

5 Ways Writers Use Misleading Graphs To Manipulate You [INFOGRAPHIC]

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BY RYAN MCCREADY ([HTTPS://VENNGAGE.COM/BLOG/AUTHOR/RYAN/](https://venngage.com/blog/author/ryan/)), SEP 11, 2018



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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/22ce28de-6000-4e90-972a-6af7db5cb67a.png>).

In this post-truth era, graphs are being used to skew data and spin narrative like never before. Especially with the velocity at which some of these topics spread across social media.

All it takes is a single graph from a less-than-reputable source, blasted out to a list of followers, to spread a false narrative around the world.



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The data doesn't even have to be bad—it could just be presented in a misleading way. I mean, there is a whole [Wikipedia page](https://en.wikipedia.org/wiki/Misleading_graph) (https://en.wikipedia.org/wiki/Misleading_graph), [Reddit community](https://www.reddit.com/r/dataisugly/) (<https://www.reddit.com/r/dataisugly/>), and hundreds of articles about how graphs can be used to misinform readers.

Now, I can't make these data-skewing creators stop, but I can help you spot these misleading graphs when they crop up. I've included examples of how to graph the data properly. Also, following [data visualization best practices](https://www.toptal.com/designers/data-visualization/data-visualization-best-practices) (<https://www.toptal.com/designers/data-visualization/data-visualization-best-practices>), ensures that your graphs are always clear and understandable.

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5 WAYS WRITERS USE GRAPHS TO MISLEAD YOU

Writers use graphs to make their information seem credible. But graphs should be read with a critical eye. There are ways that writers will misrepresent and skew data to support their narratives. Here are 5 of the most common ways writers use graphs to mislead readers.

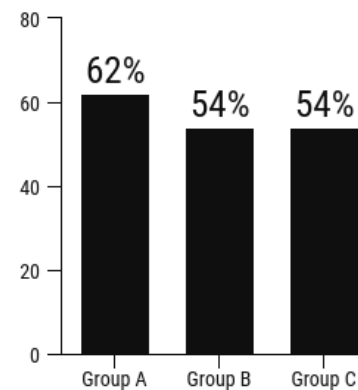
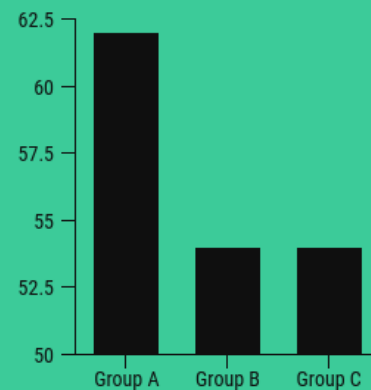
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1

OMITTING THE BASELINE

In most cases, the baseline for a graph is 0. But writers can skew how data is perceived by making the baseline a different number. This is known as a "truncated graph".



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**MISLEADING**

- Starting the vertical axis at 50 makes a small difference between groups seem massive
- Group A looks much larger than Groups B and C

VS

ACCURATE

- Starting the vertical axis at 0 offers a more accurate depiction of the data
- The difference between the groups does not seem as dramatic

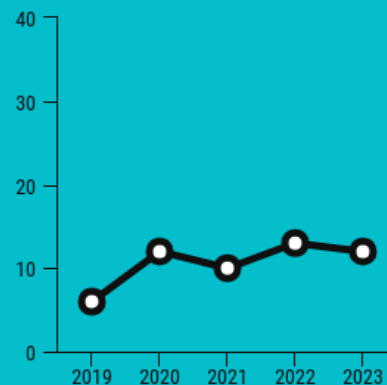
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2

MANIPULATING THE Y-AXIS

Expanding or compressing the scale on a graph can make changes in data seem more or less significant than they actually are.

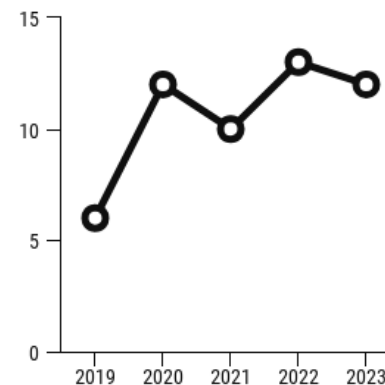
**MISLEADING**

- The scale is disproportionate to the data, making the change over

VS

ACCURATE

- The scale is proportionate to the data, showing a greater



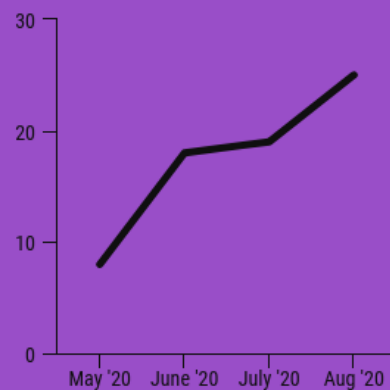
the data, making the change over time seem small

the data, showing a greater change over time

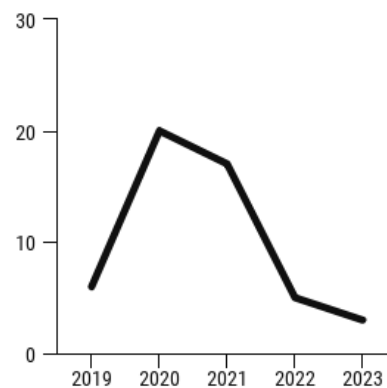
3

CHERRY PICKING DATA

Writers may only include certain data points on their graphs to reinforce their narratives. This can create a false impression of the data.

**MISLEADING**

- Only a few months out of the year are graphed, depicting an upward trends

VS**ACCURATE**

- A much wider date range is graphed, revealing an overall downward trend
- This graphs shows the bigger picture

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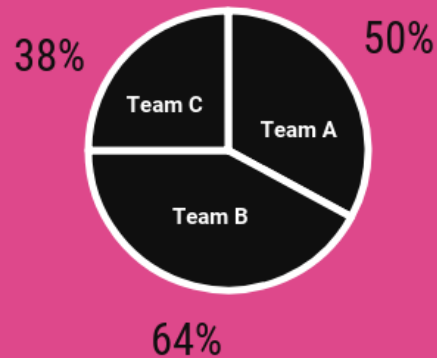
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USING THE WRONG GRAPH

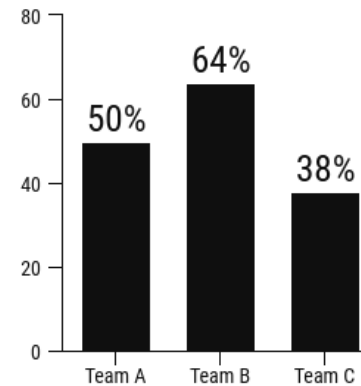
The type of graph you use should depend on the type of data you want to visualize. Using the wrong type of graph can skew the data. Writers will sometimes use the wrong type of graph on purpose.



MISLEADING

- Pie charts are used to compare parts of a whole, not the difference between groups
- A different type of graph should be used to compare the three teams

VS



ACCURATE

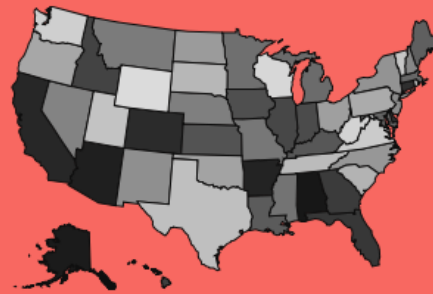


- Bar graphs are better for showing the differences between groups
- This chart is a better visualization of the data

5

GOING AGAINST CONVENTIONS

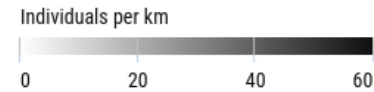
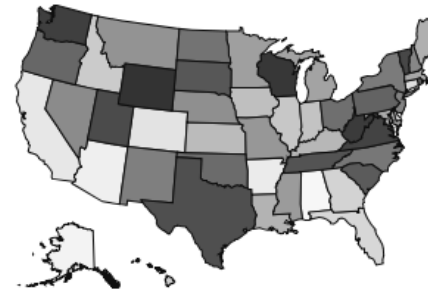
Over time, we have developed standards for how data is visualized. Flipping those conventions can make a graph confusing or misleading to readers.



MISLEADING

- Normally, darker shades are associated with density on a map but here, dark has been used to depict lower population density
- This graph can confuse and mislead readers, who expect dark to represent a higher population density

VS



ACCURATE



- This map follows the convention of using lighter shades for lighter density and darker shades for higher density
- Readers will intuitively know how to interpret the data

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1. Omitting The Baseline

Omitting baselines, or the axis of a graph, is one of the most common ways data is manipulated in graphs. This misleading tactic is frequently used to make one group look better than another.

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In the data visualization world, this is known as a truncated graph (https://en.wikipedia.org/wiki/Misleading_graph#Truncated_graph).

Truncating graphs can make something that is not very significant look like a massive difference.

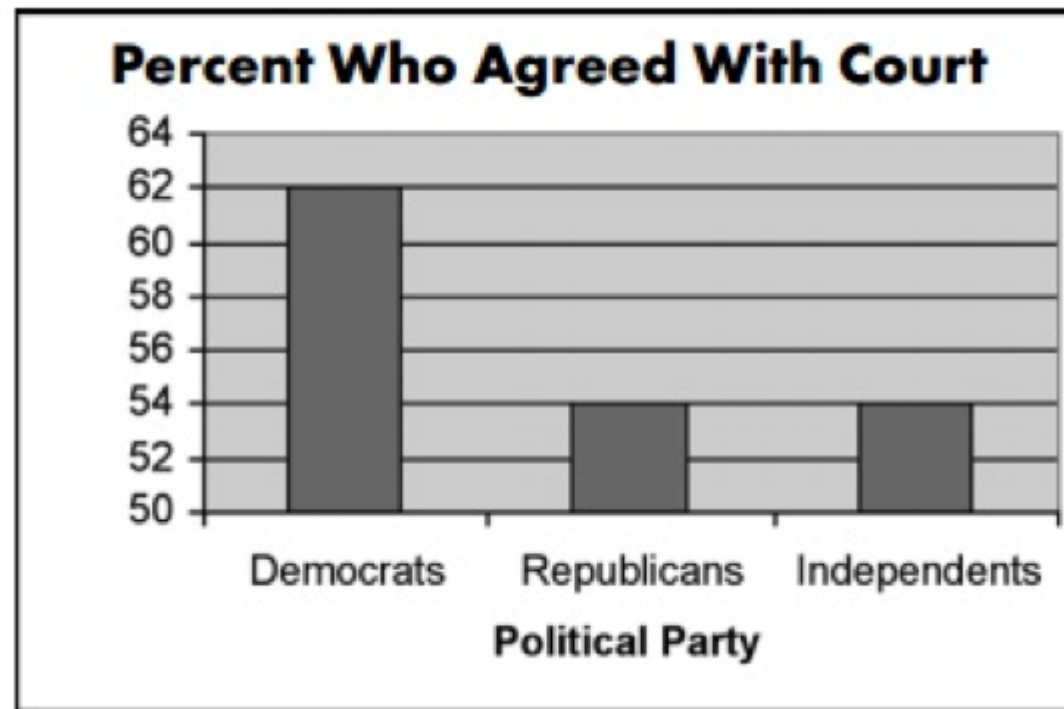
Just take a look at the first example below that compared how Democrats, Republicans, and Independents felt about a certain issue.

(I actually have used this graph before to show people also how they should have used color in their data visualizations!
(<https://venngage.com/blog/infographic-design-the-dos-and-donts-of-color-selection/>))

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-1.png>).

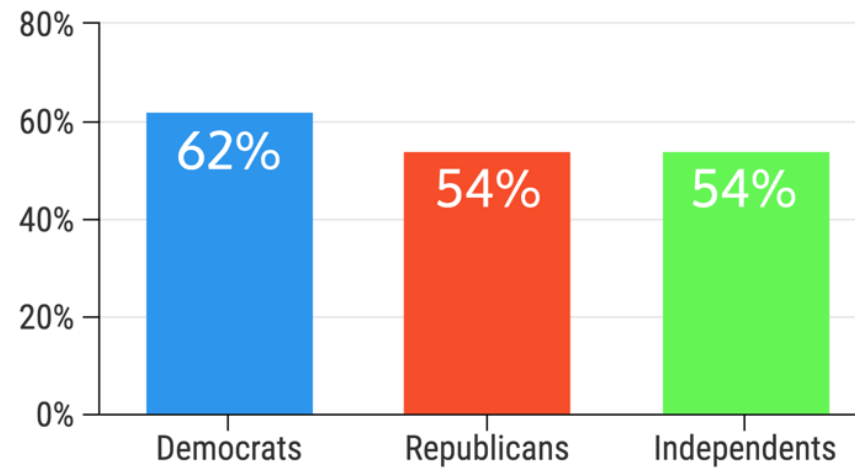
Source (<http://www.statisticshowto.com/misleading-graphs/>)

If you took a cursory glance at this graph you would probably think that Democrats agreed almost three times more than Republicans and Independents. But a closer look shows that difference was only about a 14% difference. This graph was obviously created to push an incorrect idea about a certain group.

