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Horizontal stratification of universities and precariousness of graduates working conditions

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ABSTRACT

The global massification of higher education has led to a significant increase in the number of university graduates entering the labor market. This expansion has also driven to greater segmentation of higher education institutions in terms of prestige, quality, and students' background. Previous research focused predominantly on the relationship between institutional stratification and graduates' salaries, often overlooking other key dimensions of their working conditions. This study analyzes how the horizontal stratification of Chilean universities relates to graduates' working conditions. This objective was achieved by constructing profiles of working conditions based on graduates' salaries, hiring regimes, and working hours. Latent Class Analysis was used to identify three distinct profiles. By analyzing data from a survey conducted at eleven Chilean universities, the association between graduates' characteristics and working conditions was estimated using an ordinal logistic model. The results show that despite holding a university degree, 13 % of graduates work under precarious conditions including part-time jobs or employment contracts that do not guarantee labor rights. While institutional selectivity facilitates access to the most favorable working conditions, its importance diminishes for other types of jobs. Horizontal stratification, therefore, acts as a mechanism of exclusion, limiting access to high-quality employment for graduates from low selective institutions. These findings suggest that the relationship between horizontal stratification and working conditions is complex as it extends beyond a simple replication of institutional hierarchies in the labor market.

1. Introduction

The massification of higher education has, over the past few decades, enabled the enrolment of historically excluded groups (Brown & James, 2020; Marginson, 2016). This process, however, has not necessarily translated into an equitable distribution of educational opportunities. A key factor in the persistence of educational inequalities is the growing internal stratification observed across tertiary education systems worldwide (Lucas, 2001). Both institutions and academic programs have increasingly differentiated themselves in

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terms of prestige, selectivity, and quality (Croxford & Raffe, 2015; Carpentier, 2021). This institutional differentiation is closely linked to the profile of students entering the system. Despite equity policies aimed at widening access, it is largely young people from elite backgrounds who apply to and enrol in high-value and prestigious universities and programs (Czarnecki, 2018; Jerrim et al., 2015).

As a consequence, there has been a sustained growth in the number of university graduates. The proportion of adults aged 25 to 34 with a tertiary degree in OECD countries increased by 5 % between 2019 and 2024 (OECD, 2024). This expansion has contributed to increasing saturation in labor markets, especially in economies where demand for highly qualified workers has not grown at the same pace as the supply of new graduates. As a result, there has been a trend toward the devaluation of university degrees and, consequently, of the employment conditions of some university graduates (Knight et al., 2017; Suleman & Figueiredo, 2020).

A useful framework for assessing these conditions is the concept of *precariety*. Since the early 21st century, this term has been employed to describe the growing instability of employment relationships, rising job insecurity, and the subsequent increase in workers' social vulnerability (Bourdieu, 1998; Lewchuk, 2017; Standing, 2011). Precarious employment is typically characterised by the absence of formal labor contracts and social protections, but also by low wages and undefined yet extended working hours (Campbell et al., 2012; International Labour Organization [ILO], 2023; Volchik et al., 2021).

Research in various countries has shown that recent university graduates face higher unemployment rates, growing job flexibility, and a greater prevalence of temporary or project-based contracts in their early careers (Gleerup et al., 2018; Knight et al., 2017; Suleman & Figueiredo, 2020). While this literature has broadened the understanding of graduate employment outcomes beyond salary alone, most studies remain focused on wages. These studies have shown that not all graduates face the same challenges when entering the labor market. In particular, graduates' earnings are closely associated with characteristics of their university trajectories, such as the type of higher education institution attended, field of study and the perceived quality of their training (Gerber & Cheung, 2008; Carroll et al., 2018; Ge et al., 2022).

These trends are especially relevant in contexts where the number of higher education graduates has expanded more rapidly than employment opportunities. In Eastern European (Zajac et al., 2018) and Latin American countries (Pérez-Roa, 2019), the explosive growth of higher education, mainly driven by the private sector, has led to increasing institutional segmentation and greater difficulties for graduates seeking stable and high-quality jobs. In Latin America, the expansion of higher education has occurred in contexts marked by deep social inequalities and widespread labor informality, further complicating graduates' transition into the workforce (Salgado & Castillo, 2023).

Chile stands out as a paradigmatic case in the region (Chiroleu & Marquina, 2017). Over the past 30 years, the country has undergone one of the most significant transformations in higher education in Latin America. This change has been marked by accelerated growth and widespread privatization (Gregorutti et al., 2016; Salazar & Leihy, 2017). The massification of tertiary education has led to increasing institutional differentiation based on prestige, quality, and selectivity (Villalobos et al., 2020). These dynamics have produced a highly stratified system in which access to the most selective universities remains closely tied to students' socioeconomic background (Espinoza et al., 2023; Rodríguez et al., 2022).

These structural changes have unfolded within a broader socioeconomic context marked by inequality. Chile has one of the highest income inequality levels among OECD countries (Gini index of 43; World Bank, 2022), and its economy is characterised by low productivity and a limited demand for highly skilled workers (OECD, 2018). Furthermore, a regulatory framework that favors labor market flexibility has allowed for the proliferation of hiring practices such as freelance contracts that do not guarantee basic job stability or labor rights (Durán & Narbona, 2021). These factors combine to make Chile a particularly relevant case for studying the employment conditions of university graduates in labor markets shaped by graduate oversupply and precariety.

