



**STScI** | SPACE TELESCOPE  
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

# HST TAC: process & statistics

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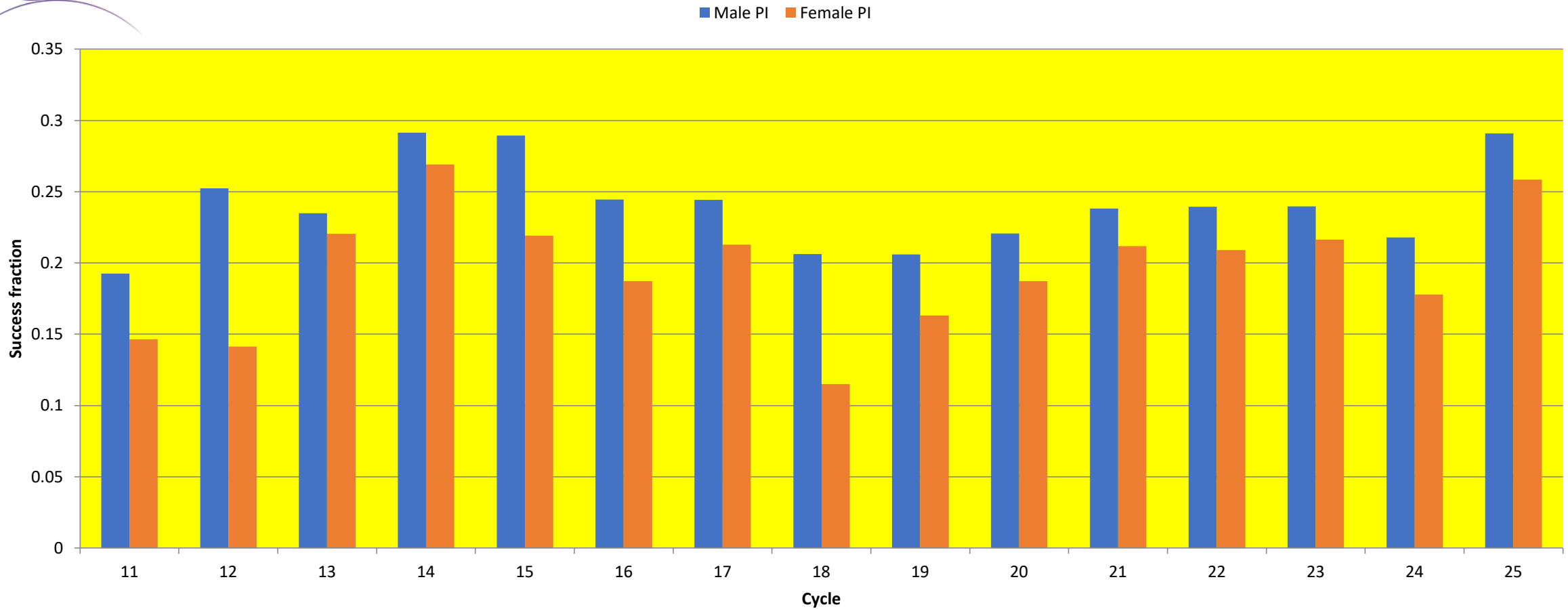
# HST Proposal Review Process: overview

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- Annual proposal review (most cycles)
  - Smaller proposals are distributed to topical panels
    - Solar System. Exoplanets & disks, stellar physics, stellar populations, galaxies & IGM, black holes & their hosts, cosmology
    - Typically 8 panel members + chair
    - STScI staff provide panel support
    - Larger proposals are reviewed by super-TAC comprised of TAC chair, panels chairs & at-large
  - Two-stage review process
    - Preliminary reviews prior to the meeting
      - 5-6 reviews per proposal → individual grades combined → ranked list
      - Proposals in lower 40% ruled out from discussion (but can be revived)
    - Remaining proposals are discussed and re-graded at face-to-face meeting
      - All un-conflicted panelists grade proposals → ranked list
      - Panels can adjust ranked list to allow for science balance
      - Final ranked list presented as a recommendation to the Director



