

Unequal Impacts of the COVID-19 Pandemic on Young VET Diploma Holders: Cohort and Occupational Differences in Unemployment in Switzerland

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Abstract: We analyse how the COVID-19 pandemic affected unemployment of young VET diploma holders in Switzerland. Our results indicate that whereas unemployment increased among all young workers during the pandemic (period effect), the cohort completing its training in 2020 was most affected (cohort effect). We also find substantial variation across training occupations. VET diploma holders who trained in occupations that were economically heavily affected by the pandemic experienced higher unemployment risks than those in less affected occupations.

Keywords: COVID-19-pandemic, economic crisis, labour market entry, vocational education and training, cohort and period effects

Impacts inégaux de la pandémie de COVID-19 sur le chômage des jeunes titulaires d'un diplôme de formation professionnelle en Suisse : différences de cohorte et de profession

Résumé : Nous examinons l'impact de la pandémie de COVID-19 sur le chômage des diplômé·e·s de la formation professionnelle initiale en Suisse. Si le chômage a augmenté pour l'ensemble des jeunes travailleur·euse·s pendant la pandémie (effet de période), les diplômé·e·s de la cohorte 2020 ont été les plus touché·e·s (effet de cohorte). Des variations substantielles apparaissent selon les professions de formation : les diplômé·e·s de professions fortement touchées économiquement ont été davantage exposé·e·s au risque de chômage.

Mots-clés : Pandémie de COVID-19, crise économique, entrée sur le marché du travail, enseignement et formation professionnels, effets de cohorte et de période

COVID-19-Pandemie und Arbeitslosigkeit junger Absolvierender der Berufsbildung in der Schweiz: Kohorten- und Berufsunterschiede

Zusammenfassung: Der Beitrag untersucht, wie sich die COVID-19-Pandemie auf die Arbeitslosigkeit junger Berufslehrgänger:innen in der Schweiz ausgewirkt hat. Obwohl die Arbeitslosigkeit während der Pandemie bei allen jungen Arbeitnehmer:innen gestiegen ist (Periodeneffekt), waren die Absolvierenden des Jahrgangs 2020 am stärksten betroffen (Kohorteneffekt). Absolvierende, die in Berufen ausgebildet wurden, die wirtschaftlich stark von der Pandemie betroffen waren, hatten ein höheres Arbeitslosigkeitsrisiko als Absolvierende weniger betroffener Berufe.

Schlüsselwörter: COVID-19-Pandemie, Wirtschaftskrise, Eintritt in den Arbeitsmarkt, berufliche Grundbildung, Kohorten- und Periodeneffekte

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1 Introduction

Economic recessions hit young people particularly hard at the start of their careers (Brzinsky-Fay, 2007; Cockx & Ghirelli, 2016). Graduating during economic downturns increases the risk of unemployment (Rothstein, 2023) and makes transitioning into stable jobs more difficult. This can have long-lasting scarring effects, such as lower employment chances and income loss (Buchs et al., 2015; Bühlmann et al., 2023; Cockx & Ghirelli, 2016; Kriesi & Schweri, 2020; Sacchi & Samuel, 2024). The scarring effects of unemployment are particularly strong among vocational education and training (VET) diploma holders (Shi, 2024; Shi & Di Stasio, 2022).

The economic recession triggered by the COVID-19-pandemic was severe worldwide (World Bank Group, 2022, Ch. 1) and the downturn was much deeper than the Great Recession of 2009 (Salvatore, 2021). Although Switzerland was less affected than many other European countries, it still experienced its largest GDP decline since the 1975 oil crisis (–10% in Q2 2020; –2.5% in 2020, SECO, 2021b). However, the economic crisis triggered by the COVID-19 pandemic differed from earlier recessions. Despite the steep initial economic decline and heightened uncertainty among young people entering the labour market (Schmidt, 2024), extensive government support, such as short-time work schemes and financial support for businesses, helped cushion the shock (Eichenauer et al., 2025; Eichenauer & Sturm, 2020). In addition, the swift easing of restrictive measures and emerging labour shortages (Kaiser et al., 2024; Speiser & Leist, 2023) allowed the Swiss economy to recover much faster than from previous crises or than other European countries (Schmidt, 2024). These developments may have mitigated negative labour market outcomes for Swiss VET diploma holders, raising the question of who was most affected.

Life-course research suggests that the effect of economic crises on unemployment risks of young workers varies according to the life stage during which a recession hits. Those graduating during a crisis are most vulnerable to tightening labour market conditions due to their limited work experience (Gangl, 2002). Yet, findings from the Great Recession suggest that even cohorts graduating some time before an economic crisis can be negatively affected by decreasing labour demand and suffer from higher risks of unemployment (Atherwood & Sparks, 2019). In life-course research, this is typically addressed as the distinction between cohort and period effects.

In addition, we expect differences between training occupations. Research shows that economic downturns hit economic sectors and occupational fields unevenly (e.g. Foster-McGregor et al., 2012). This was also observed during the COVID-19 crises. Although unemployment initially rose overall, workers from service sector occupations suffered most (Bolli, Caves, et al., 2021a; SECO, 2021c). In this paper, we thus analyse the following questions: *To what extent did the risk of becoming unemployed early in career differ between cohorts who earned their VET*

diploma before, during, or after the pandemic? Did the risk of becoming unemployed during the pandemic differ between training occupations?

Our analyses use longitudinal register data on educational trajectories in Switzerland (LABB data) from the Federal Statistical Office. Register data are particularly useful for answering our research question. Unlike survey data, they are not biased due to selective panel attrition or the underrepresentation of vulnerable social groups and provide large sample sizes suitable for analysing occupational and temporal differences. We focus on VET diploma holders because VET represents the dominant upper-secondary pathway in Switzerland and accounts for two-thirds of all diplomas awarded. (Dionisius et al., 2023). Due to its mostly dual form and its close link to the labour market, Swiss VET is highly exposed to economic changes and well suited to studying our research question because a vast majority of those with VET diplomas typically enter the labour market after completing their training (BFS, 2024a).

2 Theory and Hypotheses

To theorize our research question and formulate hypotheses, we combine arguments from job search theories (Arrow, 1973; Spence, 1973) and the labour queue model (Thurow, 1979) with insights from research on life-course (e.g., Elder et al. 2002) and occupationally segmented labour markets (Buchmann et al., 2009; Sengenberger, 1987). We begin by discussing basic mechanisms of job search to theorize why young workers are particularly vulnerable to economic recessions (2.1). We then discuss whether the impact of the COVID-19-pandemic is best understood as a period or cohort effect (2.2) and focus on potential differences between occupational subsegments in the pandemic impact (2.3).

2.1 Why Young Workers are Particularly Vulnerable to Economic Recessions

The labour queue model posits that workers who are looking for a job rank vacancies in a job queue, whereas employers rank applicants for open positions in a worker queue and offer the job to the first-ranked applicant (Thurow, 1979). The size of the job queue depends on economic conditions and is small at times of economic downturns, with many job seekers competing for few jobs. The COVID-19 lockdown measures, including the closure of non-essential shops, restaurants, bars, and entertainment venues and the implementation of working from home, placed considerable strain on economic activity. Job vacancies in several industries declined, and unemployment rates increased.

