

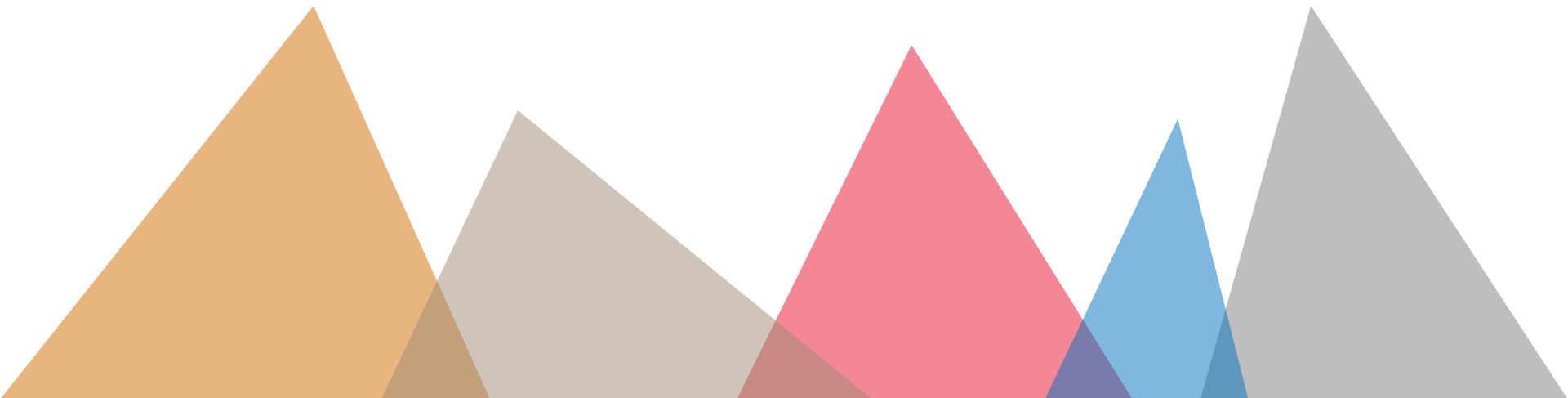
Telling Your Data Story

Infographic Design Training

Tahmid Chowdhury and Suzanne Slattery

JSI CHIME Data Visualization Team

July 21, 2017

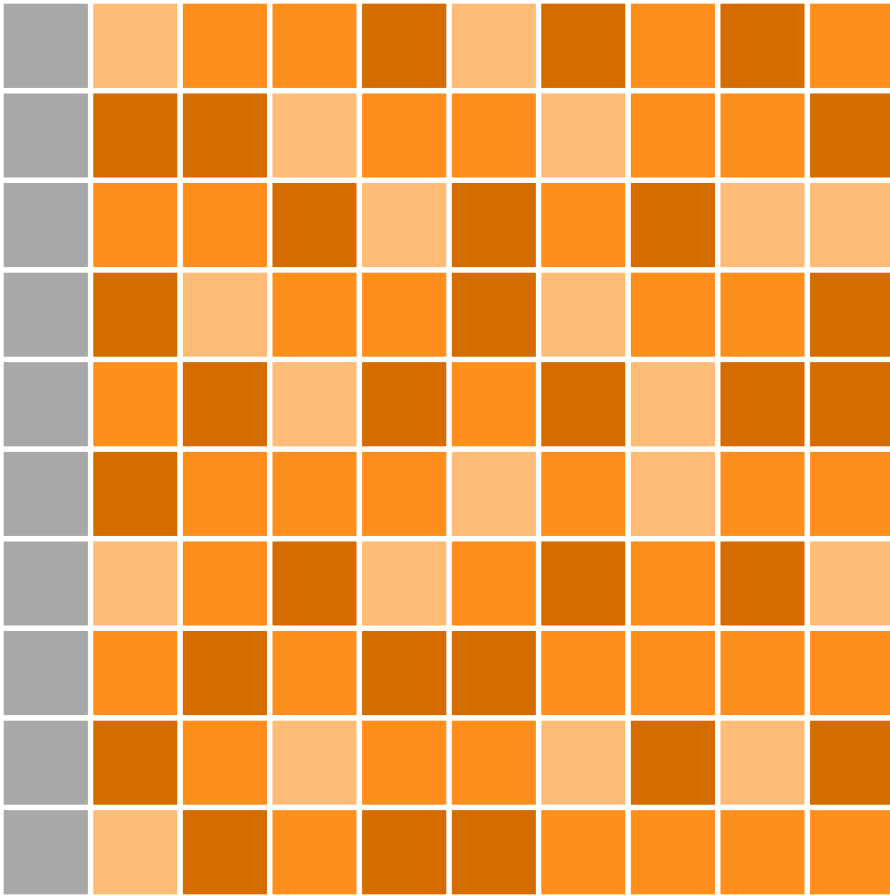




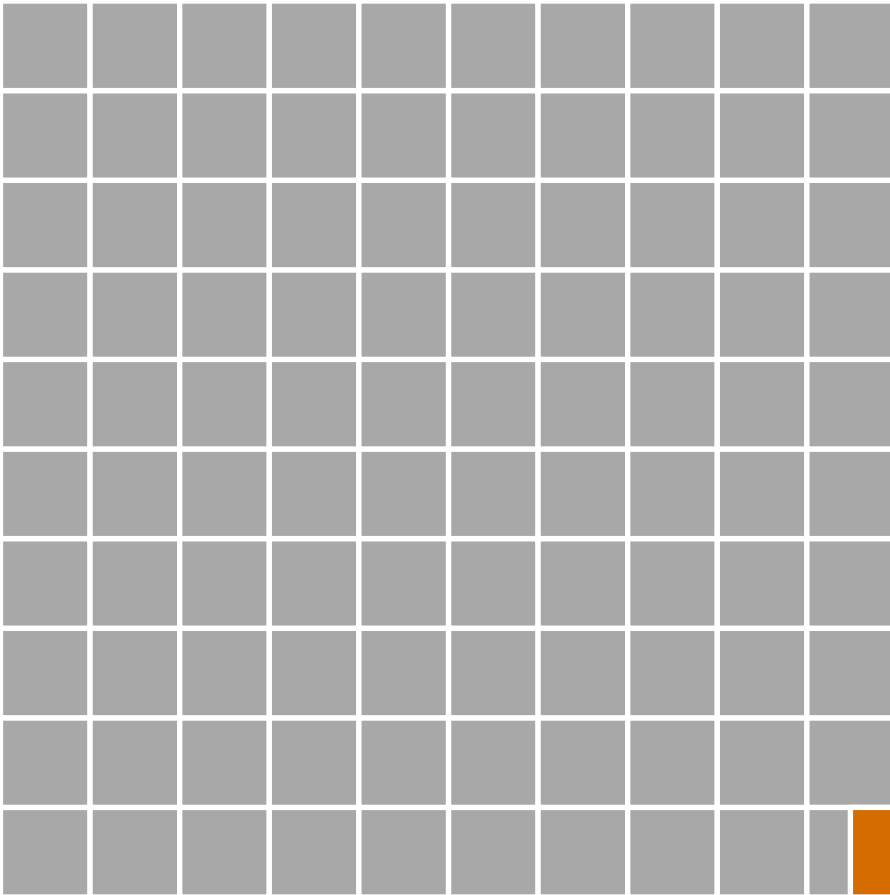
**Tahmid
Chowdhury**



Suzanne Slattery



90%
of the data
in the world
was generated
in the last
2 years



0.5%
of the data
in the world
has been
analyzed

Our modern day challenge:

Balancing the **volume** of information available with what our brains can **comprehend**.

Speedy and brief communications mediums have **reconditioned** people to prefer consuming information in **small chunks**



Today, content not distilled into
easily

consumable key points often fails to
spark action by decision-makers.



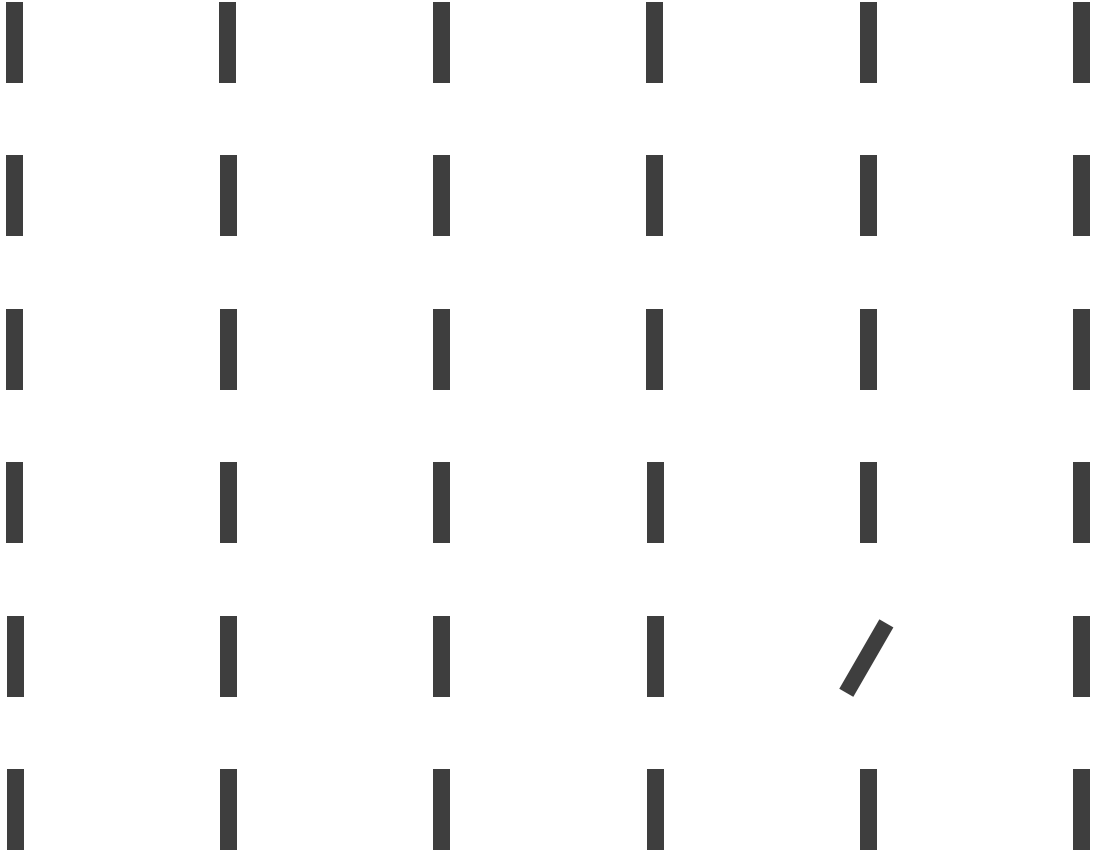
**Pre-attentive
processing helps
people interpret
your charts before
they realize they're
thinking.**



9	4	5	9	8	2
5	3	5	2	3	7
6	8	9	4	5	2
1	9	7	1	6	5
9	8	4	7	5	2
3	7	7	4	9	3

9	4	5	9	8	2
5	3	5	2	3	7
6	8	9	4	5	2
1	9	7	1	6	5
9	8	4	7	5	2
3	7	7	4	9	3

57	18	48	13	45	14
15	36	53	22	52	25
40	53	12	58	47	18
29	43	36	17	28	52
11	55	18	45	85	13
24	34	42	37	34	47



Preattentive Attributes

Form

Orientation:



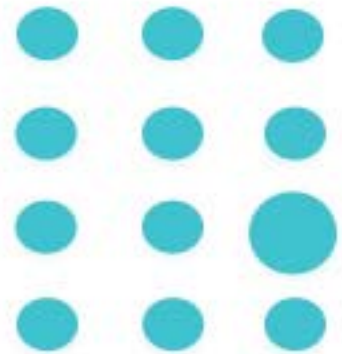
Line Length:



Line Width:



Size:



Shape:



Curvature:



Added Marks:



Enclosure:



Preattentive Attributes

Color and Spatial Position

Intensity:



Hue:



2-D Position:



You identify and combine preattentive attributes to analyze patterns in a visualization. For example:



High, low & in between



Going up, down, & remaining flat



Steady & fluctuating



Normal & abnormal



65

of the US population
are visual learners

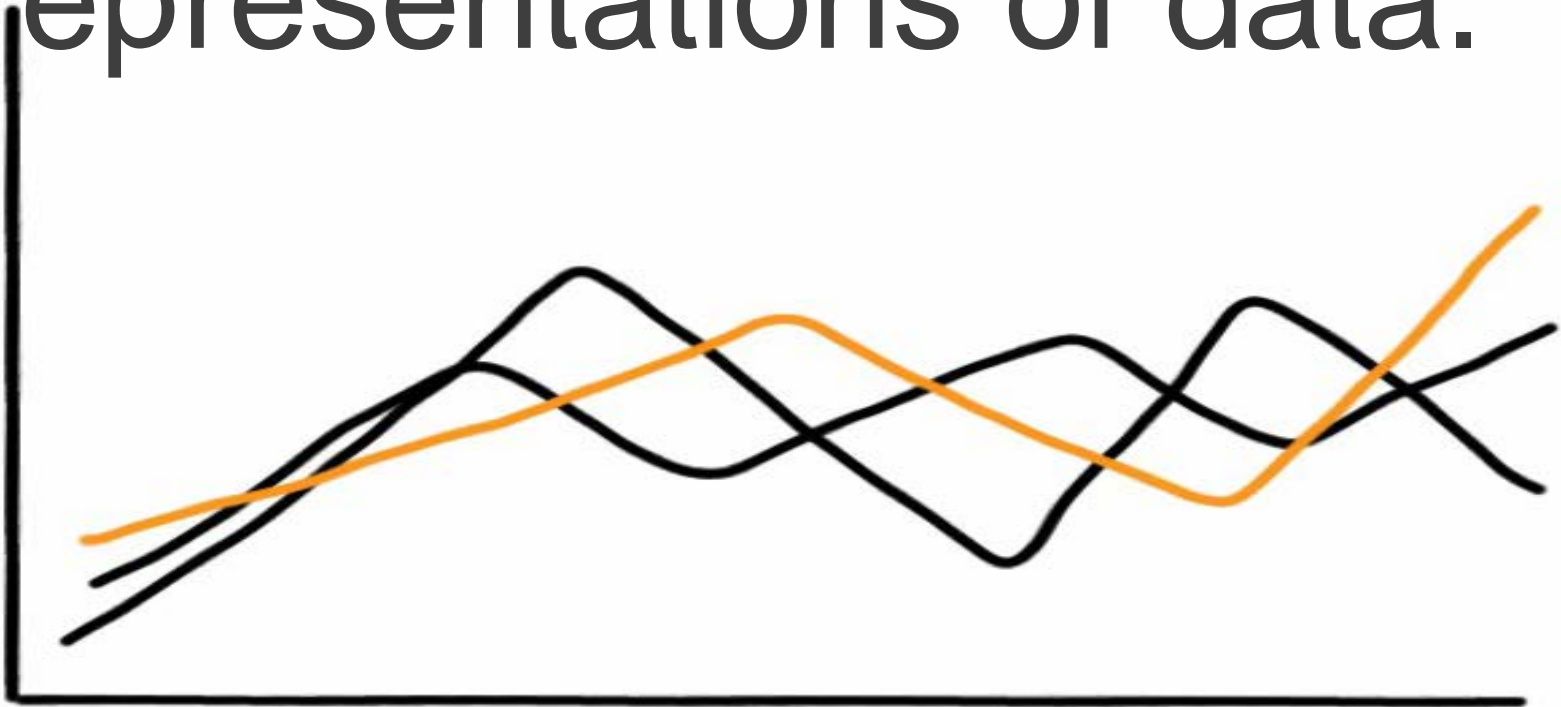
%

and

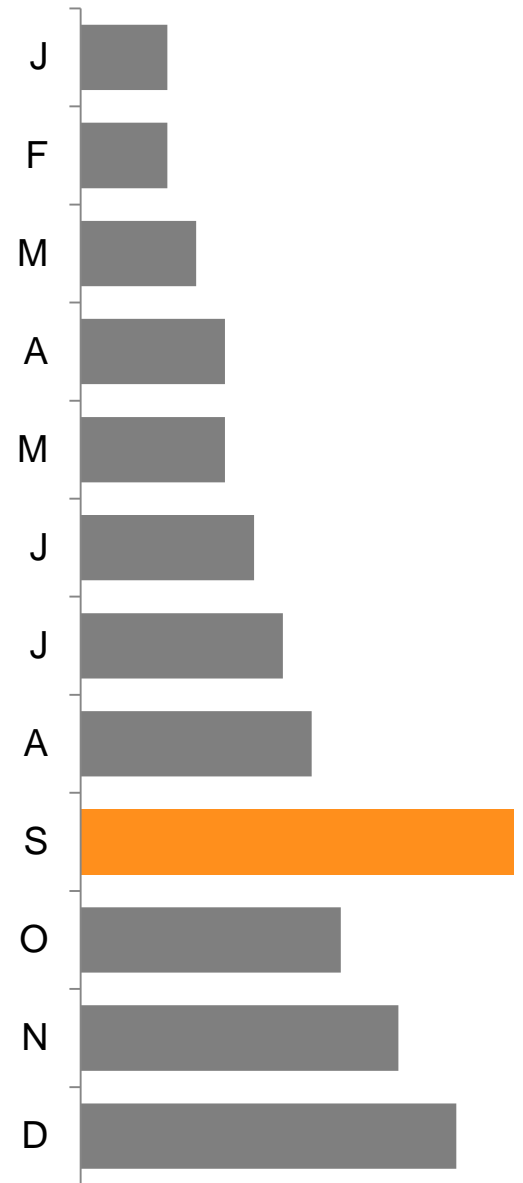
Visuals are processed
times faster than text

60k

Data visualizations are
any graphic
representations of data.



