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Swimming against the Stream: Equity and Performance on Primary School at Minas Gerais' Municipal Educational Systems

Nadando contra a Corrente: Equidade e Desempenho nas Redes Municipais de Ensino Fundamental em Minas Gerais

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Abstract: The influence of social origin on educational determinants is a central theme in discussions related to the foundation of public policies, whether in the focus of education with one end, or as a means to achieve other ends in the provision of public goods. This paper is exploratory work, which aims to investigate the municipal education networks of Minas Gerais, its capacity to mitigate social inequalities on their performance, and look into its public management practices that may be correlated with these results. Investments in infrastructure, providing equitable access to students seems to achieve good results in promoting an education that can be equitable without impairing student performance.

Keywords: Education; Public policy; Equity; Logistic Regression.

Resumo: A influência da origem social e das condições socioeconômicas sobre as realizações educacionais é uma temática central nas discussões relacionadas às políticas públicas, seja no enfoque da educação com um fim, ou como um meio para o alcance de outros fins na provisão de bens públicos. O presente trabalho realiza um esforço exploratório para investigar as redes municipais de educação de Minas Gerais, em sua capacidade de amortecer desigualdades sociais sobre os seus resultados, e refletindo sobre que recursos e práticas da gestão pública que podem estar contribuindo para esta capacidade de proporcionar desempenhos mais satisfatórios em condições socioeconômicas desfavoráveis. Investimentos em infraestrutura, provendo acesso equitativo ao alunado parecem relacionados a bons resultados em promover uma educação que consiga ser equitativa sem prejudicar o desempenho dos alunos.

Palavras-chave: Educação; Políticas Públicas; Equidade; Regressão Logística.

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1. Introduction

From academic debates to conventional wisdom, education is conceived as part of the solution to Brazil's wicked problems. If, on the one hand, researchers from several fields of science make efforts to understand the current situation of Brazilian education, its causes and consequences, on the other hand, it is recurring to find parents in a situation of vulnerability, whose, at the same time expect their children's can have a education of quality, then in their next generations might not repeat the situation of deprivation experienced they had.

Regarding the evolution experienced by basic education in the country in the last decades, such as the universalization of access to basic education (Lima, 2011) and the expansion of early childhood education, some indicators still evidence the fragility of education offered by Brazilian public systems. A well-known example of this is Brazil's relative positions in the Program for International Student Assessment (PISA), an OECD test that compares the educational performance of several countries, in which Brazil is repeatedly among the worst positions, despite recent improvements performance.

Evidently, there is an enormous heterogeneity in the quality of public education systems, considering the country's territorial dimensions, and the differences of an economic, social and political nature between them, in addition to, the decentralized and competing responsibility between state and municipal entities in the provision of basic education. Considering the data from Prova Brasil, which makes up the evaluation system of the National Institute of Educational Studies and Research Anísio Teixeira (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira - Inep), the heterogeneity and inequality of performance among member states is evident. The difference in the average performance of students in the initial years of elementary school in Maranhão (last place) and Paraná (first place), in the test held in 2017, was 1.74 points (the maximum test score is 10 points), and the national average was 6.08 points, with a coefficient of variation of the average of 9.01%.

Analysing the dataset from the 2017 School Census, the state of Minas Gerais has the second highest number of enrollments in the country, in kindergarten, elementary and high school, just behind São Paulo. Regarding the institutional arrangements for the provision of these services, it is noteworthy that the state has the second largest state system, and the third largest contingent of students enrolled in municipal systems, however, these are dispersed in 853 different municipalities. The shape of this

arrangement accentuates its heterogeneity, so that the state has an average of 5,364 students per municipal systems, however, 81.9% of the municipalities are below this average. Therefore, it is expected this scenario will imply non-uniform educational results.

This paper aims to discuss the intersections between educational equity and educational performance at on the initial years of elementary school at municipal schools, comparing their results with socioeconomic status using families as a control. To fulfill this objective, this work is divided into four more sections, in addition to this one. As of the end of this introduction, the literature that discusses the perspectives of equity in education will be presented, which will compose the foundation for the methodological section. A third section will present the methods in which this paper will base their analysis and the fourth section will present the results, as well as its discussions, and finally, some final considerations will be made.

2. Literature Review

The period between the 60s and 70s was a turning point in studies on education and its relationship with socioeconomic conditions. Large-scale works were financed by developed nations in order to better understand this relationship, among which the Coleman Report, in the United States, longitudinal surveys carried out at INED, in France, and the Plowden Report, in Great Britain, are highlighted. A point of convergence between the main results was the perception that family characteristics and socioeconomic conditions influence the student's performance, and, since then, several scientific aspects were guided by investigating this relationship.

According to Forquin (1995), one of these theoretical streams sought to study the inequality of access to education and socio-cultural disparities, which involved issues related to the cultural values and aspirations of the class, the family educational climate and the background of studies of the parents and the sociolinguistic codes and its implications in delimiting the environments accessed by students. Some works, along the same lines, developed hypotheses related to the existence of cultural inequalities between groups, which legitimized compensatory education programs in the 1970s. On the other hand, Forquin (1995) mentions that another current sought to explore the relationship between social structure on educational inequalities, understanding that the school could be a mechanism of social reproduction, taking into account the association of educational

factors in access to jobs, but also as an instrument of transmission and acquisition of status.

