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Cultural and Linguistic Competence in Survey Design and Methodology Workshop

Session 3: Analysis and Reporting

November 2, 2022

Virtual Meeting/Conference Recording Notice

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AIR Inclusive Meeting Guidelines

Hosting and Participating in Meetings

ENGAGE EVERYONE

Consider participants' needs (e.g., visual, auditory, sensory, cognitive, physical, and language). Establish meeting norms to encourage participation. Ask participants to alert the meeting facilitator if they have difficulty seeing the content and/or hearing the presenter. Designate a meeting monitor to address audiovisual issues, monitor the chat box, and respond to participants as needed.

MINIMIZE NOISE

Avoid moving around or shuffling materials on your desk during the meeting. Eliminate crunching or chewing noises and loud typing, which interfere with sound quality for virtual participants and are amplified by microphones and sensory aids for visual or auditory impairments. Speak from a stationary position to keep the audio clear. Mute your phone or your computer microphone when you are not speaking.

MAXIMIZE MICROPHONES

Presenters should use microphones to ensure that their voice is loud enough for all to hear. Microphones are needed for face-to-face and virtual meetings and are critical for engaging remote colleagues as well as persons with hearing loss. During virtual meetings, use headphones with a built-in microphone to make sure that the facilitator and attendees can hear you. During face-to-face meetings, set up microphones for the facilitator, presenters, and attendees. Make sure that hand-held microphones are available for meetings that include audience participation. Make sure that speakers are positioned near a microphone.

ACKNOWLEDGE SPEAKER

Provide an auditory or visual cue before speaking to identify yourself as the speaker. State your name for those who cannot see you. When asking for questions or comments, meeting facilitators should allow five to seven seconds for participants to use the "raise the hand" tool, unmute their phones, or provide a response in the chat box. Be comfortable with the wait time.

BE HEARD AND SEEN

Project your voice when speaking. Only one person should speak at a time. Avoid overlapping and sidebar conversations. Position everyone present so that they can be seen on screen. Encourage virtual participants to use their webcams if they feel comfortable doing so. Let people see your facial expressions and body language clearly if you are using your webcam.

MAXIMIZE VISUAL DISPLAYS

Email materials to participants before the meeting. Display meeting documents on screen and capture the main discussion points verbally and visually by taking notes, restating key concepts, or using the chat box. If a participant asks for clarification, rephrase the content instead of repeating it. Assign a meeting note taker so that the meeting leader and monitor can focus on engaging participants. Notes also ensure access for individuals with executive function-related needs, processing disorders, or visual/auditory impairments.

These guidelines are intended to improve the meeting experience for all participants, including meeting facilitators, monitors, and attendees, as well as people with hearing loss or visual impairment, and those for whom English is an additional language. Some of the guidance presented here may apply only to in-person meetings, or virtual meetings, while other guidance applies to both meeting types.
Developed by the Access AIR and AIR CREW Employee Resource Groups with support from the AIR Diversity, Equity, and Inclusion Office.

Day 3—How are You Feeling?

As we draw this course to a close, how are you feeling about survey methods?

Put your squirrel number in the chat.

Agenda

1. Welcome
2. Bias in Survey Data
3. Reporting Survey Results Using Plain Language
4. Visual Representation of Survey Data
5. Open Questions & Answers Time
6. Reflections on the Day & Closing

Meet the Presenters

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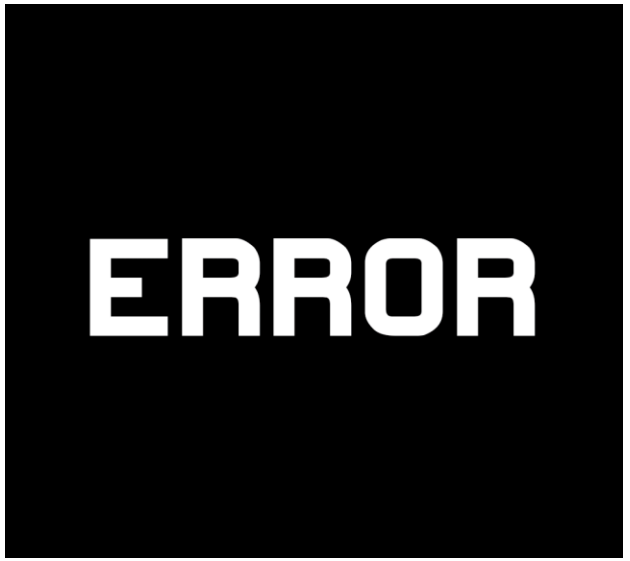
Bias in Survey Data

Stacey Bielick

What Is Bias in Survey Data?

Bias in surveys is the result of errors or problems with the survey that are not random. All surveys have errors, and these errors can come from all aspects of the survey design. Groves (1989) calls this “total survey error.”

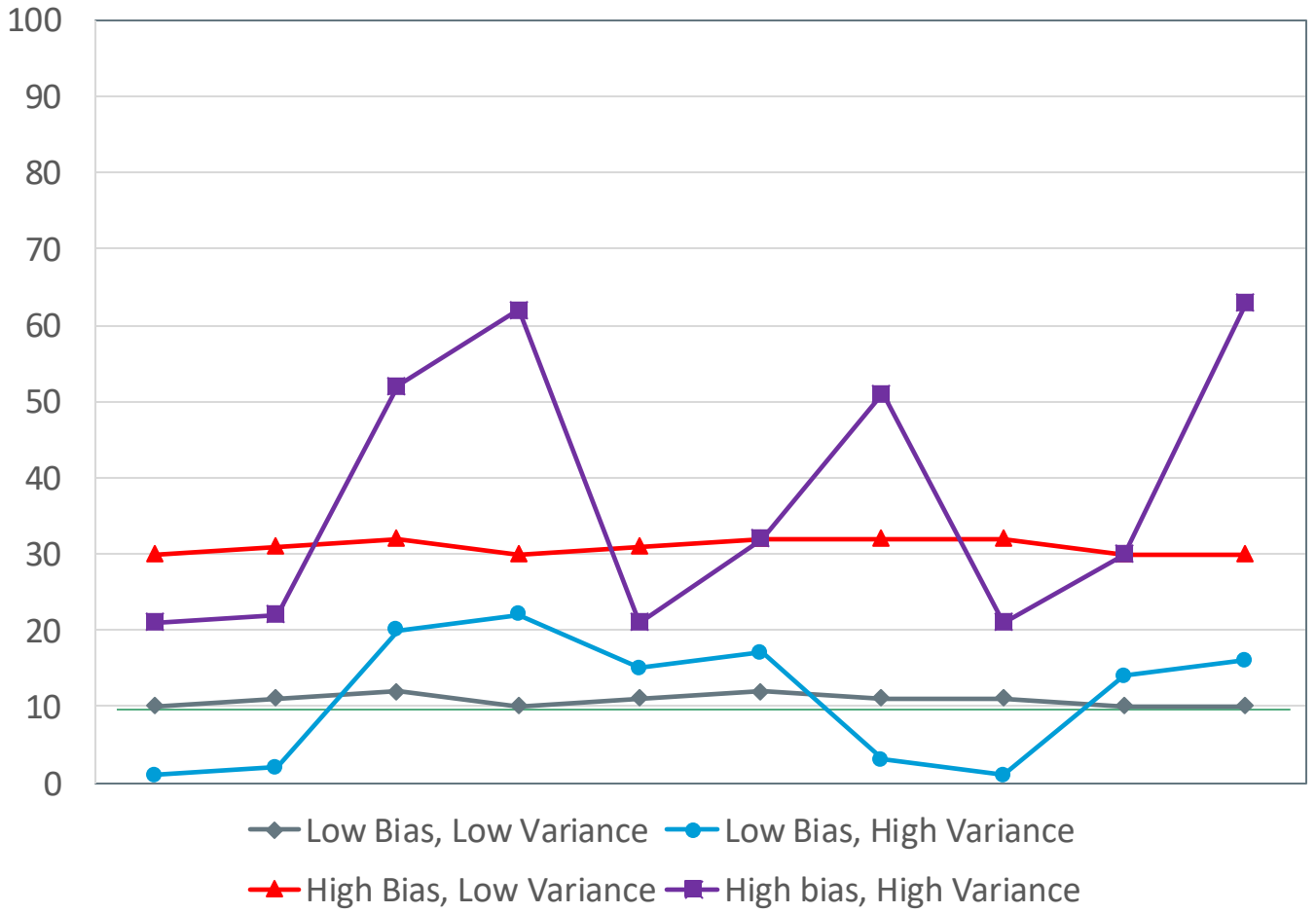
Total survey error is the difference between a population parameter (such as the mean, total, or proportion) and the estimate of that parameter based on the survey.



What Is Bias in Survey Data?

There are two types of errors: bias and variance. Bias is systematic error, and variance is random error.

In the figure, the population parameter we want to estimate is around 10 on the y-axis, and the lines show estimates of that population parameter if we conducted the same survey 10 times.



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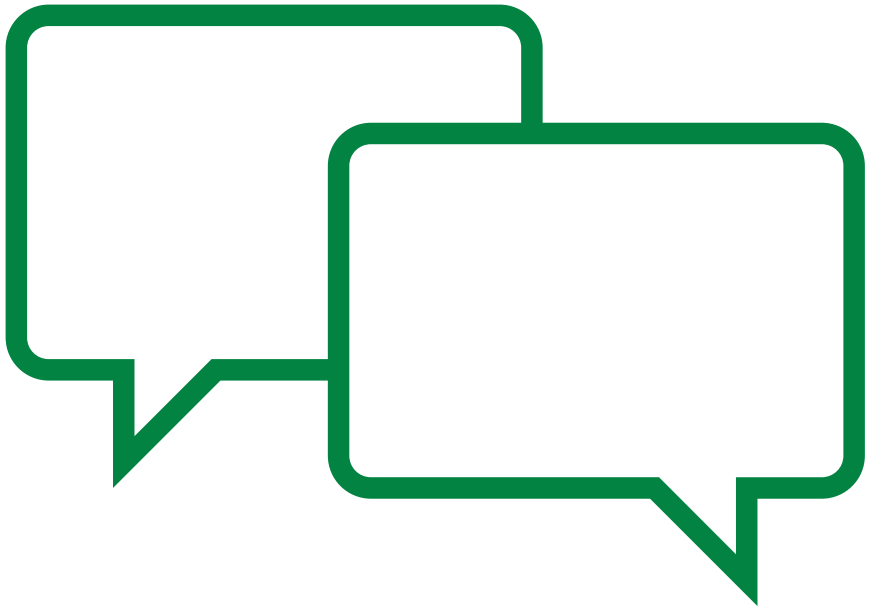
Chat Activity: Sources of Bias

Think about your learnings during this workshop.

In the Chat, please share ways that questionnaires, sampling, and data collection can lead to survey bias.



Sources of Bias

Questionnaire

- Item nonresponse
- Leading questions
- Restrictive response categories
- Order effects
- Questions that are not culturally or linguistically sensitive

Sampling

Data Collection

Sources of Bias

Questionnaire

- Item nonresponse
- Leading questions
- Restrictive response categories
- Questions that are not culturally or linguistically sensitive

Sampling

- Small sample size
- Undercoverage
- Not representative

Data Collection

Sources of Bias

Questionnaire

- Item nonresponse
- Leading questions
- Restrictive response categories
- Questions that are not culturally or linguistically sensitive

Sampling

- Small sample size
- Undercoverage
- Not representative of population

Data Collection

- Nonresponse
- Mode
- Accessibility
- Timing

Takeaway Message

It is better to anticipate sources of bias and design your survey to minimize them from the start.

Case Study: The 2016 Election Polls

NOVEMBER 9, 2016

Why 2016 election polls missed their mark

BY ANDREW MERCER, CLAUDIA DEANE AND KYLEY MCGEENEY

Supporters of presidential candidate Hillary Clinton watch televised coverage of the U.S. presidential election at Comet Tavern in the Capitol Hill neighborhood of Seattle on Nov. 8. (Photo by Jason Redmond/AFP/Getty Images)

PEW RESEARCH CENTER
NOVEMBER 9, 2016

Why 2016 election polls missed their mark

BY ANDREW MERCER, CLAUDIA DEANE AND KYLEY MCGEENEY

The results of Tuesday's presidential election came as a surprise to nearly everyone who had been following the national and state election polling, which consistently projected Hillary Clinton as defeating Donald Trump. Relying largely on opinion polls, election forecasters put Clinton's chance of winning at anywhere from 70% to as high as 99%, and pegged her as the heavy favorite to win a number of states such as Pennsylvania and Wisconsin that in the end were taken by Trump.

How could the polls have been so wrong about the state of the election?

Continued on next slide…

There is a great deal of speculation but no clear answers as to the cause of the disconnect, but there is one point of agreement: Across the board, polls underestimated Trump's level of support. With few exceptions, the final round of public polling showed Clinton with a lead of 1 to 7 percentage points in the national popular vote. State-level polling was more variable, but there were few instances where polls overstated Trump's support.

Pollsters don't have a clear diagnosis yet for the misfires, and it will likely be some time before we know for sure what happened. There are, however, several possible explanations for the misstep that many in the polling community will be talking about in upcoming weeks.

Pair/Share: Election Polling Bias

Time: 8 minutes

Instructions

1. Read the *Election Polling Bias Reading* (go to the Working Folder)
2. Discuss with your partner:
   - **What are some possible explanations for this election polling bias?**

Note: The election was held on November 8, 2016.

NOVEMBER 9, 2016

Why 2016 election polls missed their mark

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Supporters of presidential candidate Hillary Clinton watch televised coverage of the U.S. presidential election at Comet Tavern in the Capitol Hill neighborhood of Seattle on Nov. 8. (Photo by Jason Redmond/AFP/Getty Images)

Pair/Share - Share Out

What are some possible explanations for the election polling bias described in the reading?

NOVEMBER 9, 2016

Why 2016 election polls missed their mark

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Supporters of presidential candidate Hillary Clinton watch televised coverage of the U.S. presidential election at Comet Tavern in the Capitol Hill neighborhood of Seattle on Nov. 8. (Photo by Jason Redmond/AFP/Getty Images)

Here Is What the American Association for Public Opinion Research (AAPOR) Says Happened

Questionnaire response

"Some Trump voters who participated in preelection polls did not reveal themselves as Trump voters until after the election, and they outnumbered late-revealing Clinton voters. This finding could be attributable to either late deciding or **misreporting**."

Less compelling evidence: "**Ballot order effects** may have played a role in some state contests, but they do not go far in explaining the polling errors. State election rules led to Trump's name appearing above Clinton's on all ballots in several key states that Trump won narrowly (e.g., Michigan, Wisconsin, and Florida). Being listed first can advantage a presidential candidate by roughly one third of a percentage point. "

Here Is What AAPOR Says Happened

Sampling

"Less compelling evidence: Likely voter modeling error. In 2016, turnout nationwide typically grew more in heavily Republican counties than in heavily Democratic counties, relative to 2012. A number of polls were adjusted to align with turnout patterns from 2012. Based on what happened in 2016, this adjustment may have overestimated turnout among, for example, African Americans, and underestimated turnout among rural Whites."

Here Is What AAPOR Says Happened

Data collection

"There was **nonresponse bias** that underrepresented voters with lower education levels. In 2016, there was a strong correlation between education and presidential vote in key states. Voters with higher education levels were more likely to support Clinton. Furthermore, recent studies are clear that people with more formal education are significantly more likely to participate in surveys than those with less education."

Poll timing: "About 13% of voters in Wisconsin, Florida, and Pennsylvania decided on their presidential vote choice in the final week, according to the best available data. These voters broke for Trump by near 30 points in Wisconsin and by 17 points in Florida and Pennsylvania."

When Does Nonresponse Lead to Bias?

If responders and nonresponders differ on characteristics that are related to the topic of interest, a **potential for nonresponse bias exists.**

Nonresponse bias

- occurs when nonresponders differ from responders and there are enough of them to impact your results and
- can harm the validity of the survey as it weakens the ability to draw accurate conclusions about the population.

Are Response Rates Important?

The response rate is one way to gauge whether survey results are representative of the population.

- A **high response rate maximizes the chance that the results are representative** of the population.
- A **low response rate increases the chance of biased results**, which cannot be generalized to the population.

The response rate is not a perfect indicator of representativeness. It is commonly used because it is available and easy to interpret.

It is not a guarantee of representativeness or lack of representativeness.

How to Evaluate Nonresponse Bias

The basic measure of nonresponse bias is **relative bias**, which is computed by calculating the difference between estimates generated for everyone in the sample and estimates generated only for sample members who responded (or did not respond).

Example Relative Bias Formula

$$\text{Rel}B(\bar{Y}_{NR}) = B(\bar{Y}_{NR}) / \bar{Y}_T$$

$\bar{Y}_{NR}$ = Value based on nonresponding cases

$\bar{Y}_T$ = Value based on all cases

Measure Bias

This table contains fictional data for training purposes only.

Student Characteristic	Number of Students	Percent of Students	Number of Respondents	Percent of Respondents	Estimated Bias	Relative Bias
School's COVID virtual status						
Online	357	89.3	301	89.3	-0.1	0.00
In-person	43	10.8	36	10.7	0.1	0.01
Free or reduced price lunch recipient						
Yes	128	32.0	64	28.8	3.2	0.10
No	272	68.0	158	71.2	-3.2	-0.05
Gender*						
Male	218	54.5	183	54.3	0.2	0.00
Female	182	45.5	154	45.7	-0.2	0.00

*Some schools allow students to report their gender as nonbinary. The sample size of students reported as nonbinary is too small to report and is excluded from the analysis.

Reporting About Nonresponse Bias

- Specify who responded (that is, the group the data represent).
- Do not imply that the results apply to anyone other than those who responded.
- Report results by subgroups (for example, by age or gender) for which there were large differences in response rates or concerning relative bias.

For example:

The response rate for students who attended school in-person during the COVID-19 pandemic was lower than the response rate for students who attended school virtually. A nonresponse bias analysis shows a potential for bias in any estimates associated with virtual or in-person instruction.

Transparent Reporting for Surveys (AAPOR)

- Describe the data collection strategies employed.
- Tell who sponsored the survey and conducted it.
- Provide survey questionnaires and other measurement tools.
- State the population you are surveying.
- Describe the sample design/participant recruitment.
- Specify the dates of data collection.
- State the sample size and sampling error.
- Describe data processing and procedures to ensure data quality.
- Explain if or how data were adjusted using weighting.
- Acknowledge limitations associated with measured and unmeasured error.

Correcting Bias in Survey Data

Questionnaire

Item-level errors can often be reduced through imputation of missing data, recoding, or collapsing categories.

Sampling

Issues stemming from sampling or sample size can often be reduced with the use of sample weights.

Data Collection

Nonresponse adjustments also can be made through weighting.

Mode and accessibility issues tend to lead to nonresponse and measurement error, but they can be addressed using methods relevant to those errors.

Questions?

Break

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Reporting Survey Results Using Plain Language

Joni Wackwitz and Stacey Bielick

Writing With Plain Language

Make it easy for your audience to get the point:

- Be clear and concise.
- Use active voice.
- Avoid long strings of nouns or modifiers.
- Avoid jargon, technical terms, and acronyms.
- Use a conversational tone (versus an academic tone).
- Be concrete, versus abstract, and provide examples.
- Test and refine your language and messages.

Resources for Writing With Plain Language

- Plainlanguage.gov, U.S. General Services Administration
- Going Public: Writing About Research in Everyday Language (2014), Mark Dynarski & Ellen Kisker, National Center for Education Evaluation and Regional Assistance, Analytic Technical Assistance and Development, Institute of Education Sciences, U.S. Department of Education

Plain Language: Before-and-After Example

✖ Before

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Source: Plainlanguage.gov

✔ After

Lead in drinking water can make you sick. Here are some possible health effects of high lead levels in your drinking water:

Children:

- Delayed growth
- Learning disabilities
- Short attention span

Adults:

- Kidney problems
- High blood pressure

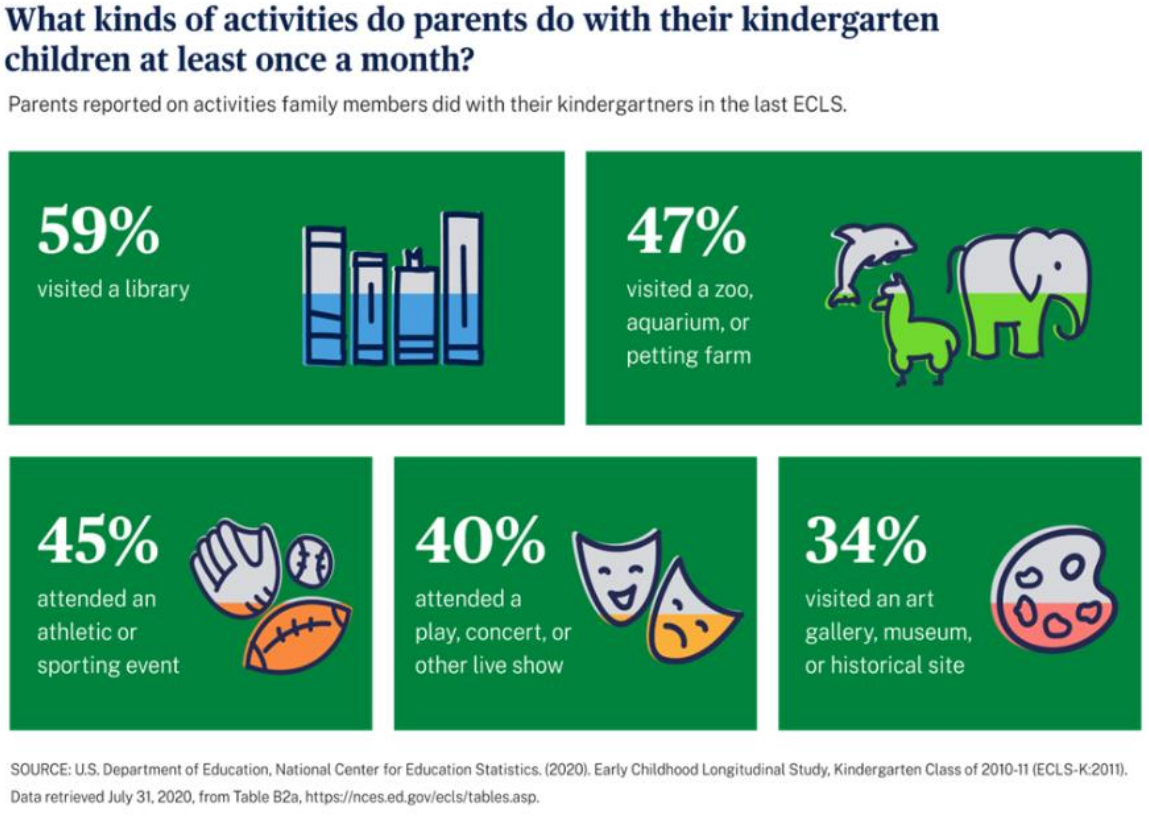
Plain Language: Before-and-After Example

Before

According to parent-reported data in the Early Childhood Longitudinal Study of 2010–11, parents participated in a variety of activities at least once a month with their children who are enrolled kindergarten: 59% visited a library with their kindergarten children; 47% visited a zoo, aquarium, or petting farm; 45% attended an athletic or sporting event in which their child was not a participant; 40% attended a play, concert, or other live show; and 34% visited an art gallery, museum, or historical site.

Source: NCES Blog | What Do NCES Data Tell Us About America's Kindergartners? (ed.gov)

After



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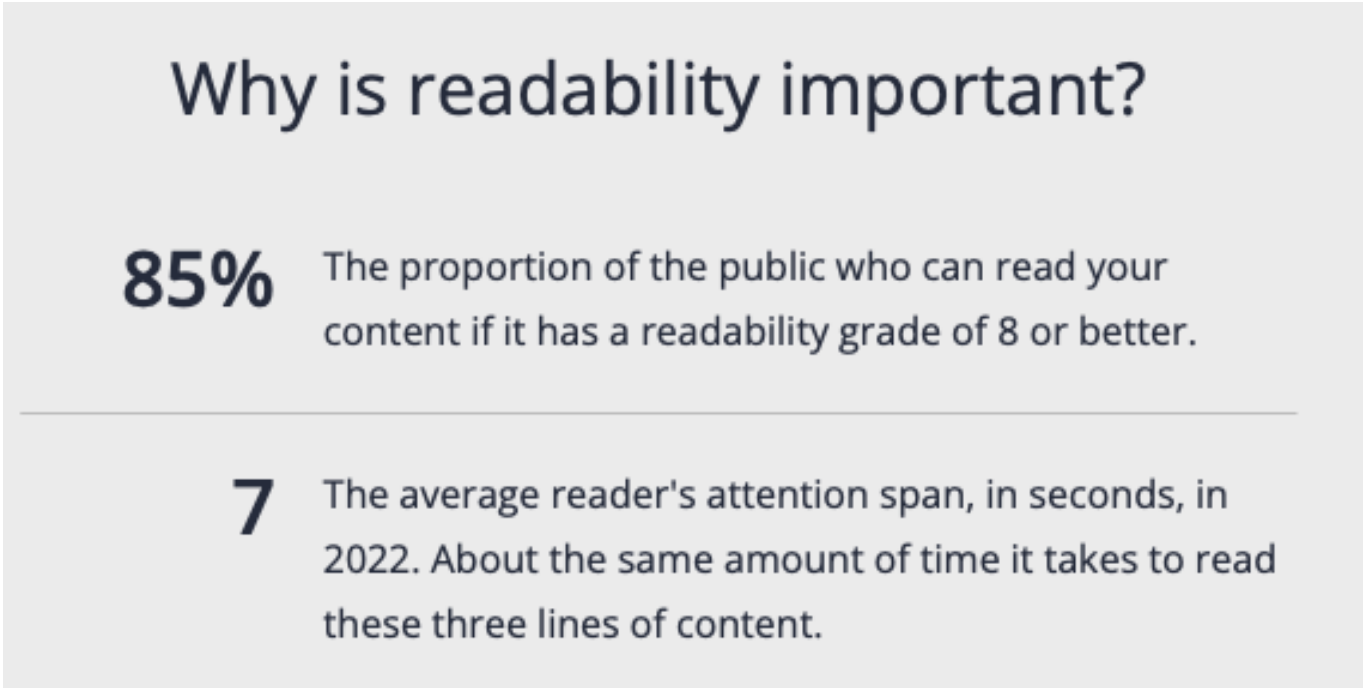
Plain Language: Before-and-After Example

Before	After
Concept: Counterfactual The **counterfactual** in this study was business as usual.	The study compared outcomes for participants in the intervention with outcomes of similar individuals who did not participate. The outcomes of individuals who did not participate in the intervention provide an estimate of what would have happened to participants without the intervention.

Source: Going Public: Writing About Research in Everyday Language (2014).

Test for Readability

- Readability applications:
  - Flesch Kincaid Grade Level
  - Flesch Reading Ease
  - ProWritingAid
- Assess factors such as:
  - Average word length
  - Average syllables per word
  - Average sentence length



Source: "Test Your Readability," Readable. https://readable.com/text/

Activity: Plain Language

Time: 7 minutes

Instructions

1. **Please work individually to rewrite the example text below in plain language:**

   This literature review identifies malleable factors that can be measured in K–12 settings and that predict students' postsecondary science, technology, engineering, and math (STEM) success (defined as enrolling in, persisting in, and completing a postsecondary STEM major or degree), particularly for Hispanic students.

2. **Enter your rewrites in the Jamboard (link in Chat) using a sticky note** (there are multiple Jamboard pages if there is not enough space).

