

Integration of Venezuelan Refugees and Migrants in Brazil

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Abstract

An unprecedented number of Venezuelans have left behind the worsening economic and social crisis at home to look for better future prospects. Brazil is hosting about 261,000 Venezuelans as migrants, asylum seekers, or refugees, which, at 18 percent, constitutes the largest share of Brazil's 1.3 million refugees and migrants population (as of October 2020). Although previous literature on other host countries found that Venezuelan refugees and migrants are struggling to secure high-paying jobs that are commensurate with their education, little is known about their access to education and social protection. This paper fills this gap by analyzing various administrative and census data to explore whether Venezuelan migrants and refugees face differential access to education, the formal labor market and social protection

programs. It finds that even though there is minimum legal constraints and work permits are relatively easy to obtain, Venezuelan refugees and migrants face challenges integrating into the education system, social protection programs and the formal labor market. The results suggest that Venezuelan refugees and migrants have faced downgrading in grades at school and occupations at work. They are more likely to attend overcrowded schools than their host community counterparts and more likely to do inferior jobs characterized by temporality, lower wages and higher hours worked. Overall, the results suggest that improvement in school capacity, accreditation of Venezuelan education or degrees and relocation to places with favorable employment opportunities may facilitate integration.

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Integration of Venezuelan Refugees and Migrants in Brazil*

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1 Introduction

The low price of oil along with onerous government spending and excessive international debt have pushed the Republica Bolivariana de Venezuela, once one of the richest countries in Latin America, in to one of the worst economic and social crises of modern day. Economic activity has been contracting with GDP (PPP) shrinking at a rate of 35% in 2019 according to United Nations data. The inflation rate hit 929,797% in 2019 (IMF, 2019), while 89% of the population has been estimated to be living in poverty (ENCOVI, 2018). Health conditions have worsened with an average Venezuelan losing 10 kilos of body weight in 2017 and infant mortality rising to 26 per 1000 live births in 2016 from 14.6 per 1,000 live births in 2010. An average of 89 homicides were reported per 100,000 inhabitants in 2019, which is almost three times the rate of countries that are at war (World Bank, 2019a). These worsening economic and social conditions generated an unprecedented exodus of Venezuelans in search of a better future and ability to avail basic human rights. The Venezuelan refugees and migrants living abroad increased by about six times between 2015 and 2019 as Table 1 suggests. The net migration rate in the Republica Bolivariana de Venezuela, was about -15.69 per 1000 population in 2019, suggesting more than 7% of the population of the Republica Bolivariana de Venezuela, has fled the country since 2014. Although the United States and Spain were the most significant hosts of Venezuelans¹ traditionally, 80% of the Venezuelans who were displaced after 2014 were hosted by Latin American countries. Colombia and Peru have been the most significant hosts followed by Chile, Ecuador, the United States and Brazil. As of October 2020, Colombia has about 1.7 million of the Venezuelan refugees and migrants, which is after about 60,000 to 100,000 Venezuelans returned back to reunite with their families during the COVID-19 pandemic (Mazza, 2020). Peru stands second with about 1 million refugees and migrants, while Chile and Ecuador are the third and fourth significant hosts with about 0.47 million and 0.41 million Venezuelan refugees and migrants respectively. Brazil is hosting about 0.26 million Venezuelans (18% of all its total migrant and refugee population) as of the second quarter of 2020, 76 times the number of Venezuelan refugees and migrants in 2015 (Table 1), resulting in a federal decree number 9.285 of February 2018, recognizing it as a humanitarian crisis.²

Most Latin American countries have showed openness in welcoming and granting legal status to Venezuelan refugees and migrants (Selee and Bolter, 2020). However, the sheer size of the Venezuelan refugees and migrants means that addressing their urgent humanitarian needs and providing for their protracted stay may strain the public resources of the Latin American countries, unless they can harness the potentials of the Venezuelans to drive economic growth, which is a development challenge. This will only be possible through economic and social integration of Venezuelans. Greater economic and social inclusion will allow Venezuelans to work in productive jobs, create new job opportunities as business owners, pay taxes and contribute to the social security system, that will pave the path for economic development (UNHCR, 2018). However, our knowledge of living conditions of the Venezuelans in Latin American countries is scant. There are few studies (Olivieri et al. (2020), Graham et al. (2020), Uscategui and Andrea (2019)) that look into the labor market conditions of the Venezuelan refugees and migrants but to the best of our knowledge, there has not been any study that looks into their access to schooling³ and social protection programs.

¹This paper uses Venezuelans and Venezuelans migrants, asylum seekers and refugees interchangeably.

²<http://www.planalto.gov.br/ccivil03/ato2015-2018/2018/decreto/D9285.htm>

³This paper concentrates on grades up to high school as data on university is not available. However, the paper finds that inclusion of Venezuelans decreases with level of education, suggesting that integration will be even lower in

Table 1: Venezuelan Net Population Displaced Abroad Over the Years

	2010	2015	2019
Worldwide	556,641	695,551	4,326,330
South America	62,240	86,964	3,239,730
North America (US+Canada)	196,910	273,418	371,919
Europe (Portugal, Spain, Italy)	203,117	224,328	309,170
Central America & Mexico	21,260	33,065	166,974
Carribbean	19,629	21,74	119,333
Others	53,485	56,702	119,204
South America			
	2010	2015	2020
Colombia	43,511	48,714	1,717,352
Peru	3,504	4,129	1,043,460
Chile	8,095	54,787	475,702
Ecuador	6,120	8,901	415,835
Brazil	2,844	3,425	261,441
Argentina	1,236	1,240	217,562

Source: Author's calculation from UN Data

This paper attempts to fill this gap by investigating how integrated the Venezuelan refugees and migrants are in the education, formal labor market and social protection sectors of Brazil⁴ and how different economic and social factors accelerate or hinder the process of integration. By integration, this paper refers to the definition advocated by OECD (2011) that defines integration as a two-way process of adaptation by migrants and host societies that includes the rights, obligations and access to different kinds of services and the labor market. Another contribution of this paper lies in the fact that unlike Colombia, Peru and Ecuador, on which previous studies have focused, Brazil has universal access to education, healthcare and social protection irrespective of documentation status and prohibits any kind of discrimination at work (Selee and Bolter, 2020) and consequently it serves as a case study to see whether different legal constraints can lead to differential observed outcomes.⁵ This paper refers to this different legal framework in Brazil as little or minimum legal constraints in line with Selee and Bolter (2020) and Mazza (2020), however in reality, it still might be challenging for Venezuelans to integrate.

Measuring integration calls for a benchmark against which outcomes can be assessed and this

universities.

⁴Access to health service is an important dimension of integration that we do not focus on this paper due to unavailability of data.

⁵Olivieri et al. (2020), Graham et al. (2020), Uscategui and Andrea (2019), Selee and Bolter (2020) and Mazza (2020) report that Venezuelans face legal restrictions, differential access to education, health, labor market and safety net programs and hostility in Colombia, Peru and Ecuador.

study compares the outcomes of Venezuelans with those of Brazilians.⁶ All the integration measures indicate that in spite of little legal barriers, Venezuelans face challenges in accessing education, formal jobs and social protection in Brazil. Venezuelans are 0.47 times as likely to be in school, 0.3 times as likely to be employed in the formal sector, and 0.7 times as likely to be registered in single registry compared to their Brazilian counterparts. The findings suggest that only 42% Venezuelan children enroll in school and even when they do, they experience grade downgrading and capacity constraints, making it harder to attain productive human capital and make future generations self-reliant. In the formal labor market, their employment is of much lower quality than the Brazilian, characterized by high temporality and greater work hours, despite the higher schooling levels suggesting they also face occupation downgrading in Brazil. Controlling for selection into wage employment, there seems to be also a significant wage penalty for Venezuelans. Consequently, more educated Venezuelans and Venezuelans with higher number of children are more likely to register in the unified registry⁷ than their Brazilian counterparts. Overall, integration seems to be higher where the population of Venezuelan migrants and refugees is lower, controlling for selection, especially in education, supporting previous literature by [Lazaer \(1999\)](#) and [Carneiro et al. \(2020\)](#). It should be noted here that theoretically a larger network of refugees and migrants can provide more information about job prospects, school requirements, social protection benefits and local customs and traditions, promoting integration ([Gautier, 2020](#)), but in the case of Brazil, concentration in certain localities like Roraima and most Venezuelan migrants and asylums being new to the situation, seem to be creating an overcrowding effect constraining integration.

This paper is divided into six sections. Section 2 starts with a description of the migration trend in Brazil and key demographic characteristics of the Venezuelan refugees and migrants and then moves on to give a brief literature review on forced displacement and economic integration, focusing on the work on Venezuelan refugees and migrants in Latin American countries. Section 3 provides details on the variables and the methodology employed. Section 4 describes the data and presents the summary statistics with an emphasis on the effect of the COVID-19 pandemic.⁸ Section 5 presents the results, while Section 6 concludes with some policy implications and discusses venue for further research.

2 Refugee and Migration Trends and Literature Review

The refugees and migrants population in Brazil has been increasing rapidly from 2016 and the blue bar in [Figure 1](#) shows that the total refugees and migrants population increased from about 0.7 million in 2016 to about 1.4 million in July 2020. From being one of the lowest asylum seeking and migrants population in 2016, among the Latin American countries, Venezuelans in Brazil quickly became the largest refugee and migrant population by 2019. Brazil also has significant number of nationals⁹ from Bolivia and Haiti, followed by Colombia, Argentina and China. During the period of July 2017 to October 2020, Brazil received about 126,256 migrants and 30,000 asylum seekers

⁶Venezuelans could also be compared with the other migrants, but this study concentrates on the Brazilians by birth as this paper is more focused on the extent of local integration in Brazil.

⁷The Unified Registry of Social Programs (CadUnico) is a database that collects details about low-income families in Brazil, which can be used to identify vulnerable people in the society and develop appropriate benefits for them. The details are given in the Methodology section.

⁸Impact analysis of the COVID-19 pandemic is not possible due to unavailability of data.

⁹Regular refugees and migrants

from Haiti, 38,232 migrants from Colombia, 9,063 asylum seekers from Cuba and 3,986 refugees from the Syrian Arab Republic.

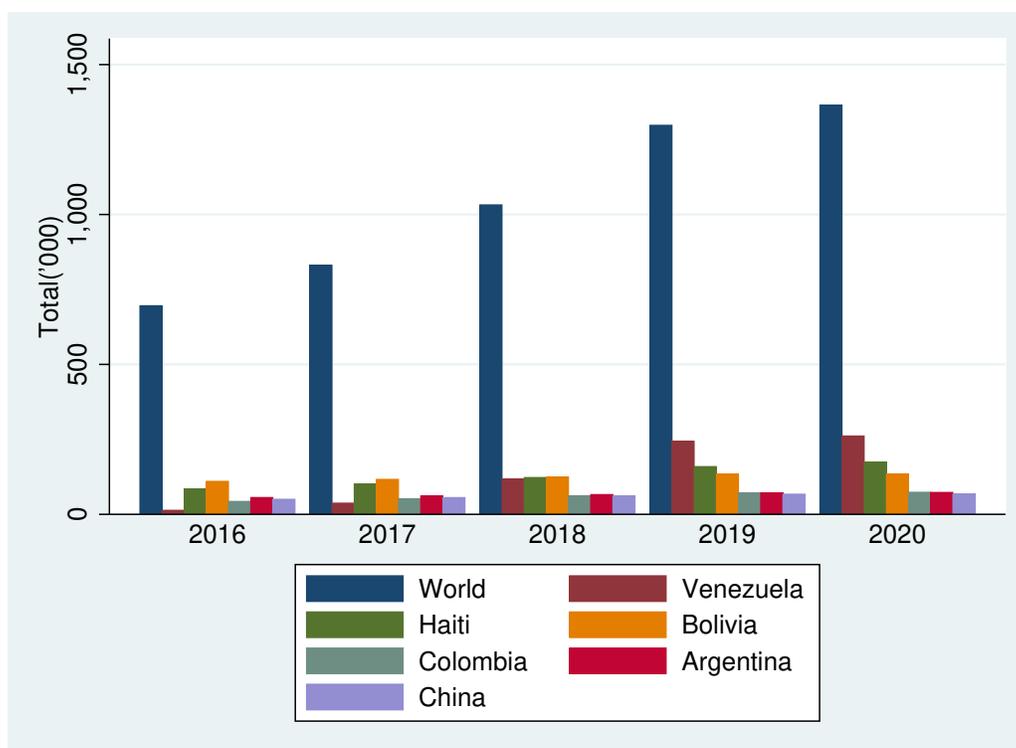


Figure 1: Migration Trend in Brazil
Source: Author's calculation from SISMIGRA and STIMAR.

This section discusses the trends in Venezuelan refugees and migrants in Brazil, reports their key demographics and reviews the available literature on integration, especially focusing on Venezuelans in Latin America.

2.1 Refugee and Migration trends of Venezuelans in Brazil

Figure 2 shows the trend of Venezuelan refugees and migrants in Brazil. Although the number of Venezuelans increased quickly from about 118,000 in 2018 to about 265,000 in the first quarter of 2020, the stock started dwindling after the onset of the COVID-19 pandemic. Concentrating on the monthly flows, we see that half of the Venezuelans, who entered Brazil, exited Brazil either to go back to the Republica Bolivariana de Venezuela or move onwards to other countries. When the pandemic hit, the movement across borders was restricted and we see that more Venezuelans were leaving than coming in and as a result the total number started falling. The Federal Police database also reveals that half of the Venezuelan refugees and migrants entered Brazil and requested temporary residence permits, while the other half registered as asylum seekers. Of the migrant and asylum seeker population, 95% have residence permits, as opposed to more permanent forms of stay. As of October 2020, there were 145,462 Venezuelan migrants and refugees, 96,556 Venezuelan asylum

seekers and 46,647 Venezuelans refugees, who had entered Brazil since July 2017. The quarterly flow of asylum seekers peaked in the third quarter of 2018, while the quarterly flow of migrants peaked in the last quarter of 2019. The Venezuelan refugees and migrants increased from about 14,000 in the first quarter of 2015 to about 263,000 in the second quarter of 2020.

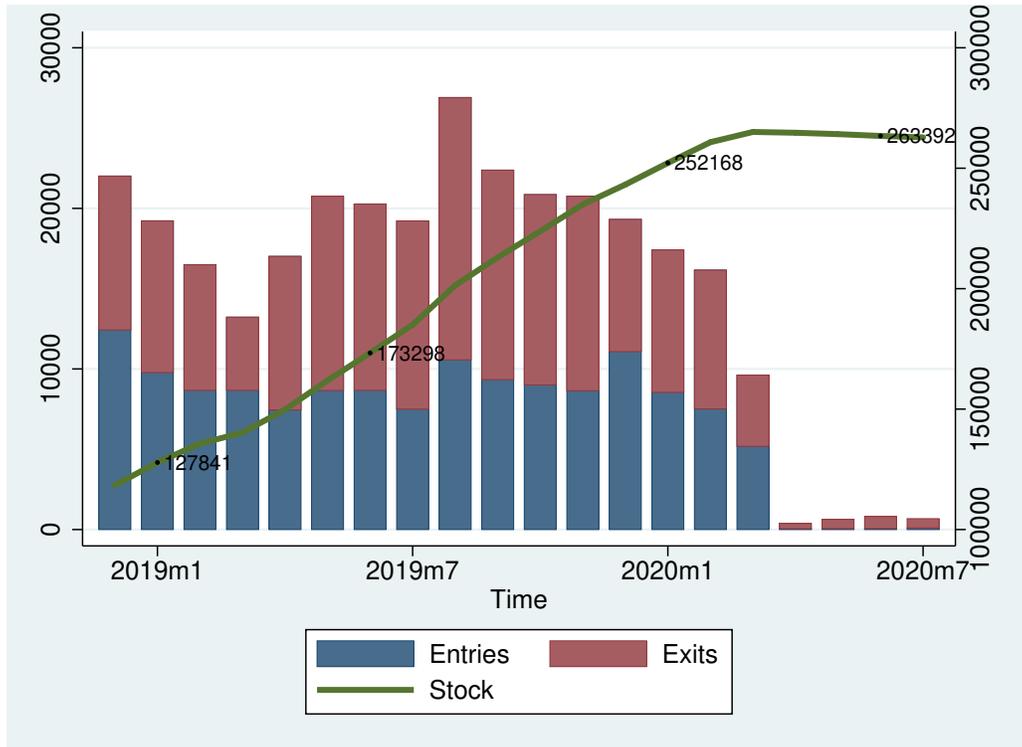


Figure 2: Refugee and Migration Trend of Venezuelans in Brazil
 Source: Author’s calculation from SISMIGRA and STIMAR.

In Brazil, estimates show that most Venezuelan refugees and migrants enter and settle in Roraima (50%) and Amazonas (19%), which is not surprising given that these states border the Republica Bolivariana de Venezuela at the north. The north region of Brazil is also the poorest traditionally, contributing only 4.7% of GDP in 2016 for instance. The population of Roraima in 2016 was about 0.5 million, one of the lowest among the states in Brazil and contributing only about 0.2% of the Brazilian GDP. Consequently, after the massive Venezuelan inflow, the Venezuelan refugees and migrants quickly comprised of about 30%¹⁰ of the population of Roraima and the state received help from the federal government, UNHCR, faith based organizations and civil society partners to manage its response to the influx and provide humanitarian assistance. The initiative is called “Operação Acolhida” (Operation Welcome) and has three main programs: border management and documentation; provision of humanitarian assistance including shelter; and “Interiorization” which involves the voluntary relocation of Venezuelans from Roraima to other cities. The voluntary

¹⁰ Author’s calculation from SISMIGRA and STIMAR. It may overestimate the Venezuelan population in Roraima since the database is not updated regularly.

relocation program has relocated about 47,949¹¹ Venezuelans from Roraima to other Brazilian cities, where there are more opportunities for social and economic integration.

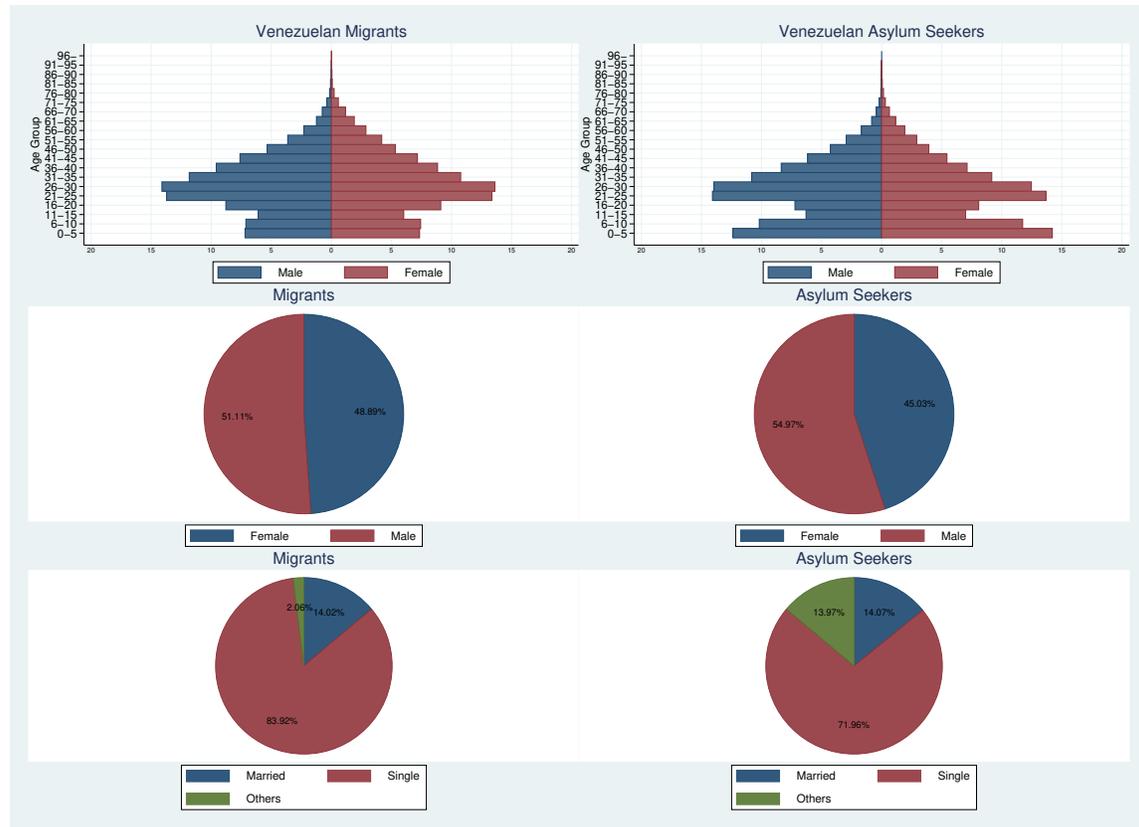


Figure 3: Age, Gender and Civic Status of Venezuelans in Brazil
Source: Author's calculation from SISMIGRA and STIMAR.

Available data managed by the Federal Police shows that the Venezuelan population in Brazil has a balanced gender distribution as Figure 3 shows, contrary to the other population movements that are observed in other parts of the world, where men form the dominant movers. Of the Venezuelan migrant population, 49% are women while 51% are men, and 45% of the asylum seekers are women while 54% are men. This Venezuelan balanced gender distribution is observed in other Latin American countries like Colombia and Peru suggesting that this gender equality may be specific to the Venezuelan migration process. Venezuelan refugees and migrants are young, and many are single parents. Of the Venezuelan migrants, 75% are below 50 years old and 50% of the refugees and migrants are between the age of 20 and 40 years old. The presence of about 20% children below the age of 20 years points to the fact that a key component of the Venezuelan migrants and asylum seekers is that there has been substantial family migration. However, about 72% of Venezuelan asylum seekers and 84% of asylum seekers above the age of 25 years report their civic status as single, signifying that most of those families consist of single parents. There is no

¹¹This number represents those relocated by January 2021.

significant difference in proportion of single parents between men and women. According to the data available on the occupation of the Venezuelan population, who entered as migrants in Brazil, at the time of registration approximately 16% worked in the households as governesses, butlers and cooks, 10% worked as vendors, 5% as teachers, 3% as engineers and 3% as administrators, suggesting most of the migrants work in semi-skilled rather than high -skilled jobs in Brazil but the dataset does not contain any information on education.¹²

Brazil has maintained the same open entry requirements for Venezuelans over the years. Residence permit is available to any Venezuelan, who enters as long as they have some type of identity documents. Since March 2018, Brazil has also begun allowing Venezuelans with this special form of temporary residence to apply for permanent residence status three months before their temporary permits are set to expire. However, this opportunity is only available for Venezuelans with a legal source of income. Those, who do not have such proof of income are permitted to renew their temporary residence permits indefinitely. Brazil has also adopted a *prima facie* approach in granting refugee status to the Venezuelan asylum seekers since December 2019. This follows the decision in June 2019 by CONARE (Brazil’s National Committee for Refugees) to recognize the situation in the Republica Bolivariana de Venezuela as human rights violation as described under the broader refugee definition contained in the 1984 Cartagena Declaration on Refugees. On a single day, 21,432 Venezuelan asylum seekers were granted refugee status in Brazil on December 6, 2019, making it the country with about 50,000 refugees and the most popular country for refugees in Latin America.

