

JUST // EQUATIONS

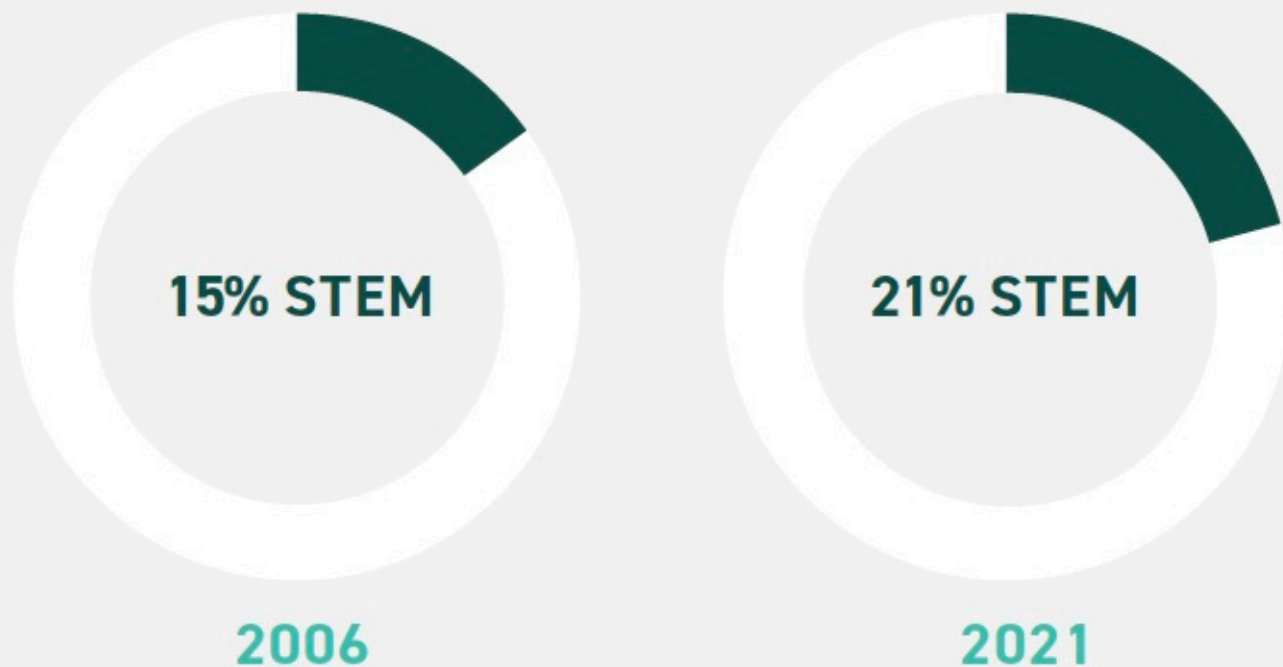
**A COMPLEX EQUATION:  
CONFRONTING MATH OBSTACLES  
ON THE TRANSFER PATH**

# THE NARROW PATH TO STEM TRANSFER

## STEM DEGREES ARE GROWING AS A PROPORTION OF BACHELOR'S DEGREES —

increasing by **40 percent** nationally over 15 years.\*

### STEM DEGREES AS A PROPORTION OF B.A./B.S. DEGREES NATIONALLY



\*California saw a 25 percent increase from 2011 to 2017.