Countering Deficit Narratives

“How does it feel to be a problem?”

W.E.B. DuBois, *Souls of Black Folk*

Zoom Poll: Deficit Narratives

Which one of these statements is better?

1. The results of the intervention show test score disparities across race/ethnic lines, with Black students' school-year gains lagging behind those of White students.
2. The intervention produced school-year gains in test scores for White students that were X points higher, on average, than the gains for Black students.

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Countering Deficit Narratives

“How does it feel to be a problem?” W.E.B. DuBois, *Souls of Black Folk*

“Moreover, by conveying the narrative through political speeches, media outlets, images, movies, television shows, and educational learning materials, the narrative is socialized and becomes social knowledge that is passed from generation to generation” (Russell et al., 2002).

“Deficit thinking is rooted in a blame the victim orientation that suggests that people are responsible for their predicament and fails to acknowledge that they live within coercive systems that cause harm” (Davis & Museus, 2019).

How to Avoid Deficit Narratives

- Avoid terms that imply a deficit (e.g., *lag, gap, trailed*).
- Attribute the cause of the outcome to an intervention, policy, or system.
- Reference specific data or statistics rather than using general descriptions of patterns.
- Place emphasis on the advantage provided to some students rather than the disparity produced for others.
- In most education research, avoid implying that a demographic characteristic is causal.

Source: Russell et al. (2022).

Tips From the Centers for Disease Control and Prevention for Avoiding Stigmatizing Language

Table 1. Overarching principles and preferred terms

Key principles	Terms to avoid	Preferred terms
Avoid use of the terms such as vulnerable, marginalized, and high-risk as adjectives. These terms can be stigmatizing. These terms are vague and imply that the condition is inherent to the group rather than the actual causal factors.	Vulnerable groups Marginalized groups High-risk groups At-risk groups High-burden groups Hard to reach groups Targeted population	Disproportionately affected Groups that have been economically/socially marginalized Groups that have been marginalized Groups placed at higher risk/put at higher risk of [outcome] Groups at higher risk of [outcome] Groups experiencing disadvantage Groups experiencing disproportionate impact Population of focus Under-resourced communities
Avoid dehumanizing language. Use person-first language instead. Describe people as having a condition or circumstance, not being a condition. A case is an instance of disease, not a person. Use patient to refer to someone receiving treatment.	*Examples:* Diabetics Diabetes patients The diabetes population COVID-19 cases The homeless Inmates Victims	 People with [disease] Patients with [disease] (if being treated) People experiencing [health outcome or life circumstance] People who are experiencing [condition] Survivors

Source: Centers for Disease Control and Prevention (2020).

Zoom Poll: Countering Deficit Narratives (cont'd)

Which one of these statements is better?

1. The Black–White gap was significant in many grades in American schools, which suggested that Black students trailed their White peers in mathematics and reading scores, by and large.

2. The analyses suggest that American schools achieved mathematics and reading scores, as measured by [name instrument], that are X points higher for White students compared with Black students.

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Questions?

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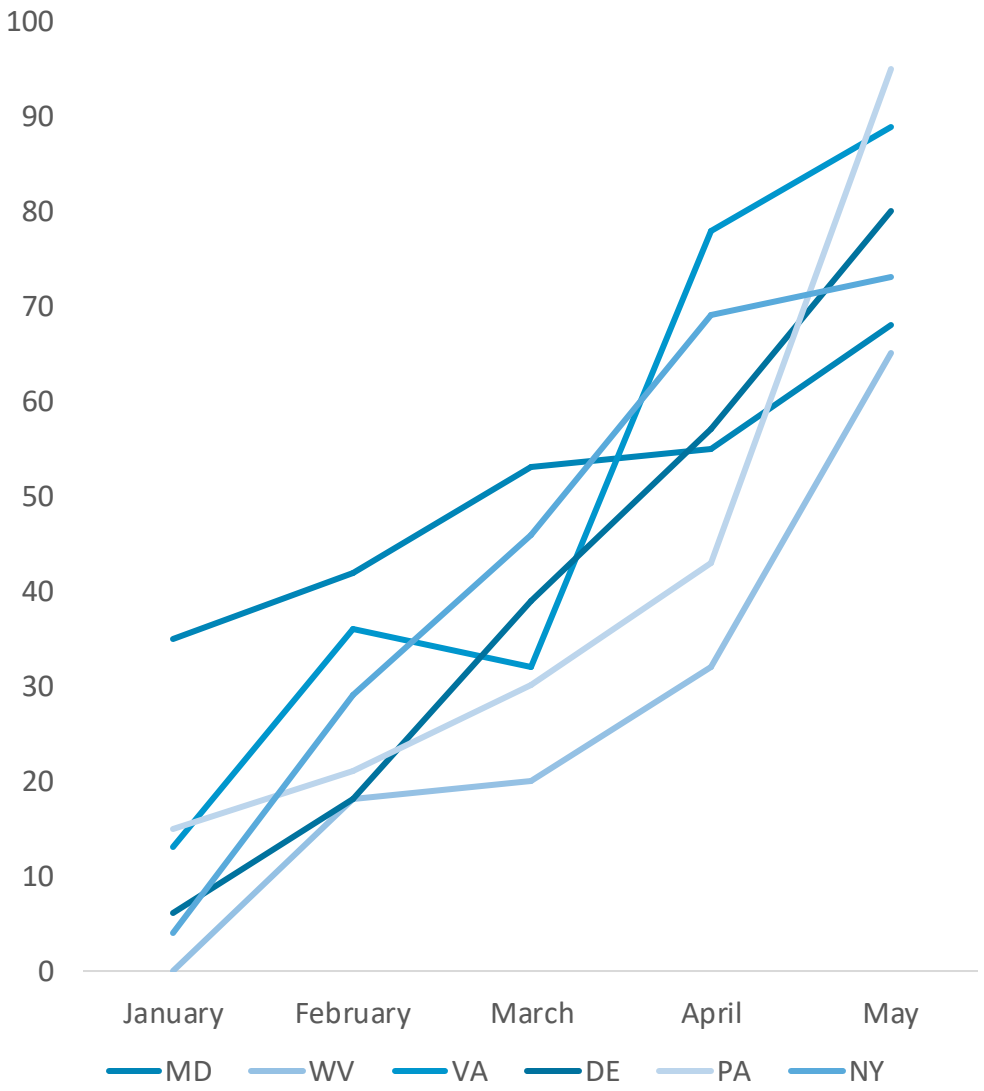
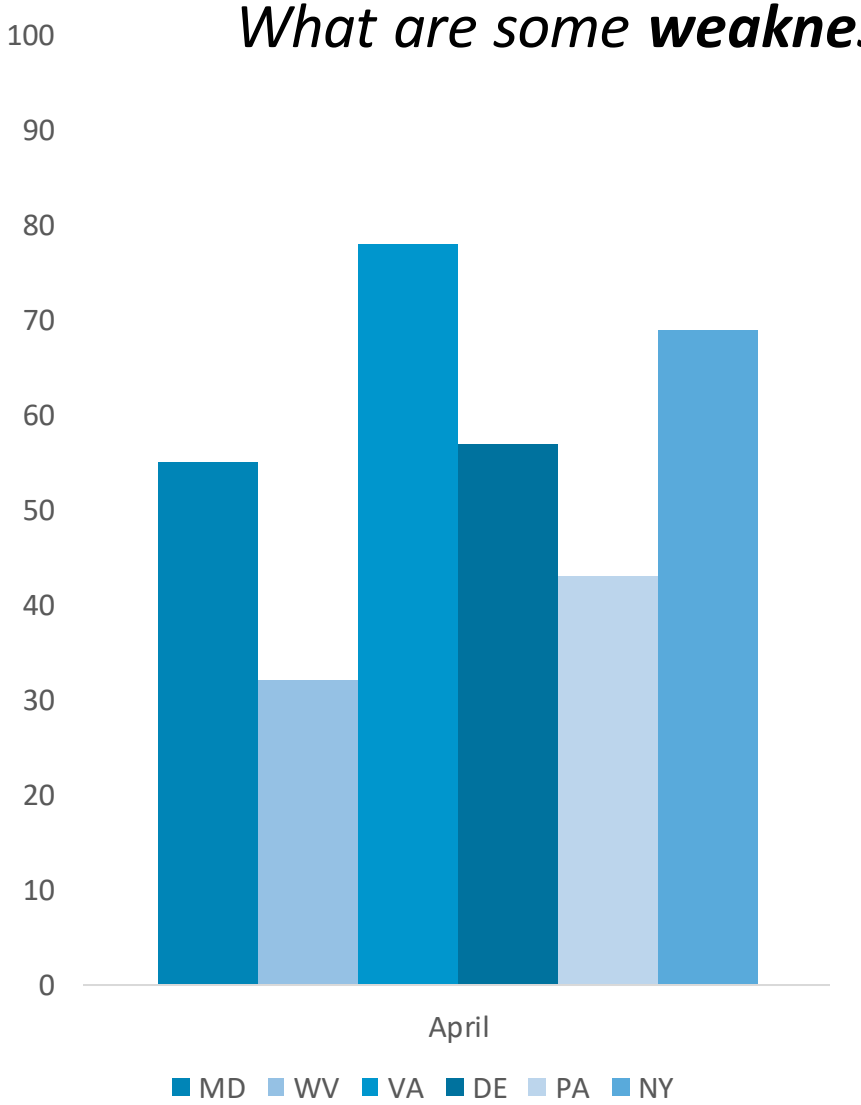
Visual Presentation of Data

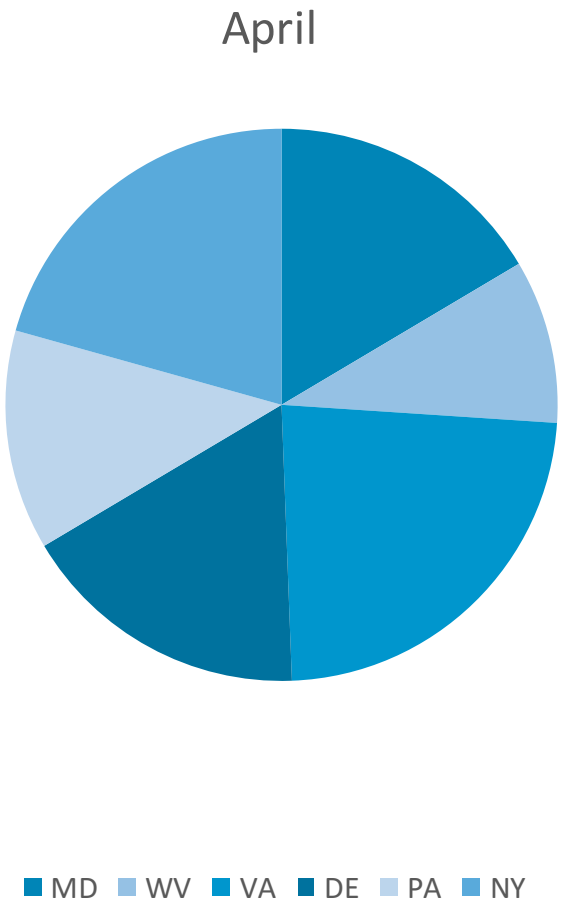
Perry Gorelik

Monochromatic Graphs





*What are some **weaknesses** of these graphs?*



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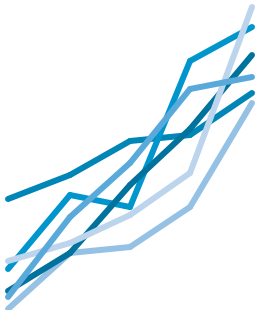
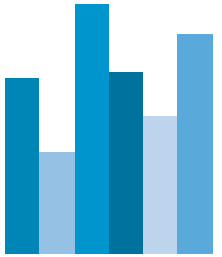
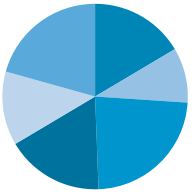
Weaknesses

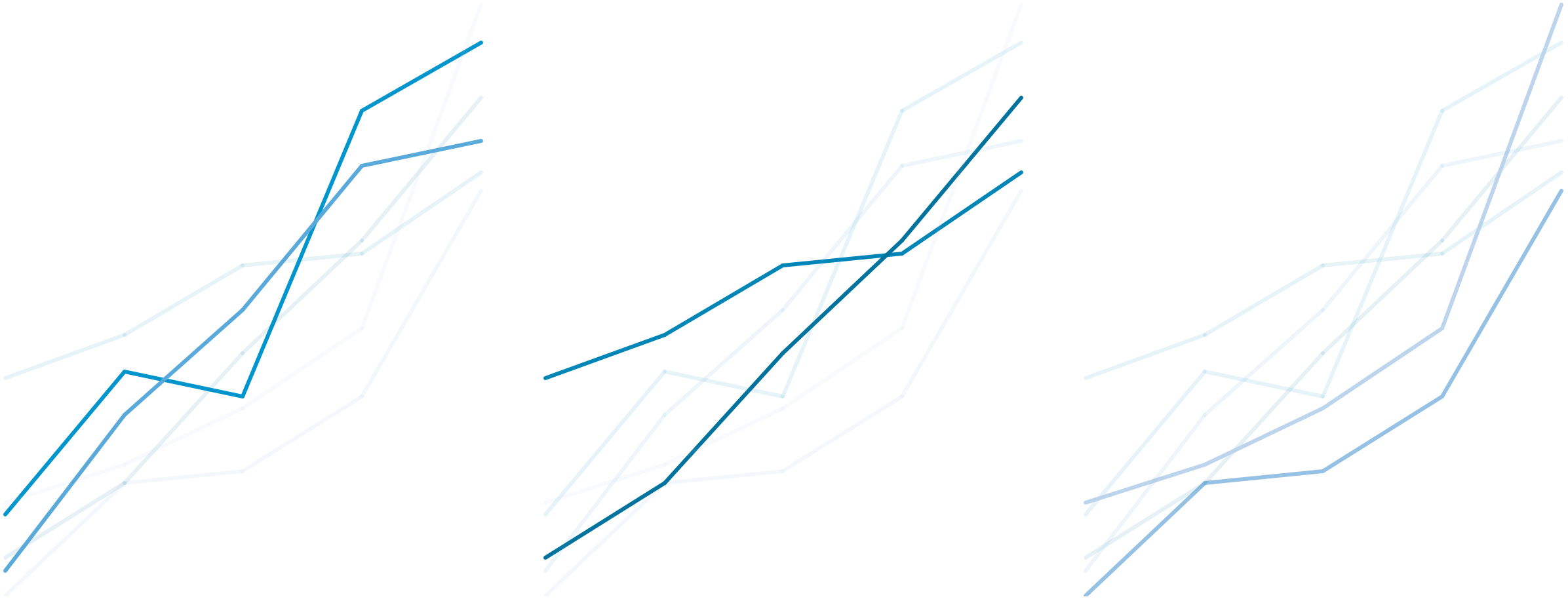


- Difficult to discern **colors/shapes** from each other
- **Data** is hidden or hard to determine
- Visual cues not offering additional meaning or context
- Could be considered **boring**

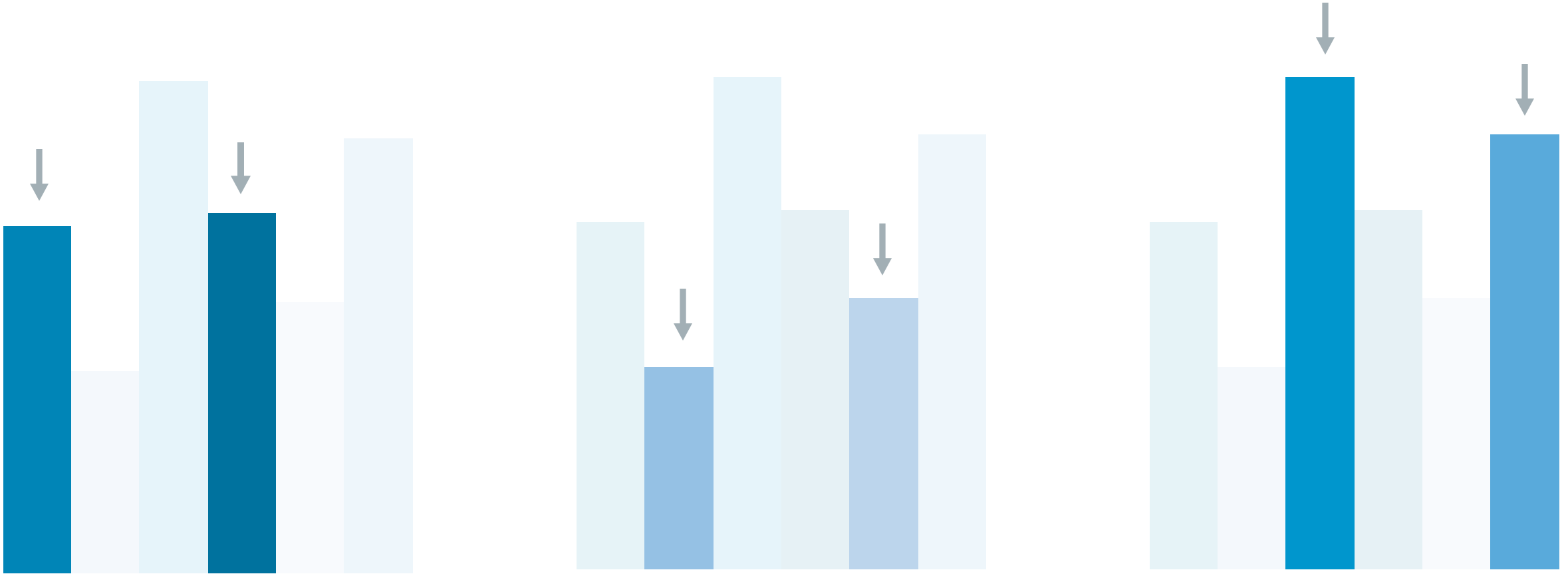




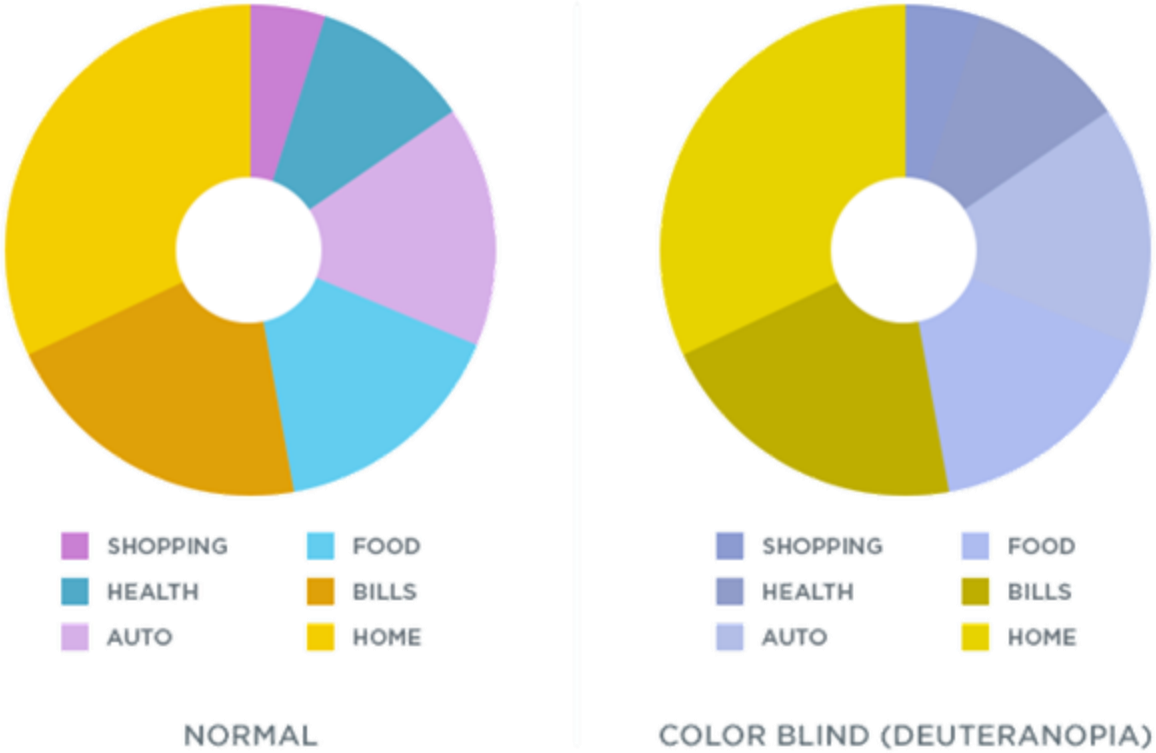
Lack of Contrast (Graph 1)

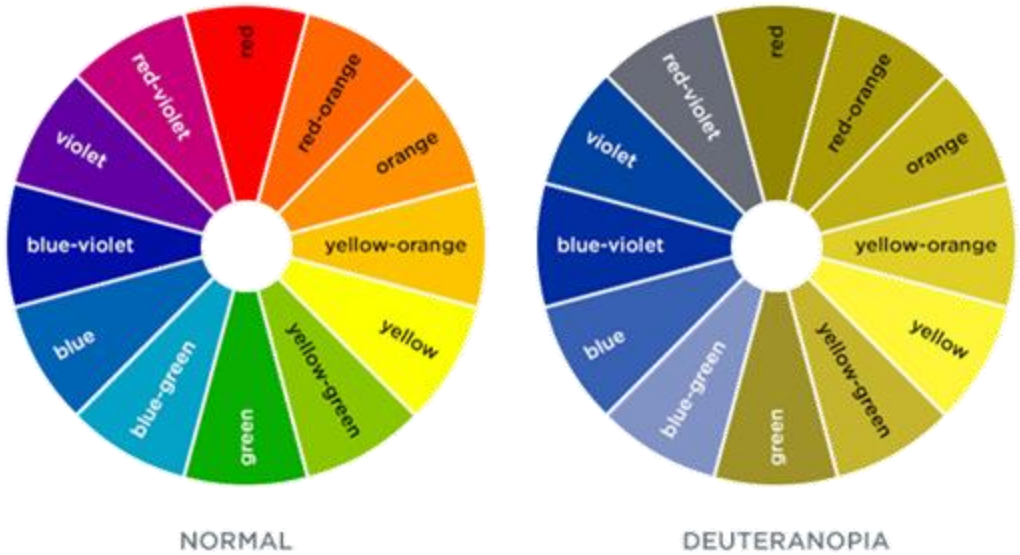


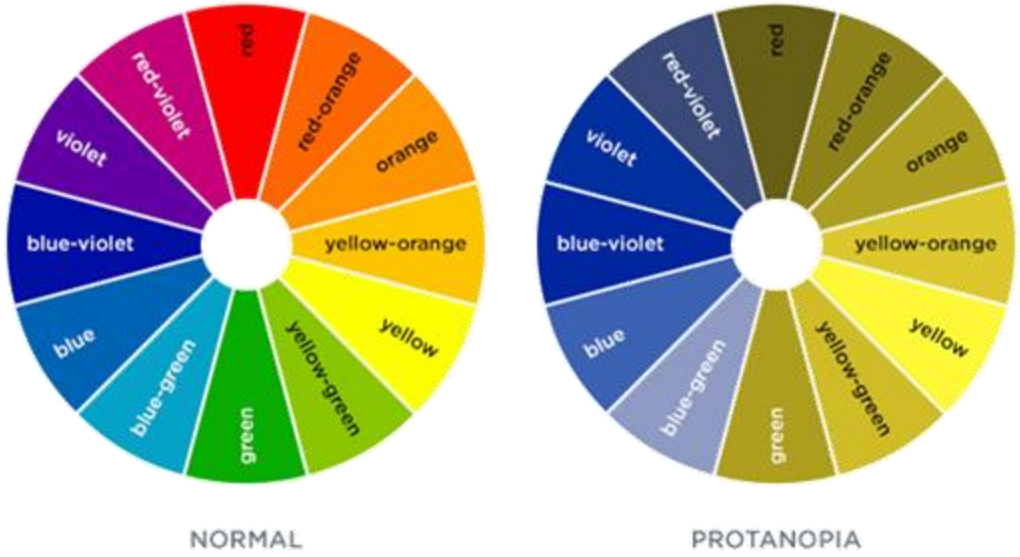
Lack of Contrast (Graph 2)



Color Blindness





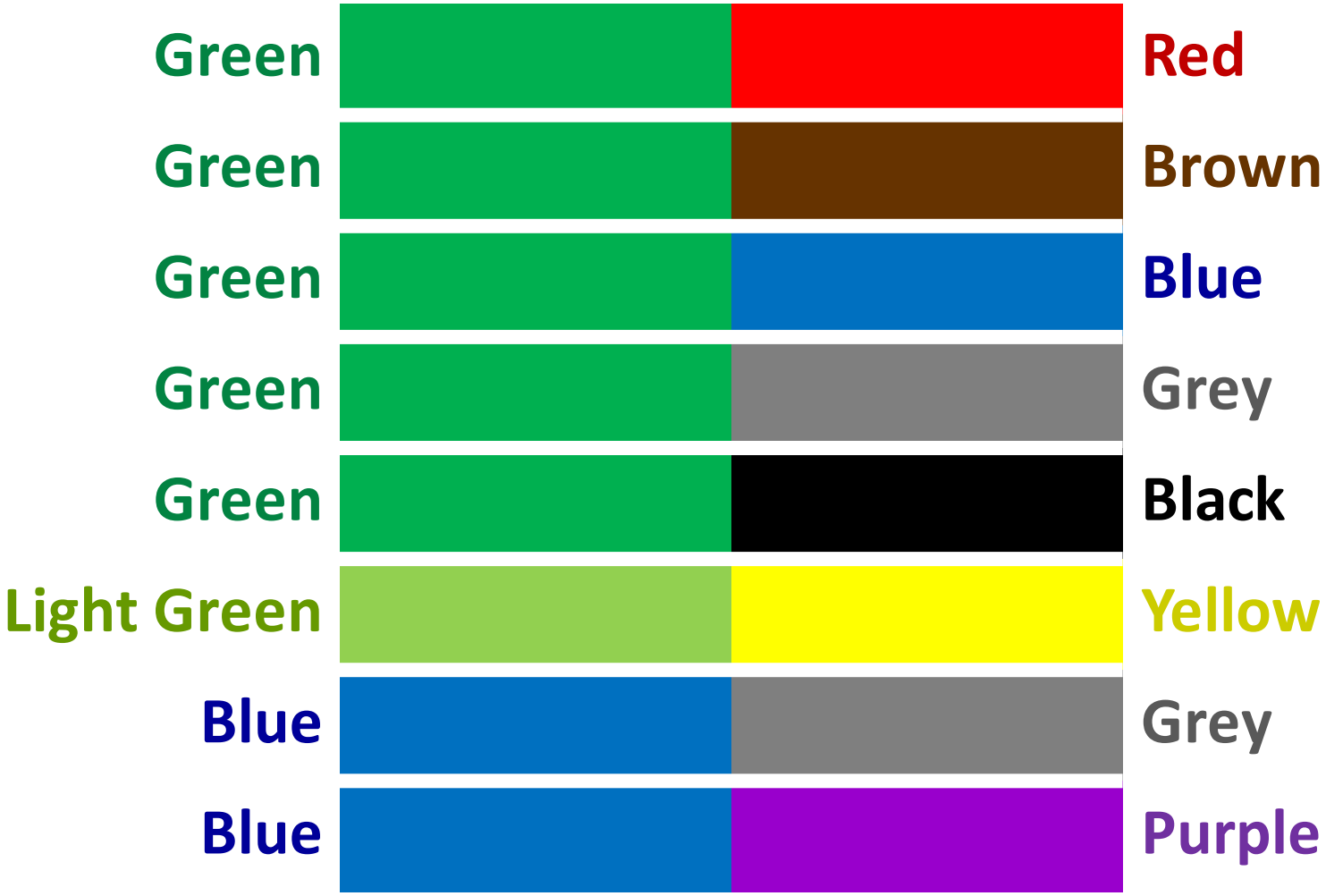


https://cruxcollaborative.com/insights/understanding-color-blindness-guide-to-accessible-design

