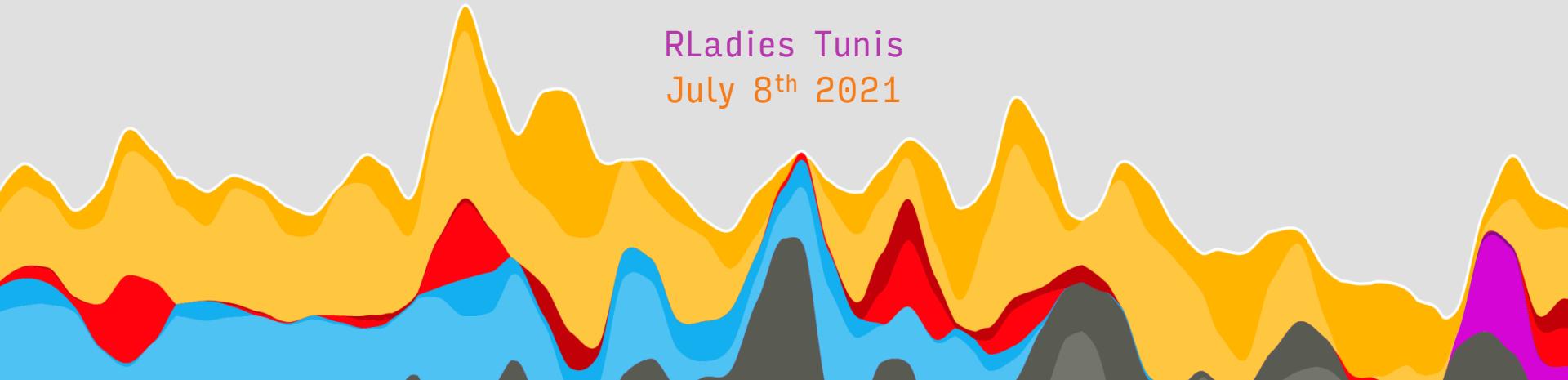


My Favorite ggplot2 Extension Packages

Dr. Cédric Scherer

RLadies Tunis

July 8th 2021



Cédric Scherer

Freelance Data Visualization Specialist
Computational Ecologist at IZW Berlin



Consulting



Coaching



Coding



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Illustration by Allison Horst



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ggplot2: Build a data MASTERPIECE



Illustration by Allison Horst



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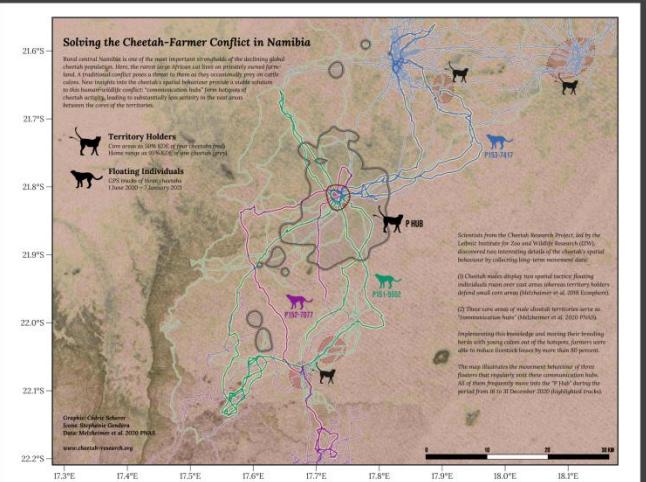
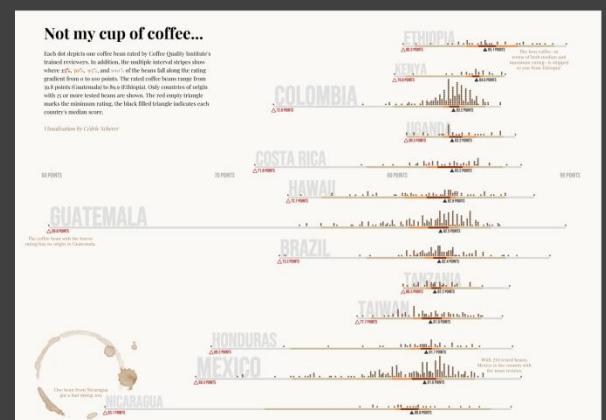
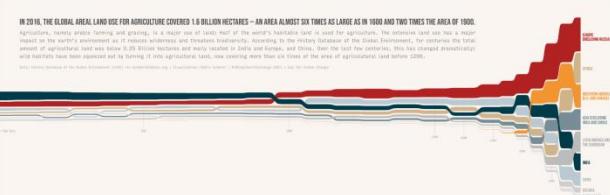
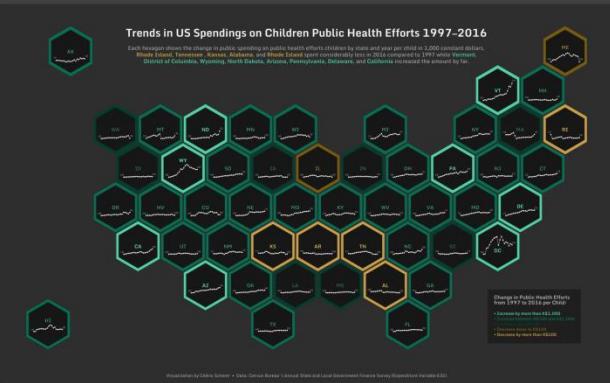
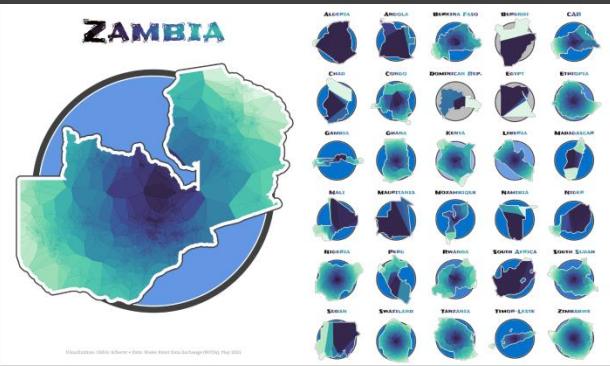
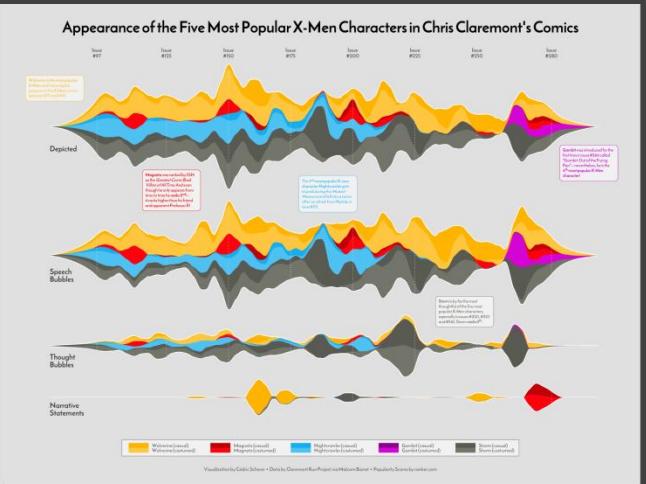
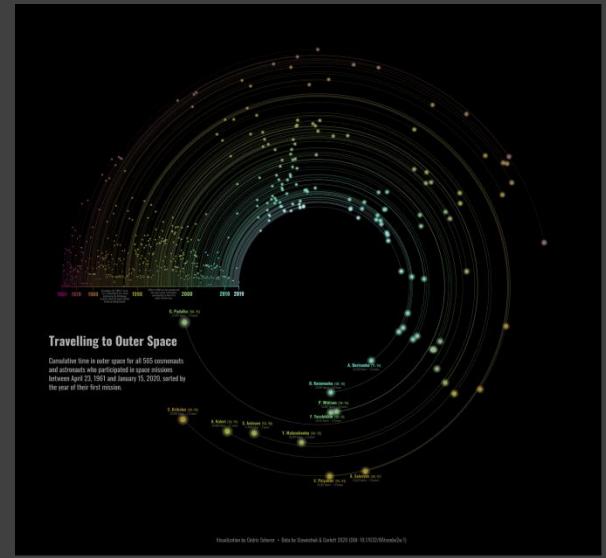
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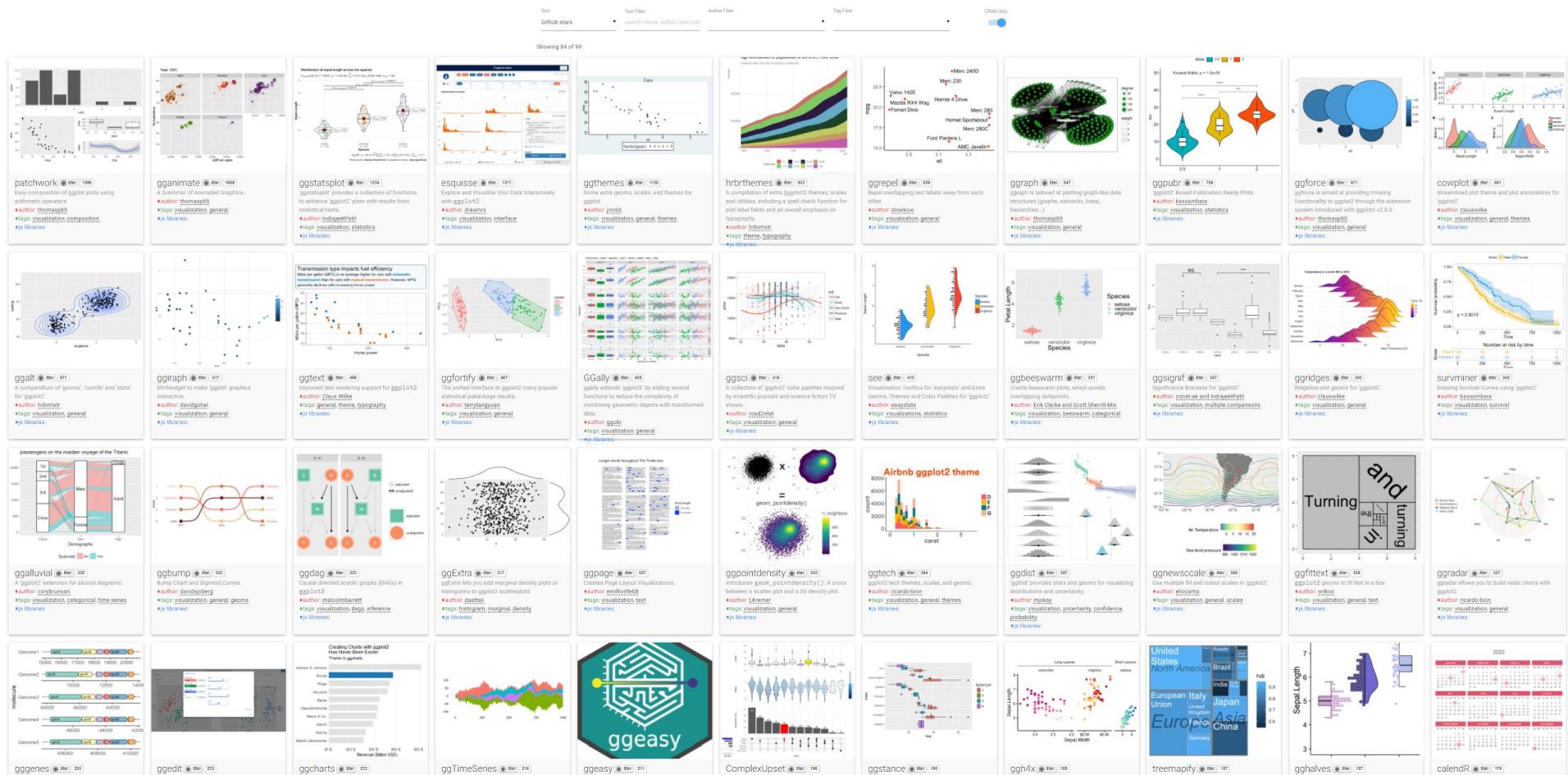
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99 registered extensions available to explore



exts.ggplot2.tidyverse.org/gallery



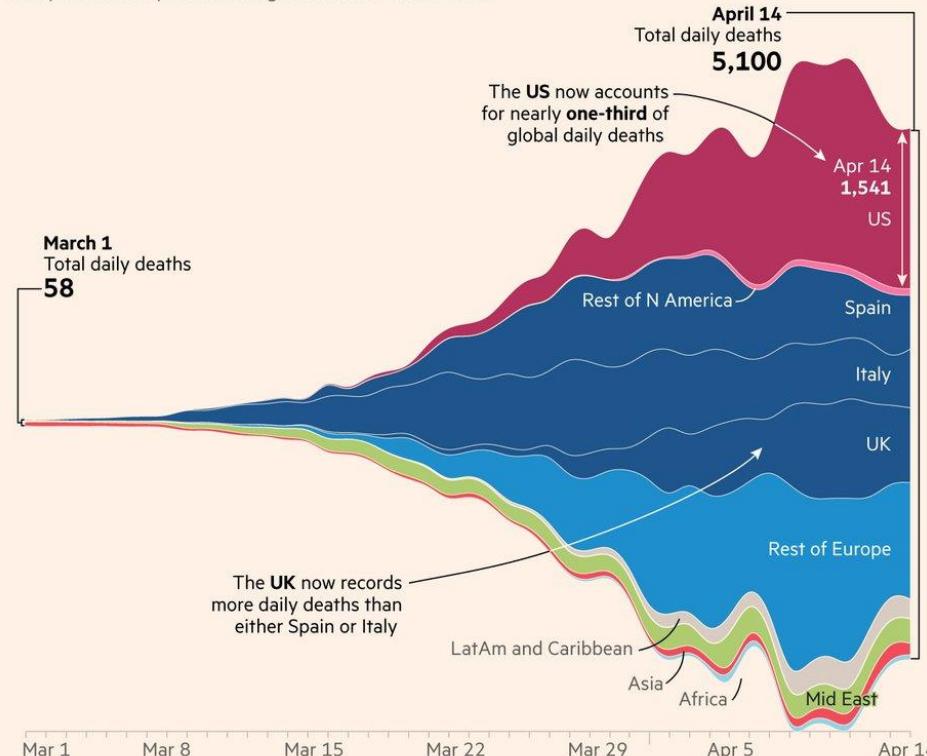
Chart Types

{ggstream}

Create Popular Streamgraph

Focus of Covid-19 deaths has switched from Asia to Europe – and now the US

Daily deaths of patients diagnosed with coronavirus



FT graphic: Steven Bernard / @sdbernard
Source: FT analysis of ECDC
© FT



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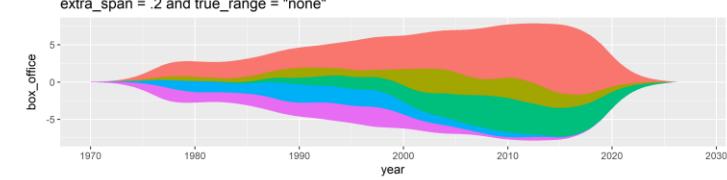
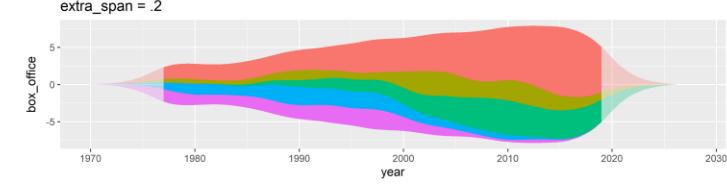
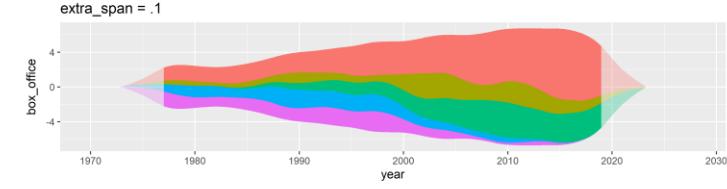
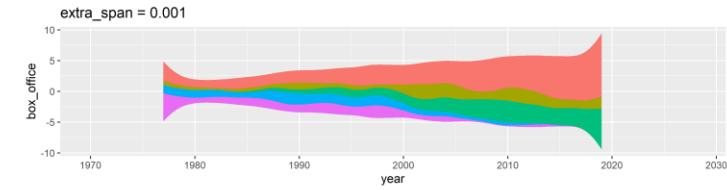
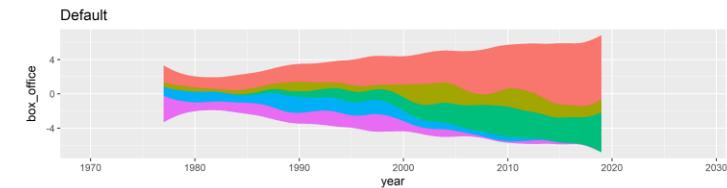
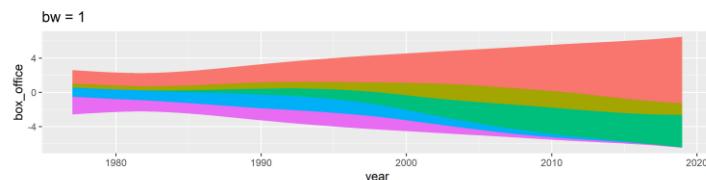
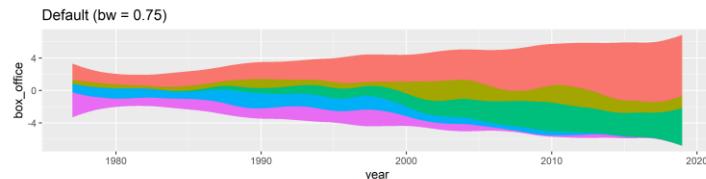
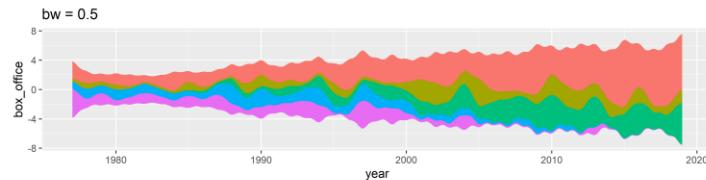
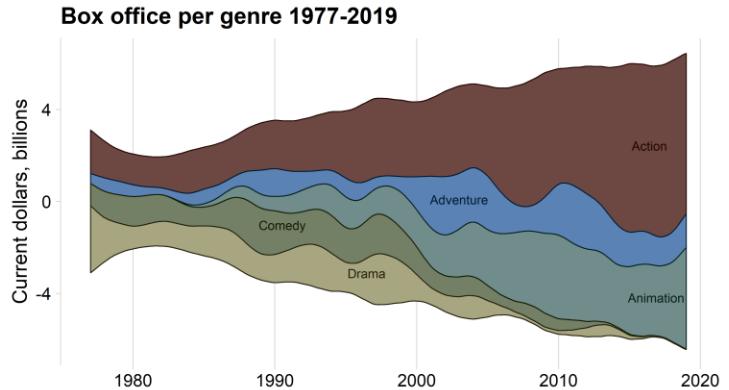
David Sjoberg
davidsjoberg

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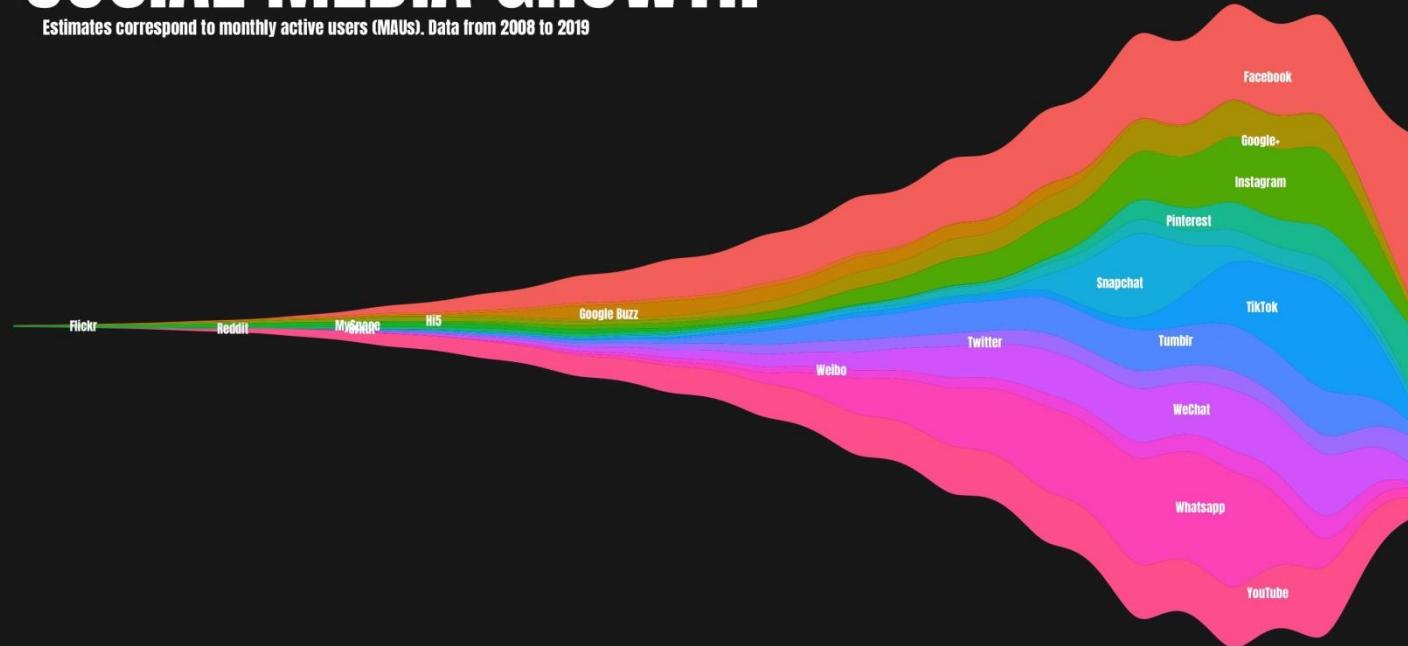
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SOCIAL MEDIA GROWTH

Estimates correspond to monthly active users (MAUs). Data from 2008 to 2019



Paula L. Casado (@elartedel dato)
Data: Our world in data | #30DayChartChallenge | Day 20: Upwards

