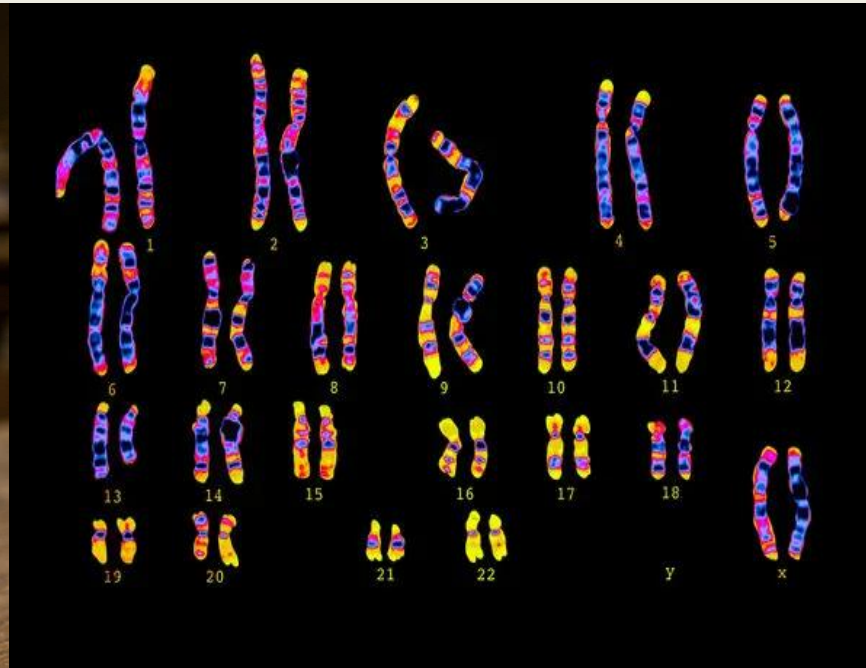


A thick black L-shaped frame is positioned on the left and bottom edges of the slide, framing the central text.

# DELVING DEEPER INTO DATA ANALYTICS

*Presentation by Feda Fitian*

What does Starbucks, the human genome, and aircraft transportation all have in common?



