MODERATOR:

Welcome to today’s Coffee Break presented by the Applied Research and Evaluation Branch in the Division for Heart Disease and Stroke Prevention at the Centers for Disease Control and Prevention.

We are fortunate to have Nicole Dickerman as today’s presenter. She is an ORISE Fellow from the CDC’s Division for Heart Disease and Stroke Prevention and sits on the Evaluation and Program Effectiveness Team.

My name is Sharada Shantharam and I am today’s moderator. I am on the Applied Research and Translation Team within the Applied Research and Evaluation Branch.
MODERATOR:

Before we begin we have a few housekeeping items.

All participants have been muted. However, to improve audio quality please mute your phones and microphones.

If you are having issues with audio or seeing the presentation, please message us using the chat box or send us an email at AREBheartinfor@cdc.gov

If you have questions during the presentation, please enter it on the chat box on your screen. We will address your questions at the end of the session.

Since this is a training series on applied research and evaluation, we hope you will complete the poll at the end of the presentation and provide us with your feedback.
MODERATOR:

The information presented here is for training purposes and reflects the views of the presenters. It does not necessarily represent the official position of the Centers for Disease Control and Prevention.

So, without further delay. Let’s get started. Nicole the floor is yours.
THE POWER OF DATA VISUALIZATION:
EFFECTIVE REPORTING STRATEGIES FOR
PROGRAM EVALUATORS

Thank you, Sharada. Good afternoon to everyone calling in. I appreciate you joining us for today’s presentation on The Power of Data Visualization: effective reporting strategies for program evaluators.

Communicating evaluation findings is an integral part of the evaluation process; however, it can often pose some challenges. Evaluators need to consider audience needs, dissemination objectives, any reporting requirements and use tailored strategies to effectively communicate data and evaluation findings to key audiences and stakeholders. During this presentation, I will describe a few effective approaches and available tools to improve evaluation reports and communication of key findings, through the use of data visualization.

I also want to point out that this presentation only gives a brief introduction to data visualization. As this topic continues to grow in popularity, there are many other resources available on the web. At the end of this presentation, I have a few links to some excellent data visualization and evaluation report writing experts that you may find useful.
Communicating data and evaluation results can be a serious balancing act. Evaluators need to consider the purpose of the evaluation, their audience or stakeholder needs, reporting requirements, and key dissemination objectives, among many other things. It can be extremely challenging given all these factors, plus any resource constraints you may experience in your setting. However, there is no one way to communicate your results. Therefore, it’s important to format your evaluation findings strategically.
There are several ways to report evaluation findings. In this presentation, I’ll discuss four common reporting types, including infographics, executive summaries, traditional evaluation reports, and action-oriented evaluation reports. These are distinct reporting styles that all communicate different levels of data. When communicating evaluation results, it’s important to consider your specific setting and how you want your evaluation findings to be used.
The first reporting type I’ll discuss is an infographic. Infographics are a communication tool that represent information in a graphic format designed to make data easily understandable at a glance. They are usually related to a single topic and one page in length and are intended to quickly communicate a message, simplify the presentation of large amounts of data, illustrate patterns and relationships, and monitor changes in variables over time. They do a great job at summarizing an overall trend or key findings and are an effective strategy for communicating evaluation findings to stakeholders that are interested in high level findings. Some intended users of infographics include strategic decision makers, external stakeholders, and the general public.

Also shown are a few websites for creating infographics. All the websites shown are extremely user-friendly and have free components, which is great if cost is a barrier.
Next we have executive summaries. Executive summaries are short documents that summarize a longer report so a reader may rapidly become acquainted with a large body of material without having to read the entire report. Executive summaries often have more detail than an infographic but less detail than a full evaluation report. They are able to tell “the whole story” of your evaluation, but by synthesizing findings and presenting overarching themes. They are suitable as a stand-alone document that share a bite-sized amount of information about your evaluation findings. They might also share strategic information and depict general progress toward implementation and outcomes.

It’s important to remember that executive summaries may be the only piece of information that the audience will have a chance to read in your report. With this in mind, executive summaries allow an evaluator to communicate a handful of key findings with your evaluation approach, in addition to a few recommendations or conclusions.
The next reporting type I’ll talk about are traditional evaluation reports. Traditional evaluation reports are comprehensive documents that detail evaluation methods and actionable findings for the purpose of informing program improvement. They include information about all methods, data collection instruments, and detailed findings and recommendations. Audiences can include funders, program leadership, partners and stakeholders,

However, traditional evaluation reports are not a one-size-fits all approach. Evaluators should try to write traditional evaluation reports that can be broken down into smaller sections that can be disseminated to stakeholders individually. Also, consider organizing reports strategically and places where using other reporting approaches, like infographics and executive summaries might be more useful.

