Skilled Immigrants and Credential Recognition in Peru [*]

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Abstract

In 2020, amidst the COVID-19 crisis, the Peruvian government implemented a policy recognizing the foreign medical qualifications of immigrant health care workers. We analyze the labor market performance of Venezuelan health professionals with respect to other Venezuelans with university-level qualifications between 2018 and 2022. We find health professionals experienced a marked improvement in their wages, significantly outperforming their fellow immigrants in sectors such as law and education. Compared to native Peruvian health professionals, we find that Venezuelans health professionals experienced the highest positive impact on their income of all university-level professionals. It should be noted that though robust, the effect is not statistically significant. We argue nevertheless that the increase in the income of Venezuelan health professionals relates to the effectiveness of credential recognition policies in boosting the earnings of immigrants.

Key Words: Immigration, Economic Assimilation, Wage Discount.

JEL Classification: J15, J24, J31, J70.

1 Introduction

Human capital is difficult to transfer to another country (Friedberg (2000)). Imperfect skill recognition is the most commonly offered explanation, about which several studies have written (for example,Friedberg (1992), Friedberg (2000), Chiswick and Miller (2008), Nielsen (2011)). Lower quality of education (and work experience) in the home country has also been explored (Piracha et al. (2012)), Green and McIntosh (2007), Ferrer et al. (2006)), as have discrimination against foreign workers (Oreopoulos (2011), Weichselbaumer (2017)) and language and culture as hurdle (Chiswick and Miller (2003), Chiswick and Miller (2010)).[1]

More narrowly, a problem that immigrants face is that certain occupations, such as medicine, law, and teaching, require professionals to obtain national certifications in order to work in a labor market. Recent studies on this topic include Tani (2017), Kleiner (2017), Brücker et al. (2021), Kugler and Sauer (2005), and Gomez et al. (2015).[2]

Kleiner (2017) provides a comprehensive overview of the influence of occupational licenses and regulations, synthesizing findings from various academic studies and empirical evidence. This author highlights that for migrants, working in a universally licensed occupation can increase hourly earnings by 8 to 15 percent compared to unlicensed individuals with similar education and skills. Those in high-wage occupations, such as doctors and lawyers, benefit the most due to strict entry barriers. Tani (2017) argues that the recognition of foreign qualifications has a significant impact on the wages of migrants in Australia. In a cross-sectional descriptive analysis, migrants who have had their qualifications recognized earn wages that are 40 percent higher compared to those who have not.[3] Similarly, Brücker et al. (2021) investigate the effect of formal recognition of occupational qualifications on the labor outcomes of immigrants in Germany. Using a differences-in-differences methodology, the study reveals that the recognition of foreign qualifications increases employment rates of immigrants by 24.5 percent and hourly wages by 19.8 percent. This increase is primarily due to greater access to regulated occupations and better matching of workers' skills and employer needs. [4] All of these studies findings form a consensus on the importance of the

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[1]Pecoraro and Wanner (2019) develop an illustrative summary of possible causes.

[2]Combining information from the IAB-SOEP Migration survey and German social security data, Brücker et al. (2021) find gains from occupational recognition in the labor market.

[3]However, endogeneity tests indicate positive selection among those who choose to have their qualifications recognized, implying that these individuals possess characteristics making them more likely to earn higher wages. The study also reveals that while the local signal is particularly beneficial for initial entry into the labor market, its impact diminishes over time as employers become able to directly evaluate the migrants' productivity.

[4]Along these lines, Feline and Zubrzyckiz (2021) study the effects of a 2013 legalization program for Senegalese immigrants in Ar-

recognition and assessment of foreign qualifications.

Regarding Peru, ours is the first paper that analyzes the effects of occupational licensing for immigrants. In a related study, Torres and Galarza (2021) find that Venezuelan immigrants in Peru face significant wage disparities compared to native workers, earning substantially less. Foreign work experience and education are often undervalued in the Peruvian labor market, leading to lower earnings for immigrants. These authors also find that while immigrants working in occupations that match their previous roles in Venezuela tend to earn higher wages than their fellow nationals who do not find such employment.

Our study takes advantage of a natural experiment to investigate whether the slow labor assimilation of immigrants is related to the lack of certification of their when accounting for education and work experience the former lag behind native-born professionals in pay. In 2020, amidst the COVID-19 crisis and facing a deficit of health professionals, the Peruvian government implemented a policy recognizing the medical qualifications of immigrant health care workers (doctors, nurses, and so forth) who were already treating patients. This policy continued even after the COVID-19 crisis subsided. As a result, since 2020 Venezuelan health care professionals have found it easier to have their skills officially recognized. This contrasts with lawyers and teachers, who face greater challenges when it comes to working in their fields of expertise.

This natural experiment allows us to analyze the effect of credential recognition on health care professionals. We employ two rounds of the Encuesta Dirigida a la Población Venezolana que reside en el País (ENPOVE; National Survey of the Venezuelan Population Residing in Peru), one conducted in 2018 before the pandemic and the other in 2022, when the pandemic was waning and credential recognition for doctors had already been implemented. Additionally, we compare the groups of immigrants from 2018 and 2022 with Peruvian individuals, using data from the 2018 and 2022 Encuestas Nacional de Hogares (ENAHO, National Household Surveys). We employ a difference-in-difference (DID) and triple-difference approaches to analyze the impact of occupational licensing on doctors. Our results point to an increase in the monthly income of Venezuelan health care professionals in the 2022 group with respect to other professions. However, though the effects are robust they are not statistically significant in all specifications.

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gentina, finding that while the program had limited impact on the immigrants' access to the formal labor market, it significantly improved their subjective well-being. Relying on 50 in-depth interviews and a small-scale survey, the authors highlight that legal status enhances social integration and increases the likelihood of collective action for labor and human rights among the Senegalese street hawkers.

The remainder of the paper proceeds as follows: section 2 describes the data, section 3 presents the econometric specifications used to identify the immigrant wage premium, section 4 discusses the results, and section 5 concludes.

2 Background

During 2020, the Peruvian government implemented a series of Emergency Decrees that significantly facilitated the integration of foreign doctors, particularly Venezuelans, into the Peruvian health system in response to the COVID-19 pandemic. These measures allowed for the rapid incorporation of essential human resources to address the health crisis.

In April of that year, Emergency Decree No. 037-2020 was enacted,[5] creating the SPECIAL COVID SERVICE - SERVICER. This decree enabled the participation of foreign health care professionals. In response, the coordinator of Médicos de Unión Venezolana in Peru expressed his appreciation: "We are grateful to Peru and ready to offer our services throughout the country, especially in provinces and critical zones. We stand united against Covid-19."

In addition, the Center for Economic Development (CenDE) has highlighted the impact of Ministerial Resolution No. 448-2020-MINSA,[6] "Guidelines for the Surveillance, Prevention, and Control of Health for Workers at Risk of Exposure to COVID-19." This resolution was crucial for the integration of migrant medical technologists and nurses into the occupational clinic environment. The regulation specifies that companies must have health personnel who meet these guidelines, but the requirement for professional registration is waived, provided they have the appropriate training from higher education institutions that specialize in occupational health or safety and health at work. (Equilibrium-Centro para el Desarrollo Económico, 2021)

In August 2020, another significant measure was introduced, Emergency Decree No. 090-2020,[7] designed to close the gaps in health human resources during the pandemic. This decree allows graduates and professionals trained abroad in the health sciences to provide face-to-face services in various public institutions without their degrees needing to be recognized or revalidated or their needing the temporary authorization of the respective professional college. Additionally, it specifies that these professionals have six months after the end of the Health Emergency to complete the processes of getting their degrees recognized or revalidated and of passing the the national health sciences exam in order to continue practicing legally.

