Communicating Results to Different Audiences:

Guidelines for Scientists and Researchers for Communicating Data

Developed by Odd Studio, in partnership with Fundação Oswaldo Cruz (Fiocruz), and Global Health Strategy (GHS Latin America)
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Dear reader,

These guidelines are an initiative of the Bill and Melinda Gates Foundation, led by the Quantitative Science Team, aimed at researchers of data science and public health who hope to share their data and communicate their results in an innovative way. Developed by Odd Studio, in partnership with Fundação Oswaldo Cruz (Fiocruz), and Global Health Strategy (GHS), this document includes an introductory chapter and five sections that offer guidelines and suggestions for your work, including the identification of a target audience, the development of communication products, and establishing a dialogue with both the press and health stakeholders.

This Guideline is brief and does not intend to map out in complete detail all the complexities involved, including the actors, possibilities and steps that exist between carrying out research, producing knowledge, and its implementation in public health policies and practices. However, this document seeks to address the main needs identified by the researchers involved in the Grand Challenges Explorations in Data Science from 2018 to 2022, in Africa, Brazil and India.

We believe that our approach is applicable to many individuals who may encounter these challenges, but it is specifically addressed to scientists working with data in economically developing countries that face significant challenges in public health security. We seek to offer practical actions to assist with tasks that often may seem challenging.

In the future, we hope to include chapters to cover other important topics. For now, however, we present essential tools to promote a mindset and culture of research development that is context-sensitive and centered on the human, as well as propose solutions that take into account a variety of global perspectives.

Furthermore, we believe that collective construction is an effective way to establish bonds of security, trust, belonging and fruitful social change. Thus, this is only the first version of this document. As you carry out a critical reading and provide us with your feedback and insights, we hope to evolve the methodology and approach.

We appreciate your time and hope you select the chapter that intrigues you the most!

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Communicating Results to Different Audiences: Guidelines for Scientists and Researchers for Communicating Data

"Nothing – not the careful logic of mathematics, not statistical models and theories, not the awesome arithmetic power of modern computers – nothing can substitute here for the flexibility of the informed human mind."

Tukey (1962)

In the past few decades, we have witnessed the Internet spread, reaching every corner of the globe. The world as we know it could not exist without the World Wide Web. It impacts the ways we access, read and use information, as marked by:

- ***Dissemination and access to all kinds of information - of quality or not;***
- ***the rapid increase of data in terms of volume, variety, variability, as well as computational processing power, but, conversely, humanity's inability to fully analyze and interpret it;***
- ***the consolidation of social media platforms as a cross-generational source of information;***
- ***the unregulated (still in-process) mass use of personal data, from social media to government surveillance and non-governmental organizations;***
- ***the development and growth of digital solutions, data science, and artificial intelligence, which, by determining what information is shown to people, reinforce biases and personal beliefs;***
- ***the development of high-level programming languages and interfaces that require little to no programming knowledge, allowing for the open and accessible analysis and interpretation of data throughout the world.***

At the same time, the potential use of data science for health and evidence-informed policies has changed how science is conducted globally. What once required months to collect or analyze, can now be quickly combined to answer complex, fundamental questions in a way that is faster, more affordable, and can produce insights into a variety of areas.

For this reason, the effort of researchers and scientists who work with data can be overwhelming. The sense of responsibility when sharing results has grown significantly (or perhaps we have just become more conscious of it). At the same time, however, it is more important now than ever before. Science is not only the validation of knowledge we generate in the world but also a reliable method for constantly improving upon it. This rigorous method to define questions, organize, analyze and find patterns in data is extremely pertinent, not only to a world recovering from a collective trauma such as COVID-19 (during which this method was used rigorously for recovery efforts) but also to a world that is changing at a faster pace than we've ever seen before.

As everything else progresses so quickly that we cannot keep up, we must rely on processes that ensure we have all of the necessary information to move forward.

Research papers are essential to the process of validating and recognizing work within academia. But just as social media has its specific language and culture that may be inaccessible for those unfamiliar with it, scientific language may also be niche and full of specific jargon, not only for younger generations but also for educators, health professionals, and even policymakers.

But there are other ways to communicate findings that maximize the potential to produce change including:

- ***Understanding that different audiences consume data outputs differently and that the more researchers communicate their work, the simpler it will be for other people to understand their potential uses;***
- ***Recognizing and defining the purpose of different outputs generated by data projects, such as databases and algorithms will reduce the learning curve for others starting the same path and address society's needs;***
- ***Exploring different ways in which research studies in data can impact policies and society at various levels and lead to better-contextualized processes;***
- ***Collaborating with other areas of knowledge will strengthen the interdisciplinary nature of data projects, bringing a plural perspective to the creation of possible solutions and increasing their potential impact.***

Just as researchers learn the elements, sections, and formatting required to write a scientific article, other means of communicating results can also be learned. Although research may be conducted by researchers only, change cannot. So learning how to share your findings effectively can amplify the potential impact of your research.

Effective scientific communication with data can impact policies and healthcare, as well as better our understanding of society's well-being. Additionally, communicating outside the scientific community can help boost a researcher's career and maximize the impact of their results. It can also strengthen collaborations across sectors and contribute to one's public profile by opening doors to unexpected opportunities.

An academic paper is often a description of the work, not the findings, which is key to supporting evidence-informed policies. However, if the work generated is intended to produce a society-wide impact, it should:

- ➔ ***Be straightforward in its results, clearly answering the proposed questions;***
- ➔ ***Consider its context, limitations, and implications;***
- ➔ ***Be inclusive and avoid specific, over-complicated, and technical language;***
- ➔ ***Be tailored to its potential use, considering the user's needs and decisions, as well as the community it directly impacts;***
- ➔ ***Be accessible for those with disabilities and make use of visual representations and other alternative text that support its findings;***
- ➔ ***Consider different formats to deliver its findings (not everyone needs an app or a dashboard);***

Understand that findings in data may be the endpoint for a researcher's work, but are the beginning of a conversation, the necessary start that leads to new actions, and support change in another person's journey.

Communicating with different audiences doesn't mean a researcher must change the direction of their work or recommend actions that are not within their area of knowledge. But, that there are other ways of conveying the same information that guarantees it can play a more significant part in society.

While the world drowns in misinformation, those with the knowledge and resources to make use of available data to understand patterns and solve complex questions should be leading conversations and building bridges.

But this is a complex task. And should not be done alone. This, then, is a guide to help you get started.

This guide will include:

- *Defining how to communicate your findings with data;*
- *Interviewing, researching, and understanding your user;*
- *Communicating with stakeholders and policymakers;*
- *Communicating with Journalists;*
- *Telling stories with data;*

References and Further Resources

- *Ball, P. 2018. 'News' spreads faster and more widely when it's false* ***Nature****. doi: https://doi.org/10.1038/d41586-018-02934-x. Available in: https://www.nature.com/articles/d41586-018-02934-x*
- *Davies SR, Franks S, Jensen AM, Mannino I, Schmidt AL, Wells R, Woods R, Zollo F. 2019. Summary report: European Science Communication today.* ***Project Quest****. 2-118. https://questproject.eu/scanning-the-landscape-of-european-science-communication/*
- *Freeling B, Doubleday ZA, Connell SD. 2019. Opinion: How can we boost the impact of publications? Try better writing.* ***Proc Natl Acad Sci*** *U S A. 116(2): 341-343. doi: 10.1073/pnas.1819937116. PMID: 30622212; PMCID: PMC6329950.*
- *Olan, F, Jayawickrama, U, Arakpogun, EO, et al. 2022. Fake news on Social Media: the Impact on Society.* ***Inf Syst Front****. https://doi.org/10.1007/s10796-022-10242-z*
- *Reinsel D, Gantz J, Rydning J. 2018. The Digitization of the World: From Edge to Core.* ***IDC White Pape.*** *Framingham, MA. 1-28. https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf.*
- *Tukey, J W. 1962. The Future of Data Analysis. The Annals of Mathematical Statistics.* ***Institute of Mathematical Statistics Stable****. 33. No. 1. 1-67 URL: http://www.jstor.org/stable/2237638*
- *https://www.who.int/health-topics/infodemic#tab=tab_1*
- *https://www.interaction-design.org/literature/article/information-overload-why-it-matters-and-how-to-combat-it*

Guideline I:

Determining how to communicate your findings with data

01

VISUAL SUMMARY

Determining how to communicate your findings with data

Data projects often have different objectives and the same project can generate different results. These deliverables, or data products, can be of varying degrees of complexity, use a variety of technologies and programming languages, examine the past, or attempt to predict the future. Adding to this scenario, researchers must often engage a population that is becoming less likely to consume information in ways that are not adapted to their needs and desires. Thus, this guide provides insights and a framework to help researchers navigate these challenges and effectively communicate their results

When to use?

Use Guideline I when planning a data-product deliverable. The purpose is to help you in determining how to communicate your research findings with data.

What to expect?

1. Greater awareness of the importance of nurturing a design mindset when defining a data project deliverable.
2. An understanding of the different purposes of a data product
3. What to take into account when selecting the format of your data product
4. A framework to design data products when communicating research results

01 *Analytical solutions for data products have a variety of complexities:*

Databases, indexes, visualizations, algorithms, artificial intelligence algorithms. The more complex a data product is, the harder it is for a user to understand.

02 *A design mindset means not only understanding a product's purpose:*

But also that its purpose will determine your choice of format. In order to define a format, you need to understand your audience and what you wish to communicate to them.

03 *The purpose of most data products can be classified into four types:*

Inspire feeling; make the data available to be explored; explain to comprehend; and inform to decide.

04 *Selecting the format of your product depends on:*

Your audience's knowledge of the project area; what you wish to achieve with your project and what to communicate to your audience; the frequency of use and sustainability of your data product; the complexity of your data product; how it is delivered and distributed to your audience; and the resources you have at your disposal.

05 *Designing a data product involves: a suitable analytical solution:*

A well-defined audience and purpose; and a selection of the format that will help you achieve your objective.

At every step in the process, please keep in mind:

- **Focus on determining the most impactful data product**
- **Encourage putting yourself in your user's shoes**
- **Define your audience and the purpose of your data product**
- **A dashboard is not always the best solution to data problems**

Not everybody needs a dashboard

Creating a product for every audience is the same as creating for none. What determines a data product's appropriateness is its adaptation to its intended user. By understanding your audience, you will be able to make better decisions regarding your data product.

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1.1 Data Project's Deliverables: Data Products

Data research projects can have different objectives: validating or improving existing data, making data accessible to others, discovering patterns or answering specific questions, and developing algorithms to support decision-making, or a mix of all of the above. The possibilities are vast, and one project can generate multiple outputs. These outputs, or data products, can be complex to different degrees, use different technologies and programming languages, and examine the past or attempt to predict the future.

Chairs, refrigerators, and combs were planned, designed, and developed. Designers considered their purpose, who and how they would be used, and the materials to build them. This area of knowledge aims to question and define the processes that solve problems in the real world. To design is to consider function, based on the user, context, and purpose.

It doesn't matter if you are an epidemiologist or a data scientist. When planning a data project's deliverable, you are designing a data product or service. A data product is any product that uses data as its raw material; without data, it could not exist. There are different types of analytical solutions for data products, that have a variety of complexities:

- ***Databases:*** *A compilation of captured and organized groups of data that can be laid out with a table or a complex interrelated set of bases. Anyone that has ever accessed a database with no documentation, or guidelines, understands the need to properly plan, design, and explain databases. Thus, they are important data products to support the continuation and replication of scientific work.*
- ***Indexes:*** *The aggregation and calculation of one or of a group of variables that support the monitoring, visualizing, defining of standards, or the identification of patterns in data projects. There are many indexes that are commonly used by researchers but are not easily understandable for other audiences. These data products are usually disseminated within their area of expertise (example: any researcher may be used to the term "p value", its implication or significance), but are not well-known in other settings. So ensuring that potential users can read and interpret them is key to the successful use and adoption of indexes.*
- ***Visualizations:*** *Various ways of representing variables and indexes visually. Visualizations are visual by definition, meaning they are very useful for identifying patterns and outliers, telling stories, and comparing information. But they pose issues for visually-impaired audiences. They also refer to a specific set of data, so they can be biased. Additionally, the chosen design may or may not support the information shown. Visualizations can be amazing data products if context, media, format, and audience are taken into consideration.*

- ***Algorithms:*** *A set of rules that perform a specific data-related task. As data products, they facilitate the computation of complex calculations and support decision-makers by resolving questions. Algorithms are also a reflection of the data, rules, parameters, and methods applied. As they are logical and mathematical, the decisions they make can appear distant and even cold to other people, especially when they impact a population's health or other aspects of their lives. Making sure the structure of an algorithm is open, transparent, and accessible is an important means to generate trust in its adoption. People tend to mistrust algorithms, but will trust other people. Making your algorithms more relatable and trustworthy is key to expanding their usage.*

- ***Artificial Intelligence Algorithms:*** *Similar to algorithms, AI performs tasks according to rules and data. The difference is that it may simulate human thought and behavioral processes, using the experiences generated to improve results. If the thought of a mathematical equation making decisions regarding people's lives can be scary, imagine trying to comprehend that a machine may be "intelligent" in its decision-making. Plus, the specific parameters and databases used can lead to biased results. Even though we know it is not that simple, generally, this can be even scarier for those who (1) are not familiar with the design process of an algorithm, (2) are not part of its development, (3) do not understand or have access to its decision-making processes (i.e. a black boxes algorithms). The usage of simulators or artificially intelligent systems is therefore extremely complex. In one data product, all of the others are included: databases, indexes, visualizations, and algorithms. And the greater the impact a data product may have on its population, the more careful, ethical, transparent, and accessible one must be in communicating it.*

For some data projects, the analytical solutions above may look like steps to reach a final deliverable. For others, you may even use several of these options to produce a single database (e.g. if you use cleaning algorithms and visualize outliers, you are making use of 2 other products to produce a database). What we will focus on is which of these options will be made available for outside audiences. You should consider the final output of the database, but when publicizing your results, you will probably need to make the cleaning algorithms available as well. Explaining both is necessary.

When presenting a final report with descriptive, diagnostic or prescriptive findings, as well as visualizations, it is possible that the database used is already present in the product but does not need to be made available. Focusing on presenting your results, instead of your database may be enough for your intended audience.

The number of choices when determining your final output (or outputs) can be overwhelming. As is the work and additional resources necessary to produce the best version of your findings for your final audience. Instead of trying to achieve everything within the timeframe of your project, it is best to focus on determining the most impactful product, whether that is a database or a visualization.

✱ ***A design mindset can support you and your team in that process.***

1.2 Nurturing a design mindset for data products

Like any product, the more complex it is, the more knowledgeable the designer is. So in order for data scientists to design good algorithms, they need to understand the database, develop reliable indexes, and visualize the various relationships and behaviors of their data. As you've probably heard, GIGO's law (garbage in, garbage out) helps us understand that there is a logical order one has to follow when building more complex products. If the data fed to an algorithm is of poor quality (garbage in), the algorithm's output will not be satisfactory (garbage out).

This understanding also applies to how a consumer of this information interprets the output of any data product. If it takes months for data scientists to grasp the complexity of a big database, how will someone who is only familiar with the results be able to accept its output without question? Even though all of the different data products may be potentially valuable, not all are ready to be consumed without determining the additional materials that accompany complex products, which are often described in manuals and how-to-use guides.