Data
visualizations
can communicate
huge amounts of
data and help
identify trends and
areas of interest.



Declarative



Idea
Illustratio
n

Everyday
Data Viz

Conceptual



Idea
Generati
on

Visual
Discover
y



Data-driven



Exploratory

Infographics:

- Static
- Hand-crafted every time
- Made for a specific dataset
- Context-sensitive
- Tells a premeditated story
- Best for guiding the

Data Dashboards:

- Dynamic
- Automatically generated
- Creates images for arbitrary datasets
- Context-free
- Allows user to explore the data
- Best for allowing the audience to draw their own conclusions

Infographic Process

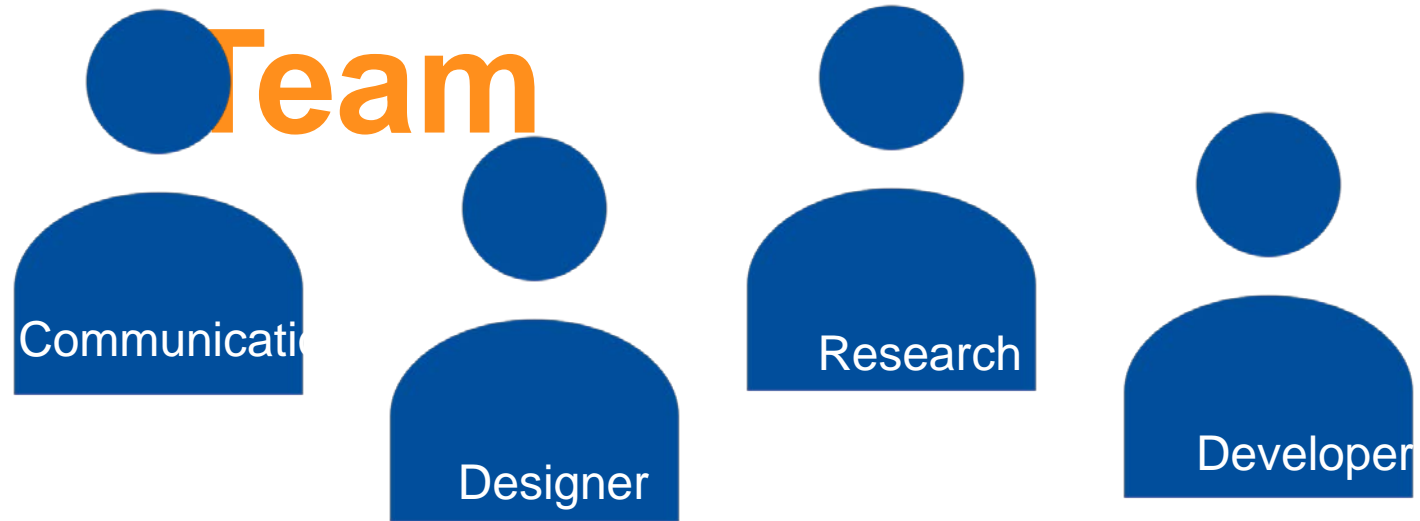
1.
Identify
your
audience
& context

2.
Find the
story in
your data

3.
Build your
charts &
assemble

4.
Dissemina
te & share

The Dream



-VERSUS-

Reality



WHO Is Your
Audience?

On the most common visualization
mistakes:

“Time isn’t adequately
spent on is just what is
the question that you’re
trying to answer and
what does your audience
need to know?”



Cole Nausbaumer
StorytellingwithData.com



WHO is your audience?

WHAT do they want to know?

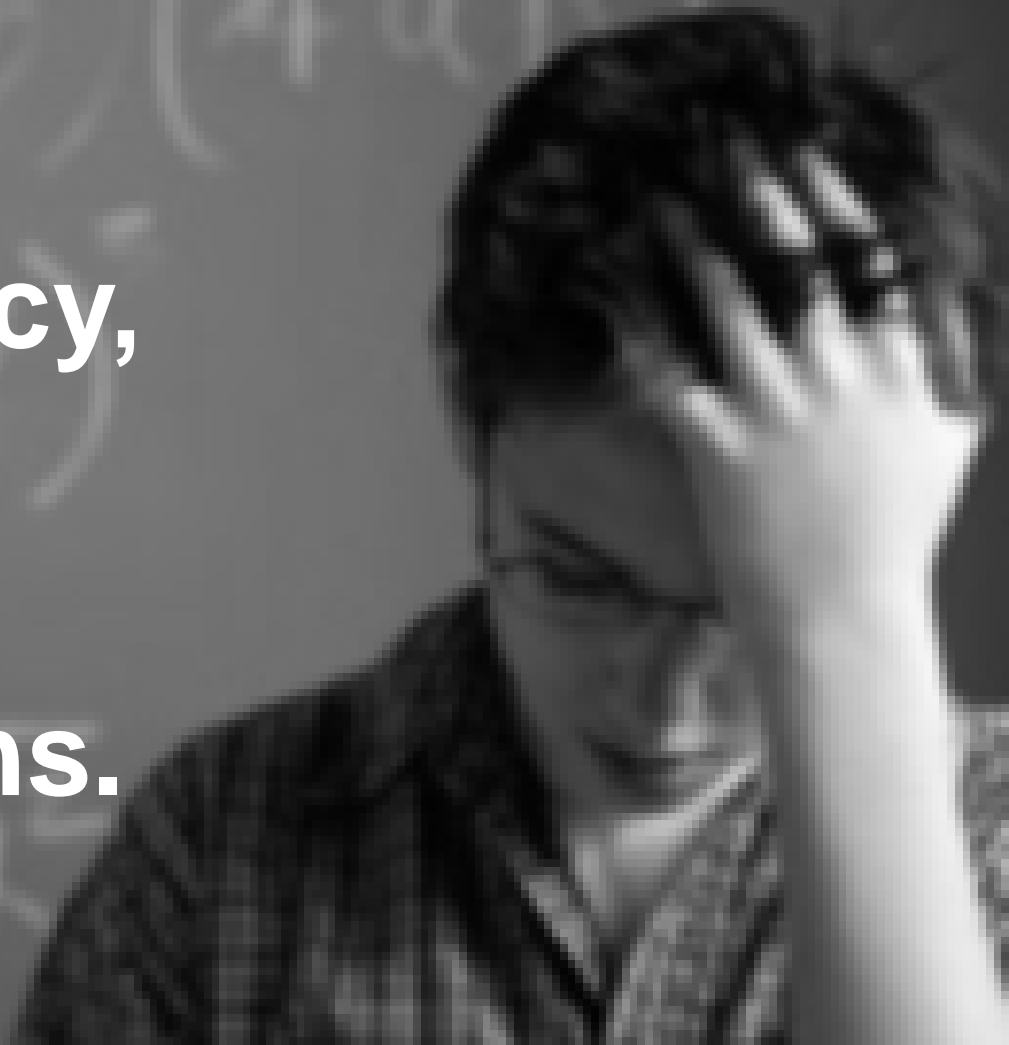
HOW will you communicate it?



Different
stakeholders have
different data
needs.



**Consider your
stakeholders'
literacy,
numeric literacy,
and what data
they need to
make decisions.**



Infographic Process

1.
Identify
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& context

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story in
your data

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charts &
assemble

4.
Dissemina
te & share



WHAT Is Your
Story?

“Data is powerful. But with a good story it’s unforgettable.”



Daniel Waisberg
Google

Ask Yourself

Questions:

What is your **goal**?

- Are you promoting action?
- Are you educating?
- Raising money?

Who is your audience?

- What do you **know** (from your data)?
- What does it **mean**?
- Why is it



Infographic Process

1.
Identify
your
audience
& context

2.
Find the
story in
your data

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assemble

4.
Dissemina
te & share



Chart Selection

Picking the right chart type for your data story is critical to developing great visualizations. ?



Data Types

FOUR TYPES OF DATA


NOMINAL: Data sorted into categories


ORDINAL: Arbitrary numerical scale


DISCRETE: Represents units


CONTINUOUS: Can be measured on a continuum

TYPES OF CHARTS

→ Bar chart 

→ Pie chart, bar chart 

→ Arrays, Pie chart, Bar chart 

→ Line chart 

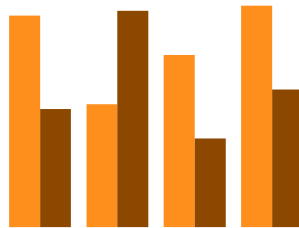


Compare Categories

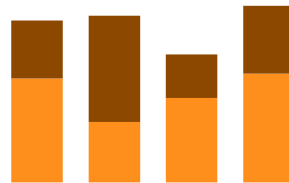
Column



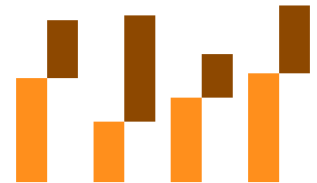
Paired Column



Stacked Column



Waterfall



Bar



Paired Bar



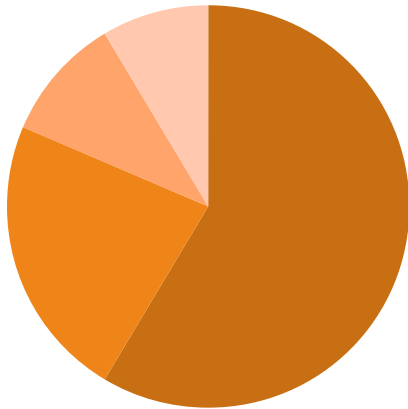
Stacked Bar



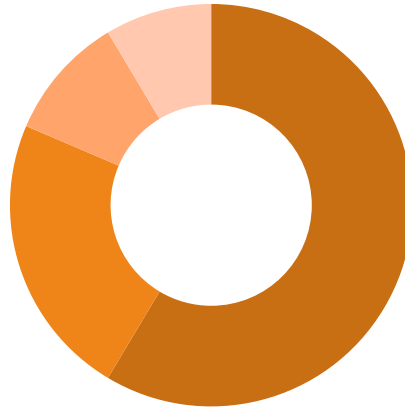


Part-to-Whole

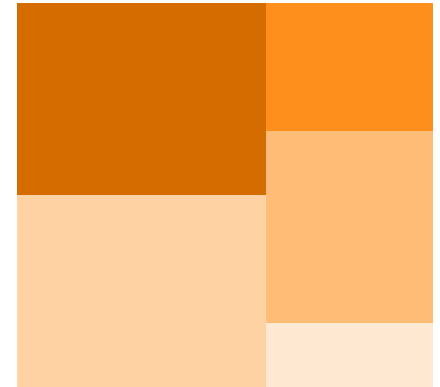
Pie



Donut



Tree Map



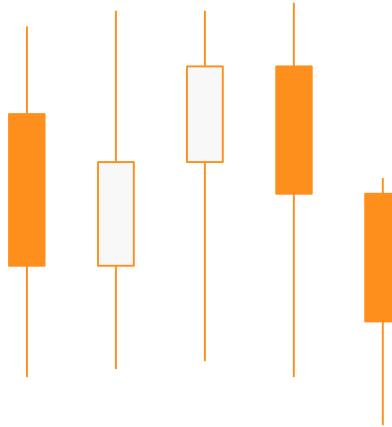


Distribution

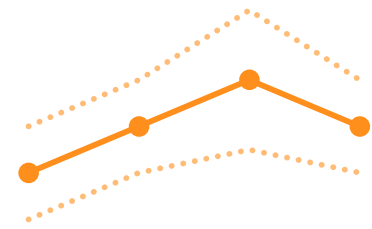
Histogram



Box and Whiskers



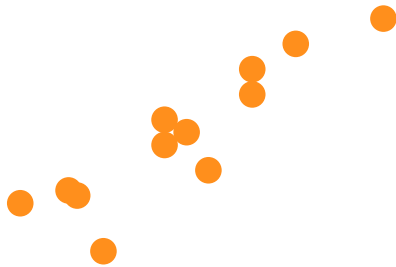
Confidence Interval



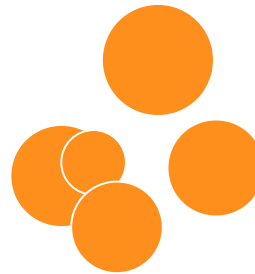


Relationship

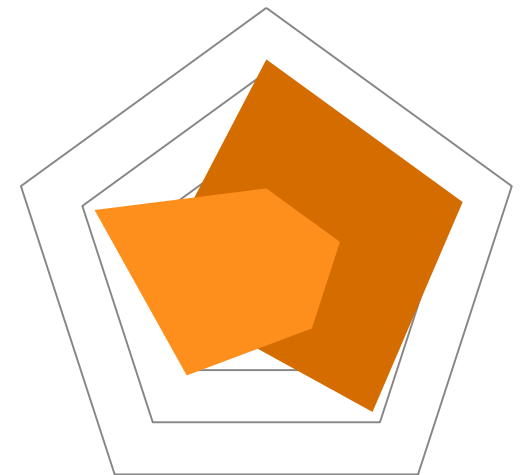
Scatterplot



Bubble



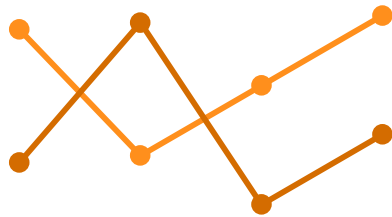
Radar / Spider





Time Series

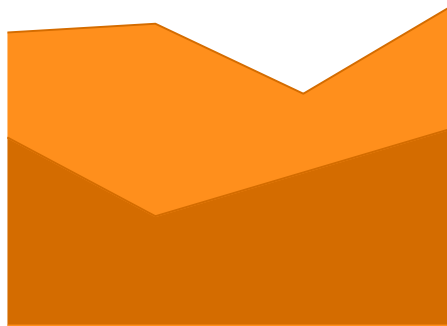
Line



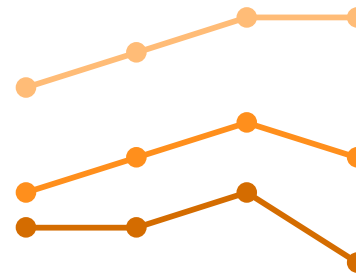
Timeline



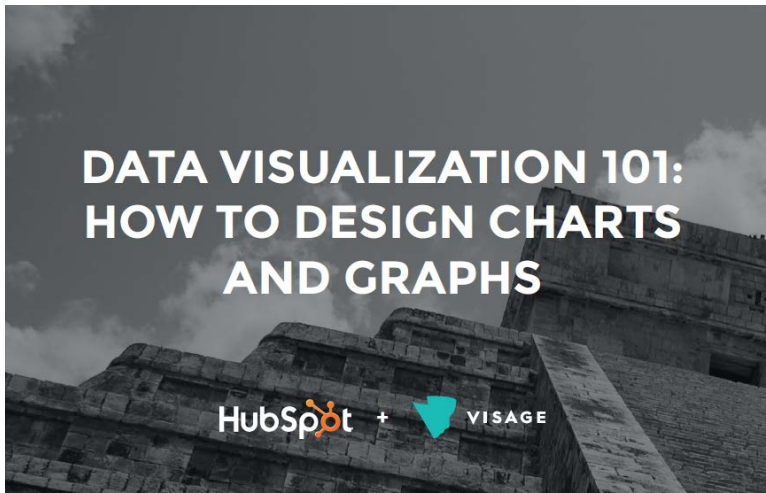
Stacked Area



Spark Lines



Resource for Chart Selection



visage.co/content/data-visualization-101

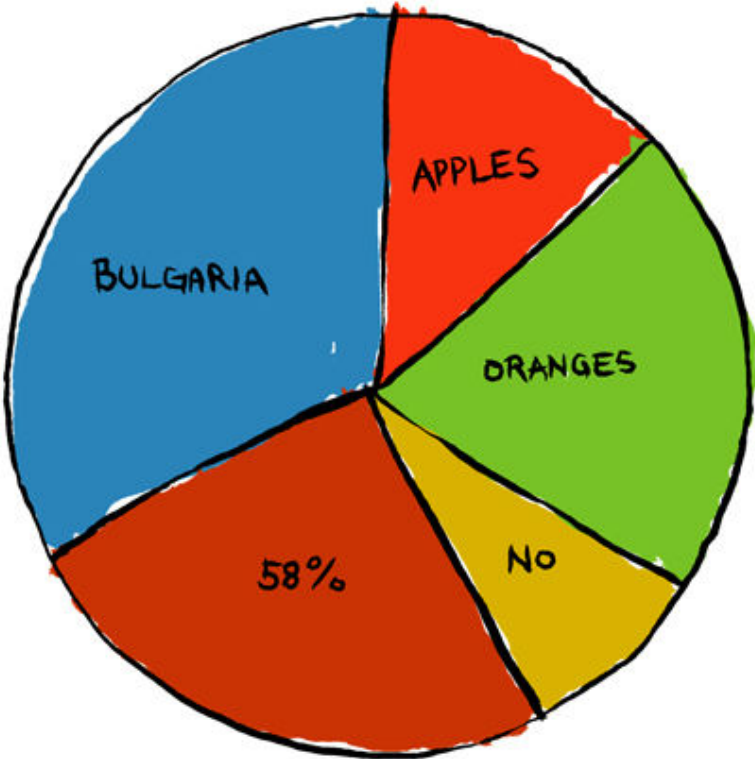
The Data Visualisation Catalogue



<http://datavizcatalogue.com/>

Common Infographic Mistakes (Don't do it!)

