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Disparities in the school placement trajectories of students with intellectual disabilities☆

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ABSTRACT

Background and objectives: Students with intellectual disabilities (ID) often require extensive support. They are more frequently placed in separate settings, such as special schools, than students with other special educational needs (SEN). Although school placements are intended to meet individual needs, they may also contribute to educational disparities. This study examines the placement trajectories of students with ID.

Methods: We analysed longitudinal data from 3227 students who received intensive SEN support in at least one school year by tracking their placements over 11 years. 18 % had an administrative ID label reflecting the student's primary educational support need. Using multinomial logistic regressions, we compared school placements and the number of placement transfers between students with and without the ID label. Sex and first language were included to assess for additional disparities.

Results: Students with the ID label were more likely to attend separate settings than those with other types of SEN, a trend that increased with age. Male students and those for whom German was their first language were more often schooled in separate settings. Male students also had higher odds of placement transfers.

Conclusions: This study highlights differences in school placement trajectories between students with the ID label and those with other types of SEN. Future research should explore the factors that influence placement decisions, including environmental and student characteristics.

What this paper adds

This study provides new insights into the school placement trajectories of students with intellectual disabilities (ID) compared to those with other types of special educational needs. It highlights disparities in educational placements by showing that students with ID are more likely to be placed in separate settings, particularly as they grow older. This study improves understanding of students with ID's educational pathways by elucidating their placement trajectories, ultimately supporting the provision of

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equitable education.

1. Introduction

Students with intellectual disabilities (ID) often have complex support needs that encompass academic learning and adaptive skills (American Association on Intellectual and Developmental Disabilities, 2025). They might be schooled inclusively in regular classes, or in separate settings such as special classes or special schools (Ebersold, 2011). Although this range of placement options seeks to meet students' individual needs, it might inadvertently contribute to disparities in educational outcomes, because inclusive and separate placements often have different academic and social impacts (Oh-Young & Filler, 2015; Ruijs & Peetsma, 2009). Students with extensive support needs might benefit from inclusive schooling, according to first evidence suggesting positive outcomes in academic and adaptive behaviour domains (Dell'Anna et al., 2022). However, students with ID remain disproportionately represented in separate settings compared to those with other types of special educational needs (SEN) (e.g., Buchner et al., 2021). Furthermore, prior research suggests school placement may vary by sex, race, and migrant background (Morrier & Gallagher, 2011; Sullivan, 2011).This study examines the placement trajectories of students with ID across compulsory education and compares them to those of students with other types of SEN.

1.1. Placement decisions for students with ID

The American Association on Intellectual and Developmental Disabilities (2025) defines intellectual disability as "[…] a condition characterized by significant limitations in both intellectual functioning and adaptive behaviour that originates before the age of 22". The proportion of students with ID within the SEN population varies by assessment criteria and disability classification. In the United States of America (USA), approximately 6 % of students with SEN were identified as having an ID in 2023 (National Center for Education Statistics, 2024), whereas that figure ranged from 16 % to 18 % in Germany between 2013 and 2022 (Kultusministerkonferenz, 2024). Given Switzerland's similarities to Germany's educational system, its proportion is likely comparable (Müller et al., 2020).

Many countries in Europe use a multiple-track system (European Agency for Development in Special Needs Education, 2003) that offers both inclusive and separate placement options for students with SEN. However, to date, few studies have focused on school placements for students with SEN in general, and even fewer have focused on those for students with ID. An overview of inclusion rates in European countries between 2010 and 2016 suggests that students with ID have benefited less from inclusive developments in schools as compared to students with other types of SEN (Buchner et al., 2021). Similarly, in the USA, inclusion rates for students with ID have increased to a lesser extent than those for students with learning disabilities (McLeskey et al., 2012) and have stagnated at a low level in recent years (Brock, 2018).

Support needs among students with ID vary greatly, and those who require more intensive support are often placed in separate settings (Kurth et al., 2014). Professionals and administrators experience placement decisions as challenging, particularly for those with severe needs (Norwich, 2008). While separate placements may better address individual needs, they may also hinder social participation and future vocational outcomes.

Overall, students with SEN appear to benefit from inclusive placements, showing neutral to positive outcomes in academic and social domains (Oh-Young & Filler, 2015; Ruijs & Peetsma, 2009). Furthermore, a recent systematic review found that students with more severe or complex support needs have modest benefits to academic learning and adaptive skills, but less favourable outcomes for social participation was observed for some students, including low social acceptance, social rejection, and isolation (Dell'Anna et al., 2022).

1.2. Placement trajectories: grade level and placement transfers

Research on placement decisions for students with SEN is scarce (e.g., Morgan et al., 2023) and even more so for those with ID. The few studies that have been conducted have often used a cross-sectional approach (e.g., Kurth et al., 2014). Yet students' individual SEN status varies over time (Schulte & Stevens, 2015; Woods, 2020), and students may transfer between different placements (Snozzi et al., 2023, 2024).

