

Access to higher education during COVID-19: First-generation students in Austria

European Educational Research Journal

1–23

© The Author(s) 2025



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/14749041241312250

journals.sagepub.com/home/eer**Sylvia Mandl** 

Institute for Advanced Studies, Austria

Nora Haag 

Institute for Advanced Studies, Austria

Abstract

In Austria, educational upward mobility remains particularly low compared to other European countries, partly due to the prevalence of early tracking. The COVID-19 pandemic caused a severe economic crisis, and numerous measures were applied on the national labour market and in the higher education sector to counteract the negative consequences. In this paper we analyse how existing inequalities in access to higher education for first-generation students (i.e. students with parents without a tertiary degree) have developed in course of the pandemic, drawing on the unique pool of longitudinal register data collected for all Austrian students. We find that in the first year of the pandemic (2020/21), there is a clear peak in the number of students entering higher education in Austria. However, as this increase is mainly due to students with a tertiary family background, the share of first-generation students continued to decrease during this period. It shows that despite the disruptive effects of the pandemic and new labour market and higher education policies, the enduring downward trend in both the total number and the proportion of first-generation students has not been reversed.

Keywords

First-generation students, COVID-19, pandemic, inclusive higher education, higher education access

Introduction

A university education increases the potential for participation and integration in the social, economic and political spheres, and also offers best possible career opportunities (in terms of salary and status; BMFWF, 2017; OECD, 2023). Equal opportunities in access to and successful completion of higher education are therefore particularly important. However, there are inequalities of

Corresponding author:

Sylvia Mandl, Institute for Advanced Studies, Josefstädter Straße 39, Vienna 1080, Austria.

Email: mandl@ihs.ac.at

opportunity in the Austrian education system. Whether students' parents have finished higher education remains an important determinant of access to and participation in higher education (BMWF, 2017; Lessky et al., 2021; Unger et al., 2020; Zucha et al., 2024).

During the COVID-19 pandemic courses moved online, and students had to study at home as schools and universities were closed in 185 countries (Marinoni et al., 2020), leading to a change in academic and social life, with varying degrees of difficulty due to different personal circumstances (Aristovnik et al., 2020; Marczuk and Lörz, 2023; Resch et al., 2023). Students were affected not only by the changes at the university, but also by the impact of the COVID-19 pandemic on the economic system. On the one hand, tense economic situations can make studying more attractive than working. Previous research shows, that in times of economic downturn, such as the financial crisis of 2008, rising student numbers can be observed (Eichmann and Nowak, 2020). On the other hand, a large share of the students' income comes from their family or partner in Austria (Zucha et al., 2024). With rising unemployment especially among people without a university degree during the pandemic (Ragacs and Reiss, 2021), this group has less money to financially support their children with starting higher education.

The question arises as to how existing inequalities in access to higher education for first-generation students (i.e. students with parents without a tertiary degree) have developed in course of the pandemic. A closer look needs to be taken at the specific changes in the labour market and in access to higher education during the pandemic and how existing inequalities have developed in this context. There are currently no studies available on how access to higher education for first-generation students has changed during these difficult times in Austria.

The first research question guiding our analysis is therefore the following:

→ *How did the number of (a) first-time enrolments and (b) programmes started by first-generation students change over the pandemic period? (RQ1)*

In addition, we are interested in differences to non-first-generation students.

→ *Do these changes differ from non-first-generation students? (RQ2)*

Furthermore, we examine the impact of parental education (first-generation vs non-first-generation students) on access to higher education across different gender, age groups, higher education sectors and fields of study. This provides a more nuanced understanding of how these factors interact in shaping access to higher education:

→ *What are the differences in the changes over the pandemic period between first generation students and non-first-generation students in terms of (a) gender, (b) age groups, (c) higher education sectors and (d) fields of study? (RQ3)*

To answer these questions, this article analyses longitudinal register data collected for all Austrian students and builds on Boudon's (1974) theoretical approach and its further development for interpretation.

The paper is structured as follows: First, we give an overview of our theoretical framework. Consequently, the current discourse on (in)equality in access to higher education in general and in Austria in particular is presented, especially for first-generation students. We then take a closer look at the Austrian higher education environment and the labour market over the pandemic period. This is followed by a description of the research methodology and our findings on access

to higher education for first-generation students in Austria. Finally, our findings are discussed in the pandemic context.

Theoretical framework

This paper primarily draws on the theory of Boudon (1974), which posits primary and secondary effects of social origin, and its further developments. These theoretical approaches can be classified as rational choice (RC) theories (Esser, 2001).

The theory of primary and secondary effects of social origin elucidates the mechanisms through which social inequalities emerge within the educational system. The primary effects of social origin are the influences of social origin on children's school performance and skills development. Subsequently, these discrepancies in academic achievement influence engagement in the educational process. Secondary effects of social origin refer to different educational choices according to social origin. The expected costs and expected benefits of the desired educational path are rationally weighed (Boudon, 1974). Students and their parents from a lower social status tend to perceive the costs of an educational path with a higher social status as being higher, while the corresponding benefits are evaluated as being lower. This results in a reduction in the perceived utility of the educational path with a higher social status. Consequently, students with a lower social status are less likely to choose an educational path with a higher status than students with a higher social status, even when their achievements are similar. As evidenced by previous research, the secondary effects of social origin prevail over the primary effects in the transition to higher education (Bachsleitner et al., 2020; Neugebauer and Schindler, 2012; Schindler and Lorz, 2012).

Building on Boudon's model, Breen and Goldthorpe (1997) view the desire for status maintenance as a core element of their theory, with the fear of social decline acting as a critical motivating factor included in expected costs and returns. They argue that parents from higher social classes are particularly focused on securing their children's social status. For these families, educational choices are not based solely on the child's performance but also reflect a strategic decision to preserve family status (Breen and Goldthorpe, 1997). In contrast, the prospect of upward mobility is a less significant factor in educational decision-making (Stocké, 2007). Becker's (2003) theory of social maintenance also emphasises that educational decisions are shaped by a cost-benefit analysis in which academic performance and previous school experience play a central role, as they shape expectations of success in a given educational pathway (Becker, 2003). These dynamics are part of the broader reproductive mechanisms in education, through which social inequalities are perpetuated over generations (Bourdieu, 1973).

RC theories cite a number of factors that are thought to influence the anticipated costs and returns. These are also identified in empirical research (see Section 'Social inequalities in higher education'), along with other factors. The various RC theories are characterised by the assumption of rational actors and the distinction between primary and secondary effects. These theories provide a valuable approach to explaining the differences in access to higher education between first-generation students and non-first-generation students, even though it is not possible to test these theories directly in this context. Individuals from academic background (non-first-generation students) typically pursue the strategy of maintaining status by viewing higher education as a means of securing the social status they have achieved. These individuals are willing to invest heavily in education as they clearly see the benefits of a university degree. Individuals from non-academic backgrounds (first-generation students) on the other side may be more affected by uncertainties and risks, such as those posed by the COVID-19 pandemic and a university degree is not a relevant factor in maintaining the status in these families.

Social inequalities in higher education

Higher education is often seen as a way of promoting equality and social justice. However, the reproductive mechanisms of social inequality come into play at educational and occupational transitions, which is why the transition to university is also seen as an important stage in the development of social inequalities (Bachsleitner et al., 2020; OECD, 2023). Social inequality in education is defined by notable discrepancies in educational opportunities and outcomes, which are closely associated with the socioeconomic and cultural background of students. Despite policies dedicated to increase equity in tertiary education, numerous studies show that social inequalities in higher education remain high (Bachsleitner et al., 2020; Blossfeld et al., 2019; Haas and Hadjar, 2024; Zucha et al., 2024).

The social dimension principle of the European Higher Education Area (EHEA) acknowledges the significant impact of socio-economic status on access, entry and completion of higher education. In many European countries, there is a notable underrepresentation of students from non-academic backgrounds in comparison to the general population (Hauschild et al., 2024). A positive correlation exists between the level of parental education and the likelihood of pursuing higher education. It is evident that social origin has an impact on access to higher education (Bachsleitner et al., 2020; Blossfeld et al., 2019; Neugebauer and Schindler, 2012; Neugebauer et al., 2013; Smyth and Hannan, 2007; Unger et al., 2020; Zucha et al., 2024).

