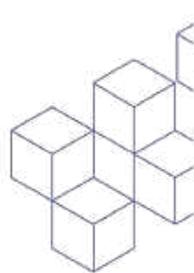




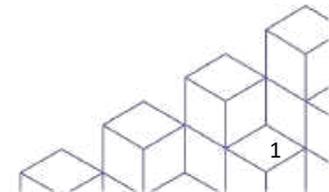
Empowering Women in Tech
–
A Transatlantic Vision

Think NEXUS Webinar
23 July 2020



**The United States:
Women and Minorities in STEM –
Science, Technology, Engineering
and Mathematics**

Florence D. Hudson, Founder & CEO, FDHint LLC
Executive Director, Northeast Big Data Innovation Hub
Columbia University, New York, USA



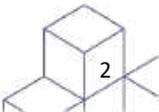
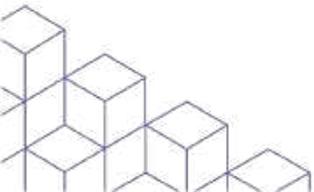
We Envision an Inclusive Digital Society

The aspiration to have the digital society be fully inclusive, fair and accessible for all is equally appropriate for the U.S. This will allow better leverage of a country's human resources to develop the future, bringing multiple perspectives together to address challenges and opportunities, and harnessing latent STEM capabilities and interest across the population. While we have made progress, there is more to do.

Florence D. Hudson

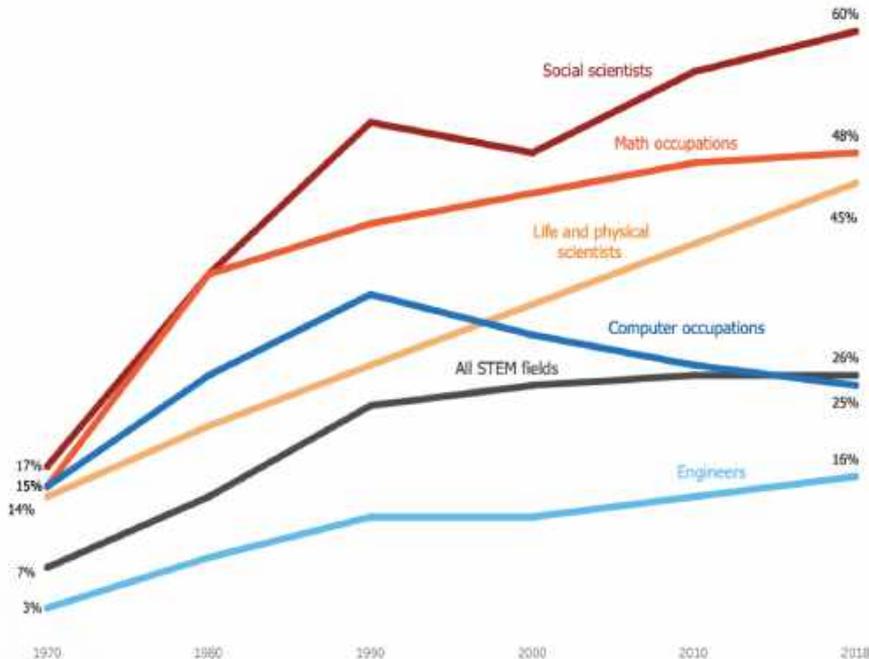
Founder and CEO, FDHint

Executive Director, Northeast Big Data Hub



Women are a minority in Tech in the U.S.

Percentage of science, technology, engineering, and math (STEM) workers who are women



Women's representation in computing & STEM is half their total US population representation, or less.