It is often the case that funders require a traditional evaluation report for program accountability and reporting requirement. In such instances, it’s important to comply with the reporting requirements specified by the funder.
The last reporting type I’ll cover today is an action-oriented evaluation report. Action-oriented reports are intentionally shorter than traditional formal evaluation reports and are focused, simple, and geared toward a particular audience. These evaluation reports offer flexibility in terms of time and creativity. A well-designed action-oriented evaluation report calls attention to important findings and possible next steps. These reports can be presented through various mediums including but not limited to newsletter articles, webinars, debriefs/town halls, dashboard reports. Intended users can include program leadership, program staff, public health practitioners, policy makers, and other evaluators.
Now that I’ve described 4 common reporting types, I’d like to point out that not all of these are mutually exclusive. It’s important for evaluators to note that it may be beneficial to use multiple reporting types to present evaluation findings, especially when taking into consideration which types would be appropriate for different audiences and stakeholders.

No matter which reporting type you choose to use, it’s always important to consider how to present your data in an engaging and understandable way.
Which brings me to data visualization and how it can be used to help communicate your evaluation findings. So, what exactly is data visualization? Data visualization, otherwise known as data viz, is the creation and study of the presentation of the visual representation of data. It is also known by several disciplines as the modern equivalent of visual communication. Data viz can also be thought as an integration of data, design, shareability, and story, as seen in the graphic to the right.

According to Azzam et al.’s definition, data viz relies on three specific criterion. The first criterion states that data viz is based on qualitative and quantitative data. The second criterion states that data viz results in an image that is representative of raw data. And the last criterion is that data viz should be readable by viewers and supports exploration, examination, and communication of the data. While these three criteria may seem obvious at first glance, it takes thoughtful consideration and application to successfully achieve them in practice.
Effective data visualizations should tell a story about your data, be clear and easily understood, be selective in the information presented, compliment text, and avoid jargon and technical language.

Visualizations should be used to increase understanding of a program, its context, and history, aid in data collection, conduct analyses of data, and communicate to stakeholders.
So now, I’d like to highlight a few tips for creating effective data visualizations. These include but are not limited to simplifying graphs, visibly highlighting key findings, using meaningful colors, comparison, labeling, and ordering.
This slide shows an example of how to simplify a graph to make it more effective. This 3-dimensional pie chart shown is attempting to describe intervention types for strategy 3.1 for 1305, which deals with trying to increase implementation of QI processes in health systems. There are a few issues with this graph. First, it’s hard to see and distinguish a difference each piece of the pie. For example, one piece of the pie represents 26% and another segment represents 23%, however they look extremely similar. It’s also confusing to follow which color relates to which intervention type since the colors in the legend are so small.

So, let’s simplify this graph.

I took the same data from the 3-D pie chart and formatted it using a horizontal bar chart in Excel. I ordered the data from greatest to least so the reader can easily distinguish differences between each category and the regression. I also directly labeled each intervention type so that there is no need for a legend.
Now let’s take this bar chart and see if we can make it better. I want to visually highlight the key findings to share with my stakeholders.

Here is an approach to visually highlighting key findings. Since I want my stakeholders to see that workgroups or collaboratives and professional development opportunities were the most commonly implemented intervention type, I want to make those stand out. Therefore, I colored the top two greatest rows in an eye-catching red color, and I faded out the other rows so the reader is drawn to the data that is most meaningful. I also added a title that summarizes key points from these data.
Here we have another example. This is the Year 5 Evaluation Snapshot from 1305. In it, there are many data viz techniques used but the ones I want to highlight are the ordering of the graph axis, highlighting the key findings from the evaluation, and the use of a specific color-red-to differentiate that these data are for heart disease outcomes.

Ordering is an important tip to remember when communicating patterns in your data. Evaluators should try to order data intuitively by categorizing alphabetically, sequentially, or by value. Order data consistently. And order data evenly by using natural increments on axes (0, 20, 40,60…and so on).
Data visualization can make comparisons and relationships a lot easier to see. Evaluators should try to include a baseline if possible. A baseline allows for some added context for comparison and if small fluctuations in data are meaningful, you may be able to see the difference.

Labeling allows the audience to interpret data, but too many or too few can hinder a visualization’s effectiveness. Make sure everything that needs a label has one and that all labels are easily identified with the corresponding data. Also, it’s important to not over label. If something needs a label or the value of a data point is important to telling the story, then include a label to enhance comprehension. If not, leave the label out.

In this example, I want to highlight the final 1422 Evaluation Snapshot, which shows the comparison between the baseline and the Year 4 actual value and how we can visualize improvements. It also uses labeling to ensure that each bar in the graph is correctly labeled with the appropriate context and shows what the axis is measuring.
Using meaningful colors could also be an effective method when developing visualizations.

