What Do Brazilian Pre-service Teachers Want? A Discrete Choice Study of Internship Preferences

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Abstract

This document proposes a study to examine pre-service teachers' (PSTs) valuations of internship amenities in Salvador, Brazil, through the lens of the Pedagogical Support and Activities Program (PAAP). Despite PAAP's potential to benefit both student learning and PST development through active tutoring roles, the program currently operates below capacity, filling only about 800 of 1,500 available positions. Using survey data and a discrete choice experiment, we investigate two key questions: (1) to what extent are there observable differences between PSTs who choose PAAP and those who do not?, and (2) how do PSTs value different internship amenities such as salary, commute time, schedule flexibility, mentor support, and teaching practice opportunities? Our findings will inform the Municipal Secretary of Education's (Secretaria Municipal de Educação, SMED) efforts to improve PAAP recruitment and contribute to the broader literature on how PSTs value internship amenities. This research has immediate policy implications for the design of teacher training programs and adds to our understanding of PST preferences when determining where to complete student-teaching experiences.

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Introduction

This study aims to improve our understanding of the value that pre-service teachers—PSTs, or individuals training to become teachers—place on amenities when choosing among in-school internships and selection into an internship program. We do this using the Pedagogical Support and Activities Program (Programa de Apoio à Aprendizagem Pedagógicas, PAAP), an internship initiative managed by the Municipal Secretary of Education (Secretaria Municipal de Educação, SMED) in Salvador, Brazil, in collaboration with the World Bank as a case study. PAAP provides incoming teachers with hands-on, in-classroom teaching experience through an internship under the guidance of a cooperating teacher.

PAAP likely benefits both students in classes with interns and interns themselves. The program transforms a traditionally passive classroom internship experience into an active tutoring role. Research supports the benefits of tutoring programs (e.g., Carlana and La Ferrara, 2021), suggesting that mentor teachers with a PAAP intern can help students struggling with literacy skills by allowing them to work one-on-one or in small groups with the intern as a tutor. Interns in PAAP gain practical teaching experience under high-quality mentors, which may improve effectiveness (Goldhaber et al., 2020). Furthermore, conversations with the SMED highlights additional program benefits: the internship pay often exceeds that of alternatives, and SMED can place interns in schools throughout the city, allowing for convenient placement close to home.

Despite these potential benefits, SMED has faced challenges in attracting interns to PAAP. Currently, SMED can accommodate 1,500 PAAP interns but contracts only about 800. This research project aims to address the following questions to enhance our understanding of factors influencing participation in PAAP:

1. To what extent are there observable differences between PSTs who choose PAAP and those who do not?

2. How do PSTs in Salvador, Brazil, value different amenities and disamenities (e.g., teaching opportunities, location convenience, cooperating teacher support)?

Answering these questions will enable SMED to improve recruitment efforts for PAAP and provide new insights into PST internship preferences. Our first descriptive question examines the extent to which observable characteristics predict participation in PAAP. For example, we will investigate whether higher-income PSTs are more likely to join the program than their lower-income peers. Understanding the composition of PAAP interns will allow SMED to target recruitment efforts toward underrepresented groups. Our second research question will use a discrete choice experiment to assess PST preferences for various internship amenities (e.g., commute time, support from cooperating teachers).

Our findings have the potential to inform practice and contribute to the research literature. This work will inform SMED on how to design PAAP internship amenities and

promotional materials to appeal broadly to PSTs. Additionally, these results will contribute to a growing body of economics and policy research that uses discrete choice experiments to measure how workers value workplace amenities and disamenities (e.g., Mas and Pallais, 2017; Fuchsman et al., 2023).

Furthermore, this project has important policy implications. Goldhaber et al. (2020) show that student teachers in the United States paired with more effective mentor teachers during their student teaching experience tend to be more effective themselves. This experiment will allow us to determine how much PSTs value supportive mentor teachers relative to other potential amenities. Understanding PSTs' preferences could help inform policies and practices around mentor teacher selection, training, and placement.

The following sections provide background on the importance of these questions and outline the methods we plan to use to answer them.

