

SOCIOECONOMIC STATUS OF HIGHER EDUCATION STUDENTS AT A HIGH SCHOOL AND FIVE COLLEGES IN MEXICO CITY

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Abstract-- The objective of this research is to identify the socioeconomic level (SES) of higher education students in the institutions: Tecnológico Nacional de México/Instituto Tecnológico de Milpa Alta (TecNM/ITMA) and in Faculty of Dentistry, Faculty of Engineering, Faculty of Economics, Faculty of Accounting and Administration and Faculty of Sciences of the National Autonomous University of Mexico (UNAM). For this purpose, a questionnaire was applied to a significant sample of each institution, analyzing their sociodemographic differences.

The first step was to review the validity of the instrument. For this purpose, after adapting the content, a linear regression was performed to observe the significant variables correlated with socioeconomic level.

In Mexico City there are great economic and social contrasts, which are reflected in the differences in individuals' income, access to educational resources and possession of assets, among others [1].

According to [2], public universities are differentiated into two groups, using a clearly financial classification criterion. This paper presents the results and conclusions of an investigation carried out with the purpose of analyzing the socioeconomic level of university students and whether there is a relationship between this and any particular characteristic of them (sex, age, faculty, etc.). To this end, the sample responded to a questionnaire with questions about

of behaviors related to their socioeconomic level.

Key words: Socioeconomic level, university students, faculties, Mexico City.

INTRODUCTION

Socioeconomic Level.

Works carried out by [3] mention that the aspects that most influence the choice of a university career are economic, and family income, socioeconomic level, and parents' level of schooling stand out.

The socioeconomic level (SES) refers to the different economic and social conditions of Mexico's population. The AMAI (Mexican Association of Market and Opinion Intelligence Agencies) created a statistical model more than 20 years ago and it has been constantly changing over time. The reagents that make it up for the 2018 version will be used, resulting in a score that allows ranking situations according to the ability to meet the needs of the family. It considers the following dimensions:

1) human capital, 2) infrastructure practice, 3) connectivity and entertainment, 4) sanitary infrastructure, 5) planning and future, 6) basic infrastructure and space [4].

The Digital Age poses a need for international organizations and educational authorities to promote the introduction of media and literacy

computer science in formal and non-formal education as a basic competence [5].

The acquisition of these competencies depends on access to physical media such as computer equipment and Internet connectivity.

The authors [6] discuss the current economy, and how digital skills combined with higher education are associated with higher paying jobs and in order to increase employment opportunity efforts should be focused on training focused on digital skills.

Therefore, the NSE will have a direct effect on the means available to the student body.

Regression Analysis

Regression analysis is a statistical technique for investigating and modeling the relationship between variables. Applications are manifold, as they exist in almost any field, including engineering, physical and chemical sciences, economics, management, biological sciences and in the social sciences.

The term regression was used for the first time in a study carried out by Francis Galton on anthropometric variables in 1889, when comparing the height of parents and children, it turned out that children whose parents had a height above the mean value tended to be equal to it; while those whose parents were very short tended to reduce their difference with respect to the mean height; that is, they "regressed" to the average. The term linear is used to distinguish it from other regression techniques, which employ models based on any mathematical function, such as quadratic, cubic, exponential, etc.

Up to this point the independent regressor variable x is assumed to be a scientific or physical variable rather than a random variable [7].

Cronbach's alpha

The internal consistency method based on Cronbach's alpha makes it possible to estimate the reliability of a

measurement instrument through a set of items that are expected to measure the same construct or theoretical dimension [8].

The validity of an instrument refers to the degree to which the instrument measures what it purports to measure, and the internal consistency reliability of the instrument can be estimated with Cronbach's alpha. The measurement of reliability using Cronbach's alpha assumes that the items (measured on a Likert-type scale) measure the same construct and that they are highly correlated [9]. The closer the alpha value is to 1, the higher the internal consistency of the items analyzed. The reliability of the scale should always be obtained with data from each sample to ensure reliable measurement of the construct in the particular research sample. As a general criterion, [10] suggest the following recommendations for evaluating Cronbach's alpha coefficients:

- Coefficient alpha $>.9$ is excellent.
- Coefficient alpha $>.8$ is good.
- Coefficient alpha $>.7$ is acceptable.
- Coefficient alpha $>.6$ is questionable.
- Coefficient alpha $>.5$ is poor
- Coefficient alpha $<.5$ is unacceptable.

DEVELOPMENT

Methodology.

The survey on socioeconomic status was applied in five faculties of the UNAM, Ciudad Universitaria campus and in the TecNM/ITMA, which offers 4 undergraduate degrees.

Given the personal nature of most of the questions, the questionnaire was given to them with the folio number and they answered it.

Sampling frame.

