**BIOST 2049**

**Spring 2023**

**Research Article Dissection 1 – Multiple Linear Regression**

**Due 1/25/22 by 11:59 via the Assignment Link posted to Canvas**

Please read the article “Comparison of direct measures of adiposity with indirect measures for assessing cardiometabolic risk factors in preadolescent girls” by Hetherington-Rauth et al. found on Canvas and answer the questions below.

This is an individual assignment. You can discuss the article with your classmates, but the answers you submit should be your own.

Please be brief but write in complete sentences with appropriate interpretations (a yes or no answer will not get full credit). A few sentences is all that is necessary to answer each question.

1. What is the research question that is the basis of the author’s work?

*Compare the effects of indirect measures of adiposity with direct measures of adiposity on cardiometabolic risk factors such as estimated insulin resistance.*

1. From the methods section, was there an assessment of confounding? Were interactions investigated?

*Potential confounders were controlled for and either included a priori or because they were highly correlated covariates with cardiometabolic risk factors. Interactions were not assessed.*

1. Do you agree with the interpretation used for the adjusted R2 measure in the methods and results?

*No, the adjusted R^2 measure is not the proportion of variance in cardiometabolic risk factors explained by their models. It is a model performance metric, but this interpretation is only valid for the unadjusted, multiple R^2 metric.*

1. What type of tests are used to compute the p-values to assess the addition of variables to the models shown in Table 4 (last column)? Is there alternative test that would be equivalent?

*They used Wald tests. A partial F-test could have also been used.*

1. From Table 6, would you consider these adjusted R2 values to be strong? Explain why or why not.

*I would consider the adjusted R^2 for logHOMA-IR to be moderate and the others to be weak. Strong adjusted R^2 values are reasonably at least .8 or higher.*

1. Would you have done the analysis differently? Why or why not.

*I would have assessed interactions between indirect and direct measures since such interactions may contain useful information.*

1. Is there anything related to the statistical methods that is not clear for you?

*No.*