In general, it is a consensus that there are multiple determinants of a student's academic success. Soares (2004) developed a conceptual model that aims to synthesize the influences of intra-school and extra-school factors on students' cognitive performance. In view of the socioeconomic inequality prevalent in the country, the effect of this phenomenon on educational results is an essential research topic (Costa Ribeiro, 2011).

From there, it is possible to operationalize the analysis of equity in Brazilian education, understanding this concept as the guarantee of equal opportunities, as highlighted by Mokate (2002). The author continues and relates this concept to four aspects: equal access, equal inputs, equal results, and equal capacities. The first is related to the equal offer of the service in question, that is, its coverage, while the second is related to the resources used for the quality of the offer.

Equality of results is closer to the concept of equity, since different individuals are expected to have, despite their heterogeneity, similar results through the application of a policy. In practice, this becomes complex, in view of the particularities of different groups, which, therefore, even with equal levels of access and inputs, can produce different results. Finally, the last concept levels the previous ones, insofar as it establishes that everyone should be in a position close to achieving the pre-established results with the policy - which converges a lot to the concept of equal opportunities.

Several articles have already investigated the factors that determine school results in the country. Barros and Mendonça (1997), Sobreira and Campos (2008) and Monteiro (2015) are some of the articles that investigated, in different periods, the influence of investment in education on student performance, pointing to a positive correlation between the two dimensions. Other works broaden the view on this issue, and they widen the school processes and include other dimensions that go beyond the school, such as the work of Barros et al (2001), which takes into account the family, community dimensions, access to education, infrastructure and teaching quality.

However, observing the inequality in achieving satisfactory results for Brazil, other articles have focused on investigating possibilities of transposing the trade-off between performance and equity, that is, simultaneously guaranteeing broad access and satisfactory educational performance for students of different backgrounds. Setúbal's (2010) article brings a conceptual and panoramic view on the approach that educational

policy must take in order to generate equity. The author conceives social equity as an axis to rethink educational management, and for that, it is necessary that the portfolios that lead educational policies are articulated with the conduct of social policies and with the provision of other public facilities, linked health, sport, leisure and culture. Other pillars conceived in the article are the centrality that the teacher must assume, and, consequently, the appreciation of the class that must be applied, besides conceiving a reformulation of the curriculum, dialoguing with the needs of the student, and the establishment of a proximal dialogue with family and other actors in the territory.

In another aspect, some studies approach this perspective in a more applied way, such as Albernaz et al (2002) and Travitzky (2017), which point to the need to strengthen the salary appreciation of the teaching staff, and the strengthening of the infrastructure and provision of material equipment to schools, these results being important for the wider achievement of more equitable educational results. Soares (2005) work deepens the debate on school performance and equity, encompassing several dimensions that are important in this area. The author notes the difference in results that exist between social groups, which go beyond the socioeconomic context, but are also relevant when looking at characteristics such as gender, race and the regionalization of the country. The author presents a survey of school processes that are related to increased performance, which, however, have no positive relationship with the production of more equitable results. The only variable presented that has a positive relationship with this dimension is the dedication of the teachers. Finally, Soares (2005) is emphatic in stating that the infrastructure issue, which concerns access to education, still constituted an obstacle for the country, and that, therefore, has a broad effect on the difficulty of achieving an equitable and efficient results on educational attainments.

3. Methods

This paper aims to advance the existing discussion in the literature about a supposed trade-off between efficiency and equity in the educational field[1]. Therefore, it is expected to investigate municipalities that have managed to break this paradox, then presenting satisfactory educational results, despite their students' socioeconomic status. From this point of view, the municipalities of interest would be those that simultaneously present a) more satisfactory academic performance, b) minimizing in their systems the

weight of the students' socioeconomic conditions on the results, even if c) the students served do not enjoy high levels of familiar background.

To make this analysis operational, the work will make use of the educational results of 5th grade students enrolled in the municipal systems of the state of Minas Gerais who took the Prova Brasil in 2017, so that their data were taken from the National Evaluation System of Basic Education (Sistema Nacional de Avaliação da Educação Básica - SAEB), managed by the National Institute of Educational Studies and Research Anísio Teixeira (INEP).

The method developed to inquire whether or not the trade-off starts from the following classification, it was necessary to create an indicator that denotes the Socioeconomic Status (SES) of the student body in the municipality. Some variables were extracted from the socioeconomic questionnaire answered by each student, and, subsequently, an indicator was estimated through the Item Response Theory (IRT). According to Pasquali and Primi (2003), the method is efficient since it unfolds from the latent trait theory, which manages to merge observable variables (those that can be found in the answers), with hypothetical unobservable traits, or aptitudes, which do not appear in the model, however, they are correlated with observable variables. According to Soares (2005), the use of the method in the estimation of the Socioeconomic Level is due to the possibility of making the best use of each item inserted, in addition to allowing the comparison of two different samples, obtained with different individuals and different methods, and, finally, gives an appropriate and smoothed treatment in case of missing data. Other authors, such as Soares and Andrade (2006) and Alves et al (2014) have already used the same procedure to estimate the socioeconomic level of students through questionnaires from standardized tests.