Challenges for first-generation students in higher education

First-generation students are more likely to experience disadvantages in terms of financial resources, support systems, and knowledge about pursuing higher education (Dausien and Hackl, 2023; Kiebler and Stewart, 2021; Lessky and Unger, 2023; Oldfield, 2012; Pascarella et al., 2004). The lack of parental guidance can intensify the feelings of anxiety that first-generation students often experience. In addition, first-generation students may become alienated from their families as they gain experiences that their parents did not have (O'Shea, 2015; O'Shea et al., 2024).

The COVID-19 pandemic exacerbated these challenges for this group. First-generation students in the US reported fewer resources for academic success than non-first-generation students and experienced greater negative effects on academic outcomes as well as increased isolation and mental health issues (Aucejo et al., 2020; Black et al., 2020; Kiebler and Stewart, 2021; Raposa et al., 2024; Santa-Ramirez et al., 2022). Studies conducted in Germany have found a significant increase in the intention to leave the higher education system and delays in graduation among first-generation students (Koopmann et al., 2023; Lörz and Becker, 2023). EUROSTUDENT data show that first-generation students are more likely to perceive a negative impact of the COVID-19 pandemic on their employment as well as on their ability to finance their studies and living expenses (EUROSTUDENT 8, 2024).

The (financial) burdens and uncertain job prospects caused by the COVID-19 pandemic are likely to have exacerbated the perceived differences in the costs and benefits of higher education for first-generation students. This may have influenced the decisions of individuals from non-academic backgrounds to commence, continue or terminate their studies, thereby demonstrating how the pandemic served to exacerbate existing educational inequalities through a process of secondary effects that were linked to social class.

Inequalities in higher education in Austria

In Austria, these issues are compounded by a particularly low level of educational upward mobility. This is partly due to the fact that, in comparison to other European countries, educational

pathways are set particularly early (at the age of 10) through the process of early tracking (Lee, 2014; Woessmann, 2009). An individual's social background can exert a pivotal influence on their educational trajectory, extending beyond the early years of formal education to also shape decisions about pursuing higher education (Lee, 2014). In the winter semester of 2022/23, over half of all new students in Austria were first-generation students (Zucha et al., 2024). However, access to higher education is not socially balanced when compared with the overall population. Parents of students tend to have a higher level of education than comparable age groups in the population. Nevertheless, there are differences depending on the type of higher education institution. Children of parents with a lower level of education are more likely to be enrolled in universities of applied sciences, in particular (Zucha et al., 2024).

Despite the Austrian government's commitment to fostering equal opportunities in education (BMWF, 2017; Bruneforth et al., 2012), barriers to higher education persist, particularly for students from socio-economically disadvantaged backgrounds (Unger et al., 2020; Zucha et al., 2024). These inequalities in higher education become particularly evident when considering the impact of external crises on the educational landscape. The global impact of the COVID-19 pandemic has posed significant challenges to the education sector, which may have exacerbated existing inequalities or created new inequalities. In this context, an examination of first-generation students' access to higher education is of particular relevance.

Impact of the COVID-19 pandemic in Austria

Austria was affected relatively early by the pandemic, with the first COVID-19 case registered in February 2020. After an initial rather cautious response to the virus, in March 2020 all restaurants and shops were closed, apart from pharmacies, supermarkets and grocery stores. Schools and day-care facilities for children were closed, and if not for (necessary) work, buying food, physical activities and assisting those in need, everyone had to stay at home (Pollak et al., 2020).

Higher education institutions were closed starting in March 2020, allowing only teaching methods without face-to-face contact. Interrupted by shorter periods with restricted possibilities for personal contact, remote learning continued to be the main education mode until winter term 2021/22. In Austria, most study programmes had not applied online teaching before the pandemic. Therefore, the transition to a fully remote mode was a new challenge in many study programmes. During this time of lockdowns, students had fewer opportunities to interact with their universities and work with their peers (Pollak et al., 2020; Resch et al., 2023). On the positive side, distance learning has facilitated the integration of academic pursuits with employment for students, as it reduced the time and expenses required for commuting (Thaler et al., 2021).

The Matura (A-levels), which is required for access to higher education, took place later than usual in 2020 and in a different mode. While the Matura normally consists of a written and an oral part, in 2020 the performance of the previous school year was included in the assessment and the oral part was not compulsory. In addition, the higher education information sessions that would otherwise have been offered were cancelled (BMBWF, 2020, 2021; Haag et al., 2020).

In addition to teaching modalities, the lockdowns also affected the admission procedures of Austrian universities. For this purpose, the Federal Ministry of Education, Science and Research has issued a regulation for aptitude, admission and selection procedures for the academic year 2020/21 for all higher education sectors (COVID-19-Hochschul-Aufnahmeverordnung – C-HAV). Most public university admission tests (for highly demanded degree programmes) scheduled for early to mid-July have been postponed to mid-August/early September. Furthermore, and aside to enhanced hygiene precautions, higher education institutions took various additional measures, such as changing examination modalities (Haag et al., 2020). Some universities of applied sciences

cancelled in-person appointments for admission procedures (FH Wiener Neustadt, 2022; FHWien der WKW, 2023). The Academy of Fine Arts Vienna (2020), for example, conducted the personal admission interviews via Zoom. On the one hand, this put additional pressure on prospective students who had to deal with sometimes untested setups. On the other hand, some of the changes (like cancellation of entrance exams) may have made it easier to enter higher education.

Table 1 provides an overview of the changes in the admission procedures at public universities in the different fields of study in the 2020/21 academic year (Haag et al., 2020). As some study programmes are offered by different universities, there is a wide variety of adaptations within individual fields of study. Nevertheless, the majority of study programmes at public universities (approximately 87%) require no admission procedure (BMBWF, 2024).

The COVID-19 pandemic not only affected study conditions in Austria, but also influenced the labour market. Austria experienced a particularly severe recession compared to other wealthy countries due to its reliance on tourism and the prolonged closure of non-essential businesses (Huber and Picek, 2021). Unemployment rose dramatically during the first lockdown (Ragacs and Reiss, 2021), especially among young people at the typical age for starting higher education. This is because they are disproportionately represented in sectors affected by the lockdowns (Eichmann and Nowak, 2020).

The impact of the economic downturn was not limited to young people already engaged in the labour market. Especially potential new entrants to the labour market encountered challenges in securing their first employment, as companies demonstrated a reluctance to hire during the crisis (Bock-Schappelwein et al., 2021; Tamesberger and Bacher, 2021). This was exacerbated by the fact that the specific financial support offered during this period (COVID-19 short-time work programme) was only available to people who had previously been employed (Tamesberger and Bacher, 2021).

After April 2020, loosening of measures took place followed by repeated closures and re-openings of varying degrees. From 2021, schools and higher education institutions gradually returned to their previous graduation and admissions procedures (BMBWF, 2021; Dittler and Kreidl, 2023; Pollak et al., 2021a, 2021b). However, it was not until October 2021 that unemployment in Austria was below the pre-crisis level of October 2019 (AMS Österreich, 2021). The last COVID-19 measures were lifted in the beginning of July 2023 in Austria.

To summarise, the COVID-19 pandemic has created an exceptional situation in Austria, both at universities and in the labour market (Ragacs and Reiss, 2021; Resch et al., 2023). This has led to new challenges in an already unequal higher education system, especially for first-generation students (Becker and Lörz, 2020; Rodríguez-Planas, 2022).

Methodology

Data and definitions

The analyses in this paper are based on administrative data from Statistics Austria's UHSTAT1 form, which is a compulsory form filled in by all students when they apply for or start their studies in Austria. The scientific use of this data is covered by the Austrian data protection legislation (Bundesstatistikgesetz § 31) and complies with the General Data Protection Regulation (GDPR). Data access was granted through an agreement with Statistics Austria. The use of administrative data allows us to avoid sampling and thus the inherent selection bias. In addition to its robustness and completeness, this form has the unique advantage of collecting rare data on parental education.

Table 1. Changes in admission procedures at public universities in different fields of study due to the COVID-19 pandemic in the 2020/21 academic year.