Existing research in Chile show that graduate labor otcomes have been uneven. In particular, there is some segmentation in graduates' earnings based on institutional prestige and socioeconomic background (Rodrigo & Oyarzo, 2021; Zimmerman, 2019). Studies have consistently shown that graduates from more prestigious universities earn higher salaries (Bordón & Braga, 2020). However, in recent years there has been growing interest in the broader precariety of graduates' working conditions, as Chile's labor market dynamics have increasingly exposed new professionals to insecure forms of employment (Fundación Sol, 2024). In certain economic sectors, newly graduated professionals have faced saturated job markets, wage stagnation, high turnover rates, and the imposition of flexible employment contracts (Azócar et al., 2025; Pérez-Roa, 2019). Nevertheless, despite this growing interest, most existing studies, both in Chile and internationally, focus narrowly on salaries and job types, neglecting other dimensions of working conditions and their connection to institutional stratification.

This study addresses that gap by examining the relationship between the horizontal stratification of the university system and graduates' working conditions, with particular attention to the impact of institutional selectivity on labor market outcomes. Rather than focusing solely on salaries, this research adopts a broader approach to analysing employment precarity and instability among graduates. The aim is to provide a more comprehensive understanding of the challenges university graduates face in contemporary labor markets. By focusing on the Chilean case, this study provides empirical evidence from a paradigmatic context in Latin America regarding the dynamics of university graduates' employment in middle-income countries with highly segmented mass higher education systems. The study seeks to contribute to broader discussions on how educational stratification relates to labor market inequality, offering insights for other emerging economies undergoing similar transformations.

2. Literature review

2.1. Horizontal stratification in higher education and graduates' labor outcomes

The massification of higher education in recent decades has been accompanied by a process of institutional stratification. At a

broader level, this is reflected in the vertical differentiation between universities and non-university institutions (Carpentier, 2021). Simultaneously, a process of horizontal stratification has taken place within the university system itself, whereby institutions and academic programs are differentiated based on factors such as available resources, institutional mission, quality of education, selectivity, and prestige (Boliver, 2015; Lepori et al., 2014). This context has raised questions about how institutional differentiation relates to graduates' labor market outcomes and the reproduction of broader social inequalities (Czarnecki, 2018; Lucas, 2001; Reimer & Jacob, 2011).

The mechanisms through which horizontal stratification translates into differential labor outcomes have often been explained through the role of educational credentials in the labor market. This has been approached from two main theoretical perspectives. The first is *signalling* theory, which posits that, in the absence of complete information about candidates' abilities and skills, employers rely on educational credentials as signals of a candidate's suitability (Spence, 1973). A second perspective, *credentialism* theory, suggests that credentials are not only indicators of ability but also confer social status based on institutional background, serving to legitimate graduates within the labor market (Collins, 1979, 2002). Within this framework, the horizontal stratification of institutions allows graduates from prestigious universities to access the more desirable and higher-paid jobs.

However, the advantages conferred by educational credentials are not disconnected from broader processes that reproduce social inequality. In this regard, Bourdieu (1984; Bourdieu & Passeron, 1964, 1970) argued that educational institutions tend to reward students differently based on their social origin, favouring those from upper-class backgrounds. In the context of mass higher education, this implies that students from privileged backgrounds are more likely to access high-status institutions with better labor market outcomes (Czarnecki, 2018; Jerrim et al., 2015). Horizontal stratification in higher education thus contributes to the reproduction of inequality through differentiated educational trajectories shaped by students' social class backgrounds (Weininger & Lareau, 2018).

A growing body of research has examined the relationship between the characteristics of university credentials and graduates' labor outcomes. However, the findings remain mixed. On the one hand, some studies have shown that transitioning to the labor market is easier for those who have studied at prestigious universities (Bathmaker et al., 2016) and that university prestige is positive related with graduates' salaries (Carroll, Heaton & Tan, 2018; Ge et al., 2022). This advantage may be attributed partially to positive discrimination mechanisms used by employers. Studies carried out in the United Kingdom (Drydakis, 2016) and Latin America (MacLeod et al., 2017; Nogales et al., 2020) have shown that employers tend to favor graduates from prestigious universities, regardless of their academic performance.

In other contexts, the effects of horizontal stratification are not as apparent. Studies in Germany (Lang & Schwabe, 2023), Kazakhstan (Kemelbayeva, 2022), and the United Kingdom (Duta et al., 2021) have found that university prestige is not always a strong predictor of future earnings. Similarly, Hu and Vargas (2015) found that in China, institutional prestige does not directly affect wages but does influence the likelihood of attaining positions of authority.

Beyond institutional prestige, field of study emerges as a second important dimension of horizontal stratification in shaping graduates' trajectories. In Norway, salaries vary according to the university's perceived quality and the graduate's field of study (Borgen & Mastekaasa, 2018). In China (Hu & Vargas, 2015; Mok & Qian, 2018) and the United Kingdom (Sullivan et al., 2017), graduates from STEM, Law, Economics, and Business programs tend to achieve higher earnings and more prestigious occupations.

2.2. *The precariousness of university graduates' working conditions*

In the past two decades, precariousness has become one of the key conceptual tools used to analyze the deterioration of employment conditions. It describes the growing instability and insecurity of work, and the social vulnerability that this entails for workers (Bourdieu, 1998; Lewchuk, 2017; Standing, 2011; Espinoza et al., 2025). Precarious employment is characterized not only by low wages but also by dimensions such as limited protection against contract termination, lack of access to social security, and restricted labor rights (The International Labor Organization [ILO], 2012).

Although initially used to analyze unskilled employment, the concept of precariety has recently been applied to university graduates, who are increasingly exposed to unstable work conditions (Gleerup et al., 2018; Suleman & Figueiredo, 2020). Several structural factors contribute to this trend. One of these is the growing mismatch between the number of graduates and the effective demand for qualified professionals in the labor market (Knight et al., 2017). In some countries, an oversupply of graduates has led to high levels of underemployment and employment in occupations unrelated to their academic training (Ryu & Jeong, 2021; Somers et al., 2018). These conditions have contributed to wage stagnation or even decline among university graduates (ILO, 2023). Research has documented difficulties in securing well-paid jobs among graduates in countries such as the United States, Canada, the United Kingdom, and China (Green & Henseke, 2016; Navarro & Fachelli, 2018).

