Creating a Data Story in Four Steps:

A Practical Guide for Local Public Health

NACCHO℠
National Association of County & City Health Officials

Behind every data point is a person, and behind every number is a story. By contextualizing the data with those stories, you can uplift the real-world experiences often invisible in statistics alone. This is the essence of data storytelling. This guide offers a structured way to begin building capability as a data storyteller; it offers a starting point for crafting more intentional data stories.

What is a data story?

A data story weaves together statistics, narrative, and visuals to see data in context and inspire action.

What kinds of actions can be inspired?[1]

Inform decisions for audiences that have a high interest in the topic and high influence for change
Spark advocacy for audiences that have a low interest in the topic and high influence for change
Sustain engagement for audiences that have a high interest in the topic and low influence for change
Build awareness for audiences that have a low interest in the topic and low influence for change

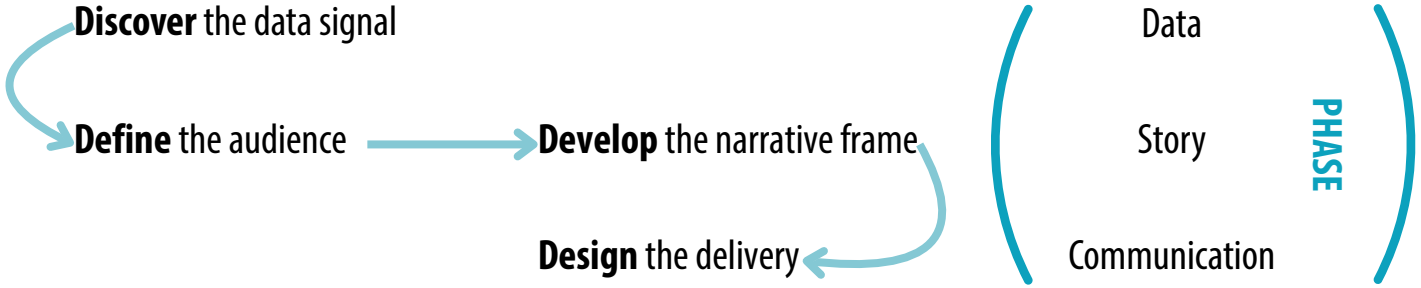
How do data stories inspire action?

Data stories grab attention through emotion, cultivate credibility through evidence, and directly connect insights to solutions.

When is a data story needed?

Data stories are useful when the communication is explanatory—to share insights that guide an audience toward a key message/conclusion. When the purpose is exploratory—to allow users to interact with data and uncover their own insights—analysis-based approaches, like a dashboard or one-off visualization, are more useful than narrative-based approaches.

NACCHO's "4D Data Storytelling" Process: Four Key Steps to Move from Data Analysis to Meaningful Communication



[1] Adapted from: Gurman Bhatia's The Craft of Building Stories with Data and AcademyHealth's Communicating for Impact

Before Getting Started

To create an effective data story, you must translate signals in the analysis into clear, intentional communication. NACCHO's 4D process outlines four steps to support that translation. The process begins after data analysis is complete and works best for those with a foundational level of data literacy.

How to Use This Guide

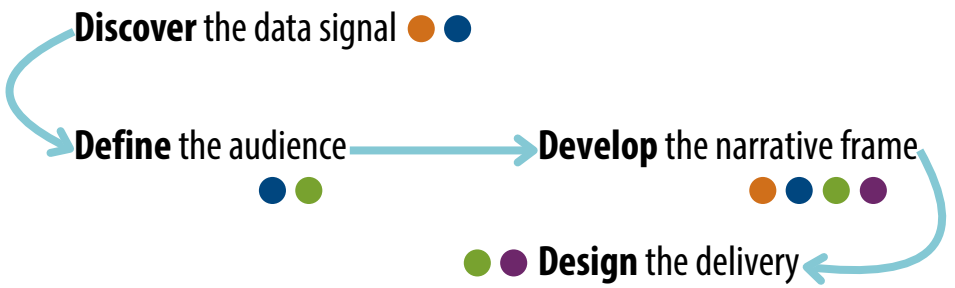
As a Step-by-Step Process
If you're new to data storytelling, it is best to follow each step in order as the worksheets and pages are designed to build on one another.

