
Biological Distance Analysis: Forensic and Bioarchaeological Perspectives, edited by Marin A. Pillous and Joseph T. Hefer, is a much-needed response to the resurgence of biological distance or, biodistance, assessments in biological archaeology and its recent changes in the field of forensic anthropology. The editors mention that the study of biodistances is lacking a comprehensive volume, and it is clear that they achieve just that. This edited volume boasts 47 contributors from many differing backgrounds in both fields of study, which is a testament to the wide range of information covered. It covers the need for clear-cut instructions on how to carry out various biodistance analyses, and juxtaposes these guides with case studies to exemplify how these techniques work outside of the theoretical realm. In addition, this volume is also dedicated to comparing and contrasting the use of biological distance analyses in bioarchaeology and forensic anthropology. As both fields have different goals when using similar techniques, this distinction is essential. Overall, Biological Distance Analysis contains both straightforward and informative guides and practical considerations for researchers hoping to pursue topics in biological distance.

Section one covers the basics of conducting a biodistance assessment, including how to collect data, how to create a dataset, and how to analyze that data. The structure of the first section is arranged in an easily comprehensible sequence. First, Hefner et al. provide background information and history on the field as a whole, followed by a study of the evolution of the use of statistical methods, as well as the mathematical theory behind those choices by J.H. Relethford. The following chapters describe each type of biodistance analysis including craniometrics (Dudzik and Kolatorowicz), 3D modeling (Urbanová and Ross), cranial nonmetric traits (Pink et al.), dental morphology (Pilloud et al.), and dental metric traits (Pilloud and Kenyhercz), each of which discuss the differences in applying these methods in a forensic or bioarchaeological context. Overall, section one of this volume is an excellent guide for standardizing the way in which we collect, analyze, and interpret data in biological distance analyses.

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continuation of the methods outlined in section one, but instead uses bioarchaeological contexts as case studies. Due to the fact that it would be impossible to give a definitive statement on the identity of an ancient individual through osteological techniques, bioarchaeological approaches differ from forensic approaches because they focus on the population, not the individual. These case studies were an excellent way to see the methods employed on a variety of different populations, each with their own propensity towards one method of biodistance analysis or another. Overall, the third section is comprised of well thought-out case studies that exemplify the considerations that must be made when applying methods to a population.

There are some significant chapters in this volume that cover topics that have been seldom discussed in other written works. For instance, J.H. Relethford’s chapter on Biological Distances and Population Genetics in Bioarchaeology (23-33) is the only all-encompassing guide for the statistical analysis of biodistance data. He covers each type of analysis by discussing the evolution of statistical methods in regards to biodistance analyses. By doing so, he is able to discuss the shortfalls of each previous method and how it evolved into the next, better form of quantifying and analyzing data. As a biodistance researcher myself, this is the only guide of its kind that discusses the theory and application of these statistical methods. It is an essential guide to confidently using a critically interpreting statistical techniques and results.

Another significant chapter in the first section is by Dudzik and Kolatorowicz, entitled “Craniometric Data Analysis and Estimation of Biodistance” (35-55). It is noteworthy because it lays out a standard for data collection by presenting the strengths and weaknesses of certain measurements, instrumentation, and other options in craniometry. It also discusses basic procedures and considerations in an easily comprehensible manner, which will certainly allow for greater standardization of procedures in the future.

The two concluding chapters in the first section deal with some controversial topics in the field: whether or not biological distances reflect genetic distances (Smith et al.) and the pros and cons of replacing missing data with estimated data (Kenyhercz and Passalacqua). These topics are important to consider in both fields because they greatly affect the way that data is interpreted. There is a famously repeated statement in the field of biodistance assessment claiming that there is greater genetic variation within a single population than there is between all populations globally. The chapter by Smith et al. quantifies this statement statistically, by showing that in a single cemetery there are no significant correlations between mtDNA and cranial measurements, but on a global scale there are correlations between differences in mtDNA and differences in measurements of the complete cranium (169-174). Many researchers tend to dismiss the study of biological distances because of the idea that genetic variation is so broad in a single population, but this study proves that biological distance studies on a global scale can still be correlated with genetic distances. The authors of this chapter admit that there is much more work to be done on the topic, but this study does lay the framework for justifying biological distance analyses in the future. The final chapter in this section also achieves a similar goal of helping bioarchaeologists in particular to justify the way that they deal with missing data. These two chapters will be immensely helpful to researchers who seek to make informed decisions when dealing with the interpretation of their data.

In section two, the chapter on morphoscopic traits by Hefner was an interesting addition because it described an older method that has been seldom used in the past 50 years. Macromorphoscopics is a method that uses nonmetric traits of the cranium, but only those that are visible during life. Since the study is rather new to modern anthropologists, this was an interesting case study into the standardization of the method.

There was one very important aspect of biological distance analysis missing from this volume, and that is social context. Although it is often avoided, it is essential to discuss the racist origins of the field in order to display that our current analyses refute those early conclusions. This is especially true of the chapter on morphoscopic traits, which is a method that has potential, but has been largely ignored due to its association with Nazi practices in the mid 20th century. It is important to note that the methods are sound, but that objective interpretation of the results is what separates the researches of today from those of the past. It is vital to make this distinction and discuss why future studies are ethically sound as justification.
In addition, some of the case studies in the third (bioarchaeological) section were lacking an important component. The case studies were heavily reliant on the statistical and scientific components of the populations in question, which is understandable for a volume devoted to the materials and methods associated with biological distance, but in the case of archaeological populations it is important to also include other strands of evidence (such as material culture, grave goods, etc.). This is essential because without evidence of culture, we are basically forcing our modern views of how populations differ on to a past population that may or may not have viewed diversity in the same way.

Biological Distance Analysis is an excellent tool for both researchers who are new to the field of biodistance, and those looking to further their knowledge on available techniques and recent research questions. They have certainly reached their goal of producing a “comprehensive volume dedicated to the study of biodistance.” The many concerns and considerations associated with biological distance analyses are covered in this edited volume, which helps the future researcher to make informed decisions on how to treat data from collection to analysis to interpretation. From a foundational standpoint, Biological Distance Analysis has the potential to be a standard reference volume for anyone embarking on a biological distance study, but that other forms of evidence (such as material culture) should be taken into consideration especially in the case of bioarchaeological studies.

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