Employers searching for workers base hiring decisions on limited information and observable signals of productivity and trainability (Arrow, 1973; Fossati et al., 2020; Spence, 1973; Tholen, 2023; Thurow, 1979). In the occupationally segmented

Swiss labour market with its close link to the educational system, occupation-specific credentials and work experience are used as primary signals. The former are a prerequisite for access to skilled labour queues; the latter influence the position within the queues (Kriesi et al., 2010). Although this strong emphasis on occupation-specific credentials facilitates transitions from education to skilled employment, it also limits mobility between occupations (Buchs et al., 2015; Hupka-Brunner & Meyer, 2023; Müller & Schweri, 2015).

Due to their limited work experience, labour market entrants generally occupy less favourable positions in the labour queue (Salvisberg & Sacchi, 2014). Their disadvantage is particularly pronounced during economic recessions, when competition from more experienced workers increases (Brzinsky-Fay, 2007; Cockx & Ghirelli, 2016). Firms may even change their hiring practice during recessions and explicitly target more experienced workers because the labour supply is larger (Forsythe, 2022). Thus, work experience has a strong impact on a job applicant's position within the labour queue.

2.2 Cohort or Period Effects?

The economic recession in Switzerland was rather brief. Although the economic decline in 2020 was steep, the economy recovered quickly, with positive GDP growth from mid-2021 onwards (SECO, 2021a). As of 2022, labour demand also increased substantially, and the skilled labour shortage index reached an all-time high in 2023 (Stellenmarkt-Monitor Schweiz, 2024). Against this backdrop, we are interested in identifying which young workers were particularly affected by the pandemic-related crisis.

From a life-course perspective (Elder et al., 2002), the COVID-19 pandemic was a disruptive historical event that affected the entire population. The concomitant economic decline and rising levels of unemployment posed a threat to a large part of the workforce in general and young workers with little work experience in particular, thus triggering a period effect. However, life-course theory argues that disruptive events may affect individuals differently depending on the life stage at which the event occurs (Becker & Blossfeld, 2017; Elder et al., 2002). Individuals who experience an event such as the COVID-19 pandemic at the same life stage and at the same time belong to the same cohort. Cohort effects thus result from having different formative experiences than previous or later cohorts (Altman, 2023; Yang & Land, 2008).¹ The question thus arises whether the unemployment risk increased mainly for the cohorts completing their VET training during the economic crisis or whether a more general period effect affected all young workers with limited work experience.

1 Life-course theory also distinguishes age effects. They refer to variation in life-course experiences due to differences in chronological age and are less relevant to the current study because of the low age heterogeneity of the group of VET diploma holders analysed.

In our study, a cohort effect is observable if those finishing their training during the height of the crisis in summer 2020 faced higher unemployment than earlier cohorts. Such a cohort effect might be observable because the 2020 cohort was by far the most vulnerable: they had to enter the labour market at a time when uncertainty about the course of the pandemic and its economic consequences was highest and when companies were probably most reluctant to advertise positions and employ workers with limited work experience. Furthermore, adapted final exams led to higher success rates in 2020 (BFS, 2021; Graf et al., 2024, p. 15), potentially weakening the signalling value of the diploma. It also increased the number of diploma holders entering the labour market in 2020 (Garloff et al., 2013). The cohorts entering the labour market in 2021 and 2022 may also have suffered from a lower signalling value of their diploma compared to later cohorts because they experienced school closures, working from home, and widespread short-time work during their training. Apprentices who trained during the pandemic may therefore have accumulated a skill gap particular to pandemic cohorts, which may have been difficult to recoup (Bolli, Caves, et al., 2021b) and might have impaired their position in the labour queue.

By contrast, a period effect would imply a temporary increase in unemployment among all young people with little or no work experience regardless of when they completed their VET training due to the economic conditions during the first years of their career. This implies that even young workers receiving their VET diploma within the few years before the outbreak of the pandemic were negatively affected by the economic downturn of 2020, for instance, because they were unable to transition to stable employment or because they lost their jobs during the pandemic.

Given the timing of the pandemic and the relatively short-lived economic crisis in Switzerland, we expect the strongest negative impact of the pandemic on learners completing their training in summer 2020. Later cohorts (2021–22) may have been less affected despite potential negative effects of the pandemic on the signalling value of their diploma because they entered the labour market at a time of increasing and widespread labour shortages. Because the initial economic shock was deep and uncertainty high in autumn and winter 2020/21, we also expect to find a weaker period effect for cohorts graduating before the pandemic. We thus postulate that *the pandemic increased the risk of unemployment for all young workers who completed their training shortly before or during the pandemic (period effect, H1a) but that the effect of the pandemic was strongest for the 2020 graduation cohort (cohort effect, H1b). We expect a lower unemployment risk for the cohorts who completed their training after the height of the pandemic (H1c).*

2.3 Heterogenous Impact of the Pandemic Between Occupations

The economic crisis triggered by the COVID-19 pandemic affected occupational subsegments differently. The literature on occupational segmentation of labour mar-

kets (e.g. Buchmann et al., 2009; Sengenberger, 1987) leads us to expect differences in the impact of the pandemic across occupational fields. One of the specificities of this crisis was the simultaneous shock to both demand and supply (Schmidt, 2024), which led to a sharp reduction in work volume and vacancies, short-time work, and rising unemployment levels in some sectors, especially in spring 2020 and autumn and winter 2020/21 (Bolli, Caves, et al., 2021a; Kaiser et al., 2024; Schmidt, 2024; SECO, 2021c). On the supply side, measures such as business closures and bans on certain activities, quarantine measures, and sick leave limited the ability of many service sector businesses to produce goods and services. On the demand side, lockdown measures, travel restrictions, and widespread insecurity about the course of the pandemic and personal future financial situations reduced domestic and international consumption (Kaiser et al., 2024). The widespread use of short-time work in sectors that suffered economically during the pandemic protected employed workers from unemployment but potentially made it more difficult for young workers to secure jobs in their occupational subsegments because job vacancies decreased (Bolli, Caves, et al., 2021a).

A specificity of the COVID-19 pandemic was the widespread introduction of working from home. We argue that employees in sectors and occupations in which working from home was possible were less directly affected by the economic repercussions of the lockdown measures. However, it remains unclear to what extent working from home cushioned the risk of unemployment, because employers in occupations where working from home was possible, might have been more cautious to hire new employees during the pandemic: working from home made onboarding of new workers more difficult, and the demand shock might have affected occupations in these subsegments through a decline in the demand for services. Therefore, we expect a smaller, but positive, increase in unemployment risk in occupations in which many employees worked from home during the pandemic.

Finally, some sectors and occupational subsegments suffered from neither demand nor supply-side shock during the pandemic but from increasing and sometimes overwhelming workloads. We expect that the labour demand in these segments of the labour market, such as occupations in the healthcare sector, increased during the pandemic and that VET diploma holders from these subsegments were less likely to be unemployed during the economic crisis than workers from subsegments without increased workload.

In summary, we thus expect *that the unemployment probability was higher among diploma holders from training occupations which were economically heavily affected by the economic repercussions of the pandemic (i.e. via decreased work volume, fewer job vacancies, and more short-time work) (H2a) or where many employees were working from home (H2b). We expect that unemployment probability was lower among those who experienced an increase in workload (H2c).*

3 Data and Measures

3.1 Data and Sample

We use longitudinal register data (LABB data) from the Federal Statistical Office. The LABB data (2024) include information on educational trajectories and subsequent labour market integration of all students in formal education and some demographic variables, such as gender, age, and citizenship status. As our research questions relate to young workers with little work experience, we examine young Swiss workers who earned a federal upper-secondary VET diploma or certificate between 2018 and 2022. This allows us to distinguish between young workers completing their VET training before (2018–2019), during (2020–2021), and after (2022) the COVID-19 pandemic. We restrict our sample to VET diploma holders who were between 18 and 25 years when completing their training and part of the permanent resident population of Switzerland. The final sample consists of 240 062 unique observations, roughly 45 000 per cohort.

