



UNIVERSITY  
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March 25, 2021

The Honorable Nancy Skinner  
Chair, Joint Legislative Budget Committee  
1020 N Street, Room 553  
Sacramento, California 95814

Dear Senator Skinner:

Pursuant to Item 6440-001-0001 of the 2010-11 Budget Act, Provision 7, enclosed is the University of California's report to the Legislature on California State Summer School for Mathematics and Science (COSMOS), 2016-2020.

If you have any questions, Associate Vice President David Alcocer would be pleased to speak with you. David can be reached by telephone at (510) 987-9113, or by email at [David.Alcocer@ucop.edu](mailto:David.Alcocer@ucop.edu).

Sincerely,

Michael V. Drake, MD  
President

Enclosure

cc: Senate Budget and Fiscal Review  
The Honorable John Laird, Chair  
Senate Budget and Fiscal Review Subcommittee #1  
(Attn: Ms. Anita Lee)  
(Attn: Ms. Jean-Marie McKinney)  
The Honorable Kevin McCarty, Chair  
Assembly Budget Subcommittee #2  
(Attn: Mr. Mark Martin)  
(Attn: Ms. Carolyn Nealon)  
Mr. Hans Hemann, Joint Legislative Budget Committee  
Ms. Erika Contreras, Secretary of the Senate  
Ms. Amy Leach, Office of the Chief Clerk of the Assembly  
Ms. Sue Parker, Office of the Chief Clerk of the Assembly  
Mr. Jeff Bell, Department of Finance  
Mr. Chris Ferguson, Department of Finance  
Ms. Rebecca Kirk, Department of Finance

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**University of California**  
**Report on the California State Summer School for**  
**Mathematics and Science, 2016-2020**  
March 2021

**Table of Contents**

Legislative Request .....	2
University of California Response .....	2
Executive Summary .....	2
Mission and Goals .....	4
Program Description .....	4
Caliber and Number of Student Participants .....	5
Demographics of Student Participants .....	6
Program Funding, Costs, and Financial Aid .....	11
Conclusion .....	14
Appendix A: Summer 2020 COSMOS Cluster Offerings (Planned) .....	15
Appendix B: COSMOS Advisory Board Members .....	16
Appendix C: COSMOS Application .....	17

**List of Displays**

Display 1: COSMOS Participant Unweighted Grade Point Averages, 2018 .....	5
Display 2: COSMOS Participants by Year and Campus, 2016-2020 .....	6
Display 3: COSMOS Participants by Grade, 2016-2019 .....	7
Display 4: COSMOS Participants by Grade and Year, 2016-2020 .....	7
Display 5: COSMOS Applicant and Participant Ethnicities by Year, 2017-2020 .....	9
Display 6: COSMOS Participants by County, 2017-2020 .....	10
Display 7: COSMOS Totally Participants and Participants Awarded Financial Aid .....	12
Display 8: COSMOS Alumni Post-Secondary Destinations by Ethnicity .....	13

## **Legislative Request**

Item 6440-001-0001 of the 2010-11 Budget Act requires the University of California (UC) to provide a report to the Legislature on *COSMOS Program Outcomes and Effectiveness*. The Budget Act reads:

“7. Of the funds appropriated in Schedule (1), \$1,897,200 is for the California State Summer School for Mathematics and Science (COSMOS). The University of California shall report on the outcomes and effectiveness of COSMOS every five years, commencing April 1, 2011.”

Section 8669.1 of the Education Code reads:

"It is the intent of the Legislature that the University of California conduct an evaluation on the effectiveness of the California State Summer School for Mathematics and Science every two years from the effective date of the act that amends this section."

## **University of California Response**

The California Legislature established the California State Summer School for Mathematics and Science (COSMOS) in 1998 (Assembly Bill 2536), with the goal of engaging highly talented and motivated students in an intensive program of study, experimentation, and activities to further their interests and skills in science, technology, engineering, and mathematics. The Request for Proposal to host COSMOS was awarded to the University of California and the program launched at Irvine and Santa Cruz in 2000. Due to high demand, UC added two additional campuses: Davis in 2001 and San Diego in 2004.

The long-term goals of the COSMOS program require a multi-year examination of how COSMOS participants fare. This COSMOS report to the Legislature covers summer 2016 through summer 2020 and provides information on the program and participants, program funding and costs, and college destinations of COSMOS alumni.

## **Executive Summary**

- From summer 2016 through summer 2019, 3,128 students participated in COSMOS. (Due to COVID-19, COSMOS was unable to offer a summer 2020 program.<sup>1</sup>) Had there

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<sup>1</sup> Due to the COVID-19 pandemic, COSMOS made the choice to cancel the summer program at all four campuses. The cancellation was announced in April 2020, by which time the admissions for the 2020 program had already been released. In this report, where 2020 data are provided, the participants are those who accepted their position at COSMOS. As they did not actually attend they will not be counted as alumni of the program for future reporting.

been a program in 2020, an additional 911 students would have attended the program bringing the total for the 5 years to 4,039. Over time, enrollment has risen steadily, from 728 participants in summer 2016 to 911 admitted students in summer 2020, which is an increase of 25%.