Table 1 presents the variables used to measure the students' SES indicator, from two dimensions: economic condition and social capital, understood as its influence on the first dimension, as has been researched since Coleman (1968), and as it has already been operationalized by other authors such as Alves et al (2014).

Table 1: Variables used to estimate SES students index

Economic Situation	・Have refrigerator at home ・Have laundry machine at home ・Have car at home ・Numbers of bedrooms at home ・Number of households ・Have housekeeper services at home
Capital Social / Cultural	・Mother educational attainment ・Mother can read ・Lives with its father ・Father educational attainment ・Father can read

Source: Prova Brasil de 2017.

The indicator was created for each student, and subsequently added to the municipal level, resulting in an average municipality SES. Thus, a categorical variable was created classifying the municipalities between above average and below average, when compared to the state's average SES.

In a second step, a Pearson correlation coefficient (R^2) was estimated at the municipal level attesting to the correlation between the socioeconomic level of its students and their proficiency in the test (calculated by the average between the Portuguese Language and Mathematics tests). In the present case, this indicator has the function of measuring the equity of the municipality, that is, how much the education systems manages to soften the influence of the socioeconomic conditions of its students on the educational results, which, in this article will be called I_Equi. For the analysis of the statistics, a parameter was established, based on the study by Akoglu (1988), which raises several metrics of classification and interpretation of Pearson and Spearman's correlation coefficients. It was then defined that the correlation scores between 0 and 0.2 are weak; values between 0.20 and 0.59 are moderate and 0.60 and 1.00 characterize a strong correlation. Then, a positive I_Equi indicates that socioeconomic level and proficiency are related in the same direction, so that a negative I_Equi would indicate an inverse relationship between the variables. The closer to 0, the less the dependence of these variables on each other, that is, the variation of one is not correlated to the variation of the other.

Finally, a categorical variable was created classifying municipalities as above average and below average, regarding their average proficiency in Prova Brasil in relation to the state average.

After completing these steps, some municipalities were selected that presented satisfactory results in terms of proficiency, so that this parameter was not necessarily related to the SES of their students, which would be a good demonstration of equity in the educational context. The selection followed the following criteria:

- The average proficiency of the municipality is above the state average;
- The socioeconomic level (SES) is below the state average;
- The correlation between SES and proficiency of students in the municipality is weak (I_Equi between -0.2 and 0.2).

After this outline, the development of work will continue to demonstrate how these three variables, which make up the criteria, are interrelated in their distribution, through scatter plots, justifying the adopted criterion. Then, the focus will be directed to the selected municipalities, showing their spatial distribution in the state of Minas Gerais. In this way, it will be possible to identify whether the regional issue interferes with the educational results found, and if there is any pattern to be pursued.

Finally, the work focuses on looking for factors that may be related to the satisfactory results of the selected municipalities, such as an effort to find practices in public management that can configure explanatory hypotheses for the results found and guide new works. For this purpose, only the municipalities that have a SES below the state average were selected, with the objective of not biasing the analysis, either with results that are correlated to a high standard of SES of the student body, that is, to the relationship of this same indicator with the state capacity of the municipality, and may have more capacity to implement certain practices in the educational context not available to other municipalities with a more vulnerable population.

The analysis of these hypotheses starts from the systematization developed by Jannuzzi (2005), to list indicators for the monitoring and evaluation of programs and policies, the author establishes a cycle that successively goes through inputs, processes, results and impacts. Thus, for each of the stages, it would be possible to select or build indicators that identify the state of that stage, making the task of monitoring and evaluating the cycles clearer. Aware that the results are already data - collected through the test of Prova Brasil -, the present work remains to analyze the steps that precede it, in order to explain the different patterns of results that can be observed in the municipalities of Minas Gerais. Therefore, the input indicators, here understood as municipal revenues and the expenses that are committed to the maintenance and development of education,

as well as the processes, which are done from these inputs, will be analyzed, including the dimensions of management administrative and institutionalization, structure of the municipal education system, infrastructure and pedagogical effort. In this context, in view of a wide range of variables and dimensions, the most efficient method to identify which factors can be more effective to overcome the trade-off between efficiency and equity, is to perform a logistic regression, which returns the probability of occurrence of an event (in the present case, whether the municipality is selected or not) based on the predetermined variables (Cameron & Trivedi, 2005). All the information necessary to operationalize the analysis through the independent variables at this stage, both for inputs and processes, were extracted from the Minas Gerais Social Responsibility Index (Índice Mineiro de Responsabilidade Social - IMRS), of the João Pinheiro Foundation (FJP).