COMMON MISTAKES



**Misrepresentati
on of Your Data.**

COMMON MISTAKES

the HAZARDS of HOSPITALS

Why US Hospitals Aren't Nearly as Safe as You Think



We all think of the hospital as the place we go to get better. But hospitals in the United States are making people sicker at alarming rates. Between overtired interns, germ-covered doctors, and haphazard record keeping, you might find yourself in more trouble than you were when you checked in.

INEFFICIENT RECORD KEEPING AND COMMUNICATION



7,000



People killed by medication errors - giving a patient the wrong medication or too much - each year

At Children's Hospital in Boston, switching to electronic record keeping and implementing a patient hand-off training program reduced medical errors by:

40%



SOLUTION

Implement computerized record keeping and patient hand-off training.



CONCLUSION

The United States ranks last out of 19 developed nations in preventable deaths at hospitals. There are many causes behind this, but unless every sector of health care works together, there can be no solution.



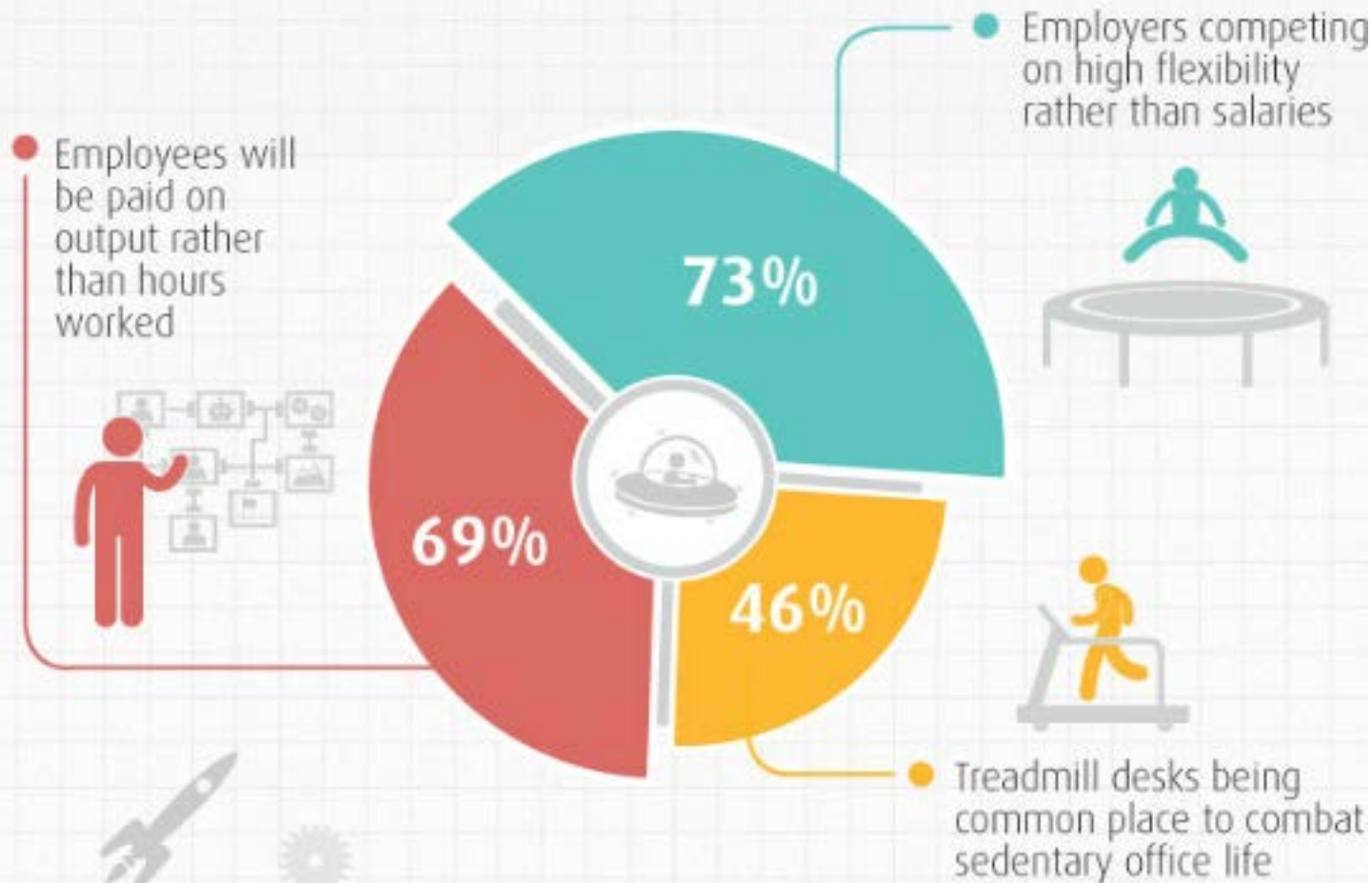
COMMON MISTAKES

1

It doesn't add up

BIGGEST FUTURE CHANGES IN THE WORKPLACE?

In a survey of HR professionals, changes forecasted in the workplace varied from:



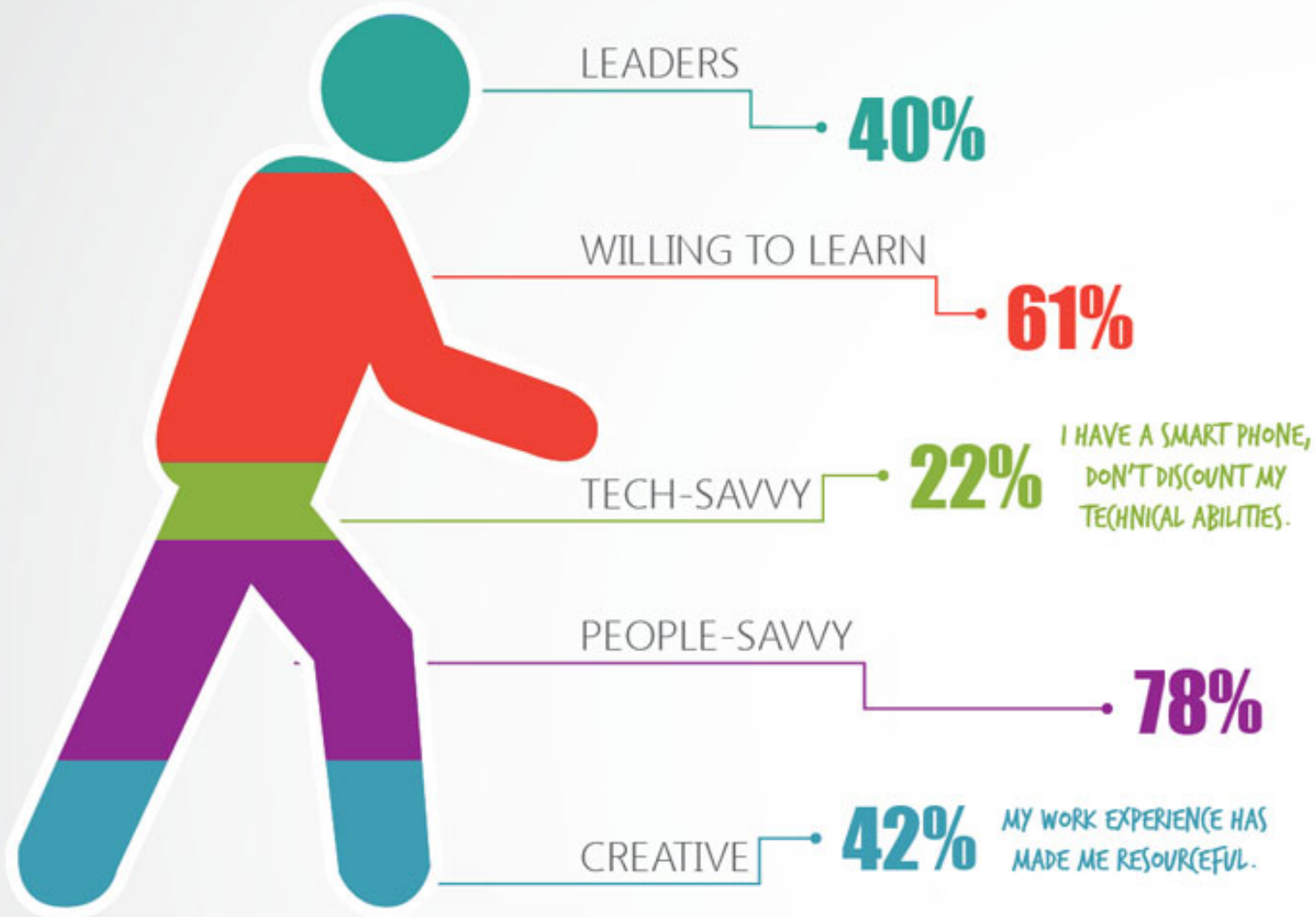
BEST PRACTICE
Make sure your numbers make sense

2

It's the wrong chart

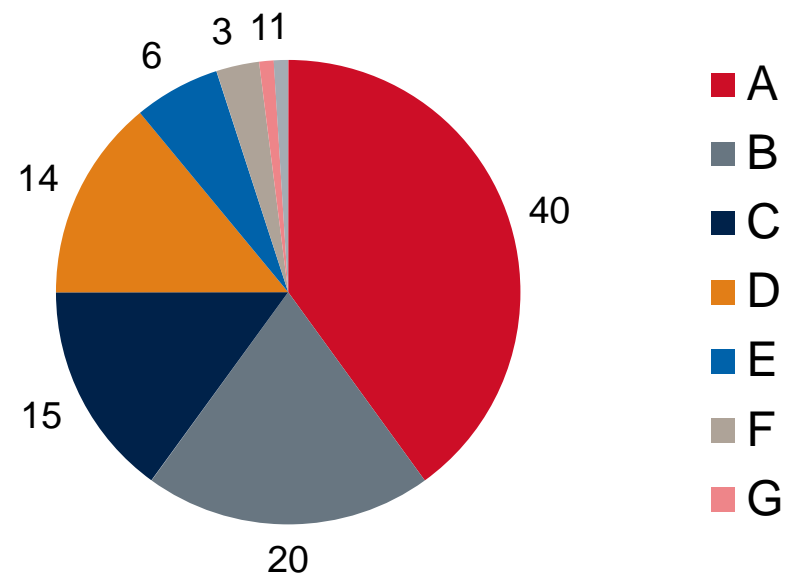
COMMON MISTAKES

HOW BABY BOOMERS DESCRIBE THEMSELVES



 COMMON MISTAKES

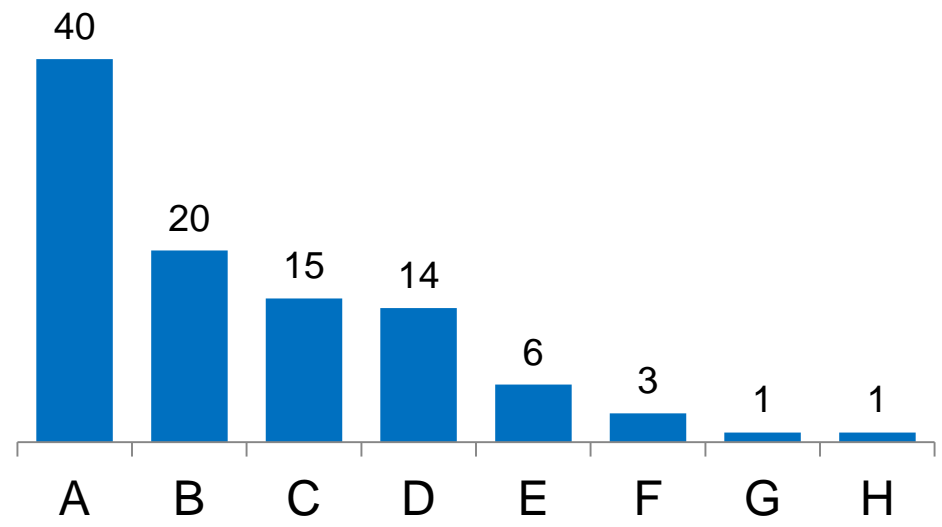
DON'T



BEST PRACTICE

Avoid using pie charts if possible, especially

DO



3

It makes the reader
work

SOCIAL MEDIA USAGE



LinkedIn
myspace

Myspace
and LinkedIn
launched

facebook.

Facebook launched

friendster

Reached
3M users
in 3 months



7B pieces
of content
shared
weekly



65M
daily tweets



3.5 billion pieces
of content shared
on Facebook weekly



50M
users



100M
users



57M
users



400M
users



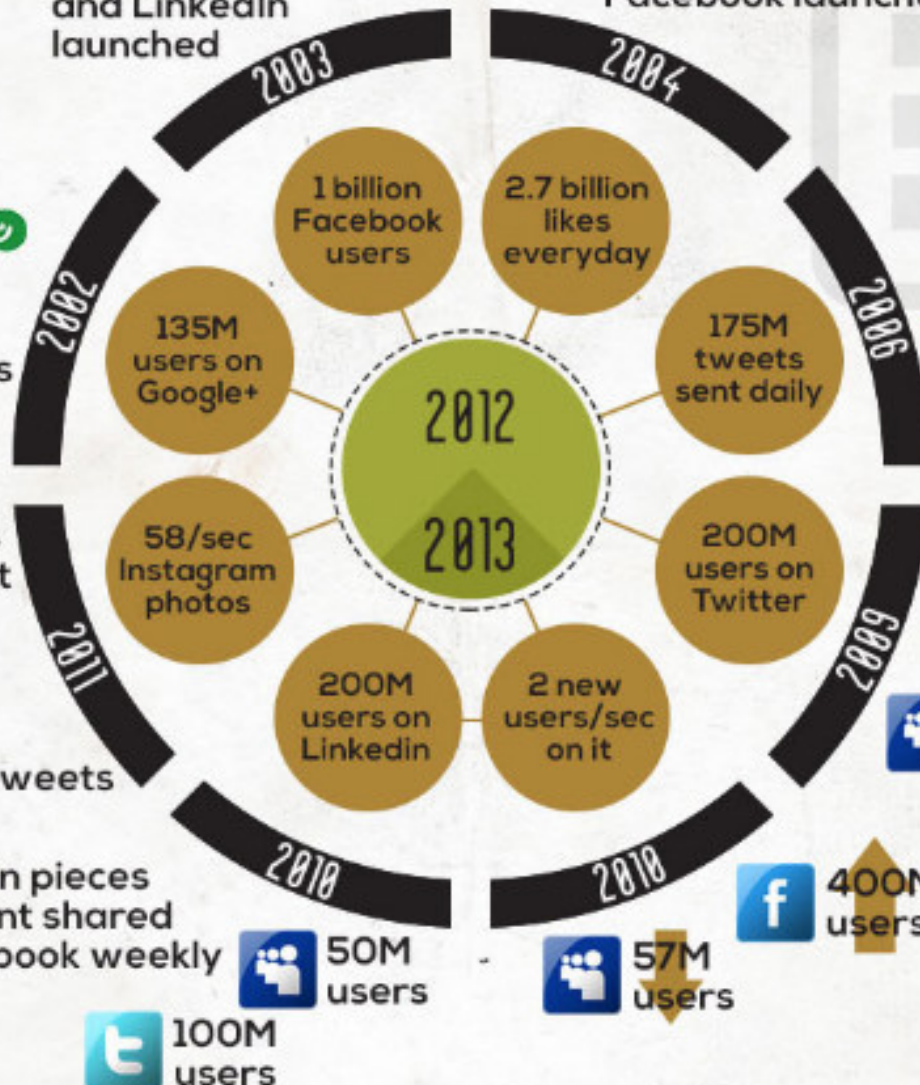
Twitter
Launched



200M
users



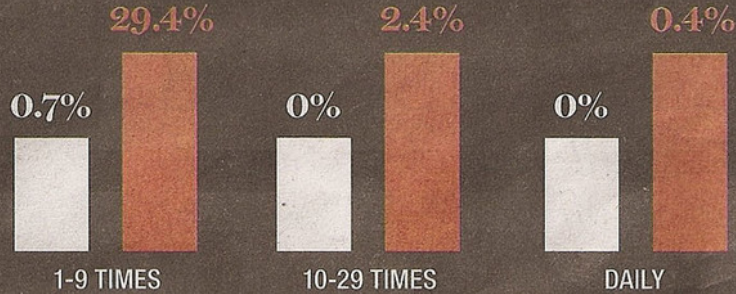
75M
users



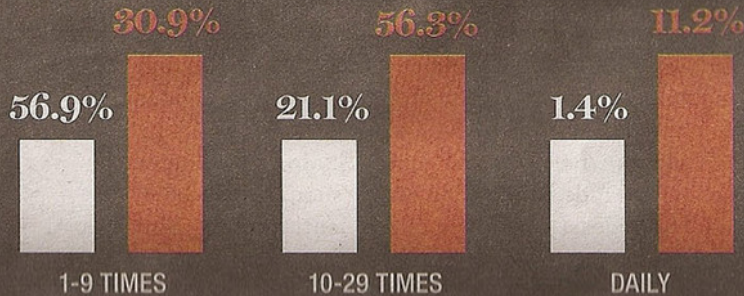
BY THE NUMBERS

The National Collegiate Health Assessment was taken by 1,000 UCSB students in Spring 2009. Participants were asked how frequently they used substances over the past 30 days. Numbers in white reflect actual student use, while red numbers indicate perceived substance use. The average age of participants was 20 years and approximately 99 percent were full-time students.