Color Contrast

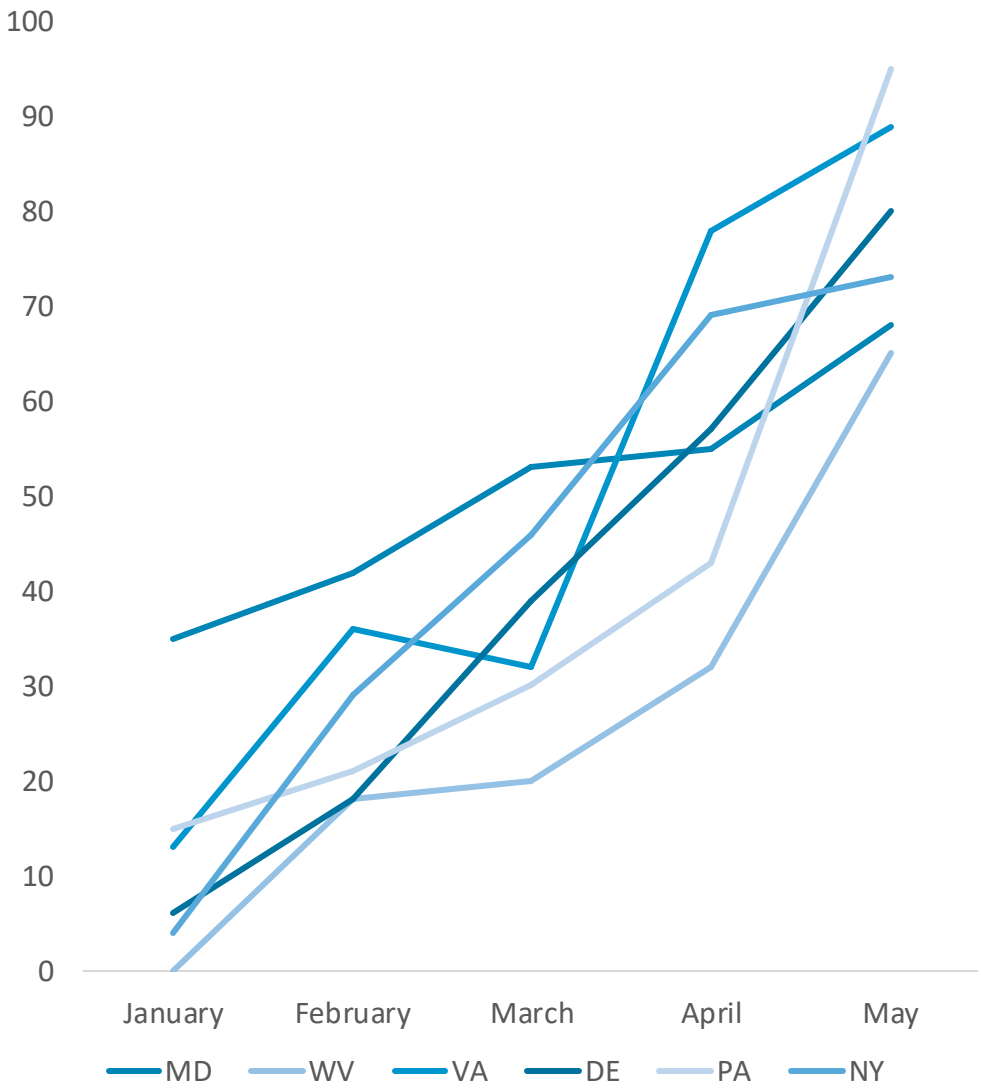
https://www.creative-photo-design.com/how-to-combine-colors-in-your-graphic-designs/color-contrast/

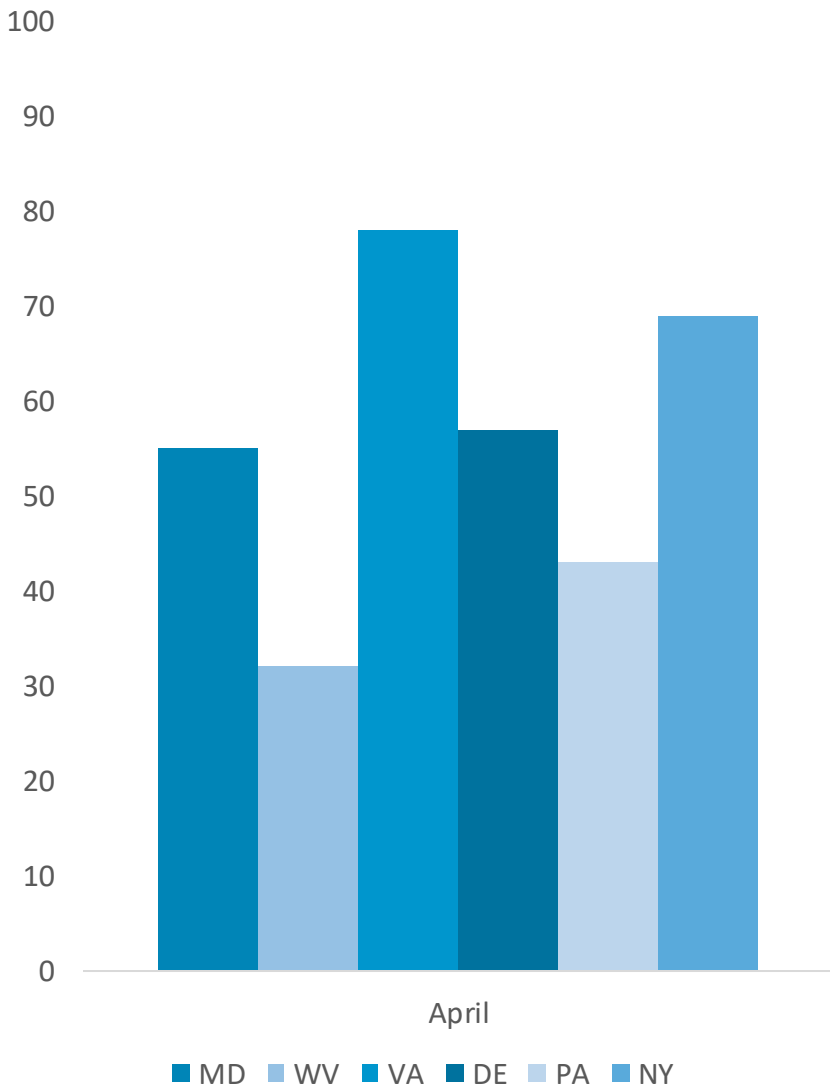
Color Combinations to Avoid

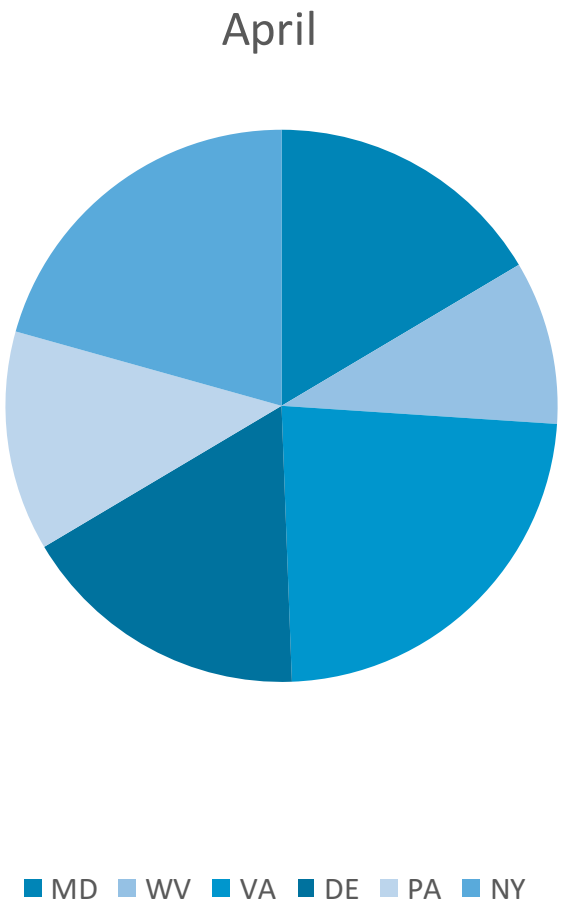


https://www.smashingmagazine.com/2016/06/improving-color-accessibility-for-color-blind-users/

Originals







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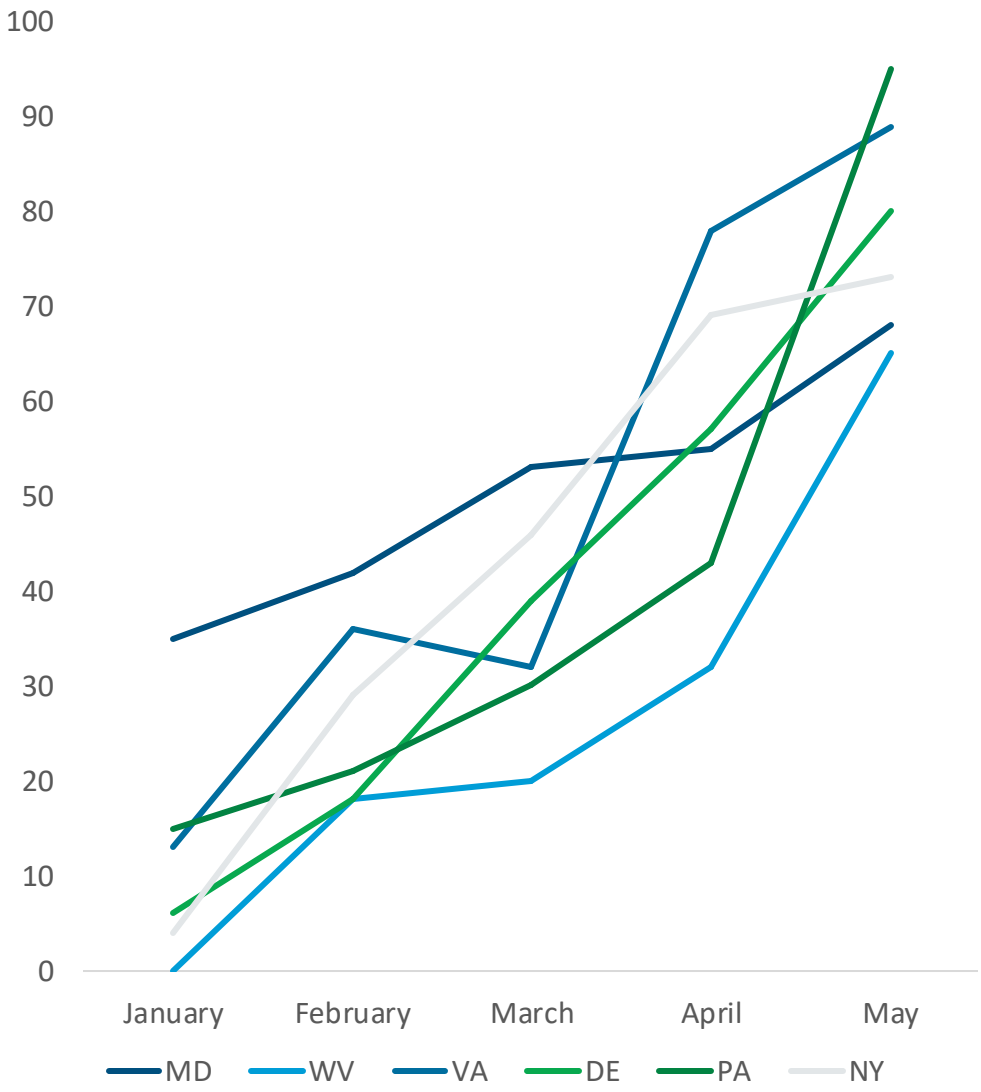
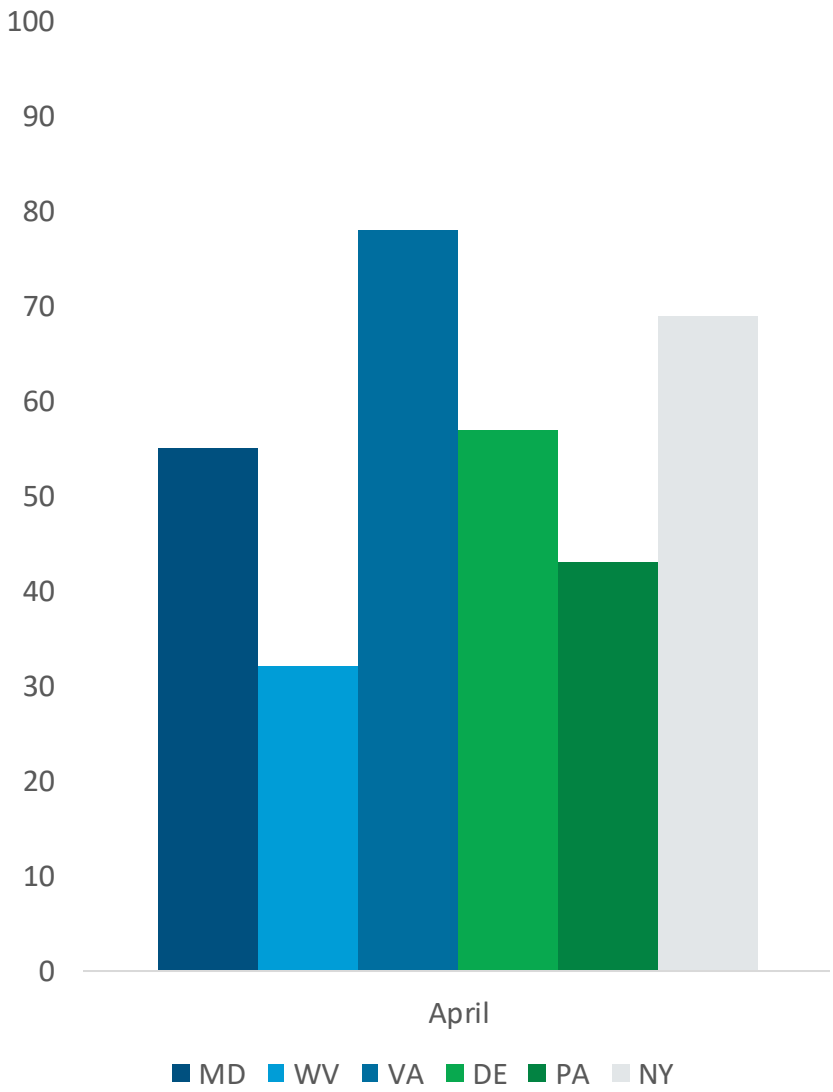
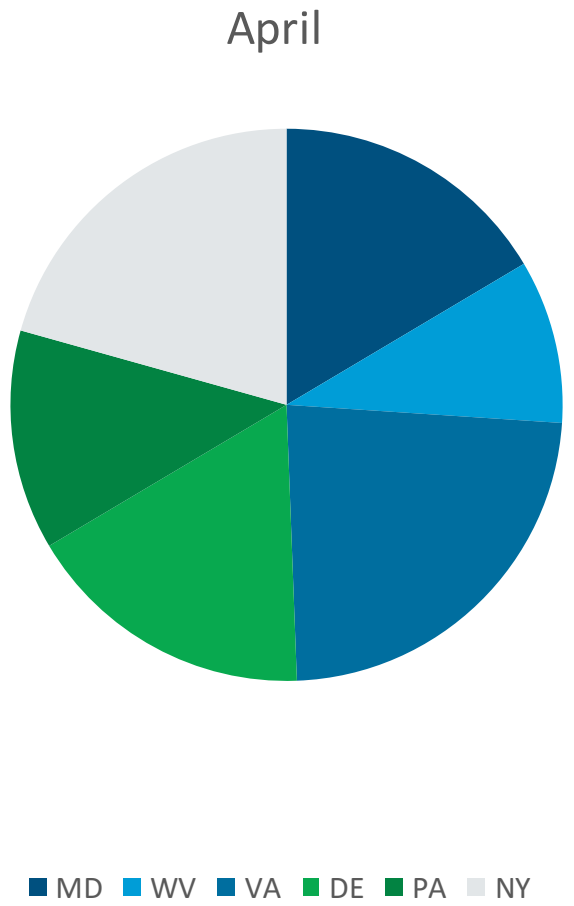
Add Colors/Shades - Staying with Template

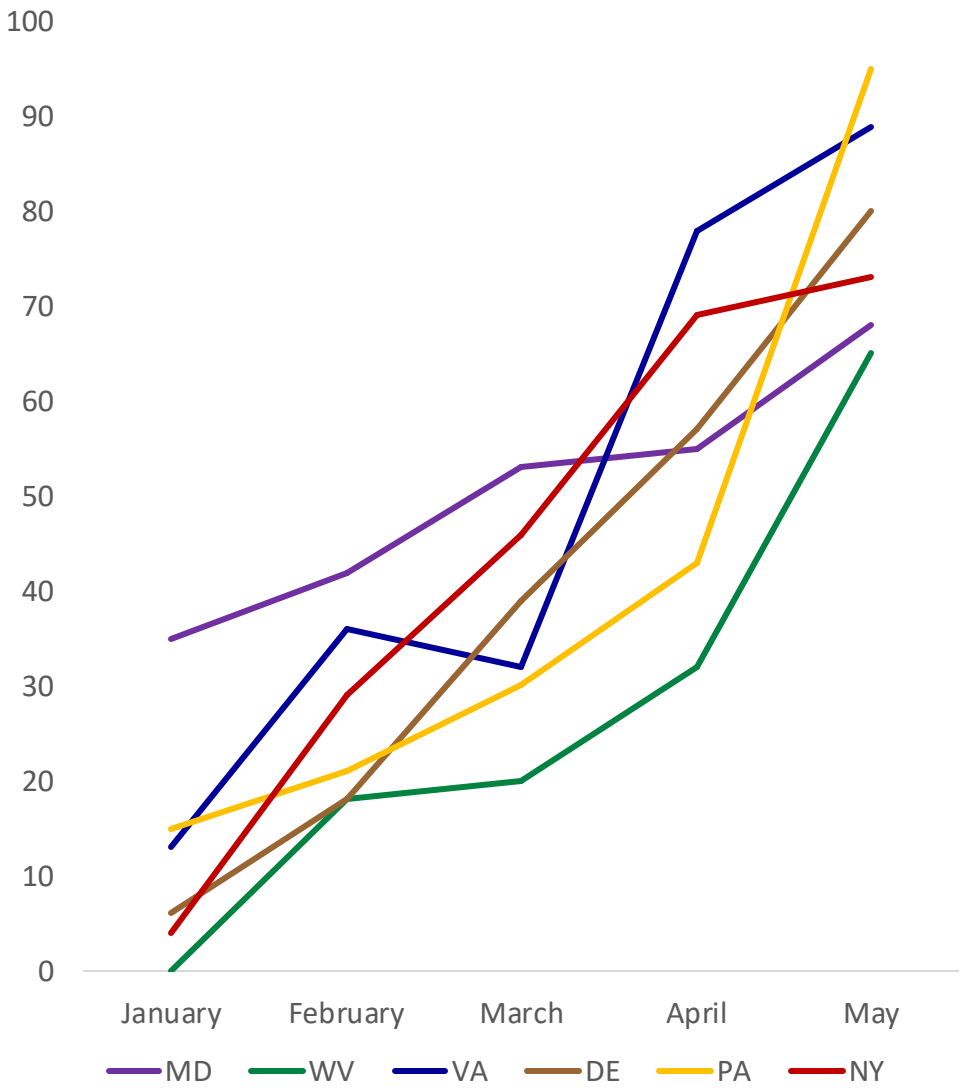


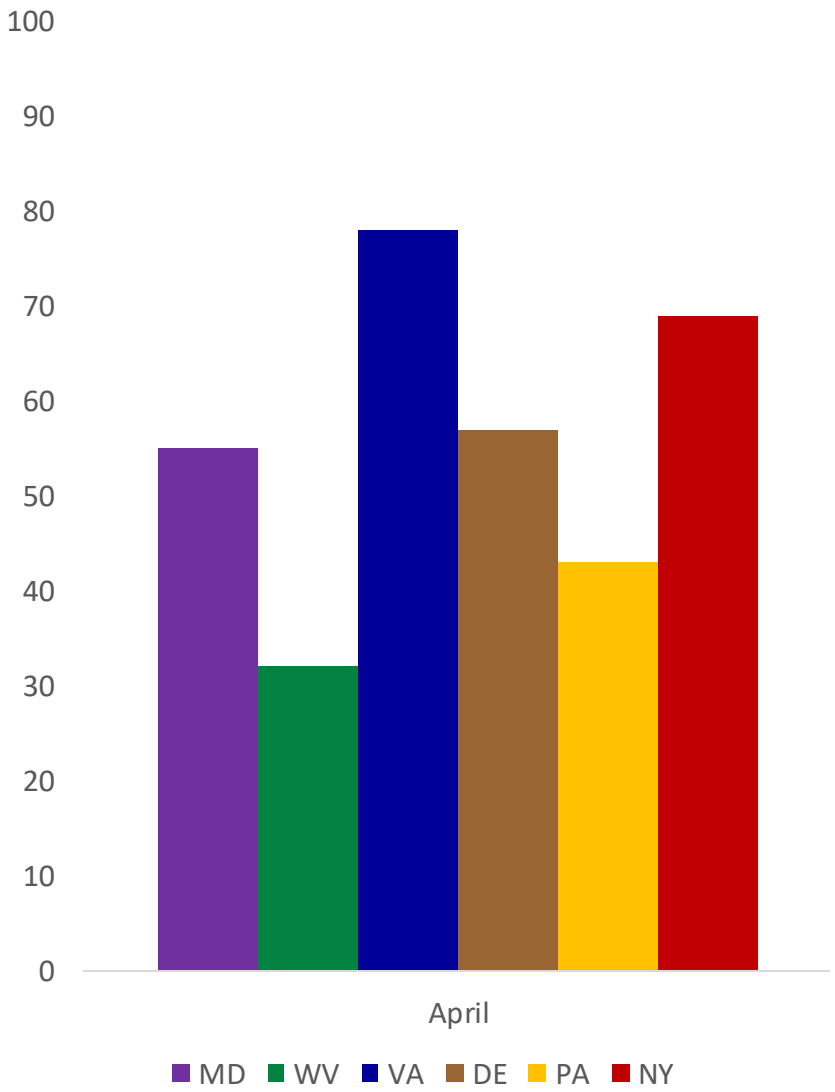


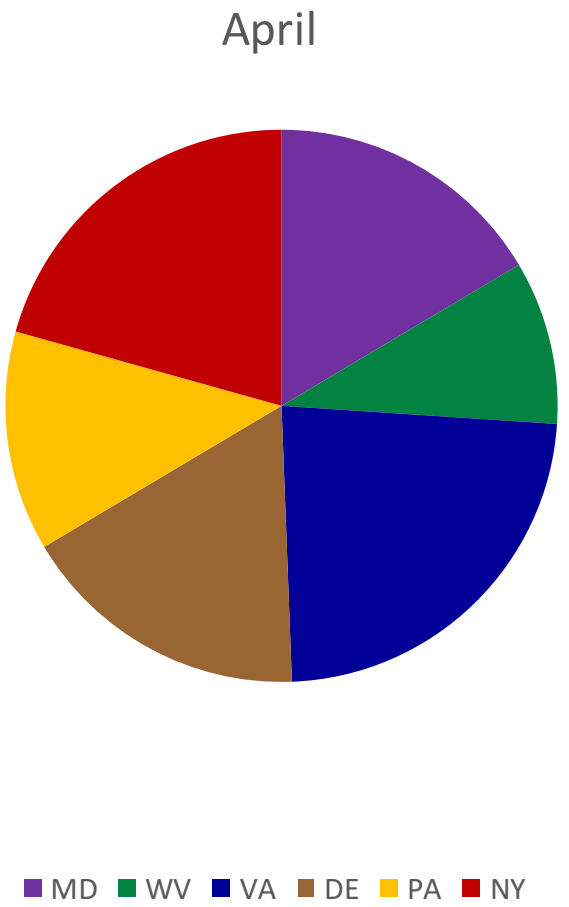


AIR®

Category Colors

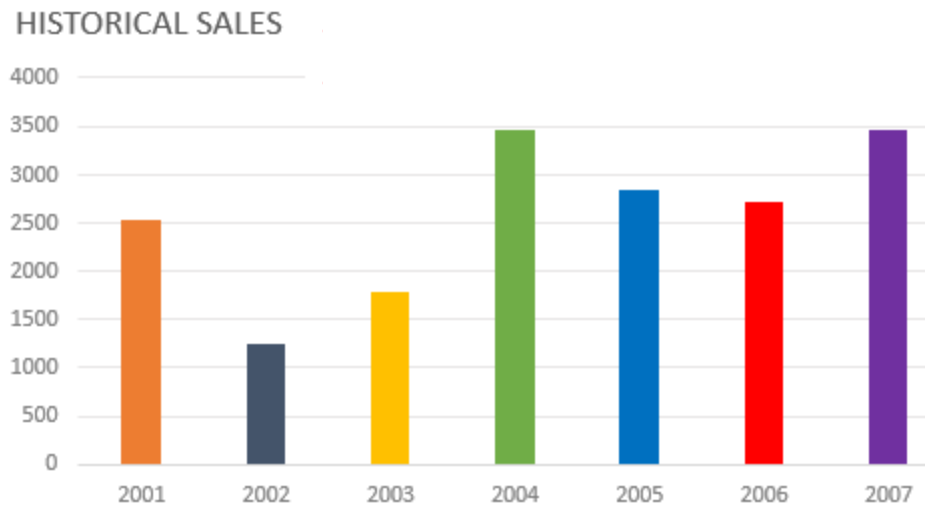


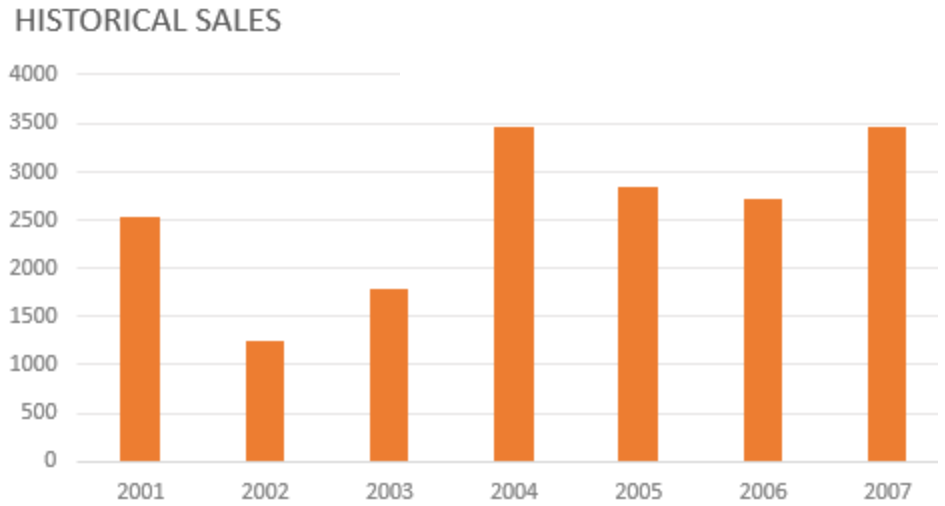




AIR®

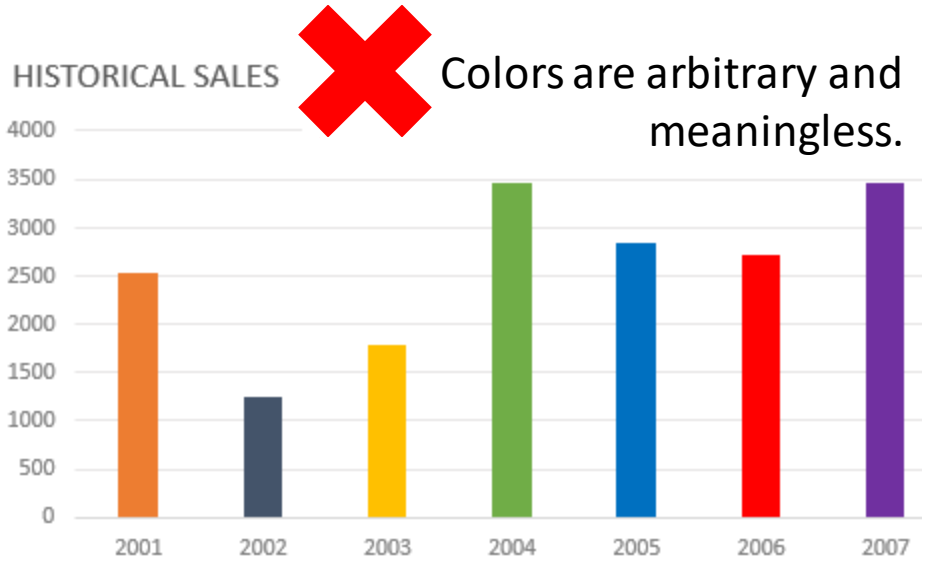
Colors Should Convey Meaning





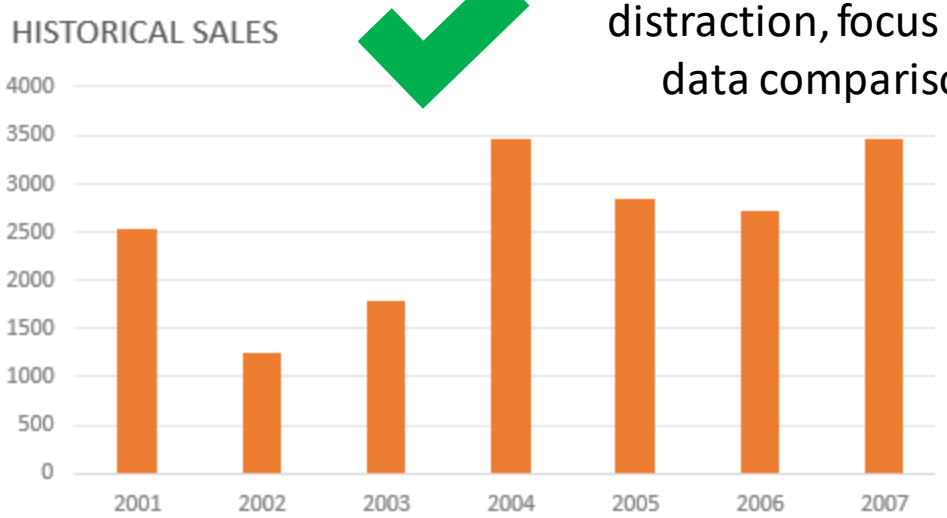
https://goodly.co.in/how-to-pick-the-right-color-for-your-chart/

