Transitions from Education to Employment

Cohort 2 (TREE2)

TREE2 Results: The First Two Years

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1   Introduction

It has been five years since TREE's second school leavers' cohort (TREE2) was launched, thus extending the study towards a replicative multi-cohort design. In early 2021, data from TREE2's baseline survey (2016) and panel waves 1 and 2 (2017/2018) were published for the use by the scientific community (Hupka-Brunner et al., 2021; TREE, 2021).[1] The findings of the present paper draw on this data release, thereby providing an initial overview of mostly descriptive results pertaining to the cohort's crucial transition from lower to upper-secondary education.

Beyond the most salient descriptive results of the cohort's trajectories in its first two post-compulsory years, the paper provides a synoptic comparison with the first TREE cohort (TREE1), which made the same transition 16 years earlier (2000-2002).

In a second step, descriptive findings are complemented by multivariate analyses which aim at disclosing major mechanisms underlying this crucial transition in adolescents' educational pathways. In doing so, a particular focus lies on the role of skills, achievement and the pronounced tracking at the lower-secondary level of education that characterises the Swiss education system.

The paper concludes with a summary and an outlook on further research questions raised by our first findings.

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[1] See https://forsbase.unil.ch/datasets/dataset-public-detail/17413/2259/ .

2　Data and methods

TREE (Transitions from Education to Employment) is a multi-disciplinary longitudinal large-scale survey providing high-quality longitudinal data on educational and occupational pathways in Switzerland for the use of the scientific community at large. The source of the data is a multi-cohort panel study of school leavers who were first surveyed at the end of compulsory school at the age of approximately 15 to 16 years.

The first TREE cohort (TREE1) was launched in 2000 and draws on a large national sample of school leavers (N>6,000) who were tested and surveyed on the occasion of Switzerland's first-time participation in PISA (Programme for International Student Assessment; see TREE, 2016). The second TREE panel study (TREE2) covers a comparable population that has left compulsory education in 2016 (Hupka-Brunner et al., 2021). It draws on the AES 2016[2], a large-scale national assessment of mathematics skills, as its baseline survey. Since 2016, the TREE2 sample has been re-surveyed at yearly intervals. Scientific use files of the data are presently available for the baseline survey as well as for panel waves 1 and 2 (TREE, 2021). This paper draws on data from the cited release.[3]

The analyses performed for the present contribution have been weighted to compensate for biases that result from unequal selection probabilities and sample attrition.[4] To facilitate legibility, we have omitted information on estimation accuracy (confidence intervals) in the running text. This information is provided in tables in the appendix. The text nevertheless takes estimation accuracy into account in that it generally only reports findings that are statistically significant at least at the 5% percent level.[5]

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[2]　Assessment of the Attainment of Educational Standards. In German: Überprüfung des Erreichens der Grundkompetenzen (ÜGK). In French: vérification de l'atteinte des compétences fondamentales (COFO).
For details see https://uegk-schweiz.ch/uegk-2016-neu/ .

[3]　Data can be retrieved from the data archive of FORS, the Swiss Centre of Expertise in the Social Sciences in Lausanne. See https://forsbase.unil.ch/project/study-public-overview/17413/0/ for details.

[4]　For details on sample design and weighting, see also Sacchi (forthcoming).Variance estimation was performed using suitable methods to properly model the complex survey structure (Verner & Helbling, 2019).

[5]　The full regression models also take the 10 percent level into account.

3   Transitions from lower- to upper-secondary education: The first two years

3.1   Overview

With the data presently available as published scientific use files, we are able to observe TREE2 respondents' trajectories across a period of approximately 24 months, ranging from the end of compulsory school to the end of their second post-compulsory year (i.e., from spring/summer 2016 to spring/summer 2018). Our analyses pertain to the situation that the respondents reported in panel waves 1 and 2 (2017 and 2018).[6]

In 2017, one year after the cohort has left compulsory school, more than three quarters of the observed school leavers had gained access to a "certifying" educational programme at upper-secondary level of education, that is, an educational programme which leads to a diploma at ISCED level 3 (see Figure 1): 47% were enrolled in various programmes of vocational education and training (VET, green areas), while 31% pursued a general educational programme (GE, blue areas). Yet, a total of 22% of the cohort were still to be found in various interim solutions or internships geared toward facilitating access to certifying programmes (17%) or were not pursuing any educational activity at all (5%).

How to read Figure 1

The flow diagram presents the educational situation of the observed cohort in years 1 (2017, to the left) and 2 (2018, to the right) after it has left compulsory school. The black columns to both the left and right of the diagram and the coloured flows between the two are proportional to the population percentages displayed on either side of the diagram.

VET and general education (marked in various hues of green and blue; lower part of the diagram) represent students enrolled in so called "certifying" upper-secondary educational programmes, that is, programmes leading to a degree at ISCED level 3.[1] The interim solutions/internship categories (marked in yellow/orange) are not "certifying" in themselves, but mostly geared toward enabling or facilitating access to programmes at the upper-secondary level of education.

Percentages are displayed at two levels of aggregation: the 4-categories level distinguishes only between VET, general education, interim solutions/internships and absence of any educational activity. The 9-categories level further distinguishes between programme types within the main categories.

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[6]   Main field work of TREE2 panel waves usually starts in March and ends in July/August of a given year.

Figure 1: *Educational situation of TREE2 cohort in 1ˢᵗ and 2ⁿᵈ post-compulsory year (2017/18)*
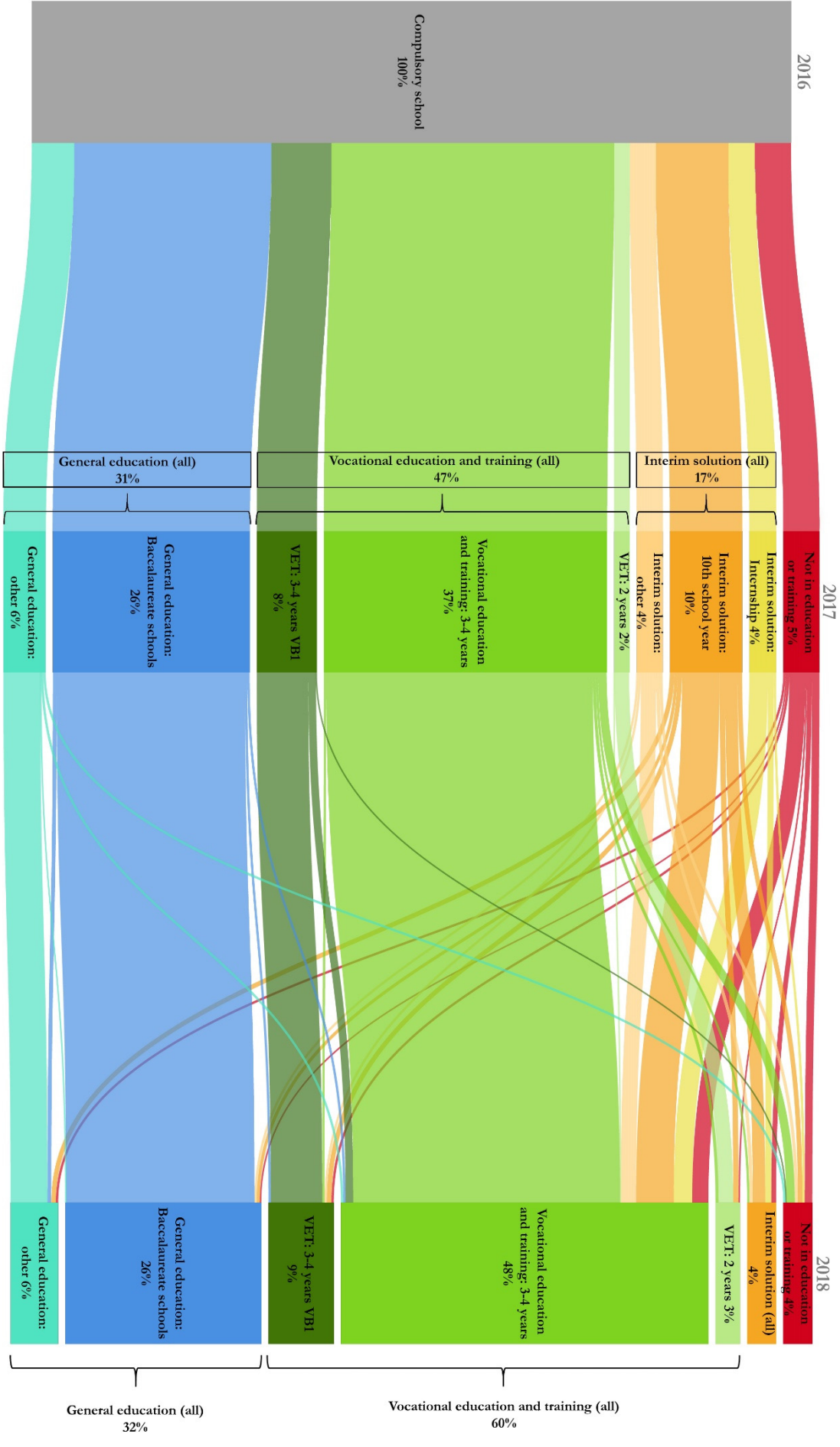
Legend: *VET = Vocational education & training; VB1 = Vocational baccalaureate type 1.*
Sums of detailed percentages may not add up to aggregate percentages due to rounding.

One year later, in spring/summer 2018, the share of learners in either VET or general education programmes had risen to 92% (60% VET, 32% general education), while 8% of the cohort were not enrolled in any certifying upper-secondary education at all.

As Figure 1 highlights, the major dynamic of pathway discontinuities during the cohort's first two post-compulsory years can be observed mostly between the various types of "non-certifying" situations and VET. whereas close to 10% of the cohort attended a tenth school year, nearly 4% were to be found in internships. Further analyses (not shown in detail in this publication) reveal that most internships were attended for an entire year. This type of indirect or delayed entry into VET is particularly frequent in female-dominated professions of the health and care sector. The category "other interim solutions" includes a wide variety of "preparatory" activities with varying levels of standardisation and institutionalisation such as language and au-pair stays, "motivational semesters", "pre-apprenticeships" etc.

