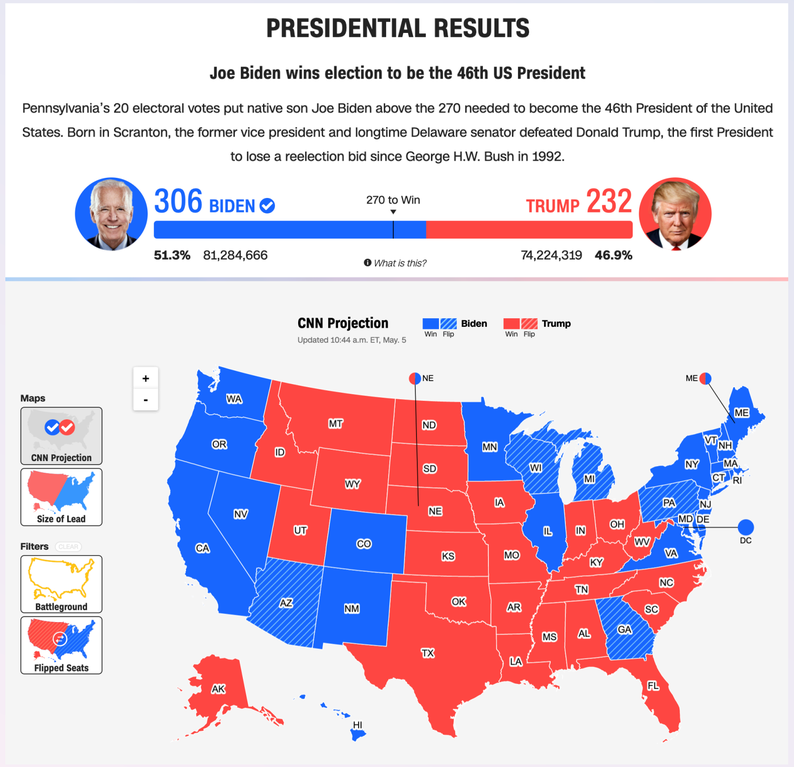
Chapter 4, Episode 4:
Building a better world

People with disabilities deserve to:

Participate in politics



Credit: CNN

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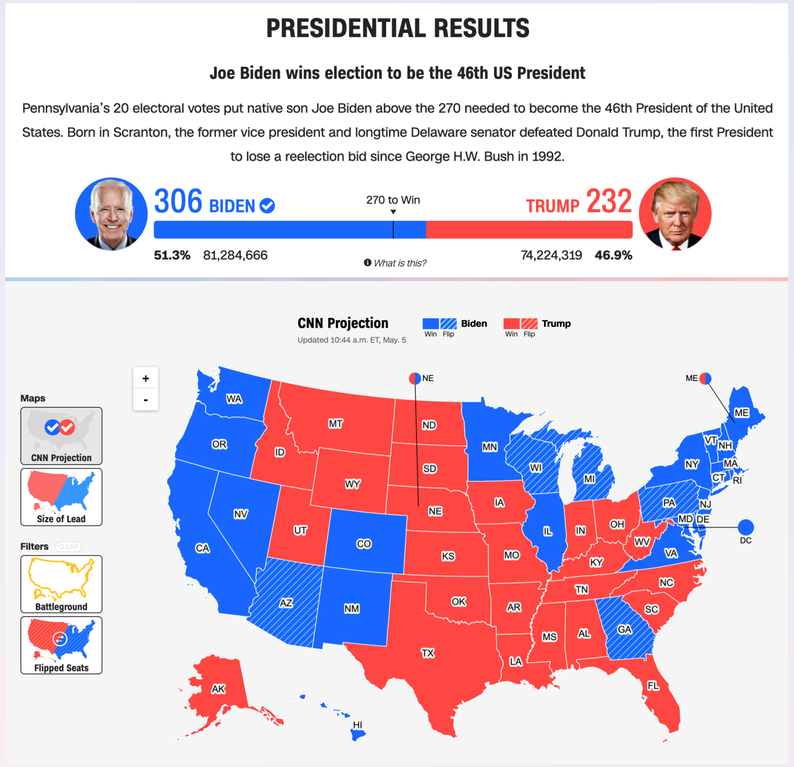

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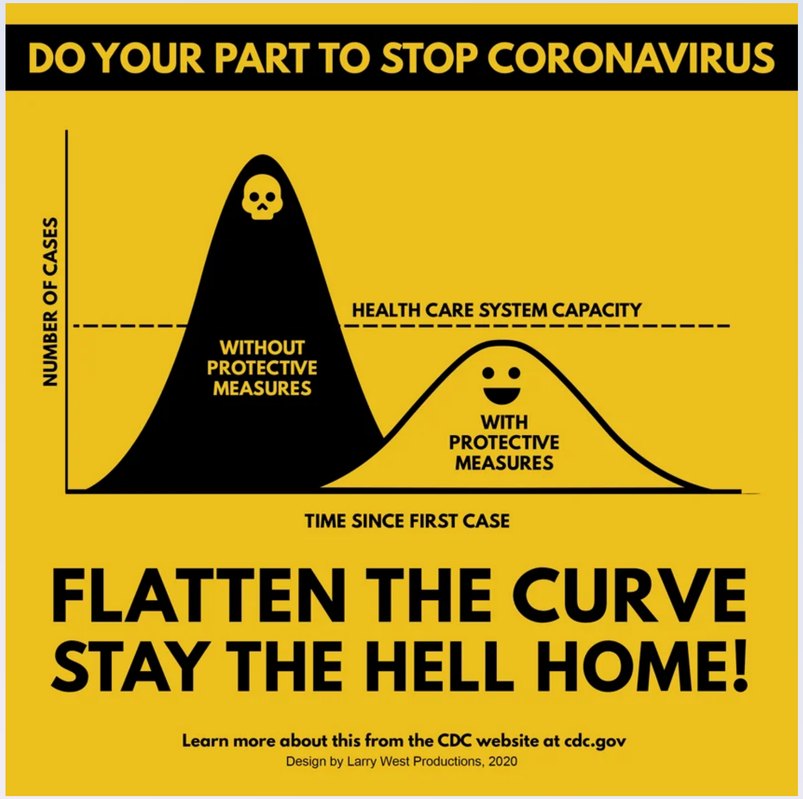
Make informed decisions



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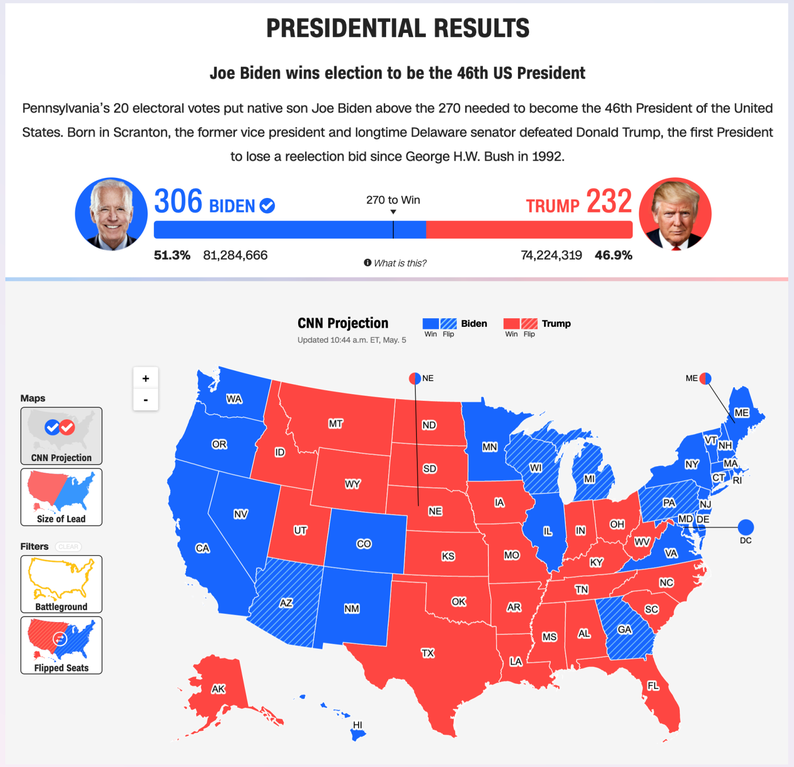

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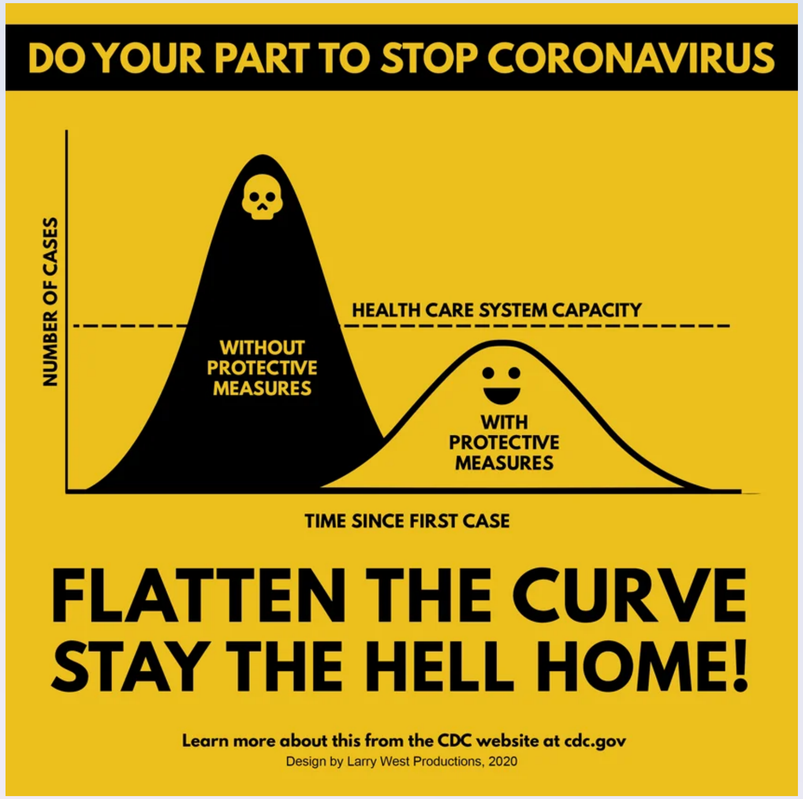
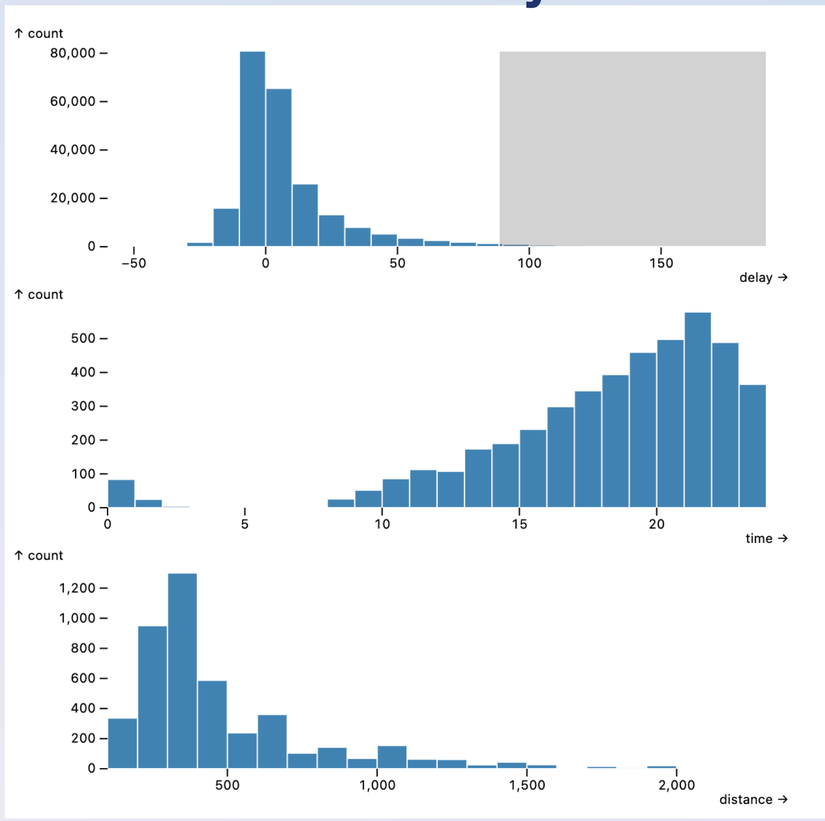


