

b/c you need to be smarter than that...

# Reading Science for Skeptics

# What is a skeptic?

- Someone who will not (necessarily) accept statements as fact
- Unsure, questioner, doubter
- Someone who THINKS!!

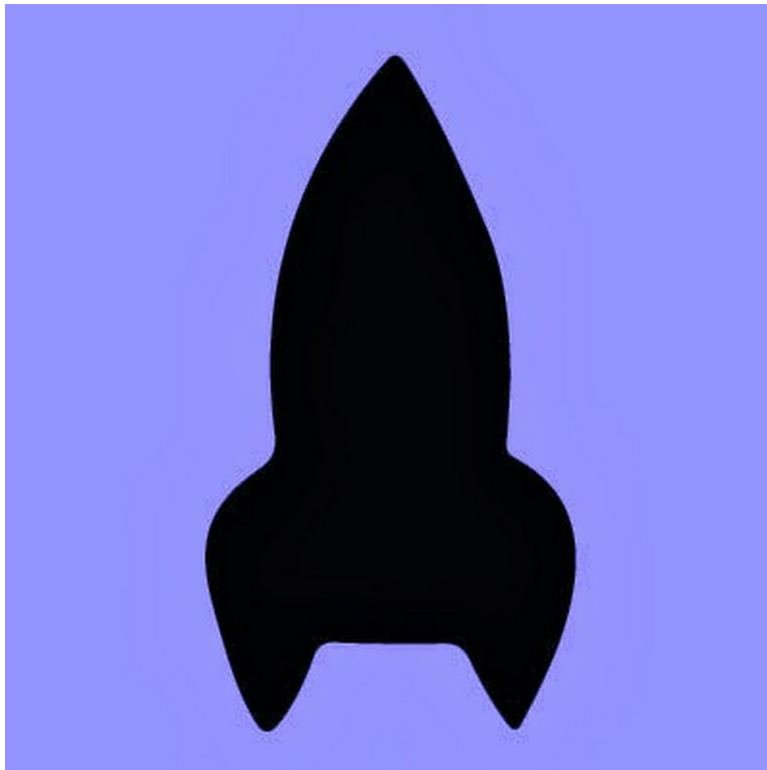
# Is this a bad thing??

- Of course not!
- BUT... you should approach all (science) reading with a balance of curiosity and skepticism
  - Be open-minded!



**DEMAND  
EVIDENCE  
AND  
THINK  
CRITICALLY**

# It's OK To Be Smart



- [http://youtu.be/  
LHew7MqP4UM?  
list=FLjgN7p1qoyX  
DSitEGegocIA](http://youtu.be/LHew7MqP4UM?list=FLjgN7p1qoyXDSitEGegocIA)

# Is the headline a question?

- Look for “quotes”
- Skip the headline?

# Press Release or real News?

- PRs are NOT news
- A well-written science news article looks at the topic from multiple perspectives, with varying viewpoints and voices.
- A press release may be a credible source of information, but it is only a start. Well written science news articles will include more

## Press Release

## News

Published by a university, research organization or govt. agency

Published by a reputable news organization like: Scientific American, JAMA, BBC, etc

Positive portrayal of the research; discovery and findings are placed in a positive light

Asks tough questions: how expensive, dangerous, accurate, etc. Asks the “yes-but” questions

Generally not skeptical or negative

Maintains a skeptical or neutral view

Biased in favor of the university, research organization or govt. agency or source of funding

