

Data-Driven Storytelling



Online Course
**Data Visualization
for Professionals**



THE UNIVERSITY
of EDINBURGH

Benjamin Bach

June 2020

<http://benjbach.me>
<https://datavis-online.github.io>

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Outline

How to tell stories with data?

- Exploration vs. Explanation
- Storytelling
- Storytelling structures
- Storytelling patterns
- Storytelling Genres
- Style and design

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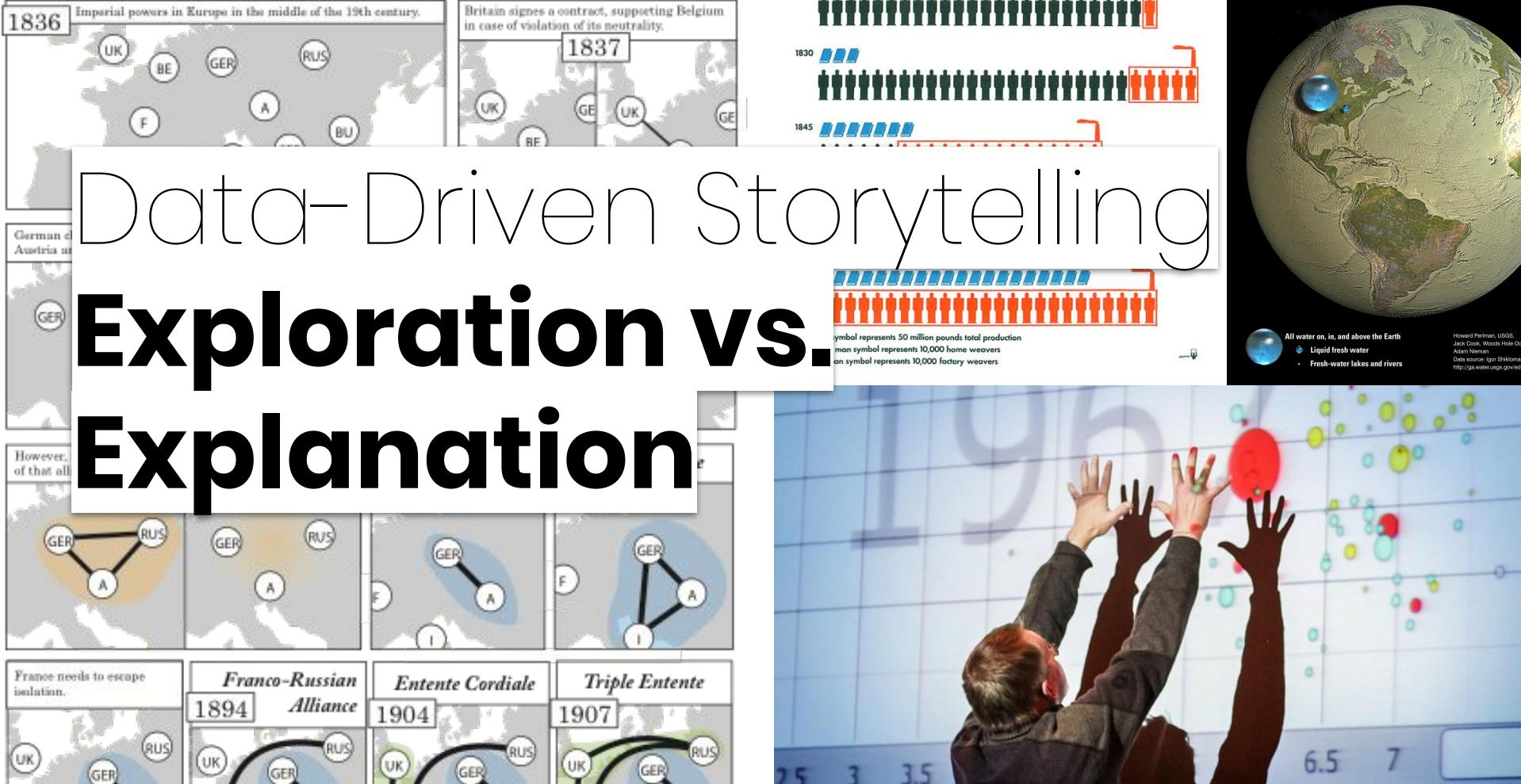
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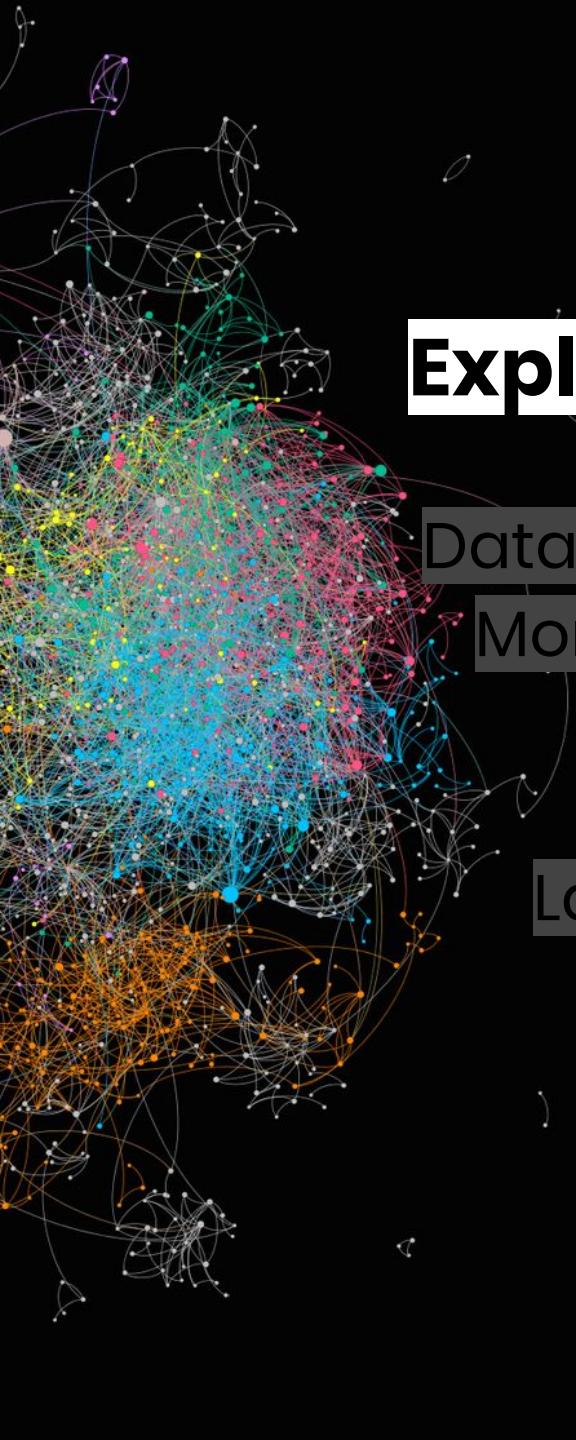
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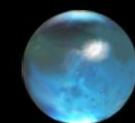
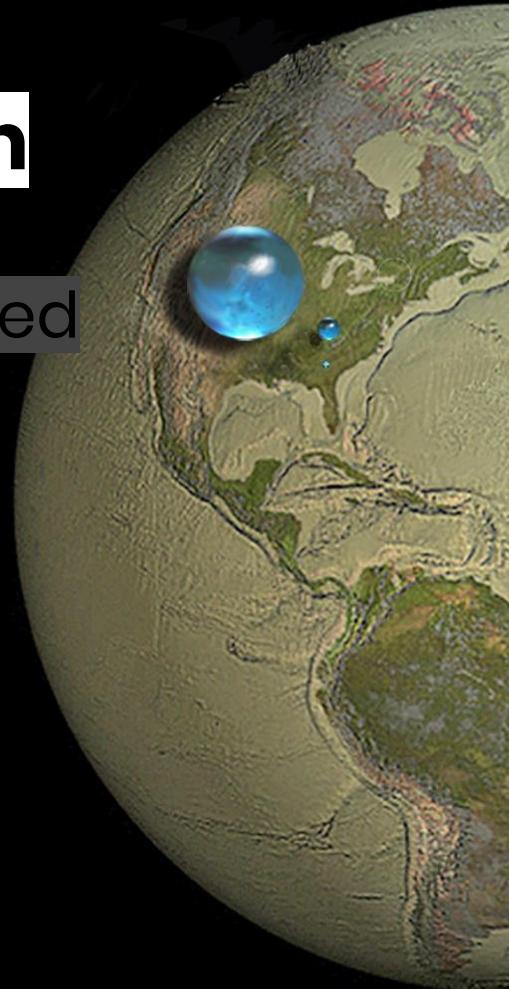
The World's Water

Exploration

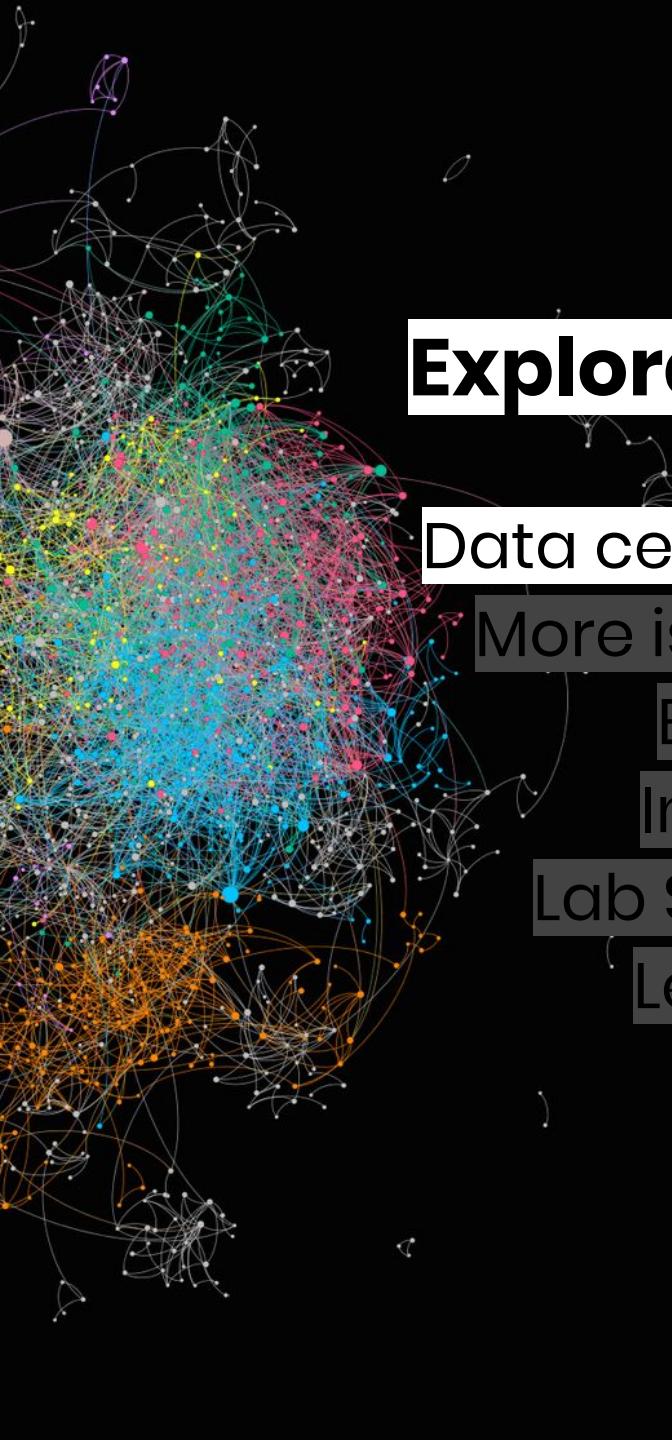
Data centered
More is more
Experts
Insights
Lab Setting
Lengthy
Fuzzy

Explanation

Human centered
Less is more
Non-experts
Messages
In-the-wild
To-the-point
Precise



- All water on, in, and above the Earth
- Liquid fresh water
- Fresh-water lakes and rivers



