# Golf - Professional Golfers Association Tour

**Introduction:**

Performance statistics and winnings for male professional golfers on the PGA from 2010 to 2018 seasons.

The data set you will use contains 1674 rows and 18 columns. Each row indicates a golfer's performance for that year.

I have selected 80% random sample of the original dataset.

**The task given in this assignment is to answer the following question:**

**“Which skills are good predictors that individual male golfers need in order to gain more total winnings (Money)?**

You are tasked with ***building a multiple linear regression model***, to predict the target variable (i.e. ‘Money’) in order to answer this question.

**Variable Description:**

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Player Name | Name of the golfer |
| Rounds | The number of games that a player played |
| Fairway Percentage | The percentage of time a tee shot lands on the fairway |
| Year | The year in which the statistic was collected |
| Avg Distance | The average distance of the tee-shot |
| gir | (Green in Regulation) is met if any part of the ball is touching the putting surface while the number of strokes taken is at least two fewer than par |
| Average Putts | The average number of strokes taken on the green |
| Average Scrambling | Scrambling is when a player misses the green in regulation, but still makes par or better on a hole |
| Average Score | Average Score is the average of all the scores a player has played in that year |
| Points | The number of FedEx Cup points a player earned in that year. These points can be earned by competing in tournaments. |
| Wins | The number of competitions a player has won in that year |
| Top 10 | The number of competitions where a player has placed in the Top 10 |
| Average SG Putts | Strokes gained: putting measures how many strokes a player gains (or loses) on the greens. |
| Average SG Total | The Off-the-tee + approach-the-green + around-the-green + putting statistics combined |
| SG OTT | Strokes gained: off-the-tee measures player performance off the tee on all par-4s and par-5s. |
| SG APR | Strokes gained: approach-the-green measures player performance on approach shots. Approach shots include all shots that are not from the tee on par-4 and par-5 holes and are not included in strokes gained: around-the-green and strokes gained: putting. Approach shots include tee shots on par-3s. |
| SG ARG | Strokes gained: around-the-green measures player performance on any shot within 30 yards of the edge of the green. This statistic does not include any shots taken on the putting green. |
| Money | The amount of prize money a player has earned from tournaments |

**References:**

<https://www.pgatour.com/stats.html>.

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**Final Report Description**

Below is a description of the sections required as part of the final report you are submitting. The below sections are not selective, i.e. all listed sections must be in your report and in the order it is stated.

# Title

Your report must have a descriptive title. Try not to be ambiguous with the title. The title must be descriptive of the study that is been executed.

# Author

Your name and surname should be added. The Project will be done individually.

# Abstract

Provide a short overview of the whole article. The reader should have a general idea of the attempted methods as well as the results of the study by reading through the abstract. (+-300 words)

The abstract should entice the reader to continue reading the report.

In your first submission you will not be able to have all the information in the abstract; the abstract will be continually constructed until your Project is completed.

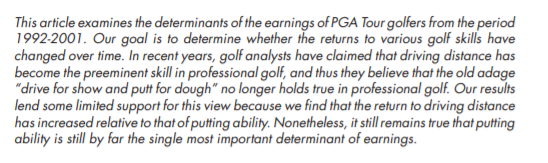
**In your abstract you should have the following information within it:**

1. **Introduction** – Describing what your topic of your project and what its covering. You will need to provide the reader with a background to the study. You need to avoid any unnecessary information.
2. **State the Problem** – The main research question that you have to answer is “” but you also need to come up with your own specific research question based on the dataset you have received. This needs to be written in one sentence.
3. **Summarizing what your contribution** is to the research at hand.
4. **Explain how you have approached the research question –** How are you going to address your research that will be conducted.
5. **Describing how you went about doing the research** – by providing an outline of the methods you have used within your project.
6. **You need to provide the key impacts to your project** – This is provided by the conclusion of your research that you have conducted, you need to provide the implications and primary take-home message which is the answer to your main research question and your specific research question.

**What your abstract should not have:**

1. No new information must be discussed that was not discussed in the project.
2. By reading you abstract one will be able to grasp what your project is about without reading it.
3. Does not contain citations (Quotations).
4. Does not include a lengthy background of your topic
5. Does not contain any illustrations, figure, tables or pictures.

