

ENDNOTES

- 1 “Brian Wansink,” Charles H. Dyson School of Applied Economics and Management, Cornell University, <https://dyson.cornell.edu/people/brian-wansink>.
- 2 “The Large Plate Mistake,” Food & Brand Lab, Cornell University, <https://foodpsychology.cornell.edu/discoveries/large-plate-mistake>.
- 3 “Glass Shape Illusions,” Food & Brand Lab, Cornell University, <https://foodpsychology.cornell.edu/discoveries/glass-shape-illusions>.
- 4 “ABC News David Zinczenko talks with Brian Wansink about food behavior,” August 20, 2016, <https://www.youtube.com/watch?v=-WuzPUMuZ6I>.
- 5 “Is Your Kitchen Making You Fat? Decor + Organizing Tips to Help You Slim Down,” Rachael Ray Show, March 31, 2017, https://www.youtube.com/watch?v=8z6_nqECjRE.
- 6 Brian Wansink, “The Grad Student Who Never Said ‘No,’” *Healthier & Happier*, November 21, 2016, <https://web.archive.org/web/20170312041524/http://www.brianwansink.com/phd-advice/the-grad-student-who-never-said-no>.
- 7 “Backlash prompts prominent nutrition researcher to reanalyze multiple papers,” *Retraction Watch*, February 2, 2017, <http://retractionwatch.com/2017/02/02/backlash-prompts-prominent-nutrition-researcher-reanalyze-multiple-papers/>.
- 8 “Backlash prompts prominent nutrition researcher to reanalyze multiple papers,” *Retraction Watch*, February 2, 2017, <http://retractionwatch.com/2017/02/02/backlash-prompts-prominent-nutrition-researcher-reanalyze-multiple-papers/>.
- 9 Andrew Gelman, “Hark, hark! the p-value at heaven’s gate sings,” *Statistical Modeling, Causal Inference, and Social Science*, December 15, 2016, <http://andrewgelman.com/2016/12/15/hark-hark-p-value-heavens-gate-sings/>.
- 10 “Backlash prompts prominent nutrition researcher to reanalyze multiple papers,” *Retraction Watch*, February 2, 2017, <http://retractionwatch.com/2017/02/02/backlash-prompts-prominent-nutrition-researcher-reanalyze-multiple-papers/>.
- 11 For an introduction to the terminology, see *Wikipedia*, “Reproducibility,” <https://en.Wikipedia.org/wiki/Reproducibility>. For a more in-depth examination of the vocabulary, see Edo Pellizzari, et al., *Reproducibility: A Primer on Semantics and Implications for Research* (Research Triangle Park, NC, 2017), esp. pp. 9-11, 20-21, 25-40, https://www.rti.org/sites/default/files/resources/18127052_Reproducibility_Primer.pdf.
- 12 Steven N. Goodman, Daniele Fanelli and John P. A. Ioannidis, “What does research reproducibility mean?,” *Science Translational Medicine* 8, 341 (2016), pp. 1-6, <http://stm.sciencemag.org/content/8/341/341ps12/tab-pdf>.
- 13 Markus Brückner and Mark Gradstein, “Income and Schooling,” *Vox: CEPR’s Policy Portal*, April 4, 2013, <http://voxeu.org/article/income-and-schooling>.
- 14 Thomas L. Halton, et al., “Low-Carbohydrate-Diet Score and the Risk of Coronary Heart Disease in Women,” *The New England Journal of Medicine* 355 (2006), pp. 1991-2002, <http://www.nejm.org/doi/full/10.1056/NEJMoa055317#t=article>.
- 15 Livio Raccuia, “Single-Target Implicit Association Tests (ST-IAT) Predict Voting Behavior of Decided and Undecided Voters in Swiss Referendums,” *PLoS One* (2016), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0163872>.
- 16 For an introduction, see “Statistical epidemiology,” *Wikipedia*, https://en.Wikipedia.org/wiki/Statistical_epidemiology. For more in-depth examinations, see David Clayton and Michael Hills, *Statistical Models in Epidemiology* (Oxford, 1993); M. Elizabeth Halloran and Donald Berry, eds., *Statistical Models in Epidemiology, the Environment, and Clinical Trials* (New York, 2000); Duncan C. Thomas, *Statistical Methods in Genetic Epidemiology* (Oxford, 2004); Lyle D. Broemeling, *Bayesian Methods in Epidemiology* (Boca Raton, FL, 2014).
- 17 For an introduction, see “Environmental statistics,” *Wikipedia*, https://en.Wikipedia.org/wiki/Environmental_statistics. For more in-depth examinations, see Bryan F. J. Manly, *Statistics for Environmental Science and Management, Second Edition* (Boca Raton, FL, 2009); Pierre Legendre and Louis Legendre, *Numerical Ecology, Third English Edition* (Amsterdam, 2012); Song S. Qian, *Environmental and Ecological Statistics with R, Second Edition* (Boca Raton, FL, 2017).

- 18 For an introduction, see “Psychological Statistics,” *Wikipedia*, https://en.Wikipedia.org/wiki/Psychological_statistics. For more in-depth examinations, see Michael Cowles, *Statistics in Psychology: An Historical Perspective* (London, 2005); Dieter Rasch, Klaus D. Kubinger, and Takuya Yanagida, *Statistics in Psychology Using R and SPSS* (Chichester, 2011); S. Alexander Haslam and Craig McGarty, *Research Methods and Statistics in Psychology, Second Edition* (London, 2014).
- 19 For an introduction, see Katarina Čobanović and Valentina Sokolovska, “Use of statistical methods in sociology,” *Proceedings of the Challenges for Analysis of the Economy, the Businesses, and Social Progress* (2010), pp. 879-92, <http://www.eco.u-szeged.hu/download.php?docID=40429>. For more in-depth examinations, see Adrian E. Raftery, “Statistics in Sociology, 1950-2000: A Selective Review,” *Sociological Methodology* 31 (2001), pp. 1-45, <https://www.stat.washington.edu/raftery/Research/PDF/socmeth2001.pdf>; John H. Goldthorpe, “Causation, Statistics, and Sociology,” *European Sociological Review* 17, 1 (2001), pp. 1-20, <https://academic.oup.com/esr/article-abstract/17/1/1/502739?redirectedFrom=fulltext>; Thomas J. Linneman, *Social Statistics: The Basics and Beyond* (New York, 2011).
- 20 Randall Munroe, *xkcd*, <https://xkcd.com/882/>.
- 21 Megan L. Head, et al., “The Extent and Consequences of P-Hacking in Science,” *PLoS Biology* (2015), <http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002106>.
