Data Storytelling Toolkit for State Education and P-20W+ Agencies

Last Updated August 2022

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BACKGROUND

This Toolkit was developed for data stewards and data champions at State Education and P-20W+ Agencies to help drive the adoption of the expertise, tools, and practices needed to support effective online data storytelling.

Data storytelling is an emerging discipline in the public sector. It enables agencies and their programs to educate and engage key audiences with mission-related insights, taking advantage of owned data, proven technologies, and communications best practices.

As this is a complex and fast-evolving space, the Toolkit does not aim to be comprehensive. Rather, this guide serves as a desk reference to help kickstart efforts by showing the value of and guiding early steps.

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01 INTRODUCTION TO DATA STORYTELLING

The Value of Stories

Data storytelling acknowledges that stories are how we, as humans, often understand the world.

Data stories combine:

DATA	MULTIMEDIA	NARRATIVE	DESIGN
offers a relatively objective perspective	makes that data accessible	makes the data more compelling	presents these elements in a compelling way

Creating Space for Stories

With P-20W+ data, education data practitioners tend to be highly focused on the foundational steps of the data lifecycle.

While data storytelling comes much later, it is increasingly recognized as an opportunity to leverage agency data investments for higher impact.

Data Management Lifecycle

USE · DATA DEFINITION · PRIVACY · COLLECTION · STORAGE · VALIDATION · QUALITY
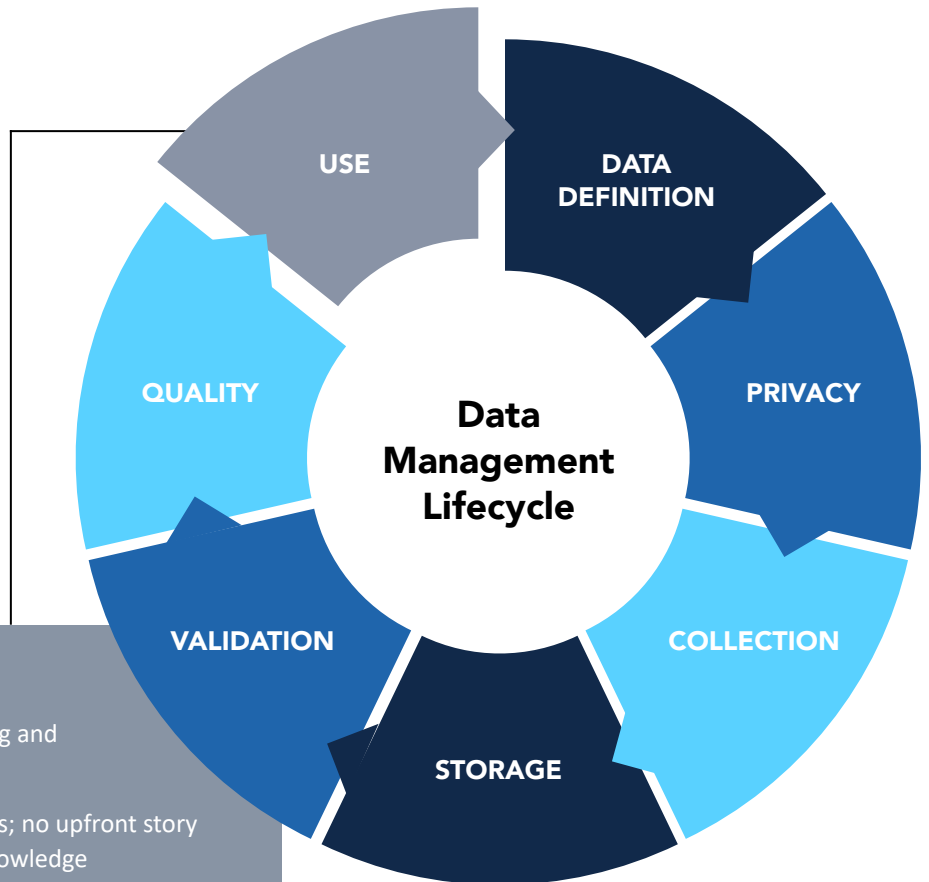
DATA USE

Reports meet statutory requirements; long and information-dense

BI Dashboards explore data, identify new insights; no upfront story presented, requires deep data knowledge

Data Stories persuade, show meaning of the data; reduces context

Stories vs. BI Dashboards

It's easy to put data in a dashboard, share the link with people and say:

'There we go. I've done my part. It's on everyone else to do what they need to do with the data.'