One of the most notable characteristics of precarious employment is the type of contract involved. Kalleberg (2012) observes that atypical employment relationships, especially those not mediated by permanent contracts, intensify job precarity. In recent years, young professionals have been increasingly exposed to unstable contractual arrangements and insecure working conditions (Acea-López et al., 2022; Brown et al., 2014). In Spain, university graduates report that unstable contracts constrain their professional development and future life planning (Ayala-Hurtado, 2022).

Another aspect that has gained relevance in recent years is part-time employment. This form of work has been classified as a type of underemployment because it often prevents graduates from fully utilizing the skills and competencies acquired during their university formation (Bell & Blanchflower, 2019). Although in some cases part-time work may be voluntary, for instance, to balance work and family life (Chung & van der Lippe, 2020), the number of involuntary part-time workers has risen over the past three decades (Pech et al., 2020). In this context, part-time work is increasingly associated with labor precariety due to its link with job insecurity, lower

wages, and poorer working conditions (Horemans et al., 2016; Maestripieri, 2023).

2.3. The chilean context

The Chilean higher education system has experienced major transformations over the past 40 years as a consequence of neoliberal reforms implemented by the military dictatorship (1973–1990) during the 1980s. These reforms allowed for the deregulated expansion of new private universities and shifted the institutional funding model towards tuition fees (Gregorutti et al., 2016; Salazar & Leihy, 2017). This new type of institution supplemented the already existing private universities, known as "traditional private universities", and public universities. By 1990, there were 62 universities, 40 of which were newly established private institutions (Bernasconi & Rojas, 2003). Three new "traditional" universities opened in 1993 and 2 state universities in 2015. Some of the "new"universities closed so that by 2025, the Chilean system included 18 state institutions, 9 traditional private universities, and 26 new private universities (Consejo Nacional de Educación [CNED], 2024).

These transformations, combined with a widespread social aspiration to pursue higher education, contributed to the massification of tertiary education beginning in the 1990s. Between 1989 and 2023, university enrollment increased from 131.000 to nearly 700.000 students (CNED, 2024; Rolando et al., 2010). This expansion allowed for increased coverage for all social sectors (Ministerio de Desarrollo Social, 2022). However, the system underwent a process of horizontal stratification based on prestige and quality (Villalobos et al., 2020). Evidence shows that students from elite backgrounds continue to enrol disproportionately in the most prestigious and selective universities (Espinoza et al., 2023; Rodríguez et al., 2022).

The massification of higher education has also led to a notable increase in the number of university graduates. Between 2007 and 2022, the annual number of graduates has increased by 97 %, reaching nearly 90,000 graduates in 2022 (Servicio de Información de Educación Superior [SIES], 2024). The importance of the private sector is reflected in the fact that 72 % of these graduates obtained their degrees from privates universities (48 % from new private universities and 23 % from traditional private universities), while only 28 % graduated from state universities. It is currently estimated that approximately 47 % of the Chilean population between the ages of 25 and 40 hold a tertiary-level qualification (Ministerio de Desarrollo Social, 2022).

These graduates are entering a labor market that has been reshaped by neoliberal reforms. Similar to the higher education sector, the Chilean labor market has been deregulated, which has profoundly changed employment conditions. In recent decades, Chilean labor policy has increasingly adjusted legal regulation to meet market demands, rather than ensuring labor rights protections (Durán & Narbona, 2021). This has led to the institutionalization of labor precariety, where even legally regulated employment arrangements reproduce characteristics of informal work, such as contractual instability and limited social protection (Hernández & Pavez, 2019; Stetcher & Sisto, 2020).

For university graduates, these conditions, together with the oversupply of professionals, has generated significant difficulties in labor market insertion. Saturation in certain professional fields has made it more difficult for some young graduates to find employment and has increased mismatch between their training and job opportunities (Castillo & Rodríguez, 2016; Didier, 2021; Espinoza et al., 2019;). Nevertheless, not all graduates face the same challenges.

Differences in employment outcomes have been identified according to the selectivity and prestige of the university attended (Zimmerman, 2019), as well as field of study (Schurch, 2013). The gap in employment outcomes is particularly pronounced between elite and non-elite institutions (Bordón & Braga, 2020). A recent qualitative study that focused on working conditions found that graduates employed on fixed-time or output-based contracts experienced heightened job insecurity and developed coping strategies to meet their financial needs (Pérez-Roa, 2019).

3. Methodology

3.1. Data

The data for this research was collected through a survey administered to graduates from an intentional sample (Cohen et al., 2017) of eleven Chilean universities that participate in the Uniform Admission System (Sistema Único de Admisión - SUA). The SUA groups selective Chilean universities (27 of 57) that centrally admit students based on standardized admission tests scores. The universities selected for this study were chosen in 2020 to represent a diverse array of graduates across three key criteria: academic selectivity (low, medium, and high), geographical location (north, center, and south), and universtity type (public, new private, traditional private).

These dimensions were selected because they reflect three critical axes of segmentation in Chilean higher education following massification. Admission selectivity varies significantly across institutions, shaping student experiences and graduate labor outcomes. Additionally, Chile's vast geographic has resulted in differences between universities in the central region and those in more remote areas. Finally, universities have followed divergent developmental paths depending on whether they were established before the 1981 reform (public and traditional private universities) or afterward (new private universities). To select the sample, institutional profiles were constructed based on these three criteria. Institutions matching these profiles were then invited to participate. In cases where a university declined, another with similar characteristics was invited.

Data collection took place in two stages. First, participating universities were asked to provide sociodemographic and academic information for all 12,796 graduates from the 2010 cohort. A 10 % random sample of graduates was invited to complete the survey ($N = 1280$). Questionnaires were returned by 833 graduates (6.5 % of all graduates) during the first semester of 2021. At the time of the survey, participants had been working for five to six years since graduation. From this group 11.6 % (97) had missing data for some variables. These cases were excluded, resulting in a final sample of 736 graduates.

