

# Assignment 1: You Be the Bioarcheologist

Name:

## **Part I: Bioarcheological Analysis**

**Instructions:** Follow the steps below to build your research questions and hypotheses.

### **Hypothesis #1 (30 points)**

(1) Identify evidence from the Berkchister data that demonstrates a change in a specific health outcome over time. State this evidence as a complete sentence, following the example below.

Example: Evidence of traumatic injury increased from 6.9% in the Mesolithic samples (Level VI) to 13.6% in the Neolithic samples (Level IV).

Examination of the Berkchister data reveals a marked increase in signs of malnutrition, as evidenced by the prevalence of rickets. The data show a shift from 0% in the Mesolithic samples (Level VI) to 12% in the Neolithic samples (Level IV).

(2) Given this evidence, write a research question that investigates the relationship between the change in health outcome and change in a social, environmental, or demographic factor.

Example: What relationship exists between the increase in traumatic injury from Level VI to Level IV and the rise in population size?

How does the increase in rickets from Level VI to Level IV correlate with dietary changes due to agricultural practices?

(3) Pose a hypothesis that states the nature of the relationship between the change in health outcome and change in a social, environmental, or demographic factor. Tip: Write a directional alternative (research) hypothesis; do not write a null hypothesis.

Example: An increase in conflict/warfare between growing neighboring groups may correspond to the rise in traumatic injury identified between Level VI and Level IV samples.

The transition from a hunter-gatherer to an agricultural lifestyle, with a reduction in dietary diversity and reliance on crop-based diets, may have led to an increase in vitamin D deficiency and, consequently, a higher incidence of rickets observed from Level VI to Level IV.

### **Hypothesis #2 (30 points)**

(1) Identify a second piece of evidence from the Berkchister data that demonstrates a change in a specific health outcome over time.

Analysis shows an increase in evidence of respiratory diseases, with 0% incidence in the Mesolithic samples (Level VI) rising to 3.5% in the Bronze Age samples (Level III).

(2) Given this second piece of evidence, write a research question that investigates the relationship between the change in health outcome and change in a social, environmental, or demographic factor.

What relationship exists between the rise in respiratory diseases from Level VI to Level III and changes in living conditions, particularly increased indoor smoke exposure from new heating and cooking methods?

(3) Pose a second hypothesis that states the nature of the relationship between the change in health outcome and change in a social, environmental, or demographic factor. Tip: Write a directional alternative (research) hypothesis; do not write a null hypothesis.

As communities transitioned to settled lifestyles with enclosed living spaces and fire-based heating and cooking systems, increased exposure to indoor smoke could have contributed to the rise in respiratory diseases from the Mesolithic to the Bronze Age.

## **Part II: Summary Report (30 points)**

Instructions: Write a summary report (approximately two paragraphs) below that includes your final interpretation of the changes in health through time at the Berkchister Parish site. Use the module materials and Berkchister statistics to address the following: 1) Does overall health improve or decline through time? 2) What factors (social, environmental, cultural, demographic, etc.) likely contributed to these changes?

You do not need to do any statistical analyses for this assignment. You need to identify trends in health overall (increase, decrease, no change, etc.) and attempt to explain them with support from the Roberts and Cox 2007 reading. While your two pieces of evidence may show an (increase/decrease) in certain health factors, look at the entire data set over time to make your conclusions.

Your assignment does not need to include a bibliography. The only sources you should need are within the module and can be cited using in-text citations in the (Author, pub year) format (Antoine, 2004)

### **Formatting: (5 points)**

Maintain this document's 1-inch margins, single-spacing, and 12-point font throughout the assignment.

### **Spelling/Grammar: (5 points)**

0-1 errors = 5 points, 2-3 errors = 4 points, 4-5 errors = 3 points, 6-7 errors = 2 points, 8-9 errors = 1 point, 10+ errors = 0

The comprehensive review of the Berkchister Parish data indicates a decline in general health standards over time, notably through the transition from hunting and gathering to more settled agricultural societies. The evidence points to a noticeable increase in both rickets and respiratory diseases, diseases associated with changes in diet and living conditions, respectively.

The shift towards agriculture introduced significant changes in diet, reducing dietary diversity and increasing reliance on staple crops, which may lack certain nutrients, leading to malnutrition and conditions like rickets. Concurrently, adopting new heating and cooking technologies within more enclosed living environments likely led to increased exposure to indoor smoke, aggravating respiratory conditions. These health trends are supported by the broader historical context discussed in "Roberts and Cox (2007)," which links agricultural practices and sedentary lifestyles with increased disease prevalence due to these environmental and dietary changes.

This summary underscores the complex interplay between cultural evolution, environmental modifications, and health outcomes, highlighting the critical role of bioarcheological research in uncovering these relationships. Through this assignment, students gain insights into how historical shifts in lifestyle can influence health, emphasizing the importance of integrating multiple data sources to form coherent hypotheses in bioarcheological studies.