- 22 “Texas sharpshooter fallacy,” *Wikipedia*, https://en.Wikipedia.org/wiki/Texas_sharpshooter_fallacy. See also William C. Thompson, “Painting the target around the matching profile: the Texas sharpshooter fallacy in forensic DNA interpretation,” *Law, Probability, and Risk* 8 (2009), pp. 257-76, <https://academic.oup.com/lpr/article/8/3/257/926184>.
- 23 “Backlash prompts prominent nutrition researcher to reanalyze multiple papers,” *Retraction Watch*, February 2, 2017, <http://retractionwatch.com/2017/02/02/backlash-prompts-prominent-nutrition-researcher-reanalyze-multiple-papers/>.
- 24 Tim van der Zee, et al., “Statistical heartburn: An attempt to digest four pizza publications from the Cornell Food and Brand Lab,” *PeerJ Preprints*, January 25, 2017, <https://peerj.com/preprints/2748/>; Tim van der Zee, “The Wanskink Dossier: An Overview,” *The Skeptical Scientist*, March 21, 2017, <http://www.timvanderzee.com/the-wanskink-dossier-an-overview/>.
- 25 Tim van der Zee, “The Wanskink Dossier: An Overview,” *The Skeptical Scientist*, March 21, 2017, <http://www.timvanderzee.com/the-wanskink-dossier-an-overview/>.
- 26 Andrew Gelman, “Pizzagate, or the curious incident of the researcher in response to people pointing out 150 errors in four of his papers,” *Statistical Modeling, Causal Inference, and Social Science*, February 3, 2017, <http://andrewgelman.com/2017/02/03/pizzagate-curious-incident-researcher-response-people-pointing-150-errors-four-papers-2/>.
- 27 “Andrew Gelman,” Statistics Department, Columbia University, <http://www.stat.columbia.edu/~gelman/>.
- 28 “Applied Statistics Center,” Columbia University, <http://iserp.columbia.edu/center/applied-statistics-center>.
- 29 Andrew Gelman, “Pizzagate, or the curious incident of the researcher in response to people pointing out 150 errors in four of his papers,” *Statistical Modeling, Causal Inference, and Social Science*, February 3, 2017, <http://andrewgelman.com/2017/02/03/pizzagate-curious-incident-researcher-response-people-pointing-150-errors-four-papers-2/>.
- 30 Andrew Gelman, “Dear Cornell University Public Relations Office,” *Statistical Modeling, Causal Inference, and Social Science*, April 6, 2017, <http://andrewgelman.com/2017/04/06/dear-cornell-university-public-relations-office/>.
- 31 Jordan Anaya, “Cornell and the First Law of Foodynamics,” *Medium*, February 17, 2017, <https://medium.com/@OmnesRes/cornell-and-the-first-law-of-foodynamics-cb2ed34d7e7f>; Nick Brown, “Some instances of apparent duplicate publication from the Cornell Food and Brand Lab,” *Nick Brown’s blog*, March 2, 2017, <http://steamtraen.blogspot.co.uk/2017/03/some-instances-of-apparent-duplicate.html>; Nick Brown, “Strange patterns in some results from the Food and Brand Lab,” *Nick Brown’s blog*, March 22, 2017, <http://steamtraen.blogspot.co.uk/2017/03/strange-patterns-in-some-results-from.html>.
- 32 John P. A. Ioannidis, “Why Most Published Research Findings Are False,” *PLoS Med* 2, 8 (2005), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1182327/>.

- 33 See also Andrew Gelman and John Carlin, “Beyond Power Calculations: Assessing Type S (Sign) and Type M (Magnitude) Errors,” *Perspectives on Psychological Science* 9, 6 (2014), pp. 641-61, http://www.stat.columbia.edu/~gelman/research/published/retropower_final.pdf; Eric Loken and Andrew Gelman, “Measurement error and the replication crisis,” *Science* 355 (2017), pp. 584-85, <http://science.sciencemag.org/content/355/6325/584>; Nathan P. Lemoine, et al., “Underappreciated problems of low replication in ecological field studies,” *Ecology*, September 9, 2016, <http://onlinelibrary.wiley.com/doi/10.1002/ecy.1506/abstract>; Denes Szucs and John Ioannidis, “Empirical assessment of published effect sizes and power in the recent cognitive neuroscience and psychology literature,” *PLoS Biology*, March 2, 2017, <http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.2000797>.
- 34 Leslie G. Biesecker, “Hypothesis-generating research and predictive medicine,” *Genome Research* 23, 7 (2013), pp. 1051-53, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3698497/>.
- 35 John P. A. Ioannidis, “Contradicted and Initially Stronger Effects in Highly Cited Clinical Research,” *JAMA* 294, 2 (2005), pp. 218-28, <http://jamanetwork.com/journals/jama/fullarticle/201218>. See also John P. A. Ioannidis, “Why most discovered true associations are inflated,” *Epidemiology* 19, 5 (2008), pp. 640-48, <https://www.ncbi.nlm.nih.gov/pubmed/18633328>.
- 36 Shanil Ebrahim, et al., “Reanalyses of randomized clinical trial data,” *JAMA* 312, 10 (2014), pp. 1024-32, <https://www.ncbi.nlm.nih.gov/pubmed/25203082>.
- 37 Further replication studies not mentioned in the text of this article that fail to reproduce much-publicized scientific research include Timothy C. Bates and Shivani Gupta, “Smart groups of smart people: Evidence for IQ as the origin of collective intelligence in the performance of human groups,” *Intelligence* 60 (2017), pp. 46-56, <http://www.sciencedirect.com/science/article/pii/S0160289616303282>; John H. Lurquin, et al., “No Evidence of the Ego-Depletion Effect across Task Characteristics and Individual Differences: A Pre-Registered Study,” *PLoS One*, February 10, 2016, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147770>; E.-J. Wagenmakers, et al., “Registered Replication Report. Strack, Martin, & Stepper (1988) [Facial Feedback Hypothesis],” *Perspectives on Psychological Science* October 26, 2016, <http://journals.sagepub.com/doi/full/10.1177/1745691616674458>; Mark Regnerus, “Is structural stigma’s effect on the mortality of sexual minorities robust? A failure to replicate the results of a published study,” *Social Science & Medicine* 188 (2017) pp. 157-165, <http://www.sciencedirect.com/science/article/pii/S027795361630627X>.