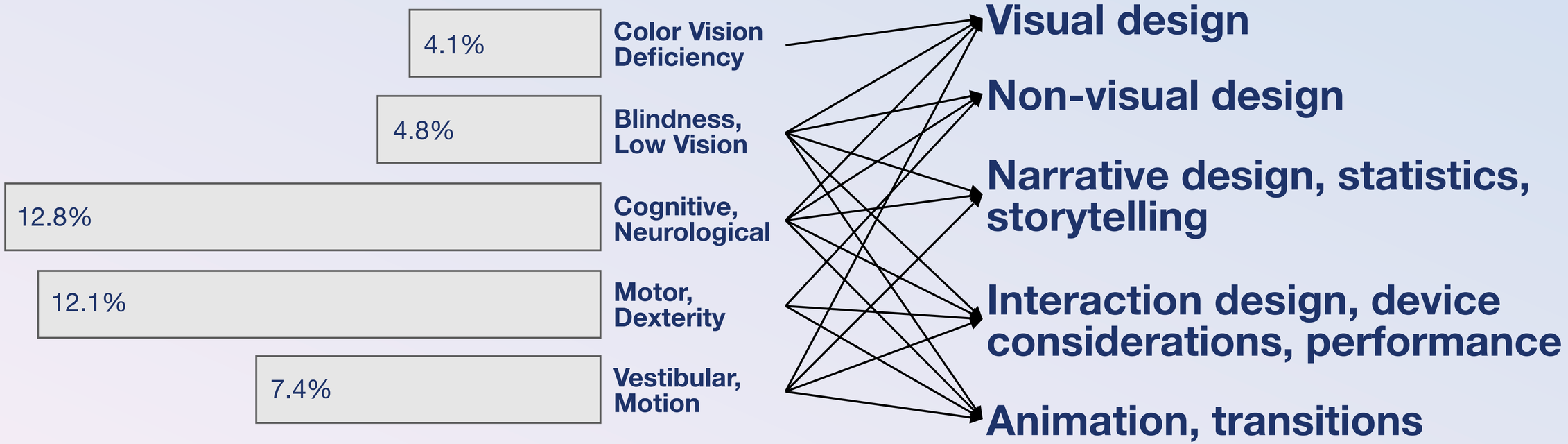
Credit: Reddit

Analyze data quickly and efficiently

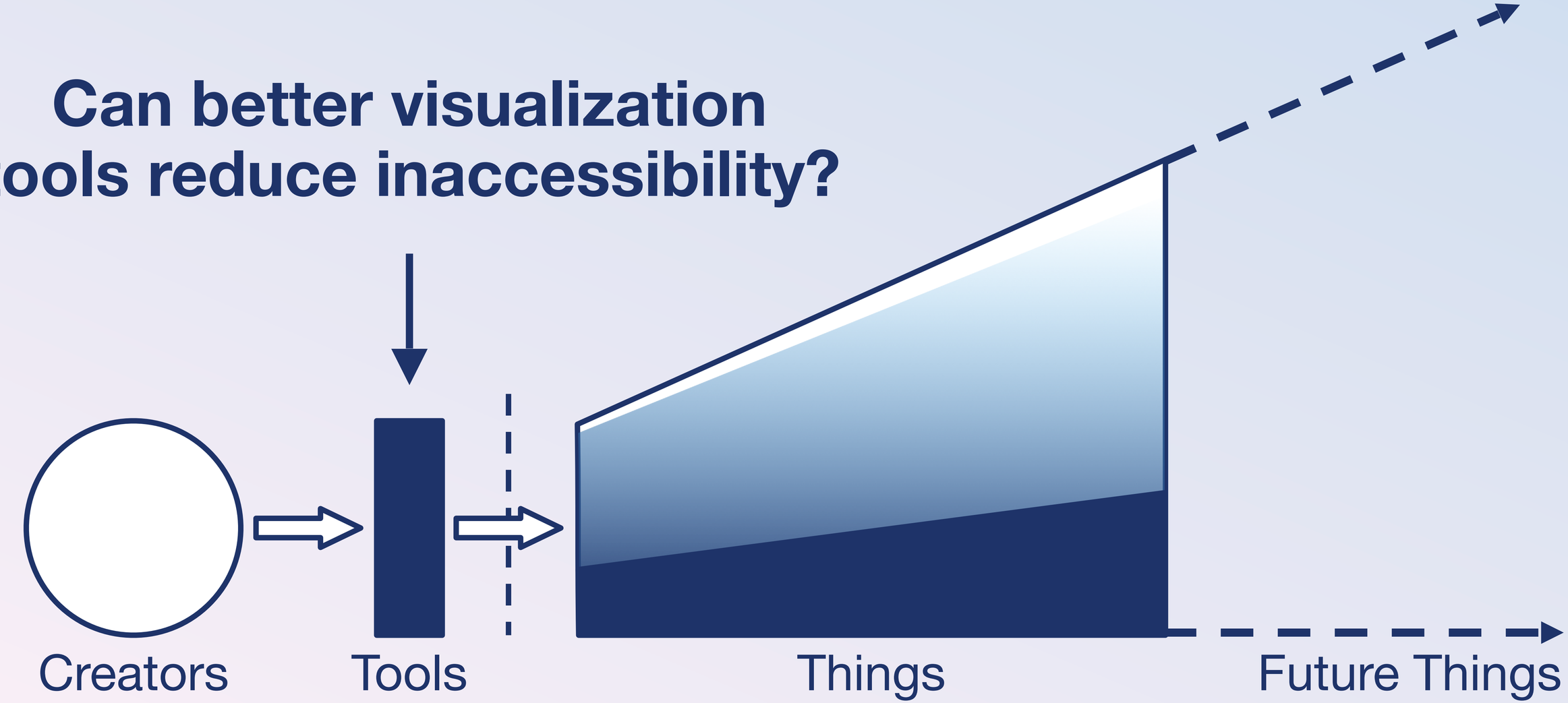


Credit: Our research

Accessibility affects every aspect of visualization work



Can better visualization tools reduce inaccessibility?



All principles are *incomplete*,
but some are *useful*.

Perceivable
Operable
Understandable
Robust

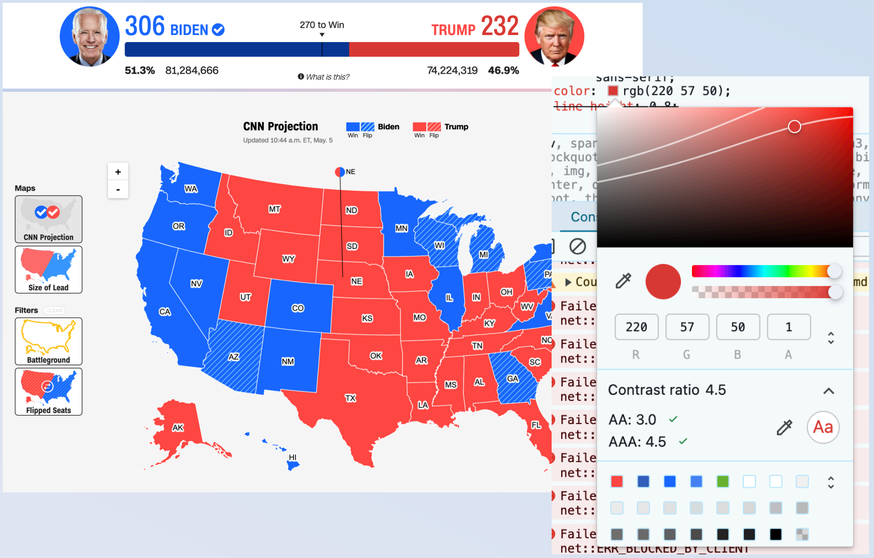
Chartability's additions:

+
Compromising
Assistive
Flexible

Elavsky et al, "Chartability." (2022)

Perceivable

Can someone perceive this in multiple ways? Is each way easy?



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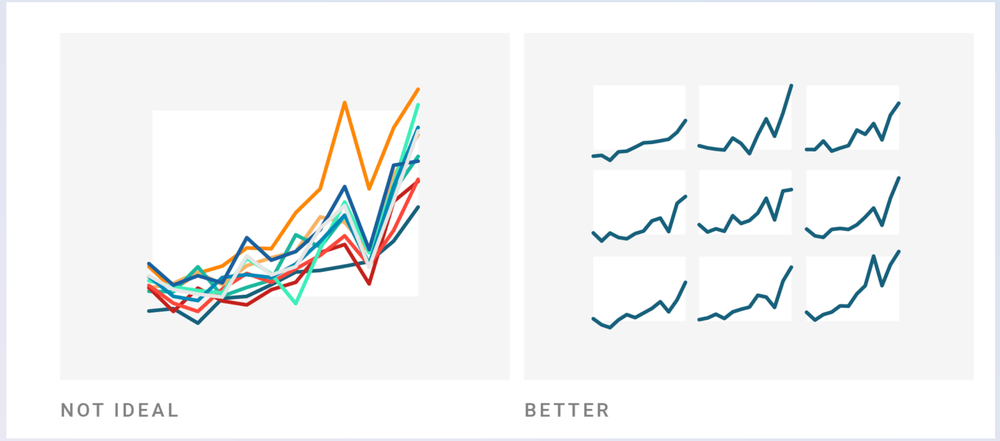

