

Data Storytelling Principles

Angelica Lo Duca

What is a data story

A data story is a story based on data.

A data story is not a story with data.

In a data story, you start with data and then extract the narrative.

In a story with data, you start with a narrative and then you search for data supporting your narrative.

The focus of a data story

A data story does not tell all the data.

A data story focuses on a **single insight** extracted from the data and builds a story that tells the “journey of said insight”.

The three elements of a data story

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 to build a data story

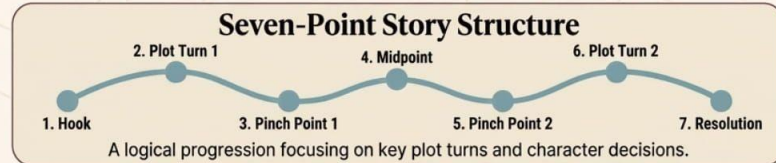
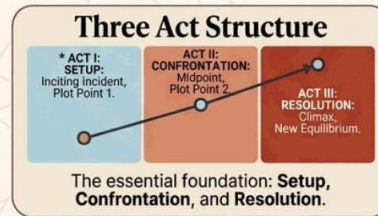
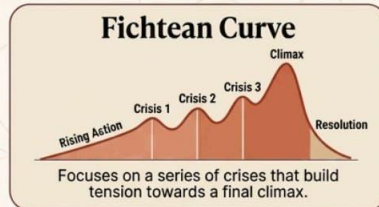
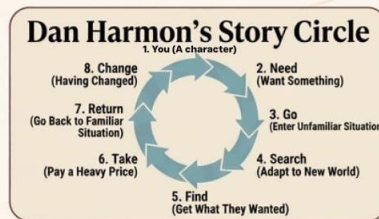
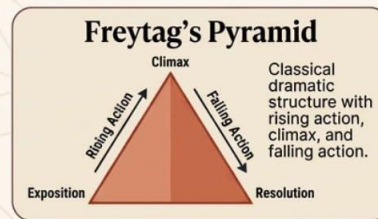
You can use the classical narrative

Credits: Ashley Couto

<https://www.linkedin.com/feed/update/urn:li:activity:7448322642195058689/>

7 POWERFUL STORYTELLING FRAMEWORKS

Craft compelling narratives with these proven structures.



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.

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.

Why We Need a Hero

Data alone does not create engagement.

Stories need:

- a focus
- a transformation
- a protagonist

In data storytelling, the protagonist is the **hero**.

The hero helps the audience emotionally and cognitively connect with the data.

The Core Principle

We do not invent the hero.

We discover the hero in the data.

The hero must emerge from:

- the structure of the dataset
- the patterns in the data
- the central transformation revealed by the analysis

This keeps the story grounded in evidence.

What Is a Data Hero?

A data hero is the entity most affected by the insight.

The hero can be:

- a person
- a group
- an organization
- a phenomenon
- a system

The hero is what the data is truly about.

The Hero Extraction Process

Dataset



What do the data describe?



Who or what changes the most?



How specific are the data?



Hero

Question 1: What do the data describe?

Do the data describe:

- people?
- experiences?
- behaviors?
- organizations?

Or:

- processes?
- systems?
- physical phenomena?

This determines whether the hero is:

- Human
- Nonhuman

Human vs Nonhuman Heroes

Human Heroes

Heroes directly connected to human experience.

Examples:

- students
- patients
- workers
- citizens

Human vs Nonhuman Heroes

Nonhuman Heroes

Heroes representing systems, phenomena, or processes.

Examples:

- temperature
- pollution
- traffic
- inflation

Heroes in data-driven stories

Human

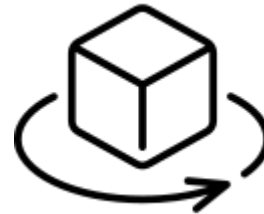
Directly connected
to people



Students
Patients
Organizations
Countries
...

Nonhuman

Indirectly
connected to
people



Products
Temperature
Trains
...

Example: Climate Data

Dataset

Global temperature measurements

What do the data describe?

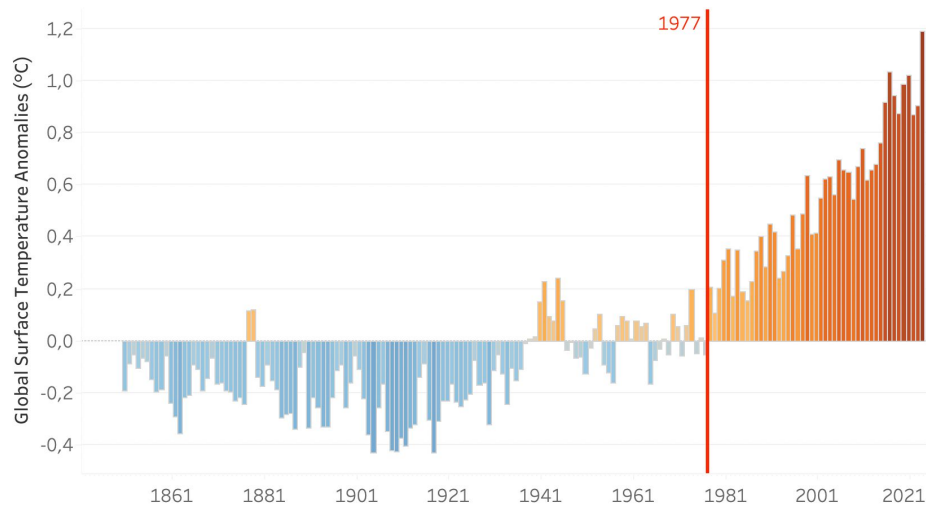
A physical phenomenon.

Hero Type

Nonhuman Hero

The hero is the temperature.

A **Worrying Situation**: Global Warming Since 1977



Example: Library Data

Dataset

Books read per person

What do the data describe?

