AAAC Demographics Subcommittee

Members

Prisca Cushman (AAAC) University of Minnesota.
Jim Buckley (AAAC) Washington University.
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Todd Hoeksema (AAS CAPP) Stanford University.
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Brad Peterson (NASA NAC) The Ohio State University.

Agency Contact Persons

NSF Astronomy: Jim Ulvestad, Daniel Evans, Maria Womack
NSF Particle Astrophysics: Jim Whitmore, Jean Cottam
NASA Astrophysics: Paul Hertz, Linda Sparke, Glenn Wahlgren, Hashima Hasan
NASA Heliophysics: Arik Posner
NASA Planetary: Jonathan Rall
DOE Cosmic Frontier: Kathy Turner, John Boger
AAS: Joel Parriott
NRC (NAS): David Lang, James Lancaster

Other participants welcome!

Working Group Mission Statement

Over the last decade, budget pressures and a steep rise in the number of proposals have had an impact on researchers and funding agencies in the fields of Astronomy and Astrophysics. The decreasing success rate of individual proposals, a general decrease in funding levels in many agencies, and increased reviewer load has been a topic of concern within the community. Consequently, a working group has been formed under the auspices of AAAC, including representatives from CAS, CAA, AAS, and NAS, in consultation with representatives from the relevant divisions of NSF, DOE and NASA.

Its purpose is to evaluate the effect of this changing environment on the health of the field, specifically addressing whether this will result in an unacceptable restrictions in the range of new scientific initiatives and negatively impact career choices of the most promising researchers. It is already creating an unsustainable load on reviewers and has led the agencies to consider solutions to the problem (such as reducing the frequency of solicitations or restricting the number of proposals per year).

This working group will gather relevant demographic data in order to understand how the funding environment over the last 10 years has affected researchers and projects. Of particular concern is the balance between National Labs and Universities, and between individual researcher grants and large projects. We will compare funding models across agencies and determine appropriate metrics for evaluating success. This will allow us to provide data-driven projections of the impact of such trends in the future, as well as that of any proposed solutions.

Some solutions discussed

- No change
- One proposal per year per PI
- RFPs every other year
- Pre-proposal stage (two-step proposals)

Major questions to answer for each particular solution

Is it good for the science?
Would it improve success rates?
Would it reduce reviewer load?
Has this been tried before, and with what results?

A quick survey (Jim Ulvestad) of other NSF divisions (Physics, Materials Research, Chemistry, Math) reveals that multiple submission from the same PI during the same proposal submission window are officially discouraged, but not forbidden.

Not necessarily a one solution fits all!

Need to understand the agency philosophy, suite of funding mechanisms
- And
What the problem is that we are trying to solve

Gathering Information from various sources

NASA Astrophysics Committee Liaison: Brad Peterson
NASA Heliophysics Committee Liaison: Todd Hoeksema
NASA Planetary Committee Liaison: Jim Buckley
NSF Astronomy Committee Liaison: James Lowenthal
NSF Particle Astrophysics Committee Liaison: Angela Olinto
DOE Cosmic Frontier Committee Liaison: Prisca Cushman
AAS Community Information Liaison: Joel Parriott

Each agency wiki page is independently researched and edited by the liason, but follows a template

- Funding Policies and Philosophy
- RFP and Proposal structure and frequency
- Selected Questions and Available Data
- Resources: Links to Existing Talks, Trending Graphs, Relevant Information

This is the hard one!

What we are doing now

The questions we could ask are limited only by our imagination!
Brainstorming was our first task to make sure we covered the bases.

To pare them down and prioritize takes several steps (in parallel).

