Visualization

2 April 2024

Data scientists use plots for both *exploratory* and *explanatory* purposes – they are useful for understanding data in preparation for further analysis and in presenting data to a general audience.

Visual explanations

Our ideas of what makes an effective – and honest – visualization build on centuries of work to communicate the information contained in data.

CHARTS THAT CHANGED THE WORLD

esri

Products   Industries   Support & Services   Stories   About

ArcGIS Pro

Something in the water:
the mythology of Snow's
map of cholera

Mapping   Kenneth Field

December 03, 2020

Subscribe Latest Issues

SCIENTIFIC AMERICAN

Sign In | Newsletters

www.scientificamerican.com/article/how-florence-nightingale-changed-data-vi...

DRAFT DIAGRAM
Surviving drafts of Nightingale's diagrams give a rare peek into her team's creative process. Drawn by government clerks, these drafts show how the team refined original ideas to improve information design. They also reveal that the mechanical precision of the final lithographs was not present in the original references. This early sketch gives a preview of one of Nightingale's most famous graphics (*below*), which reveals how army deaths from preventable diseases (*blue*) outnumbered hospital deaths from wounds (*red*). Credit: British Library Imaging Services

How Florence Nightingale Changed Data Visualization Forever
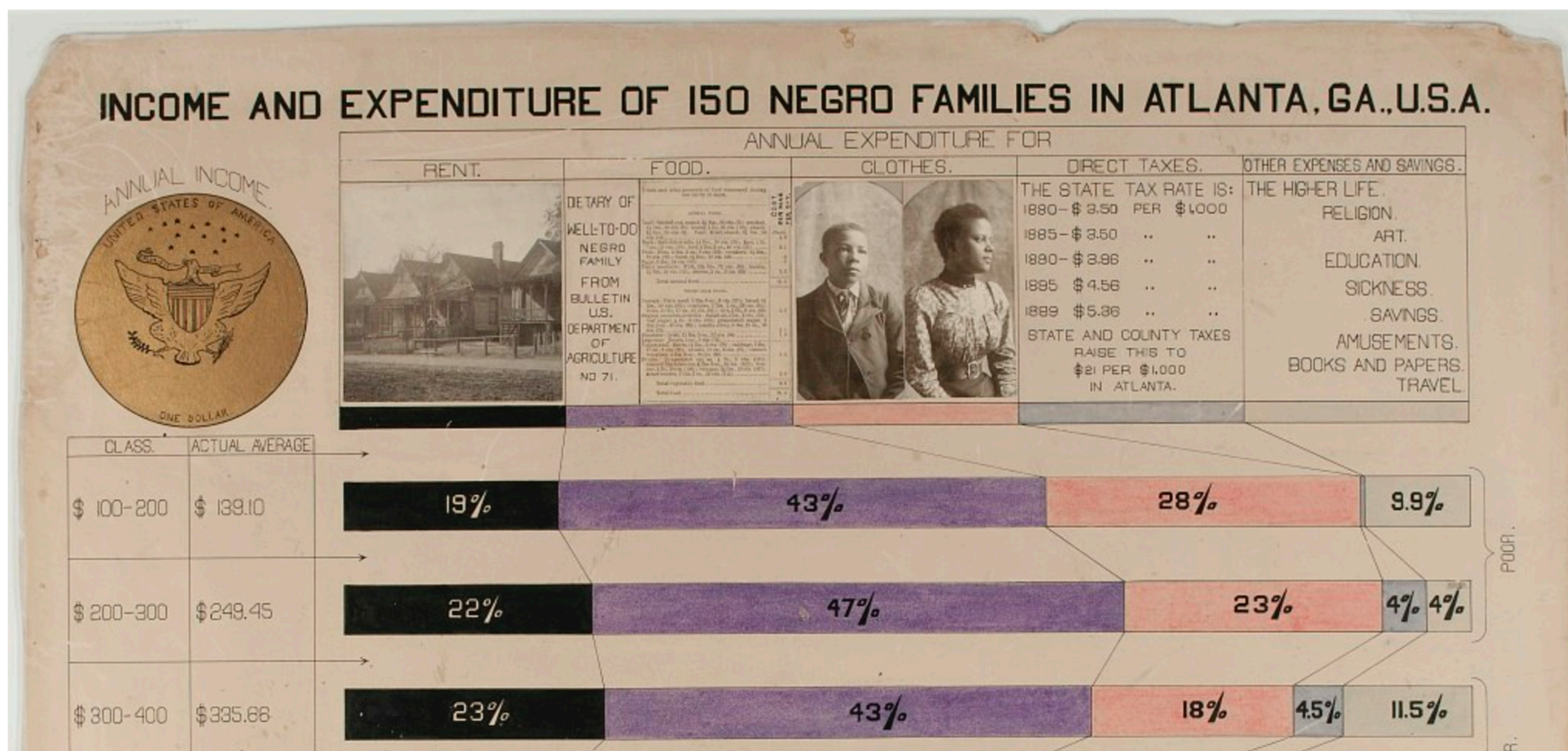
August 1, 2022

