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Educational Trajectories and Professional Achievements: An Analysis of Doctors with ANID Postdoctoral Funding in Chile

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Abstract

This study aimed to investigate the relationship between the educational trajectory and professional achievement of individuals who have obtained a doctoral degree and received postdoctoral funding from ANID in Chile. The results reveal that those who pursued studies abroad during their postgraduate education tend to achieve greater professional success, such as higher income, compared to their peers who studied in Chile. This finding suggests that exposure to diverse educational and cultural contexts can enrich graduates' competencies and skills, facilitating better job opportunities. Additionally, it was found that 97.4% of the doctors are currently employed, with research activities (36.5%) and a combination of teaching and research (32.7%) being predominant. However, the low percentage of doctors engaged in activities outside the academic field is noteworthy, raising questions about the barriers limiting their mobility towards productive or commercial sectors. Furthermore, it was observed that the educational level of parents significantly influences the likelihood of their children completing higher education, highlighting the importance of social and cultural capital in educational trajectories. In conclusion, this study not only provides a clear insight into the professional trajectories of doctors in Chile but also invites reflection on how previous educational experiences and family environment can impact their professional achievements. The study suggests the need for future research to delve deeper into the dynamics that limit the transition to non-academic sectors and how broader opportunities can be fostered for these highly qualified professionals.

Keywords: Intergenerational Educational Mobility, Educational Trajectory, Professional Achievement, Doctorate, Chile, Labor Market Integration, Social Capital, Academic Mobility, Social Reproduction, Educational Inequality.

Introduction

In recent decades, researchers have increased their interest in studying the causes or factors that may determine how doctoral students have achieved that level of education (Golde, 2000; Walker, Golde, Jones, Bueschel, & Hutchings, 2008; Woodrow Wilson Foundation, 2005). These studies are framed within a context of higher education expansion, which has also begun to affect this group of the population. For example, among postgraduates, there is greater competition in subsequent job placement, to the extent that it may be questioned whether the degree obtained will lead to improved socio-labor conditions, the development of a satisfying

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career or profession, or even better prospects for quality of life compared to previous stages or to their parents. Studies such as the one published by Burke et al. (2019) in the UK context, show that these concerns may be present today, as the labor market clearly demonstrates a classist selection trend, with a significant role played by the social capital of origin.

On this matter, according to the scientific literature, students whose parents did not attend university tend to have lower rates of university enrollment and graduation, due to coming from lower-income households and starting university with less academic preparation (D'Amico & Dika, 2013; Engle, 2007; Nguyen & Nguyen, 2018; Nunez & Cuccaro-Alamin, 1998; Terenzini et al., 1996; Warburton et al., 2001). These students not only have lower probabilities of enrolling in university (Choy, 2001; Ward et al., 2012), but even if they enroll, they are also less likely to graduate (Choy, 2001; Engle & Tinto, 2008). For example, students with both parents without higher education are significantly less likely than their counterparts to earn a degree (Toutkoushia, May-Trifiletti, & Clayton, 2019).

Regarding first-generation students, among the studies showing the relationship between access to more advanced courses and the characteristics of these students is one by Chapman et al. (2016), which highlights the influence of school, family, and peers on the likelihood of accessing higher education. Furthermore, once these students reach these levels, the probability of dropping out is higher compared to the rates presented by students whose parents had university degrees (Forrest et al., 2018). For example, a study in the U.S. indicates that the dropout rate for students whose parents did not complete higher education can be as high as 33%, compared to 14% for students whose parents did have university degrees (Forrest et al., 2018).

Despite these challenges, first-generation students have a number of factors that enable them to successfully complete their studies. Theories of social and cultural capital have been widely used in higher education literature to examine the various inequalities faced by first-generation students in the university setting compared to their peers. Pascarella et al. (2004) and Walpole (2007) highlight how social stratification, access, and knowledge affect individual trajectories and degree attainment. Academic research has shown that first-generation university students are statistically more likely to have low incomes, obtain poor academic results, and be more likely to drop out without reaching the highest level of education (Redford & Hoyer, 2017).

The study conducted by Carlton (2015) demonstrates that first-generation students are less likely to secure a place in postgraduate programs, and this is not due to factors such as poor academic performance or low socioeconomic status (Payne, 2004). Therefore, it is possible to consider that the type of university may affect the likelihood of completing postgraduate studies among university students whose parents did not achieve that level of education.

