



# Intro to Critical Thinking

# Today's goals

## Improve your thinking and your success in life by:

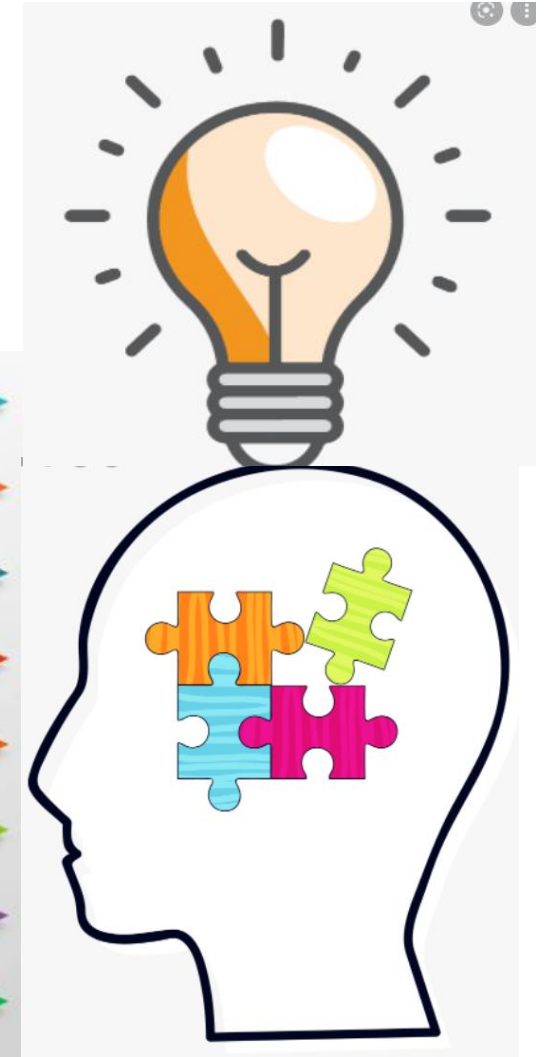
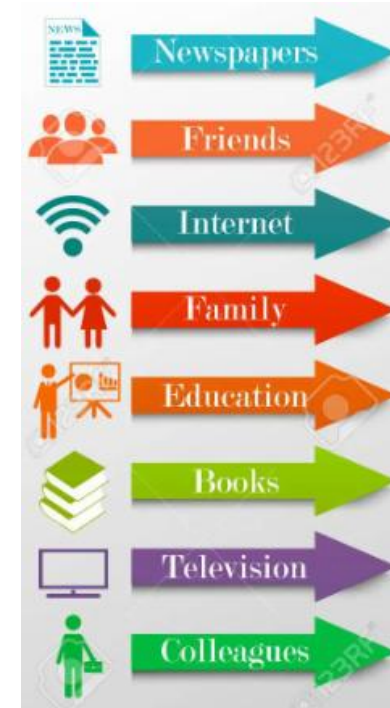
- Introducing you to **what is Critical Thinking** and **why you should care**
- Showing you how **each of our life experiences creates a lens for how each of us view the world around us** and how it **creates bias in each of us**
- Improving your understanding that **most forms of media as well as input from everyone with whom we interact likely comes with biases affecting the quality of information we receive**
- **Seeking out information & knowledge that comes from quality sources with differing perspectives** improving your Critical Thinking leading to better decision-making.

# Today's in-depth focus

1. Why do you think the way you do and why that is likely different than others
2. Media and information bias - how to avoid it or use it to gather different viewpoints

# What is Critical Thinking?

Critical Thinking is the ability to **think clearly & rationally** by evaluating several different sources of information objectively to make informed decisions.



# Critical thinkers will...

- Identify and clarify a problem or opportunity
- Collect data and/or information from several sources and perspectives
- Evaluate the quality and validity of the data & information
- Use this data & information to analyze & solve problems or look at opportunities systematically rather than by intuition or instinct.

# What is not Critical thinking?

Making decisions based on emotion or gut feel based on your biases – “I feel...”

Simply accepting comments by others or articles on the internet or other media without examining their validity

Making decisions based on one source of information, particularly from biased or poor-quality sources

Making decisions based on rules-of-thumb – “It usually....”

