



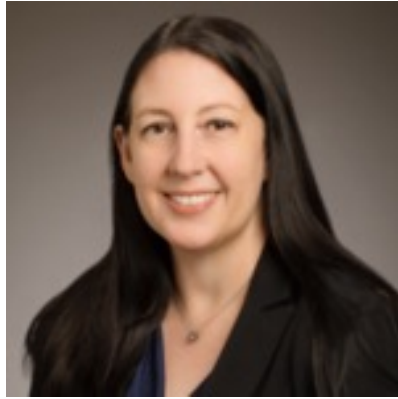
School of Natural Sciences

All-Hands Meeting

Fall 2022



Applied Mathematics



Sarah Frey
Teaching Professor
July 1, 2020



Tomas Rube
Assistant Professor
July 1, 2022



Chemistry and Biochemistry



Michael Findlater
Professor
July 1, 2020



Andrea Merg
Assistant Professor
July 1, 2020



Rebeca Arevalo
Assistant Professor
July 1, 2020



Michael Thompson
Assistant Professor
July 1, 2020



Henrik Larsson
Assistant Professor
April 4, 2022



Life and Environmental Sciences



Xuan Zhang
Assistant Professor
July 1, 2020



Claire Lukens
Assistant Professor
January 1, 2021



Mindy Findlater
Assistant Teaching Professor
July 1, 2021



Marilia Gaiarsa
Assistant Professor
January 1, 2023



Adeyemi Adebisi
Assistant Professor
July 1, 2021



Matthew Hutchinson
Assistant Professor
January 1, 2023



Molecular and Cell Biology



Kelly Shepardson
Assistant Professor
July 1, 2022



Maggie Sogin
Assistant Professor
January 1, 2021



Bercem Dutagaci
Assistant Professor
January 1, 2021



Michele Nishiguchi
Professor
July 1, 2020



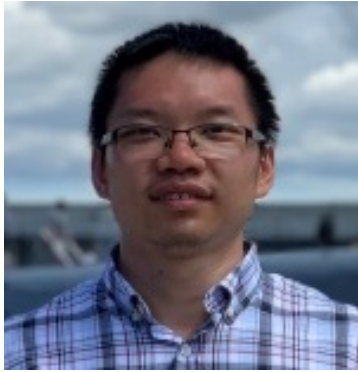
Fredrick Quinn
Adjunct Professor
July 1, 2022



Stefan Materna
Assistant Professor
July 1, 2020



Physics



Hui Cai
Assistant Professor
July 1, 2020



Anna Nierenberg
Assistant Professor
July 1, 2020



Sarah Loebman
Assistant Professor
July 1, 2020



Brian Utter
Teaching Professor
July 1, 2020



School Staff Hired Since March 2020



Cynthia Marmolejo
CalTeach Student
Services Advisor
March 2022



Mel Alexandra
Department
Specialist
May 2022



Chelsea Flannery
Undergrad Advisor
& Career Support
Coordinator
December 2021



Emily Heng
Graduate Coordinator
February 2022



Ernie Costello
Sr. Assistant Dean,
Chief of Finance &
Operations
May 2021

Tom Martinez
Department Support Supervisor
April 2020

Alisa Kravchuk
Department Specialist
May 2022

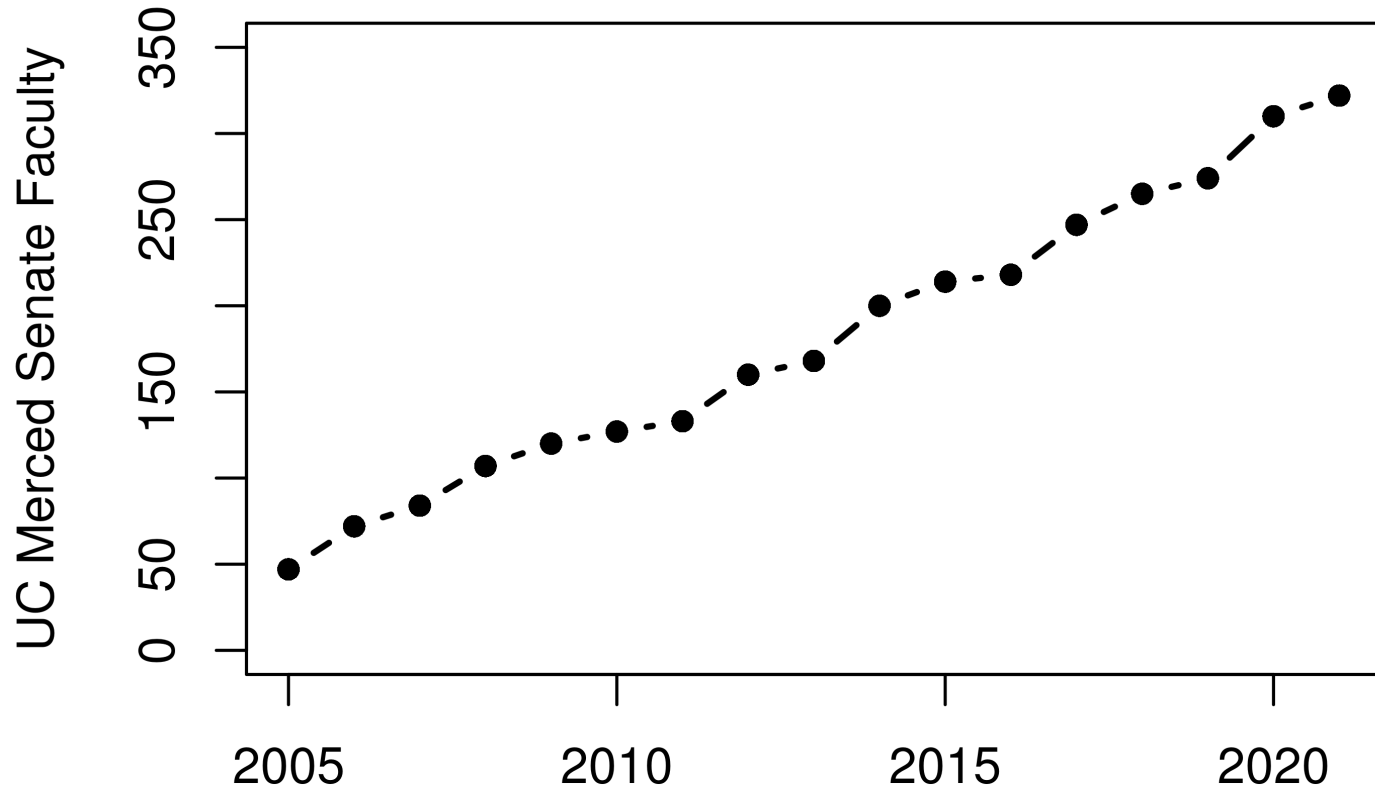
Judy Malone
Department Specialist
June 2022

Stephanie Lopez
Academic Personnel Specialist
August 2022

Maria Christina Soriano
Chemistry Lab Assistant
January 2022

Jessica Pall
Chemistry Lab Assistant
January 2022

The campus is growing in size and reputation



Project 2020 has doubled the size of the campus and research space





SNS is building labs & facilities that ensure the future success of our research programs