Consequently, the background and social and family context of first-generation students can influence their final academic achievement, as well as their income after entering the labor market. The following question then arises: to what extent does this context affect the choice of educational institution, and does the public or private nature of the university, for example, also correlate with academic success or failure? In this regard, Horowitz and Spector (2005) examined the impact of private versus public high schools on the academic performance of 15,270 university students, with one of the most relevant findings being that students who attended private Catholic schools obtained higher grades on average, but this correlation begins to weaken and disappear when students reach university levels.

When considering the characteristics of first-generation doctoral students, several lines of scientific research can be distinguished. According to LeBouef and Dworkin (2021), most of the empirical literature on these students, specifically in the case of first-generation university students in the United States, shows that their parents did not attend university and had limited resources to achieve success in it. Furthermore, these students are more likely to come from low socioeconomic backgrounds or ethnic or racial minorities, and they have a higher likelihood of dropping out of university (Azmitia et al., 2018). Bachsleitner et al. (2018), in turn, assert that postdoctoral researchers from families with higher educational levels have a greater chance of accessing doctoral programs, although nearly half of this effect is due to the influence of different grades obtained in high school and university.

Considering the aforementioned scientific evidence, the following research question arises: Is there a relationship between the educational trajectory and subsequent professional achievement of individuals who obtained a doctoral degree and have a postdoctoral funding by National Research & Development Agency (ANID) in Chile? From this question, several specific sub-questions are posed:

- What type of work do individuals who obtained a doctoral degree and have ANID postdoctoral funding currently perform?
- Does studying a graduate program abroad result in higher subsequent income?

Materials and Methods

Type of Study and Population

This study has a quantitative, exploratory, and descriptive approach. The population studied corresponds to early-career postdoctoral researchers (maximum 5 years since obtaining their Ph.D.), who were awarded postdoctoral funding by ANID in Chile, through its National Fund for Scientific and Technological Development (Fondecyt), between the years 2019 and 2023.

Participants

The final sample used in this study consists of 290 participants who responded to all the questions in the survey within the specified timeframe. The average age of the participants is 39.53 years (SD = 33.45). Of these, 53.4% (n=155) are men, 46.2% (n=134) are women, and one person identifies as non-binary (0.3%).

Instruments and Application

An ad-hoc survey was developed for this study, aimed at the socio-educational and professional characterization of the postdoctoral researchers studied. The survey consists of a total of 50 questions, organized into the following 8 dimensions: 1) Economic situation of origin, 2) Family background, 3) Educational trajectory, 4) Funding and scholarships, 5) Studies, 6) Research, 7) Employment, and 8) Professional expectations.

The survey design and application involved four stages. First, the survey was reviewed by a committee of specialists and tested on a small group of participants, achieving validation. Second, the lists of Fondecyt postdoctoral projects awarded between 2019 and 2023 were reviewed, allowing the identification of the doctors responsible for these projects. It is important to note that this information was generated by the Ministry of Science of Chile and is publicly accessible. Third, the survey was sent to the professional email addresses of Fondecyt postdoctoral researchers, with the survey conducted between March 2019 and March 2024. Once

the survey was administered, the final stage involved reviewing and cleaning the data.

