

IOWA STATE UNIVERSITY

Department of Statistics

Zombie Statistics: The Coming Apocalypse and How to Avoid It

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Outline

- What is a zombie statistic and why do we care?
- A semester-long course on zombie statistics
- Two examples: Breakout rooms
- Opportunities, discussion, and questions

What is a zombie statistic?

“...are repeated often enough that they have attained the status of official fact. They are referred to as “zombie statistics” because, though they have no basis in fact, they just won’t die.

Numbers like these make good headlines and rally advocates for various causes. But if you’re trying to solve a problem, you have to know what the problem is, and zombies just muddy the waters.”

by Deborah Mesce (2017), [source link](#)

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Examples

Do you know examples of a zombie statistics?

Zombie course case studies

- “70% of the world's poor are women.” or slightly different “70% of the world’s poor are females.”
- “Half of the hospital beds in the world are filled with people suffering from water-related diseases.”
- “Women perform 66% of the world’s work, produce 50% of the food, but earn only 10% of the income and own only 1 % of the property.”

Zombie course case studies

- “Only 1 in 10 Americans have a valid passport.”
- “Some people are left-brained, others are right-brained.”
- The Mehrabian 7-38-55 rule: “The words that we speak only account for about 7% of what we communicate, whereas our tone of voice and our body language make up 38 and 55% respectively.”

Questions:

Origin

- How are zombies born?
Where do they come from?

Impact

- Why do we care about zombies?
- What are harmful consequences of allowing zombies to survive?

How are zombie statistics born?

Origin: zombie statistics are often a result of

- Pseudo-scientific exercises or research studies with questionable methodology
- Unsubstantiated extrapolation or plain fabrication

How are zombie statistics born?

- Citations of citations
- Confirmation bias
- Accepting and reproducing a claim without checking its source

Bringing zombie statistics to life

- Information to public and policy & decision makers
- Reports, public relations materials
- Advertising and marketing

Why are zombie statistics bad?

- Factually incorrect
- “muddy the waters” (Deborah Mesce, 2017)
- Not needed (“The real ones are bad enough”, Amy Keegan, 2018)
- Loss of credibility
- Inhibit monitoring process
- Limit access to resources

Unknown, unintended consequences –

The Ghost Statistic That Haunts Women's Empowerment



Even when quantitative data are valid, they often produce very limited understandings of the complex realities of the lives of girls and women.

Illustration by Mike McQuade; Source photograph by Carlo A / Getty

By **Kathryn Moeller**, January 4, 2019

<https://www.newyorker.com/science/elements/the-ghost-statistic-that-haunts-womens-empowerment>

- Lead to an increased burden for women
- Shift in responsibility to alleviate gender inequity from root causes such as government to women

Zombie statistics course

- Semester long 1-credit Honors seminar
- Once a week for 50 minutes
- Four instructors (Mark Kaiser, Dan Nordman & us)
- 15 students
 - No statistics majors
 - Sophomores, Juniors, Seniors
- Groups of three

Zombie statistics course – activities and assessments

- Background readings, small-group discussions, class discussions
- Identification of main characteristics of zombie statistics
- Written synopsis reports

Your Turn

- Choose a “Zombie statistic” breakout room
- Do the reading
- Identify two or three characteristics of the claim in this case study that might serve as indicators of a potential zombie statistic

Two Zombies



“We use only 10% of our brains.”

<https://tinyurl.com/yhvn9hbt>



There are “four generations of families where no-one has ever had a job.”

<https://tinyurl.com/46cv8jfk>



There are “four generations of families where no-one has ever had a job.”

- Exploring “generations and cultures of worklessness” in contemporary Britain (article by Ralston & Gayle)
- Second study, different research methodology
- Data from the British Household Panel Survey
- Same result

<https://www.youthandpolicy.org/articles/generations-of-worklessness/>

Synopsis report

- Completely different approaches to study the same phenomenon
- Both studies wish to generalize findings to United Kingdom in general
- Rationale for why they might be able to do so, however, differs for the studies

Synopsis report question

How would you argue that the conclusions from each of these studies apply to the entire U.K.?

Do you think that this difference makes the two studies complimentary (re-enforcing of each other) or not?

Characteristics to watch for

1. Figures do not change over long periods of time.
2. Target Population not clearly identified
3. Origin questionable or unknown
4. Claim tied to commercial marketing
5. Statistics that have "shock value"
6. Picked up and repeated by public writers/speakers over some time
7. Extends norms or beliefs of a group to a much broader context
8. Wordings (and hence exact meaning) changes over time.