2.2 Past Research

Our paper contributes to the literature on forced displacement, and economic and social integration of refugees and migrants in the host communities and aims to extend the literature in two ways. First, to the best of our knowledge, it is the first study to look into the recently displaced Venezuelans’ access to social protection programs and education in a Latin American country, which provides universal access to education, health care and social protection irrespective of legal status. Second, it provides the first evidence outside Europe on the association between education of children and concentration of forcibly displacement individuals.

Most past research on the recent episode of Venezuelan forced displacement has focused on the labor market. Descriptive statistics in [Cavalcanti et al. \(2020\)](#) shows that Venezuelans consisted of 12% of the total migrants and refugees working in the formal labor sector in 2019 in Brazil. [Graham et al. \(2020\)](#) find that Venezuelan migrants in Colombia, the country hosting the largest number of Venezuelan refugees and migrants, work in lower-paid and more informal work and that before the COVID-19 pandemic, employed Colombians were earning 43 percent more on average than employed Venezuelans, despite the fact that Venezuelans are highly educated. [Caruso et al. \(2019\)](#) and [Penaloza \(2019\)](#) focus on the impact of the influx of Venezuelans on the labor market in Colombia and find that it reduces wages, especially for male workers in the informal sector. [Olivieri et al. \(2020\)](#) focus on Ecuador and report that although Venezuelans are more educated and more likely to be employed, they tend to work in low wage and informal work and experience significant occupational downgrading. [Bahar et al. \(2021\)](#) provides evidence of asymmetrical effects of a large scale amnesty program that granted work permits to undocumented Venezuelans in Colombia that

¹²Race data is available only for a sample of the population showing that 25% of the Venezuelan population is white, while the rest being indigenous, brown and black. The dataset does not include information on the specifics of the source regions in Venezuela, where the refugees and migrants are from.

helped labor market outcomes of Venezuelan at the cost of Colombian workers. The World Bank (2019) report on Peru also provides evidence of highly educated Venezuelans struggling to get jobs that are commensurate with their education levels. Incorporating these highly educated Venezuelans into the formal labor market can not only boost labor productivity but also economic growth (Graham et al., 2020). The short-run penalty on wages and employment for the refugees and asylum seekers is also found in Turkey, which has faced a large inflow of Syrian refugees since 2011 (Balkan and Tumen (2016), Becker and Ferrara (2019), DelCarpio and Wagner (2015), Loayza et al. (2018), Tumen (2016) and Tumen (2018)) and in many European countries (Fasani et al., 2018).

Although to the best of our knowledge, there is no research exploring the effect of Venezuelan displacement on children’s education, Bauer and Kvasnicka (2013), Sarvimaki et al. (2016) and Becker et al. (2020) find that in the long run descendants of forced migrants of World War II tend to acquire more education than their native peers. However, the reasons behind this result seem to vary, while Bauer and Kvasnicka (2013) point to congestion in agriculture leading to more people looking for outside opportunities and acquiring more education, Becker et al. (2020) attribute the reason to labor market competition with the natives. Bilgili (2019) finds that newly arrived refugee and migrant children in the Netherlands have lower enrollment rate in higher education and lower academic resilience than their Dutch counterparts, although their performance in the Netherlands is better than in the other OECD countries. Abu-Ghaida and Silva (2020) surveys the literature on the education outcomes of internally displaced persons and refugees, and find that the secondary gross enrollment rate for refugee adolescents was 31 percent compared to 76 percent globally, and the tertiary gross enrollment rate for refugees was 3 percent compared to 38 percent globally. All the top six host countries in Latin America provide universal access to education regardless of their legal status. Argentina, Ecuador, Peru, Panama and Mexico have implemented laws codifying the right to primary and secondary education, Brazil, Chile and Colombia do not have any such law, but have policies to provide for universal education (Selee and Bolter, 2020). However, all the countries are facing varying practical challenges in enrolling Venezuelans in the education system. They have to grapple with the questions of how to enroll students, who lack the documents schools usually require, how to place children in the right grades when they lack school records, and how to respond to differing levels of academic knowledge among children of a similar age. Countries like Peru, where 70 percent of the Venezuelan children are concentrated in the city of Lima, capacity constraint is adding to the difficulty of accessing education (Selee and Bolter, 2020). In response, the Peruvian Education Ministry has introduced a second shift of the school day to make space for more students (UNHCR, 2019).

In theory, most of the Latin American countries have constitutions that explicitly recognize protection of economic and social rights. They have adopted a rights-based approach in social protection policies, with some countries committing to explicit social guarantees (Cecchini et al., 2015). In the 2014 Brazil Declaration and Plan of Action,¹³ the country has also committed to include refugees, asylum-seekers and stateless person to the national social protection programs. But in most countries, the national social protection programs are restricted to a subset of non-nationals at best. In countries like Colombia, Chile and Panama, the refugees and migrants need to have special permission or identity documents, while in Peru and Ecuador, only nationals are eligible for social protection programs. Only Brazil gives non-nationals access to social assistance

¹³“A Framework for Cooperation and Regional Solidarity to Strengthen the International Protection of Refugees, Displaced and Stateless Persons in Latin America and the Caribbean.”

programs, regardless of their legal status (Mazza, 2020), and as per design, access to *Bolsa Família*¹⁴ is conditioned on school attendance and health check-ups, making this study on access to education and social protection of Venezuelan refugees and migrants unique. Research on Turkey (Ozler et al., 2020), which implemented the Emergency Social Safety Net (ESSN), the largest cash transfer program for refugees in 2016, finds positive effects of the program on food consumption, children’s likelihood of attending school and decline in poverty. However, they find that the program causes substantial changes in household composition, with school age children moving from larger ineligible households to smaller eligible ones, suggesting that the design of the program can be improved. Positive results of cash assistance on quantity and quality of food consumption, children’s education, social participation and mental health of migrants and refugees are also found in various studies ((Chaaban et al., 2020), (Caria et al., 2020), (Lehmann and Masterson, 2020), (Shammout and Vandecasteele, 2019), (Valli et al., 2019)). Most Latin American countries, including Brazil, have a well-functioning social assistance system and extending them to Venezuelan refugees and migrants will ensure that Venezuelan families have the ability to pay for basic needs and send their children to school and at the same time it promotes social cohesion by increasing purchasing power of the Venezuelan population and the host communities.

3 Methodology

In order to formulate effective policy to help Venezuelans better integrate in the host country, their characteristics and vulnerabilities need to be known and this paper intends to fill this gap by exploring how well the Venezuelan refugees and migrants have integrated in the formal labor market, how much access they have to education and social protection programs and the key challenges that they face.

This paper has two objectives: - 1) to measure the extent of Venezuelan migrants and refugees integration in Brazil, and 2) to explore some of the drivers and barriers of integration. Since this paper is focusing on three different sectors of the economy, the variables and the estimation strategies change accordingly depending on the availability and nature of the data. This section provides a detailed description of the estimation strategies used.

3.1 Integration Measures

There is no consensus on the definition of integration. This paper follows the definition advocated by OECD (2011) that defines integration as a two-way process of adaptation by refugees and migrants and host societies, which includes the rights, obligations, access to different kinds of services and the labor market, along with identifying and respect for a core set of values that bind the non-national population and the host societies for common good. In Brazil, migrants and refugees have the same rights to education, health, jobs and social protection programs as host community, as a result, this paper focuses on the access to education, formal labor market and social protection programs.¹⁵

¹⁴The flagship conditional cash transfer program for the poor in Brazil

¹⁵Data on health is not available at this time and is left for future study.

Integration is measured as a ratio between the outcome variable of Venezuelans and the outcome of Brazilians. Most commonly used measure, used by [Abramitzky et al. \(2020\)](#), [Carneiro et al. \(2020\)](#), [OECD \(2015\)](#) and many others, is the relative probability of the outcome variable of Venezuelans compared to Brazilians. To measure integration in the education sector, this paper calculates the relative probability of Venezuelans, aged between 4 and 17 years old, the mandatory school age,¹⁶ enrolled in regular school compared to the Brazilian cohort. This paper also calculates the relative probability of Venezuelans in the fundamental and high school level of schooling, with the schooling age of 6 to 14 years and 15 to 17 years, respectively.

$$R_e = \frac{Venezuelans_{enrolled}/Venezuelans_{SchoolAge}}{Brazilians_{enrolled}/Brazilians_{SchoolAge}} \quad (1)$$

To measure integration in the formal labor market, this paper calculates the relative probability of Venezuelans, aged between 15 and 64 years old,¹⁷ employed in the formal labor market compared to Brazilian cohort.

$$R_f = \frac{Venezuelans_{Employed}/Venezuelans_{WorkingAge}}{Brazilians_{Employed}/Brazilians_{WorkingAge}} \quad (2)$$

To measure integration in the social protection program, this paper calculates the relative probability of Venezuelans registering in *Cadastro Unico*¹⁸ compared to Brazilian cohort and the relative probability of registered Venezuelans to be *Bolsa Familia* (PBF)¹⁹ beneficiaries compared to their Brazilian counterpart.

$$R_c = \frac{Venezuelans_{CadastroUnico}/Venezuelans_{Population}}{Brazilians_{CadastroUnico}/Brazilians_{Population}} \quad (3)$$

$$R_p = \frac{Venezuelans_{PBF}/Venezuelans_{CadastroUnico}}{Brazilians_{PBF}/Brazilians_{CadastroUnico}} \quad (4)$$

This relative probability index has an easy interpretation. A R_i of 0.5 means that Venezuelans are half as likely as Brazilian to be found in sector i . [Abramitzky et al. \(2020\)](#), [Carneiro et al. \(2020\)](#) and [Fryer and Levitt \(2004\)](#) point out that the relative probability index is sensitive to outliers and advocates the use of F-Index, which is a monotonic transformation of the relative probability index. The *F – Index* is measured by the following expression:

$$F_i = 100 * \frac{R_i}{1 + R_i} \quad (5)$$

where i can be e , f , c and p . This paper reports the F-Index in the main body of the paper. The relative probability index is reported in the appendix. The *F – Index* runs from 0 to 100, with higher number signalling more integration. A F-index of 0 means that Venezuelans are not present at all, while a F-index of 50 means that Venezuelans are as likely to be present as Brazilians and F-index of more than 50 means that Venezuelans are more likely to be present than Brazilians. Although there is no upper bound of relative probability, there is an upper limit of the F-index.

¹⁶Art.4,1 Law n. 9394/96.

¹⁷Working-age population.

¹⁸The Unified Registry of Social Programs (*Cadastro Unico*) is a database that collects details about low-income families in Brazil, which can be used to identify vulnerable people in the society and develop appropriate benefits for them.

¹⁹The flagship conditional cash transfer program for the poor in Brazil.

3.2 Estimating the Relationship between Integration and the Brazilian Environment

This paper is conceptually interested in investigating what are some of the drivers and barriers to integration. So depending on the availability of data, this paper estimates slightly different models for each sector of the economy.

3.2.1 Education

Education in Brazil is divided into three levels – basic (educacao infantil), fundamental (Ensino fundamental) and high school (Ensino medio). Education is mandatory for those between the ages of 6 and 17 years, which covers fundamental and high school. Although, Brazil has an gross enrollment rate of in the primary and the secondary school was more than 100% and adult literacy rate was about 93% in 2018, recent [World Bank \(2019b\)](#) report suggests that learning is a major problem with 48% of 10 year olds in Brazil unable to read and understand a simple text although this learning poverty has been declining over last decade. According to its PISA (Program for International Student Assessment) results, Brazil’s performance was grim with approximately 43% of the students appearing to be below level two compared to only 13.4% of the students with similar performance in OECD countries.

To explore access to education, this paper first explores the kind of schools that Venezuelans enroll into or are present and then estimate how school characteristics like teacher student ratio, class-sizes, teacher qualifications and grade demotion, along with the size of the Venezuelan refugees and migrants in the municipality affect integration, measured by the F-Index. We focus on regular schooling from basic education to grade 12.

The below school selection model is estimated as a linear probability model (Ordinary Least-squares regression) and then as a Probit model²⁰ to show the robustness of results.

$$V_{ijz} = \beta_1 S_{ijz} + \beta_2 X_{jz} + \sum_z y_z + \mu_{ijz} \quad (6)$$

where V_{ijz} is a dummy taking the value 1 if school i in municipality j and province z has at least one Venezuelan student enrolled in the school and zero otherwise. S_{ijz} is a vector of school characteristics involving average class size, excluding Venezuelans, teacher-student ratio, proportion of teachers with undergraduate (college) degree, proportion of teachers with MA degree, gender ratio, proportion of white students, average age, type of school (dummy taking the value of 1 if public school and 0 otherwise), total number of Brazilians in the school, proportions of Brazilian who attend classes, lower than his age equivalents, school amenities and access to public services. School amenities include a dummy which takes a value of 1 if the school has simultaneous access to internet, science labs and computer labs and 0 otherwise, while the access to public services is measured as a dummy taking the value of 1 if the school has simultaneous access to electricity, water, sanitary and garbage collection. X_{jz} includes municipality level characteristics including log of natural number of the total number of Venezuelans living in the municipality,²¹ while y_z includes indicator variable representing the province or state level fixed effects.

²⁰This estimated Probit model will be used in calculating the inverse Mills ratio for estimating the integration model. This correction term controls for the fact that selection bias of schools which receive Venezuelans.

²¹It should be mentioned that the population data on Venezuelans are not updated regularly.

To estimate the association between school and municipal characteristics and extent of integration, the high number of schools (97%) with zero Venezuelan enrollment becomes a problem. [Cameron and Trivedi \(2010\)](#) points out that ordinary least squares regressions will not yield consistent estimates because the censored sample is not representative of the population and suggests the use of [Heckman \(1979\)](#) model as one of the ways to control for the bias. This paper first estimates the relationship between the above covariates and the F-Index in an ordinary least-square linear model (OLS) and then in a two-stage Heckman selection model ([Cameron and Trivedi, 2010](#)) and ([Heckman, 1979](#)). This paper estimates the two-stage Heckman selection model both with and without using any exclusion restriction. Without exclusion restriction, the model identification is based solely on the non-linearity of the functional form. This paper uses the proportion of Brazilians who attend classes lower than their age equivalents as the exclusion restriction and re-estimate the Heckman selection model using the exclusion restriction. An exclusion restriction is a variable or variables that explains variation in the selection variable but does not affect the outcome variable directly. This paper argues that if Venezuelans see that many Brazilians are overaged in a school, they might not be too willing to enroll but once Venezuelans are present in the school, they care about the Venezuelans' performance and not the Brazilians.²² The model below shows the second stage regression estimated in the Heckman model and for the OLS model, we include the same variables except the λ s (Inverse Mills ratio).

$$F_{e,ijz} = \alpha_1 S_{ijz} + \alpha_2 X_{jz} + \alpha_3 \lambda_{ijz} + \sum_z^Z y_z + \nu_{ijz} \quad (7)$$

where $F_{e,ijz}$ is the F-index of integration and all the other covariates are as described before except that S_{ijz} now includes a dummy if the Venezuelan on average are more likely to be mismatched to grade than the Brazilians at the school and λ_{ijz} is the inverse mills ratio or Heckman correction term ([Heckman, 1979](#)), which controls for the fact that not all schools has Venezuelan students. The inverse mills ratio is estimated using the Probit model estimation of our selection model previously discussed.²³

3.2.2 Formal Labor Market

Like most other Latin American countries, Brazil's labor market is segmented into informal and formal sectors, with about 40% of the country's employed workforce working in the informal sector, that is in a job unregulated by the government. This paper concentrates only on the formal labor market as data on the informal sector is not available. Although in most countries, refugees's access to the labor market is limited to the informal sector ([Clemens et al., 2018](#)), in Brazil, refugees also have access to the formal labor market, which in theory should allow Venezuelans to be more integrated and contribute positively to the economy. However, 12% of the total employment in Brazil is public sector employment ([OECD, 2017](#)), which bars foreigners from participating.

For the formal labor market, this study asks three questions: 1) What are the characteristics of the firms that hire Venezuelans? 2) How do firm characteristics and municipality level Venezuelan refugees and migrants affect integration of Venezuelans in the formal labor market? 3) Is there a

²²This paper admits that the exclusion restriction may be weak but in the result section it shows statistical evidence of proportion of Brazilian over age affecting the selection model but not the extent of integration in the second stage.

²³This paper shows the results of these models using 2020 education census in the main body. It also re-estimates the model using fixed effect models and the 2019 education census. The results are given in the Appendix (7.2).

wage gap between Venezuelans and Brazilians and how much of it can it be explained by individual, firm and municipal level characteristics?

To answer the first question, the following firm selection model is estimated as a linear probability model and as a Probit model.²⁴

$$P_{f,ijz} = \beta_{f1}Firm_{ijz} + \beta_{f2}X_{jz} + \sum_z^Z y_z + \mu_{f,ijz} \quad (8)$$

where $P_{f,ijz}$ is a dummy taking the value 1 if the firm i in municipality j and province z has at least one Venezuelan employed and zero otherwise. $Firm_{ijz}$ is vector including dummies for the size and industry (agriculture, manufacturing and service) of the firm, gender ratio, average age, proportion of workers who are white, proportions of workers with high school education, proportion of workers with college degrees, proportion of workers in the firms working with temporary contracts and the proportion of Brazilian workers who work in the firm in an occupation that requires education below their highest education. X_{jz} is log of natural number of the Venezuelan refugees and migrants living in municipality j and province z and y_z is the province fixed effects.

To answer the second question on how firm characteristics affect integration at the firm level, the high number of firms (80%) with no Venezuelan employees may lead to selection bias as a result, we estimate the model using both ordinary least squares regression and the two-stage Heckman selection model (Heckman, 1979). This paper estimates the two-stage Heckman selection model with and without using any exclusion restriction. Without restriction, the model is identification by the non-linearity of the functional form. It then uses proportion of Brazilian who work in the firm in a position that requires education level below the individual's education level as the exclusion restriction and re-estimate the Heckman selection model using the exclusion restriction. This paper argues that if Venezuelans see that many Brazilians are downgraded in the firm, they might not be too willing to work there but once Venezuelans are present in the firm, they care about the relative Venezuelans' performance and not directly the Brazilians'.²⁵ The model below shows the second stage estimated in the Heckman model and for the OLS model, we include the same variables except the λ s (Inverse Mills ratio).

$$F_{f,ijz} = \alpha_{f1}Firm_{ijz} + \alpha_{f2}X_{jz} + \alpha_{f3}\lambda_{ijz} + \sum_z^Z y_z + \nu_{ijz} \quad (9)$$

where $F_{f,ijz}$ is the F-index of integration at the firm and all the other covariates are as described before except λ_{ijz} , which is the inverse mills ratio, which is estimated using the first stage selection model of the Heckman model and $Firm_{ijz}$ includes a dummy which is 1 if the Venezuelans in the firm are more likely to be downgraded than Brazilians .

To answer the third question, a Mincer wage regression is estimated using both ordinary least square estimation and a two-stage Heckman selection model. The selection problem in the Mincer regression arises from the fact that we only observe the wages of workers, who are in wage employment as of December 2019, consequently in the RAIS dataset, this paper only observes wages of about 80% of the workers in the formal sector. In line with previous estimation strategies, this paper estimates the Heckman model with and without using exclusion restrictions. The exclusion restriction that

²⁴The Probit model is used as a robustness check.

²⁵The paper admits that the exclusion restriction may be weak but in the result section it shows statistical evidence of proportion of Brazilian downgraded affecting the selection model but not the extent of integration.

this paper uses is the number of non-Venezuelan migrants working at the firm. Although more non-Venezuelan migrants working in the firm may help Venezuelans to find a job or wage employment at the firm, it is unlikely that it will lead them to be more productive and earning a higher wage, especially in an environment, where the official language is different from the native language spoken by Venezuelans. The model below shows the second stage estimated in the Heckman model and for the OLS model, the same variables are included except the λ s (Inverse Mills ratio).

$$\ln w_{ijz} = \gamma_1 M_{ijz} + \gamma_2 X_{jz} + \gamma_3 \text{Venezuelan}_{ijz} + \gamma_4 \lambda_{ijz} + \sum_z^Z y_z + \nu_{ijz} \quad (10)$$

where w_{ijz} refers to individual's hourly wage and M_{ijz} is individual, i 's socio-demographic characteristics like age, gender, education, occupation dummies, contract types, and the firm's characteristics like size and industry. Venezuelan_{ijz} is an indicator variable which takes the value of 1 if the individual is a Venezuelan by birth and 0 for Brazilians. Thus, γ_3 captures the wage gap between the Venezuelan and the Brazilian. To identify the underlying causes of the wage gap, an Oaxaca-Blinder decomposition is performed at the mean (Oaxaca and Ransom, 1994). Specifically, the above equation is estimated separately for Venezuelan and Brazilian and then D is calculated, which is the difference in the expected value of Venezuelan and Brazilian wages obtained by estimating the wage equation separately. D can then be decomposed into two parts - one that reflects the differences attributed to the observed characteristics (E) and the other reflects differences in coefficients (C). So, it can be expressed as:

$$D = \ln \overline{w_V} + \ln \overline{w_B} \quad (11)$$

$$D = (\overline{\text{Char}_V} - \overline{\text{Char}_B})\gamma_* + \overline{\text{Char}_B}(\gamma_B - \gamma_*) + \overline{\text{Char}_V}(\gamma_V - \gamma_*) \quad (12)$$

where the over-line represents the expected value of the variables, V represents Venezuelans, B represents Brazilians and the γ s are the estimated coefficients, while γ_* represents the weighted average of the other coefficients. The first term in the above equation is the explained component of the wage gap, that is E, while the second term is the unexplained component, the C, which is the difference in the return to the observed characteristics of Venezuelans and Brazilians, evaluated at the mean of the characteristics.

