

SCIENCE at *Cal*
scienceatcal.berkeley.edu

Annual Report

DECEMBER 2021

The
Lawrence
Hall of
Science
UNIVERSITY OF CALIFORNIA, BERKELEY

Berkeley
UNIVERSITY OF CALIFORNIA



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About Science at Cal

Our Mission

Science at Cal connects UC Berkeley Science, Technology, Engineering and Mathematics (STEM) researchers with diverse community groups of all ages and backgrounds, for science engagement and learning. Accessibility, inclusiveness, creativity and innovation are hallmarks of Science at Cal events, which reach tens of thousands of people annually.

Throughout the year, Science at Cal presents ongoing, free outreach programs in STEM and other disciplines, helps promote other groups' related efforts, and creates new programs and initiatives at Berkeley and in the community. This broad scope of activities is made possible by Science at Cal's dynamic network of campus alliances and valuable community partnerships.

Our Vision

In 2008, Science at Cal was envisioned as a unifying effort to raise public awareness, understanding and appreciation of scientific research at Berkeley. To realize this vision, we engage the vast Berkeley STEM community as science communicators and foster creative collaborations among campus and community-based groups who share our commitment to equity and inclusion in STEM education and careers.

Letter from the Director

Dear Science at Cal Community,

With almost a year of COVID behind us, we started 2021 a little bit the wiser and ready to continue to do what we do best: expose the world to the best and brightest STEM researchers from across UC Berkeley's campus. Traditionally, you could find within lectures halls, cafes, bars, libraries, and restaurants... and at festivals, street fairs, farmers' markets, and more! There was a glimmer of hope we'd be seeing you in person again—even if masked; even if six feet apart—but with county-wide and university guidelines in place, we had to postpone live events until 2022. But that couldn't stop us from charging forward, and, as a result, it has been a busy year of virtual events. Like most of you, Zoom has become our best friend!

Besides looking forward, we've also taken

some time to look back. How has Science at Cal historically served the communities we hope to reach, both internally at UC Berkeley (like Cal's STEM researchers and students) and externally (like campus visitors, lecture attendees, and event participants)? Do our activities support our mission? (Spoiler: They do!)

Naturally, we've taken a scientific approach to measuring our impact. In this report, you'll see the culmination of a year and a half long effort to collect and analyze data about who we are, whom we serve, and most importantly, how we can improve. Speaking of looking forward, we are *really* excited to see you in person again soon... so stay tuned!

With much gratitude,

Dione Rossiter, Ph.D., Executive Director



2021 Goals, Motivations & Tasks (oh my)

Goal: Expand Science at Cal's reach and audience; focus on diversity and inclusion.

- ✓ Task: Learn & employ strategies for inclusive/accessible events

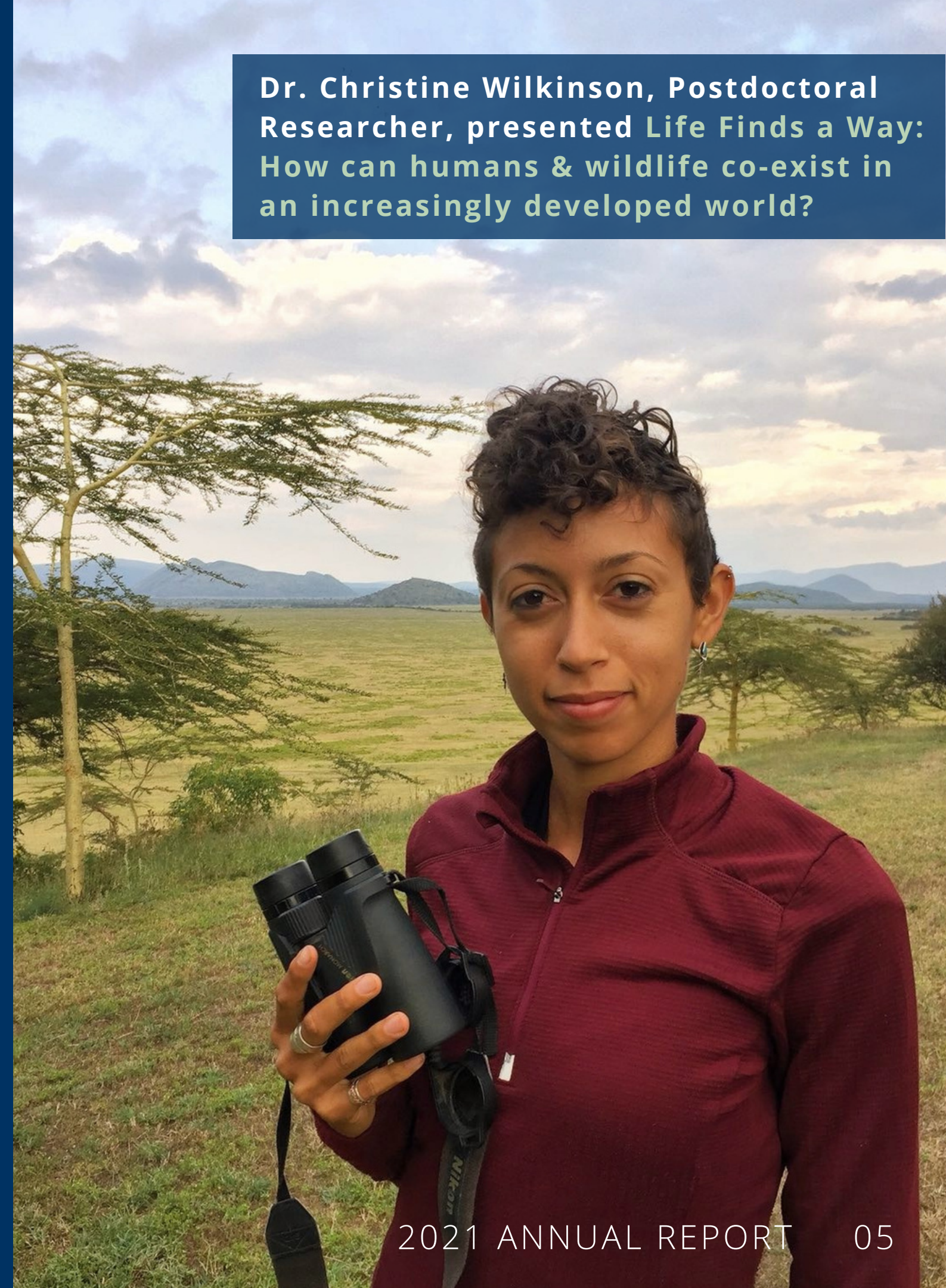
Motivation: Understand our audience.

- ✓ Task: Find and clean past listservs to understand historical audience
- ✓ Task: Better survey our current audience
 - ✓ Add gender, age, race, affiliation questions in registration
- ✓ Task: Create historical archive/database of events & speakers

Motivation: Understand our impact.

- ✓ Task: Compare past and present data to understand reach both in terms opportunities presented to STEM researchers and community members served.

Dr. Christine Wilkinson, Postdoctoral Researcher, presented **Life Finds a Way: How can humans & wildlife co-exist in an increasingly developed world?**



2022 Goals, Motivations & Tasks (oh my)

Goal: Expand Science at Cal's reach and audience; focus on diversity and inclusion cont.

- Task: Expand Caminos de la Ciencia program

Motivation: Reach underserved groups identified through 2021 research

- Task: Create marketing goals and plans targeted to underserved (by SciatCal) groups
- Evaluate effectiveness of those efforts

Goal: Bring in Support for Science at Cal

- Task: Review and compile data to use when seeking donations, foundation support, and grants

Dr. Charles Marshall, Professor
& Director of the UC Museum
of Paleontology, presented
On the Origin of Life



2021 Virtual Event Highlights

21 Events

36 Total speakers

2008 Total virtual attendees

5481 Total YouTube views

In 2021, Science at Cal presented an all virtual line-up, focusing our efforts on online lecture events.

In addition to our monthly lecture events, pre-COVID, you could see Science at Cal scientists all over our community, participating in the Bay Area Science Festival, Cal Day, farmers' markets, and street fairs, to name a few. Since many of those venues

temporarily closed during COVID, all of our programming for 2021—and therefore, all of the 2021 data presented hereafter*—comes from three staple programs moved virtual:

Lecture Series

Originating in 2009 and bit more formal than the rest of our offerings, the Science at Cal Lecture Series features in-depth public science lectures from renowned UC Berkeley researchers.

Grounds for Science

Grounds for Science is a public science talk series that includes exciting short talks on cutting-edge topics organized by and featuring UC Berkeley graduate students.

Midday Science Cafe

Brought to you by UC Berkeley's Science at Cal and Berkeley Lab's Government & Community Relations Office, Midday Science Cafe is a virtual series that highlights compelling and complementary research from both institutions.

*Science at Cal did not collect audience demographics data until 2021; therefore, only 2021 audience demographics data is presented. Science at Cal speaker demographics data spans as far back as 2010; therefore, 2021 speaker demographics data is compared to 2010–2021 data, labeled as "Cumulative."

Nina Sokolov, Graduate Student, presented: The Bees' Disease: How Do Bees Get Sick?