Other thoughts and discussion

- Pros and Cons for introducing zombie statistics to students?
- Opportunities to integrate zombie statistics in curriculum
- Other topics related to zombie statistics
 - Odds and proportions
 - Assessing sources of information
 - Video on “On Scientific Studies” by John Oliver

Questions?

Thoughts?

Additional resources

- Bastian, H. (2019, November 30). *The Power of Zombie Statistics: Systematic Review Edition*. Absolutely Maybe.
<https://absolutemaybe.plos.org/2019/11/30/the-power-of-zombie-statistics-systematic-review-edition/>.
- Mesce, D. (2017, October 30). *Beware of Zombie Statistics ... Even When It's Not Halloween*. Population Reference Bureau.
<https://scorecard.prb.org/insight/beware-of-zombie-statistics-even-when-its-not-halloween/>.

Student reading

“70% of the world's poor are women.” or slightly different “70% of the world’s poor are females.”

- Greenberg, J. (2014, July 3). *PolitiFact - Meet the “zombie stat” that just won’t die.* @politifact. <https://www.politifact.com/article/2014/jul/03/meet-zombie-stat-just-wont-die/>

Student readings

“Half of the hospital beds in the world are filled with people suffering from water-related diseases.”

- Groups referencing the Zombie Statistic
 - *Clean Water: Our Impact*. Just One Africa. (n.d.). <https://www.justoneafrica.org/clean-water-impact/>. Retrieved on June 28, 2021
 - *The Water Crisis: The Importance of Clean Water to Health*. The Water Project. (n.d.). <https://thewaterproject.org/why-water/health>. Retrieved on June 28, 2021
- Reading about the Zombie Statistic
 - Keegan, A. (2018, March 23). *Zombie statistics: to make progress we need to kill them off for good*. WASH Matters. <https://washmatters.wateraid.org/blog/zombie-statistics-to-make-progress-we-need-to-kill-them-off-for-good>.

Student readings

“Women perform 66% of the world’s work, produce 50% of the food, but earn only 10% of the income and own only 1 % of the property.”

- Groups referencing the Zombie Statistic
 - UNDP Gender Team. (2011, July). *Fast Facts On Gender Equality at United Nations Development Programme*. Scribd. <https://www.scribd.com/document/146177694/Fast-Facts-on-Gender-Equality-at-UNDP-July-2011>.
 - WomenAid International. (n.d.). <http://www.womenaid.org/intro/mainfram.htm>. Retrieved on June 28, 2021

Student readings

“Women perform 66% of the world’s work, produce 50% of the food, but earn only 10% of the income and own only 1 % of the property.”

- Readings about the Zombie Statistic
 - Cohen, P. (2013, March 8). 'Women Own 1% of World Property': A Feminist Myth That Won't Die. The Atlantic. <https://www.theatlantic.com/sexes/archive/2013/03/women-own-1-of-world-property-a-feminist-myth-that-wont-die/273840/>.
 - Green, D. (2014, March 21). *Killer factcheck: 'Women own 2% of land' = not true. What do we really know about women and land?* Killer factcheck: 'Women own 2% of land' = not true. What do we really know about women and land? – FP2P. <https://oxfamapps.org/fp2p/killer-factcheck-women-own-2-of-land-not-true-what-do-we-really-know-about-women-and-land/>.
 - Helfand-Rogers, C. (2019, February 27). *The (Nonexistent) Factoid That's Driving Social Change Efforts for Women*. The Story Exchange. <https://thestoryexchange.org/zombie-statistics-drive-social-change-efforts-women-not-real/>.
 - Kessler, G. (2018, August 15). *Analysis | The zombie statistic about women's share of income and property*. The Washington Post. <https://www.washingtonpost.com/news/fact-checker/wp/2015/03/03/the-zombie-statistic-about-womens-share-of-income-and-property/>.

Student readings

“Only 1 in 10 Americans have a valid passport.”

- Amos, O. (2018, January 9). *Is it true only 10% of Americans have passports?* BBC News. <https://www.bbc.com/news/world-us-canada-42586638>
- Evans, A. (2012, January 27). *The Traveling Minority*. National Geographic. <https://www.nationalgeographic.com/travel/article/the-traveling-minority>

Student readings

“Some people are left-brained, others are right-brained.”