Register data are particularly useful for answering our research question. Unlike survey data, results are not biased due to selective panel attrition or the underrepresentation of vulnerable social groups. In addition, the large quantity of data allows us to study differences across occupations, occupational subsegments, and over time without running into small-*n* problems. We combine these register data with survey data from training firms and occupation-specific economic measures to account for the unequal impact of the pandemic between occupations.

3.2 Measures

Our dependent variable is unemployment at various points in time after earning the VET diploma. We code VET diploma holders as unemployed if they are registered as unemployed with the regional employment centre at the end of each year, starting approximately six months after individuals have received their VET diploma, and follow them yearly until the end of 2022. We compare this group with individuals who are either employed or in training. Beginning the observation window six months after the completion of training has the advantage of excluding the immediate transition period after earning the VET degree, which is often marked by some degree of instability and uncertainty: some apprenticeship contracts continue until September, and not all VET diploma holders attempt to start working immediately, for example if they already know that they will continue their education in autumn. Compared to other countries, the transition phase is rather short in Switzerland; prior to the pandemic, the job search period of those leaving the education system and searching for a job was on average about three months (Bertschy et al., 2007). Before the pandemic, only between four and five percent of all VET diploma hold-

ers were registered as unemployed six months after completion of upper secondary education (Büro BASS, 2018), and most of those who become unemployed in their early career find a job rather quickly (Hänni & Kriesi, 2025). Hence, the transition phase is usually over in Switzerland by the end of the year, which allows us to study changes in the unemployment probability among VET diploma holders during the pandemic in comparison to later or earlier periods.

To assess cohort effects, we include a set of binary variables capturing the year of earning the VET diploma or certificate (one for each year of 2018–2022). We define cohorts earning their VET diploma in summer 2020 or summer 2021 as pandemic cohorts. Period effects are measured using binary variables, corresponding to each measurement point of unemployment (winter 2018/19, winter 2019/20, winter 2020/21, winter 2021/22, winter 2022/23). We account for the cohort size per occupation with the logged number of diploma holders entering the labour market.

To assess differences in the pandemic impact between occupations, five occupation-level indicators are included, which measure the situation in winter 2020/21, when the economic crisis was deepest (see below for details on the analytical strategy). (i) We measure change in occupation-specific labour demand with information about occupation-specific job opportunities using representative yearly job advertisement data from the Swiss job market monitor (Buchmann et al., 2022). We count the number of vacancies per occupational field and year (in 1 000 jobs, using the 3-digit Swiss Standard Classification of Occupations CH-ISCO-19), where the number of advertised positions is weighed by the probability that a worker with occupation x was able to access jobs in other occupations (see Grønning & Kriesi, 2022). We then calculate the percentage change in job opportunities in winter 2020/2021 in comparison to the average of the years 2017–2019, which functions as our baseline. We assess (ii) changes in work volume during the pandemic by deriving an occupation-specific measure for the absolute number of hours worked in the fourth quarter of a particular year from the monthly sectorial data on work volume from the State Secretariat of Economy (BFS, 2024b). For occupations prevalent in various economic sectors, we weighted the sectorial data in proportion to their distribution in the sectors before matching them to a training occupation. We then calculate the percentage change in work volume in the fourth quarter of 2020 in comparison to our baseline years of 2017–2019 (using the 5-digit Swiss Standard Classification of Occupations CH-ISCO-19). Finally, using a training firm survey (Singer et al., 2026) targeted at 4 236 VET trainers (response rate of 42.3%), we measure whether firms in a given occupation implemented (iii) working from home (for apprentices and/or other employees), (iv) short-time work (for apprentices and/or other employees) or were affected by (v) an increase in workload. We average the firm-level responses by occupation: higher values indicate that more firms in an occupation were affected by working from home, short-time work, and increase in workload. Information from the firm survey is available for the largest 35 (24 Federal VET Diploma and 11 Federal VET Certificate) training occupations and thus for

approximately 70 percent of the observations. The model containing these variables (m5 in Table 1) is thus restricted to individuals from training occupations that were included in the firm survey ($n = 108\,259$).

We control for the language region of residence (German-, French-, or Italian-speaking parts of Switzerland), gender (female vs. male), and citizenship status (Swiss vs. foreign) at the individual level. At the occupational level, we differentiate between two-year programmes leading to a Federal VET Certificate and three- and four-year programmes leading to a Federal VET Diploma. We approximate the intellectual requirement level of training programmes by controlling for the time learners spend in vocational school, measured as the total number of lessons in vocational school that learners attend over the entire duration of the apprenticeship², a measure shown to capture important variation in learning environments (Grønning et al., 2018; Meyer & Sacchi, 2020). Table A1 in the Appendix provides a descriptive overview of all the variables used in the analysis.

3.3 Analytical Strategy

We first look at the employment status of young VET diploma holders descriptively. We then estimate multilevel mixed logistic regression models reflecting the hierarchical structure of the data, with individuals nested within training occupations. These models take into consideration that the independence assumption is often violated with nested data (Hox, 2010). To test hypotheses 1a–1c about cohort and period effects, which are empirically challenging to completely isolate (Glenn, 2002), we use the longitudinal nature of our data and estimate the unemployment probability of young VET diploma holders at multiple timepoints jointly (winter 2020/21–winter 2022/23). Depending on when VET diploma holders received their diploma, we have information for up to three timepoints, enabling a three-level model with time nested in individuals nested in occupations. Formally speaking, our random intercept models are represented by the following equation.

$$Y_{ij} = \beta_0 + \beta_1 cohort_i + \beta_2 period_t + \beta_3 ind. controls_{ij} + \beta_4 occ. specific controls_j + \nu_i + \mu_{jt} + \varepsilon_{ijt},$$

(Eq. 1)

where Y_{ij} is the unemployment probability of person i who trained in occupation j at time t and β_0 is the intercept. We explain the unemployment probability by cohort-specific effects (β_1), which vary between individuals, period-specific-effects (β_2), which vary between timepoints, and individual and occupation-specific controls, which vary between individuals and occupations (β_3) or solely between

2 For school-based (nondual) VET programmes, we use the data on the respective dual apprenticeship.

occupations (β_4). The unaccounted variance between occupations is v_i , μ_{jt} is the unaccounted variance between individuals from the same training occupation, and ε_{ijt} is the residual error term.