Manuals and how-to-use guides are essential in:

- ➔ ***Presenting the material in a simple and quick guide;***
- ➔ ***Indicating the different situations in which it should (and should not) be used;***
- ➔ ***Demonstrating how long someone can use the product before it needs to be replaced or updated;***
- ➔ ***Relaying the parts, materials, and components it is made of;***
- ➔ ***Answering frequently asked questions and providing the manufacturer's contact information.***

If you've ever encountered a manual that is only readily comprehensible by people with specialized knowledge, for example, if only a physicist or an engineer could read a manual for a refrigerator, you know how hard it could be to use the final product. We don't need to be engineers to be able to use a car. The same is true for policymakers; they should be able to understand the output of an algorithm independently of analysts or data scientists, and recognize its relevance for their work. Thinking of your guide and manuals when developing your data product can be one way of supporting your final consumer.

A design mindset means you not only understand your product's purpose, but also its purpose will determine your choice of format. In order to define a format, you need to understand your audience and what you wish to communicate to them.

Tip

Think of a design methodology as the scientific method: while the scientific method is used to deliver scientific results, design is used to deliver products and services. Both science and products can be developed with more or less rigor use of the method. Similarly for both, may be the quality and trust in the final result.

1.3 Defining your audience

A single data project can have multiple deliverables and multiple audiences. Defining your audience is so important that we have dedicated 3 chapters to helping you. It is not uncommon for research projects to have broad audiences, which further complicates the work. When we are unsure of whom we are supporting, our work can become as generic as our audience. Whether it is a stakeholder or a student, the more you know about your intended audience, the better you can support them.

1.4 The purpose of your data product

Data products can have different purposes depending on their audience's expected reaction. The same data can be represented in various formats, depending on its purpose. It is very uncommon for a data product to encompass all possible intentions, and attempting to do so may confuse more than help. You can classify the purpose of most data products into four types:

1.4.1 Inspire Feeling:

You have an unexpected finding or conclusion you've discovered in your analysis. You have information that is known and relevant but lacks the appropriate attention. To reach your audience, you need to convince them of the topic's importance and actively engage them.

Suitable for audiences that:	*Not suitable for audiences with*
◆ *Know very little about the topic, context, or data, or know a lot - depending on your intention;* ◆ *Need to be convinced of the importance of that information;* ◆ *Need to disseminate the findings to others;* ◆ *Don't have time to waste.*	◆ *Knowledge of the topic's importance;* ◆ *A need to understand the details of the data.*

Key: *Knowing what type of feeling your information can generate is crucial and will help you determine whether or not this is a valid strategy. This is especially effective in grabbing your audience's attention and leading them to examine other data products.*

1.4.2 Make the data available to be explored:

You have one or multiple datasets that are cleaned and organized or a series of indexes that are not easily available or open to the general public. They can be made available to other audiences, so they can use them to generate new analyses and findings or for others to download.

Suitable for audiences that:	*Not suitable for audiences with*
◆ *know the questions they wish to answer but lack the resources;* ◆ *know the questions they wish to answer, but the parameters (filters, time frame, and comparable variables) change constantly;* ◆ *are familiar with the knowledge area, context, and data sources presented;* ◆ *understand basic principles of data analysis (e.g. correlation vs. causation);* ◆ *Have the time to analyze the data and make conclusions;.*	◆ *Little understanding of the topic;* ◆ *Basic data and statistical literacy;* ◆ *Not enough time or knowledge to filter or compile data and draw conclusions.*

⚐ ***Key:*** *Your audience is in control of the data product, so they must have a good understanding of it or have a high-quality manual when using it.*

1.4.3 Explain to comprehend:

After analyzing your data, your project has made an important discovery (or several). However, understanding and communicating why that finding is relevant to your audience is necessary. The context, applicability, or theoretical model can help your audience generate new insights.

Suitable for audiences that:	*Not suitable for audiences with*
◆ *Could benefit from this information and develop new ideas, insights, or decisions;* ◆ *Need to trust your findings;* ◆ *Need to revisit or update their beliefs regarding the relevant area of expertise;* ◆ *Need to communicate your message to others.* ◆ *Have some understanding of the context in which your findings can be helpful.*	◆ *Not enough time to hear you at that moment;* ◆ *Need a simple and useful answer.*

⚐ ***Key:*** *New methodologies or analyses may need to be explained before they are adopted. There are various steps involved in integrating new findings into policies or routines.This may be the first step in that process.*

1.4.4 Inform to decide:

You have questions that have produced measured indexes, visualizations, algorithms, or simulators that can inform, predict or support a decision. Your final output has clear applicability for the target audience.

Suitable for audiences that:	*Not suitable for audiences with*
◆ *Are involved in transparent decision-making processes to which your findings are relevant;* ◆ *Have an evaluation routine or repeated process with answers that can be mapped;* ◆ *Are familiar with the techniques, models, and data sources you have provided;* ◆ *Understand your outputs, or have the time and resources to do so.*	◆ *Have questions that change frequently;* ◆ *Lack known, defined, and recognized measurements for their problem.*

Key: *Knowing your audience's processes is essential to support decision-making. Adoption may be low if processes are unclear or the measurements provided are not yet known. Mature processes are necessary before attempting to target decision-making. Ensure you understand the challenge you aim to address before committing to it.*

✱ ***Once you understand what you wish to achieve with your products, defining their format will become easier.***

1.5 Why not everybody needs a dashboard: selecting a format

A scientific article is one type of format. It is best used to communicate the results of your project to peers. Whether you've developed a single algorithm or a series of visualizations that support your findings, you can deliver the same information on a Twitter thread, with a 5-minute video, on a Jupyter Notebook, or written on a wall. But, as previously mentioned, some formats are more appropriate for certain audiences than others.

Selecting the format of your product depends on:

➔ ***Your audience's knowledge of the area of expertise:*** *The public may not have extensive knowledge of your area, even when discoveries you make may impact their lives. To this audience, introducing information with videos, social media, physical experiences, or workshops may be more engaging and informative. Notably, this does not mean that these formats are unsuitable for more knowledgeable users, but they may need more detailed content, depending on their intended use. Your choice of format should be based on how it will impact your audience and the level of detail you would like them to absorb.*

➔ ***What you wish to achieve with your project and communicate with your audience:***

- ***To inspire:*** *interactive, centered on the human experience and told like a story. Do not be afraid to tap into the feelings of those who have had similar experiences, or even make use of your own. Stand alone charts rarely inspire. Dashboards or automatic systems may not have the expected impact.*
- ***To make data available for exploration:*** *dashboards, interactive data visualizations and reports, and documented databases for download. Keep in mind that all of these also require planning and designing. Determining which data will be made available and how is crucial. This means taking into account the technology, processing requirements your user will need to have a good experience, the type of visualizations shown, the hierarchy of information, and other aspects that both give control and freedom to the user and support them in this process. Having complete freedom when analyzing data can be overwhelming, so you must make sure your audience is equipped with the necessary knowledge to navigate your data on their own.*
- ***To explain:*** *reports or micro-websites that use scrollytelling stories as a means of displaying information, combining visual graphics, supporting text, and charts may be more suitable to communicate your findings. You can employ analogies, describe scenarios, or provide answers to direct questions yourself ask. Interactive workshops and talks that involve exercises to help participants incorporate your findings are recommended. It is important to choose formats that allow you to select what elements of your methodology and results you will present. While the latter is more appealing to a general audience, you can also point to other materials to encourage a more in-depth understanding of your work.*
- ***To support decision-making:*** *Beyond format, in order to support decision-making, you must have a complete understanding of how decisions are made. Exploratory questions do not lead to direct decision-making, they are stepping stones in that process. Questions and answers must be well-developed, and user-tested algorithms and decision matrices are necessary. Formats meant to guide decision-making are usually well-built, easily navigable dashboards (with little to no interaction), policy reports, simulators that include contextual decisions and are adapted to the user's data and reality, and interfaces that guide the user through prescriptive algorithms. The more decision-oriented it is, the more specific a format must be. Generic decision-making products require readaptation, and rework.*

➔ ***The frequency of use and sustainability of your data product:*** *If the frequency in which your user will use your data product is quarterly or less, developing dashboards or other similar formats may not be the most effective. The same is true for products that will not be continued after projects are delivered. Make sure you understand the limitations of your work before proposing a product that needs constant updates. Data becomes obsolete, and so does the means by which it is delivered.*

- ***The complexity of your data product:*** *The more complex a data product is to understand and use and the bigger its implications are for individuals, the more additional material you may need to explain it. User experience and user interaction are areas of design that examine how to help a user quickly understand an interface. Websites and apps can be good formats to present algorithms, especially prescriptive ones.*
- ***How it is delivered and distributed to your audience:*** *Let's imagine your project is a chart that helps health professionals to track women's weight gain during pregnancy, and the government intends to deliver printed copies of this material in every corner of the country, or perhaps your app will be used in spaces with no Internet service. Printed material is a completely different medium from digital, as are apps that require offline functionality from those that work online. Considering these requirements is key to planning your product, and hiring the right talent to support you.*
- ***The resources you have at your disposal:*** *Finally, remember that your project has a timeframe, you have specific resources to prioritize, and talent to manage. We can always dream of what is possible, but remember to have backup plans in case what you wish for is not feasible at the moment.*

1.6 Designing your data product

Designing a data product involves all of the elements above:

- ***An analytical solution that properly addresses your challenge and research question;***
- ***A well-defined and studied audience;***
- ***The purpose that will help you value your results and impact your audience, and the context of that problem in your audience's reality; and***
- ***The format that will help you fulfill your purpose, considering you have or can gather a team with the necessary resources and talent.***

It is often said that a great data product starts with a great question. We believe it starts by designing one. To help you in that process, you can use the framework below.

1.7 A framework to design data products:

We suggest you invite your team to participate and contribute to this process: use a board you can fill with stickers, and discuss each element as you go through the questions below. We have also prepared a document you can download and use as a reference. Depending on the project's complexity, this exercise can take from 45 minutes to 2 hours. In addition, remember that you can always revisit this information and change it. As your project takes shape, continue to realign expectations with your team members.

1.7.1 What questions do you wish to answer with your data?

Try: *breaking your primary research question into steps before reaching the final objective. Build a question tree (example here), beginning from the most basic and building your way up to the more complex.*	***Avoid:*** *having a small number of questions that are too specific or that may already be answered, and are thus not novel to the area (unless your novelty is the model applied or how you will make results available).*

1.7.2 For each of the questions, what are the answers you would provide?

Try: *describing the information that you expect to generate from those questions, instead of listing the variables used. You will find examples on the board provided.*	***Avoid:*** *answering from a biased perspective. Remember the scientific method and use these principles to help you simplify the possible answer that you are looking for.*

1.7.3 Who could benefit from and use the proposed answers for each question?

Try: *specifying who might benefit from your findings the most, considering the decisions or insights they may generate from these answers. Would your target audience be interested in these answers? Is there any actionable outcome for them? The more specific you are, the easier it will be to define them. Examples include municipal health secretaries in Kenya, data scientists focused on maternal, nutrition and child health in state x or y in India, and medical professionals in obstetrics and gynecology in the region or hospital x.*

Avoid: *generic or broad definitions, such as "citizens" or " stakeholders". They are often of little use when choosing the most effective data product.*

If necessary, learn more about who may need those answers in your municipality, state, or country. Talk to experts and ask them how policy is conducted in your area of research. The more you learn about who makes the decisions, the more you can support them with your answers. Try to list at least three of them. There is more information to support you in chapter 2.

1.7.4 In which potential situations would your audience use those answers, and what for?

Try: *generating scenarios in which these answers could be used for. What are the challenges stakeholders face that your data may be relevant to? What actions can your data lead to? Would they need more guidance when using it, or the freedom to explore the information independently? How much time do they need to understand the information?*

Avoid: *being too optimistic about how far the information you provided can support them. It is good to believe that your project can change the world, but providing answers to basic questions has tremendous value. For example, can your information change policies, or can it be one element that supports investment analysis in that area?*

1.7.5 What is the analytical solution that will provide answers to these situations?

Try: *providing solutions that are simpler, rather than complex. Sometimes you need a simple tool, not a complex one.*

Avoid: *aiming for analytical solutions that you are not secure you will be able to achieve with the data you have. Keep GIGO's law in mind.*

You may need more than one analytical solution for different problems. Unless you have already progressed in your project, we recommend listing all solutions you'd like to explore. Once your project evolves, you can revisit them.

1.7.6 What is the optimal format for your audience?

Try: *going out of your comfort zone to create a compelling data product. Explore different ways to communicate your findings to challenge yourself.*

Avoid: *delivering a product only because you have committed to in your proposal. If it is possible, when revisiting your audience's needs, you can recommend other ways of reaching them.*

Keep in mind that you don't need to deliver a dashboard only because you have the data available. Your findings, in a well presented report, with definitive guiding and support can make a much bigger impact at the end.

1.7.7 Prioritizing your data products

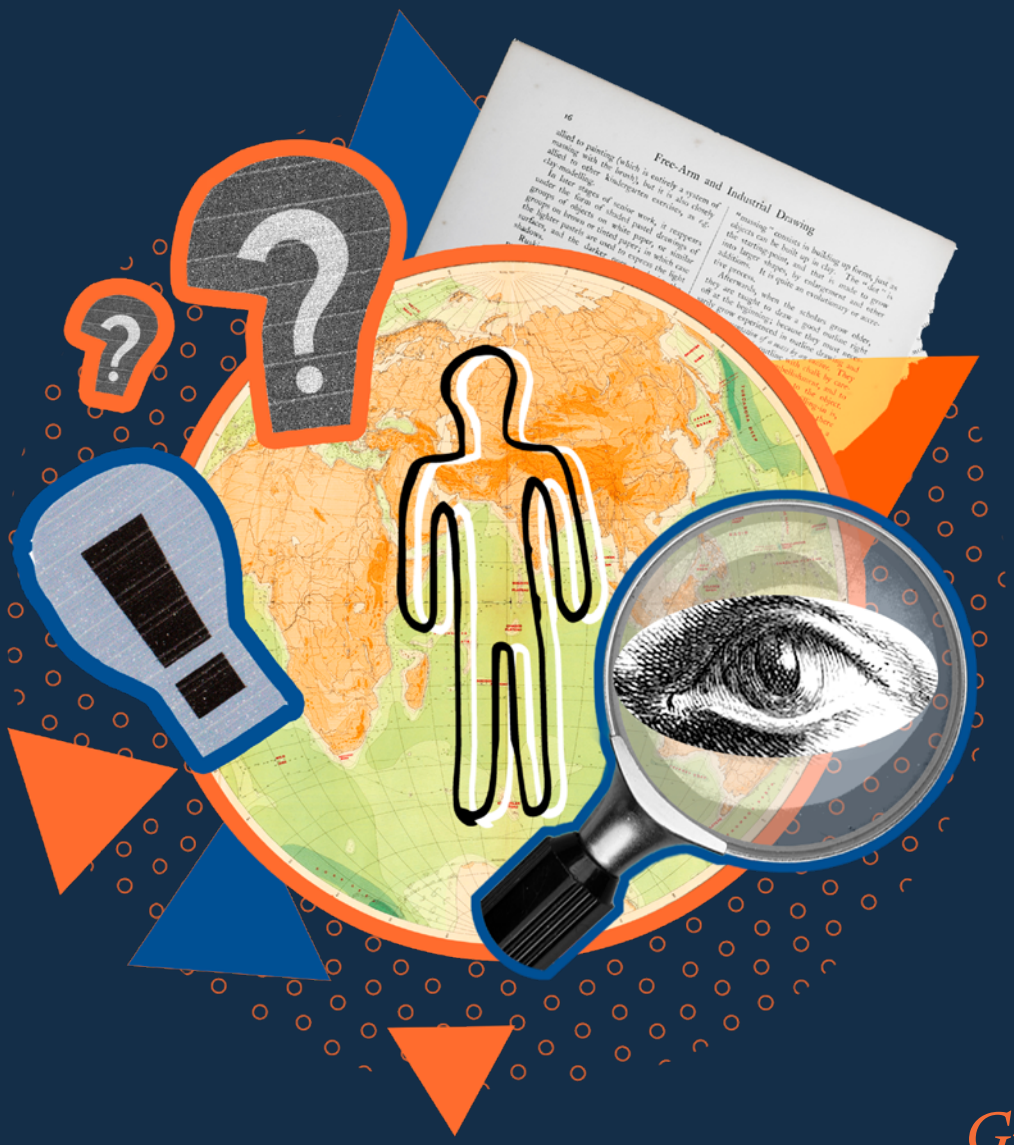
Finally, discuss your data product with your team, considering time and resources. Be both critical and frank about the available knowledge and data. To prioritize, try this final exercise:

- ➔ ***If you had to prioritize only one of the questions to be answered, which one would you choose and why? Make a star next to it for future reference.***
- ➔ ***Which is the most difficult to answer and why?***
- ➔ ***Which is the most logical to start with and why?***
- ➔ ***Which would be the most novel in your area of expertise?***
- ➔ ***Which would be the most useful to support your target audience?***

✱ ***In the end, go back and reprioritize. Are you still choosing your starred question?***

1.8 References and Further Resources

- *Kilkenny MF and Robinson KM. 2018. Data quality: "Garbage in– garbage out". Health Information Management Journal 47(3) 103-105. DOI: 10.1177/183335831877435*
- *Pugh T. 2017. How to Explain What Design is to Non-Designers.* ***Medium****. https://medium.com/@teekatwo/how-to-explain-what-design-is-to-non-designers-72838fc12b09*
- *Davenport TH and Kudyba S. 2016. Designing and Developing Analytics-Based Data Products.* ***Sloan Review MIT****. https://sloanreview.mit.edu/article/designing-and-developing-analytics-based-data-products/*
- *https://designthinking.ideo.com/*
- dl.acm.org/doi/pdf/10.1145/1464291.1464366



Guideline II:

Interviewing, Researching and understanding your user

02

VISUAL SUMMARY

Interviewing, researching and understanding your user

Sharing the results of your projectand having a positive impact is both challenging and complex. To effectively communicate your project results, you must establish who your audience is as soon as possible and center them as the protagonists in the process of developing your data products. This guideline presents the "Human-Centered Design Approach" and details its steps by providing practical examples and recommendations on how to proceed.

