



National
Science
Foundation

STUDY OF ANTI-HARASSMENT POLICIES, GUIDELINES, AND COMMUNICATIONS

June 2022

A report from the Evaluation and Assessment Capability
Section of the National Science Foundation

About the Evaluation and Assessment Capability Section

[The Evaluation and Assessment Capability \(EAC\)](#) Section bolsters NSF efforts to make informed decisions and promote a culture of evidence. Located in the Office of Integrative Activities of the Office of the Director, EAC provides centralized technical support, tools, and resources to conduct evidence-building activities and to build capacity for evidence generation and use across the agency. EAC is led by NSF's Chief Evaluation Officer.

About this report

This report was prepared for NSF under contract numbers 47QRAA18D00BQ Order No. 49100420F0180 and GS00Q17GWD2457 Order No. 49100418F1342. The views expressed in this report do not necessarily represent the views of NSF or the U.S. Government.

Preferred citation

Kozakowski, W., Nigenda, A., Tuttle, C. 2022. *Anti-Harassment Study Findings [PowerPoint Presentation]*. National Science Foundation, Alexandria, VA.

NSF Quality Certification: Level 2

Quality Certifications

Level 1 - The author(s)/contractor(s) are responsible for the quality and conclusions presented in this report

Level 2 - NSF verified that this report underwent quality assurance procedures and contributed to assessing its content

Level 3 - NSF independently reproduced the analysis presented in this report



Anti-Harassment Study Findings

December 10, 2021

Revised April 19, 2022

Final June 22, 2022

Submitted to:

National Science Foundation

Submitted by:





CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

Anti-Harassment Study

As part of its commitment to promoting safe and harassment-free research and education environments, in fiscal year (FY) 2018 the National Science Foundation (NSF) augmented its anti-harassment policies, guidelines, and communications to promote safe, harassment-free environments for the practice of science. It then commissioned a study to respond to questions in NSF’s FY 2020 Learning Agenda related to these anti-harassment policies:

Q4: Has NSF’s *communication strategy* helped raise *awareness of its anti-harassment policies*, particularly the new *award “term and condition” (T&C)*?

Q5: Has NSF’s anti-harassment *conference policy* led to increases in references to anti-harassment policies and procedures in *submitted proposals*?

NSF initiated this study as *the first of several steps* to learn about the efficacy of its anti-harassment policies, guidelines, and communications—*without increasing burden on any external actors* (administrators, faculty, grant PIs, or students).

The study:

- Included qualitative and quantitative components,
- Relied on NSF data and content publicly available through institutional websites about NSF’s T&C,
- Leveraged technology to retrieve information and used natural language processing algorithms to automate webpage coding, and
- Relied on text mining to identify and retrieve data from conference proposals.

The analysis of communications and the T&C was descriptive, whereas the analysis of the conference policy used an interrupted time series design to estimate changes before and after the introduction of the policy.



Anti-Harassment Study

Key preliminary findings from the study suggest the following:

- Based on our sample of artifacts, NSF communication was most frequent during policy development and rollout, focused on specific policies and consistent framing, and intended for NSF staff and grantees. Outside of those periods, communication was less targeted and less frequent. It sought to engage a broader audience and focused on the need for anti-harassment policy generally.
- Relatively few institutions of higher education (IHEs), non-profits, or companies that received an NSF award (as an awardee institution) or were a PI's or co-PI's institution on an award since the T&C went into effect referenced NSF's anti-harassment policies on their public webpages or directly linked to NSF's T&C-related webpages. Among IHEs, those that received more funding, had very high engagement with research, and did not predominantly serve a minority student population were more likely to reference NSF's anti-harassment policies on their websites.
- The vast majority of IHEs that received an NSF award (as an awardee institution) or were a PI's or co-PI's institution on an award since the T&C went into effect have an anti-harassment policy and disseminate information about it through their public website. In comparison, only one-fifth of nonprofits and very few companies did so. Among IHEs, a large majority of minority-serving institutions (MSIs) receiving NSF grants have an anti-harassment policy in place, but they are less likely to do so than non-MSIs.
- The introduction of NSF's conference policy led to an increase in proposals referencing anti-harassment policies and procedures. This finding holds regardless of institution type, amount of funding, and minority-serving status. However:
 - The observed increase in references to anti-harassment policies and procedures was lower among principal investigators (PIs) from MSIs than among PIs from non-MSIs.
 - The increase among MSIs conceals large variation within that group. Conference proposals submitted by PIs at Hispanic-Serving Institutions (HSIs) are more likely to reference anti-harassment policies and procedures after the introduction of NSF's new policy. This was not true of proposals submitted by PIs from Historically Black Colleges and Universities (HBCUs).





CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

NSF's Anti-Harassment Policies

As part of its commitment to promoting safe and harassment-free research and education environments, the National Science Foundation (NSF) has augmented its anti-harassment policies, guidelines, and communications.

Specifically, NSF adopted the following:

- **A new award term and condition (T&C)** in FY 2018 titled *Notification Requirements Regarding Sexual Harassment, Other Forms of Harassment, and Sexual Assault*. The T&C in all NSF awards requires awardee organizations to notify NSF of any findings or determinations of harassment involving an NSF-funded Principal Investigator (PI) or co-PI, or related administrative actions concerning harassment findings or investigations (September 2018, https://www.nsf.gov/od/oecr/term_and_condition.jsp).
- **A new anti-harassment conference policy** in FY 2019 that extends the reach of its anti-harassment efforts to a broader range of work environments, to include NSF-supported conferences. Proposers that submit conference proposals are required to have a policy or code-of-conduct that addresses sexual harassment, other forms of harassment, and sexual assault, and include clear and accessible means of reporting violations of the policy or code-of-conduct. This policy or code-of-conduct must be disseminated to conference participants prior to attendance at the conference as well as made available at the conference itself (PPAPG, February 2019, p. II-40). However, proposers do not need to address this in their proposals, nor are they required to submit the policy or code-of-conduct to NSF for review (PAPPG, October 2021, p. II-45).

*“As the primary funder of U.S. basic science and engineering research, NSF is committed to creating a more inclusive STEM culture and climate.”
(NSF News Release 18-082)*



NSF's Anti-Harassment Study: Overview

This document shares **findings** from the study investigating NSF's anti-harassment policies and efforts to communicate these policies to the research community.

This study responded to questions in NSF's FY 2020 Learning Agenda related to NSF's anti-harassment policies to promote safe, harassment-free environments for the practice of science.

NSF initiated this study as the first of several steps to learn about the efficacy of its anti-harassment policies, guidelines, and communications—without increasing burden on any external actors (administrators, faculty, grant PIs, or students).

The study explored the following:

- How NSF communicated its anti-harassment T&C and its anti-harassment conference policy;
- The extent to which awardee institutions were aware of the new T&C, as reflected by relevant information on institutional websites; and
- Whether the conference policy has led to changes in the proposals submitted to NSF and the conferences NSF supports.

Note: See [Technical Appendix](#) for details on data, samples, and methods, and for supplemental analyses.

NSF's Interim Learning Agenda included

Q4: Term and Condition (T&C) Analysis

Has NSF's communication strategy helped raise awareness of its anti-harassment policies, particularly the new award "term and condition"?

Q5: Conference Policy Analysis

Has NSF's anti-harassment conference policy led to increases in references to anti-harassment policies and procedures in submitted proposals?

Study Components and Research Questions

The study was organized into three components to answer a series of related research questions.

1. **Communication analysis:** a **qualitative review of NSF's communication activities**, including communication materials and dissemination strategy.
2. **Term and condition analysis:** a **quantitative, descriptive analysis of awardee organizations' public web content** on sexual harassment, other harassment, and sexual assault policies, with particular attention to whether the organizations included references or links to the NSF T&C.
3. **Conference policy analysis:** a **quantitative and qualitative analysis of NSF proposals** that measured how often proposals included references to anti-harassment policies and practices before and after NSF's new policy.

Communications

1. How has NSF communicated its new award anti-harassment T&C, both within and outside the organization?
2. How has NSF communicated its anti-harassment conference policy, both within and outside the organization?

Outcomes related to the term and condition

3. Have institutions established their own anti-harassment policies and publicized these via their website?
4. Do NSF-funded institutions reference the NSF's anti-harassment T&C on their websites? Does the text link to the policy?
5. Does reference to NSF's anti-harassment T&C vary based on the characteristics of institutions?

Outcomes related to the conference policy

6. Has the anti-harassment conference policy led to increases in references to anti-harassment policies and procedures in submitted proposals?
7. Are there differences in references to anti-harassment policies and procedures based on the characteristics of proposals, PIs, or institutions?
8. How do proposals discuss anti-harassment policies and practices?
9. Do NSF-funded institutions include any reference to NSF's anti-harassment conference policy on their websites?
10. Do institutions with NSF funding for conferences have institutional anti-harassment conference procedures, including mechanisms for reporting incidents, on their websites?



CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

Communications Analysis

Exploration of NSF's approach to disseminating and publicizing anti-harassment policies (both the T&C and conference policy)

1. **Interviewed** key NSF staff following a semi-structured protocol designed to cover the intent of the policies and the strategy for their communication, and gauge policy implementation relevant to Questions 4 and 5 (see slide 7). Respondents interviewed were key Office of Equity and Civil Rights (OECR, formerly Office of Diversity and Inclusion) and other NSF staff responsible for designing and implementing the anti-harassment policies.
2. **Collected sample of materials** identified by senior OECR staff that reflected NSF's documented communications plan.
 - This sample focused on written and documented materials and approaches, including policy-related guidance, applicable government reports, NSF website materials, Federal Register materials, internal communications, organizational journals and websites, congressional inquiries and testimony, press statements, and social media events and mentions.
 - The sample excluded some other types of communication, such as presentations at conferences and speeches at grantee convenings.
3. **Reviewed sample of communications materials.**
4. **Manually coded and categorized materials** into four time periods (see sidebar) and three domains:
 - Intended Audience (NSF staff and stakeholders, broader scientific community)
 - Mode of communication (policy language or guidance, internal planning, social media reference, press release or public statement, in-person or social media event, press or publication mention)
 - Content (reference to assessment of need, T&C, conference policy, broader anti-harassment efforts)

Comprehensive coding and analysis of communication materials into four time periods

Prior to 2018 | Historical NSF Communication on Sexual Harassment

Example: [Press statement](#): "The National Science Foundation (NSF) will not tolerate harassment at grantee institutions."

January–July 2018 | Policy Development and Public Comment

Example: [Testimony to Congress, Statement for the Record](#) (by Rhonda Davis)

August–December 2018 | Term and Condition Release and Rollout

Example: [Response to Public Comment](#) and [Final Federal Register Notice](#)

January 2019–Present | Ongoing Communications and Updates

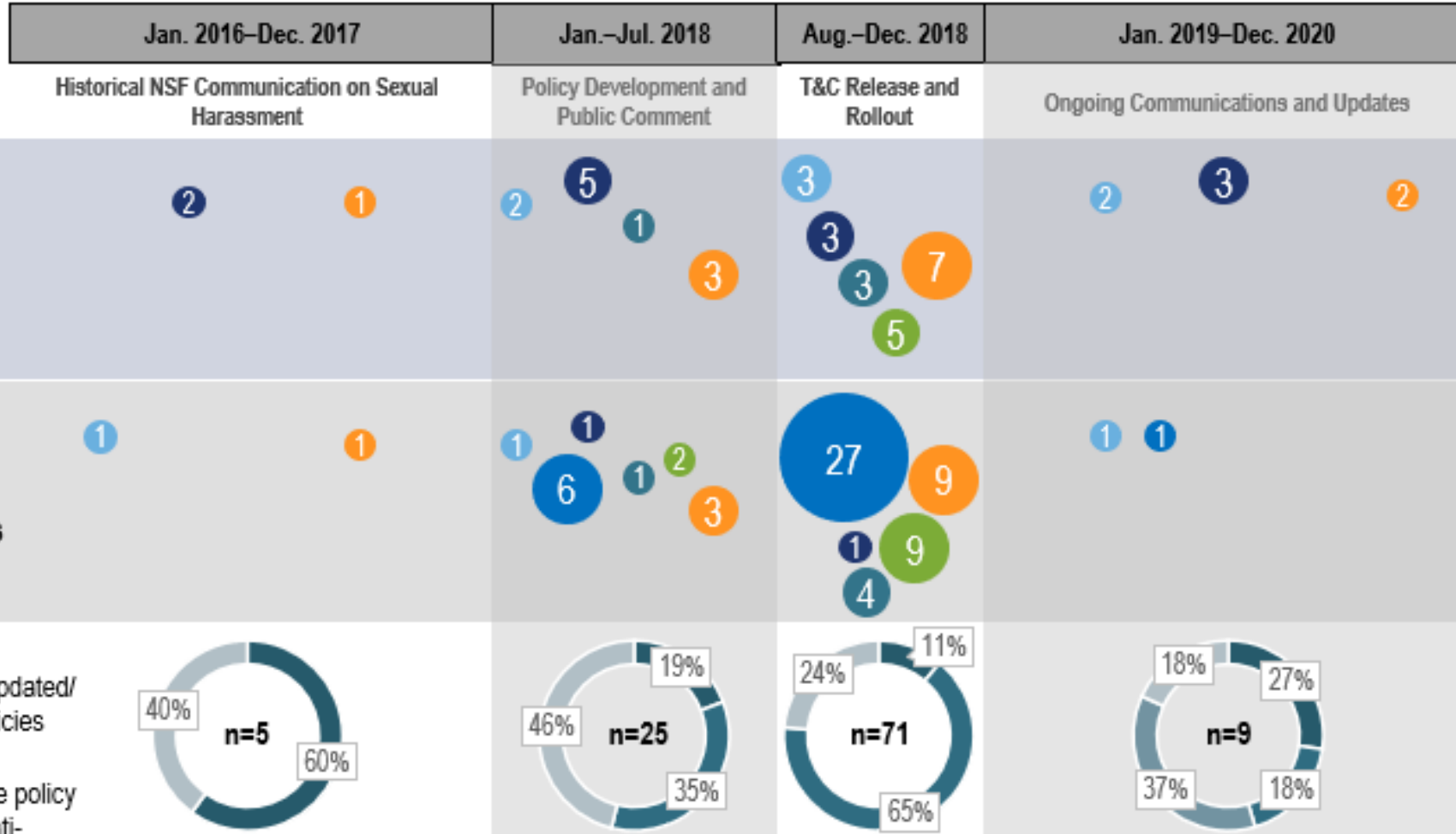
Example: [Proposal & Award Policies & Procedures Guide](#)

Note that the representative activities identified with each of the four time periods are not exclusive to that time period.

Important limitation: Due to the nature of the sample of materials and exclusion of some forms of communication, this analysis likely underestimates the extent of the approach.

Communications: Key Materials

NSF's approach to disseminating and publicizing anti-harassment policies



During policy development and rollout, communications were frequent, focused on the specific policies and consistent framing, and tried to engage NSF staff and grantees.

In the periods leading up to development and after rollout, less-frequent communications addressed the broader scientific community and focused on the need for anti-harassment policy.

Mode of communication

- Policy language or guidance
- Internal planning
- Press release or public statement
- In-person or social media live event
- Social media post or reference
- Press or publication mention



Communications: Interviews with NSF Stakeholders

Key elements of the communications strategy identified by NSF staff included:

- **Incorporating multiple considerations in the T&C communications rollout plan.** *“When the plan was devised, we were keeping in mind: (1) the newness/uniqueness of this (the first such strategy from a federal agency) and (2) develop[ing] messaging that was as strong as possible, [as] communities that would be served tend to be skeptical—they’ve been let down in the past.... Keep expectations realistic, but clearly say that because we take this so seriously, we’re taking action.”*
- **Focusing on institutional buy-in—specific grantees to a lesser extent.** Communications focused on institutions, as NSF *“wanted to be sensitive to the challenges they have, while making it clear [NSF] wanted them to do certain things.”*

Most successful activities according to key OECR staff include the following:

- Initial rollout with consistent, constant messaging
- Facebook live event
- NSF townhall
- Institution roundtables : *“...most effective were the roundtables. We had roundtables with institutions’ general counsels, their VPs of research, their diversity staff if they wanted to listen in, which gave an opportunity for engagement on more than one side...this was a really good cross-pollination of information between us and [other] entities.”*
- Ad-hoc discussions at outside conferences



NSF Facebook Live NSF Anti-Harassment Policy

What's next?

- ➡ *“A lot of conference activities are on hold or held virtually.... ODI [now OECR] is more focused on how to fine-tune implementation or [identify] other program areas [the T&C] could be applied to and currently isn’t.”*
- ➡ *“Helping people [realize] that race is a part of the T&C”*



CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

Term and Condition (T&C) Analysis Overview

This analysis examines whether institutions subject to NSF's T&C demonstrated awareness of NSF's anti-harassment policies, including the T&C, (by linking to official guidance on NSF's website about it) and whether they had their own anti-harassment policies on their public websites. There were two main strands of work.

- 1 **Identified institutions subject to the T&C and whether these institutions linked to NSF's T&C-related webpages using Ahrefs**
 - a) Identified all institutions subject to the T&C (see Technical Appendix for details).
 - b) Used Ahrefs, a search engine optimization tool that can identify URLs linking to a webpage, to identify all public websites linking to NSF's T&C webpage, NSF's T&C News Release 18-082, or NSF's webpage on stopping harassment, which discusses the T&C.
 - c) Merged the resulting list of webpages to the list of institutions subject to the T&C using webpage domains (see Technical Appendix for details).
 - d) Conducted a descriptive analysis summarizing the number and share of institutions subject to the T&C linking to at least one of the three T&C-related webpages.