- The demand for admission to COSMOS is strong and has been since its inception. For example, of 4,833 completed applications for summer 2019, 1,060 (22%) were admitted, and 340 (7%) were wait-listed.
- Using higher education enrollment data from the National Student Clearinghouse, UC has been able to track 96 percent of its participants (3,354 of 3,483) from summer 2011 to summer 2015 as having enrolled at a college or university after completing high school. Similarly, although not all participants from summer 2016 to summer 2019 have completed high school as of this writing, 2,832 of 3,172 (89%) have already enrolled in a college or university. This means that at least nine out of ten (6,186 or more of 6,655) COSMOS participants from the past decade have already enrolled in a college or university.
- Of the 6,186 COSMOS alumni enrolled at colleges and universities, 5,440 (90%) attended four-year institutions, with 3,384 (55%) at UC campuses, 1,858 (30%) at private or out-of-state universities, and 198 (3%) at California State University campuses. Another 737 (12%) enrolled at California Community Colleges (two-year programs), and the remaining 9 (less than 0.1%) enrolled at private or out-of-state two-year institutions.
- Among the 3,384 COSMOS alumni who enrolled at UC campuses, 37% were at UC Berkeley, 22% at UC Los Angeles, 15% at UC San Diego, 9% at UC Davis, 7% at UC Santa Barbara, 6% at UC Irvine, 4% at UC Santa Cruz, and 1% each at UC Riverside and UC Merced.
- Also, of the 3,384 COSMOS alumni enrolled at UC campuses, 3,296 (97%) entered with declared majors. Of these 3,296 students, 2,614 (79%) have declared STEM (science, technology, engineering, and mathematics) majors.
- After UC, the top ten four-year universities at which COSMOS alumni most often enrolled are Stanford University, University of Southern California, Massachusetts Institute of Technology, Carnegie Mellon University, California Polytechnic State University, Cornell University, University of Pennsylvania, University of Illinois at Urbana, University of Chicago, and Brown University.

## **Mission and Goals**

The mission of the COSMOS program is to provide outstanding high school students in STEM disciplines with opportunities to delve deeply into their subjects and to prepare for careers in the STEM fields.

In 2002, the University of California convened an expert advisory board to design the COSMOS program. The board set out the following goals for the COSMOS program:

- To engage talented students in high-level teaching and learning;
- To establish a community of scholars that fosters analytical thinking and experimentation;
- To connect students to institutions of higher learning and research facilities;
- To develop models for excellence in science and mathematics education; and
- To ensure that the COSMOS student body reflects California’s geographic, economic, and cultural diversity.

## **Program Description**

The COSMOS summer sessions last four weeks and straddle state fiscal years. For funding purposes, each summer session is aligned with the earlier fiscal year; for example, the summer 2015 session is funded from FY 14-15 dollars.

In the course of a four-week summer session, COSMOS courses or “clusters” address advanced topics in the STEM fields that go well beyond the typical high school curriculum. COSMOS clusters typically consist of two science and/or mathematics courses, and a science communication course. (Science communication courses teach students how to present science projects to diverse audiences.) The clusters vary by campus and by session but have included such subjects as astronomy, aerospace and mechanical engineering, biomedical sciences, computer science, ecology, marine science, robotics, game theory, and more. (Please see Appendix A for a list of COSMOS clusters by campus planned for summer 2020.)

The cluster courses are intensive, emphasizing current research underway at the University of California. Distinguished faculty and researchers teach the COSMOS courses and supervise the students. Typically, 18 to 25 students participate in a given COSMOS cluster, and the ratio of students to faculty is usually five to one. COSMOS aims to keep the faculty student ratio low for each cluster so that students benefit from one-on-one faculty mentorship. On weekdays, students

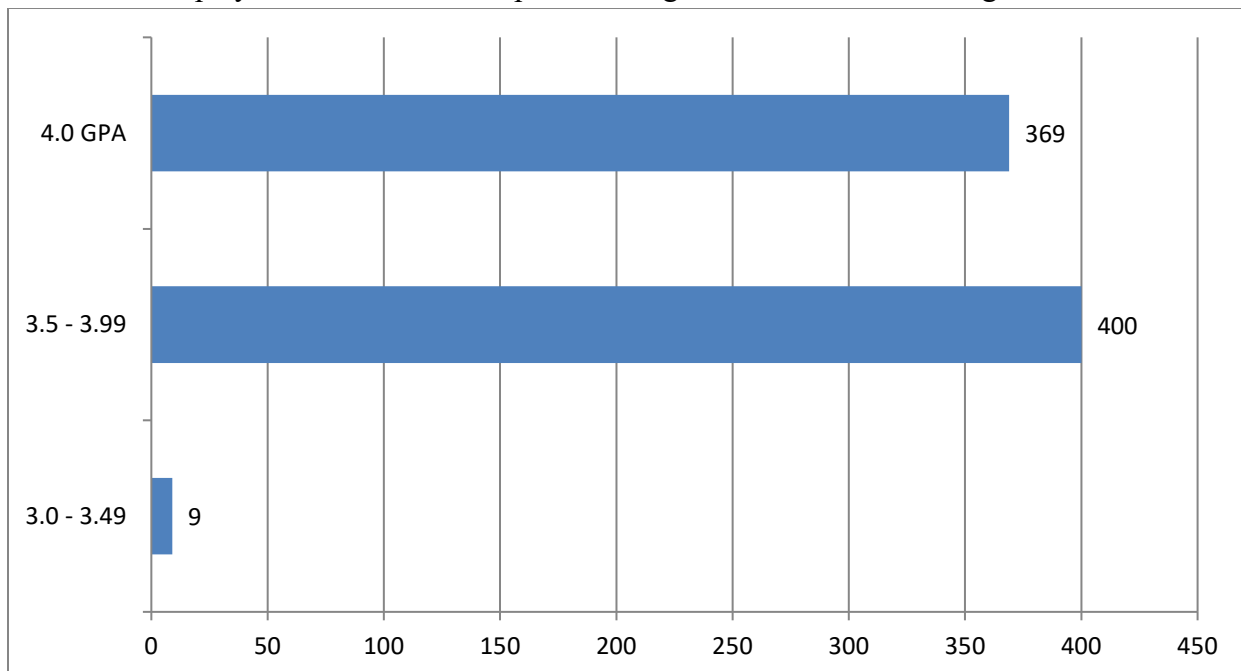
typically work from 9:00 a.m. to 4:00 p.m. in University classrooms (attending lectures and discussions) and laboratories, augmented with field trips and/or fieldwork.

