

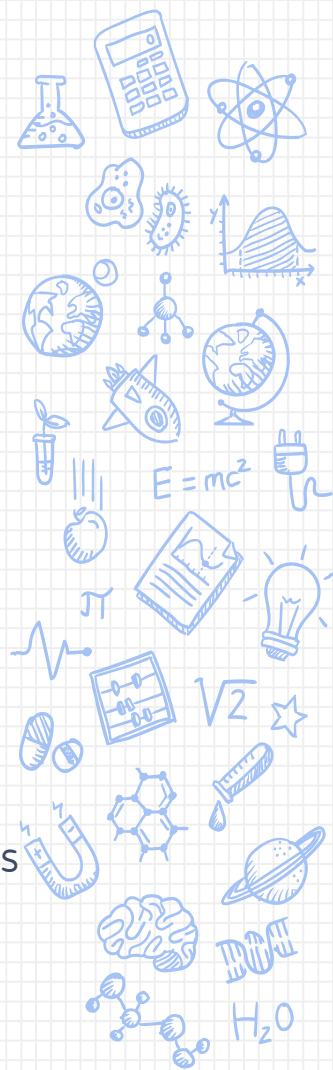
Thinking Critically

©2017 Chris L Peterson

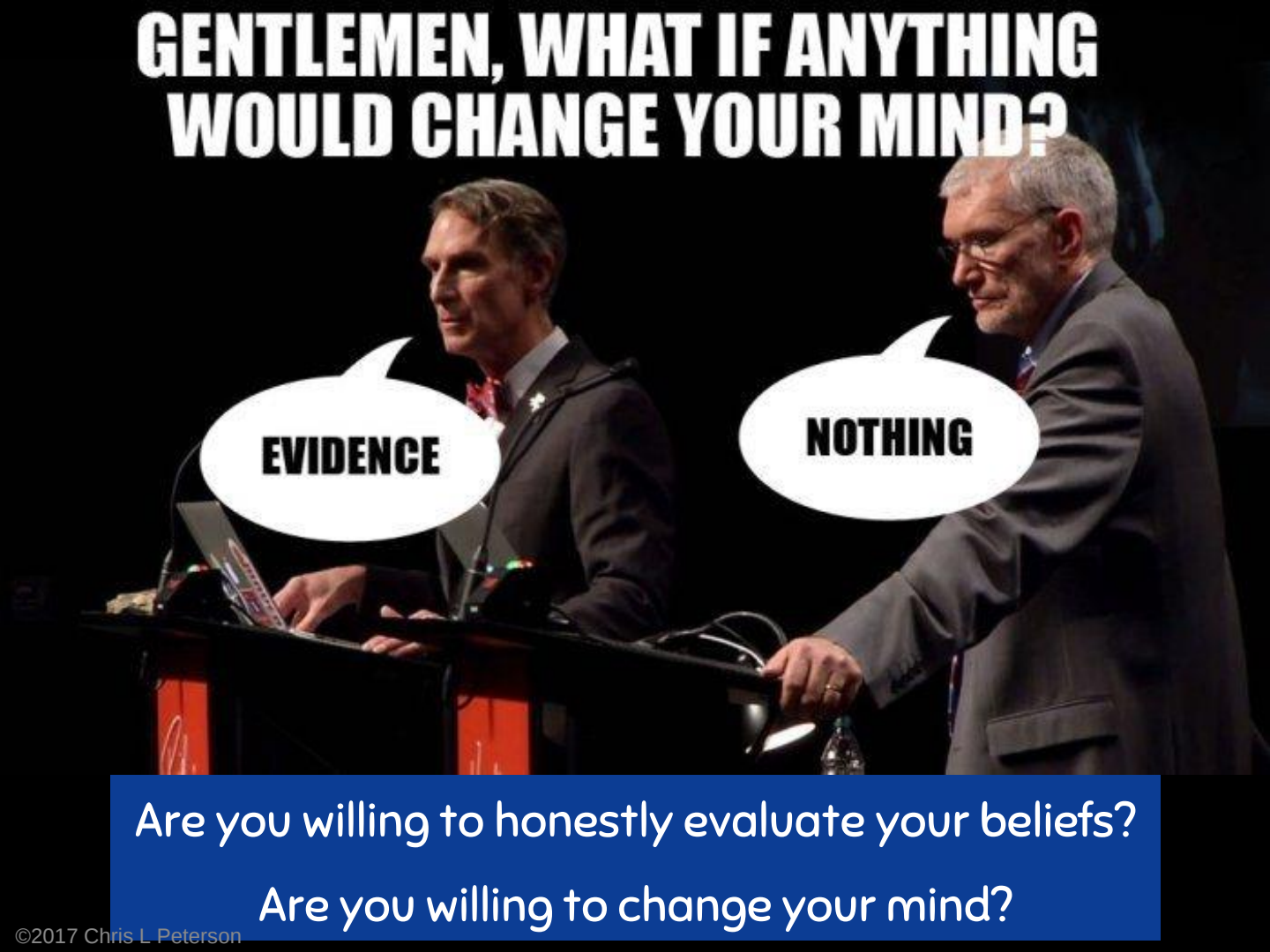
Is Your Ox Being Gored?