Making decisions **without** listening to or reading arguments coming from different perspectives “I don’t care what you say...”

*Many people seek out news and information that supports their gut feel and biases and they reject news and information that doesn’t support their gut feel / bias as untrue without really examining both types for validity*

# Why is Critical Thinking important?

Critical Thinking helps you make the best decisions for you and others!!!

**It is valued** by individuals, organizations & businesses likely leading to your views being accepted and your recommended action steps being executed

- **It is a skill that organizations want** in their leaders and advisors
- This skill **will likely lead to promotions, financial bonuses, & awards over your lifetime**

***It pays in many ways to be a Critical Thinker!***

# What is fundamental to Critical Thinking?

Understanding your biases!

Being able to create an understanding of the key issue or opportunity

Sticking to a **systematic method** to collect information, analyze it, & draw conclusions

Willingness to **spend the time & effort to gather** information that **both supports and refutes** your initial thoughts and biases on the matter

**Spending the time & effort to organize** the information in a way that allows you to **effectively evaluate it objectively before drawing any conclusions**

Not letting your **emotions** get in the way and drive your decisions

Having an **open mind** and **willingness to listen to others with different perspectives**



# Barriers to Critical Thinking

Your conscious and unconscious bias

Not investing the time and effort to collect diverse information for your analysis and conclusions

An over-reliance on feelings or emotions

An over reliance on what you think to know

*(For those of you have taken the Decision Science class, remember all the quotes from **very smart people or organizations that missed tremendous opportunities or made mistakes because they felt they “knew better”**)*

Self-centered or societal/cultural-centered thinking (conformism, dogma and **peer-pressure**)

***Who here has had to argue both sides of an argument?***

***What was your experience?***

# Understanding your bias

*Your view of the world around you is shaped by your life experiences to date!!!*

*Think about how I might view the world and interpret things I see, hear, and read if I said:*

“I grew up in the USA during the mid 20<sup>th</sup> century in a white, middle class, republican, Christian home with a traditional family structure, loving parents, and no drama in a neighborhood and school that was similar.”

*Now just changing even one of those facts might make a significant difference in how I might see the world. Try substituting the following or your situation and think how that might change how I would see the world and interpret things I see, hear, and read differently...*

19 <sup>th</sup> century	Haiti	Black	Rich	Democrat	Muslim	Non-traditional	An environment	Neighborhood
21 <sup>st</sup> century	Mexico	Hispanic	Poor	Libertarian	Hindu	family structure	full of drama	and/or school
	Russia	Indian	...	Extremist	Buddhist		and/or pain	is different
	China	....		...	Agnostic		e.g. alcoholism,	than my
	Africa				Atheist		drug use,	family/me
	...				...		abuse, crime	

# Some of your biases can and likely will change over time

To the extent that you...

- are exposed to people, situations, and things that are different
- you have a significant emotional event
- you make a conscious decision to look at people and things from different perspectives

some of your biases will likely change.

*What if I added to the previous slide....*

*“After graduating from middle school, I was a minority student in high school and during my career I traveled extensively all over the world meeting and working closely with people from many different cultures and in many different situations.”*

*How might this change my view and biases?*

*Can you think of events in your life that changed how you look at things?*

# Sources of information – Bias and Quality

Where do you get your information?

Do you feel it is of good quality? How do you or would you know?

Do you feel it is biased? How do you or would you know?

What are your thoughts with regards to information and positions coming from politicians? Does it depend on which party? Why or why not?

What are your thoughts with regards to information and positions coming from “The Media”? Does it depend on which media source? Why or why not?

# Understanding the bias and accuracy of various media outlets / Sources of low biased information

- **Ad Fontes** – [www.adfontesmedia.com](http://www.adfontesmedia.com) is an excellent resource for showing accuracy and bias of various media outlets. Their methodology is to have:

Groups of 3 (one who leans left, one that is centered, and one that leans right) from a pool of 40 analysts review articles from media outlets and score each article on a number of parameters that leads to overall scores for accuracy and bias of each article. Based on multiple articles reviewed by various groups of 3, an overall score for the media outlet determined

- **Allsides** - [www.allsides.com](http://www.allsides.com) – is another excellent resource for showing bias in various articles and media outlets.