Students are required to live on campus for the duration of the program, which gives them many opportunities to interact with a community of student scholars who support and learn from one another and who share the same interests in mathematics and science. Evening and weekend activities, including recreational activities and additional field trips, are planned and supervised. A statewide advisory board consisting of scientific and technological leaders in higher education and industry guides the COSMOS program. Representatives include leaders from the philanthropic, industrial, business, legislative, and non-profit community. (Please see Appendix B for a list of current advisory board members.)

### **Caliber and Number of Student Participants**

*Caliber of Participants* – Each campus can accommodate an average of just over 200 participants per summer session and thus selection is competitive. For example, of 4,833 completed applications for summer 2019, 1,060 (22%) were admitted, and 340 (7%) were wait-listed. Applicants must demonstrate academic excellence. For example, in summer 2018, nearly all COSMOS attendees had an unweighted GPA of 3.5, with an overall average of 3.93. (Display 1)

Display 1: COSMOS Participant Unweighted Grade Point Averages, 2018



Source: COSMOS application database

*Number of Participants* – Display 2 indicates a steady rise in the number of students participating in COSMOS from 728 participants in summer 2016 to 911 admitted for summer 2020, an increase of 25%.

Display 2: COSMOS Participants by Year and Campus, 2016-2020

	Summer 2016	Summer 2017	Summer 2018	Summer 2019	Admissions 2020	Total 2016-2020
UC Davis	209	198	216	238	278	1,139
UC Irvine	165	167	182	186	220	920
UC San Diego	170	205	199	222	203	999
UC Santa Cruz	184	175	180	232	210	981
Total	728	745	777	878	911	4,039

Source: COSMOS application database

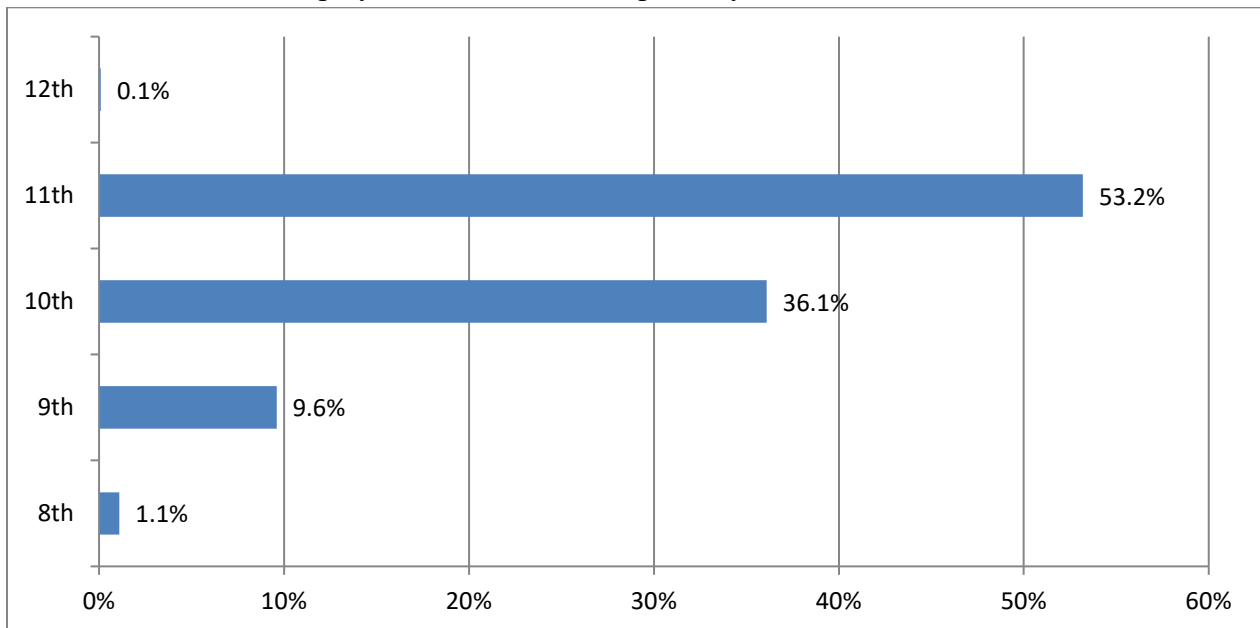
### **Demographics of Student Participants**

*Grade Level of Participants* – As mandated by the authorizing legislation, COSMOS participants may apply as early as the eighth grade to attend a summer session before entering high school, and participants may also apply immediately after graduating from high school, but both are rare; the vast majority of applicants are in the process of completing ninth, tenth, or eleventh grade.

