# Caucus for Women in Statistics (CWS)

**Promoting and Supporting Women in Statistics & Data Science**

**Motomi (Tomi) Mori, PhD, MBA**
**Member and Chair, Department of Biostatistics**
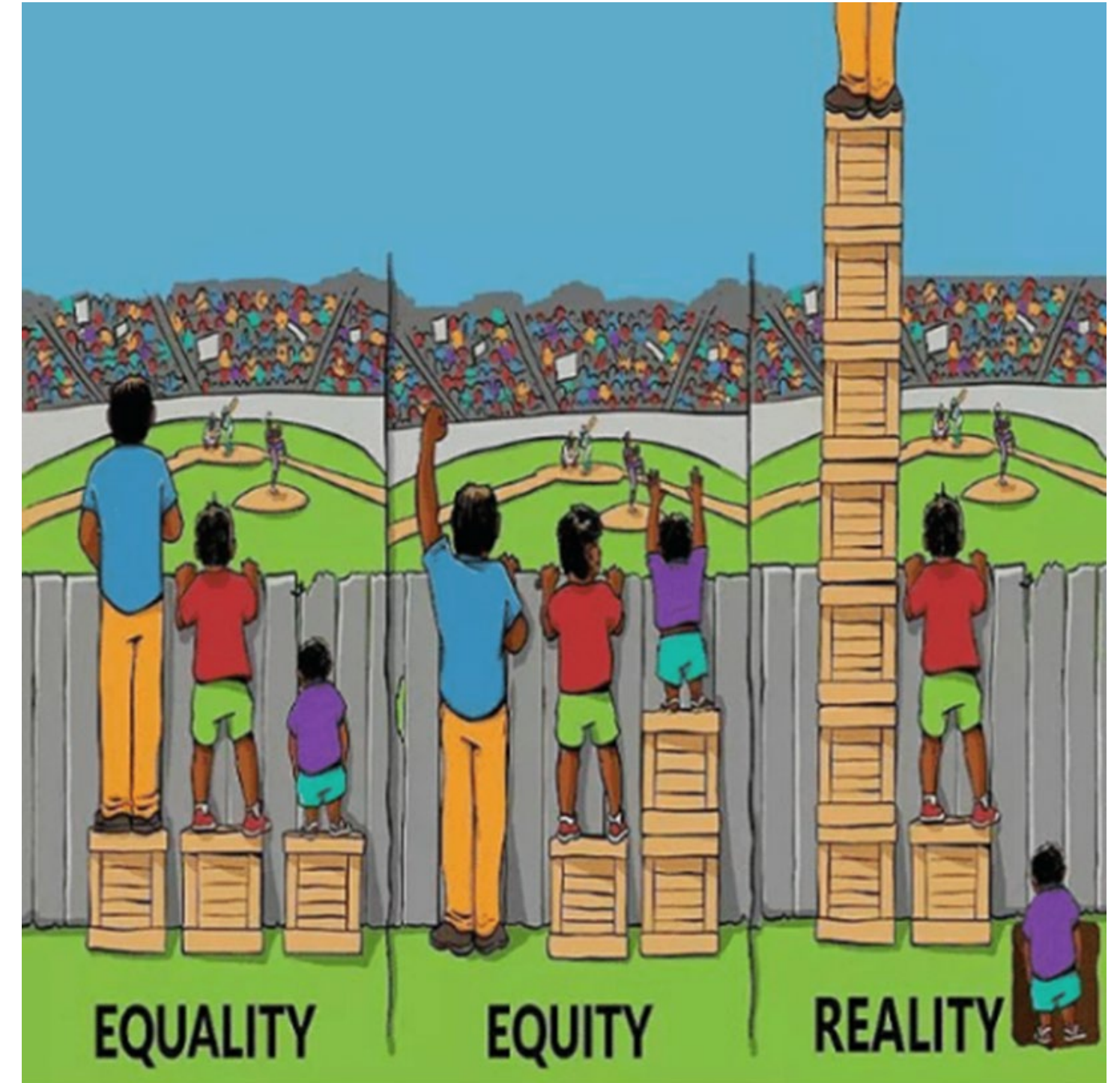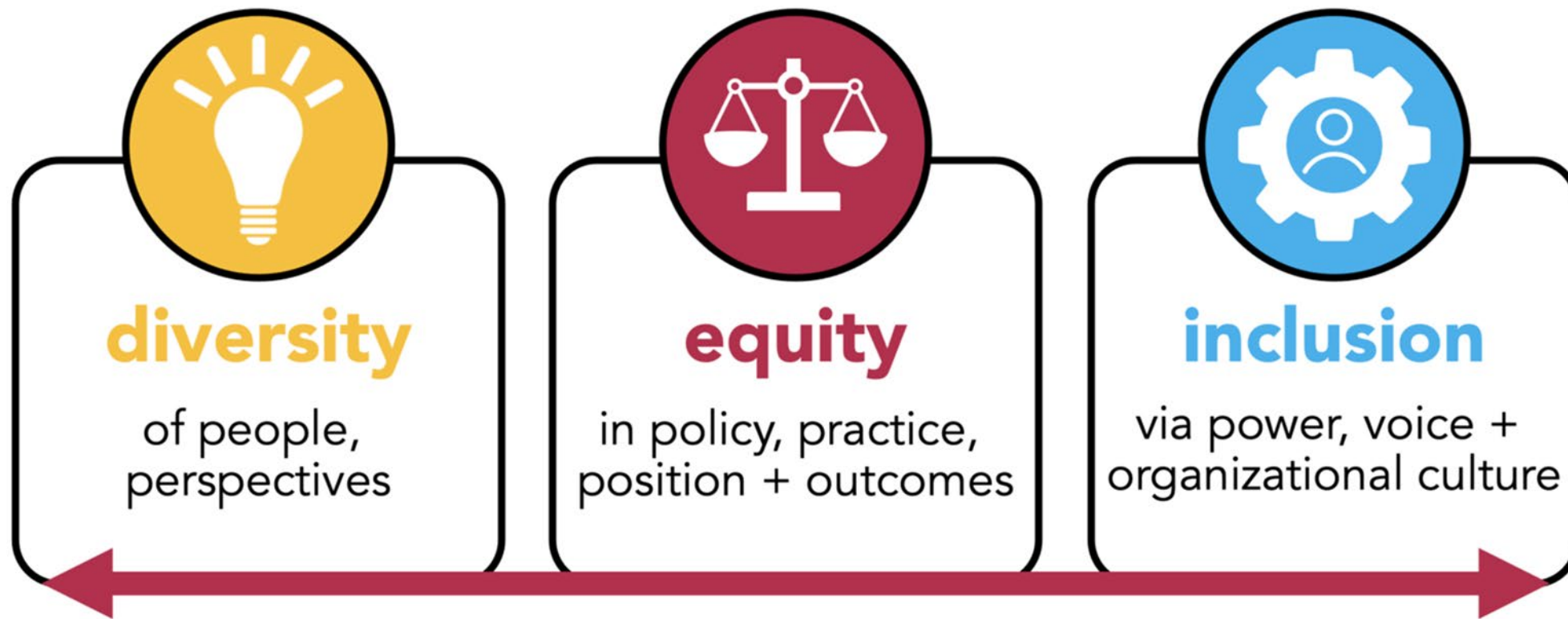**St. Jude Children's Research Hospital, Memphis, Tennessee, USA**

**The Institute of Statistical Mathematics**
**June 23, 2023**

# Outline

- Why DEI?

- My Journey

- Caucus for Women in Statistics

- Diversity, Equity and Inclusion Efforts at St. Jude

- Present and Future

# Why DEI?



diversity
of people, perspectives

equity
in policy, practice, position + outcomes

inclusion
via power, voice + organizational culture



EQUALITY          EQUITY          REALITY

Finding cures. Saving children.

# What is Your Vantage Point?

*Fierce Conversations* by Susan Scott

"Beach Ball Reality"

# My Journey



- **Career Paths**
- Washington (3), Utah (4), Oregon (5), and Tennessee (6)
- Fred Hutchinson Cancer Research Center, University of Washington
- Huntsman Cancer Institute, University of Utah
- Knight Cancer Institute, Oregon Health & Science University
- St. Jude Children's Research Hospital



- **Educational Paths**
- Japan to US
- California, Montana, Iowa (1, 2)
- University of Montana: BA in Psychology
- University of Iowa: MS in Statistics, PhD in Biostatistics
- Oregon Health & Science University: MBA in Healthcare Management

# Caucus for Women in Statistics (CWS)

**https://cwstat.org/**

- The CWS is an international professional statistical society formed in 1971 with its missions to advance careers of women statisticians through advocacy, educational resources and networking opportunities.