As a Framework for Thinking
With more experience, you may move between the steps more fluidly, recognizing that data storytelling is often iterative. In that case, use the relevant worksheets and pages to help you check assumptions, refine framing, or pressure-test messaging.

Who Should Be Involved in the 4D Process

Depending on the project, you may involve:

- Analysts to validate the data and ensure statistical accuracy of messaging
- Subject matter experts to provide context and interpretation
- Communications staff to shape messaging and framing
- Designers to transform the story into a compelling format



Step 1: Discover the Data Signal

The first step in "Discover, Define, Develop, Design" is to discover what your data is telling you about the topic. Data analysis uncovers many patterns, trends, and details, but not all of them are meaningful. So, you need to identify which finding(s) are relevant to your context—and *why*—before you begin shaping the narrative.

What is a signal?

A signal—also called an insight—is a non-obvious, meaningful shift in understanding that helps you see a pattern, cause, or possibility differently.[2] It is more than just a data point or statistic; rather, a data signal is the key takeaway of the data point or statistic.

Example: *In 2023, 62% of local health departments reported they had not received supplemental funding for data modernization.[3] Data modernization funding has not reached most jurisdictions, forcing them to rely on outdated systems for infectious disease outbreak detection and response.*

Before you create a data story, there are a few questions to think about to find and understand the signal:

What

- **What issue am I trying to understand?**
- **What relationships or trends in the dataset stand out?**

So What

- **Why is the relationship or trend a signal vs. noise?**
- **Why does the signal matter right now?**
- **How does the signal shift understanding?**

Now What

- **How can the signal inspire an action** (i.e., inform decisions, spark advocacy, sustain engagement, or build awareness)**?**

[2] Bhatia, G. (2026 January). *The craft of building stories with data* [PowerPoint slides]. Open Visualization Academy. https://openvisualizationacademy.org/courses/the-craft-of-building-stories-with-data/finding-insights/what-is-an-insight

[3] Cunningham, M.C. et al. (2024). *2023 Forces of change survey*. National Association of County and City Health Officials. Washington, DC. https://www.naccho.org/uploads/downloadable-resources/2023-Forces-of-Change-Survey-Report.pdf

Step 2: Define the Audience

NACCHO
National Association of County & City Health Officials

Understanding your audience is an essential step to creating data stories that resonate. An audience is a group of people that use or shape your data (e.g., elected officials, partners, residents); this can be defined as broadly or narrowly as needed. Each audience has different needs and experiences related to the topic of your data story, which inform whether and how they take in information about it. Once you determine who the data story is for, you can use the prompts below to explore the perspectives of that specific audience.

Identifiers and Priorities

What is their role related to the topic? Are they an internal or external stakeholder?

What is their level of interest in the topic?

What is their level of influence related to the topic?

Experience and Pain Points

What challenges do they experience related to the topic?

What motivates them to care about and take action related to the topic?

What action(s) can the audience take related to the topic?
Tip: Look at the first page of this guide and the audience's level of interest & influence.

Reaching Them

What do they believe about the topic? How does their culture and context affect those beliefs?

Who or what influences them? Who do they trust?

What kinds of content do they enjoy? Where do they access that content?

Step 3: Develop the Narrative Frame

NACCHO℠
National Association of County & City Health Officials

Now that you understand your audience, it's time to start distilling your messaging to maximize uptake. You can use this worksheet to determine how to frame your data signal so that it resonates with your specific audience.

1 Who is your audience?

Example: *Policymaker with competing priorities (i.e., low interest, high influence)*

2 What is the topic, and why is it relevant to this audience?

Start with the relevance of topic to your specific audience, using language that acknowledges their experiences and pain points.

Example: *Limited resources for data modernization means that many communities can't benefit from technological advances that stop the spread of infectious diseases.*

3 What is the data signal?

Focus on the signal that is most meaningful for your audience—not every detail in the dataset.

Example: *In 2023, two in three local health departments reported they had not received supplemental funding for data modernization. Data modernization funding has not reached most jurisdictions, forcing them to rely on outdated systems.*

4 What impact does the signal show for this audience?

Use the data to show the real-world consequences or missed opportunities that this audience cares about. Connect the numbers to outcomes they care about.

