

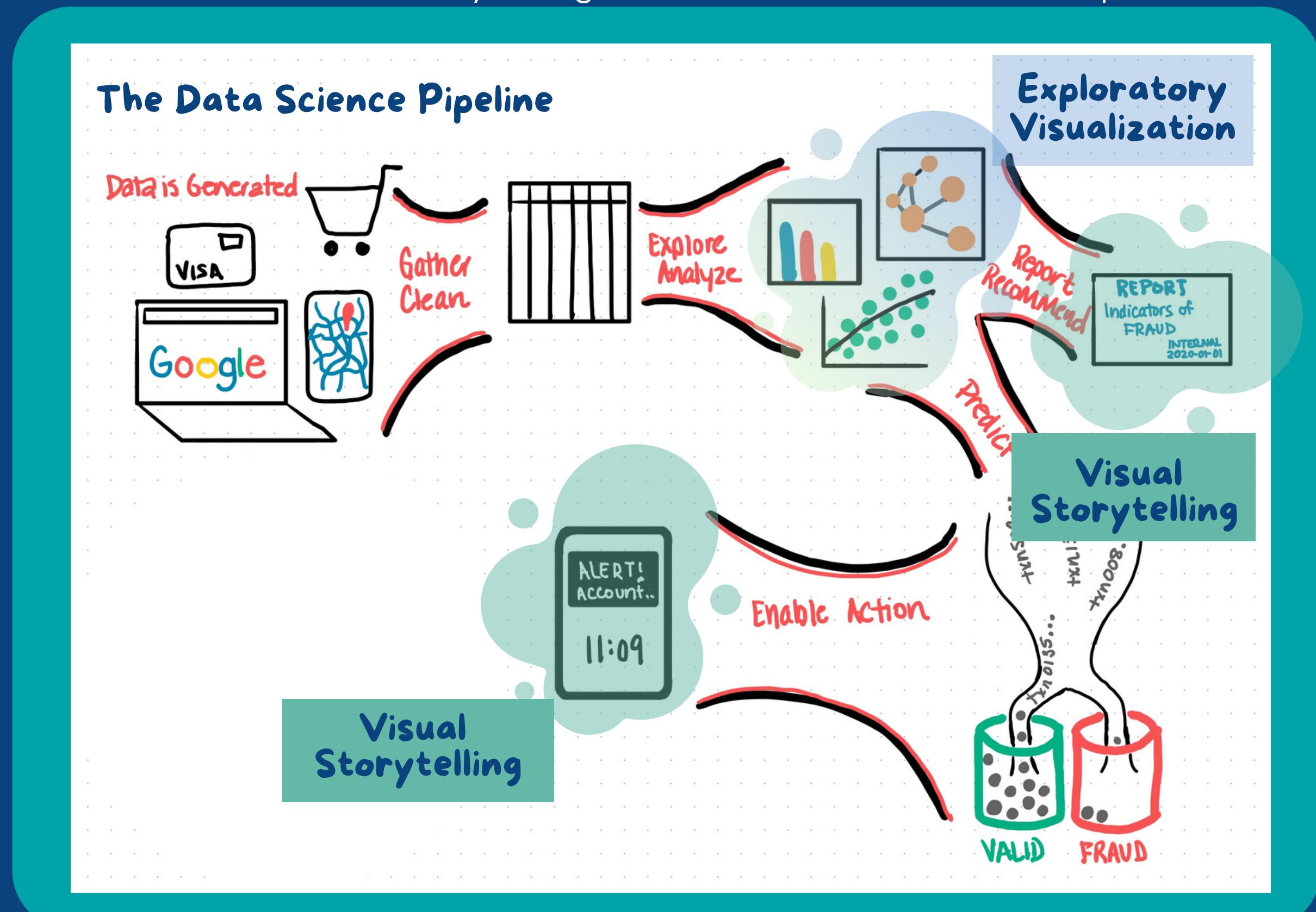
# Storytelling

With a story, what you do will be remembered. What you recommend will be considered. What you discover will be influential.

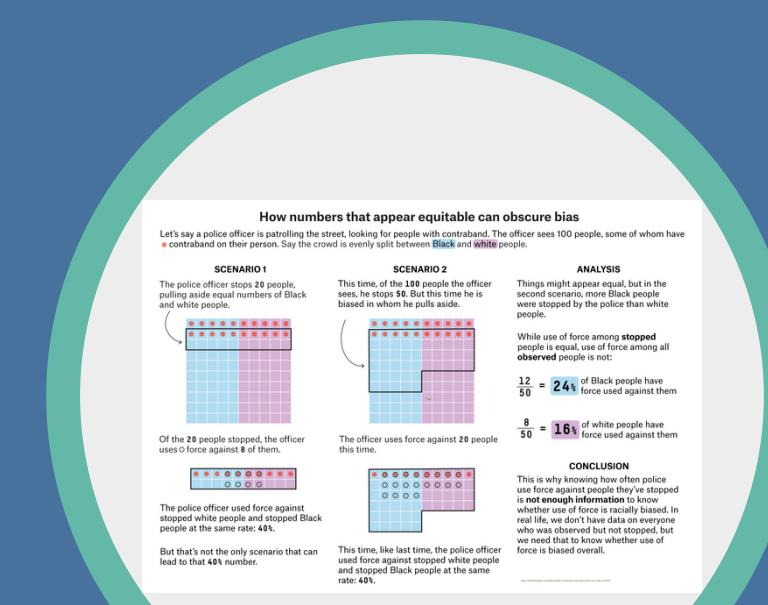
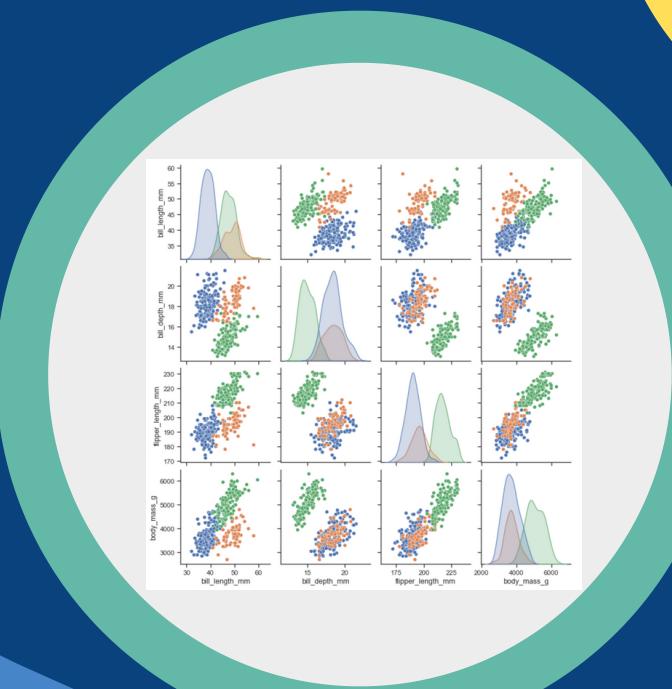


# Visual Storytelling

## Where does Storytelling fit within the Data Science Pipeline?



# Visualization



The Book With No Pictures

B.J. Novak

# Storytelling

**Executive summary**

Since 1968, successive Labour and Conservative governments have introduced legislation to outlaw racial discrimination in employment.<sup>1</sup> And yet, racism and racial inequality have proven themselves to be historically resilient features of the British labour market.

While one in eight of the working-age population is from an ethnic minority background, people from ethnic minorities are less likely to access work, one in five of those who are actually in employment. Moreover, the Equality and Human Rights Commission's (EHRC) report *A Race at Work: race, ethnicity and employment in Britain*, published in April 2016, also found that people from ethnic minority groups have higher unemployment rates than White people.<sup>2</sup>

It was also in August 2016 that the United Nations' Committee on the Elimination of Racial Discrimination reported its concern at the:

- higher rates of unemployment among persons of African and Asian descent;
- occupational segregation with the concentration of persons belonging to ethnic minorities in insecure and low-paid work; and
- discriminatory treatment of public sector employees.

It was in that context that the Home Secretary Theresa May announced the launch of an 'unprecedented audit of public services' to reveal racial disparities and help end the burning injustices many people experience across Britain.<sup>3</sup> The evidence presented in this report suggests that the audit will be successful in addressing racial inequality as it is the racism faced by ethnic minority people working in the public sector.

This report builds on the *Race at Work* report that was published in 2015. The Race at Work survey was conducted between 28 July and 17 September 2015. In this report we explore further the nature, scale and human impact of racial discrimination in the workplace. Of the 10,000 adults aged 16 and over in Great Britain, 1,000 were Black or Black British, 1,000 were Asian or Asian British, 1,000 were from other ethnic minorities and 7,000 were White British. The survey was conducted online, with 1,000 interviews completed by people aged 16–24 years old, currently living in England, Wales, Scotland and Northern Ireland. 6,076 people took part in the survey, which was conducted via the public open survey, while some 18,381 respondents participated via the public open survey.

Building on the 2015 report, we offer a qualitative analysis of responses given to open-ended survey questions designed to explore the following:

- employee accounts of experiencing and/or witnessing racial harassment or bullying in the workplace;
- How far, if at all, employers promote equality, diversity and fairness in the workplace.

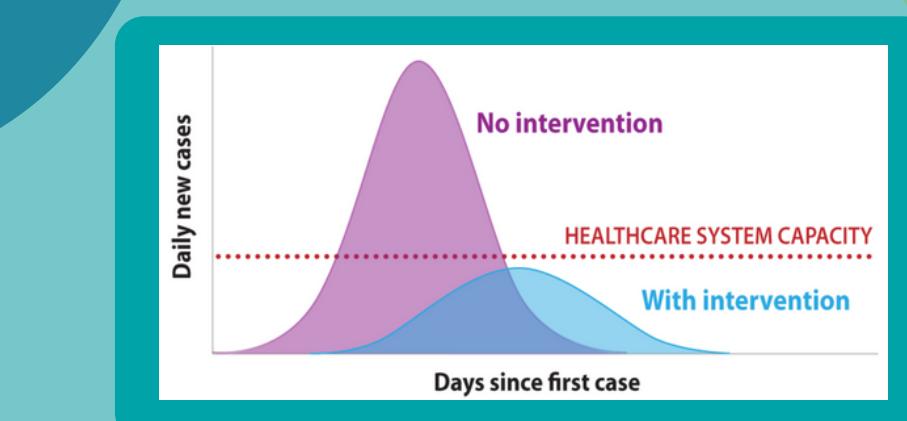
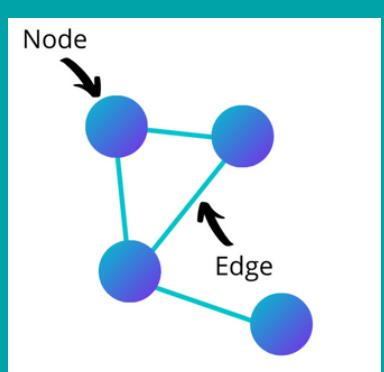
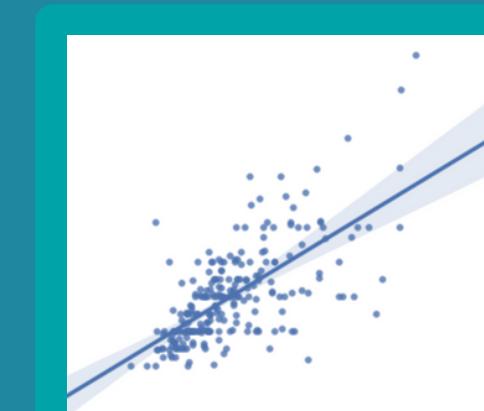
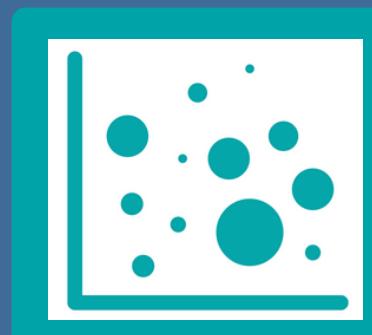
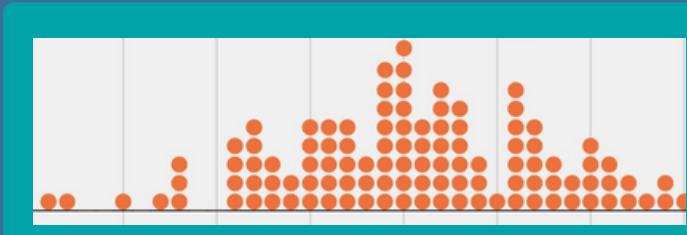
In doing so, this report provides further insights into the nature, scale and human impact of racial bullying and harassment in the workplace. In addition to this, we draw further attention to some of the specific barriers that prevent the realisation of equality, diversity and fairness at work.

# Plots, Graphs, and Charts

What's the Difference?

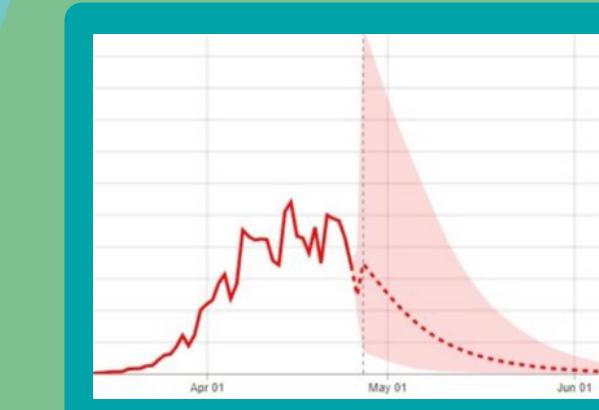
## Plot

points marked on a coordinate system, continuous axes



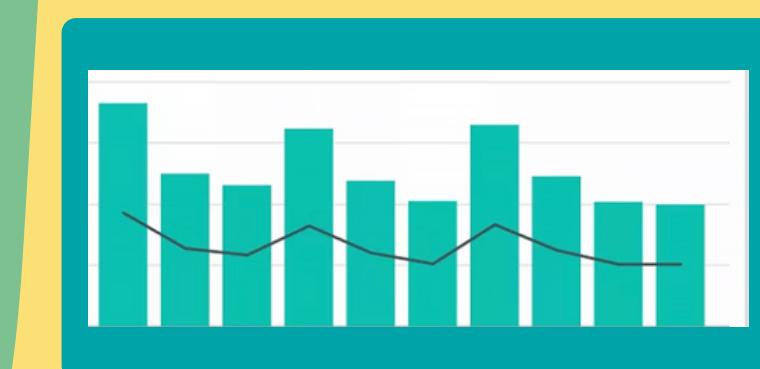
## Graph

A diagram of a mathematical function or statistical data  
Also, nodes connected by edges