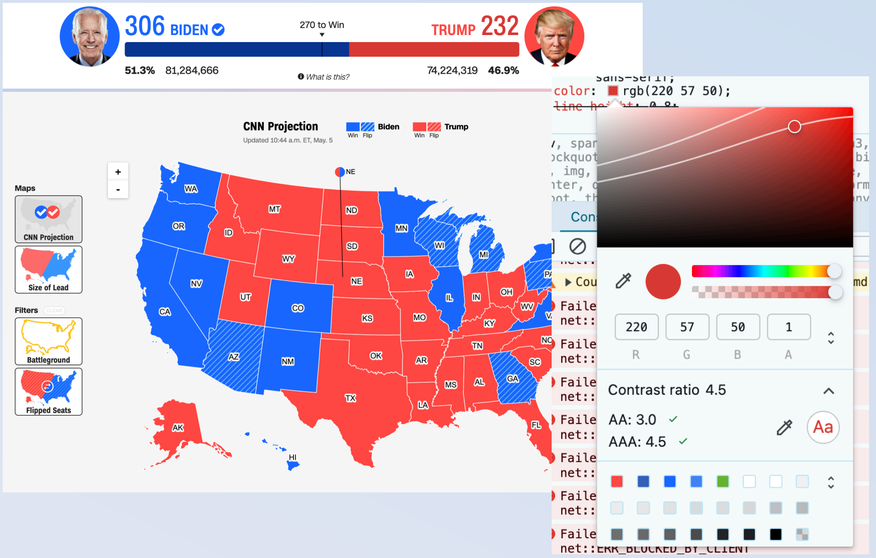

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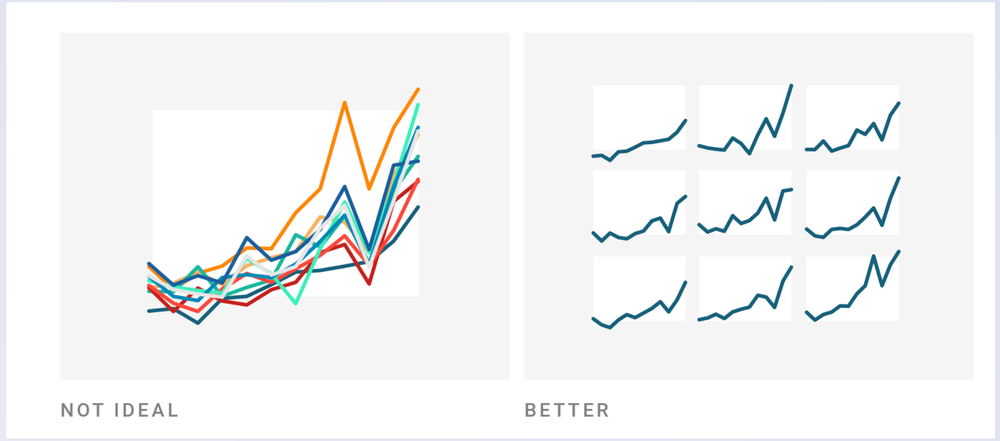

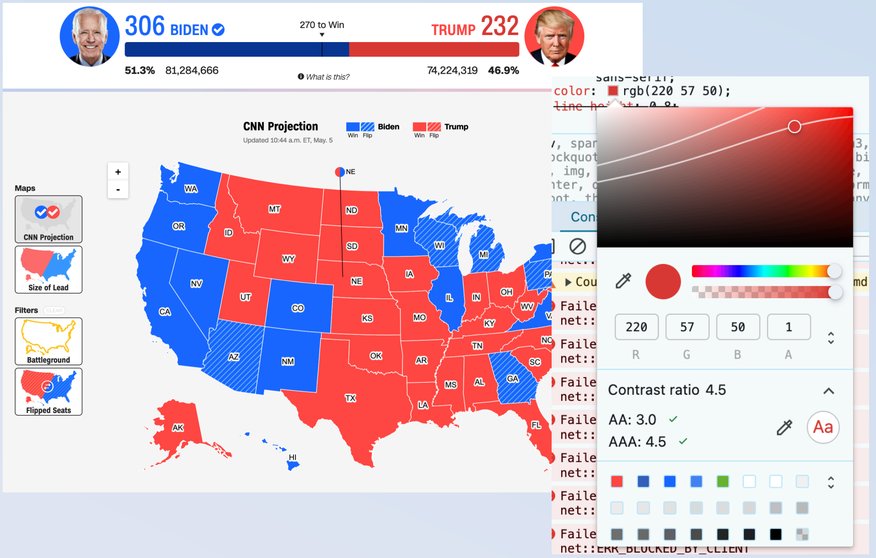

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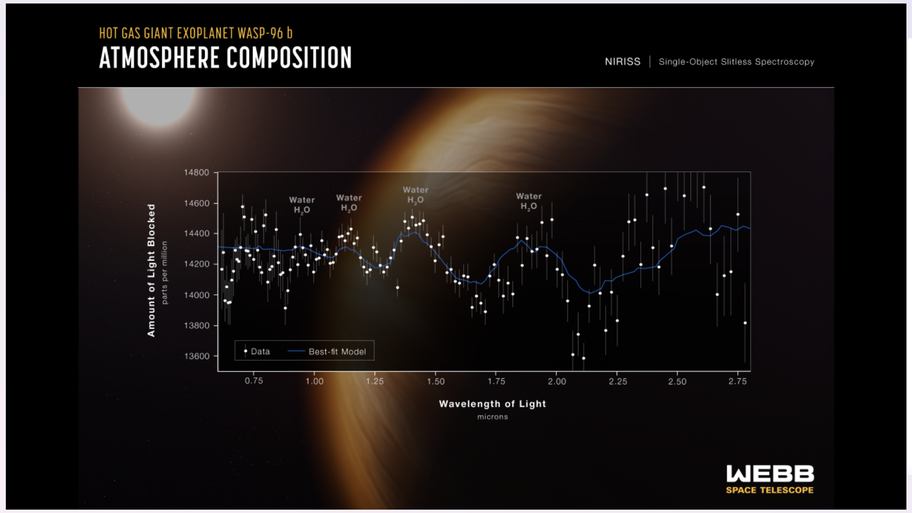


Exoplanet WASP-96 b (NIRISS Transmission Spectrum)

Extended Description

Graphic titled "Hot Gas Giant Exoplanet WASP-96 b Atmosphere Composition, NIRISS Single-Object Slitless Spectroscopy."

The graphic shows a transmission spectrum in the form of a graph of the Amount of Light Blocked by the planet's atmosphere in parts per million on the vertical *y*-axis versus Wavelength of Light in microns on the horizontal *x*-axis.

Graph

Axes

The *y*-axis ranges from 13,500 parts per million (less light blocked) at the bottom to 14,800 parts per million (more light blocked) at the top, with labeled tick marks are labeled every 200 parts per million, starting at 13,600.

The *x*-axis ranges from 0.6 microns on the left to 2.8 microns on the right, with labeled tick marks every 0.25 microns, starting at 0.75 microns.

Key

The graph includes a key showing that the solid white circles centered on gray vertical lines represent data points, and a blue solid line represents a best-fit model.

Data and Model

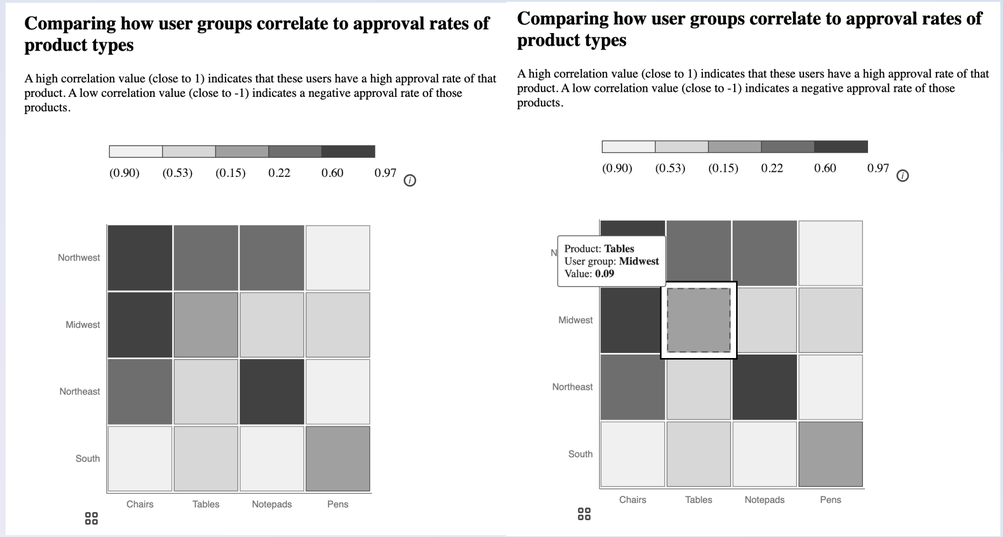
The graph consists of 141 data points, each with a gray error bar. The points range in value from 13,589 to 14,883 parts per million. The data points are not connected. They follow a jagged trend from left to right, with a number of broad peaks and valleys. The lengths of the error bars vary from a minimum of plus or minus 43 to a maximum of plus or minus 314. The error bars are smallest between about 1 and 1.3 microns, generally increasing in length toward the left from 1 to 0.6 microns, and toward the right from about 1.3 to 2.8 microns.

A solid blue line with several prominent peaks and valleys represents the best-fit model. The model begins at the far left with a very slight downward slope toward the right with a small peak around 0.95 microns, and another peak at about 1.15 microns. The line then becomes more sinuous, forming a taller, broader peak centered at about 1.4 microns and a slightly shorter broad peak at 1.9 microns. Starting around 2.15 microns, the line trends back upward with a wavy slope of about 30 degrees.

The blue best-fit model line generally follows the trend of the data. It intersects some data points, but does not match the data perfectly. The match between the model and data is clearest between about 0.9 and 1.65 microns.

Operable

Can someone operate this in multiple ways? Is each way easy?



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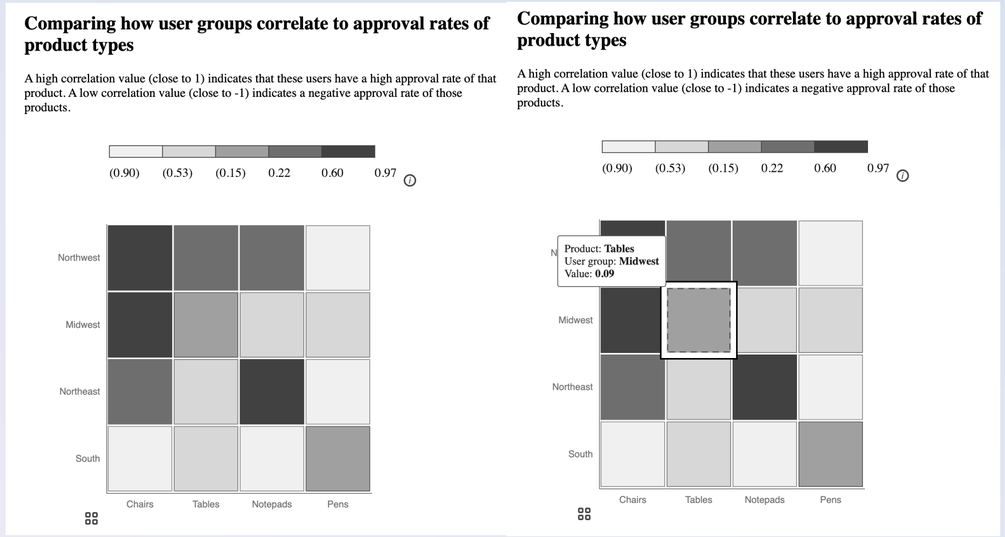