They do not provide an accuracy score but do provide an analysis of current events with views from all sides

- [www.USAFacts.org](http://www.USAFacts.org) is an excellent resource for facts

# AllSides™ Media Bias Chart™

All ratings are based on online content only — not TV, print, or radio content.  
Ratings do not reflect accuracy or credibility; they reflect perspective only.



AllSides Media Bias Ratings™ are based on multi-partisan, scientific analysis.

Visit [AllSides.com](https://www.allsides.com) to view hundreds of media bias ratings.

Version 5.1 | AllSides 2021

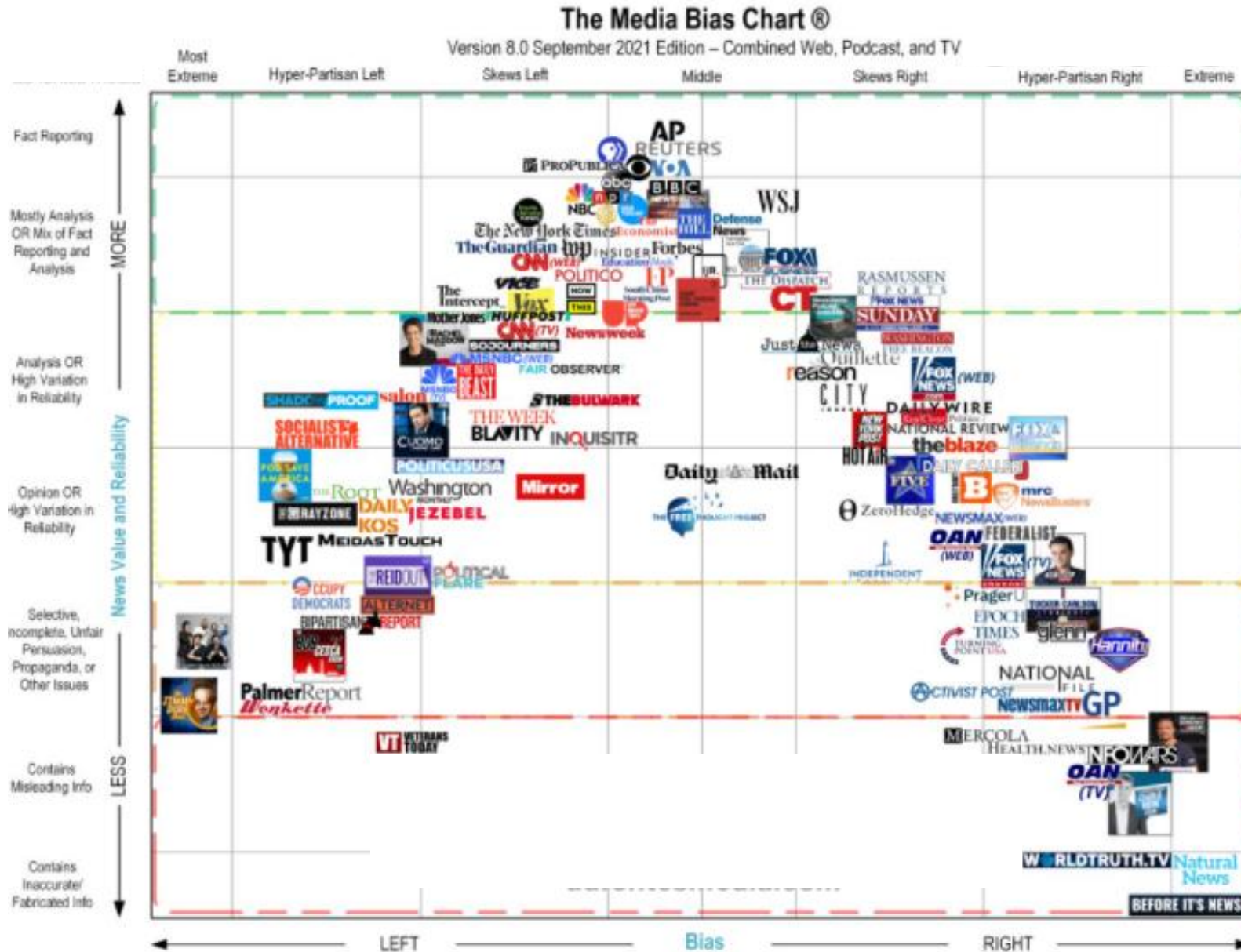
## Sources of Information and their likely bias

