



STScI | SPACE TELESCOPE
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

The Dual-Anonymous Review Process

Lou Strolger

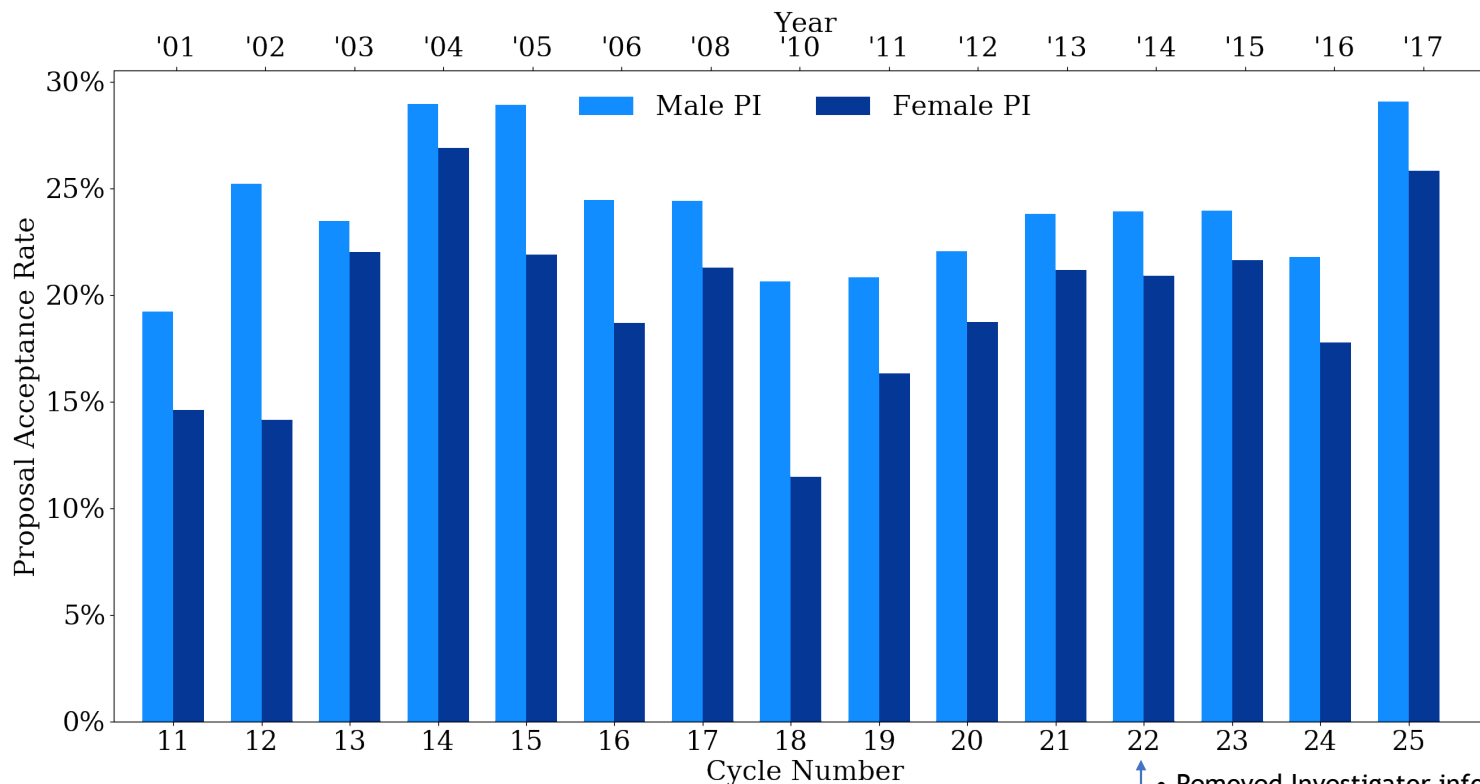
Deputy Head of Instruments Division

February 4, 2021



Gender-correlated Systematics in HST Proposal Selection

I. N. Reid 2014, PASP, 126, 923



average