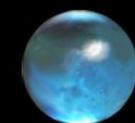
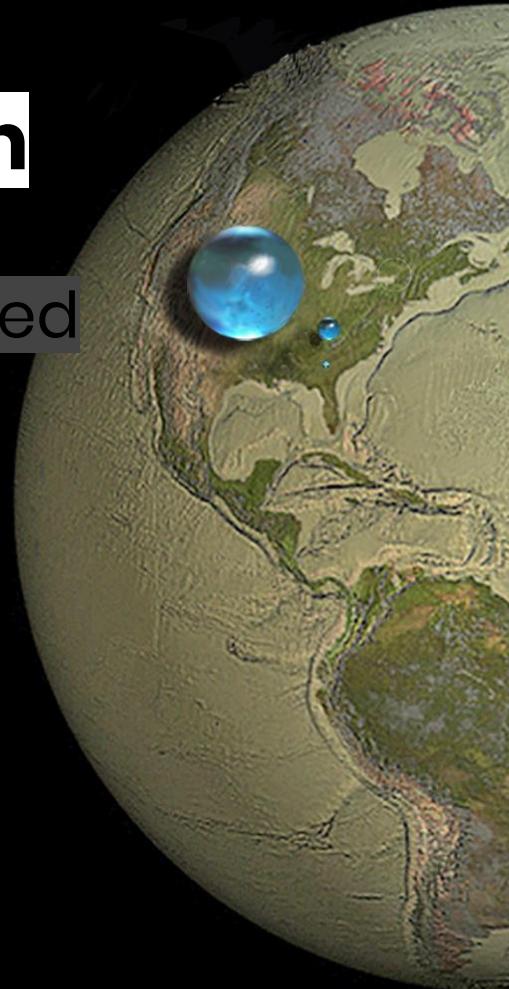
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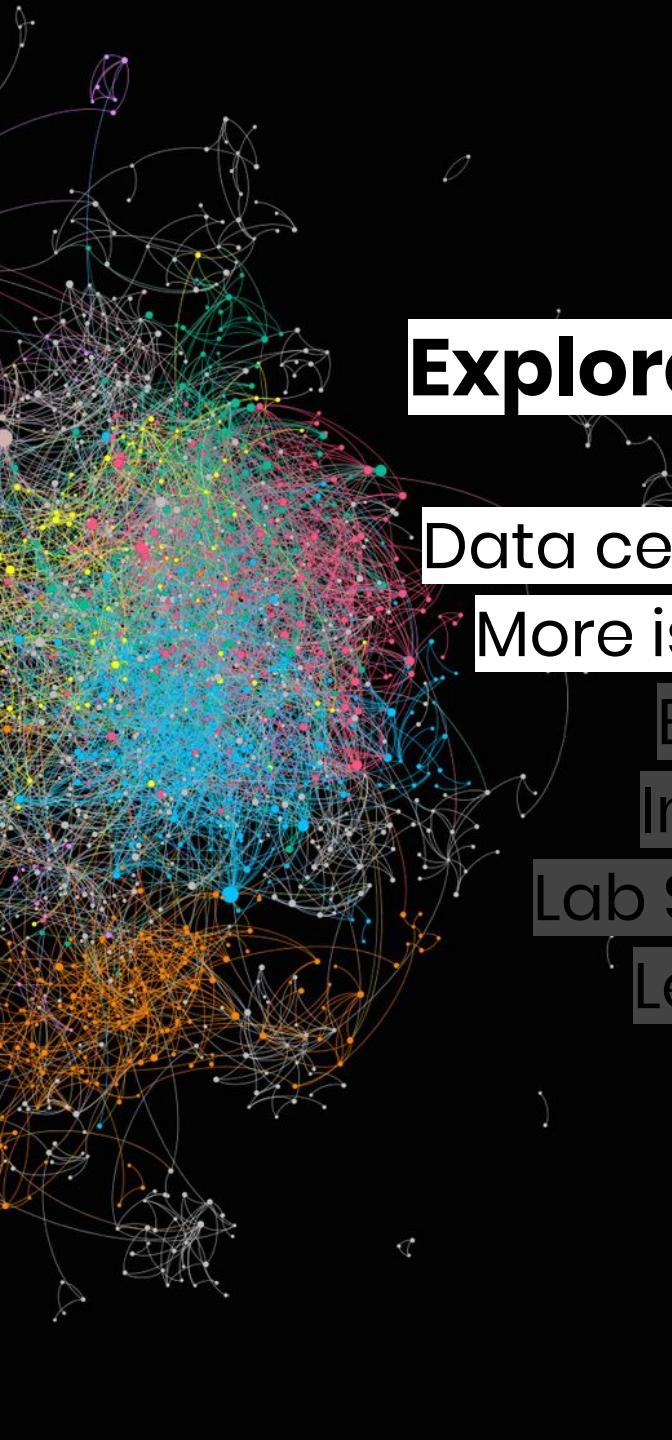
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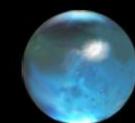
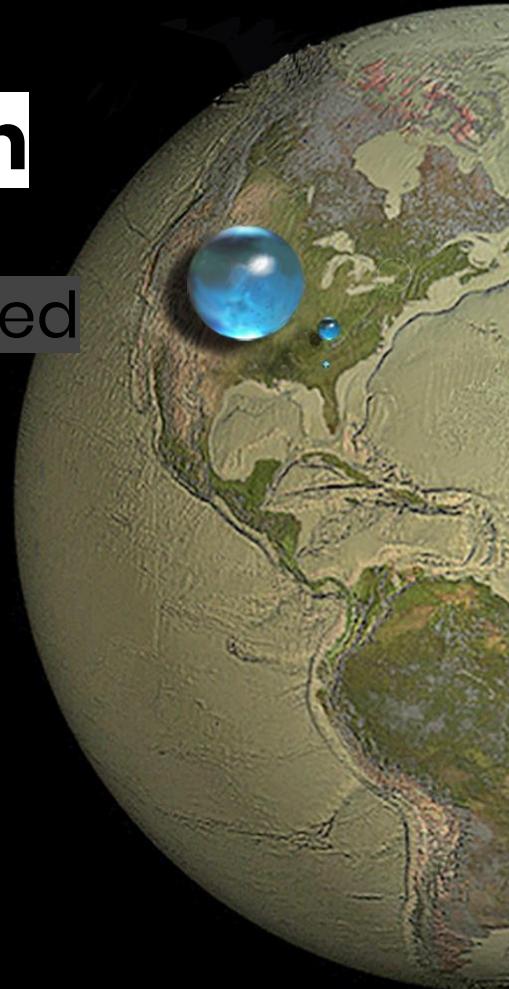
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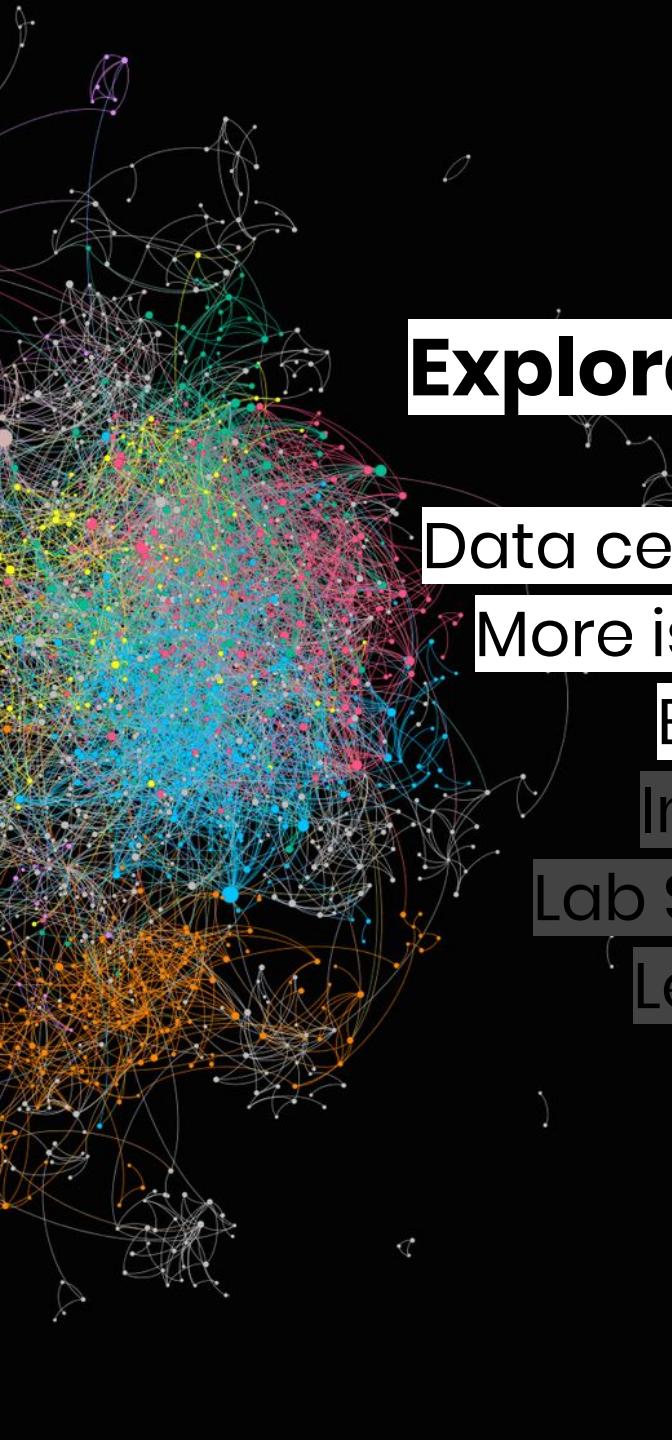
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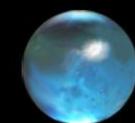
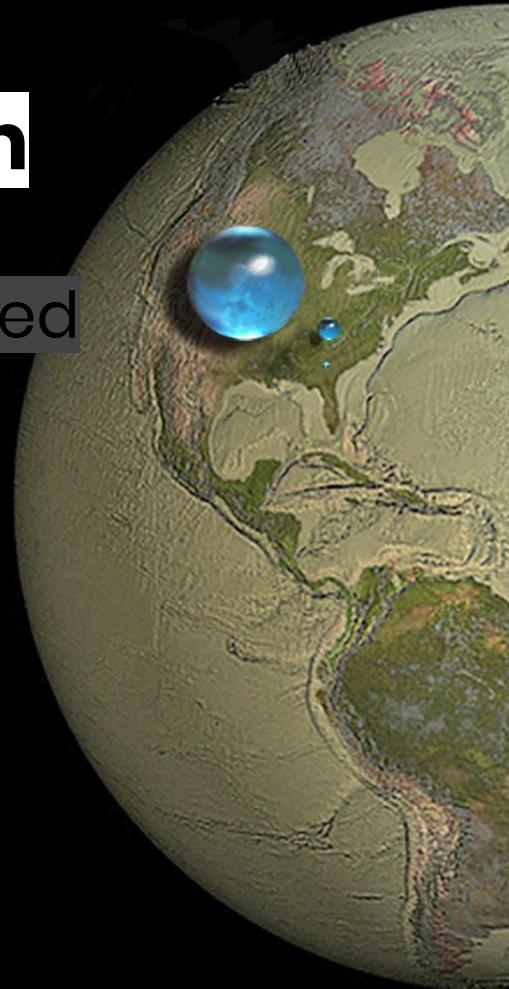
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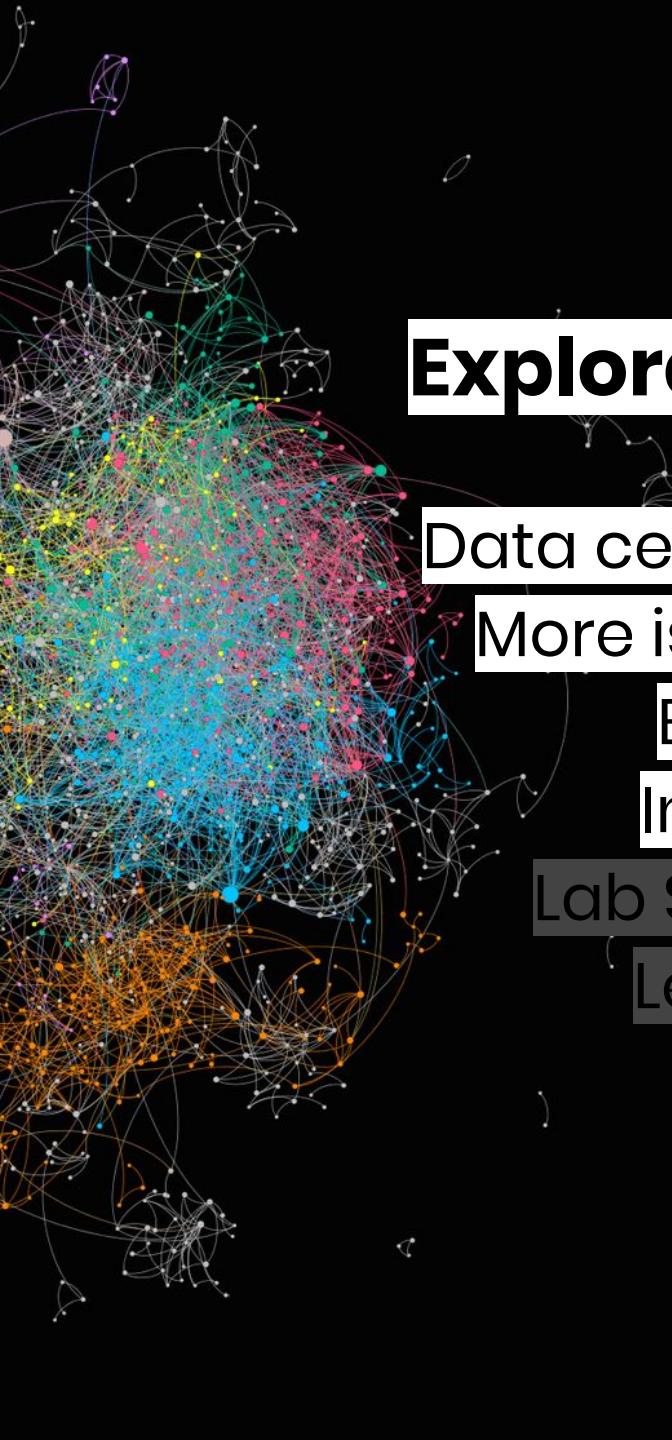
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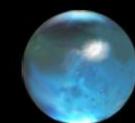
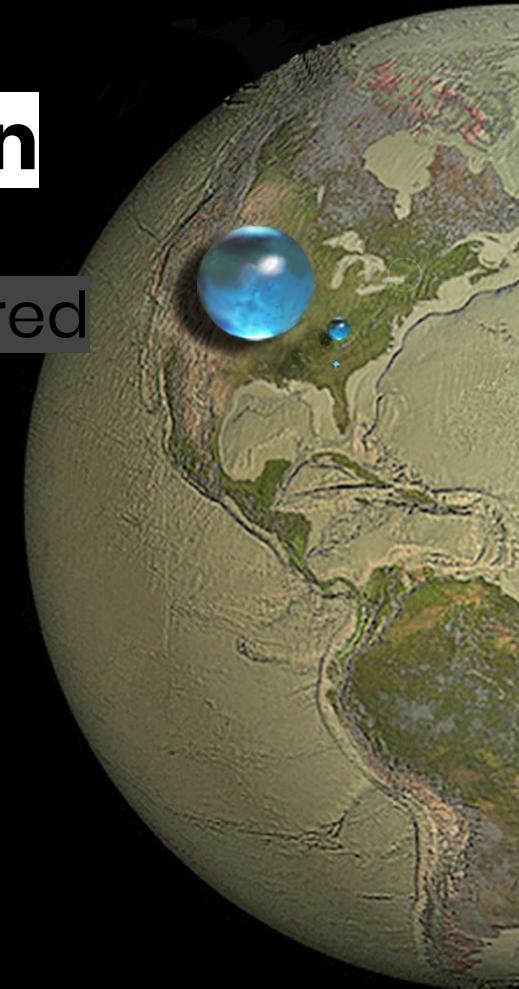
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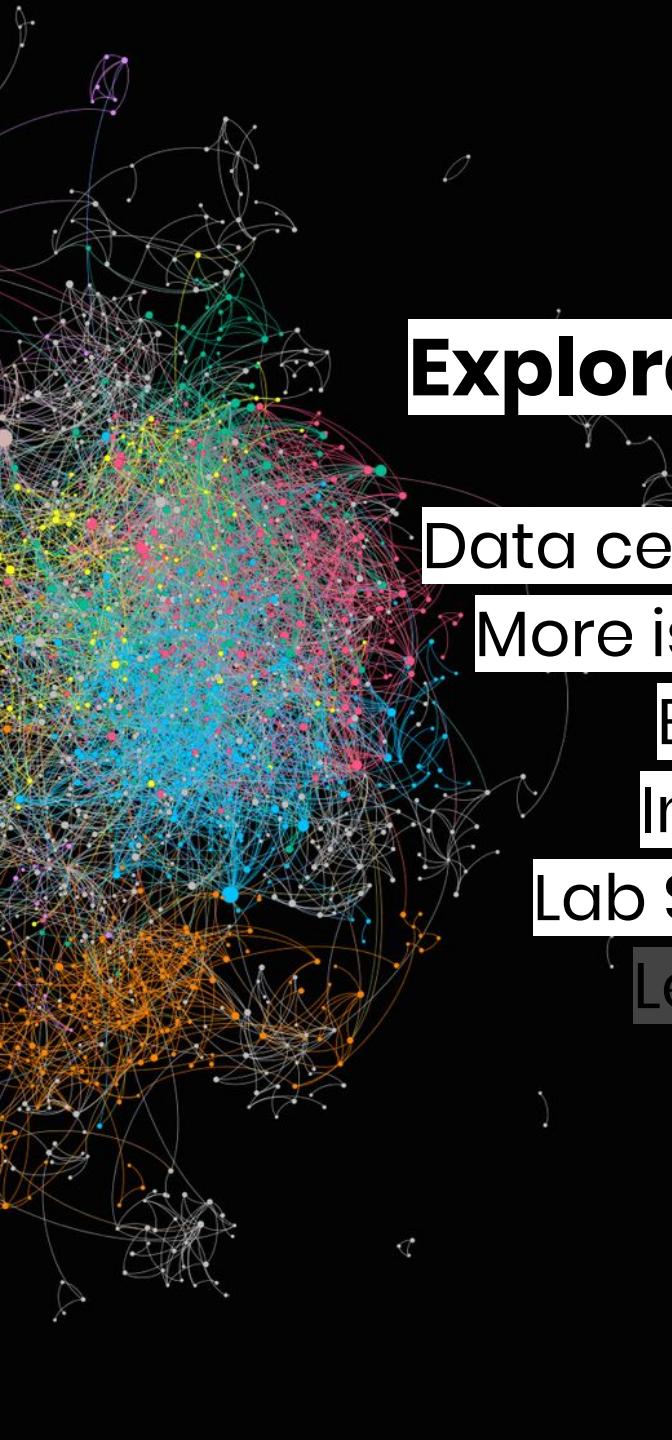
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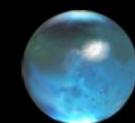
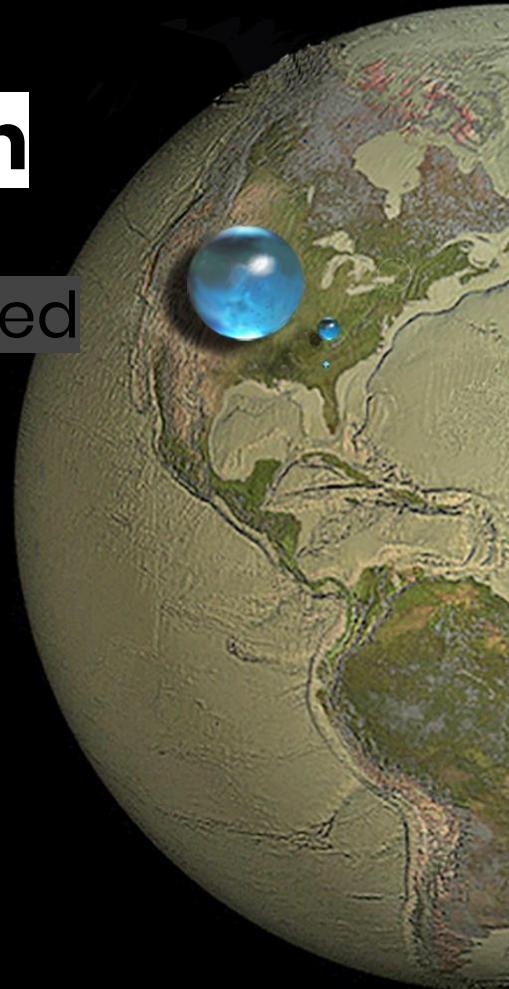
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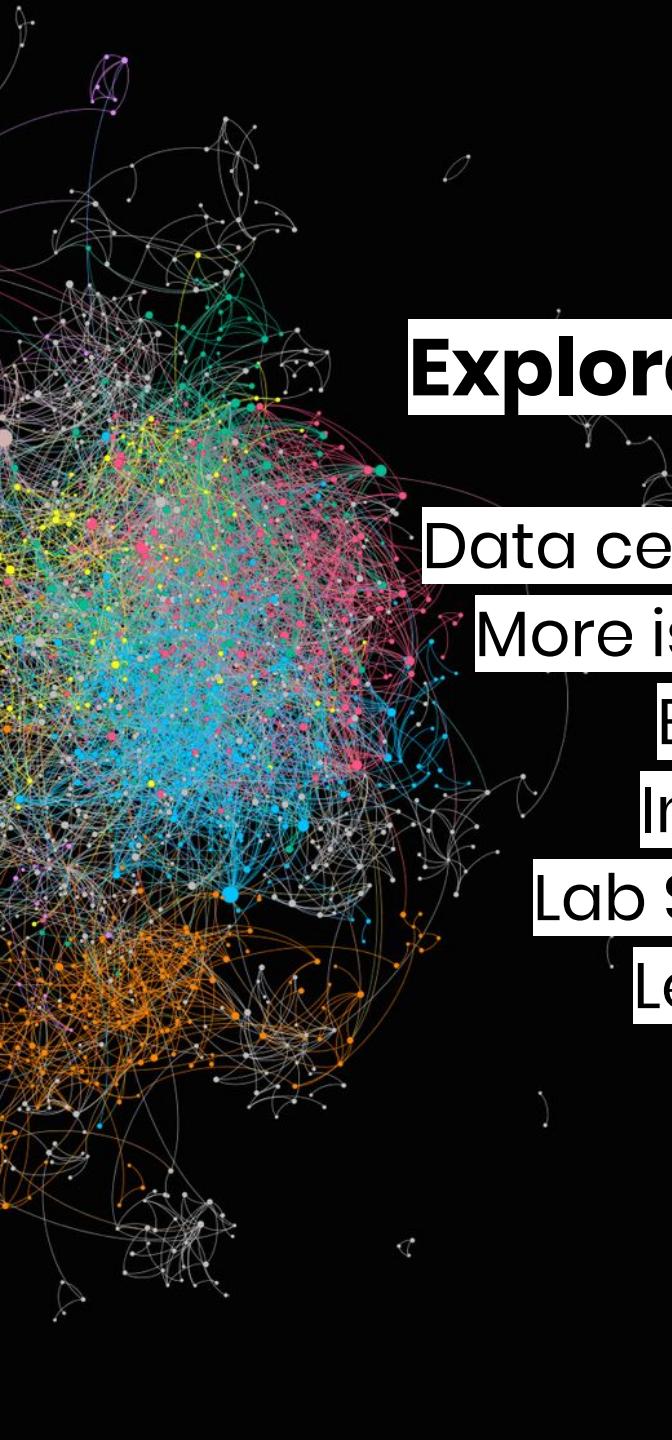
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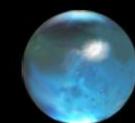
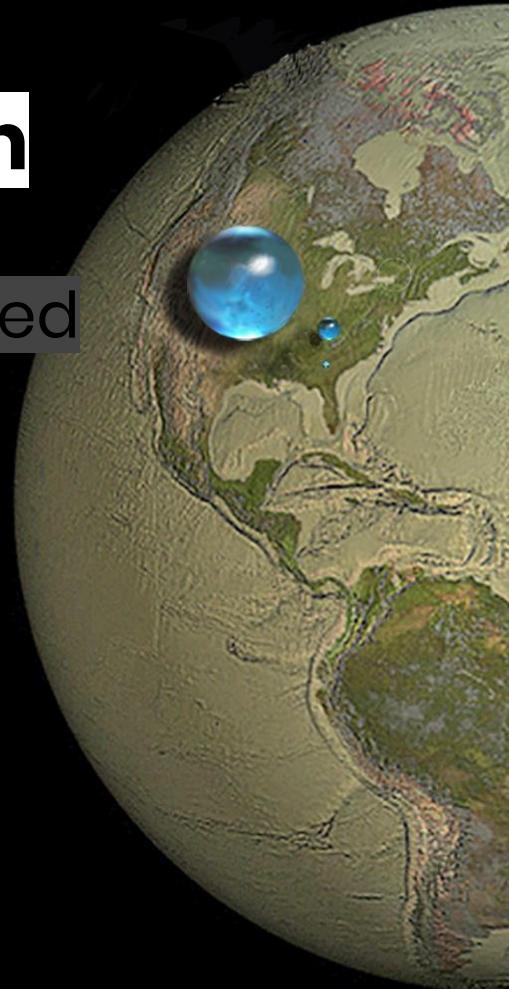
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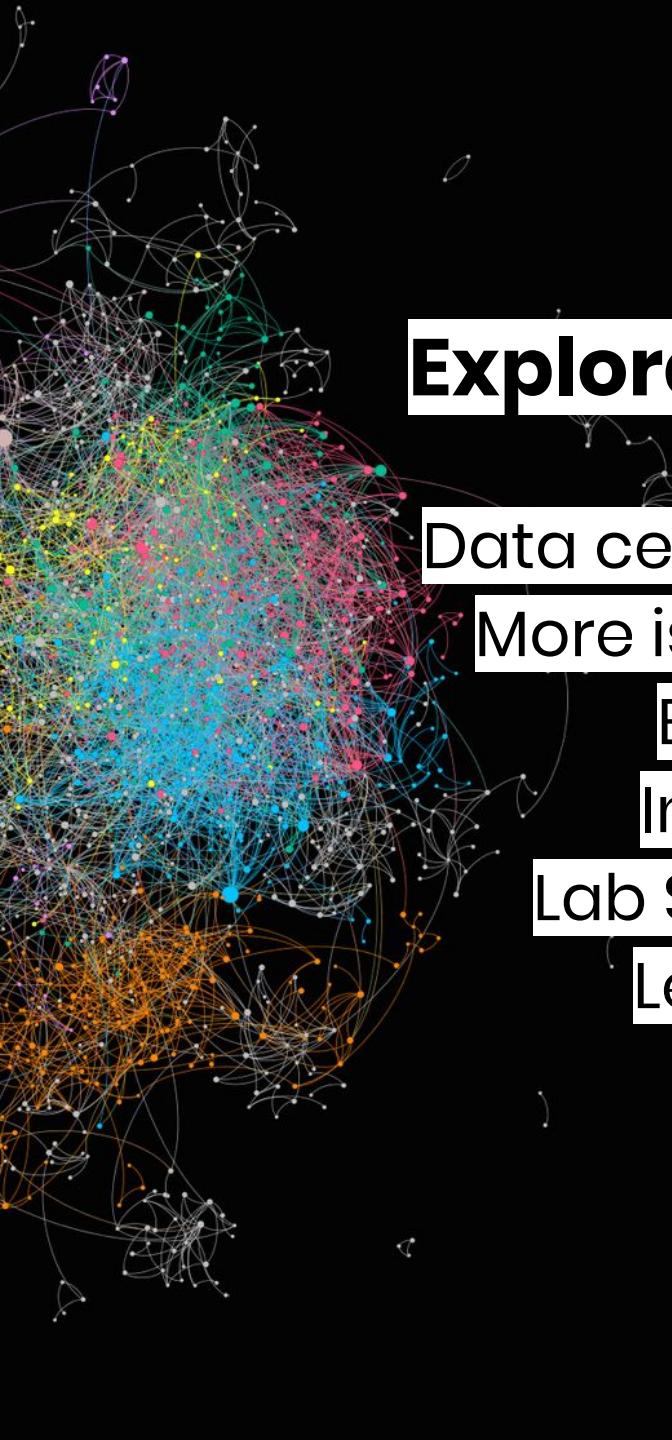
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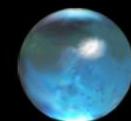
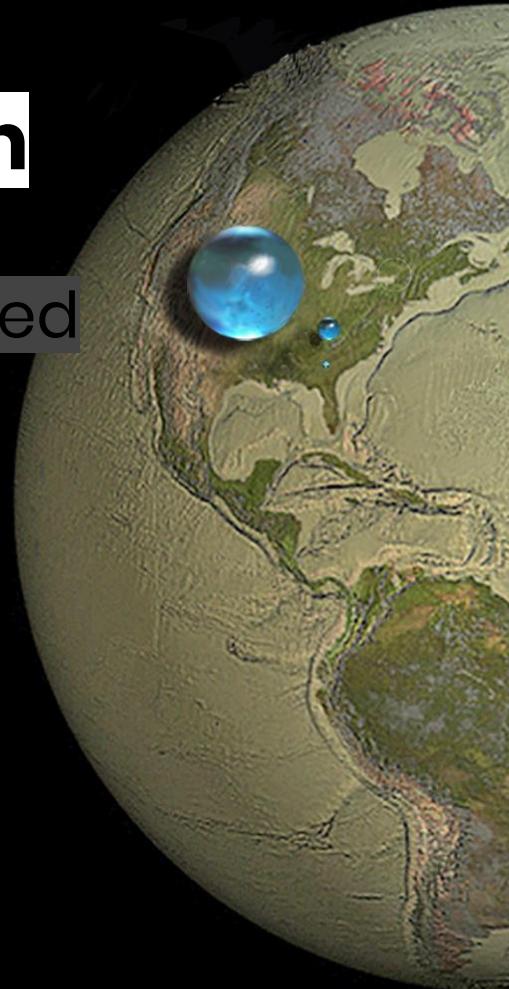
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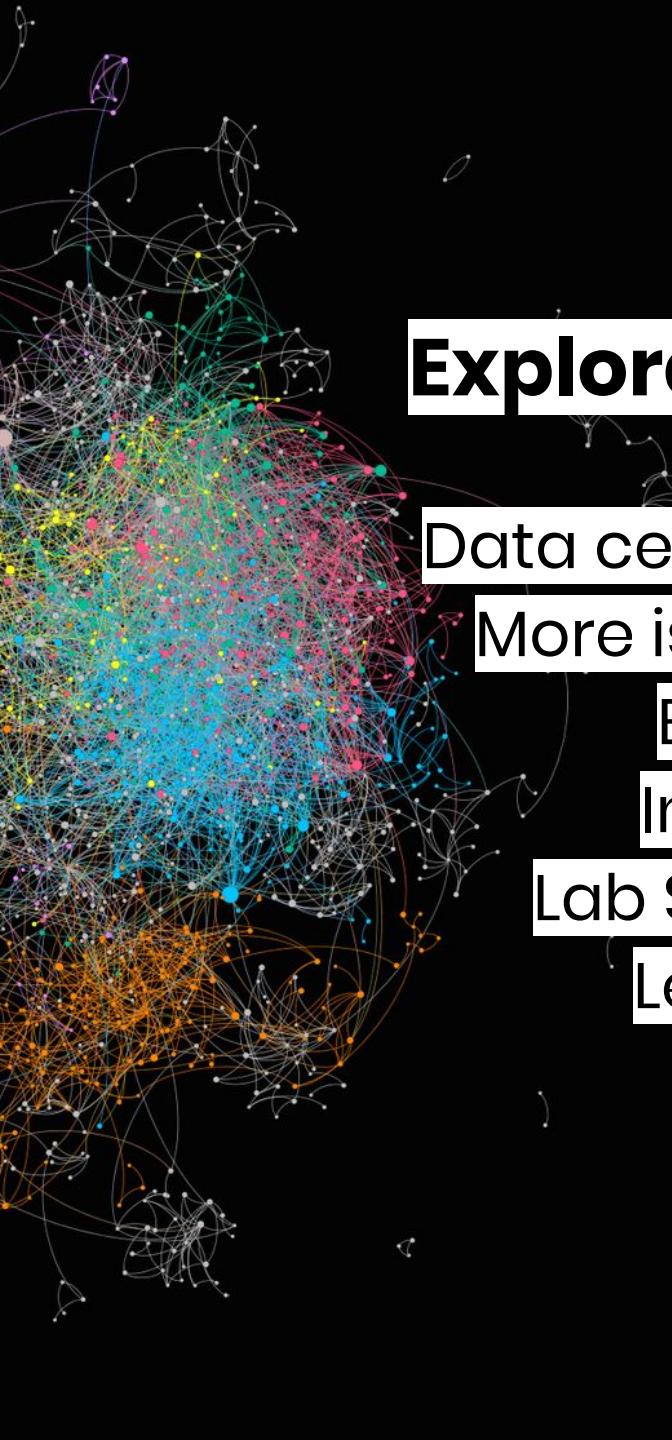
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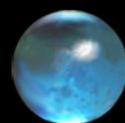
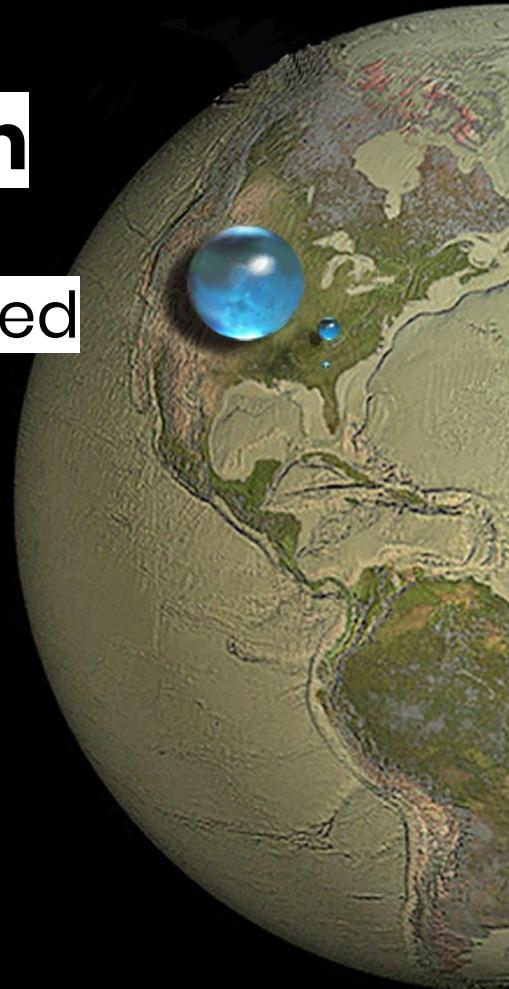
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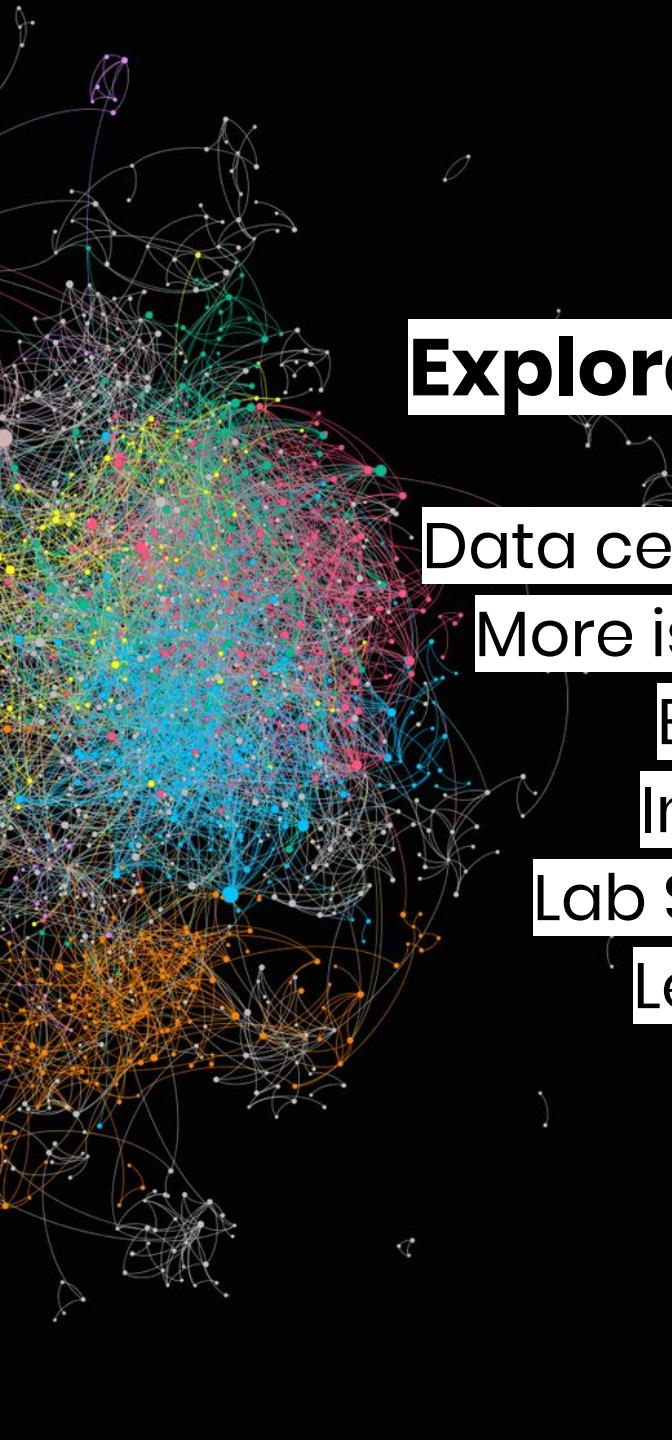
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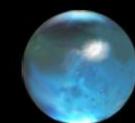
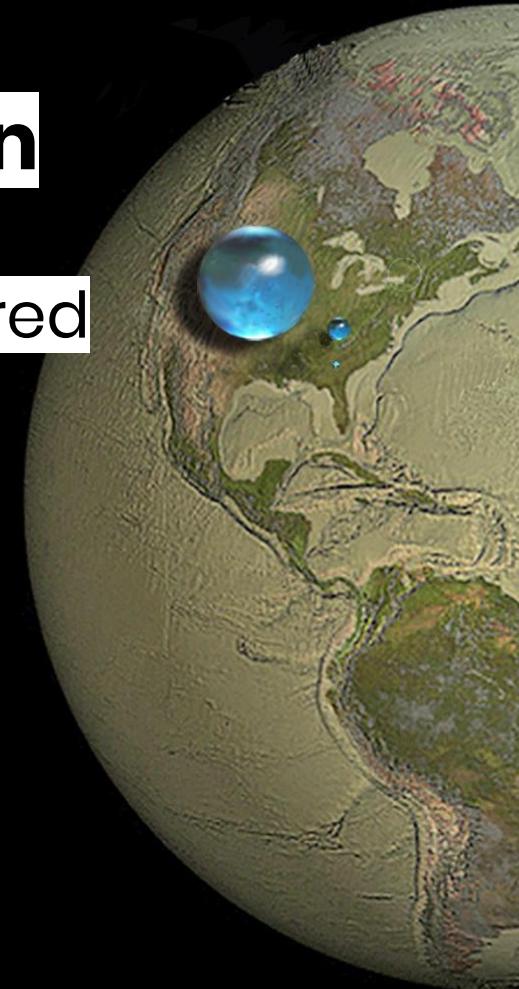
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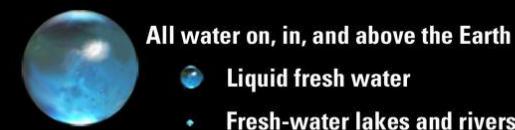
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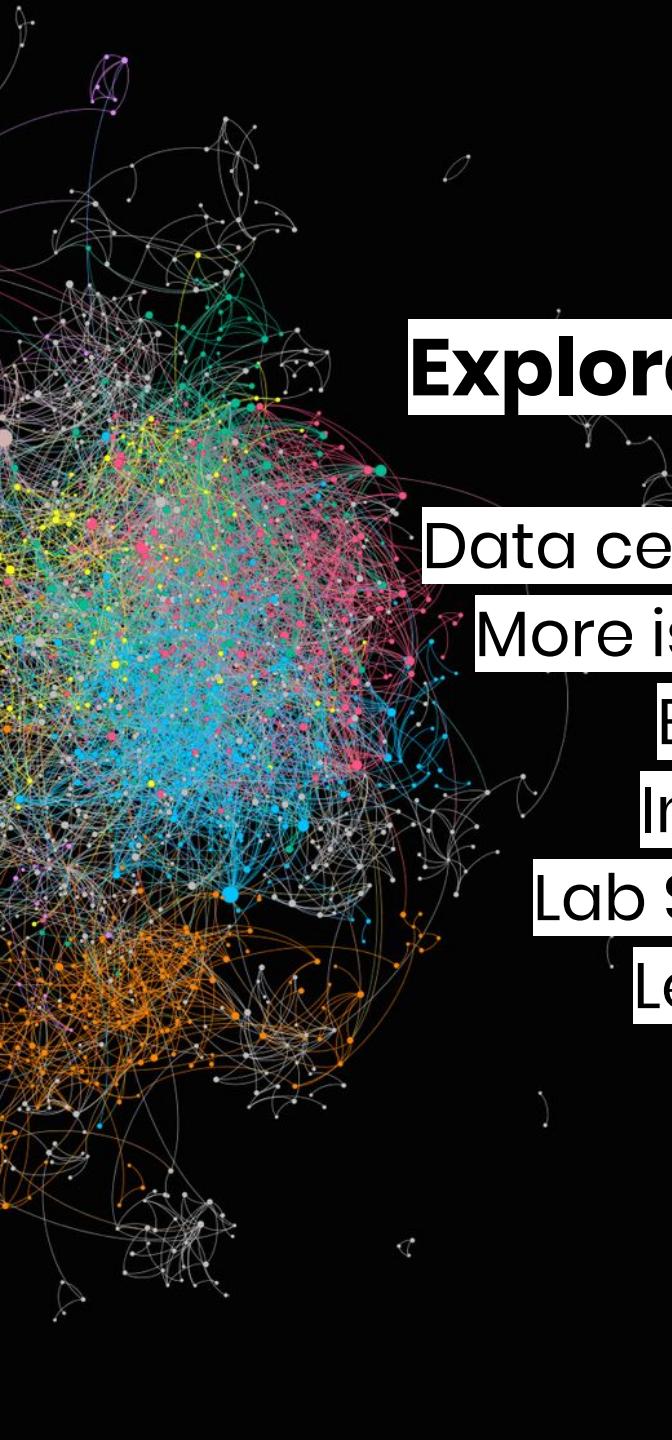
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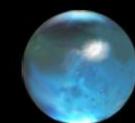
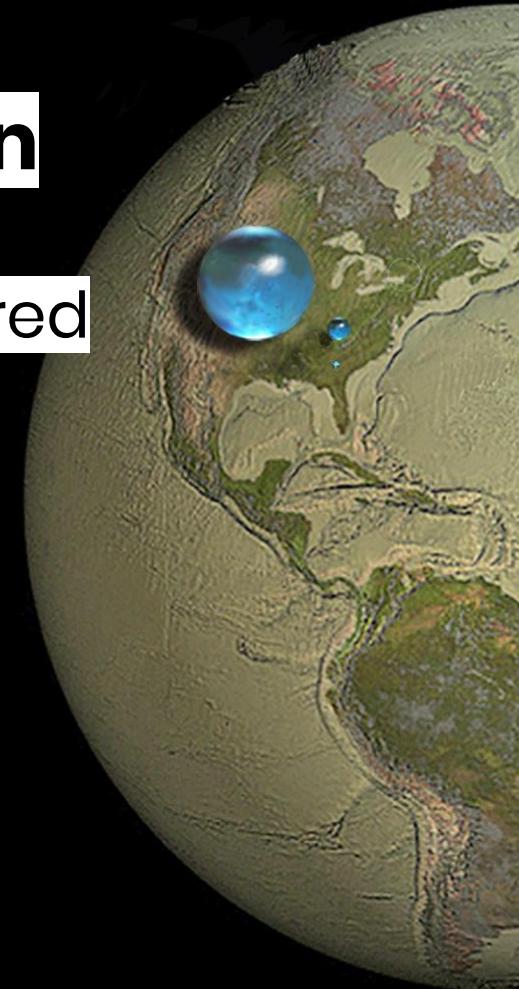
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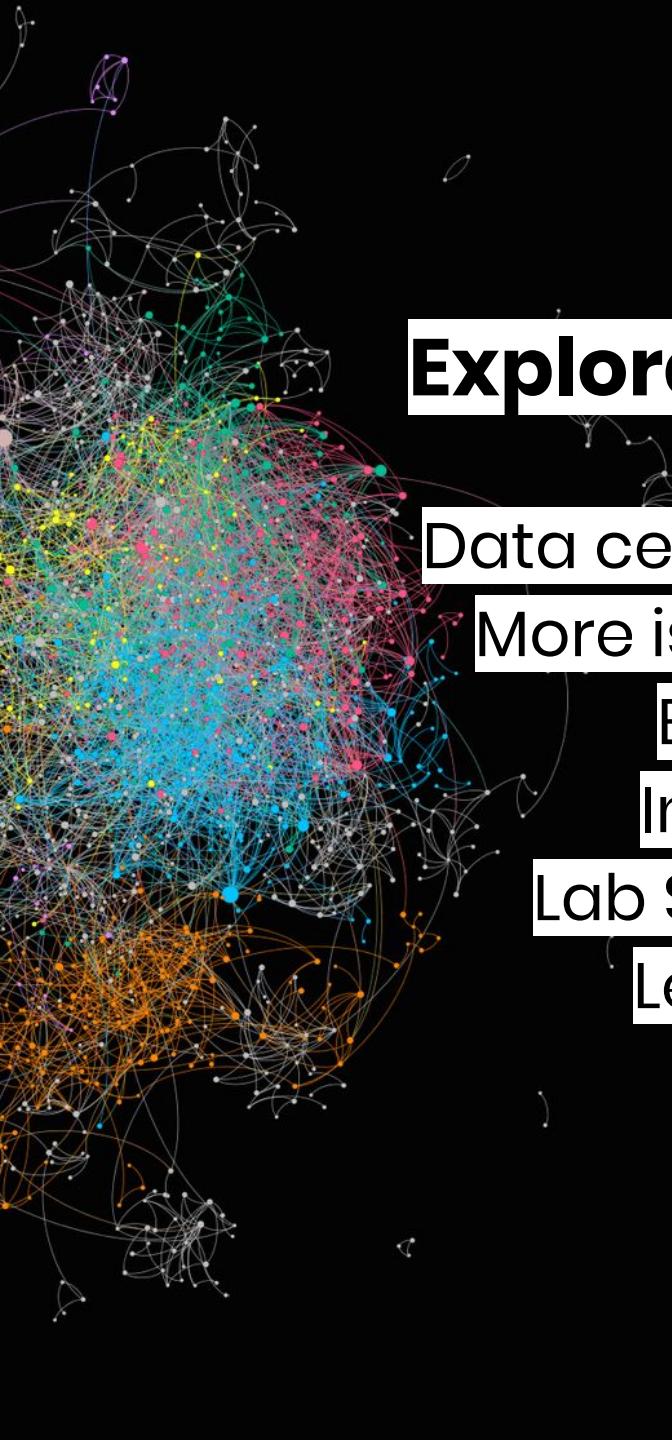
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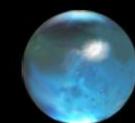
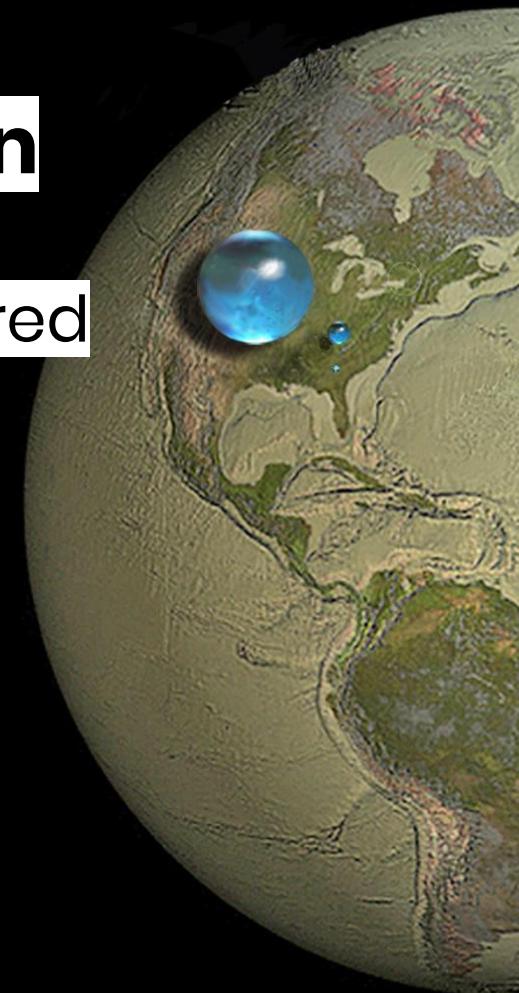
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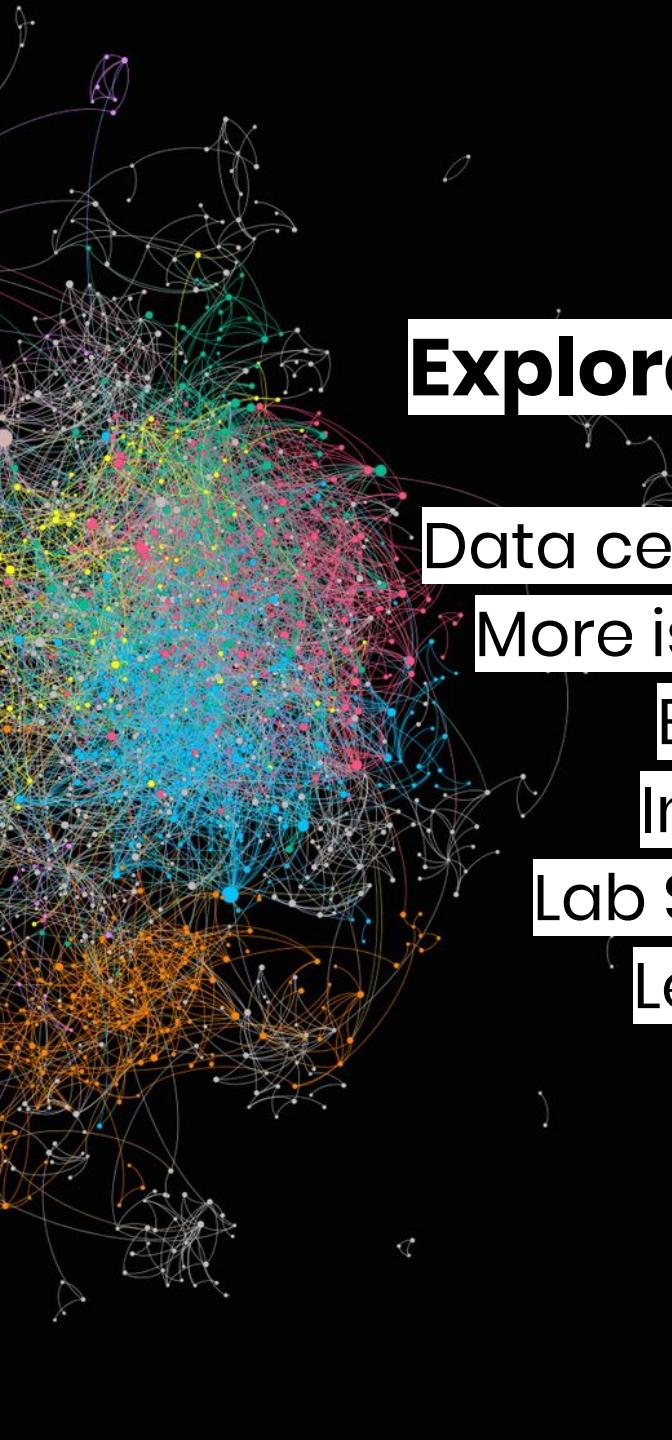
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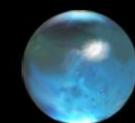
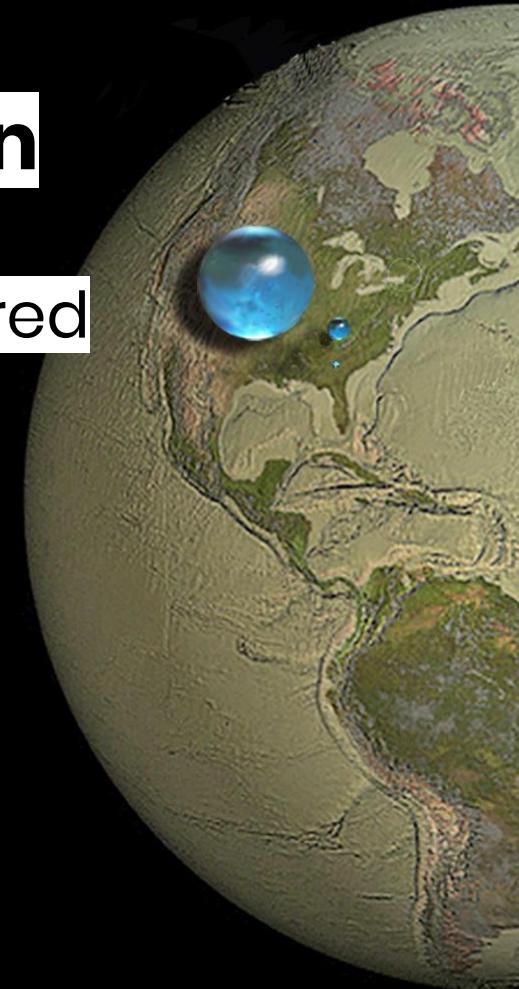
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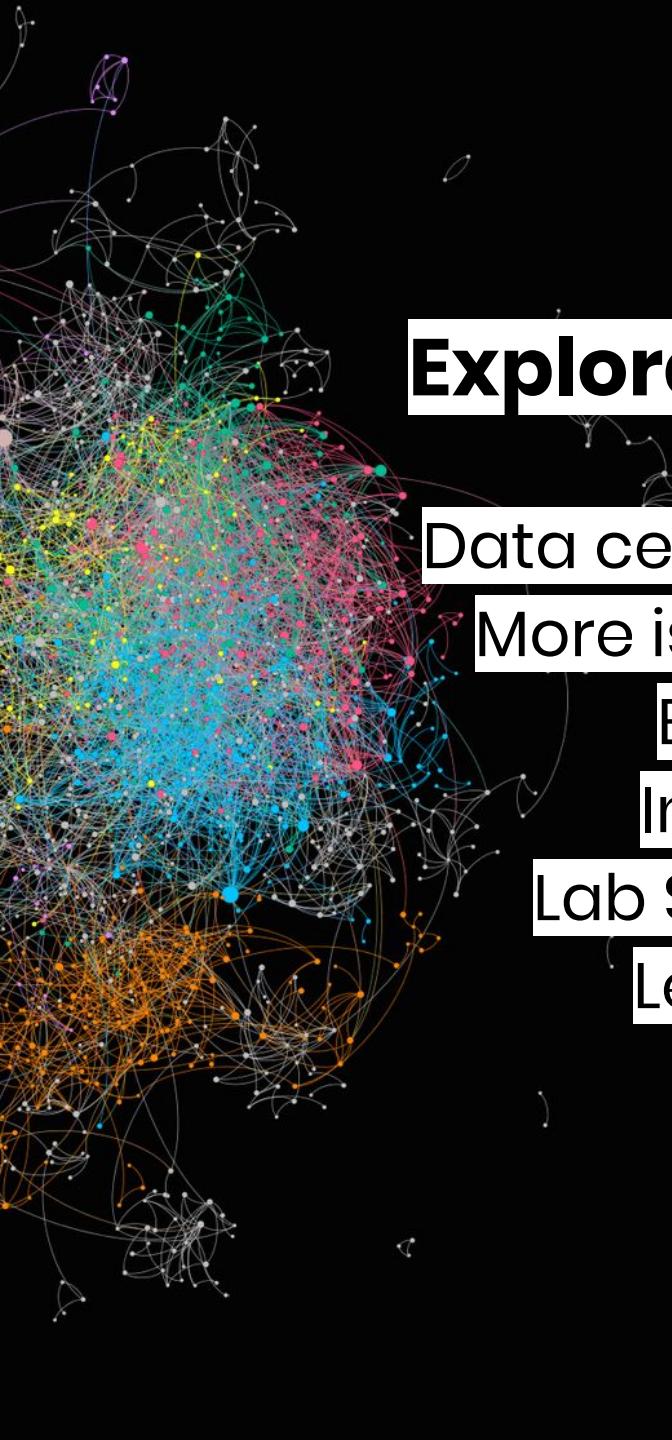
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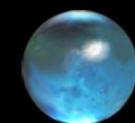
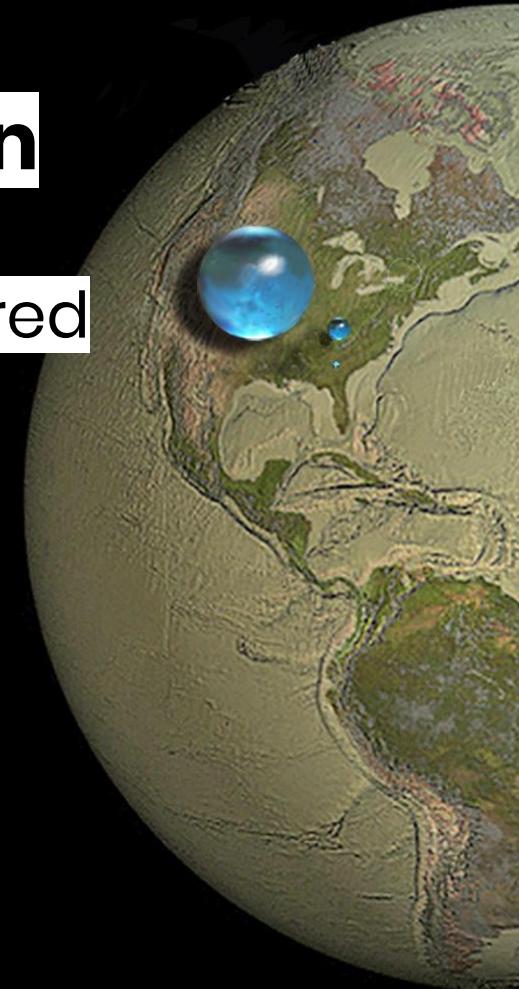
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Traditional