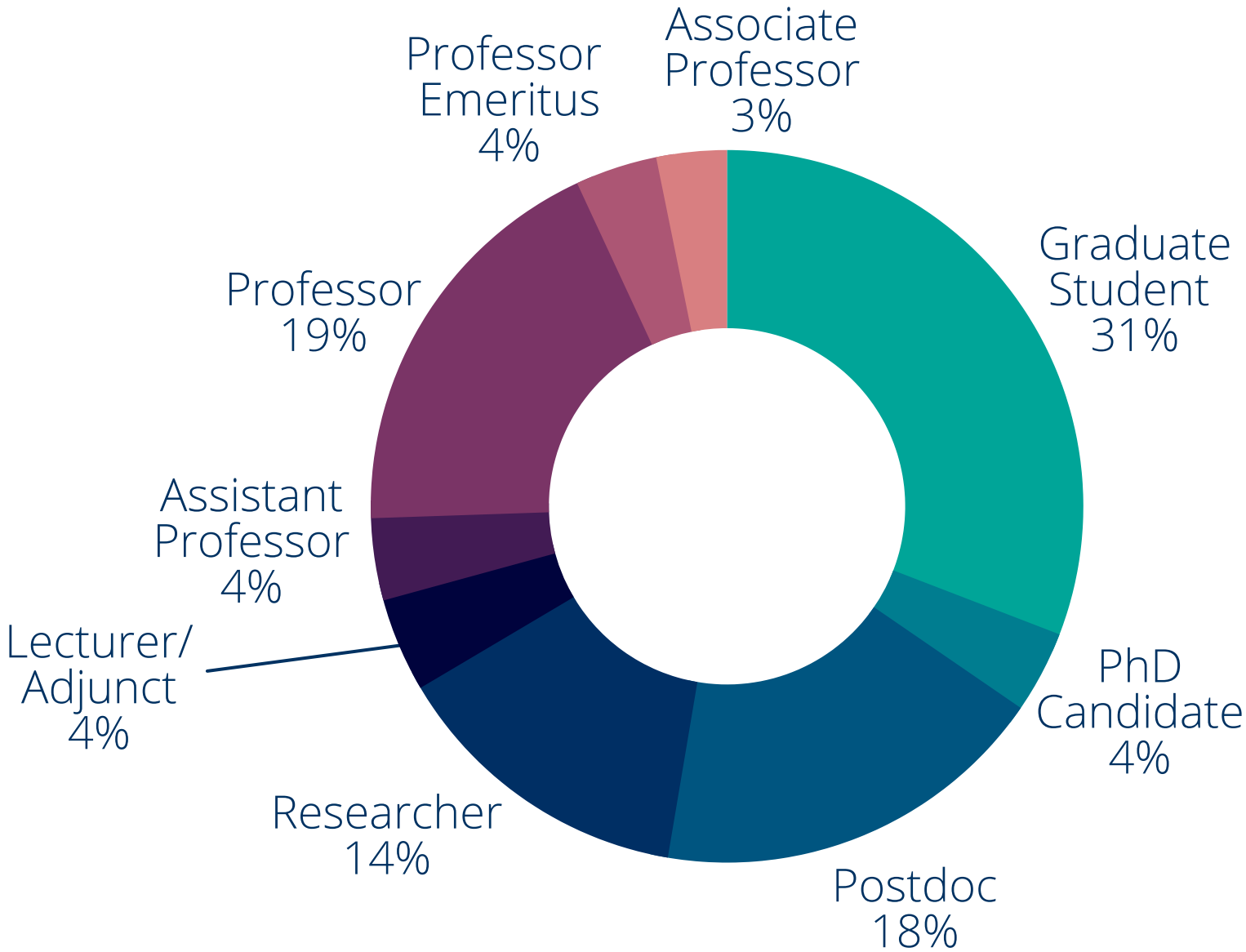
Speaker Demographics



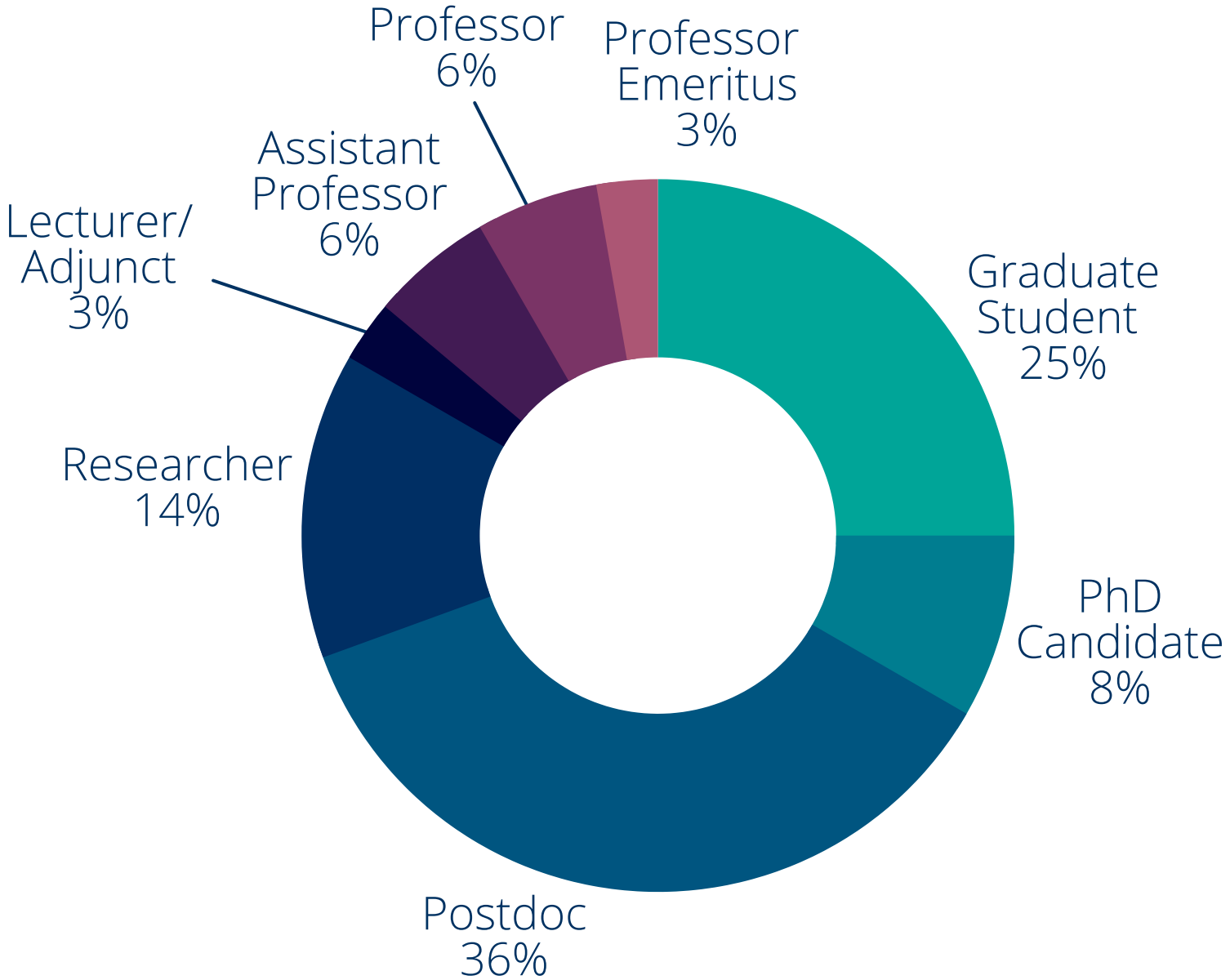
Career Phase

With the addition of Midday Science Cafe in 2020, our events now feature a higher percentage of early-career scientists than historically (69% in 2021 compared to 53% cumulatively). Science at Cal provides young professionals access to outreach opportunities and one-on-one science communication training they would not be exposed to otherwise.

Cumulative



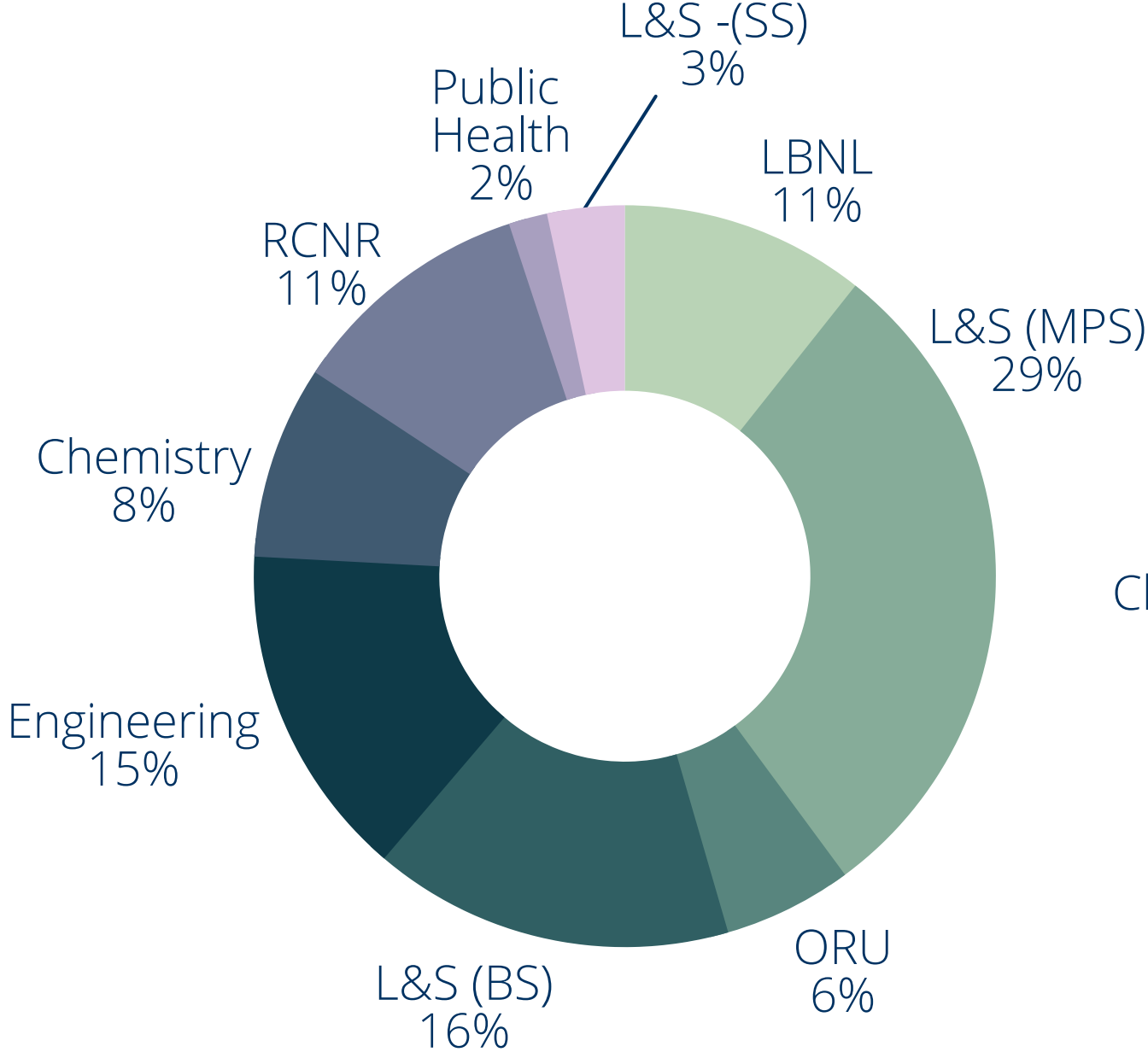
2021



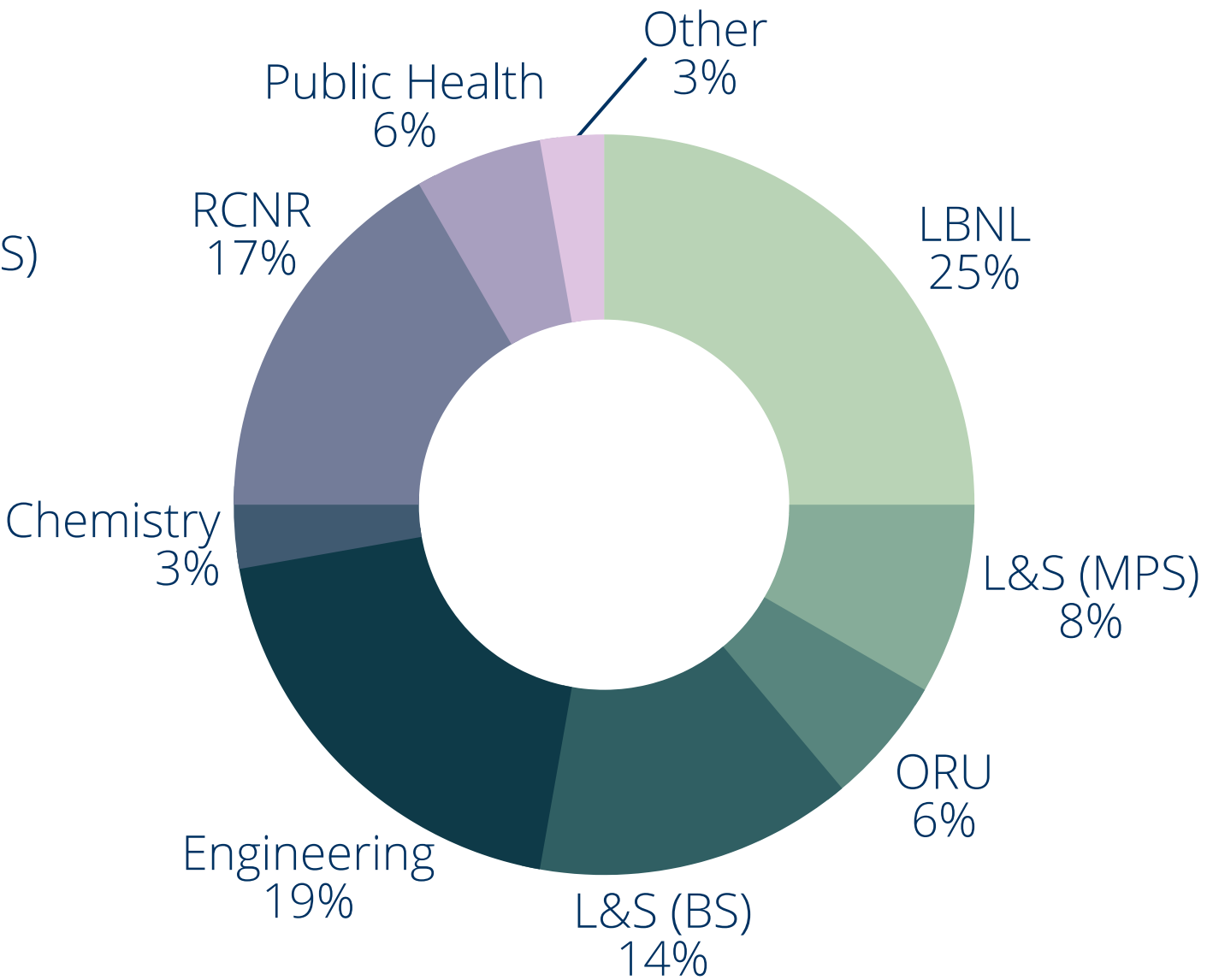
College/Division

Science at Cal features a wide variety of scientific disciplines by ensuring representation across the university's numerous STEM colleges, divisions, and departments.

Cumulative



2021



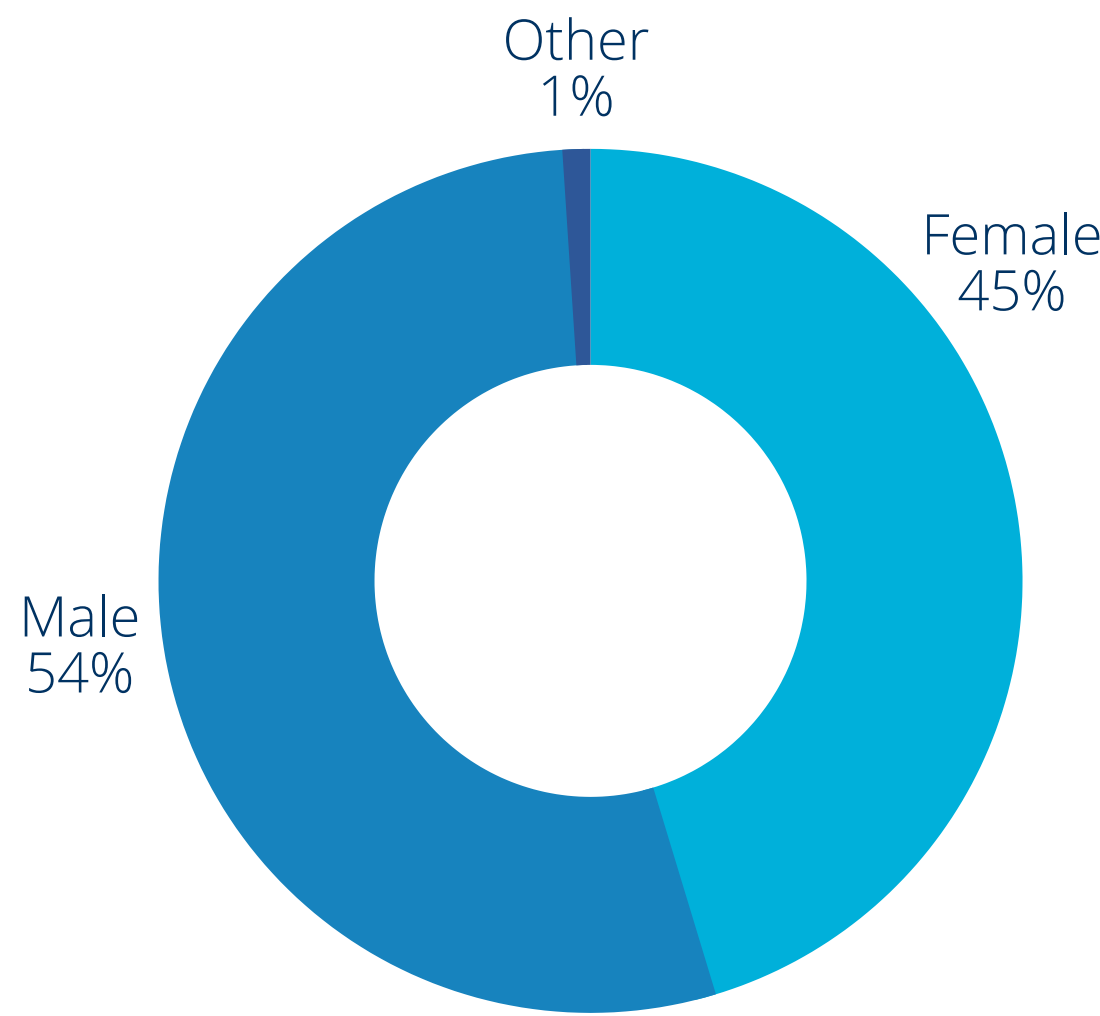
Legend

L&S (SS)	Letters & Science, Social Sciences
L&S (MPS)	Letters & Science, Mathematics and Physical Sciences
L&S (BS)	Letters & Science, Biological Sciences
RCNR	Rausser College of Natural Resources
LBNL	Lawrence Berkeley National Lab
ORU	Organized Research Unit

