

BASELINE ASSESSMENT OF DEMOGRAPHIC REPRESENTATION IN AAAS/*Science* FUNCTIONS

October 2020



Introduction to Baseline Assessment of Diversity, Equity and Inclusion in AAAS/Science Functions



AAAS is committed to taking concrete actions to address systemic racism. To this end, we have embarked on a three-pronged draft plan:

- Hold up a mirror to ensure accountability
- AAAS programs and initiatives to increase diversity, equity, and inclusion (DEI) in science and engineering
- AAAS actions to ensure DEI within AAAS

Science, engineering and medicine are not immune to the discrimination, subjugation, and silencing of minority colleagues and voices. The reasons for this are deeply ingrained in the systems that govern the conduct of these fields. When we hold up a mirror to the scientific enterprise, it is clear we must be reminded that Black and other underrepresented minority lives – and scientific contributions – matter. We must ensure this moment does not slip away. We can and must be a powerful force for change (Parkih, 2020; draft plan).

We have completed the first step of holding up a mirror to ensure accountability with the Baseline Assessment of DEI in AAAS/Science Functions. This is AAAS' first annual effort to make public aggregate demographic data on:

- Authors, reviewers, award winners, and fellows
- Select functions of AAAS.

This report is a baseline assessment. It examines the availability and quality of our demographic data and presents the current demographic representation for AAAS/Science Functions and Science Family Authors and Reviewers. We will work to improve the quality of our data and methodology over time.

This report does not lay out a plan for next steps in addressing DEI in AAAS/Science Functions. At this point, we are merely reporting on and acknowledging the current status and content of our data.

We invite you to email us your suggestions for addressing DEI in AAAS/Science and improving our data and methodology by emailing us at suggestionsforaaas@aaas.org. While we will not be able to respond to each email individually, know that the AAAS Leadership Team will consider each one.



PURPOSE

Draft Plan for Identifying and Addressing Systemic Racism in the Scientific Enterprise



**REPORT DEMOGRAPHIC
REPRESENTATION IN
AAAS/*SCIENCE* FUNCTIONS
AND *SCIENCE* FAMILY
AUTHORS AND REVIEWERS**



**AAAS PROGRAMS AND
INITIATIVES TO INCREASE
DEI IN STEM**



**AAAS ACTIONS TO ENSURE
DEI WITHIN AAAS/*SCIENCE*
FUNCTIONS**

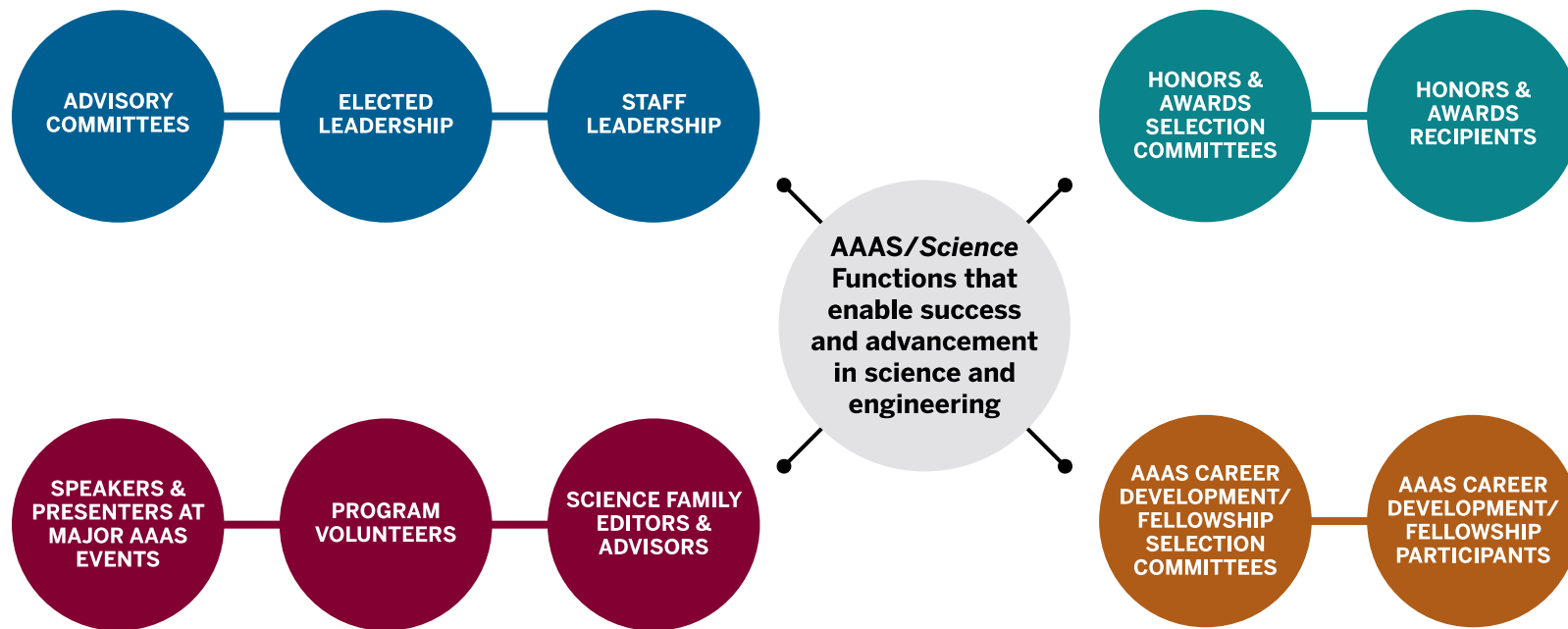
Notes: Based on Dr. Sudip Parikh's email and draft plan, 7/21/2020. *Science* Family of Journals is referred to as *Science* Family throughout this report. DEI: Diversity, Equity, and Inclusion; STEM: Science, Technology, Engineering, and Math.

Objective: Baseline Assessment



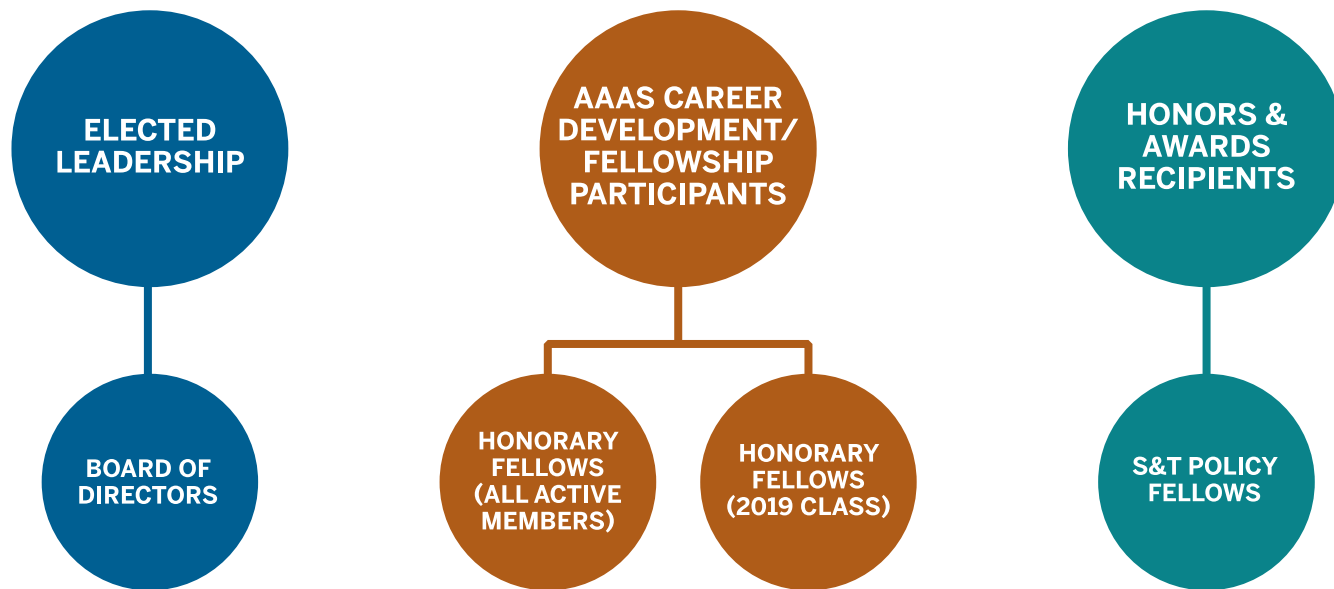
Examine the availability and quality of demographic data and present the current demographic representation for AAAS/*Science* Functions and *Science* Family Authors and Reviewers.

AAAS/Science Functions Included in This Report



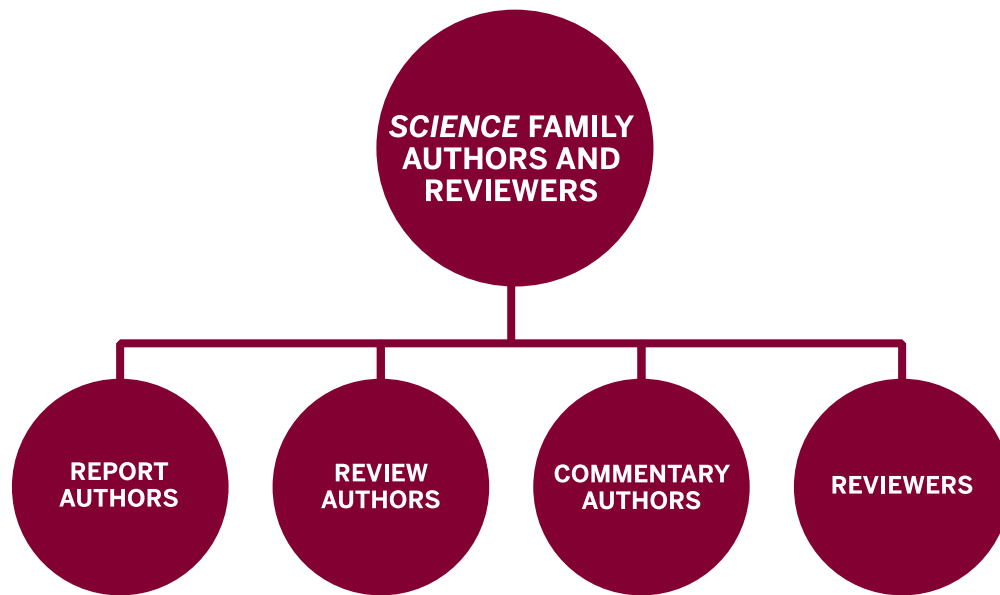
Notes: Based on Dr. Sudip Parikh's email and draft plan, 7/21/2020; refer to Appendix A for additional details.

Additional Stand-alone AAAS Subgroups Presented



Notes: S&T: Science and Technology. Refer to Appendix A for additional detail.

Science Family Authors and Reviewers



Note: Report and Research Article Authors are referred to as Report Authors throughout this report.



METHODOLOGY

Methodology: Overview



Data Collection and Analysis Process Overview

- 1 Assemble data for all AAAS/*Science* Functions and *Science* Family Authors and Reviewers.
- 2 Assess for consistency of demographic data.
- 3 Estimate gender*.
- 4 Decide categories for gender and race/ethnicity.
- 5 Decide how to count individuals within and across functions.
- 6 Present results.

*Lincoln Mullen (2018). Gender: Predict Gender from Names Using Historical Data. R package version 0.5.2.

Step 1. Assemble Data for All AAAS/*Science* Functions and *Science* Family Authors and Reviewers



- Focus on AAAS and *Science* Family Functions that enable success and advancement in science and engineering.
- Obtained data for the “most recent” or “present” class of each AAAS and *Science* Family Function. **For example:**
 - 2020 Board of Directors.
 - 2020/21 class of S&T Policy Fellows.
 - 2019 class of Honorary Fellows.
 - *Science* Family Authors and Reviewers September 2019 through August 2020.

Step 2. Assess Assembled Demographic Data for Consistency Across Sources



Step 3. Estimate Gender



*Lincoln Mullen (2018). Gender: Predict Gender from Names Using Historical Data. R package version 0.5.2.

Strengths and Weaknesses of “Gender R Package Version 0.5.2”



Strengths	Weaknesses
Has at least 98% accuracy rate for our population.	Can only infer gender likely to have been assigned at birth based on the name.
The name dictionary on which the packages relies is diverse and multiethnic.	Less accurate without birth-year data because some names change gender association over time, although this is minimized by selecting only those estimates with $\geq 95\%$ confidence.

For additional information: <https://docs.ropensci.org/gender/>

Step 4. Decide Categories for Gender and Race/Ethnicity



Issue	Decision
Inconsistent use of “decline to answer” for ethnicity and/or gender across functions and subgroups.	Included “no data” category.
Some groups have race and ethnicity broken out into two questions where ethnicity identifies “Hispanic or Latinx” and race does not include this as an option; most have one race/ethnicity question where Hispanic/Latinx and “Two or more races/ethnicities” are options.	In cases where race and ethnicity are asked separately, If Hispanic or Latinx is selected, this designation supersedes the response to the second race question.

