

A person in a blue denim shirt is holding a black clapperboard with white and red markings. The clapperboard has 'CIAK CIAK' written on it, along with a red digital display showing '338'. The background is a film set with various studio lights and equipment.

Applying Cinematic Techniques to Data Storytelling

Angelica Lo Duca
Researcher @ IIT-CNR, Author of “Become a Great Data Storyteller” (Wiley)
and “Data Storytelling with Altair and AI” (Manning Publications)

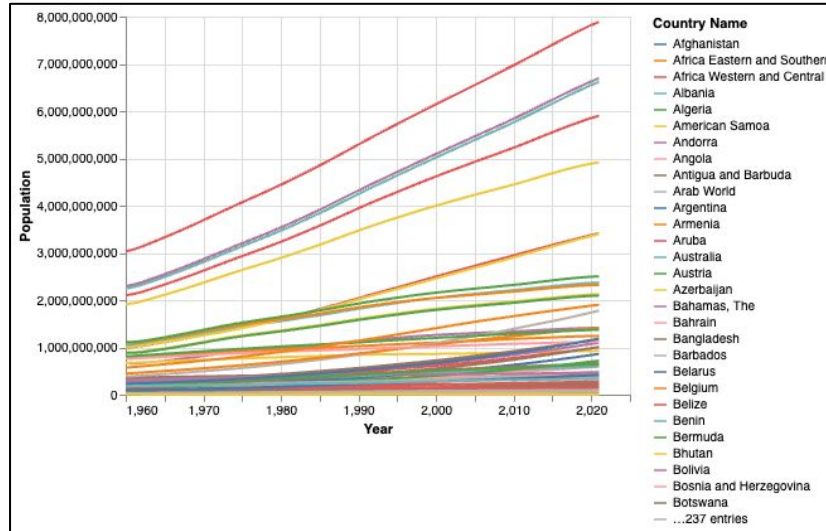


Bonn 2011

1 minute. Tons of charts.
No one cared.
No one came to my poster.

Data is not enough.

Data



Chart



Audience

Data



Story



Audience

Stories speak at three levels



1

Stomach

Corresponds to the *instinctive* level: the audience understands the story without a detailed reflection.



2

Heart

Corresponds to the *affective* level: the audience engages with the story.



3

Brain

Corresponds to the *behavioral* level: the audience acts based on the story.

How can we tell
Data
Driven
Stories?



Data Storytelling is communicating the results of your data analysis process to an audience through a **story**.



Behind every data point, there are people.
People have stories to tell.

10

A number.

Numbers do not tell stories.

10 apples

A data point.

Data tells stories.

This year my apple tree has ten more apples than last year.

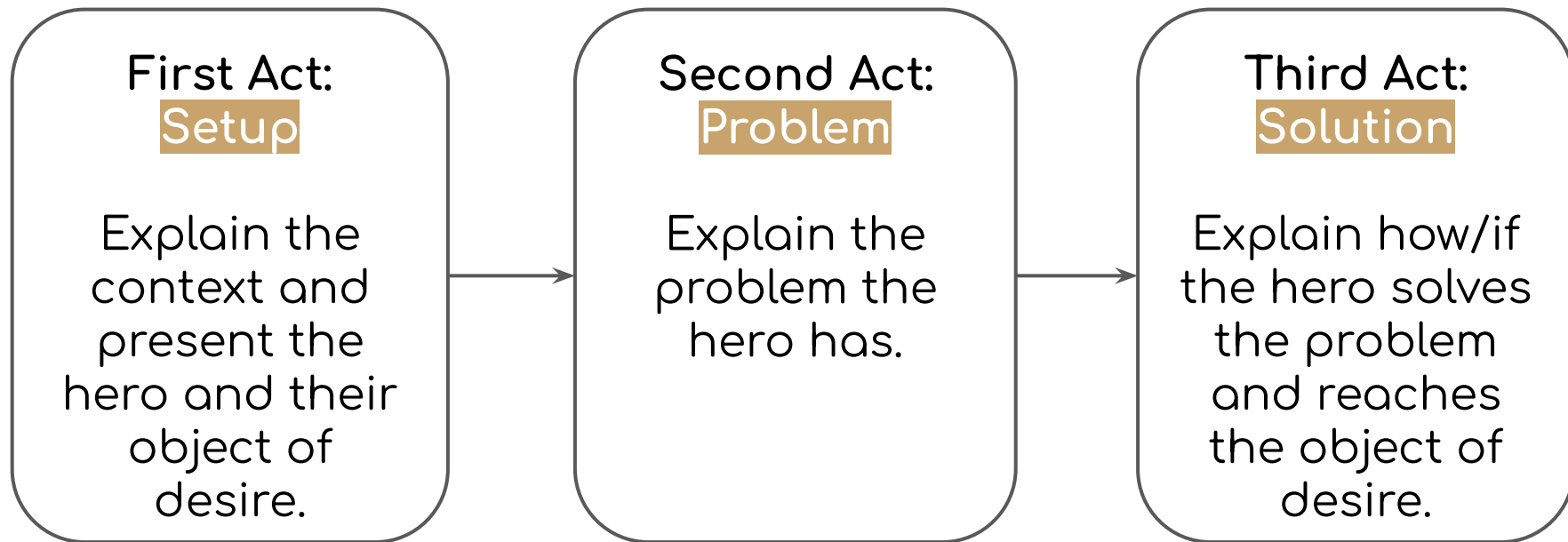
How can we structure
a data-driven story?

Let's borrow the structure of a story
from the cinema.

Every story is about
a hero wanting something
but a problem prevents them
from reaching it.

Every story is about
a hero wanting something (object of desire)
but a problem prevents them
from reaching it.