<div align="center">**Background**</div>

PAAP Internship Program

COVID-19-related school closures caused learning loss in children around the world (Azevedo et al., 2021). In response to this, policymakers have implemented a range of programs to help students recover from the detrimental effects of the pandemic. In Salvador, Bahia the municipal Secretary of Education recently launched PAAP. PAAP provides PSTs with the opportunity to transform their internship experience from a passive model to an active in-class tutoring role. PAAP is based on evidence that shows that tutoring can improve learning outcomes that were negatively affected by COVID-19 (e.g., Carlana and La Ferrara, 2021).

In addition to improving student learning, PAAP may also affect benefits the PSTs who participate. For example, PAAP interns may have additional opportunities to practice classroom management skills, which are traditionally lacking in novice teachers (Bartanen et al., 2023). The program can also enhance PST effectiveness by offering interns the opportunity to practice teaching under the supervision of high-quality cooperating teachers, as research indicates that PSTs randomly assigned to effective mentor teachers are more effective than their peers (Goldhaber et al., 2020). Finally, conversations with practitioners indicate that PAAP generally provides clear advantages compared to other internships, such as higher monthly salaries and the opportunity to work in a school in a convenient location.

Despite the potential benefits of the PAAP program, SMED finds it difficult to recruit interns. Program documents indicate that SMED can accommodate 1,500 PAAP interns but contracts only about 800. Our study will help the SMED improve this process by identifying the composition of PAAP interns and allowing the SMED to design PAAP internship amenities and promotional materials to appeal broadly to PSTs.

Compensating Differentials and Workplace Amenities

Prior work on compensating differentials shows that workers are willing to give up significant portions of their wages for various workplace amenities, but it is unclear which amenities are valued by PSTs when choosing where to do their internships. For example,

Mas and Pallais (2017) show that workers are willing to forgo 20% of wages to avoid a schedule set by an employer on short notice, and 8% for the option to work from home. Maestas et al. (2023) use a similar methodology to show that working conditions play a significant role in job choice, and are central components of the compensation received by workers.

Other more recent studies use discrete choice experiments to value workplace characteristics, finding that factors like commute time, professional development opportunities, and workplace culture significantly influence job choices. Most related to this study, Fuchsman et al. (2023) use a discrete choice experiment to estimate teachers' willingness to pay for different retirement benefits. This study builds upon this research by estimating amenities that PSTs value when determining where to complete student-teaching experiences.

Data

Focus Groups

We will conducted one-hour long focus groups with PSTs in Salvador to understand the amenities they prioritize when deciding to participate in internship programs. These focus groups included approximately 10 PSTs who are either participating in the PAAP program and those who are not. During these semi-structured discussions, we explored participants' reasons for engaging in an internship program. Common themes in the focus groups highlighted the importance of salary, internship location, and flexibility in internship choice. Focus groups also revealed a lack of information channels between SMED and PSTs. All participants were paid R$50 for their participation.

Qualtrics Survey

To answer our research questions, we will collect data from PAAP and non-PAAP interns via an anonymous Qualtrics survey that takes approximately 15 minutes to complete. To compensate participants for their time, three randomly selected participants will win R$100. Here is a link to the current version of the survey in Qualtrics.

In this survey, we collect information on PST demographics, academic abilities, internship experiences, and preparedness to enter in the classroom as a teacher. Importantly, we also ask PSTs a battery of questions where they choose between two hypothetical internships with randomly varying amenities. In these questions, we randomly vary the following items:

- Salary $\in$ R\{900, 950, 1000, 1050, 1100\ 1150, 1200\}$
- Flexibility $\in$ \{Flexible, Inflexible\}
- Mentor teacher support $\in$ \{Little support, Well-supported\}

We ask each PST to complete six of these questions. Each question contains a brief description of the definition of the flexibility and mentor teacher support amenities. Figure 1 provides an example of a discrete choice questions in Portuguese. Finally, following research showing the importance of verifying that survey respondents are paying attention (DellaVigna, 2009), we include a question intentionally designed to verify that respondents are paying attention during the survey. Surveys will be tested and improved

iteratively by PSTs.

Methods

Research Question 1

Regression Analysis

We plan to answer the first research question using information collected from the survey. We will use this information to estimate the model below via regressions of the general form:

$$\text{PAAP}_{ip} = \alpha + \beta' \mathbf{X}_{ip} + \gamma_p + \varepsilon_{ip}$$

where the binary variable PAAP_{ip} takes on the value of 1 if PST i in TEP p participates in PAAP and 0 otherwise. This variable is modeled as a function of $\mathbf{X}_{ip}$, a vector of observable characteristics of PSTs (e.g., race, parental education, etc.), and γ_p, TEP fixed effects. The estimated values of the coefficents in the vector β' will allow us to understand whether certain groups of PSTs are more likely to participate in PAAP than others. For example, these results will inform us if PSTs of one race are more likely to participate in PAAP than PSTs of another race.