- 2 **Identified whether institutions subject to the T&C have an anti-harassment policy on their public websites and whether they reference official guidance on NSF's website about the T&C**
 - a) Created a codebook with clear criteria for classifying a webpage as one of the following:
 - i. was an institution's policy against harassment
 - ii. referenced NSF's T&C-related anti-harassment policies
 - b) Used robotic process automation (RPA) to run web search queries via Google for each institution and retrieved webpages related to an institution's harassment policy and NSF's harassment policies.
 - c) Built Natural Language Processing (NLP) algorithms to automate webpage coding. Trained, validated, and tested algorithms with a sample of manually coded webpages. Once algorithms were performing well, scaled up to automate webpage review for all institutions.
 - d) Conducted a descriptive analysis summarizing the share of institutions subject to the T&C with at least one public webpage meeting criteria (i) or (ii).

Important limitation: These analyses provide **an estimate of the minimum percentage of institutions** subject to the T&C that are linking to or referencing NSF's anti-harassment policies or that have their own anti-harassment policy, since some institutions may disseminate information through other means (e.g., emails, physical copies) than their public websites.

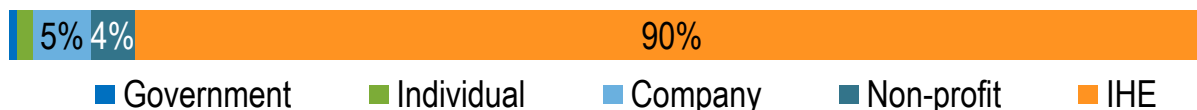


1a Identifying which institutions are subject to the T&C and which receive the most awards

For All Institutions Subject to the T&C, Percentage of Each Type of Institution



Percentage of Awards (Either New or Funding Amendments) Since T&C Went Into Effect Granted to Different Types of Institutions



Percentage of Award Funding (FY 2016–FY2020) Granted to Different Types of Institutions Subject to the T&C*



Source: NSF awards (both new awards and funding amendments to existing awards) with effective dates from October 22, 2018, to February 1, 2021 (N=4,108 unique institutions identified from 35,114 awards. Institutions include awardee institutions and PI or co-PI institutions listed on awards).

The study-focuses on IHEs and, to a lesser extent, companies and non-profits when reporting findings because they receive the most awards and funding.

- The first step of the analysis was identifying the set of institutions that received new awards or funding amendments (or have PIs or co-PIs on awards or funding amendments) that went into effect after the T&C was in effect.
- The types of institutions subject to the T&C were companies (38%), IHEs (30%), individuals (16%), non-profits (12%), and government entities (4%).
- The vast majority of new awards or funding amendments to existing awards (90%) during this period of time went to IHEs, compared to companies (5%), non-profits (4%), individuals (1%), or government entities (<1%). Among institutions subject to the T&C, IHEs also received 84% of all direct award funding from FY2016-FY2020, compared to 8% for non-profits and 6% for companies.
- Given that individuals and government entities represented a small portion of total awards granted, the study focuses on IHEs, non-profits, and companies for this report, particularly IHEs given how many awards and how much funding they receive.

APPROACH

Examples of institutions in each category and one of their associated awards

Category	Awardee	Award #	Project Title	Amount
Government	RIVERSIDE UNIFIED SCHOOL DISTRICT	1759448	Riverside Air Monitoring Project	\$1,195,447
	GEOLOGICAL SURVEY, US DEPT OF	2013642	Transforming Ethics Education: Connecting STEM Faculty, Research Operations and Maintenance of National Science Foundation Ice Core Facility	\$953,183
Individual	Choi, Steve K.	2001866	Measuring Rayleigh Scattering of the Cosmic Microwave Background with CCAT-prime	\$200,000
	Caplins, Serena A.	1907177	NSF Postdoctoral Fellowship in Biology FY 2019: The relationship between seasonal adaptation and plasticity in the sea slug	\$138,000
Company	SYNTEK TECHNOLOGIES INC.	1931415	Global Modeling of Plasma Plumes in the Equatorial Upper Atmosphere	\$158,531
	LI INDUSTRIES, INC.	1951107	SBIR Phase II: A Direct Lithium-Ion Battery Recycling Process Yielding Battery-Grade Cathode Materials	\$750,000
Non-Profit	MANAGEMENT LEADERSHIP FOR TOMORROW	1719241	AWARE-EDP: Coaching and professional development to advance STEM innovation ideas and funding of underrepresented entrepreneurs and scientists	\$208,675
	AMERICAN INSTITUTE OF CHEMICAL ENGINEERS	1947262	2019 Global Symposium on Waste Plastic	\$15,820
IHEs	NEW YORK UNIVERSITY	1839302	Graduate Research Fellowship (GRFP)	\$6,491,284
	UNIVERSITY OF WASHINGTON	1934360	Collaborative Research: Advancing Science with Accelerated Machine Learning	\$600,001

Note: For each category of institution, this table shows an example of an awardee institution and an associated award. Please note that the sample includes any institutions that were awardee institutions, as well as PI or co-PI institutions on new awards or funding amendments since the T&C went into effect.

1d Institutions Linking to NSF's T&C-Related Webpages

Institutions Subject to T&C Linking to T&C Webpages:

69 IHEs (5%)
(Out of 1,241 Total)

14 Non-Profits (3%)
(Out of 477 Total)

0 Companies (0%)
(Out of 1,578 Total)

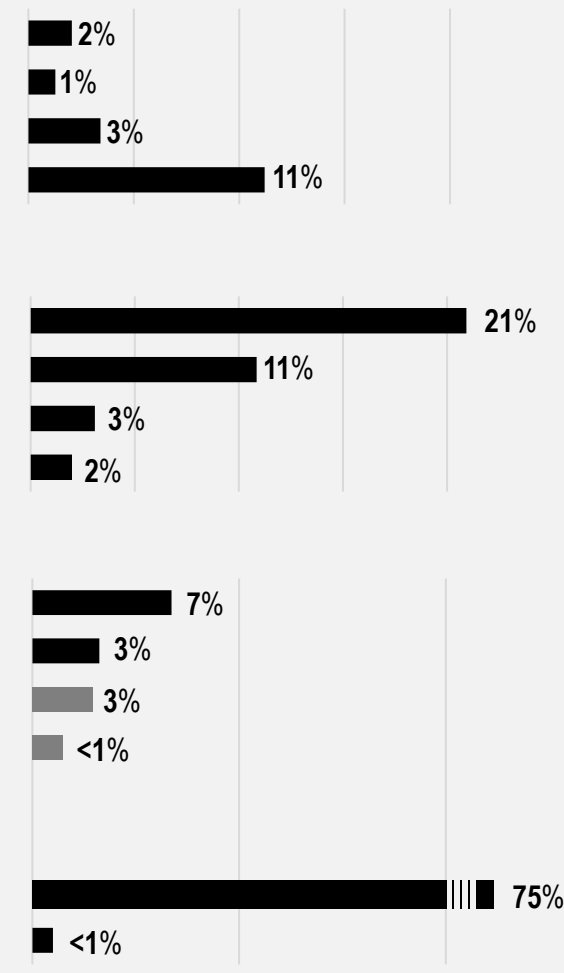
IHEs linking to NSF T&C-related webpages by category

Total Direct Award Funding (FY 2016–2020)	# with Links
\$1 to \$250,000 (n=97)	2
\$250,001 to \$1,000,000 (n=234)	3
\$1,000,001 to \$2,500,000 (n=225)	8
\$2,500,001 or more (n=482)	54

Research Intensity	# with Links
Very high research activity (R1) (n=129)	27
High research activity (R2) (n=129)	14
Non-R1 and non-R2 (n=882)	26
Status Unknown (n=101)	2

Minority-Serving Status	# with Links
non-MSI (n=862)	58
MSI (n=278)	9
HSI (n=137)	4
HBCU (n=68)	1
Tribal (n=20)	0
Native Hawaiian (n=4)	0
Alaska Native (n=4)	3
Status Unknown (n=101)	2

Percent with links to T&C-related guidance



Few IHEs linked to the T&C-related webpages, though those that received more funding or were R1s were more likely to link. MSIs were less likely to link to T&C-related webpages than non-MSIs.

- **69 out of 1,241 IHEs** subject to the T&C (5%) had links to the NSF T&C-related webpages.
- **14 non-profits** out of 477 (3%) and **0 companies** out of 1,578 (0%) subject to the T&C linked to NSF's T&C-related webpages on their public website.
- IHEs with **more award funding** from NSF were more likely to link to the webpages, with **11%** of those with awards over \$2.5M linking to T&C-related pages.
- Similarly, **institutions with very high research activity** were more likely to link to the T&C, with **21%** doing so.
- **Minority-serving institutions (MSIs)** linked to the T&C less than non-MSIs.

Notes:

- (1) The study did not include individuals and government agencies subject to the T&C in any analyses as they received few awards and, in the case of individuals, would not be expected to have webpages.
- (2) Total direct award funding includes all funding institutions received as an awardee institution from FY16-FY20. Some IHEs (n=202) are not included in this section, as they were never an awardee institution that directly received funding during this period of time (e.g., only a co-PI's institution).
- (3) The vast majority of IHEs missing research intensity or minority-serving status are outside of the U.S. and not covered by Carnegie and IPEDS
- (4) Sub-categories of institutions in MSI category will not sum to total in MSI category because MSIs include other institutions not listed here.



2a Create Codebook for Webpage Classification

Code	Definition
1a. Institution has a policy against harassment.	A statement of an institution’s policy regarding sexual harassment or other harassment. The policy must apply to the institution as a whole, rather than a subset of it, such as a policy specific to a department or a single research center within an institution.
1b. Institution has a detailed policy, including (1) a clear definition of harassment, or (2) policies and procedures for reporting.	A statement of an institution’s policy regarding sexual harassment or other harassment, which includes 1) a definition of harassment or 2) policies and procedures for handling reported cases, such as reporting mechanisms. The policy must apply to the institution as a whole, rather than a subset of it, such as a policy specific to a department or research center.
2. Institution references NSF’s harassment policies.	A reference to NSF’s policies against harassment with the goal of disseminating information to an institution’s community about NSF’s harassment policies.

Note: Initially, the study included a third code in the codebook which was aimed at identifying whether an institution had a policy against harassment at conferences specifically. However, after conducting manual coding, there was an insufficient number of relevant pages to train the model to identify this code and it was dropped from the analysis. This code is not listed in the codebook on this slide but is discussed further in the Technical Appendix.

A codebook was developed that describes the criteria for classifying a webpage as having an institution’s anti-harassment policy or as referencing NSF’s harassment policies.

Developed codebook to address main research questions for the webpage analysis: For the webpage analysis, the codebook provides clear definitions of constructs called codes that the NLP model is trained to automatically identify.

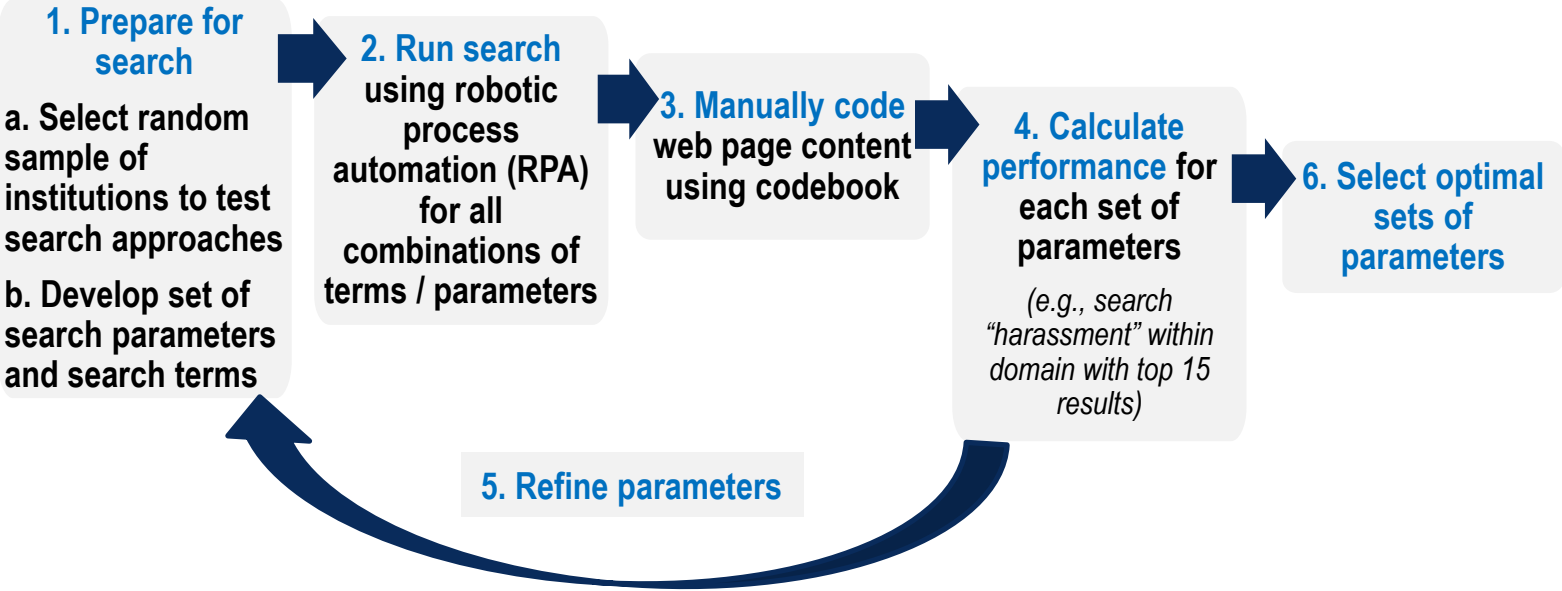
Codes 1a and 1b align with the following research question: Have institutions funded by NSF established their own anti-harassment policies and publicized these via their public website? Codes 1a and 1b are separated to clarify how expansive or detailed the anti-harassment policy is.

Code 2 aligns with the following research question: Do NSF-funded institutions reference NSF’s anti-harassment webpages, including the T&C, on their public websites? The model identified institutions’ webpages that referenced NSF’s harassment policies (Code 2) and then a key word search identified which of these webpages were explicitly referencing the T&C.



APPROACH

2b Test and choose the web search approaches to use to identify relevant webpages



Parameters	Tested Variations
Search terms	For each of the 3 bolded search terms below, an additional variation of adding NSF OR "National Science Foundation" was also tested for a total of 6 combinations: harassment + NSF OR "National Science Foundation" harassment sexual assault + NSF OR "National Science Foundation" harassment OR (sexual assault) + NSF OR "National Science Foundation"
Within domain or not	Within domain (e.g., harassment site:gmu.edu) Outside domain (e.g., harassment + "George Mason University")
Number of search results	Top 1–20 results from Google search

Two optimal web search approaches were chosen to scale up.

Sampling approach. A random sample of institutions (n=19) was used to test web search approach parameters. The sample was stratified by institution category: companies or nonprofits, very high intensity research institutions, high intensity research institutions, minority-serving postsecondary institutions, and all other postsecondary institutions.

