



# Do welfare counsellors help at-risk upper secondary school students?

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## ARTICLE INFO

### JEL classification:

I24 (education and inequality)

I28 (government policy)

I38 (government policy)

Provision and effects of welfare programmes)

I22 (Education finance financial aid)

### Keywords:

School counsellors

Social services

Upper secondary education

Completion rates

NEETs

## ABSTRACT

Counselling is considered to be an important policy tool to prevent early school leaving, yet little is known about the effect of counselling on student outcomes. We investigate the effect of a novel type of counselling in Norwegian schools: the student welfare counsellor. These counsellors are employed by local welfare offices but placed in upper secondary schools, serving as a link between the student and support services by addressing financial, health or family-related issues and helping students into appropriate welfare office programmes. Using a difference-in-differences approach with variation in treatment timing, we find that moving this counselling service to schools kept students in school longer, although completion rates in upper secondary education did not increase. Effects are more pronounced for students with a minority background. These results suggest that moving available services closer to students can influence the educational attainment of at-risk youth – at least in the short run.

## 1. Introduction

Even with an increased focus on early interventions to counteract the consequences of early childhood inequalities, many students continue to slip through the cracks of the educational system, dropping out before completing upper secondary education (OECD, 2015). The high costs of dropout to individuals and society justify investment also at later stages, and gaining more knowledge on effective remediation policies for at-risk youth is essential. This is particularly relevant now that we are faced with the worsening of young people's mental health in response to Covid-19 (OECD, 2021).

The OECD suggests career guidance, counselling and mentoring as efficient means of reducing dropout, given that they are of sufficient quality and adequate for the students' needs (OECD, 2012). Such

services were severely disrupted during the pandemic, and re-establishing or even strengthening these services may be an important way of helping at-risk youth going forward. However, there is still little evidence on the effectiveness of different types of counselling and support staff in schools, and the few studies that exist rarely examine long-term outcomes (Kautz et al., 2014).<sup>1</sup>

Recent research has reported promising results from different types of multi-faceted programmes (Cook et al., 2014; Oreopoulos et al., 2017; Lavecchia et al., 2020). The US "Becoming a Man" programme provided daily two-on-one tutoring combined with social cognitive behavioural therapy to disadvantaged students, leading to substantial improvements in high school attainment and academic performance (Cook et al., 2014). The Canadian "Pathways to Education" programme targeted impoverished upper secondary school students and offered a

This article is based on analyses performed in connection with an upper secondary school project on NAV supervisors (see Salvanes et al., 2019). The project was financed with R&D funds from the Directorate of Labor and Welfare. We would like to thank Bjarne Strøm and Colin Green, as well as seminar participants from Norwegian University of Science and Technology, for comments and suggestions.

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<sup>1</sup> Studies have shown that lowering the student-to-counsellor ratio decreases student misbehaviour (Carrell & Carrell, 2006), boosts academic performance (Carrell & Hoekstra, 2014) and increases college enrollment (Hurwitz & Howell, 2014). There is also a related literature on mentoring programmes, typically finding modest average effects (for overviews see DuBois et al., 2002; Eby et al., 2008; Rodríguez-Planas, 2012), and that their effectiveness seems to depend on the target groups and the quality of the relationship between mentors and mentees (Rhodes 2008). Other studies have focused on using counselling, in itself or in combination with other measures, to improve the transition between upper secondary and tertiary education, with many studies finding positive effects of counselling in high school on college enrolment and related outcomes, at least for some students (see e.g. Castleman, Arnold & Wartman, 2012; Borghans, Golsteyn & Stenberg, 2015; Bos et al., 2012; Cunha, Miller & Weisburst, 2018; Avery, 2010, 2013; Carrell & Sacerdote, 2013).

<https://doi.org/10.1016/j.econedurev.2022.102271>

Received 14 October 2021; Received in revised form 16 March 2022; Accepted 13 May 2022

Available online 26 May 2022

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combination of extensive tutoring, mentoring, financial support and easy access to student-parent workers who were responsible for working with the individual student and parent on a regular basis and monitoring their academic development (Oreopoulos et al., 2017). The programme increased upper secondary school completion and college enrolment, increased earnings and employment and reduced welfare receipt (Oreopoulos, Brown et al., 2017; Lavecchia et al., 2020). While such comprehensive programmes show that interventions for at-risk youth can yield large and lasting positive effects, less is known about which components are essential for generating these effects.

In this paper, we focus on the causal effect of one such element – counselling services in schools. In Norway, a quarter of the students who enter upper secondary school do not complete within five years (Statistics Norway, 2019a), slightly higher than the OECD average (OECD, 2019). A survey of Norwegian dropouts revealed that 42% reported that the reason for dropping out was primarily related to health-related issues (both mental and physical), financial issues or family issues (Markussen & Seland, 2012). Norwegian students are entitled by law to school counsellors who provide them with career guidance as well as advising them on other non-academic issues (Regulations to the Norwegian Education Act, Chapter 22), however, the complexity of the reasons for dropping out indicates that students may need additional support services. Introducing more school support staff, such as counsellors and special needs educators, has long been part of the public discussion in Norway (Meld. St. 46 (2012)).

To provide more comprehensive help for at-risk youth, a new counselling model was tried out, starting 2000, where welfare counsellors from the Norwegian Labour and Welfare Administration's local welfare offices (NAV offices) were placed in upper secondary schools. These counsellors serve as a link between students and different public support services and, in contrast to other school counsellors, have the authority to make decisions on measures and benefits provided through social services. Furthermore, as they are more closely tied to the local welfare offices, they have more in-depth knowledge on all available services, measures and benefits, facilitating students' access to appropriate help. The mechanisms through which the school welfare counsellors can improve outcomes are first, through helping the students address financial, health or family-related issues, thereby making it easier for them to focus on school. Second, welfare counsellors can help drop-outs into appropriate programmes offered by the local welfare offices. This may ease the transition into the labour market, thereby reducing the number of dropouts who are not in education, employment or training (NEETs).