If they wanted to properly show the differences, or just report the facts objectively, they could have included a more accurate graph like this:

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Percent Who Agreed With Court



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<https://venngage.com/templates?preview=78d5559b-a1f1-4f1a-b586-9d574fb8055e>

CREATE THIS GRAPH

<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>

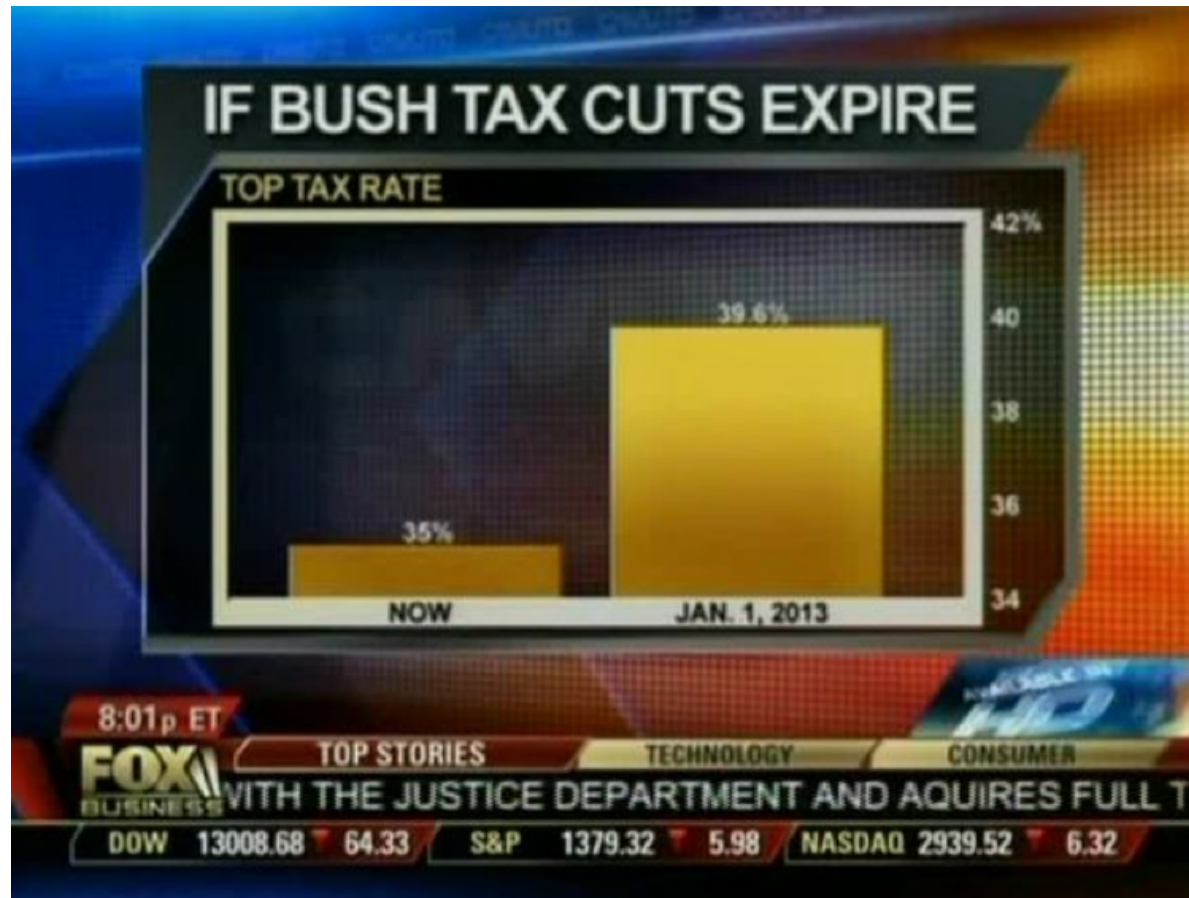
Whoa, that is much better!

Another example of using good data in a misleading graph to fool readers comes from Fox News (which actually could win a medal for their many deceptive graphs and charts (<https://www.mediamatters.org/research/2012/10/01/a-history-of-dishonest-fox-charts/190225>)).

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-3.png>).

Source

(<https://www.mediamatters.org/blog/2012/07/31/dishonest-fox-chart-bush-tax-cut-edition/189046>).

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In this graph, they are trying to do the same thing as the previous example: deceive their audience. But the margin is a lot closer, with only an 11% increase.

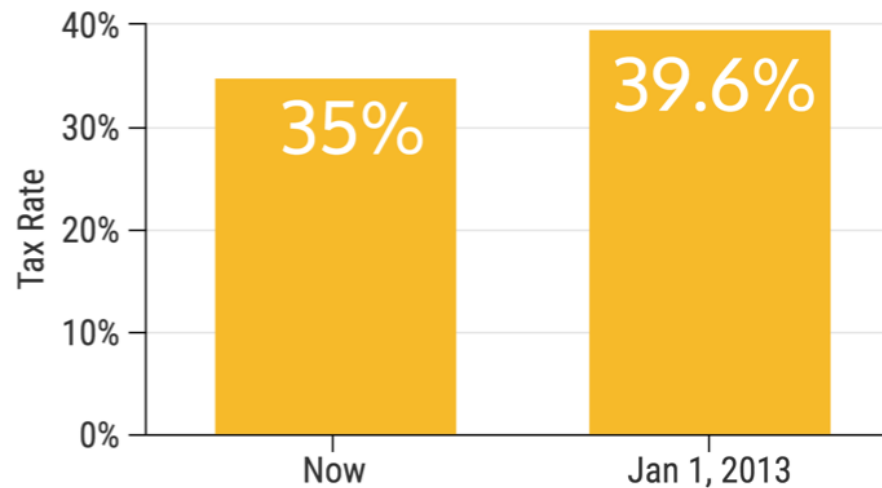
That didn't stop Fox from publishing a graph that makes one tax rate seem almost 4x larger than the other.

Oh, and the small numbers that they used not only on the axis but also as labels almost confirm they wanted to mislead their audience.

Here is how it should have looked (as you can see, the difference is not that impressive):

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If Bush Tax Cuts Expire



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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-4.png>)

8

Writers also get themselves into trouble when they try too hard to be unique or creative with a graph.

One of the first things they remove is the baselines or axis. I believe this is because the writers think it actually distracts from the data. But it only makes the data harder to read!

As you can see in this graph, there are no baselines at all! Now, this misleading graph makes it seem like our current president has nominated judges at double or triple the rate of his predecessors.

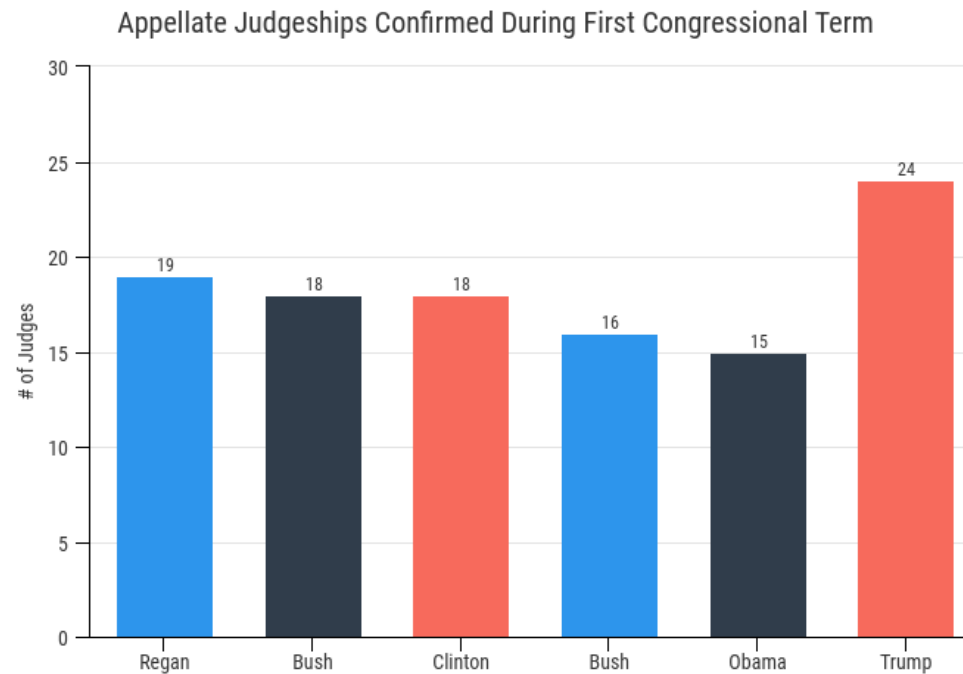
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Appellate Judgeships Confirmed During First Congressional Term. Ronald Reagan, 19; George Bush, 18; Bill Clinton, 18; George W. Bush, 16; Barack Obama, 15; Donald Trump, 24. Illustration by Tracy Ma

Source (<https://www.nytimes.com/2018/08/22/magazine/trump-remaking-courts-judiciary.html>)

When the graph is adjusted and the axis are added you can see the real story. He definitely is nominating at a high rate, but it's not as crazy as the original draft made it seem:



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<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>

CREATE THIS GRAPH

(<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>)

It is important to remember that axis manipulation like this is not limited to just politics or hot-button issues.

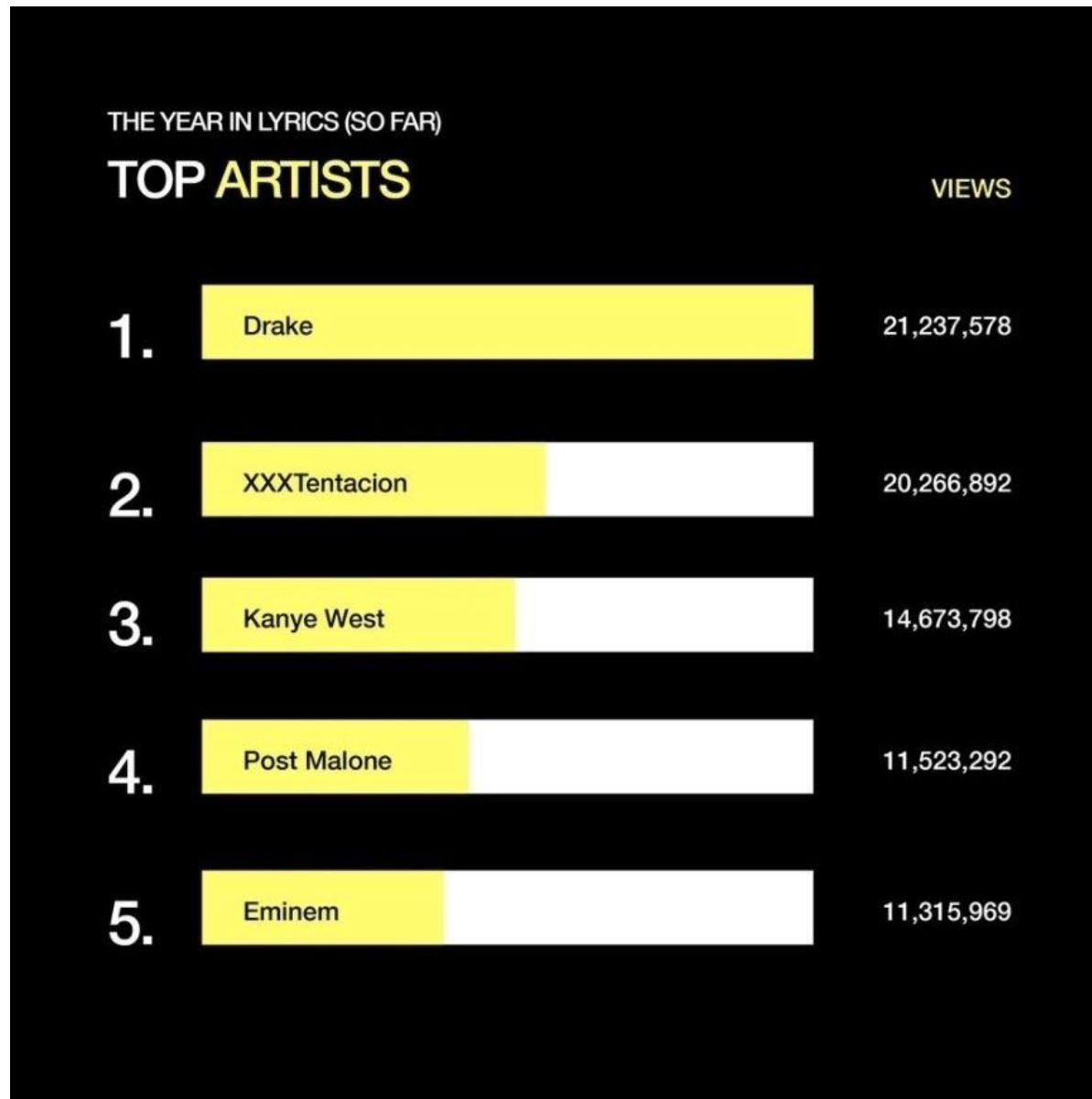
Even music journalists sometimes find themselves on the wrong side of a misleading or bad graph. Just check out this bad graph that I found from Genius (<https://genius.com/>):

