The Impact of the Active School Search Campaign on Preschool Enrollment Rates in Brazilian Municipalities

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Abstract

Brazil has yet to achieve universal access to preschool education, a goal initially scheduled for accomplishment by 2016 according to the National Education Plan. This article aims to present the results, in terms of preschool enrollment rates, of an evaluation assessing the effectiveness of the Active School Search Campaign, developed by the United Nations Children’s Fund and the National Union of Municipal Directors of Education, a campaign to support the municipalities in proactively searching for children who are out of school or at risk of dropping out. The empirical identification strategy consisted of employing the differences-in-differences method combined with propensity score matching. The results indicate that the impact was not statistically significant in any of the exercises performed. This evidence reinforces that policies to combat school exclusion require an intersectoral approach.

Keywords: National Education Plan, preschool, universalization of education, evaluation of educational policies

1. Introduction

School exclusion in Brazil is still a harsh reality. It refers to children and adolescents who have never been enrolled in the mandatory education system or students who dropped out (enrolling and not finishing the school year or did not re-enroll for the next school year).

In 2019, almost 1.1 million children and adolescents aged 4-17 (compulsory school age in Brazil, encompassing preschool, elementary school, and high school) were not enrolled in educational institutions, corresponding to 2.7% of the population in this age group. Adolescents between 15 and 17 years old who should be in high school make up 57.4% of this group, and children between 4 and 5 years old who should be in preschool make up 35%. This population is primarily Black, Pardo, and Indigenous, in the lowest per capita family income quintile, and resides in urban areas (Instituto Brasileiro de Geografia e Estatística [IBGE], 2019).

In the same year, 623,187 elementary and high school students of the local and state education systems dropped out of school (2.2% of the population of this age enrolled). The highest dropout rates were found among the most vulnerable populations and in rural areas, affecting mainly adolescents between 15 and 17 years old. In 2019, 7.1% of these young people left school without finishing high school (IBGE, 2019).

This situation has worsened due to the COVID-19 pandemic. A survey carried out by UNDIME (an organization that gathers the heads of the Brazilian municipalities’ education departments) between April and May 2020 pointed out that almost 40% of the 4,272 municipalities that responded to the questionnaire still had not made a decision about the continuity of online activities (União Nacional dos Dirigentes Municipais de Educação [UNDIME], 2020). Also, according to data from the 2020 School Census, only 9.9% of the basic education schools in Brazil returned to face-to-face activities that school year. As for public schools, this proportion was even lower (5.0%), making student attendance a greater challenge for federal, state, and local school systems.

The Active School Search Campaign, an initiative started in 2017, gained particular relevance after the pandemic. The campaign was developed by the United Nations Children’s Fund (UNICEF), in partnership with UNDIME.
with support from CONGEMAS (an organization that gathers the heads of the Brazilian municipalities’ social assistance departments) and the National Council of Municipal Health Departments (CONASEMS). The campaign aims to support states and municipalities in identifying, registering, controlling, and monitoring children and adolescents who are out of school or at risk of dropping out. According to data provided by the National Coordination of the Active School Search Campaign, between 2017 and 2020, 2,522 municipalities from 22 states joined the initiative (UNICEF, 2021a).

The active search for preschool children (4 and 5 years old) was already one of the Brazilian National Education Plan (PNE) measures as a strategy to understand the demand for this service. According to Law 13005 (2014), this strategy is related to PNE’s goal 1 – addressing literacy and expansion of schooling and educational opportunities, as described later in this article – and is carried out in partnership with government agencies for social assistance, health, and child protection. However, an audit by the Federal Court of Audits observed that most municipalities had not fully implemented the strategy (TCU, 2017).

Given that local governments in Brazil bear the responsibility for preschool education provision, this research examines the participation of Brazilian municipalities in the Active School Search Campaign. The study assesses the impact of this participation on preschool enrollment rates by applying the difference-in-differences methodology combined with propensity score matching, using a set of socio-economic variables of the municipalities.

This article is organized into five sections, including this introduction. The next section presents a theoretical review of the importance of universal access to preschool and an overview of educational policies in Brazil, focusing on the Active School Search Campaign as a policy to address exclusion in preschool. Section three details the data sources and methodological procedures for impact assessment, followed by the analyses and discussions of results, in section four. The last section concludes with recommendations for public policies and suggestions for future research.

