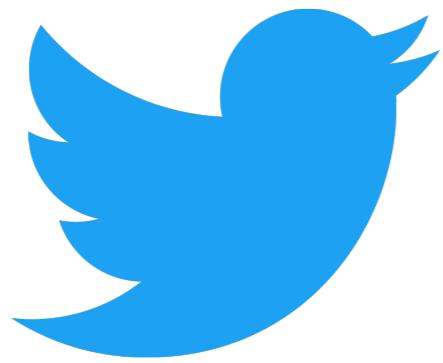




[github.com/maxhumber/gazpacho](https://github.com/maxhumber/gazpacho)



[github.com/maxhumber/gif](https://github.com/maxhumber/gif)



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