- The CWS is independent of the American Statistical Association (ASA). It collaborates closely with ASA on initiatives to advance and advocate women in statistics but also widely with other international statistical organizations.

- It is a relatively small organization with 300+ members around the world (mostly in the US and Canada).

- Donna Brogan is our founding president. CWS celebrated the 50th anniversary in 2021.

Donna J. Brogan, Ph.D.

50th ANNIVERSARY
CWS
1971–2021

# Donna Brogan, CWS Founding President



"At the ASA annual meeting in August of 1969 in New York City about ten women held three informal meetings to discuss the need and mission for a Women's Caucus for statisticians.  Discussion continued at the next annual meeting, held jointly with the American Economic Association in December of 1970 in Detroit, and was attended by about 40 to 50 persons from both professional groups.  The impetus for these discussions primarily came from two sources: *the second wave of feminism sweeping the country* and *discrimination against women that impacted female statisticians*.  Areas of discrimination included education, employment, salary, and career advancement and recognition.  In 1971 the Caucus for Women in Statistics was officially organized, recognized by the ASA, and permitted to organize a paper session for annual meetings."

Donna Brogan served as the first Caucus president, from 1970-1973.

# CWS Today

- Executive Committee: Executive Director, President, President-Elect, Past President, Treasurer, Secretary

- Committees (9): Program, Communications, Professional Development, Liaisons to Other Organizations, Country Reps, Promoting Positive Professional Environments (P3E), Travel Award, Societal Impact Award, Nomination

- Activities: monthly happy hours, educational webinars, awards (Societal Impact Award, Travel Awards), mentoring program, Talk the Walk interview series, ASA Women in Statistics & Data Science conference, ASA Committee on Women in Statistics (CoWiS)

- Organizes sessions to feature women data scientists and leaders at various professional conferences

- Virtual Around the World Symposium 2021



JSM 2022 CWS Reception with Jana Asher, Winner of the Societal Impact Award



Virtual Happy Hours with Madam President



JSM 2022 Session

Finding cures. Saving children.

# IDWSDS 2021

- International Day of Women in Statistics & Data Science (IDWSDS), October 11, 2021 (UTC: 12:00am-11:59pm)
- 24 hour, virtual, around the world conference featuring women statisticians and data scientists.
- Endorsement from 36 statistical and data science organizations around the world
- 205 participants from 36 countries
- 55% academic, 17% students, 10% non-profit organizations, 9% business and industry, 9% government.

# IDWSDS Celebrates Women Statisticians Around the World
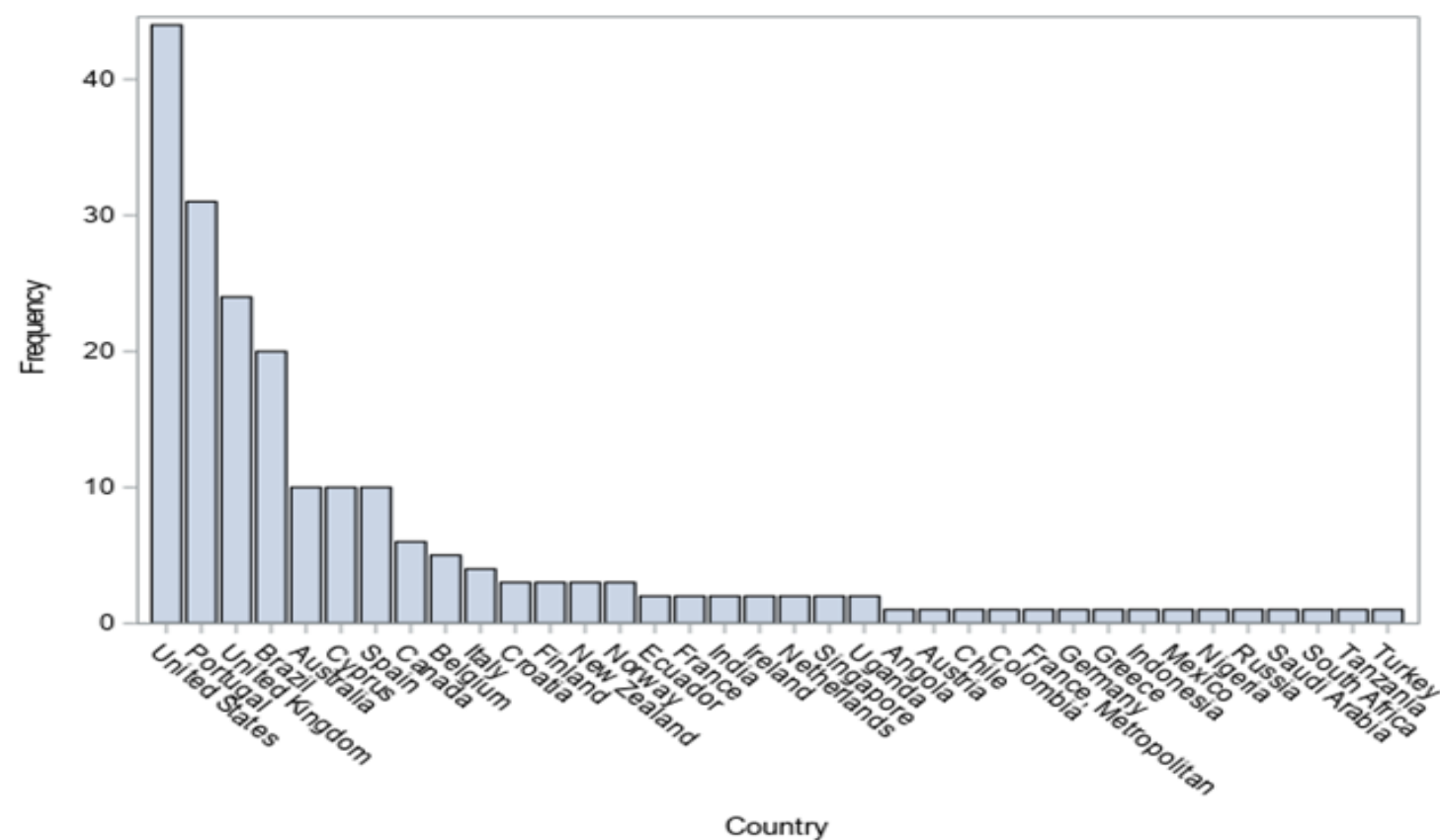
## New Zealand

**Women in Statistics and Data Science in Aotearoa New Zealand**

**Dr Alice Hyun Min Kim**
Dr. Alice Hyun Min Kim is a Biostatistician/Research Fellow based in Wellington, New Zealand. Her research interests focus on the applications of Epidemiology and Statistics in Medicine, Psychology and Public Health. She studied Economics at the University of Auckland and Harvard University, and has an MSc in Statistics from the University of Auckland and a PhD in Health Sciences from the University of Canterbury. Her teaching experiences include Epidemiology (first year) and Health Issues in the Community (postgrad). In her current role at the University of Otago Wellington, she provides biostatistical and methodological input to various health research projects working with a diverse group of researchers across disciplines and institutions. She is a member of the WHO Thematic Platform for Health Emergency and Disaster Risk Management Research Network and has lead- and co-authored research methods chapters on natural experiment design and health disaster and emergency research data.
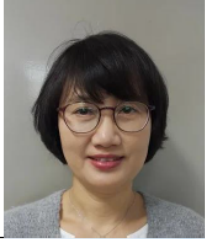
**My journey and work as a Statistician**

**Dr Nokuthaba Sibanda**
Dr Nokuthaba Sibanda is a Senior Lecturer in Statistics in the School of Mathematics and Statistics at Victoria University of Wellington in New Zealand. She is also the Associate Dean for Postgraduate Research in the Faculty of Engineering and the Secretary for the New Zealand Statistical Association. Earlier in the year she was the co-Ambassador for Women in Data Science NZ. Nokuthaba's research focuses on the development of methods for application in health-related areas and fisheries modelling. She obtained her Bachelors' degree in Statistics from the University of Zimbabwe, her MSc in Statistics from University College London and a PhD from Imperial College London. Before moving to academia in New Zealand, she worked as a Biostatistician in the UK.