- 38 Andrew Gelman and Kaiser Fung, “The Power of the ‘Power Pose’,” *Slate*, January 19, 2016, http://www.slate.com/articles/health_and_science/science/2016/01/amy_cuddy_s_power_pose_research_is_the_latest_example_of_scientific_overreach.html; Uri Simonsohn and Joseph Simmons, “Power Posing: Reassessing The Evidence Behind The Most Popular TED Talk,” *Data Colada*, May 8, 2015, <http://datacolada.org/37>.
- 39 Andrew Gelman and David Weakliem, “Of beauty, sex, and power: Statistical challenges in estimating small effects,” October 27, 2008, <http://www.stat.columbia.edu/~gelman/research/unpublished/power4r.pdf>.
- 40 Andrew Gelman, “A whole fleet of gremlins: Looking more carefully at Richard Tol’s twice-corrected paper, ‘The Economic Effects of Climate Change’,” *Statistical Modeling, Causal Inference, and Social Science*, May 27, 2014, <http://andrewgelman.com/2014/05/27/whole-fleet-gremlins-looking-carefully-richard-tols-twice-corrected-paper-economic-effects-climate-change/>.
- 41 Colleen M. Ganley, et al., “An examination of stereotype threat effects on girls’ mathematics performance,” *Developmental Psychology* 49, 10 (2013), pp. 1886-97, <http://psycnet.apa.org/record/2013-02693-001>; and see Ulrich Schimmack, “Why are Stereotype-Threat Effects on Women’s Math Performance Difficult to Replicate?,” *Replicability-Index*, January 6, 2015, <https://replicationindex.wordpress.com/tag/stereotype-threat-and-womens-math-performance/>.
- 42 Doug Rohrer, Harold Pashler, and Christine R. Harris, “Do Subtle Reminders of Money Change People’s Political Views?,” *Journal of Experimental Psychology* 144, 4 (2015), pp. e73-e85, http://uweb.cas.usf.edu/~drohrer/pdfs/Rohrer_et_al_2015JEPG.pdf; Ulrich Schimmack, Moritz Heene, and Kamini Kesavan, “Reconstruction of a Train Wreck: How Priming Research Went off the Rails,” *Replicability-Index*, February 2, 2017, <https://replicationindex.wordpress.com/2017/02/02/reconstruction-of-a-train-wreck-how-priming-research-went-off-the-rails/comment-page-1/>, and see especially Daniel Kahneman, [Comment,] February 14, 2017, <https://replicationindex.wordpress.com/2017/02/02/reconstruction-of-a-train-wreck-how-priming-research-went-off-the-rails/comment-page-1/#comment-1454>.
- 43 Yudhijit Bhattacharjee, “The Mind of a Con Man,” *The New York Times*, April 26, 2013, http://www.nytimes.com/2013/04/28/magazine/diederik-stapels-audacious-academic-fraud.html?_r=1&pagewanted=all&.
- 44 Rickard Carlsson and Jens Agerström, “A closer look at the discrimination outcomes in the IAT literature,” *Scandinavian Journal of Psychology*, April 24, 2016, <http://onlinelibrary.wiley.com/doi/10.1111/sjop.12288/abstract>.
- 45 Hart Blanton, et al., “Toward a Meaningful Metric of Implicit Prejudice,” *Journal of Applied Psychology* 100, 5 (2015), pp. 1468-81, <https://www.ncbi.nlm.nih.gov/pubmed/25602125>.

- 63 Emili García-Berthou and Carles Alcaez, “Incongruence between test statistics and P values in medical papers,” *BMC Medical Research Methodology* 4, 13 (2004), [https://link.springer.com/article/10.3758%2Fs13428-015-0664-2](https://www.ncbi.nlm.nih.gov/pubmed?cmd=Search&doptcmd=Citation&defaultField=Title%20Word&term=Garcia-Berthou%5Bauthor%5D%20AND%20Incongruence%20between%20test%20statistics%20and%20P%20values%20in%20medical%20papers; Michèle B. Nuijten, et al., “The prevalence of statistical reporting errors in psychology (1985–2013),” <i>Behavior Research Methods</i> 48, 4 (2016), pp. 1205–26, <a href=).
- 64 Matthew H. Kramer, et al., “Statistics in a Horticultural Journal: Problems and Solutions,” *Journal of the American Society for Horticultural Science* 141, 5 (2016), pp. 400–06, <http://journal.ashspublishings.org/content/141/5/400.full>; Tracey L. Weissberger, et al., “Reinventing Biostatistics Education for Basic Scientists,” *PLoS Biology* 14, 6 (2016), <http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002430>.
- 65 Jeff Leek, “On the scalability of statistical procedures: why the p-value bashers just don’t get it,” *Simply Statistics*, February 14, 2014, <https://simplystatistics.org/2014/02/14/on-the-scalability-of-statistical-procedures-why-the-p-value-bashers-just-dont-get-it/>.
- 66 E.g., Thea F. van de Mortel, “Faking it: social desirability response bias in self-report research,” *Australian Journal of Advanced Nursing* 25, 4 (2008), pp. 40–48, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.818.5855&rep=rep1&type=pdf>; and see Rob Hoskin, “The dangers of self-report,” *Science for All: Brainwaves*, March 3, 2012, <http://www.sciencebrainwaves.com/the-dangers-of-self-report/>.
- 67 Leslie K. John, et al., “Measuring the Prevalence of Questionable Research Practices With Incentives for Truth Telling,” *Psychological Science* 23, 5 (2012), pp. 524–32, <https://www.cmu.edu/dietrich/sds/docs/loewenstein/MeasPrevalQuestTruthTelling.pdf>.
- 68 Sam Schwarzkopf, “The Pipedream of Preregistration,” *The Devil’s Neuroscientist*, November 28, 2014, <https://devilsneuroscientist.wordpress.com/2014/11/28/the-pipedream-of-preregistration/>.
- 69 Leslie K. John, et al., “Measuring the Prevalence of Questionable Research Practices With Incentives for Truth Telling,” *Psychological Science* 23, 5 (2012), pp. 524–32, <https://www.cmu.edu/dietrich/sds/docs/loewenstein/MeasPrevalQuestTruthTelling.pdf>.
- 70 Claudia Tebaldi and Reto Knutti, “The use of the multi-model ensemble in probabilistic climate projections,” *Philosophical Transactions of the Royal Society* 365 (2007), pp. 2053–75, esp. p. 2068, <http://rsta.royalsocietypublishing.org/content/365/1857/2053>. See also Frédéric Hourdin, et al., “The Art and Science of Climate Model Tuning,” *Bulletin of the American Meteorological Society*, March 2017, pp. 589–602, <https://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-15-00135.1>.