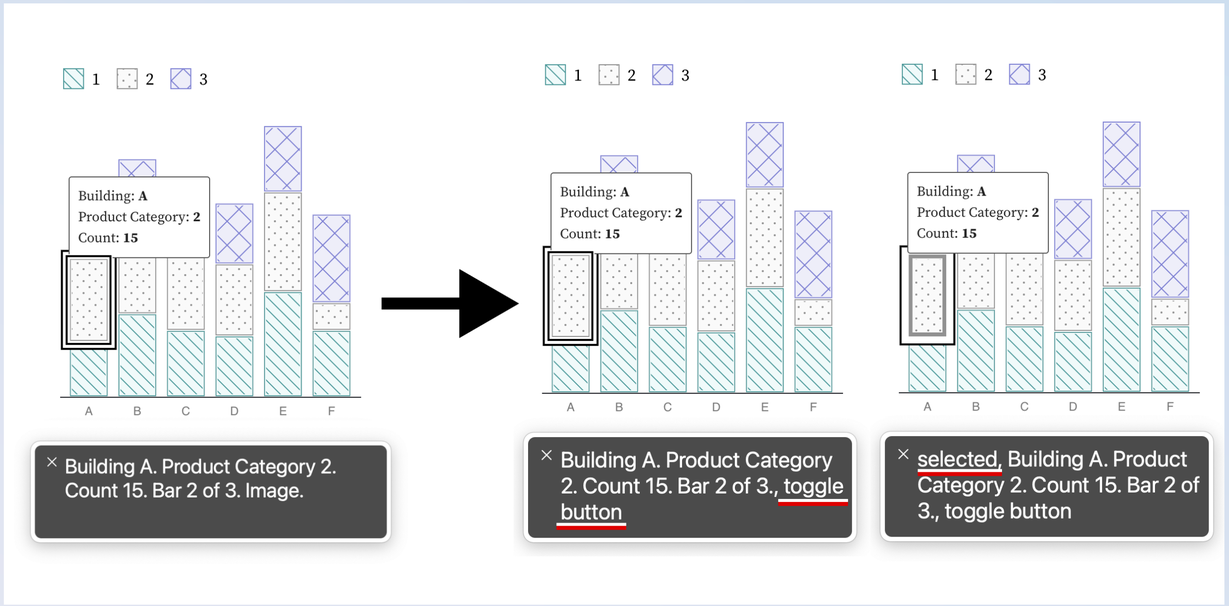

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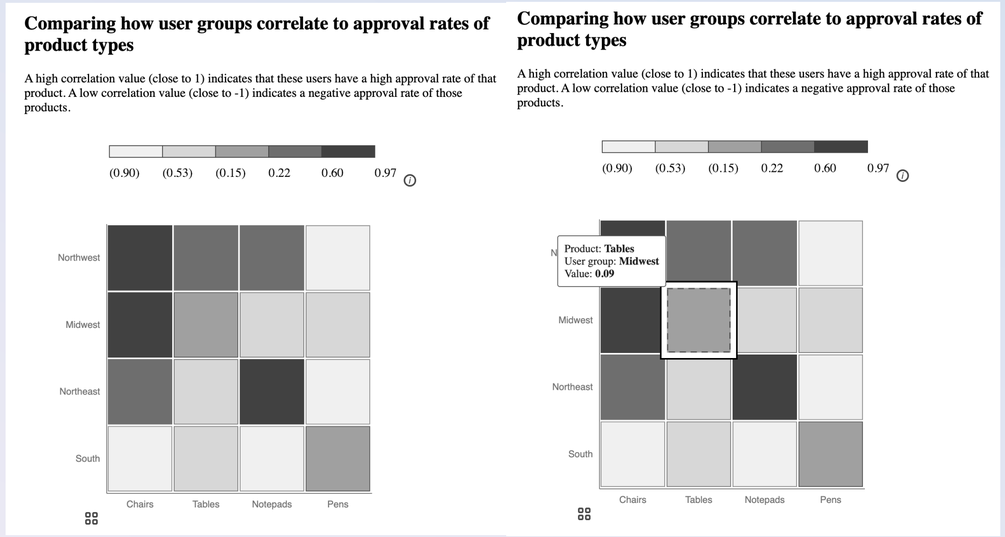

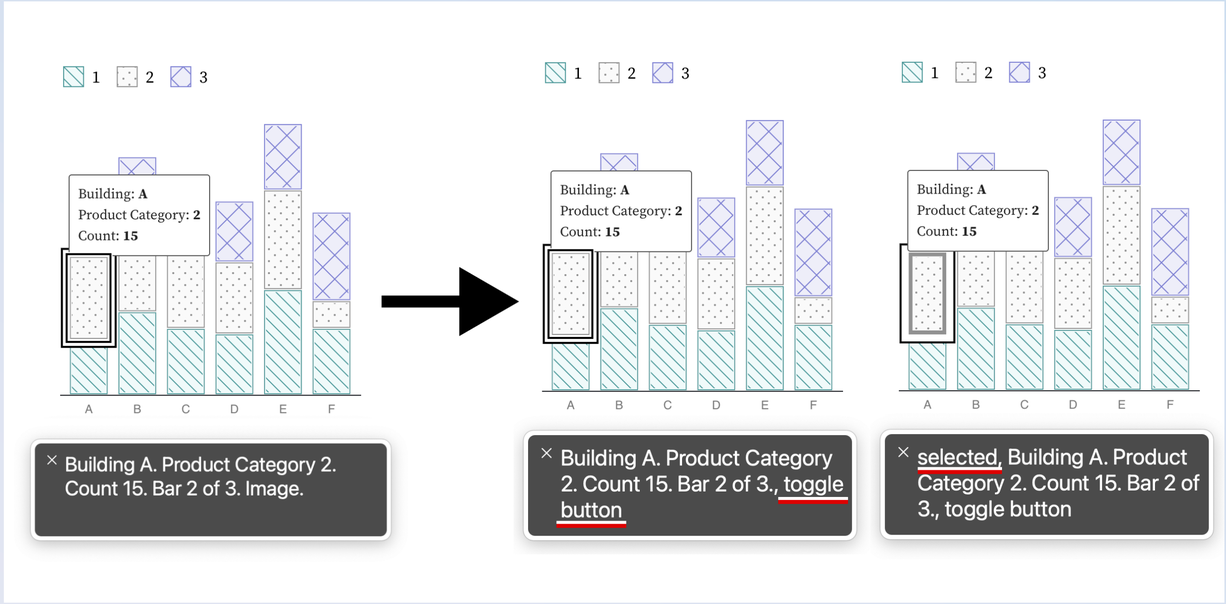

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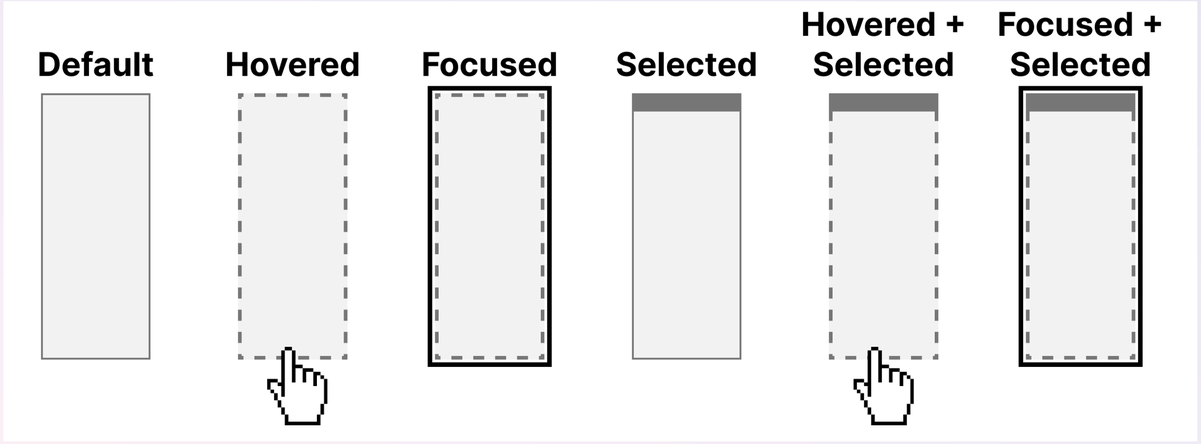