In fact, the placement of students with SEN (including ID) appears to vary across grade levels. In most European countries, the proportion of students with SEN attending separate placements is higher in secondary school than in primary school (Buchner et al., 2021). Although this primary-secondary gap narrowed between 2010 and 2016 for all students with SEN, it persisted for students with ID (Buchner et al., 2021). Generally, the likelihood of attending separate placements seems to be higher the older the students get (Snozzi et al., 2024; Woods, 2020). Another relevant aspect of school placement trajectories is the frequency of placement transfers. Frequent school transfers have been linked to adverse outcomes for all students, irrespective of SEN status, including lower academic achievement and emotional or behavioural problems (e.g., Welsh, 2017). Furthermore, normative transitions (e.g., primary to secondary school), are often more challenging for students with SEN than for their peers (e.g., Harris & Nowland, 2020) and transfers between placements are also considered difficult (e.g., Rens & Louw, 2021). In Switzerland, students with SEN undergo frequent transfers between placements (Snozzi et al., 2023), with substantial differences in the number of transfers individual students experience during compulsory education (Snozzi et al., 2024).

1.3. Placement disparities by sex and migrant background

Beyond differences by SEN type, a few studies from the USA suggest sex and migrant background may be linked to placement decisions for students with SEN (e.g., Morrier & Gallagher, 2011). Studies that included sex as a covariate found that male students were more likely than female students to attend separate placements (Morgan et al., 2023; Woods, 2020). Black and Latinx preschoolers with disabilities are more likely than White preschoolers with disabilities to be placed in separate schools (Morrier & Gallagher, 2011). However, studies on older students suggest that this disparity disappears once academic achievement is taken into account (Morgan et al., 2023; Woods, 2020). Students with low English proficiency are also underrepresented in both the most inclusive and the most restrictive placement options (Sullivan, 2011).

To our knowledge, no study has examined disparities in placement decisions for students with ID based on sex, or on factors such as race, migrant background, and first language.

1.4. Disparities regarding the identification of SEN

While research on placement decisions is scarce, a larger body of research, mostly from the USA (Cooc & Kiru, 2018), has explored disparities in SEN identification, examining how factors like sex or migrant background influence access to support. This research is relevant to the current study as it provides insight into the characteristics of the SEN population and examines disparities, though in the context of SEN identification rather than placement decisions.

Male students are overrepresented in special education, even when controlling for prior academic achievement and socioeconomic factors (Coutinho & Oswald, 2005; Fish, 2019, 2022; Hibel et al., 2010; Shifrer, 2018; Strand & Lindorff, 2021). These disparities were smaller for students with ID than for students with other disabilities (Coutinho & Oswald, 2005; Fish, 2019; Morgan et al., 2015; Sullivan & Bal, 2013).

Results regarding racial disparities are less consistent. Black and Latinx students were found to be overrepresented in SEN identification (Coutinho & Oswald, 2005), though this disparity diminished or disappeared when controlling for socioeconomic background and prior achievement (Hibel et al., 2010; Morgan et al., 2015; Strand & Lindorff, 2021; Sullivan & Bal, 2013; Woods et al., 2020). Similarly, English language learners in the USA have been reported to be overrepresented in special education (Sullivan, 2011) but underrepresented when controlling for academic achievement and socioeconomic factors (Fish, 2019; Morgan et al., 2015; Sullivan & Bal, 2013).

Disparities regarding race or language status have been found to be similar for students with ID and those with other types of SEN (Fish, 2019; Morgan et al., 2015; Sullivan, 2011; Sullivan & Bal, 2013), with one earlier study reporting lower racial disparities for students with ID (Coutinho & Oswald, 2005).

1.5. The current study

While studies on inclusive schooling show promising outcomes for students with ID (Dell'Anna et al., 2022), this group of individuals is still more likely than students with other types of SEN to be placed in separate school settings (e.g., Buchner et al., 2021). Furthermore, the extent to which factors such sex and migrant background contribute to disparities in placement trajectories remains unclear.

To our knowledge, this is the first study to systematically address this gap by examining the placement trajectories across educational pathways, comparing students with ID to those with other types of SEN.

Our analysis focused on two key aspects of individual placement trajectories. First, we investigated students' school placements and how they evolved over time (i.e., across grade levels). Second, we analysed the number of placement transfers experienced by individual students. This serves as an indicator of the complexity of placement trajectories, which is likely to impact student outcomes. Furthermore, we explored potential disparities related to sex and migrant background, including interactions with SEN type (students with ID versus other types of SEN), to determine whether these factors differentially influence placement trajectories.