That's something that we have been trying to deal with. We talk about going beyond 'just another dashboard.'

We actually have a module in our data literacy playbook called Not Another Dashboard.

A dashboard is a very nice way to explore the data yourself.

It's an exploratory tool. It's a way for you to filter and look at the data on your own.

Where I think it is quite weak is helping people understand what the most important thing to look at is.

A dashboard doesn't just point your users or your readers to see: *Look, that was the highest point. This was because COVID restrictions came in at that point. And this is why this data point is very interesting.*

RACHEL YALES
International Federation of Red Cross and Red Crescent Societies

Anticipating Common Questions

You and Your Team
Great data stories are a cross-disciplinary effort.
They may require a project manager, and often involve data analysts, subject matter experts, writers, editors, designers, and developers.

Quality and Complexity
Data stories only need to be as long as the amount and quality of available data and the complexity of the underlying story. A few paragraphs, visualizations, and images may suffice.

Time and Effort
A worthwhile data story can take days, but you may also decide to take weeks or even longer to create. The investment should be proportional to the intended impact.

Who Benefits from Data Storytelling?

The audiences who benefit most from data storytelling have use cases that are distinct from other stages of the data lifecycle. The following list is illustrative and by no means exhaustive. To sort and filter this as a spreadsheet, please visit: bit.ly/COIPersonas.

PERSONA	DATA TYPE	USE CASE
Assessment Company (e.g. College Board for SAT)	K-12	Target appropriate districts and schools for testing recruitment
Assessment Company (e.g. EST for GRE)	Postsecondary	Target appropriate universities for testing recruitment
Curriculum Development Staff or Department Lead	K-12	Understand where changes or investments in curriculum may need to be made
Economic Development Organization	Workforce	Identify trends to recruit and support local business
Economic Policy Lead	Workforce	Understand emerging trends
Employee	Workforce	Look for availability of relevant, quality jobs to progress in career
Employer	Preschool	Open locations in schools or districts that offer good learning progressions to employee dependents
Employer	K-12	Identify needed skills and competencies
Employer	Postsecondary	Looking for needed skills and competencies
Employer	Workforce	Look for needed skills and competencies
Governor or Legislator	Preschool	Reference data for evidence-based policymaking
Governor or Legislator	K-12	Reference data for evidence-based policymaking
Governor or Legislator	Postsecondary	Reference data for evidence-based policymaking
Governor or Legislator	Workforce	Reference data for evidence-based policymaking
Individual	Workforce	Look at new career options and identify resources to make career decisions or changes
Individual	Workforce	Understand progress via Comprehensive Learner Record (CLRs) or Learner and Employment Record (LERs)
Parent	Preschool	Identify school types/teaching methods that lead to good learning progressions
Parent	Preschool	Find specific schools with quality ratings or demonstrated learning progressions
Parent	K-12	Find specific schools with quality ratings or demonstrated career outcomes
Parent	Postsecondary	Find specific schools with quality ratings or demonstrated career outcomes
Recruiter	Workforce	Understand where best to target efforts to recruit needed skills and certifications
School or District Leader	K-12	Compare outcomes across states
School or District Leader	Workforce	Compare outcomes across states
Student	K-12	Understand progress via Comprehensive Learner Record (CLRs) or Learner and Employment Record (LERs)
Student	K-12	Find employment options based on high school diploma / GED training
Student	Postsecondary	Understand progress via Comprehensive Learner Record (CLRs) or Learner and Employment Record (LERs)
Student	Postsecondary	Identify possible careers and insights to make informed career decisions
Teacher Preparation Program	K-12	Understand where changes or investments in curriculum may need to be made
Teacher Preparation Program	Postsecondary	Understand where changes or investments in curriculum may need to be made
University Leader	Postsecondary	Understand comparative outcome data for their programs (via IPEDS data)
Workforce Development Board	Workforce	Identify opportunities to invest and build local capacity

02 PLANNING YOUR STORY

Building Blocks

Like the data collection efforts behind them, data stories have a purpose and a point of view. These are baked into the start.