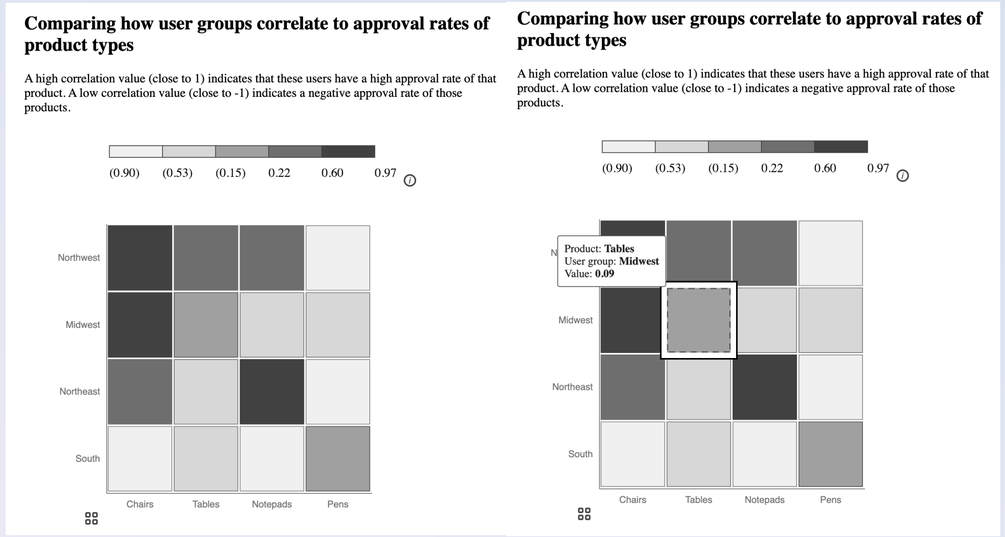

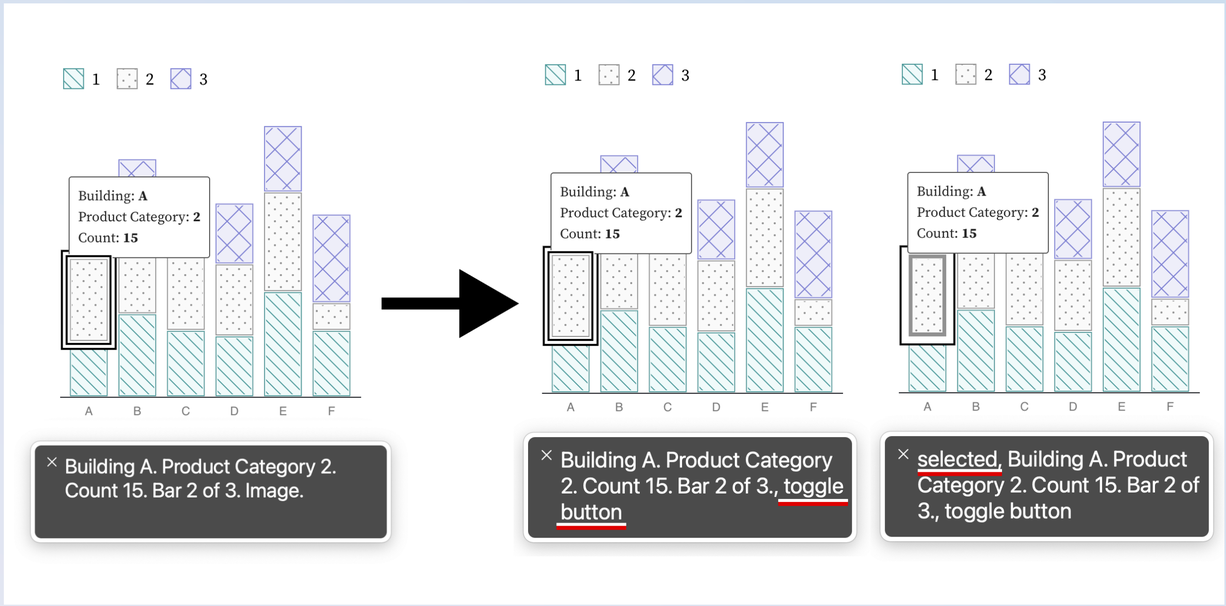

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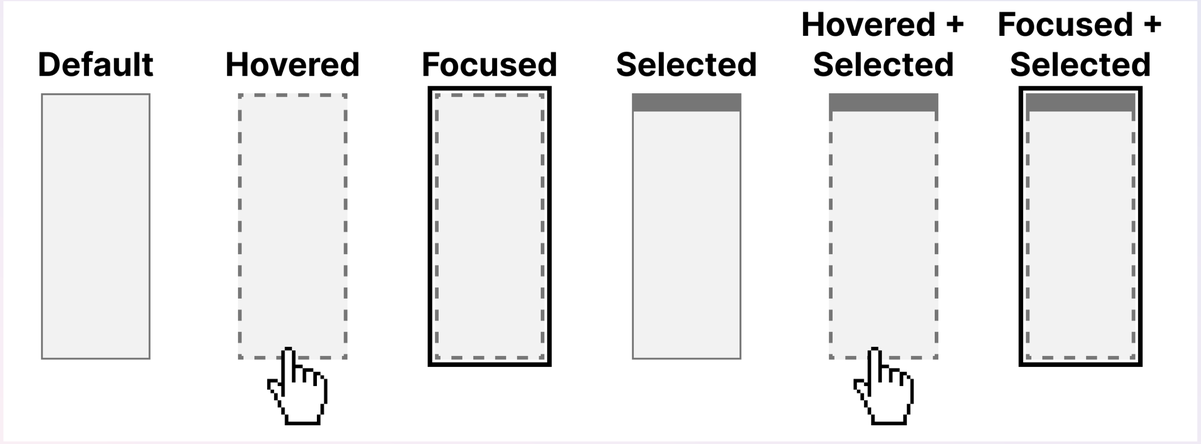

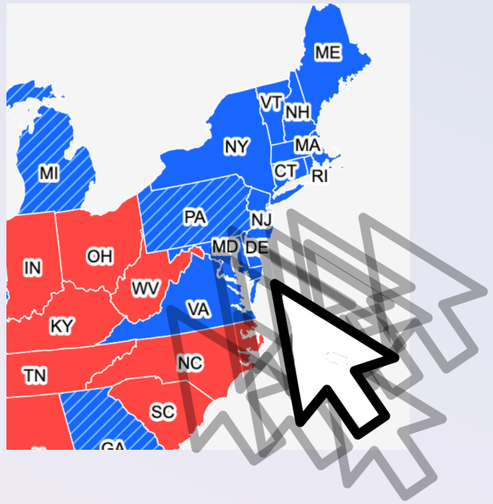

Understandable

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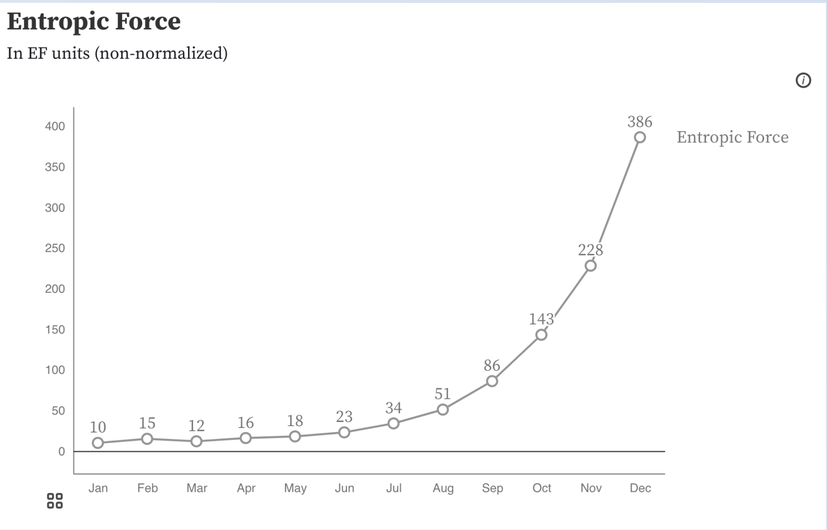

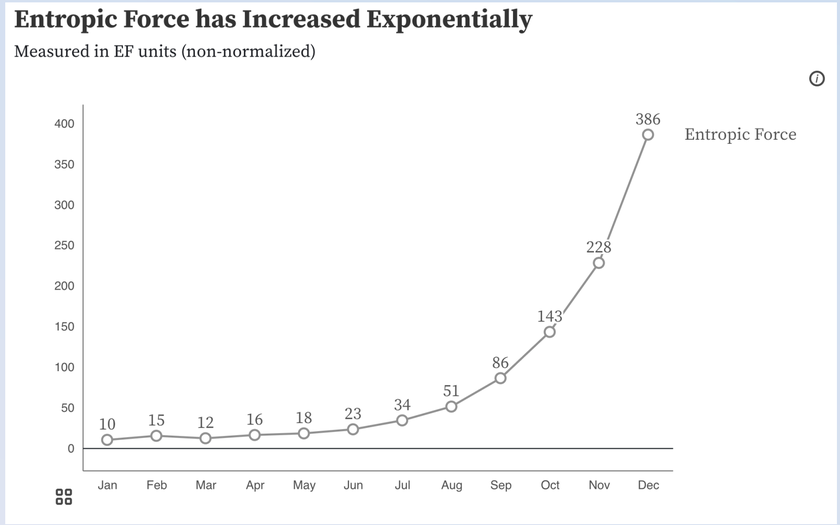

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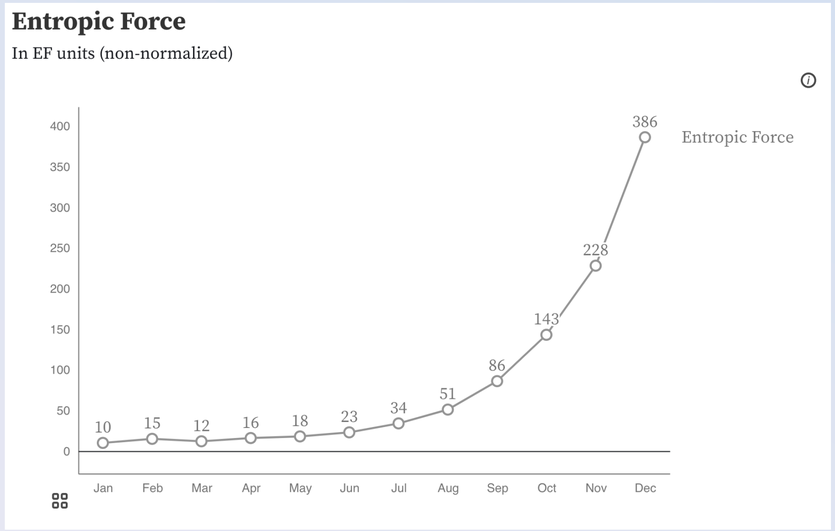

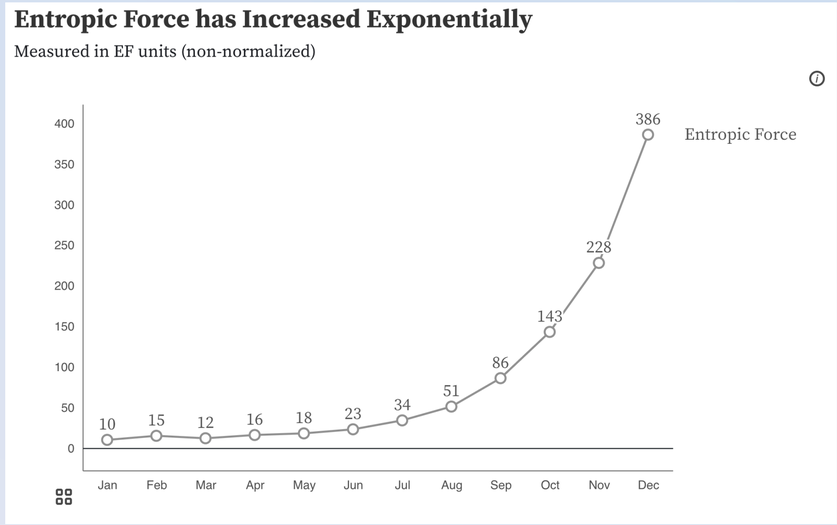

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Measured in EF units (non-normalized). EF units are valuable for catching egregious over-simulation in models that use randomized data decimation techniques. This particular evaluation findings demonstrate that the randomization models are significantly over-producing entropy in our latest force simulations.

Hemingway Editor

Readability

Post-graduate

Poor. Aim for 14.

Words: **39**

Show More

1 adverb. Aim for 0 or fewer.

0 uses of passive voice. Nice work.

1 phrase has a simpler alternative.

0 of 3 sentences are hard to read.

2 of 3 sentences are very hard to read.

Measured in EF units (non-normalized). These units are helpful for catching bad data loss when we remove our data at random. We are producing too much entropic force in our latest models.

Hemingway Editor

Readability

Grade 6

Good

Words: **32**

Show More

0 adverbs. Well done.

0 uses of passive voice. Nice work.

0 phrases have simpler alternatives.

0 of 3 sentences are hard to read.

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Robust

Is this design compliant with existing standards and works with the user’s assistive technologies of choice?