3.2.3 Social Protection Programs

Providing social security to all irrespective of legal status is a constitutional obligation in Brazil. Social security in Brazil is organized in three main blocks, social welfare and pensions, which is contributory and social assistance and health, which is non-contributory. This paper focuses on social assistance programs that are administered and implemented jointly by the federal, state and municipal governments. The two largest social assistance cash transfer programs are *Bolsa Família* and the Continuous Benefit Provision (BPC). Social assistance programs are designed to target the vulnerable at each part of their life cycles. For example, *Bolsa Família* (PBF), which is a conditional cash transfer for households living in poverty and extreme poverty, targets not only families but also pregnant mothers, children and adolescents. BPC, Continuous Benefit Provision targets the elderly (those above 65 years) and the people with disabilities who cannot support themselves.

The Single Registry of Social Programs (*CadÚnico*) is a database that collects details about

low-income families, which can be used to identify vulnerable people in the society and develop appropriate benefits for them. *CadÚnico* aims to include families with monthly income of up to half a minimum wage per person, or total monthly income of up to three minimum wages. Families with an income above half a minimum wage can also be registered, as long as their inclusion is linked to receipts of social programs, implemented by municipalities, states or the federal government. *CadÚnico* enrollment records show a significant increase in the total number of Venezuelans enrolled in the register, jumping from 1,969 in January 2018 to 74,185 in July 2020 and 77,291 in September 2020. Due to unavailability of recent census data and PNAD surveys not including nationality, there is not enough information at present on the Venezuelans to explore the determinants of registering, thus, this paper concentrates on the determinants of receiving treatment under *Bolsa Família*, once registered in *CadÚnico*.

Bolsa Família is one of the social assistance programs that uses the *Cadastro Unico* to identify the low-income families and assess their socioeconomic conditions. *Bolsa Família* is a conditional cash transfer for households living in poverty and extreme poverty. In July 2020, 13.5 million families, reaching 44.5 million people - approximately 21% of Brazil's total population - benefited from *Bolsa Família*. The total amount disbursed is approximately R\$ 30.6 billion (USD\$ 6.1 billion) per year, equivalent to 0.45% of the national GDP.

Bolsa Família benefits are given depending on the family's composition and per capita income. The basic benefit is equal to R\$ 89.0 (USD\$ 18.0) and is paid only to extremely poor families, whose income per capita does not exceed 89.0 reais per month. Variable benefits are R\$ 41.0 (USD\$ 8.2) and are available for families with children between 0 and 6 months of age, children under 15, pregnant women and nursing mothers, up to a maximum of 5 beneficiaries per family. The variable youth benefit has a cash transfer of 48 reais (USD\$ 9.2), and is intended for families with adolescents aged between 16 and 17 years, and has a maximum limit of 2 beneficiaries per family. Both variable benefits and variable youth benefits depend on compliance with conditions related to minimum school attendance, vaccination, in the case of children of vaccination age, and the use of health services for pregnant women. It also comprises of the Benefit of Overcoming Extreme Poverty (BSP), which is a variable amount paid to those families under *Bolsa Família*, who even after receiving other types of benefits do not achieve per capita monthly family income of R\$ 89.0. The average monthly payment of *Bolsa Família* is equivalent to approximately R\$ 170.0 (USD\$ 34.0) per family, as of March 2020.

This paper is interested in analyzing whether there is a gap in the coverage rate of PBF between Venezuelans and Brazilians, who are registered in CadÚnico. We then analyze the underlying causes of the gap using the Blinder-Oaxaca decomposition technique for non-linear regression models, developed in [Oaxaca and Ransom \(1994\)](#). The below model is estimated using both OLS and Probit model.

$$I_{ijz} = \alpha_{p1}M_{ijz} + \alpha_{p2}X_{jz} + \alpha_{p3}Venezuelan_{ijz} + \sum_z^Z y_z + \mu_{p,ijz} \quad (13)$$

where I_{ijz} is an indicator variable taking the value of 1 if household i living in municipality j and province z is PBF beneficiary and 0 otherwise. M_{ijz} is a vector including household characteristics like income per capita, household size, dummy equal to 1 if family has children between 0 and 6 years old, 7-15 years old and 15-17 year old respectively, dummy for access to public services like

electricity, water and etc., education of household head, sex of household head, age of household head and employment status of household head. X_{jz} includes municipal level characteristics, including log of natural number of the total number of Venezuelans living in the municipality. The coefficient, α_{p3} , identifies the coverage gap between Venezuelan and Brazilian. This gap is then divided into the explained and the unexplained component as discussed in (Oaxaca and Ransom, 1994).

4 Data

4.1 Data Sources

The data for this analysis comes from five sources. The education data comes from the 2019 and 2020 School Census; the labor market data comes from the 2019 Annual Report on Social Information (RAIS); the social assistance data comes from the *Cadastro Unico*; and the population data comes from National Migration Registry System (SISMIGRA) and International Traffic System (STI-MAR) for Venezuelans and from Brazilian Institute of Geography and Statistics Foundation's (IBGE) population estimation counts for Brazilians (Summary of Social Indicators).

The School Census on basic education is carried out annually by INEP (Anísio Teixeira National Institute for Educational Research and Studies). It collects information on early childhood education, elementary education, high school education and professional education, irrespective of whether the organization is public or private. It contains information on school amenities, infrastructures and management, as well as, detailed information on students and teachers. Information on the teachers include their level of training, teaching activities, places of origin along with sex, gender and race, while the information on the students include demographics data along with places of origin. One caveat in this data is that it does not include any data on student's socio-economic or family background. In 2019, it included data on about 176,000 schools, 2.3 million teachers and 50 million students, with 20,272 (0.05% of all students) Venezuelan students in regular traditional school, all over Brazil. In 2020, Brazilian students in regular school increased to 37,738.

The RAIS dataset is an administrative data managed by the Ministry of Economy. It covers all formally employed wage earners, either public or private, and is collected annually, including data on demographics, income, occupation, nationalities, new hires and terminations during the year. In 2019, it contains information about 28,910 Venezuelans with about 19,746 employed in the formal sector as of December 31, 2019.

Cadastro Unico is a database that collects details about low-income families and is used to identify vulnerable people in the society to develop appropriate benefits for them. Apart from income, it contains information on beneficiary status of *Bolsa Família* program, living conditions, demographics, education and labor market outcomes. This paper uses *Cadastro Unico* of December 2017, December 2018, December 2019 and July 2020 for our analysis. On average, *Cadastro Unico* includes information on about 78 million people (28 million households) and as of September 2020, there were about 77,291 Venezuelans (30,500 households) registered in it.

The SISMIGRA is an administrative record, maintained by the Federal Police, of migrants, who applied for residence permits and contains information on age, sex, country of birth and municipality

of residence. The STI-MAR contains the same information on those who have requested asylum in Brazil and is also maintained by the Federal Police. IBGE publishes population estimates of Brazil by municipality every year. It should be noted here that the population estimates of Venezuelan from the two sources may be an overestimate due to double counting and lack of updating of STI-MAR.

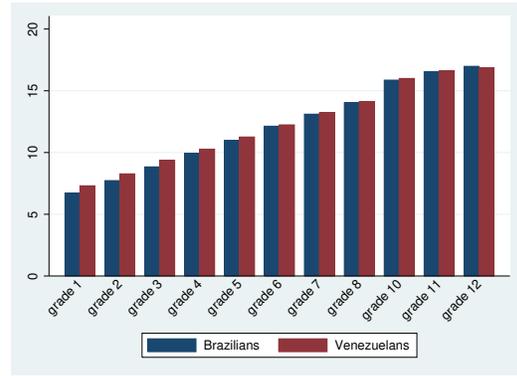
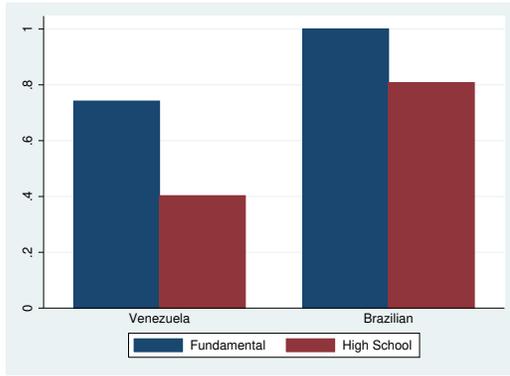
4.2 Summary Statistics

4.2.1 Education

The Venezuelan refugees and migrants, 20% of whom are below 20 years and with majority located in Roraima, have the potential to strain the education system. However, according to the education census of 2020, only about 37,738 or 45% of the Venezuelan school age children have been enrolled in school. The gross enrollment rate among the 0-5 years old cohort is about 18% while it is about 74% in the 6-14 years old cohort and only 40% in the 15-19 years old cohort. The Brazilians enrollment rate is much higher across all age groups. Figure 4a reveals that gross enrollment rate in the fundamental level (grade 1 to grade 9) is only about 74% among Venezuelans, compared to 100% among Brazilians, while in high school, the enrollment rate is about 40% among Venezuelans, compared to 80% among Brazilians. The drop-out rate between fundamental and high school seems to be the higher among Venezuelans than the Brazilians.²⁶ Among Brazilians enrolled in school, 33% are white, while only 15% of the Venezuelans enrolled in school are white. Among the white Venezuelans in school, 65% are in fundamental level and 11% are in high school, while among the non-white Venezuelans, 70% are in fundamental level and 11% are in high school. Given that about half of the Brazilian population is white, the relatively low presence of Brazilians white in the regular schooling needs to be explored further. Although race data on all Venezuelan refugees and migrants are not available, data for 2019 suggests that about 25% of the Venezuelans refugees and migrants are white, suggesting that white-nonwhite schooling disparity exists for both Venezuelan refugees and migrants and Brazilians.

Figure 4b shows that average Venezuelans tend to be older than Brazilians in lower grades, from grade 1 to grade 5, suggesting that Venezuelans are more likely to be mismatched to class. Difficulty in evaluating Venezuelan students' prior knowledge and language barrier may lead to Venezuelans being enrolled into the lowest grade possible, which may not only demotivate Venezuelan students from learning but also add to additional cost to the government. Some cities in Brazil are already responding to this mismanagement. For example, in Manaus, some teachers and school staff have received Spanish-language training, and in the city of Pacaraima, schools have developed Portuguese language classes focused on the needs of Venezuelan students (Selee & Bolter, 2020).

²⁶Since there is no data on those, who are not dropping out, this paper cannot investigate the reasons behind the high dropout rate but better outside opportunities, lower returns to higher education, lacking the knowledge of the official language, along with the tradition of boys being the breadwinner, are most likely to contribute to the phenomenon.



(a) enrollment rate by school level

(b) Average Age by Grade

Figure 4: Individual level characteristics

Table 2: Summary statistics of enrolled students in schools by nationality

	All Brazil			RR & AM		
	(1) Venezuelans	(2) Brazilians	(3) Difference (1)-(2)	(4) Venezuelans	(5) Brazilians	(6) Difference (4)-(5)
Total Students	37,738	42,930,024		22,481	1,194,065	
Female	0.481 (.5)	0.49 (.5)	-0.009* (.004)	0.481 (.5)	0.487 (.5)	-0.006 (.009)
Age	10.219 (4.06)	10.711 (4.78)	-0.492** (.195)	10.511 (3.849)	11.498 (4.915)	-0.987 (.279)
White	0.153 (.36)	0.335 (.472)	-0.182*** (.049)	0.091 (.288)	0.085 (.279)	0.006 (.005)
Overage	0.681 (.466)	0.535 (.499)	0.146 *** (.03)	0.727 (.445)	0.651 (.477)	0.077 (.038)
School Characteristics						
Public	0.373 (.484)	0.313 (.464)	0.059 *** (.019)	0.379 (.485)	0.403 (.49)	-0.024 (.026)
Classsize	26.145 (6.056)	24.696 (7.571)	1.449 ** (.694)	26.966 (5.859)	26.307 (8.781)	0.66 (.955)
Teacher - Student Ratio	0.915 (.515)	0.954 (.684)	-0.039 (.056)	0.854 (.421)	0.873 (.766)	-0.019 (.098)
Public Services	0.488 (.5)	0.677 (.468)	-0.189** (.088)	0.295 (.456)	0.129 (.335)	0.166 (.057)
Amenities	0.159 (.366)	0.181 (.385)	-0.022 (.019)	0.143 (.35)	0.177 (.382)	-0.035 (.009)
Science Lab	0.203 (.402)	0.259 (.438)	-0.056** (.021)	0.176 (.381)	0.22 (.414)	-0.044 (.009)
Computer Lab	0.634 (.482)	0.562 (.496)	0.072* (.04)	0.637 (.481)	0.535 (.499)	0.102 (.05)
Internet	0.946 (.227)	0.94 (.237)	0.005 (.023)	0.923 (.266)	0.772 (.42)	0.151 (.036)
Library	0.608 (.488)	0.524 (.499)	0.084 (.051)	0.638 (.481)	0.609 (.488)	0.029 (.075)
Spanish Proficient Teacher	2.025 (8.77)	0.695 (3.18)	1.33 (1.119)	3.104 (11.126)	1.973 (8.179)	1.131 (1.623)
Portugese Proficient Teacher	38.028 (28.526)	32.969 (25.752)	5.059** (1.871)	41.901 (29.564)	37.774 (28.158)	4.127* (.513)
Teachers with Undergraduate Degrees	93.931 (12.581)	88.641 (20.027)	5.291** (2.467)	94.028 (12.302)	87.307 (25.001)	6.721 (2.207)
Teachers with MA	3.324 (5.64)	3.102 (6.822)	0.222 (.325)	3.096 (5.402)	2.374 (6.951)	0.723 (.397)
Total enrollment	638,219 (407.149)	553,232 (436.999)	84,988 *** (24.8)	672.15 (394.792)	706.492 (725.409)	-34.342 (16.813)
Ln(Concentration)	-4.805 (3.306)	-8.983 (1.183)	19 (1.612)	-2.418 (1.944)	-4.632 (1.319)	2.215 (.995)

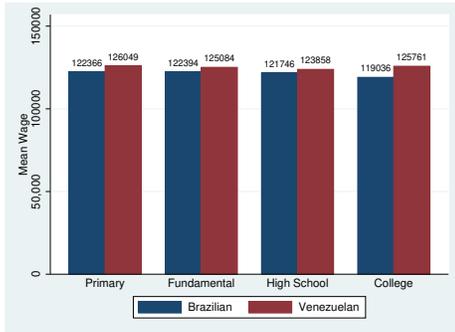
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All refers to all of Brazil, RR stands for Roraima and AM stands for Amazonas. The difference in column (3) refers to the difference between column (1) and column (2), while the difference in column (6) refers to the difference between column (4) and column (5). The sample is restricted to only regular schools. Overaged refers to students who are going to a lower grade compared to his or her age cohort

Table 2 shows summary statistics of Brazilian and Venezuelan children enrolled in school up to grade 12. The differences in averages are posted in columns (3) and (6) and the standard errors are clustered at the province level. Out of the 38,000 Venezuelan children attending regular schools, about 22,000 are in Roraima and Amazonas. In line with Venezuelan refugees and migrants population having a balanced gender distribution, about 48.5% of Venezuelans enrolled are female compared to 49% of Brazilians enrolled. Venezuelans across Brazil, on average, attend larger class-sizes, but both Venezuelans and Brazilians attend same class sizes in Roraima and Amazonas. Differences in teacher student ratios seem to be not significant between the two nationalities. About 31% of Brazilians, compared to 37% of Venezuelans attend public schools. Among the private schools, most Venezuelans attend community or philanthropic schools. Table 20 shows that among public schools, 3% of Federal schools, 25% of Provincial schools and 12% of Municipal schools have Venezuelan students and on average federal and municipal schools have better trained teachers, while the private schools have better access to amenities. More Venezuelans than Brazilians attend schools that have simultaneous access to public services like water and sewage and access to internet services in Roraima but overall Brazilians seem to attend schools with better access to public services. These schools are more likely to have teachers who have either an undergraduate or a MA degree. Only about 3% of the teacher in Roraima and Amazonas, at schools with Venezuelan children, are proficient in Spanish language, which might be a major deterrent for Venezuelan children, who only speak Spanish and understand little or no Portuguese. While Venezuelans attend schools with higher enrollment than Brazilians on average across Brazil, they attend schools with lower enrollment in Roraima and Amazonas. This partly may reflect the fact that on average schools in Roraima and Amazonas are bigger than the average school in Brazil. Another interesting finding is that higher proportion of Venezuelans (68%) are attending classes that are below the grades consistent with their age than the Brazilian cohort (53%). This phenomenon may discourage students from attending schools, that may lead to inappropriate behavior like bullying, which will exaggerate the challenges that they already face in integrating. However, the average age of Venezuelans is lower since more Venezuelans are enrolled in grades below 4. About 20% of Venezuelans enrolled in school are enrolled in grade 1. Figure 16 shows that the grade distribution of Venezuelans are skewed to the left compared to the grade distribution of Brazilians.

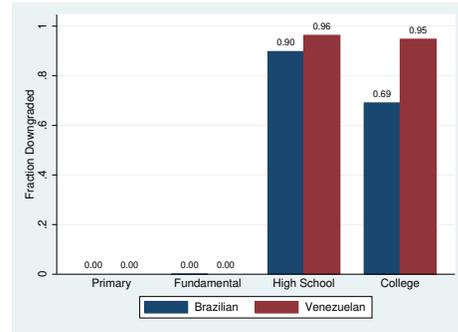
Overall, descriptive statistics reveal that being demoted to lower class and shortages in having Spanish speaking teachers are major obstacles for Venezuelans to access education and Brazilian government and the international organizations are in the right direction to train teachers and school staffs Spanish language (Selee & Bolter, 2020) and offer Portuguese language courses to Venezuelan students. At the same time, resources need to be diverted to increase capacity of schools. Another factor that is not observed in the data is the knowledge of Venezuelans about their rights and low attendance of Venezuelan in school may reflect the lack of knowledge about the education system in Brazil and constraints in accessing equivalence certificates. So, facilitation of credentials certification and provision of information on how to enroll and which documents are needed to enroll may promote more Venezuelans to access education.

4.2.2 Labor Market

As of December 2019, about 29,000 Venezuelans are in RAIS, with about 19,000 employed, compared to 47 million Brazilians. Table 3 shows the summary statistics of the characteristics of Venezuelans and Brazilians, who are employed in the formal sector and represented in the RAIS dataset. The differences in averages are posted in columns (3) and (6) and the standard errors are



(a) Mean Monthly Wage Rate



(b) Proportion Downgraded

Figure 5: Performances in the Formal Labor Market by Nationality

clustered at the province level. Out of the 19,000 Venezuelans in the formal sector, about 5,609 are in Roraima and Amazonas. Summary statistics reveal that an average employed Venezuelan earns about 3.4 percentage points more in monthly wage than an average Brazilian but the difference is statistically insignificant. In Roraima and Amazonas, the raw wage penalty is about 0.5 percentage points but is again statistically insignificant. Figure 5a shows that there is a wage premium for Venezuelans across the different education level. According to Table 3, Venezuelan formal workers are younger, less likely to be female and white and more likely to have completed high school than their Brazilian peers. They are more likely to work longer hours a week than the Brazilian formal workers. They are also more likely to be occupationally downgraded than Brazilians. While 72% of the Brazilians report to work in an occupation, where the education requirement is lower than their acquired highest education, 86% of the Venezuelans report so, suggesting that occupation downgrading is more prevalent among Venezuelans. Venezuelans work mainly as industrial workers, especially as machine and vehicle operators and as workers in hotel industry, personal services, hygiene and security services. Figure 5b shows that incidence of being occupationally downgraded at work is higher for high school and college educated Venezuelans than for high school and college educated Brazilians. On average, employed Venezuelans seem to have been in Brazil for about 1.5 years and work in firms that have higher number of non-Venezuelan migrants.

Table 3: Summary statistics of those employed in the formal sector by nationality

	All Brazil			RR & AM		
	(1) Venezuelans	(2) Brazilians	(3) Difference (1)-(2)	(4) Venezuelans	(5) Brazilians	(6) Difference (4)-(5)
Total Employed	19,746	47,365,435		5,609	694,801	
Ln(Wage)	11.714 (.249)	11.681 (.195)	.034 (.023)	11.657 (.176)	11.663 (.236)	-.005 (.021)
Hours Worked	42.504 (5.498)	40.526 (7.818)	1.978*** (.15)	42.535 (5.168)	40.213 (7.738)	2.322** (.043)
Female	.302 (.459)	.512 (.5)	-.21*** (.023)	.239 (.427)	.472 (.499)	-.233** (.005)
White	.259 (.438)	.349 (.477)	-.09 (.056)	.098 (.298)	.094 (.292)	.005 (.01)
Age	31.447 (9.102)	34.748 (12.007)	-3.301*** (.336)	31.225 (8.637)	34.596 (11.385)	-3.372 (.906)
Fundamental	.095 (.293)	.152 (.359)	-.057*** (.007)	.084 (.278)	.113 (.316)	-.029 (.006)
High School	.73 (.444)	.683 (.465)	.047* (.026)	.798 (.401)	.756 (.43)	.042 (.015)
College	.134 (.341)	.105 (.307)	.029 (.019)	.086 (.28)	.1 (.3)	-.014 (.037)
Scientist	.009 (.095)	.037 (.189)	-.028*** (.003)	.008 (.087)	.047 (.212)	-.039* (.005)
Admin	.034 (.181)	.07 (.255)	-.036*** (.004)	.035 (.184)	.072 (.258)	-.037* (.004)
Commerce	.116 (.32)	.242 (.428)	-.126*** (.011)	.124 (.329)	.256 (.437)	-.133 (.054)
Personal	.455 (.498)	.387 (.487)	.068* (.036)	.526 (.499)	.413 (.492)	.113 (.021)
Agriculture	.028 (.166)	.047 (.211)	-.018** (.008)	.036 (.185)	.013 (.113)	.023 (.018)
Industry	.354 (.478)	.196 (.397)	.158*** (.046)	.268 (.443)	.177 (.382)	.09* (.01)
firm>10	.007 (.083)	.013 (.115)	-.007*** (.002)	.005 (.07)	.002 (.048)	.003 (.003)
Downgraded	.857 (.351)	.721 (.449)	.136*** (.012)	.857 (.35)	.755 (.43)	.102 (.025)
Temporary	.006 (.076)	.005 (.068)	.001 (.002)	.002 (.043)	.007 (.084)	-.005** (0)
Tenure (Months)	66.323 (67.515)	403.108 (588.971)	-336.785*** (22.347)	90.48 (77.059)	427.69 (621.83)	-337.21* (37.265)
Total Non-Venezuelan Migrants	5.354 (6.985)	3.135 (4.061)	2.218** (0.967)	3.580 (4.841)	3.507 (3.803)	0.726*** (0.052)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All refers to all of Brazil, RR stands for Roraima and AM stands for Amazonas. The difference in column (3) refers to the difference between column (1) and column (2), while the difference in column (6) refers to the difference between column (4) and column (5). The sample is restricted to those employed on 31st December 2019. Downgraded refers to the proportion of employed who are working at an occupation, where education requirement is lower than the individual's.