Colors Should Convey Meaning



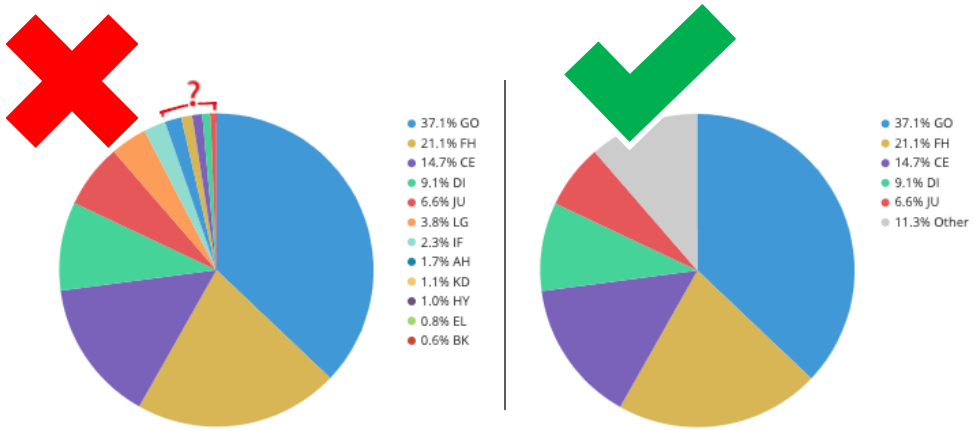
Colors are arbitrary and meaningless.

Uniform colors remove distraction, focus on data comparison.



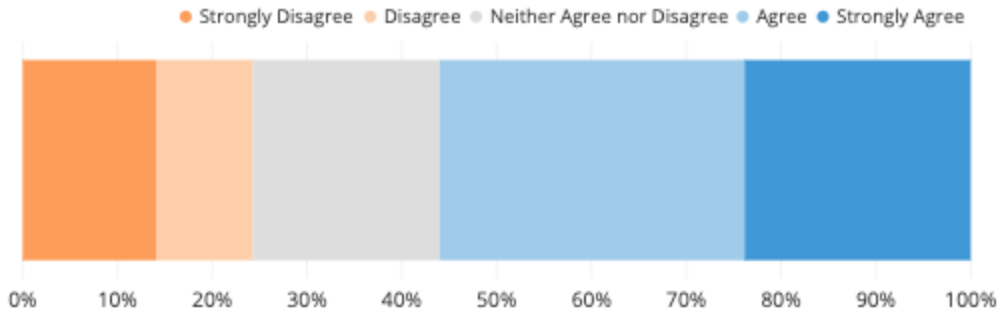
https://goodly.co.in/how-to-pick-the-right-color-for-your-chart/

Three Types of Color Palette for Data Visualization



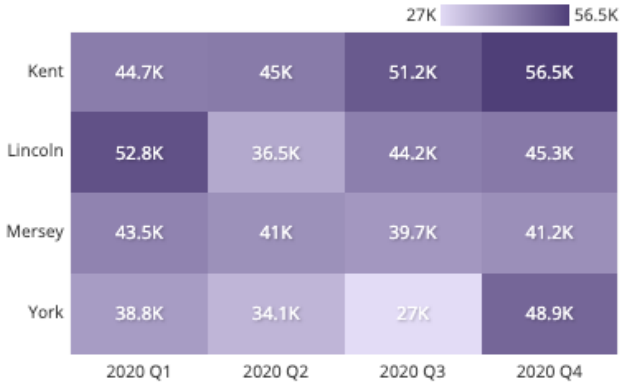
Qualitative

- ***Categories***
- No more than 10 distinct colors
- Don't repeat colors
- If they get too little, merge them



Diverging

- ***Like two Sequential palettes the have a shared endpoint***
- ← Smaller/Negative
- Larger/Positive →

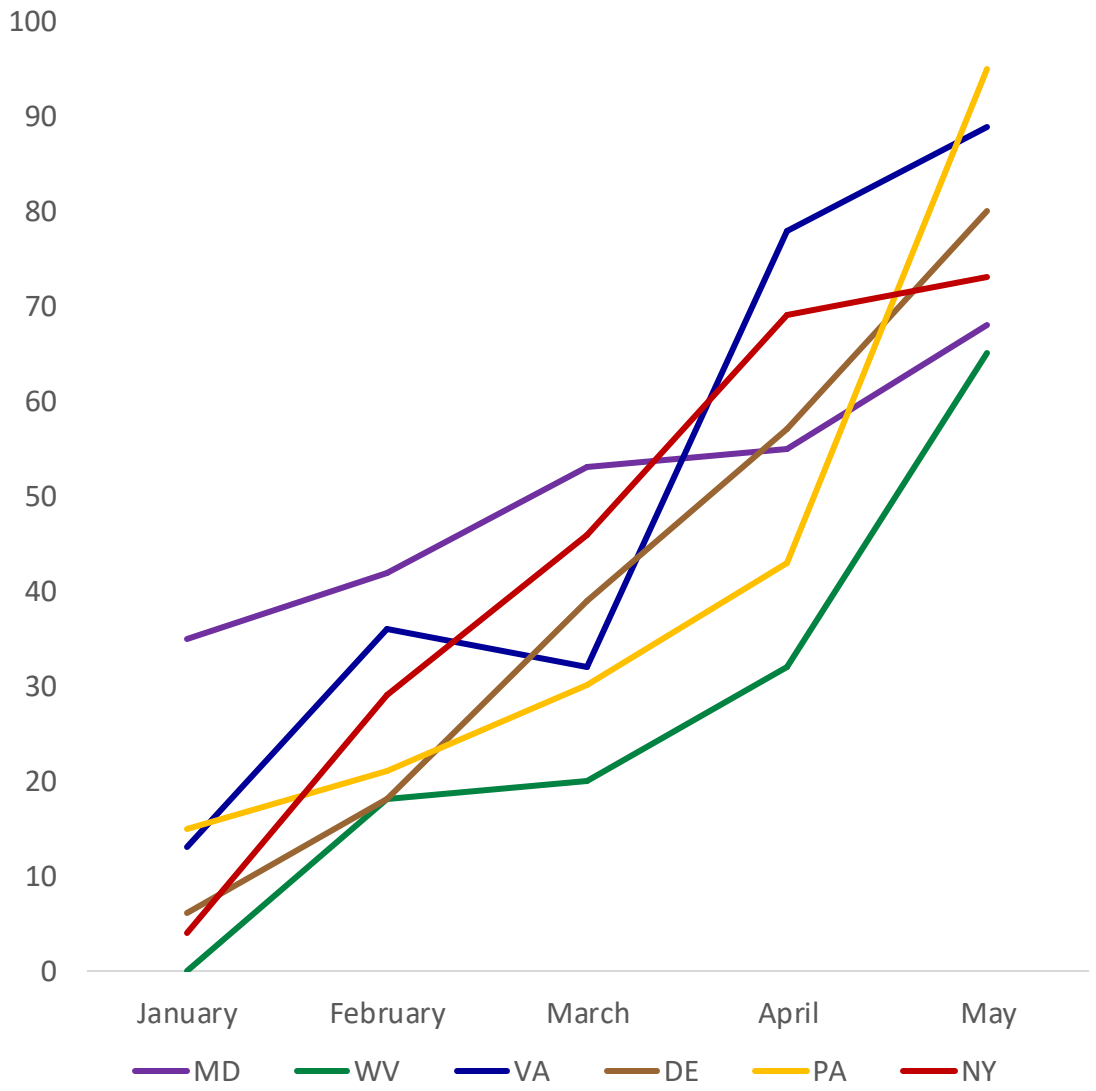


Sequential

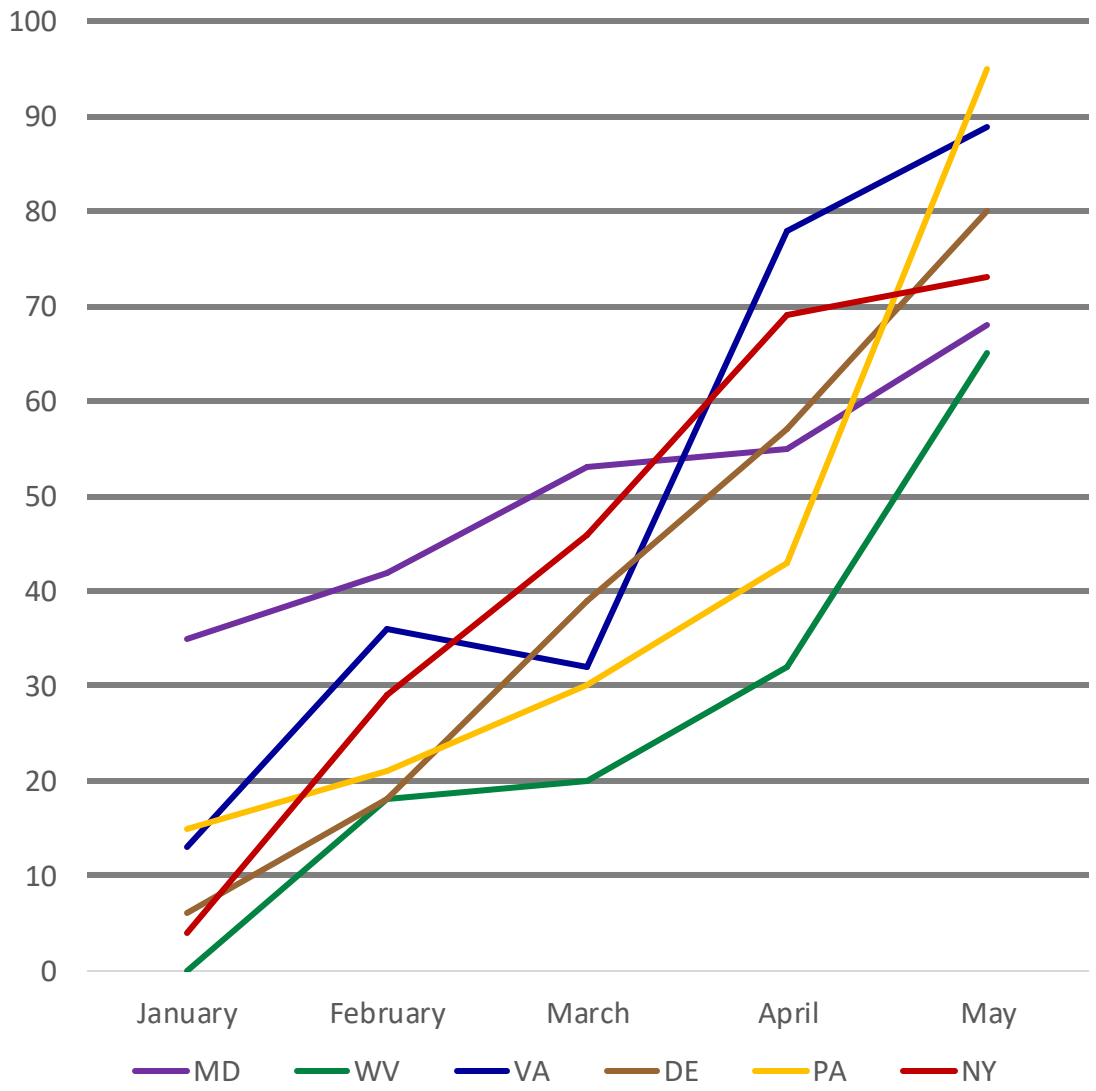
- ***Numeric or ordered values***
- Lightness/darkness or hues

https://chartio.com/learn/charts/how-to-choose-colors-data-visualization/

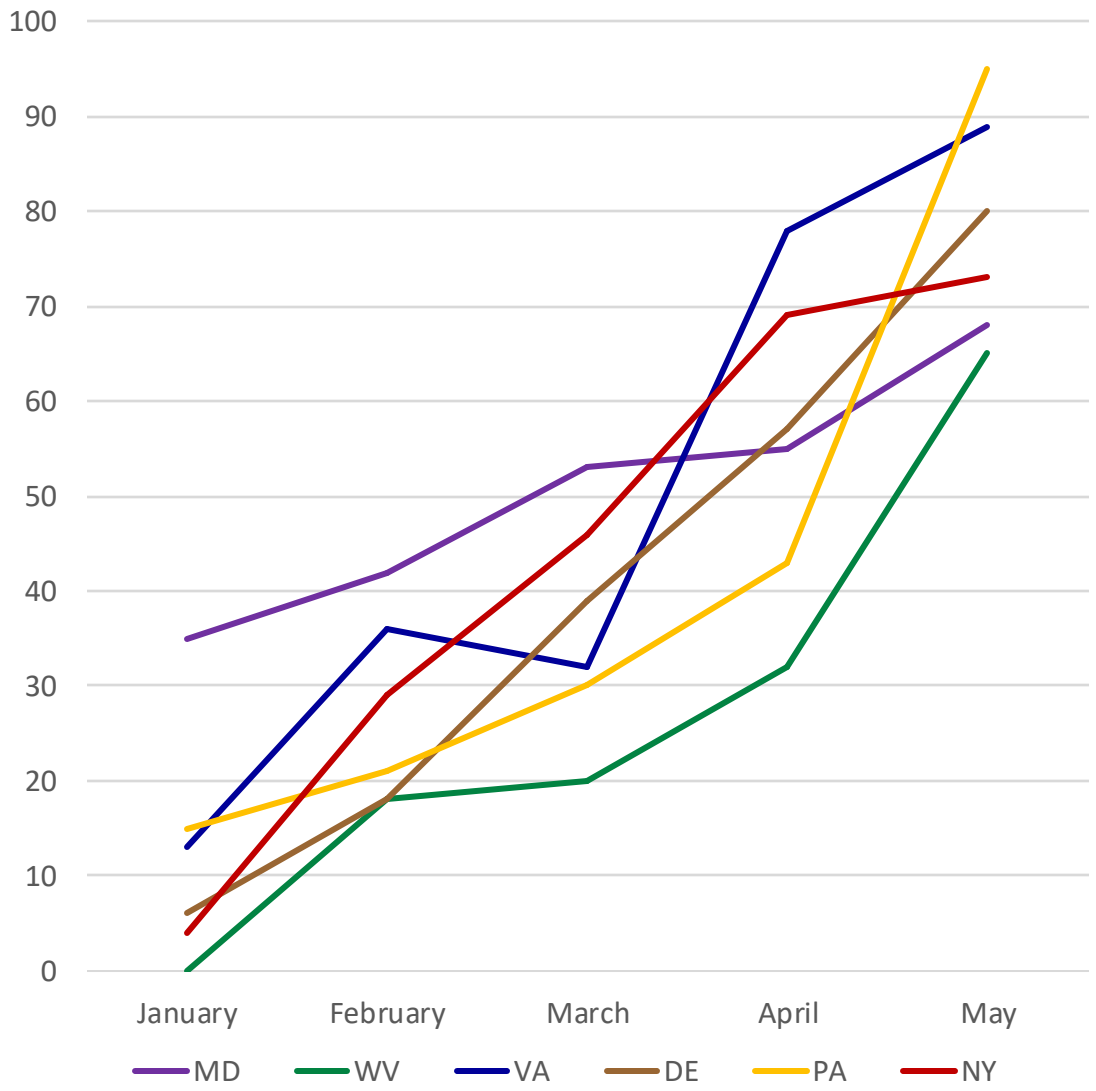
Line Graph – Original with Colors



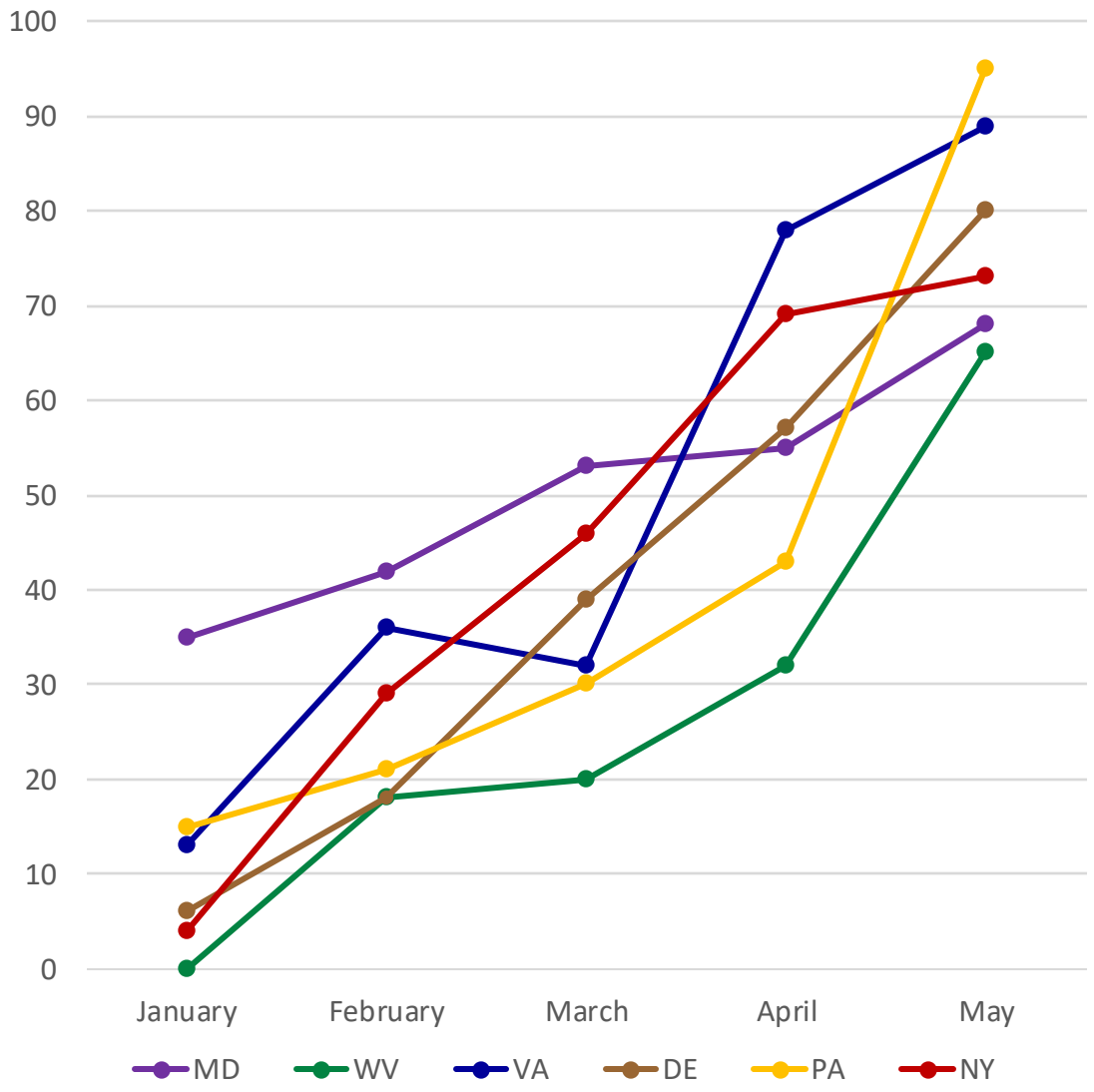
Line Graph – Gridlines



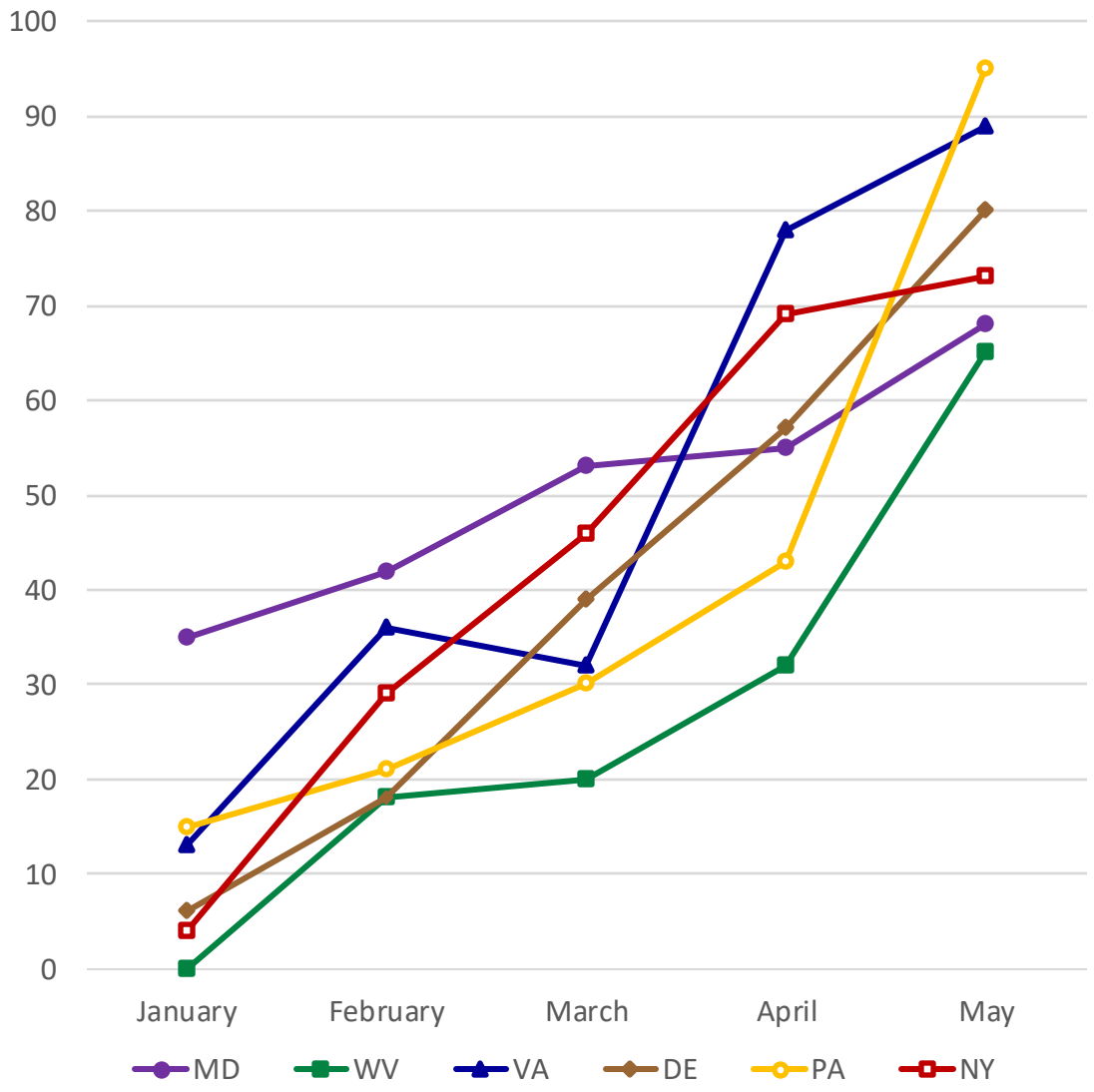
Line Graph – Gridlines (Lighter & Thinner)



