



## Some New Insights on the Fisher Randomization Test



Randomized experiment is a quintessential methodology in science, engineering, business and industry for assessing causal effects of interventions on outcomes. Randomization tests, conceived by Fisher, are useful tools to analyze data obtained from such experiments because they assess the statistical significance of estimated treatment effects without making any assumptions about the underlying distribution of the data. Other attractive features of randomization tests include flexibility in the choice of test statistic and adaptability to experiments with complex randomization schemes and non-standard (e.g., ordinal) data. In the past, these tests' major drawback was their possibly prohibitive computational requirements. Modern computing resources make randomization tests pragmatic, useful tools driven primarily by intuition. In this talk the speaker will discuss some recently developed results on FRT that provides new theoretical insights and can potentially lead to its broader applicability. The speaker will also argue that randomization tests are natural and effective tools for data fusion, that is, combining results from an ensemble of similar or dissimilar experiments.

### Tirthankar Dasgupta, Ph.D.

Professor  
Department of Statistics  
Rutgers University

**Date:** Monday, November 1, 2021  
**Time:** 1:50 – 2:40 p.m. US Central Time  
**Zoom Meeting ID:** 998 4499 3279  
**Passcode:** 724615  
**Faculty host:** Yu Ding, TAMIDS

### Biography

Dr. Tirthankar Dasgupta is a Professor in the Department of Statistics, Rutgers University. His research interests include causal inference, experimental design, statistical applications in the physical sciences, engineering and biomedical sciences, and quality engineering. He received his Ph.D. in industrial engineering from Georgia Institute of Technology in 2007. He served as a faculty member in the Department of Statistics at Harvard University during 2008-2016 where he received the David Pickard award for teaching and mentoring. Part of his research has been funded by the Division of Civil, Mechanical and Manufacturing Innovation (CMMI), Division of Material Research (DMR) and Division of Mathematical Sciences (DMS) of the National Science Foundation and he holds a patent on statistical predictive modeling and compensation of geometric deviations of 3-D printed products. Presently he serves on the editorial boards of the Journal of the American Statistical Association and the Journal of the Royal Statistical Society (Series B), and IISE Transactions. He has served on the editorial boards of Technometrics and Journal of Quality Technology in the past and was the 2014-15 Chair of INFORMS Section on Quality, Statistics and Reliability.

You can also click this link to join the seminar <https://tamu.zoom.us/j/99844993279?pwd=TkJodWFVRURyMmkwakl4SWZGeVJTQT09>