The PUBLIC DOMAIN REVIEW

COLLECTIONS / IMAGES

W. E. B. Du Bois' Hand-Drawn Infographics of African-American Life (1900)

Search Wikipedia   Search

The Kallikak Family

文A **5 languages** ∨

Contents [hide]

Article   Talk   Read   Edit   View history   Tools ∨

From Wikipedia, the free encyclopedia

For the television series, see The Kallikaks*.*

The Kallikak Family: A Study in the Heredity of Feeble-Mindedness was a 1912 book by the American psychologist and eugenicist Henry H. Goddard, dedicated to his patron Samuel Simeon Fels.[1] Supposedly an extended case study of Goddard's for the inheritance of "feeble-mindedness", a general category referring to a variety of mental disabilities including intellectual disability, learning disabilities, and mental illness, the book is noted for factual inaccuracies that render its conclusions invalid. Goddard believed that a variety of mental traits were hereditary and that society should limit reproduction by people possessing these traits.

The name Kallikak is a pseudonym used as a family name throughout the book. Goddard coined the name from the Greek words καλός (*kalos*) meaning good and κακός (*kakos*) meaning bad.[2]

DEBORAH AT THE SEWING MACHINE.

Goddard's book traced the genealogy of "Deborah Kallikak", a woman in his institution.

Summary   [edit]

The book begins by discussing the case of "Deborah Kallikak" (real name Emma Wolverton, 1889–1978),[3] a woman in Goddard's institution, the New Jersey Home for the Education and Care of Feebleminded Children (now Vineland Training School). In the course of investigating her genealogy, Goddard claims to have discovered that her family tree bore a curious and surprising moral tale.

The book follows the genealogy of Martin Kallikak, Deborah's great-great-great grandfather, a Revolutionary War hero married to a Quaker woman. On his way back from battle the normally morally upright Martin dallied one time with a "feeble-minded" barmaid. He impregnated her and then abandoned her. The young Martin soon reformed and went on with his upright life, becoming a respected New England citizen and father of a large family of prosperous individuals. All of the children that came from this relationship were "wholesome" and had no signs of developmental disabilities.[4]

But according to Goddard, a child was born by the dalliance with "the nameless feeble-minded girl". This single child, a male, called Martin Kallikak Jr. in the book (real name John Wolverton, 1776–1861[3]), went on to father more children, who fathered their own children, and on and on down the generations. And so with the Kallikaks, Goddard claims to have discovered, one has as close as one could imagine an experiment in the hereditability of intelligence, moral ability, and criminality.

On the "feeble-minded" side of the Kallikak family, descended from the abandoned single-parent barmaid, the children wound up poor, mentally ill, delinquent, and intellectually disabled. Deborah was, in Goddard's assessment, "feeble-minded": a catch-all early 20th century term to describe various forms of intellectual or