Table 1 compares the characteristics of the final sample to those of the target population (all graduates from the 2010 cohort in the eleven selected universities). Significant differences were observed in gender, field of study and university selectivity. Women were more likely to respond to the sruvey, there was an overrepresentation of Social Science graduates and an underrepresentation of those from medium selectivity universities. To address these sampling biases, weights were calculated based on these three variables. Descriptive statistics were then recalculated using these weights. As shown in Table 1 (corrected sample column), applying weights reduces the differences for gender, field of study and selectivity. In the following analyses, these weights were used as a robustness check for all models estimated using the unweighted final sample.

3.2. Analytical strategy

The analysis was carried out in two stages. In the first stage, groups of graduates were identified based on their labor conditions at the time of the survey. The groups were defined using latent class analysis (LCA), a statistical method developed by Lazarsfeld and Henry (1968). LCA fits a model that defines latent classes (groups of graduates) based on similarity of associations between categorical variables, in this case the working-conditions variables (below). The classes built by LCA are mutually exclusive (Goodman, 1974; Weller et al., 2020). The parameters of LCA models are estimated using the maximum likelihood method.

In the second stage, an ordinal logistic regression model was used to estimate how certain factors are related to the different profiles of working conditions (Liu, 2023). Ordinal logistic regression extends binary logistic regression to dependent variables with more than two ordered categories. These models are used to estimate the probability of a respondent being above a particular level of the dependent variable. In this case, the dependent variable is graduates' working conditions, which is an ordinal variable divided into four categories: unemployed, poor, moderate and excellent working conditions.

For an ordinal variable with four categories, the model estimates three cumulative binary logistic regressions:

1. the probability of being employed (poor, moderate or excellent working conditions) versus unemployed.
2. the probability of having moderate or excellent working conditions versus poor working conditions or unemployed;
3. the probability of having excellent working conditions versus any of the three lower categories.

The main assumption underlying ordinal logistic regression is that the coefficients for each predictor remain constant across these three binary logistic models (proportional odds assumption). If the assumption does not hold, the model can be adjusted to allow for some variation in the coefficient of the variable that does not meet the assumption (Liu, 2023).

All analyses were performed in Rstudio (R Core Team, 2024). Latent class were constructed using poLCA package (Linzer & Lewis, 2011), while the ordinal regression was estimated with VGAM package (Yee, 2015). Robustness checks were performed with packages survey (Lumley, 2024) and svyVGAM (Lumley, 2023).

3.3. Variables

3.3.1. Variables describing working conditions

In order to capture different dimensions of their precariety three variables were used to construct graduates' working conditions: working hours, salary,[1] and contract type. First, while part-time employment can sometimes be a voluntary choice, particularly for women balancing work and family responsibilities (Chung & van der Lippe, 2020), evidence from Chile (Fundación Sol, 2024), Europe (Maestripieri, 2023) and the United States (Bell & Blanchflower, 2019) suggests that reduced working hours can serve as a proxy for underemployment and are associated with greater instability, and job precariety . Based on this, working hour was defined as a four-level variable: One-quarter (11 h/week), Half (22 h/week), Three-quarters (33 h/week), Full-time (44 h/week).

Second, salary was measured as a four-level variable: Low (less than USD$820), Medium (USD$820-USD$1640), High (USD$1640-USD$2200) and Very High (more than USD$2200). Finally, contract type was measured using three categories. In Chile, permanent and fixed-term contracts establish a mutual dependency relationship with the employer, which provide legal protections related to job stability, healthcare, and social secutirty. While fixed-term contracts have a defined end date, permanent contracts offer greater security due to their indefinite nature. In contrast, fee-based contracts are temporary service contracts that exclude labor benefits such as vacations, severance pay, and social protection (Dirección del Trabajo, 2021). Therefore, contract type was defined as a three-level variable: Fee, Fixed Term and Indefinite.

3.3.2. Variables describing graduates

Four sets of variables were considered for the ordinal regression: graduates' characteristics prior to entering higher education, their university academic performance, the characteristics of their degree program and university, and their experience after graduation:

1. Characteristics before entering higher education
   - Gender (Female 0, Male 1)
   - First Generation (One or both parents attended university 0, neither parent attended 1)

[1] In US dollars in 2021. Unlike in other countries, wages in Chile are generally defined on a monthly basis and not on an hourly basis. For this reason, both hours worked and wages received were included in the analysis, as both measure different aspects of graduates' working conditions.

Table 1
Description of the final sample, corrected sample and population.

Variable	Final sample (%)	Corrected Sample (%)	Population (%)
Gender Female	59.6	54.3	54.5
First-Generation Student	52.8	54.5	49.5
Secondary Type			
Private	12.3	11.4	15.5
Voucher	50.8	50.1	49.3
Public	36.9	38.5	35.2
Selectivity			
Low	16.3	16.0	15.9
Medium	36.7	43.3	43.5
High	47.0	40.7	40.6
Field of Study			
STEM	23.4	24.3	23.6
Administration	8.3	10.7	11.9
Agriculture	3.7	3.6	3.7
Art & Architecture	5.8	5.3	5.5
Social Science	16.9	13.0	12.6
Law	5.1	4.1	4.4
Education & Hum.	19.1	19.2	19.0
Health	17.6	19.6	19.3
	Average (Std. Dev)	Average (Std. Dev)	Average (Std. Dev)
Univ GPA	5.68	5.68	5.62
	(0.55)	(0.55)	(0.54)
PSU score	6.11	6.08	6.06
	(0.56)	(0.57)	(0.58)
N	736	736	10,573

Source: Authors own work.

