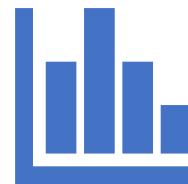


# Data Storytelling in SDG Reporting

Hong Xiao (UNSD consultant)

Global Network Webinar: Data Storytelling & Data Visualization Toolkit

25 January 2022



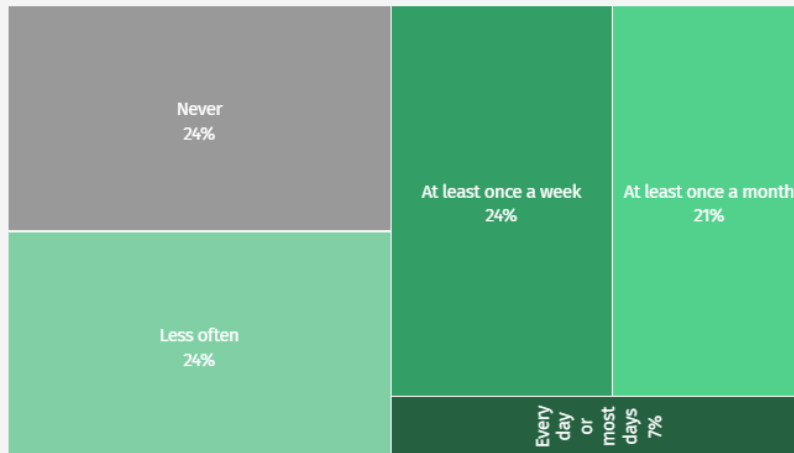
# Example: A soulless infographics



## Gardening around the world

In 2017, GfK asked 23,000 consumers (aged 15 or over) online in 17 countries how often they do gardening or yard work. Countries included are Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Italy, Japan, Mexico, Netherlands, Russia, South Korea, Spain, UK, and USA.

**Frequency of gardening or yard work**  
(average across 17 countries)



- It does not have a key message.
- It does not have a logical flow.
- It is a collage of facts.
- It is not a data story.

# Agenda



**What is data storytelling?**



What does data storytelling look like in SDG reporting?



How to tell data stories in SDG reporting?

# Does data speak for itself?

Often, no.

- Data gives the ‘what’, but only humans know the ‘why’ and the ‘so-what’.
- “Numbers are boring, people are interesting. You need to look at the numbers but also understand the lives behind the numbers.” – Hans Rosling

# What do scientists say?



Human brain is not a logic processor.

Numbers and facts stimulate the language-processing areas in the human brain.



Human brain is a story processor.

Stories stimulate language-processing areas and areas that help the audience experience the story.

Sources:

- Jonathan Haidt, "The Righteous Mind: Why Good People Are Divided by Politics and Religion", Vintage; Illustrated edition, February 12, 2013.
- ["Your Brain on Fiction", New York Times](#)

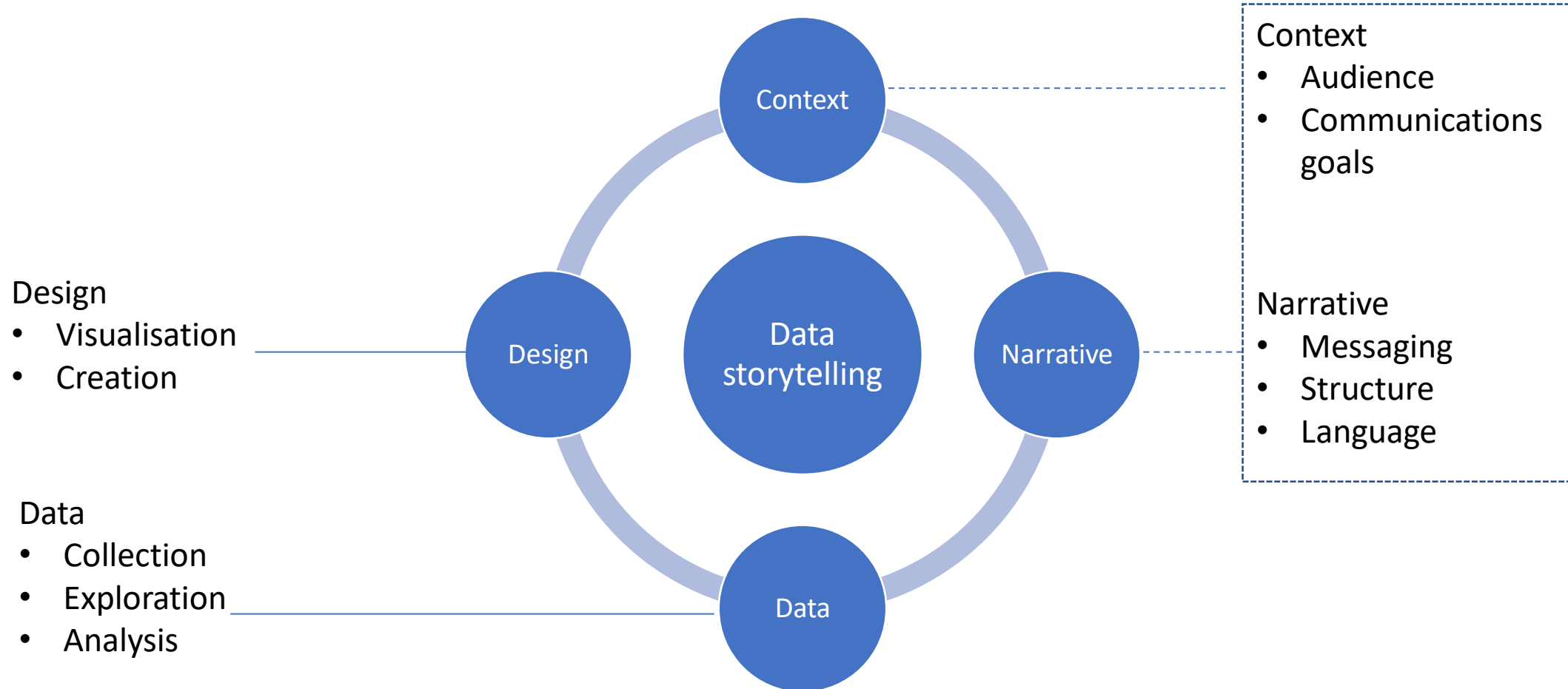


# What is data storytelling?

Data storytelling is a multidisciplinary process that combines the results of data analysis with compelling narratives and presents the combination via text and visuals to inform, engage, and influence the audience.



# Data storytelling components



Source: [Venngage Data Storytelling Benchmark Report 2021](#)



# Data stories come in many shapes, forms, and sizes

Report

Article

Presentation

Infographics

Chart

Webpage

More





# Example: Save the Children report



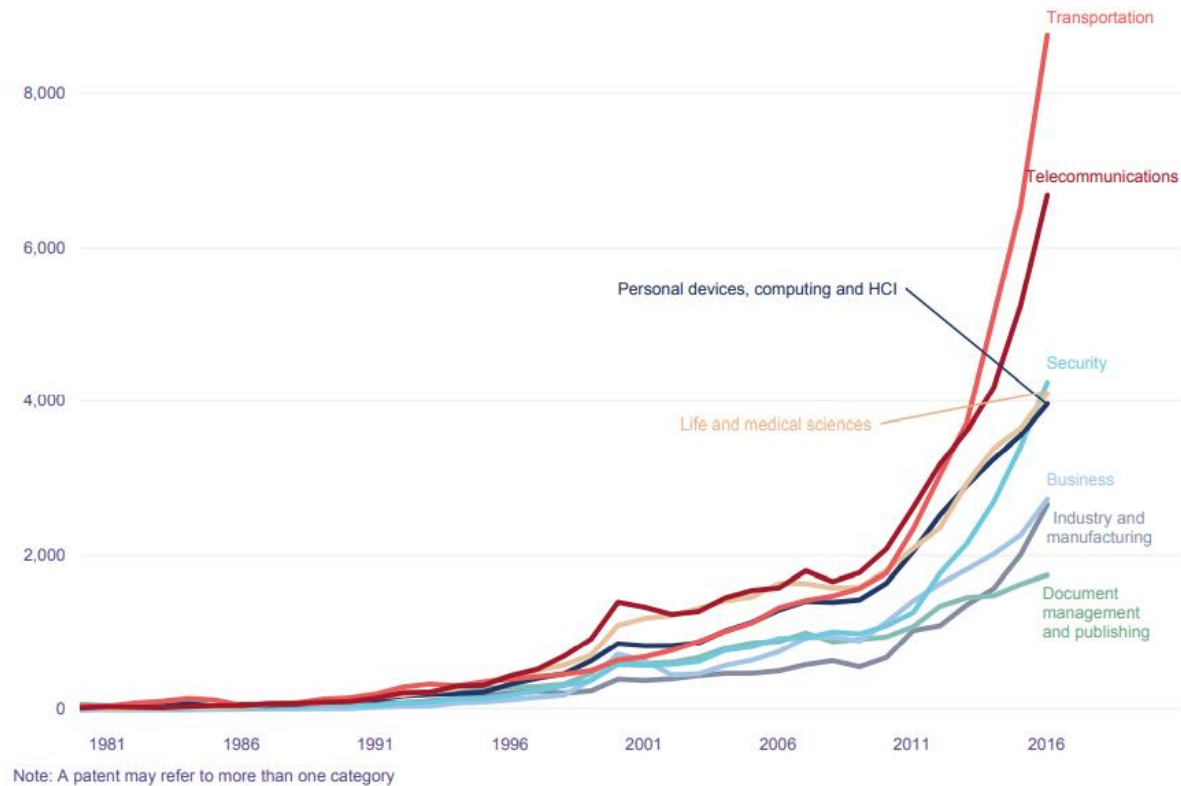
Source: [Save the Children Change for Children 2020 Report](#)