Approximately three quarters of those pursuing interim solutions and internships in year 1 succeeded in gaining access to a certifying programme in year 2 (mostly 3-4 years VET). The same is true for about two-thirds of those who did not pursue any educational activity in year 1 at all.

It should be noted that the aggregation level displayed in Figure 1 understates the overall discontinuity of pathways, as it does not take reorientations, repetitions and short-term interruptions within a given programme into consideration.[7]

Overall consistency with population parameters calculated on the basis of other data sources such as exhaustive student register data (see, e.g., BFS, 2016) is excellent, indicating a robust representativity of our sample.

3.2   Educational situation by selected characteristics

As Figure 2 highlights, educational situations throughout the first two post-compulsory years vary strongly by socio-demographic and socio-spatial characteristics.

Gender

Our findings confirm the well-known fact that young women enrol substantially more frequently (by 10 percentage points) in general education programmes than young men. Furthermore, in year 1, their share in interim solutions and internships was markedly higher than that of their male counterparts' (20 vs. 15%). This is particularly true with regard to internships, which women attended twice as frequently as men (6 vs. 3%). As outlined in section 3.1, internships are particularly widespread in female-dominated professions of the health and care sector.

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[7]   Particularly respondents switching VET training professions and/or training firms.

Figure 2:   *Educational situation in the first and second post-compulsory year by selected characteristics*
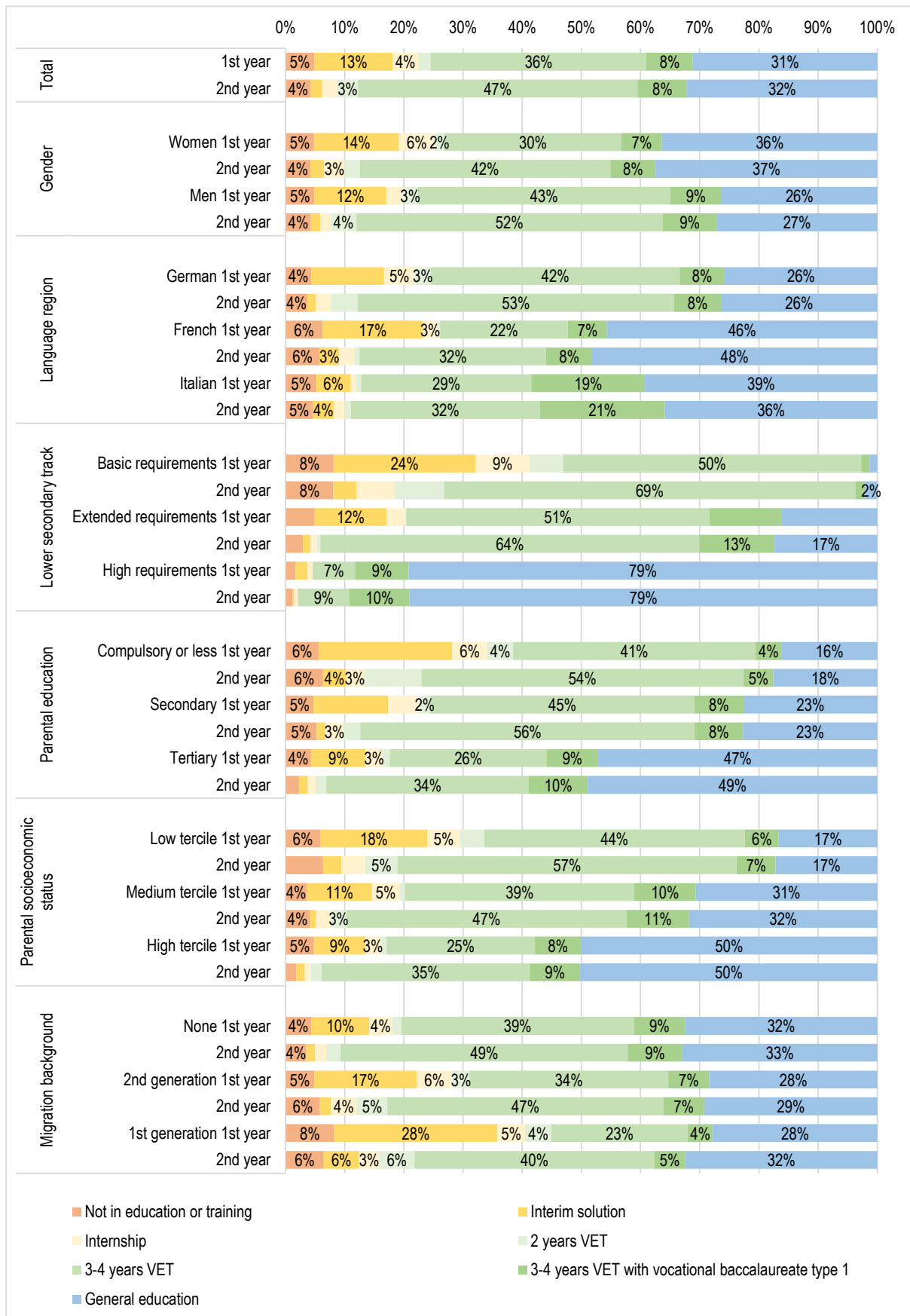
Language region

The shares of VET versus general education differ substantially, particularly between the German- and the French-speaking part of Switzerland. While in the former two thirds of the cohort (63%) were enrolled in VET programmes by year 2, this was the case for only a good 40% in the latter. Conversely, the share of francophone students enrolled in general education was almost twice (48%) that of their German-speaking counterparts. Furthermore, more than one in four school leavers (26%) in French-speaking Switzerland attended an interim solution, internship or no education at all, while the same applied to 21% in German-speaking and only to 12% in Italian-speaking Switzerland.

With regard to the ratio of VET and general education programmes, Italian-speaking Switzerland is situated half-way between the German and French language regions. A remarkable finding with regard to the Italian language region is that it displays by far the highest share of VET trainees enrolled in a vocational baccalaureate programme (21% in year 2, compared to 8% in the other two language regions).

Track attended at lower-secondary school

Switzerland's lower-secondary education system is pronouncedly tracked, with students being assigned at the end of primary school to programmes that vary substantially in terms of their academic requirements and curricula (see, e.g., Baeriswyl, 2015).[8] Unsurprisingly, nearly 80% of the students in the academic tracks of upper-secondary education previously attended programmes with high requirements, which are geared toward preparing for these tracks at the upper-secondary level. Contrariwise, this is the case for only 16% of the students who previously attended the medium track ("extended requirements") and about 1-2% of those who were enrolled in low tracks ("basic requirements"). Close to 80% of the latter two groups were pursuing VET programmes in post-compulsory year 2. Yet, the pattern unfolding with regard to students having attended the "basic" track is distinctly different from that of their medium-track counterparts. In year 1, over 40% of them failed to gain access to certifying upper-secondary programmes (pursuing interim solutions or no education at all). In both years 1 and 2, they were markedly underrepresented in vocational baccalaureate programmes, while being overrepresented in 2-years VET programmes.

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[8] In a relatively small number of cases, respondents attended lower-secondary schools which do not allocate their students to tracks based on requirement levels (integrative, non-selective programmes). This category is not displayed in Figure 2. It should also be noted that there are more or less accentuated organisational forms of track separation: In some lower-secondary schools students of different tracks are taught in "mixed-track" classes (in all or some subject matters), while other schools teach their students in classes entirely separated by track/programme. The website of the Swiss Conference of Cantonal Ministers of Education (EDK, see www.edk.ch) provides detailed information outlining the organisation of each canton's lower-secondary-level programmes.

Parental education and socio-economic status

As our findings reveal, social origin is invariably and markedly associated with the type of upper-secondary programme in which young people enrol. Children from parents with low educational attainment or socio-economic status (SES) were significantly overrepresented in non-certifying situations (interim solutions/out of education) in year 1, while being distinctly underrepresented in general education programmes. The opposite is true for children from well-to-do and well-educated families.

While 30-35% of students with parents of low socio-economic or educational status failed to gain access to certifying upper-secondary programmes in post-compulsory year 1, this was the case for less than 20% of the students whose parents are highly educated and have a high socio-economic status. Contrariwise, the share of students attending general education programmes was at approximately 50% percent if the students' parents had a tertiary level diploma or a high SES. The same share droppped below 20% among students whose parents were to be found in the lowest SES tercile or did not have any post-compulsory degree.

Migration background

Compared to non-migrants, students with migration background were substantially more frequently enrolled in interim solutions or out of education. This applies particularly to first-generation migrants, whose share in this group was over 40% in year 1 and still at 15% in year 2.

By contrast, migrants' share in general education programmes does not significantly differ from the overall average. With regard to first-generation migrants, this finding clearly contrasts with what the respective figures[9] from the first TREE cohort tell us: In TREE1, the share of first-generation migrants in general education was ten percentage points lower than that of second-generation migrants and non-migrants. This is a remarkable result that deserves further examination. It is plausible to assume that these differences across cohorts have to do with a distinct change in the composition of the migrant population in Switzerland: Whereas until the early 2000s migrants to Switzerland were predominantly low-qualified, there has been a substantial shift towards high-qualified migration since Switzerland's agreement with the European Union on the free movement of labour came into effect in 2002 (see, e.g., Observatorium FZA, 2018; SECO, SEM, BFS, & BSV, 2015).

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[9] Not displayed in this paper (figures are provided on request).

3.3   Comparing transitions across cohorts

3.3.1   Changes in context factors between 2000 and 2016

As mentioned previously, the two TREE cohorts have left compulsory school at an interval of 16 years (TREE1: 2000; TREE2: 2016). In that period, several major context factors expected to affect the transitions under scrutiny have undergone substantial changes.