**Example of an abstract:**



*Journal:* ***Drive for Show and Putt for Dough? An Analysis of the Earnings of PGA Tour Golfers***

*DOI: 10.1177/1527002503260797*

1. First Sentence ***(Is the background information)***
2. Second Sentence ***(is stating the problem)***
3. Third Sentence ***(Summarizing the contribution and Gap in research)***
4. Fourth Sentence ***(Provides an explanation to the approach of the research question as well as the how they went about their research)***
5. Fifth Sentence ***(indicates the primary take-home message and the answer to the research question)***

# Literature Review & Introduction

**Introduction**

1. You will need to **discuss the background and main theme** of the research project (context).
2. **Highlight the overall trends/main themes in the literature -** conclusions made, conflicts in theory, methodology, evidence or the gaps or weaknesses in the literature.
3. **There must be a thesis statement for the literature review** - The thesis statement does not necessarily have to present an argument or position, but can simply argue for a particular perspective on the material (e.g. agree with 1 group of scholars).
4. **Give a general outline** of how you will review this literature and why.

**Here are a few phrases that can used in order to have a structured and professional Literature review below:**

* ***When you are providing context to a specific work from another author:***
  + Recent work in the field has shown that
  + It is generally assumed/known that…
* ***When you would like point out aim you are making:***
  + This review considers….
  + This discussion focuses on…
* ***When you are outlining a structure of your paragraphs:***
  + The review is divided into three main sections. Firstly…..is considered; secondly, ……is analysed and finally………. is done.
  + This review first considers…….and then…….

**Example of an introduction:**

**Example: Introduction**

The Neopatrimonial School refers to literature that attributes Africa’s poor political and economic record to Neopatrimonialism, which is said to have weakened the state’s capability to foster development and economic growth. Increasingly arguments have emerged which challenge this view on the basis of the very utility of the concept as an explanatory tool in Africa. The main argument is that neopatrimonialism merely describes the style of governance in a country, but does not indicate the type of strategies or policies a state will pursue and with what success. This paper aims to review these two contrasting sets of literature in order to illustrate that Neopatrimonialism does not necessarily lead to underdevelopment. The review first highlights the main arguments of the neopatrimonial school and critiques these arguments by reflecting on the contrasting emerging literature.

1. First Sentence ***(Discusses the background and main theme)***
2. Second Sentence ***(Highlights a trend and main theme of other articles in relation to the research conducted)***
3. Third Sentence ***(present an argument or position related to the research conducted)***
4. Fourth Sentence ***(Provides the reader with the main components of how you will review the literature)***

*Journal:* ***Neopatrimonialism and the Political Economy of Economic Performance in Africa: Critical Reflections***

*DOI:*[*10.1017/S004388711500009X*](http://dx.doi.org/10.1017/S004388711500009X)

**Body:**

* ***Discuss the sources*** *- This can be done in subsections, grouping various works in chronologically order.*
  + ***Chronological:*** *organise your review according to when the sources were published, only do this if the order demonstrates an important trend. You can also organise the sources chronologically according to the history of the topic.*
* Summarise the articles with as much detail as each article merits.
* Identify consistent patterns and points of agreement & inconsistencies, disagreement & unresolved issues across these texts to establish what is known.
* Read widely but make sure to only use the most significant and relevant sources of information to date.
* Each paragraph should have a topic sentence and a clear main idea.
* Pay attention to the vocabulary you use to aid in your overall analysis.

**These are a few phrases that can be used within your literature review:**

1. ***Referring to another authors ideas***

* *Weber put forward the idea that….*
* *In Mkandawire’s view……*
* *According to Chang’s perspective…….*
* *Khadiagala argues that….*

1. ***Providing support***

* *Fombad’s findings (2001) support this idea.*
* *For example in 1984…*
* *This shows that….*

1. ***Making a concession***

* *Good’s study provides much relevant information.*
* *Taylor makes several interesting points…*
* *Parson argues convincingly*

1. ***Showing Disagreement***

* *There are several flaws in Nwabueze’s argument.*
* *While the discussion makes some good points, there are serious problems.*
* *Peterson’s argument cannot be accepted for several reasons.*

1. ***Comparing***

* *Whereas Molomo argues for……….., Samatar presents a case against it.*
* *Botswana is considered to have a good democracy, however….*

1. ***Weakening a statement***

* *Naidoo’s argument is not completely valid because….*
* *This is possibly a result of…….as a result of…*

**Conclusion:**

1. **Summary of what you have drawn from the literature** - *e.g. inconsistencies in the findings and therefore areas that are pertinent to future study of the topic.*
2. **Where might the discussion proceed** - Future *research*
3. **Remember to** - *maintain the focus established in your Introduction.*

# Research Questions

List and discuss your research questions. These questions can be further elaborated on in the following section. A Minimum of 1 Research Question.