2. Literature Review

2.1 The Importance of Preschool Universalization: International and Brazilian Evidence

Several studies deal with the impact of early childhood education on children’s cognitive development. Meta-analyses of research carried out in the United States since the 2000s demonstrate gains in school performance. More recent studies have improved research methodologies and confirmed these results, albeit to a lesser extent (Santos, 2015).

The literature shows that the effects of access to early childhood education are heterogeneous, and disadvantaged children tend to benefit the most. In the United States, a study showed that attendance in programs with knowledge-stimulating environments could improve reading and math skills, partially offsetting disadvantages of these children such as their likelihood to live in environments that do not facilitate learning, difficulty in accessing books at home, and having less stimulating verbal interactions (Magnuson, Ruhm, & Waldfogel, 2007).

Research conducted in Denmark confirmed that attending high-quality schools at age 3 is associated with better cognitive performance at age 11 and more significant effects for children from lower-income families. In the United States, the study did not identify differences in the benefits obtained by the most disadvantaged children compared to those from more favorable environments (Gosta et al., 2012).

Subsequent studies confirmed the positive effects of universal early education for American children at an economic and social disadvantage. These effects were assessed through knowledge tests and non-cognitive skills (self-control, motivation, and perseverance), which could determine long-term socio-economic impacts (Cascio, 2015).

According to Heckman, Pinto, and Savelyeve (2013), education positively influences children’s socio-emotional and cognitive development. Socio-emotional development has yielded more enduring effects, albeit less significant, than cognitive development. In their longitudinal study, the authors found that experiences in preschool have long-lasting consequences in individuals’ adult lives, affecting their wages, health, involvement with violence, and marriage.

The longevity of education’s impact on the individuals’ adult lives seems to be related to the quality of preschool education. A longitudinal study in the UK found that only medium or high-quality preschools had lasting effects on academic and socio-behavioral performance (Taggart, Melhuish, Sammons, & Siraj-Blatchford, 2011).

The literature abundantly demonstrates the pivotal role of early childhood education quality in shaping
individuals’ lives. This encompasses the concerning reality that lower-quality schools may hinder future success in adulthood (Cascio, 2015). Although elements such as class size, teacher qualification, and teacher/student ratio affect children’s development, this influence has limits that must be observed so that the costs of educational services do not outweigh the benefits (Note 1). In addition, parent-oriented programs (focusing on improving children’s skills and parenting behavior) and the design of skills-based curricula can positively impact children’s development (Joo et al., 2020).

A Brazilian study found a positive impact of access to school in early childhood on both educational attainment and labor market participation (Barros & Mendonça, 1999). Santos (2015) identified international evidence highlighting the statistically significant influence of preschool on the student’s educational progression. Similarly, Menezes Filho (2011) stresses the importance of the age at school entry, noting that students who attended preschool consistently outperformed those who started school in the first grade across all levels. The author suggests that public investment at the beginning of the teaching cycle is more likely to positively impact students’ educational journeys. Conversely, Neubauer, Davis, and Espósito (1996) observed a diminishing effect of this investment over the educational cycle.

The literature in Brazil also found that preschool programs can reduce educational inequalities, considering that vulnerable children who start school earlier present faster language development than others (Koslinski & Bartholo, 2020). The influence of preschool quality was confirmed in a study that identified statistically relevant impacts of preschool quality on grades obtained in a national exam — Provinha Brasil, which assesses the development of literacy skills in children (Campos et al., 2011).

Regarding student progression, an analysis of the relationship between early education and wages, schooling, and school proficiency index in Brazil showed that preschool has a positive relationship with the completion of the four school cycles (with an increasing marginal effect in the first three) associated with an increase of one and a half years of schooling and a 16% increase in income (Curi & Menezes Filho, 2009).

Studies on school exclusion in Brazil have predominantly concentrated on elucidating its causes rather than on devising effective programs and actions to combat it (Silva et al., 2020). The causes identified often include cultural and family factors, low income, and issues related to teaching methods (Ostrovski & Correia, 2018). Studies show that policies addressing school exclusion primarily focus on measures to reduce students’ difficulties remaining in school. An example of such measures is improving school transport for children and adolescents who live in riverside and rural communities. Other programs aim to offer health services to students enrolled in the public education system, combat violence, and provide food and teaching materials (Silva et al., 2020). The conditioned cash transfer program Bolsa Família stands out, successfully reducing school dropout rates (Santos et al., 2019).