Paula Casado, Contribution to #30DayChartChallenge, Day 20: Upwards



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NBA 2K

Average and peak number of players at the same time

NBA 2K17

NBA 2K18

NBA 2K19

NBA 2K20

NBA 2K21

average peak

Source: SteamCharts
Graphic: Georgios Karamanis

2017

2018

2019

2020

2021

125K
100K
75K
50K
25K
0
-25K
-50K
-75K
-100K
-125K

Georgios Karamanis, Contribution to #TidyTuesday 2021/11



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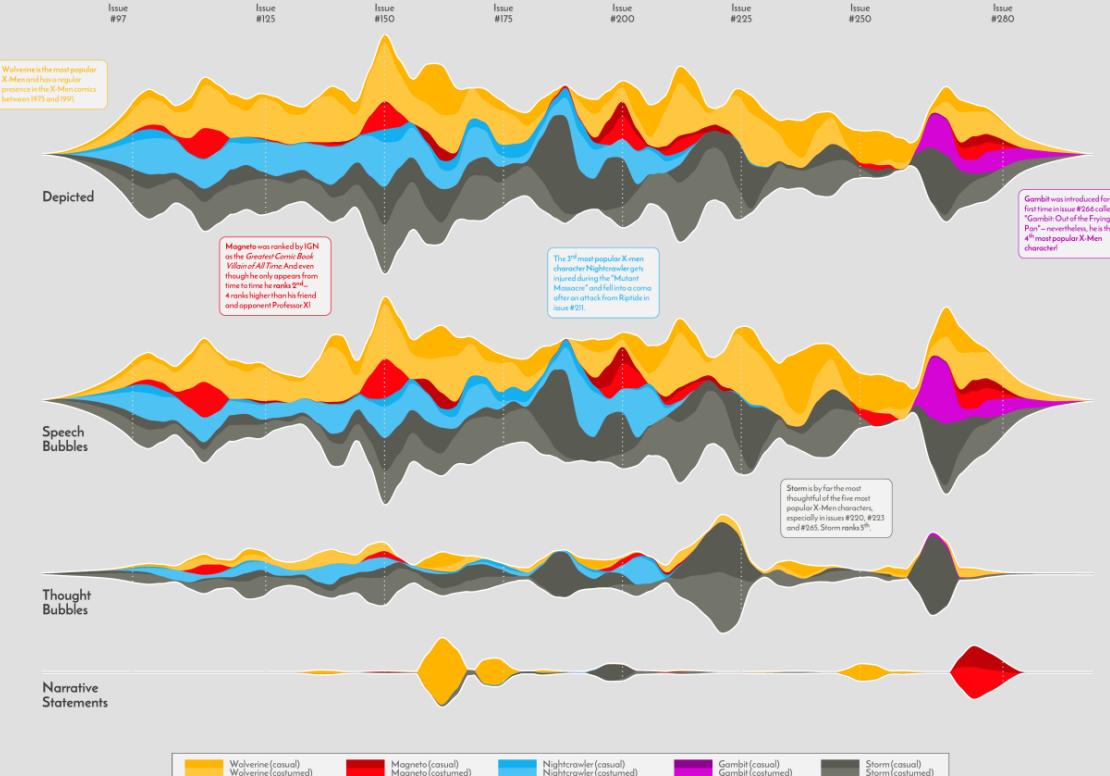


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Appearance of the Five Most Popular X-Men Characters in Chris Claremont's **X-MEN** Comics



Visualization by Cédric Scherer • Data by Claremont Run Project via Malcolm Barrett • Popularity Scores by ranker.com • Logo by Comicraft

My Contribution to #TidyTuesday 2020/27



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{ggsankey}

Create Sankey and Other Flow Charts



David Sjoberg
davidsjoberg

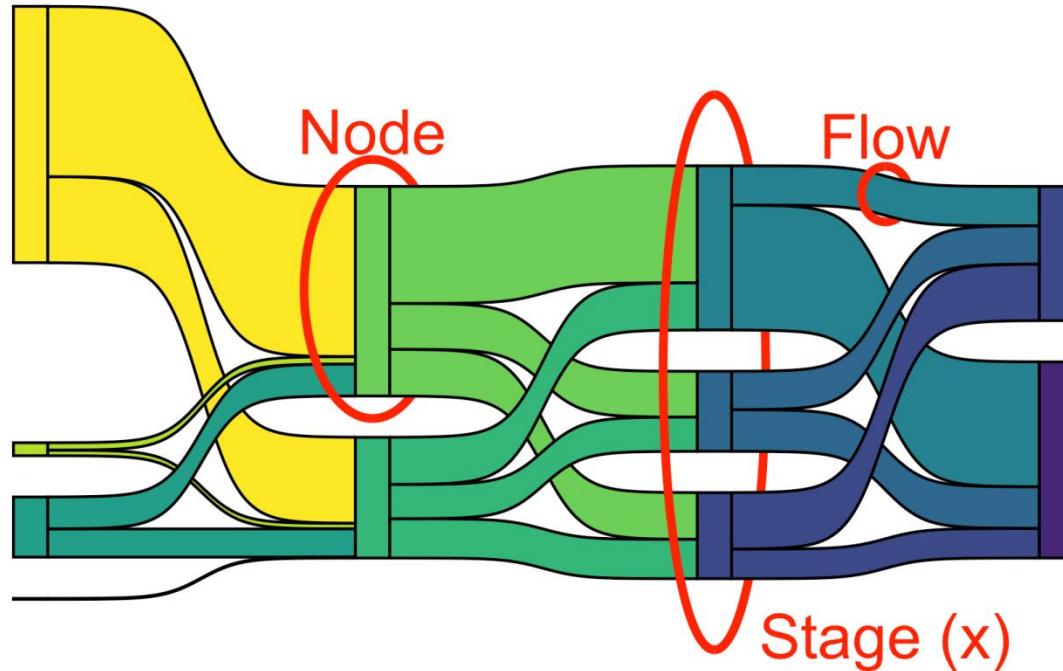
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Principal aesthetics



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David Sjoberg
davidsjoberg

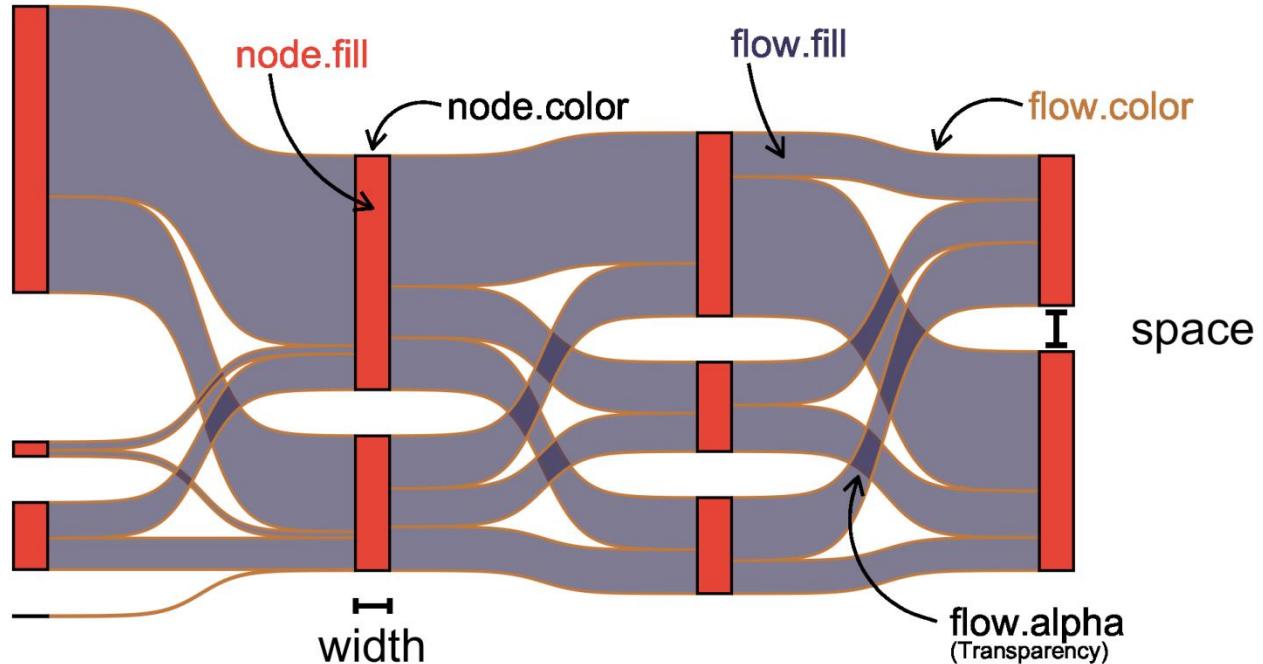
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Control the geometries





David Sjoberg
davidsjoberg

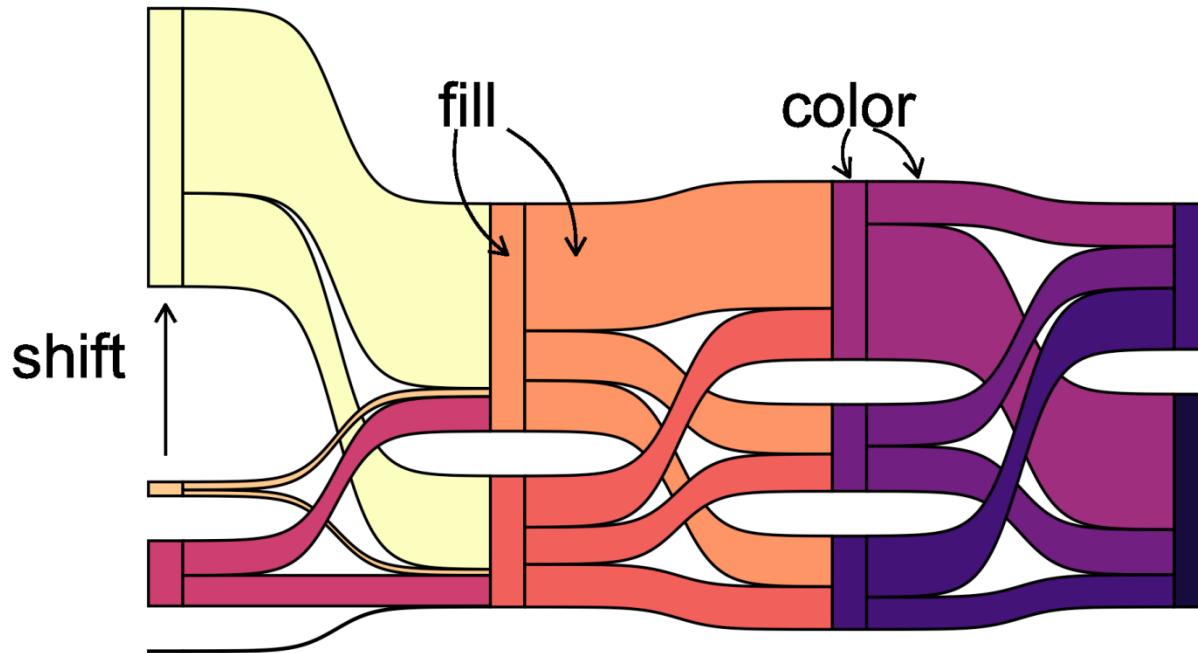
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Additional aesthetics

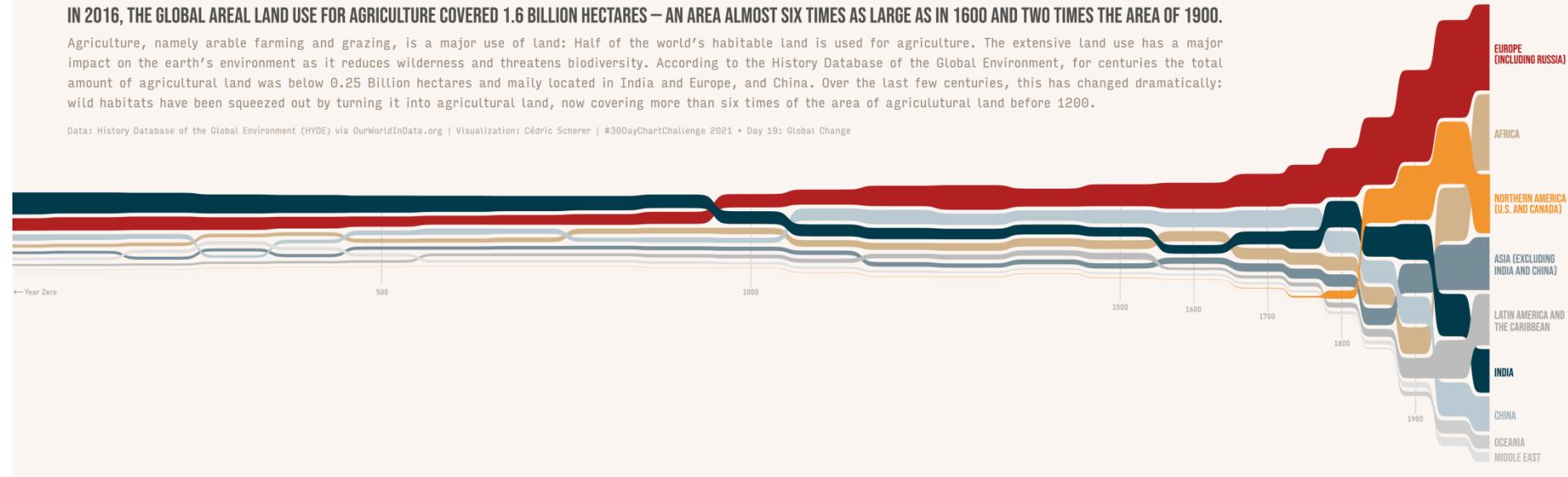


geom_sankey_bump()

IN 2016, THE GLOBAL AREAL LAND USE FOR AGRICULTURE COVERED 1.6 BILLION HECTARES – AN AREA ALMOST SIX TIMES AS LARGE AS IN 1600 AND TWO TIMES THE AREA OF 1900.

Agriculture, namely arable farming and grazing, is a major use of land: Half of the world's habitable land is used for agriculture. The extensive land use has a major impact on the earth's environment as it reduces wilderness and threatens biodiversity. According to the History Database of the Global Environment, for centuries the total amount of agricultural land was below 0.25 Billion hectares and mainly located in India and Europe, and China. Over the last few centuries, this has changed dramatically: wild habitats have been squeezed out by turning it into agricultural land, now covering more than six times of the area of agricultural land before 1200.

Data: History Database of the Global Environment (HYDE) via OurWorldInData.org | Visualization: Cédric Scherer | #30DayChartChallenge 2021 • Day 19: Global Change



My Contribution to #30DayChartChallenge 2021, Day 19: Global Change



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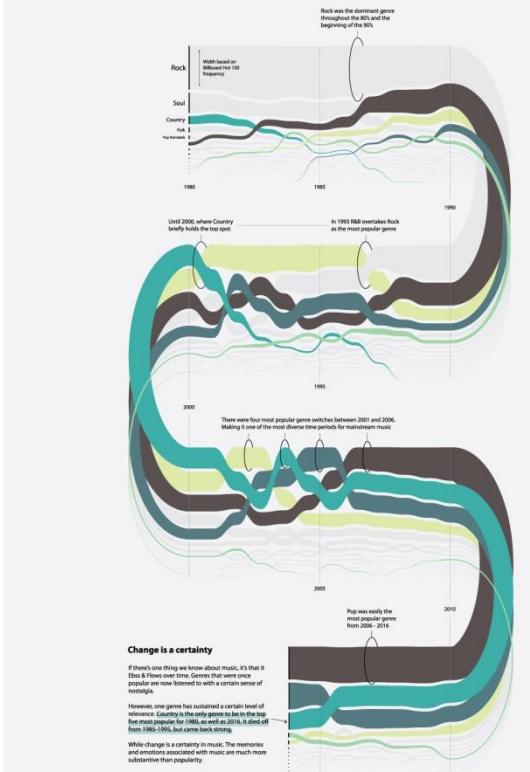


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Ebb & Flow

Music genre popularity
over time (1980 - 2016)

- Pop
- Hip-Hop
- Country
- EDM
- R&B



Ebb & Flow by Robert Janezic



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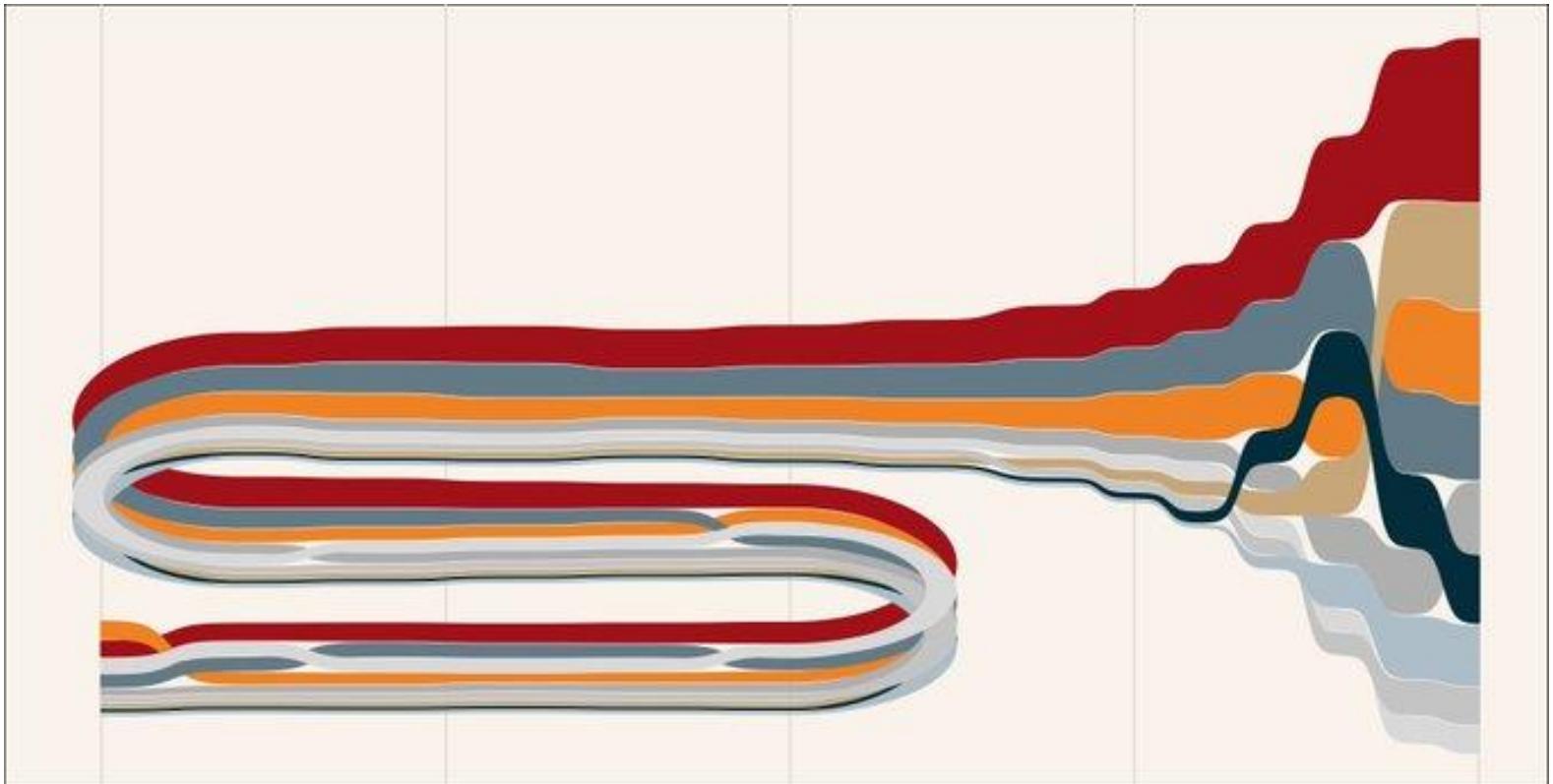
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Trial Trumpet Plot by David Sjöberg



{gggibbous}

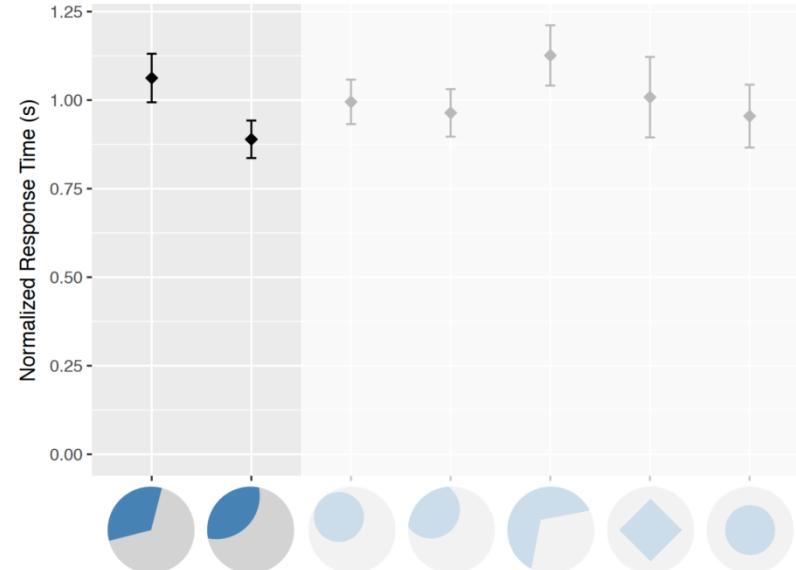
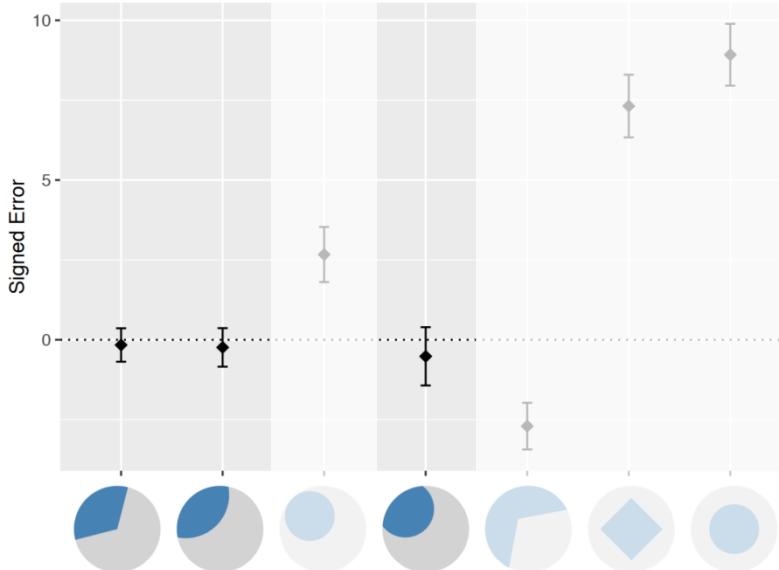
Create Moon Charts

cran.r-project.org/web/packages/gggibbous



Circular Part-to-Whole Charts Using the Area Visual Cue

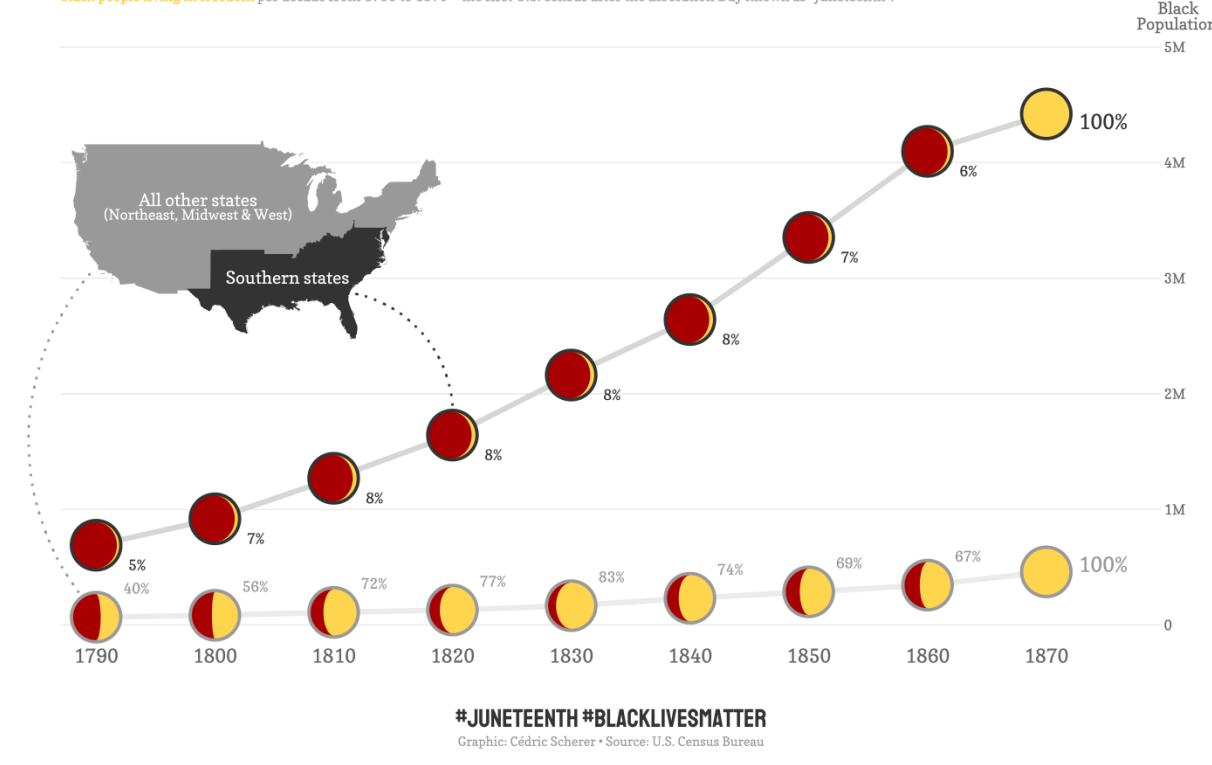
Robert Kosara
Tableau Research



doi.org/10.2312/evs.20191163

AN ECONOMY BUILT ON SLAVERY—A FUTURE BUILD ON FREEDOM?