2. Methods

2.1. Study context and data

This study examines placement trajectories of students with ID and other types of SEN in the Swiss canton of Zurich. It focuses on students receiving intensive SEN support ('verstärkte Massnahmen'), which includes those with ID. Eligibility for intensive SEN support requires a formal assessment by a school psychologist or paediatrician (Schweizerische Konferenz der kantonalen Erziehungsdirektoren, 2014). Support can include assistance from special education teachers or classroom assistants in regular classes (inclusive placements) or specialised schooling in special or private schools (separate placements). Zurich's public education law stipulates that students should be taught in mainstream classes 'whenever possible' (Kanton Zürich, 2005). In relation to the total student population, the proportion of students schooled in separate placements has slightly declined from 2.0 % in 2009 to 1.7 % in 2022, while the proportion of students in inclusive placements has risen from 0.7 % to 2.3 % over the same period (Bildungsstatistik Kanton Zürich, 2024). The canton's education statistics office ('Bildungsstatistik Kanton Zürich') provided administrative census data, collected annually, of all students who received intensive SEN support in at least one year between 2009 and 2022. The dataset covers the entire period of compulsory education, which typically includes two years of kindergarten, six years of primary school, and three

years of lower secondary school. We tracked students across school years through the use of anonymised identifiers for each student.

2.2. Variables

The R code used for the construction of the following variables is provided in Supplementary Materials, Sections B.1 and B2.

ID label. Like other European countries (Buchner et al., 2021), Switzerland does not record clinical diagnoses in administrative data. However, the canton of Zurich assigns an administrative disability label based on school placement, which we used to create a variable that indicated whether a student had ever been assigned the ID label (1) or never been assigned the ID label (0). This label reflects an administrative categorisation of primary support needs, rather than a formal clinical diagnosis. Many students with the ID label likely have comorbidities, such as autism spectrum disorder or sensory impairments, which are not captured in the administrative data. The administrative disability label is consistently recorded for students in special schools but inconsistently for those in inclusive placements or private schools. In the full dataset, 33 % of all instances in which the ID label was assigned, these students were schooled inclusively. To further improve identification, we aggregated data across eleven school years. It is therefore likely that we identified most students with this label, but we cannot rule out the possibility that we did not identify some students with ID who attended only inclusive placements or private schools.

Sex. This variable reflects the students' sex as recorded in the dataset. It distinguishes between male (1) and female (2).

First language. This variable was used as an indicator for migrant background. Because German is the language of instruction in schools in the canton of Zurich, we created a dummy variable for first language German (1) or another language (0).

Placement type. This variable was derived from information on school(s) attended and SEN support received. It distinguishes between seven different types of placements: (1) schooling in regular classes *without* intensive SEN support, (2) schooling in regular classes *with* intensive SEN support, (3) special classes within regular schools, (4) special schooling at private schools, (5) special schools type A, (6) special schools type B, and (7) special schools type C. Special schools type A serve students with learning or behavioural difficulties and speech development disorders; type B typically serve students with physical, sensory, or multiple disabilities; type C cater to students with ID. Of note, unlike special schools, students in special classes within regular schools are not classified as receiving intensive SEN support. Consequently, students in special classes were only included in the dataset if they also received intensive SEN support during at least one school year.

Prior to 2015, two additional categories of special school placements were used. Special school type D was for children who were hospitalised (0.3 % of data points, 2009 – 2014). The category SphKG ("Sprachheilkindergarten") was used for kindergartens that specialised in supporting children with speech development disorders (3.0 % of data points in 2009 and 2010). To streamline classification, type D schools were grouped with type B and type SphKG schools were included with type A.

Placement category. This variable simplified *placement type* into three main categories of placement: (1) regular class without intensive SEN support, (2) regular class with intensive SEN support, and (3) separate schooling in special classes, private schools, or special schools.

Number of placement transfers. *Placement type* was used to calculate the number of placement transfers for individual students. Two versions were derived: (1) *all placement transfers*, which reflected the total number of transfers between any placement, and (2) *placement transfers excluding internal transfers*, where 'internal transfers' refers to transfers between regular classes with and without intensive SEN support. Internal transfers do not necessarily involve a transfer to another school or class and are likely less challenging for students. Due to the small number of students with more than three transfers, both variables were treated as ordinal, with four levels: 0 transfers, 1 transfer, 2 transfers, and 3 or more transfers.

2.3. Sample selection

We used a sample of four cohorts to investigate school trajectories across compulsory education. Each cohort was defined by the year its students transferred from kindergarten to primary school (2011–2014) and each trajectory spanned eleven school years (i.e., the duration of compulsory education). The R code used for the sample selection is provided in Supplementary Materials, Section B.3.

The four cohorts included 3633 students who received intensive SEN support in at least one year. Of these, 824 (23 %) had missing placement data, likely due to relocation outside the canton of Zurich. Students with missing information in more than one school year (406 students, 11 %) were excluded from the analysis due to insufficient data on their placement trajectories. To assess potential selection bias, we examined whether the characteristics of included and excluded students differed. Pearson's Chi-squared tests showed no significant differences in ID label $\chi^2(1) = 2.78$, $p = 0.095$, sex $\chi^2(1) = 0.49$, $p = 0.486$, and German as a first language $\chi^2(1) = 0.45$, $p = 0.502$ between students included and excluded from the analysis.