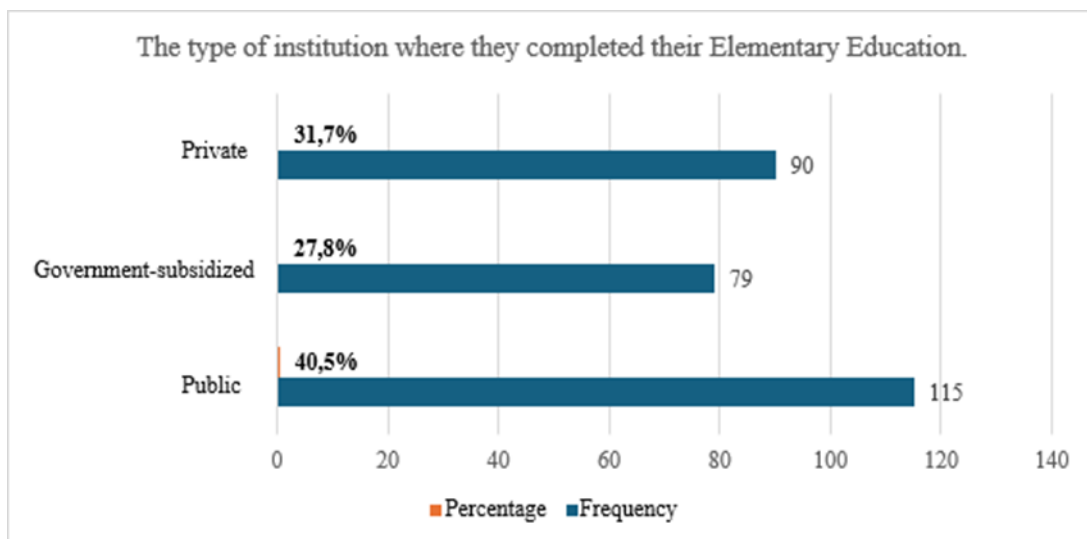
Results

Schooling of Doctors with ANID Postdoctoral Funding

To address the questions raised, the responses provided by the interviewees were considered. The analysis begins with the presentation of the results regarding the type of institution where they completed their primary education (Figure 1). As shown, 40.5%

(115) of the participants completed their primary education in public institutions; 31.75%

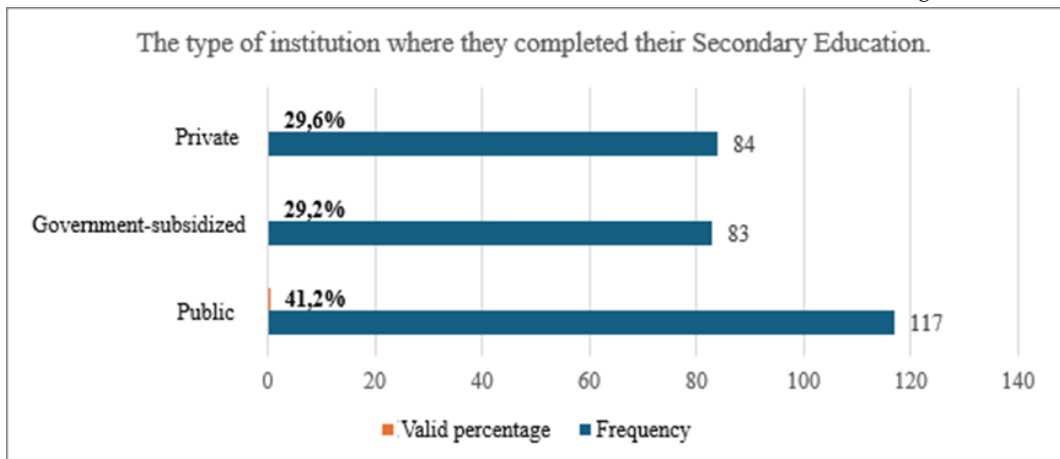
(90) did so in private institutions, and 27.8% (79) completed their primary education in subsidized private institutions.



Graph 1. Type of Institution Where Elementary Education Was Completed

Source: own elaboration

The results are similar to the previous ones when observing the type of institution where they completed their secondary education (Figure 2). A total of 41.2% (117) chose public institutions, 29.6% (84) chose private institutions, and 29.2% (83) attended subsidized private institutions for their secondary education. Therefore, it can be said that, in the early stages of the participants' educational journey, the majority chose public institutions.

