Factores asociados a los resultados de la evaluación de Competencias Saber-Pro en el municipio de Sincelejo, Sucre en el periodo 2017.

Factors associated with the results of the evaluation of Saber-Pro Competencies in the municipality of Sincelejo, Sucre in the period 2017.

Rafael Roberto Ruiz Escorcia [1] , Maryan Rivas Mendez[2], Greisy Paola Morillo[3]

[1,2] Corporacion Universitaria del Caribe-CECAR Colombia
3Universidad Nacional Evangelica – UNEV
[1]rafael.ruize@cecar.edu.co ; [2]gmorillo@unev.edu.do

Resumen

El presente estudio tiene como objetivo analizar los factores socioeconómicos relacionados con el desempeño académico o resultados de las evaluaciones de los estudiantes de Sincelejo, los cuales presentaron las pruebas Saber Pro en el periodo del 2017. Para su análisis se tomó la base de datos del ICFES, a través de este se escogió la población de Sincelejo y se realizaron tablas de frecuencias y graficas que permitieron observar como se ve afectado el puntaje global por factores socioeconómicos u otros. A partir de ello se concluye que, el nivel o status socio-económico afecta significativamente el desarrollo de las capacidades, así mismo se observó que la motivación financiera de los padres para satisfacer las necesidades del estudiante permite aumentar el rendimiento académico.

Palabras clave: Status socio-económico, Evaluación, Estadística.

Abstract

The present study aims to analyze the socioeconomic factors related to the academic performance of Sincelejo students, who presented the Saber Pro tests in the period of 2017. For its analysis the ICFES database was taken, through this the population of Sincelejo was chosen and tables of frequencies and graphs were made that allowed observing how the global score is affected by socioeconomic or other factors. From this it is concluded that, the socioeconomic level significantly affects the development of skills, likewise it was observed that the financial motivation of the parents to meet the needs of the student allows to increase the academic performance.

Key words: Socioeconomic Status, Evaluation, Statistics.

1. Introduction

The evaluation of generic and specific competencies acquired by undergraduate students is a global trend, which was adopted in Colombia, with the aim of ensuring qualityeducation, Article 3 of D869 of 2010 (MEN [2010]). ICFES [2012-2015]. The main objective of this tool is to check if students develop the right skills for professionalperformance, Cortés, S. G., Piñeros, C. A [2015]. Vocationaltraining takes a high degree of relevance, as it is related to the production processes that develop in the country. So it is a necessity to develop lifelong learning and it is imperative to build competencies in students that aim at social, cultural and economic development.

Research such as those carried out by Gimeno Sacristán, J et. al. , [2008], on competency education, lead to taking modern language and focusing it on effective education, this is basedon what is indicatedby authors such as Jurado Valencia F., [2009], which claim that this type of education is based on the needs, types of learning and potentials of the studentthat allow him to function properly in the field ofwork. Moreover, in Gil F.A et.al., [2013] it is considered important to identify the variables associated with the variation of the results in the Saber pro tests, as can be seen in the results of Ruiz Escorcia R. R's recent research. et. to., [2018].

The competencies that are evaluated by the ICFES to students of Higher Education Institutions are: Quantitative Reasoning, Critical Reading, Writing, English and CitizenCompetences, MEN [2008]. The objective of assessing the competencies mentioned is that these are cross-cutting to all academic programmes, Lascarro C. , Angle G. [2016]. Likewise, in the research of Valens M., [2007]., developed in2004,a study of the socioeconomic level was done selecting a database of 2,377 university students from all over the country. From this database, a sample was taken corresponding to 52 students,with which it was evident that there were significant differences between the average scores of the universities and those obtained by the students, which are explained by the personal characteristics and those of the institution towhich theybelong, facts that are reafirmados by Cortés, S. G., Piñeros, C. A [2015].