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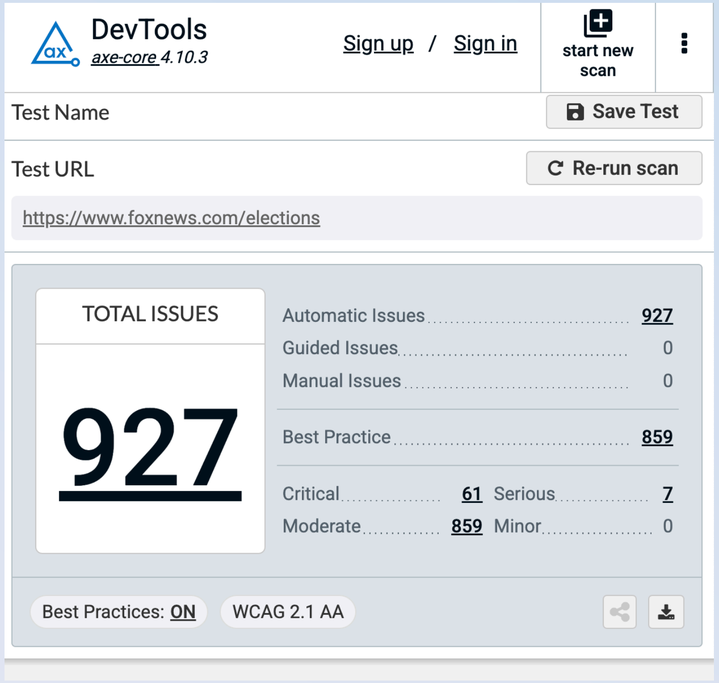
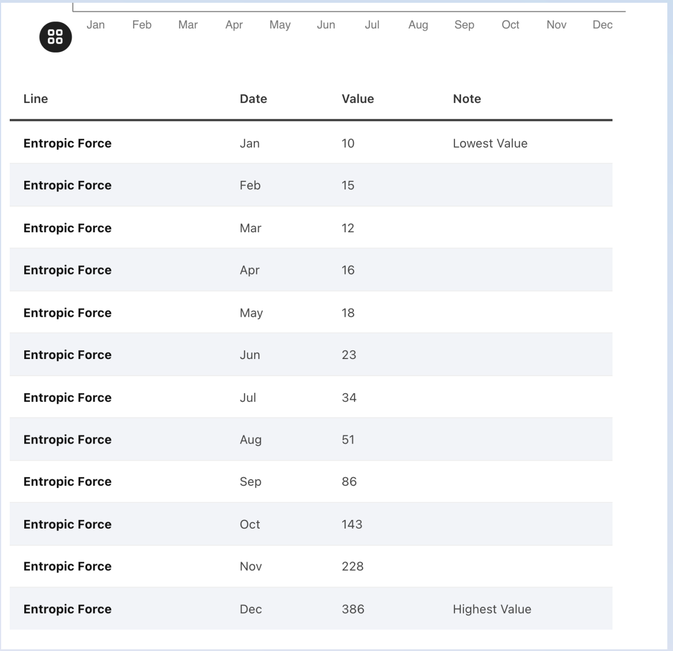


Compromising

Have multiple user flows been provided to reach each outcome or purpose provided?



Line	Date	Value	Note
Entropic Force	Jan	10	Lowest Value
Entropic Force	Feb	15	
Entropic Force	Mar	12	
Entropic Force	Apr	16	
Entropic Force	May	18	
Entropic Force	Jun	23	
Entropic Force	Jul	34	
Entropic Force	Aug	51	
Entropic Force	Sep	86	
Entropic Force	Oct	143	
Entropic Force	Nov	228	
Entropic Force	Dec	386	Highest Value

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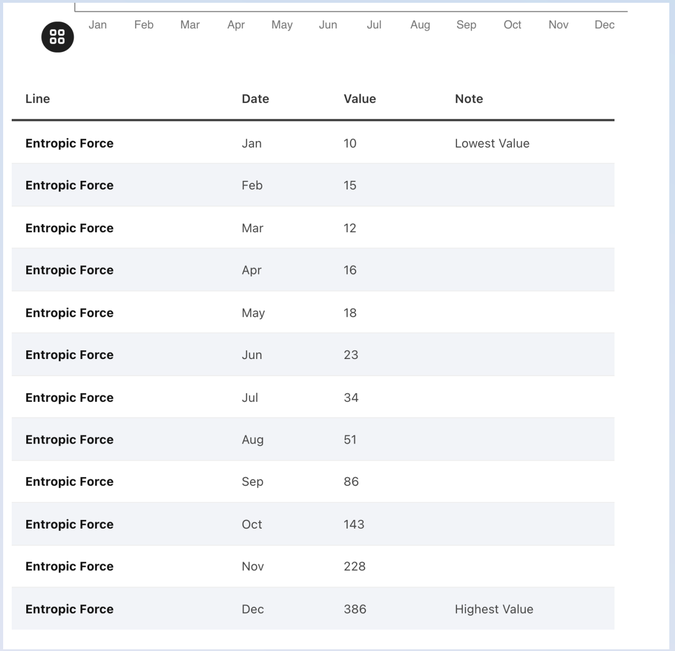

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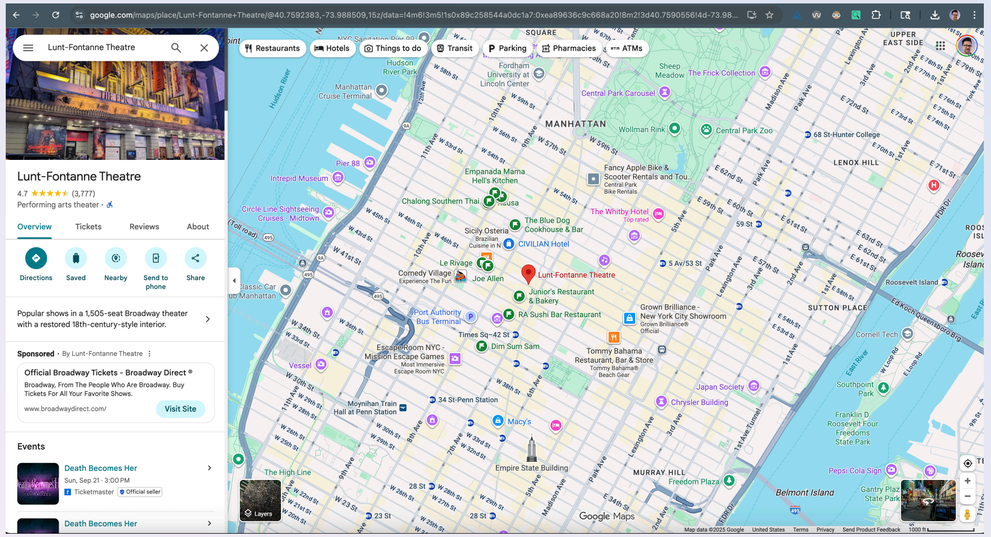

Assistive

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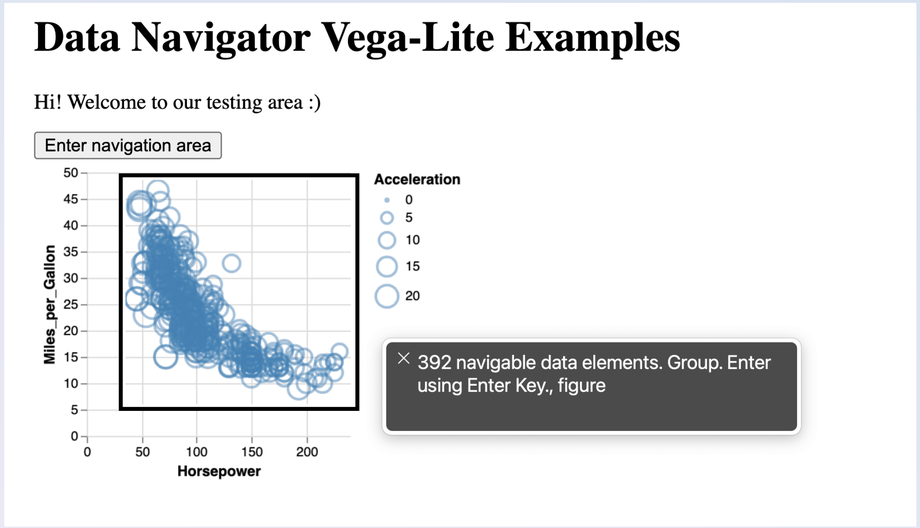

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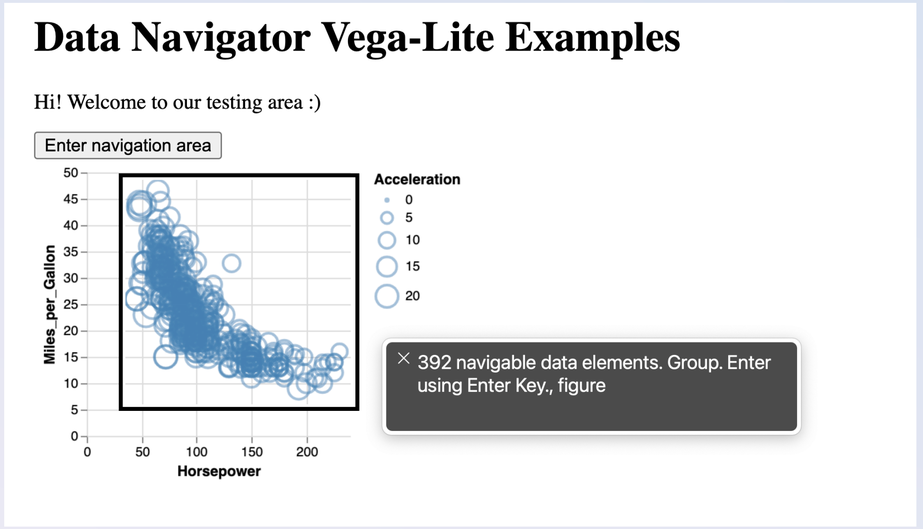

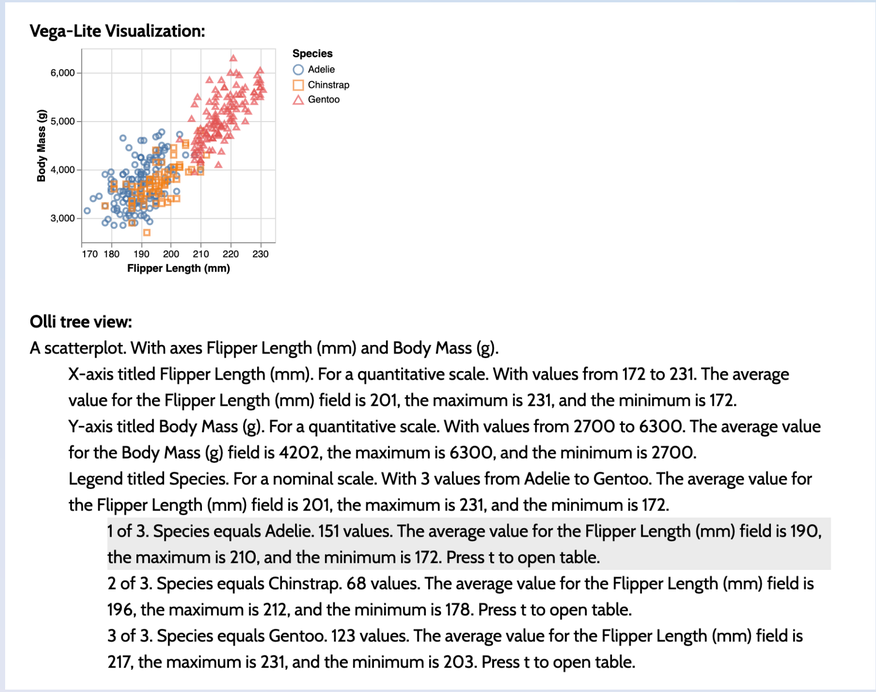

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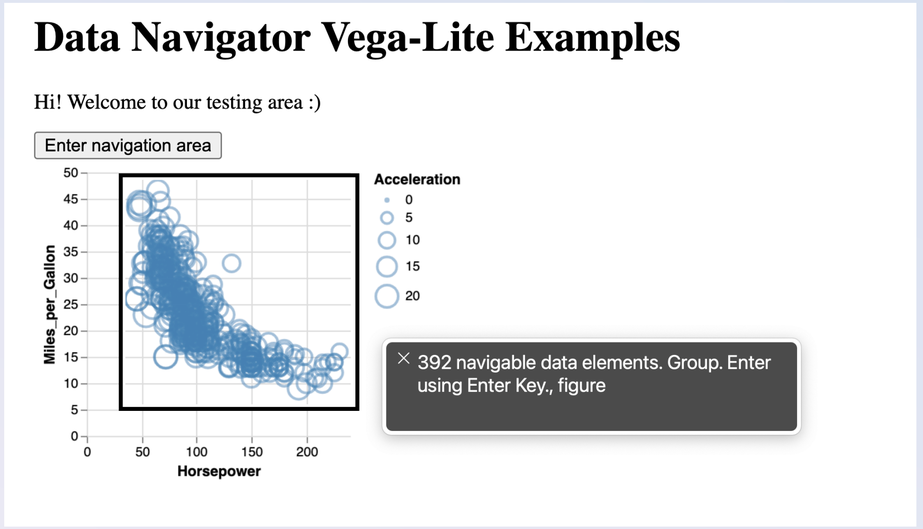

