

False positives rare from fingerprint examiners

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In a controlled study, fingerprint examiners who determined that a crime scene-quality print matched a high-quality sample from the same individual were correct 99.8% of the time.

Investigators utilize a range of techniques to collect [crime scene fingerprints](#), or "latents." Latent print examiners try to match these limited-detail prints to high-quality prints, or "exemplars," that law enforcement officers obtain directly from individuals.

JoAnn Buscaglia and colleagues presented 169 experienced latent print examiners with approximately 100 latent-exemplar pairs that had been selected to include a range of commonly encountered scenarios, and asked the experts to determine whether the fingerprints were from the same individual.

The examiners made only six false positives, or an error rate of about 0.1%. Most of the examiners, however, incorrectly determined at least once that a matched latent-exemplar pair did not come from the same individual, for an overall false negative rate of about 7.5%.

The authors report that independent examinations conducted by different participants detected every false positive and the majority of false negatives, leading the researchers to conclude that duplicate analyses, as practiced by some forensic laboratories, would likely reduce error rates even further.

More information: "Accuracy and reliability of forensic latent fingerprint decisions," by Bradford Ulery, R. Austin Hicklin, JoAnn Buscaglia, and Maria Antonia Roberts, [doi: 10.1073/pnas.1018707108](https://doi.org/10.1073/pnas.1018707108)

Abstract

The interpretation of forensic fingerprint evidence relies on the expertise of latent print examiners. The National Research Council of the National Academies and the legal and forensic sciences communities have called for research to measure the accuracy and reliability of latent print examiners' decisions, a challenging and complex problem in need of systematic analysis. Our research is focused on the development of empirical approaches to studying this problem. Here, we report on the first large-scale study of the accuracy and reliability of latent print examiners' decisions, in which 169 latent print examiners each compared approximately 100 pairs of latent and exemplar fingerprints from a pool of 744 pairs. The fingerprints were selected to include a range of attributes and quality encountered in forensic casework, and to be comparable to searches of an automated fingerprint identification system containing more than 58 million subjects. This study evaluated examiners on key decision points in the fingerprint examination process; procedures used operationally include additional safeguards designed to minimize errors. Five examiners made false positive errors for an overall false positive rate of 0.1%. Eighty-five percent of examiners made at least one false negative error for an overall false negative rate of 7.5%. Independent examination of the same comparisons by different participants (analogous to blind verification) was found to detect all false positive errors and the majority of false negative errors in this study. Examiners frequently differed on whether fingerprints were suitable for reaching a conclusion.

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