BSL-3

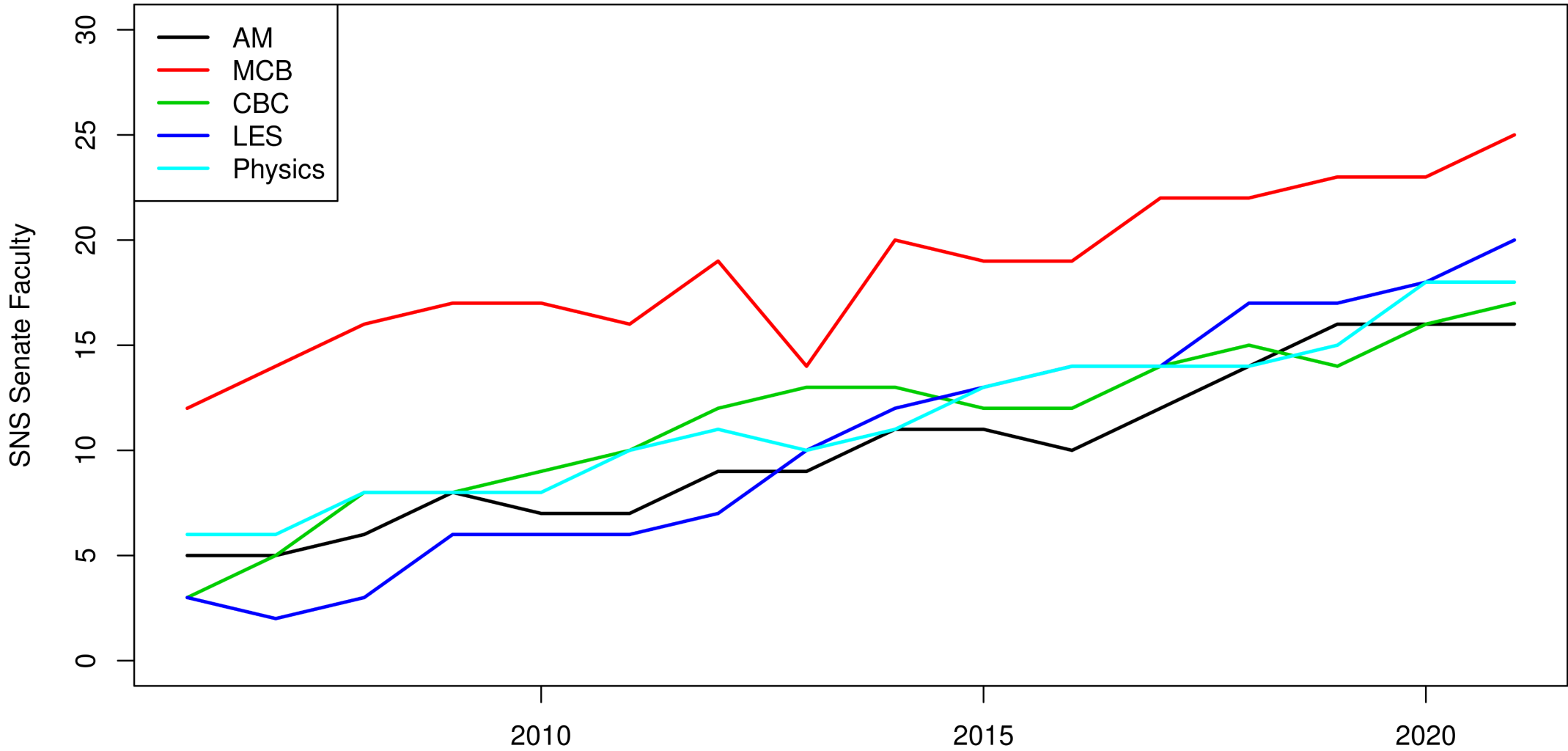


Pinnacles Cluster

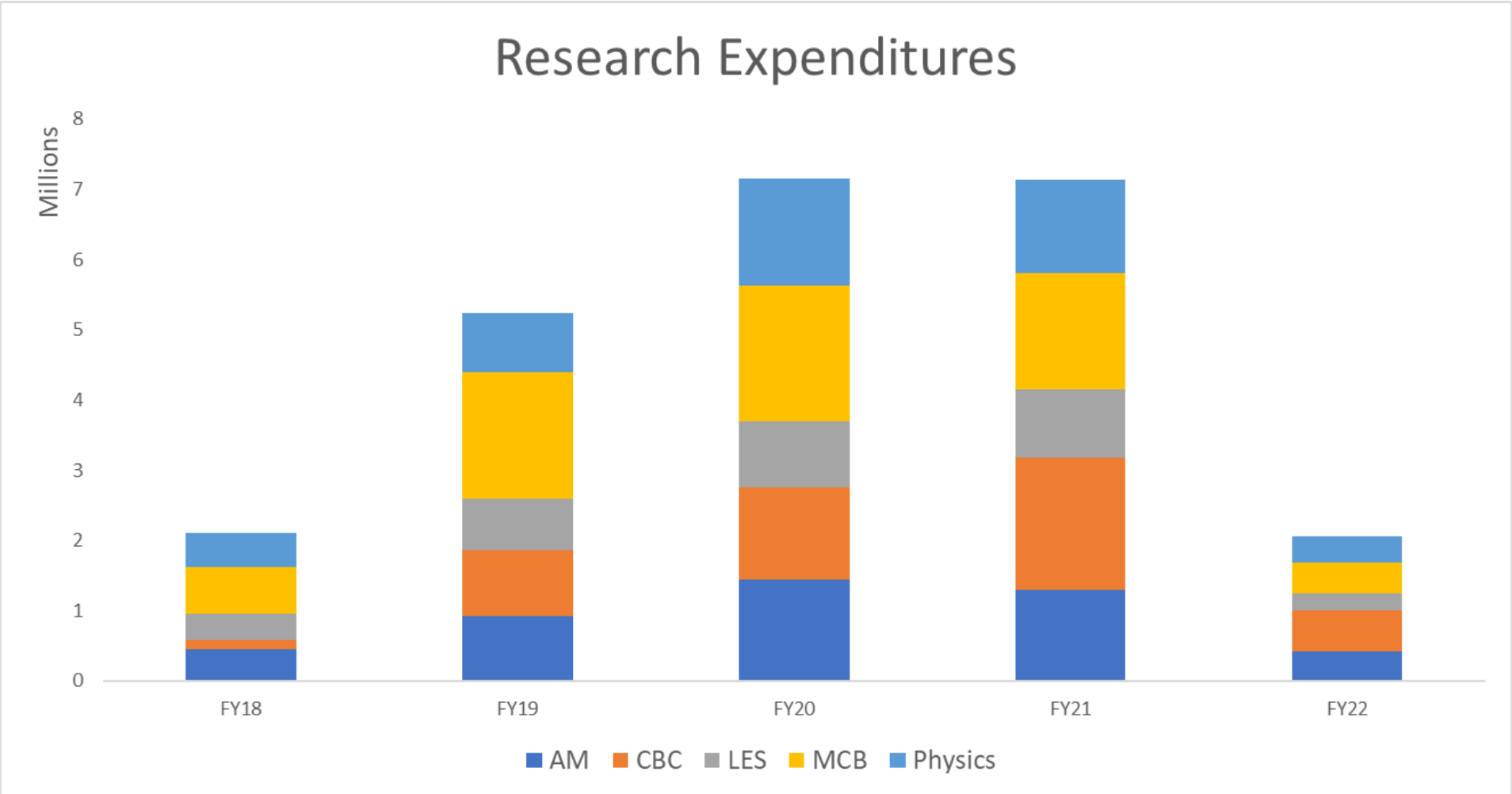


BSP

SNS departments reaching the size of those at established universities



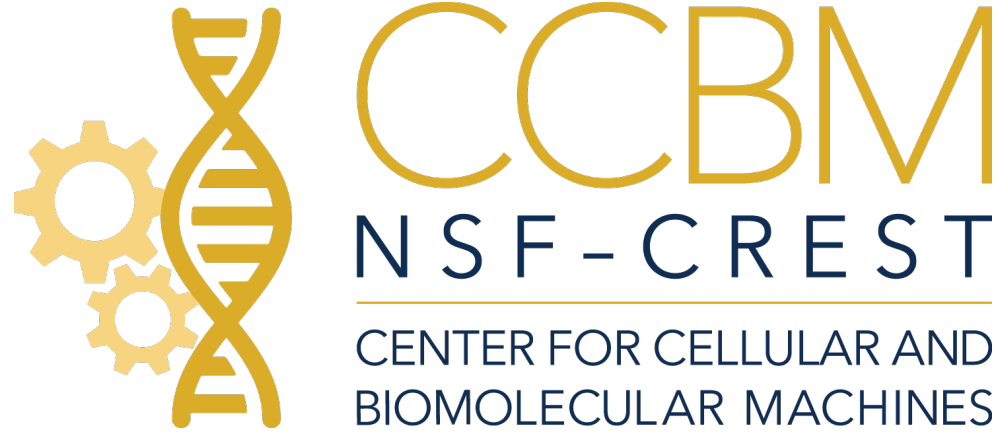