By 1860, property owners in the south of North America began establishing plantation farms for cash crops like tobacco, cotton, and sugar cane—enterprises that required increasing amounts of labor. To meet the need, wealthy planters became slave traders and imported ever more individuals to the colonies, the vast majority from West Africa. While the “Emancipation Proclamation” was made law as of 1863, slave owners in the South, namely Texas, still maintained slavery until June 19th 1865 when Union soldiers were able to enforce the law abolishing slavery in the region. The graphic below shows the share of **black people in slavery**, most of them enslaved in the Southern states, and **black people living in freedom** per decade from 1790 to 1870—the first U.S. census after the Liberation Day known as “Juneteenth”.



My Contribution to #TidyTuesday 2020/25



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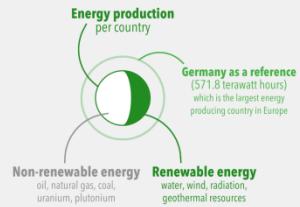
@cedscherer

How European countries generated electricity in 2018

Germany is the largest energy producing country in Europe. It generates the most renewable and conventional thermal energy, representing 31% and 56% of its overall production respectively. **France** is the second largest energy European producer and by far the largest nuclear energy provider; 71% of its production is based on nuclear fission to generate heat.

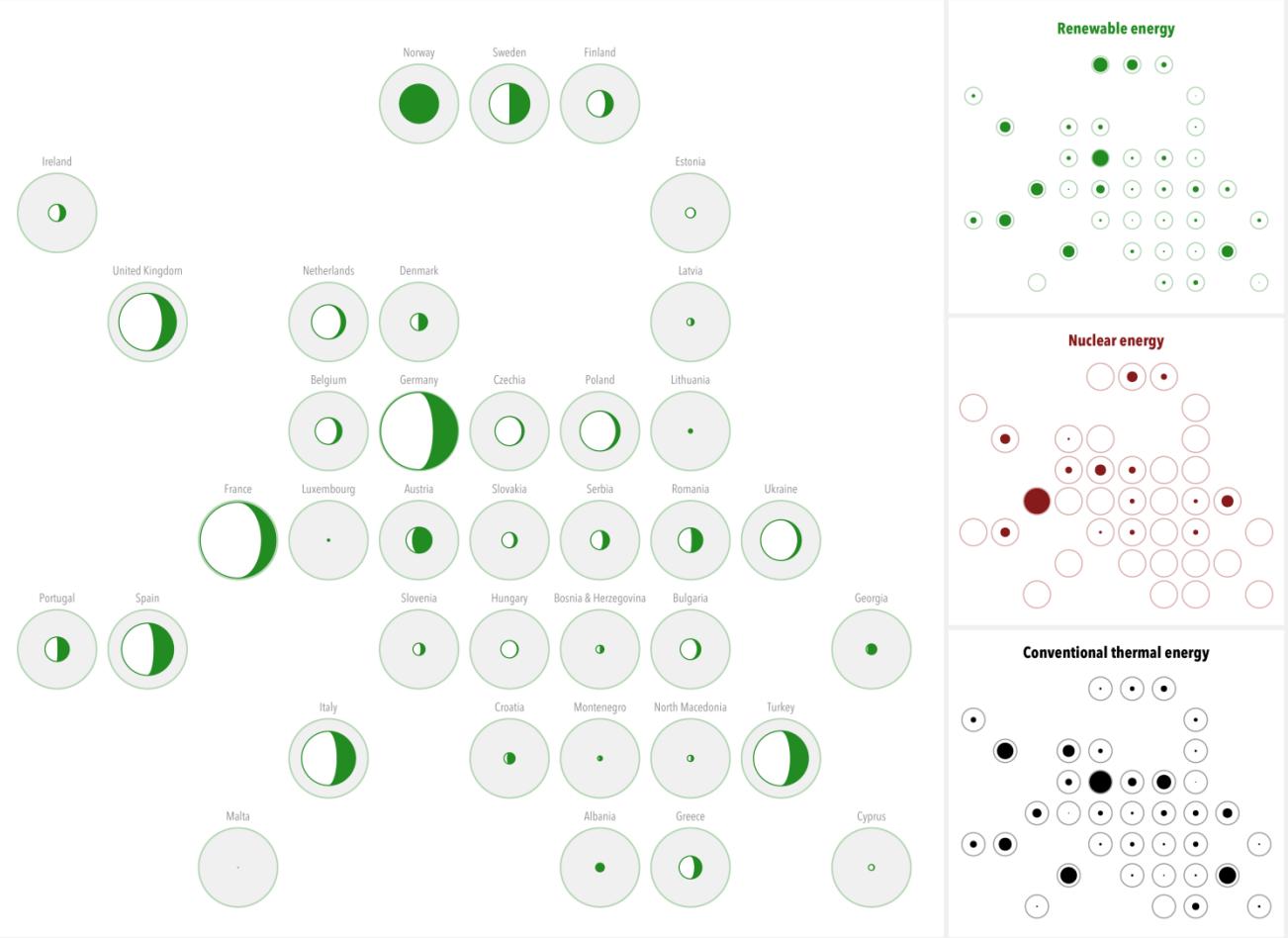


Renewable energy is energy that comes from resources that are naturally replenished such as sunlight, wind, water, and geothermal heat. Unlike fossil fuels, such as oil, natural gas and coal, or nuclear power sources such as uranium and plutonium, renewable energy regenerates naturally in a short period of time.

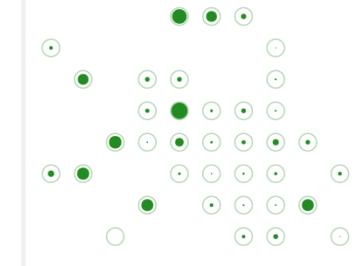


Norway had an electricity production almost entirely made up of renewable energy (98%). This makes Norway the second largest producer of this energy type in Europe. Interestingly, most of the renewable energy is produced by hydro power that take up 95% and only 3% by wind. In contrast, twelve European countries were reported to produce less than 20% of their energy with renewable resources: **Malta** (0%), **Hungary** (5%), **Estonia** (6%), **Czechia** (7%), **Cyprus** (9%), **Ukraine** (9%), **Poland** (10%), **Netherlands** (13%), **Bulgaria** (17%), **Belgium** (18%), **Slovakia** (19%), and **France** (19%).

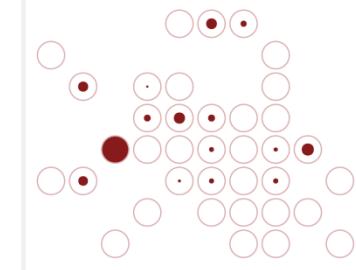
Note: Energy production is mapped to the area of the circles.
Visualization by Cédric Scherer • Data by Eurostat



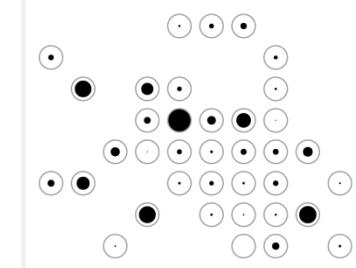
Renewable energy



Nuclear energy



Conventional thermal energy



My Contribution to #TidyTuesday 2020/32



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{ggdist}

Visualize Distributions and Uncertainty



Matthew Kay

mjskay

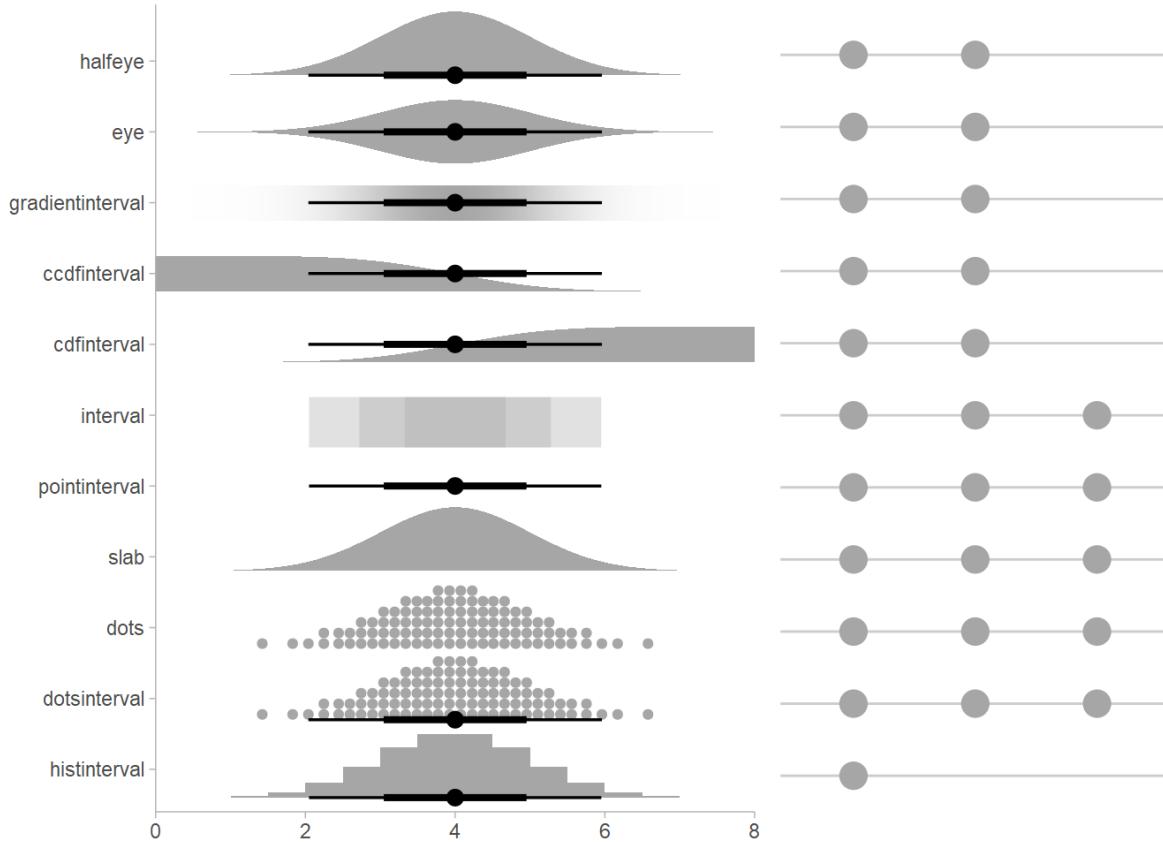
Unfollow

Assistant Professor at Northwestern;
works on human-computer interaction,
information visualization,
communicating uncertainty

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📍 Chicago
✉️ mjskay@northwestern.edu
🔗 http://www.mjskay.com/
🐦 @mjskay

The stat_slabinterval / geom_slabinterval family



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Not my cup of coffee...

Each dot depicts one coffee bean rated by Coffee Quality Institute's trained reviewers. In addition, the multiple interval stripes show where 25%, 50%, 95%, and 100% of the beans fall along the rating gradient from 0 to 100 points. The rated coffee beans range from 59.8 points (Guatemala) to 89.9 (Ethiopia). Only countries of origin with 25 or more tested beans are shown. The red empty triangle marks the minimum rating, the black filled triangle indicates each country's median score.

Visualization by Cédric Scherer

Coffee stain © paperwerk.

60 POINTS

70 POINTS

GUATEMALA

△ 59.8 POINTS
The coffee bean with the lowest rating has its origin in Guatemala.



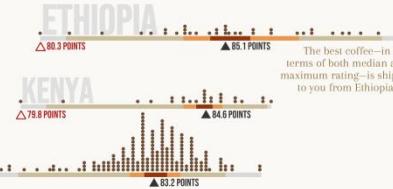
One bean from Nicaragua got a bad rating, too.

NICARAGUA

△ 63.1 POINTS

COLOMBIA

△ 72.8 POINTS



The best coffee—in terms of both median and maximum rating—is shipped to you from Ethiopia!

COSTA RICA

△ 71.8 POINTS

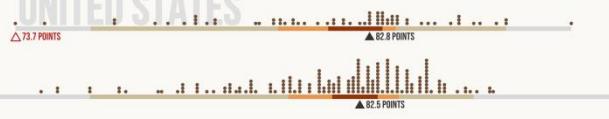


80 POINTS

90 POINTS

UNITED STATES

△ 73.7 POINTS



BRAZIL

△ 73.2 POINTS



80 POINTS

90 POINTS

TANZANIA

△ 80.3 POINTS

△ 82.2 POINTS

80 POINTS

90 POINTS

TAIWAN

△ 77.7 POINTS

△ 81.9 POINTS

80 POINTS

90 POINTS

HONDURAS

△ 69.2 POINTS

△ 68.3 POINTS

80 POINTS

80 POINTS

90 POINTS

MEXICO

△ 68.3 POINTS

△ 81.6 POINTS

80 POINTS

80 POINTS

90 POINTS

With 218 tested beans, Mexico is the country with the most reviews.

Contribution to #TidyTuesday 2020/28



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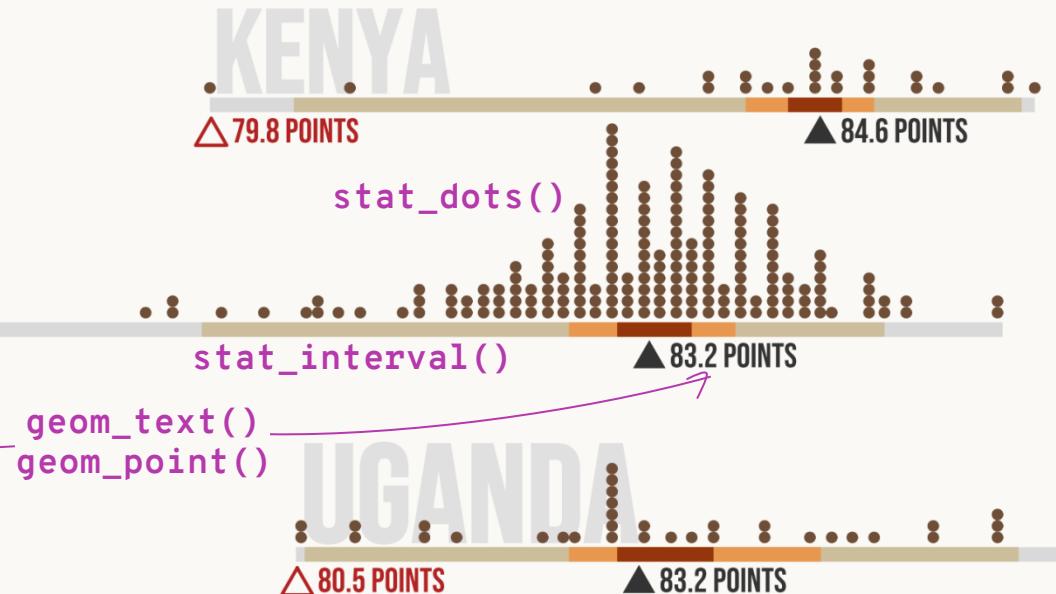


@cedscherer

Not my cup of coffee...

COLOMBIA

△ 72.8 POINTS



Contribution to #TidyTuesday 2020/28



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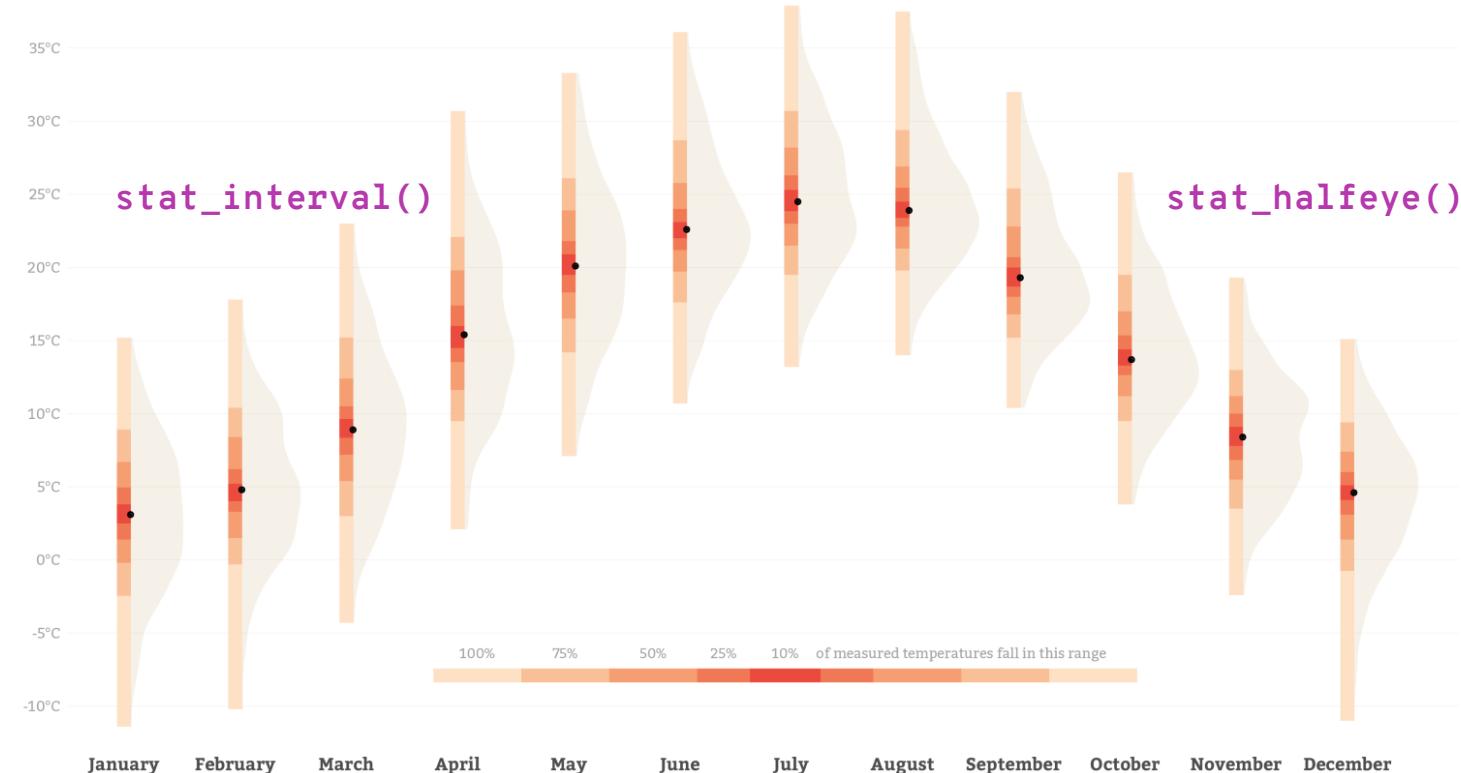
@z3tt



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Daily Temperatures in Berlin, Germany

Range and distribution of maximum daily temperatures in Celsius per month from 2000 to 2018 measured in Berlin-Dahlem, Germany



Visualization by Cédric Scherer | Data: DWD (Deutscher Wetterdienst)

Contribution to the SWD Challenge September 2019



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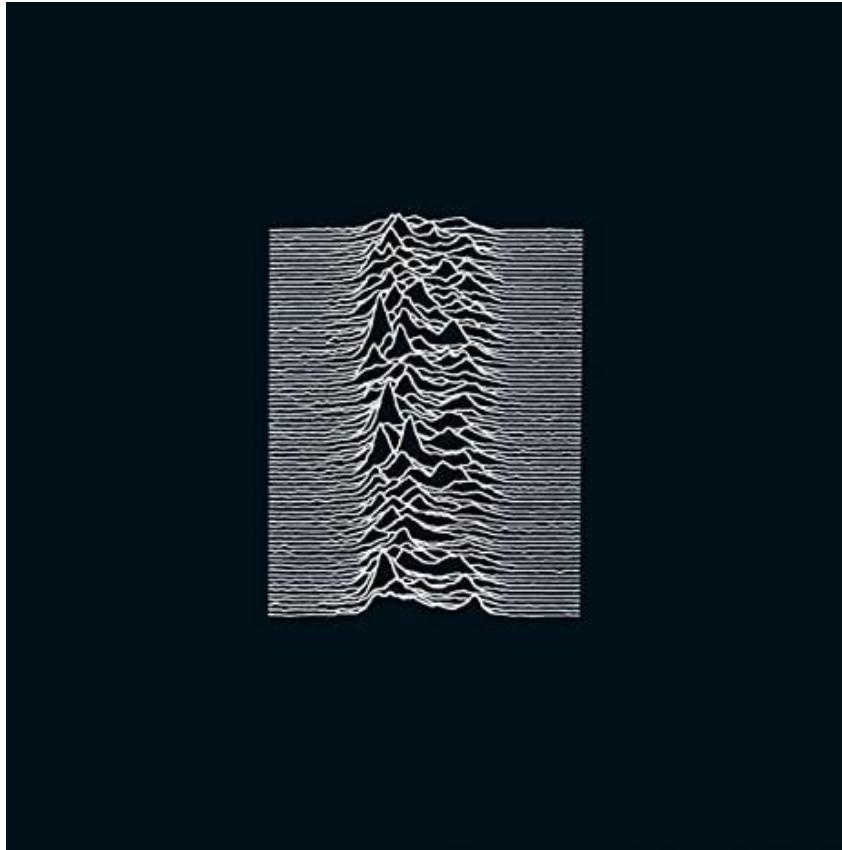
@z3tt



