**Activity 20: How to Analyze Data**

**Purpose of this assignment:** Identifying the analyses you will need to test your hypothesis (-es).

**How does it fit within the entire project?** These analyses will be the test of your hypothesis. Settling on the right analyses will be critical to being able to draw conclusions from your dataset and to contributing meaningfully to research.

**Tasks required:** Critically read three papers from the primary literature and complete the handout below.

**Deliverable:** Completed version of this handout uploaded to [LMS] by [deadline].

**Estimated time:** less than an hour and a half

**Group work or individual work?** Individual work

**Notes to instructor:**

* This activity was developed for a CURE in which students were provided two recent papers from the primary literature that represented model papers that investigated similar questions in different study systems.
* Students had already completed two scaffolding activities prior to this one [**Activities 4 and 8**].

**Step-by-step:** Recall that you have already done some of this work as part of your framework.

Fill out a table for each publication you were given at the start of the semester..

1. Identify the hypothesis (-es) you will be testing in your study:
2. For each hypothesis above, identify the variables you will be using in your analyses:
3. In general terms, what will you need to do with these variables? In other worlds, identify the comparison you will be making. Examples: “We will be comparing variable x between males and females for all species in our sample”, “We will be comparing the variable x between all species in our sample”, …
4. What variables do you need to control for?
5. What analyses did the published articles provided to you at the start of the semester employ? Look at the material and methods as well as the figures. Replace [name] with the name of the analysis. Complete the first row of the first two tables with the full reference for each of the two “model” papers associated with your project.

|  |  |  |
| --- | --- | --- |
| **Paper 1:** | | |
| Hypothesis: |  | |
| Analysis 1: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Conclusion drawn from analysis: |  |
| Analysis 2: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Conclusion drawn from analysis: |  |

|  |  |  |
| --- | --- | --- |
| **Paper 2:** | | |
| Hypothesis: |  | |
| Analysis 1: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Conclusion drawn from analysis: |  |
| Analysis 2: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Conclusion drawn from analysis: |  |

1. Identify a paper from the primary literature that has undertaken an analysis you are interested in running on your own data and complete the table below. Think back to your bibliography activity for help.

|  |  |  |
| --- | --- | --- |
| **Paper 3:** | | |
| **Hypothesis:** |  | |
| Analysis 1: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Conclusion drawn from analysis: |  |
| Analysis 2: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Conclusion drawn from analysis: |  |

1. How do your data differ from those published in the papers above?
2. How do your questions/hypotheses differ from those tested in the papers above?
3. Fill out the table below for YOUR study. Note that the number of analyses is not fixed. You may have one, two, three, four … The research should dictate this. Add rows to the table as necessary.

|  |  |  |
| --- | --- | --- |
| Analysis 1: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |
| Analysis 2: [name] | Dependent variable(s): |  |
| Independent variable(s): |  |
| Control variable(s): |  |
| Goal of the analysis |  |

1. How does your proposed analytical protocol differ from those previously used in the primary literature? Why?
2. What are some possible obstacles or challenges to the analyses you propose to run?