When picking out colors, always consider the needs of your audience. Note that some individuals may be colorblind. You can find colorblind compatible color palletes at www.colorbrewer.org. Also consider whether or not your document will be printed in color or greyscale. Some colors, when printed in greyscale, look very similar, therefore making it difficult for your audience to see a clear indication from your visualization.
POLL QUESTION

- What data viz technique(s) do you use when you report your evaluation findings?
  - Simplify graphs
  - Visually highlight key findings
  - Use meaningful colors
  - Comparison
  - Labeling
  - Ordering
  - Other?
While data visualization may have the ability to improve communication of evaluation findings, evaluators should also keep in mind that using data visualization could present some challenges and limitations. The first limitation is related to causality. One of the greatest strengths of data viz is its ability to illustrate deliberate relationships. However, visualizations may easily mislead readers into thinking that relationships or patterns in data exist when in reality they do not.

The second limitation in developing data visualizations is the reliability of data used to create it. For instance, if data contain issues like missing values, unrepresentative samples, or other problems, then it is the evaluators responsibility to acknowledge those limitations transparently to avoid misleading stakeholders.

The third limitation of data visualization is related to introducing new or unfamiliar visualizations to stakeholders. Evaluators need to be thoughtful when introducing new types of visualizations to reduce audience frustration and misinterpretation.

Another limitation is related to understanding the connection between the visualization and the evaluation purpose/question. Evaluations often contain multiple data sources and analyses; however, not every analysis requires a visualization. In determining which
visualizations to create, an evaluator needs to be cognizant of the main evaluation questions and design visualizations that clearly support the answers to those questions.
So now that we touched on the potential impact of data visualizations in evaluation research and identified some examples, you may be wondering if there is a way to ensure you’re creating an effective data visualization or report. Well, there are a number of ways to answer this question. First and foremost, is your audience receiving what you intended? If yes, then that’s a good sign that you’re meeting your goals.

Here you see two checklists that provide guidance on both data visualization and evaluation reporting. They were developed by Stephanie Evergreen and Ann Emery, two experts in data visualization and evaluation.

The data visualization checklist, on the left, walks through several components for effective reporting and data communication. The evaluation report layout checklist, on the right, focuses on organization reports using effective strategies that allow the reader to easily access the key findings and take-home points.

At the end of the day, there isn’t one way to produce an effective evaluation and communicate data. It ultimately comes down to the combination of these strategies to communicate the needs of your unique data to your stakeholders’ needs.
There are several tools and resources available that can aid in creating effective reports with data visualization that powerfully convey our evaluation findings and inspire stakeholders.

There are several Microsoft Office programs, like Excel, PowerPoint and Access) and software packages (Tableau, GIS, and R) that allow evaluators a bit more flexibility and customization when it comes to data visualization.
I also wanted to point out a few websites from a few evaluation and data visualization experts that have great tips for developing effective approaches to communicating and disseminating your data. Including Stephanie Evergreen and Ann Emery’s websites.

In addition, here are a few books that may be helpful for guiding straightforward approaches to effective presentation of data.
Here we have a tip sheet developed by the Evaluation and Program Effectiveness Team in DHDSP on effective evaluation reporting. It consists of several considerations to include when communicating evaluation results, like engaging stakeholders through the evaluation process, defining a target audience, and many more. For a more in depth dive into effective evaluation reporting, you can also find the full Evaluation Reporting Guide at the link on the screen.
Here is a helpful graphic by Andrew Abela from Extreme Presentations, which may be helpful when deciding what kind of charts and visualization tools to use to communicate evaluation findings for when you’re working with quantitative data.
RESOURCES


Thank you all for your time and participation!

MODERATOR:

At this time, we’ll take any questions but first we’ll check to see if any questions have come in through the Q&A box.

*If we have questions ask the questions posed by the attendees to the presenter*

*If we do not have questions, proceed with the script below*

Since it appears that we have no questions at this time from the audience, we have some questions that we wanted to ask that might be insightful to our participants.

Question 1: What’s a good way to get started in integrating data visualization techniques into evaluation reporting?

That’s a great question and I wish there was one way to answer that. However, I think it often starts with understanding the purpose of the evaluation, the program and what your stakeholders’ needs are. When you’re creating deliverables or evaluation reports,
if you see an opportunity to highlight something that will catch the attention of your stakeholders, I think that’s a great opportunity to use data viz to showcase those messages. There are also a lot of free software applications I mentioned, like Excel that produce really great visuals that can be a good starting point before purchasing another software application, to see if you even need to spend the money.

**Question 2: What does the future of data visualization look like?**
Well, I can’t say for certain but the data viz space is ever evolving. There are constantly new data viz software packages and techniques coming on the market that will offer innovative approaches to displaying data. I believe it will continue to play a critical role in the evaluation process as well.
MODERATOR:

Thank you for your participation!

As a reminder, all sessions are archived and the slides and script can be accessed at our Division website at the link shown. Today’s slides will be available in about 3-4 weeks.

If you have any ideas for future topics or questions, please feel free to contact us at the listed email address on this slide.
MODERATOR:

Our next Coffee Break is scheduled for Tuesday, July 9th and is entitled Rigorous Program Evaluations: What Are They and How Do I Conduct Them?

Thank you for joining us. Have a terrific day everyone. This concludes today’s call.