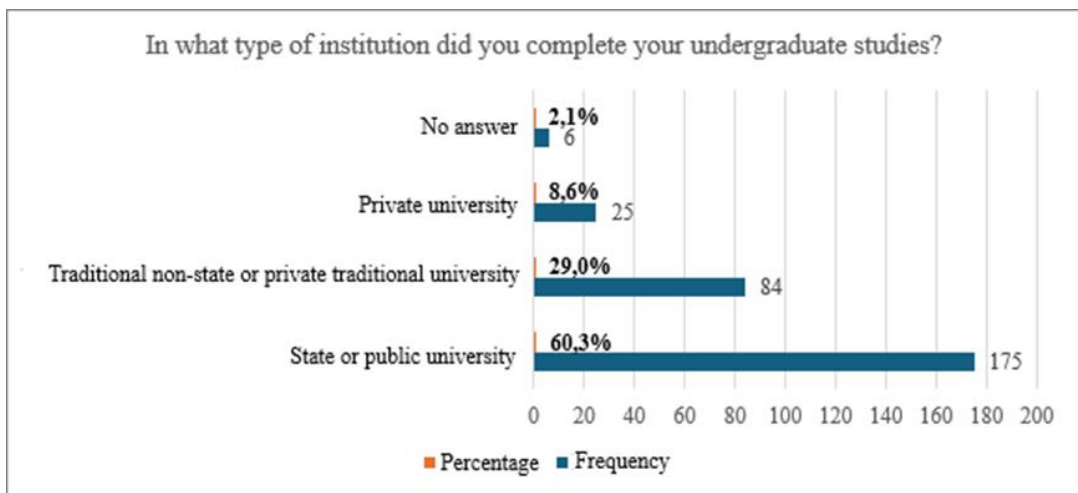


Graph 2. Type of Institution Where Secondary Education Was Completed

Source: own elaboration

Higher Education Trajectory of Doctors with ANID Postdoctoral Funding

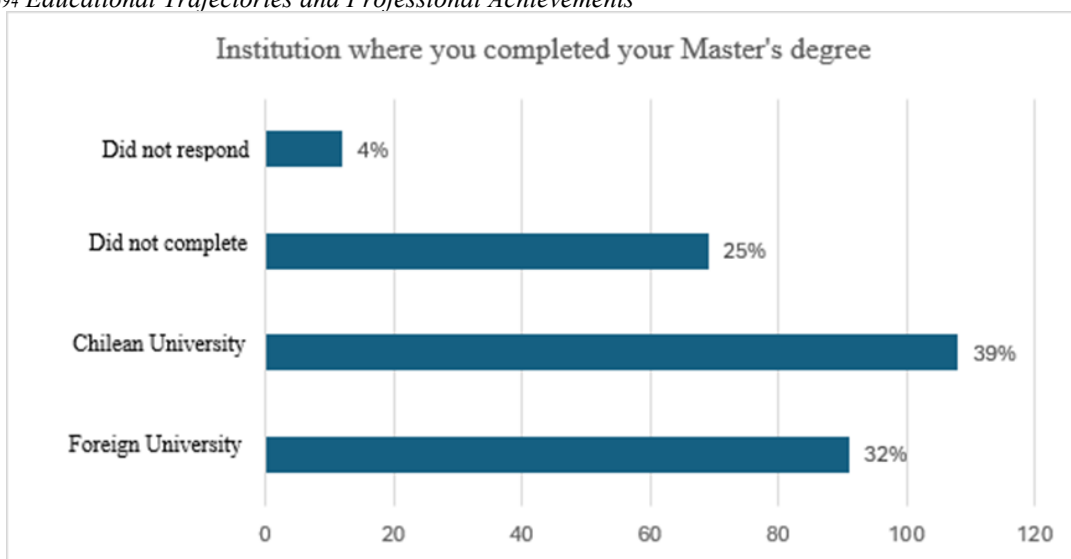
The trajectory of the doctoral participants continues through subsequent stages. For undergraduate studies, 60.3% of the participants (175) pursued their education at public or state universities (Figure 3).



Graph 3. Type of Institution Where Undergraduate Studies Were Completed

Source: own elaboration

These results can be extrapolated when analyzing the institution where participants completed their master's degree (Figure 4), as 39% chose Chilean universities, both public and private (108), compared to 32% who attended foreign universities, and 25% (69 people) did not pursue a master's degree. Therefore, in general, it can be said that the majority of those included in the study have completed a master's degree, with only 7% more having done so in Chile compared to those who studied abroad.