## Chart

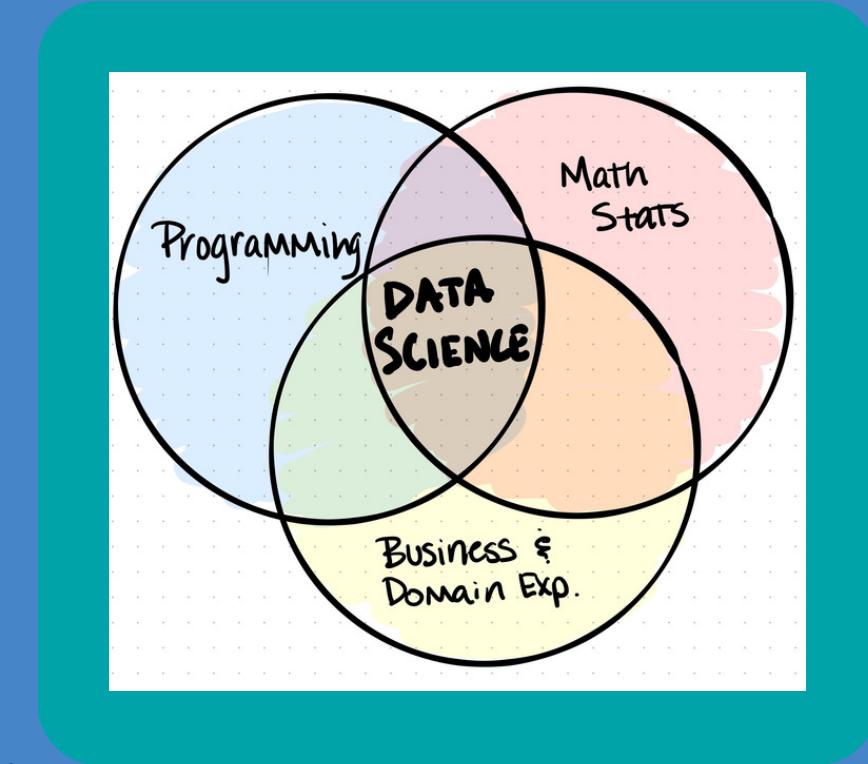
Graphical representation of data



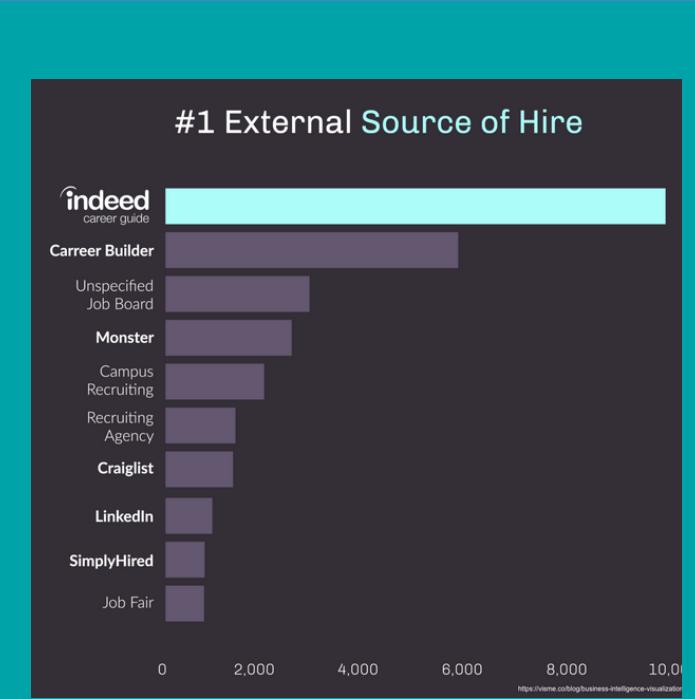
# Types of Visual Communication



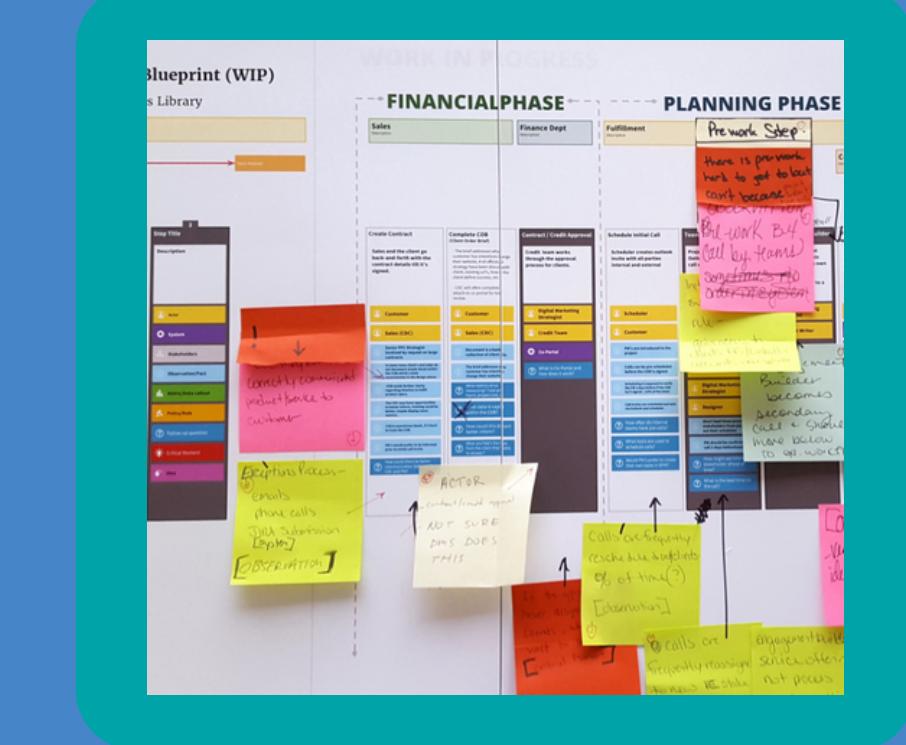
Conceptual



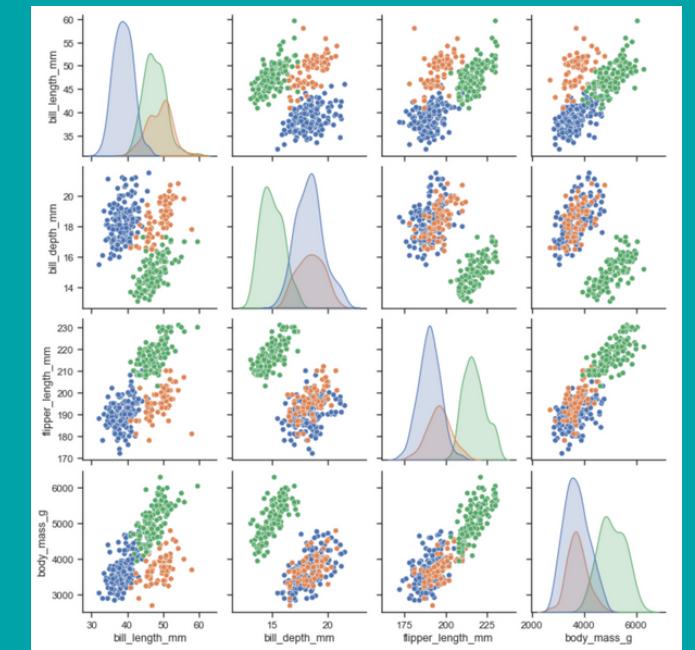
Declarative



Data  
Driven

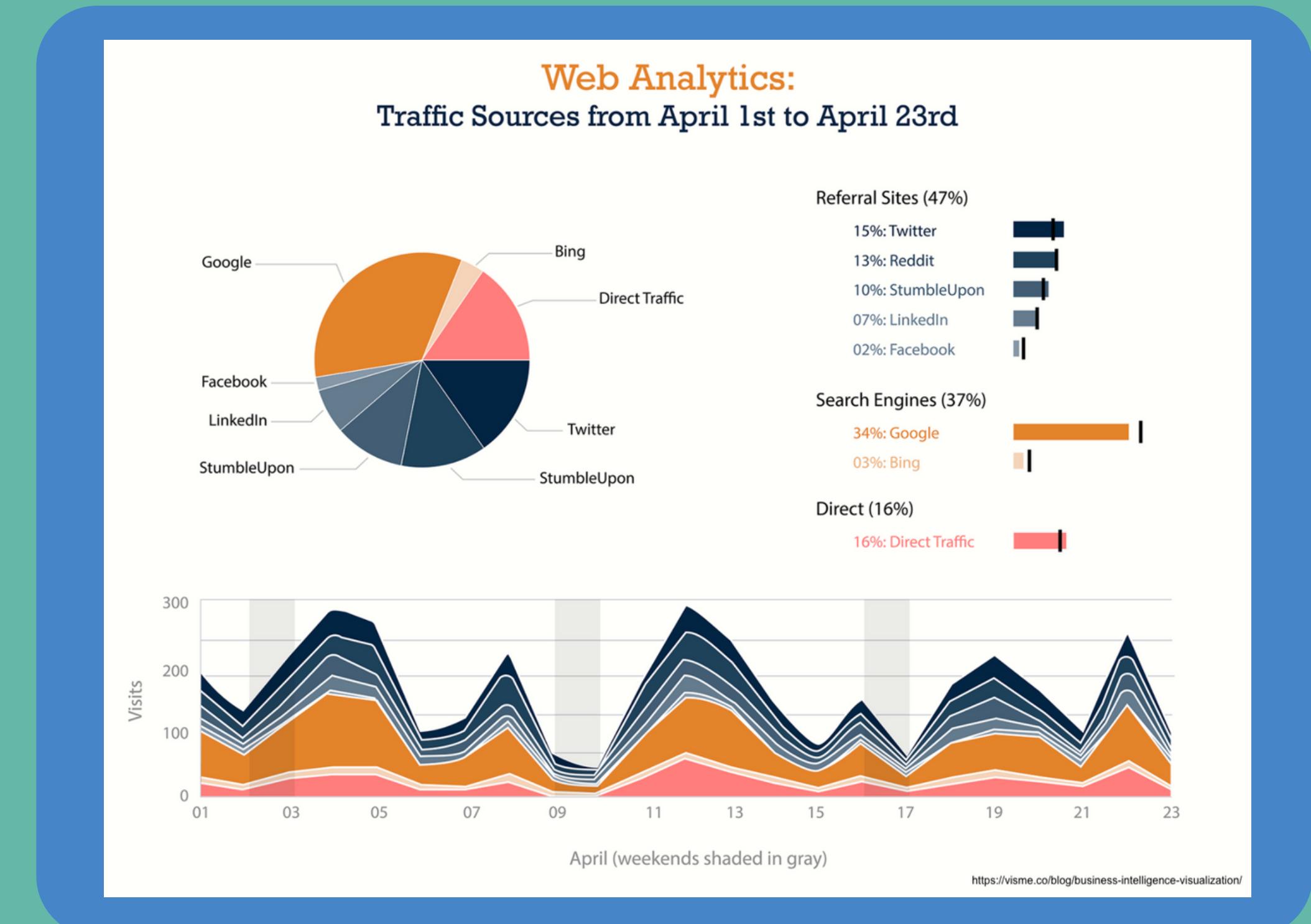


Exploratory



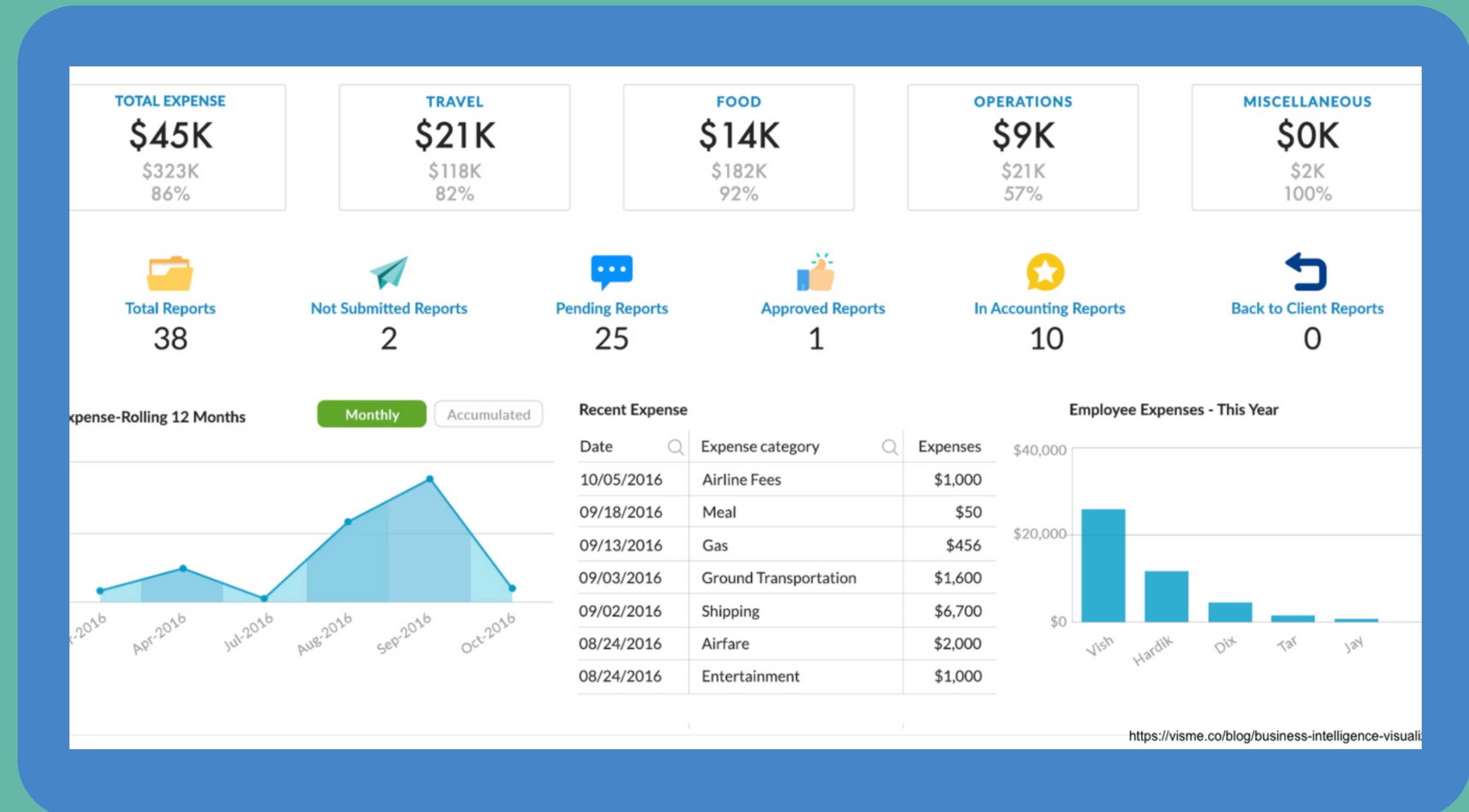
# Storytelling in Practice

## Web Analytics Dashboard



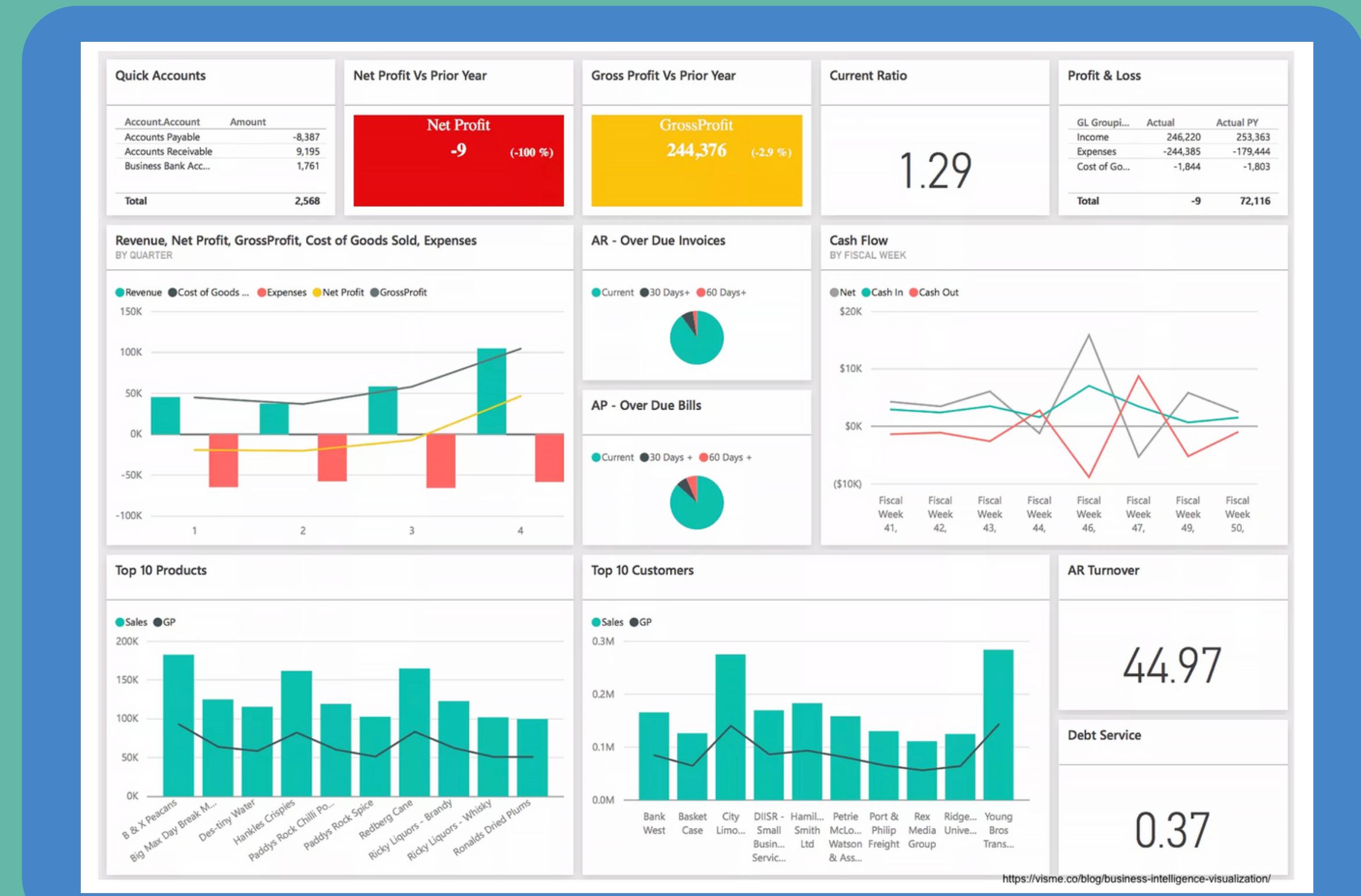
# Storytelling in Practice

## Accounting Dashboard



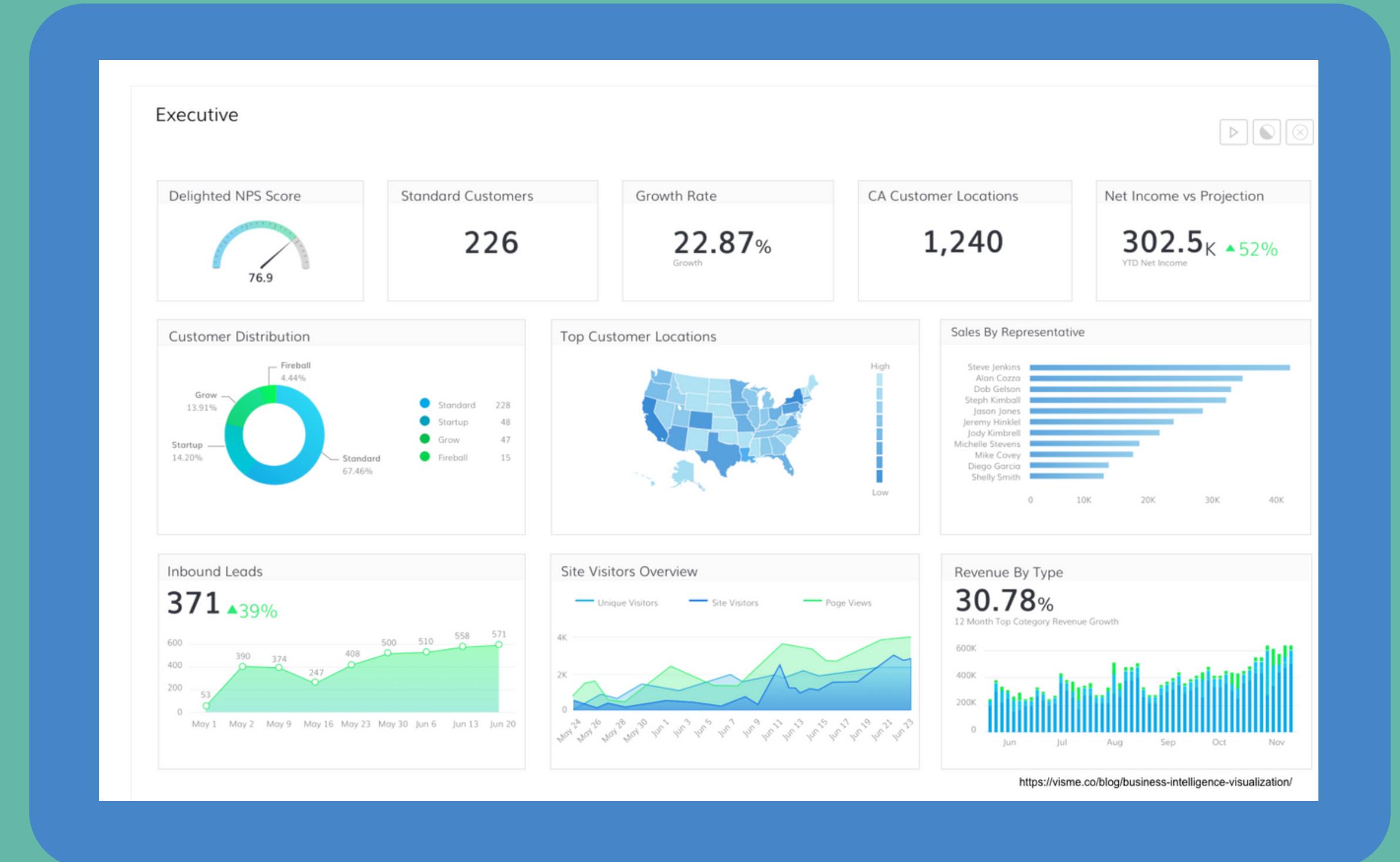
# Storytelling in Practice

## Finance Dashboard



# Storytelling in Practice

## Business Leadership Dashboard

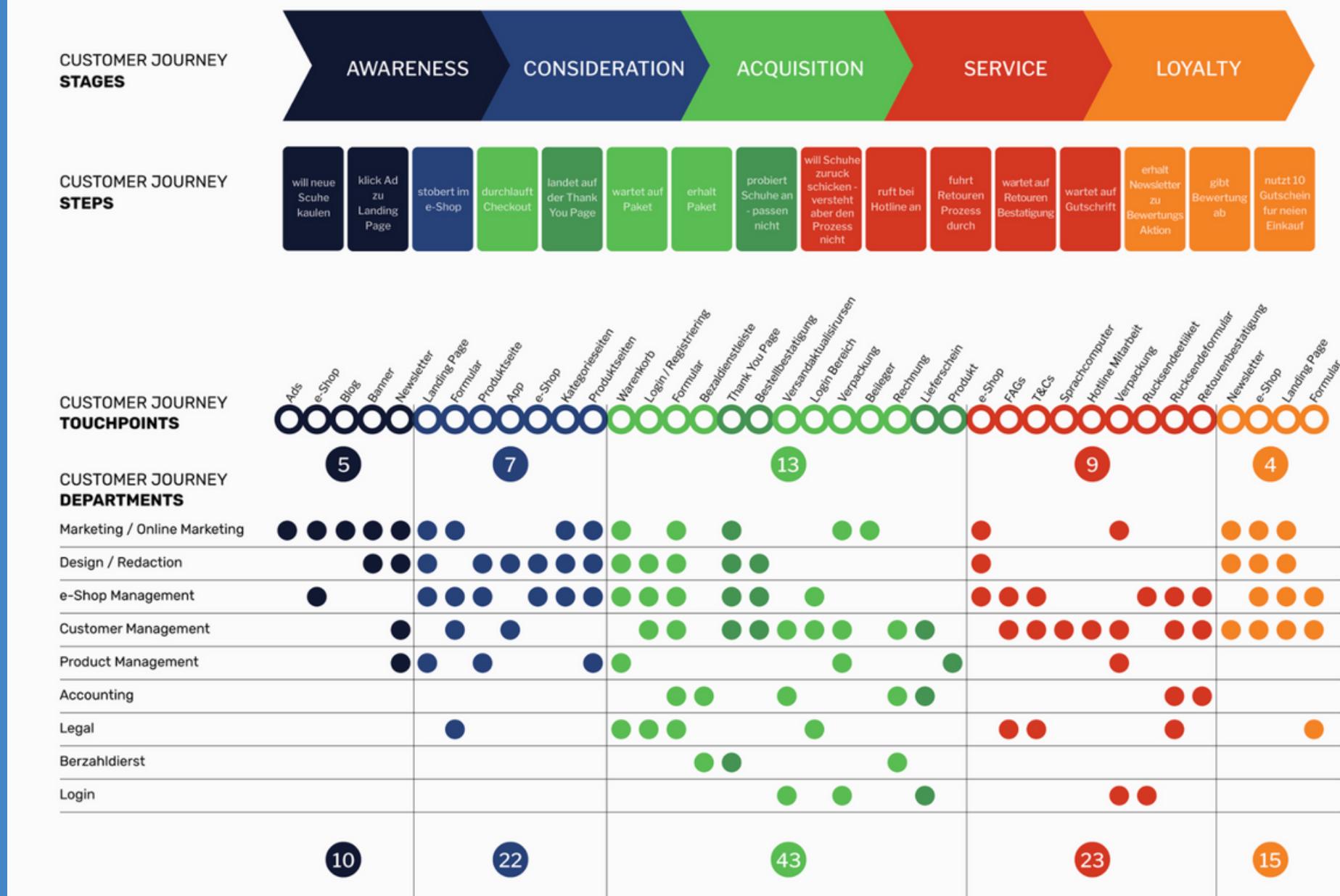


# Storytelling in Practice

## Customer Experience



### CUSTOMER JOURNEY LAYERS



<https://visme.co/blog/business-intelligence-visualization/>