Measure	Fields of study
Changes in admission process	
Online admission	Biology (BOKU University)
Refund for cancelled participation in exam	Medicine (all Univ.)
Late registration/Application deadline extended	Business and Administration (Univ. of Vienna, Univ. of Graz) Education Science (Univ. of Graz) Psychology (Univ. of Klagenfurt) Languages (Univ. of Graz) Natural Sciences/Environment (Univ. of Graz)
Changing examination modalities	
Reduction of exam questions and time	Psychology (Univ. of Salzburg)
Essays + knowledge questions (instead of exams)	Business and Administration (WU Vienna) Law (WU Vienna)
Online exam	Business and Administration (Univ. of Klagenfurt, WU Vienna) Pharmacy (Univ. of Graz) Biology (Univ. of Graz)
Electronic exam on site	Molecular Biology (Univ. of Graz, Graz Univ. of Technology)
No entrance exams	
Cancellation of exams	Law (Univ. of Vienna) Business and Administration (Univ. of Vienna, Univ. of Graz) Education Science (Univ. of Vienna, Univ. of Graz) Natural Sciences/Environment (BOKU Univ., Univ. of Graz) Languages (Univ. of Vienna, Univ. of Graz)
Exams did not take place, due to the low number of participants	Architecture (Vienna Univ. of Technology, Graz Univ. of Technology) Law (Univ. of Graz) Social Sciences (Univ. of Vienna) Journalism (Univ. of Vienna)
No major changes in examination modalities	
Exams took place	Law (Univ. of Linz) Veterinary Medicine (Univ. of Veterinary Medicine Vienna) ICT (Vienna University of Technology, Univ. of Vienna) Pharmacy (Univ. of Vienna) Psychology (Univ. of Vienna, Univ. of Graz, Univ. of Innsbruck) Medicine (all Univ.) Biology (Univ. of Vienna, BOKU University) Chemistry (Univ. of Vienna)

Source: Own illustration based on Haag et al. (2020).

WU Vienna: Vienna University of Economics and Business; ICT: Information and Communications Technology.

There can be several studies (with different measures) per field of study.

The data have been specifically processed to answer the research questions and are available to us in aggregated form for the academic years 2017/18 to 2022/23 for bachelor's and diploma programmes at public universities and universities of applied sciences. In order to limit the effects of other countries' education systems on the results, only students who completed their secondary education in Austria are included in the analysis, and mobility students are excluded. In addition to the academic years, the data are aggregated in relation to the fol-

lowing categorical variables: higher education sector, field of study, gender, age and first-generation student status.

The term ‘first-generation student status’ is employed by Spiegler and Bednarek (2013) to categorise students according to whether they have parents without tertiary education (‘first-generation students’) or parents with tertiary education (‘non-first-generation students’). This definition places emphasis on social origin, defined by parental educational attainment. In our paper, ‘tertiary education’ of the parents refers specifically to all forms of post-secondary educational institutions. In the context of the students being a first-generation or non-first-generation student, the highest level of education attained by both the mother and father is considered collectively. If the educational level of one parent is unknown, the education of the known parent counts as the highest level of education. Information on both parents is missing in a small number of cases (between 2% and 10% each study year); either because the data for this student is not available at all (missing form) or because the student indicated not to know the education of both parents. These cases are included in the analysis where we do not differ between first-generation and non-first-generation students. We use the term ‘first-admission students’ (who can be either first-generation or non-first-generation students) to refer to students who are completely new to the higher education system (i.e. who have not previously been enrolled in another university or in another programme in Austria).

When looking at different fields of study in more detail, analysing the data only for first-admission students would distort the picture. Previous studies have shown that students are often already in another programme (with no or less stringent admission procedures) when they pass the entrance exam in a study programme, particularly in medicine (Haag et al., 2020). This is why focusing on first-admission students would only show data for the group of people who passed the entry tests at the first attempt. This would be particularly problematic for study programmes with highly selective admission tests. We therefore also draw on information of all regular study programmes started (in the first semester), regardless of whether it was the person’s first admission. An entry represents one study programme in which an individual is enrolled. In Austria it is possible to be enrolled in more than one programme at the same time. This means that when analysing ‘study programmes started’, (by non-/first-generation students) individuals with multiple enrolments are represented multiple times in the dataset. We categorise the study programmes started into fields of study based on the ISCED-F-2013 classification (UNESCO, 2014).

Methods

To assess whether the frequency between specific academic year pairs (e.g. 2019/20 to 2020/21 and 2020/21 to 2021/22) is equally distributed a one-sample Chi-square test is conducted. By testing the null hypothesis that the years have the same expected frequency, this non-parametric test identifies significant deviations from uniformity.

We further apply logistic regression (Wald-test) to examine whether the difference in the percentage changes in first-generation and non-first-generation students is significant. The statistical tests are conducted with significance levels set at $*p < 0.05$, $**p < 0.01$, and $***p < 0.001$.

In this study, we apply significance tests to administrative data, carefully considering the findings of related literature (Behnke, 2005; Broscheid and Gschwend, 2005; Connelly et al., 2016; Posch et al., 2021). Although administrative data often encompass full populations and may not inherently require inferential techniques, we incorporate significance tests due to the presence of stochastic influences – such as measurement error and latent social processes – which Broscheid and Gschwend (2005) argue justify inferential methods even in full data contexts. This approach enables us to not only identify patterns within the dataset but also to support broader, generalizable insights where appropriate.

Table 2. First-admission students in Austria from 2017/18 to 2022/23.

Academic year	First-admission students	Change compared to the previous year	
		Absolute	Percentage
2017/18	31,345		
2018/19	30,789	-556	-2
2019/20	29,343	-1,446	-5
2020/21	33,061	+3718	+13
2021/22	29,244	-3,817	-12
2022/23	28,257	-987	-3

Data: UHSTATI (Statistics Austria).

Limitations

While the findings of this study offer valuable insights, it is essential to acknowledge the limitations of the research design. As the Austrian population data are only available at an aggregated level, it is not possible to calculate multivariate regressions including mediating variables, which would have enhanced the interpretation. Furthermore, although the use of quantitative data allows for statistical analysis and a view of the big picture, it cannot capture the depth and complexity of first-generation students' experiences and perspectives. Additionally, the present study is limited to examining public universities and universities of applied sciences. In Austria, there are two additional higher education sectors, namely private universities and universities of teacher education, which collectively represent approximately 9% of all students (Zucha et al., 2024). However, due to the unavailability of sufficient data for these two sectors, they are not included in the present analysis.

Results

Development of first admissions during the pandemic

Looking at first-admission students, we see a **clear COVID-19 peak**: In 2020/21, the number of first-admission students increased by 3718 or 13% (see Table 2). The following year, there was a decrease (-3817 or -12%), with the number even falling below the level before the COVID-19 outbreak, but in line with the general downward trend.

The number of first-generation (FG) students decreased from 18,451 in the 2017/18 academic year to 16,056 in the 2019/20 academic year (see Figure 1). A closer examination of the period surrounding the outbreak of the coronavirus reveals that the number of FG students entering higher education increased in 2020/21 compared to the previous year, with 17,966 students enrolling. Further pairwise comparisons show that the increase in enrolment from 2019/20 to 2020/21 and the subsequent decrease in enrolment from 2020/21 to 2021/22 are statistically significant. However, the significant increase in the number of non-first-generation (NFG) students from 2019/20 to 2020/21 resulted in a corresponding decline in the proportion of FG students, from 59% to 57%. In other words, **the absolute number of FG students increased, but their proportion decreased** during the COVID-19 outbreak in Austria (*RQ1a*). Furthermore, the analysis revealed a **significant overall difference in student enrolment between FG and NFG students across the academic years 2017/18 to 2022/23** (*RQ2*).