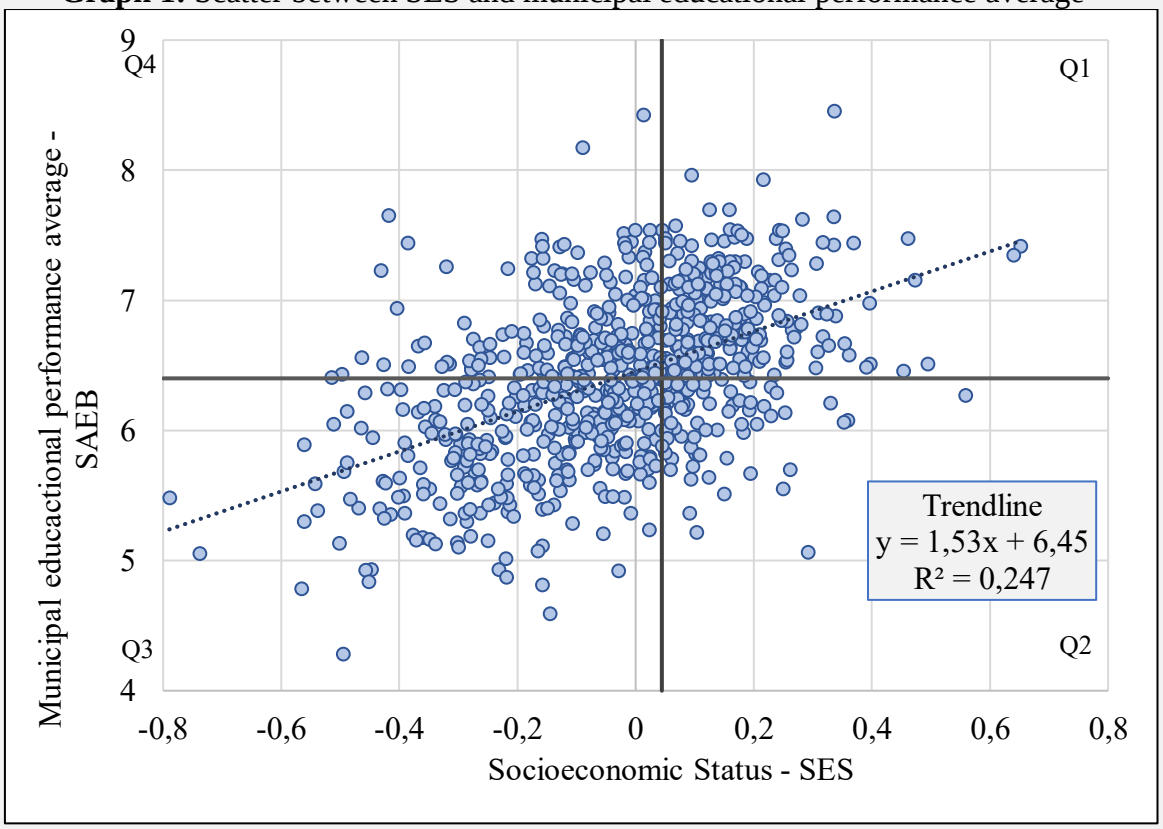
4. Results

After more than half a century of the publication of the Coleman Report, the relationship between school performance and the socioeconomic status of their families remains a highly relevant research topic, and, although several efforts have been implemented in the country to make education more equitable, still relevant - to a greater or lesser extent, in practically all countries - relevant signs of this effect when analyzing the educational field. Graph 1 shows this effect, based on the average proficiency of students in the municipalities of Minas Gerais, considering only the municipal school system, and the average SES of their students.

According to the interpretation of Graph 1, there is a moderate correlation between the average proficiency of students in the municipal systems of Minas Gerais, and their SES. The coefficient indicates that the SES is able to explain (predict) about 25% of the variation in the performance of the municipalities in Prova Brasil. 760 municipalities are included, since for the estimation of the socioeconomic satus, some municipalities did not have enough observations or had incomplete data in the completion of students. To facilitate visualization, the graph was divided into quadrants according to the average of the variables. In this sense, it is clear that, with respect to both variables, the municipalities that are above the average vary little in relation to this one, while the municipalities that position themselves below the established section, present greater dispersion. Although there is a correlation that indicates that, the higher the SES, the greater the average proficiency, due to the magnitude of the correlation, it is possible to

identify municipalities that are outside the rule – which constitute the main objective of this work. Quadrant 4 of the graph shows