As of February 2021, more than 5,630 Venezuelan migrants and refugees were among the health

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[5]D. U. N° 037-2020. Decreto de Urgencia que dicta medidas complementarias para el sector salud en el marco de la emergencia sanitaria por los efectos del coronavirus (COVID-19).

[6]Resolución Ministerial N.° 448-2020-MINSA. Lineamientos para la Vigilancia, Prevención y Control de la salud de los trabajadores.

[7]D. U. N° 090-2020. Decreto de Urgencia que establece medidas excepcionales y temporales que coadyuven al cierre de brechas de recursos humanos en salud para afrontar la pandemia por la COVID-19.

care personnel on the front line responding to the health emergency (Equilibrium-Centro para el Desarrollo Económico, 2021). Despite the significant contribution of these professionals to public health in Peru, the medium- and long-term consequences of these measures on the occupational and economic integration of Venezuelan health professionals have not been widely assessed. This gap in research suggests the need for future studies to examine the lasting impacts of the policy of recognizing foreign credentials in emergency health contexts.

3 Data

We use data from the 2018 and 2022 National Surveys of the Venezuelan Population Residing in Peru (ENPOVE), as well as the 2018 and 2022 Peruvian National Household Surveys (ENAHO). All these surveys were conducted by the Peruvian Statistics Bureau (Instituto Nacional de Estadística e Informática, INEI) and gather similar socio-economic information. ENPOVE faithfully follows the structure of ENAHO, reproducing its main modules and questions. This harmonization allows for the integration and analysis of comparable variables for Peruvian and Venezuelan workers. As argued by Torres and Galarza (2021), ENAHO and ENPOVE complement each other, with ENAHO using the 2017 National Census as a sampling frame for the overall population (with some foreign born), while ENPOVE augments its sampling frame with information from the Superintendencia Nacional de Migraciones (National Migration Superintendence).

The inaugural ENPOVE took place in 2018, conducting interviews in urban areas across six regions: Arequipa, Callao, Cuzco, La Libertad, Lima, and Tumbes, generating a data set of 9,487 observations. It is important to highlight that neither the ENPOVE 2022 nor the 2018 version are panel data samples; each survey was conducted independently, without tracking a specific immigrant cohort. Similarly, the subsequent iteration of this survey (ENPOVE 2022) featured an expanded scope, collecting data on Venezuelan migrants residing in urban areas across nine regions: Lima (the nation's capital), Ancash, Ica, and Callao in the central coastal region; Piura, Lambayeque, Tumbes, and La Libertad in the northern coastal region; and Cusco and Arequipa in the south.[8] Like its initial iteration, ENPOVE 2022 gathered demographic information from all household members (such as age, gender, and education), as well as details regarding migration status, health, employment history (including prior roles held in Venezuela and current employ-

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[8]A region is analogous to a US state; Peru has 25 regions.

ment status), experiences of discrimination, and social networks.

While ENAHO is recognized as the primary and dependable repository for extensive social, demographic, and economic insights from Peruvian households, it faces challenges in gathering data on foreign-born individuals. In particular, it lacks information on the historical labor backgrounds of foreigners, such as details about their prior occupations. This underscores the necessity of leveraging both surveys in our analysis. ENAHO is conducted year-round and provides representative data at both the national and regional levels covering all 25 regions.

The key data collected from both surveys include age, gender, level of education, field of study, current wage, and residential area. Furthermore, ENPOVE inquires about respondents' occupations in Venezuela, date of arrival, work permit status, and whether their degree titles have been recognized.

Working Sample

In the analysis, the focus is on individuals within urban areas across five regions: Arequipa, Callao, La Libertad, Lima, and Tumbes. The demographic scope is specifically narrowed to those ages 25 to 74 years, effectively capturing the population who is most likely to be economically active. The sample deliberately excludes individuals with incomes at or below zero in order to keep the focus on those engaged in the labor market. Additionally, the study limits its scope to participants with higher educational achievements, specifically those who had undergraduate, master's, or higher degrees. This ensures that the analysis concentrates on a cohort for whom the educational background is uniform and who are at a level where degree homologation is possible and relevant for employment in Peru.

The dependent variable is defined as the logarithm of monthly wages from the primary occupation. In cases where wage data are reported in varying frequencies, these figures are standardized to a monthly basis to ensure analytical consistency. A binary variable is introduced to denote immigrant status, derived from responses in the ENPOVE interviews. Educational levels are categorized into distinct groups, each represented by a dummy variable corresponding to the highest degree attained. Work experience, a critical variable in the analysis, is calculated using the standard formula of current age minus years of education, assuming uninterrupted education starting at age six.

The categorization of the field of study is methodically constructed using the Clasificador de

Carreras e Instituciones de Educación Superior y Técnico Productivas. This classification system is instrumental for aligning the fields of study to the degrees that the immigrants had earned in Venezuela. In order to capture the labor market dynamics more precisely, a variable denoting the possession of some form of work permit is included. Another variable include captures whether the respondent had homologated their university degree, which is critical for those seeking employment in Peru within their previous professions in Venezuela.

After applying these rigorous criteria, the refined working sample for the study stood at 1,861 observations. This subset of the data provides a focused lens through which to analyze the labor market outcomes for a specific, educationally homogenous segment of the population. This approach ensures that the findings are relevant to policy discussions concerning the integration and employment of educated immigrants in Peru.

Descriptive Statistics

Table 1 displays the descriptive statistics of the complete sample (1,861 observations), focusing on immigrants who responded to the ENPOVE survey in 2018 and 2022. The sample notably consists entirely of graduate-level individuals, reflecting the research interest in this particular demographic based on their potential to homologate their qualifications for employment in Peru. The proportion of females saw an increase from 0.530 in 2018 to 0.596 in 2022. Age-wise, the 2018 sample was younger on average, with a mean of approximately 34 years old, compared to 36 years in 2022. The age distribution was skewed towards those between 25 and 40 years, comprising 81.3 percent of the 2018 sample and 73.8 percent in 2022.

The experience level, measured by years of (imputed) work experience, was high across both samples but shows a decrease from 60.8 percent of individuals with up to 19 years of experience in 2018 to 53.4 percent in 2022. The average monthly income reported by immigrants rose from 1,100 Peruvian soles in 2018 to 1,370 in 2022, with corresponding log salary increases from 6.902 to 7.069.

Diving deeper into occupation categories, the distribution shifted slightly across the years. The percentage of engineering professionals decreased from 0.199 in 2018 to 0.184 in 2022, while the proportion of health professionals increased marginally. Similarly, teaching professionals made up a larger proportion in 2022 than in 2018. In general, these shifts potentially indicate changing demand dynamics in the labor market.

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In terms of regional distribution, Lima remained the predominant place of residence for immigrants, with approximately 49.6 percent in 2018 and a significant increase to 60.0 percent in 2022, which may reflect the capital's draw as a center for economic opportunities. Other regions like Arequipa, Callao, and La Libertad also saw shifts in their immigrant populations, but the overall distribution remained relatively stable, with Tumbes hosting the smallest proportion in either sample.

