

Missing Persons: Estimating birth place and migrational history, a multi-prong approach to identification

Dr. Chelsey Juarez, Ph.D. California State University Fresno.

Experts estimate that there are currently approximately 85,000 missing presumed dead in the U.S (Federal Bureau of Investigation National Crime Information Center, 2019). Further, the FBI estimates some 40% of annual homicides go unsolved, contributing additional numbers of unidentified known deceased. According to Kimmerle and colleagues, the missing who end up as our unidentified are predominately male, adult, foreign born individuals, minorities and at-risk individuals such as the mentally ill, elderly and infants (Kimmerle et al., 2010). The foreign born and undocumented status of many of the unidentified presents a unique challenge in the process of identification because of the inability to utilize conventional forensic identification tools such as missing person reports and family DNA reference databases (Hughes et al., 2017). For example, traditional investigative data from the decedent, like CODIS STRs, are not useful in the traditional forensic approach of familial matching from reference samples if these reference samples have not been submitted. Given the geographic structuring of genetic and other biological features of humans, one way to allow the collected biological evidence, like CODIS STRs, to still assist in the identification process is to exploit the geospatial relationship of oxygen hydrogen and strontium isotopes in teeth, bones and hair to develop a comprehensive investigative lead. This presentation outlines the current multi-pronged approach to identification of deceased unidentified cases taken by the Forensic Anthropology Laboratory at California State University Fresno. This approach is a three-pronged approach focused on region of origin and last known residence estimation, DNA data, and forensic anthropology analysis.

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