

## **Appendix T1**

### Project Plan Forms and Proposal Assignments

Sample project planning assignments are provided for each project, ranging from formal proposal assignments to brief project plan forms. You may elect to use one of these forms as is, or you may use them as a model to create your own project planning assignment.

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# Project Planning Assignments for Linear Regression Projects

## Linear Regression Formal Proposal Assignment

One formal proposal should be submitted per team, following the guidelines below.

- ✓ Proposal should be typed.
- ✓ There should be a title; under the title, all team members should be listed as co-authors.
- ✓ The proposal should be written in paragraph form, using full sentences.
- ✓ There should be one section, each with its own header, for each topic in the outline below.
- ✓ The student application for permission to conduct research (**IRB form**) must ALSO be completed and signed. **Only one form per team.**

Outline – Sections to Include in the Proposal

- I. **Introduction and Rationale:** Briefly introduce the idea of what you will study. This is where you will *informally* introduce your two research variables, explain the type of connection you think there might be, and why. In this section, you lay the groundwork (big picture overview) and convince the reader that your study both makes sense and matters (rationale).
- II. **Research Question:** Formally state the main question you propose to answer (e.g., “Is there a correlation between how often a person exercises and the mood they are usually in?”) In one sentence, state how you will attempt to answer this question (by using linear regression to examine the correlation between the two research variables). Use one or two additional sentences to justify the question. (Why will the world be a better place if we know the answer to this question?)
- III. **Definition of Terms:** Define your two research variables *operationally*. This means give each variable a succinct name and describe EXACTLY how it will be quantified. If you indicate that a person’s opinion will be represented on a scale of 1 – 10, tell what 1 represents and what 10 represents. If the variable is something that is measured, calculated, or rated, tell how it will be obtained (e.g., will height actually be measured with a measuring tape, or will it be obtained by asking participants what their height is?)
- IV. **Demographic Variables:** Name three demographic variables that you will collect. These may be quantitative or categorical, and they should be useful to describe your sample and help you verify whether your sample reasonably represents your population (see next item). Define each variable clearly, including both its name and the possible values it may have.
- V. **Sampling Strategy:** Define your population first; then discuss your sample. Recall that the population is the entire group that you intend for your sample to represent (e.g., all Metropolitan State students, all female freshmen at Metro State, etc.) Explain how you will obtain a statistically sound sample to represent this population. Identify your sampling strategy by name (e.g., stratified sample). Also identify your target sample size (recall sample size requirements).
- VI. **Data Source or Instrument:** Identify any website, survey, or process that you will use to collect data. Show a copy of any survey ***exactly as it will be given to participants***. Explain briefly how the survey was constructed, taking care to point out how questions were worded to avoid bias.
- VII. **Hypothesis:** State what correlation you believe you may find (your hypothesis). Be specific about whether you expect the correlation to be positive or negative and whether you think it might be weak, moderate, or strong. Briefly justify your hypothesis.

# Linear Regression Preliminary Proposal Assignment

This form is your preliminary proposal. Fill out and turn in one form per team.

- I. Team Members: List the names of all team members below.
  
- II. Preliminary research question: State the main question you propose to answer (e.g., “Is there a correlation between a professional baseball player’s salary and batting average?”)
  
- III. Research variables: Name and define/explain the 2 variables you propose to investigate. Explain how each variable will be measured and/or quantified (e.g., height in inches, commute time in minutes, survey score on a scale of 6 to 23, where higher scores indicate more optimism).

| Variable | Definition/Explanation |
|----------|------------------------|
|          |                        |
|          |                        |

- IV. Demographic variables: Name the 3 demographic variables you will obtain about participants in the study.

| # | Demographic Variable |
|---|----------------------|
| 1 |                      |
| 2 |                      |
| 3 |                      |

- V. Preliminary hypothesis: State your preliminary hypothesis about the two variables you propose to study. (Do you expect to see a correlation between the two variables? Positive or negative? Weak, moderate, or strong? **Why?**)
  
- VI. Additional planning notes: Note here any division of tasks your team has agreed upon, any ideas about survey design, sampling strategy, or other project details.

## Linear Regression Brief Project Plan Form

### A. Project Option – Check one:

- I will complete this project alone. My name is \_\_\_\_\_
- This project will be completed by the following team of students (list all)  
(MAX 4 students; a student may **not** be added to the team after plan is submitted.)

### B. Details of regression analysis you plan to conduct

- a) Target population: \_\_\_\_\_
- b) Research variables:  
\_\_\_\_\_ and \_\_\_\_\_
- c) Research question: \_\_\_\_\_
- d) Hypothesis: I (we) expect a
  - positive correlation       negative correlationand predict that it will be
  - weak     moderate     strongI (we) predict this because \_\_\_\_\_  
\_\_\_\_\_

### C. Data collection plan (check one, and give relevant details)

- I (we) will obtain data from the following website(s). Name AND give full URLs below.
- I (we) will obtain data by giving a survey. Attach survey ***exactly as it will be given to participants***, and describe a specific sampling strategy below.
- Other data collection plan: Give specific details below.

# Project Planning Assignments for Comparison Projects

## Comparison Project Preliminary Proposal Assignment

### A. Project Option – Check one:

- Option 1 – Working alone, using the class data file.
  
- Option 2 – Team of 3 or 4, collecting our own data.
  
- Option 3 – Team of 2 (Check one below)
  - using the class data file     collecting our own data

### B. Name(s) of all students working on this project

### C. Research variable for project (1 quantitative variable):

### D. Type of statistical test you plan to conduct (check one)

- 1-sample t-test
  
- matched pairs t-test  
If matched pairs t-test is selected, identify two data elements to be analyzed for each participant.

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- 2-sample t-test  
If 2-sample t-test is selected, identify groups to be compared (at least 2 independent groups)

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### E. Demographic variables

These are 2 additional variables used to describe your sample.  
These should NOT overlap with your research variable or groups above.

## Comparison Project Brief Project Plan Form

### A. Project Option – Check one:

- I will complete this project alone. My name is \_\_\_\_\_
- This project will be completed by the following team of students (list all)  
(MAX 4 students; a student may **not** be added to the team after plan is submitted.)

### B. Type of statistical test you plan to conduct (check one, and give relevant details)

- 1-sample t-test
  - a) Target population: \_\_\_\_\_
  - b) Research variable: \_\_\_\_\_
  - c) Research question: \_\_\_\_\_
  - d) Hypothesis: \_\_\_\_\_
- matched pairs t-test
  - a) Target population(s): \_\_\_\_\_
  - b) The research variable will be the **difference** between \_\_\_\_\_ and \_\_\_\_\_
  - c) Research question: \_\_\_\_\_
  - d) Hypothesis: \_\_\_\_\_
- 2-sample t-test
  - a) Target populations (2): \_\_\_\_\_ and \_\_\_\_\_
  - b) Research variable: \_\_\_\_\_
  - c) Research question: \_\_\_\_\_
  - d) Hypothesis: \_\_\_\_\_

### C. Data collection plan (check one, and give relevant details)

- I (we) will obtain data from the following website(s). Name AND give full URLs below.
- I (we) will obtain data by giving a survey. Attach survey **exactly as it will be given to participants**, and describe a specific sampling strategy below.
- Other data collection plan: Give specific details below.