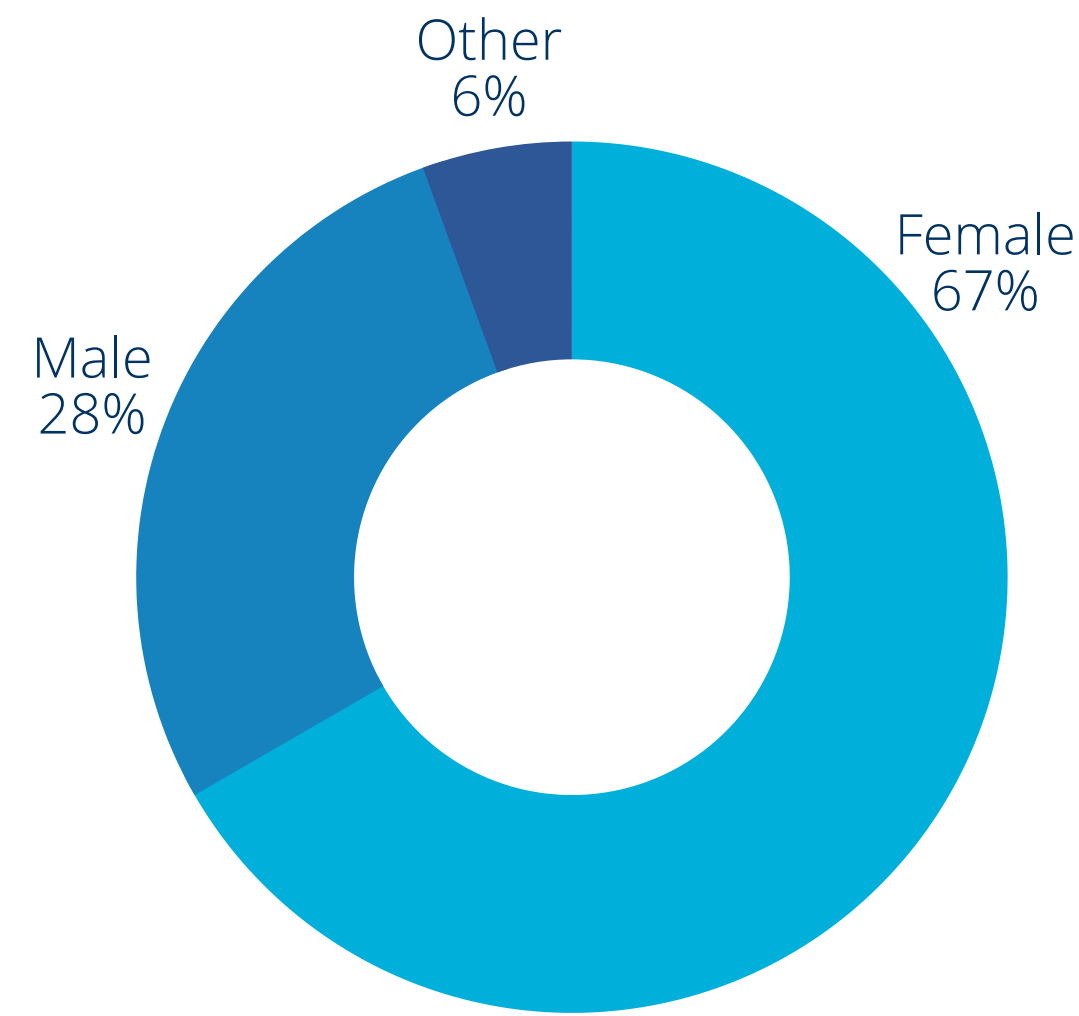
Gender

In 2021, we featured more women and nonbinary scientists than historically, surpassing UC Berkeley's gender distribution for graduate students and faculty.

Cumulative



2021



UC Berkeley

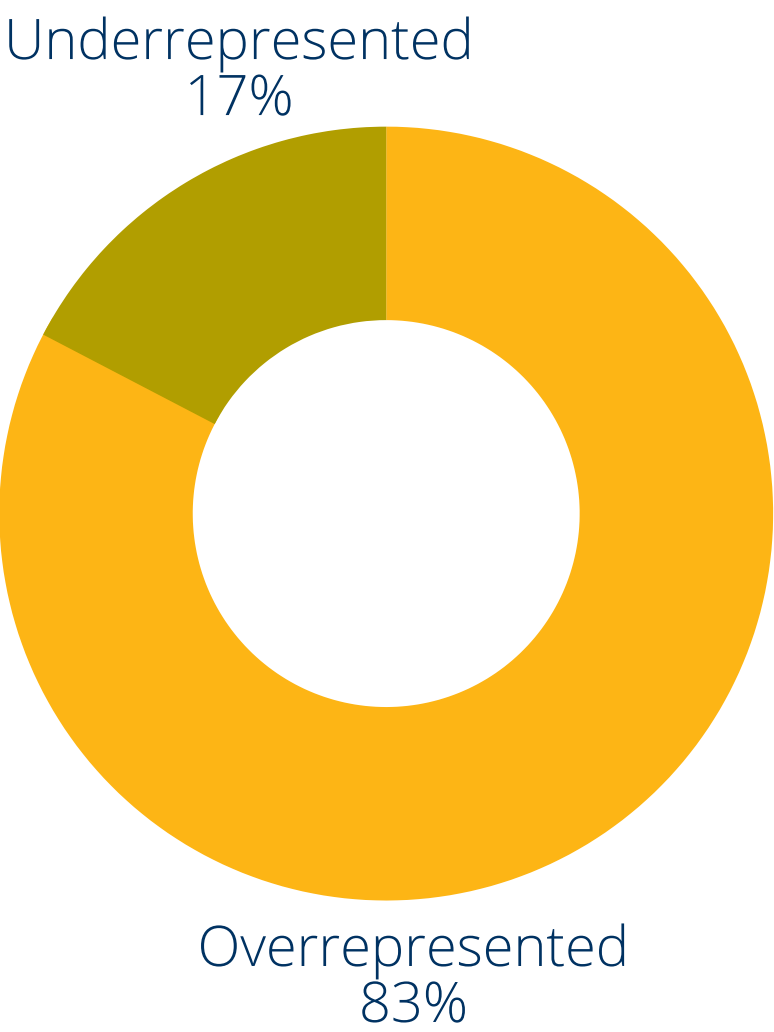
Graduate Students
46% are women
1% are transgender/gender non-conforming*
Faculty
34% are women
1% are transgender/gender non-conforming

Ref: [UC Berkeley Data](#)

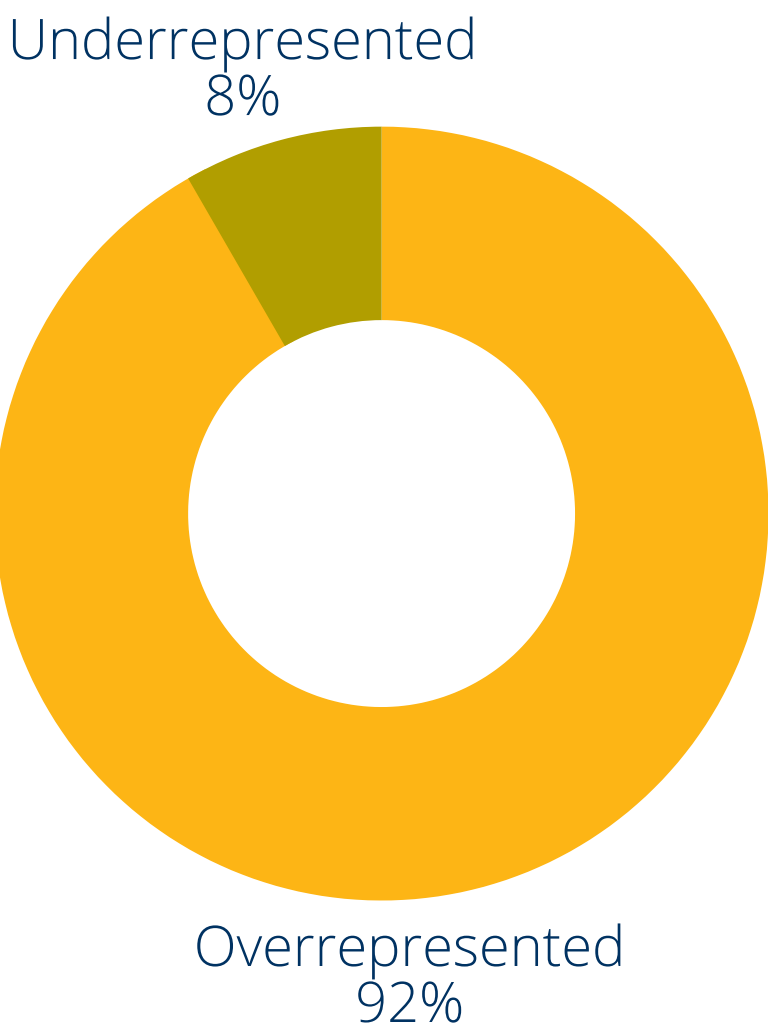
Race

More attention is needed to feature scientists from historically underrepresented groups in STEM at Science at Cal events. Not only will recruiting more underrepresented scientists diversify our programs, it will provide professional development opportunities for scientists of color and provide examples of non-white, non-male scientists for communities in and around UC Berkeley.