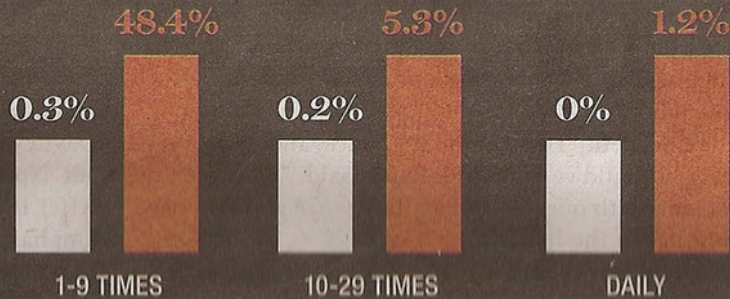
OPIATES



ALCOHOL



COCAINE



COMMON MISTAKE

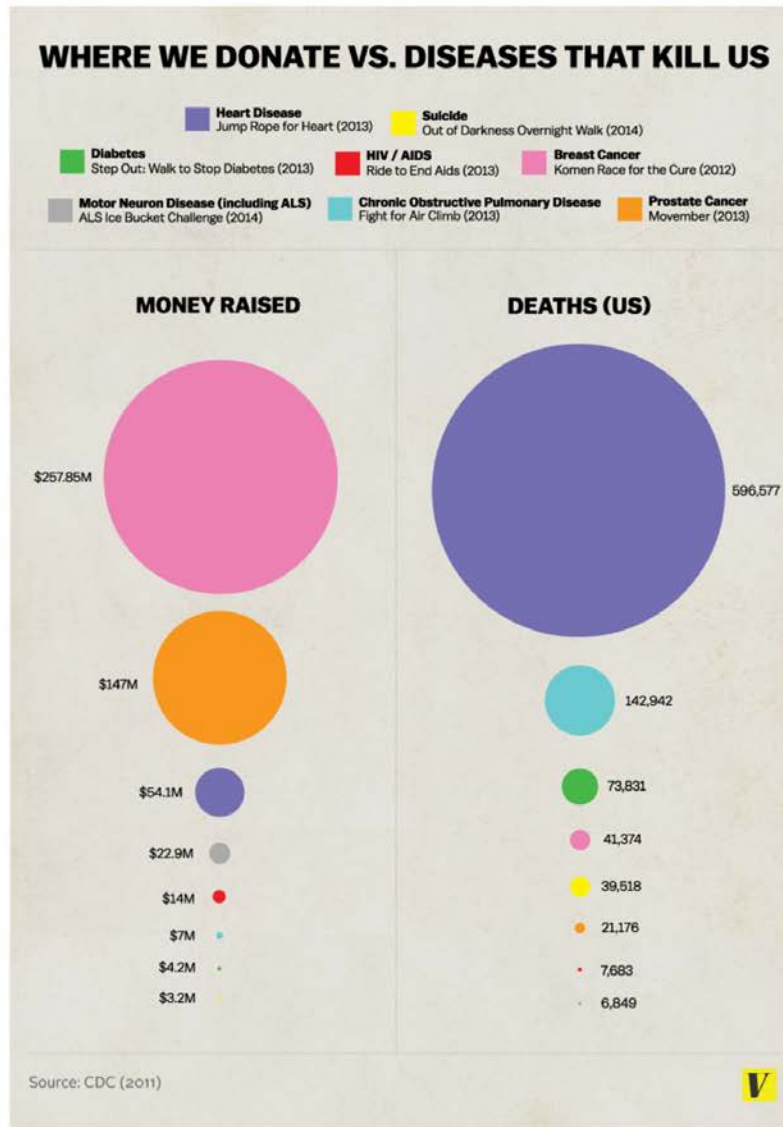
BEST PRACTICE

Make sure your bars correlate with your data

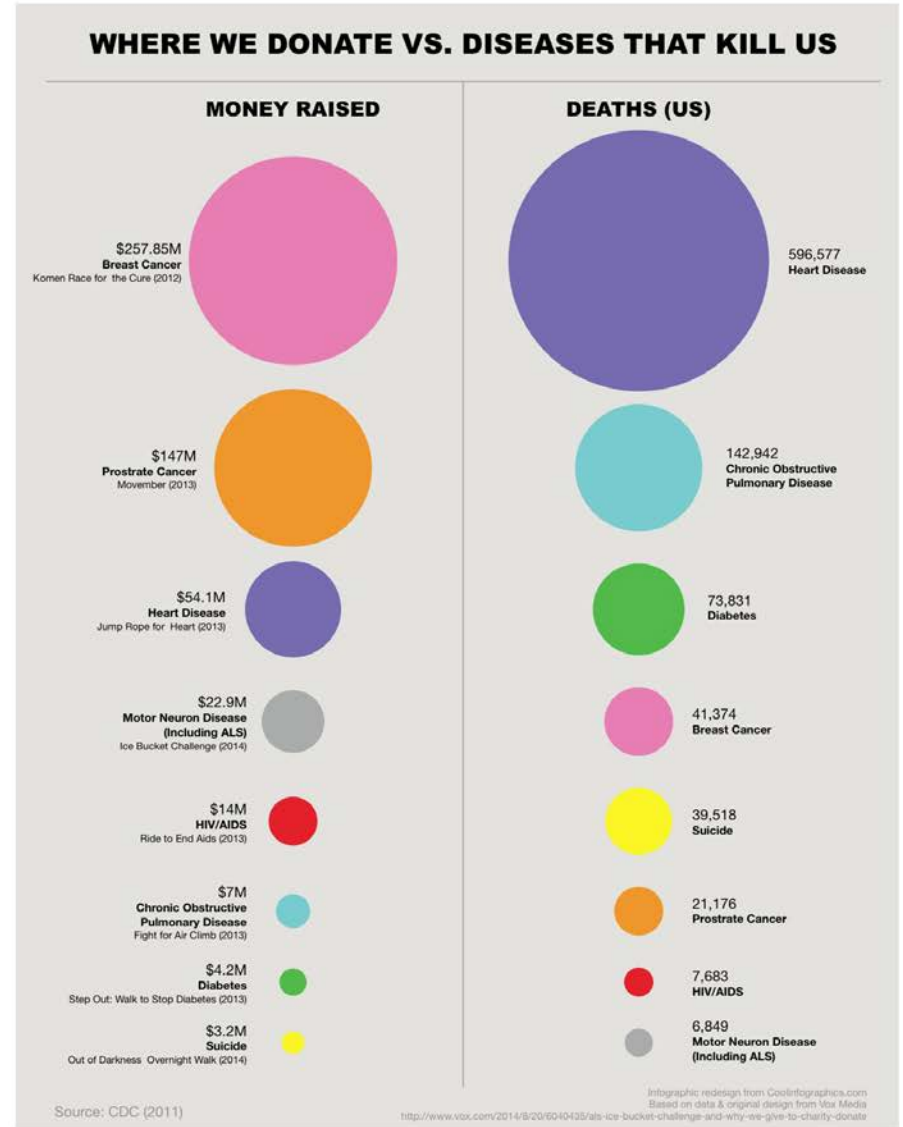


Inaccurate scales

Original Design



Corrected Design



BEST PRACTICE

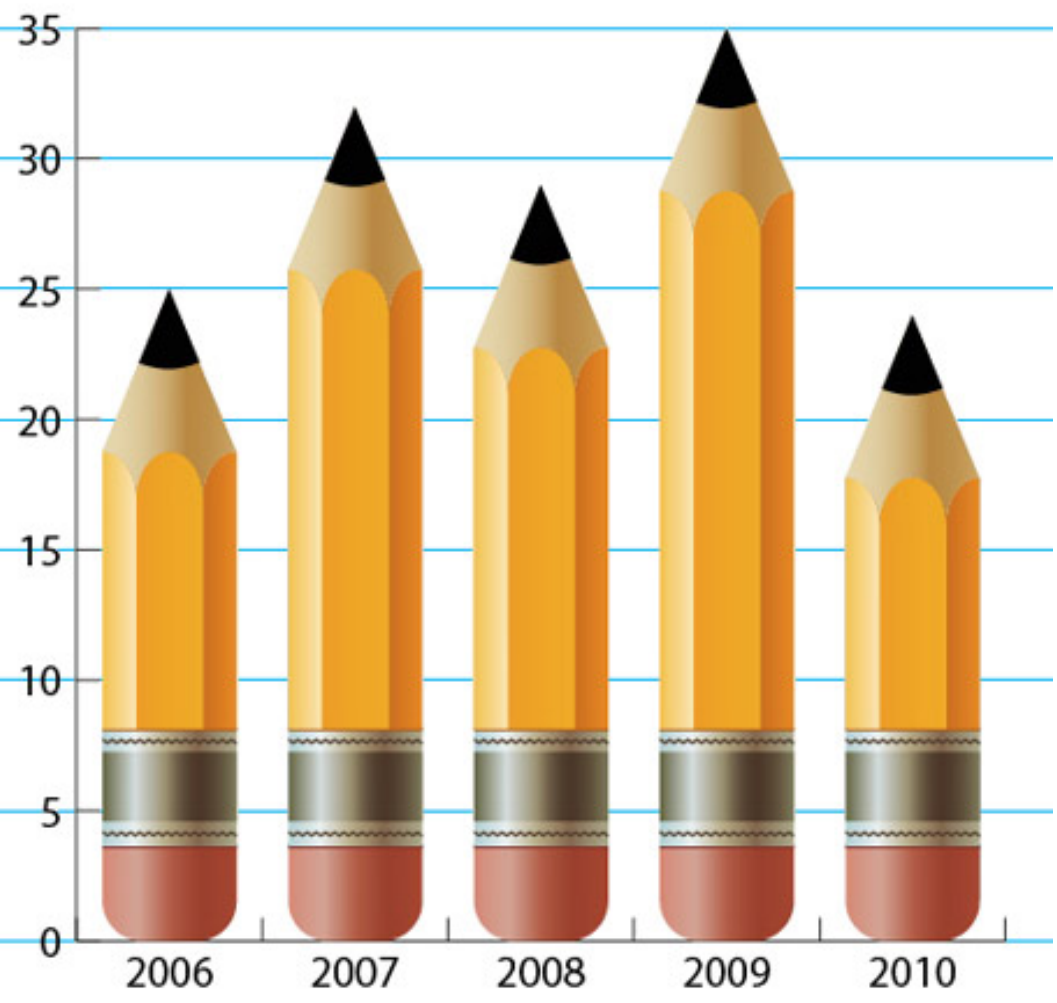
To demonstrate scale, increase by area instead of

5

**Boring/nondescript
titles**

COMMON MISTAKES

Elementary School Class Size



BEST PRACTICE

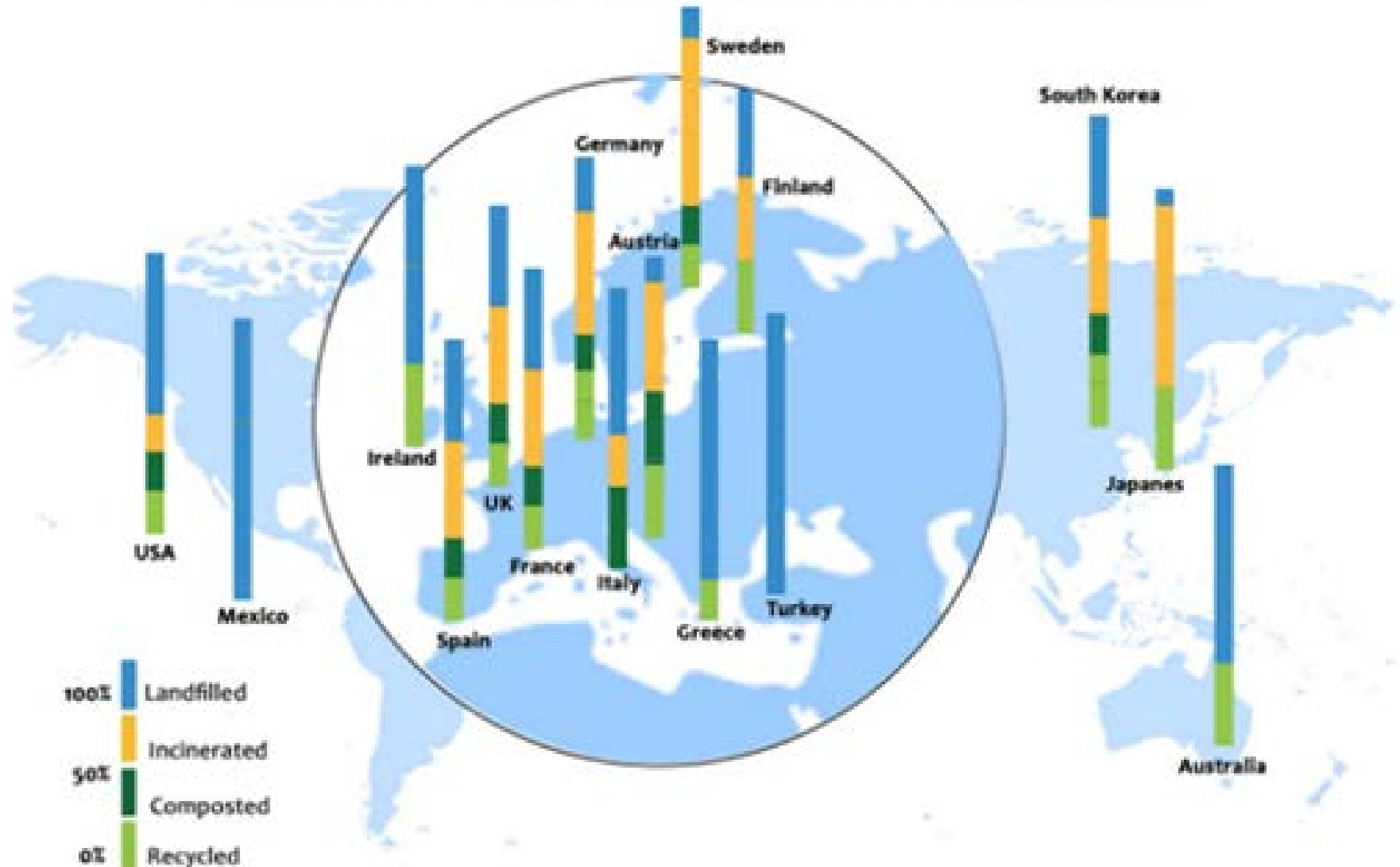
Use clear & succinct language that tells your reader the takeaway

6

Incomparable Comparisons

WASTE MANAGEMENT & RECYCLING OF USA

How do different countries dispose of their waste?