However, studies such as Figueiredo and Salles (2017) highlight the government and schools’ neglect in actively seeking out students who have dropped out. For the authors, authorities have implemented public initiatives in the education sector with insufficient focus. The Active School Search Campaign examined in this research addresses the concern raised by Figueiredo and Salles (2017). It aims to increment the efforts to locate children who are either not enrolled in the school system or are at risk of dropping out – a relevant strategy for achieving the Brazilian National Education Plan (PNE) goals.

2.2 The National Education Plan and the Fight Against Preschool Exclusion

The Brazilian 1988 Constitution (CF, art. 214) provides for a nationwide education plan (PNE) with a multi-annual duration aiming to harmonize and advance education across its various levels while integrating governmental efforts. However, the first PNE was presented only in 2001, enacted through Law 10172 (2001) and designed for the period from 2001 to 2010. The PNE’s goals were i) raising the population’s global level of schooling; ii) improving the quality of education at all levels; iii) reducing social and regional inequalities in accessing and maintaining enrollment in public education, and iv) democratizing the management of public education. However, the guidelines for planning, managing, and executing public education policies under PNE were not effectively implemented. Key challenges revolved around establishing a collaborative framework among federal, state, and local governments. According to Dourado (2010, pp. 684-685),

The PNE was designed as a formal plan, marked by the absence of concrete financing mechanisms, despite presenting wide-ranging goals, indicating major challenges for improving national education. Another aspect to be highlighted refers to the global dynamics of planning adopted, in which there is no budget assigned to support the PNE’s goals since the PNE was not taken into account in the process of elaborating the Pluriannual Plan (PPA) and its updates.
Despite these issues, some progress has been made, particularly in the consolidation of assessment systems in the area of education. In 2004, the National Higher Education Assessment System (SINAES) was created. SINAES supplemented the other two assessments already in place, the Basic Education Assessment System (SAEB), established in 1990, and the National High School Exam (ENEM), which started in 1998. It is noteworthy that preschool education is still underrepresented in SAEB. This assessment was only extended to preschools from 2019 onward, albeit in a limited sample of institutions.

Constitutional Amendment 59/2009 amended article 214, introducing a more participatory perspective to elaborating the PNE. In this context, a new plan was prepared emphasizing federal, state, and local coordination, access to quality and egalitarian education, and the development of an equitable funding model. After a series of political disputes, the plan was approved through Law 13005/2014, establishing guidelines, goals, and strategies for Brazilian educational policy from 2014 to 2024. Goal 1, which addresses the universalization of literacy and expansion of schooling and educational opportunities, was thus described:

Goal 1: The goal is to universalize early childhood education in preschool for children from 4 to 5 years of age by 2016; and expand the offer of early childhood education in daycare centers to serve at least 50% of children up to 3 years old until the end of the term of this PNE (Ministério da Educação [MEC] 2014).

The local governments’ task and the great challenge is to make a strong investment in early childhood education, corroborating the centrality of education for children from 0 to 5 years of age. According to the PNE, it is crucial to obtain detailed information about the demand for daycare (0-3) and preschool (4-5) to enable expansion, including the adoption of active search mechanisms for children at the municipal level. The plan includes support from the federal and state governments to reorganize the local education system, provide infrastructure, and train professionals (MEC, 2014).

The PNE underscores the development of a systemic approach to management and delineates strategies for its implementation. It proposes that managers, school professionals, students, parents, and society overcome the fragmented view of system management when formulating local education plans. For instance, according to the 1988 Federal Constitution, goals related to preschool primarily fall within the purview of local governments. However, achieving these goals requires contributions from the state and federal governments, especially concerning funding, technical support, general guidelines, and teacher training. Thus, all levels of government must acknowledge their respective roles in executing local plans, fostering cooperation to advance universalization and enhancing the quality of education nationwide (MEC, 2014).

This joint effort is one of the assumptions of the Active School Search Campaign, which UNICEF developed in partnership with UNDIME in line with strategy 1.15 of the PNE. The campaign aims to assist municipalities in the fight against school exclusion, supporting governments in identifying, registering, controlling, and monitoring children and adolescents out of school or at risk of dropping out (UNICEF, 2021b).

The local government’s executive branch is responsible for joining the campaign and defining a local manager, who must facilitate communication with the other participants, ensuring the adoption of intersectoral actions. The operationalization of the activities requires the participation of a group of professionals. There is a) an operational coordinator who plans and monitors the progress of actions, b) institutional supervisors who receive alerts about children and adolescents out of school and are responsible for the necessary referrals to guarantee (re)enrollment and permanence, c) technicians, who visit families to understand the reasons for school exclusion and carry out technical analysis to ensure (re)enrollment, and d) community agents, who are responsible for actively searching for out-of-school (or at risk of dropping out) children and adolescents, communicating cases and potential problems (UNICEF, 2021b).

