

**Hospital Service Quality**

A FINAL PROJECT REPORT SUBMITTED

IN FULFILMENT OF THE REQUIREMENTS FOR COURSE STAT 250

APPLIED STATISTICS

DEPARTMENT OF STATISTICS OF

MIDDLE EAST TECHNICAL UNIVERSITY

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June 2021

**ABSTRACT**

This report is a detailed analysis associated with hospital patients at an anonymous hospitalization. The hospital is looking to utilize a curriculum to improve its service quality and productivity. In order to progress, this process undoubtedly starts with and ends with the patients in the hospital. The objective of this report is to break down by primarily dissecting the multiple factors related to the patients and seeking the correlation between those factors and the overall hospital productivity. In order to get to the root of the dilemma, several statistical methods were used to approach the problem, such as hypothesis tests (t-test), multiple linear regression, multiple logistic regression and a nonparametric test. Based on the results of these findings, various statistical representations such as histograms, boxplots and scatterplots were applied. By the end of this report, conclusions from the data can be drawn vividly to answer the unknown.

1. **Introduction**

Having an exceptional hospital and phenomenal service is very essential in today’s day and age, hence examining these patients’ frustrations is very important. The original dataset contains 95 observations (patients in this case). The sample was selected randomly, without any pattern whatsoever. The exact numbers of representations used were (insert number of scatter plots, box plots etc). For the scatter plots and correlation graphs, linear regression method was used. As for the corresponding pie charts, boxplots and the bar graph, various t-tests were applied.

* 1. **Data description**

Out of all the factors that could possibly affect these patients, seven variables were drawn from the original dataset. Five of these variables are numerical (age, severity, anxiety, satisfaction and day), and the remaining two are categorical (gender and surgical). The surgical variable has two categories, and they are whether are patient is a surgical or medical patient. Gender has two as well categories as well, respectfully. The severity variable refers to how severe the patients’ condition is, meanwhile the anxiety variable attributes to the patients’ anxiety level. The day variable is assigned to how many days the patient has been in the hospital and the satisfaction variable points out how content the patient is with the hospital service and quality. The age variable is self-explanatory.

* 1. **Research questions**

1. Which variable plays the most critical role in patient satisfaction?
2. Does patient satisfaction differ among gender?
3. Do the anxiety levels of the patients have any relationship their gender?
4. Does patient satisfaction fluctuate for the number of days the patient stays in hospital or is the patient a surgical patient?
   1. **Aim of the study**

The objective of the analysis was to correlate the assigned variables and analyze how they contributed to the hospitals overall service quality and production. The goals to achieve were to see how the selected categorical and numerical variables had an effect on the patients’ situation and finding out whether two certain variables had a linear relationship, based on the research questions.

1. **Methodology/Analysis**

The two essential statistical methods utilized to interpret the data were hypothesis testing (t-tests in particular) and linear regression. By using R-studio, the representations were then created from the tests. Linear regression was used to see any possible linear relationships between two variables and correlation as well. The variables that linear regression was applied to were age and (etc etc fill in. The hypothesis tests were primarily used to see which variables had the most effects on the patients.

1. **Results and Findings**

This section should include a summary of the results of the investigation or experiment together with any necessary diagrams, graphs or tables of gathered data that support your results. Present your results in a logical order without comment. Discussion of your results should take place in the main body (**Discussion**) of the report.

1. **Discussion/Conclusion**

A summary of the main things which have been learned in earlier parts of the report and what it all means. Don't include inessential things. Perhaps discuss to what extent results can be trusted. Perhaps also include a discussion of relevant results from other sources, of course with references. Perhaps discuss what could have been achieved if you had had more time.

**References**

These should always be included if you refer to books or papers from journals. The simplest, and widely-used style, is to refer to authors in the text in the format “Surname (Year of Publication)”, and to give the full references in the References section as shown at the end of this section i.e. for a journal article reference give Author’s surname, author’s initials, title of paper including subtitle if there is one, journal name, year of publication, volume, first and last page numbers of article, in that order; for a book reference give, in the following order, the author’s surname, the author’s initials, (year of publication) Title of book (in italics), publishing company, city of publication.

1. Chapman, M. & Mahon, B. (1986), *Plain Figures*, HMSO, London.
2. Fowler, H. W. (1983), *Dictionary of Modern English Usage* (2nd edition revised by Sir Ernest Gowers), Oxford University Press, Oxford and New York.
3. Gowers, Sir Ernest (1973), *The Complete Plain Words* (2nd edition revised by Sir Bruce Fraser), Penguin Books,
4. Harmondsworth, Middlesex. Higham, Nicholas J. (1993), *Handbook of Writing for the Mathematical Sciences*, Society for Industrial and Applied Mathematics, Philadelphia.

**Appendices**

Under this heading you should include all the supporting information you have used that is not published. This might include tables, graphs, questionnaires, surveys. Refer to the appendices in the body of your report.

**NOTES:**

1. Please add page number.
2. This report should include everything, introduction, analysis, results, conclusion, outputs, codes and more if you want.
3. The corresponding person should both email and bring a hardcopy of this report to Onur by deadline.