Objectively false beliefs:

- The Earth isn't warming
- If the Earth is warming, it isn't caused by humans
- Vaccines cause autism, or are otherwise unsafe
- Cellphones cause cancer
- Living near power lines or cell towers is harmful
- Intelligent design / creation science
- Acupuncture / homeopathy / chiropractic / detoxification / naturopathy
- Dowsing / witching
- Organic foods are healthier than conventional foods
- Gluten sensitivity is common
- GMOs are unhealthy or harmful



GENTLEMEN, WHAT IF ANYTHING WOULD CHANGE YOUR MIND?

A photograph of two men standing behind a black podium on a stage. The man on the left is looking at a laptop and has a speech bubble above him that says 'EVIDENCE'. The man on the right is looking down and has a speech bubble above him that says 'NOTHING'.

EVIDENCE

NOTHING

Are you willing to honestly evaluate your beliefs?

Are you willing to change your mind?

Epistemology

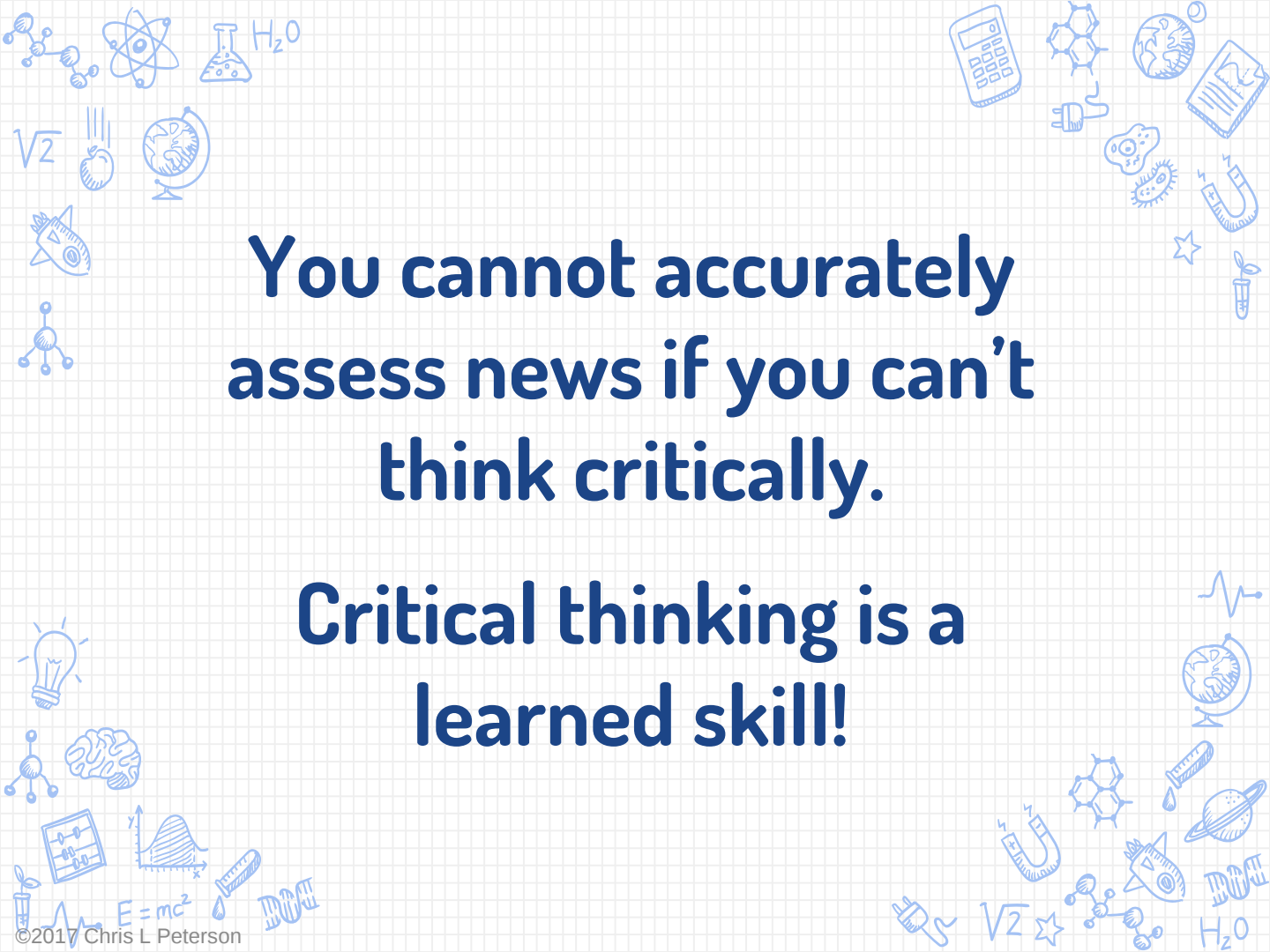
/əˌpɪstəˈmäləjē/
noun PHILOSOPHY

the theory of knowledge, especially with regard to its methods, validity, and scope. Epistemology is the investigation of what distinguishes justified belief from opinion.

Epistemology

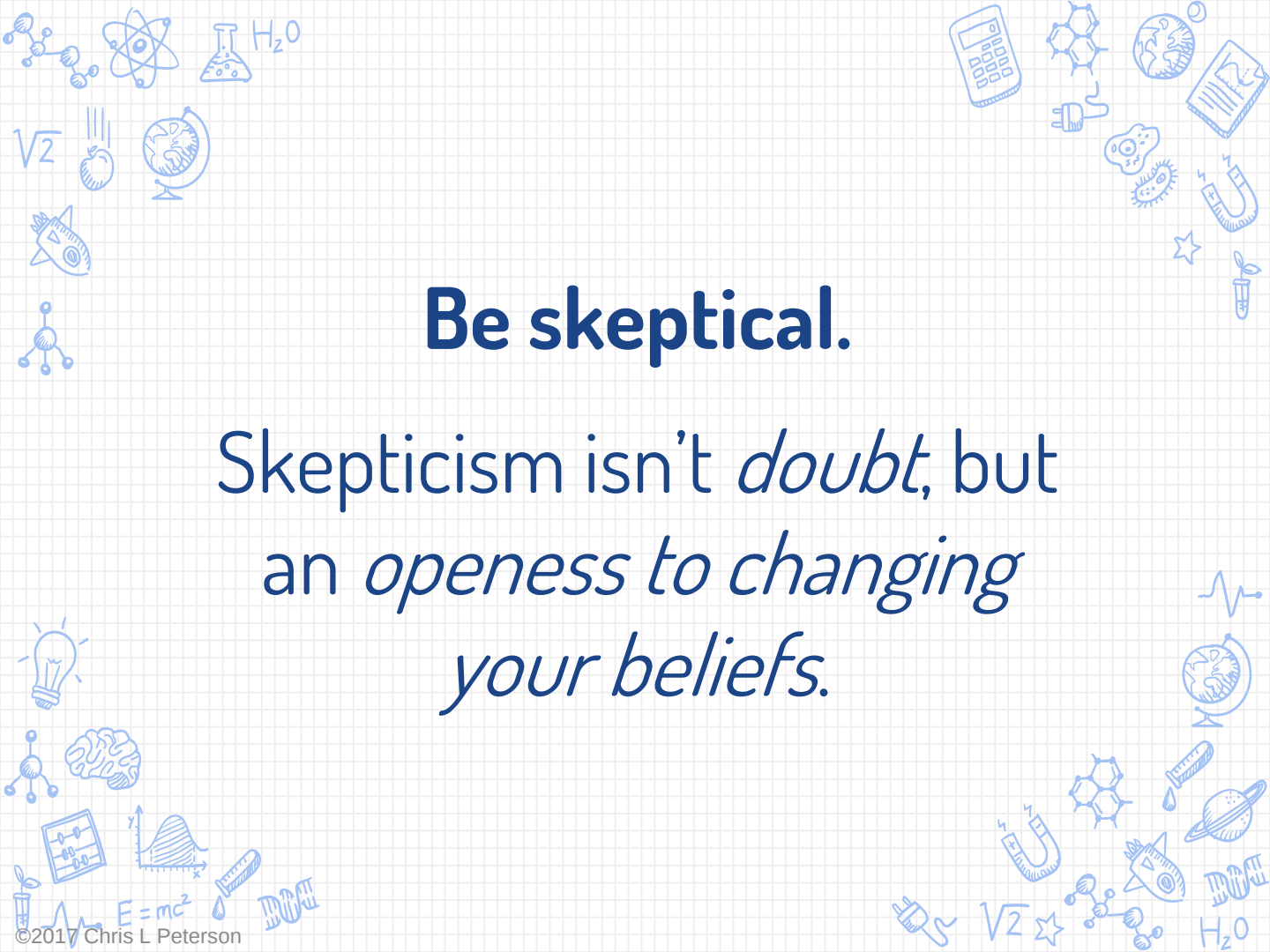
Evidence-based: belief is based on the relative weight of objective evidence