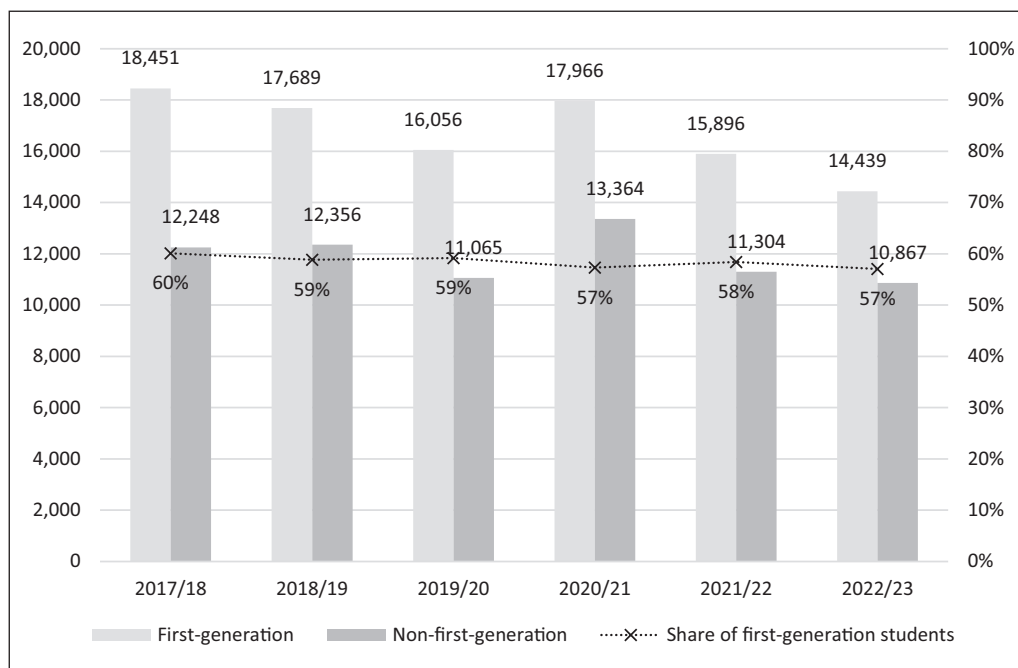


Figure 1. Absolute numbers and shares of (first-generation/non-first-generation) first-admission students. Data: UHSTATI (Statistics Austria).

The following year, as before the COVID-19 outbreak, the downward trajectory persisted. The number of first-time admissions of FG students in the 2021/22 academic year was lower than in the preceding years, with 15,896 students being admitted. Overall, **the number and proportion of first-admission FG students declined from 2017/18 to 2022/23, with the exception of the COVID-19 peak (RQ1a).**

From 2019/20 to 2020/21, the number of FG male students increased significantly by 6%, while the number of FG female students increased significantly by 17%. However, **the relative increase was significantly lower compared to NFG students for both men** (Wald(1)=9.280, $p < 0.01$) **and women** (Wald(1)=13.730, $p < 0.001$; RQ3a).

Looking at the change 1 year later (from 2020/21 to 2021/22), the number of FG students decreased significantly for both genders. **The relative decline in first-admission students was significantly smaller among FG female students compared to NFG female students** (Wald(1)=14.120, $p < 0.001$). For men, there is no (significant) difference (RQ3a) (Table 3).

Changes in the number of (non-)first generation students across age groups are shown in Table 4. For FG students, the changes in the observed years were significant for all age groups. The increase from 2019/20 to 2020/21 was particularly high for those aged 30 and above (+23%). However, the difference in the proportional growth between FG and NFG students between 2019/20 and 2020/21 is only significant for students under 21 (Wald(1)=11.537, $p < 0.001$), and those between the ages of 21 and 25 (Wald(1)=12.866, $p < 0.001$). Therefore, **in the younger age groups, the increase in the number of FG students was lower than that of NFG students (RQ3b).** In the year following the outbreak of the pandemic (2020/21 to 2021/22), the relative differences remain significant only in the youngest age group, with FG students experiencing a smaller decline.

Table 3. First-admission students by gender and first-generation student status.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
Total					
First-generation (FG)	16,056	17,966	15,896	+12%***	-12%***
Non-first-generation (NFG)	11,065	13,364	11,304	+21%***	-15%***
Difference				+9 pp***	-4 pp**
Men					
First-generation (FG)	6947	7344	6390	+6%***	-13%***
Non-first-generation (NFG)	5278	6025	5266	+14%***	-13%***
Difference				+8 pp**	+0.4 pp
Women					
First-generation (FG)	9109	10,622	9506	+17%***	-11%***
Non-first-generation (NFG)	5787	7339	6038	+27%***	-18%***
Difference				+10%***	-7%***

Data: UHSTAT I (Statistics Austria).

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

Table 4. First-admission students by age and first-generation student status.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
<21					
First-generation (FG)	9795	11,090	9949	+13%***	-10%***
Non-first-generation (NFG)	8792	10,654	9049	+21%***	-15%***
Difference				+8 pp***	-5 pp**
21–25					
First-generation (FG)	4697	5009	4483	+7%**	-11%***
Non-first-generation (NFG)	1900	2314	1963	+22%***	-15%***
Difference				+15pp***	-5 pp
26–30					
First-generation (FG)	891	1038	855	+16%***	-18%***
Non-first-generation (NFG)	232	261	185	+13%	-29%***
Difference				-4 pp	-11 pp
>30					
First-generation (FG)	673	829	609	+23%***	-27%***
Non-first-generation (NFG)	141	135	107	-4%	-21%
Difference				-27 pp	+6 pp

Data: UHSTAT I (Statistics Austria).

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

Development of study programmes started during the pandemic

Looking at the total number of study programmes started in Figure 2, a COVID-19 peak is visible, but it was lower than for first-admission students. This shows that, in general, there was a greater tendency to start studying for the first time than to take up a new study programme (e.g. in a different field of study) in the first year of the pandemic in Austria. The peak in the number of study

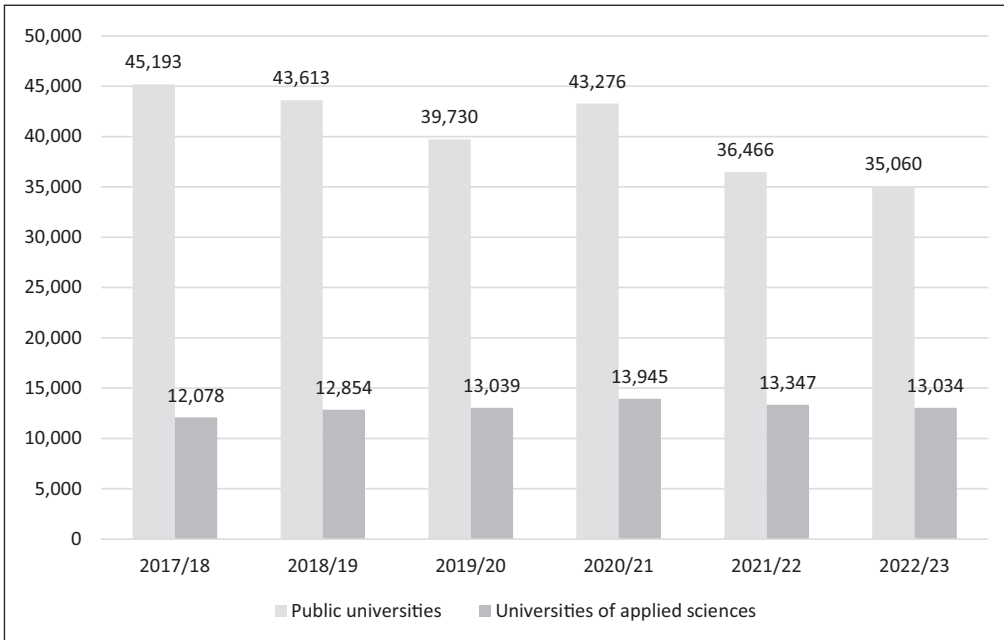


Figure 2. Absolute numbers of study programmes started by higher education sector.
Data: UHSTATI (Statistics Austria).

programmes started was slightly higher at public universities than at universities of applied sciences. In the subsequent academic year (2021/22), the number of new study programmes started at public universities even fell below the level before the COVID-19 outbreak.