5% gap

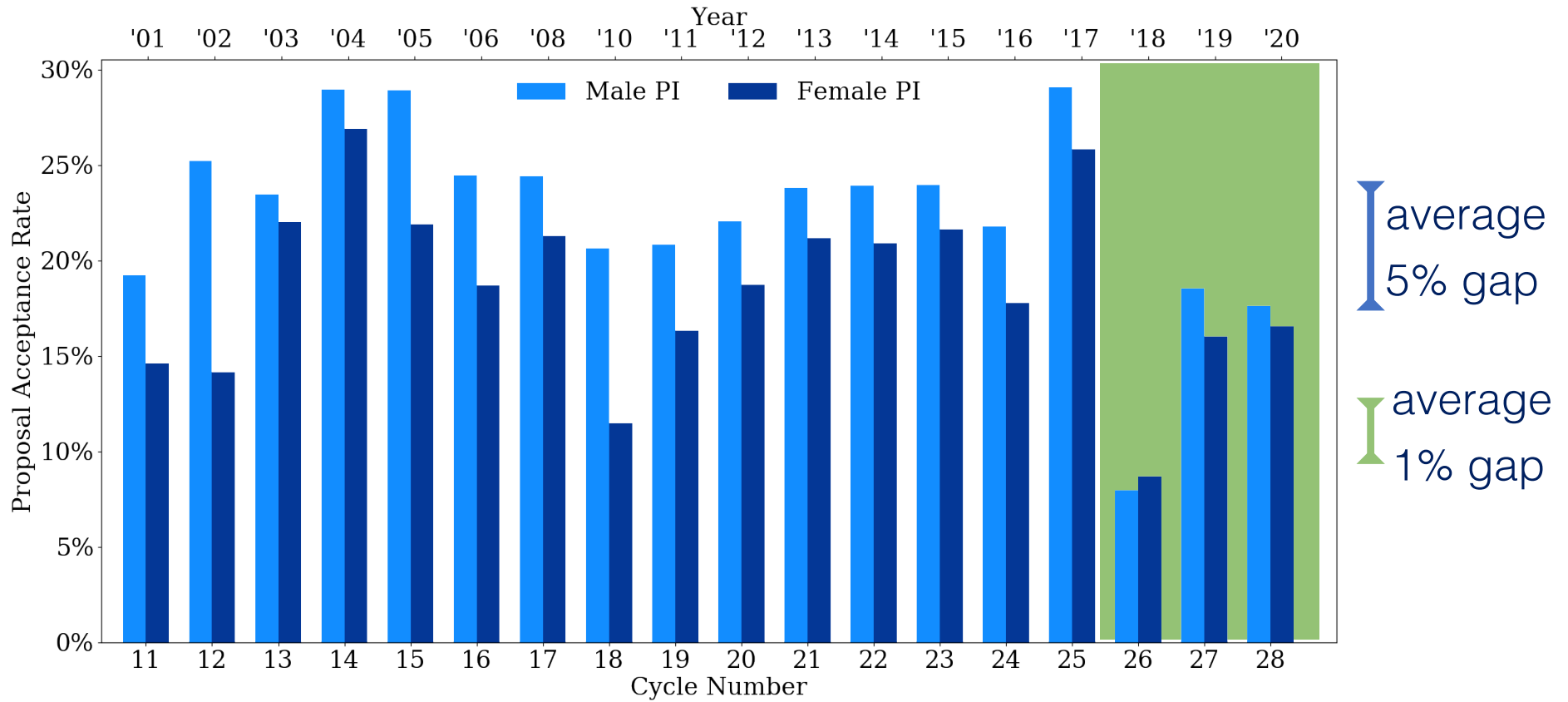
2017: Constituted a working group, explored advisory and community feedback.

Designed a dual-anonymous review process for Cycle 26

- Removed Investigator info from cover page
- Alphabetized list of investigators
- Invited Johnson & Link review. feedback: adopt an anonymous process



