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Title: How FAIR is Bioarchaeological Data: with a particular emphasis on making archaeological science data Reusable

General questions

- **Did you read the “guide for reviewers”? (see the Help menu of the thematic PCI or the dedicated blog post)**
Yes
- **Is the manuscript well written?**
Overall, yes, but there are specific areas that need work (lack of important detail in Materials and Methods and the need to integrate the analysis portion of Results into Discussion).
- **Is the description of the rationale and methods clear and comprehensive?**
The methods are not explained in great enough detail. I do not feel it would be possible to try to replicate this study based on the current level of detail provided in the Materials and Methods section.
- **Are there flaws in the design of the research?**
This should be evaluated once the Materials and Methods section is revised.
- **Are there flaws in the analysis?**
Not all data is easily accessible (see Results section), which makes it hard to evaluate all the analysis.
- **Are there flaws in the interpretation of results?**
I would like to see more use of the results and graphs in the Discussion section. It is less flaws and more not fully making connections between results and the interpretation.
- **Do you have concerns about ethics or scientific misconduct?**
N/A at this time
- **Did you detect a spin on the results, discussion or abstract? (a spin is a way of twisting the reporting of results such that the true nature and range of the findings are not faithfully represented, <https://doi.org/10.1073/pnas.1710755115>)**
I detected no spin.
- **Is something critical missing?**
Much needed detail in the Materials and Methods section.

Title/abstract/introduction

- **Does the title clearly reflect the content of the article?**
Yes
- **Does the abstract present the supported findings of the study concerned and no other?**
Yes
- **Does the introduction clearly explain the motivation for the study?**
Yes. Author lays out clearly what is at stake when using a finite resource using destructive techniques of analysis. Reusability of data is key.
- **Is the research question/hypothesis/prediction clearly presented?**
Yes. "Ultimately, this thesis aims to determine the extent to which bioarchaeological data is reusable."
- **Does the introduction build on relevant recent and past research performed in the field?**
The introduction points toward building something new rather than looking to the past, which feels appropriate for the topic.

Materials and Methods

- **Are the methods and analysis described in sufficient detail to allow replication by other researchers?**

No.

I do not know what is meant by a Needs Analysis. It is clear that it is a method or a process but the fact that it is capitalized makes it seem like it is a specific methodology with specific characteristics. If so, the method/characteristics need to be clearly defined. If not, then Needs Analysis shouldn't be capitalized. Honestly, either way this needs to be clarified.

Also, the background portion in the Materials and Methods section feels like it fits better in the Introduction. It is tangentially connecting to materials but does not give insight into this study's methods.

Personally, I would move the Background to the Introduction and then flesh out the methods (software, if you used stats, what tests were they, etc.). Greater detail is needed.

- **Is the experimental plan consistent with the questions?**
I don't have a good sense of the author's plan other than the kind of questions were asked on the questionnaire.
- **Are the statistical analyses appropriate?**

Possibly. The author has relied nearly exclusively on %, which does not require much in the way of statistics. I would have liked to know if the differences that were being seen in the data was significant or not. Too be fair, looking at the data associated with the bar graphs in the results section, frequently there is too small of a sample size to run statistical analysis. No tables presented with pie charts.

- **Have you evaluated the statistical scripts and program codes?**
This is outside of my area of expertise. I don't write Python.

Results

Please see Odds and Ends at the bottom of the document for comments about the Results section.

- **Have you checked the raw data and their associated description? Have you run the data transformations and statistical analyses and checked that you get the same results?**

I viewed the cvs file. Since it was survey responses, it was not easy to instantly understand the data. I would have to make tables to organize data to understand it. The spreadsheet makes sense to the author but would take some work for the reviewer/reader to understand.

The author has relied nearly exclusively on %, which does not require much in the way of statistics.

- **To the best of your ability, can you detect any obvious manipulation of data (e.g. removal)?**
N/A See Tables and Figures section below.
- **Do the statistical results strongly support the conclusion ($p < 10^{-3}$ or $BF > 20$)?**
N/A No statistical analysis other than % presented.
- **In the case of negative results, was a statistical power analysis (or an appropriate Bayesian analysis) performed?**
- N/A No statistical analysis other than % presented.
- **Did the authors conduct many experiments but retain only some of the results?**
N/A

Discussion

- **Do the interpretations of the analysis go too far?**
Interpretations seem consistent with the results though it would be good to reference the results more directly. Line 344, "The findings demonstrate that data reuse is considered significant among bioarchaeologists (Figure 25),

and ...” The graphs are there. They should be used to support interpretations of the results.

- **Are the conclusions adequately supported by the results?**
I would like to see the analysis portion at the end of the Results integrated into the Discussion section and then to see the paper a second time.
- **Does the discussion take into account relevant recent and past research performed in the field?**
Yes. New field of research.
- **Did the authors test many hypotheses but consider only a few in the discussion?**
I would like to see the analysis portion at the end of the Results integrated into the Discussion section and then to see the paper a second time.

References

- **Are all the references appropriate?**
Yes
- **Are the necessary references present?**
Yes
- **Do the references seem accurate?**
Yes

Tables and figures

- **Are the tables and figures clear and comprehensive?**
Tables and figures are clear, but more tables are needed to present all the data that have been graphed. If the data from the cvs file were presented in the results alongside the figures, it would make it easier to check the author’s results. It would also make it easier to compare the tables in the results section back to the raw data in the cvs file.

The bar graph legends are small and tough to read without increasing document size.

- **Are all the tables/figures useful?**
Yes.
- **Are there too many/too few tables and figures?**

There are a lot of figures, but they do seem reasonable to include. It is good that the data was included as a table with the bar graphs but there should also be tables with the pie charts. Nothing wrong with small, simple tables. Presenting all data increases transparency.

- **Do the tables and figures have suitable captions such that they can be understood without having to read the main text?**

Mostly, but it would be good if the figures were also referenced in the text to direct the reader to the correct figure/table while reading. If the figures were referenced in the body of the text, the text would not need to be so broken up into chunks. The text broken up this way really interrupts the flow. Figures 15, 28, and 30 could use more explanation. They are unusual enough looking that it is not instantly understandable by looking at them. Figure 26 needs more information in caption. CC-BY needs to be defined in the body of the text. Creative Commons Attribution (CC BY) license and then different variants also need to be defined (CC BY-SA, CC BY-NC, etc.).

Odds and ends

- Line 58 has an issue at the beginning of the sentence. Looks like Materials and Methods was added at the start of the sentence by mistake.
- Line 143 and 145, the 13 in $\delta^{13}\text{C}$ should be superscript.
- Results should just be your results (data tables, graphs, etc.). The analysis portion of your results should be integrated into your discussion section.