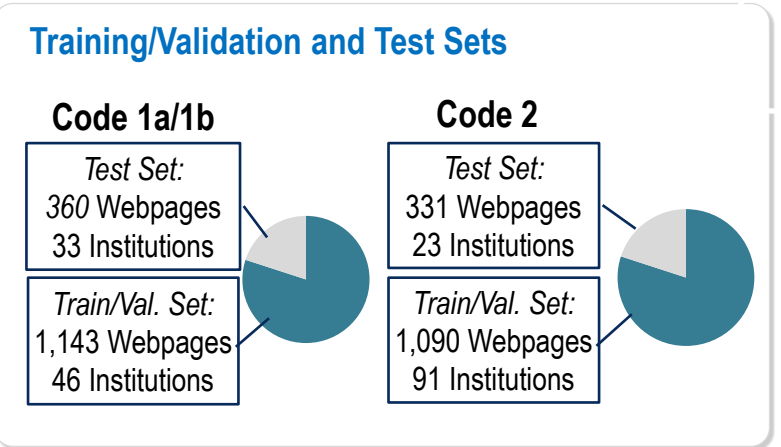
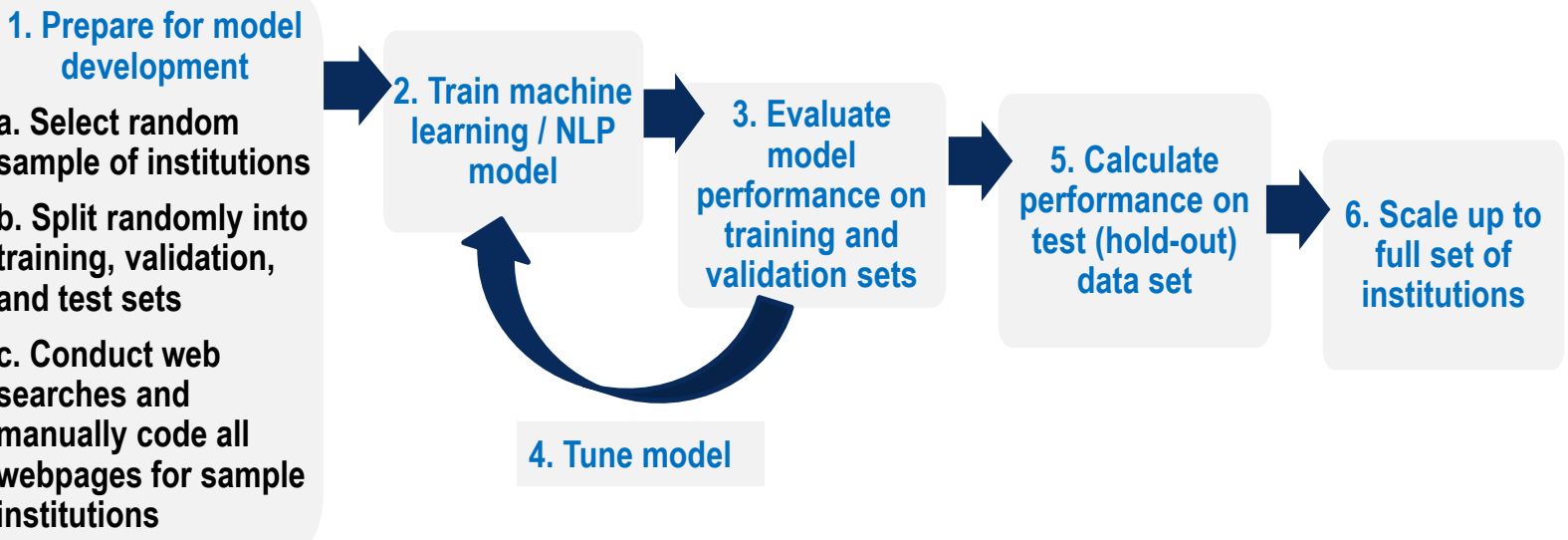
Search parameter development. To determine the optimal set of web search parameters, all possible combinations of the search parameters listed in the table were tested. (An example of a tested search approach combination would be running a search for the term "harassment" restricted to pages within an institution's domain, pulling the top 20 webpages from the search results.)

"Optimal" search parameter selection. After running all search approach combinations for all institutions in the sample, the webpages were manually coded. For each web search approach combination and each code, recall was calculated at the institution level (i.e., the percent of institutions identified via manual coding as a "yes" for a particular code that the web search approach returned at least one "yes" for.) The top two performing searches chosen were: 1) Search term: harassment; Within domain; 12 webpages. 2) Search term: harassment AND (NSF OR "National Science Foundation"); Within domain, 5 webpages. Together, these searches had the following recall rates: 97% for code 1a, 90% for code 1b, and 87% for code 2.



APPROACH

2c Develop NLP Model to classify a webpage as an institution’s anti-harassment policy or as referencing NSF’s T&C-related content



Model Performance (Institution Level)

	Code 1a	Code 1b	Code 2
Sensitivity/Recall	84%	94%	82%
Specificity	71%	81%	83%
Balanced accuracy	78%	88%	83%

Developed model to automate webpage coding.

Sampling approach. To develop the Natural Language Processing (NLP) model, 50 institutions were randomly selected and all the webpages returned from the optimal searches were manually coded. Institutions were split into a training and validation set (40 institutions) and a test set (10 institutions) to evaluate the final model performance. As with the search parameter optimization, the sample was stratified by institution type, research intensity, and minority-serving status. During model development, additional webpages were manually coded to improve performance, as needed.

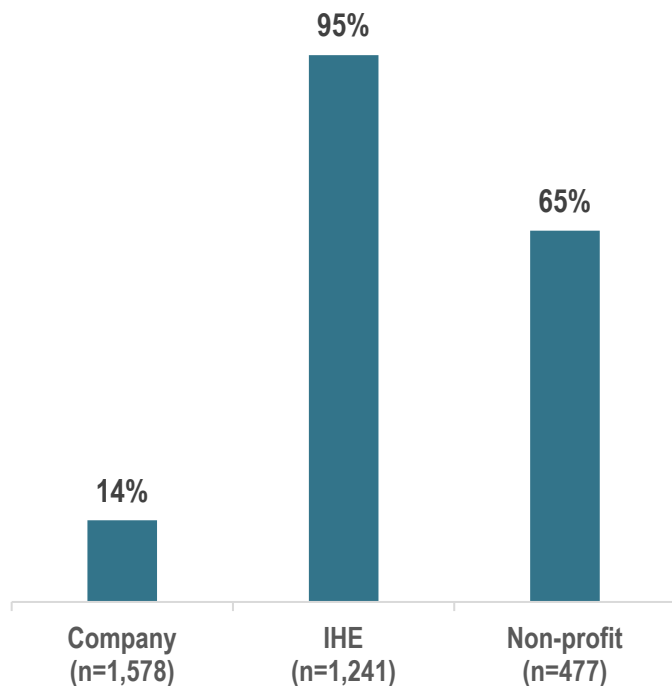
NLP model development. Using the manually-coded webpages in the training and validation set, two deep learning models were trained at the webpage level—one for code 1a/1b (a multi-label classifier) and one for code 2 (a single label classifier)—to predict whether a page was relevant for each code. For code 2, webpages were required to have “NSF” or “National Science Foundation” to be a relevant page. After developing the models, the test set was used to evaluate the final performance before applying the model to the full set of institutions. For code 2an additional text search for “term and condition” and “T&C” was run on all relevant pages to identify explicit references to the T&C. (Note that this will miss some pages that reference the T&C in less direct terms.)

Note: Manual coding and training was done for another code identifying institutions’ policies against harassment at conferences. However, after conducting manual coding there was an insufficient number of relevant pages to train the model for this code and this had to be dropped this from the analysis.

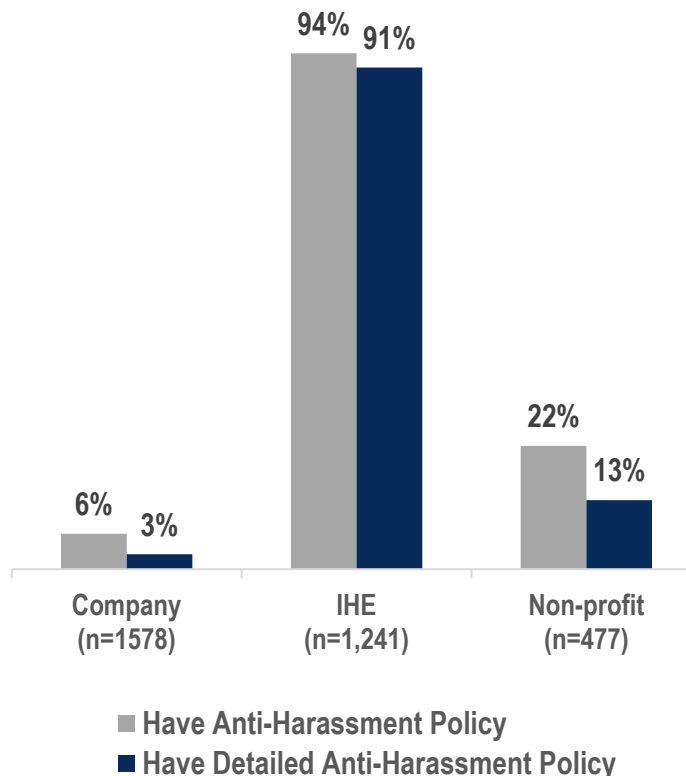


2d Anti-Harassment Policy Webpages, by Institution Type

Share of institutions (by type) with at least one webpage returned from one of the two web searches



Share of institutions (by type) with anti-harassment policy webpages



Source: Public webpages collected June–July 2021 for each institution subject to the T&C

Notes:

- (1) Relevant webpages include any webpage that is returned at least one of the two web searches run.
- (2) Companies were distinguished from non-profits as having the following in the name: "llc," "inc," "incorporated," "company," or "corporation." Manual checks were used to identify additional companies. A limitation of this approach is that the non-profit category may contain some companies.
- (3) Analysis excludes individuals and government entities because they receive very few awards.

95% of IHEs had at least one relevant public webpage, and 94% had a public anti-harassment policy webpage. 65% of nonprofits had at least one relevant public page, but only 22% had a public anti-harassment policy webpage. Few companies had a relevant webpage or an anti-harassment policy on their public website.

The vast majority of IHEs (95%) and a majority of non-profits (65%) had relevant public webpages identified by the optimal web searches. However, only 14% of companies had any relevant public webpages identified by the optimal web searches, indicating they did not have content related to harassment (or NSF and harassment) on their public webpages.

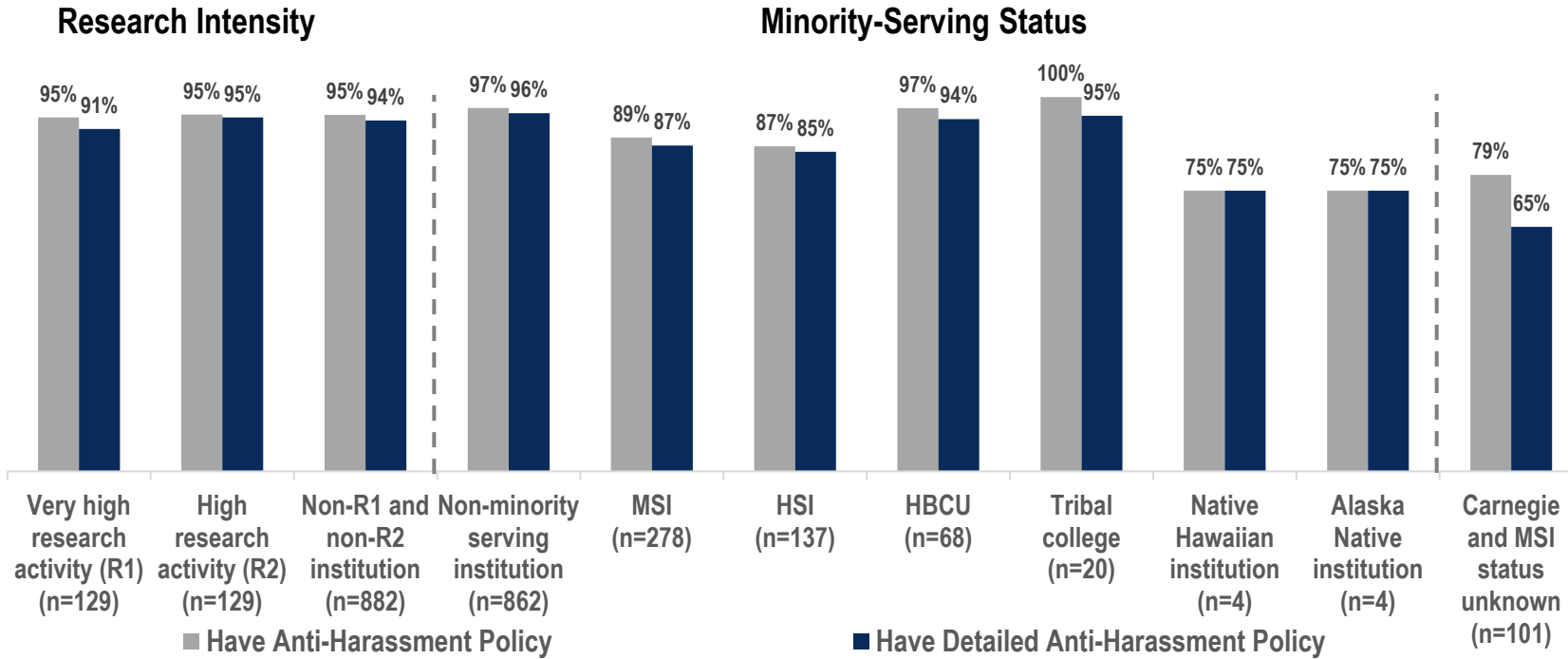
Among IHEs, 94% had an anti-harassment policy on their public institutional website, and 91% had a detailed policy that outlined clear definitions of harassment or policies and procedures for reporting.

A fifth of non-profits (22%) and very few companies (6%) had an anti-harassment policy on their public website and even fewer non-profits (13%) or companies (3%) had a detailed anti-harassment policy on their public website.



2d Anti-Harassment Policy Webpages, by Institution Characteristics

Share of IHEs (by category) with anti-harassment policy webpages



Source: Public webpages collected June–July 2021 for each institution subject to the T&C

Notes:

- (1) R1 institution = an institution classified as having “very high research activity” in the Carnegie Classification of Institutions of Higher Education; R2 institution = an institution classified as having “high research activity” in the Carnegie Classification of Institutions of Higher Education (2018);
- (2) HSI (Hispanic-serving institution), HBCU (Historically Black College or University), Native Hawaiian institution, Alaska Native institution, and Tribal college are subsets of MSI (Minority-serving institution); HBCU and Tribal college designations were retrieved from IPEDS, MSI and HSI from Carnegie Classifications of Institutions of Higher Education (2018), and Alaska Native and Native Hawaiian from U.S. Department of Education’s Office of Postsecondary Education’s 2021 eligibility lists for Title III grants.
- (3) The overwhelming majority of institutions with Carnegie Classifications or MSI status unknown (n=101) were outside the U.S.

MSI institutions are slightly less likely to have an anti-harassment policy on their public websites than non-MSIs.

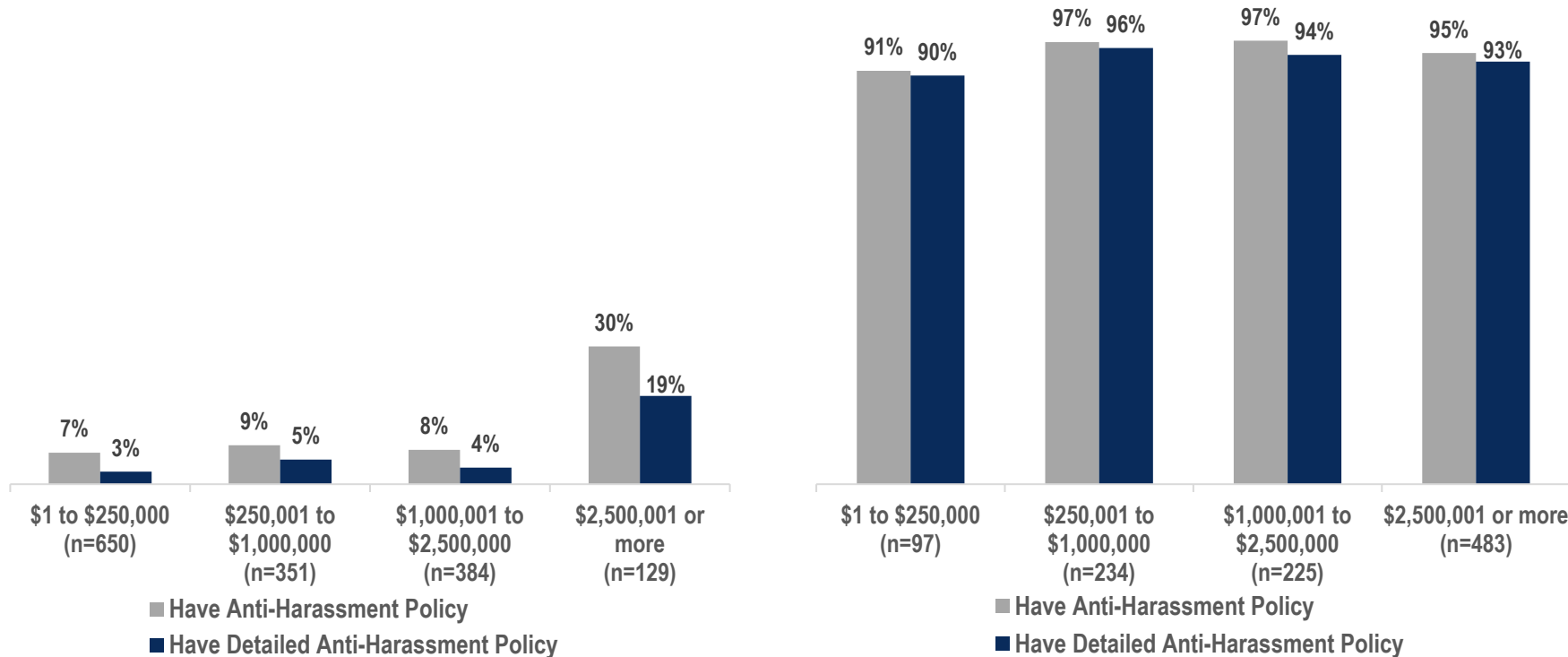
Among IHEs, institutions with different levels of research intensity (very high, high, and all other) have anti-harassment policies on their public websites at similar rates (95%).

HBCUs and Tribal colleges had public anti-harassment policy webpages at similar or slightly higher rates to non-MSI institutions. But, given the lower rates of anti-harassment policy webpages at other MSIs, MSIs (89%) on average had anti-harassment policy webpages at lower rates than non-MSIs (97%).

2d Anti-Harassment Policy Webpages, by Funding Amount

Share of companies and non-profits with anti-harassment policy webpages, by total direct funding amount (FY 2016–FY 2020)

Share of IHEs with anti-harassment policy webpages, by total direct funding amount (FY 2016–FY 2020)



The percentage of institutions with a public anti-harassment policy webpage is higher for institutions that receive more funding.