Research Question 2

Discrete Choice Model

To estimate PSTs' willingness-to-pay (WTP) for internship attributes, we model the choices PSTs make between hypothetical internship options that differ in salary and non-salary attributes. Following previous work from Maestas et al. (2023) and Fuchsman et al. (2023), we assume that PSTs' choices reflect an underlying utility function based on the internship's salary, specific non-salary attributes (e.g., commute time, scheduling flexibility), and individual characteristics.

We employ a discrete choice model where each PST chooses between two internship options in each choice set, with utility for option j for individual i in choice set t specified as:

$$U_{ijt} = \alpha + \mathbf{X}_{ijt}\beta' + \delta \ln w_{ijt} + \lambda_{\mathbf{i}} + \varepsilon_{ijt}$$

where U_{ijt} represents the latent utility of internship j, $\mathbf{X}_{ijt}$ represents a vector of non-salary attributes, w_{ijt} is the salary, and λ_i captures individual characteristics (e.g., sex, race, etc.). The model assumes that the probability of choosing j over an alternative k is given by:

$$P(U_{ijt} > U_{ikt}) = \Lambda \left([X_{ijt} - X_{ikt}] \beta + \delta \left(\ln w_{ijt} - \ln w_{ikt} \right) \right)$$

where $\Lambda(\cdot)$ denotes the cumulative logistic distribution.

Regression Framework

To implement our discrete choice model empirically, we will estimate logistic regression specifications that incorporate the randomly assigned internship attributes. Each PST i faces choice set t containing two internship options j, where options vary across five dimensions: monthly salary ($Salary_{ijt}$), commute time ($Commute_{ijt}$), schedule flexibility ($Schedule_{ijt}$), mentor teacher support ($Mentor_{ijt}$), and teaching practice

opportunities ($Practice_{ijt}$). Our base specification estimates:

$$
\begin{aligned}
\Pr(Choice_{ijt} = 1) = \Lambda(&\alpha + \delta \ln Salary_{ijt} + \beta_1 Commute_{ijt} \\
&+ \beta_2 FlexSchedule_{ijt} + \beta_3 GoodMentor_{ijt} \\
&+ \beta_4 SomePractice_{ijt} + \beta_5 DailyPractice_{ijt} + \lambda_{\mathbf{i}} \beta_6' + \varepsilon_{ijt})
\end{aligned}
$$

In this model, $Salary_{ijt}$ represents monthly salary, $Commute_{ijt}$ represents commute time in minutes, $FlexSchedule_{ijt}$ is an indicator for flexible scheduling (1 = "Set your own hours", 0 = "Fixed hours"), $GoodMentor_{ijt}$ is an indicator for mentor support (1 = "Well-supported", 0 = "Little support"), and $SomePractice_{ijt}$ and $DailyPractice_{ijt}$ are indicators for teaching practice opportunities, with "No opportunities" as the omitted category. Finally $\lambda_{\mathbf{i}}$ represents a vector of individual-level controls variables such as demographics, which will increase precision.

For each non-salary attribute k, we can then calculate willingness-to-pay as:

$$
WTP_k = w \left[1 - \exp \left(-\frac{\beta_k}{\delta} \right) \right]
$$

For continuous variables (commute time), this represents the WTP for a one-unit change. For binary indicators (schedule flexibility, mentor support) and categorical variables (teaching practice opportunities), this represents the WTP for moving from the base category to the indicated level.

This framework enables us to estimate PSTs' valuations of specific internship attributes while accounting for the discrete nature of the choice sets and potential heterogeneity in preferences.

Heterogeneity Analyses

Following Fuchsman et al. (2023), to examine preference heterogeneity, we will estimate our discrete choice model with interaction terms. Specifically, we add the interaction terms to the base preference in the numerator of the exponential in Eq.(4). For example, the willingness-to-pay for a low-SES student, denoted by the superscript l, for amenity k is:

$$
WTP_c^l = w \left[1 - \exp \left(-\frac{\beta^k + \beta^{lk}}{\delta} \right) \right] \tag{1}
$$

where β^{lk} is low-SES students' differential preference for the amenity k.