The use of welfare counsellors in Norwegian schools started as a two-year trial in year 2000 at one upper secondary school in the Norwegian county of Østfold. Following favourable experience with the trial, the programme was gradually introduced into all upper secondary schools in Østfold during the period 2009–12. Using a difference-in-differences approach with variation in treatment timing, we compare the relative differences in outcomes between students at schools that introduced welfare counsellors and students at schools that did not, before and after the welfare counsellors were in place. We use this estimation strategy to evaluate whether the presence of student welfare counsellors had an impact on how long the students stayed in school, whether they were inactive – not in school, work or registered as unemployed – as well as on upper secondary school completion rates.

We find that moving welfare counselling services to schools kept students in school longer, although completion rates did not increase. The effects were more pronounced for minority students. These results suggest that moving available services closer to students can influence the educational attainment of at-risk youth – at least in the short run. Our results are robust to a range of sensitivity analysis such as correcting for multiple hypothesis testing, event-study-specification and Goodman-Bacon decomposition, addressing the now standard critique that a two-way-fixed-effect design with staggered timing can result in biased estimates in the presence of dynamic treatment effects. Reassuringly, our

results show that 97.8% of the identifying variation comes from comparing treated to never treated.

## 2. Background

### 2.1. Upper secondary education in Norway

Students in Norway typically complete lower secondary education in the year they turn 16, after 10 years of mandatory schooling. Individuals are not obliged to stay in school beyond the 10th grade, but nearly all students (98%) transition directly into upper secondary education. Students can choose between the academic track (usually three-year programmes) qualifying them for entry into higher education or the vocational track (usually four-year programmes consisting of two years in school and two years in training). There are currently 5 academic track programmes and 10 vocational track programmes.

The Norwegian regional level of government, which consisted of 19 counties in the period we studied, is responsible for providing upper secondary education. Each county is free to decide upon the upper secondary school structure, i.e. the location, number and size of schools, and most students attend schools in the county where they reside. Since 1994 all students have the right to a place in upper secondary education – irrespective of their performance in lower secondary school. However, the allocation of programme places is based on the grade point average (GPA) from lower secondary education. Thus, even though students have a right to a place, they will not necessarily be allocated to their programme of choice. Students can specify three programmes in their application and are entitled to be admitted to one of the three. Whether students can specify school choices in their application depends on the county of residence, as this is decided at the county level.

After enrolling in upper secondary education, students have a right to up to five consecutive years of upper secondary education. This is the main reason why Statistics Norway and the government use a five-year window in reports on national completion rates. While completion rates have been relatively stable since the mid-90s, with a slight increase in recent years, there are important differences reflecting socio-economic status and gender. For students whose parents have a masters or higher level of education 90% complete within five years, while only 54% of students whose parents only have lower secondary education or less complete within five years (Statistics Norway, 2019b). Boys typically fare worse than girls with 81% of girls completing within five years while only 70% of boys do the same (Statistics Norway, 2019b).

### 2.2. The welfare counsellors in school programme

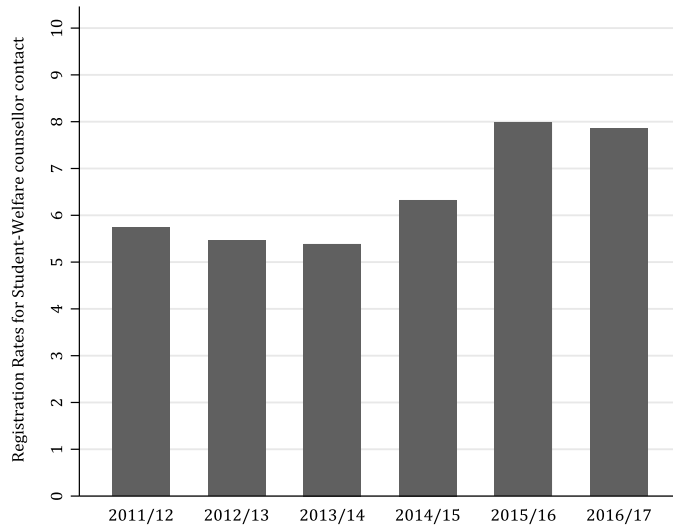
School counsellors are a common feature of student services in developed countries, typically helping students with career advice as well as non-academic issues. In the US, for example, counsellors are an integral part of school, providing guidance on social/emotional development, peer relations and academic skills among other things while also putting students in touch with resources that provide appropriate help if they need follow-up that is outside of the counsellors' field of expertise (Carrell & Carrell, 2006).

By law, all Norwegian upper secondary schools are obliged to provide both educational welfare counselling and career guidance to their students (The Education Act, 1998, §9-2). While career counselling primarily is information and guidance regarding educational and vocational choices, the main purpose of the educational welfare counselling is to help students with personal non-academic issues. However, as students may experience quite severe and complex issues, there is an ongoing public discussion in Norway regarding the introduction of more school support staff (Meld. St. 46, 2012).