Faith-based: belief is based on indoctrinated ideas, on the acceptance of ideas from trusted parties, on dogma

A decorative border of various blue line-art icons surrounds the central text. The icons include a molecular structure, an atom, a beaker with H₂O, a calculator, a hexagonal cell, a globe, a book, a plug, a microorganism, a magnet, a star, a test tube, a rocket, a lightbulb, a brain, a graph, a ruler, a DNA helix, a plug, a star, a molecule, and H₂O.

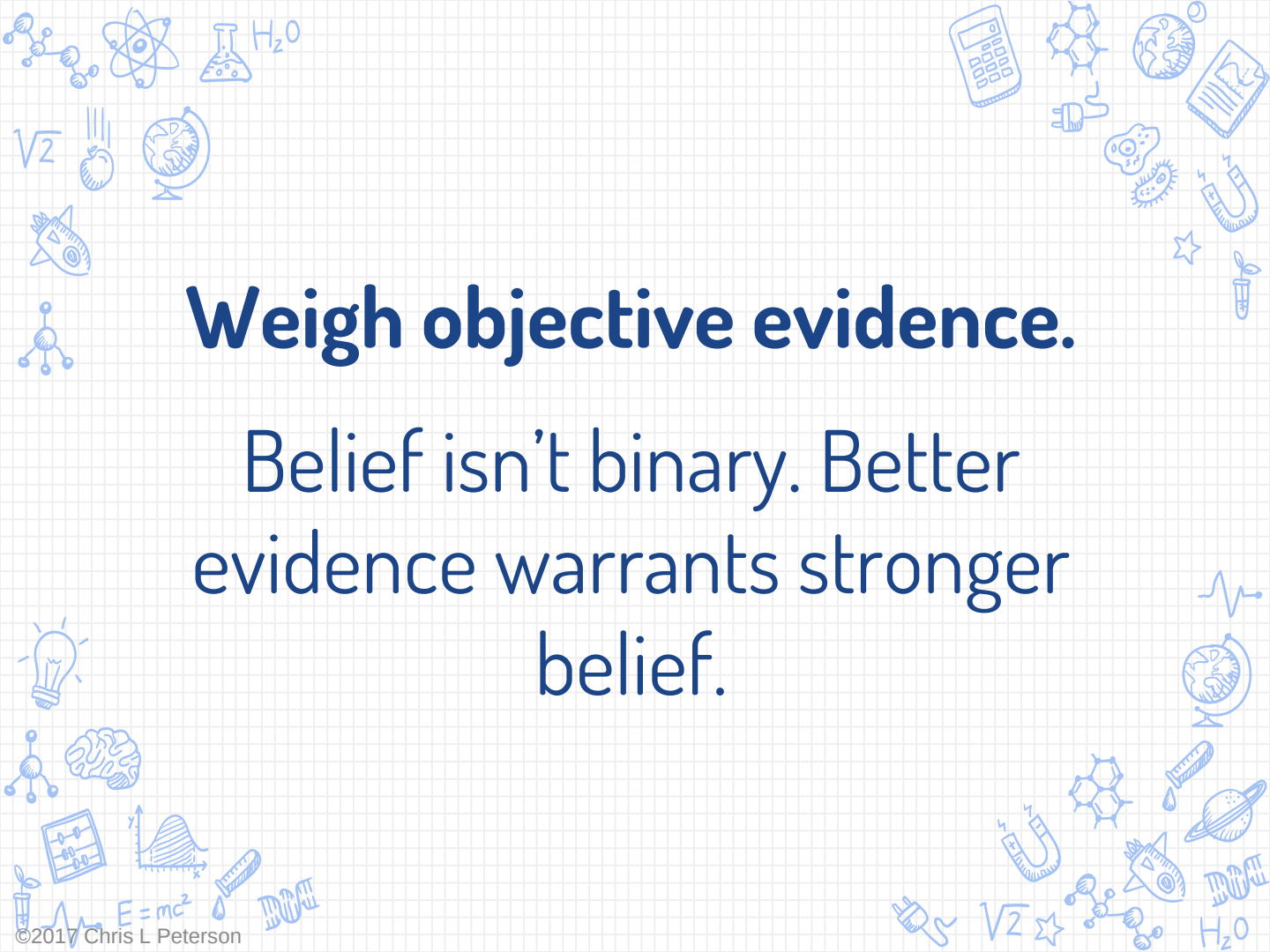
**You cannot accurately
assess news if you can't
think critically.**

**Critical thinking is a
learned skill!**

A decorative border of hand-drawn blue icons surrounds the central text. The icons include a molecular structure, an atom, a beaker with H₂O, a calculator, a hexagonal cell, a globe, a book, a plug, a microorganism, a magnet, a star, a test tube, a rocket, a lightbulb, a brain, a graph, a beaker, a DNA helix, a plug, a star, a molecular structure, a rocket, a planet, and the chemical formula H₂O.