- 71 Andrew Gelman and Eric Loken, “The Statistical Crisis in Science,” *American Scientist* 102 (2014), pp. 460–65, <https://pdfs.semanticscholar.org/922b/5cffa298ad5e109acf7dbe6b7bcecb5740b4.pdf>.
- 72 Alec T. Beall and Jessica L. Tracy, “Women Are More Likely to Wear Red or Pink at Peak Fertility,” *Psychological Science* 24, 9 (2013), pp. 1837–41, <https://pdfs.semanticscholar.org/922b/5cffa298ad5e109acf7dbe6b7bcecb5740b4.pdf>.
- 73 Andrew Gelman and Eric Loken, “The Statistical Crisis in Science,” *American Scientist* 102 (2014), pp. 463–64, <https://pdfs.semanticscholar.org/922b/5cffa298ad5e109acf7dbe6b7bcecb5740b4.pdf>.
- 74 Joseph P. Simmons, et al., “False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant,” *Psychological Science* 22, 11 (2011), pp. 1359–66, <http://people.psych.cornell.edu/~jec7/pcd%202015-16%20pubs/Simmons%20PsySci%202011.pdf>.
- 75 Helena Harrison, et al., “Case Study Research: Foundations and Methodological Orientations,” *Forum: Qualitative Social Research* 18, 1 (2017), <http://www.qualitative-research.net/index.php/fqs/article/view/2655/4079>.
- 76 John Whitehead, “Stopping clinical trials by design,” *Nature Reviews Drug Discovery* 3 (2004), pp. 973–77, <https://www.nature.com/nrd/journal/v3/n11/full/nrd1553.html>.
- 77 Steven E. Nissen, “ADAPT: The Wrong Way to Stop a Clinical Trial,” *PLoS Clinical Trials* 1, 7 (2006), <http://journals.plos.org/plosclinicaltrials/article?id=10.1371/journal.pctr.0010035>.
- 78 Paul S. Mueller, et al., “Ethical Issues in Stopping Randomized Trials Early Because of Apparent Benefit,” *Annals of Internal Medicine* 146, 12 (2007), pp. 878–81, <http://annals.org/aim/article/735073/ethical-issues-stopping-randomized-trials-early-because-apparent-benefit>.
- 79 Mihaela Stegert, et al., “An analysis of protocols and publications suggested that most discontinuations of clinical trials were not based on preplanned interim analyses or stopping rules,” *Journal of Clinical Epidemiology* (2015), <https://fhs.mcmaster.ca/anesthesiaresearch/documents/PIIS089543561500267X.pdf>.

- 80 Joseph P. Simmons, et al., “False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant,” *Psychological Science* 22, 11 (2011), pp. 1359-66, <http://journals.sagepub.com/doi/pdf/10.1177/0956797611417632>.
- 81 Lauren E. Griffith, et al., “Statistical approaches to harmonize data on cognitive measures in systematic reviews are rarely reported,” *Journal of Clinical Epidemiology* 68, 2 (2015), pp. 154-62, [http://www.jclinepi.com/article/S0895-4356\(14\)00349-7/fulltext](http://www.jclinepi.com/article/S0895-4356(14)00349-7/fulltext). For ontologically grounded remedies to provide standardized descriptions of research methods across the disciplines, see Robert Arp, Barry Smith, and Andrew D. Spear, *Building Ontologies with Basic Formal Ontology* (Cambridge, MA and London: 2015).
- 82 D. Fleischer, et al., “The implementation of initial data populations of environmental data and creation of a primary working database,” *Polar Science* 6, 1 (2012), pp. 97-103, <http://www.sciencedirect.com/science/article/pii/S1873965212000023>.
- 83 John Bates, “Climate scientists versus climate data,” *Climate Etc.*, February 4, 2017, <https://judithcurry.com/2017/02/04/climate-scientists-versus-climate-data/>.
- 84 Thomas R. Karl, et al., “Possible artifacts of data biases in the recent global surface warming hiatus,” *Science* 348 (2015), pp. 1469-72, <http://science.sciencemag.org/content/348/6242/1469>.
- 85 Chris Mooney, “Federal scientists say there never was any global warming ‘pause,’” *The Washington Post*, June 4, 2015, https://www.washingtonpost.com/news/energy-environment/wp/2015/06/04/federal-scientists-say-there-never-was-any-global-warming-slowdown/?utm_term=.ffa38eaca77d.
- 86 Andrew Gelman, “Pizzagate, or the curious incident of the researcher in response to people pointing out 150 errors in four of his papers,” *Statistical Modeling, Causal Inference, and Social Science*, February 3, 2017, <http://andrewgelman.com/2017/02/03/pizzagate-curious-incident-researcher-response-people-pointing-150-errors-four-papers-2/>.
- 87 Kay Dickersin, et al., “Publication Bias and Clinical Trials,” *Controlled Clinical Trials* 8, 4 (1987), pp. 343-53, <http://www.sciencedirect.com/science/article/pii/0197245687901553>.
- 88 Annie Franco, et al., “Publication bias in the social sciences: Unlocking the file drawer,” *Science* 345 (2014), pp. 1502-05, <http://science.sciencemag.org/content/345/6203/1502>.
- 89 Patrick J. Michaels, “Evidence for “publication Bias” Concerning Global Warming in Science and Nature,” *Energy & Environment* 19, 2 (2008), pp. 287-301, <http://journals.sagepub.com/doi/abs/10.1260/095830508783900735?journalCode=eaea>.
- 90 Anton Kühberger, et al., “Publication Bias in Psychology: A Diagnosis Based on the Correlation between Effect Size and Sample Size,” *PLoS One* 9, 9 (2014), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0105825>.
- 91 Alan S. Gerber and Neil Malhotra, “Publication Bias in Empirical Sociological Research Do Arbitrary Significance Levels Distort Published Results?,” *Sociological Methods and Research* 37, 1 (2008), pp. 3-30, <http://journals.sagepub.com/doi/abs/10.1177/0049124108318973>.
- 92 Jim McCambridge, “A case study of publication bias in an influential series of reviews of drug education,” *Drug and Alcohol Review* 26, 5 (2007), pp. 463-68, <https://www.ncbi.nlm.nih.gov/pubmed/17701508>.
- 93 Leping Liu, et al., “An Examination of Publication Bias in an International Journal of Information Technology in Education,” *Computers in the Schools* 24, 1-2 (2007), pp. 145-63, <https://eric.ed.gov/?id=EJ783492>.
