**Overview of DSPG Program**

The VA Tech Social and Decision Analytics Laboratory (SDAL) conducts an NSF Research Experience for Undergraduates (**REU) program** called **Data Science for the Public Good (DSPG)**. This program provides NSF funding for undergraduates through a grant to the American Statistical Association. Our DSPG program also includes funding for graduate students. This description primarily focuses on the undergraduate experience, although much of it applies to the graduate students as well.

The rationale for this program is that our communities are in a tremendous struggle to manage the conflicting forces threatening their ability to survive and strive. They must be able to provide health, safety, security, employment and leisure to their community that is becoming increasingly diverse in an environment of constricting resources, increasing inequality, rapidly increasing technological innovations, and growing global networks.

During the course of administering public services and allocating resources, an abundance of data are generated. The story of the community is in these data. Our main research question for the DSPG program is how to bring this story to light and make it accessible to municipal governments. 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 proposed **REU** program **Data Science for the Public Good (DSPG)** is at the interface of data analytics and understanding (modeling) the social condition. **The research projects are based on social science and statistical theory, research, and practice and will be driven by real problems.** Students will become part of SDAL teams that are a vertically integrated sets of researchers, from undergraduate students to senior faculty and horizontally integrated across multiple disciplines. Students will engage in all phases of the data cycle from data discovery, data acquisition, profiling, and evaluating the data for completeness, uniqueness, and consistency, and developing and conducting corresponding statistical analyses.

The REU students will participate in one or more of the **summer 2016 data-driven research projects** focused on community analytics – the study of local governments using their administrative data flows combined with other sources of data, such as survey, social media, and procedural data.

**Activities and Mentoring**

SDAL REU students are to be part of interdisciplinary research teams that horizontally integrate statistics and social and behavioral sciences and vertically integrate undergraduates, graduate students, post-doc fellows, research faculty, and sponsors. The REU students will participate in one or more of the **summer 2016 data-driven research projects** focused on community analytics – the study of local, state, and federal government programs and policies using their administrative data flows combined with other sources of data, such as survey, social media, and procedural data.

SDAL’s government sponsors are interested in applying evidence-based approaches to improving sustainability and resiliency in local county and city settings. For an example of our past research with Arlington County Fire Department, see https://collaboration.vbi.vt.edu/display/FPSDSP/Our+Work+with+Arlington+County.

REU students will prepare for and participate in professional training and development workshops, poster presentations, and technical report and publication writing. Formal workshops will be given at the beginning of the REU period on Data Science to introduce scientific and statistical computing tools such as Hadoop, R, Python, GIS, other software tools as needed for projects. A related set of seminars on statistical and social science topics will be presented and will include exercises that related to their assignments.

Each REU student will partner with another REU student and each will have post-doctoral and senior researcher mentors. The mentors will guide their research as well as engage in discussions about future career opportunities. REU students will participate in sponsor meetings, presentations, and other events. REU students will also work with other faculty in our lab as part of our team science approach. Our seven research faculty and 4 post-doctoral associates have a strong track record of conducting research with undergraduates and are quite eager to work with undergraduates again.

Excursions will be organized to events at AAAS, National Academies, Congressional Hearings, and to experience other Washington Metropolitan science and technology activities. Students will attend the SDAL seminar series with national and international speakers from government, academia, and industry.