

Education and Training

Presented by: Dr. Robin Mejia

May 13, 2020

forensicstats.org



CSAFE 1.0 RFP

*Create education and training infrastructure in probabilistic
methods
for practitioners, non-practitioners and stakeholders.*

CSAFE 1.0 RFP

Create education and training infrastructure in probabilistic methods

for practitioners, non-practitioners and stakeholders.





CSAFE 1.0: Training Statistics, Criminology, and Forensic Science Students

Major Accomplishments:

- Ran 4 summer and 2 academic year workshops on statistics and forensic science for undergraduate students (and a few graduate) statistics students; students contributed to development and refinement of pilot educational materials. (UVA)
- Ran academic year pilot course on statistics and forensic science for students with prior exposure to statistics. (UVA)
- Developed and ran course for undergraduate criminology students featuring active learning. (3 times at UCI and 2 times at Penn)

Impact:

- Classes and activities exposed more than 550 students (future statisticians and criminal justice professionals) to current issues in statistics and forensics, seeding the field of potential future collaborators.
- Developed educational materials focused specifically on statistics in forensic science that can be used again and adapted to additional audiences.

CSAFE 1.0: Summer Undergraduate Research

Major Accomplishments:

- Over four summers (2016-2019), between 5 and 22 students per year participated in programs at CMU and Iowa State.
- In teams of mixed backgrounds, students completed research projects on topics such as fingerprint and cartridge analyses.
- Students came from a broad range of institutions from across the country, including University of Notre Dame, Eastern New Mexico University, University of Puerto Rico-Rio Piedras Campus, Albany State University, Howard University, Spelman College, West Virginia University, New York University, University of Central Florida, Fordham University, and others.

Impact:

- Expanded reach of CSAFE to a broad range of students and institutions; provided training in statistical issues.





CSAFE 1.0: Trainings for Forensic Science Practitioners

Major Accomplishments:

- New educational materials on probability and statistics concepts targeted to forensic audiences
 - Material can be used 60-90 minute presentations or half- or full-day trainings
- More than 13 workshops for forensic practitioners in a number of states (CA, FL, IL, MN, MO, PA, VA, WA)
- Keynotes and sessions at a number of conferences (IAI, AAFS, OSAC)
- Launch of CSAFE webinar series
 - 17 so far; averaged 65 site registration and 38 recorded views per event in 2018 and 2019
- Revamped website, newsletter

Impact:

- More than 600 forensic practitioners trained; more received online content
- Made CSAFE a known commodity in the forensics community and led to collaborations

CSAFE 1.0: Education of Legal Professionals

Major Accomplishments:

- Mock Trial Short Course for law students and practicing lawyers Forensic Science Colloquia
- Extensive presentations to defense attorneys, prosecutors, judges (seminars, CLE, keynote talks)
- Educational module on Forensic Pattern Recognition Evidence for National Academies of Sciences, Engineering, Medicine - http://sites.nationalacademies.org/pga/scipol_ed_modules/index.htm
- Draft Principles on Forensic Evidence, American Law Institute Principles of Policing Project
- Collaboration with National Judicial College on book chapter
- The Forensics Forum Blog, <https://sites.law.duke.edu/forensicsforum/>.

Impact:

- Lawyers gained practice through experiential training on forensics
- Improved access to reliability rulings in state court through online database
- Symposia bringing together forensics, statistics, and legal professionals approaches led to collaborations.





Research Area Objectives

Our goal is to reach all stakeholders invested in understanding statistics and forensic science:

Forensic Practitioners: The core clients of CSAFE. Forensic practitioners need to apply probability and statistics tools in their analyses, interpretation, and presentation of forensic evidence.

Legal Community: Lawyers and judges are key consumers of forensic analysis results. Lawyers use results in charging, plea negotiations and in court. Judges are the admissibility gatekeepers. Both groups must understand core statistical concepts and interact with successfully with forensic examiners.

Graduate Students in Forensic Science: Future practitioners and laboratory managers. CSAFE 2.0's new partner, West Virginia University, has robust undergraduate and graduate programs in forensic science, and will provide a focal point for development and distribution of new courses and materials.

Undergraduates in Criminology, Forensic Science, and Statistics: Future forensic practitioners, forensic statisticians, and criminal justice professionals. Building on on CSAFE 1.0 successes educating statistics and criminology students, CSAFE 2.0 will add support for undergraduate programs in forensic science.

Summer Research Experiences in Forensics: Exposing students to real research can help them connect the ideas they learn in class to real world problems. We will consolidate our programs at Iowa State and continue our successful history of outreach to historically minority-serving institutions.