Graph 4. Type of Institution Where the Master's Degree Was Completed

Source: own elaboration

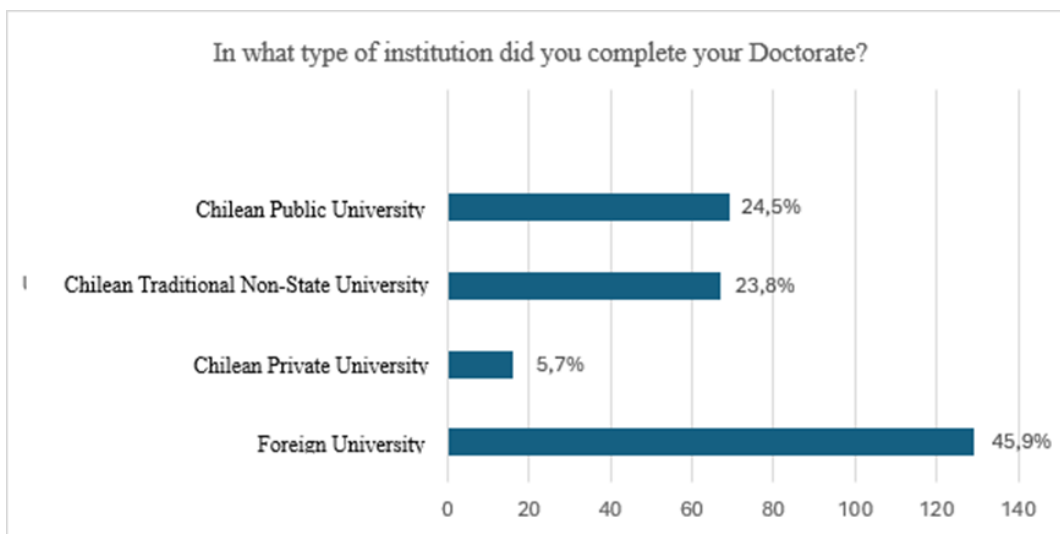
Regarding the country where the studies were completed, as we have seen, the majority of doctorates in the sample conducted their master's studies in Chile, accounting for 38.6% of the total, while 32.5% studied abroad, with 7.9% having studied specifically in Spain (Table 1).

In which country is the university where you completed your Master's degree located?	Frequency	Percentage
Netherlands	1	0,3%
Germany	3	1,0%
Argentina	4	1,4%
Australia	1	0,3%
Brazil	7	2,4%
Chile	110	37,9%
Chile and United States	1	0,3%
Colombia	4	1,4%
Cuba	4	1,4%
Ecuador	2	0,7%
USA	9	3,1%
Spain	23	7,9%
France	6	2,1%
India	2	0,7%
England	3	1,0%
Italy	4	1,4%

Morocco	1	0,3%
Mexico	4	1,4%
Mexico & Chile	1	0,3%
Mexico and Spain	1	0,3%
Peru	1	0,3%
Poland	1	0,3%
United Kingdom	5	1,7%
Venezuela	3	1,0%
Did not complete a Master's degree	69	24,6%

Table 1. Country Where the Master's Degree Was Completed

Source: own elaboration



Graph 5. Type of Institution Where the Doctorate Was Completed

Source: own elaboration

If the data on the institution where the doctorate was completed are classified by including both foreign and Chilean universities, with Chilean universities separated into private, public, and traditional categories (Figure 5), we observe that 45.9%, or 129 people from the sample, completed their doctorate at foreign universities, 23.8% at traditional non-state Chilean universities, 24.5%, or 69 individuals, at public Chilean universities, and only 5.7% completed their doctorate at private Chilean universities.

Regarding the country where the respondents completed their doctorate, similar to the master's case, Chile remains the country chosen by the majority to pursue these studies, though the gap between those studying in Chile and those studying abroad is smaller. In total, 129 individuals, or 45.9% of the sample, studied abroad, as shown in Table 2, with the countries hosting the most Chilean doctoral students being Spain and the United States of America.

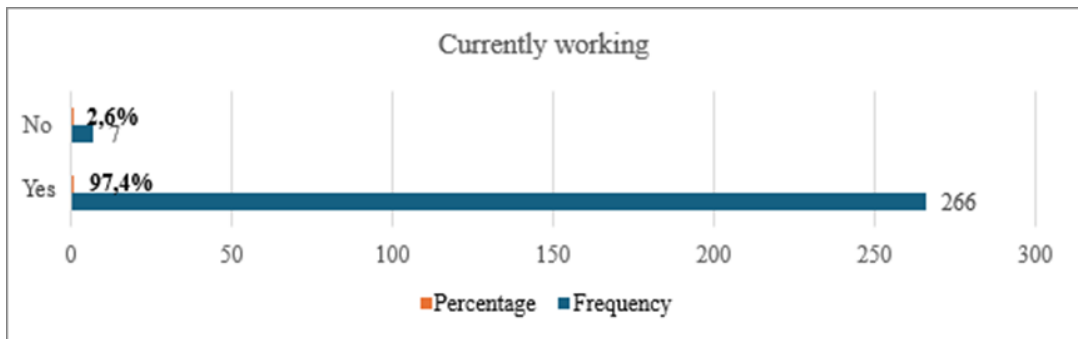
In which country is the university where you completed your Doctorate located?	Frequency	Percentage
Unspecified	6	2,1%
Netherlands	1	0,3%
Germany	11	3,8%
Argentina	8	2,8%
Australia	4	1,4%
Brazil	6	2,1%
Canada	1	0,3%
Chile	152	54%