Chart I.
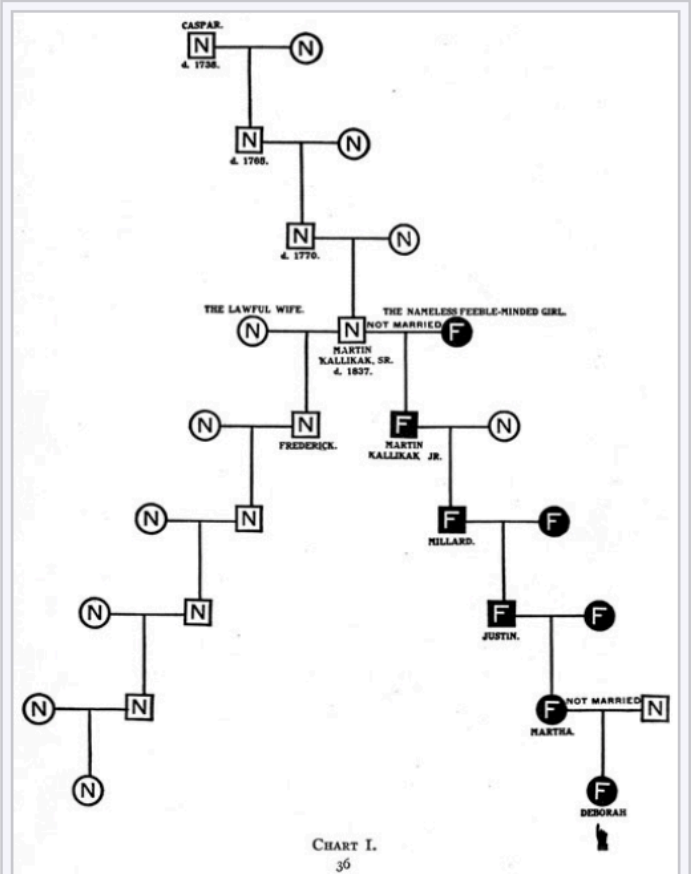
Goddard's Kallikak pedigree

Climate stripes

Representing global temperature rise over two centuries

What are the stripes?

No words. No numbers. No graphs. Just a series of vertical coloured bars, showing the progressive heating of our planet in a single, striking image.

The climate stripes were created by Professor Ed Hawkins at the University of Reading in 2018.

They show clearly and vividly how global average temperatures have risen over nearly two centuries,
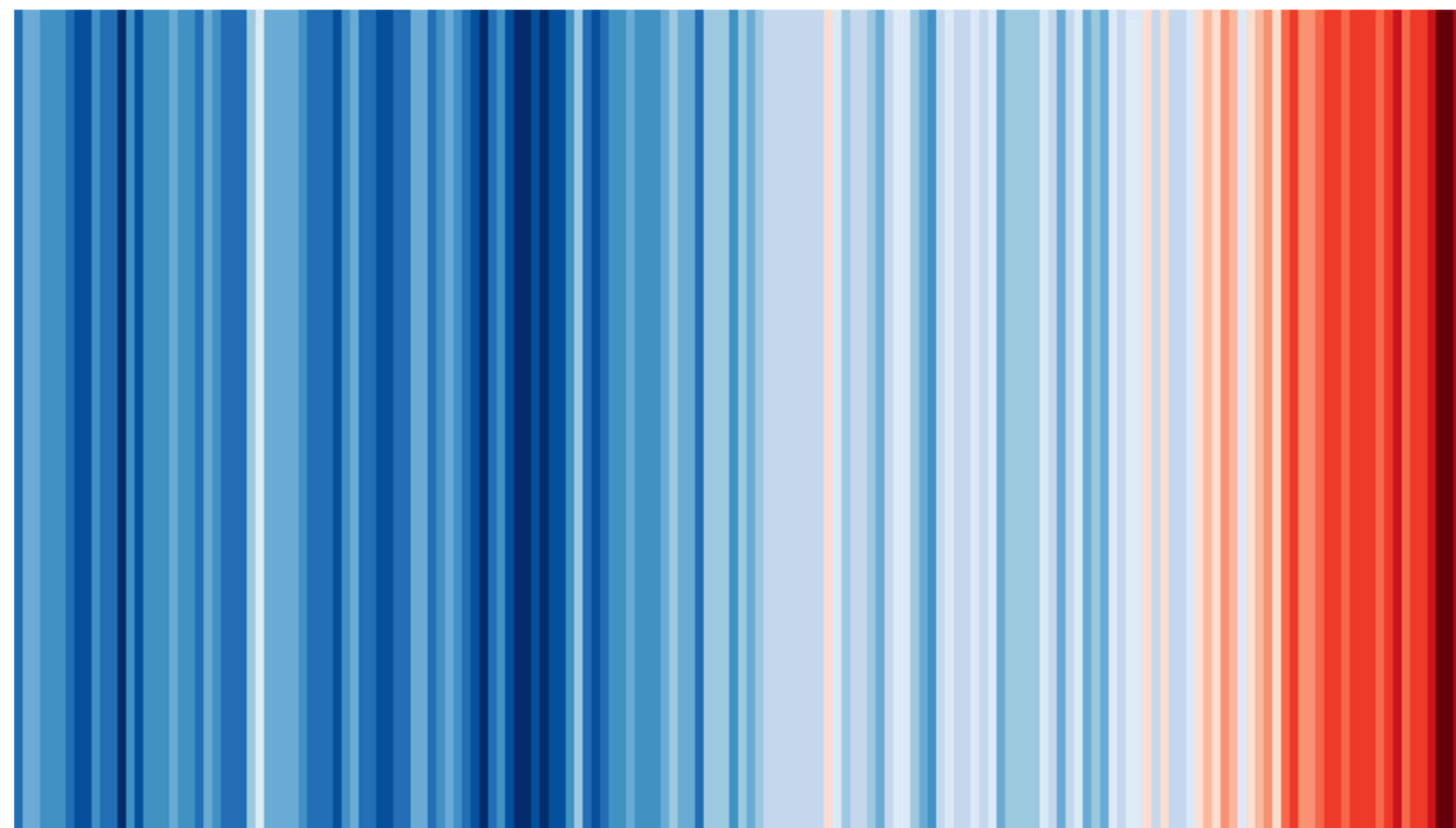
How do they work?