To provide more comprehensive help to students struggling with non-academic issues, in the early 2000s, the Norwegian county of Østfold developed an in-school counselling service whereby staff members from local NAV offices were placed in upper secondary

**Table 1**  
Upper secondary schools with welfare counsellors – Østfold county.

Upper secondary school	Start date	Percentage of full-time equivalent
Halden	aug.00	100%
Greåker	mar.09	100%
Borg	mai.09	100%
Kalnes	aug.11	40%
St. Olav	aug.11	60%
Fredrik II	apr.13	100%
Glemmen	apr.10	100%
Malakoff	feb.11	50%
Kirkeparken	feb.11	50%
Askim	mar.12	100%
Mysen	mar.12	100%



**Fig. 1.** Registration rates for new contacts between students and welfare counsellors, 2011/12–2016/17. The sample includes all students at treated schools in school years 2011/12 to 2016/17. The figure shows the share of students that were in contact with welfare counsellors for the first time each school year.

schools. At the time, the completion rates in Østfold were not all that different from the national average. For example, for the cohort that entered upper secondary school in year 2000, 67.5% of students in Østfold completed within 5 years whereas the national average was 69.7%.<sup>2</sup> The programme started as a two-year trial in year 2000 at one upper secondary school in the county, and the main goal of the programme was to reduce drop-out among at-risk youth. The purpose was to create an easily accessible counselling service for students in upper secondary education with problems considered to be “not school-related”, but which nevertheless made school challenging. These could be personal problems (substance abuse, mental health problems, behavioural problems, etc.) or problems related to home and family, finances or housing, etc. Furthermore, the counsellor was supposed to contribute towards strengthening the interdisciplinary cooperation within the school and serve as a link between the school, NAV and other public support services. As youth dealing with these issues typically find it hard to navigate through the bureaucracy of the Norwegian labour and welfare system, they need closer follow up than can be provided by the regular welfare counsellors at local NAV offices (Thrana, Handegård,

Anvik, & Bliksvær, 2009).

Following an evaluation (Holt, 2002)<sup>3</sup> concluding that there was an overall favourable experience with the programme, the trial was continued and expanded in the period 2009 to 2012 to include all other upper secondary schools in the county – 11 in total, as listed in Table 1. The school size varied from about 400 to 1 300 students, where the median school size was about 1000 students. On average, the schools were given one full-time position per 1000 students.<sup>4</sup> The counsellors worked at the school 5 days a week, were required to have an undergraduate degree in social work or related subjects and had meetings with NAV when needed. Unlike regular school counsellors, the welfare counsellors were employed by the local NAV offices and thus worked under the Norwegian Social Services Act. More specifically, they had the authority to make decisions on measures and benefits accordingly, including social assistance, housing support and the qualification program.<sup>5</sup> Through contact with NAV, the welfare counsellor was also able to put students in touch with other parts of NAV that provide other services such as work practice and job seekers assistance.<sup>6</sup> Hence, the welfare counsellors were in a unique position with respect to counselling at-risk youth.

While the programme was supposed to target at-risk youth, all students in upper secondary schools had access to the welfare counsellors. Registration forms completed by welfare counsellors<sup>7</sup>, provide us with valuable information on the nature of contact between welfare counsellors and students, as well as observable characteristics of the targeted population. This gives us detailed information on the treatment, such as the fraction of treated students and the type of help given – shedding light on whether the counsellors worked to improve student outcomes through the expected channel as well as whether they in practice targeted the relevant population.

Fig. 1 shows registration rates for new contacts between students and welfare counsellors in the school years 2011/12 to 2016/17. The results in Fig. 1 suggest that the welfare counsellors became a more integral part of all schools in Østfold over time – with the fraction of students being in contact with counsellors ranging from six percent in the school year 2011/12 to eight percent in the final school year (2016/17).

Tables 2 and 3 document the nature of contact between students and welfare counsellors and observable characteristics of those students, respectively. In Table 2, we see that while most meetings between students and welfare counsellors were initiated by employees at the school (e.g. teachers, nurses or school counsellors), many students also contacted welfare counsellors themselves. The share of contacts between students and welfare counsellors initiated by students also increased over time, from 27.5% of the contacts in 2011/12 to 42% in 2016/17. In the same period, the rate of meetings initiated by employees at the school decreased (mainly due to a decrease in the rate of meetings initiated by school counsellors), while the corresponding rate for outside services remained relatively stable during the same period. Taken

<sup>3</sup> The evaluation was based on a summary of the social worker’s own work, written statements from collaborators, a questionnaire among class managers at the school and interviews with advisors, inspector and staff at the local NAV office.

<sup>4</sup> Based on information given to us by the county.

<sup>5</sup> The qualification programme is an offer of follow-up and work training to help an individual into work or activity. It applies to individuals aged 18–67 with significantly reduced work and income capacity and no or very limited subsistence benefits (Social Services Act Section 29). To qualify for this the applicant must have undergone work ability assessment.

<sup>6</sup> It is important to note that the rights to the different services and benefits provided by NAV did not change following the introduction of the new counselling model; the model merely made the services more easily available, as the counsellors were placed closer to students.

<sup>7</sup> Data from the registration form was provided to us by Østfold county. Unfortunately, it does not include unique identifiers for student id and cannot be merged with other data sources.

<sup>2</sup> Statistics Norway: <https://www.ssb.no/statbank/table/09262/>.