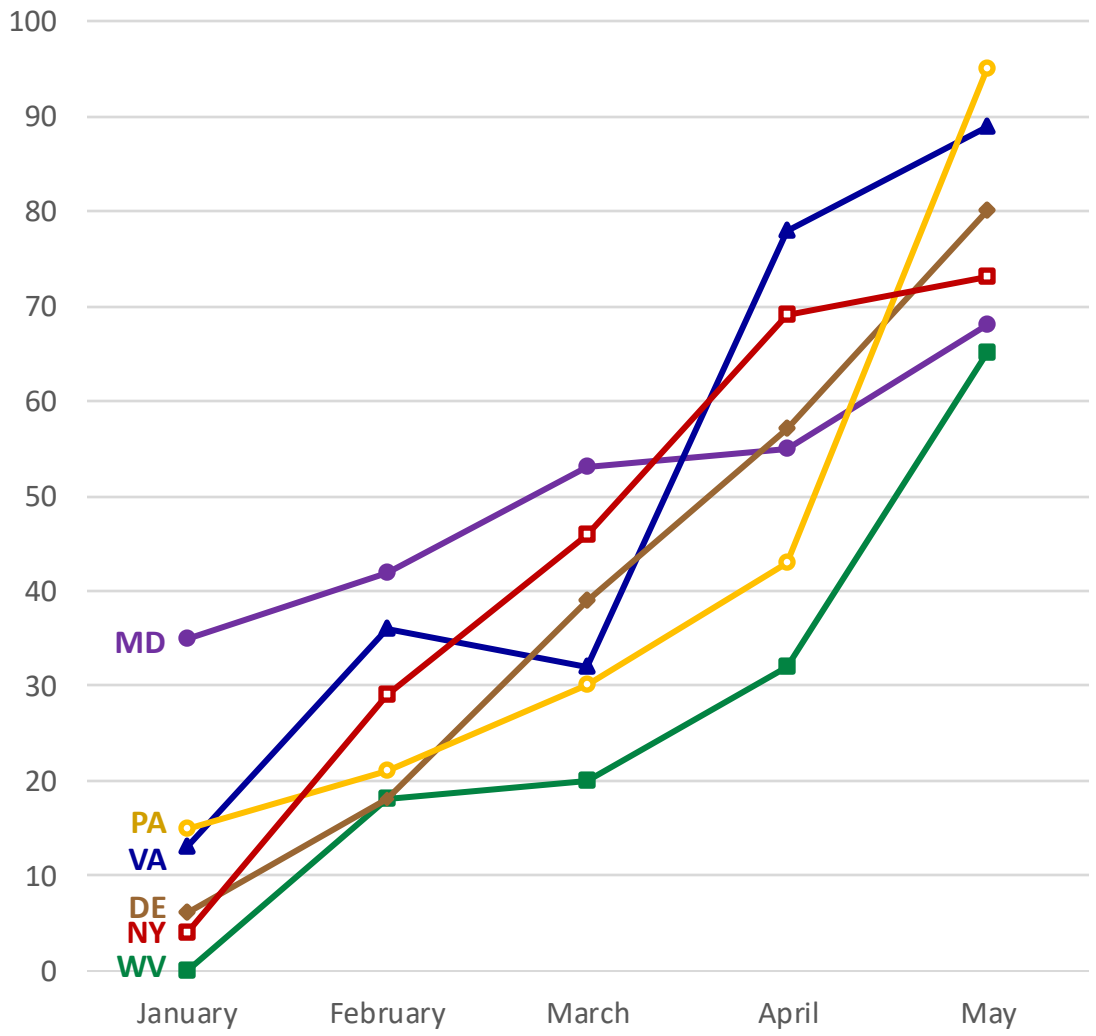
Line Graph – Data Point Markers



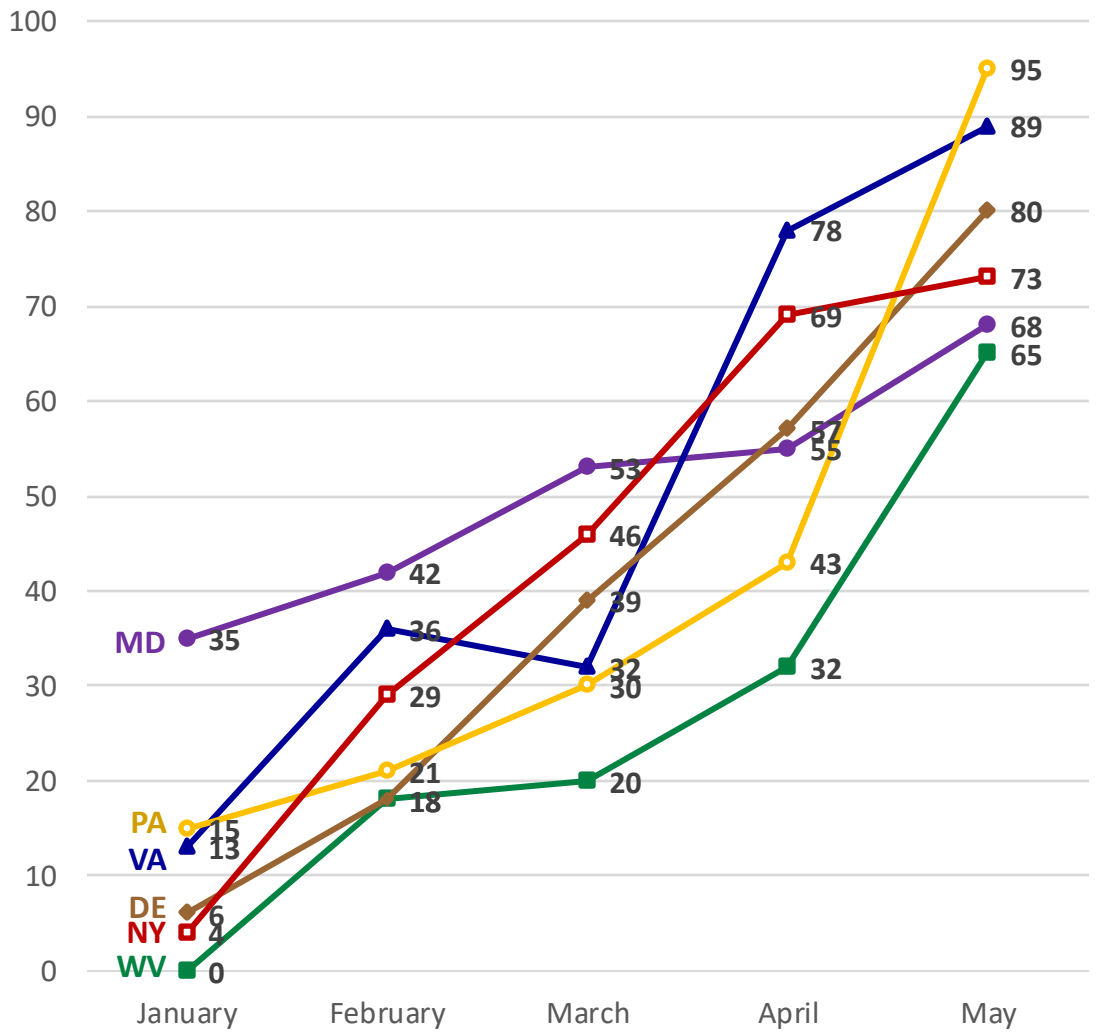
Line Graph – Data Point Markers (Different Shapes)



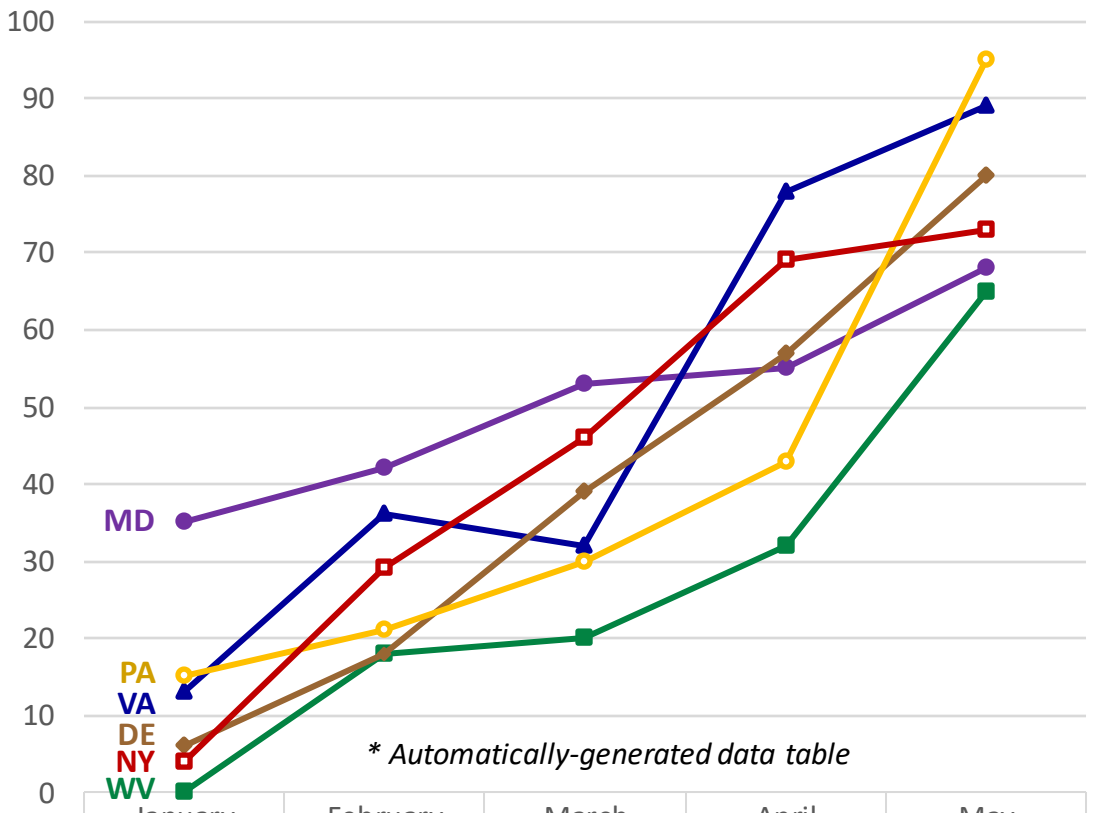
Line Graph – Data Labels



Line Graph – Data Point Labels

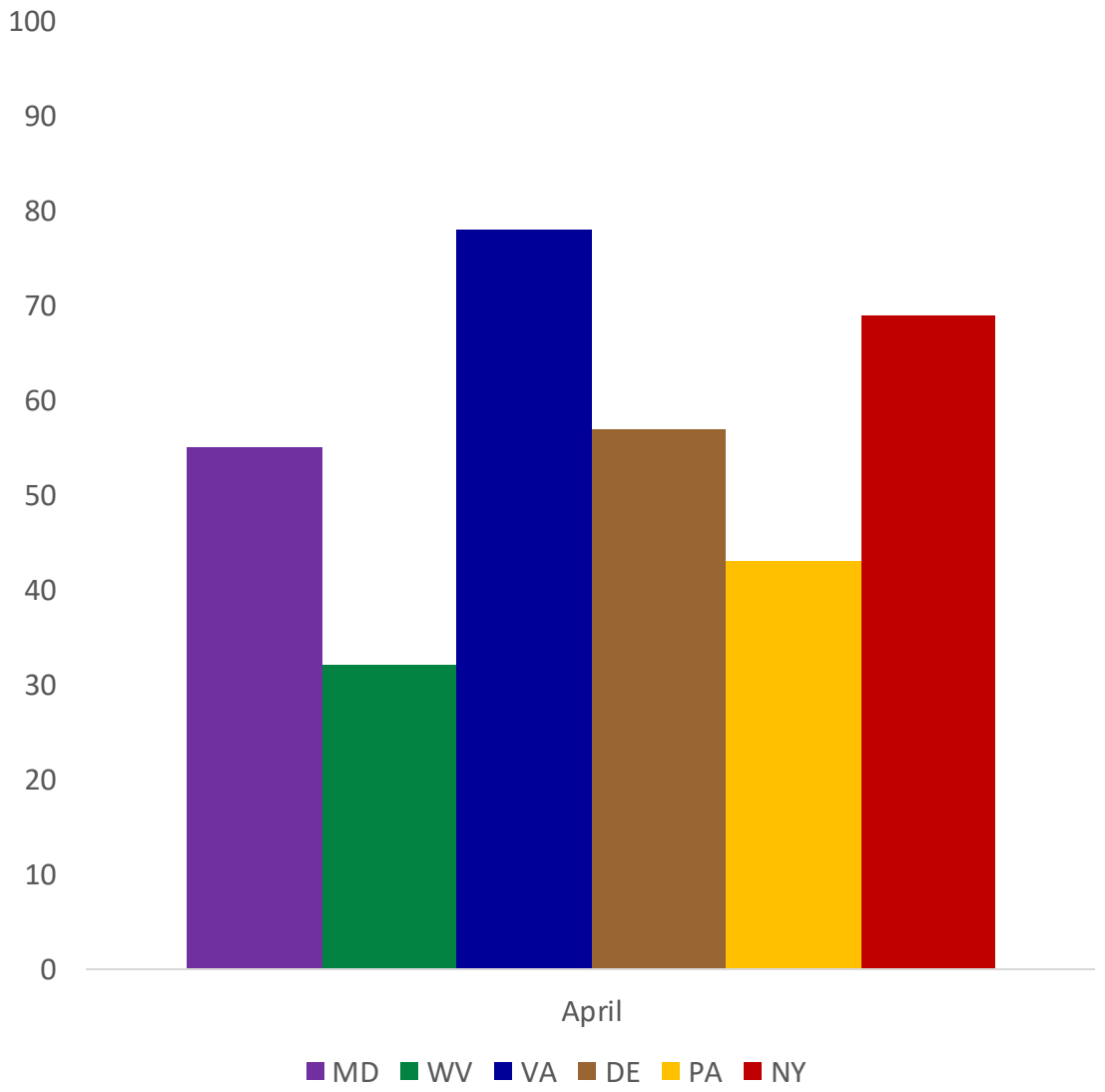


Line Graph – Data Table

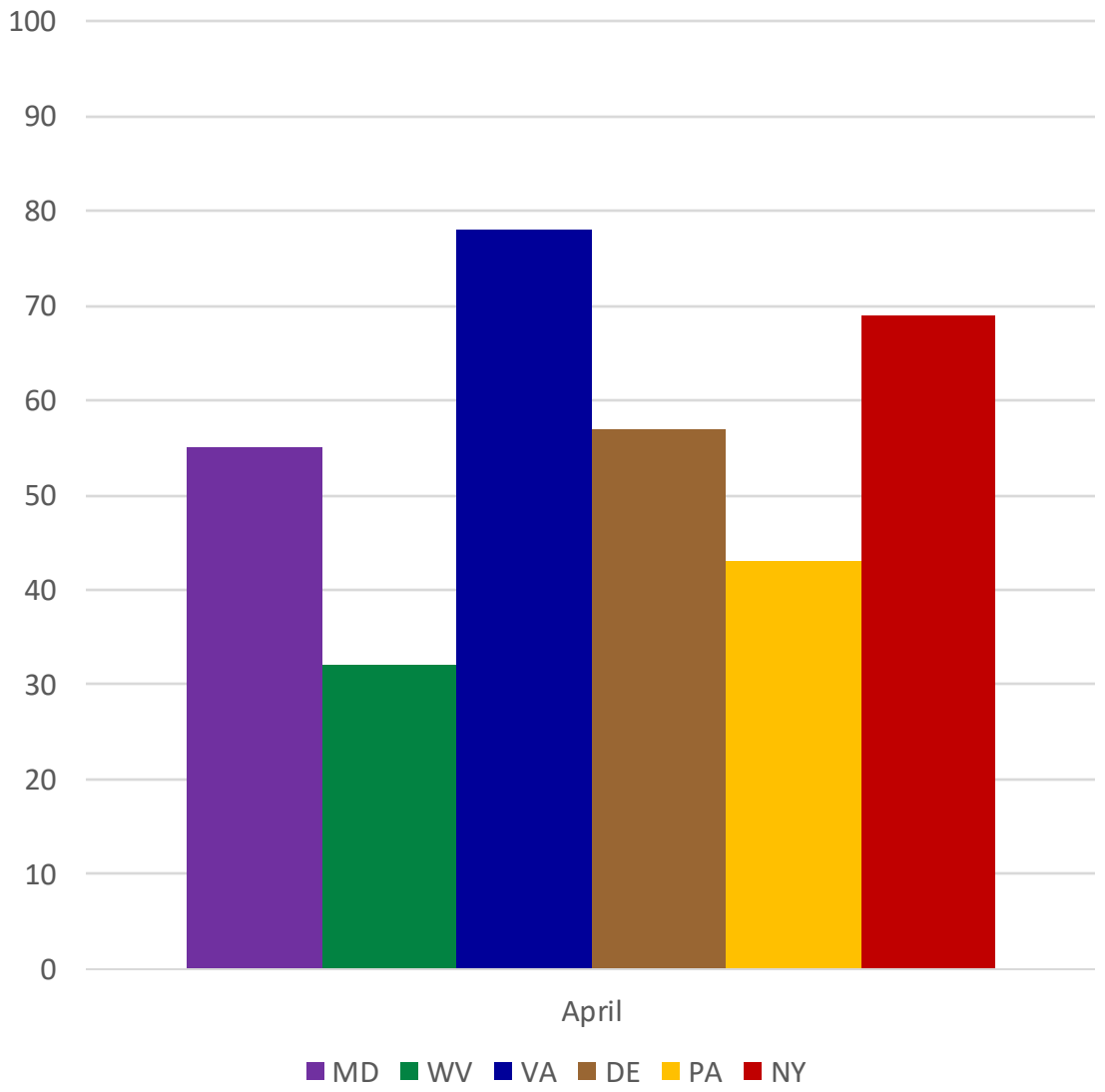


	January	February	March	April	May
MD	35	42	53	55	68
WV	0	18	20	32	65
VA	13	36	32	78	89
DE	6	18	39	57	80
PA	15	21	30	43	95
NY	4	29	46	69	73

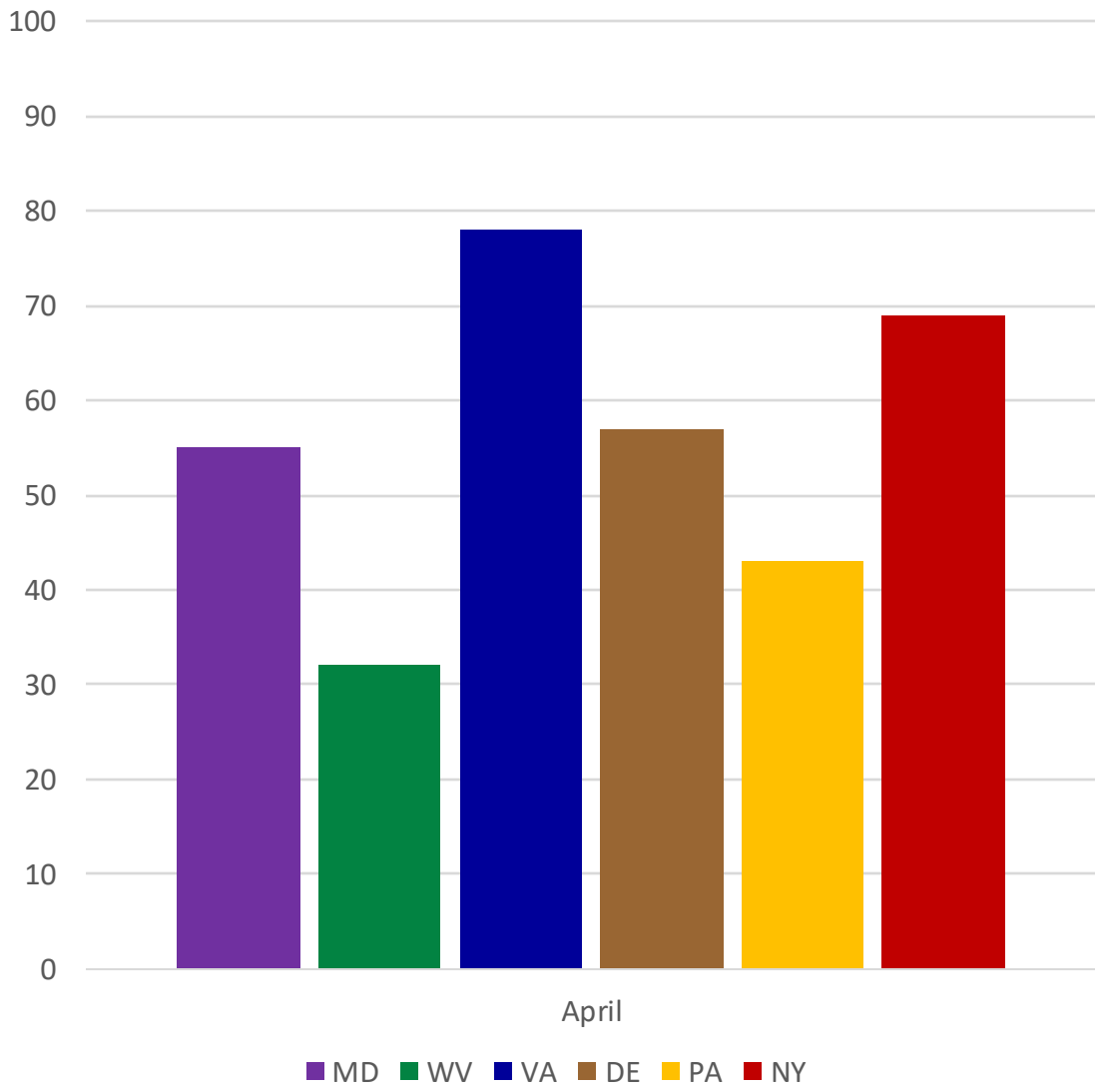
Bar Graph – Original with Colors



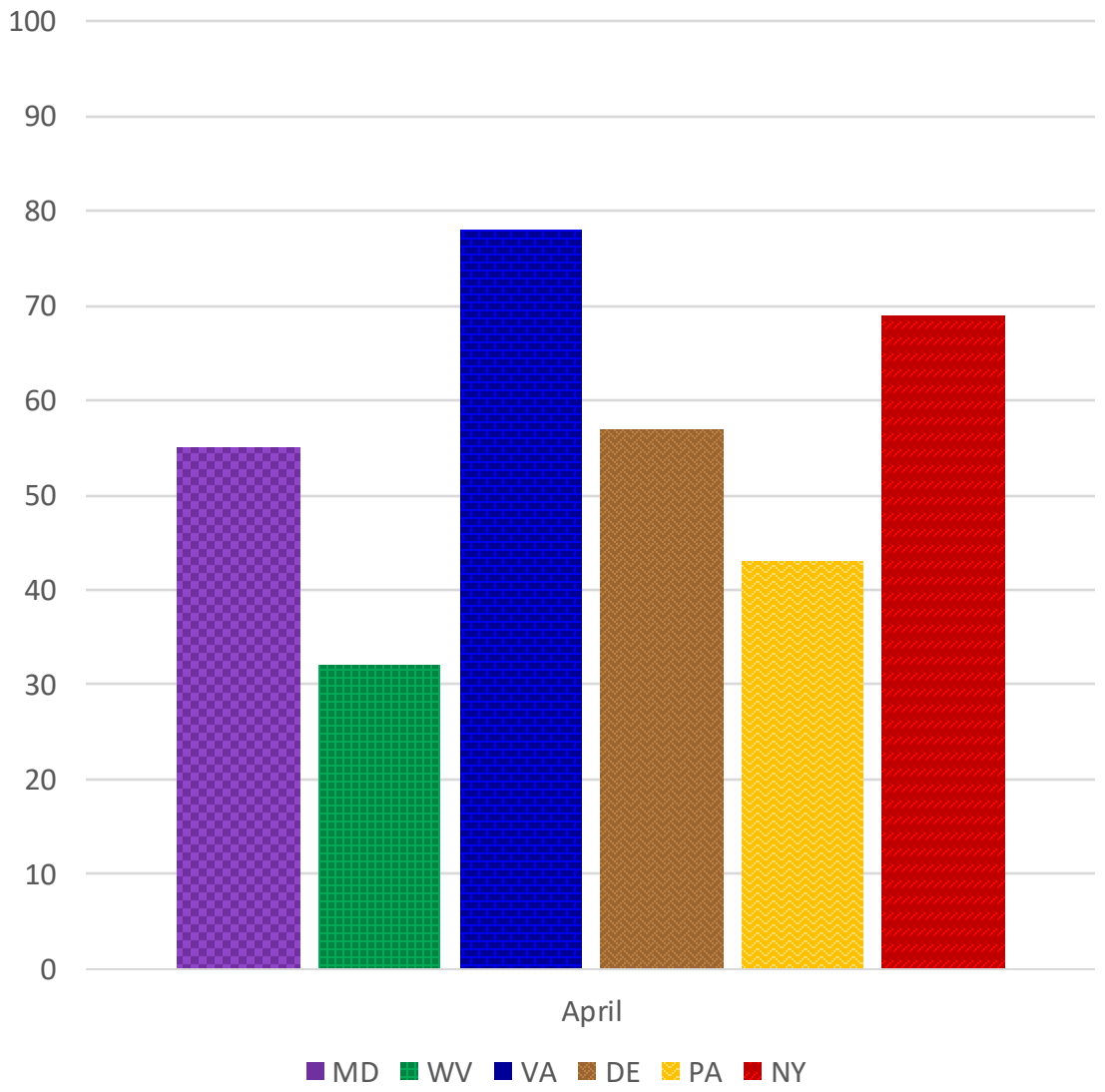
Bar Graph – Gridlines (Light & Thin)