Consider the following formulas:

▶ [Audience] will learn [Insight] based on [Dataset].

▶ [Audience] will feel [Emotion] based on [Insight].

▶ Based on [Emotion], [Audience] will want to take [Action] to achieve [Change].

Success doesn't require a full "story." Data stories do not need to—but certainly can—include each of the phases often attributed to a story.

Consider these story phases:

01

Provide context on the people, places, or issues central to your story.

02

Introduce a key conflict.

03

Increase emotional engagement.

04

Show a decision that addresses the conflict.

05

Provide some closure.

Approaching New Stories

The following quotes are sourced from interviews with data storytelling leadership at national and international news websites. We keep their quotes anonymous in exchange for their candid insights.

How is data effectively used?

"We will often use charts in place of photographs. These help to reinforce the general theme of a story."

"Continuously updating dashboards require special care and feeding. They are appropriate for big issues, but we do not just let these get automatically updated from a table.

Consider how to push each update and how updates will be presented and contextualized."

For enterprise data reporting, we work hard to make something invisible, visible.

We spend a lot more time and effort to gather intelligence and present something insightful, surprising. The story is built around this data.

What makes a great data story?

"A good data story doesn't have to be flashy to be insightful. In other words, it doesn't need to have unique form or structure, and it doesn't need to be interactive."

"Annotating is critically important. This makes the difference for clear explanation and understanding of the data elements."

A good visualization is something that distills a complex story into a few variables.

Planning for Success

The following quotes are sourced from interviews with data storytelling leadership at national and international news websites. We keep their quotes anonymous in exchange for their candid insights.

What defines success?

"We have three metrics for measuring success: number of unique visits, total time spent on page, and—did we learn something new? All are equally important."

See Making Your Case for additional approaches.

"Just because you build it, does not mean that they will come.

You need a robust promotional strategy around your work: SEO[1], social media, advertising, email, etc."

How do you build trust?

"Transparency is an important consideration for all data stories.

How do you go from raw data to final product? Share your approach or methodology as best as possible."

"Make sure your organization has a process for checking data.

Build it into your culture and your processes so it doesn't fall on any one person."

And a passionate request...

For goodness' sake, please get away from BI tools! They are complex and present a lot of data. They are not great as storytelling tools, and they are not built to be.

[1]Search Engine Optimization

Considering the State Agency Context

The following insights are sourced from interviews with State Education and P-20W+ Agency leadership. We keep their quotes anonymous in exchange for their candid insights.

What should other states know?

"Our data is often quite complicated and nuanced. The story we tell should be easy to follow. Ask if your story could be represented in the simple arc of a children's story book."

"The data you use can certainly be used for political purposes. We just work hard to build and maintain our credibility as an independent organization. The story comes from the facts, not the other way around."

"Like any good web project, it's important to know who your audience is for your data story. Build it for them. Test it with them before you launch it. Is it easy to navigate? Is it easy to understand? What are the key takeaways?"

"The most interesting data stories are sometimes the ones that are the hardest to capture. Try not to answer questions based on a recent snapshot that should be answered with longitudinal data."

The story should be easy to follow.

▼

The story comes from the facts.

▼

The story must have an audience.

▼

The story should be built on the right data.

03 BUILDING YOUR STORY

Selecting Data Visualization Tools/Technologies

Consider these options for displaying your data. To sort and filter as a spreadsheet, and see additional columns, please visit: bit.ly/COIDataViz.

