ASA Receives Grant to Establish Series of REUs

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The American Statistical Association recently received a $380,340 National Science Foundation (NSF) grant to establish a series of undergraduate research experiences on campuses throughout the United States with the goal of invigorating the undergraduate research community in statistics.

The project is for 2016–2018, with three research experiences for undergraduates (REU) sites per year, for a total of nine REU sites. At each site, four students will work in teams so that 36 students will participate during the life of the project. At each site, students will conduct research for 10 weeks. They will investigate complex data sets from varied scientific and engineering disciplines in which statistics plays a key role for data analysis.

Recruitment will target (but not be limited to) women, minorities, and persons with disabilities. Supported students must be U.S. citizens, nationals, or permanent residents.

One expected outcome is a greater number of students who are well prepared for graduate study in statistics. Moreover, we expect these experiences will influence the students' career choices in the long run. Most of the projects are anticipated to have a significant interdisciplinary component. Thus, the students will see how statistics has an impact on fields such as engineering, atmospheric science, health care, and all kinds of public policy.

A goal of the ASA is to promote undergraduate research experiences in statistics. Faculty who want to respond to the NSF's REU solicitation in August are welcome to seek feedback from our team of investigators; we are glad to help our colleagues who are starting (or continuing) their own REU programs on their campuses. Moreover, the ASA will coordinate three more REU sites in 2017 and three more in 2018. If you are interested in applying for such an REU site, please write to *REU@amstat.org* for more information.

The three NSF-sponsored REU sites administered thr ough the ASA this year are described below. This material is based upon work supported by the NSF under Grant No. DMS-1560332.

SPIRAL at Morgan State University, coordinated by Monica Jackson

The goal of the Summer Program in Research and Learning (SPIRAL) is to provide a mentoring structure for under-represented minorities and women that promotes active engagement in mathematics and statistics. With a supportive structure, the participants will be encouraged to pursue and remain in mathematics and/or statistics with the hopes that they diversify the talent pool of fully trained mathematicians/statisticians in academia, government, and industry.

This year, the statistics project will be in the field of spatial statistics. Students will investigate methods for detecting clusters and global clustering patterns. In addition, they will analyze a data set with a spatial correlation structure.

The program is three-pronged:

1. Students will participate in research seminars in mathematics and statistics in which research projects will be investigated in teams. Each team will write a final paper discussing their results and give an oral presentation.

2. There will be an intensive four-week course emphasizing mathematical proofs with problem workshops and daily homework that consists of three modules—applied mathematics, statistics, and basic foundations of mathematics—to assist the students in their research projects.

3. One day a week will be devoted to professional development and career awareness, enhancing the students' view of the mathematical and statistical world.

SPIRAL was created as an REU that would address the issues of human capital and materially strengthen the students' foundation so they return to their schools at a higher level than when they left. Students will be advanced first-year or

sophomore students who have completed calculus II, are pursuing a major in mathematics or statistics, and who have at least a 3.2 average.

SDAL DSPG at Virginia Tech, coordinated by Sallie Keller and Stephanie Shipp

The Social and Decision Analytics Laboratory (SDAL)—located in Arlington, Virginia—will host the Data Science for the Public Good (DSPG) REU program. SDAL is part of the Biocomplexity Institute of Virginia Tech and central to their "information biology" theme to study massively interacting systems from molecules to policy.

The SDAL research is at the interface of data analytics and understanding (modeling) the social condition quantitatively at scale. In this context, the DSPG program will introduce students to how communities are struggling to provide health, safety, security, employment, and leisure to their citizens in an environment of constricting resources, increasing inequality, rapidly increasing technological innovations, and growing global networks. This provides a rich and mutually rewarding opportunity to leverage community knowledge and massive data resources with statistics, social science, and data science research.

The DSPG research projects planned for this summer are based on social science and statistical theory, research, and practice. The projects are driven by real problems of interest to local municipalities that collect data as part of their daily operations. The goal is to liberate and repurpose these natural flows of data to answer their questions.

Students will become part of SDAL teams that are vertically integrated across researchers, from undergraduate students to senior faculty, and horizontally integrated across multiple statistics and social science disciplines. Students will engage in all phases of the data cycle—data source discovery, data acquisition, profiling, and evaluating the data for completeness, uniqueness, and consistency and developing and conducting statistical analyses.

Stat REU at Lamar University, coordinated by Kumer Das

Stat REU at Lamar University (LU) is a 10-week research and academic experience. LU is one of eight institutions in the Texas State University System and has been classified as one of the 29 public universities nationally named a doctoral research university by the Carnegie Foundation. This REU site offers sophomores, juniors, and seniors the opportunity to perform summer research in the fields of Big Data analytics, data dimension reduction, text mining, and image processing.

Students will be engaged in all stages of the Big Data analysis cycle. Stat REU at LU is designed to spark and sustain excitement about undergraduate research throughout the statistics discipline. The students will further be trained in all aspects of research, from the ethics code to using library and online resources to delivering oral presentations to using LaTeX to write statistical papers. ■

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