But non-transfer students are more likely to earn those degrees.†

### FIRST-TIME COMMUNITY COLLEGE STUDENTS



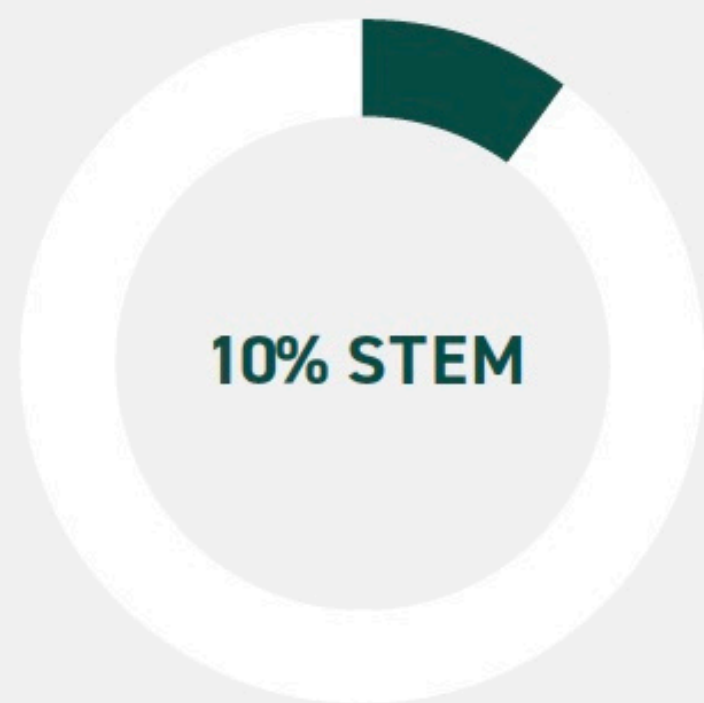
### FIRST-TIME UNIVERSITY STUDENTS



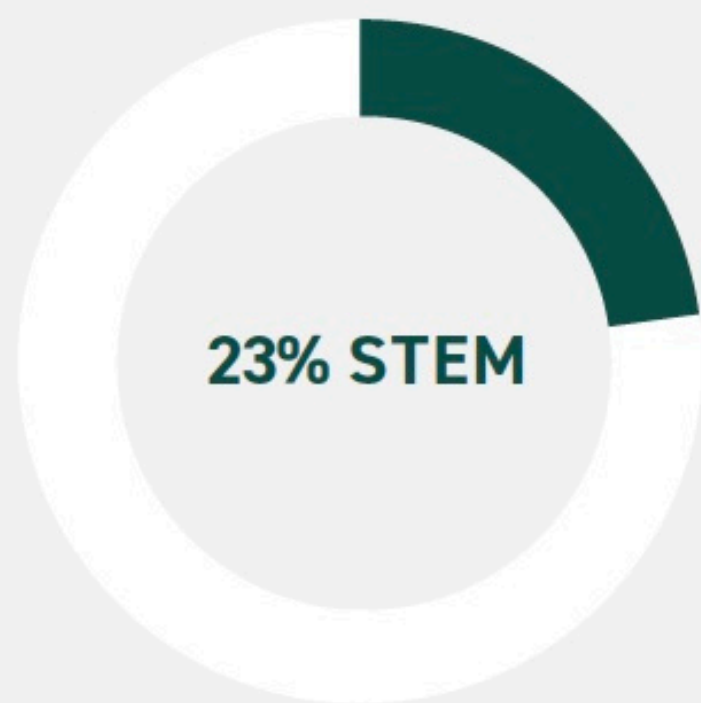
† Percent of entering students who earn a STEM degree within six years.

Even before transferring, community college students are less likely than university students to complete STEM degrees.