Little if any bias

Few, if any outside sources

Includes multiple outside sources (voices) with varying viewpoints/perspectives

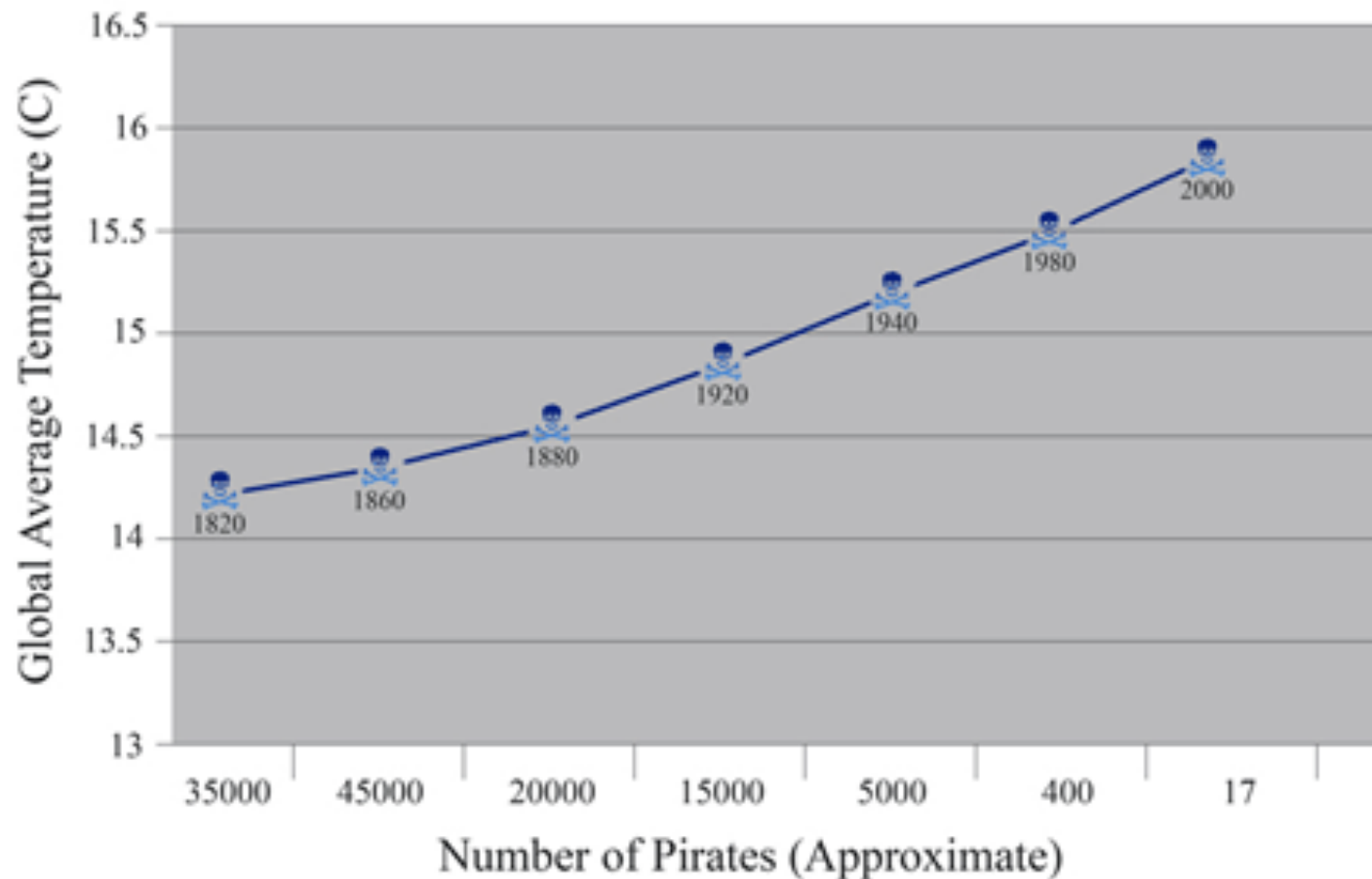


# Look for Warning Words

- link
- correlation
- association
- possible

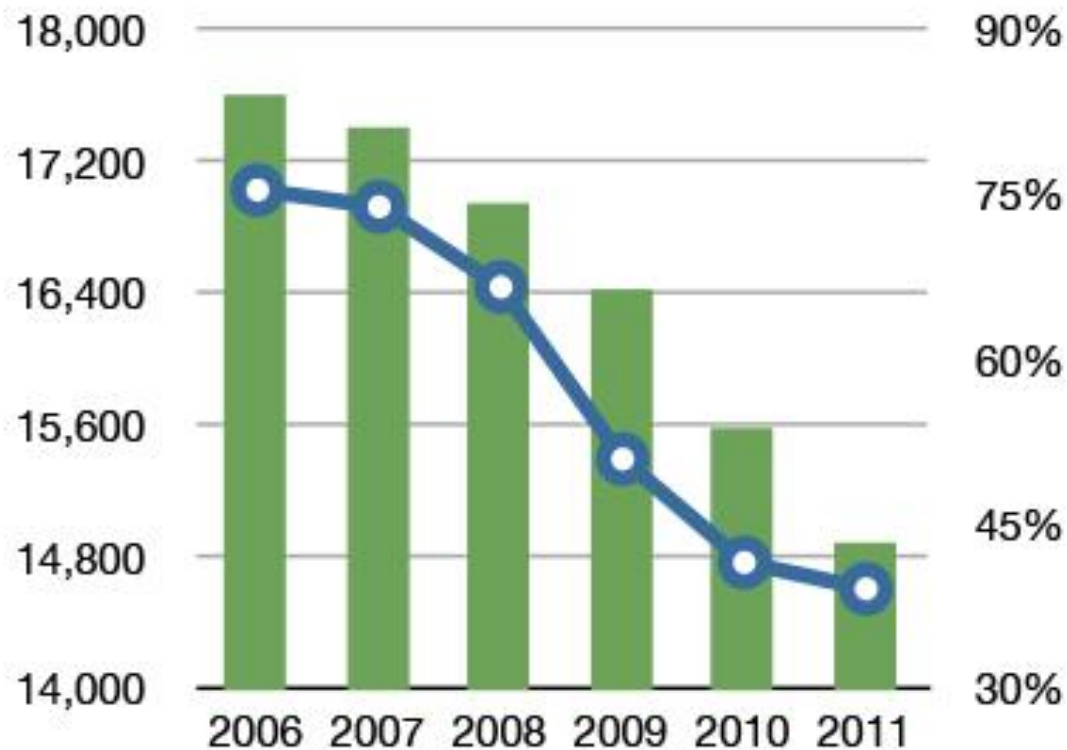
# Correlation $\neq$ Causation!!!!

Global Average Temperature Vs. Number of Pirates



<http://www.tylervigen.com/>

Internet Explorer vs Murder Rate



○ Murders in US

■ Internet Explorer Market Share

# more...

- Was the Scientific Method used?
  - Peer review
- Does someone stand to gain \$\$\$?
- Is it actual journalism?
- Breakthroughs and Scary Stories
  - truth:hype ratio
- Does it fit the stereotype or common belief?

# 2, 4, 8, ...

- I have a rule in mind that governs these numbers
- Discuss with your group; come up with your own set of numbers that (may) fit my rule.
- I will say yes it fits or no it doesn't
- If it fits – tell me the rule you used
  - I will tell you if you are right

# Why??

- Why do you keep proposing numbers that fit YOUR rule?!?
- It is not getting you any closer to the answer!
- Do something different!!!
- Stop trying to confirm what you already believe!!!

# Prove the null-hypothesis!

- Move away from common belief
- Do you see why getting wrong answers is more powerful than getting right answers?!
- Finding data that supports your findings is not always helpful... you don't get a prize for "being right" ...

# Veritasium



- [http://youtu.be/vKA4w2O61Xo?  
list=FLjgN7p1qoyXDSitEGegocIA](http://youtu.be/vKA4w2O61Xo?list=FLjgN7p1qoyXDSitEGegocIA)