Display 3 shows the percentages of summer 2016 to summer 2019 COSMOS participants by the grade level they most recently finished before the summer of their participation. One percent applied as eighth graders to participate in a COSMOS session before beginning their freshman year of high school, and most students participated in the summer before their junior (36%) or senior year (53%).



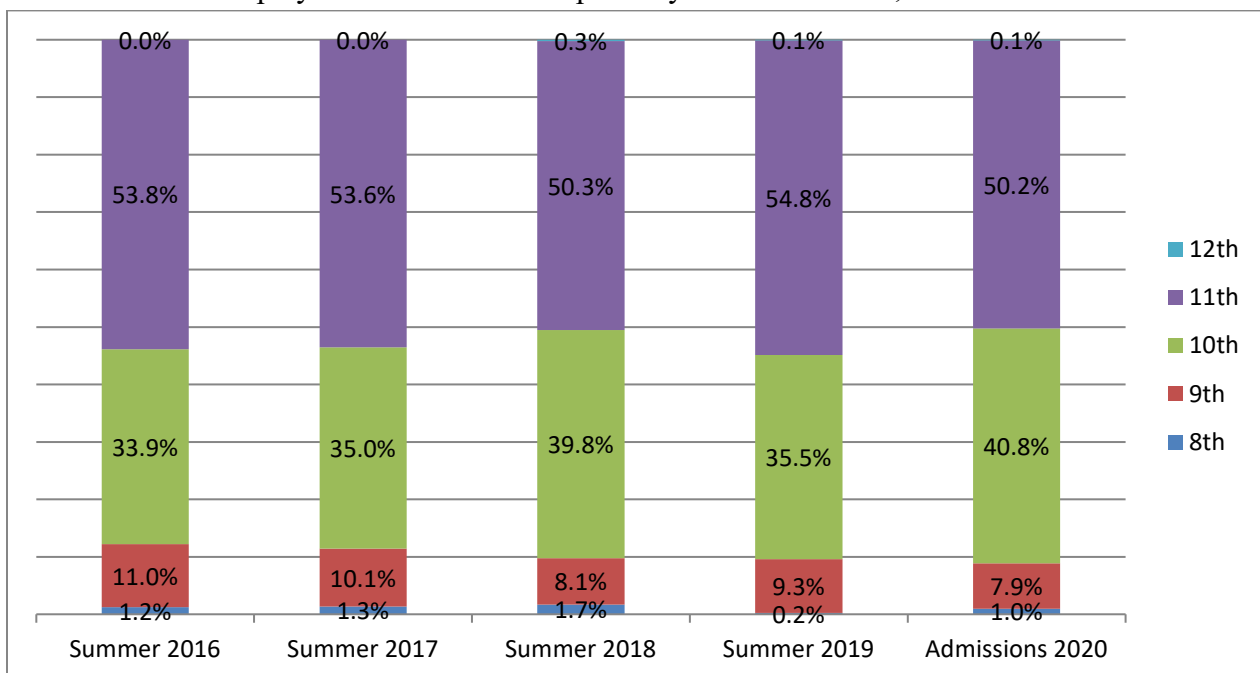
Display 3: COSMOS Participants by Grade, 2016-2019



Source: COSMOS application database

Over time, participation by grade level has not shifted by much, with the majority of students attending the summer after their 11<sup>th</sup> grade year. As indicated in Display 4, fluctuations have occurred across all grade levels, but not in a pronounced way.

Display 4: COSMOS Participants by Grade and Year, 2016-2020



Source: COSMOS application database

*Gender and Ethnicity of Participants* – COSMOS students have historically remained evenly split between male and female participants. For example, from summer 2016 to summer 2020, male participants comprise 48.2% and female participants comprise 51.7%. In later years, students were also given the option for Other/Disclaimer which makes up 0.1% of participants/admits from 2016 to 2020.

Reporting methods for participant ethnicity changed between the summers of 2016 and 2017.<sup>2</sup> For summer 2016, participant ethnicities were 59.2% Asian/Pacific Islander, 17.2% Caucasian, 12.9% Latino, 1.1% African American/Black, 0.1% Native American, 3.8% Multiple Ethnicities (some combination of the previously listed ethnicities), and 5.6% Declined to State. As indicated in Display 5, participant ethnicities did not have large changes throughout 2017 to 2020, with only White students seeing a clear drop from 20% to about 15%. All students were asked separately if they identified as Hispanic or Latino. This resulted in a decline between 2017 to 2020, from 11% to 8%.

The student composition in COSMOS continues to show imbalances in the attendance of different ethnic groups. The balance between genders is slightly in favor of females. In consultation with equity, diversity, and inclusion specialists at the Office of the President and UC Davis, COSMOS leadership is conducting an analysis of the selection process to determine whether adverse biases are affecting the program's faculty-led admissions decisions. Early findings indicate that identifying more prospective students from underrepresented groups and encouraging them to apply can positively affect admission and enrollment of more participants from these groups. The program is also revamping its outreach strategies to better reach all qualified students in the state by building stronger relationships with schools and K-12 STEM programs with substantial populations of students from underrepresented groups.