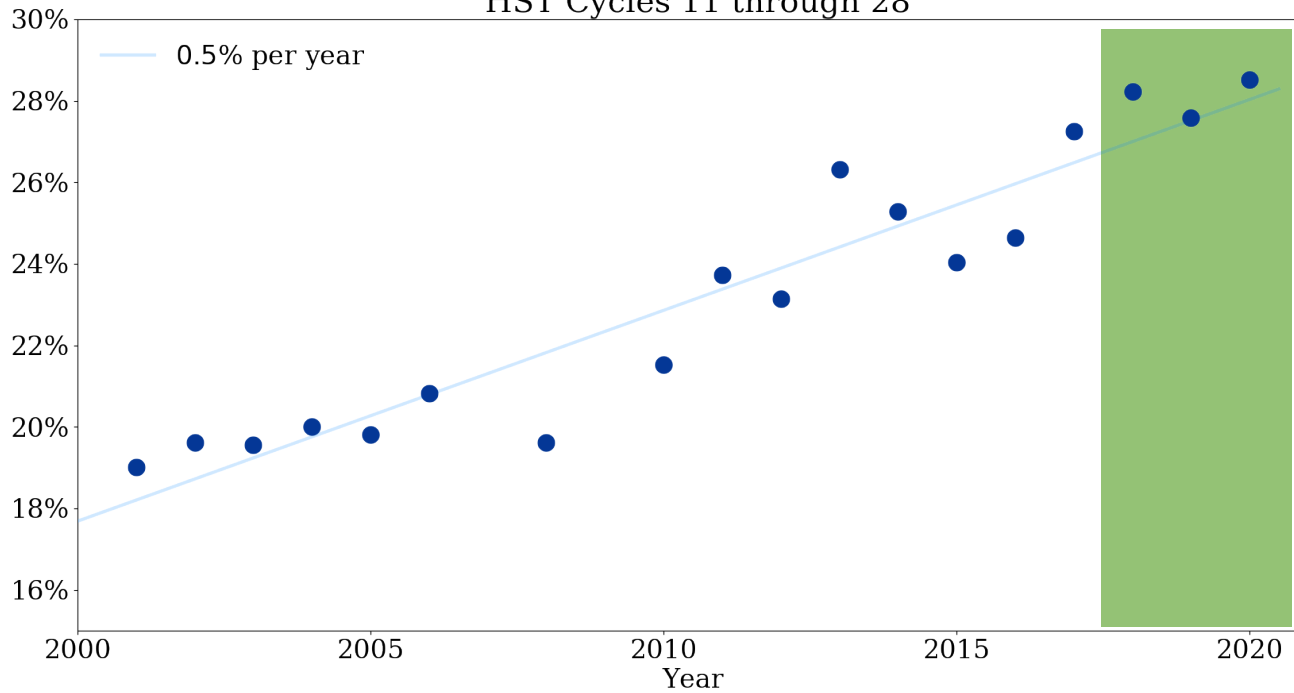
Impact of the Dual-Anonymous Review: Decreasing the Gap in Gender Bias





Impact of the Dual-Anonymous Review: Enticing New Proposers

Fraction of proposals submitted by female PIs
HST Cycles 11 through 28



Number of PIs awarded programs for their first time

Cycle 28	55
Cycle 27	51
Cycle 26	6
Cycle 25	21
Cycle 24	5



Unconscious Bias



HST gender
award gap

Various other
inequities due to
conscious and
unconscious
identity biases



Unconscious Bias

- STScI is working to reduce bias in the selection of proposals associated with our missions. Part of that effort is increasing awareness of unconscious bias within our review panels.
- **Everyone employs Unconscious or Implicit Bias**, social stereotypes about certain groups of people that individuals form outside their own conscious awareness. These biases are often at odds with our consciously held values and belief system. (For more information, please see Project Implicit at <https://implicit.harvard.edu>.)
- These biases can have unintended consequences, e.g., for our ability to identify the most scientifically meritorious proposals, and can have lasting negative effects, particularly on the careers of women and other underrepresented groups in STEM.
- While this dual anonymous review process is designed to help mitigate biases, it is not *bias-free*. We encourage you to seek formal unconscious bias training

A NEW DIRECTION IN RESOURCE ALLOCATION



JWST too!

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001



June 7, 2019

To: Distribution (Astrophysics GO Leads)
From: SMD/Director of Astrophysics
Re: Dual Anonymous Peer Reviews for Astrophysics GO Programs

In June 2018, the Space Telescope Science Institute (STScI) conducted a dual anonymous peer review for Cycle 26 of the Hubble General Observer (GO) program¹. The dual anonymous peer review addresses many issues of implicit bias. STScI's implementation of dual anonymous peer review was successful in Cycle 26. During June 2019, STScI will be conducting the Hubble Cycle 27 peer review, again using the dual anonymous process. STScI and NASA will review the Cycle 27 experience and outcomes to assess the dual anonymous practice.

In the absence of any contra-indications from the Hubble Cycle 27 peer review, I am directing all NASA Astrophysics GO programs to use dual anonymous peer reviews beginning in CY 2020.