Graph 1: Scatter between SES and municipal educational performance average

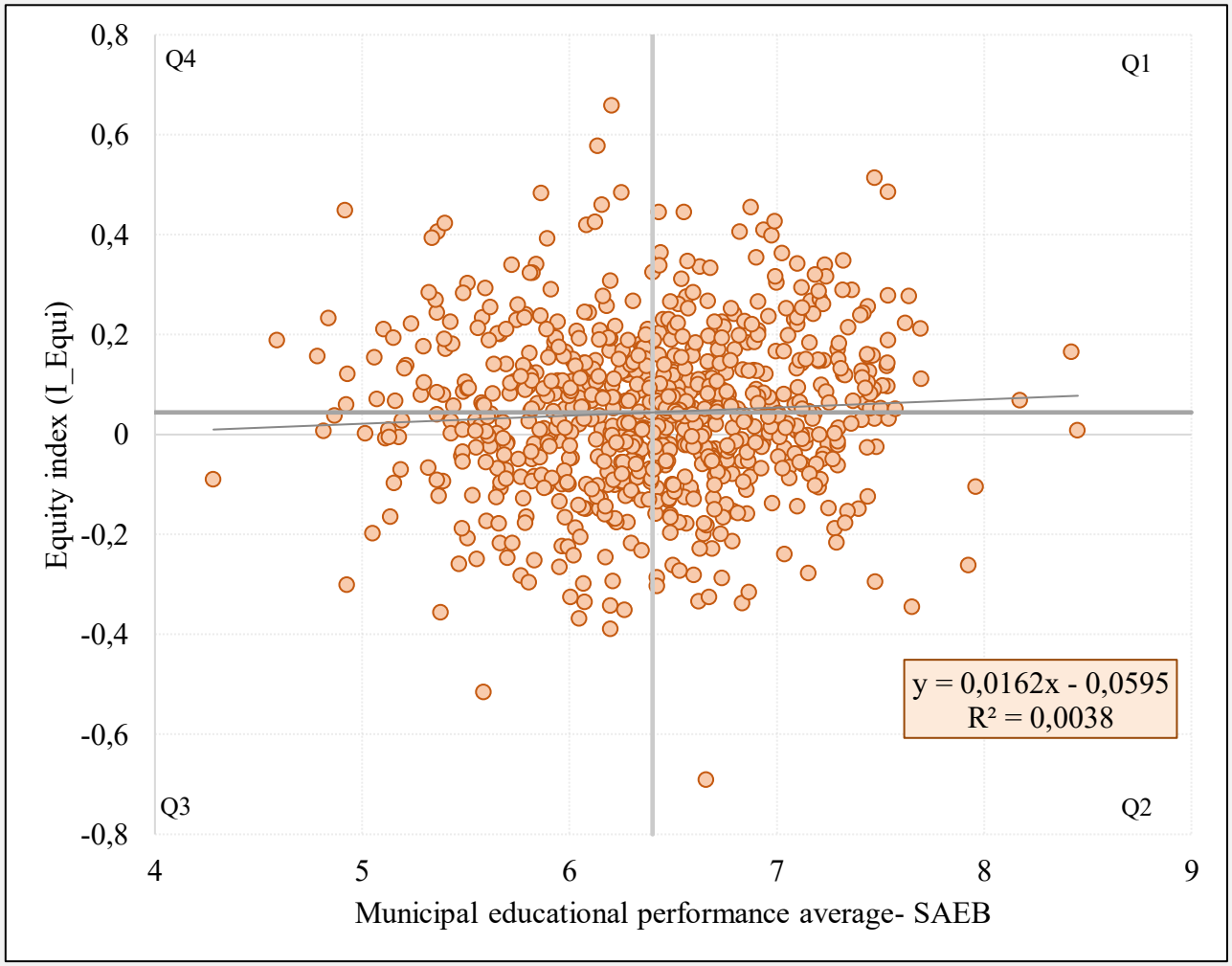


Source: Prova Brasil (SAEB/INEP).

municipalities with SES below the average and proficiency above the average, composing a subset with 239 municipalities (34% of the sample). This component reinforces that, if the SES is not an important determinant of the academic performance of municipal systems, there are several other factors at play, since a significant number of municipalities with a situation of vulnerability below the state average, managed to achieve satisfactory performance in standardized tests.

Far ahead, it is necessary to further filter the results, so that it is possible to investigate municipalities that are able to combine the tasks of achieving good performance and establish a level of internal equity among their students. With this objective, Graph 2 shows the dispersion between the average proficiency of students in the municipality and the Equity Index, this being the correlation coefficient, for each municipality, between the proficiency of each student and their respective socioeconomic index.

Graph 2:
Scatter between municipal educational performance average and equity index (I_equi)



Source: Prova Brasil (SAEB/INEP).

