

Latent Print Comparison and Examiner Conclusions:

A Field Analysis of Case Processing in One Crime Laboratory

Lead Researchers: Brett O. Gardner, Sharon Kelley and Maddisen Neuman
Journal: Forensic Science International | **Publication Date:** 2 December 2020
Link: forensicstats.link/FieldAnalysis-DOI

OVERVIEW

While research on error rates and identifying areas of bias and influence in forensic examination exists, most of it occurs under controlled conditions. With this in mind, researchers set out to investigate real-world latent print comparison-based casework performed by the [Houston Forensic Science Center](#) (HFSC) and to assess the results of their latent print analyses for an entire year.

THE GOALS

- 1 Analyze the HFSC latent print unit's 2018 casework and describe examiner conclusions.
- 2 Explore what factors might have affected the examiners' decisions.
- 3 Establish the extent of differences between individual examiner's conclusions.

THE STUDY

Researchers gathered data from [JusticeTrax](#), HFSC's laboratory information management system. With this, they looked at 20,494 latent print samples the HFSC team examined in 2018. In total, 17 different examiners submitted reports that year. All examiners were certified by the International Association for Identification and had anywhere from 5 to 36 years of experience in the field.

When provided a latent print for comparison, the examiners first checked if the print had enough usable data to enter into an Automated Fingerprint Identification System (AFIS). If so, the examiners then made one of three conclusions based on AFIS results:

-  **No Association:** The print is not a potential match with any known print in the AFIS database
-  **Preliminary AFIS Association (PAA):** The print is a potential match with a known print in the AFIS database
-  **Reverse Hit:** The print is not a potential match with any known print in the AFIS database, but later matches to newly added record prints



RESULTS

44.8% of the prints examined had enough usable data to enter into AFIS.



Out of the 11,812 prints entered into AFIS, only 20.7% (2,429 prints) resulted in a PAA

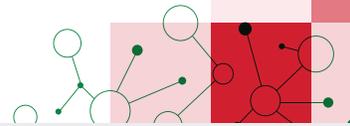
Examiners were slightly more likely to conclude a print was sufficient to enter into AFIS in cases involving a person offense (a crime committed against a person)

The types of AFIS software used produced vastly different results. The county-level AFIS (called MorphoTrak) and the federal-level AFIS (called Next Generation Identification, or NGI), were both nearly five times more likely to result in a PAA than the state-level AFIS (called NEC).

Individual examiners had drastically different standards to whether a print had enough usable data to enter into AFIS, and again regarding whether the AFIS results could be considered a PAA. This could differ by nearly twice as much, as one examiner concluded 13.3% of their AFIS results were PAAs, while another had 27.1% PAAs in their results.

FOCUS ON THE FUTURE

- The major differences between the county, state and federal-level AFIS software indicates that more research is needed on AFIS databases to increase their reliability across the board.
- These results only reflect the work of one crime lab over the course of one year. Future research should be conducted with multiple labs in various locations.
- HFSC made significant changes to its workflow in recent years, which may contribute to the disparity in examiner conclusions.



LEARN MORE

Access the full research study to learn more at forensicstats.link/FieldAnalysis.

Additionally, explore relevant publications:

- [Implementing Blind Proficiency Testing in Forensic Laboratories: Motivations, Obstacles, and Recommendations](#)
- [Accounting for Individual Difference Among Decision-Makers with Applications to the Evaluation of Forensic Evidence](#)

FUNDING



CSAFE is a publicly funded organization headquartered at Iowa State University. The National Institute of Standards and Technology (NIST) is one of the center's providers, supporting CSAFE as a nationally recognized Center of Excellence in Forensic Sciences, NIST Award # 70NANB15H176.