# Example: WIPO report

**Figure 3.18. Patent families for top application field categories by earliest priority year**

*Patent families related to AI application fields emerged in the 1990s, with transportation and telecommunications overtaking all other fields*



# Agenda



What is data storytelling?



**What does data storytelling look like in SDG reporting?**



How to tell data stories in SDG reporting?

# SDG content is dense and heavy by nature.



Numbers



Geographies



Topics



Terminologies

# SDG data stories have a broad audience.

Media

Government  
agencies

International  
organisations

General public

Civil society

Businesses

Academia

More



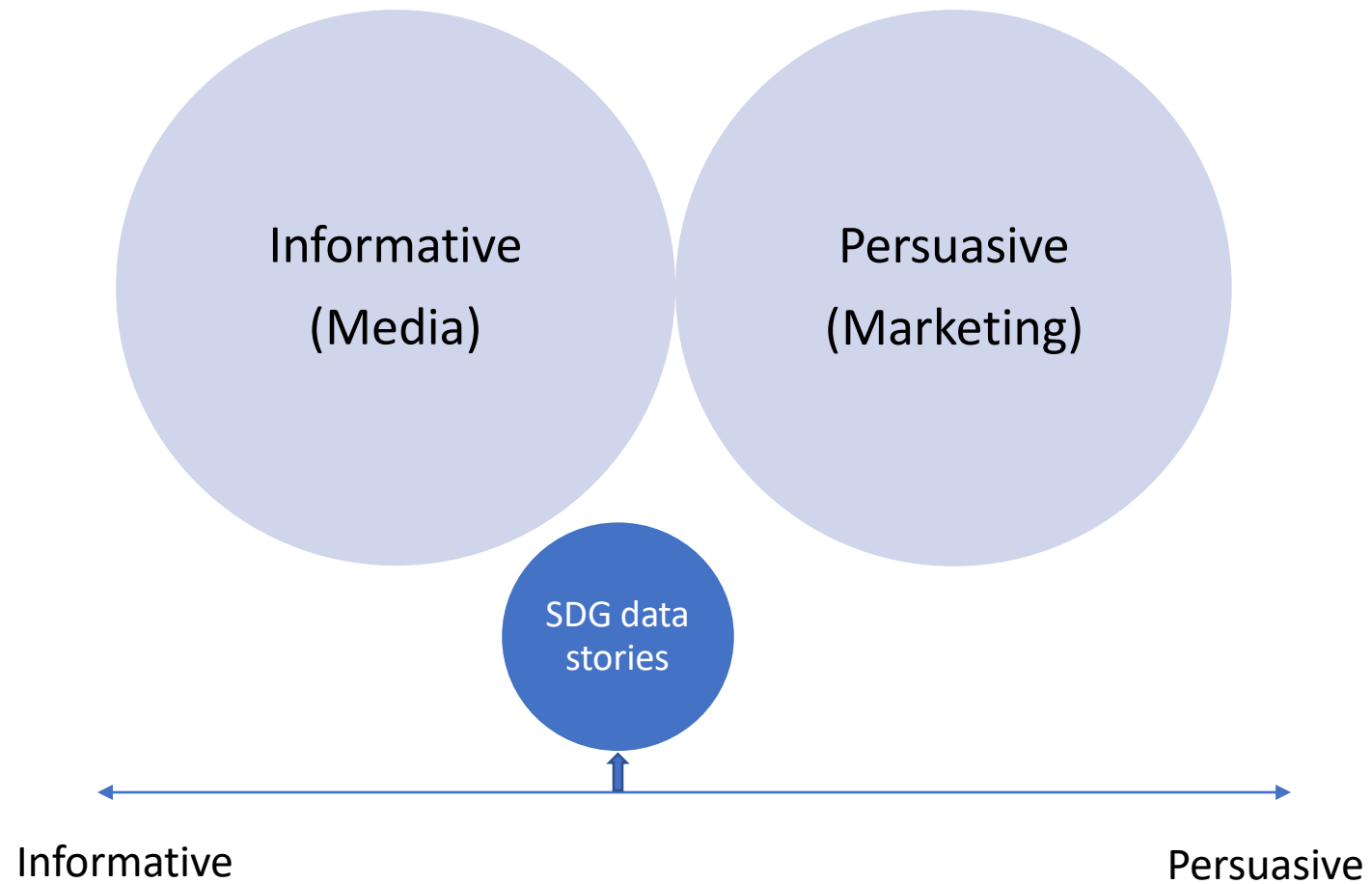
# How to analyse your audience

## Some key questions for audience analysis:

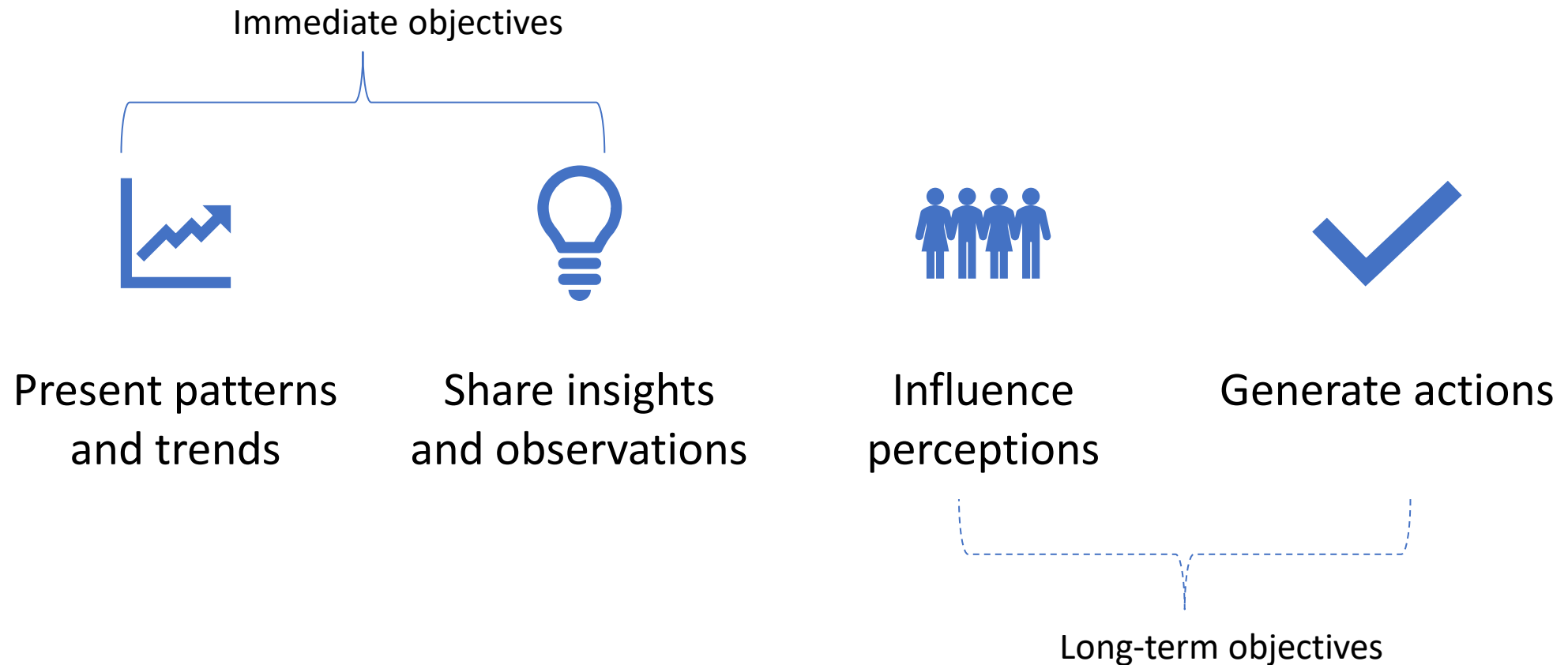
- Who are the audiences?
- How is the data story relevant to the audiences?
- Why do the audiences need the information?
- How will the audiences use the information?
- What role(s) do the audiences play (decision making, influencing, or information gathering)?
- What data is available that would support the storytelling needed by the audiences?
- What do you need your audiences to do with the data story?
- How experienced are the audiences with data and the data story (laymen versus fluent)?
- What do the audiences care about in the data story (microdata, metadata, key figures, key messages, explanatory texts, guidance on how to understand statistics, insights for sharing, or in-depth analyses)?