### Notes:

1. While the group that did this analysis of media is made up of individuals that have various biases and clearly not all the individual articles by different writers at a particular media company fall into the same bucket, this still is a reasonable indicator of bias in media in general and what typical positions are taken at the particular sources
2. Media sources with red circles show that “news” from them is less biased than the “opinion” articles



# Sources of information – Bias & Quality

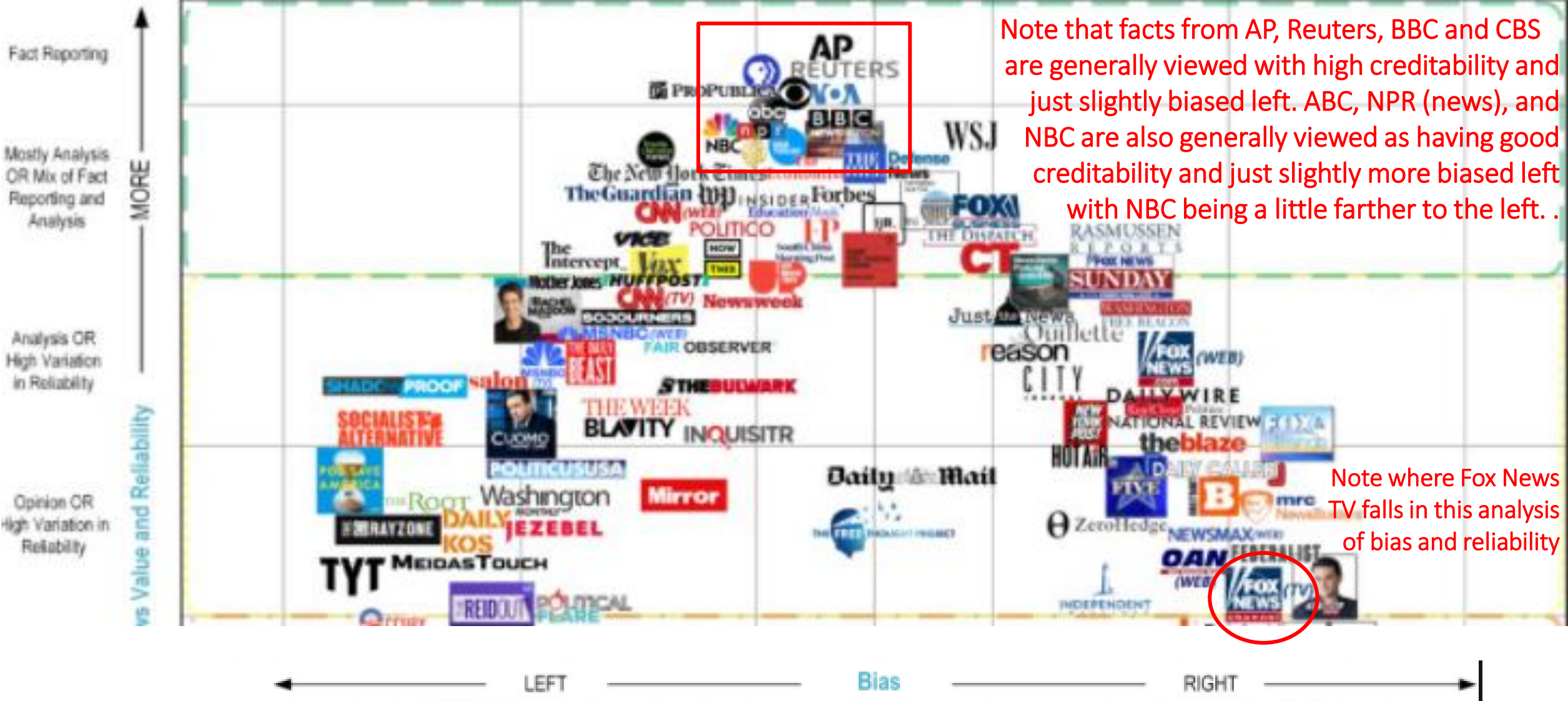


*The same note from the previous slide applies here too and probably applies to the quality dimension as well, but this is still a good reference to understand the bias and quality of information coming from these sources*