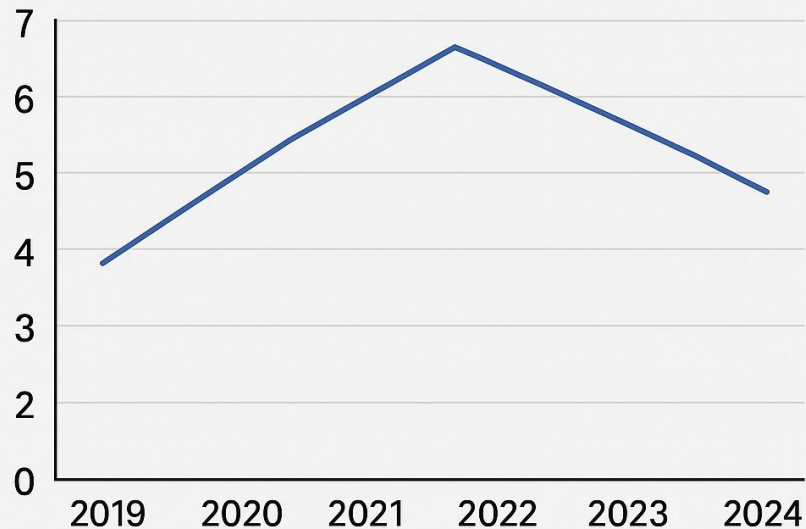
Human behavior.

Hero Type

Human Hero

The hero is the readers.

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



Question 2: Who is most affected by the insight?

The hero is not simply what appears in the data.

The hero is:

- the entity experiencing the transformation
- the subject of the narrative conflict
- the focus of the change

Question 3: How specific are the data?

The level of specificity determines the concreteness of the hero.

- Individual → Concrete Hero
- Group → Medium Hero
- System → Abstract Hero

Concrete Hero

A specific individual or entity

Example:

- one patient
- one city
- one school

Medium Hero

A group or category

Example:

- students
- workers
- readers

Abstract Hero

A system or large-scale phenomenon

Example:

- climate change
- healthcare system
- economy

Example: Climate Story

Dataset

Global temperatures from 1880–2024

Insight

Temperatures are increasing rapidly.

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

Example: Climate Story

Hero

Global temperature

Object of Desire

Remain stable.

Antagonist

CO₂ emissions.

Story

“The planet is losing its balance.”

The Object of Desire

The hero always wants something.

The object of desire represents:

- a goal
- an equilibrium
- a desired state

Examples:

- stable temperatures
- safer cities
- higher literacy
- lower pollution

The Problem

The problem is:

- the tension revealed by the data
- the change disrupting equilibrium
- the obstacle preventing the hero from reaching the goal

Without a problem, there is no story.

The Antagonist

The antagonist is the force creating the problem.

Examples:

- CO₂ emissions
- economic pressure
- misinformation
- social inequality
- declining public interest

The antagonist creates narrative tension.

Sidekicks

Sidekicks humanize the story.

A sidekick:

- reinforces the hero
- creates empathy
- makes abstract data relatable

Examples:

- a climate scientist
- a library visitor
- a patient testimony

From Data to Story

Dataset	Insight	Hero	Story
Climate data	Temperature rising	Temperature	Planet losing balance
Library data	Reading decreasing	Readers	Reading habits declining
Hospital data	Waiting times increasing	Patients	Healthcare under pressure

Why This Matters

Systematic hero extraction helps us:

- avoid arbitrary storytelling
- reduce narrative bias
- maintain fidelity to the data
- make AI-assisted storytelling more transparent

The hero is not selected randomly.

The hero is justified by the data.

Final Message

Data tells stories.

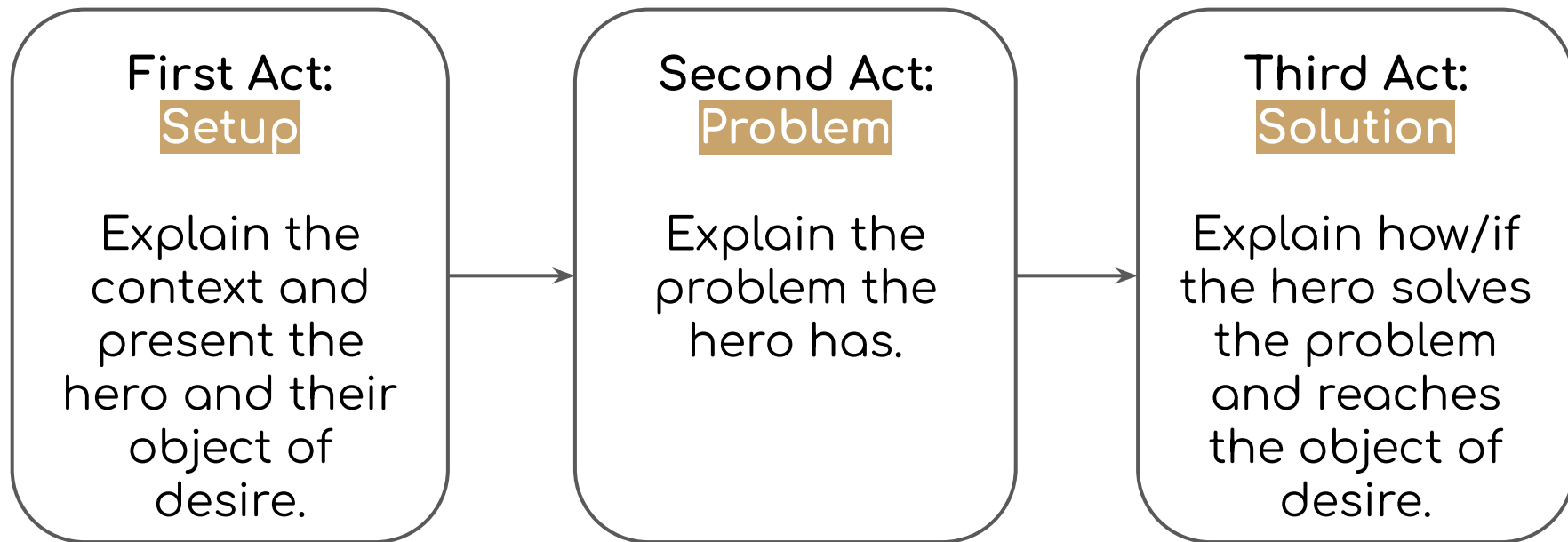
Heroes make people care.

When we identify the right hero:

- patterns become narratives
- insights become meaningful
- data becomes humanly understandable

Even when the hero is not human.