Overall, it seems that Venezuelans work longer hours and in more contact-based jobs than Brazilians even though they are on average better educated. They are more likely to be downgraded, suggesting that just like the education sector, facilitation of credential verification and offering Portuguese language training may encourage more Venezuelans to enter the formal labor market as will specialized counsellors who are proficient in Spanish language and knowledgeable about Venezuelan community.

4.2.3 Social Protection

Table 4 shows the summary statistics of those enrolled in *Cadastro Único* in December 2019 by their nationality. The differences in household characteristics between Venezuelans and Brazilians are posted in column (3) and (6) and the standards errors are clustered at the province level and seems to be stark and statistically significant. Compared to 23 million Brazilian, about 18,000 Venezuelans are registered in the single registry. Venezuelans registering in *Cadastro Único* are on average poorer than their Brazilian peers. Average income of registered Venezuelan is R\$85, while that of Brazilian is R\$307. 72.3% of Venezuelan live in extreme poverty, with an income less than R\$89 while 48% of Brazilians registered have an income less than R\$89 (Figure 6a). Venezuelans registered are also more educated with 27% having some tertiary education compared to 3% of Brazilians registered having tertiary education. Figure 6b shows that 20% of Brazilians in *Cadastro Único* have high school degrees compared to 42% of Venezuelans in *Cadastro Único* having high school degrees. Except in Roraima and Amazonas, registered Venezuelans' family sizes (2.8) are also slightly bigger than the registered Brazilian family size (2.7). According to Table 4, Venezuelans seem to have more younger children in the age cohort 0 to 5 years than Brazilians. Registered Venezuelan households are also less likely to have female heads and average age of heads are lower than the registered Brazilian households. Conditions of living seems to be almost similar for both Brazilians and Venezuelans, with about 54% reporting that they have simultaneous access to water supply, garbage collection, adequate sanitation and electricity. However, Venezuelan heads of the households are more likely to be employed and be self-employed than Brazilian heads, although the months worked is substantially lower. Overall, the summary statistics reveal that Venezuelans who register for social assistance are poverty-stricken and work in low quality jobs, although they are more educated and the overall results seem to be consistent all across Brazil including Roraima and Amazonas.

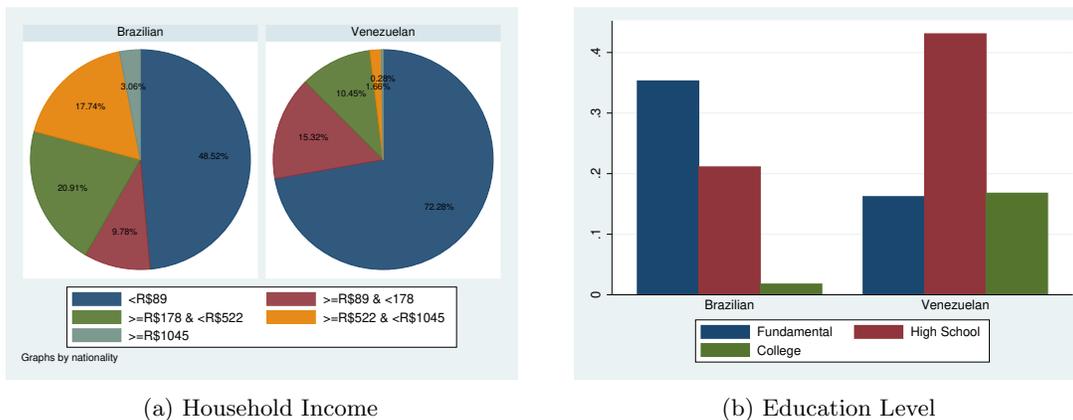


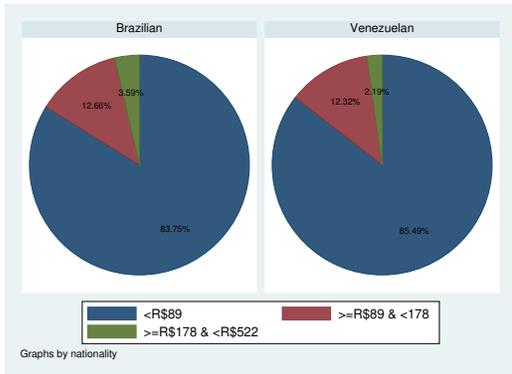
Figure 6: Fraction of those registered in *Cadastro Único* by income brackets, education and nationality

Table 4: Summary statistics of households registered in *Cadastro Único*

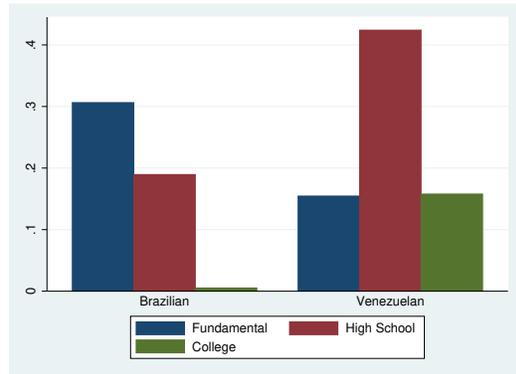
	All Brazil			RR & AM		
	(1) Venezuelans	(2) Brazilians	(3) Difference (1)-(2)	(4) Venezuelans	(5) Brazilians	(6) Difference (4)-(5)
Income per Capita	85.281 (143.137)	307.036 (417.804)	-221.755*** (20.503)	85.745 (119.18)	244.888 (381.645)	-159.143** (11.516)
Extreme Poverty	.722 (.448)	.485 (.5)	.237*** (.039)	.699 (.459)	.565 (.496)	.134* (.016)
Poverty excluding Extreme Poor	.106 (.307)	.209 (.407)	-.104*** (.013)	.108 (.311)	.149 (.356)	-.041 (.007)
Infrastructure	.548 (.498)	.542 (.498)	.006 (.073)	.501 (.5)	.354 (.478)	.147 (.069)
Tertiary	.27 (.444)	.035 (.183)	.235*** (.029)	.232 (.422)	.029 (.167)	.203* (.018)
Secondary	.637 (.481)	.427 (.495)	.211*** (.016)	.651 (.477)	.472 (.499)	.18** (.007)
Children - 0<Age <=5	.259 (.438)	.248 (.432)	-.037*** (.007)	.244 (.429)	.33 (.47)	-.069** (.004)
Family Members	2.805 (1.671)	2.704 (1.458)	.101 (.15)	2.658 (1.598)	3.143 (1.835)	-.486 (.137)
Head- Months Worked	5.567 (4.174)	8.365 (4.185)	-2.798*** (.21)	5.539 (4.189)	8.008 (4.428)	-2.469* (.219)
Head - White	.153 (.36)	.285 (.451)	-.132*** (.04)	.115 (.319)	.069 (.253)	.046* (.006)
Head - Female	.664 (.472)	.816 (.388)	-.152*** (.008)	.665 (.472)	.798 (.401)	-.133** (.007)
Head Age	36.624 (12.263)	43.479 (16.044)	-6.855*** (.534)	37.007 (12.663)	41.582 (16.251)	-4.575 * (.53)
Head Employed	.542 (.498)	.499 (.5)	.043 (.042)	.618 (.486)	.533 (.499)	.085* (.01)
Head Self-Employed	.461 (.498)	.301 (.459)	.16** (.075)	.592 (.491)	.36 (.48)	.232** (.005)
Head - Agriculture	.019 (.137)	.142 (.349)	-.12***3 (.024)	.021 (.142)	.191 (.393)	-.171** (.009)
Observations	18,480	23,430,686		12,159	632,463	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All refers to all of Brazil, RR stands for Roraima and AM stands for Amazonas. The difference in column (3) refers to the difference between column (1) and column (2), while the difference in column (6) refers to the difference between column (4) and column (5). The sample is restricted to those, who have updates information in the last 24 months.

Table 5 shows that about 6,000 Venezuelans receive *Bolsa Família*, compared to 11 million Brazilians. It reports the demographics of registered households receiving *Bolsa Família* cash transfers in December 2019 by their nationality and reveals important differences between the two groups. The average income of those receiving PBF is lower and about 84% of Brazilians live in extreme poverty compared to 85% Venezuelans (Figure 7a). The average income of Venezuelan is lower than Brazilian, while the extreme poverty rate is higher. They are more educated and have lower number of children than their fellow Brazilian PBF beneficiaries. Figure 7b shows that 42% of the Venezuelan PBF beneficiaries have high school education, while 15% have college degrees, compared to 19% of Brazilian PBF beneficiaries having high school degrees and 1% of Brazilian PBF beneficiaries having college degrees. Table 5 shows that the Venezuelan PBF beneficiary households are also less likely to be led by women. Venezuelan heads of the households, who are receiving PBF, are also less likely to be employed and even when employed, are more likely to be self-employed and work for lower number of months than their Brazilian peers. Venezuelans receiving PBF are also more likely to have simultaneous access to water supply, garbage collection, adequate sanitation and electricity than the Brazilian counterparts, which is a result of most of them living in urban areas and in shelters.



(a) Household Income



(b) Education Level

Figure 7: Fraction of those receiving *Bolsa Familia* by income brackets, education and nationality

Table 5: Summary statistics of households registered in *Cadastro Único*, who are receiving *Bolsa Familia*

	All Brazil			RR & AM		
	(1) Venezuelans	(2) Brazilians	(3) Difference (1)-(2)	(4) Venezuelans	(5) Brazilians	(6) Difference (4)-(5)
Income per Capita	46.445 (55.479)	52.625 (64.375)	-6.18* (3.361)	49.392 (47.943)	51.144 (59.27)	-1.752 (2.258)
Extreme Poverty	.855 (.353)	.838 (.369)	.017 (.021)	.851 (.356)	.833 (.373)	.019 (.013)
Poverty excluding extreme poor	.022 (.145)	.036 (.186)	-.014** (.006)	.014 (.117)	.03 (.171)	-.016* (.002)
Infrastructure	.517 (.5)	.443 (.497)	.073 (.061)	.486 (.5)	.279 (.449)	.207 (.038)
Tertiary	.258 (.437)	.012 (.108)	.246*** (.019)	.233 (.423)	.012 (.109)	.221*** (.002)
Secondary	.622 (.485)	.435 (.496)	.187*** (.018)	.633 (.482)	.505 (.5)	.128*** (.002)
Children - 0 < Age <= 5	.264 (.441)	.367 (.482)	-.074 *** (.011)	.242 (.428)	.466 (.499)	-.14** (.005)
Family Members	2.959 (1.725)	3.136 (1.52)	-.177 (.178)	2.801 (1.637)	3.812 (1.819)	-1.011 (.174)
Head-Months Worked	4.853 (3.897)	7.32 (4.312)	-2.467*** (.229)	4.854 (3.921)	7.342 (4.482)	-2.488** (.152)
Head-White	.138 (.345)	.222 (.416)	-.084** (.033)	.11 (.312)	.055 (.228)	.055*** (0)
Head-Female	.635 (.482)	.887 (.316)	-.252*** (.012)	.634 (.482)	.878 (.328)	-.243** (.011)
Head Age	36.741 (11.393)	37.336 (11.268)	-.595** (.264)	36.795 (11.614)	35.187 (10.635)	1.608** (.104)
Head Employed	.519 (.5)	.558 (.497)	-.039 (.044)	.587 (.492)	.631 (.483)	-.043* (.005)
Head Self-Employed	.454 (.498)	.392 (.488)	.062 (.077)	.572 (.495)	.448 (.497)	.124** (.002)
Head - Agriculture	.016 (.126)	.214 (.41)	-.197*** (.03)	.015 (.122)	.268 (.443)	-.253** (.012)
Observations	6,372	11,373,380		4,246	369,958	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All refers to all of Brazil, RR stands for Roraima and AM stands for Amazonas. The difference in column (3) refers to the difference between column (1) and column (2), while the difference in column (6) refers to the difference between column (4) and column (5). The sample is restricted to those, who have updates information in the last 24 months.

Overall, the descriptive statistics show that Venezuelans who register in the single registry are poorer but more educated than their Brazilian counterparts. However, the lower registration rate in *Cadastro Único* may signal that many Venezuelan refugees and migrants may not be aware of their rights and guarantee accesses, suggesting a need to provide continued information assistance and language training.

4.3 Impact of the COVID-19 Pandemic

The COVID-19 pandemic has affected millions of people, causing disruptions on all branches of the economy as countries imposed travel restrictions and lockdowns to subdue the spread of the virus and prevent it from overwhelming the health care system. Reports show that vulnerability to the COVID-19 virus varies with age, health and social conditions (Garcini et al., 2020). Mazza (2020) describes that beginning mid-March 2020, all South American countries officially closed their borders and there was a dramatic reduction in cross-border movements. Figure 2 supports this

for Brazil with only a few hundred exiting the country and very few entering. Total estimates of returnees between March and September 2020 range from 60,000 to 100,000 (Mazza, 2020), with only about 2,300 returnees from Brazil and most of the returnees are from Colombia as it received the highest displaced Venezuelans before the start of the Covid-19 pandemic.

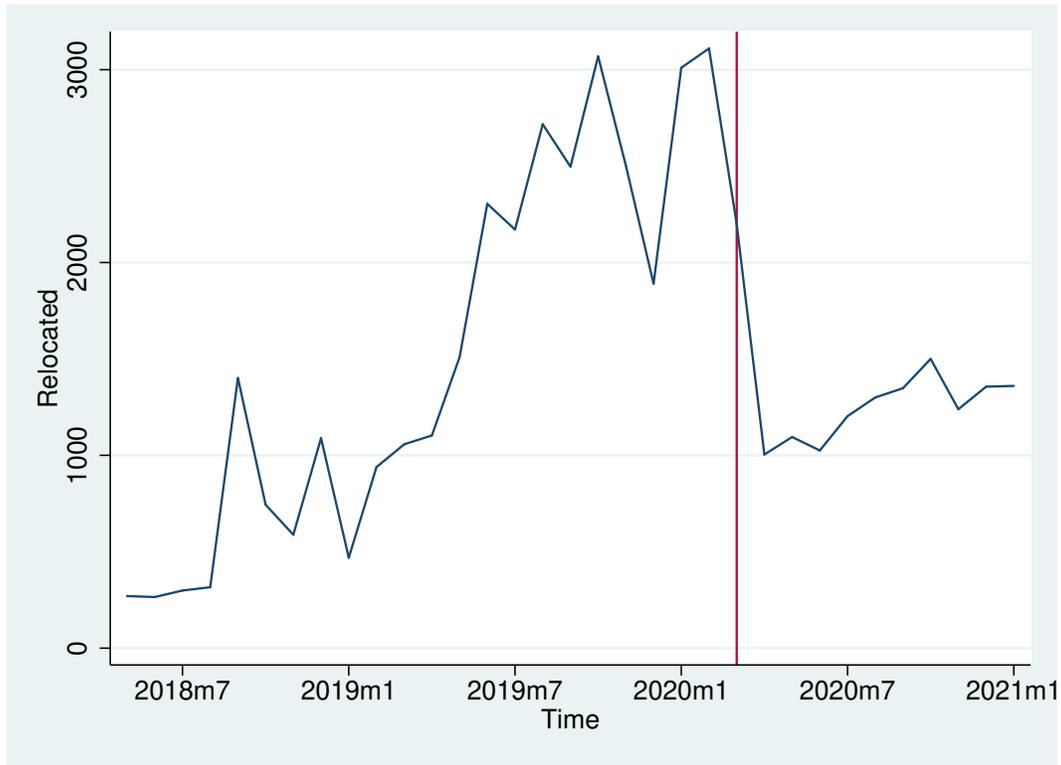


Figure 8: Effect of Covid-19 pandemic on *Operação Acolhida*

Figure 8 shows that the number of beneficiaries of *Operação Acolhida* decreased substantially from April 2020. There is a steep decline in the beneficiaries of relocation from Roraima to the other states, from about 3,000 in February to about 1,000 in April and onwards. This may have led to overcrowding in shelters and hospitals and to shortages of food in Roraima and further research needs to be conducted to quantify the actual effects.

In order to flatten the curve of hospitalizations of COVID-19 patients, over 180,000 schools in Brazil have been closed. Teachers are learning to deliver courses online and parents are learning to become learning facilitators in midst of the additional stress of facing or the possibility of facing an adverse income loss. However, access to computer and digital tools are not universal and it is becoming exceptionally difficult to teach low income children and the Venezuelan migrant and refugee children are most likely to drop out. Figure 9 shows that most students do not have access to computers and the students in the northern regions in Brazil lag behind in their access to computers.

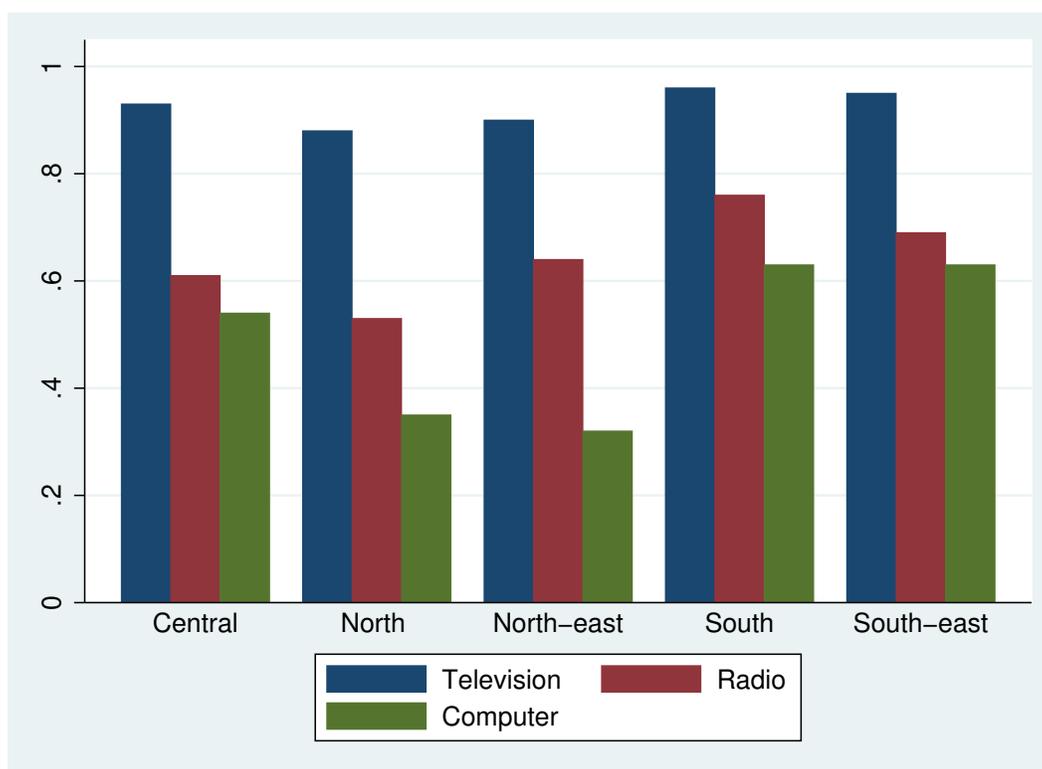


Figure 9: Percentage of students having access to means of online education
Source: SAEB 2017

However, it also shows that about 90% of the students across Brazil has access to television and some states in Brazil, namely Amazonas, Piaui, Parana, Distrito Federal and *Maranhao* have already begun to broadcast educational content through television. According to the student vulnerability index, published by World Bank, Roraima is one of the most vulnerable states in Brazil, where students face high dropout, less family support, higher incidence of working and lower technology. Since most of the Venezuelan children are living in Roraima, they are more susceptible to disrupted learning due to the pandemic.

School closures also mean that the social safety nets through schools are also affected. Many children depended on the school meals as their only source of nutritious meals. Consequently, Law 13,987/2020 has been enacted by the federal government, allowing the resources originally allocated to providing school meals in all public schools (under the national School Meals Program—PNAE) to be used to buy basic food baskets for disadvantaged families. Before this change, many municipalities were already distributing food baskets to the families of vulnerable students (World Bank, 2020).

Effect of the COVID-19 pandemic on the labor market is heterogenous, affecting some types of jobs more than others. Unfortunately, the risk of employment disruptions are higher in service based jobs and Venezuelans, as discussed previously, are heavily concentrated in those service sector

jobs. In addition, most Venezuelans work in the informal sector, which before the pandemic has no access to job protections and unemployment insurance. In line with [Mazza \(2020\)](#), Venezuelans in Brazil appear to be disproportionately working in tourism, retail and personal care, the informal sectors that are heavily impacted by the pandemic.

