Diverse Minds, United Goals: CUBE 2024 Reflections

BY ALEX HANLON, STAFF WRITER & SORO RESIDENT

As a proud South Roanoke resident and staff writer for *Stroll South Roanoke*, I am delighted to reflect on the recently concluded CUBE Summer 2024 program. The Collaborative Undergraduate Biostatistics Experience (CUBE) program aims to diversify collaborative biostatistics by offering research experiences to underrepresented students in STEM. As the founder and Director of both CUBE and the Center for Biostatistics and Health Data Science (CBHDS) at Virginia Tech's Health and Technology Campus, I am excited to share this summer's highlights and successes.

(L to R): CUBE students (row 1) Chloe Burt, Jackie Gregasavitch, Miriam Sack; (row 2) Genevieve Jean-Pierre, Maggie Brooks, Genevieve Brunner; (row 3) Julia Neres, Grayson Weavil, Sarah Lathrop

MISSION AND VISION

CUBE's mission is to raise awareness of the vital role of collaborative biostatisticians in translational science and to diversify the profession. Collaborative biostatisticians provide expertise in study design, statistical methodology, and interpretation of results for various research studies, including clinical trials, observational studies, quality improvement projects, and real-world evidence studies. Through CUBE, we aim to inspire and equip the next generation of biostatisticians. Enhancing diversity within our profession broadens perspectives, improves problem-solving abilities, and fosters innovation in health sciences.

PROGRAM EVOLUTION AND GROWTH

The CUBE program began with one student at Virginia Tech in 2021 and expanded to four students in 2022, with two students each at Virginia Tech in Roanoke and the University of Virginia (UVA) in Charlottesville. Based on feedback, we refined the program for 2023, hosting five students across both sites. This summer, supported by an NIH award to Virginia Tech (with me as lead investigator) and UVA funding, we expanded to nine students—seven at Virginia Tech and two at UVA.

DIVERSE REPRESENTATION

This year's students represented Duke, Florida State, Juniata College, St. Olaf College, Virginia Tech, Wake Forest, and Washington and Lee University. The cohort was diverse, including students from various racial and ethnic backgrounds, disadvantaged backgrounds, neurodiverse individuals, and a significant proportion identifying as LGBTQIA+. This year's cohort also included students who are first-generation U.S.-born and first-generation college students.

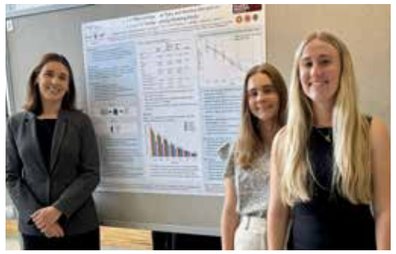
STUDENT PROJECTS AND ACHIEVEMENTS

Students learned biostatistics and R programming and worked in three teams on collaborative projects. Their efforts culminated in oral presentations and participation in poster symposiums at Virginia Tech in Blacksburg and the Fralin Biomedical Research Institute (FBRI) in Roanoke.

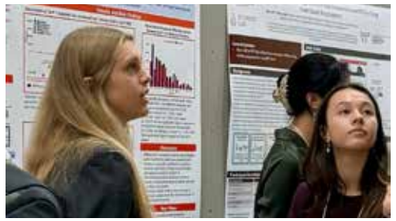
Projects included:

1. Trust, Social Isolation, and Mental Health Outcomes
2. GLP-1s Beyond Weight Loss: Social Media Insights on Discussion, Taste, and Mental Health
3. The Effect of Price, User Type, and Nicotine Strength on E-Cigarette Demand

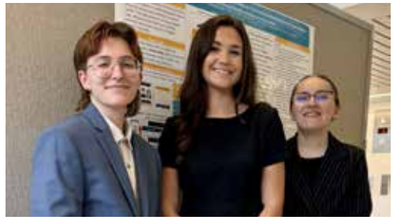
The GLP-1 project won first place for visual elements and knowledge acquisition and second place for oral presentation. The social connections project supports an upcoming NIH grant submission, and all three projects will be submitted for peer-reviewed publications, showcasing the program's impact.



CUBE students (l to r) Julia Neres, Maggie Brooks, and Genevieve Brunner at the FBRI Poster Symposium in Roanoke



CUBE students Sarah Lathrop (left) and Jackie Gregasavitch at the Blacksburg Poster Symposium



CUBE students (l to r) Miriam Sack, Grayson Weavil, and Chloe Burt at the FBRI Poster Symposium in Roanoke

(L to R): Enjoying S'mores around the fire with Tanner Barbour (CBHDS), Grayson Weavil, Maggie Brooks, Julia Neres, Miriam Sack, Sarah Lathrop, Genevieve Brunner, Alex Goebel (CBHDS), Jackie Gregasavitch, and Chloe Burt

(L to R): CUBE students and mentors Alex Hanlon (CBHDS), Jackie Gregasavitch, Sarah Lathrop, Alicia Lozano (CBHDS), Sarah Ratcliffe (UVA)

MENTOR CONTRIBUTIONS

The success of the CUBE program is attributed to the dedicated mentorship provided by both content and biostatistics experts. At Virginia Tech, biostatistics and programming mentors included me, Alicia Lozano, Monica Ahrens, Tanner Barbour, Alex Goebel, Chris Grubb, and Muyao (Jenny) Lin; content mentors included Brooks Casas, Pearl Chiu, Alex DiFeliceantonio, and Jeff Stein. UVA biostatistics mentors included Sarah Ratcliffe, Genevieve Lyons, and Marieke Jones.

EVALUATION AND IMPACT

Evaluation metrics demonstrated statistically significant improvements in students' knowledge and experience in research, understanding of graduate school processes, and career opportunities in biostatistics. Students reported increased confidence and readiness for future research endeavors, emphasizing the program's positive impact on their academic and professional trajectories. CUBE alumni from previous cohorts have gone on to prestigious graduate programs in biostatistics, business analytics, public health, and data science. Their success is a testament to the program's effectiveness in preparing students for advanced studies and careers in STEM fields.

LOOKING FORWARD

Reflecting on CUBE Summer 2024, it is clear that our mission to diversify and bring awareness to collaborative biostatistics is succeeding. The program's growth aligns with the rising importance of biostatistics in public health and the value of diverse perspectives in research. Our students' achievements in innovative projects, competitions, and future endeavors highlight the impact of opportunities and mentorship in STEM. As we move forward, we are committed to fostering an inclusive environment that educates and empowers the next generation of biostatisticians. Together, we are building a more equitable and effective scientific community, ready to tackle pressing health challenges with creativity, expertise, and a commitment to health equity.

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