Step 5. Decide How to Count Individuals Within and Across Functions

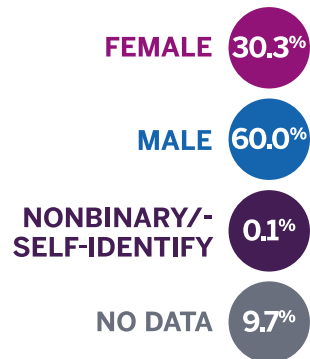
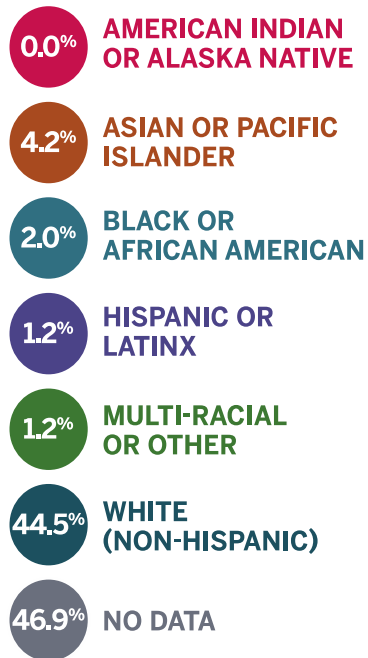


Issue	Example	Decision
Individuals show up multiple times within a function.	In Staff Leadership, all Advisory Council members are also on the Leadership Team.	Counted once within the function
Individuals show up multiple times across functions.	An Elected Leader also is part of an award selection committee.	Counted in each function
Overall presentation of results.	Individuals show up in multiple functions and multiple subgroups.	Counted once for overall results

Step 6. Present Results



RACE/ETHNICITY



GENDER



LIMITATIONS AND CONCERNS

Limitations and Concerns



DATA COVERAGE



DATA CONSISTENCY



ESTIMATED GENDER DATA



CONFIDENTIALITY



ETHICAL CONCERNS



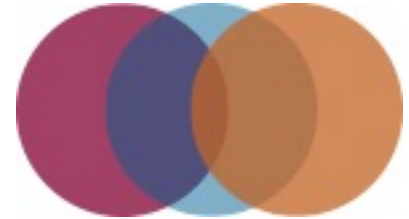
Assessment of Limitations and Concerns



**EXPOSING DATA ISSUES
NOW WILL LIKELY LEAD
TO IMPROVED DATA
OVER TIME.**

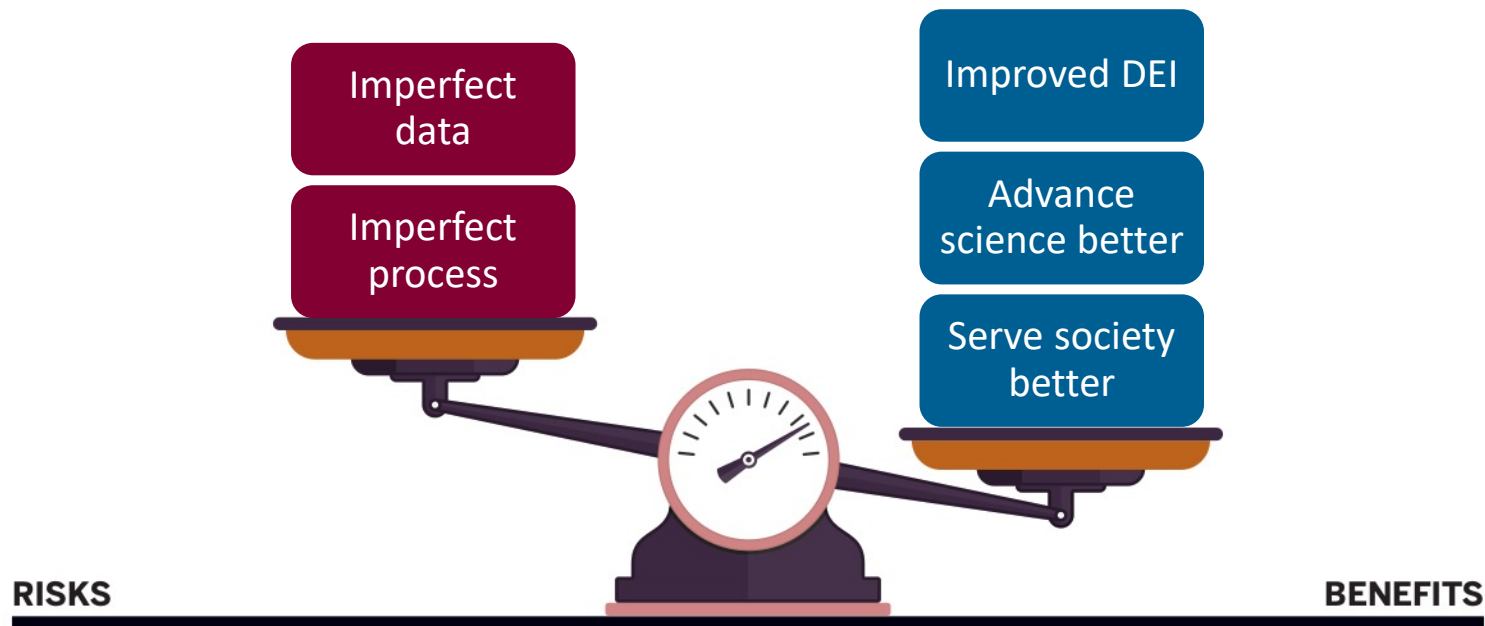


**THIS WILL BE AN
IMPERFECT
PROCESS.**



**TRANSPARENCY
IS KEY.**

The Benefits Outweigh the Risks





RESULTS



Order of Results

- Reminder on Functions
- Executive Summary
- Data Coverage
- Results Overview
- Summary and Next Steps



RESULTS: REMINDER ON FUNCTIONS AND SUBGROUPS

Reminder on AAAS/*Science* Functions



Functions are not limited to AAAS staff members but include elected leadership, award winners, program participants, award and program selection committees, etc.; *Science* Family Authors and Reviewers are examined separately.

Note: Refer to slides 5-7 and Appendix A for details.



RESULTS: EXECUTIVE SUMMARY

Executive Summary: Coverage of Demographic Variables



Data coverage (usable data available, including estimated data) for gender is high for AAAS/*Science* Functions and moderate for *Science* Family Authors and Reviewers.

Race/ethnicity coverage is moderate for AAAS/*Science* Functions and low for *Science* Family Authors and Reviewers.



Note: High coverage: $\geq 80\%$; moderate coverage: 50-79%; low coverage: $<50\%$

Executive Summary: Gender Representation



AAAS has some functions in which the ratio of males to females is balanced or favors females, but overall, males outnumber females 2:1.

***Science* Family Authors and Reviewers' ratio of males to females is 2:1 in favor of males.**

Note: These ratios exclude missing data.

Executive Summary: Race/Ethnicity Representation



12:1

People who are White (non-Hispanic) outnumber people of all other ethnicities 12:1 for Honors and Awards Recipients, a nomination-based AAAS/*Science* Function.

5:1

People who are White (non-Hispanic) outnumber people of all other ethnicities 5:1 for Career Development/Fellowship Participants, an application-based AAAS/*Science* Function.

2:1

It is difficult to assess ethnicity representation for *Science* Family Authors and Reviewers due to missing data, but what we have indicates that White (non-Hispanic) people outnumber people of all other ethnicities by at least 2:1.

Note: These ratios exclude missing data.

Executive Summary: Next Steps, Improve Data & Processes



**Improve/develop
systems for collecting
demographic data for
all AAAS/*Science*
Functions and *Science*
Family Authors and
Reviewers**



**Improve coverage
with self-report data**

**Develop system for
linking data
AAAS/*Science*
Functions and *Science*
Family Authors and
Reviewers**



**Improve consistency
and facilitate
analyses**

**Identify reliable and
ethical methods for
estimating
race/ethnicity**



**Improve
coverage**



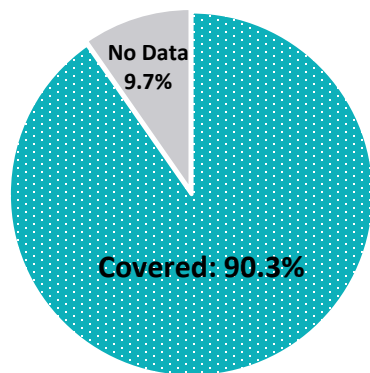
RESULTS: DATA COVERAGE

Data Coverage: Overall Gender



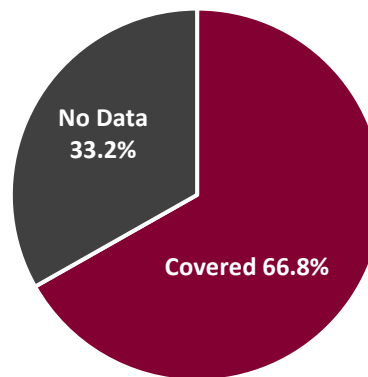
AAAS/Science Functions (N=13,480)

- No Data: 9.7%
- Covered: 90.3%



Science Family Authors and Reviewers (N=49,316)

- No Data: 33.2%
- Covered: 66.8%



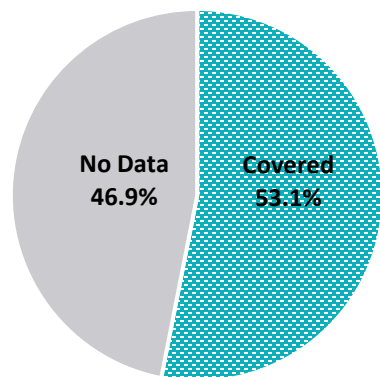
Note: “Covered” means usable gender data (including estimated data) are available; “no data” means gender data are missing.

Data Coverage: Overall Race/Ethnicity



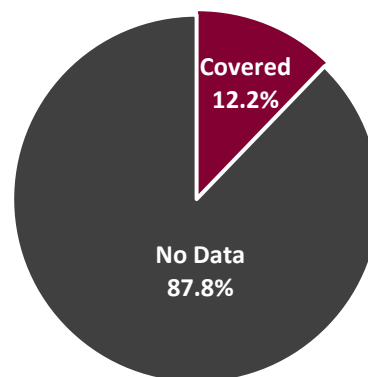
AAAS/Science Functions (N=13,480)

- No Data: 46.9%
- Covered: 53.1%



Science Family Authors and Reviewers (N=49,316)

- No Data: 87.8%
- Covered: 12.2%



Note: “Covered” means usable race/ethnicity data are available; “no data” means race/ethnicity data are missing.



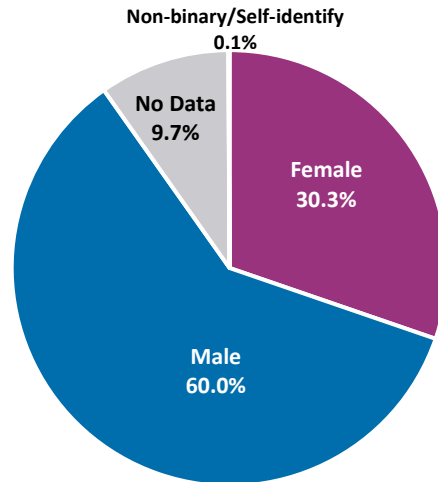
RESULTS: OVERVIEW

Overview: Gender Representation



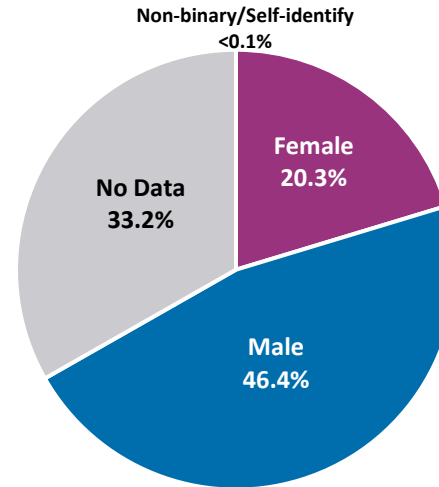
AAAS/Science Functions (N=13,480)

- No Data: 9.7%
- Female: 30.3%
- Male: 60.0%
- Non-binary/Self-identify: 0.1%

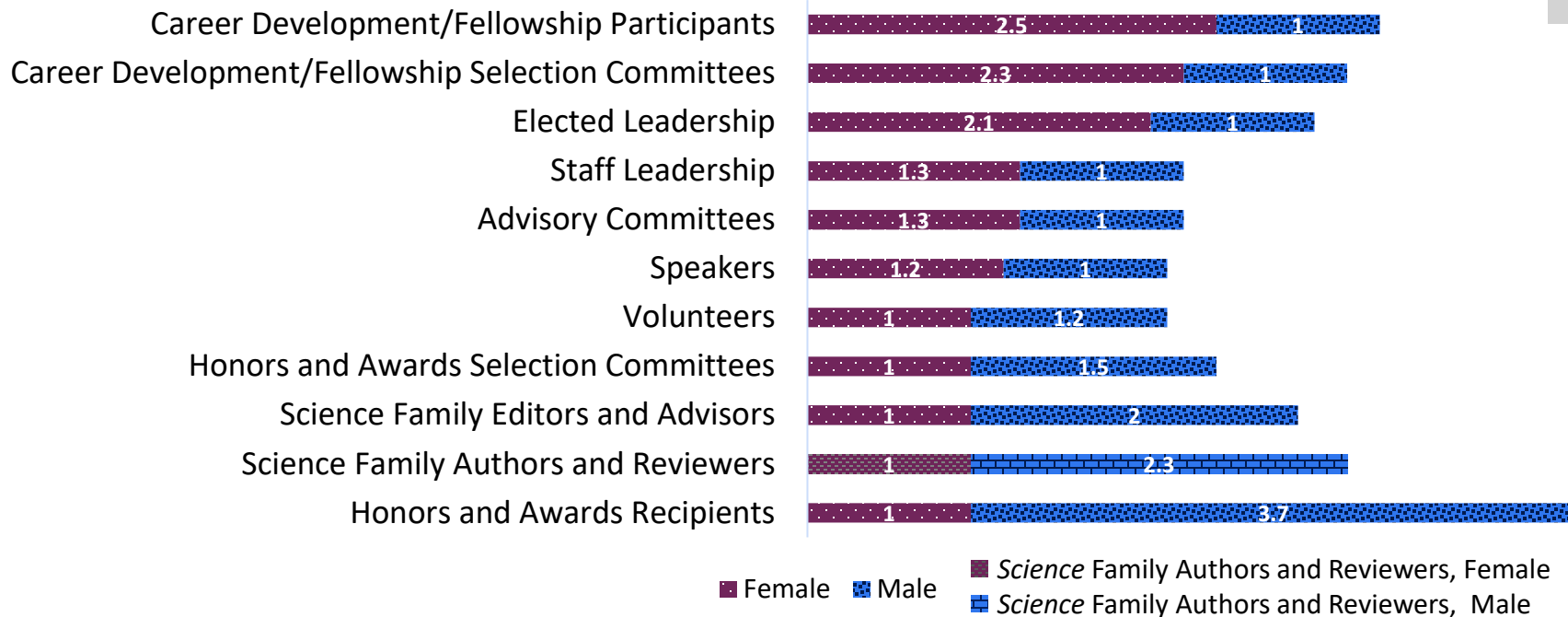


Science Family Authors and Reviewers (N=49,316)