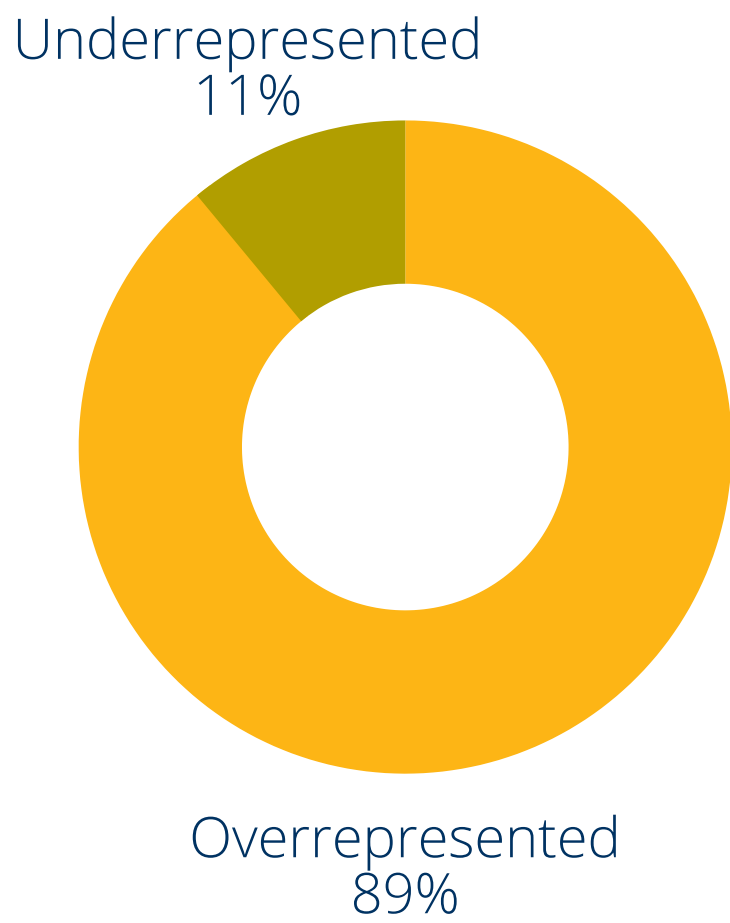
Cumulative



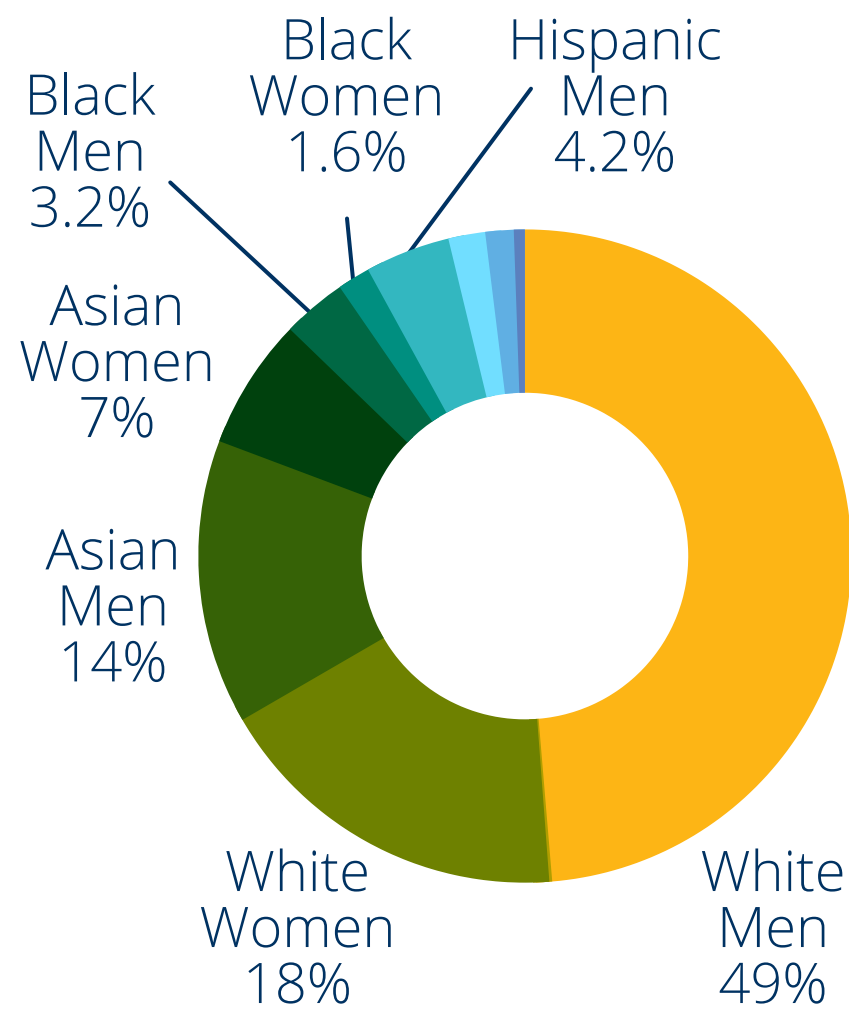
2021



UC Berkeley Faculty



All STEM Careers

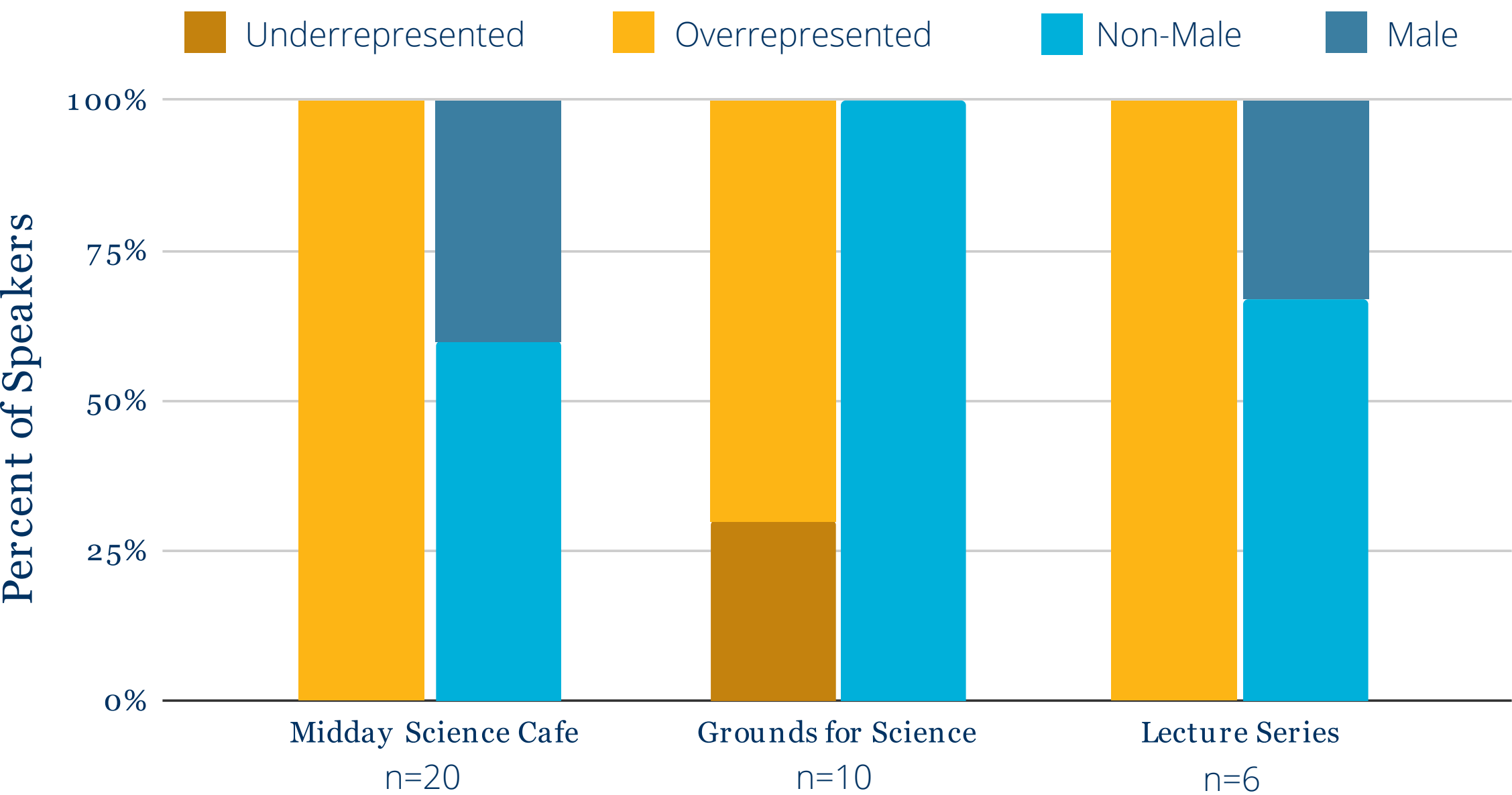


Underrepresented groups are African American, Chicano/Latino, Native American/Alaska Native, and Pacific Islander. Overrepresented groups are White and Asian. Ref: [UC Berkeley Faculty Data](#) (2020); [NSF All STEM Careers Data](#) (2015).

Diversity by Event

Science at Cal's Grounds for Science series offers a model for increasing the number of historically underrepresented scientists featured in events. Grounds for Science showcases graduate students, offering a more diverse pool of speakers than any other career phase due to discrimination and barriers to success for women and minorities further along in their careers (often referred to as the "leaky pipeline").

2021 Speaker Diversity Metrics



Speaker Testimonials

“

“Working with Science at Cal was a great experience—I am very appreciative of the opportunity I had to workshop and practice



my presentation with a patient, knowledgeable team. **The COVID-19 pandemic really drove home the importance of science communication.** I really enjoyed learning how to best communicate my research

findings to people outside my discipline, and I took away a lot of skills I know I'll use in the future.”

**Navya Pothamsetty, Graduate Student,
Depts. of Epidemiology and Biostatistics
Grounds for Science – Representation in Research: The
Case of Post-Traumatic Stress Disorder & Heart Disease**

Hear from Berkeley's STEM research community about their experiences working with Science at Cal.

“

"I enjoyed the level of feedback I got during our prep sessions. In particular, I appreciated the balance between positive encouragement and frank but constructive comments on clearly communicating to a broad audience. **I left feeling like I got a nice crash course on public outreach.** I would definitely recommend the experience to any of my colleagues."

**Dr. Kyle Meyer,
Postdoctoral Researcher,
Dept. of Integrative Biology
Midday Science Cafe –
Microbiomes: From fields of
leaves to under the seas**





It was an absolute privilege to take part in Science at Cal. I had timed a 45 minute talk, and spent the same amount of time answering insightful questions from a curious and engaged audience. Dee made the experience run seamlessly, which is more remarkable during the difficult times of Zoom. What a pleasure!"

Dr. Harriet Lau, Assistant Professor, Dept. of Earth & Planetary Science
Lecture – What can studying Earth's tiny vibrations teach us about our planet?



I was extremely appreciative of the opportunity to share my research with a general audience through Science at Cal. **The greatest impact of the program for me was the help in crafting an accessible and engaging presentation about the science I do every day.**

Sometimes during the PhD, it can become easy to get lost in the research; Science at Cal does a phenomenal job coaching graduate students and preparing them to give compelling public talks about science. The experience taught me how to be a more effective science communicator."

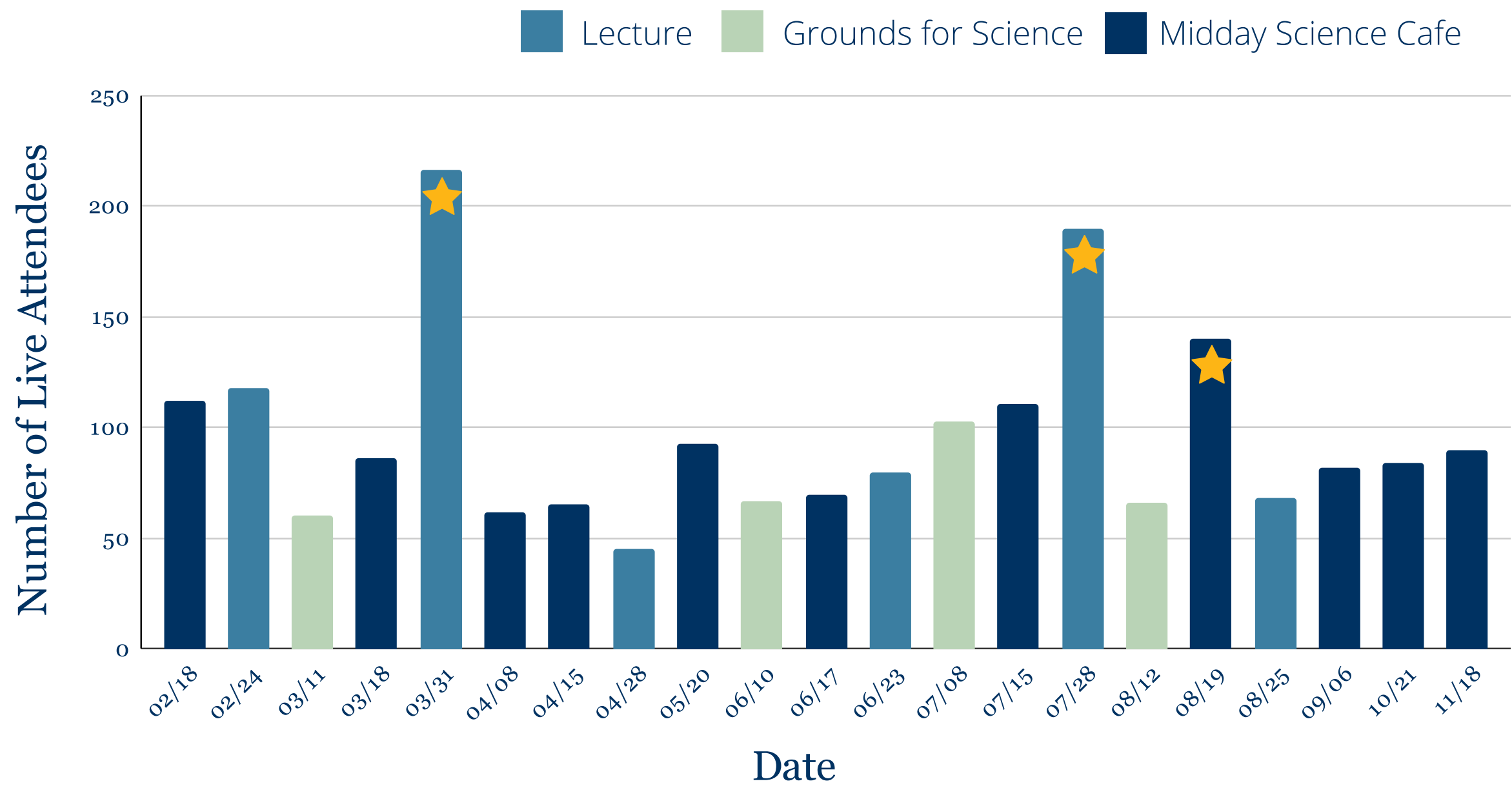


Sarah Hartman, PhD Candidate, Dept. of Environmental Science, Policy, and Management
Grounds for Science – Product of Mexico: The Socio-Environmental Impacts of Food Trade

Audience Demographics



Zoom Attendance



★ The top three most-attended events were:

216

Lecture – On the Origin of Life

190

Lecture – The Science of Happiness

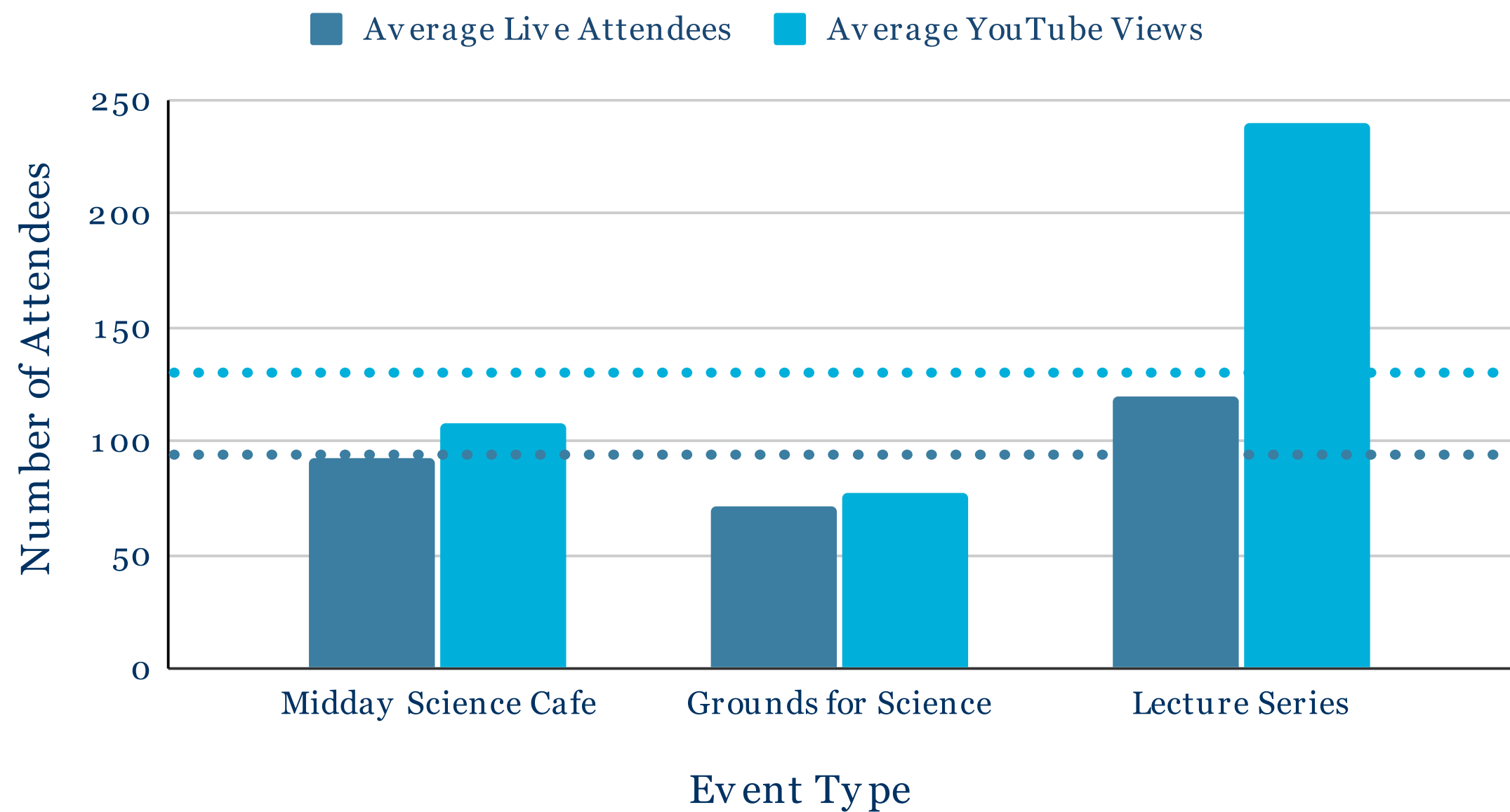
140

Midday Science Cafe – The Periodic Table

Zoom vs YouTube Viewership

Lectures are Science at Cal's most highly-attended virtual event, both live and post-event on YouTube. YouTube more than doubles our viewership on average.