# The Media Bias Chart ®

Version 8.0 September 2021 Edition – Combined Web, Podcast, and TV

Most Extreme    Hyper-Partisan Left    Skews Left    Middle    Skews Right    Hyper-Partisan Right    Extreme





# Summary

- Critical Thinking is the ability to think clearly and rationally by evaluating several different sources of information objectively to make informed decisions.
- Critical Thinking involves a clear understanding of the problem or opportunity, researching the relevant data and information from multiple good accuracy sources with no or differing biases, analyzing this information for validity, using this data and information to analyze and solve problems or look at opportunities systematically rather than by intuition, instinct, or emotions.
- Critical Thinking helps you make the best decisions for you and others.
- It is valued by individuals, organizations and businesses likely leading to your views being accepted and your recommended action steps being executed

# Optional material – Media Example

# Critical Thinking — Media Example 1

Headline:

**42% increase in shark attacks in Florida in 2021  
compared with 2020**

*Your thoughts?*

*Will your thoughts influence whether or not you will go in the Gulf if you are at the beach? Why or why not?*

# For our shark attack question and decisions, you collect some data...

## *Per CBS News:*

“There have been an average of 25 shark attacks in Florida over the last 5 years.”

“That number ticked to 28 in 2021.”

*“17 of those attacks took place in Volusia County”...  
“which includes Daytona Beach”*

*You find that many of the articles draw from the following data source:*

[International Shark Attack File – Florida Museum of Natural History \(ufl.edu\)](https://www.floridamuseum.org/shark-attack-file)

## *Per Outdoor Life:*

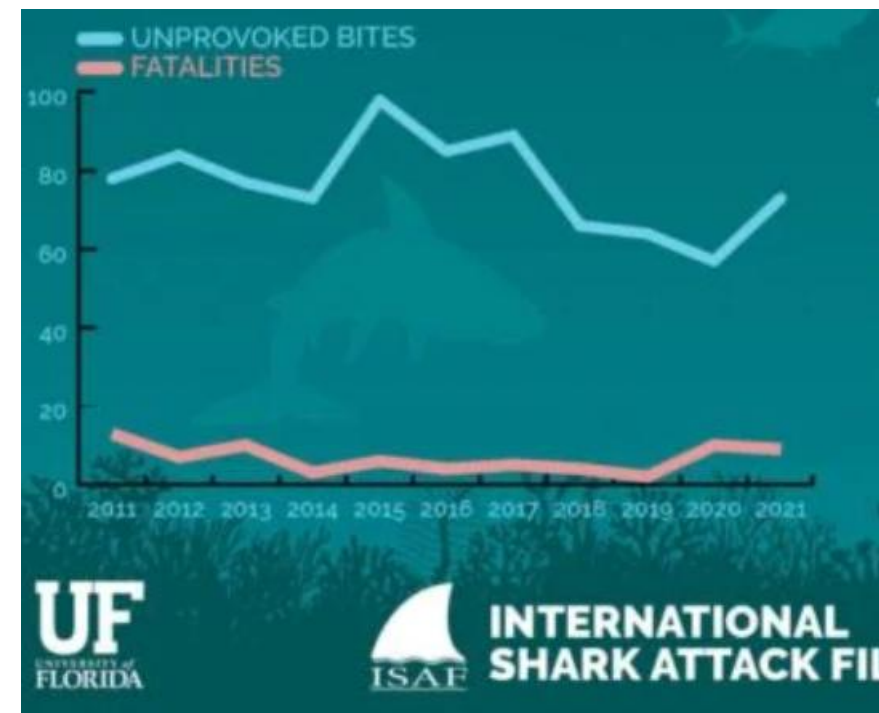
“Florida Accounted for Nearly 40 Percent of Shark Attacks Worldwide in 2021”

“Human-shark encounters increased globally in 2021 after three years of decline”