**Let's talk numbers.**



TO BE THE OWN PERSONALTY AND NOT THEIR PERSONAL TOOTH-PASTE

**STARBUCKS**  
EXPERIENCE

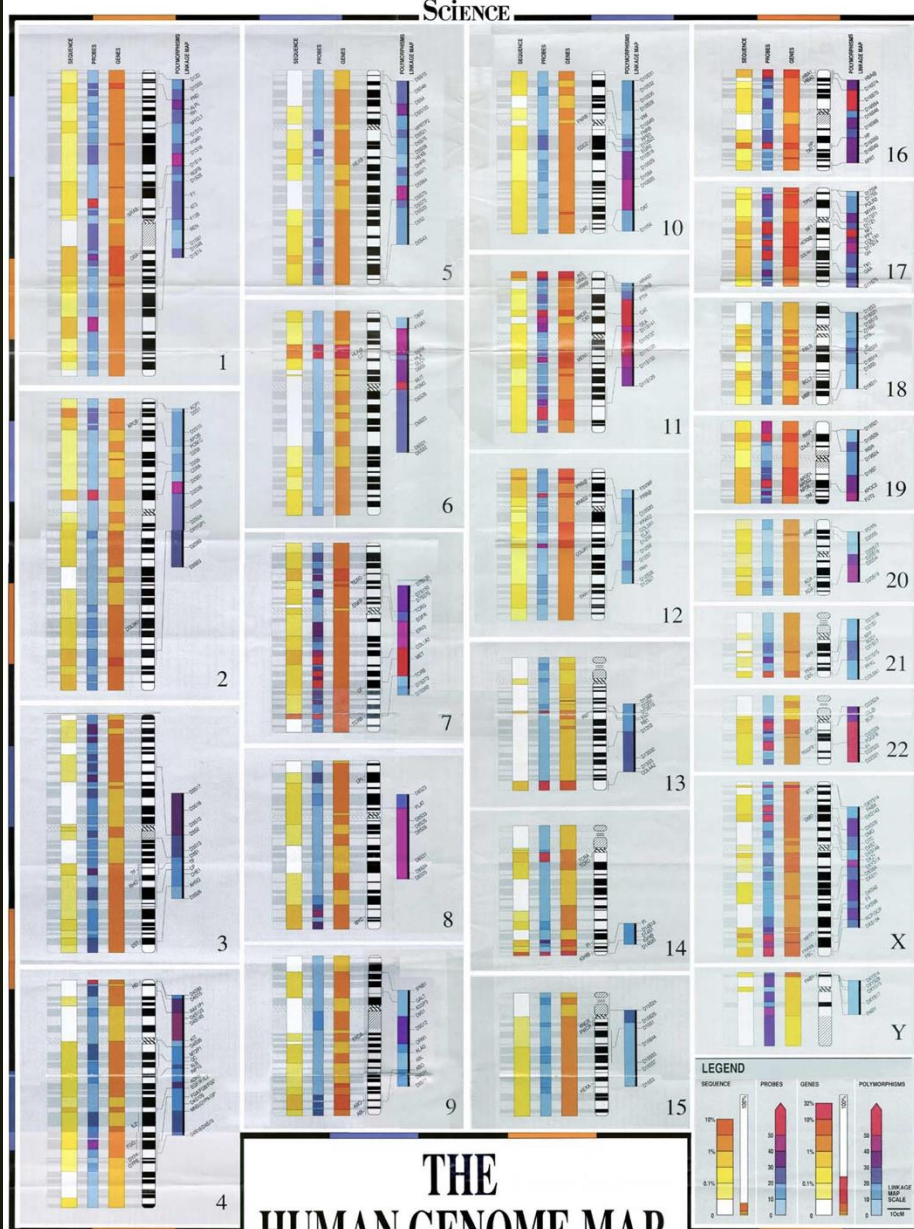


**90 million transactions a week**

**25,000 stores worldwide**

**500 customers a day per location**





## THE HUMAN GENOME MAP 1990

Results of efforts to map and sequence the human genome, either published or in press by July 31, 1990, are depicted in the bars surrounding the ideogram of each of the 24 chromosomes. Each type of bar is labeled at the top of the wall chart. The data are illustrated as colored intervals according to logarithmic or linear scales, as shown in the legend. Further information, including a description of the allocation and estimation procedures, appears on the back and in the accompanying article (J. C. Stephens *et al.*) in the October 12, 1990 issue of *Science*.

The *Sequence density bar* indicates progress towards determining the complete DNA sequence of each chromosome band. An estimate of progress for each band was obtained by dividing the length of known DNA sequence currently allocated to the band by the length

that was estimated to exist in that band.

The *Probes distribution bar* reflects the extent of scientific research activity for each band by showing the number of probes (defined pieces of DNA, including clones and PCR primers) allocated to the band.

The *Genes density bar* shows progress towards identifying all genes in each band. As with sequence, an estimate of progress was calculated by dividing the number of known genes allocated to the band by the estimated total number of genes in the band.

The *Linkage map*, shown as the heavy right border of the polymorphism bar, depicts relative order and distance

in centimorgans for loci selected from published maps to give an illustrative map with a resolution averaging 10 to 20 cM. The *Polymorphism bar* indicates the number of known polymorphic loci allocated to the cytogenetic intervals formed by the linkage map. Lines connect the bar to the ideogram for those loci with a precise cytogenetic map localization.

Representative genes are identified by their alphanumeric symbols to the left of the ideogram. Vertical bars show the band (or bands if less precisely mapped) known to contain each gene. Names and disease associations are in the table on the back. These genes were included because of their location in bands of high information content or because of their interest to the broad scientific community or the general public.