Table 2. Country Where the Interviewees Completed Their Doctorate

Source: own elaboration

Postdoctorate and Professional Activity of Doctors with ANID Postdoctoral Funding

Another issue raised concerns the work performed by individuals who have obtained a doctoral degree. A total of 97.4% are employed, while only 2.6% are not (Figure 6)

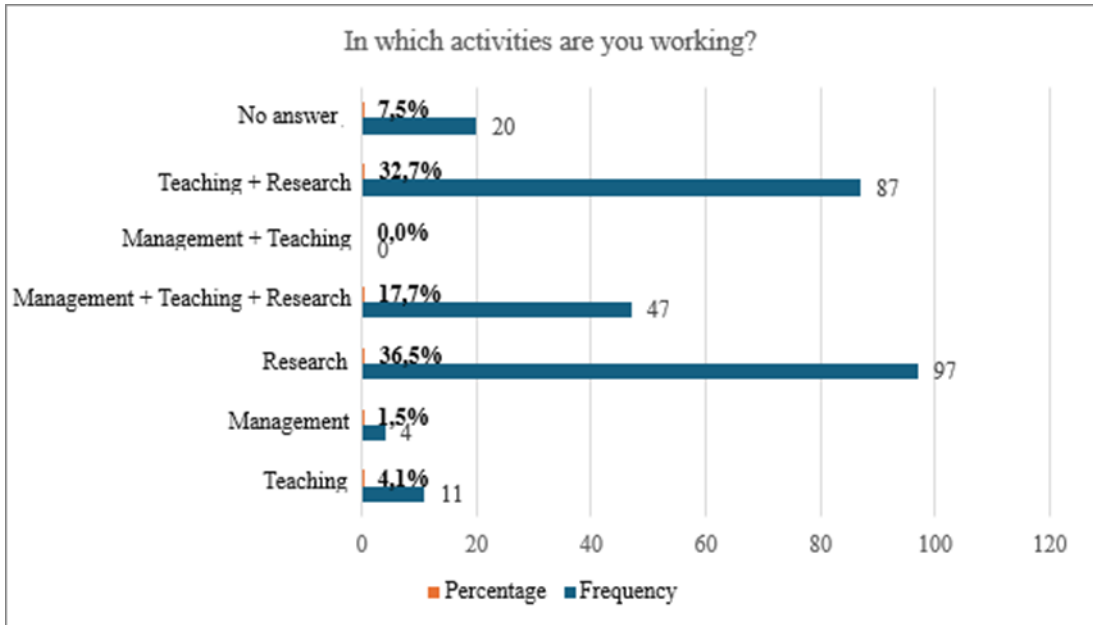


Graph 6. Are You Currently Working?

Source: own elaboration

The activities predominantly performed by individuals who have obtained a doctoral degree with postdoctoral funding are centered on research (Figure 7). Of the total participants, 97 (36.5%) are exclusively dedicated to research; 87 (32.7%) to both

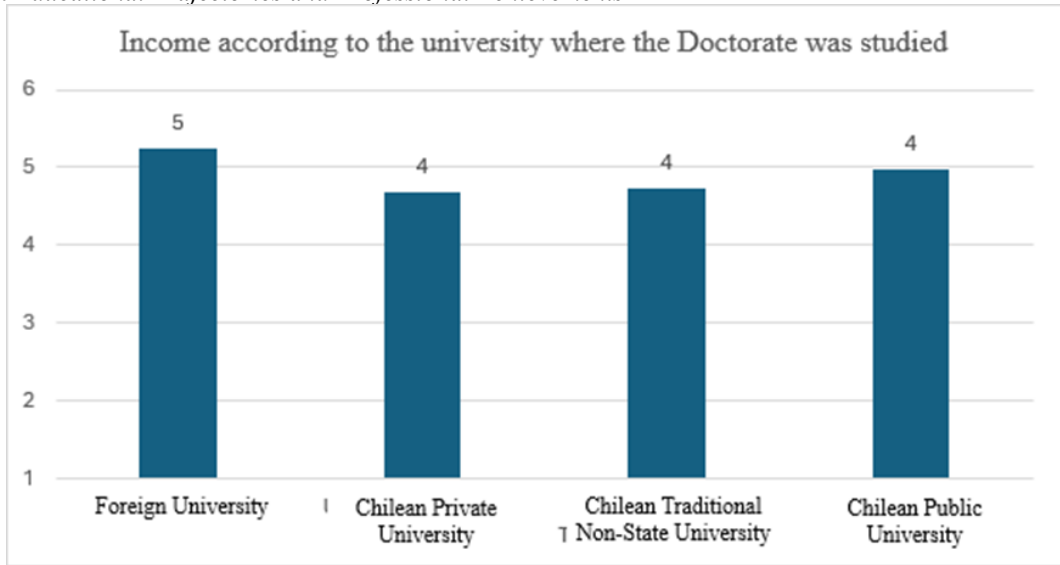
teaching and research; and 47 (17.7%) to tasks that include research, teaching, and management activities. Both teaching and management are residual activities by themselves or combined with others, as only 4.1% (11 doctors) and 1.5% (4 doctors) perform these functions exclusively in their respective jobs.