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{ggribges}

Create Ridgeline Plots



The cover of Joy Division's "Unknown Pleasures" LP



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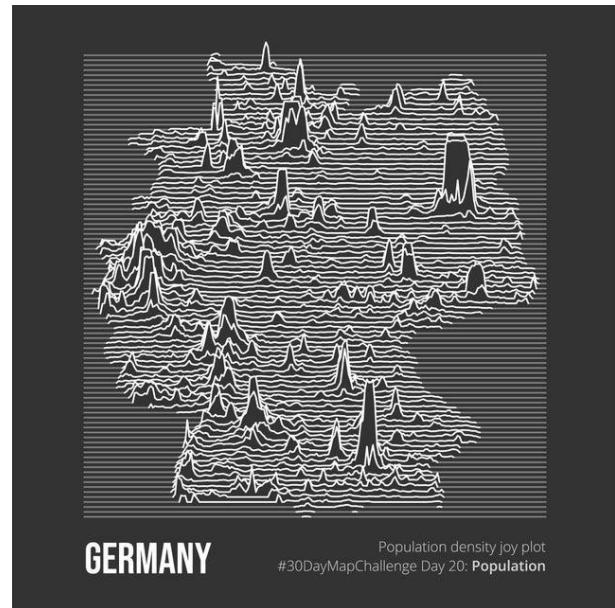
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Koen Van den Eeckhout, Contribution to
#30DayChartChallenge, Day 20: Population



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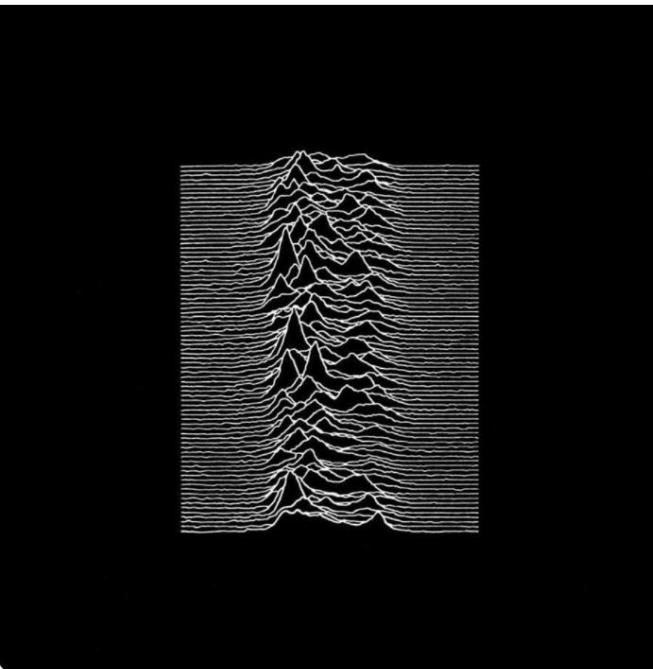
Jenny Bryan

I hereby propose that we call these "joy plots" #rstats



Jake (The '80s Never Ended in my World) Rudh @JakeRudh

Joy Division completed recording this masterpiece debut album on this day in 1979.



3:02 AM · Apr 25, 2017



Joy Plot Ridgeline Plot

clauswilke.com/blog/2017/09/15/goodbye-joyplots/



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Claus Wilke
clauswilke

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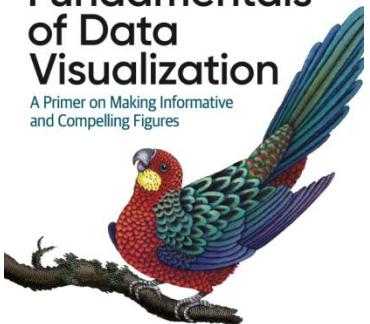
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The University of Texas at Austin
<http://wilkelab.org>

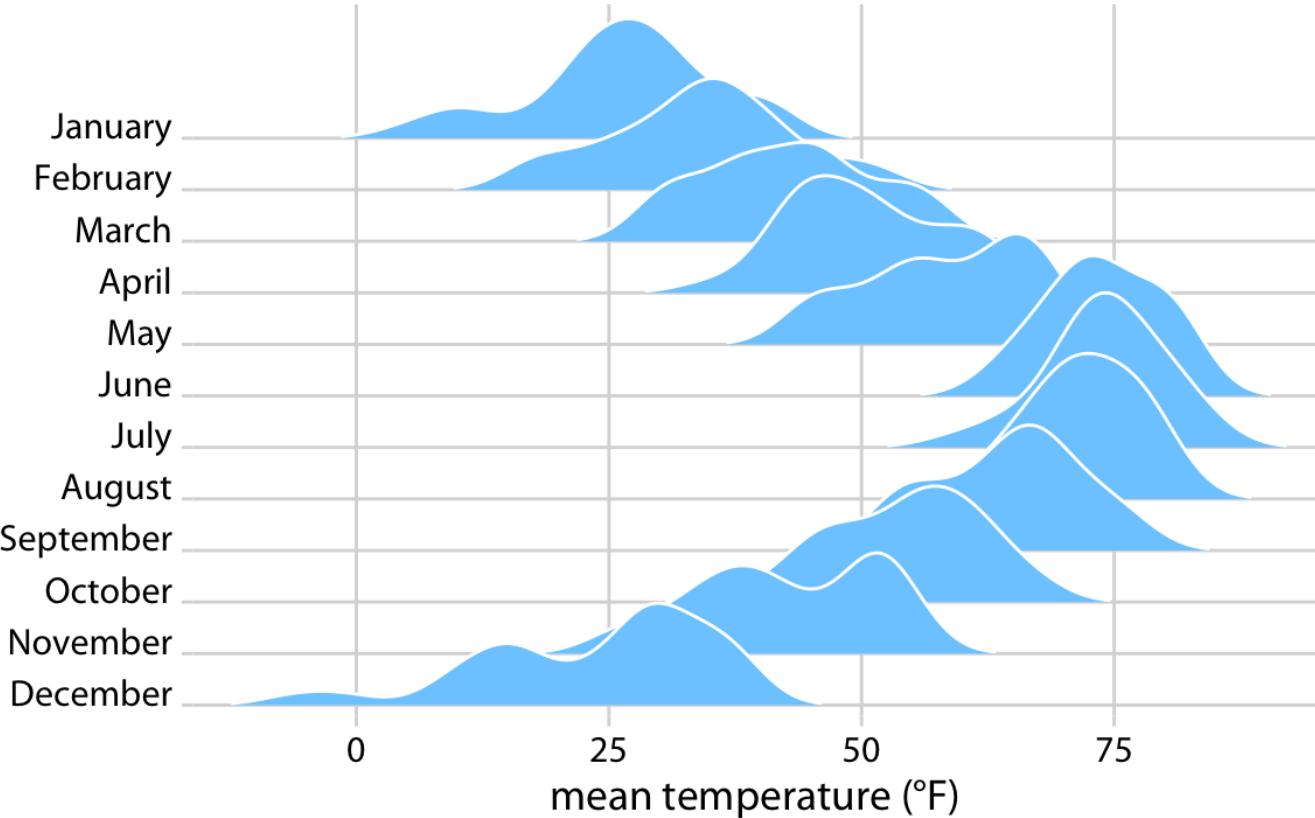
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Fundamentals of Data Visualization

A Primer on Making Informative and Compelling Figures



Claus O. Wilke



From "Fundamentals of Data Visualization" by Claus O. Wilke



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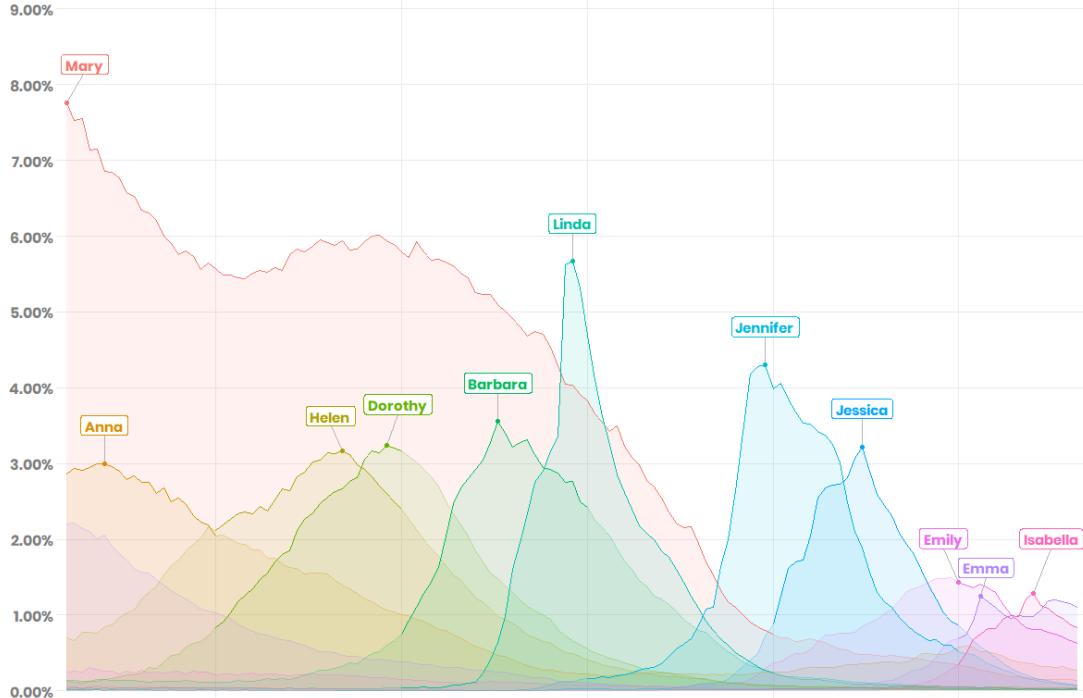
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Most popular girl names in the U.S.

Top 2 names with the highest mean and/or maximum per quarter are shown.

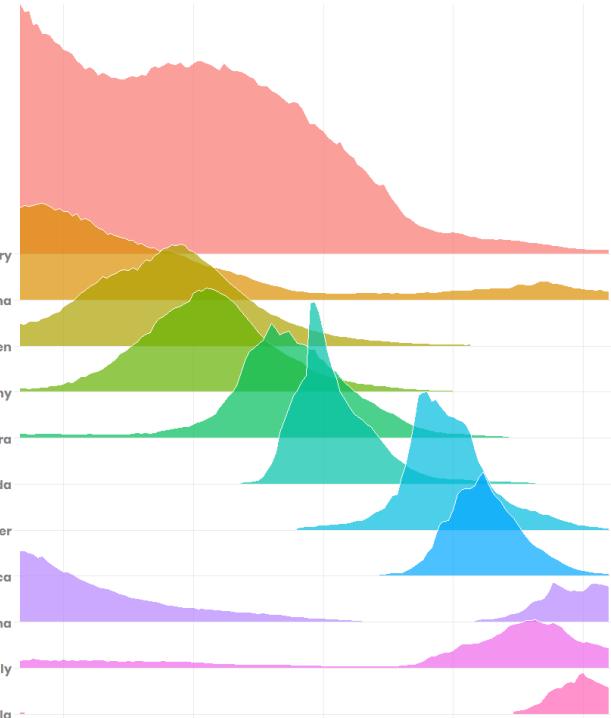


Source: U.S. Social Security Administration

Personal Project

Most popular girl names in the U.S.

Top 2 names with the highest mean and/or maximum per quarter are shown.



Source: U.S. Social Security Administration



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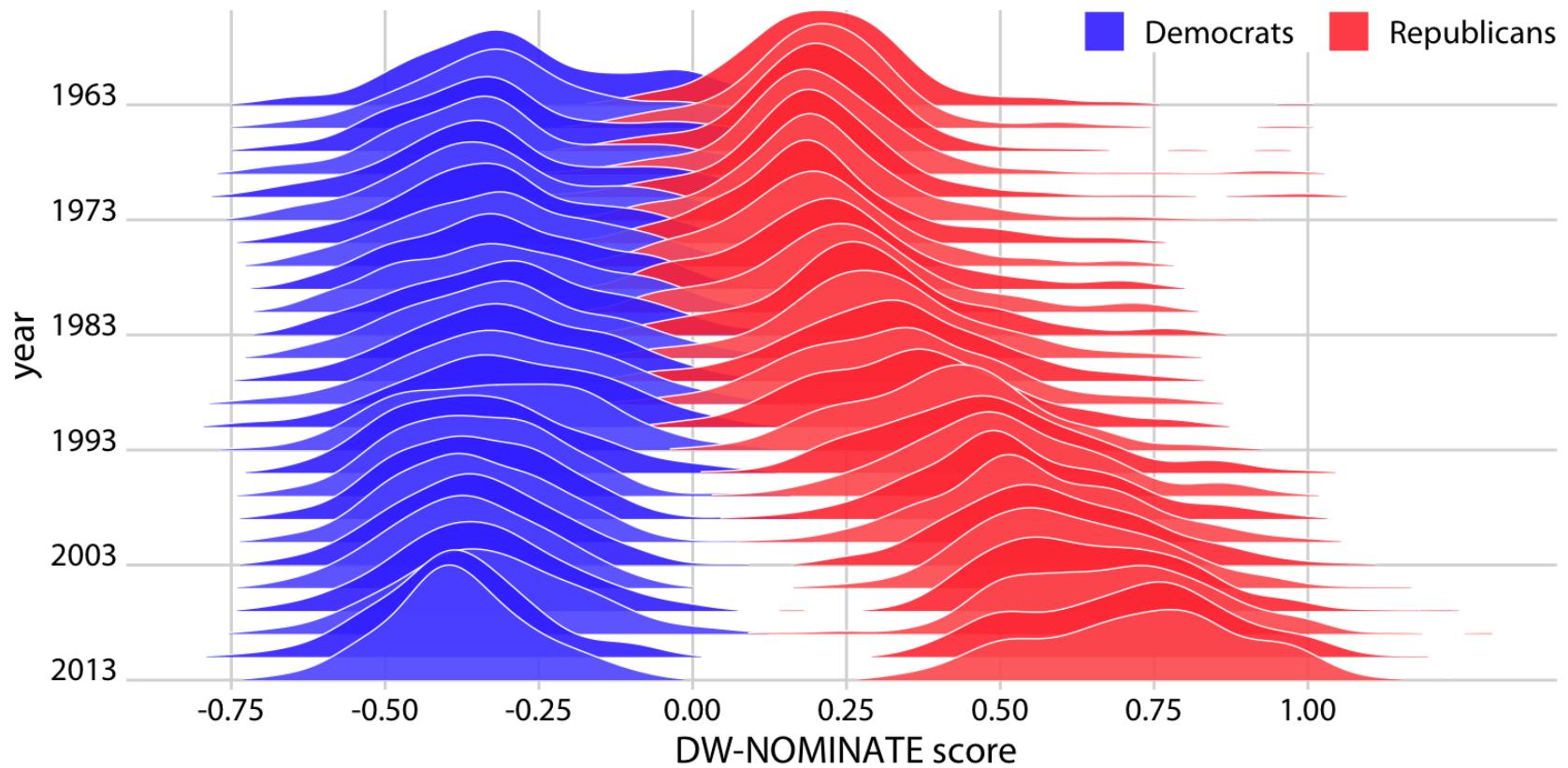
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From "Fundamentals of Data Visualization" by Claus O. Wilke



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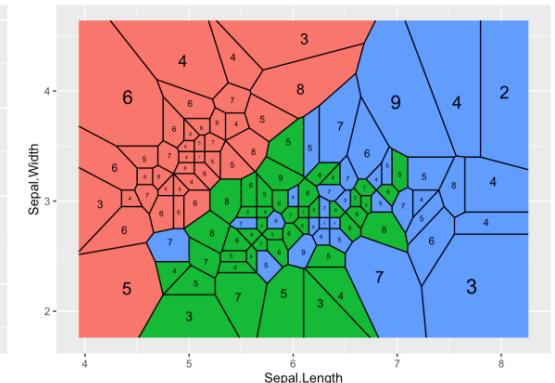
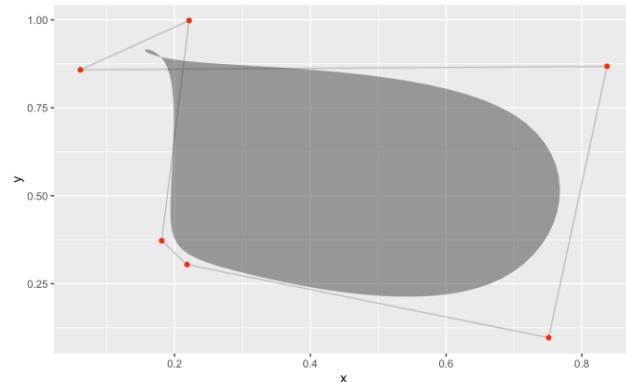
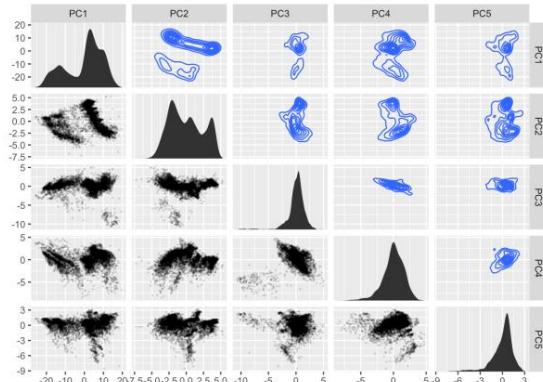
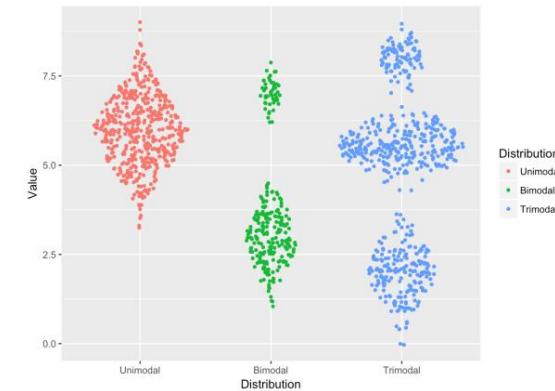
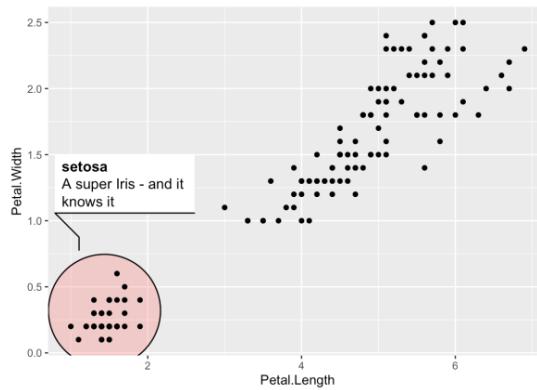
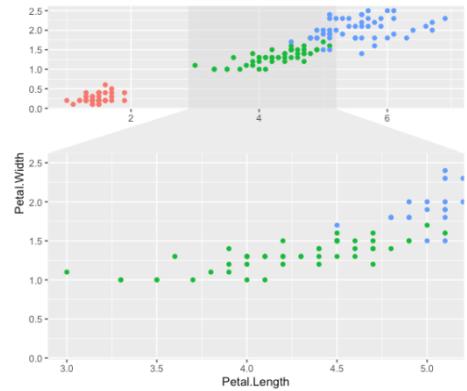
@cedscherer

Streamgraph	{eggstream}	geom_stream()
Sankey Diagram	{eggsankey}	geom_sankey(), geom_sankey_bump()
Moon Chart	{eggdist}	stat_eye(), stat_interval(), stat_dots(), ...
Uncertainty Chart	{gggibbous}	geom_moon()
Ridgeline Plot	{ggridges}	geom_ridgeline(), geom_density_ridges()
Waffle Chart	{waffle} {eggwaffle}	geom_waffle()
Bump Chart	{ggbump}	geom_bump(), geom_sigmoid_*
Parliament Diagram	{ggpol}	geom_parliament()
Beeswarm Plot	{ggbeeswarm}	geom_beeswarm(), geom_quasirandom()
Sina Plot	{ggforce}	geom_sina()
Voronoi Map	"	geom_voronoi_segment(), geom_voronoi_tile()
Pie Chart	"	geom_arc_bar()
Parallel Sets	"	geom_parallel_sets()
Alluvial Chart	{ggalluvial}	geom_alluvium(), geom_stratum()
Network Graph	{ggraph}	geom_edge_*, geom_node_*
Horizon Chart	{ggalt}	geom_horizon()
Dumbbell Plot	"	geom_dumbbell()
Lollipop Plot	"	geom_lollipop()

Labeling

{ggforce}

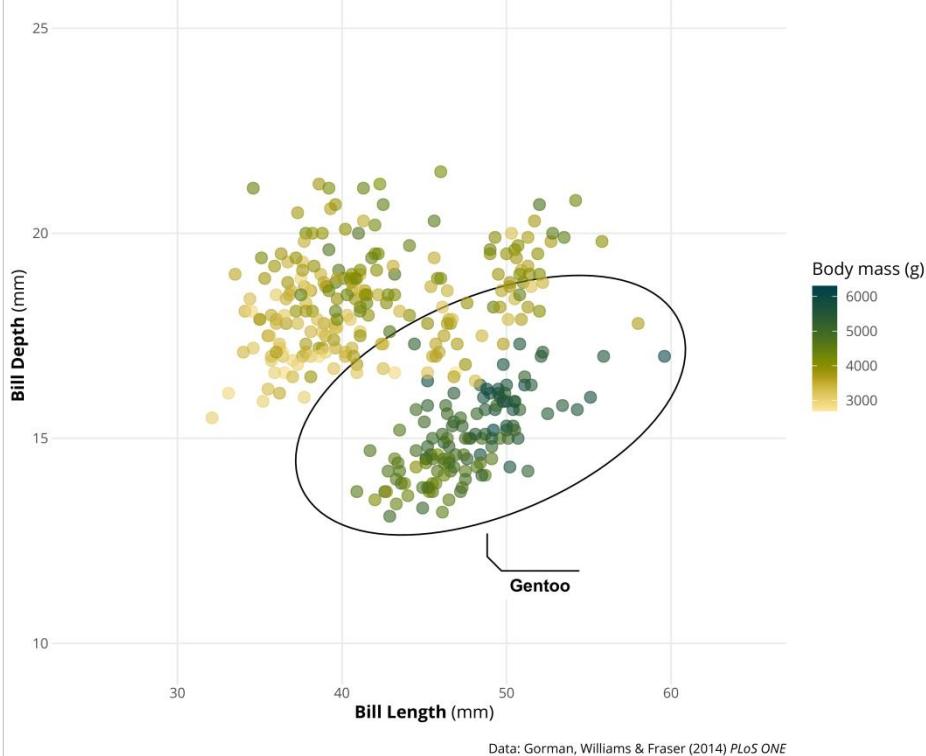
Providing Missing Functionality



`geom_mark_*`() adds advanced labels for single or multiple points

Bill Dimensions of Brush-Tailed Penguins (*Pygoscelis*)

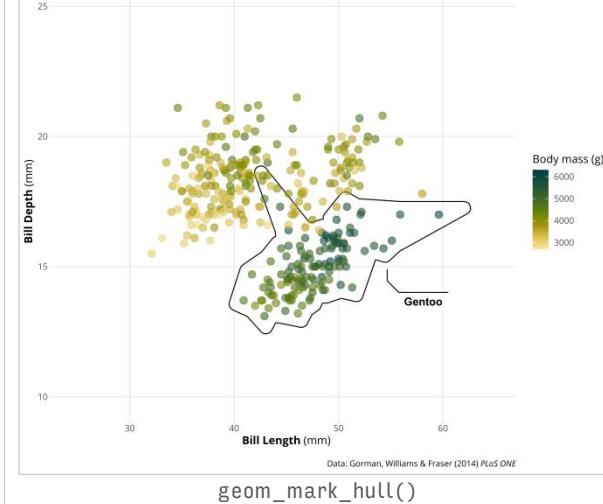
A scatter plot of bill depth versus bill length.



