



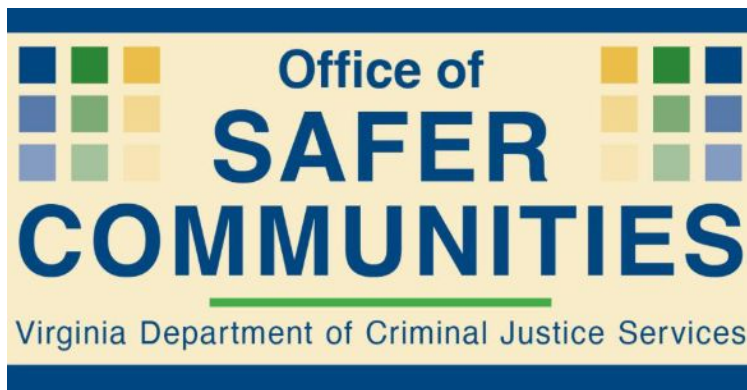
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Government and Public Affairs

VISUALIZING YOUR DATA

Tips for Grantees

Developed for The Department of Criminal Justice Services'
Office of Safer Communities



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TRAINING OBJECTIVES

- Ensuring grantees have the knowledge and skills necessary to present data effectively.
- By the end of this training, you will...
 - Understand important considerations for data visualization
 - Purpose
 - Audience
 - Categorizing data
 - Determine the best presentation methods
 - Learn tips & best practices
 - Explore resources related to visualizing your data



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WHAT IS DATA VISUALIZATION?

- Data can be anything!
 - Collection of facts, figures, or information that can be collected, organized, and analyzed
 - Ex. # of participants, test scores, # of donors, etc.
- Data allows us to tell a story.
- **Data Visualization:** making data easier to understand by representing data in a visual or graphical way

WHY IS DATA VISUALIZATION IMPORTANT?

Importance of Data Visualization



CONSIDERATION 1: WHAT IS THE PURPOSE?

- Ask: Why?
 - Formality
 - Tone
 - Presentation focus
- Ask: What is the information you are trying to convey? **Be Specific!**
 - Show participation - the number of individuals served or participants at an event
 - Demonstrate need - crime trends in the area over time
 - Communicate effectiveness - increases in knowledge after a program

CONSIDERATION 2: WHO IS YOUR AUDIENCE?

- Data visualization should be tailored to your audience!
 - Internal staff and partners
 - External partners
 - Stakeholders
 - Community at large
- What does your audience care about?
 - Overall success
 - Use of funding
 - Details of organization

CONSIDERATION 3: UNDERSTANDING YOUR DATA

What type of data is available?

Quantitative:

- Numerical data
- Countable or measurable
- What or how much/many?
- Number of participants, crime rates, satisfaction levels, etc.

Qualitative:

- Descriptive, non-numerical data
- Focus on understanding and ideas.
- Why or how?
- Perceptions of programs, experiences, explanations

Many projects will rely on both categories to fully capture all of the important information.

CONSIDERATION 3: UNDERSTANDING YOUR DATA

What type of variable do we have?

Numerical/Interval:

- Age, income, likert scale
- Pre/Post Test scores, crime rates
- Can help us show counts, average, range, more advanced statistical analyses.

Categorical/Nominal:

- No order or numerical value
- Race, Gender, Program type
- Employment status, offense type
- Can help us show breakdowns by category and most common responses