The policy must be carried out cross-sectorally, connecting different areas of the local government, such as the departments of education, health, social assistance, and planning, to form a protection network. The campaign can also count on the participation of nonprofit and civil society organizations (United Nations International Children’s Emergency Fund [UNICEF], 2021). It can be developed in two fronts of action, i.e., raising awareness of the actors responsible for school inclusion and of society in general about the problem to be addressed and proposing plans that contribute to the solution. The campaign involves communication activities to engage local actors and other activities directed to priority audiences – families, schools, civil servants, and the media (UNICEF, 2021b).

The campaign emphasizes the use of technology to guarantee the right of children and adolescents to education. Thus, it uses a technological tool to monitor the development of its actions. The tool works as an extensive database to facilitate communication between the areas, store essential data on each monitored case and support the management of information on the situation of the child or adolescent in the municipality or state. The data
obtained subsidizes the planning, development, and implementation of public policies that guarantee the right to education (UNICEF, 2021b).

The cycle between 2017 and 2020 involved 2,522 municipalities from 22 Brazilian states. The period between 2017 and 2018 was when more municipalities joined the campaign, as shown in Figure 1.

![Figure 1. Evolution of the number of municipalities joining the Active School Search Campaign (2017-2020)](image1)

Source: Elaborated by the authors based on data from the National Coordination of the Active School Search Campaign, 2021.

However, the participation of municipalities in the program is heterogeneous across Brazilian regions. Proportionally, the Northeast and North regions had the highest percentage of participation in the campaign, 75% and 63% of their municipalities, respectively. In the Central-West, 33% joined the Active School Search Campaign, and in the South and Southeast regions, only 26% joined. Figure 2 presents a map of municipalities participating in the program.

![Figure 2. Municipalities that joined the Active School Search Campaign, 2020](image2)

Source: Elaborated by the authors based on data from the National Coordination of the Active School Search Campaign, 2021.

Data from the Active School Search platform, extracted in July 2020, indicate that more than 100,000 children were being monitored, and more than 60,000 had already been (re)enrolled, with the remainder in the process of returning to school. Departments of social assistance and health and protection services complemented the work of the local departments of education in monitoring the campaign’s development (UNICEF, 2021c).

The campaign went through adaptation and intensified due to the COVID-19 pandemic. Recommendations and guidelines to cope with crises and emergencies were prepared to meet the new challenges imposed on education systems (UNICEF, 2021d). According to UNICEF, for many families, the condition of socio-economic vulnerability worsened due to the pandemic, with a risk of increased school exclusion. Thus, the main message highlighted the centrality of the right to education for children and adolescents, even in a health and economic crisis, encouraging an alert, robust, and active social protection network (UNICEF, 2021c).
The platform of the Active School Search campaign was closed in December 2020 since a new cycle of local administrations started in January 2021. Historical data were safeguarded and made available to teams as soon as the new administrations had re-engaged with the campaign. In this cycle, 2,977 municipalities in 22 states participated in the campaign (UNICEF, 2021c).

Despite this effort, the report of the third PNE monitoring cycle released in 2020 showed that the goal of preschool universalization by 2016 had not been achieved. In 2018, although coverage reached 93.8%, 330,000 children did not have access to preschool. According to the report, trend analysis suggests that the target could be reached between 2020 and 2024 if the growth trend is maintained (INEP, 2020b).

In 2020, the Federal Court of Audit (TCU) confirmed a significant degree of non-compliance with the goals and strategies established in the PNE, most of which are projected to remain unfulfilled by the deadline (Federal Court of Audit [TCU], 2020).

A look at the progress of the goals of the PNE shows that the difficulties of integrating the remaining population groups escalate as coverage expands to higher levels. It is increasingly challenging to reach those who have yet to be included, requiring the implementation of various public policies to achieve the desired universalization (Gomes, 2017).

3. Methodology

This study adopted many different data sources. The sample contained all 5,570 Brazilian municipalities.