When to use?

Use Guideline II when establishing who your audience is. The purpose is to guide you on implementing a Human-Centered Design practice while defining your data project deliverables.

01 *There are four steps to putting Human-Centered Design into practice:*

Establish who your users are; interview them to understand their routines, needs and desires; draft prototypes of your data products and test them with your users; and make a final evaluation to refine your product.

02 *Users' contribution and role will vary along the different stages of the project:*

As will the tools and methods available in a Human-Centered Design practice.

03 *Interviews involve:*

The formulation of hypotheses and specific objectives; the preparation of a script of questions; establishing protocols; conducting interviews (including notes); transcription and analysis; and translation of findings obtained into actionable guidelines.

04 *To overcome common difficulties in the realization of interviews:*

Develop online questionnaires; search for materials and reports that have already analyzed your target audience's behavior; and create personas.

05 *In Human-Centered Design projects:*

Prototyping and testing with users are continuous practices with shifting focus depending on the stage of the project.

What to expect?

1. Increased awareness about the importance of putting humans (your audience) at the center when developing a data product.
2. Knowledge on Human-Centered Design practice.
3. A framework to establish who your users are.
4. Recommendations on main points to be covered when planning interviews.
5. Insights on prototyping and testing with users.

At every step in the process, please keep in mind:

Users are experts about their own reality

Users are not only your target audience, but also important co-design partners

Be as specific as possible when defining your audience

Prototype and test with your users for feedback and continuous improvement

Talk to the user before setting the data product

Before creating an amazing dashboard with beautiful graphics updated daily, or an extremely detailed report with 50 pages full of data tables, you must first speak with your audience to understand if these products make sense to them. You might discover that there is no need for something so complex, and that, in fact, what your audience really needs is a weekly email with a summary of your updated results.

Developed by Odd Studio, in partnership with Fundação Oswaldo Cruz (Fiocruz), and Global Health Strategy (GHS Latin America)
Iniciativa: Bill and Melinda Gates Foundation | 2023 | V 0.1

2.1 What is human-centered project?

It might seem obvious that the results of your research should serve people, but sharing them with society and having a positive impact is both challenging and complex. To successfully communicate your results, you must as soon as possible establish who your audience is and center them as the protagonists in the development of your data products. In doing so, you can begin to see your project as part of a process of Human-Centered Design.

Every person is unique in their qualities, faults, desires and expectations. As such, it is important to see them as experts of their own reality. Following this train of thought, we can identify the routines, questions, problems and desires of the various audiences involved. This is also helpful in selecting the formats for the most appropriate data products based on the characteristics of each of these groups of people.

Thus, before creating an amazing dashboard with beautiful graphics updated daily, or an extremely detailed report with 50 pages full of data tables, you must first talk to your audience to understand if these products make any sense to them. You might discover that there is no need for something so complex, and that, in fact, what your audience really needs is a weekly email with a summary of your updated results. In this way, users should not only be seen as passive individuals, but as active partners who contribute to the whole process of their data products' development.

There are four steps to put Human-Centered Design in practice that we suggest ought to be fulfilled by your research group. In the steps below, you may encounter some terms which you are not very familiar with. Don't worry, we will explain each stage in the following sections:

- ***Establish who your users are;***
- ***Interview people in these different groups to understand their routines, needs and desires and relate these parameters to proposed solutions in your data product;***
- ***Draft prototypes[1] of your data products, implementing your planned solutions. These prototypes must be tested with your users, in order to determine if the functions and format are appropriate for the project's intentions. You can then redefine objectives and make necessary changes to align your product with the expected results;***
- ***Lastly, make a final evaluation of your data product, presenting it to selected users, to refine its delivery.***

1 *The concept of a prototype will be further explained in section 4.11. For now, it is sufficient to understand that prototypes are models and rough versions of your data product. It is recommended you build them continuously throughout the entire project in order to test concepts and functionalities with your users.*

These four steps will be detailed in the following sections. Through them, we can observe that interviewing users is important throughout the development of your project as well as in testing before final delivery. During each stage, the possible contributions and the role of the user vary, as presented in the following figure:

	User contributions in the developmental stages of the data product.		
	Stages of the project:		
	Beginning	***Middle***	***End***
Stage Objective	*Establishing design guidelines for the project.*	*Prototyping and validation of development paths.*	*Verifying that the final results are aligned with the expectations of the project.*
User contribution	*Sharing experiences about routines, desires and issues that can support the creation of proper design guidelines.*	*Interacting with prototypes and sharing opinions on adjustments to be made to the project*	*Testing and evaluating data product's final versions*
Tools and methods	◆ *In-depth interviews;* ◆ *Personas.*	◆ *Prototypes;* ◆ *Think aloud (page 32)*	◆ *Usability testing workshops;* ◆ *Focus groups.*

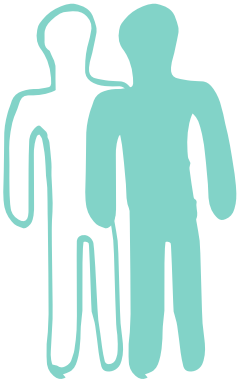
This is not a simple undertaking, but it is the right path!

It is important to be transparent from the start: although there are only four steps, this is not an easy enterprise. It takes time, requires the support and involvement of different team members, and results do not appear overnight. However, by putting this process into practice and learning from your mistakes and successes, you will be able to see the transformative power and value of bringing users into the center of a project.

2.2 Establish who your users are:

Users include everyone who could potentially see and use the value generated by the data products you and your research teams create (OUDEN, 2012). A dashboard, for example, can generate value for city managers by providing indicators which support them in the policy decision-making process. Likewise, an interactive website that describes the history of the evolution of vaccination coverage in a country can contribute to the advocacy efforts of NGOs concerned with this issue.

Hence, **it is important to establish for whom your products can generate value**. Gather your team and discuss potential audiences who might consume the data products you are developing. Take note of all the audiences that come to mind in the first column in the framework. Do this without judgment, acting freely with your team. At the end, you can return to the generated ideas and debate in more depth what appears most appropriate.



But watch out! During this process, as well as during your final analysis, it is important to avoid the frequent error of creating and developing products while only taking into account generic and/or broad groups. For example, when we speak with researchers and ask about their target audience, we have frequently encountered the following appeared:

- ***"I want to communicate with public authorities!" Problem:*** *public authorities are a broad and diverse group. There may be people dedicated to the formulation of public policies, others to the implementation of policies and law enforcement. Each one may have different interests in the types and ways of accessing information according to their functions.*
- ***"With my dashboard, managers will be able to make better decisions about this topic!" Problem:*** *selecting a delivery format having in mind a group with which you have not spoken or you are not familiar risks undermining the efficacy of the project.*
- ***"I will deliver my data to health workers and they can come to their own conclusions." Problem:*** *exploratory data products can be a problem when we have not determined the questions relevant to your audience's daily life. Wrong conclusions can be drawn and your data product becomes a "disservice".*
- ***"My project serves society as a whole!" Problem:*** *Even though this seems positive, it is a very ambitious response. Data products can hardly include audiences so widely conceived at the beginning of the project's development, when they possess limited resources and do not have access to the whole population.*

The examples above are insufficient, as they do not take into account the significant differences in the way each group of users

receives, consumes and utilizes the results of your research. For instance, federal public stakeholders look at indexes which state managers do not have access to or have not heard of. Even within these groups, there are professionals whose areas and assignments are distinct or particular. For this reason, try to be as specific as possible. We list some examples of good user descriptions:

Examples of good user descriptions

- *Data journalists specializing in scientific communication about non-transmissible chronic diseases;*
- *Public stakeholders of small municipalities that lack access to basic health services;*
- *Federal public managers in the Ministry of Health, or a similar entity, assigned to departments dedicated to women's health;*
- *Researchers studying neglected diseases;*
- *Hospital managers following near-miss cases protocols.*

It is interesting to note that some of these profiles, despite being decision makers, may only be indirect consumers of your data. Consider, for example, a mayor or health secretary in a small town. They may rarely, if at all, open an exploratory dashboard or read a scientific article. These activities are usually conducted by management advisors, who have the time to dedicate to exploring data, generating insights and producing executive summaries that can inform decision-making. In this case, it is likely that the most appropriate step is to interview the advisory workers, rather than the managers themselves.

Suggestion!

When completing a list of the most important user profiles, take this opportunity to write down the names and contacts of up to three people who fit these profiles and who you can contact to carry out the interviews detailed in the following step.

Remember to also establish recognizable criteria to select or discard names of people to be interviewed. For example: your project requires interviews with pregnant women to understand how they are assisted by the public health system in their localities. It would be best to arrange interviews with people who are currently pregnant, rather than interviewing people who were pregnant five years ago and who may no longer remember the details of their experiences at that time.

2.3 Interviewing users to understand their routines, needs and desires:

After establishing who the people you want to interview are, you will need to prepare protocols and scripts that can guide you before, during and after your conversations. Below are the main points to be covered in this step:

➔ ***Formulate hypotheses and specific objectives:*** *The goal of this stage is to formulate hypotheses and questions about the routines, needs and desires of the people you wish to interview. See in the next figure questions you can ask during interviews to learn about your users.*

Suggestions of questions to formulate hypothesis:

- *What challenges does this person face in their daily routine and what challenge does your product solve? Try to describe the challenges you know and those that you assume. Later, you can confirm your assumptions by talking to people and testing your prototypes;*
- *What level of knowledge does this person have regarding the subject? To define levels of expertise, make a comparison with people you know have an in-depth understanding of the subject.*
- *In what way does this person normally consume information? Think about frequency, location (on the street, traveling, at home), media (smartphone, computer, or, consider the type of media, such as podcasts, videos etc.) and time dedicated to the consumption of information. Consider also the presence of other people during this consumption (check if the person works alone or if there are more people to share information and questions with).*
- *What actions might this person take after reading your content? Propose a bill? Identify investment locations? Write a news article? Create a presentation and share data with other researchers? Generate new research questions to be further explored? Think about the real actions this person can enact.*
- *What are this person's life experiences, opinions and biases? Consider political context, use of technology, time and experience in the position, family and other aspects that may influence their perception and reception of your research subject.*

➔ ***Prepare a script[2] of questions:*** *starting from your hypotheses and objectives, prepare questions that correspond to what you have noted. Remember that a good question (i) is transparent and direct, (ii) does not lead or judge the respondent, (iii) cannot be answered with a simple yes or no, and (iv) answers at least one of your specified objectives.*

2 *To prepare your script and analyze interviews outcomes, the following articles may be useful: McIntosh MJ, Morse JM. Situating and Constructing Diversity in Semi-Structured Interviews. Global Qualitative Nursing Research. 2015;2. doi:10.1177/2333393615597674 and Braun V; Clarke V. (2006) Using thematic analysis in psychology, Qualitative Research in Psychology, 3:2, 77-101. Available in: <https://www.researchgate.net/publication/235356393_Using_thematic_analysis_in_psychology>*

- ***Establish protocols:*** *protocols help you develop your relationship with respondents by making sure the response procedures are comprehensible, helping to monitor time and progress, determining who is responsible for documenting and recording interviews as well as writing thank you notes post-interviews.*
- ***Conduct the interview (and take notes):*** *try to conduct the interview in pairs, with a person responsible for conducting the interviews and another taking notes, recording the conversation and managing time. Make the conversation natural and comfortable for the interviewee. If possible, practice the interview with someone on your team in advance.*
- ***Transcribe and analyze:*** *In order to analyze your results, it is crucial that you record the answers obtained in the interview. A word by word speech transcription takes a long time and is usually impracticable and less productive. Recording through video and audio can be enough to retain certain points. Nevertheless, summarizing the interviews into main topics to determine the most relevant ideas and discuss results is a good alternative.*
- ***Create guidelines for the project:*** *this last step involves translating the findings and observations obtained from the interviews into actionable guidelines for your project to help you and your team transform the results into new data products or to change a previously planned product delivery format.*

At this stage, there is no magic formula. You and your team will have to discuss the points that draw the most attention and then establish priorities. For example: an initial hypothesis suggested that people would like to have large and in-depth reports with a lot of data presented in tables. However, interviews indicated that your audience does not have time to read this amount of information. Based on this, it might be a good idea to propose data products that curate the most relevant content and deliver this information in a timely manner. There are not necessarily any right answers, but rather answers that may be more or less adequate for the audience's reality as determined by your research process.

There are several common difficulties in the realization of interviews, including difficulties related to financial or personal resources, or time and access to your audience. In these cases we suggest the following alternatives:

- ***Develop an online questionnaire and share it with communities of experts on the subject;***
- ***Search for materials and reports that have already analyzed your target audience's behavior;***
- ***Gather your team and create a description of an imaginary person who would be part of your target audience (also known as creating personas[3]).***

3 *To know more about the process of building personas, you can check the article "Personas", from the Interaction Design Foundation,* ***available here****.*

2.4 Draft prototypes to test with your users

After completing your interviews, it is time to develop your data product. At this stage, users' opinions continue to be valuable, as they can assist in guiding the development of the rougher versions of your products, known as prototypes.

Prototypes are rudimentary, low-cost models which help you envision what your final product could be. By definition, they are unfinished, temporary and quickly developed. In this process, there is one golden rule: build prototypes quickly, test them with your users, and discard them afterwards, taking what has been learned and incorporating it into future versions of the prototype.