**Table 2**  
Type of contact between students and welfare counsellors, 2011/12–2016/17.

	School year						Total
	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	
<b>Who initiated the first meeting:</b>							
Student	27.5	26.2	35.2	38.1	41.2	41.9	35
Parents	4.3	3.8	4.5	3.6	3.7	3.9	4
Other students	1.3	1.1	0.4	0.8	0.3	0.7	0.8
Employee at school:							
School counselor	23.1	20.2	11.9	13.9	12.8	16	16.3
Nurse	5	3.5	3.7	3.7	4.4	3.4	3.9
Other health services	0.5	0.2	0.7	0.5	0.5	0.4	0.5
Class teacher	14	13.6	21.9	16.2	15.3	14.1	15.8
Other teachers	5.9	8.7	6.2	4	5	6.4	6
Outside school services:							
Other welfare counsellors	0.7	1.6	1.5	1.7	2	2.4	1.7
Educational and Psychological Counselling Service (PPT)	1.3	1.4	1.6	2.2	1.2	1.6	1.5
Child services	1.8	4.6	3.8	2.9	2.9	2.3	3.1
Others	5.1	8.6	4.2	4.4	4.1	4	5.1
<b>Reason for contact between student and welfare counsellor:</b>							
Financial	32.4	37.9	33.8	39.8	39.5	35.7	36.5
Living and family	40.4	35	28.6	29.6	30.2	29.5	32.2
Drug abuse	5.7	6.2	6	7.2	5.5	4.5	5.8
Mental health	8.2	7.7	16.6	14.4	12.8	14.1	12.3
School absenteeism	9.7	11.8	15.3	10.4	9.1	10.6	11.1
General concern	10.4	11.4	11.2	7.9	6.3	5.9	8.8
Criminal behavior	0	0	0.7	0.8	0.9	0.4	0.5
In need of NAV services	7.3	9.9	12.6	11.5	11.3	11	10.6
Job application	2	2.4	3.3	1.8	2.8	1.5	2.3
Other reasons	5.7	11.3	11.7	10.8	5.8	10.9	9.4
<b>Reason for follow up by welfare counsellor:</b>							
Financial	45.1	50.2	46	51.5	52.2	45.8	48.4
Living and family	50.4	48.1	42.5	42.5	44.8	41.7	45
Drug abuse	10.4	10.3	9	10.2	9.4	7.2	9.4
Mental health	20.2	24.1	28.6	29.4	31	29.1	27.1
School absenteeism	23.8	26.5	28	24.1	26	23.5	25.3
General concern	14.1	19.7	17.4	17.7	18.6	18.2	17.6
Criminal behavior	0	0.5	1.8	2.1	1.9	1.1	1.2
In need of NAV Services	15	18	19.6	22.4	25.5	20.9	20.2
Job application	6.6	8.8	7.9	9.9	13.4	7.8	9.1
Other reasons	19	25.5	19.9	25.7	29.1	37.6	26.1
<b>Follow up by welfare counsellor after first meeting:</b>							
Short follow up (1–3 conversations)	41.9	39.4	36.1	37.3	38.9	40.4	39
Sporadic follow up	18.1	24.6	23.5	20.2	20	19.6	21
Close follow up (up to three months)	14.3	15.3	18.7	22.3	20.6	18	18.2
Long follow up (more than three months)	25.6	20.2	21.6	20.2	20.5	22	21.7

**Table 3**  
Descriptive statistics of students in contact with welfare counsellors 2011/12–2016/17.

	School year						Total
	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	
Female	54	53.6	48.8	50.7	51.2	47	50.9
Minority background	28.6	26.8	27.9	21.6	25	26	26
<b>Living and family conditions:</b>							
Living with parents	57.2	56	61	58.5	55.8	57.7	57.7
In the custody of child services	4.3	3.8	3.3	5.2	2.5	4	3.8
Living alone	29.5	27.8	25.7	26.2	30.4	29.8	28.2
Other living arrangements	8.8	8	6	5.2	7.3	3.8	6.5
<b>Study track</b>							
Academic tracks	29	27.6	29.1	30.4	32.7	33	30.3
Vocational tracks	67.3	68.5	67.9	56.2	56.7	56.6	62.2
Other	5.5	10.4	7.7	7.3	3.3	7.2	6.9
<b>Grade:</b>							
First year	39	38.6	36	34.3	34	35.3	36.2
Second year	41.1	37.9	40.9	30.7	35	30.6	36
Third year	19.9	23.5	23.1	29.6	28.3	31.6	26
Other	0	0	0	5.4	2.6	2.5	1.8
Sample size	559	634	731	866	953	985	4 728

together, this shows that more students gradually sought out the counsellors as they became familiar with their role. Furthermore, this indicates that visits to the welfare counsellors were not considered to be stigmatizing.

The reasons for seeking out the counsellors were mixed and confirms that students sought out welfare counsellors for quite severe and complex issues. The most common reasons were related to financial and family issues, often in combination with mental health problems and

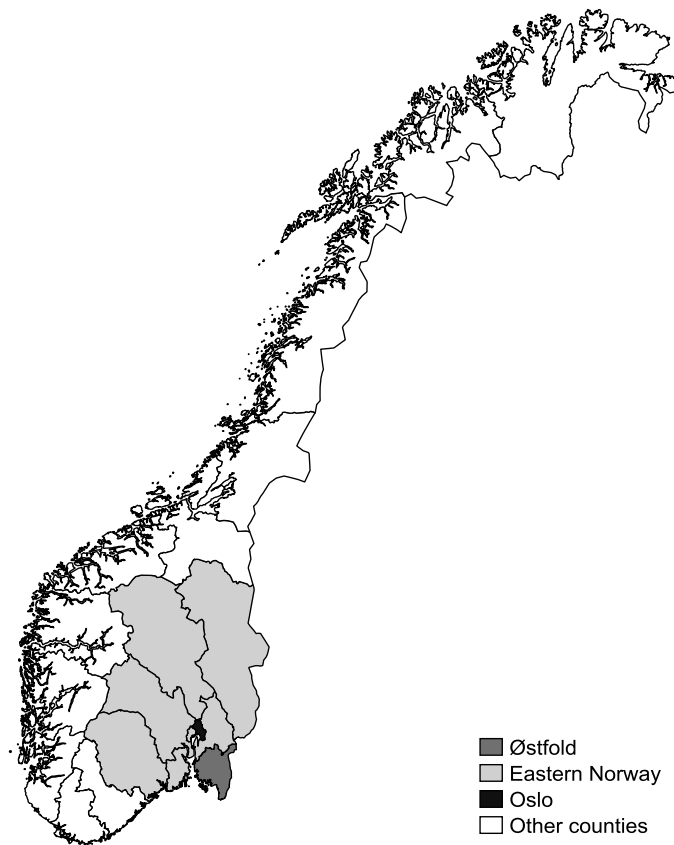


Fig. 2. Counties in Norway.