Data on the variable of interest – gross and net enrollment rates in preschools – were collected from an unprecedented report prepared by the Maria Cecilia Souto Vidigal Foundation, published on the foundation’s platform Primeira Infância Primeiro (Early Childhood First). There is no official data on enrollment rates in Brazil. This information is calculated by control agencies and other civil society organizations using different methodologies, usually based on data from the school census and population estimates.

Data about the treatment variable – municipalities joining the Active School Search Campaign from 2017 to 2020 – was obtained from the campaign’s national coordination. This information was used to form the treatment and control groups.

Information related to the municipal demographic and socio-economic characteristics were used as variables in the matching model to define comparable municipalities. Thus, the following control variables were adopted: population, Gross Domestic Product per capita (GDP per capita), infant mortality rate, expenses paid on early childhood education, the average number of students per preschool class, number of preschool establishments, and proportion of teachers with higher education.

Population data were obtained from the 2010 Census and estimates from the Brazilian Institute of Geography and Statistics (IBGE). Municipal GDP per capita was available only until 2018 and was also collected from IBGE.

Infant mortality rates were calculated based on data from the application of the Department of Informatics of the Brazilian National Health System (DATASUS), Tabnet, which provides health indicators. The number of births per mother’s residence and the number of deaths of children under one year old per residence were analyzed, establishing a relationship between these indicators. Information on early childhood education expenses was extracted from the National Treasury Secretariat (STN) in consolidated municipal finance data (FINBRA). The data on the average number of students per preschool class, number of public preschool establishments, and proportion of teachers with higher education came from the Children’s Observatory, a project of the ABRINQ Foundation.

The empirical procedure to evaluate the campaign’s impact was the difference-in-differences method, which matched municipalities based on the propensity score. Thus, it was possible to compare, over time, changes in results between the municipalities that participated in the program (treatment group) and the municipalities that did not participate (control group). The software Statistics and Data Science (STATA), version 15.1, was used in the analysis.

The difference-in-differences method can be used when the rule to select the intervention’s beneficiaries is unclear. This method assumes the presence of unobserved heterogeneity between groups and does not vary over time, using data from observations before and after the intervention to establish the differences and determine the heterogeneity (Khandker, Koolwal, & Samad, 2010). Thus, a comparison time series is added to the intervention time series, assessing pre and post-intervention outcomes in settings that implemented the intervention (treatment groups) with analogous changes before and after in settings where it was not implemented (control
group) (Rossi, Lipsey, & Henry, 2019).

The year immediately before the intervention, as municipalities progressively joined the campaign between 2017 and 2020, was 2016. Considering that the enrollment rate data for 2021 were not yet available during the study, 2020 was deemed the year immediately following the intervention. The model was tested, excluding municipalities that joined the campaign in 2020. This adjustment did not affect the result, as these municipalities accounted for less than 4% of the total participants.

The hypothesis of causal identification for this estimation strategy is that in the absence of the campaign, the trends in the evolution of enrollment rates between the treatment and control groups are similar, conditioned to the covariates of the model (hypothesis of parallel trends). If the trends in the results for the two groups were different, the estimated effect of the treatment would be invalid or biased, as the trend of the comparison group would not be a valid estimate for the counterfactual trend of the treatment group (Gertler et al., 2018).

In this study, the difference-in-differences method was combined with the propensity score matching (PSM) method, constructed with data from 2016 (the year before the implementation of the Active School Search Campaign). The PSM makes it possible to match treated and untreated individuals, identifying a comparison group between untreated individuals with observable characteristics similar to treated individuals (Gertler et al., 2018). The variables observed to define the PSM were population, GDP per capita, infant mortality rate, expenses paid on early childhood education, the average number of students per preschool class, number of public preschool establishments, the proportion of teachers with complete higher education, and dummy variables from states. Municipalities were matched with their nearest neighbor. Therefore, it was possible to find a municipality with a PSM comparable to that of the treated municipalities. The possibility of repetition was accepted – a control municipality was considered a reference for more than one treated municipality. The sample was kept only in the area of common support to improve the quality of the combinations. The matching estimation method used was the probit, which assumes a normal distribution.

A t-test of differences in population means for matched data was used to evaluate the null hypothesis that the means of the observable variables between the treatment and control groups are equal, verifying their similarity.