# Data story genres



# What are the objectives of data storytelling in SDG reporting?





# SDG data storytellers need to bring out the meaning of data for the audience.

Move from



to



## Data analysis

Bottom-up process

Showing data

Making sense

Finding 'what'

## Data storytelling

Top-down process

Telling data stories

Making meaning

Highlighting "what" and "so-what"



# Example: OECD Better Life Index

## Housing

### Background

Living in satisfactory housing conditions is one of the most important aspects of people's lives. Housing is essential to meet basic needs, such as shelter, but it is not just a question of four walls and a roof. Housing should offer a place to sleep and rest where people feel safe and have privacy and personal space; somewhere they can raise a family. All of these elements help make a house a home. And of course there is the question whether people can afford adequate housing.

#### *Rooms per person and dwellings with basic facilities*

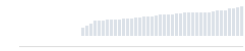
When looking at housing, it is important to examine living conditions, such as the average number of rooms shared per person and whether dwellings have access to basic facilities. The number of rooms in a dwelling, divided by the number of persons living there, indicates whether residents are living in crowded conditions. Overcrowded housing may have a negative impact on physical and mental health, relations with others, and children's development. In addition, dense living conditions are often a sign of inadequate water and sewage supply. In the OECD, **the average home contains 1.8 rooms per person**. In terms of basic facilities, **95.6% of dwellings across the OECD contain private access to an indoor flushing toilet**.

#### *Housing expenditure*

Housing costs take up a large share of the household budget and represent the largest single expenditure for many individuals and families, by the time you add up elements such as rent, gas, electricity, water, furniture and repairs. In the OECD, households on average spend around **20% of their gross adjusted disposable income on keeping a roof over their heads**. The level of housing costs in household budgets varies from **26% in New Zealand and the United Kingdom to 15% in Korea**.

### Top Ranking

#### Housing



### Indicators

#### Housing expenditure



#### Dwellings with basic facilities



#### Rooms per person



### Find Out More

#### OECD Affordable Housing Database

→ more ...

#### The Future of Housing: Policy Scenarios

→ more ...

Source: [OECD Better Life Index](#)



# Example: UN Women infographics

English Español Français

Search...

EXECUTIVE BOARD | COMMISSION ON THE STATUS OF WOMEN | TRUST FUNDS | GET INVOLVED

ABOUT | WHAT WE DO | WHERE WE ARE | HOW WE WORK | PARTNERSHIPS | NEWS AND EVENTS | DIGITAL LIBRARY

Home > Digital Library > Multimedia

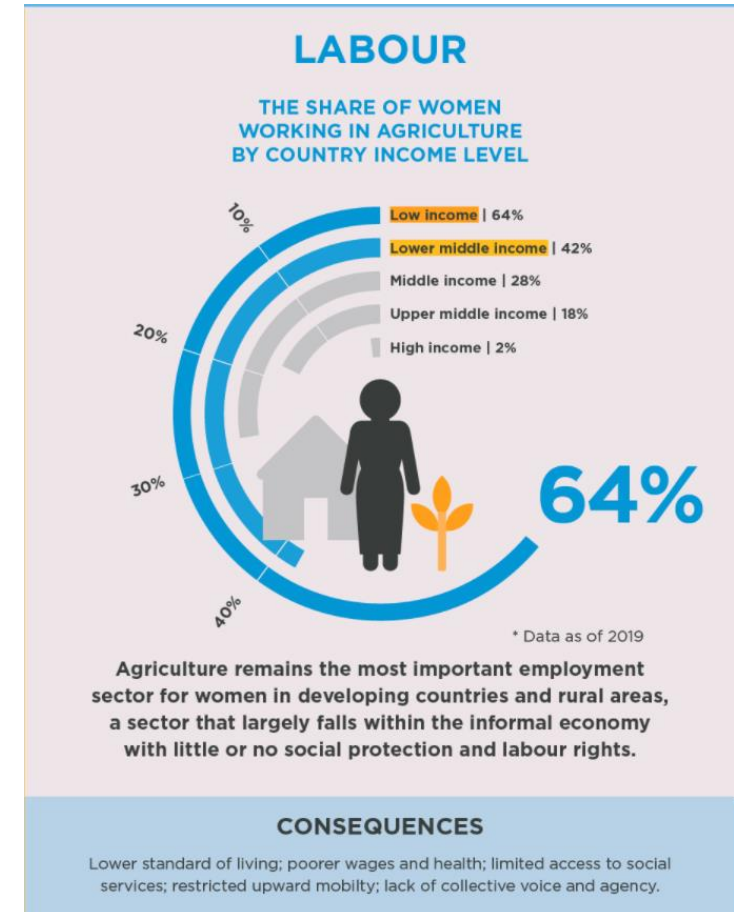
## Learn the facts: Rural women and girls

Date: 28 February 2018  
(Updated October 2021)

### LEARN THE FACTS: RURAL WOMEN AND GIRLS

Rural women ensure food security for their communities, build climate resilience and strengthen economies. Yet, gender inequalities, such as discriminatory laws and social norms, combined with a fast-changing economic, technological and environmental landscape restrict their full potential, leaving them far behind men and their urban counterparts.

Below are just some of these challenges and their consequences.



Source: [Learn the facts: Rural women and girls | UN Women](#)



# Agenda



What is data storytelling?



What does data storytelling look like in SDG reporting?



**How to tell data stories in SDG reporting?**

# How to make SDG materials friendlier to the audience



## Keep it simple

Create a crisp storyline (key message +  $\leq 3$  core arguments)

Write a clear, powerful title

Minimize the use of jargon

Use visuals strategically



## Bring a perspective

Present insights identified in the data

Show “what” and “so-what”