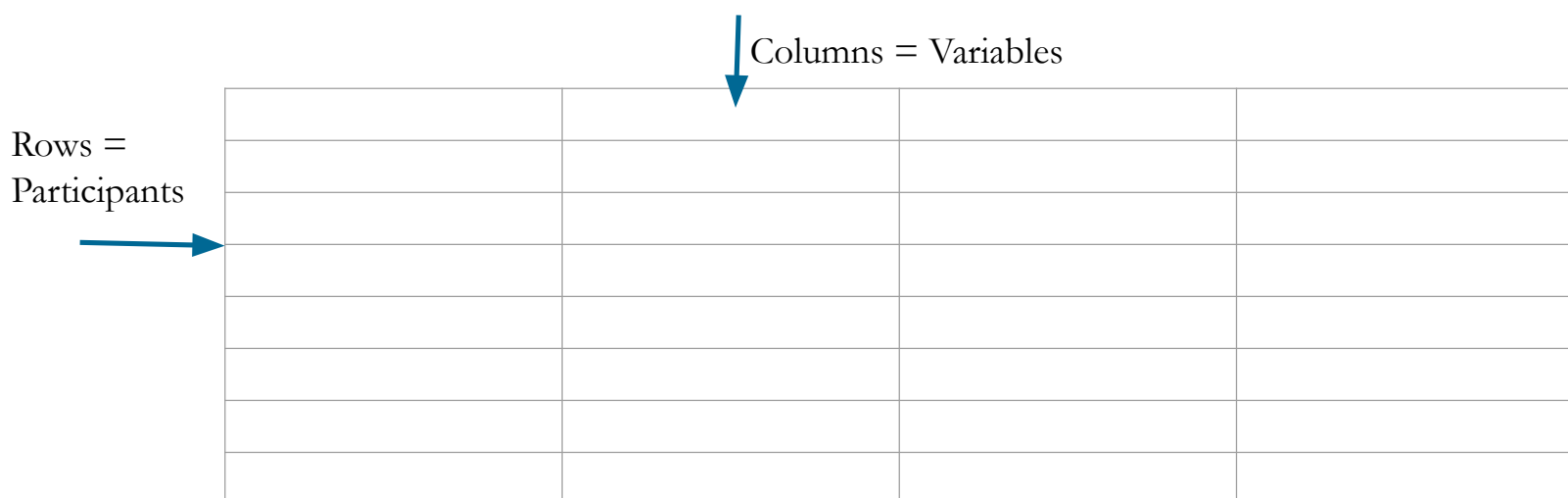
Knowing the type of data can help to determine the best type of data visualization

CONSIDERATION 3: UNDERSTANDING YOUR DATA

How do we put data together?

- **Intake forms:**
 - descriptive information, categorical data (race, gender, school, etc)
 - assessment scores, numerical information
 - criminal or academic history
- **Test Scores** - pre and post test scores
- **Survey Results**
 - perceptions (categorical or interval)
 - qualitative information

CONSIDERATION 3: UNDERSTANDING YOUR DATA



DATA VISUALIZATION

Types and Tools



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TYPES OF DATA VISUALIZATION

- **Charts** - Information presented in a graphical form
 - **Bar** - helps compare numerical values with the length of each bar representing the value of each variable.
 - **Line** - helps show trends over time, each dot represents a point in time
 - **Pie** - helps organize and show data as a percentage of the whole with each slice corresponding to a category's percentage.



Bar charts



Line charts



Pie charts



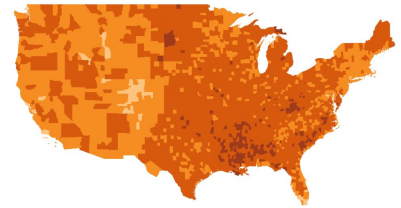
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TYPES OF DATA VISUALIZATION

- **Table** - a set of data presented in rows and columns, highlighting different categories of data
- **Geospatial** - data presented in map form using different shapes and colors to show the relationship between data points and specific physical locations
 - **Area Maps** - helps to show specific values over a geographic location.
 - **Heat Maps** - helps present patterns and trends in relationship to data utilizing color and size to represent different measures.

	Age	Attendance	Score
Participant 1	14	5	75
Participant 2	16	10	100
Participant 3	13	9	90



IMPACT		LIKELIHOOD				
		Improbable (1)	Remote (2)	Occasional (3)	Probable (4)	Frequent (5)
Catastrophic (5)	5	10	15	20	25	
Significant (4)	4	8	12	16	20	
Moderate (3)	3	6	9	12	15	
Low (2)	2	4	6	8	10	
Negligible (1)	1	2	3	4	5	

TYPES OF DATA VISUALIZATION

- **Infographic** - visual representation of data, designed to present complex ideas quickly and clearly while following a narrative.
 - Multi-media approach utilizing text, illustrations, data visualizations and layouts to tell a story or convey a message.
 - Used to communicate a wide-range of data in a quick and concise way.
 - Great for both quantitative and qualitative data.



