Enhancing statistical methods in grants and papers

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2019-06-04

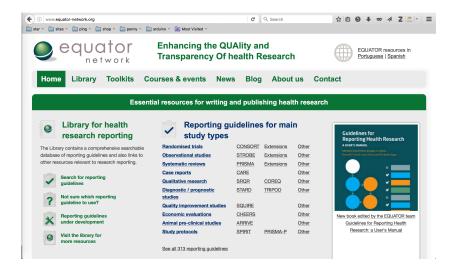
Seminar series on statistical reasoning in biomedical research

- Apr 30: P-values: What they are and what they are not (Fridtjof Thomas, PhD)
- ▶ May 07: Should We eliminate P-Values or Use More of Them: A Discussion on the P-Value Controversy (Saunak Sen, PhD)
- May 14: The Bayesian Approach to Data Analysis (Fridtjof Thomas, PhD)
- ▶ May 21: Multiple Testing and the False Discovery Rate (Saunak Sen, PhD)
- ▶ May 28: The Perfect Doctor: An introduction to Causal Inference (Fridtjof Thomas, PhD)
- ▶ Jun 04: Enhancing Statistical Methods in Grants and Papers (Saunak Sen, PhD)

Outline

- Reporting guidelines
- ▶ NIH reproducibility initiative
- BERD clinic
- Biostatistics consulting
- Co-investigators
- ▶ Edcational resources

Equator network



Principles and Guidelines for Reporting Preclinical Research

www.nih.gov/research-training/rigor-reproducibility

- Rigorous statistical analysis
- Transparency in reporting
- Data and material sharing
- Consideration of refutations
- Consider establishing best practice guidelines for: image-based data, antibodies, cell lines, animals
- Endorsements from leading journals
 Nature, Science, Cell, PLoS, BMJ, Society for Neuroscience

Biostatistics, Epidemiology and Research Design (BERD) unit of TN-CTSI

- Connects researchers
- Fills gaps in research methods expertise
- Provides access to commonly used research methodology (biostatistics, biomedical informatics, epidemiology, molecular bioinformmatics)
- Develops new methods for translational research
- BERD Clinic
- Biostatistics consulting
- Educational resources
- Co-investigators

Collaboration vs consultation

Sometimes it is not clear whether to look for a collaborative or a consulting arrangement.

- Open-ended vs defined (time, deliverables) interaction
- Standard vs innovative methods
- Partner vs provider

For short projects with defined goals and using standard methods a consulting arrangement is preferred.

Note that authorship is independent of consulting vs collaborative arrangement.

Residents and fellows are eligible for a voucher worth 10 hours of consulting for projects.

Collaborations

Collaborations are suited for long-term open-ended engagements or when methodological innovation in anticipated.

Typically collaborations are funded by research grants. Before a grant is submitted, one has to estimate the percent effort for each collaborator. This is tricky.

- ► How many similar projects can a single person handle at one time? Divide 100% by that number.
- ▶ How many hours per year (month or week) would the project consume? Divide that by the FTE equivalent.
- What is the understanding between collaborators? Higher percent effort should mean faster response times and dedicated time slots.

Educational resources

- ▶ Masters in Epidemiology with three tracks (Biostatistics, Clinical Investigation, and Data Science (36 credit hours)
- ▶ Certificate Program in Clinical Investigation (12 credit hours).
- BERD seminars
- Data Science PhD program

Resources

- ► TNCTSI BERD
- Equator network
- NIH on rigor and reproducibility
- NIH training modules
- ► ICMJE authorship guidelines

Slides at https://tnctsi.uthsc.edu