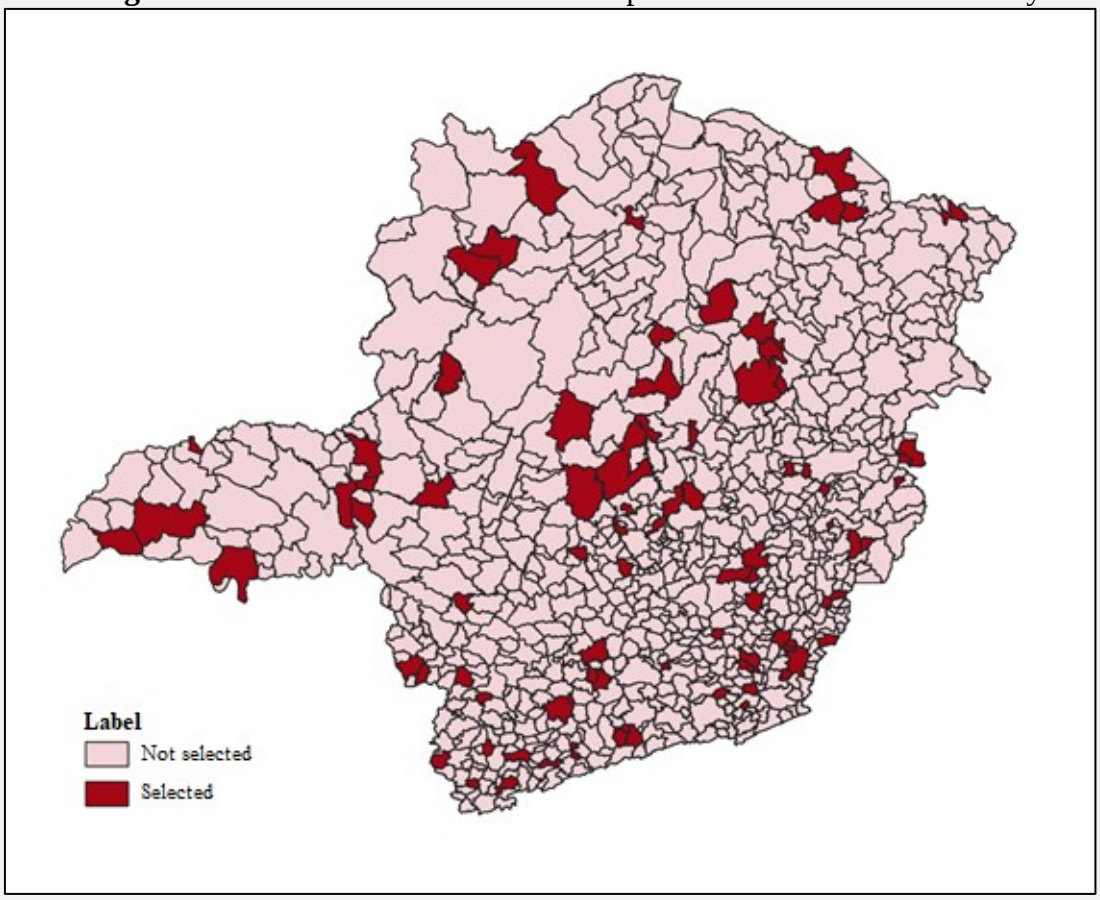
As is evident from the analysis of Graph 2, the correlation between the average proficiency of students in the municipal system and the equity index (I_Equi) is practically insignificant. In practical terms, it is observed that, in addition to the heterogeneity of the proficiency gradients observed in the state - as already shown in Graph 1 - the municipalities also have different standards of internal equity. Of the municipalities represented, 593 have a weak correlation between SES and proficiency, which accounts for 78.0% of the sample. On the other hand, it must be emphasized that this effort is still not enough to achieve a quality education, given that it would not help to ensure that students had similar performance, regardless of their socioeconomic level, if that income were below the level suitable for learning. Therefore, in this way, the present work emphasizes a subset that unfolds from these 593 municipalities, which are selected for having a performance in Prova Brasil higher than the state average. Based on

this criterion, and, together with the criterion established in Graph 1, we have the selected municipalities with the appropriate behavior in relation to performance and equity.

In view of the state's territorial extension and the heterogeneities that surround it, Figure 1 aims to demonstrate, in a visual way, the distribution of the selected municipalities in the territory of Minas Gerais. It is evident that there is not necessarily a close relationship between the criteria established for the selection of municipalities and the territorial distribution of the state. If, on the one hand, this finding validates the criterion, without biasing the selection for a given local or municipal standard, on the other hand, it makes it difficult to explore the characters that may lead to the understanding of how the municipalities may have achieved such positive results.

What can be inferred from the observation of Figure 1 is that, in some cases, surrounding municipalities appear as selected, which may lead to believe that whatever the factors that are associated with these results, they can be "transmissible " in a spillover effect, in which the political decisions or choices of a place affect the places around, as highlighted by Belsey and Case (1992).

Figure 1: Distribution of selected municipalities at Minas Gerais territory



Source: Own elaboration based on data from Prova Brasil (SAEB/INEP).

Table 2 continues in this analysis and lists the municipalities selected by mesoregion, making it possible to be more precise in the observations on the equity and performance results of the municipalities, according to the criterion adopted.

Table 2: Distribution of selected municipalities in the mesoregions of Minas Gerais

Region	Selected	NSE above average	Sample	Total
Campo das Vertentes	3	7	35	36
Central Mineira	5	13	27	30
Jequitinhonha	6	37	40	51
Metropolitana de Belo Horizonte	8	23	89	105
Noroeste de Minas	2	6	18	19
Norte de Minas	8	67	74	89
Oeste de Minas	3	7	37	44
Sul/Sudoeste de Minas	17	29	141	146
Triângulo Mineiro/Alto Paranaíba	9	20	63	66
Vale do Mucuri	0	20	20	23
Vale do Rio Doce	9	70	92	102
Zona da Mata	15	57	124	142
Total	**85**	**356**	**760**	**853**

Source: Prova Brasil (SAEB/INEP) and IBGE.

According to the analysis in Table 2, it is evident that the municipal systems have different characteristics of the public in each region. For example, in the Vale do Mucuri region, all municipalities have below average SES, while in the South / Southwest region of Minas, only 20.5% of the municipalities fall under this criterion. At the same time, the regions that have the most municipalities with the most socioeconomically vulnerable students are also the ones that have the fewest municipalities selected (proportionally to the number of municipalities with lower than average SES). It is possible, then, that the same effect captured in the analysis of Figure 1 is also noticeable here, since regions that have more municipalities with SES below the average have difficulty implementing good results, and, in turn, have no neighbor in this situation, making it more difficult to break this cycle of performance difficulties.