DATA VISUALIZATION TOOLS

- Microsoft Excel or Google Sheets (free)
 - Ideal for organizing data
 - Allows for quick editing and data cleaning
 - Offers multiple types of data visualization options with supports
 - Fairly user friendly, but can be limited in customization options
- Tableau
 - Popular and powerful data visualization tool
 - Offers a wide range of visualization options
 - Free public version (cannot be used for sensitive data)
- Canva
 - User friendly, online graphic design tool
 - Templates
 - Free version

DATA VISUALIZATION EXERCISE

Your nonprofit hosted a summer program for at-risk youth. One component was a 10-session class where students learned about Virginia Laws. Students were tested 3 times during the program and surveyed about their experiences. You are asked to present to about the program at the next City Council meeting.

- Purpose?
- Audience?
- Type of data?
- Data visualizations?
- Story?
- What can we use?

DATA VISUALIZATION EXERCISE

Summer Enrichment: Learn the Law

	Age	Zip Code	Gender	Attendance (out of 10)	Score 1	Score 2	Score 3	Enjoyment (1-5)	Quote
Participant 1	14	23222	M	5	75	80	90	4	“TBH, it was kind of boring”
Participant 2	16	23223	M	10	90	95	100	5	“I liked it and learned a lot”
Participant 3	13	23223	F	9	90	90	100	5	“The staff was fun and made camp fun”
Participant 4	15	23224	F	9	50	70	85	5	“Felt like school, but more fun”
Participant 5	14	23222	M	8	60	75	85	5	“Staff was cool, I had a good time and learned a lot”

DATA VISUALIZATION EXERCISE

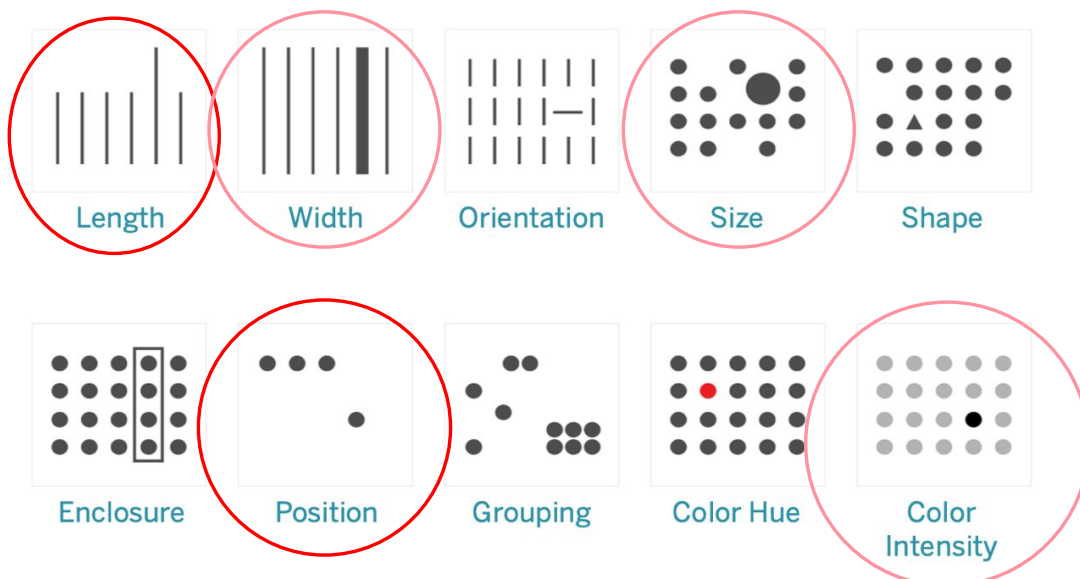
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- Purpose?
- Audience?
- Type of data?
- Data visualizations?
- Story?
- What can we use?

DATA VISUALIZATION BEST PRACTICES

What works best when visualizing your data.

VISUAL CUES



VISUAL CUES

Type of Color

Palette

Description of Use

Example

Qualitative Palette

Categorical data that does not have an inherent ordering.



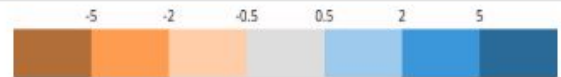
Sequential Palette

Data that is numeric, or has a natural ordering.



Diverging Palette

Numeric data that diverges from a center value.



