456 **Thu, 8/6/2020, 10:00 AM - 11:50 AM** **Virtual**

P-Values and "Statistical Significance": Deconstructing the Arguments — Topic Contributed Panel

(https://ww2.amstat.org/meetings/jsm/2020/onlineprogram/AbstractDetails.cfm?abstractid=309634)

Section on Statistical Consulting, Biometrics Section, IMS

Organizer(s): Deborah Mayo, Virginia Tech

Chair(s): Larry Wasserman, Carnegie Mellon University

10:05 AM **P-Values and "Statistical Significance": Deconstructing the Arguments**

Panelists: **Deborah Mayo, Virginia Tech**
Karen Kafadar, University of Virginia
Ya'acov Ritov, University of Michigan
Stanley Young, CGStat

11:40 AM **Floor Discussion**

Keywords: P-values; statistical significance tests; replication crisis; multiplicity; methodological guidelines; Bayesian methods

Abstract: In the face of today's crisis of replication, researchers, societies, and journals are advancing methodological reforms. Many are welcome, others are radical. The misuses of statistical significance tests and P-values have resulted in the most criticism. The time is right to consider the presuppositions of criticisms, the ramifications of proposed reforms, and set the stage for a balanced appraisal of alternative methods. That is the goal of our session. Panelists will consider problems not typically addressed, e.g., many of the most serious problems are due to violating assumptions in computing P-values. Some look at the policy impacts foundational disagreements have in setting methodological guidelines. Others contrast the use of P-values, confidence intervals, and Bayesian methods in general and in contexts of high dimensional data. We explain how even agreement on sources of poor replication may lead to opposing standpoints on the importance of P-value thresholds. Our overall aim is to point to new avenues for communicating the proper interpretation of P-values, and to ensure our theoretically sound statistical methodology is neither abused nor dismissed categorically.