vs.

**Data-Driven
Storytelling:**

Story:

Story:

Narrative:

Narrative

Traditional

vs.

Data-Driven Storytelling:

Story:

- Events, facts

Narrative:

Narrative

Traditional

vs.

Data-Driven Storytelling:

Story:

- Events, facts

Story:

Narrative:

- Putting things in context
- Communication
- Order of events
- audience, author, storytelling,
- Story-telling
- medium

Narrative

Traditional

vs.

Data-Driven Storytelling:

Story:

- Events, facts

Story:

- Facts, insights, messages,
- Processes: *data transformation, selection, aggregation*

Narrative:

- Putting things in context
- Communication
- Order of events
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Narrative

Traditional

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- Processes: *data transformation, selection, aggregation*

Narrative:

- Putting things in context
- Communication
- Order of events
- audience, author, storytelling,
- Story-telling
- medium

Narrative

- Provide **context**: persons, collection, importance, questions,
- Explain **visualizations**
- Talk to an **audience**
- Take home **message**
- Choose storytelling **medium**



Data-Driven Storytelling Traditional Storytelling



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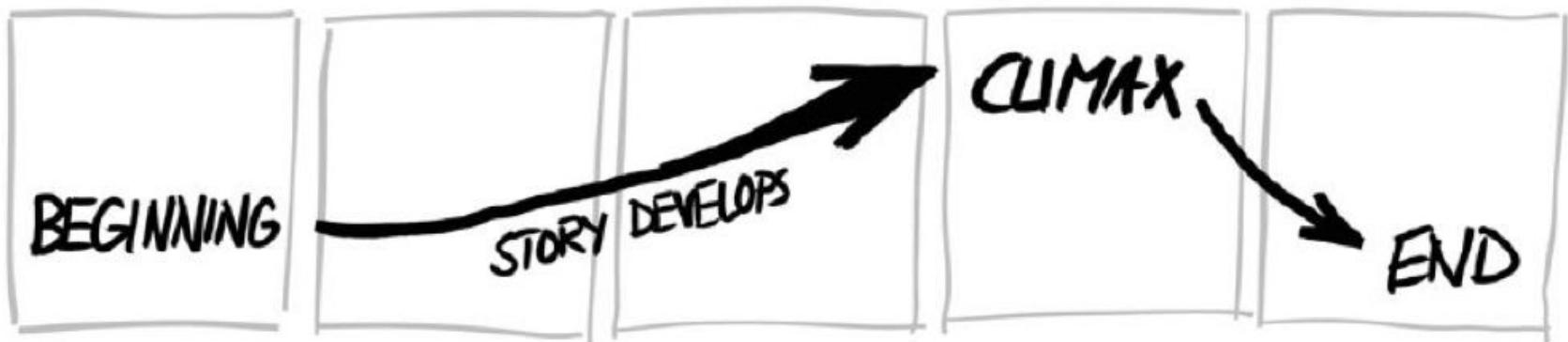
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Story structure: **Drama**



Story Structure



Story Structure



Introduction
Context
Problems

...

Curiosity

Audience
reaction



Story Structure



Beginning

Middle

End

Introduction
Context
Problems

...

Events, facts,
Relations, surprise,
Findings, insight

...

Curiosity

Understanding

Audience
reaction



Story Structure



Beginning

Middle

End

Introduction
Context
Problems
...

Events, facts,
Relations, surprise,
Findings, insight
...

Conclusion,
Resolution,
Take-home
Call-to-action,
...