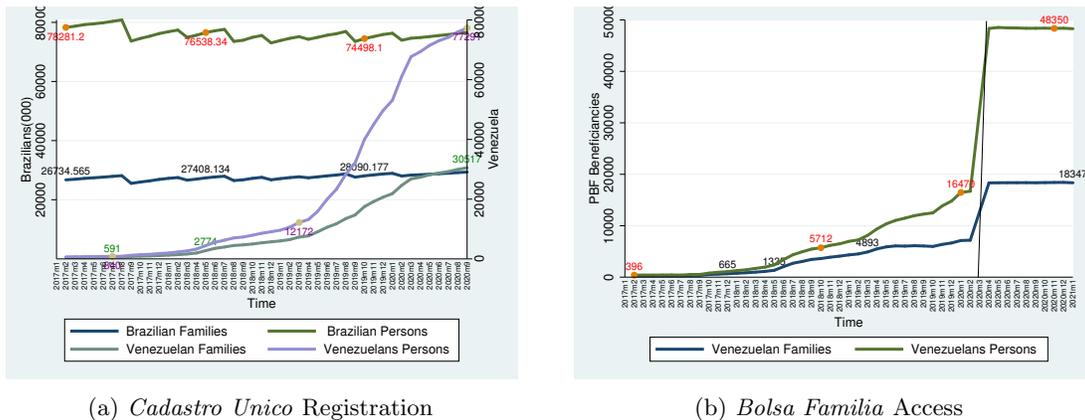


Figure 10: Effect of Covid-19 pandemic on access to *Bolsa Familia*

In response to the Coronavirus pandemic, the federal government, initiated two main policies to alleviate the impact of the pandemic. They expanded the PBF to include eligible families and granted a financial benefit of R\$ 600 (USD 117), *Auxilio Emergencial*, to those, whose occupations were seriously affected by the crisis, including informal workers, individual microentrepreneurs, self-employed and unemployed. Eligibility depends on having a per capita household income of less than R\$ 522.5 (USD 101) monthly or a total household income of R\$ 3,135 (USD 609). As long as one is registered in the Single Registry or receives *Bolsa Familia* benefit, the receipt of *Auxilio Emergencial* is automatic, but one can also register for the benefit online. Rough estimates suggest that about 277,197 Venezuelans benefited from the program between April and November 2020. Figure 10 shows that Venezuelan PBF beneficiaries increased from about 15,000 in February 2020 to little more than 48,000 in April 2020 and have remained all most constant till January 2021. [World Bank \(2020\)](#) points out that although these measures may ameliorate the impact of the pandemic, fiscal constraints and high inequality may prevent Brazil from negating all the adverse effects of the crisis in the short-run.

Although Brazil is the only country in the LAC region to provide social benefits during the pandemic without regard to legal status, the benefits are administered through local governments, which are overloaded with new clients and their demands. Institutional capacity is the most limited in Roraima, which is the main gateway for Venezuelan refugees and migrants and with most Venezuelans having no access to digital platform, registering online in *Cadastro Único* becomes a challenge, which is reflected in the gradual increase of Venezuelans registered in Figure 10. Experiences in the pandemic point to the importance of affordable and accessible internet, and digital literacy, which will not only benefit Venezuelans but also Brazilians.

5 Results

This section provides an overview of results of the estimation strategies described in section 3.

5.1 Education

5.1.1 Integration

Venezuelans are less likely to be enrolled in school compared to their Brazilian peers. Overall, the F-Index measure shown as the red line in Figure 11 is about 32, suggesting that it is 0.47 times as likely for Venezuelans to be in school as Brazilians. However, the extent of integration varies across states. Roraima, which hosts the highest number of Venezuelans, has one of the lowest F-Index and a relative probability²⁷ of 0.25, suggesting that it is 0.25 times as likely for Venezuelan children to enroll as Brazilian children. In the fundamental level of schooling, average F-Index is about 41 while in the high school, it is about 33, suggesting that integration is lower as school level progresses. In Roraima, the F-index at the fundamental level is 26, while at the high school level, it is about 6. This may suggest that learning a new language becomes more difficult as one grows older supporting evidence in [Bleakly and Chin \(2010\)](#). Overall, the diagram also seems to suggest that integration is higher in provinces that have lower number of Venezuelan residents.

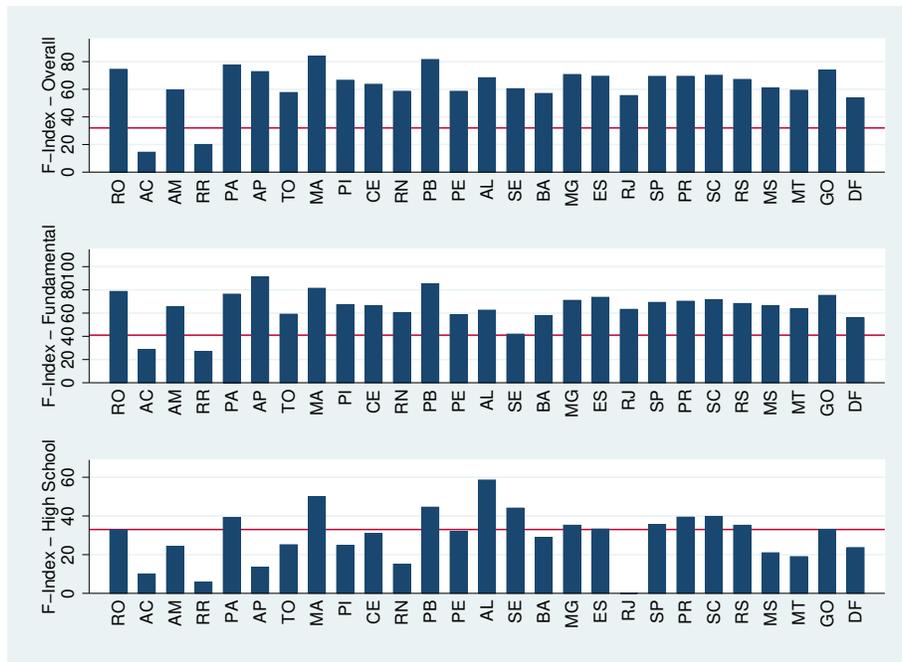


Figure 11: Measures of Integration in Education overall and by different levels and states

²⁷Relative probability at each province is given in the appendix.

5.1.2 Barriers and Facilitators of Integration in Education

Table 6 shows the estimates of the school selection model shown in equation (6), where the standard errors are clustered at the province level. Columns 1 to 3 report results from the OLS estimation, while columns 4 to 6 report the marginal effect of the Probit model. It should be noted here that the results here are at best correlations and not evidence of causation due to endogeneity of many variables in our model and lack of proper instruments. Venezuelan across Brazil are more likely to be present in public schools, which seems to be not the case in Roraima and Amazonas. This may be due to higher presence of Philanthropic schools set up to accommodate the Venezuelan refugees and migrants children. Venezuelans are more likely to be found in schools that have bigger class sizes and in schools which lower proportion of Spanish language teachers, suggesting overcrowding of students and language barriers to be paramount in the lack of participation of Venezuelan children in the education system in Brazil. To help understand the difference in the interpretation of the OLS and Probit models, let's focus on column (1) and column (4), column 1 suggests that holding everything else constant, an increase in class size by 1 student increase likelihood of Venezuelans to increase by 0.0015 percentage points on average, while column (4) suggests that the predicted likelihood of having Venezuelan students increase by about 0.04 percentage points if class sizes increase by an additional student, holding all variables at the mean reported in Table 2. The schools, where Venezuelans enroll, have better infrastructure or better access to public services and higher educated teachers, suggesting that the quality of education are adequate but with lower number of teachers fluent in Spanish and capacity constraints, Venezuelan children may not be very eager to access education. The concentration in public schools may signify that Venezuelans are opting for it because it is free. Venezuelans are also likely to be present in schools that have higher number of Brazilian students although the magnitude of the effect is very small and close to zero. These results seems to be robust across all the provinces of Brazil and across the different model specifications.

Table 6: Characteristics of schools, where Venezuelans are present

	(Brazil) OLS	(RR&AM) OLS	(Rest) OLS	(Brazil) Probit	(RR&AM) Probit	(Rest) Probit
Female Students	-0.0316* (0.0137)	-0.155 (0.0281)	-0.0160* (0.00656)	-0.275 (0.185)	-1.459 (0.969)	-0.0732 (0.112)
White Students	-0.00925 (0.0119)	0.432 (0.0577)	-0.0172 (0.00923)	-0.0860 (0.0978)	1.514 (0.921)	-0.124 (0.0879)
Average Age	-0.00638*** (0.00143)	-0.00584 (0.0137)	-0.00570*** (0.00102)	-0.0914*** (0.00782)	-0.0705 (0.0699)	-0.0899*** (0.00508)
Public	0.0249* (0.00919)	-0.0964 (0.0535)	0.0245** (0.00725)	0.235*** (0.0403)	-0.0944* (0.0405)	0.250*** (0.0345)
Class size	0.00152* (0.000559)	0.0123** (0.000121)	0.00115* (0.000498)	0.0409*** (0.00381)	0.0596** (0.0224)	0.0379*** (0.00275)
Teacher-Student Ratio	0.000338 (0.00440)	-0.0141 (0.0470)	-0.000967 (0.00448)	0.128** (0.0412)	0.212 (0.127)	0.120** (0.0426)
Public Services	0.0137 (0.00677)	0.0641 (0.0182)	0.0157* (0.00596)	0.290*** (0.0478)	0.135*** (0.00582)	0.293*** (0.0486)
Amenities	-0.0147** (0.00515)	-0.0192 (0.0178)	-0.0148* (0.00556)	-0.113*** (0.0295)	-0.141 (0.130)	-0.111*** (0.0300)
Spanish Proficient Teachers	-0.000841* (0.000408)	-0.000246* (0.0000159)	-0.000207 (0.000150)	-0.0113* (0.00494)	-0.0100 (0.00929)	-0.00735* (0.00334)
Teachers with Undergraduate (%)	0.000186 (0.000163)	0.00142 (0.000482)	-0.0000244 (0.0000307)	0.00688*** (0.00203)	0.0152*** (0.00359)	0.00394*** (0.000751)
Teachers with MA (%)	0.000662** (0.000202)	0.00168 (0.000217)	0.000734*** (0.000192)	0.00584** (0.00186)	0.00372 (0.00792)	0.00649*** (0.00187)
Brazilians Overaged	0.0319* (0.0124)	-0.0233 (0.0446)	0.0408** (0.0119)	0.426*** (0.0987)	0.0280 (0.162)	0.511*** (0.0979)
Total Brazilians	0.000147*** (0.0000255)	0.000375* (0.0000164)	0.000129*** (0.0000200)	0.000676*** (0.000132)	0.00113*** (0.000278)	0.000639*** (0.000130)
Ln(Concentration)	1.010*** (0.188)	0.0825* (0.00363)	0.00867** (0.00236)	0.0745*** (0.0163)	0.378*** (0.0343)	0.0829*** (0.0138)
Observations	172354	5877	166477	172354	5877	166477
R^2	0.110	0.421	0.077			

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. The Probit models (columns 3 to 6) report marginal effects at the means.

All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Brazilians Overaged is the fraction of Brazilians who are studying at a lower grade than that his age would suggest.

Table 16 shows how school and municipal level characteristics relate to the level of integration and report the results of equation (7). The OLS estimates in columns 1 to 3 suggest that integration is higher in school, where teachers have a MA degree. For example, schools with one additional Brazilian student relate to a decrease F index by 0.008 percentage points. Similarly, schools that demote Venezuelans more than Brazilians is associated with a 6 point lower F-index in Roraima and Amazonas. Controlling for selection with (column 7) and without (column 4) exclusion restriction, the direction of the relationship holds although the magnitude differ and is not statistically significant across all specifications. The significance improves once the school fixed effect is taken into account in a panel estimation framework as shown in Table 16 in the Appendix. Overall, this paper finds that grade demotion or being overaged in a class is a major barrier to integration. Integration is higher in schools, where Venezuelans less likely to be demoted to a class, compared to their age. It also finds that integration is higher in municipalities that have lower concentration of Venezuelans, suggesting that spatial segregation of refugee and migrants may not be conducive to integration in the host country, a result that is supported in past studies like Carneiro

et al. (2020). Better amenities of schools promote integration as well as superior education of teachers.

The first stage regressions used to estimate the inverse mills ratio (λ) for the Heckman model is given in the appendix (Table 17). The standard errors are clustered at the province level and it shows that likelihood of Venezuelans being enrolled in the school is about 0.42 percentage points higher if the school has an additional percentage of overaged Brazilians. Overaged Brazilian is significant in the first stage although it has no significance in the second stage that estimates its effect on extent of integration (Table 16). The likelihood ratio test has a p-value of 0 suggesting that the first stage model is overall well modelled and that the overall model is significant. However, except column (5), λ is not significant, suggesting that except Roraima and Amazonas, selection bias is not a problem or that our exclusion restriction is weak.

Table 7: Determinants of Integration in School

	(All) OLS	(RR&AM) OLS	(Rest) OLS	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman
Female Students	-12.17 (6.561)	-37.50 (12.96)	-2.423 (1.322)	-12.67 (6.476)	-40.92 (14.97)	-1.322 (1.407)	-12.68 (6.493)	-38.80 (12.22)	-2.059 (1.220)
White Students	0.0264 (0.799)	28.37 (15.96)	-0.716 (0.474)	-0.211 (0.972)	25.38 (14.79)	-0.293 (0.776)	-0.226 (0.922)	26.74 (16.97)	-0.712 (0.650)
Average age	-0.257** (0.0872)	-0.634 (0.260)	-0.198* (0.0759)	-0.419 (0.321)	-1.719 (0.140)	-1.719 (0.490)	0.178 (0.190)	-0.441* (0.534)	-1.171 (0.243)
Public	0.572 (0.373)	2.810 (0.870)	0.429 (0.244)	0.988 (0.825)	5.362 (0.831)	-0.541 (1.419)	1.036 (0.566)	4.214* (0.191)	0.733 (0.819)
Class Size	-0.0185 (0.0485)	-0.161 (0.379)	0.00154 (0.0168)	0.0576 (0.158)	0.421 (0.283)	-0.168 (0.202)	0.0652 (0.113)	0.230 (0.432)	0.0403 (0.112)
TS ratio	-0.808 (0.834)	-7.894 (6.143)	-0.0882 (0.239)	-0.568 (1.001)	-6.576 (6.027)	-0.595 (0.705)	-0.543 (0.909)	-7.030 (6.409)	0.0532 (0.474)
Infrastructure	0.264 (0.516)	1.602 (1.439)	-0.0670 (0.308)	0.804 (0.796)	4.835 (2.150)	-1.303 (1.374)	0.857 (0.539)	3.688 (1.176)	0.205 (0.665)
Amenities	-0.708 (0.458)	-2.475 (0.269)	-0.639 (0.508)	-0.901 (0.506)	-3.312 (0.309)	-0.176 (0.667)	-0.913 (0.452)	-3.358 (0.294)	-0.663 (0.478)
Spanish Proficient Teachers	-0.180** (0.0581)	-0.199 (0.186)	-0.0533 (0.0526)	-0.200** (0.0623)	-0.325 (0.164)	-0.000386 (0.0808)	-0.201** (0.0587)	-0.293 (0.155)	-0.0575 (0.0675)
Teachers with Undergraduate Degree	0.0287 (0.0188)	0.0565 (0.0718)	0.00354 (0.0103)	0.0419 (0.0281)	0.144 (0.0812)	-0.0277 (0.0418)	0.0431 (0.0231)	0.114 (0.0600)	0.00911 (0.0262)
Teachers with MA	0.0121 (0.0122)	0.0502 (0.0227)	0.0104 (0.0136)	0.0225 (0.0217)	0.119 (0.0360)	-0.0132 (0.0358)	0.0239 (0.0139)	0.0744* (0.00537)	0.0197 (0.0203)
Brazilian Overaged	-1.007 (0.604)	-1.193 (2.890)	-1.518 (0.912)	-0.165 (1.194)	4.466 (3.362)	-3.395 (1.763)			
Total Brazilian	-0.00889*** (0.000845)	-0.00415 (0.00327)	-0.00920*** (0.000760)	-0.00785*** (0.00168)	0.00119 (0.00344)	-0.0118** (0.00362)	-0.00776*** (0.00120)	-0.000602 (0.00218)	-0.00877*** (0.00215)
Overaged	-0.709 (0.825)	-5.875*** (0.178)	-0.314 (0.525)	-0.732 (0.844)	-6.274* (0.437)	-0.310 (0.509)	-0.295 (0.763)	-1.859 (5.016)	-0.119 (0.700)
Ln(Concentration)	-105.5*** (7.809)	-14.02* (0.779)	-97.80*** (7.374)	-10.86*** (1.173)	-10.86* (0.534)	-7.088*** (1.882)	-10.81*** (0.880)	-11.95 (1.324)	-5.302*** (1.061)
λ				2.310 (4.156)			2.533 (2.725)		
λ					19.16* (0.951)			12.81 (3.004)	
λ						-5.075 (6.454)			1.081 (3.577)
Observations	8175	1203	6972	8175	1203	6972	8175	1203	6972
R^2	0.839	0.696	0.621	0.839	0.697	0.622	0.839	0.697	0.621

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Overaged is a dummy if the rate of grade mismatch at school is higher for Venezuelans than Brazilians. Brazilians Overaged is the fraction of Brazilians who are studying at a lower grade than that his age would suggest and is used as the exclusion restriction in columns 7 to 9. Columns 4, 5 and 6 are estimated without using exclusion restrictions. Spanish, college and MA refers to qualifications of teachers in the schools. λ refers to the Inverse Mill's ratio and the first stage regressions are shown in the appendix.

However, the robustness of the results across the different specifications give evidence of grade demotion being a major obstacles for integration in school. This may happen due to either not being fluent in Portuguese or not having the correct documents and accreditation, suggesting that policy formulation needs to focus on giving language training and promoting credential verification and validation.

5.2 Labor

5.2.1 Integration

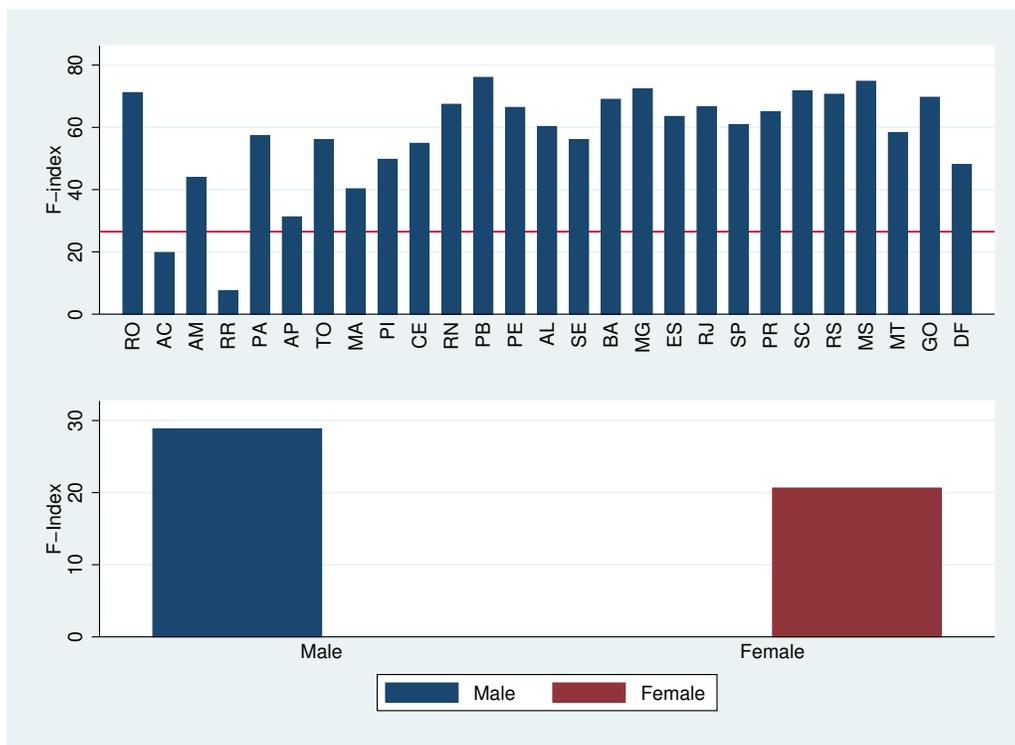


Figure 12: Measure of Integration in Formal Labor Market by Regions and gender

It is harder for Venezuelans to access the formal labor market than the Brazilians. The overall share of formal workers in Brazil is about 45%, but as Figure 12 shows that the Venezuelans are 0.36 times as likely to enter the formal sector as Brazilians, with a corresponding F-index of 26.5. The level of integration varies across states, with lowest in Roraima, which also have the highest concentration of Venezuelan formal workers, with about Venezuelans being 0.08 times as likely as Brazilian to be a formal worker. Integration is higher in states that has higher job opportunities like Rio de Janeiro, Sao Paulo and Minas Gerais. These states also receive the highest number of Venezuelans, who were relocated through the "interiorization" strategy,²⁸ run by the federal government with the help of UNHCR and other civil society organizations, which involves the voluntary relocation of Venezuelans from Roraima to other cities within Brazil to ensure effective socioeconomic integration. Similarly, Parana (PR), Santa Catarina (SC) and Rio Grande do Sul (RS) may have high integration as a result of receiving high number of Venezuelans relocated through the "interiorization" strategy, suggesting the key role played by the "interiorization" strategy in helping Venezuelan refugees and migrants to be included in the more productive sector of the economy. It

²⁸It is one of the strategies under Operation Welcome, which is discussed in the introduction.

also seems to be harder for women to access formal sector jobs with an F-index of 20, compared to the F-index of 29 for Venezuelan males, highlighting that women have to face additional constraints to enter the formal labor market. These constraints may be related to lower returns to education and higher penalty for being minority women as Table 22 shows in addition to the common stereotype of the male being the primary earner of the family.

5.2.2 Determinants of Integration and the Wage Gap

Table 8 shows the estimation results of equation (8),²⁹ where the standard errors are clustered at the province level and indicates that Venezuelans are more likely to work in firms that hire more temporary and female workers in Brazil, except Roraima and Amazonas. Column (1) suggests that likelihood of Venezuelans being present in the formal sector firm increases by 0.15 percentage points on average if the firm incurs a percentage point increment in the proportion of female employed, holding everything else constant. Similarly, for column (4), it implies that predicted likelihood of Venezuelans being present increases by about 0.73 percentage points if the firm incurs a percentage point increment in the proportion of female employed, holding all the variables at their mean reported in Table 3. These firms are also less likely to hire college educated personnel and are more likely to operate in construction and trade industry and are less likely to work in agriculture and manufacturing industry. Venezuelans are less likely to work for formal sector firms, where Brazilian workers are more likely to be occupationally downgraded. Occupational downgrading seems to be a stronger deterrent in rest of Brazil than in Roraima and Amazonas. Outside Roraima and Amazonas, firms with additional number of non-Venezuelan refugees and migrants can be related to about 0.78 point increase in the predicted likelihood of Venezuelans being present in a formal sector firm on average, suggesting that the overcrowding effect is less than the positive effect of higher networks, but in Roraima and Amazonas, the information gathered through network has no significant effect on the likelihood of getting into a formal sector firm.