- No Data: 33.2%
- Female: 20.3%
- Male: 46.4%
- Non-binary/Self-identify: < 0.1%



Overview: Gender Ratios

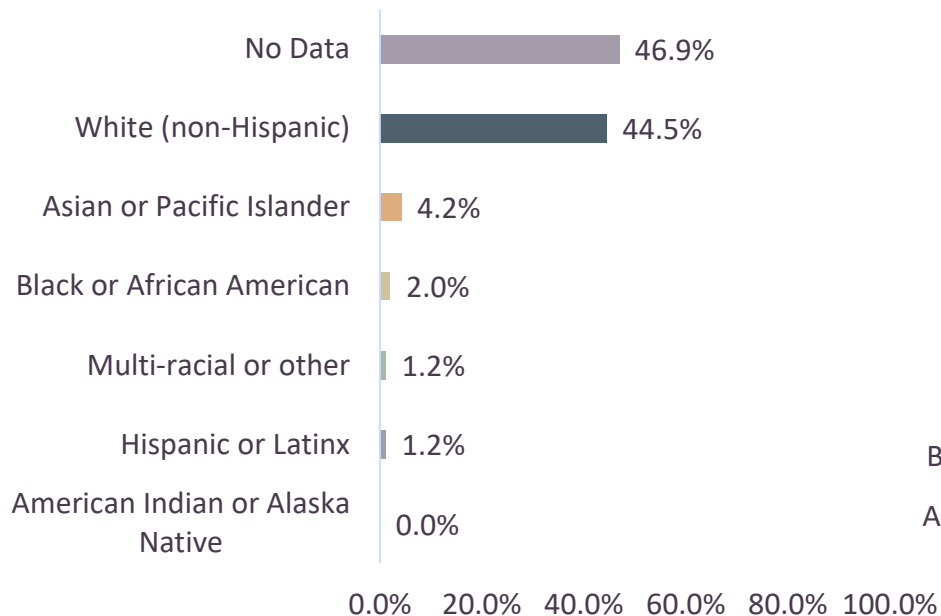


Note: Each bar presents the ratio of males to females, excluding missing data. For example, the top bar shows that females outnumber males by nearly 3:1 among Career Development/Fellowship Participants. The bottom bar shows that males outnumber females nearly 4:1 among Honors and Awards Recipients.

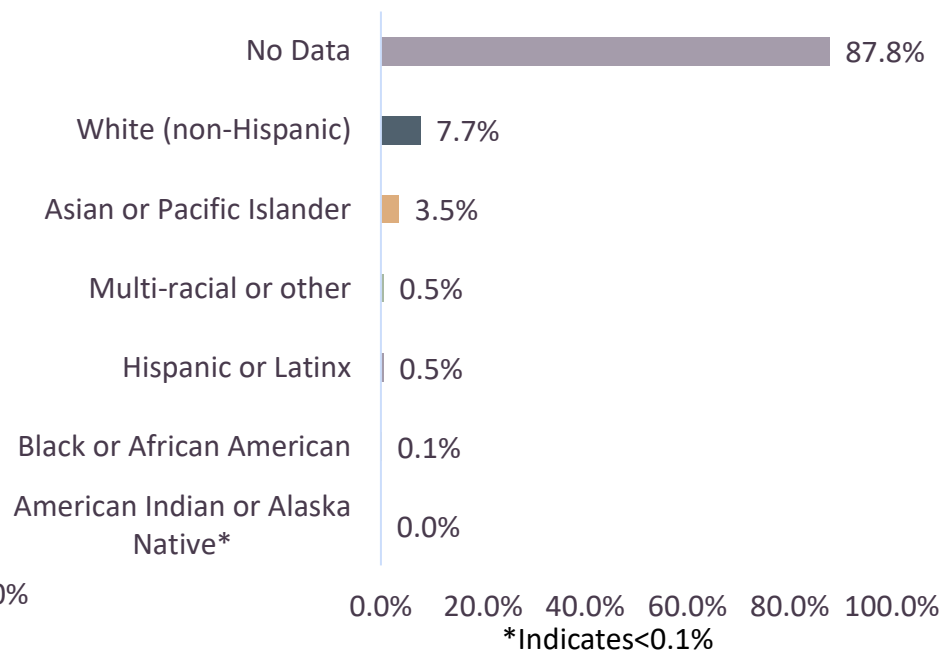
Overview: Race/Ethnicity Representation



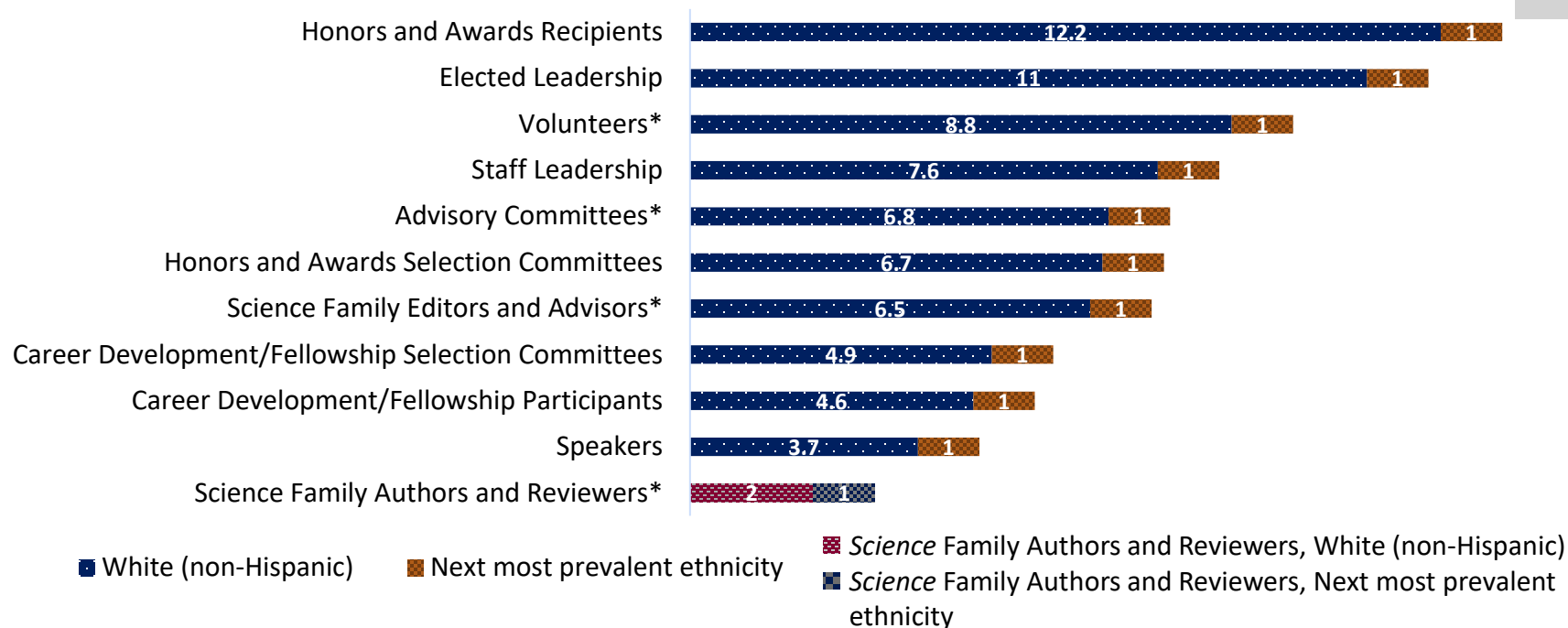
AAAS/Science Functions (N=13,480)



Science Family Authors and Reviewers (N=49,316)



Overview: Race/Ethnicity Ratios



Notes: Each bar presents the ratio of White (non-Hispanic) function members to the next most prominent race/ethnicity, excluding missing data. For example, the top bar shows that White (non-Hispanic) members outnumber any other race/ethnicity by at least 12:1 among Honors and Awards Recipients. *Interpret with caution; coverage for ethnicity was <50 percent.



SUMMARY AND NEXT STEPS

Summary



Data coverage for both gender and ethnicity has room for improvement.

Males outnumber females 2:1 across all AAAS/*Science* Functions (total) and *Science* Family Authors and Reviewers.

All AAAS/*Science* Functions and *Science* Family Authors and Reviewers are predominately White (non-Hispanic).

Nomination-based functions and subgroups are more lopsided toward males and White (non-Hispanic) people than application-based functions and subgroups.

Next Steps: AAAS will improve...



Data for future reports of AAAS' demographics

Data collection processes and storage systems

Coverage of demographic variables



APPENDIX A: SUBGROUPS INCLUDED IN EACH FUNCTION

Staff Leadership:

- AAAS Senior Management: Leadership Advisory Council
- AAAS Senior Management: Leadership Team





Elected Leadership:

- Board of Directors
- AAAS Council
- Section Leadership: Steering Groups
- Section Leadership: Committee on Nominations
- Electorate Nominating Committee

Advisory Committees:



- National Conference on Lawyers and Scientists (NCLS)
- Committee on Scientific Freedom and Responsibility (CSFR)
- Committee on Science & Technology Engagement with the Public (CoSTEP)
- Committee on Science, Engineering, and Public Policy (COSEPP)
- Committee on Opportunities in Science (COOS)
- Annual Meeting Scientific Program Committee

Science Family Editors and Advisors:

- Professional Editors
- Academic Editors
- Advisors





Honors and Awards Recipients:

- Honorary Fellows, All Active Members
- Honorary Fellows, Class of 2019
- 2020 Award Winners (Award for Science Diplomacy; Award for Scientific Freedom and Responsibility; Early Career Award for Public Engagement with Science; Kavli Science Journalism Award; Mani L. Bhaumik Award for Engagement with Science; Mentor Awards; Newcomb Cleveland Prize; Philip Hauge Abelson Prize; AAAS/Subaru SB&F Prize for Excellence in Science Books)



Honors and Awards Selection Committees:

- Honorary Fellows Selection Committee
- Award for Science Diplomacy Selection Committee
- Award for Scientific Freedom and Responsibility Selection Committee
- Early Career Award for Public Engagement with Science Selection Committee
- Kavli Science Journalism Awards Selection Committee
- Mani L. Bhaumik Award for Public Engagement with Science Selection Committee
- Mentor Awards Selection Committee
- Newcomb Cleveland Prize Selection Committee
- Philip Hauge Abelson Prize Selection Committee
- AAAS/Subaru SB&F Prize for Excellence in Science Books Selection Committee

Career Development/Fellowship Program Participants:



- S&T Policy Fellows
- Mass Media Fellows
- Leshner Leadership Fellows
- News from Science Internships
- Diverse Voices
- If/THEN Ambassadors
- Catalyzing Advocacy in Science and Engineering (CASE) Workshop Participants
- Lemelson Invention Ambassadors
- L'Oreal USA for Women in Science Fellowships

Career Development/Fellowship Program Selection Committees:



- S&T Policy Fellows Selection Committee
- Mass Media Fellows Selection Committee
- Leshner Leadership Fellows Selection Committee
- If/THEN Ambassadors Selection Committee
- Lemelson Invention Ambassadors Selection Committee
- L’Oreal USA for Women in Science Fellowships Selection Committee

Speakers and Presenters at Major AAAS Events:

- Annual Meeting Speakers
- S&T Policy Forum Speakers
- ERN Speakers
- Noyce Summit Keynote Speakers



Volunteers:

- Scientists engaged by SciLine
- On-Call Scientists
- STEM Volunteers



Science Family Authors and Reviewers:

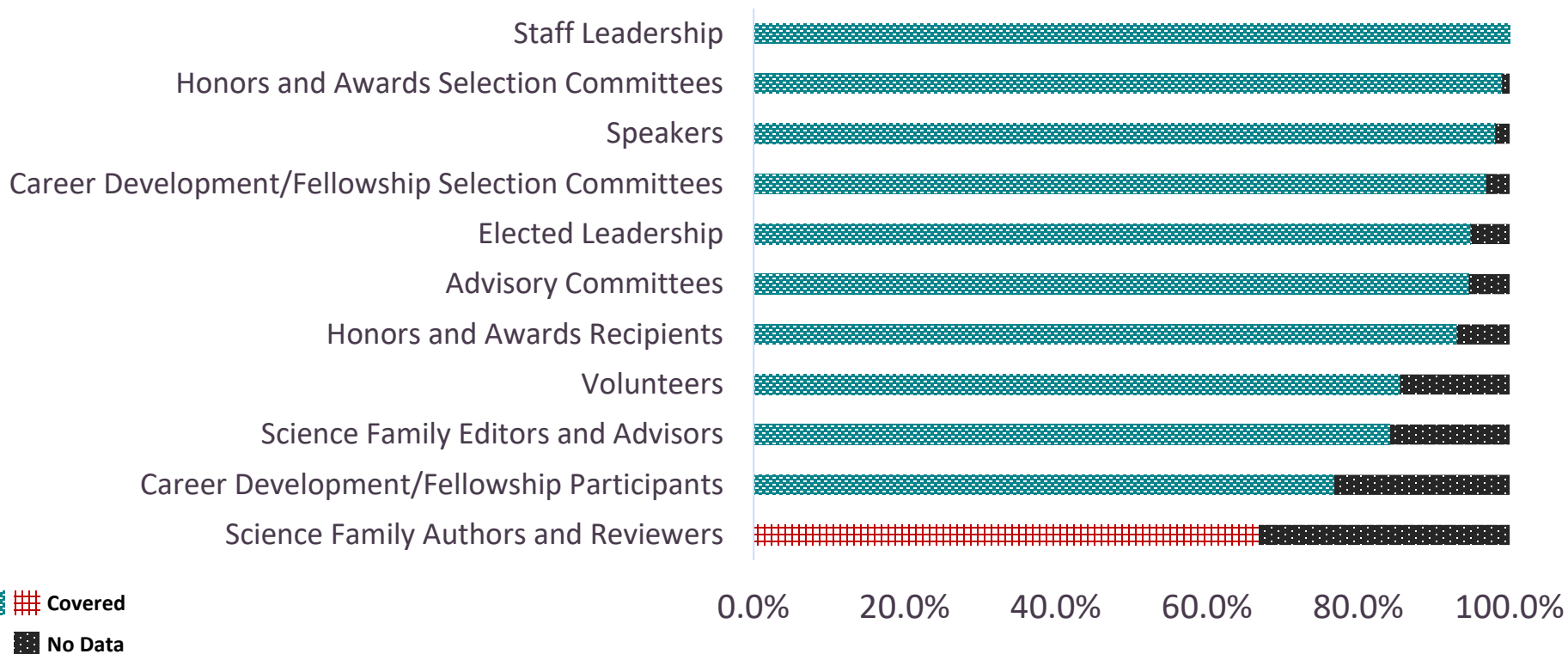
- Report Authors
- Review Authors
- Commentary Authors
- Reviewers



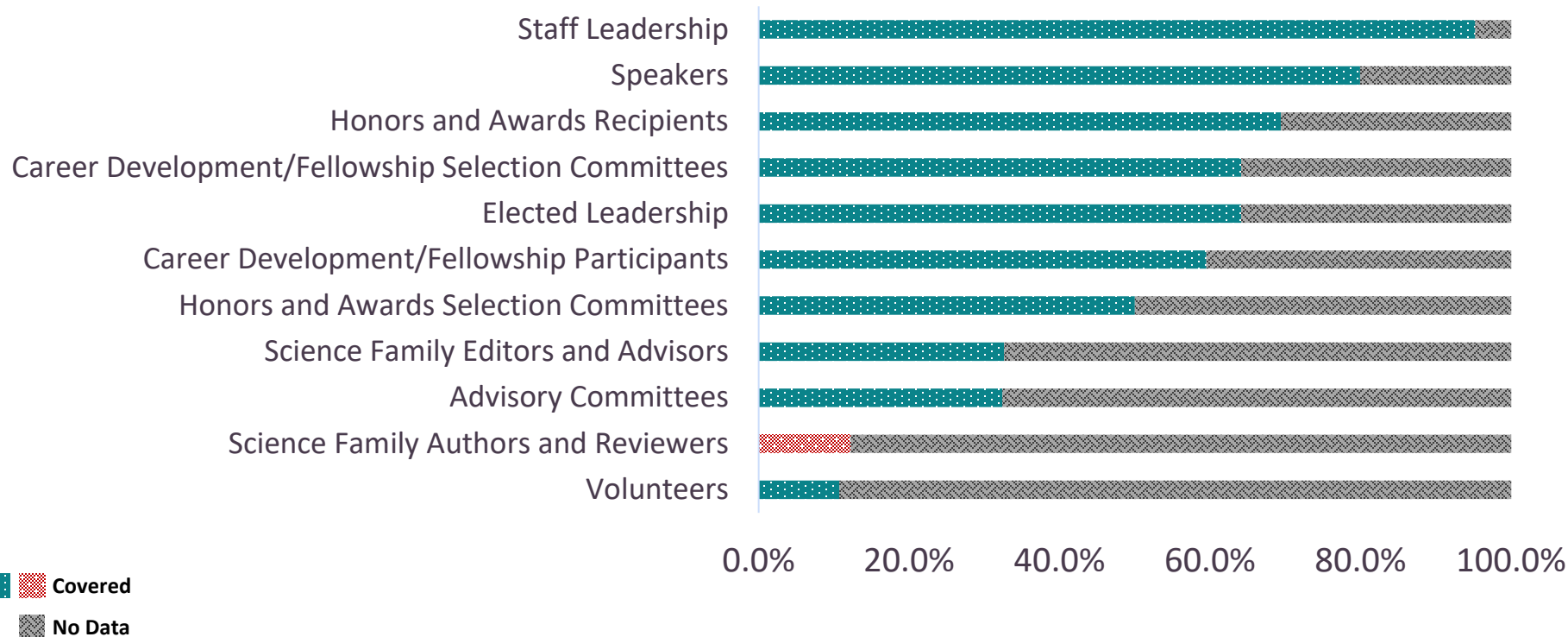


APPENDIX B: ADDITIONAL DATA COVERAGE INFORMATION

Data Coverage: Gender AAAS/*Science* Functions and *Science* Family Authors and Reviewers



Data Coverage: Race/Ethnicity AAAS/*Science* Functions and *Science* Family Authors and Reviewers



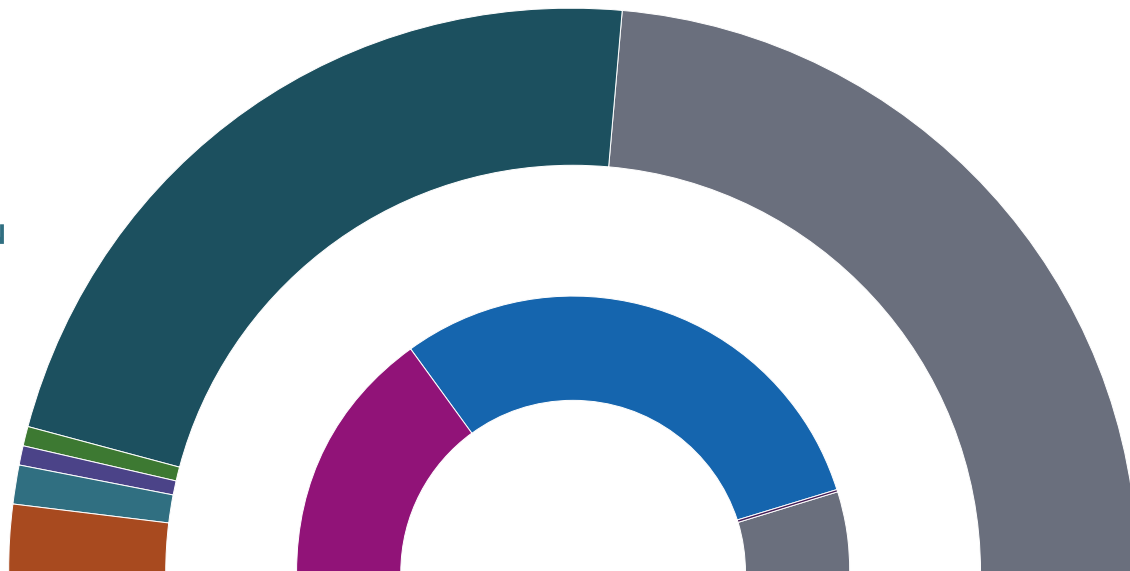
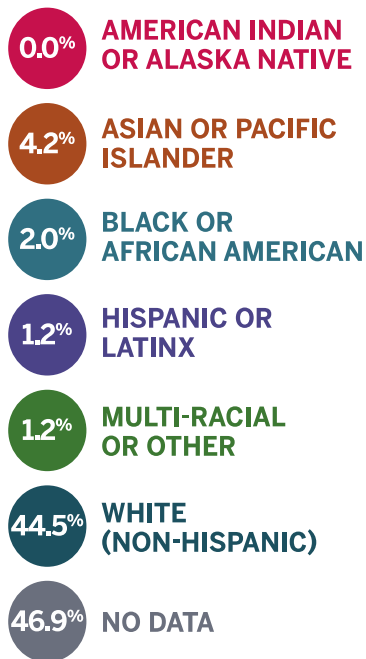


APPENDIX C: DEMOGRAPHIC REPRESENTATION IN EACH FUNCTION

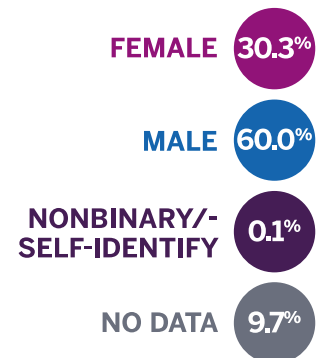
AAAS/Science Functions (N=13,480)



RACE/ETHNICITY



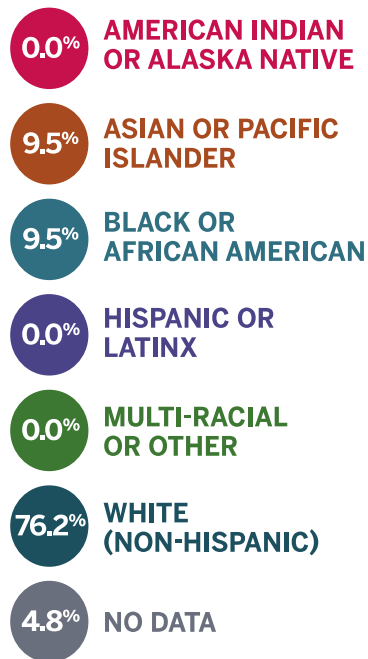
GENDER



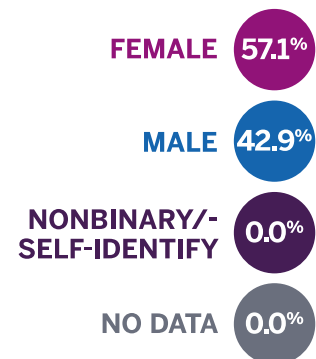
AAAS Staff Leadership (N=21)



RACE/ETHNICITY



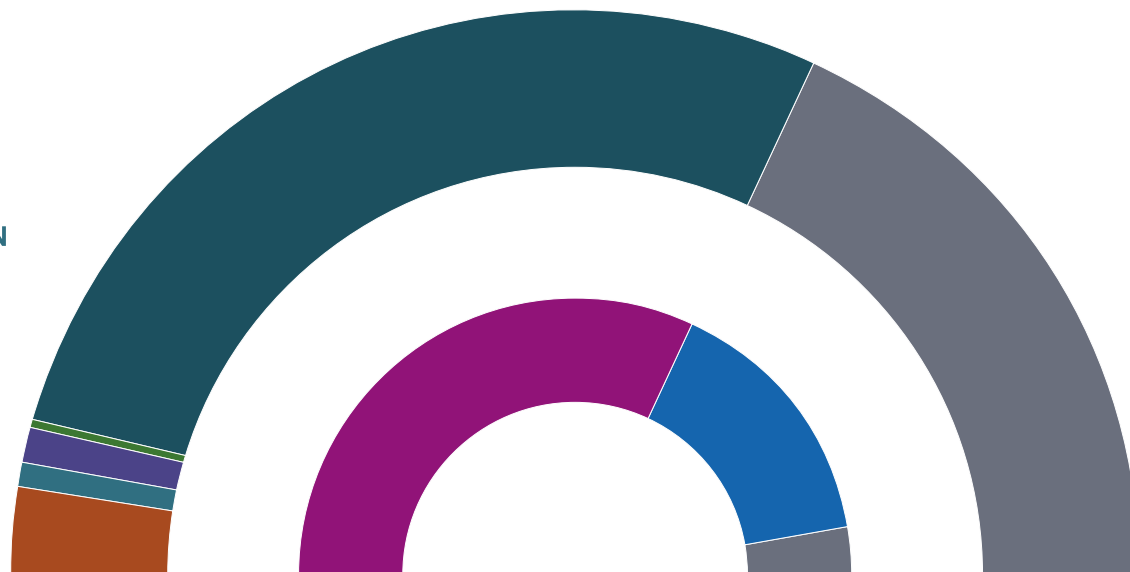
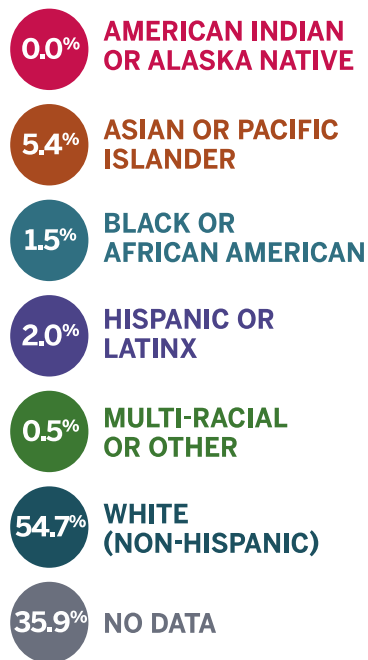
GENDER



AAAS Elected Leadership (N=404)