The analysed sample consisted of 3227 students. To ensure comparability across the four cohorts, we tested for differences in these variables between cohorts. Pearson's Chi-squared tests showed no significant difference in ID label $\chi^2(3) = 6.29$, $p = 0.098$, sex $\chi^2(3) = 1.84$, $p = 0.606$, and German as a first language $\chi^2(3) = 4.35$, $p = 0.226$ between the students in the four cohorts.

2.4. Sample characteristics

This section presents the distribution of student characteristics in the sample and compares them to official statistics to assess representativeness. In total, 590 students (18 %) were assigned the ID label in at least one school year. While Switzerland does not record the percentage of students with ID, this figure aligns with reports from Germany, where 16–18 % of students with SEN are assigned to the ID-focused special education category (Kultusministerkonferenz, 2024).

Female students were underrepresented in the sample, comprising only 32 % of students with intensive SEN. This proportion aligns with the percentage of female students in special schools in Zurich in 2009 (31 %) and 2022 (30 %; Bildungsdirektion Kanton Zürich, 2010, 2023).

Similarly, native German speakers were underrepresented (48 %). This is comparable to official statistics for Zurich, where in 2009, 35 % of students in special classes were native German speakers, compared to 65 % in regular classes (Bildungsdirektion Kanton Zürich, 2010). By 2022, the proportion of students for whom German was their first language decreased to 56 % in all primary schools. Although detailed statistics on language status are not available for 2022, administrative data shows that students with Swiss nationality were consistently underrepresented in special classes and special schools compared to regular classes (Bildungsdirektion Kanton Zürich, 2023).

Given that the sample was derived from census data, and the distribution of students with the ID label, sex, and first language were consistent with figures reported in official statistics, we concluded that the sample was reasonably representative.

2.5. Data analysis

To investigate students' *placements over time*, we conducted multinomial logistic regressions for each year, using the nominal outcome variable placement categories. The analysis was conducted using data from years 2–11. Year 1 was excluded due to insufficient observations in the inclusive schooling category. We also used multinomial logistic regressions to examine the *number of placement transfers* students underwent.

Three models were specified for each outcome. Model 1 included the ID label as the primary explanatory variable to assess differences in the placement trajectories or transfer frequencies of students with the ID label compared to those with no label or another label. In Model 2, sex and first language were added as explanatory variables to account for potential demographic disparities in placement outcomes and transfer frequencies, and to control for the unequal distribution of these characteristics between groups (Table 1). Model 3 included interaction terms for ID label with sex and first language, allowing us to investigate whether the effects of ID label on placement outcomes and transfers varied across sex and language groups.

Data analysis was conducted with the software R (R Core Team, 2016). Examples of the R code used in the analyses are provided in Supplementary Materials, Section C.

3. Results

3.1. Descriptive statistics

Student characteristics differed between the group of students with and without the ID label. Among students with the ID label, there were slightly more female students, $\chi^2(1) = 4.99$, $p = 0.026$ and fewer students who spoke German as a first language, $\chi^2(1) = 16.27$, $p < 0.001$ (Pearson's Chi-squared tests) (Table 1).

Fig. 1 shows the distribution of students by placement category over time. Visual inspection shows that the proportion of students in separate placements increased gradually over time, a trend that holds for both students with and without the ID label. The proportion of students in inclusive placements increased during the early years and declined in later years in both groups. However, students with the ID label showed an earlier increase and a more pronounced decrease in the proportion of inclusive placements.

In all years, some students did not receive intensive SEN support, despite their inclusion in the sample for having received intensive SEN support in at least one year. Among students with the ID label, approximately 35 % did not receive intensive SEN support in year 1, 25 % in year 2, and 10 % from year 3 onward. For students without the ID label, the proportion without intensive support started at approximately 80 % in years 1 and 2, then steadily decreased from 65 % in year 3–35 % in year 11.

The relative frequencies of placement transfers are depicted in Fig. 2. Frequencies are shown for both the total number of placement transfers and the number of placement transfers excluding internal transfers between schooling in regular class with and without intensive SEN. The number of students with no transfers is higher in both groups when internal transfers are excluded, with a more pronounced difference for students without the ID label.

3.2. Placement over time

To address our research question, we first examined placement differences across years between students with and without the ID label. Multinomial logistic regressions showed that, in most years, students with the ID label had higher odds of attending separate

Table 1
Students' characteristics.

	Total sample	ID label	No ID label	P-value[(a)]
N	3227	590	2637	
Sex Female	32.1 %	36.1 %	31.2 %	< .05
First language German	48.1 %	40.5 %	49.8 %	< .001

Note.
(a) *p*-values are based on Pearson's Chi-squared tests comparing students with to those without the ID label.