²⁹All results can be interpreted as correlation and not causation due to potential biases due to endogeneity issues.

Table 8: Characteristics of Firms, where Venezuelans work

	(Brazil) OLS	(RR & AM) OLS	(Rest) OLS	(Brazil) Probit	(RR & AM) Probit	(Rest) Probit
Female Proportion	0.151*** (0.0285)	-0.0288 (0.194)	0.165*** (0.0273)	0.726*** (0.113)	-0.0974 (0.488)	0.844*** (0.0758)
White Proportion	-0.0683*** (0.0175)	-0.303** (0.00132)	-0.0513*** (0.0130)	-0.428*** (0.0976)	-0.897*** (0.0430)	-0.345*** (0.0864)
Temporary Proportions	0.612*** (0.125)	0.718 (0.137)	0.599*** (0.136)	2.148*** (0.550)	4.577 (2.792)	2.088*** (0.573)
High School	-0.0323 (0.0275)	0.201 (0.0623)	-0.0537* (0.0249)	-0.0592 (0.147)	0.553** (0.212)	-0.172 (0.145)
College	-0.231*** (0.0436)	-0.183* (0.00532)	-0.236*** (0.0466)	-1.135*** (0.164)	-0.510*** (0.0000541)	-1.241*** (0.158)
Agriculture	-0.0827** (0.0229)	-0.138 (0.166)	-0.0810** (0.0225)	-0.435*** (0.104)	-0.387 (0.476)	-0.453*** (0.107)
Manufacturing	-0.0529*** (0.00823)	-0.0128 (0.0165)	-0.0556*** (0.00844)	-0.252*** (0.0438)	-0.0352 (0.0477)	-0.277*** (0.0456)
Constructions	0.114*** (0.0274)	0.0735 (0.0274)	0.119*** (0.0292)	0.449*** (0.0851)	0.185 (0.106)	0.479*** (0.0895)
Trade	0.0500*** (0.0103)	0.125 (0.0117)	0.0446*** (0.0103)	0.220*** (0.0339)	0.345*** (0.0131)	0.210*** (0.0373)
Firm Size>10	-0.0471 (0.0493)	0.0367 (0.270)	-0.0585 (0.0501)	-0.194 (0.334)	0.134 (0.743)	-0.255 (0.366)
Brazilian Downgraded	-0.0397 (0.0208)	-0.0340 (0.00802)	-0.0389 (0.0225)	-0.322** (0.125)	-0.114*** (0.0211)	-0.373** (0.142)
Non-Venezuelan Migrants	0.729** (0.253)	0.393 (0.331)	0.780* (0.298)	2.598** (0.846)	1.303 (0.992)	2.762** (0.983)
Ln(Concentration)	0.0511 (0.0257)	0.0262 (0.00293)	0.0314 (0.0224)	-0.0842*** (0.00609)	0.0700*** (0.00709)	-0.0891*** (0.00578)
Observations	14955	895	14060	14955	895	14060
R ²	0.211	0.095	0.182			

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. Columns 1, 2 and 3 are estimated as a linear probability model, while columns 4, 5 and 6 report the marginal effects at the means of the estimated Probit model. Brazilian downgraded refers to the proportion of Brazilians employed who are working at an occupation, where education requirement is lower than the individual's.

Table 9 provides further evidence of occupational downgrading being the major barrier to integration in the labor market. It shows that Venezuelans are less likely than Brazilians to work in firms, which downgrades Venezuelans more than the Brazilians. Column (1) shows that firms, which downgrades Venezuelans more than Brazilians, have a predicted F-index that is 37 points lower. This result is robust even after controlling for the fact that some firms do not have any Venezuelans in their payroll with and without exclusion restrictions. Without exclusion restriction, the F-index is 37 points lower and with proportion of Brazilians downgraded as the exclusion restriction, the F-index is 41 points lower. The results also suggest bigger firms can be associated lower F-index and integration. The table also shows that integration is higher in firms that have higher number of non-Venezuelan migrants, but this result is robust except in Roraima and Amazonas, suggesting that the added advantage of having network and information about possible job opportunities outweigh the negative effect of higher competition due to higher labor supply. However, there is

some evidence that once controlled for selection, high number of Venezuelan refugees and migrants in the municipality can have a negative effect on the extent of integration. This result is primarily driven by the situation in Roraima and Amazonas where the negative effect of higher competition due to higher labor supply is obstructing more Venezuelans to integrate in the formal labor market.

Table 9: Determinants of Integration in Formal Labor Market

	(All) OLS	(RR&AM) OLS	(Rest) OLS	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman
Female Proportions	-12.14*** (1.829)	-6.421 (3.911)	-12.33*** (2.107)	2.145 (11.01)	-49.73 (14.00)	6.481 (10.34)	2.503 (9.332)	-40.22 (27.06)	4.041 (9.413)
White Proportions	9.231* (4.312)	8.222 (5.397)	10.84* (4.720)	0.443 (6.606)	34.76 (14.95)	-0.644 (8.360)	0.188 (5.957)	25.03 (27.95)	0.627 (7.810)
Temporary Proportion	10.71* (4.223)	11.78 (6.998)	8.904* (4.307)	39.07 (20.20)	-77.04 (35.55)	45.92 (23.29)	39.45* (18.74)	-57.81 (67.20)	43.29 (21.68)
High School	22.37* (9.271)	2.556 (39.17)	20.97*** (5.199)	17.04 (12.75)	18.85 (32.03)	13.84 (7.936)	15.58* (7.299)	0.797 (9.508)	22.64*** (5.958)
College	0.343 (7.028)	-39.82 (33.59)	6.250 (4.739)	-22.70 (22.08)	32.81 (3.446)	-23.62 (21.60)	-23.28 (19.95)	15.20 (23.24)	-19.69 (20.07)
Agriculture	4.808 (2.528)	0.157 (1.050)	6.449 (3.315)	-5.038 (7.490)	30.25 (10.43)	-6.900 (8.610)	-5.321 (6.412)	22.21 (25.14)	-5.000 (7.876)
Manufacturing	2.493 (1.811)	5.662 (6.617)	1.316 (1.116)	-2.845 (5.321)	22.89** (0.144)	-5.590 (4.319)	-3.044 (4.262)	17.69 (6.962)	-4.361 (3.902)
Construction	-4.809*** (1.184)	-2.755 (0.285)	-4.658** (1.417)	3.477 (6.000)	-26.68 (10.03)	6.336 (5.744)	3.632 (5.272)	-21.70 (17.10)	5.277 (5.310)
Trade	-2.880* (1.390)	3.097 (0.551)	-4.786*** (1.162)	0.909 (2.843)	-8.162 (3.976)	0.280 (2.989)	0.881 (2.969)	-6.946 (5.717)	0.338 (2.884)
Firm Size>10	-25.75** (7.470)	-6.132 (0.680)	-27.83*** (7.223)	-28.46** (8.264)	2.331 (0.971)	-29.43*** (7.343)	-28.56** (7.934)	-2.017 (1.156)	-28.94*** (7.480)
Brazilian Downgraded	-3.501 (13.66)	-27.29 (39.42)	10.31* (4.515)	-2.232 (14.60)	-29.07 (39.17)	12.48* (5.075)			
Non-Venezuelan Migrants	367.8*** (61.68)	123.7 (130.5)	428.8*** (55.71)	414.3*** (83.42)	2.481 (69.02)	493.3*** (61.57)	416.8*** (68.53)	66.18 (12.58)	479.3*** (57.42)
Ln(Concentration)	-102.4*** (3.836)	-8.579* (0.388)	-102.9*** (4.415)	-3.945 (2.589)	-12.27* (0.755)	6.420 (7.854)	-3.847 (2.133)	-10.88 (2.953)	4.930 (7.258)
Mismatch	-36.87*** (4.381)	-28.05 (17.44)	-3.290 (3.147)	-37.26*** (4.535)	-28.01 (17.23)	-1.581 (3.117)	-41.16*** (1.784)	-34.43 (8.210)	0.353 (3.098)
λ				19.68 (15.58)			10.76 (21.63)		
λ					-31.36 (15.30)			-154.0 (161.5)	
λ						21.06 (14.77)			24.08 (15.03)
Observations	2743	475	2268	2743	475	2268	2743	475	2268
R^2	0.492	0.519	0.265	0.494	0.523	0.267	0.494	0.508	0.265

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Mismatch is a dummy if the rate of occupational downgrading at firm is higher for Venezuelans than Brazilians. Brazilians Downgraded is the fraction of Brazilians who are occupationally downgraded would and is used as the exclusion restriction in columns 7 to 9. Columns 4, 5 and 6 are estimated without using exclusion restrictions. All variables (except concentration index) are at the firm level. λ refers to the Inverse Mill's ratio and the first stage regressions are shown in the appendix.

The first stage regressions used to estimate the inverse mills ratio (λ) for the Heckman model is given the appendix (Table 18). Proportion of Brazilian downgraded at the firm is significant in the first stage although it has no significance in the second stage that estimates its effect on extent of integration (Table 9). The likelihood ratio test has a p-value of 0 suggesting that the first stage model is overall well modelled and that the overall model is significant. However, λ in the second stage of Table 9 is not significant, suggesting that either selection bias is not a problem or that the exclusion restriction used in the analysis is weak.

Even though the Venezuelan refugees and migrants face higher obstacles than Brazilian in

accessing the formal labor market, least square estimations suggest that the wage penalty is statistically insignificant after controlling for individual characteristics, occupations and firm size and remains statistically insignificant even after controlling for selection into wage earning employment. For example, once they are in the formal labor market, Venezuelans are more likely to find a waged employment (Table 19) that gives them a lower wage on average than Brazilians (Table 10). This result is in contradiction to results found in other Latin American countries hosting Venezuelans. For example, Olivieri et al. (2020) find a very high significant wage gap between Ecuadorean and Venezuelan, penalizing the Venezuelan refugees and migrants but they did not control for selection and were including both the formal and informal sector workers. Table 10 shows that controlling for the effect of higher education on the likelihood of getting a waged employment, having a college degree leads to higher wage across Brazil other than in Roraima and Amazonas. Column (9) of Table 10 shows that controlling for selection using number of non-Venezuelan migrants working in the firm as exclusion restriction, having a high school education is associated with a 0.02 percentage points higher wage outside Roraima and Amazonas but no significant effect in Roraima and Amazonas, suggesting that congestion in the formal labor market in Roraima and Amazonas may be a problem and the "interiorization" strategy has a crucial role to play in matching Venezuelan refugees and migrants to the right jobs.

The first stage regressions used to estimate the inverse mills ratio (λ) for the Heckman model is given the appendix (Table 19). The exclusion restriction, which is the number of non-Venezuelan migrants in the firm is significant in the first stage although it has no significance in the second stage that estimates its effect on the natural logarithm of wage (Table 10). The likelihood ratio test has a p-value of 0 suggesting that the first stage model is overall well modelled and that the overall model is significant. λ s in the second stage of Table 10 in columns (4), (6),(7) and (9) are significant, suggesting evidence of selection. However, the results should be interpreted with caution as our exclusion restriction may be theoretically weak and as there are other omitted variables that may affect wage and are controlled for in the estimations.

Table 10: Determinants of wage

	(All) OLS	(RR&AM) OLS	(Rest) OLS	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman
Venezuelans	0.009 (0.014)	-0.020 (0.028)	0.027** (0.008)	-0.059*** (0.015)	-0.088 (0.013)	-0.048*** (0.010)	-0.044 (0.022)	-0.029 (0.032)	-0.034 (0.021)
Age	0.002*** (0.000)	0.003* (0.000)	0.002*** (0.000)	0.020*** (0.001)	0.027 (0.002)	0.020*** (0.001)	0.019*** (0.001)	0.023* (0.001)	0.019*** (0.001)
White	0.002 (0.005)	-0.002 (0.002)	0.002 (0.005)	0.010 (0.005)	0.006 (0.003)	0.010 (0.005)	0.009 (0.004)	-0.001 (0.001)	0.009 (0.004)
Ln(Hours Worked)	0.309*** (0.014)	0.200* (0.004)	0.311*** (0.014)	0.298*** (0.013)	0.183* (0.005)	0.300*** (0.013)	0.299*** (0.013)	0.185* (0.004)	0.301*** (0.013)
Female	-0.016*** (0.003)	-0.009 (0.002)	-0.016*** (0.003)	-0.071*** (0.005)	-0.046 (0.005)	-0.071*** (0.005)	-0.059*** (0.015)	-0.015 (0.004)	-0.059*** (0.014)
High School	0.021*** (0.002)	0.018 (0.009)	0.021*** (0.003)	0.023*** (0.002)	0.035 (0.012)	0.023*** (0.002)	0.023*** (0.003)	0.014 (0.006)	0.023*** (0.003)
College	0.058*** (0.005)	0.059 (0.015)	0.058*** (0.005)	0.135*** (0.009)	0.173 (0.039)	0.135*** (0.009)	0.113*** (0.025)	0.059 (0.006)	0.113*** (0.025)
Temporary	0.046 (0.027)	0.017 (0.003)	0.047 (0.028)	0.042 (0.026)	0.018 (0.002)	0.043 (0.027)	0.042 (0.026)	0.017 (0.003)	0.043 (0.027)
Scientist	0.051*** (0.011)	0.009 (0.008)	0.052*** (0.011)	0.047*** (0.011)	0.004 (0.009)	0.048*** (0.011)	0.046*** (0.011)	0.003 (0.008)	0.047*** (0.011)
Administration	0.033* (0.015)	0.020 (0.006)	0.033* (0.015)	0.032* (0.015)	0.016 (0.005)	0.032* (0.015)	0.030 (0.017)	0.015 (0.005)	0.030 (0.017)
Commerce	-0.010 (0.006)	-0.043 (0.013)	-0.009 (0.006)	-0.003 (0.006)	-0.036 (0.011)	-0.002 (0.006)	-0.003 (0.006)	-0.035 (0.010)	-0.002 (0.007)
Personal	0.015 (0.007)	-0.012 (0.012)	0.015* (0.007)	0.015 (0.008)	-0.015 (0.013)	0.015 (0.008)	0.014 (0.007)	-0.014 (0.012)	0.014 (0.007)
Industrial	0.018 (0.009)	0.042** (0.000)	0.017 (0.009)	0.016 (0.009)	0.036** (0.000)	0.016 (0.009)	0.015 (0.009)	0.038* (0.001)	0.015 (0.009)
Firm>10	-0.029*** (0.006)	-0.004 (0.023)	-0.029*** (0.007)	-0.030*** (0.007)	-0.009 (0.020)	-0.030*** (0.007)	-0.029*** (0.007)	-0.008 (0.020)	-0.029*** (0.007)
Total Non-Venezuelan Migrants	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.000)	-0.000 (0.000)			
λ				-0.344*** (0.037)			-0.254* (0.101)		
λ					-0.395 (0.081)			-0.039 (0.022)	
λ						-0.343*** (0.038)			-0.256* (0.101)
Observations	15832423	238293	15594130	15832423	238293	15594130	15832423	238293	15594130
R^2	0.193	0.123	0.194	0.208	0.153	0.209	0.208	0.152	0.209

Standard error in parentheses and are clustered at the province level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All regressions include state fixed effect. Columns (1), (4) and (7) use all data, columns (2), (5), and (8) use data on Roraima (RR) and Amazonas (AM) and columns (3), (6) and (9) show the results from the rest of Brazil. Columns 4, 5 and 6 are estimated without using exclusion restrictions. Columns (7), (8) and (9) use total non-Venezuelan migrants at the firm as the exclusion restriction.

Table 23 shows the returns to different characteristics by nationality controlling for selection and provides further evidence that although higher education leads to higher wage for Brazilian, the same is not true for Venezuelan refugees and migrants. Higher education seems to have no or smaller effect on wage of Venezuelans controlling for selection, providing further evidence that facilitation of credential verification and validation is of utmost important to promote integration of asylum seekers and migrants. Table 11 shows the Oaxaca decomposition and shows that depending on observed characteristics, Venezuelans should be paid even more but some unobserved or unexplained is dampening the wage premium of Venezuelans controlling for selection, suggesting that other variables like language skills and being relocated through the "interiorization" strategy that are not controlled for in the regressions are important factors in explaining formal labor market performances of Venezuelans.

Table 11: Decomposition of the wage gap

	(Brazil) OLS	(RR & AM) OLS	(Rest) OLS	(Brazil) Heckman	(RR & AM) Heckman	(Rest) Heckman
Differential						
Brazilian	11.682*** (0.012)	11.663*** (0.001)	11.682*** (0.012)	11.682*** (0.012)	11.663*** (0.001)	11.682*** (0.012)
Venezuelan	11.715*** (0.022)	11.658*** (0.019)	11.746*** (0.015)	11.715*** (0.022)	11.658*** (0.019)	11.746*** (0.015)
Difference	-0.033 (0.020)	0.006 (0.021)	-0.064*** (0.012)	-0.033 (0.020)	0.006 (0.021)	-0.064*** (0.012)
Decomposition						
Explained	-0.029** (0.011)	-0.017** (0.007)	-0.044*** (0.008)	-0.077*** (0.021)	-0.023** (0.008)	-0.098*** (0.022)
Unexplained	-0.004 (0.013)	0.023 (0.028)	-0.020** (0.007)	0.044* (0.021)	0.029 (0.028)	0.034 (0.021)
Observations	15832423	238293	15594130	15832423	238293	15594130

Standard error in parentheses and are clustered at the province level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Oaxaca decomposition conducted controlling for selection. First column uses all data, second column uses data on Roraima (RR) and Amazonas (AM) and the third column shows the results from the rest of Brazil. Total non-Venezuelan migrants are used as the exclusion restriction for the Heckman selection models.

Overall, the results suggest that just like the education sector, equivalency of education or occupational downgrading is a major barrier to integration in the formal labor market. Although race plays an important role in the Brazilian labor market (Márquez et al., 2007), this paper does not find a statistically significant differential effect of race on Venezuelan asylum seekers and migrants' performance in the formal labor market. The importance of Portuguese language skills and relocation program in promoting integration and productivity of Venezuelan refugees and migrants are also highlighted in the results, implying that having specialized employment counsellors for the Venezuelans may help them to access the formal labor market more.

5.3 Social Protection

5.3.1 Integration

Overall, Venezuelans seem to be less likely to register in *Cadastro 'Unico* than Brazilians, but if they do register, they are equally likely or more likely to have access to *Bolsa Familia* programs. However, on average, integration have continuously improved over the last 4 years, as Figure 13, shows, with Venezuelans being 0.7 times as likely to be registered as Brazilians in July 2020, while they were only 0.2 times as likely to be registered in December 2018, with an F-index of 17 in December 2018 and 42 in December 2020. Venezuelans still constitute a small fraction of the vulnerable people registered in *CadÚnico*, with 0.01 Venezuelans registered for each Brazilian in 2018, which increased to 0.10 Venezuelans registered for each Brazilian in 2020. Integration in *CadUnico* varies across states. Relative probability and the F-index of registering in *CadUnico* is the highest

in Rio Grande do Sul and lowest in Roraima, while the concentration of registered Venezuelans is the highest in Roraima and lowest in Tocantins. Overall, it seems that integration is more in states that have lower number of Venezuelans. Venezuelans registered are also more likely to be living in urban areas than the registered Brazilians. PBF coverage rate seems to be slightly higher for Venezuelans than for Brazilians, although in numbers, there are fewer Venezuelans receiving the program compared to Brazilians. In July 2020, the relative probability index suggests that it is about 1.2 times as likely for Venezuelans registered to receive PBF as Brazilians registered, with an F-Index of 56. The figure below also shows that there has not been any differential access to *Bolsa Familia* for the Venezuelans except in 2019. Morgandi et al. (2020) reports that approximately 1.5 million families (about 10% of total families benefitted) were in the waiting list in 2019 and this deterioration in program coverage and fall in the value of the benefit opened up discussion on the need of reform of the *Bolsa Familia* program, which resulted in the introduction of the 13th payment for December 2019. The rest of our analysis focuses on whether controlling for eligibility, Venezuelans still face a differential coverage rate and what factors influences the coverage gap in 2019.

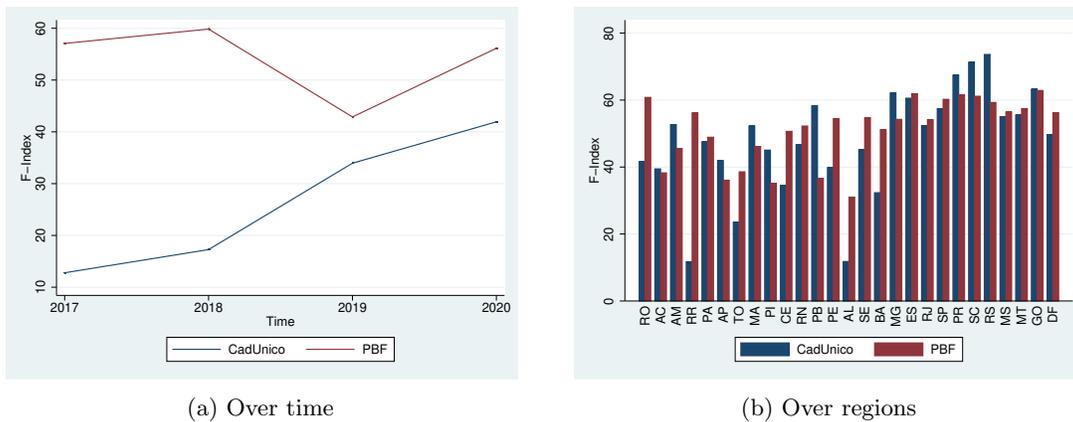


Figure 13: Measure of Integration in Social Protection over Time and Regions

5.3.2 Coverage Gap and Decomposition

Table 12 shows the results after estimating equation (13) and clustering the standard errors at the province level. It reveals that the coverage gap in 2019 remains after controlling for income per capita and family composition, which are the two main criteria for eligibility of PBF. Venezuelans are found to be 0.12 to 0.19 percentage points less likely to receive *Bolsa Familia* than Brazilian, controlling for their income and family characteristics and conditional on them enrolling in *Cad'Unico*. However, this coefficient should be interpreted with caution since the estimation results do not control for selection in to *Cadastro 'Unico* and there are likely many omitted variables that the estimations do not control for, like the availability of required documents. Table 13 further shows that only 0.05 of the 0.19 percentage points difference can be explained by endowment difference (explained), the other 0.14 percentage points relate to unobserved characteristics or to differences in returns to the characteristics. One obvious candidate to explain this unexplained gap may be propensity to register in the Single Registry, which cannot be controlled for because of unavailability of data on the

population who is not enrolling. Other reason may be lack of knowledge about the social protection system in Brazil. Not being fluent in Portuguese, the official language of Brazil, is obviously a big obstacle for integration.