## Korea

**Session 3 (3:00am-5:00am)**

**Gender, Statistics and COVID-19 in Korea**

**Organizer: Man-Suk Oh**

**Introduction to WISK**

Man-Suk Oh
https://pure.ewha.ac.kr/en/persons/man-suk-oh
Professor, Department of Statistics
Ewha Womens University, Korea

President, Women in Statistics in Korea (WISK)

**Integrating a gender gap perspective into statistics**

Sohee Park
https://ir.ymlib.yonsei.ac.kr/researcher-profile?ep=521
Professor, Department of Biostatistics
Graduate School of Public Health
Yonsei University, Korea

**Prognosis of COVID-19 patients by the underlying disease and drug treatment in Korea**

Taerim Lee
https://www.researchgate.net/profile/Tae-Rim-Lee
Emeritus Professor, Department of Data Science & Statistics
Korea National Open University, Korea

IBS Executive Board Director

**Algorithms for clustering COVID-19 data: An overview of current trends and new visual approaches**

Eun-Kyung Lee
https://pure.ewha.ac.kr/en/persons/eun-kyung-lee
Professor, Department of Statistics
Ewha Womens University, Korea

## Europe

**Session 11 (2:15pm-3:45pm)**

**Diverse Statistical Approaches: Origin and Fundamentals**

**Organizer: Vanda Lourengo (SPE & CWS)**

In this session a general historical overview of three particular areas of statistics will be given: Specifically, Bayesian statistics (Alexandra Schmidt), extreme value theory (Ivette Gomes), and model selection and inference (Gerda Claeskens). The speakers of this invited session are well known and established researchers in the above areas of statistics. Check below their short-bios and stay tuned this session!

**Bayesian statistics and Bayesian inference spatial statistics**

Alexandra Schmidt
http://alex-schmidt.research.mcgill.ca/

Alexandra M. Schmidt is Professor of Biostatistics and the endowed University Chair in the Department of Epidemiology, Biostatistics and Occupational Health (E at McGill University. Currently, she is the Program Dire of the Biostatistics Graduate Program. She is an Electe Fellow of the American Statistical Association (2020) and an Elected Member of the International Statistical Institute (2010). She was awarded the Distinguished Achievement Medal (2017) from the American Statistical Association's Section on Statistics and the Environment and the Abdel El-Shaarawi Young Investigator Award (2008), from The International Environmetrics Society. She was the 2015 President of the International Society for Bayesian Analysis.

**Extreme value theory**

Ivette Gomes
https://www.researchgate.net/profile/Maria_Gomes17

Ivette Gomes is a principal researcher at CEAUL (Centre for Statistics and Applications, UL) since 1979, an Emeritus Professor at the Faculty of Science, University of Lisbon (UL), since 2017, and an Elective Member of the Academy of Sciences of Lisbon since 2018. She has a PhD in Statistics (University of She_eld, UK, 1978), an Habilitation Degree in Applied Mathematics (UL, 1982) and one of her main areas of research is Statistics of Extremes and Risk Evaluation. She was a founding member and President of the Portuguese Statistical Society (SPE) and among other

## US and Canada

**Session 16 (8:00pm-9:00pm)**

**Bayesian Statistics**

**Organizers: Xenia Miscouridou, Alejandra Avalos Pachecho (j-ISBA)**

In this session we have the pleasure to host three early career women researchers from the junior ISBA community. They will present recent advances in the broader area of Bayesian Statistics.
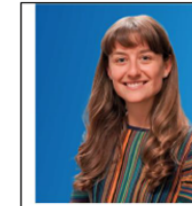
**Thinned Random Measures for Sparse Networks with Overlapping Communities**

Federica Zoe Ricci is a third year PhD candidate in the Department of Statistics at the University of California Irvine . Her PhD research focuses on Bayesian Nonparametric models and she is jointly advised by Erik Sudderth and Michele Guindani . She is interested in the analysis of network data, in classification tasks and recommendation systems and enjoys working on projects related to statistics and data science education. She created the R package gradetools to assist data science teachers with grading and providing feedback to their students.
https://federicazoe.github.io/

**Uncovering Product Cannibalisation using Multivariate Hawkes Processes**

Isabella Deutsch, M.Sc B.Sc is from Vienna, Austria and is currently living in Edinburgh, United Kingdom. She works as a Strategic Data Scientist and is PhD Student in Statistics, University of Edinburgh. She is the co-founder of the Piscopia Initiative. She serves as a student trustee and director at the Edinburgh University Students' Association.
www.isabelladeutsch.com

**Bayesian Design for Monitoring Coral Reefs**

Katie Buchhorn lived in Germany for 3.5 years where she began her career self-employed and with it built a life abroad. She returned home to work on model development / quantitative analysis and is now working in the field of applied statistics in an environmental context as a PhD candidate at Queensland University of Technology. She wrote "Wondrous Worlds: the Extraordinary Adventures of a Curious Mathematician."
www.wondrousworlds.com.au

https://github.com/KatieBuc

# Women Supporting Women

Video compilation of past president interviews
https://www.youtube.com/watch?v=MLX_tWNmS9s&t=21s





Donna Brogan celebrating CWS 50th Birthday at CWS Reception, JSM 2022.

# Diversity, Inclusion and Equity Efforts at St. Jude

St. Jude Children's Research Hospital®
Finding cures. Saving children.

# Tennessee



Capital: Nashville
Nickname: The Volunteer State
Population in 2020: 6.9 million
(15th most populous state)
Area: 109,247 km$^2$ (36th largest state)



Grand Ole Opry



Great Smoky Mountains National Park



Country Music Hall of Fame and Museum

# Memphis, Tennessee






National Civil Rights Museum






Graceland

Population (2020): 633,104
White: 27.1%
Black: 64.7%
Hispanic: 7.7%
Asian: 1.7%

Finding cures. Saving children.

# St. Jude Children's Research Hospital



SJCRH was founded by Danny Thomas in 1962. He made a promise to St. Jude Thaddeus, the patron saint of hopeless causes.