This article has taken into account research reflecting the impact of somee-factors such asso-economic, see for example Chestnut E et. to., [2008]. In this sense, this study aims to analyze the factors affecting the academic performance of undergraduate students. Therefore the main objective is to analyze the socio-economic andeducational factors associated with the performance of undergraduate students in the overall score and score in eachmodule, applying inferential statistics, Nolberto V. A., Ponce M. E., [2008].

2. Materials and methods

This study is descriptive in nature, with elements of inferential statistics, whose main objective is to analyze the socio-economic factors associated with educational performance. To carry out the study, a sample of 500 students belonging to higher institutions of the municipality of Sincelejo, Sucre,Colombia was selected,taking into account thatsocioeconomic strata (from stratum 1 to 5) were present. For this purpose, the ICFES database was used and socioeconomic strata, overall score, score of each subject, people in charge, education of the mother and whether she has the necessary tools were chosen as variables of interest. Central trend measurements, variability measurements, frequency table and graphical method were used for the correct analysis. It should be noted that central trend measures are position measures that aim to establish a value that can be considered within the data in some sense, Castillo S. , [2012].

3. Results and discussion

To perform a descriptive analysis of the students who performed the Saber Protests, taking into account thesocioeconomic stratum, densitydiagrams, box diagrams,frequency tables, central trend and variability tables were performed. Thesestatistical tools enabled a detailed analysis of the socioeconomic factor of students in the municipality of Sincelejo.

Below is a frequency chartassociated with the overall score of students who took the Saber Pro tests in the municipality of Sincelejo.

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Table 1. Global Score Frequency Table.

	Linf	Lsup	MC	fi	Fi	fr
1	79.0	91.8	85.4	6	6	0.012
2	91.8	104.6	98.2	12	18	0.024
3	104.6	117.4	111.0	58	76	0.116
4	117.4	130.2	123.8	107	183	0.214
5	130.2	143.0	136.6	116	299	0.232
6	143.0	155.8	149.4	116	415	0.232
7	155.8	168.6	162.2	62	477	0.124
8	168.6	181.4	175.0	20	497	0.040
9	181.4	194.2	187.8	11	508	0.022
10	194.2	207.0	200.6	2	510	0.004

Source: Own elaboration

Also, a table with the measures of central trend and variability is presented.

Table 2. Table of central trend measures and variability.

Mean	Median	Variance	Standard deviation
138.19	137	406.8276	20.16997

Source: Own elaboration

Through Table 1, it can be seen that the highest frequency was obtained when the overall score is in the range [130.2, 155.8], while the lowest frequency was obtained when the overall score is in the range [79, 91.8]. It is also noted that the minimum score is 79 and the maximum of 207. Following the above idea, in the range [79.0, 91.8], it is observed that 6 people obtained that score, while in the range [194.2, 207.0] only 2 people werepresent.

On the other hand, Table 2 shows that the average overall score is 138.19 and the deviation of scores from the average is 20.16. This indicates, as can be seen, that the variability is relatively low since the coefficient of variation corresponds in this case to 14.6%.

According to this study, it can be inferred that the possible reasons why the highest frequency of students is not in the highest rank is due to multiple external factors associated with the student's quality of life; such as socioeconomic status or parenteducation.

It will then be analyzed how much the strata, in which the students are located, affect academicperformance.

We will start by presenting a density diagram of the socioeconomic strata versus the overallscore.