- 94 Stephanie Coronado-Montoya, et al., “Reporting of Positive Results in Randomized Controlled Trials of Mindfulness-Based Mental Health Interventions,” *PLoS One* 11, 4 (2016), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0153220>.
- 95 John M. Crawford, et al., “Publication Bias and Its Implications for Evidence-Based Clinical Decision Making,” *Journal of Dental Education* 74, 6 (2010), pp. 593-600, <http://www.jdentaled.org/content/74/6/593.full>.
- 96 Irving L. Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascoes* (Boston: Houghton Mifflin, 1982), p. 1. See also Lee Ross, Mark Lepper, and Michael Hubbard, “Perseverance in self-perception and social perception: biased attributional processes in the debriefing paradigm,” *Journal of Personality and Social Psychology* 32, 5 (1975), pp. 880-92, <https://www.ncbi.nlm.nih.gov/pubmed/1185517>.
- 97 Daniel B. Klein and Charlotta Stern, “Groupthink in Academia: Majoritarian Departmental Politics and the Professional Pyramid,” *The Independent Review* 13, 4 (2009), <http://www.independent.org/publications/tir/article.asp?a=731>.
- 98 “Ignaz Semmelweis,” *Wikipedia*, https://en.Wikipedia.org/wiki/Ignaz_Semmelweis.

- 99 Ian Leslie, “The sugar conspiracy,” *The Guardian*, April 7, 2016, <https://www.theguardian.com/society/2016/apr/07/the-sugar-conspiracy-robert-lustig-john-yudkin>.
- 100 Stanley Rothman, et al., “Politics and Professional Advancement Among College Faculty,” *The Forum* 3, 1 (2005), http://www.conservativecriminology.com/uploads/5/6/1/7/56173731/rothman_et_al.pdf; Scott Jaschik, “Moving Further to the Left,” *Inside Higher Ed*, October 24, 2012, <https://www.insidehighered.com/news/2012/10/24/survey-finds-professors-already-liberal-have-moved-further-left>; Christopher Ingraham, “The dramatic shift among college professors that’s hurting students’ education,” *The Washington Post*, January 11, 2016, https://www.washingtonpost.com/news/wonk/wp/2016/01/11/the-dramatic-shift-among-college-professors-thats-hurting-students-education/?utm_term=.3dd925610e0f; Mitchell Langbert, et al., “Faculty Voter Registration in Economics, History, Journalism, Law, and Psychology,” *Econ Journal Watch* 13, 3 (2016), pp. 422-51, https://econjwatch.org/file_download/944/LangbertQuainKleinSept2016.pdf?mimetype=pdf.
- 101 John Tierney, “Social Scientist Sees Bias Within,” *The New York Times*, January 7, 2011, http://www.nytimes.com/2011/02/08/science/08tier.html?_r=0.
- 102 Heterodox Academy: “The Problem,” <https://heterodoxacademy.org/the-problem/>; “Research,” <https://heterodoxacademy.org/research/>; “Political Bias,” *Best Practices in Science*, http://bps.stanford.edu/?page_id=3371; “Publications,” *Heterodox Academy*, <https://web.archive.org/web/20170218102047/http://heterodoxacademy.org/resources/publications/>.
- 103 Andrew Gelman, “‘Why this gun control study might be too good to be true,’” *Statistical Modeling, Causal Inference, and Social Science*, March 11, 2016, <http://andrewgelman.com/2016/03/11/why-this-gun-control-study-might-be-too-good-to-be-true/>.
- 104 José L. Duarte, et al., “Political diversity will improve social psychological science” *Behavioral and Brain Sciences* 38 (2015), <https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/political-diversity-will-improve-social-psychological-science1/A54AD4878AED1AFC8BA6AF54A890149F>; Alice H. Eagly, “When Passionate Advocates Meet Research on Diversity, Does the Honest Broker Stand a Chance?,” *Journal of Social Issues* 72, 1 (2016), pp. 199-222, <http://onlinelibrary.wiley.com/doi/10.1111/josi.12163/abstract>; Mark Regnerus, “How different are the adult children of parents who have same-sex relationships? Findings from the New Family Structures Study,” *Social Science Research* 41, 4 (2012), pp. 752-70, <http://www.sciencedirect.com/science/article/pii/S0049089X12000610>; Richard E. Redding, “Scientific Groupthink and Gay Parenting,” *The American (AEI)*, December 18, 2013, <http://www.aei.org/publication/scientific-groupthink-and-gay-parenting/>;
- 105 Judith A. Curry, “Statement to the Committee of Science, Space and Technology of the United States House of Representatives,” March 29, 2017, <https://curryja.files.wordpress.com/2017/03/curry-house-science-testimony-mar-17.pdf>.
- 106 Judith Curry, et al., *Climate Science: Assumptions, policy implications, and the scientific method* (The Global Warming Policy Foundation: GWPF Report 24, 2017), <https://www.thegwpf.org/content/uploads/2017/03/Climate-Science-March20171.pdf>; Judith Curry, “Testimony of Professor Judith Curry,” p. 13. Also see Scott Adams, *Dilbert*, May 14, 2017, <http://dilbert.com/strip/2017-05-14>.
- 107 Leonard P. Freedman, et al., “The Economics of Reproducibility in Preclinical Research,” *PLoS Biology* 13, 6 (2015), <http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002165>; and see Richard Harris, *Rigor Mortis: How Sloppy Science Creates Worthless Cures, Crushes Hopes, and Wastes Billions* (New York: Basic Books, 2017).
- 108 Monya Baker, “1,500 scientists lift the lid on reproducibility,” *Science*, May 25, 2016, http://www.nature.com/news/1-500-scientists-lift-the-lid-on-reproducibility-1.19970?WT.mc_id=SFB_NNEWS_1508_RHBox.
- 109 [“Home Page,”] The Center for Open Science, <https://cos.io/>; [“Home Page,”] Laura and John Arnold Foundation, <http://www.arnoldfoundation.org/>.
- 110 “Reproducibility Project: Psychology,” OSFHome, [Open Science Framework,] <https://osf.io/ezcuj/>.
- 111 “Reproducibility Project: Cancer Biology,” eLife, <https://elifesciences.org/collections/9b1e83d1/reproducibility-project-cancer-biology>.
- 112 Preregistration Challenge, The Center for Open Science, <https://cos.io/prereg/>.
- 113 Sam Apple, “John Arnold made a fortune at Enron. Now he’s declared war on bad science,” *Wired*, January 22, 2017, <https://www.wired.com/2017/01/john-arnold-waging-war-on-bad-science/>.
- 114 “Research Integrity,” Laura and John Arnold Foundation, <http://www.arnoldfoundation.org/>.