In order to provide all NASA Astrophysics GO program leads with the benefit of STScI's experience, STScI will host a workshop in Fall 2019 to share their practices, lessons learned, and extant documentation with all other missions.

If you have any questions, please address them to your HQ Program Scientist or to me.

Paul Hertz
Director, Astrophysics Missions
Science Mission Directorate



A dual anonymous peer review— Proposer Guidelines

Proposers craft their proposals in accordance to anonymizing guidelines

- Exclude names and affiliations, including in figures and references to personal websites
- Do not claim ownership of past work, e.g., “my successful HST program GO-8675309...” or “our analysis shown in Smith et al. 2015...”
- Rather, cite all references in passive third person, e.g., “the analysis by Smith et al. 2015 shows...” This includes references to proprietary data and software. Note: there may be an even greater importance to cite all relevant work.
- Proposers should focus on describing the work proposed, e.g., “We propose to do the following...” or “this program will measure the effects of...”
- *Proposers can provide reviewers with all the relevant information to make recommendations on relative scientific merit.*



A dual anonymous peer review— Proposer Guidelines, cont.

- Proposers must also submit a Team Expertise and Background description with their submissions. This section is **not anonymous**.
- The TE&B will not be considered in the review of scientific merit leading into the ranked recommendations.
- The TE&B will be used in a final stage of the review, after the scientific ranking is completed.
- Proposers are not to submit management plans for **any** proposals. Archival proposals must include an Analysis Plan which details how products will be made available, and on what timeline. These should not include a description of personnel, or information on their identities.
- Awarded programs will submit Budget Requests (not anonymized) with detailed management plans. The Financial Review Committee will compare the requested costs with commensurate work as described in the science proposals.



A dual anonymous peer review— Reviewer Guidelines

Panel and TAC reviewers are to consider proposals solely on the scientific merit of what is proposed

- Do not spend time attempting to identify the PI or the team. Discuss and evaluate the science and not the people
- In discussion leading up to the scientific ranking, do not make guesses on identities, insinuate the likely identities, or instigate discussion on team's experience. There is a later evaluation of competency in the TE&B review.



Levelers will be present to insure the discussion focuses on scientific merits of the proposals.

If the discussion veers to comments on the proposing team, their job is to refocus that discussion.

They have the **authority** to stop a discussion to refocus it, or halt it completely.



A dual anonymous peer review— Reviewer Guidelines, cont.

- Follow the evaluation criteria we have provided to you for grading and discussion.
- Be mindful of what you say in discussions. Keep in mind that language can be important to preserving anonymity. Use appropriately neutral pronouns (e.g., “what they propose to do is...”, or “the investigators have collected supporting data, and evaluated available MAST data...”).
- Several studies on dual-anonymous processes (in other fields) show that when encouraged to guess at identities, reviewers surprisingly often guess wrong.
 - The investigators on sufficiently anonymized proposals should be at least ambiguous.
 - It is futile, risky, and **prohibited** to guess at or suggest identities.



A dual anonymous peer review— Reviewer Guidelines, cont.

- Proposals that have not been sufficiently anonymized should be considered non-compliant and flagged for potential rejection.
- However, this is new, and there may be an occasional slip-up. If that should happen:
 - proceed if that instance can be ignored and not impact the discussion of scientific merit.
 - in the reviewer comments, highlight that instance and let the proposers know the proposal could have been more sufficiently anonymized.
 - If the mistakenly revealed identity can't be ignored, flag the proposal. Levelers may be helpful in reaching that decision.

Please let your panel support person and the SPG know of any proposals are not compliant with the anonymizing guidelines.



Conflicts of Interest

- In many ways, conflicts of interests are easier to manage than they had been for HST. There is no need for “major” and “minor” conflict levels— when a reviewer is conflicted, they must leave the room.
- Panelists will be excused from the discussion of proposals in which they may have a conflict of interest. This includes (but not limited to) interpersonal, close collaborator, or competitive conflicts of interests. And proposals they are investigators on (of course).
- There will be some automated checks of investigators, close collaborators (proposals & in literature), and checks against conflicts provided previously by panelists.
- The SPG relies on self-identified conflicts. If you **strongly** suspect you have a conflict with a given proposal, **you are conflicted** and should leave the room during that discussion.
- When conflicted, state that you are conflicted. Do not announce your conflict or reason for leaving the room. Arrangements will be made in advance for bringing you back.