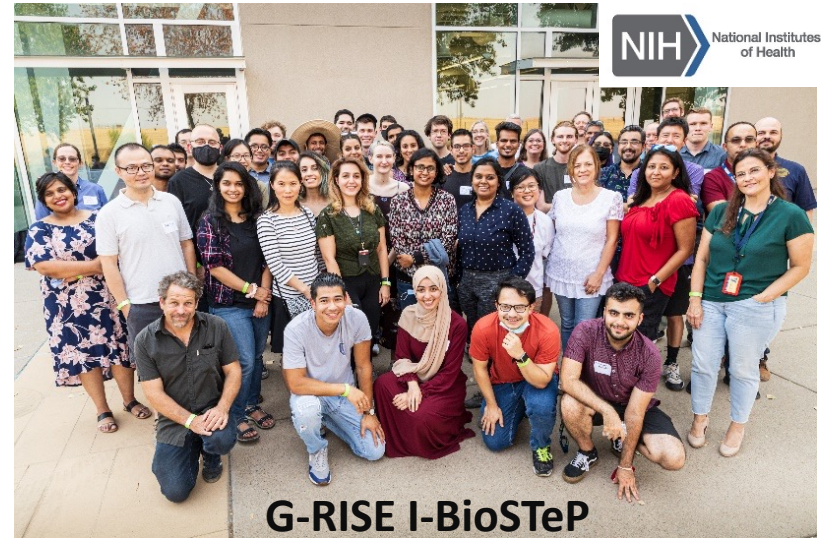
SNS faculty are successful in securing extramural funding



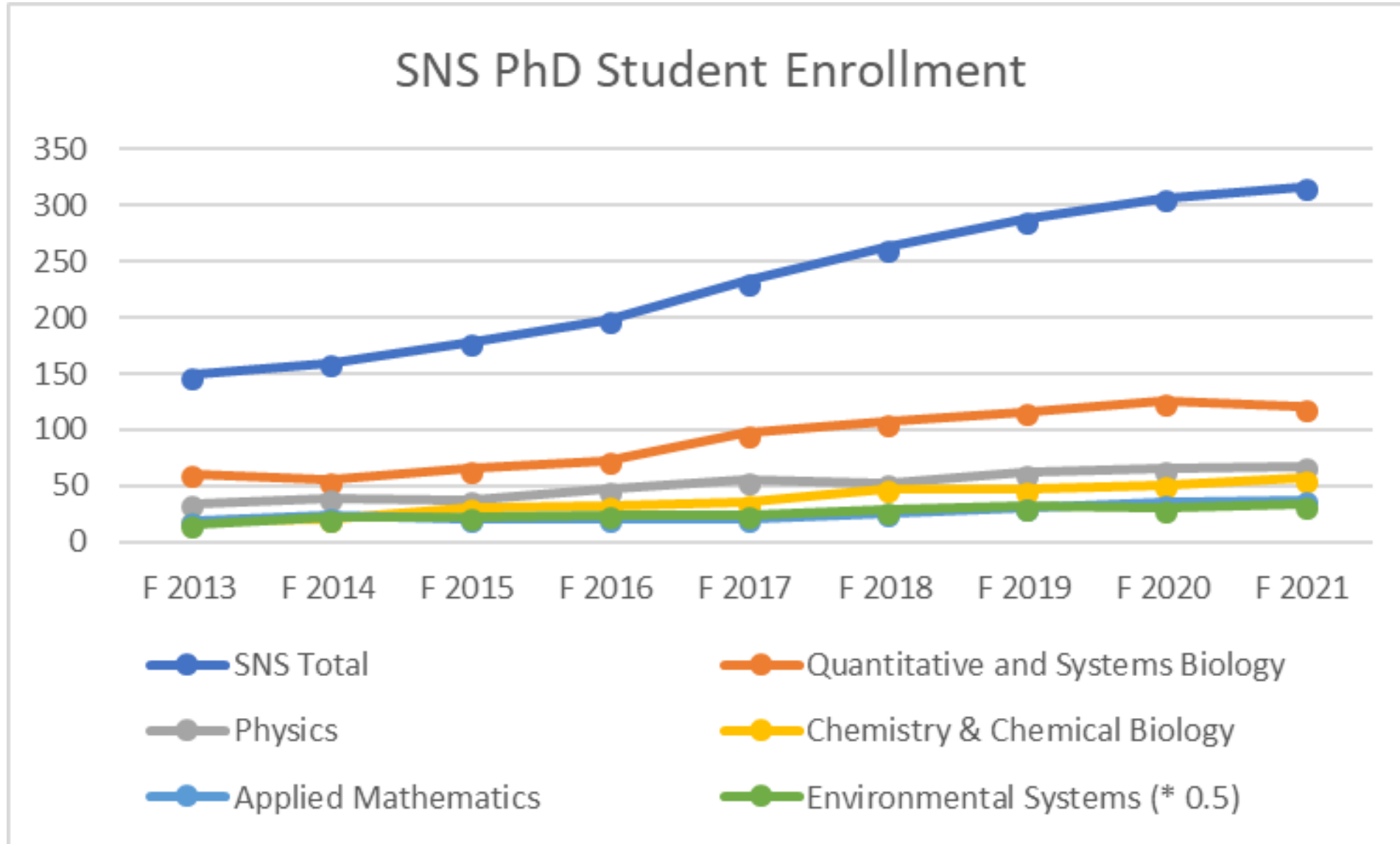
SNS is a key player in major research Centers and graduate training programs