# Human Genome

23 chromosome pairs

20,000 - 25,000 genes per person

3 billion DNA base pairs

[illegible]

# Air Transportation

# 100,000 flights per day

# 5,000 airlines

# 17,700 airports worldwide

# What is Data Analytics?

Data Analytics involves the research, discovery, and interpretation of patterns within data.

Would you consider yourself a data analyst?

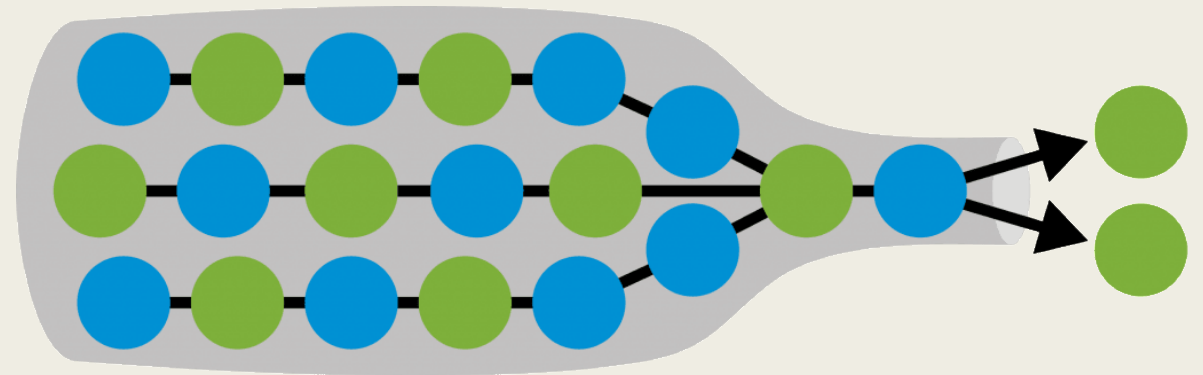


# You've been a data analyst just from shopping at the mall.

- When the best time to go shopping is
  - *Days of the week*
  - *Times of the day*
  - *Different seasons, holiday vs. non-holiday*
- Where we expect to park our car
  - *Different arrival times*
- Which stores typically offer promotions
  - *And where we can get a better price*
- When our favorite employees are working