Table 4  
Balance test for background characteristics.

Variables	DinD	# students	# schools
Male	-0.023** (0.010)	248631	90
Minority	0.019* (0.010)	248631	90
Age	0.003 (0.004)	248631	90
GPA, lower secondary education	0.040 (0.030)	243057	90
GPA missing	-0.006* (0.003)	248631	90
Academic track	0.027 (0.018)	248631	90
Vocational track	-0.032* (0.018)	248631	90
Other	0.006*** (0.002)	248631	90
<i>Parental education:</i>			
Lower secondary education or less	-0.009 (0.010)	248631	90
Upper secondary education	-0.009 (0.011)	248631	90
Higher education	0.015 (0.012)	248631	90
Missing	0.003 (0.002)	248631	90

Significance Levels:

\*\*\* 1%,

\*\* 5%,

\* 10%. Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate is from a different regression and is the coefficient on  $d_{st}$  from Eq. (1). Other means that the student receives a comprehensive form of special education. Parental education is measured the year the student turns 16.

school absenteeism. One out of ten student needed access to services provided by NAV and in about nine percent of the cases, drug abuse was given as one of the reasons for contact.

While most of the cases did not need much follow-up, 40% of students required tight monitoring, with many meetings over a long period. Follow-up included coordinating the cooperation between the student in need and public services, establishing the collaboration between different public services and helping students with applications for financial assistance. While the welfare counsellors also helped students with job applications, information from the registration forms shows that only in about two percent of cases was this stated as the reason for contact, and only in about nine percent of the cases was this the reason for follow-up. This, together with information from the job description used in the recruitment process, indicates that the main objective of the counselling service was to improve students' chances on the labour market through continuation of schooling.

Table 3 presents the characteristics of students in contact with welfare counsellors. Approximately 25% had minority background – which indicates a substantial overrepresentation of minority students in the targeted population. Based on the descriptive statistics in Table 5 we know that only about 12% of students in upper secondary education in Østfold had minority background. Furthermore, 62% of students in contact with welfare counsellors were enrolled in the vocational track – which was the case for only about 53% of students in Østfold in our sample. It is well known that both minority students and vocational track students have substantially lower completion rate in upper secondary education. For example, official statistics show that for students that entered upper secondary education in 2014 – about 89% of academic track students completed within five/six years whereas this was true only for about 68% of vocational track students. As for minority students, the completion rate among immigrant students (born in a different country) was 65%, compared to 81% for children born in Norway to foreign born parents (second generation immigrants) and 84% for majority students (SSB, 2019b). It is also worth noting that only about 58% of the students in contact with welfare counsellors lived with their parents. This share appears low, however there is no national data on living arrangement for upper secondary school students so we are not able to make a direct comparison. Taken together, the information provided in Tables 2 and 3 strongly indicates that the counselling service was appropriately targeted – i. e. at youths with a relatively large risk of dropping out of upper secondary education.

### 3. Empirical strategy

All upper secondary schools in Østfold county eventually had welfare counsellors. A natural comparison group is other schools located in neighbouring counties –the idea being that students and schools that are geographically close to each other are more similar than schools that are further apart. We conducted difference-in-differences analyses using schools in other counties in Eastern Norway, except for Oslo<sup>8</sup>, as comparison schools. The counties included are Akershus, Hedmark, Oppland, Buskerud, Vestfold and Telemark.<sup>9</sup> Fig. 2 shows the geographical location of the different counties included in the analysis. We also perform a robustness check where we drop one control county at a time to check whether any one county has a large impact on the results.

The regression model can be written in the following way:

$$Y_{ist} = \alpha + \gamma_t + \mu_s + \beta d_{st} + \delta X_{ist} + \epsilon_{ist}, \tag{1}$$

where  $Y_{ist}$  is the outcome for individual  $i$  who entered upper secondary

<sup>8</sup> Oslo, the capital city, is both a county and a municipality and is not necessarily comparable to the less densely populated counties in the rest of Eastern Norway.

<sup>9</sup> Schools that were part of a similar pilot at national level initiated by NAV are excluded from the comparison group.



**Table 5**  
Observable characteristics by treatment status.

	Treated schools			Control schools		
	Fraction/average	SD	N	Fraction/average	SD	N
<b>A. Outcome measures</b>						
In school, t+1	0.944		30832	0.950		217799
In school, t+2	0.873		28172	0.912		201683
Normal progression, t+1	0.863		30832	0.866		217799
Normal progression, t+2	0.748		28172	0.789		201683
On-time completion	0.523		22749	0.593		168766
Completion within 5 years	0.600		12146	0.714		153895
Inactive, t+1	0.045		25533	0.039		185911
Inactive, t+2	0.09		19453	0.05		169822
Inactive, t+3	0.176		12146	0.179		153895
<b>B. Observable characteristics</b>						
Male	0.514		30832	0.511		217799
Minority background	0.121		30832	0.085		217799
Age at the time they enter upper secondary	16.035	(0.200)	30832	16.030	(0.192)	217799
GPA from lower secondary education	3.843	(0.833)	29875	4.005	(0.830)	213182
GPA missing	0.031		30832	0.021		217799
Academic track	0.474		30832	0.594		217799
Vocational track	0.526		30832	0.401		217799
Other	0.000		30832	0.005		217799
<i>Parental education level:</i>						
Lower secondary education or less	0.239		30832	0.176		217799
Upper secondary education	0.381		30832	0.356		217799
Higher education	0.370		30832	0.461		217799
Missing	0.010		30832	0.008		217799

Notes: All outcomes are measured in October. *Inactive* means that the individual is not working, in school or registered as unemployed. *Other* means that the student receives a comprehensive form of special education. Parental education is measured the year the student turns 16.

education at school  $s$  in year  $t$ .  $X_{ist}$  is a vector of individual level characteristics including gender, indicators for minority background and parental education.  $\gamma_t$  represents cohort fixed effects, defined by the first year the individual entered upper secondary education, and  $\mu_s$  school fixed effects.  $\varepsilon_{ist}$  is an idiosyncratic error term.  $d_{st}$  is an indicator equal to 1 if the individual is in a treated cohort in a treatment school and 0 otherwise.  $\beta$  thus captures the intention-to-treat effect (ITT) of welfare counsellors in schools. Standard errors are clustered at school level.