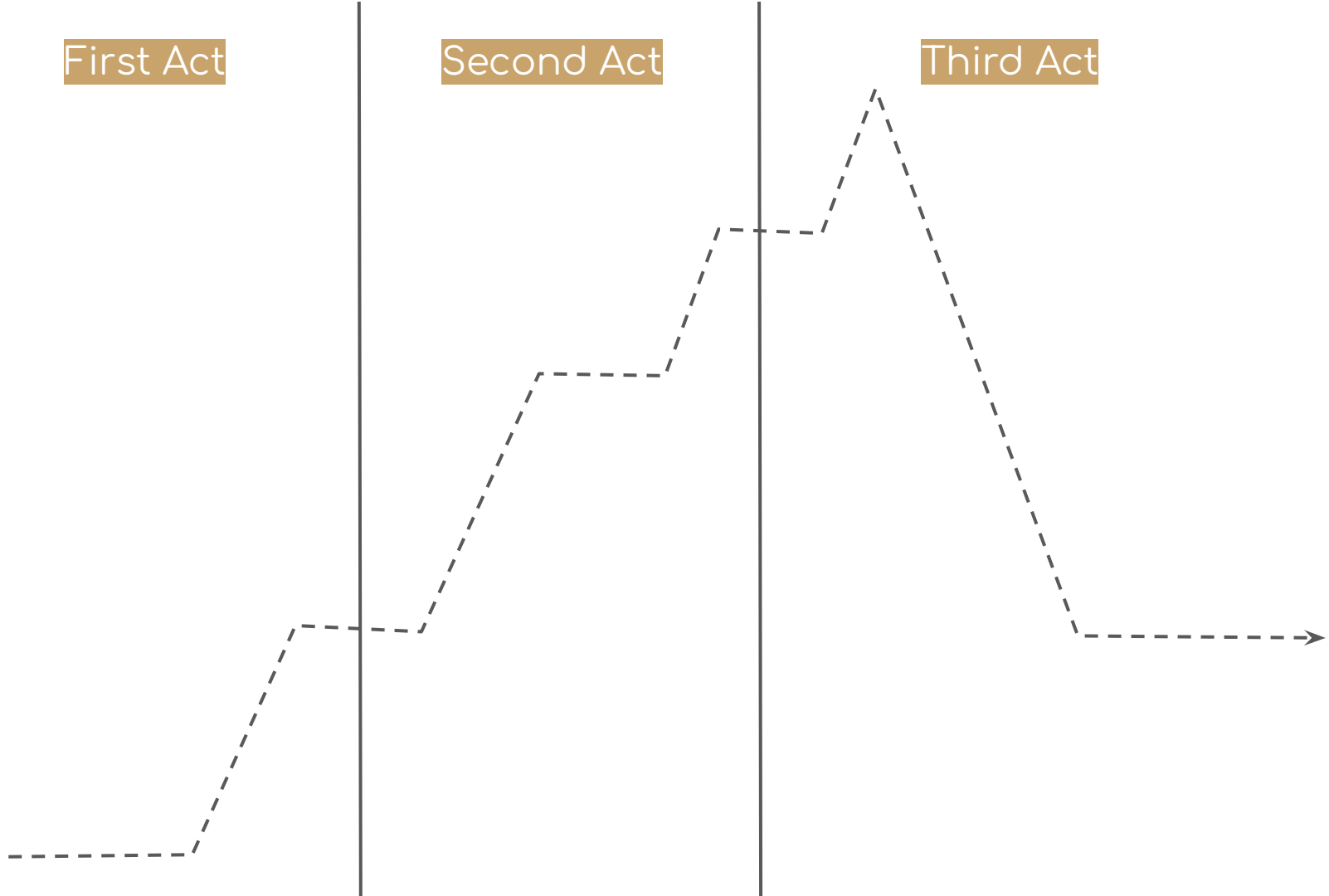
The Three-Act Structure



First Act

Second Act

Third Act





Antonio

First Plot Point

Antonio wants to ride a bike without training wheels.

The Dark Night

Antonio fights against fear and ultimately decides that he will make it.

Second Plot Point

Antonio meets his antagonist: fear of falling.

Climax

Antonio rides the bike without training wheels.

Who is the **hero** in a data-driven story?

The audience is not the hero.

The data storyteller is not the hero.

The hero is extracted from the data.

Heroes in data-driven stories

Human

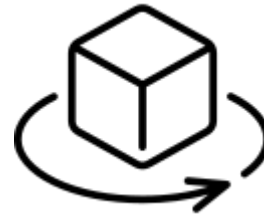
Directly connected
to people



Students
Patients
Organizations
Countries
...

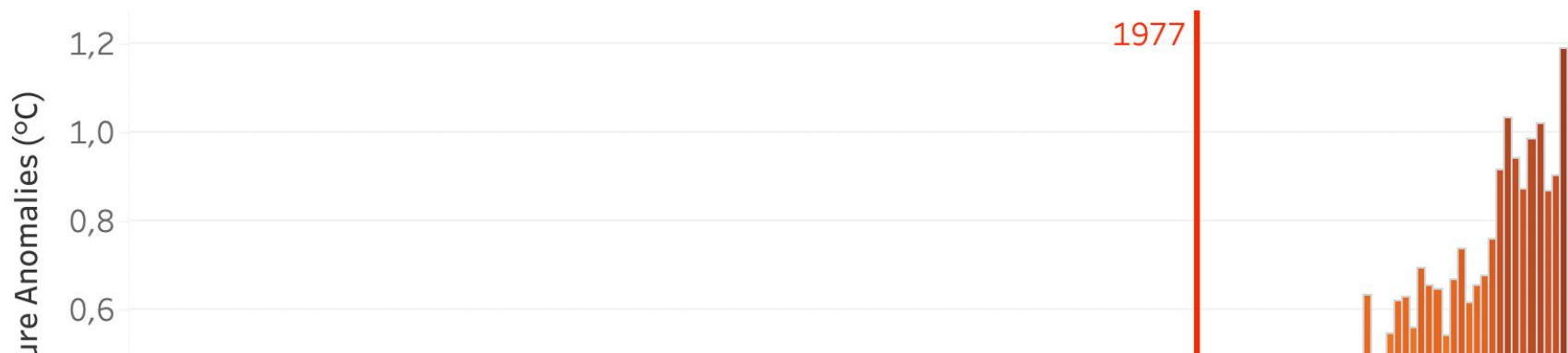
Nonhuman

Indirectly
connected to
people

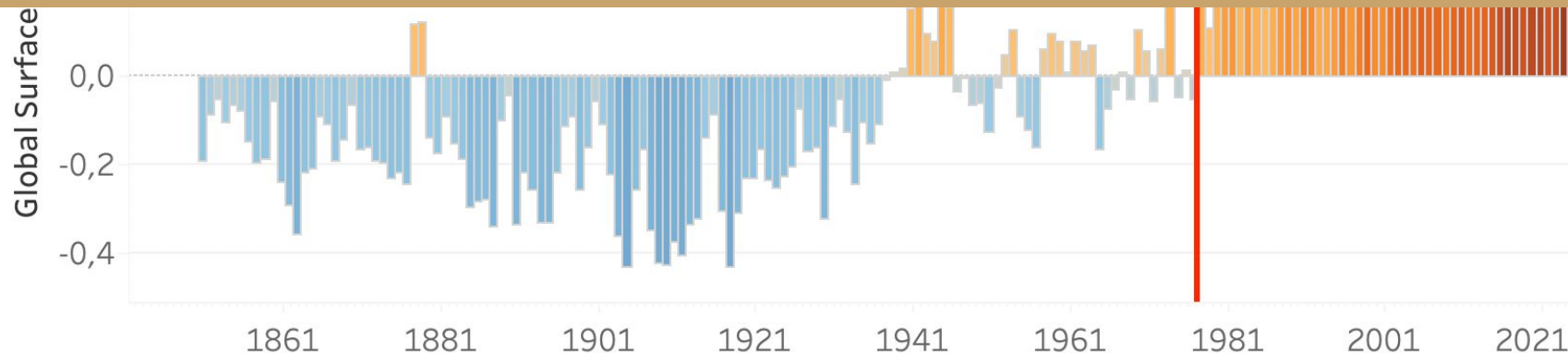


Products
Temperature
Trains
...

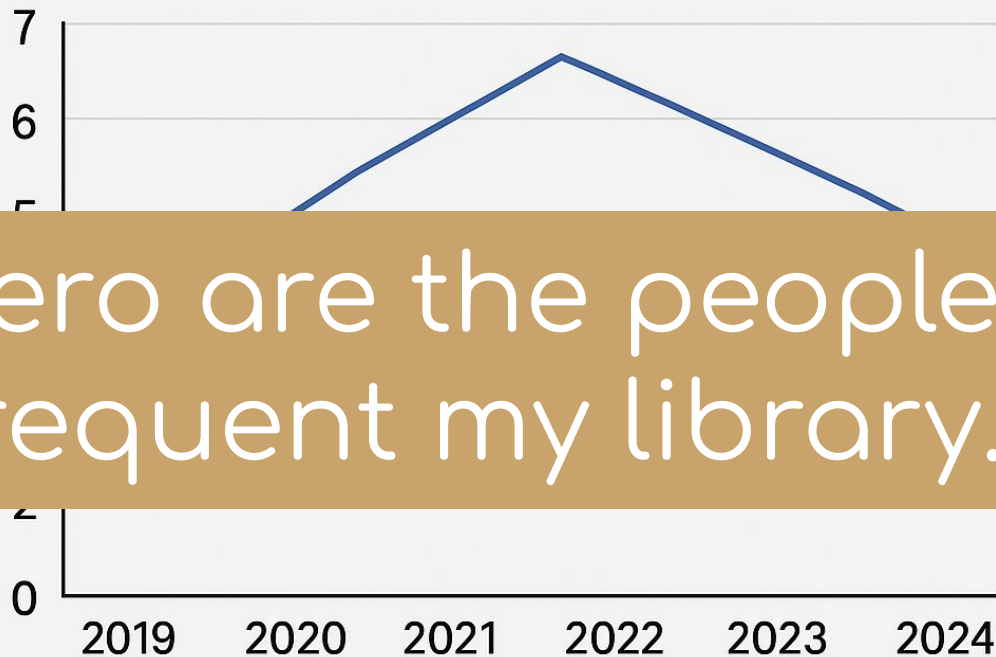
A Worrying Situation: Global Warming Since 1977



The hero is the temperature!