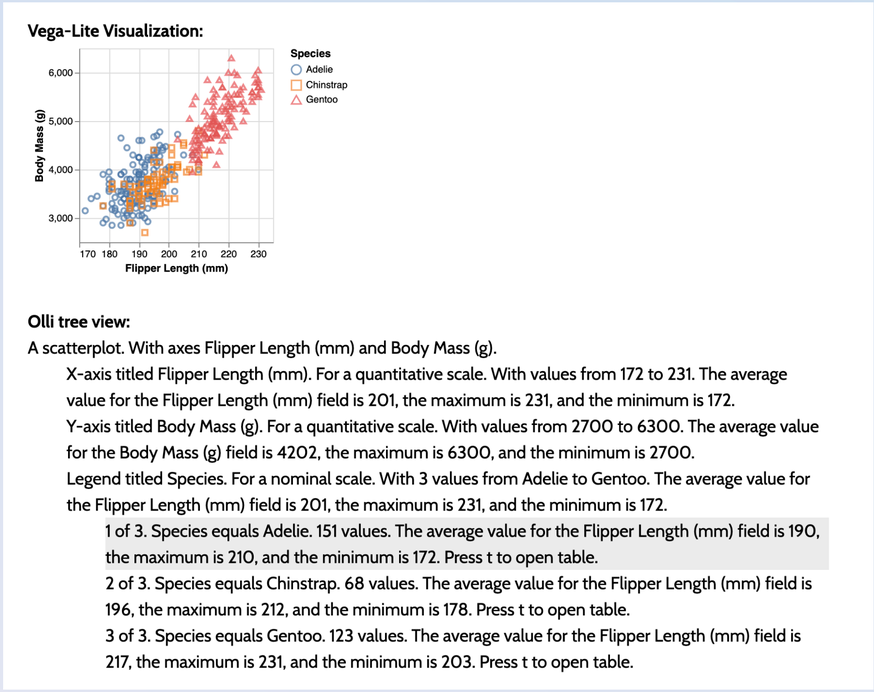

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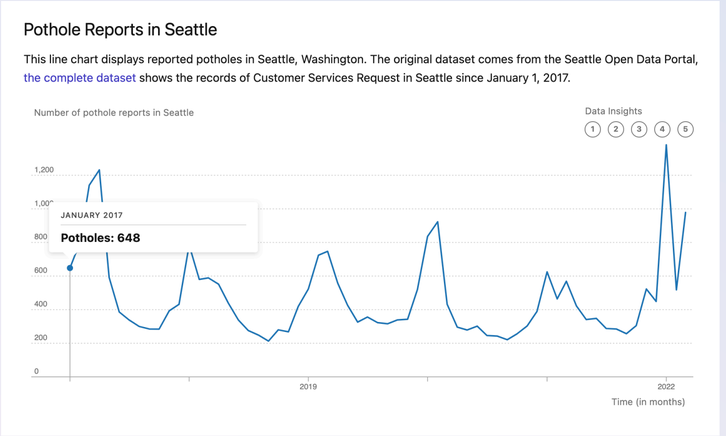

Flexible

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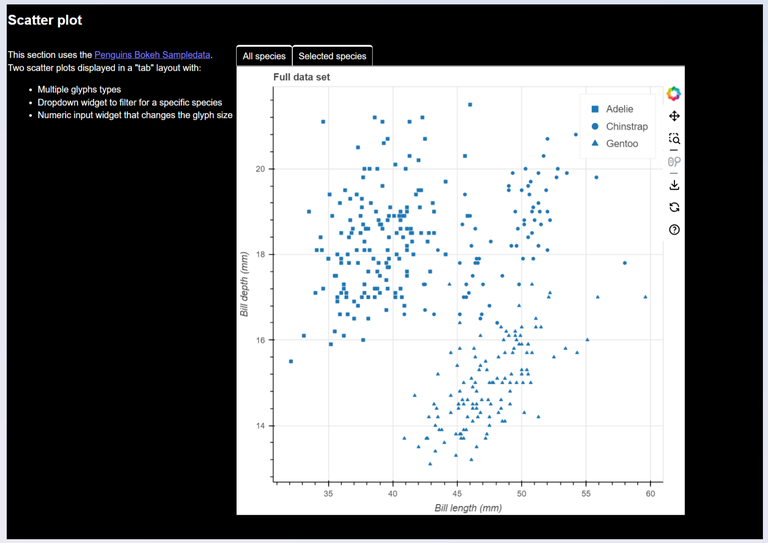

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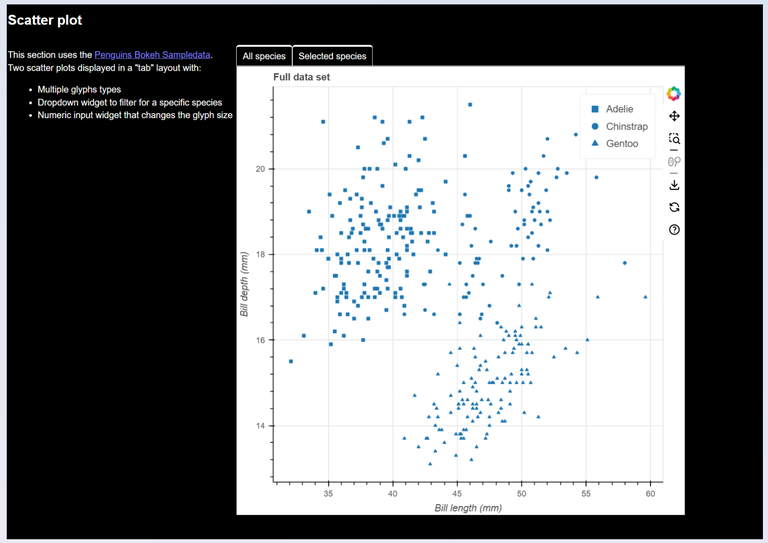

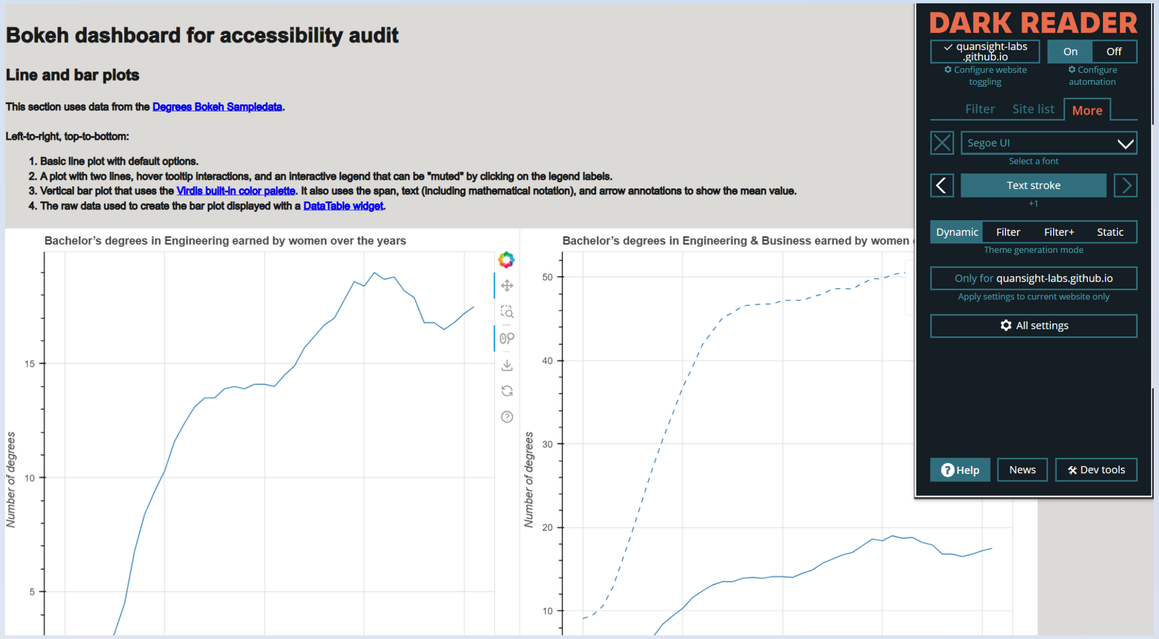

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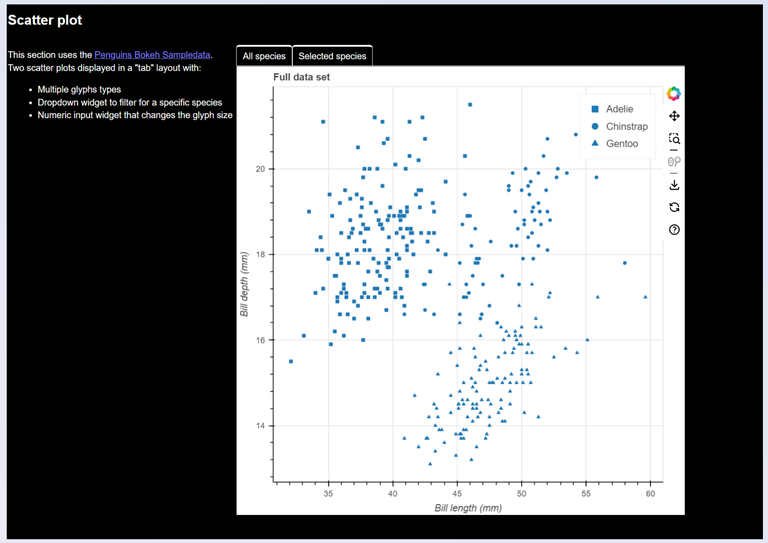