## *Per USA Today:*

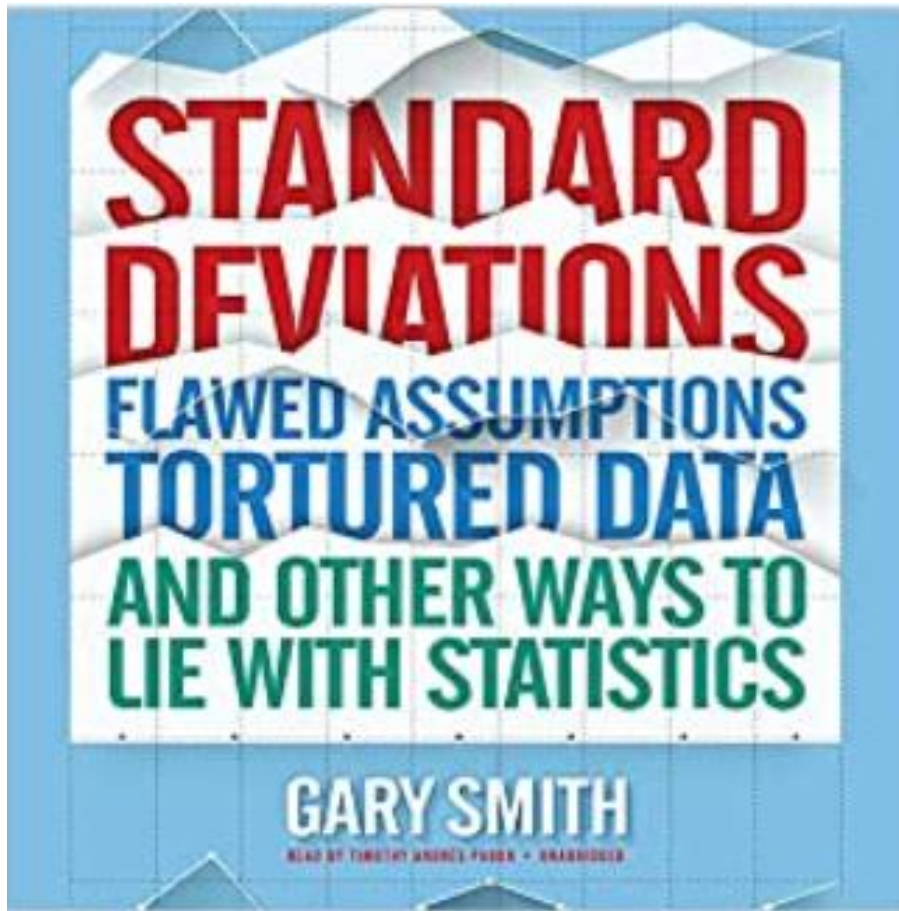
“2020 was an 'unusually deadly year' for shark attacks, with the most deaths since 2013”

Worldwide



# Understanding data

*When tortured, the data will confess to anything!*



To be a critical thinker, it is important to gather data and information from multiple sources if available and look at it from different perspectives.

If you are looking for data to simply support a “gut-feel” position you have, you are not thinking critically.

Many if not most of the articles you hear and read have been written in a way to sway you to the author’s position on the matter

Frequently parts of the data are emphasized to “sensationalize” an article to pull you in to reading and/or to convince you to take the author’s position

# You examine the shark data and do some analysis...

From the data from generally reliable sources, you know there were 28 attacks in 2021 and that was a 42% increase.

Relying on your algebra 😊 Assume X is # of shark attacks in 2020.

$$X * (1 + 42\%) = 28 \text{ attacks}$$

$$1.42 * X = 28 \quad \text{Therefore } X = 20 \text{ attacks in 2020}$$

You also know there was an average of 25 over the last 5 yrs.