We conclude this section by noting that while the individuals in the samples from ENPOVE 2018 and ENPOVE 2022 shared common demographic characteristics, such as age distribution and concentration in Lima, they differed in their gender makeup, educational attainment, and their specific occupational categories. These changes are noteworthy, because they suggest evolving patterns in the integration and economic participation of the immigrant population in Peru.

Table 1 – Summary Statistics: Working Sample

	Mean			Mean	
	2018	2022		2018	2022
Independent variables			**Education level**		
Female	0.530	0.596	Graduate	1.000	1.000
Age (years)	34	36	**Migration status**		
25-30	0.416	0.262	Some work permit	0.462	0.037
31-40	0.397	0.475	Homologation	0.887	0.100
41-50	0.152	0.205	**Region**		
Over 50	0.035	0.057	Arequipa	0.225	0.100
Employment			Callao	0.118	0.154
Income	1100.31	1369.94	La Libertad	0.140	0.120
Log monthly income(PEN)	6.902	7.069	Lima	0.496	0.600
Occupation categories			Tumbes	0.021	0.025
Engineering prof.	0.199	0.184	**Work experience**		
Health prof.	0.100	0.103	9 years or less	0.059	0.022
Teaching prof.	0.243	0.247	10–19 years	0.607	0.534
Finance prof.	0.053	0.049	20–29 years	0.232	0.306
Law prof.	0.071	0.048	30–39 years	0.093	0.117
			Over 40 years	0.009	0.022
Observations	**1213**	**648**	Observations	**1213**	**648**

4 Econometric Specifications

To measure the economic improvement of Venezuelan's health professionals between 2018 and 2022, we explore different econometric specifications via comparisons of foreign health professionals to (1) foreign nonhealth professionals and (2) native-born health professionals.

The first simple comparison comes from a difference-in-difference estimation using Venezuelan health professionals and Venezuelan nonhealth professionals between 2018 and 2022. Specifically, we estimate

$$Y_{ir} = \beta_0 + \beta_1 Health_i + \beta_2 D2022 + \beta_3 Health_i * D2022 + X_i\rho + \delta_r + \epsilon_{ir}, \tag{1}$$

where Y_{ir} indicates the logarithm of monthly income of a Venezuelan worker i residing in city r interviewed in year t. The binary variables *Health* and *D2022* refer to whether an immigrant is a health professional and whether they were interviewed in 2022. In this case, the variable of interest is β_3, because it reflects the additional income Venezuelan health professionals earned between 2018 and 2022 compared to other Venezuelan professionals. Regarding the last terms, X_i represents a female binary indicator, δ_r a region fixed effect, and ϵ_{ir} the model error.

A second, more detailed specification involves comparing the performance of health professionals, between 2018 and 2022, to the performance of other specific careers. Hence, we estimate

$$Y_{ir} = \beta_0 + \beta_1 Health_i + \beta_2 D2022 + \beta_3 Health_i * D2022 +$$
$$\sum_{j=1}^{J} \gamma_j Profession_{ij} + \sum_{j=1}^{J} \iota_j Profession_{ij} * D2022 + X_i\rho + \delta_r + \epsilon_{ir}, \tag{2}$$

where the summations separate the income, in 2018 and 2022, for a particular set of occupations.[9]. In this specification, our interest is focused on the difference between the income of Venezuelan health professionals (obtained by the sum of β_0, β_1, β_2, and β_3) and of Venezuelan workers who had followed another career path j (obtained by the sum of β_0, β_1, γ_j, and ι_j).[10]

Our last specification adds Peruvian workers to the sample in order to determine the incomes of Venezuelan and Peruvian workers in the same profession. Our interest here lies in comparing the change in income of Venezuelan health professionals (between 2018 and 2022) to the change in

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[9]Careers not individualized are grouped in the category *other professions*

[10]In this specification, the incomes of a base career for 2018 and 2022 comes from β_0 and β_2, respectively.

income of Peruvian health professionals. Accordingly, we estimate the following equation:

$$Y_{ir} = \beta_0 + \sum_{j=1}^{J} \kappa_j Native profession2018_{ij} + \sum_{j=1}^{J} \lambda_j Native profession2022_{ij} +$$

$$\sum_{j=1}^{J} \tau_j Venez profession2018_{ij} + \sum_{j=1}^{J} \nu_j Venez profession2022_{ij} \quad (3)$$

$$+ X_i \rho + \delta_r + \epsilon_{ir},$$

where the four summations identify the average income for each possible combination of profession, immigrant vs. native status (Venezuelan or Peruvian), and year of analysis (2018 and 2022). Given this equation, we can compare the increase in income through the years of Venezuelan health professionals to that of Peruvian health professionals. Furthermore, in a triple difference analysis, we can even compare that change to the increase in income seen by Venezuelan immigrants.

5 Results

5.1 Initial Estimations

Table 2 presents the estimates corresponding to our first specification. Column 1 shows the results for our main sample, Venezuelans with positive incomes and with postsecondary education, whereas column 2 restricts the sample to Venezuelans with a bachelor's degree and column 3 further restricts it to those with (some type of) work permit. Lastly, the fourth column incorporates a gender dummy variable and region fixed effects. The results show that Venezuelan health professionals experienced an increase of around 35 log points in their (monthly) salary between 2018 and 2022 (the sum of the ENPOVE 2022 and Health prof. 2022 coefficients). Figure 1 shows this increase for all columns. The wage difference (between 2018 and 2022) remains similar as the sample changes and controls and fixed effects are added.

The additional benefit for health professionals, with respect to other professional Venezuelans, is represented by the Health Prof.-2022 coefficient, the DID estimate. It showcases the different behavior of immigrant health professionals between 2018 to 2022 in comparison to immigrants in other professions. The estimated coefficient exhibits a robust positive effect and statistical significance of 90 percent. That is, Venezuelan health professionals gained 22 to 30 log points more in

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their monthly salary between 2018 to 2022 than other Venezuelan professionals.

Figure 2 presents this DID estimate for all columns; that is, it shows the disparity in wage increase between Venezuelan health professionals and those in other professions. The figure shows that the wage increase of Venezuelan health professionals between 2018 and 2022 considerably exceeded that of professionals not employed in the health sector. This first result suggests the influence of external factors that exclusively affected health professionals.

Table 2 – Regression Results on Log Salary – Individuals with Positive Incomes – **Venezuelan Sample**

	(1)	(2)	(3)	(4)
ENPOVE 2022	0.145**	0.139**	0.0523	0.0712
	(0.0498)	(0.0490)	(0.0470)	(0.0511)
Health prof.	0.00898	0.00420	0.00231	0.0453
	(0.0571)	(0.0552)	(0.0601)	(0.0620)
Health prof. - 2022	0.219*	0.239*	0.298*	0.279*
	(0.101)	(0.107)	(0.113)	(0.114)
Constant	6.901***	6.901***	7.010***	7.017***
	(0.0560)	(0.0547)	(0.0314)	(0.0305)
Controls	No	No	No	Yes
N	1861	1719	1055	1055
R^2	0.0373	0.0378	0.0275	0.0950

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(1) College graduate with positive income

(2) College graduate with positive income and bachelor's degree

(3) College graduate with positive income, bachelor's degree, and work permit

(4) College graduate with positive income, bachelor's degree, and work permit; FEs and controls