RACE/ETHNICITY

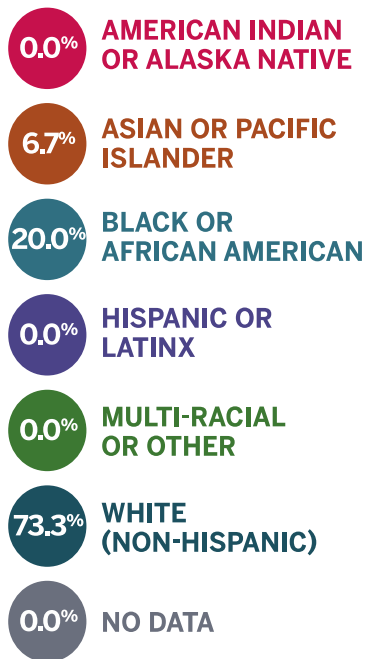


GENDER

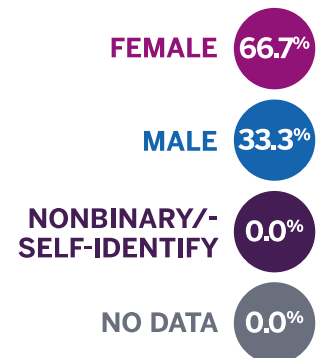
Elected Leadership Subgroup: Board of Directors (N=15)



RACE/ETHNICITY



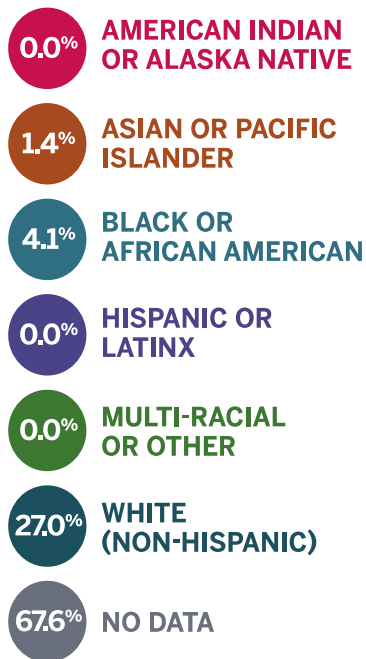
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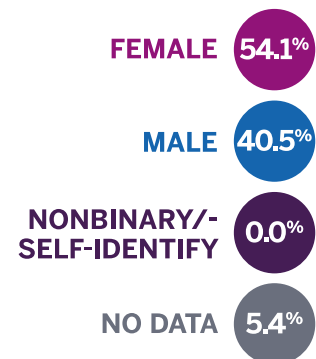
Advisory Committees (N=74)



RACE/ETHNICITY



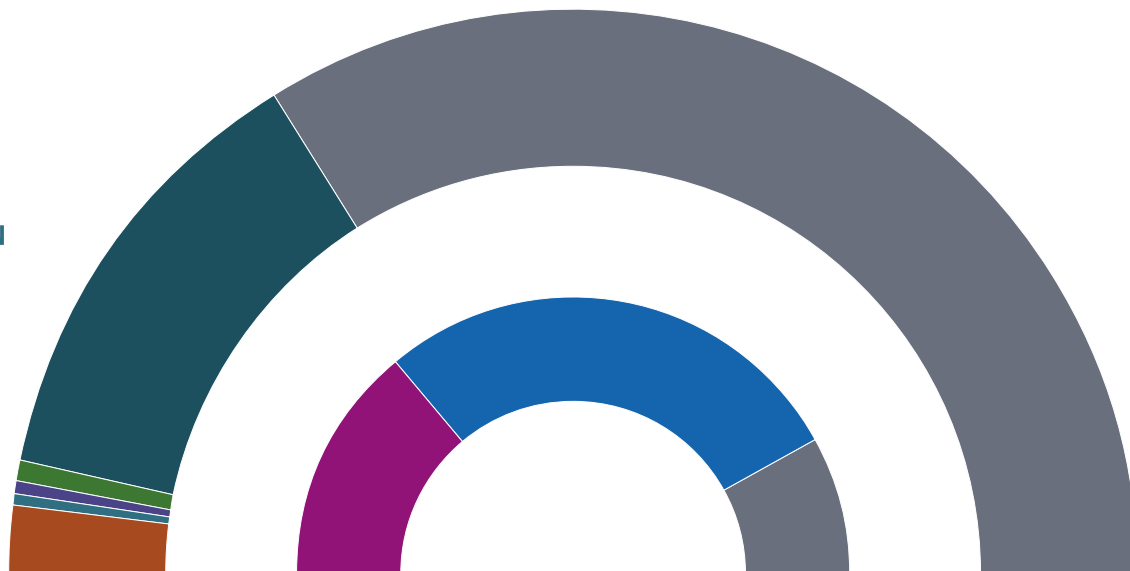
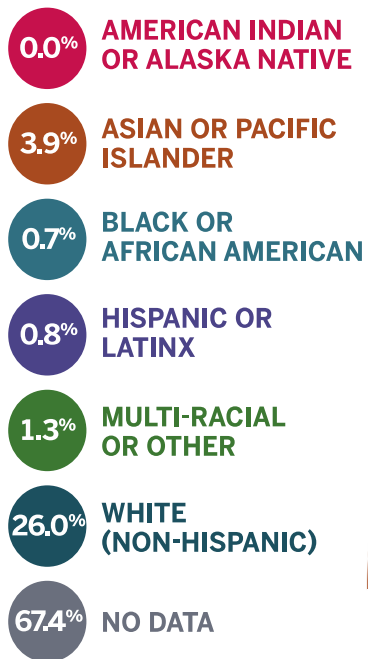
GENDER



Science Family Editors and Advisors (N=720)



RACE/ETHNICITY

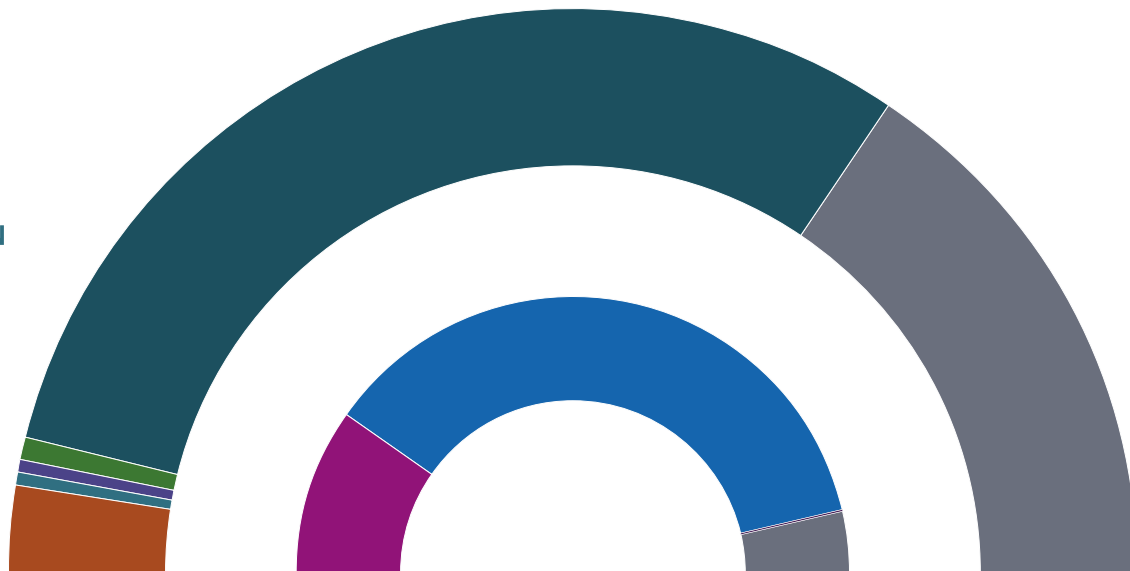
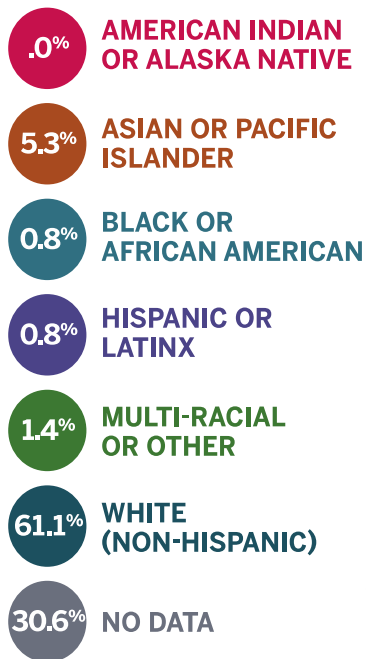


GENDER

Honors and Awards Recipients (N=8,785)



RACE/ETHNICITY

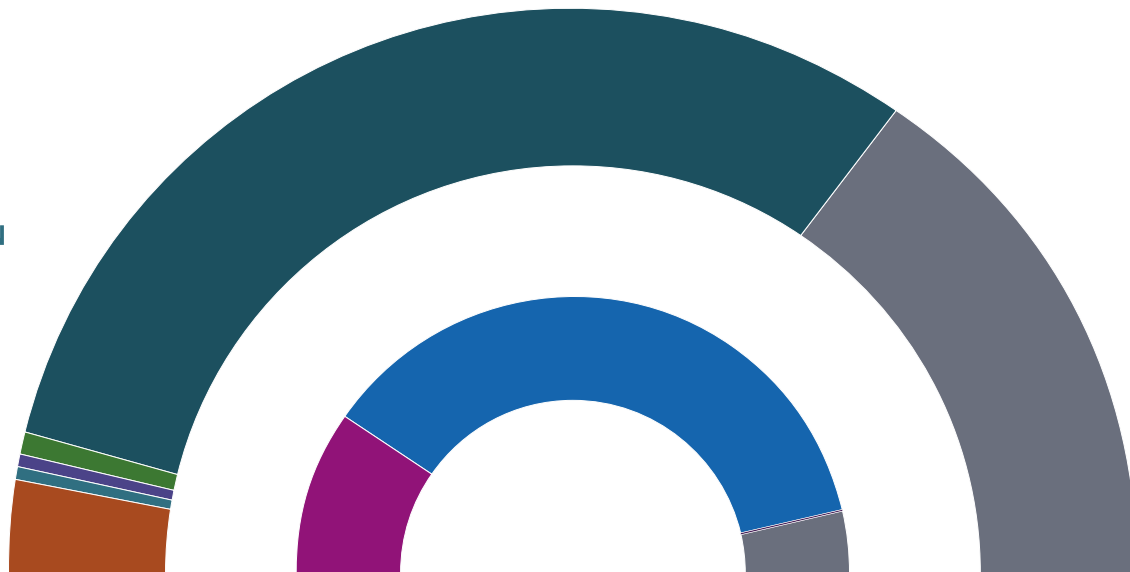
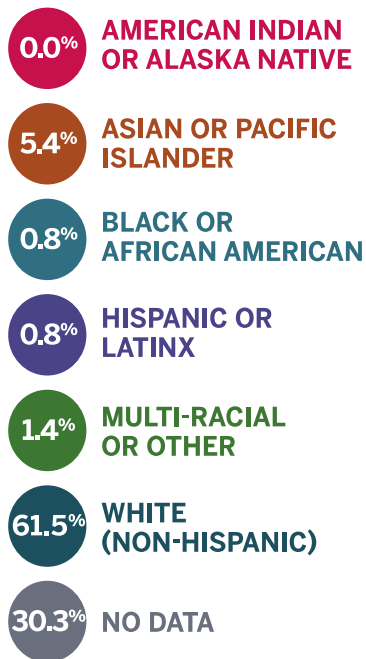


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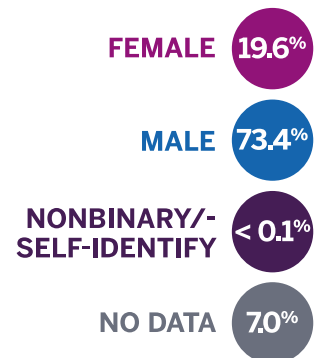
Honors and Awards Recipients Subgroup: Honorary Fellows, All Active Members (N=8,734)



RACE/ETHNICITY



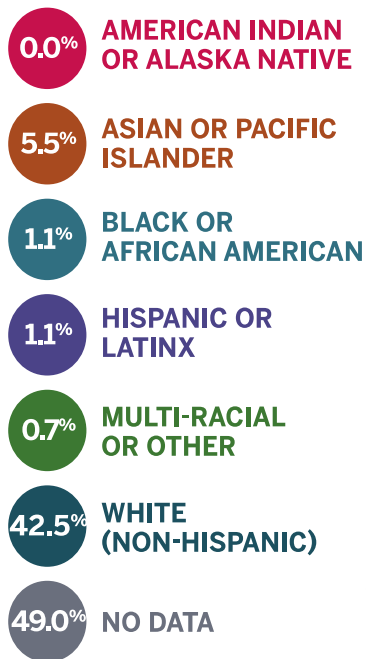
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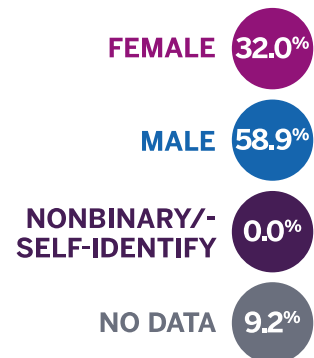
Honors and Awards Recipients Subgroup: Honorary Fellows, Class of 2019 (N=435)