Across all companies and nonprofits, those with \$1 to \$250,000 in direct funding were least likely to have an anti-harassment policy (7%) or a detailed anti-harassment policy (3%) on their public website. Those with \$250,001 to \$1,000,000 (9% and 5%, respectively) and \$1,000,001 to \$2,500,000 (8% and 4%, respectively) followed closely behind.

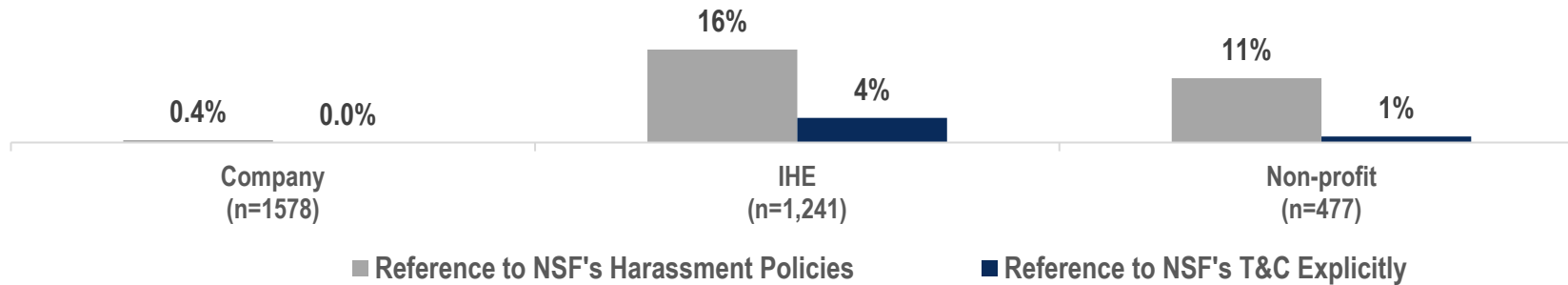
IHEs that received \$250,001 or more in funding were more likely to have an anti-harassment policy on their public website than those with less funding. A similar pattern held for detailed anti-harassment policies.

Source: Public webpages collected June–July 2021 for each institution subject to the T&C.

Notes: Total direct award funding includes all funding institutions received as an awardee institution from fiscal years 2016 to 2020. Institutions that did not receive any funding as an awardee institution on an award during the period of time (n=541 for companies and nonprofits, n=202 for IHEs), such as an institution that is only ever a co-PI's institution on an award, are excluded from this chart. Funding categories were created with the goal of distributing the total number of institutions evenly across categories (aside from those with N/A funding). Intervals are therefore not constant.

2d NSF Anti-Harassment Policy References, by Institution Type

Share of institutions with webpages referencing NSF’s anti-harassment policies, including the T&C



Source: Public webpages collected June–July 2021 for each institution subject to the T&C.

Notes:

- (1) A reference to NSF’s T&C explicitly indicates that the webpage contained the exact expressions: “term and condition” (not case sensitive) or “T&C” (case sensitive).
- (2) Companies were distinguished from non-profits as having the following in the name: "llc," "inc," "incorporated," "company," or "corporation." Manual checks were used to identify additional companies. A limitation of this approach is that the non-profit category may contain some companies.

Relatively few institutions referenced NSF’s T&C on their public webpages.

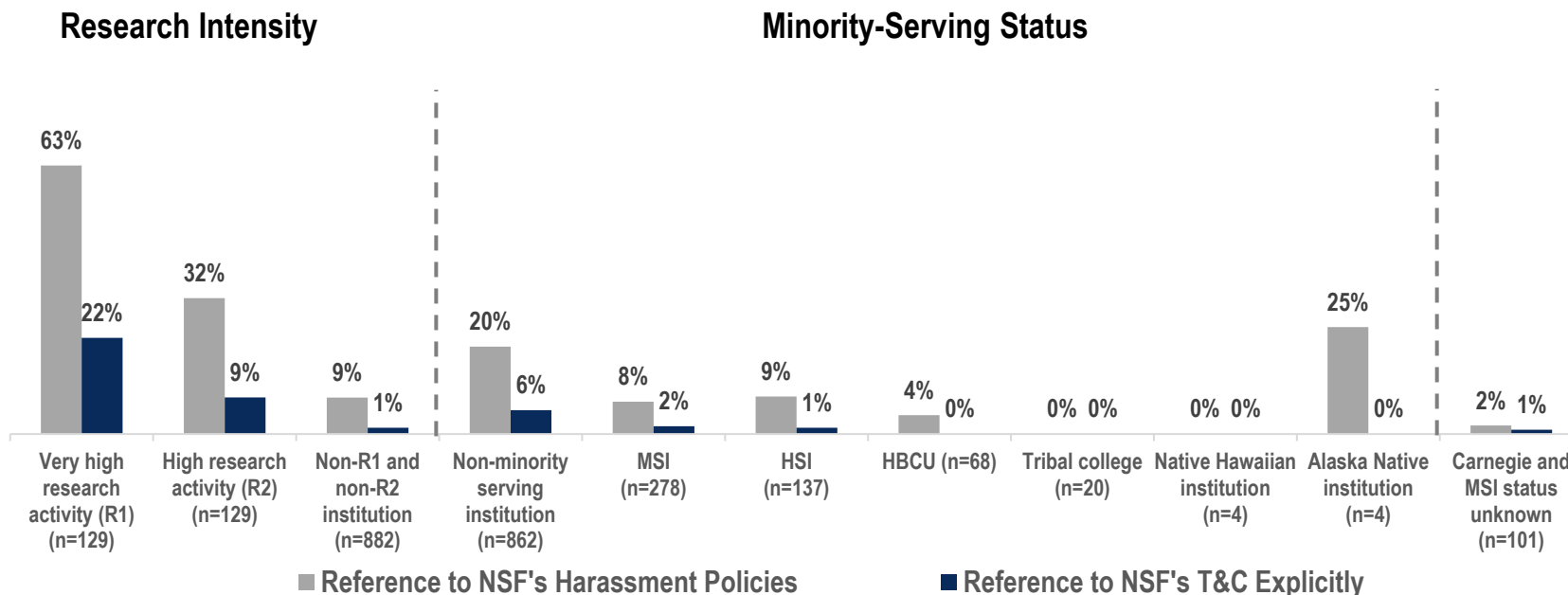
IHEs and non-profits were more likely to reference NSF’s harassment policies, compared with companies (16% and 11% vs 0.4%).

4% of IHEs and 1% of nonprofits had public webpages that referenced NSF’s harassment policies and explicitly mentioned the phrase “term and condition” or “T&C.” (Some institutions may reference the T&C through less specific language and would not be captured here.)

2d NSF Anti-Harassment Policy References, by IHE Characteristics

Institutions with greater research intensity (R1s and R2s) were more likely to reference NSF's anti-harassment policies and the T&C on their public webpages than other institutions.

Share of institutions (by category) with webpages referencing NSF's anti-harassment policies, including the T&C



63% of IHEs with very high research activity (R1s) and 32% with high research activity (R2s) referenced NSF's anti-harassment policies on their public webpages, compared to 9% of all other IHEs.

Just over 20% of IHEs with very high research activity (R1s) and 9% with high research activity (R2s) explicitly reference the term and condition, compared to only 1% of all other IHEs.

Minority-serving institutions (8%) were less likely to reference NSF anti-harassment policies on their public webpages, compared with non-MSIs (20%).

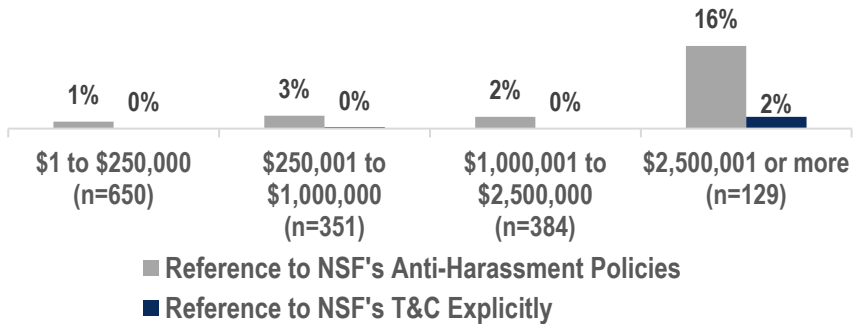
Source: Public webpages collected June–July 2021 for each institution subject to the T&C.

Notes:

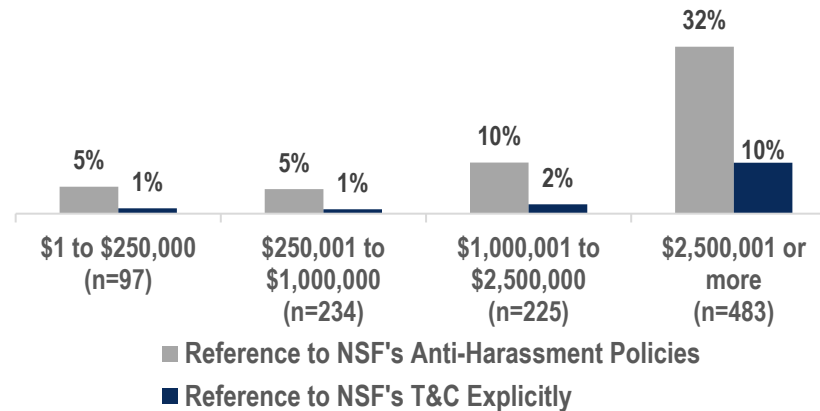
- (1) A reference to NSF's T&C explicitly indicates that the webpage contained the exact expressions: "term and condition" (not case sensitive) or "T&C" (case sensitive).
- (2) R1 institution = an institution classified as having "very high research activity" in the Carnegie Classification of Institutions of Higher Education; R2 institution = an institution classified as having "high research activity" in the Carnegie Classification of Institutions of Higher Education (2018).
- (3) HSI (Hispanic-serving institution), HBCU (Historically Black College or University), Native Hawaiian institution, Alaska Native institution, and Tribal college are subsets of MSI (Minority-serving institution); HBCU and Tribal college designations were retrieved from IPEDS, MSI and HSI from Carnegie Classifications of Institutions of Higher Education (2018), and Alaska Native and Native Hawaiian from U.S. Department of Education's Office of Postsecondary Education's 2021 eligibility lists for Title III grants.
- (4) The overwhelming majority of institutions with Carnegie Classifications or MSI status unknown (n=101) were outside the U.S. and may not be expected to comply with the T&C.

2d NSF Anti-Harassment Policy References, by Funding Amount

Share of companies and non-profits with webpages referencing NSF’s anti-harassment policies, by total direct funding amount (FY 2016–FY 2020)



Share of IHEs with webpages referencing NSF’s anti-harassment policies, by total direct funding amount (FY 2016–FY 2020)



Source: Public webpages collected June–July 2021 for each institution subject to the T&C.

Notes: A reference to NSF’s T&C explicitly indicates that the webpage contained the exact expressions: “term and condition” (not case sensitive) or “T&C” (case sensitive). Total direct award funding includes all funding institutions received as an awardee institution from fiscal years 2016 to 2020. Institutions that did not receive any funding as an awardee institution on an award during the period of time (n=541 for companies and nonprofits, n=202 for IHEs), such as an institution that is only ever a co-PI’s institution on an award, are excluded from this chart. Funding categories were created with the goal of distributing the total number of institutions evenly across categories (aside from those with N/A funding). Intervals are therefore not constant.

Institutions that received the most funding from NSF were more likely than other institutions to reference NSF’s anti-harassment policies, including the T&C.

Across companies and non-profits, those with more than \$2.5 million in award funding from FY 2016 to FY 2020 were substantially more likely to reference NSF’s anti-harassment policies (16% versus 3% or less for other funding categories) on public websites. For those receiving over \$2.5 million in funding, 2% made explicit reference to the T&C.

A similar pattern held when limiting the sample to IHEs. Among IHEs, 32% of institutions with over \$2.5 million in direct funding referenced NSF’s anti-harassment policies on their public websites, compared with only 10% of those with \$1,000,001 to \$2,500,000 in funding. 10% of those receiving over \$2.5 million in funding made explicit reference to the T&C.





CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

Conference Policy Analysis

This analysis examines whether conference proposals subject to NSF's new anti-harassment policy reference the policy in the body of the proposal. According to the new policy, proposals are required to have a policy or code-of-conduct in place but are not required to submit the policy to NSF.

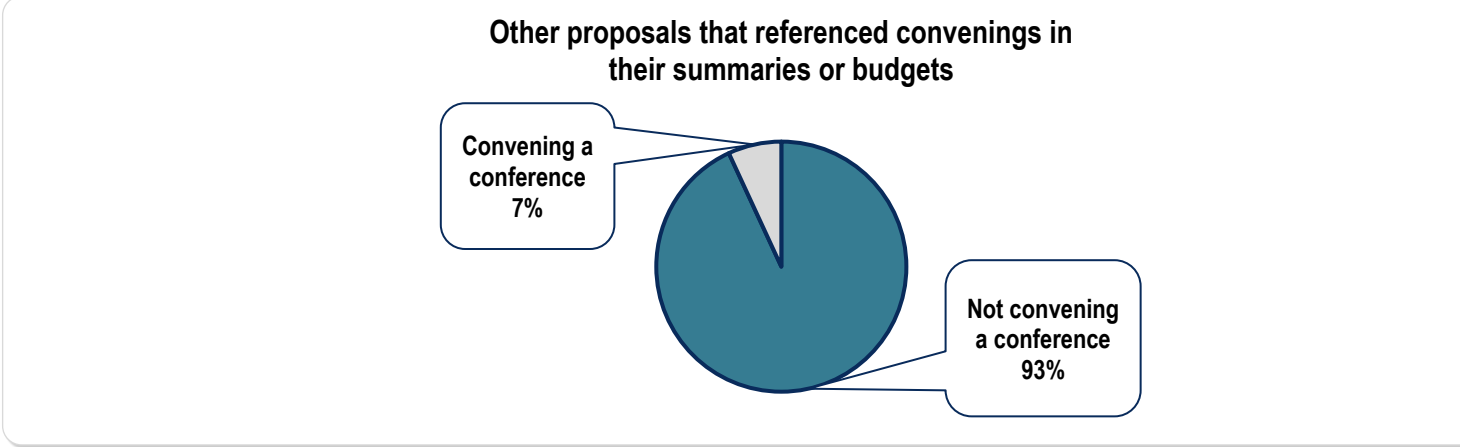
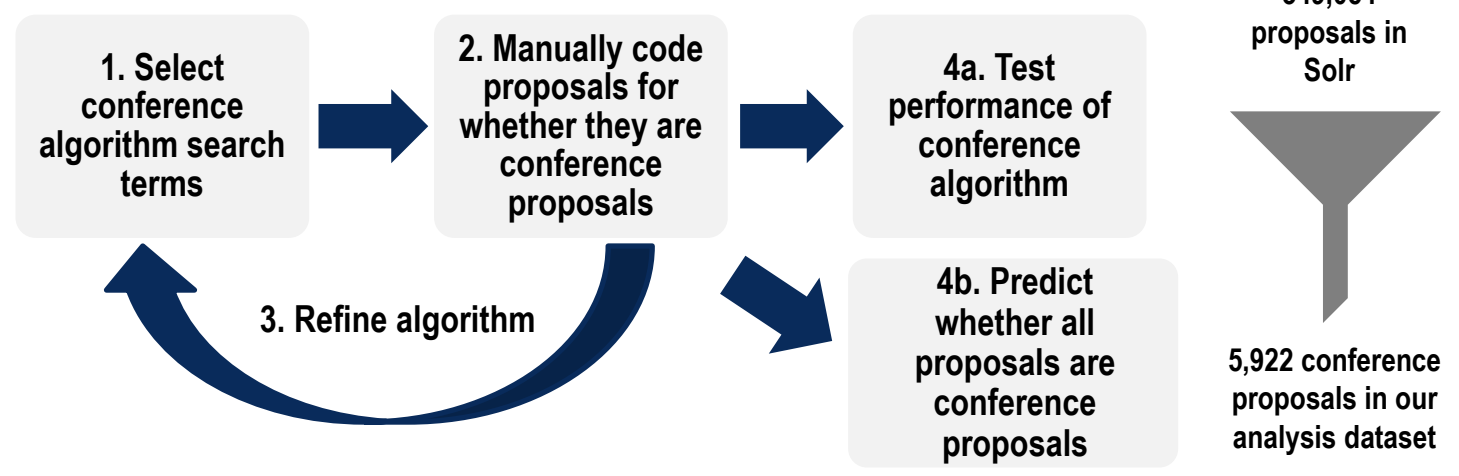
1. **Identified conference proposals** using text mining approaches. Conference proposals included those that requested funding to convene a conference or to fund participants to attend a specific conference but did not include research proposals that request conference or travel funding (due to these proposals being more challenging to identify; see next slide).
2. **Measured references** to anti-harassment policies and practices among identified conference proposals using text mining approaches.
3. **Estimated changes** in references to anti-harassment policies and practices after the new NSF policy using an interrupted time series model. Estimated how these changes differed by proposal and PI characteristics.
4. **Qualitatively explored** the ways in which proposals referenced anti-harassment policies or practices.

