

FOR A CHANGE, WE AREN'T
GOING TO BE TALKING ABOUT
IM/MIGRANT WOMEN ENGAGED
IN SEX WORK.

But we will be talking about something relevant to them

How Data & Statistics Can Be Misinterpreted, Misrepresented and Manipulated

Data and statistics play a huge role in public opinion and policy decisions, even when they shouldn't

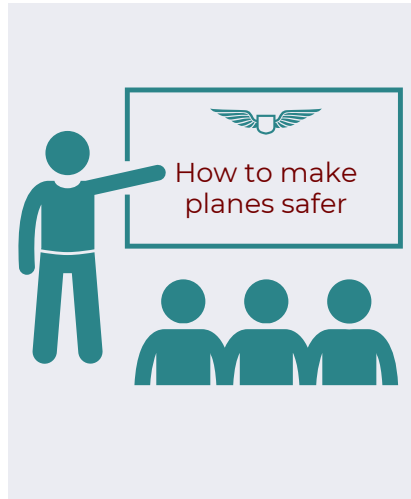
In this resource, we will introduce the reader to some **select examples** of how data and statistics can be misinterpreted, misrepresented, or outright manipulated — all leading to problems for anyone trying to use such data or statistics to **form an opinion** or **solve a problem**.

Please note, these are **just a few examples** that were chosen to illustrate reasons to be mindful when looking at data/statistics. There are **many, many more ways** that data and statistics can be problematic and we encourage the reader to continue to explore this topic.

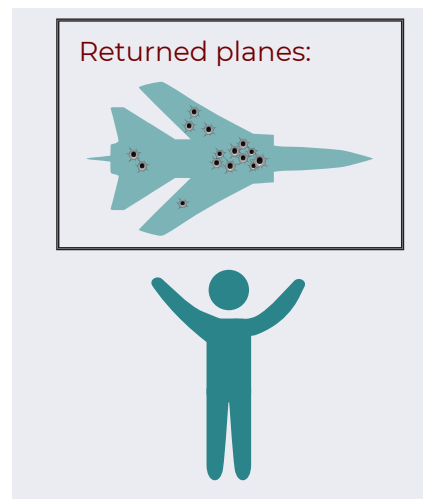
HOW DATA/STATISTICS CAN BE... MISINTERPRETED:



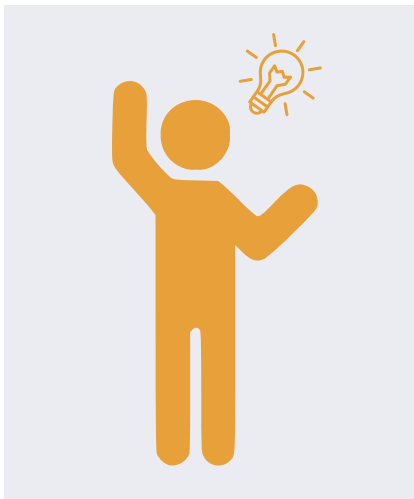
Location:
Airforce headquarters.



"Based on our data from
all the planes that
returned..."



"...We should add extra
armour in the places
with bullet holes!"



"Actually, you should
add extra armour to all
the places **WITHOUT**
bullet holes..."



"What?
Why?!"



"...Because the planes
that got hit there didn't
come back."

This is called Survivorship Bias

[Survivorship Bias](#) is a type of [selection bias](#), and affects data validity because the target population is not actually represented by the sample group under study.

“Survivorship bias occurs when researchers focus on individuals, groups, or cases that have passed some sort of selection process while ignoring those who did not. Survivorship bias can lead researchers to form incorrect conclusions due to only studying a [biased] subset of the [population](#).”¹

If you only study something that survived a **selection process** (planes returning from war), you might **miss a critical part** of the problem (planes that didn't return) and this might cause you to **draw an incorrect conclusion** (where to place extra armour) and ultimately **fail at your objective** (increasing the safe return rate of the planes).²