Graph 7. In Which Activities Are You Working?

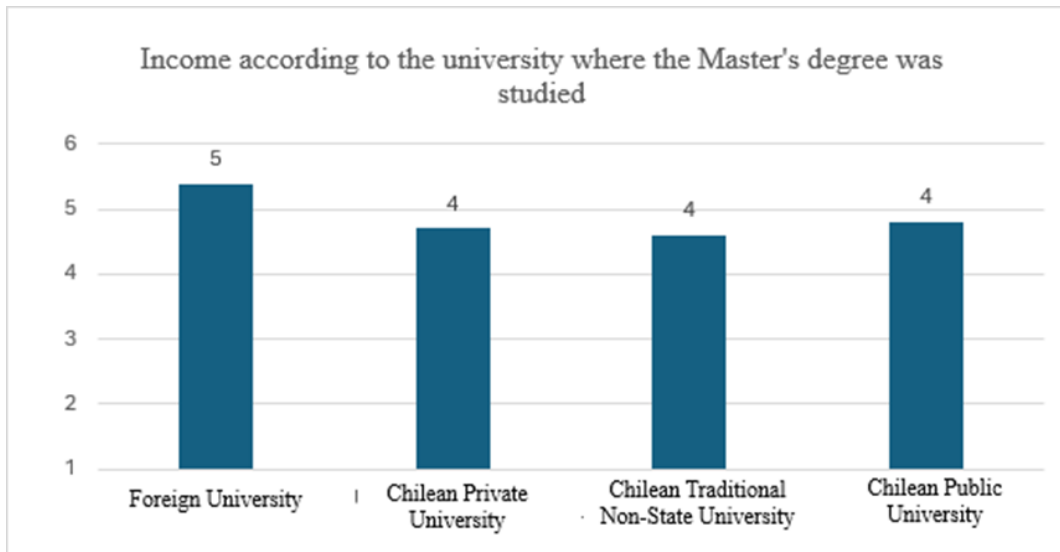
Source: own elaboration

Figures 8 and 9 show that the average income of the participants who studied either their master's or doctorate abroad is higher than the average income of those who studied in Chile. Students who studied abroad have an average income between 2,000,001 and 2,500,000 Chilean pesos (category 5), while those who studied in Chile have an average income between 1,500,001 and 2,000,000 (category 4). Although there is a difference, it is not extreme. However, it is noteworthy that the two individuals with the highest income in the sample, belonging to category 13 (income between 6,000,001 and 6,500,000), are people who spent most of their lives abroad before turning 18 and currently live abroad.



Graph 8. Income According to the University Where the Doctorate Was Studied

Source: own elaboration



Graph 9. Income According to the University Where the Master's Degree Was Studied

Source: own elaboration

Discussion of Results

This study sought to answer the question: Is there a relationship between the educational trajectory and the subsequent professional achievement of individuals who obtained a doctoral degree and received ANID postdoctoral funding in Chile? Throughout the study and analyzing the sample results, we found that there is indeed a relationship between educational trajectory and professional achievement, considering that income is one part, though not the entirety, of

the factors to consider when discussing professional success. In this regard, the results show that those who include studies abroad in their postgraduate trajectory have higher average incomes compared to their peers who studied only in Chile.