To further distinguish period and cohort effects and to quantify which effect dominated during the COVID-19-induced economic crisis, we include an interaction between our cohort and period measures, which we illustrate graphically:

$$Y_{ij} = \beta_0 + \beta_1 cohort_i + \beta_2 period_t + \beta_3 period_t * cohort_i + \beta_4 ind. controls_{ij} + \beta_5 occ. specific controls_j + v_i + \mu_{jt} + \varepsilon_{ijt}. \quad (\text{Eq. 2})$$

We then introduce occupation-specific impact measures to account for the occupation-specific effect of the pandemic. We restrict these analyses to the employment status in winter 2020/21 because most of our measures capture the situation at this point in time, when the economic crisis was most pronounced. The respective random intercept model is based on the following two-level equation for one single time-point (i.e. without time-variance), where β_2 refers to the coefficient for the occupation-specific impact of the pandemic in a particular training occupation:

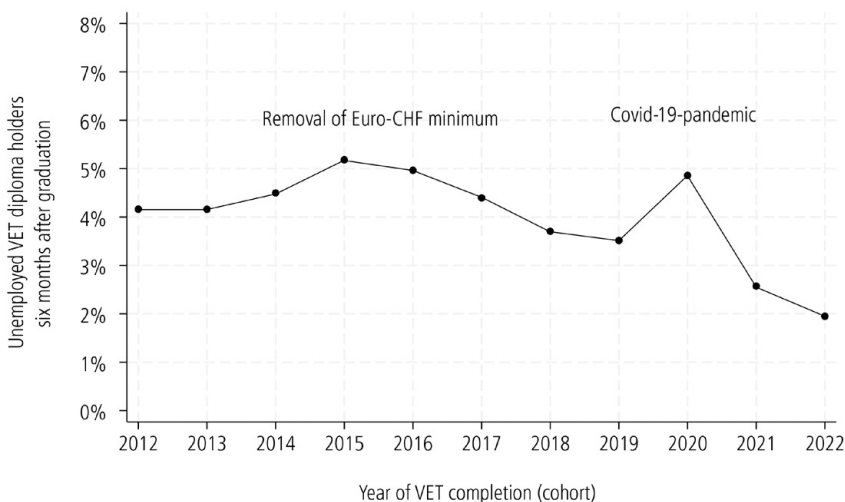
$$Y_{ij} = \beta_0 + \beta_1 cohort_i + \beta_2 impact_i + \beta_3 ind. controls_{ij} + \beta_4 occ. specific controls_j + \mu_{jt} + \varepsilon_{ijt}. \quad (\text{Eq. 3})$$

4 Results

4.1 Descriptive Results

Figure 1 shows the proportion of VET diploma holders by graduation cohort who were unemployed six months after receiving their diploma for the years between 2012 and 2022. Overall, it is apparent that unemployment was low among young Swiss VET diploma holders in recent years and declined from four percent in 2012 to two percent in 2022. This pattern is in line with research on youth unemployment, which shows that dual VET systems facilitate smooth transitions into the labour market (Bolli et al., 2021; Korber, 2019; c.f. Kriesi et al., 2024). However, as Figure 1 further illustrates, two peaks interrupted the general decreasing trend. A first increase in unemployment among VET diploma holders is observed among the cohorts who earned their diplomas in 2015 and 2016. These cohorts were affected by the detrimental economic consequences of the abolition of the fixed minimum

Figure 1 Proportion of Unemployed VET Diploma Holders Six Months After Completion of Training, by Graduation Cohort



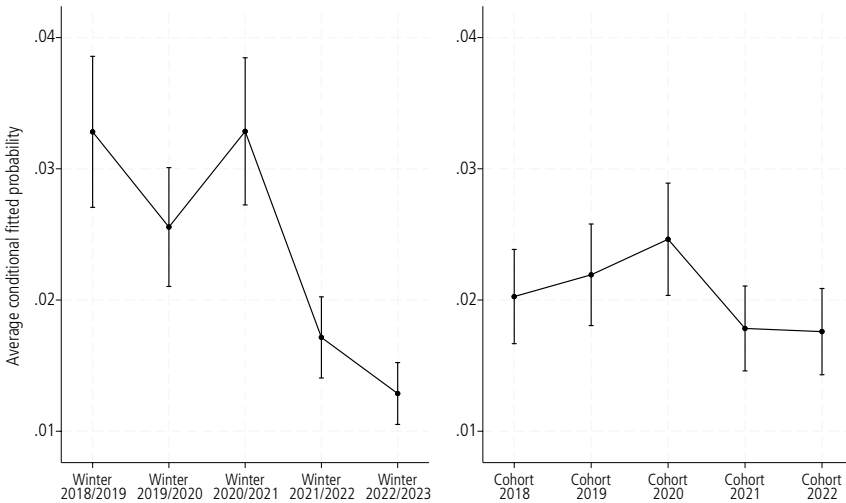
Note: Own calculation based on LABB data 2012–2022.

exchange rate between the euro and the Swiss franc in January 2015. The proportion of young unemployed VET diploma holders recovered relatively quickly after this shock and resumed its downward trend until 2019. A second peak is evident for the cohort which earned its diplomas in 2020, which corresponds to the economic repercussions of the pandemic triggered by domestic lockdown measures and a domestic and global collapse in demand (Kaiser et al., 2024). Strikingly, the economic recession appears only to have affected the employment prospects of the 2020 cohort. For the 2021 and 2022 cohorts, unemployment levels rebounded very quickly and dropped even below the pre-pandemic level, thus continuing the overall decreasing trend since 2012. This finding is consistent with recent results showing that the negative impact of the pandemic on the Swiss economy was rather brief and was swiftly followed by an economic recovery (Kaiser et al., 2024; Schmidt, 2024; Speiser & Leist, 2023).

4.2 Multivariate Results

Our main multivariate results are presented in Table 1. Models 1 and 2 test our first set of hypotheses by assuming a cohort and a period effect, albeit of different magnitude. These effects are illustrated in Figures 2 and 3. The left panel of

Figure 2 Predictive Margins of Being Unemployed by Period (Left) and Cohort (Right), With 95% Confidence Intervals



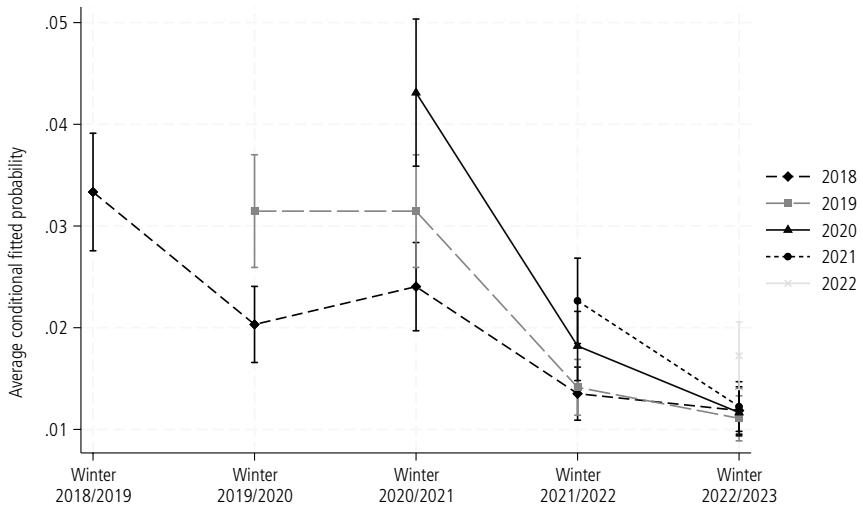
Note: Average conditional fitted probabilities by period (left) and cohort (right) are based on Model 1 in Table 1. Data: LABB data, own calculations. Estimates of average conditional fitted probabilities with corresponding confidence intervals are provided in Table A2 in the online supplementary material.

Figure 2 indicates that young VET diploma holders' predicted probability of being unemployed was on average, and controlling for cohorts, substantively higher in winter 2020/21 than in winter 2019/20, i.e. directly before the pandemic, and in later years, which together indicate a period effect of the pandemic on young VET diploma holders' unemployment probability. However, the figure also shows that the average unemployment level in winter 2020/21 was not unprecedented and comparable to that in winter 2018/19.

