NATIONAL CFRP
Center for Fatality Review & Prevention

MEANINGFUL DATA VISUALIZATIONS

Telling Stories to Save Lives

August 2025 Office Hours

Key Funding Partner

Federal Acknowledgement

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WARMUP

Join December Office Hours to learn how to create a live dashboard like this one!

Submit warmup questions by scanning this QR code:

What to Expect Today

August Office Hours

MEANINGFUL DATA VISUALIZATIONS

Explore visualization concepts and ways to create impactful visualizations with our data.

VISUALIZATIONS IN THE WILD

Highlight a handful of excellent visualizations from fatality review programs.

RESOURCES & OPEN DISCUSSION

Summarize available resources, discuss about visualization, and answer questions.

INTRODUCTION

To Data Visualization

Meaningful Data Visualizations

Why?

- Many people (but not all) are visual processors.
- Effective visuals allow us to “see” patterns in charts before we even realize we’re processing that information.
- Know your audience so that you can create charts that center their needs.
- You play a key role in understanding who your audience is and what they need to know. So, it is up to you to choose the most appropriate visualization.

Who is Your Audience?

When Visualizing Data

- Fatality review team members.
- Policymakers.
- Academics (e.g., peer review, research-geared conferences).
- Community members/public.
- A different group?

→ Findings should be thoughtfully interpreted and explained, depending on your audience.

User Story

Knowing Your Audience to Select a Visualization

As a [**type of person**],
I need [**type of information**]
So that [**I can do something**].

As a [**policymaker**],
I need [**data on trends**]
So that [**I can advocate**].

A user story example that we'll use today is…

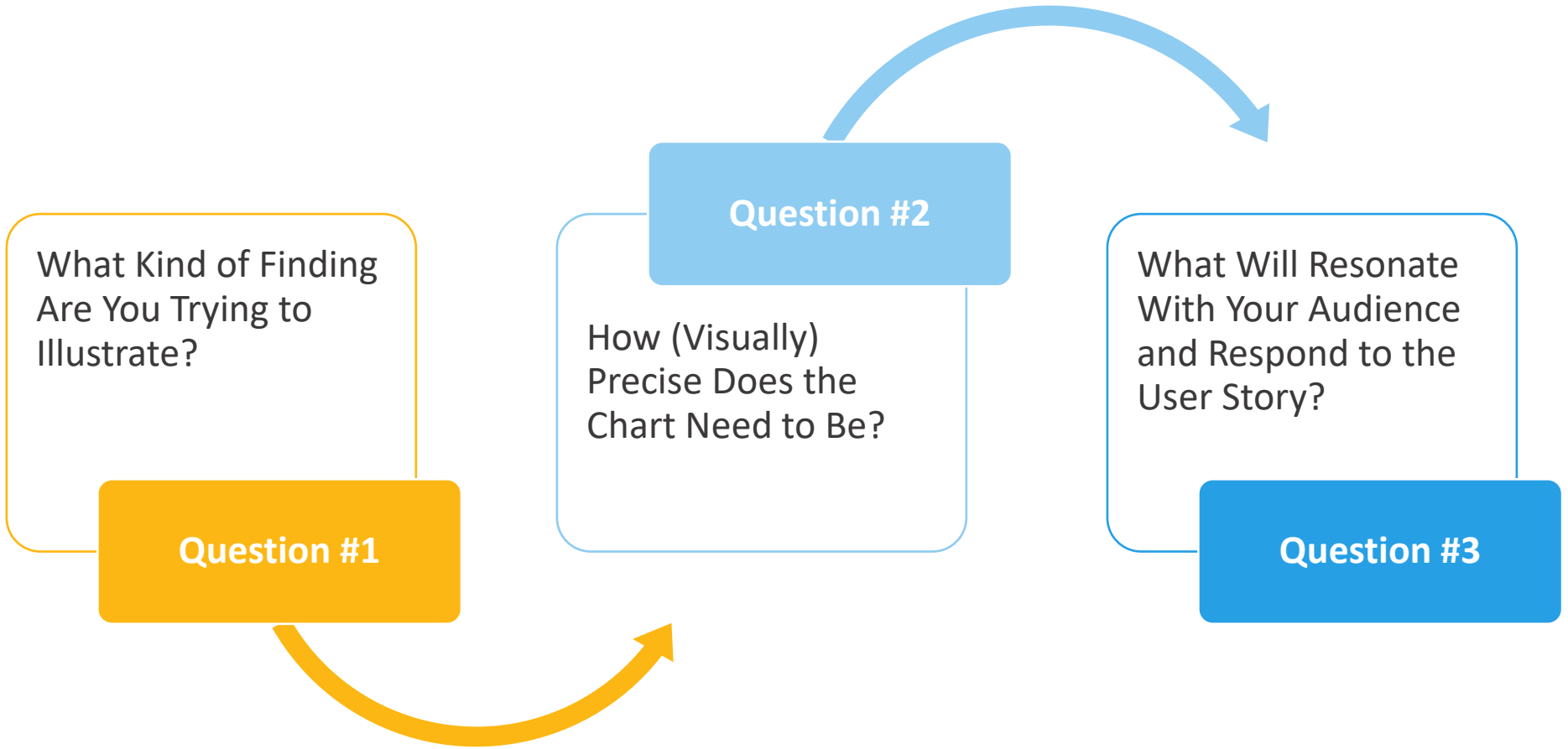
As a **fatality review team member**,
I need **to know how many infant deaths were sleep-related**
So that **I can compare with other infant deaths**.

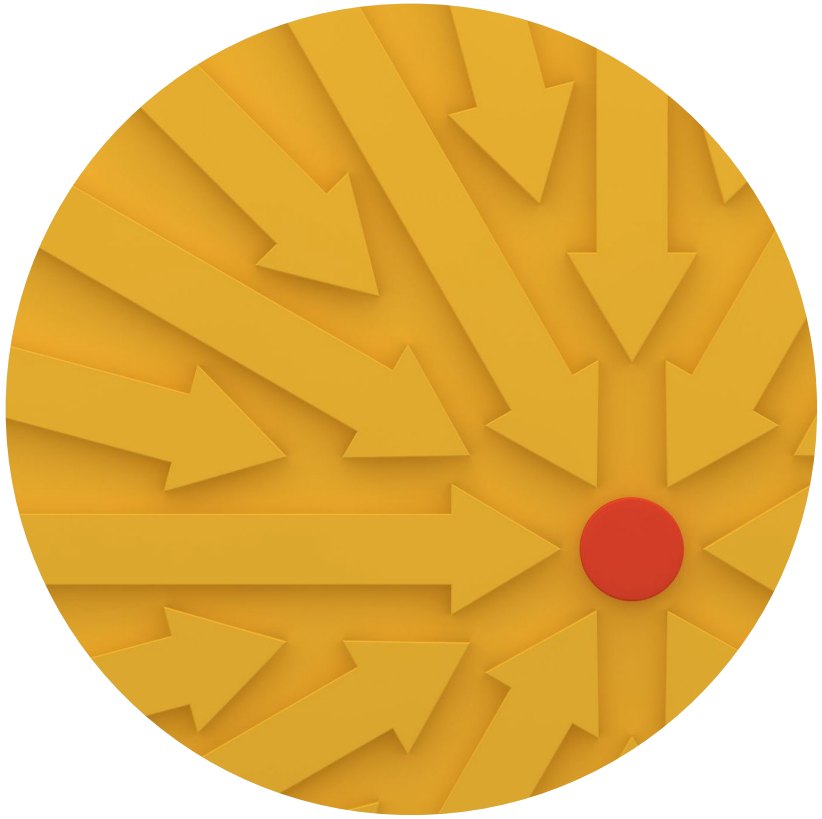
CHART SELECTION

Strategies

Selecting a Chart

Three Questions





Selecting a Chart

Question #1: What Kind of Finding Are You Trying to Illustrate?

- Different chart types accomplish different things.
- To select the right chart for you, use a chart taxonomy, which classifies and groups charts according to function or other features, like shape.
- For example:
    - Visual Vocabulary (Financial Times): https://journalismcourses.org/wp-content/uploads/2020/07/Visual-vocabulary.pdf
    - Data Viz Project: https://datavizproject.com/

Chart Taxonomy

Visual Vocabulary

https://journalismcourses.org/wp-content/uploads/2020/07/Visual-vocabulary.pdf

Deviation

Emphasise variations (+/-) from a fixed reference point. Typically the reference point is zero but it can also be a target or a long-term average. Can also be used to show sentiment (positive/neutral/negative).

Example FT uses
Trade surplus/deficit, climate change

Diverging bar

A simple standard bar chart that can handle both negative and positive magnitude values.

Diverging stacked bar

Perfect for presenting survey results which involve sentiment (eg disagree/neutral/agree).

Spine chart

Splits a single value into 2 contrasting components (eg Male/Female).

Surplus/deficit filled line

The shaded area of these charts allows a balance to be shown – either against a baseline or between two series.

Correlation

Show the relationship between two or more variables. Be mindful that, unless you tell them otherwise, many readers will assume the relationships you show them to be causal (i.e. one causes the other).

Example FT uses
Inflation & unemployment, income & life expectancy

Scatterplot

The standard way to show the relationship between two continuous variables, each of which has its own axis.

Line + Column

A good way of showing the relationship between an amount (columns) and a rate (line).