# How to locate a story in data

1

Identify trends and patterns

2

Draw comparisons

3

Look for correlations

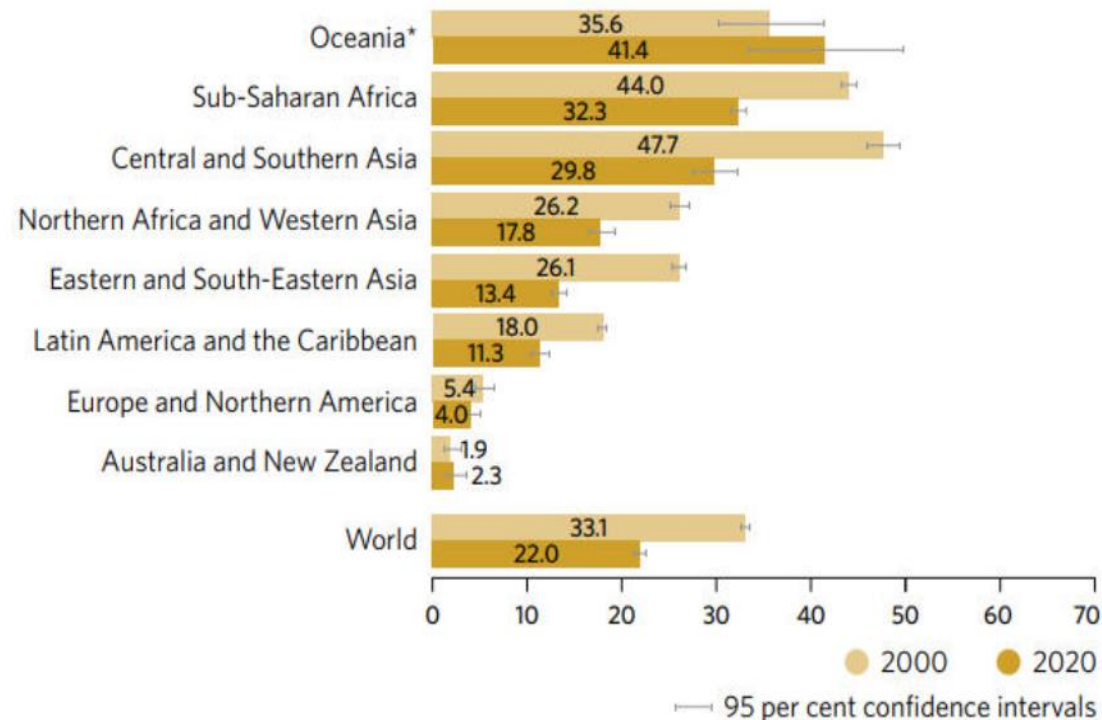
4

Check on outliers



# What is the story?

Proportion of children under age 5 who are affected by stunting, 2000 and 2020<sup>1</sup> (percentage)



Show Data

Download to CSV

\* Excluding Australia for New Zealand.

- **Trends and patterns:** Compare Global 2020 with Global 2000 to highlight progress
- **Comparisons and correlations:** Oceania, Sub-Saharan Africa, and Central and Southern Asia vs. the rest. Why? Are children more vulnerable in these regions hence demand more attention?
- **Outliners:** Oceania is the only region that has higher stunting statistics in 2020 than in 2000. Why?

Source: <https://unstats.un.org/sdgs/report/2021/Goal-02/>



# How to write a data story title

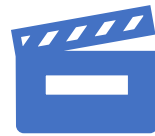
## SMART rule



Specific



Measurable



Action-oriented



Relevant



Time-bound

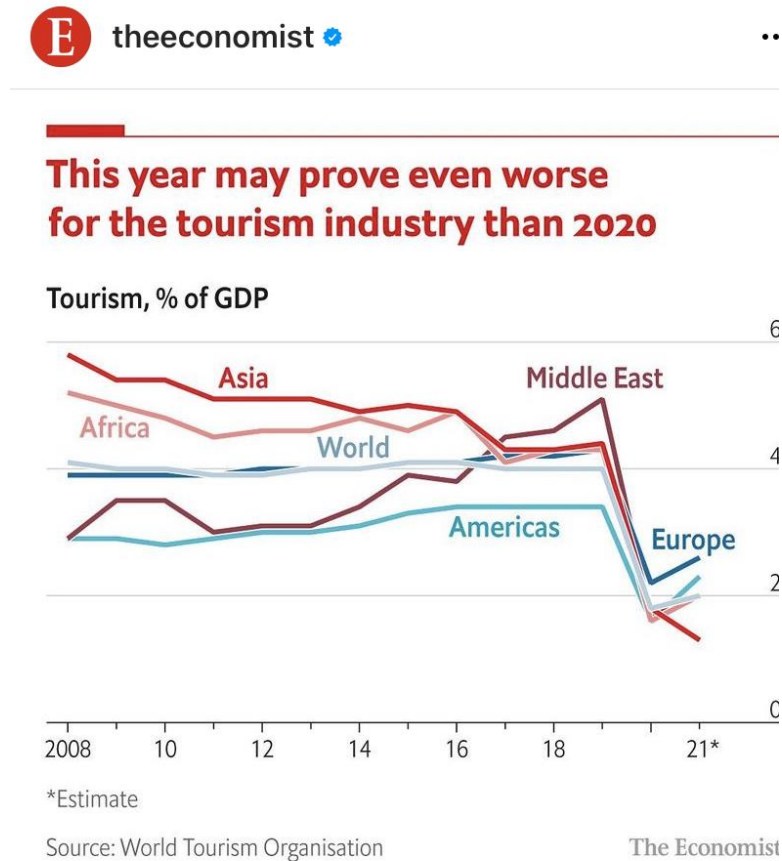


# Example: **SMART** titles or headlines

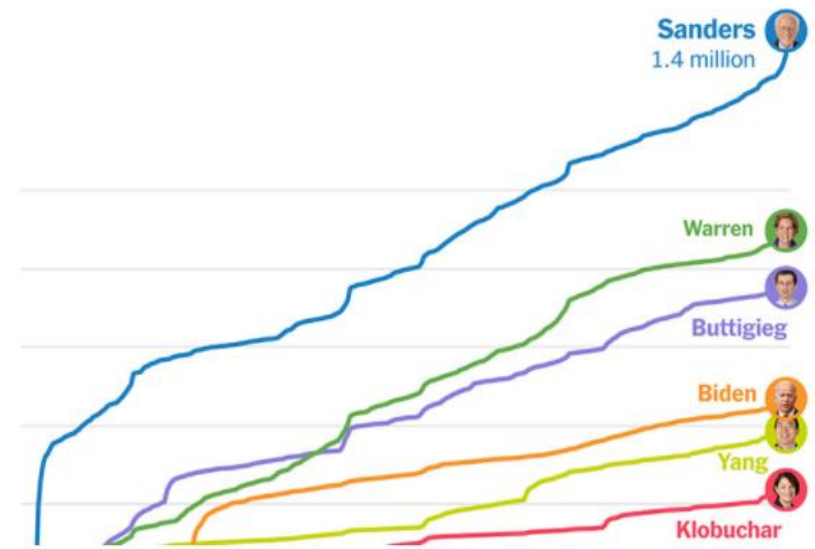
- **A decade of progress in reproductive, maternal and child health could be stalled or reversed by the pandemic.** (Source: [UN SDG Report 2021 Goal 3](#))
- **Global warming of 1.5°C and 2°C will be exceeded during the 21st century.** (Source: [IPCC | Climate Change 2021: The Physical Science Basis](#))
- **Pfizer Vaccine Has 23% Efficacy Vs. Omicron in South African Lab Study** ([Time](#), December 12, 2021)



# Clear, powerful titles reduce the cognitive load on the audience.



Source: [Economist](#)



## The Donors Powering the Campaign of Bernie Sanders

Source: [NY Times](#)



# How to write the key message

1

Construct the key message as a big idea

- What is at stake?
- What will the future look like?
- How does it compare with the past situation?
- Trends and patterns

2

Provide essential information

- Who
- What
- Where
- When
- Why
- How

3

Show the meaning of data

- Highlight the insights identified in the data
- Summarize the core statistical finding

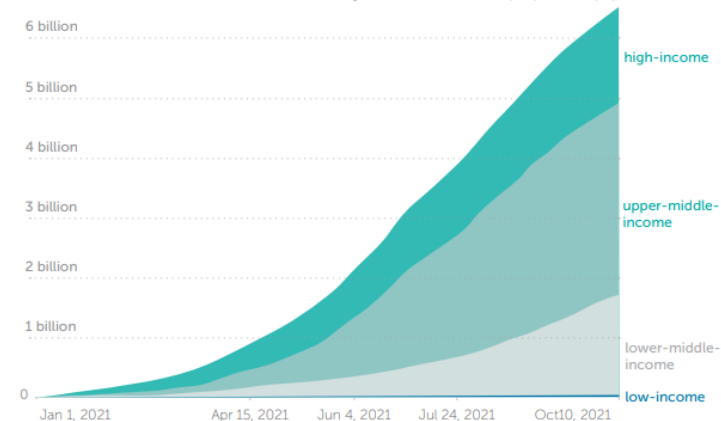


# Example: Global Preparedness Monitoring Board report

If the first year of the COVID-19 pandemic was defined by a collective failure to take preparedness seriously and act rapidly on the basis of science, the second has been marked by profound inequalities and a failure of leaders to understand our interconnectedness and act accordingly. In the most glaring example, as of 20th October, 63% of those living in high-income countries had received at least one dose of COVID-19 vaccine. In low-income countries, only 4.5% had received the same.<sup>3</sup> The failure to act in the interests of all has prolonged the pandemic for all, as new variants circulate worldwide.