Figure 1 – Differences in Log Salary between Health Professionals 2022 and Health Professionals 2018
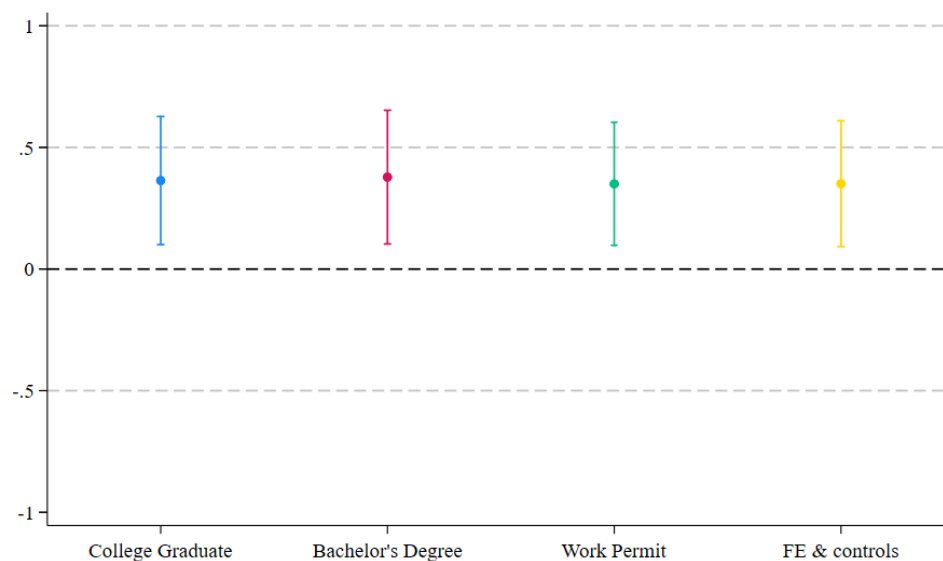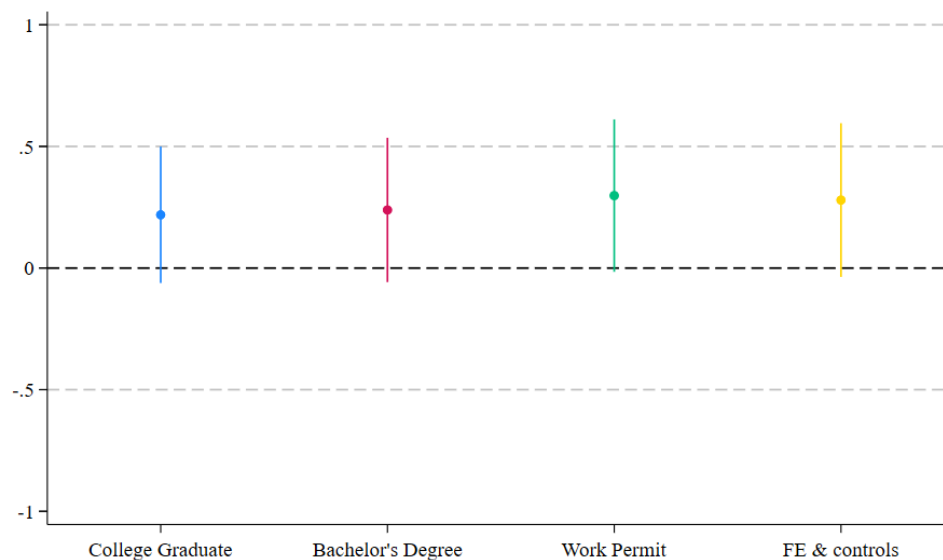- Table 2

Figure 2 – Difference in Difference: (Log Salary of Health Professionals 2022 Minus Log Salary of Health Professionals 2018) Minus (Log Salary of Nonhealth Professionals 2022 Minus Log Salary of Nonhealth Professionals 2018) - Table 2

5.2 Venezuelan Sample

Table 3 presents the results for specification (2), which is an extension of specification (1) that identifies some other professional groups. This allows for the analysis of the specific salary increase of a variety of types of Venezuelan professionals from 2018 to 2022. Specifically, in addition to health professionals, we identify professionals in the fields of law, science, finance, and education. We group other professions in the broad category"others." In our estimations, however, the excluded base group is teaching professionals.

The table is divided into 12 columns with the results of applying each sample specification spanning 3 columns. For columns 1 to 3, the sample consists of Venezuelan university graduates with positive incomes. For columns 4 to 6, the sample is just those with a bachelor's degree. For columns 7 to 9, further focus on Venezuelans with a bachelor's degree and a work permit. Finally, the results shown in columns 10 to 12 reflect controlling for gender and the addition of region fixed effects.

Within each three-column group, only health professionals are explicitly identified first, so the results are the same as in table 2. Then, finance and law professionals dummies and interactions are included. Lastly, science professionals and the other professionals group are added.

It can be seen that the sign and size of the Health Prof. 2022 coefficient is robust: it ranges from 0.21 to 0.29 across all columns and is statistically significant at the 95 percent level even with the addition of controls and region fixed effects. We also find no significant effect, distinctive from the base group, for finance professionals, while for law professionals there is a negative and significant effect. The results are robust across all columns. Figures 3 and 4 summarize these findings.

Both figures 3 and 4 present results from column 12. Figure 3 shows the difference in log salary between health professionals and other groups for 2022. We first notice that those within the health group have a higher salary than law and teaching professionals. Second, with science and finance professionals we also find a positive difference, although the confidence intervals are too wide to argue statistical significance.

Figure 4 presents the DID estimation. It illustrates how the salary difference between health professionals and other professional groups varied between 2018 and 2022. The results show that the salary difference for health professionals compared to all groups was greater in 2022 than in 2018. However, the wide confidence intervals do not permit the conclusion that these differences

are statistically significant.

Table 3 – Regression Results on Log Salary – College Graduates – **Sample: Venezuelans only**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ENPOVE 2022	0.145**	0.156**	0.105**	0.139**	0.154**	0.0937*	0.0523	0.0561	0.0608	0.0712	0.0738	0.0930
	(0.0498)	(0.0468)	(0.0337)	(0.0490)	(0.0467)	(0.0350)	(0.0470)	(0.0459)	(0.0460)	(0.0511)	(0.0505)	(0.0476)
Health prof.	0.00898	0.0107	0.0759	0.00420	0.00670	0.0757	0.00231	-0.00802	0.115*	0.0453	0.0393	0.141**
	(0.0571)	(0.0575)	(0.0499)	(0.0552)	(0.0556)	(0.0497)	(0.0601)	(0.0615)	(0.0481)	(0.0620)	(0.0645)	(0.0456)
Health prof. - 2022	0.219*	0.208	0.259**	0.239*	0.223	0.284**	0.298*	0.294*	0.289**	0.279*	0.277*	0.257**
	(0.101)	(0.102)	(0.0766)	(0.107)	(0.107)	(0.0821)	(0.113)	(0.114)	(0.0793)	(0.114)	(0.114)	(0.0796)
Finance prof.		0.0157	0.0808*		0.0273	0.0963**		-0.0644	0.0590		-0.0752*	0.0326
		(0.0194)	(0.0333)		(0.0209)	(0.0311)		(0.0325)	(0.0331)		(0.0284)	(0.0477)
Finance prof. - 2022		-0.0392	0.0121		-0.0923	-0.0317		0.00827	0.00352		0.0670	0.0391
		(0.106)	(0.129)		(0.144)	(0.163)		(0.109)	(0.157)		(0.131)	(0.169)
Law prof.		0.0108	0.0759**		0.0107	0.0798**		-0.0681	0.0554		-0.000547	0.102
		(0.0100)	(0.0171)		(0.00735)	(0.0176)		(0.0372)	(0.0447)		(0.0259)	(0.0543)
Law prof. - 2022		-0.158**	-0.107***		-0.199**	-0.139**		-0.147*	-0.152***		-0.157***	-0.178**
		(0.0422)	(0.0214)		(0.0529)	(0.0333)		(0.0532)	(0.0255)		(0.0209)	(0.0565)
Science prof.			0.177**			0.188***			0.281***			0.227***
			(0.0422)			(0.0381)			(0.0212)			(0.0234)
Science prof. - 2022			0.0723			0.0962			-0.0332			-0.0378
			(0.0855)			(0.0884)			(0.0871)			(0.0859)
Other prof.			0.0460			0.0480			0.0999			0.0973
			(0.0343)			(0.0324)			(0.0621)			(0.0772)
Other prof. - 2022			0.0822*			0.0908**			0.0263			-0.0121
			(0.0314)			(0.0223)			(0.0669)			(0.0641)
Constant	6.901***	6.899***	6.834***	6.901***	6.899***	6.830***	7.010***	7.020***	6.896***	7.017***	7.027***	6.914***
	(0.0560)	(0.0570)	(0.0581)	(0.0547)	(0.0552)	(0.0563)	(0.0314)	(0.0322)	(0.0321)	(0.0305)	(0.0306)	(0.0572)
Region FEs	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Controls	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
N	1861	1861	1861	1719	1719	1719	1055	1055	1055	1055	1055	1055
R^2	0.0373	0.0390	0.0607	0.0378	0.0405	0.0665	0.0275	0.0332	0.0661	0.0950	0.0982	0.118