We plan to analyze differences between the following subgroups. Justifications for why we will analyze these groups are provided. It is unclear a priori whether we will have sufficient statistical power to identify subgroup differences.

- Socioeconomic status
  - Lower SES students may value non-wage amenities less than higher SES

students.
- Gender
  - Prior work on amenity valuation suggests that amenities may be valued differently by gender.
- Preparedness to enter the classroom
  - PSTs who feel more prepared to enter the classroom may place a higher value on mentor teacher support.
- Certification area (e.g., pedagogy, math)
  - Focus group interviews revealed that students getting non-pedagogy certifications (e.g., math or letras) receive less training in pedagogical methods. Similarly, focus groups revealed that many math students cannot participate in inflexible internship due to course requirements that are only offered annually. There may be differential valuations of amenities across certification areas.
- Public vs. private universities
  - Focus group interviews revealed differential internship preferences between private and public university students.

Power Analysis

Our power analysis examines the statistical power to detect different effect sizes in an internship choice experiment. In this context, effect size refers to the change in the probability of a participant choosing a particular internship, compared to a baseline probability. The baseline probability is set at 0.5, meaning participants have a 50% chance of selecting an internship in the absence of any other factors. The analysis considers three effect sizes:

1. Salary effect: Going from the minimum to the maximum salary level increases the probability of selecting that profile by 40 percentage points, from 0.5 to 0.9.

2. Flexibility effect: Having the flexibility attribute increases the probability of selecting that profile by 10 percentage points, from 0.5 to 0.6.

3. Quality effect: The quality attribute increases the probability of selecting that profile by 7.5 percentage points, from 0.5 to 0.575.

The power analysis results are visualized in Figure 2. The x-axis represents the number of choices per respondent, ranging from 1 to 6, while the y-axis shows the statistical power. The figure depicts three different effect sizes, represented by the colored lines: salary (blue), flexibility (red), and quality (green). The salary effect corresponds to a 40 percentage point change in probability from the baseline of 0.5, the flexibility effect is a 10 percentage point change, and the quality effect is a 7.5 percentage point change. The graph illustrates how the statistical power to detect these effects increases as the number of choices per respondent grows. With 300 respondents and 6 choice tasks per respondent, the power to detect each effect size is above 80%.

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Figures and Tables

(a) *English*

Internship Comparison

Please review the characteristics of each internship carefully and select the one you prefer.

Internship 1	Internship 2
Monthly Stipend	**Monthly Stipend**
$950	$900
Flexibility	**Flexibility**
Inflexible	**Flexible**
An inflexible internship has: (1) assigned school placements by the coordinator and (2) a fixed schedule with no ability to change shifts	*A flexible internship offers: (1) the option to select schools near your residence or campus and (2) the ability to choose between morning or afternoon shifts*
Mentor Teacher Support	**Mentor Teacher Support**
Limited	**Highly supportive**
An internship with a mentor teacher providing limited support offers: (1) infrequent supervision, leaving you to teach full class periods independently, and (2) few opportunities to receive feedback or work closely with the mentor	*An internship with a highly supportive mentor teacher offers: (1) personalized and consistent guidance and feedback to enhance your teaching skills, and (2) opportunities to closely collaborate in lesson planning and co-teaching for practical experience*

Which internship would you choose?

○ Internship 1   ○ Internship 2

(b) *Portuguese*

Comparação de Estágios

Por favor, revise cuidadosamente as características de cada estágio e selecione o que você prefere.

Estágio 1	Estágio 2
Salário Mensal	**Salário Mensal**
R$ 950	R$ 900
Flexibilidade	**Flexibilidade**
Inflexível	**Flexível**
Um estágio inflexível possui: (1) escolha em escolas designadas pela coordenação e (2) horário fixo sem possibilidade de alteração entre turnos	*Um estágio flexível oferece: (1) a opção de selecionar escolas próximas à sua residência ou faculdade e (2) a possibilidade de escolher entre turnos da manhã ou da tarde*
Apoio do Professor Regente	**Apoio do Professor Regente**
Apoio limitado	**Altamente apoiador**
Um estágio com um professor regente que fornece apoio limitado oferece: (1) supervisão infrequente, deixando você a ensinar períodos de aula inteiros de forma independente, e (2) poucas oportunidades de receber feedback ou trabalhar de perto com o orientador	*Um estágio com um professor regente altamente apoiador oferece: (1) orientação e feedback personalizados e consistentes para aprimorar suas habilidades de ensino, e (2) oportunidades de colaborar de perto no planejamento de aulas e na coregência para experiência prática*

Qual estágio você escolheria?