Figure 1 | COVID-19 vaccine doses administered by country income group

For vaccines that require multiple doses, each individual dose is counted. As the same person may receive more than one dose, the number of doses can be higher than the number of people in the population.



The large majority of vaccine doses have been administered in high- and upper-middle-income countries. Very few have reached low-income countries. Source: Our World in Data, World Bank.

## A powerful key message with:

- **Insight:**  
“... the second (year of the COVID-19 pandemic) has been marked by profound **inequalities** and a **failure** of leaders to understand our interconnectedness and act accordingly.”
- **Statistical finding:**  
**63%** of those living in high-income countries had received at least one dose of COVID-19 vaccine. In low-income countries, only **4.5%** had received the same.

[Source: Global Preparedness Monitoring Board Annual Report 2021](#)

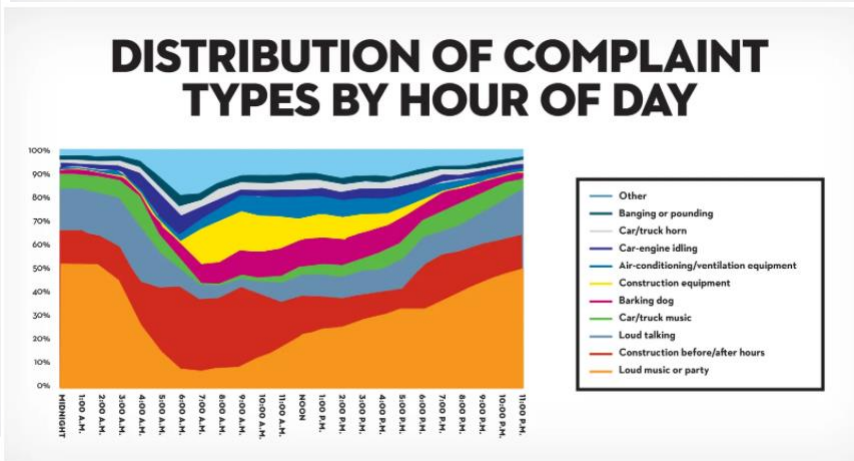
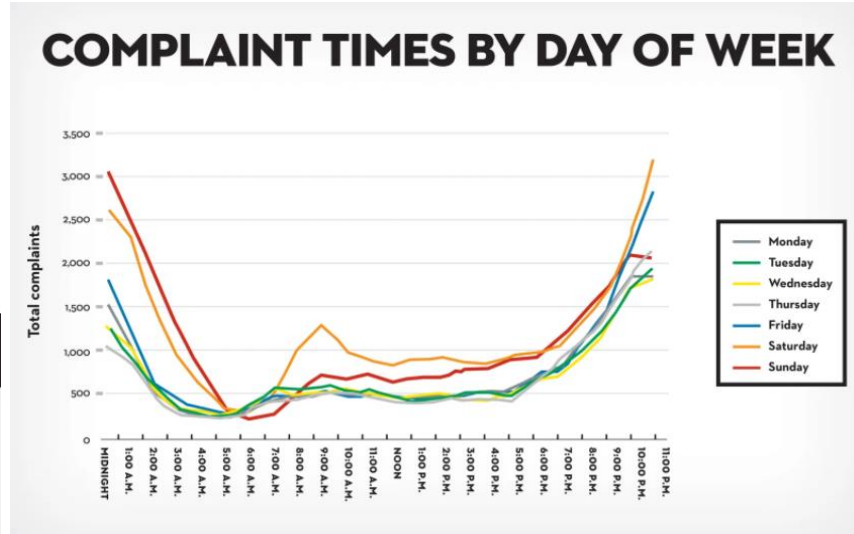


# Example: New Yorker article

ANNALS OF TECHNOLOGY

## MAPPING NEW YORK'S NOISIEST NEIGHBORHOODS

COMPLAINT TYPE	COUNT	PERCENTAGE
Loud music or party	52,368	37%
Construction before/after hours	23,180	16%
Loud talking	18,210	13%
Car/truck music	8,962	6%
Barking dog	7,480	5%
Construction equipment	5,819	4%
Air-conditioning/ventilation equipment	4,200	3%
Car-engine idling	3,886	3%
Car/truck horn	3,374	2%
Banging or pounding	3,087	2%
Other	10,098	7%

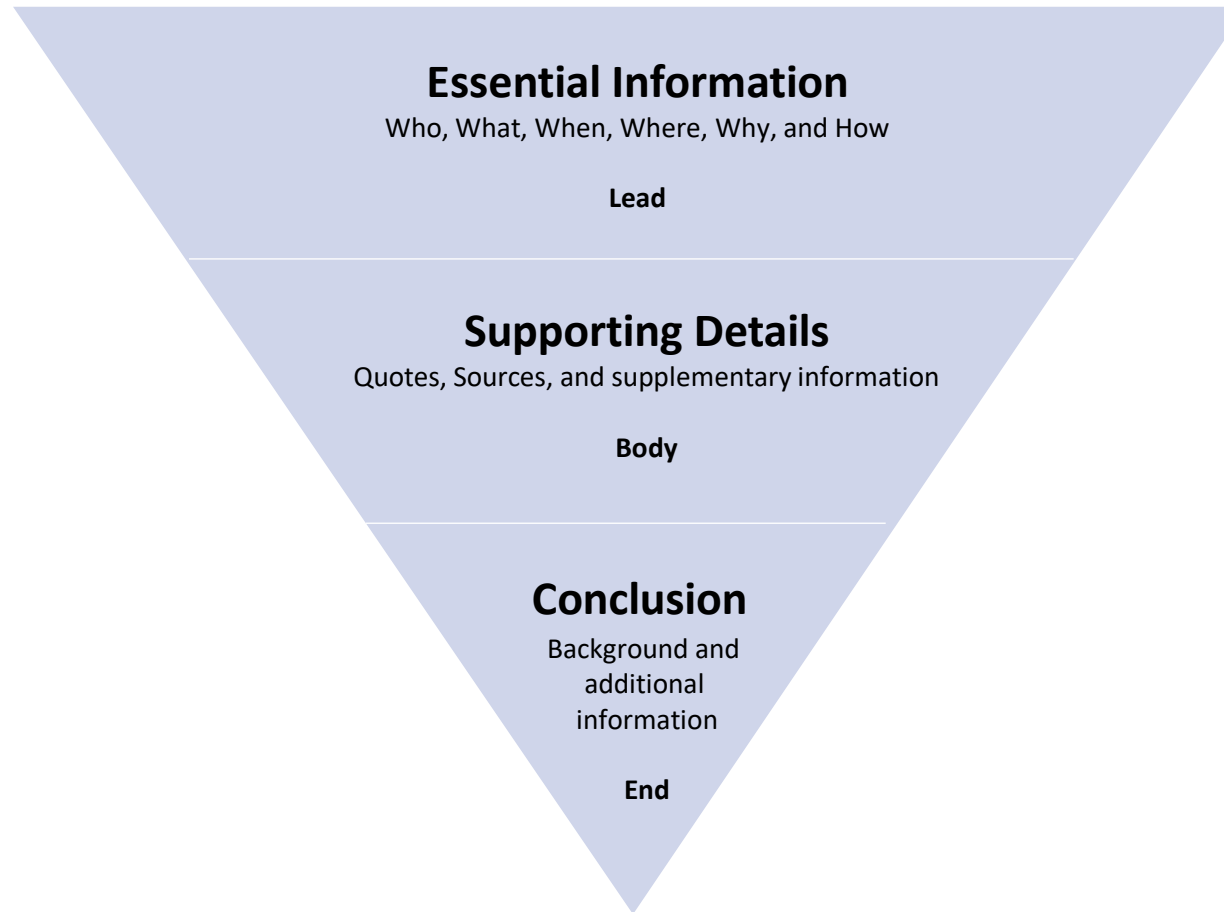


RANK	NEIGHBORHOOD	COMPLAINTS PER THOUSAND RESIDENTS
1	Midtown/Midtown South	104.51
2	North Side/South Side	75.59
3	SoHo/Tribeca/Civic Center/Little Italy	75.57
4	Battery Park City/Lower Manhattan	59.98
5	West Village	59.96
6	East Village	58.64
7	Washington Heights North	56.85
8	East Williamsburg	56.79
9	Hudson Yards/Chelsea/Flatiron/Union Square	56.34
10	Clinton	56.21
...	...	...
179	Williamsburg	3.64
180	Bellerose	3.60
181	Arden Heights	3.53
182	Annadale/Huguenot/Prince's Bay/Eltingville	3.46
183	Brownsville	3.22
184	Todt Hill/Emerson Hill/Heartland Village/Lighthouse Hill	3.16
185	Oakland Gardens	3.05
186	Rossville/Woodrow	3.03
187	Starrett City	2.25
188	Co-op City	1.10