Average Number of Books Read Per Person in My Library in a Year



The hero are the people who frequent my library.

The Data-Hero-Humanity Matrix

Qualitative		
Quantitative		

Data {

The diagram shows a 3x3 grid. The first row is empty. The second row is labeled 'Qualitative' in the first column. The third row is labeled 'Quantitative' in the first column. To the left of the second and third rows, there is a vertical curly bracket labeled 'Data'.

The Data-Hero Humanity Matrix

Data {	Qualitative	Experiences, opinions, perceptions, or behaviors of people
	Quantitative	

The Data-Hero Humanity Matrix

Data {	Qualitative	Experiences, opinions, perceptions, or behaviors of people	Description of objects, environments, events, processes, or systems
	Quantitative		

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The Data-Hero Humanity Matrix

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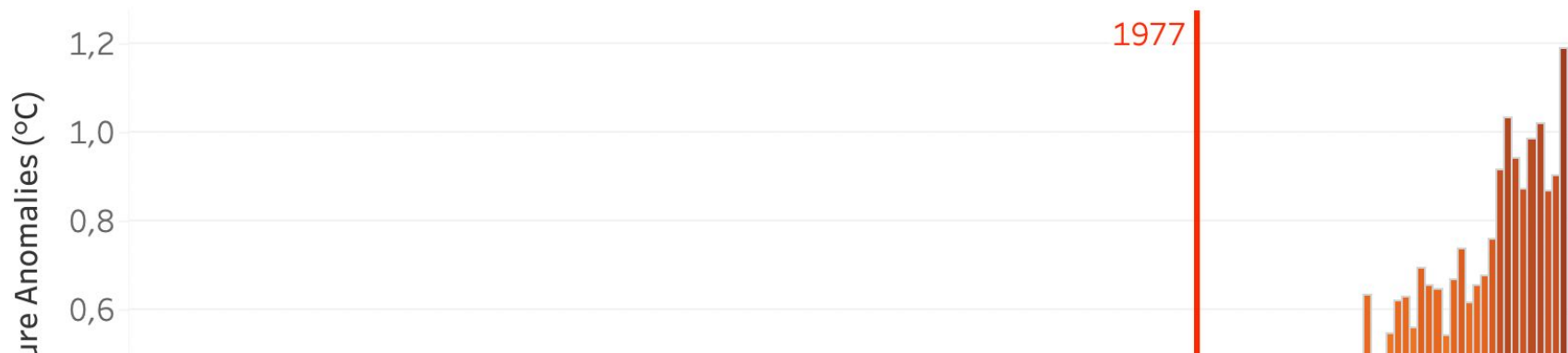
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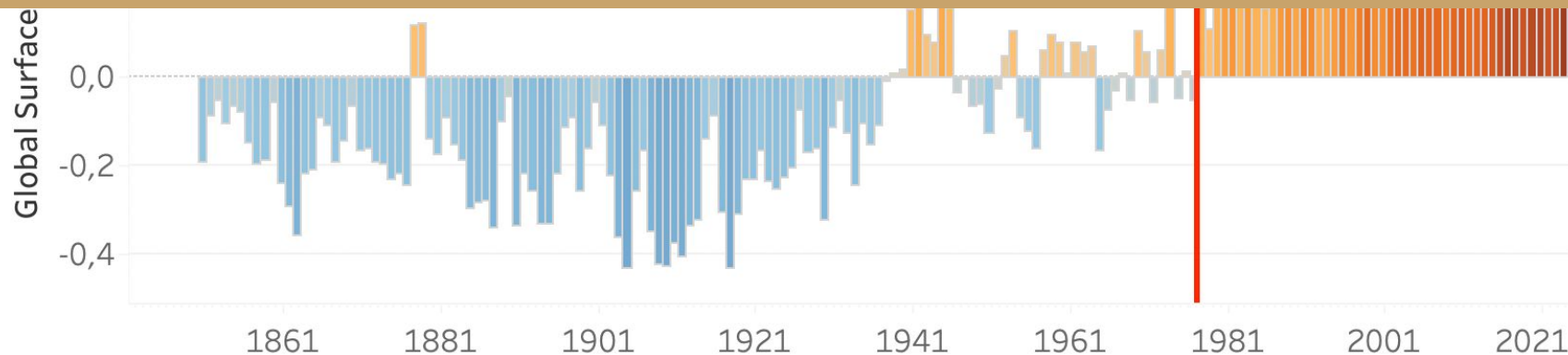
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	Human	Nonhuman
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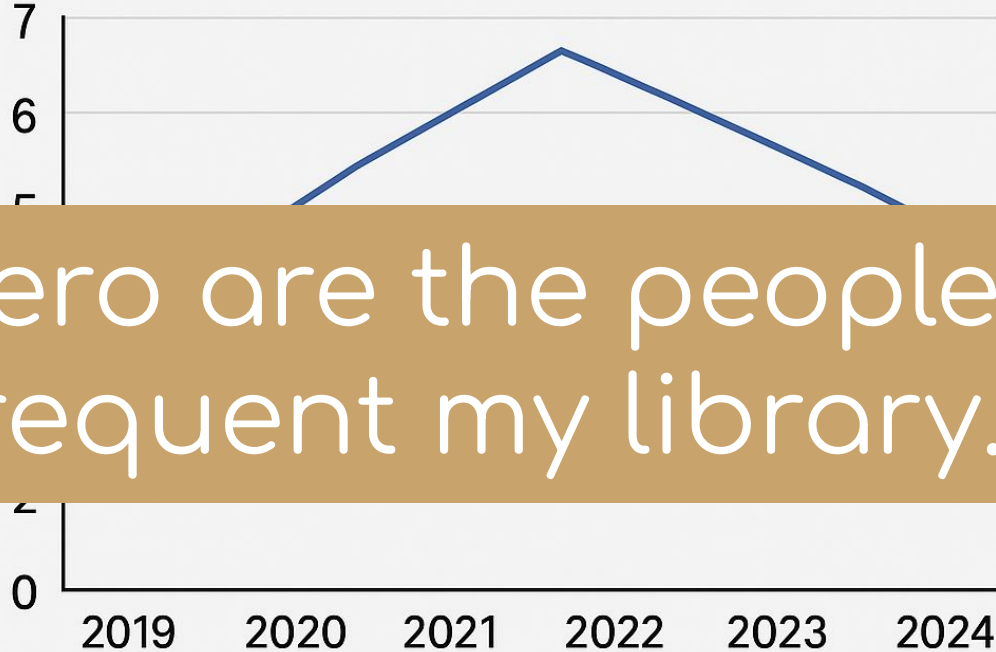
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The hero are the people who frequent my library.

