

STATISTICS TASK GROUP: NEVER HAVING TO SAY YOU'RE CERTAIN



NIST
National Institute of
Standards and Technology
U.S. Department of Commerce



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David Banks, Duke: Vice-Chair
William Guthrie, NIST: Executive Secretary



STG Mission

- Provide advice to OSAC units on proper use & explanation of statistical concepts used in standards posted on OSAC registry
- Serve as members on OSAC units to ensure practical advice relevant to units' disciplines
- Ensure consistent statistical advice across OSAC units
- Collaborate with forensic practitioners to develop proper, validated, and practical statistical procedures
- Provide other statistical advice as requested
- Serve as advisers, not as intruders



STG: OSAC statisticians & affiliates

- Karen Kafadar (UVA), FSSB
- SAC Statisticians:
 - *Biology: Bruce Wier (UW), Simone Gittelsohn (University of Technology - Sydney)*
 - *Chemistry: William Guthrie (NIST)*
 - *Crime Scene: Jerry McGwin (UAB)*
 - *Digital/IT: Abhyuday Mandal (U-GA)*
 - *Physics/Pattern: Hal Stern (UCI)*



SAC/Subcommittee Statisticians:

(15 of 25 SubSACs have statisticians)

- Chemistry: Will Guthrie, NIST
 - *Gunshot Residue: Cliff Spiegelman, Texas A&M*
 - *Materials/Trace Evidence: Cédric Neumann, South Dakota State Univ*
 - *Geological Materials: Martin Wells, Cornell*
- Crime Scene:
 - *Fire & Explosion: Mark Johnson, Univ of Central Florida*
 - *Medico/Legal Death Investigation: Gerald McGwin, Univ AL*



- Physics/Pattern Evidence: Hal Stern, UC-Irvine
 - *Blood Stain: Haonan Wang, Colorado State Univ*
 - *Footwear & Tire: Steven Lund, NIST*
 - *Firearms & Toolmarks: Max Morris, Iowa State Univ*
 - *Questioned Documents: Chris Saunders, South Dakota State Univ; Mark Lancaster, Northern Kentucky Univ*
- Others: David Kaye, PSU (LRC), Bill Thompson, UCI (HFC), Alicia Carriquiry, ISU



Statistics: *Raison d'être*

- Help to define the problem (J.W. Tukey: “Often finding the question is harder than finding the solution”)
- Draw valid inferences from data
- Understand how the process can be “measured”
- Identify sources of variability: what influences might affect the data? (materials, methods, personnel, ...)
- Help to assign quantitative measures to qualitative outcomes
- Work with forensic scientists to understand, characterize, and quantify sources of uncertainty in the process
- Design studies to understand sources of variability in the forensic process; factors that influence the targets (measurements, configurations, etc.) & quantify their effects



Work Products

- Comments on proposed Standards, including seized drugs (E2548-11) and glass standards (E2926-13: XRF; E2330-12: ICP-MS; E2927-16: LA-ICP-MS)
- Participate in other Task Groups (e.g., Conclusions Task Group; Interpretations for testimony)
- Confer on best practical guidance
- Many STG members participate widely in forensic statistics (CSAFE, SAMSI, journal referee, etc.)



Submitting inquiries

- Send to unit statistician (most knowledgeable about the area); suggest you copy the statistician at next level (e.g., subcommittee and SAC)
- Please do not hesitate to send reminders. We are used to being referees for journal article submissions
- For faster response, please direct reviewer to **specific section(s)** of most (statistical) concern





QUESTIONS?

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