Source: [Mapping New York's Noisiest Neighborhoods - The New Yorker](#)



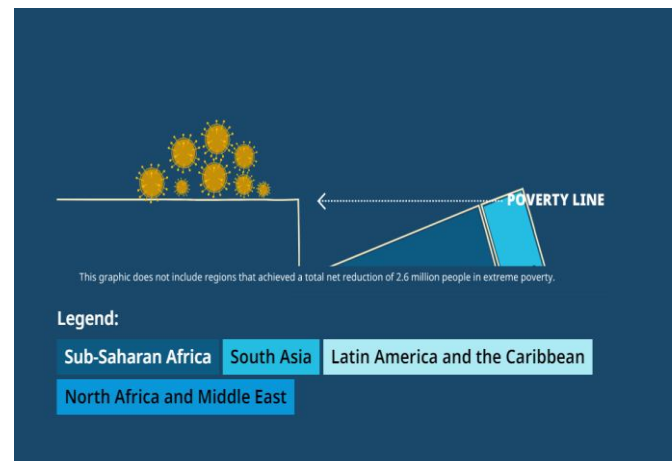
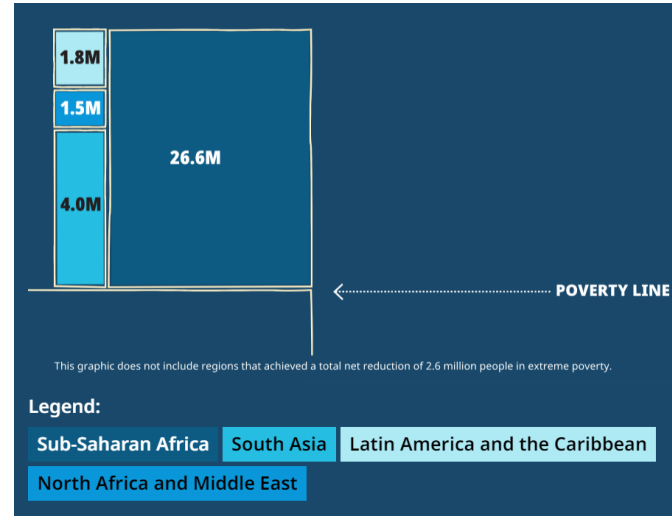
# How to structure a data story—Inverted Pyramid Model



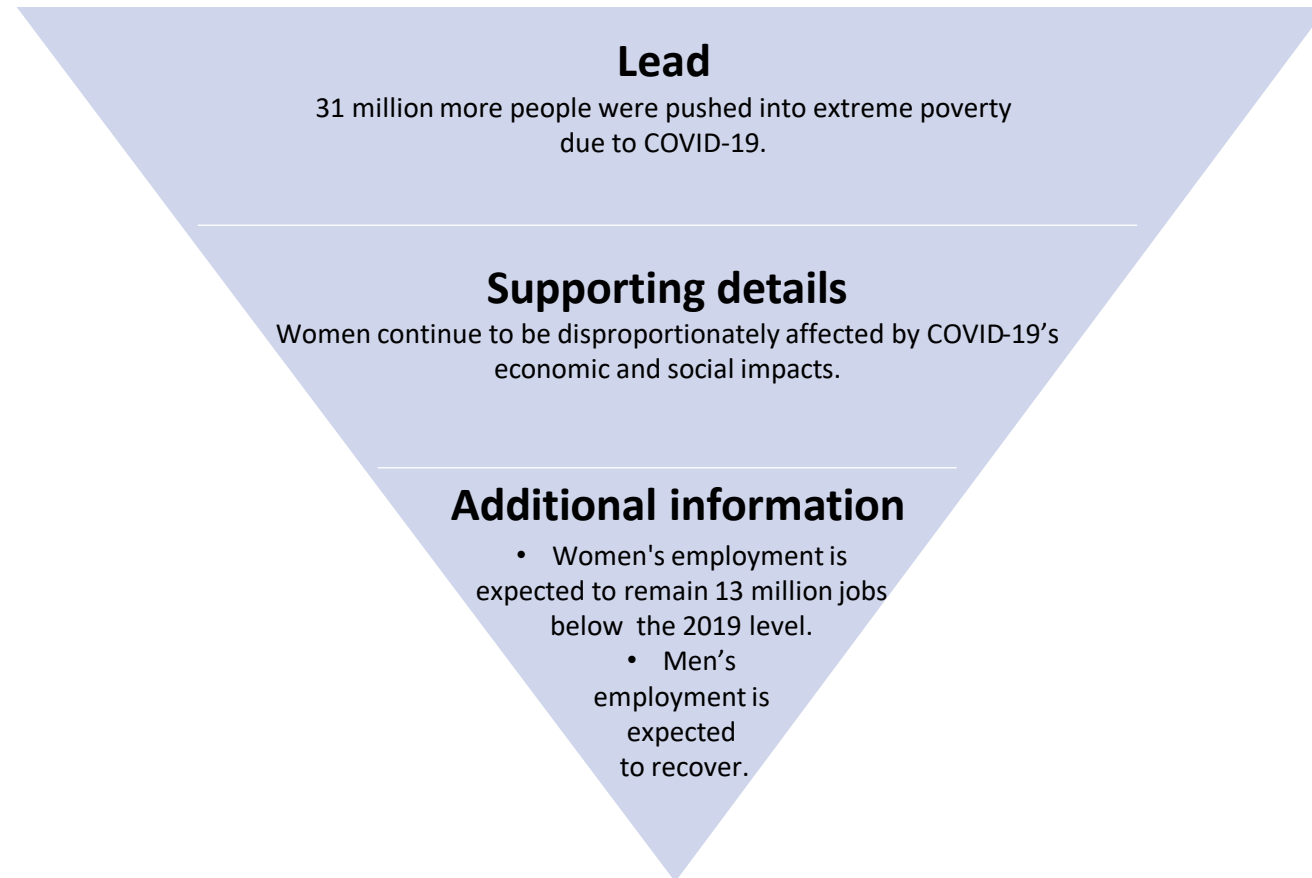
# Inverted Pyramid example: Gates Foundation Report

## Millions More in Extreme Poverty

For many, the economic impacts of the pandemic continue to be severe and enduring. We know we may seem like unlikely messengers on this topic—we're two of the most fortunate people on the planet. And the pandemic has made that even more clear. People like us have weathered the pandemic in good shape, while those who are most vulnerable have been hit the hardest and will likely be the slowest to recover. An additional 31 million people around the world have been pushed into extreme poverty as a result of COVID-19. Although men are 70% more likely to die from COVID-19, women continue to be disproportionately affected by the economic and social impacts of the pandemic: This year, women's employment globally is expected to remain 13 million jobs below the 2019 level—while men's employment is largely expected to recover to pre-pandemic rates.