Table 12: Relationship between likelihood of being PBF beneficiary, nationality and other household characteristics

	(All) OLS	(RR&AM) OLS	(Rest) OLS	(All) Probit	(RR&AM) Probit	(Rest) Probit
Venezuela	-0.185*** (0.0493)	-0.192 (0.101)	-0.125*** (0.0272)	-0.531** (0.170)	-0.580* (0.293)	-0.566** (0.183)
Income per capita	-0.000256*** (0.0000161)	-0.000335 (0.0000388)	-0.000254*** (0.0000159)	-0.00683*** (0.000122)	-0.00663*** (0.000280)	-0.00683*** (0.000121)
Extreme Poverty	0.426*** (0.0147)	0.302 (0.0308)	0.430 (0.0150)	0.290 (0.0638)	0.174*** (0.0142)	0.289*** (0.0637)
Infrastructure	-0.0434*** (0.00429)	-0.0301 (0.00748)	-0.0439*** (0.00438)	-0.162*** (0.0164)	-0.113** (0.0378)	-0.163*** (0.0166)
Tertiary	-0.0896*** (0.00456)	-0.0886 (0.0119)	-0.0895*** (0.00468)	-0.490*** (0.0183)	-0.318*** (0.0857)	-0.492*** (0.0183)
Secondary	-0.0571*** (0.00287)	-0.0237 (0.00812)	-0.0580*** (0.00282)	-0.185*** (0.00922)	-0.0791** (0.0263)	-0.184*** (0.00928)
Children - 15<Age <=17	0.0482*** (0.00202)	0.0461* (0.00249)	0.0482*** (0.00211)	0.155*** (0.00528)	0.128*** (0.0140)	0.155*** (0.00528)
Children - 5<Age <=15	0.113*** (0.00401)	0.119* (0.00817)	0.113*** (0.00417)	0.427*** (0.00774)	0.393*** (0.0355)	0.426*** (0.00777)
Children - 0<Age <=5	0.0755*** (0.00419)	0.0549* (0.00255)	0.0765*** (0.00427)	0.256*** (0.00902)	0.173*** (0.0221)	0.256*** (0.00911)
Family Members	0.00554** (0.00174)	0.0178* (0.000956)	0.00504** (0.00177)	0.0322** (0.0112)	0.0871*** (0.00537)	0.0323** (0.0112)
Head White	-0.00977*** (0.00225)	-0.0173* (0.000496)	-0.00963*** (0.00224)	-0.0250*** (0.00640)	-0.0553*** (0.00435)	-0.0258*** (0.00652)
Head Female	0.0609*** (0.00291)	0.0604*** (0.0000841)	0.0609*** (0.00298)	0.283*** (0.0114)	0.244*** (0.00185)	0.283*** (0.0114)
Head Age	-0.000319* (0.000137)	-0.00144 (0.000271)	-0.000300* (0.000139)	0.000447 (0.000556)	-0.00294*** (0.000492)	0.000419 (0.000557)
Head Employed	-0.0214*** (0.00576)	-0.0694 (0.0358)	-0.0199** (0.00598)	0.105*** (0.0165)	-0.191* (0.0825)	0.108*** (0.0167)
Head -Self Employed	0.0864*** (0.0117)	0.0633 (0.00910)	0.0867*** (0.0120)	0.172*** (0.0315)	0.110*** (0.0135)	0.172*** (0.0314)
Head Agri	0.0619*** (0.00385)	0.0554* (0.00394)	0.0623*** (0.00397)	0.251*** (0.0107)	0.241*** (0.00516)	0.252*** (0.0108)
head - Months Worked	0.000514 (0.000392)	0.000128 (0.000544)	0.000486 (0.000402)	0.0220*** (0.00147)	0.0185*** (0.000425)	0.0220*** (0.00146)
Ln(Concentration	0.00640*** (0.00106)	-0.0151 (0.00394)	-0.0257*** (0.00117)	-0.297*** (0.0150)	-0.0444** (0.0163)	-0.00556 (0.0136)
Observations	8729818	268305	8461513	8729818	268305	8729818
R ²	0.478	0.384	0.479			

Standard error in parentheses and are clustered at the province level. Columns (4) to (6) report the marginal effects of the Probit model estimation.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

All regressions include state fixed effect

Another interesting result from Table 12 is that concentration of Venezuelans, which is the

number of Venezuelan over total population in a municipality, has a negative effect on the propensity of a household to receive *Bolsa Familia* benefits. This might suggest that having the same ethnic network may lower the need for Venezuelans to access social protection or it might also suggest congestion. So, the model is re-estimated separately first focusing on Roraima and Amazonas, where the concentration is the highest and then on rest of Brazil and find that the relationship is still significant and slightly higher for rest of Brazil, suggesting that both factors are important. Table 13 supports this finding by showing that the average coverage gap is higher in Roraima and Amazonas than the other states in Brazil. The model also seems to explain more of the variation in coverage rate in rest of Brazil than in Roraima and Amazonas. The high unexplained gap may partially reflect the selection of the kind of Venezuelans, who register into *Cadastro 'Unico*, which this paper could not control for due to data limitations. It may also reflect that some Venezuelans do not have the sufficient Portuguese language skill or the knowledge about their rights for registration.

Table 13: Decomposition of the coverage rates

	(1) Brazil	(2) RR & AM	(3) Brazil - RR &AM
Differential			
Brazilian	0.549*** (3258.87)	0.699*** (780.65)	0.544*** (3179.49)
Venezuelan	0.362*** (65.54)	0.370*** (58.56)	0.335*** (29.53)
Difference	0.187*** (33.87)	0.329*** (51.58)	0.209*** (18.45)
Decomposition			
Explained	0.0456*** (13.87)	0.137*** (38.82)	0.0857*** (11.49)
Unexplained	0.142*** (24.85)	0.192*** (28.90)	0.124*** (10.59)
Observations	8729818	268305	8461513

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Oaxaca decomposition conducted by linear probability model. First column uses all data, second column uses data on Roraima (RR) and Amazonas (AM) and the third column shows the results from the rest of Brazil. The analysis is on data from 2019 *Cadastro Unico*.

Overall, in line with previous results on education and formal labor market, the results on social protection sector suggests that language training programs, provision of information and facilitation of different document or credential verification and validation may encourage more Venezuelan refugees and migrants to register in *Cadastro 'Unico* and benefit from receiving *Bolsa Familia* cash transfers.

6 Conclusion and Policy Implications

The inflow of Venezuelan refugees and migrants into Brazil is a humanitarian crisis but it has also created a development challenge. Greater economic and social inclusion of the refugees and migrants will not only build human capital for Venezuelans but will also create a multiplier effect of benefits for the host communities and vice-versa a failure to build human capital will have dire consequences not only the Venezuelans but also on the host communities. This paper is a starting step to investigate the extent of integration of Venezuelans in Brazil and the main challenges that they are facing.

Overall, our results suggest that even though theoretical legal constraint is scant, Venezuelan refugees and migrants still face various challenges to assimilate in Brazil. Congestion, language barrier and mismatch of age and grade attainment are the main impediments for the Venezuelan refugees and migrants children to integrate in schools. Similarly, occupational downgrading is the main barrier for the working age Venezuelan refugees and migrants to access the formal labor market. Venezuelans who register for access to social protection programs are also poorer than their Brazilian counterparts. Another result worth pointing out is the spatial concentration of the Venezuelan refugees and migrants are not helping integration rather it is accelerating congestion and deterring integration, especially in the education sector, stressing the importance of relocation programs in the integration of Venezuelan refugees and migrants.

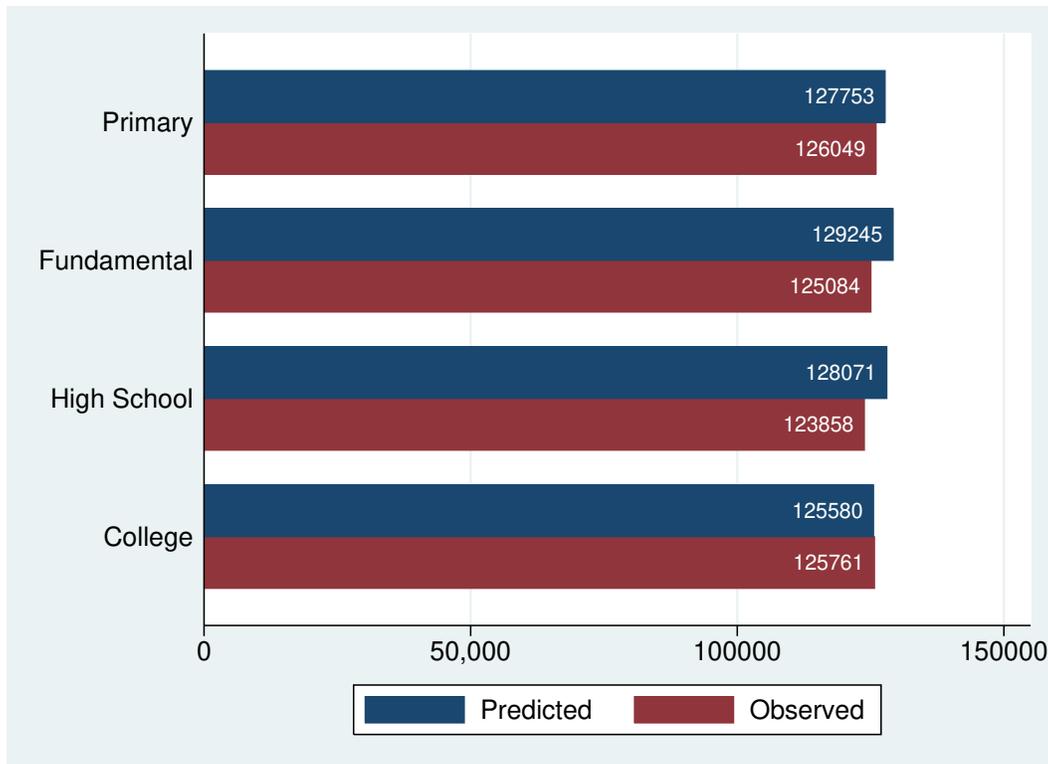


Figure 14: Average predicted³⁰ and observed monthly wage of Venezuelans by education level

Two obvious barriers to integration of Venezuelan refugees and migrants in Brazil, that we could not control for in our estimation due to data limitations, are language barriers and xenophobia. The official language of Brazil is Portuguese, while the mother tongue of Venezuelans is Spanish. Consequently, language barrier may partially explain not only the downgrading in grades and occupations, but also lower enrollment rate in *Cadastro Único*. Hostility toward refugees and migrants is another barrier. Brazil ranks 50th in the migrant acceptance index (Esipova et al., 2017), published by Gallup Poll, below many of the other Latin American host countries, so it is likely that xenophobia against Venezuelans may hinder their integration. However, our data does not provide any information on that. The results of the Venezuelans not being sufficiently rewarded for their human capital provides some evidence of discrimination, but it may also point to productivity loss due to other factors like being fluent in Portuguese that we did not control for in the estimation. However, the results point out that occupational downgrading is higher among Venezuelans suggesting differential treatment. Figure 14 shows that the wage gaps between the observed Venezuelan wage and their predicted wage if they are rewarded equally for their endowments as Brazilians and controlling for selection to waged employment are substantial specially at the fundamental³¹ and the high school level.

Our results suggest certain policy implications that may accelerate inclusion of Venezuelan refugees and migrants and their children in Brazil. These policy implications include:

- Facilitation of the process of credential and skill verification and validation - This will subdue downgrading in both schools and the formal labor market.
- Strengthen voluntary relocation to areas within Brazil that have more job opportunities - The federal government, along with UNHCR and other civil society have been implementing a program like this since 2018.
- Provision of language training may help children to enroll in school at the grade, commensurate with their age and also promote employability of Venezuelan adults.
- Development of labor intermediation services focusing on language training, Venezuelan community outreach and specialized counsellors, who know employers where language is less a factor or looking for particular skill sets as suggested in Mazza (2017).
- Increased capacity of schools through holding different shifts can reduce overcrowding.
- Stronger labor market activation programs to include job intermediation and skills and language training to help in overcoming search barriers and matching friction.
- Continue provision of information assistance for documents issuances and enrollment to education, health and social assistance services and benefits and inform Venezuelan refugees and migrants of their social rights and guarantee access.

It should be noted here that results reported in this paper do not provide evidence of causation rather it provides insights on correlations. Another challenge this paper faces is that the population data, used to estimate the school age and working age population, is not updated regularly, which may lead to overestimation of Venezuelan population in Roraima as it is the main gateway. However, further research is needed to study the impacts of the policy already in place, like the relocation programs. Research is also needed to study how language barrier and xenophobia are affecting

³¹Fundamental level refers here to grades 6 to grade 9 and primary refers to grade 5 completed.

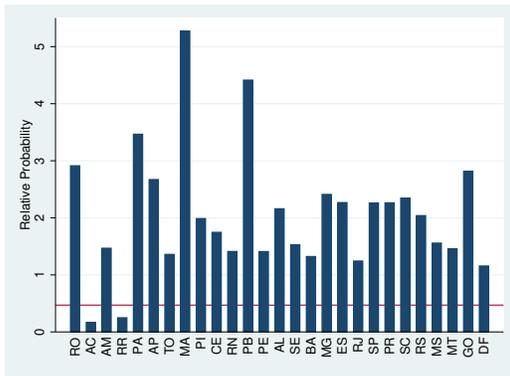
integration efforts and how best to combat them. With the disruptions of COVID-19, research is also needed to see how it impacted the Venezuelan refugees and migrants in Brazil and how should the livelihood and humanitarian aid be adapted to address its effects.

7 Appendix

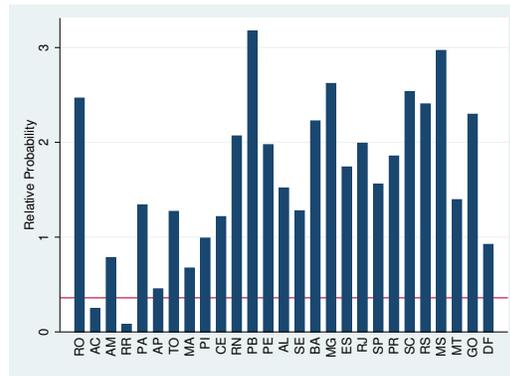
7.1 Relative Probability Measure of Integration

Table 14: Conversion chart between relative probability and F-Index

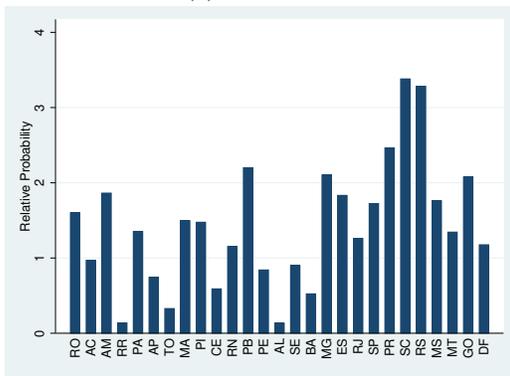
Relative Probability	F-Index
0.00	0.00
0.20	16.67
0.40	28.57
0.60	37.50
0.80	44.44
1.00	50.00
1.20	54.55
1.40	58.33
1.60	61.54
1.80	64.29
2.00	66.67
50.00	98.04
100.00	99.01



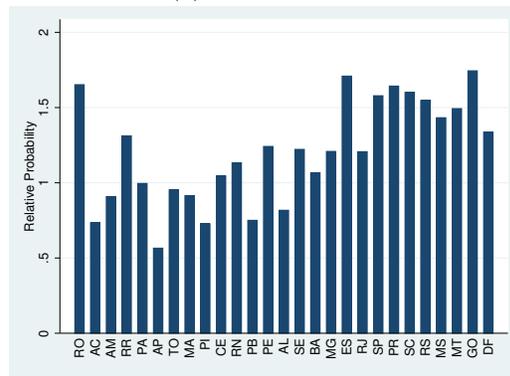
(a) Education



(b) Formal Labor



(c) CadUnico



(d) PBF

Figure 15: Relative Probability in Different Sectors

7.2 Panel Estimations of Education Sector

Table 15: Characteristics of schools, where Venezuelans are present in a fixed effect model

	(Brazil) OLS	(RR&AM) OLS	(Rest) OLS	(Brazil) Probit	(RR&AM) Probit	(Rest) Probit
Female Students	-0.00615 (0.00557)	-0.0107 (0.0261)	-0.00544 (0.00568)	-0.633** (0.198)	-3.796*** (0.787)	-0.214 (0.209)
White Students	0.0343*** (0.00210)	-0.109 (0.0978)	0.0353*** (0.00209)	0.442*** (0.0421)	4.626*** (0.850)	0.290*** (0.0440)
Average Age	-0.00157*** (0.000366)	0.00147 (0.00143)	-0.00166*** (0.000387)	-0.158*** (0.00541)	-0.199*** (0.0304)	-0.152*** (0.00557)
Public	-0.00406*** (0.000960)	-0.0114* (0.00457)	-0.00223* (0.00102)	0.00465 (0.0270)	-0.408*** (0.108)	0.0581* (0.0294)
Class Size	0.00129*** (0.000148)	0.00292*** (0.000795)	0.00118*** (0.000150)	0.0818*** (0.00391)	0.143*** (0.0156)	0.0749*** (0.00395)
Teacher-Student Ratio	0.0117*** (0.00106)	0.0273** (0.0105)	0.0103*** (0.00102)	0.303*** (0.0212)	0.426** (0.135)	0.286*** (0.0213)
Public Services	0.00664 (0.00459)	-0.104 (0.113)	0.00773 (0.00453)	0.583*** (0.0337)	0.522* (0.211)	0.583*** (0.0339)
Amenities	0.0116*** (0.00242)	0.0606* (0.0261)	0.00976*** (0.00240)	-0.0279 (0.0393)	0.184 (0.215)	-0.0494 (0.0401)
Spanish Proficient Teachers	-0.0000715 (0.0000411)	-0.000117* (0.0000545)	-0.0000754 (0.0000558)	-0.0253*** (0.00381)	-0.0248** (0.00813)	-0.0202*** (0.00503)
Teachers with Undergraduate Degree	-0.0000330* (0.0000133)	-0.00000484 (0.0000569)	-0.0000330* (0.0000136)	0.0167*** (0.000783)	0.0393*** (0.00303)	0.00984*** (0.000766)
Teachers with MA	0.000128 (0.000127)	-0.000694 (0.00147)	0.000138 (0.000125)	0.0108*** (0.00179)	0.0110 (0.0124)	0.0111*** (0.00180)
Brazilians Overaged	0.00939*** (0.00169)	-0.0629* (0.0254)	0.0116*** (0.00172)	0.797*** (0.0425)	0.207 (0.326)	0.982*** (0.0449)
Total Brazilians	0.0000901*** (0.0000166)	0.0000939 (0.0000985)	0.0000921*** (0.0000169)	0.00155*** (0.0000631)	0.00349*** (0.000532)	0.00142*** (0.0000630)
Ln(Concentration)	0.00997* (0.00387)	0.326 (0.244)	0.00681 (0.00390)	0.729*** (0.0134)	1.104*** (0.0673)	0.836*** (0.0210)
Observations	305076	11292	293784	305076	11292	293784
R^2	0.023	0.019	0.023			

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the school level. The Probit models (columns 3 to 6) report marginal effects at the means.

All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Brazilians Overaged is the fraction of Brazilians who are studying at a lower grade than that his age would suggest.

