



Oklahoma State Bureau of Investigation

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Attention OSBI Customers:

The OSBI recently received notification from the FBI that they had identified errors with the data used to calculate population statistics. Because the OSBI also uses the data from the FBI to calculate population statistics, OSBI reports may be impacted as well. This notification is being provided to explain what the issue is, how it impacts reports, and what actions the OSBI will take to correct the issue.

What is a population statistic?

A population statistic is a calculation performed to determine how common or rare a DNA profile is or to determine how likely/unlikely it is that a person selected at random could be a contributor to a DNA profile or mixture. It in no way impacts whether a known reference sample matches, is excluded, or cannot be excluded; rather, it impacts the weight associated with a match, or cannot be excluded statement.

The following statements are examples of population statistics:

The probability of selecting an unrelated individual at random from the population having this DNA profile is at least 1 in 10.5 quintillion.

The probability of selecting an unrelated individual at random from the population that could be a contributor to this DNA mixture is at least 1 in 10.5 thousand.

How are population statistics calculated?

Every forensic DNA profile consists of alleles at multiple locations on the DNA molecule. Population statistics are estimated by first determining how often each allele is observed in different populations (e.g. Caucasian, African-American, Southwest Hispanic, etc). These allele frequencies are then used as the basis for mathematical formulas which estimate the overall probability of observing a DNA profile in a population. The final population statistic reported depends on the individual alleles detected in a crime scene (or questioned) profile and on which locations yielded results.

How significant is this issue?

Preliminary information indicates that the impact on a statistic for a **complete** profile would be less than 10%. For the example above, 10.5 quintillion (10,500,000,000,000,000) when corrected would be expected to

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fall within 1.05 to 105 quintillion (1,050,000,000,000,000 to 105,000,000,000,000,000). While this is a broad range when evaluating the number by itself, it is not expected to have a significant effect on the assessment of the overall evidentiary weight.

It should be noted that this evaluation of significance is intended to reflect the worst case scenario based on the information provided by the FBI. The OSBI will need to conduct additional reviews in order to verify the significance of this issue for OSBI casework.

Which cases are impacted?

Due to the data that was impacted and the way population statistics are calculated, there is the *potential* that any OSBI DNA report containing autosomal short tandem repeat DNA profiles* issued prior to 5-29-15 could have been impacted. Whether or not a DNA report is impacted will depend on the DNA profile(s) that was/were obtained in each case.

* Statistics for Y-STR (male specific short tandem repeat profile) cases are not affected.

How does the OSBI plan to address this issue?

The OSBI has obtained the corrected data from the FBI and is in the process of incorporating the corrections into the OSBI Statistics program used for casework. All OSBI DNA analysts have been instructed to hold DNA reports with this type of population statistics and not issue them until the OSBI Statistics program has been corrected. To allow for any urgent need for an immediate report, analysts may issue a report prior to the correction with management approval, provided that the report includes language notifying the reader of this issue.

After the OSBI Statistics program is updated with the corrected allele frequencies, the OSBI will further evaluate the significance of this issue for OSBI cases and determine any other actions which need to be taken. Based on the information available at this time, the OSBI anticipates providing amended reports to any impacted case upon notification that the case is going to trial. In addition, the OSBI can provide an amended report for any impacted case upon request. After completing an evaluation of the significance of this issue on OSBI reports, a determination will be made regarding whether additional amended reports are necessary. The OSBI will provide additional information as it becomes available.

Who Do I Contact With Questions?

If you wish to request an amended report, please contact the analyst whose signature appears on the report, by calling the phone number located in the report header. In the event that the reporting analyst is no longer employed by the OSBI, please ask to speak to the Biology Unit supervisor.

If you have questions about this notification or issue in general, please contact the OSBI CSD Quality Manager, Erin Henry at 405-330-6724.