Be skeptical.

Skepticism isn't *doubt*, but
an *openness to changing*
your beliefs.

A decorative border of hand-drawn blue icons surrounds the central text. The icons include a molecular structure, an atom, a beaker with H₂O, a calculator, a hexagonal cell, a globe, a book, a plug, a microorganism, a magnet, a star, a test tube, a rocket, a lightbulb, a brain, a graph, a beaker, a DNA helix, a plug, a star, a molecular structure, and H₂O.

Weigh objective evidence.

Belief isn't binary. Better
evidence warrants stronger
belief.

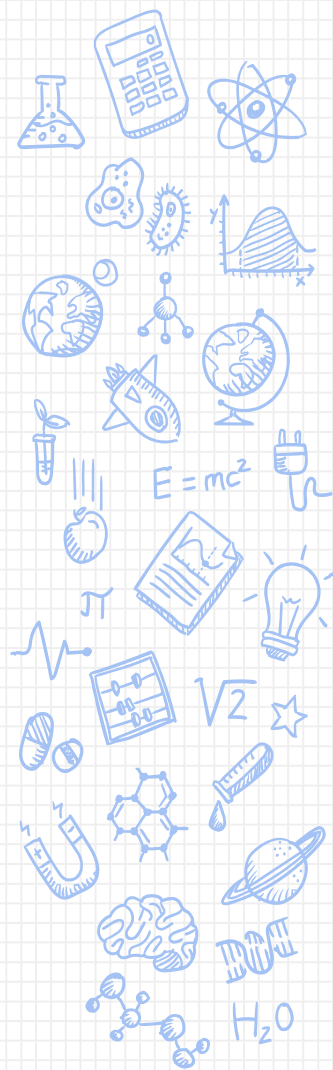
A decorative border of hand-drawn blue icons surrounds the central text. The icons include a molecular structure, an atom, a beaker with H₂O, a calculator, a hexagonal cell, a globe, a book, a plug, a microorganism, a magnet, a star, a test tube with a plant, a rocket, a lightbulb, a brain, a graph, a DNA helix, a plug, a magnet, a star, a molecular structure, a rocket, a planet with a ring, and the chemical formula H₂O.

Respect expert opinion.

Respect expert consensus.

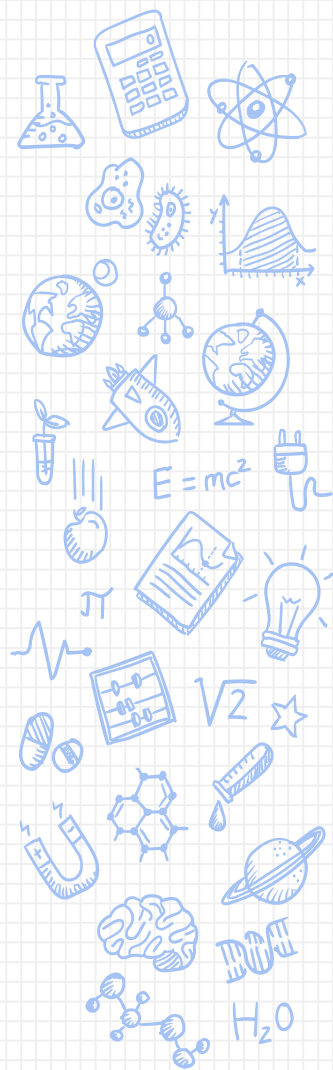
Cognitive Biases

- Confirmation bias
- Belief bias
- Backfire effect (denialism)
- Bandwagon effect
- Reactance
- Authority bias
- Illusion of truth effect