Graph 1.   Socioeconomic strata density diagram vs overall score
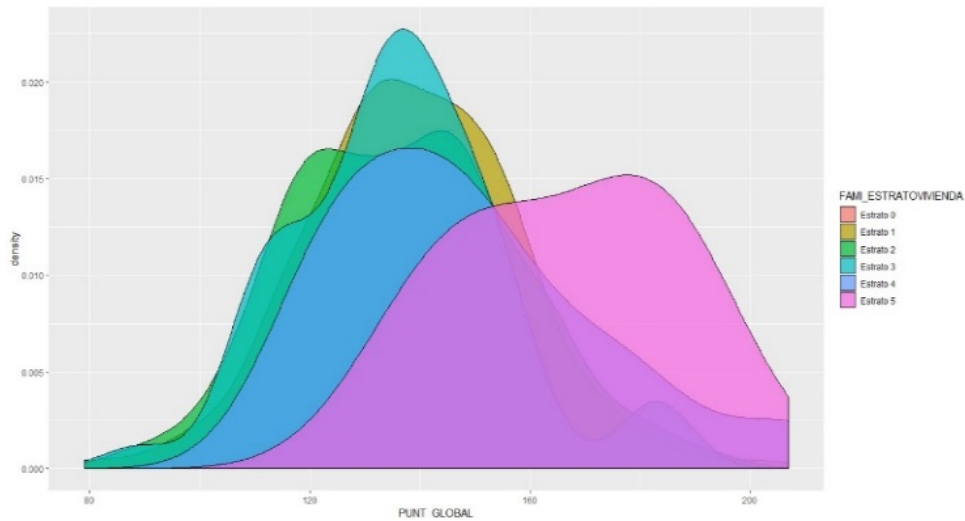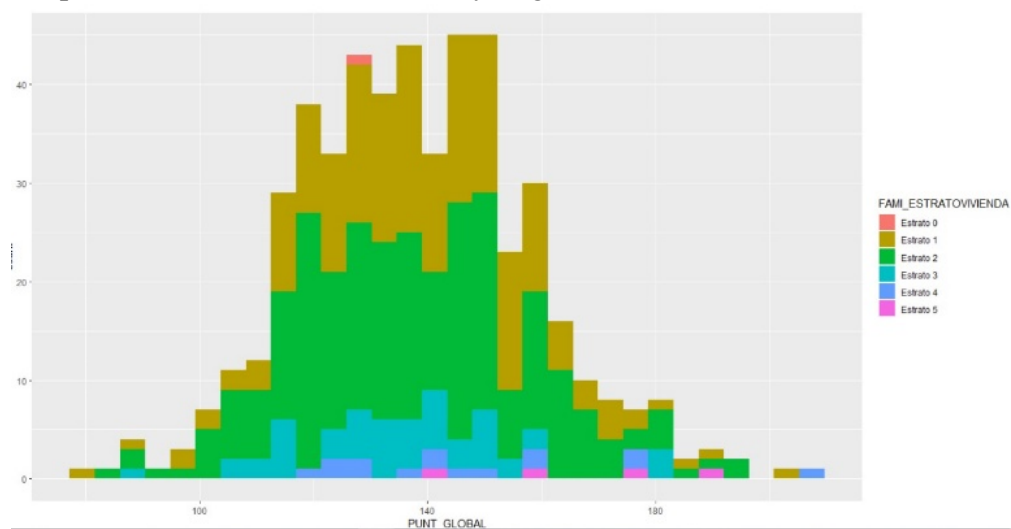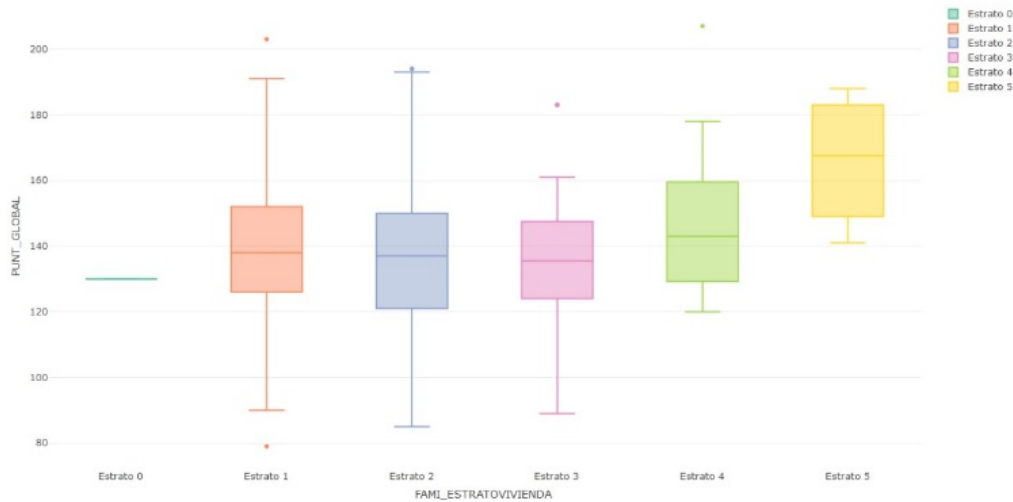