The right panel of Figure 2 indicates that, on average across all years under study, the probability of becoming unemployed was higher for the graduation cohort of 2020 than for all other cohorts. This finding suggests an additional cohort effect for those VET learners who completed their training when the most severe pandemic-related restrictions were in place.

To quantify the size of the cohort effect, we included an interaction term between our indicator variables for the time periods and the graduation cohorts (see Model 2 in Table 1). The results are presented graphically in Figure 3. It shows that the differences between cohorts were much larger in winter 2020/21 than in other winters, with the 2020 cohort exhibiting the highest predicted unemployment

Figure 3 Predictive Margins of Being Unemployed by Cohort and Period, With 95 % Confidence Intervals



Note: Average conditional fitted probabilities by period are based on Model 2 in Table 1. Data: LABB data, own calculations. Estimates of average conditional fitted probabilities with corresponding confidence intervals are provided in Table A3 in the online supplementary material.

rate over the entire period under study. This supports our first hypotheses that the impact of the pandemic was particularly strong among the cohort completing their VET training in summer 2020 (H1b), although the recession in winter 2020/21 also affected young workers who completed their training in the two years before the pandemic (H1a). This is particularly evident for the cohort graduating in summer 2018. After declining in the previous year, their unemployment probability increased slightly at the onset of the pandemic. However, the elevated unemployment risk of the 2020 cohort was brief. By winter 2022/23, it was comparable to the other cohorts.

In line with H1c, we find that the unemployment risk of the cohort that completed training after the pandemic in 2022 was comparable to that of earlier cohorts at the same point in their careers (see Figure 3). The slightly elevated unemployment risk for this cohort is observable for all cohorts at the beginning of their careers. The size of the occupation-specific graduation cohort did not affect the probability of being unemployed.

Our second set of hypotheses posits that the impact of the pandemic on the employment prospects of young workers with a VET diploma differed according to how their training occupation was affected by the pandemic. We present the results

Table 1 Determinants of the Unemployment Probability of Young VET
Diploma Holders Before, During and After the COVID-19-Pandemic

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Cohort 2019	0.27***	−0.07	0.30***	0.29***	0.28***
Ref=Cohort 2018	(0.03)	(0.06)	(0.04)	(0.04)	(0.05)
Cohort 2020	0.51***	−0.02	0.64***	0.63***	0.62***
	(0.03)	(0.06)	(0.04)	(0.04)	(0.04)
Cohort 2021	0.57***	0.04			
	(0.04)	(0.06)			
Cohort 2022	0.78***	0.41***			
	(0.05)	(0.06)			
Winter 2019/20	−0.43***	−0.57***			
Ref=Winter 2018/19	(0.03)	(0.04)			
Winter 2020/21	−0.29***	−0.38***			
	(0.03)	(0.04)			
Winter 2021/22	−1.11***	−1.02***			
	(0.04)	(0.05)			
Winter 2022/23	−1.53***	−1.16***			
	(0.04)	(0.05)			
Cohort 2019 * Winter 2019/20		0.57***			
		(0.07)			
Cohort 2019 * Winter 2020/21		0.38***			
		(0.07)			
Cohort 2019 * Winter 2021/22		0.12			
		(0.07)			
Cohort 2020 * Winter 2021/22		0.70***			
		(0.07)			

Continuation of Table 1 on the next page.

Continuation of Table 1.

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Cohort 2020 * Winter 2022/23		0.35*** (0.08)			
Cohort 2021 * Winter 2021/22		0.54*** (0.08)			
Reduction in work volume in %			0.21* (0.09)		
Reduction in vacancies in %				0.19*** (0.05)	
Prevalence of working from home					2.41** (0.74)
Prevalence of short-time work					2.63** (0.85)
Prevalence of increased workload					−0.064 (0.81)
Swiss citizenship	−0.38*** (0.02)	−0.38*** (0.02)	−0.34*** (0.03)	−0.34*** (0.03)	−0.35*** (0.04)
Women	−0.21*** (0.02)	−0.21*** (0.02)	−0.22*** (0.04)	−0.23*** (0.04)	−0.24*** (0.04)
French-speaking region	0.84*** (0.02)	0.84*** (0.02)	0.65*** (0.03)	0.65*** (0.03)	0.69*** (0.04)
Italian-speaking region	1.30*** (0.04)	1.31*** (0.04)	0.91*** (0.06)	0.90*** (0.06)	0.94*** (0.07)
Two-year VET programme	0.69** (0.21)	0.69** (0.21)	0.65** (0.24)	0.63** (0.23)	−0.06 (0.44)
Number of lessons voc. School (ln)	−0.61* (0.24)	−0.61* (0.24)	−0.51+ (0.28)	−0.42 (0.26)	−2.14*** (0.53)

Continuation of Table 1 on the next page.

Continuation of Table 1.

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Size of graduation cohort (ln)	–0.02 (0.04)	–0.02 (0.04)	–0.01 (0.04)	–0.04 (0.04)	0.14 (0.12)
Constant	0.31 (1.74)	0.32 (1.74)	–0.05 (2.00)	–1.08 (1.92)	9.79** (3.79)
Occupation-level variance	0.53*** (0.07)	0.53*** (0.07)	0.51*** (0.08)	0.49*** (0.08)	0.33*** (0.09)
Individual-level variance	1.46*** (0.05)	1.46*** (0.07)			
Total number of observations	729 453	729 453	146 249	147 624	108 259
Number of VET diploma holders	240 062	240 062	–	–	–
Number of occupations	217	217	192	211	34

Note: Multilevel logistic regression models, estimates represent coefficients with standard errors in parentheses. Data: LABB data, own calculations. Occupation-level variance depicts level 3 variance in Models 1 and 2 and level 2 variance in Models 3–5. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

in Models 3 to 5 in Table 1. Still controlling for differences between cohorts, we find, in line with hypothesis 2a, that diploma holders from training occupations that experienced a large relative decrease in work volume (m3), job vacancies (m4), or widespread short-time work (m5) were more likely to be unemployed in winter 2020/21 than diploma holders from occupations that were less negatively affected by the pandemic. For example, those who trained in occupations that were affected on average by a 20% decrease in work volume from Q4 2019 to Q4 2020 had a predicted unemployment probability of about 5% in winter 2020/21, whereas those in occupations that experienced no change in work volume had a predicted unemployment probability of 3.5%. Likewise, diploma holders who trained in occupations in which short-time work was prevalent (90th percentile) had a risk of about 5% of becoming unemployed in winter 2020/21, whereas those from training occupations in which short-time work was rare (10th percentile) had a corresponding risk of only about 2%. This equates to at least a 30% lower probability of being unemployed in winter 2020/21 among those less affected by the pandemic.

Turning to H2b, we find that those who trained in occupations in which many companies reported that the majority of workers were working from home (90th percentile) experienced a higher probability of being unemployed in winter 2020/21 (approximately 7%) than those working in occupations in which working from home was less widespread (10th percentile: unemployment probability of 2%). Against our expectations, the proportion of firms that reported an increase in workload during the pandemic was not significantly related to young workers' unemployment probability in winter 2020/21. Although the sign of the coefficient is negative, it is not significant, therefore leading to the rejection of H2c.