Connected scatterplot

Usually used to show how the relationship between 2 variables has changed over time.

Bubble

Like a scatterplot, but adds additional detail by sizing the circles according to a third variable.

XY heatmap

A good way of showing the patterns between 2 categories of data, less good at showing fine differences in amounts.

Ranking

Use where an item's position in an ordered list is more important than its absolute or relative value. Don't be afraid to highlight the points of interest.

Example FT uses
Wealth, deprivation, league tables, constituency election results

Ordered bar

Standard bar charts display the ranks of values much more easily when sorted into order.

Ordered column

See above.

Ordered proportional symbol

Use when there are big variations between values and/or seeing fine differences between data is not so important.

Dot strip plot

Dots placed in order on a strip are a space-efficient method of laying out ranks across multiple categories.

Slope

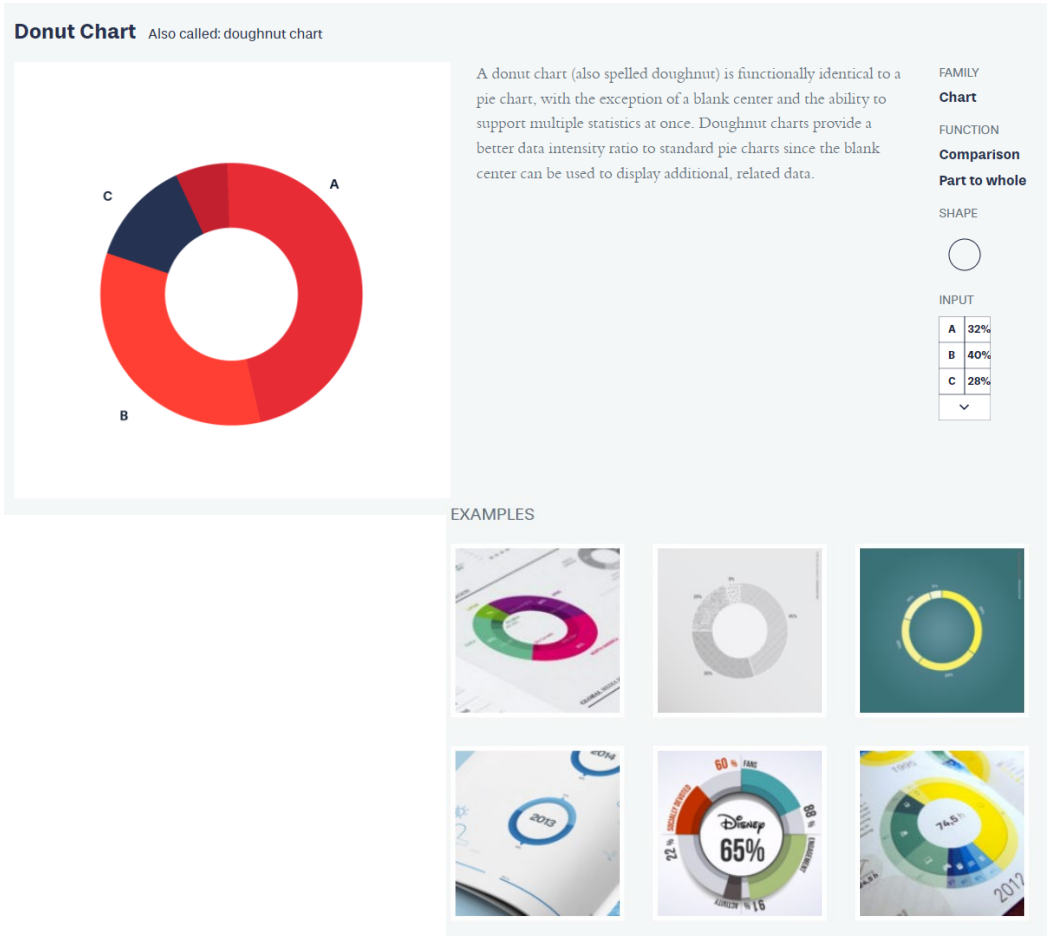
Perfect for showing how ranks have changed over time or vary between categories.

Lollipop chart

Lollipops draw more attention to the data value than standard bar/column and can also show rank and value effectively.

Chart Taxonomy

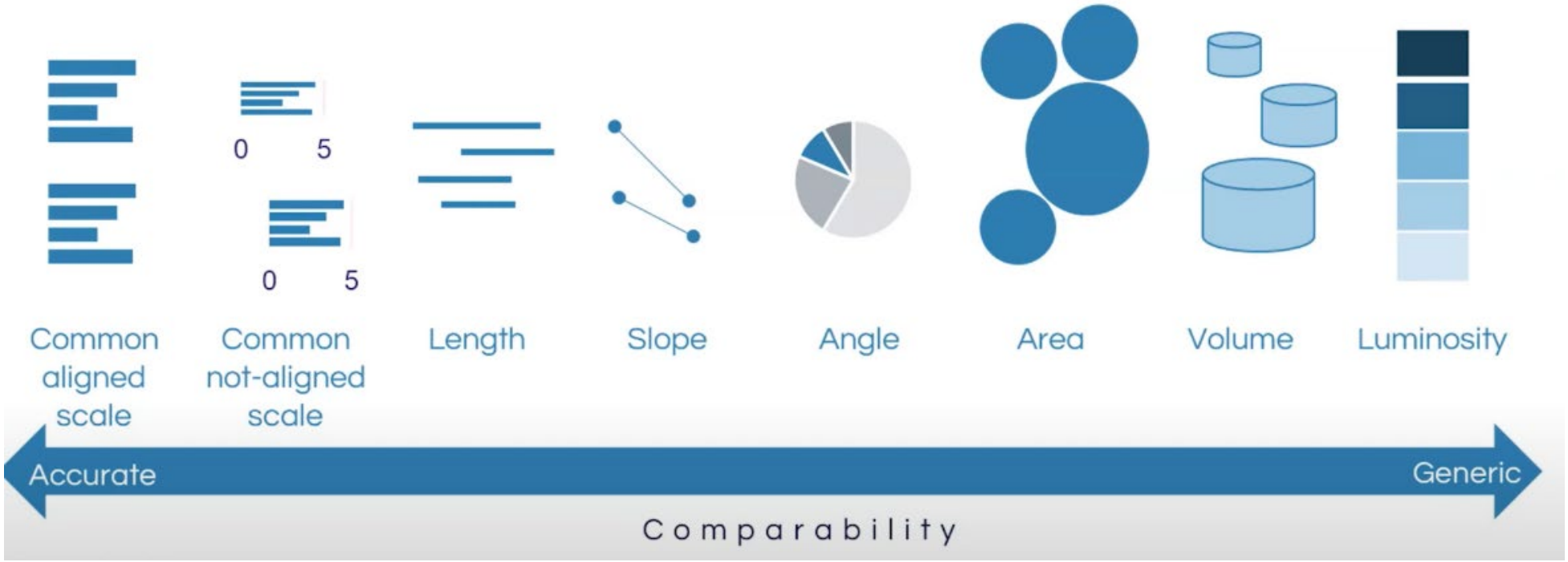
Data Viz Project



https://datavizproject.com/

Selecting a Chart

Question #2: How (Visually) Precise Does the Chart Need to Be?



Source: Creating Meaningful Visualizations: A Virtual Learning Series for MMRIA Users

Selecting a Chart

Ask Yourself #3: What Will Resonate With Your Audience and Respond to the User Story?

User Story:

As a **fatality review team member**,

I need **to know how many infant deaths were sleep-related**

So that **I can compare with other infant deaths**.

Selecting a Chart

Question #3: What Will Resonate With Your Audience and Respond to the User Story?

Let’s start with a data table.

Number of infant deaths by maturity and sleep environment involvement, 2004-2020		
	Preterm (<37 weeks)	**Term (37+ weeks)**
Sleep related	6501	20098
Not sleep related	35830	12429
Missing/unknown	8928	4011

Data source: Pediatric National Fatality Review-Case Reporting System

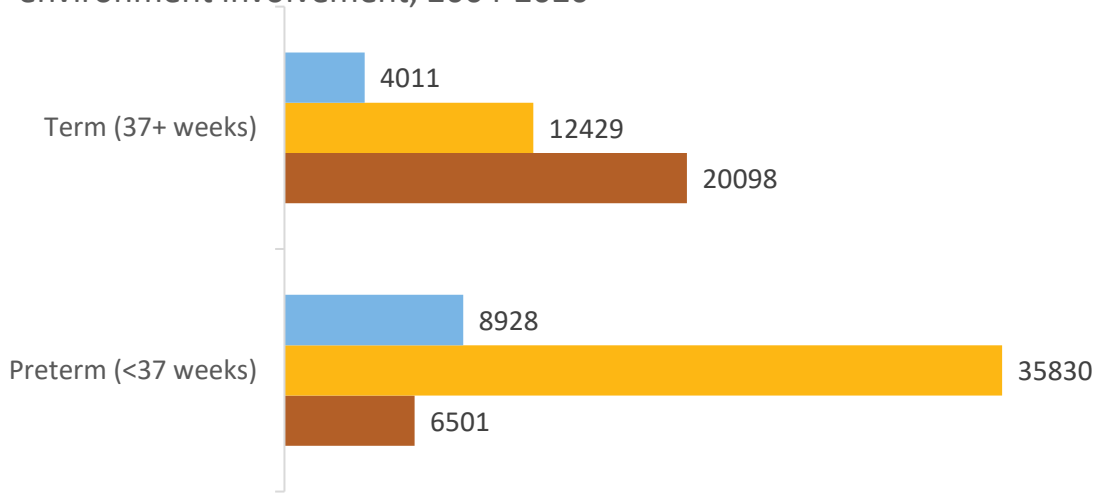
What Stories Do Different Bar Charts Tell?