RACE/ETHNICITY



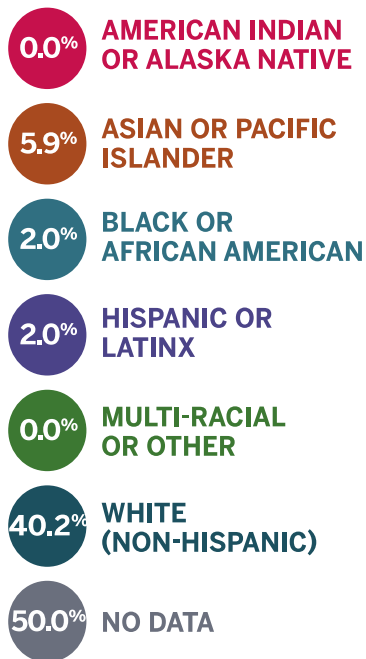
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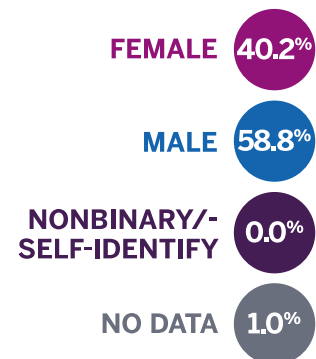
Honors and Awards Selection Committees (N=102)



RACE/ETHNICITY



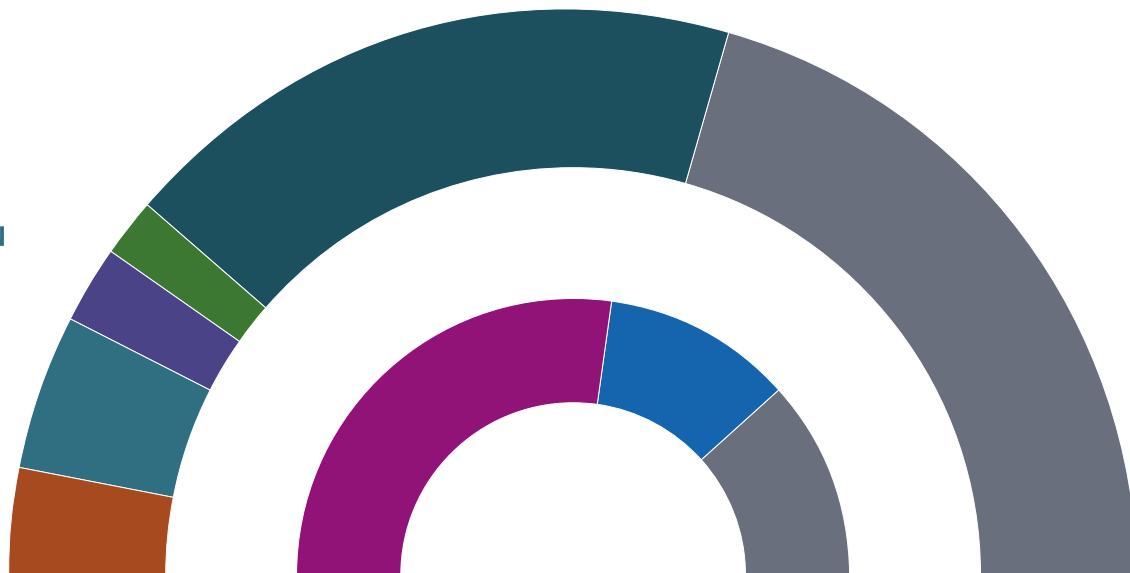
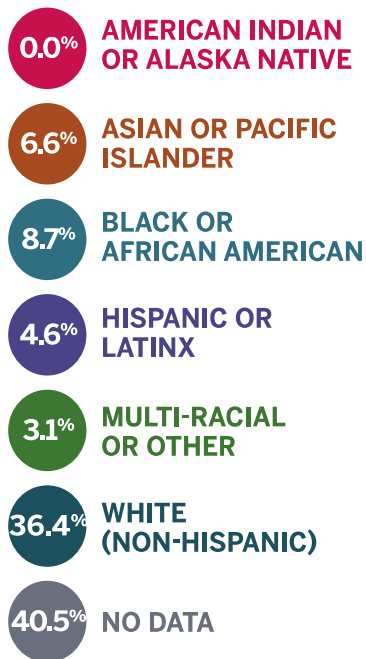
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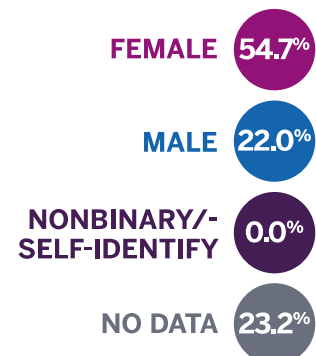
Career Development/Fellowship Participants (N=667)



RACE/ETHNICITY



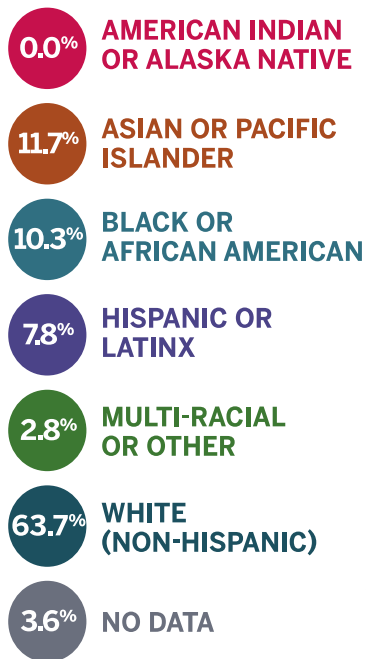
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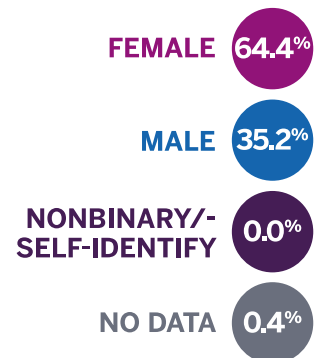
Career Development/Fellowship Participants Subgroup: S&T Policy Fellows (N=281)



RACE/ETHNICITY



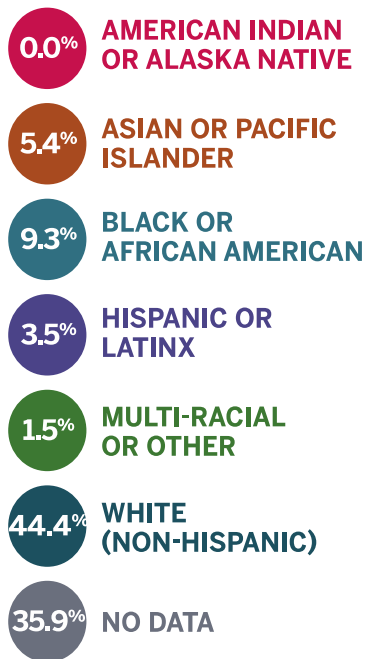
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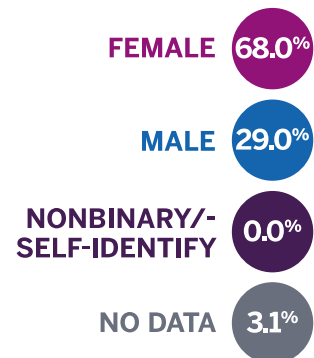
Career Development/Fellowship Selection Committees (N=259)



RACE/ETHNICITY



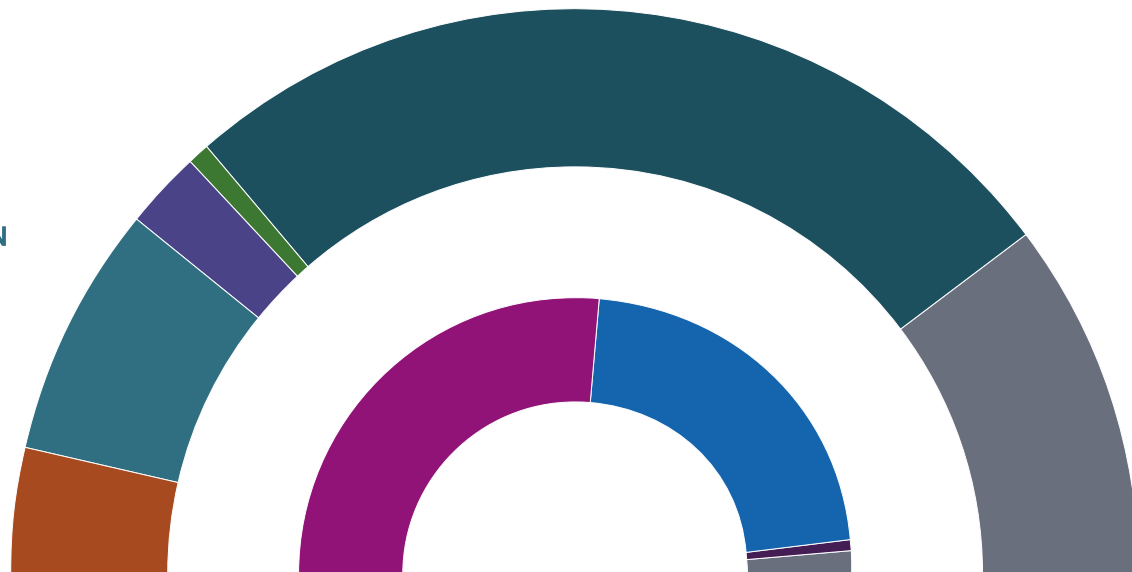
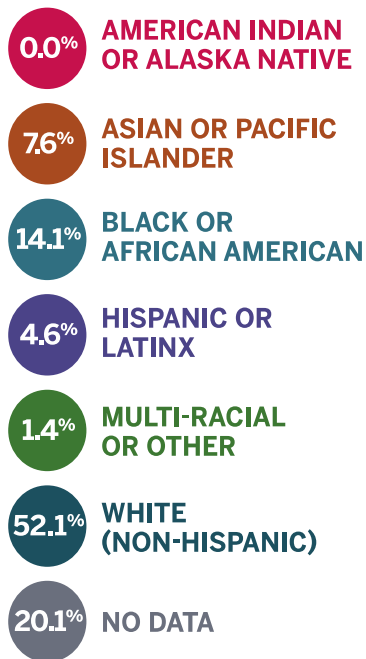
GENDER



Speakers and Presenters at Major AAAS Events (N=844)



RACE/ETHNICITY

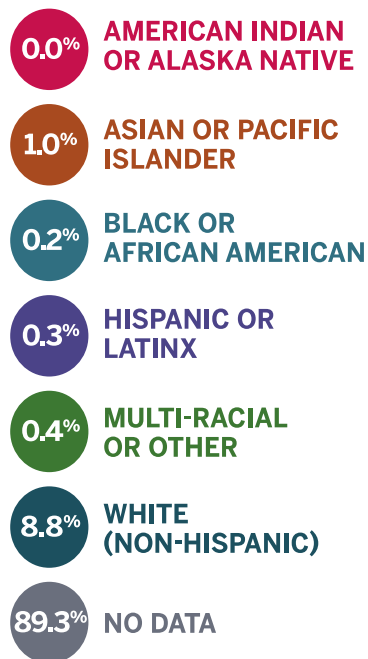


GENDER

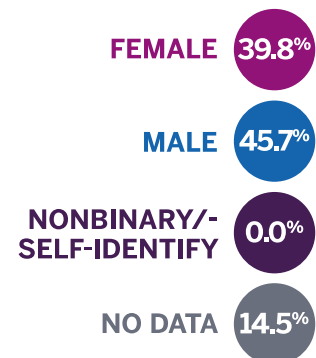
AAAS Program Volunteers (N=3,676)



RACE/ETHNICITY



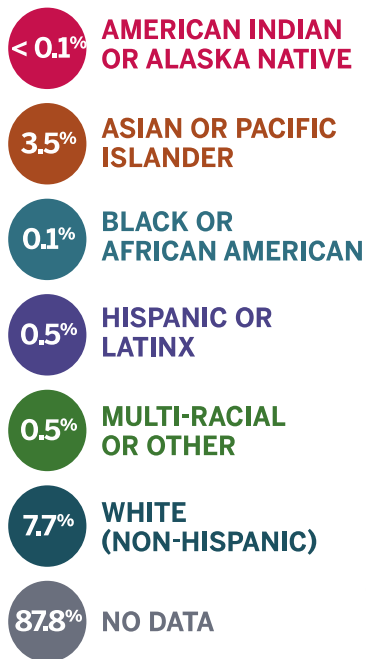
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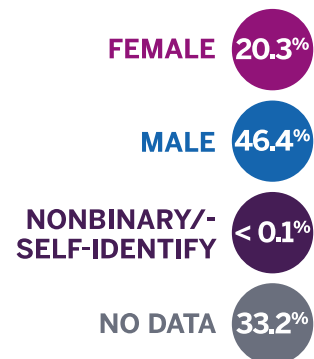
Science Family Authors and Reviewers (N=49,316)



RACE/ETHNICITY



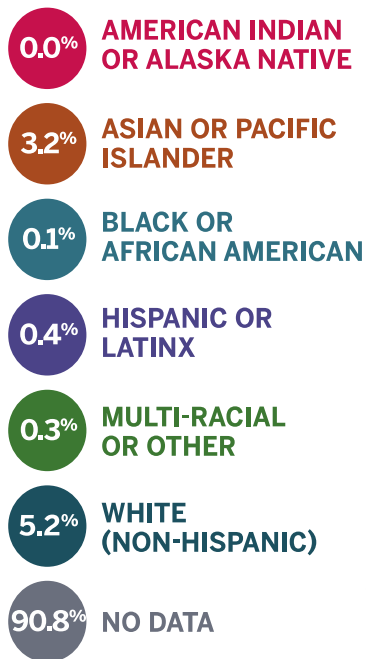
GENDER



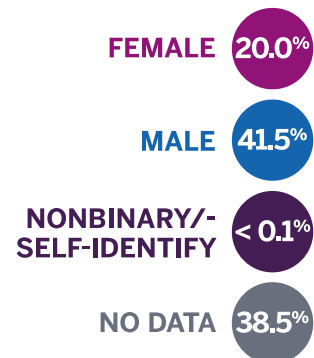
Science Family Authors and Reviewers Subgroup: Report Authors (N=33,453)