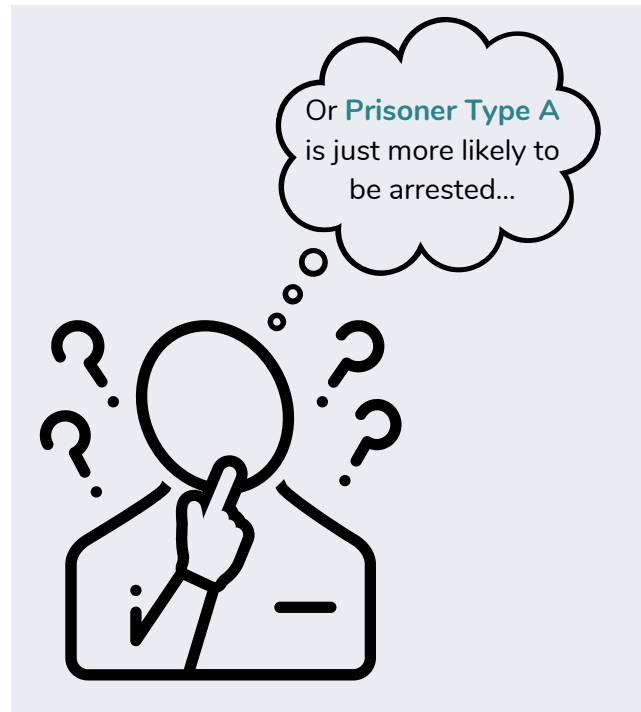
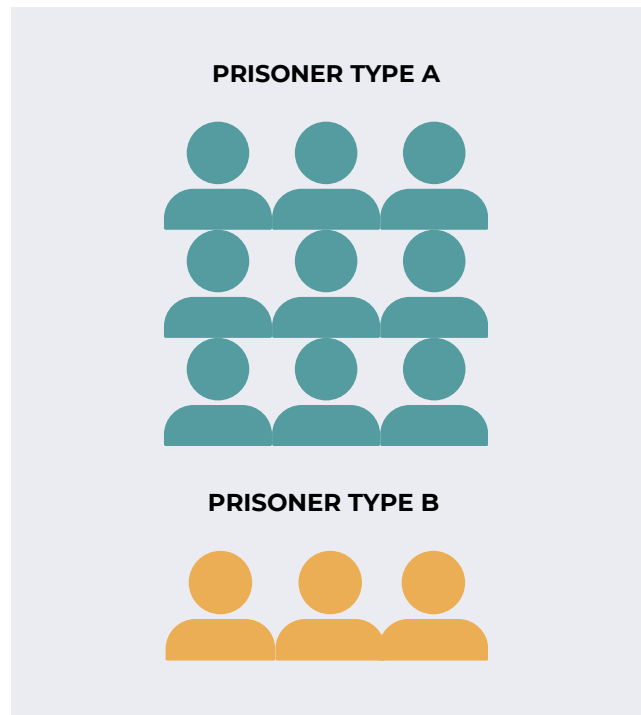
This is a great example of how data can be easily misinterpreted, leading to misunderstanding and incorrect conclusions.

Consider how such a misinterpretation of scientific data could result in repercussions for a marginalized community in society.

¹ Nikolopoulou, K. (2022, November 18). [What Is Survivorship Bias? | Definition & Examples](#). Scribbr. Para. 1. Retrieved August 2, 2023. Link within quotation is present in original source.

² Resource example adapted from [Statistics By Jim](#).

HOW DATA/STATISTICS CAN BE... MISREPRESENTED:



This is called **Overrepresentation**

Overrepresentation occurs when "the representation of a group in a category... differs substantially from the representation of others in that category."³

In the context of the above example, [overrepresentation in criminal justice systems](#) occurs when the group in question really is more likely to commit crime OR the group is **more likely to be surveilled, arrested, prosecuted, and convicted of crime** than other groups.

For example, we know that Indigenous peoples and other racialized groups are overrepresented in the criminal justice system in Canada.

If we don't consider the systemic racism and related factors contributing to the marginalization and over-policing of BIPOC, it may seem as though these groups are simply inherently more likely to commit crime.

We know this isn't true.

"It shows you the stats but it doesn't give you the story"⁴ — It's important to consider how statistics have come to be and not just the end result.

