# Committee on Foundations for Assessing Health and Vitality Meeting

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### Committee Task

This study will <u>define the data</u> that NASA needs to collect to enable each decadal survey to conduct its own analysis of its <u>research</u> <u>community's health and vitality</u>.

### **Committee Actions**

To accomplish this task, the committee will:

1. Identify the characteristics of a healthy and vital research community.

2. Define implementable measures for assessing the health and vitality of a research community based on the above-identified characteristics, considering demographics, careerstage structure, distribution of "hard money" and "soft money" positions, relative dominance of NASA Centers in performing research in the discipline, fraction of funding for the discipline provided by NASA relative to other funding agencies, and other relevant variables.

3. Based on the above-identified measures, enumerate the types of data that NASA should be collecting to enable future assessments of the health and vitality of the scientific work force and any statutory, regulatory or policy impediments to collecting those data. Recommend practical and actionable approaches that, if implemented, would reduce the identified impediments.

4. Recommend and prioritize best practices for NASA to use to improve the health and vitality of its research communities.

### Comments

1. Identify the characteristics of a healthy and vital research community.

- Robust age distribution from recent graduates to experienced PIs
- Demographics that match the larger community

2. Define implementable measures for assessing the health and vitality of a research community based on the above-identified characteristics, considering <u>demographics</u>, <u>career-stage</u> structure, <u>distribution of "hard money</u>" and "soft money" positions

3. Based on the above-identified measures, enumerate the types of data that NASA should be collecting to enable future assessments of the health and vitality of the scientific work force and any statutory, regulatory or policy impediments to collecting those data.

- Note: any data NASA collects must be approved by OMB
- Comply with the Civil Rights Act, Title IX of the Education Act, etc.

#### Introduction

- We collect data through NSPIRES for grant applicants, reviewers, and students
- Data collected 2016 2021
  - Back-casted from 2016 to 2014 where possible
  - 2020 and 2021 data are incomplete
- Data was compiled according to EEOC/OMB guidelines
  - Complies with NASA ODEO and Human Capital methodology
- This is an on-going analysis, so by no means a finished product.

#### What demographic data we collect

See next two charts

#### **Demographics Data Collection**

#### WHY THIS INFORMATION IS BEING COLLECTED:

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify any inequities based on gender, race, ethnicity, or disability. NASA asks that you provide information about your gender, race, ethnicity, and disability status in order to ensure compliance with Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d et seq., Title IX of the Education Amendments of 1972, 20 U.S.C. § 1681 et seq., Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. § 701 et seq., and NASA's implementing regulations at 14 CFR. §§1250, 1251, and 1253.

Submission of the requested information is voluntary and will not affect an organization's eligibility for an award. However, withholding this information will undermine the usefulness of information provided by others. Any individual who would prefer not to submit some or all the information requested should check the box(es) provided.

1. Gender * (choose one):	<ul> <li>Male</li> <li>Female</li> <li>I prefer not to report my gender</li> </ul>	Added "OTHER" category in 2019
2. Ethnicity * (choose one):	<ul> <li>Hispanic or Latin (1)</li> <li>Not Hispanic or Latin</li> <li>I prefer not to report my ethnicity</li> </ul>	
3. Race * (select one or more):	<ul> <li>American Indian or Alaska Native (1)</li> <li>Asian (1)</li> <li>Black or African American (1)</li> <li>Native Hawaiian or Other Pacific Islander (1)</li> <li>White (1)</li> <li>Other</li> <li>I prefer not to report my race</li> </ul>	
4. Do you have any of the following disabilities/serious health	Hearing Impairment	
conditions? Consider your answers without the use of medication and aids (excent evenlasses) or the help of another	Visual Impairment Mobility/Orthopedic Impairment	
person. (Check all boxes that apply to you.) *	<ul> <li>Other</li> <li>None</li> <li>I prefer not to reveal my disabilities/health conditions</li> </ul>	6
5. Are you currently serving (or have previously served) as PI, PD, Co-PI, or Co-PD on any federally funded project? *	<ul> <li>Yes</li> <li>No</li> <li>These terms may not be consi Office of the Chief Scientist</li> </ul>	stent across Agencies