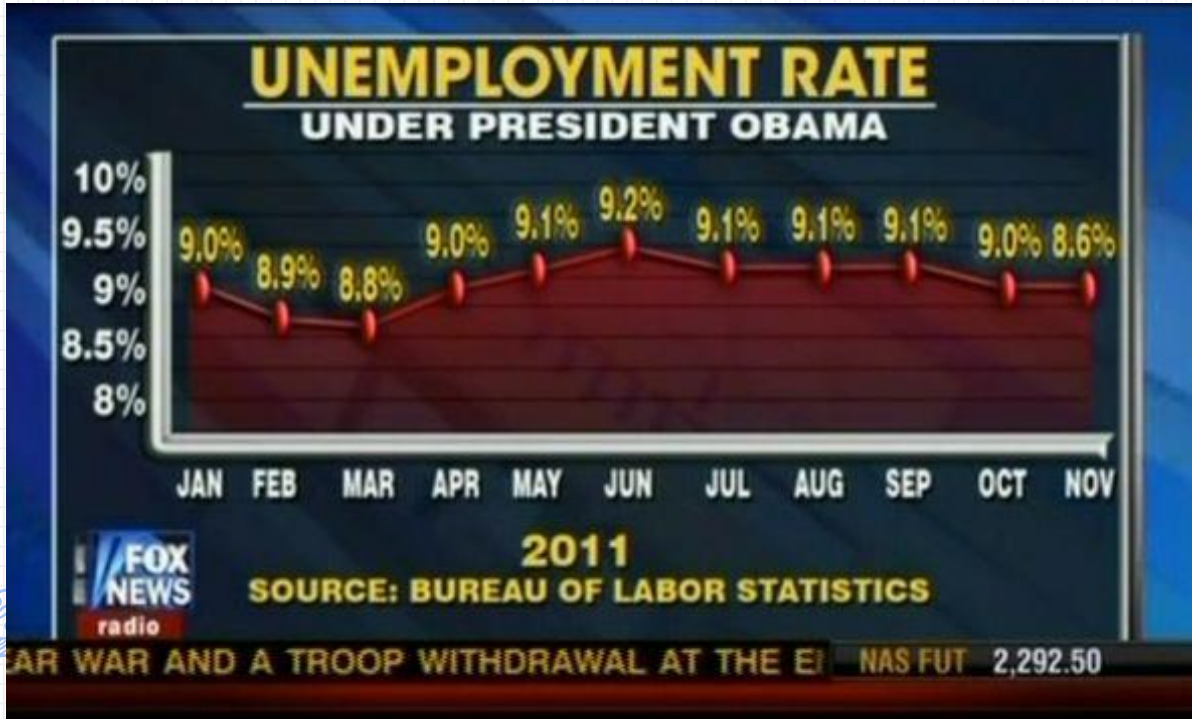


Logical Fallacies

- Argument from ignorance
- Slippery slope
- Black-or-white
- False cause
- Ad hominem
- Appeal to authority
- Shifting the burden of proof
- Cherry picking
- Tu quoque

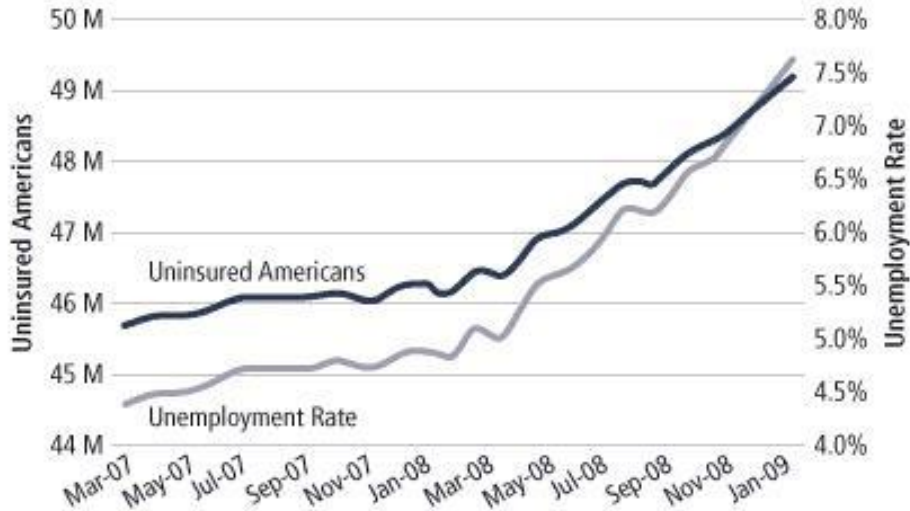


Graphical Data



Graphical Data

Job and Health Insurance Losses Accelerating
14,000 People Becoming Uninsured Every Day