What is the very first data point your eye is drawn to?

What comparisons does each chart enable you to make (or not)?

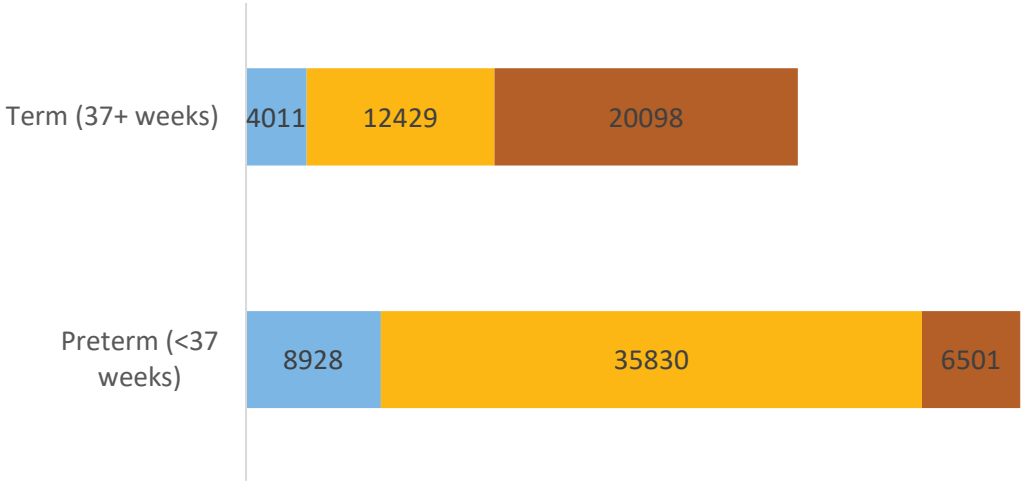
Clustered Bar Chart

Number of infant deaths by maturity and sleep environment involvement, 2004-2020



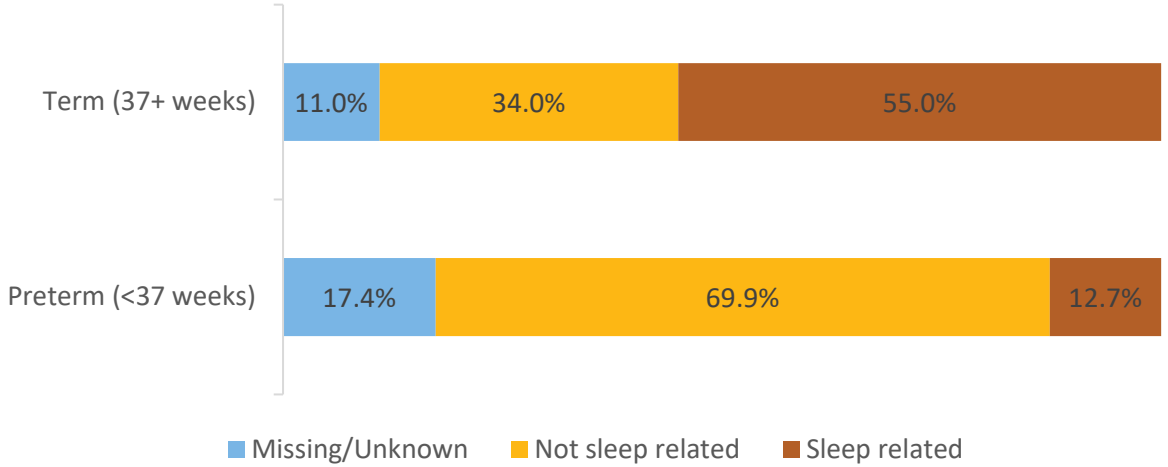
Stacked Bar Chart

Number of infant deaths by maturity and sleep environment involvement, 2004-2020



100% Stacked Bar Chart

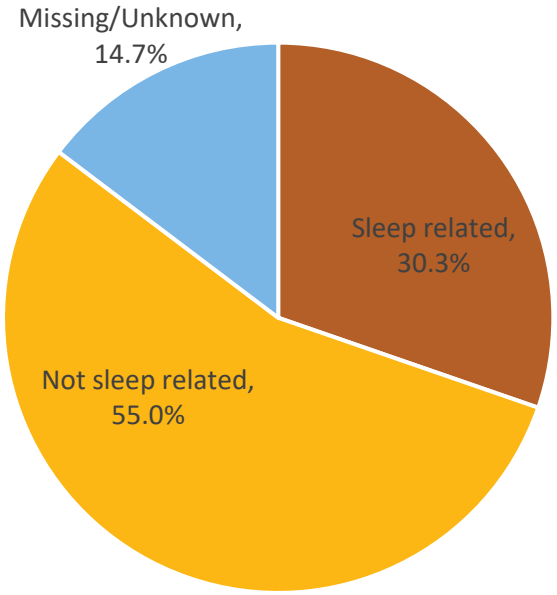
% of infant deaths by maturity and sleep environment involvement, 2004-2020



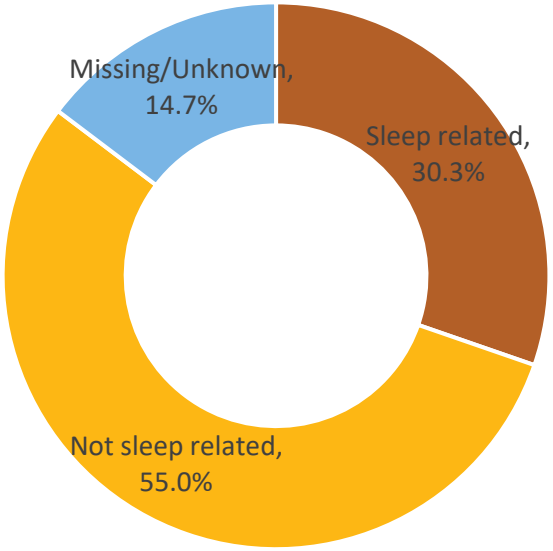
Data source: Pediatric National Fatality Review-Case Reporting System

When Are Pies Appropriate?

Pie Chart
Infant deaths by sleep environment involvement, 2004-2020



Doughnut Chart
Infant deaths by sleep environment involvement, 2004-2020

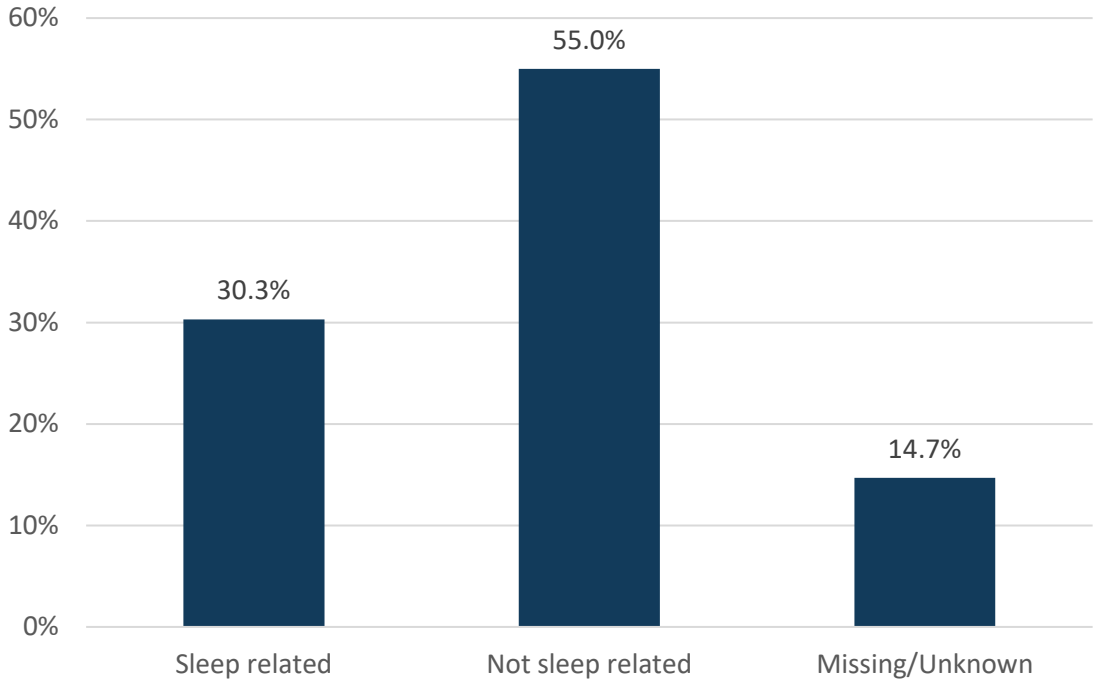


Data source: Pediatric National Fatality Review-Case Reporting System

How About the Trusty Column Chart?