For FG students, the number of study programmes started increased significantly at universities of applied sciences (+4%) and even more at public universities (+9%; Table 5). However, the subsequent decline was higher in percentage terms (−7%; −17%), meaning that **the number of study programmes started after the COVID-19 peak remained below the level of 2019/20 (RQ1b).**

The relative difference between FG students and NFG students is significant for public universities from 2019/20 to 2020/21 (Wald(1)=21.035, $p < 0.001$). During this period, FG students started study programmes in public universities more often than before, but not as often as NFG students. **Therefore, there is a significant difference in the enrolment behaviour between first-generation and non-first-generation students during the COVID-19 pandemic at public universities (RQ3c).**

Table 6 summarises **the fields of study at public universities** with an increase in the number of study programmes started by FG students during the COVID-19 peak. The **largest significant increases** in the number of **FG students** starting degree programmes were **in law (+34%) and architecture (+32%).**

The relative increase in the number of study programmes started was significantly higher among NFG students in law (Wald(1)=5.609, $p < 0.05$), social sciences (Wald(1)=5.454, $p < 0.05$) and business and administration (Wald(1)=6.266, $p < 0.05$). **Thus, in these fields of study, FG students were more often starting a study programme in 2020/21 than in 2019/20, but still significantly less often than NFG students (RQ3d).**

Table 5. Study programmes started during and after the COVID-19 peak higher education sector and first-generation student status.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
Public universities					
First-generation (FG)	19,483	21,283	17,699	+9%***	-17%***
Non-first-generation (NFG)	17,445	20,349	16,967	+17%***	-17%***
Difference				+7 pp***	+0.2 pp
Universities of applied science					
First-generation (FG)	8483	8830	8228	+4%**	-7%**
Non-first-generation (NFG)	4245	4546	4354	+7%***	-4%*
Difference				+3 pp	+3 pp

Data: UHSTATI (Statistics Austria).

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

In the following year, there was a significant decline in the number of study programmes started by FG students in law, architecture, teacher training, arts and humanities, social sciences, natural sciences, and business and administration. In social sciences, the relative decrease was significantly higher for NFG students ($\text{Wald}(1)=4.029$, $p < 0.05$).

There were also decreases in the number of FG students starting degree programmes at public universities in the first year of the pandemic (see Table 7), with significant decreases in education science (-27%), ICT (-16%) and engineering (-16%). For NFG students, the decline was only significant in education science (-35%), and there was a significant increase in medicine (+14%).

The relative decline in study programmes started was significantly higher among FG students compared to NFG students in ICT ($\text{Wald}(1)=4.453$, $p < 0.05$), engineering ($\text{Wald}(1)=7.904$, $p < 0.01$) and medicine ($\text{Wald}(1)=4.025$, $p < 0.05$). In other words, **in the first year of the COVID-19 pandemic, FG students enrolled significantly less often in ICT, engineering and medicine than NFG students (RQ3d).**

In engineering, the decline in the number of study programmes started by FG students continued in the following academic year (-15%), and the relative decline was significantly higher than for NFG students ($\text{Wald}(1)=3.901$, $p < 0.05$).

The following analyses show the change in the **number of study programmes started at universities of applied sciences**. Only in health and welfare there was a significant increase in the number of programmes started by FG students from 2019/20 to 2020/21 (+19%; see Table 8). From 2020/21 to 2021/22, the decrease was significant in business and administration and engineering for both FG and NFG students (see Tables 8 and 9). In all fields of study, **no statistically significant differences were observed in the relative changes between FG and NFG students at universities of applied sciences (RQ3d).**

Discussion

In Austria, entering higher education can be difficult for disadvantaged groups, such as first-generation students. Despite the many benefits of a university degree, this group faces barriers that prevent them from participating and succeeding in higher education (Dausien and Hackl, 2023; Haag et al., 2020; Lessky et al., 2021; Zucha et al., 2024). In the course of the COVID-19 pandemic, significant changes have taken place in the Austrian labour market and higher education

Table 6. Fields of study at public universities with an increase in the number of study programmes started by first-generation students during the COVID-19 peak.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
Law					
First-generation (FG)	2054	2751	2160	+34%***	-21%***
Non-first-generation (NFG)	1578	2344	1933	+49%***	-18%***
Difference				+15 pp*	+4 pp
Architecture					
First-generation (FG)	370	487	369	+32%***	-24%***
Non-first-generation (NFG)	399	476	421	+19%**	-12%
Difference				-12 pp	+13 pp
Teacher training					
First-generation (FG)	1597	1934	1580	+21%***	-18%***
Non-first-generation (NFG)	1150	1353	1105	+18%***	-18%***
Difference				-3 pp	-0.1 pp
Arts and humanities					
First-generation (FG)	3337	3981	3102	+19%***	-22%***
Non-first-generation (NFG)	3556	4323	3300	+22%***	-24%***
Difference				+2 pp	-2 pp
Social sciences					
First-generation (FG)	1681	1897	1629	+13%***	-14%***
Non-first-generation (NFG)	1341	1699	1320	+27%***	-22%***
Difference				+14 pp*	-8 pp*
Natural sciences					
First-generation (FG)	2910	3255	2643	+12%***	-19%***
Non-first-generation (NFG)	3069	3558	2979	+16%***	-16%***
Difference				+4 pp	+3 pp
Pharmacy					
First-generation (FG)	382	413	411	+8%	-0.5%
Non-first-generation (NFG)	379	412	391	+9%	-5%
Difference				+1 pp	-5 pp
Business and administration					
First-generation (FG)	2314	2476	2102	+7%*	-15%***
Non-first-generation (NFG)	1759	2098	1825	+19%***	-13%***
Difference				+12 pp*	+2 pp
Services					
First-generation (FG)	114	117	90	+3%	-23%
Non-first-generation (NFG)	110	132	98	+20%	-26%*
Difference				+17 pp	-3 pp

Data: UHSTAT1 (Statistics Austria).

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

sector, with the implementation of new measures (Budgetdienst, 2020; Haag et al., 2020; Huber and Picek, 2021; Ragacs and Reiss, 2021). In this context, it is crucial to examine how existing inequalities for first-generation students have developed. Therefore, in this paper we have taken a closer look at how enrolment in higher education has changed for first-generation students during and after the COVID-19 pandemic in Austria.

Table 7. Fields of study at public universities with a decrease in the number of study programmes started by first-generation students during the COVID-19 peak.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
Education science					
First-generation (FG)	837	614	528	-27%***	-14%*
Non-first-generation (NFG)	448	293	236	-35%***	-19%*
Difference				-8 pp	-5 pp
ICT					
First-generation (FG)	1273	1073	981	-16%***	-9%*
Non-first-generation (NFG)	950	913	923	-4%	+1%
Difference				+12 pp*	+10 pp
Engineering					
First-generation (FG)	1636	1367	1162	-16%***	-15%***
Non-first-generation (NFG)	1433	1388	1054	-3%	-24%***
Difference				+13 pp**	-9 pp*
Veterinary					
First-generation (FG)	282	242	202	-14%	-17%
Non-first-generation (NFG)	249	229	230	-8%	+0.4%
Difference				+6 pp	+17 pp
Medicine					
First-generation (FG)	431	414	474	-4%	+14%*
Non-first-generation (NFG)	764	870	887	+14%**	+2%
Difference				+18 pp*	-13 pp
Psychology					
First-generation (FG)	265	258	261	-3%	+1%
Non-first-generation (NFG)	255	258	262	+1%	+2%
Difference				+4 pp	+0.4 pp

Data: UHSTAT I (Statistics Austria).

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

The first year of the pandemic: The COVID-19 peak

In the first year of the COVID-19 pandemic (2020/21), there is a clear peak in the number of first-admission students and study programmes started in Austria. There was a tendency to enrol in higher education for the first time and to start a new programme (e.g. in a different field of study), although this was somewhat less common. In that year, the oral component of the Matura (A-levels) was not compulsory, several changes were made to university admission procedures, and long periods of lockdowns had led to high unemployment rates, particularly among younger age groups (AMS Österreich, 2020; BMBWF, 2021; Haag et al., 2020). The implementation of short-time work programmes has contributed to the stabilisation of the overall economy. However, this has also resulted in a decline in the attractiveness of young professionals to potential employers (Tamesberger and Bacher, 2021). It is therefore unsurprising that, during this pandemic, as in previous crises affecting the labour market, a greater proportion of young people have opted to pursue tertiary education rather than embarking on a (pure) career in the labour market.