Women comprise:

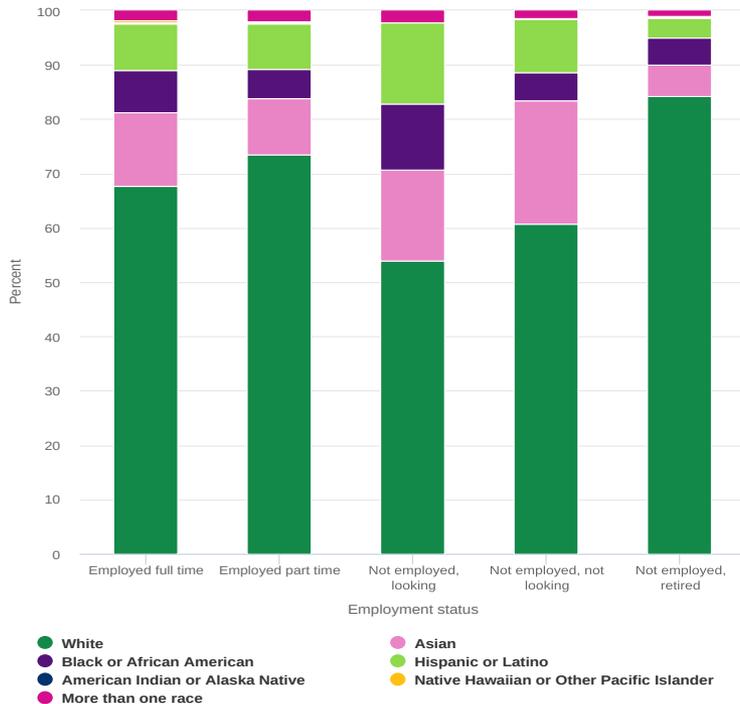
- **51%** of the total U.S. population in 2018, and **46%** of the total U.S. labour force in 2016.
- **25%** of the labour force in computer occupations in 2018, **15%** in 1970, reached a high of **34%** in 1990.
- **3%** of the engineering labour force in 1970 and rose to **16%** in 2018.

There is an opportunity to better engage and retain women in STEM professions, for diversity of thought, and to transform the potential energy of our human population into kinetic energy in tech.

Black and Hispanic representation in STEM is half their total US population representation

National Center for Science and Engineering Statistics | NSF 19-304

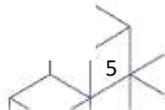
FIGURE 5-D
Employment status of scientists and engineers, by ethnicity and race: 2017



- **White individuals:**
 - 73% of the U.S. total population
 - 67% of full time employees in STEM
- **Asians:**
 - 5% of the total U.S. population,
 - 13% of full time employees in STEM
 - STEM representation is double their census %
- **Hispanics:**
 - 18% of total U.S. population
 - 8% of full time and part time STEM employees
 - STEM representation is half of their census %
- **Blacks and African Americans:**
 - 14% of the overall U.S. population
 - 7% of full-time STEM employees
 - STEM representation is half of their census %

Diversity & Inclusion Enables Diversity of Thought, Enhancing Collaborative Innovation

- We need diversity of thought and experience to identify and understand the challenges we need to address, and develop the solutions, and new opportunities to advance our capabilities in technology and society to address these challenges.
- We need to attract more of the human population to STEM and tech, to join and lead teams developing new innovations and expanding the use of advanced technologies such as artificial intelligence, big data and analytics, machine learning, the Internet of Things, distributed digital ledger technology, and cybersecurity.
- Increasing outreach, education, professional development, support and mentoring for under-represented minorities including women and people of colour will enable them to enter and remain in the workforce.
- Diversity and inclusion enables and enhances collaborative innovation.



We have made progress, increasing women and minority leadership in Tech and STEM

- There is increasing awareness of women and minority leaders in tech
- Hidden figures are less hidden – the women of NASA
- Creating role models, increasing knowledge of their leadership
- Meeting role models inspires women and minorities in tech and STEM



Figure 3 – Meeting role models inspires women and minorities in tech (From Left: Florence DiStefano Hudson with Astronaut Alan Bean 1976; with Sally Ride, First American female astronaut c1977 at a Society of Women Engineers (SWE) conference; with Sally Ride and Florence's daughter Kristen Danielle Hudson c2003; with Astronaut Bonnie Dunbar and Kristen Danielle Hudson in 2005; with Mae Jemison, First African American female astronaut in 2017).

