

Math 1040 – Term Project

INTRODUCTION:

This project will allow you to pull together methods you have studied, starting with choosing a research question, then designing a method for collecting data, analyzing your results, and presenting your work to the class. Part of the project will be completed individually and part will be completed as a group.

RESEARCH QUESTION:

Each student should submit a research question by the date posted on the schedule. The research question will ask how one **quantitative** variable is related to a second **quantitative** variable (such as “Is *shoe size of adult men* related to *height of adult men*?”) Your question should be different than others that have been posted, and different than the previous example.

Keep in mind that you cannot use the Internet to gather data. You will need to gather original data on your own using correct sampling techniques.

You should turn in the following, typed **EXACTLY** as it appears below, filling in the blanks with your own unique information:

My first quantitative variable is _____. The unit of measurement for this variable is _____. A few possible values for this first quantitative variable are _____, _____, and _____.

My second quantitative variable is _____. The unit of measurement for this variable is _____. A few possible values for this second quantitative variable are _____, _____, and _____.

My research question is “Is _____ related to _____?”
(first variable) (second variable)

To answer this research question, I would gather data as follows: _____

GROUPS:

After you have submitted your research question, your instructor will assign you to a group. There will generally be 4 or 5 students in each group.

TOPIC SELECTION and DATA COLLECTION PLAN:

By the due date posted on the schedule, one member of each group should submit a research question that the group plans to address for the term project and a plan for how the group will collect data.

- Data must be collected by **gathering it on your own. Do not use data available to you on the Internet and do not use the Internet to collect data.**
- It is important that your data be collected **randomly**. Explain how you will introduce randomness into your data collection.

DATA:

By the due date posted on the schedule, one member of each group should submit the group's data organized into a table. Each group member's name who participated in data collection should be included with the table.

WRITTEN REPORT:

By the due date posted on the schedule, **EACH STUDENT** should submit a written report that they have created on their own. **This is not a group part of the project! Do not work together on this!!!**

The written report should include the following:

- **Purpose of the study** (the research question)
- **Study Design** (description of the study design including the data collection plan)
- **The Data, Statistics and Graphs**
 1. all data, organized into a table
 2. statistics for your first quantitative variable: mean, standard deviation, five-number summary, range, mode, outliers
 3. histogram for your first quantitative variable
 4. boxplot for your first quantitative variable
 5. statistics for your second quantitative variable: mean, standard deviation, five-number summary, range, mode, outliers
 6. histogram for your second quantitative variable
 7. boxplot for your second quantitative variable
 8. statistics for testing the correlation between your two variables: linear correlation coefficient (**USE R AND NOT R²**) and equation for line of regression
 9. scatterplot that includes line of regression
- **Difficulties/surprises encountered**
- **Analysis** (Include discussion of distribution of each variable and correlation, or lack of correlation, between the two variables. Include a comparison of your value for R with the critical value for your sample size.)
- **Interpretation and conclusions** (Include conclusion about correlation from above comparison of R with critical value. State in your own words if and how you have answered the original question.)

VISUAL PRESENTATION:

On the dates posted on the schedule, each group will present their project to the class. The presentation can be a power point presentation. It should include a summary of the project, graphs, and results

Each member should contribute to the presentation and the presentation should list each group member who helped, along with a note on what part of the presentation the group member helped with. If a group member's name is not mentioned, the assumption will be that the group member did not contribute to the presentation.

GRADING:

Unless stated otherwise by your instructor, the term project is worth 14% of your final grade. It will be scored according to the following rubric.

3 points	DATA COLLECTION
7 points	WRITTEN REPORT
4 points	VISUAL PRESENTATION
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14 points	TOTAL

GENERAL EDUCATION ePORTFOLIO:

It is a requirement in this class for you to add the written report and visual presentation from your term project to your ePortfolio.

REFLECTIVE WRITING:

Your ePortfolio assignment must have a reflective writing component. For this component, each student must write two to three paragraphs responding to **one** of the following questions and add this reflective writing to your ePortfolio.

- What process did you go through to complete this assignment?
- What challenges did you face in completing the assignment? How did you address them?
- What impact did this project have on your understanding of statistics?