With regard to the institutional settings of the education system, one of these factors is the new VET legislation that came into effect in 2004.[10] Among other things, it extended federal regulation to (training) professions in the health, social, arts, agriculture and forestry sectors[11], and led to the introduction of VET programmes of two years' duration.[12] Another relevant institutional factor concerns the Federal Vocational Baccalaureate (FVB) that was introduced in the 1990s to grant VET graduates access to the then newly established universities of applied sciences (UAS). At the time of the first TREE cohort's transition to upper-secondary education, the regulation on FVB of 1998 had just come into effect[13]. FVB programmes beyond those devoted to technical and commercial fields of study were therefore considerably less developed and witnessed lower attendance.[14] A similar remark is in order with regard to the upper-secondary specialised schools (Fachmittelschulen/Ecoles de culture générale), which, contrary to the present situation,[15] were substantially less widespread at the time of the first TREE cohort's transition to upper-secondary education.

Another substantial context factor pertains to the supply of firm-based VET training places, which, much like the general labour market, is largely market-based in Switzerland. With respect to the market for VET training places, the first TREE cohort made its transition during a period when, after a long span of economic downturn in the 1990s, the mismatch of VET applicants and available training places was close to its peak.[16] The number of the former has been estimated to have exceeded the number of the latter by around 20,000, which is the equivalent to approximately one-quarter of that age group at the time. By contrast, the overall ratio of

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[10]   Vocational and Professional Education and Training Act, VPETA. See https://www.fedlex.admin.ch/eli/cc/2003/674/en .

[11]   Previously, these training professions had been regulated by other authorities and were not covered by standard federal VET legislation.

[12]   Eidgenössischer Berufsattest (EBA) in German; attestation de formation professionnelle (AFP) in French. The new programme was designed to replace the so called "Anlehre" (formation [professionnelle] élémentaire in French), a one-year VET programme which, contrary to the newly introduced two-years programmes, did not lead to a diploma at ISCED level 3. Today, the two-year programmes can be attended for over 50 training professions.

[13]   See https://www.fedlex.admin.ch/eli/oc/1999/194/de . The regulation was amended in 2009 (see BMVo 2009 SR412.103.1, https://www.fedlex.admin.ch/eli/cc/2009/423/de).

[14]   According to the figures provided by the Swiss Federal Statistical Office (SFO), only 339 type 1 FVBs were acquired in fields of study other than the technical and the commercial. Note that type 2 FVB programmes (undertaken after completion of a 3- or 4-year initial VET programme) had not yet been established and could thus not be considered during the period in question.

[15]   The large majority of the group labelled "other general education" in Figure 1 attends this type of programme.

[16]   See the yearly editions of the "Lehrstellenbarometer" ("baromètre des places d'apprentissage" in French) published by the State Secretariat for Education, Research and Innovation (SERI) between 1997 and 2017.

demand and supply in the market for VET training places was more balanced when the second TREE cohort made its transition to upper-secondary education.

3.3.2   Comparative findings

Turning to the two cohorts' situation in their first post-compulsory year (see Figures 1 and 2),[17] we observe a relatively stable share of nearly 50% in both cohorts that directly entered a VET programme (cohort 1: 49%; cohort 2: 47%). Entry into general education programmes has substantially increased from 27% in cohort 1 to 32% in cohort 2. The proportion of youths who failed to gain direct access to a certifying upper-secondary programme in year 1 is only slightly lower in cohort 2 (22%) than in cohort 1 (25%).

Figure 3:   *Educational situation of the TREE1 cohort in the first and second post-compulsory year (2001/02)*

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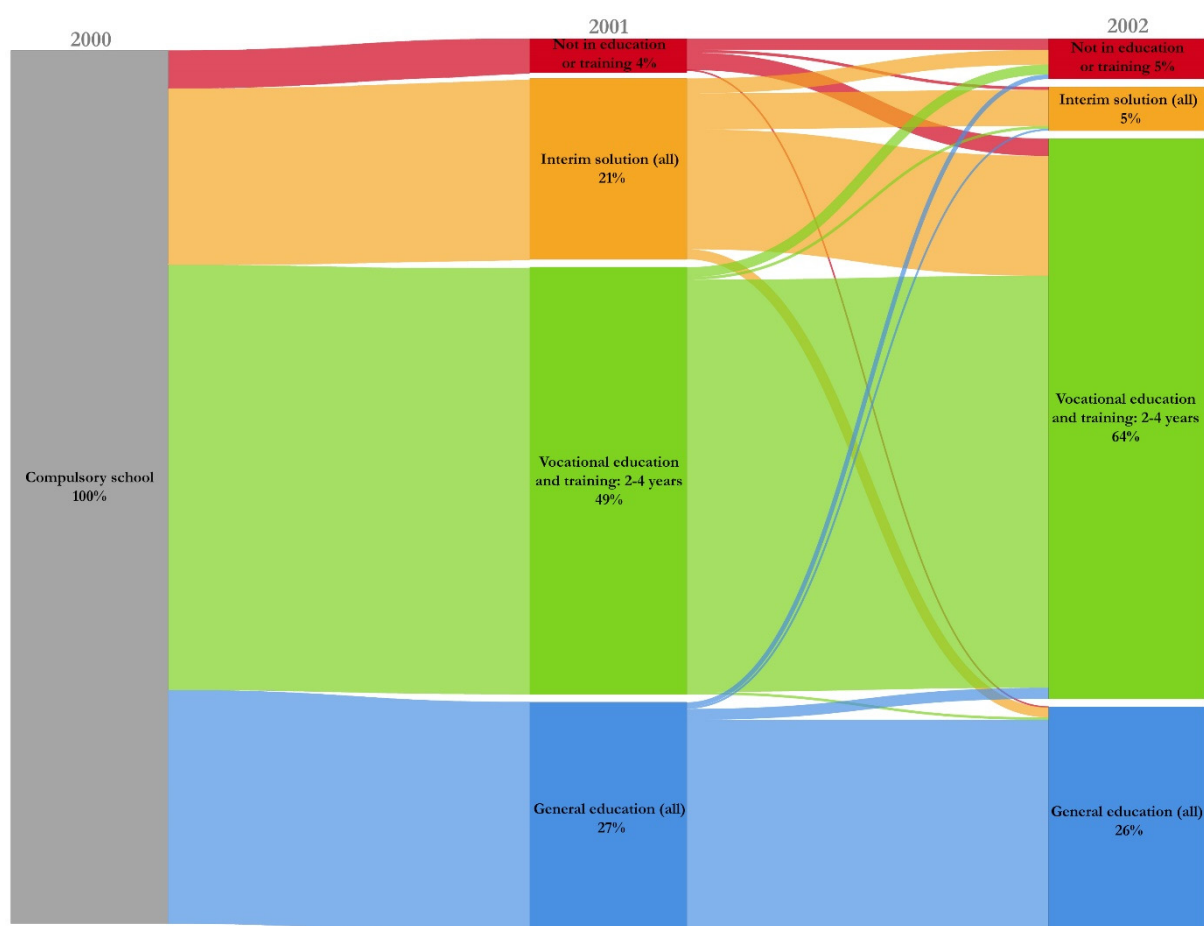
[17]   Given the substantial changes of institutional settings within the education system described in section 3.3.1, comparisons are made at the highest aggregation level only (4 categories/situations).

The latter finding is somewhat surprising. While accounting for a VET-market situation that is substantially more balanced for cohort 2 than for cohort 1 (see section 3.3.1 above), one would expect the number of undelayed, direct VET entries to increase noticeably and, conversely, lead to a decrease in students in "interim solutions". This is obviously not the case, which raises the question of whether there are differences between cohorts regarding a) the mechanisms underlying the allocation to interim solutions and b) the effects of having attended an interim solution on further educational trajectories (see, e.g., Sacchi & Meyer, 2016). With increasing progress of observation of the second cohort, these questions can and should be addressed by further, more in-depth analyses.

The data for the situation in year 2 after completing compulsory school confirms the marked increase of students enrolled in general education programmes: Whereas in cohort 1, the share of these programmes was at one in four (26%), it approached one-third in cohort 2 (32%). Conversely, the share of VET students decreased by four percentage points (from 64 to 60%). Overall, our findings suggest that the proportion of upper-secondary students in programmes designed to grant access to university-type education at the tertiary level has increased significantly across the two cohorts compared. In cohort 2, the shares of general education students and VET trainees enrolled in vocational baccalaureate programmes add up to over 40%.[18] A rough estimate of the respective share in cohort 1 arrives at approximately 30%.[19]

Overall, with regard to VET and compared to cohort 1, we observe a certain "polarisation" in cohort 2. The above-mentioned findings with regard to vocational baccalaureates concern the "top end" of the highly stratified Swiss VET system. The 2-year programmes, newly established by VET legislation in 2004, represent its opposite end. Register-based statistics published by the Swiss Federal Statistical Office (SFO) reveal that today, the two-year programmes account for approximately 10 percent of all VET diplomas obtained at the upper-secondary level.[20] For the second TREE cohort, we can therefore expect a considerable increase of the share of VET trainees in 2-year programmes in the years to come.

Little change is observed regarding the proportion of those who had not (yet) found access to certifying upper-secondary programmes even in year 2 after compulsory school: It is at close to 10% in both cohorts, thus slightly falling short of the policy goal to achieve an upper-secondary completion rate of 95% (EDK & WBF, 2015). Considering the risks associated with delayed entry into upper-secondary education, this group continues to deserve special attention from research and educational policy.

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[18]   This share can be expected to approach 50% in a few years due to the fact that more than half of all vocational baccalaureates are obtained via a programme attended only after graduating from initial VET.

[19]   Difficulties of comparisons derive from the institutional changes in Switzerland's education system outlined in section 3.2.1, as well as from differences of measurement when it comes to how TREE's captures the details of the observed educational pathways.

[20]   3-4-year programmes (2020): 63 270 diplomas; 2-year programmes: 6 890 diplomas. See e.g. www.bfs.admin.ch (page "Sekundarstufe II, berufliche Grundbildung: Bildungsabschlüsse nach Kanton").

