Sexual Orientation and Gender Identity Data For the WMPD Report

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Associate Professor of Psychology & Neural Science
New York University
my lab and I study the cognitive and neurobiological mechanisms underlying split-second social judgments and less conscious forms of bias
LGBTQ disparities in STEM hurt scientific progress
Estimates suggest LGBTQ people are 17-21% less represented in the STEM workforce than statistically expected based on their prevalence in the U.S. population.

American Community Survey (U.S. Census Bureau): men in same-sex couples are less likely to complete an undergraduate degree in STEM and be in a STEM occupation relative to men in other-sex couples; this pattern is also observed among sexual-minority men vs. straight men in the National Health Interview Survey (CDC)

compared to straight men, sexual-minority men are 13% more likely to leave STEM for a non-STEM major from freshman to senior year, even though they show greater signs of engagement in STEM (e.g., research and lab participation)
LGBTQ people encounter non-supportive STEM environments

- LGBTQ people in STEM report more negative workplace experiences than do non-LGBTQ people in STEM (and than do LGBTQ people outside STEM)

- LGBTQ people in STEM are more likely to experience career barriers, harassment, and professional devaluation than non-LGBTQ people

- Roughly 70% of sexual-minority STEM faculty who are out at work report feeling uncomfortable in their department

- More than 40% of LGBTQ people in STEM are not out to colleagues

- U.S. physics: 21% of LGBTQ people report being excluded, intimidated, or harassed at work due to being LGBTQ; 75% feel uncomfortable at work; these predict desire to leave STEM

Cech & Pham (2017); Partridge et al. (2014); Yoder & Mattheis (2016); American Physical Society (2016); Cech & Waidzunas (2021)
Potential factors driving LGBTQ STEM disparities

- Anti-LGBTQ bias and discrimination
- STEM stereotypes (masculine, heterosexual, cisgender)
- STEM norms of impersonality that isolate LGBTQ people

Freeman (2018), Nature; Freeman (2020), Policy Insights from the Behavioral & Brain Sciences
NSF National Center for Science & Engineering Statistics (NCSES) collects official nationwide data to generate the WMPD report:

- **National Survey of College Graduates (NSCG)**
  - biennial, nationally representative survey of 164,000 bachelor degree recipients (18-76 years old), all fields
  - conducted by U.S. Census Bureau on behalf of NCSES

- **Survey of Doctorate Recipients (SDR)**
  - biennial, nationally representative survey of 120,000 PhD degree recipients (18-76 years old), STEM fields only

- **Survey of Earned Doctorates (SED)**
  - annual census of all new PhD recipients (18-76 years old), all fields
  - typically mandated by doctoral institutions to receive PhD, leading to high response rate (92.1%)
  - NCSES works closely with doctoral institutions and provides them data
NSF NCSES has not collected sexual orientation or gender identity (SOGI) in national STEM education and workforce surveys

- National Survey of College Graduates
- Survey of Doctorate Recipients
- Survey of Earned Doctorates

Women, Minorities, and Persons with Disabilities in S&E Report

S&E Indicators Report

NIH

Congress & Policymakers

University Diversity Offices

Researchers

Scientific Organizations

Sexual orientation & gender identity questions for NSF surveys
Importance of official, nationwide data

- allow researchers and policymakers to track LGBTQ disparities and career and educational barriers (including intersections with gender, race, and economic background)

- development and testing of strategies to increase retention of LGBTQ people in STEM, if and where there are leakages

- help universities, funding agencies, and scientific societies prevent or stop bias and pipeline issues

- inform NSF and NIH diversity initiatives (e.g., GRFP, NRSA) and university diversity initiatives for recruiting faculty and trainees

- help change the conversation in STEM more broadly
Co-signed by 17 major scientific organizations

- **August 2018**
  Federal Register response to NSF

- **October 2018**
  Federal Register response to NSF

- **October 2018**
  Meeting with NSF NCSES leadership

- **June 2020**
  Federal Register response to NSF

- **October 2020**
  Federal Register response to OMB

- **March 2021**
  Federal Register response to OMB

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Sexual orientation & gender identity questions for NSF surveys
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NSF moves to pilot LGBT questions on national workforce surveys

By Katie Langin | Nov. 7, 2018, 2:45 PM
The National Academies has recommended that NSF add SOGI questions to its surveys.
### SOGI questions have strong federal precedents

Major federal surveys have collected SOGI data for years:

<table>
<thead>
<tr>
<th>Survey</th>
<th>n</th>
<th>per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Risk Factor Surveillance System (BRFSS)</td>
<td>400,000</td>
<td></td>
</tr>
<tr>
<td>Current Population Survey (CPS)</td>
<td>320,000</td>
<td></td>
</tr>
<tr>
<td>National Crime Victimization Survey (NCVS)</td>
<td>160,000</td>
<td></td>
</tr>
<tr>
<td>National Health Interview Survey (NHIS)</td>
<td>87,500</td>
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</tr>
</tbody>
</table>
SOGI questions are voluntary

Privacy and confidentiality of personally identifiable data in NSF NCSES surveys are strongly protected by federal law; respondents cannot be identified or exposed to discrimination

NSF NCSES and U.S. Census Bureau suppress data cells with too few respondents to prevent possible identifiability or disclosure

Respondents react favorably to SOGI questions in federal surveys; SOGI questions elicit fewer sensitivity reactions than other commonly measured questions like income or disability

Freeman (2020), *Policy Insights from the Behavioral & Brain Sciences*
SOGI questions are highly feasible

- In 2012, the National Center for Education Statistics (NCES) recognized the need to introduce SOGI measures wherever possible in national education surveys.