As the counsellors started at different times during the year and covered all students in the school, this resulted in variation in treatment duration across cohorts. Fully treated students are those who were exposed to treatment as of the first day in upper secondary education – the counsellor started working at the school no later than September that year – while partially treated students are those who were exposed to welfare counsellors for a shorter period. To capture the full effect we drop partially treated individuals in the baseline specification, -creating an asymmetric ‘doughnut hole’. Partially treated individuals are reintroduced in the robustness analyses in Section 6.3.

The identification of the ITT relies on the parallel trend assumption – i.e. that in the absence of the school welfare counsellors, the treatment schools would have had the same development in outcomes over time as the control group. Even though this cannot be directly tested, we provide evidence in support of this assumption in our sensitivity analysis in Section 6.2.

Further, for the identification strategy to hold, the composition of students entering in the treatment schools should not have changed in response to the introduction of welfare counsellors in schools. This could happen if, for example, certain types of students to a larger degree selected into schools with welfare counsellors. This seems unlikely, as

Østfold practiced a neighbourhood enrollment regime during the period we consider, and not what is often referred to as “free choice of school”. During the empirical period students could only apply for a specific programme in upper secondary education, not to specific schools.<sup>10</sup>

We run the regression specified in Eq. (1), replacing the outcome measures with relevant background characteristics. Table 4 provides the results. Several of the coefficients are statistically significantly different from zero. This indicates that there were some minor changes in the composition of the student groups at the treated schools before and after the introduction of the school welfare counsellors compared to the other schools in Eastern Norway. This is likely due to some compositional differences in cohorts across time in which Østfold differed from the comparison counties. In our preferred specification we therefore control for these background variables.

#### 4. Data

We rely on high quality register data made available by Statistics Norway. The data are at the individual level and consist of detailed information on the individual’s educational trajectory, registered employment and unemployment. In addition, the data contain background information, about both the individuals themselves and their parents. Information about education stems from the National Education Database (NUDB), while information on social security, employment and unemployment is obtained from the National Employment Database (FD-Trygd) and register-based employment statistics.

Each school is identified through a unique school number. If two or more schools merged during the period 1999–2015, we treat the schools as one unit throughout the period, that is, the administrative unit at the

<sup>10</sup> Note that if the welfare counsellors were successful in reducing dropouts this would affect the composition of students that stay in school, providing a potential mechanism through which welfare counsellors affect student outcomes by changing the peer group composition. However, this will not bias the estimates as we define treatment and control group students based on whether they enter a treatment or control school the year they start upper secondary school for the first time.

**Table 6**  
Average effects for fully treated, with asymmetric “doughnut hole”.

	(1)DinD, w/o controls	(2)DinD,w. controls	# students	# schools
In school, t+1	0.019** (0.008)	0.018** (0.007)	248631	90
In school, t+2	0.020** (0.009)	0.014* (0.007)	229855	90
Normal progression, t+1	0.025** (0.012)	0.023** (0.011)	248631	90
Normal progression, t+2	0.026* (0.015)	0.015 (0.012)	229855	90
On-time completion	0.041** (0.017)	0.017 (0.011)	191515	90
Completion within 5 years	0.002 (0.021)	-0.007 (0.012)	166041	87
Inactive, t+1	-0.015** (0.006)	-0.015*** (0.006)	211444	90
Inactive, t+2	-0.010** (0.005)	-0.006 (0.004)	189275	89
Inactive, t+3	-0.014 (0.010)	-0.013 (0.010)	166041	87

Significance Levels:

- \*\*\* 1%,
- \*\* 5%,
- \* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{it}$  from Eq. (1). Control variables include school fixed effects, year fixed effects. In specification (2) additional controls are added: GPA, age indicators for gender, minority background, parental education and track in upper secondary school. *Inactive* means that the individual is not working, in school or registered as unemployed. On-time completion is an indicator variable equal to 1 if a student in VET completes upper secondary education within 4 years whereas it is equal to 1 if an academic track student completes within 3 years. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

end of the period.<sup>11</sup> We limit our sample to schools that we can follow throughout the period. For each school ID, we merge information about the start-up year and month of the school welfare counsellor. Private schools are not included in our sample as they were not affected by the welfare counsellors, and in any case, there are few private upper secondary schools in Norway.<sup>12</sup>

Initially there are 11 treatment schools in our sample. However, two of these schools are excluded from our sample. The first school started in the year 2000, and due to data limitations, there is no pre-treatment period for this school. The second school is dropped from our sample because it participated in another project that may confound the effects. Further, we limit our sample to individuals of the normal age for starting upper secondary education – defined as ages 15–17.

Based on the available data we create various educational outcome measures. First, we create indicators for whether the student is still registered in school 1 and 2 years after they entered upper secondary education for the first time (measured in October each year), denoted “in school, year t+1” and “in school, year t+2”. These measures capture both students that move through upper secondary school at a normal pace, but also students that move horizontally in the education system.

<sup>11</sup> In our sample 79 of the 90 schools had the same school id throughout the empirical period whereas the remaining 11 schools changed school id.