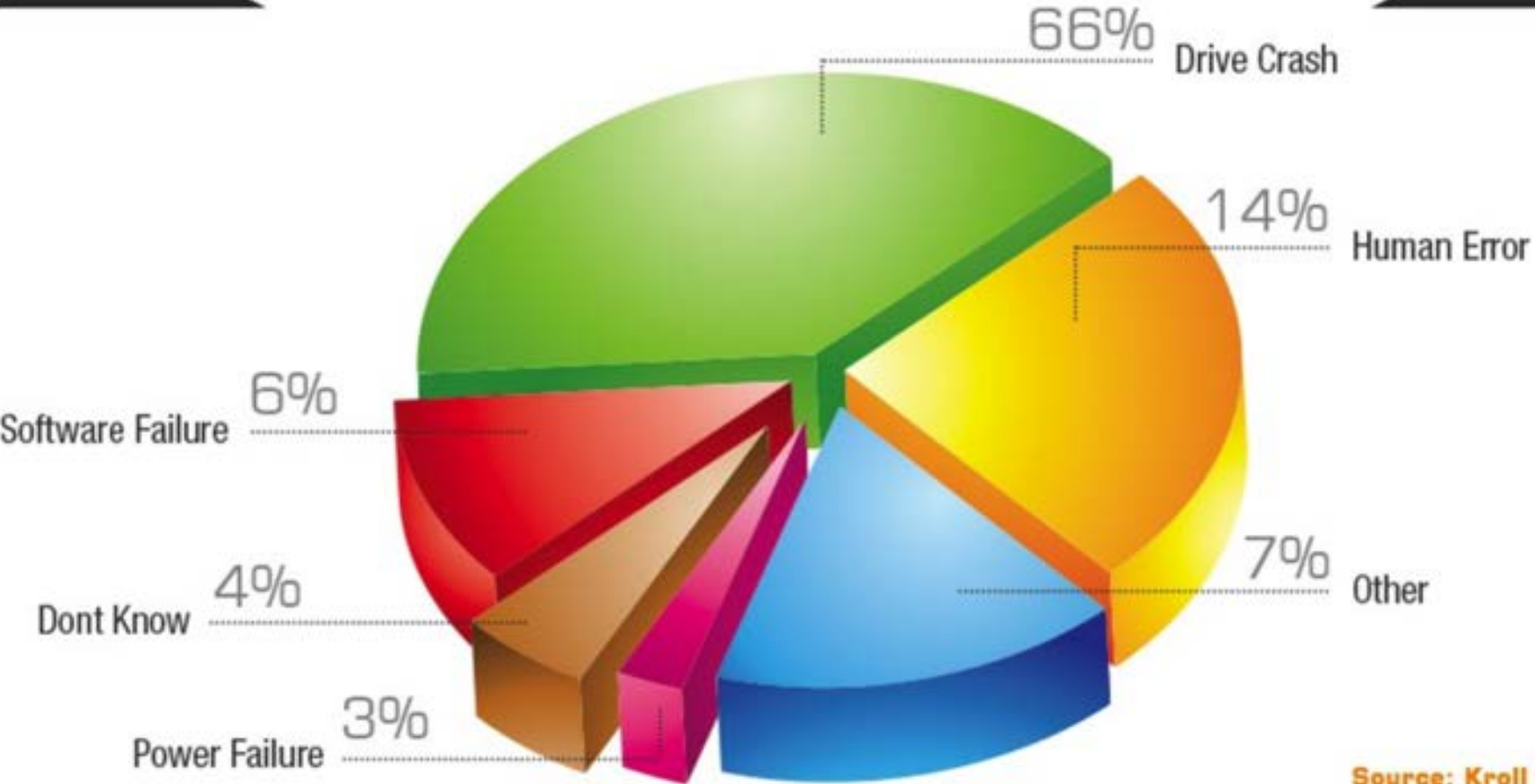




Using 3-D charts

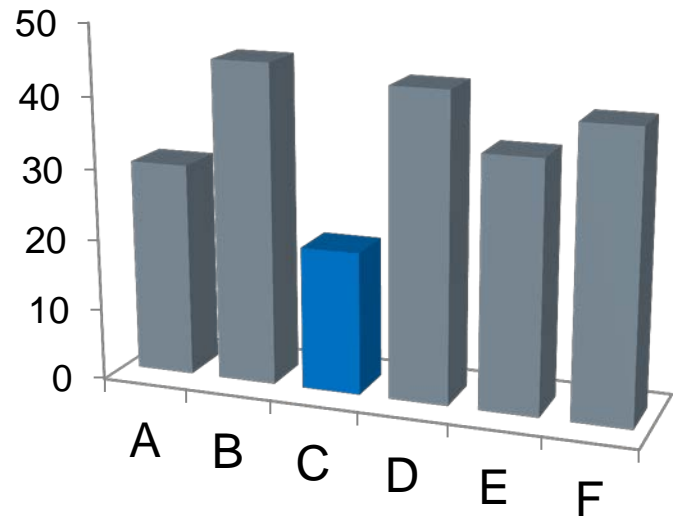
COMMON MISTAKES

THE MAIN CAUSES OF DATA LOSS

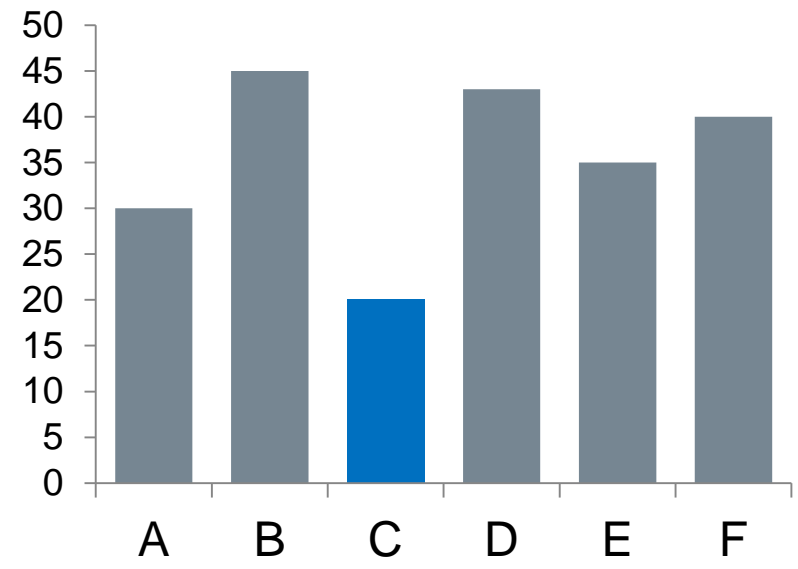


Source: Kroll Ontrack

Use 'flat design' and avoid 3D charts



BEFORE



AFTER

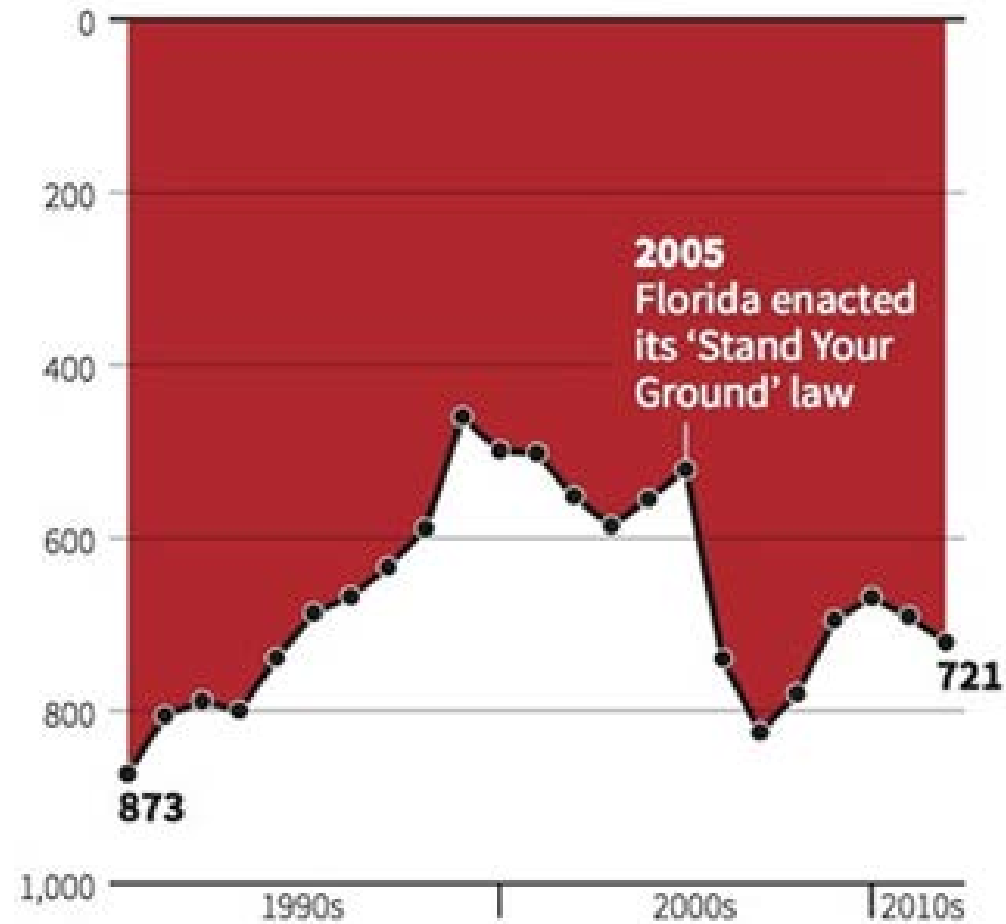
8

Wrong axis
placement

COMMON MISTAKES

Gun deaths in Florida

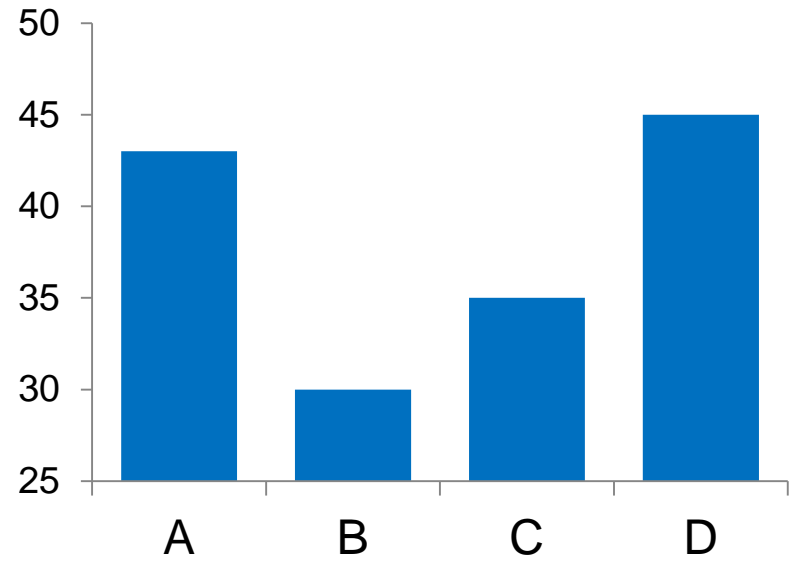
Number of murders committed using firearms



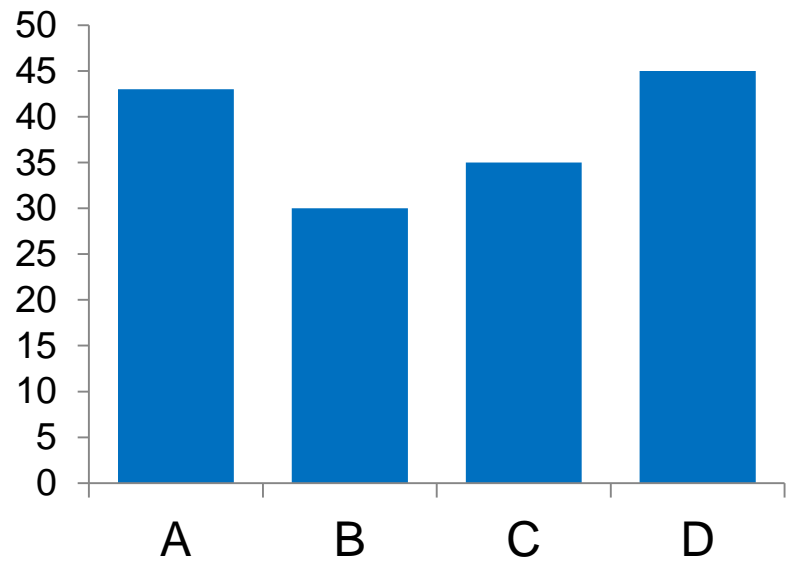
Source: Florida Department of Law Enforcement

 COMMON MISTAKES

DON'T



DO



BEST PRACTICE
Use the full axis by starting at zero

9

Too much or too little
text

10 Not following basic design principles

A FEW DESIGN PRINCIPLES

Color

Use color to emphasize or reinforce value. Avoid the “Skittles effect”

Font

Pick appropriate fonts for your audience. Stick to 2-3 at the most and be consistent in usage.

Balanc e

The eye tends to seek balance and will notice if your design is unbalanced. Use this principle to make your graphic visually pleasing.

Contras t

Use contrast (light/dark, big/small, thick/thin) to highlight/emphasize.

Hierarch y

Give your audience visual cues of what is the most important part of your message.

So what does 2012 mean for the economy?!?!?



Building Charts in Excel

1

Declutter your chart.

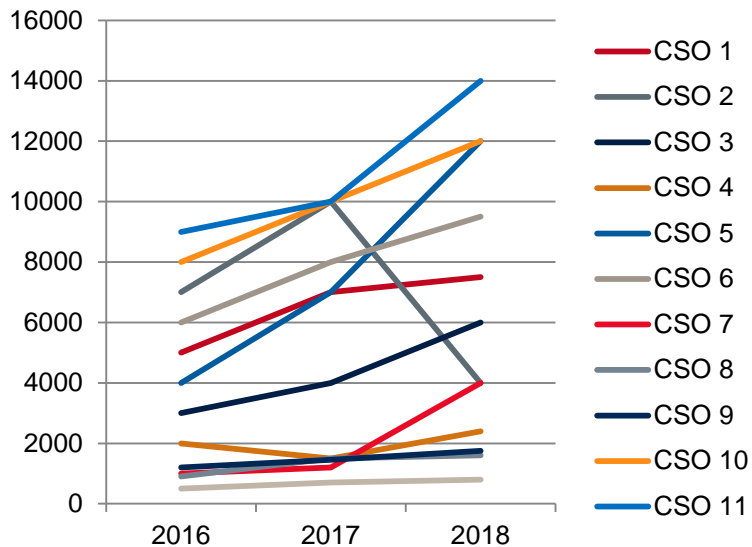
Or as Edward Tufte wrote:

**“Erase non-data-ink,
within reason.”**

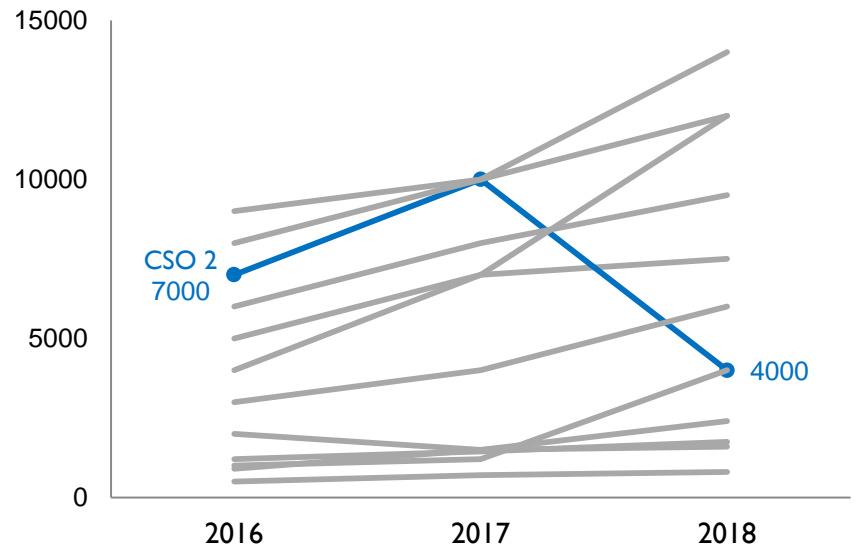


Edward Tufte
from *The Visual Display of Quantitative
Information*

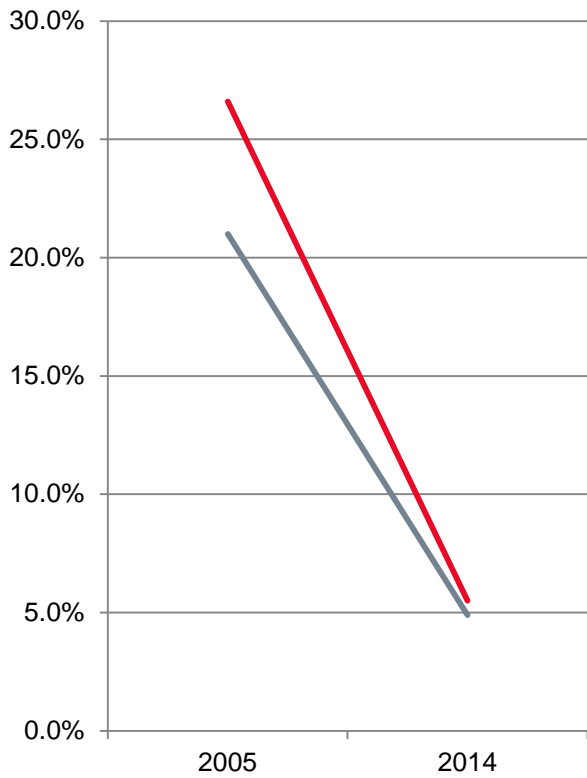
Remove the default lines, borders & tick marks that distract your audience.