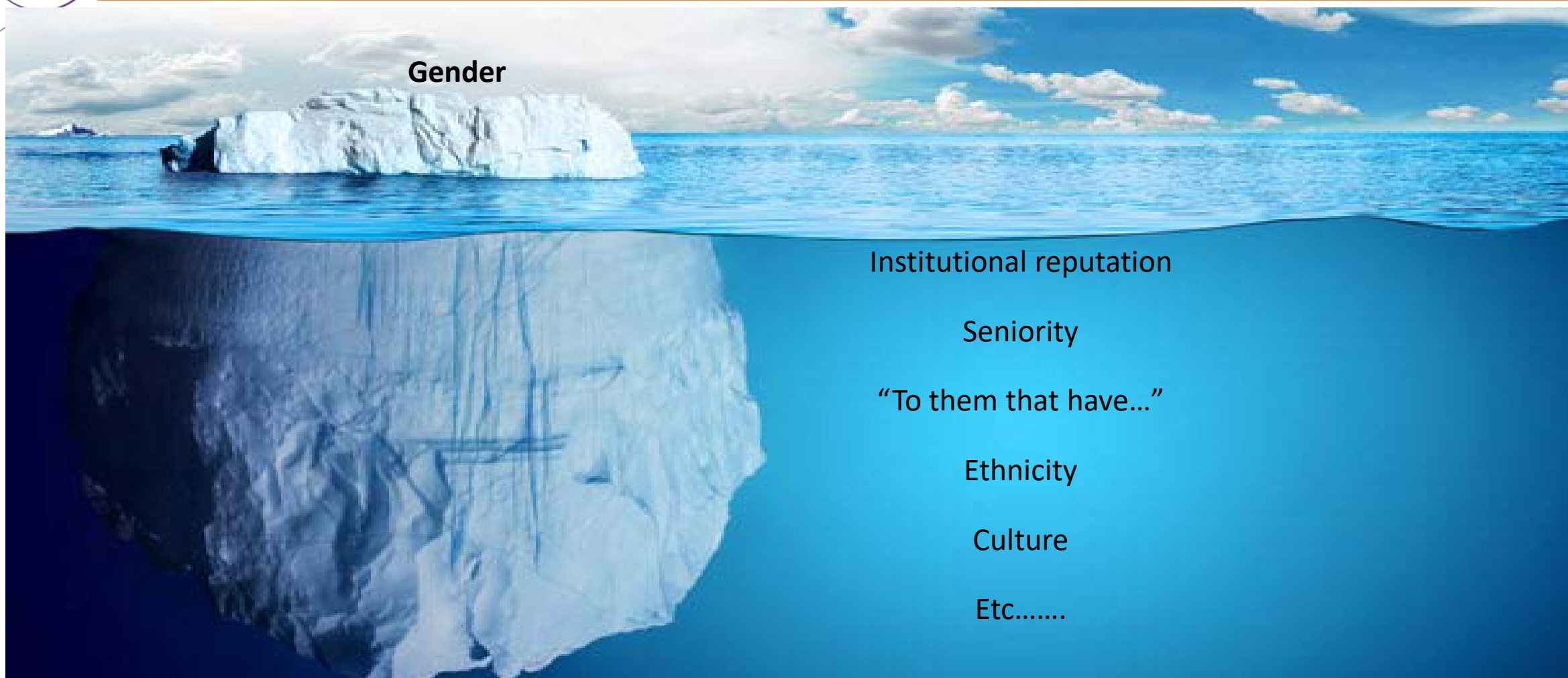
# PI gender and HST proposal selection statistics



- Clear systematic trend for HST proposals led by male PIs to have a higher success rate
- Comparable analyses since conducted by other facilities & agencies, including NOAO, Chandra, ALMA, & ESA
  - Indications of similar systematics in some cases



## Bias is complex



The gender-based offset is likely the tip of the iceberg – a measured effect that points to other inequities and biases that are harder to measure and quantify.



## Adapting the HST TAC to a dual anonymous process

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Statistics show proposals led by male PIs have a consistently higher success rate than those led by female PIs  
In consultation with the ST User Committee (STUC), proposal formats were adjusted to limit PI information:

- Cycles 22/23: PI name removed from front page of proposal
- Cycle 24: initials replaced forenames
- Cycle 25: alphabetical listing

No significant impact on the outcomes.