- University Selection Test (PSU) scores (4.31–7.84)

2. Academic performance in university.
   - Graduation with distinction (If the graduate graduated with a final grade point average equal to or greater than 6.0, on a scale of 1.0–7.0; 0, 1)
3. Characteristics of the degree program and university
   - Field of study of the degree program (Administration, Agriculture, Art and Architecture, Social Sciences, Law, Education and Humanities, Health, STEM)
   - University selectivity. Defined using the average combined scores on the University Selection tests (mathematics and language) of students admitted to a university. Scores were grouped in three levels of selectivity: Low, Medium, and High
4. Experience post-graduation
   - The time it took to find the first job (<2 months, 2–6 months, 6–12 months, >1 year)
   - Region (Metropolitan, North, Center, South)

4. Results

4.1. Construction of graduates' working conditions profiles

The initial results from the LCA are presented in Table 2. Model selection was based on both statistical fit (AIC, BIC, G^2, χ^2) and the interpretability of the results. According to the Akaike (AIC) and Bayesian Information Criteria (BIC), the best-fitting model is the one with the lowest values. In this case, the models with two and three classes presented the lowest AIC and BIC values, respectively. Meanwhile, the G^2 and χ^2 statistics, which compare the observed and expected frequencies, showed better fit as the number of classes increased. Regarding interpretability, the 2-class model was discarded because one of the classes grouped 87 % of the graduates, while the remaining class included only 13 %, resulting in insufficient differentiation in working conditions. To achieve more precise distinctions between employment profiles, models with a larger number of classes were considered.

Although G^2 and χ^2 statistics improved with the four- and five-class models, the AIC and BIC indicated that the three-class model provided a better overall fit. Additionally, the three-class model meaningfully split the large class of 87 % into two subgroups, one with 53 % of graduates and the other with 34 %, thus enabling substantial differentiation in working conditions. By contrast, the four- and five-class models did not add significant distinctions. Therefore, taking into account both statistical and substantive considerations, the three-class model was selected as the final specification.

Fig. 1 illustrates the three latent classes identified in the final model, highlighting differences in employment conditions across the groups. The first class, comprising 13 % of respondents, is characterized by the most precarious working conditions. Most of this class is distinguished by part-time employment, which result in lower salaries, and fee-based contracts. While graduates in Class 2 (50 %) and Class 3 (37 %) work full-time, they differ primarily in their income levels, and to a lesser extent, in the type of contract. Class 2 (moderate conditions) is characterized by medium-level income and a mix of fixed-term and permanent contracts. In contrast, Class 3

Table 2
LCA Fit Statistics.

	Latent class models			
	2 classes	3 classes	4 classes	5 classes
Graduates*	613	613	613	613
Size (%)	87	34	12	15
	13	53	19	36
		13	29	13
			40	28
				8
Parameters	17	26	35	44
LL (df)	−1629(30)	−1618(21)	−1614(12)	−1606(3)
AIC	3293	3289	3298	3301
BIC	3367	3404	3452	3496
G^2	56.9185	35.95793	26.74788	12.20942
χ^2	54.36516	35.31435	26.61546	9.530192

* Only graduates who were employed at the time of the survey were included in the construction of working conditions profiles ($N = 613$).
Source: Authors own work.