With regard to the control variables and consistent with previous research, our findings indicate that, all else equal, women and VET diploma holders with Swiss citizenship had a lower probability of being unemployed after earning their VET diploma and that diploma holders from French- or Italian-speaking regions and those completing a shorter VET certificate had a higher probability of being unemployed. More time in vocational school decreased the likelihood of becoming unemployed in most models.

4.3 Robustness Checks

We conducted several robustness tests. First, as the pandemic impact measures from the firm survey are available for only approximately 70% of the observations, we restricted our sample in Models 1–4 to occupations for which this information is available (see Table A4 in the Appendix). The main results did not change when using this subsample.

Second, we adopted an alternative approach to distinguishing between cohort and period effects and estimated the unemployment probability for cohorts separately at two time points: after six months and after 18 months. The results corroborated our findings (see Table A5 in the Appendix).

Third, we ran mixed-effect linear probability models and standard logistic regression models with clustered standard errors at the occupational level. Both alternative model specifications essentially produced the same results and conclusion (see Tables A6 and A7 in the Appendix).

5 Discussion and Conclusion

Our article analysed how the COVID-19 pandemic affected the unemployment risk of young VET diploma holders in Switzerland. By comparing cohorts of young people earning their VET diplomas before, during, and after the pandemic, we explored whether the observed changes in unemployment probability reflect a period or a cohort effect and whether the unemployment risk differed between occupational fields depending on how they were affected by the pandemic.

Most of the results are in line with our hypotheses. They demonstrate that the risk of unemployment increased for young VET diploma holders during the COVID-19 pandemic. Both the descriptive and multivariate analyses indicate a pronounced peak in unemployment among the 2020 graduation cohort, who entered the labour market when the economic recession was most pronounced and uncertainty highest. This finding supports the occurrence of a distinct cohort effect: the 2020 cohort was particularly exposed to adverse labour-market conditions and thus faced higher unemployment risks than did earlier or later cohorts. We also observed an elevated unemployment probability for all observed young VET diploma holders in the labour market in winter 2020/21. This additionally points to a period effect of the pandemic that temporarily also affected those with one or two years of work experience. From a life-course perspective, these findings support the assumption that the transition from education to the labour market is a critical life stage for young people during which they are highly vulnerable and exposed to adverse economic conditions. Although the economic downturn also impacted older cohorts of VET diploma holders, just one or two years of work experience attenuated the detrimental impact of the COVID-19 crisis on the unemployment risk.

Furthermore, the findings indicate that the risk of becoming unemployed during the pandemic differed between training occupations. VET diploma holders who trained in occupations that experienced a decrease in work volume and job vacancies and widespread short-time work were on average more than twice as likely to be unemployed in winter 2020/21 than young workers who trained in occupations that were less affected by a decrease in labour demand. As expected, VET diploma holders who trained in occupations in which working from home was widespread during the pandemic also exhibited a higher unemployment probability during the economic crisis. This might be related to challenges in hiring and increased uncertainty among employers during the pandemic. When most employees are working from home, the recruitment and onboarding process becomes more difficult, which might have led employers to postpone recruitments to the postcrisis period. Finally, and against our expectations, training in an occupation affected by an increase in workload during the pandemic was not significantly related to the risk of unemployment among young VET diploma holders. A possible reason may be that many occupations with an increase in workload, such as in the health sector, had already experienced pronounced labour shortages before the pandemic, preventing the engagement of additional staff due to a lack of labour supply. In other occupational fields, employers may have refrained from hiring despite increasing workloads due to uncertainty about the duration of the crisis and the development of labour demand.

Taken together, our findings for multiple VET graduation cohorts and training occupations indicate that the impact of a disruptive event on individual careers is highly contingent on an individual's life stage and life circumstances. From a policy perspective, it is noteworthy that although the COVID-19 crisis made labour market integration of young VET diploma holders more difficult, its impact was moderate

and brief in Switzerland, as our results indicate. The swift and extensive policy response is likely to have cushioned the shock and prevented a more pronounced rise in youth unemployment. Moreover, the rapid economic recovery and the emerging shortages of skilled labour from 2021 onwards facilitated the labour market integration of the affected cohorts. By 2023, the unemployment risk of the 2020 cohort was comparable to that of other cohorts in our timeframe.

Despite the brief effect of COVID-19 on unemployment rates, the differences in impact observed between occupations and cohorts may contribute to long-lasting negative consequences for VET learners in specific occupations. Negative consequences may result if VET learners from occupations that were severely affected by the pandemic were forced to take on low-skilled jobs in other occupations, with detrimental consequences for their further career (Buchs et al., 2017). However, the data does not allow us to address potential scarring effects, such as precarious employment and job mismatch, because we lack information on individuals' occupation and type of contract after they received their VET diploma. A second limitation is that we cannot reliably compare the economic effect of the COVID-19 pandemic with previous economic downturns because national register data on educational trajectories (LABB) is only available from 2011. Third, our measures of how training occupations were affected by the pandemic are approximations from intermittent and aggregate data. Although we were able to consider changes in the work volume on a quarterly basis, data on vacancies is only available yearly, and the information on how training firms were affected by the pandemic stems from firms' average assessment over the entire pandemic period.

These limitations should be addressed by future studies that will be able to rely on more detailed data and longer time-series. For instance, research should examine whether early-career disadvantages and horizontal occupational mobility among VET diploma holders who earned their diploma shortly before or during the pandemic had any medium- or long-term consequences for job stability and quality, income, or mobility patterns. Further research is needed to determine whether the quick recovery observed in unemployment risk translated into sustained career recovery. Lastly, research should investigate whether the pandemic affected men and women differently and to what extent such differences are related to the strong gender segregation in Swiss VET.

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Appendix

Table A1 Descriptive Statistics

	Mean	SD	Min	Max	N
Dependent Variables					
Unemployed 2020/21	3.7%				5 433
Unemployed 2018/19–2022/23	2.2%				17 223
Control Variables					
Swiss citizenship	83.9%				123 944
Men	54.5%				80 450
German-speaking region	77.3%				114 149
French-speaking region	19.3%				28 568
Italian-speaking region	3.4%				4 948

Continuation of Table A1 on the next page.

Continuation of Table A1.

	Mean	SD	Min	Max	N
Two-year programme with VET diploma	7.6%				11 170
Number of lessons voc. School (ln)	7.290	0.302	5.886	7.290	147 665
Size of graduation cohort (ln)	7.022	1.606	0	7.024	147 665
<i>Cohort and Period Variables</i>					
Cohort 2018					49 584
Cohort 2019					48 460
Cohort 2020					49 621
Cohort 2021					46 486
Cohort 2022					45 911
Winter 2018/19					49 584
Winter 2019/20					98 044
Winter 2020/21					147 665
Winter 2021/22					194 151
Winter 2022/23					240 009
<i>Indicators of impact of the pandemic</i>					
Reduction in work volume in %	−0.136	−0.342	−0.596	2.270	146 249
Reduction in vacancies in %	2.821	−1.057	1.016	5.937	147 624
Degree of working from home	0.243	−0.229	0	0.570	108 259
Degree of short-time work	0.170	−0.131	0	0.689	108 259
Degree of increased workload	0.277	−0.178	0.003	0.741	108 259
<i>Total number of observations</i>					
Total w/o missings (Models 1 & 2)					729 453
Total w/o missings (Models 3–5)					147 665

Note: For factor variables the reported percentages are based on the number of observed individuals in 2020/2021 ($n = 147\,665$). For the dependent variable measuring the unemployment status of individuals in different periods and for the period variables the reported percentages are based on the total number of observed annual episodes ($n = 729\,453$). The total number of observations reported here for m3–m5 differs slightly from the number of observations reported in Table 1 due to different missing values on the impact variables.