The administrative data employed in this study permitted a more detailed examination of the enrolment numbers for first-admission students, classified according to whether they were (non-)

Table 8. Fields of study at universities of applied sciences with an increase in the number of study programmes started by first-generation students during the COVID-19 peak.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
Health and welfare					
First-generation (FG)	2003	2393	2406	+19%***	+1%
Non-first-generation (NFG)	994	1151	1252	+16%***	+9%*
Difference				-4 pp	+8 pp
Architecture					
First-generation (FG)	39	42	48	+8%	+14%
Non-first-generation (NFG)	38	33	30	-13%	-9%
Difference				-21 pp	-23 pp
Arts and humanities					
First-generation (FG)	233	246	206	+6%	-16%
Non-first-generation (NFG)	178	189	157	+6%	-17%
Difference				+1 pp	-1 pp
Services					
First-generation (FG)	211	216	196	+2%	-9%
Non-first-generation (NFG)	131	125	113	-5%	-10%
Difference				-7 pp	-0.3 pp
ICT					
First-generation (FG)	995	1010	951	+2%	-6%
Non-first-generation (NFG)	501	576	519	+15%*	-10%
Difference				+13 pp	-4 pp
Business and administration					
First-generation (FG)	2598	2603	2428	+0.2%	-7%*
Non-first-generation (NFG)	1193	1215	1088	+2%	-10%**
Difference				+2 pp	-4 pp

Data: UHSTAT1 (Statistics Austria).

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

first-generation students. This allowed us to see how the achievement of the goal of reducing the under-representation of students with less educated parents in Austria has developed over the course of the pandemic. It was disclosed that the overall number of first-generation students pursuing higher education increased during the 2020/21 academic year. However, the increase in the number of non-first-generation students has been even greater, leading to an even lower proportion of first-generation students than previously observed. With reference to the rational choice (RC) theories discussed above, we assume that the economic impact of the pandemic has disproportionately increased the cost of education for potential first-generation students, due to the higher incidence of unemployment among their parents (Ragacs and Reiss, 2021). Therefore, although individuals with parents who did not attain a tertiary education may also have been more inclined to pursue higher education during periods of reduced labour market attractiveness, it is not unexpected that their overall participation is less significant in comparison to those with parents who hold academic degrees. They were more likely to pursue higher education during the COVID-19 pandemic, still their level of engagement was lower than that of their counterparts.

The rise in first-admission students was significantly less pronounced for first-generation students than for non-first-generation students, for both men and women. Age-related differences in

Table 9. Fields of study at universities of applied sciences with a decrease in the number of study programmes started by first-generation students during the COVID-19 peak.

Group	2019/20	2020/21	2021/22	Change from 2019/20 to 2020/21	Change from 2020/21 to 2021/22
Natural sciences					
First-generation (FG)	105	87	88	-17%	+1%
Non-first-generation (NFG)	72	79	81	+10%	+3%
Difference				+27 pp	+1 pp
Social sciences					
First-generation (FG)	98	83	93	-15%	+12%
Non-first-generation (NFG)	66	68	83	+3%	+22%
Difference				+18 pp	+10 pp
Social work					
First-generation (FG)	398	378	341	-5%	-10%
Non-first-generation (NFG)	197	212	219	+8%	+3%
Difference				+13 pp	+13 pp
Engineering					
First-generation (FG)	1777	1748	1444	-2%	-17%***
Non-first-generation (NFG)	869	890	805	+2%	-10%*
Difference				+4 pp	+8 pp

Data: UHSTAT1 (Statistics Austria).

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

the influence of parental education on first-time enrolments could be identified. It was especially the younger age-groups among which first-generation students enrolled in higher education less often than non-first-generation students in that year. As younger students are often more dependent on financial support from their parents (Zucha et al., 2024), they may have been more affected than older students by the disproportionately high incidence of parental unemployment.

Our results also show that there is a significant difference in the enrolment behaviour of first-generation and non-first-generation students at public universities in the first year of the COVID-19 pandemic. In law, social sciences and business and administration, there was an increase in the number of study programmes started for both groups, although the increase was significantly smaller for first-generation students. In ICT and engineering there was a decrease for both groups, with first-generation students significantly less likely to enrol in these study fields. There is also a significant difference in medicine: the number of study programmes started by first-generation students has decreased, while the number of study programmes started by non-first-generation students has increased. This may be due to the partial abolition of entrance exams in other fields, which may have made them comparatively more attractive to them. In addition, ICT, engineering and medicine are often perceived to be more difficult. According to the above-mentioned RC theories, the risk of investing a lot of time (and sometimes fees) in applying for and then studying in these fields may have made them less attractive, particularly to first-generation students.

At universities of applied sciences, the number of study programmes started also increased in the first year of the pandemic. However, there were no significant differences between the enrolment behaviour of first-generation and non-first-generation students. This could be attributed to the different study cultures and target groups at the universities of applied sciences in comparison to public universities.

The years following the COVID-19 outbreak

In the second year of the pandemic, increased efforts to reopen businesses and political support led to a decline in unemployment figures. In addition, schools started to gradually return to their previous graduation mode and some of the temporary measures in higher education admission procedures have been withdrawn (AMS Österreich, 2021; BMBWF, 2021; Dittler and Kreidl, 2023; Pollak et al., 2021a, 2021b). In that year, the number of first-admission students and study programmes started were lower than before the COVID-19 outbreak in Austria. It becomes evident, that young people have once again been able to gain a better foothold in the labour market and that simplifications in graduation and admission procedures have been scaled back.

After the COVID-19 peak, the number of first-generation students who enrol in higher education and the number of study programmes started by them declines to a lower level than before the pandemic. Looking at the overall picture from 2017/18 to 2022/23, the pandemic did not break the long-term downward trend in both the total number and proportion of first-generation students and their study programmes started. Part of this development can be explained by the fact that the share of parents with tertiary education in the Austrian population is increasing (STATcube, 2024). Furthermore, according to RC theories, the main reason for not attending higher education is that their educational choices are influenced by their social background (Scharf et al., 2020; Watermann et al., 2014). For young people without tertiary background, attending higher education comes with more costs than benefits, including spending time on studying rather than earning money and potential social isolation from their social origin. As previously stated, during the pandemic it was especially people without higher education degrees who lost their jobs. This means that after 1 year of redundancy, the parents of (potential) first-generation students had fewer financial resources to support their decision to enter higher education. RC theories also draw attention to the importance of status reproduction processes, which allow people from underprivileged backgrounds to internalise social norms and expectations that prioritise short-term financial security over long-term investment in education. A university degree is not a relevant factor in maintaining the status in these families. Therefore, people from non-academic backgrounds, driven by these beliefs and social dynamics, may have chosen to enter the labour market directly when it recovered, rather than pursue higher education, in search of immediate financial independence and social validation.

Conclusion

This paper indicates that there was no positive long-term change in enrolments for higher education of first-generation students in Austria in course of the COVID-19 pandemic. In the first year of the crisis there was a temporary peak in overall first-time admissions and study programmes started, but the different measures and instrument used to cope with the new situation (e.g. different modes for Matura and admission to higher education, COVID-19 short-time work programme) did not go hand in hand with an increase in the proportion of first-generation students in particular.

As shown by Boudon, parental education affects children's educational decisions in many ways, which explains why single interventions may not have brought about comprehensive change. More multifaceted strategies are therefore urgently needed to address these inequalities in access to higher education for first-generation students.

Acknowledgements

We would like to thank Johann Bacher, Bianca Thaler and Martin Unger for their comments and suggestions at various stages of the research process. We thank Statistics Austria for providing the data. We would also

like to thank the anonymous reviewers for their helpful comments. Open Access Funding provided by Institute for Advanced Studies (IHS).

Data availability statement

The data used in this study were obtained from Statistics Austria through a special agreement. Interested researchers can obtain access by contacting Statistics Austria directly.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research received funding from the Institute for Advanced Studies (IHS), Vienna.

Ethical approval and informed consent statements

The scientific use of this data is covered by the Austrian data protection legislation (Bundesstatistikgesetz § 31) and complies with the General Data Protection Regulation (GDPR). Data access was granted through an agreement with Statistics Austria.