- Blacker, K. (2016, December 15). *Debunking the Left-Brain/Right-Brain Myth*: Johns Hopkins Science of Learning Institute. <http://scienceoflearning.jhu.edu/science-to-practice/resources/debunking-the-myth-about-left-brain-right-brain-learning-styles>.
- Corballis, M. C. (2007). The dual-brain myth. *Oxford University Press Scholarship Online*. <https://doi.org/10.1093/acprof:oso/9780198568773.003.0019>
- Kosslyn, S. M., & Miller, G. W. (2014, April 25). *Sperry, Jenkins: Left Brain, Right Brain*. Psychology Today. <https://www.psychologytoday.com/us/blog/the-theory-cognitive-modes/201404/sperry-jenkins-left-brain-right-brain>.
- TED Education, & Waters, E. (2017, July 24). *The left brain vs. right brain myth*. YouTube. <https://www.youtube.com/watch?v=ZMSbDwplyF4&feature=youtu.be>.
- University of Utah Health Sciences. (2013, August 14). *Researchers debunk myth of 'right-brained' and 'left-brained' personality traits*. ScienceDaily. <http://www.sciencedaily.com/releases/2013/08/130814190513.htm>.

Student readings

The Mehrabian 7-38-55 rule: “The words that we speak only account for about 7% of what we communicate, whereas our tone of voice and our body language make up 38 and 55% respectively.”

- Amsel, T. T. (2019). An Urban Legend Called: “The 7/38/55 Ratio Rule.” *European Polygraph*, 13(2), 95–99. <https://doi.org/10.2478/ep-2019-0007>
- Gerold, A. (2021, March 13). *The importance of non-verbal communication — The myth and the truth*. Brain-Friendly Ligbx. <https://www.akos-gerold.com/post/the-importance-of-non-verbal-communication-the-myth-and-the-truth>
- Neurodata Lab, N. (2018, November 16). *Experts Say. . . Is Communication Really Only 7% Verbal? Truth vs. Marketing*. Medium. <https://medium.com/@neurodatalab/experts-say-is-communication-really-only-7-verbal-truth-vs-marketing-9a8e7428fd0f>

Student readings

“We use only 10% of our brains.”

- Bennett, K. (2018, March 28). *Why Do We Only Use 10 Percent of the Brain?* Psychology Today. <https://www.psychologytoday.com/us/blog/modern-minds/201803/why-do-we-only-use-10-percent-the-brain>.
- Boyd, R. (2008, February 7). Do People Only Use 10 Percent of Their Brains? Scientific American. <https://www.scientificamerican.com/article/do-people-only-use-10-percent-of-their-brains>
- Cytowic, R. E. & TED Education. (2014, January 30). *What percentage of your brain do you use?* - Richard E. Cytowic. YouTube. https://www.youtube.com/watch?v=5NubJ2ThK_U
- Kenneth L. Higbee & Samuel L. Clay (1998). College Students' Beliefs in the Ten-Percent Myth, *The Journal of Psychology*, 132(5), 469-476, doi: 10.1080/00223989809599280)
- *Neuromyth 4* - OECD. (n.d.). Organisation for Economic Co-Operation and Development (OECD). <https://www.oecd.org/education/ceri/neuromyth4.htm>. Retrieved on June 28, 2021

Student readings

There are “four generations of families where no-one has ever had a job.”

- *Cultures of Worklessness - we need to focus on work, not welfare*. Bevan Foundation. (2012, December 17). <https://www.bevanfoundation.org/views/cultures-of-worklessness-we-need-to-focus-on-work-not-welfare/>.
- MacDonald, R., Shildrick, T., & Furlong, A. (2013). In search of 'intergenerational cultures of worklessness': Hunting the Yeti and shooting zombies. *Critical Social Policy*, 34(2), 199–220. <https://doi.org/10.1177/0261018313501825>
- Ralston, K., & Gayle, V. (2017, October 12). *Exploring “generations and cultures of worklessness” in contemporary Britain*. Youth & Policy. <https://www.youthandpolicy.org/articles/generations-of-worklessness/>
- Shildrick, T. (2013, January 29). *Are 'cultures of worklessness' passed down the generations?* [slides]. Social Futures Institute, Teesside University. <https://www.ark.ac.uk/ARK/sites/default/files/2018-08/ShildrickJan13.pdf>