On the other hand, it is emphasized that, even though the mesoregions present different proportions of municipalities with SES below the average, the proportion of selected municipalities (except in the Vale do Mucuri) by mesoregion does not present considerable heterogeneity, when it is taken into account. Considering its magnitude

before the state. This fact reinforces the robustness of the adopted criterion, since it is not linked to cultural issues that may affect political choices and influence the educational environment to the point of making it difficult to replicate elsewhere. Therefore, it is possible that the observed results are linked to certain choices and the construct of the present work is reinforced, as a reinforcement for the dialogue between education and public management.

Understood as the municipalities are distributed in the state according to their capacity to promote equity in the public education of the municipal systems - according to the criteria adopted here, the present work aims to take a step forward. In this endeavor, an exploratory effort to investigate what factors may be related to this capacity of the selected municipalities will be used next.

Table 3 presents indicators that seek to compare the difference between the financial capacity of the municipalities and how much they strive to provide resources in the educational services that are competent. In general, the indicators did not show statistical significance, considering a 10% significance margin, in showing that the averages are different between the selected and unselected municipalities. In this case, it would be imprecise to analyze the results by comparing the samples through the differences between the averages, making it necessary to draw another type of conclusions.

Table 3: Municipalities input index, by selected and not selected

	Not selected		Selected		
	Average	Standard error	Average	Standard error	P=p
Current net revenue (per capita)	0.471085	0.037676	0.4839461	0.075361	0.8716
Budget percent on education	0.236547	0.003082	0.2323037	0.004546	0.4855
Minimal investment in education	0.309622	0.003766	0.2967732	0.007592	0.1076
Education spending (per capita)	618.2794	12.94847	638.0638	23.63179	0.4589

Source: IMRS/FJP.

As the articles raised in the literature indicate, the key to this understanding may lie in school processes and allocative choices, that is, in how and where the money is spent and, therefore, to guide the ongoing exploratory effort. Table 4, in turn, shows some of these indicators that denote the school panorama in the municipalities of the two groups, and which will later compose the logistic regression model, to be exposed later.

Table 4: Municipal process-index, by selected and not selected

	Not selected		Selected		
Variable	**Avg.**	**Std Error**	**Avg.**	**Std Error**	**P=p**
Socioeconomic Status - SES	0,217	0,009	-0,161	0,012	0,001
Students in schools with courts (%)	0,578	0,015	0,680	0,025	0,001
Students in schools with internet (%)	0,937	0,006	0,974	0,007	0,001
Absenteeism Inhibition Program *	0,247	0,027	0,329	0,052	0,143
Full-time students (%)	0,128	0,011	0,116	0,018	0,589
School management complexity	0,113	0,011	0,109	0,016	0,855
Initial years of elementary school students in the Municipal System (%)	0,763	0,015	0,794	0,024	0,300
Education Career Plan *	0,856	0,022	0,841	0,041	0,755
Faculty with higher education (%)	0,009	0,000	0,009	0,000	0,238

Note: * Express dummy variable, in which 1 is presence and 0 is absence.
Source: IMRS/FJP.

Among the variables of the school process, only two were significantly different between the selected and unselected groups and both comprise the dimension of infrastructure, with the percentage of students studying in schools that have courts and the second, this same percentage for schools with internet. With regard to the teaching staff, the average percentage of teachers with higher education is not statistically different between the two groups, a factor that may be related to the extension of Fundeb and its effects on teacher training, generating equity between the municipalities.

As for management, the percentage of schools with medium or high complexity management did not appear as a relevant factor, nor did the existence of programs to inhibit teacher absenteeism, which is an indicator pointed out by the literature as a determinant for students' academic performance. (Gesqui et al, 2008), as well as the existence of a career plan for education professionals. The percentage of students in the initial years of the municipality that is enrolled in the municipal systems also did not appear as significant, which, otherwise, could reflect an imbalance between the municipal and state systems, overloading some of them. In the same vein, the number of full-time students was not significant, which, although it could be a strategy for the promotion of equity, allowing more reinforced monitoring of the most vulnerable students, as reinforces Setúbal (2010), is not achieved due, mainly, low adherence in both groups.[1]

The SES of the municipalities presented a different average for the two groups, so that the selected municipalities present a lower average of the indicator. Although this variable is not related to school processes, it was inserted in Table 3 since it will be used as a control variable for the logistic regression that was estimated and will be exposed

below. Even so, its result already points out that the selected municipalities, have already been chosen from a sample with SES below the state average, and even in this subgroup, they have an even lower level than their peers, and, meanwhile, managed achieve above-average results in state proficiency.

Based on this, a logistic regression was estimated, with the dependent variable being the municipality selected, that is, representing that this would be an adequate result profile to be presented by municipalities with SES below the average, so that this does not reflect in their educational results, achieving proficiency above the state average. The results of the regression, considering the coefficients of the estimation equation, such as the marginal effects of the variables that were significant at a limit of 10% of significance, are reported in Table 5.