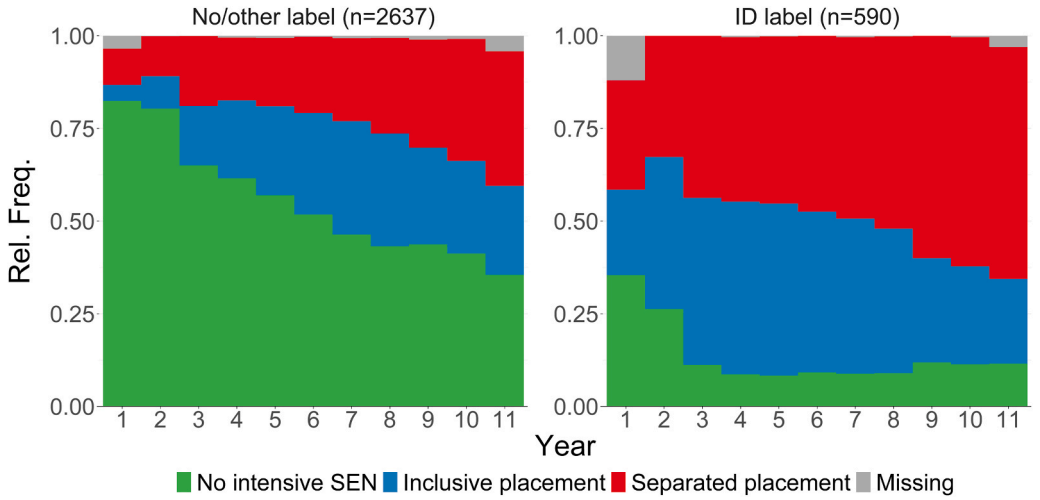

Fig. 1. Distribution of the placement category in each year, separately for students with and without the ID label. Note. Students with no intensive SEN support as well as students with intensive SEN support in inclusive placements are schooled in regular classes. Students with intensive SEN support in separate placements are schooled in special schools, special classes in regular schools, or private schools.

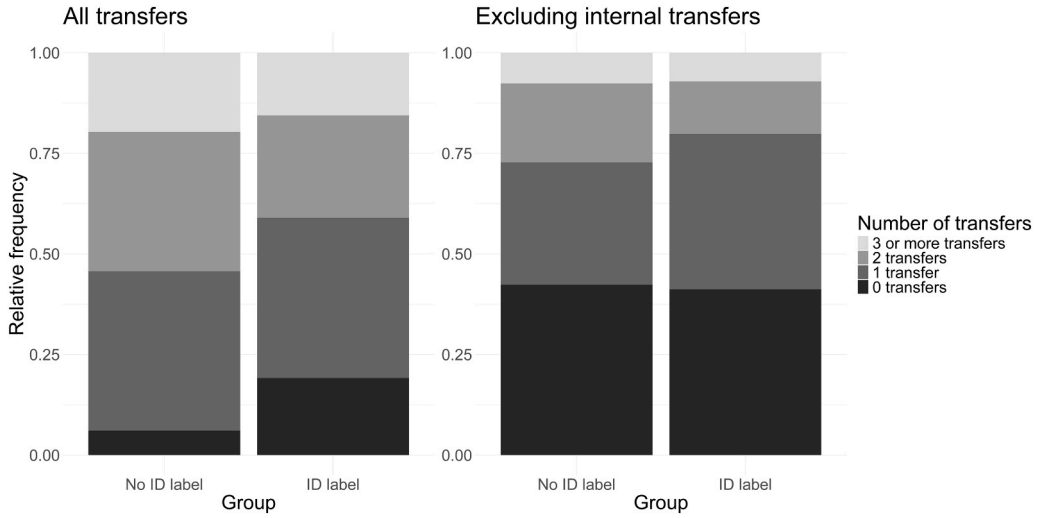

Fig. 2. Relative frequencies of students who experienced 0, 1, 2, or 3 or more placement transfers, in the group with and in the group without the ID label.

settings rather than inclusive settings (Table 2, Table A in the Supplementary Materials). A clear time trend emerged: in years 2 and 3, the odds ratios were near one, indicating similar odds of separate placements. After year 3, the odds ratios increased, stabilising around two by lower secondary school (years 9–11) (see also Fig. 3).

Students with the ID label had lower odds of not receiving intensive SEN support than being placed in inclusive settings, compared to those without the label ID. The time trend showed odds ratios below 1, which increased over time (Fig. 3). Thus, students with the ID label had lower odds of being without intensive SEN support compared to receiving support in inclusive placements, a difference that became less pronounced in later years.

In years 6–10, female students had lower odds of attending separate settings than male students, controlling for the ID label and first language (Table 2). Odds ratios for the interaction between ID label and sex were below 1 for all years except 7 and 8; however, statistical significance was observed only in year 3. This finding suggests that the tendency for female students to be placed in inclusive settings is similar for both those with and without the ID label. No significant interaction effects with the ID label were found regarding the odds of not receiving intensive SEN support.

From years 4–11, students for whom German was their first language had higher odds of being in separate settings, controlling for ID label and sex. No significant interaction effects were found between first language and ID label for inclusive versus separate settings. Additionally, students with German as their first language had higher odds of not receiving intensive SEN support than receiving

Table 2
Odds ratios from multinomial regression analyses on placement categories, using inclusive placement as the reference category.

