



Middle East Technical University
Department of Statistics

STAT 365
SURVEY SAMPLING TECHNIQUES
TERM PROJECT
2021-2022 FALL

MEHMET EREN YAVUZ 2361608

OKAN KESKİN 2467140

HAZAL GÜLŞAH KARAKOÇ 2218204

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Abstract

One of the economic problems of the society is youth unemployment rate. TURKSTAT July 2020 statistics show that at least one out of every 4 people (25.9%) in the 15-24 age group is unemployed (TUIK, 2020). This problem causes the anxiety of finding a job in university students, called the Z generation. In addition, there are other factors that cause job anxiety. The aim of this study is to understand the factors affecting the job anxiety of students studying at Middle East Technical University (METU). For this purpose, a questionnaire was applied to 135 students studying at METU. As a result of the survey, it was seen that students have finding job anxiety and there is no significant difference in terms of CGPA, Faculty and, families' countries perception of unemployment anxiety. In addition, a statistically significant relationship was found in terms of job anxiety level and whether the student have looked for an internship or not, and also whether student can find any internship or not. Also, in this survey population parameters were estimated.

.Keywords

Finding Job Anxiety Level, Unemployment, University Students

1. INTRODUCTION

In this study, the main research objective is to understand the factors that affect/do not affect job anxiety among university students. The name of the data used to understand reasons of level of finding job anxiety is STAT365 which is encoded as "mydata". In order to draw a meaningful conclusion from the data, Survey-Weighted Linear Model, Box-Cox transformation, Rao&Scott Adjusment, KruskalWallis test, GGLOT and Mosaic Plot are used. Also, data set was collected by the owners by using Google Forms.

Data

The data set was collected by the owners by using Google Forms. Also, this project consists of 136 participants and 20 questions. Out of one hundred thirty six (..) respondents, sixty-four (64) were female, seventy (70) were male and one (1) person stated their gender as the other. In other words, survey represents almost 47.3% of female, 52% of male and 0.7% of other. This represents that the survey has almost a balanced range of gender. This survey focused on the students at METU, therefore the participants were between 19 and 28 years old. While more than half (54.2%) of the participants are from Faculty from Engineering, this rate is followed by the Faculty of Arts and Sciences with almost thirty percent (30.4%), while eleven percent (11%) of the participants are from the Faculty of Economic and Administrative Sciences and almost four percent (4.4%) are from the Faculty of Architecture. In addition, majority of the participants (92.6%) are undergraduate, and forty-eight point one (48.1%) are third year students.