Review of the Team Expertise and Background

- After the scientific ranking is complete, the panel will receive the TE&B sections and an alphabetized list of investigators (PI not identified) for those proposals that rank above their nominal time-allocation line.
- The panel should allow some time (about 20 minutes) to review those materials.
- Panelists should then raise specific proposals up for discussion. If there are clear, compelling deficiencies in expertise required to see through the goals of the proposal, the panel must then decide **by consensus** to flag the proposal for potential disqualification, and provide a detailed justification in the panel comments to the Director.



Review of the Team Expertise and Background, cont.

- The criteria for sufficient expertise is left to the panels in order to evaluate cases as necessary, e.g., for particularly difficult datasets, difficult analyses, or programs of exceptionally high risk.
- However, general inexperience with JWST data should not be a disqualifier, neither should failure to publish past datasets (unless there's an extraordinary issue).
- **Proposals can only be eliminated in this final review. The TE&B review will not be used to re-evaluate or upgrade programs below the nominal allocation recommendation.**
- If a panel should choose to essentially disqualify a proposal at the TE&B review, that panel is effectively forfeiting the time that it would have allocated to that proposal.
- Comments to proposers should be based on the scientific discussion, i.e., the discussion leading to the scientific ranking. It should not include comments on the team or their expertise.



Summary of dual-anonymous review process

- Please be mindful of Implicit Bias as you conduct your reviews.
- Proposals should be written in adherence to the dual-anonymous guidelines.
- TAC and Panel members should review (grade, discuss, and rank) proposals on the basis of scientific merit, not the identity of the proposers.
- Levelers will be present to insure the discussions focus on scientific merit, not the identity of the proposers.
- Reviewers should excuse themselves from discussions on proposals in which they have conflicts of interest.
- TE&B review will be done after the scientific ranking and can only be used to flag programs which may lack the expertise to do what they propose. No re-ranking of recommendations will be done at this stage.

End

DUAL-ANONYMOUS

BACKUP SLIDES





Community feedback

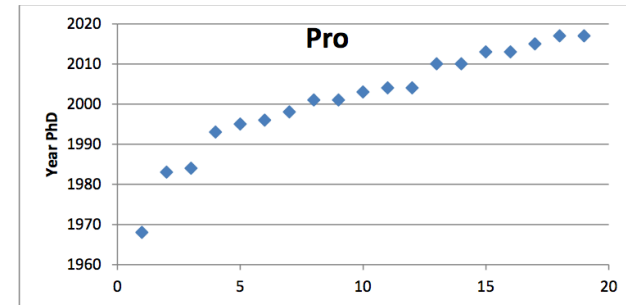
Initial feedback from community was mixed. Nearly as many for the proposed changes as against. **Notable seniority and gender differences in responses.**

Most concern focused on responsibility of use: insuring teams have competency to carry out what they propose to do. *Built in a TE&B review at the end of scientific ranking.*

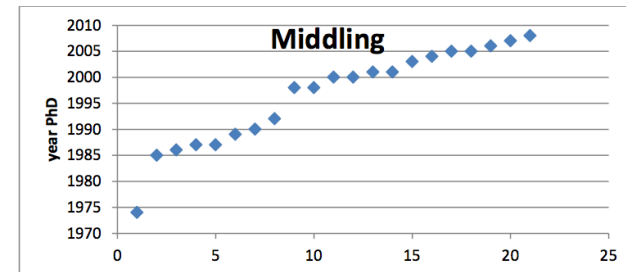
Upon implementation, **most** TAC members decided **not to review TE&B.**

Feedback since has been mostly strong: **most panelists saw little difference from previous review style, and are generally have been in favor of the change.**

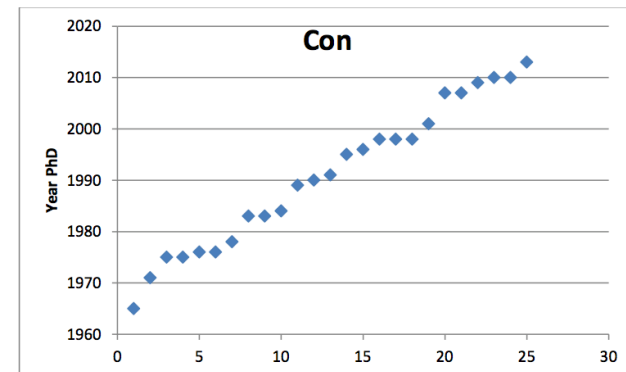
March 7, 2018



11 M, 8 F



19 M, 9 F



22 M, 4 F



Working toward an anonymous review

Cycle 22 (2014)	Removed Investigator information from cover page
Cycle 23 (2015)	Alphabetized list of investigators, Principal investigator not identified
Cycles 24 & 25 (2016 & 2017)	Invited external consultants to review process, feedback: <i>adopt an anonymous process</i>
2017	Constituted a Working Group, Explored advisory and community feedback
Cycle 26 (2018)	1st dual-anonymous HST TAC review