Source: Own elaboration

It can be observed, through graph 1, that the behavior of stratum three is symmetrical, while stratum four and five have a bias to the right, so it is inferred that in these strataare students who have a higher overallscore.

The following graph corresponds to the density diagram of socioeconomic strata versus the overall score.

Graph 2.   Socioeconomic strata density diagram vs overall score

Source: Own elaboration

Graph 2 shows that people in stratum five have a minimum score of 180.0. However, the highest score is for people in stratum one and four. However, the minimum score of 79.0 is in stratum one.

Below is the diagram of socioeconomic strata boxes versus the overall score.

**Graph 3.** Diagram of socioeconomic strata boxes vs overall score.

Source: Own elaboration

Figure 3 illustrates that in stratum one the range of normal values is between 90 and 191, while in the isdeal two the range is between 85 and 193. Also, in the tresstratum, the range of normal values is between 89 and 161. It should be noted that in stratum three are located people who have the lowest maximum score.

It is also observed that in stratum four the range of normal values ranges from 120 to178, and finally, in stratum five the range ranges from 141 to188. Por therefore reaffirms that in the latter stratum are located people who have the highest minimum score.

Below is the box diagram corresponding to the contrast between the strata and the score in the English module.

Graph 4. Diagram of stratum boxes vs score in the English module.
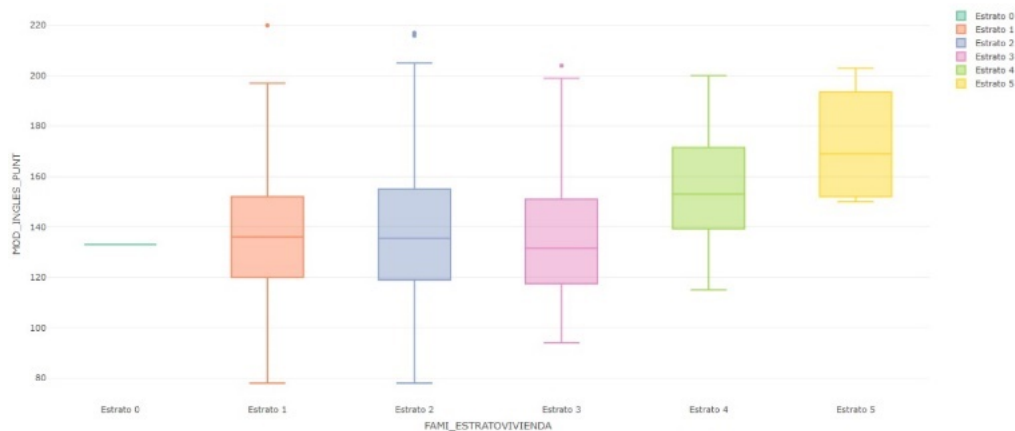
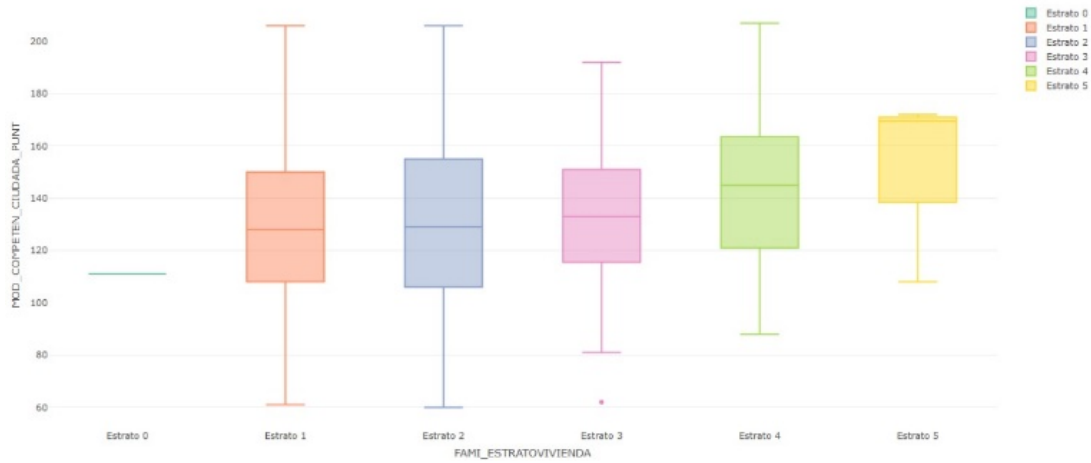
Source: Own elaboration