*"Show me my way in life, and I will build you a shrine."*

**Our mission statement**

The mission of St. Jude Children's Research Hospital is to advance cures, and means of prevention, for pediatric catastrophic diseases through research and treatment. Consistent with the vision of our founder Danny Thomas, no child is denied treatment based on race, religion or a family's ability to pay.
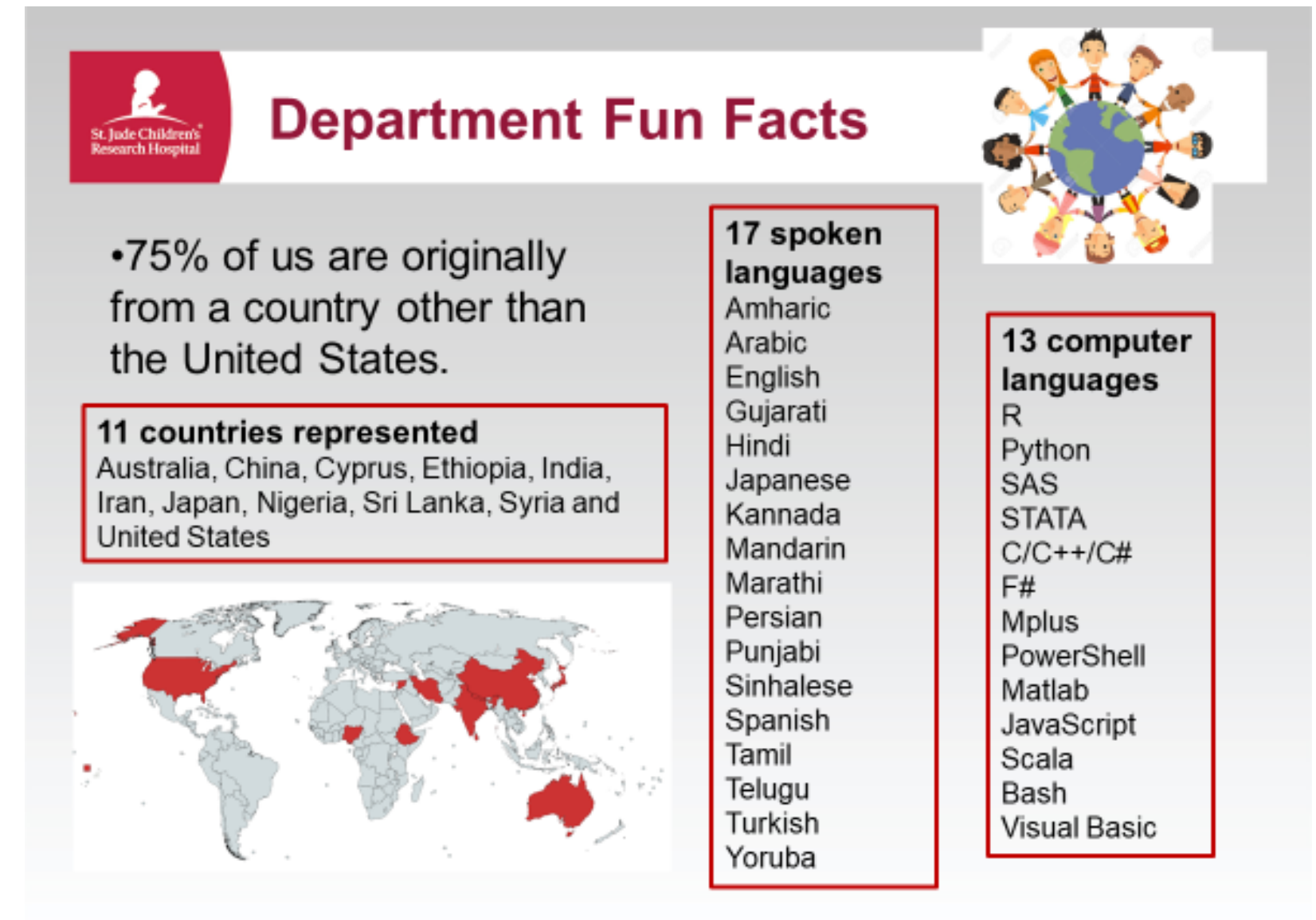
# St. Jude Children's Research Hospital

- Non-profit research hospital dedicated to care and research for children with catastrophic diseases
  - 80% cancer and 20% other difficult to treat diseases including sickle cell anemia
  - 90% of patients treated under clinical protocol
- ALSAC raises money for St. Jude
  - Patients and families do not pay for medical expenses
- Approximately 6,000 employees
- 22 academic departments
  - 12 clinical, 7 basic science and 3 data science departments
- All positions comparable to tenured or tenure-track

# Biostatistics Department

- A relatively large department consisting of 70 employees
    - 15 faculty, 30 staff, 8 computing personnel
- Typical faculty efforts distribution: 70% collaborative research and 30% independent research
- A team of faculty and staff is assigned to specific disease areas or departments to provide biostatistics collaboration and consulting
- 80% of all collaborative projects are clinical research
- Department is diverse and multi-cultural.



**Department Fun Facts**

•75% of us are originally from a country other than the United States.

**11 countries represented**
Australia, China, Cyprus, Ethiopia, India, Iran, Japan, Nigeria, Sri Lanka, Syria and United States

**17 spoken languages**
Amharic
Arabic
English
Gujarati
Hindi
Japanese
Kannada
Mandarin
Marathi
Persian
Punjabi
Sinhalese
Spanish
Tamil
Telugu
Turkish
Yoruba

**13 computer languages**
R
Python
SAS
STATA
C/C++/C#
F#
Mplus
PowerShell
Matlab
JavaScript
Scala
Bash
Visual Basic
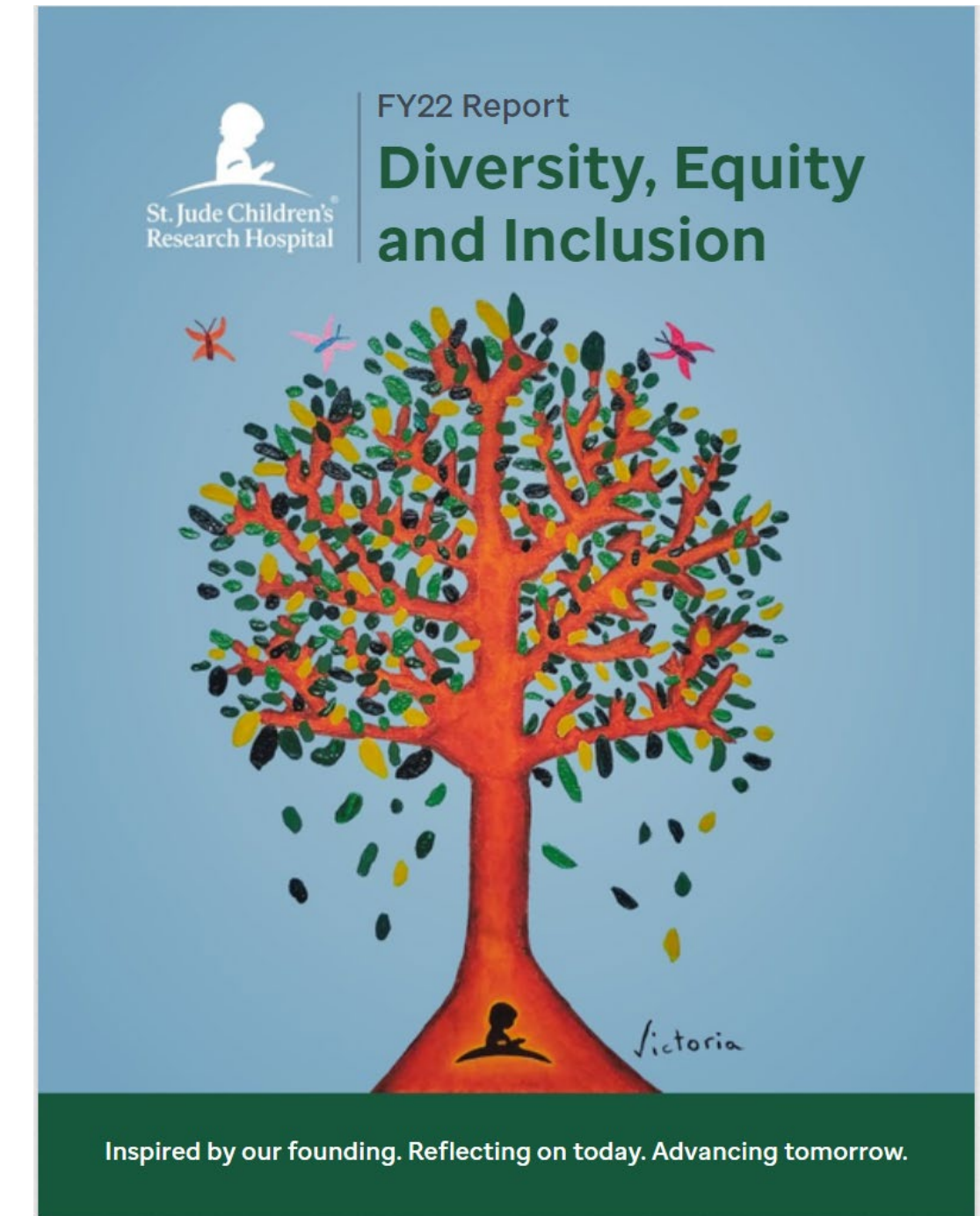
Finding cures. Saving children.

# Diversity, Equity and Inclusion Office



**FY22-27 Goals**

1. Infrastructure and Analytics
2. Leadership
3. Talent
4. Culture
5. Patients and Research Participants
6. Community
7. Reputation



FY22 Report
**Diversity, Equity and Inclusion**

St. Jude Children's Research Hospital

Inspired by our founding. Reflecting on today. Advancing tomorrow.



**Beyond the Dream: Living out the Legacy of MLK**

# Women in Leadership + Learning (WILL)

**WILL Vision Statement**

To ensure that St. Jude is a supportive, equitable workplace free of barriers for women to work, advance and lead.

**WILL Program Goals**

• Empower women with the tools and resources to thrive in their leadership and career journeys

• Develop champions to support, mentor, sponsor and empower women leaders of today and tomorrow

• Explore how St. Jude's culture and policies can contribute to a safe, equitable and inclusive place for women, honoring intersectionality

# Program Description

- 30 women faculty of all ranks (instructor, assistant, associate and full) are selected after open application period.