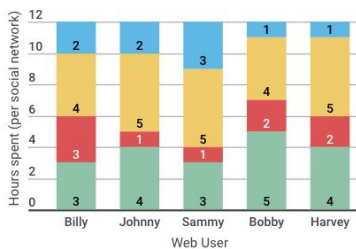
1

2

3

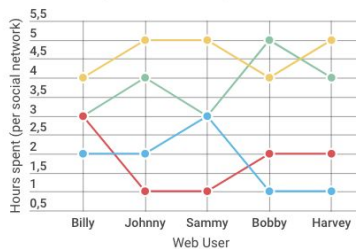


Time spent on different social networks for 5 web users



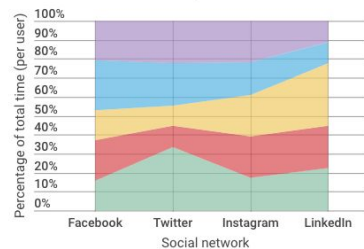
● Facebook ● Twitter ● Instagram ● LinkedIn

Time per social network per web user



● Facebook ● Twitter ● Instagram ● LinkedIn

Social network usage for 5 web users

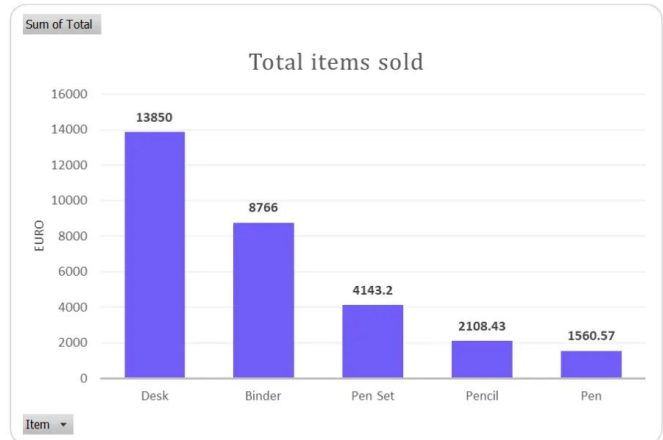


● Billy ● Johnny ● Sammy ● Bobby ● Harvey





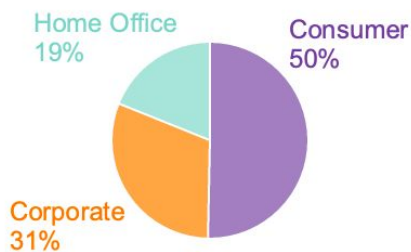
Cluttered chart
(bad data visualization example)



Clean chart
(good data visualization example)

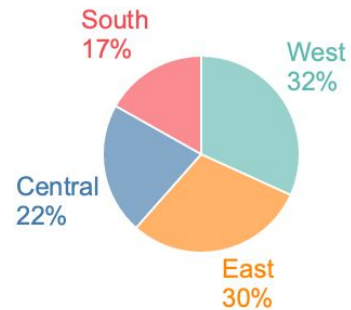
✓ **Do**

% of Sales in Segments



✗ **Don't**

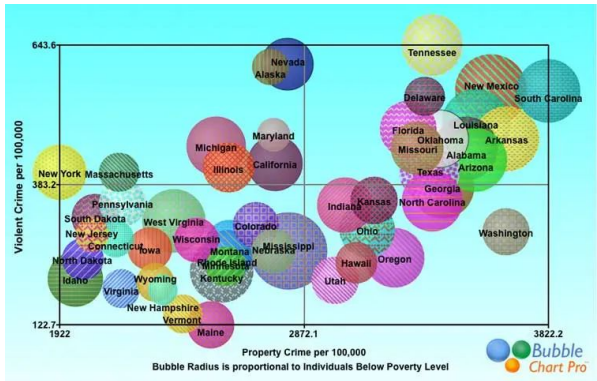
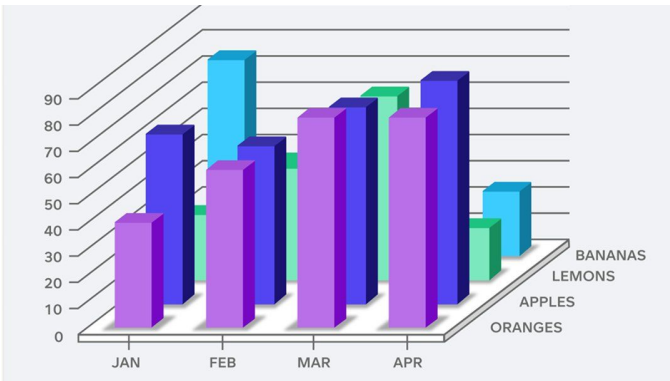
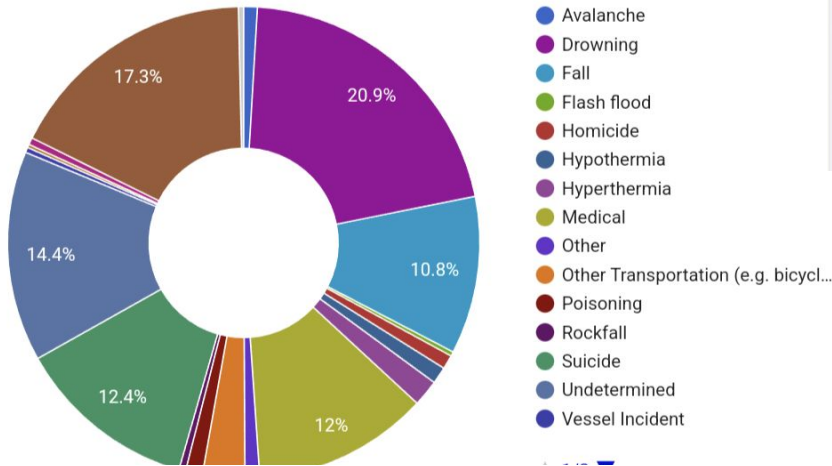
% of Sales in Regions



