ASA News
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P-Values, Hypotheses and Inference … Statistics Experts Propose New Ways to Address the Trio and Reality of Reproducibility

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BALTIMORE, Md. (July 30, 2017) – Amid the increased quantification of scientific research and a proliferation of large, complex data sets expanding the scope for statistics, debate has been brewing in the scientific community about the use and validity of *p*-values. Andrew Gelman, professor of statistics and political science and director of the Applied Statistics Center at Columbia University; Blake McShane, associate professor of marketing at Northwestern University; and Jeffrey Leek, associate professor in the department of biostatistics at Johns Hopkins University Bloomberg School of Public Health, will present new approaches to addressing what has been dubbed the "reproducibility crisis" July 30 at the 2017 Joint Statistical Meetings (JSM) in Baltimore.

"The source of the crisis has been attributed to lack of tools for reproducibility or *p*-values and hypothesis testing," notes Leek. "I believe there's an alternative explanation: that data analysis is a human behavior, and we understand it relatively poorly." Leek proposes data science be studied "as a science" and the statistics community campaign for more statistics education, rather than focusing on a specific tool or measure of significance. The co-editor of the journal *Biostatistics* and contributor to the blog *Simply Statistics*, Leek has long advocated for greater understanding and access to shared curricula, compatibility and education research.

"Top science journals routinely publish ridiculous, scientifically implausible claims and justify it based on $p<0.05$," said Gelman. This in turn calls into question all sorts of more plausible, but not necessarily true, claims that are supported by this same sort of evidence." Among Gelman's many focus areas, he's performed research into survey methods, experimental design and statistical inference. In light of the distrust of *p*-values, Gelman posits whether experimental science involving human variation should simply start over and proposes that Bayesian inference could supply a solution.

Since its publication in March 2016, the ASA's policy statement on statistical significance and *p*-values—a guidance document containing principles on the proper use and interpretation of the *p*-value—has been viewed more than 198,000 times, a testament to the widespread concern for reproducible research shared by professionals in business, academia and government throughout the statistical and broader scientific community.

Media can attend JSM for FREE, but must pre-register by emailing Jill Talley, ASA public relations manager, at jill@amstat.org.

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About JSM 2017

JSM 2017 is the largest gathering of statisticians and data scientists in the world, taking place July 29–August 3, 2017, in Baltimore. Occurring annually since 1974, JSM is a joint effort of the American Statistical Association, International Biometric Society (ENAR and WNAR), Institute of Mathematical Statistics, Statistical Society of Canada, International Chinese Statistical Association, International Indian Statistical Association, Korean International Statistical Society, International Society for Bayesian Analysis, Royal Statistical Society and International Statistical Institute. JSM activities include oral presentations, panel sessions, poster presentations, professional development courses, an exhibit hall, a career service, society and section business meetings, committee meetings, social activities and networking opportunities.

About the American Statistical Association

The ASA is the world's largest community of statisticians and the oldest continuously operating professional science society in the United States. Its members serve in industry, government and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare. For additional information, please visit the ASA website at www.amstat.org.

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