# Key steps of the data analysis process:

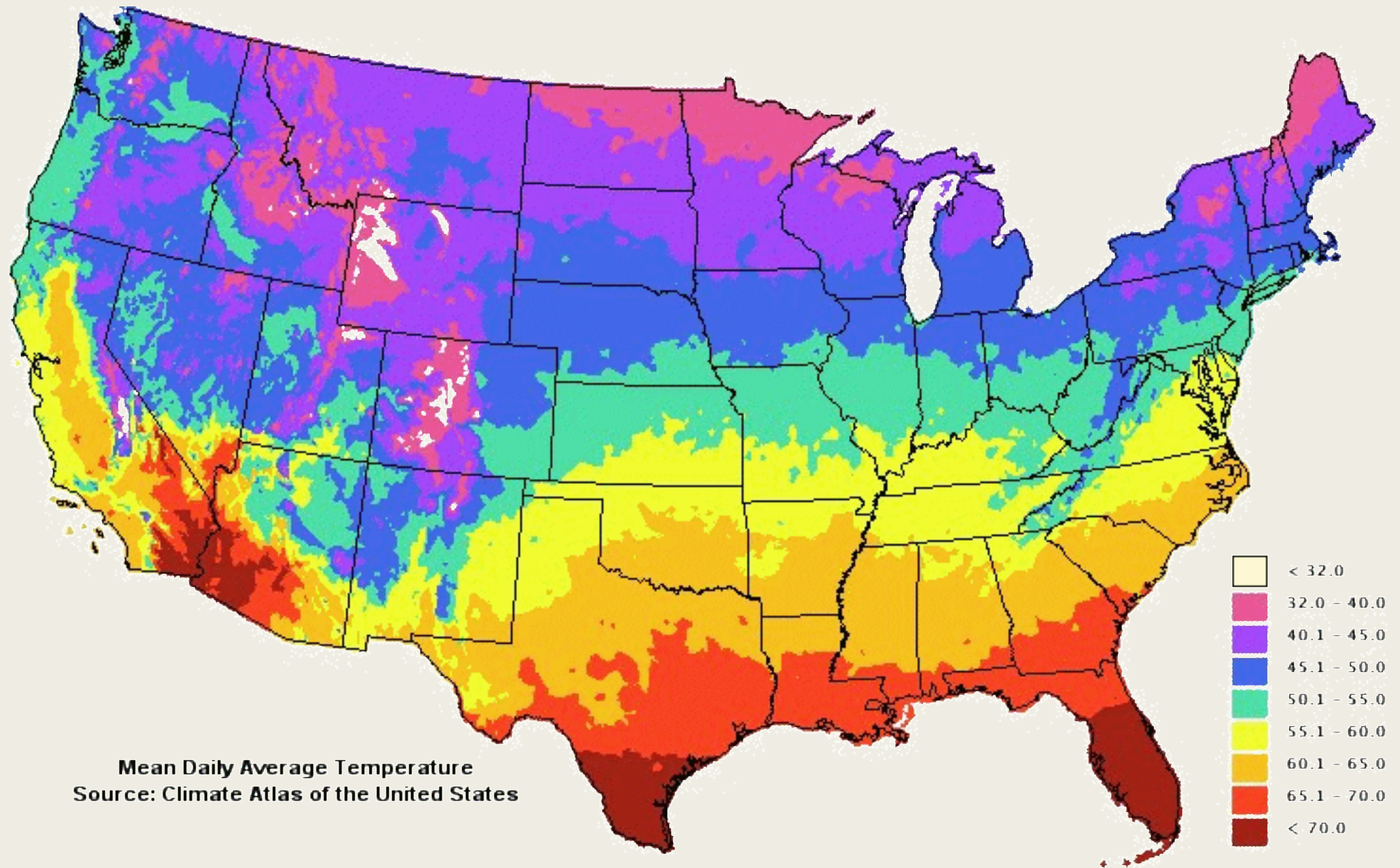
- **Collect** the data
- **Explore** the data
- **Organize** information data provides
- **Narrow** data into areas of interest
- Come to a **conclusion**
- **Communicate** your results



*I like to refer to the process of data analysis as a "bottleneck effect"*

# Let's run through an example of data analysis involving weather forecasting:

- **Collecting** daily weather conditions
- **Exploring** the data and comparing data with past records of the same day
- **Organizing** information into categories:
  - *temperature, humidity, barometric pressure*
- **Narrowing** data into traditional observations
  - *Thunderstorms likely, high tides from wind currents*
- Coming to a **conclusion** about weather conditions
  - *Will it be sunny? Will there be a hurricane?*
- **Communicating** your results



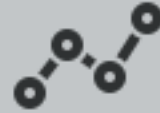
**Mean Daily Average Temperature**  
Source: Climate Atlas of the United States

# Understanding the four different types of data analytics:

- **Descriptive analytics** which answers, “What happened?”
- **Diagnostic analytics** which answers, “Why did something happen?”
- **Predictive analytics** which answers, “What is likely to happen?”
- **Prescriptive analytics** which answers, “What action should be taken?”



**Data analysis is evolving the world  
around us right before our eyes.**



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**NO THANKS**

**YES, SHARE ANALYTICS DATA**

# Consider the following statistics as of March 2019:

7.7 billion people on the planet.