Example: *Data modernization helps local health departments detect outbreaks faster, slow transmission, and prevent deaths. Outdated systems during the pandemic resulted in reporting delays, limiting implementation of timely interventions in some areas.*

5 What is your ask of this audience?

Wrap up with a clear next step that is aligned with the specific action you want the audience to do (also known as, your communication goal).

Example: *This gap in data modernization funding keeps communities at risk. As a policymaker, you can help strengthen public health infrastructure by supporting direct funding at the local level.*

Step 3: Develop the Narrative Frame *(continued)*

Data stories are built on the elements of narrative storytelling, so you will need to transform your distilled message into the narrative arc structure. This usually involves storyboarding, collaborating with subject matter experts, and user testing with audience representatives. This helps you refine the narrative, incorporate feedback, and even uncover new data signals.

Elements of Narrative Storytelling

Character: Communities, health departments, specific populations

Conflict: Public health challenges (e.g., funding, capacity, outbreaks)

Call-to-action: Sustain funding, develop the workforce, create new policy

Progression of the Narrative Arc Structure

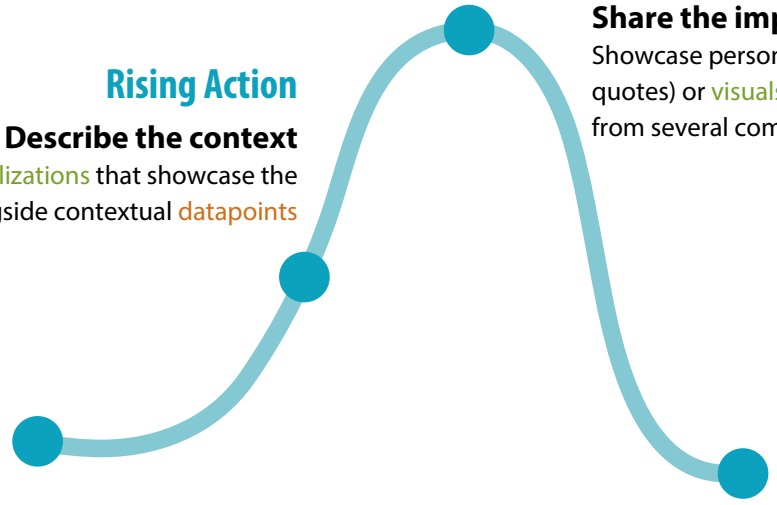
Introduction: Introduce the conflict and who it affects

Rising Action: Describe the context of the conflict

Peak Action: Share the impact of the conflict and whether anything is being done to address it

Resolution: Make the ask by clearly stating a specific, timely call-to-action

Review the narrative arc below for <u>one example</u> of how to integrate statistics, narrative, and visuals into the progression:



Introduction

Introduce the conflict

Describe the data signal (i.e., statistics) in plain language, or start with a relevant anecdote from a community member

Rising Action

Describe the context

Include data visualizations that showcase the data signal alongside contextual datapoints

Peak Action

Share the impact

Showcase personal narratives (e.g., stories, quotes) or visuals (photographs, videos) from several community members