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(1–3) College graduate with positive income
(4–6) College graduate with positive income and bachelor's degree
(7–9) College graduate with positive income, bachelor's degree, and work permit
(10–12) College graduate with positive income, bachelor's degree, and work permit; FE and controls

Figure 3 – Log Salary of Health Professionals Minus Log Salary X Professions - 2022 – Table 3 Column 12
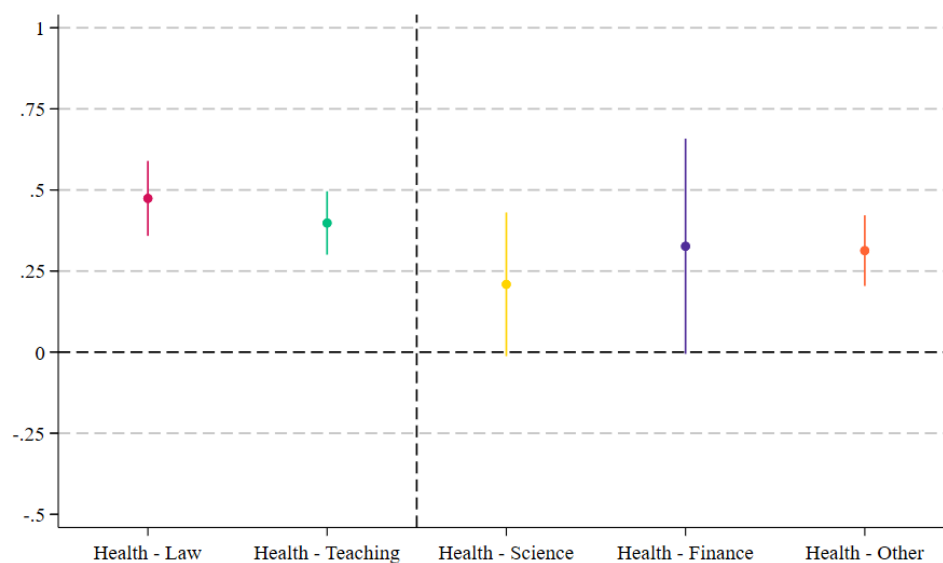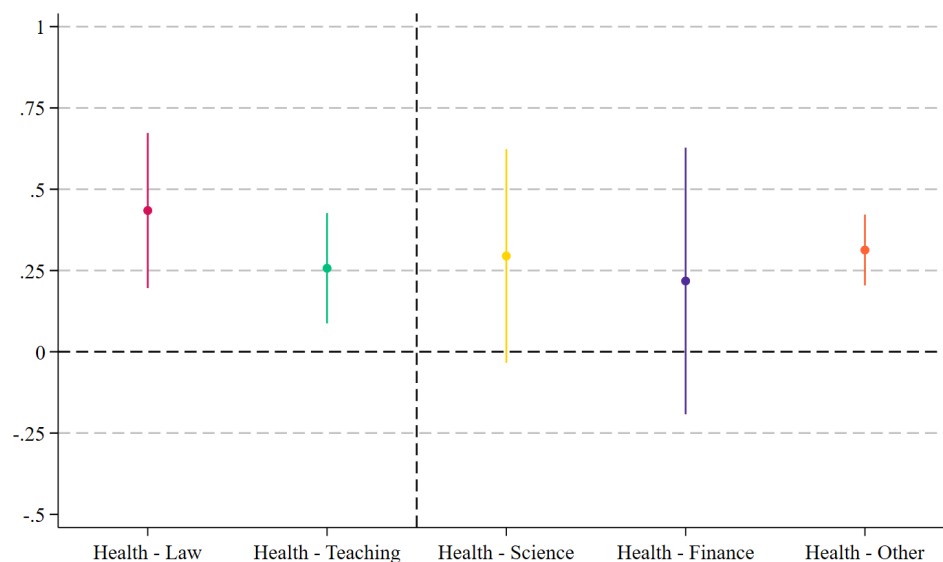

Figure 4 – **Difference in Difference** : (Log Salary Difference: Health Professionals Minus X Professionals - 2022) Minus (Log Salary Difference: Health Professionals Minus X Professionals - 2018) – Table 3 Column 12

5.3 Venezuelan and Peruvian Sample

Table 4 presents the estimates corresponding to specification (3). This table outlines the results of regression analyses that examine the wage and log wage differentials between native-born and Venezuelan professionals in the Peruvian labor market.

The results indicate that belonging to the group of Venezuelan immigrant doctors in 2022 has a positive and statistically significant impact on incomes with respect to the base category. Moreover, when comparing the changes in immigrants' wages from 2018 to 2022 for all of the professions, the data show that while the wages earned by those in fields such as science, teaching, finance, and law exhibit modest or insignificant increases, the wages earned by those in the health sector shows a markedly superior increase, as is illustrated clearly in figure 5.

Figure 6 presents the difference between the logarithms of wages of native-born health professionals in 2022 and in 2018. The results indicate that although there was an increase in the wages of native-born professionals in the health sector, this increase is not statistically significant. Taken together, figures 5 and 6 suggest additional factors may be contributing to the wage increase seen by Venezuelan health professionals.

Figure 7 illustrates the differences between immigrant and native-born professionals in terms of wage evolution. It shows that while the wage increase in the health sector was greater compared to that in other professional sectors, this result is not statistically significant. When the wage increase seen by health professionals is compared with those seen by professionals in the fields of law and teaching, marked discrepancies are noted. Furthermore, Venezuelan health professionals experienced a larger wage increase between 2018 and 2022 than did native-born health professionals. In the legal sector, in contrast, the wage difference is negative, indicating that the wage increase for native-born professionals was higher than that for Venezuelan professionals. In the education sector, the wage difference is null, implying that the wage increases were statistically equivalent for both groups. We argue for the importance of comparing the wage increase seen by health professionals with that seen by law professionals, given that credential homologation in these sectors often faces numerous barriers due to the highly regulated nature of these professions. Still, figure 7 shows that the DID estimator for the wage increase seen by Venezuelan health professionals is not statistically significant.