Start the conversation

A few more

WHO Coronavirus (COVID-19) Dashboard

Search by Country, Territory, or Area

Overview Measures Table View Data More Resources

Global Situation

Daily | **Weekly**

771,679,618
confirmed cases

40m

20m

0

Jan 1 2020 | Jan 1 2021 | Jan 1 2022 | Jan 1 2023

6,977,023
deaths

100k

50k

0
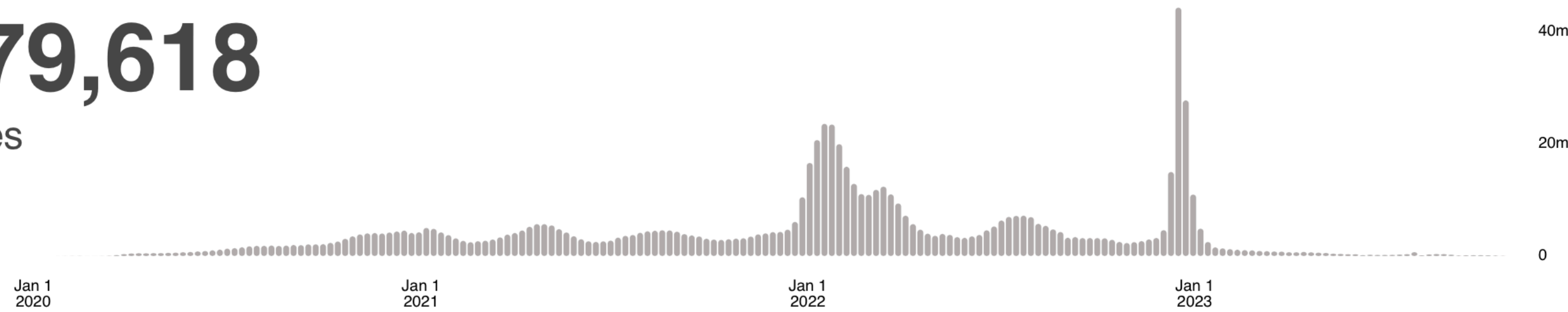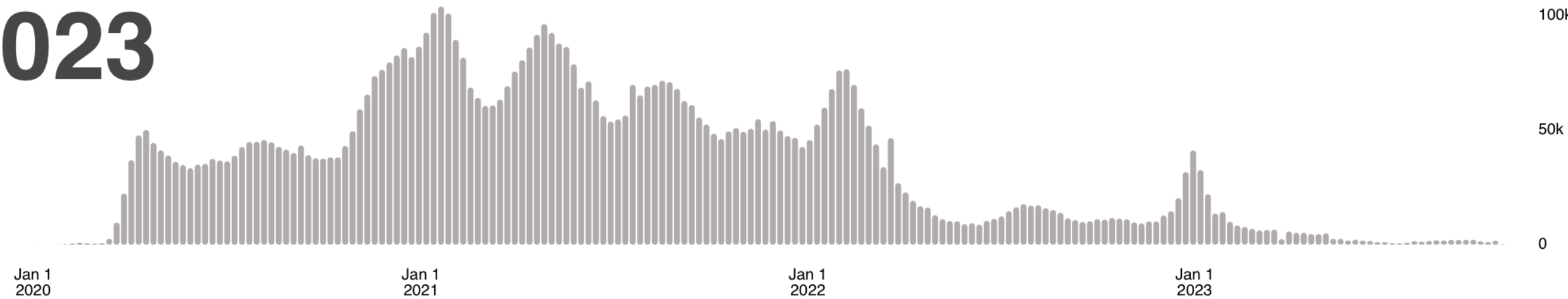
Source: World Health Organization
Data may be incomplete for the current day or week.