		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		Year 10		Year 11	
		Model 3		Model 3		Model 3		Model 3		Model 3		Model 3		Model 3		Model 3		Model 3		Model 3	
Intercept	Separate	1.09		1.14		0.72	***	0.68	***	0.64	***	0.63	***	0.69	***	0.80	**	0.85		1.00	
	No intensive SEN	7.35	***	2.93	***	2.11	***	1.84	***	1.51	***	1.23	**	1.20	**	1.51	***	1.49	***	1.36	***
ID label	Separate	0.85		0.94		1.41	*	1.46	*	1.66	**	1.78	***	1.80	***	2.30	***	2.42	***	2.26	***
	No intensive SEN	0.11	***	0.08	***	0.09	***	0.12	***	0.18	***	0.22	***	0.26	***	0.33	***	0.41	***	0.48	***
Sex: female	Separate	1.17		1.11		0.89		0.88		0.76	*	0.67	***	0.62	***	0.76	*	0.78	*	0.90	
	No intensive SEN	1.03		1.10		1.07		1.06		0.95		0.88		0.92		0.96		1.02		1.06	
ID label * sex female	Separate	0.59		0.59	*	0.70		0.78		0.90		1.08		1.09		0.92		0.84		0.82	
	No intensive SEN	1.07		0.94		0.53		0.61		0.78		1.00		0.82		0.90		0.61		0.65	
First language: German	Separate	1.17		1.00		1.39	*	1.42	**	1.65	***	1.78	***	1.99	***	2.26	***	2.69	***	2.42	***
	No intensive SEN	1.58	**	1.87	***	1.92	***	1.65	***	1.68	***	1.70	***	1.53	***	1.31	**	1.26	*	1.17	
ID label * first language German	Separate	0.81		1.12		0.93		0.94		0.89		0.84		0.83		0.89		0.76		0.93	
	No intensive SEN	0.31	***	0.53	*	0.81		0.49	*	0.39	**	0.30	**	0.35	**	0.49	*	0.38	**	0.51	
Log-Likelihood		−2278		−2879		−2949		−3080		−3210		−3273		−3320		−3292		−3272		−3173	
McFadden R^2		0.13		0.11		0.10		0.09		0.07		0.06		0.06		0.05		0.06		0.047	
Likelihood ratio test ($\chi 2$)		671	***	680	***	672	***	575	***	480	***	429	***	394	***	378	***	397	***	312	***
N		3224		3226		3212		3211		3220		3208		3211		3200		3203		3099	

Note. For models 1 and 2 see supplementary material Table A.
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

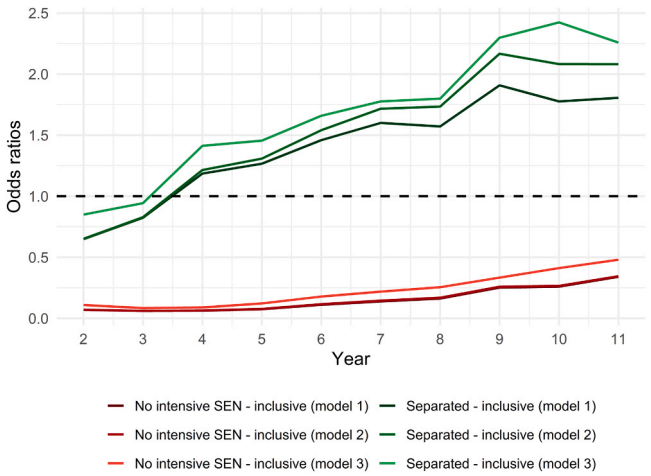

Fig. 3. Odds ratios for the placement of students with the ID label compared to those without the ID label in each year. Note. Odds ratios are derived from multinomial logistic regression analyses on placement categories, with inclusive placement as the reference category (see Table 2).

support in inclusive placements. The effect was significant in years 3–9, and in years 2 and 10 in models with the interaction terms. The interaction between first language and ID label showed odds ratios below 1 and was statistically significant in all years except years 4 and 11. This finding indicates that the higher odds of not receiving intensive SEN support for students whose first language was German were less pronounced or reversed in the group with the ID label.

3.3. Number of placement transfers

We used multinomial logistic regressions to examine whether students with the ID label differed from those without this label in the number of placement transfers. Overall, students with the ID label had lower odds of experiencing any transfer compared to no transfers (Table 3, Fig. 4, Table B). However, after excluding internal transfers (i.e., transfers between no intensive SEN and support in inclusive placements), students with the ID label had higher odds of undergoing one transfer, lower odds of two transfers, and similar

Table 3
Odds ratios from multinomial regression analyses on the number of all placement transfers and the number of placement transfers excluding internal transfers, using no transfers as the reference category.