#### Demographic Data Collection - Career data

o Masters								
o Doctorate								
o Other								
o I prefer not to	answei	r						
		~	This is	s a pr	oxy for	"care	eer sta	ge"
o Academia		Ту	pe of i	nstitu	ition sl	nould	be cap	otured
o Government								
o For-profit								
o Nonprofit								
o Other								
o I prefer not to	o answe	er						
o Primarily Res	earch							
o Primarily Tea	ching							
o Science-relat	ed a							
o Engineering/	Cu Tochnol	logy rol	atad					
o Eurthor Traini		ducatio	aleu					
	ING OF EC	uucatio	011					
o Other								
	<ul> <li>o I prefer not to</li> <li>o Academia</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to</li> <li>o Primarily Res</li> <li>o Primarily Tea</li> <li>o Science-relat</li> <li>o Engineering/</li> <li>o Further Train</li> <li>o Other</li> </ul>	<ul> <li>o I prefer not to answe</li> <li>o Academia</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answe</li> <li>o Primarily Research</li> <li>o Primarily Teaching</li> <li>o Science-related</li> <li>o Engineering/Technol</li> <li>o Further Training or E</li> <li>o Other</li> </ul>	<ul> <li>o I prefer not to answer</li> <li>o Academia</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answer</li> <li>o Primarily Research</li> <li>o Primarily Teaching</li> <li>o Science-related</li> <li>o Engineering/Technology-religion</li> <li>o Other</li> </ul>	<ul> <li>o I prefer not to answer</li> <li>o Academia</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answer</li> </ul> O Primarily Research O Primarily Research O Primarily Teaching O Science-related O Engineering/Technology-related O Further Training or Education O Other	<ul> <li>o I prefer not to answer</li> <li>o Academia</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answer</li> <li>o I prefer not to answer</li> <li>o Primarily Research</li> <li>o Primarily Teaching</li> <li>o Science-related</li> <li>o Engineering/Technology-related</li> <li>o Further Training or Education</li> <li>o Other</li> </ul>	<ul> <li>o I prefer not to answer</li> <li>This is a proxy for</li> <li>o Academia</li> <li>Type of institution shoes</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answer</li> <li>o Primarily Research</li> <li>o Primarily Teaching</li> <li>o Science-related</li> <li>o Engineering/Technology-related</li> <li>o Further Training or Education</li> </ul>	<ul> <li>o This is a proxy for "care</li> <li>o Academia</li> <li>Type of institution should</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answer</li> <li>o Primarily Research</li> <li>o Science-related</li> <li>o Engineering/Technology-related</li> <li>o Further Training or Education</li> <li>o Other</li> </ul>	<ul> <li>o This is a proxy for "career state</li> <li>o Academia</li> <li>Type of institution should be cap</li> <li>o Government</li> <li>o For-profit</li> <li>o Nonprofit</li> <li>o Other</li> <li>o I prefer not to answer</li> <li>o Primarily Research</li> <li>o Primarily Teaching</li> <li>o Science-related</li> <li>o Engineering/Technology-related</li> <li>o Other</li> </ul>

## Additional data collected

- SOLICITATION\_NUMBER
- FISCAL\_YEAR
- ORGANIZATION
- SOLICITATION\_TITLE
- PROPOSAL\_NUMBER
- TEAM\_MEMBER\_UNIQUE\_ID
- SELECTION\_STATUS

- SUBMITTING\_INSTITUTION
- TEAM\_MEMBER\_ROLE
- SERVED\_AS\_PI
- DEGREE
- DEGREE\_YEAR
- CAREER\_SECTOR
- CAREER\_TYPE

### How is it collected?

- Data is requested from everyone who uses NASA's NSPIRES website
  - Submitting proposals
  - Reviewing proposals
- All data is strictly VOLUNTARY no one is required to answer any of the demographic questions

## Example data

• Following charts

### Gender Participation: 2014 - 2020



### Gender Success Combined Divisions



### Gender Success Combined Divisions



## Race/National Origin (RNO) Participation



Astrophysics N = 11,198



Planetary Science N = 31,172

### RNO and gender combined

#### Planetary



Asian M 🗆 Asian F 🗖 Hispanic M 🗆 Hispanic F 🗖 PNA, M 🗬 PNA, F 🗆 PNA, PNA 🗬 White M 📾 White F 🗖 Other<sup>1</sup> M 💷 Other<sup>1</sup> F

### **RNO Success Combined Divisions**





### **RNO Success Combined Divisions**

39% 40% 33% 29% 27% 30% 24% 19% 17% 17% 17% 17% 20% 15% 10% 0% 2014 2015 2016 2017 2018 2019 2020 Astrophysics Hispanic Heliophysics Hispanic Planetary Hispanic