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<sup>2</sup> In 2017, COSMOS began using a new application database with ethnicity groups that differ slightly from those used in the previous database. The new groups, in use since 2017, can be seen in Display 5.

Display 5: COSMOS Applicant and Participant Ethnicities by Year, 2017-2020

	2017		2018		2019		2020	
	Applied	Attended	Applied	Attended	Applied	Attended	Applied	Admitted
Asian/Asian American	2,321 65.3%	464 62.3%	2,941 70.7%	502 64.6%	3,578 73.6%	566 64.5%	3,480 75.0%	605 66.4%
White	565 15.9%	149 20.0%	575 13.8%	154 19.8%	542 11.1%	158 18.0%	485 10.5%	144 15.8%
Hispanic or Latino	422 11.9%	82 11.0%	323 7.8%	59 7.6%	280 5.8%	78 8.9%	259 5.6%	74 8.1%
African American/Black	39 1.1%	4 0.5%	40 1.0%	8 1.0%	25 0.5%	6 0.7%	25 0.5%	7 0.8%
Native American/Alaskan Native	19 0.5%	5 0.6%	24 0.6%	5 0.6%	18 0.4%	3 0.3%	13 0.3%	7 0.8%
Native Hawaiian/Other Pacific Islander	14 0.4%	0 0.0%	20 0.5%	3 0.4%	16 0.3%	2 0.2%	15 0.3%	3 0.3%
Multiple Ethnicities	138 3.9%	40 5.4%	153 3.7%	28 3.6%	184 3.8%	57 6.5%	153 3.3%	44 4.8%
Decline to State	460 12.9%	83 11.1%	409 9.8%	78 10.0%	500 10.3%	86 9.8%	467 10.1%	101 11.1%

Source: COSMOS application database

*Geographic Diversity of Participants* – Display 6 shows the number of participants from California by county, where each county has been placed into one of the 11 regions defined by the California County Superintendents Educational Services Association (CCSESA; <http://ccsesa.org/>). (CCSESA regions comprise multiple counties and provide an organizational mechanism for county superintendents to work together in order to implement statewide educational programs and policies.)

COSMOS participants have come from every CCSESA region. For summer 2017 to summer 2020, 3,247 COSMOS participants resided in 44 of California's 58 counties, with the largest

share (1,061; 33%) coming from Region 5 (Monterey, San Benito, Santa Clara, and Santa Cruz Counties).

Display 6: COSMOS Participants by County, 2017-2020<sup>3</sup>

Region	Counties Included	Total COSMOS Participants
1	Humboldt, 3, 0.09% Lake, 1, 0.03% Mendocino, 8, 0.25% Sonoma, 21, 0.65%	33 1.02%
2	Butte, 5, 0.15% Shasta, 2, 0.06% Siskiyou, 1, 0.03%	8 0.25%
3	Alpine, 1, 0.03% Colusa, 2, 0.06% El Dorado, 5, 0.15% Nevada, 1, 0.03% Placer, 21, 0.65% Sacramento, 68, 2.10% Sutter, 2, 0.06% Yolo, 33, 1.02%	133 4.10%
4	Alameda, 408, 12.58% Contra Costa, 177, 5.46% Marin, 24, 0.74% Napa, 3, 0.09% San Francisco, 53, 1.63% San Mateo, 133, 4.10% Solano, 7, 0.22%	805 24.82%
5	Monterey, 13, 0.40% San Benito, 1, 0.03% Santa Clara, 1,014, 31.26% Santa Cruz, 33, 1.02%	1,061 32.71%
6	Amador, 2, 0.06% San Joaquin, 8, 0.25% Stanislaus, 12, 0.37%	22 0.68%
7	Fresno, 20, 0.62% Kings, 1, 0.03% Merced, 5, 0.15% Tulare, 1, 0.03%	27 0.83%
8	Kern, 38, 1.17% San Luis Obispo, 2, 0.06% Santa Barbara, 7, 0.22% Ventura, 43, 1.33%	90 2.77%
9	Imperial, 18, 0.55% Orange, 308, 9.49% San Diego, 270, 8.32%	596 18.37%
10	Mono, 1, 0.03% Riverside, 30, 0.92% San Bernardino, 45, 1.39%	76 2.34%
11	Los Angeles, 393, 12.11%	393 12.11%
Total	44 Counties	3,244 100%

Source: COSMOS application database

<sup>3</sup> Summer 2016 figures were taken from aggregated data found in a previous COSMOS report which did not contain county data for all participants. Therefore, only data for 2017-2020 participants/admits are included in Display 6.

## **Program Funding, Costs, and Financial Aid**

*COSMOS Funding Sources* – In FY 2019-20, UC received \$1.652 million in State funds to fund the summer 2019 COSMOS program, and since 2016-17 the amount of state appropriation has remained at approximately \$415 thousand per campus each year. The 2011-12 Budget Act permitted a reduction of up to 21.3% in State General Funds for COSMOS. The California Education Code specifies that the State fund at least 50%, but not more than 75%, of the program’s actual costs.