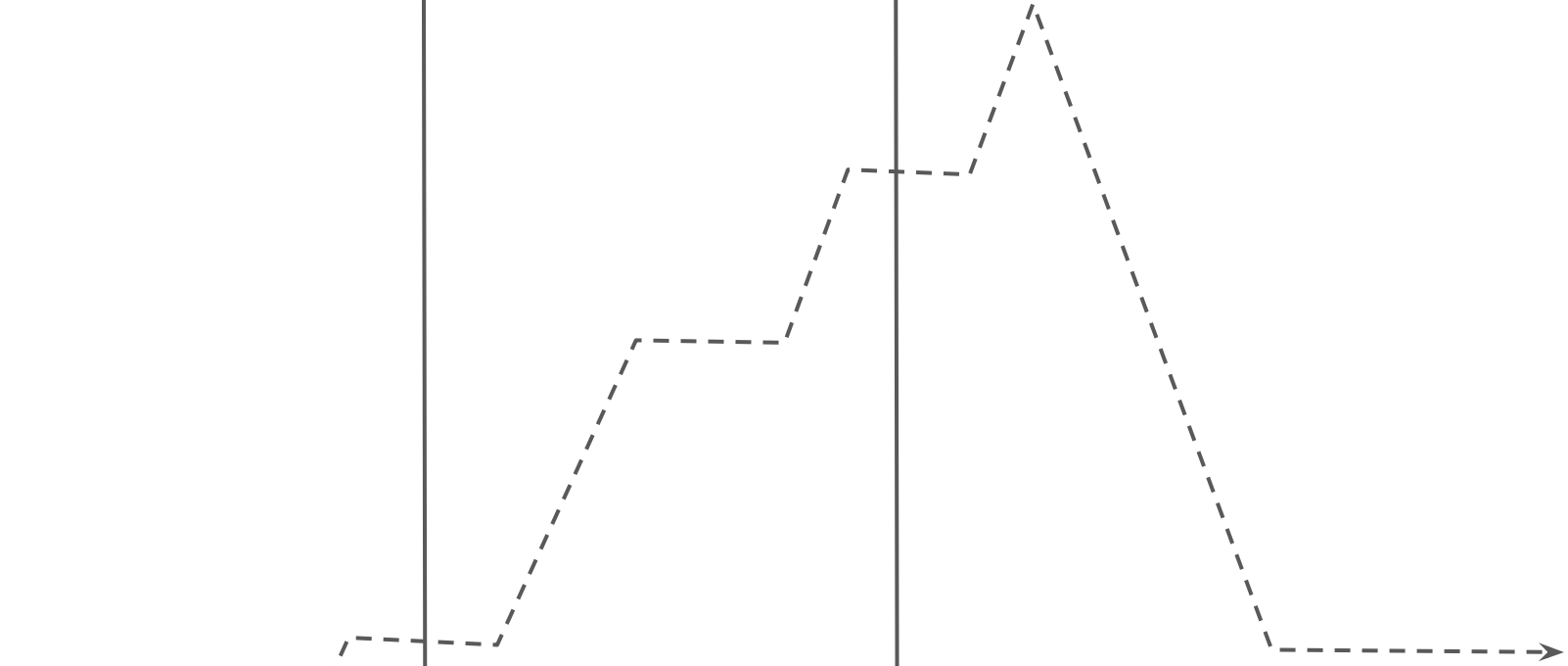
The Three-Act Structure



First Act

Second Act

Third Act





Antonio

First Plot Point

Antonio wants to ride a bike without training wheels.

The Dark Night

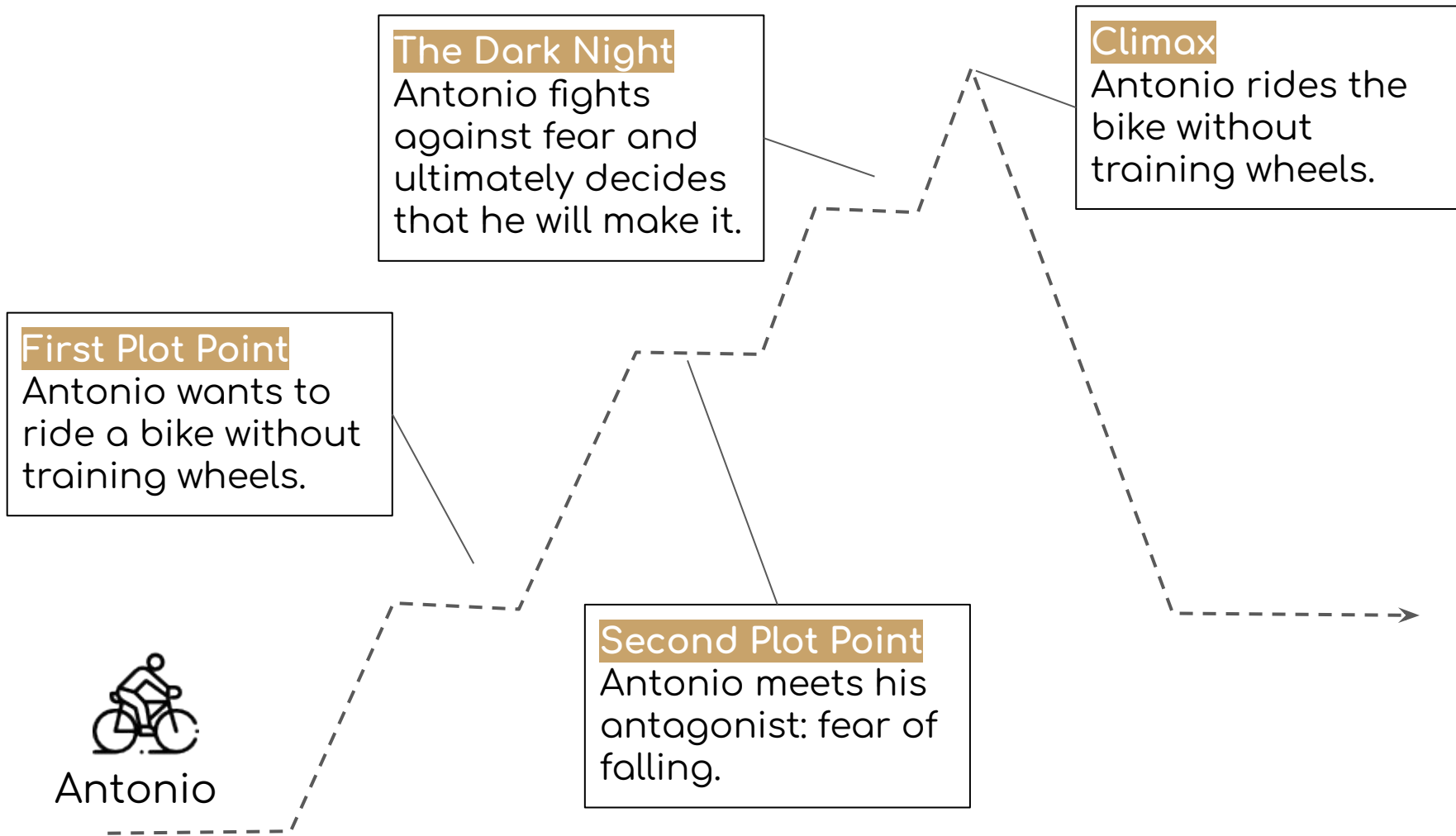
Antonio fights against fear and ultimately decides that he will make it.