NAME	VENDOR/ AUTHOR	TYPE	EXECUTIVE SUMMARY	WHO USES?	RECOMMENDED BY NEWS SITES	DEVELOPMENT REQUIRED	FREE OPTION	PAID OPTION	ANIMATION	INTERACTION
amCharts	amCharts	Chart Library	Pay for a wide range of fast, high-polish data visualizations and deploy to your hosting environment.	amChart is used by large companies such as Amazon, Apple, ebay, and PayPal within their customer-facing products.	No	High	Yes	Yes	Yes	Yes
Chart.js	Chart.js Community	Chart Library	Quickly set up and self-host a limited set of free charts with simple configuration options.	Chart.js is used by several large companies, such as Deloitte and GoDaddy.	No	Medium	Yes	No	Yes	No
Charts	Google	SaaS Product	Customize and embed a wide set of free charts.	Google Charts appears to be most adopted by mid-sized companies.	No	Medium	Yes	No	Yes	No
D3	D3 Community	JavaScript Library	Create and host highly custom, engaging data stories, developed from scratch or from free official or community-developed modules.	D3 is foundational to many of the data visualization SaaS solutions presented in this catalog.	Yes	Very High	Yes	No	Yes	Yes
Data Studio	Google	SaaS Product	Embed a highly flexible canvas that includes one or more elements, including text, images, links, graphs, maps, or tables.	Data Studio is used by researchers and communicators who have rich datasets but very targeted audiences in mind for storytelling.	No	Low	Yes	No	Yes	No
Datawrapper	Datawrapper GmbH	SaaS Product	Embed attractive, informative visualizations with a low-cost enterprise solution for teams that need to publish a high volume of content.	Datawrapper is used by news publishers to reduce burden on teams in developing graphics ready for web or print use.	Yes	Low	Yes	Yes	No	Yes
Flourish	Canva	SaaS Product	Embed animated or interactive data visualizations with an enterprise solution that offers proven and highly customizable templates.	Flourish is used by marketing and advertising agencies to offer engaging data visualizations for high-impact needs.	Yes	Low	Yes	Yes	Yes	Yes
Highcharts	Highcharts	Chart Library	Pay for a wide range of fast data visualizations and deploy to your hosting environment.	Most of the Fortune 100 uses Highcharts.	No	High	No	Yes	Yes	Yes
StoryMaps	Esri	SaaS Product	Create and embed scrollable, data-based narratives, leveraging cutomizable templates to include maps, text, images, auto-play videos, and other chart types.	StoryMaps is commonly used by federal agencies and nonprofits that collect unique geographic data, already use Esri ArcGIS to analyze that data, and have a public communication mandate.	No	Low	No	Yes	Yes	Yes

Selecting Natural Language Generation Tools

In the great majority of use cases, you will want to write copy that is specific to your story. For select use cases, where you may want to generate text for many views of your data (by school, by city, etc.), you may consider these advanced options for converting structured data into narrative text. To sort and filter this as a spreadsheet, and see additional columns, please visit: bit.ly/COINLG.

NAME	VENDOR/ AUTHOR	DESCRIPTION *Vendor-Supplied*	MODEL	HOW IT WORKS *Vendor-Supplied*	PRICING
WordSmith	Automated Insights	Wordsmith is the world's first public natural language generation (NLG) engine. Wordsmith allows users to generate human-sounding narratives from data. The platform makes it easy to produce millions of personalized reports, articles, and narratives in the time it takes to write just one.	Self-Service	Upload structured data via uploading a CSV directly, passing the data to our API as a JSON object, or through one of our integrations that seamlessly connects to our API like Tableau. The output of every current solution is powered by the narrative design (also referred to as "template", "intent", or "narrative type"), which is constructed by the end user.	Contact sales for pricing. As of publication, for large volume (e.g. 100,000 unique articles), the estimated cost is approximately $50,000.
ARRIA NLG	ARRIA	Arria NLG Studio is the world's first true NLG design tool that gives users (from novice to expert) the ability to automatically generate, from complex data sources, superbly written, natural-language reports. With Arria, descriptive narratives accompany your visuals in the form of an Overview (what happened), Key Drivers and Offsets (why it happened), and Data Commentary (what potential actions should be taken)—based on the entire dataset.	Vendor-Managed	Arria offers 3 deployment options: cloud, dedicated cloud, or on-premises—to accommodate your permissions and data security requirements. Various ARRIA products are available to connect with data and add context with the ability to generate entire documents with insights relevant to the specific reader and use case.	Contact sales for pricing. Multiple pricing models are available, including Pay Per Viewer, Pay Per Word, and Pay Per Use Case.

Selecting and Editing Multimedia

Consider these options for sourcing and tailoring multimedia to accompany your story.

RESOURCE	PHOTOS	VIDEOS	DESIGN	FREE	PAID
Adobe Express			●	●	●
Canva			●	●	●
Pexels	●	●		●	
Pixabay	●	●		●	
Shutterstock	●	●			●
Unsplash	●			●	

04 MAKING YOUR CASE

Securing Support

If this represents a new approach for your organization, consider the following recommendations for showing the value of data storytelling and building consensus within your organization.