This phenomenon suggests that exposure to different educational and cultural contexts can enrich graduates' competencies and skills, which, in turn, may lead to better job opportunities and more prominent professional performance. It also raises the question of whether opportunities abroad are greater for doctors than those available in Chile. La parte social de como esto aumenta la brecha y desigualdad (haría un comentario en el MT)

It is important to note that while income is a relevant indicator of professional achievement, it is not the only criterion to consider. Other factors, such as job satisfaction, the development of interpersonal and technical skills, as well as employment stability, also play crucial roles in evaluating professional success. Therefore, adopting a holistic perspective when analyzing the relationship between educational trajectory and professional achievement in future research would be essential. Additionally, it would be necessary to consider the impact of social and cultural capital on these trajectories. The interaction between professional networks (social capital), which are understood to be broader and less insular among those who have studied in different countries, and the education received (cultural capital) can significantly influence the job opportunities available to graduates. Those with strong social capital tend to access better job opportunities, suggesting that the networks established abroad during academic training can be key determinants of later professional success.

At the beginning of the study, three specific questions were also posed. First, in what types of universities did the individuals who obtained a doctoral degree study? Second, are these institutions related to the attainment of the doctoral degree? Lastly, what type of work do these ANID postdoctoral-funded doctors currently perform?

Regarding the first question, 65.9% of the doctorates obtained their postdoctorate in the last six years, with 25% of them at state or public universities, which translates to 69 doctorates. Meanwhile, 24% of the doctorates completed their studies at traditional non-state universities. Finally, only 6% of the students pursued their doctoral studies at private universities. Therefore, the majority of students chose public institutions. As shown in the Pew Research Center report (2021), first-generation university graduates face more challenges in accessing advanced study institutions because they lack the information that parents with university knowledge or cultural and social capital can provide. Consequently, students whose parents have their own academic experience are more likely to access postsecondary education. In this context, it is observed that the likelihood of an adult completing higher education increases significantly with the educational level of their parents. This phenomenon not only highlights the direct influence parental education has on their children's academic aspirations but also emphasizes the crucial role of the family environment in shaping educational expectations. Parents with a higher educational level usually possess greater cultural and social capital, allowing them to transmit values, knowledge, and resources that foster a culture of learning at home. This dynamic creates a virtuous cycle in which offspring are not only motivated to achieve higher educational goals but also have the necessary support to navigate academic challenges. Thus, when considering the educational trajectories of adults, it is essential to recognize how the experiences and achievements of previous generations can pave the way for a more promising academic future.

Another question raised in our research, "What type of work do individuals who have obtained a doctoral degree perform?" is fundamental for understanding the professional trajectories of

these highly qualified individuals. The results reveal that an overwhelming majority, an impressive 97.4%, are currently employed. This figure not only underscores the employability of doctors but also reflects the growing demand for their expertise in various sectors. A deeper analysis of specific occupations shows that the predominant activity is research, with a notable 36.5% of respondents exclusively dedicated to this area. This suggests that doctors are playing a crucial role in knowledge generation and scientific advancement. Additionally, 32.7% combine their efforts in both teaching and research, indicating a significant commitment to training new generations and transmitting knowledge. Finally, 17.7% are involved in activities that integrate management, teaching, and research, highlighting their ability to lead and manage complex projects in academic and professional settings. These results not only provide a clear picture of the professional paths of doctors but also open the door to reflecting on how their contributions impact society and the development of knowledge.

A particularly striking aspect of the results is the surprisingly low percentage of doctors engaged in activities outside the academic or university sphere—only 4 (%) individuals from the total sample. Despite the diversity of skills and knowledge these professionals possess, an insignificant number seem to opt for careers in the productive, commercial, or other sectors. This phenomenon raises questions about the reasons behind this trend. It could be that the academic culture, deeply ingrained in the formation of these individuals, has instilled in them a preference for the university environment, where they can continue their research and teaching work. Furthermore, it is possible that the perception of academic work offering greater prestige and personal satisfaction is influencing their decision to remain in this field. It could also be that opportunities in the private sector are not attractive enough, or that there are significant barriers to transitioning to these areas, such as a lack of adequate professional networks or the perception that their skills are not valued outside the academic environment. This phenomenon deserves deeper exploration to better understand the dynamics that limit the professional mobility of doctors toward alternative sectors and how broader opportunities can be fostered for their professional development.

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