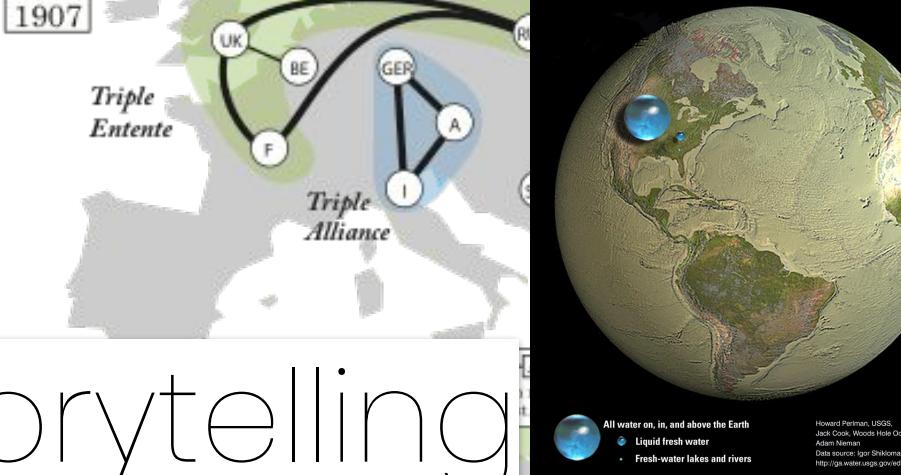
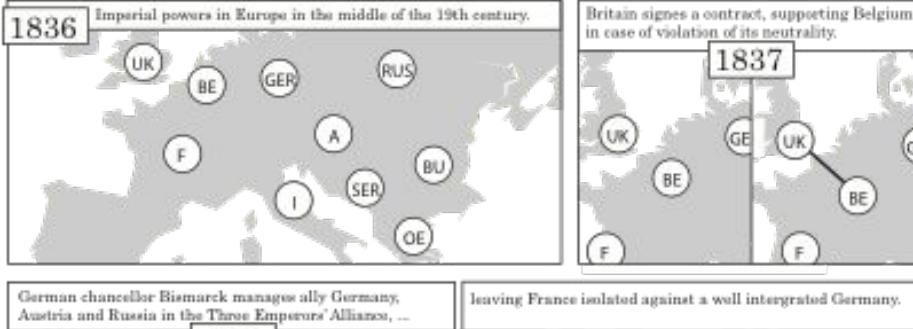
Curiosity

Understanding

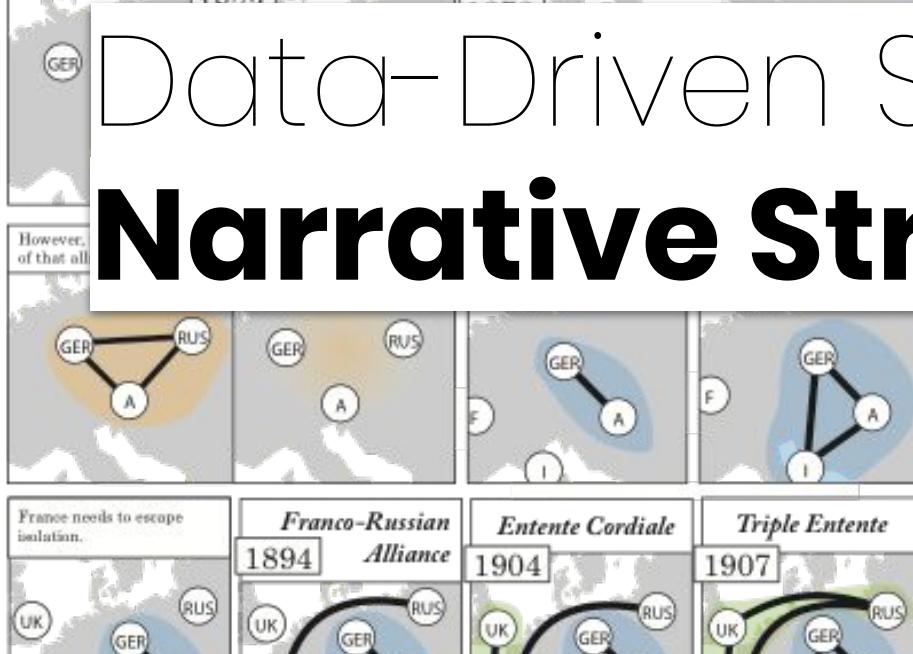
Action

Audience
reaction





Data-Driven Storytelling Narrative Structures



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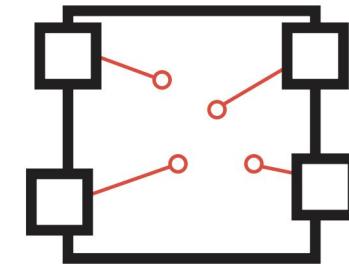
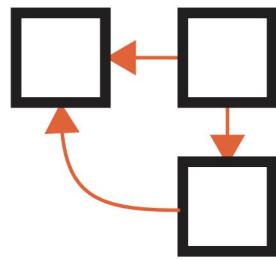
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Narrative Structures

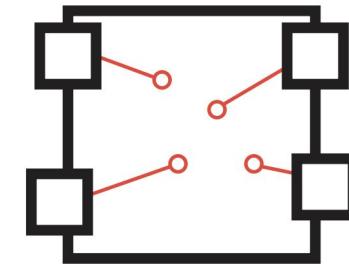
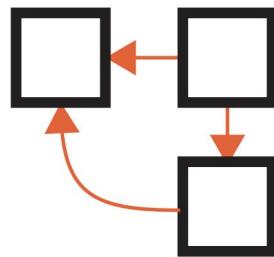


Author driven



Reader driven

Narrative Structures



Author driven

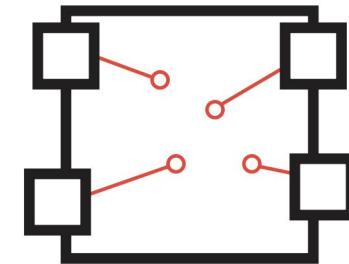
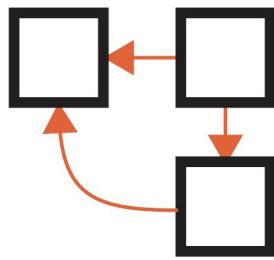
Heavy messaging



Reader driven

No messaging

Narrative Structures



Author driven

Heavy messaging

No interactivity

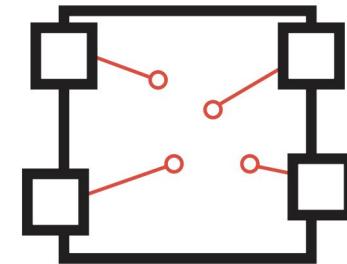
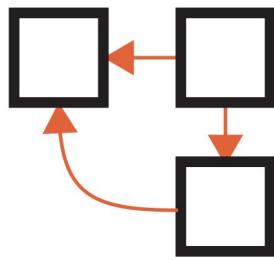


Reader driven

No messaging

Free interactivity

Narrative Structures



Author driven

Heavy messaging

No interactivity

Linear

Reader driven

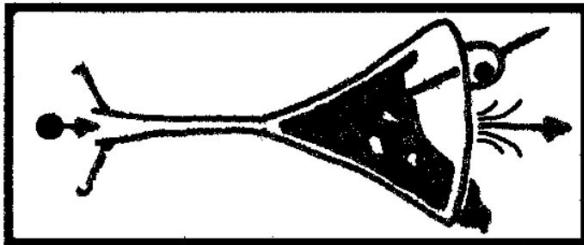
No messaging

Free interactivity

Interactive

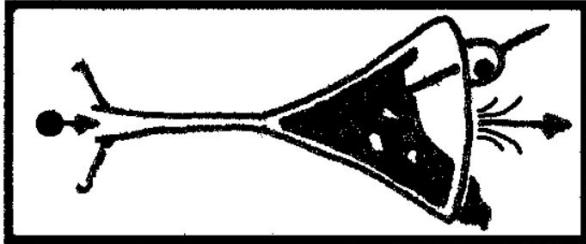


Narrative Structures

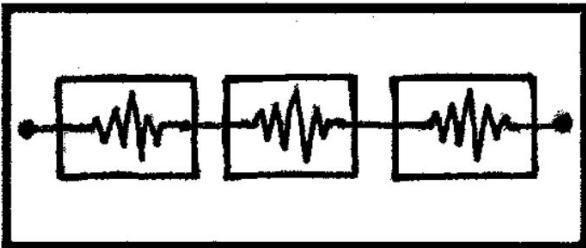


Martini-glass Structure
Guidance first, then exploration

Narrative Structures

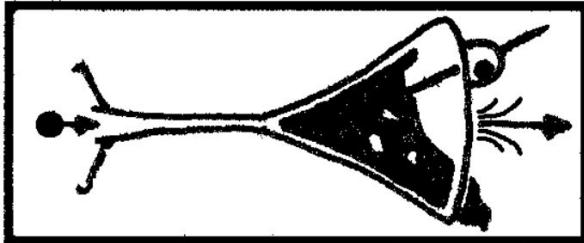


Martini-glass Structure
Guidance first, then exploration

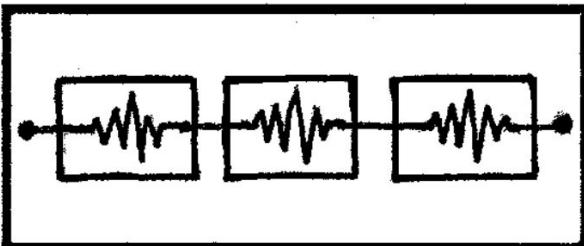


Interactive slideshow
Overall structure
+ local exploration

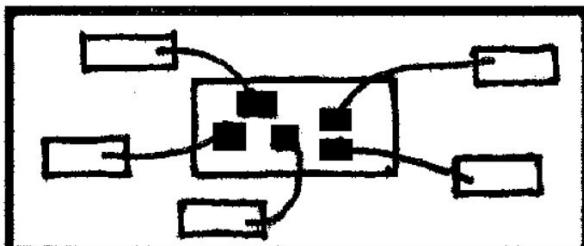
Narrative Structures



Martini-glass Structure
Guidance first, then exploration

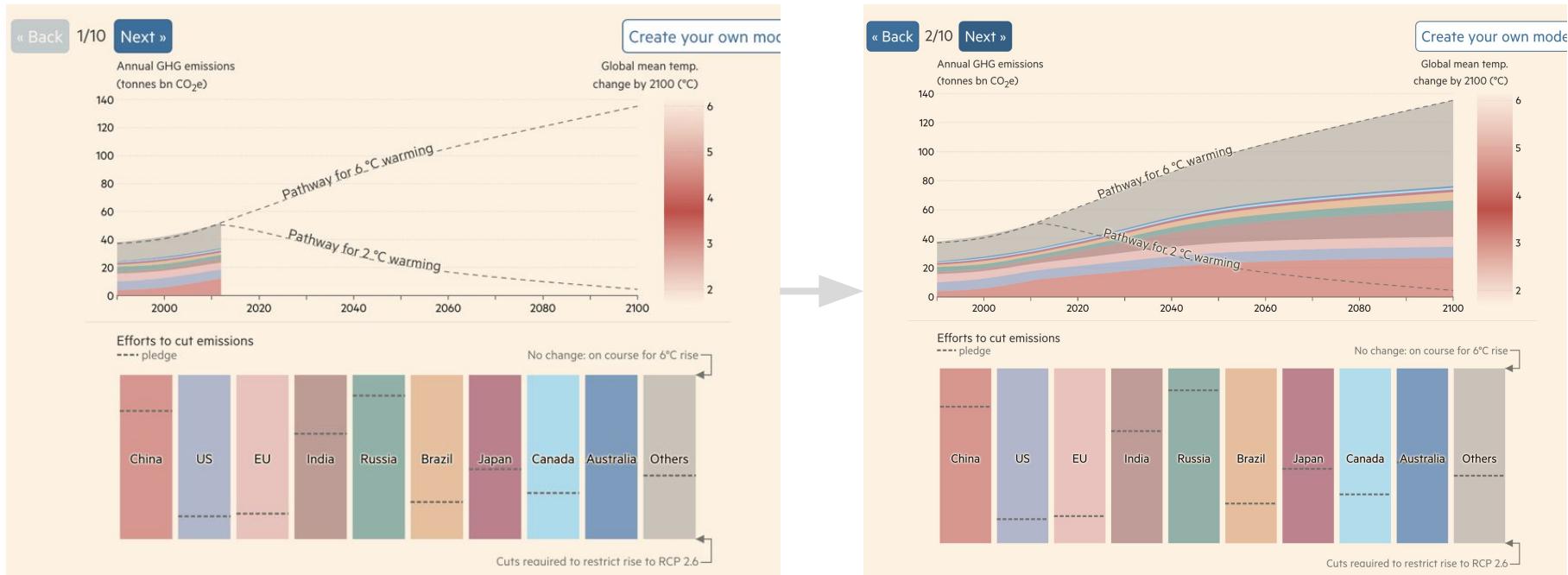


Interactive slideshow
Overall structure
+ local exploration

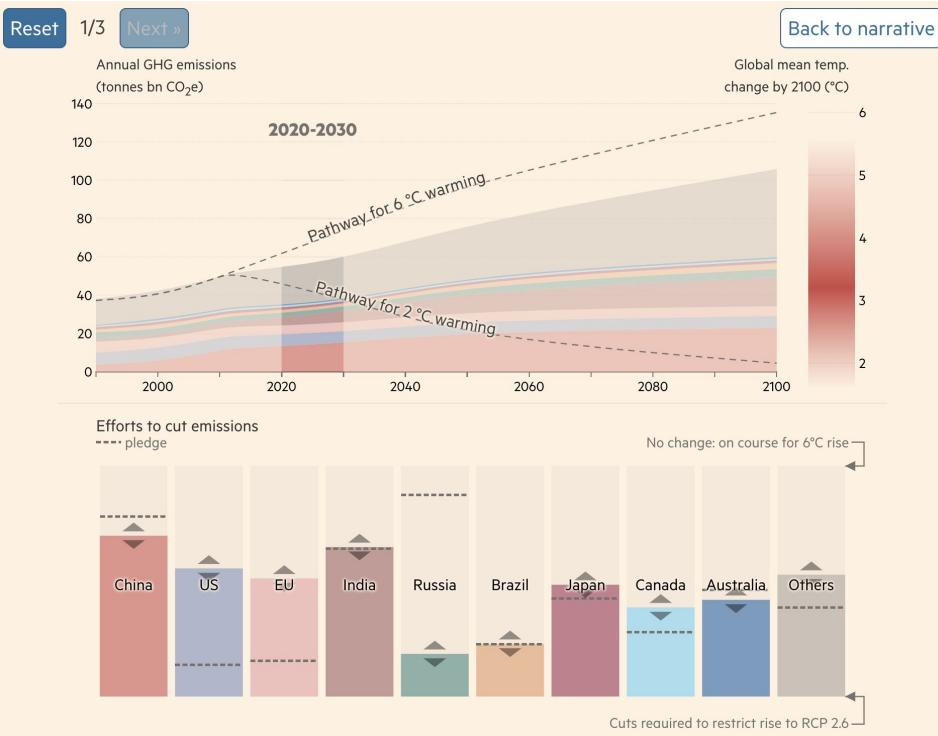
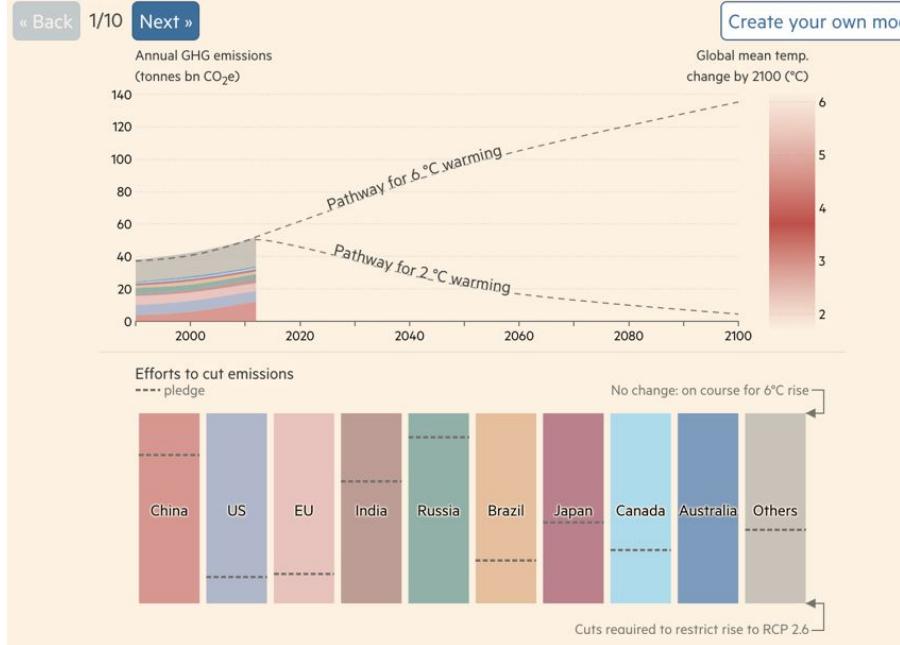


Drill-down story
Largely reader driven

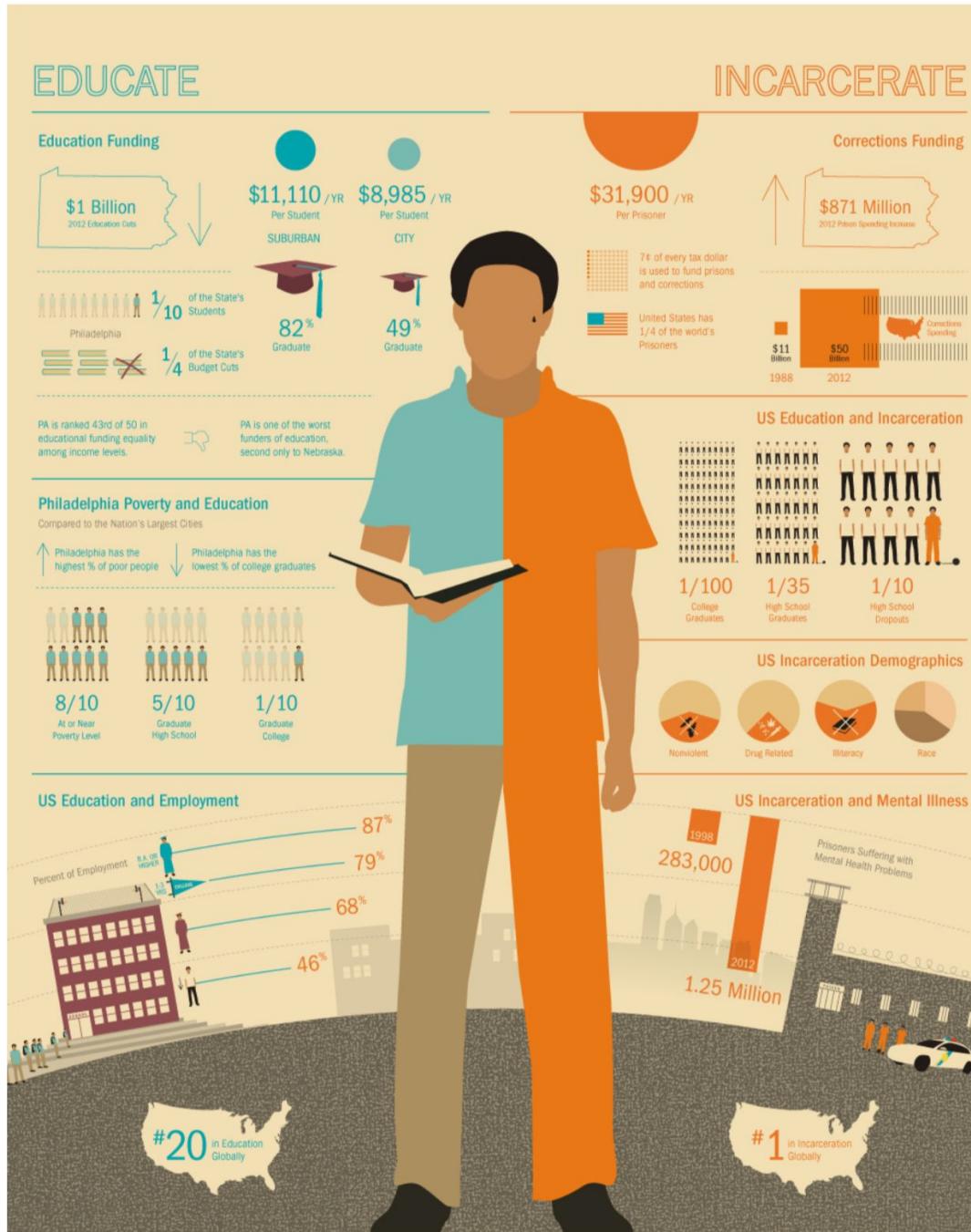
Narrative structures: Interactive Slideshow



Narrative structures: Martini-glass Structure



Narrative structures: Drill-down story





Data-Driven Storytelling Narrative Design Patterns



Online Course
**Data Visualization
for Professionals**



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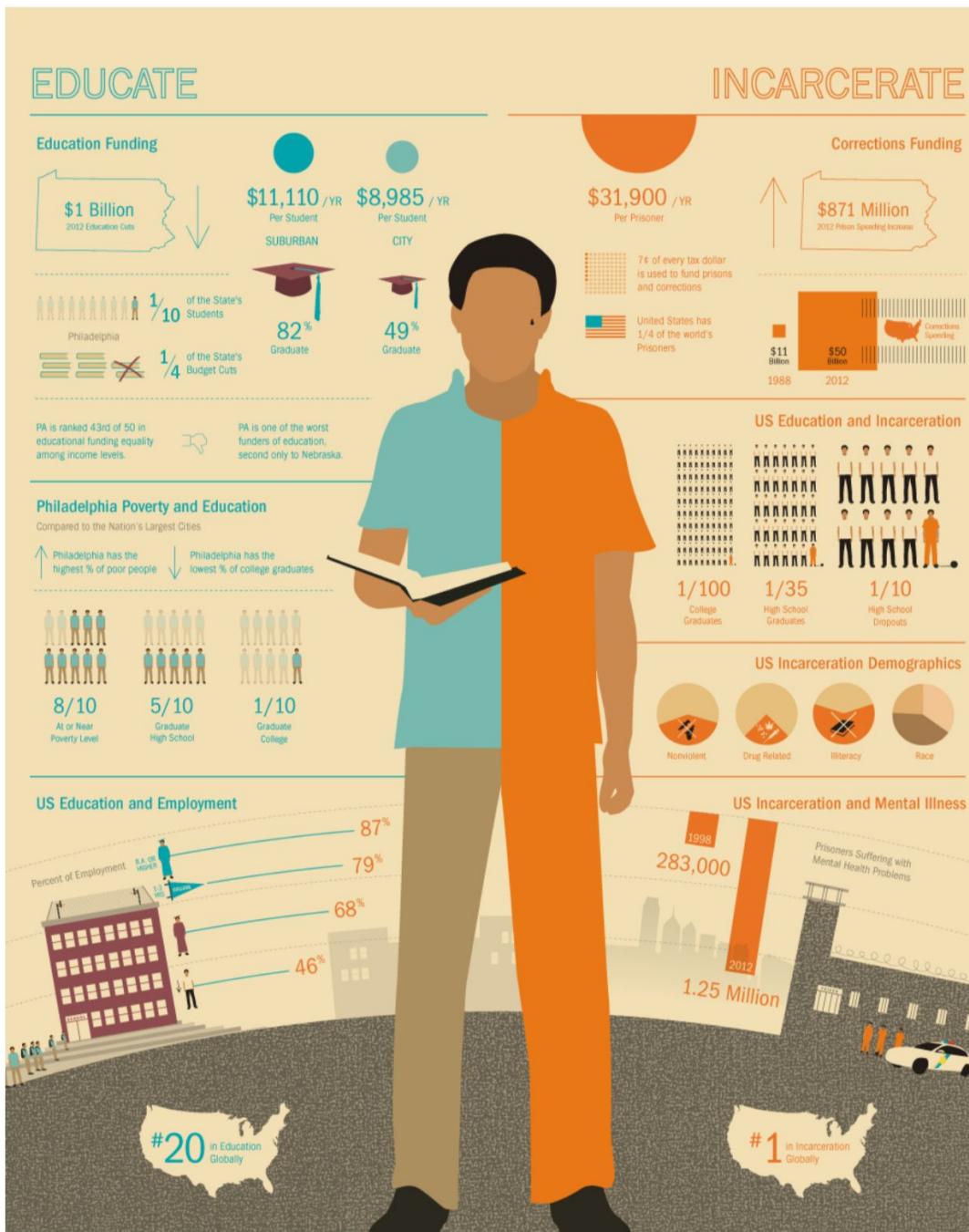
Benjamin Bach