The Wonk Room

Graphical Data

THE BLOG

Over 100 Million Now Receiving Federal Welfare

2:40 PM, AUG 8, 2012 • BY DANIEL HALPER

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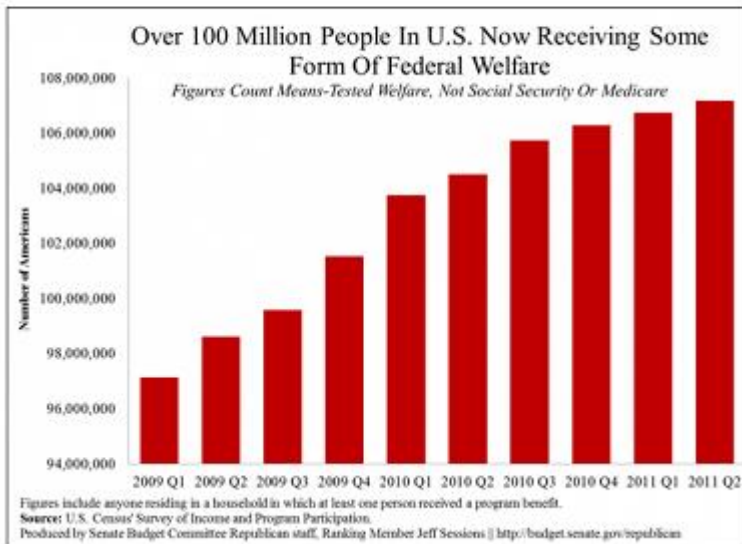
LARGER TEXT

SMALLER TEXT

ADVERTS

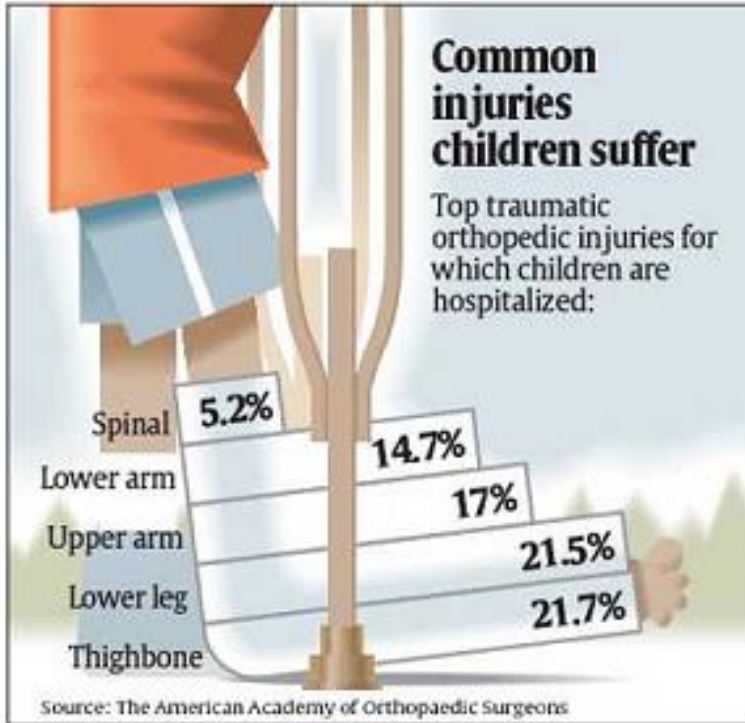
Facebook Twitter Google+

A new chart set to be released later today by the Republican side of the Senate Budget Committee details a startling statistic: "Over 100 Million People in U.S. Now Receiving Some Form Of Federal Welfare."