You need provide your Research Question as well as your research question that you have come up with, which is the one you are setting out to answer. (You need to answer the research question i have provided on the Project as well as answering your own research question)

You can have more than one research question, but one research question that you create is enough.

Your research Question is an extension of the Main Research Question:

**For Example:**

**Main Research Question** - reviewing the Ladies Professional Golf Association (LPGA) referring to the relationship between skills and rounds played in comparison to Total winnings/per round.

**Research Questions:**

1. If an individual has played more or fewer total rounds of golf than their opposition, does it affect the amount of total winnings per round they will earn.
2. What skills do individual female golfers need in order to gain more total winnings/ per round.

# Methodology:

Describe all methods that you are using in your study. You do not have to list the specific SAS procedure by name in this section. Merely discuss the method within each specific procedure you are using.

For example, you do not state that you are using the ‘proc corr’ procedure, you describe and discuss the correlation analysis that is attempted within the ‘proc corr’ procedure.

**Introduction:**

This should explain everything below, this is when the reader understands what you intend on doing for your methodology, a brief introduction to methodology.

***You may break up the methods section into various subsections if that suits the style of your writing.***

1. You need to provide the reader with an understanding on what methods you intend on using for your initial Analysis. Why you intend on conducting this methods, what is the reason behind conducting these procedures. This means that you should be explaining what methods you will be using to conduct your descriptive statistics, your correlations, your predictive modelling as well as selection techniques. You need to explain why you are using this methodology in order to answer your research question.
2. For instance: you could be conducting histograms of your variables to see if they are normally distributed using skewness and kurtosis which will give you an ideaof the distribution of the data.
3. For Instance: You could be conduction your predictive modelling which will in turn help you understand which variables are more predictive of the response variable Y.
4. These are just two examples; this should be done, but more importantly, you have the freedom to conduct as many methods as you want as long as it has a purpose and reason behind it.

**Conclusion:**

You need to conclude on your methodology, now new information should be included in this paragraph.

# Initial Analysis - Results and Discussion

* Provide a discussion (using graphical aids) of the results of your study.
* Again, this may be broken up into subsections.

**Introduction**

You need to introduce your research at hand. Explain the proposed research question and what you intend to gain from understanding this question. Go on to explain your Created Research question which dives deeper in what the proposed question is. Explain what is the aim, your objective and outcome that you would like to achieve from gaining this knowledge and how it will improve the research field of study. In this main introduction you need to stipulate to the reader what you will be discussing in your analysis, in a short description of what will be takin place in each section of your analysis.

**Results and discussion**

Introduction: (It needs to be done for each section you will be explaining)

If you are going to start off with Descriptive analytic or any other analysis you need to explain in depth why you are going to undertake this analysis and why it is important for answering both the research question as well as the Created research question. You need to explain to the reader in brief manner what are the points you will be touching on within the Descriptive analysis before the reader starts reading the information you are setting them up for.

**Body**

If you are doing descriptive analysis, you need to understand that when doing any analysis, you want to relate it to literature review. If one author describes information pertaining to a certain variable and your analysis shows something of equal value you can provide evidence by saying that the author’s information has brought some insight to your work and this can lead to further curiosity as to what will happen to the variables. For instance will it be included in the model or will it be dropped, what is the significance of this variable and how it plays a role in answering your research question.

**For example:**

“The effects of skills on earnings confirm earlier work. Putting is the most important skill for men or women, followed by driving distance for men and greens in regulation for women.” (Shmanske, 2000).

- ***Taking our research question into consideration one would have to do further* research** as to finding out if having advanced skills in putting and playing more or less rounds will or will not affect their total winnings per round.