Build a Case

- Partner with someone from a program office. This is imperative. Too often the program office looks at data thinking it has one meaning, when it has another.

  On the flip side, data stewards comprehend the meaning, but may not always understand the implications.

- Identify one or more audiences and use cases where data storytelling would advance your state's objectives.

- Identify high-quality datasets, at least one within your state, that support those use cases.

- Summarize an objective "as-is" overview of your organization's Data Use efforts, including successes, lessons learned, and unmet opportunities based on recent projects.

Identify a Champion

- Identify a champion in your organization who has authority in the agency, has ownership over those use cases, and is open to supporting innovative approaches.

  If possible, include the champion when building the case for data storytelling.

- Consider recommending colleagues or offices to this champion who would support critical data storytelling roles and potentially form the nucleus of an advisory group.

  These may be individuals with talent to contribute or take ownership over key organizational processes.

Scoping Data Stories

Consider the following options for identifying the level of effort and investment that may be needed for individual data stories.

Similar Project Approach

- What are roughly comparable projects within and outside of your organizations for sizing of the level of effort?

  Consider data complexity, timeline, people (internal/external), tools, technology, and size and quality of the resulting product.

Bottoms-up Approach

- How will project members coordinate and communicate?

- Do you control your project timeline or is the project informed by an external deadline?

- How will you access the needed data?

- How much work is needed to analyze and prepare the data for visualization?

- Do you anticipate "out of the box" data visualizations or are custom implementations needed?**

- Do you need to pay for access to new tools? If relevant, how many user licenses do you need?

- Do you need to create or buy rights to supporting multimedia?

- How much text do you anticipate writing to provide context for data visualizations and multimedia in support of the project goals? How nuanced, and what expertise, is needed to appropriately tell the story?

- Where will you host/publish the resulting data story?

- Will the data story need any future updates from your team?

- Who will promote and through which channels?

*** Please note that custom implementations are not recommended for teams just beginning their data storytelling journey.*

COMPARABLE PROJECTS

COMPLEXITY

TOOLS

TECHNOLOGY

QUALITY

SCALE

PROJECT MEMBERS

TIMELINE

DATA ACCESS

ANALYSIS

CUSTOMIZATION

MEDIA RIGHTS

COPYWRITING

EXPERTISE

PUBLISHING

UPDATES

PROMOTION

Questions to Ask a Vendor

Consider the following recommendations for assessing external vendors to assist in developing compelling, high-value data stories.

QUESTION	EXPLANATION
What foundational efforts are recommended to prepare for successful data storytelling?	If the agency is building new data storytelling capacity, an experienced firm will suggest investments such as assessing current processes and capabilities or developing a data visualization vocabulary that aligns with existing branding guidelines. In any case, they will need time to get up to speed with project data and stakeholders.
What is the vendor's experience with the preferred technologies/tools for data storytelling?	Understand the number, variety, and complexity of previous implementations to identify how flexible the vendor can be in meeting goals as project challenges are identified and mitigated.
What is the vendor's experience with user experience research, design, and testing?	Ask about specific roles and projects dedicated to UX (user experience) design. This will help data stories to resonate, as they will be designed for and tested with priority audiences.
How will the proposed solution remain visible when the contract ends?	Ensure that the solution's visibility is not dependent on the vendor's continued involvement (hosting, account access, etc.). Ensure that resources/capabilities will be available to sustain and update.
Is the vendor comfortable working with firm-fixed price contracts?	For projects with clearly defined inputs, processes, and outputs, firm-fixed price contracts can be an excellent opportunity to provide cost protection.
How does the vendor manage time and material contracts?	For projects with undefined scope, and especially in circumstances where the agency is building new data storytelling capacity, vendors will likely only feel comfortable accepting contracts based on time and materials. In these circumstances, look for a proven record of Agile project management; clear transparency and visibility into project and budget status; and defined processes to periodically identify alternative options to balance factors such as cost and impact.

05 CASE STUDIES

The following case studies present insights into the state of practice across leading agencies. They reinforce key themes from this toolkit but also highlight how organizations may choose to approach data stories based on their capabilities, staffing, and experience in this domain.