# Storytelling in Practice

Report & Presentation



## Just Keep Spinning

Classifying Hard Drive Failures

**Misty Garcia  
John Salas  
Tim Sotirhos  
David Tenorio**



# Storytelling in Practice

## Report & Presentation



Can you tell me  
how to get to  
ASSESSMENT STREET

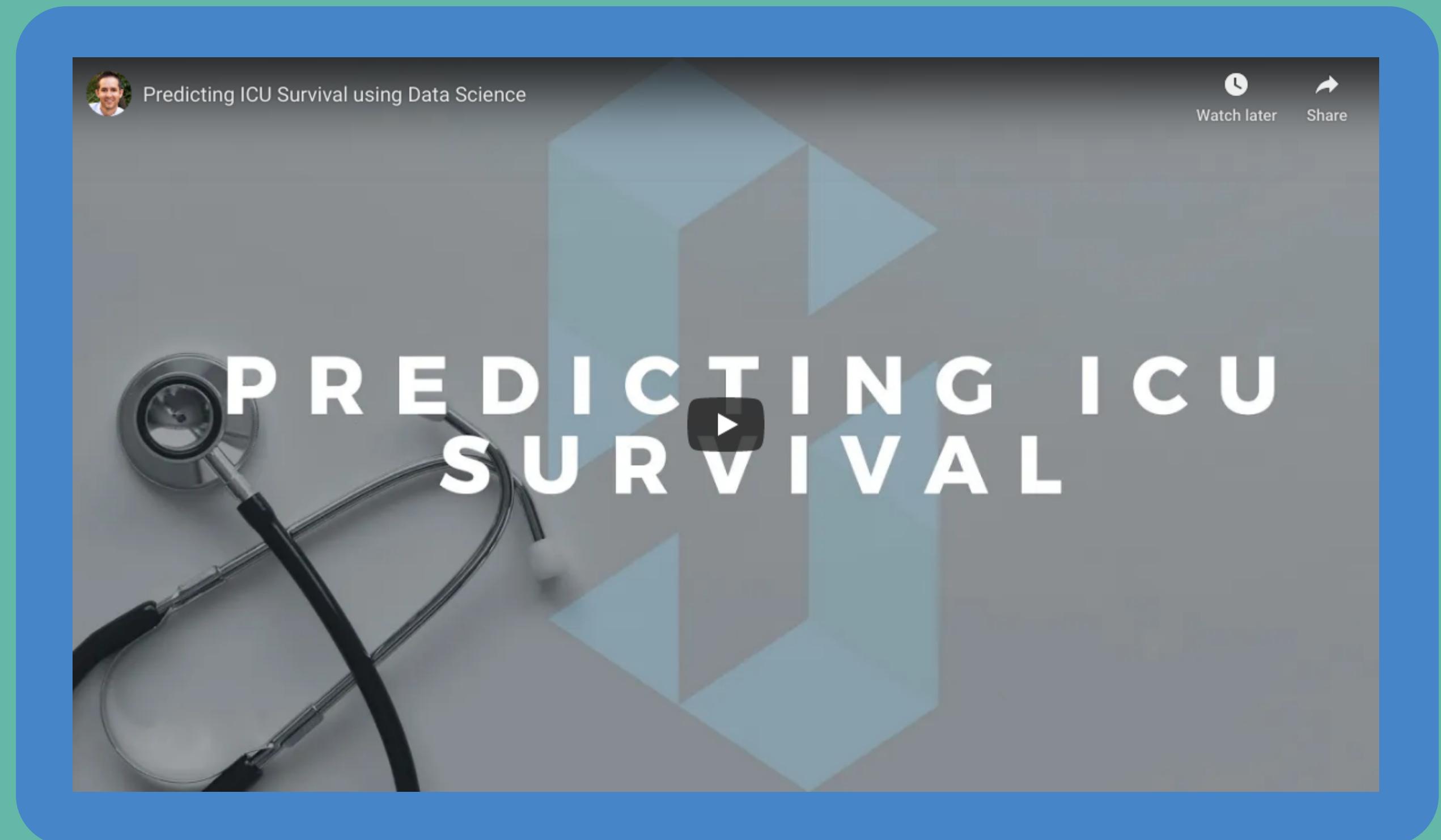
0123

Cris Giovanoni      Codeup Bayes  
Faith Kane      January 30, 2020  
Jacqueline Shay  
Sara Peña

The slide features a large white speech bubble containing the text "Can you tell me how to get to ASSESSMENT STREET". A road sign with the number "0123" above the street name is shown. Below the speech bubble, the names of the four presenters are listed: Cris Giovanoni, Codeup Bayes, Faith Kane, and Jacqueline Shay. To the right of the names, the date "January 30, 2020" is written. The entire slide is set against a background of stylized blue and white waves.