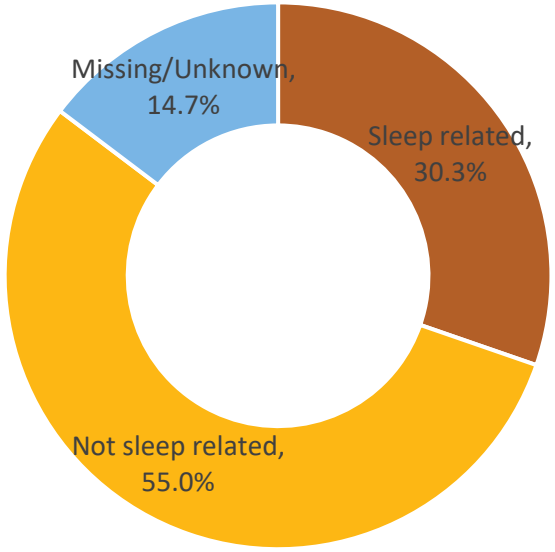
Column Chart

Focuses our attention on **comparing categories**



Doughnut Chart

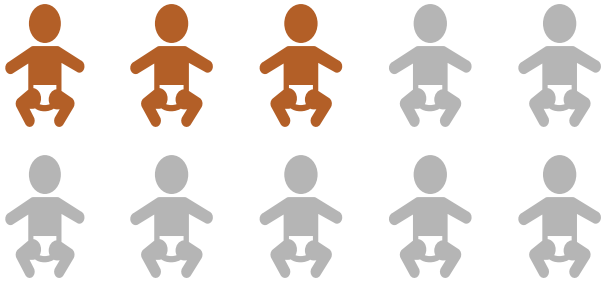
Focuses our attention on **part to whole comparisons**



Data source: Pediatric National Fatality Review-Case Reporting System

How About *[something different]*?

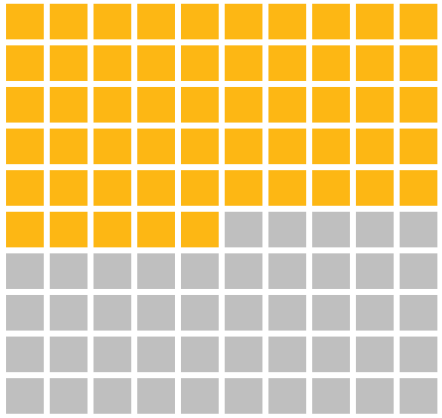
Isotype/Pictogram/Icon Array
Focuses our attention on both **magnitude and part to whole comparisons**



3 in 10 infant deaths reviewed were sleep related.

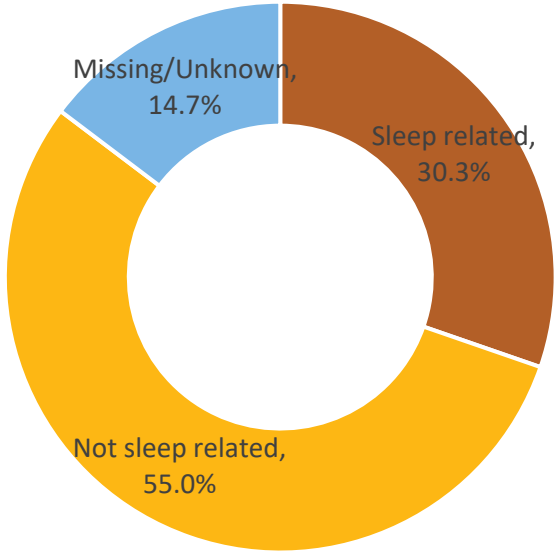
Consider using whole numbers.

Gridplot/Waffle Chart
Focuses our attention on **part to whole comparisons**



55 in 100 infant deaths reviewed were not sleep related.

Doughnut Chart
Focuses our attention on **part to whole comparisons**



Data source: Pediatric National Fatality Review-Case Reporting System

Selecting a Chart

Summary

- Overall, use a chart taxonomy with your team to decide what is best.
    - Consider the user story.
    - What data story do you want to tell?
- Don’t be afraid to select a novel chart type but do it with intention and think about what will resonate the most with your audience.

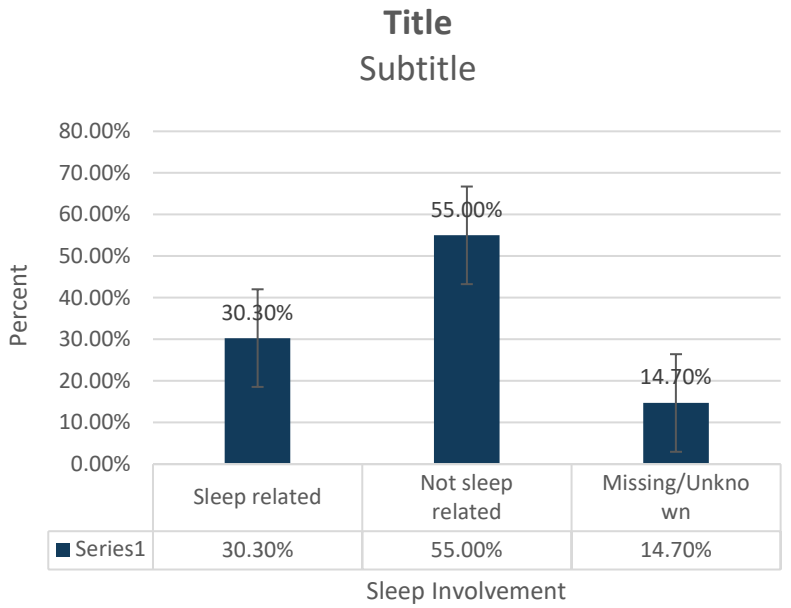
EFFECTIVE FORMATTING

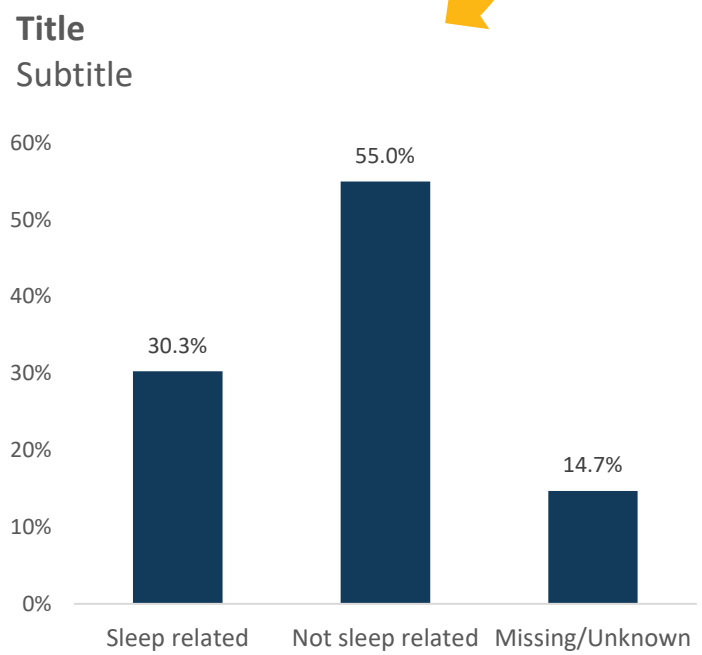
Strategies

Strategies for Effective Formatting

Declutter to Enable Understanding

- Consider:
  - Gridlines?
  - Rotated text?
  - Legend?
  - Series sizing?
  - Axis titles?
  - Data labels?
  - Reference lines?
  - Error bars?
  - Chart title/subtitle?
  - Data source?
  - Text alignment?





Data source: Pediatric National Fatality Review-Case Reporting System

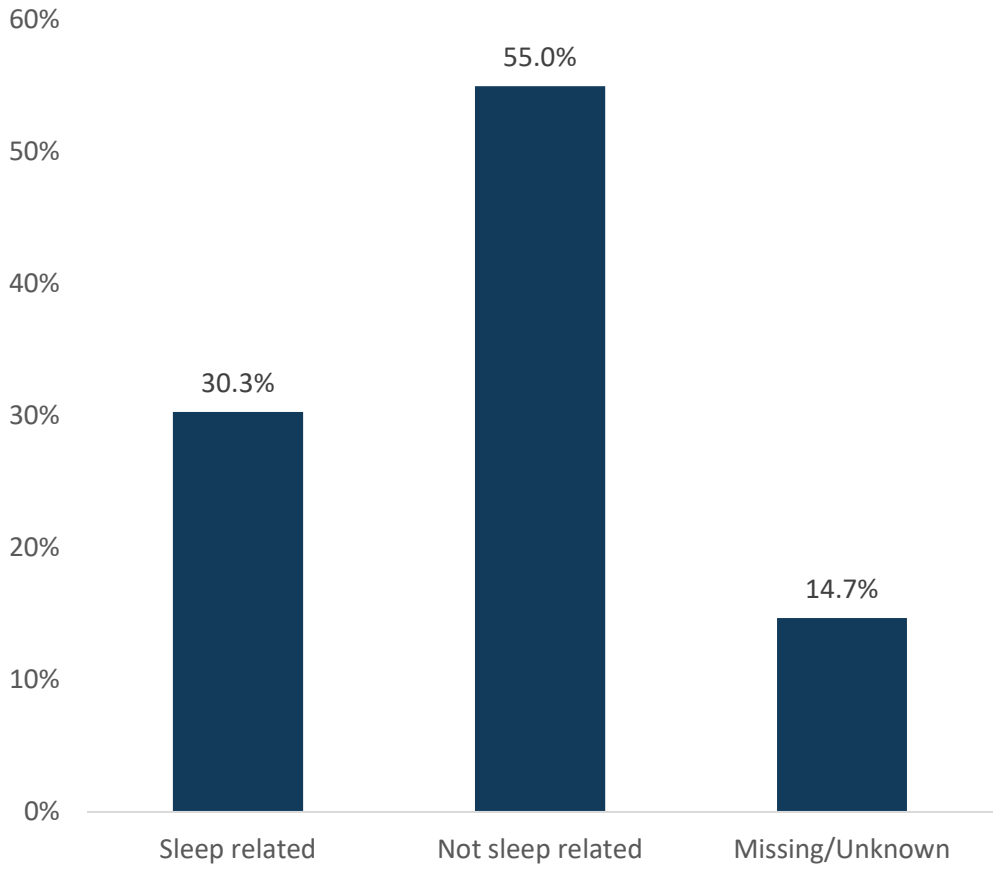
Strategies for Effective Formatting

Meaningful Text

- Charts are meant to be read, interpreted, and understood.
- Consider:
  - Axis titles?
  - Units?
  - Data source?
  - Titles and subtitles?
    - Use the title to write a headline. What should a reader take away from your chart?