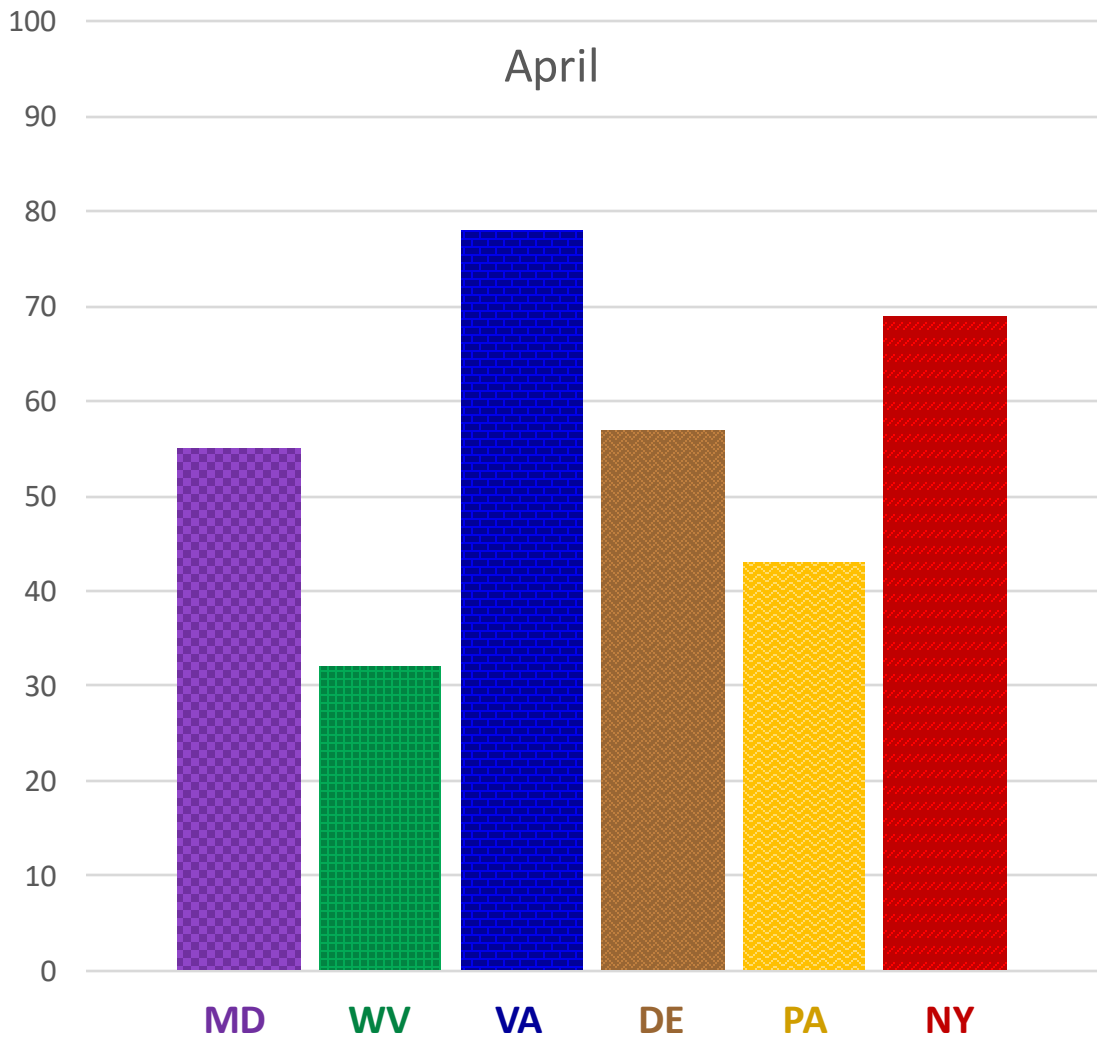
Bar Graph – Separate Shapes



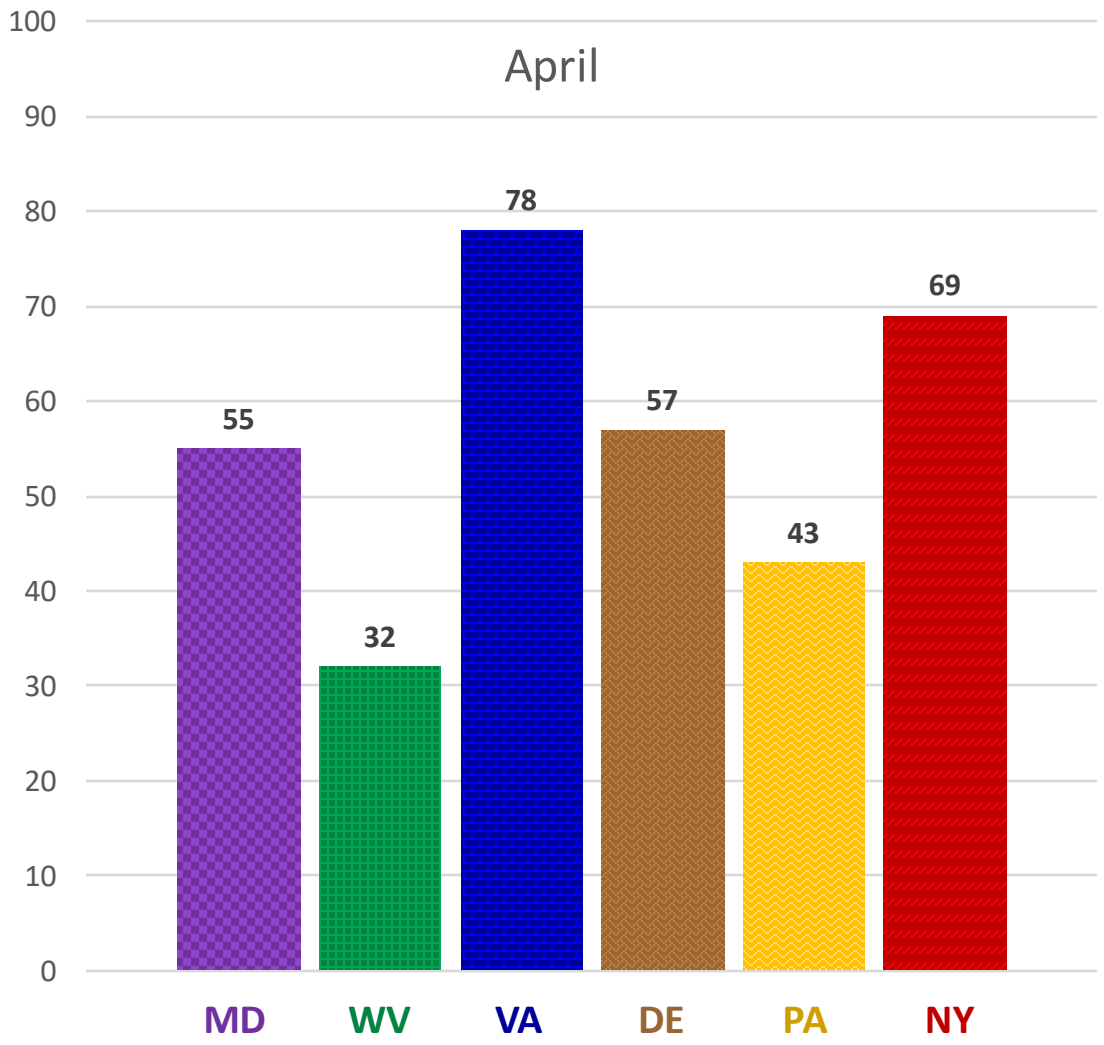
Bar Graph – Pattern Fills



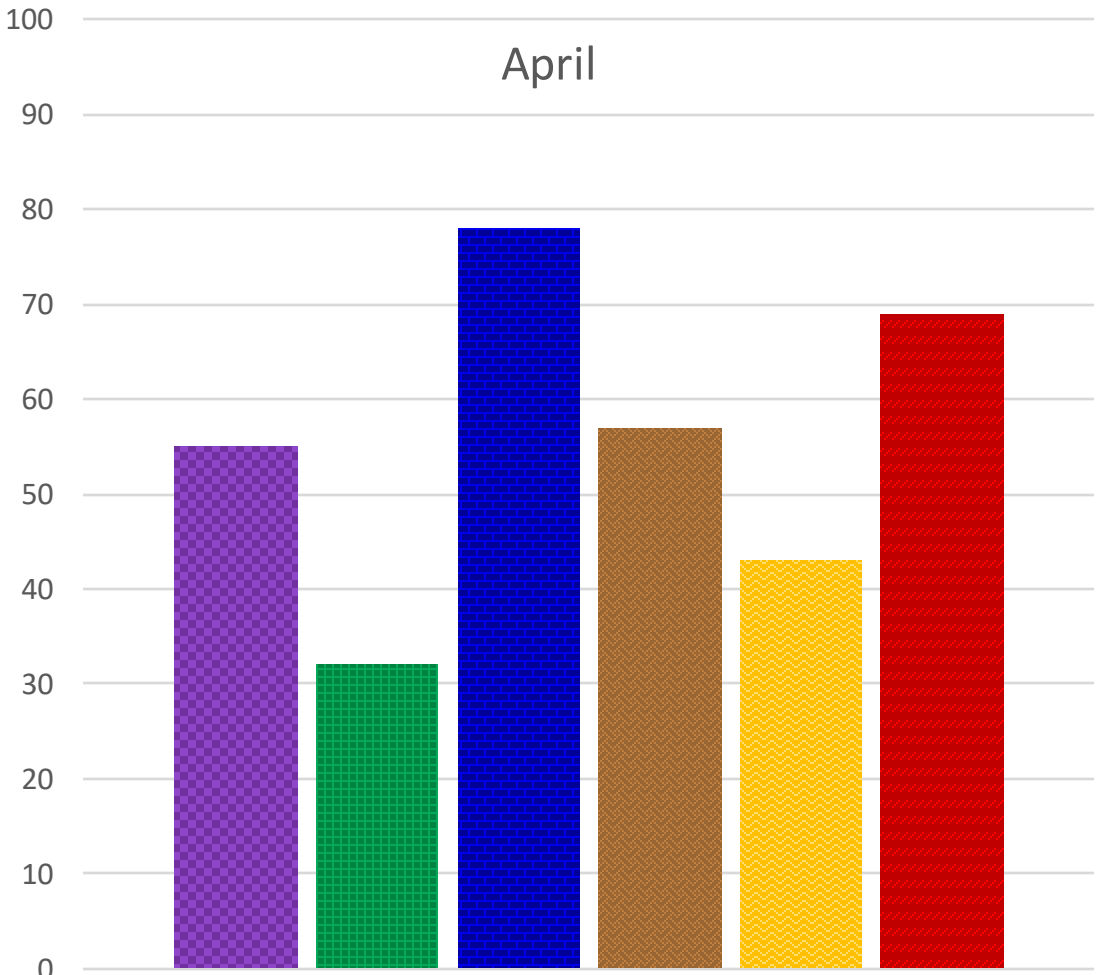
Bar Graph – Data Labels (Colored)