Formally, the empirical difference-in-differences strategy used after matching the groups was defined by the following equation:

\[ TM_{i,t} = \beta_0 + \beta_1 \times \text{Time}_{t} + \beta_2 \times \text{Treated}_{i} + \delta \times \text{Treated}_{i} \times \text{Time}_{t} + u_{i,t}, \]

Where:

- \( TM_{i,t} \) is the variable of interest that, in this study, corresponds to the gross and net enrollment rate of municipality \( i \), in year \( t \);
- \( \beta_0 \) is the expected value of the variable of interest when analyzing the control group before the change;
- \( \text{Treated}_{i} \) is the dummy variable that takes the value 1 when the municipality belongs to the treatment group (municipalities that received the treatment); \( \text{Time}_{t} \) is a dummy that takes the value 1 in the year 2020 (post-treatment) and 0 (pre-treatment) in 2016; and \( u_{i,t} \) is the random error term. The coefficient \( \delta \) measures the impact of the Active School Search Campaign on enrollment rates in the participating municipalities.

In this context, the combination of the difference-in-differences method, which controls for unobservable characteristics that remain constant over time, with matching techniques, facilitates a stronger association between the treatment and control groups. This reduces the risk of estimation bias, enhancing the robustness of the impact assessment.

4. Results and Discussion

The results of the participation of municipalities in the campaign on preschool gross and net enrollment rates and the validity of the propensity score matching (PSM) conducted will be discussed in this section.

The difference-in-differences method combined with PSM was adopted. It aimed to confirm or refute the research hypothesis that “the participation of municipalities in the Active School Search Campaign is significantly related to the increase in enrollment rates in municipal preschools.”

4.1 Effects of Joining the Active School Search Campaign

The temporal comparison between the enrollment rates of the 1,908 municipalities in the treatment group and the 1,870 municipalities in the matched comparison group demonstrated that, for Brazil (with a confidence interval of 95%), there is no evidence that the estimated impact is different from zero for both gross and net enrollment rates. Therefore, based on the methodology, the hypothesis that the municipality’s participation in the Active School Search Campaign affected enrollment rates is rejected. The following table summarizes the results obtained:
Table 1. Effect of joining the Active School Search Campaign on Gross and Net Enrollment Rates – Brazil (95% CI)

<table>
<thead>
<tr>
<th></th>
<th>CI1</th>
<th>CI2</th>
<th></th>
<th>CI1</th>
<th>CI2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross rates</td>
<td>-1.46</td>
<td>1.81</td>
<td>Net Rates</td>
<td>-1.73</td>
<td>1.08</td>
</tr>
<tr>
<td>CI1</td>
<td>-4.73</td>
<td>1.81</td>
<td>CI2</td>
<td>-4.54</td>
<td>1.08</td>
</tr>
</tbody>
</table>

Source: Elaborated by the authors, based on the difference-in-differences test combined with PSM.

The possibility of heterogeneous effects was assessed because of the vast geographical size and disparities within the country, as well as the diversity among regions and municipalities within the same region. The analysis considered the results on net enrollment rates, which portray the enrollment of children between 4 and 5 years old, a population whose universal access to preschool was determined in the Brazilian National Education Plan (PNE).

In this context, a new test was applied to observe the net enrollment rates in the country’s five regions (Central-West, Northeast, North, Southeast, and South). The test did not confirm that the estimated impact is different from zero, as shown in Figure 3 below:

Figure 3. Effect of the participation of the municipality in the Active School Search Campaign, per region (CI 95%)

Source: Elaborated by the authors, based on the difference-in-differences test combined with PSM.

The study tested other specifications that could suggest heterogeneous effects of participation in the Active School Search Campaign on net preschool enrollment rates in Brazilian municipalities, regardless of the region to which they belong. Four other tests were conducted, considering specific municipal characteristics separately – population, GDP per capita, the proportion of preschool enrollments in urban areas, and the expenses paid per child enrolled in preschool. The evidence again indicates that, regardless of the tested characteristic, the estimated impact is not different from zero, with no heterogeneous effects, as seen in Figures 4, 5, 6, and 7 below:

Figure 4. Effect of the participation of the municipality in the Active School Search Campaign, considering the municipality’s population (CI 95%)

Source: Elaborated by the authors, based on the difference-in-differences test combined with PSM.
The evaluation of a public policy is intended to improve expenditures, management, and effectiveness of actions. In the case of the Active School Search Campaign, thousands of municipalities participated, and the lack of impact on enrollment rates can be used in decision-making about the policy, especially regarding its improvement, adoption, expansion, solution, or discontinuation. As it is a policy created by non-governmental entities, these entities can also benefit from the lessons learned when evaluating the experience.
The estimated results reinforce the understanding that policies to combat school exclusion are intersectoral and involve other aspects, complementing the search for out-of-school children, such as racial issues, poverty, violence, and low schooling of parents or guardians. Additionally, difficulties such as geographical barriers, lack of documentation for children, and inadequate school system infrastructure may have limited the effectiveness of the analyzed public policy. It is important to highlight that the policy targets populations yet to be integrated into the school system, and as coverage approaches near-universal levels, including such groups becomes increasingly challenging.