More than half of infant deaths reviewed were not sleep related.

Infant deaths by sleep environment involvement, 2004-2020



Data source: Pediatric National Fatality Review-Case Reporting System

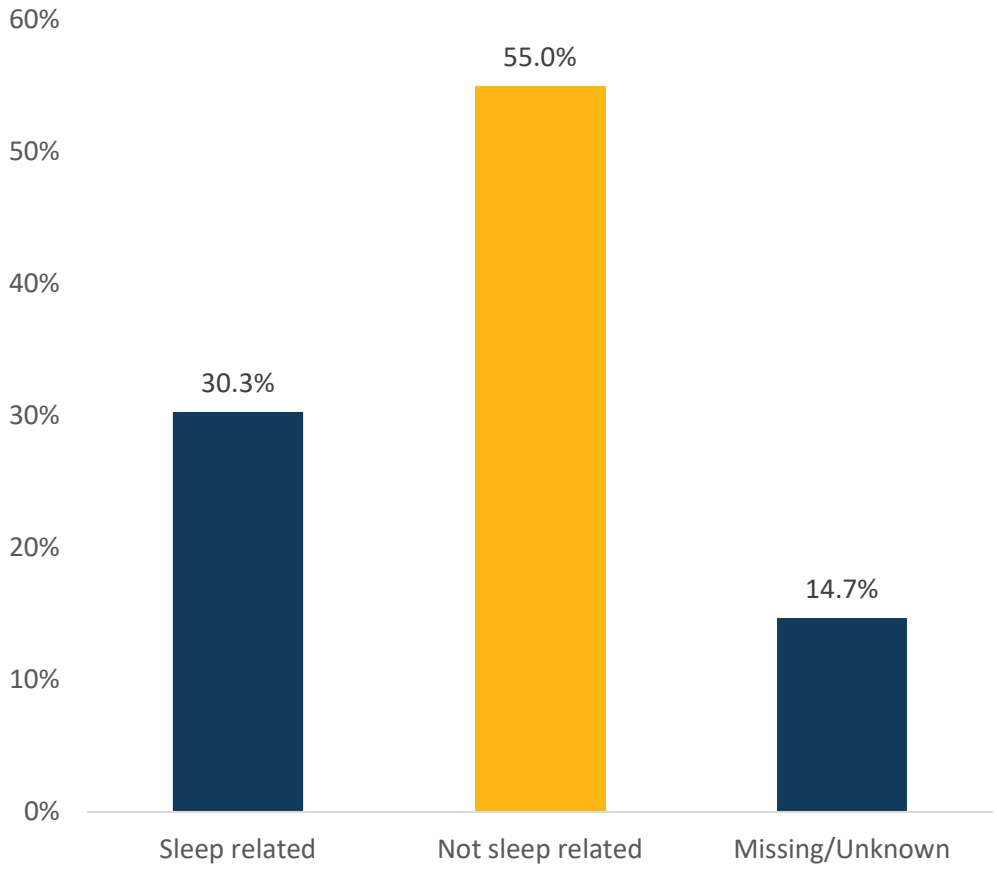
Strategies for Effective Formatting

Use Color Purposefully

- Ask yourself:
  - What story are we emphasizing?
  - Do we need more than one color to highlight different categories?
    - Categorical: Different color for each category.
    - Highlight: Focus the reader's attention.
  - How has the color(s) been used in other parts of the slide deck/report/dashboard/etc.?
- Check color contrast with the WebAIM Contrast Checker

More than half of infant deaths reviewed were not sleep related.

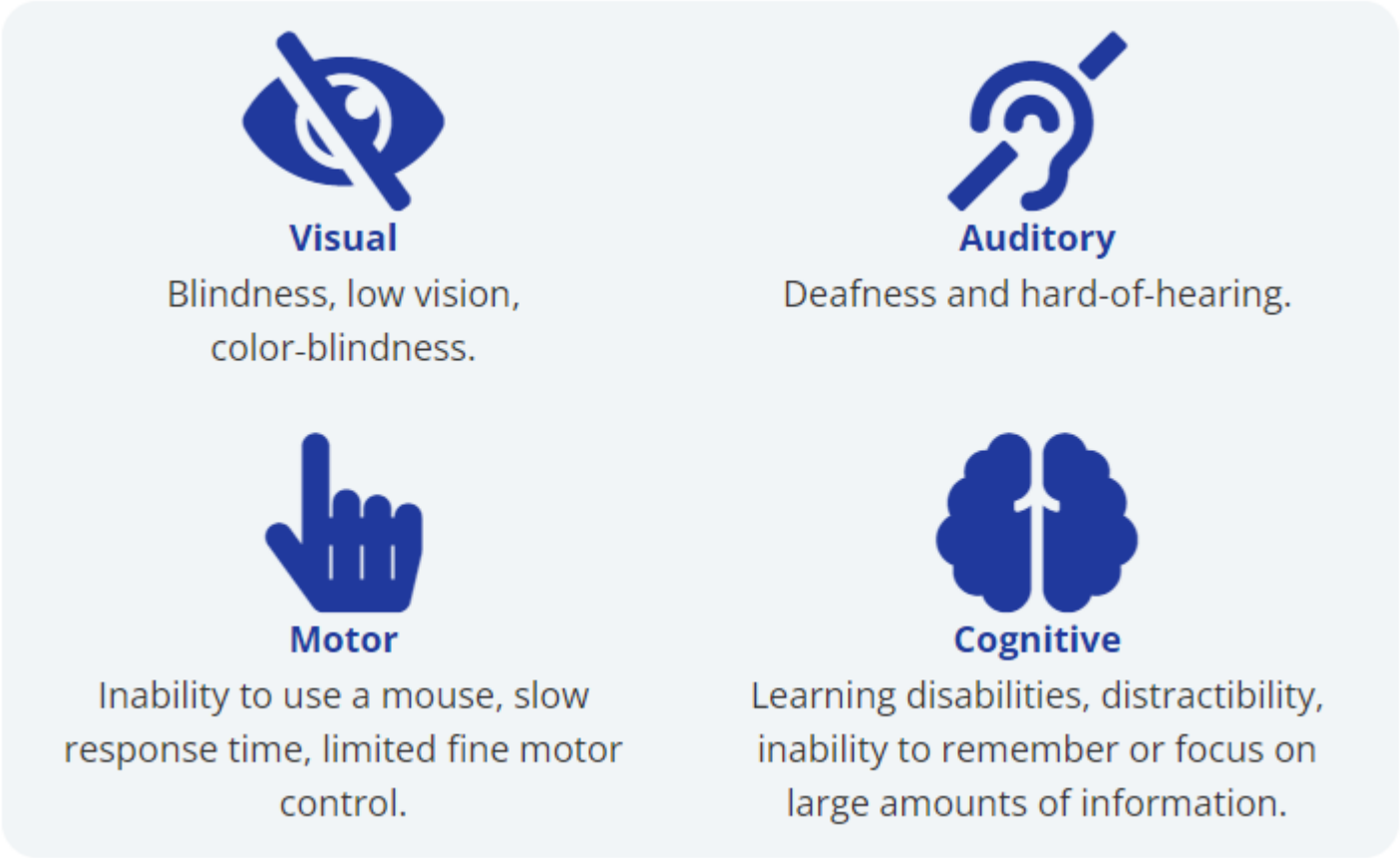
Infant deaths by sleep environment involvement, 2004-2020



Data source: Pediatric National Fatality Review-Case Reporting System

Strategies for Effective Formatting

Always Consider Accessibility



Source: WebAIM, https://webaim.org/resources/

Other Considerations

When Formatting

- **Put people first.** Help the audience better understand and recognize the people behind the data.
- **Consider missing groups.** Be transparent about analysis and visualization decisions, such as by using footnotes.
- **Order data labels in a purposeful way.** Sort alphabetically, by population size, by sample size, or by magnitude of the data.
- **Be thoughtful with colors, icons, images, and shapes.** Be intentional in your choices not to reinforce potential stereotypes.
- **Challenge the default approach.** Consider if there are different approaches.