Important limitation: NSF requires conferences to have a policy in place, although PIs are not required to describe their anti-harassment policy in their conference proposal or otherwise submit it to NSF. This analysis is an exploration of **whether PIs choose to include information about their anti-harassment policy** in their submitted proposal.



FINDINGS

Conference Policy: Identifying Proposals



Note: Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.

Accuracy of conference algorithm: 99%

Inclusion criteria. The conference proposal analysis included 1) proposals that requested funding to convene a conference, workshop, symposium, meeting, or summit, or 2) requested travel funding to attend a specific one of those events. The analysis included proposals received between October 1, 2015, and March 31, 2021. This document uses the term “conference proposals” to refer to both proposals that convene conferences and request travel funding to a conference.

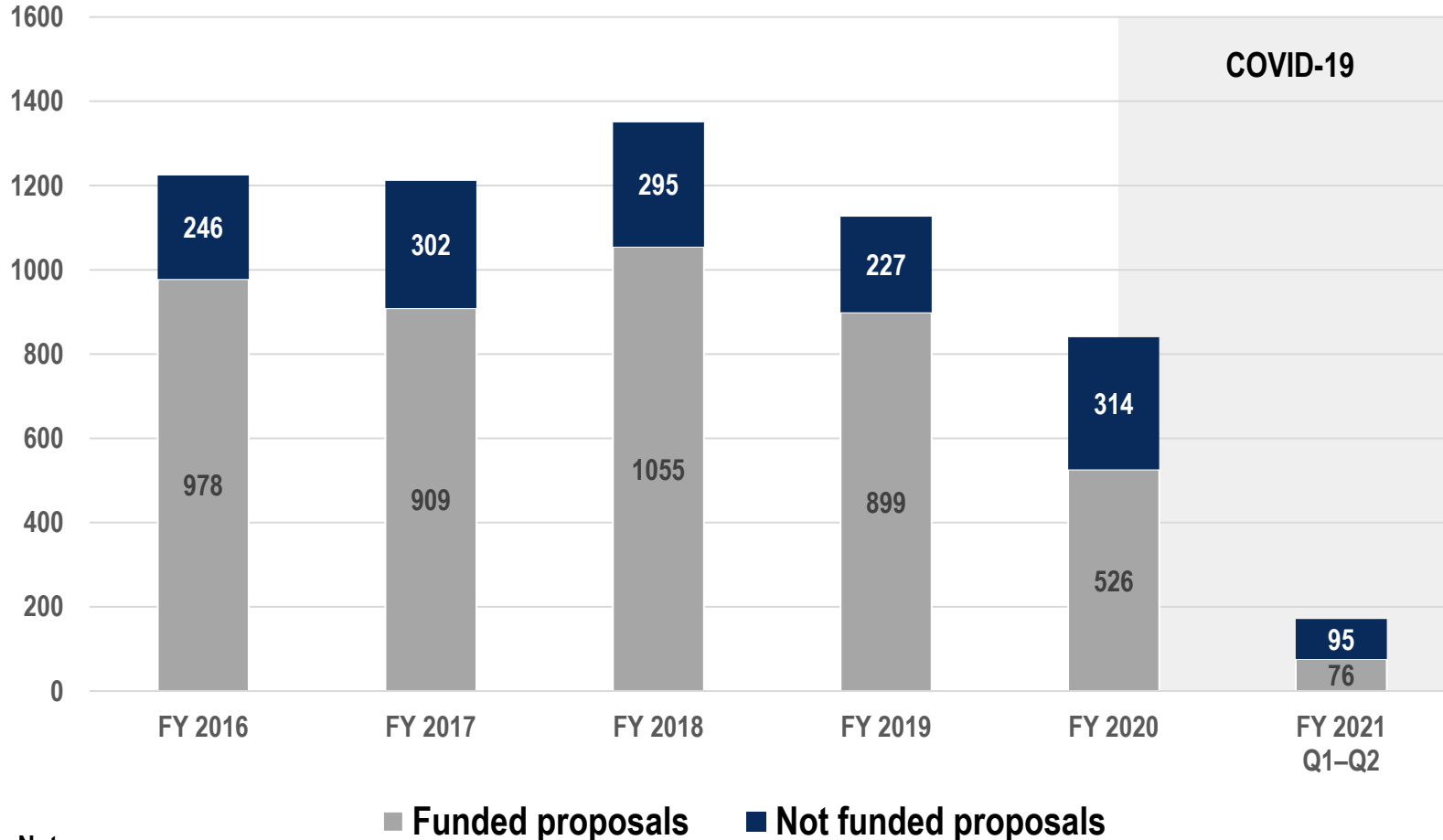
Building a conference algorithm. To categorize proposals, the steps were to select initial algorithm search terms, compare the algorithm search terms to manual codes, and refine the algorithm to increase predictive performance. Out of 349,054 proposals in Solr in our date range, 5,922 were conference proposals. When tested on a hold-out test set of proposals, the accuracy of the algorithm was 99%.

Excluding other proposals that requested conference funding. The analysis originally included other proposals that requested funding to convene a conference (for example, as part of a broader research project) but this did not occur frequently. Less than 7% of sampled proposals that referenced a convening in the summary or budget sections of their proposals were requesting to convene a conference. The majority were instead proposing to present their research at a conference. This low prevalence would make building an algorithm challenging and would require high amounts of manual coding to achieve a reasonable predictive performance.



FINDINGS

Number of Conference Proposals



Notes:

- (1) This figure shows the number of proposals identified as conference proposals by year and funding status. N=5,922.
- (2) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.

NSF received 1,200 to 1,400 conference proposals per year between FY 2016 and FY 2018; the numbers were lower in FY 2020—a trend that appears to be continuing in FY 2021 (Q1–Q2).

NSF received 1,224 conference proposals in FY 2016; 1,211 in FY 2017; 1,350 in FY 2018; and 1,126 in FY 2019. This decreased to 840 proposals in FY 2020 and 171 proposals in the first half of FY 2021. The proposals received in FY 2020 and FY 2021 were likely lower due to COVID-19.

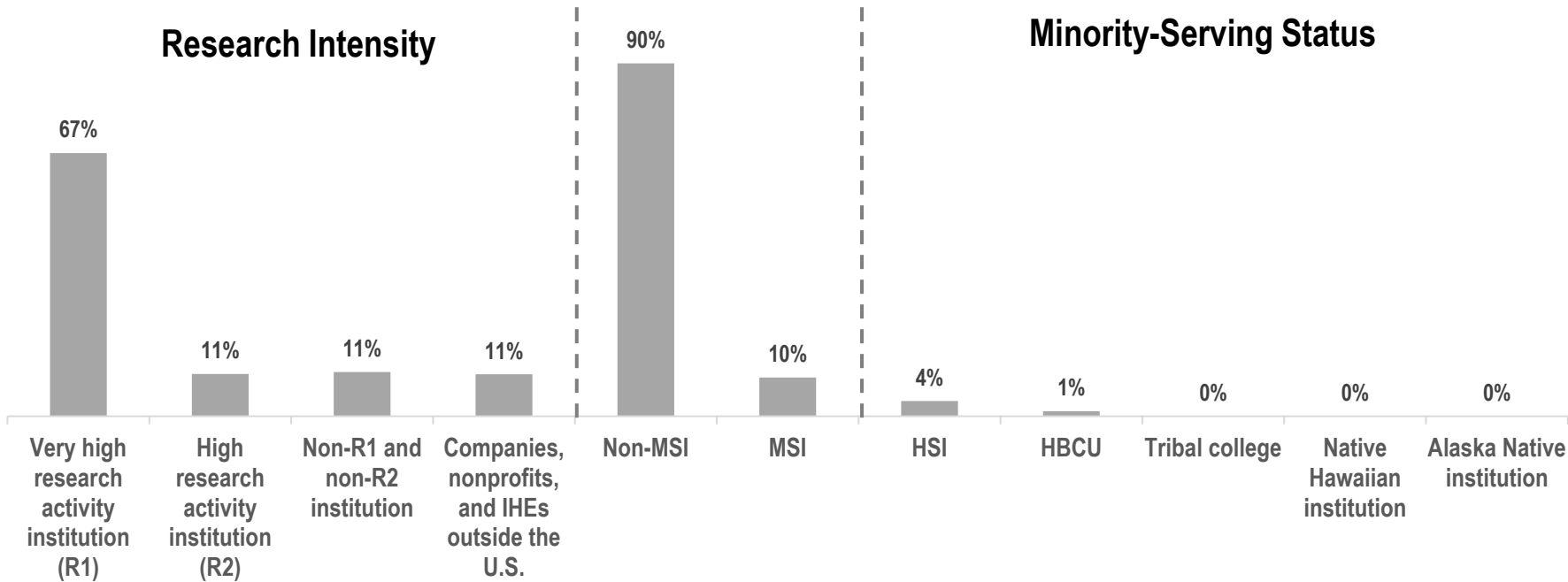
Over this period, 75% of conference proposals were funded: 78% before FY 2020 and 60% in FY 2020 and 2021.



FINDINGS

Conference Proposals, by PI Institutional Characteristics

Percent of conference proposals received by PI institutional characteristics (FY 2018)



PIs who submitted conference proposals in FY 2018 were primarily from institutions with very high research activity (67%); 10% were from minority-serving institutions.

67% of conference proposals were submitted by PIs from institutions with very high research activity, 11% from institutions with high research activity, 11% from non-R1 and non-R2 institutions, and 11% from all other institutions.

10% of proposals were submitted by PIs from minority-serving institutions (MSIs), 4% from Hispanic-serving institutions (HSIs), and 1% from Historically Black Colleges and Universities (HBCUs). Close to 0% were from Tribal colleges, Native Hawaiian institutions, and Alaska Native institutions.

Descriptive statistics on this slide and the subsequent slides are from the fiscal year before the policy was announced (FY 2018) to represent pre-policy baseline characteristics.

Source: NSF Solr data for conference proposals received between October 1, 2017, and November 1, 2018

Notes:

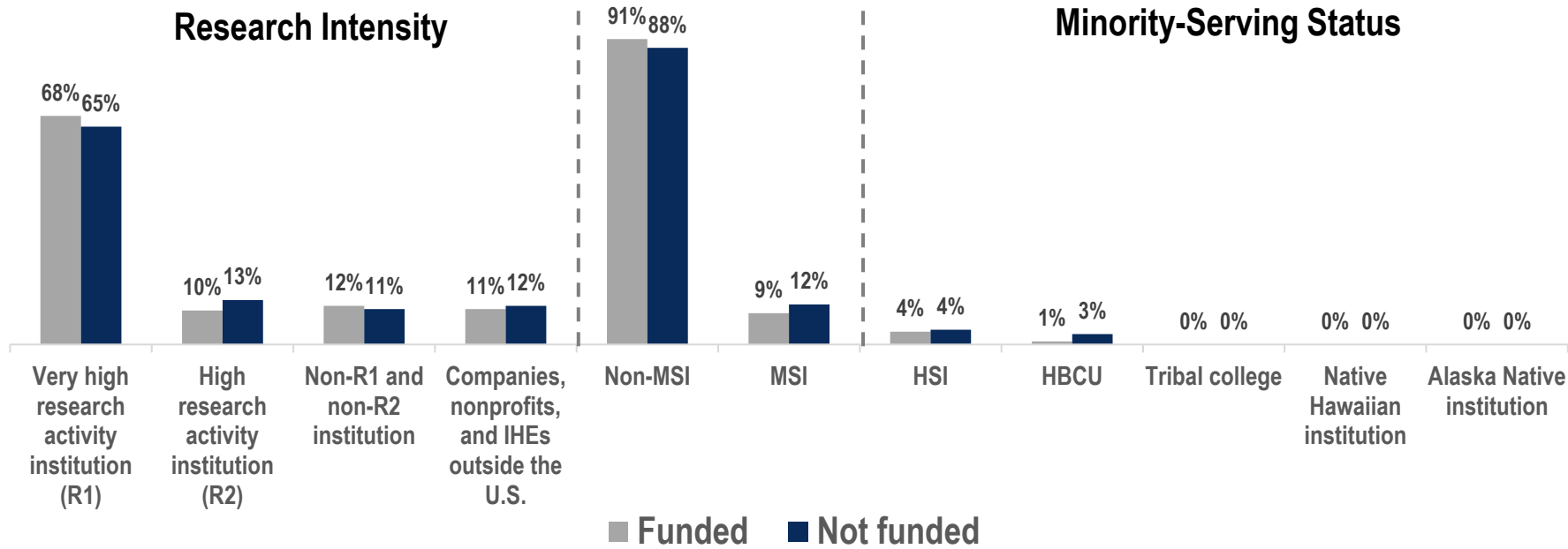
- (1) Research intensity comes from the Carnegie Classification of Institutions of Higher Education; IHE = institution of higher education.
- (2) MSI = Minority-serving institution; HSI = Hispanic-serving institution; HBCU = Historically Black College or University. HSI, HBCU, Tribal college, Native Hawaiian institution, and Alaska Native institution are subsets of MSI. MSI and HSI were retrieved from the Carnegie Classification of Institutions of Higher Education; HBCU and Tribal college were retrieved from IPEDS; Native Hawaiian institution and Alaska Native institution were retrieved from NSF's Solr search engine.
- (3) This figure shows characteristics of PIs' institutions for the fiscal year before the policy was announced to represent pre-policy baseline characteristics. N=1,350.
- (4) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.



FINDINGS

Conference Proposals, by PI Institutional Characteristics`

Percent of conference proposals received by PI institutional characteristics and proposal funding (FY 2018)



Funded proposals are somewhat more likely to be from PIs from institutions with very high research activity and from non-minority-serving institutions than non-funded proposals

Funded research proposals were 3 percentage points more likely to be from PIs at institutions with very high research activity (R1 institutions), and 3 percentage points less likely to be at institutions with high research activity, compared to non-funded proposals.

Funded research proposals were also 3 percentage points more likely to be from PIs at non-minority-serving institutions, including HBCUs (2 percentage points) and Hispanic-serving institutions (1 percentage point).

Differences in PI characteristics by funding status should be interpreted with some caution given that Solr data may reflect PI institutions at different time points for funded and not funded proposals (see note). All differences were statistically significant.

Source: NSF Solr data for conference proposals received between October 1, 2017, and November 1, 2018

Notes:

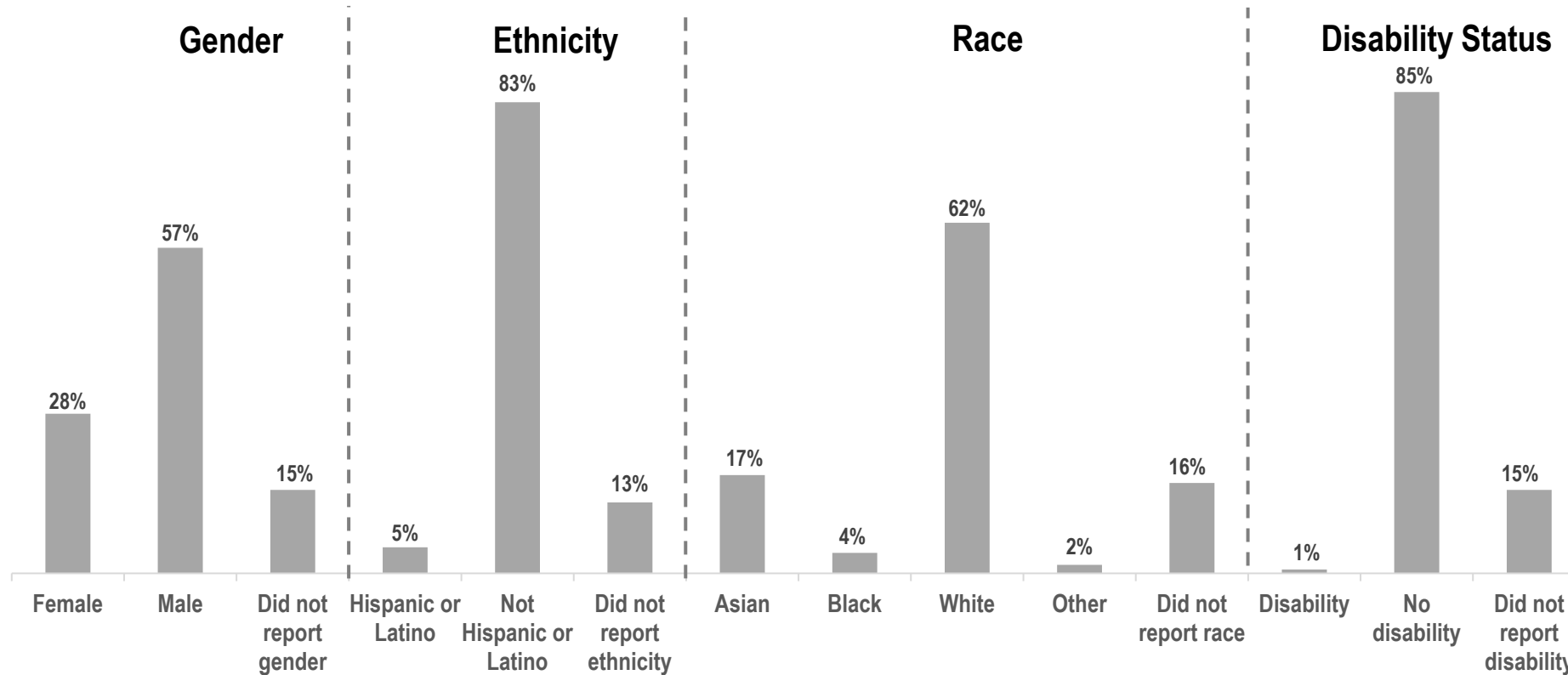
- (1) Research intensity comes from the Carnegie Classification of Institutions of Higher Education; IHE = institution of higher education.
- (2) PI institution information in Solr may be updated over time for PIs who receive funding and not updated for PIs who do not receive funding, and thus this comparison should be interpreted with caution.
- (3) MSI = Minority-serving institution; HSI = Hispanic-serving institution; HBCU = Historically Black College or University. HSI, HBCU, Tribal college, Native Hawaiian institution, and Alaska Native institution are subsets of MSI. MSI and HSI were retrieved from the Carnegie Classification of Institutions of Higher Education; HBCU and Tribal college were retrieved from IPEDS; Native Hawaiian institution and Alaska Native institution were retrieved from NSF's Solr search engine.
- (4) This figure shows characteristics of PIs' institutions for the fiscal year before the policy was announced to represent pre-policy baseline characteristics. N=1,350.
- (5) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.