Bar Graph – Data Point Labels

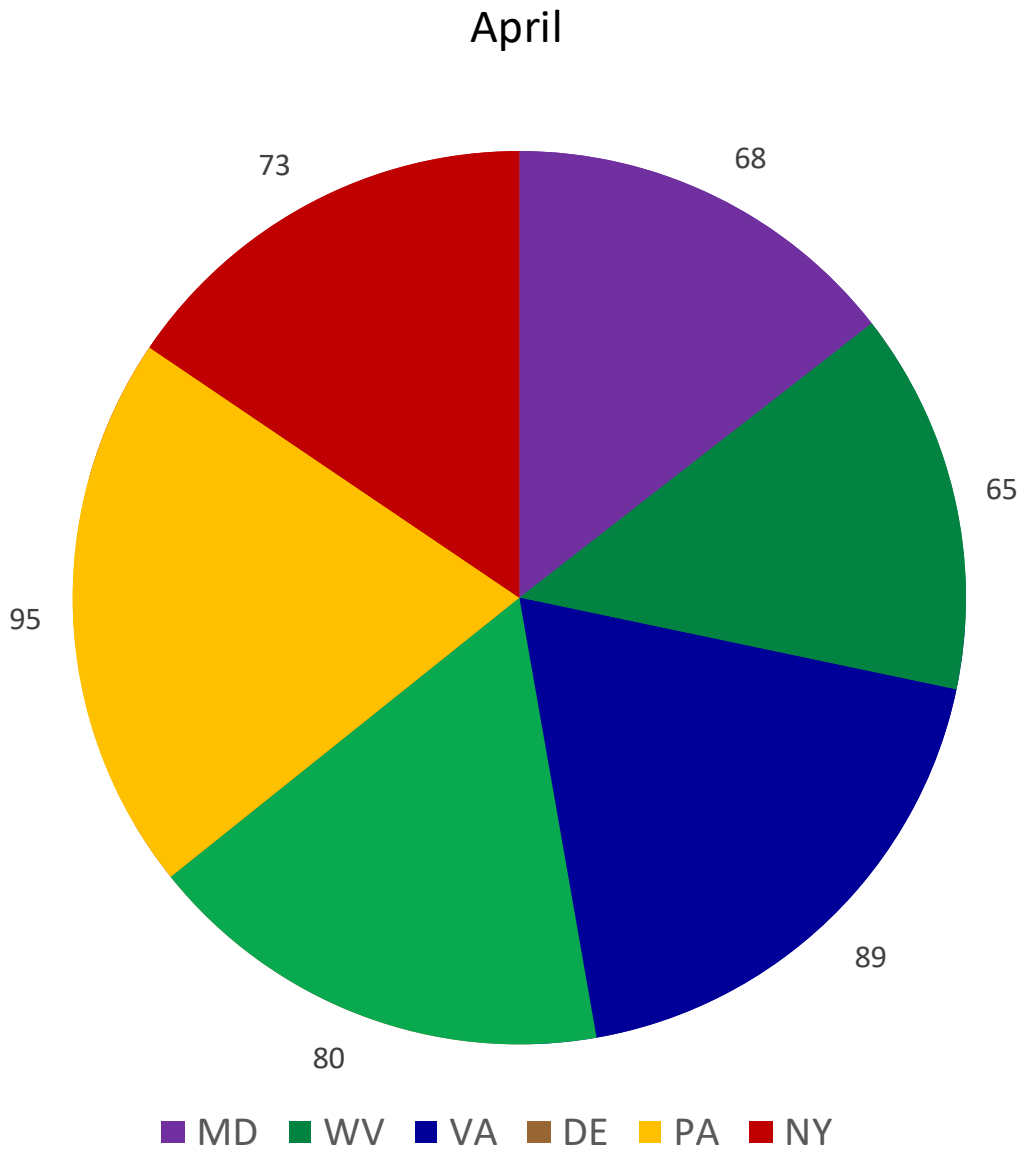


Bar Graph – Data Table

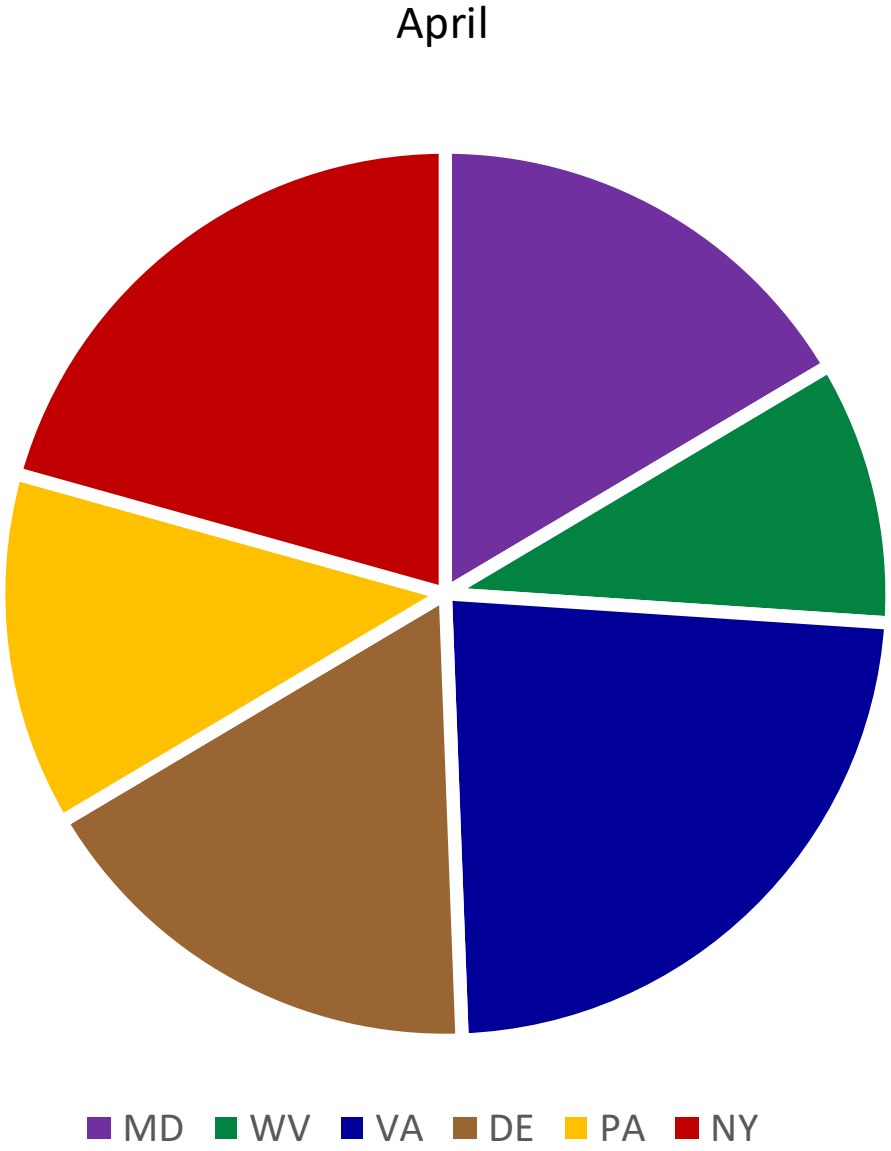


MD	WV	VA	DE	PA	NY
55	32	78	57	43	69

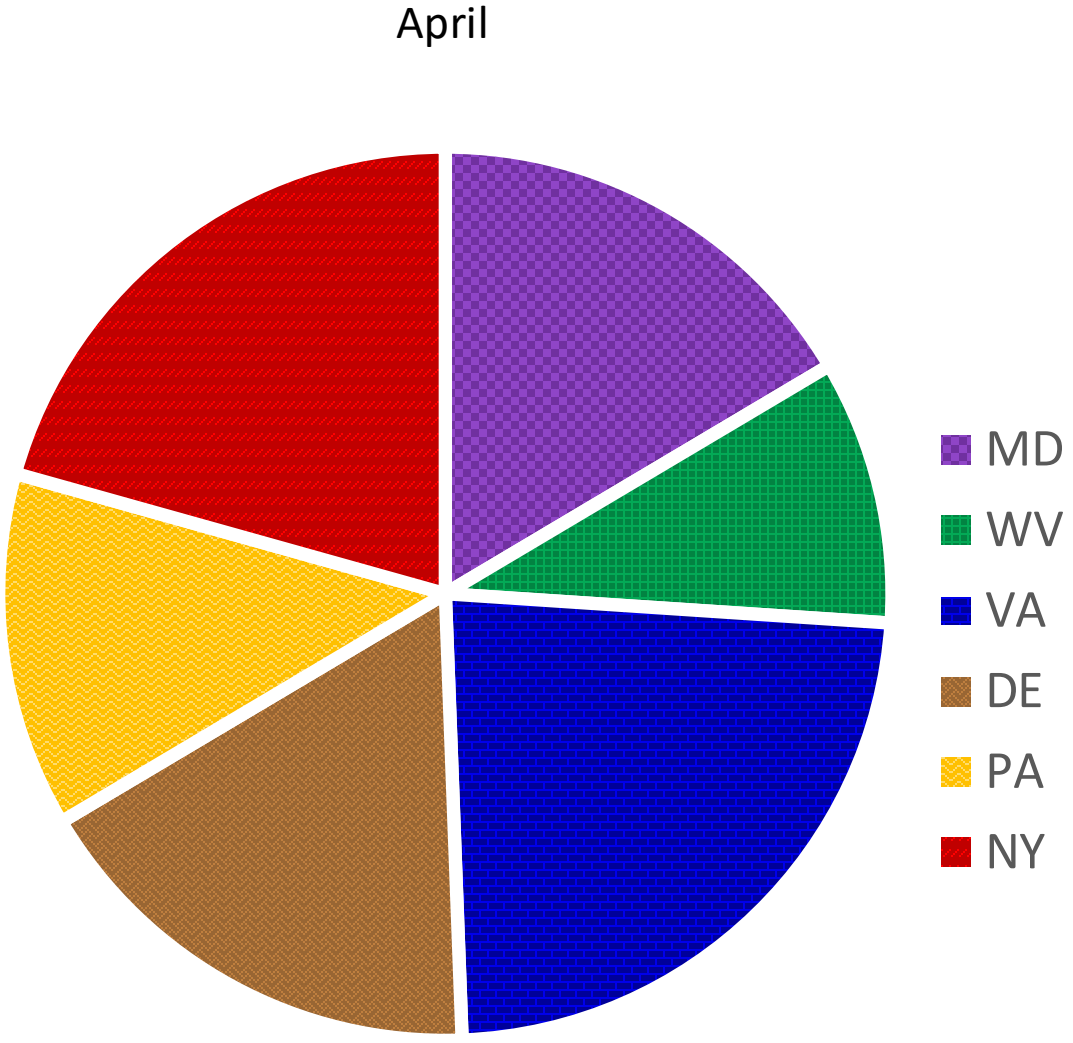
Pie Graph – Original with Colors



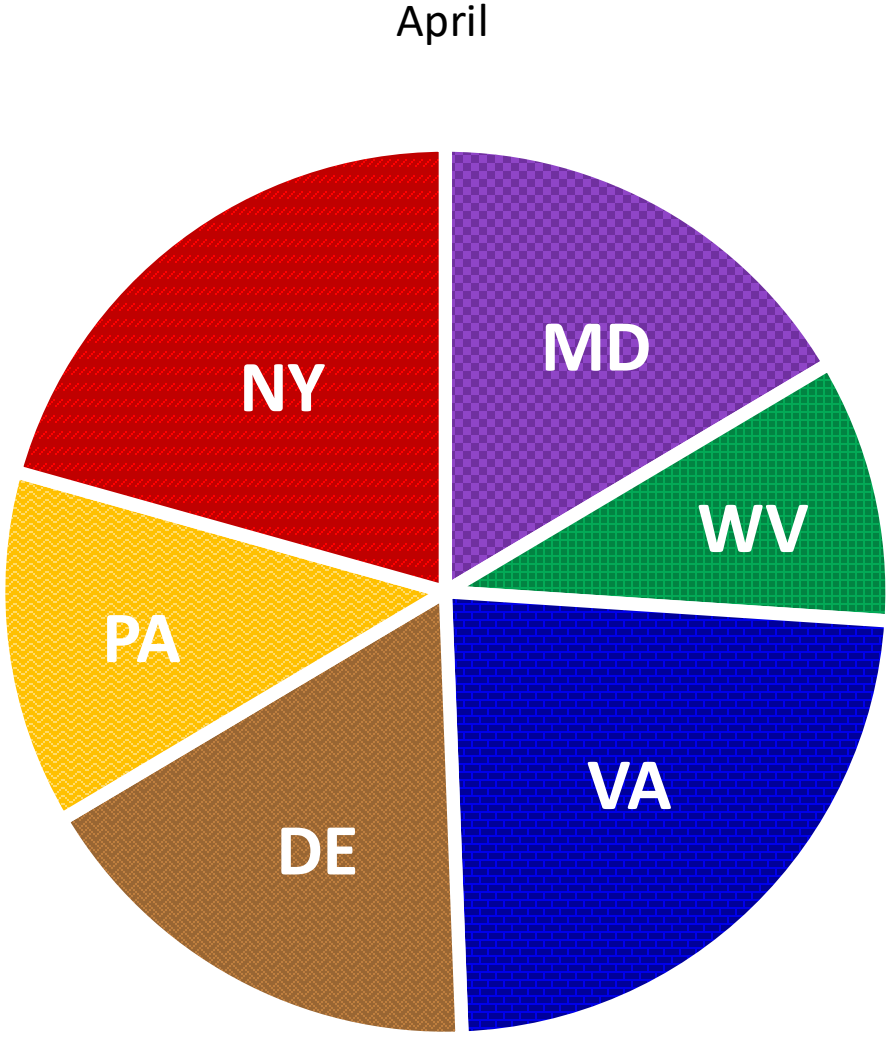
Pie Graph – Separate Shapes



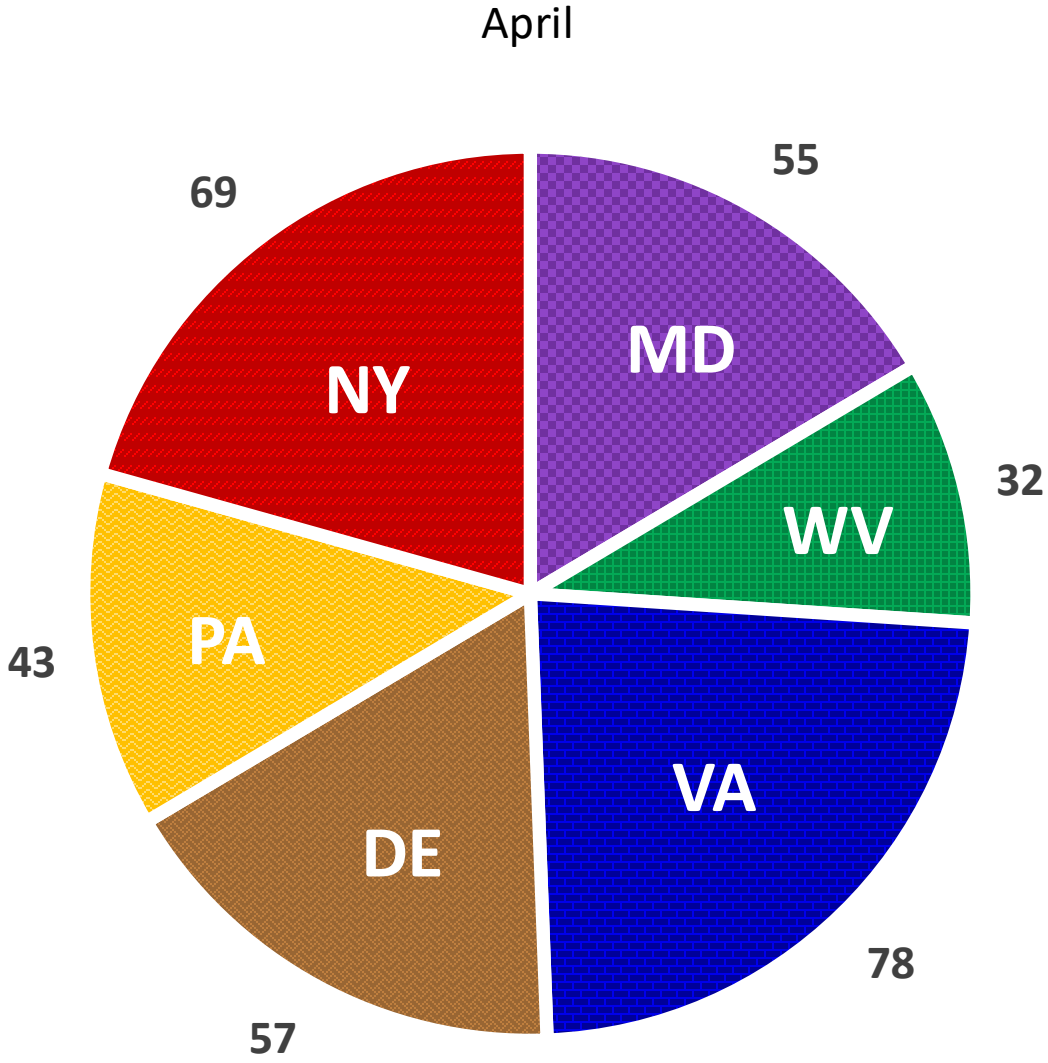
Pie Graph – Pattern Fills



Pie Graph – Data Labels

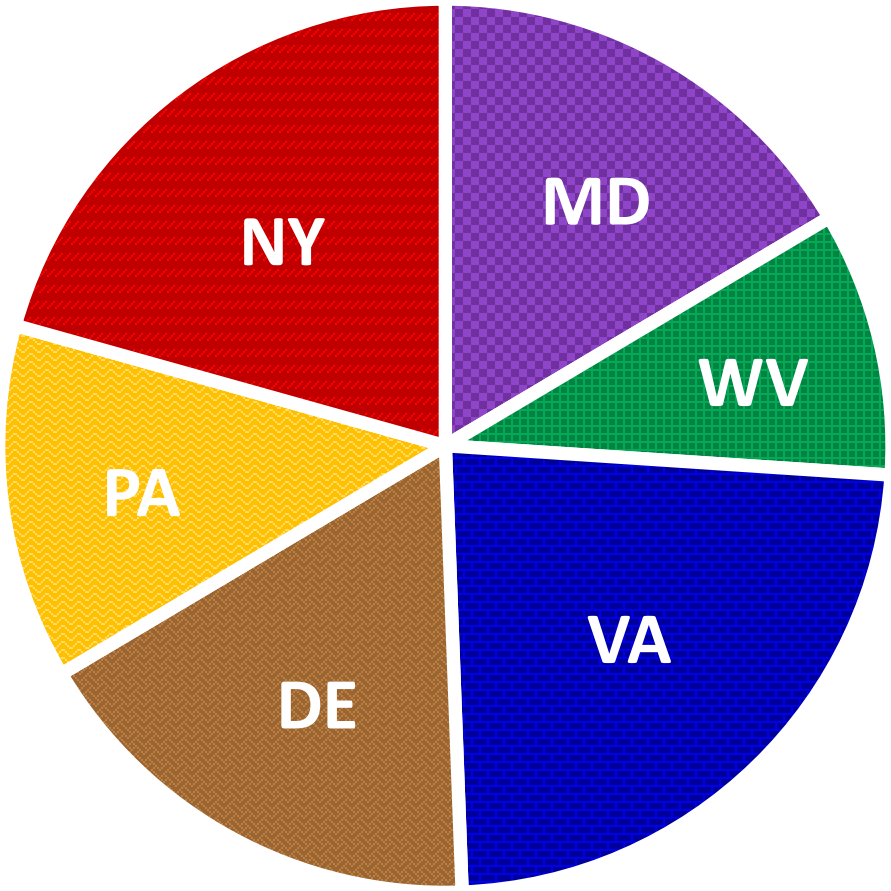


Pie Graph – Data Values



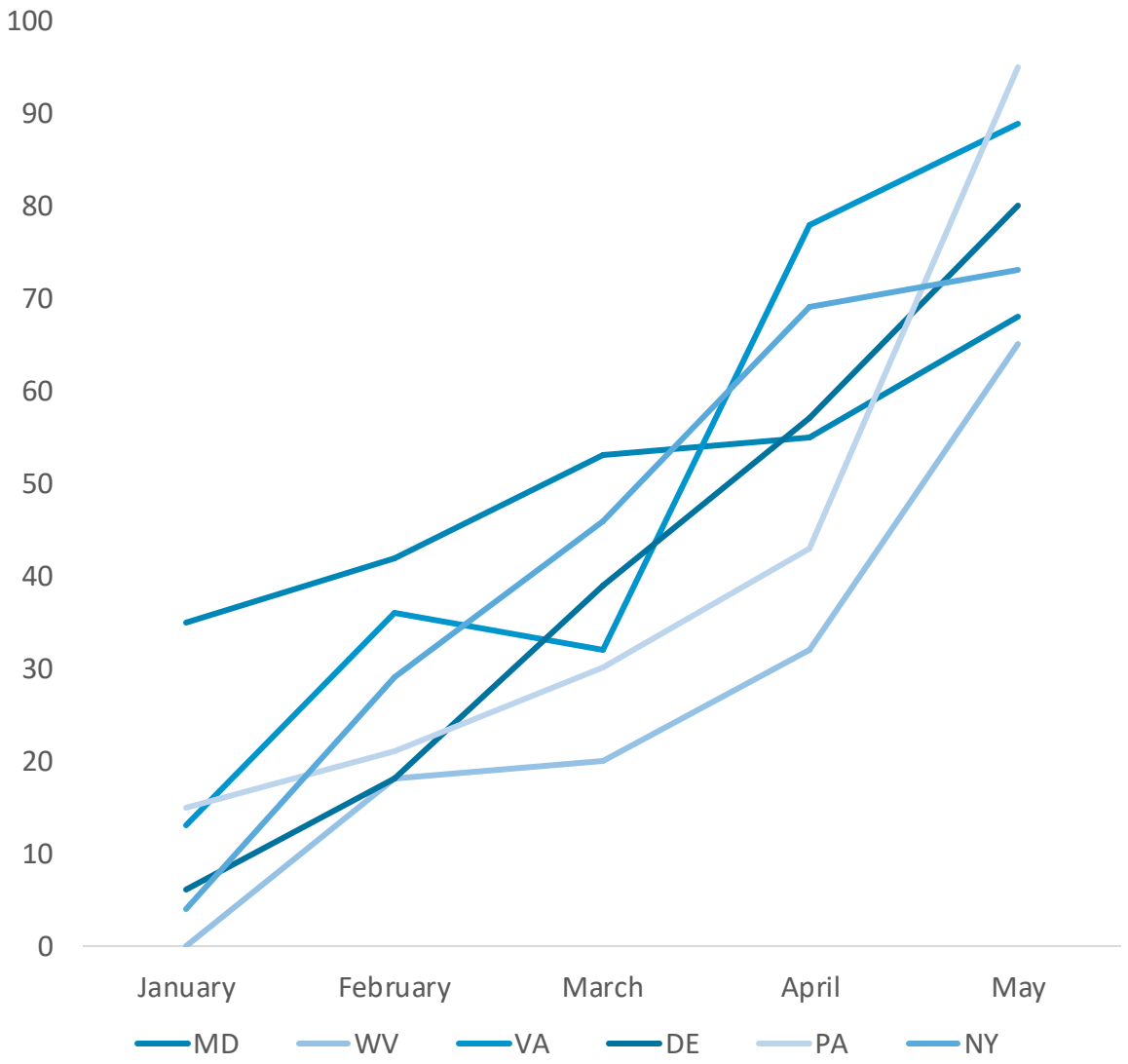
Pie Graph – Data Table

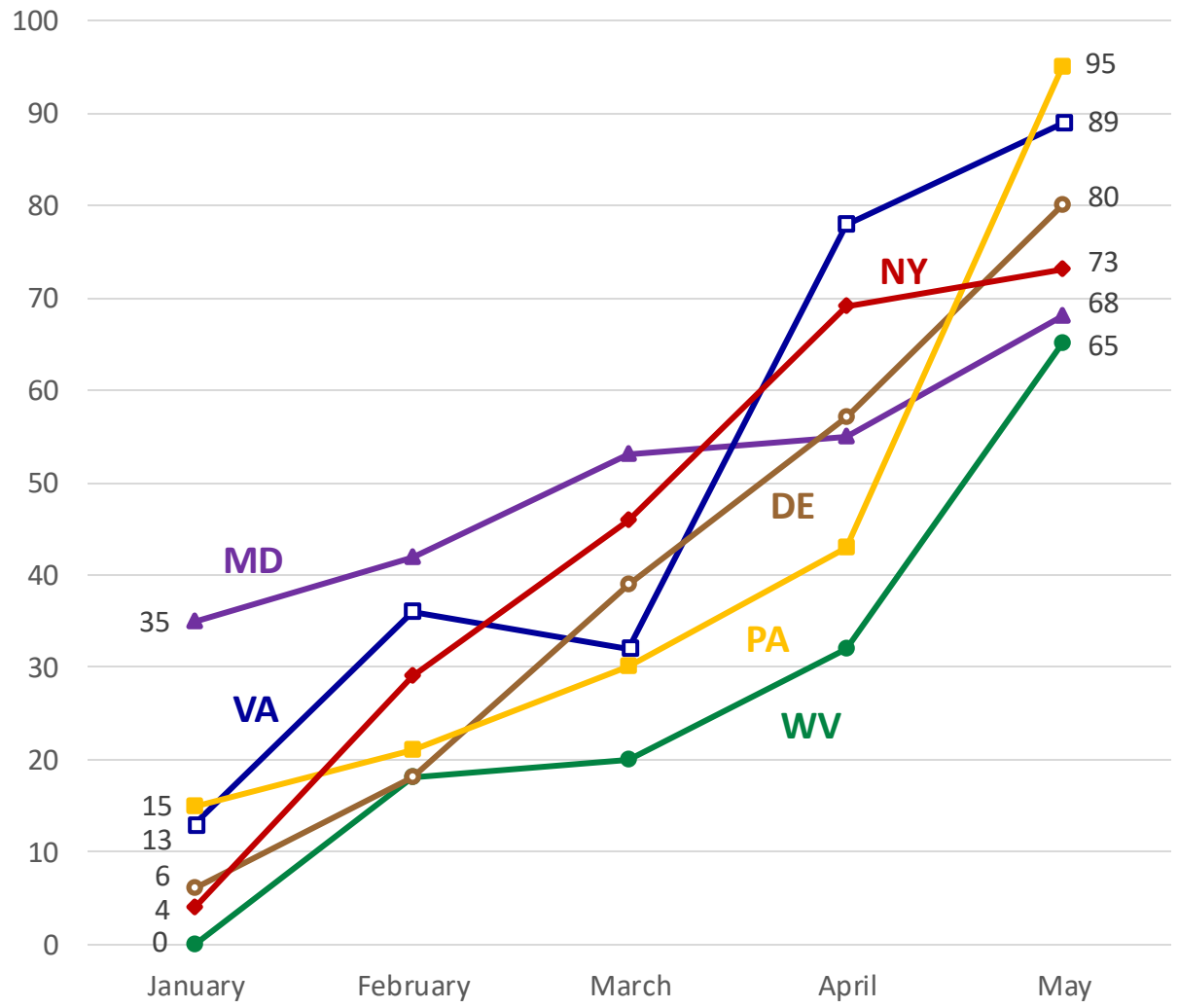
April



MD	WV	VA	DE	PA	NY
55	32	78	57	43	69

Compare





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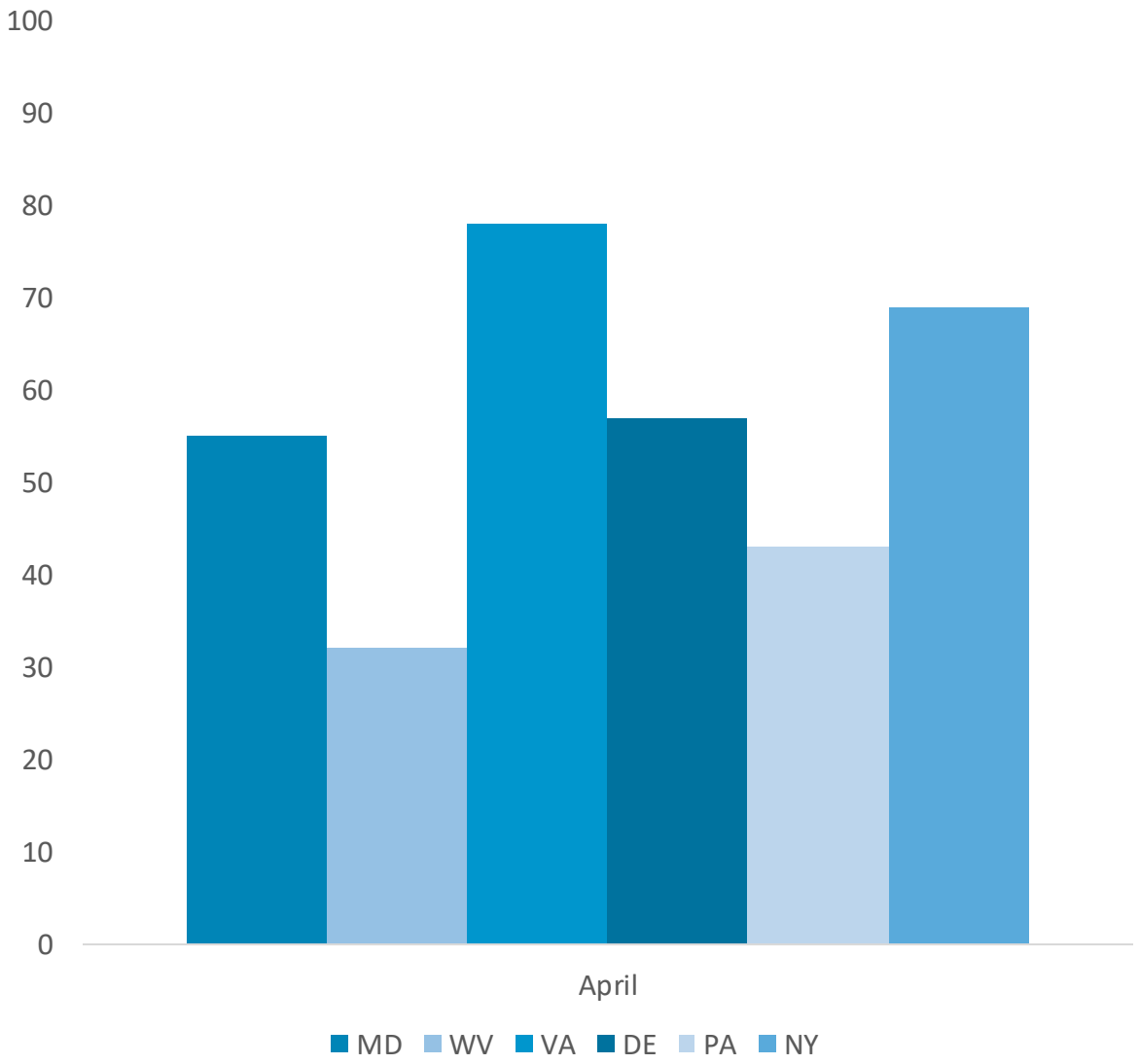
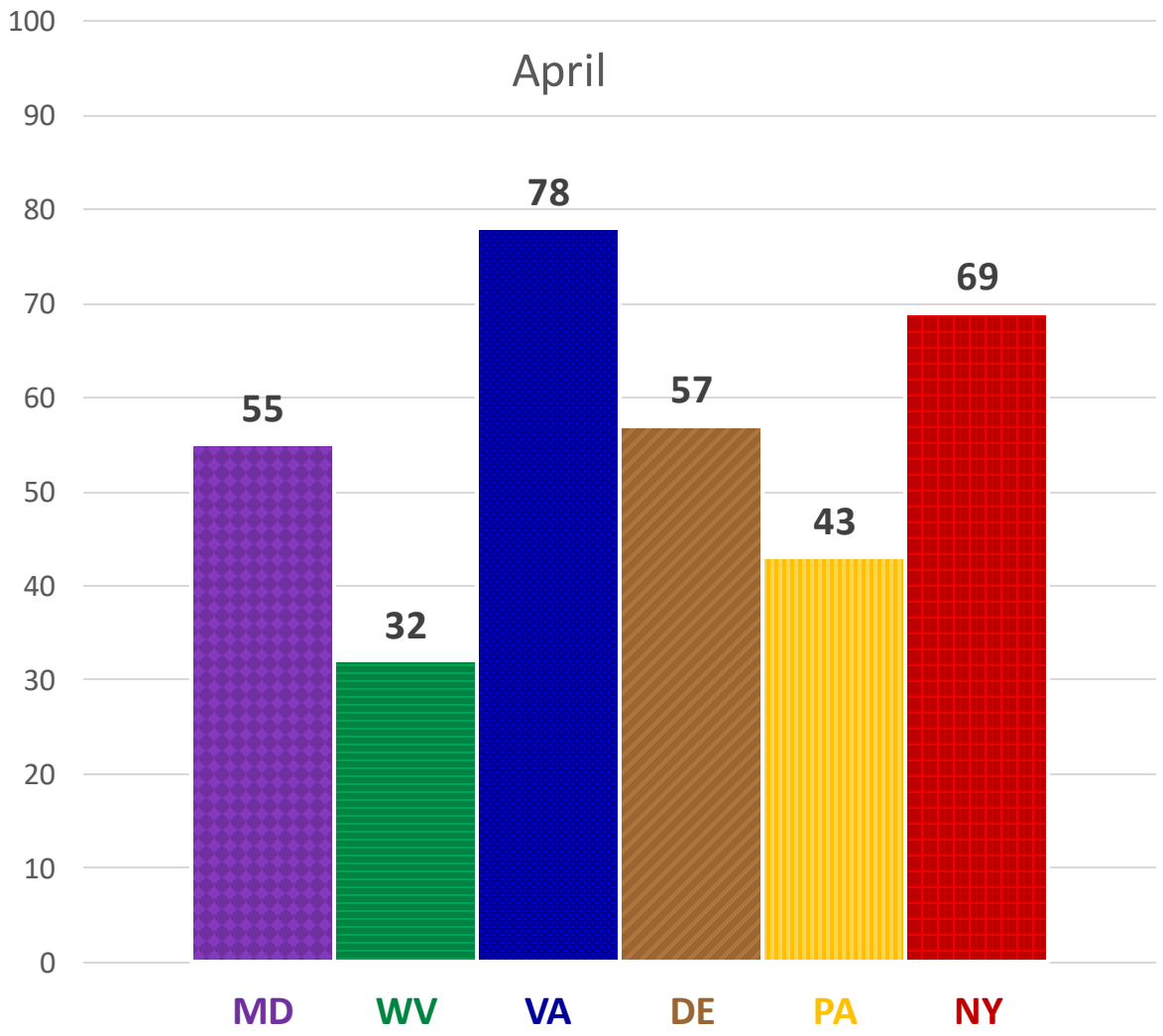
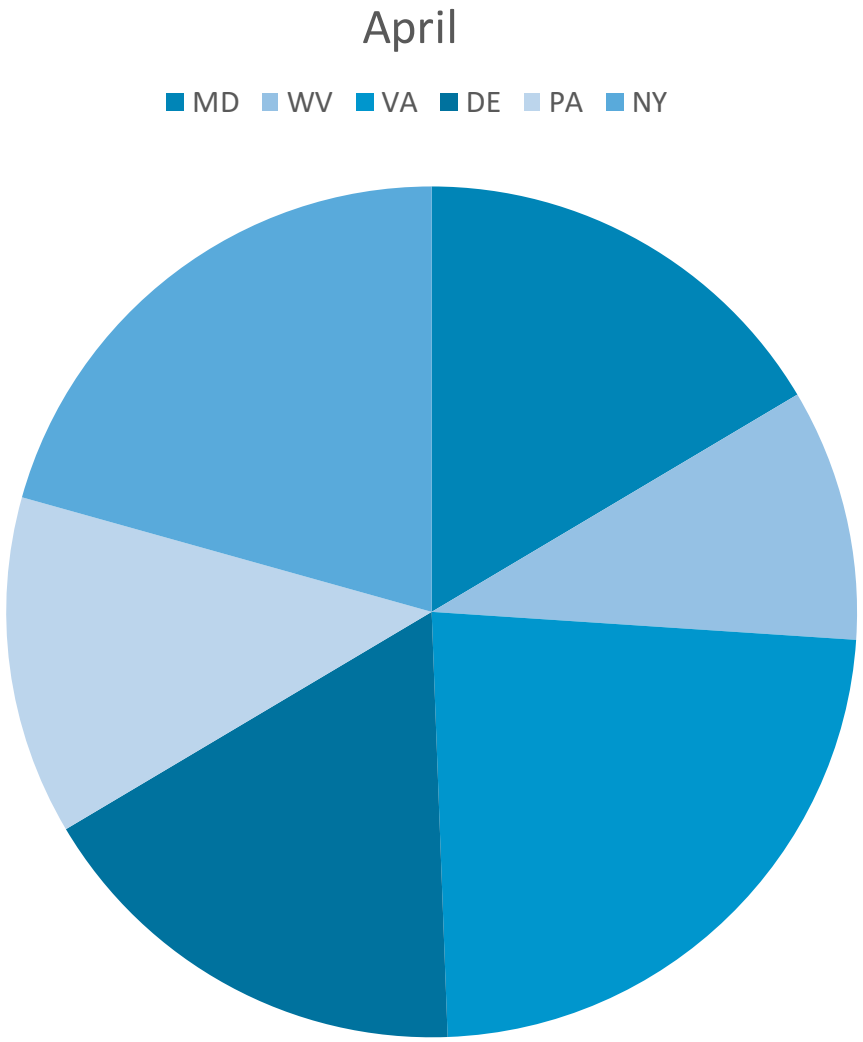
Compare

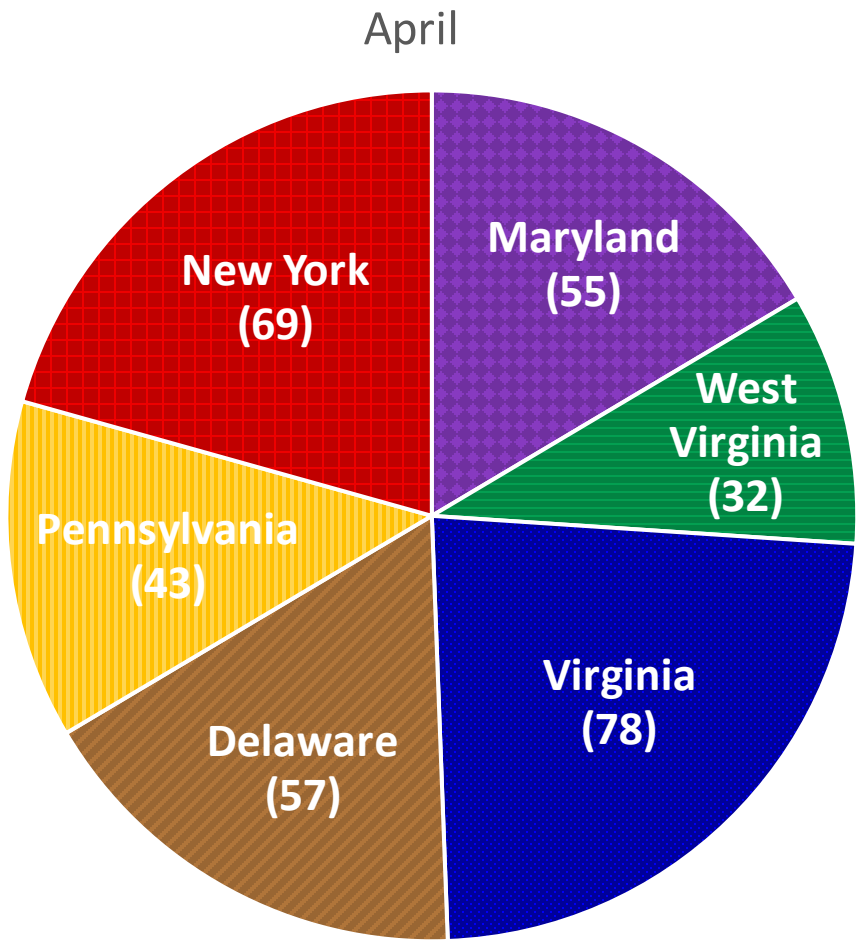




AIR®

Compare



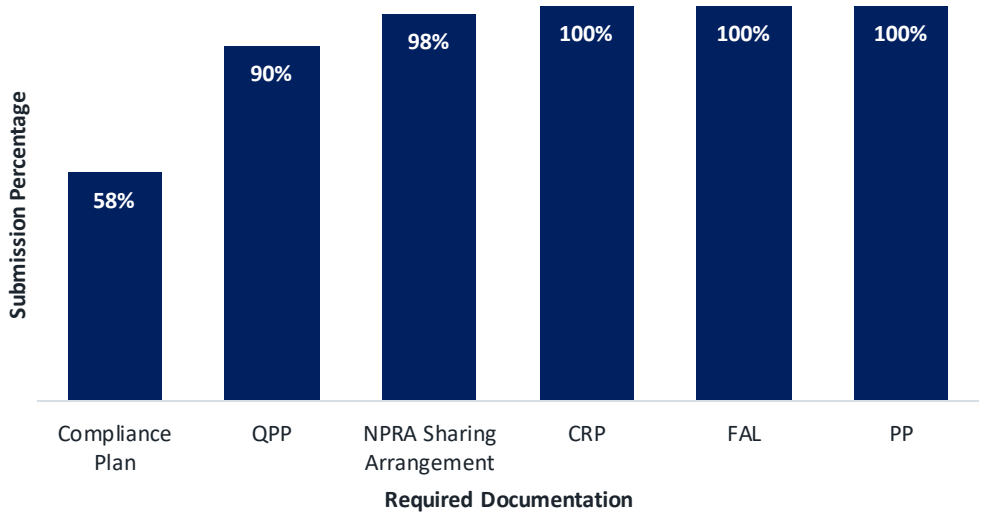


Accessible Text Alternatives to Non-Text Elements

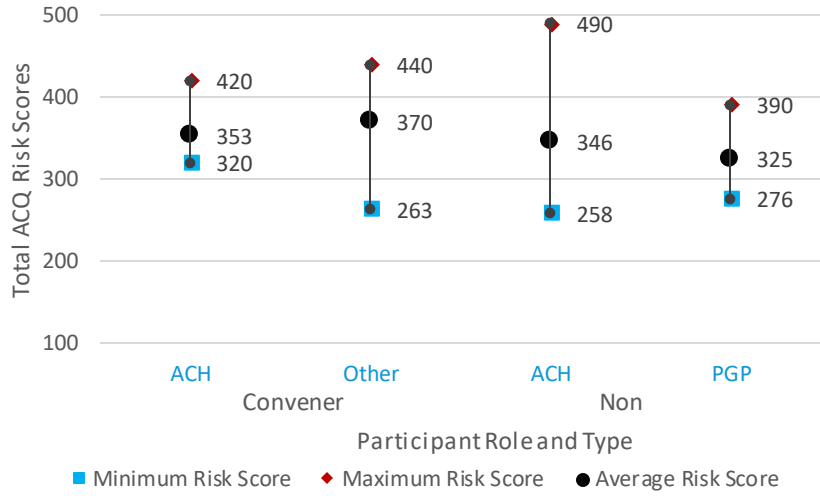
- a.k.a. **Alt text**
- Descriptive text, invisible, read aloud by screen reader
- Should convey information presented, but also its relevance.
- 250 characters (Ideally)
  - *Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec fermentum mi ut interdum tincidunt. Maecenas ac consectetur erat. Aenean consequat diam, vitae suscipit sem fringilla. Donec velit justo, facilisis non laoreet eget, placerat in duigo.*
  - Screen readers cannot stop midway through alt text
- **Content Comprehension > Convenience**

Examples of Simple Alt Text: Just the Data

Bar graph.
Compliance Plan: 58%;
QPP: 90%;
NPRA Sharing Arrangement: 98%;
CRP: 100%;
FAL: 100%;
PP: 100%.



Average-Minimum-Maximum graph.
Convener ACH: Minimum Risk Score 320, Average Risk Score 353, Maximum Risk Score 420;
Convener Other: Min 263, Average 370, Max 440;
Non Convener ACH: Min 258, Average 346, Max 490;
Non Convener PGP: Min 276, Average 325, Max 390.