Finally, Figure 8 presents a difference-in-difference-in-difference (DDD) estimation in order to

compare visually the relative increase experienced by Venezuelan health professionals with respect to the relative change in other professions. Essentially, this figure contrasts the point corresponding to health professionals from figure 7 with each of the other points representing other professions. Based on this figure, we can confirm that health professionals experienced a marked increase in wages relative to their native-born counterparts, whereas immigrants working in the fields of law and education did not relative to their native-born peers. Though we argue that this result could provide an indication of the effectiveness of credential homologation policies in improving the incomes of immigrant health professionals, the effect is still not statistically significant.

Table 4 – Regression Results on Salary and Log Salary – Individuals with Positive Income – College Graduates

	(1) Salary	(2) Log salary	(3) Log salary	(4) Log salary
Health 2022 native-born	2136.4***	1.045***	0.722***	0.453*
	(138.0)	(0.0796)	(0.0763)	(0.191)
Health 2022 immigrant	876.6***	0.437***	0.434***	0.429***
	(117.4)	(0.0721)	(0.0729)	(0.0721)
Health 2018 native-born	1621.8***	0.869***	0.550***	0.284
	(127.3)	(0.0685)	(0.0894)	(0.142)
Health 2018 immigrant	140.2*	0.0911	0.0901	0.0977
	(63.98)	(0.0508)	(0.0506)	(0.0521)
Science 2022 native-born	1898.9***	0.899***	0.650***	0.386*
	(150.9)	(0.0487)	(0.0639)	(0.178)
Science 2022 immigrant	521.3**	0.299**	0.304**	0.300**
	(178.8)	(0.0928)	(0.0923)	(0.0907)
Science 2018 native-born	1826.8***	0.883***	0.618***	0.356*
	(202.3)	(0.0545)	(0.0590)	(0.148)
Science 2018 immigrant	125.3***	0.115**	0.125**	0.131**
	(20.80)	(0.0373)	(0.0374)	(0.0392)
Teaching 2022 native-born	940.8***	0.625***	0.257*	-0.0374
	(128.2)	(0.108)	(0.113)	(0.230)
Teaching 2022 immigrant	124.2	0.110*	0.104*	0.102*
	(65.95)	(0.0476)	(0.0456)	(0.0453)
Teaching 2018 native-born	707.1***	0.501***	0.145	-0.152
	(88.39)	(0.0711)	(0.0949)	(0.207)
Finance 2022 native-born	1631.8***	0.837***	0.564**	0.294
	(336.1)	(0.111)	(0.123)	(0.181)
Finance 2022 immigrant	303.0	0.203	0.199	0.197
	(186.3)	(0.150)	(0.151)	(0.151)
Finance 2018 native-born	1602.3***	0.809***	0.494***	0.229
	(253.2)	(0.0559)	(0.0526)	(0.141)
Finance 2018 immigrant	-27.15	0.0337	0.0383	0.0443
	(95.13)	(0.0523)	(0.0505)	(0.0507)
Law 2022 native-born	2629.6***	1.099***	0.810***	0.536**
	(317.1)	(0.0800)	(0.0929)	(0.147)
Law 2022 immigrant	171.5	0.109	0.104	0.113
	(144.2)	(0.0871)	(0.0826)	(0.0860)
Law 2018 native-born	1814.9***	0.842***	0.571***	0.311
	(244.8)	(0.0529)	(0.0700)	(0.166)
Law 2018 immigrant	95.71	0.0814**	0.0841**	0.0905***
	(55.76)	(0.0218)	(0.0200)	(0.0193)
Other 2022 native-born	1636.8***	0.816***	0.541***	0.274
	(215.9)	(0.0705)	(0.0813)	(0.162)
Other 2022 immigrant	231.4*	0.190**	0.192**	0.193**
	(104.1)	(0.0675)	(0.0665)	(0.0659)
Other 2018 native-born	1360.4***	0.724***	0.442**	0.178
	(226.0)	(0.0917)	(0.114)	(0.168)
Other 2018 immigrant	80.94	0.0397	0.0424	0.0455
	(84.76)	(0.0465)	(0.0446)	(0.0446)
Constant	1171.7***	6.963***	6.930***	6.768***
	(117.5)	(0.0580)	(0.0621)	(0.105)
Region FEs	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N	5368	5368	5368	5368
R^2	0.230	0.319	0.348	0.359

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Column 3 adds experience controls for both native-born and immigrant professionals.
Column 4 includes controls for experience and experience^2.

Figure 5 – Log Salary of Immigrant X Professionals 2022 Minus Log Salary of Immigrant X Professionals 2018 – Table 4 column 1
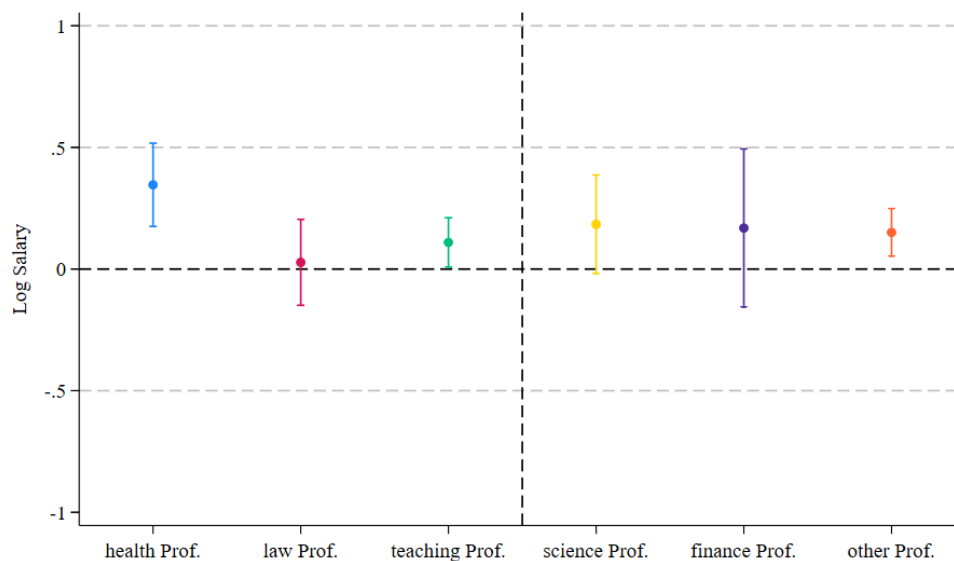