4 Modelling the transition from lower- to upper-secondary education

4.1 General model

To estimate partial effects of the characteristics reported in section 3.2, we ran, in a multivariate perspective, a multinomial logistic regression on the educational situation of the second TREE cohort at the end of their first post-compulsory year (see Table 1). The regression table reports average marginal effects, that is, the increase (positive values) or decrease (negative values) in the probability of a given educational situation and characteristic compared to the reference category, while statistically controlling for all other characteristics in the model.

Gender

In the case of gender, the bivariate effects reported in section 3.2 are confirmed: Even if we control for all the other factors in the model (i.e., linguistic region, lower-secondary track attended, parental socio-economic status and education, migration background, school marks and AES maths skills), young men, compared to their female counterparts, are significantly more likely to pursue VET programmes (+13 percentage points [PPs]) and less likely to attend a general education programme or an interim solution (-8 and -6PPs, respectively).

Language region

With regard to the effects of language region, the main bivariate findings also persist in a multivariate perspective. All else being equal and compared to German-speaking Switzerland, school leavers in French-speaking Switzerland are substantially less likely to pursue VET programmes (-14PPs), while being more likely to attend general education, interim solutions/internships or to be outside of education altogether.

In the Italian-speaking part of the country and all else being equal, school leavers are less likely to attend interim solutions and internships than their German-speaking counterparts (-8PPs); however, they are substantially more likely to be enrolled in VET programmes leading to a vocational baccalaureate (+14PPs).[21]

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[21] Somewhat surprisingly students in Italian-speaking Switzerland are less likely to be in general education than those in the German-speaking parts (−4PPs). This is hard to explain off-hand as, according to Figure 2, their share among the former (39%) is considerably higher than among the latter (26%).

Table 1:   Multinomial logistic regression on educational status one year after the end of compulsory school (second cohort, 2017)

	Not in education or training		Interim solution/ internship		VET 2–4 years		VET 3–4 years with VB		General education	
	AME	SE	AME	SE	AME	SE	AME	SE	AME	SE
Gender (ref: female)										
Male	0%	0.01	-6% ***	0.01	13% ***	0.01	2% +	0.01	-8% ***	0.01
Language region (ref: German)										
French	3% **	0.01	6% ***	0.02	-14% ***	0.02	0%	0.01	6% ***	0.01
Italian	1%	0.01	-8% ***	0.02	-2%	0.04	14% ***	0.03	-4% *	0.02
Lower-secondary track attended (ref: extended requirements)										
Basic requirements	4% **	0.01	13% ***	0.02	6% **	0.02	-9% ***	0.01	-14% ***	0.01
High requirements	-2% **	0.01	-9% ***	0.02	-36% ***	0.02	-5% ***	0.01	52% ***	0.03
No differentiation based on skill level	-4% **	0.01	8%	0.06	-19% *	0.08	-10% ***	0.02	24% **	0.08
School marks in teaching language (ref: at the mark)										
Below the mark	-1%	0.03	8% +	0.04	-9% *	0.05	0%	0.02	3%	0.04
Above the mark	-3% **	0.01	-1%	0.02	-2%	0.02	2% +	0.01	4% **	0.01
Subject not taken	6%	0.09	-1%	0.06	1%	0.09	2%	0.05	-8%	0.09
School marks in maths (ref: at the mark)										
Below the mark	1%	0.02	3%	0.02	-2%	0.03	2%	0.02	-4% +	0.02
Above the mark	-1%	0.01	-3% +	0.02	-1%	0.02	3% ***	0.01	1%	0.01
Subject not taken	-4% **	0.02	-3%	0.05	-1%	0.08	-1%	0.03	9%	0.11
AES maths score (weighted likelihood estimates)	0%	0.00	-4% ***	0.01	-2% *	0.01	3% ***	0.00	3% ***	0.01
Parental socio-economic status (ref: medium tercile)										
Low	1%	0.01	0%	0.01	4% *	0.02	-2%	0.01	-3% *	0.02
High	3% *	0.01	0%	0.02	-5% **	0.02	-2% *	0.01	5% ***	0.01
Missing	2%	0.02	5%	0.04	-7%	0.05	-1%	0.03	1%	0.03
Parental level of education (ref: upper sec. level)										
Compulsory level or less	0%	0.01	2%	0.02	-2%	0.02	-2% +	0.01	3%	0.02
Tertiary level	1%	0.01	0%	0.01	-6% ***	0.02	-1%	0.01	6% ***	0.01
Other education / missing	3%	0.02	7% +	0.04	-5%	0.04	-4% +	0.02	0%	0.04
Migration background (ref: none)										
2nd generation (respondent born in Switzerland, parents born abroad)	-1%	0.01	2%	0.02	-10% ***	0.02	1%	0.01	7% ***	0.02
1st generation (respondent and parent(s) born abroad)	1%	0.01	7% **	0.02	-15% **	0.02	-1%	0.01	8% ***	0.02

Observations: 7 882

Pseudo R-squared: 30%

AME = coefficient (average marginal effects)

SE = standard error

significant negative effect

significant positive effect

Levels of significance:

*** p < .001

** p < .01

* p < .05

+ p < .1

Track attended at the lower-secondary level

As our regression table highlights, the "net" effects of the lower-secondary track attended are remarkably strong for all types of post-compulsory educational situations. Compared to the medium track ("extended requirements") and all other things (particularly marks and standardised maths test scores) being equal, having attended the high track at lower-secondary school increases the likelihood of attending general education by no less than 50 percentage points, while significantly reducing the probability of being in any other educational situation. In turn, students who attended the low track ("basic requirements") are substantially less likely to access general education (-14PPs) or VET geared towards the vocational baccalaureate (-9PPs) even if they achieve comparable marks and maths test scores. Conversely, they are more likely to attend a "regular" VET programme (+6PPs), an interim solution (+13PPs) or no education at all (+4PPs; see also section 4.2).

Parental education and socio-economic status

Even when we control for marks and test scores, our regression table reveals significant effects of social origin on the likelihood of attending either a VET or a general education programme: The higher the status and education of a student's parent(s), the likelier the student will be enrolled in general education. The effects are very similar for both measures of social origin: Having parents with a high socio-economic status or a tertiary level degree (instead of parents with medium SES or upper-secondary education) increases the likelihood of being enrolled in general education by 5 to 6 percentage points - while reducing the probability to attend a VET programme by the same order of magnitude. The opposite is true for adolescents with low-educated parents (+4 PPs for VET and -3PPs for general education).

Migration background

The pattern observed with respect to migration is strikingly similar to that reported with regard to parental education and socio-economic status: Having migrant parents significantly reduces the likelihood of access to VET, while increasing – all else being equal – the likelihood to attend general education. First generation migrants are also more likely to attend an interim solution or internship.

Skills and achievement

Having achieved a high score in the AES maths test significantly increases the likelihood of attending general education or a VET programme leading to a vocational baccalaureate, while reducing the probability of attending "regular" VET and interim solutions/internships or of being out of education altogether.

With regard to the grades obtained in the language of teaching and in mathematics, the pattern is less straightforward. All else being equal, students with grades above the failing mark[22] in their language of teaching are more likely to attend general education or a VET programme geared toward the vocational baccalaureate, while being less likely to no longer be in education or training altogether. Contrary to the AES score, however, there are no significant effects with regard to 2-4 years VET and interim solutions. A grade below the failing mark, on the other hand, is associated with a marked drop in the likelihood of being enrolled in 2-4 years VET (-9PPs) and an equally marked increase in the likelihood of pursuing an interim solution (+8PPs).

As for maths grades, it may, at first glance, be surprising that we observe any significant effects at all, considering the fact that we already control for standardised maths skills measured by AES. However, we have to keep in mind that marks in a given subject matter, programme, school or class measure something different than standardised national assessments such as AES (for more details, see the following section 4.2). This finding in itself underlines the necessity to distinguish between standardised skills measures and grades. This said, we observe significant effects of maths grades above the failing mark for VET programmes including vocational baccalaureate classes (+3PPs) and for interim solutions (-3PPs), whereas grades below that mark only affect the likelihood of attending general education (-4PPs).

To assess across-cohort changes of the mechanisms at work in the crucial transition between lower- and upper-secondary education, we have run a model similar to the one displayed in Table 1 for the first TREE cohort. Despite the substantial contextual changes summarised in section 3.3.1, the effects found with respect to TREE2 are very similar to those observed in TREE1 (see complete model in appendix table D). Cognitive skills and academic achievement do matter, to a certain extent, when it comes to successfully mastering the transition to upper-secondary programmes (see also the next section, 4.2). This is in line with the meritocratic and equity principles education policy claims to adhere to (EDK & WBF, 2015), However, ascriptive characteristics such as gender, social origin, migration background as well as institutional and regional factors such as lower-secondary tracking and language region keep playing a substantial – and persistent – role for both cohorts.

4.2   Assessing the role of skills, achievement and (lower-secondary) tracking

As highlighted above, one of the salient features of the TREE panel survey design is that it draws on large-scale assessments of standardised skills that were measured in the baseline survey. In the case of the first TREE cohort, this is PISA 2000, which mainly measured reading literacy skills. In the case of TREE2, standardised skills in mathematics were assessed in the context of the Swiss skills monitoring scheme AES (Angelone & Keller, 2019).[23] PISA claims to measure

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[22]   The grade scale in Switzerland ranges from 1 to 6, with 1 being the lowest value and 6 the highest. The pass/fail mark ("at the mark") is at 4.

[23]   Assessment of the Attainment of Educational Standards. For details see footnote 2 on page 4.

general literacy skills irrespective of the curriculum according to which the tested students had been instructed prior to the assessment (OECD, 2006, 1999). Methodologically, the AES test design strongly leans on the PISA test concept but differs in that its test items account for the Swiss curricula taught in the tested subject matter up to the grade in which the test is administered.

Apart from the participation in national or international large-scale assessments such as PISA or AES, there are no systematic standardised tests of student skills or achievement at the national level in Switzerland. Marks received in specific cantons, tracks, or subject matters can hardly be compared with each other due to the strongly federalist organisation of education in general and the pronounced tracking in Switzerland's secondary education system in particular. Standardised measures are therefore indispensable for an unbiased assessment of students' skills.