Table A2 Marginal Predicted Means of Figure 2

	Estimates	Std. Error	95 % confidence Interval	
Winter 2018/19	0.033	0.003	0.027	0.039
Winter 2019/20	0.026	0.002	0.021	0.030
Winter 2020/21	0.033	0.003	0.027	0.038
Winter 2021/22	0.017	0.002	0.014	0.020
Winter 2022/23	0.013	0.001	0.011	0.015
Cohort 2018	0.020	0.002	0.017	0.024
Cohort 2019	0.022	0.002	0.018	0.026
Cohort 2020	0.025	0.002	0.020	0.029
Cohort 2021	0.018	0.002	0.015	0.021
Cohort 2022	0.018	0.002	0.014	0.021

Note: Predictive margins are based on Model 1 in Table 1. Data: LABB data, own calculations.

Table A3 Marginal Predicted Means of Figure 3

	Estimates	Std. Error	95% confidence Interval	
Cohort 2018 * Winter 2018/19	0.033	0.003	0.028	0.039
Cohort 2018 * Winter 2019/20	0.020	0.002	0.017	0.024
Cohort 2018 * Winter 2020/21	0.024	0.002	0.020	0.028
Cohort 2018 * Winter 2021/22	0.014	0.001	0.011	0.016
Cohort 2018 * Winter 2022/23	0.012	0.001	0.010	0.014
Cohort 2019 * Winter 2019/20	0.031	0.003	0.026	0.037
Cohort 2019 * Winter 2020/21	0.031	0.003	0.026	0.037
Cohort 2019 * Winter 2021/22	0.014	0.001	0.011	0.017
Cohort 2019 * Winter 2022/23	0.011	0.001	0.009	0.013
Cohort 2020 * Winter 2020/21	0.043	0.004	0.036	0.050
Cohort 2020 * Winter 2021/22	0.018	0.002	0.015	0.022
Cohort 2020 * Winter 2022/23	0.012	0.001	0.009	0.014

Continuation of Table A3 on the next page.

Continuation of Table A3.

	Estimates	Std. Error	95% confidence Interval	
Cohort 2021 * Winter 2021/22	0.023	0.002	0.018	0.027
Cohort 2021 * Winter 2022/23	0.012	0.001	0.010	0.015
Cohort 2022 * Winter 2022/23	0.017	0.002	0.014	0.021

Note: Predictive margins are based on Model 2 in Table 1. Data: LABB data, own calculations.

Table A4 Determinants of the Unemployment Probability of Young VET
Diploma Holders Before, During and After the COVID-19-Pandemic,
Restricted Sample

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21	
	M1	M2	M3	M4
Cohort 2019, Ref = Cohort 2018	0.25*** (0.03)	−0.13+ (0.07)	0.28*** (0.05)	0.28*** (0.05)
Cohort 2020	0.50*** (0.03)	−0.067 (0.07)	0.61*** (0.04)	0.62*** (0.04)
Cohort 2021	0.54*** (0.04)	−0.031 (0.07)		
Cohort 2022	0.71*** (0.06)	0.31*** (0.07)		
Winter 2019/20	−0.42*** (0.04)	−0.56*** (0.05)		
Ref = Winter 2018/19				
Winter 2020/21	−0.35*** (0.04)	−0.43*** (0.05)		
Winter 2021/22	−1.12*** (0.04)	−1.05*** (0.05)		
Winter 2022/23	−1.51*** (0.04)	−1.11*** (0.06)		

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Continuation of Table A4.

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21	
	M1	M2	M3	M4
Cohort 2019 * Winter 2019/20		0.63*** (0.08)		
Cohort 2019 * Winter 2020/21		0.42*** (0.08)		
Cohort 2019 * Winter 2021/22		0.17+ (0.09)		
Cohort 2020 * Winter 2021/22		0.74*** (0.08)		
Cohort 2020 * Winter 2022/23		0.43*** (0.09)		
Cohort 2021 * Winter 2021/22		0.61*** (0.09)		
Reduction in work volume in %			1.15* (0.54)	
Reduction in vacancies in %				0.24** (0.08)
Swiss citizenship	−0.37*** (0.03)	−0.37*** (0.03)	−0.35*** (0.04)	−0.35*** (0.04)
Women	−0.23*** (0.03)	−0.24*** (0.03)	−0.23*** (0.04)	−0.24*** (0.04)
French-speaking region	0.85*** (0.02)	0.86*** (0.02)	0.69*** (0.04)	0.69*** (0.04)
Italian-speaking region	1.29*** (0.04)	1.29*** (0.04)	0.94*** (0.07)	0.94*** (0.07)

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Continuation of Table A4.

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21	
	M1	M2	M3	M4
Two-year VET programme	–0.39 (0.57)	–0.39 (0.57)	0.27 (0.52)	0.23 (0.51)
Number of lessons voc. School (ln)	–2.37*** (0.58)	–2.37*** (0.58)	–1.75** (0.59)	–1.75** (0.58)
Size of graduation cohort (ln)	–0.073 (0.13)	–0.073 (0.13)	0.22 (0.15)	0.16 (0.14)
Constant	13.5** (4.38)	13.5** (4.38)	7.48+ (4.26)	7.07+ (4.20)
Occupation-level variance	0.77*** (0.21)	0.77*** (0.21)	0.52*** (0.15)	0.50*** (0.14)
Individual-level variance	1.47*** (0.06)	1.49*** (0.06)		
Total number of observations	533 942	533 942	108 176	108 176
Number of VET diploma holders	175 780	175 780	–	–
Number of occupations	34	34	34	34

Note: Multilevel logistic regression models, estimates represent coefficients with standard errors in parentheses. Data: LABB data, own calculations. Occupation-level variance depicts level 3 variance in Models 1 and 2 and level 2 variance in Models 3–5. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Sample is restricted to occupations covered in the firm survey.

Table A5 Determinants of Unemployment Probability of Young VET Diploma Holders Before, During and After the COVID-19-Pandemic, Status Six and 18 Months After Completing VET

	Unemployment probability	
	Six months after finishing VET	18 months after finishing VET
Cohort 2019, Ref = Cohort 2018	−0.058+ (0.03)	0.47*** (0.04)
Cohort 2020	0.28*** (0.03)	−0.11* (0.04)
Cohort 2021	−0.40*** (0.04)	−0.51*** (0.05)
Cohort 2022	−0.68*** (0.04)	
Swiss citizenship	−0.32*** (0.03)	−0.22*** (0.04)
Women	−0.09** (0.03)	−0.37*** (0.04)
French-speaking region	0.82*** (0.03)	0.67*** (0.03)
Italian-speaking region	1.31*** (0.04)	1.08*** (0.06)
Two-year VET programme	0.93*** (0.22)	0.61** (0.22)
Number of lessons voc. School (ln)	−0.44+ (0.26)	−0.45+ (0.25)
Size of graduation cohort (ln)	−0.013 (0.04)	0.011 (0.04)
Constant	−0.49 (1.87)	−0.83 (1.80)

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Continuation of Table A5.