# Storytelling in Practice

## Report & Presentation



# Steps to Creating a Good Story

from Good Charts, The HBR Guide to  
Making Smarter, More Persuasive Data  
Visualizations



## Understand

Understand what Makes a Visual Story Good, how to Critique Charts, and how we Consume Visual Information

## Create

Systematically Create your Story from Idea to Version 1

## Refine

Refine your Story so that it Impresses, Persuades, and Empowers

## Present

Use Techniques to Capture and Maintain your Audience's Attention

# A Good Story

- Effective
- Highlights the Truth, Does not Deceive
- Tells the Intended Story



**How numbers that appear equitable can obscure bias**

Let's say a police officer is patrolling the street, looking for people with contraband. The officer sees 100 people, some of whom have contraband on their person. Say the crowd is evenly split between Black and white people.

**SCENARIO 1**  
The police officer stops 20 people, pulling aside equal numbers of Black and white people.

Of the 20 people stopped, the officer uses force against 8 of them.

The police officer used force against stopped white people and stopped Black people at the same rate: 40%.

But that's not the only scenario that can lead to that 40% number.

**SCENARIO 2**  
This time, of the 100 people the officer sees, he stops 50. But this time he is biased in whom he pulls aside.

The officer uses force against 20 people this time.

This time, like last time, the police officer used force against stopped white people and stopped Black people at the same rate: 40%.

**ANALYSIS**  
Things might appear equal, but in the second scenario, more Black people were stopped by the police than white people.

While use of force among **stopped** people is equal, use of force among all **observed** people is not:

$\frac{12}{50} = 24\%$  of Black people have force used against them

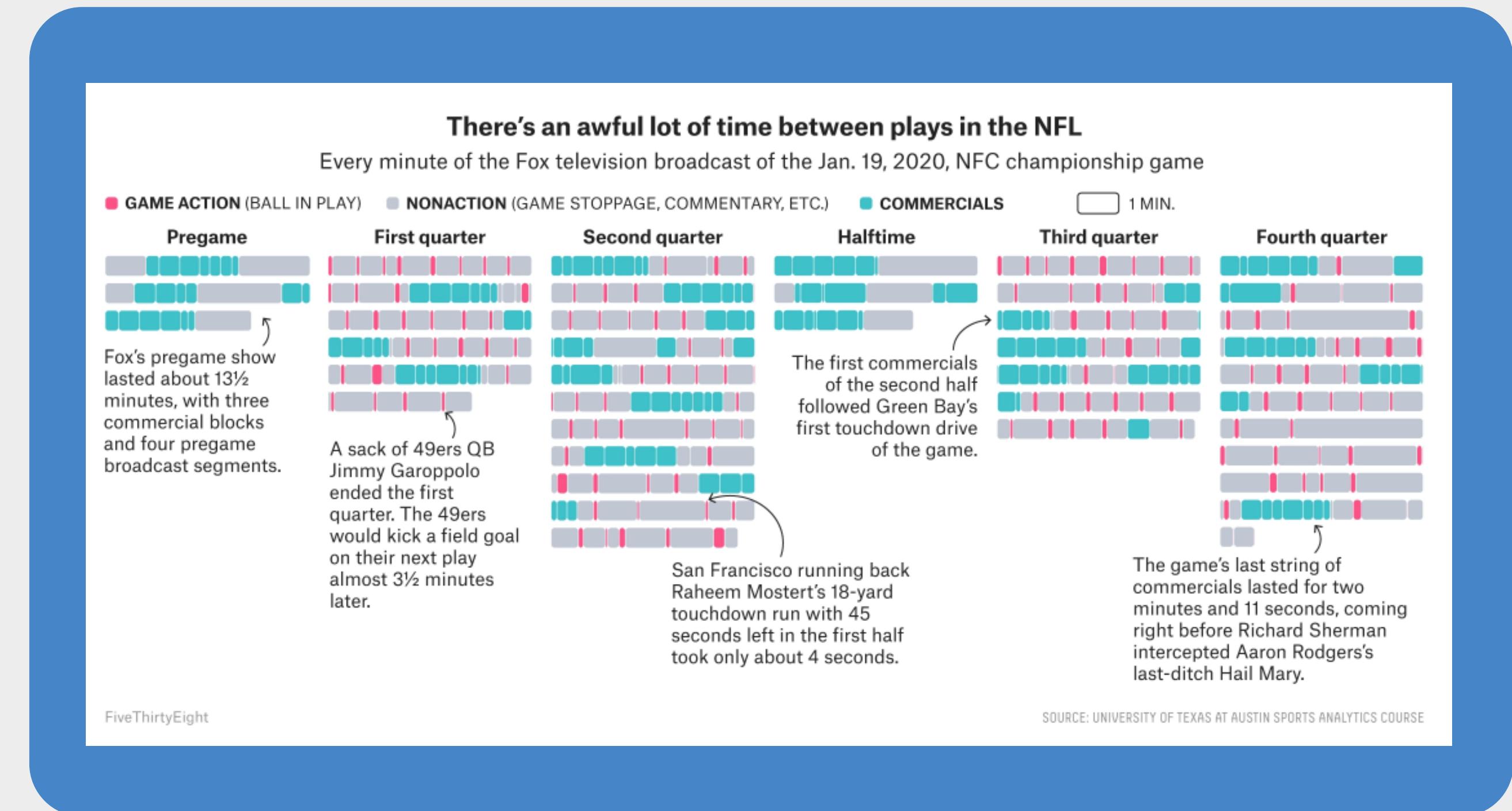
$\frac{8}{50} = 16\%$  of white people have force used against them

**CONCLUSION**  
This is why knowing how often police use force against people they've stopped is **not enough information** to know whether use of force is racially biased. In real life, we don't have data on everyone who was observed but not stopped, but we need that to know whether use of force is biased overall.

<https://fivethirtyeight.com/features/the-40-weirdest-and-best-charts-we-made-in-2020/>

# A Good Story

- Effective
- Highlights the Truth, Does not Deceive
- Tells the Intended Story



# Not a Good Story





## Note

the first few things you see, the first ideas that come to mind

## Answer

Do these things I noted match the chart's main idea or apparent intent?

## Answer

Is there anything misleading?

## Answer

Is anything missing?

## Note

Likes, dislikes, wish-I-saws

## Answer

What are 3 things you would change? Why?

## Sketch

Sketch on paper your own version, then critique.

# Awareness through Critique

The first step to telling good stories is becoming aware of the structure, attributes, and methods used in stories you like versus those you do not.

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## Immediate Thoughts

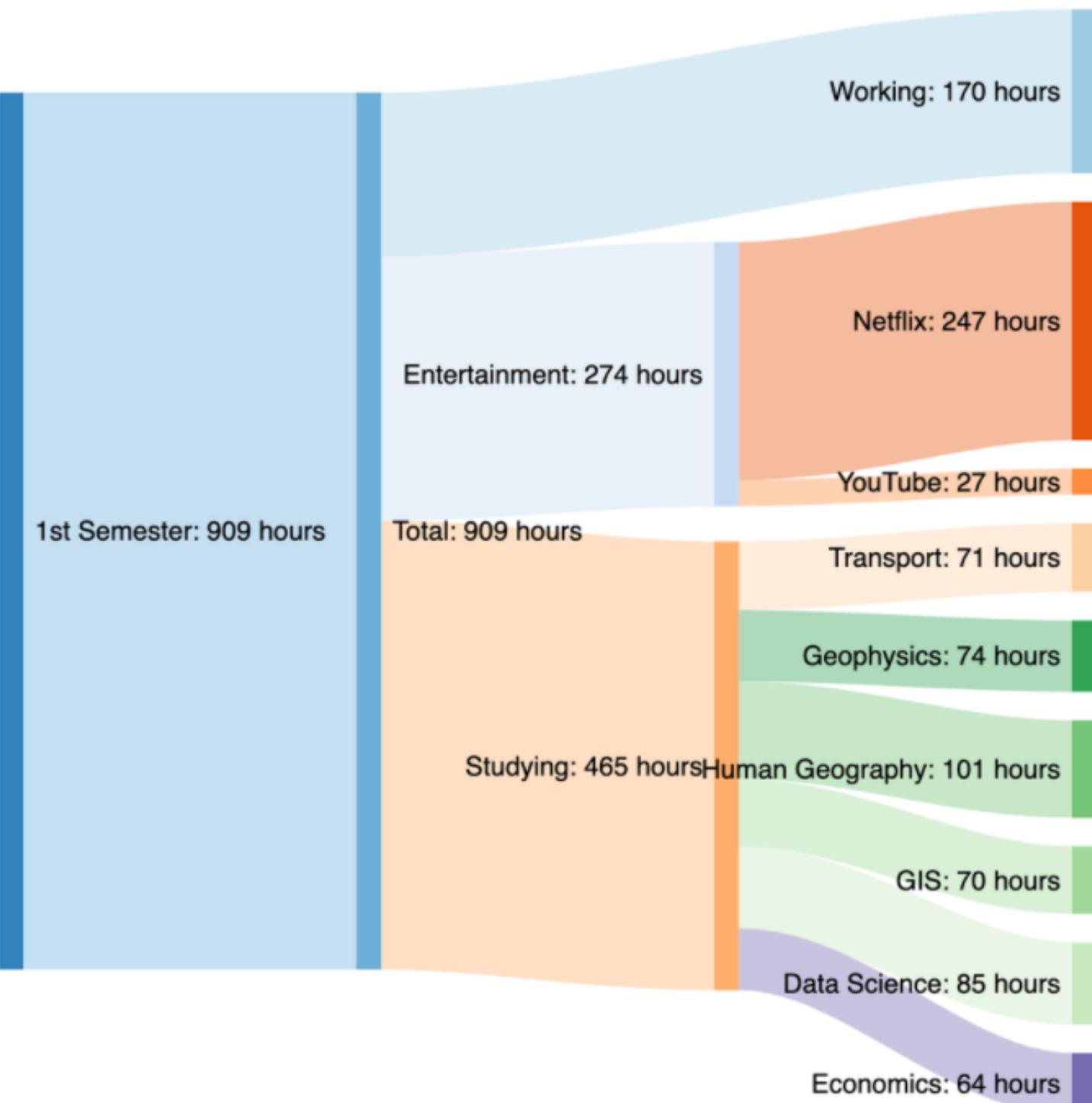
- Most classes are taking similar time.
- I wonder if time was useful? If the author was happy with the discoveries or thought, "Oh wow, I could have really improved in my courses if I had not watched so much Netflix"
- Is this any different from the first year?
- That's a lot of netflix! Or is it? hmmmm
- Does the author not do any other types of entertainment?

# Let's Critique!

↑ r/dataisbeautiful · Posted by u/masto-chuck OC: 1 6 hours ago  
119 ↓

[OC] How I spent the first semester of my second year of uni

OC



# Let's Critique!

## Note

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## Do My Observations Match Apparent Intent?

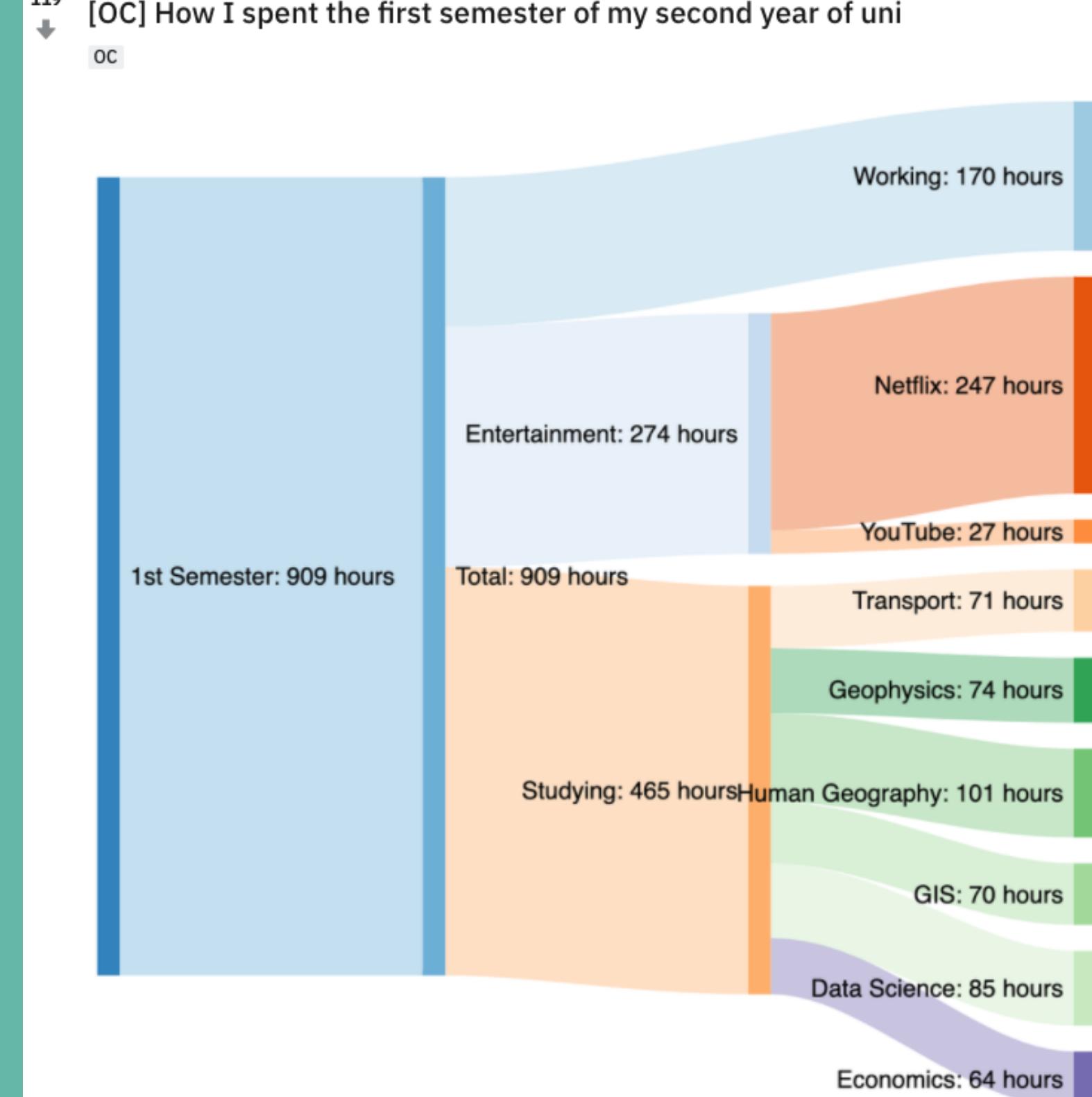
I'm not sure what the intent is beyond discovery of how the author spend their first semester of second year in college. Having a clear understanding of the author's takeaway from this would be useful.