Graph 4 highlights that in the English module the highest score was obtained by people belonging to stratumone. In addition, stratas one, two and three were excelled at obtaining higher scores than students belonging to stratum s four and five.
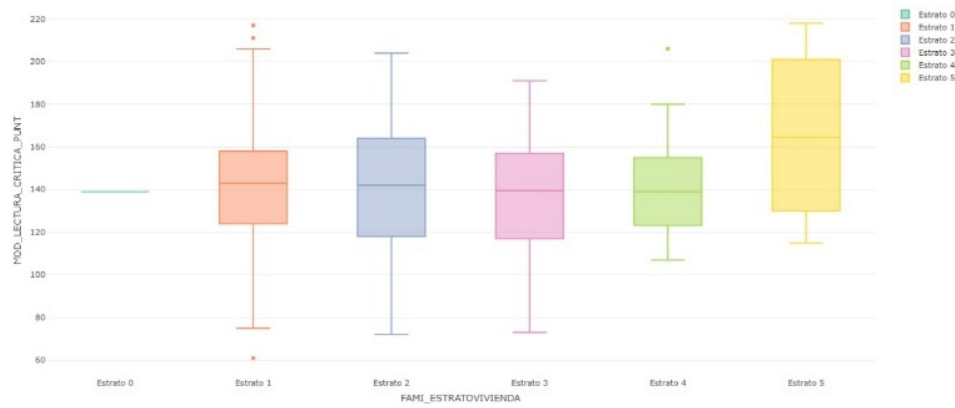
Below is the box diagram that contrasts the stratum with the citizen competences module.

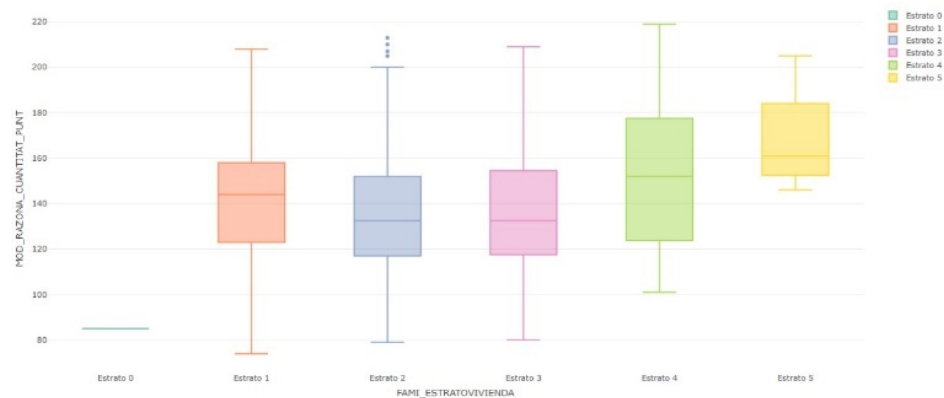**Graph 5.** Diagram of stratum boxes vs score in the citizen competition module

Source: Own elaboration

Graph 6. Diagram of stratum boxes vs score in the critical reading module.