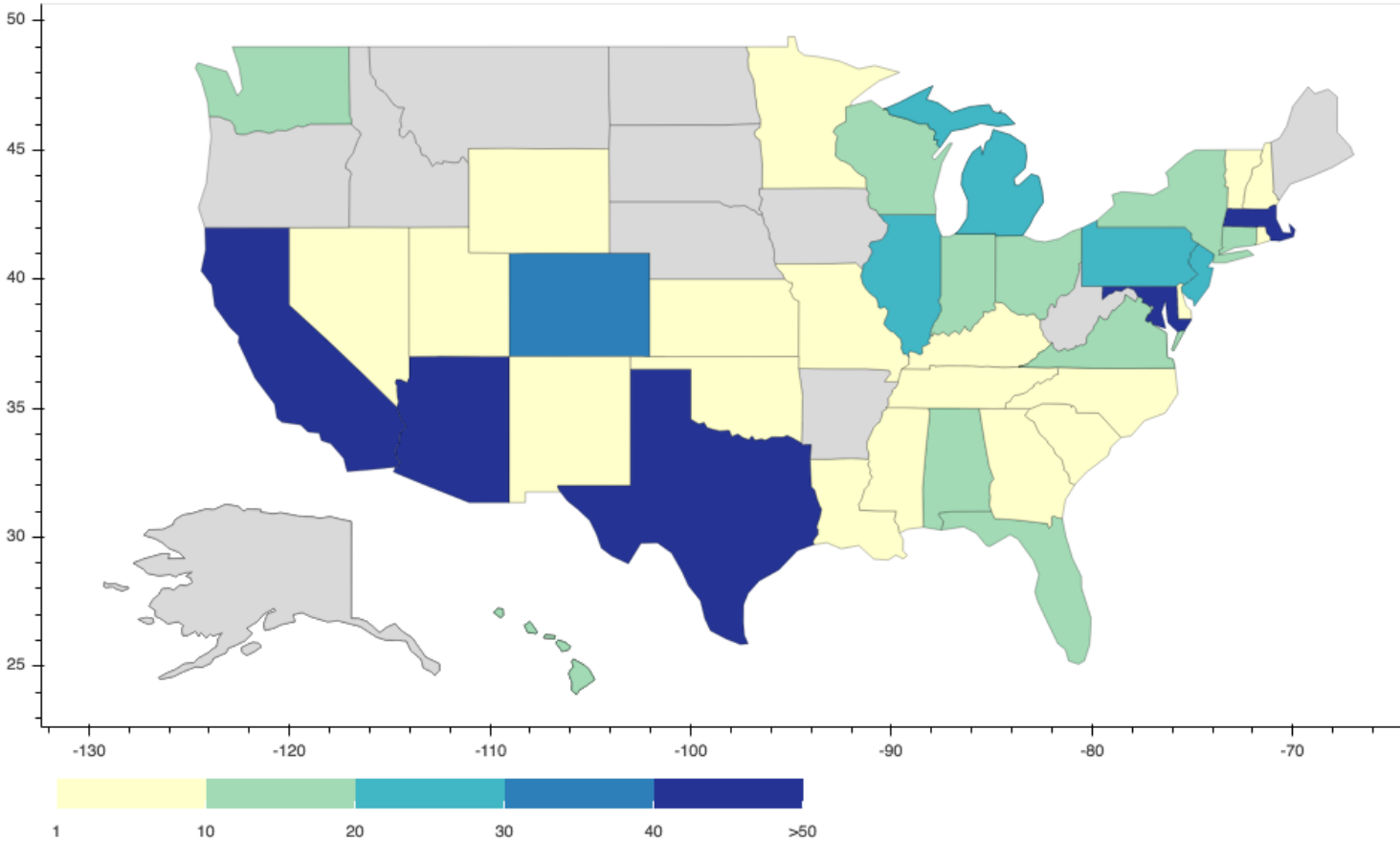
STScI took several progressive steps to reducing identity biases