Additional funds are also provided by participants with the ability to pay from private sources. Over the years UC raised the following amounts of extramural, private funds to support COSMOS: \$325,000 in FY 2015-16; \$237,292 in FY 2016-17; \$192,184 in FY 2017-18; \$159,501 in FY 2018-19; and \$469,991 in FY 2019-20.

*Costs Per Student* – The average cost per student to the University to host a student for a four-week COSMOS summer session, including the costs of providing room and board and the costs of instruction, is \$5,742.

*Program Affordability* – Eligible in-state residents paid a maximum tuition of \$3,932 for the four-week session in summer 2019. (The California Education Code states that tuition for COSMOS may increase by no more than 5% each year for California residents, which has happened every year. It was also increased in 2020, but due to the cancellation of the program due to the COVID-19, no tuition was paid.) This sum covered all student costs with the exception of their travel to and from the campus they were attending. Depending on family income, varying financial assistance was available for families making up to, and including, \$120,000. For example, a family of four with a yearly income of \$43,000 would likely have qualified for a scholarship (\$3,732), and a family of four with a yearly income of \$112,000 would likely have qualified for a 20% scholarship (\$746.40).

Scholarships are provided as funds are available, and this accounts for the fluctuation in the number of awards provided to students from 2016 through 2019. In summer 2019, 66 (7.5%) were provided the maximum financial aid, for a total of \$246,312, and 97 (11.0%) received awards totaling \$304,531.20. Display 7 shows the summer 2019 COSMOS participants, and the number and percent awarded full or partial financial aid.

Out-of-state students, composed of both non-California US residents and international students, pay nonresident tuition and are not eligible for financial assistance. The out-of-state tuition was \$6,000 for 2016 through 2018, and was increased to \$6,500 in 2019. From summer 2016 to summer 2019, 67 (2%) COSMOS participants were non-residents.

Display 7: COSMOS Total Participants and Participants Awarded Financial Aid

	Summer 2016	Summer 2017	Summer 2018	Summer 2019	Admissions 2020
Total Participants	728	745	777	878	911
Total Participants Awarded Financial Aid	160	127	111	97	93
Percent Receiving Financial Aid	22.0%	17.0%	14.3%	11.0%	10.2%

Source: COSMOS application database

*COSMOS Alumni's Academic Development* – UC successfully tracked college or university enrollment for 96% of all COSMOS participants from summer 2011 to 2020 by utilizing the National Student Clearinghouse database, which provides college/university enrollment information for most higher-education institutions within the United States, including UC campuses (Display 8). UC also utilizes the UC systemwide Data Warehouse to track the majors of COSMOS students who enroll at UC's undergraduate campuses.

- Using higher education enrollment data from the National Student Clearinghouse, UC has been able to track 3,354 of 3,483 (96%) alumni from summer 2011 to summer 2015 as having enrolled at a college or university after completing high school. Similarly, even though not all participants from summer 2016<sup>4</sup> to summer 2019 have completed high school as of this writing, 2,832 of 3,172 (89%) have already enrolled in a college or university. This means that at least nine out of ten (6,186 or more of 6,655) COSMOS participants from the past decade have already enrolled in a college or university.
- Of the 6,186 COSMOS alumni enrolled at colleges and universities, 5,440 (90%) attended four-year institutions, with 3,384 (55%) at UC campuses, 1,858 (30%) at private or out-of-state universities, and 198 (3%) at California State University campuses. Another 737 (12%) enrolled at California Community Colleges (two-year programs), and the remaining 9 (less than 0.2%) enrolled at private or out-of-state two-year institutions.
- Among the 3,384 COSMOS alumni who enrolled at UC campuses, 37% were at UC Berkeley, 22% at UC Los Angeles, 15% at UC San Diego, 9% at UC Davis, 7% at UC Santa Barbara, 6% at UC Irvine, 4% at UC Santa Cruz, and 1% each at UC Riverside and UC Merced.

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<sup>4</sup> The COSMOS application database was upgraded in 2017 to enable more accurate reporting. The number of students who attended COSMOS in 2016 was 728. Developers of the application database were able to recover raw data for a total of 772 students listed as either attended or accepted; however, they were unable to identify which 44 students ultimately did not attend. Therefore, all 772 students are included in the college-going analysis.

- Also, of the 3,354 COSMOS alumni enrolled at UC campuses, 3,296 (98%) entered with declared majors. Of these 3,296 students, 2,614 (79%) have declared STEM (science, technology, engineering, and mathematics) majors.
- After UC, the top ten four-year universities at which COSMOS alumni most often enrolled are Stanford University (126 alumni), University of Southern California (108 alumni), Massachusetts Institute of Technology (107 alumni), Carnegie Mellon University (82 alumni), California Polytechnic State University (79 alumni), Cornell University (79 alumni), University of Pennsylvania (62 alumni), University of Illinois at Urbana (57 alumni), University of Chicago (53 alumni), and Brown University (50 alumni).
- Additionally, alumni enrolled at Harvard University (46 alumni), Columbia University (44 alumni), Princeton University (36 alumni), Yale University (29 alumni) and Dartmouth College (22 alumni), bringing the total of COSMOS alumni have enrolled in Ivy League universities during the past decade to almost 370.