Jan 1 2020 | Jan 1 2021 | Jan 1 2022 | Jan 1 2023

Situation by WHO Region

Daily | **Weekly** | **Cases** | Deaths | Count

Europe
276,780,884
confirmed

40m

Western Pacific
207,412,892
confirmed

Americas
193,320,888

Who's ahead in each state

Leading candidate's forecasted chance of winning and margin of victory in each state. Dots closer to the line represent tighter races, and wider bars mean more uncertainty about the outcome.

Average ●

80% of outcomes fall in this range

SORT BY MARGIN   SORT BY STATE

Margin of victory

★ *Special election*
ⓘⓘ *Incumbent candidate/controlling party*

			+75	+50	+25		+25	+50	+75	
ⓘ NV	Laxalt	Cortez Masto			●					51 in 100
⬤ PA	Oz	Fetterman			●					57 in 100
ⓘ GA	Walker	Warnock			●					63 in 100
ⓘ AZ	Masters	Kelly			●					66 in 100
ⓘ NH	Bolduc	Hassan			●					72 in 100
⬤ NC	Budd	Beasley			●					82 in 100
ⓘ WI	Johnson	Barnes			●					81 in 100
⬤ OH	Vance	Ryan			●					87 in 100
ⓘ CO	O'Dea	Bennet					●			91 in 100
ⓘ WA	Smiley	Murray					●			92 in 100
ⓘ FL	Rubio	Demings			●					95 in 100
ⓘ IA	Grassley	Franken			●					97 in 100
ⓘ UT	Lee	McMullin			●					96 in 100
⬤ MO	Schmitt	Busch Valentine			●					>99 in 100
ⓘ CT	Levy	Blumenthal					●			>99 in 100
ⓘ IN	Young	McDermott			●					99 in 100
ⓘ IL	Salvi	Duckworth					●			>99 in 100

PICK A MODEL

Disney   Screenplay Dialogue,   **2,000 Screenplays: Dialogue**   Only High-Grossing Films: Ranked in
          Broken-down by Gender   **Broken-down by Gender**   the Top 2,500 by US Box Office*

100% of Words   90%   75%   60%   50/50   60%   100% of Words
are Male   Gender Split   are Female

All Genres | Action | Drama | Comedy | Horror   Search [Find a Film...]

Each screenplay has at least 90% of its lines categorized by gender. If you notice a missing character from the analysis, their lines may be in the remaining 10%. If a character was cut from the film but is present in the screenplay, we inferred his or her gender based on the script's pronouns.

Across thousands of films in our dataset, it was hard to find a subset that didn't over-index male. Even romantic comedies have dialogue that is, on average, 58% male. For example, *Pretty Woman* and *10 Things I Hate About You* both have lead women (i.e., characters with the most amount of dialogue). But the overall dialogue for both films is 52% male, due to the number of male supporting characters.

How many screenplays have women as lead characters?

In 22% of our films, actresses had the most amount of dialogue (i.e., they

Exaggerating China's military spending, St. Louis Fed breaks all statistical rules with misleading graph

The Federal Reserve Bank of St. Louis published a jaw-droppingly misleading graph that portrays China as spending more on its military than the US. In reality, the Pentagon's budget is roughly three times larger.