Second Plot Point

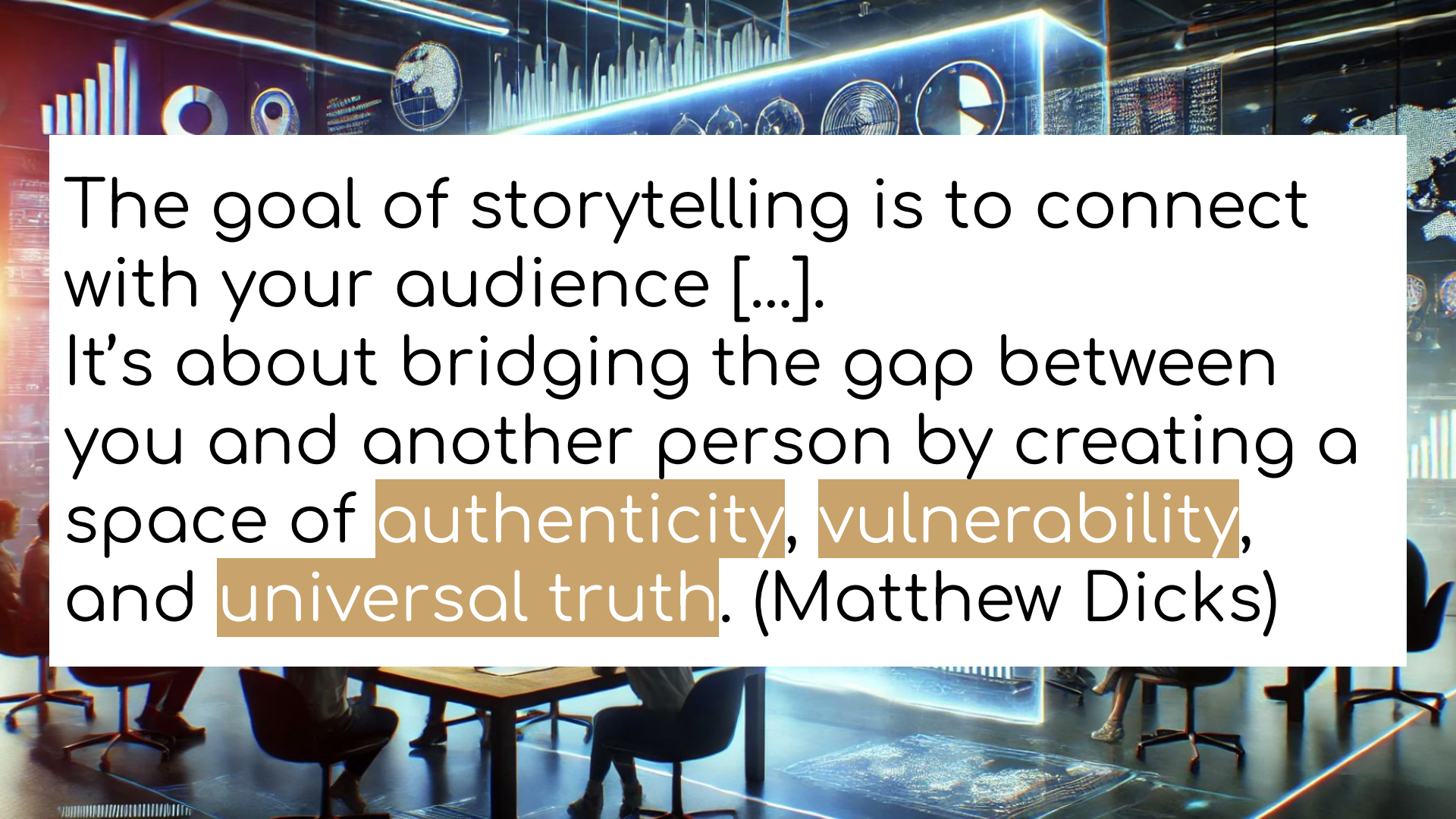
Antonio meets his antagonist: fear of falling.

Climax

Antonio rides the bike without training wheels.

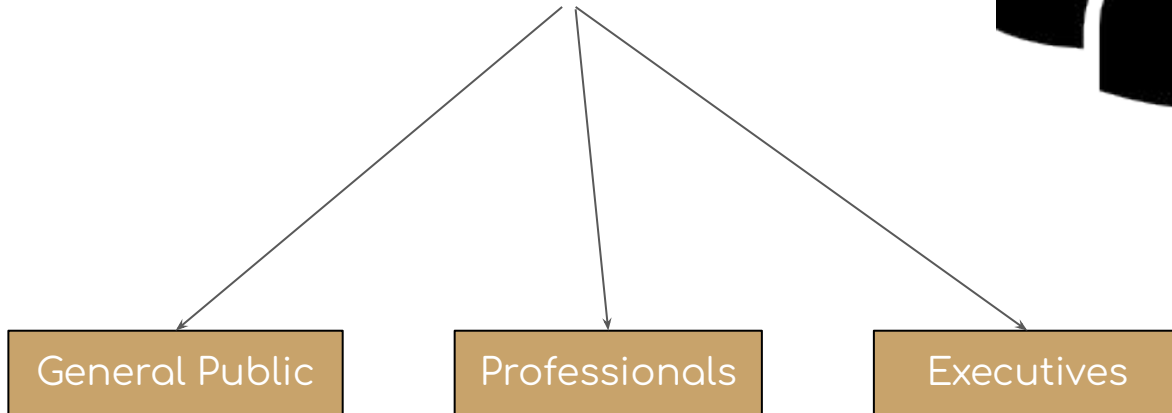
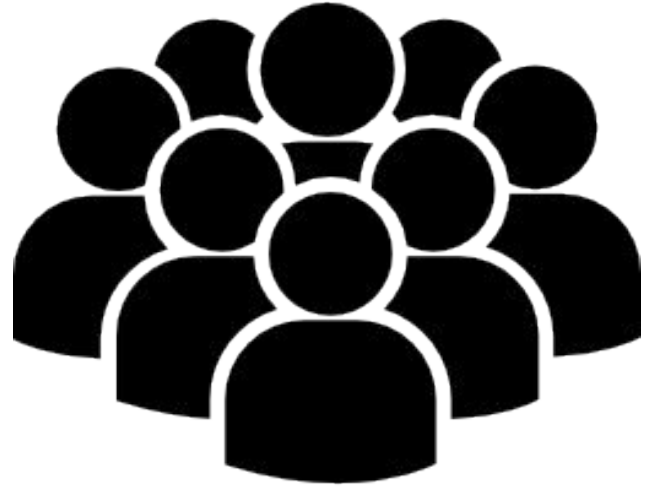