Professor Stefanie Johnson (U. Colorado) recruited in 2017 as a consultant to provide expert advice

- Participated, with Dr. Jessica Kirk, as observers at the Cycle 25 HST TAC
  - Preliminary grades in Cycle 25 show no evidence for gender bias;
  - **Over 50% of the discussion in Cycle 25 TAC panels focused on people, rather than projects**
- Recommended full anonymisation to Space Telescope Users Committee (October 2017):
  - Working Group established to poll the community and develop appropriate supporting materials
    - Lou Strolger (STScI0, chair), Peter Garnavich (Notre Dame), Stefanie Johnson (Colorado), Mercedes Lopez-Morales (CfA)/STUC), Andrea Prestwich (CfA/Chandra), Christina Richey (JPL), Paule Sonnentrucker (STScI/ESA), Michael Strauss (Princeton), Brian Williams (STScI)
- STUC endorsed dual anonymous implementation for HST Cycles 26 & 27



## Current status

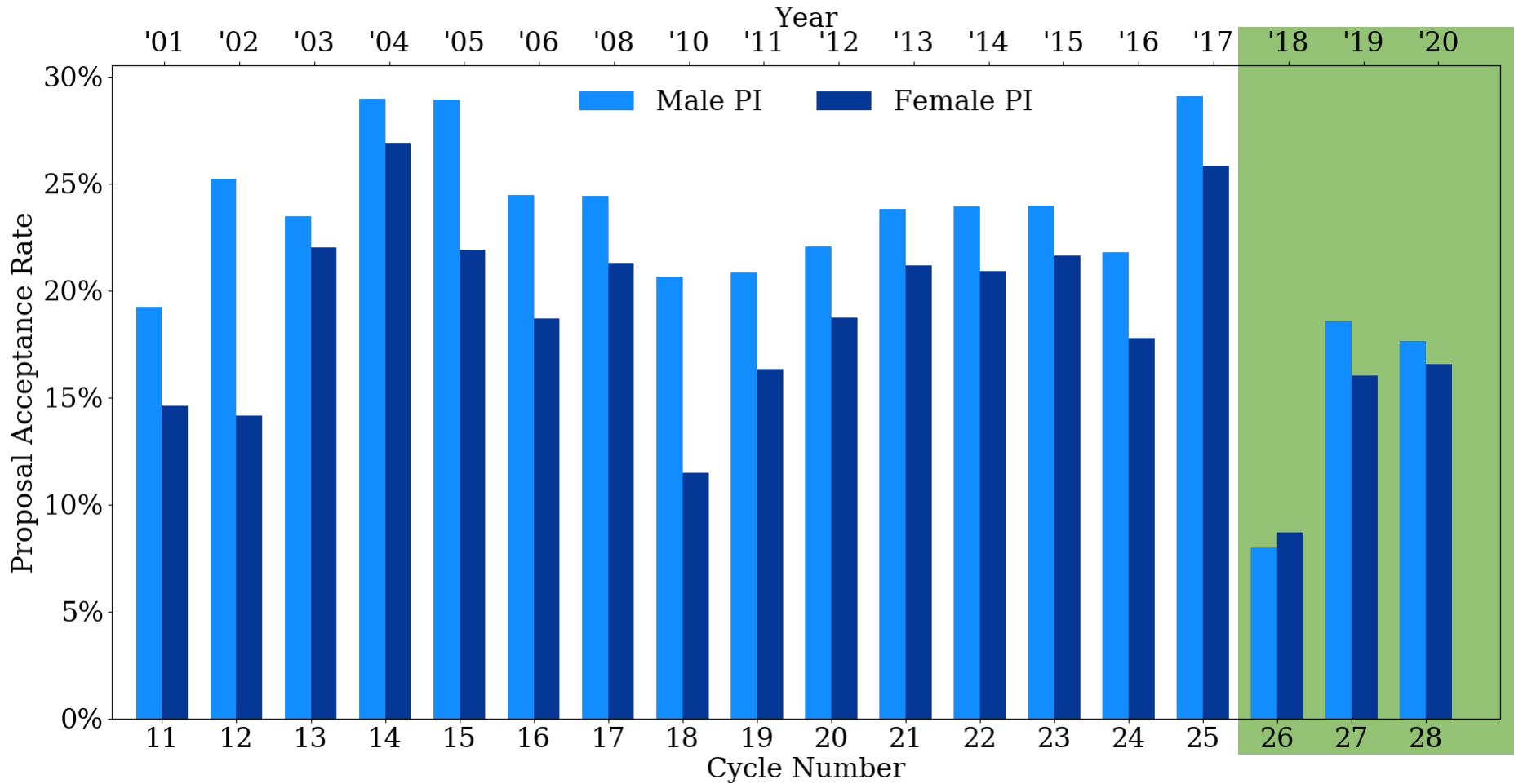
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- Implemented for Cycle 26 through 28
  - Includes mid-cycle calls and Director's Discretionary Time proposals
  - Documentation provided for proposers and reviewers
- Compliance
  - Style guides available for proposers, including extensive examples
    - Goal is to avoid first person possession, not eliminate useful information
    - Proposers provide a team expertise summary in addition to the standard proposal
  - Proposals vetted by reviewers during the preliminary review
    - Potentially problematic cases flagged for consideration by ST Director
    - 99.9% of proposals are compliant – 2-3 eliminated from consideration in 3 cycles
- TAC panels meet to discuss proposals post-triage
  - Proposal conflicts defined by personnel, not institutions
    - Personal involvement, involvement of close collaborators or competitors, competing proposals
  - Levelers monitor discussion through the grading and ranking process
  - Once the final ranked list is compiled, the panels review the team expertise
    - Any problematic cases are flagged for consideration by the Director
    - No proposals have been flagged to date
- Feedback from the TAC is supportive of the dual anonymous process
  - Discussion is less stressful and focused more on the proposed science