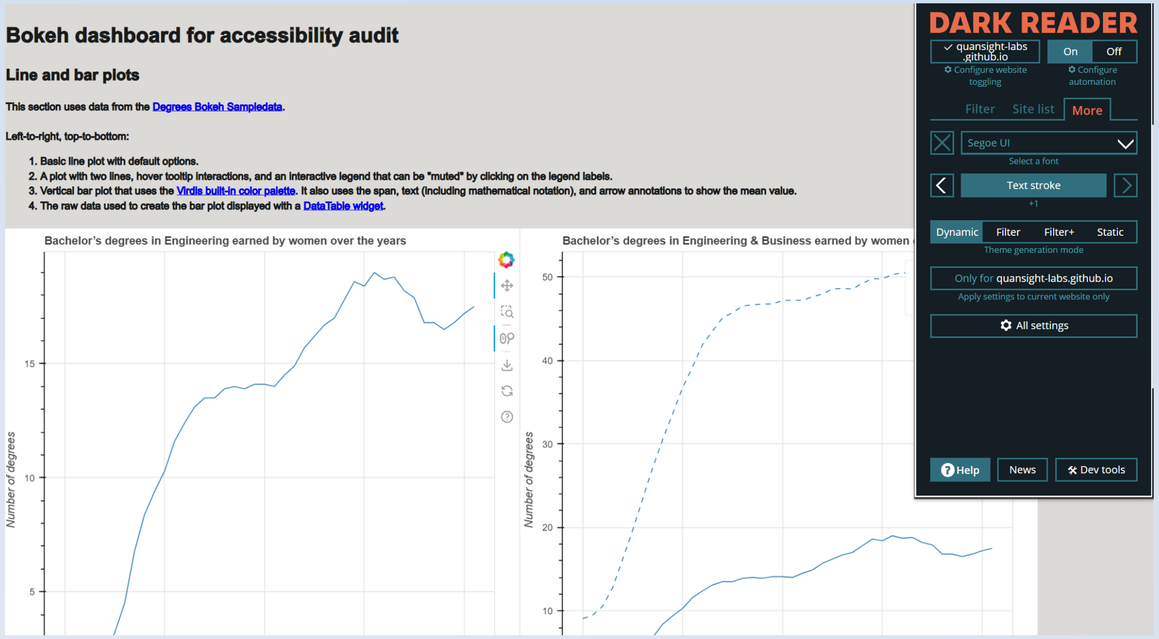

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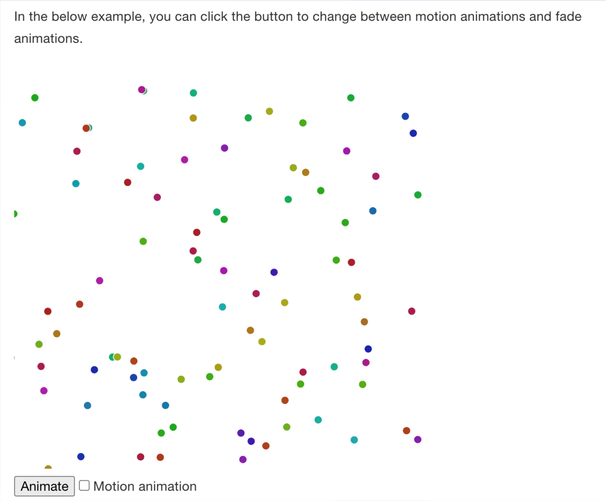

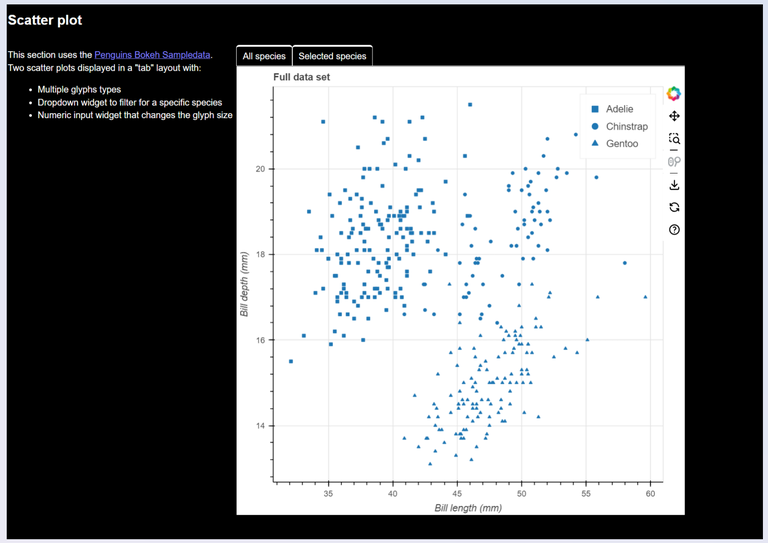

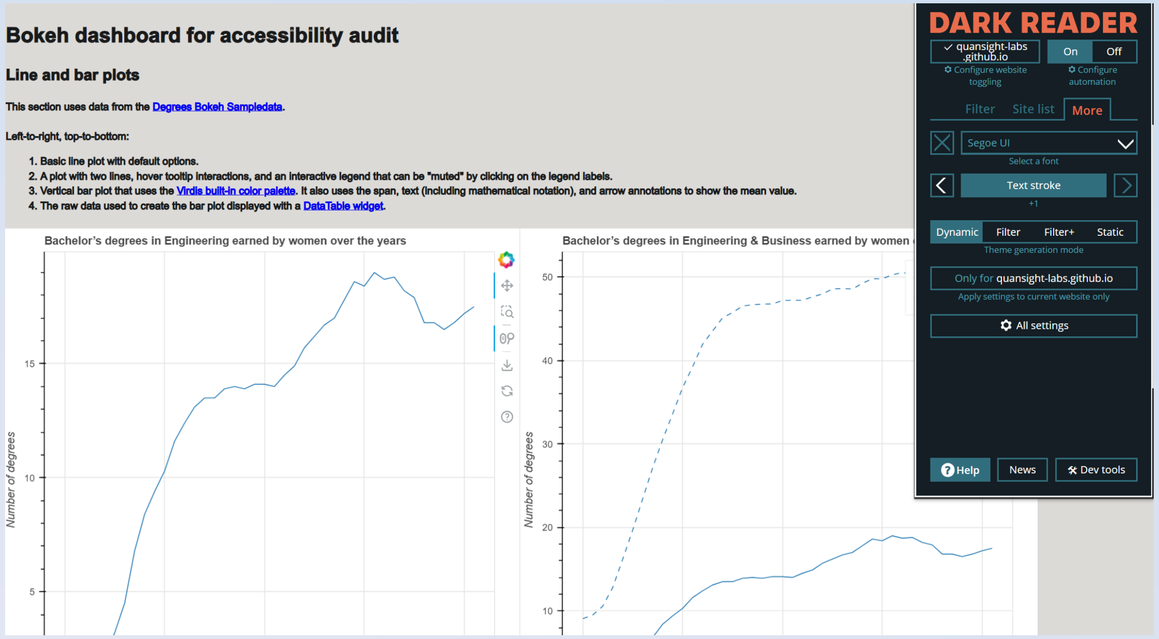

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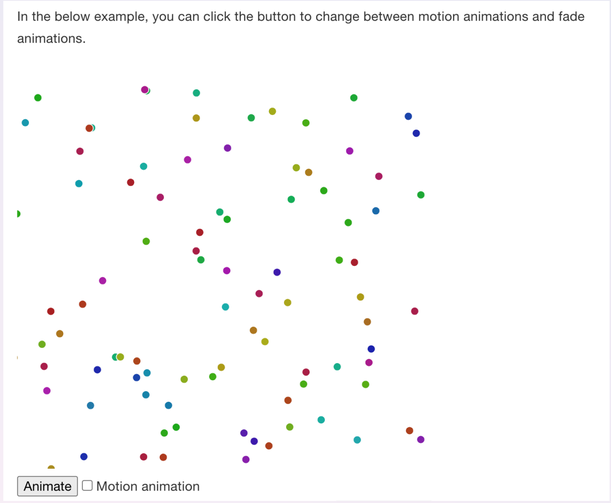
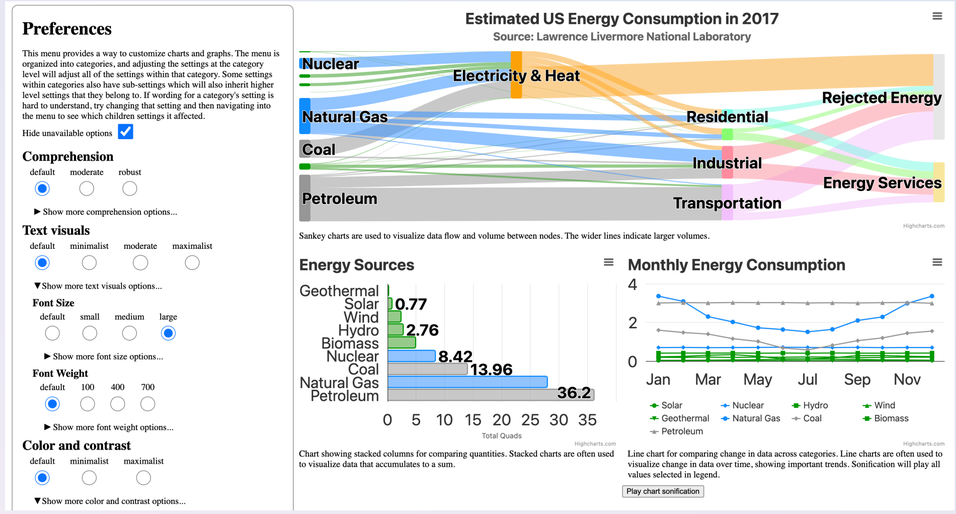
Does the user have ways to change or adjust presentational and operational aspects of this design, according to their needs and preferences?

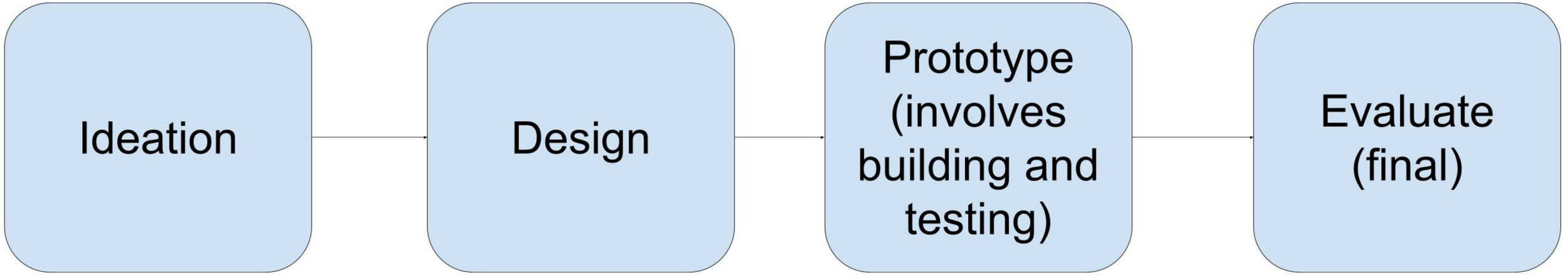




Remember: do *not* ask for free labor from people with disabilities.

Pay them for their knowledge and expertise.

You can get feedback *and* collaborate at any stage of design



Source: “How not to make bad AT” by Iman et al

Data is for *everyone*

Credit: “Let’s play with data kit” by easydataviz

My work and curated resources

Chartability workbook

Chartability paper

Chartability super audit

Data Navigator demo

Data Navigator paper

Softerware demo

Softerware paper (pre-print)

Our repo of visualization + accessibility resources