BEFORE

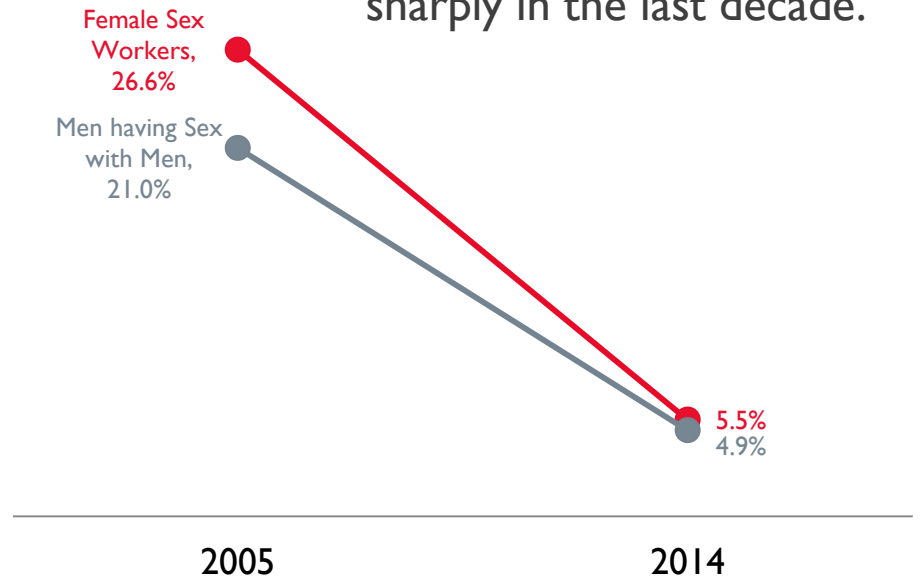


AFTER



BEFORE

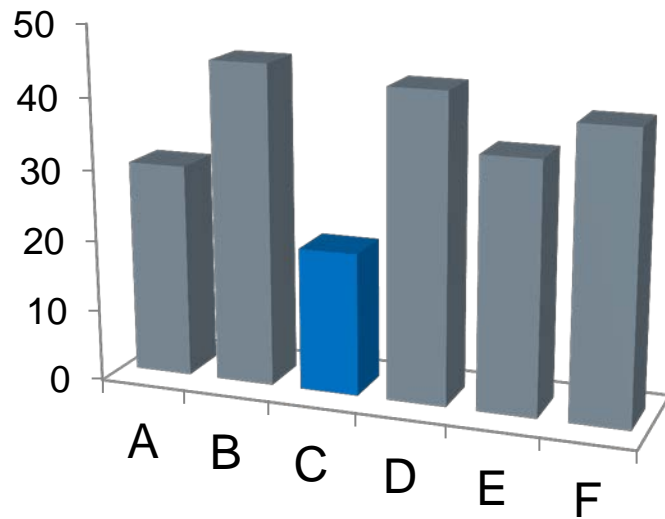
HIV Prevalence in Guyana's key populations has declined sharply in the last decade.



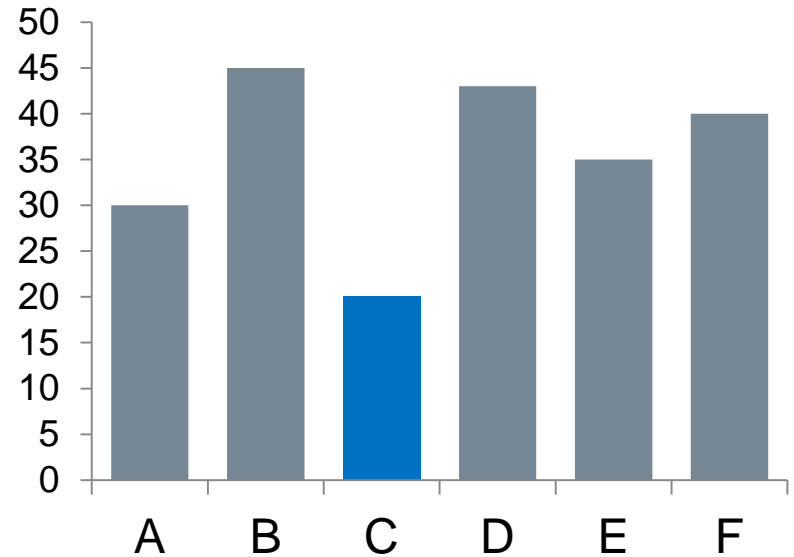
AFTER



Use 'flat design' and avoid 3D charts



BEFORE

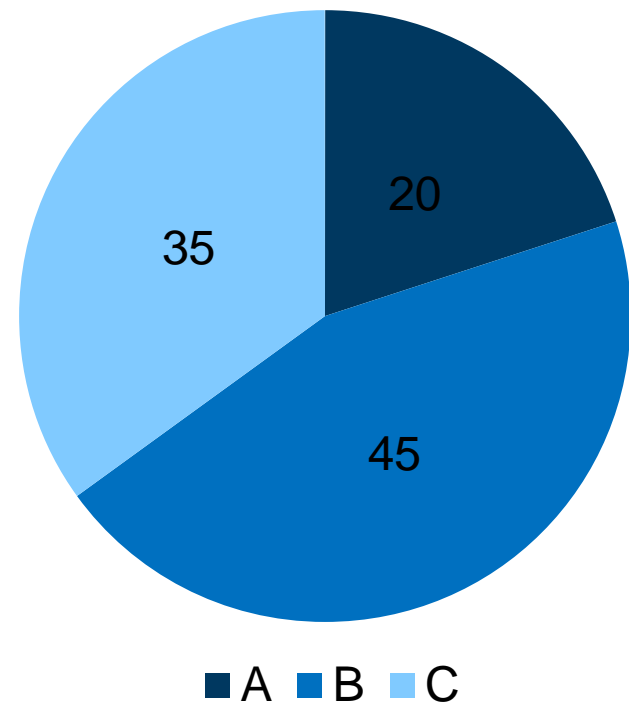
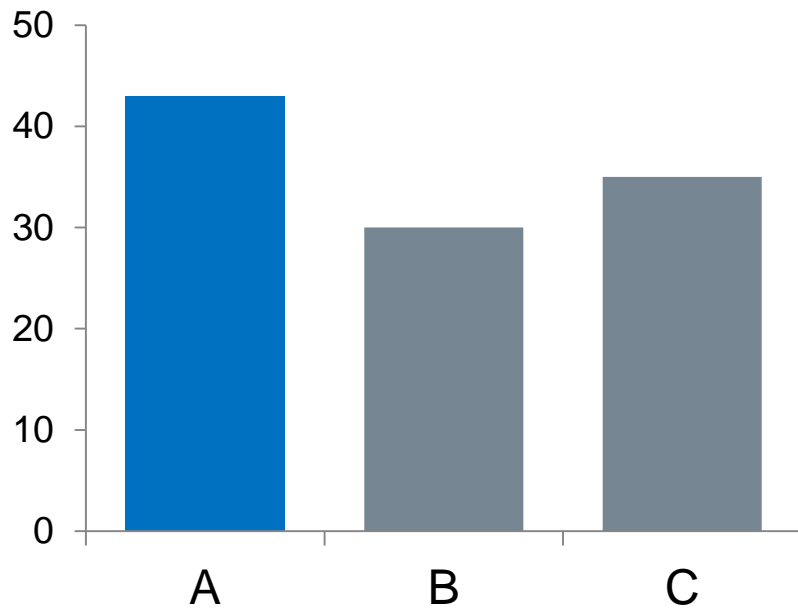


AFTER

BEST PRACTICE

For comparing charts, keep the style consistent

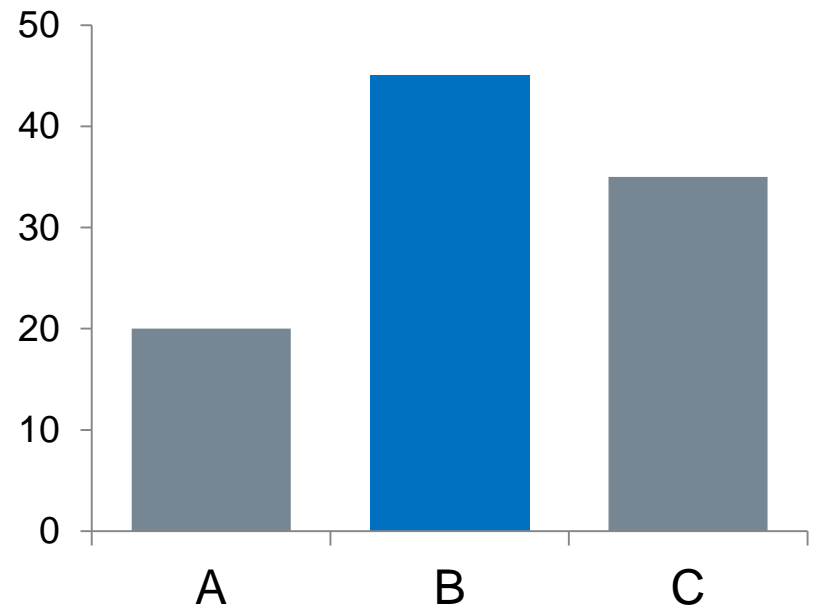
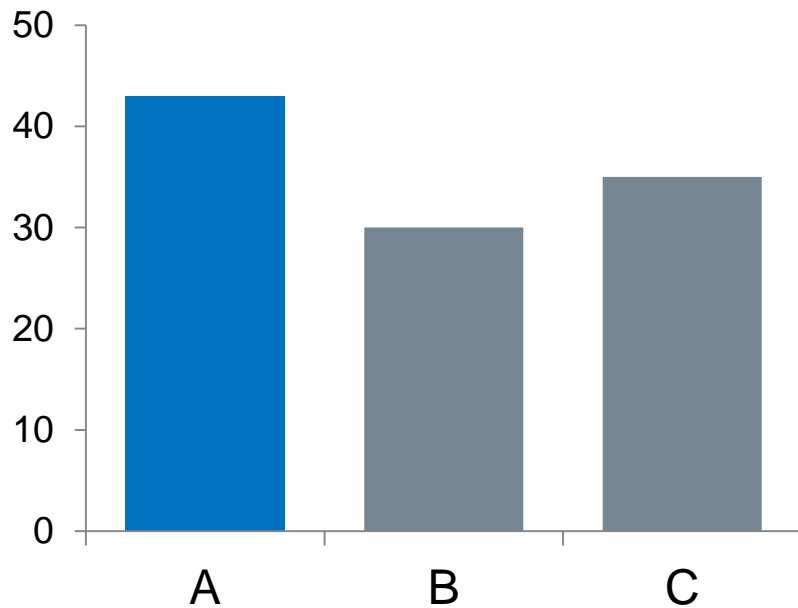
DON'T