`geom_mark_ellipsoid()`

Bill Dimensions of Brush-Tailed Penguins (*Pygoscelis*)

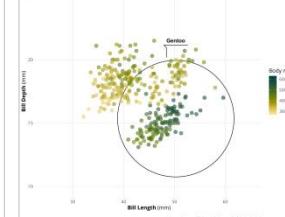
A scatter plot of bill depth versus bill length.



`geom_mark_hull()`

Bill Dimensions of Brush-Tailed Penguins (*Pygoscelis*)

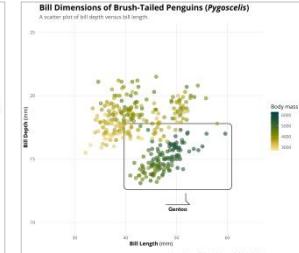
A scatter plot of bill depth versus bill length.



`geom_mark_circle()`

Bill Dimensions of Brush-Tailed Penguins (*Pygoscelis*)

A scatter plot of bill depth versus bill length.



`geom_mark_rect()`



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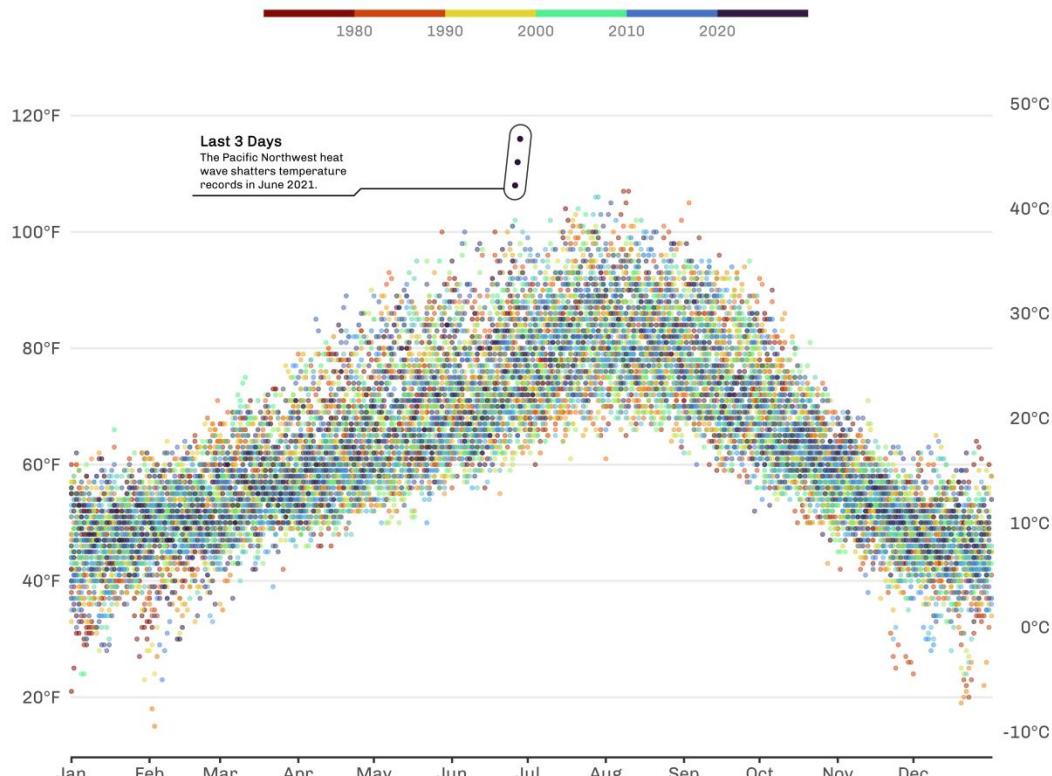


@z3tt



@cedscherer

Daily maximum temperatures in Portland (Oregon), 1979–2021



Data: National Oceanic and Atmospheric Administration via Oregon Live • Graphic: Cédric Scherer

Personal Project



cedrischerer.com



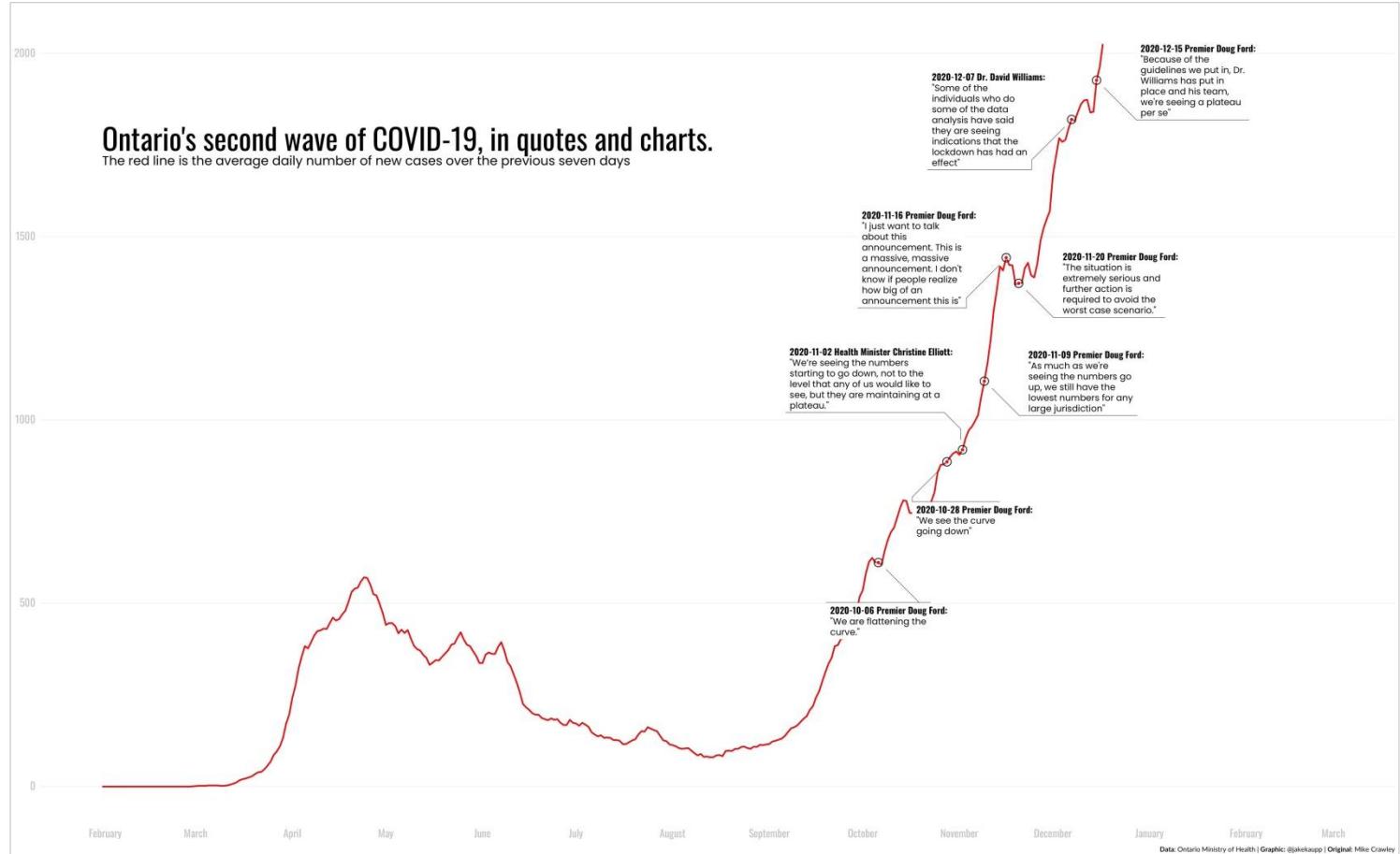
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@z3tt



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Jake Kaupp



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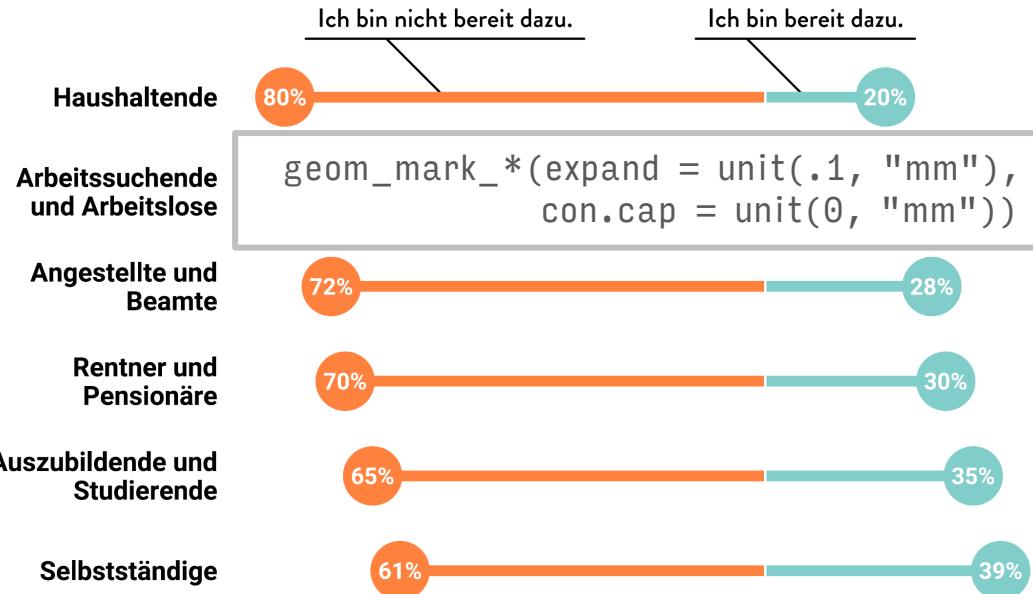
@z3tt



@cedscherer

Data: Ontario Ministry of Health | Graphic: @jakekaupp | Original: Mike Crowley

Die Präsidentin der EU Ursula von der Leyen bittet "finanziell nicht notleidende Kunden" ihr Recht auf Rückerstattung aus Solidarität nicht in Anspruch zu nehmen.



Basierend auf 1057 Antworten auf eine Umfrage von KUENDIGUNG.ORG

Customer survey Kuendigung.org
(kuendigung.org/studien/verbraucherumfrage-zur-zukunft-nach-der-krise)



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@z3tt



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{ggrepel}

Avoid Overlapping Text Labels

ggrepel

Wonderfully Repulsive Labels.

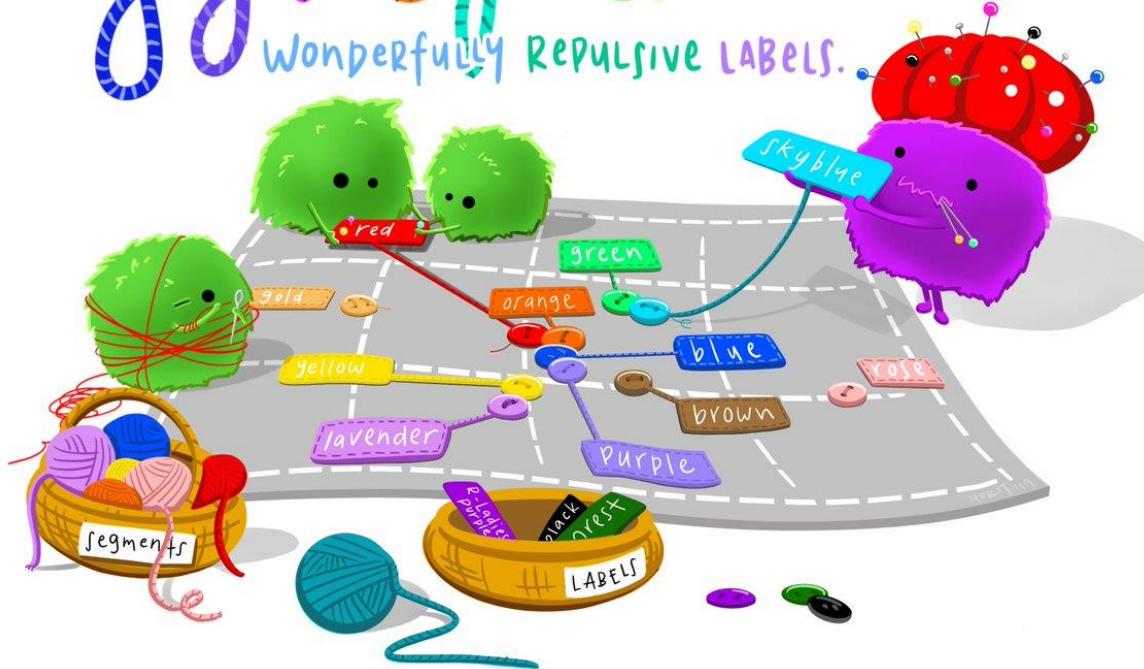


Illustration by Allison Horst



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@z3tt



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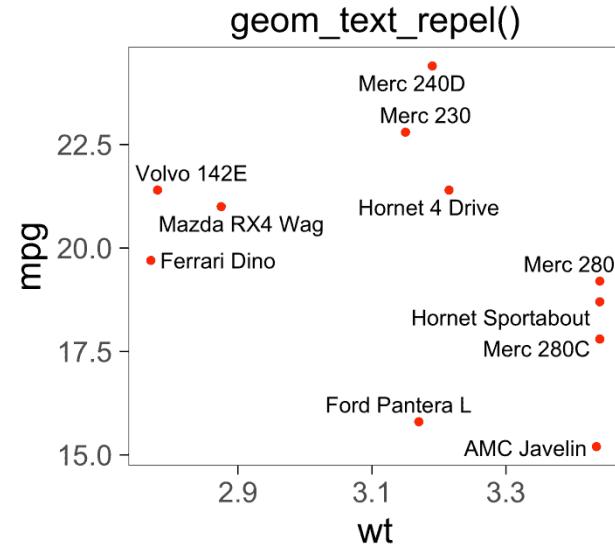
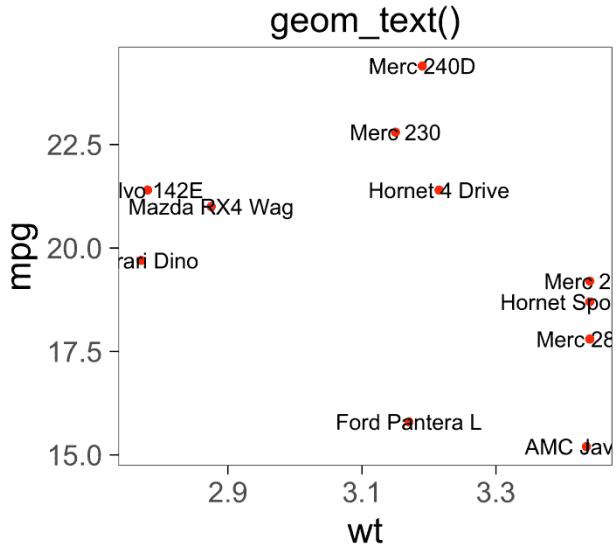
Kamil Slowikowski
slowkow

Unfollow

Computational biologist. Using transcriptomics to learn about inflammation and cancer.

452 followers · 318 following · 3.9k

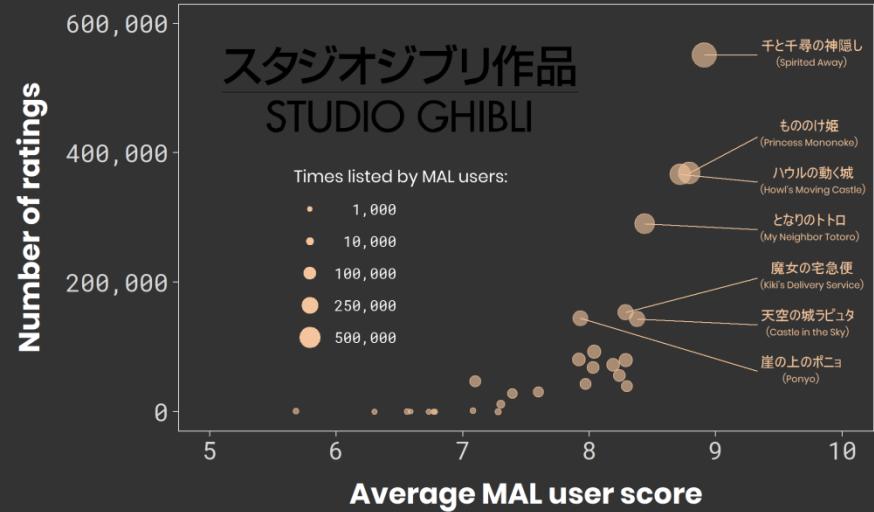
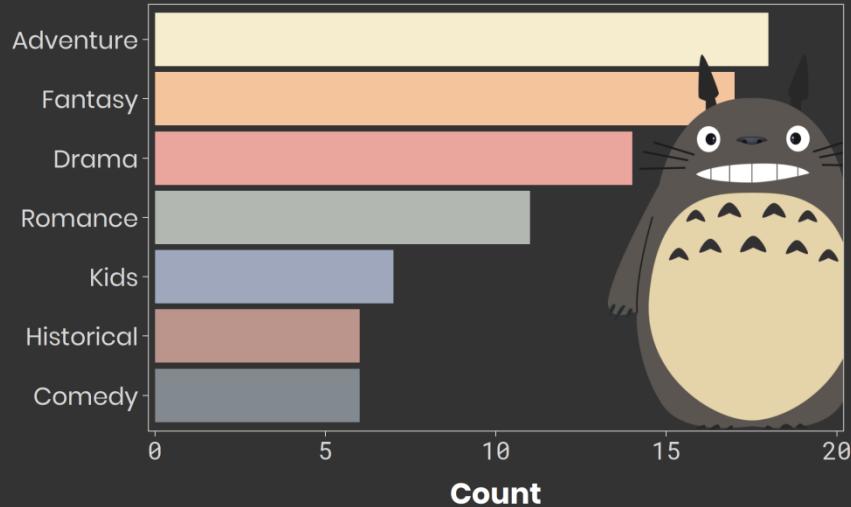
Massachusetts General Hospital
kslowikowski@gmail.com
<https://slowkow.com>
@slowkow



My First Contribution to #TidyTuesday!

Studio Ghibli movies listed on MyAnimeList.net (MAL)

Most common genres



Visualization by Cédric Scherer | Picture credit: Studio Ghibli, Inc & MangoKingoroo

My Contribution to #TidyTuesday 2019/17



cedrischerer.com



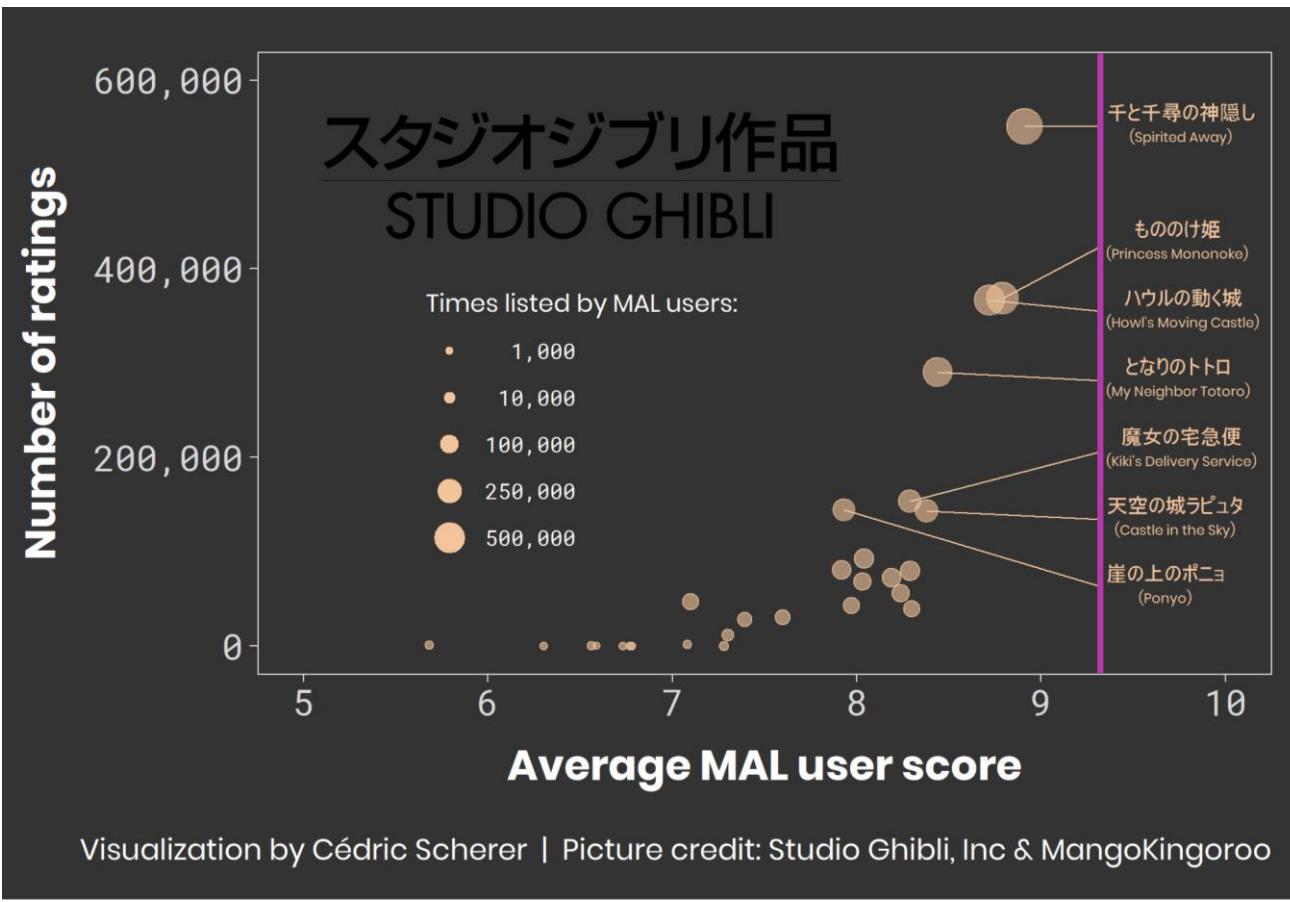
@CedScherer



@z3tt



@cedscherer



My Contribution to #TidyTuesday 2019/17

xlim = c(9.25, NA)



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@z3tt



@cedscherer

THE EMPERORS OF ROME

TIMELINE OF ROMAN EMPERORS, START OF EACH REIGN AND THEIR CAUSE OF DEATH.
THE DARKER THE CIRCLES, THE MORE EMPERORS WERE REIGNING DURING THIS PERIOD.