Do not be afraid of using and presenting rough, incomplete or even simulated data. It is also not necessary to get bogged downstuck in refining aesthetics. Prototypes are used for testing alternatives and their importance is limited to what you expect to be developed and/or evaluated in each version. This must be communicated to your audience, along with the limitations of each preview. And remember: we are still not discussing disseminating your product. These tests are performed with a specific group of your audience that has been pre-selected by your team.

The basic idea of the prototype is to foster dialogue between your team and your users, considering your product and contexts of use, so that everyone can view the product as something tangible and so that your team understands, during the process, what is effective and what can be improved or discarded.

Perhaps the concept of prototypes is a little alien or scary to you But there is no need for worry: prototypes can be less complicated than you might think. See the following examples:

- ***A one-page executive summary, printed in your workplace and written using simulated data and fictitious values for the most important indicators. It can be presented to your users to discuss what they think of the given alternative, including the suitability of the medium and language used, the way the information is arranged, the explanation of the text, and the need for changes, among other aspects;***
- ***A cardboard with post-its simulating the organization of a dashboard, where each post-it represents a data visualization from the page., It can be useful for evaluating the occurrence of gaps in the information and the audience's comprehension of the product, as well as to verify if there is any valuable information that is misrepresented;***

➔ ***A text file with an initial draft of your scientific article can also be considered a prototype! This initial text could be worth discussing with your peers to think about the relationship between the context of your research and the main results you seek to publish.***

Remember!

Sharing your data products online only when they are complete is a risky strategy! A final product demands a lot of energy, time and work. If at the end of the project you develop a product that is of little use to your user, you may be extremely frustrated. Therefore, users' opinions are essential to determining the scope of your objectives during the development process of your product, making continuous refinements possible. There may be no space for personal contributions or for strategy changes and corrections.

Testing your prototypes:

In the ***Think Aloud***[4] *method, you ask your users to use your prototype while verbalizing aloud what they think about it as they explore the material. It is a very simple and financially viable method, which generates valuable insights about the way users think and use your product.*

2.5 Finish your data product and improve delivery by testing it with your users

Prototypes become more and more refined throughout the development and improvement process, until your team reaches the version that will be the final product.

At this stage, taking into account your schedule, the nature of testing changes: instead of a conceptual validation of the objectives and the ideal format for the data product, tests start to verify how easy it is to use and what users understand about the product. In this step, you can also evaluate and discuss launching and disseminating strategies for your product.

4 *You can find more information about this technique at* ***nngroup.com****.*

To that end, best practice consists of organizing workshops and gathering four to eight users to test whether your product is both successfully meeting their demands and is appropriate for their routines. If the product is a dashboard, you can test to see if your users can find all the information they need to make decisions about a specific topic. If you are designing an executive summary, deliver it to the group of key users and discuss with them about the usefulness of the information given, whether the data is legible enough or even if it should be printed or digital.

Another important aspect to take into account during these workshops is how you will facilitate discussions between users. You can either speak with individual users to understand their personal views or organize focus groups of up to 5 participants to explore the group's understanding of your product.

Focus groups:

Focus groups are discussions led by a moderator with a small group of participants in a semi-structured or unstructured way. The objective of a focus group is to attain information about a certain group's position (behavior, language, logic, manners) on a topic under investigation (Tremblay et al., 2010).

According to Scrimshaw and Hurtado (1987 apud TRAD, 2009), the person responsible for moderating a focus group should perform the following steps: (a) introduce a discussion topic and keep it interesting for the group; (b) emphasize to the group that there is no right or wrong answer and avoid interfering with their opinions and judgments; (c) observe the participants, encouraging each one to speak; (d) seek community "cues" from the participants' discussion and speech; (e) build connections among the informants to deepen, individually, the answers and comments considered to be relevant by the group or the researcher; (f) observe non-verbal communication and the speech rhythm of the participants, within the time provided for debate.

The importance of this final stage is to understand your products' potential for success by listening to what users have to say about their experiences interacting with them.

2.6 Key points of this chapter

- ***Users are experts on their own realities. Talking to them will help you understand how your data products respond to their needs.***
- ***Users should not only be seen as your target audience, but also as important co-design partners during the development of your products;***
- ***Defining vague audiences is unproductive. It is necessary to establish an effective group for communicating your results;***
- ***Users can contribute in a variety of ways in each stage of your data product's development;***
- ***Create rough prototypes and test them with your users to elicit feedback that will allow you to continuously improve the development of your product;***
- ***The end is not really the end. Remember to perform tests of your final product with users. These tests may support you in further refining your product, help verify the effectiveness of the proposed solution, and assist in the dissemination of your product.***

2.7 References and Further Resources

- *https://www.nngroup.com/articles/thinking-aloud-the-1-usability-tool/*
- *Braun, Virginia & Clarke, Victoria. (2006). Using thematic analysis in psychology.* ***Qualitative Research in Psychology****. 3. 77-101. 10.1191/1478088706qp063oa. Available in: <https://www.researchgate.net/publication/235356393_Using_thematic_analysis_in_psychology>.*
- *OUDEN, E. Levels of Value. In: Innovation Design: Creating Value for People, Organizations and Society. London:* ***Springer****, 2012. P.13-20.*
- *Trad, Leny A. Bomfim. Grupos focais: conceitos, procedimentos e reflexões baseadas em experiências com o uso da técnica em pesquisas de saúde. Physis:* ***Revista de Saúde Coletiva*** *[online]. 2009, v. 19, n. 3 [Acessado 14 Novembro 2022], pp. 777-796. Available in: <https://doi.org/10.1590/S0103-73312009000300013>.*
- *Tremblay, M. C., Hevner, A. R., & Berndt, D. J. (2010). Focus Groups for Artifact Refinement and Evaluation in Design Research.* ***Communications of the Association for Information Systems****, 26. https://doi.org/10.17705/1CAIS.02627*

Guideline III

Communicating to Stakeholders and Policymakers

03

VISUAL SUMMARY

Communicating to stakeholders and policymakers

Different factors create distance between the acquisition of scientific knowledge and the formulation of policies to improve healthcare systems. For example, the difference in pace between the formulation of public policies and research as well as the type of language used to communicate research, which is generally not very friendly to a non-specialized audience. Thus, this guide presents key actions to bring together scientific knowledge and health policy, promoting better dissemination of knowledge generated.

When to use?

Use Guideline III in your research routine. Its purpose is to build a culture of proximity between researchers, stakeholders, and policymakers so that they can refer to your work when making health management policy decisions.

What to expect?

1. Steps to develop research appropriate to the needs and priorities of the population and the formulation of health policies.
2. Assertive dissemination of your project results, promoting increased visibility and applicability.
3. Ways to build trust and belonging between the parties involved.

01 *Have a multidisciplinary team:*

Consider different areas of activity and interest when forming your team, such as communication, public management and civil society.

02 *Take into account the context and participation of public management:*

Integrate policymakers into your work to promote engagement, belonging, and trust. It is also important to consider different sociocultural contexts.

03 *Use accessible language: Avoid jargon, make statements simple:*

Be concise and use familiar vocabulary without underestimating your audience. Finally, diversify and expand your communication channels.

04 *Prioritize impacts, indicating solutions:*

Focus on promoting changes, presenting the hows, whys and whats. Indicate pathways for action and implications for health policy.

05 *Explain that research is part of a process:*

Present motivations for your research, how it has been carried out, highlight the scope (time and geographic cut-off, sample population, etc.) and possible limitations.

At every step in the process, please keep in mind:

- **The information must arrive on time**
- **Start with something simple**
- **Listen and think like a policymaker**
- **This is a collective action**

Genuine motivation in political engagement

Communicating with stakeholders and policymakers requires commitment in a territory of uncertainties, whose return may be difficult to measure or only quantifiable in the long term. However, it is important to remember that this exercise, in itself, has value as a field of innovation in carrying out research and formulating policies.

Developed by Odd Studio, in partnership with Fundação Oswaldo Cruz (Fiocruz), and Global Health Strategy (GHS Latin America)
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3.1 Connecting scientific research with healthcare management

The knowledge your research produces can be applied to help formulate public policies and improve healthcare systems, which is beneficial for the population. **To do this, however, you will need to connect scientific knowledge with action in healthcare management. Several factors may separate these two fields, such as:**

- ***The rapid pace at which public policies are developed is usually incompatible with the timeframe required to collect or produce high-quality scientific evidence;***[5]
- ***Public policies differ from research in that they are not developed in an ideal or pragmatic process. Planning, implementation and evaluation are performed simultaneously and decision-making must consider institutional demands, objectives and limitations;***
- ***Language and research communication format serve as barriers to understanding the content for a non-specialized audience;***
- ***The recent decline in the credibility of scientific research necessitates that more people engage in the promotion and use of science. However, the distance between researchers and managers can make it difficult to build bonds of trust and safety.***

Consequently, on one hand, health workers and stakeholders need knowledge and support for their decision-making processes. On the other hand, the research that safeguards valuable knowledge has difficulty connecting and participating in healthcare. This impacts information access and the use of research to meet collective health demands, as, for example, in health emergencies such as the Zika virus outbreak in Brazil, the COVID-19 pandemic and responses to variants and the persistence of diseases like malaria and dengue in many regions of the world. **Thus, multisectoral actions are important to bring these areas closer, allowing for the adoption of a culture of mutual responsibility.**

✱ ***This guide indicates key actions that researchers can take to build communication channels with public health authorities and health-care providers, promoting better research dissemination and generating more knowledge. These recommendations seek to overcome obstacles and promote evidence-informed policymaking.***[6]

5 *As presented by Romão (2021), evidence is understood as any type of information produced through systematic processes, as seen in the results of scientific research and institutional protocols for data collection and analysis, formal consultations with civil society and other interested parties, and monitoring of public policies and policy evaluation processes.*

6 *Evidence-informed policymaking is a systematic and transparent process to access, evaluate, adapt and apply scientific evidence in decision-making (Brazil, 2020).*

3.1.1 Results we hope you achieve:

Close the gap between your work and healthcare stakeholders by developing the following skills:

a. ***research development contextualized to the needs and priorities of the population and healthcare stakeholders;***
b. ***the effective dissemination of your research project and its results, obtaining better visibility and improving its application; and***
c. ***the building of trust, belonging and safety between all parties involved.***

3.1.2 Why use these guidelines and when?

These guidelines propose possible changes to your professional routine. A culture of closeness is important to encourage the dissemination and your audience's use of your work, as well as developing a better understanding of the criteria and important factors in decision-making, which include fields outside of scientific knowledge.

3.2 Recommendations for communication with healthcare stakeholders

The steps listed below cover development of your research and communication of your results and emphasize direct and routine dialogue with stakeholders:

3.2.1 Have a multidisciplinary team, with different areas of interest and expertise in synthesizing and applying evidence

In the field of Knowledge Translation[7], different groups participate in the development and implementation of evidence-informed healthcare policies. For example,

7 ***Knowledge Translation*** *is a dynamic and interactive process that includes synthesis, dissemination, exchange and ethical application of knowledge to improve health and to provide more effective health services and products, serving as a bridge between research and decision-making (Brazil, 2020).*

researchers can participate in identifying problems, defining research questions and searching for evidence. Other activities are also relevant, such as preparing for implementation. It is important to identify your position in these stages and build your team with individuals from different areas of expertise, like communication professionals (journalists, designers, advertising agents etc.) and healthcare consultants.

3.2.2 Know your audience

When your audience is involved in healthcare management, there are key questions you must ask to help you understand this audience's needs, which will in turn support the development of your communication strategies.

For this group, it is helpful to ask about:

- *Sex, age, race/color;*
- *Schooling and technical knowledge regarding the subject of interest;*
- *Profession and experience in health management;*
- *Location and time of work;*
- *Main motivations and challenges in work routine;*
- *Main criteria for decision-making;*
- *Common tools used when searching for references;*
- *Availability to communicate with other people;*
- *Openness to dialogue and interest in leadership and engagement/mobilization.*

3.2.3 Present your research and results with accessible language

Accessible language involves crafting your message so that it is comprehensible for your audience, i.e., a text that can easily be understood, avoids interpretation difficulties, is easily adaptable, and is readily applicable. These parameters should be considered in any sort of research communication, as specialized research demands previous and in-depth knowledge for comprehension. Thus, you must develop your message concisely, using familiar vocabulary.

Here are some suggestions to help you:

- *Avoid jargon and make simple and clear statements, without underestimating your audience. For instance, people can likely infer what grouping is, and it is possible to explain a study's intentions and the complexities of relationships between groups, even without using the term "k-means or cluster."*
- *Do not be afraid to communicate the complexity of your research, but do not forget to prioritize the impacts of your study, relating both problems and solutions. That research is a complicated endeavor is common sense. Therefore, it is essential to demonstrate the reasons for developing a complex study, emphasizing its potential influence on the routine of health management. For example, people should understand the importance of arbovirus propagation and its relationship with the reproductive cycle of vector insects, even without detailing the population dynamics of these insects or complex decisions you made in the data collection process.*

3.2.4 Focus on communication that promotes change

When considering the development of public policies, stakeholders often have only partial information regarding the challenges they face, their options and possible consequences. Using evidence does not eliminate uncertainty and risk factors, but it is crucial to reduce risk and improve outcomes.

In this way, communication for stakeholders should seek to impact this audience, as it is an act of persuasion and not merely of "delivery" or "transmission" of knowledge. For this reason, it is not enough to send dashboards without synthesizing knowledge they contain, or to open up one's data without indicating the solutions that were utilized to gather them. The objective is collaboration so that healthcare decisions are supported by scientific knowledge. Therefore, you must present the "how", "why" and "for what".

Otherwise, it is likely that the public's response to your product will consist of questions you thought were already answered, misinterpretations of your work or even a complete lack of feedback.

3.2.5 Information must be useful for those receiving your message

Consider what would make your work appropriate in a variety of socio-cultural contexts and frequently consult healthcare management during the development of your research and the reporting of results. Your message should be aligned with institutional capabilities, objectives and priorities. Ask yourself: Is my research subject a priority for the local healthcare

system? Can the solutions proposed be implemented with the resources and technology available? Is there political interest to engage with questions that I put forth? If not, is there a cultural background through which I can seek support from members of my community?

If there is so much information, why are we in a crisis of disinformation?

It is true, the amount of information created and disseminated has never been higher, even in academia. But the problem of disinformation does not come from the abundance of material available. It is the content of this information and how it is addressed. The main academic publications are produced and directed among peers, distant from the practical and daily needs of the population and decision-makers, resulting in public policies that are developed without considering research-based evidence.

3.2.6 Provide evidence that leads to action

The knowledge produced through your work should be contextualized and directed towards practical courses of action. Given changes and inaccuracies in health management, evidence is more likely to be implemented when it recommends strategies that consider local barriers, advantages and objectives to be considered in the formulation of public policies. This requires experience and a broad knowledge of health management itself. If this is not the case of your team, another option is to describe the public-policy implications of your research (see examples in the following text box). It is always prudent to recognize one's own limits and seek partnerships to expand them.

Evidence that indicates where action can happen

- *A research group does not have experience or qualified partnerships that can present strategies for expanding vaccination coverage to stakeholders, but they instead build a panel with maps that indicate areas of opportunity and priority in vaccination campaigns, based on well-known and validated indexes;*
- *Offer workshops with the management of care centers for people undergoing treatment for dependence on illicit substances in order to demonstrate how a research questionnaire could be included in the routine of patient care, seeking to identify key attributes of the patient's history that may influence the possibility of recidivism;*
- *Although it may not have maternal and child health care guidelines, the research project enabled the distribution of booklets that present new perspectives about the gestational period for both patients and health workers.*

3.2.7 Explain how your research is part of the knowledge building process

In order for people in general to have a better understanding of what scientific knowledge is, you must describe this knowledge as both dynamic and being continuously constructed and improved. Therefore, it is important to show that your research is part of the broad and cumulative process of knowledge production, rather than a source of truths to be imposed.