By **Ben Norton** Published 2023-01-23
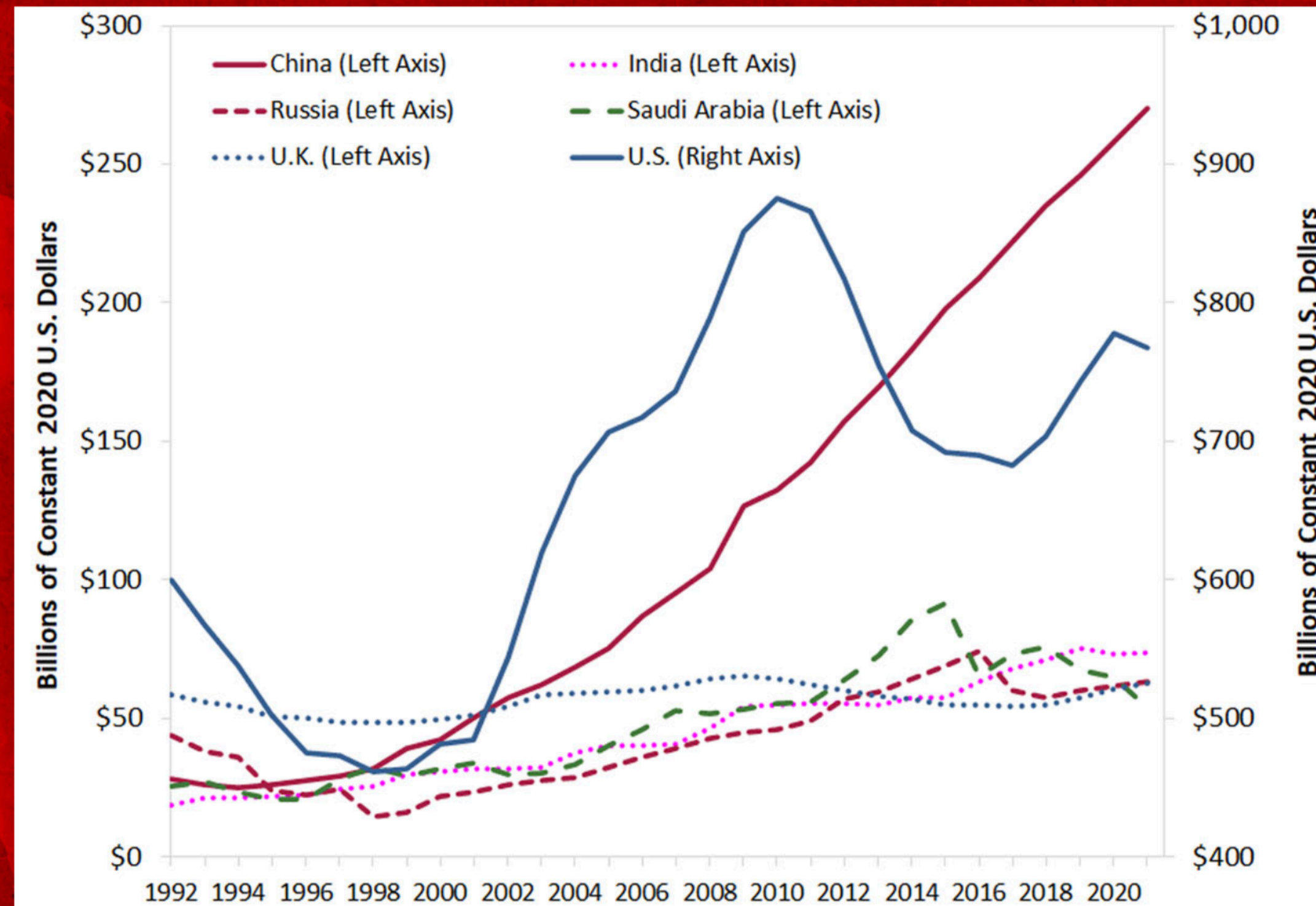
Visualization in Python

As we've seen, the **datascience** module provides several functions to generate different kinds of plots – like the ones we've talked about – from the data in tables.

These functions are built on top of the popular **matplotlib** module.

Acknowledgments

This class incorporates material from:

Florence Nightingale

John Snow, *On the Mode of Communication of Cholera*, 1855

Edward Tufte, *Visual Explanations*, 1997