Graphical Data

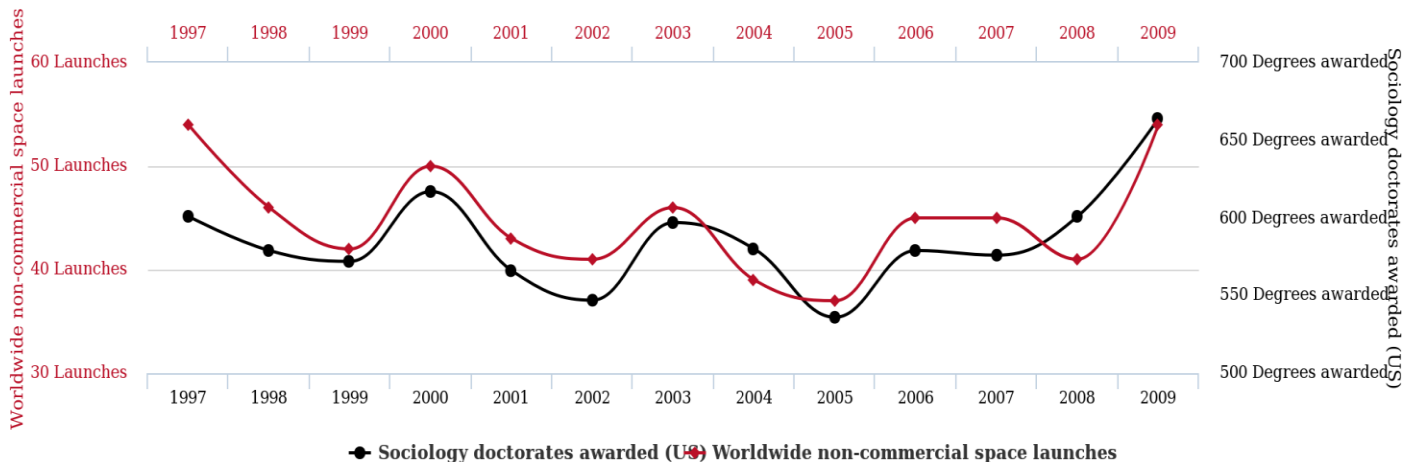
USA TODAY Snapshots™



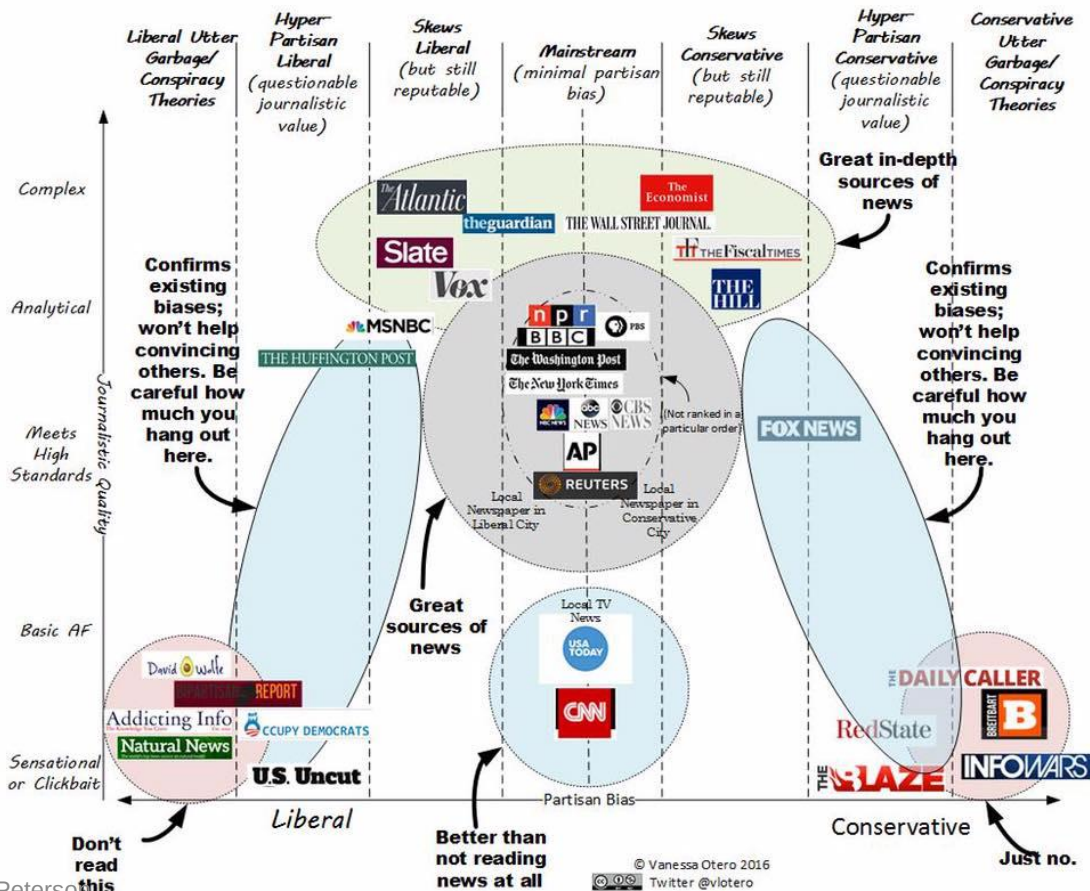
By Shannon Reilly and Frank Pompa, USA TODAY

Correlation vs. Causation

Worldwide non-commercial space launches
correlates with
Sociology doctorates awarded (US)



Consider Sources



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Fact Checking

- Is the source real and reputable?
- Read the story!
- Check out the author
- Look at quotes; check them
- Read comments
- Check sources
- Look for independent accounts
- Does the data make sense?
- Be aware of your biases
- Use experts: Snopes, FactCheck, PolitiFact, WP Fact Checker, MediaBiasFactCheck