If the intent was to generate questions, then yes, I guess it did meet that goal!

 r/dataisbeautiful · Posted by u/masto-chuck OC: 1 6 hours ago

[OC] How I spent the first semester of my second year of uni

OC

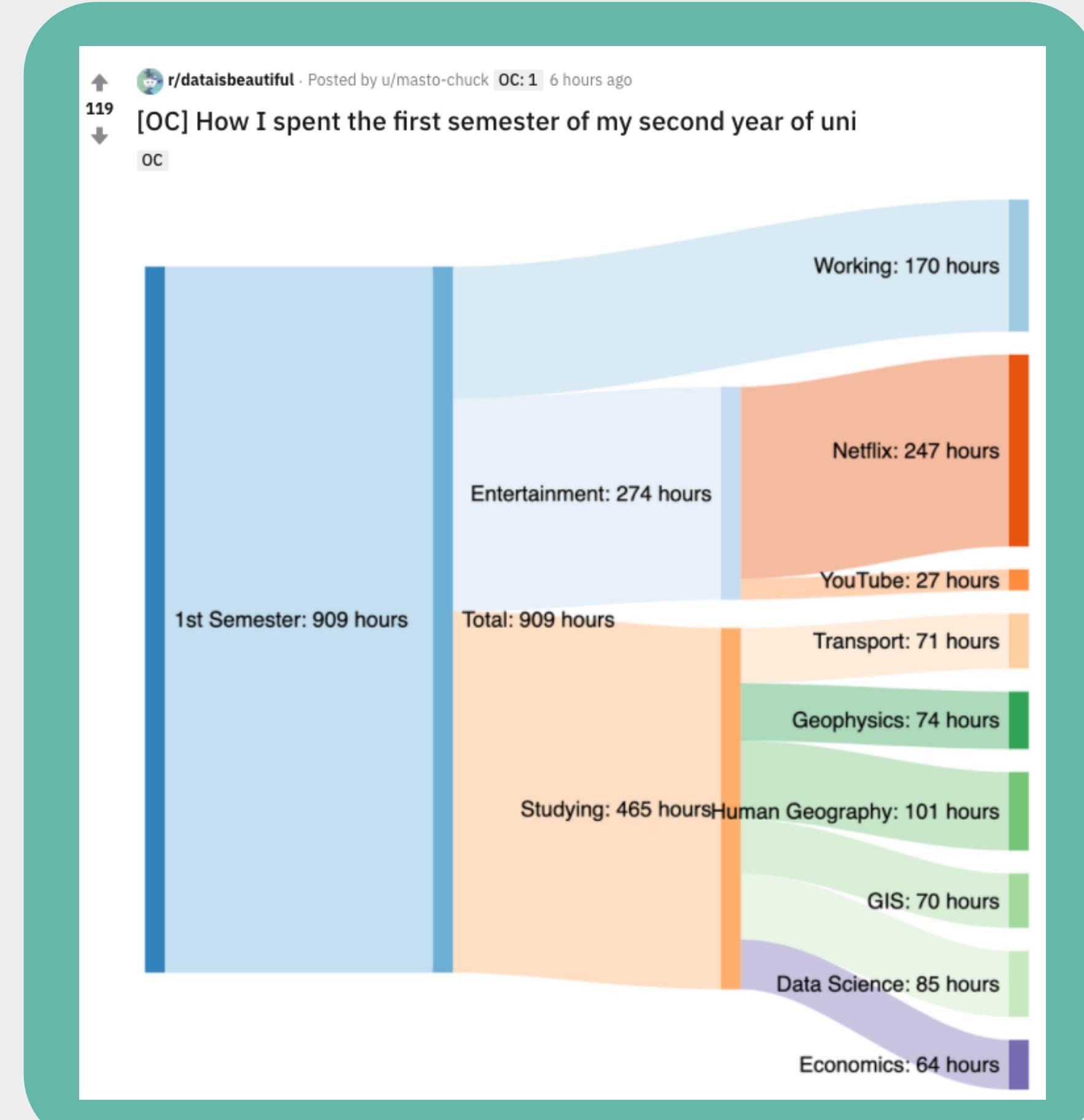


# Let's Critique!

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  - Note**  
Likes, dislikes, wish-I-saws
  - Answer**  
What are 3 things you would change? Why?
  - Sketch**  
Sketch on paper your own version, then critique.
- 

## Is Anything Misleading?

Well, it's unclear what hours are captured. 18 weeks would be a total of 3,024 hours. Although the number of hours included are noted, a viewer must be cognizant enough to know that is too low to be the number of hours in a semester. In addition, it is not indicated which hours are counted and which are not. Was the hours data was collected consistent? Or did the author set the categories and then collect data when time was spent in one of those categories?

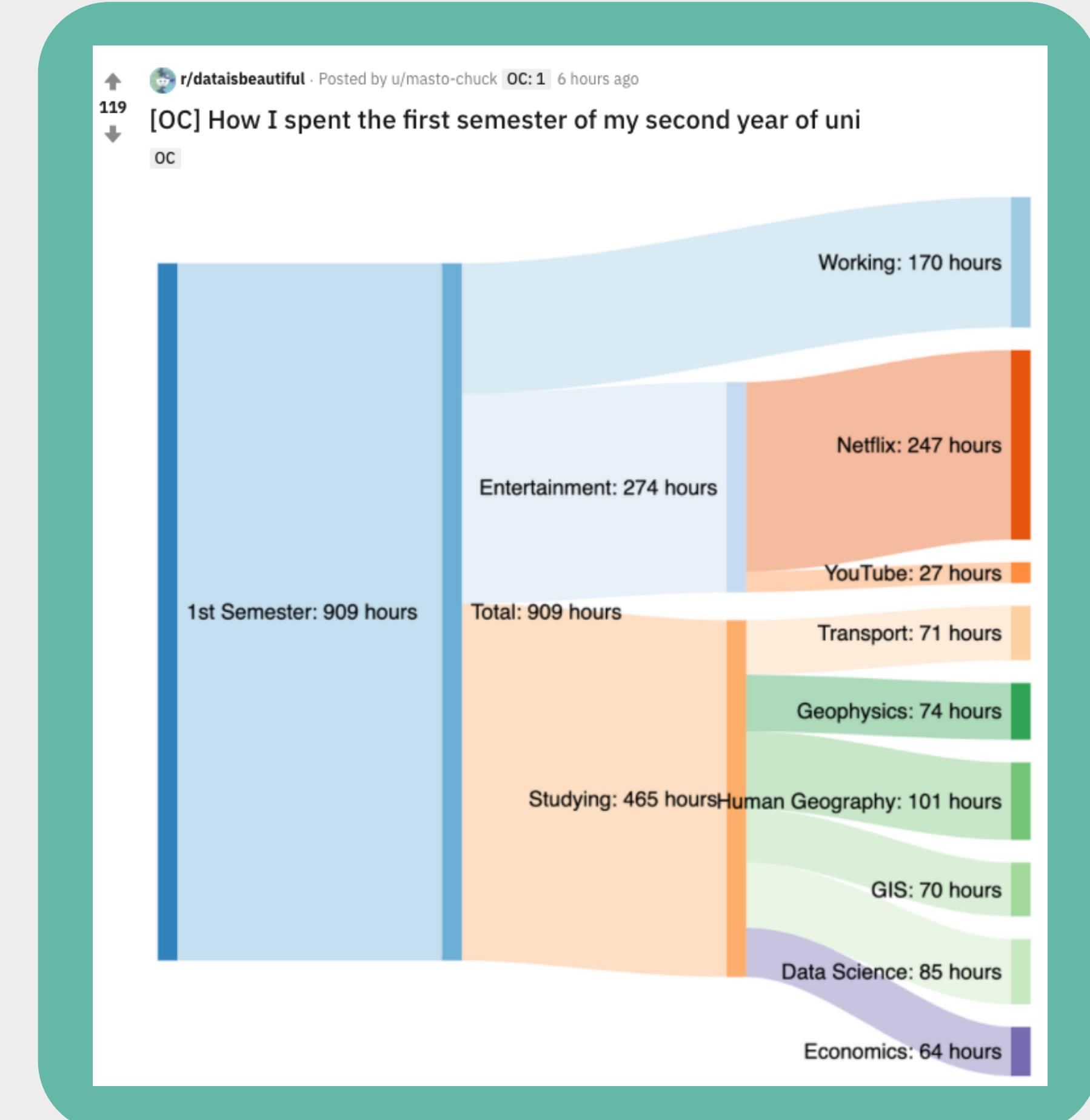


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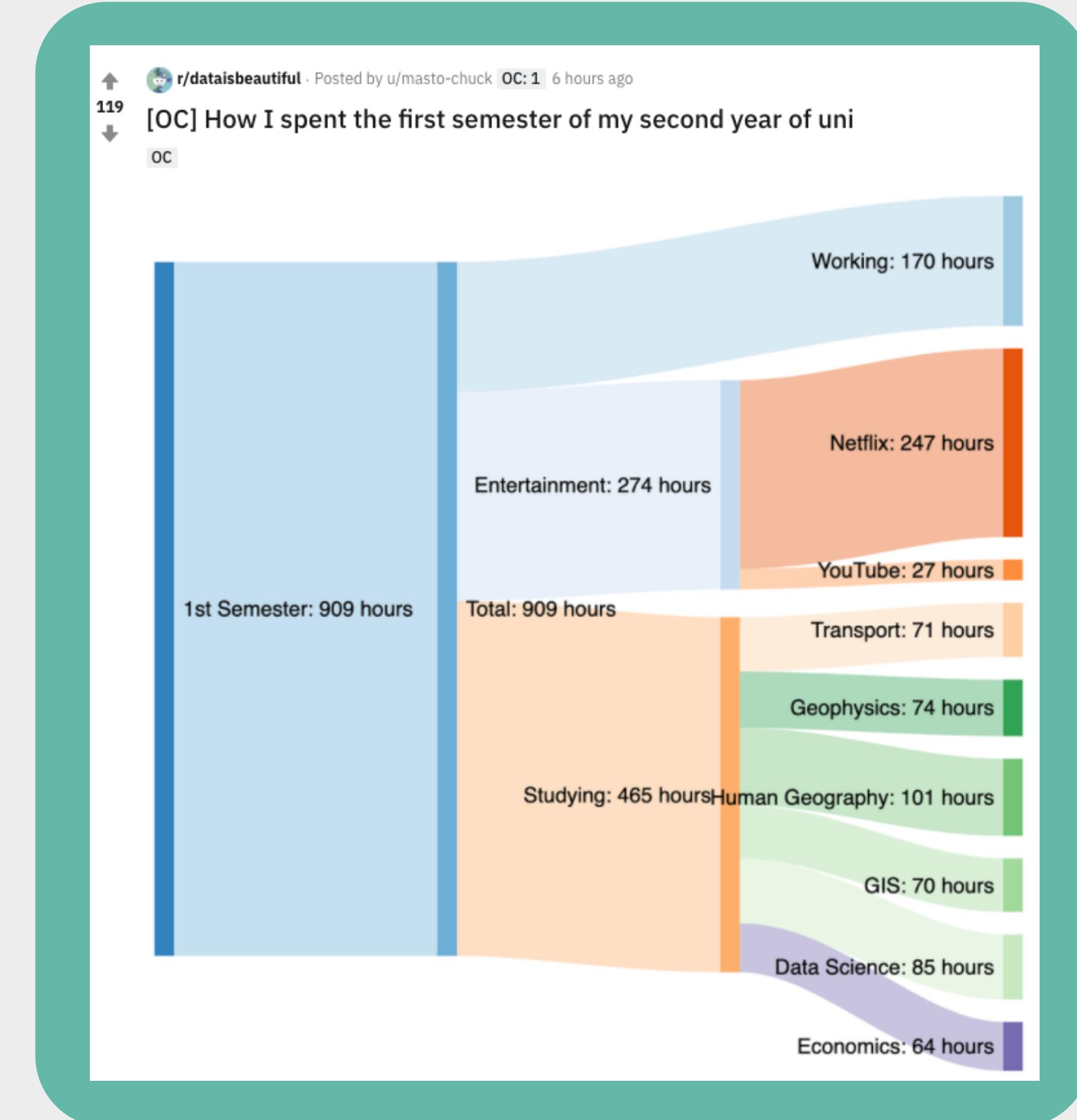
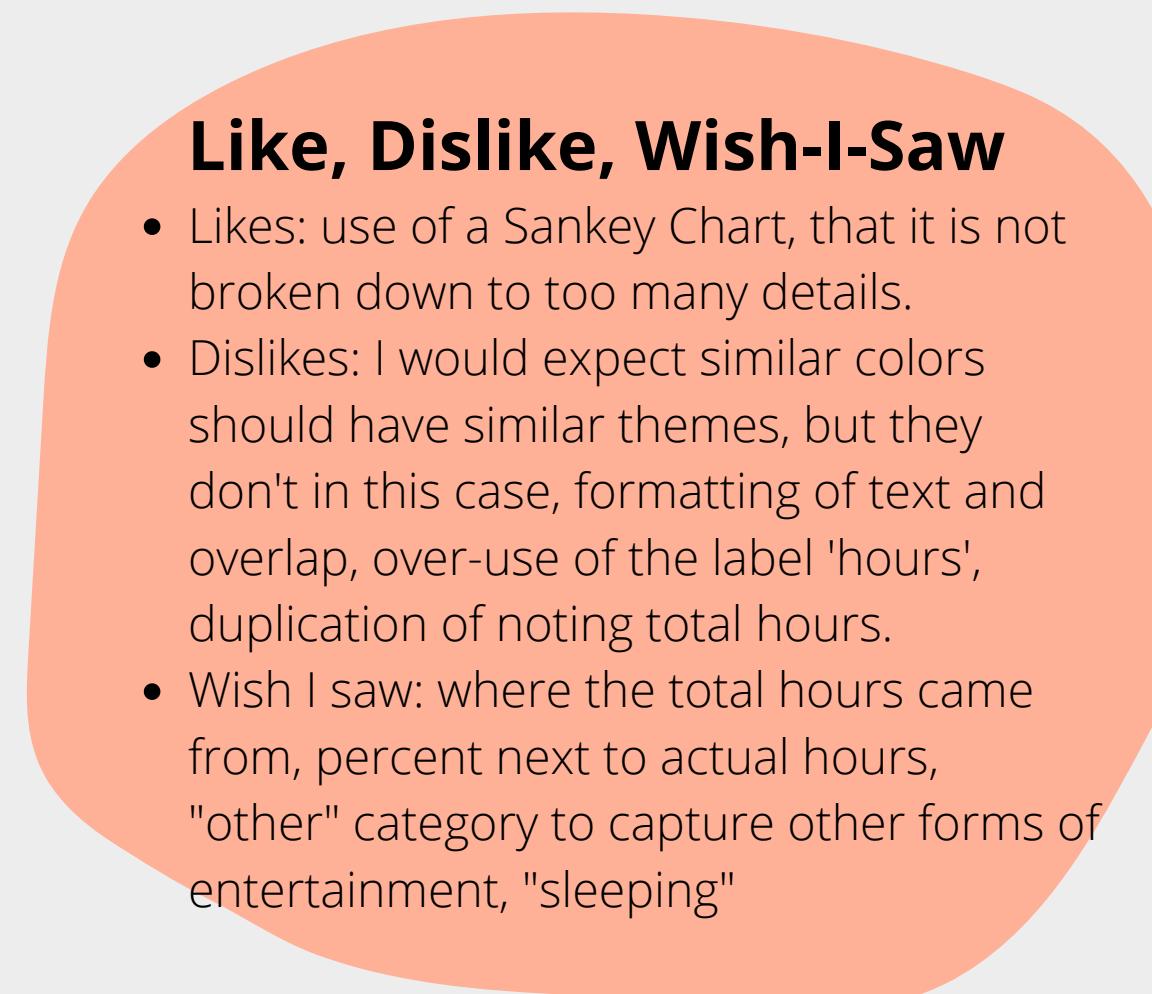
## What's Missing?