FINDINGS

Conference Proposals, by PI Demographic Characteristics

Percent of conference proposals received by PI demographic characteristics (FY 2018)



PIs who submitted conference proposals in FY 2018 primarily identified as male, not Hispanic or Latino, White, and without a disability; about 22% of PIs identified as non-white.

28% of conference proposals were submitted by PIs who identified as female, 5% as Hispanic or Latino, 17% as Asian, 4% as Black, 2% as another race (including American Indian, Alaska Native, Native Hawaiian, Pacific Islanders, and two or more races), and 1% as having a disability. 13% to 17% of PIs did not report their gender, ethnicity, race, or disability status.

Notes:

(1) This figure shows PI characteristics for the fiscal year before the policy was announced to represent pre-policy baseline characteristics. It includes proposals received between October 1, 2017, and November 1, 2018. N=1,350.

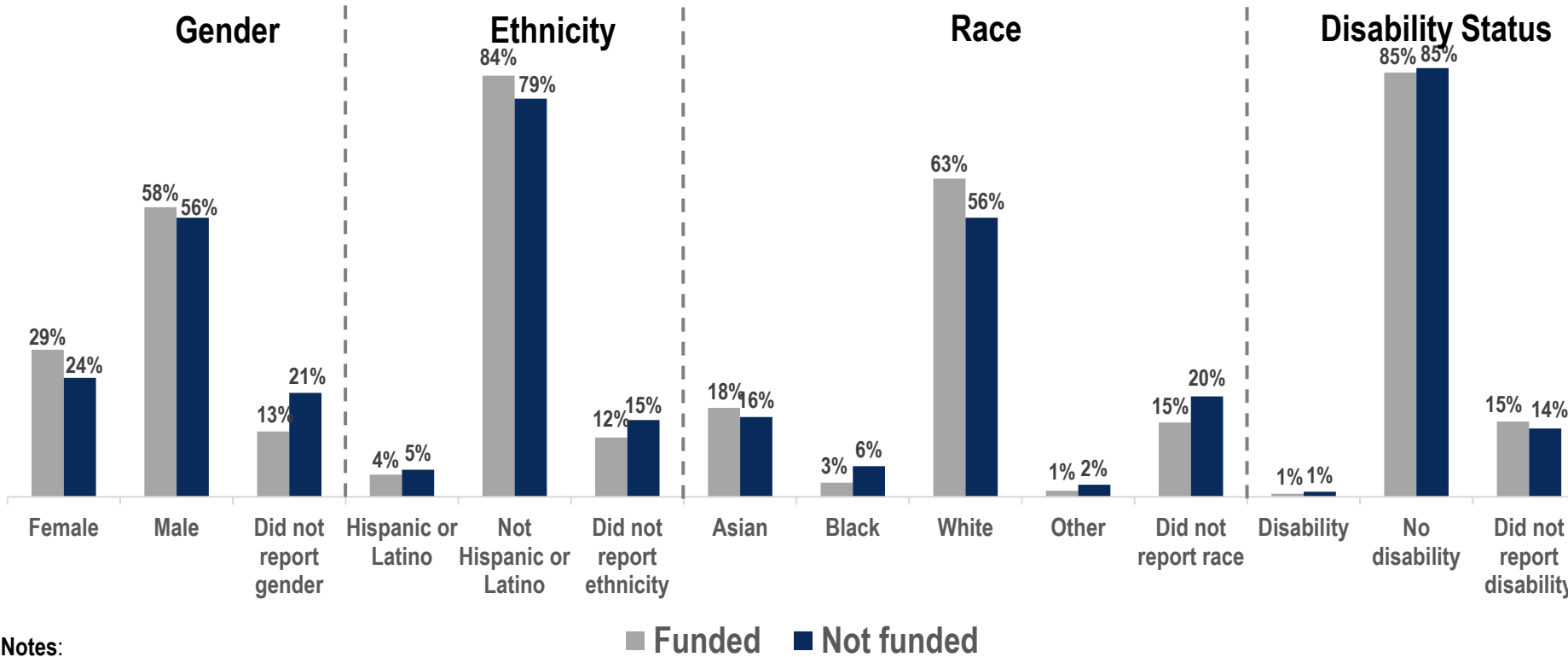
(2) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.



FINDINGS

Conference Proposals, by PI Demographic Characteristics

Percent of conference proposals received by PI demographic characteristics and proposal funding (FY 2018)



Notes:

- (1) PI characteristics in Solr may be updated over time for PIs who receive funding and not updated for PIs who do not receive funding, and thus this comparison should be interpreted with caution.
- (2) This figure shows PI characteristics for the fiscal year before the policy was announced to represent pre-policy baseline characteristics. It includes proposals received between October 1, 2017, and November 1, 2018. N=1,350.
- (3) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.
- (4) Differences between funded and not funded proposals reported in the text may not match those shown in the figure due to rounding.

Funded proposals are somewhat more likely to be from PIs who identified as Asian, White, and as not Hispanic or Latino.

Compared to not funded research proposals, funded research proposals were 8 percentage points more likely to be from PIs who identified as White, 2 percentage points more likely to be from PIs who identified as Asian, and 3 percentage points less likely to be from PIs who identified as Black.

Funded research proposals were 5 percentage points more likely to be from PIs who identified as not Hispanic or Latino, and less likely to be from PIs who did not report their ethnicity or reported that they identify as Hispanic or Latino.

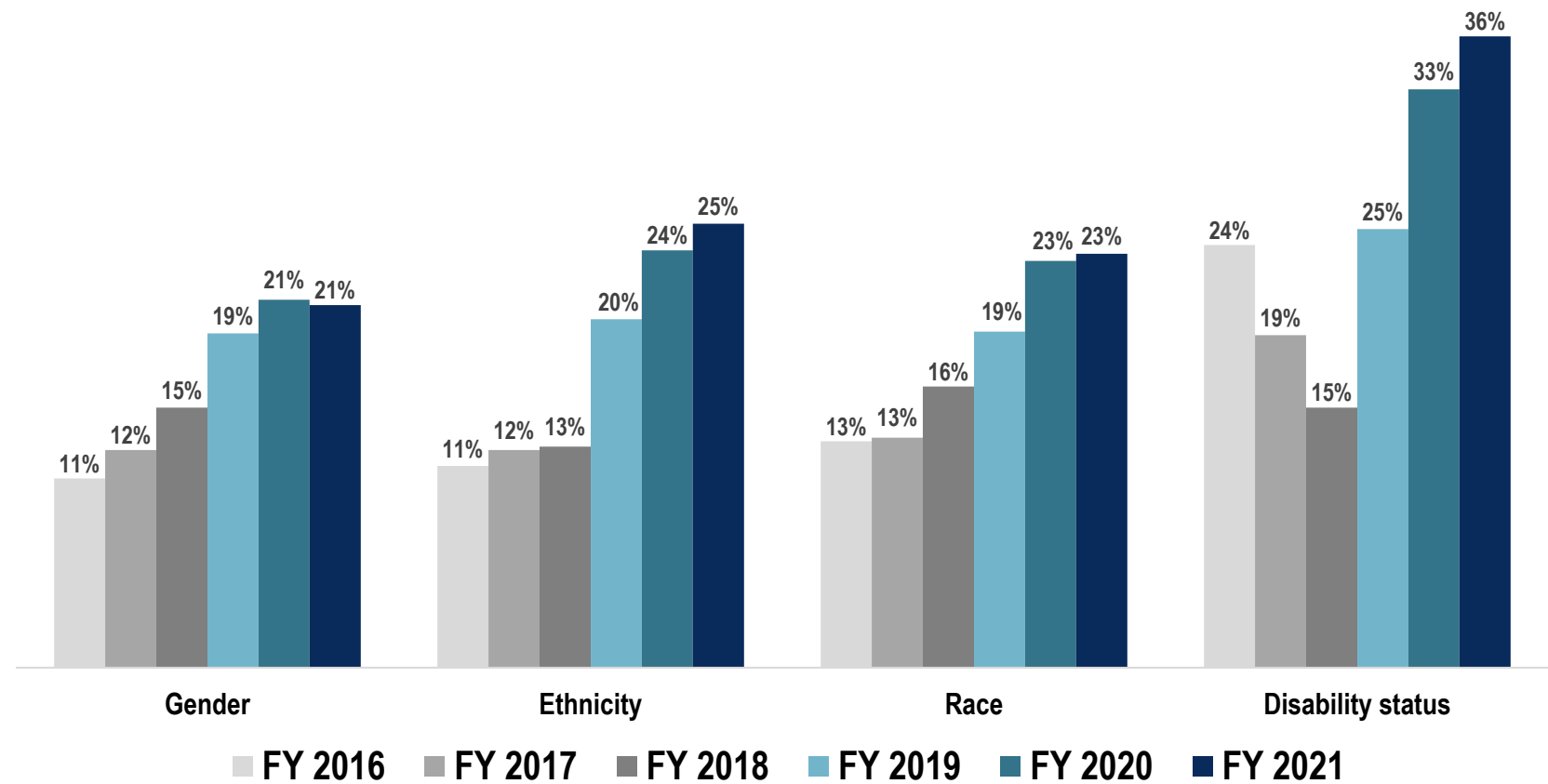
Funded research proposals were 8 percentage points more likely to be from PIs who reported their gender compared to not funded research proposals.



FINDINGS

Conference Proposals, by PI Demographic Characteristics

Percent of conference proposals received by PIs who do not report demographic characteristics (FY 2016–FY 2021)



Note: This figure shows the percent of proposals with PIs who did not report their gender, ethnicity, race, and disability status among all received conference proposals. N=5,922.

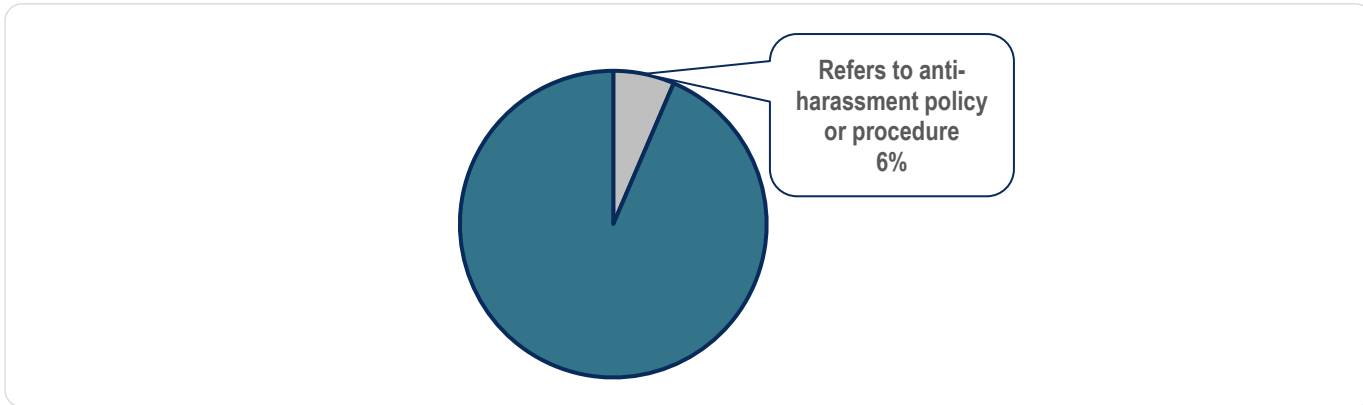
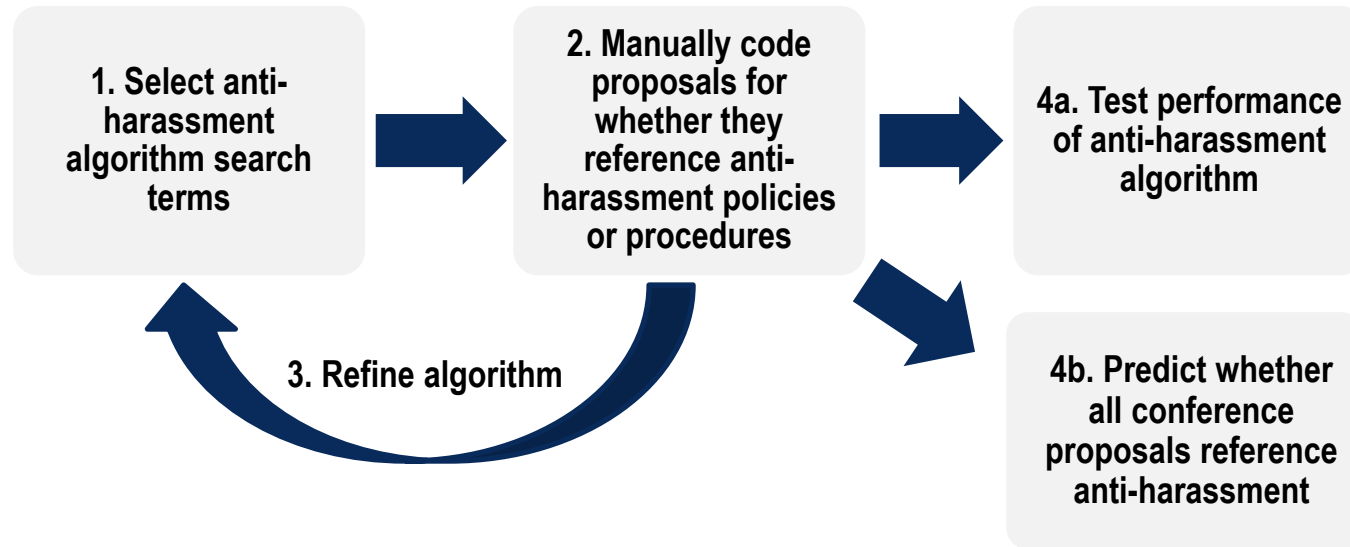
From FY 2016 to FY 2018, the percent of PIs who did not report demographics increased over the study time period.

Unlike other PI characteristics shown in the previous slides, the percentage of PIs who do not report their gender, ethnicity, race, or disability status substantially increased over the study time period. In FY 2016, 11%–13% of PIs did not report their gender, ethnicity, or race, and this increased to 21%–23% in FY 2021. The percent of PIs who did not report their disability status decreased from 24% in FY 2016 to 15% in FY 2018, then increased to 36% in FY 2021.

Analysis results for PIs who do not report demographic characteristics (shown in subsequent slides) should be interpreted with some caution given its changing composition before and after the policy implementation.



Conference Policy: Identifying Anti-Harassment References



Note: Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.

