



INSIGHTS

Latent Print Comparison and Examiner Conclusions:

A Field Analysis of Case Processing in One Crime Laboratory

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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



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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.

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