Slices are too similar to each other

What Are the Top Causes of Death in the National Parks?

Fatalities in National Parks (2007-2023) by Cause of Death

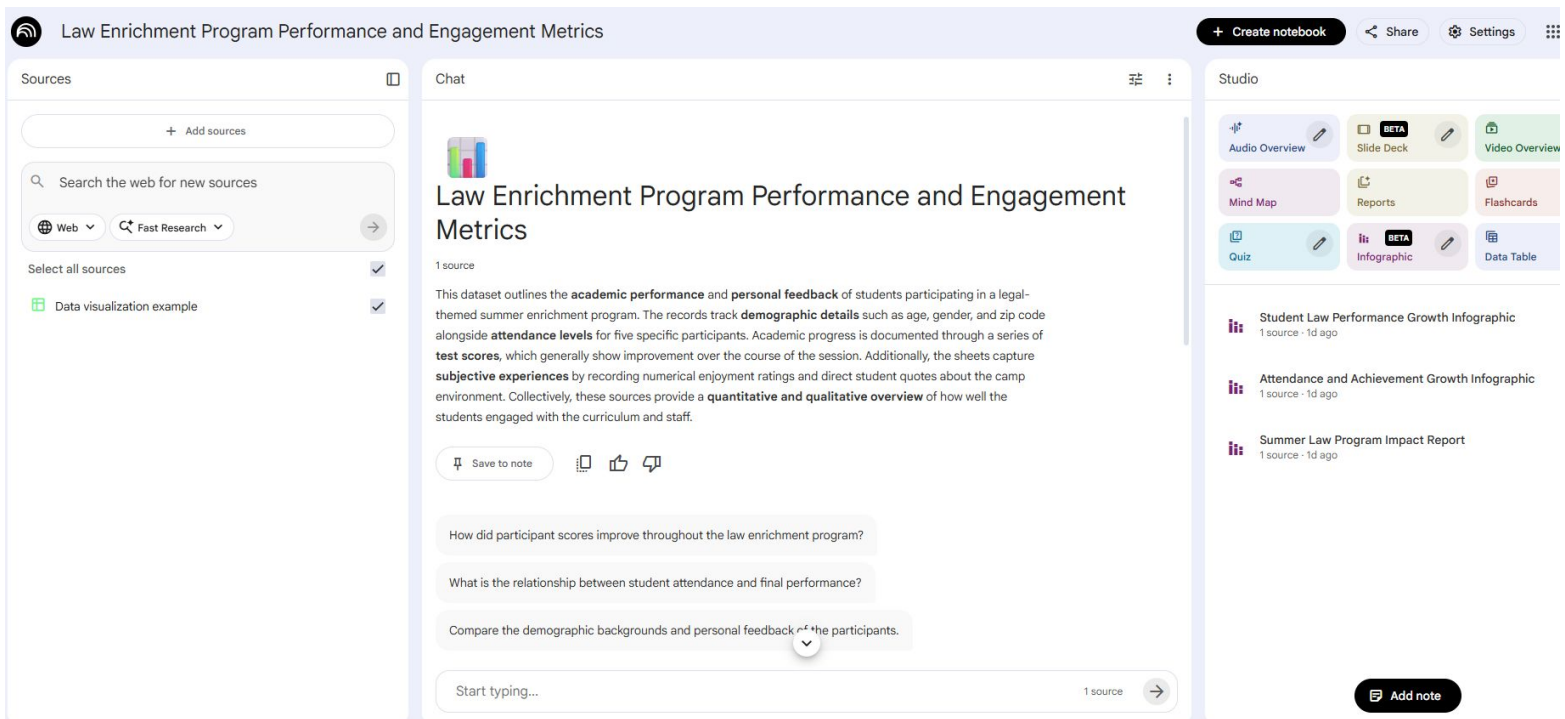


BEST PRACTICES WRAP-UP

- Know your purpose - don't create just to create
- Know your audience - what are their interests?
- Know your data
- Match data type to data visualization
- Be clear, concise
- Simplicity is ideal
- Strategically choose colors and fonts for readability
- Make sure visuals are cohesive and the message is clear
- Label visuals clearly
- Maintain accuracy

DATA VISUALIZATION RESOURCES

- [Understanding Data Types](#) - LinkedIn, Data 101: Understanding Data Types
- [Understanding Data Visualization](#) - Tableau: What Is Data Visualization?
- [More about Data Visualization](#) - Syracuse University: What Is Data Visualization?
- [Information about Data Visualization Tools](#) - UC Berkeley: Data Visualization Tools
- [Data Visualization Course](#) - Center to Improve Program and Project Performance Course
- [Google for Nonprofits](#) - (Free Google Workspace access + \$10,000 in grant ads)
- [Grist](#) - Database software, free for small nonprofit organizations
- [NotebookLM](#) - AI driven tool via Google Workspace



The screenshot displays the Google NotebookLM interface. The notebook title is "Law Enrichment Program Performance and Engagement Metrics". The main content area shows a chat window with a single source and a paragraph of text describing the dataset. The text reads: "This dataset outlines the **academic performance** and **personal feedback** of students participating in a legal-themed summer enrichment program. The records track **demographic details** such as age, gender, and zip code alongside **attendance levels** for five specific participants. Academic