Hispanic comparison

#### 50% 50% 41% 40% 29% 26% 30% 24%25% 21%21% 25% 20% 17% 16% 20% 6% 15% 15% 10% 0% 2014 2015 2016 2018 2019 2020 2017

Astrophysics Other Heliophysics Other Planetary Other

#### "Other" comparison

### Declared Disability Success by division

#### Astrophysics



Declared disability None Prefer not to answer

6/16/2021

### Relevant Civilian Labor Force (RCLF) data

#### Under-Represented Minorities Among Astronomy Faculty, 2012

Dogroos Awardod by		Hispanic
Department	African American %	American %
Astronomy only	1	2
	2	2
Physics	2	3

Percent of Astronomy Faculty Members who are Women, 2010 - 2018				
Academic Rank	2010	2014	2018	
Full Professor	15%	15%	18%	
Associate Professor	22%	29%	26%	
Assistant Professor	30%	29%	41%	
Instructor/Adjunct	-	19%	30%	
Other Ranks	17%	22%	25%	
Overall	19%	19%	23%	

Race and Ethnicity for Members of Planetary Science Community*					
	All survey respondents** (n=2,367)	Members of Division for Planetary Sciences*** (n=895)			
White	83%	87%			
Asian or Asian American	13%	10%			
Hispanic or Latinx	5%	5%			
American Indian or Alaska Native	1%	*			
Black or African American	1%	1%			
Native Hawaiian or Other Pacific Islander	<1%	*			
Another Race/Ethnicity	4%	2%			

\*SOURCE: American Astronomical Society's Division for Planetary Sciences 2020 workforce survey.

\*\* Percent of students unknown

\*\*\* 14% of this group are students

Percentage Hispanic, African American, Pacific Islander and/or Native American among Faculty, Researchers, Post Docs

	Faculty	Research Scientists	Post Doc
2011	1.5	3.4	4.4
2018	5.8	1.3	14.7

\*SOURCE: Survey of US Academic Departments that Include Planetary Science. 2018 data provided by Fran Bagenal, University of Colorado.

Source: AIP Statistical Research Center (www.aip.org/statistics).

## Relevant Civilian Labor Force (RCLF) data

#### American Institute of Physics (AIP), Academic Workforce Survey

The Academic Workforce Survey has been conducted every two years since 1986. Between March and June 2018, we contacted 797 physics and astronomy departments (including 39 astronomy-only departments) that award a bachelor's degree or higher in physics or astronomy. We send follow-up responses to those departments that do not respond. We received responses from 720 institutions, a 90% response rate.

#### **National Science Foundation**

National Center for Science and Engineering Statistics (NCSES) <u>https://www.nsf.gov/statistics/about-ncses.cfm</u> - they conduct their own surveys, are independent of NSF

https://ncses.nsf.gov/indicators https://ncses.nsf.gov/indicators/reports https://ncses.nsf.gov/pubs/nsf21321/



This publication is part of the Science and Engineering Indicators suite of reports. Indicators is a compressionally mandated report on the state of the U.S. Science and engineering enterprise. It is policy relevant and policy neutral. Indicators is prepared under the guidance of the National Science Board by the National Center for Science and Engineering Statistics, a federal statistical agency within the National Science Foundation. With the 2020 edition, Indicators is changing from a lingle report to a set of disaggregated and streamlined reports published on a rolling basis. Detailed data tables will continue to be available online. **2021** Women, Minorities, and Persons with Disabilities in Science and Engineerin



National Center for Science and Engineering Statistics Directorate for Social, Behavioral and Economic Science National Science Foundation



#### Relevant Civilian Labor Force (RCLF) data

#### American Geophysical Union

#### AGU's Diversity, Equity and Inclusion Dashboard

Baseline Data across AGU Programs April 2021

#### Tableau demo

- Tableau is an on-line tool for building and displaying "dashboards"
- OCS has worked with the NASA OCIO to develop a dashboard for demographic data
- Hope to have it available for external viewing this fall

• DEMO -

### Summary

- Our data show no consistent bias in gender, RNO, or handicap wrt "success"
- Participation for most minorities is low in all SMD divisions
  - Pacific Islander/Hawaiian, American Indian/Alaska native, Black/African American, Hispanic/Latinx
     – however these communities are also poorly represented in the RCLF
- We still have too large a "PNA" response (~20%) we need to increase the willingness to answer the demographic questions
  - Revising questions should help we are working that now internally
    - Expand options for gender, race, ethnicity
    - Collect information on type of institution
    - Collect status as tenured, tenure track, temporary, postdoc, intern, ....
  - Plan is to approach OMB for clearance in a few months
- Forward work (this committee could recommend)
  - Work with NSF / AIP / AAS / AGU etc. on collecting better focused survey data for RCLF
  - Collect student data separately
  - Sharing survey data more easily
- Future state incorporating financial information from SAP and possibly annual reports