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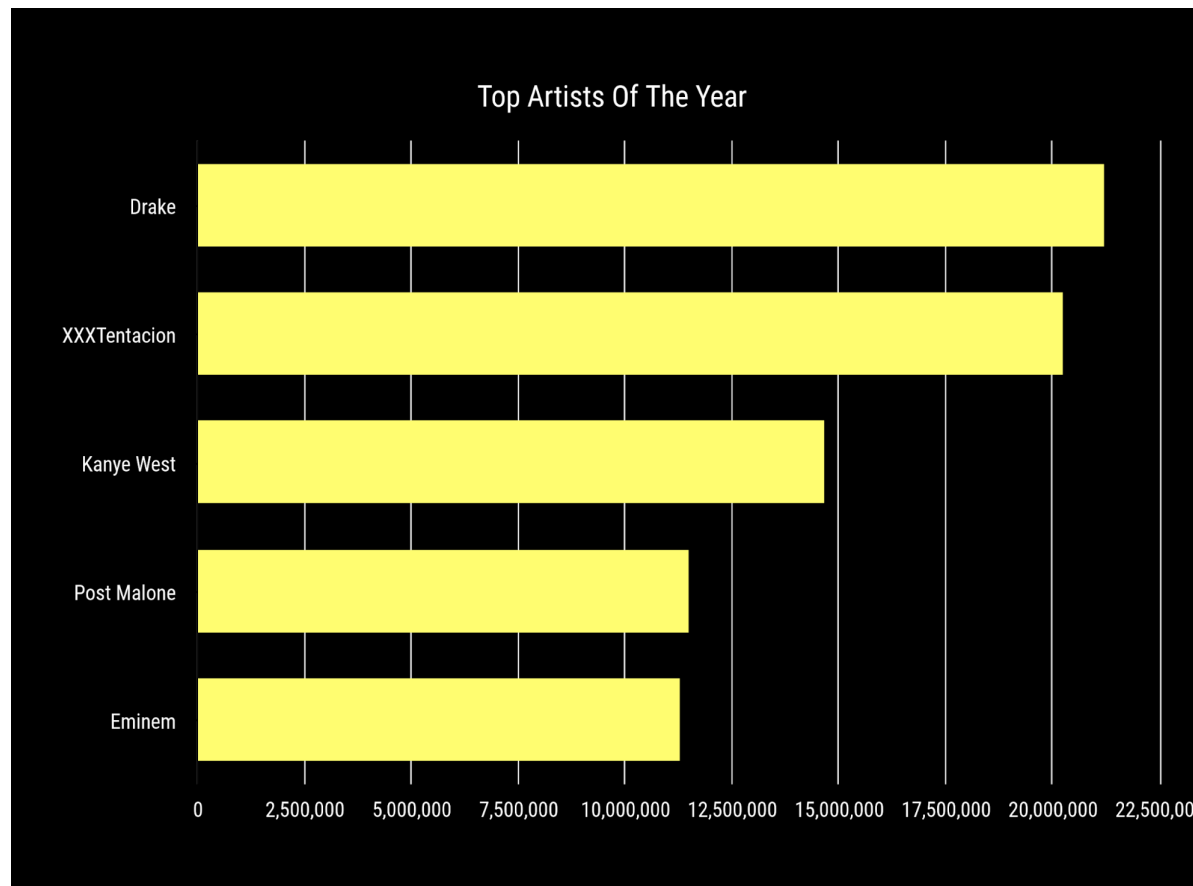
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Source

(https://www.reddit.com/r/CrappyDesign/comments/8y0jxd/this_chart_makes_drake_lc)

I'm guessing Drake was pretty happy to see this chart, but it really should have looked like this:



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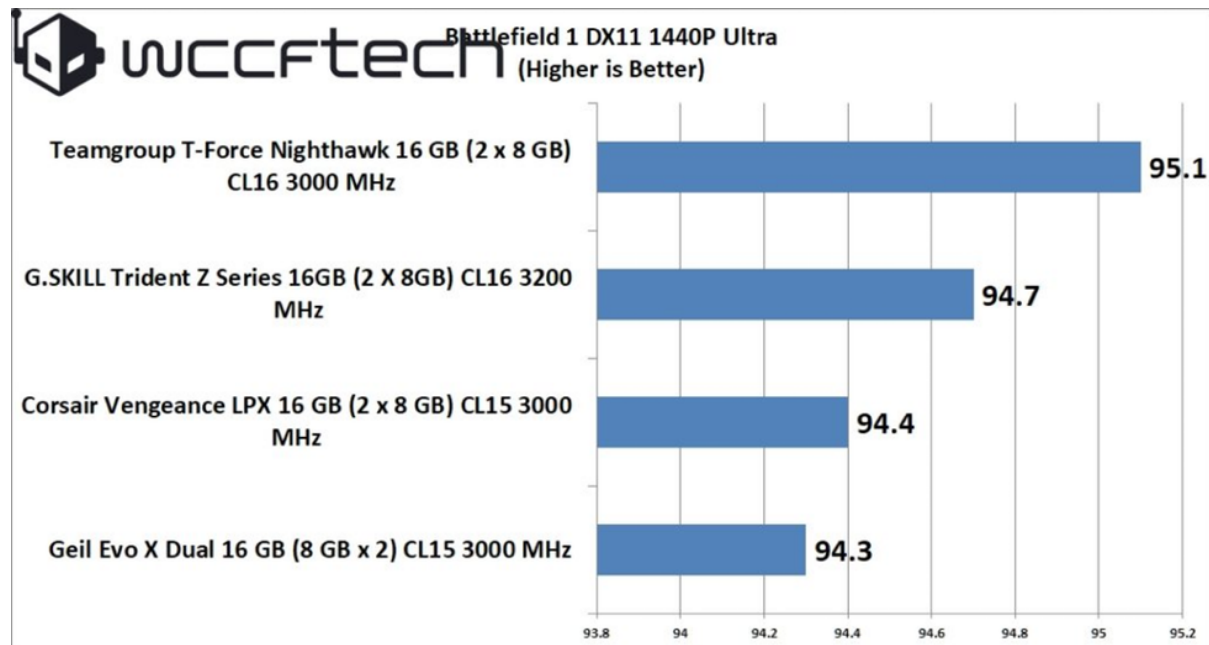
<https://venngage.com/templates/charts/bar-chart--abda2263-db42-4fa3-849c-3cfa2c89d233>

CREATE THIS GRAPH

<https://venngage.com/templates/charts/bar-chart--abda2263-db42-4fa3-849c-3cfa2c89d233>

Sorry Drake.

You can also see these kinds of misleading graphs it in tech:



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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-5.png>).

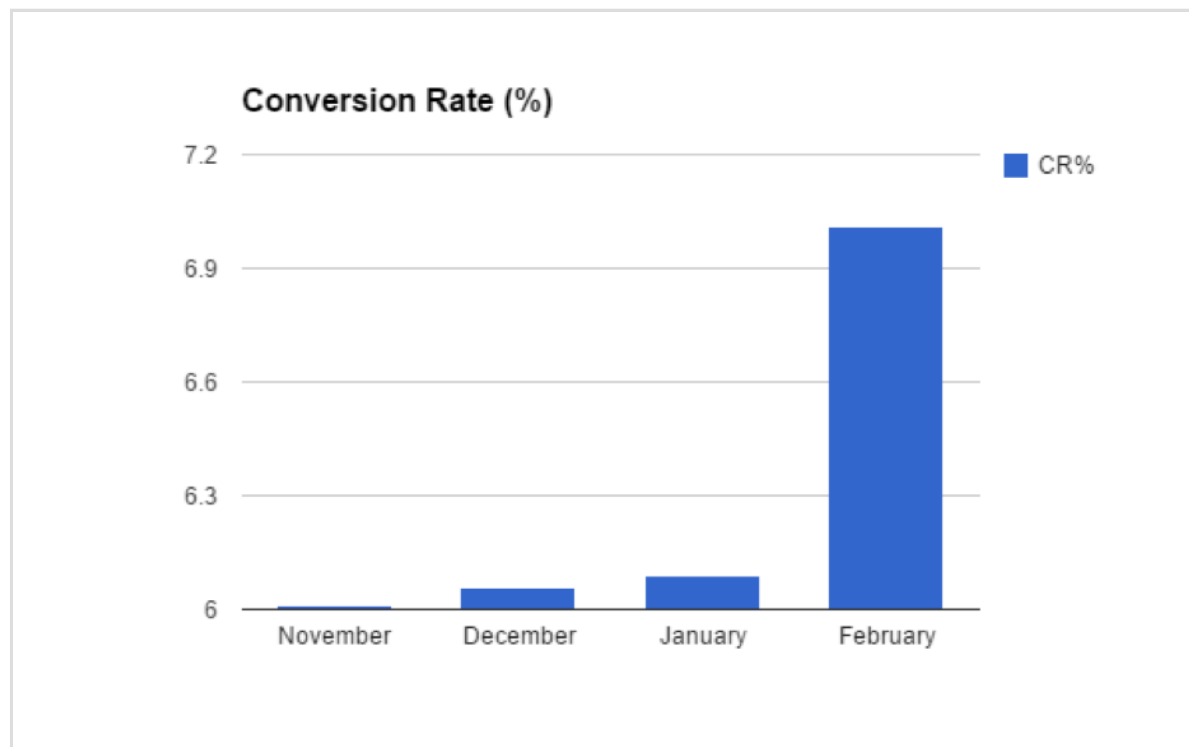
Source

(https://www.reddit.com/r/dataisugly/comments/6crq0a/unrivaled_performance/).

In business meetings:

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-6.png>).

Source

(<http://www.sweetspotintelligence.com/en/2015/02/03/education-data-manipulation/>).

And even in nutrition information:

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-7.png>)

Source

(https://www.reddit.com/r/dataisugly/comments/6aaep3/found_on_business_insider/)

Honestly, wherever people are using data visualizations to backup their claims, you will probably find someone misleading graphs like the examples above.

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2. Manipulating the Y-Axis

A common trick of the graph manipulator is to blow out the scale of a graph to minimize or maximize a change. This is known simply as axis changing

(https://en.wikipedia.org/wiki/Misleading_graph#Axis_changes) in the data visualization world.

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Axis manipulation is almost the opposite of truncating data, because they include the axis and baselines but change them so much that they lose meaning.

This is a very powerful tool on social media and can be used to push a false narrative.

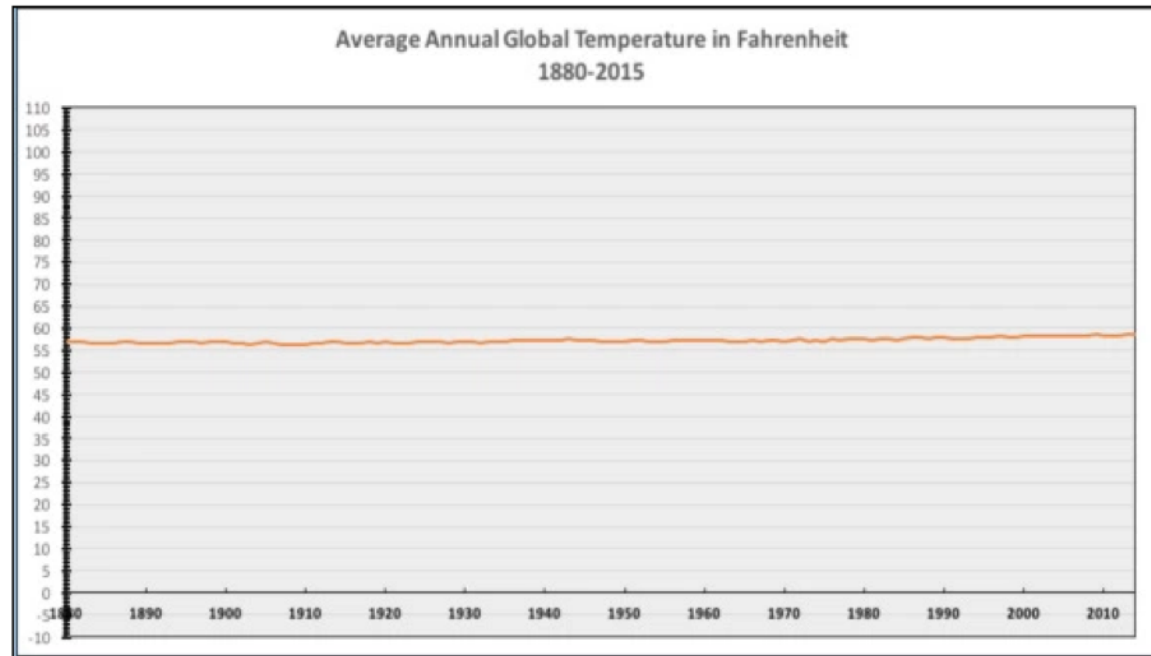
For example, take a look at this graph of global warming data from the National Review

(https://twitter.com/NRO/status/676516015078039556?ref_src=twsrc%5Etfw&ref_url=https%3A%2F%2Fqz.com%2F580859%2Fthe-most-misleading-charts-of-2015-fixed%2F):

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-8.png>).

8

Source (https://twitter.com/NRO/status/676516015078039556?ref_src=twsrc%5Etfw&ref_url=https%3A%2F%2Fqz.com%2F580859%2Fthe-most-misleading-charts-of-2015-fixed%2F).

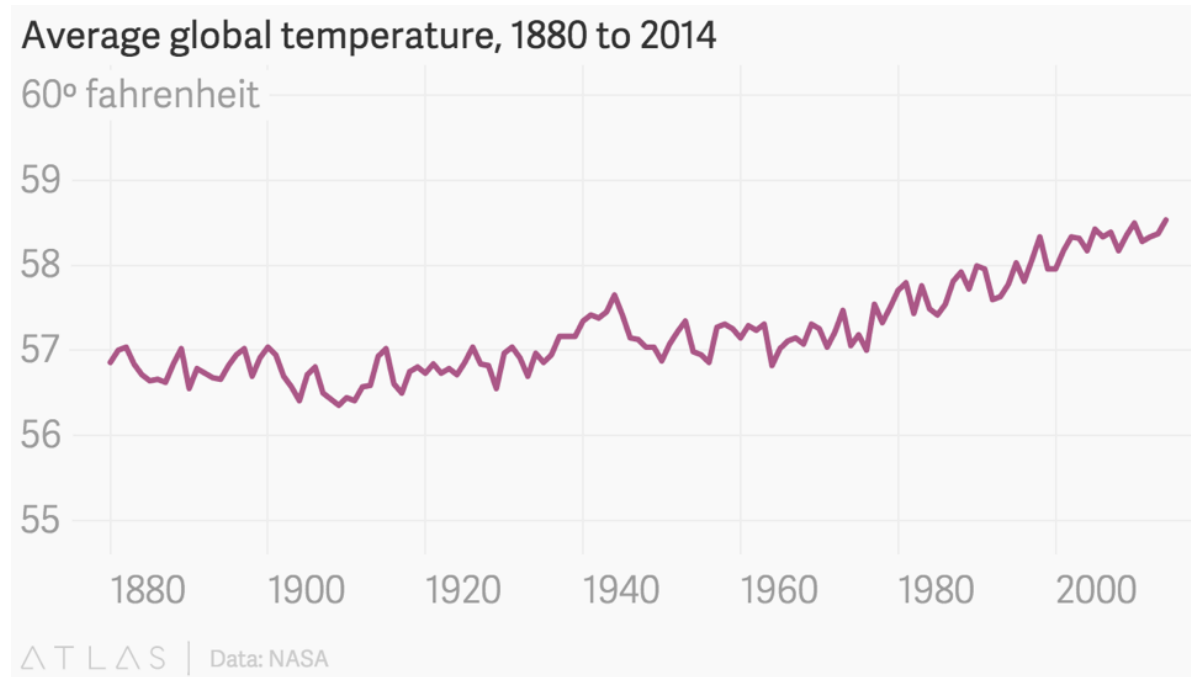
They are intentionally including temperatures from -10 degrees up to 110 degrees to make that line as flat as they can. All to push an idea that global warming is not real or something. Thankfully, those who are more respectable with data called them out on their misinformation immediately.