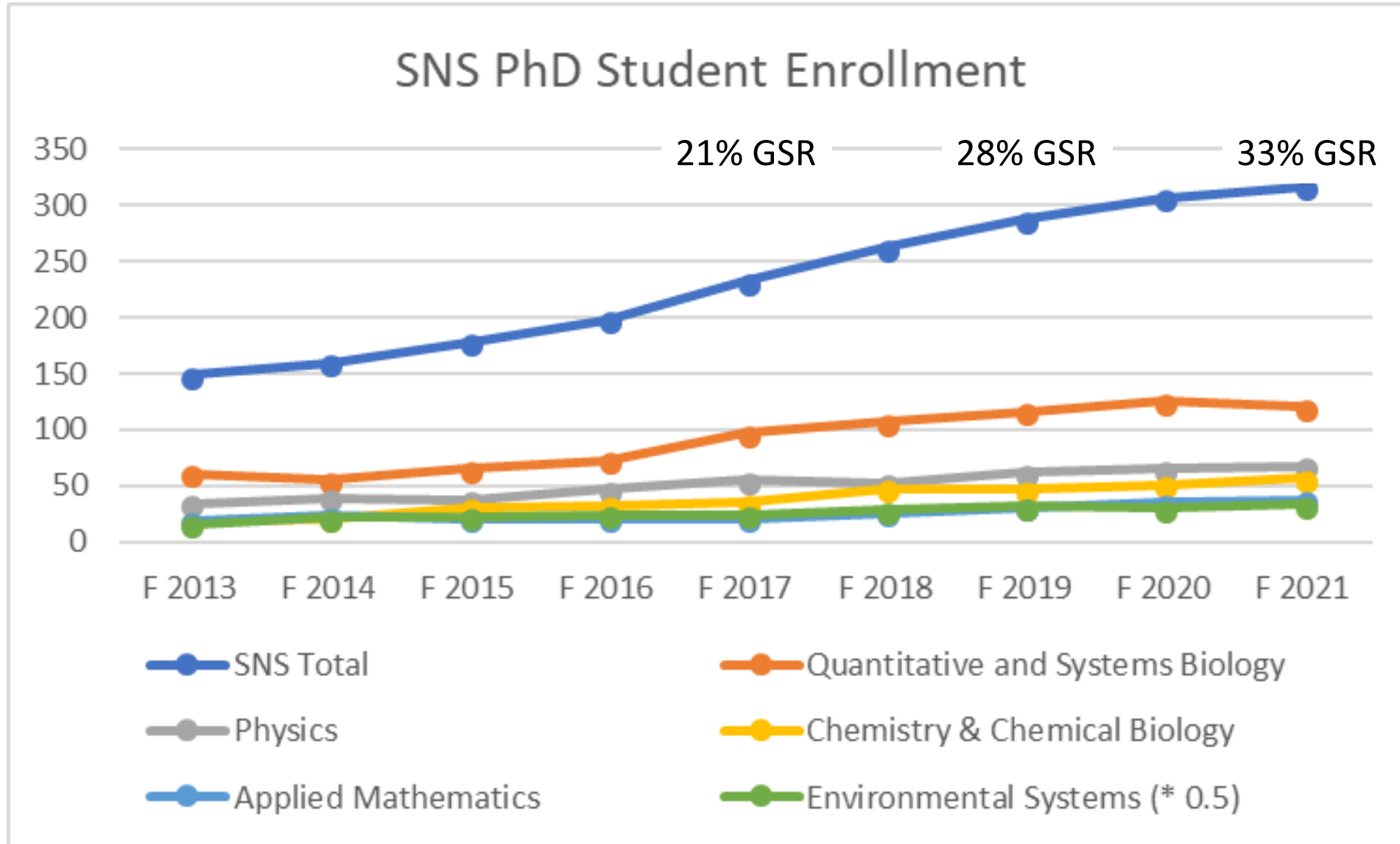
INstitute for Symbiotic Interactions, Teaching, and Education in the Face of a Changing Climate



PhD enrollments are increasing steadily



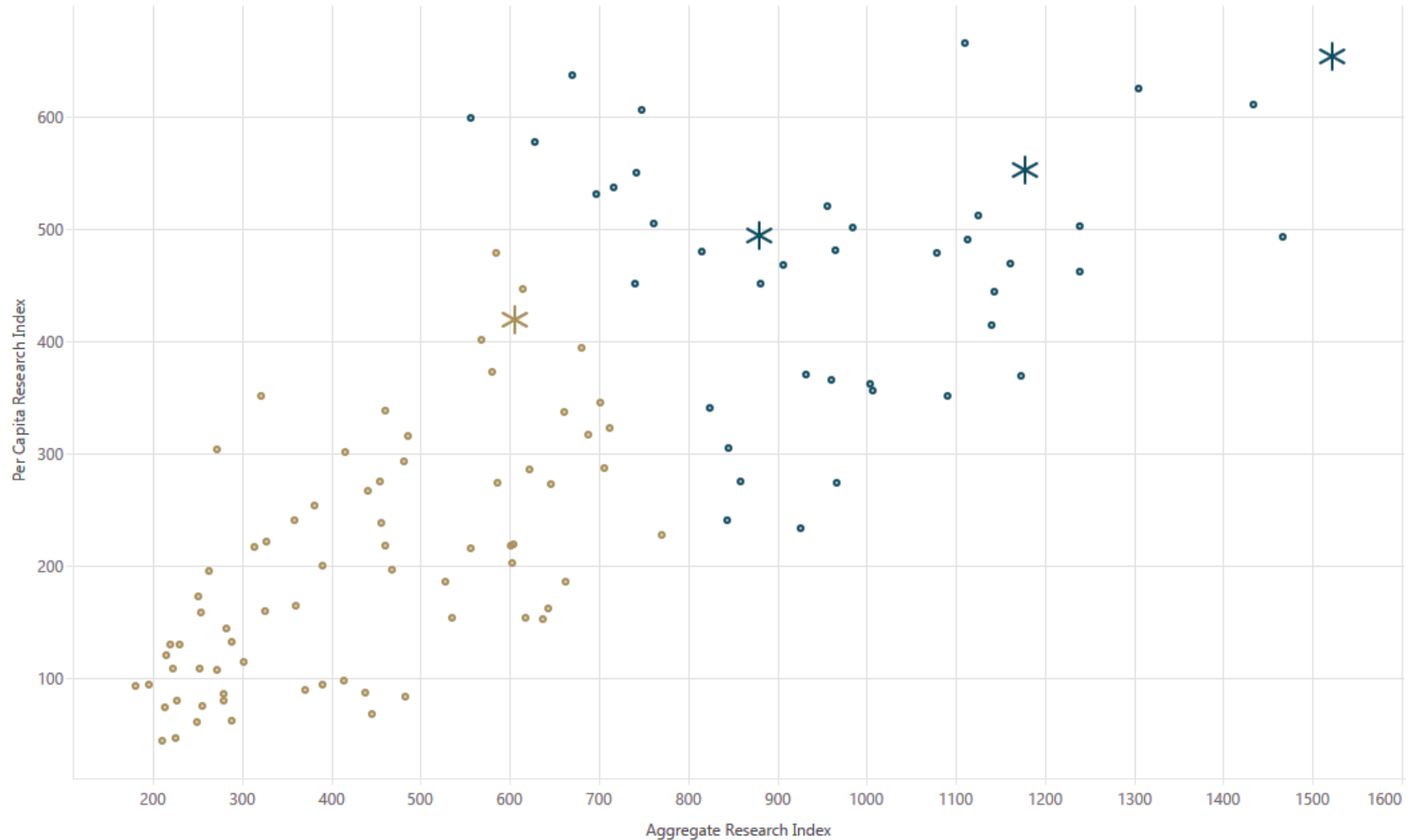
PhD enrollments are increasing steadily





UC Merced is perched on the edge between R2 and R1 Carnegie designation

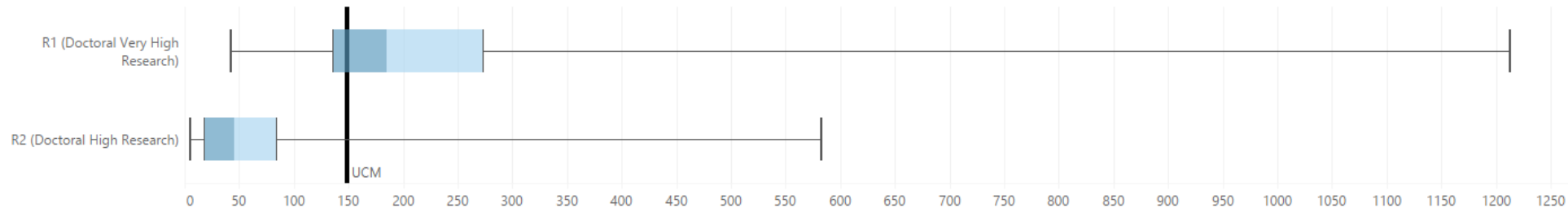
2021 Carnegie Classifications, Non-Medical, 4-Year Public