- 10 champions who hold a senior leadership position (EVP, SVP, department chairs) are invited to participate and serve as a champion to a group of three women.

- A champion is assigned to each group to provide mentoring, coaching and sponsorship.

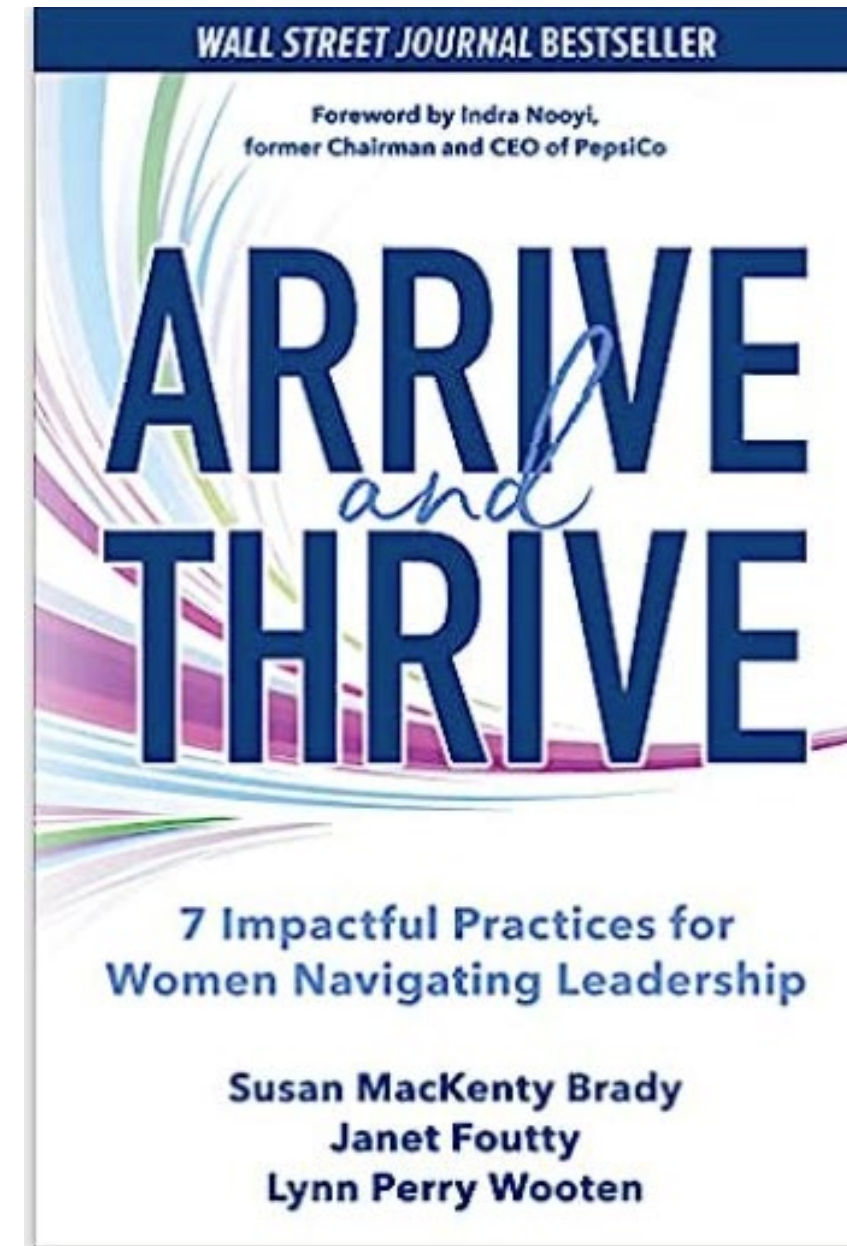- Both women participants and champions learn together.

# Simons University Institute of Inclusive Leadership



**INSTITUTE STAFF**

## Susan MacKenty Brady

Deloitte Ellen Gabriel Chair for Women & Leadership
CEO, Simmons University Institute for Inclusive Leadership
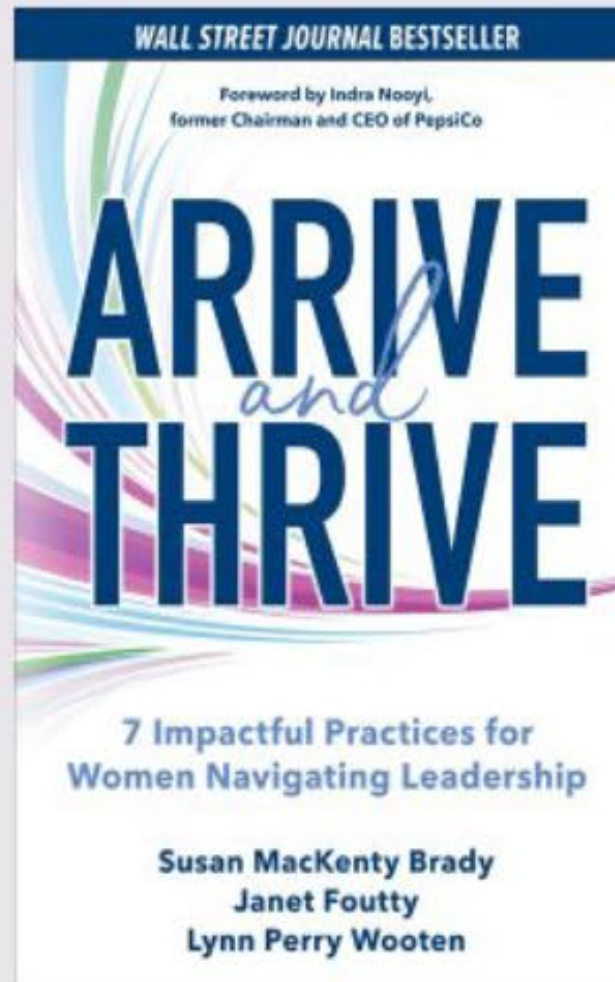


Simmons University Institute for Inclusive Leadership

S. Brady | Simmons University Institute for Inclusive Leadership
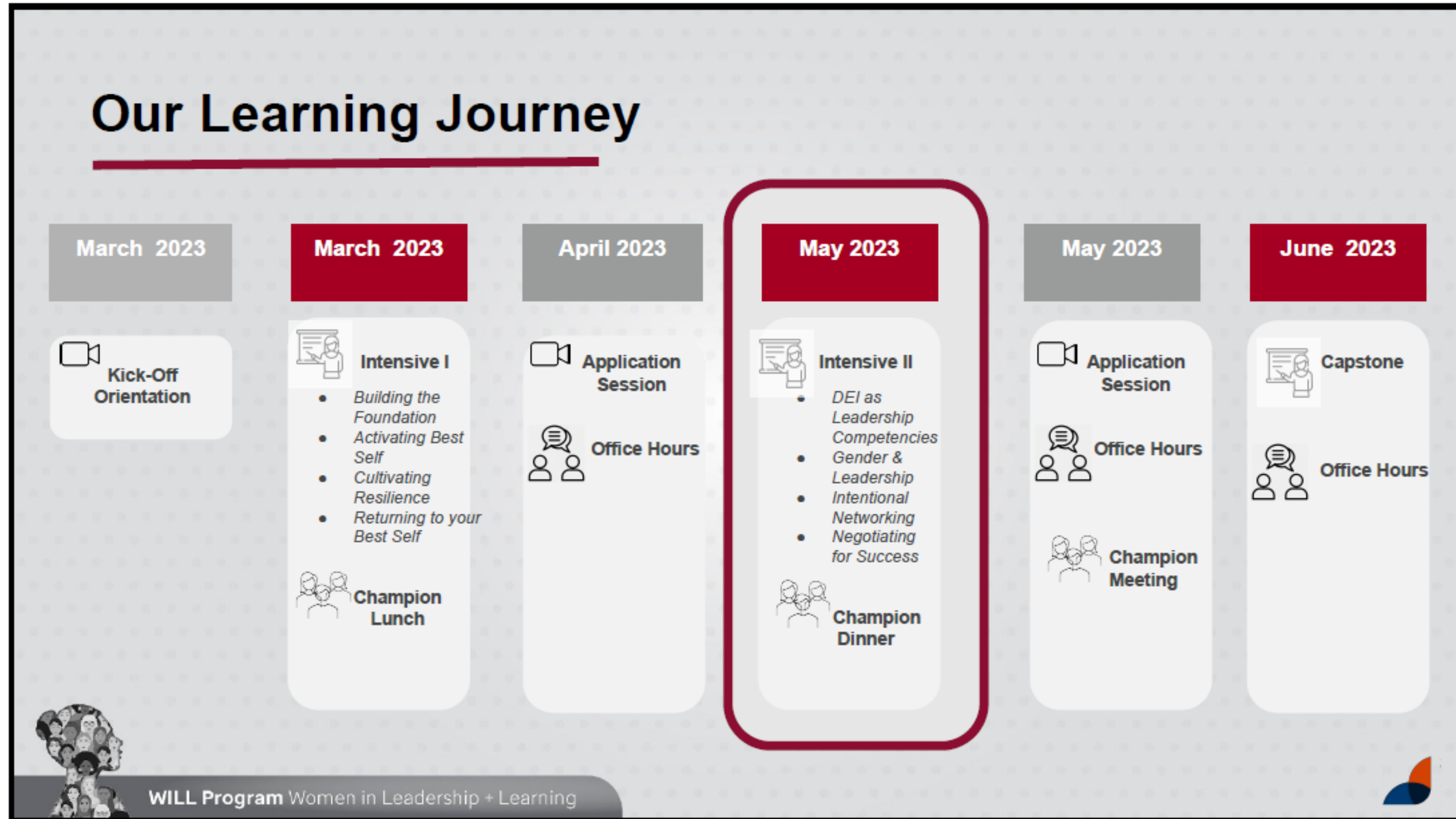
# Topics Covered in the Program