Determine which questions are

1. Already answered
2. Can be answered readily (data exists)
3. Would take significant work
4. Cannot be done (either the data doesn't exist or is protected)

We are addressing 1 by summarizing trends we find
in the presentations and graphs collected in ***Resources***
We are asking the agencies to help identify 2-4
Resource people were listed on first page.
Special mention to Daniel Evans (Data guru for NSF Astronomy)
NSF ParticleAstro will draw from Astronomy
All the agencies have a lot of data already
We have a number of community questions that can be answered by AAS

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American Astronomical Society

Questions and Available Data

- Our digital job register data goes back to 2003.
- Our digital membership data goes back at least 10 years.
  - Demographic information is self-reported and not broadly consistent with federal standards of classification.
  - Our membership data will have the unclear bias of “people who choose to be AAS members.”
  - It is not obvious how this would bias the information.
    - Possible examples:
      - Are we undersampling small institutions?
      - Are some other institutions over or under-represented based on local department culture?
      - Are astronomers from certain types of institutions more likely to be AAS members?
  - In addition, the overlaps between our membership and the proposing-and-funded or proposing-and-not-funded cohorts are unclear.
- We think we could provide a secondary estimate of the field demographics to compare to the agencies' datasets, but as a primary source, our data would introduce unclear biases.

Links to Existing talks, trending graphs, relevant information

Example: Selected Questions and Available Data (NSF PA)

- Who is proposal PI? Position, gender, race/ethnicity, geographical location, institution type
  - Takes some time to collect from each proposal (P.C. Protected data?)
- How many proposals by same PI? - broken down by PI category
  - Fairly easy NSF PA - Mostly one proposal per PI)
- Number of senior researchers on proposal per year, per category
  - Could get it but probably take some time to collect from each proposal
- Compare success rates of different sorts of proposals per PI category, yrs between
  - Huge amount of work
- Do younger researchers rise through the ranks? First appearance ➔ PI
  - Takes some time to collect from each proposal
  - First time younger PI "Career grants" could shed light
- Community demographics (support, type, missions/labs/universities per field) including impact on people (leaving field, working part time, retirement)
  - Try AAS first
- What are acceptable and unacceptable success rates? And what factors influence them? (program staff, reviewers, community, fairness, etc.)
  - Impossible?
- Does the success rate make any difference in program allocations by agencies?
  - Question for Program Managers
- Number of proposals reviewed/selected/funding per/supplements/missions
  - Much already exists
- ***Not considered by these Questions yet: Reviewer Load !***

Questions that *can* be answered will be broken down into Database Queries

General Data we need (over the last 10 years)

- Who is writing the proposals? Please let me know which of these data are available, without violating privacy rules.
  - PI position: (postdoc, professor, tenured, etc)
  - Gender, race/ethnicity
  - geographical location,
  - size, type (and research tier?) of institution
  - Other?
- How many proposals submitted by same PI - broken down by PI category above
- Number of senior researchers on proposal per year - broken down by the PI categories above
- Total funding awarded -same breakdown
- Compare success rates of different sorts of proposals
  - per PI category as above
  - per number of senior researchers on the proposal
  - per number of proposals submitted in the last 5 years
  - per which type of proposal (indexed by RFP? or by topic?)
- Years between successful proposals for each PI (does each renewal count as a "successful proposal"?)- broken down by the PI categories
- Ratio of successful to unsuccessful proposals per PI - broken down by the PI categoris
- Same ratio, but as an overall success rate per RFP or topic - which categories make sense here?
- Do younger researchers rise through the ranks (are researcher on proposal and then become PI later)?
  - Number of years between first appearance as senior researcher on a proposal to becoming PI
  - Number of senior researchers (above postdoc) that are supported on proposal soft money overall
  - Same as above, but per proposal, per geographical place, per gender/race/ethnicity

Schedule (too aggressive?)

- Identify the questions that can inform this decision.
- Data collection required to answer these questions.
- What already exists at the agencies?
- What trending plots are the most informative?
- What other data must be collected and from where and how?
  - By January (at least by next AAAC meeting)

- Collect data and determine optimal format for presentation
  - Draft by AAAC Spring report

- Disseminate results – either publically or to the agencies
  - By summer 2015