Figure 4 displays the distribution of AES math test scores broken down by the three types of lower-secondary track that students of the TREE2 cohort have attended at the end of their compulsory schooling. The extent to which the curves overlap is striking.[24] It is at approximately 50% between tracks with basic vs. extended (academic) requirements, and at approximately two thirds between the tracks with extended vs. high requirements. There is even a substantial overlap of over 25% between the lowest and the highest track (basic vs. high requirements). Math test scores within this area of triple overlap may thus be achieved by students of any of the three observed tracks. Previous research drawing on PISA maths skills scores show almost identical distribution patterns (Ramseier et al., 2002, p. 70).

Our results are in line with a large body of research that emphasises the existence of a "meritocratic grey area" (Kronig, 2007) in tracked education systems. In the case of Switzerland, allocation of students to lower-secondary tracks claims to be achievement-based. However, the "diagnostics" guiding this allocation are widely held to be highly unreliable – and yield results that are highly socially selective, even when controlling for skills and achievement (Angelone, Keller, & Moser, 2013; Bauer & Riphahn, 2006; Felouzis, Charmillot, & Fouquet-Chauprade, 2011; Neuenschwander, Gerber, Frank, & Bosshard, 2013). Furthermore, numerous analyses based on the data of the first TREE cohort (TREE1) highlight to what degree post-compulsory educational pathways in Switzerland are pre-determined by the track attended at lower-secondary school (Hupka-Brunner & Meyer, 2021; Meyer, 2009).

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[24]   Even acknowledging the fact that measurement errors of said tests tend to lead to a certain overestimation of the overlap.

Figure 4:   Distribution of mathematics skills scores by type of lower-secondary track attended


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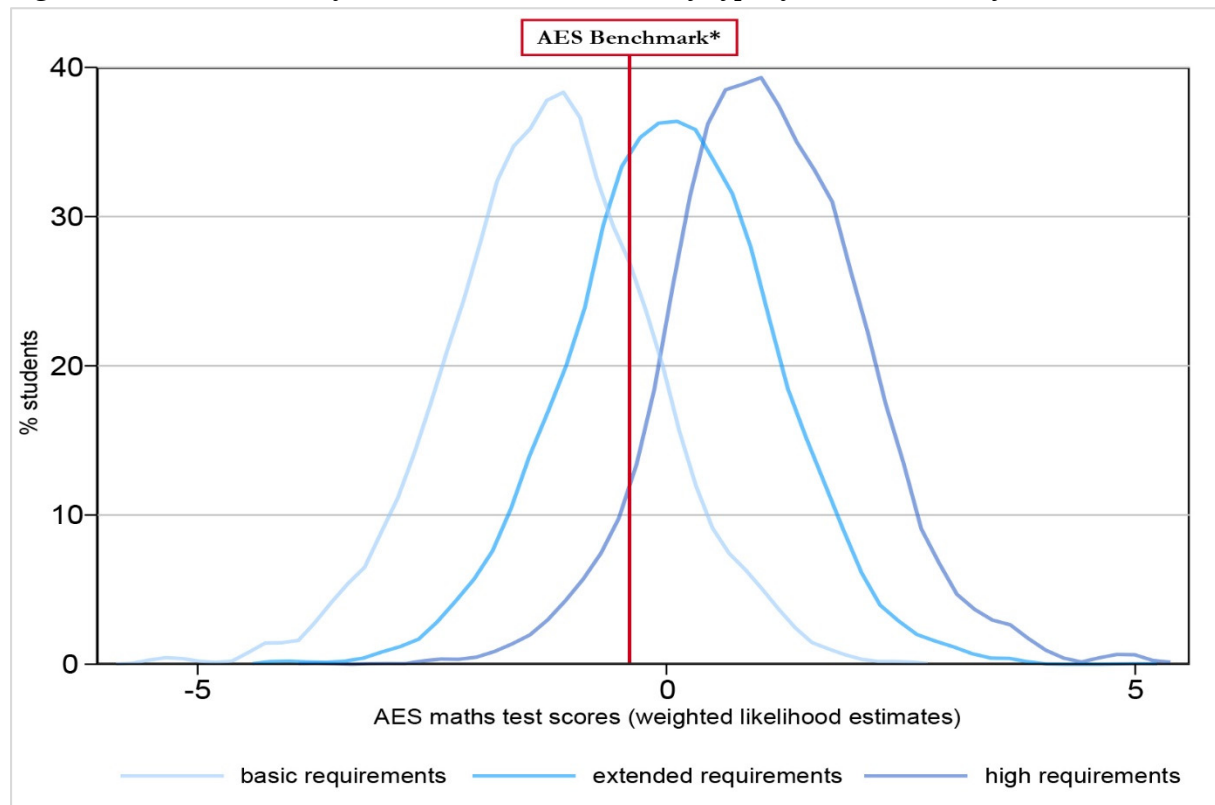
* Technical note on the AES mathematics skills measure

The weighted likelihood estimate (WLE) score displayed in Figure 4 is a point estimator for the individual mathematical skills of young people at the end of compulsory schooling. The higher the score, the higher the individual's mathematical competences. Item parameters as well as the distribution of student parameters were estimated beforehand using a one-dimensional Rasch model with the marginal maximum likelihood method (MML) and taking into account respondents' individual sampling weights. The mean of respondents' individual parameters was set to zero. Score distributions were calculated on the basis of the complete AES 2016 sample.

According to the AES 2016 documentation, the critical benchmark is set at -0.4 scale points. Students below this benchmark (to the left of the red line in the graph) are considered not to have achieved minimal skills in mathematics at the end of compulsory school (Angelone & Keller, 2019). This was the case for 38% of all students (6% among students in "high" tracks, 34% in "medium" and 75% in "basic/low" tracks (Konsortium ÜGK, 2019).

In Figure 5 we attempt to quantify this path-dependency between lower and upper-secondary tracks in terms of increased or reduced likelihoods to attend, all other things being equal, a given upper-secondary track depending on the lower-secondary track attended. We ran two separate models for German- and for French-speaking Switzerland, comparing students from "basic" lower-secondary tracks with students from extended and high tracks (pooled).

Figure 5:   *"Net" effect of lower-secondary tracking on educational status in first post-compul-
               sory year (marginal effects from multinomial logistic regression)*
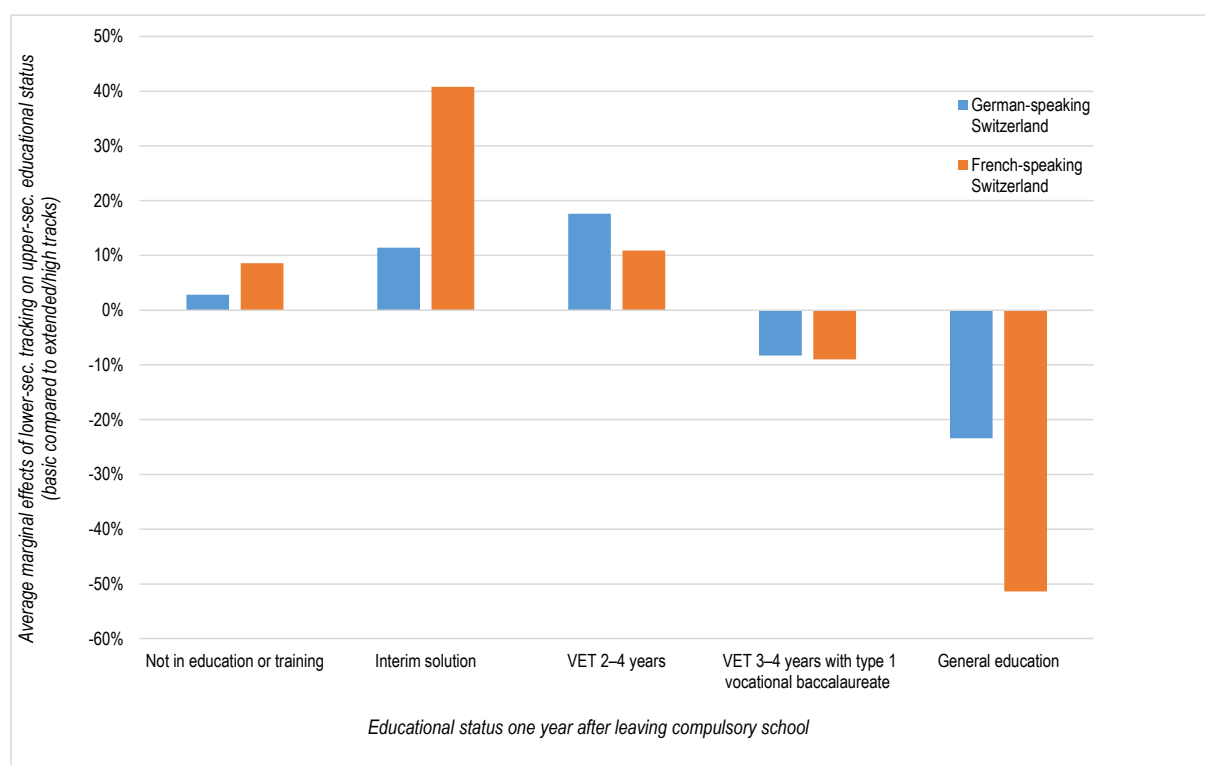
*Example of how to read Figure 5: Compared to students who attended a lower-secondary track with extended or
high requirements and all else being equal, students in French-speaking Switzerland who attended tracks with
basic requirements are over 40% more likely to be found in an interim solution in their first post-compulsory year.
The same is true for somewhat over 10% percentage points of students in German-speaking Switzerland.*

The graph indicates that students from "basic" lower-secondary tracks are substantially less
likely to access general education programmes. At first glance, this may seem trivial in view of
the strong formal track dependency between the lower-secondary tracks that more or less ex-
plicitly claim to prepare for baccalaureate schools at upper-secondary level and those schools
themselves.[25] However, we have to keep in mind that our model controls for skills and achieve-
ment (and other factors). In other words: With regard to skills and achievement, these students
would most likely be capable of attending a general education programme, were it not for the
fact that they had attended a "basic" track at lower-secondary level.