Average Live Attendance and YouTube Views by Event Type

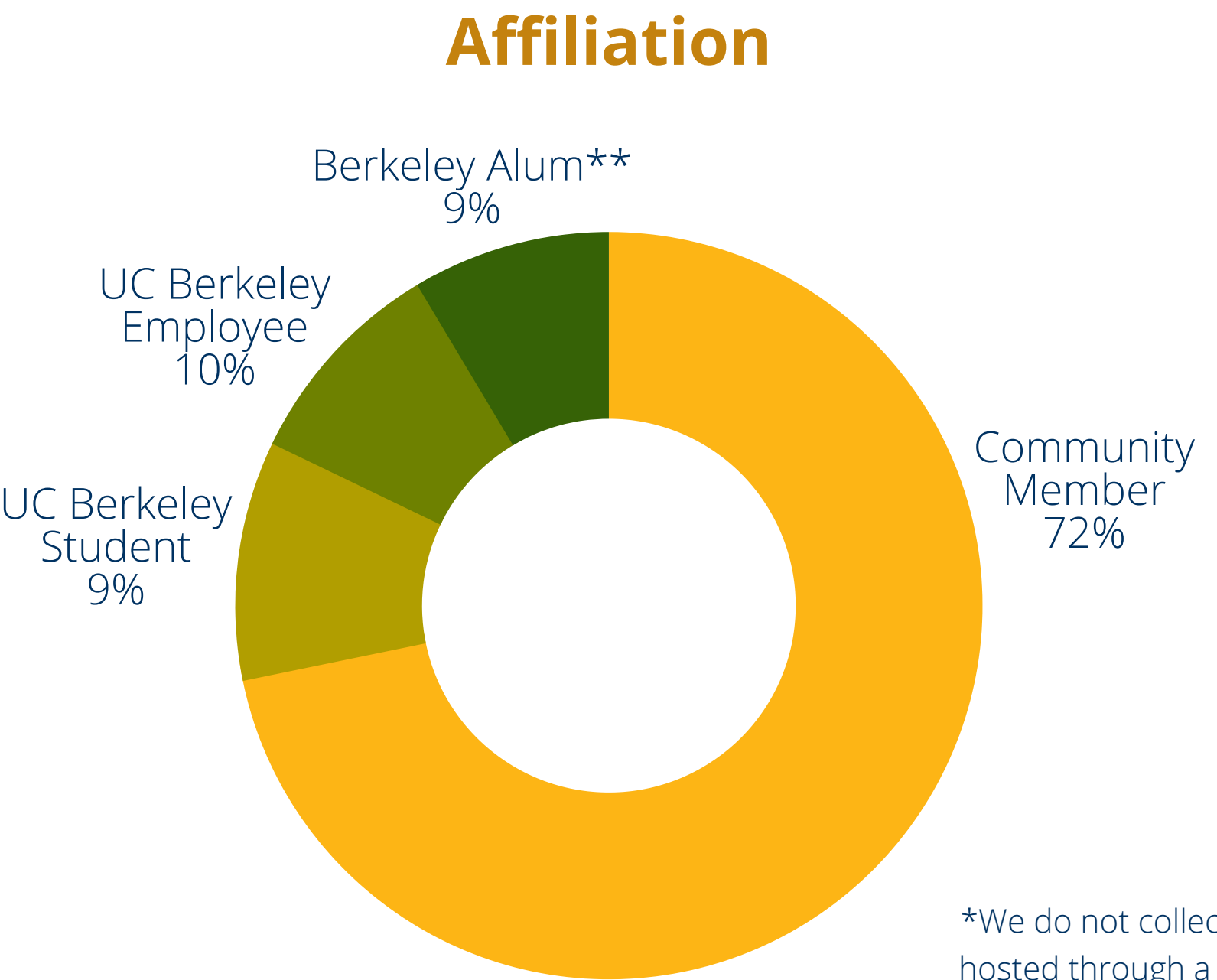


96 Average live event attendees

137 Average YouTube Views per event

UC Affiliation

Science at Cal's mission is to "connect UC Berkeley STEM researchers with diverse community groups of all ages and backgrounds..." In order to assess whether we are achieving that mission, we've begun collecting demographics for some of our events.* Over 70% of our audience in 2021 were community members. But are we reaching all sectors of our community?

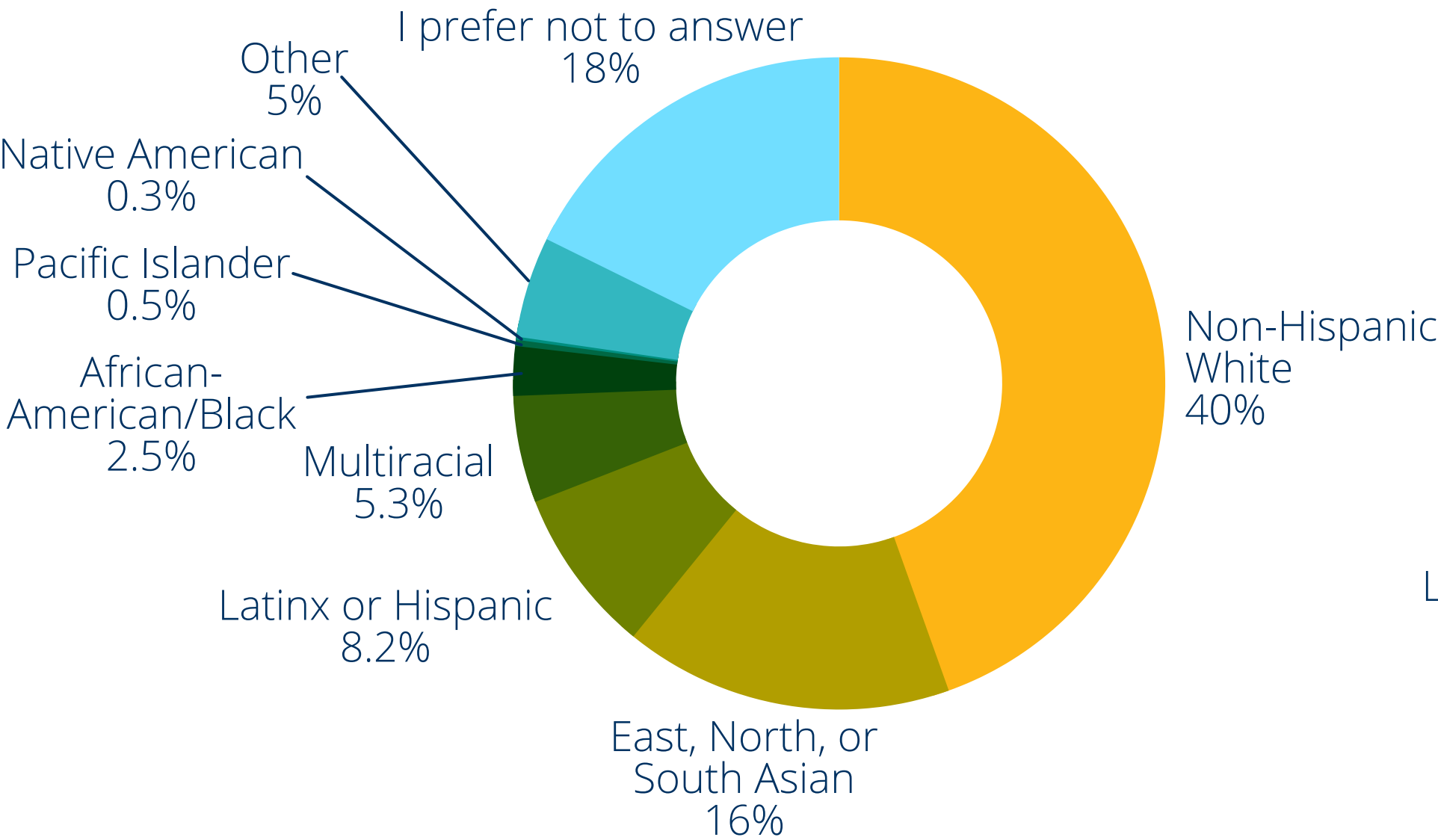


*We do not collect demographics for Midday Science Cafe because it is co-hosted through a separate registration platform managed by Berkeley Lab.
**We began collecting alumni status in April 2021

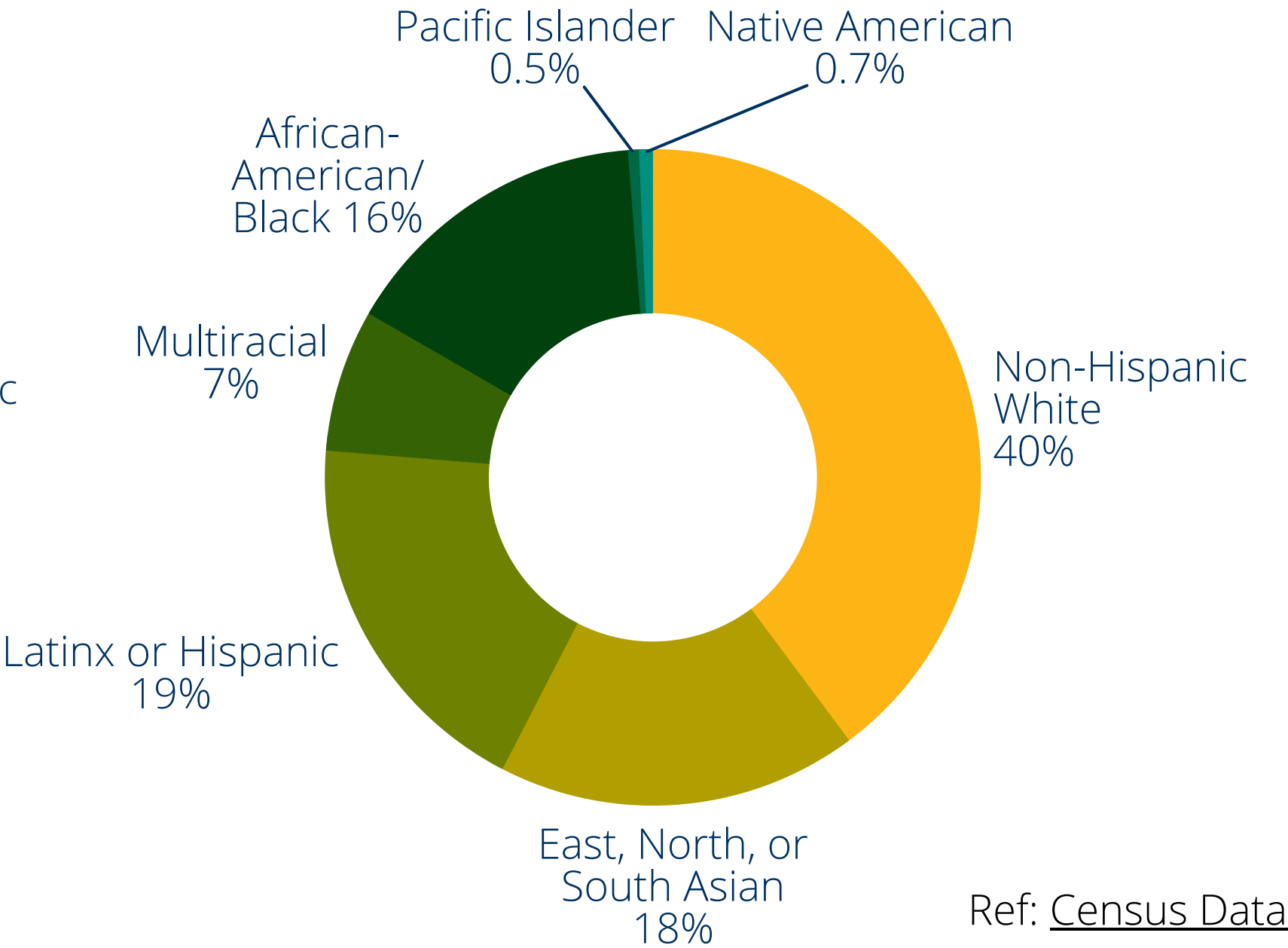
Race

Our audience contains a diversity of racial identities. Based on these data, we should expand our reach to Berkeley and Oakland's Latinx and Black communities, who are underrepresented in our audience.