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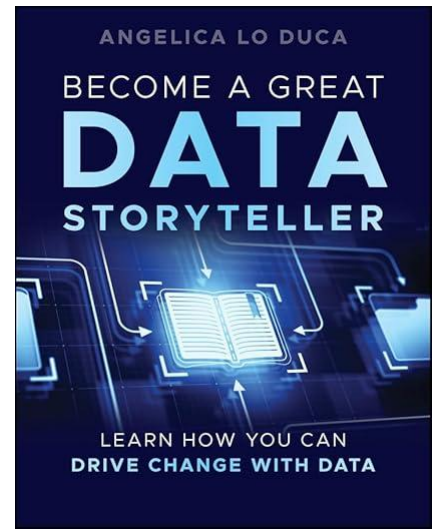
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Who specifically is the hero?
A single person?
A group of people?
An organization?

Use the Data-Hero-Concreteness
Matrix.



Every hero has a **sidekick** who reinforces the hero's presence.

The sidekick is the **human case** behind your data.

A Worrying Situation: Global Warming Since 1977

1,2

1977

A sidekick can be a climate change expert or your friend experiencing temperature changes (floods, too high temperatures,...)

-0,4

1861

1881

1901

1921

1941

1961

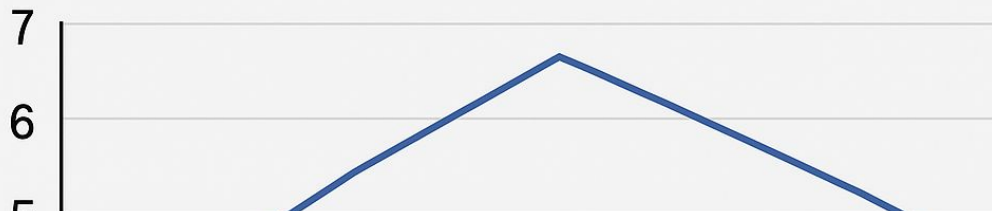
1981

2001

2021



Average Number of Books Read Per Person in My Library in a Year



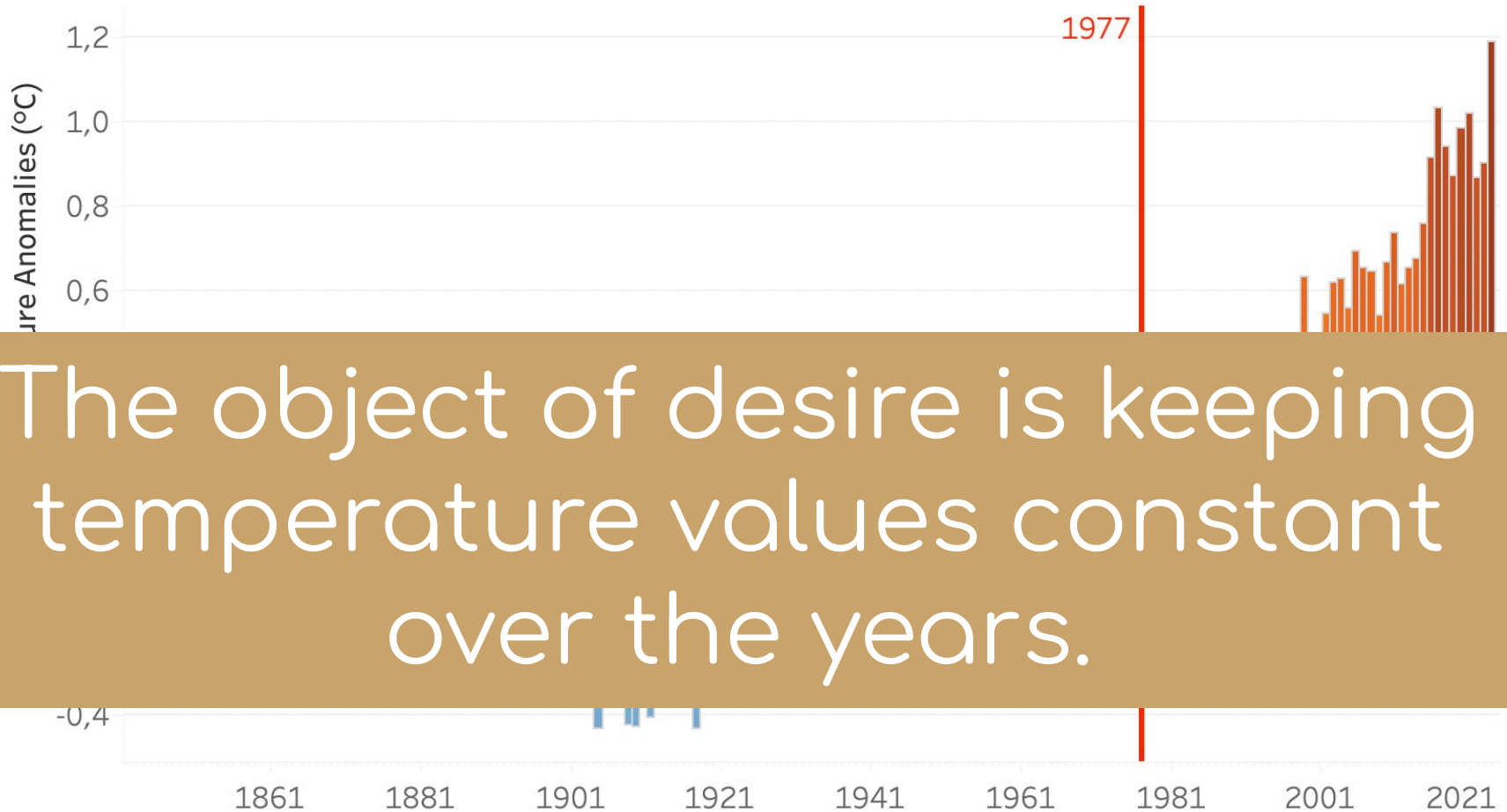
The sidekick could be a real reader who frequents the library.

2019 2020 2021 2022 2023 2024

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from reaching it.

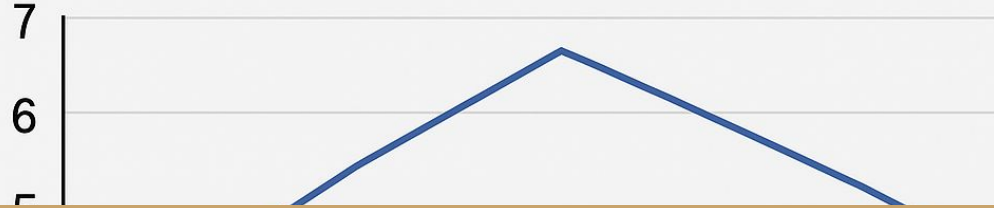
Every story is about
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A Worrying Situation: Global Warming Since 1977



The object of desire is keeping temperature values constant over the years.

Average Number of Books Read Per Person in My Library in a Year



The object of desire is increasing the average number of read books per person.