If I had more time, I would have written
you a shorter letter. (Blaise Pascal)
Brevity takes time. (Matthew Dicks)

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 illuminated with a cool blue light, and there are several people sitting at desks, working. The overall atmosphere 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

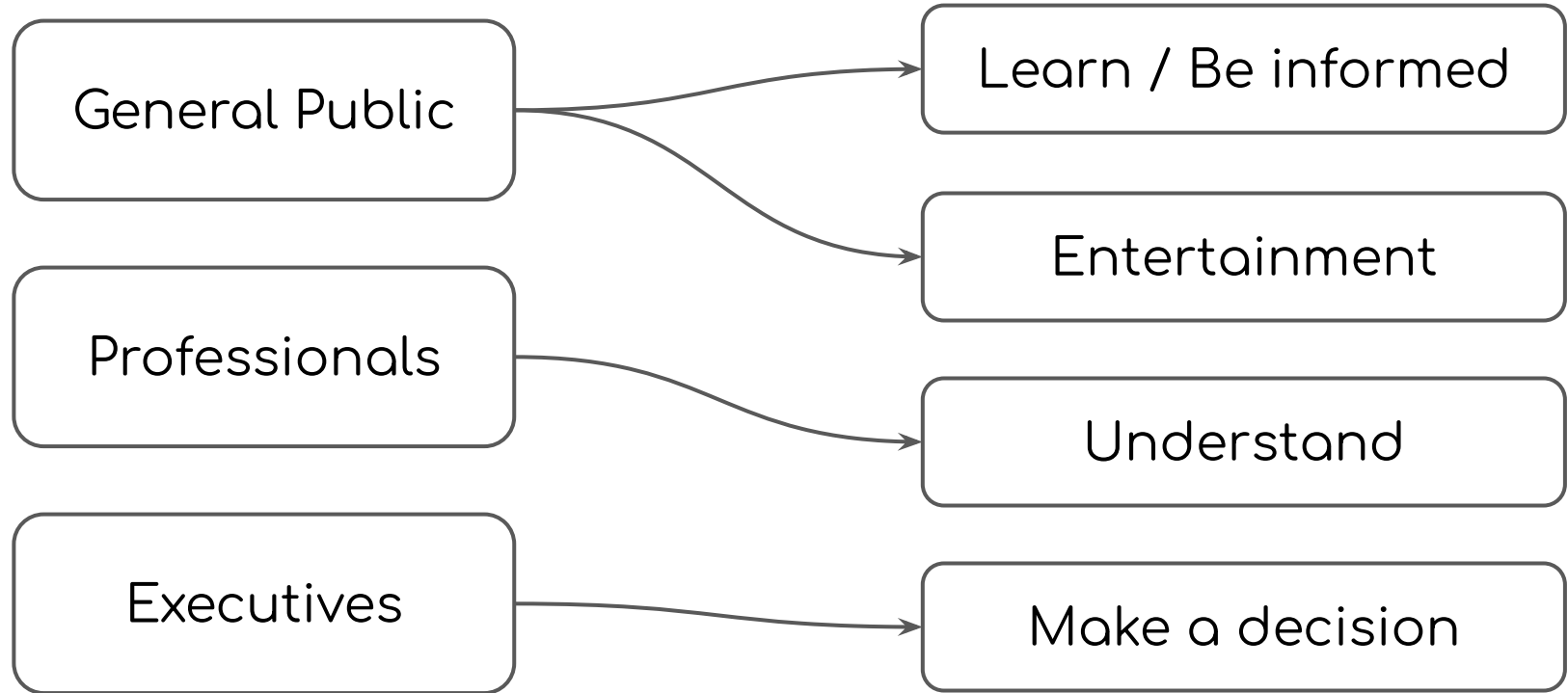


General Public

Professionals

Executives

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.

After the story is ended

And now? Leave a message for
the audience

```
graph TD; A[And now? Leave a message for the audience] --> B[Lesson learned]; A --> C[Consequences of no action]; A --> D[Next steps];
```

Lesson
learned

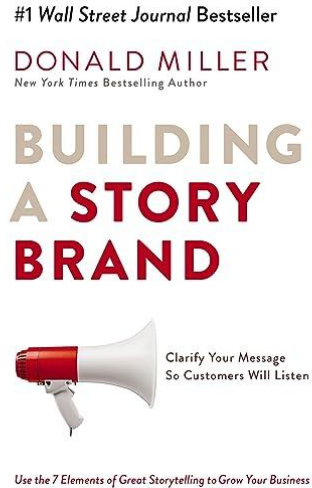
Consequenc
es of no
action

Next steps

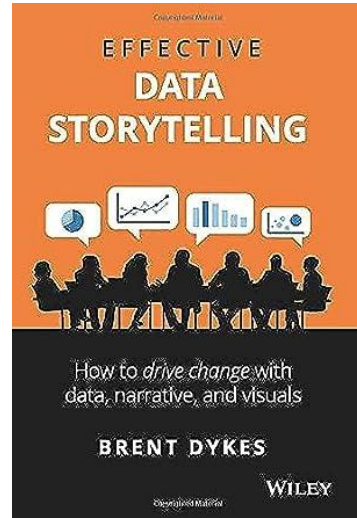
Next Step	Description	Purpose	Example
Ask for support	Ask the audience to support the story in some way	Leverage the audience's competencies to solve the problems highlighted in the story	Invite the audience to participate in a survey
Provide different options	Provide the audience with potential alternatives to proceed	Help the audience's decision-making process	A list of possible alternative next steps: A, B, C
Free interaction	Leave the audience the possibility to freely interact with the story	Let the audience analyze the data and draw conclusions	An interactive chart
Learn more	Encourage the audience to delve deeper into the topic or insights presented in the data story	Direct the audience to additional resources, articles, studies, or references for a more comprehensive understanding	A link to an in-depth analysis report
Propose a plan	Propose a plan outlining the sequence of actions to be taken	Let the audience continue working on the story after its end	A list of possible sequential next steps
Sharing	Encourage the audience to share the data story, for example, on their social networks	Leverage the audience's networks, foster discussions, and increase visibility to amplify the reach of the data story	Use social media buttons to share the story