**The 7 Practices**

WALL STREET JOURNAL BESTSELLER

Foreword by Indra Nooyi,
former Chairman and CEO of PepsiCo

**ARRIVE**
*and*
**THRIVE**

**7 Impactful Practices for
Women Navigating Leadership**

**Susan MacKenty Brady
Janet Foutty
Lynn Perry Wooten**

1. Investing in Your Best Self

2. Embracing Authenticity

3. Cultivating Courage

4. Fostering Resilience

5. Inspiring a Bold Vision

6. Creating a Healthy Team Environment

7. Committing to the Work
   of an Inclusive Leader

# WILL Curriculum



## Our Learning Journey

| March 2023 | March 2023 | April 2023 | May 2023 | May 2023 | June 2023 |
|---|---|---|---|---|---|
| Kick-Off Orientation | Intensive I<br>• Building the Foundation<br>• Activating Best Self<br>• Cultivating Resilience<br>• Returning to your Best Self<br><br>Champion Lunch | Application Session<br><br>Office Hours | Intensive II<br>• DEI as Leadership Competencies<br>• Gender & Leadership<br>• Intentional Networking<br>• Negotiating for Success<br><br>Champion Dinner | Application Session<br><br>Office Hours<br><br>Champion Meeting | Capstone<br><br>Office Hours |

**WILL Program** Women in Leadership + Learning

Finding cures. Saving children.

# Returning to Best Self with Susan Brady



How **harshness** robs your Best Self

HARSH ABOUT SELF

YOUR BEST SELF

HARSH ABOUT OTHERS

# Leading in a Gendered World with Elisa van Dam

Finding cures. Saving children.

# DEI as Leadership Competencies with Darlene Slaughter
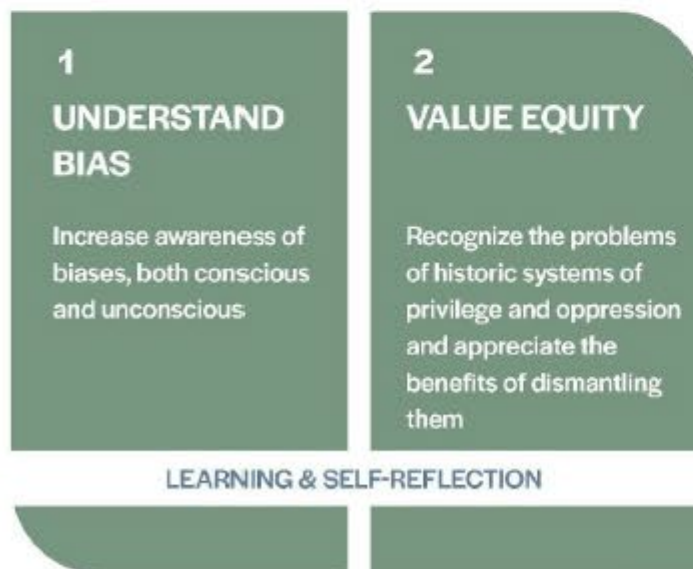
# Exercise



## 7 Questions to Courageous Action™

1. Is this important? Why? **YES**

2. Is this the right time? Why? **YES**

3. What is the best thing that could happen? And then what?

4. What is the worst thing that could happen? And then what?

5. What don't I know?

6. Who can help? How?

7. How can I take a small step?

# Current Status

- Two cohorts completed the program, Fall 2022 and Spring 2023. Approximately 60 women faculty participated, representing 40% of all women faculty at St. Jude.

- The evaluation was overwhelmingly positive with many appreciating the opportunity to network with women faculty in other departments.

- The program received the support from the executive leadership and will continue next year.

- There has been discussion to expand the program to include non-faculty (professional staff) as well as to create a more general leadership program for both men and women.

# Where Are We Now and Where Can We Go?

# Women in Leadership

## Women in Leadership: Challenges and Recommendations

Even in top positions, women face challenges within institutional structures, systems and mind-sets that require transformative change, argue M. Cristina Alcalde and Mangala Subramaniam.

By M. Cristina Alcalde and Mangala Subramaniam · Published July 17, 2020

https://www.insidehighered.com/views/2020/07/17/women-leadership-academe-still-face-challenges-structures-systems-and-mind-sets
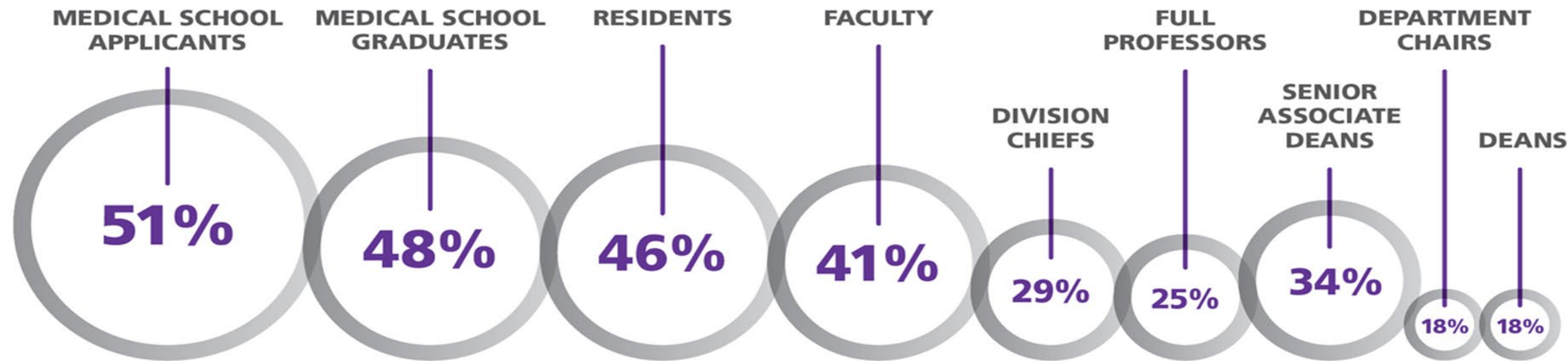
"Women hold the least senior administrative positions and are the lowest paid among higher ed administrators. The picture is starker for women of color: in 2016, only 14 percent of higher ed administrators – men and women were racial or ethnic minorities."