THE EMPERORS OF ROME

TIMELINE OF ROMAN EMPERORS, START OF EACH REIGN AND THEIR CAUSE OF DEATH.

THE DARKER THE CIRCLE, THE MORE EMPERORS WERE REIGNING DURING THIS PERIOD.

NATURAL DEATH IN PEACE
FATALITY OR IN CAPTIVITY
UNKNOWN CAUSE OF DEATH

AUGUSTUS

—50 BC

TIBERIUS

1 AD

CAESAR AUGUSTUS

1 AD

CALIGULA

41 AD

CLAUDIUS

50 AD

NERO

68 AD

GALBA

69 AD

OHTO

69 AD

VITELLIUS

69 AD

VESPASIAN

69 AD

DOMITIAN

96 AD

SEPTIMIUS SEVERUS

193 AD

CARACALLA

217 AD

GETA

217 AD

MACRINUS

218 AD

ELAGABALUS

222 AD

SEVERUS ALEXANDER

235 AD

MAXIMINUS I

235 AD

GORDIAN I

238 AD

GORDIAN II

238 AD

BALBIUS

238 AD

PUPHENIUS

238 AD

GORDIAN III

238 AD

PHILIP I

244 AD

TRAJAN DECIVUS

251 AD

HOSILIUS

251 AD

TRIBONIANUS GALIUS

251 AD

CLAUDIOCUS GOTHICUS

251 AD

CLAUDIOCUS AURELIAN

251 AD

QUINTILLUS

251 AD

TACITUS

251 AD

FLORIAN

251 AD

PROBUS

259 AD

CARUS

282 AD

CARRIUS

282 AD

NUMERIAN

284 AD

DIOCLETIAN

284 AD

MAXIMIAN

285 AD

GALERIUS

285 AD

CONSTANTINE I

286 AD

CONSTANTIUS II

286 AD

SEVERUS II

286 AD

MAXENTIUS

286 AD

CONSTANTINE THE GREAT

286 AD

LUCIENIUS I

288 AD

MAXIMINUS II

288 AD

CONSTANTINE II

288 AD

CONSTANS

288 AD

CONSTANTIUS II

288 AD

VETRANIO

288 AD

JULIAN

288 AD

JOVIAN

295 AD

VALENS

295 AD

VALENTINIAN I

295 AD

GRATIAN

296 AD

VALENTINIAN II

296 AD

THEODOSIUS I

379 AD



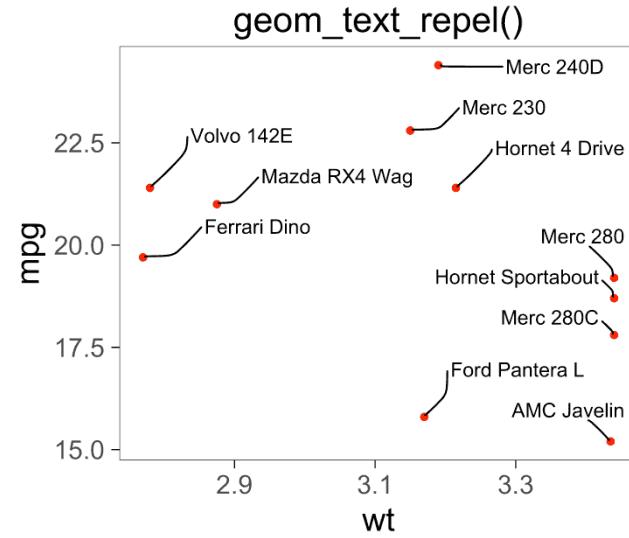
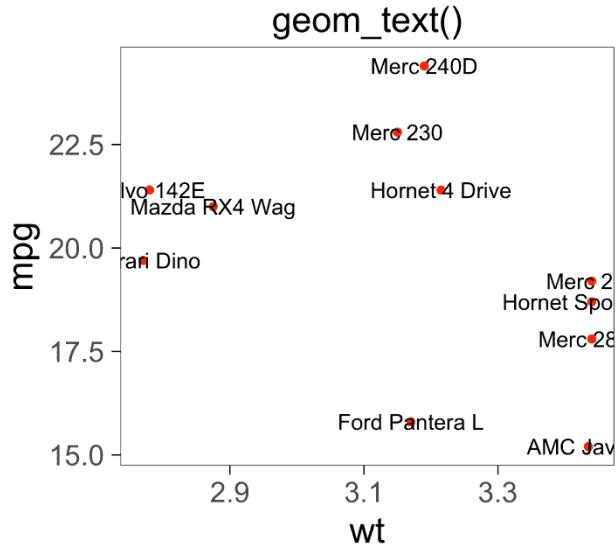
Kamil Slowikowski
slowkow

Unfollow

Computational biologist. Using transcriptomics to learn about inflammation and cancer.

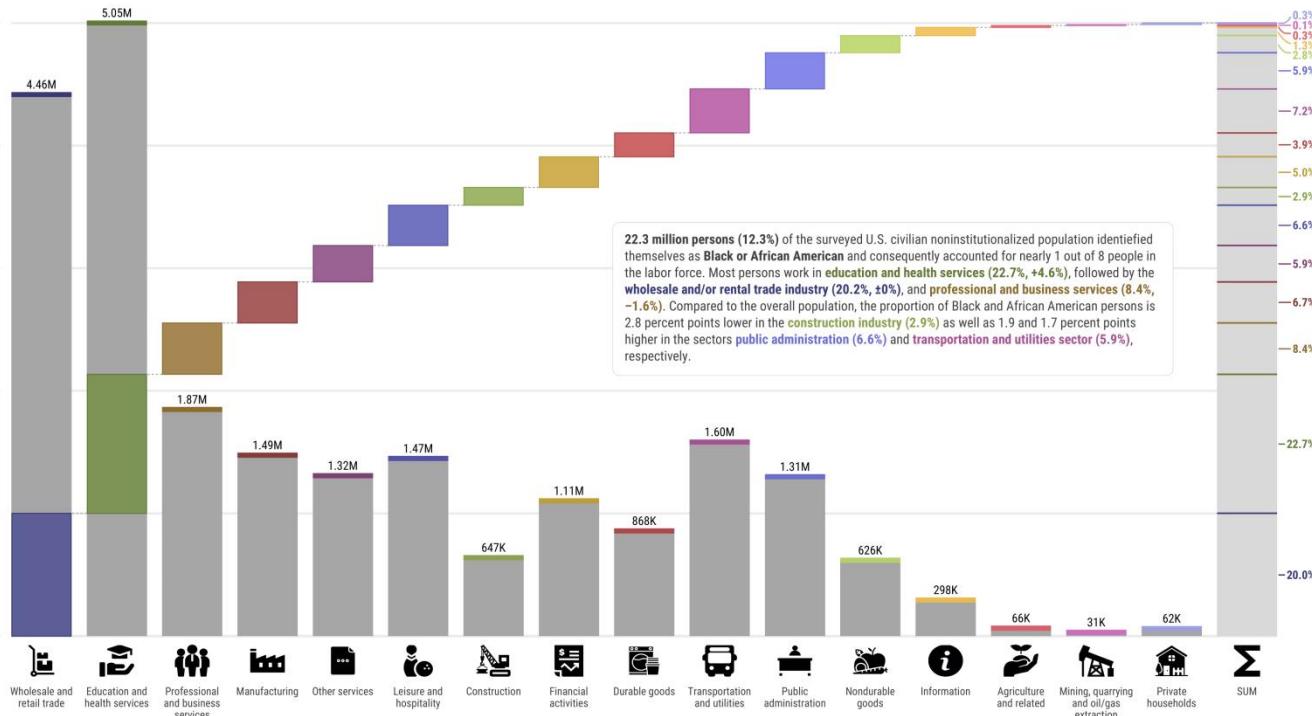
452 followers · 318 following · 3.9k

Massachusetts General Hospital
kslowikowski@gmail.com
<https://slowkow.com>
@slowkow



Employed Black and African American Persons in the United States of America by Industry (2020)

The Current Population Survey (CPS) is a monthly survey of households conducted by the U.S. Bureau of Census for the Bureau of Labor Statistics. It provides a comprehensive body of data on the labor force, employment, unemployment, persons not in the labor force, hours of work, earnings, and other demographic and labor force characteristics. The following visualizations show the overall number (grey bars) and distribution (colored bars) per industry in 2020. The industries are sorted by the number of employed persons overall.



Visualization: Cédric Scherer • Data: Labor Force Statistics from the Current Population Survey (2020), U.S. Bureau of Labor Statistics (BLS)

My Contribution to #TidyTuesday 2021/09



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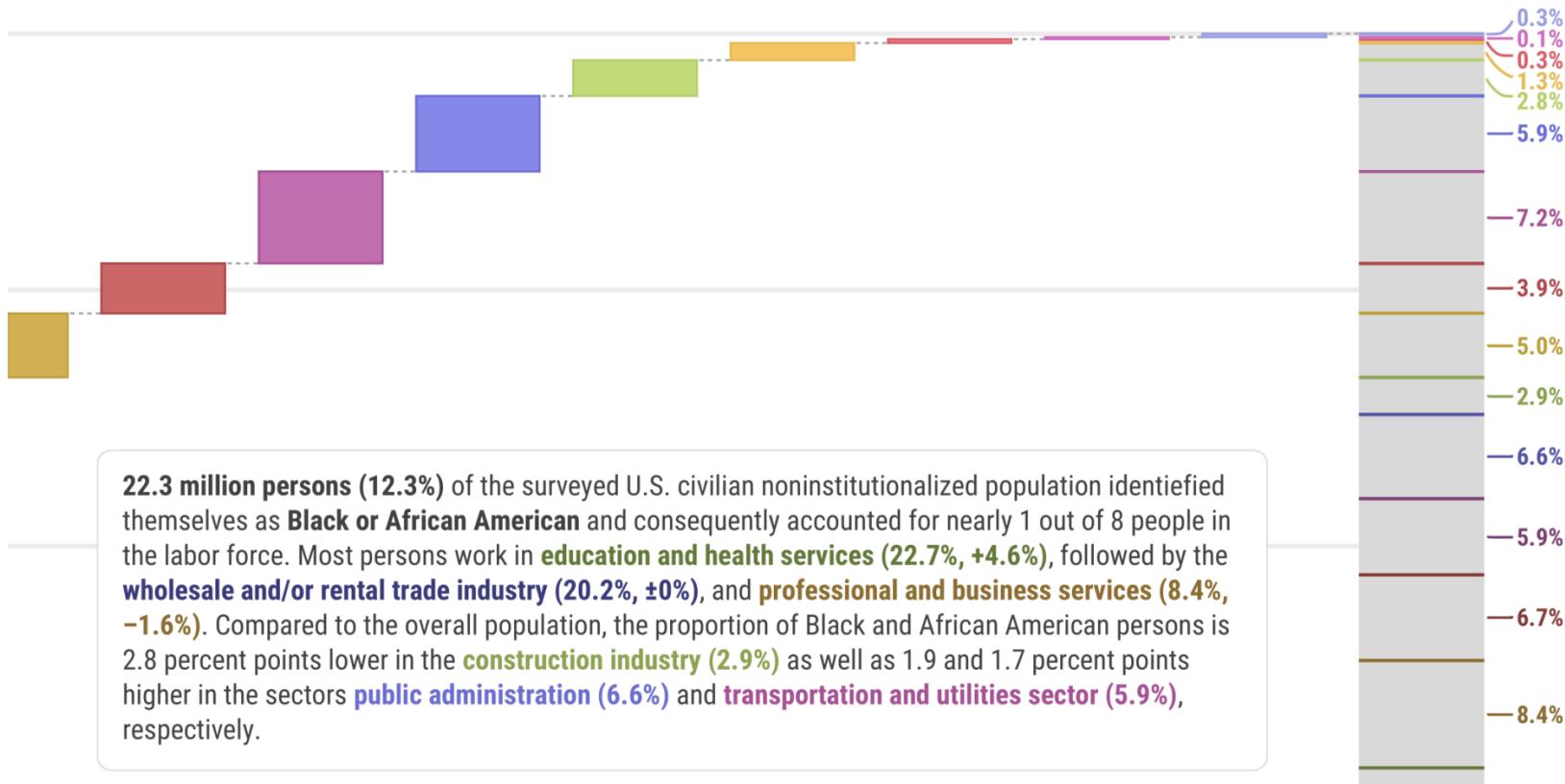
@CedScherer



@z3tt

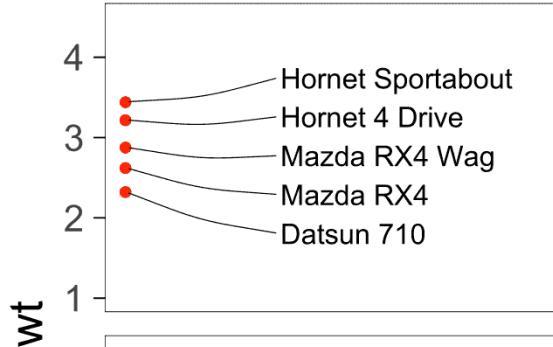


@cedscherer



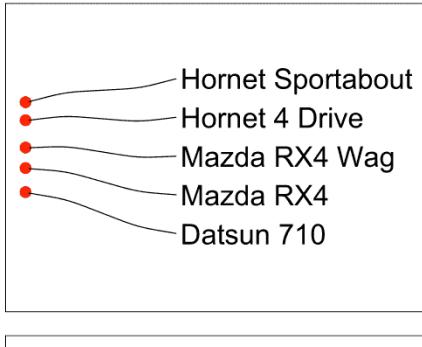
22.3 million persons (12.3%) of the surveyed U.S. civilian noninstitutionalized population identified themselves as **Black or African American** and consequently accounted for nearly 1 out of 8 people in the labor force. Most persons work in **education and health services (22.7%, +4.6%)**, followed by the **wholesale and/or rental trade industry (20.2%, ±0%)**, and **professional and business services (8.4%, -1.6%)**. Compared to the overall population, the proportion of Black and African American persons is 2.8 percent points lower in the **construction industry (2.9%)** as well as 1.9 and 1.7 percent points higher in the sectors **public administration (6.6%)** and **transportation and utilities sector (5.9%)**, respectively.

inflect: FALSE



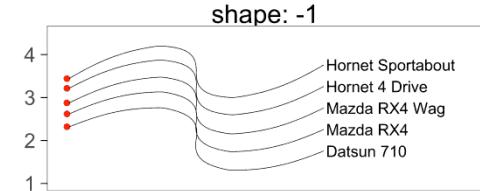
wt

inflect: TRUE

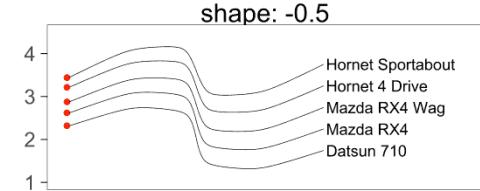


square: FALSE

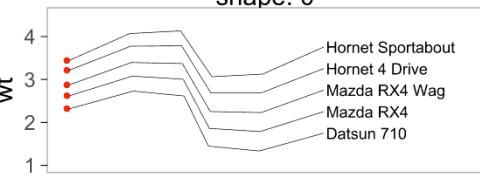
square: TRUE



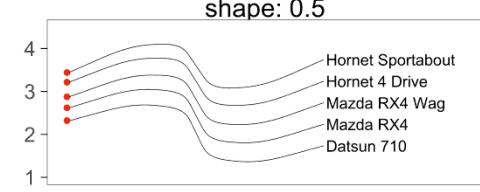
shape: -1



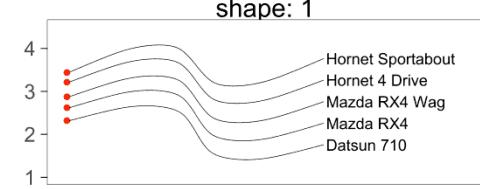
shape: -0.5



shape: 0



shape: 0.5



shape: 1



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@CedScherer



@z3tt



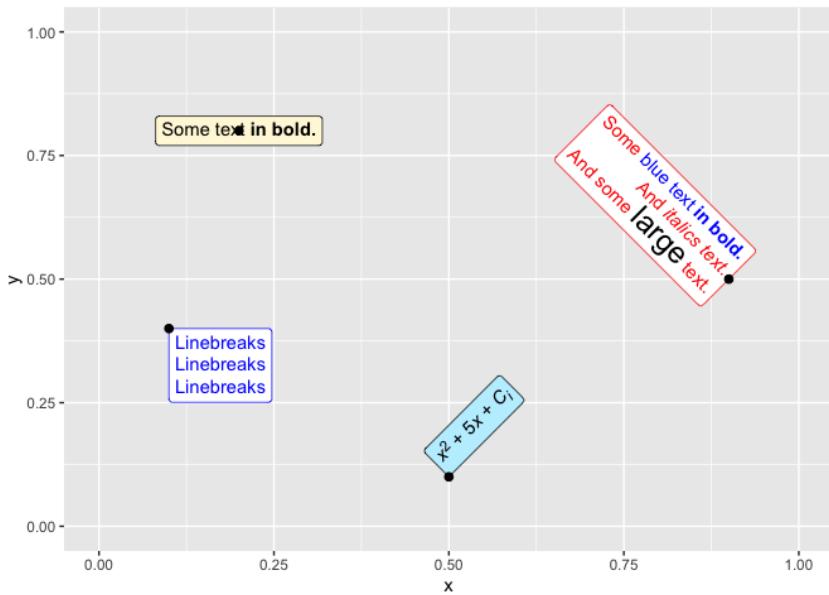
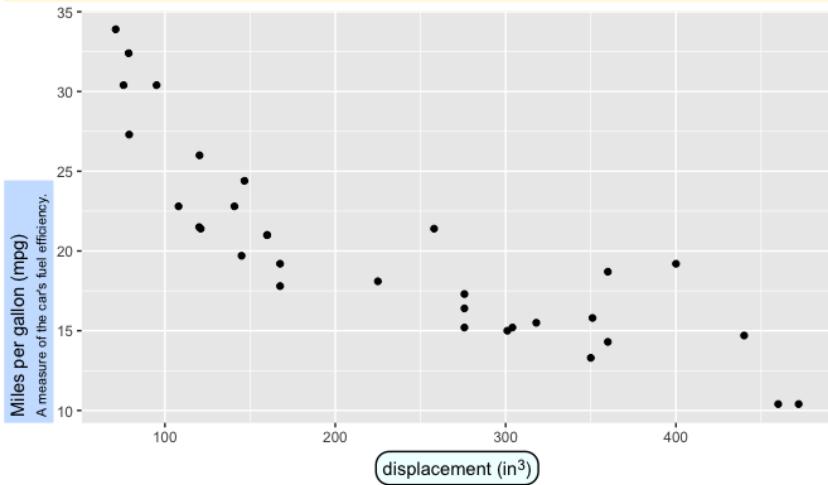
@cedscherer

{ggtext}

Improved Text Rendering Support

Fuel economy vs. engine displacement

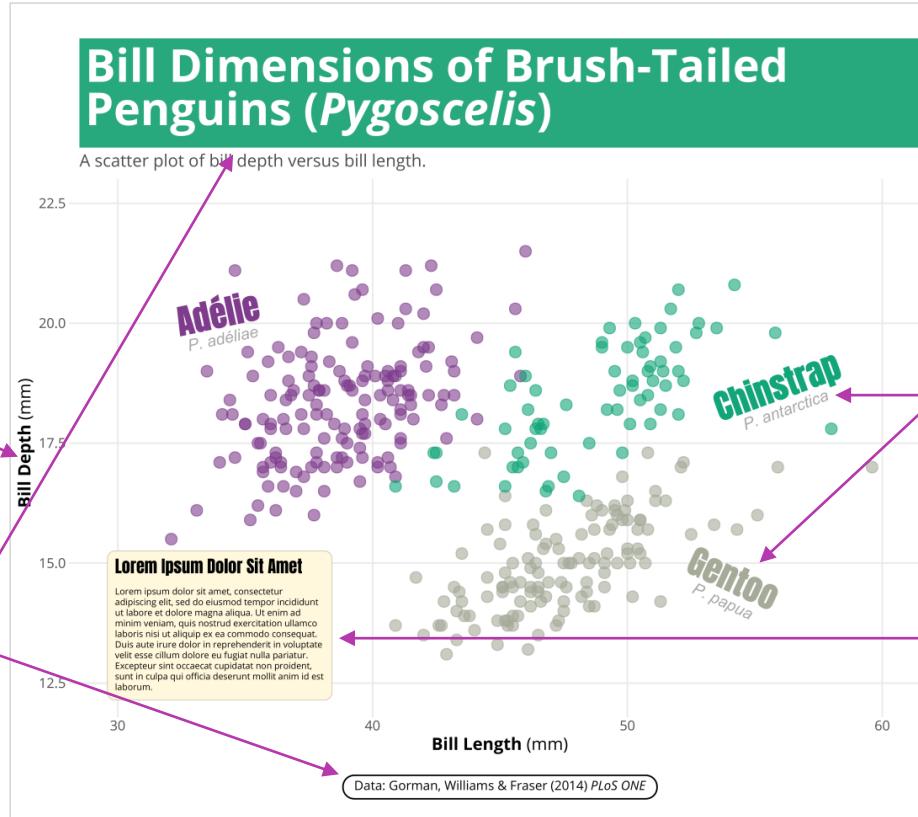
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.



THEME ELEMENTS

`element_markdown()`

`element_textbox()` and
`element_textbox_simple()`
→ includes word wrapping



GEOMETRIES

`geom_richtext()`

`geom_textbox()`
→ includes word wrapping



Chats about Friends and their Past, Present, and Future Partners

Mentions of the main characters and their most popular partners in dialogues* during the ten seasons of Friends.



**Font Color
Font Face**

<b style='color:#d86b1d;'>Ross & Rachel
<b style='color:#ba2a22;'>Rachel & Barry

*For each of the 67,373 dialogues in 236 episodes it was determined whether the two names occur in the same text.
The area and luminescence of the squares is mapped to the number of overall mentions of the two names per season.