#### DEGREES AWARDED IN 2022-23



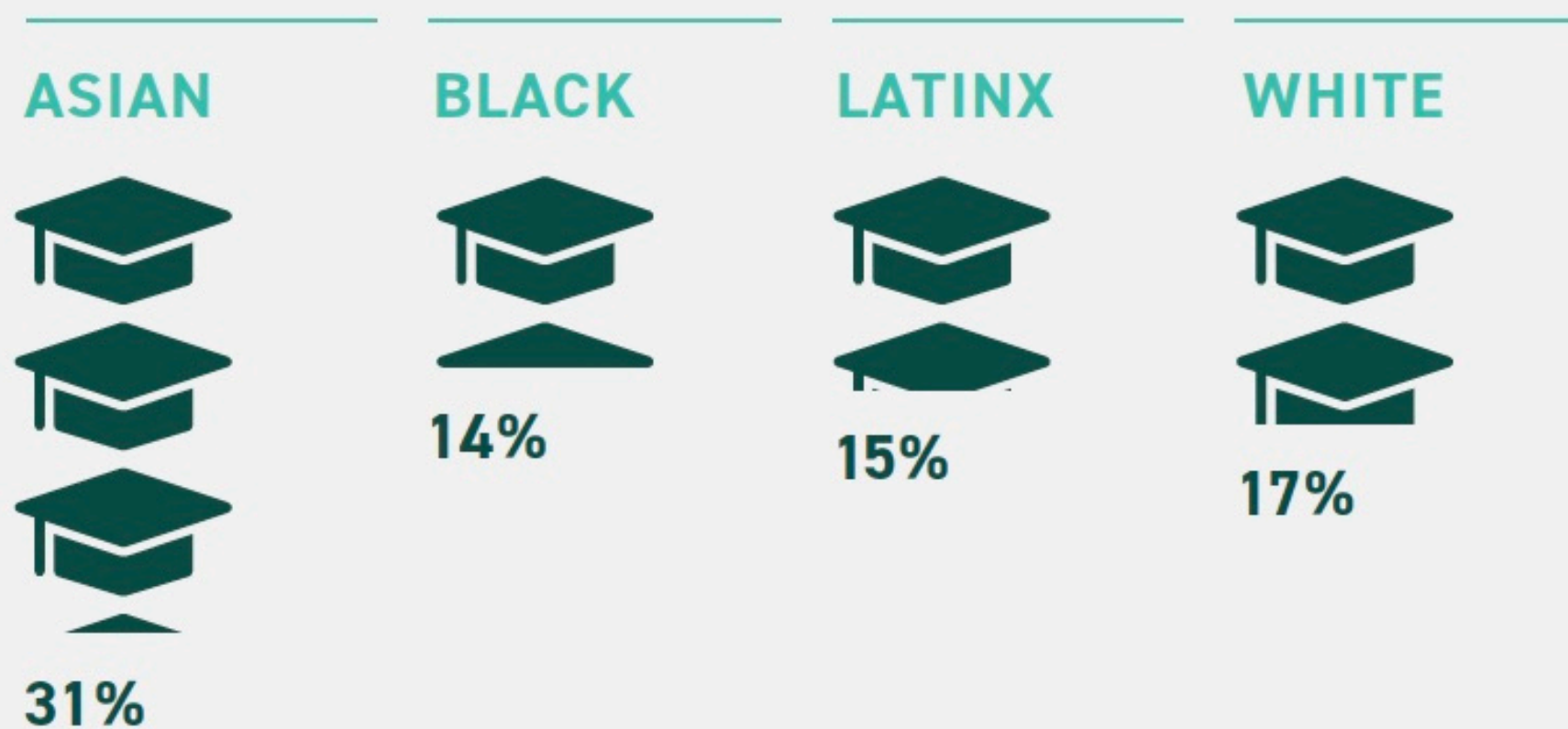
A.A. DEGREES



B.A./B.S. DEGREES

And racial disparities are stark.

#### PROPORTION OF TRANSFER STUDENTS' BACHELOR'S DEGREES IN STEM<sup>‡</sup>



<sup>‡</sup>For 2015-16 enrollees. Proportion across all groups was 18 percent.

## BIOLOGY: LOWER-DIVISION MATH REQUIREMENTS AT SELECTED CAMPUSES\*

STATISTICS	PRE-CALCULUS	CALCULUS I	CALC I + STATISTICS	CALC I, II + STATISTICS	CALC I, II, III + STATISTICS	CALC I, II, III + DIFFERENTIAL EQUATIONS + LINEAR ALGEBRA
1 COURSE	1 COURSE	1 COURSE	2 COURSES	3 COURSES	4 COURSES	5 COURSES
<b>UC SANTA CRUZ</b> (B.A.)  <b>CAL STATE DOMINGUEZ HILLS</b> (B.A.)	<b>CAL STATE EAST BAY</b> (B.A.)  <b>CSU BAKERSFIELD</b> (B.S.)  <b>SAN FRANCISCO STATE</b> (B.A.)  <b>CAL STATE NORTHRIDGE</b> (B.A.)  <b>CAL STATE SAN BERNARDINO</b> (B.A.)	<b>UC SANTA CRUZ</b> (B.S.)  <b>SAN JOSÉ STATE</b> (B.S.)  <b>SAN DIEGO STATE</b> (B.A. & B.S.)  <b>CAL POLY POMONA</b> (B.S.)  <b>CAL STATE EAST BAY</b> (B.S.)	<b>UC MERCED</b> (B.A.)  <b>SONOMA STATE</b> (B.S.)  <b>SACRAMENTO STATE</b> (B.S.)  <b>CAL STATE DOMINGUEZ HILLS</b> (B.S.)  <b>CSU SAN MARCOS</b> (B.S.)	<b>UC SAN DIEGO</b> (B.S.)  <b>CAL POLY SAN LUIS OBISPO</b> (B.S.)	<b>UC LOS ANGELES</b> (B.S.)	<b>UC BERKELEY</b> (B.S.)
<b>COLOR KEY</b> <span style="color: #007060;">■</span> <b>UC CAMPUSES</b> <span style="color: #007060;">■</span> <b>CSU CAMPUSES</b>						

\*Campuses were selected to illustrate the range of sequences required around the state. For campuses with concentrations within biology, the following were used:

- + **Cell and molecular biology:** Cal State East Bay (B.S.), Sacramento State, Cal State Dominguez Hills, San José State
- + **Chemical biology:** UC Berkeley (B.S.)
- + **Biology education:** Cal State East Bay (B.A.)

# Three Math Obstacles to Transfer Success



**The gate.** Math anxiety and math prerequisites act as a gatekeeper for many students pursuing math-intensive fields.



**The maze.** The complexity, inconsistency, and opacity of math requirements makes the transfer experience difficult and inefficient.



**The pace.** Course scheduling challenges can delay progress and lengthen time to degree.

# Competing Priorities

- Innovation vs. standardization
- Institutional autonomy vs. systemwide consistency
- Efficient completion vs. academic quality





# THANK YOU

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