Figure 6 – Log Salary of Native X Professionals 2022 Minus Log Salary of Native-born X Professionals 2018 – Table 4 column 1
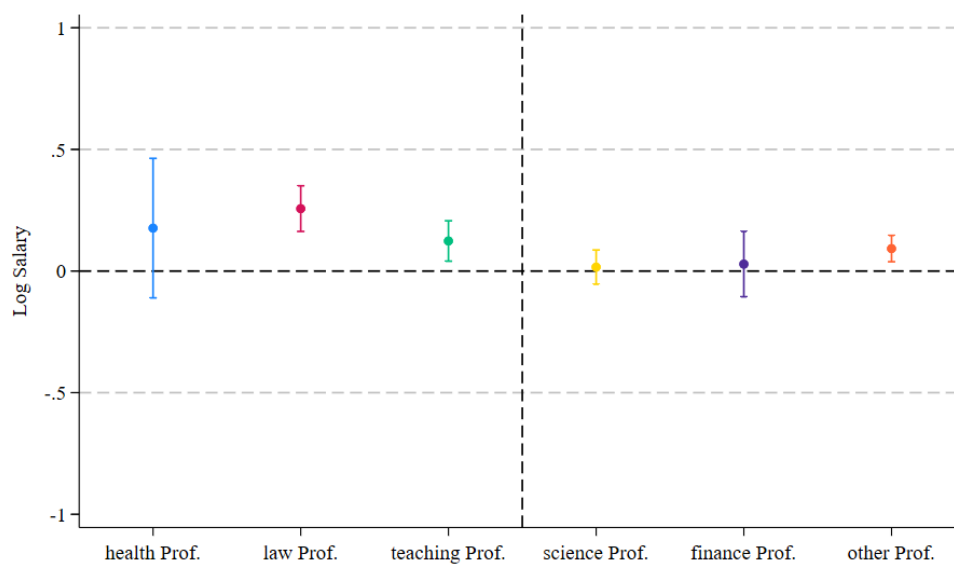
Figure 7 – Difference in Difference : (Log Salary of ImmigrantProfessionals, 2022 vs. 2018) vs. (Log Salary of Native-born Professionals, 2022 vs. 2018) – Table 4 column 1
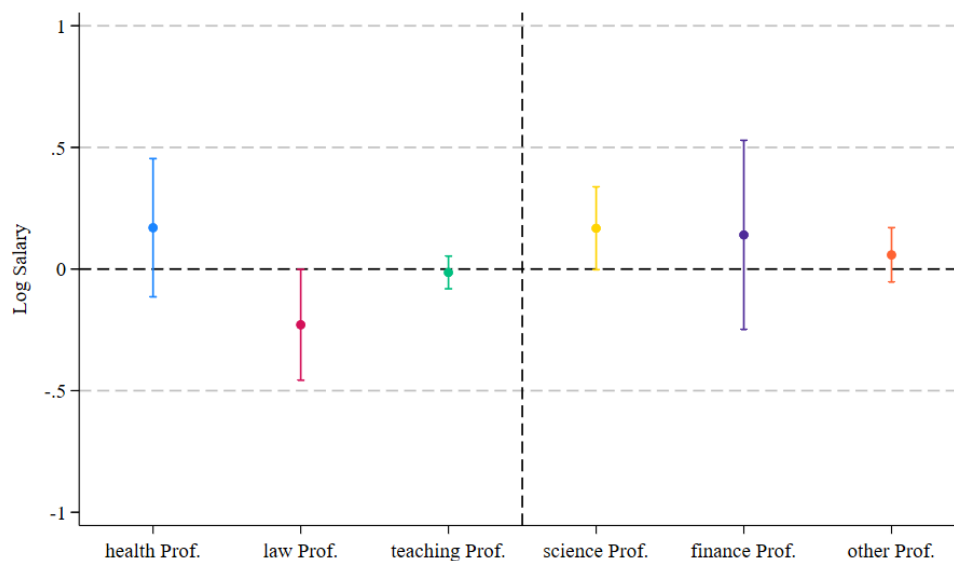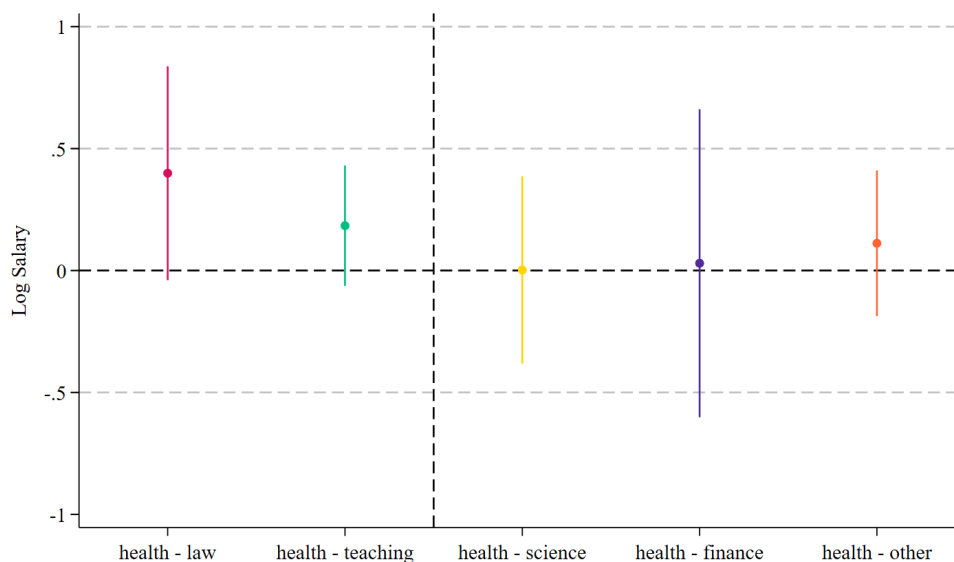

Figure 8 – Difference in Difference in Difference : Comparison of the Log Salary Difference between Immigrant and Native-born Health Professionals (2018 vs. 2022) vs. Log Salary Difference between Immigrants and Native-born in X Professions – Table 4 column 1

6 Conclusions

Our results show a significant improvement in immigrantVenezuelan health professionals' income compared to the income of other immigrant Venezuelan professionals between 2018 and 2022 in Peru. Broadly, Venezuelan health professionals experienced an increase of 35 log points in their wages in the four-year period of study.

When comparing this improvement to the wage evolution seen by other professional Venezuelan migrants, we find that health professionals significantly outperformed all other university-level professionals, most notably those in comparable sectors such as law and education. Venezuelans in the health sector in Peru enjoyed a notable salary increase, while other professional groups experienced modest or insignificant increases. For example, the income of immigrant Venezuelan law professionals barely showed a marginal increase. We relate this significantly different behavior to varying impacts of credential recognition policies in different sectors.

When comparing the evolution of salaries of immigrant and native Peruvian professionals, we also find that Venezuelan health professionals experienced the highest increase in income among all professional groups. However, although the DID effect was positive, it was not statistically significant. Still, a DDD estimator finds that of all the immigrant Venezuelans with university-level credentials, health professionals experienced the highest increase in their incomes, in comparison to their native-born peers.

Taken as a whole, we argue these findings provide some empirical evidence that the policies implemented during the global health crisis, whereby foreign degrees and experience in medicine were recognized, did have an important impact on the economic assimilation of immigrants. This highlights the importance of such mechanisms, at least in the context of high demand for medical skills.

However, it is important to consider that the results may not be generalizable to all professional sectors, given that health professionals were in particular demand during the study period. Future research could explore the effectiveness of credential recognition policies in other professional sectors in different economic contexts. It would also be valuable to analyze the long-term effects of these policies on the labor integration and professional development of Venezuelan immigrants in Peru and other host countries in the region.