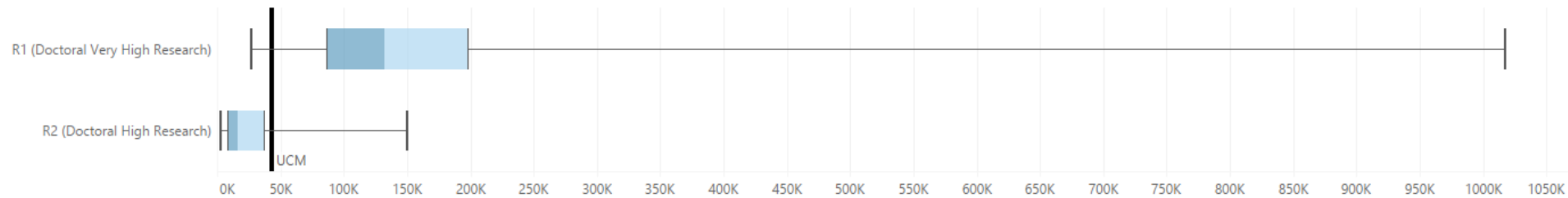
UC Merced's STEM Disciplines are making excellent progress towards R1 designation

Comparisons with 4-year, public universities without medical schools:

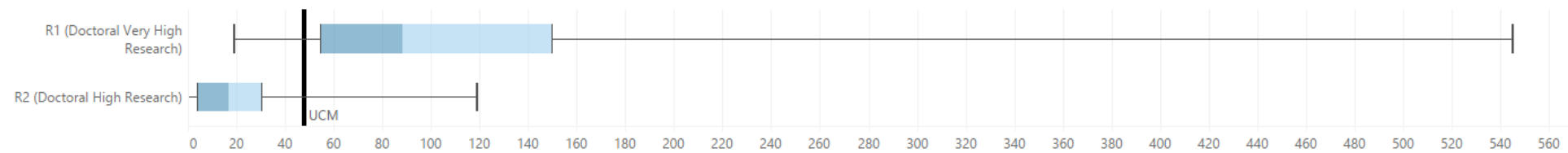
STEM: Per Capita Science & Engineering Research and Development Expenditures (1000s) - Non-Medical, 4-Year Public



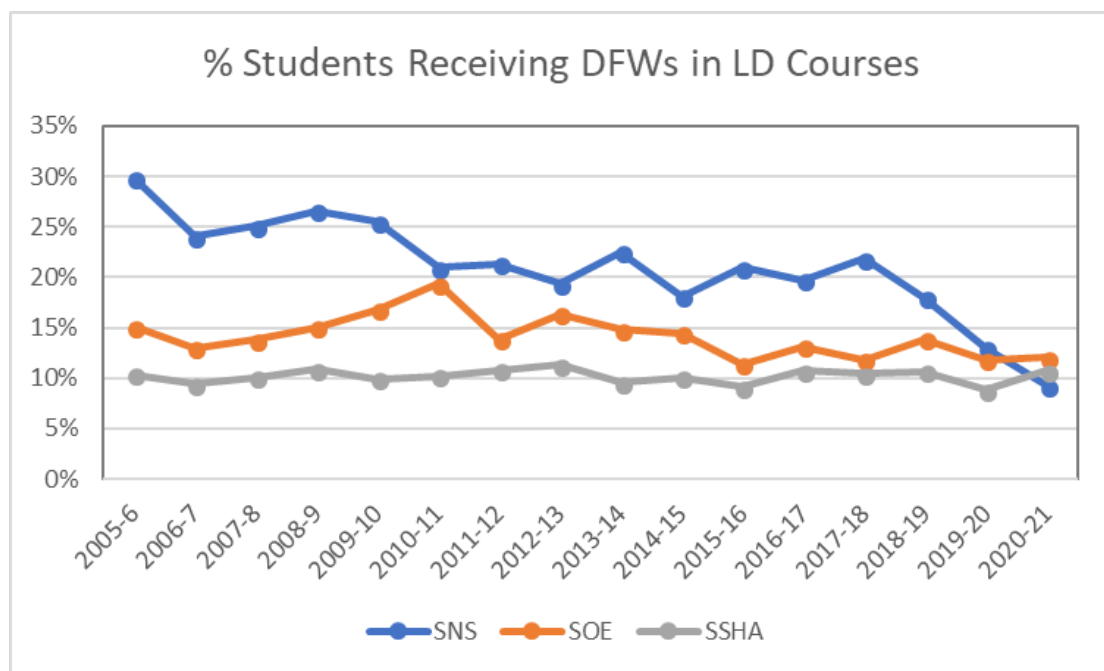
STEM: Science and Engineering Research and Development Expenditures (1000s) - Non-Medical, 4-Year Public Universities



STEM: PhDs - Non-Medical, 4-Year Public



Data-driven, innovative teaching is increasing student success



BIO 2 session in TEAL room F21 (Prof. M. Nishiguchi)

US News and World Report
 Top 100 for 3 years running
 42 among public universities
 15 among R2 universities
 13 for economic diversity.
 5 for creating social mobility

Washington Monthly
 49 in the United States (of 442)
 23 among public universities

Look Who's Talking: Teaching and Discourse Practices across Discipline, Position, Experience, and Class Size in STEM College Classrooms

JOURJINA SUBIH ALKHOURI, CRISTINE DONHAM AND PETRA KRANZFELDER*

Students are more likely to learn in college science, technology moves (TDMs) that encourage student engagement and learning in college STEM classrooms. In STEM courses a protocols to investigate teaching practices and TDMs across that instructors guide students in active learning activities, presented more than biology instructors. Also, teaching face teaching experience nor class size had an impact on teaching development efforts across instructor and course characteristics.

Keywords: undergraduate, graduate, teacher discourse moves

The Classroom Observation Protocol
 Undergraduate STEM (COPUS; Smith et al. 2019) and the Classroom Discourse Observation Protocol (COPUS; Kranzfelder et al. 2019a) are two classroom observation tools that allow researchers to assess teaching and discourse practices. A previous study combining COPUS and COPUS results showed that it is possible to create a classroom environment with high student-centered, evidence-based teaching practices (EBTPs) that encourage student learning, but with low dialogic, interactive discourse (Kranzfelder et al. 2020). This indicates that even when instructing with active learning teaching practices, they are dominating classroom conversations. However, previous work only examined biology instructors' classroom teaching and discourse practices in mostly introductory undergraduate biology classes at a research-intensive, predominantly white institution (PWI). Therefore, it

BioScience 71: 1063–1078. © The Author(s) 2021. Published by the American Chemical Society. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For more information, see <https://doi.org/10.1093/biosci/biab077>

Education

Measuring Attitude toward Chemistry, Biology, and Math at a Hispanic-Serving Institution

Jordan Chang and Erik Jason Menke*

pubs.acs.org/jchemeduc Article

Cite This: *J. Chem. Educ.* 2022, 99, 1758–1765 Read Online

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ABSTRACT: This work describes the evaluation of the Attitude toward the Subject of Chemistry Inventory (ASCI), as well as two modifications (one for measuring attitude toward math and one for measuring attitude toward biology), for college students at a Hispanic Serving Institution. Instrument reliability was tested via multiple administrations of the instruments, and confirmatory factor analysis supported a two-factor structure similar to an existing model of a revised version of the ASCI for all three instruments. The similar factor structure of the three instruments, coupled with interviews with students, provide validity evidence for the instruments and support an interpretation that one of the subscales aligns with a cognitive aspect of attitude while the other subscale aligns with an affective aspect. The results of these instruments indicate that students have a more positive attitude toward biology than either chemistry or math, and more positive affective attitude than cognitive attitude for all three subjects, although student attitudes show little change with respect to biology, chemistry, or math during a typical semester. However, major perturbations, such as switching to remote instruction midsemester, can lead to small but significant increases and decreases in attitude.