June 2020

<http://benjbach.me>
<https://datavis-online.github.io>

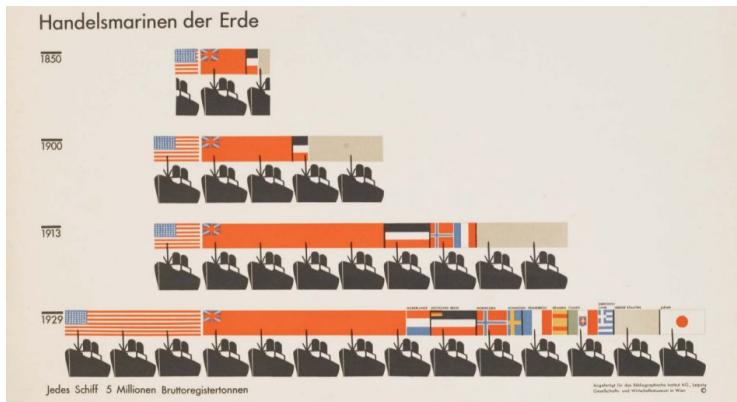
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Narrative Patterns Contrast

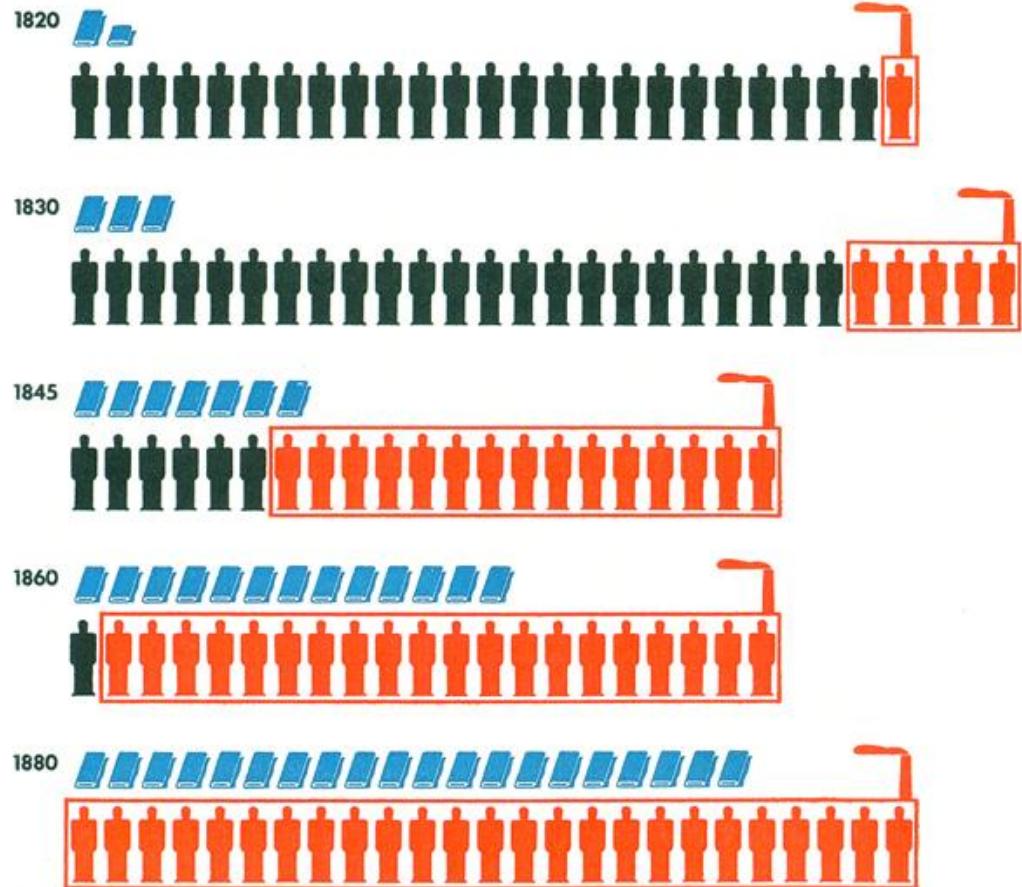


Bach, Benjamin, et al. "Narrative Design Patterns for Data-Driven Storytelling." *Data-Driven Storytelling*. AK Peters/CRC Press, 2018. 125-152.

Narrative Patterns: **Concretize (ISOTYPE)**



Home and Factory Weaving in England



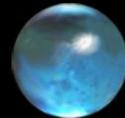
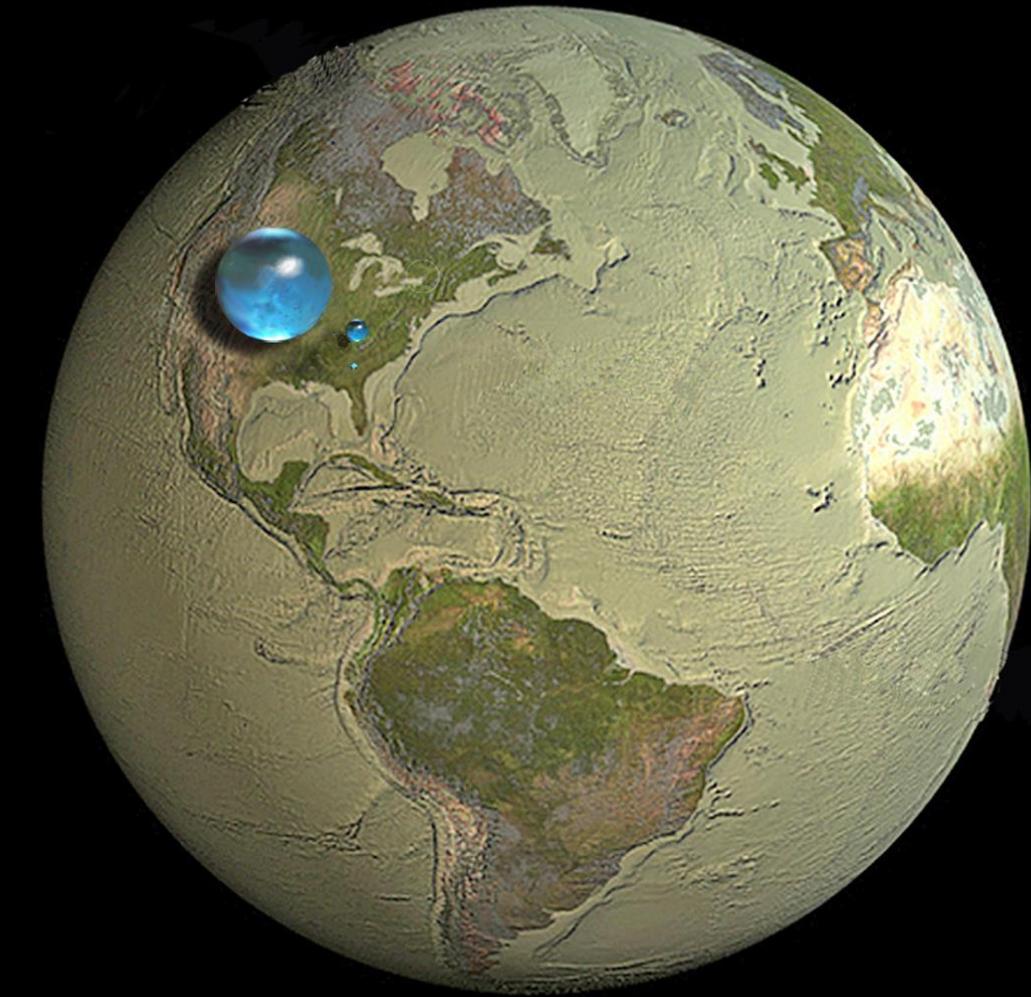
Scales

\$1 TRILLION & \$20 TRILLION IN PHYSICAL \$100 BILLS



Scales

The World's Water

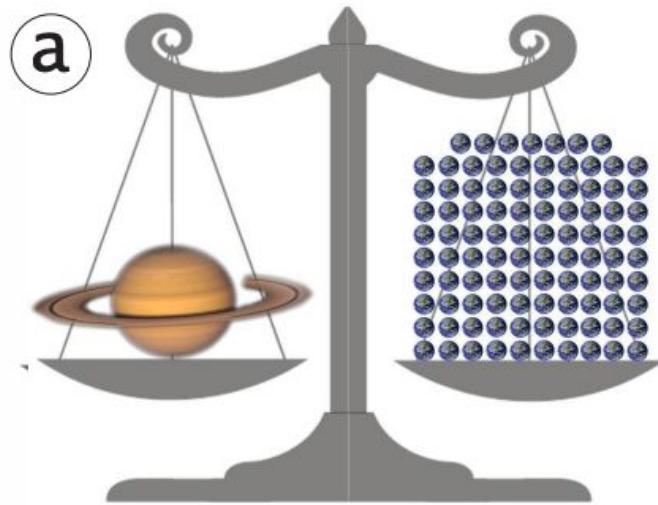


- All water on, in, and above the Earth
 - Liquid fresh water
 - Fresh-water lakes and rivers

Howard Perlman, USGS,
Jack Cook, Woods Hole Oceanographic Institution,
Adam Nieman
Data source: Igor Shiklomanov
<http://ga.water.usgs.gov/edu/earthhowmuch.html>

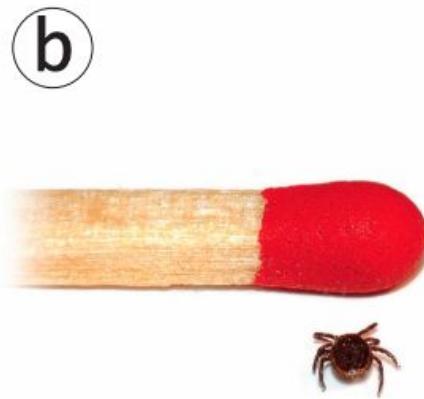
Chevalier, Fanny, Romain Vuillemot, and Guia Gali.
"Using concrete scales: A practical framework for effective visual depiction of complex measures."
IEEE transactions on visualization and computer graphics 19.12 (2013): 2426-2435.

Scales

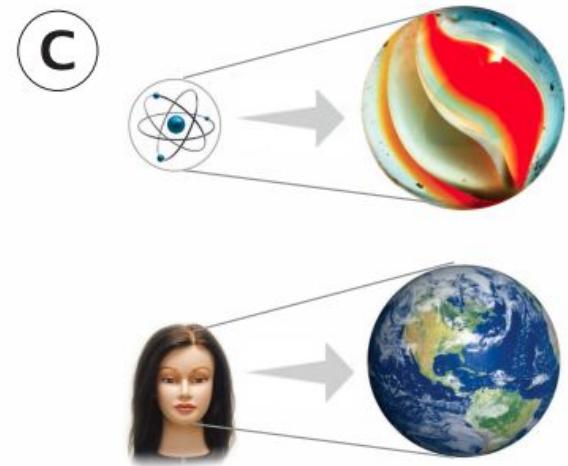


Quantities

Chevalier, Fanny, Romain Vuillemot, and Guia Gali.
"Using concrete scales: A practical framework for effective visual depiction of complex measures."
IEEE transactions on visualization and computer graphics 19.12 (2013): 2426-2435.



Reference



Analogy

Narrative Patterns: <http://napa-cards.net>

NAPA Cards Preview

Narrative Patterns for Data-Driven Storytelling

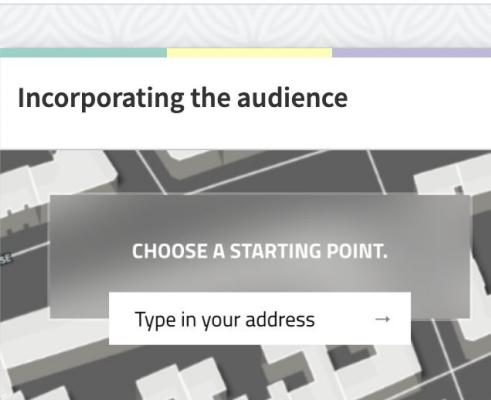
What is
this?

EMPATHY [4] ENGAGEMENT [3] FRAMING [11] FLOW [3] ARGUMENT [3]

Incorporating the audience

CHOOSE A STARTING POINT.

Type in your address →



HOW

Audience becomes part of the narrative.

WHY

Increase empathy, facilitate personal comparisons. Helps make the data and information more personally relevant. To allow reader to use herself as measuring device.

EXAMPLE

Ubisoft: Collapse

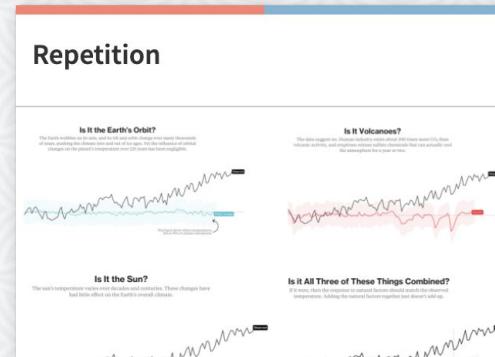
Repetition

Is It the Earth's Orbit?
The Earth's orbit is elliptical, and so it's not really change over much thousands of years. But the Sun is changing, and the Sun's changing has been suggested to have influenced the Earth's orbit.

Is It Volcanoes?
The data suggest the Chinese volcano erupted about 200 times since 1500, thus causing a great deal of dust and ash into the atmosphere. This is the largest event in the last 2000 years.

Is It the Sun?
The Sun's temperature is changing over centuries. These changes have had little effect on the Earth's overall climate.

Is It All Three of These Things Combined?
The Sun is changing, the Earth's orbit is changing, and the number of volcanoes is changing. Adding the natural factors together just doesn't add up.



HOW

A phenomenon is re-presented multiple times with changes to the main variable/dimension (the data) or the time frame or the animation pattern (see the example) while other elements of the story don't change. Note: this could be like running multiple simulations with the data to see which is most effective (and in this case, the story would be more reader driven)

WHY

To show that the same phenomenon happens over and over again. It also strengthens the narrative through rhythm. Establishing a constant reference frame can help to emphasize change and differences.

EXAMPLE
Bloomberg: What's really warming the world?

Juxtaposition

The Billion Dollar Gram
Bills spent on this. Below is spent on that. Is it relative right?



Category	Amount
US Defense Budget	\$1.0 Trillion
Raid and invade every island on Earth for 5 years	\$1.0 Trillion
EXXON: Big Oil assessment total	\$1.0 Trillion
China	\$0.5 Trillion
Russia	\$0.5 Trillion
Big War 00	\$0.5 Trillion
Big War 07	\$0.5 Trillion
Walmart Revenues	\$0.5 Trillion
Warren Buffet	\$0.5 Trillion
Big Tobacco Settlement	\$0.5 Trillion
For year to shift the entire world to solar power and eliminate energy	\$0.5 Trillion
Mars	\$0.5 Trillion
Marcelo Odebrecht	\$0.5 Trillion
Bilbao restoration	\$0.5 Trillion
Mathew modish	\$0.5 Trillion
Google	\$0.5 Trillion
Facebook	\$0.5 Trillion

HOW

Showing two or more complementary visualizations (pictures) juxtaposed.

WHY

Compare cases or samples, allows to highlight contrast, difference, absence of difference, change over time. Allows for individual exploration of (minor) differences.

EXAMPLE

David McCandless: Billion Dollar Gram



Data-Driven Storytelling

Storytelling Genres



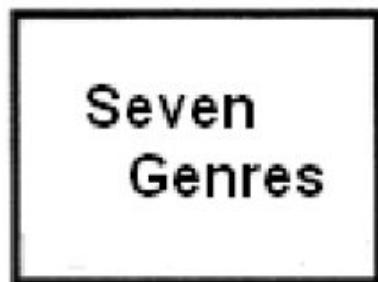
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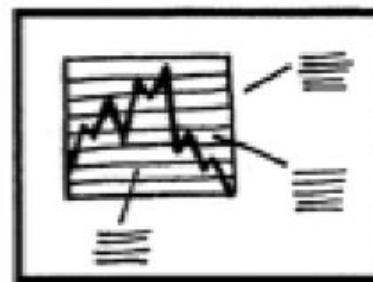
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Benjamin Bach
 June 2020
<http://benjbach.me>
<https://datavis-online.github.io>

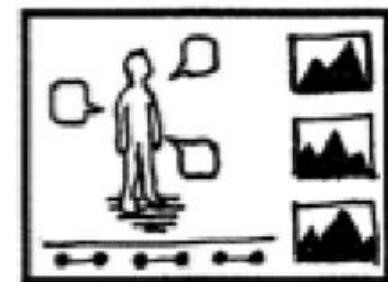
Seven Genres by Segel & Heer



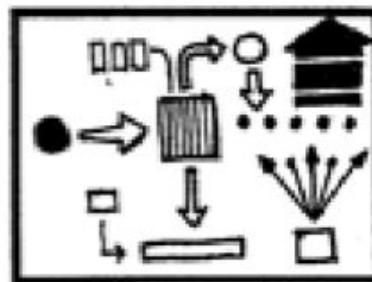
Magazine Style



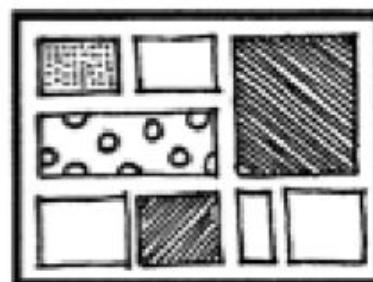
Annotated Chart



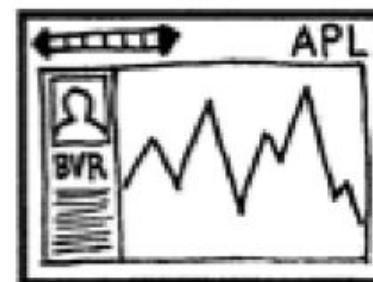
Partitioned Poster



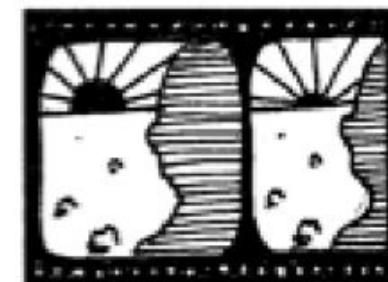
Flow Chart



Comic Strip



Slide Show



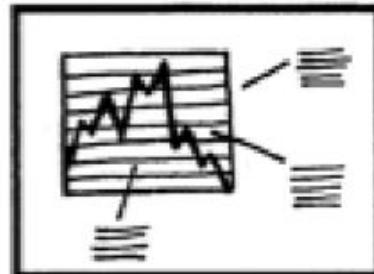
Film/Video/Animation

Seven Genres by Segel & Heer

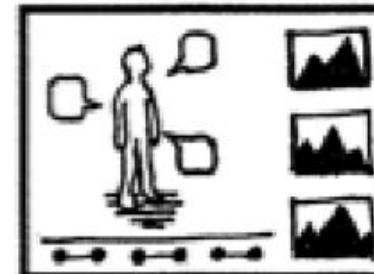
Seven
Genres



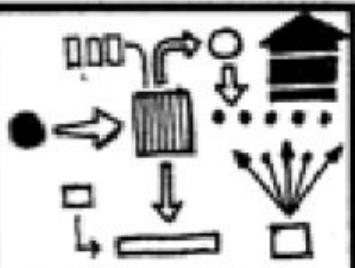
Magazine Style



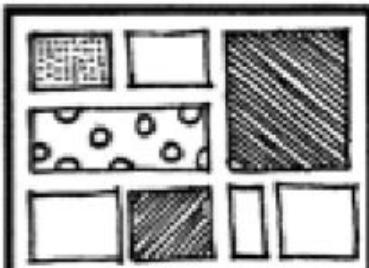
Annotated Chart



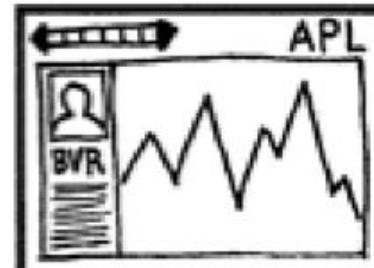
Partitioned Poster



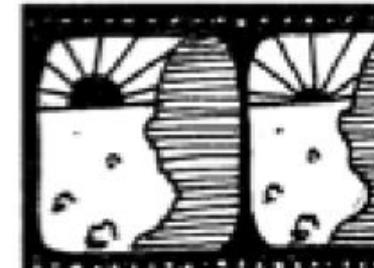
Flow Chart



Comic Strip



Slide Show



Film/Video/Animation

Magazine Style

physical, social, political, and economic structures of a region can place residents at varying risks for vulnerability. Areas susceptible to violence or natural disaster pose clear threats to individuals. An individual's environment also affects his or her development and behavioral choices. Resources available in the physical and social environments create the contexts within which decisions are made about health, education, and employment. Political and social environments also dictate whether resources are accessible to all adolescents. An examination of the residential distribution of adolescents provides a baseline for comparing geographical patterns of vulnerability. Within Uganda, by type of residence, the majority of adolescents (87 percent) live in rural versus urban areas. Figure 6 shows the distribution of adolescents aged 10 to 19 living in Uganda. Regional distributions show Karamoja contains only four percent of the adolescent population. Kampala with a much denser population contains 4.6 percent of the population. The Eastern and Western regions contain the largest proportions of the adolescent population.

Household factors influencing vulnerability

Household-level factors have direct impacts on the well-being of adolescents. Households are the primary setting where adolescents live and engage in activities. For this reason, the household environment and the people who live there have significant impacts on the lives of adolescents. Physical conditions of the home influence the health of residents. Family structures and demographic characteristics of household members affect the knowledge, decisions, behaviors and interactions in the environment of the adolescent.

Access to improved water sources and sanitation

Unsafe water, inadequate sanitation, and poor hygiene are among the five leading risk factors responsible for one quarter of all deaths in the world (WHO 2009). Unsafe water supplies and inadequate sanitation in homes increase exposure to water-borne diseases and can cause diarrhea. Ensuring access to clean water sources and sanitation is key to maintaining hygiene and health. Improved water sources are those that either naturally protect water from contamination or are constructed to do so. These include piped water, public taps, standpipes, boreholes, tube wells, protected wells and springs, and rainwater collection. Improved sanitation includes constructs and systems that prevent fecal contamination. These include flush or pour toilets, ventilated pit latrines, pit latrines with slabs, and composting toilets (UNICEF 2013b).

Housing conditions across East and Southern Africa are largely in need of improvement, and lack of improved sanitation varies by country. In nearly all of East and Southern Africa, over half of adolescents either do not have improved sanitation or share facilities with other households. Conditions are worst in Madagascar and Mozambique where fewer than four percent of adolescents live in households with improved sanitation that is not shared (Figure 7). Rwanda has the lowest proportion of adolescents affected—35 percent—which is still unacceptably high. Lack of access to improved water sources affects lower proportions but is still a problem in the region. In five countries, fewer than half of adolescents have access to improved water sources (Figure 8). Water conditions are best in Namibia, where only 15 percent of adolescents have no access to improved water.

In Uganda, overall access to improved water and sanitation increased by a small but significant percentage between 2006 and 2011 (Figure 9). In 2006, 33 percent of adolescents had no access to improved water; in 2011, it is 30 percent. The proportion of adolescents without access to improved

FIGURE 6
PROPORTION OF ADOLESCENTS AGED 10-19
BY REGION, UGANDA, 2011

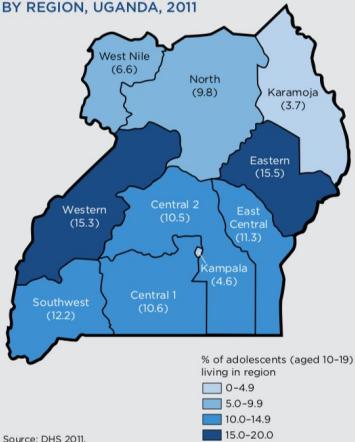


FIGURE 7

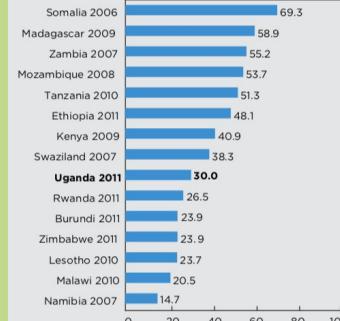
PERCENT OF ADOLESCENTS AGED 10-19
LIVING IN HOUSEHOLDS WITH NO
IMPROVED OR WITH SHARED SANITATION,
EAST AND SOUTHERN AFRICA



Source: DHS 2007-2011; MICS 2006-2008.