<sup>12</sup> In the school year 2018/2019, 8 percent of students in upper secondary education attended a private school (The Norwegian Directorate for Education and Training).

**Table 7**  
Average treatment effects, fixed sample.

	(1) DinD w/o controls	(2) DinD w. controls	# Students	# Schools
In school, t+1	0.017*** (0.005)	0.016*** (0.005)	164981	87
In school, t+2	0.018 (0.012)	0.014 (0.009)	164981	87
Normal progression, t+1	0.027* (0.014)	0.022 (0.015)	164981	87
Normal progression, t+2	0.029 (0.019)	0.020 (0.013)	164981	87
On-time completion	0.029 (0.020)	0.016 (0.013)	164981	87
Completion within 5 years	0.003 (0.022)	-0.008 (0.012)	164981	87
Inactive, year t+1	-0.018*** (0.004)	-0.018*** (0.004)	164981	87
Inactive, t+2	-0.020*** (0.006)	-0.017*** (0.005)	164981	87
Inactive, t+3	-0.014 (0.010)	-0.012 (0.010)	164981	87

Significance Levels:

- \*\*\* 1%, \*\* 5%,
- \* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{it}$  from Eq. (1). Control variables include school fixed effects, year fixed effects. In specification (2) additional controls are added: GPA, age indicators for gender, minority background, parental education and track in upper secondary school. *Inactive* means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16.

Next, to separate the two mechanisms, we create indicators for whether the student is registered in year 2 one year after starting school and registered in year 3 two years after starting school, i.e. moving at a normal pace through upper secondary education, denoted “normal progression, year t+1” and “normal progression, year t+2”. To be able to capture whether there is an impact on on-time completion we define an indicator variable equal to 1 if a student in VET graduate within four years (normal programme duration of VET) and equal to 1 if an academic track student graduates within 3 years (normal programme duration of an academic track programme). Lastly, we create an indicator for whether the student complete within 5 years of starting school, denoted “Completed within 5 years”.

Even if there is no impact on educational outcomes, counsellors could be considered to have beneficial effects if they reduce the proportion of young people who are inactive, that is, the proportion who do not participate in education, work or other activity. Re-engaging them in employment or education is viewed as particularly challenging (see e.g. Bø & Vigran, 2015; OECD, 2018). To capture this, we create indicators for whether the student is registered as inactive 1, 2 or 3 years after starting upper secondary school, measured in October each autumn. We define inactive as not in school/education, working or registered as unemployed with NAV, denoted “inactive, year t+1”, “inactive, year t+2”, and “inactive, year t+3”. According to this definition, an individual is categorized as inactive could still be an active job seeker. Those who are not entitled to benefits have less incentive to register as a job seeker with NAV. Benefits are often based on previous income of a certain magnitude, leaving many of the individuals in our sample ineligible. Nevertheless, it is possible that young people register with NAV to gain access to measures and/or follow-up that can increase their chances in the labour market.

**Table 8**  
Separate effects by treatment cohort.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	In school, t+1	In school, t+2	Normal progression, t+1	Normal progression, t+2	On-time completion	Completed within 5 years	Inactive, t+1	Inactive, t+2	Inactive, t+3
t	0.009 (0.011)	0.011 (0.011)	0.012 (0.015)	0.004 (0.017)	0.01 (0.01)	-0.013 (0.012)	-0.009 (0.009)	-0.008 (0.009)	-0.023** (0.011)
t+1	0.015* (0.009)	0.016** (0.008)	0.026* (0.014)	0.025 (0.018)	0.03* (0.02)	0.010 (0.012)	-0.014* (0.007)	-0.016** (0.007)	0.000 (0.016)
t+2	0.021*** (0.007)	0.010 (0.008)	0.024* (0.013)	0.017 (0.013)	0.04*** (0.01)	-0.017 (0.028)	-0.019*** (0.006)	0.010* (0.005)	0.009 (0.008)
t+3	0.029*** (0.009)	0.001 (0.017)	0.035*** (0.010)	0.017 (0.017)	-0.02 (0.06)	.	-0.028*** (0.005)	0.025 (0.021)	.
t+4	0.019*** (0.005)	0.037*** (0.008)	0.018** (0.009)	0.010 (0.014)	.	.	-0.028*** (0.005)	.	.
t+5	0.027*** (0.007)	0.056** (0.025)	0.026 (0.015)	0.034* (0.019)	.	.	.	.	.
# Students	248631	229855	248631	229855	191515	166041	211444	189275	166041
# Schools	90	90	90	90	90	87	90	89	87

Significance Levels:

- \*\*\* 1%,
- \*\* 5%,
- \* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Columns (1)-(8) present the results of separate regressions similar to the specification in (1), but separate treatment indicators are included for cohorts starting school in period t to t+5. Control variables includes school fixed effects, year fixed effects, GPA, age, indicators for gender, minority background, parental education and track in upper secondary school. All columns exclude partially treated individuals in an asymmetric “doughnut hole” approach. Inactive means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

We also measure background characteristics at individual level, including gender, age, GPA from lower secondary school, track in upper secondary education, minority background, and parent’s educational level. Minority background students include individuals who are immigrants or Norwegian born with immigrant parents. Parental education is measured the year the individual turns 16 and reflects the educational level of the parent with the highest completed educational level, divided into the following three categories: lower secondary (mandatory education), upper secondary or higher education.

Table 5 shows the descriptive statistics for outcome variables (Panel A) and background characteristics (Panel B) for the period 2002–2015, where we separate between treated students from schools in Østfold county and comparison schools. The number of years we can follow the included cohorts in our data varies by outcome measure (see Table 0.1 in the Appendix for an overview). For some treatment schools we do not have access to post-treatment outcome measures.