- 909 hours out of...
- Percent of time spent
- Any takeaways? What did the author do with this information?
- Does color mean anything?
- It seems a large number of categories or a catch-all category is missing



# Let's Critique!

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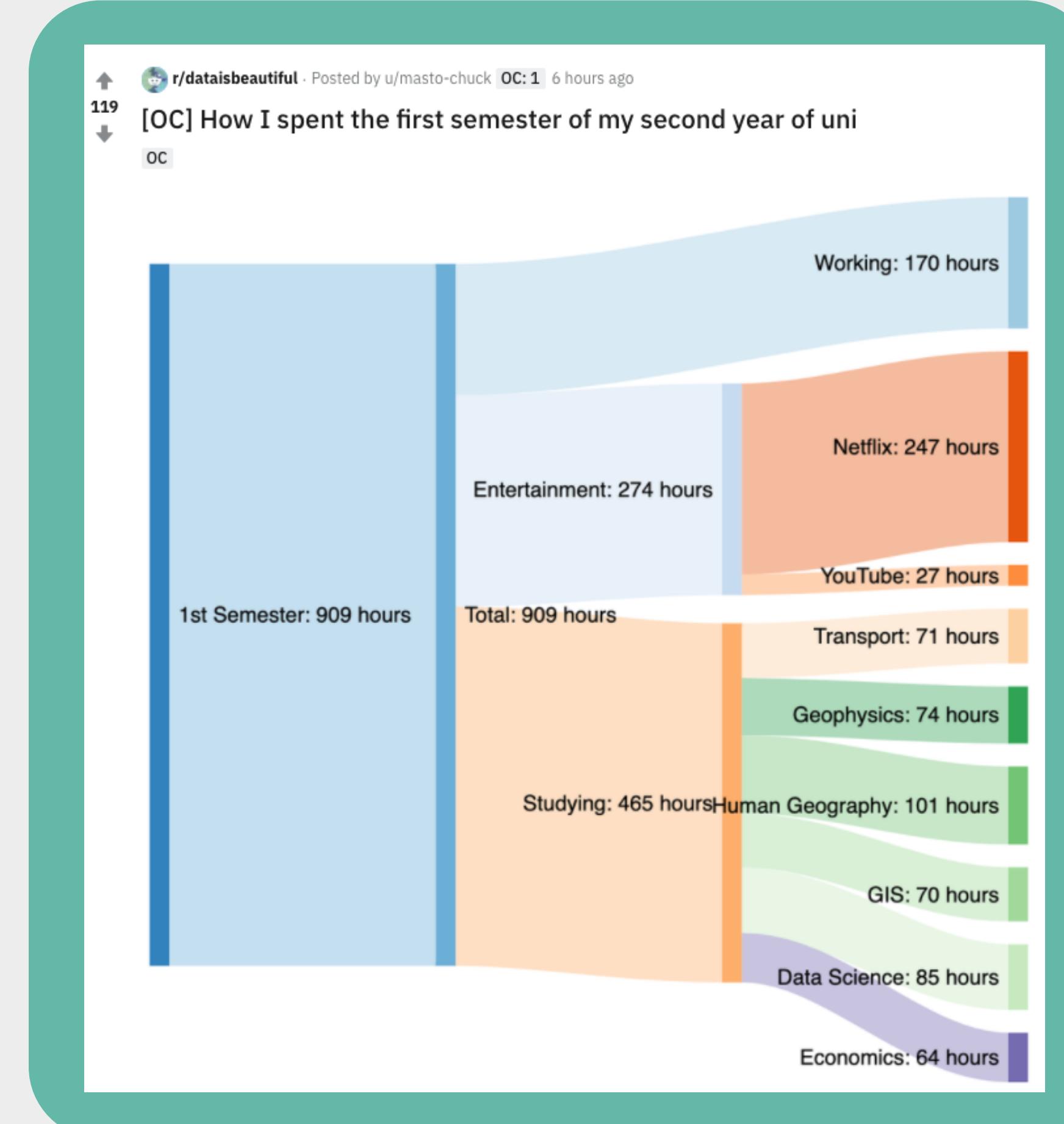


# Let's Critique!

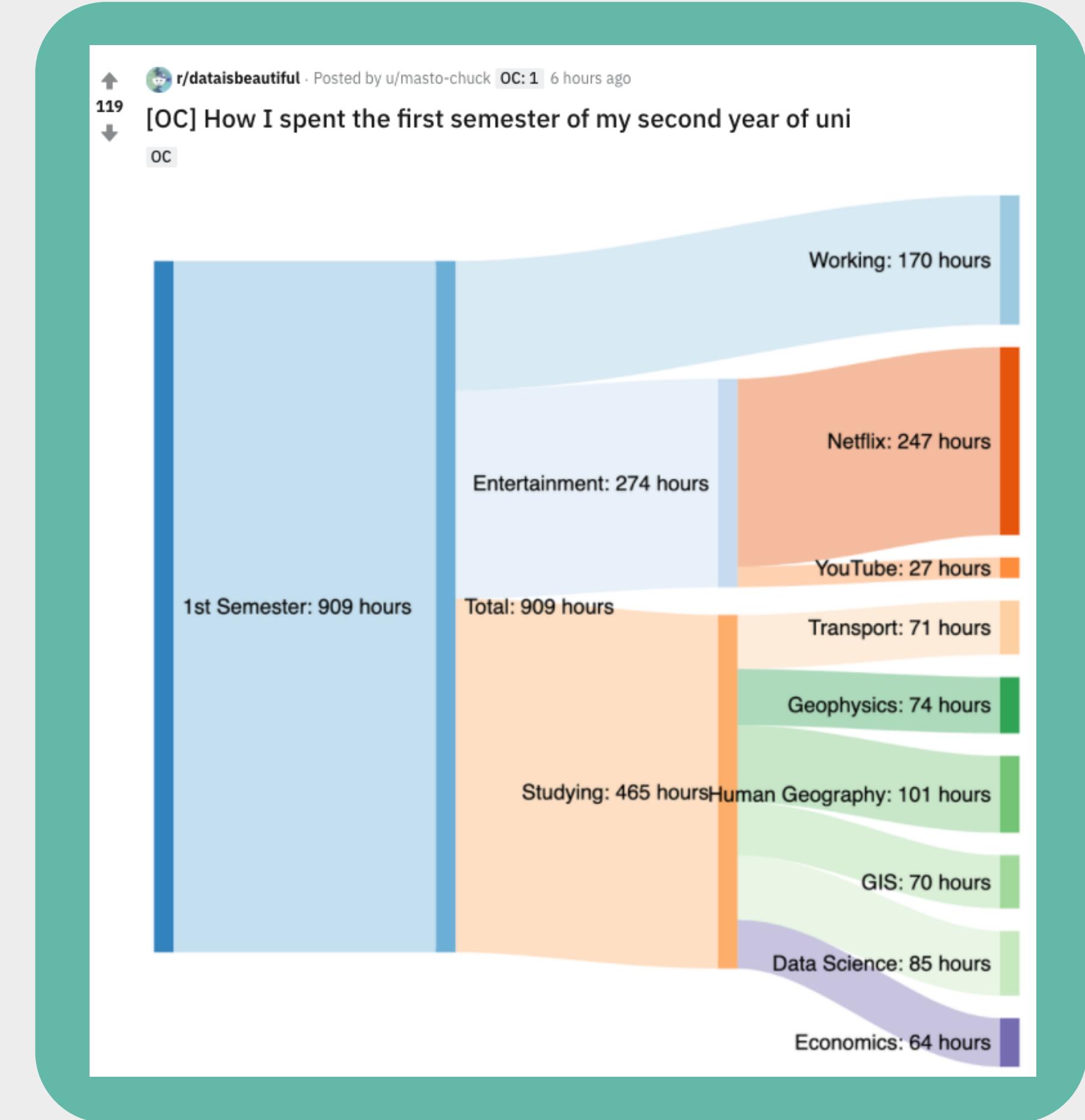
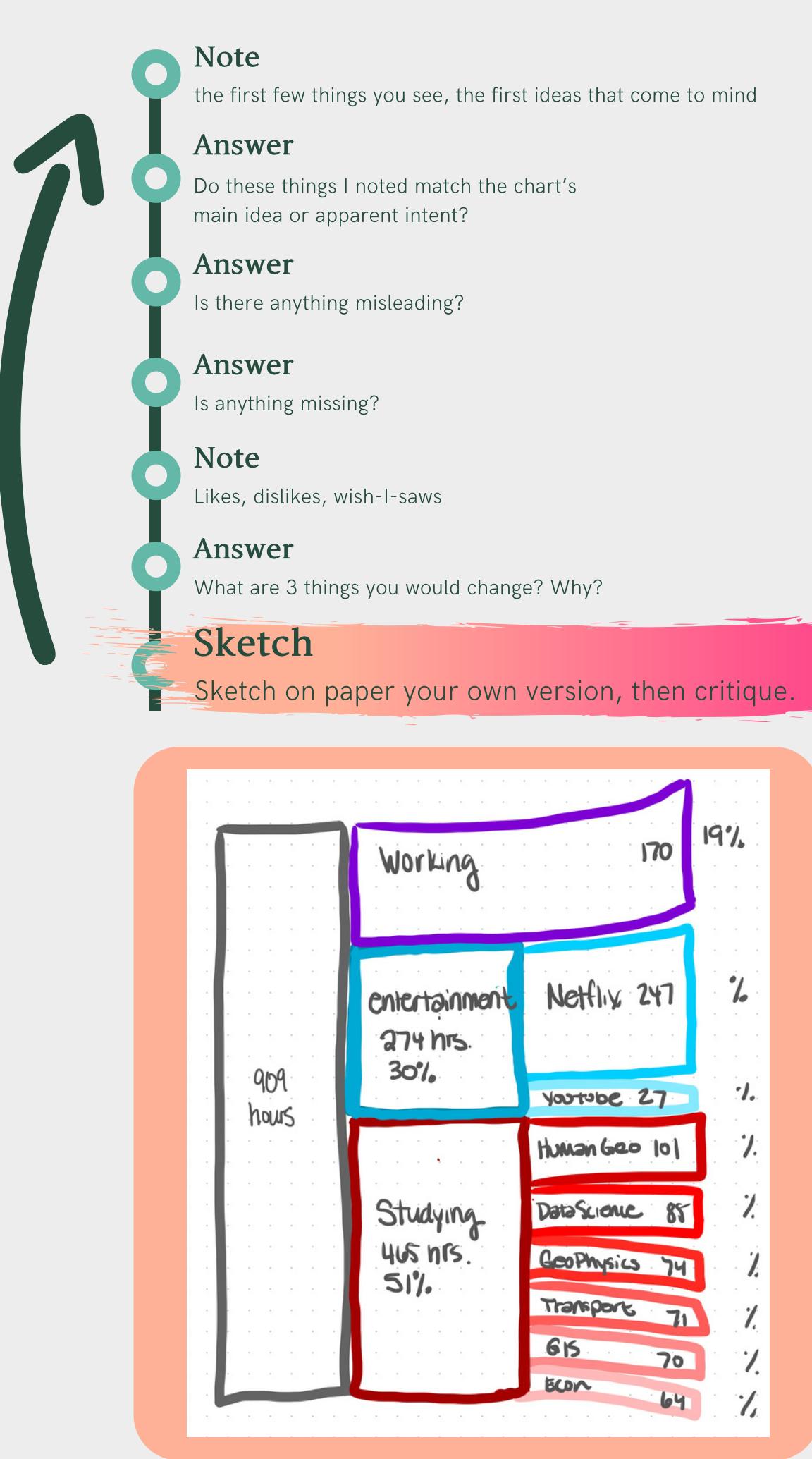
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What are 3 things you would change? Why?
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Sketch on paper your own version, then critique.

## 3 Things I Would Change

- Have each major category (entertainment, working & studying) be a unique color and then gradients of that color fan off into the subcategories. It will help drive the eyes down one category and then down the next instead of jumping around and also trying to figure out how the orange shades are related, e.g.
- Clean up around the text formatting. It will make it less noisy and much easier to read. Also, adding a percentage to the raw hours to that I don't have to estimate in my head.
- Remove Hours and place it in the total and in the root level with total hours.



# Let's Critique!



# Understand How We See

- We don't consume from left to right, top to bottom.
- We see first what stands out.
- We only see a few things at once.
- We seek meaning and make connections. If meaning is unclear, we will make our own.
- We use experience and expectations to make cognitive shortcuts.
- We process and remember pictures MUCH better than numbers. Yes, even you!

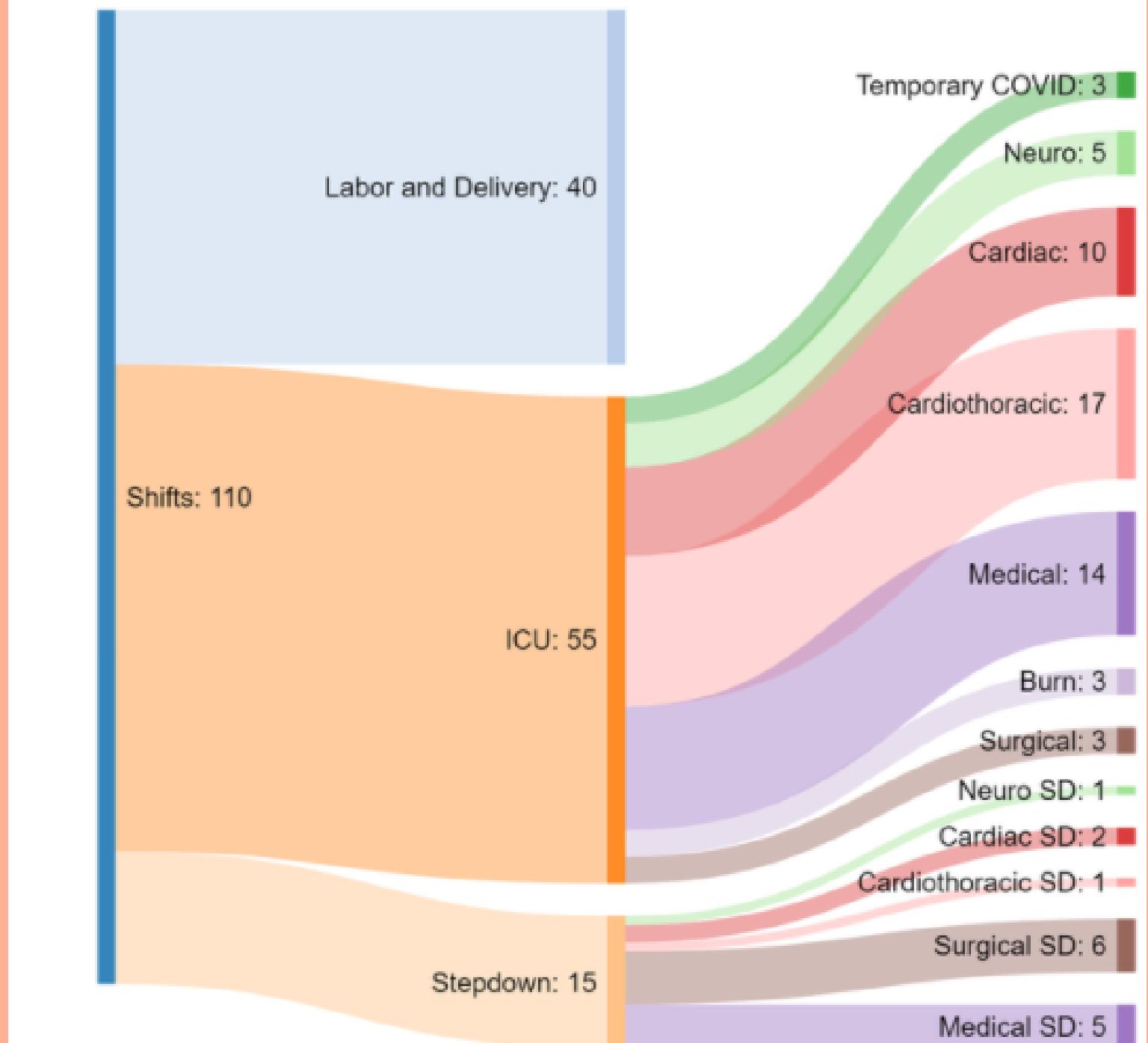


# We Don't Go In Order

Don't assume your audience will read right to left, top to bottom.