For this reason, it is important to express the study's motivations, describe how it was conducted, highlight its coverage (time, geography, population etc.) and include limitations. When possible, you can provide your target audience access to your data. As for results, it is often best to indicate how your conclusions can be applied by potential users (stakeholders, health service professionals, civil society etc.).

To better understand this idea, we present a hypothetical study investigating the relationship between the volume of pesticides applied in an urban area and child development in the last decade. For stakeholders, it may be important to understand which urban areas have been considered and why, as well as knowing what motivates the researchers to study the last ten years rather than a greater or lesser period of time. To establish trust, it is also useful to explain the focus on child development and describe how many children were included in the sample as well as the criteria used. Knowing where the data source is also necessary as are the limitations given the sample's or cohort's nature.

These are a lot of responsibilities!

It's true. And we have to add another... It is important to emphasize that the suggestions proposed here do not imply a decrease in the quality of your research. One should not be done at the expense of another, but rather your research and its applicability should complement one another, and this process can help develop new ways of conducting research.

3.2.8 Promote partnerships and get closer to stakeholders during the development of your study

When everyone involved understands their role and actively participates in shared processes, they develop feelings of engagement, belonging and trust. Credibility can be a determining factor in the acceptance and use of your evidence, because it fosters openness and encourages listening to and exchanging information. Furthermore, the exchange of ideas between researchers and policy makers can promote the development of research that is better suited to the specificities of local practice, as well as to a gradual and more in-depth comprehension of the work and researchers' experiences. It is also important to remember to put yourself in the position of listener, too.

Let's consider a scenario in which you are researching the possible impacts of ultra-processed foods on the occurrence of chronic inflammatory diseases among incarcerated populations.

To consider your main questions, it would be helpful to contact prison managers and determine what they know about the subject to better understand how decisions about what food is offered to the participants of the research are made.

Decision-making processes are often complex and context-driven. Don't underestimate or judge whoever makes them, being curious about how and why they do it is key to support you in the discovery process.

3.2.9 Diversify and expand your means of communication

The format you select to publish evidence is often one of the main obstacles to its adoption by stakeholders. You should therefore consider other media besides the usual scientific communication format. These alternatives might include social media, executive summaries, presentations, web conferences, and other types of emotional and attractive narratives. For many of these formats, visual resources, such as infographics, mind maps, illustrations and tables, are excellent ways to make your material more interesting and easier to understand. These alternatives promote more interest in your work and improve the likelihood of getting feedback from your audience.

The best alternative will be determined by the message you seek to transmit, the volume of information and how you will interact with the audience, the viability of certain media for your particular research, the availability of technical, human and financial resources, as well as the deadline.

As an example, a podcast may be an interesting choice to make an investigative presentation about the diverse factors that expose various groups of the population to a high risk of contracting COVID-19, indicating which social groups require more assistance from public resources. On the other hand, a booklet could be more efficient to communicate with professionals and managers of small health centers, who need to rapidly recognize risks associated with malnutrition in pregnant women and infants.

The message is the priority!

The variety of contents available and interesting communication methods to choose from may lead you to select a bolder communication option that seems promising, without evaluating its viability for disseminating your work. Often, the text or media do not match your product or the media is not appropriate or accessible to your audience. For this reason, it is essential to determine the message you want to share and to whom this message will be addressed, and only then identify possible means of communication.

As an analogy, we can think of the delivery of several Christmas packages. The characteristics of the present determine the delivery method, which can be an envelope for a card or a big box for a bicycle. These differences are also important when you select the means of transportation for this gift, as well as when you think about the distance between the origin place and destination, and even the characteristics and desires of the person to whom this package is addressed.

3.3 To conclude, remember

- *Your information must be timely: health management time differs from research time, but to be effective, information must arrive in time for its audience to implement it. The suggestions above can help you in this process. However, continuous communication, including the presentation of partial results, within reason, can be quite useful;*
- *Start with something simple: These guidelines introduce ideas that while perhaps not new, are still not widespread. If you are unfamiliar with the above ideas, remember to start with something simple;*
- *Listen and think in partnership with your audience: This is a process of collective learning. Always remember to go back to your audience for more insight into their needs and expectations;*
- *Simplify in order to expand: Research is a complex activity, we know. However, it does not need to be represented in a complicated way. What needs to be shared is just that which is useful for the audience, in a language that enables them to make use of your results.*
- *This is a collective action: Again, this is an activity that involves co-responsibility. Remember that both establishing partnerships and building multidisciplinary teams are essential for the effectiveness of any project, as well as seeking practical purposes for your work and avoiding the research/politics dichotomy, as this does not promote useful results.*

3.4 Discussion: this guideline is not a panacea

For those conducting research, generating interest or working alongside stakeholders and health workers may cause feelings of frustration, skepticism or insecurity. These feelings may be the cause of the many obstacles found or the few examples of success known. There are also risks, such as the misuse or opportunistic selection of evidence, harassment and reputational damage. Furthermore, even open processes of dialogue can encounter issues of bias, for example, with issues of gender and race.

We have observed that these challenges are many and that careers in research already follow their own trajectory. Thus, this guideline alone may not be enough to help you in the midst of the multifactorial universe that communication between research and health policy formulation entails. Entering this field implies traveling through uncertain territory, from which returns may be difficult to measure or be invisible in the short and medium term.

✱ ***For researchers who do decide to take on this commitment, it is important to remember from the beginning that this path demands genuine motivation to participate in political activity. This is a paradigm shift and is an exercise that has great value as an innovative area for conducting research.***

3.5 References and Further Resources

- Assis Luiz Mafort Ouvern, André Luís Bonifácio de Carvalho, Nádia Maria da Silva Machado, Marcelo Rasga Moreira, José Mendes Ribeiro. Municipal managers at the Unified Health System: profile and perspectives for the 2017-2020 Management Cycle. **Saúde Debate**. Rio de Janeiro, v. 43, n. especial 7, 2019. 75–91 p. DOI: 10.1590/0103-11042019S706
- Brazil. Ministério da Saúde. Secretaria de Ciência, Tecnologia, Inovação e Insumos Estratégicos em Saúde. Departamento de Ciência e Tecnologia. Diretriz metodológica: síntese de evidências para políticas [recurso eletrônico] / Ministério da Saúde, Secretaria de Ciência, Tecnologia, Inovação e Insumos Estratégicos em Saúde, Departamento de Ciência e Tecnologia. – Brasília: **Ministério da Saúde**, 2020. 70 p. http://bvsms.saude.gov.br/bvs/publicacoes/diretriz_sintese_evidencias_politicas.pdf
- Davi Romão. How to improve the culture of evidence use in the Brazilian public sector: a learning brief. International Network for Advancing Science and Policy (INASP). **England and Wales**, 2021. 18 p. www.inasp.info.
- Kathryn Oliver & Paul Cairney. The dos and don'ts of influencing policy: a systematic review of advice to academics. **Palgrave Communications**, 2019. 5–21 p. https://doi.org/10.1057/s41599-019-0232-y | www.nature.com/palcomms
- www.sites.epsjv.fiocruz.br/dicionario/verbetes/gessau.html

Guideline IV: Communicating with journalists

"You have zero control over what a reporter writes, but you have 100% control over what you say."

Unknown author

04

VISUAL SUMMARY

Communicating with journalists

Given the central role of research in the formulation of public policies and the development of a knowledge-based society, communication with journalists is necessary to disseminate new scientific information among the general population. However, interacting with journalists can be challenging, as it requires entering into a whole new world with its own rules and ideas. Thus, this guideline offers recommendations on how to plan and disseminate your research in the media.

When to use?

Use Guideline IV when planning a strategy to disseminate your research in the media or when approached by a journalist to provide information about your research.

What to expect?

1. Greater awareness of the importance of communicating your research findings to the media.
2. Understanding of the main characteristics of a news agenda as well as on what makes an item newsworthy.
3. A guide for disseminating your work with journalists.

01 *Characteristics that make a fact newsworthy in major media platforms:*

Relevancy, novelty, proximity to people's lives, notoriety, present time.

02 *Induced versus spontaneous agenda:*

The former involves planning. Advanced notice is given to schedule visits or interviews. In the case of the latter, however, the agenda emerges as a reaction to an event that makes your research particularly newsworthy.

03 *Dissemination steps:*

Developing a timetable; determining your target audience; setting your objectives and goals; taking action; making partnerships (during the whole process); establishing responsibilities and roles; and preparing yourself for possible crises.

04 *How to be a good source:*

Do not talk about subjects you are not familiar with; the institution you are working with is relevant; consider the challenge of connecting with journalists as part of your job; making time to speak with journalists is essential.

05 *Checklist for successful communication with journalists:*

Identify opportunities for communication during your research; involve your partners and the press; plan your agenda; contact journalists and/or newsrooms; prepare for the interviews; and collect results.

At every step in the process, please keep in mind:

Journalists can serve as allies in combating misinformation and disseminating your work

A report's agenda is to journalists what a hypothesis is to researchers; it must be investigated

Like any other skill, speaking in a clear and objective way requires training, practice and knowledge.

Focus first on the message and only then on the nuances

When talking with journalists, it is important to reverse what might seem to be the logical order: conclusions should be presented at the beginning and connected directly to key messages. Only at the end should you add why or how you arrived at these conclusions.

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4.1 Communication, research and public health

Research is an essential source of information needed for the formulation of public policies as well as an important tool in developing a society centered around science and knowledge. In this sense, communicating with journalists can strengthen and promote science communication among the general population.

It is sometimes difficult for those who do research to get out of the "academy" or the "laboratory" and face a television camera or a microphone. In this situation, everything changes, including the way research must be explained. **Considering the challenges researchers face when contacting journalists, this guideline presents information and suggestions on how to plan and disseminate your research in the media.**

4.2 Why is communicating with journalists important?

While misinformation is not a recent issue, technological advances have greatly changed the problem's nature. According to the WHO, we are currently in an infodemic, i.e., **"too much information including false or misleading information in digital and physical environments during a disease outbreak. It causes confusion and risk-taking behaviours that can harm health. It also leads to mistrust in health authorities and undermines the public health response."**[8] We have already seen the striking impact of this phenomenon in the COVID-19 pandemic, as inaccurate messages and rumors spread quickly, like the virus itself.

Access to quality information may help to change this scenario. Your carefully investigated and interpreted data and knowledge can serve as raw material to develop content relevant to the population and for public health. Without diligently planning how to communicate this information, your research will not reach its target audience.

8 *WHO (www.who.int/health-topics/infodemic#tab=tab_1). With growing digitization, expansion of social media and Internet use, information can spread faster than ever. This can be useful to more quickly fill information voids but can also amplify harmful messages that lead people to uncertainty about what they need to do to protect their health and the health of people around them. This can intensify or lengthen outbreaks.*

Press offices are departments responsible for planning and offering media agendas. Whenever possible, the professionals in these departments should be involved in the development of dissemination strategies. They can also provide support by training spokespeople who are responsible for representing a research group to present their content and serve as consultants for the press.

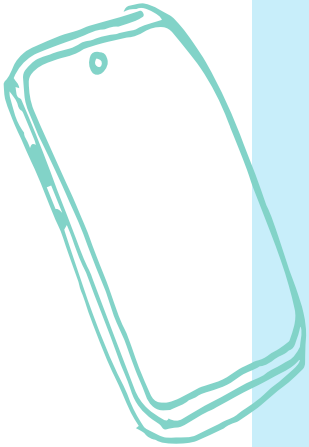
As such, communication needs you as much as you need it, and journalists can serve as allies in combating misinformation and disseminating your work.

What are news reports and what are "newsworthiness criteria?"

A news report is a writing genre that seeks to inform society of relevant information. The factors that influence the space that news might receive if published are the time of publication, the people involved, its impact and initial spread. For this reason, it is important to consider newsworthiness criteria, i.e., the characteristics that make a fact newsworthy in major media platforms.

- ***Relevance:*** *the impact this fact will have in other people's lives. E.g., a new president is elected;*
- ***Novelty:*** *how unprecedented or new this fact is. E.g., a new HPV variant is identified with a greater potential to cause cancer;*
- ***Proximity:*** *if this fact is near or relatable to people's lives. E.g.: a car accident downtown blocks streets.*
- ***Notoriety:*** *this fact is related to something of public knowledge. E.g.: A Brazilian researcher is nominated for the Nobel Prize in Physics.*
- ***Present time:*** *this fact is of the present moment. E.g.: a new COVID-19 variant worries health authorities.*

It is worth remembering that these criteria are of little use if the fact to be published does not have consistent, illustrated information and does not provide space for storytelling



4.3 Step by step guide for disseminating your work with journalists

Now that we better understand the role of the press in communicating scientific knowledge, let's see how you can release your work to the press with the following steps:

4.3.1 Develop a timetable

Establish deadlines according to important project dates (commemoration of fact or an important date, project anniversary etc.) and what must be completed for each step (e.g., producing and sending press releases, staying in contact with journalists, being available for interviews etc.). Also consider the possibility of external factors that can support the dissemination of your content.

4.3.2 Determine your target audience

Defining your target audience is important to establish which media you wish to employ for your agenda. You can aim for large newspapers with national coverage, but depending on the chosen audience your agenda can also be present in local radio broadcasts, which can be more effective in reaching the target audience that is best served by the information.

What is an agenda and how and when to send it to the press

For every news report there is an agenda, which is what motivates a journalist to seek more information, to make inquiries, to look for someone to describe the situation and spokespeople to comment on it. If we compare this with scientific inquiry, an agenda is like a hypothesis to be investigated.

Transforming a fact into a news report is the role of a communication professional, but it is the responsibility of those who want to publicize their agenda to incentivize it. This is what we call an ***induced agenda****, for which there is planning involved: a press release is sent to the newsroom or the journalist; advanced notice is given to schedule visits or interviews; you can also produce materials to support the article, such as graphics, photos, videos, glossaries, summaries etc. - journalists are often grateful for this!*

However, there are times when an agenda simply appears. This is referred to as a ***spontaneous agenda****, a reaction to an event or something relevant that becomes newsworthy without advance planning. In this case, quick reaction time and taking advantage of opportunities are key aspects in achieving success, and researchers should ask themselves: is it possible to make any connection between the event and my area of study or research? What type of connection? For example: a fashion model is hospitalized because she used the same tampon for months, and your research is about toxic shock syndrome, or some case of obstetric violence comes to light, and your research is about reducing childbirth interventions. It is this sort of situation when those responsible for communication must act, both by sending messages to journalists and by making the spokesperson and public research data available. If you already maintain contact with journalists, they may approach you, requesting interviews or comments.*

4.3.3 Set your objectives

As with determining your audience, setting objectives is important in guiding your communication strategy. Do you seek visibility and credibility to find more support/financing? Do you want to promote engagement in the local community to develop your research? Do you want to present a discovery? Questions like these are important in the initial phase of your project, because they determine your intentions.

4.3.4 Set goals

You can set deadlines and expected results for your goals. For instance, it could be a certain number of citations in the press in a three-month period, releasing your news in a particular newspaper or achieving some percentage increase in the number of social media followers.

4.3.5 Take action

This is the moment to implement all the steps you have developed during the project, including, for example, the preparation of disclosure material (press releases, fact sheets, graphics, photos, videos, internal briefings, key messages etc.) and the dissemination strategy (a press conference, sending material to newsrooms, notes in reference columns or sending out general releases, among other strategies).

4.3.6 Make partnerships

During the whole process, it is important to remember to contact possible partners and to think about how this relationship will work. These partnerships may occur with other teams, institutions, researchers etc.