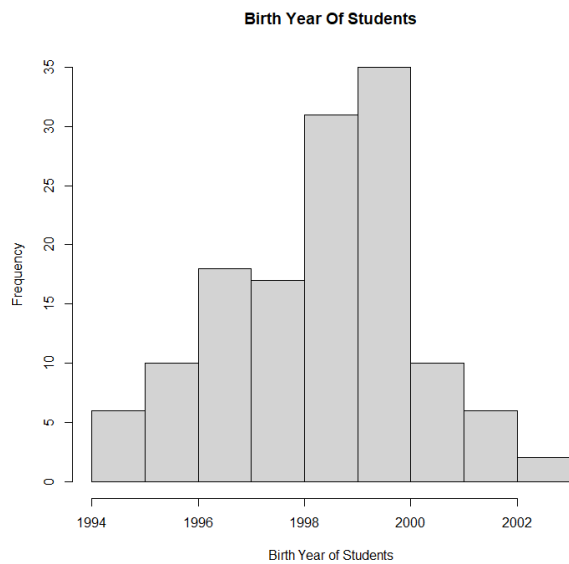


Figure 1: Histogram of Birth Year of Students

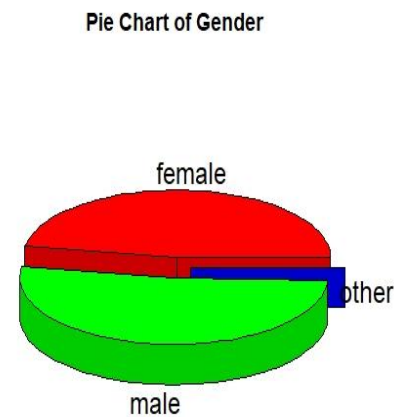


Figure 2: Pie Chart of Gender

VARIABLE	DESCRIPTION
Q1	Gender
Q2	Birth Year
Q3	The city where the student's family lives
Q4	Faculty
Q5	Department
Q6	Starting School Year
Q7	Education Level
Q8	Students' Grade
Q9	Situation of Extension of School Year
Q10	Number of Extended Semesters of School
Q11	CGPA
Q12	Student's membership status in a student club
Q13	Job Anxiety Status
Q14	Rate finding job anxiety level
Q15	Overlooking internship/job status
Q16	Finding job/internship status
Q17	Satisfaction status from internship/job
Q18	Level of Satisfaction

2. REVIEW LITERATURE

3. AIMS OF RESEARCH

Main Objective

The main research purpose is to find out which variable can affect the finding job anxiety level among the METU students.

Minor Objectives

- 1- Do the students' hometown have effect on the level of finding job anxiety?
- 2- Is students' finding job anxiety level affected by CGPA?
- 3- Is students' finding job anxiety level affected by faculty?
- 4- Does finding/not finding an internship affect level of finding job anxiety?

4. SURVEY METHODOLOGY

4.1. SURVEY DESIGN

4.1.1 Sample Design

In this study, a total of 142 responses were collected through the google questionnaire sent to individuals individually. The original population size is 26500 after some clarification, justification and arrangement of data the number dropped 135. In addition to that, sample size is calculated for 95% confidence interval at 9% margin of error.

4.1.2 Data Collection

This survey has been conducted online due to access much more target group. Google form was used. Metu students was target group. Since snowball sampling has been used one respondent share another respondent our questioner.

From the answers given to the questions, it is planned to process and present the answers consisting of immigration ideas belonging to university students. R is used in the study and R is used for analysis.

4.2 METHODS OF ANALYSIS

Descriptive statistics and statistical tests were used as statistical methods. Graphical methods, information tables showing frequency are used as belonging to the statistical method of the identifier. It can be seen that this information gives information that will make visualization and identification about it. Besides, it is obvious that statistical tests will be used in many methods, such as ANOVA and normality testing. In addition, modeling will be done using linear and logistic regression method.

4.2.1 Descriptive Statistics

Frequencies

Frequency distribution is a statistical distribution or graph that indicates the frequency of different results in a survey. Each element in the dataset includes the frequency or number of responses of properties within a particular group or interval, and therefore the total number the distribution of values in the dataset. The frequency distribution shows that detailed class of data grouped into mutually exclusive groups and the number of responses in the classification.

Box Plot

A boxplot is a standardized way of displaying the distribution of data based on a five number summary (“minimum”, first quartile (Q1), median, third quartile (Q3), and “maximum”). It can tell you about your outliers and what their values are.

4.2.2 Statistical Tests

- Linear modelling normality test
- Using linear modelling we can check the parameters linear relations.
- Chi square test
- Chi square test is used to determine whether there is a statistically significant difference between the expected frequencies and the observed frequencies in one or more categories of a contingency table.
- Rao & Scott Adjustment

- We review the basic ideas underlying the Rao-Scott corrections to chi-squared tests for contingency tables

5. ANALYSIS

We conducted mean CGPA and mean finding work anxiety level of Metu then we have made two stage cluster method, 4 of the 5 faculties has selected. With using this method, the mean value of CGPA of METU students is estimated as 2.86, and the mean value of anxiety level of METU students is estimated as 3.13.

5.1 Descriptive Statistics

Birth Year of METU students:

Minimum	1 st Quantile	Median	Mean	3 rd Quantile	Maximum
1994	1998	1999	1999	2000	2003

Table 1: Descriptive statistics of birth year of METU students

While the minimum age of METU students is 19, the maximum is 28. Also, the median of METU students' age is 23.