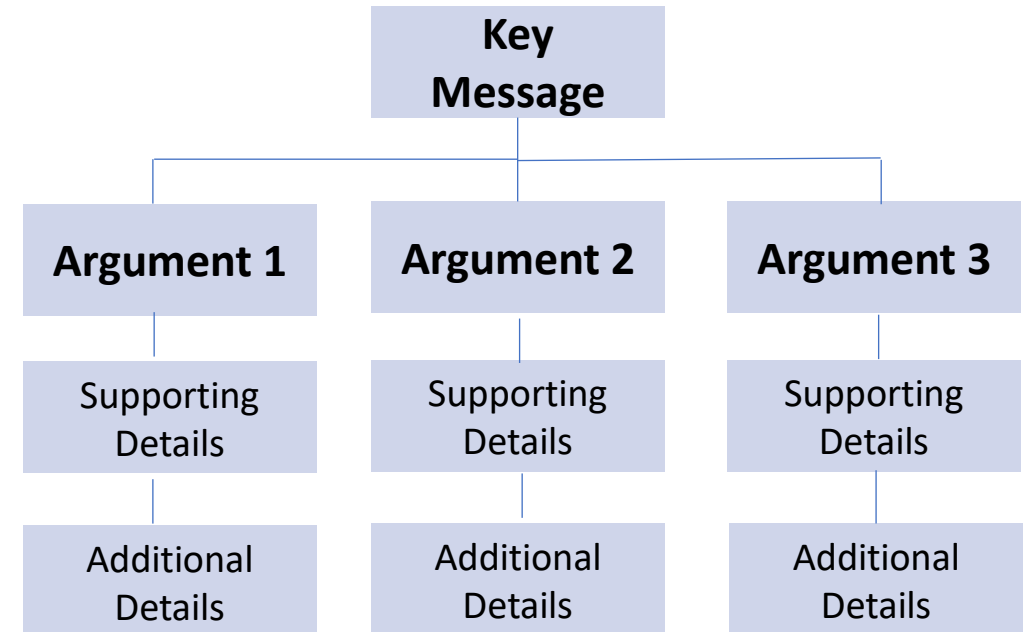
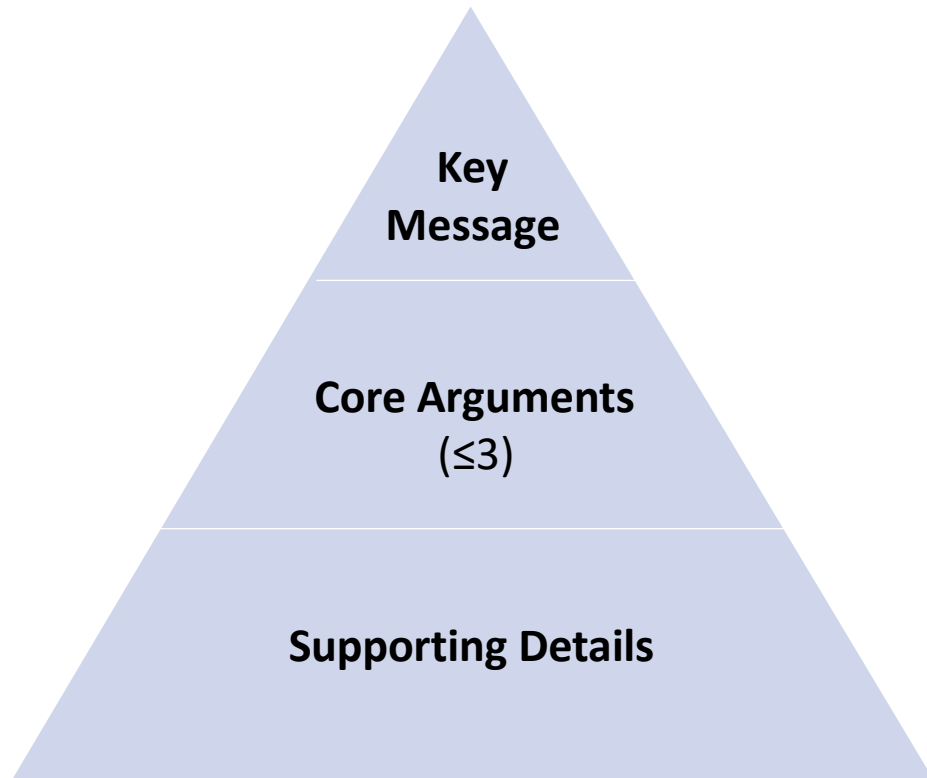


# Gates report analysed in an inverted pyramid





# How to structure a data story—Pyramid Model



# Example: Marine Stewardship Council story

## The ocean is vast

The ocean is so big that **most of it remains unexplored**. Scientists don't know exactly how many species of plants and animals live in the ocean, but some think that more than 90% of them have yet to be discovered.

There's one thing that everyone is agreed on, though: **the ocean is home to an extraordinary variety of plants and animals.**



From coral reefs to polar seas, the ocean bursts with life and diversity.

And **much of this life is essential to sustaining us**. Around the world, more than a billion people rely on fish for their main source of protein, while around 1 in 10 depends on fishing for their livelihood.



Source: [Dad fishes for the future, MSC](#)

# 20%

OF THE OCEAN  
HAS BEEN  
EXPLORED



We rely on the ocean's wild bounty so much that **fish is the most traded food in the world** – above tea, coffee, bananas and sugar.

# 91%

OF SPECIES  
ARE YET TO BE  
DESCRIBED

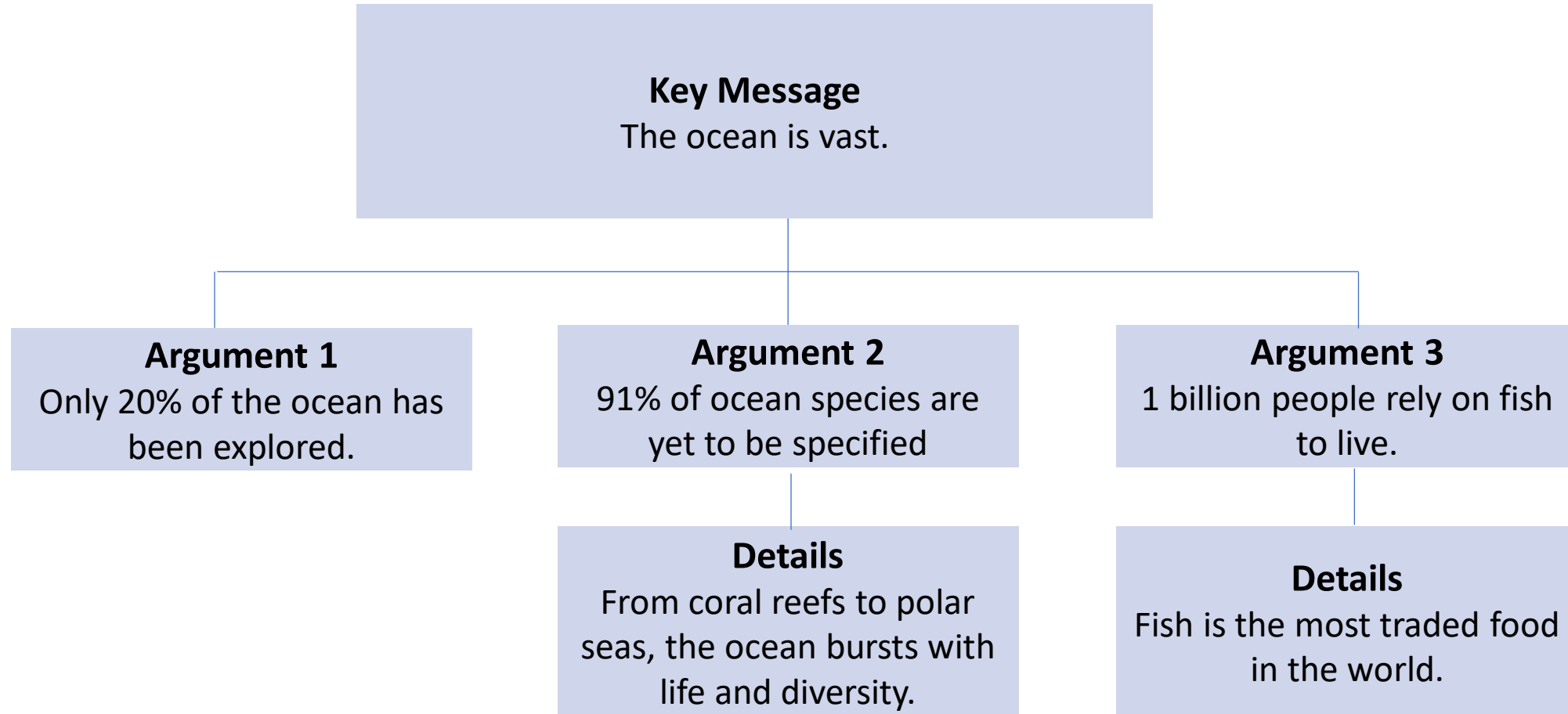


# 1BN

PEOPLE RELY  
ON FISH  
TO LIVE



# MSC story analysed in a pyramid structure



# General writing tips

Put key message first.

One paragraph, one idea.

Start a paragraph with a topic sentence.

Write short sentences.

No more than 3 sentences in one paragraph.

Use headlines, headings, subheadings, bold text, and bullets.

Use active voice.

Use appropriate verbs.

Minimize the use of jargon.

Minimize the use of acronyms.

Try not to use long words.

Avoid redundancy.