Warning!

Many consider journalists as professionals specialized in telling real life stories. For this reason, it is important to work with partners who can help to humanize your message, reporting stories or situations that can explain how the results of your research depict reality. Therefore, whenever possible, involve organizations from civil society, professionals or ordinary people, whom you contacted during your research development. For example, if your research is about premature births, think about facilitating contact between a journalist and the mother of a premature child or with an association that defends the interests of families whose children are born premature.

4.3.7 Establish responsibilities and roles

Define the roles that you and the members of your team will take. Who will be the spokesperson? How will you deal with increasing demand for you or your organization? Is the secretary of your department aware of a possible increase in phone calls?

4.3.8 Protect yourself against possible crises

Sensitive topics are always subject to crisis, including those related to beliefs, taboos, ideology, and politics, among others. Unpredictable situations might also occur, but, whenever possible, anticipate and plan how to react and determine who is responsible for dealing with this type of issue.

4.4 What do you need to be a good source?

✱ ***There are researchers who are ubiquitous in the news media and with reason. They not only possess a broad knowledge of the subject, but also make themselves available for interviews, clearly explain complicated issues with simple and direct language and, of course, benefit from the support of their communications team.***

Having followed the previous steps, it is now time to focus on preparation, which is essential if you and your team wish to become reliable sources of information for the press. Training to communicate with the press is necessary to successfully adapt your message to the public. Below are some suggestions on how to be a good source:

- ***Do not talk about subjects you are not familiar with:*** *use your knowledge and work experience to discuss the most important information you have. If you are not familiar with a subject, recommend a colleague. Journalists actually love to receive recommendations and you will benefit from this as well, even if you are not the spokesperson;*
- ***The institution you are working with is relevant:*** *the location of you work, your post and the roles you play serve as the credentials that will spark interest in the media;*
- ***Consider the challenge of connecting with journalists as part of your job:*** *speaking well is not a gift, but something built with technique and practice.*

Warning!

Unlike what common sense may suggest, speaking well and in a clear and objective way requires training, practice and knowledge, like any other skill. This, combined with a good personal presentation and availability for interviews, will make you an excellent source.

➔ ***Making time to speak with journalists is essential:*** *contacting journalists takes time and dedication, so consider this when planning;*

Focus first on the message and only then on the nuances

In general, researchers tend to follow a logical order of explanation, beginning by the context or problem, describing how it develops and, lastly, their conclusions. However, when talking to journalists, it is important to reverse this order: conclusions should be presented at the beginning and connected directly to key messages - what you want to communicate - and only at the end add why or how you arrived at these conclusions.

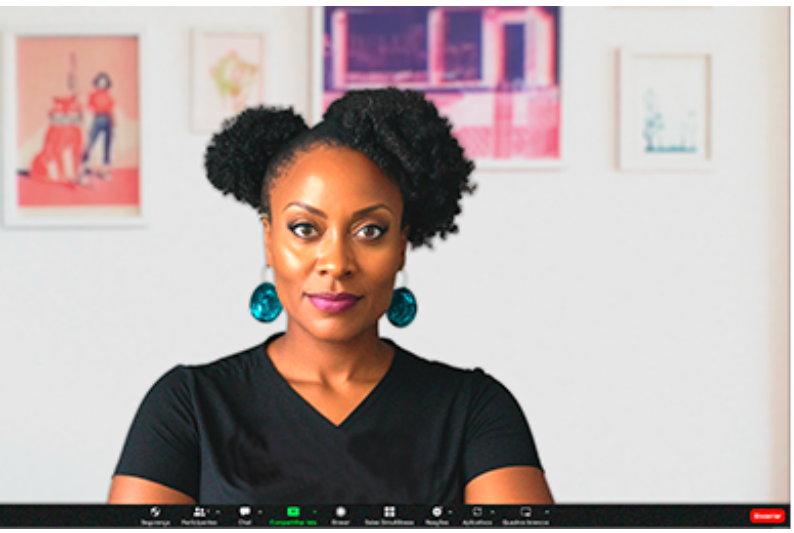
4.5 What you should know before and during an interview

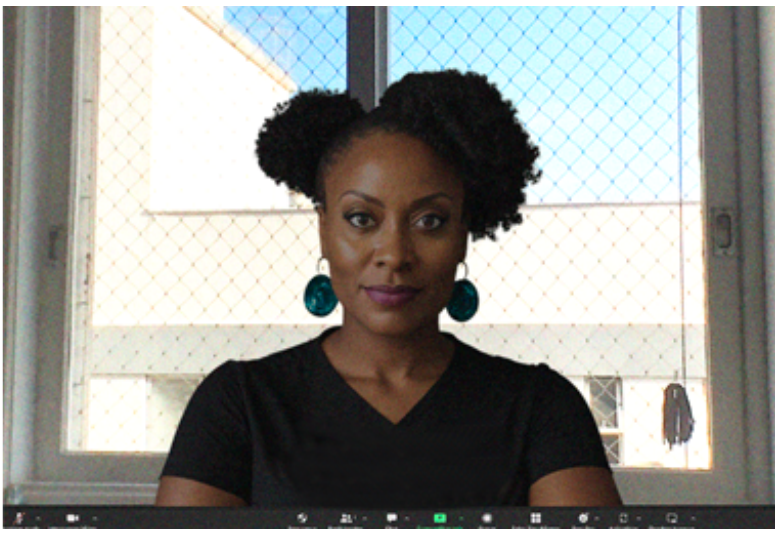
Before

- *Make sure the requested agenda is what you want to say;*
- *Know how, with whom and for whom you will speak. Consider your means of communication, the channel or network in which your content will be presented and, eventually, the television program you will participate in. Try to find out about the reporter and how the interview will be conducted (e.g., live, recorded, by video, by phone call, by email, by exchanging audio files or in person);*
- *Determine how your participation can produce results that support your research objectives or contribute to achieving them;*
- *Based on the previous parameters, determine the best way to answer in order to take full advantage of both your time and the journalist's. Negotiate your participation: is it going to be through an interview, a phone call conversation, or a questionnaire?*
- *Think about the types of questions that may be asked;*
- *Determine if you might be asked about specific data.*

During

- *While nothing should get more attention than the message, how we present ourselves visually is very important. It gives us credibility and guides what kind of attention we will receive, so choose discreet clothes and accessories that suit you. It is important that your clothing style is aligned with the position or organization you represent, as well as to the level of formality of the interview;*
- *Choose a well-lit, calm, silent, comfortable and clean environment. Avoid a background that may draw more attention than you do;*
- *Know what you want to say: do not say anything that you do not want to be published;*
- *Do not dwell on every word, be focused and clear.*





Legend: In the illustration above, we observe a research in different moments and situations. On the left, there is a well-lit room, with fewer objects in the background; on the right, the room is full of distractions and is poorly lit. Of course the expert's credibility and knowledge are not invalidated because of the place she is in or the clothes she is wearing, however, take into account that the environment and personal presentation can distract the viewer, deemphasizing your message.

4.6 Checklist

- ➔ *Identify opportunities for communication in your research;*
- ➔ *Involve your partners and the press;*
- ➔ *Plan your agenda;*
- ➔ *Contact journalists and/or newsrooms;*
- ➔ *Prepare for the interviews;*
- ➔ *Collect results.*

4.7 References and Further Resources

- *Bishwajit G, José Y, Junior RP, et al. Role of Health Journalism in Promoting Communication among Stakeholders in Healthcare Sector: **Scientific Foundation and Architecture**. J Healthc Commun. 2016, 1:3. DOI: 10.4172/2472-1654.100016*
- *Institute of Medicine (US) Committee on Assuring the Health of the Public in the 21st Century. 2002. The Future of the Public's Health in the 21st Century. Washington (DC): **National Academies** Press (US); 7, Media. Available from: https://www.ncbi.nlm.nih.gov/books/NBK221224*
- *Profile of the Brazilian journalist 2021: https://perfildojornalista.paginas.ufsc.br/files/2022/08/RelatorioPesquisaPerfilJornalistas2022x2.pdf*
- *The challenges for scientific journalism in Brazil:*
- *https://jornal.usp.br/atualidades/os-desafios-para-o-jornalismo-cientifico-no-brasil/*
- *How to talk to the press:*
- *https://raconhecimento.net/product/como-falar-com-a-imprensa-de-ativismo/*
- *"Advocacy on Action", a Toolkit for Public Health Professionals: https://raconhecimento.net/product/advocacy-on-action-a-toolkit-for-public-health-professionals/*
- *www.who.int/health-topics/infodemic#tab=tab_1*

Guideline V:
Telling Stories with Data

"Maybe stories are just data with a soul."

Brené Brown

05

VISUAL SUMMARY

Telling stories with data

In a world submerged in data, statistics and notifications, employing storytelling principles when presenting your results can greatly increase your project's impact by expanding your audience beyond academia, engaging your readers and listeners, and motivating evidence-based decision-making. This guideline, therefore, presents storytelling principles and provides examples of how to implement them by interweaving facts into a narrative and adapting the complexity of your results and the media used to the target audience's needs.

When to use?

Use Guideline V when communicating with or transferring knowledge to an audience. The purpose of this guideline is to present the main principles of storytelling and explain how to include them when communicating the results of your project.

What to expect?

1. Greater awareness of storytelling principles and how it can facilitate the learning process and increase interest in a subject.
2. Knowledge of how to include storytelling principles in your most frequently-used communication formats
3. Information to improve your data visualizations, such as graphics and schemes

01 *Why use storytelling:*

It is easier to remember information connected with a story rather than as a series of random facts; stories activate areas of the brain related to emotion, making it easier to record information; and, because of our desire to be entertained, hearing a story makes you less critical of its contents.

02 *What to keep in mind when developing and adapting your story to your audience:*

Your audience's level of knowledge on the subject; formats in which they are used to consuming information; actions they can take after accessing your content; audience's opinions and life experiences; types of language they are familiar with.

03 *A story's basic elements:*

The main message you wish to convey; secondary messages; contextual information and details needed to connect the main and secondary messages; and endings that can assume a variety of forms (e.g. conclusions; call to action; homework).

04 *Plot structures that fit well in data stories:*

Organize facts over time; start big and drill down; start small and zoom out; highlight contrasts.

At every step in the process, please keep in mind:

In a sea of data and statistics without context, stories can be a tool to set scientific work apart.

Adaptation is key in storytelling.

Your data product purpose impacts the way you tell your story.

It is always important to clearly define the main message you wish to convey.

Storytelling is not a data product but rather a technique of communication

You can apply storytelling every time you present information to others, regardless of the chosen format.

Developed by Odd Studio, in partnership with Fundação Oswaldo Cruz (Fiocruz), and Global Health Strategy (GHS Latin America)
Iniciativa: Bill and Melinda Gates Foundation | 2023 | V 0.1

5.1 Why humans tell stories

Stories have always been used to transform abstract or complex ideas into accessible and memorable concepts. Some studies suggest that storytelling has existed since we were just one small group of humans in Africa.

Throughout history, stories have been a tool used both for good and for bad. They are told to disseminate important knowledge. Regardless of the user's level of expertise in the subject, we use stories to expand people's knowledge or provoke feelings.

The seventh sister

At the end of each year we can see in the night sky a cluster of stars known as Pleiades, or "the seven sisters". To the naked eye it is easy to count six bright stars, but in many cultures around the world they are known as seven, with similar stories about the loss of the seventh sister. How can Australian Aboriginal stories and Greek stories be so similar in such specific details, when the former was isolated from the rest of the world for at least 50,000 years?

The answer may lie in the slow movement of the stars. Astronomers "rewinded" their position in the cluster 100,000 years into the past and found that two of them that today look like a single star because they overlap in our line of sight were previously further away from each other. At that time, when the first humans were starting to tell stories, they saw these seven stars become six, thus creating a story maintained until today.

Even after the invention of writing, we continued to use stories as the principal tool to explain and educate. At that time we knew only that it worked, but today we understand the reasons behind it:

- ***It's easier to remember information connected with a story rather than as random facts. Stories connect new information with memories and knowledge we already have. We learn and memorize better because we can relate what is new to something we already understand;***
- ***Stories also activate more areas of the brain, especially the ones related to emotion, making it easier to effectively record memories;***
- ***From a psychological point of view, when you hear a story, you become less critical of its contents because you want to be entertained. The opposite happens, however, when you hear numbers and statistics. As mathematician John Allen Paulos observed, "In listening to stories we tend to suspend disbelief in order to be entertained, whereas in evaluating statistics we generally have an opposite inclination to suspend belief in order not to be beguiled."***

It is a myth that science and data do not lie or are not biased, and thus, do not require anything additional to be trusted or convincing.

An experiment run at Stanford University asked students to tell one minute speeches and then to recall the information told. It was found that while "in the average one-minute speech, the typical student uses 2.5 statistics, only one student in ten tells a story". On the other hand, "when students are asked to recall the speeches, 63% remember the stories. Only 5% remember any individual statistic".

Storytelling is an effective tool to encourage the brain to believe and memorize content, presenting complex information in a friendly and user-adapted format so your audience does not feel judged, threatened or under evaluation - situations that neither facilitate the learning process nor increase interest in the subject.

Our world has been tailored to learn from stories, but the average citizen is overloaded and bombarded with information. The excessive use of technology and preponderance of notifications have made people increasingly anxious and overwhelmed. In a sea of data and statistics without context, stories can be a tool to set scientific work apart.

5.2 When you should tell stories with your data

In ***Guideline I: Determining how to communicate your findings with data***, we explained the difference between data products, formats and analytical solutions. **Storytelling with data, however, is entirely different**.

Even though you may envision a beautiful report or visually appealing website when discussing telling stories with your data and results, *and although these can be really good examples of formats and data products to explain your work*, **storytelling is in fact a tool that you can apply every time you present information to others, regardless of the chosen format**. Whether you are creating a single visualization, a dashboard, an app, a complete report: the less you think your product needs storytelling, the more necessary it probably is.

You can use storytelling principles to communicate with or transfer knowledge to an audience other than your academic peers through a paper. **Storytelling is not about creating characters and building an entertaining script. It is about connecting facts through a narrative to facilitate understanding and memorization and adapting the complexity and media to the target audience**.

We know this is not a simple task and it requires specialized skills. However, understanding the principles in this guideline can help you:

- ***Gradually include some of these principles in your most frequent communication formats, such as during classes and presentations at conferences;***
- ***Improve your graphics and schemes;***
- ***Be critical about ways your team can improve its communication methodology;***
- ***Be more effective in hiring communication partners and more critical about their work;***
- ***Develop a more productive relationship with partners, as you and your team will be better qualified to give directions and orient them.***

With the ultimate goal of:

- ***Expanding your audience outside the academic public;***
- ***Engaging your readers and listeners;***
- ***Motivating evidence-based decision-making.***

5.3 How to tell stories with data

When we tell a story, we lead our audience along a path of reasoning so they can learn something we already know. To achieve this understanding, adaptation is key. The same content can produce different stories depending on its intended audience or your purpose in telling it. A famous storytelling exercise involves explaining the same content to a 5 year old, to your best friend and to your grandmother. Would these stories be the same?