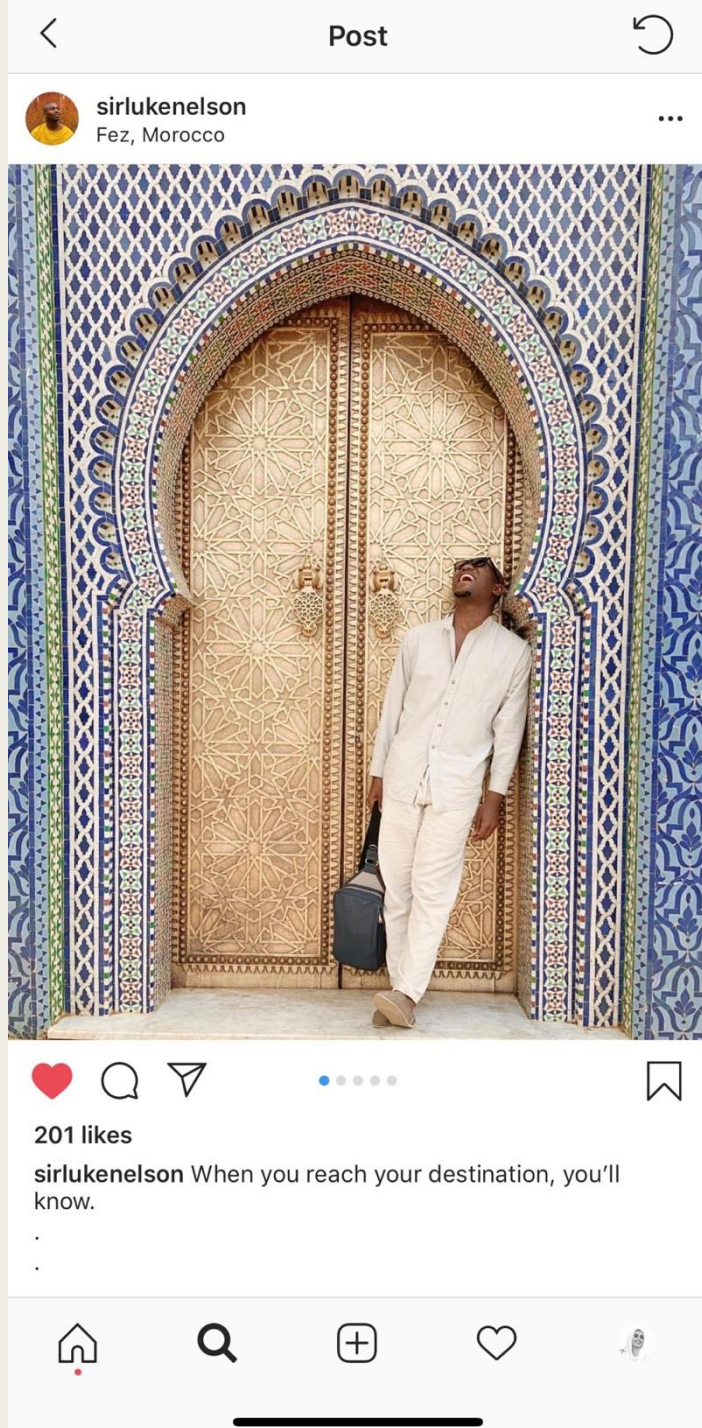
4.1 billion have access to the internet.

2.77 billion people using social media


67.6% of internet users are active on social media.

That's nearly two-thirds.

**And that's a lot of data.**







sirlukenelson 4

183 profile visits in the last 7 days

40 posts

1,716 followers

1,748 following

Promotions

Edit Profile

Luke Nelson

Coach

Miami

✈️ NYC

🌐🌐🌐

sirlukenelson.com/

+

New


Sintra

Lisbon

Tunisia

Manchester...


Email




A screenshot of a social media post by 'sirlukenelson' from Fez, Morocco. The post features a man in a white shirt and sunglasses sitting on a green and white checkered ledge, looking out over a cityscape. The post has 145 likes, 6 comments, 0 shares, and 1 bookmark. The bottom of the image shows the Instagram interface with the post's engagement metrics and the user's profile information.