ORCID iDs

Sylvia Mandl  <https://orcid.org/0009-0009-5870-3597>

Nora Haag  <https://orcid.org/0009-0004-7929-4570>

References

- Academy of Fine Arts Vienna (2020) Zulassungsprüfung Bildende Kunst Studienjahr 2020/2021. Available at: https://www.akbild.ac.at/de/news/2015/copy_of_online-anmeldung-zur-zulassungspruefung-bildende-kunst (accessed 31 October 2024).
- AMS Österreich (2020) Krise am Arbeitsmarkt Covid-19-Teil 2. Spezialthema zum Arbeitsmarkt. Available at: https://www.ams.at/content/dam/download/arbeitsmarktdaten/%C3%B6sterreich/berichte-auswertungen/001_spezialthema_0420.pdf (accessed 31 October 2024).
- AMS Österreich (2021) Arbeitsmarktlage 2020. Available at: https://www.ams.at/content/dam/download/arbeitsmarktdaten/%C3%B6sterreich/berichte-auswertungen/001_JB-2020.pdf (accessed 31 October 2024).
- Aristovnik A, Keržič D, Ravšelj D, et al. (2020) Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability* 12(20): 8438.
- Aucejo EM, French J, Ugalde Araya MP, et al. (2020) The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *Journal of Public Economics* 191: 104271.
- Bachsleitner A, Neumann M, Becker M, et al. (2020) Soziale Ungleichheit bei den Übergängen ins Studium und in die Promotion: Eine kumulative Betrachtung von sozialen Herkunftseffekten im nachschulischen Bildungsverlauf. *Soziale Welt* 71(3): 308–340.
- Becker R (2003) Educational expansion and persistent inequalities of education: Utilizing subjective expected utility theory to explain increasing participation rates in upper secondary school in the federal republic of Germany. *European Sociological Review* 19(1): 1–24.
- Becker K and Lörz M (2020) Studieren während der Corona-Pandemie: Die finanzielle Situation von Studierenden und mögliche Auswirkungen auf das Studium. *DZHW. Brief* 9. DZHW.
- Behnke J (2005) Lassen sich Signifikanztests auf Vollerhebungen anwenden? Einige essayistische Anmerkungen. *Politische Vierteljahresschrift* 46(1): O1–O15.

- Black VG, Martinez GP and Gonzales ST (2020) COVID-19 impact on first-gen students. Findings from the COVID-19 First-Gen Survey. Report, Texas State University, USA.
- Blossfeld H-P, Blossfeld GJ and Blossfeld PN (2019) Soziale Ungleichheiten und Bildungsentscheidungen im Lebensverlauf. Die Perspektive der Bildungssoziologie. *Journal for Educational Research Online* 11(1): 16–30.
- BMBWF (2020) Fahrplan Zentralmatura & Berufsschulabschluss Schuljahr 2019/20. Available at: https://levv.at/wp-content/uploads/2020/04/Fahrplan_Matura_Berufsschulabschluss_20200408.pdf (accessed 10 October 2024).
- BMBWF (2021) Zentralmatura 2021. Available at: <https://www.bmbwf.gv.at/Themen/schule/schulpraxis/zentralmatura/zentralmatura2021.html> (accessed 31 October 2024).
- BMBWF (2024) Universitätsbericht 2023. Available at: https://unibericht.bmbwf.gv.at/Unibericht_2023.pdf (accessed 31 October 2024).
- BMWF (2017) National strategy on the social dimension of higher education. Towards more inclusive access and wider participation. Austria. Available at: http://www.sozialerhebung.at/sozdim/strategiepapier/Strategie_2017_englisch.pdf (accessed 31 October 2024).
- Bock-Schappelwein J, Fink M, Mayrhuber C, et al. (2021) Selbständig Erwerbstätige in Österreich. Struktur, Einkommen und Betroffenheit von der COVID-19-Krise. *WIFO Monatsberichte (Monthly Reports)* 94(3): 205–223.
- Boudon R (1974) *Education, Opportunity, and Social Inequality: Changing Prospects in Western Society*. Wiley.
- Bourdieu P (1973) Cultural reproduction and social reproduction. In: Brown R (ed.) *Knowledge, Education, and Cultural Change*. London: Tavistock Publications, pp.71–112.
- Breen R and Goldthorpe JH (1997) Explaining educational differentials: Towards a formal rational action theory. *Rationality and Society* 9(3): 275–305.
- Broscheid A and Gschwend T (2005) Zur statistischen Analyse von Vollerhebungen. *Politische Vierteljahresschrift* 46(1): O16–O26.
- Bruneforth M, Weber C and Bacher J (2012) Chancengleichheit und garantiertes Bildungsminimum in Österreich. In: Herzog-Punzenberger B (ed.) *Nationaler Bildungsbericht Österreich 2012. Band 2: Fokussierte Analysen bildungspolitischer Schwerpunktthemen*. Graz: Leykam, pp.189–228.
- Budgetdienst (2020) Update. COVID-19-Maßnahmenpakete und Budgetentwurf 2020. Available at: https://www.parlament.gv.at/dokument/budgetdienst/budget/BD_-_Update_COVID-19-Massnahmenpakete_und_Budgetentwurf_2020.pdf (accessed 18 March 2024).
- Connelly R, Playford CJ, Gayle V, et al. (2016) The role of administrative data in the big data revolution in social science research. *Social Science Research* 59: 1–12.
- Dausien B and Hackl J (2023) Einstieg in eine “fremde Welt”? Perspektiven der Biographieforschung und empirische Argumente zum Übergang in die Hochschule von “first-generation students” der Bildungswissenschaft. *BIOS – Zeitschrift für Biographieforschung, Oral History und Lebensverlaufsanalysen* 34(1): 42–69.
- Dittler U and Kreidl C (2023) Eine kurze Chronologie der Covid-19-Pandemie von Sommersemester 2020 bis Sommersemester 2022. In: Dittler U and Kreidl C (eds) *Wie Corona die Hochschullehre verändert: Erfahrungen und Gedanken aus der Krise zum zukünftigen Einsatz von eLearning*. Wiesbaden: Springer Gabler, pp.1–19.
- Eichmann H and Nowak S (2020) Auswirkungen der Corona-Pandemie auf die Beschäftigten und auf die (digitalisierte) Betriebsratsarbeit: Eine Literaturstudie von AK und ÖGB durchgeführt von FORBA. Report, Austria.
- Esser H (2001) *Soziologie - Spezielle Grundlagen*. Frankfurt/New York: Campus Verlag.
- EUROSTUDENT 8 (2024) Database of EUROSTUDENT 8. Available at: <https://database.eurostudent.eu/> (accessed 20 March 2024).
- FH Wiener Neustadt (2022) Informationen zum Coronavirus. Available at: <https://www.fhwn.ac.at/news/informationen-zum-coronavirus> (accessed 8 November 2024).
- FHWien der WKW (2023) Aktuelle Informationen zum Coronavirus - FHWien der WKW. Available at: <https://www.fh-wien.ac.at/news/aktuelle-informationen-zum-coronavirus/> (accessed 8 November 2024).