In both UNAM and ITMA, the type of sampling was stratified, in UNAM the strata are the faculties and in ITMA, where there are 22 groups of three careers and different semesters, each group was considered as a stratum,

9 groups were selected. The type of sample was random within each stratum.

At UNAM the survey was applied to students outside of class, but currently enrolled in the 2019-1 semester. At ITMA it was applied to students enrolled in the semester comprising the months of August-December 2018.

Sample size.

To calculate the sample, a population from each faculty was taken with a maximum error of 10% applied with the following formula:

$$D = \frac{E^2}{4} \quad \text{Eq. (1)}$$

$$n = \frac{Npq}{(N-1)D + pq} \quad \text{Eq. (2)}$$

With this, a minimum sample size of 93 students was obtained, so the sample was applied to 134 ITMA students.

Instrument Description

A 4-section questionnaire was used, based on questionnaires validated for consistency and reliability of the results.

The first section contains general information about the respondent such as: sex, age, average age, relationship status and occupation. The data in this section will be our working axis in comparing and relating the data.

The second and third sections were not used for this article and are related to respondents' perceptions of envy and classism.

Finally, the last section is a study that identifies the socioeconomic level of the respondent's family using the index developed by the Mexican Association of Market Intelligence and Public Opinion Agencies (AMAI).

With a maximum score of 300, the NSE levels are: A/B, C+, C, C-, C-, D+, D, E. However, for the purpose of simplifying the analysis of the results they are grouped as follows:

Table 1. Socioeconomic Level.

SOCIOECONOMIC STATUS	CUT-OFF POINTS	AMAI
ALTO	166 or more	A/B, C+
MEDIUM HIGH	112 a 165	C, C-
MEDIUM LOW	90 a 111	D+
BAJO	0 a 89	D, E

DISCUSSION AND ANALYSIS OF RESULTS

The data show a total population of 616 students comprised of 278 female students and 338 male students. Ages ranged from 17 to 50 years, with an average age of 21.41 years, and the average age of the students was 21.41 years.

The average score ranges from 5 to 10, and the population average is 8.317. Regarding the situation in terms of relationship, the majority of those surveyed are single, however, there are 190 married people. Finally, it was observed that 418 students are only studying and 198 are working as a second activity. From

In this general population, by means of control questions, a level of honesty in the questionnaires was determined, so that the distribution by faculty was as follows:

Table 2. Data table.

Data	SCIENCES	ACCOUNTING AND ADMINISTRATION	ECONOMY	ENGINEERING	ITMA	DENTISTRY	Total
COUPLE							190
Female	18	15	12	11	9	29	94
No Work	55.6%	66.7%	66.7%	72.7%	77.8%	69.0%	63
If you work	44.4%	33.3%	33.3%	27.3%	22.2%	31.0%	31
Male	27	15	18	13	10	13	96
No Work	63.0%	73.3%	61.1%	46.2%	40.0%	53.8%	56
If you work	37.0%	26.7%	38.9%	53.8%	60.0%	46.2%	40
SOLTERO							426
Female	34	31	24	12	39	44	184
No Work	52.9%	77.4%	87.5%	75.0%	76.9%	77.3%	136
If you work	47.1%	22.6%	12.5%	25.0%	23.1%	22.7%	48
Male	36	48	46	64	31	17	242
No Work	52.8%	77.1%	76.1%	76.6%	48.4%	47.1%	163
If you work	47.2%	22.9%	23.9%	23.4%	51.6%	52.9%	79
Total	115	109	100	100	89	103	616



Figure 1. Age graph.

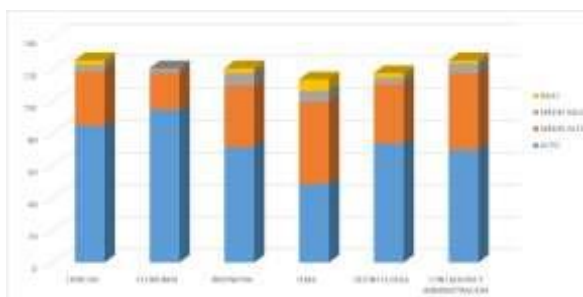


Figure 2. Data by Socioeconomic Level.

The application of the questionnaire was carried out by handing it to the subjects, it is made up of four sections, which are delimited to measure three different factors that are considered relevant at the time of measuring the level of envy in the subjects: non-sensitive data of the subject, feelings associated with envy, feelings associated with classism, as well as

The socioeconomic level on which this work is measured.

After obtaining the resulting data from the questionnaires, we proceeded to evaluate the subjects' responses for reliability and validity.

To carry out the validation of the questionnaire, a reliability analysis was first performed to observe whether the test had internal consistency. The first analysis showed an optimal Cronbach's alpha: 0.9. After eliminating question 5 from the Classism section, Cronbach's alpha rose to 0.93 and thus improved reliability.