KEYWORDS: First-Year Undergraduate/General, Second-Year Undergraduate, Chemical Education Research, Testing/Assessment

FEATURE: Chemical Education Research

INTRODUCTION

What is attitude? While attitude can have a variety of context-dependent definitions, psychologists generally hold that attitude is a multidimensional construct that depends on knowledge, feeling, and behavior, and must be directed at something or someone in either a positive or negative manner. More formally, attitude is a tripartite structure that combines (1) a cognitive dimension (knowledge), (2) an affective dimension (feeling), and (3) an action dimension (behavior).^{1–4} This tripartite structure can lead to similar attitudes about something, but for different reasons. As an example, consider two biology graduate students, one who is deeply knowledgeable about protein structure and enjoys solving crystal structures, but is squeamish about dissecting animals, and another who feels very confident working in a lab and is unfazed by the sight of blood, but worries about her depth of knowledge and finds exams stressful. Both students likely have a positive attitude toward biology, otherwise they probably would not be in graduate school studying biology, but for different underlying reasons.

An important reason for understanding attitude is that attitude has been shown to affect behavior. For example, a student who finds chemistry engaging, likes thinking about chemistry problems, and feels confident while carrying out chemistry experiments is more likely to continue taking chemistry courses, or even major in chemistry, than a student who finds chemistry frustrating, dislikes thinking about chemistry problems, and feels clumsy when carrying out chemistry experiments. A generally accepted model linking attitude with behavior is Theory of Planned Behavior,⁵ developed by Ajzen in the 1980s as an extension of Ajzen and Fishbein's Theory of Reasoned Action.^{6–8} The Theory of Planned Behavior posits that there are three inputs that modulate a person's intention to behave: (1) attitude toward a behavior, (2) subjective norms, and (3) perceived behavior control, and this intention then impacts their actual behavior. Of these three inputs, attitude toward a behavior is the most important. This model has been shown to be effective for understanding the relationship between student attitude and behavior in physics.^{9,10} More broadly, fostering positive student attitudes toward science has been shown to correlate strongly with student achievement, persistence, and retention.^{11–25}

An important result of this idea that attitude modulates behavior is that if we want to improve student success in science, we must improve student attitudes about science. It is well-known that undergraduate students leave STEM majors at

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<https://doi.org/10.1021/acs.jchemeduc.1c01109>
J. Chem. Educ. 2022, 99, 1758–1765

SNS is leading the campus in empowering and cultivating faculty leadership

SNS Leadership Council Fall, 2022



Leadership Council

- Department chairs:
- Faculty hiring and promotion
 - Teaching assignments
 - TA hiring
 - Departmental budget and planning
 - Lead department vision

- Graduate group chairs:
- Grad group policies and planning
 - Graduate recruitment
 - Consult on TA Assignments
 - Lead graduate program vision

- NS Executive Committee (Elected):
- Review and develop school policies
 - Represent SNS at Academic Senate

SNS Planning (Core)

Department Chairs	Graduate Chairs	SNS EC
AM - Suzanne Sindi	AM - Roummel Marcia	Eric Menke (chair)
CBC - Ryan Baxter	CBC - Christine Isborn	David Strubbe (vice chair)
LES - Carolin Frank	ES - Marc Butel	MCB - David Ardell
MCB - Jennifer Manilay	QSB - Fred Wolf	CBC - Aurora Pribram-Jones
Physics - Linda Hirst	Physics - Chih-Chun Chien	LES - Emily Jane McTavish
		Physics - Lin Tian
		AM - Chrysoula Tsogka/Erica Rutter

Dean - Betsy Dumont
 Associate Dean for Academic Programs - Mike Colvin
 Assistant Dean for Students - Angie Salinas
 Assistant Dean for Operations and CFO - Ernie Costello





SNS is widely recognized as *the* campus trailblazer in many different arenas

Research Article



An Upper-Division, Remote Microbiology Laboratory That Blends Virtual and Hands-on Components to Promote Student Success during the COVID-19 Pandemic

Candace Guzman-Cole^a and Marcos E. García-Ojeda^a
^aDepartment of Molecular and Cell Biology, School of Natural Sciences, University of California, Merced, Merced, California, USA

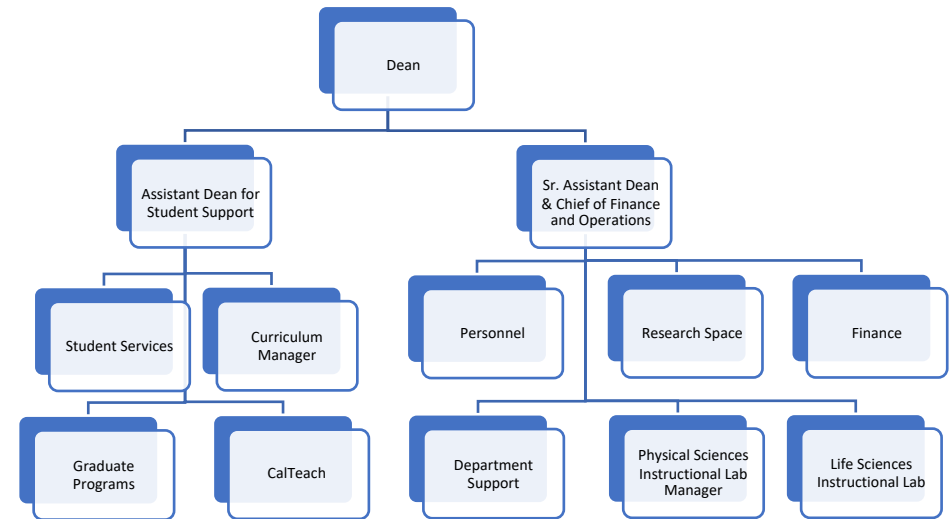


Catalyst for inaugural Associate Deans for Equity, Justice and Inclusive Excellence



1st Academic Living Learning Communities

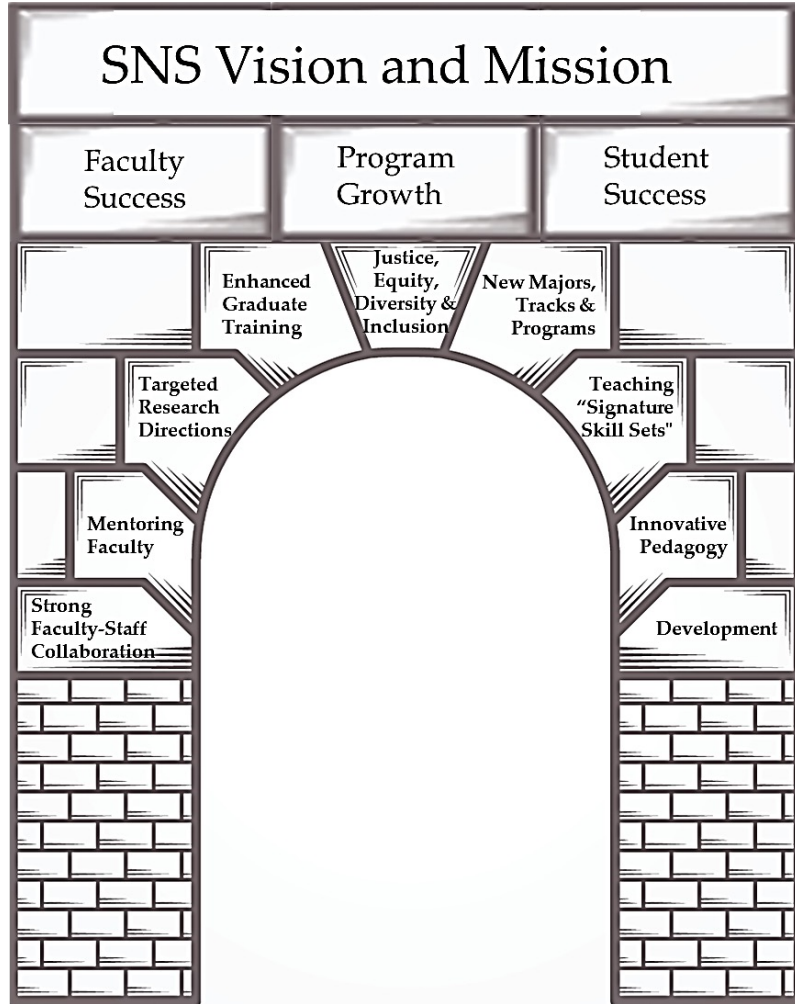
17 NSF CAREER Awards!