○ Estágio 1   ○ Estágio 2
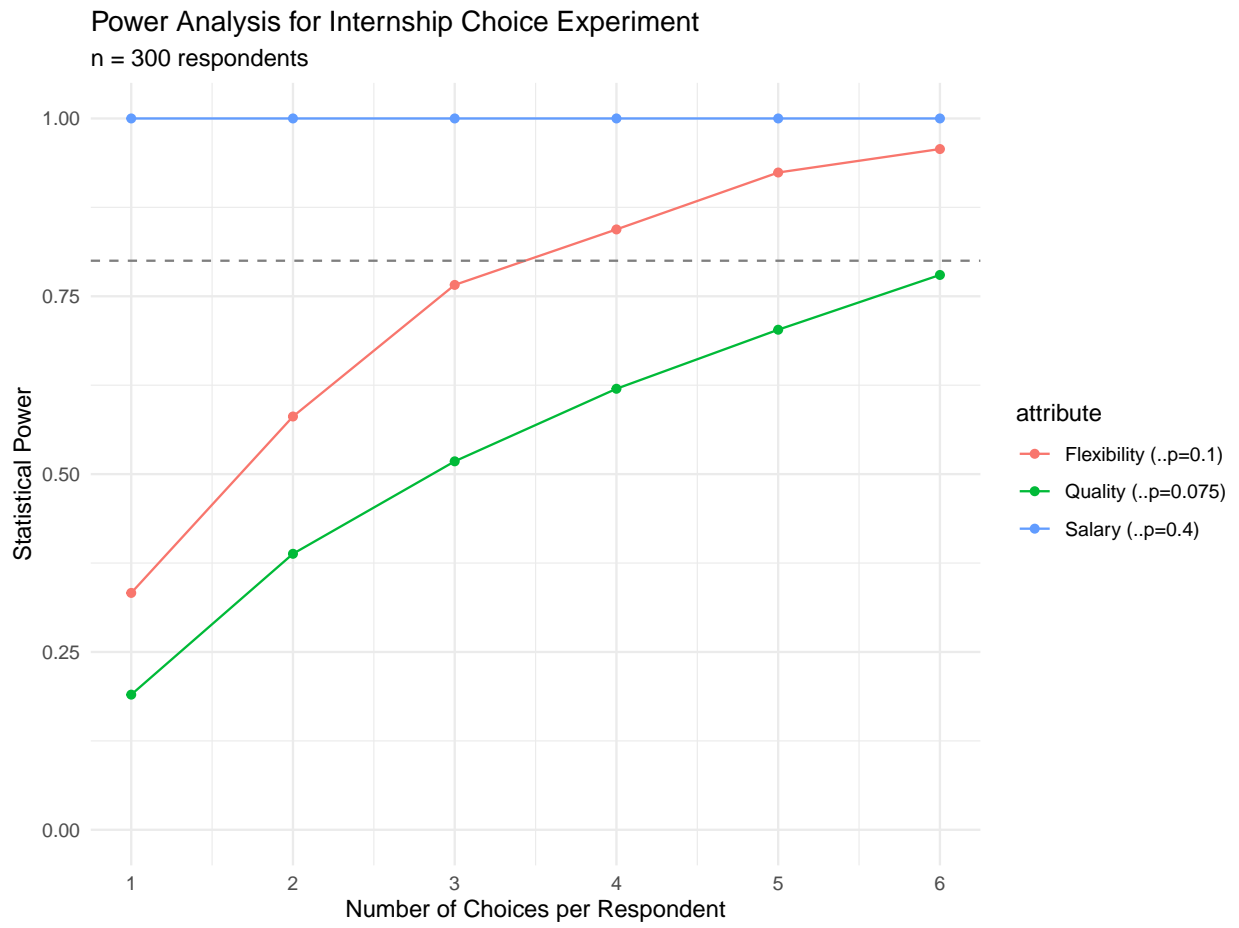
Figure 1
Example of Discrete Choice Question

Figure 2

Power Analysis