General Graph/Chart Alt Text Guideline

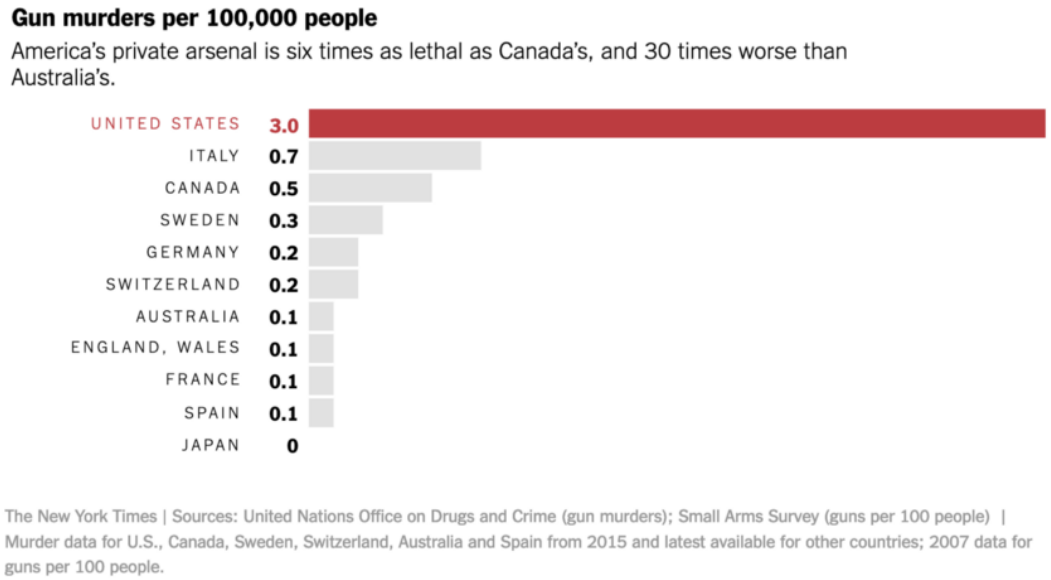
"**Chart type** of **type of data** where **reason for including chart**"

Also: Include **[a link to] data source** somewhere in the text

https://medium.com/nightingale/writing-alt-text-for-data-visualization-2a218ef43f81

Alt Text Example

"**Chart type** of **type of data** where **reason for including chart**"



Bar chart of gun murders per 100,000 people where America's murder rate is 6 times worse than Canada, and 30 times Australia

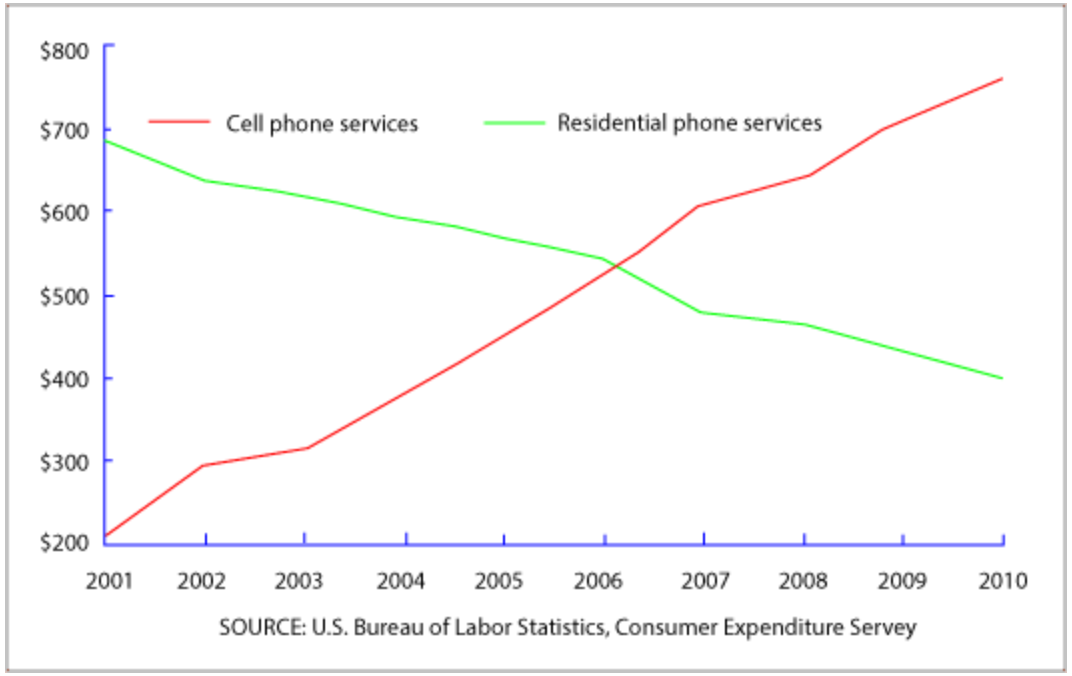
---

Bar chart of **gun murders per 100,000 people** where **America's murder rate is 6 times worse than Canada, and 30 times Australia**

https://medium.com/nightingale/writing-alt-text-for-data-visualization-2a218ef43f81

Example of Complex (Too Much Data) Alt Text

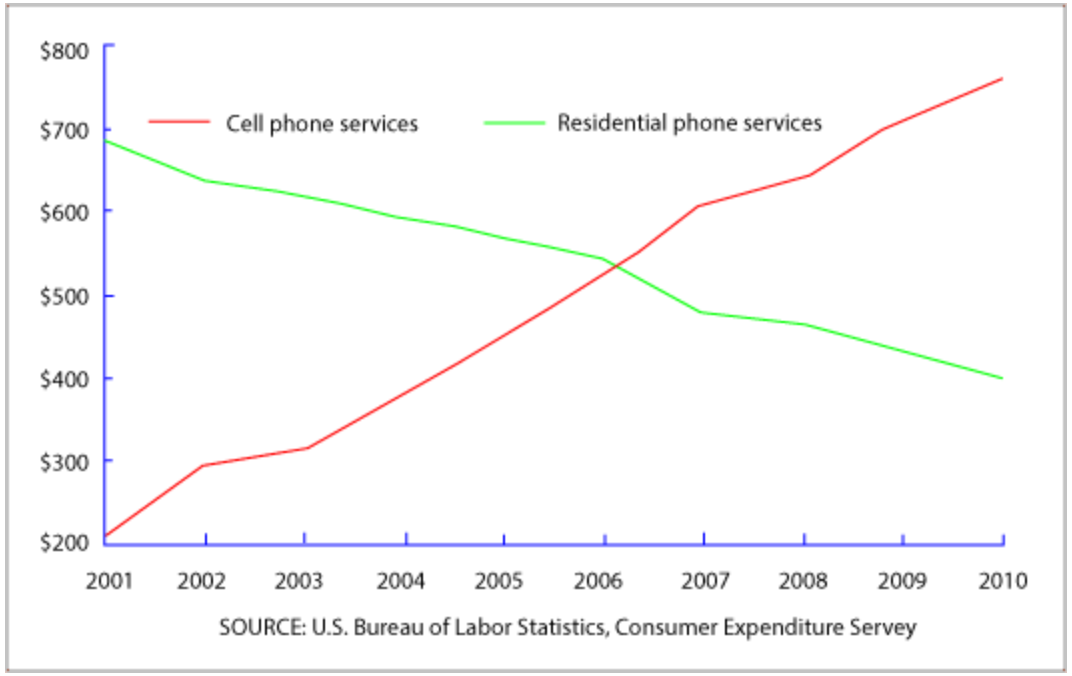
- "**Line graph** showing an **upward trend** in **cell phone services from 2001 through 2010**, with a **corresponding downward trend** in **residential phone services over the same period**."



https://equidox.co/blog/beyond-basic-alt-text-charts-maps-and-diagrams/

When Possible, Refer to Actual Data

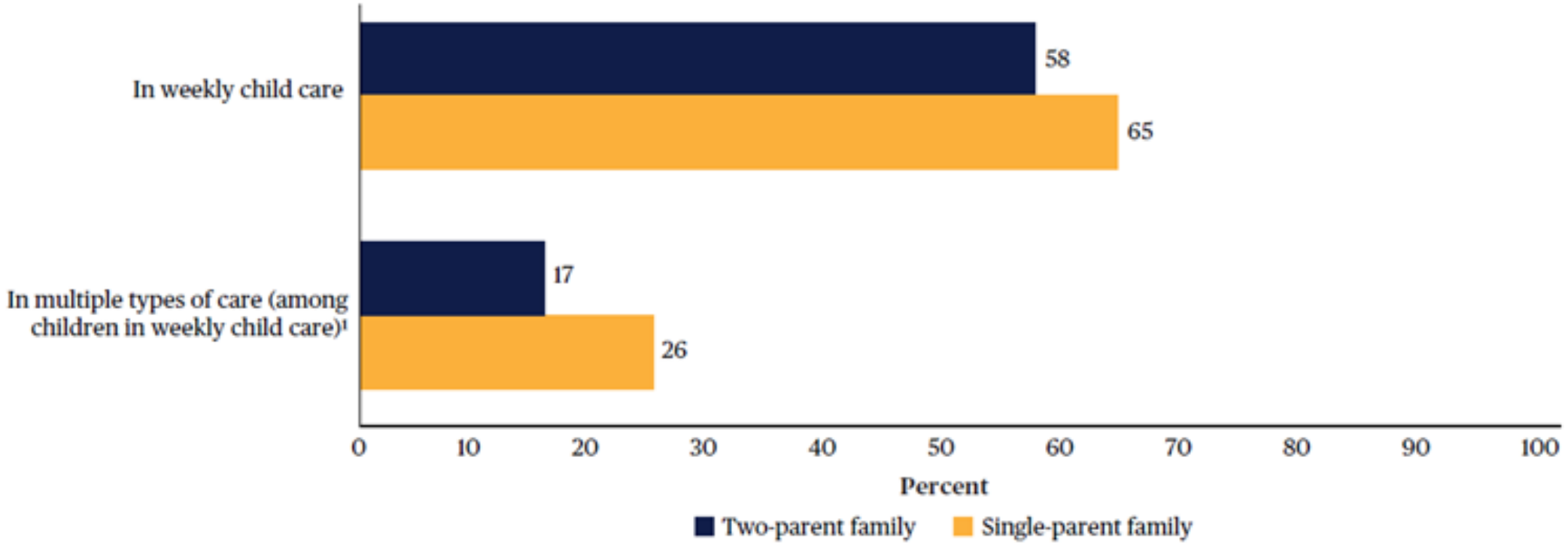
- "Line graph showing an upward trend in cell phone services from 2001 through 2010, with a corresponding downward trend in residential phone services over the same period. **Refer to accessible data table in Appendix B**."



https://equidox.co/blog/beyond-basic-alt-text-charts-maps-and-diagrams/

Chat Activity: What alt text would you create for this real figure?

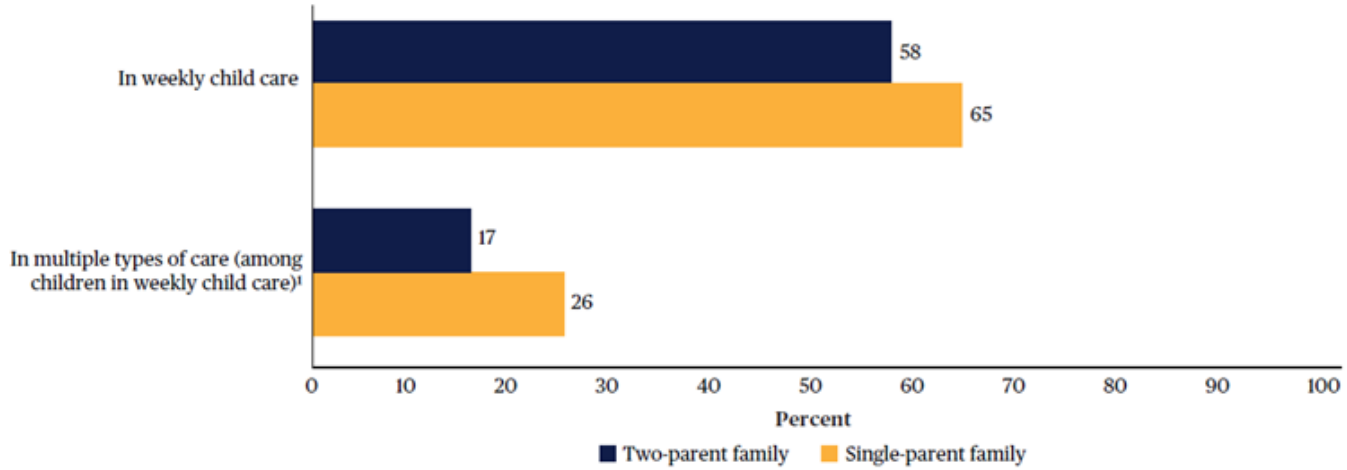
FIGURE 1. Child care in 2019: Percentage of children in at least one type of weekly child care, and among those in care, percentage in multiple types of weekly child care, by family structure



[1] "Multiple types of care" refers to children who are in more than one type of weekly child care (relative care, nonrelative care, or center-based care).
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (ECPP-NHES), 2019.

Chat Activity: What alt text would you create for this real figure?

FIGURE 1. Child care in 2019: Percentage of children in at least one type of weekly child care, and among those in care, percentage in multiple types of weekly child care, by family structure



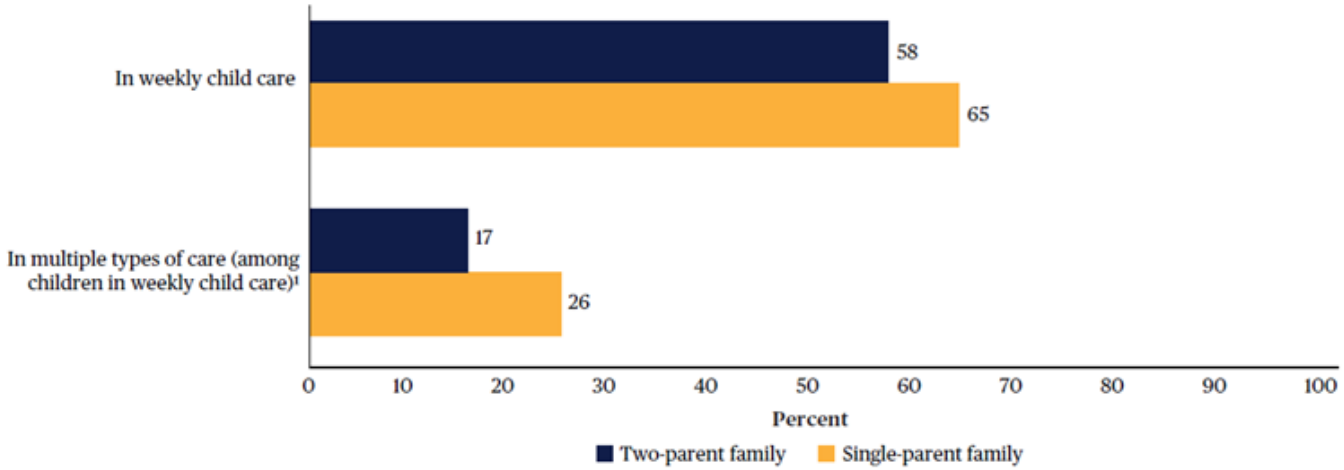
[1] "Multiple types of care" refers to children who are in more than one type of weekly child care (relative care, nonrelative care, or center-based care).
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (ECPP-NHES), 2019.

Bar graph of **percentage of children in weekly child care by family structure, in 2019** where **17% of the 58% of two-parent family children in weekly child care are in multiple types of care and 26% of the 65% of single-parent family children are in multiple types of care**

272 characters = Good!

Chat Activity: What alt text would you create for this real figure?

FIGURE 1. Child care in 2019: Percentage of children in at least one type of weekly child care, and among those in care, percentage in multiple types of weekly child care, by family structure



[1] "Multiple types of care" refers to children who are in more than one type of weekly child care (relative care, nonrelative care, or center-based care).
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (ECPP-NHES), 2019.

Bar graph of **percentage of children in weekly child care by family structure, in 2019** where **17% of the 58% of two-parent family children in weekly child care are in multiple types of care and 26% of the 65% of single-parent family children are in multiple types of care**

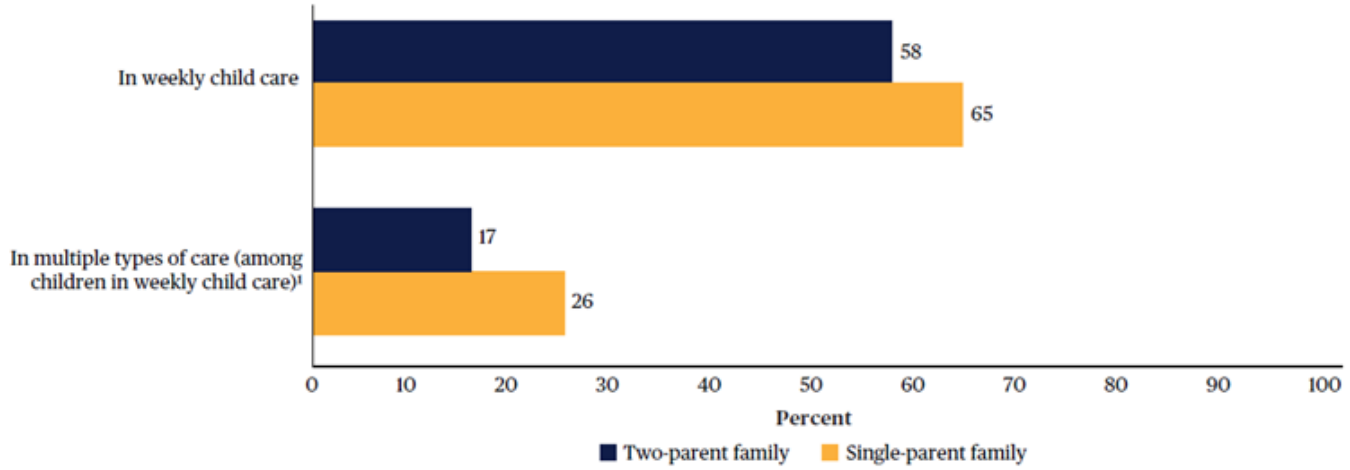
272 characters = Good!

….which refers to children who are in more than one type of weekly child care (relative care, nonrelative care, or center-based care). **Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (ECPP-NHES), 2019.**

600 characters = BAD

Chat Activity: What alt text would you create for this real figure?

FIGURE 1. Child care in 2019: Percentage of children in at least one type of weekly child care, and among those in care, percentage in multiple types of weekly child care, by family structure

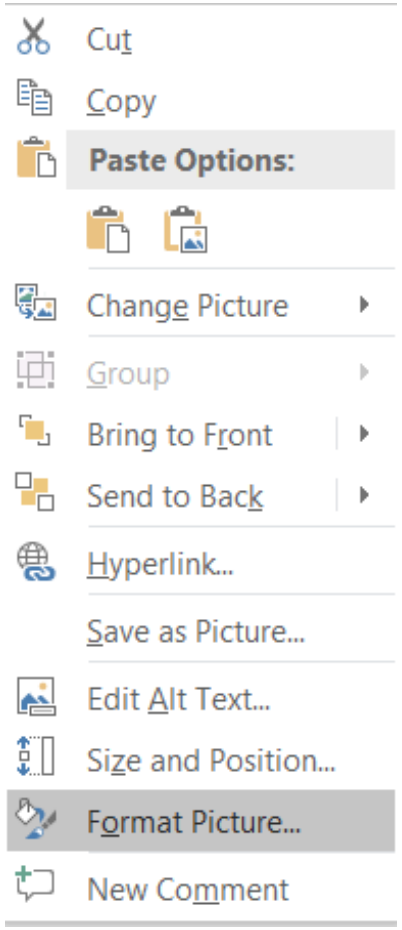


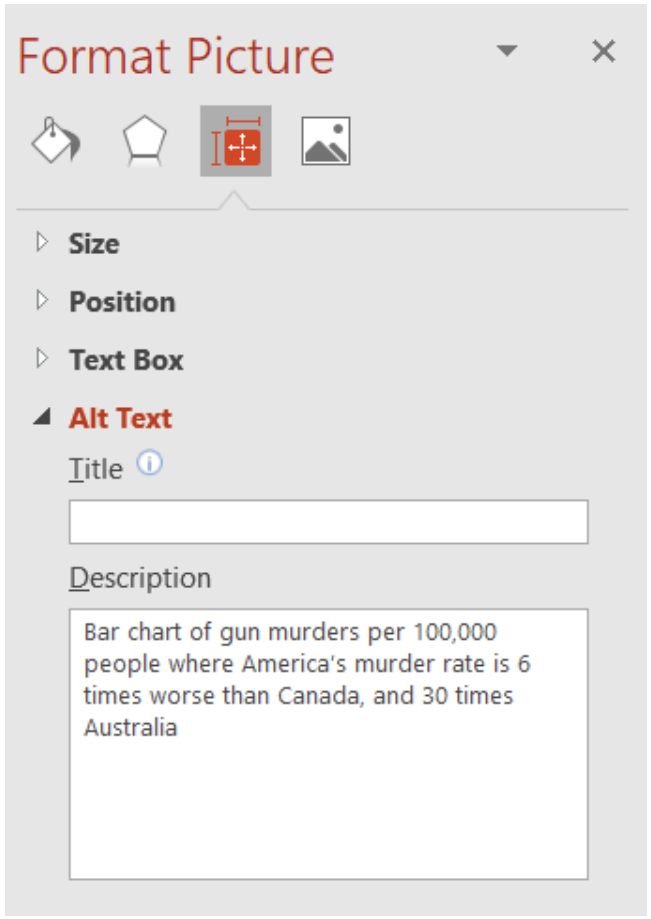
Crop out extra image text --> Move to actual text

"Multiple types of care" refers to children who are in more than one type of weekly child care (relative care, nonrelative care, or center-based care). Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Program Participation Survey of the National Household Education Surveys Program (ECPP-NHES), 2019.

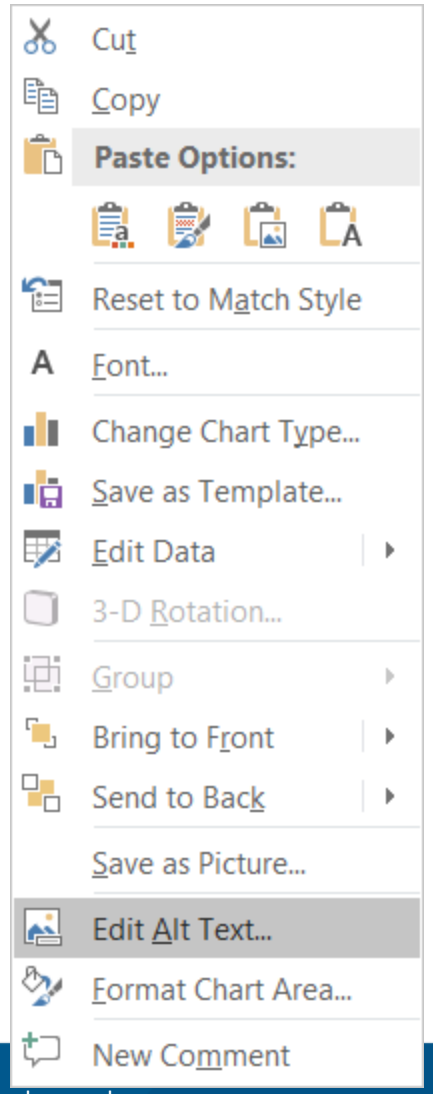
Bar graph of percentage of children in weekly child care by family structure, in 2019 where 17% of the 58% of two-parent family children in weekly child care are in multiple types of care and 26% of the 65% of single-parent family children are in multiple types of care. **[Refer to footnote pointing to following paragraph.]**

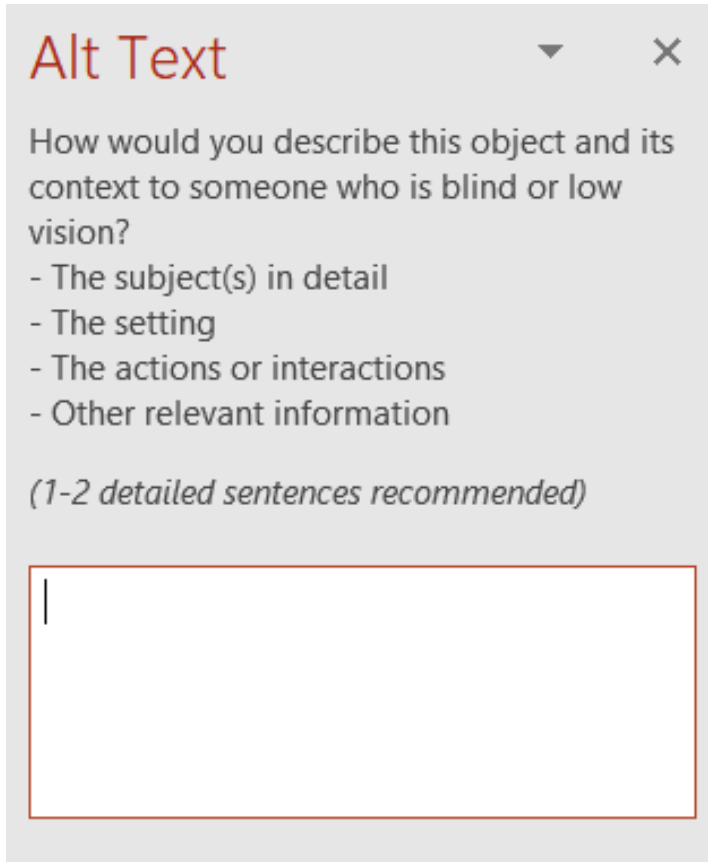
How to Insert Alternate Text in Power Point





OR





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Summary

- Variation in colors/patterns/textures/shapes
  - Do the colors have meaning?
- High contrast, especially with text
- If possible, include the data
- Consider the audience
  - Can someone with a visual disability understand this without difficulty?
  - What could be visually modified to make the data stand out more clearly?

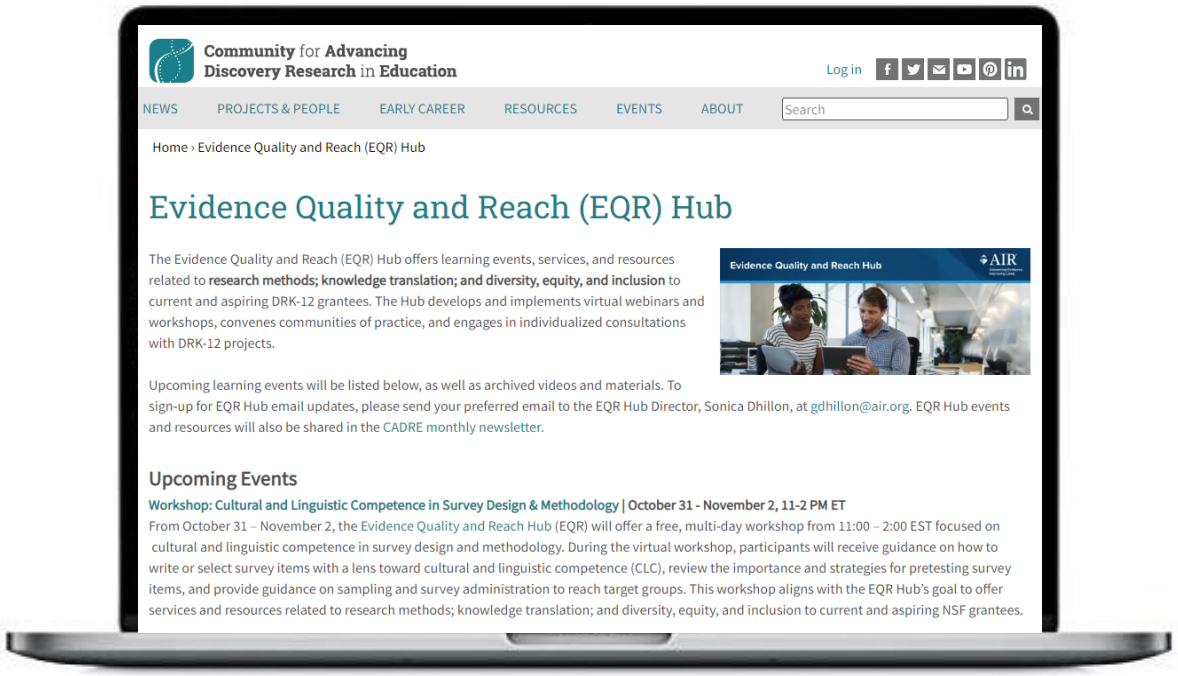
Helpful Websites Referenced

- https://cruxcollaborative.com/insights/understanding-color-blindness-guide-to-accessible-design
- https://www.creative-photo-design.com/how-to-combine-colors-in-your-graphic-designs/color-contrast/
- https://www.smashingmagazine.com/2016/06/improving-color-accessibility-for-color-blind-users/
- https://goodly.co.in/how-to-pick-the-right-color-for-your-chart/
- https://chartio.com/learn/charts/how-to-choose-colors-data-visualization/
- https://medium.com/nightingale/writing-alt-text-for-data-visualization-2a218ef43f81
- https://equidox.co/blog/beyond-basic-alt-text-charts-maps-and-diagrams/

Questions?

Reflections on the Day & Closing

Keep In Touch



Visit the **EQR Hub** page on the CADRE website.

https://cadrek12.org/eqr-hub
- Info on upcoming events
- Links to PPTs and videos of past events

http://cadrek12.org/

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