Attendee Race



Berkeley & Oakland Race

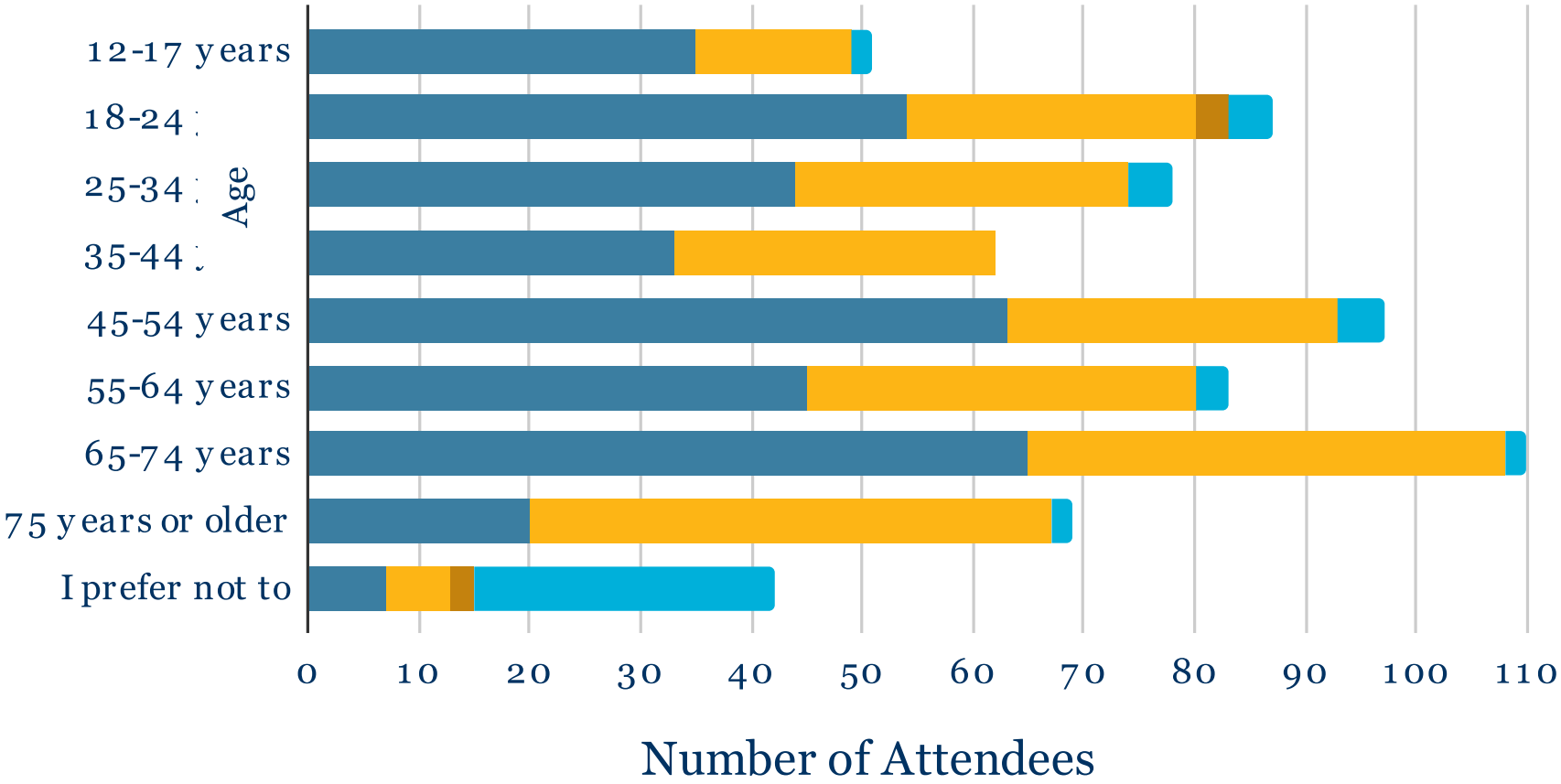


Ref: [Census Data](#)

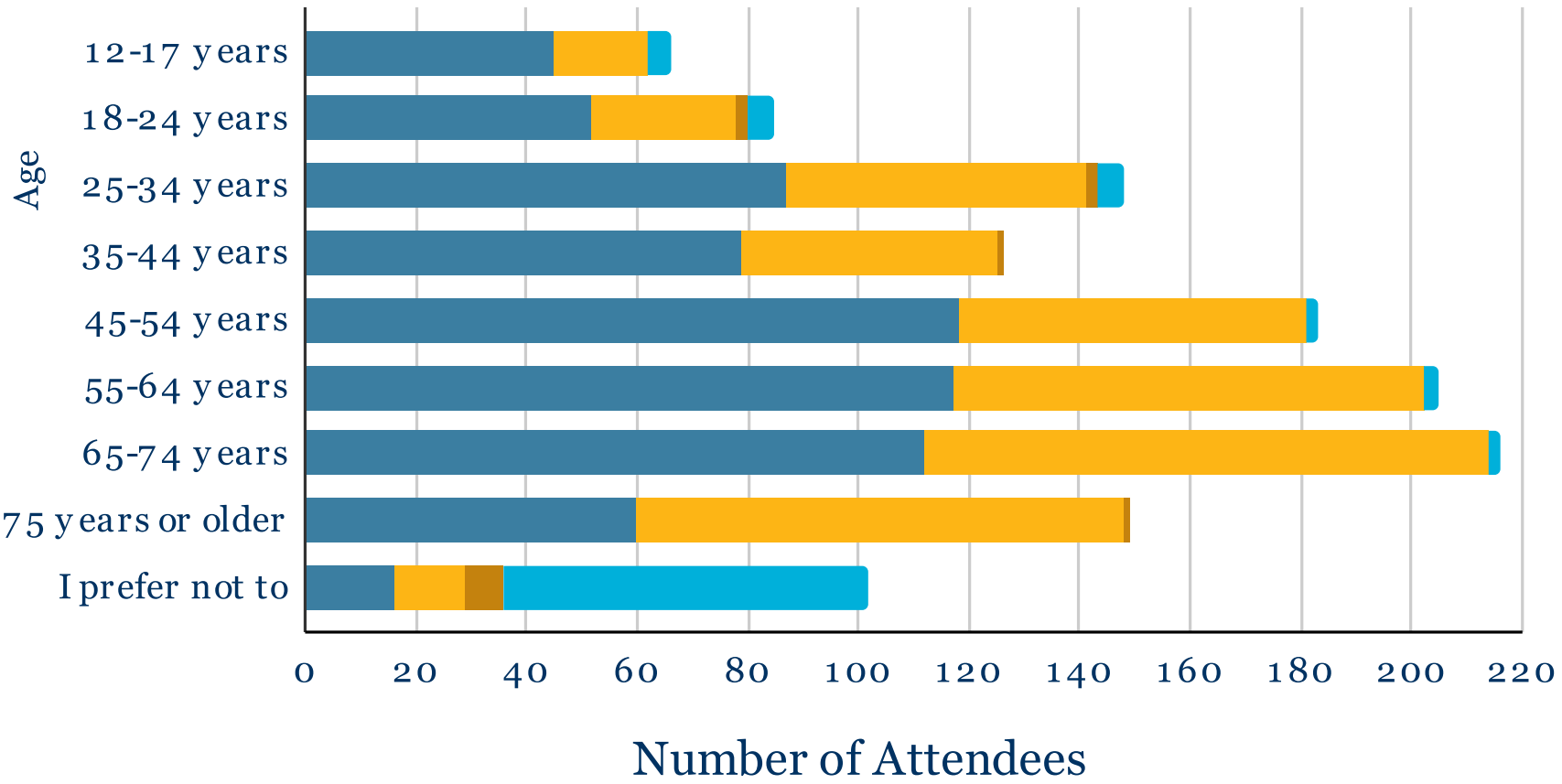
Age & Gender

The gender distribution between Grounds for Science and Lectures Series was not significantly different (54% female, 38% male, 1% other, 7% prefer not to answer). However, age distribution for Lectures tended to fall later in the spectrum (i.e. we see more attendees of older age), where Grounds for Science's attendee age tends to be more broadly distributed.

Grounds for Science



Lecture



Stronger Together: Berkeley Lab

One of the things Science at Cal has missed most during the pandemic is seeing our partners and collaborators across the Bay Area. We are lucky to have been able to maintain ties and continue programming during the pandemic and even create new and innovative experiences for our audiences.

To help do that, Science at Cal joined forces both with Lawrence Berkeley National Lab's K-12 STEM Education & Outreach Programs, led by Faith Dukes (bottom right), and Government Relations, led by Jennifer Tang (third from right), since the beginning of the pandemic. In fact, Berkeley Lab's Government Relations team and Science at Cal have been



co-hosting Midday Science Cafe each month virtually for almost two years without ever meeting face to face. In November, members of Science at Cal and Berkeley Lab's Government & Community Relations Office met up for the first time (safely vaccinated and outside) in person!

Stronger Together: The Lawrence

The Lawrence Hall of Science and Science at Cal normally join forces during the Bay Area Science Festival and Cal Day. But since both events were either postponed or lacked live outreach components in 2021, we had to find innovative ways to collaborate. Luckily, there were ample opportunities to showcase Science at Cal trained scientists in the Lawrences' work with the public. In just one example, check out the "This Is What a Scientist Looks Like" posters featuring Science at Cal speakers, Nina Sokolov and Navya Pothamsetty. Better yet, visit the Lawrence to see the larger-than-life posters hanging from their walls.

This Is What a Scientist Looks Like™

Nina Sokolov, Ecologist



About Nina

Art and science are Nina's two passions. She uses pens and watercolors to make illustrations of the bees she studies. Drawing detailed pictures helps her to notice tiny differences between bee species. Art also helps Nina to communicate her ideas when the language might be hard to understand. To get the word out about her work, she has even created coloring book pages!

About Nina's Work

Nina studies diseases in bees. Bees are struggling, and diseases are some of the many reasons why. Using butterfly nets and hand vacuums, Nina collects all kinds of bees and tests them for viruses. She is working to find out how viruses can pass back and forth between commercial honeybees and native bee populations. Nina says one way you can help bees is to plant gardens with the native flowers they like to pollinate.

Science at The Lawrence

Explore our pollinator garden in the Outdoor Nature Lab!



This Is What a Scientist Looks Like™

Navya Pothamsetty, Data Scientist



About Navya

Navya has loved science since she was a kid, because science connects to everything around her. Training her family's new puppy reminds her of ideas she learned about psychology and how the brain works. When she cooks, Navya treats it like scientific research. She tries a recipe over and over, changing just one ingredient or method at a time to figure out how it affects the outcome. No matter what she's doing, Navya always thinks like a scientist!

About Navya's Work

Navya researches public health. She uses coding to take lots of disorganized data and make it useful for answering important questions like: How do money and status affect people's health? Does being stressed make you sicker? Navya thinks we need scientists with many different perspectives, in order to ask questions that might get missed otherwise.

Science at The Lawrence

Investigate the science of public health in Pandemic Detectives!



The Lawrence

Social Media Metrics



Dr. Kerri Johnson, Postdoctoral Scholar, presented **Changing climates, changing landscapes: What does this mean for the future?**

Highlights

1534 Twitter followers

1012 Facebook Page Likes

585 Instagram followers

214 YouTube Subscribers (est. 2018)

413 Alt. YouTube Subscribers (est. 2013)

Top Tweet

📢 Congrats to these @UCBerkeley SciComm rockstars! They'll be participating in a new training program for grads led by the fabulous @elshafie_sara, hosting workshops for UCB, & generally taking over the #scicomm world. Need I say more? Stay up to date: scienceatcal.berkeley.edu/berkeley-scicomm pic.twitter.com/ztVIHhHEL5