	Unemployment probability	
	Six months after finishing VET	18 months after finishing VET
Occupation-level variance	0.51 *** (0.07)	0.39 *** (0.06)
Total number of observations	240 062	194 151
Number of occupations	217	217

Note: Multilevel logistic regression models, estimates represent coefficients with standard errors in parentheses. Data: LABB data, own calculations. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A6
Determinants of Unemployment Probability of Young VET Diploma Holders Before, During, and After the COVID-19-Pandemic, Multi-Level Linear Probability Models

	Unemployment probability in winter 2018/19–winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Cohort 2019	0.01 *** (0.00)	–0.001 (0.00)	0.01 *** (0.00)	0.01 *** (0.00)	0.01 *** (0.00)
Ref = Cohort 2018					
Cohort 2020	0.01 *** (0.00)	–0.0002 (0.00)	0.02 *** (0.00)	0.02 *** (0.00)	0.02 *** (0.00)
Cohort 2021	0.01 *** (0.00)	0.001 (0.00)			
Cohort 2022	0.01 *** (0.00)	0.01 *** (0.00)			
Winter 2019/20	–0.01 *** (0.00)	–0.02 *** (0.00)			
Ref = Winter 2018/19					
Winter 2020/21	–0.01 *** (0.00)	–0.01 *** (0.00)			
Winter 2021/22	–0.02 *** (0.00)	–0.02 *** (0.00)			

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	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Winter 2022/23	–0.03*** (0.00)	–0.02*** (0.00)			
Cohort 2019 * Winter 2019/20		0.01*** (0.00)			
Cohort 2019 * Winter 2020/21		0.01*** (0.00)			
Cohort 2019 * Winter 2021/22		0.002 (0.00)			
Cohort 2020 * Winter 2021/22		0.02*** (0.00)			
Cohort 2020 * Winter 2022/23		0.01*** (0.00)			
Cohort 2021 * Winter 2021/22		0.01*** (0.00)			
Reduction in work volume in %			0.01* (0.00)		
Reduction in vacancies in %				0.01*** (0.00)	
Prevalence of Working from Home					0.07** (0.02)
Prevalence of Short-time work					0.07* (0.03)
Prevalence of Increased workload					0.02 (0.03)
Swiss citizenship	–0.01*** (0.00)	–0.01*** (0.00)	–0.02*** (0.00)	–0.02*** (0.00)	–0.02*** (0.00)

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Continuation of Table A6.

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Women	–0.01*** (0.00)	–0.01*** (0.00)	–0.01*** (0.00)	–0.01*** (0.00)	–0.01*** (0.00)
French-speaking region	0.02*** (0.00)	0.02*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Italian-speaking region	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Two-year VET programme	0.02*** (0.00)	0.02*** (0.00)	0.04*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Number of lessons voc. School (ln)	–0.01* (0.00)	–0.01* (0.00)	–0.02 (0.01)	–0.01 (0.01)	–0.02+ (0.01)
Size of graduation cohort (ln)	0.0002 (0.00)	0.0002 (0.00)	–0.0003 (0.00)	–0.001 (0.00)	–0.001 (0.00)
Constant	0.12*** (0.03)	0.12*** (0.03)	0.14* (0.07)	0.11+ (0.07)	0.43*** (0.12)
Occupation-level variance	–3.33*** (0.01)	–3.33*** (0.01)	–3.68*** (0.08)	–3.70*** (0.08)	–3.96*** (0.14)
Individual-level variance	–4.23*** (0.07)	–4.23*** (0.07)	–1.68*** (0.00)	–1.68*** (0.00)	–1.71*** (0.00)
Total number of observations	729 453	729 453	146 249	147 624	108 259
Number of VET diploma holders	240 062	240 062	–	–	–
Number of occupations	217	217	192	211	34

Note: Multilevel linear probability models, estimates represent coefficients with standard errors in parentheses. Data: LABB data, own calculations. Occupation-level variance depicts level 3 variance in Models 1 and 2 and level 2 variance in Models 3–5. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A7 Determinants of Unemployment Probability of Young VET Diploma Holders Before, During and After the COVID-19-Pandemic, Logistic Models with Clustered Standard Errors

	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Cohort 2019	0.25***	−0.07	0.29***	0.28***	0.27**
Ref = Cohort 2018	(0.05)	(0.07)	(0.06)	(0.06)	(0.09)
Cohort 2020	0.46***	−0.022	0.62***	0.61***	0.61***
	(0.06)	(0.06)	(0.07)	(0.07)	(0.09)
Cohort 2021	0.53***	0.042			
	(0.11)	(0.11)			
Cohort 2022	0.74***	0.40***			
	(0.11)	(0.10)			
Winter 2019/20	−0.40***	−0.52***			
Ref = Winter 2018/19	(0.03)	(0.05)			
Winter 2020/21	−0.27***	−0.35***			
	(0.06)	(0.06)			
Winter 2021/22	−1.03***	−0.95***			
	(0.07)	(0.06)			
Winter 2022/23	−1.42***	−1.08***			
	(0.08)	(0.07)			
Cohort 2019 * Winter 2019/20		0.53***			
		(0.08)			
Cohort 2019 * Winter 2020/21		0.35***			
		(0.07)			
Cohort 2019 * Winter 2021/22		0.11			
		(0.08)			
Cohort 2020 * Winter 2021/22		0.63***			
		(0.07)			

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	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Cohort 2020 * Winter 2022/23		0.32 *** (0.05)			
Cohort 2021 * Winter 2021/22		0.50 *** (0.07)			
Reduction in work volume in %			0.47 *** (0.12)		
Reduction in vacancies in %				0.20 ** (0.06)	
Prevalence of Working from Home					1.92 * (0.80)
Prevalence of Short-time work					2.16 * (0.87)
Prevalence of Increased workload					0.081 (0.92)
Swiss citizenship	−0.41 *** (0.04)	−0.41 *** (0.04)	−0.42 *** (0.05)	−0.42 *** (0.05)	−0.36 *** (0.06)
Women	−0.13 (0.11)	−0.13 (0.11)	−0.24 * (0.10)	−0.28 ** (0.10)	−0.37 *** (0.09)
French-speaking region	0.82 *** (0.07)	0.82 *** (0.07)	0.71 *** (0.06)	0.69 *** (0.05)	0.71 *** (0.06)
Italian-speaking region	1.18 *** (0.06)	1.18 *** (0.06)	0.91 *** (0.08)	0.88 *** (0.09)	0.91 *** (0.11)
Two-year VET programme	0.43+ (0.23)	0.44+ (0.24)	0.52 * (0.24)	0.43+ (0.24)	−0.18 (0.39)
Number of lessons voc. School (ln)	−0.89 ** (0.29)	−0.89 ** (0.29)	−0.61 * (0.29)	−0.58+ (0.32)	−1.70 ** (0.53)

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	Unemployment probability in winter 2018/19– winter 2022/23		Unemployment probability in winter 2020/21		
	M1	M2	M3	M4	M5
Size of graduation cohort (ln)	0.12* (0.05)	0.12* (0.05)	0.097* (0.05)	0.066 (0.05)	0.11 (0.08)
Constant	2.41 (2.03)	2.41 (2.03)	0.36 (2.05)	−0.23 (2.37)	7.25+ (3.75)
Total number of observations	729 453	729 453	146 249	147 624	108 259
Pseudo R2	0.06	0.06	0.04	0.04	0.06

Note: Logistic regression models, estimates represent coefficients with cluster robust standard errors in parentheses. Data: LABB data, own calculations. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.