# Executive Summary

AAMC

## REPRESENTATION OF WOMEN IN ACADEMIC MEDICINE 2018-2019

MEDICAL SCHOOL APPLICANTS — **51%**

MEDICAL SCHOOL GRADUATES — **48%**

RESIDENTS — **46%**

FACULTY — **41%**

DIVISION CHIEFS — **29%**

FULL PROFESSORS — **25%**

SENIOR ASSOCIATE DEANS — **34%**

DEPARTMENT CHAIRS — **18%**

DEANS — **18%**

https://www.aamc.org/data-reports/data/2018-2019-state-women-academic-medicine-exploring-pathways-equity

EXECUTIVE SUMMARY

Association of
American Medical Colleges

Finding cures. Saving children.

# Progress of Women in Statistics

- A dramatic increase in bachelor's and master's degrees awarded during the last 20 years.

- A steady increase in PhD degree awarded.

- Women representation in PhDs improved from 25% in 1987 to 40% in 2020.





https://magazine.amstat.org/blog/2021/10/01/undergrad-stats-degrees-up/
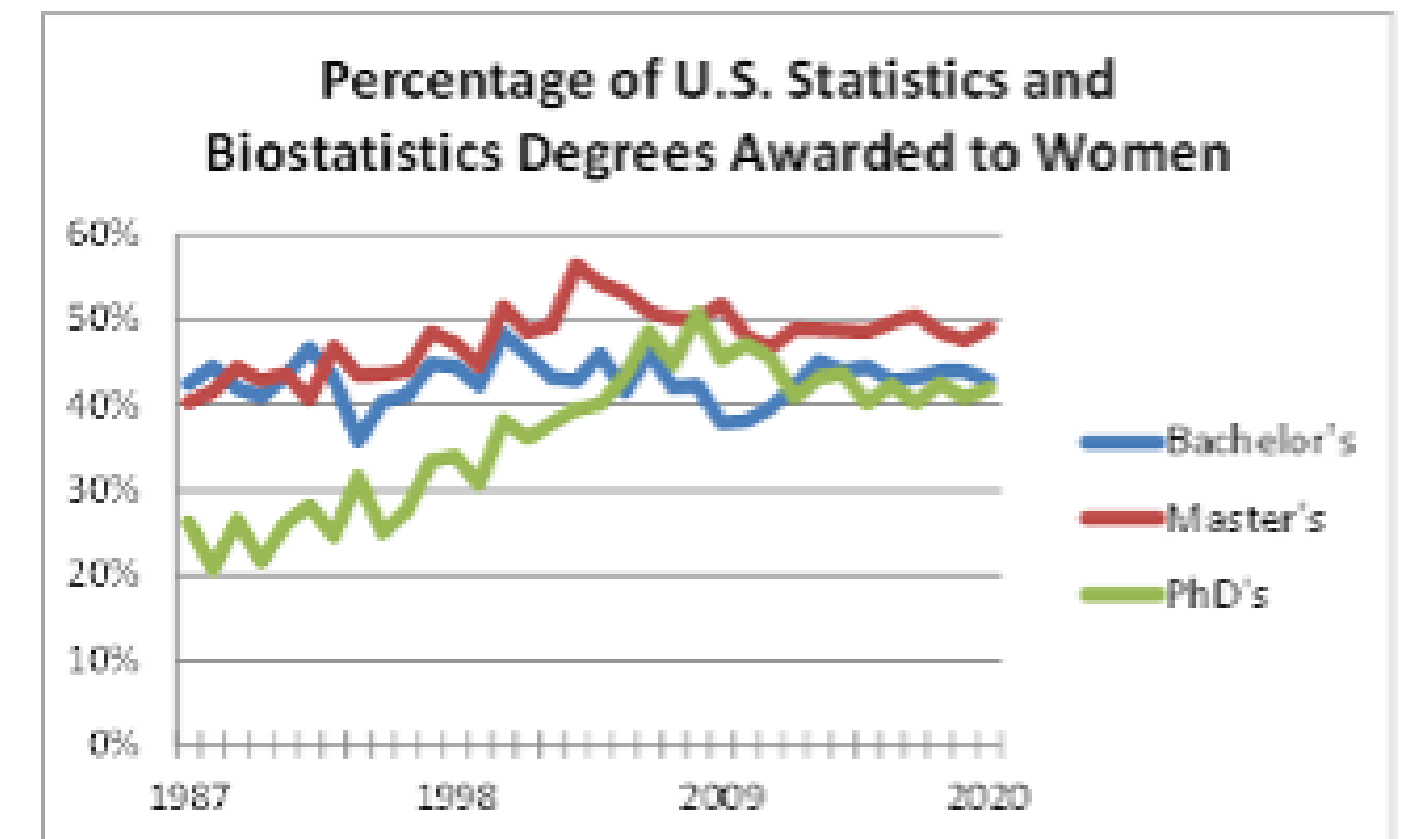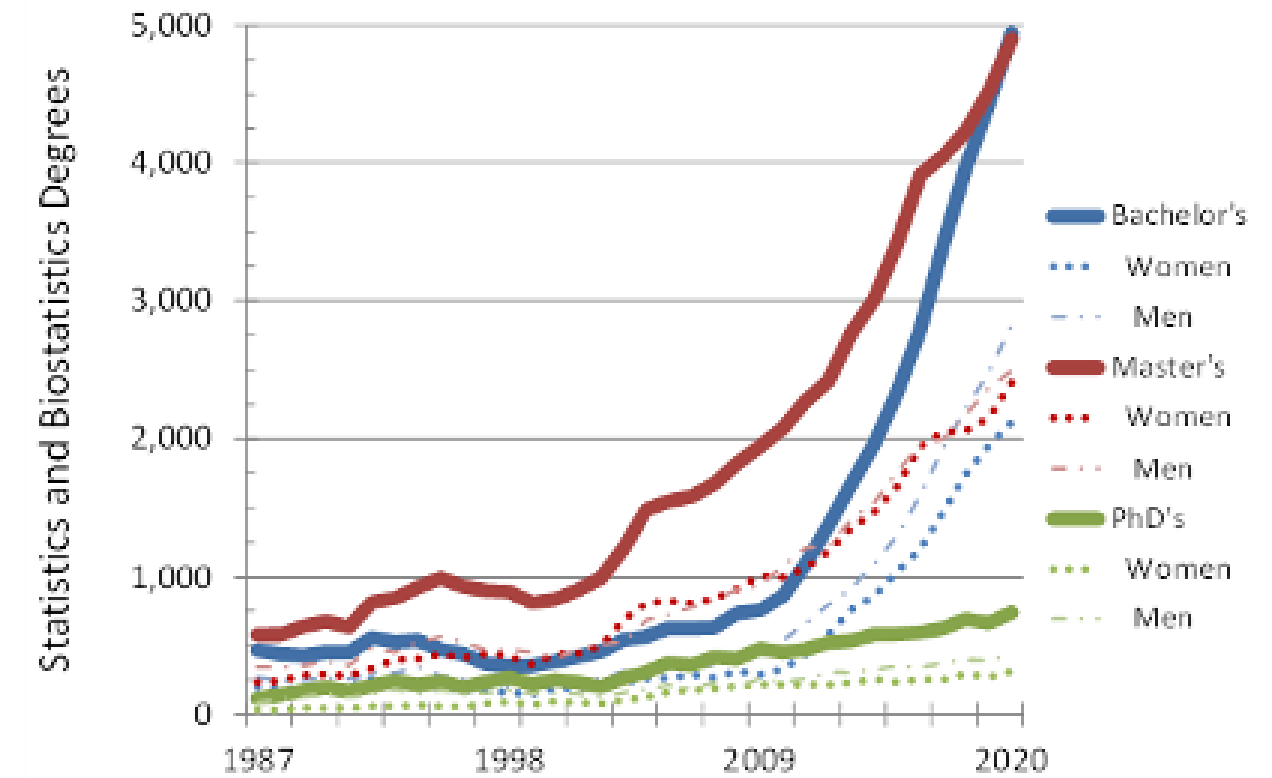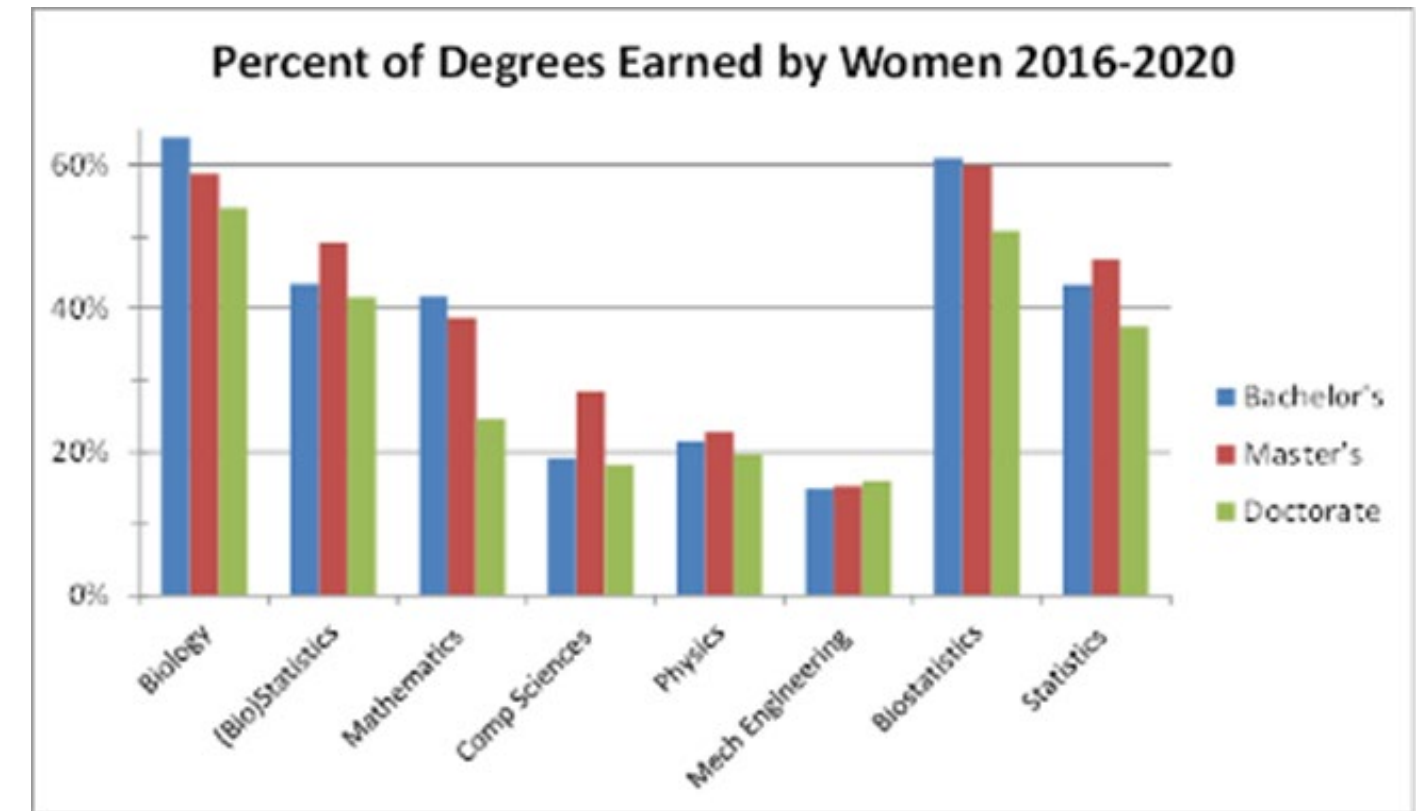
# Still More to Do