FIGURE 8

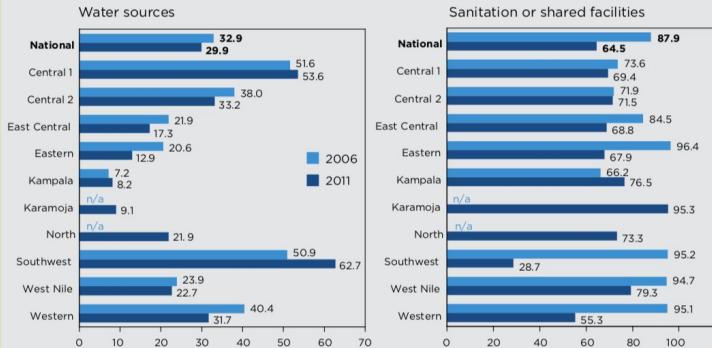
PERCENT OF ADOLESCENTS AGED
10-19 LIVING IN HOUSEHOLDS WITH
NO IMPROVED WATER SOURCE, EAST
AND SOUTHERN AFRICA



Source: DHS 2007-2011; MICS 2006-2008.

FIGURE 9

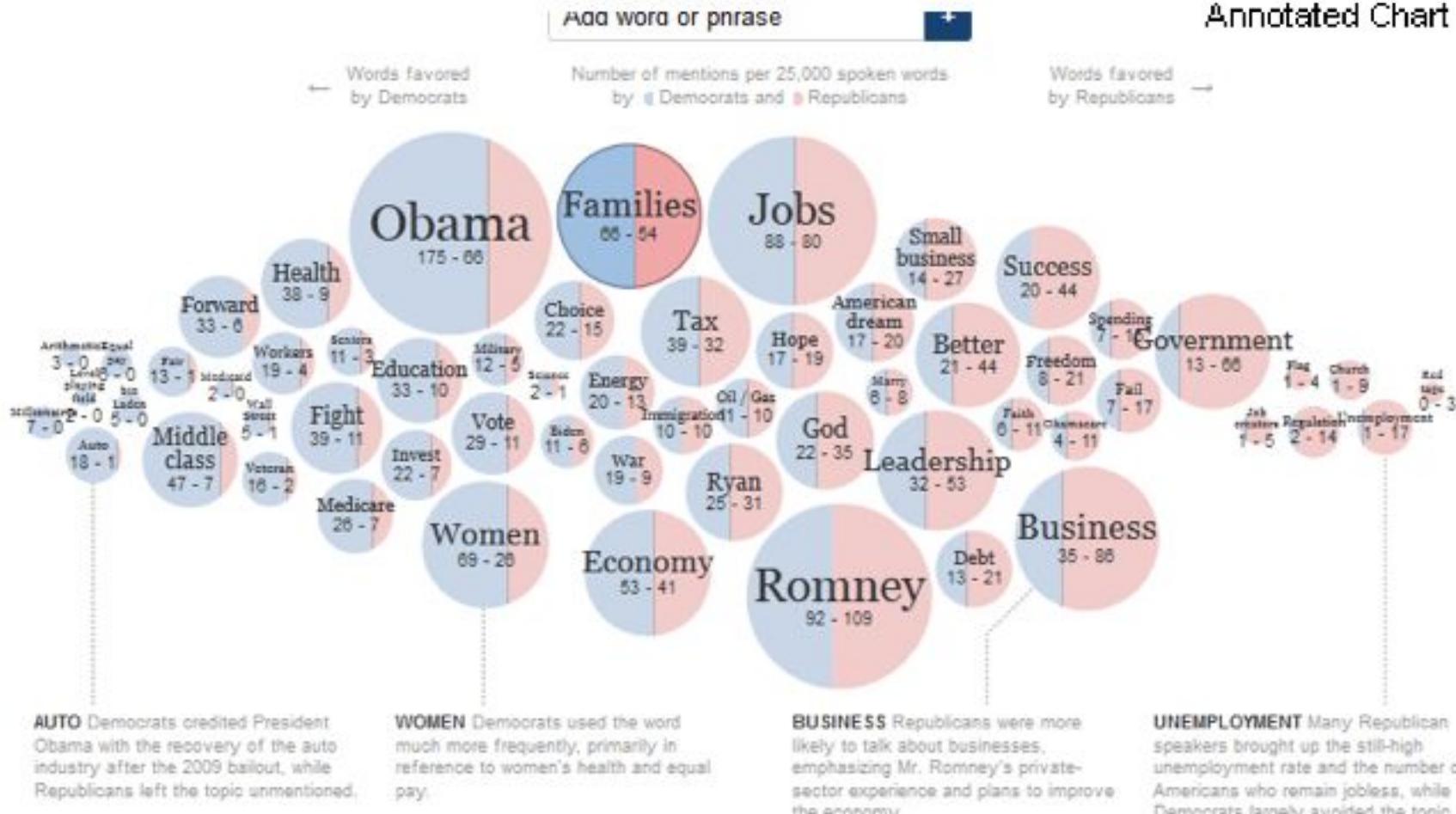
PERCENT OF ADOLESCENTS AGED 10-19 LIVING IN HOUSEHOLDS WITHOUT ACCESS TO
IMPROVED WATER AND WITHOUT ACCESS TO IMPROVED OR WITH SHARED SANITATION, IN
UGANDA, BY REGION, 2006 AND 2011



Source: DHS 2006 and 2011.

Note: Changes to the geographic boundaries were made to the North region in the 2011 DHS. The 2006 DHS North region is now divided into the North and Karamoja. For this reason, rates for 2006 are not shown for the North since it is not comparable and Karamoja was not identified in the previous survey.

Annotated Chart



Partitioned Poster (Infographic)



Partitioned Poster

<https://www.visualcinnamon.com/portfolio/baby-spike>

GRAPHIC SCIENCE

The Average
7.3 babies born
per minute

Eat First
More births of all types
occur right after lunch

Day Shift

Births peak around 8 A.M.,
then rise again between noon
and 1 P.M. Hospitals typically
have more doctors and nurses
on hand during the morning
and fewer later in the day.

The Average
447 babies born per hour

Fewest Births
Sunday night
between 2 and 3 A.M.

Early Riser

More babies than average
are born on weekdays during
daylight hours. Fewer are
born on weekends or at night,
primarily because fewer
hospital staffers are on duty,
so women tend not to schedule
their delivery then. Despite
folklore, a full moon has no effect.

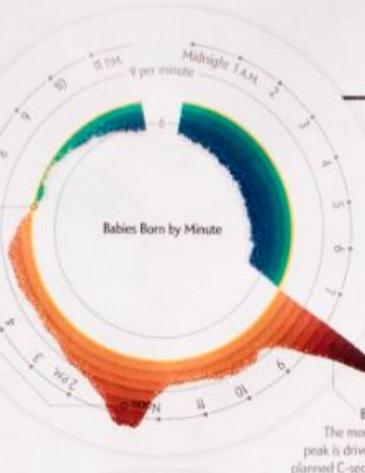
The Average
77,000 babies born per week

No, Thanks
Moms do not schedule C-sections
around Thanksgiving

Happy Holidays
Babies seem to arrive
nine months after Christmas
and New Year's Eve

Summer Son

Evidently, more people have
sex during colder months,
leading to more births nine
months later from July through
October, and less sex during
warmer months.



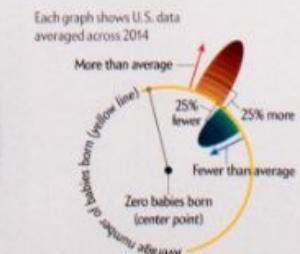
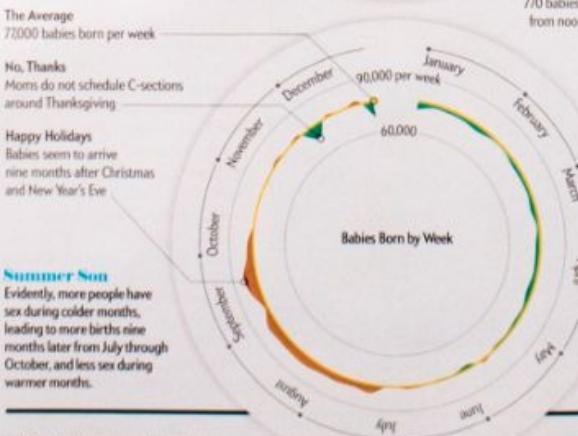
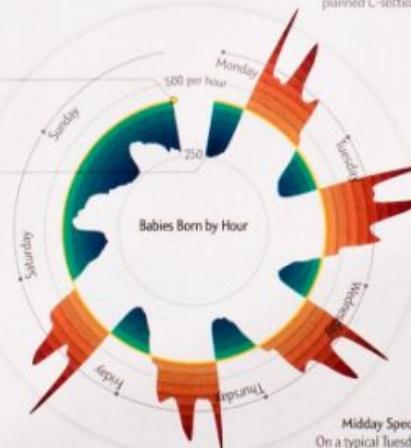
The Baby Spike

Births peak on
weekdays during
daytime work hours

Two generations ago babies were born pretty much spontaneously, around the clock. But today in the U.S., about half of all births are cesarean sections prescheduled by Mom or deliveries induced by doctors concerned about the mother's or baby's health. These medical procedures have skewed the days of the week, and hours of the day, during which those little bundles of joy arrive.

The procedures dominate because more than 98 percent of infants are born in a hospital, despite what seems to be the rising popularity of home births. Far more babies now arrive on weekdays than on weekends, most between 8 A.M. and 6 P.M. "We can't schedule spontaneous labor, obviously," says Neel Shah, a physician and professor at Harvard Medical School. "But we can schedule delivery."

—Mark Fischetti and Zan Armstrong



SOURCE: U.S. CENTER FOR DISEASE CONTROL AND PREVENTION, 2014

Slide Shows

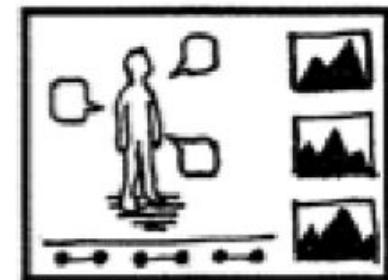
Seven
Genres



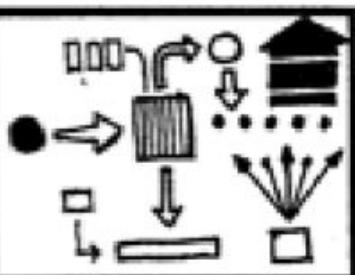
Magazine Style



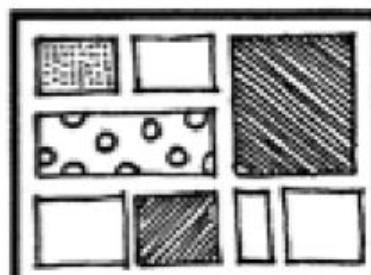
Annotated Chart



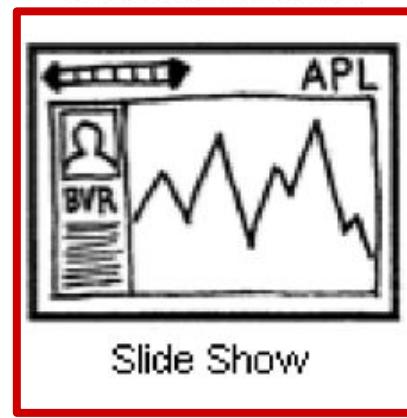
Partitioned Poster



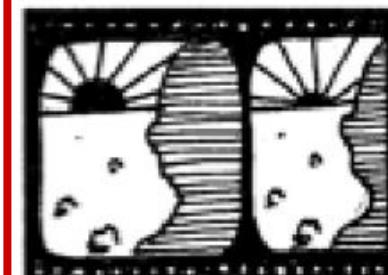
Flow Chart



Comic Strip



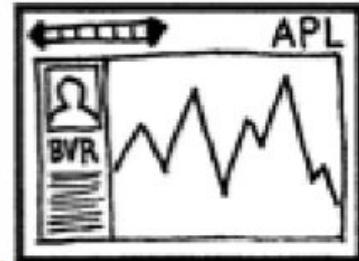
Slide Show



Film/Video/Animation

Slideshow

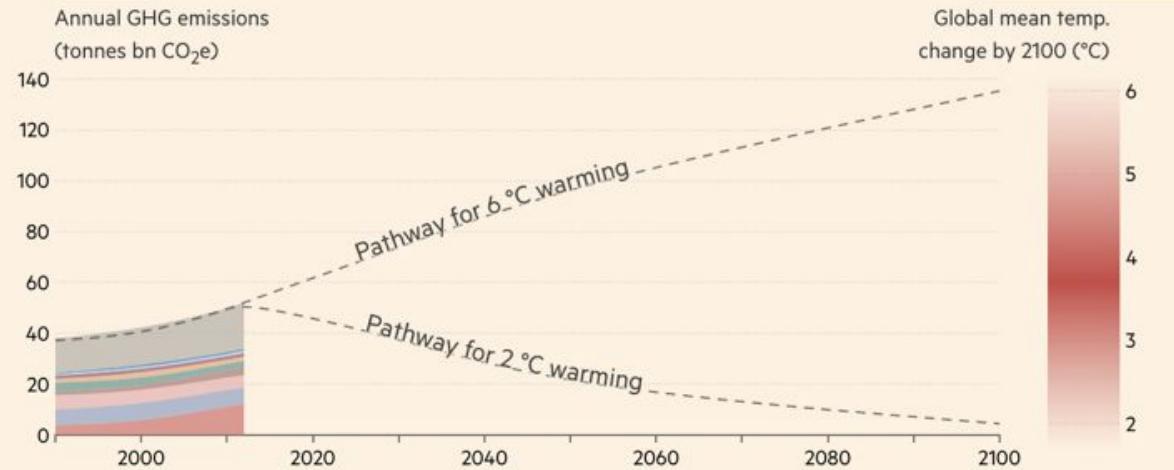
<https://ig.ft.com/sites/climate-change-calculator/>



Slide Show

« Back 1/10 Next »

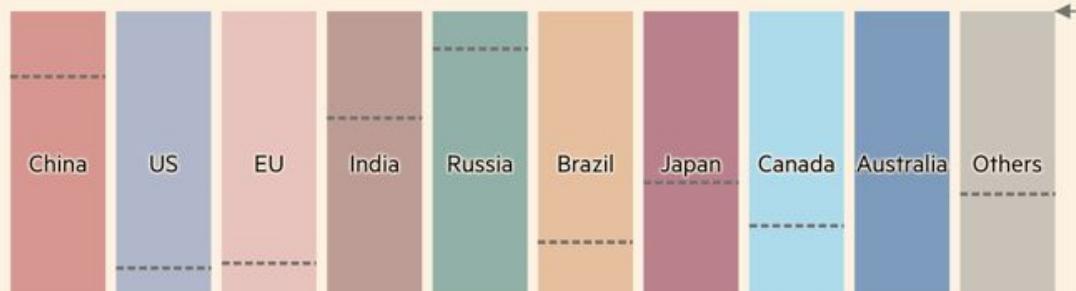
Create your own mod



Efforts to cut emissions

---- pledge

No change: on course for 6°C rise



Cuts required to restrict rise to RCP 2.6

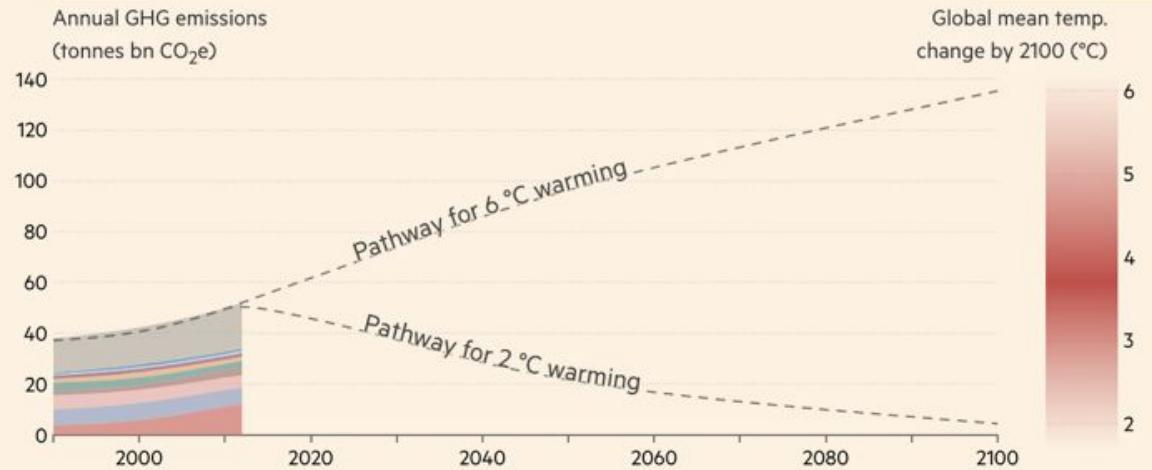
Interactive

« Back

1/10

Next »

Create your own model



Efforts to cut emissions

---- pledge

No change: on course for 6°C rise

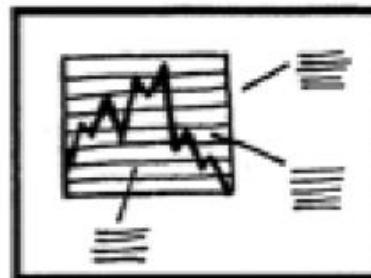


Data Videos

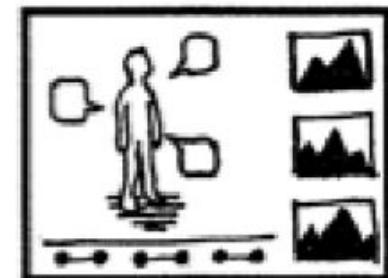
Seven
Genres



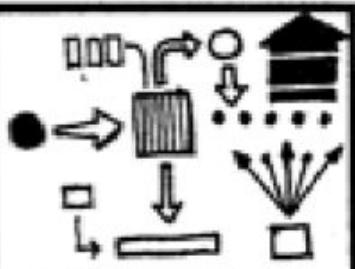
Magazine Style



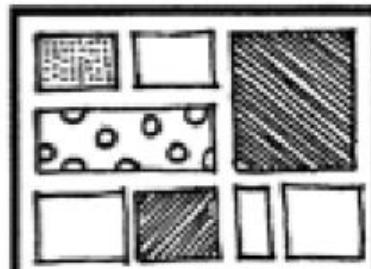
Annotated Chart



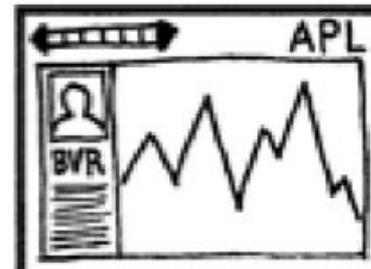
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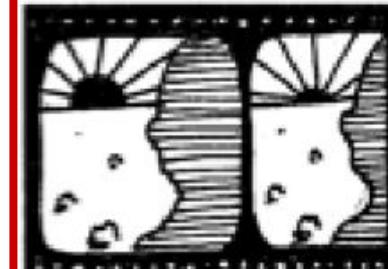
Flow Chart



Comic Strip



Slide Show



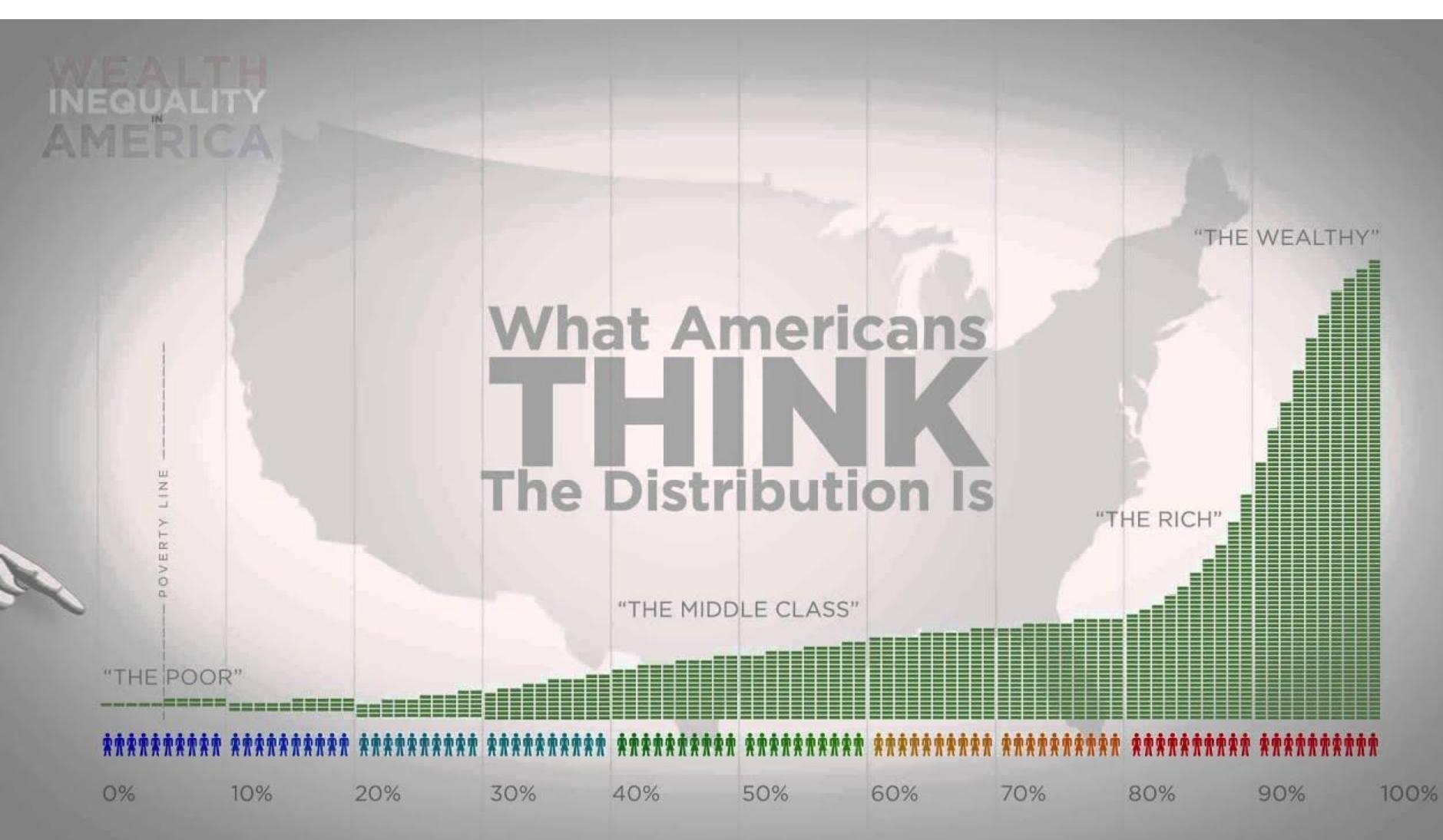
Film/Video/Animation

Life Presentations



https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen?language=en

Data Videos

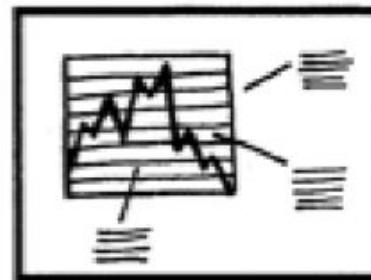


Data Comics

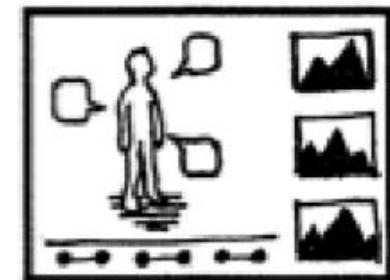
Seven Genres



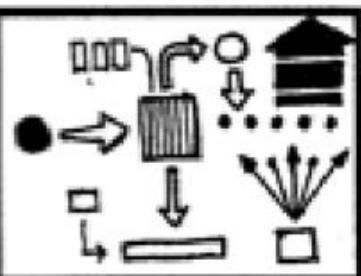
Magazine Style



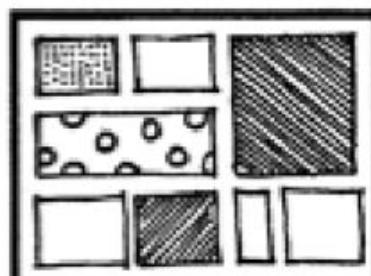
Annotated Chart



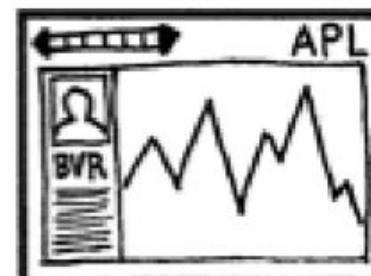
Partitioned Poster



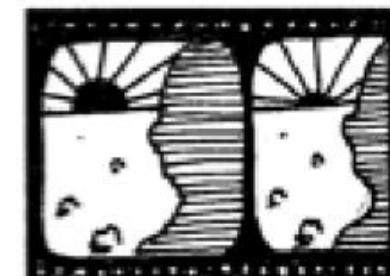
Flow Chart



Comic Strip



Slide Show



Film/Video/Animation

Report

physical, social, political, and economic structures of a region can place residents at varying risks for vulnerability. Areas susceptible to violence or natural disaster pose clear threats to individuals. An individual's environment also affects his or her development and behavioral choices. Resources available in the physical and social environments create the contexts within which decisions are made about health, education, and employment. Political and social environments also dictate whether resources are accessible to all adolescents. An examination of the residential distribution of adolescents provides a baseline for comparing geographical patterns of vulnerability. Within Uganda, by type of residence, the majority of adolescents (87 percent) live in rural versus urban areas. Figure 6 shows the distribution of adolescents aged 10 to 19 living in Uganda. Regional distributions show Karamoja contains only four percent of the adolescent population. Kampala with a much denser population contains 4.6 percent of the population. The Eastern and Western regions contain the largest proportions of the adolescent population.