- In 2015, piloting was conducted (cognitive testing and field testing), which revealed the questions are highly feasible and present no issues.

- In 2016, SOGI questions were added to national surveys of high schoolers and college students, and these were beneficial and did not cause issues.

Christopher & Burns (April 2021), FedCASIC Workshops
SOGI questions are highly feasible

2016 follow-up to the 2009 High School Longitudinal Study (HSLS)
23,000+ high-school freshmen

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NSF’s current piloting of SOGI questions

April 2021
Piloting of SOGI questions has finally begun!
NSF’s current piloting of SOGI questions

- online convenience sample ($n = 2,800$) to test effects of response-item order and question order, as well as question comprehension, comfort level, and response accuracy

### Sexual orientation

Which of the following best represents how you think of yourself?
- Gay or lesbian
- Bisexual
- Straight; that is, not gay, lesbian, or bisexual
- Something else: ___________________

### Gender identity

Do you describe yourself as male, female, or transgender?
- Male
- Female
- Transgender
- Do not identify as female, male, or transgender

What sex were you assigned at birth, on your original birth certificate?
- Male
- Female

Two-step gender identity method

- respondents are marked as gender minorities if they either describe themselves as “transgender” or report an assigned birth sex different from their current gender identity
- surveys that simply add a “transgender” option to a binary sex question undercount the transgender population, identifying roughly 5 times fewer gender-minority respondents than a two-step method (Tate, Ledbetter, & Youssef, 2013; Tordoff et al., 2019)
- National Center for Education Statistics’ 2015 cognitive testing revealed two-step method to be least confusing to respondents (Christopher & Burns, April 2021, FedCASIC Workshops)
2021 National Survey of College Graduates (NSCG) has a nationally representative non-production panel for piloting survey changes ($n = 5,000$), being used to test disclosure risk, break-off and non-response rates, and time spent on SOGI questions.

**Sexual orientation**

- Regardless of your sexual experience, what is your sexual identity or orientation (select all that apply)?
  - Lesbian or gay
  - Straight, that is, not gay
  - Bisexual
  - Asexual
  - Pansexual
  - Fluid
  - Queer
  - Other sexual orientation: ____________
  - Prefer not to answer

**Gender identity**

- What sex were you assigned at birth, on your original birth certificate?
  - Male
  - Female
  - Don’t know

- What is your current gender identity (select all that apply)?
  - Male
  - Female
  - Transgender
  - Gender non-conforming
  - Non-binary
  - Genderfluid
  - Genderqueer
  - Other gender identity: ____________
  - Prefer not to answer

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Personal correspondence with NCSES (March 29, 2021; April 9, 2021)
NSF’s current piloting of SOGI questions

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- 2020 Census Barriers, Attitudes, & Motivators Survey (CBAMS)

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Which of the following best represents how you think of yourself?
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- only 1.5% used ‘something else’

- of the write-ins, only 16% could be classified as sexual minorities (e.g., ‘pansexual’, ‘queer’, ‘asexual’), so 0.24% of respondents prefer to use these terms
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- Other gender identity: _______________
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U.S. population estimates

LGBTQ people: 5.6%
Asians: 5.3%
American Indians and Alaska Natives: 0.7%
Native Hawaiian and Pacific Islanders: 0.2%
NSF’s current piloting of SOGI questions

- NCSES’ pilot studies are geared toward implementation on the National Survey of College Graduates (NSCG)

- NCSES indicates additional work would be needed to add SOGI questions to other surveys, such as the Survey of Earned Doctorates (SED) (annual census of all newly minted PhDs in the U.S.):
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Personal correspondence with NCSES (March 29, 2021)

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Paige Byerly
@paigebyerly

Honestly can not believe that these are the only options in a mandatory @NSF survey I just had to take, no less when they have an ENTIRE Office of Diversity and Inclusion. We need our scientific institutions to do better than this.

Are you...

- Male
- Female

3:01 PM · Apr 28, 2021 · Twitter Web App

23 Retweets 1 Quote Tweet 251 Likes
The possibility of federal-wide SOGI data standards

OMB could set federal-wide SOGI data standards that NSF NCSES would need to follow, similar to race and ethnicity standards (OMB Policy Directive No. 15):

President Biden’s Executive Order 13985 on equity established an interagency Equitable Data Working Group tasked with improving federal data collection to better capture diversity of the American people.

A National Academies’ consensus study on *Measuring Sex, Gender Identity, and Sexual Orientation for the NIH* could make OMB policy recommendations.
Thank you!