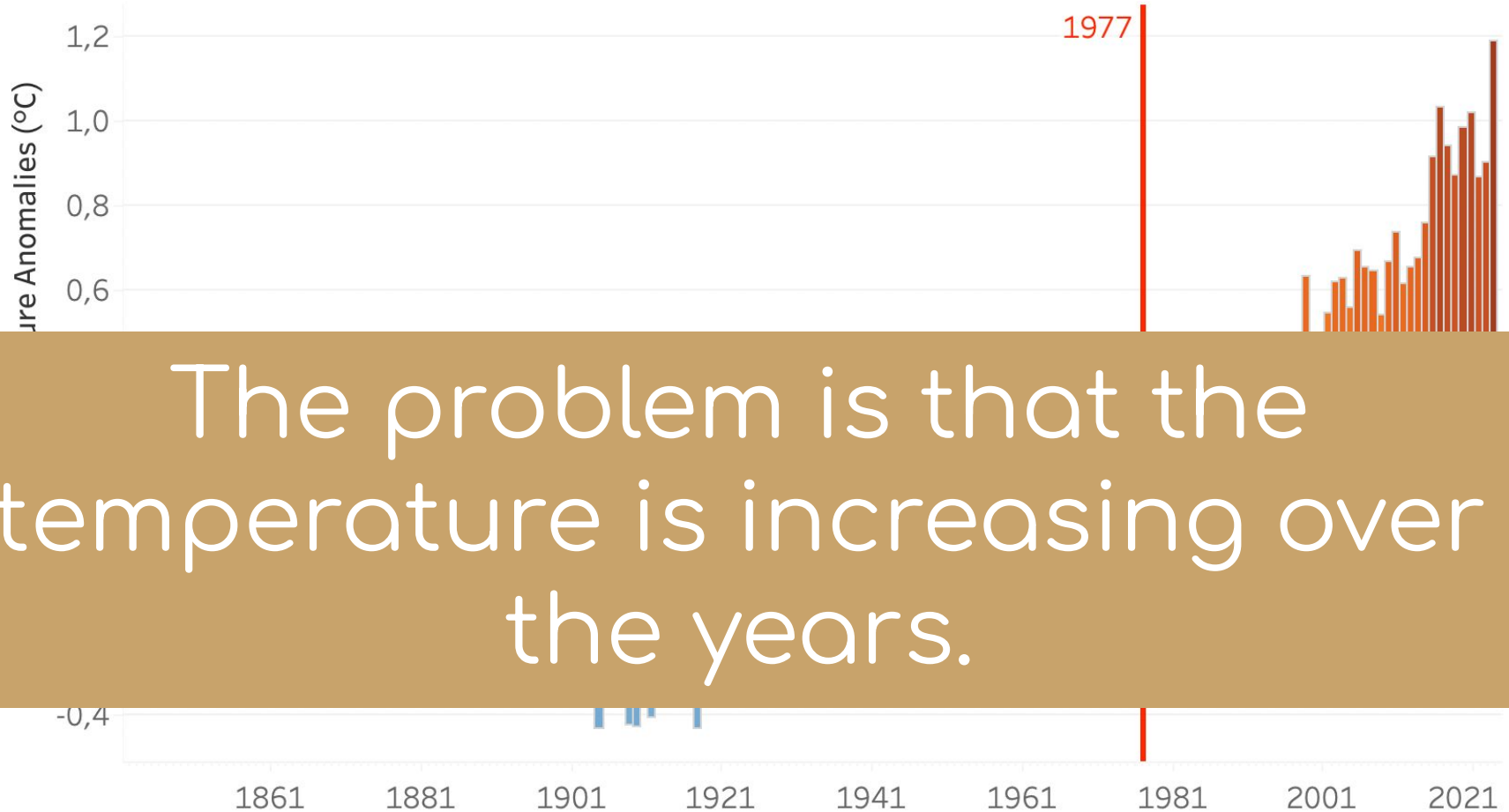
2019 2020 2021 2022 2023 2024

Every story is about
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from reaching it.

The problem is the **insight** extracted from your data.

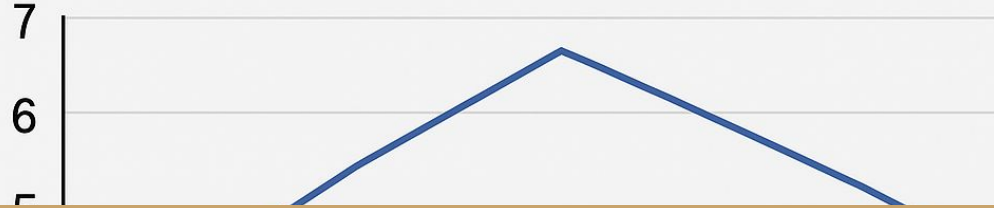
The insight is what you have discovered analyzing your data.

A Worrying Situation: Global Warming Since 1977



The problem is that the temperature is increasing over the years.

Average Number of Books Read Per Person in My Library in a Year

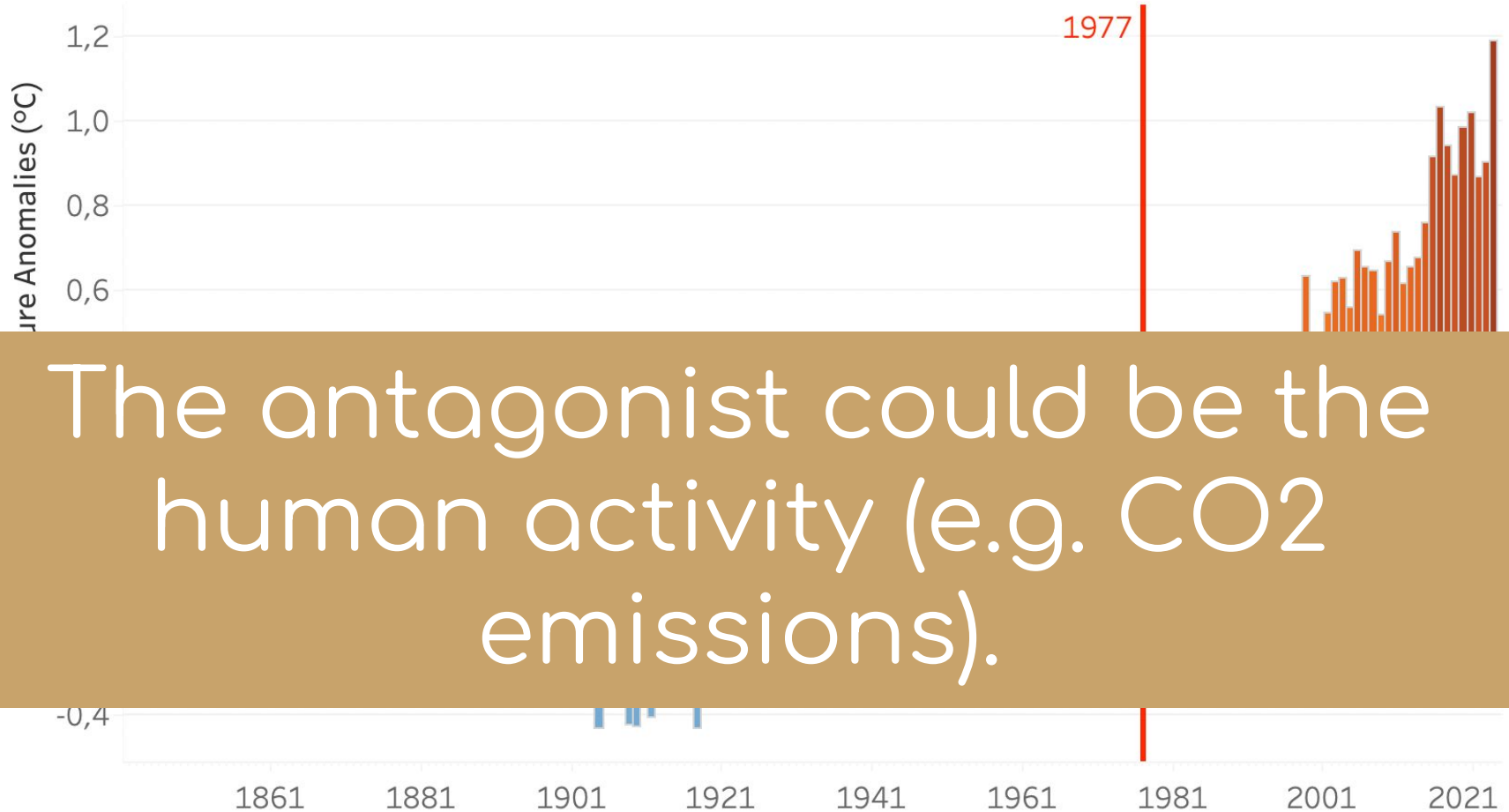


The problem is that since 2022 the average number of books read per person is decreasing.