- Gender disparity is even more prominent in other data science fields, less than 20% PhDs awarded to women in computer sciences and physics and mechanical engineering.

- ASA also released 2020 Work and Salary Survey conducted by Langer Research Associates. The report states:

  - "Women tend to make less, both in base salary and total employment income, with gaps growing wider through mid-career."

  - "More men than women were full professors, 43 vs. 25 percent, though rates at the associate and assistant levels were more comparable."

  - "Forty-five percent of men were fully tenured, compared with 32 percent."



Percent of Degrees Earned by Women 2016-2020

https://www.amstat.org/asa/files/pdfs/YCR-2020WorkandSalarySurvey.pdf

# Opportunities



- Create a network of women statisticians and data scientists
- Nurture the network
- Share stories, challenges and support each other
- Reach out to other international groups
  - CWS, ASA JEDI Outreach Group, ASA Committee on Women In Statistics (CoWiS)
- Engage in sponsorship and advocacy
- Together we can break the glass ceiling!

"The term *glass ceiling* refers to the sometimes invisible barrier to success that many women come up against in their careers." It was first coined by Marilyn Loden almost 40 years ago.
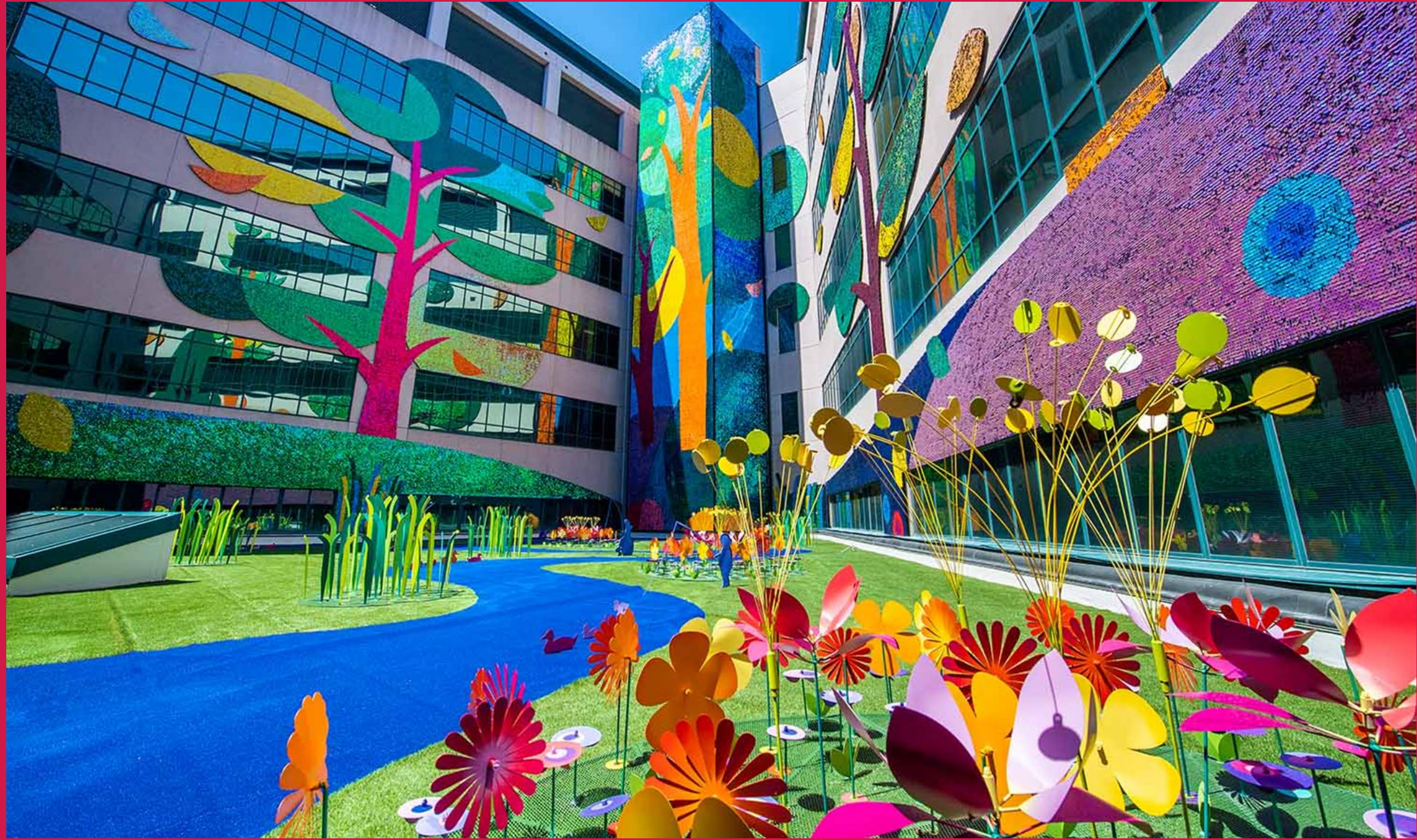https://www.bbc.com/news/world-42026266

**Special Thank-You to Professors
Tomoko Matsui,
Mihoko Minami,
Kozo Kitamura,
ISM Director Tsubaki and Deputy
Director Kawasaki**

**Thank You for Your Attention.**