Diversity in Tech & STEM Organizations Provide Role Models and Peer Mentoring and Support

- Organisations supporting women and minorities in tech have been growing in size, enabling connections to role models and mentors, and nurturing a sense of “belonging”
- **Society of Women Engineers (SWE)**
 - Grew from 50 women engineers & scientists in 1950 to 40,000 members globally in 2019, and a global conference in 2019 with 14,000 participants
- **Grace Hopper Celebration of Women in Computing**
 - 25,000 attendees at their conference in 2019
- **National Society of Black Engineers (NSBE)**
 - 16,000 members worldwide, with 14,000 participants at their 2019 conference
- **Society of Hispanic Professional Engineers (SHPE)**
 - 11,000 members, with 9,600 attendees at their 2019 conference

INWES – International Network of Women in Engineering and Sciences

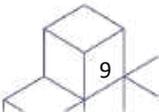
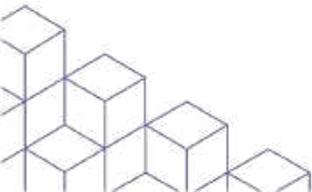
- INWES Europe launched in 2015 – Member country organizations

<u>Country</u>	<u>Organization</u>
UK	Women's Engineering Society – WES
France	fi – femmes-ingenieurs
Switzerland	Swiss Engineering
Germany	German Association of Women Engineers – dib
France	EPF Montpellier
UK	University of Warwick
France	Africa Business Cafe Network, Bordeaux
Individual Members	From Poland, Portugal, France, UK, Germany, Cyprus

Source: <http://www.inwes.org/europe/>

Diversity in TECH and STEM organizations are helping to build the pipeline

- Diversity in engineering & tech organisations have strong and growing junior programmes including K-12, and collegiate programs, to inspire students of all ages to explore the joy of engineering and tech, inspiring them to become engineers and enter technical career paths.
 - Society of Women Engineers launched [SWEnext](#) in 2015
 - National Society of Black Engineers launched [NSBEjr](#) in 1990
 - Society of Hispanic Professional Engineers High School and College Chapters
- These efforts are helping increase the staying power of women and minorities in tech. But there is more to do.



Steps to increase minorities and women in tech

Encourage and support women and minorities to enter and stay in tech

- Identify students and professionals with interest and/or acumen in STEM and tech, and mentor them, encourage them, support them
- Leverage diversity in engineering organisations - SWE, NSBE, SHPE, INWES, etc.
- Establish and grow a culture of diversity and inclusion in your organization, attracting minorities and women and maintaining participation
- Teach how to recognize and mitigate microaggressions and non-inclusive behaviour
- Be a longitudinal or lifetime mentor, share your insights, experiences

U.S. NSF INCLUDES Program

- Launched in 2017 to improve STEM education and support for women and minorities
- NSF INCLUDES = Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science
- Grants and programs to pro-actively seek and effectively develop science, technology, engineering and mathematics (STEM) talent from all sectors and groups in our society
- Facilitating partnerships, communication and cooperation, to build on and scale up what works in broadening participation programs to reach underserved populations nationwide

"Our nation's future prosperity relies on advancing the frontiers of science - and reaching our full potential requires including all Americans in that effort."

- Dr. France A. Córdoba



NSF Director,
2014-2020
Dr. France A. Córdoba

Thank you

Florence D. Hudson
Executive Director

Northeast Big Data Innovation Hub
Columbia University

<https://fdhint.com>

florence.distefano.hudson@gmail.com

[@Flo4Princeton](https://twitter.com/Flo4Princeton)



<https://www.linkedin.com/in/florencehudson/>