Highly effective organization and staff



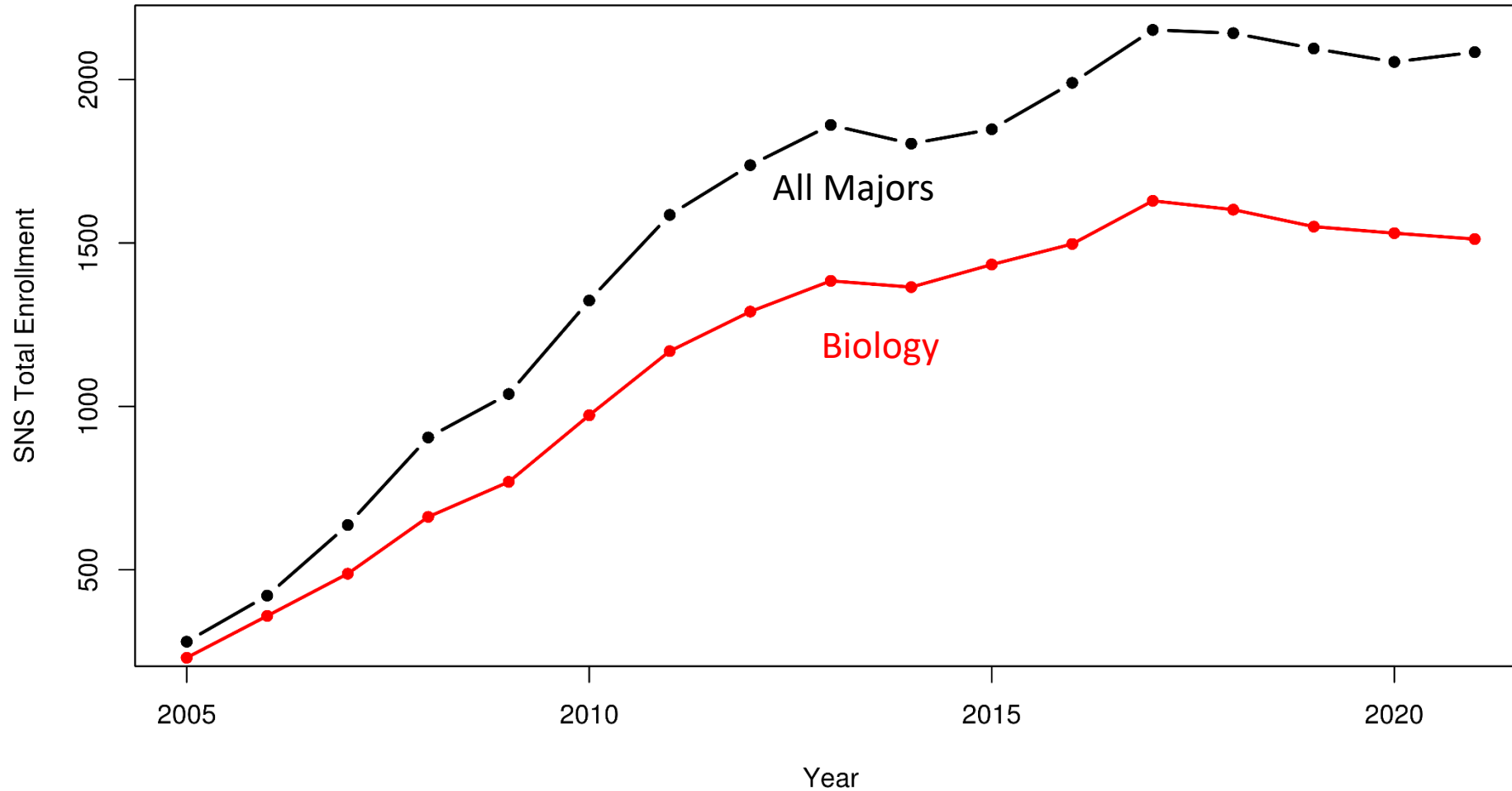
SNS has a comprehensive, community-driven and actionable Strategic Plan



Ongoing and near-term action items:

- Formalizing training and organizing resources for Department Chairs
- Working with Department Specialists to more fully integrate them into departments
- Lunch & Learn - "how to" sessions for faculty hosted by SNS staff - THIS THURSDAY!!
- Pedagogical Training for new faculty - collaboration with CETL
- Mentor Training - National Research Mentoring Network (CIMER program)
- Continued support for grant-writing workshops
- Exploring expanded professional development for grad students and postdocs
- Exploring Postdoctoral Fellows affiliated with grad programs to provide near peer mentoring and community focus
- Campus hiring Director of Academic Program Development - support for writing program proposals, market-based analytics for scoping programs and desirable skill sets
- Enhanced collaboration with External Relations, Admissions and DUE for marketing majors

Despite positives, SNS's future depends on continued student growth





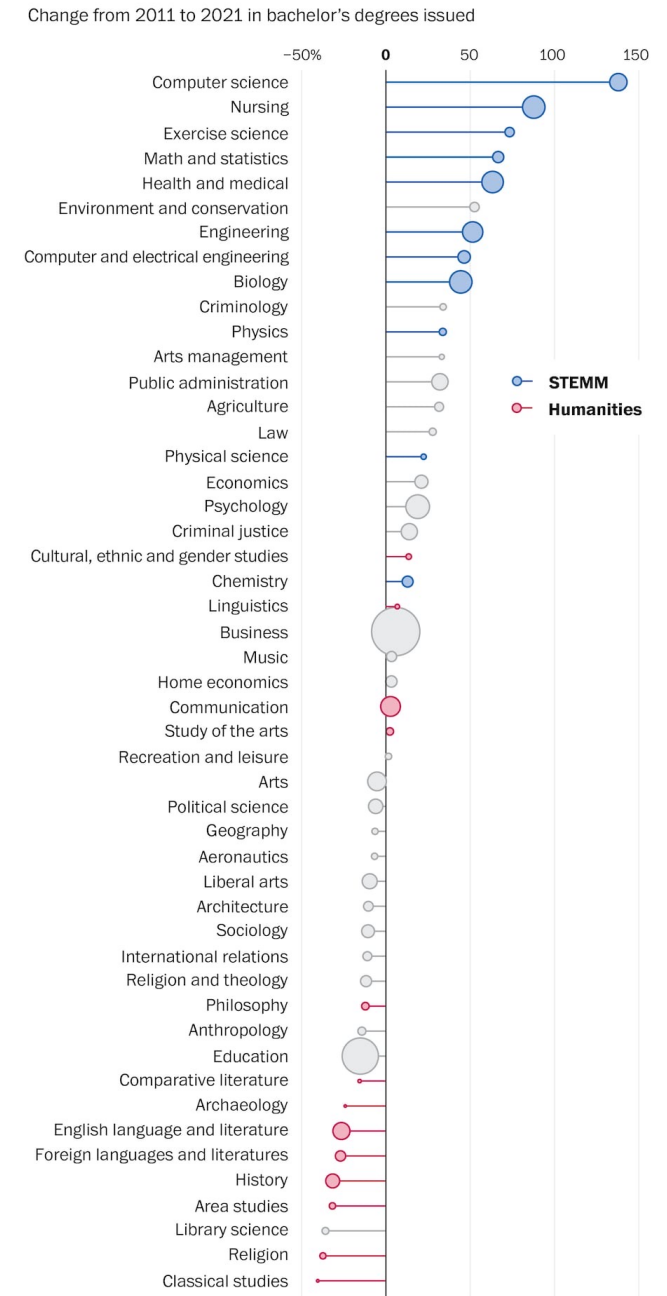
Reasons for drop in SNS enrollment are unclear