- 115 [“Home Page,”] Meta-Research Innovation Center at Stanford (METRICS), <http://metrics.stanford.edu/>.

- 138 “Conviction in Son’s Death Overturned; Court Criticizes Gansler’s Use of SIDS Statistics in Insurance Argument” Barry H. Helfand & David Martella, <https://www.maryland-defense-attorneys.com/conviction-in-sons-death-overturned-court-criticizes-ganslers-us.html>.
- 139 Vincent Scheurer, “Convicted on Statistics?,” *Understanding Uncertainty*, <https://understandinguncertainty.org/node/545>.
- 140 In Maryland, the accused parent was later reconvicted of murder, but the prosecution did not use statistics in the second trial. David Snyder, “Md. Father Convicted Again of Smothering Infant Son,” *The Washington Post*, May 14, 2004, https://www.washingtonpost.com/archive/local/2004/05/14/md-father-convicted-again-of-smothering-infant-son/c1e5507-002c-4b77-boaf-80dbf1666726/?utm_term=.099084bf64b2.
- 141 E.g., Sean Tanner, “Evidence of False Positives in Research Clearinghouses and Influential Journals: An Application of P-Curve to Policy Research,” *Observational Studies* 1 (2015), pp. 18-29, http://obsstudies.org/files/pcurve_protocol.pdf.
- 142 Joseph P. Simmons, et al., “False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant,” *Psychological Science* 22, 11 (2011), pp. 1359-66, <http://journals.sagepub.com/doi/pdf/10.1177/0956797611417632>.
- 143 Scientists should consider employing the standardized descriptions of research materials and procedures provided by the theory of applied ontology. Robert Arp, Barry Smith, and Andrew D. Spear, *Building Ontologies with Basic Formal Ontology* (Cambridge, MA and London: 2015); Nophar Geifman, et al., “Opening clinical trial data: are the voluntary data-sharing portals enough?” *BMC Medicine* 13, 280 (2015), https://www.researchgate.net/publication/283748831_Opening_clinical_trial_data_Are_the_voluntary_data-sharing_portals_enough; Anita Bandrowski, et al., “The Ontology for Biomedical Investigations,” *PLoS One*, April 29, 2016, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154556>; and see Satya S. Sahoo, Joshua Valdez, and Michael Rueschman, “Scientific Reproducibility in Biomedical Research: Provenance Metadata Ontology for Semantic Annotation of Study,” *AMIA Annual Symposium Proceedings* (2016), pp. 1070-79, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5333253/>; Jie Zheng, et al., “The Ontology of Biological and Clinical Statistics (OBCS) for standardized and reproducible statistical analysis,” *Journal of Biomedical Semantics* 7, 53 (2016), <https://jbiomedsem.biomedcentral.com/articles/10.1186/s13326-016-0100-2>; The OBO Foundry, <http://obofoundry.org>.
- 144 Jeffrey N. Rouder, “The What, Why, and How of Born-Open Data,” *Behavior Research Methods* 48, 3 (2016), pp. 1062-69, http://ppl.missouri.edu/sites/default/files/Rouder-BRM_o.pdf.
- 145 E.g., James P. Wallace, III, et al., “On the Validity of NOAA, NASA and Hadley CRU Global Average Surface Temperature Data & The Validity of EPA’s CO2 Endangerment Finding, Abridged Research Report,” June 2017, <https://thsresearch.files.wordpress.com/2017/05/ef-gast-data-research-report-062717.pdf>. See also Blakeley B. McShane and Abraham J. Wyner, “A Statistical Analysis of Multiple Temperature Proxies: Are Reconstructions of Surface Temperatures over the Last 1000 Years Reliable?” *The Annals of Applied Statistics* 5, 1 (2011), pp. 5-44, <https://arxiv.org/pdf/1104.4002.pdf>.
- 146 E.g., Gary W. Oehlert, *A First Course in Design and Analysis of Experiments* (2010), <http://users.stat.umn.edu/~gary/book/fcdae.pdf>; Howard J. Seltman, *Experimental Design and Analysis* (2015), <http://www.stat.cmu.edu/~hseltman/309/Book/Book.pdf>; Natalie J. Blades, G. Bruce Schaalje, and William F. Christensen, “The Second Course in Statistics: Design and Analysis of Experiments?” *The American Statistician* 69, 4 (2015), pp. 326-33, <http://www.tandfonline.com/doi/abs/10.1080/00031305.2015.1086437?journalCode=utas20>.
- 147 E.g., New York University—Wagner, Research Methods, <https://wagner.nyu.edu/education/courses/research-methods>; European Society for Medical Oncology, Methods in Clinical Cancer Research, <http://www.esmo.org/Conferences/Workshops-Courses/Methods-in-Clinical-Cancer-Research-MCCR>; University of Maryland, University College, Research Methods in Psychology, <https://www.umuc.edu/academic-programs/course-information.cfm?course=psyc300>.
- 148 Edward R. Dougherty, *The Evolution of Scientific Knowledge: From Certainty to Uncertainty* (Bellingham, WA, 2016), <http://spie.org/samples/9781510607361.pdf>; Peter V. Coveney, Edward R. Dougherty, and Roger R. Highfield, “Big data need big theory too,” *Philosophical Transactions of the Royal Society* 374 (2016), October 3, 2016, <http://rsta.royalsocietypublishing.org/content/374/2080/20160153>.
- 149 E.g., Edward R. Dougherty and Michael L. Bittner, *Epistemology of the Cell: A Systems Perspective on Biological Knowledge* (Hoboken, NJ, 2011).
- 150 E.g., Judea Pearl, “Causal inference in statistics: An overview,” *Statistics Surveys* 3 (2009), pp. 96-146, http://ftp.cs.ucla.edu/pub/stat_ser/r350-reprint.pdf.
- 151 Story C. Landis et al, “A call for transparent reporting to optimize the value of preclinical research,” *Nature* 490 (2012), pp. 187-91, <https://www.nature.com/nature/journal/v490/n7419/full/nature11556.html>; and see Force11, <https://www.force11.org/>.

- 152 Carole J. Lee and David Moher, “Promote scientific integrity via journal peer review data,” *Science* 357 (2017), pp. 256-57, <http://science.sciencemag.org/content/357/6348/256?ijkey=aoQ8T2TirYWfM&keytype=ref&siteid=sci>.
- 153 Sam Schwarzkopf, “Strolling through the Garden of Forking Paths,” *NeuroNeurotic*, September 25, 2016, <https://neuroneurotic.net/2016/09/25/strolling-through-the-garden-of-forking-paths/>.