**What did you first see in the chart?**

oc 110 shifts as a critical care float nurse [OC]



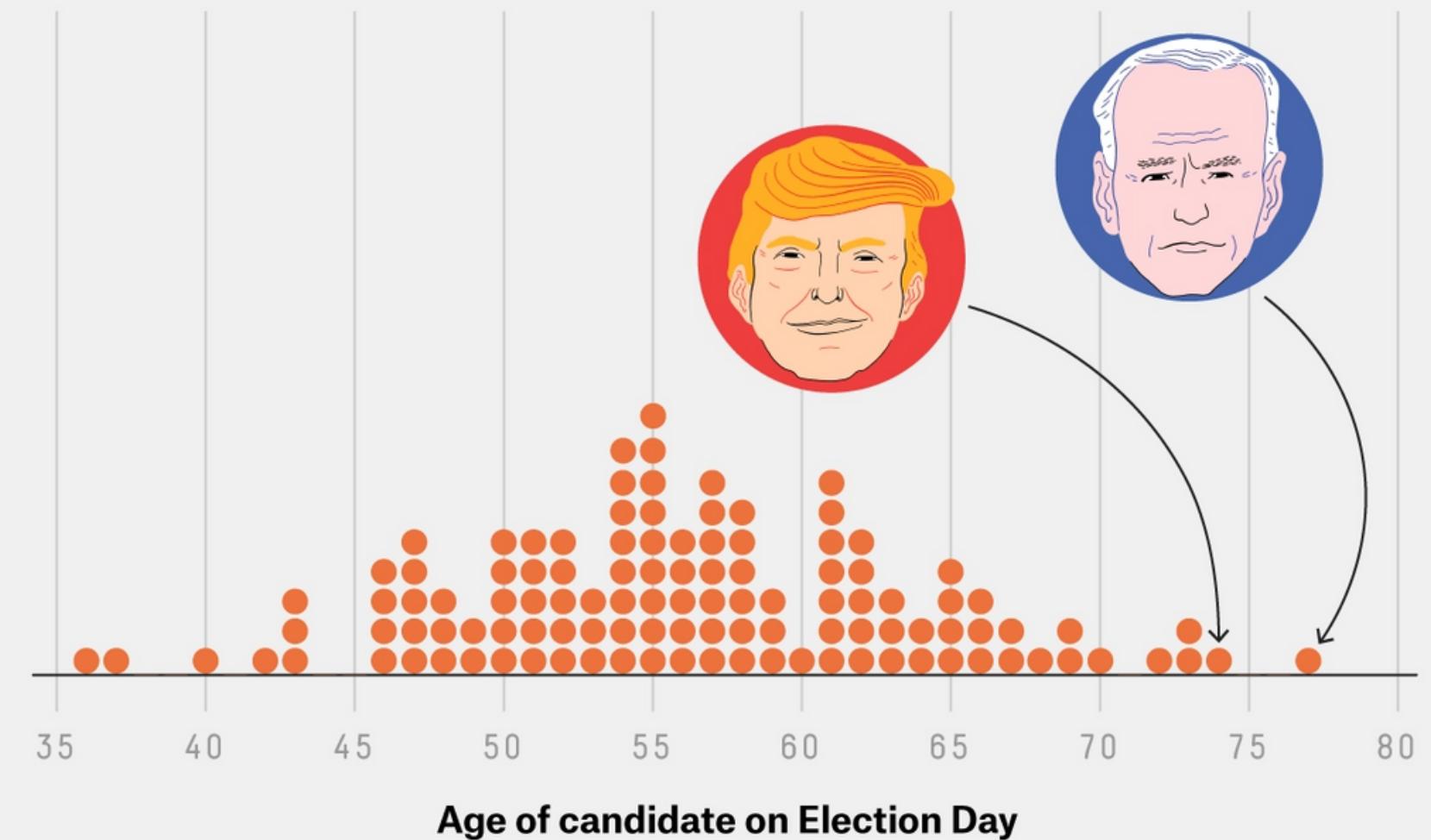
# We See First What Stands Out.

Make what you want the audience to see first stand out!

What did you see first?  
What stands out in this chart?

## Biden and Trump will be the oldest presidential nominees

Number of major-party presidential nominees\* by age, 1796-2020



\* Only the top two vote-getters from the major parties are included. In cases where a party split its nominations (1824, 1836, 1860), those candidates have been omitted. In 1820, President James Monroe was the only candidate from that cycle, as he was unopposed.

FiveThirtyEight

SOURCES: BIOGRAPHICAL DIRECTORY OF THE U.S. CONGRESS, DAVE LEIP'S ATLAS OF U.S. PRESIDENTIAL ELECTIONS, ENCYCLOPEDIA BRITANNICA

# We only see a few things at once.

Reduce the number of elements on a chart.

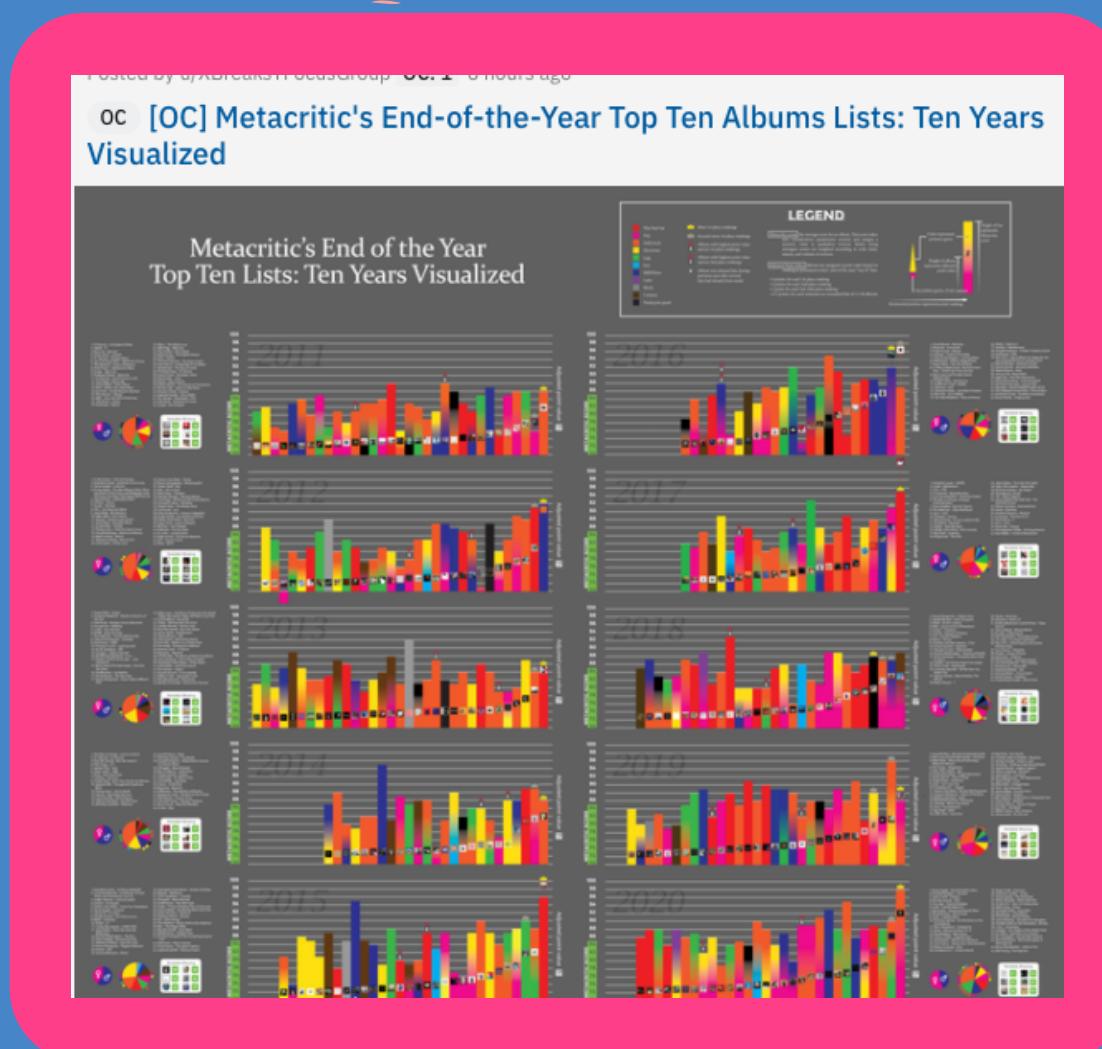
Gray out the context that needs to remain but not be seen at the same importance as the key idea.

Reduce the number of colors.

Reduce the number of numbers, including digits.

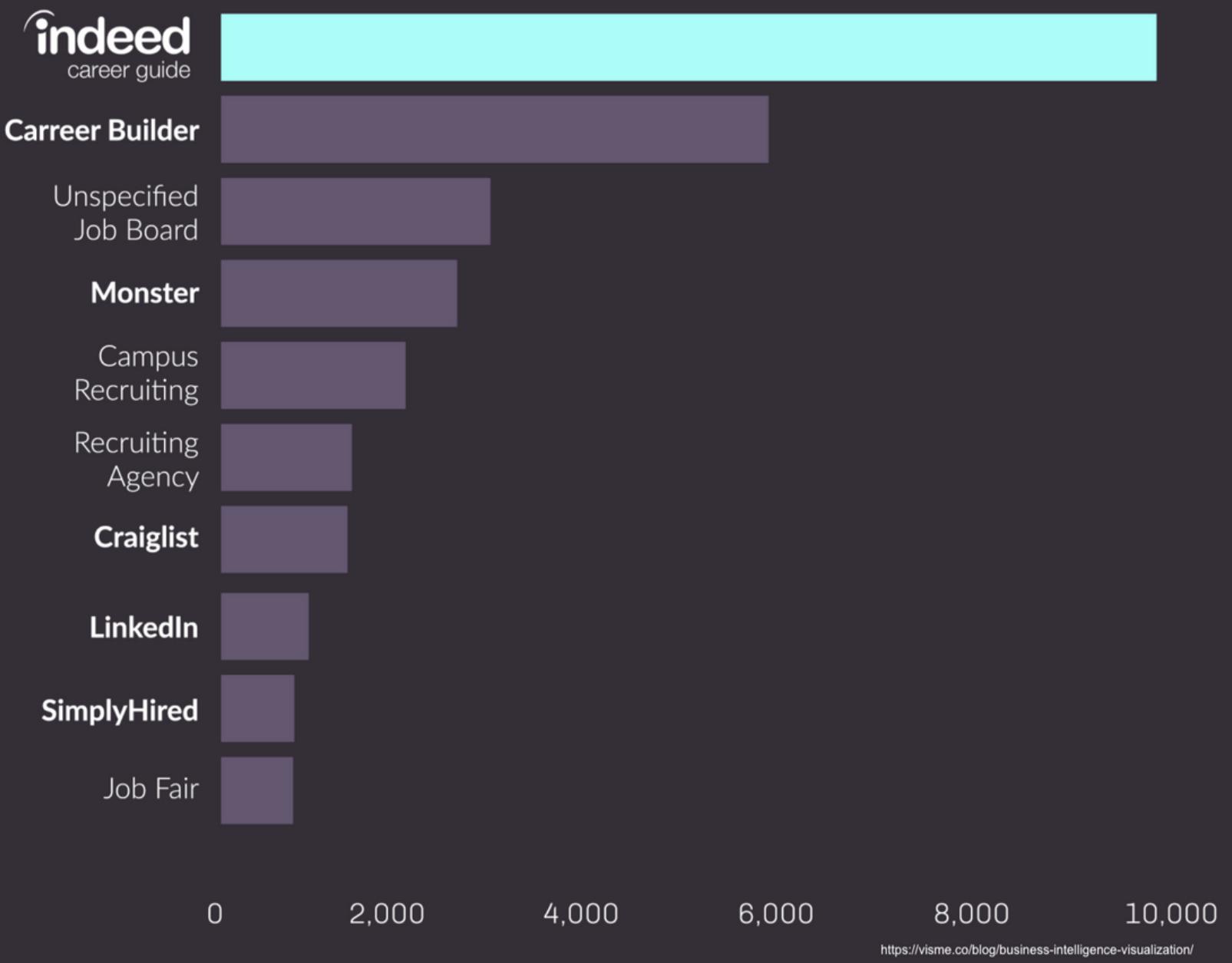
## Where would I even begin?

Reading this chart is going to take too much time...I'll move on.



## I Get the Message!

### #1 External Source of Hire

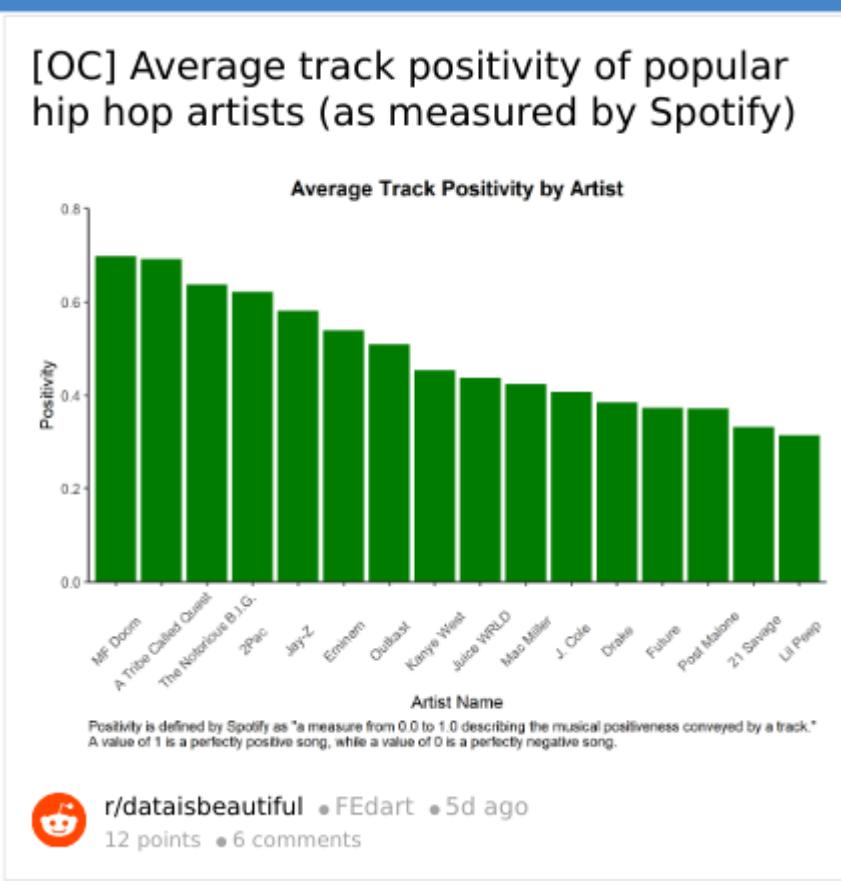


We seek meaning and make connections.