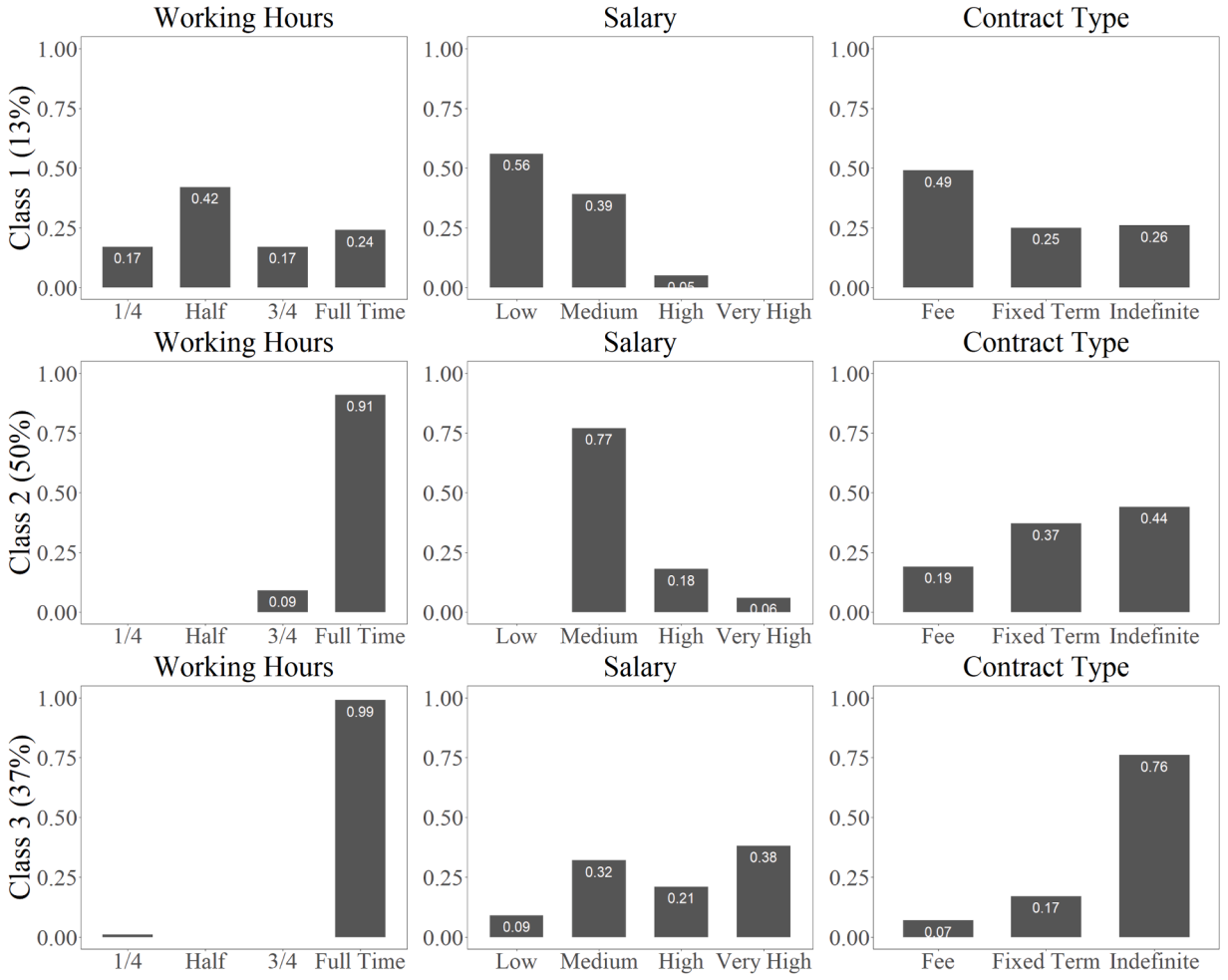

Fig. 1. Working conditions of graduates by Latent Class Membership.
Source: Authors own work.

(excellent conditions) includes graduates with high or very high income levels and is composed predominantly of graduates employed under permanent contracts. This group enjoys the most favorable labor market outcomes.

4.2. Graduates' characteristics and working conditions

After defining the working conditions profiles, an ordinal logistic regression model was estimated, using the profiles as the dependent variable and treating the unemployed as the baseline category. The proportional odds assumption was tested using a Likelihood Ratio Test, which revealed that it was not met by the variables gender and selectivity ($p < 0.05$). Accordingly, a partial proportional odds model was estimated, allowing coefficients for these variables to vary. Table 3 presents the results of this model,

Table 3
Partial Proportional Odds Model results (coefficients and standard deviation).

Variable	1|2 Coef (Std. Er.)	2|3 Coef (Std. Er.)	3|4 Coef (Std. Er.)
Intercept	2.986**	2.371*	−1.455
	(1.022)	(1.016)	(1.039)
Gender Male	−0.223	−0.110	0.701***
	(0.224)	(0.198)	(0.199)
First-Generation Student	0.281		
	(0.156)		
PSU scores	0.121		
	(0.163)		
Distinction	−0.017		
	(0.175)		
Selectivity (Ref = Low)			
Medium	−0.032	0.071	0.828*
	(0.338)	(0.312)	(0.367)
High	0.281	0.056	1.078**
	(0.346)	(0.312)	(0.359)
Field (Ref = STEM)			
Administration	−0.090		
	(0.306)		
Agriculture	0.426		
	(0.397)		
Art & Architecture	−1.439***		
	(0.348)		
Social Science	−1.112***		
	(0.245)		
Law	−1.710***		
	(0.368)		
Education & Hum.	−1.233***		
	(0.252)		
Health	−0.609*		
	(0.256)		
Time (Ref = <2 months)			
2–6 months	−0.558**		
	(0.182)		
6–12 months	−0.983***		
	(0.227)		
>1year	−2.058***		
	(0.224)		
Region (Ref = Metropolitan)			
North	−0.939**		
	(0.319)		
Center	−0.825***		
	(0.319)		
South	−0.881***		
	(0.197)		
LL	−770		
DF	2180		
Residual deviance	1539		
AIC	1595		
McFadden R2	0.13		
Cox and Snell R2	0.27		
Nagelkerke R2	0.30		

* $p < 0.05$,.
** $p < 0.01$,.
*** $p < 0.001$
Source: Authors own work.

including three coefficients for the two variables that violated the assumption. Each coefficient estimates the relationship between the independent variable and the probability of being above a specific threshold on the ordinal outcome. For instance, the 2|3 column estimates the effect on the likelihood of being in class 3 or 4, relative to being in class 2 or below. Annex A reports the results of the same model estimated using weights to correct for sampling bias. The weighted model yielded no major differences in terms of coefficient or significance.

Table 3 indicates that not all pre-enrollment variables were significantly related to graduates' working conditions. Neither PSU scores nor First Generation status were significant predictors of the working conditions of graduates. On the other hand, there is a difference between men and women, but this is only in the probability of belonging to the class with excellent working conditions (coefficient 3|4 of 0.683). Academic performance within the university was unrelated to the working conditions of graduates.

The variables that characterized the horizontal stratification of the university system were, however, statistically significantly related to working conditions. Those who studied at a university with medium or high selectivity were more likely to belong to the class with excellent working conditions than to lower classes, in contrast to those who studied at a low selectivity university. In particular, graduates from high selectivity institutions had a 185 % higher odds ratio of belonging to class 4 than those who studied at low selectivity universities ($e^{1.046} = 2.85$). Regarding field of study, graduates from a STEM program were more likely to enjoy better working conditions as compared to graduates in Art & Architecture, Social Science, Law, Education and Humanities and Health.

Finally, the results show that the time between graduating from university and obtaining their first job was significantly related to the graduates' working conditions. Those who took less than two months to find their first job were more likely to have better working conditions than those who took more than two months. A similar relationship was found for the region in which graduates are currently living. Those who live in the Metropolitan Region, where the country's capital Santiago is located, have better working conditions than those who live in the center, north, and south of the country.