A similar effect can be observed with regard to VET programmes involving a vocational bacca-
laureate. Contrary to the programmes offered by the academic baccalaureate schools, these are
at least formally accessible to students of all types of lower-secondary tracks. The lowered prob-
abilities of access for "basic" track students are not as marked as in the case of general education,
and the differences between language regions are lower as well (-8 to -9 PPs).

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[25]   In some cantons, there are specific baccalaureate school tracks that already start in grades 7, 8 or 9, i.e. before the end of
       lower-secondary/compulsory school.

On the other hand, we observe an increased risk for "basic" track students to be out of education altogether or in some form of interim solution, in other words, to fail to directly enter a certifying upper-secondary programme. Conversely to what we observe in the case of general education, the increase in this risk is markedly more accentuated in French- than in German-speaking Switzerland (40 vs. 11 PPs with regard to interim solutions, 8 vs. 2 PPs in the case of "dropout").

With regard to 2-4-year VET programmes, the odds for "basic"-track students are increased by almost 20 percentage points in German-speaking Switzerland, and by just over 10 PPs in the francophone part of the country.

One might argue that we do not control for (other) individual factors such as, e.g., motivation and personality traits. However, the findings of Sacchi & Meyer (Meyer & Sacchi, 2020; Sacchi & Meyer, 2016) as well as those of Burger (2021) suggest that compared with institutional factors, gender and social origin, these individual factors play a relatively marginal role with regard to the selection mechanisms under scrutiny.

In summary, we observe a distinct "institutional" effect of lower-secondary tracking tending to keep, all else being equal, "low track" students from attending upper-secondary programmes that provide access to tertiary-level education, while increasing their risk of discontinuous pathways and/or early dropout. Our findings suggest that the effect seems to be markedly more accentuated in French- than in German-speaking Switzerland.

The regional differences can be expected to have to do with a) the share of students attending general education programmes (which is higher in French- than in German-speaking Switzerland); b) the share of students attending a "basic" track at lower-secondary school (which is lower in French- than in German-speaking Switzerland); c) the attractiveness and prestige of VET (which is lower in French- than in German-speaking Switzerland).[26]

In any case, the presented findings merit further, in-depth research, not least in view of the fact that the share of youth failing to complete an upper-secondary degree is markedly higher in French- than in German-speaking Switzerland.

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[26] In order to account for these "systemic" differences between language regions, we ran another regression model (not displayed in this paper; to be provided on request) which only included low-track students (of both language regions combined) and reintroduced language region as an independent variable. With regard to the probabilities to be in an interim solution or out of education altogether, the additional model basically confirms the findings discussed above (substantially higher probabilities in French-speaking Switzerland). Furthermore, low-track students in French-speaking Switzerland are markedly less likely to access 2-4 years VET programmes than their German-speaking counterparts (-29 PPs). However, the regional disparities with regard to general education (see Figure 5) almost disappear (slightly increased likelihood [+4PPs] for students from French-speaking Switzerland).

5   Summary and Outlook

5.1   Summary

The findings of the present paper draw on the first release of data pertaining to TREE2, the second school leavers' cohort TREE has launched in 2016. The aim of this paper has been to provide a first overview of results pertaining to the cohort's crucial transition from lower- to upper-secondary education. Beyond the most salient descriptive results of the cohort's trajectories in its first two post-compulsory years, the paper also provides a synoptic comparison with the first TREE cohort (TREE1), which made the same transition 16 years earlier (2000-2002).

Within two years of completing compulsory school, over 90% of the TREE2 cohort had gained access to a certifying programme at the upper-secondary level of education (i.e., leading to a diploma at ISCED level 3). 60% pursued a VET programme and 32% a programme of general education. Compared to the first TREE cohort (64% VET vs. 26% general education), this is a distinct shift towards general education programmes.

Of the TREE2 cohort, 22% failed to gain direct access to certifying upper-secondary programmes. They pursued various types of interim solutions (10th school years, internships, other "intermediate" activities) or were out of education altogether (be it temporarily or permanently). Among the TREE1 cohort, this share was at 25%. Accounting for a VET market situation which is substantially more balanced for cohort 2 than for cohort 1, one would expect a more marked decrease in the number of students in "interim solutions" due to a presumably higher share of undelayed, direct VET entries. This not being the case, we are confronted with the question of whether the mechanisms underlying the allocation to interim solutions and/or their effects on further educational trajectories have changed across cohorts.

In line with previous research based on data of the first TREE cohort, we analysed individual and institutional characteristics that may be expected to influence the transition between lower and upper-secondary education. While skills and achievement do matter to some extent in our multivariate regression models, ascriptive characteristics such as gender, social origin, migration background as well as institutional and regional factors such as lower-secondary tracking and language region invariably play a substantial role in the process. A comparative multivariate model calculated for both TREE cohorts suggests that these mechanisms have barely changed across cohorts.

This pertains particularly to the long shadow of lower-secondary tracking. In a model attempting to quantify the path-dependency between lower- and upper-secondary tracks while controlling for student skills and achievement, we observe a distinct "institutional" effect of lower-secondary tracking that tends to keep "low track" students from attending upper-secondary programmes granting access to tertiary education – while increasing their risk of discontinuous pathways and/or early dropout.

5.2   Outlook

While this paper is being presented to the public, the data from further panel waves are being prepared for the use of the scientific community. Five panel waves at yearly intervals have been completed to date, and we are putting every effort into timely publication of the collected data.

The first, synoptic results presented in this paper give rise to a number of research issues that should be addressed in more detail. One of them concerns the analysis of educational pathways at the micro-level, drawing on the fine-grained episodic data that allow for a month-by-month observation of all activities undertaken by the cohort's respondents. This pertains particularly to VET pathways often characterised by discontinuities not only in the form of the delayed entries outlined in this paper, but also in the form of repetitions and reorientations (changes of programmes, training professions and training companies).

In view of the replication design TREE has adopted for its second cohort, one major research issue consists of furthering and refining in-depth comparisons between cohorts 1 and 2. Furthermore, the gradual extension of the available data's observation span will soon allow to analyse the transition from upper-secondary education to tertiary-level education and/or the labour market. It will also allow researchers to investigate how the second TREE cohort deals with the COVID-19 pandemic, for the detailed coverage of which we have adapted and extended our survey instruments since its first outbreak in early 2020.

6 Appendix/Documentation

A: Educational situation of TREE2 cohort in first and second post-compulsory year (2017/18):

Complete tabulation of values, cases and confidence intervals displayed in Figure 1

Each cell reports: % = weighted table percent; n = unweighted number of cases; lb/ub = lower/upper bound of confidence interval (cell format: **% / n / lb–ub**).

2018 (post-compulsory year 2) — columns; **2017 (post-compulsory year 1)** — rows

2017 \ 2018	Not in education or training	Interim solution: Internship	Interim solution: 10th school year	Interim solution: other	VET 2 years	VET 3–4 years	VET 3–4 years with voc. baccalaureate type 1	General education: baccalaureate	General education: other	Total
Not in education or training	1.0% / 46 / 0.6–1.6%	0.2% / 15 / 0.1–0.4%	0.1% / 9 / 0.0–0.2%	0.4% / 18 / 0.2–0.8%	0.2% / 9 / 0.1–0.4%	2.1% / 119 / 1.6–2.7%	0.3% / 25 / 0.2–0.6%	0.2% / 19 / 0.1–0.4%	0.3% / 14 / 0.1–0.5%	4.8% / 274 / 4.0–5.8%
Interim solutions: Internship	0.3% / 13 / 0.1–0.6%	0.8% / 35 / 0.5–1.3%	0.0% / 2 / 0.0–0.1%	0.1% / 5 / 0.0–0.2%	0.1% / 3 / 0.0–0.3%	2.4% / 120 / 1.8–3.1%	0.0% / 3 / 0.0–0.1%	0.1% / 1 / 0.0–0.7%	0.0% / 1 / 0.0–0.1%	3.8% / 183 / 3.0–4.7%
Interim solutions: 10th school year	0.6% / 40 / 0.4–0.9%	0.8% / 32 / 0.5–1.3%	0.3% / 17 / 0.2–0.8%	0.6% / 27 / 0.4–1.0%	0.7% / 25 / 0.4–1.2%	4.9% / 278 / 4.1–5.9%	0.6% / 33 / 0.4–0.9%	0.4% / 26 / 0.2–0.6%	0.6% / 34 / 0.4–1.0%	9.5% / 512 / 8.3–10.8%
Interim solutions: other	0.4% / 27 / 0.2–0.6%	0.1% / 16 / 0.1–0.3%	0.0% / 3 / 0.0–0.1%	0.5% / 28 / 0.3–0.9%	0.1% / 78 / 0.0–0.2%	2.1% / 159 / 1.6–2.8%	0.3% / 32 / 0.2–0.5%	0.3% / 28 / 0.1–0.7%	0.1% / 8 / 0.0–0.2%	3.9% / 308 / 3.2–4.8%
VET 2 years	0.0% / 2 / 0.0–0.1%	0.0% / 0 / –	0.0% / 0 / –	0.0% / 0 / –	1.9% / 98 / 1.4–2.6%	0.1% / 3 / 0.0–0.7%	0.0% / 0 / –	0.0% / 0 / –	0.0% / 0 / –	2.1% / 103 / 1.5–2.8%
VET 3–4 years	1.1% / 57 / 0.8–1.5%	0.2% / 11 / 0.1–0.3%	0.1% / 5 / 0.0–0.2%	0.2% / 12 / 0.1–0.3%	0.4% / 23 / 0.2–0.8%	34.7% / 2247 / 32.6–36.8%	0.3% / 30 / 0.2–0.6%	0.0% / 1 / 0.0–0.0%	0.0% / 2 / 0.0–0.2%	36.9% / 2388 / 34.8–39.1%
VET 3–4 years with voc. baccalaureate	0.1% / 6 / 0.0–0.4%	0.0% / 1 / 0.0–0.1%	0.0% / 0 / –	0.0% / 2 / 0.0–0.0%	0.0% / 0 / –	1.0% / 64 / 0.7–1.4%	6.7% / 523 / 5.9–7.6%	0.0% / 2 / 0.0–0.2%	0.0% / 2 / 0.0–0.2%	7.9% / 600 / 7.1–8.8%
General education: baccalaureate schools	0.1% / 7 / 0.0–0.2%	0.0% / 2 / 0.0–0.1%	0.0% / 0 / –	0.0% / 3 / 0.0–0.0%	0.0% / 0 / –	0.3% / 13 / 0.1–0.7%	0.3% / 23 / 0.2–0.5%	24.5% / 1749 / 22.2–27.0%	0.5% / 20 / 0.3–1.0%	25.6% / 1817 / 23.3–28.1%
General education: other	0.3% / 9 / 0.1–0.7%	0.1% / 5 / 0.0–0.2%	0.0% / 0 / –	0.0% / 2 / 0.0–0.0%	0.0% / 0 / –	0.3% / 12 / 0.1–0.6%	0.0% / 2 / 0.0–0.1%	0.1% / 8 / 0.0–0.3%	4.8% / 342 / 4.1–5.6%	5.5% / 380 / 4.7–6.4%
Total	3.8% / 207 / 3.1–4.6%	2.2% / 117 / 1.6–2.8%	0.5% / 36 / 0.3–0.9%	1.8% / 97 / 1.3–2.4%	3.4% / 165 / 2.7–4.3%	47.8% / 3015 / 45.6–50.1%	8.5% / 671 / 7.7–9.5%	25.7% / 1834 / 23.4–28.1%	6.3% / 423 / 5.5–7.3%	100% / 6565