BEST PRACTICE

For comparing charts, keep the style consistent

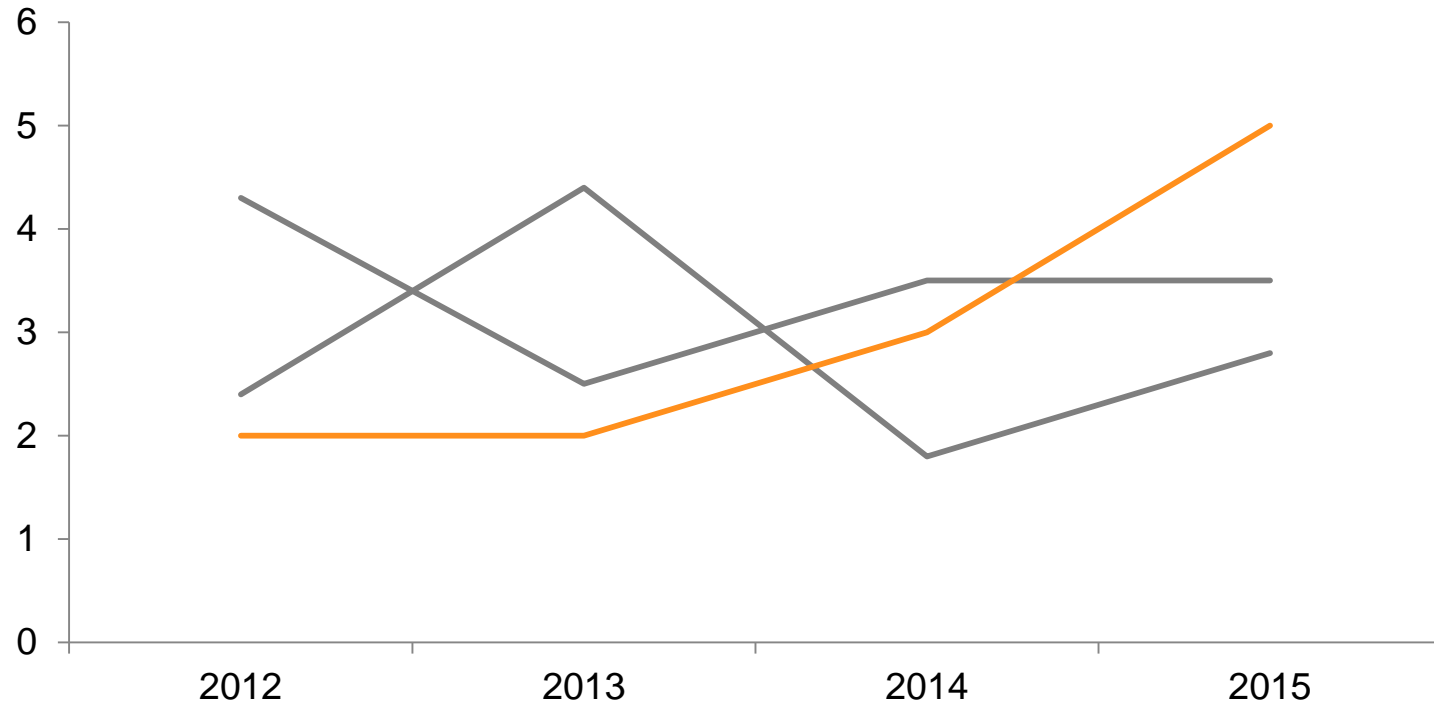
DO



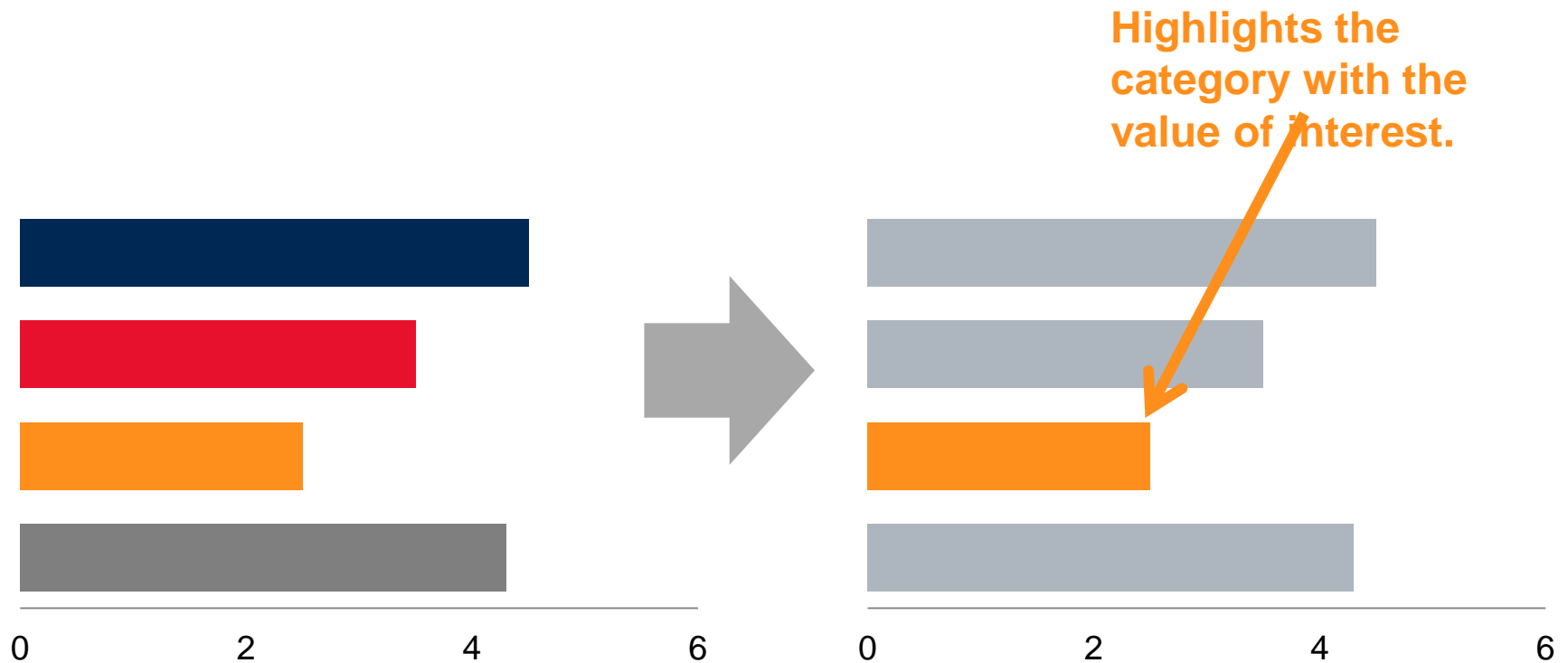
2

**Use color to add
impact.**

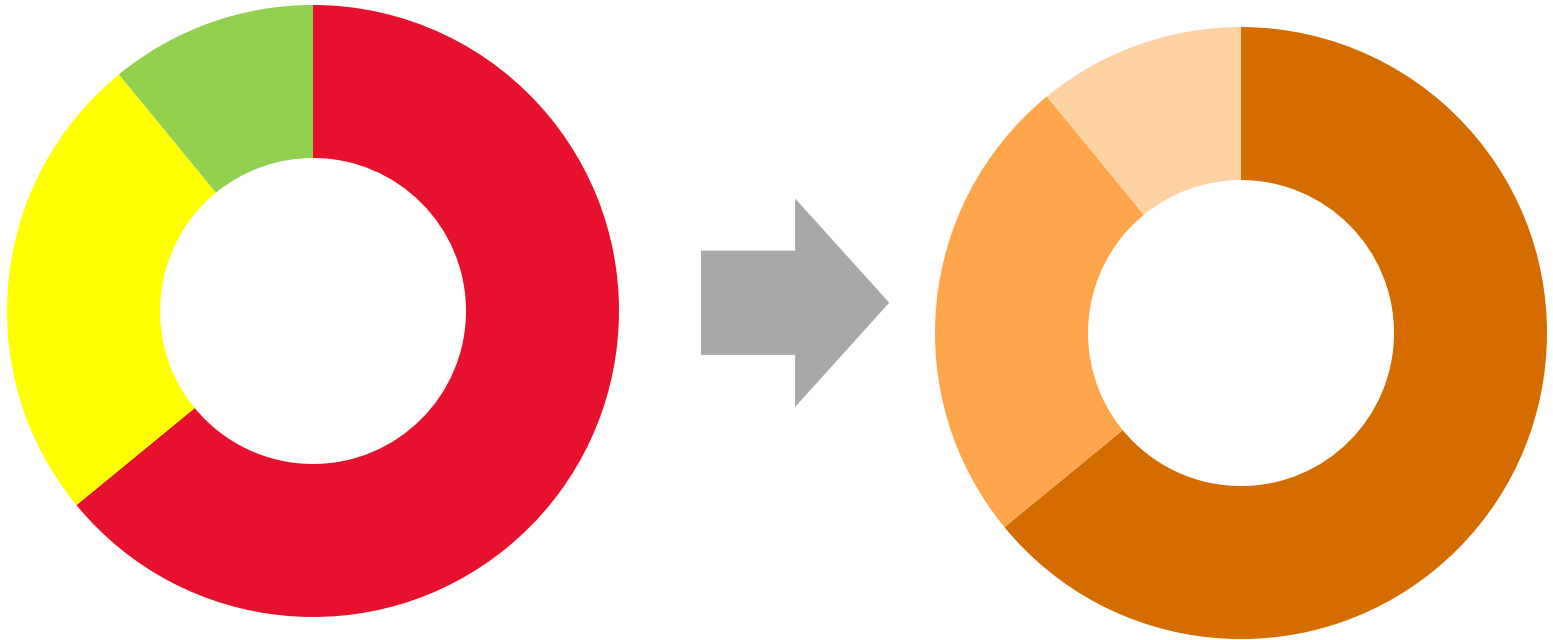
If you use **color sparingly**,
it becomes more **powerful**



Selective use of color helps the important points stand out.



Consider black & white printing and those who are colorblind.

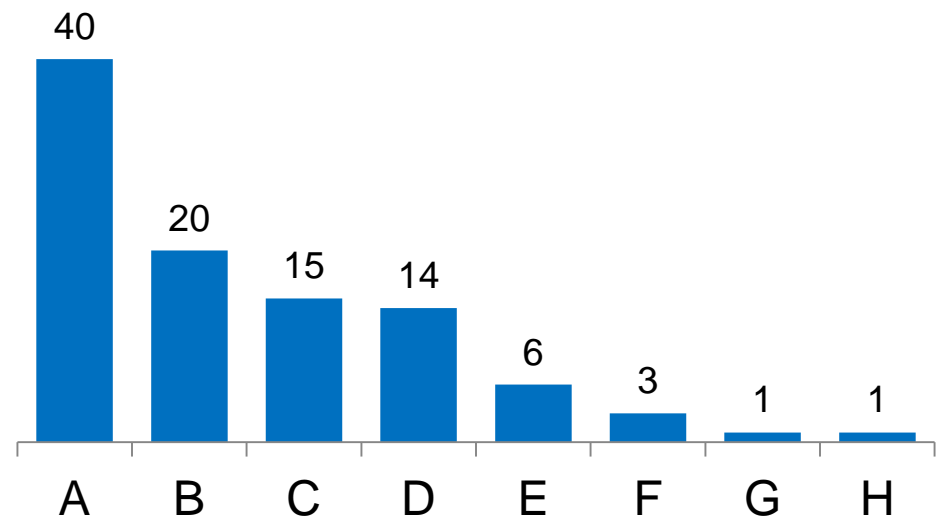
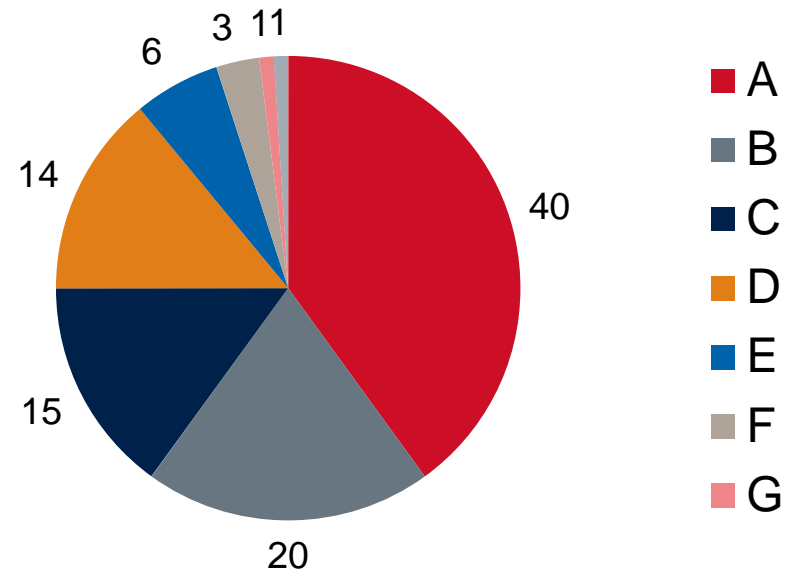


Read Stephanie Evergreen's excellent post on this topic for more details & alternatives:
<http://stephanieevergreen.com/no-more-red-yellow-green/>



BEST PRACTICE

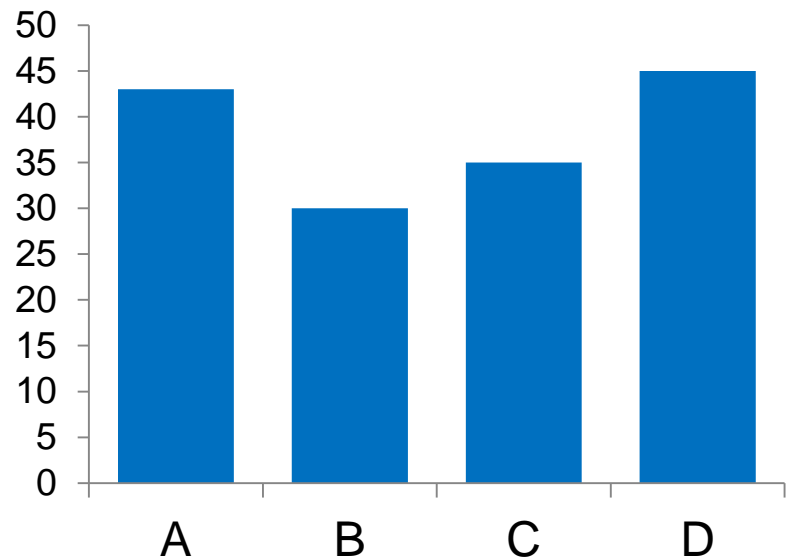
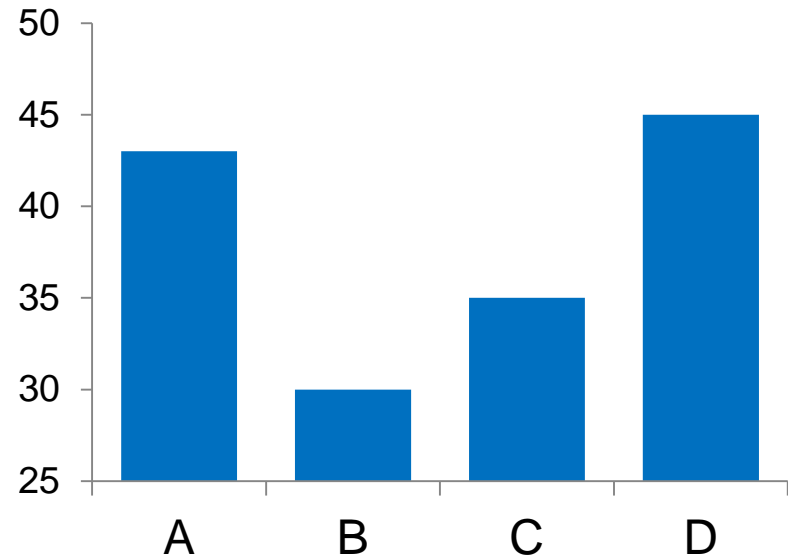
Avoid using pie charts if possible, especially for comparison





BEST PRACTICE

Use the full axis by starting at zero

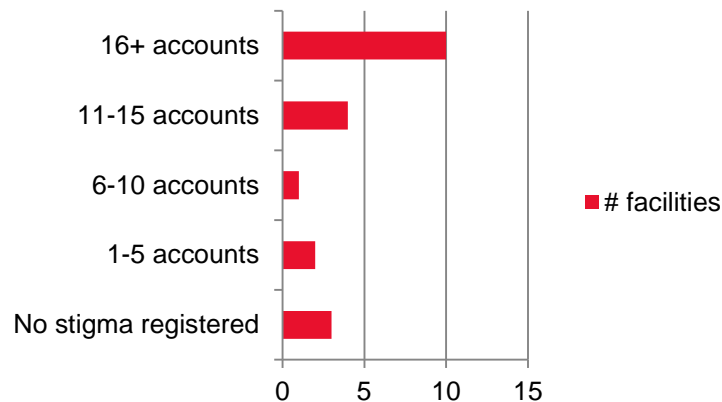


3

Create a purposeful title.

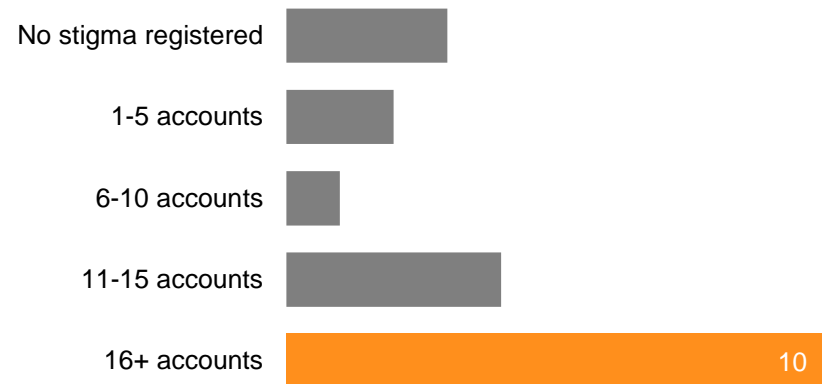
Are you clear and succinct, telling your reader the key takeaway?

facilities reporting incidents



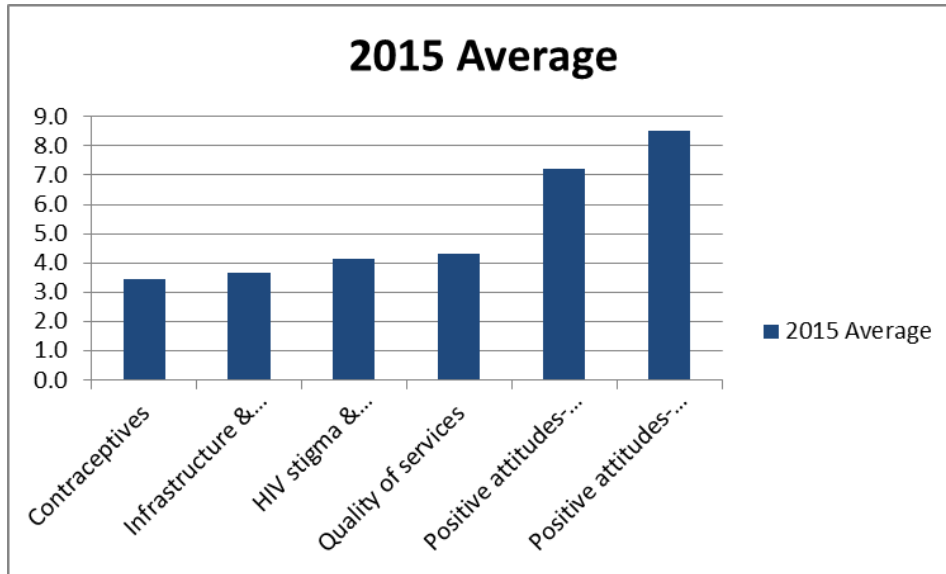
BEFORE

S&D remains a challenge: half of facilities reported more than 16 incidents last quarter.



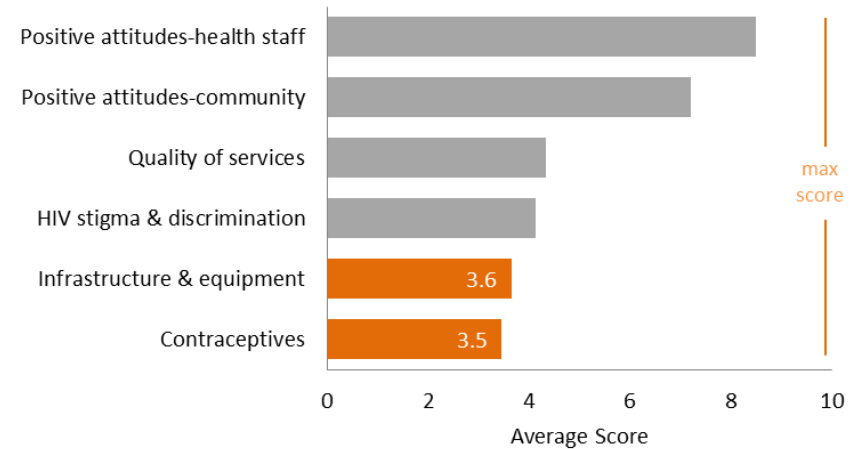
AFTER

Use data labels sparingly, reserving them for key data points.



BEFORE

Low scores in supply-side categories require national action to improve health services.