([https://twitter.com/NRO/status/676516015078039556?](https://twitter.com/NRO/status/676516015078039556?ref_src=twsrc%5Etfw&ref_url=https%3A%2F%2Fqz.com%2F580859%2Fthe-most-misleading-charts-of-2015-fixed%2F)
[ref_src=twsrc%5Etfw&ref_url=https%3A%2F%2Fqz.com%2F580859%2Fthe-most-misleading-charts-of-2015-fixed%2F](https://qz.com/580859/the-most-misleading-charts-of-2015-fixed/)).

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And the good people at Quartz (<https://qz.com/580859/the-most-misleading-charts-of-2015-fixed/>), decided to fix it for them, which you can see below:



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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-9.png>)

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The saddest thing is that these organizations know exactly what they are doing.

What should frustrate you, the reader, is that both of these organizations had access to the same data and tools. But only one decided to present it in a trustworthy manner.

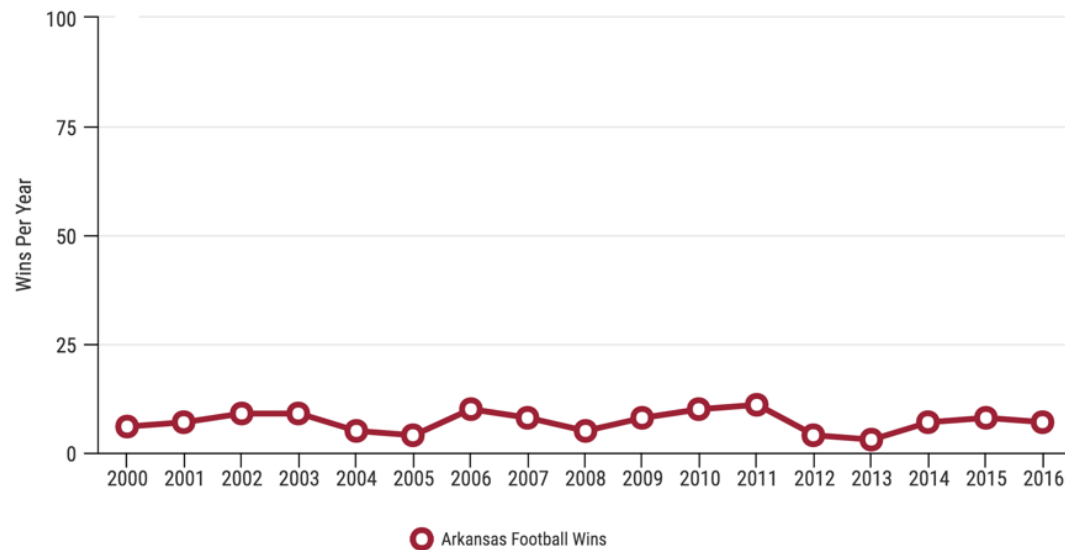
I mean, I could do the exact same thing using data about my beloved Arkansas Razorbacks.

In this example, I looked at their win totals over the last 15 or so years and put them on a normal line graph. But I then took the same approach as the previous graph and manipulated the y-axis:

Bad Graph

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-10.png>)

With those changes, I can make it look like the Razorbacks have been winning fairly consistently over the past few years.

Awesome!

But if you follow college football you will know that we have not been winners most of the time, and the graph should look a little closer to this:

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(<https://venngage.com/templates?preview=0e364154-2c6b-43d4-a2c5-fee2da9c77a5>),

CREATE THIS GRAPH

(<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>)

This one is not so inspiring...

Again, this is the exact same data, presented in the same type of data visualization, but each graph tells a completely different story.

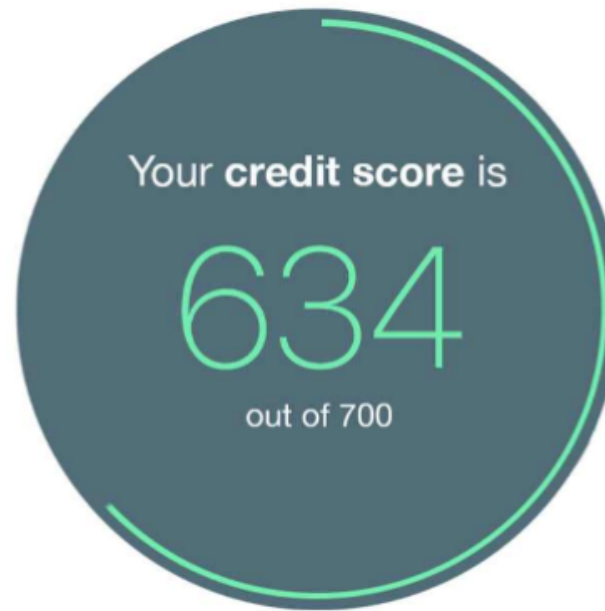
It only took one tiny change to completely flip the story. That should make you uncomfortable.

Like to make it seem like you have a terrible credit rating, causing you to freak out:

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Source

(https://www.reddit.com/r/dataisugly/comments/7px800/634_700/),

When it really isn't that bad of a rating, using 700 as the max:

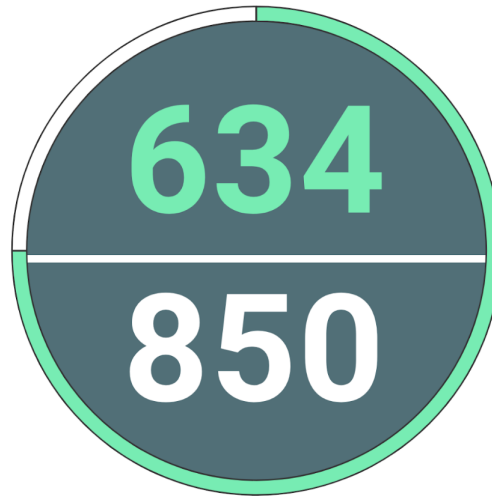
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(<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>)

Even when you use 850, the max credit score
(<https://www.creditsesame.com/blog/credit/what-is-the-highest-credit-score/>), the graph they used is still very misleading:

Your Credit Rating



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(<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>),

CREATE THIS GRAPH

(<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>)

And even though this *faux pas* seems rather simple in the grand scheme of things, this approach can be used to mislead people about their situation. Or try to sell them something they don't need.

I wanted to include this example to show that not all misleading graphs are line and bar charts. Some can be innocent pie charts that just got caught up with some shady people!

As you can see, this misleading tactic is being used in politics, on social media, and in businesses to push an agenda or idea.

3. Cherry Picking Data

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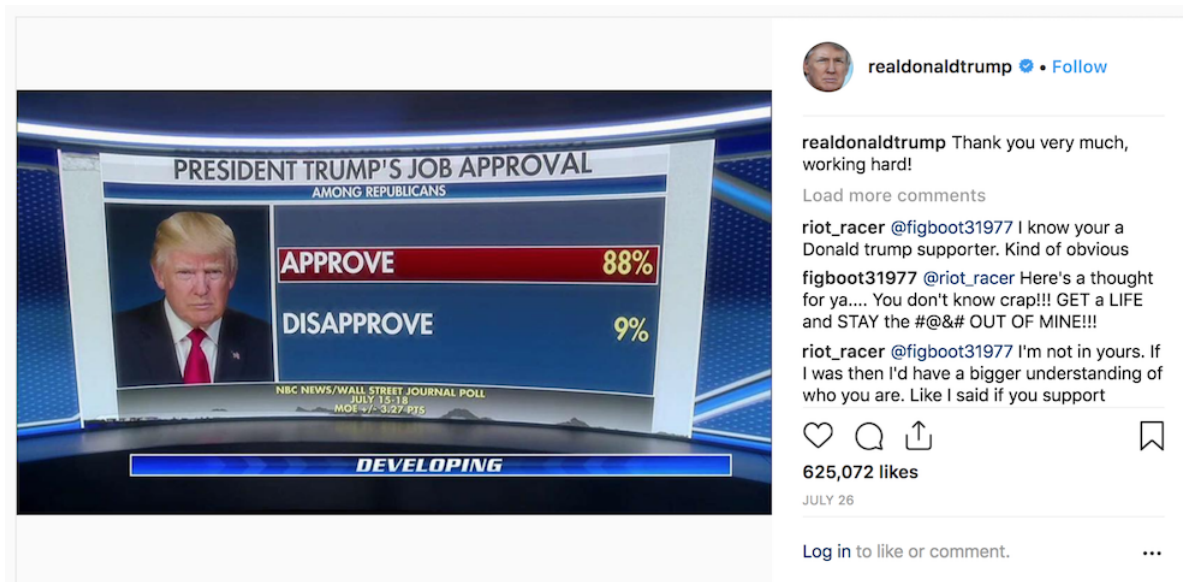
Another way to skew data is by only including certain parts of the data in your misleading charts or graphs. Usually, it is only the data that puts your viewpoint in a positive light or your opponent's in a negative light.

For example, only including a month where there was a sales spike and not the rest of the yearly data.

Or only sharing misleading poll results that make a certain person look favorable to everyone. But when you take a harder look at this graph, it only includes people from his own party:

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Source (<https://www.instagram.com/p/BlrtJxQgNdy/?taken-by=realdonaldtrump>).

And that party is shrinking by the day.

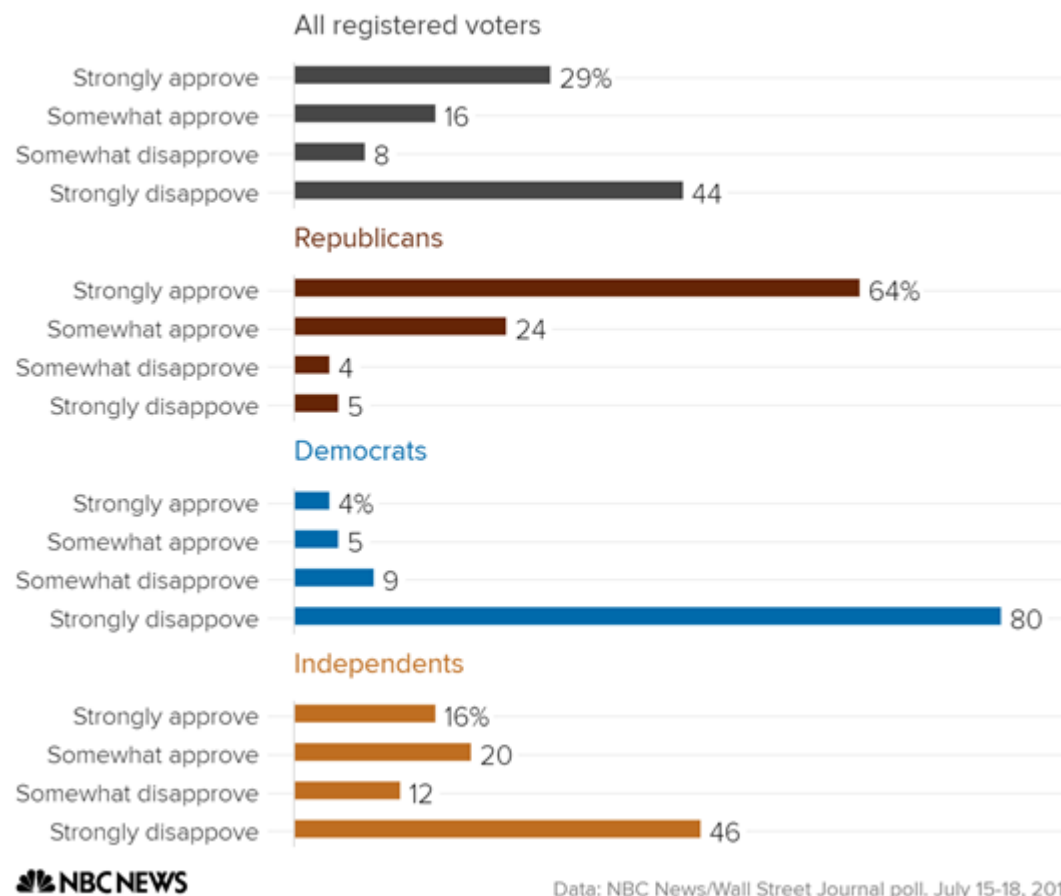
(<https://www.brookings.edu/blog/fixgov/2018/06/14/trump-owns-a-shrinking-republican-party/>). This is definitely misleading, especially when the rest of the results looked like this:

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Strength of Trump approval/disapproval by party



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Source (<https://www.nbcnews.com/politics/first-read/nbc-wsj-poll-public-gives-trump-thumbs-down-russia-thumbs-n893266>)

If someone were to quickly look at the original bad graph, they would probably think everyone loves the president. When actually only about 35% of the country approves of his administration.

It is not technically wrong but it is definitely misleading. This is often called improper extraction (https://en.wikipedia.org/wiki/Misleading_graph#Improper_extraction), when only a certain chunk of data is included.

This is more common in graphs that have time as one of their axes. I mean it is pretty easy to start with a year that confirms what you are trying to say.