Cancel


Insights





Posted on 03/22/19, 5:25pm

  
146

  
6

  
0

  
1

Interactions 

27


Actions taken from this post

Profile Visits

25

Website Clicks

2

Discovery 

769

Accounts reached  
12% weren't following you

Follows

1

Reach

769

Impressions

1,610

From Home

1,479

From Location

88

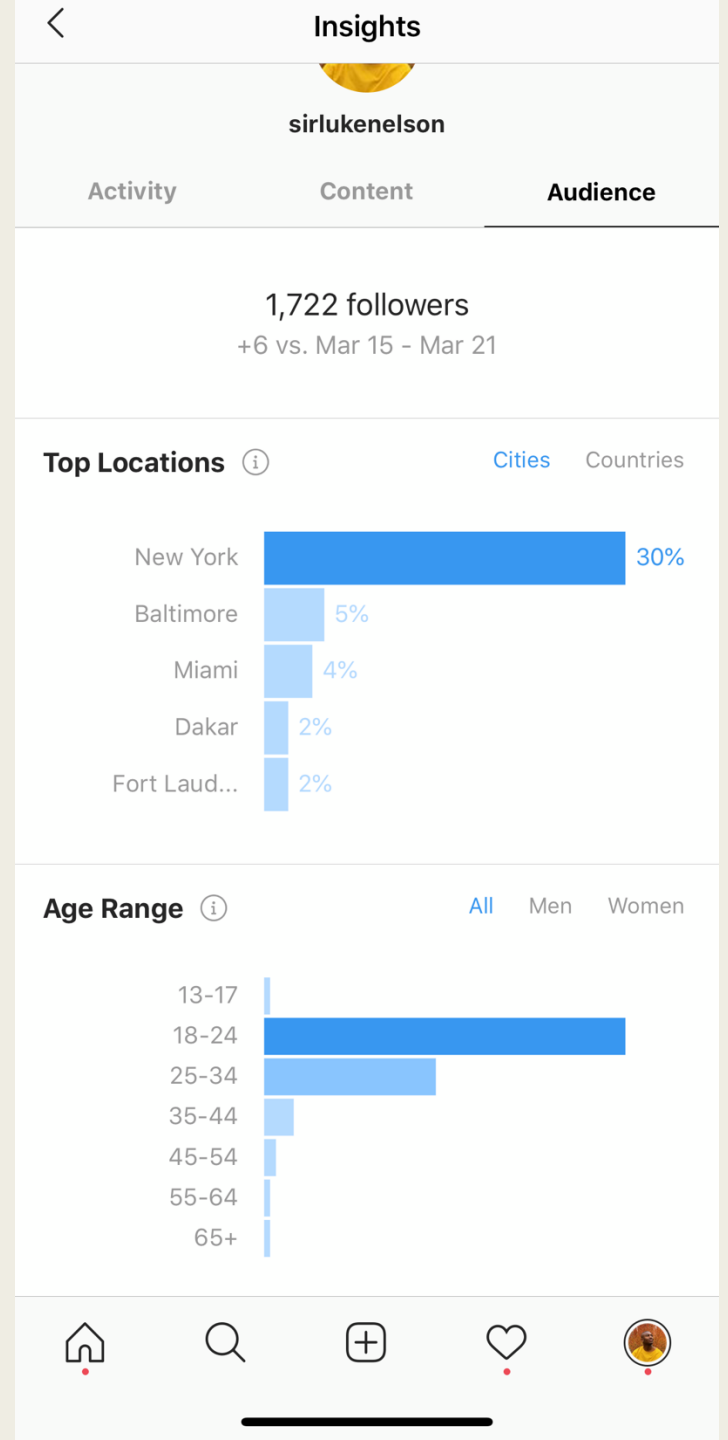
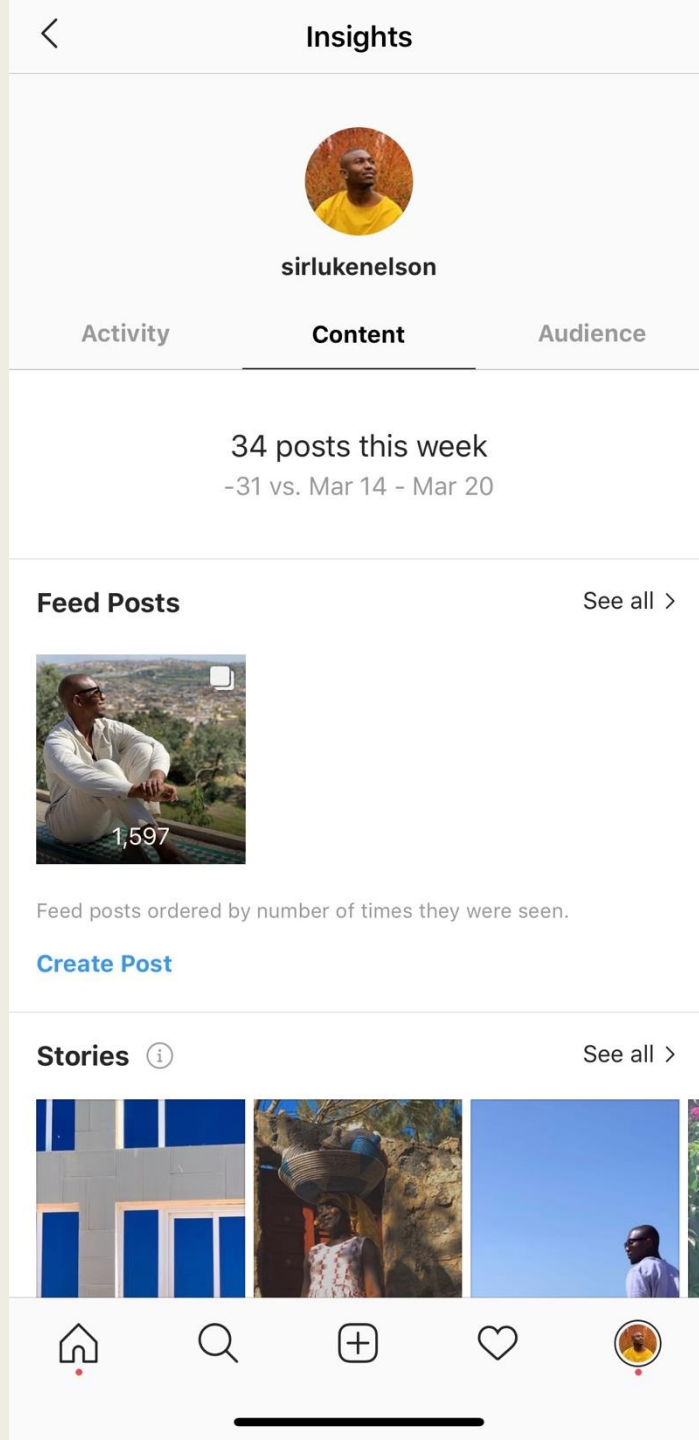
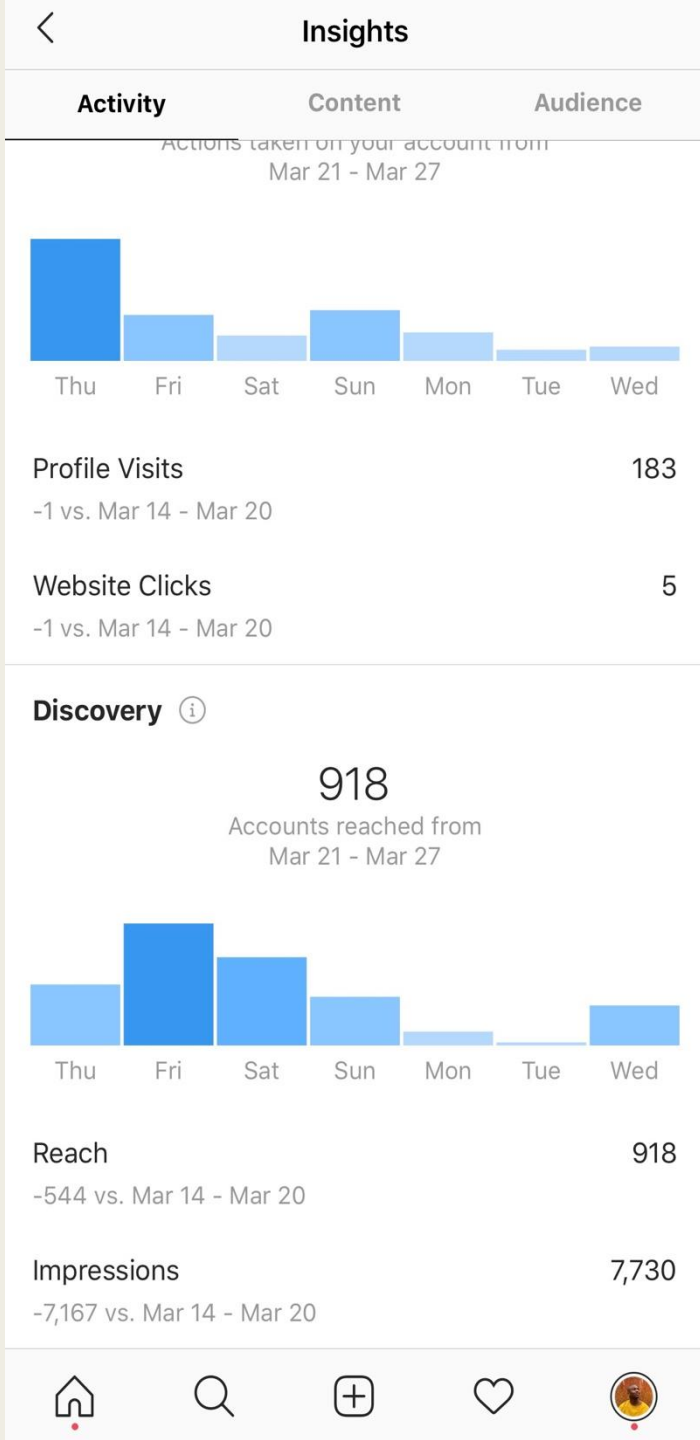
From Profile