We supplement with a case study from the global Red Cross network to demonstrate the power and potential of data stories in making data actionable and insightful.

Understanding the Nuance and Challenge of Neighborhood Measures

Interviewees

Jessica Cunningham, Executive Director; Matt Berry, Research Director; Kris Stevens, Data Scientist

Reframing Data for the Local Agency and Individual User

Interviewee

Lori Fey, Deputy Commissioner, Data Analytics and Innovation, THECB

Using Data to Put Community Needs First

Interviewees

Diana Medina, Regional Community Engagement and Accountability (CEA) Manager, Americans Region; Rachel Yales, Sr. Officer, Information Management for PGI-CEA
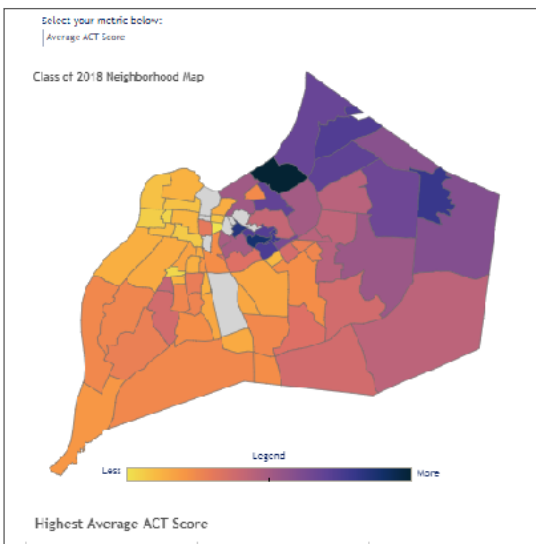
KYSTATS

Understanding the Nuance and Challenge of Neighborhood Measures

Interviewees

Jessica Cunningham, Executive Director; Matt Berry, Research Director; Kris Stevens, Data Scientist

Evolve502, a non-profit organization in Louisville, KY, was struggling to easily understand where students lived and what high schools and postsecondary institutions they attended. The KYSTATS team created a dashboard to help Evolve502 better understand the story of the youth they serve.

Focused data storytelling on individual neighborhoods resulted in powerful visualizations immediately useful to Evolve502.

What was the approach?

- KYSTATS had ready access to both residential tract information and school attended. They partnered with Louisville Metro United Way to map the residential tracts to neighborhoods, leading to analysis and visualization of neighborhood school attendance patterns that were used by Evolve502 to provide programmatic support to youth. This focus on individual neighborhoods, instead of the entire city, has led to the development of powerful data visualizations.

- To ensure that the data story was well-accepted and highly visible on launch, KYSTATS created a shared governance process with Evolve502 that included well-known, respected stakeholders with knowledge of community issues and knowledge of how the data related to the community. This grounded approach resulted in relevant data for the project, and when combined with an extensive internal review of both the data and storytelling approach, the team was able to ensure data were not only relevant—but also reliable and valid.

What was the result/impact?

- From a broader perspective, Evolve502 became an organization that incorporates data into both strategy and day-to-day work to target both location and needed support. For example, Evolve502 uses the data to inform where to place a community learning hub (a partner that provides youth with out-of-school time support) or determine other locales of strong need.

- Of additional note: Various organizations (like Evolve502) now work with KYSTATS early in the grant writing process. These conversations ensure that data, including, for example, appropriate matched samples, will be used with validity and rigor to best answer evaluation questions and tell a story that is accurate and appropriate to the examined issues.

What lessons were learned or reinforced as a result?

- When possible, refine possible story parameters during exploration such that the work results in well-defined problems on pertinent questions. This will result in data stories that will be immediately useful and allow stakeholders to see the power of data and storytelling.

- Bring a team to the work with a variety of experiences that include a strong team of analysts and community partners/stakeholders. If teams do not have experience working cross-functionally, consider also engaging an external facilitator to ensure the analysts and stakeholders are "hearing" each other..

Texas Higher Education COORDINATING BOARD

Reframing Data for the Local Agency and Individual User

Interviewee

Lori Fey, Deputy Commissioner, Data Analytics and Innovation, THECB

Texas has a long history of quality data systems and key leading indicators for P-20W+ that have been used to monitor and assess programs. The team at THECB regularly visualizes data for both internal and public consumption and, generally, the data have been rich sources for policymakers and researchers.