Display 8: COSMOS Alumni Post-Secondary Destinations by Ethnicity

	UC	Private/ Out-of- State 4-year	CSU	CCC	Other	Total
Asian/Pacific Islander	1,927	1,079	66	454	3	3,529
White	564	385	51	104	1	1,105
Chicanx/Latinx	508	165	65	88	2	828
Other/Unknown	292	178	9	58	2	539
Two or More Races	57	19	2	23	0	101
African American	30	31	3	10	1	75
American Indian	6	1	2	0	0	9
Total	3,384	1,858	198	737	9	6,186

Sources: National Student Clearinghouse, UC Data Warehouse

## **Conclusion**

The California State Summer School for Mathematics and Science (COSMOS) continues to provide many of the state's academically brightest students an opportunity for a rigorous math and science summer learning experience. Each summer this highly competitive program, with a 21% acceptance rate, provides challenging hands-on educational experiences to approximately 800 students. Program participants reside in 44 of California's 58 counties.

Upon completion of high school, a vast majority, more than 89%, of COSMOS alumni enroll in post-secondary education. A significant percentage (55%) attend a UC campus and more than 30% enroll at a private or out-of-state university. During the past decade nearly 370 COSMOS alumni have enrolled in an Ivy League university.

COSMOS continues to provide high school students with interest in STEM disciplines with opportunities to delve deeply into the subjects and to prepare for careers in the STEM fields. COSMOS continues to meet its goals to provide talented students with enriching experiences that foster scholarship and college aspirations leading to eventual professions in science and mathematics fields. While program participants reflect California's geographic and economic diversity, the program continues to seek more ethnic diversity to reflect California high school graduates.



## **Appendix A: Summer 2020 COSMOS Cluster Offerings (Planned)<sup>5</sup>**

### UC DAVIS

- 1 Quantum Mechanics & Applications to Nanotechnology
- 2 Physics & Engineering: From scientific method to technological applications
- 3 Introduction to Engineering Mechanics
- 4 Introduction to Astrophysics
- 5 Computers in Biophysics & Robotics
- 6 Mathematics
- 7 Introduction to Plant Microbiology
- 8 The Internet of Things
- 9 Mathematical Modeling of Biological Systems
- 10 Sustainable Transportation
- 11 Future Foods: Sustainable Aquaculture & Aquaponic Food Production
- 12 Our Dynamic Skeleton: Its growth, repair, & unexpected influence on organismal health

### UC IRVINE

- 1 Mimicking Natural Protein Interactions to Target Cancer & Other Diseases
- 2 Computation & Machine Learning: Physics, Big Data, & Our Understanding of the Universe
- 3 Tissue & Tumor Biology & Mathematical/Computational Modeling
- 4 Can you make the next billion-dollar antibiotic?
- 5 Sound for Virtual Reality: An Exploration of 3D Sound & Movement Using Python & Game Engines
- 6 Biomedical Sciences – Clinical Translational Science: The Next Generation of Biomedical Research
- 7 BioEngineering Your Brain: Controlling the World with Your Brainwaves
- 8 Genes, Genomes, & Skeletal Muscle Dystrophies
- 9 Sustainable Civil Engineering Infrastructure

### UC SAN DIEGO

- 1 Computers in Everyday Life
- 2 Engineering Design & Control of Kinetic Sculptures
- 3 Understanding Climate Change through the Chemistry of the Atmosphere & the Oceans
- 4 When Disaster Strikes: Earthquake Engineering
- 5 Photonics: Light-based Technologies in Everyday Life
- 6 Biodiesel from Renewable Sources
- 7 Synthetic Biology
- 8 Tissue Engineering & Regenerative Medicine
- 9 Music & Technology
- 10 Robot Inventors
- 11 Introduction to Autonomous Vehicles

### UC SANTA CRUZ

- 1 Number Theory & Discrete Math
- 2 Nanochemistry & Nanotechnology
- 3 Blubber, Feathers, & Fur: Exploring Animals in the Ocean & on Land
- 4 The Physics of Single-Atom-Thick Sheets
- 5 Video Game Design: From Concept to Code
- 6 Introduction to Networking & the Internet & Smart Power
- 7 Microbiology & Environmental Toxicology
- 8 Marine Mammals & Oceanography: From Prey to Predators
- 9 The Building Blocks of Life: Molecules & Cells in Biology
- 10 Semiconductor Materials & Devices Engineering

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<sup>5</sup> Due to the COVID-19 pandemic, COSMOS made the choice to cancel the summer program at all four campuses. The cancellation was announced in April 2020, by which time the admissions for the 2020 program had already been released.

## **Appendix B: COSMOS Advisory Board Members**

### **Alan R. Bishop**

Chief Scientist, Los Alamos National Laboratory  
Former Principal Associate Director - Science, Technology, and Engineering, Los Alamos National Laboratory  
Fellow, American Physical Society, Institute of Physics, American Association for the Advancement of Science  
Recipient, E.O. Lawrence Award, Department of Energy  
Humboldt Senior Fellow, Los Alamos Fellow

### **Chris Kahn (Chair)**

Founder and Owner, Chris Kahn Consulting, Sacramento  
Secretary, Board of Trustees, The California Museum

### **Margo Leonetti O'Connell**

The Leonetti/O'Connell Family Foundation  
Board of Trustees, California Science Center Foundation

### **DeWayne Quinn**

Director, Global Information Systems, Apple Inc.  
Founder, The Quinn Foundation.