2019 2020 2021 2022 2023 2024

The problem is caused by the
antagonist.

A Worrying Situation: Global Warming Since 1977



The antagonist could be the human activity (e.g. CO₂ emissions).

Average Number of Books Read Per Person in My Library in a Year



The antagonist could be a rising interest towards movies.

Structuring your data as a story
enables you to better understand your
data!

Hook

The opening moment in the story.

Hero

Present hero, their goals, and their object of desire.

Context

Describe where the hero lives.

Inciting Event

A turning point preparing the problem.

Buildup

Prepare the final pieces for the first plot point.

First Plot Point

Introduce the main problem the hero has.

First Act

Second Pinch Point

Reinforce the contrast between the hero and the antagonist.

Action

Describe how the antagonist causes the problem.

Second Plot Point

Show the contrast between the hero and the antagonist.

First Pinch Point

Present the antagonist.

Reaction

Reinforce the problem by showing the effects.

Second Act

**Dark Night or
Third Plot Point**
Knowledge

Climax

The moment where the hero's goal is met (or lost)

Next Steps
Objective

Third Act

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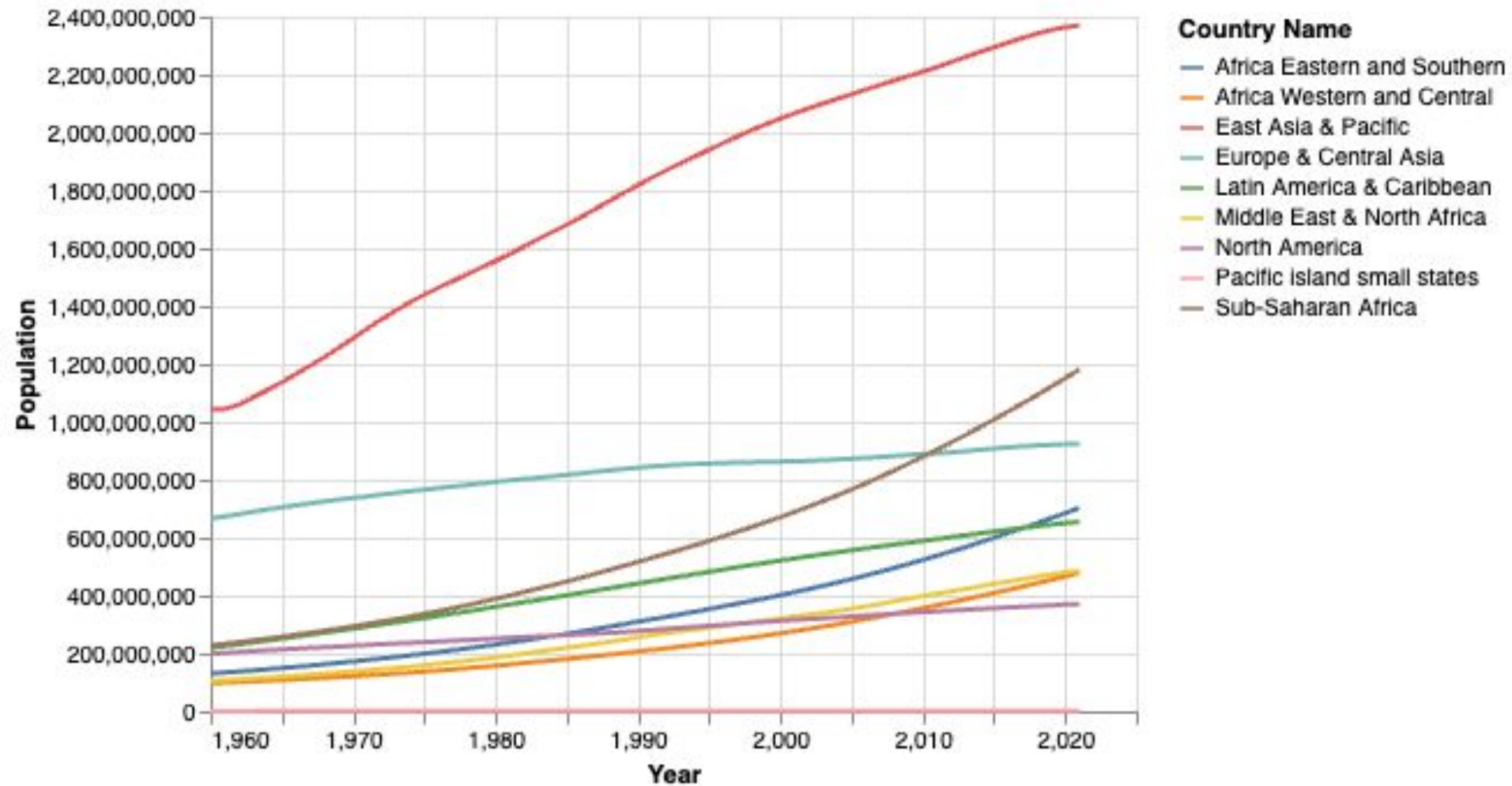
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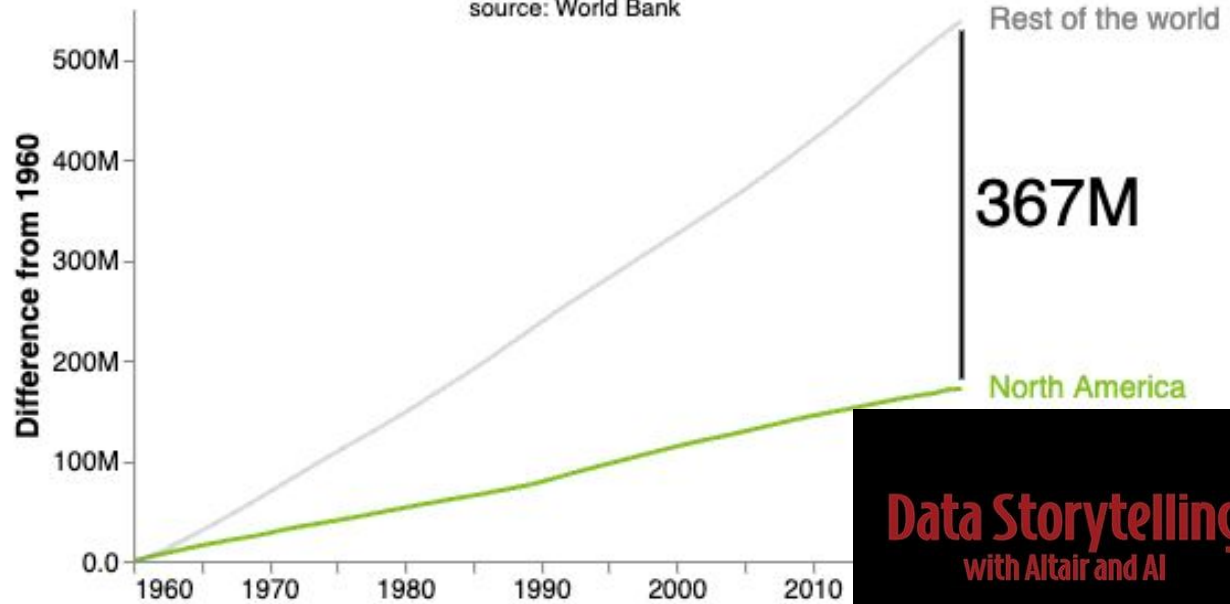
Third Act