- Haag N, Thaler B, Stieger A, et al. (2020) Evaluierung der Zugangsregelungen nach § 71b, § 71c, § 71d UG 2002. Report, Institute for Advanced Studies (IHS), Austria.
- Haas C and Hadjar A (2024) Social inequalities in study trajectories: A comparison of the United States and Germany. *Sociology of Education* 97(3): 276–296.
- Hauschild K, Gwosć C, Schirmer H, et al. (2024) *Social and Economic Conditions of Student Life in Europe: Eurostudent 8 Synopsis of Indicators 2021-2024*. wbv Media.
- Huber A and Picek O (2021) 500 Tage Corona: Wie gut kam Österreich durch die Krise? *Momentum Institut Policy Brief 08*. Vienna Momentum Institut.
- Kiebler JM and Stewart AJ (2021) Student experiences of the COVID-19 pandemic: Perspectives from first-generation/lower-income students and others. *Analyses of Social Issues and Public Policy* 22(1): 198–224.
- Koopmann J, Zimmer LM and Lörz M (2023) The impact of COVID-19 on social inequalities in German higher education. An analysis of dropout intentions of vulnerable student groups. *European Journal of Higher Education* 14(2): 290–307.
- Lee B (2014) The influence of school tracking systems on educational expectations: A comparative study of Austria and Italy. *Comparative Education* 50(2): 206–228.
- Lessky F, Nairz-Wirth E and Feldmann K (2021) Informational capital and the transition to university: First-in-family students' experiences in Austrian higher education. *European Journal of Education* 56(1): 27–40.
- Lessky F and Unger M (2023) Working long hours while studying: A higher risk for first-in-family students and students of particular fields of study? *European Journal of Higher Education* 13(3): 347–366.
- Lörz M and Becker K (2023) COVID-19 Pandemie und soziale Ungleichheit: Hängt eine prekäre Finanzierungssituation mit sozialer Ungleichheit im Studium zusammen? *ZeHf – Zeitschrift für empirische Hochschulforschung* 6(1): 24–44.
- Marczuk A and Lörz M (2023) Did the poor get poorer? The impact of COVID-19 on social inequalities between international and domestic students. *Journal of Studies in International Education* 28(2): 1–20.
- Marinoni G, van't Land H and Jensen T (2020) The impact of Covid-19 on higher education around the world. IAU Global Survey Report, International Association of Universities (IAU), France.
- Neugebauer M, Reimer D, Schindler S, et al. (2013) Inequality in transitions to secondary school and tertiary education in Germany. In: Jackson M (ed.) *Determined to Succeed? Performance Versus Choice in Educational Attainment*. Stanford, CA: Stanford University Press, pp.56–88.
- Neugebauer M and Schindler S (2012) Early transitions and tertiary enrolment: The cumulative impact of primary and secondary effects on entering university in Germany. *Acta Sociologica* 55(1): 19–36.
- OECD (2023) Education at a Glance 2023: OECD indicators. Available at: https://www.oecd.org/en/publications/education-at-a-glance-2023_e13bef63-en.html (accessed 31 October 2024).
- Oldfield K (2012) Still humble and hopeful: Two more recommendations on welcoming first-generation poor and working-class students to college. *About Campus: Enriching the Student Learning Experience* 17(5): 2–13.
- O'Shea S (2015) Arriving, surviving, and succeeding: First-in-family women and their experiences of transitioning into the first year of university. *Journal of College Student Development* 56(5): 499–517.
- O'Shea S, May J, Stone C, et al. (2024) *First-in-Family Students, University Experience and Family Life: Motivations, Transitions and Participation*. Cham, Switzerland: Palgrave macmillan.
- Pascarella ET, Pierson CT, Wolniak GC, et al. (2004) First-generation college students. *The Journal of Higher Education* 75(3): 249–284.
- Pollak M, Kowarz N and Partheymüller J (2020) Blog 51 – Chronologie zur Corona-Krise in Ös-terreich – Teil 1: Vorgeschichte, der Weg in den Lockdown, die akute Phase und wirtschaftliche Folgen. Available at: <https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog51/> (accessed 10 October 2024).
- Pollak M, Kowarz N and Partheymüller J (2021a) Blog 112: Chronologie zur Corona-Krise in Österreich - Teil 5: Dritte Welle, regionale Lockdowns und Impffortschritt. Available at: <https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog112/> (accessed 10 October 2024).
- Pollak M, Kowarz N and Partheymüller J (2021b) Blog 135 - Chronologie zur Corona-Krise in Österreich - Teil 6: Ein "Sommer wie damals", der Weg in die vierte Welle, ein erneuter Lockdown und die Impfpflicht. Available at: <https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog135/> (accessed 10 October 2024).

- Posch K, Thaler B and Lessky F (2021) Einflussfaktoren auf Studienerfolg: Heterogene Effekte nach Studienfachgruppe? *Zeitschrift für Hochschulentwicklung* 16(14): 143–162.
- Ragacs C and Reiss L (2021) Austria's labor market during the COVID-19 crisis. *Monetary Policy & the Economy* (Q2/21): 59–78.
- Raposa EB, Bartolotta K, Forbes N, et al. (2024) Emotional distress and access to mental healthcare among first-generation college students during the onset of the COVID-19 pandemic. *The Journal of Higher Education*. Epub ahead of print 1 August 2024. DOI: 10.1080/00221546.2024.2378641
- Resch K, Alnahdi G and Schwab S (2023) Exploring the effects of the COVID-19 emergency remote education on students' social and academic integration in higher education in Austria. *Higher Education Research & Development* 42(1): 215–229.
- Rodríguez-Planas N (2022) Hitting where it hurts most: COVID-19 and low-income urban college students. *Economics of Education Review* 87: 102233.
- Santa-Ramirez S, Block S, Vargas A, et al. (2022) “It was rough”: The experiences of first-generation collegians transitioning into higher education amid COVID-19. *New Directions for Higher Education* 2022(199): 41–56.
- Scharf J, Becker M, Stallasch SE, et al. (2020) Primäre und sekundäre Herkunftseffekte über den Verlauf der Sekundarstufe: Eine Dekomposition an drei Bildungsübergängen. *Zeitschrift für Erziehungswissenschaft* 23(6): 1251–1282.
- Schindler S and Lorz M (2012) Mechanisms of social inequality development: Primary and secondary effects in the transition to tertiary education between 1976 and 2005. *European Sociological Review* 28(5): 647–660.
- Smyth E and Hannan C (2007) School processes and the transition to higher education. *Oxford Review of Education* 33(2): 175–194.
- Spiegler T and Bednarek A (2013) First-generation students: What we ask, what we know and what it means: An international review of the state of research. *International Studies in Sociology of Education* 23(4): 318–337.
- STATcube (2024) Statistical Database of STATISTICS AUSTRIA. Available at: <https://www.statistik.at/en/databases/statcube-statistical-database> (accessed 20 March 2024).
- Stocké V (2007) Explaining educational decision and effects of families' social class position: An empirical test of the Breen–Goldthorpe model of educational attainment. *European Sociological Review* 23(4): 505–519.
- Tamesberger D and Bacher J (2021) Jugendarbeitslosigkeit und Jugendbeschäftigung in der Corona-Krise 2020. *WISO* 44(1): 33–61.
- Thaler B, Schubert N, Kulhanek A, et al. (2021) Prüfungsinaktivität in Bachelor- und Diplomstudien an Universitäten. Report, Institute for Advanced Studies (IHS), Austria.
- UNESCO (2014) ISCED Fields of education and training 2013 (ISCED-F 2013): Manual to accompany the International Standard Classification of Education 2011. Report, UNESCO Institute for Statistics.
- Unger M, Binder D, Dibiasi A, et al. (2020) Studierenden-Sozialerhebung 2019: Kernbericht. Report, Institute for Advanced Studies (IHS), Austria.
- Watermann R, Daniel A and Maaz K (2014) Primäre und sekundäre Disparitäten des Hochschulzugangs: Erklärungsmodelle, Datengrundlagen und Entwicklungen. In: Maaz K, Neumann M and Baumert J (eds) *Herkunft und Bildungserfolg von der frühen Kindheit bis ins Erwachsenenalter: Forschungsstand und Interventionsmöglichkeiten aus Interdisziplinärer Perspektive*. Wiesbaden: Springer Fachmedien Wiesbaden, pp.233–261.
- Woessmann L (2009) International evidence on school tracking: A review. *CESifo DICE Report, ifo Institut für Wirtschaftsforschung an der Universität, München* 7(1): 26–34.
- Zucha V, Engleder J, Haag N, et al. (2024) Studierenden-Sozialerhebung 2023: Kernbericht. Report, Institute for Advanced Studies (IHS), Austria.

Author biographies

Sylvia Mandl works at the Institute for Advanced Studies (IHS) in Vienna and holds a PhD in Social and Economic Sciences. Her current research focuses on the study and living conditions of students in European countries, with the aim of providing an evidence base for cross-country comparisons of the social dimension of European higher education.

Nora Haag is a researcher at the Institute for Advanced Studies (IHS) in Vienna, currently pursuing a doctoral degree in Social and Economic Sciences (Sociology) at Johannes Kepler University (JKU) Linz. Her research focuses on access to higher education, admission procedures, and social inequality within (higher) education.