Bibliography

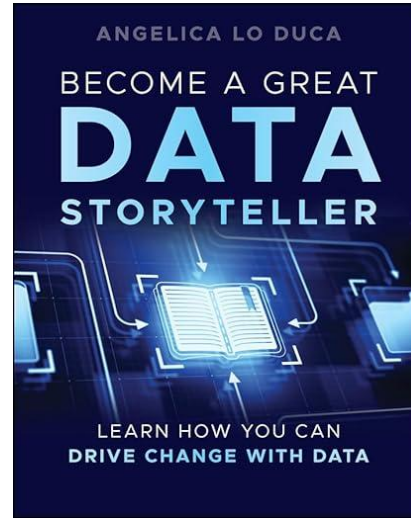
Books



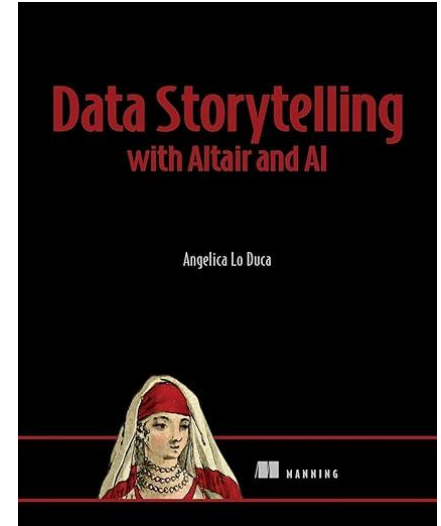
Storytelling



Conceptual
perspective



Technical perspective



Influencers



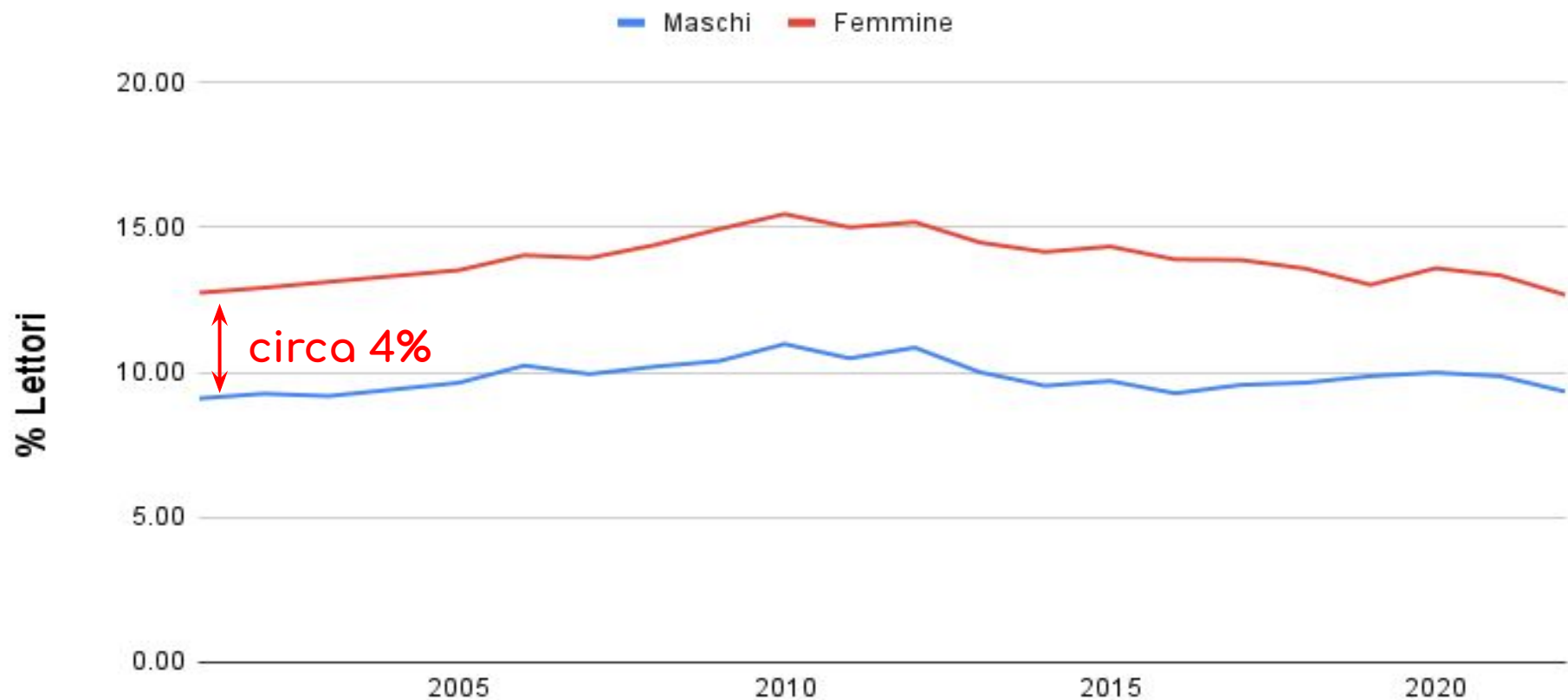