Fig. 2 presents the predicted probabilities of belonging to each employment conditions class, according to university selectivity and field of study. Across fields, the probability of being unemployed was relatively low. However, in Law, the unemployment rate reached 13 % among graduates from low- and medium-selectivity universities, and fell below 10 % only among those from high-selectivity institutions. Substantial variation was also observed in the likelihood of attaining excellent working conditions based on university selectivity. Among Education and Humanities graduates, the probability of belonging to the top category increased from 14 % at low-selectivity universities to 26 % and 32 % at medium- and high-selectivity universities, respectively. In STEM, one-third of graduates

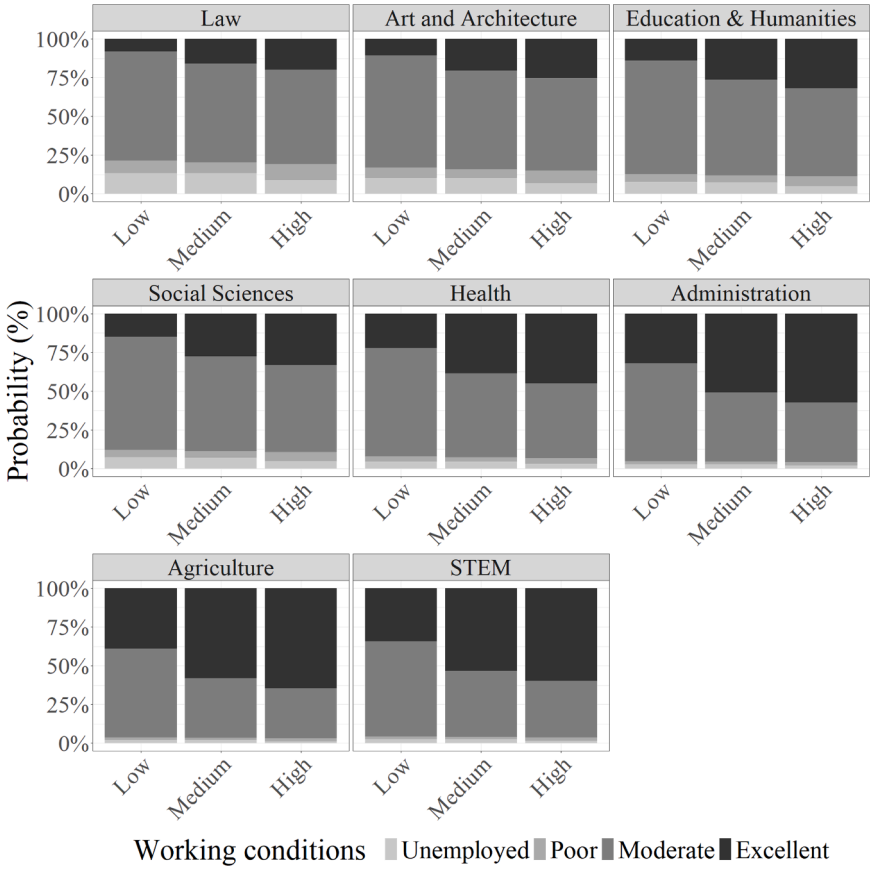

Fig. 2. Probability of belonging to working conditions profiles by Field of Study and University Selectivity.
Source: Authors own work.

from low-selectivity universities achieved excellent conditions (34 %), while the figure rose to 53 % and 60 % for those from medium- and high-selectivity institutions, respectively.

5. Discussion

This research shows that graduates in Chile after they secure employment experience varying working conditions. Graduates from certain universities and fields of study are more likely to work in jobs with precarious working conditions, such as part-time work, lack of permanent contract, and low pay (Emmenegger et al., 2012; Standing, 2011). Graduates of more selective (prestigious) universities receive higher salaries and are more likely to work under a permanent employment contract. This provides evidence of how the horizontal stratification of universities is related to the stratification of graduates in the labor force (Gerber & Cheung, 2008).

Consistent with the lack of consensus in existing literature, however, the relationship identified in this study between university selectivity and employment conditions is not linear. On the one hand, the findings indicate that university selectivity does not significantly influence the likelihood of obtaining employment in general or accessing jobs with moderate working conditions. This aligns with previous studies that have found no direct link between institutional selectivity and graduates' labor market outcomes (Duta et al., 2021; Lang & Schwabe, 2023; Hu & Vargas, 2015; Kemelbayeva, 2022). On the other hand, this study did reveal that selectivity plays a crucial role in accessing jobs with the most favorable working conditions. This finding supports previous research that emphasizes the importance of university selectivity in shaping graduates' future employment trajectories (Carroll et al., 2018; Drydakis, 2016; Ge et al., 2022; Nogales et al., 2022).

In summary, the impact of institutional selectivity on access to the labor market is not uniform, which provides new insights into the role of university credentials. According to credentialism theory (Collins, 1979, 2002), this study's findings confirm that university degrees can either create or limit opportunities in the job market, depending on their specific characteristics. However, in light of the growing challenges that recent graduates face in securing employment (Ryu & Jeong, 2021; Navarro & Fachelli, 2018; Green & Henseke, 2016), the results suggest that this process is complex and multidimensional. In the case of Chile, the evidence indicates that university credentials allow employers to exclude graduates from less selective universities from positions that offer the best working conditions.

This has significant implications for analyzing the recent changes in higher education systems and the labor market for graduates. Specifically, the findings emphasize the importance of evaluating graduates' labor market outcomes through the lens of precariety. This approach allows for the consideration of factors related to employment stability and security (Standing, 2011; ILO, 2012). While it is evident that tertiary credentials can lead to access to higher-paying jobs, some graduates still encounter precarious conditions in the labor market (Gleerup et al., 2018).

