A122 Predicting Region of Origin for Unidentified Deceased Migrants at the Texas-Mexico Border Utilizing Stature and Stable Isotopes

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Learning Overview: The goal of this presentation is to predict the region of origin for unidentified deceased migrants at the United States-Mexico border using stature data obtained from country-specific national health and nutrition surveys across Mexico and Central America, stable isotope models for strontium and oxygen of the same region, and a maximum likelihood assignment model that will utilize spatial statistics to predict an estimated region of origin.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by promoting interdisciplinary approaches to both forensic identification and their application to human rights issues at the border and beyond by integrating traditional forensic and biological anthropological methods, such as stature estimation, with biogeochemistry and geostatistics to improve the probability of identifications of these challenging cases.

Stature varies markedly across Mexico and Central America and can be combined with previous studies of isotopic variation to narrow region of origin of unidentified migrants found at the United States-Mexico border. Establishing region of origin can reduce the potential matches for unknown cases within missing persons databases and potentially aid in generating positive identifications for deceased migrants recovered along the United States-Mexico border.

Hypothesis: A dual-isotope isoscape and likelihood assignment method can be used in conjunction with known stature data to estimate region of origin for deceased migrants recovered along the Texas-Mexico border and improve the probability of making a positive identification.

Outcomes: This presentation will shed light on the humanitarian crisis occurring at the United States-Mexico border and promote interdisciplinary approaches to both forensic identification and its application to human rights issues at the border and beyond by integrating traditional forensic and biological anthropological methods, such as stature estimation, with biogeochemistry and geostatistics, thus improving the probability of identifications of these challenging cases. An additional outcome is closure for the families whose loved ones are still missing along the United States-Mexico border.

Synopsis/Methods: Stature data is obtained from country-specific national health and nutrition surveys from across Mexico and Central America. These include Mexico (*n*=22,231), Nicaragua (*n*=15,266), Honduras (*n*=22,757), Guatemala (*n*=25,914), and El Salvador (*n*=7,132). These data are used as an additional predictor variable for a recently tested assignment model that used strontium and oxygen isoscapes for Mexico, Central America, and the Caribbean to predict region of origin for unidentified deceased migrants from the United States-Mexico border. Using the Operation Identification (OpID) forensic cases at Texas State University, previously sampled migrants (*n*=3, two identified and one unidentified) are run through the adjusted assignment model to determine if stature is a suitable variable that can narrow region of origin predictions for the OpID cases.

Results/Conclusions: The goal of the research is to predict regions of origin for each case and determine whether adding the stature variable aided the prediction. Two of the three samples have been identified since the initial study and the accuracy of the adjusted model predictions can be assessed. Overall, the assignment approach proves successful in narrowing the region of geographic residence for deceased migrants recovered near the United States-Mexico border. Adding stature data to the model improves the method by further narrowing predicted regions of origin and increasing the chance of making a positive identification.

Geographic Origin, Stable Isotopes, Stature