# MAT 243 Project Two Summary Report

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**Notes:**

* Replace the bracketed text on page one (the cover page) with your personal information.
* You will use your selected team for all three projects

## Introduction: Problem Statement

*Discuss the statement of the problem in terms of the statistical analyses that are being performed. In your response, you should address the following questions:*

* What is the problem you are going to solve?
* What data set are you using?
* What statistical methods will you be using to do the analysis for this project?

* Answer the questions in a paragraph response. Remove all questions and this note before submitting! Do not include Python code in your report.*

## Introduction: Your Team and the Assigned Team

*In the Python script, you picked the same team and years that you picked for Project One. The assigned team and its range of years will be the same as in Project One as well.*

*See Steps 1 and 2 in the Python script to address the following items in the table below:*

* What team did you pick and what years were picked to do the analysis?
* What team and range of years were you assigned for the comparative study? (Hint: this is called the assigned team in the Python script.) Present this information in a formatted table as shown below.

Table 1. Information on the Teams

|  | **Name of Team** | **Years Picked** |
| --- | --- | --- |
| 1. Yours | Team (e.g. Knicks) | XXXX-YYYY (e.g. 2013 - 2015) |
| 2. Assigned | Team (e.g. Bulls) | XXXX-YYYY (e.g. 1996- 1998) |

*Caution sign icon
 Answer the questions in a paragraph response. Remove all questions and this note (but not the table) before submitting! Do not include Python code in your report.*

## Hypothesis Test for the Population Mean (I)

*Suppose a relative skill level of 1340 represents a critically low skill level in the league. The management of your team has hypothesized that the average relative skill level of your team is greater than 1340. You tested this claim using a 5% level of significance. For this test, you assumed that the population standard deviation for relative skill level is unknown. Explain the steps you took to test this problem and interpret your results.*

*See Step 3 in the Python script to address the following items:*

* In general, how is hypothesis testing used to test claims about a population mean?
* Summarize all important steps of the hypothesis test. This includes:
  1. Null Hypothesis (statistical notation and its description in words)
  2. Alternative Hypothesis (statistical notation and its description in words)
  3. Level of Significance
  4. Report the Test Statistic and the P-value in a formatted table as shown below:

Table 2: Hypothesis Test for the Population Mean (I)

| **Statistic** | **Value** |
| --- | --- |
| Test Statistic | X.XX  *\*Round off to 2 decimal places.* |
| P-value | X.XXXX  *\*Round off to 4 decimal places.* |

* 1. Conclusion of the hypothesis test and its interpretation based on the P-value
* What are the implications of your findings from this hypothesis test? What is its practical significance?

* Answer the questions in a paragraph response. Remove all questions and this note (but not the table) before submitting! Do not include Python code in your report.*

## Hypothesis Test for the Population Mean (II)

*Your team’s coach has hypothesized that average number of points scored by your team in the team’s years is less than 106 points. For this test, you assumed that the population standard deviation for points scored is unknown. You tested the claim using a 1% level of significance. Explain the steps you took to test this problem and interpret your results.*

*See Step 4 in the Python script to address the following items:*

* Summarize all important steps of the hypothesis test. This includes:

1. Null Hypothesis (statistical notation and its description in words)
2. Alternative Hypothesis (statistical notation and its description in words)
3. Level of Significance
4. Report the Test Statistic and the P-value in a formatted table as shown below:

Table 3: Hypothesis Test for the Population Mean (II)

| **Statistic** | **Value** |
| --- | --- |
| Test Statistic | X.XX  *\*Round off to 2 decimal places.* |
| P-value | X.XXXX  *\*Round off to 4 decimal places.* |

* 1. Conclusion of the hypothesis test and its interpretation based on the P-value
* What are the implications of your findings from this hypothesis test? What is its practical significance?

* Answer the questions in a paragraph response. Remove all questions and this note* *(but not the table) before submitting! Do not include Python code in your report.*

## Hypothesis Test for the Population Proportion

*Suppose the management claims that the proportion of games that your team wins when scoring 102 or more points is 0.90. You tested this claim using a 5% level of significance. Explain the steps you took to test this problem and interpret your results.*

*See Step 5 in the Python script to address the following items:*

* In general, how is hypothesis testing used to test claims about a population proportion?
* Summarize all important steps of the hypothesis test. This includes:

1. Null Hypothesis (statistical notation and its description in words)
2. Alternative Hypothesis (statistical notation and its description in words)
3. Level of Significance
4. Report the Test Statistic and the P-value in a formatted table as shown below:

Table 4: Hypothesis Test for the Population Proportion

| **Statistic** | **Value** |
| --- | --- |
| Test Statistic | X.XX  *\*Round off to 2 decimal places.* |
| P-value | X.XXXX  *\*Round off to 4 decimal places.* |

* 1. Conclusion of the hypothesis test and its interpretation based on the P-value
* What are the implications of your findings from this hypothesis test? What is its practical significance?

* Answer the questions in a paragraph response. Remove all questions and this note (but not the table) before submitting! Do not include Python code in your report.*

## Hypothesis Test for the Difference Between Two Population Means

*You were asked to compare your team’s skill level (from its years) with the assigned team’s skill level (from the assigned time frame). You tested the claim that the skill level of your team is the same as the skill level of the assigned team, using a 1% level of significance.*

*See Step 6 in the Python script to address the following items:*

* In general, how is hypothesis testing used to test claims about the difference between two population means?
* Summarize all important steps of the hypothesis test. This includes:

1. Null Hypothesis (statistical notation and its description in words)
2. Alternative Hypothesis (statistical notation and its description in words)
3. Level of Significance
4. Report the Test Statistic and the P-value in a formatted table as shown below:

Table 5: Hypothesis Test for the Difference Between Two Population Means

| **Statistic** | **Value** |
| --- | --- |
| Test Statistic | X.XX  *\*Round off to 2 decimal places.* |
| P-value | X.XXXX  *\*Round off to 4 decimal places.* |

1. Conclusion of the hypothesis test and its interpretation based on the P-value

* What are the implications of your findings from this hypothesis test? What is its practical significance?

* Answer the questions in a paragraph response. Remove all questions and this note (but not the table) before submitting! Do not include Python code in your report.*

## Conclusion

*Describe the results of your statistical analyses clearly, using proper descriptions of statistical terms and concepts.*

* What is the practical importance of the analyses that were performed?
* Describe what these results mean for the scenario.

* Answer the questions in a paragraph response. Remove all questions and this note before submitting! Do not include Python code in your report.*

## Citations

*You were* ***not*** *required to use external resources for this report. If you did not use any resources, you should remove this entire section. However, if you did use any resources to help you with your interpretation, you* ***must*** *cite them. Use proper APA format for citations.*

Insert references here in the following format:

Author's Last Name, First Initial. Middle Initial. (Year of Publication). Title of book: Subtitle of book, edition. Place of Publication: Publisher.