METU Students' satisfaction level with the internship:

Minimum	1 st Quantile	Median	Mean	3 rd Quantile	Maximum
1.00	2.50	4.00	3.35	4.00	5.00

Table 2: Descriptive statistics of METU students' satisfaction level with internship

The minimum satisfaction level is 1 and the maximum is 5. While median of the satisfaction level of students for internship is 4, the mean is 3.35. (A 5-point Likert Scale was used in this question). METU Students' finding job anxiety level:

Minimum	1 st Quantile	Median	Mean	3 rd Quantile	Maximum
1.00	2.00	3.00	3.13	4.00	5.00

Table 3: Descriptive statistics of METU students' finding job anxiety level

The minimum anxiety level is 1 and the maximum is 5. While median of the anxiety level of students for finding job is 3.00, the mean is 3.13. (A 5-point Likert Scale was used in this question.)

5.2 The relationship between students' hometown and finding job anxiety level.

The inference obtained from the data collected at the end of the research is as follows: boxplot is used to visualize the data.

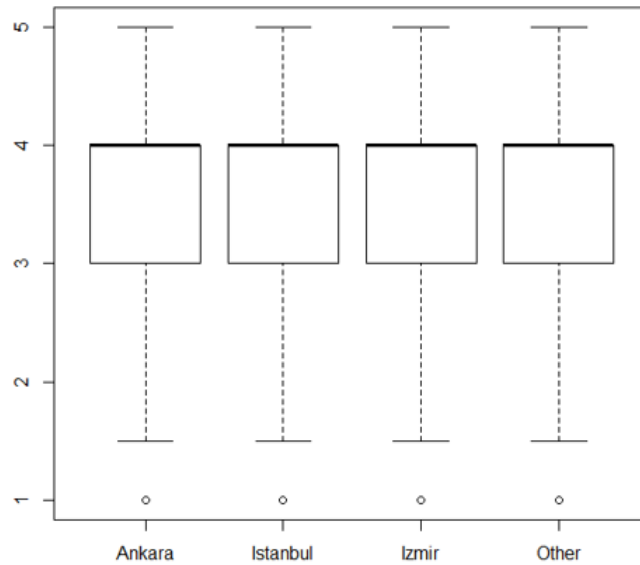


Figure 3: Stress Level and Hometown of Population Box Plot

As it can be concluded that there is no difference in anxiety levels depends on hometowns because median values and distributions from the boxplot for hometowns around the finding work anxiety level are the same for each hometown.