### **Jose Solorio**

Senior Policy Advisor, Nossaman LLP; California Student Aid Commissioner  
Councilmember, City of Santa Ana  
Former State Assemblyman

### **Gayle Edlund Wilson, COSMOS Advisory Board Chair Emerita**

Former California First Lady 1991-1999  
Board of Directors, Gilead Science  
Board of Trustees, California Institute of Technology  
Board of Directors, Science for Society and the Public (SSP)

## **Appendix C: COSMOS Application**

### Parent/Guardian information

Please provide your Parent/Guardian information below. At least one Parent/Guardian must be associated with your application. Once these details are provided, they cannot be edited. COSMOS will notify the primary (Parent/Guardian #1) with details about application fees, waivers and other important information that must be addressed to complete your application. The Parent/Guardian email(s) must be different than your email, and will only be sent after this checklist and Financial Aid response are completed. Should your Parent/Guardian not see or receive their email, please have them check their spam/junk or other folders where auto emails could be delivered.

#### Parent/Guardian #1

Prefix \*

First Name \*

Last Name \*

Parent/Guardian Phone Number

International Number?

Phone Number \*

Email \*

Verify Email \*

Additional Email

## Parent/Guardian #2

Prefix

First Name

Last Name

Parent/Guardian Phone Number

International Number?

Phone Number

Email

Verify Email

Additional Email

## References

Please provide at least one teacher recommendation. Only one recommendation letter is required though we strongly suggest supplying an additional teacher to ensure at least one recommendation is received by the deadline. One must be a STEM teacher and both should be someone who can speak to your academic and leadership qualities.

Your references will be contacted by email and will be requested to complete a reference form online. You can track the status of your request in this application portal. Reminders will also be sent to the references, but students are responsible for making certain the reference is completed by the deadline. Teachers may need to check their spam folders depending on school email policy. Applications will not be reviewed if the reference is not completed. Teachers may submit technical help requests to [cosmos@eresources.com](mailto:cosmos@eresources.com).

If you choose not to waive your right to the recommendation, please note the prospective reference will be alerted to this preference.

### Reference #1

First Name \*

Last Name \*

Title

Organization

Email \*

This reference is from the school I currently attend

## Reference #2

First Name

Last Name

Title

Organization

Email

This reference is from the school I currently attend

Students have a right to inspect and review their education records, except where the right of access to certain records has been waived.

Please check one of the following options: \*

- I waive my right to access the contents of these recommendations.
- I do not waive my right to access the contents of these recommendations. I understand my references will be informed of this and may decline if they so choose.

Next

Save For Later

Cancel

## School Information

Please enter your school information below. If you cannot find your school, please scroll to the bottom of the dropdown and select "Other". You may then enter your school in the provided field.

School Name \*

School Address

School City

School County

CDS Code

CASSID

Current Grade Level \*

Unweighted Overall GPA \*

*GPA's will be verified by transcript. Falsifying this information may result in an offer being rescinded.*

Anticipated Graduation Year \*

Next

Save For Later

Cancel

## Program Preferences

Please select your program preferences below. You must choose the campus you are applying to first, and the available clusters will be displayed. Some clusters are "first choice" only, and others have prerequisites for eligibility. Please be sure to familiarize yourself with these details before making your selections.

Please Select Your Campus \*

 ▼

Cluster Choice #1 \*

 ▼

Cluster Choice #2

 ▼

Why did you select cluster #1? (200 word limit) \*

Words count: 0 word(s)

I have reviewed the prerequisites necessary for my selected cluster(s) and certify that I meet those requirements. I understand that if I do not meet the prerequisites, my chances of acceptance are lowered. \*

Next

Save For Later

Cancel



# Transcripts

Please upload your unofficial high school transcript below. If you are an 8th or 9th grade student, please provide your 7th or 8th grade transcript as well. Transcripts can be updated until the application is submitted.

High School Transcript \*

SELECT FILES

8th / 7th Grade Transcript

SELECT FILES

Other

SELECT FILES

Please note: your offer may be rescinded if transcript information does not match the Official Transcript received.\*

Next

Save For Later

Cancel

# Activities

Please note any activities that highlight your academic capabilities or other qualities that speak to your fitness for the COSMOS program. These should emphasize your scholastic record, particularly in STEM-related activities. There is a limit of 2 activities, but no obligation to submit that many.

Do you wish to enter any activities? \*

- Yes  
 No

## Activity #1

Activity Name \*

Brief Description (50 word limit) \*

Words count: 0 word(s)

Hours per week \*

Weeks per year \*

Years \*

Add More

Next

Save For Later

Cancel

## Statement of Interest

Beyond what has already been shared in your application, what do you believe makes you stand out as a strong candidate for admissions to COSMOS? If there's anything you want us to know about you, but didn't find a question or place in the application to tell us, now's your chance. What have you not shared with us that will highlight a skill, talent, challenge or opportunity that you think will help us know you better?

Statement of Interest (300 word limit) \*

Words count: **0** word(s)

Next

Save For Later

Cancel

**Contact Information:**  
Office of the President  
University of California  
1111 Franklin Street  
Oakland, CA 94607  
<http://www.ucop.edu>