If I had more time, I would have written
you a shorter letter. (Blaise Pascal)
Brevity takes time. (Matthew Dicks)



Population in North America over the last 50 years

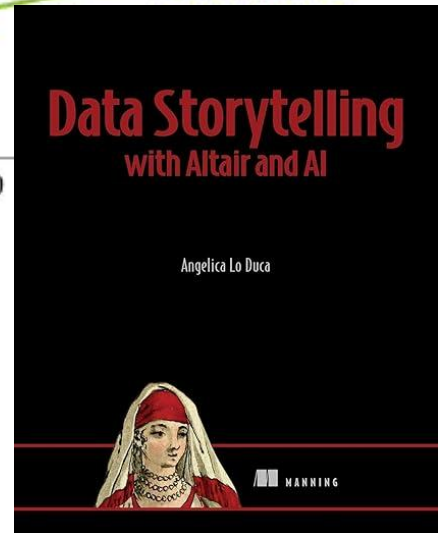
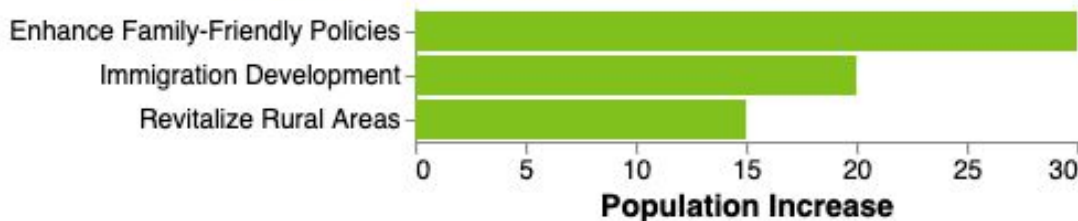
source: World Bank

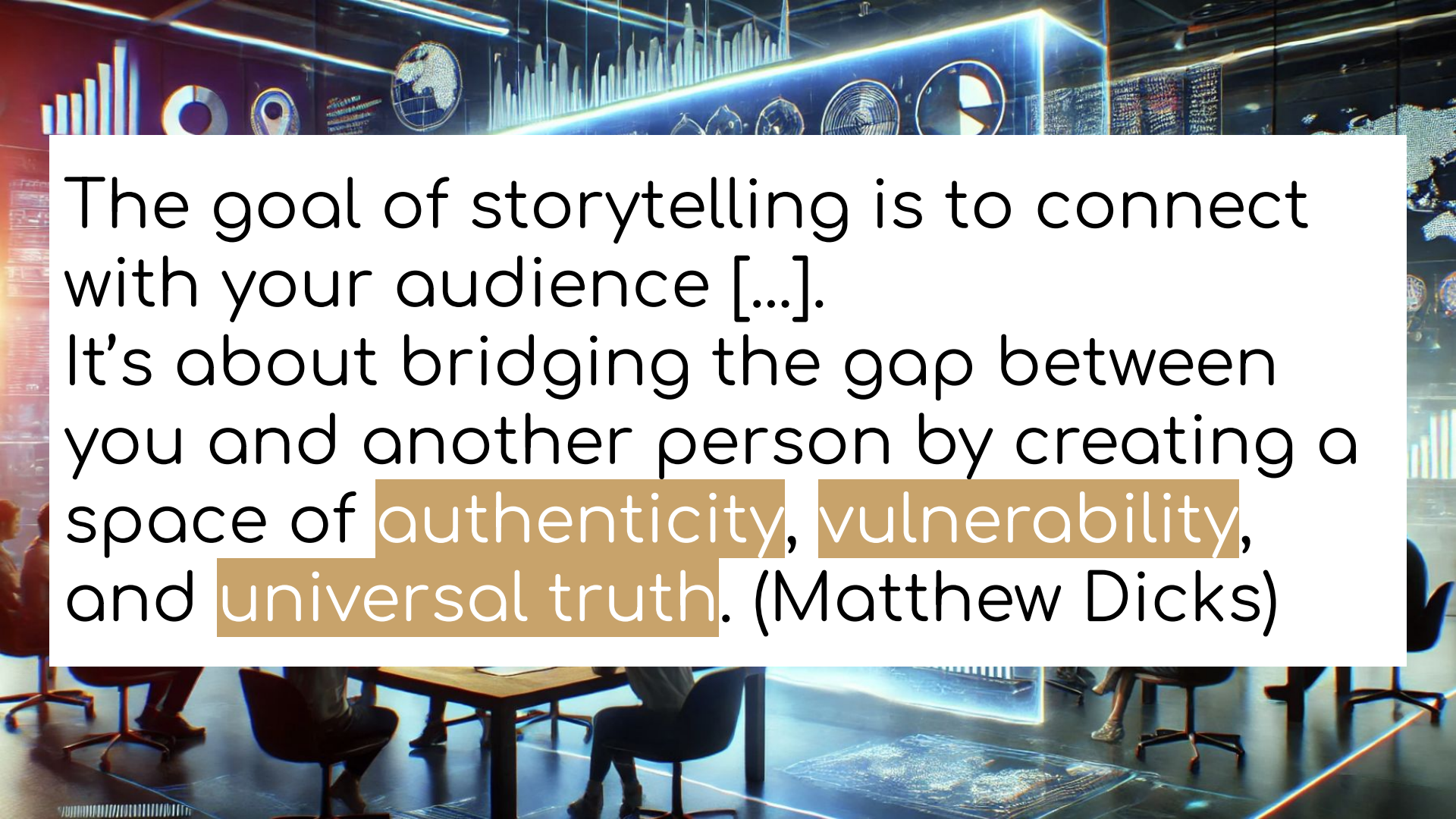


Why this gap?

1. Lower Fertility Rate
2. Lower Immigration Rate
3. Higher Average Age

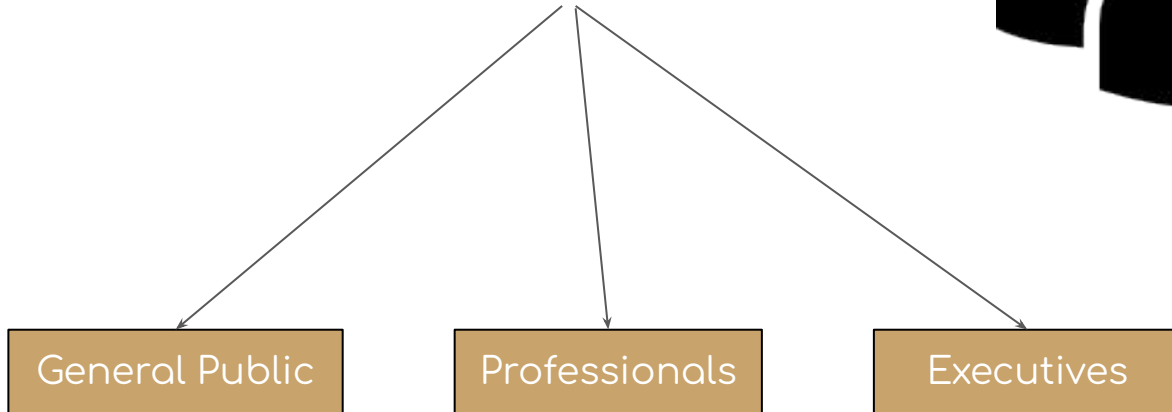
Strategies for population growth in North America