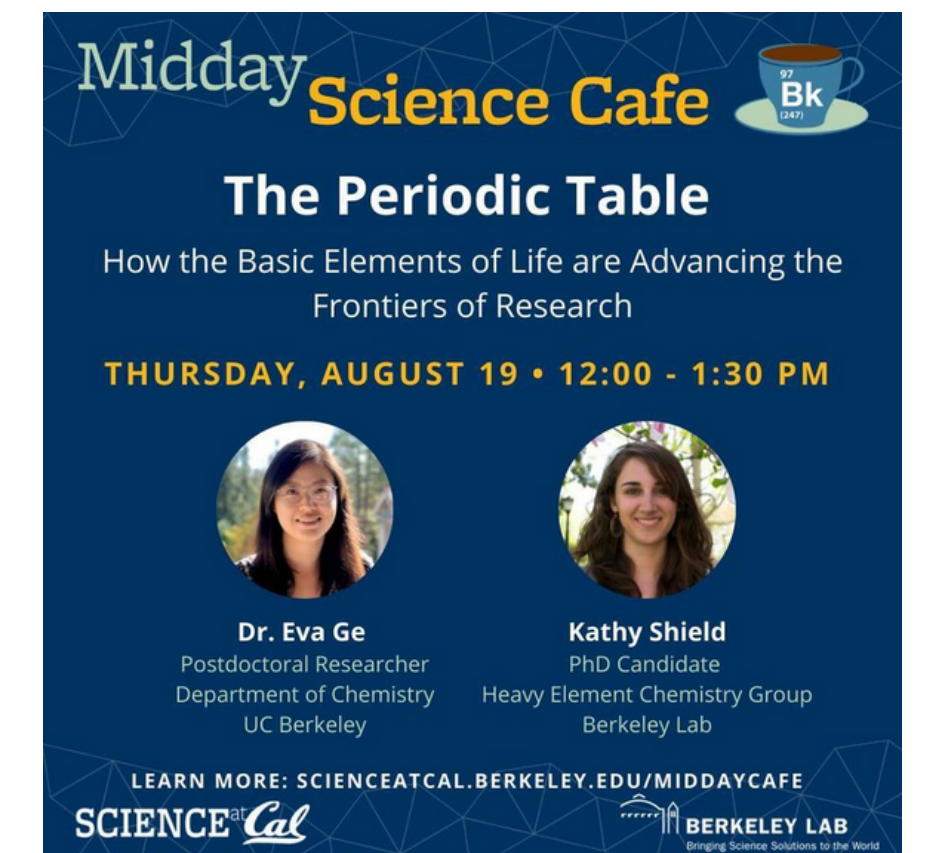
Top YouTube Video



Top Facebook Post



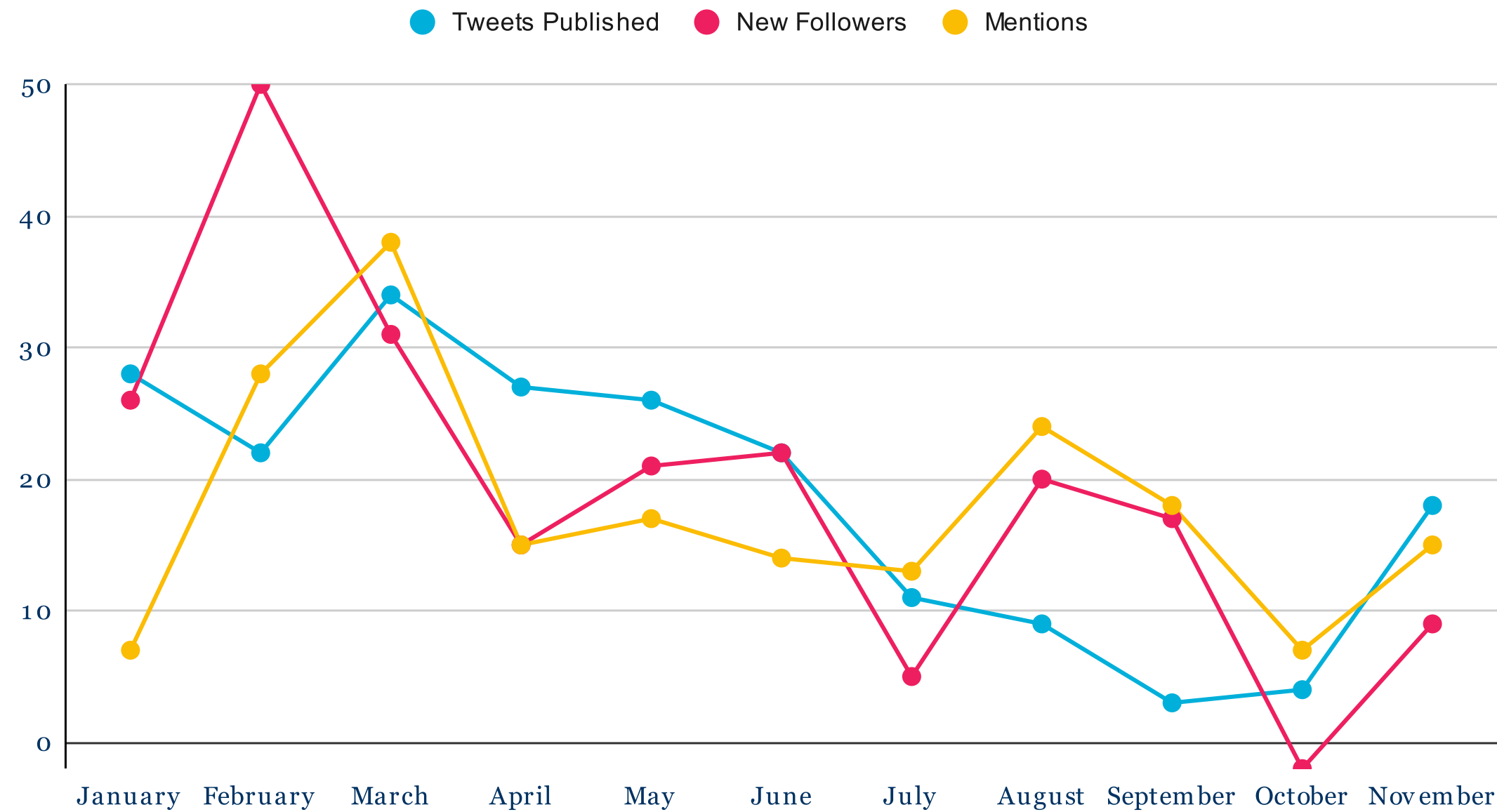
Top Instagram Post



Twitter

Engagement on Twitter was impacted by Science at Cal's staffing shortages in the late summer/early fall, but has begun to rise again.

Tweets Published, New Followers and Mentions 2021



Top Tweet:

- February 2021
- 80 Likes
- 19 Retweets

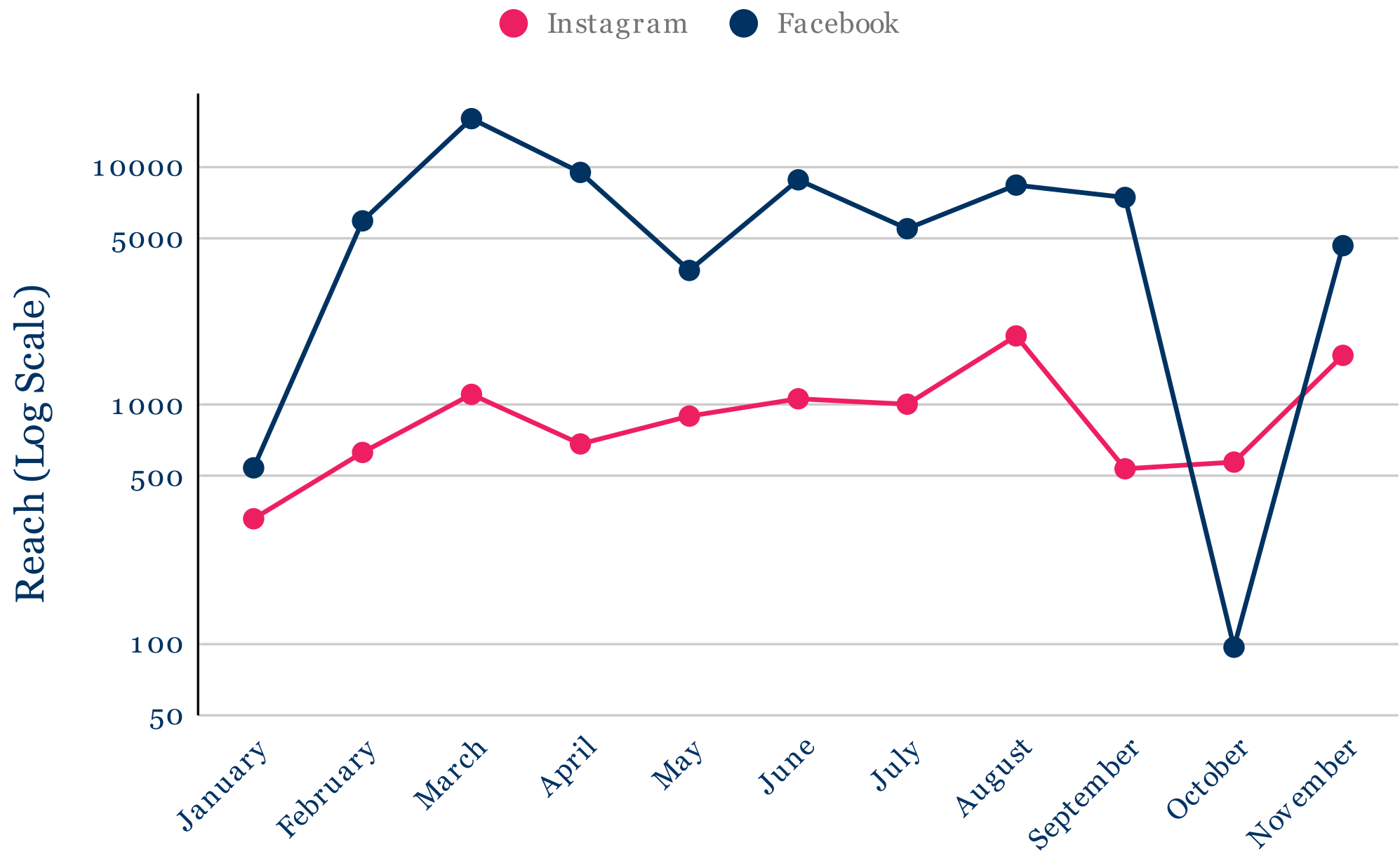
📢 Congrats to these [@UCBerkeley](#) SciComm rockstars! They'll be participating in a new training program for grads led by the fabulous [@elshafie_sara](#), hosting workshops for UCB, & generally taking over the [#scicomm](#) world. Need I say more? Stay up to date: scienceatcal.berkeley.edu/berkeley-scicomm-fellows pic.twitter.com/ztVIHhHEL5



Facebook & Instagram Reach

Instagram and Facebook reach, or "the number of people who saw your post at least once" over time, . Note that the Y-axis is on a logarithmic scale, indicating the overall reach for Facebook was much higher than for Instagram.

Instagram and Facebook Reach Over Time

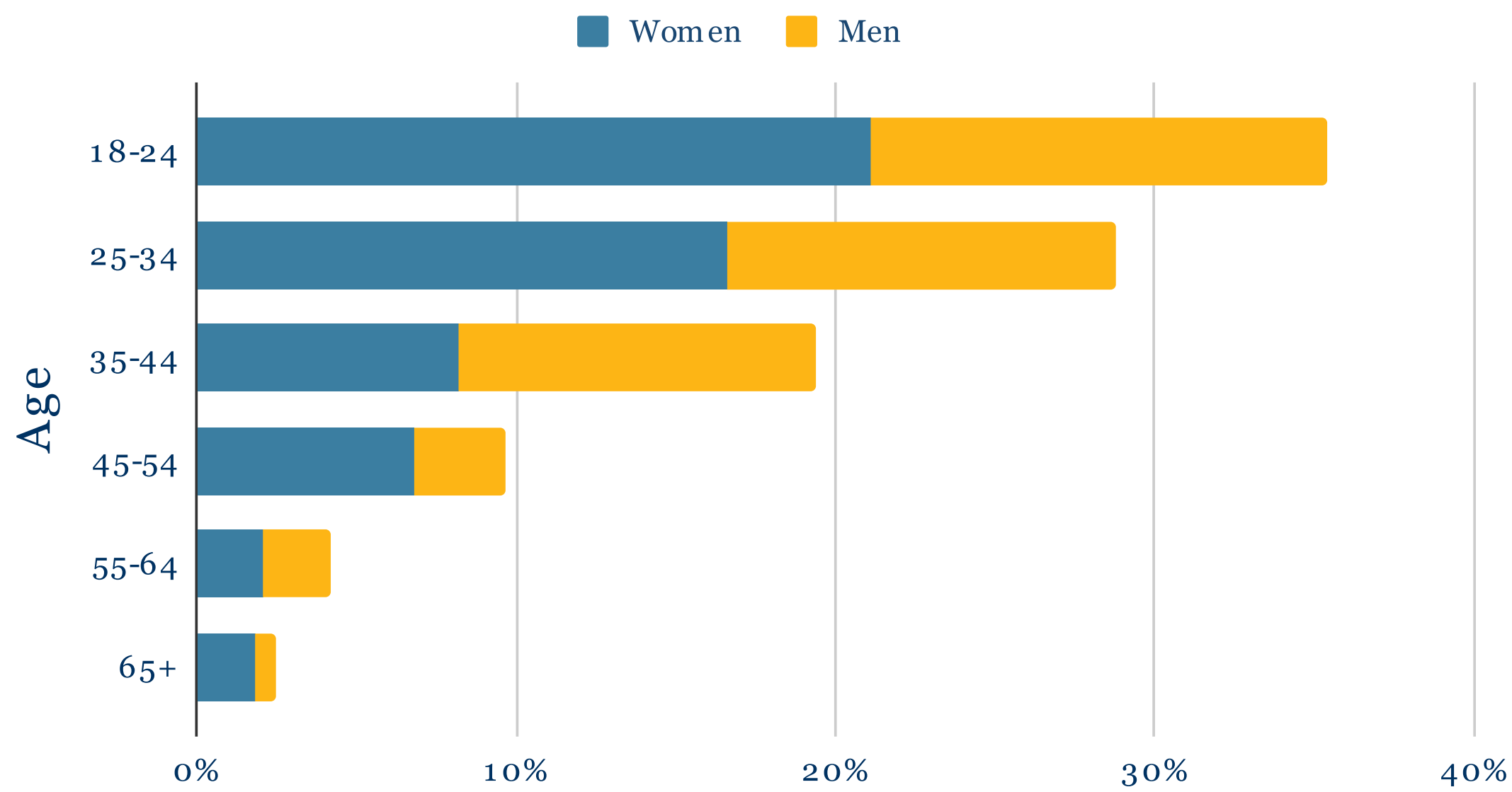


No paid Facebook advertisements were posted in January or October, which impacted the reach for those months.

Instagram Demographics

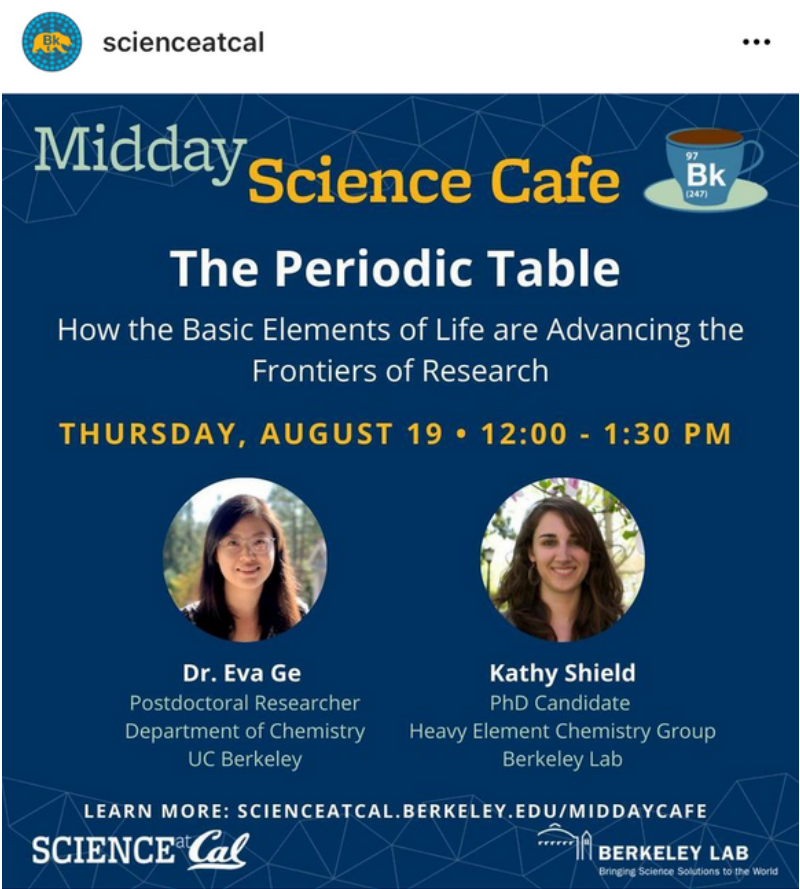
More women than men follow our Instagram page (56.6% vs 43.4%), and followers tend to be younger.