Household factors influencing vulnerability

Household-level factors have direct impacts on the well-being of adolescents. Households are the primary setting where adolescents live and engage in activities. For this reason, the household environment and the people who live there have significant impacts on the lives of adolescents. Physical conditions of the home influence the health of residents. Family structures and demographic characteristics of household members affect the knowledge, decisions, behaviors and interactions in the environment of the adolescent.

Access to improved water sources and sanitation

Unsafe water, inadequate sanitation, and poor hygiene are among the five leading risk factors responsible for one quarter of all deaths in the world (WHO 2009). Unsafe water supplies and inadequate sanitation in homes increase exposure to water-borne diseases and can cause diarrhea. Ensuring access to clean water sources and sanitation is key to maintaining hygiene and health. Improved water sources are those that either naturally protect water from contamination or are constructed to do so. These include piped water, public taps, standpipes, boreholes, tube wells, protected wells and springs, and rainwater collection. Improved sanitation includes constructs and systems that prevent fecal contamination. These include flush or pour toilets, ventilated pit latrines, pit latrines with slabs, and composting toilets (UNICEF 2013b).

Housing conditions across East and Southern Africa are largely in need of improvement, and lack of improved sanitation varies by country. In nearly all of East and Southern Africa, over half of adolescents either do not have improved sanitation or share facilities with other households. Conditions are worst in Madagascar and Mozambique where fewer than four percent of adolescents live in households with improved sanitation that is not shared (Figure 7). Rwanda has the lowest proportion of adolescents affected—35 percent—which is still unacceptably high. Lack of access to improved water sources affects lower proportions but is still a problem in the region. In five countries, fewer than half of adolescents have access to improved water sources (Figure 8). Water conditions are best in Namibia, where only 15 percent of adolescents have no access to improved water.

In Uganda, overall access to improved water and sanitation increased by a small but significant percentage between 2006 and 2011 (Figure 9). In 2006, 33 percent of adolescents had no access to improved water; in 2011, it is 30 percent. The proportion of adolescents without access to improved

FIGURE 6
PROPORTION OF ADOLESCENTS AGED 10-19
BY REGION, UGANDA, 2011

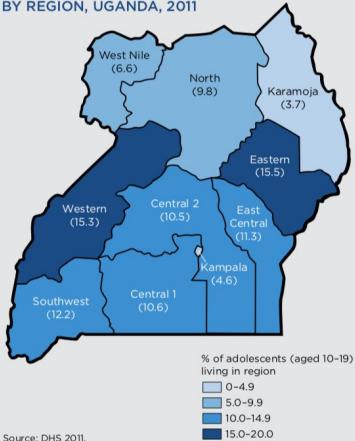
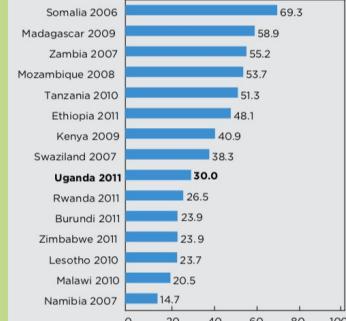


FIGURE 7
PERCENT OF ADOLESCENTS AGED 10-19
LIVING IN HOUSEHOLDS WITH NO
IMPROVED OR WITH SHARED SANITATION,
EAST AND SOUTHERN AFRICA



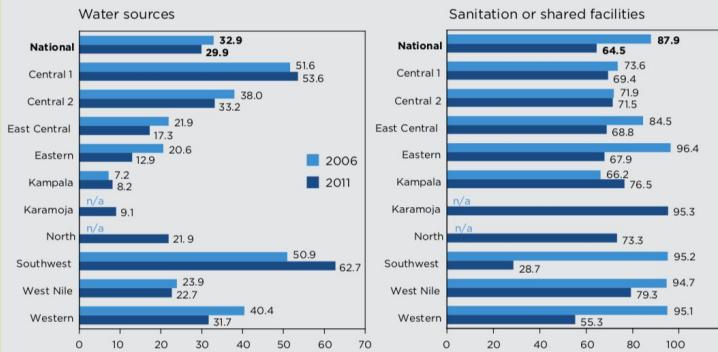
Source: DHS 2007-2011; MICS 2006-2008.

FIGURE 8
PERCENT OF ADOLESCENTS AGED
10-19 LIVING IN HOUSEHOLDS WITH
NO IMPROVED WATER SOURCE, EAST
AND SOUTHERN AFRICA



Source: DHS 2007-2011; MICS 2006-2008.

FIGURE 9
PERCENT OF ADOLESCENTS AGED 10-19 LIVING IN HOUSEHOLDS WITHOUT ACCESS TO
IMPROVED WATER AND WITHOUT ACCESS TO IMPROVED OR WITH SHARED SANITATION, IN
UGANDA, BY REGION, 2006 AND 2011



Source: DHS 2006 and 2011.

Note: Changes to the geographic boundaries were made to the North region in the 2011 DHS. The 2006 DHS North region is now divided into the North and Karamoja. For this reason, rates for 2006 are not shown for the North since it is not comparable and Karamoja was not identified in the previous survey.

Panel (sequences)

I just came back from
Boston to Paris.

5500km in just 6h.



That produced 1 ton of CO₂.

It

Panel (sequences)

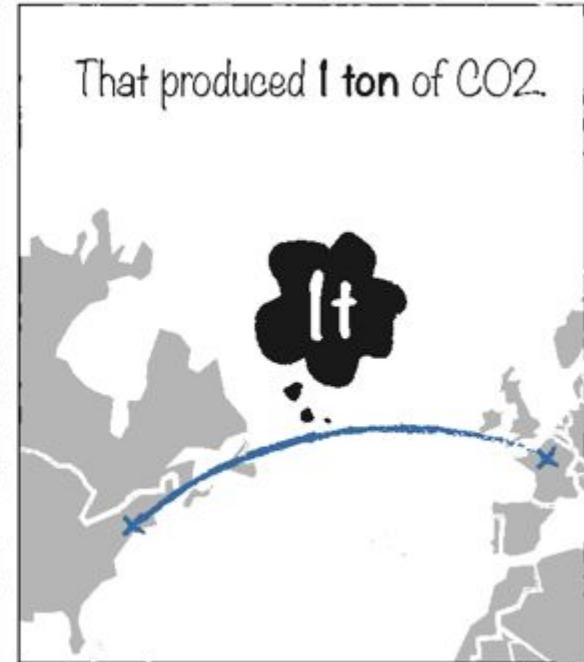
I just came back from
Boston to Paris.



5500km in just 6h.

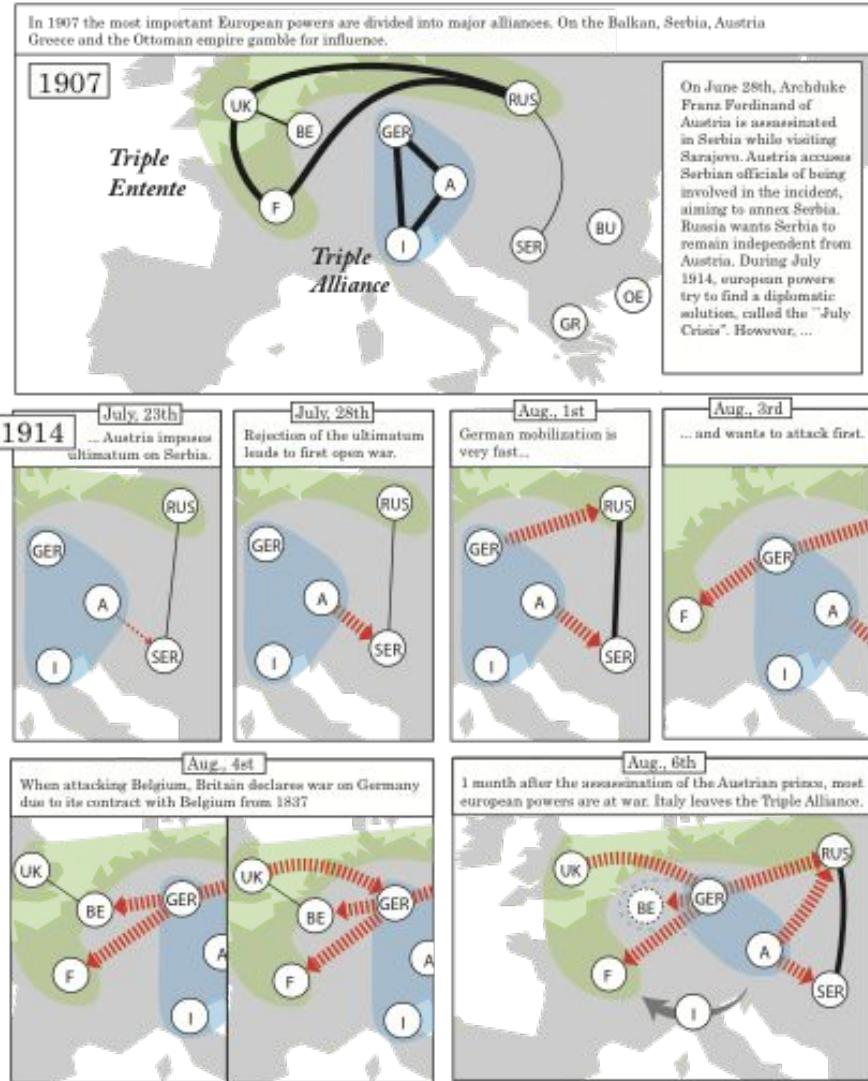
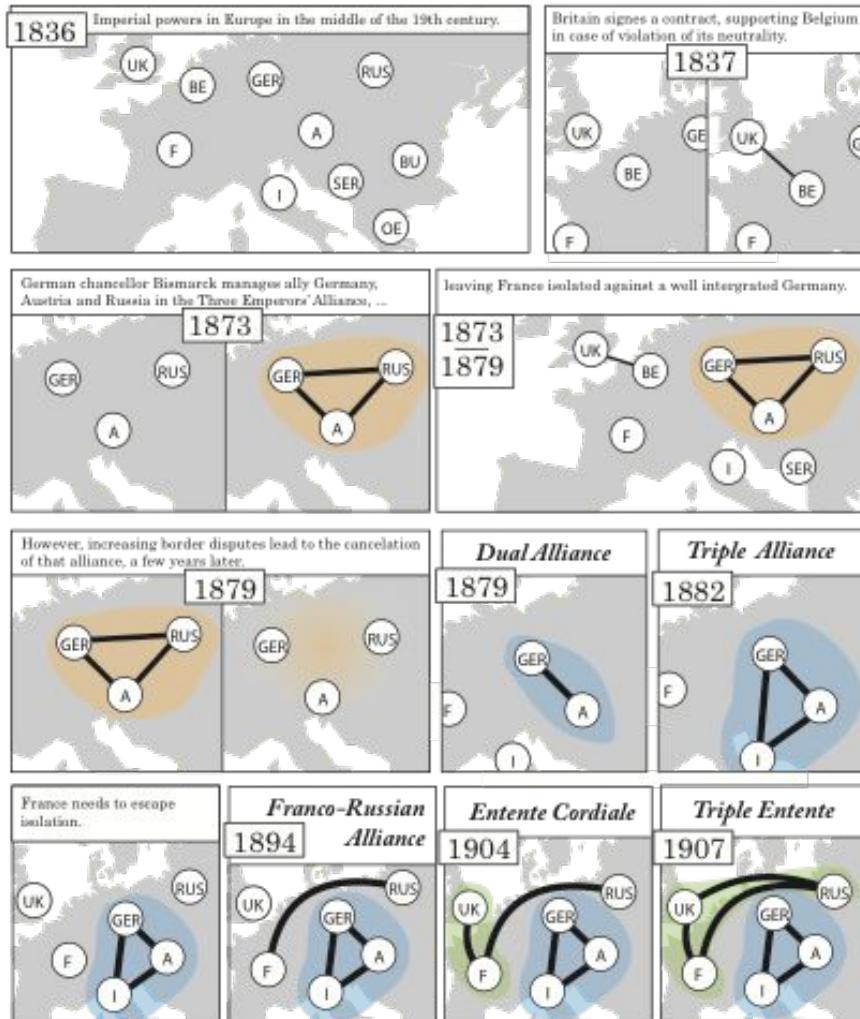


That produced **1 ton** of CO₂.



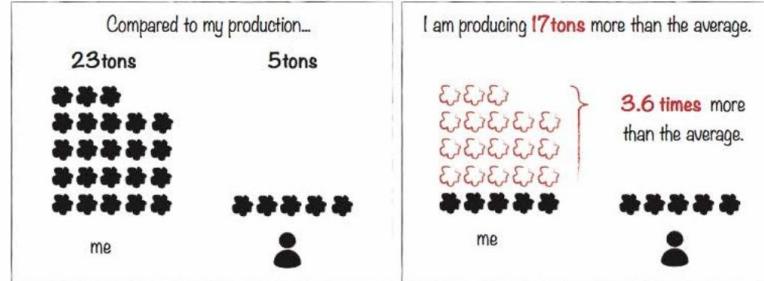
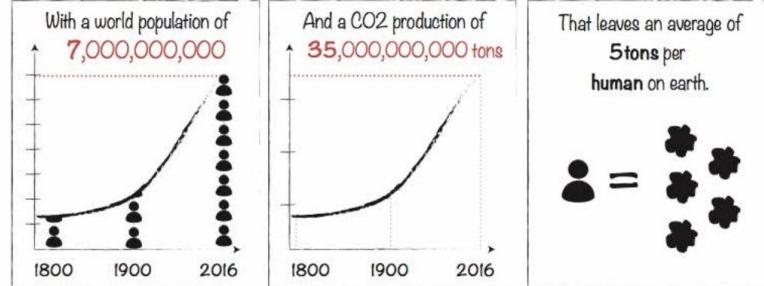
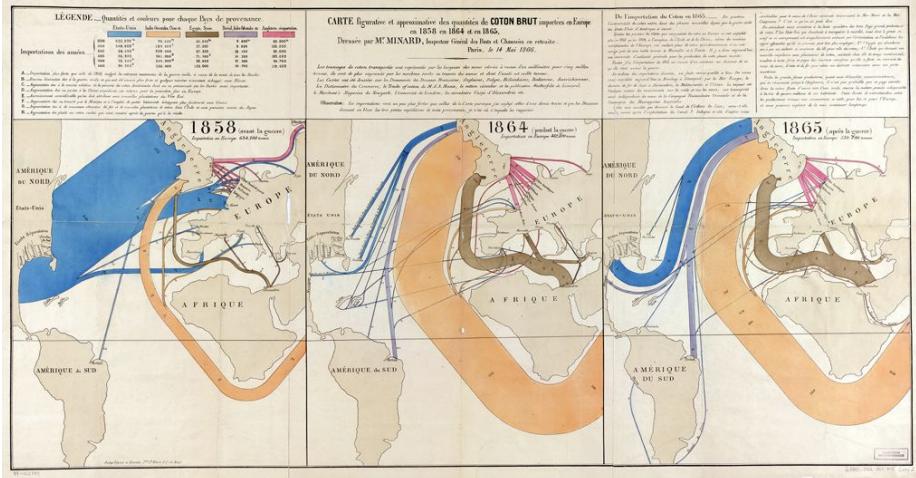
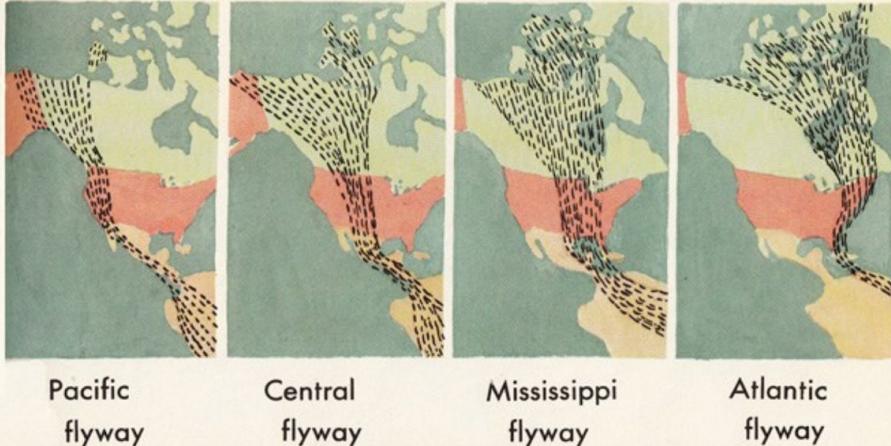
Data Comics

European Alliances before World War I (1836-1914)

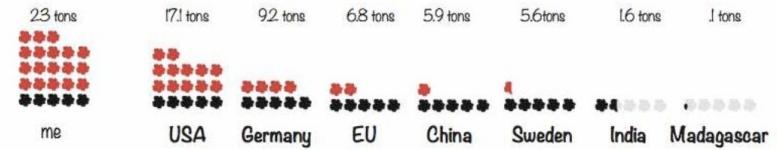


Data Comics

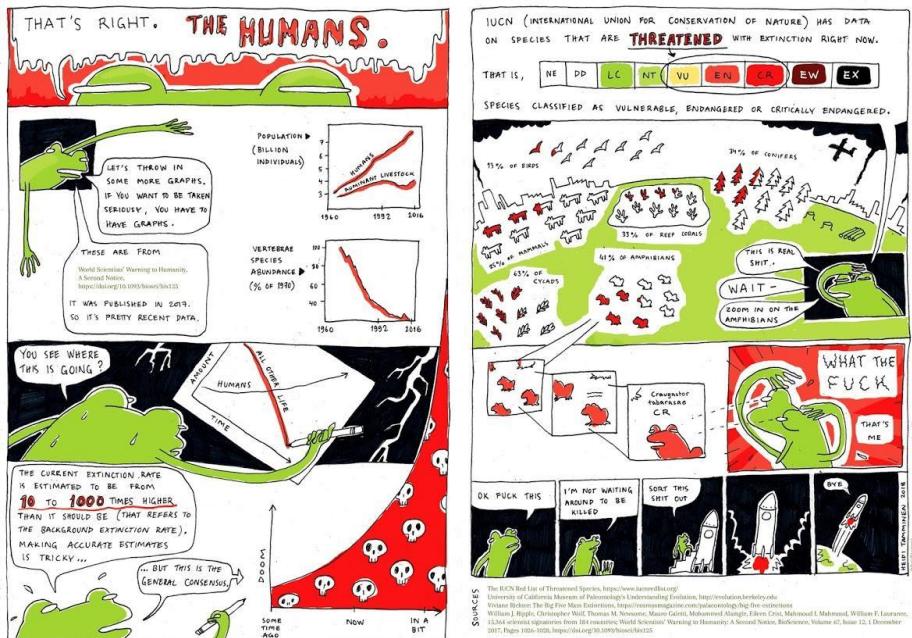
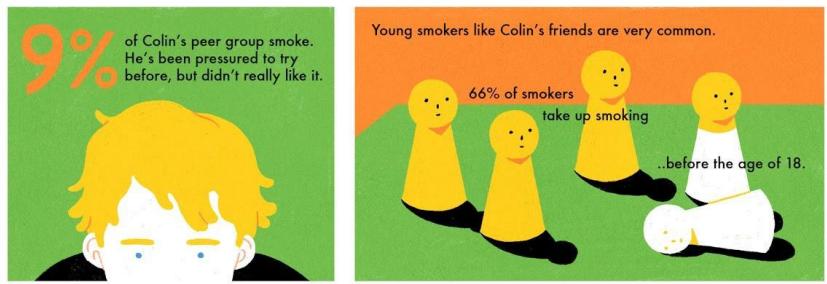
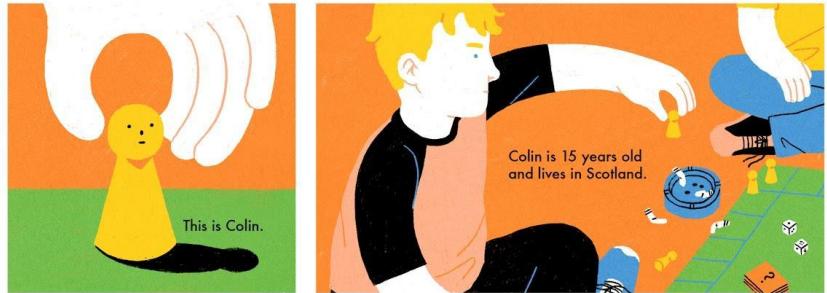
Maps can show the way birds go when they fly north or south for the season.