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Table 1 – Regression Results on Salary – College Graduates with Positive Income

	(1)	(2)	(3)	(4)
ENPOVE 2022	212.2**	208.4**	101.2	130.1
	(68.23)	(67.45)	(79.38)	(86.36)
Health prof.	4.999	8.267	0.611	66.46
	(72.59)	(71.76)	(101.0)	(104.0)
Health prof. 2022	555.7**	583.6**	668.7**	644.3**
	(170.6)	(186.3)	(228.7)	(232.0)
Constant	1099.8***	1097.4***	1236.1***	1306.4***
	(60.24)	(57.02)	(43.23)	(49.37)
Region FEs	No	No	No	Yes
Controls	No	No	No	Yes
N	1861	1719	1055	1055
R^2	0.0401	0.0428	0.0322	0.0645

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(1) College graduate with positive income

(2) College graduate with positive income and bachelor's degree

(3) College graduate with positive income, bachelor's degree, and work permit

(4) College graduate with positive income, bachelor's degree, and work permit; FEs and controls

Table 2 – Regression Results on Salary – College Graduates – Sample: Venezuelans Only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ENPOVE 2022	212.2**	223.2**	116.9**	208.4**	228.9**	92.81*	101.2	102.8	76.30	130.1	129.9	118.7
	(68.23)	(63.89)	(35.50)	(67.45)	(64.58)	(38.71)	(79.38)	(82.65)	(57.18)	(86.36)	(89.21)	(64.00)
Health prof.	4.999	1.522	106.7	8.267	6.100	110.0	0.611	-22.49	186.9*	66.46	48.64	224.4**
	(72.59)	(72.59)	(57.70)	(71.76)	(71.98)	(59.99)	(101.0)	(104.5)	(77.77)	(104.0)	(108.0)	(73.79)
Health prof. 2022	555.7**	544.6**	650.9***	583.6**	563.1**	699.2***	668.7**	667.2**	693.7**	644.3**	645.3*	654.2**
	(170.6)	(172.3)	(117.6)	(186.3)	(186.3)	(136.5)	(228.7)	(233.1)	(159.8)	(232.0)	(232.8)	(162.0)
Finance prof.		-25.02	80.19		-9.598	94.34		-155.0**	54.39		-171.7**	15.87
		(23.98)	(44.17)		(29.64)	(44.43)		(40.99)	(52.24)		(47.37)	(80.95)
Finance prof. 2022		-13.50	92.79		-125.5	10.63		25.60	52.10		114.2	108.4
		(159.1)	(186.9)		(229.8)	(247.6)		(198.6)	(239.2)		(239.4)	(266.2)
Law prof.		-25.53	79.68		-19.74	84.19		-140.5***	68.87		-49.90	127.3
		(13.95)	(38.70)		(20.20)	(42.04)		(27.32)	(60.82)		(26.11)	(81.15)
Law prof. 2022		-207.5*	-101.2		-291.9***	-155.8**		-204.9**	-178.4***		-227.4*	-217.2
		(80.61)	(88.33)		(56.84)	(40.44)		(50.05)	(38.12)		(88.16)	(112.7)
Science prof.			257.8***			267.6***			461.6***			388.2***
			(34.55)			(34.99)			(49.99)			(30.89)
Science prof. 2022			257.8			323.3			100.3			95.86
			(157.1)			(163.8)			(165.6)			(165.3)
Other prof.			91.07			81.62			178.3			174.6
			(62.39)			(52.76)			(111.2)			(131.7)
Other prof. 2022			110.6*			143.7***			36.38			-11.21
			(50.59)			(26.17)			(87.51)			(85.79)
Constant	1099.8***	1103.3***	998.1***	1097.4***	1099.6***	995.6***	1236.1***	1259.2***	1049.8***	1306.4***	1329.6***	1126.9***
	(60.24)	(60.01)	(48.91)	(57.02)	(56.03)	(48.07)	(43.23)	(46.31)	(45.09)	(49.37)	(52.22)	(79.69)
Region FEs	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Controls	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
N	1861	1861	1861	1719	1719	1719	1055	1055	1055	1055	1055	1055
R^2	0.0401	0.0415	0.0634	0.0428	0.0453	0.0720	0.0322	0.0367	0.0671	0.0645	0.0674	0.0889

Standard errors in parentheses
* $p < 0.10$, ** $\textit{p} < 0.05$, *** $p < 0.01$

(1–3) College graduate with positive income
(4–6) College graduate with positive income and bachelor's degree
(7–9) College graduate with positive income, bachelor's degree, and work permit
(10–12) College graduate with positive income, bachelor's degree, and work permit; FEs and controls

Figure 9 – Salary of Health Professionals Minus Salary of X Professions in 2022 – Table 2 column 12
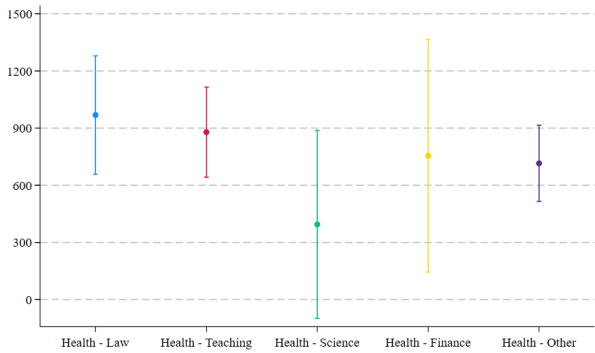
Table 3 – Regression Results on Salary and Log Salary – Individuals with Positive Income – College Graduates

	(1) Log salary	(2) Salary
Health 2022 native-born	0.453*	120.5
	(0.191)	(385.6)
Health 2022 immigrant	0.429***	866.8***
	(0.0721)	(119.2)
Health 2018 native-born	0.284	-374.1
	(0.142)	(239.9)
Health 2018 immigrant	0.0977	138.0*
	(0.0521)	(63.22)
Science 2022 native-born	0.386*	118.3
	(0.178)	(292.9)
Science 2022 immigrant	0.300**	539.6**
	(0.0907)	(173.3)
Science 2018 native-born	0.356*	1.344
	(0.148)	(232.5)
Science 2018 immigrant	0.131**	161.1***
	(0.0392)	(21.10)
Teaching 2022 native-born	-0.0374	-1270.0**
	(0.230)	(420.1)
Teaching 2022 immigrant	0.102*	95.69
	(0.0453)	(69.05)
Teaching 2018 native-born	-0.152	-1475.4**
	(0.207)	(404.0)
Finance 2022 native-born	0.294	-232.7
	(0.181)	(323.9)
Finance 2022 immigrant	0.197	294.6
	(0.151)	(192.1)
Finance 2018 native-born	0.229	-378.6
	(0.141)	(223.6)
Finance 2018 immigrant	0.0443	-17.53
	(0.0507)	(89.00)
Law 2022 native-born	0.536**	705.1*
	(0.147)	(290.5)
Law 2022 immigrant	0.113	143.0
	(0.0860)	(136.6)
Law 2018 native-born	0.311	-23.08
	(0.166)	(314.9)
Law 2018 immigrant	0.0905***	106.7*
	(0.0193)	(44.41)
Other 2022 native-born	0.274	-227.4
	(0.162)	(286.8)
Other 2022 immigrant	0.193**	234.9*
	(0.0659)	(103.3)
Other 2018 native-born	0.178	-517.8
	(0.168)	(322.6)
Other 2018 immigrant	0.0455	92.28
	(0.0446)	(77.50)
Female	-0.166***	-335.2***
	(0.0171)	(43.77)
Constant	6.768***	1091.6***
	(0.105)	(182.5)
N	5368	5368
R^2	0.359	0.281

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$