Accuracy of anti-harassment algorithm: 94%

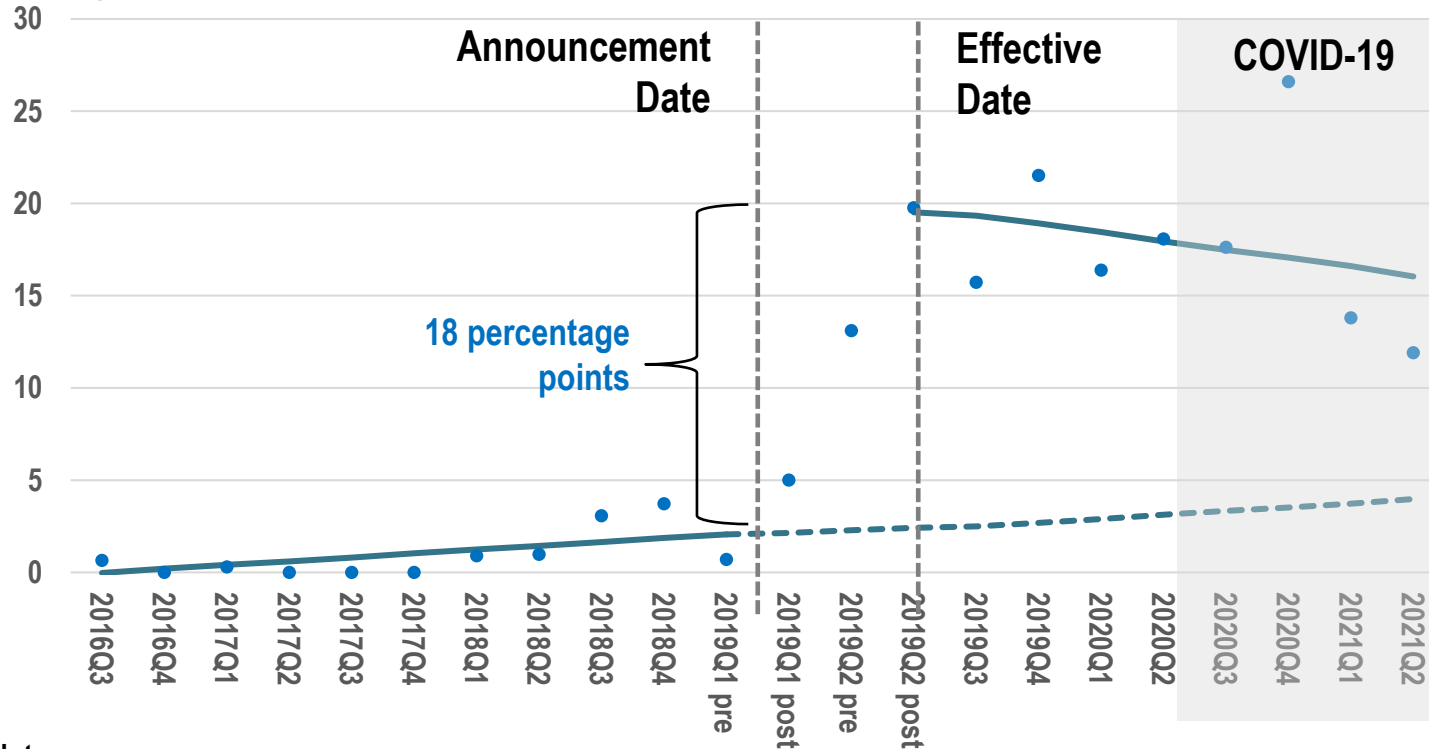
Inclusion criteria. As in the previous analysis, this analysis included all proposals that requested funding to convene a conference, workshop, symposium, meeting, or summit, or requested travel funding for participants to attend a specific one of those events (the analysis does not include proposals that request funding to attend a third-party conference to present research findings). The analysis included proposals received between October 1, 2015, and March 31, 2021.

Building the anti-harassment algorithm. To identify whether proposals referenced anti-harassment policies or procedures, the steps were to select initial algorithm search terms, compare the algorithm search terms with manual codes, and refine the algorithm to increase predictive performance. Out of 5,922 conference proposals, 382 referenced anti-harassment policies or practices (6.4%). When tested on a hold-out test set of proposals, the accuracy of the algorithm was 94%.

FINDINGS

Conference Policy: Change in Anti-Harassment References

Change in percent of proposals that had anti-harassment references



The percent of conference proposals with anti-harassment policies increased 18 percentage points after the policy was announced.

Before NSF’s new policy was announced, 0%–4% of proposals referenced an anti-harassment policy, and this rate increased less than 1 percentage point per year.

After NSF’s new policy was announced, the percent of proposals voluntarily referencing anti-harassment policies increased by 18 percentage points (an increase of over 700%). This increase was estimated using an interrupted time series model and is statistically significant. The rate at which anti-harassment references changed over time was not significantly different after the policy than before the policy.

Robustness analyses: point estimates ranged between 16 and 18 percentage points for models without covariates (based on whether the analysis was conducted at the annual, quarterly, or monthly level and the inclusion of a time trend). Including covariates reduced the precision of the estimates; estimates in the models with covariates ranged between 12 and 18 percentage points. The quarterly model is presented as it balances having enough time periods with reducing noise.

Notes:

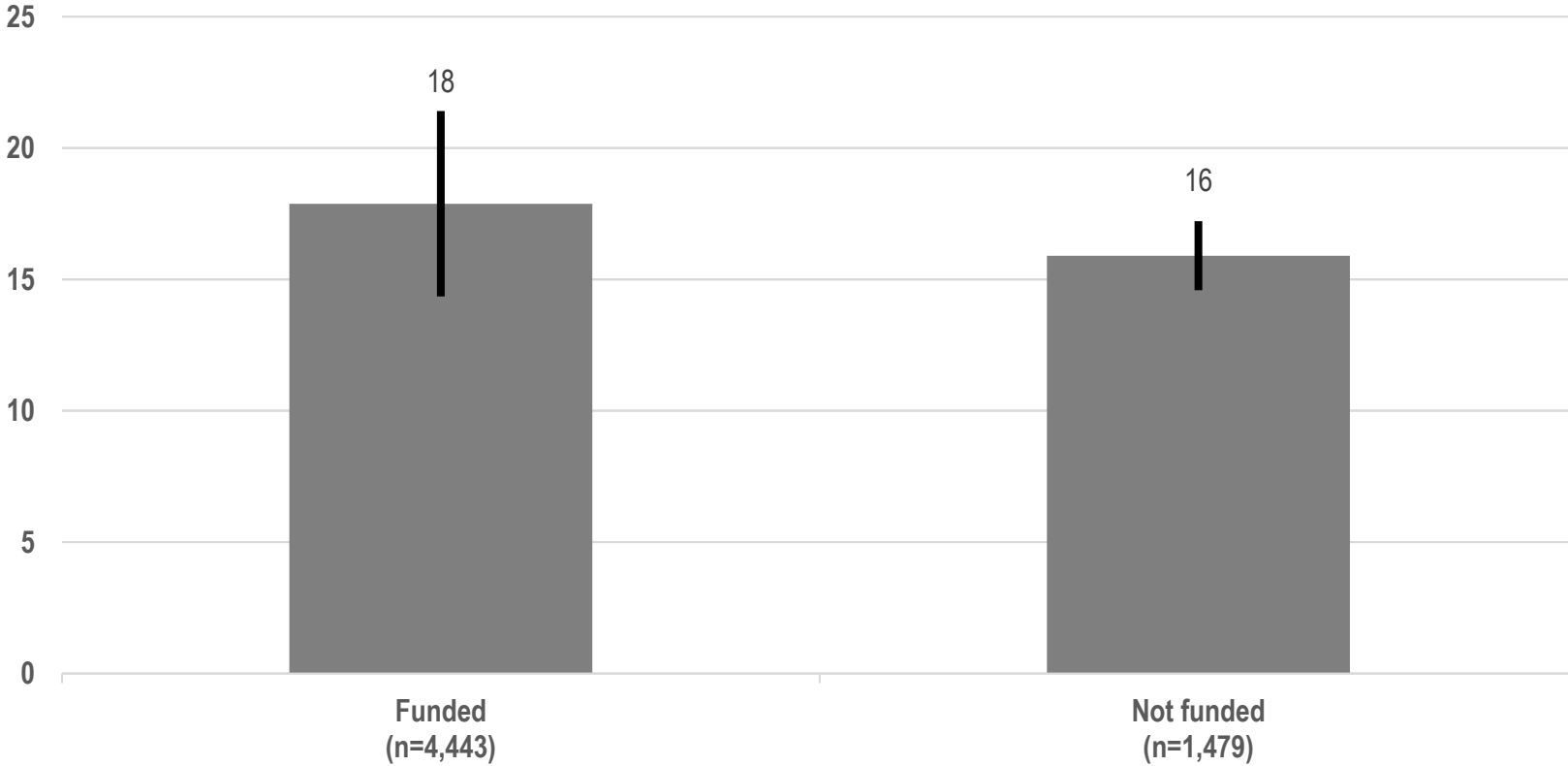
- (1) This figure shows the change in anti-harassment references from before NSF’s policy to after NSF’s policy. The change is estimated using an interrupted time series model, which is estimated at the quarterly level and includes time trends before and after the policy change and does not include covariates (n=24 quarters, based on 5,922 proposals). The model estimates the changes at the announcement date and effective date separately and the sum of the two changes is shown. Thus, the reported change includes differences from before NSF announced its new policy (in November 2018) to after the policy became effective (in February 2019).
- (2) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.



FINDINGS

Conference Policy: Change in Anti-Harassment References

Change in percent of proposals that had anti-harassment references within each group



Funded and not funded proposals were both more likely to reference an anti-harassment policy or procedure after the policy was announced.

Both proposals that received funding and proposals that did not receive funding were significantly more likely to reference anti-harassment policies and practices after the new policy (by 18 and 16 percentage points, respectively). The difference between funded and not funded proposals is not significant.

Notes:

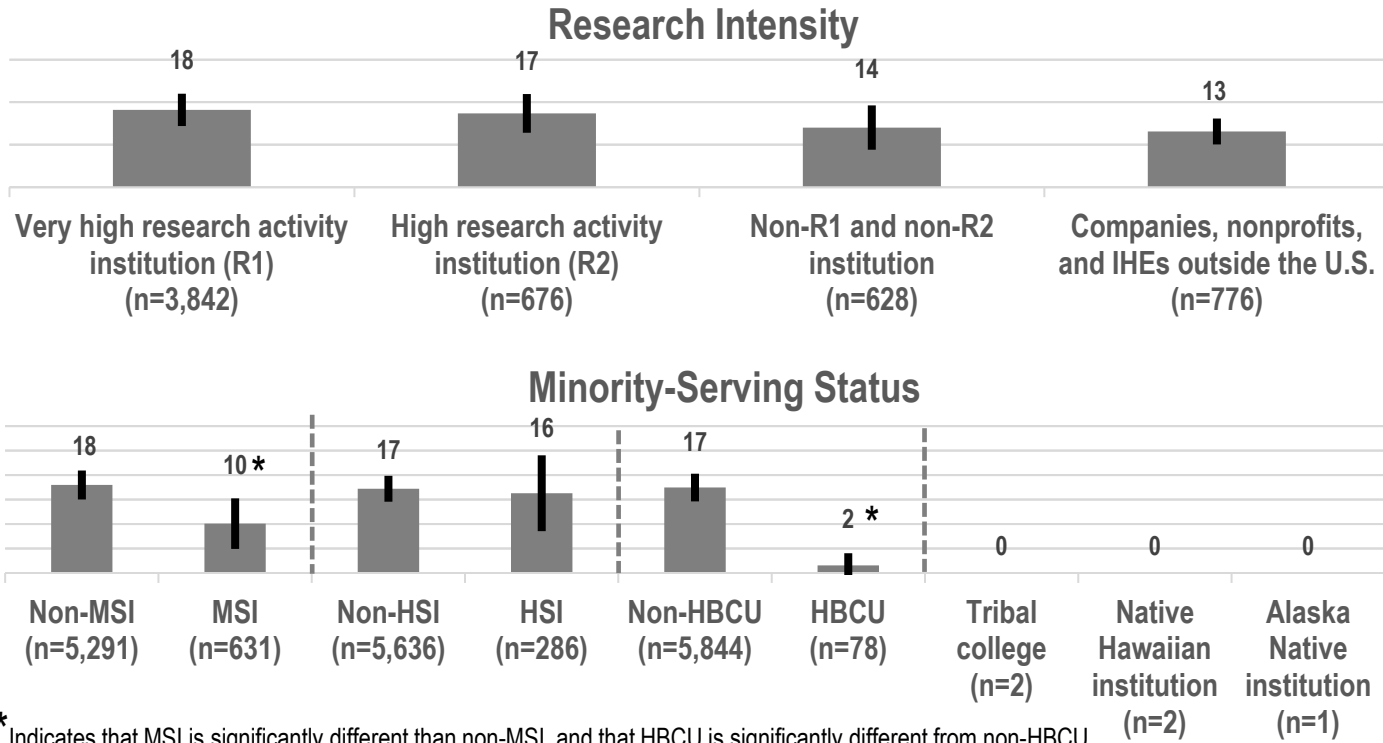
- (1) This figure shows the change in anti-harassment references from before NSF's policy to after NSF's policy. The change is estimated using an interrupted time series model, which is estimated at the quarterly level and does not include a time trend. The change includes differences from before NSF announced its new policy (in November 2018) to after the policy became effective (in February 2019). The black bars indicate the confidence intervals of the estimates.
- (2) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.



FINDINGS

Conference Policy: Change in Anti-Harassment References

Change in percent of proposals that had anti-harassment references within each group



- Notes:** * Indicates that MSI is significantly different than non-MSI, and that HBCU is significantly different from non-HBCU.
- (1) These figures show the change in anti-harassment references from before NSF's policy to after NSF's policy. The change is estimated using an interrupted time series model, which is estimated at the quarterly level and does not include a time trend. The change includes differences from before NSF announced its new policy (in November 2018) to after the policy became effective (in February 2019). The black bars indicate the confidence intervals of the estimates.
 - (2) Research intensity is from the Carnegie Classification of Institutions of Higher Education. IHE = institution of higher education. MSI = Minority-serving institution; HSI = Hispanic-serving institution; HBCU = Historically Black College or University. HSI, HBCU, Tribal college, Native Hawaiian institution, and Alaska Native institution are subsets of MSI. The number of proposals for Tribal colleges, Native Hawaiian institutions, and Alaska Native institutions was too small to estimate changes.
 - (3) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.

PIs from institutions across Carnegie classifications increased their anti-harassment references. PIs from minority-serving institutions increased their anti-harassment references less than PIs from other types of institutions.

Research Intensity. Proposals submitted by PIs from all types of institutions were significantly more likely to reference anti-harassment policies and procedures after NSF's new policy. The differences in changes across institutions of varying research intensities were not statistically significant.

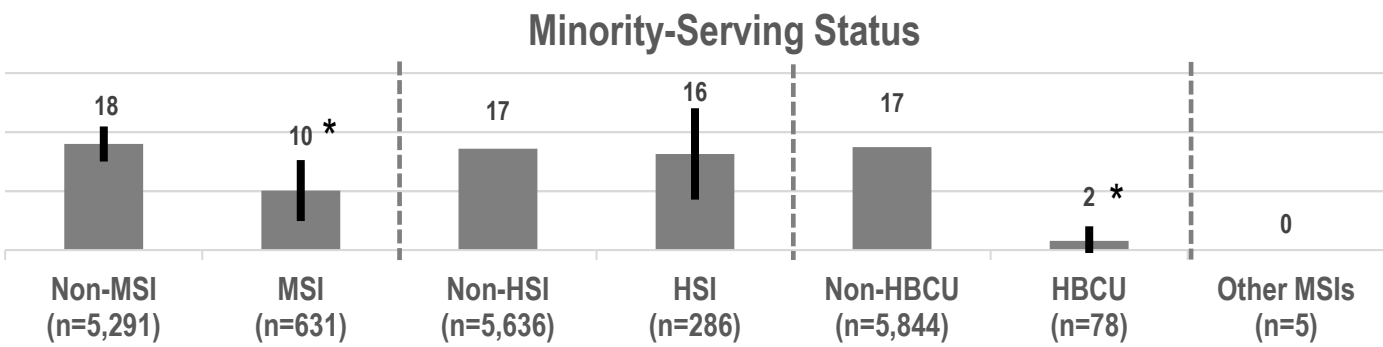
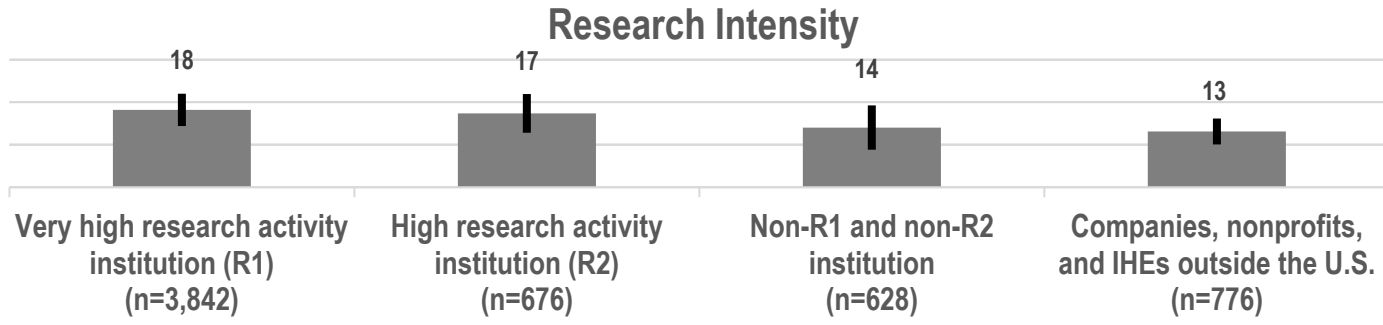
Minority-Serving Status. Proposals submitted by PIs from non-MSIs, MSIs, and HSIs were all significantly more likely to reference anti-harassment policies and procedures after NSF's new policy. PIs from HBCUs did not significantly increase their anti-harassment references after the new policy, and the difference between HBCUs and non-HBCUs was statistically significant. No PIs from Tribal colleges, Native Hawaiian institutions, or Alaska Native institutions included anti-harassment references before or after the new policy. PIs from MSIs also increased their anti-harassment references significantly less than PIs from non-MSIs; this is driven by non-HSI institutions. There were no significant differences between HSIs and non-HSIs.



FINDINGS

Conference Policy: Change in Anti-Harassment References

Change in percent of proposals that had anti-harassment references within each group



Notes: * Indicates that MSI is significantly different than non-MSI, and that HBCU is significantly different from non-HBCU

- (1) These figures show the change in anti-harassment references from before NSF's policy to after NSF's policy. The change is estimated using an interrupted time series model, which is estimated at the quarterly level and does not include a time trend. The change includes differences from before NSF announced its new policy (in November 2018) to after the policy became effective (in February 2019). The black bars indicate the confidence intervals of the estimates.
- (2) Research intensity is from the Carnegie Classification of Institutions of Higher Education. IHE = institution of higher education. MSI = Minority-serving institution; HSI = Hispanic-serving institution; HBCU = Historically Black College or University. HSI, HBCU, and other MSIs are subsets of MSI. Other MSIs include tribal colleges and institutions serving native populations. This category is intentionally broad to preserve confidentiality. The number of proposals submitted by PIs from other MSIs was too small to estimate changes.
- (3) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.