Brent Dykes



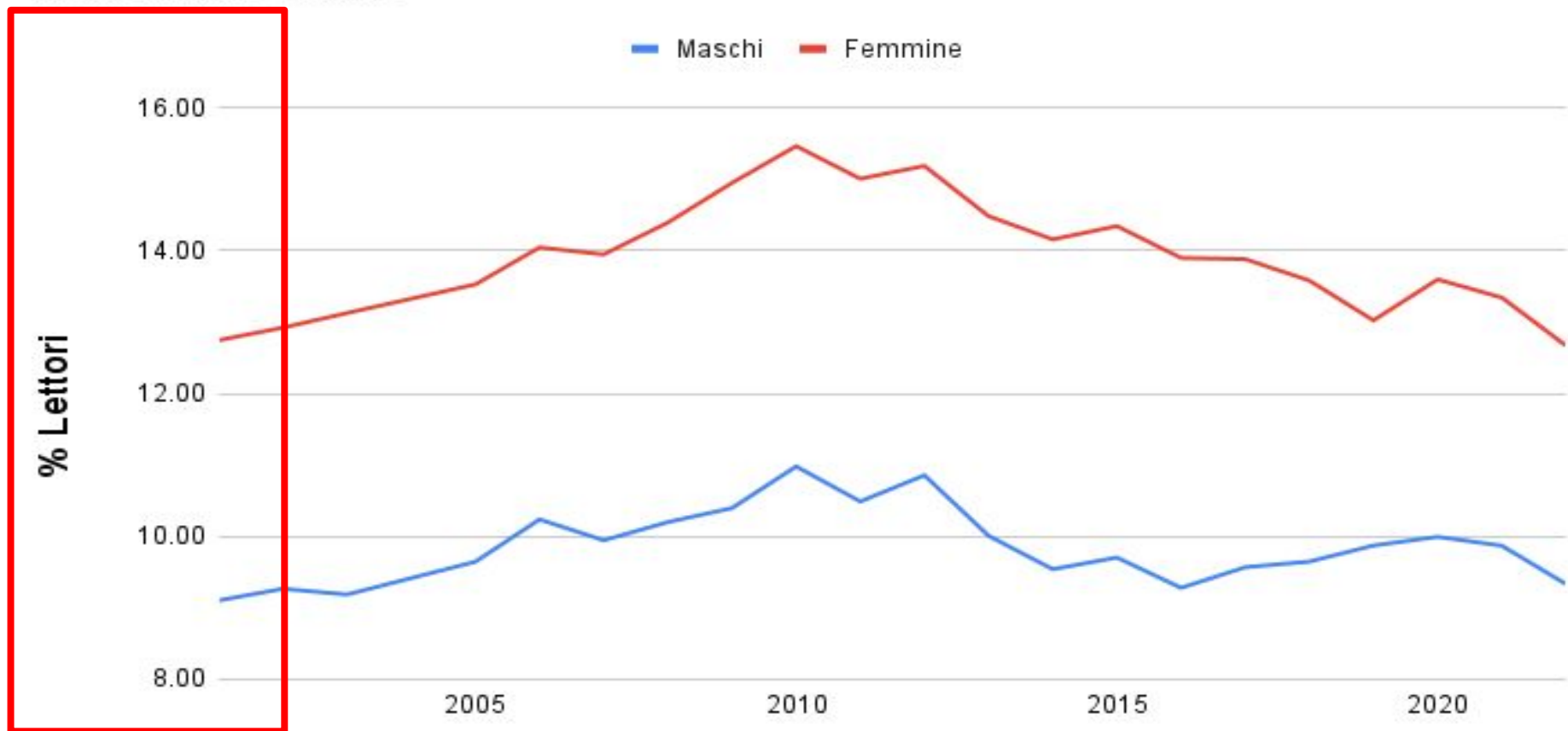
Salma
Sultana

Data Manipulation

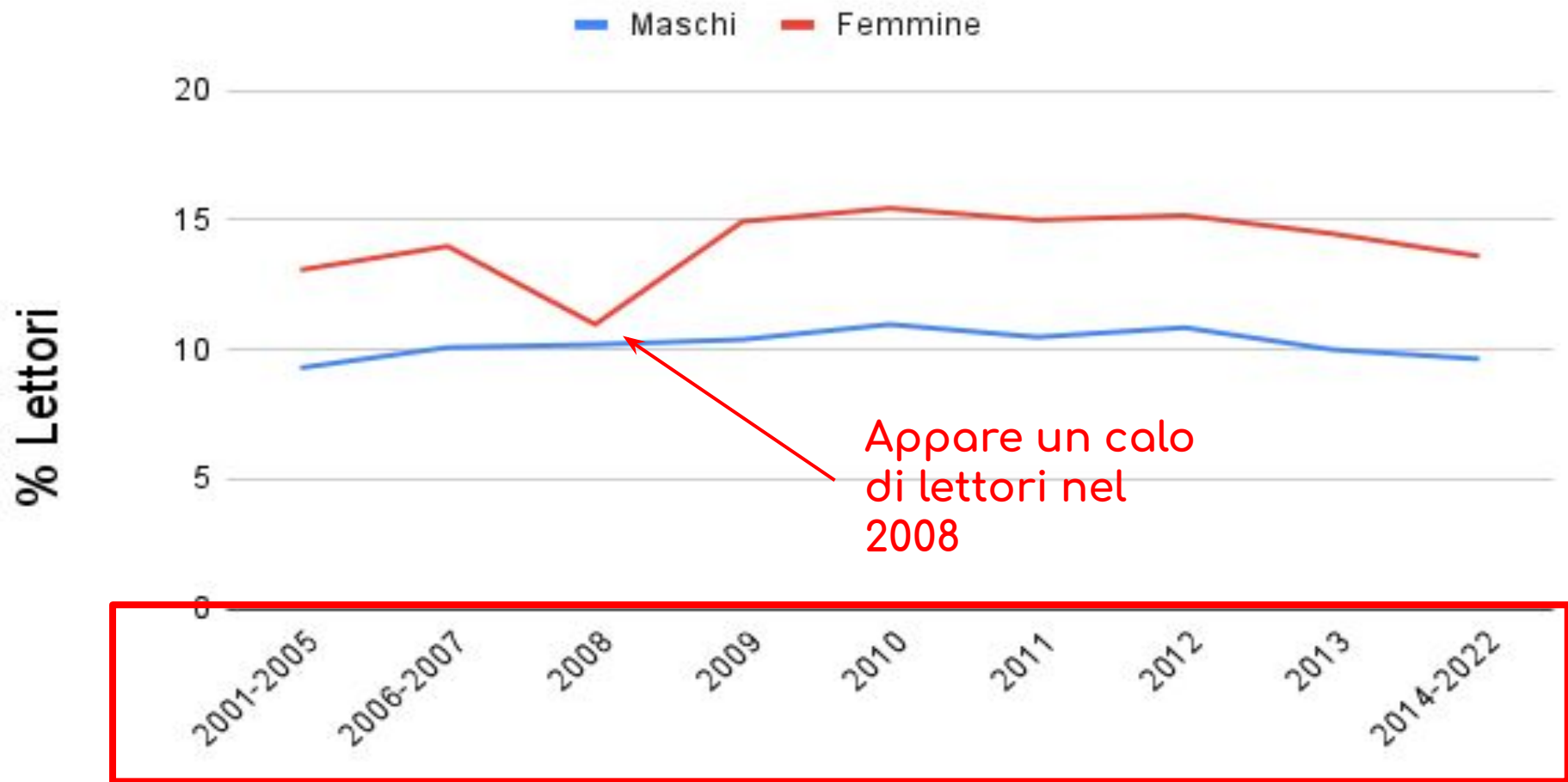
Percentuale di persone che hanno letto almeno un libro nell'ultimo anno