		All placement transfers		Placement transfers without internal transfers	
		Model 3		**Model 3**	
Intercept	1 transfer	11.58	***	0.57	***
	2 transfers	11.07	***	0.56	***
	3 or more transfers	8.44	***	0.24	***
ID label	1 transfer	0.17	***	1.35	
	2 transfers	0.12	***	0.52	**
	3 or more transfers	0.09	***	0.68	
Sex female	1 transfer	0.42	***	0.71	***
	2 transfers	0.43	***	0.62	***
	3 or more transfers	0.28	***	0.33	***
ID label * sex female	1 transfer	3.28	***	1.47	
	2 transfers	3.06	***	1.51	
	3 or more transfers	3.34	***	2.07	
First language German	1 transfer	0.69	*	1.91	***
	2 transfers	0.57	**	0.94	
	3 or more transfers	0.39	***	1.01	
ID label * first language German	1 transfer	1.18		0.83	
	2 transfers	1.38		1.44	
	3 or more transfers	2.85	**	1.58	
Log-Likelihood		−3962		−3917	
McFadden R^2		0.023		0.017	
Likelihood ratio test (χ2)		187	***	138	***
N		3227		3227	

Note. For models 1 and 2 see supplementary material Table B.
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

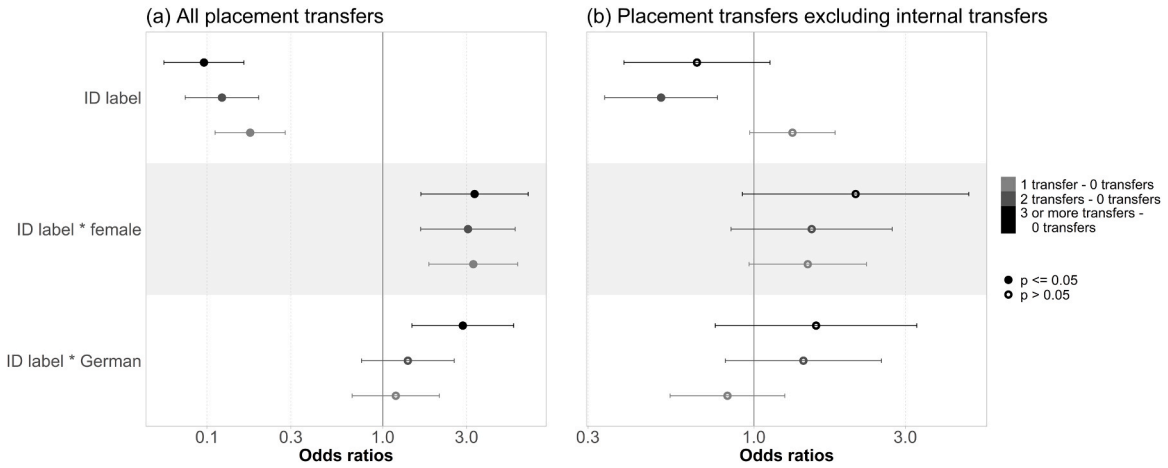

Fig. 4. Odds ratios for placement transfers of students with the ID label compared to those without the label ID as well as interaction terms with sex and first language. Note. Odds ratios are derived from multinomial logistic regression analyses on the number of placement transfers, with no transfers as the reference category (see Table 3).

odds of three or more transfers compared to no transfers. Only the comparison between two transfers and no transfers was statistically significant. Overall, the results suggest that students with the ID label experience fewer placement transfers. However, this difference appears to stem primarily from students without the label ID transferring between receiving and not receiving intensive SEN support in regular classes.

Female students had lower odds of experiencing any placement transfers compared to male students, both overall and when internal transfers were excluded. The lowest odds ratios were observed for three or more transfers versus no transfers. The interaction term between ID label and sex showed significantly higher odds for placement transfers when all transfers were considered. This indicates that the lower odds of placement transfers for female students were less pronounced or reversed for students with the ID label. However, the significance on the interaction term disappeared when internal transfers were excluded, suggesting it was driven by students without the ID label who shifted between receiving and not receiving intensive SEN support in regular classes.

Students with German as their first language had lower odds of placement transfers when all transfers were considered. However, when excluding internal transfers, they had higher odds of one transfer and similar odds for two or more. The interaction between ID label and first language was significant when analysing all transfers and comparing no transfers to three or more transfers. This suggests that the effect of first language was less pronounced or reversed among students with compared to those without the ID label.

4. Discussion

Examining the school placement pathways of students with ID is essential for identifying disparities and promoting equitable educational opportunities. We used administrative census data to analyse school placements across grades and the number of placement transfers during compulsory education. Our results suggest that, for the context of Switzerland, students with ID had higher probabilities of being schooled in separate placements than students with other types of SEN. This effect became more pronounced with increasing student age. Furthermore, male students and those whose first language was German were more likely to be schooled in separate placements, and male students were more likely to experience placement transfers.