Description of cell values: % = weighted table percent; n = unweighted number of cases; lb/ub = lower/upper bound of confidence intervals (95% level)

B: Educational situation in first and second post-compulsory year by selected characteristics: Complete tabulation of values, cases and confidence intervals displayed in Figure 2

Category	Subcat.	Year	stat	Not in education or training		Interim solution		Internship		VET 2 years		VET 3–4 years		3–4 years VET with type 1 vocational baccalaureate		General education	
Total		1st year	row % / n	4.8%	378	13.2%	989	4.4%	280	2.1%	154	36.5%	3'034	7.8%	695	31.2%	2'441
		(2017)	lb / ub	4.2%	5.6%	12.0%	14.6%	3.7%	5.2%	1.7%	2.7%	34.5%	38.5%	7.0%	8.7%	28.9%	33.6%
		2nd year	row % / n	4.2%	231	1.9%	137	2.6%	144	3.5%	182	47.3%	3'192	8.4%	694	32.1%	2'323
		(2018)	lb / ub	3.4%	5.2%	1.5%	2.5%	2.0%	3.3%	2.7%	4.4%	45.0%	49.6%	7.6%	9.3%	29.8%	34.5%
Gender	Female	1st year	row % / n	4.8%	212	14.3%	610	6.1%	217	1.6%	83	29.9%	1'428	6.8%	319	36.4%	1'523
		(2017)	lb / ub	4.0%	5.8%	12.8%	16.0%	5.0%	0.0742	1.2%	0.0215	27.9%	0.3211	5.9%	0.0795	33.8%	39.1%
		2nd year	row % / n	4.2%	128	2.3%	83	3.4%	108	2.6%	96	42.3%	1588	7.6%	330	37.5%	1455
		(2018)	lb / ub	3.2%	5.4%	1.7%	3.3%	2.6%	4.6%	1.9%	3.6%	39.7%	45.0%	6.6%	8.9%	34.8%	40.2%
	Male	1st year	row % / n	4.9%	166	12.2%	379	2.7%	63	2.6%	71	42.6%	1'606	8.7%	376	26.3%	918
		(2017)	lb / ub	4.0%	6.0%	10.6%	14.0%	2.0%	3.8%	1.8%	3.6%	40.0%	45.4%	7.6%	10.0%	23.6%	29.2%
		2nd year	row % / n	4.3%	103	1.6%	54	1.8%	36	4.3%	86	51.9%	1'604	9.1%	364	27.2%	868
		(2018)	lb / ub	3.2%	5.8%	1.1%	2.3%	1.1%	2.9%	3.0%	6.0%	48.7%	55.0%	7.8%	10.5%	24.3%	30.2%
Language region	German	1st year	row % / n	4.3%	230	12.3%	632	5.2%	231	2.8%	142	42.0%	2'388	7.6%	452	25.8%	1'484
		(2017)	lb / ub	3.5%	5.3%	10.9%	13.9%	4.3%	6.3%	2.2%	3.6%	39.4%	44.6%	6.7%	8.7%	23.0%	28.8%
		2nd year	row % / n	3.7%	123	1.4%	72	2.6%	103	4.5%	165	53.5%	2'438	8.0%	431	26.4%	1'403
		(2018)	lb / ub	2.8%	4.8%	1.0%	2.0%	2.0%	3.5%	3.4%	5.8%	50.5%	56.4%	6.9%	9.1%	23.6%	29.4%
	French	1st year	row % / n	6.3%	122	16.9%	326	2.5%	46	0.4%	9	21.6%	515	6.6%	159	45.7%	800
		(2017)	lb / ub	4.9%	7.9%	14.4%	19.8%	1.7%	3.7%	0.2%	1.0%	19.2%	24.3%	5.4%	8.1%	41.6%	49.8%
		2nd year	row % / n	5.7%	91	3.3%	55	2.6%	37	0.9%	14	31.5%	623	7.8%	175	48.2%	783
		(2018)	lb / ub	4.0%	8.2%	2.2%	4.9%	1.6%	4.2%	0.4%	1.9%	28.3%	35.0%	6.5%	9.2%	44.0%	52.4%
	Italian	1st year	row % / n	5.2%	26	5.8%	31	1.0%	3	0.9%	3	28.8%	131	19.2%	84	39.3%	157
		(2017)	lb / ub	3.3%	8.1%	4.2%	7.8%	0.2%	3.7%	0.2%	3.5%	23.7%	34.5%	15.5%	23.6%	34.0%	44.8%
		2nd year	row % / n	4.6%	17	3.6%	10	1.8%	4	1.1%	3	32.0%	131	21.1%	88	35.9%	137
		(2018)	lb / ub	2.6%	7.9%	.018 .0701	7.0%	0.6%	5.0%	0.3%	3.5%	26.3%	38.2%	16.6%	26.6%	30.5%	41.6%
Lower-secondary track attended	Basic requirements	1st year	row % / n	8.1%	177	24.0%	482	9.1%	151	5.7%	112	50.4%	1161	1.5%	47	1.3%	29
		(2017)	lb / ub	6.5%	10.1%	21.3%	27.0%	7.2%	11.5%	4.3%	7.5%	46.8%	53.9%	1.0%	2.1%	0.8%	2.0%
		2nd year	row % / n	8.1%	124	3.9%	76	6.4%	77	8.4%	131	69.5%	1266	1.7%	45	2.1%	42
		(2018)	lb / ub	6.2%	10.5%	2.8%	5.4%	4.6%	8.9%	6.4%	10.9%	66.1%	72.7%	1.2%	2.4%	1.4%	3.0%
	Extended requirements	1st year	row % / n	4.9%	146	12.2%	357	3.1%	89	0.2%	8	51.2%	1605	12.2%	421	16.2%	516
		(2017)	lb / ub	3.8%	6.3%	10.4%	14.1%	2.3%	4.2%	0.1%	0.5%	48.2%	54.2%	10.6%	13.9%	14.3%	18.3%
		2nd year	row % / n	2.9%	71	1.3%	40	1.1%	45	0.6%	8	64.1%	1636	12.7%	409	17.4%	505
		(2018)	lb / ub	2.0%	4.2%	0.7%	2.3%	0.8%	1.5%	0.2%	1.7%	60.9%	67.1%	11.1%	14.6%	15.2%	19.7%
	High requirements	1st year	row % / n	1.7%	39	2.0%	71	0.8%	15	0.0%	0	7.2%	196	9.1%	219	79.2%	1830
		(2017)	lb / ub	1.1%	2.6%	1.4%	3.0%	0.4%	1.9%	-	-	5.6%	9.2%	7.4%	11.0%	76.4%	81.8%
		2nd year	row % / n	1.2%	21	0.2%	7	0.6%	10	0.0%	0	8.7%	203	10.1%	233	79.1%	1707
		(2018)	lb / ub	0.6%	2.4%	0.1%	0.7%	0.3%	1.3%	-	-	6.8%	11.1%	8.4%	12.1%	76.1%	81.8%
Parental SES	Low	1st year	row % / n	5.9%	173	18.2%	476	5.5%	135	4.1%	113	44.1%	1380	5.7%	204	16.7%	493
		(2017)	lb / ub	4.8%	7.2%	15.8%	20.8%	4.3%	7.0%	3.2%	5.2%	41.3%	46.9%	4.7%	6.9%	14.5%	19.0%
		2nd year	row % / n	6.4%	120	3.1%	68	4.1%	67	5.4%	110	57.3%	1435	6.6%	208	17.2%	468
		(2018)	lb / ub	4.8%	8.3%	2.2%	4.3%	2.9%	5.7%	4.0%	7.3%	54.2%	60.4%	5.5%	7.8%	15.0%	19.7%
	Medium	1st year	row % / n	3.6%	90	11.1%	282	4.6%	97	0.9%	18	38.8%	1025	10.3%	276	30.7%	790
		(2017)	lb / ub	2.6%	4.9%	9.4%	13.0%	3.4%	6.3%	0.4%	2.1%	35.9%	41.9%	8.8%	12.2%	27.7%	33.9%
		2nd year	row % / n	4.1%	73	1.0%	34	2.6%	49	2.6%	39	47.4%	1058	10.6%	272	31.8%	748
		(2018)	lb / ub	2.9%	5.7%	0.7%	1.6%	1.7%	3.8%	1.4%	4.7%	43.8%	51.0%	8.8%	12.6%	28.6%	35.2%
	High	1st year	row % / n	4.8%	100	8.7%	198	2.5%	42	1.0%	19	25.1%	583	7.8%	203	50.1%	1126
		(2017)	lb / ub	3.6%	6.4%	7.2%	10.5%	1.6%	4.0%	0.5%	2.2%	22.3%	28.1%	6.5%	9.2%	46.3%	53.9%
		2nd year	row % / n	1.8%	29	1.4%	28	1.0%	25	1.9%	25	35.1%	643	8.6%	204	50.2%	1072
		(2018)	lb / ub	1.0%	3.2%	0.8%	2.6%	0.6%	1.6%	1.0%	3.5%	31.5%	38.9%	7.2%	10.2%	46.3%	54.1%
Parental education	Compulsory education or lower	1st year	row % / n	5.6%	69	22.6%	200	5.9%	48	4.4%	45	41.0%	421	4.5%	62	16.1%	158
		(2017)	lb / ub	4.1%	7.6%	19.0%	26.6%	3.9%	8.8%	2.9%	6.7%	36.3%	45.7%	3.2%	6.2%	12.7%	20.3%
		2nd year	row % / n	6.3%	43	3.9%	29	3.0%	26	9.8%	48	54.4%	453	5.1%	57	17.6%	157
		(2018)	lb / ub	4.0%	9.8%	2.2%	6.7%	1.8%	5.0%	6.4%	14.5%	49.2%	59.5%	3.8%	7.1%	13.8%	22.1%
	Upper secondary education	1st year	row % / n	4.7%	167	12.6%	443	5.3%	158	1.9%	74	44.7%	1696	8.3%	330	22.6%	842
		(2017)	lb / ub	3.8%	6.0%	11.0%	14.4%	4.2%	6.6%	1.3%	2.6%	42.0%	47.3%	7.1%	9.7%	20.1%	25.3%
		2nd year	row % / n	5.3%	116	1.5%	59	3.1%	70	2.9%	89	56.5%	1750	8.2%	315	22.7%	795
		(2018)	lb / ub	3.9%	7.0%	1.0%	2.1%	2.1%	4.3%	2.1%	4.0%	53.5%	59.4%	7.0%	9.6%	20.2%	25.4%
	Tertiary education	1st year	row % / n	4.3%	119	9.3%	292	2.8%	64	1.3%	24	26.5%	844	8.7%	296	47.2%	1403
		(2017)	lb / ub	3.3%	5.6%	7.9%	10.9%	1.9%	4.0%	0.7%	2.4%	24.0%	29.2%	7.5%	10.2%	43.9%	50.5%
		2nd year	row % / n	2.3%	61	1.5%	38	1.3%	40	1.8%	30	34.2%	908	10.0%	308	48.9%	1'334
		(2018)	lb / ub	1.6%	3.1%	0.9%	2.5%	0.9%	2.0%	0.9%	3.5%	31.1%	37.5%	8.6%	11.6%	45.4%	52.4%
Migration background	None	1st year	row % / n	4.3%	247	9.8%	604	3.8%	191	1.6%	82	39.3%	2381	8.6%	546	32.5%	1769
		(2017)	lb / ub	3.6%	5.2%	8.7%	11.1%	3.1%	4.7%	1.1%	2.2%	37.0%	41.8%	7.7%	9.7%	29.9%	35.2%
		2nd year	row % / n	3.5%	148	1.5%	82	2.0%	92	2.4%	106	48.5%	2'419	9.2%	546	33.0%	1'679
		(2018)	lb / ub	2.7%	4.5%	1.0%	2.1%	1.5%	2.6%	1.7%	3.4%	45.8%	51.3%	8.2%	10.3%	30.3%	35.7%
	Second generation	1st year	row % / n	4.8%	72	17.3%	218	6.1%	67	2.9%	49	33.6%	473	7.0%	111	28.4%	428
		(2017)	lb / ub	3.6%	6.5%	14.4%	20.6%	4.4%	8.3%	2.0%	4.2%	30.1%	37.2%	5.4%	9.0%	24.7%	32.4%
		2nd year	row % / n	5.8%	48	1.9%	24	4.4%	47	5.2%	46	46.6%	546	6.0%	106	29.2%	407
		(2018)	lb / ub	3.8%	8.7%	1.1%	3.2%	2.7%	7.0%	3.3%	8.1%	42.2%	51.1%	5.4%	8.9%	25.3%	33.5%
	First generation	1st year	row % / n	8.2%	57	27.6%	162	4.7%	21	4.4%	23	23.1%	171	4.2%	37	27.8%	237
		(2017)	lb / ub	5.7%	11.6%	22.7%	33.0%	2.6%	8.5%	2.6%	7.5%	19.2%	27.5%	2.7%	6.6%	23.3%	32.8%
		2nd year	row % / n	6.4%	33	6.0%	31	3.4%	21	6.0%	26	40.5%	218	5.3%	38	32.5%	230
		(2018)	lb / ub	4.0%	10.3%	3.7%	9.6%	1.8%	6.4%	3.5%	10.0%	34.4%	46.8%	3.3%	8.2%	27.4%	37.9%