RACE/ETHNICITY



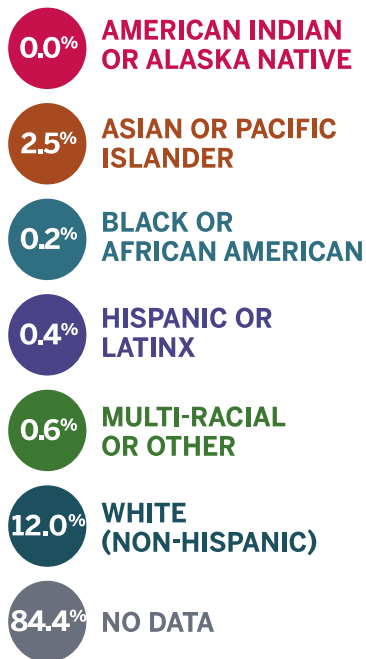
GENDER



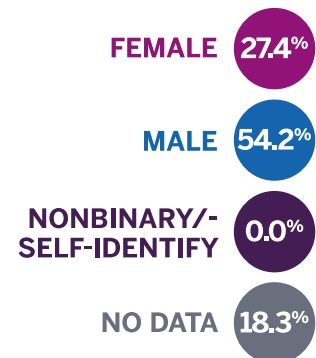
Science Family Authors and Reviewers Subgroup: Review Authors (N=518)



RACE/ETHNICITY



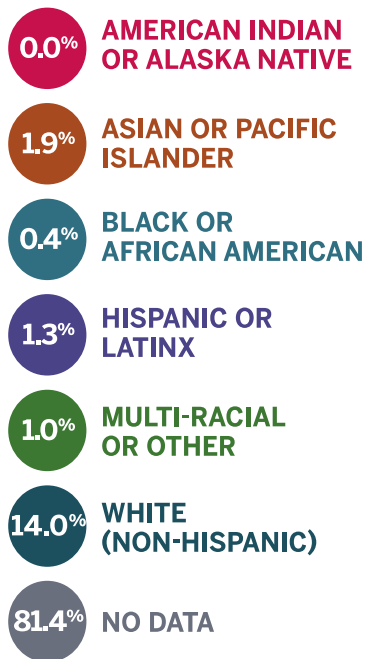
GENDER



Science Family Authors and Reviewers Subgroup: Commentary Authors (N=1,133)



RACE/ETHNICITY

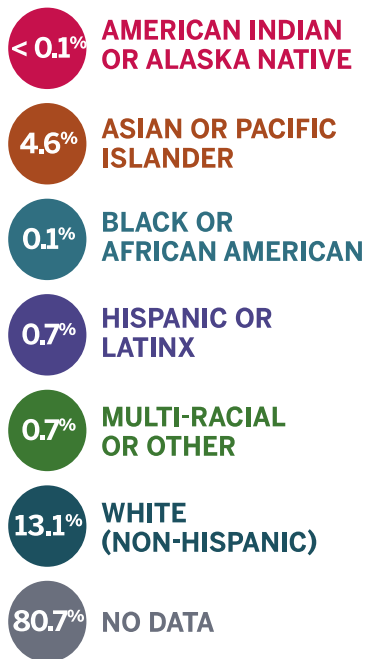


GENDER

Science Family Authors and Reviewers Subgroup: Reviewers (N=16,734)



RACE/ETHNICITY



GENDER



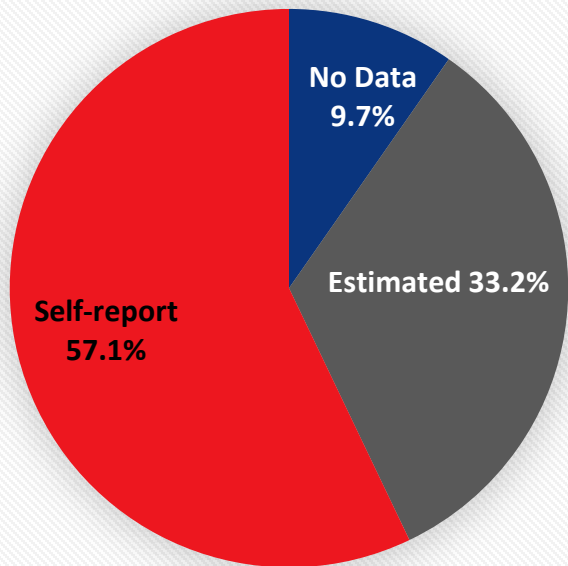
APPENDIX D: GENDER ESTIMATES

AAAS/Science Functions (N=13,480)



Gender Coverage and Estimates:

No Data: 9.7%
Estimated: 33.2%
Self-report: 57.1%



Staff Leadership (N=21)

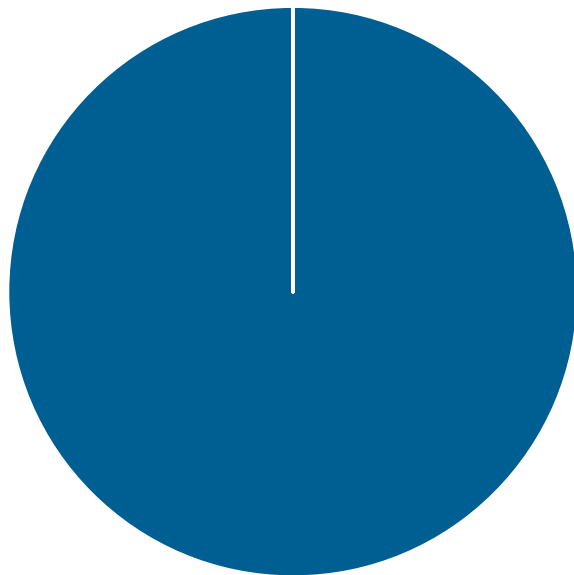


Gender Coverage and Estimates:

No Data: 0.0%

Estimated: 0.0%

Self-report: 100%

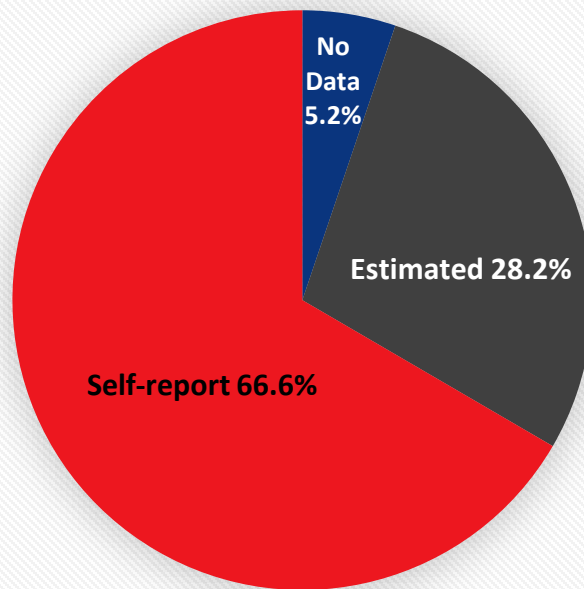


Elected Leadership (N=404)



Gender Coverage and Estimates:

No Data: 5.2%
Estimated: 28.2%
Self-report: 66.6%



Elected Leaders Subgroup: Board of Directors (N=15)

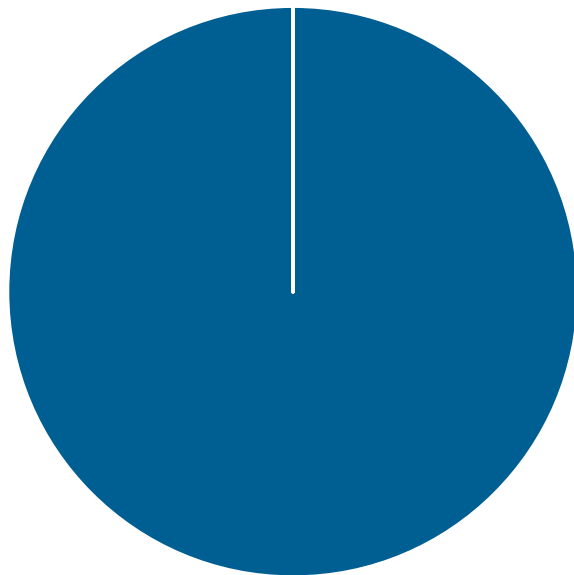


Gender Coverage and Estimates:

No Data: 0.0%

Estimated: 0.0%

Self-report: 100%

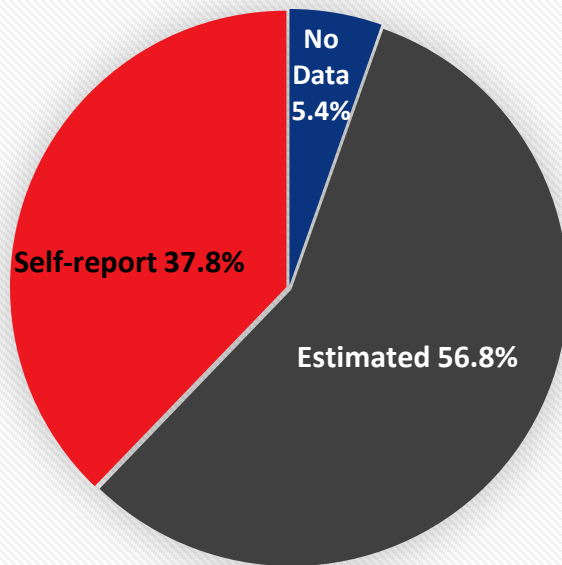


Advisory Committees (N=74)



Gender Coverage and Estimates:

No Data: 5.4%
Estimated: 56.8%
Self-report: 37.8%

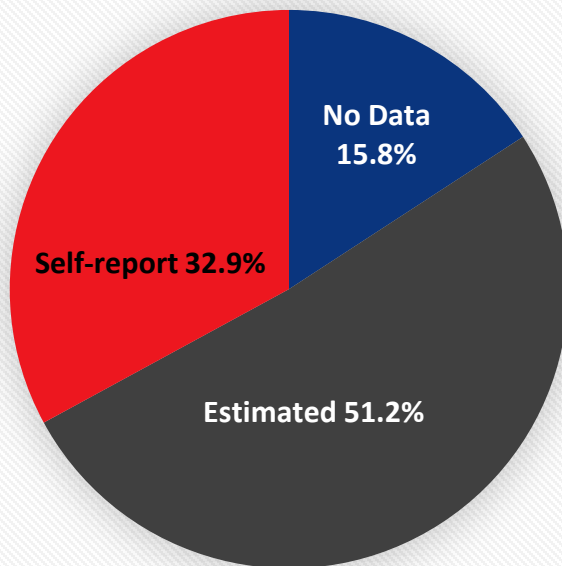


Science Editors and Advisors (N=720)



Gender Coverage and Estimates:

No Data: 15.8%
Estimated: 51.2%
Self-report: 32.9%

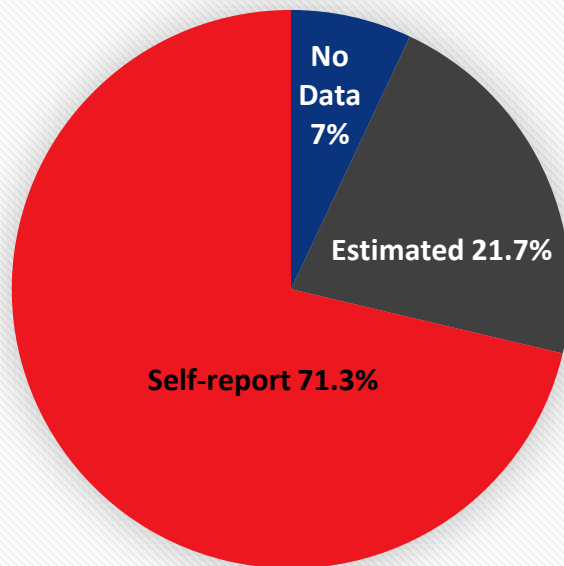


Honors and Awards Recipients (N=8,875)



Gender Coverage and Estimates:

No Data: 7.0%
Estimated: 21.7%
Self-report: 71.3%

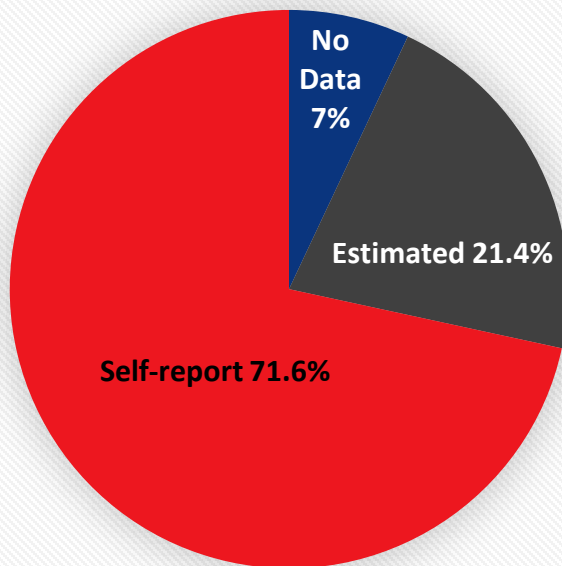


Honors and Awards Recipients Subgroup: Honorary Fellows, All Active Members (N=8,734)



Gender Coverage and Estimates:

No Data: 7.0%
Estimated: 21.4%
Self-report: 71.6%



Honors and Awards Recipients Subgroup: Honorary Fellows, Class of 2019 (N=435)