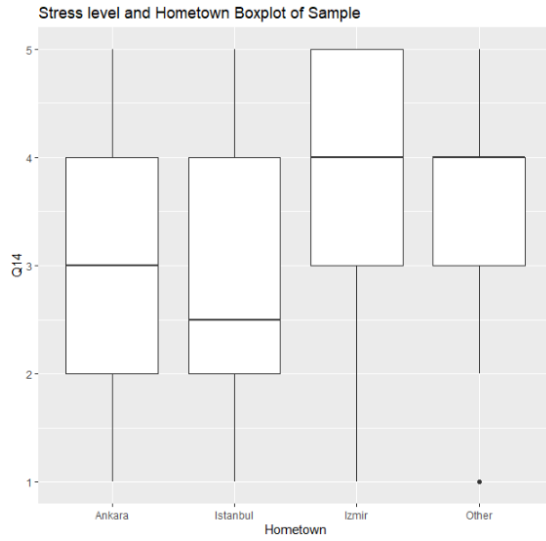


Figure 4: Anxiety Level and Hometown Boxplot

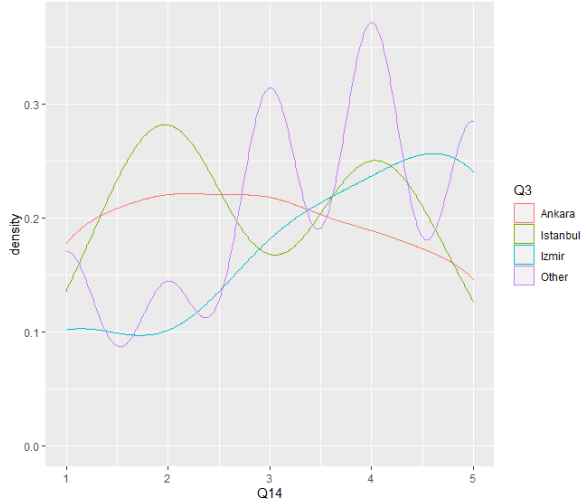


Figure 5: Density Plot of Each Countries for Anxiety Level

However, when sample is analyzed, there are different distributions and median values are different from each other. İzmir has the biggest median values and longest lower tail but centered median while İstanbul has the lowest median value and size of quartiles.

5.3 The Relationship between CGPA and Finding Job Anxiety Level

The relationship between job anxiety level and CGPA of METU students is visualized by using mosaic plot, but this plot did not gave enough information then linear model is used to find whether a relationship between finding job anxiety and CGPA or not. After, that p-value is checked. It can be concluded that there is no significant relationship between CGPA and anxiety level. Also, it can be seen that all median values are same at the exact same CGPA value for each anxiety level.

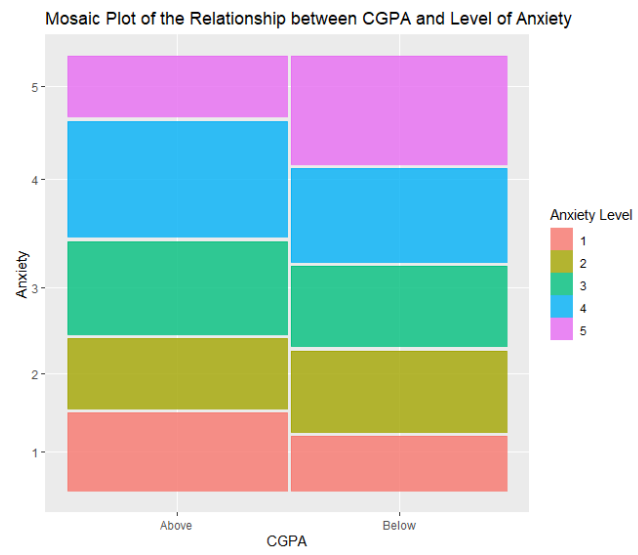


Figure 6: Mosaic Plot of CGPA and Anxiety

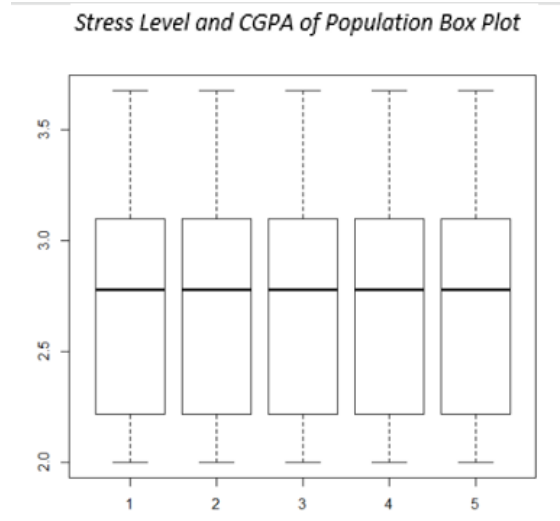


Figure 7: Box Plots of Anxiety Level and CGPA

H_0 : CGPA and Stress Level has no relation.

H_1 : CGPA and Stress Level has relation

	Estimate	Standard Error	t value	P value
Intercept	3.17490	0.21970	14.45	0.00475
CGPA	-0.01453	0.07654	-0.19	0.86697

Table 4: Stress level and CGPA Survey Weighted Linear Regression Summary

Also it can be seen that from the survey weighted regression summary, since the p value is greater than 0.05, there is no relationship between CGPA and job anxiety level.

5.4 The Relationship between Faculty and Finding Job Anxiety Level

H_0 : Faculty and Stress Level has no relation.

H_1 : Faculty and Stress Level has relation.