As an extension of these efforts, leadership at THECB now prioritizes efforts to imagine how data can be more accessible to local agencies or individuals who want to use the data to understand their own story.

What was the approach?

- Based in Human Centered Design principles, THECB has begun a 'data modernization' process that will allow users to access data in a more community-based, personalized way. The plan is to allow users to define what that community is (such as an elected jurisdiction, a Metropolitan Statistical Area (MSA), an Education Service Center region, etc.) to get tailored insights.

- THECB has conceptualized a public portal that could be used to allow individuals to access data useful to their own decision making. For example, tools will try to help a user understand the comparative labor market outcomes between a particular degree at one institution versus that same degree at another institution, including the relative levels of possible student debt.

Lessons Learned

While the process is still in an early stage, some key lessons have already been learned.

- Regularly enforce the importance of user engagement by planning interviews and research with local organizations and individual students and families; working to understand and implement best practices in the field; and designing projects to include Human Centered Design at their core.

- Be ready to invest the time required to not only develop data systems, processes, and tools, but also understand the heavy time investment needed in listening to stakeholders and hearing from those that want to use the data beyond just policy and research. While it is important to continue to collect those measures typically used for monitoring and compliance, by working with stakeholders, it is possible to find new and unexpected measures of interest to users.

- Beyond guidance provided earlier in this toolkit, THECB recommends two additional measures of success for the storytelling process:
    - Accurate data story portrayal in the media, especially in data sets that may have been historically misunderstood or misused.
    - Feedback mechanisms to allow those able to use the data in meaningful ways to share how it was useful.

Using Data to Put Community Needs First

Interviewee

Diana Medina, Regional Community Engagement and Accountability (CEA) Manager, Americans Region; Rachel Yales, Sr. Officer, Information Management for PGI-CEA

IFRC identified a gap in available data regarding COVID-19 impacts on migrant and indigenous populations in Latin America and the Caribbean. IFRC facilitated community engagement to collect new information and tell the story of that data to help guide improved policy decision-making at the national level.
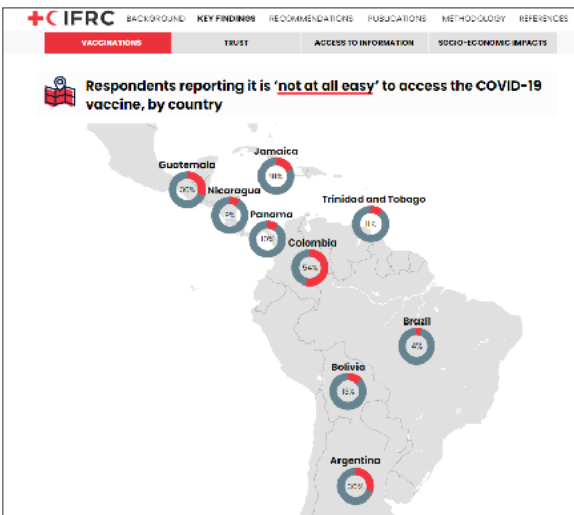
Visualizations clearly indicated that some countries were outliers and reinforced that differential responses by the Society may be necessary.

What was the approach?

- IFRC started with primarily quantitative data, but as they worked the story, they realized that an emphasis on numerical data would not give a full picture of how the pandemic was impacting the lives of individuals. They wanted to be sure that they were showing not just the numbers, but also the people behind the numbers.

- They turned to the community to inform the story, working with volunteers to inform what they should be examining, to assist in building local questionnaires, and to provide interviews and photos—all to add context on what was happening behind the numbers.

What was the result/impact?

- A data rich story that includes both well designed presentation of quantitative data and an equal emphasis on qualitative information and context. The use of multiple methods of both data analysis and storytelling supports key audiences, including Red Cross National Societies and local decision makers charged with planning and delivering vaccines.

- Local decision makers trust the data and recommendations because they know that the community was part of the process. In the case of IFRC, their national societies were able to take the data and change their COVID responses on the local level.

Images sourced from National Society volunteers helped to ground the data visualizations and make it more human and engaging.

Lessons Learned

- Tell the story of the community. Collect individual stories and show the human beings behind the numbers.