4.1. Placement trajectories of students with ID

Although the administrative data used does not provide detailed information on students' support needs, we hypothesise that the severity and complexity of these support needs underly the observed differences. Students with ID often require substantial academic and social support, which mainstream schools may struggle to provide (Byrne, 2013). In line with this, students in Switzerland's special schools for ID often have severely limited adaptive skills, and over half exhibit clinically relevant emotional and behavioural problems (Müller et al., 2020). Decisions to transfer a student to a special school are often influenced by concerns about inadequate support (e.g., Kelly et al., 2014). This raises the question of whether regular schools (especially at the lower secondary level) are sufficiently equipped to support the needs of students with ID. This issue is particularly relevant given that different placements may lead to different outcomes (e.g., Cole et al., 2023). While further research is needed on the effects of inclusive education for students with severe support needs, existing evidence suggests a positive impact on both academic performance and adaptive skills (Dell'Anna et al., 2022). The lower transfer frequency for students with the ID label was driven by internal transfers. Our results indicate that students with the ID label often began compulsory education with intensive SEN support which would reduce the likelihood of subsequent internal transfers. This explanation is plausible, as students with high support needs are more likely to receive support from the outset (Woods, 2020).

4.2. Student sex and first language

Our results confirm previous findings that male students are more likely than female students to attend separate placements (Morgan et al., 2023; Woods et al., 2020). Furthermore, we found that male students underwent placement transfers more frequently than female students. A possible mechanism behind these effects might be that male students, compared to female students, often display more direct aggressive behaviours, classified as externalising problems (Card et al., 2008), which could lead to transfers to separate placements. However, a more recent study found that while male students, both with and without disabilities, were more likely to engage in bullying than female students, victimisation, fighting, and relational aggression were higher among students with disabilities, regardless of sex (Simpson et al., 2016). Given that school transfers are often particularly challenging for students with SEN, the higher transfer rates among male students may place this subgroup at increased risk for negative academic and emotional outcomes (e.g., Harris & Nowland, 2020; Welsh, 2017)

Interestingly, native German speakers were more likely to be schooled in separate placements compared to those with other first languages. This result could align with a study from the USA showing that students with low English proficiency were underrepresented in both the most inclusive and most restrictive placements (Sullivan, 2011). In contrast, Black and Latinx students in the USA appear to be overrepresented in separate placements, when prior academic achievement is not accounted for (e.g., Morgan et al., 2023). Differences in the variables measured and in the educational systems make direct comparisons challenging.

Several mechanisms might help explain the observed disparity. First, parents from ethnic minority backgrounds may hold religious or cultural beliefs that increase sensitivity to stigmatisation (Kaplan & Celik, 2023), which may lead to a preference for mainstream placements. Second, limited German proficiency may pose communication barriers, potentially hindering parents' ability to advocate for their child's support needs (Kaplan & Celik, 2023). Third, a study conducted in Germany found that immigrant parents were more likely than non-immigrant parents to prioritise pragmatic factors (e.g., school proximity) over SEN-related support (e.g., access to specialists), and thus preferred mainstream over special schools (Kölm & Gresch, 2021).

Finally, the observed pattern may be driven by the type and severity of support needs. If the overrepresentation of students with a first language other than German is particularly pronounced among those with low-incidence disabilities such as emotional or learning disabilities (Coutinho & Oswald, 2005), this may indicate lower support needs, making inclusive placements more likely.

4.3. Strengths, limitations, and future directions

While many countries offer a range of placement options for students with SEN, little is known about how individual placements change over time. This study compared the placement trajectories of students with ID to those of students with other types of SEN. A key strength of this study is its longitudinal approach, which spans the entire duration of compulsory education. Additionally, the focus on students with ID contributes to a better understanding of their unique placement trajectories within the broader context of SEN education.

Nonetheless, our analysis faced limitations due to constraints in the administrative dataset. The data available lacked information on clinical diagnoses; thus, we relied on an administrative disability label as an indicator for ID. This label was not consistently recorded across all types of placements. However, by aggregating data across many school years, we likely captured the majority of students who had been assigned the ID label. Additional information, such as academic performance or family background, would have enabled a more thorough exploration of factors influencing placement trajectories. Moreover, as in similar studies (e.g., Sullivan, 2011), our models explained only a small proportion of the variance in placement outcomes. The dataset was also restricted to a single Swiss canton and results are therefore not necessarily generalisable to other regions and countries. Nevertheless, the use of a large census dataset and the use of a standardised assessment procedure for identifying students requiring intensive SEN support enhances the reliability of our findings.

Further research is needed to better understand the disparities in placement trajectories between students with ID and other types of SEN. Future studies should explore the impact of environmental factors (e.g., school context) and additional student characteristics (e.g., socioeconomic background) on placement decisions. International comparisons may further elucidate differences across school systems. Gaining deeper insights into the decision-making processes at both individual and structural levels is crucial to understanding how placements are determined and how disparities emerge.

CRediT authorship contribution statement

Zurbriggen Carmen L.A.: Writing – review & editing, Supervision, Methodology, Conceptualization. **Romana Snozzi:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Christoph M. Müller:** Writing – review & editing, Supervision, Conceptualization.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this article, the authors used ChatGPT to assist with language refinement and formulation. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ridd.2025.105110.

Data availability

The data used in this study can be requested from the Educational Statistics Office of the Canton of Zurich (Bildungsstatistik Kanton Zürich): https://pub.bista.zh.ch/

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