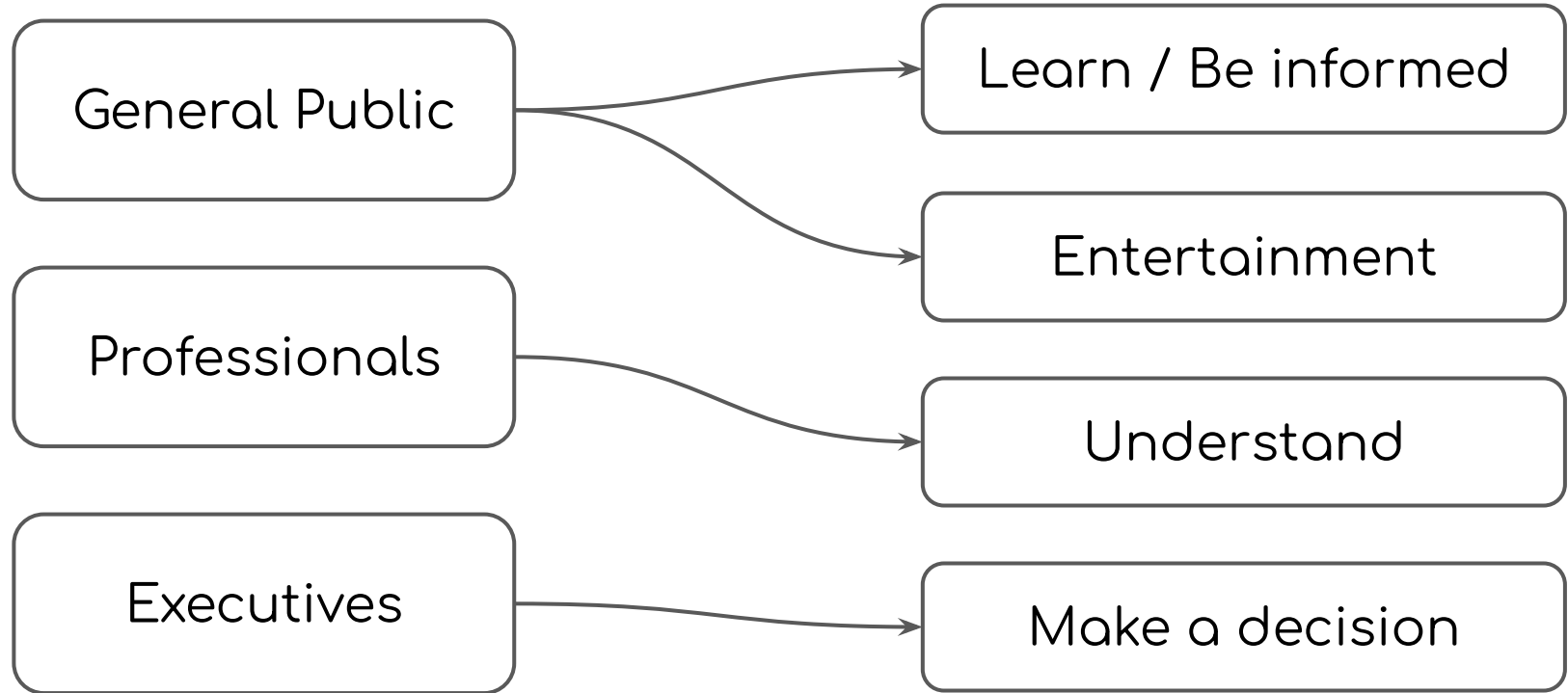
The background of the image is a futuristic control room or data center. It features multiple large screens displaying various data visualizations, including bar charts, line graphs, and maps. The room is dimly lit, with a strong blue glow emanating from the screens and ambient lighting. In the foreground, the lower portions of several people sitting at a long table are visible, suggesting a collaborative work environment. The overall aesthetic is high-tech and professional.

The goal of storytelling is to connect with your audience [...].
It's about bridging the gap between you and another person by creating a space of authenticity, vulnerability, and universal truth. (Matthew Dicks)

You always tell a story
to an audience



Each audience has a different **goal**



Based on your audience, you will choose an appropriate

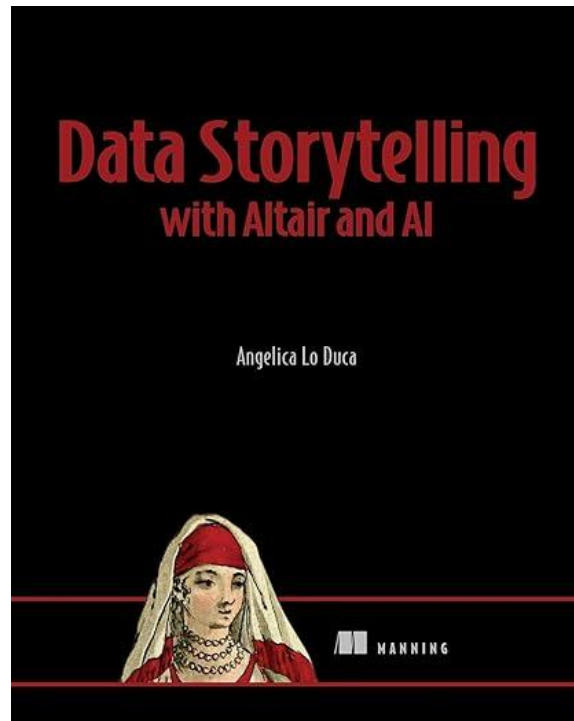
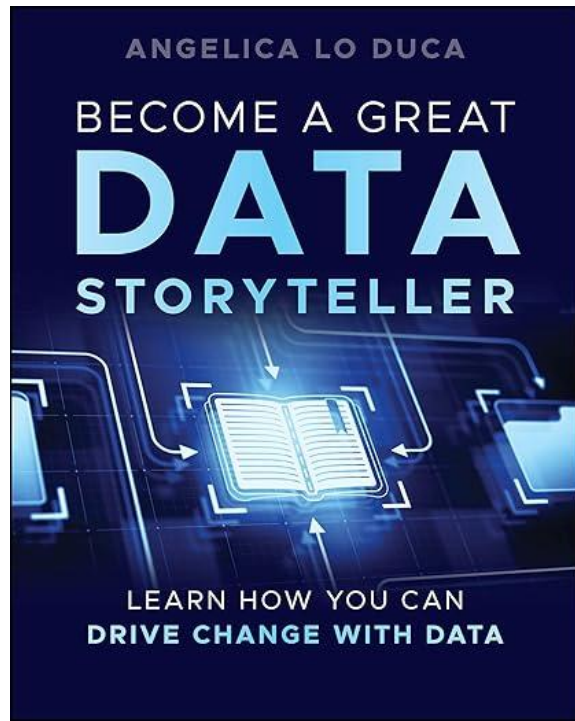
Language and Tone

The set of words (language) and the emotional expression conveyed through them (tone)

Context

The level of details to add to your story, based on the cultural sensitivity of the audience

The story is always the same.
The way you convey it changes based
on the audience.



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