Visualization by Cédric Scherer • Data by Emil Hvitfeldt via the *(friends)* R package

Contribution to #TidyTuesday 2020/37



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@z3tt



@cedscherer



key	color	partners
Ross	#f6ab18	<b style='color:#f6ab18;'>Ross & Carol
Chandler	#48508c	<b style='color:#48508c;'>Chandler & Janice
Ross & Rachel	#d86b1d	<b style='color:#d86b1d;'>Ross & Rachel

```
ggplot(friends, aes(x = episode, y = partners)) +
  ...
  theme(axis.text.y = element_markdown())
```

- Ross & Carol
- Ross & Julie
- Ross & Bonnie
- Ross & Emily
- Ross & Elizabeth
- Ross & Mona
- Ross & Charlie
- Ross & Rachel**
- Rachel & Barry
- Rachel & Paolo
- Rachel & Tag
- Rachel & Joshua
- Rachel & Paul
- Rachel & Joey
- Joey & Kathy
- Joey & Janine
- Joey & Charlie
- Monica & Richard
- Monica & Pete
- Monica & Chandler
- Chandler & Janice
- Chandler & Kathy
- Phoebe & David
- Phoebe & Gary
- Phoebe & Mike

Font Color Font Face

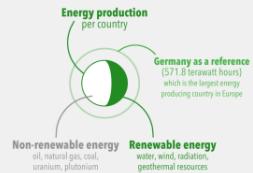


How European countries generated electricity in 2018

Germany is the largest energy producing country in Europe. It generates the most renewable and conventional thermal energy, representing 3% and 96% of its overall production respectively. France is the second largest energy European producer and by far the largest nuclear energy provider; 70% of its production is based on nuclear fission to generate heat.

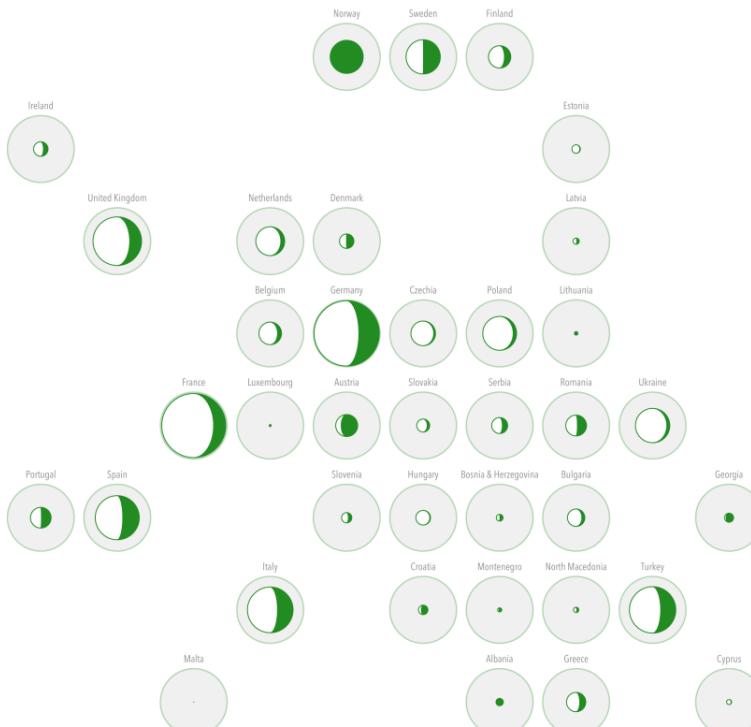


Renewable energy is energy that comes from resources that are naturally replenished such as sunlight, wind, water, and geothermal heat. Unlike fossil fuels, such as oil, natural gas and coal, or nuclear power sources such as uranium and plutonium, renewable energy regenerates naturally in a short period of time.

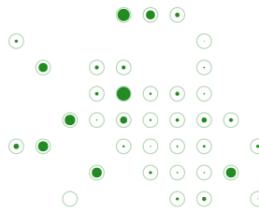


Norway had an electricity production almost entirely made up of renewable energy (98%). This makes Norway the second largest producer of this energy type in Europe. Interestingly, most of the renewable energy is produced by hydro power that take up 95% and only 5% by wind. In contrast, twelve European countries were reported to produce less than 20% of their energy with renewable resources: Malta (0%), Hungary (5%), Estonia (6%), Czechia (7%), Cyprus (9%), Ukraine (9%), Poland (10%), Netherlands (13%), Bulgaria (17%), Belgium (38%), Slovakia (40%), and France (49%).

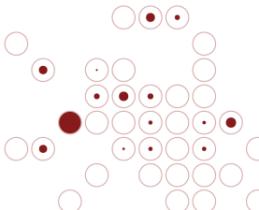
Note: Energy production is mapped to the area of the circles.
Visualization by Cedric Scherer • Data by Eurostat



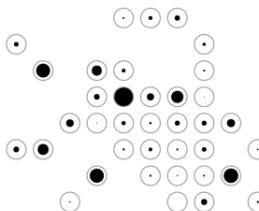
Renewable energy



Nuclear energy



Conventional thermal energy



```
geom_textbox() +
  geom_richtext()
```

My Contribution to #TidyTuesday 2020/32



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@z3tt



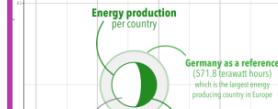
@cedscherer

How European countries generated electricity in 2018

Germany is the largest energy producing country in Europe. It generates the most renewable and conventional thermal energy, representing 31% and 56% of its overall production respectively. **France** is the second largest energy European producer and for the largest nuclear energy provider: 71% of its production is based on nuclear fission to generate heat.

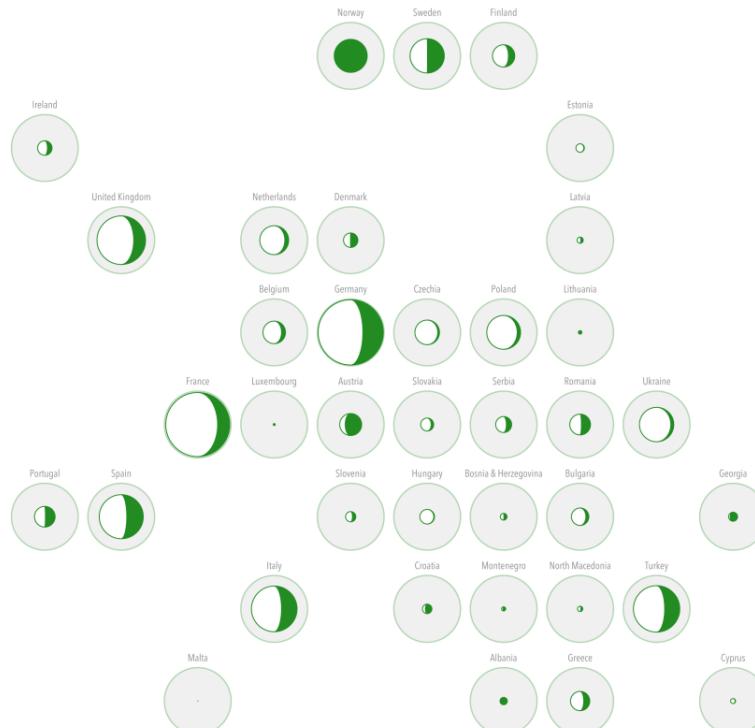


Renewable energy is energy that comes from resources that are naturally replenished such as sunlight, wind, water, and geothermal heat. Unlike fossil fuels, such as oil, natural gas and coal, or nuclear power sources such as uranium and plutonium, renewable energy regenerates naturally in a short period of time.

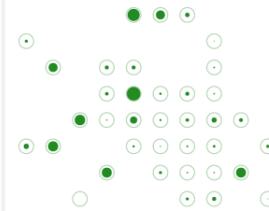


Norway had an electricity production almost entirely made up of renewable energy (98%). This makes Norway the second largest producer of this energy type in Europe. Interestingly, most of the renewable energy is produced by hydro power that take up 92% and only 5% by wind. In contrast, twelve European countries were reported to produce less than 20% of their energy with renewable resources: **Malta** (0%), **Hungary** (5%), **Estonia** (6%), **Czechia** (7%), **Cyprus** (9%), **Ukraine** (9%), **Poland** (10%), **Netherlands** (11%), **Bulgaria** (12%), **Belgium** (18%), **Slovakia** (19%), and **France** (19%).

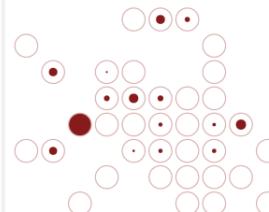
Note: Energy production is mapped to the area of the circles.
Visualization by Cedric Scherer. Data by Eurostat



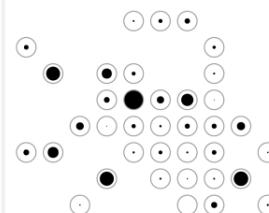
Renewable energy



Nuclear energy



Conventional thermal energy



```
geom_textbox() +
  geom_richtext()
```

My Contribution to #TidyTuesday 2020/32



cedrischerer.com



@CedScherer



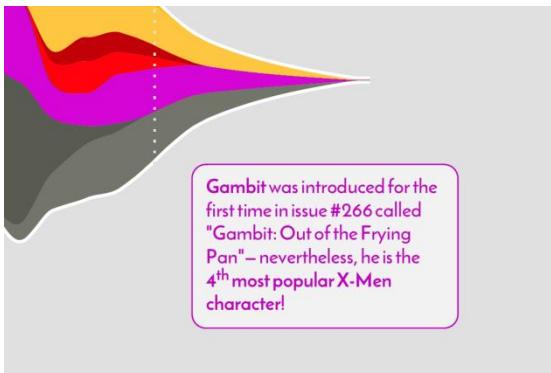
@z3tt



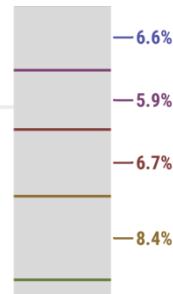
@cedscherer

AN ECONOMY BUILT ON SLAVERY—A FUTURE BUILD ON FREEDOM?

By 1680, property owners in the south of North America began establishing plantation farms for cash crops like tobacco, cotton, and sugar cane—enterprises that required increasing amounts of labor. To meet the need, wealthy planters became slave traders and imported ever more individuals to the colonies, the vast majority from West Africa. While the "Emancipation Proclamation" was made law as of 1863, slave owners in the South, namely Texas, still maintained slavery until June 19th 1865 when Union soldiers were able to enforce the law abolishing slavery in the region. The graphic below shows the share of **black people in slavery**, most of them enslaved in the Southern states, and **black people living in freedom** per decade from 1790 to 1870—the first U.S. census after the Liberation Day known as "Juneteenth".



22.3 million persons (12.3%) of the surveyed U.S. civilian noninstitutionalized population identified themselves as **Black or African American** and consequently accounted for nearly 1 out of 8 people in the labor force. Most persons work in **education and health services (22.7%, +4.6%)**, followed by the **wholesale and/or rental trade industry (20.2%, ±0%)**, and **professional and business services (8.4%, -1.6%)**. Compared to the overall population, the proportion of Black and African American persons is 2.8 percent points lower in the **construction industry (2.9%)** as well as 1.9 and 1.7 percent points higher in the sectors **public administration (6.6%)** and **transportation and utilities sector (5.9%)**, respectively.

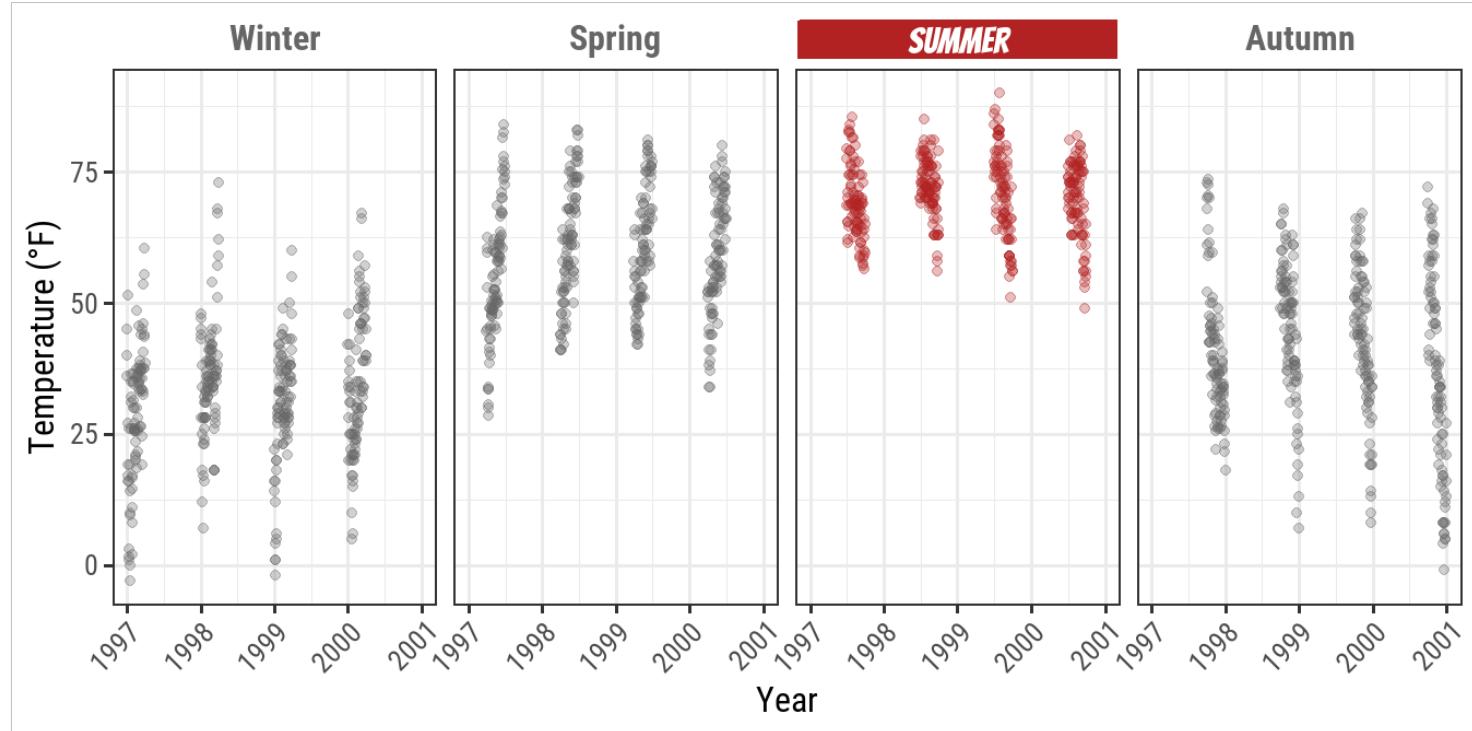


Food Carbon Footprint Index 2018

Global comparison of different diets in terms of **Average Consumption (kg/person/year)** of both animal and non-animal products as well as **Carbon Emissions (kg CO₂/person/year)** per continent and country. Font size and color intensity indicate each country's estimate with **countries printed in bold** belonging to the upper 50% of consumers and CO₂ emissions, respectively.



custom element_textbox_highlight()



- stackoverflow.com/questions/60332202/conditionally-fill-ggtext-text-boxes-in-facet-wrap
- cedricscherer.com/2019/08/05/a-ggplot2-tutorial-for-beautiful-plotting-in-r/#panels



Multi-Panel Figures¹

{geofacet}

Create Tile Grid Maps



Ryan Hafen

hafen

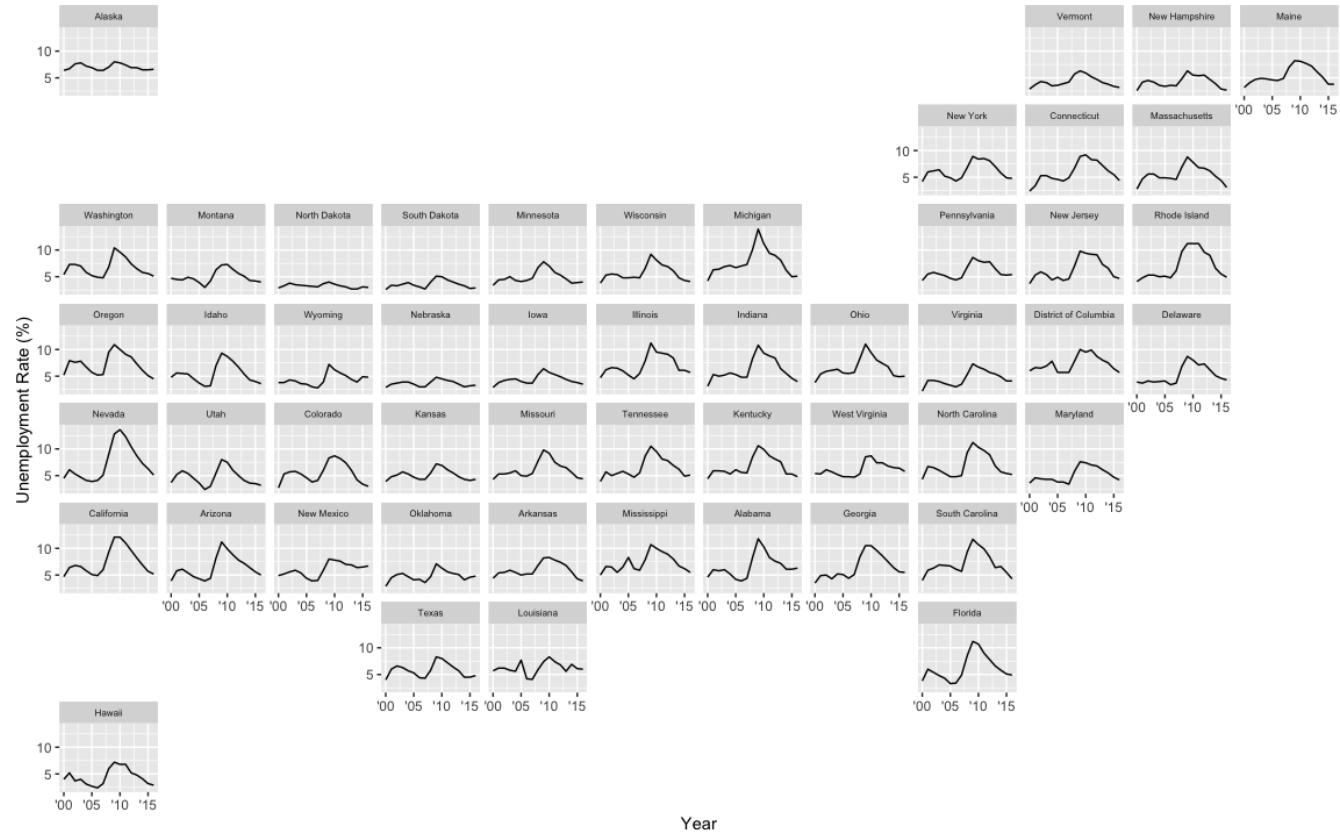
Follow

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WA, USA

ryanhafen.com

Seasonally Adjusted US Unemployment Rate 2000-2016



Data Source: bls.gov



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Which States Are Closing the Racial Vaccine Gap, and Which Aren't

Southern states like Mississippi have improved their Black vaccination rates



Note: Pennsylvania data excludes Philadelphia. These charts don't include all available races, so in rare cases, no race or ethnicity represented will look like it's getting more than its fair share of vaccines. States with fewer than four weeks of data will only show the latest vaccination gap on hover. Due to a change in how it's reporting data, Nebraska's data is as of May 24. Minnesota data is unchanged as of June 28.

Bloomberg Graphic from today



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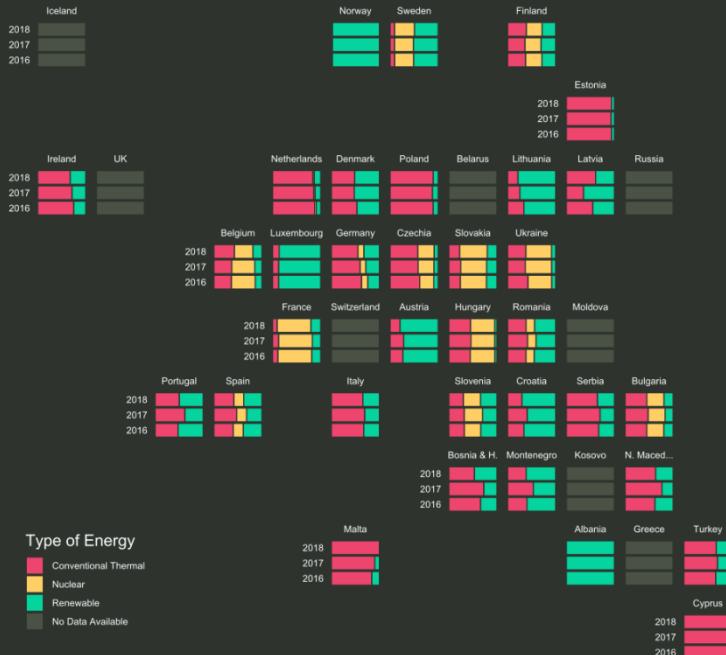
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EUROPEAN ENERGY GENERATION

Each bar represents the **total energy generation** for each country per year.
The colours represent the proportion of energy generated a) using **conventional thermal power plants**, which is to say those that use coal, oil or natural gas, b) using **nuclear power stations**, and c) using other **renewable sources**.



Data from 'Electricity generation statistics -First Results' (ec.europa.eu/eurostat/statistics-explained)
Visualisation by Jack Davison (@JDavison_)
Code found at github.com/jack-davison

Jack Davison, #TidyTuesday 2020/32



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My Contribution to #TidyTuesday 2020/21



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{patchwork}

The Composer of ggplots



Thomas Lin Pedersen
thomaslp85

Unfollow

Maker of tools focusing on data science and data visualisation

2.4k followers · 2 following · 21

@rstudio, part of @tidyverse team

Copenhagen

www.data-imaginist.com

patchwork

Combine + arrange
your ggplots!