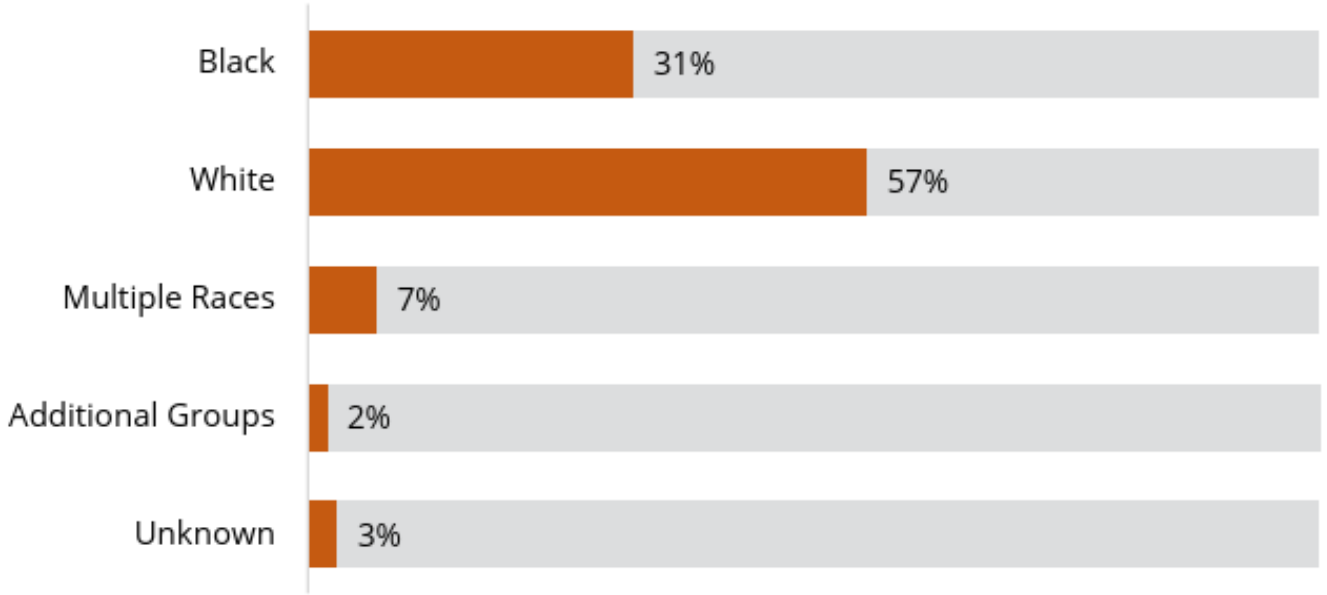
IN THE WILD

Examples of Fatality Review Data Viz

Thoughtful Labeling and Transparency

Michigan Fatality Review and Prevention

Chart 14. Deaths Reviewed by Local CDR Teams by Child's Race (2022)



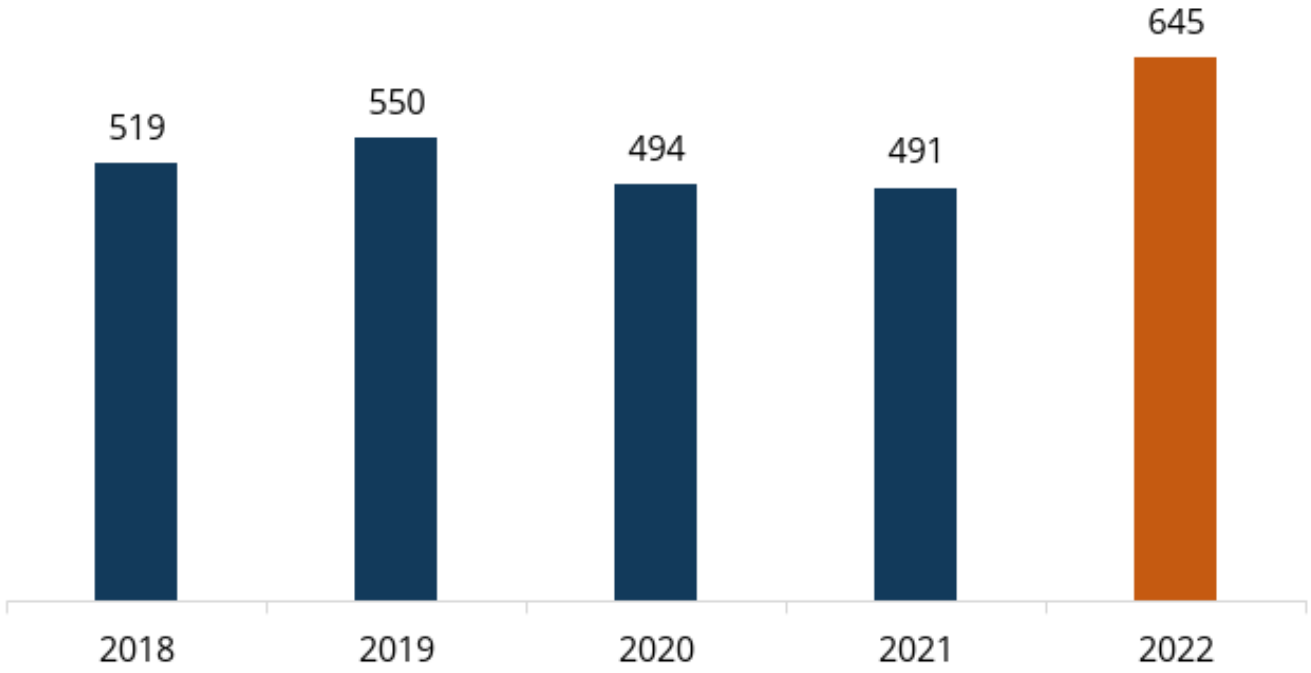
Notes: Additional groups include American Indian children and Asian or Pacific Islander children. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.

From Child Deaths in Michigan – A Report on Case Reviews Conducted in 2022. https://mifrp.org/wp-content/uploads/Child-Deaths-in-Michigan-A-Report-on-Case-Reviews-Conducted-in-2022-03.04.2025-Accessible.pdf

Purposeful Formatting

Michigan Fatality Review and Prevention

Chart 3. Number of Child Deaths Reviewed by Local CDR Teams by Year of Review (2018-2022)

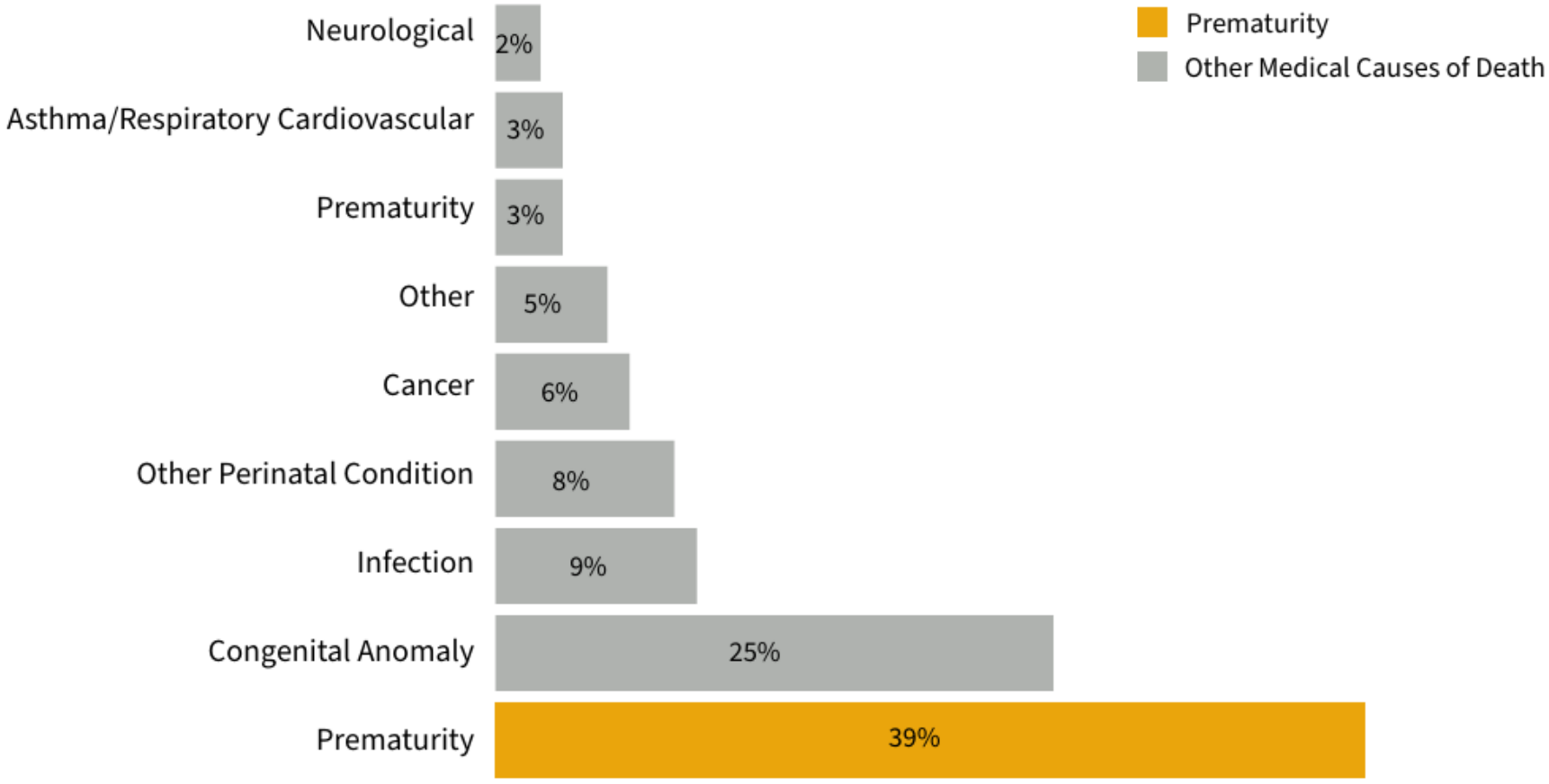


From Child Deaths in Michigan – A Report on Case Reviews Conducted in 2022. https://mifrp.org/wp-content/uploads/Child-Deaths-in-Michigan-A-Report-on-Case-Reviews-Conducted-in-2022-03.04.2025-Accessible.pdf

Meaningful Text and Colors

Ohio Child Fatality Review

Most medical deaths are due to prematurity.
Reviews of Deaths by Medical Causes Among Deaths Reviewed, from 2018 through 2022 (n=3,495).