- 154 Dorothy Michelson Livingston, “Michelson-Morley: The Great Failure,” *The Scientist*, July 13, 1987, <http://www.the-scientist.com/?articles.view/articleNo/8805/title/Michelson-Morley--The-Great-Failure/>.
- 155 B. R. Jasny, et al., “Fostering Reproducibility in industry-academia research,” *Science* 357 (2017), pp. 759-61, <http://science.sciencemag.org/content/357/6353/759.full>.
- 156 Ali H. Mokdad, et al., “Actual Causes of Death in the United States, 2000,” *JAMA* 291, 10 (2004), <http://www.csdp.org/research/1238.pdf>; Shaoni Bhattacharya, “Obesity to surpass tobacco as top US killer,” *New Scientist*, March 10, 2004, <https://www.newscientist.com/article/dn4763-obesity-to-surpass-tobacco-as-top-us-killer/>; Bootie Cosgrove-Mather, “Americans Eat Themselves to Death,” *CBS News*, March 9, 2004, <https://www.cbsnews.com/news/americans-eat-themselves-to-death/>; Nanci Hellmich, “Obesity on track as No. 1 killer,” *USA Today*, March 9, 2004, http://usatoday30.usatoday.com/news/health/2004-03-09-obesity_x.htm; David Teather, “Obesity close to smoking as cause of death in US,” *The Guardian*, March 10, 2004, <https://www.theguardian.com/world/2004/mar/11/usa.davidteather>.
- 157 Gina Kolata, “Data on Deaths From Obesity Is Inflated, U.S. Agency Says,” *The New York Times*, November 24, 2004, http://www.nytimes.com/2004/11/24/health/data-on-deaths-from-obesity-is-inflated-us-agency-says.html?_r=0.
- 158 Katherine M. Flegal, et al., “Excess deaths associated with underweight, overweight, and obesity,” *JAMA* 293, 15 (2005), pp. 1861-67, <https://www.ncbi.nlm.nih.gov/pubmed/15840860>.
- 159 Medical Evidence Boot Camp, World Federation of Science Journalists, <http://www.wfsj.org/conferences/item.php?id=205>.
- 160 David Funder, “NSF Gets an Earful about Replication,” *Funderstorms*, February 25, 2014, <https://funderstorms.wordpress.com/2014/02/25/nsf-gets-an-earful-about-replication/>.
- 161 Michael Stebbins, “Expanding Public Access to the Results of Federally Funded Research,” *Obama White House Archives*, February 22, 2013, <https://obamawhitehouse.archives.gov/blog/2013/02/22/expanding-public-access-results-federally-funded-research>.
- 162 National Institutes of Health, NIH Data Sharing Policy, “Final NIH Statement On Sharing Research Data,” February 26, 2003, <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-03-032.html>; ImmPort, <https://immport.niaid.nih.gov/home>; ClinicalTrials.gov, <https://clinicaltrials.gov/ct2/home>.
- 163 Rigor and Reproducibility, National Institutes of Health, <https://grants.nih.gov/reproducibility/index.htm>; K. Andrew DeSoto, “NIH-Wide Policy Doubles Down on Scientific Rigor and Reproducibility,” *Observer* (Association for Psychological Science), December 2016, <https://www.psychologicalscience.org/observer/nih-wide-policy-doubles-down-on-scientific-rigor-and-reproducibility>; National Institutes of Health, The Office of Behavioral and Social Sciences Research, *Healthier Lives through Behavioral and Social Sciences: Strategic Plan 2017-2021*, <https://obssr.od.nih.gov/wp-content/uploads/2016/09/OBSSR-SP-2017-2021.pdf#>.
- 164 Michael Stebbins, “Expanding Public Access to the Results of Federally Funded Research,” February 22, 2013, *Obama White House Archives*, <https://obamawhitehouse.archives.gov/blog/2013/02/22/expanding-public-access-results-federally-funded-research>.
- 165 “H.R.1030 - Secret Science Reform Act of 2015,” Congress.gov, <https://www.congress.gov/bill/114th-congress/house-bill/1030>.
- 166 Wallace D. Loh, *Social Research in the Judicial Process: Cases, Readings, and Text* (New York, Russell Sage Foundation, 1984); Murray Levine and Barbara Howe, “The Penetration of Social Science into Legal Culture,” *Law and Policy* 7, 2 (1985), pp. 173-98, <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9930.1985.tb00350.x/abstract>; Patricia J. Falk, “The Prevalence of Social Science in Gay Rights Cases: The Synergistic Influences of Historical Context, Justificatory Citation, and Dissemination Efforts,” *Wayne Law Review* 41, 1 (1994), pp. 1-69, http://engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?article=1290&context=fac_articles; Stephen Breyer, “Science in the Courtroom,” *Issues in Science and Technology* 16, 4 (2000), pp. 52-56, <http://issues.org/16-4/breyer/>.
- 167 Joëlle Anne Moreno, “Einstein on the Bench?: Exposing What Judges Do Not Know About Science and Using Child Abuse Cases to Improve How Courts Evaluate Scientific Evidence,” *Ohio State Law Journal* 64 (2003), pp. 531-85, <http://moritzlaw.osu.edu/students/groups/oslj/files/2012/03/64.2.moreno.pdf>; David L. Faigman, “Judges as ‘Amateur Scientists,’” *Boston University Law Review* 86, 5 (2006), pp. 1207-25, <http://www.bu.edu/law/journals-archive/bulr/volume86n5/documents/faigmanv.2.pdf>; Ben K. Grunwald, “Suboptimal Social Science and Judicial Precedent,” *University of Pennsylvania Law Review* 161, 5 (2013), pp. 1409-43, <http://scholarship.law.upenn.edu/>

- cgi/viewcontent.cgi?article=1390&context=penn_law_review.
- 168 Stephanie Tai, “Uncertainty About Uncertainty: The Impact of Judicial Decisions on Assessing Scientific Uncertainty,” *Journal of Constitutional Law* 11, 3 (2009), pp. 671-727, <http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1158&context=jcl>.
- 169 For judicial decisionmaking conducted without such courses in statistics, see Gary L. Wells, “Naked statistical evidence of liability: Is subjective probability enough?” *Journal of Personality and Social Psychology* 62, 5 (1992), pp. 739-752, esp. p. 745, https://public.psych.iastate.edu/glwells/Wells%20pdfs/1990-99/Wells_1992_JPSP.pdf.