Source: Own elaboration

Graph 7. Diagram of stratum boxes vs score in quantitative reasoning module
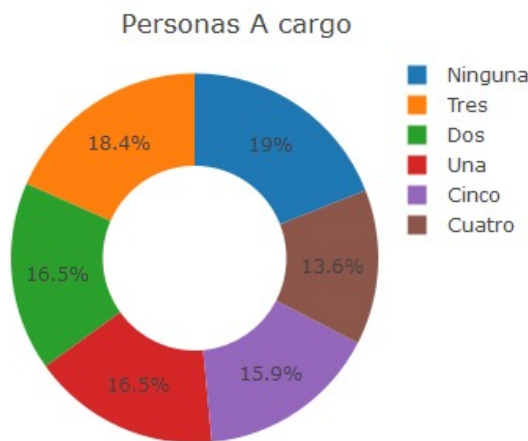
Source: Own elaboration

Generally, through the diagrams of boxes and whiskers, it is observed that people in strata one and two get the lowest scores. However,the range of normal values extends to high scores. It is also noted that in the other modulesthepeople belonging to stratum four and five obtained the highest minimum scores.

Another factor that possibly affects students' scores is the number of people in charge because they have responsibilities outside of education.

Below is a circular diagram illustrating the behavior of the dependent variable.

Graph 8. Circularlist of people in charge.

Source: Own elaboration

Through the previous stenographer it is observed that having people in charge does not significantly affect academic performance, because it is shown thatthose who are not in charge have 19% of the highest overall score, while people in charge of three people have 18.4%.

On the other hand, one factor that can affect student performance is parent education and skills building tools. To cite an example, below is a diagram of boxes and whiskers about the mother's education associated with the overall score obtained in the Saber Pro tests.

Graph 9. Mother education box diagram vs overall score.
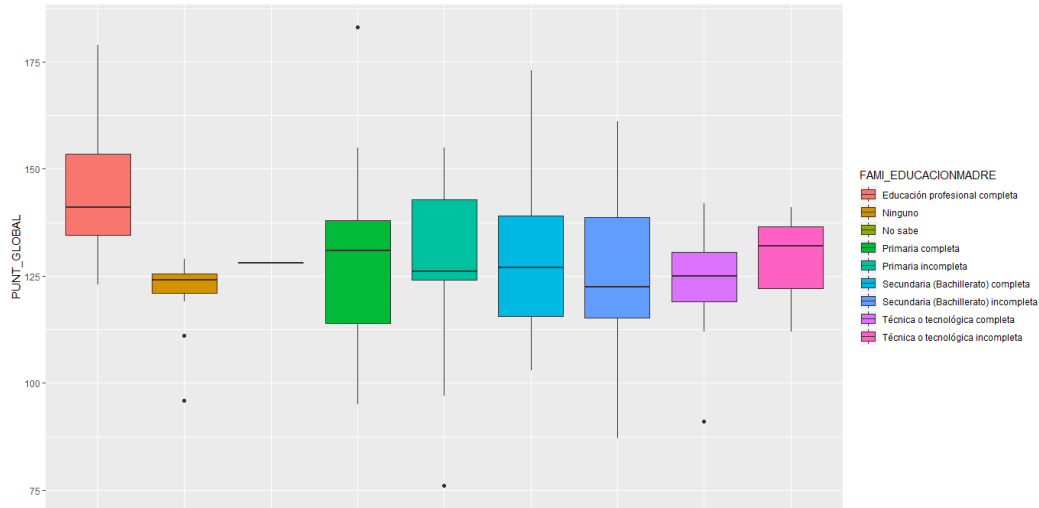
Source: Own elaboration

The diagram of boxes and whiskers shows that the mother's education greatly affects the student's overall score. The graph shows that the score of people who have a mother without any education, have a normal range of approximately 80 to 130 , while people who have a mother with a full type of vocational education have a normal range of approximately 120 to 180 of the overall score.