36

From Other

7





# Can't a computer take care of data analysis?

- Like the human brain, a computer can:
  - *Adapt and learn*
  - *Process information up to 4x as fast*
  - *Grow its memory and store up to 10x more information*
  - *Can be damaged*
- Unlike the human brain, computers lack:
  - *Imagination and creativity*
  - *Emotional intelligence*

# But computers are still needed. Data analysts heavily rely on computers for:

- Writing algorithms to help sort through the data
  - *R, SQL, Python*
- Creating visualizations of data results
  - *Tableau, Power Bi, Excel*
- Facilitating and speeding up the data analysis process.
  - *Computing powers make it simple.*

# Combining data analytics and psychology for more powerful data analytics

Implementing a background of psychology in the data analysis process helps us truly understand what it is saying about human behavior.

- Examples:
  - *Students with learning disabilities*
  - *Human responses to the design of an app (UX/UI)*
  - *Marketing strategies*

# Future expectations of data analysis

- In 2020, 1.7 megabytes of new information was created every second for every human being on the planet
  - *2012: 2.5 billion gigabytes of data generated daily*
- In 2020, demand for data analytics **increased by 28%**
- By 2023, industry is set to reach a value of \$275 billion
- Improving future quality of life:
  - *Protecting the environment*
  - *Medical procedures*
  - *Domestic and global economy*

**Maybe the data analyst in you will contribute to the future.**