Finally, the study's results provide new insights into how universities may perpetuate social inequality, consistent with Bourdieu's theory (1984; Bourdieu & Passeron, 1964, 1970). Despite the widespread massification of higher education enrollment, universities and degree programs that are considered more prestigious continue to enrol a high proportion of students from the most privileged backgrounds (Czarnecki, 2018; Jerrim et al., 2015). This pattern is evident in Chile, where the most selective universities mainly enroll students from families with greater levels of economic, social and cultural capital (Espinoza et al., 2022, 2023; Kuzmanic et al., 2023). The results of this research show that graduates from these universities are the ones who tend to secure the best job opportunities. In other words, the varying educational paths of students based on their social backgrounds and the more advantageous labor market experienced by graduates of more selective universities may be contributing to the ongoing persistence of social inequality (Weininger & Lareau, 2018).

5.1. Limitations of the study

The selection of the eleven universities included in this study was intended to reflect the national landscape of the SUA in 2020. It consisted primarily of traditional public and private universities. Since then, however, many new private universities have become part of the SUA. This shift likely indicates changes in the student demographics within SUA institutions, as well as in changes in their post-graduation career paths, owing to the varying levels of selectivity and geographic distribution of these newer institutions. The findings of this study apply, therefore, principally to Chile's traditional universities and the more selective newer private universities that joined the SUA during the early years of the past decade.

6. Conclusions

The massification of higher education is one of the most significant educational phenomena of recent decades. Thousands of students and their families have placed their hopes in the belief that a university degree will improve their social status and lead to higher salaries. However, as the number of graduates continues to rise, the value of credentials has changed based on their specific attributes. The findings of this study show that horizontal stratification within universities is related to graduates' working conditions.

The findings of this research, however, indicate that the relationship between university credentials and graduates' working conditions is complex. While degrees from more selective universities can help individuals secure the most desirable positions in the labor market, these credentials have less significance for other types of employment. In the Chilean case, horizontal stratification among universities acts as a mechanism of exclusion, limiting access of graduates from less selective institutions to top-tier jobs. The association between the stratification of higher education and the employment conditions of graduates, therefore, extends beyond simply reproduction of horizontal disparities in labor market outcomes.

These findings should be situated within a broader context of global changes, especially regarding the increasing instability of working conditions—particularly for university graduates. This study examines labor market outcomes through the lens of precariousness, revealing that the segmentation in the labor market goes beyond just wage differences. Lower-paying jobs are not only linked to decreased income but also to insecure working conditions, such as freelance contracts and part-time schedules. These findings are especially relevant in the Chilean context due to the specific characteristics of its labor market, but they also provide valuable insights for other countries, in Latin America and beyond, with similar educational and labor systems.

National and international research shows that the most prestigious universities and undergraduate programs tend to recruit young people from the most privileged economic, social, and cultural backgrounds. Graduates from these universities and degree programs are more likely to secure the best working conditions. This indicates that while the expansion of higher education has ocurred, it has not resolved existing socioeconomic inequalities; instead, it has redefined them in new ways. University education may mediate to some extent the relationship between students' socioeconomic backgrounds and their outcomes in the labor market. However, the data employed in this study do not allow for a clear analysis of this mediation process. Further research utilizing more comprehensive data is required to better understand the mediating role of the higher education system and its impact on social inequality.

Furthermore, the results of the present study apply specifically to one subset of Chilean selective universities in SUA. This excludes a notable number of new private universities. What about graduates from these other institutions? Those who graduate from non-selective universities or technical training institutions are likely to face even more precarious working conditions than those reported in this research. Future research should further explore the labor market outcomes of graduates from these other types of institutions. This will provide a more comprehensive understanding of the experiences of higher education graduates in the Chilean system. Additionally, while our findings indicate that academic performance (GPA) becomes less relevant when comparing graduates from different institutions, it is still unclear whether performance holds more significance within the same institution. This question underscores the need for further research into the dynamics within institutions and how they may impact graduates' employment outcomes.

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CRediT authorship contribution statement

Oscar Espinoza: Writing – original draft, Supervision, Investigation, Funding acquisition, Formal analysis. **Luis Sandoval:** Writing – review & editing, Methodology, Investigation. **Bruno Corradi:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Yahira Larrondo:** Writing – original draft, Methodology, Conceptualization. **Noel McGinn:** Writing – review & editing, Supervision, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no conflict of interest.

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Annex

Annex A
Partial Proportional Odds Model results taking into account sample distortions (weights).

Variable	1|2 Coef (Std. Er.)	2|3 Coef (Std. Er.)	3|4 Coef (Std. Er.)
Intercept	2.765*	2.288*	−1.996
	(1.149)	(1.134)	(1.171)
Gender Male	−0.388	−0.294	0.549*
	(0.251)	(0.222)	(0.223)
First-Generation Student	0.368*		
	(0.172)		
PSU score	0.112		
	(0.184)		

(*continued on next page*)

Annex A (*continued*)

Variable	1|2 Coef (Std. Er.)	2|3 Coef (Std. Er.)	3|4 Coef (Std. Er.)
Distinction	0.028		
	(0.183)		
Selectivity (Ref = Low)			
Medium	0.412	0.338	1.475***
	(0.382)	(0.337)	(0.426)
High	0.443	0.160	1.614***
	(0.393)	(0.342)	(0.411)
Field (Ref = STEM)			
Administration	−0.027		
	(0.379)		
Agriculture	0.809		
	(0.434)		
Art & Architecture	−1.387***		
	(0.415)		
Social Science	−1.129***		
	(0.279)		
Law	−1.534***		
	(0.378)		
Education & Hum.	−1.009***		
	(0.276)		
Health	−0.433		
	(0.278)		
Time (Ref = <2 months)			
2–6 months	−0.522**		
	(0.197)		
6–12 months	−0.943***		
	(0.274)		
>1year	−2.253***		
	(0.296)		
Region (Ref = Metropolitan)			
North	−0.896*		
	(0.362)		
Center	−0.997***		
	(0.281)		
South	−1.081***		
	(0.231)		
LL	−721		
DF	2208		
Residual Deviance	1441		
AIC	1460		
Mc Fadden R2	0.14		

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$

Source: Authors own work.

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