For some variables, some (residual) categories are not displayed in the table.

Description of cell values: row % = weighted row percent; n = unweighted number of cases; lb/ub = lower/upper bound of confidence intervals (95% level)

C: Educational situation of TREE1 cohort in first and second post-compulsory year (2001/02): Complete tabulation of values, cases and confidence intervals displayed in Figure 3

				post-compulsory year 2 (2002)										
				Not in education or training		Interim solution		VET 2–4 years		General education		Total	
				%	n	%	n	%	n	%	n	%	n
				lb	ub	lb	ub	lb	ub	lb	ub	lb	ub
post-compulsory year 1 (2001)	Not in education or training	%	n	1.3%	36	0.3%	11	2.0%	66	0.0%	5	3.7%	118
		lb	ub	0.8%	2.0%	0.2%	0.6%	1.5%	2.7%	0.0%	0.1%	2.9%	4.6%
	Interim solutions	%	n	1.7%	54	4.1%	134	13.7%	496	1.2%	87	20.7%	771
		lb	ub	1.2%	2.5%	3.4%	5.1%	12.2%	15.4%	0.9%	1.5%	18.8%	22.8%
	VET 2–4 years	%	n	1.1%	37	0.3%	13	47.2%	2008	0.3%	18	48.9%	2076
		lb	ub	0.8%	1.7%	0.1%	0.7%	44.3%	50.0%	0.1%	0.6%	46.1%	51.8%
	General education	%	n	0.5%	30	0.2%	10	1.3%	109	24.7%	1819	26.7%	1968
		lb	ub	0.3%	0.8%	0.1%	0.6%	1.0%	1.6%	21.5%	28.2%	23.4%	30.3%
	Total	%	n	4.7%	157	5.0%	168	64.2%	2679	26.2%	1929	100%	4933
		lb	ub	3.7%	5.8%	4.1%	6.1%	60.9%	67.3%	23.1%	29.6%		

Description of cell values: % = weighted table percent; n = unweighted number of cases;

lb/ub = lower/upper bound of confidence intervals (95% level)

D: *Multinomial logistic regression on educational status one year after the end of compulsory school (first cohort, 2001)*

	Not in education or training		Interim solution		VET 2–4 years		General education	
	AME	SE	AME	SE	AME	SE	AME	SE
Gender (ref: female)								
Male	0%	0.01	-15% ***	0.02	24% ***	0.02	-9% ***	0.01
Language region (ref: German)								
French	1%	0.01	-4% +	0.02	-3%	0.03	7% **	0.03
Italian	-1%	0.02	-18% ***	0.02	-14% ***	0.03	32% ***	0.02
Lower-secondary track attended								
(ref: extended requirements)								
Basic requirements	0%	0.01	7% **	0.03	0%	0.03	-7% ***	0.02
High requirements	1%	0.01	-14% ***	0.02	-23% ***	0.04	36% ***	0.04
No differentiation based on skill level	-3% +	0.02	10%	0.07	-20% **	0.07	13% **	0.05
School marks in teaching language (ref: at the mark)								
Below the mark	1%	0.01	-1%	0.02	-4%	0.03	4% **	0.01
Above the mark	3%	0.03	-4%	0.04	-3%	0.05	4%	0.03
Missing	-2%	0.03	-6%	0.06	-7%	0.10	15% +	0.09
School marks in maths (ref: at the mark)								
Below the mark	0%	0.01	-5% **	0.02	2%	0.02	4% **	0.01
Above the mark	4% *	0.02	1%	0.03	-1%	0.03	-4% *	0.02
Missing	8%	0.09	3%	0.10	-1%	0.11	-10%	0.07
PISA test reading score (Warm estimate)	-0% **	-	-0% *	-	-0% **	-	0% ***	-
Parental socio-economic status (ref: medium tercile)								
Low tercile	1%	0.01	-1%	0.02	2%	0.03	-3% *	0.01
High tercile	-1%	0.01	-2%	0.02	-4%	0.03	7% ***	0.01
Missing	1%	0.02	-8% +	0.04	-4%	0.06	11% **	0.04
Parental level of education (ref: upper secondary level)								
Compulsory education or less	3% *	0.01	5% *	0.02	-3%	0.02	-4% **	0.02
Tertiary	0%	0.01	2%	0.02	-4% +	0.02	2% *	0.01
Missing	-2%	0.01	0%	0.04	12% *	0.05	-10% ***	0.03
Migration background (ref: none)								
2nd generation (respondent born in Switzerland, parents born abroad)	-1%	0.01	1%	0.03	-9% *	0.04	9% ***	0.02
1st generation (respondent and parent(s) born abroad)	1%	0.01	5% +	0.03	-14% ***	0.03	9% ***	0.02

Observations: 5 524

Pseudo R-squared: 27.4%

AME = coefficient (average marginal effects)

SE = standard error

significant negative effect

significant positive effect

Levels of significance:

*** p < .001

** p < .01

* p < .05

+ p < .1

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