Minding the listener - or the user, as you already learned in these guidelines - however, is just the first of the factors you need to take into account. But don't worry, we are going to cover all of them:

- ***Who do you tell the story to?*** *The listener, reader or user of your story. Who are they?*
- ***Why are you telling this story?*** *What's your goal in telling the story to these people, and what's their goal in listening to you?*
- ***What is the content of your story?*** *If the audience has to remember just a single message, what would it be?*
- ***How do you tell the story?*** *The connection between the main information and context.*
- ***What format do you tell the story with?*** *Finally, the data product. Can you see how all these other answers might impact this final decision?*

✱ ***Some of the questions above have already been answered in depth in previous guidelines that will be referenced throughout and that you can read here. Below, we will detail how you can begin to tell stories with your data.***

5.3.1 Who do you tell the story to?

You can read more about defining and getting to know your user in ***Guideline II: Interviewing, Researching and understanding your user*** and ***Guideline III: Communicating to Stakeholders and Policy-makers***. When we talk specifically about adapting the story you are telling, there are some points you should pay special attention to, such as:

- ***What level of knowledge does this person have on the subject?***
- ***In what ways is this person used to consuming information?***
- ***What actions can this person take after consuming your content?***
- ***What are this person's opinions and life experiences?***
- ***What type of language is this person familiar with?***

For some interesting explorations of this topic, take a look at this ***Youtube series*** where experts are invited to explain their work to different people across five levels of complexity.

5.3.2 Why are you telling this story?

In ***Guideline I: Determining how to communicate your findings with data*** we discussed the data product's purpose. Even though storytelling is not a data product but rather a technique of communication, you will use it as part of a data product. So let's talk about how the purpose of your product impacts the way you tell your story.

a. Inspire Feeling or Explain to comprehend

Engaging, entertaining or sparking interest in your audience by making them feel something with your story is a common purpose. This can help you to highlight the nuances of your work. In these cases, ask yourself:

- ***What feelings do I want to evoke?***
- ***Do they already have an opinion that they could reflect on?***
- ***What key information will evoke emotion?***
- ***How much context do I need to give my audience on the subject?***
- ***By using this technique and involving emotion, can I create opportunities for misinterpretation of my story?***

It is common for researchers to point out a problem but not provide solutions or pathways to improvement, which can turn a great story into a complicated presentation. Keep in mind that feelings can be positive or negative, and that your information and story can inspire both. You may also need to consider how you will support your audience in dealing with hard truths and propose some possible solutions.

b. Inform to decide or make the data available to be explored

Data cannot speak by itself. Just presenting data is not enough to make people engage with it. These purposes often leave less space to tell a story, but may need it the most.

To find the balance between freedom to explore but also help guide the user on a journey, consider:

- *Do you have the confidence of your audience that the results you are providing are reliable?* ***If you do, focus on explaining the ins and outs of your product, instead of focusing on the method.***
- *Does your audience have the knowledge to explore data autonomously?* ***Exploring data autonomously requires familiarity with your dataset and the technology used to make it available. Make sure this knowledge is transferred, and does not remain with your team.***

- ➔ *Do they have time in their routine for this?* ***What is the amount of information they can interact with in the time dedicated to your product?***
- ➔ *Do they understand the context of the problem?* ***Do not expect users to understand the context or importance of a problem from only exploring the data. To engage, they need to understand immediately how this is relevant to them.***
- ➔ *Is it possible for them to reach the wrong conclusions?* ***You need to guarantee that you are conducting the use of the product to tell a story with the right endings.***

5.3.3 What is the content of your story?

a. If the audience must remember just one message, what should it be?

It may look like a simple start, but simple is often effective. Whether your communication purpose is exploratory or inspiring, it is always important to have a clear definition of the main message you wish to convey. Then, you may start listing the secondary messages, those that are also important but focus on smaller details in your data. This should be the structure of the fundamental information in your work.

With that structure in mind, the next step is to connect the messages you wish to convey with the contextual information and details needed for the story to make sense for that audience.

Do this schematically, like a skeleton that will sustain the body of your story. Draw and connect concepts, or use tools like Miro or Jamboard to paste, move and connect concepts as notes. Paper and pen can also work.

Of course, always remember who you are telling the story to - for many, you are the expert, and there is no need to prove you are knowledgeable about your work.

- ✱ ***Non-academic audiences are more interested in why (the origin of the problem) and its implications (consequences of results), and less in how (methodology). This is different from the structure used in papers, where the methodology is presented in detail to give confidence in the results and enable reproducibility.***

It seems obvious, but remember that stories have a beginning, a core, and an ending. After developing the structure of messages and their contexts (the core of the story), think about what information you can use right at the beginning of your story to catch the user's attention. Your audience is not obligated to consume your product, and our attention span is decreasing every year, so actively engaging the user in the first lines or moments of interaction is important to capture their attention.

Finally, add the finale. This may be easy in a written story, but it is more challenging if you are creating a dashboard, for example. Even then, every story needs an ending. Some examples of how to finish include:

- ***Conclusions:*** *list the main conclusions to make sure they understand the key messages as you intended;*
- ***Call to action:*** *give a role to the reader/listener/user in your story, and at the end explain what they can do to contribute;*
- ***Cliffhanger:*** *leave some questions unanswered but explain where they can be found.*
- ***Cyclical/Full circle:*** *end your story by referencing something you introduced at the beginning.*
- ***Predictive:*** *support the story by comparing the prediction to what would happen if the situation remains the same.*
- ***Homework:*** *give the user a task now that they understand the concepts. How can they use the information you gave them?*

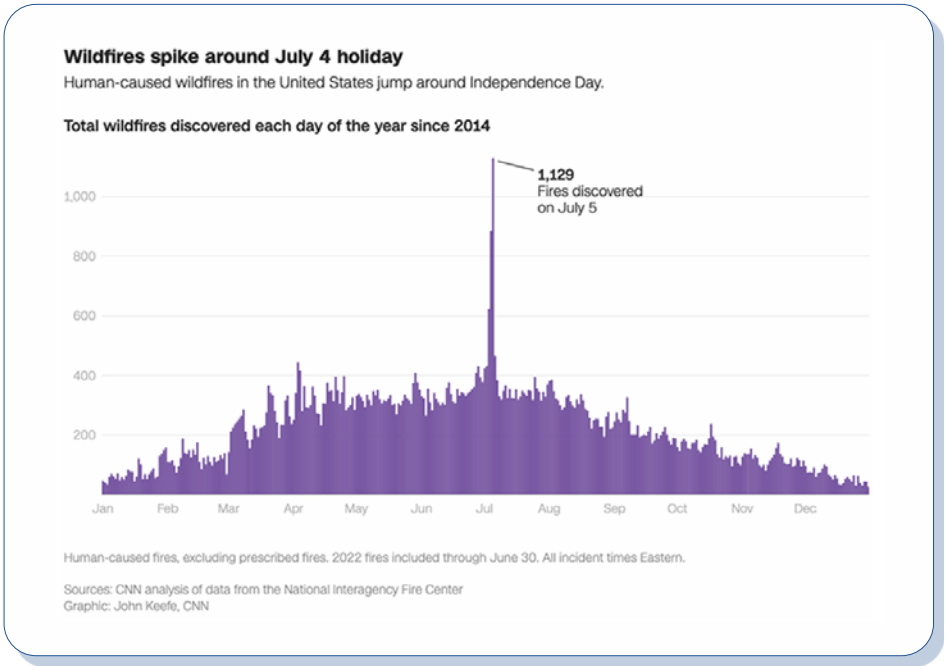
✱ ***Now that you have the basic elements of your story, it's time to connect them with the actual storytelling.***

5.3.4 How do you tell the story?

Writing, communicating and designing a story require both talent and study, but there are tricks you can use in your products and even adopt in your daily life. In literature, there are well-known plot structures that can produce remarkably different stories just by changing the order and the characters. Below, we present four structures specifically adapted to tell data stories that can be used in a wide range of products, from visualizations to websites.

*a. **Narrate change over time:** The facts are organized as time passes.*

In a visualization, this can be represented as a line plot with time as its x-axis, but this is not enough to tell a story. Add a title that summarizes the main message, a subtitle with context and indicate with notes within the area of the graph the moments of significant change in the behavior and their cause (e. g. 01 e 02).



E. g. 01
Wildfires caused by fireworks

E. g. 02
Hans Rosling's 200 Countries, 200 Years, 4 Minutes - The Joy of Stats - BBC Four

In a long-form website, you can introduce facts chronologically or even choose a character and recount a moment in their life, moment by moment (e. g. 03).

E. g. 03
78 Long Minutes:

This can also be a microstory within the bigger picture, for example, a chapter in a report or a panel in a dashboard. However, first ask yourself if you are showing this data because it is significant to the story as a whole or just because you have the data available.

Explore the intersection

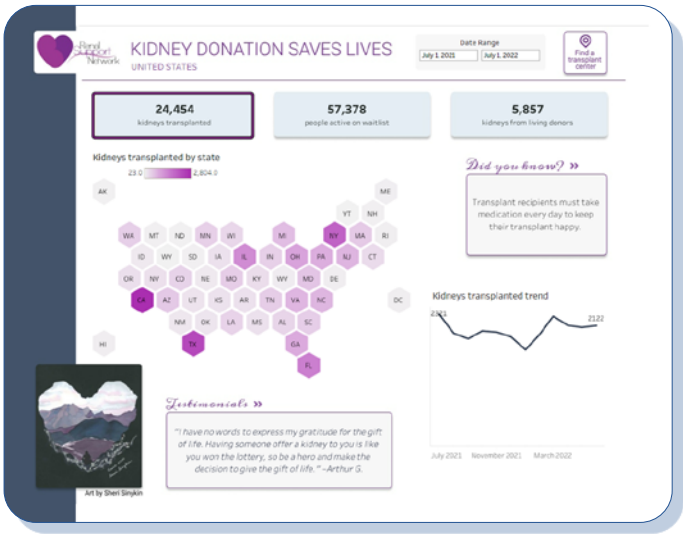
A specific case of narrating change over time is when the key moment of your story is when differences disappear and the scenario changes. Like the moment a disease surge differs from its previous behavior, or the year a new type of intervention becomes more common than others. Don't expect the user to understand that this is an important moment: highlight and explain the event as a note in a graph or a special chapter in your report (or even in a box like this one!).

b. ***Start big and drill down:*** *Start with the big picture and dig into the details.*

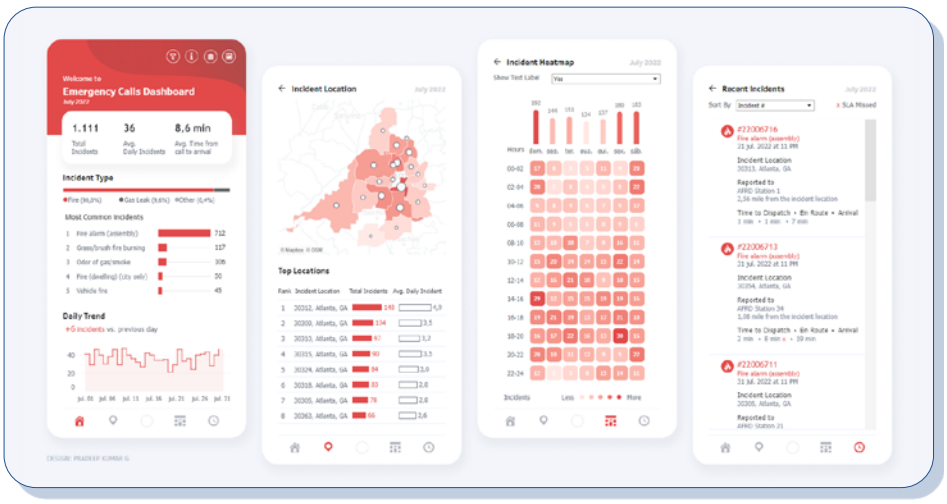
The first thing to explain to your audience is the global scenario or the situation in your country, then begin to explore a region, subregion, or municipality, or the situation surrounding an event, a condition or a group of diseases and then the specific results for one element of that group. You could even begin from the status of an index or metric and then the values of its components (e. g. 04).

E. g. 04
Feelings at Work:

As you can probably see, **this is a great approach for telling a story using a dashboard**. Just add a beginning and an ending and you have created an interesting way to explore your dashboard (e. g. 05 e 06).

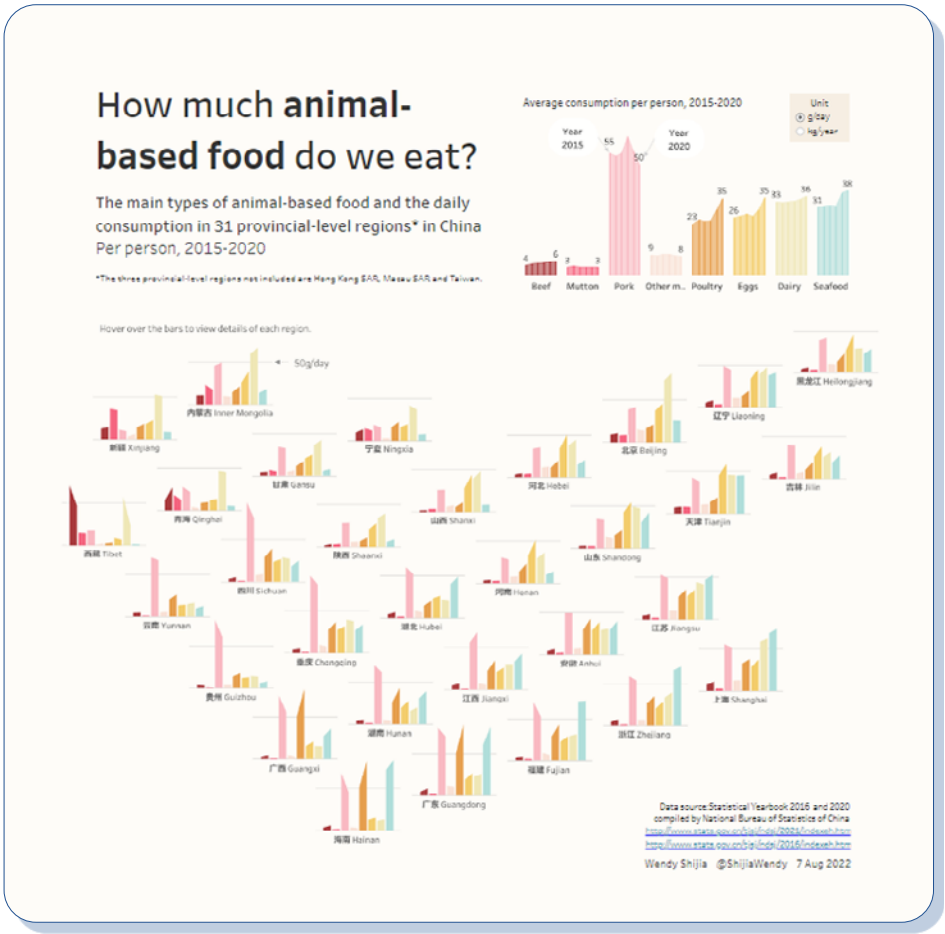


E. g. 05
Kidney Transplants Dashboard:



E. g. 06
Emergency Calls Dashboard | Mobile View:

This can also work with a visualization, if you combine a summarized statistical index (also known as a big number) and the overall situation with a detailed map or other visualization showing its subdivisions, or even in the title or subtitle of the graph.