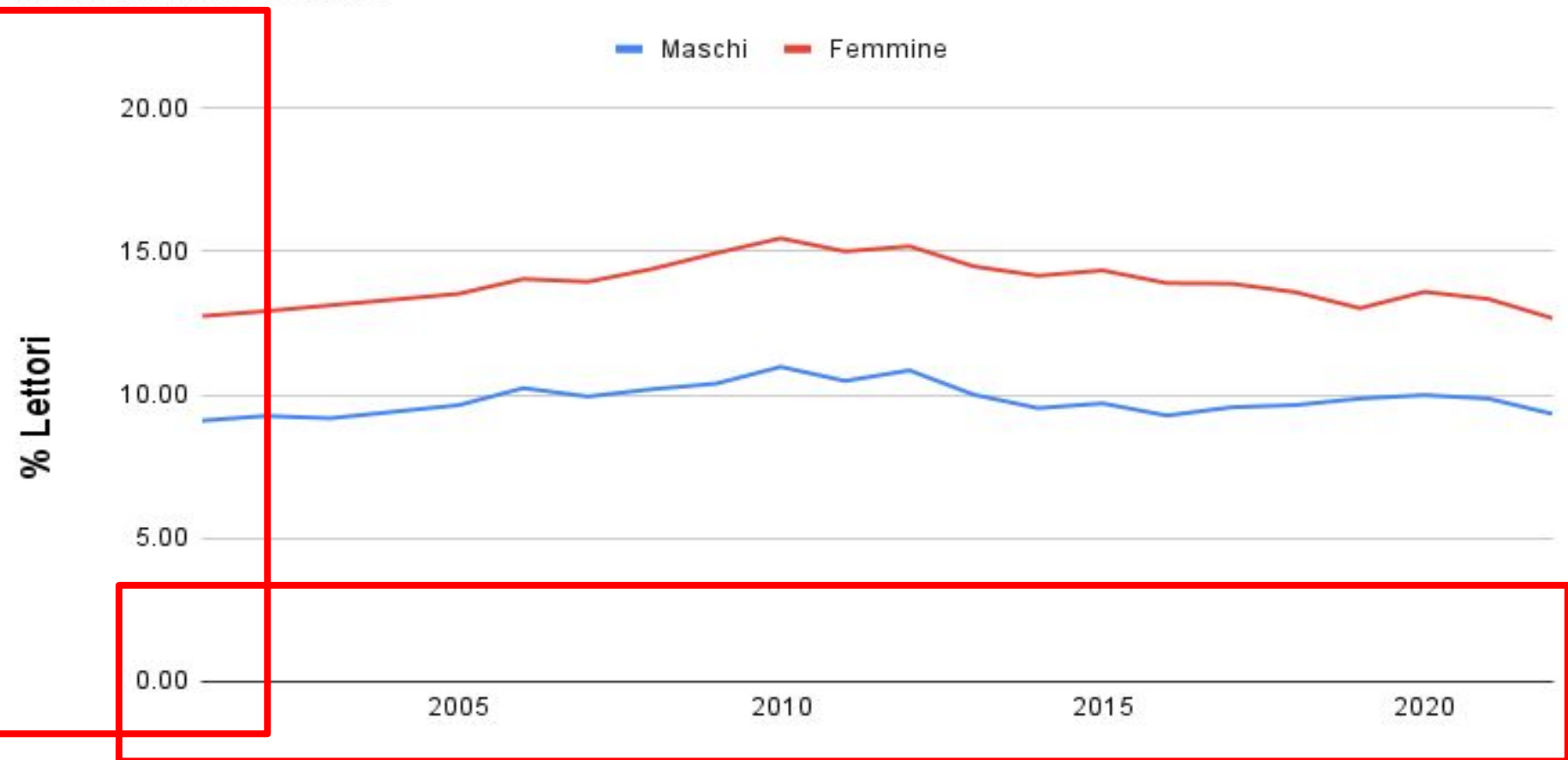
Percentuale di persone che hanno letto almeno un libro nell'ultimo anno



Percentuale di persone che hanno letto almeno un



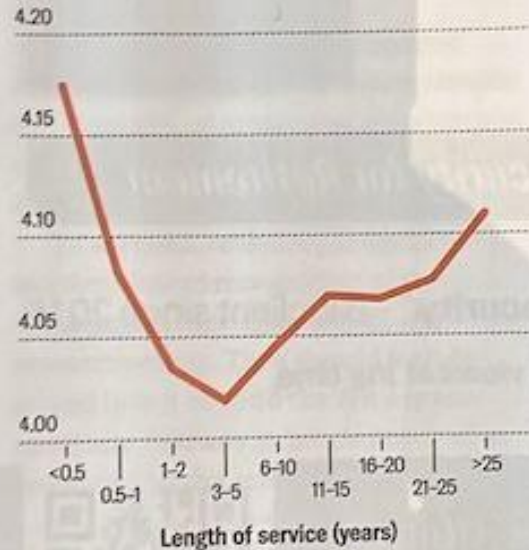
Percentuale di persone che hanno letto almeno un libro nell'ultimo anno



New Hires' Psychological Safety Fades over Time

In a study of some 10,000 employees in a large U.S. organization, people who'd just joined the firm experienced higher psychological safety than their veteran colleagues but soon lost it.

Psychological safety (5: high, 1: low)
by length of service



La sicurezza psicologica dei nuovi assunti svanisce nel tempo

In uno studio condotto su circa 10.000 dipendenti di una grande organizzazione statunitense, le persone che si erano appena unite all'azienda hanno sperimentato un livello di sicurezza psicologica più alto rispetto ai colleghi veterani, ma lo hanno perso rapidamente.

Sicurezza psicologica (5: alta, 1: bassa) in base all'anzianità di servizio

Source: Harvard Business Review, January 2025, pp. 22.

Percentuale di persone che hanno letto almeno un libro nell'ultimo anno