The impact assessment was carried out exclusively by observing the enrollment rates in preschool. This study did not investigate the effects on other educational levels to which the campaign is also directed, such as elementary and secondary education.

Another element of the campaign not assessed in this study is the effects of the municipalities’ participation on school dropout rates. The campaign targets children out of school (whose admission could impact enrollment rates) and children already enrolled but at risk of evading or dropping out. In this second case, the campaign’s effectiveness may not be fully reflected in enrollment rates alone, making it difficult to assess its success comprehensively.

In addition, it is noteworthy that the campaign started in mid-2017, and municipalities progressively joined the initiative until the end of the policy’s first cycle in 2020, the period adopted in this research. Also, this campaign qualifies and offers tools for managers and educators to undertake an active search. Therefore, it may take more time for the policy to produce results on the indicators selected (the analysis considered data from 2020 for the dependent variable gross and net preschool enrollment rates, the most recent data available).

The active search for children not enrolled in preschool is already a strategy established in the Brazilian National Education Plan (PNE). Thus, municipalities in the control group could have been engaged in active school search without joining UNICEF’s campaign, influencing the results of this research when comparing the two groups. The subsection below discusses the possibility of adopting the methodological model developed in this research to assess the impact of the PNE strategy on enrollment rates in preschool and other educational levels.

Another possibility is that even if unenrolled preschool-age children were identified, there were no places available in the municipal education systems because the schools were already at full capacity. Also, issues such as the lack of school transport and families’ interest in enrolling these children may contribute to this result.

The findings corroborate the understanding that a series of issues must be faced together when addressing school exclusion. This research seeks to contribute by evaluating a public policy to combat exclusion. As described below, the method adopted in this study can be improved to reach other variables, such as school dropout and the implementation of the PNE’s active school search strategy, regardless of adherence to UNICEF’s campaign.

**4.2 Propensity Score Matching**

This subsection assesses the robustness of the estimations by presenting the results of tests on propensity score matching (PSM) used to create the comparison group, as defined in the research methodology.

The technique used the baseline data from 2006, the year immediately before the intervention. Factors that influenced the likelihood of municipalities joining the campaign were detected. These included population size, expenses paid on early childhood education, per capita GDP, the average number of preschool students per class, the number of preschool teachers holding higher education degrees, the number of public preschool establishments, and the infant mortality rate. Additionally, dummy variables referring to Brazilian states were incorporated into the analysis.

Propensity scores were estimated based on these variables to obtain groups that were as similar as possible, and the sample size was limited to the area of common support, in which comparable units could be observed. The result was 1,908 treatment municipalities and 1,870 comparison municipalities.

To test the quality of the combinations of treatment and control groups, a t-test of differences in population means for matched data was applied, which verifies the difference between the variables considered in the model.

From the test performed and based on the p-value results obtained, it is possible to confirm the validity of the PSM model used for the matching at the Brazilian level, as follows:
Table 2. T-test of observed variables, post matching (Note 2)

| Variables                                    | Difference in averages (%) | p>|t) |
|----------------------------------------------|-----------------------------|-----|
| Population                                   | -1.40                       | 0.462 |
| Expenses paid on early childhood education   | 0.30                        | 0.837 |
| Per capita GDP                               | 2.00                        | 0.459 |
| Average number of preschool students per class | -4.40                      | 0.161 |
| Number of teachers with higher education – preschool | 4.30                       | 0.194 |
| Number of public preschool establishments    | -9.90                       | 0.002 |
| Child mortality rate                         | -5.70                       | 0.058 |

Source: Elaborated by the authors, based on the t-test results.

The descriptive statistics of the variables that make up the PSM model, pre-matching, containing the means of the observable characteristics of the treatment and control groups, are shown in Table 3. It is verified that, without the matching, the groups have distinct observable characteristics (Table 2 above shows that the matching makes the groups similar).