Invited consultants (Johnson & Kirk) specializing in bias



The Hubble Space Telescope Peer Review

Proposals received by US state, Cycle 28 (2020)

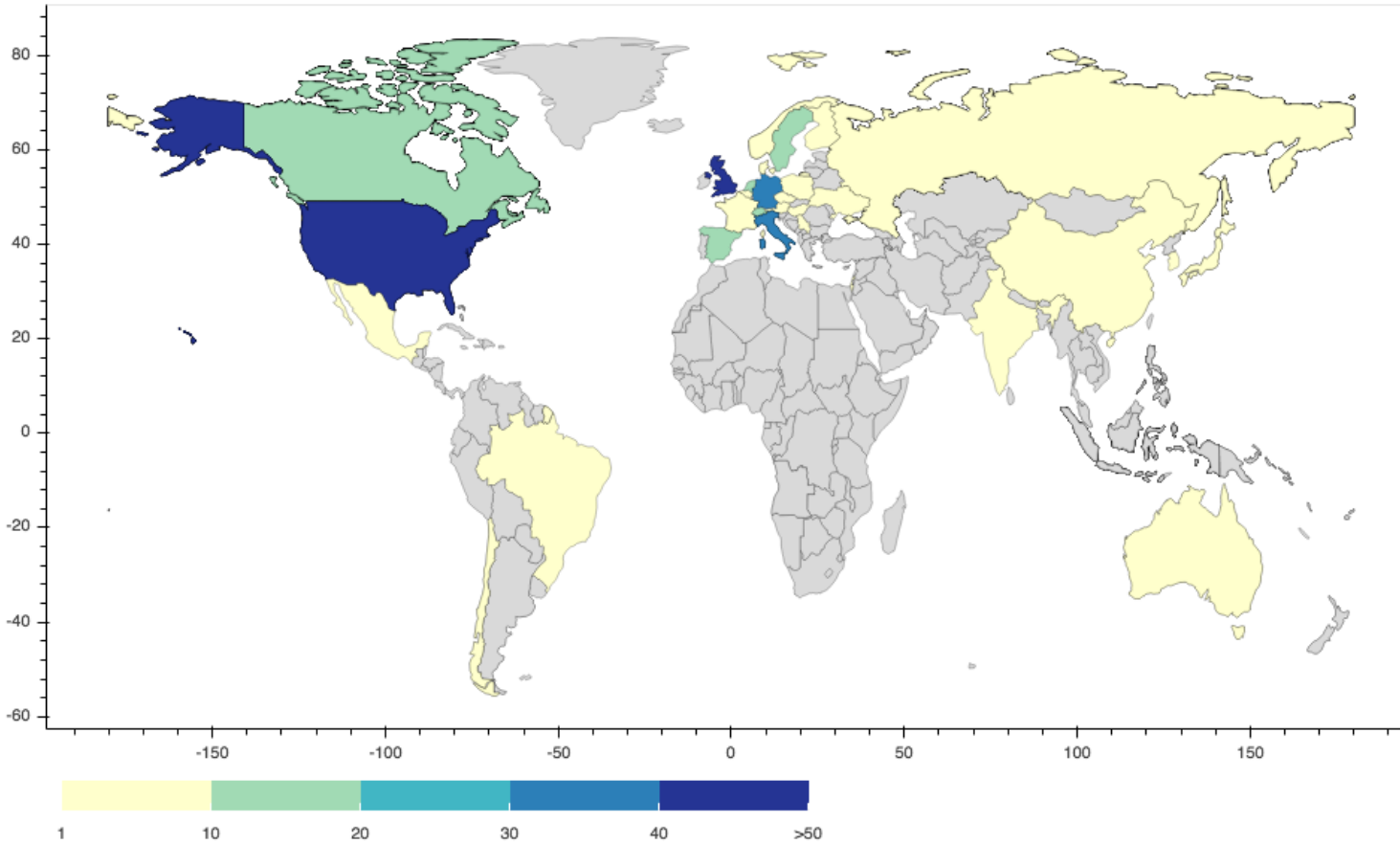


Proposer demographics show fairly good distribution



The Hubble Space Telescope Peer Review

Proposals received by country, Cycle 28 (2020)



Proposer demographics show fairly good distribution