Instagram Followers by Gender and Age



Top Instagram Post:

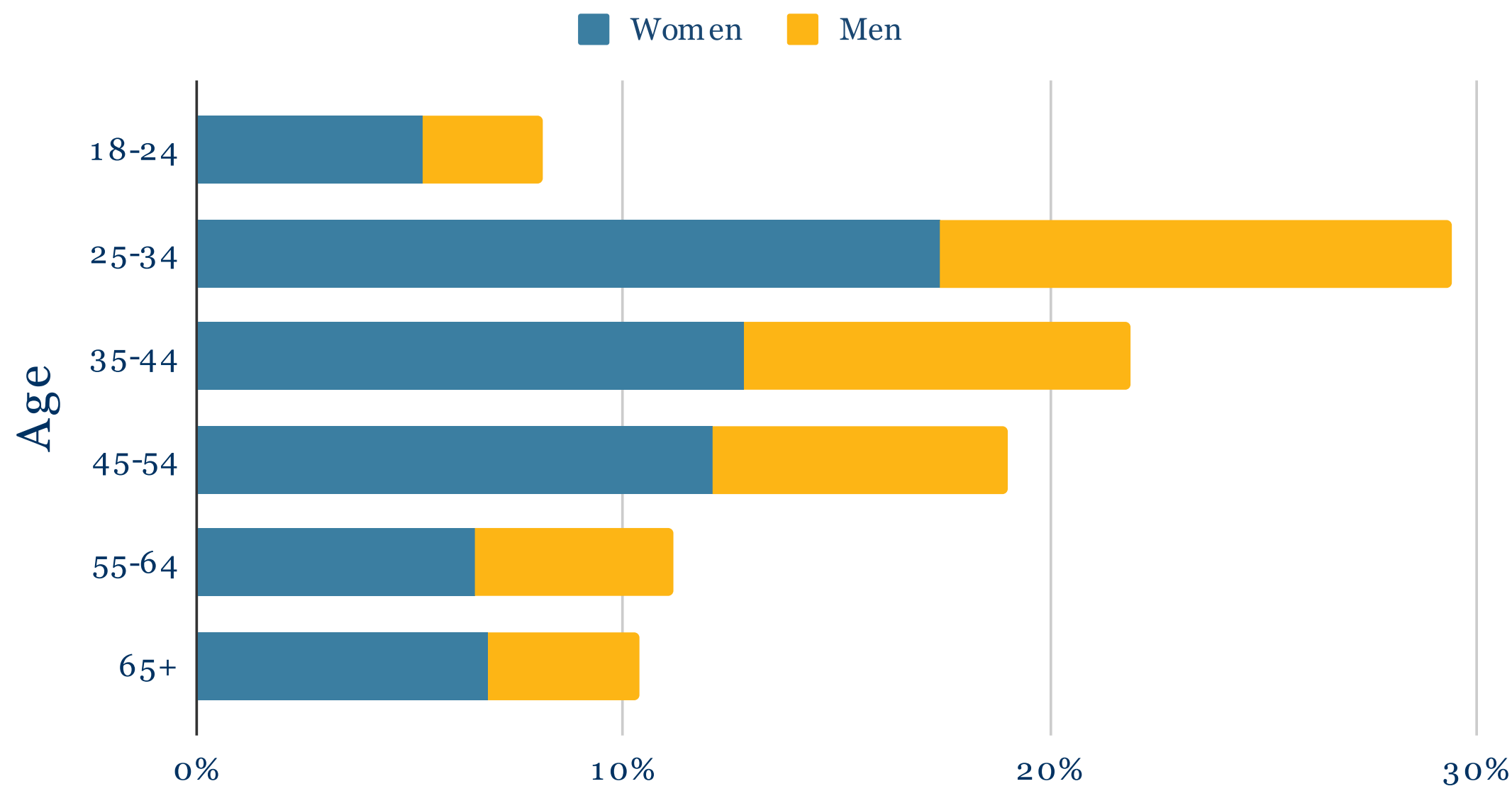
- August 2021
- 110 Likes
- Third Most-Attended Event of the Year
- \$13 Paid Advertisement



Facebook Demographics

More women than men like our Facebook page (60.9% 39.1%), and followers have a more mixed age profile than on Instagram.

Facebook Page Likes by Gender and Age

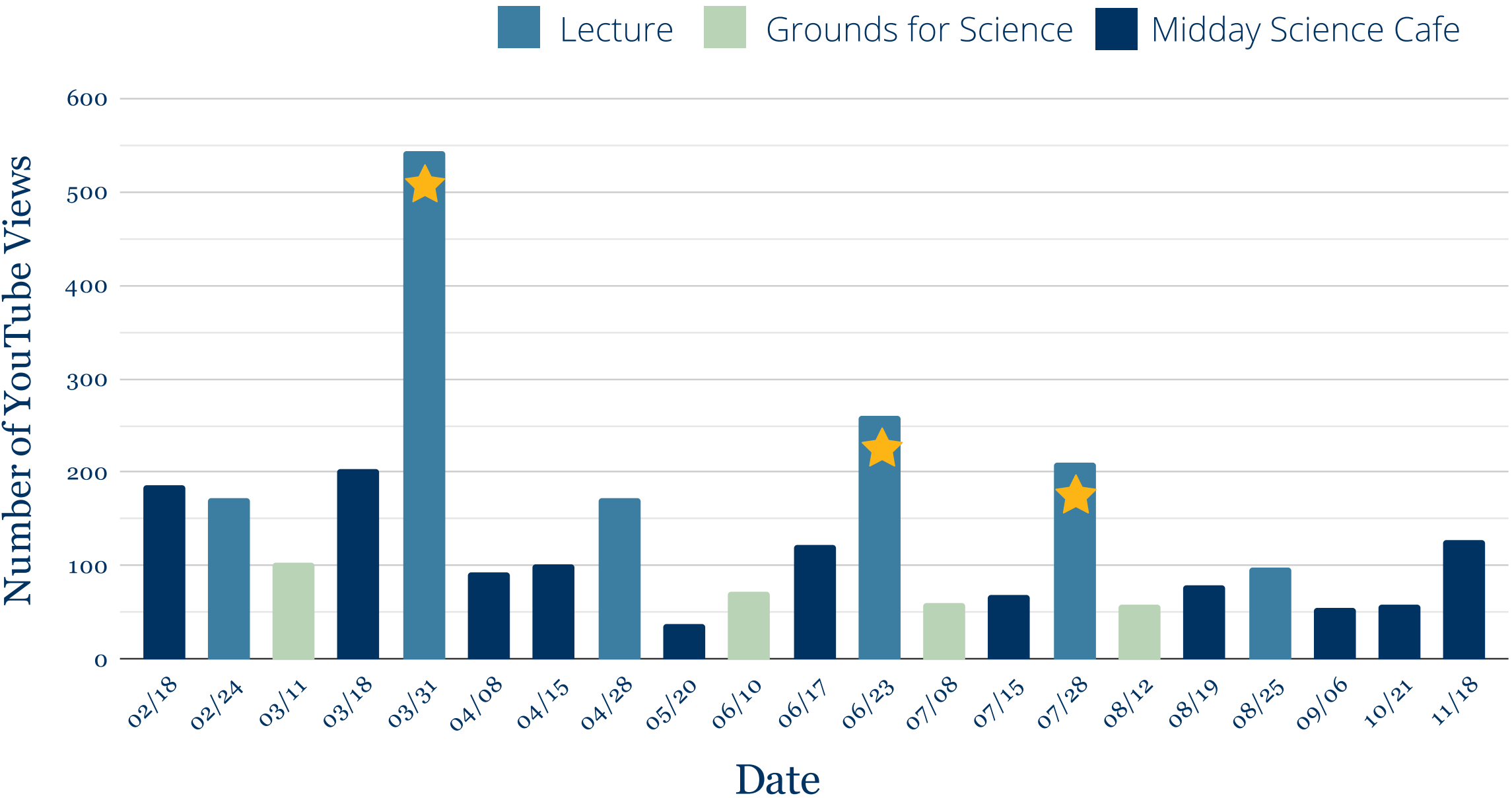


Top Facebook Event:

- September 2021
- 56 Event Responses
- 3 Likes
- 12th Most-Attended Event of the Year
- \$13 Paid Advertisement



YouTube Views



★ The top three most-watched YouTube videos were:

544

Lecture – On the Origin of Life

260

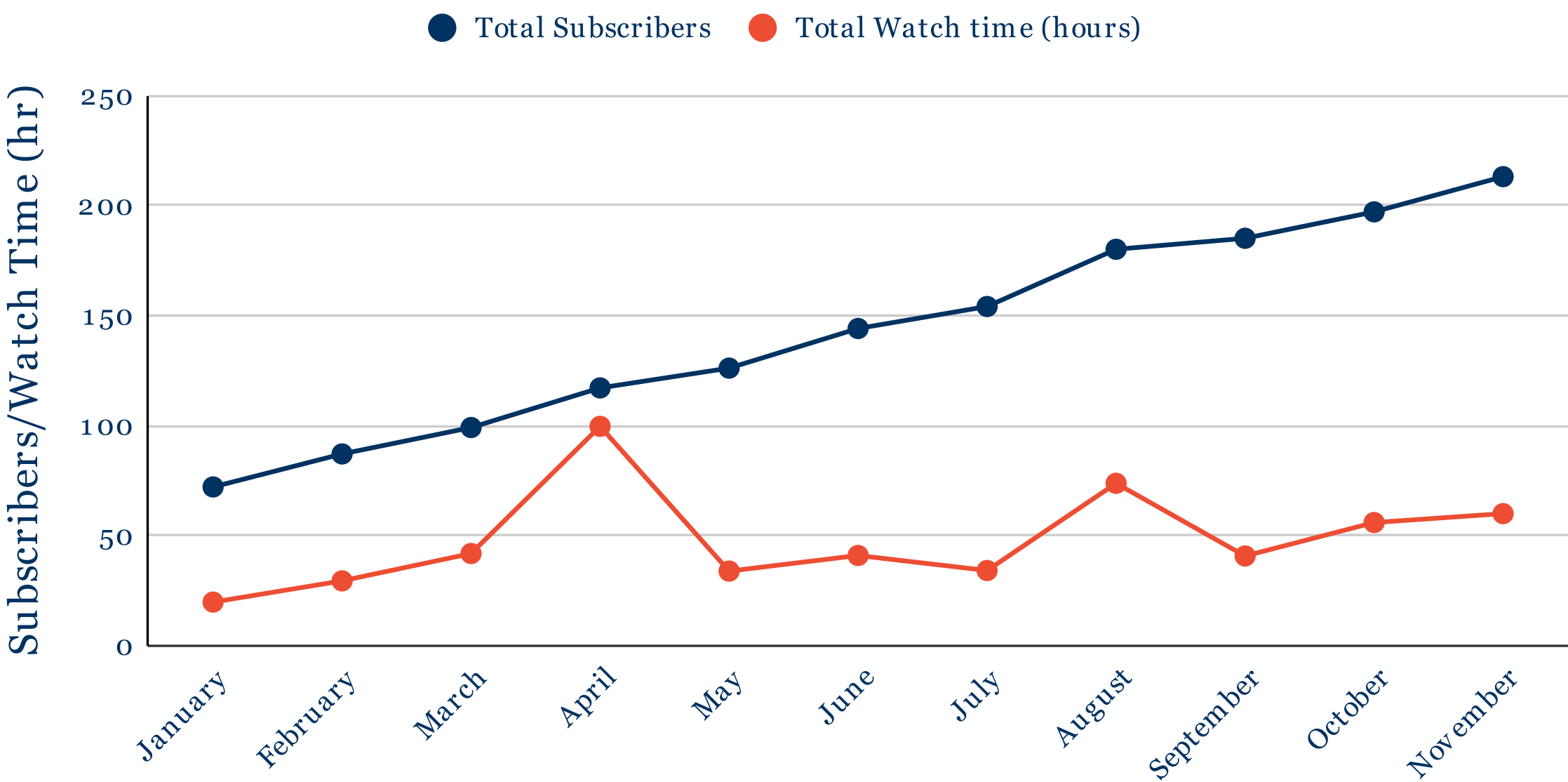
Lecture – Monitoring COVID-19 in the SF Bay Area

210

The Science of Happiness

YouTube

YouTube Subscribers and Total Watch Time



Top YouTube Video:

- 544 views
- 9 Likes
- Sparked some controversy in the comment section

SCIENCEatCal
Lecture Series

ON THE ORIGIN OF LIFE

Charles Marshall, Ph.D.
Director, UC Museum of Paleontology
Professor, Dept. of Integrative Biology

Wed, Mar 31st | 6 to 7 PM

WE'LL BEGIN IN...

2 Minute Countdown Timer

2 14:35

Advisory Council

Meet the newest members of the Science at Cal Advisory Council.



Wenjun Zhang

Associate Professor
Charles R. Wilke Endowed
Chair Chemical and
Biomolecular Engineering



Richard Allen

Interim Dean, Mathematical &
Physical Sciences Division
Director, Berkeley Seismology Lab
Endowed Professor, Earth &
Planetary Science



Lisa D. White

Director of Education & Outreach
UC Museum of Paleontology



Julia Schaletzky

Executive Director, Center for
Emerging and Neglected
Diseases, Immunotherapy and
Vaccine Research Institute
Drug Discovery Center



Elise Matera

Public Engagement Specialist
Science at Cal

Giving

Thank you to everyone who has donated!*

19 Berkeley Giving Donations

\$1855 Total Giving Amount

59 Eventbrite Donations

\$701 Total Donation Amount



Dr. Kara Nelson, Professor,
presented Monitoring COVID-
19 in the SF Bay Area through
Sewershed Surveillance

*Donations as of Dec 1, 2021

Thank you.



Thanks to the entire Science at Cal Advisory Council:

Chairs: Bernard Sadoulet and Kathleen Collins;
Members: Gibor Basri, Rosemary Gillespie,
Frances Hellman, Susan Jenkins, Daniela
Kaufer, Christopher F. McKee, Julia Schaletzky,
Carlo H. Séquin, Dan Werthimer, Lisa White,
Rachel Winheld, Wenjun Zhang; *Ex Officio:*
Richard Allen, Rena Dorph, Ardice Hartry, and
Randy Katz.

Our Funder:

Executive Vice Chancellor and Provost

Our Leadership:

The Lawrence Hall of Science

Data compiled by:

Elise Matera
Rosalynn Sarvi

Graphs and plots prepared by:

Elise Matera