NISS Affiliate Webinar: How to Write a Successful Grant Proposal

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Background

- Professor and Chair, Department of Statistics, University of South Carolina
- BMRD permanent member (2017-2021); handful of other panels
  - Presented about 30 proposals/year; read dozens more
- Participated in 3 successful R01 applications and 1 R21 application
  - and many unsuccessful applications!
- Editor, *The American Statistician*
- Associate Editor, *Statistics in Medicine*

NIH grant basics

- Review is conducted by the Center for Scientific Review
    - Most grants are scored in a study section (e.g., BMRD, etc.)
- Funding decisions are made by an institute or center (27 of them)
    - Reviewers do not make funding decisions!
- Each institute has its own payline
- Early Stage or New Investigator PIs have a funding advantage
- NIH web sites are a great resource for applicants!
- Talk to your Program Officer
    - NCI = National Cancer Institute
    - NIAID = National Institute of Allergy and Infectious Diseases

Review criteria

- Learn the review criteria inside at out
- **Criteria:** Significance, Investigators, Innovation, Approach, and Environment
    - Definitions and key questions reviewers ask
- Reviewers are looking for strengths and weaknesses in each area
- Additional review criteria; e.g., Human Subjects, Foreign Organizations, Biohazards, etc.
- Reviewers go through training for each panel

Scoring

- Each reviewer scores each of the 5 criteria
- Scores are from 1-9 (1 = best, 9 = worst)
  - S-7, I-2, I-5, A-3, E-2
    - This proposal likely represents high quality statistical research in an area that may not have high translational impact
  - S-1, I-2, I-4, A-6, E-1
    - This proposal may have high public health impact (or in science more generally) but there are some problems with the methodology
- "Striking a balance between application and methods"
  - BMRD members talk about this a lot

Reviewers and Panel Format

- Each reviewer will read 8-10 proposals; discuss aspects with the panel
- Each proposal is assigned 3 reviewers (usually)
- Primary reviewer leads discussion; secondary and tertiary reviewers add remarks
    - "Overall impact score"
- Panel discussion and Chair summarizes
- Reviewers decide on "Overall impact score" again (which may change from before)
- Each panel member votes on application
- Panel will discuss 40-50 applications!
    - Stratified by funding mechanism (e.g., R01, R21, etc.) and investigator status for R01s

Advice

- DO NOT ASSUME reviewers will be an expert in your application area and your area of statistics research
- Adopt a writing style that is warm and inviting; easy to review
- Make it easy for reviewers to grasp the main new ideas and the specific impact of your proposed work
    - Be clear, be concise
    - Situate the work in the literature
    - Tell us WHY IT IS IMPORTANT
    - Demonstrate REAL WORLD impact
    - Convey statistical ideas with adequate technical detail
    - But make the ideas accessible

Suggestions

- **Start to finish:** Give yourself 6 months
  - *"Details are the mark of the master"*
  - It is easy to detect applications that were cobbled together at the last moment
- Have others read and comment on your application
- Revise, revise, revise
- Revision/new submission? Think carefully
- It is rare to be funded on the first try
  - Be persistent!
- Regardless of whether your grant is funded, it is still a great learning experience
  - Makes you think hard about your research agenda; prioritize goals

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