PIs from institutions across Carnegie classifications increased their anti-harassment references. PIs from minority-serving institutions increased their anti-harassment references less than PIs from other types of institutions.

Research Intensity. Proposals submitted by PIs from all types of institutions were significantly more likely to reference anti-harassment policies and procedures after NSF's new policy. The differences in changes across institutions of varying research intensities were not statistically significant.

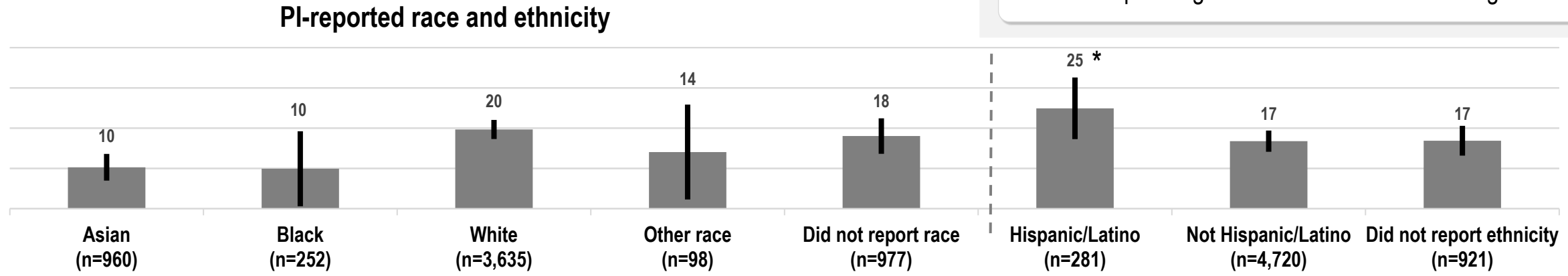
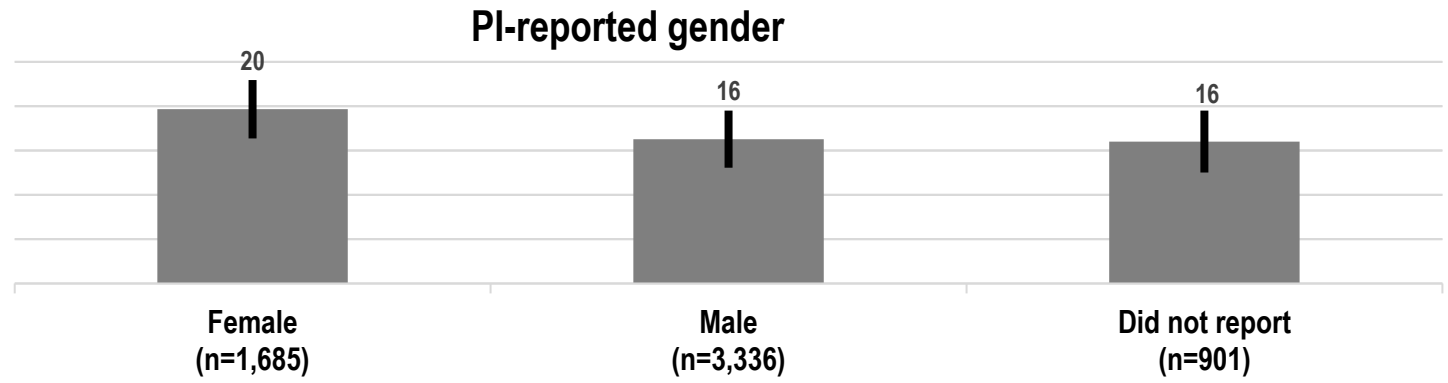
Minority-Serving Status. Proposals submitted by PIs from non-MSIs, MSIs, and HSIs were all significantly more likely to reference anti-harassment policies and procedures after NSF's new policy. PIs from HBCUs did not significantly increase their anti-harassment references after the new policy, and the difference between HBCUs and non-HBCUs was statistically significant. No PIs from other MSIs included anti-harassment references before or after the new policy. PIs from MSIs also increased their anti-harassment references significantly less than PIs from non-MSIs. There were no significant differences between HSIs and non-HSIs.



FINDINGS

Conference Policy: Change in Anti-Harassment References

Change in percent of proposals that had anti-harassment references by PI characteristics



PIs of varying genders, races, and ethnicities all increased their anti-harassment references after NSF's new policy. Hispanic and Latino PIs increased their references more than non-Hispanic or Latino PIs.

Proposals submitted by PIs across genders, races, and ethnicities were all significantly more likely to reference anti-harassment policies and procedures after NSF's new policy. PIs who reported their ethnicity as Hispanic/Latino increased their anti-harassment references more than PIs who reported their ethnicity as not Hispanic or Latino. The differences across PIs of different reported genders and races were not significant.

- Notes:** * Indicates that Hispanic/Latino is significantly different than not Hispanic/Latino.
- (1) These figures show the change in anti-harassment references from before NSF's policy to after NSF's policy. The change is estimated using an interrupted time series model, which is estimated at the quarterly level and does not include a time trend. The change includes differences from before NSF announced its new policy (in November 2018) to after the policy became effective (in February 2019). The black bars indicate the confidence intervals of the estimates.
 - (2) Conference proposals include proposals that requested funding for a convening or requested travel funding to attend a convening. Proposals that requested conference or travel funding as part of a broader research project were excluded for burden reasons.



Conference Policy: Types of anti-harassment references

Types of anti-harassment references, descriptions, and examples

Type of anti-harassment reference	Description	Example
Policy/code-of-conduct	Mentions an existing policy or code-of-conduct that addresses harassment or states that the conference will create one.	"All symposium and workshop attendees must agree to the following code of conduct and harassment policy."
Reporting: any mention	Mentions an existing reporting process or that the conference will create one.	"[Organization] has policies in place that addresses sexual harassment, other forms of harassment, and sexual assault, that include clear and accessible means of reporting violations of the policy or code-of-conduct."
Dissemination: any mention	Mentions an existing dissemination policy or that the conference will create one.	"This policy will be disseminated to workshop participants prior to attendance at the workshop itself."
Reporting: specific mechanism	Explicitly discusses the means for reporting harassment incidents.	"Participants should report any behavior inconsistent with the principles outlined here, to onsite staff, security, or venue personnel, or to event [email address]."
Dissemination: specific method	Explicitly discusses how the policy or code-of-conduct will be disseminated to participants.	"The policies for each institution will be on the [organization's] website. It will be clearly posted at the conference registration desk and it will be on the conference program."
Institutional policy	States that the policy or code-of-conduct will adhere to or adopt a specific institution's policy.	"We adopt the 'Discrimination and Harassment Policy and Procedures' put forward by the University of Colorado Boulder and available under this link."
Harassment-free convening	Explicitly describes creating a harassment-free convening.	"We will ensure that the workshop and all discussion forums are safe and harassment free environments."
Link to online policy	Includes a link to an online anti-harassment policy.	"Our anti-harassment policies can be found at [link]."

Note: This table shows examples for each of the the different types of anti-harassment references. If a proposal contains any type of anti-harassment reference, it is included as referencing anti-harassment in the quantitative analyses.

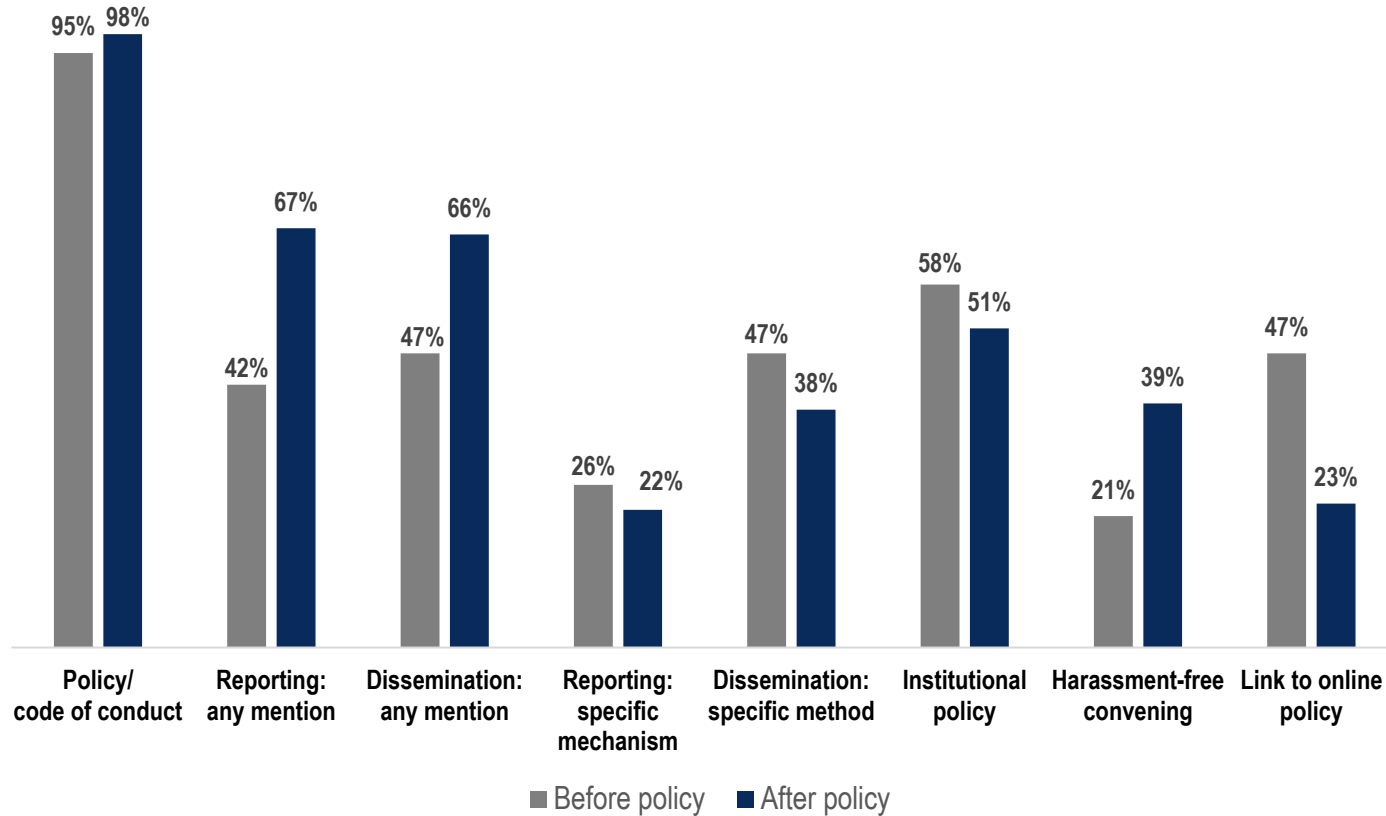
Proposals include a range of different types of references to anti-harassment

This analysis involved a qualitative review of a random subset of proposals that referenced anti-harassment both before and after the new policy. This table shows the different types of anti-harassment references found in our data, as well as descriptions and examples for each type of reference. The next slide shows the prevalence of these categories in our sample.

FINDINGS

Conference Policy: Types of anti-harassment references

Types of anti-harassment references (of proposals that mention anti-harassment)



Relative to before the policy was implemented, proposals that reference anti-harassment were more likely to mention a reporting mechanism and policy dissemination after the policy was implemented.

Proposals that reference anti-harassment were 25 percentage points more likely to mention a reporting mechanism (increasing from 42 to 67 percent) and 19 percentage points more likely to mention policy dissemination (increasing from 47 to 66 percent) after the policy was implemented. However, discussion of specific reporting mechanisms and specific dissemination methods declined 4 and 9 percentage points, respectively, after the policy.

Relative to before the policy, after the policy proposals that reference anti-harassment were also 18 percentage points more likely to discuss creating a harassment-free convening, but 7 percentage points less likely to discuss institutional policies and 24 percentage points less likely to link to online policies.

Note: This figure includes a random sample of proposals with references to anti-harassment that were qualitatively coded. It includes proposals received both before (n=19) and after (n=100) the announcement date of the new policy. In total, there are 30 proposals that reference anti-harassment before the policy and 352 after. 100 proposals post-policy were selected to understand the range of anti-harassment references in that period. Fewer proposals in the pre-period were selected given how few proposals reference anti-harassment in the pre-period.





CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

Summary of Findings

How NSF communicated its anti-harassment term and condition (T&C) and its anti-harassment conference policy:

- NSF communication was most frequent during policy development and rollout, focused on specific policies and consistent framing, and intended for NSF staff and grantees.
 - Outside of those periods, communication was less targeted and less frequent. It sought to engage the broader scientific community and focused on the need for anti-harassment policy generally.

The extent to which awardee institutions had their own anti-harassment policies or referenced NSF's harassment policies (especially the T&C) on institutional websites:

- Almost 95 percent of IHEs has an anti-harassment policy for their institution posted on a webpage. In comparison, only 22 percent of non-profits and 6 percent of companies did.
- Institutions that received more funding and institutions that were not MSIs were more likely to have an anti-harassment policy posted on their public webpages.
- Relatively few IHEs, nonprofits, or companies referenced NSF's anti-harassment policies on their public webpages or directly linked to NSF's T&C-related webpages, though IHEs did so at a higher rate than nonprofits or companies.
- IHEs with greater research intensity (R1 or R2) and those that received more funding were more likely to reference NSF's anti-harassment policies on their public webpages or directly link to NSF's T&C-related webpages; MSIs were less likely to do either behavior than non-MSIs.

Whether the conference policy led to changes in the proposals submitted to NSF and the conferences NSF supports:

- Conference proposals were 18 percentage points more likely to reference anti-harassment after the policy.
- PIs from MSIs (and in particular, HBCUs) increased their anti-harassment references less than PIs from non-MSIs after the policy. PIs who identify as Hispanic or Latino increased their anti-harassment references more than PIs who do not identify as Hispanic or Latino.
- Proposals that referenced an anti-harassment policy were substantially more likely to mention-reporting mechanisms and policy dissemination after the policy.

Implications and Considerations Based on Findings

- **NSF could consider additional communication around their anti-harassment policies, including communications focused on specific types of institutions.** Institutions with very high or high research intensity were more likely to reference NSF’s harassment policies, including the new term and condition, compared to all other institutions. MSIs were also less likely to reference NSF’s harassment policies on their webpages than non-MSIs. This suggests that focusing outreach with communications and supports might be warranted to ensure equitable dissemination and reduce any potential disparities.
- **Consider asking grantees for explicit discussion of (1) their plans for meeting NSF’s anti-harassment requirements and (2) their progress towards doing so.** Findings show that more PIs incorporated references to anti-harassment practices in their proposals than before the policy was in place, although over 80 percent of PIs still do not reference anti-harassment practices after the policy was in place. If NSF wants to learn more about how grantees plan to implement anti-harassment practices, or whether these patterns reflect actual practices rather than just choices on what to write about in a proposal, then reporting guidance or requirements could be considered. The request could apply to proposals or annual reports that are submitted to NSF.
- **Consider other sources of data to investigate adherence to the conference policy, since institutions do not appear to have anti-harassment policies that specifically cover conferences.** This study manually reviewed and coded webpages related to harassment (from the two web searches conducted) for 50 institutions and found no references to conference-specific policies. Instead, institutions describe the context in which their policies apply in more general terms (e.g., “This policy applies...when the incident occurs in an Employment or Education Program or Activity.”) The language is often broad enough that it is unclear if an off-campus conference not sponsored by the institution would apply. If NSF would like to understand whether conferences have anti-harassment policies in place, it may want to examine the conference webpages and/or materials disseminated to participants to determine whether the conference has a specific anti-harassment policy, since institutions rarely seem to publicize these generally.



CONTENT

1

Executive Summary

2

Background and Overview

3

Communications Analysis: Approach and Findings

4

Term and Condition Analysis: Approach and Findings

5

Conference Policy Analysis: Approach and Findings

6

Conclusions and Implications

7

Potential Next Steps

For NSF Consideration

The Research Team suggests that NSF consider the following potential next steps for the anti-harassment study.

- **Examine conference websites or announcements** for evidence that they have harassment policies in place. Interview or conduct focus groups with conference organizers to understand what (if anything) they are doing differently and what they are hearing from their participants.
- **Examine a random sample of research proposals that are not conference-specific but include conference funding.** These proposals were not included in this study due to the difficulty of identifying these proposals.
- **Conduct focus groups or interviews with IHEs to understand, in-depth, their views on the policies**—especially since other agencies may be looking to adopt similar policies. This semi-structured data collection will allow NSF to obtain more nuanced information about how IHEs view the policies and processes and any perceived changes as a result.
- **Survey a broader sample of IHEs or other grantee organizations** to obtain more systematic information about awareness of the policies, approach to compliance, and potential impacts or changes in number or nature of complaints.
- As a longer-term objective, with sufficient data and access: **analyze harassment reports to NSF for characteristics, patterns, and trends.**