# Decreasing the gap



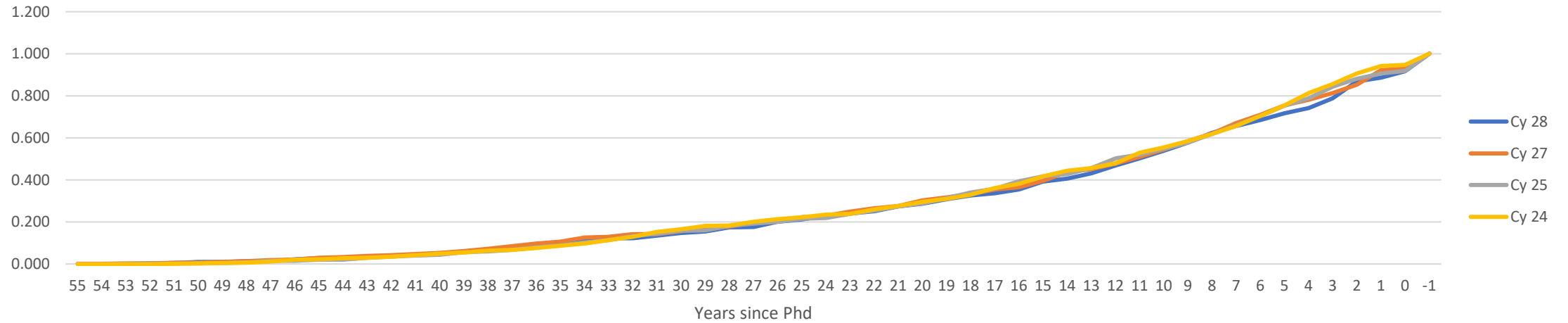
Cycles 11-25  
 $\langle \Delta \rangle = 5\%$