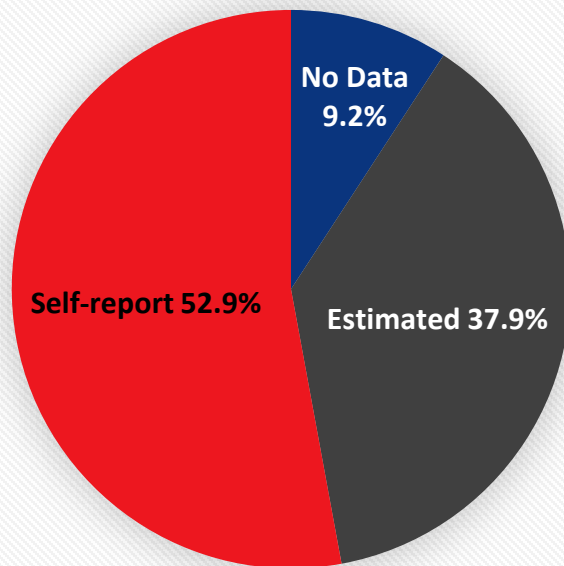


Gender Coverage and Estimates:

No Data: 9.2%

Estimated: 37.9%

Self-report: 52.9%



Honors and Award Selection Committees (N=102)

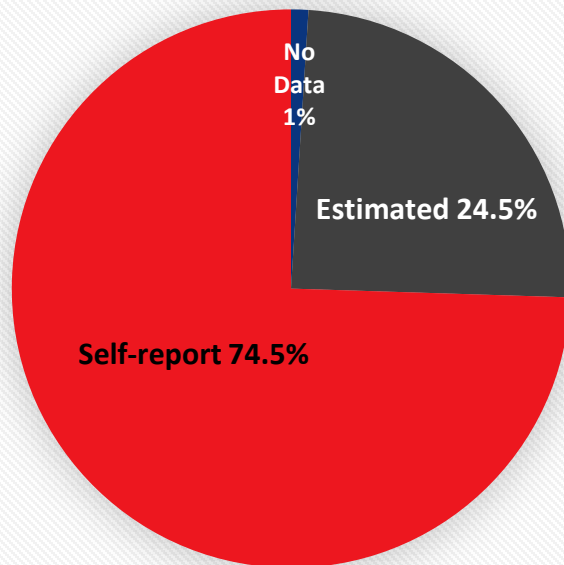


Gender Coverage and Estimates:

No Data: 1.0%

Estimated: 24.5%

Self-report: 74.5%

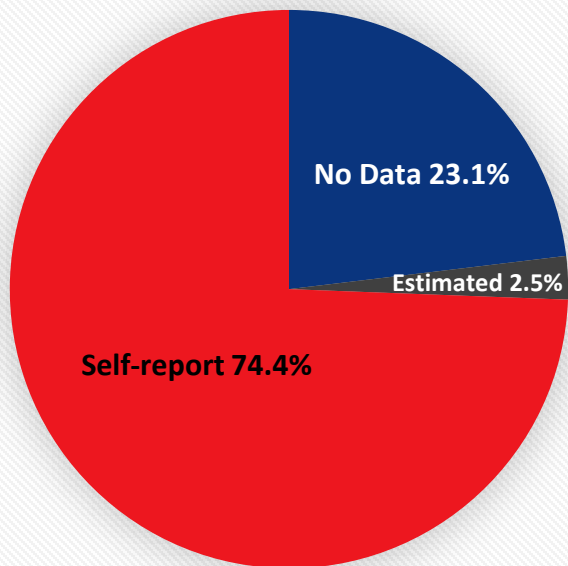


Career/Development Fellowship Participants (N=667)



Gender Coverage and Estimates:

No Data: 23.1%
Estimated: 2.5%
Self-report: 74.4%

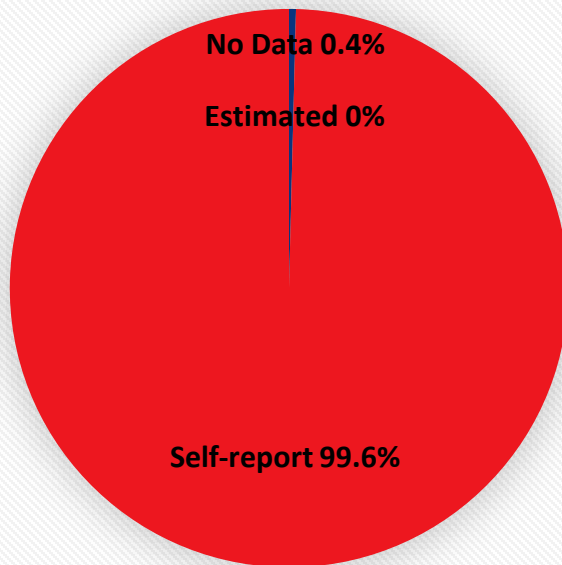


Career Development/Fellowship Participants Subgroup: S&T Policy Fellows (N=281)



Gender Coverage and Estimates:

No Data: 0.4%
Estimated: 0.0%
Self-report: 99.6%

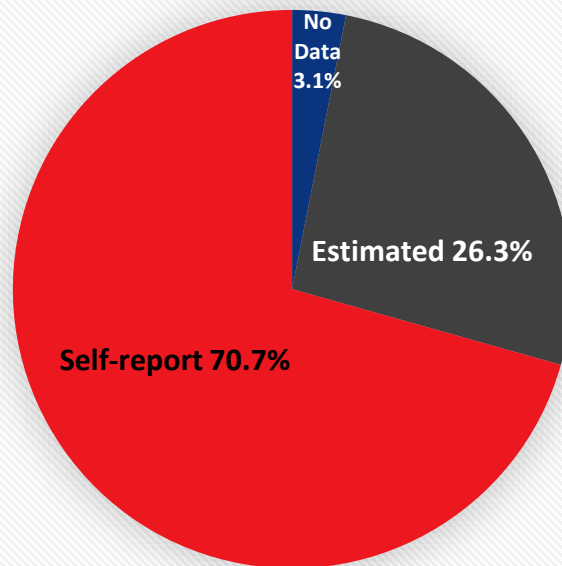


Career/Development Fellowship Selection Committees (N=259)



Gender Coverage and Estimates:

No Data: 3.1%
Estimated: 26.3%
Self-report: 70.7%



Speakers and Presenters at Major AAAS Events (N=844)

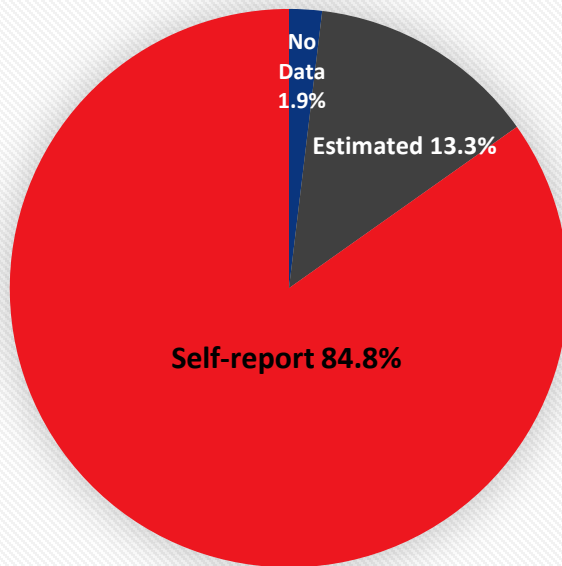


Gender Coverage and Estimates:

No Data: 1.9%

Estimated: 13.3%

Self-report: 84.8%

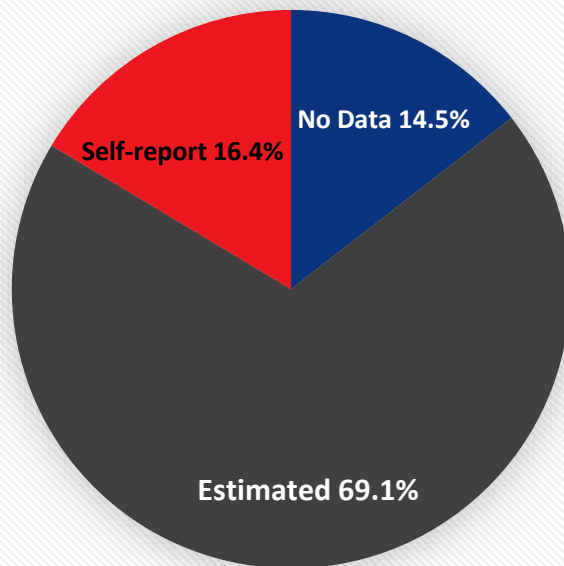


Volunteers (N=3,676)



Gender Coverage and Estimates:

No Data: 14.5%
Estimated: 69.1%
Self-report: 16.4%



Science Family Authors and Reviewers (N=49,316)

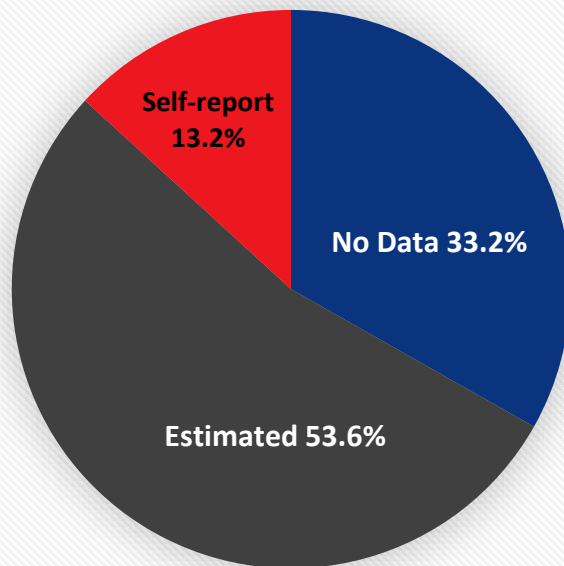


Gender Coverage and Estimates:

No Data: 33.2%

Estimated: 53.6%

Self-report: 13.2%



Science Family Authors and Reviewers Subgroup: Report Authors (N=33,453)

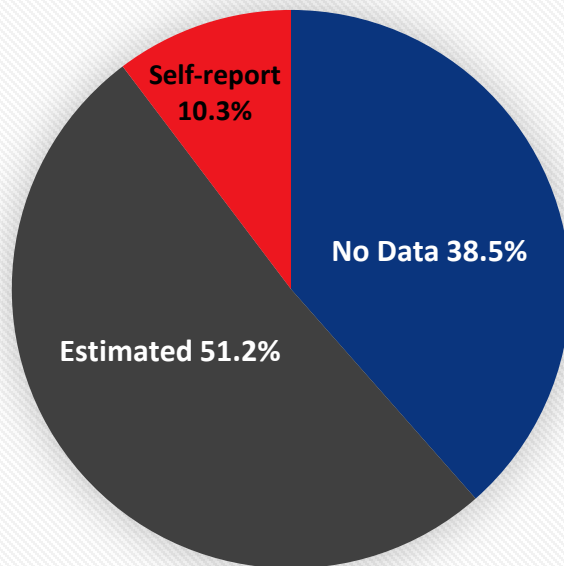


Gender Coverage and Estimates:

No Data: 38.5%

Estimated: 51.2%

Self-report: 10.3%

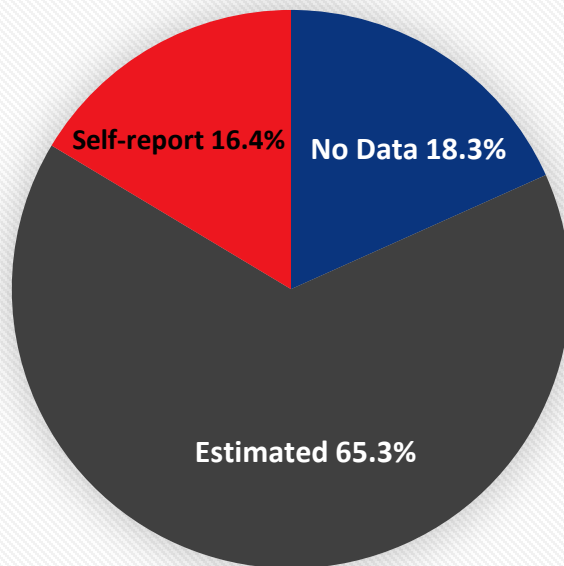


Science Family Authors and Reviewers Subgroup: Review Authors (N=518)



Gender Coverage and Estimates:

No Data: 18.3%
Estimated: 65.3%
Self-report: 16.4%

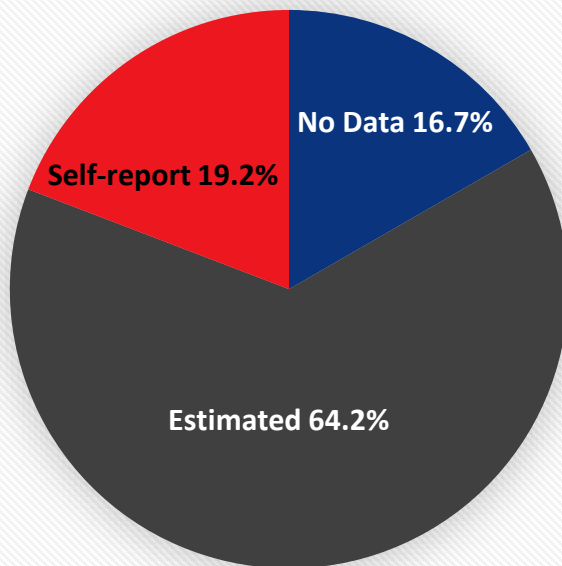


Science Family Authors and Reviewers Subgroup: Commentary Authors (N=1,133)



Gender Coverage and Estimates:

No Data: 16.7%
Estimated: 64.2%
Self-report: 19.2%



Science Family Authors and Reviewers Subgroup: Reviewers (N=16,734)



Gender Coverage and Estimates:

No Data: 22.8%
Estimated: 57.0%
Self-report: 20.2%