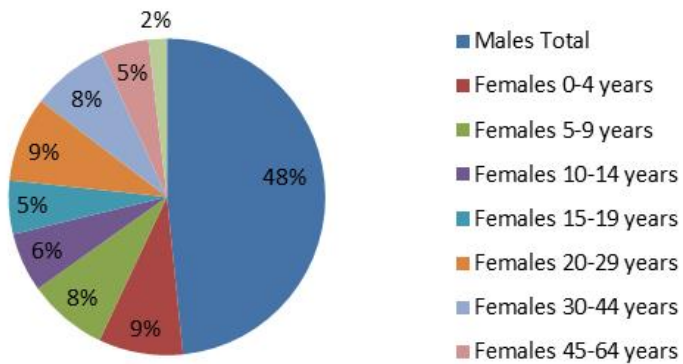


AFTER

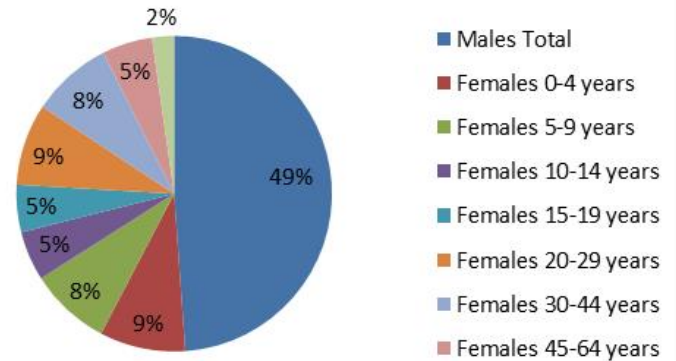
A QUICK EXAMPLE

VISUALIZING
POPULATION
DATA

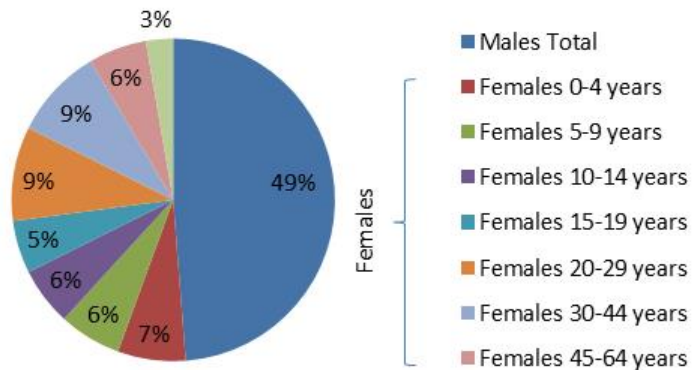
Burkina Faso 2009 Population Distribution, by Sex and Age



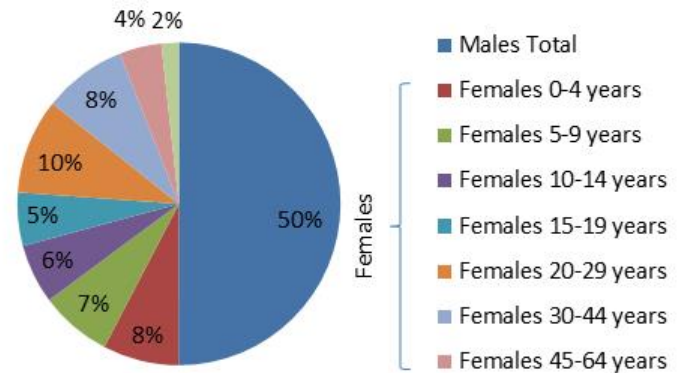
Guinea 1996 Population Distribution, by Sex and Age



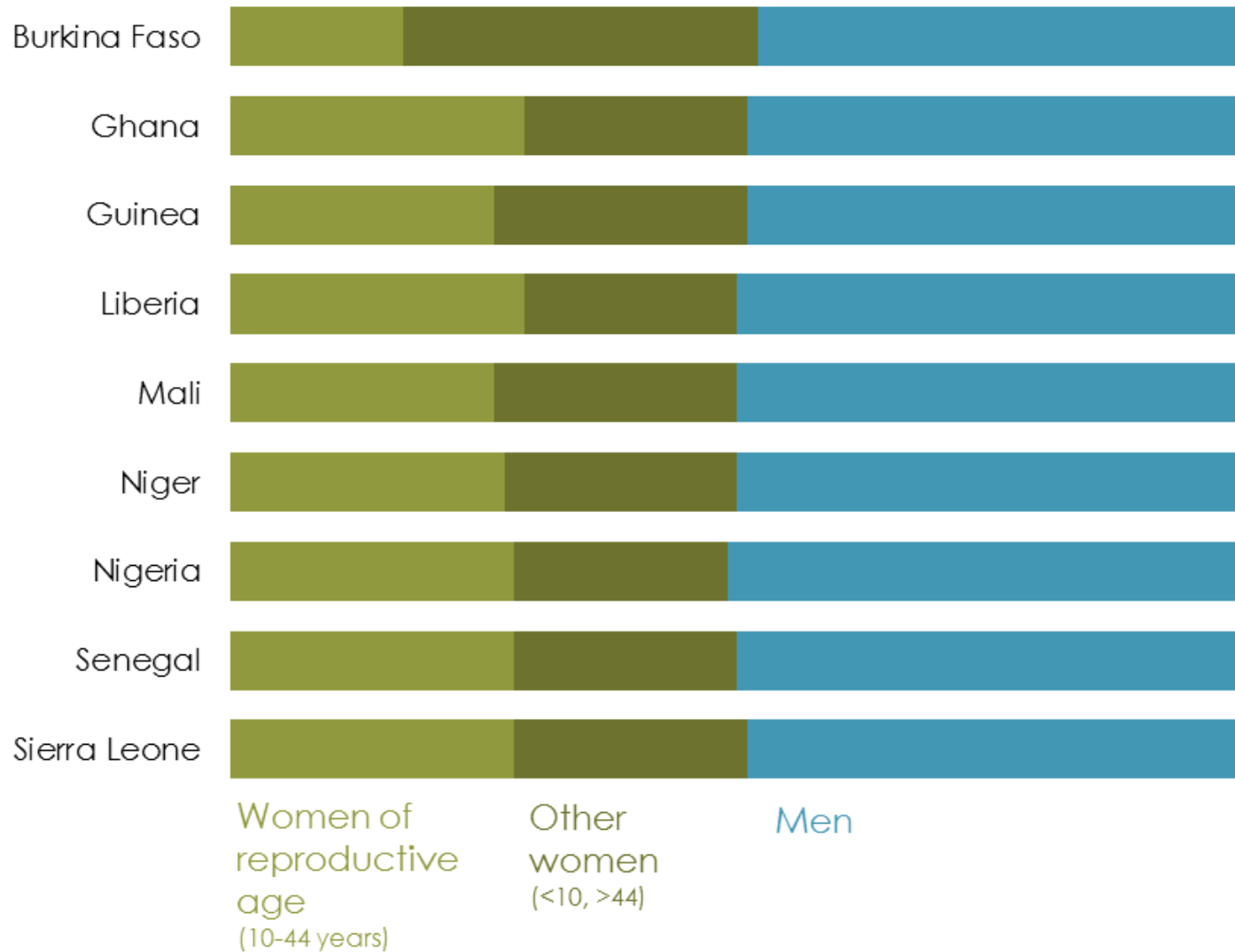
Ghana 2013 Population Distribution, by Sex and Age



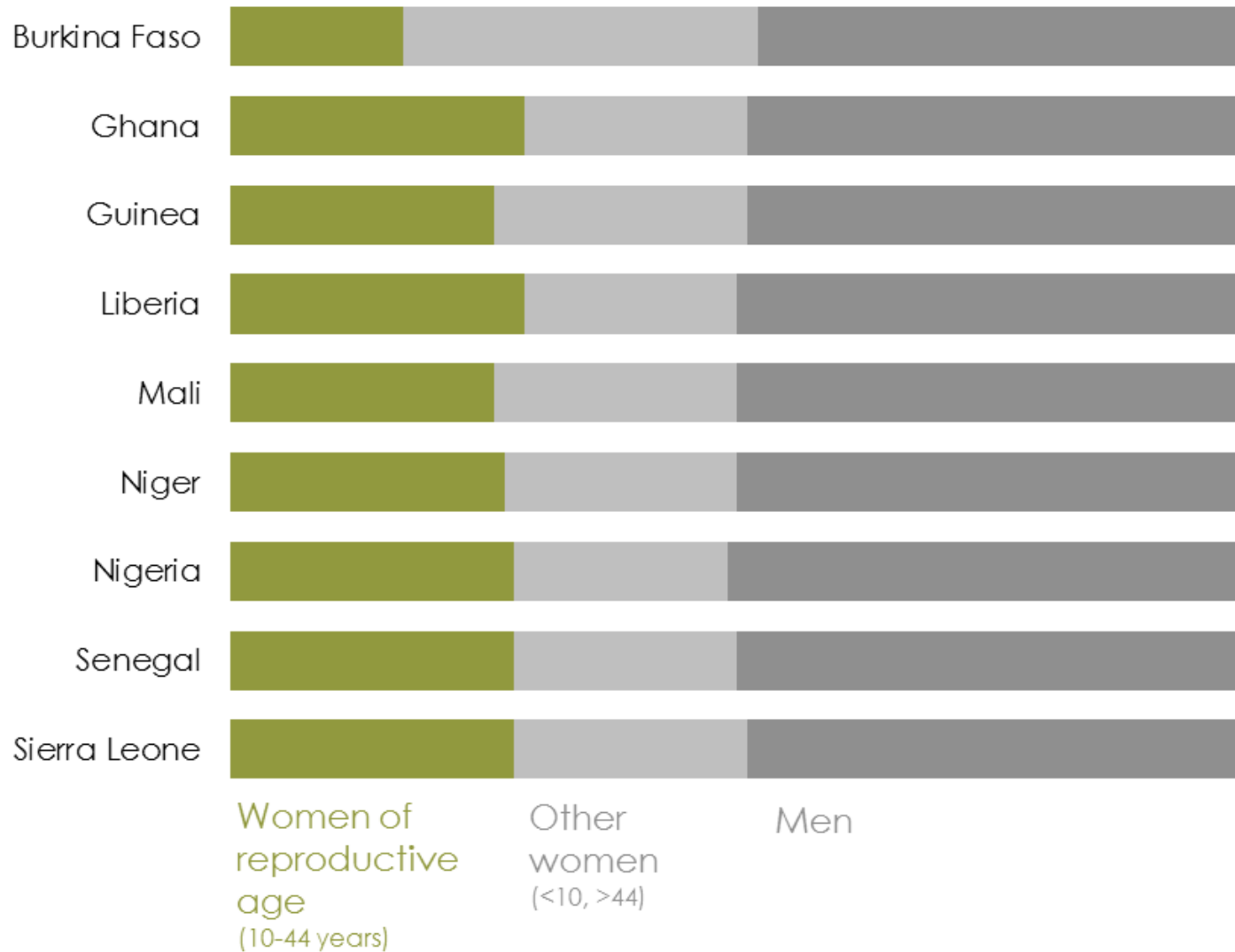
Liberia 2010 Population Distribution, by Sex and Age



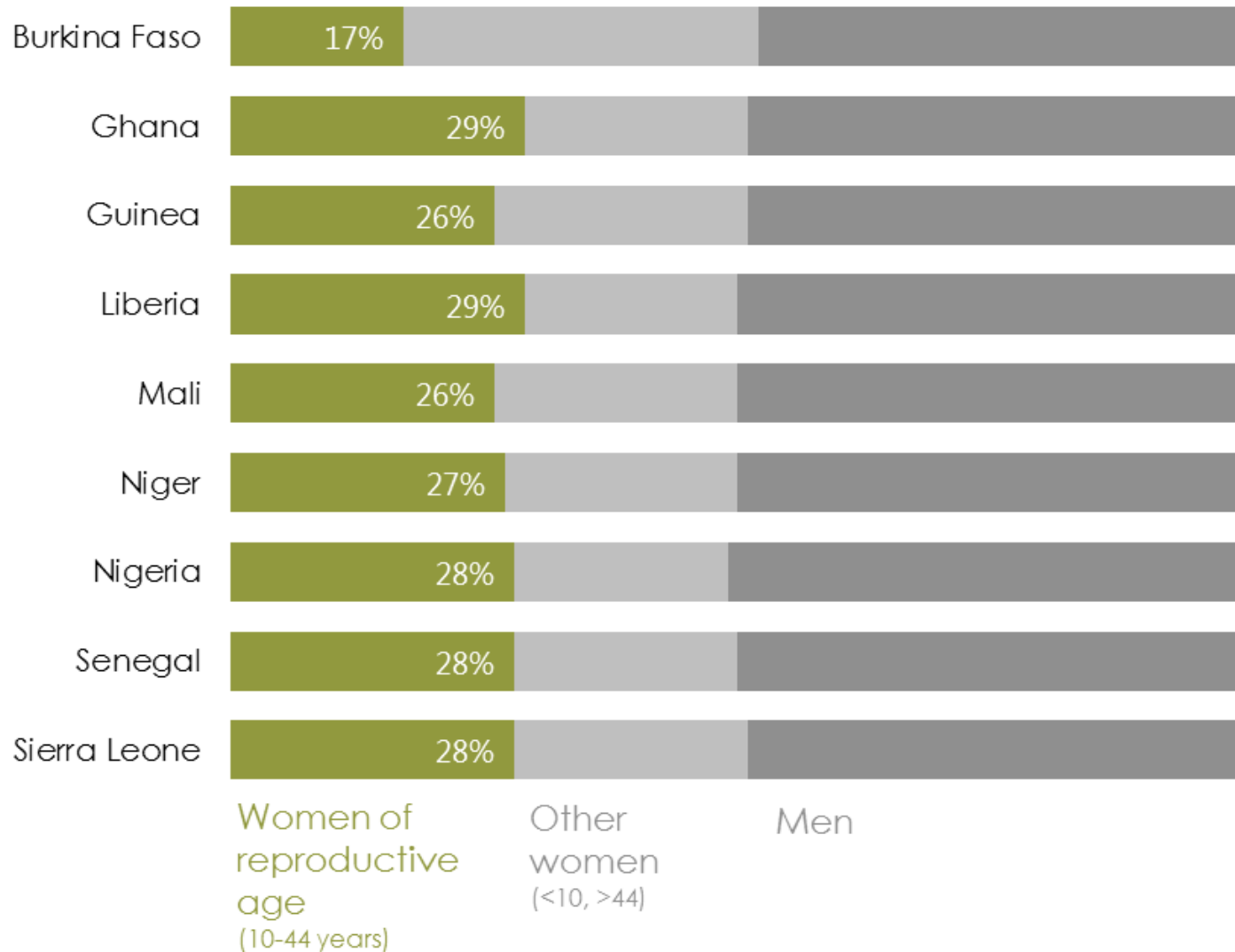
What proportion of the population do women of reproductive age represent?



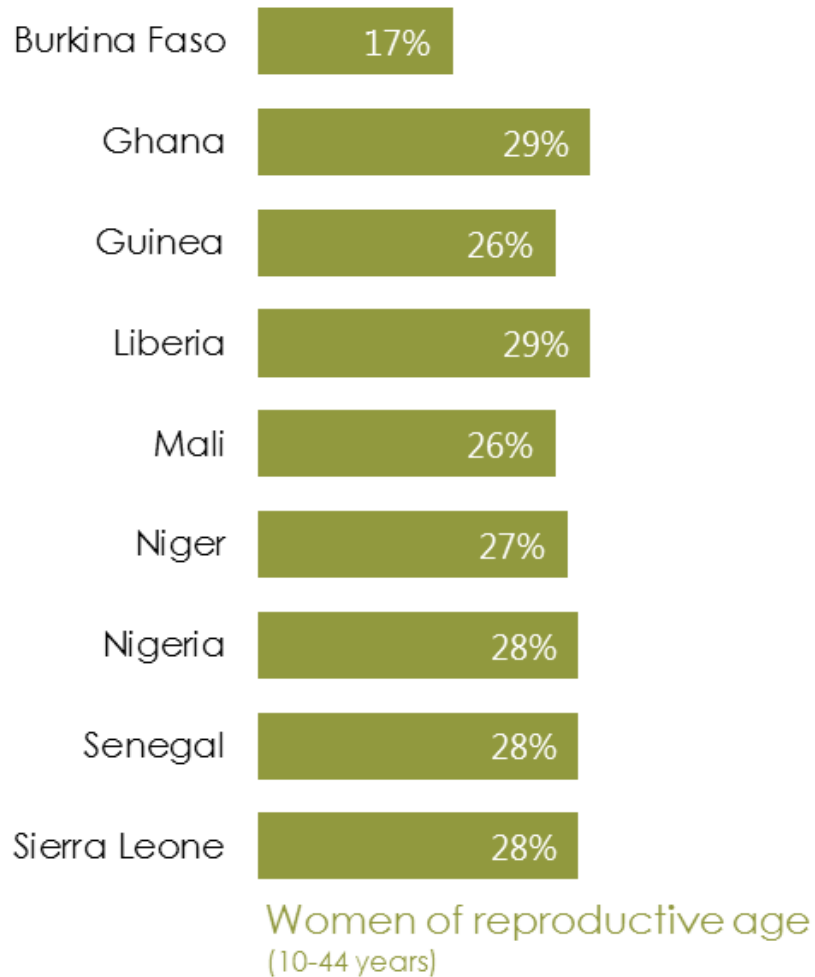
What proportion of the population do women of reproductive age represent?



What proportion of the population do women of reproductive age represent?



What proportion of the population do women of reproductive age represent?



Creating an Infographic in Piktochart

Infographic Resources

INFOGRAPHIC RESOURCES

Websites

1 Canva
<https://www.canva.com/>

2 Piktochart
<https://piktochart.com/>

3 Vennage
<https://venngage.com/>

4 Easel.ly
<https://www.easel.ly/>

Icons

5 Flat Icon
<http://www.flaticon.com/>

6 The Noun Project
<https://thenounproject.com/>

**THANK
YOU.**



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