Table 5: Logit regression outputs and marginal effects

Dependent variable: Selected Mun.	**Logit**		**Marginal effect**	
Variable	**Coef.**	**Std. Eror**	**Coef.**	**Std. Eror**
Socioeconomic Status - SES	2,470**	1,165	*Média*	
Students in schools with courts (%)	1,762*	0,616	0,288	0,097
Students in schools with internet (%)	6,220**	2,641	1,017	0,425
Absenteeism Inhibition Program *	0,505***	0,295	0,082	0,047
Full-time students (%)	-0,802	0,846		
School management complexity	0,486	0,615		
Initial years of elementary school students in the Mun. System (%)	-0,100	0,376		
Education Career Plan *	-0,849	0,867		
Faculty with higher education (%)	96,733	120,277		
Constant	-8,869*	2,787		

Source: IMRS/FJP.

The results obtained reinforce the reasoning in Table 4, however, they complement and provide a more comprehensive picture. The variables that had already shown statistical significance in the test of means reported in Table 4 (SES, students with court, and students with internet) also showed significance in the regression, as shown in Table 5. In the interaction with the other variables, and with the control by socioeconomic level, the categorical variable that reflects the presence of programs aimed at reducing teacher absenteeism showed significance in the regression, showing a positive relationship regarding the dependent variable. The other variables, of the infrastructure dimension (court and internet) also showed a positive relationship with the explained variable.

Estimating the marginal effect, on the average of SES, the results become more scalable. Municipalities that present programs aimed at reducing teacher absenteeism have a probability of 1, have an 8.2% higher probability of being in the group of selected municipalities, that is, of presenting good results in equity and performance. In the same estimation, it is possible to outline a scenario in which a municipality that increases the percentage of students who study in schools with courts by 10%, in turn, increases its probability of being at the level of adequacy of 2.8%. equity and performance. For the variable that denotes the percentage of students with internet, this same 10% variation would lead to a 10.1% increase in the dependent variable.

Such results reinforce what was found by Soares (2005), a decade and a half ago: educational performance is still quite hostage to infrastructure resources, especially in the case of the most precarious school systems that serve students at a socioeconomic disadvantage. Certainly, since the work was published, significant changes have been implemented on the national scene, mainly with the approval of Fundeb, which improved the mechanism to promote the financing of maintenance and development of education in elementary education and extended it to all basic education. Such factor may have contributed for the teaching variables to become more homogeneous, as was seen in the sample, as seen with the percentage of teachers with higher education, and regarding the existence of a career plan for professionals. However, as noted, the existence of absenteeism programs is a factor that can affect these results, since it is linked to a primary factor, already listed by Soares (2005), in its potential to generate equitable results: the dedication of teachers. Certainly, such programs can be implemented from various perspectives, which can vary from control to improving the school climate (which can cause different impacts on the dedication of the teacher), however, what has been found is that it has a large potential to influence the results in promoting equity, as it turned out.

5. Conclusions

There is a vast field of research in the field of educational inequalities, understanding its causal relationship with socioeconomic inequalities. In addition to the various works that were previously conceived by other authors, which focused on the analysis of this complex object, the present work sought to employ an effort that would bring this debate to the frontier of public management issues. The undertaking sought to analyze the relationship between the proficiency of students in the 5th year of elementary

school in the municipal systems of Minas Gerais, and their relationship with the Socioeconomic Level and, from there, explore possible relationships between potential equity-generating initiatives and efforts implemented in public management municipal.

From the established sections, selecting a pattern of municipalities that appear to have, at least in part, overcome an alleged trade-off between equity and performance, the work managed to extract important results for the foundation of public policies. It is still possible to see a pattern between SES and students' educational results, even if they have a moderate to weak pattern, it is relevant and needs to be incorporated into the horizon of management initiatives, as a factor to be mitigated. It was shown here that the positive results in equity have few regional features, which strengthens the intention of investigation for further replication of potential factors related to them.

In the final analysis, related to the management factors that may be associated with success in equity and performance, it was first reported that such results have little association with the financial capacity, or the financial inputs of each municipality, considering both revenues and expenses. This does not mean that these are not relevant factors, but that the choice of the sample selection criteria sought to precisely control the weight of the structural dimensions, to seek hypotheses related to factors that could respond to the allocative and management choices of the municipalities. Ahead, it was found that the main axis that tends to influence these results lies in the infrastructure issue and its wide offer to students in the municipality. Municipalities that have programs to inhibit teacher absenteeism also showed significant results in this field, which may be related to teacher dedication, and also reflect on students' motivation.

As it is an exploratory work, this article has some limitations, but at the same time, it deals with an important theme, in a potential academic frontier. Therefore, the results found here require new studies to be validated, and, at the same time, the work strengthens this invitation and strengthens the need for such studies to be carried out. The fact that cutting only the municipal systems, for a given state, can also prevent the results found from being applied in other regions, which also raises the need for other studies with different approaches. Finally, we hope that this article has provided methodological and conceptual insights for future researches and raise inspirations for an education that can be more equitable and effective.

Notes:

1. It is important to note that it is not stated here that these factors are irrelevant or that they have no effect on educational performance. They simply do not seem to be significant differentials between the municipalities selected for the sample based on the stated criteria and those with which they are compared, for the purposes of the circumscribed objects of this work.

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