Cycles 26-28  
 $\langle \Delta \rangle = 1\%$

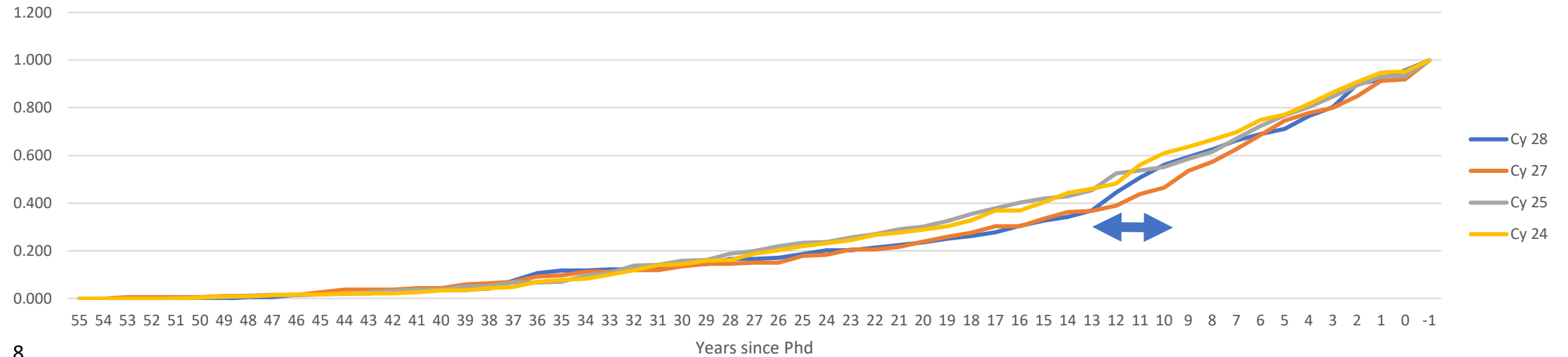


# PI Seniority

### PI seniority - submitted proposals



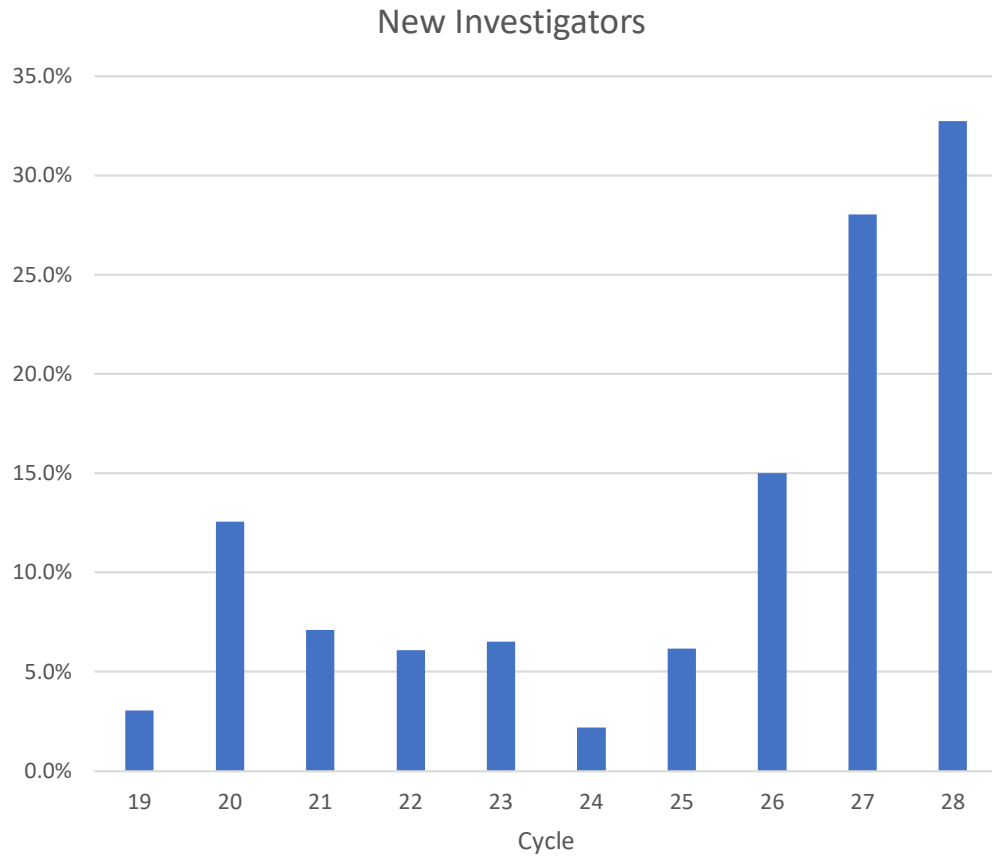
### PI seniority – Accepted proposals







# New PIs by cycle – Cycles 19-28



Cycle	New PIs	Total accepted proposals	Fraction
28	55	168	33%
27	51	182	28%
26	6	40	15%
25	21	340	6%
24	5	228	2%
23	17	261	7%
22	16	263	6%
21	18	253	7%
20	29	231	13%
19	6	196	3%



## Summary

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- HST proposal review involves a 2-stage process
  - Independent preliminary reviews
  - Face to face discussion of higher ranked proposals
- Statistics show a systematic trend with PI gender over many cycles
  - We sought expert external advice
  - We made a number of proposal format adjustments before moving to the dual anonymous review process
- Introducing dual anonymous proposal review is not a magic bullet
  - But the gender offset may be reduced in scale,
  - And the substantial increase in new (to HST) PIs is interesting