Thus, my travels in 2016 alone produced more CO2 than the average person in the most countries:

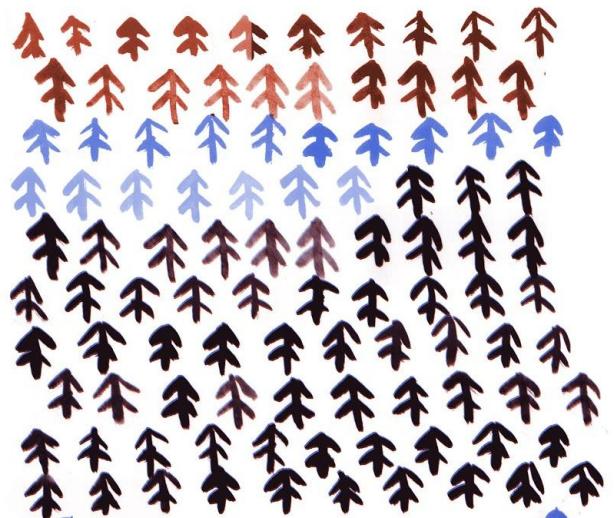


Data Comics



TREES STORE
UP TO
300 MILLION TONNES
OF CARBON

300 MILLION TONNES



20% OF THE AMAZON
RAINFOREST HAS
ALREADY BEEN
DEFORESTED, WHILE
17% HAS BEEN
LOST DUE TO
CATTLE FARMING

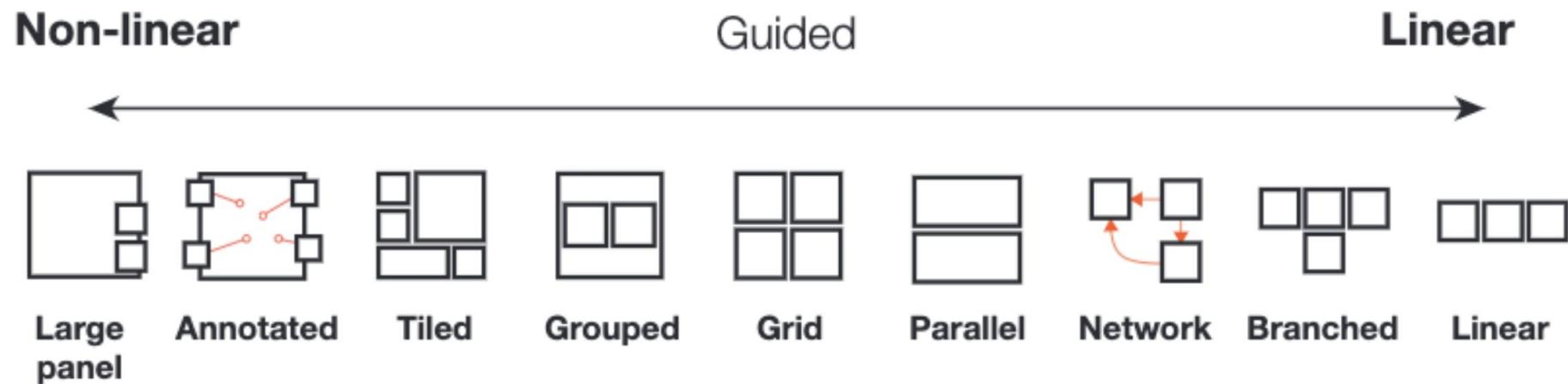
15%
OF THE WORLD'S GREENHOUSE
GAS EMISSIONS ARE A
RESULT OF DEFORESTATION



HOWEVER, ALL IN ALL, 18 MILLION ACRES
ARE LOST PER YEAR



Data Comics Design Patterns



Data Comics Design Patterns

Narrative



Exposé



Multiple-explanations

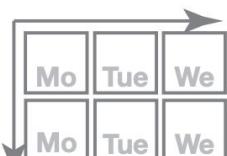


Question & answer

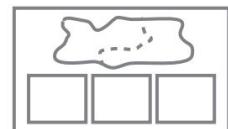
Temporal



Temporal sequence

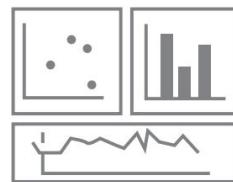


Time-grid

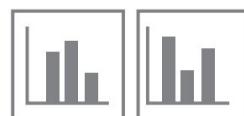


Time-nesting

Faceting



Multiple facets



Contrast

Visual Encoding



Build-up

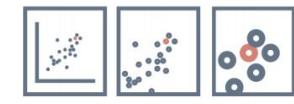


Legend

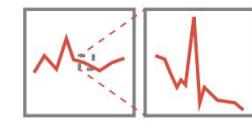


Annotated transition

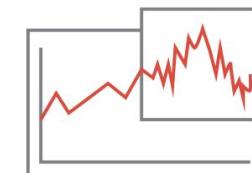
Granular



Zoom



Cut-out



Lens

Data Comics Design Patterns

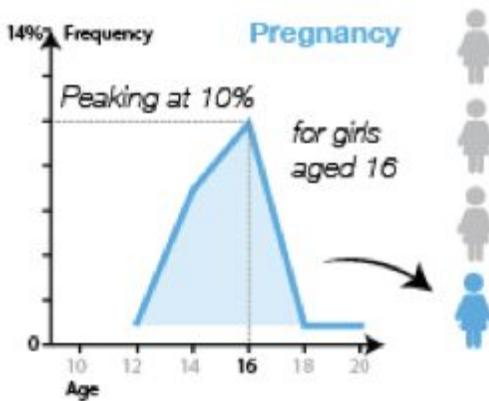
Zoom



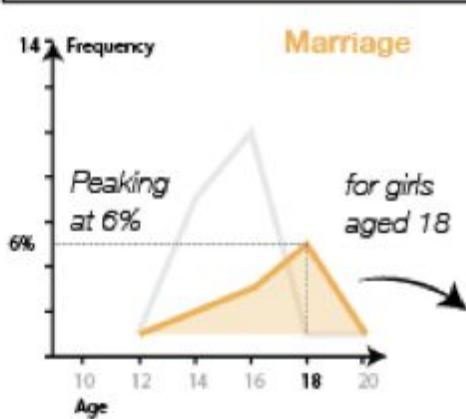
down from 127 in 2010

Data Comics Design Patterns

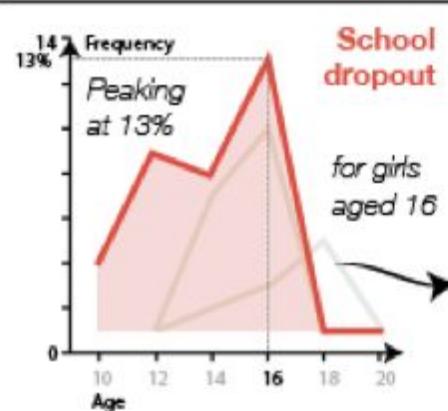
She has a one-in-four risk of becoming pregnant during adolescence,



is at high risk of being engaged in early marriage,

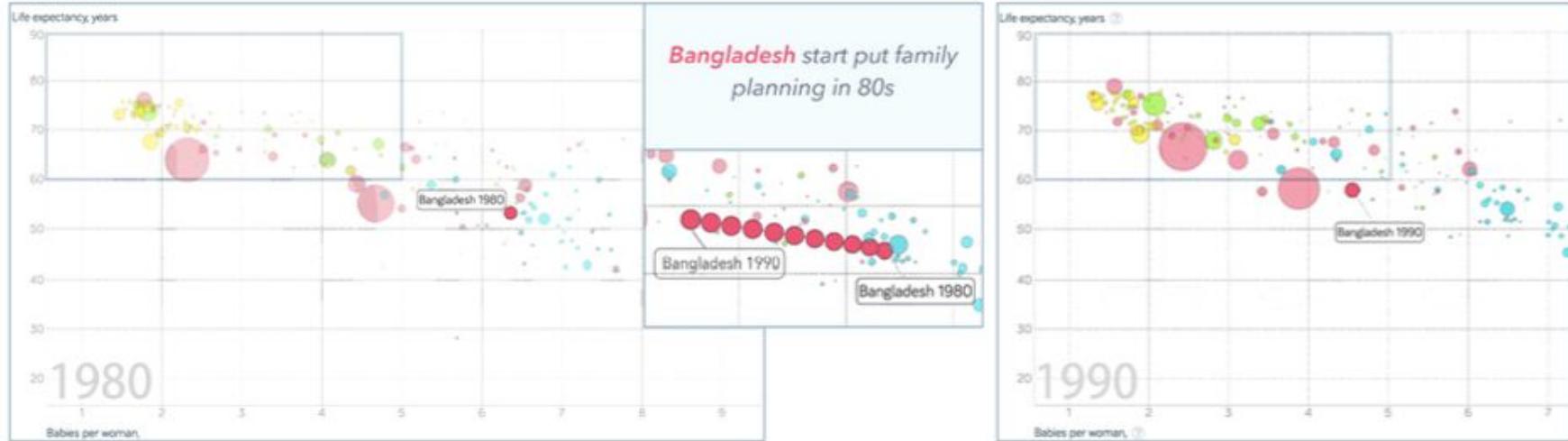


and will likely drop out of school before reaching secondary level.



Data Comics Design Patterns

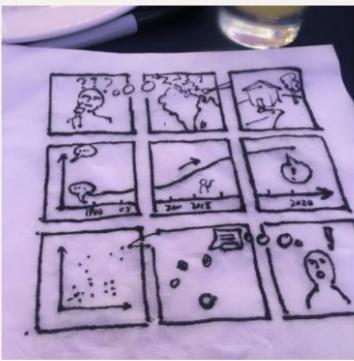
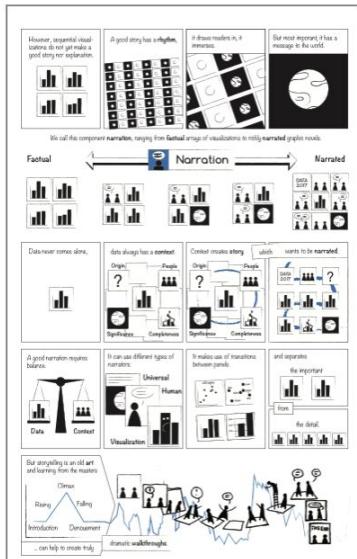
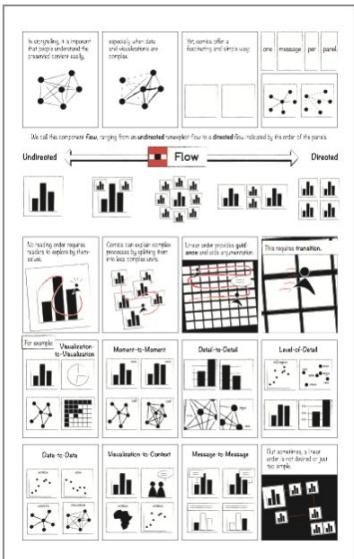
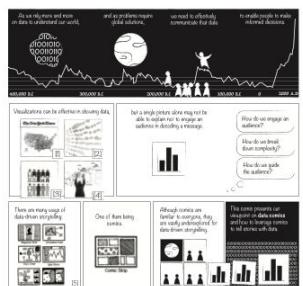
Now let's look at the next decadea from 1980 - 1990





The Emerging Genre of Data Comics

Benjamin Bach, Harvard University
Nathalie Henry-Riche, Microsoft Research
Sheila Gardiner, University of Calgary
Hanspeter Pfister, Harvard University



Napkin Comic

Zezhong Wang

The majority is accumulating in landfills and the environment at large, where it will outlive the next several generations of human civilization.



United States of Plastic

The Guardian

The rich drive up the mean far above what the typical income is. Therefore, statistician instead let the median represent the average.

While the mean is the mid-point that splits the total amount of income into equal halves.

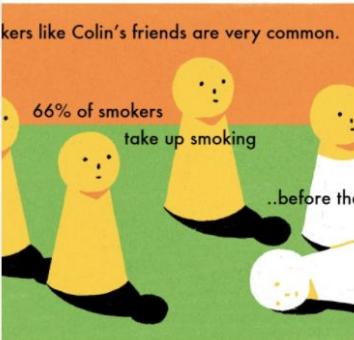


the median splits the population into equal halves, even though above-median people have a much higher income in total.



Child Poverty

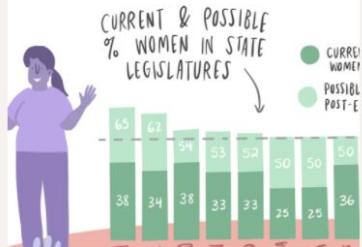
Lovisa Sundin



Smoking

Terri Po

CORD NUMBERS OF WOMEN ARE WINNING FOR OFFICE... AND NO THEY'RE WINNING PRIMARIES.



The Political Future is Female

Olivia Walch - the NIB

China's rise is so significant because of its sheer enormity. If you were to talk to a random person on Earth, they're likely to speak to a native Chinese speaker.



The Future Sounds Chinese

Josh Kramer - The NIB



Data-Driven Storytelling Style and Design



Online Course
**Data Visualization
for Professionals**



THE UNIVERSITY
of EDINBURGH

Benjamin Bach
June 2020
<http://benjbach.me>
<https://datavis-online.github.io>

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Moritz Stefaner

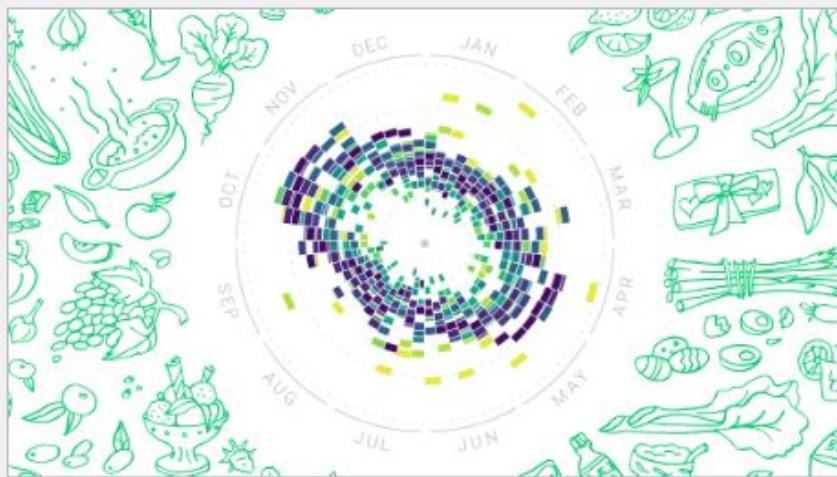
Featured projects



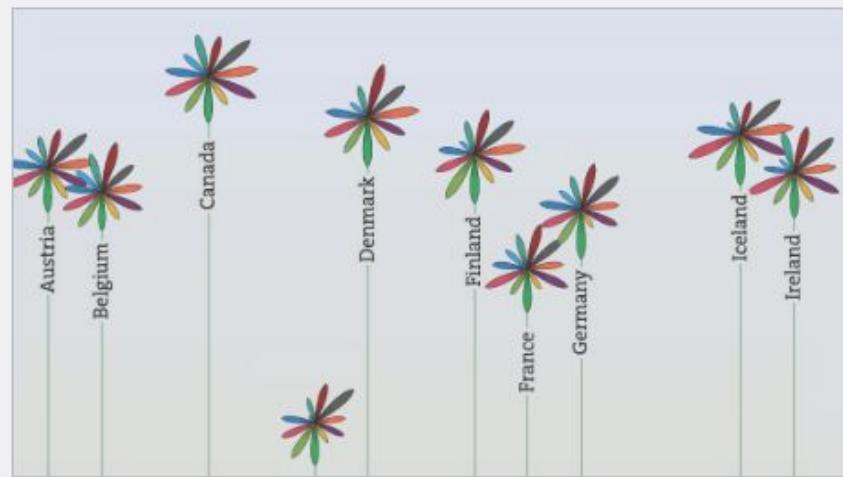
Multiplicity A collective photographic city portrait



Peak Spotting Data on rails

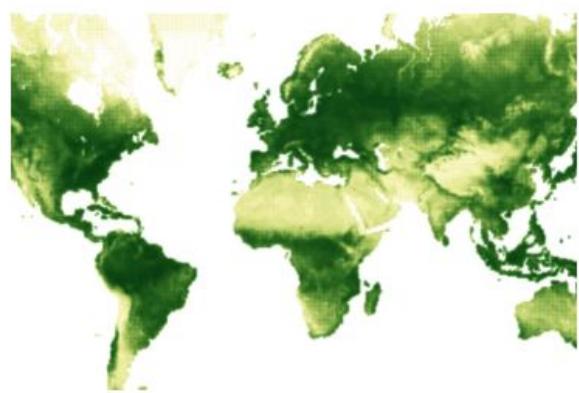
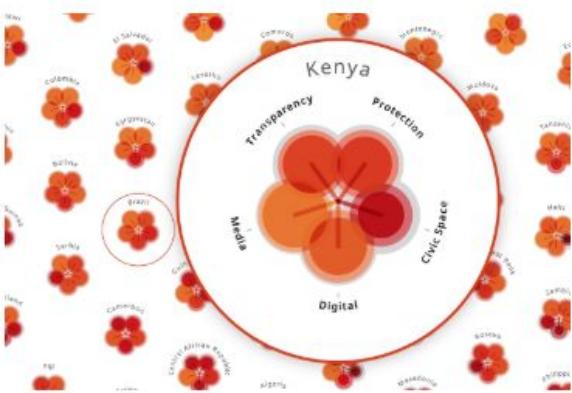
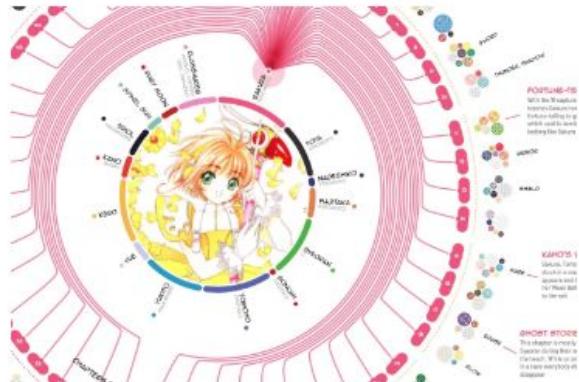
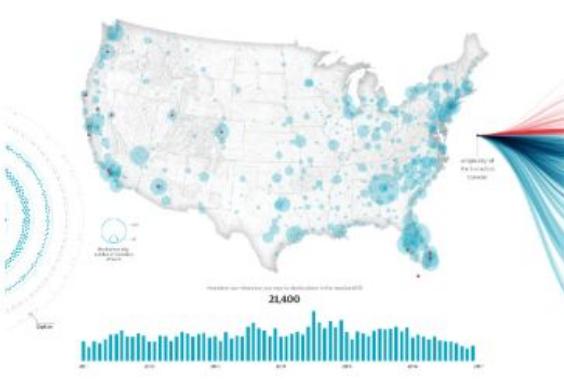
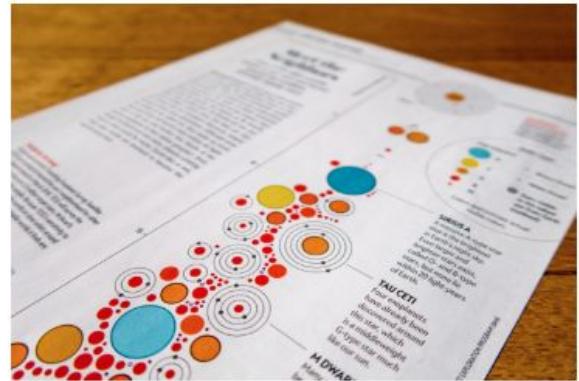
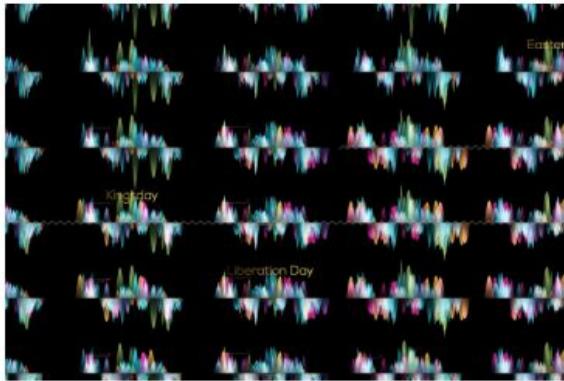
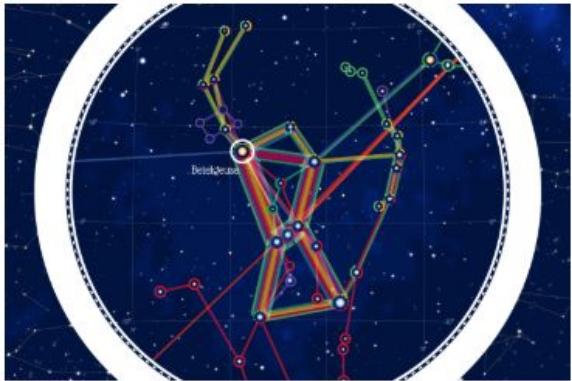


The Rhythm of Food Analyzing food seasonality

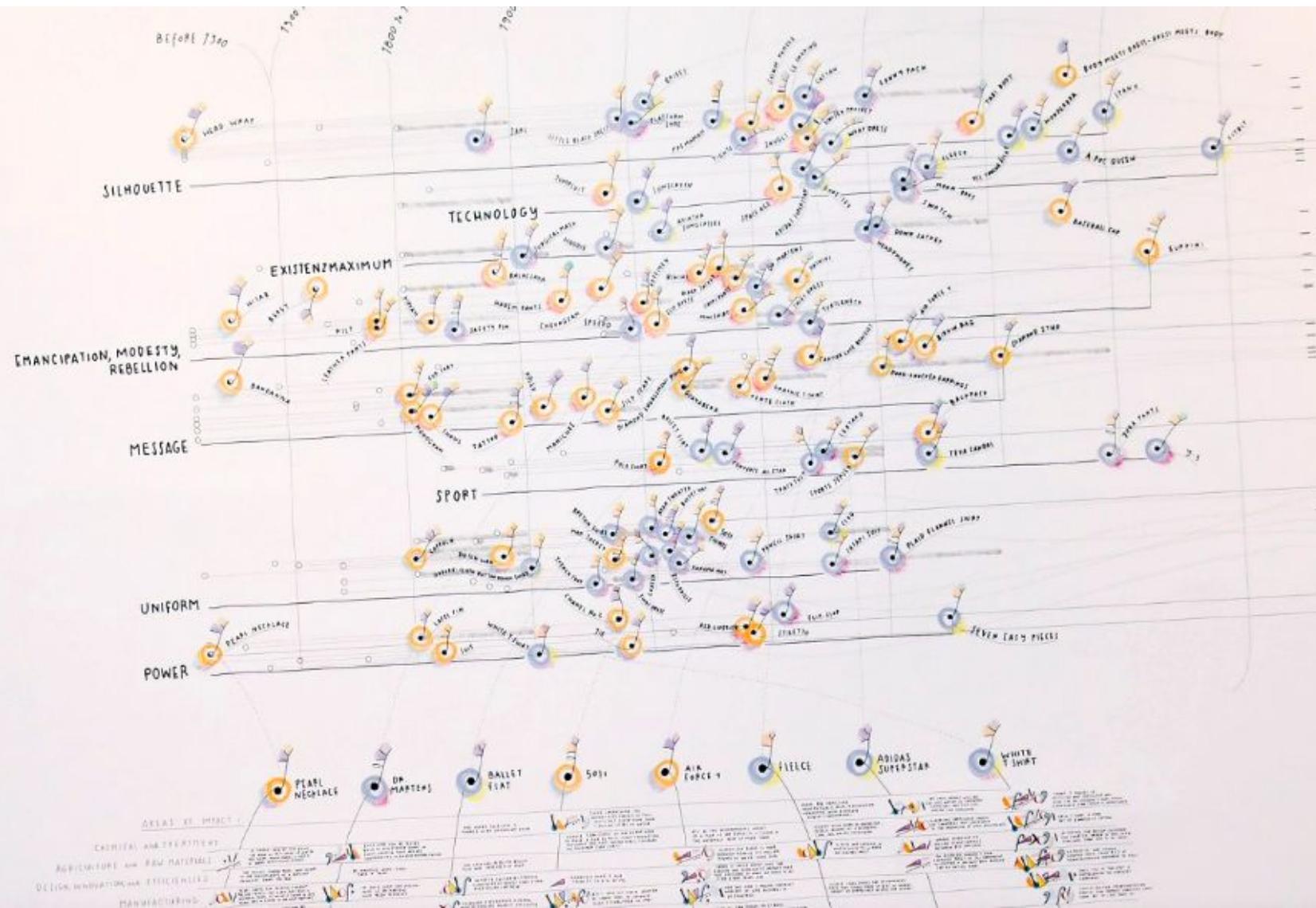


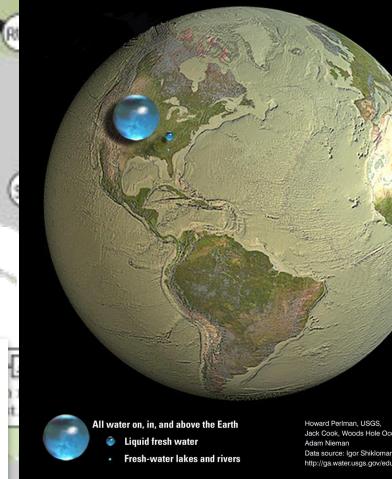
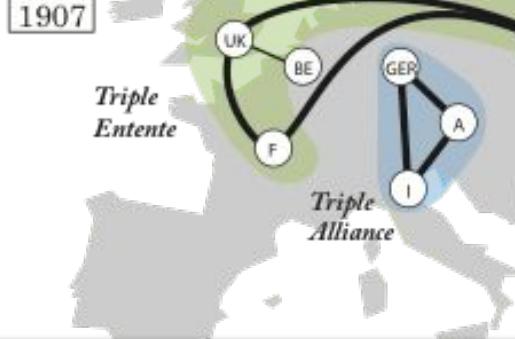
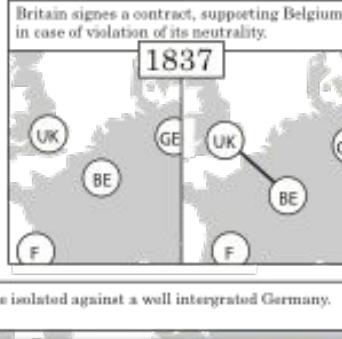
OECD Better Life Index How's life?

Nadieh Bremer



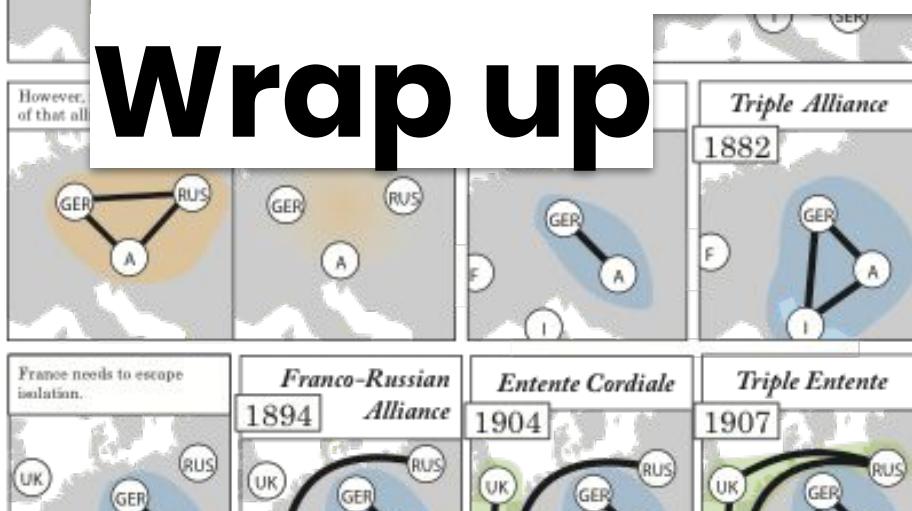
Georgia Lupi





Data-Driven Storytelling

Wrap up



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THE UNIVERSITY
of EDINBURGH

Benjamin Bach

June 2020

<http://benjbach.me>
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Summary

- Storytelling for communication and engagement
- Form follows messages
- Story structures to create stories
- Know your audience
- Choose your storytelling genre

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Book recommendations