- 170 Rasmus E. Benestad, et al., “Learning from mistakes in climate research,” *Theoretical and Applied Climatology* 126, 3-4 (2016), pp. 699-703, <https://link.springer.com/article/10.1007/s00704-015-1597-5>; and see Gretchen F. Goldman, et al., “Ensuring scientific integrity in the Age of Trump,” *Science* 355 (2017), pp. 696-98, <http://science.sciencemag.org/content/355/6326/696>.
- 171 Andrew Gelman, “‘Why this gun control study might be too good to be true,’” *Statistical Modeling, Causal Inference, and Social Science*, March 11, 2016, <http://andrewgelman.com/2016/03/11/why-this-gun-control-study-might-be-too-good-to-be-true/>.
- 172 Joseph P. Simmons, et al., “False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant,” *Psychological Science* 22, 11 (2011), pp. 1359-66, <http://journals.sagepub.com/doi/pdf/10.1177/0956797611417632>.
- 173 Irving Langmuir, “Pathological Science,” Colloquium at the Knolls Research Laboratory, December 18, 1953, <https://www.cia.gov/library/readingroom/docs/CIA-RDP96-00791R000100490001-4.pdf>.
- 174 James Rodger Fleming, *Fixing the Sky: The Checkered History of Weather and Climate Control* (New York: Columbia University Press, 2010).
- 175 “A complete list of things caused by global warming,” *Number Watch*, <http://www.numberwatch.co.uk/warmlist.htm>.
- 176 Madeleine Aruffo, “Problems with the Noble Lie,” *The Core Journal* 23 (2014), pp. 181-87, <https://www.bu.edu/av/core/journal/xxiii/Aruffo.pdf>.

FIGURES

- 1 Huff, Darrell. *How To Lie With Statistics*, Cover, https://images-na.ssl-images-amazon.com/images/I/51zFExbOw9L_SX331_BO1,204,203,200_.jpg.
- 2 Davis, Fremont. *Frederick Seitz*, 1963. Accession 90-105; Science Service Records, 1920s–1970s. *Wikipedia*. https://en.wikipedia.org/wiki/Frederick_Seitz#/media/File:Frederick_Seitz.jpg.
- 3 5Gyers. *Microplastics*, Oregon State University, *Flickr*. <https://www.flickr.com/photos/oregonstateuniversity/21282786668>.
- 4 *John Ioannidis, Chair in Disease Prevention and Professor of Medicine, and of Health Research and Policy*. Stanford University, *Stanford University*. <https://profiles.stanford.edu/john-ioannidis>.
- 5 Wansink, Brian. *Bottomless Bowl*, 2004. *Wikipedia*. https://commons.wikimedia.org/wiki/File:Bottomless_Bowl-Wansink.jpg.
- 6 Munroe, Randall. *Cell Phones*, N.d. *xkcd*, <https://xkcd.com/925/>.
- 7 Repapetilto. *P-Value Graph*, 2012. *Wikipedia*. https://en.wikipedia.org/wiki/File:P-value_Graph.png.
- 8 Munroe, Randall. *Null Hypothesis*, N.d. *xkcd*, <https://xkcd.com/892/>.
- 9 Munroe, Randall. *Significant*, N.d. *xkcd*, <https://xkcd.com/882/>.
- 10 Munroe, Randall. *Artifacts*, N.d. *xkcd*, <https://xkcd.com/1781/>.
- 11 *John Ioannidis, Chair in Disease Prevention and Professor of Medicine, and of Health Research and Policy*. Stanford University, *Stanford University*. <https://profiles.stanford.edu/john-ioannidis>.
- 12 Munroe, Randall. *Human Subjects*, N.d. *xkcd*, <https://xkcd.com/1594/>.
- 13 Munroe, Randall. *Machine Learning*, N.d. *xkcd*, <https://xkcd.com/1838/>.
- 14 Munroe, Randall. *P-Values*, N.d. *xkcd*, <https://xkcd.com/1478/>.
- 15 628512, N.d. People, *Max Pixel*. <http://maxpixel.freegreatpicture.com/Kids-Headphones-Family-628512>.
- 16 Benedek, István. *Ignaz Semmelweis*, 1860. *Wikipedia*. https://commons.wikimedia.org/wiki/File:Ignaz_Semmelweis_1860.jpg.
- 17 143654, N.d. *Pexels*. <https://www.pexels.com/photo/colors-colours-health-medicine-143654/>.
- 18 Center for Open Science. *Center for Open Science Logo*, 2017. *Wikipedia*. <https://commons.wikimedia.org/wiki/File:Cos-400-square.1200x1200.jpg>.
- 19 Munroe, Randall. *Correlation*, N.d. *xkcd*, <https://xkcd.com/552/>.
- 20 *Thomas Bayes*, 1988. *Wikipedia*. https://commons.wikimedia.org/wiki/File:Thomas_Bayes.gif.
- 21 mattbuck. *Bayes' Theorem*, 2009. *Wikipedia*. https://commons.wikimedia.org/wiki/File:Bayes%27_Theorem_MMB_01.jpg.
- 22 Munroe, Randall. *Frequentists vs. Bayesians*, N.d. *xkcd*, <https://xkcd.com/1132/>.
- 23 *Photograph of Nobel Laureate Albert A. Michelson*, N.d. *Wikipedia*. https://en.wikipedia.org/wiki/Albert_A._Michelson#/media/File:Albert_Abraham_Michelson2.jpg.
- 24 *Edward Williams Morley*, 1880. *Wikipedia*. https://en.wikipedia.org/wiki/Edward_W._Morley#/media/File:Edward_Williams_Morley2.jpg.
- 25 Häggström, Mikael. *Preventable Causes of Death in the United States*, 2009. *Wikipedia*. https://commons.wikimedia.org/wiki/File:Preventable_causes_of_death.svg.

- 26 *National Institutes of Health Logo*, 2012. *Wikipedia*. https://commons.wikimedia.org/wiki/File:NIH_Master_Logo_Vertical_2Color.png.
- 27 Kubrick, Stanley. *Dr. Strangelove*, 1964. *Wikipedia*. https://commons.wikimedia.org/wiki/File:Dr._Strangelove.png.
- 28 Vermeer, Johannes. *The Astronomer*, 1668. *Wikipedia*. [https://en.wikipedia.org/wiki/The_Astronomer_\(Vermeer\)#/media/File:Johannes_Vermeer_-_The_Astronomer_-_WGA24685.jpg](https://en.wikipedia.org/wiki/The_Astronomer_(Vermeer)#/media/File:Johannes_Vermeer_-_The_Astronomer_-_WGA24685.jpg).