Ensure the meaning is not misrepresented. If the meaning is not clearly understood, we will make our own.

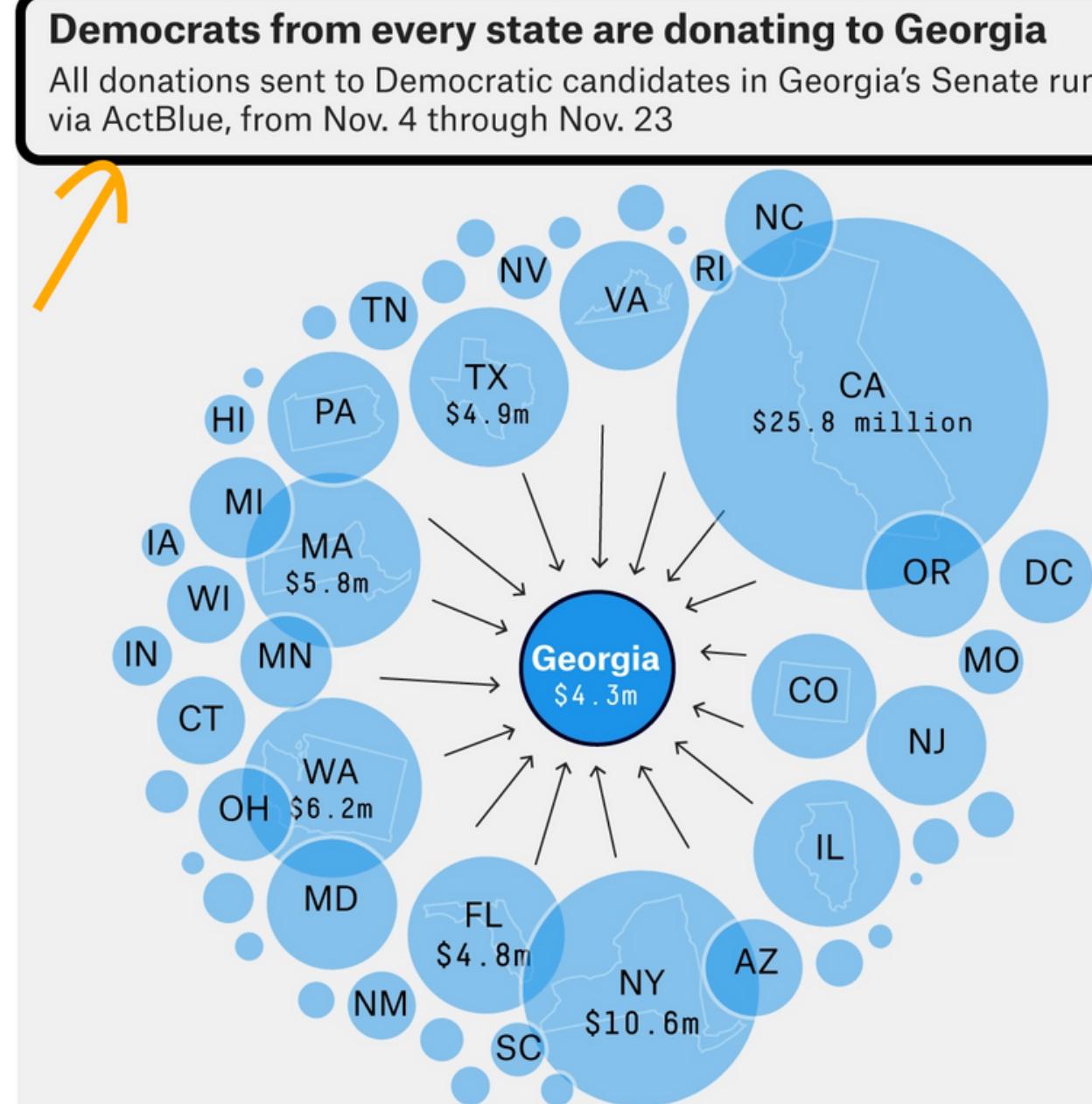
# As for the one below...

Your guess is as good as mine



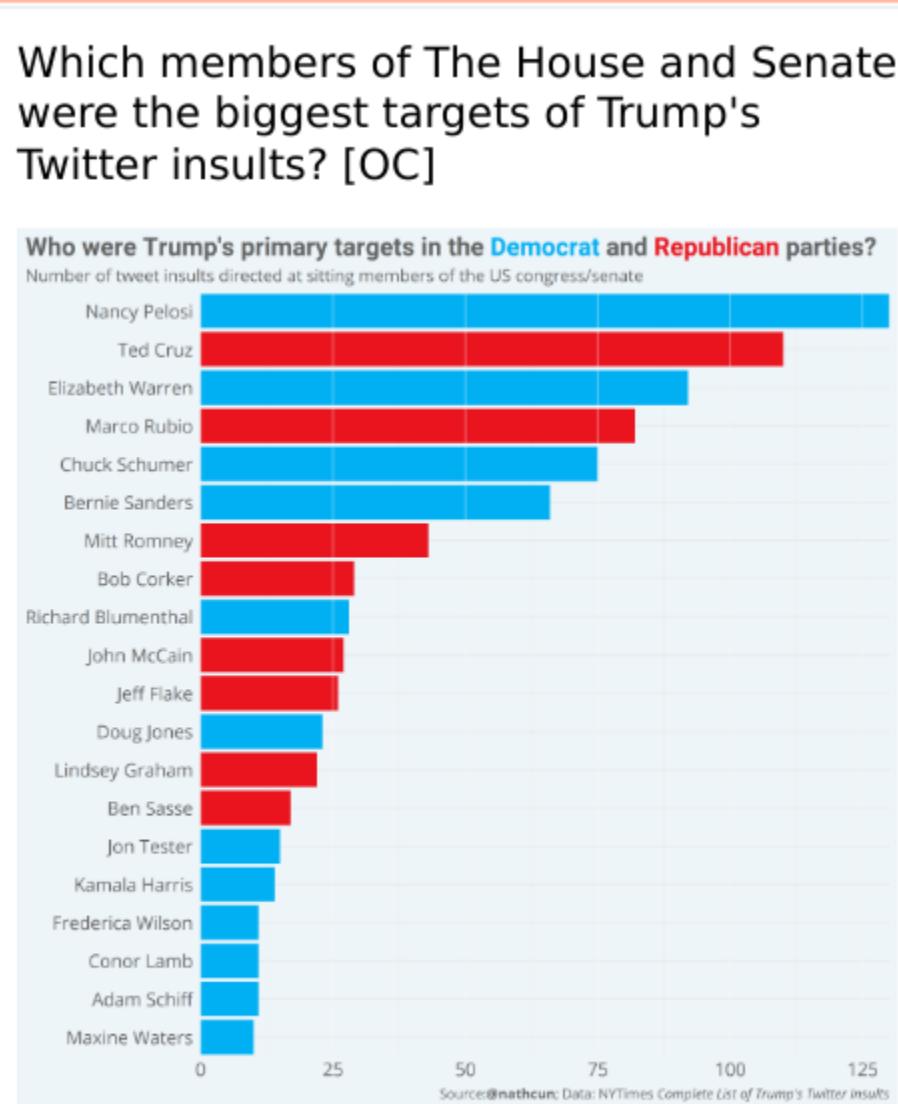
# The Title Guides Us...It Tells us the Meaning

# Make your titles useful!



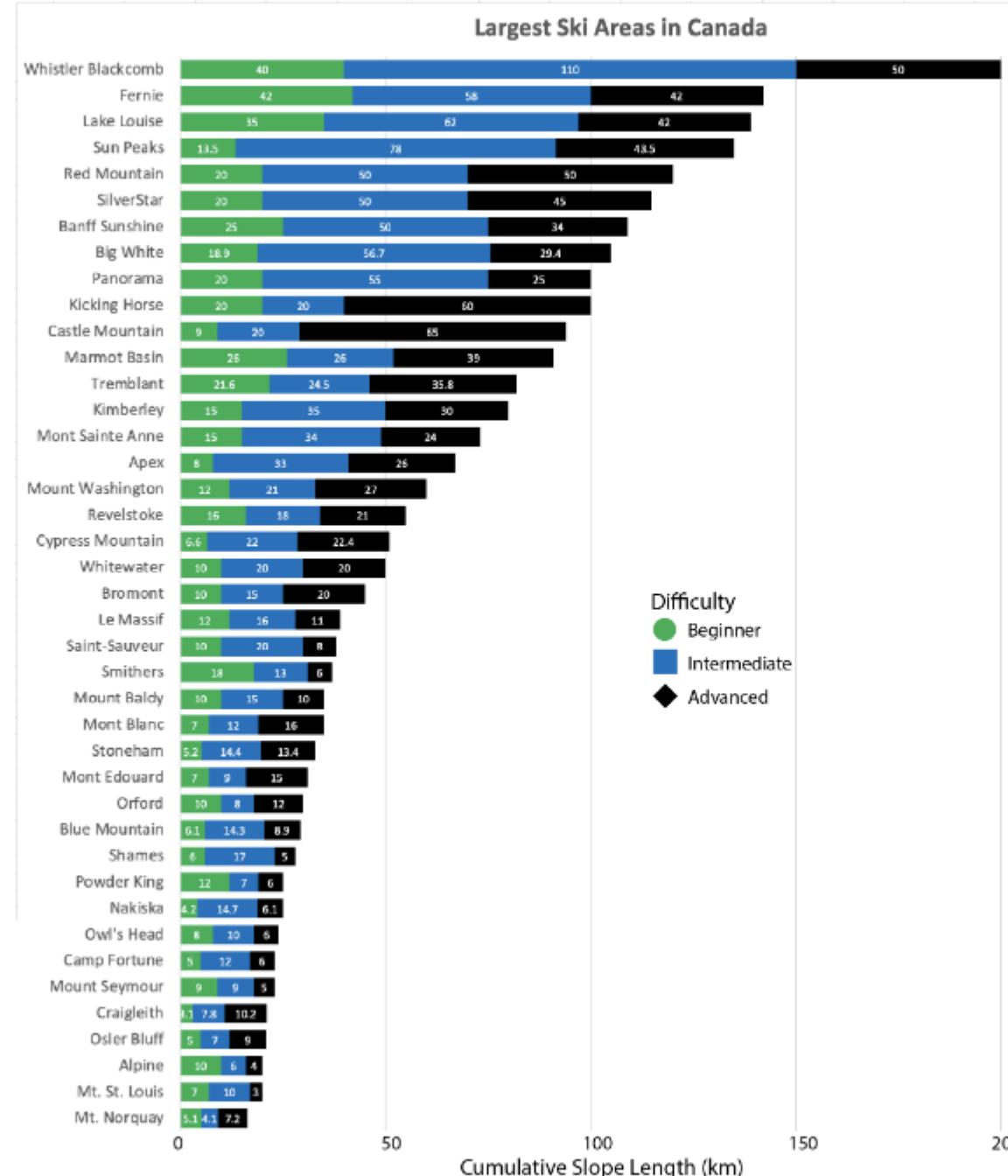
# We use experience and expectations to make cognitive shortcuts.

Make use of conventions and metaphors to speed up and reduce friction to understanding.



r/dataisbeautiful • nathcun • 4d ago  
89 points • 24 comments

## Largest Ski Resorts in Canada [OC]

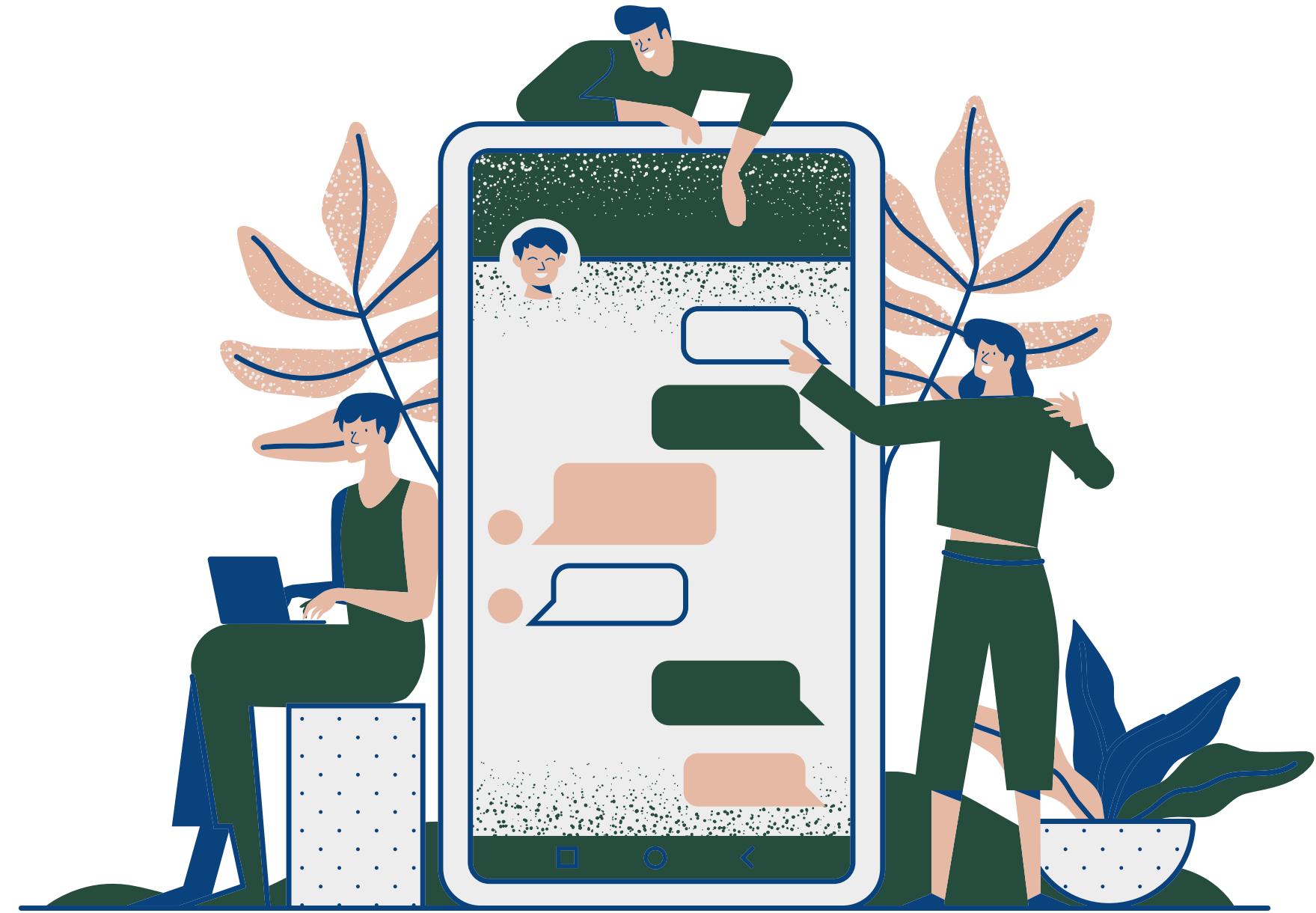


r/dataisbeautiful • PlannerSean • 4d ago  
62 points • 16 comments

# We process and remember pictures MUCH better than numbers.

Yes, even you! Limit the precision, the number of numbers, the number of units. Overuse of numbers either distract people to where they will miss the important message, or they will immediately be turned off by the whole presentation.





# Contact Us