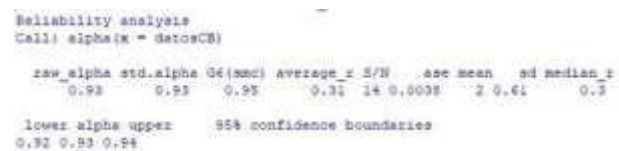
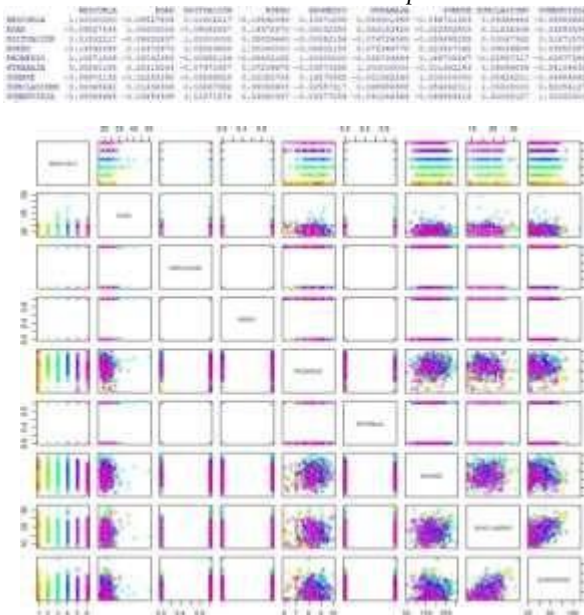


Figure 3. "alpha" indicators of the questionnaire.

We used the consolidated base in which we have the data from the survey of students from the various faculties, with the response variable $y = \text{SUMENVIDIA}$ and the independent variables $x_1 = \text{School}$ to which they belong, $x_2 = \text{Age}$, $x_3 = \text{Situation}$, $x_3 = \text{Sentimental}$, $x_4 = \text{Situation}$, and $x_4 = \text{Feeling}$, $x_4 = \text{Feeling}$, and $x_5 = \text{Situation}$. Sentimental, $x_4 = \text{Sex}$, $x_6 = \text{Average}$, $x_7 = \text{Employment}$ Situation, $x_8 = \text{Economic Situation}$, $x_9 = \text{Level of Classism}$.

Table 3. Co-correlationships.



According to what was observed, it can be inferred that the variables that have a greater relationship with the response variable are the variables x_2 =School, x_3 =Age, x_6 =Average, x_8 =Economic Situation, x_9 =Classism Level.

Resulting Model

By means of regression for the fitted model equation, the estimators obtained are:

$$\underline{\beta}^{\Delta} (X^t X)^{-1} X^t Y \quad \text{Eq. (3)}$$

$$\begin{aligned} \hat{\beta}_0 &= 0, \quad \hat{\beta}_1 = 1.95107, \quad \hat{\beta}_2 = -0.025661, \\ \hat{\beta}_3 &= -2.190034 \\ \hat{\beta}_4 &= 2.299777, \quad \hat{\beta}_5 = -1.09875 \end{aligned}$$

Therefore, the fitted model is:

$$\hat{Y} = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \hat{\beta}_2 X_2 + \hat{\beta}_3 X_3 + \hat{\beta}_4 X_4 + \hat{\beta}_5 X_5 \quad \text{Eq. (4)}$$

Discussion of results

Considering the variable of socioeconomic level, analyzing Table 4, it is noted that the extremes are: in the HIGH level, the faculties of economics and science present a higher level with 20.7% and 20.4% respectively; and, in the LOW level, ITMA students show the lowest level with 35.7%. The average is concentrated in a medium-high socioeconomic level, which shows that the student population has the necessary resources to continue with their studies.

Table 4. Percentage of Socioeconomic Level by faculty.

FACULTAD/FAC	75%	50%	25%	100%	0%	200%	0%	100%	100
DENTISTRY	10	27.0%	65	16.7%	4	245%	2	24.5%	100
COMMERCE	10	27.0%	65	16.7%	4	245%	2	24.5%	100
ACCOUNTING-ADMINISTRATION	10	27.0%	65	16.7%	4	245%	2	24.5%	100
ITMA	35.7	30.0%	20	30.0%	2.7	30.0%	1.4	30.0%	100
Total									

CONCLUSIONS

Through this study, we were able to observe that in general the male students of the engineering faculty and the female students of the dentistry faculty are the most classist, the students of the economics and science faculty are the ones who show a higher socioeconomic level, contrasting with the students of ITMA, who 35.7% of the students show a low socioeconomic level.

It can be said that, in order to have more specific conclusions, it is necessary to have a larger sample and a couple of statistical tests such as the chi-square that can give us a statistic that compares the means and standard deviations of the surveys.

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