# Print writing and web writing are different

## Print content is



passive



linear



Slow



detailed



complete

## Web content is



active



interactive



fast



concise



Complete or fragmented



# How to repurpose print materials for the web



Keep the most important message at the top of the web page.



Chunk the content into logical sections.



Use headings, subheadings, and bold text to help the audience navigate the content.



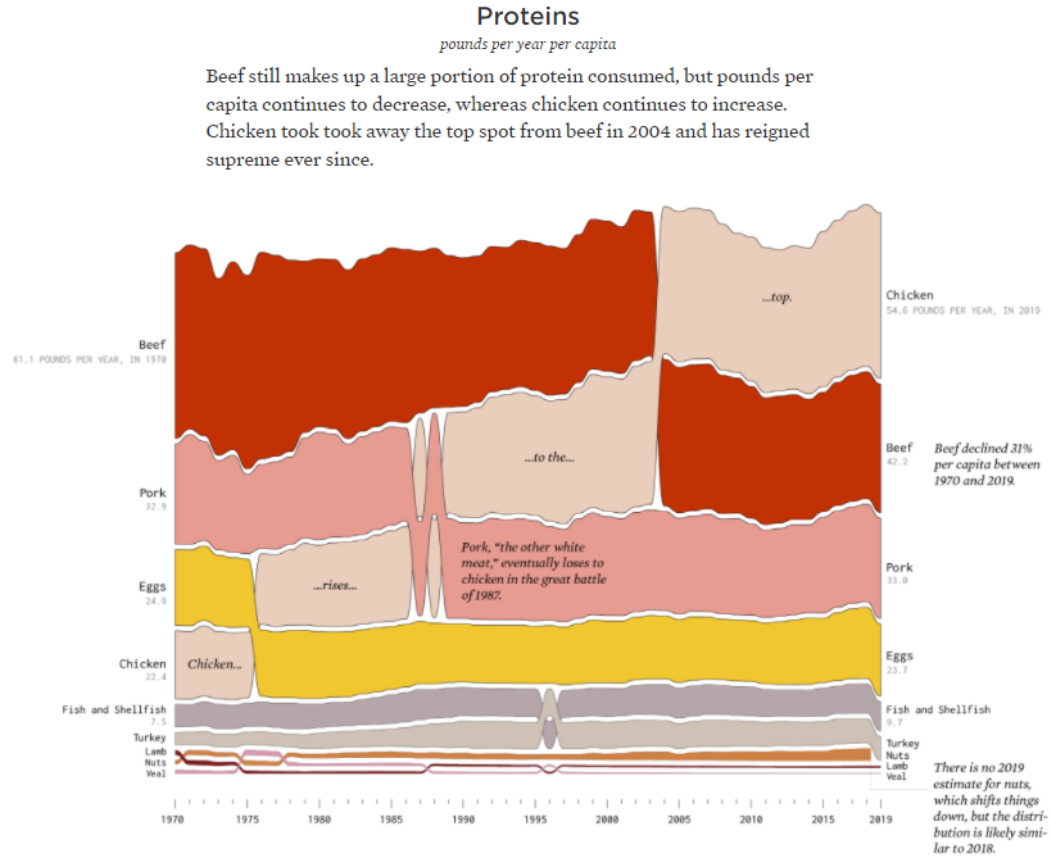
Highlight key facts in bulleted lists.



Use intentional, creative visuals to help explain complex content.



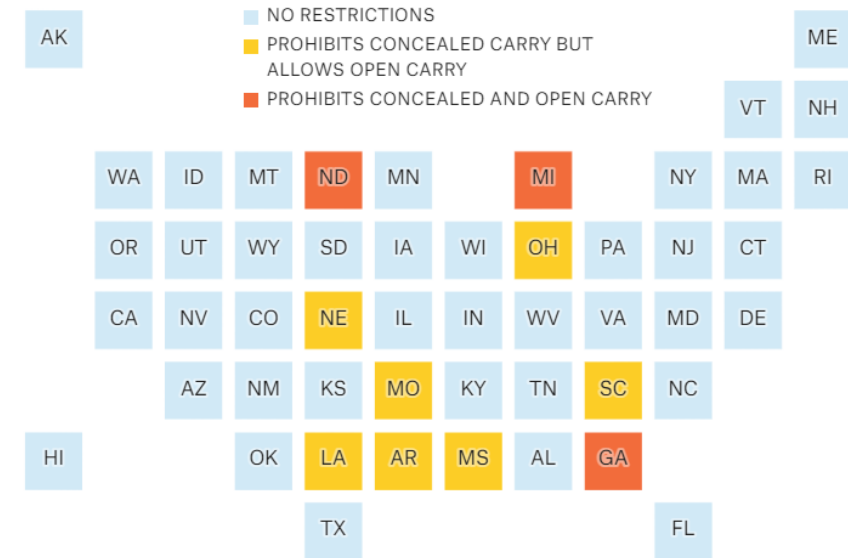
# There is no 'right' way to data storytelling



Source: [Seeing How Much We Ate Over the Years, flowingdata.com](https://flowingdata.com)

## Most states allow firearms in places of worship

Restrictions on guns in places of worship, by state



In North Dakota, individual places of worship can grant approval to carry firearms. In Mississippi, Nebraska, Ohio and South Carolina, only long guns are allowed to be openly carried. In Utah, firearms are allowed unless individual places of worship publicly prohibit it. In Virginia, there is a statute prohibiting firearms in places of worship, but it is superseded by a 2011 attorney general opinion that allows for the carrying of firearms for personal protection.

FiveThirtyEight

SOURCE: GIFFORDS LAW CENTER

Source: [God and Guns, fivethirtyeight.com](https://fivethirtyeight.com)

# Think beyond storytelling



Set the communications objectives upfront



Develop the narrative before visualizing data



Connect with the audience at their level of data literacy



Promote and advocate for your data stories with a plan





Those who tell the stories rule the world.

-- Native American proverb

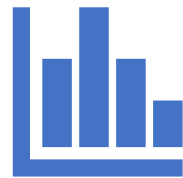


Those who tell good data stories influence the world.



# Thank you.

Contact: [caseyxh@yahoo.com](mailto:caseyxh@yahoo.com)



# Additional Resources (1/3)

## Data storytelling

- Nancy Duarte, “Data Story: Explain Data and Inspire Action Through Story”, IDEAPRESS Publishing, 2019; [Duarte DataStory®](#)
- Cole Nussbaumer Knaflic, “Storytelling with data”, Wiley, 2015, <https://www.storytellingwithdata.com/>
- Will Storr, “Science of Storytelling: Why Stories Make Us Human and How to Tell Them Better”, Harry N. Abrams, March 10, 2020
- <https://narrativescience.com/resource/webinar/how-to-tell-a-compelling-data-story-ft-zach-mazzoncini-data-storytelling-virtual-summit/>
- [Data Storytelling in Marketing: Venn Benchmark Report 2021](#)
- [Data Storytelling: The Essential Data Science Skill Everyone Needs](#)
- <https://www.nugit.co/what-is-data-storytelling/>
- <https://narrativescience.com/data-storytelling/>
- UNECE’s Making Data Meaningful series very relevant, including the Guide to Writing Stories About Numbers: <https://unece.org/statistics/making-data-meaningful>



# Additional Resources (2/3)

## Context and audience

- [Purdue Online Writing lab](#)
- <https://style.ons.gov.uk/category/writing-for-the-web/personas/>

## Writing

- Barbara Minto, “The Pyramid Principle”, Prentice Hall; 3rd edition, January 1, 2010, <http://www.barbaraminto.com/>
- [Style.ONS: A guide to writing about statistics](#)
- <https://datajournalism.com/>
- <https://www.theguardian.com/membership/datablog/2021/sep/13/numbers-you-can-tell-stories-with-a-decade-of-guardian-data-journalism>
- <https://training.npr.org/2016/10/12/leads-are-hard-heres-how-to-write-a-good-one/>
- <https://www.clearvoice.com/blog/the-dos-donts-of-writing-a-good-lead-according-to-dear-megan/>
- [Story Structure: 7 Narrative Structures All Writers Should Know](#)



# Additional Resources (3/3)

## Data visualization

- Nathan Yau, “Data Points: Data Visualization Than Means Something”, Wiley, 2013, <https://flowingdata.com/>
- Cole Nussbaumer Knaflic, “Storytelling with data”, Wiley, 2015, <https://www.storytellingwithdata.com/>
- <https://www.juiceanalytics.com/writing/20-best-data-storytelling-examples>