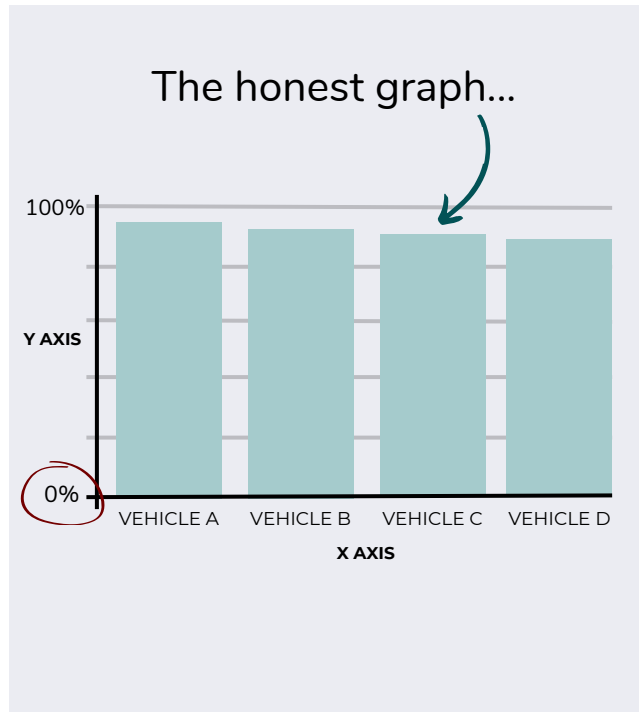
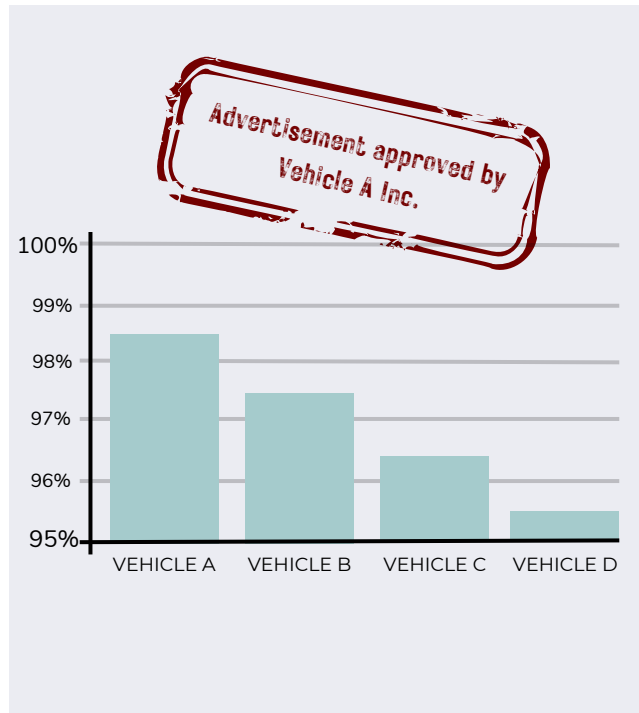
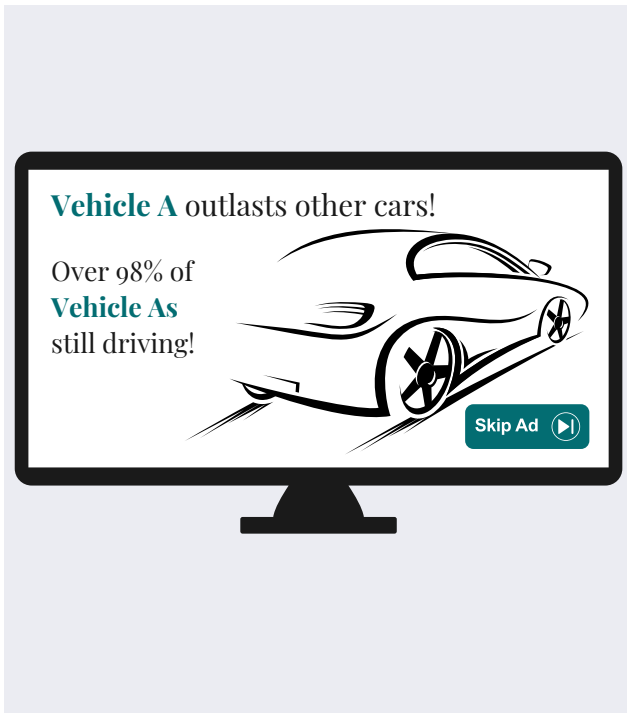
This is a great example of how data can be misrepresented and overlook systemic and institutional drivers of statistical trends.

Consider how the misrepresentation of statistics could be used to reinforce stereotypes and push a specific narrative about certain groups.

³ Skiba, R. J., Simmons, A. B., Ritter, S., Gibb, A. C., Rausch, M. K., Cuadrado, J., & Chung, C.-G. (2008). [Achieving Equity in Special Education: History, Status, and Current Challenges](#). *Exceptional Children*, 74(3), 264–288. P. 266. <https://doi.org/10.1177/001440290807400301>.

⁴ Forester, B. (October 19, 2021) [Justice Canada study finds own criminal courts stacked against Indigenous accused](#). Para. 16.

HOW DATA/STATISTICS CAN BE... MANIPULATED:



This is called a **distorted or truncated graph**

Graphs can be distorted by modifying one or more of the [axes](#) — the vertical (**y axis**) and horizontal (**x axis**) bars that form the structure of the graph — typically by narrowing numerical values to impact scale and appearance.

“This is the most common way of data manipulation. A truncated [or distorted] graph usually involves manipulation of the axis to make something not significant at all look like a huge difference.”⁵

Visually manipulating a graph is a widely used tactic in advertising and politics as it is "a very powerful tool and **can be used to push a false narrative.**"⁶

See here for [several real-life examples](#) of graph manipulation and other visual irregularities.⁷

This is a great example of how data can be outright manipulated to evoke a particular interpretation and reaction from viewers.

Consider how the visual manipulation of data could be used to spread misinformation and disinformation through society.

⁵ Tucker, T. (n.d.). Retrieved from [eCampusOntario Pressbooks](#), para. 1.

⁶ Ibid, para. 20, emphasis added.

⁷ Resource example adapted from [Trent Tucker](#).

In conclusion...

- Data and statistics can be **misinterpreted**, leading to incorrect conclusions.
- Data and statistics can be **misrepresented**, showing accurate information but ignoring the complex processes that lead to the situation.
- Data and statistics can be willfully **manipulated**, pushing viewers toward a specific conclusion to further someone's agenda.

SWAN doesn't advocate for paranoia around research or publicly available information — however, it is important to be aware that data/statistics are not perfect and **human error and agenda** can be at play here as much as anywhere else.

See our expert take on statistics specific to human trafficking [here](#).

Ask the following questions when you encounter statistics

①

Is this the full picture? Does this describe what it claims to describe?

②

How did this come to be? Is there more to the story than just the numbers?

③

Who is sharing this information and what do they stand to gain?

For more resources for journalists, visit ResponsibleReporting.ca