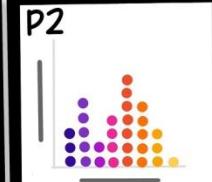
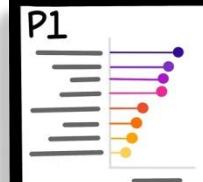


Illustration by Allison Horst



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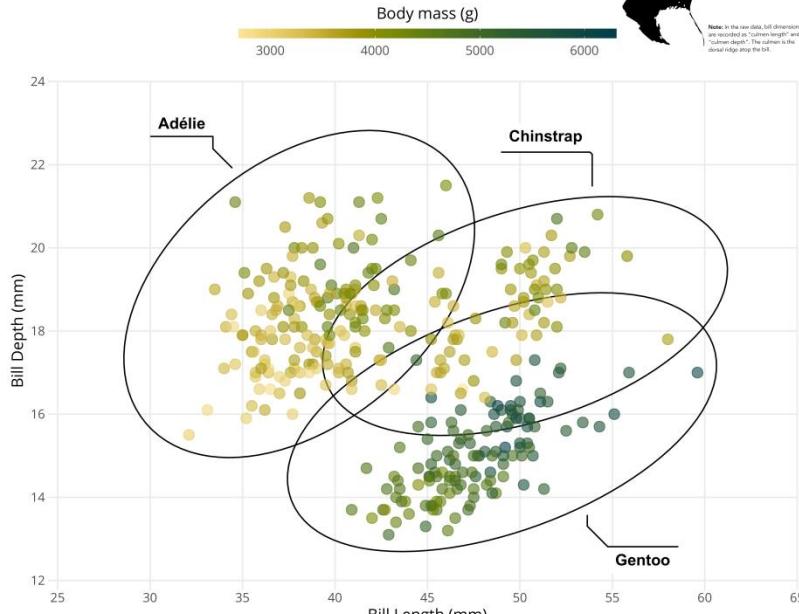


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{patchwork} The Composer of ggplots

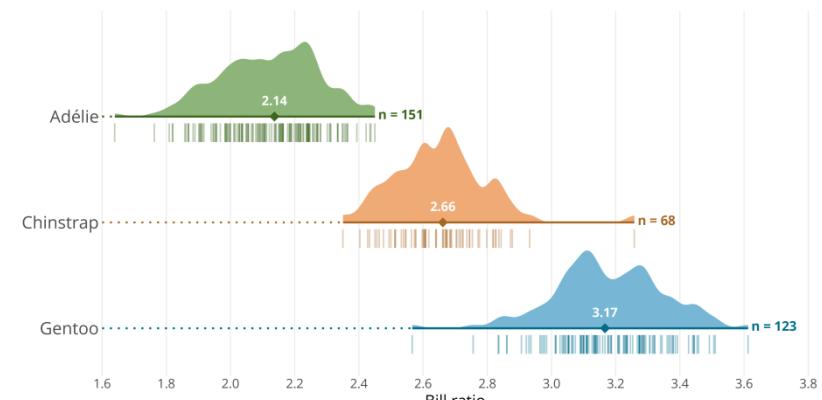
Bill Dimensions of Brush-Tailed Penguins (*Pygoscelis*)

A scatter plot of bill depth versus bill length.



p1

B. Raincloud plot showing the distribution of bill ratios, estimated as bill length divided by bill depth.



p2



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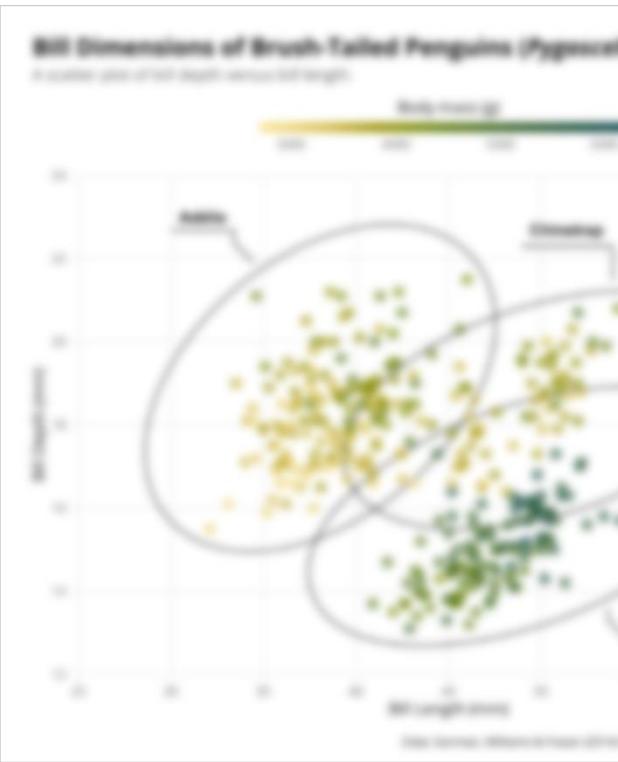


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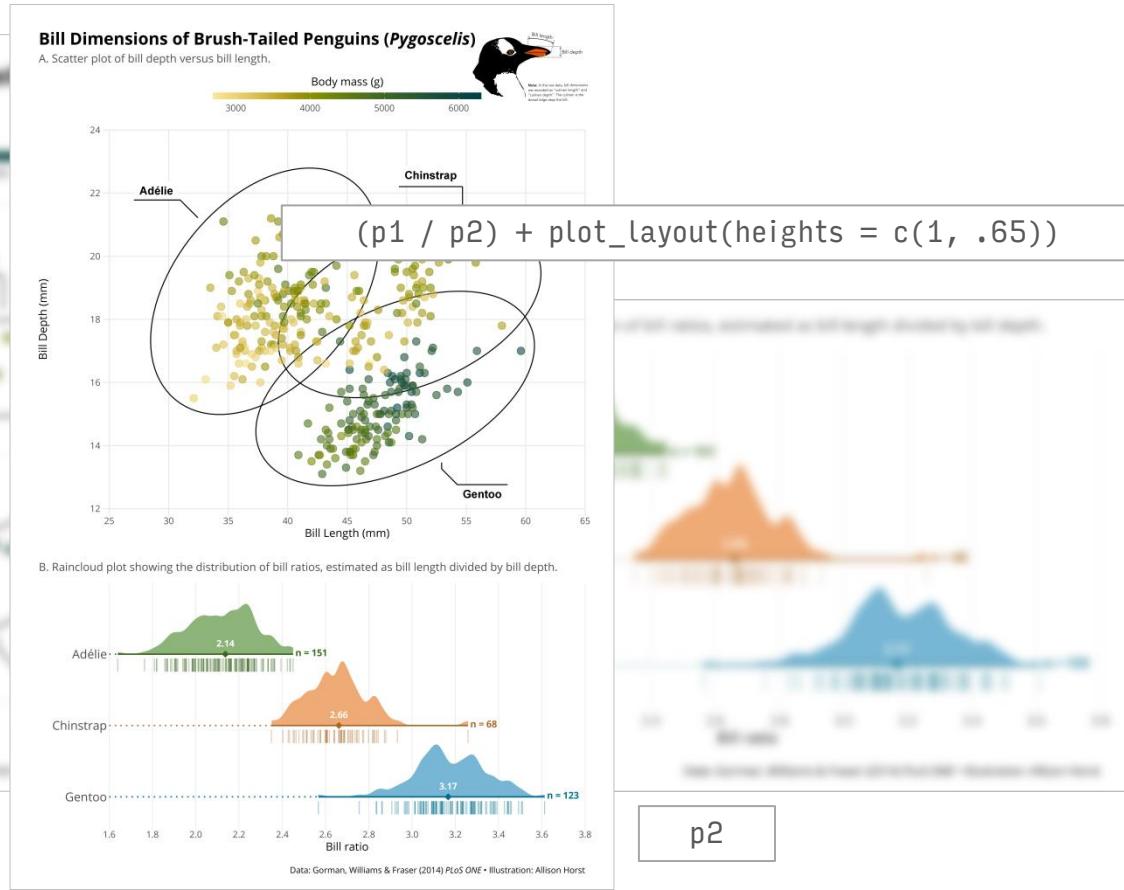


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{patchwork} The Composer of ggplots



p1



p2



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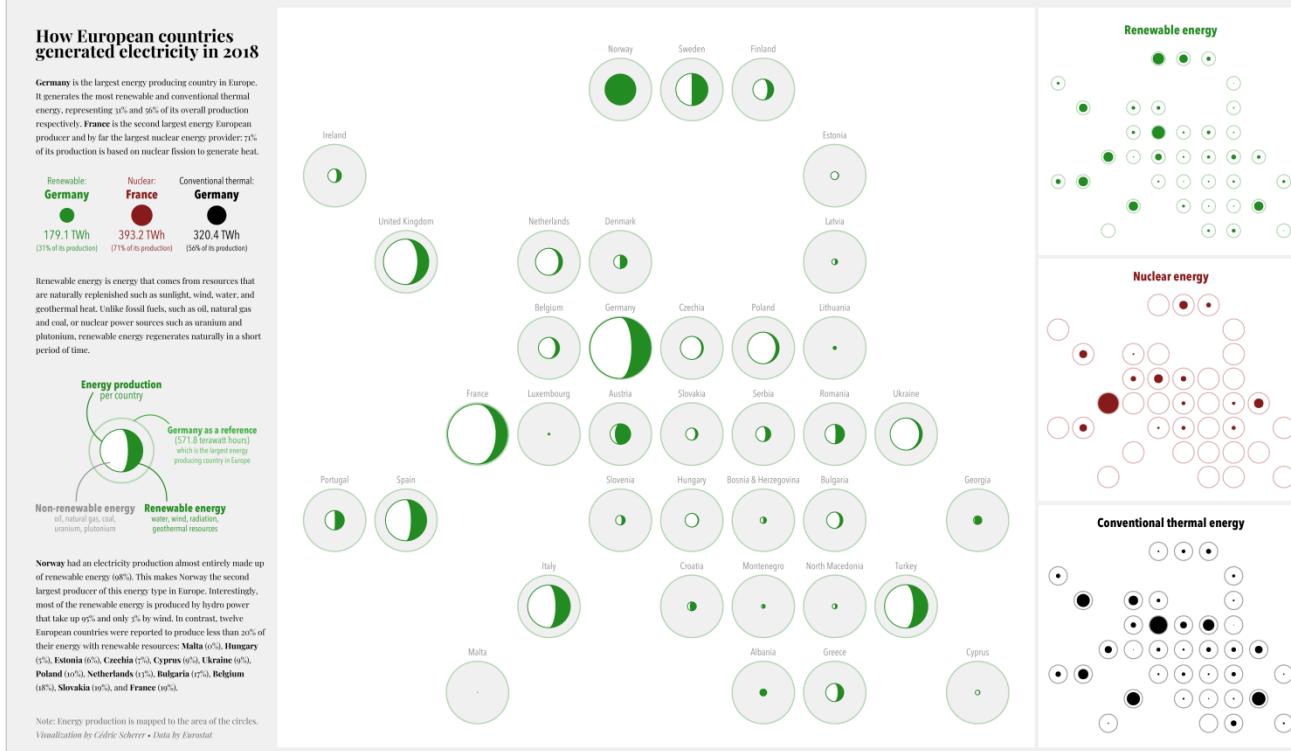
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```
legend | main | (renewable / nuclear / thermal) + plot_layout(widths = c(.35, 1, .35))
```



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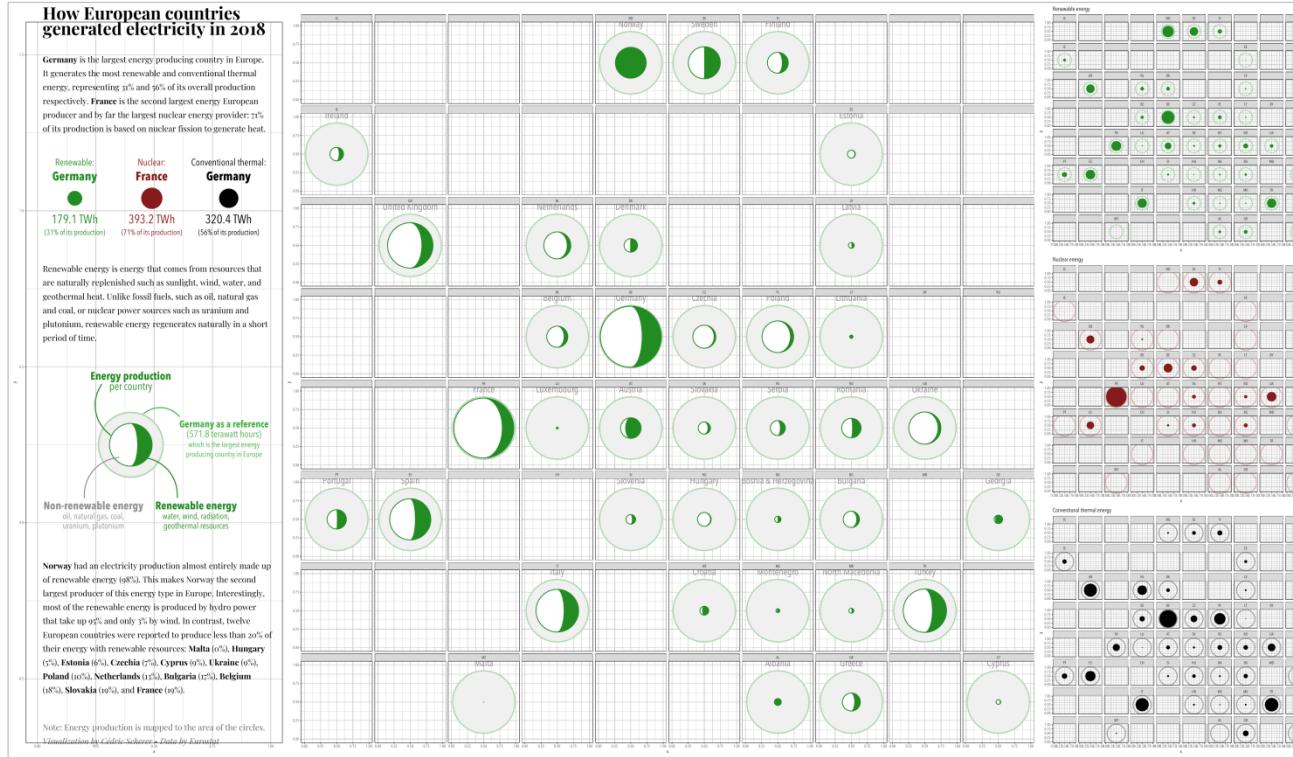
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legend | main | (renewable / nuclear / thermal) + plot_layout(widths = c(.35, 1, .35))



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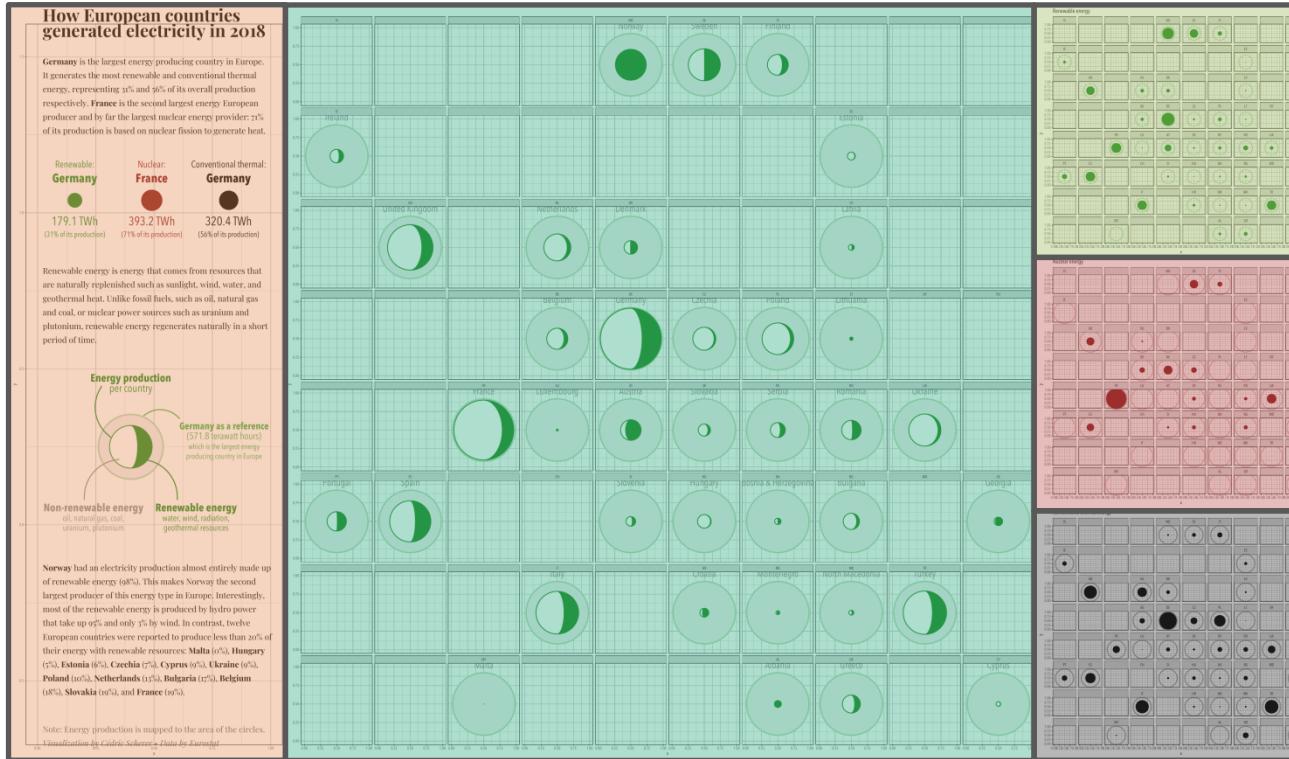
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legend | main | (renewable / nuclear / thermal) + plot_layout(widths = c(.35, 1, .35))



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CÉDRIC SCHERER

Data Visualization & Computational Ecology



A QUICK HOW-TO ON LABELLING BAR GRAPHS IN GGPLOT2

Bar charts are likely the most common chart type out there and come in several varieties. Most notably, Direct labels can increase accessibility of a bar graph. I got a request how one can add percentage labels inside the bars and how to highlight specific bars with `[ggplot2]`. This short tutorial shows you multiple ways how to do so.

POSTED BY CÉDRIC MONDAY, JULY 5, 2020

VISUALIZING DISTRIBUTIONS WITH RAINCLOUD PLOTS (AND HOW TO CREATE THEM WITH GGPLOT2)

Raincloud plots, that provide an overview of the raw data, its distribution, and important statistical properties, are a good alternative to classical boxplots. In this tutorial, I highlight the potential problem of boxplots, illustrate why raincloud plots are great, and show numerous ways how to create such hybrid charts in R with `[ggplot2]`.

POSTED BY CÉDRIC SUNDAY, JUNE 6, 2020

MY CONTRIBUTIONS TO THE FIRST #30DAYCHARTCHALLENGE

This April, Dominic Royé and I hosted the first `#30DayChartChallenge`, a data visualization challenge with the aim to create a chart every day of April with a given prompt. In total, we collected 1,960 contributions from around the world!

POSTED BY CÉDRIC SUNDAY, MAY 9, 2020

MY PERSONAL DATA VISUALIZATION YEAR 2020

Even though it was a crazy and exhausting year, there was also some good and exciting things happening. Therefore I decided to take a short break on New Year's Day and look back at some of the positive moments of my personal data visualization journey during 2020.

POSTED BY CÉDRIC FRIDAY, JANUARY 1, 2021

WHAT DO I BINGE NEXT? A DETAILED OVERVIEW OF THE TOP 250 TV SHOWS

My contribution to the RStudio table contests visualizing relevant details of the top 250 TV shows as rated by IMDb users. I focused on displaying all the details I and my friends care about including in-line visualizations of rating trends and average runtime.

POSTED BY CÉDRIC SUNDAY, NOVEMBER 1, 2020



ABOUT ME

Always coding. Passionate about design. Worried about nature. Proud dad.



[Support me](#)

FEATURED TAGS



FRIENDS

DataVisSociety
R4DS Community
CorreAid Will Chase
Georgios Karamanis
Marco Scianci Matthias Stahl
Heureka Labs

The screenshot shows Cedric Scherer's GitHub profile. His bio reads "Hi, I'm Cédric! Data Visualization Designer • Computational Ecologist". He has 501 followers and 92 following. His highlights include being an Arctic Code Vault Contributor. He has contributed to various repositories like tidyTuesday, OutlierCon2021, 30DayMapChallenge, CorreAidBerlin, and CheckIt-Map. His GitHub activity shows a heatmap of contributions per month from 2013 to 2020, with a significant spike in 2020. Below the heatmap, a pie chart shows the distribution of his contributions: 95% Commits, 3% Pull requests, and 2% Code review.

Thank you!

cedricscherer.com
[@cedricscherer](https://twitter.com/CedScherer)
github.com/z3tt

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[DATAVIS](#) [TUTORIAL](#) [TOYVERSE](#) [GGPLOT2](#)

A GGPLOT2 TUTORIAL FOR BEAUTIFUL PLOTTING IN R

POSTED BY CÉDRIC ON MONDAY, AUGUST 5, 2013

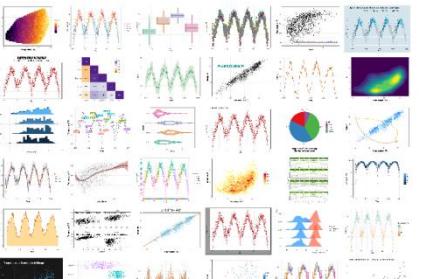
Last update: 2020-12-07

INTRODUCTORY WORDS

I don't care, just show me the content!

Back in 2016, I had to prepare my PhD introductory talk and I started using [\(ggplot2\)](#) to visualize my data. I never liked the syntax and style of base plots in R, so I was quickly in love with ggplot. Especially useful was its faceting utility. But because I was short on time, I plotted these figures by trial and error and with the help of lots of googling. The resource I came always back to was a blog entry called [Beautiful plotting in R: A ggplot2 cheatsheet](#) by Zev Ross, updated last in January 2016. After giving the talk which contained some decent plots thanks to the blog post, I decided to go through this tutorial step-by-step. I learned so much from it and directly started modifying the codes and over the time I added additional code snippets, chart types and resources.

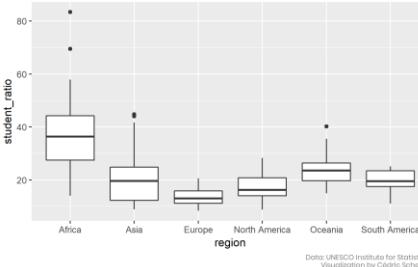
Since the blog entry by Zev Ross was not updated for some years and step by step this became a unique version of a tutorial, I decided to host the updated version on my GitHub. Now it finds its proper place on this homepage! (Plus I added a ton of other updates—just to name a few: The fantastic [\(patchwork\)](#), [\(ggtree\)](#) and [\(ggeforce\)](#) packages. How to deal with custom fonts and colors. A collection of R packages tailored to create interactive charts. And several other chart types including pie charts because everyone looooves pie charts!)


[DATAVIS](#) [TUTORIAL](#) [ANIMATIONS](#) [GGPLOT EVOLUTION](#) [TOYTODAY](#) [GGPLOT2](#) [TOYVERSE](#) [TOYTUESDAY](#)

THE EVOLUTION OF A GGPLOT (EP. I)

POSTED BY CÉDRIC ON FRIDAY, MAY 17, 2019

The Evolution of a ggplot



- Aim of this Tutorial
- Data Preparation
- The Default Boxplot
- Sort Your Data!
- Let Your Plot Shine—Get Rid of the Default Settings
- The Choice of the Chart Type
- More Geoms, More Fun, More Info!
- Add Text Boxes to Let The Plot Speak for Itself
- Bonus: Add a Tile Map as Legend
- The Final Evolved Visualization
- Complete Code for Final Plot
- Post Scriptum: Mean versus Median

AIM OF THIS TUTORIAL

In this series of blog posts, I aim to show you how to turn a default ggplot into a plot that visualizes information in an appealing and easily understandable way. The goal of each blog post is to provide a step-by-step tutorial explaining how my visualization have evolved from a typical basic ggplot. All plots are going to be created with 100% [\(ggplot2\)](#) and 0% Inkscape.

In the first episode, I transform a basic boxplot into a colorful and self-explanatory combination of a jittered dot strip plot and a lollipop plot. I am going to use [data](#) provided by the [#TidyTuesday challenge](#) I of 2019.

Thank you!



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the
END