- Build trust through inclusion. By including members from the small, vulnerable communities where Red Cross was doing humanitarian work, they were able to build trust in both the process and the results.

- Be willing to assess if the questions you had initially drafted continue to resonate as you work with the community and be willing to change if needed. This will lead to a higher likelihood that action can and will be taken from the resulting information.

- Using multiple methods of reporting (data stories, BI dashboards, charts) will allow for the findings to be applicable to a broader audience.

- Utilize diverse skillsets. IFRC found that having a team with diverse skills and life experiences allowed them to bring both the qualitative and quantitative data together to create an impactful and compelling data story.
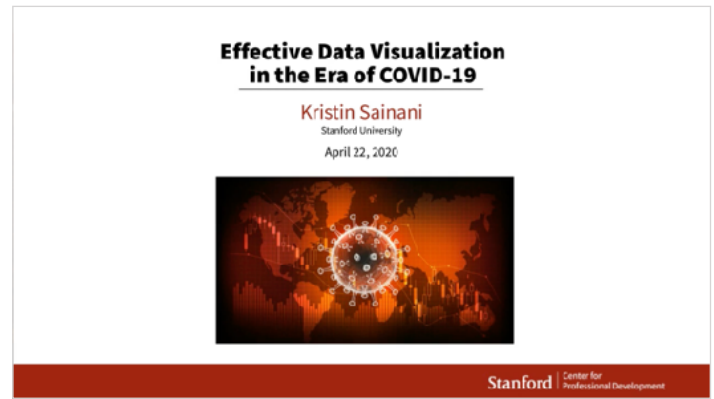
06 LEARN MORE

Recommended Resources

Watch These YouTube Videos
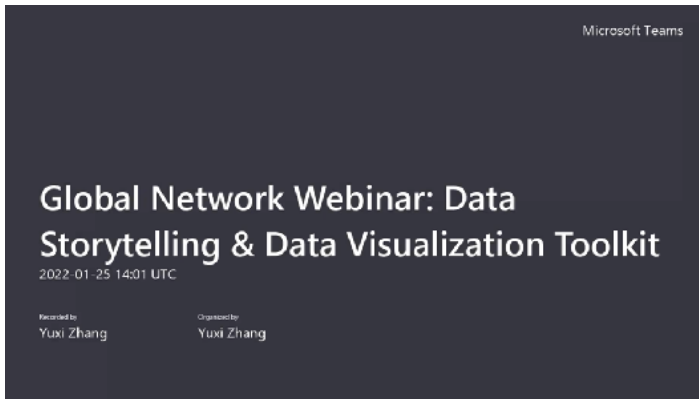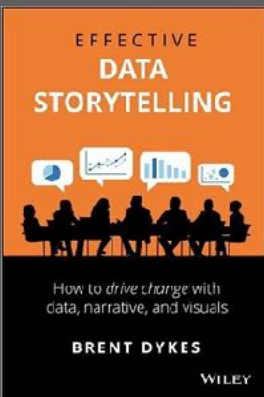

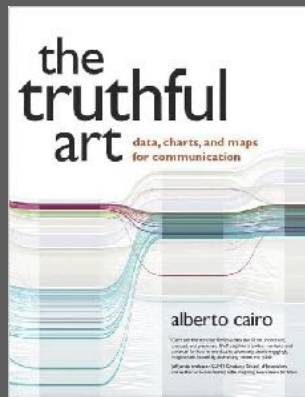Global Network Webinar: Data Storytelling & Data Visualization Toolkit (UNStats)

Effective Data Visualization in the Era of COVID-19 (Stanford)

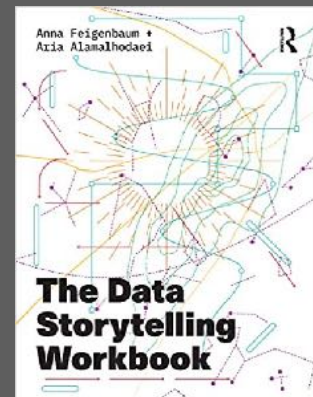### Read These Books

Effective Data Storytelling: How to Drive Change with Data, Narrative and Visuals (Brent Dykes)

The Truthful Art: Data, Charts, and Maps for Communication (Alberto Cairo)

The Data Storytelling Workbook (Anna Feigenbaum)

Share Questions and Feedback

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