F	ndf	ddf	p-value
3.3319	1	3	0.1654

Table 5: Faculty and Stress Level Chi Square Test Result

Faculty	Stress Level	se
Faculty of Architecture	3.500000	8.012345e-18
Faculty of Arts and Sciences	3.023256	3.605555e-17
Faculty of Economic and Administrative Sciences	3.214286	1.442222e-16
Faculty of Engineering	3.152778	8.212653e-17

Table 6: *Survey Statistics on Subsets Based on Faculties*

Chi square test is used to understand whether there is a significant relationship between students' faculties and anxiety level. When p-value is checked, it can be concluded that there is no significant relationship between students' faculties and anxiety level while it can be seen that from the survey statistics on subsets table the mean stress level can change little but that change is not significant.

5.5 Are there difference between search and find internship and search and could not find internship group's finding job anxiety level?

H₀: Whether student looked for an internship or not, and finding job anxiety level has no relation.

H₁: Whether student looked for an internship or not, and finding job anxiety level has relation.

F	ndf	ddf	p-value
11.535	1.88	5.64	0.01058

Table 7: *Chi square test of Searched internship Group of Population*

Since p value is smaller than 0.05, there is a relationship which means internship seeking affect anxiety level significantly.

H₀: Whether student could found an internship or not and finding job anxiety level has no relation.

H₁: Whether student could found an internship or not, and finding job anxiety level has relation.

F	ndf	ddf	p-value
11.535	2.3275	6.9826	0.03313

Table 8: *Chi square test of Searched and could not found internship Group of Population*

Since p value is smaller than 0.05, there is a relationship which means finding an internship or not affects the stress level significantly.

H₀: True difference in mean rank score of looking for an internship based on anxiety level is equal to 0

H₁: True difference in mean rank score of looking for an internship based on anxiety level is not equal to 0

t-value	Df	p-value
5.6237	2	0.03019

Table 9: Design-based Kruskal Wallis Test

Finally Kruskal Wallis test is used to see whether there is a difference in mean rank score of looking for an internship based on anxiety level, and it can be concluded that there is a significant relationship between them because p value is smaller than 0.05.

6. Results and Findings

The mean CGPA of the Metu students is estimated as 2.8614 among five faculties (Faculty of Architecture, Faculty of Arts and Sciences, Faculty of Economic and Administrative Sciences, Faculty of Education, Faculty of Engineering) by applying two-stage clustering. 4 faculty which are Faculty of Architecture, Faculty of Arts and Sciences, Faculty of Economic and Administrative Sciences, Faculty of Engineering, are chosen from 5 faculties. The mean anxiety level of the Metu students is estimated as 3.1333 from 5 level scale. For Metu students' job anxiety, median values and distributions are the same based on their families' countries, while there are different medians and distributions in the sample. When CGPA is divided into two parts as above the median and below the median of CGPA, a definite relationship does not seem from the sample. After obtaining a survey-weighted linear model and box plot for the population, there is no relationship between CGPA and job anxiety level. The relationship between job anxiety level and students' faculty is analyzed and concluded that there is no significant relationship between them. However, when the internship situation is examined, it can be concluded that there is a significant relationship between job anxiety level and whether the student has looked for an internship or not, and also whether a student can find an internship or not, and also mean values of answers for the question "Have you ever looked for an internship?" is different.

7. CONCLUSION

It can be said that there was one variable that can affect the job anxiety from analysis in this report. The goal of this project was to understand what can affect METU students' job anxiety. Therefore, a survey is done among METU students. To conclude the research questions, population estimations, population and sample boxplots, mosaic plots for sample, survey-weighted linear model Rao & Scott Adjustment, Kruskal-Wallis test are used in this project. As a result, there is no relationship between job anxiety and the country that students' families live, CGPA, faculty, but there is a relationship between job anxiety and internship. In addition to that, anxiety levels based on countries are analyzed, and it is concluded that median values and distributions are the same for İstanbul, İzmir, Ankara, and other countries. It is also concluded that students who looked for an internship and who do not have different mean values.

All in all, there is no significant relationship between job anxiety level and questions that are asked in the survey except the internship situation of students.

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