You could also call this tactic omitting data (https://en.wikipedia.org/wiki/Misleading_graph#Omitting_data). When—you guessed it—some of the key data is just left off the graph.

Both improper extraction and omitting data are things that you want to avoid!

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Let's start with an example of improper extraction because I don't think I need to show you what omitting data looks like. In this case, I struggled to find some real-world examples, because who is really going to admit they left out data.

(Not many people!)

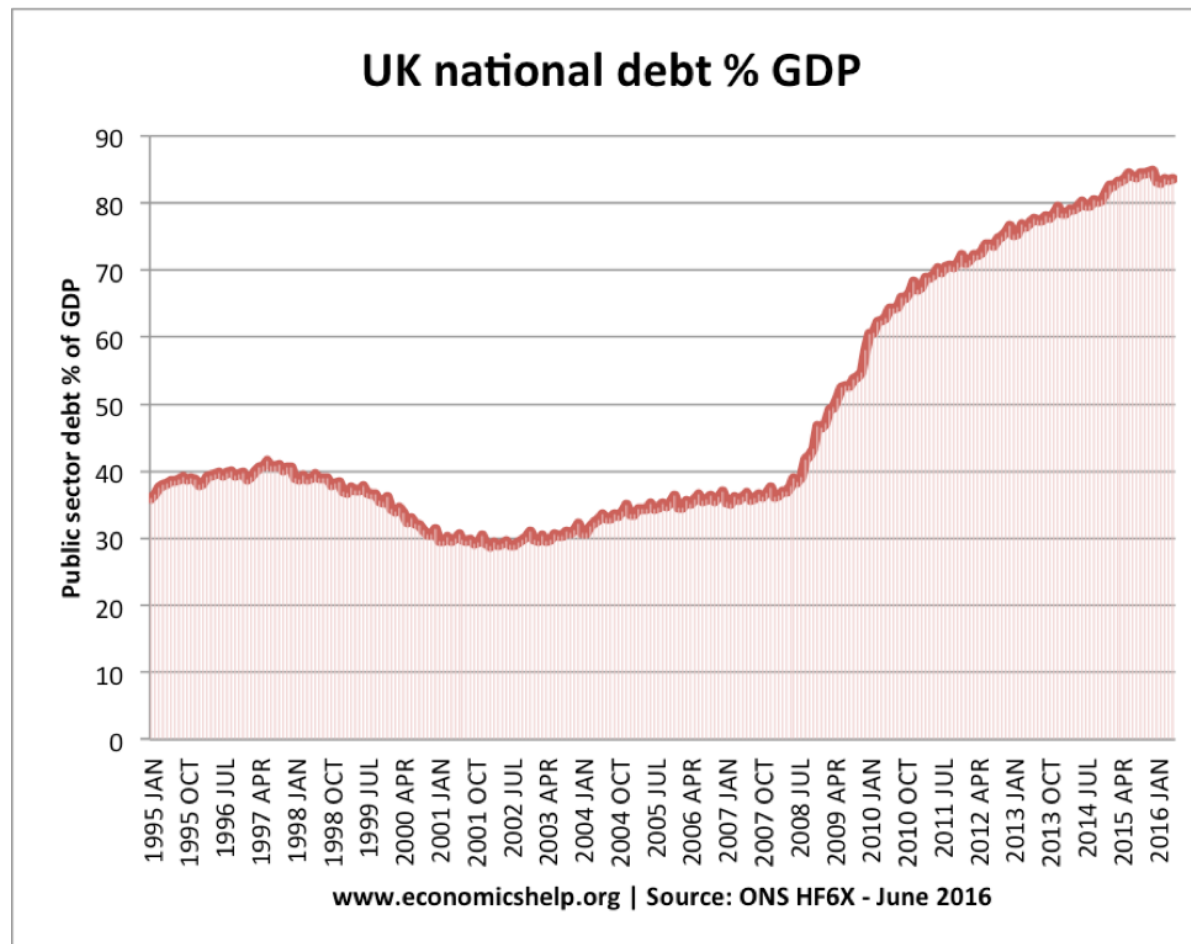
But I did find this great example from Tejvan Pettinger (<http://www.economicshelp.org/blog/21618/economics/cherry-picking-of-data/>), on how someone could cherry pick some data to make a compelling but misleading statement.

In the first graph below, a reader could obviously be misled into thinking that the UK National debt has never been higher! This graph could be used to justify a politician voting on some piece of legislation that would lower the debt.

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-12.png>).

Source

(<http://www.economicshelp.org/blog/21618/economics/cherry-picking-of-data/>)

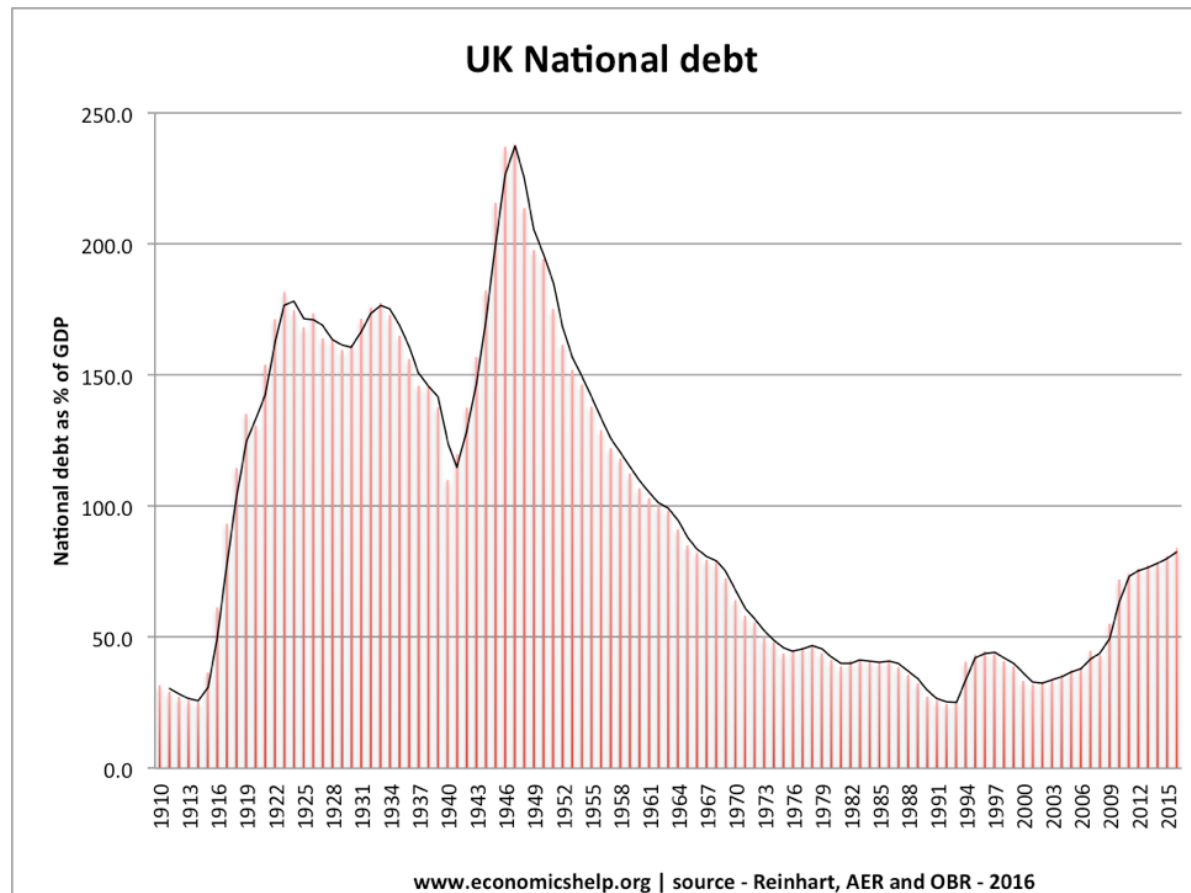
However, when you take a look at the full time series, you can see that national debt is actually pretty low in comparison.

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-13.png>),

Source

(<http://www.economicshelp.org/blog/21618/economics/cherry-picking-of-data/>),

This fictitious creator decided to also start the graph right at a low point and falsely illustrate that it could have been rising from zero to these rates. They also stuffed the graph with a bunch of random points to make it seem like the data set was much larger, when it only covered 10 years!

If you want another example of improper extraction, look no further than the stock market.

There are thousands of data points that stock analysts look at before they make trades or recommend people buy something. So there are a lot of things that they can omit to make certain company stock look better or worse overall.

But I think something that is very easy to mislead readers with is stock price. For example, take a look at the graph below, which shows that Twitter has been on an large upward swing.

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Twitter Inc

NYSE: TWTR - May 24, 3:33 PM EDT

17.97 USD ↓0.17 (0.94%)

1 day

5 day

1 month

3 month

1 year

5 year

max

16
Shares

Open 18.10
High 18.34
Low 17.83

Mkt cap 12.93B
P/E ratio -
Div yield -

(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-14.png>).

Source (<https://www.google.com/search?q=twitter+stock&oq=twitter+stock&aqs=chrome.0.0l6.5343j0j1&sourceid=chrome&ie=UTF8>),

As an outsider looking in, with just this graph at my disposal, I would think that they have been doing something right lately!

But I would be mistaken...

Twitter Inc

NYSE: TWTR - May 24, 3:34 PM EDT

17.98 USD ↓0.16 (0.91%)

1 day

5 day

1 month

3 month

1 year

5 year

max



Open 18.10
High 18.34
Low 17.83

Mkt cap 12.93B
P/E ratio -
Div yield -

16
Shares

8

(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-15.png>).

Source ([https://www.google.com/search?
q=twitter+stock&oq=twitter+stock&aqs=chrome.0.l6.5343j0j1&sourceid=chrome&ie=UTF](https://www.google.com/search?q=twitter+stock&oq=twitter+stock&aqs=chrome..69l68j0j1&sourceid=chrome&ie=UTF-8))

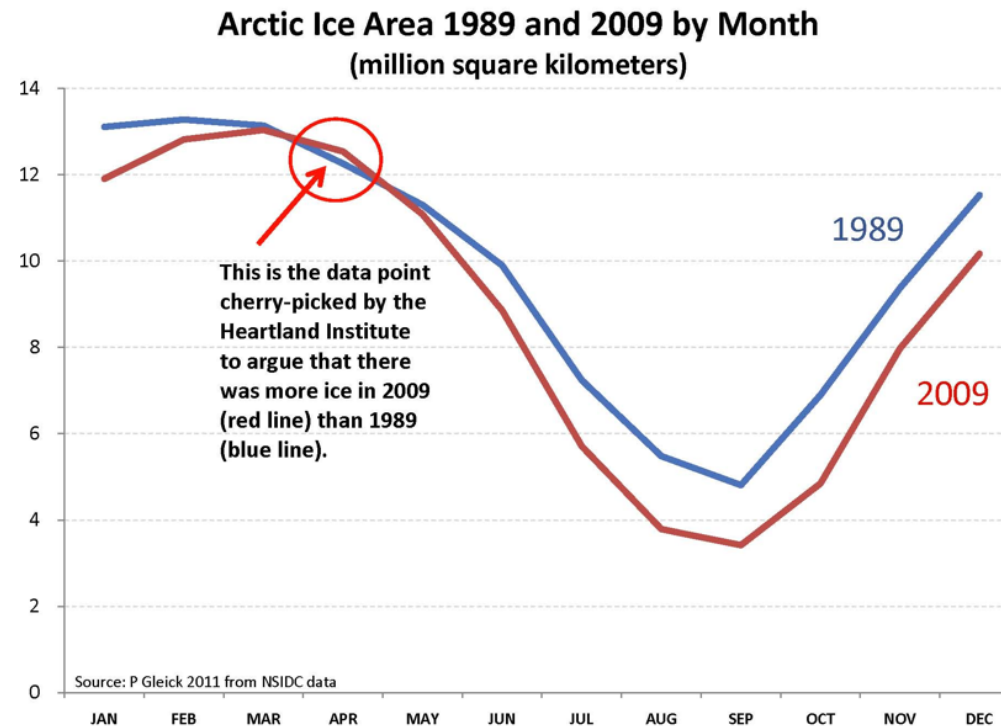
They have been on an unprecedented slide for the past year or so, and that increase is just a tiny blip on the long term graph.

Now, if I were a less than honest stock trader, I could try to unload a ton of Twitter stock just by using that graph.

And this type of misinformation could be used to manipulate about any piece of data you want to fit your goals.

Like this example, which tried to justify climate change not being real:

16
Shares



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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-16.png>).

Source (http://www.huffingtonpost.com/peter-h-gleick/misrepresenting-climate-s_b_819367.html).

Mostly because people do not want to take a look at the raw data and they see graphs as a beacon of honesty.

I mean, why would someone lie on the internet, *right?*

4. Using The Wrong Graph

So far, I have talked about intentional misinformation tactics that writers use to push their agendas.

Now I think we should take a look at types of misinformation that can happen through sheer incompetence.

This usually involves picking a type of graph or chart that does not fit the data you are trying to present. And more often than not, the misunderstood pie chart is to blame for this.

It is not the pie chart's fault that it can be so misleading—it's the people who think it can be used for any and every type of data.

For example, take a look at this pie chart from the NFL Draft:

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-17.png>)

Source (<http://i.imgur.com/wPyNMK5.jpg>).

I am not sure what they were trying to do with this chart but as a multibillion-dollar company, they should have a competent graphics person.

First, in what world is 64 prospects half of 69 prospects? And second, why did they not use a bar graph for this data?

If you were scrolling through your Twitter feed and saw misleading graphs like this, it would make sense that you thought USC blew the others out of the water.