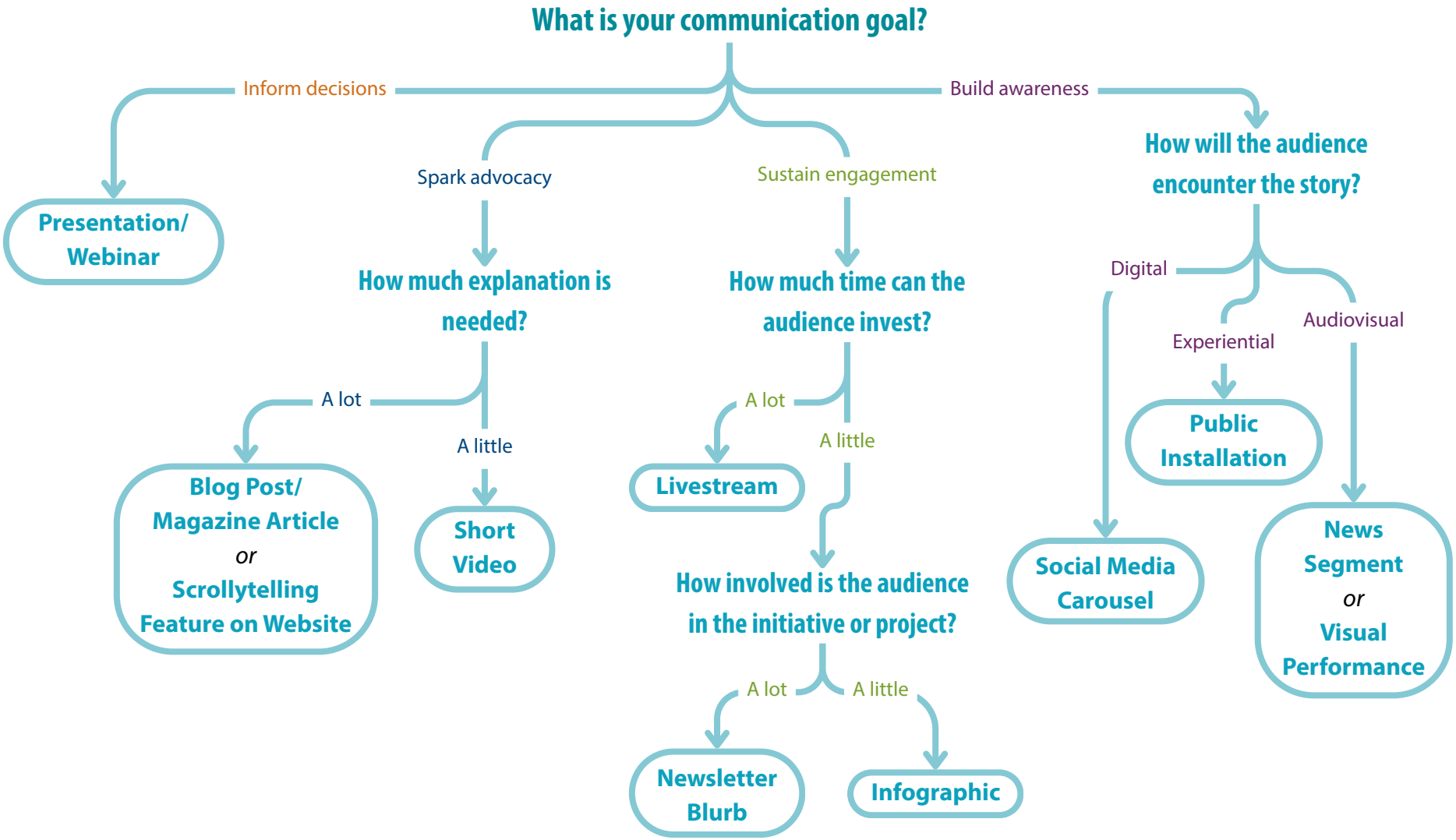
Resolution

Make the ask

Share quotes from community members that show support for the call-to-action, or describe how the data signal (i.e., statistics) could change because of the solution

Step 4: Design the Delivery

Once you know what your story is, you need to decide *how* to share the story. This decision tree offers a framework for moving from a story concept towards a completed deliverable. Start with your communication goal, which is the kind of action the audience will take as you determined in Steps 2 and 3. Then, follow the arrows through the sequential questions for recommended product ideas.[4]



[4] This decision tree is not comprehensive nor objective; rather, it offers a framework for the questions to consider when determining which kind of product may be most effective for your audience and communication goal.

Additional Data Storytelling Resources

The following hyperlinks offer complimentary information about how to create data stories, best practices for data visualization, and examples of data stories from across sectors and of differing degrees of complexity.

The Craft of Building Stories with Data
Free course on Open Visualization Academy

NACCHO Profile Study Dashboard
Example data stories about local health departments

ASTHO Profile Study Dashboard
Example data stories about state health departments

The Pudding
Digital publication of visual essays

Lapis by Kontinentalist
Platform for creating and publishing data stories

Data Visualization Checklist by Stephanie Evergreen
Guidelines for data visualization best practices

Acknowledgements

Authors: Kellie Perkins, MS; Gwen Davis, MPS
Suggested citation: Perkins, K. & Davis, G. (2026). *Creating a Data Story in Four Steps: A Practical Guide for Local Public Health*. National Association of County and City Health Officials. Washington, DC.

This publication was supported by grant #5 NU38PW000037-02-00 awarded to the National Association of County and City Health Officials and funded by the Centers for Disease Control and Prevention. The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the U.S. Department of Health and Human Services.