**ADTA 5230/4230 Data Analytics II**

**Research Project and Writing Guide**

This document summarizes the details of your research project, which are broken down into several components to assist you with knowledge retention throughout the process.

# WHAT YOU ARE SUPPOSED TO DO

1. Each student is supposed to pick group members and select a research idea and a related data set.
2. Start by giving background information about your idea. You can make use of Google search here.
3. Analyze your data with the proper statistical tools learned in the class.

# TEAM

You can form a group of 1 to 4 people of classmates. One submission per group is enough. You are supposed to clearly write, in your submission, who did which part of the study. Grading will be done independently.

# TOOLS

You are supposed to submit 1 PDF file together with your codes. However, you are expected to summarize everything in your pdf file. Code file is only for checking purposes. If you want to use extra tools, you are free to do that.

# SUBMISSION

You will be making three submissions:

1. The proposal. This is a very straightforward submission of your topic, your dataset, and your group members. Please precisely explain your idea and the related dataset.
2. You are supposed to submit 1 PDF file (of around 10 pages) only by the end of the semester. It is expected that the paper be free from grammatical errors and appropriately uses APA style for citations and reference lists. The minimum requirement for the paper will be 10 pages of content, double-spaced, with 1-inch margins, using Times Roman 12-point font. The submitted research paper should also have a separate cover page with your name(s) and the title of your paper. *Late papers will not be accepted*. The paper will be submitted for grading via software that checks for plagiarism. Plagiarism is a violation of the Student Code of Conduct and will be handled according to university policy.
3. You are supposed to prepare a report and present it in a 10-min video. Part of the final project is a brief presentation, no longer than 10 minutes, on FlipGrid.

Grading rubrics are given below.

# WRITING GUIDE

These are the essentials parts of a project. Be as clear and understandable as possible. Anybody, without any prior knowledge in the field, who reads your project should be impressed by your work.[[1]](#footnote-1) Use good and clear techniques and charting.

## Title:

Choose a title that is descriptive of your question.

## Abstract (Write this last!)

An abstract summarizes, in one paragraph of 100-200 words, the major aspects of the entire paper in the following sequence:

1. The ***question(s) you investigated***. State the purpose very clearly in the first or second sentence. (from Introduction)
2. The ***design*** *and* ***methods*** used. (from Methods)
3. The ***major findings***including***key quantitative/qualitative results.*** (from Results)
4. A brief summary of your ***interpretations*** and ***conclusions***. (from Discussion)

## Introduction

The function of the Introduction is to:

1. Establish the context of the work being reported. Give a background about the city/stock/company you are analyzing.
2. State the purpose of the work in the form of the hypothesis, question, or problem.
3. Briefly explain your rationale and approach and, whenever possible, the possible outcomes your study can reveal.
4. Explain why the problem matters to you or the world. Tell me your story.

Quite literally, the Introduction must answer the questions, "What was I studying? Why was it an important question? What did we know about it before I did this study? How will this study advance our knowledge?"

## Literature Review

* **Provide a brief and balanced review of the pertinent published literature that is available on the subject.** The key is to summarize for the reader what we knew about the specific problem *before* you did your experiments or study. This is accomplished with a general review of the *primary research literature* (with citations). Lead the reader to your statement of purpose/hypothesis by focusing your literature review from the more general context (the big picture e.g., employee engagement) to the more specific topic of interest to you.
* **What literature should you look for in your review of what we know about the problem?** Focus your efforts on the *primary research journals* - the journals that publish original research articles. [Google Scholar](https://scholar.google.com/) is a good resoure for this. Cite articles that reported specific results relevant to your study. Learn, as soon as possible, how to find the *primary literature* (research journals) and *review articles* rather than depending on reference books. The articles listed in the References section of relevant papers you find are a good starting point to move *backwards* in a line of inquiry. *Review articles* are particularly useful because they summarize all the research done on a narrow subject area over a brief period of time (a year to a few years in most cases).

## Methodology

In this section you explain *clearly* how you carried out your study in the following *general* structure and organization (details follow below):

* The city, the stock,company or the country studied.
* if you did a qualitative study, provide a description of the study site*,* including the significant physical features of your subject.
* Provide a description of the analysis you carried out.
* how the data were analyzed (qualitative analyses and/or statistical procedures used to determine significance, data transformations used, what probability was used to decide significance, etc).
* Use graphs and charts to present your work/ data. The graphs and charts must be self-explanatory. The title, axes, and legends must be clearly identified.

Organize your project so your reader will understand the logical flow of the technical aspects of your study; **subheadings** work well for this purpose.

## Results and Discussion

The function of the Results section is to objectively present your key results, in an orderly and logical sequence using both text and illustrative materials (Tables and Figures). It is recommended that you create your Tables/Figures first, then write the text of your results section as you describe the relevant information contained within the Tables/Figures.

The function of the Discussion is to interpret your results in light of what was already known about the subject of the research, and to explain our new understanding of the problem after taking your results into consideration. Fundamental questions to answer here include:

* Do your results provide answers to your testable hypotheses? If so, how do you interpret your findings?
* Do your findings agree with what others have shown? If not, do they suggest an alternative explanation in your study (or theirs?)
* Given your conclusions, what is our new understanding of the problem you investigated and outlined in the Introduction?

## References

This section allows you to provide credit to the source material used within your study. This is especially important to avoid plagiarizing the intellectual contributions of other researchers. Please refer to the APA manual 7th edition, or the APA citation guide.

## Output:

Submit a single word or a pdf file showing your material (charts and statistics). The name of the main file must be in this format: LastName1\_LastName2\_LastName3.doc. For example Erdem\_Smith\_Bernanke.doc.

Do NOT submit the data.

There is no page limit for this research. As long as you answer your question in the way defined above, you are ok. Having said that, I mostly receive around 10 pages of submissions with a lot of deviation (Sometimes they are 4-5 pages, sometimes around 20). You will NOT be graded based on the number of pages you submit.

# Grading Rubric for Project Submission

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| --- | --- | --- | --- |
| **Category** |  | **Scoring Criteria** | **Total Points** |
| **PART I:**  **Proposal** | **(10 points, Deadline:Nov 20)** | The idea is clearly explained.  The dataset is properly selected. (Don't forget to submit the name of your group members). | 60 |
| **PART II:**  **Written Submission** | **Content**  **(140 points**  **Deadline: Dec 8)** | The introduction is attention-getting, lays out the problem well. | 20 |
| Background and Literature Review are well conducted (Q2) | 20 |
| Explotory data analysis/descriptive statistics.  Analyses are well conducted.  The results are well-explained  There is an obvious conclusion summarizing the content. | 100 |
| **Design/Language/**  **Visualization**  **(60 points, Deadline: Dec 8)** | Information is presented in a logical sequence. Good language skills and pronunciation are used. | 20 |
| Visual aids are well-prepared, informative, effective, and not distracting. | 20 |
| Information was well communicated. | 20 |
| **PART III: Presentation/FlipGrid** | **(40 points, Deadline: December 8)** | The topic of the paper is clearly stated. | 10 |
| The methods are explained very-well. | 10 |
| A clear and understandable conclusion is stated. | 20 |
| **Score** |  | **Total Points** | **300** |

1. Even though you are given a data to analyze, you are also allowed to choose your own topic and data. To do this, you have to see me and get my permission before the submission. [↑](#footnote-ref-1)