1. The correlation between Greens in Regulation Percentage and Total winnings per round is moderately medium to high correlation of 0.54756

2. The correlation between Average number of Putts / Round and Total winnings per round is a moderately negative correlation of –0.46123

- What would be interesting is to find out if the ***multiple regression model included these variables.***

**Conclusion:** (Its needs to be done for every section you will be explaining)

If you are going about conducting a descriptive analysis, explain to the reader what is that you have found out about the variables you intend on analysis pertaining to your research question and proposed research question. This would be the primary take home message for your descriptive analysis.

**1. Descriptive Analysis**

* Using procedures to gain insight into your variables and the averages, distribution of the data (Skewness & Kurtosis)
* Using Procedures to gain insight into how variables are interacting with one another by looking at Frequency tables.

**2. Correlation Analysis**

**3. Multiple Regression Model (Full Model)**

**4. Analysis of Variance**

* SSE
* SSTO
* SSR

**5. Hypothesis Testing**

**6.R-Squared and Coefficient of Variance**

**7.Multiple Regression Model (Reduced Model)**

**7.1.Selection Techniques**

**Forward**

* R-Squared
* Steps
* Estimated Multiple regression model formed

**Backward**

* R-Squared
* Steps
* Estimated Multiple regression model formed

**Stepwise**

* R-Squared
* Steps
* Estimated Multiple regression model formed

**Conclusion:**

These are just a few things that you can do when looking into doing your analysis.

An analysis can be done in many different ways but the example I have given you should give you some idea on how to link literature to Analysis.

Lastly, if you add tables to your appendix you need to explain all the results, only take the necessary information that you want to interpret. This is very important. Do not Paste all the tables and graphs in to research report.

# Summary and Conclusion

Summarize the results of your study and make conclusions based on the results of the study. You may list limitations and recommendations of the study in this section.

# Bibliography

List all sources used in your study.

# General Comments

All coding does have to be included as an appendix to the report.

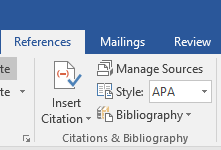
The entire report may not be longer than 15 pages excluding the bibliography.

The report should be compiled in the style of a scientific journal article in terms of the layout and content.

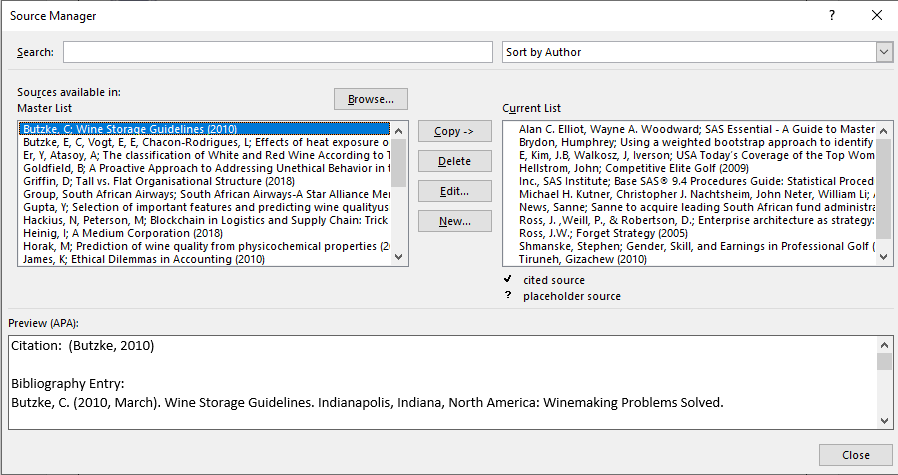
# Research report Etiquette

**Referencing Correctly:**

* You need to use APA Style Referencing
* You need to use APA Style Citations



* Its needs to be in the Style APA



* The source manager allows you to create you references and this can be used for your bibliography

**Font:**

* Font: Arial
* Font Size: 12

**Paragraph:**

* Line and paragraph spacing: 1.15
* Justify your paragraph

**Graphs and statistical Tables:**

* No pictures of Golfers or banners or anything that is not related to Statistical graphs or Statistical tables which needs to be placed in your Appendix and then referred to in you research report.

**Plagiarism Declaration:**

* Please make sure that when you are submitting your work that you add the plagiarism declaration.

**Page:**

Your report should not be in landscape it should be in standard Portrait.

Remember to make sure that the flow of the discussion can easily be followed.

Once you are done with a particular task such as the research proposal and timeline, methodology, initial analysis, draft report and final report, you may email it to **sasprojectsta221@gmail.com**