Table 16: Determinants of Integration in School in a Fixed Effect Model

	(All) OLS	(RR&AM) OLS	(Rest) OLS	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman	(All) Heckman	(RR&AM) Heckman	(Rest) Heckman
Female Students	-6.121 (6.469)	-0.938 (14.98)	-2.825 (3.103)	-9.645 (6.031)	4.547 (14.33)	-2.416 (3.125)	-9.620 (6.056)	3.107 (17.27)	-2.419 (3.092)
White Students	-0.0997 (0.705)	-48.62* (19.74)	0.767 (0.581)	-0.794 (0.729)	-67.94** (20.61)	0.301 (0.755)	-0.469 (0.668)	-76.19*** (20.49)	0.532 (0.667)
Average Age	-0.685 (0.427)	2.530* (1.223)	-0.492 (0.286)	-0.645 (0.430)	2.906* (1.210)	-0.409 (0.284)	-0.680 (0.433)	-0.249 (0.969)	-0.403 (0.283)
Public	-3.966*** (0.373)	-5.742*** (0.802)	-0.664* (0.259)	-2.637*** (0.435)	-5.913*** (0.912)	-0.978** (0.307)	-2.608*** (0.434)	-5.690*** (0.948)	-0.974** (0.306)
Class Size	0.508*** (0.102)	0.688*** (0.173)	0.148* (0.0620)	0.358*** (0.0941)	0.248 (0.180)	0.126* (0.0630)	0.365*** (0.0942)	0.311 (0.195)	0.129* (0.0627)
Teacher Student Ratio	2.167*** (0.308)	5.826*** (0.892)	-0.0289 (0.245)	1.413*** (0.279)	4.244*** (0.869)	-0.0973 (0.242)	1.402*** (0.278)	4.034*** (0.866)	-0.0846 (0.239)
Public Services	-1.205 (0.917)	-2.121 (3.427)	-0.116 (0.734)	-2.209* (0.928)	-6.057* (2.969)	-0.341 (0.803)	-2.086* (0.922)	-6.948* (3.084)	-0.245 (0.791)
Amenities	3.392*** (0.528)	4.822*** (1.338)	1.162* (0.467)	2.530*** (0.535)	5.635*** (1.359)	1.316** (0.481)	2.519*** (0.535)	5.738*** (1.374)	1.306** (0.478)
Spanish Proficient Teachers	0.0253 (0.0742)	-0.00130 (0.0830)	-0.0301 (0.0556)	0.00243 (0.0793)	0.0442 (0.0894)	-0.0243 (0.0564)	-0.000485 (0.0802)	0.0242 (0.109)	-0.0264 (0.0560)
Teachers with Undergraduate Degree	0.0151 (0.0349)	0.0193 (0.0481)	-0.0249 (0.0148)	-0.00140 (0.0402)	-0.0867 (0.0558)	-0.0319* (0.0162)	0.00233 (0.0400)	-0.0606 (0.0580)	-0.0300 (0.0159)
Teachers with MA	-0.00187 (0.0429)	0.0141 (0.122)	-0.00136 (0.0338)	-0.0167 (0.0423)	-0.112 (0.122)	-0.00468 (0.0338)	-0.0167 (0.0423)	-0.0983 (0.126)	-0.00536 (0.0338)
Brazilians Overaged	0.485 (0.878)	-54.54*** (11.21)	-0.332 (0.793)	-1.554 (0.972)	-50.65*** (10.80)	-0.723 (0.880)			
Total Brazilians	-0.0110*** (0.00283)	-0.0207** (0.00668)	-0.00517* (0.00263)	-0.0110*** (0.00299)	-0.0248*** (0.00590)	-0.00601* (0.00287)	-0.0106*** (0.00294)	-0.0246*** (0.00591)	-0.00576* (0.00280)
Overaged	-5.162*** (0.825)	-3.561 (3.394)	-1.530* (0.692)	-6.891*** (0.961)	-2.325 (3.459)	-0.477 (0.847)	-7.687*** (0.871)	-10.89* (4.924)	-0.980 (0.621)
Ln(Concentration)	-3.682* (1.464)	158.3*** (15.47)	-8.441*** (1.342)	-0.846 (1.597)	157.1*** (18.28)	-9.499*** (1.536)	-0.765 (1.598)	153.6*** (18.34)	-9.470*** (1.535)
λ				-4.041** (1.279)			-3.542** (1.181)		
λ					-14.01*** (2.782)			-14.53*** (2.782)	
λ						-0.662 (1.013)			-0.407 (0.924)
Observations	11527	2057	9470	11527	2057	9470	11527	2057	9470
R^2	0.134	0.331	0.067	0.164	0.356	0.070	0.163	0.334	0.069

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the school level. Rest refers to the Brazil provinces outside RR and AM. Overaged is a dummy if the rate of grade mismatch at school is higher for Venezuelans than Brazilians. Brazilians Overaged is the fraction of Brazilians who are studying at a lower grade than that his age would suggest and is used as the exclusion restriction in columns 7 to 9. Columns 4, 5 and 6 are estimated without using exclusion restrictions. Spanish, college and MA refers to qualifications of teachers in the schools. λ refers to the Inverse Mill's ratio and the first stage regressions are shown in the appendix.

7.3 First Stage Regressions used in Heckman Models

Table 17: Determinants of Likelihood of Venezuelans being in School

	(1) All	(2) RR&AM	(3) Rest
Female Students	-0.275 (0.185)	-1.459 (0.969)	-0.0732 (0.112)
White Students	-0.0860 (0.0978)	1.514 (0.921)	-0.124 (0.0879)
Average Age	-0.0914*** (0.00782)	-0.0705 (0.0699)	-0.0899*** (0.00508)
Public	0.235*** (0.0403)	-0.0944* (0.0405)	0.250*** (0.0345)
Class Size	0.0409*** (0.00381)	0.0596** (0.0224)	0.0379*** (0.00275)
Teacher-Student Ratio	0.128** (0.0412)	0.212 (0.127)	0.120** (0.0426)
Public Services	0.290*** (0.0478)	0.135*** (0.00582)	0.293*** (0.0486)
Amenities	-0.113*** (0.0295)	-0.141 (0.130)	-0.111*** (0.0300)
Spanish Proficient Teacher(%)	-0.0113* (0.00494)	-0.0100 (0.00929)	-0.00735* (0.00334)
Teachers with Undergraduate Degree(%)	0.00688*** (0.00203)	0.0152*** (0.00359)	0.00394*** (0.000751)
Teachers with MA(%)	0.00584** (0.00186)	0.00372 (0.00792)	0.00649*** (0.00187)
Brazilians Overaged	0.426*** (0.0987)	0.0280 (0.162)	0.511*** (0.0979)
Total Brazilian	0.000676*** (0.000132)	0.00113*** (0.000278)	0.000639*** (0.000130)
Ln(Concentration)	0.0745*** (0.0163)	0.378*** (0.0343)	0.0829*** (0.0138)
Observations	172354	5877	166477
<i>LR</i>	1329.99	5.31	969.31
p-value	0.00	0.02	0.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Brazilians Overaged is the fraction of Brazilians who are studying at a lower grade than that his age would suggest and is used as the exclusion restriction. Spanish, college and MA refers to qualifications of teachers in the schools.

Table 18: Determinants of Likelihood of Venezuelans being in Formal Sector Firms

	(1)	(2)	(3)
	All	RR&AM	Rest
Female Proportion	0.705*** (0.116)	-0.169 (0.504)	0.830*** (0.0746)
White Proportion	-0.445*** (0.0955)	-0.865*** (0.0966)	-0.360*** (0.0850)
Temporary Proportion	2.158*** (0.552)	4.806 (2.758)	2.053*** (0.574)
High School	-0.0845 (0.223)	0.982*** (0.190)	-0.369* (0.150)
College	-1.089*** (0.175)	-0.336*** (0.00378)	-1.220*** (0.166)
Agriculture	-0.443*** (0.108)	-0.397 (0.446)	-0.474*** (0.108)
Manufacturing	-0.251*** (0.0466)	0.00859 (0.0339)	-0.289*** (0.0451)
Construction	0.450*** (0.0837)	0.256 (0.135)	0.472*** (0.0883)
Trade	0.216*** (0.0381)	0.419*** (0.0538)	0.188*** (0.0375)
Firm>10	-0.167 (0.332)	0.385 (0.929)	-0.251 (0.363)
Brazilian Downgraded	-0.208* (0.007)	-0.939* (0.400)	0.0398 (0.117)
Non-Venezuelan Migrants	2.329** (0.868)	0.0559 (1.134)	2.631** (0.977)
Ln(Concentration)	-0.0941*** (0.00616)	0.0463*** (0.00416)	-0.0979*** (0.00637)
Observations	14955	895	14060
<i>LR</i>	3235.73	109.23	2594.58
p-value	0.00	0.08	0.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Total Non-Venezuelan Migrants is used as the exclusion restriction.

Table 19: Determinants of Likelihood of Venezuelans being in Waged Employment in Formal Sector

	(1)	(2)	(3)
	All	RR&AM	Rest
Age	-0.037*** (0.005)	-0.030*** (0.008)	-0.037*** (0.005)
Age Square	0.000** (0.000)	0.000 (0.000)	0.000** (0.000)
White	-0.050*** (0.013)	-0.048* (0.020)	-0.049*** (0.012)
Female	0.371*** (0.025)	0.209*** (0.019)	0.374*** (0.025)
High School	-0.018 (0.010)	-0.140*** (0.023)	-0.016 (0.010)
College	-0.564*** (0.039)	-0.715*** (0.022)	-0.563*** (0.040)
Non-Venezuelan Migrants	0.000*** (0.000)	0.003*** (0.000)	0.000*** (0.000)
Venezuelans	0.539*** (0.067)	0.453*** (0.079)	0.612*** (0.076)
Ln(Concentration)	-0.132*** (0.00293)	0.000274 (0.00274)	-0.132*** (0.00294)
Observations	20018567	307556	19711011
<i>LR</i>	160000.00	58653.65	160000.00
p-value	0.00	0.00	0.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM. Total Non-Venezuelan Migrants is used as the exclusion restriction.

7.4 Additional Information

7.4.1 Education

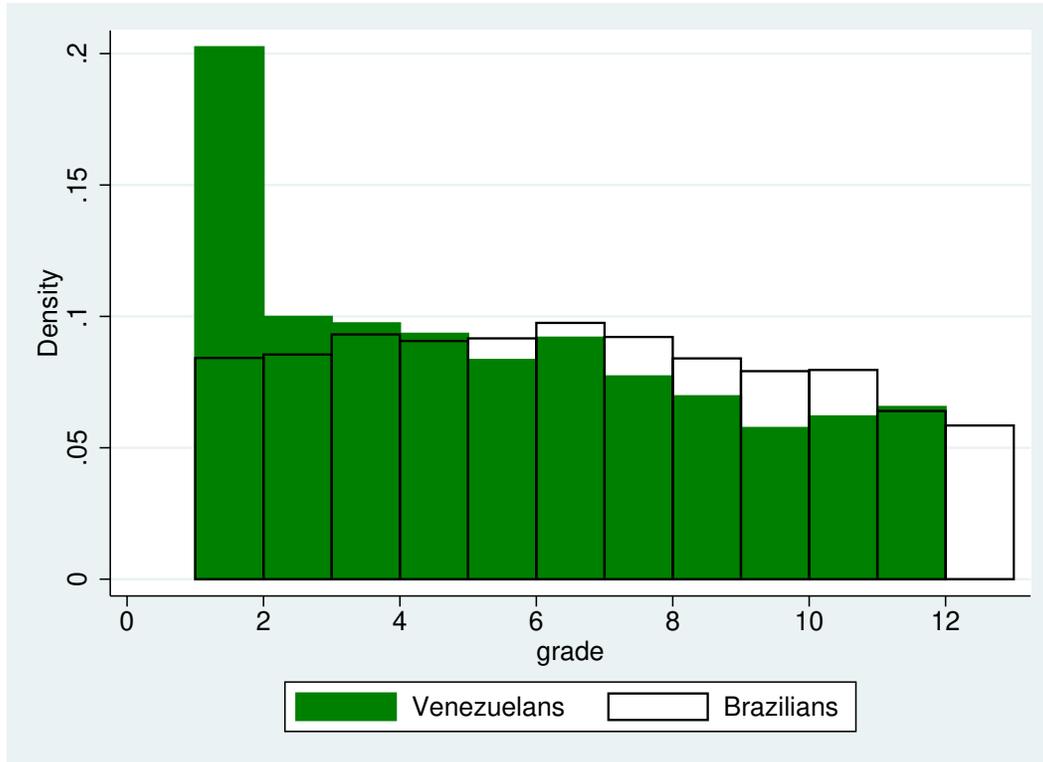


Figure 16: Distribution of Venezuelans and Brazilians by Grades

Table 20: Characteristics of Schools by Type of Administration

	(1)				
	Federal	Provincial	Municipal	Private	Total
Venezuelan Students	0.0278 (0.264)	0.245 (3.856)	0.116 (3.127)	0.0213 (0.213)	0.116 (2.903)
Student Body	409.0 (311.8)	459.9 (360.1)	204.0 (216.4)	210.6 (266.4)	248.4 (273.9)
Library	0.980 (0.139)	0.606 (0.489)	0.228 (0.420)	0.539 (0.498)	0.362 (0.481)
Science Lab	0.853 (0.355)	0.308 (0.462)	0.0271 (0.162)	0.199 (0.399)	0.114 (0.318)
Computer Lab	0.972 (0.165)	0.746 (0.435)	0.241 (0.428)	0.322 (0.467)	0.345 (0.475)
Internet	0.997 (0.0572)	0.875 (0.330)	0.662 (0.473)	0.923 (0.267)	0.756 (0.429)
Public Water	0.768 (0.423)	0.838 (0.368)	0.654 (0.476)	0.950 (0.218)	0.750 (0.433)
Public Electricity	1 (0)	0.977 (0.150)	0.948 (0.222)	0.998 (0.0390)	0.964 (0.186)
Public Sanitation	0.656 (0.475)	0.617 (0.486)	0.424 (0.494)	0.893 (0.310)	0.561 (0.496)
Amenities	0.0196 (0.139)	0.0110 (0.105)	0.00681 (0.0823)	0.0558 (0.230)	0.0184 (0.135)
Public Services	0.612 (0.488)	0.601 (0.490)	0.402 (0.490)	0.866 (0.340)	0.539 (0.498)
Teacher-Spanish	1.551 (1.704)	1.503 (6.739)	0.420 (4.449)	1.074 (4.639)	0.748 (4.954)
Teacher - Undergraduate	98.39 (6.110)	92.72 (19.44)	75.24 (32.49)	66.65 (32.46)	76.31 (31.73)
Teacher - MA	51.18 (18.01)	3.299 (6.148)	0.825 (3.569)	1.451 (4.829)	1.549 (5.458)
Observations	611	28,789	106,284	38,611	174,400

7.4.2 Social Protection

Table 21: Factors affecting the likelihood of receiving *Bolsa Familia* by nationality

	Brazil		RR & AM		Rest	
	Brazilian	Venezuelan	Brazilian	Venezuelans	Brazilians	Venezuelans
Income per Capita	-0.000256*** (0.0000160)	-0.000350*** (0.0000780)	-0.000327 (0.0000467)	-0.000517 (0.000159)	-0.000254*** (0.0000159)	-0.000242*** (0.0000432)
Extreme Poverty	0.427*** (0.0147)	0.231*** (0.0510)	0.303 (0.0306)	0.250 (0.0564)	0.430*** (0.0150)	0.140** (0.0382)
Infrastructure	-0.0434*** (0.00429)	0.00714 (0.0202)	-0.0302 (0.00584)	0.0279 (0.00920)	-0.0439*** (0.00438)	-0.0875* (0.0381)
Tertiary	-0.0899*** (0.00463)	0.0144 (0.0263)	-0.103* (0.00676)	0.0439 (0.0203)	-0.0896*** (0.00469)	-0.0609** (0.0189)
Secondary	-0.0571*** (0.00287)	-0.00881 (0.0111)	-0.0231 (0.00774)	0.00373 (0.00937)	-0.0580*** (0.00281)	-0.0325 (0.0212)
Children - 15 < Age <= 17	0.0482*** (0.00202)	-0.0161 (0.00966)	0.0472* (0.000919)	-0.0181 (0.00913)	0.0482*** (0.00211)	-0.00255 (0.0334)
Children - 5 < Age <= 15	0.113*** (0.00401)	-0.0220 (0.0243)	0.123* (0.00372)	-0.0412 (0.0223)	0.113*** (0.00417)	0.0494 (0.0320)
Children - 0 < Age <= 5	0.0756*** (0.00418)	-0.0352* (0.0163)	0.0573** (0.000177)	-0.0553 (0.0246)	0.0765*** (0.00427)	0.0359 (0.0242)
Family Members	0.00552** (0.00174)	0.0303*** (0.00202)	0.0176* (0.000524)	0.0289* (0.00106)	0.00504** (0.00177)	0.0251** (0.00813)
Head - White	-0.00973*** (0.00224)	-0.0156 (0.0154)	-0.0182 (0.00172)	0.00405 (0.00127)	-0.00961*** (0.00224)	-0.0354 (0.0292)
Head - Female	0.0610*** (0.00291)	-0.000601 (0.00951)	0.0626* (0.00278)	0.00735 (0.00994)	0.0609*** (0.00297)	-0.0178 (0.0208)
Head - Age	-0.000319* (0.000137)	0.000959* (0.000362)	-0.00147 (0.000248)	0.000660 (0.0000768)	-0.000300* (0.000139)	0.00310*** (0.000504)
Head - Employed	-0.0213** (0.00576)	0.0185 (0.0270)	-0.0663 (0.0325)	-0.0595 (0.0353)	-0.0200** (0.00598)	0.0420 (0.0419)
Head - Self-Employed	0.0865*** (0.0117)	-0.0662** (0.0235)	0.0642 (0.0100)	-0.0257 (0.0459)	0.0867*** (0.0120)	-0.0111 (0.0333)
Head-Agriculture	0.0619*** (0.00386)	-0.0280 (0.0232)	0.0550* (0.00375)	-0.0659* (0.00141)	0.0623*** (0.00398)	0.0494 (0.0641)
Head-Months Worked	0.000509 (0.000392)	0.00523 (0.00320)	-0.0000920 (0.000805)	0.0106 (0.00163)	0.000488 (0.000401)	-0.00339 (0.00443)
Ln(Concentration)	0.00553*** (0.000312)	0.00513** (0.00151)	-0.0175* (0.000291)	0.0555** (0.000343)	-0.0257*** (0.00117)	0.0192 (0.0121)
Observations	8722245	7573	262452	5853	8459793	1720
R^2	0.478	0.128	0.386	0.142	0.479	0.127

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM.

7.4.3 Labor

Table 22: Factors affecting wages by nationality without controlling for selection

	Brazil		RR & AM		Rest	
	Brazilian	Venezuelan	Brazilian	Venezuelans	Brazilians	Venezuelans
Age	0.016*** (0.001)	0.008*** (0.001)	0.023* (0.001)	0.009 (0.004)	0.016*** (0.001)	0.008*** (0.001)
Age ²	-0.000*** (0.000)	-0.000*** (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
White	0.003 (0.005)	0.012 (0.006)	-0.003 (0.002)	0.016 (0.012)	0.003 (0.005)	0.011 (0.008)
Ln(Hours Worked)	0.300*** (0.013)	0.188*** (0.032)	0.185* (0.005)	0.122 (0.027)	0.302*** (0.013)	0.228*** (0.033)
Female	-0.022*** (0.002)	-0.030*** (0.004)	-0.012 (0.002)	-0.023* (0.002)	-0.022*** (0.002)	-0.032*** (0.006)
High School	0.020*** (0.002)	0.001 (0.007)	0.011 (0.007)	-0.007 (0.021)	0.020*** (0.002)	0.005 (0.008)
College	0.052*** (0.005)	0.017 (0.012)	0.046 (0.012)	0.012 (0.035)	0.052*** (0.005)	0.022 (0.015)
Temporary	0.044 (0.026)	-0.013 (0.016)	0.017 (0.003)	0.029* (0.000)	0.045 (0.027)	-0.017 (0.017)
Scientist	0.045*** (0.011)	-0.120* (0.052)	0.003 (0.006)	0.000 (0.042)	0.046*** (0.011)	-0.167* (0.060)
Administration	0.032* (0.015)	0.014 (0.025)	0.014 (0.003)	0.053 (0.023)	0.032* (0.015)	-0.007 (0.013)
Commerce	-0.002 (0.006)	0.031 (0.027)	-0.037 (0.008)	0.064 (0.049)	-0.002 (0.006)	0.001 (0.014)
Personal	0.015 (0.008)	0.038* (0.018)	-0.016 (0.010)	0.049 (0.030)	0.016 (0.008)	0.021* (0.010)
Industrial	0.017 (0.009)	0.042 (0.021)	0.037* (0.002)	0.065 (0.026)	0.016 (0.010)	0.020 (0.018)
Firm>10	-0.031*** (0.007)	-0.055 (0.031)	-0.008 (0.019)	0.002 (0.018)	-0.031*** (0.007)	-0.085* (0.031)
Observations	15820505	11918	234077	4216	15586428	7702
R ²	0.207	0.210	0.154	0.080	0.208	0.227

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM.

Table 23: Factors affecting wages by nationality controlling for selection

	Brazil		RR & AM		Rest	
	Brazilian	Venezuelan	Brazilian	Venezuelans	Brazilians	Venezuelans
Age	0.019*** (0.001)	0.009*** (0.001)	0.023* (0.001)	0.010 (0.004)	0.019*** (0.001)	0.009*** (0.001)
Age ²	-0.000*** (0.000)	-0.000*** (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
White	0.009 (0.004)	0.016** (0.005)	-0.001 (0.002)	0.023 (0.011)	0.009 (0.004)	0.015* (0.007)
Ln(Hours Worked)	0.299*** (0.013)	0.188*** (0.032)	0.186* (0.004)	0.122 (0.027)	0.301*** (0.013)	0.227*** (0.034)
Female	-0.059*** (0.015)	-0.052*** (0.008)	-0.015 (0.004)	-0.050 (0.008)	-0.059*** (0.015)	-0.055*** (0.010)
High School	0.023*** (0.003)	0.001 (0.007)	0.014 (0.005)	0.010 (0.024)	0.023*** (0.003)	0.004 (0.008)
College	0.113*** (0.025)	0.059** (0.017)	0.060 (0.005)	0.125 (0.054)	0.114*** (0.025)	0.065*** (0.017)
Temporary	0.042 (0.026)	-0.016 (0.015)	0.017 (0.003)	0.028* (0.001)	0.043 (0.027)	-0.020 (0.017)
Scientist	0.046*** (0.011)	-0.120* (0.052)	0.002 (0.006)	0.005 (0.040)	0.047*** (0.011)	-0.168** (0.060)
Administration	0.030 (0.017)	0.014 (0.025)	0.014 (0.003)	0.054 (0.024)	0.030 (0.017)	-0.008 (0.013)
Commerce	-0.003 (0.007)	0.030 (0.028)	-0.037 (0.008)	0.067 (0.051)	-0.002 (0.007)	-0.000 (0.014)
Personal	0.014 (0.007)	0.038* (0.018)	-0.016 (0.010)	0.052 (0.030)	0.014 (0.007)	0.021* (0.010)
Industrial	0.015 (0.009)	0.044* (0.020)	0.038* (0.002)	0.066 (0.027)	0.015 (0.009)	0.022 (0.017)
firm>10	-0.029*** (0.007)	-0.058 (0.032)	-0.006 (0.020)	0.001 (0.017)	-0.029*** (0.007)	-0.090** (0.032)
λ	-0.255* (0.102)	-0.241** (0.067)				
λ			-0.040 (0.023)	-0.439 (0.082)		
λ					-0.256* (0.101)	-0.269** (0.074)
Observations	15820505	11918	234077	4216	15586428	7702
R ²	0.208	0.209	0.154	0.077	0.209	0.226

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The standard error is in parentheses and is clustered at the province level. All regressions include province fixed effect. Rest refers to the Brazil provinces outside RR and AM.

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