E. g. 07
Animal-based Food Consumption in thirteen one regions in China:

Parts of the whole

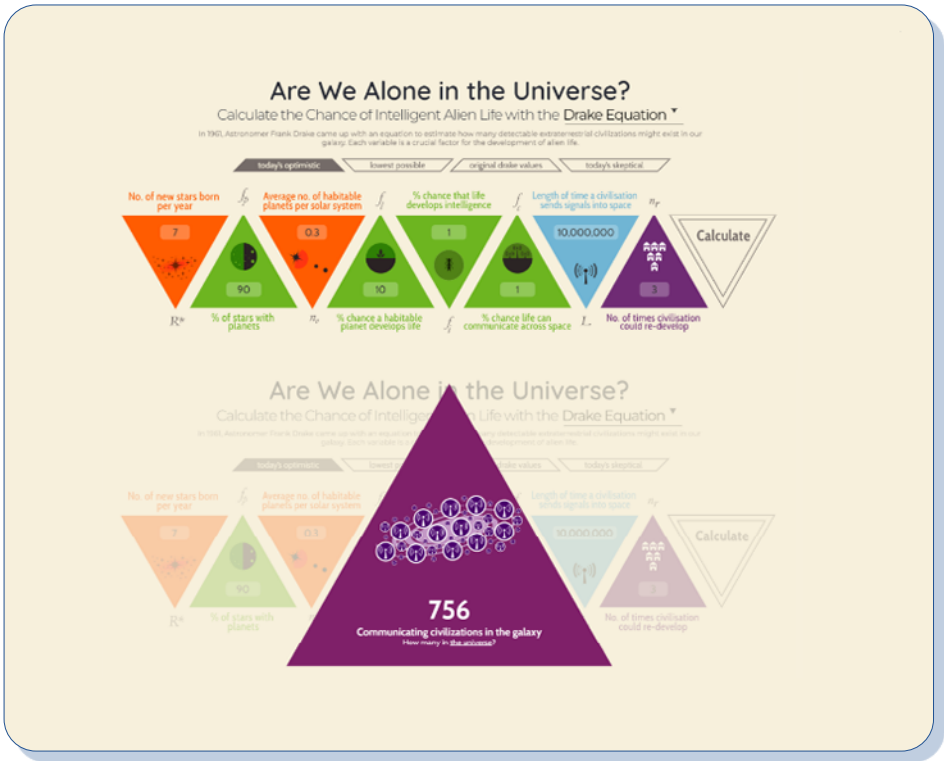
In some cases you may not be truly zooming in, but rather illustrating components at the same level of importance. ***Be careful to show the user all the components before diving into their details****.*

In a dashboard, for example, after showing the big picture or the state of an index, make sure to show the number of components and how they contribute to the final value before explaining their details or evolution.

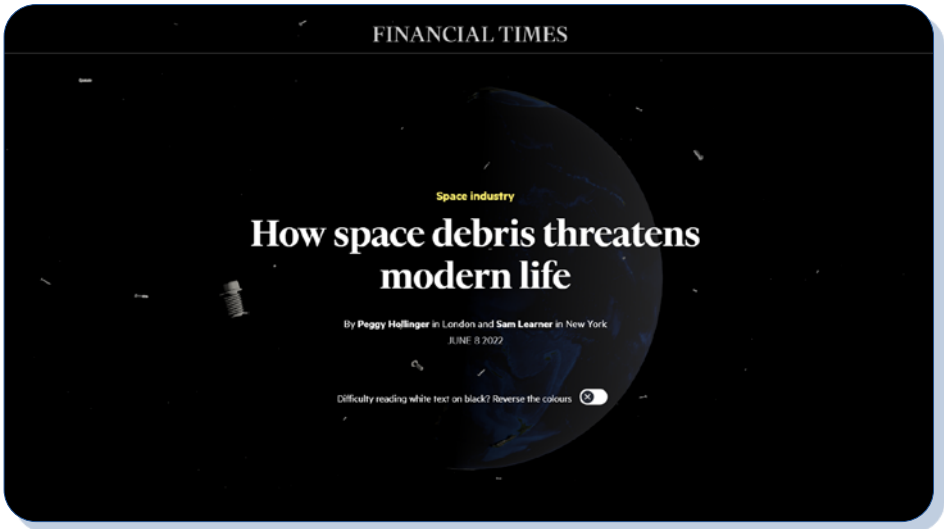
In a report, start the chapter listing all the topics you are going to cover (we do this a lot in this guideline, as you may have noticed).

c. ***Start small and zoom out:*** *Make your audience engage with a specific situation, then place it in a bigger picture.*

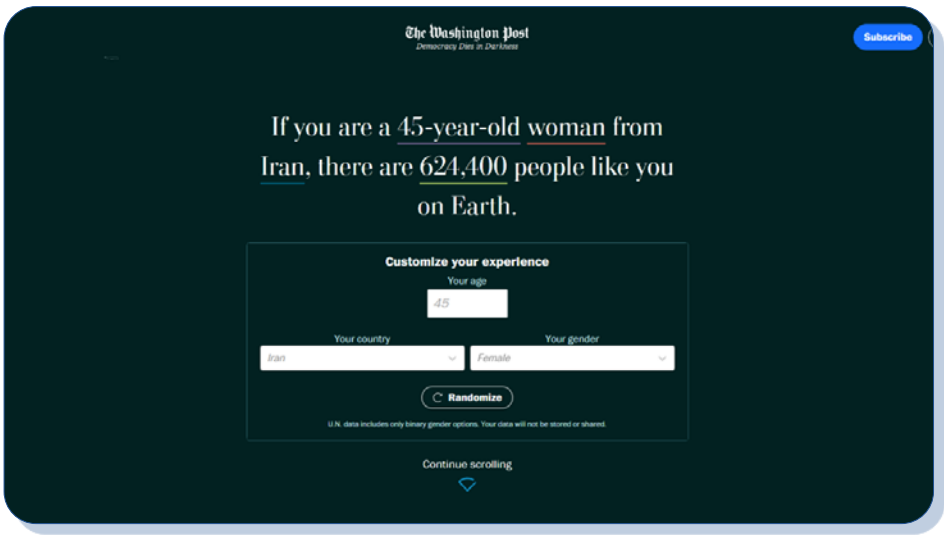
- ***Create a character that is facing the problem you study and, as you tell their story, compare how the situation is for other people in the same region, country, or the world.***
- ***Explain how behaviors that seem individual contribute to a global issue.***
- ***Show the results of your country compared with the continent and the world. Combine the information of a municipality with a small map exploring how this issue may vary from region to region. In an interactive product, let the user select their municipality and compare the data with region and country.***



E. g. 08
Are We Alone in the Universe?



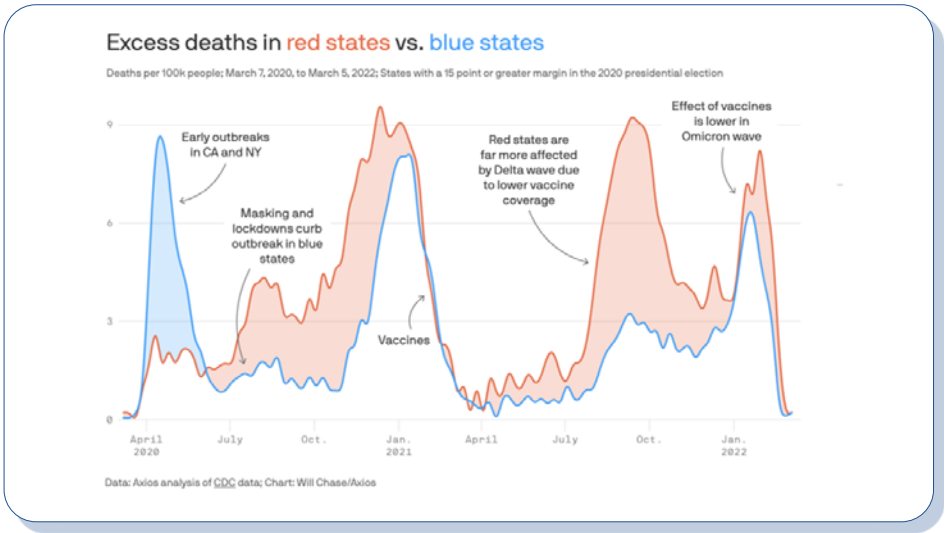
E. g. 09
How space debris threatens modern life:



E. g. 10
You're one in 8 billion:

d. ***Highlight contrasts:*** *The focus of your story is the difference between scenarios.*

Compare the best and the worst positions in a ranking, or focus on the differences between the photography of the momento *versus* the intended goal. Show the percentage change between different years of comparison, or the absolute value that separates genders, ages, ethnicities or regions.



E. g. 11
Partisan excess deaths:

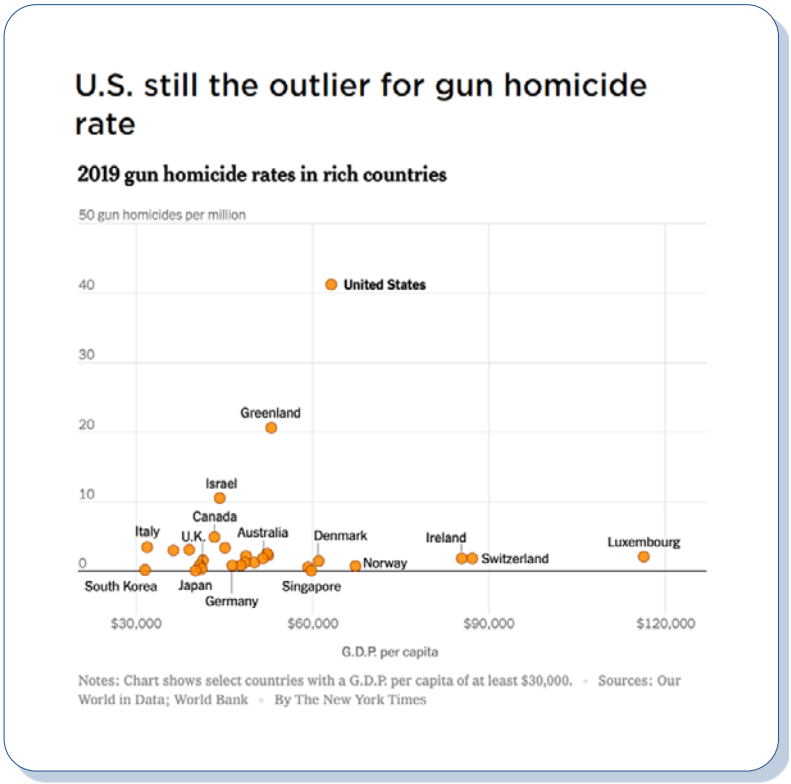
Tell the story of a privileged and an underprivileged person, highlighting the distance between them. Explain the situation of your country from the point of view of how far it is from the average or ideal scenario. This is a good moment to connect to your audience, having them relate to one side of this comparison and, perhaps, understand their privilege.

E. g. 12

America's Highest Earners And Their Taxes Revealed:

E. g. 13

U.S. still the outlier for gun homicide rate:



Outliers

In statistics, outliers are generally unwelcome, but in other contexts they can be quite captivating. We are fascinated by things that don't behave as expected. A way of presenting the general behavior in an interesting way is comparing it with an outlier. Or, even better, if the situation you are explaining is an outlier, then you can take advantage.

Bonus: Narrative strategies to spice up your story

You can use one or more of these strategies, regardless of what structure you chose. Some of them are more easily adaptable to presentations or reports, but this can be a nice exercise to think about how you could use them in visualizations or dashboards.

- *Guiding questions: use keywords or topics to structure the content and present it from the beginning, so the user knows what to expect;*
- *Personification: create a character that is living the problem or represents the average behavior of the population. People like - and relate to - people;*
- *Error: use a case where something went wrong.*
- *Provocation: start the story with a question or an affirmation that challenges the audience;*
- *Metaphor: use an example of another context that is relatable to your content;*
- *What if: focus on the consequences of the actual situation in a hypothetical future.*
- *Interaction: enable the user to interact with the story and guide the journey, or at least make them feel like it;*
- *Scenario: describe a scenario where the audience can feel like they are there, participating in the story.*

5.3.5 What format do you tell the story with?

You can find a framework to select the most appropriate format for your data product in ***Guideline I: Determining how to communicate your findings with data***. As mentioned previously, storytelling with data is not a format or a product, but rather a technique you can employ to help your audience understand the content you are presenting to them. If your main goal is to communicate, keep this in mind when defining the format. There is no better or worse format, there are only formats that are more or less suitable for your message and audience.

If you have already selected the format, here are some tips to include storytelling:

- ***Visualizations:*** *invest in engaging titles and in subtitles that provide context, and use the blank spaces in the main area of the graph to make note of important conclusions. Do not choose a type of graph because you think it is the best way of showing a certain type of data. Instead, ask yourself: in the giving context, if this visualization were a phrase, what would it say? And then try to represent this visually.*
- ***Dashboards:*** *You wouldn't give the loose pages of a book to a reader to organize them and then read the book. Why would you do this with a dashboard? Order the panels in a logical order of exploration, utilize space to add text and context, and use the tips above in each of your*

visualizations. You can follow the same process when planning the user journey for an app.

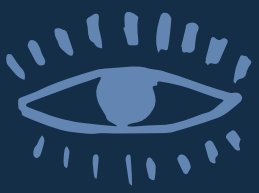
- ***Reports, slides or articles:*** *don't be afraid to use the bonus narrative strategies that we've presented, and test if the language you are using is appropriate for the audience you are targeting (ask someone that doesn't have the same knowledge about the topic as you do to read and be critical).*
- ***Social media posts:*** *keywords here are "engagement" and "straight to the point". In this type of communication product, you are in intense competition for a user's attention. Try to catch it immediately and use simple and inviting language. You are also competing with fake news, so it would be helpful to somehow demonstrate your authority in the subject.*

5.4 Key points of this chapter

- *It is easier to remember information as a story rather than as a series of random facts; stories activate areas of the brain related to emotion, making it easier to record information; additionally, because of our desire to be entertained, hearing a story makes you less critical of its contents.*
- *In a sea of data and statistics without context, stories can be a tool to set scientific work apart.*
- *Storytelling is not about creating characters and building an entertaining script. It is about connecting facts through a narrative to facilitate understanding and memorization, as well as adapting the complexity of the narrative and the media used to the target audience.*
- *Storytelling is not a data product but rather a mode of communication. You can apply storytelling every time you present information to others, regardless of the chosen format.*
- *Create a structure connecting the messages you wish to convey with the contextual information and details needed for the story to make sense for that audience. Do this schematically, like a skeleton that will sustain the body of your story.*
- *Your audience is not obligated to consume your product. For a story to be engaging, adaptation to the user's needs and level of knowledge is key.*

5.5 References and Further Resources

- ***The Purpose of Stories***
  https://www.nyu.edu/faculty/teaching-and-learning-resources/strategies-for-teaching-with-tech/storytelling-teching-and-learning/the-purpose-of-stories.html
- ***What Makes Storytelling So Effective For Learning?***
  https://www.harvardbusiness.org/what-makes-storytelling-so-effective-for-learning/
- ***Data Storytelling: The Essential Data Science Skill Everyone Needs***
  https://www.forbes.com/sites/brentdykes/2016/03/31/data-storytelling-the-essential-data-science-skill-everyone-needs/?sh=1b22b4cf52ad
- ***The world's oldest story? Astronomers say global myths about 'seven sisters' stars may reach back 100,000 years***
  https://phys.org/news/2020-12-world-oldest-story-astronomers-global.html
- ***A Hitchcock video helped find a conscious patient who'd been unresponsive for 16 years***
  https://www.theverge.com/2014/9/15/6153669/a-hitchcock-video-helped-determine-consciousness-in-a-patient-who-had
- ***Why Storytelling Is The Ultimate Weapon***
  https://www.fastcompany.com/1680581/why-storytelling-is-the-ultimate-weapon
- ***Making it stick: Tell Stories***
  https://mannerofspeaking.org/2009/10/13/making-it-stick-tell-stories/
- ***5 Levels: An expert explains a complex subject in five levels of complexity.***
  https://www.youtube.com/playlist?list=PLibNZv5Zd0dyCoQ6f4pdXUFnpAIlKgm3N
- ***8 classic storytelling techniques***
  https://norsensus.no/storydown/storytelling-techniques/



Communicating Results to Different Audiences:

Guidelines for Scientists and Researchers for Communicating Data

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