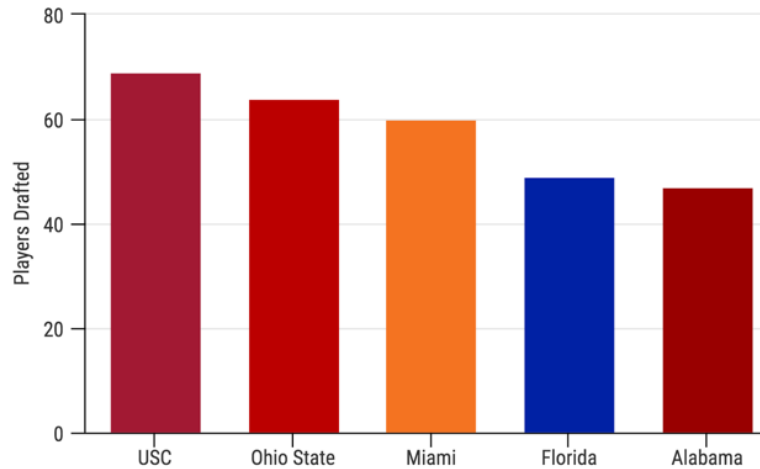
But if they wanted to share a more accurate graph, they should have created a column chart like this:

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Most Players Drafted In The First Round



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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-18.png>)

CREATE THIS GRAPH

(<https://venngage.com/templates/charts/column-chart-78d5559b-a1f1-4f1a-b586-9d574fb8055e>)

It may not be as flashy as the first one but at least it is accurate.

Here is another questionable graph from the world of college football. This time, they attempted to graph projected win totals:

16
Shares

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Source

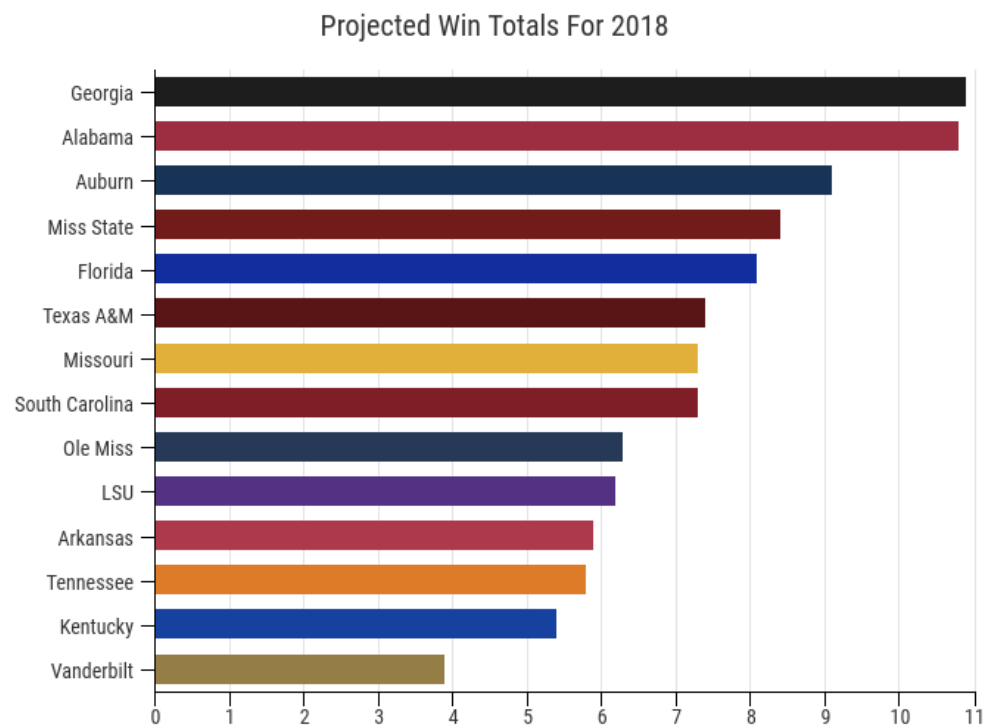
(<https://twitter.com/SECNetwork/status/982275514344722433>)

They ranked each team correctly from highest to lowest, but the inclusion of the bar graph made no sense to most people.



16
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If your school had a longer name it looked like they would win more in this graph. And if you were quickly scanning a social media feed, that would be a fair conclusion.



16
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(<https://venngage.com/templates/charts/bar-chart--abda2263-db42-4fa3-849c-3cfa2c89d233>)

CREATE THIS GRAPH

(<https://venngage.com/templates/charts/bar-chart--abda2263-db42-4fa3-849c-3cfa2c89d233>)

That's much better, but it still hurts seeing my school, Arkansas, at the bottom of both graphs.

Another way brands can be unwittingly deceptive is by trying to be too "innovative" with their graphs or charts.

In the example below, they used a *pizza* pie chart and I really can't understand why!

16
Shares



Source

(<https://www.forbes.com/sites/forbesdigitalcovers/2018/07/19/the-inside-story-of-papa-johns-toxic-culture/>)

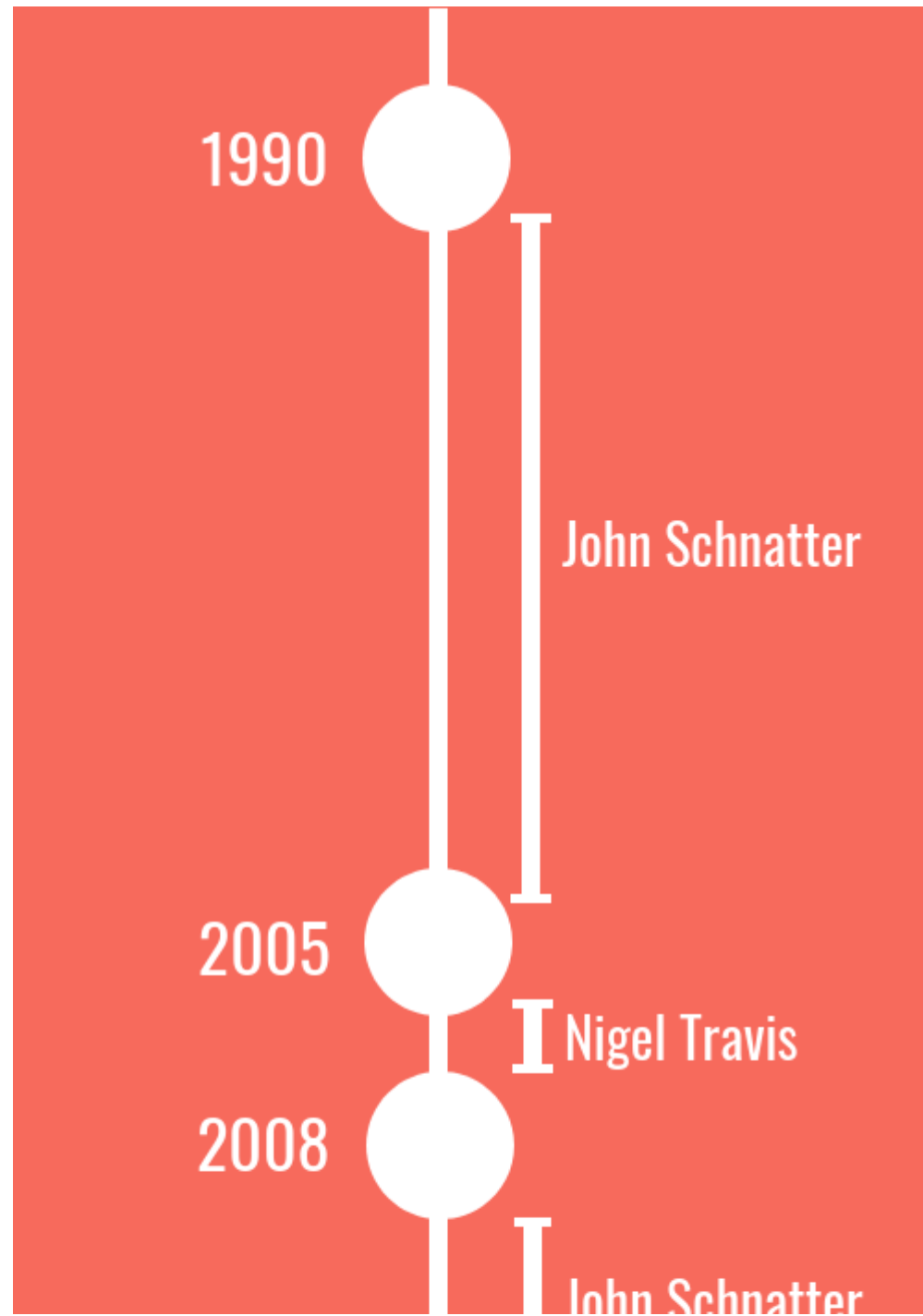
When it really should have been a timeline or even a simple table:

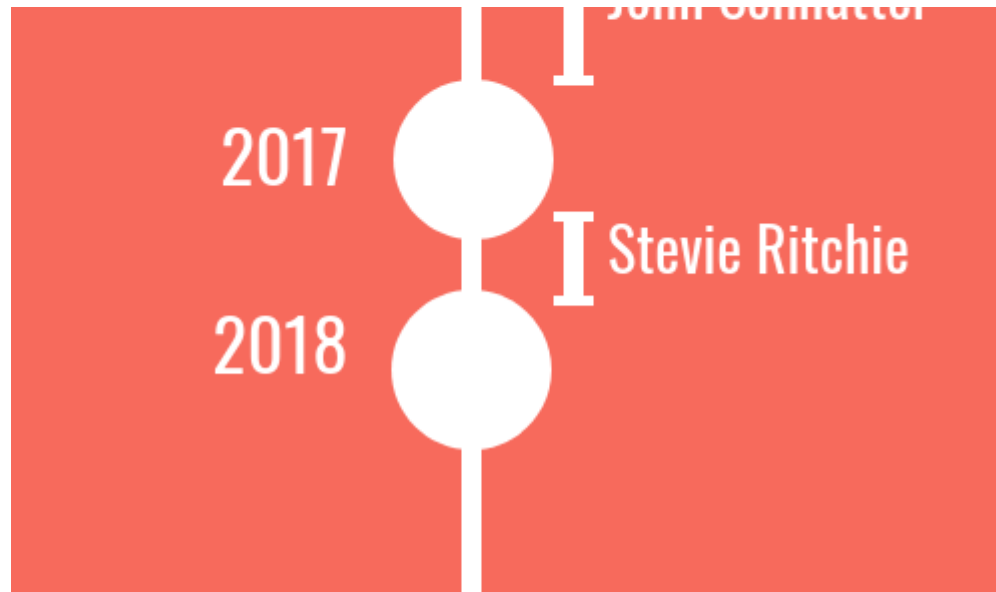
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(<https://venngage.com/templates/infographics/timeline>).

CREATE A TIMELINE

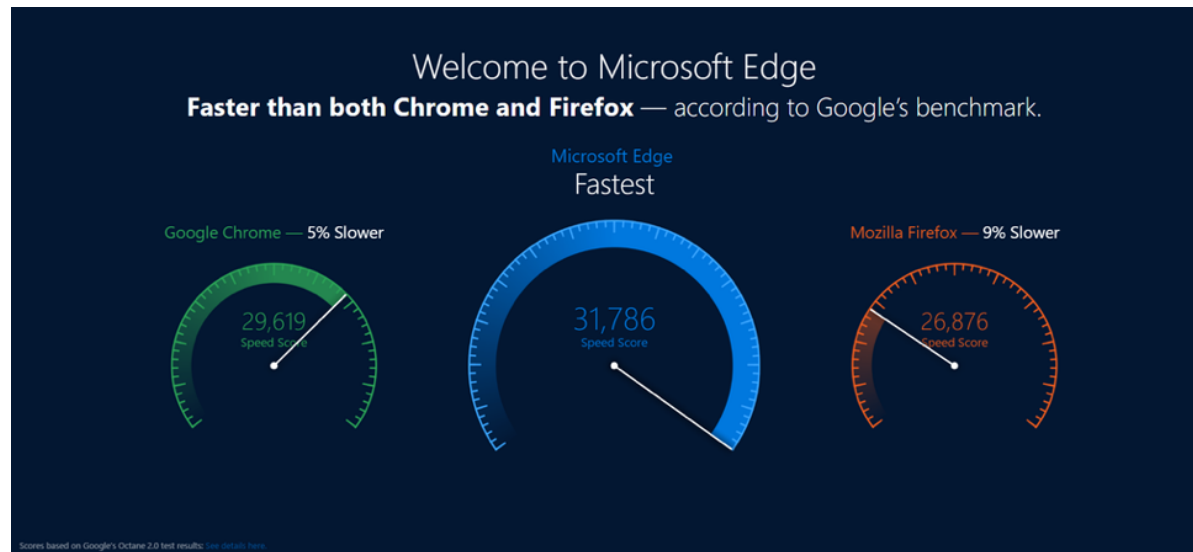
(<https://venngage.com/templates/infographics/timeline>).

8

I mean, what are they even trying to show with that terrible graph?
It's not even labeled correctly to help the reader figure out what is going on!

It may look cool, but functionality should always come first!

In this example from Microsoft, by trying to be conceptual, they created a misleading data visualization:



16
Shares

(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-19.png>).