Table 3. Descriptive statistics of the PSM model variables, 2020

<table>
<thead>
<tr>
<th>Variables</th>
<th>Average</th>
<th>Active Search = 0</th>
<th>Active search = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Standard error)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation</td>
<td>1870</td>
<td>1908</td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>0.05</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.22)</td>
<td>(0.31)</td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>0.14</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.50)</td>
<td></td>
</tr>
<tr>
<td>Central-West</td>
<td>0.10</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.30)</td>
<td>(0.24)</td>
<td></td>
</tr>
<tr>
<td>Southeast</td>
<td>0.45</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.50)</td>
<td>(0.40)</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>0.26</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.44)</td>
<td>(0.33)</td>
<td></td>
</tr>
<tr>
<td>Gross enrollment rate (FMCSV)</td>
<td>92.59</td>
<td>90.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(27.97)</td>
<td>(27.55)</td>
<td></td>
</tr>
<tr>
<td>Net enrollment rate (FMCSV)</td>
<td>88.49</td>
<td>86.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(25.01)</td>
<td>(25.65)</td>
<td></td>
</tr>
<tr>
<td>Per capita GDP (R$)</td>
<td>28,039.08</td>
<td>20,657.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(28,170.39)</td>
<td>(22,515.72)</td>
<td></td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>3.64</td>
<td>3.27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.77)</td>
<td>(2.10)</td>
<td></td>
</tr>
<tr>
<td>Expenses paid on early childhood education</td>
<td>1.25E+07</td>
<td>6.97E+06</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.34E+08)</td>
<td>(2.41E+07)</td>
<td></td>
</tr>
<tr>
<td>Average number of preschool students per class (total)</td>
<td>16.51</td>
<td>14.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(8.17)</td>
<td>(23.59)</td>
<td></td>
</tr>
<tr>
<td>Number of public preschool establishments</td>
<td>12.21</td>
<td>19.43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(24.21)</td>
<td>(28.77)</td>
<td></td>
</tr>
<tr>
<td>Number of teachers with higher education</td>
<td>83.82</td>
<td>76.43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(18.86)</td>
<td>(20.94)</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>49,782</td>
<td>51,094</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(316,668)</td>
<td>(201,611)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Elaborated by the authors.

Figure 8 shows the density histogram between the treatment and control groups. The densities show that the common support area between treated and control groups is wide, especially at the lower end of the probability distribution for program participation. It is noteworthy that, although not included in this study, the same tests assessing the validity of the PSM were performed for the empirical exercises aimed at evaluating potential heterogeneous effects.
5. Conclusion

This research sought to estimate the effects of the municipalities’ participation in the Active School Search Campaign on preschool enrollment rates. The test using the difference-in-differences method did not show statistically significant effects on the variable of interest, rejecting the research hypothesis.

The treatment and control groups were submitted to PSM based on the following observable municipal characteristics: population size, expenses paid on early childhood education, per capita GDP, average number of preschool students per class, number of preschool teachers holding higher education degrees, number of public preschool establishments, and infant mortality rate, in addition to dummy variables referring to states. The t-test of differences in population means for the matched data confirmed the model’s validity.

In 2017, at the beginning of the campaign, the preschool gross enrollment rate was 87.8% (with a net rate of 80.1%), reflecting significant growth compared to previous decades. Thus, the campaign aimed to include vulnerable populations excluded from school or at risk of dropping out, with the ultimate goal of achieving universal coverage. The target demographic comprises children who are not enrolled due to elements at the core of the school exclusion, such as low income, racial issues, violence, parents’ and guardians’ education levels, lack of documentation, inadequate school infrastructure, and geographical barriers (UNICEF, 2021a).

A look at the progress of the goals of the National Education Plan shows that, as coverage approaches near-universal levels, the task of including the target population becomes increasingly harder. Consequently, addressing this challenge requires the implementation of tailored public policies to achieve the desired universalization (Gomes, 2017).

Thus, there is an urgent need for systematic coordination among federal, state, and local governments to guarantee the expansion of education, rectify disparities in coverage, accurately assess demand and carry out an active search for children. These efforts aim to improve the indicators of educational support for preschool-aged children (Oliveira, Gouveia, & Araújo, 2018).

Future research should explore the effects of the participation of municipalities in the Active School Search Campaign on enrollment and dropout rates across other primary education levels.

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References


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Notes
Note 1. For example, studies found that there were no advantages with class sizes of less than 20 children or with a ratio less than 10:1 (Magnuson, Ruhm, & Waldfogel, 2007).

Note 2. Results of dummy variables are not presented.

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