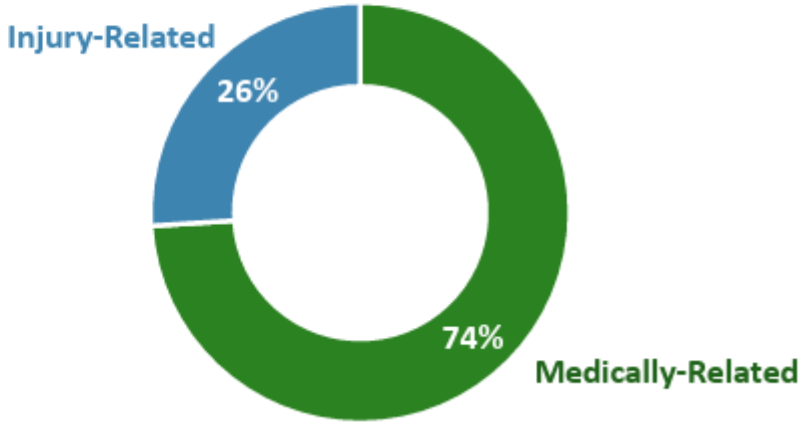
From 2023 Child Fatality Review (CFR) Annual Report.
https://odh.ohio.gov/know-our-programs/child-fatality-review/media/cfr-annual-report

Pictograms and Color Consistency

Louisiana Child Death Review Program

From 2019-2021, an average of 117 infants per year died from an injury before they reached their first birthday.[2]

About one in four infant deaths were injury-related.[2]



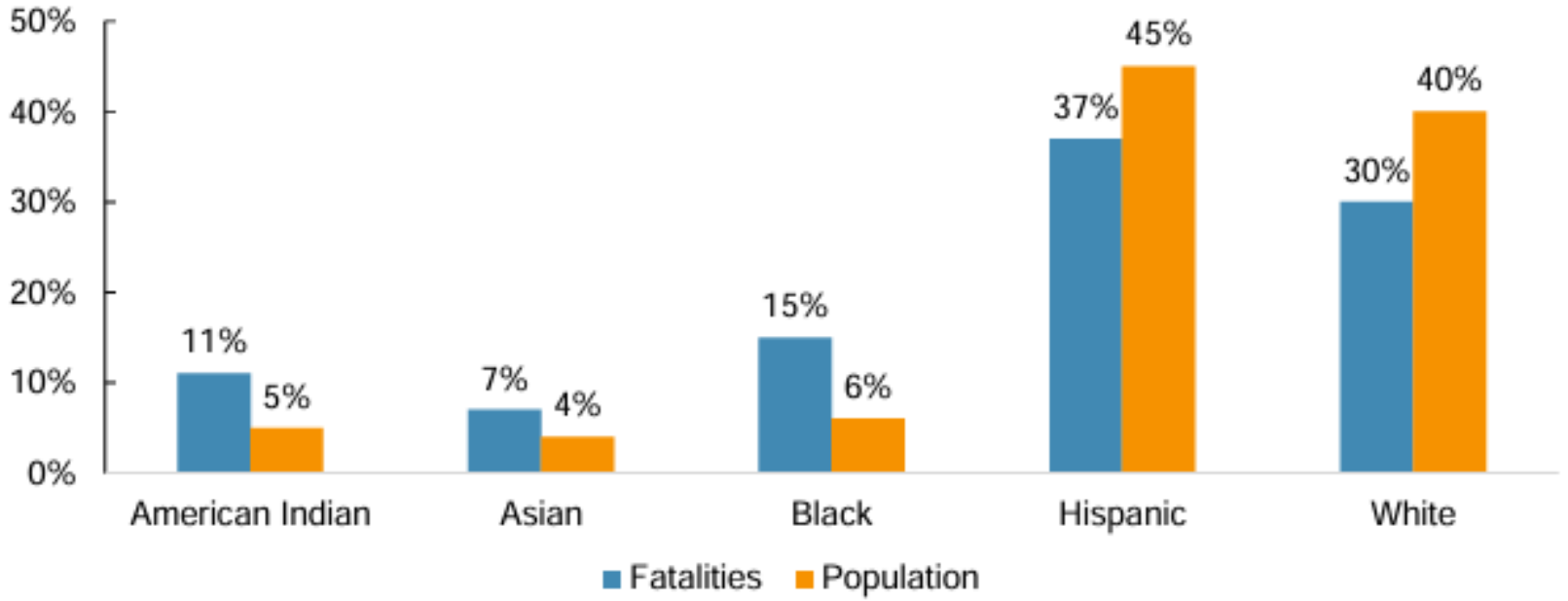
From the Louisiana Child Death Review 2019-2021 Annual Report. https://ldh.la.gov/assets/docs/LegisReports/ChildDeathReview/CDRReport_2019_2021.pdf

Clustered Column Chart for Comparisons

Arizona Child Fatality Review Team

From the 31st Annual Report, November 15, 2024. https://www.azdhs.gov/documents/prevention/womens-childrens-health/reports-fact-sheets/child-fatality-review-annual-reports/cfr-annual-report-2024.pdf

Figure 55. Percentage of Motor Vehicle Crash-Related Deaths by Race/Ethnicity, compared to the Population, Ages Birth to 17 Years, Arizona, 2023 (n=82)[2]



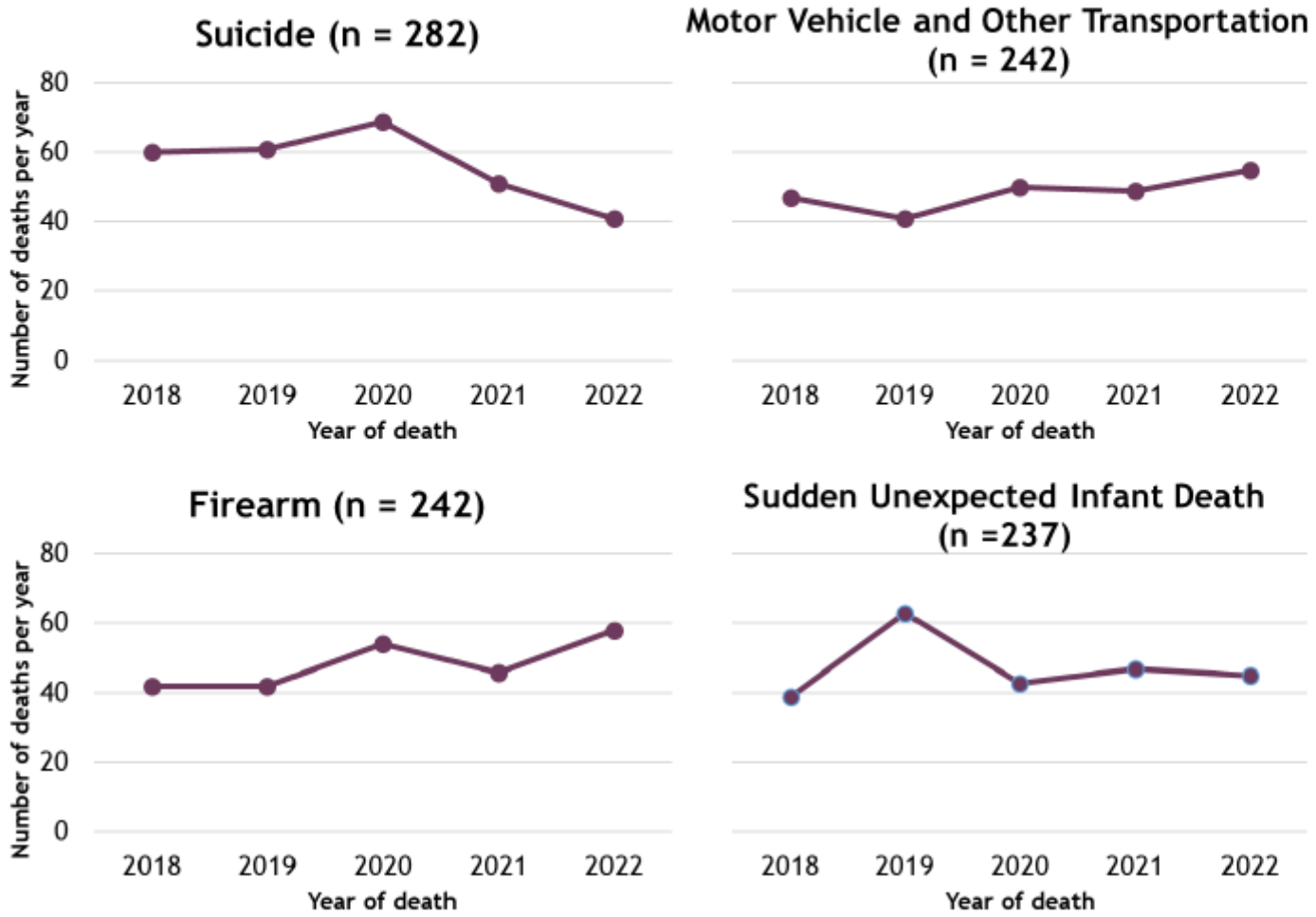
Small Multiples

Colorado's Child Fatality Prevention System

Figure 1

Leading causes of death occurring among those under age 18 in Colorado and reviewed by CFPS by year, 2018-2022 (n=1215)