Reasons to be optimistic

- SNS was the campus’s original engine of growth
- All SNS majors are seeing growth nationwide
- SNS is a leader in new pedagogies
- SNS majors are filled with innovative hands-on classes and laboratories

New strategies from SNS Academic Plan

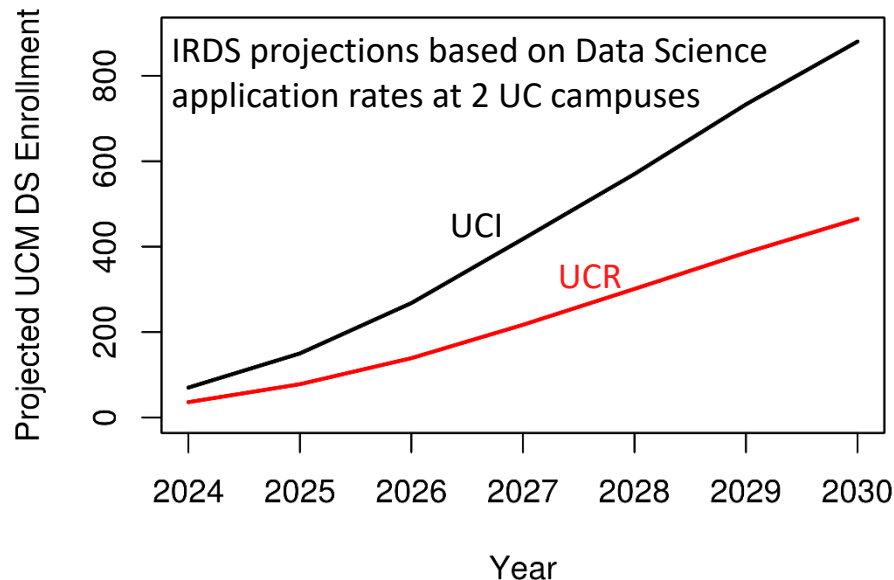
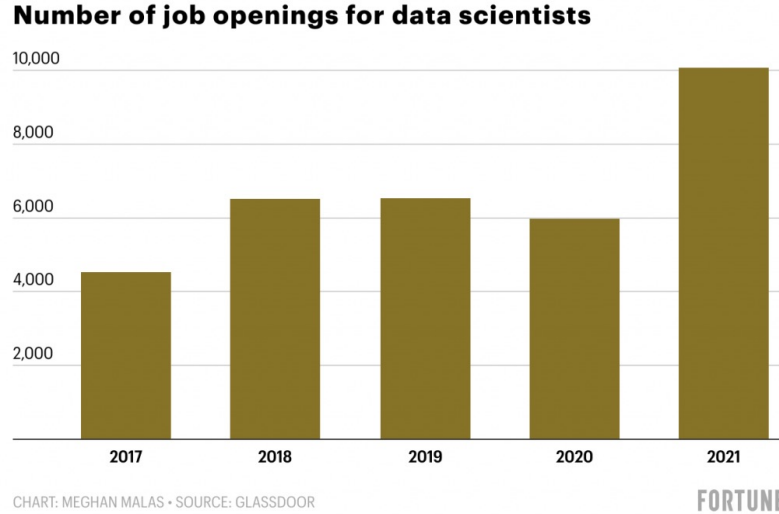
- Establish new majors in areas of job growth
- Advertise to students the underlying "skill sets" learned in SNS majors
- Create programs such as Summer Bridge to improve student retention in SNS majors
- Create post-graduation paths to employment such as MS degrees or certifications



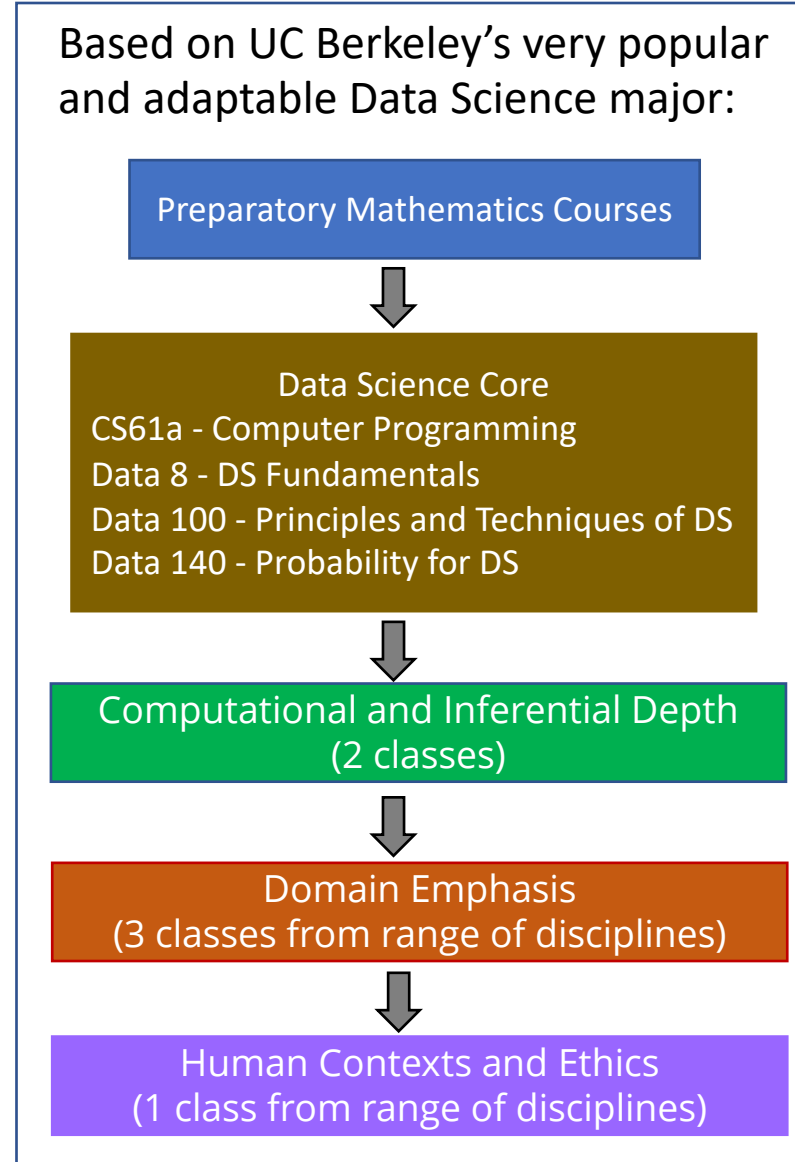
Note: size indicates relative number of graduates; figures don't include second majors; STEM disciplines include science, technology, engineering, mathematics and medicine
 Source: Ben Schmidt's analysis of data from the National Center for Education Statistics
 THE WASHINGTON POST



A multidisciplinary group within SNS is creating a proposal for a Data Science major



Based on UC Berkeley's very popular and adaptable Data Science major:



Building Community and Communication

Lunch with the Dean



SNS Graduate Student Advisory Council



Faculty & Staff Lunches



Monthly Staff Breakfasts

Daytrip for incoming PhD Students



Staff Council



Best wishes for a fantastic fall semester!



SNS fall picnic
Vista Ranch
THIS FRIDAY!

5:00-7:30pm
Families Welcome!!