CSAFE 2.0 Training and Education Projects and Lead Investigators



ED I- Training and Education for Forensic Practitioners

Lead PI: Hal Stern (UCI), Alicia Carriquiry (ISU)

ED II-Training and Education for the Legal Community

Lead PI: Brandon Garrett, Duke

ED III- Statistics Instruction for Graduate Students in Forensic Science Programs

Lead PI: Alicia Carriquiry (ISU), Robin Mejia (CMU), Casper Venter (WVU), Keith Morris (WVU)

ED IV- Courses for Undergraduates in Criminology, Forensic Science and Statistics

Lead PI: Jeff Holt, UVA

ED V- Summer Research Experiences in Forensics

Lead PI: Alicia Carriquiry (ISU), Robin Mejia (CMU)

Education Coordinator

Harlie Jud

Courses for Undergraduates

Goal: *Expand knowledge of statistical methods in forensic science among students and practitioners of criminology, forensic science, and statistics.*

Proposed Activities:

- Refine education materials and use in second iteration of course for statistics students with no prior forensic science exposure.
- Continue developing statistics and forensic science course for criminology students and further develop active learning modules.
- Build on these efforts to develop educational materials for a course forensic science students that introduces core statistical topics and connects them to their forensic training.
- Create an accessible **collection of educational materials**

Potential Impact:

- Expose a variety of students to the interplay of statistics and forensic science.
- Improve knowledge of statistical applications to forensic science among future forensic science, criminal justice, and statistics professionals.

Statistics Instruction for Graduate Students in Forensic Science

Goal: *Increase statistical literacy of graduate students in forensic science*

Proposed Activities:

- Design a course in statistical methods for students in graduate programs in forensic science and related areas.
- Pilot the course in the graduate program offered by the Department of Forensic and Investigative Science at West Virginia University.
- **Develop instructional materials** including lecture notes, homework assignments, projects and code that can be accessed online shared widely and adopted by other programs who wish to include the course among their offerings.

Potential Impact:

- Support new generations of forensic science researchers in understanding and using new quantitative tools being developed now.
- Ensure that at the MSc and PhD levels, forensic science graduates are equipped to read and contribute to the forensic science literature.

Summer Undergraduate Research in Forensic Science

Goal: *Connect coursework to practice through research experience for future practitioners.*

Proposed Activities:

- Hold 2-month summer research experiences for undergraduate students at Iowa State University to engage with CSAFE personnel and forensic practitioners.
- Draw on our relationships with forensic science programs and minority serving institutions to recruit a diverse cohort of future practitioners and researchers.
- Expand the program to include mentors who are practitioners and who can better address the needs of students who wish to join the forensics workforce.

Potential Impact:

- Engage students with the work of forensic professionals to promote forensic practice as a career choice.
- Expose students to statistical methods early in their trajectory, helping to create a qualified workforce.

Training and Education for Forensic Practitioners

Goal: Increase understanding and use of statistical methods in the practice of forensic science and reporting of results

Proposed Activities:

- Deliver training in probability and statistical methods for the analysis of forensic evidence to forensic science practitioners through events at laboratories, conferences and online.
- Develop modules that build on existing training materials to address the concerns of specific forensic disciplines and include CSAFE research findings. For example, we are holding workshop for firearms examiners next October.
- Design and deploy evaluation tools to collect information about the effectiveness of training content, delivery, associated documentation, instructors.

Potential Impact:

- Increase the statistical literacy of forensic practitioners and reporting of uncertainty.
- Get CSAFE research results to the practitioner community and identify potential collaborators, potentially supporting technology transfer.



Training and Education for the Legal Community

Goal: *Increase understanding of statistical issues in forensic science among attorneys and judges*

Proposed Activities:

- Studies of forensic course offerings in law schools, forensics training needs of judges and lawyers
- Mock Trial Short Course for law students and practicing lawyers
- CLE training on forensics for judges, defense lawyers, prosecutors. New training materials that can be used in a variety of settings
- Online forensics legal repository

Potential Impact:

- Provide resources for forensic practitioners and lawyers to understand the changing law across U.S. jurisdictions
- Create empirical base for legal training on forensics – and develop course materials that other trainers can use. Prepare Science Benchbook for judges
- Integrating forensics training into model policy, standards, and practice for judges, lawyers, and forensic practitioners

Resources and Needs

- Can you share examples of different sample reports with redacted case information – especially fingerprints and firearms?
- Do you have ideas for our summer research experience for undergraduates? Do you want to work with students?
- To improve our trainings and courses: would you be willing to talk to us or our students about your work?
- Are there trainings you would like to see? Content or areas you want covered? We want to know.
- When we are ready to pilot new trainings – do you want be a site?

Thank You!

- We really look forward to working with you.
- There will be a survey – please tell if you have ideas want to get involved!
- Our new education coordinator is Harlie Jud (harliej@iastate.edu).
- My email is rmejia@andrew.cmu.edu.