8

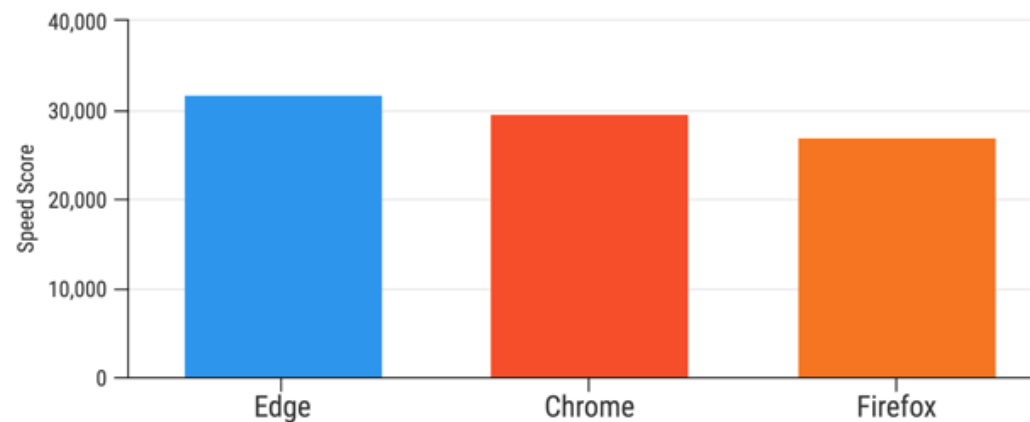
Source

([https://www.reddit.com/r/dataisugly/comments/6sktdw/microsoft edge is a better k](https://www.reddit.com/r/dataisugly/comments/6sktdw/microsoft_edge_is_a_better_k)

Even if Microsoft Edge is faster than Chrome or Firefox, it is just by a slight margin. Not around 25% faster than Chrome or 50% faster than Firefox, as the visualization would lead you to believe.

They should have used a column chart if they wanted to be accurate with their data:

Browser Speed Test



16

Shares

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-20.png>).

Or if they still wanted to use something a little less boring, they could have gone with a bubble chart like this:

16

Shares

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Shares

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(<https://venngage.com/templates/charts/bubble-chart--0681ab51-5b07-438d-aced-805628d93da1>)

[CREATE THIS GRAPH](https://venngage.com/templates/charts/bubble-chart--0681ab51-5b07-438d-aced-805628d93da1)

[.https://venngage.com/templates/charts/bubble-chart--0681ab51-5b07-438d-aced-805628d93da1\)](https://venngage.com/templates/charts/bubble-chart--0681ab51-5b07-438d-aced-805628d93da1)

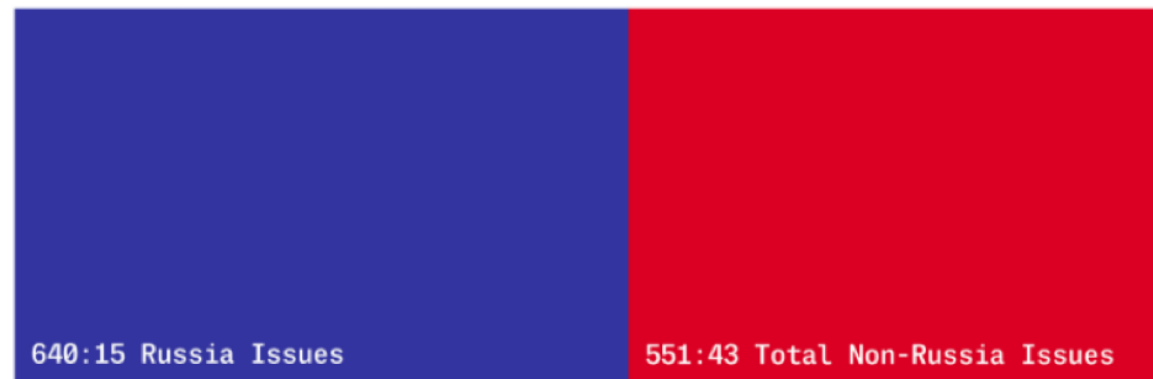
Since I gave the pie chart a bit of grief above, I'm going to show a place that it definitely should have been used!

In the example below, *The Intercept* was trying to show how the Russia issues have taken over the news lately:

RUSSIA ISSUES VS. NON-RUSSIA ISSUES

February 20–March 31, 2017

1191:58 (min:sec) Total Show Minutes



Russia issues vs. Non-Russia issues. Chart: The Intercept

16
Shares

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-22.png>),

Source (<https://theintercept.com/2017/04/12/msnbcs-rachel-maddow-sees-a-russia-connection-lurking-around-every-corner/>).

It fell just a little bit short, mainly because the labels they chose are not very descriptive.

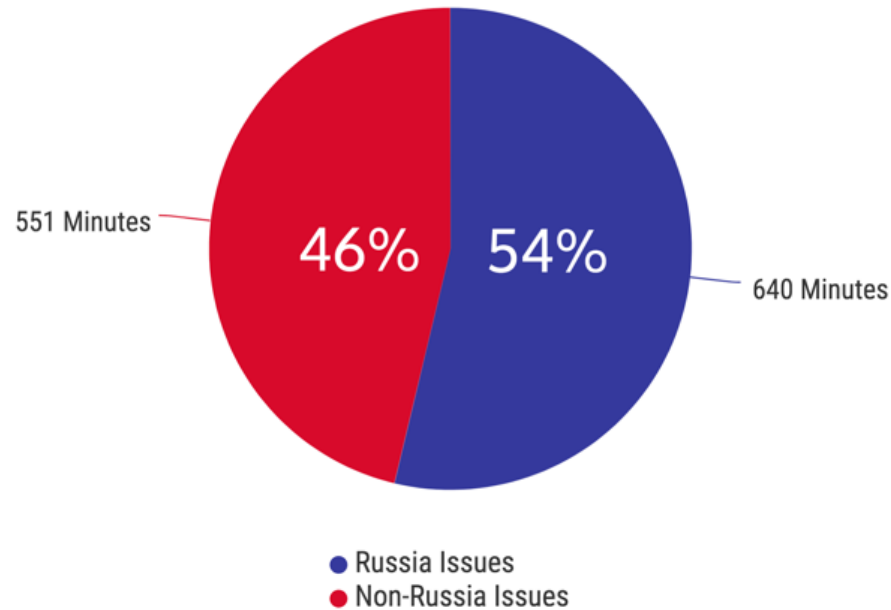
And unless you calculated it yourself, you were left guessing what the actual split was between the two.

If I was creating this visualization, I would have gone straight to the pie chart:

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Russia Issues Vs Non-Russia Issues



16
Shares

<https://venngage.com/templates/charts/pie-chart-ed8e678d-f7b7-43f4-ab4d-ce34c6bc4f70>

CREATE THIS GRAPH

<https://venngage.com/templates/charts/pie-chart-ed8e678d-f7b7-43f4-ab4d-ce34c6bc4f70>

Not only does it include the same information, it makes it easy for someone to quickly spot the difference.

Helping readers quickly understand the data should be the goal of any data visualization.

5. Going Against Conventions

To conclude our list of misleading data visualization tactics, I thought it would be a good idea to look at misleading graphs and charts that alter long-held conventions or associations.

If you are a little confused with what I am talking about, think about a graph where red represents Democrats and blue represents Republicans.

It would be pandemonium!

Or a simpler example is using green for losses, and red for profits.

16

Shares

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-24.png>).

Source (<https://www.indy100.com/article/map-us-states-with-most-stis-7573761>)

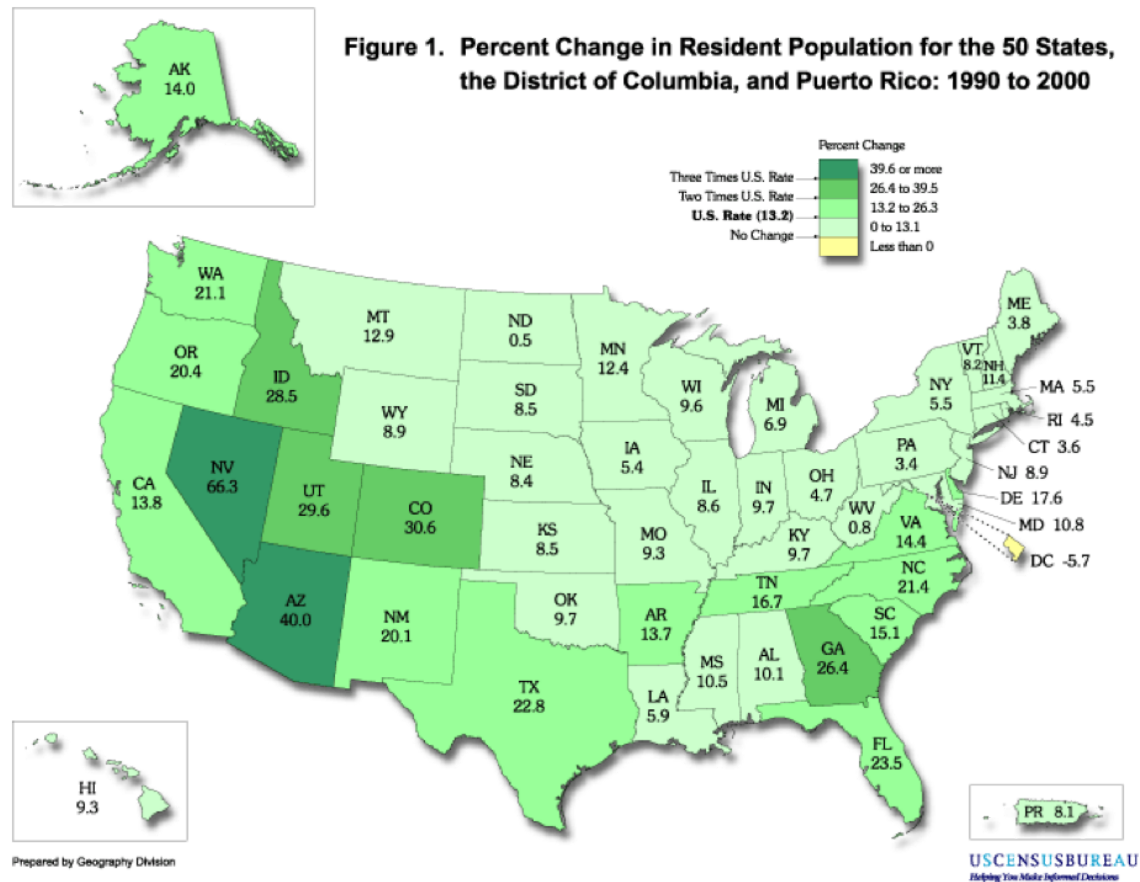
This use of color goes against almost every map data visualization I have even seen. So I do think it was created to intentionally mislead the reader.

And to make things even more mind-boggling, the higher the number is, the lower the rates are, supposedly. So the map is confusing all around, which could make someone rightly think that Idaho is a hotbed for STIs, when it is really the southern states.

Here is an example of how a map like that should have looked (we didn't have access to the raw data to recreate the map, so we found something similar):

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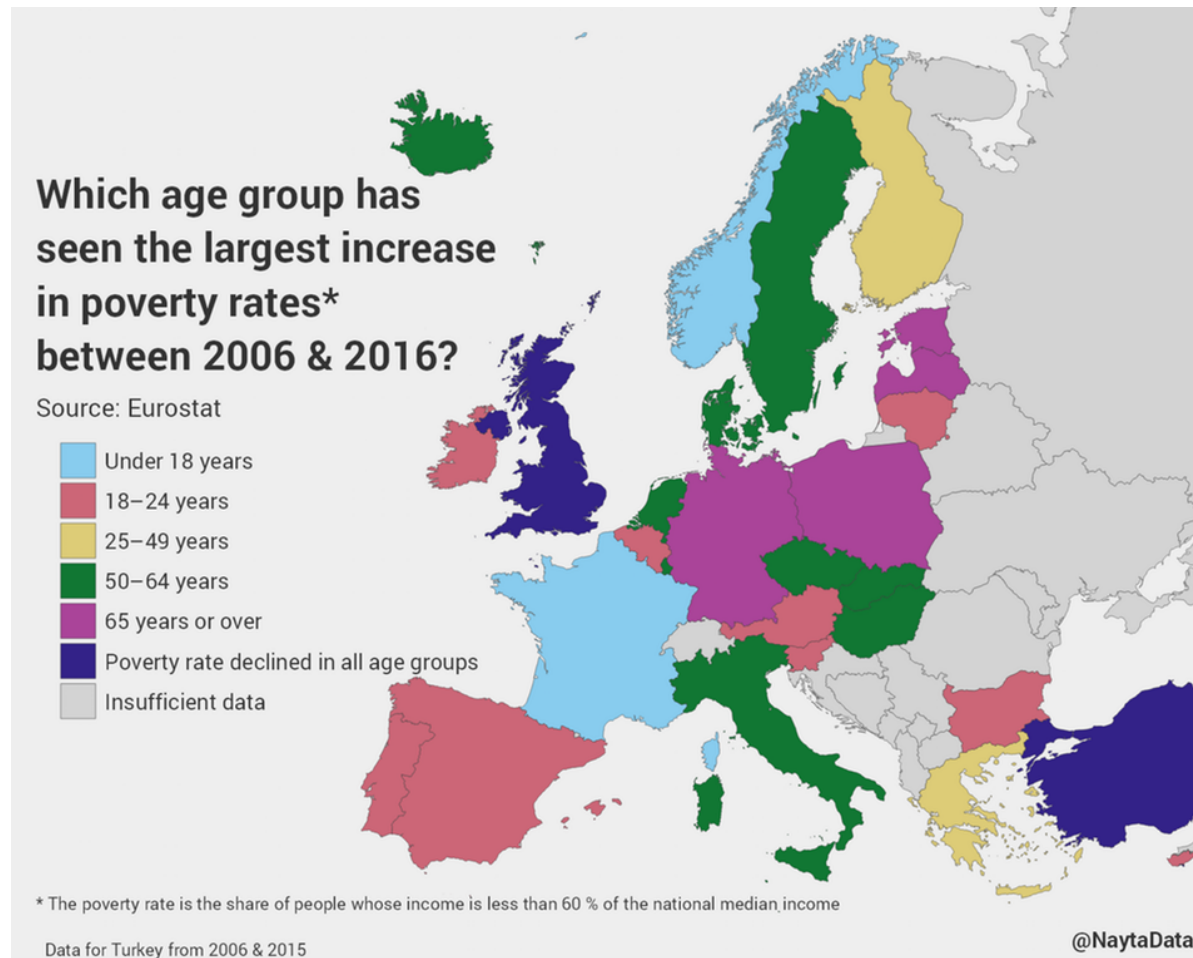
8

(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-25.png>),

Source (<http://robslink.com/SAS/democd25/change.htm>).