Graph 10. Circular diagram of people who have computers
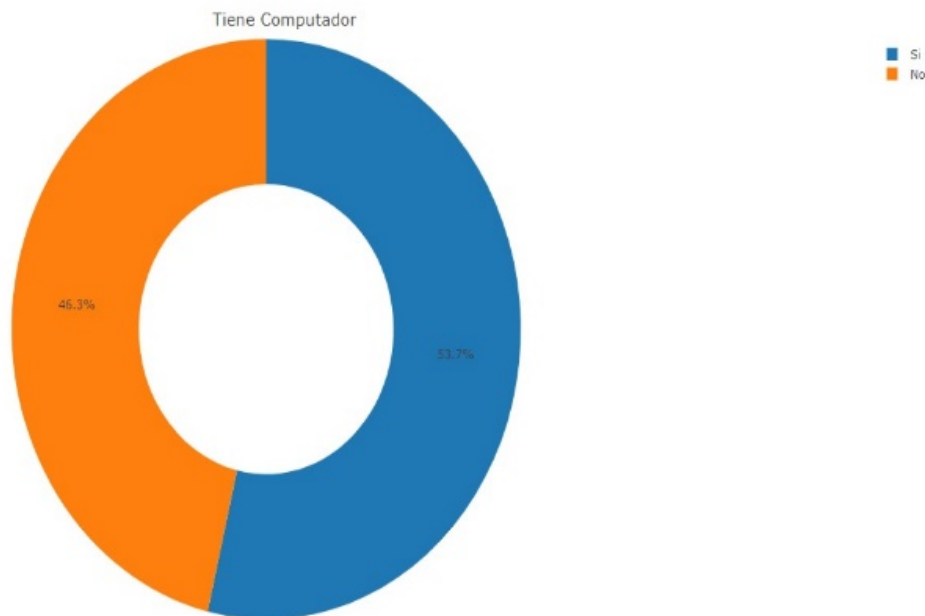
Source: Own elaboration

Graph 10 shows that 53.7% of the overall score is for people who benefit from this tool, while people who do not have a computer, correspond to46.3% of the overall score. This graph makes it possible to infer that people belonging to low strata do not have the possibility of obtaining a

study tool such as the computer, so individuals belonging to those strata have lower academic performance

4. Conclusions

The previous study was descriptive in nature, so through graphs and tables it was possible to appreciate some factors that prevent the development of the capacities of students of the municipality of Sincelejo. An important factor affecting academic performance is the socioeconomic stratum. It was shown that students in strata one and two are the most likely to score below average, because they do not have the resources or financial supports needed to obtain a quality education. The above statement is based on the diagrams of boxes and whiskers of socioeconomic stratum vs overall score, thequa l resulted in people in stratum four and five stand out for obtaining average scores higher than the rest of the people pertenecientes to the other strata. Initself, it was observed that the result in each module evaluated depends on the socioeconomic stratum. Another aspect that favors good academic performance is the education of parents.

Additionally, the study showed that those students who have a mother witha higher education level develop their abilities satisfactorily, while students who have a mother without any educational level tend to have a low score, this is due to lack of educational motivation. In this sense, family motivation for young people to complete their studies with good academic performance is essential, because students perceive this motivation. Also, providing the necessary tools is a major factor, as the study showed that the population that does not have as important a tool, as a computer is, have lower performance.

Although this study was local, it can be replicated to any city, district, school, etc. In the event that there are no socioeconomic strata in the place where this study is replicated, the stratification of the student's family income may be considered.

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