



### **B96 Statistical Interpretation and Reporting of Fingerprint Evidence at the United States Army Criminal Investigation Laboratory (USACIL)**

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After attending this presentation, attendees will have a greater understanding of how fingerprint evidence may be quantified, policies and procedures guiding the use of such methods in practice, and next steps to ensure the method is accessible by the broader forensic community.

This presentation will impact the forensic science community by discussing the progress and challenges of implementing a method for statistical interpretation and reporting of fingerprint evidence at the USACIL.

The results of forensic fingerprint examinations are traditionally based on the visual comparison and subjective opinions of forensic examiners and reported as categorical statements of inclusion or exclusion of a particular individual as the source of a latent print. In 2009, the National Research Council (NRC) encouraged the forensic science community to develop tools to evaluate and report the strength of forensic evidence using validated statistical methods rather than relying solely on the subjective opinion of forensic examiners. The recommendations of the NRC are consistent with those of the President's Council of Advisors on Science and Technology Report (PCAST) in 2016. The primary concern of the NRC and PCAST is the legal field's inability to assess the reliability of fingerprint comparison results for a given case at hand without validated statistical data concerning the strength of the findings, thus bringing into question the scientific validity of fingerprint evidence and its admissibility in criminal courts.

Over the past couple of years, the USACIL has been taking incremental steps forward to facilitate the transition from solely subjective, experience-based practices to integrating more robust, scientifically demonstrable, and data-driven practices for latent print examinations. As a part of this effort, the USACIL has developed, validated, and implemented a method that facilitates the evaluation and reporting of the statistical strength of fingerprint evidence. In March 2017, the USACIL began reporting the statistical strength of fingerprint evidence within the military criminal justice system and is navigating a way forward for the broader forensic fingerprint discipline toward stronger scientific foundations and improved practices. This presentation will provide a general explanation of the statistical methods employed, discuss policies and procedures governing its use in casework, observations related to its operational and technical impact and challenges following implementation, and discuss how other federal, state, and local forensic service providers can implement similar reforms within their laboratories.

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#### **Fingerprints, Statistics, Likelihood Ratio**