The dark colors are used to denote high values and the light ones are low ones.

Here is another example of a map using an insane color palette:



16
Shares

8

Source

([https://www.reddit.com/r/dataisugly/comments/96b09t/as a human ages they turn](https://www.reddit.com/r/dataisugly/comments/96b09t/as_a_human_ages_they_turn)

Could you even follow what they were trying to say? I couldn't!

Just like I pointed out above, these map makers should have used a single color palette with shades and tints. Almost everyone knows how to decipher those types of maps.

Next, we have a graph where the writer wanted to outright push a false idea to its audience. Honestly, it is one of the most egregious graph manipulations I have ever seen because of how blatant their intent was.

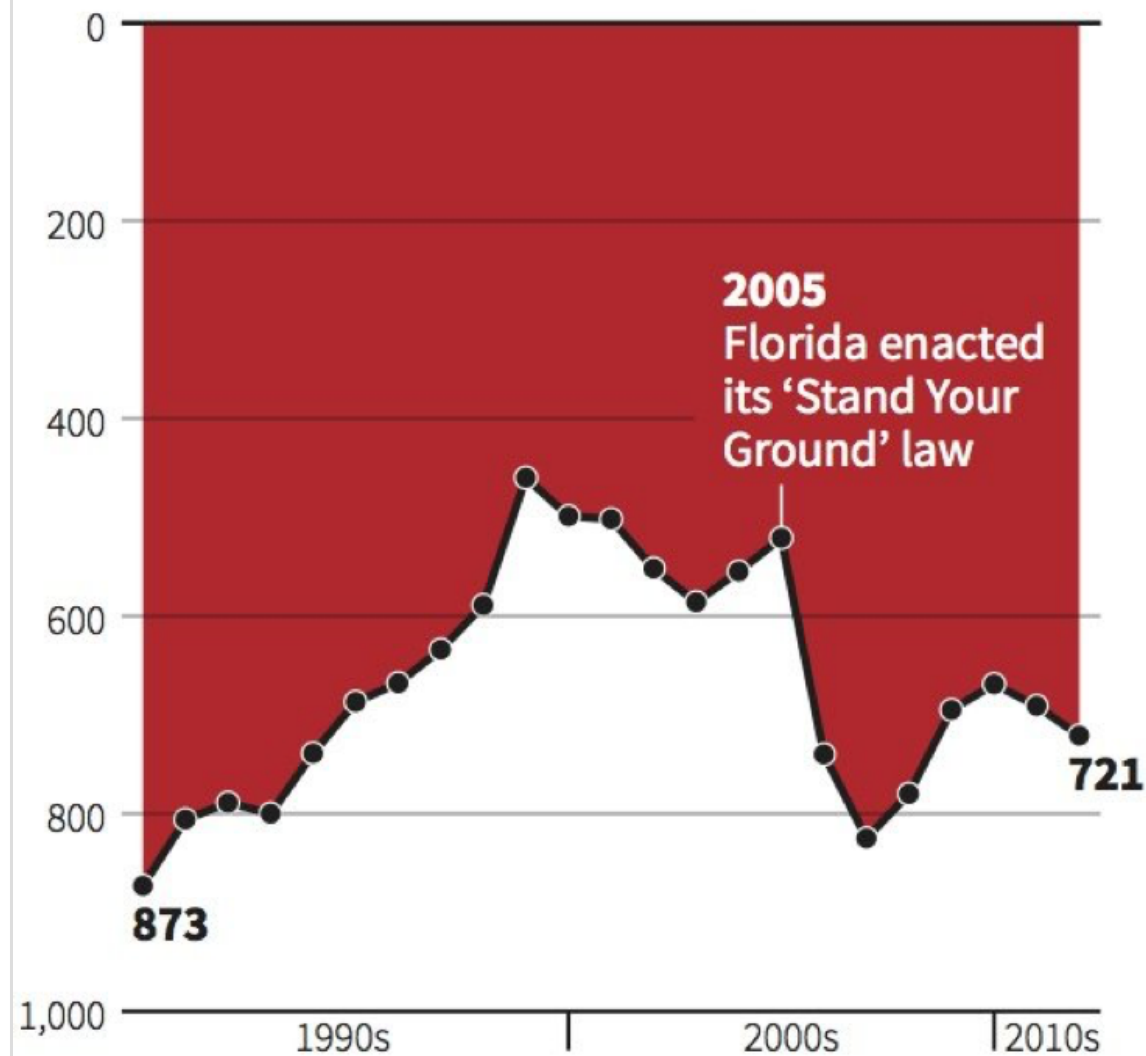
They actually flipped a graph upside down. This made it look like gun deaths were going down when in reality, gun deaths were spiking after the Stand Your Ground law was enacted:

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Shares

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Gun deaths in Florida

Number of murders committed using firearms



Source: Florida Department of Law Enforcement

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Shares

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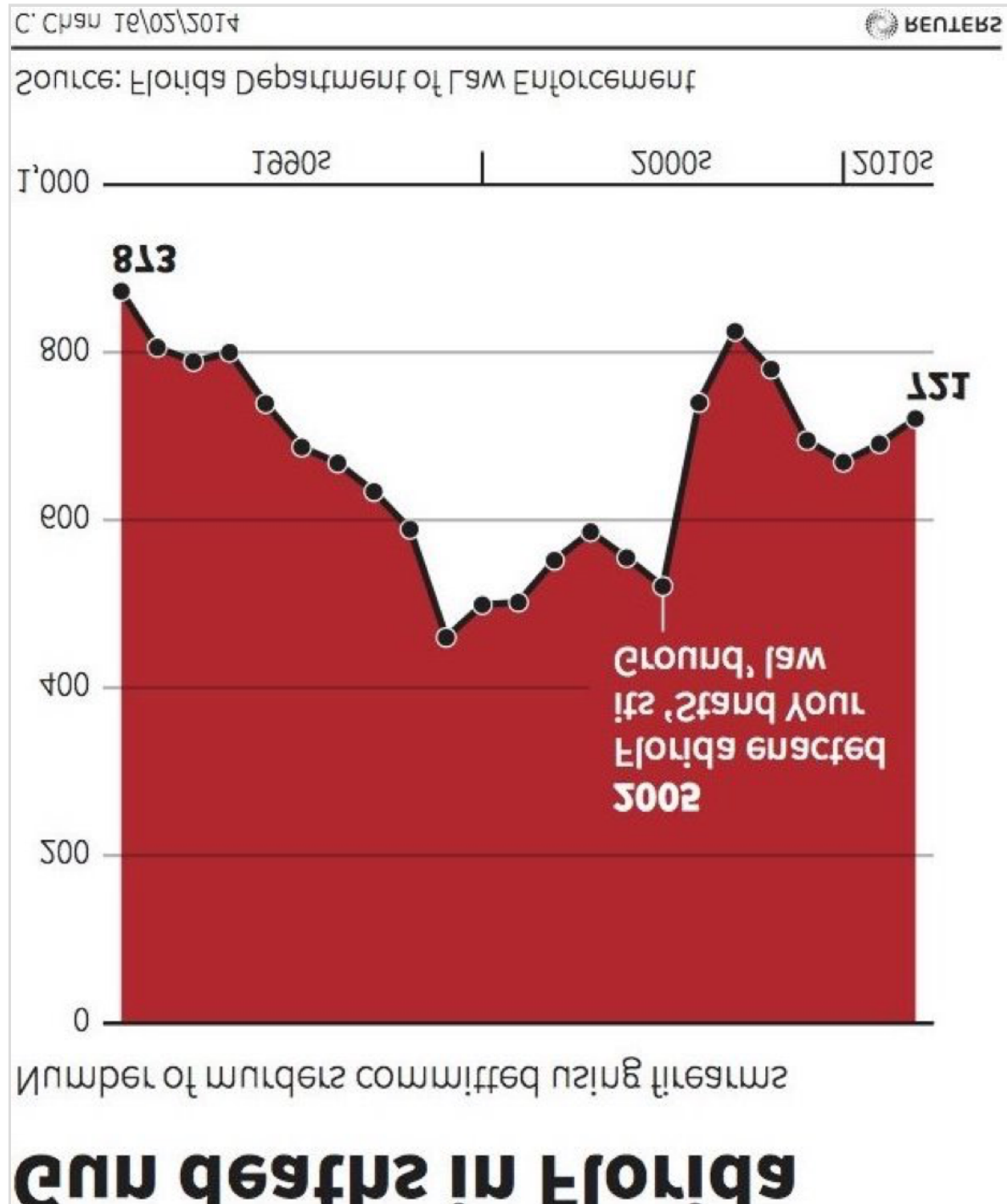
(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-26.png>).

Source (<http://www.businessinsider.com/gun-deaths-in-florida-increased-with-stand-your-ground-2014-2>)

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Shares

See what I mean? This was done to push an agenda.

A simple rotation and mirroring of the graph will show you what it should have looked like:



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Shares

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(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-27.png>).

There! Good as new, well...kinda.

And for our final example, we have one from our favorite data manipulators, Fox News.

Why don't you take a look at why this graph made this list?

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Shares



16
Shares

(<https://venngage-wordpress.s3.amazonaws.com/uploads/2017/08/misleading-graphs-28.png>).

8

Source

(<https://www.mediamatters.org/blog/2010/06/28/updated-worst-chart-ive-seen-all-day/166862>).

Did you spot it? If not, I don't blame you because I am guessing many of their viewers missed it too. And they are counting on that.

If you take a look at the x-axis, you will see that they choose to include a bunch of random time values for their graph. It's not like they just left a few months or quarters out of the graph at random—they purposefully chose those quarters to fit their narrative. You could also consider this an example of omitting data.

And the worst part about this example is not that it is a bad chart, but that they thought they could dupe their loyal viewers.

If a brand thinks so little of your intelligence that they push bad graphs on you, I would recommend finding another source.

16

Shares

Conclusion

8

Would you have guessed there were that many brands that play loose and fast with graphs?

Me neither!

As with any type of news story, I would recommend first checking where the graph is coming from and then taking a look at the data.

Like I said in the intro, most people sharing misleading graphs do not have your best interests in mind.

For example, if a graph that shows the benefits of coconut oil is being shared by a company that just happens to sell coconut oil, that graph may be skewed. Maybe look at some other sources before you order a case of it.

And if it is just one person or group sharing this particular graph, that is another red flag.

So be vigilant by always checking your sources, stay skeptical and if you feel like a writer is being misleading, call them out on it!

Do you want to learn more about picking the right charts for your data? Read this guide guide:

[How to Choose the Best Charts for Your Data](https://venngage.com/blog/how-to-choose-the-best-charts-for-your-infographic/)
[\(https://venngage.com/blog/how-to-choose-the-best-charts-for-your-infographic/\)](https://venngage.com/blog/how-to-choose-the-best-charts-for-your-infographic/)

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[\(https://venngage.com/blog/how-to-choose-the-best-charts-for-your-infographic/\)](https://venngage.com/blog/how-to-choose-the-best-charts-for-your-infographic/)



About [Ryan McCready \(https://venngage.com/blog/author/ryan/\)](https://venngage.com/blog/author/ryan/)

Ryan McCready went to the University of Arkansas and graduated with a degree in economics and international business. Now instead of studying the economy he writes about everything and enjoys stirring the pot.

6 CommentsSort by **Oldest**

Add a comment...

**Mary Cummings Williams**

What was your reasoning behind replacing your first Axis Manipulation Graph with an Omitted Baseline Graph? Especially just a few paragraphs after indicating "that's a manipulation tactic". I'm sure you could have found a zero baseline graph example...or maybe those examples you found weren't quite so politically weighted? I'm disappointed that a topic as universal and non partisan as intelligent information analysis is presented as a heavily politically slanted rant. I'm going to use your own words as much as I can to unfold what I see here (marked in quotes; my words in brackets).

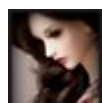
As a ... [See More](#)

[Like](#) · [Reply](#) · 4 · 2y

**Darcy Chiasson**

You can't omit the baseline on temperature unless you go to absolute 0 (-460F), in which case the graph would loose all use. With percentage or smaller numbers, you can and should include the baseline; but some stats require some axis manipulation to make sense. When it comes to temperature, the reader needs to make sure they look at the number on the y axis to see the range in question.

[Like](#) · [Reply](#) · 2 · 1y

**Chayanika Banerjee**

Keep us updated with such information.

[Like](#) · [Reply](#) · 1y

**Alix Hattenstone**

Hi, this was really interesting! I'm doing a university project exploring the question: 'Does data journalism drive misinformation and disinformation?'. What do you think? It'd be great if we could use an original quote from you.

[Like](#) · [Reply](#) · 51w

**Dann Flesher**

Alix, You can use a quote from my comment above if you want, just be sure to spell both my first and last names correctly,

[Like](#) · [Reply](#) · 40w

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Shares

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**Dann Flesher**

I agree that bias drives the manipulation of data. 'Figures don't lie, but liars figure' is a very old saw. And I think almost every person uses personal bias to make decisions, I know I do.

For instance, you use Fox as a bad example, but do not mention ABC, NBC, CNN, or CBS... or even AP. To your credit you only hide your own bias a little, you say "...our favorite data manipulators, Fox News...". But, like a truncated chart, that revelation is near the bottom of the article, so we can be drawn into your bias. Are we to assume then, since they are your "favorite data manipulators" that the others are guiltless of such manipulation???

Just curious...

Like · Reply · 1 · 40w

**Carlos Alberto Rivas**

You are great, Ryan. This post is most importan and useful than 100 posgraduate courses. Thanks.

Like · Reply · 39w

**London Weiler**

Awesome article! You did a great job demonstrating your point and teaching readers how to spot bias - this is the exact article I was looking for! Super appreciate your

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