progress is documented through a series of **test scores**, which generally show improvement over the course of the session. Additionally, the sheets capture **subjective experiences** by recording numerical enjoyment ratings and direct student quotes about the camp environment. Collectively, these sources provide a **quantitative and qualitative overview** of how well the students engaged with the curriculum and staff." Below the text are three chat prompts: "How did participant scores improve throughout the law enrichment program?", "What is the relationship between student attendance and final performance?", and "Compare the demographic backgrounds and personal feedback of the participants." The interface also includes a "Sources" panel on the left with a search bar and a "Studio" panel on the right with various visualization options like Audio Overview, Slide Deck, Video Overview, Mind Map, Reports, Flashcards, Quiz, Infographic, and Data Table.

Learn the Law: Student Performance Growth



NotebookLM

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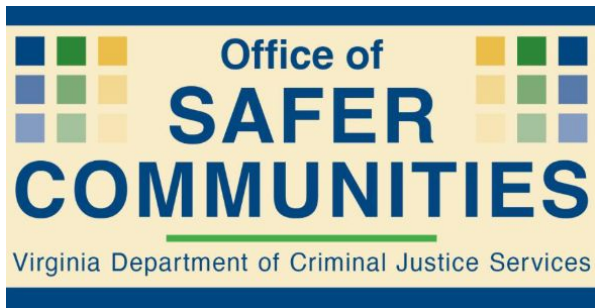
- March 3: **Prevention Evaluation Techniques** – Learn about methods for assessing program effectiveness
- March 10: **Using Data for Growth and Sustainability** – Learn about leveraging insights to strengthen and sustain your initiatives



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Learn more about the services and resources from the Center for Public Policy at cpp.wilder.vcu.edu



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- Strategic Plans
- Survey Design & Analysis
- Workforce Development
- Group Facilitation
- Change Management
- Leadership Coaching
- Evaluations
- Policy Analysis & Legislative Impact

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THANK YOU!

