

On May 11, 2015 the Federal Bureau of Investigation (FBI) Laboratory issued a CODIS bulletin email BT050815 to National DNA Index System (NDIS) participating laboratories advising them that it had identified errors in its FBI STR population data published in 1999 and 2001, and providing them amended STR population data that corrected these errors.

The 1999 and 2001 FBI STR population data was found to contain incorrect allele frequencies attributable to clerical mistakes in transcription of the genotypes and to limitations of the old technology and software. This population data has been used by the FBI and many forensic laboratories for calculating match statistics in criminal investigations and other types of human identification applications since 1999. The amended STR population data was compiled by the FBI Laboratory to correct the original data tables that contained the errors and provided to NDIS laboratories to replace those incorrect tables currently in use. While the magnitude of the errors are not great [for alleles requiring a frequency correction, the magnitude of the change in frequencies ranged from 0.000012 to 0.018], the resulting DNA profile statistics calculated using the old frequency tables will be slightly different from the statistics obtained using the amended allelic frequency tables. Empirical testing suggests that any discrepancy between profile probabilities calculated using the original and corrected data is expected to be less than a factor of two in a full profile.

Forensic DNA profile frequency estimates are included in crime lab DNA reports containing match conclusions and are provided as point estimates in order to provide a relative idea of how common or rare a matching DNA profile is expected to be in one or more specified population groups (e.g., Caucasians, African Americans, Hispanics, etc.). These estimates have been empirically shown to be within a factor of 10 of the DNA profile's true frequency in a given population by previous studies at the FBI Laboratory and as reported in the National Research Council's 1996 report entitled "The Evaluation of Forensic DNA Evidence." The variation between the original and amended FBI allelic tables are well within this confidence interval.

As a proactive measure, several crime laboratories (including the New York State Police Crime Lab) have evaluated the differences between the original allelic tables and the amended allelic tables. The following has been determined:

- Differences between statistics calculated using the original tables and the corrected tables are minute for full profiles. Statistics generated vary on a case by case basis, with some frequencies increasing in rarity, while others decrease.
- Calculations for new frequencies performed by the FBI have been independently verified by the New York State Police.

An erratum notice will be published as a Letter to the Editor in the July 2015 issue of the Journal of Forensic Sciences which will contain data showing the nominal effect of these errors on profile probabilities (the pre-publication version is attached). The FBI has also made the corrected data available to the labs through the CODIS CJIS/WAN as a database file labeled "Amended FBI STR 2015." The FBI is working on making the data available on their public website.

We have been in discussion with ANAB, ASCLD/LAB, and A2LA and we expect that those accrediting bodies will get this information out through official channels to their accredited labs. The accrediting bodies will communicate expectations and establish action items. ASCLD is working with the FBI to provide a webinar for information sharing to management and technical leadership.

Labs are advised to become educated on this issue. We are aware that some labs have already taken the following actions:

- Many labs that were using the original FBI Allelic Frequency Tables containing the erroneous data have ceased using that data.
- Several labs have accomplished a performance check to compare the DNA profile frequencies of a small number of non-probative known samples between the original FBI population database and the amended version, to confirm the system is working and also confirm the small impact of the corrections on statistics.
- Some labs that were using the FBI Allelic Frequency Tables began calculating their statistics using the corrected FBI data available on the CJIS/ WAN. Some Popstats users have updated the software frequencies with the corrected FBI data. Alternately (but not necessarily recommended), some have used the NIST population database [recognizing that switching to a completely different database will result in generally larger differences in profile frequency estimates due to the effects of sampling (on the order of ten-fold as compared to the two-fold difference expected between the original and amended FBI data sets)].
- Some labs are evaluating cases in which the frequencies were calculated using the erroneous data, but a report has not yet been issued, and recalculating statistics using the updated allelic frequency tables.
- Some labs are expeditiously preparing to make general or case specific disclosure notifications regarding the erroneous data to prosecuting and defense attorneys.
- Some labs are preparing to perform recalculations of statistics as deemed necessary. These labs are notifying prosecuting and defending attorneys so cases may be dealt with appropriately. They are giving specific attention to cases going to trial.

We know that crime laboratories are committed to providing the highest quality analyses and data and are addressing this issue. Finding clerical and technological errors in previously published and utilized data is regrettable. However, the advancements in the technology used to develop DNA profiles have enabled the detection and correction of these allelic frequency tables. While statistics within laboratory reports may be impacted, the change of statistical values calculated is small. Crime laboratory leaders and scientists are committed to transparency and to providing the most accurate information possible to the criminal justice community.