Now let Y = the average # of attacks between 2017 and 2019

$$25 \text{ attacks/yr.} = ((3 * Y) + 20 + 28) / 5$$

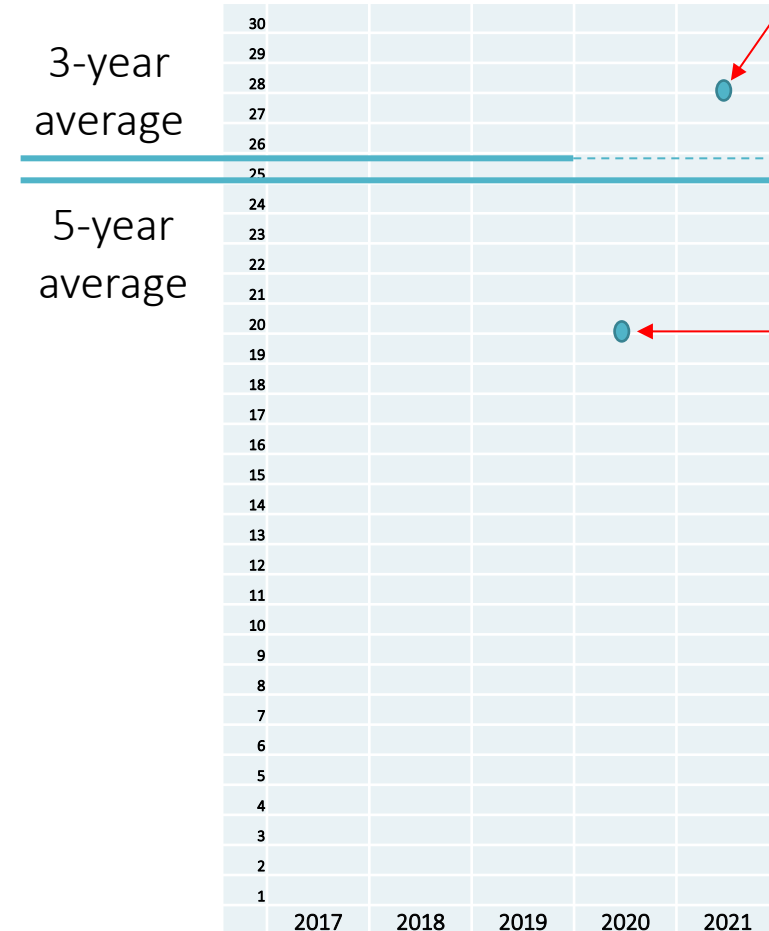
$$125 = 3 * Y + 20 + 28$$

$$125 = 3 * Y + 48$$

$$77 = 3 * Y$$

$$Y = 25.7$$

25.7 was the average from 2017 through 2019



$$\begin{aligned} & (28 - 25.7) / 25.7 \\ &= 1.3 / 25.7 \\ &= .09 \\ &= \text{9\% increase} \\ & \text{over 2017-2019 avg.} \end{aligned}$$

$$\begin{aligned} & (20 - 25.7) / 25.7 \\ &= -5.7 / 25.7 \\ &= -0.25 \\ &= \text{22\% decrease} \\ & \text{compared with} \\ & \text{2017-2019 avg.} \end{aligned}$$

*What are your conclusions?*

# Shark attack conclusions and next steps

The headline... *“42% increase in shark attacks in Florida in 2021 compared with 2020”* while true, is misleading with likely intent to grab your attention to read the article

*Are shark attacks really increasing?*

- One would need to look at more data and do a statistical analysis to know for sure.
- Secondly if you wanted to understand your personal risk over time, you would have to understand how many people-hours in the water for each year to know if shark attacks were increasing on a person-hour in the water basis
- What else would you need to know if sharks were becoming more aggressive?

*With the facts present in the article, it appears the more interesting point statistically is the 20 attacks in 2020?*

*What may have accounted for that?*

# Understanding probabilities

*Let's hypothetically say you performed a very thorough analysis and found shark attacks might be increasing on a per year basis...should you avoid going in the water?*

Comparison of Unprovoked Shark Attacks with the Number of Lightning Fatalities in Florida : 1959-2010

	NUMBER OF LIGHTNING FATALITIES	NUMBER OF SHARK BITE FATALITIES
Florida	459	9
	51:1	

Source of shark attack data:  
International Shark Attack File.

Source of lightning data: Lightning Fatalities, Injuries and Damage Reports in the United States from NOAA.

A Comparison of Shark Attack and Bicycle-Related Fatalities 1990-2009

FLORIDA BICYCLE INJURIES	FLORIDA SHARK BITE INJURIES	FLORIDA BICYCLE FATALITIES	FLORIDA SHARK BITE FATALITIES
112,581	439	2,272	4
258:1		568:1	

Source of bicycle injuries and fatalities data:

NHTSA Fatality Analysis Reporting System

Florida Department of Highway Safety and Motor Vehicles

Source of shark attack data: International Shark Attack File

*What are your conclusions?*