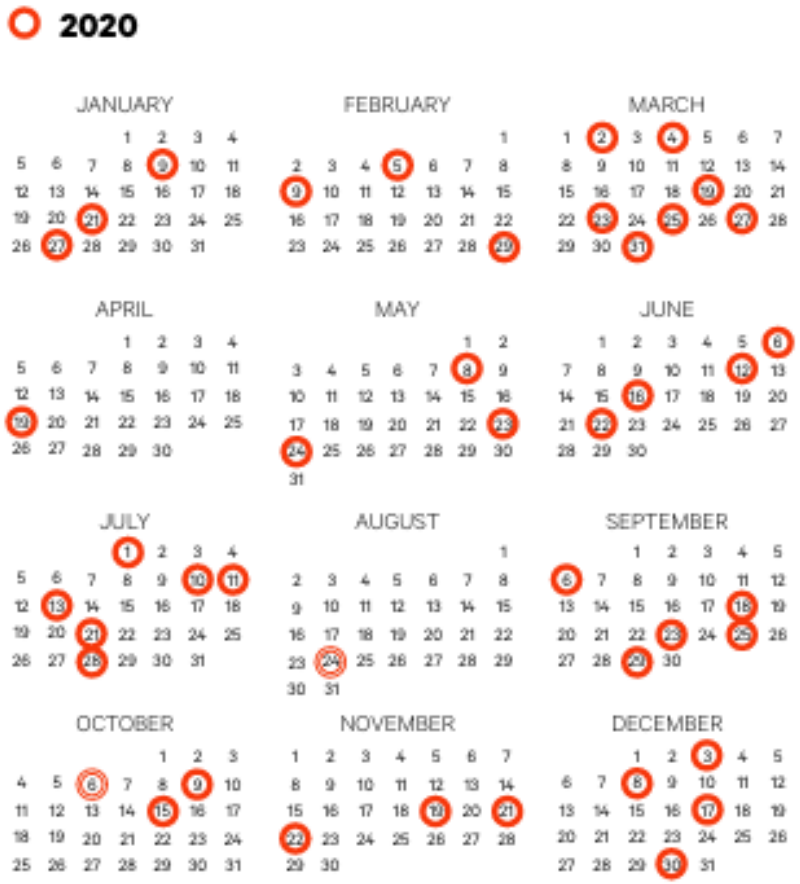
Note: Some of these deaths may be counted in multiple categories. The categories are not mutually exclusive.

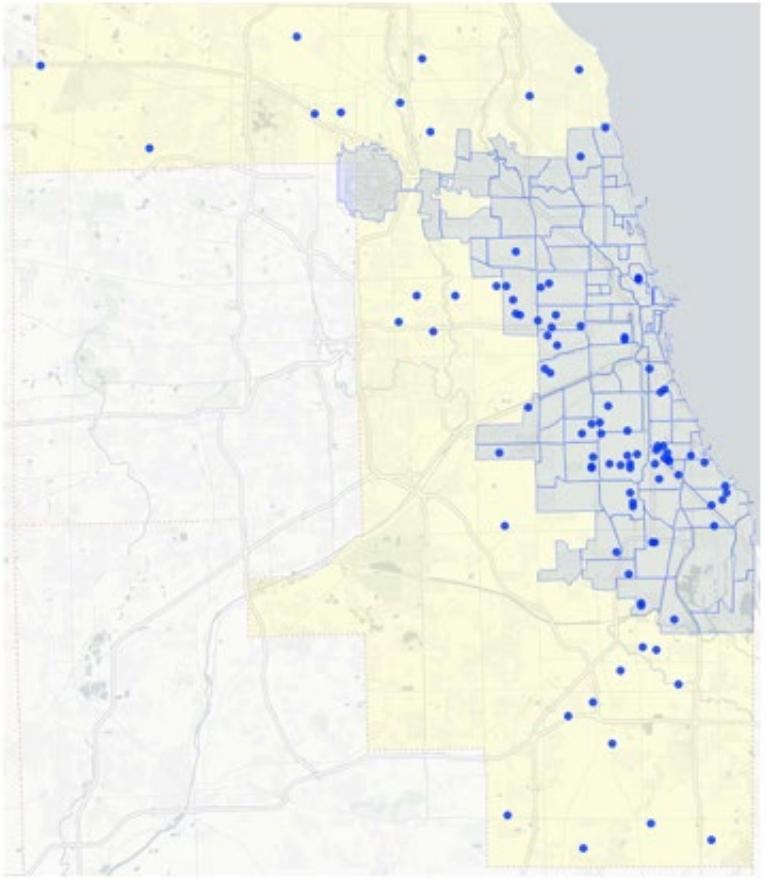


From the Child Fatality Prevention System: 2024 Annual Legislative Report. https://cdphe.colorado.gov/child-fatality-prevention-system-cfps-state-review-team

Distribution Across Time and Area

Cook County SUID Case Registry Team & Dr. Kyran Quinlan





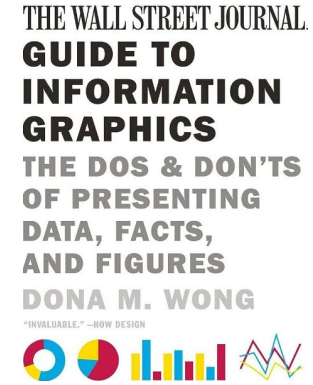
From the Sudden Unexpected Infant Death: Cook County Report, 2020-2021. https://www.rush.edu/sites/default/files/media-documents/suid-report-20-21.pdf

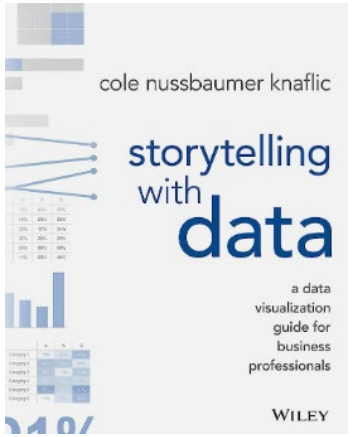

1. What stood out to you today?
2. Did you learn something new?
3. Would any of these strategies be challenging?
4. What might you try differently?

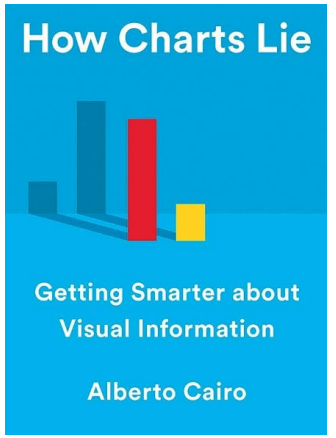
Additional Resources

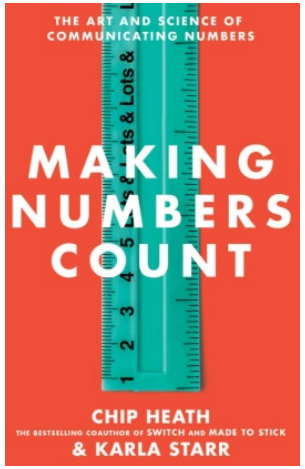
For Exploration

- Urban Institute's Do No Harm Project: https://www.urban.org/projects/do-no-harm-project
- Books (a few examples of many):
  - *Beautiful Evidence* By Edward Tufte
  - *The Wall Street Journal Guide to Information Graphics* By Dona M. Wong
  - *How Charts Lie: Getting Smarter about Visual Information* By Alberto Cairo
  - *Storytelling with Data* By Cole Nussbaumer Knaflic
  - *Making Numbers Count* By Chip Heath and Karla Starr
  - *Effective Data Visualization* By Stephanie Evergreen









Open Discussion

How can we help you today?

National Center Office Hours

Upcoming 2025 Sessions

Date	Topic
9/16/2025	Power in Partnership: Tips and Tools for Engaging Partners in the Review Process
10/21/2025	Handling Conflicting Data
11/18/2025	Facilitating Difficult Conversations
12/16/2025	Interactive Meetings: Designing Live Icebreaker Dashboards

Visit ncfrp.org/center-resources/office-hours/ to register and view past sessions!

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www.ncfrp.org