### 5. Results

Table 6 shows the ITT from a difference-in-differences analysis when we capture the full effect of the treatment – that is, when we only include the cohorts that were affected by the welfare counsellors in schools from the first day of upper secondary education, dropping partially treated cohorts from the analyses.<sup>13</sup> We show the results both with and without control variables. The results are similar in most cases. There are, however, three cases where the coefficients go from being statistically significant to no longer being so when we add controls for background characteristics. This is likely due to some minor changes in background characteristics, as previously shown in Table 2. In the following, we comment on the results in our preferred specification, which includes control variables.

From Table 6<sup>14</sup>, we can see that the presence of the welfare counsellors has increased the proportion still “in school, year t+1” by 1.8 percentage points and the proportion still “in school, year t+2” by 1.4 percentage points. This could mean that more students are progressing at a normal pace through upper secondary education. However, this measure also captures those who retake year 1 of upper secondary education – in the same school or at a different school or on a different track.

To investigate what type of effect is driving the results, we consider the estimates for “normal progression, year t+1”. We observe that the size of the estimate is relatively similar to the estimate for “in school, year t+1”. This implies that the presence of the welfare counsellor primarily contributes to an increased proportion of students moving through upper secondary education at a normal pace in the short run, and not to more students who would otherwise have dropped out retaking year 1. When we consider the effect for “normal progression, year t+2”, the estimate is comparable but loses significance. Considering the impact on on-time completion this indicates that welfare counsellors increase the fraction of students completing on time by 1.7 percentage points, however this coefficient is not statistically significant. We then go on to consider the effect in the slightly longer term – the proportion with “Completion within 5 years” – we find no statistically significant effect.

Our last outcome variables consider whether the programme impacts the number of students considered inactive – that is neither not

<sup>13</sup> The number of schools included in our analyses varies from 87–90 because we have excluded treated schools where we lacked information on post-treatment outcomes.

<sup>14</sup> We have also performed an additional robustness check to investigate whether any one county is driving the results. We run the regressions in column (2) in Table 4 where we drop one control group county at a time. The results are shown in appendix Table 0.2. Reassuringly the coefficients are relatively stable across the different control groups.



**Table 9**  
Subgroup analysis.

	GPA from lower secondary school		Parental education level		Minority background		Gender	
	1st quartile*	2nd-4th quartile	Lower secondary education or less	Upper secondary education	Minority	Other	Boy	Girl
In school, t+1	0.006 (0.012)	0.016*** (0.006)	0.013 (0.009)	0.015** (0.006)	0.033** (0.014)	0.016** (0.007)	0.014** (0.007)	0.023** (0.009)
# Students	61139	187492	45612	201076	22182	226449	127190	121441
# Schools	90	90	90	90	90	90	90	90
In school, t+2	-0.000 (0.011)	0.013** (0.007)	0.010 (0.010)	0.010 (0.007)	0.046*** (0.012)	0.010 (0.008)	0.011 (0.009)	0.016** (0.007)
# Students	57283	172572	43187	185000	19795	210060	117542	112313
# Schools	90	90	90	90	90	90	90	90
Normal progression, t+1	0.036 (0.022)	0.012 (0.008)	0.019 (0.013)	0.024** (0.011)	0.028 (0.020)	0.021* (0.011)	0.023 (0.016)	0.023** (0.010)
# Students	61139	187492	45612	201076	22182	226449	127190	121441
# Schools	90	90	90	90	90	90	90	90
Normal progression, t+2	0.020 (0.019)	0.008 (0.012)	0.016 (0.013)	0.014 (0.013)	0.046** (0.021)	0.011 (0.012)	0.021 (0.017)	0.009 (0.011)
# Students	57283	172572	43187	185000	19795	210060	117542	112313
# Schools	90	90	90	90	90	90	90	90
On-time completion	0.004 (0.017)	0.016 (0.016)	0.010 (0.018)	0.015 (0.010)	0.033 (0.027)	0.012 (0.010)	0.031** (0.013)	-0.001 (0.014)
# Students	47330	144185	37539	152751	15316	176199	97675	93840
# Schools	90	90	90	90	90	90	90	90
Completed within 5 years	-0.037** (0.018)	-0.000 (0.016)	-0.011 (0.019)	-0.009 (0.015)	-0.004 (0.017)	-0.009 (0.013)	-0.006 (0.012)	-0.009 (0.016)
# Students	41699	124342	33066	131952	12643	153398	84730	81311
# Schools	87	87	87	87	86	87	87	87
Inactive, t+1	-0.005 (0.006)	-0.013** (0.006)	-0.013** (0.005)	-0.011** (0.006)	-0.029** (0.012)	-0.012** (0.006)	-0.012*** (0.004)	-0.018** (0.008)
# Students	52867	158577	40698	169309	17585	193859	108052	103392
# Schools	90	90	90	90	90	90	90	90
Inactive, t+2	0.003 (0.011)	-0.007** (0.003)	0.002 (0.009)	-0.006 (0.005)	-0.029* (0.015)	-0.004 (0.005)	-0.008 (0.005)	-0.003 (0.006)
# Students	47988	141287	37496	150550	15078	174197	96760	92515
# Schools	89	89	89	89	89	89	89	89
Inactive, t+3	-0.019 (0.012)	-0.005 (0.012)	-0.002 (0.017)	-0.012 (0.011)	-0.020 (0.040)	-0.015** (0.007)	-0.004 (0.010)	-0.022** (0.011)
# Students	41699	124342	33066	131952	12643	153398	84730	81311
# Schools	87	87	87	87	86	87	87	87

Significance Levels:

- \*\*\* 1%,
- \*\* 5%,
- \* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{it}$  from Eq. (1). Control variables include school fixed effects, year fixed effects, GPA, age indicators for gender, minority background, parental education and track in upper secondary school. *Inactive* means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

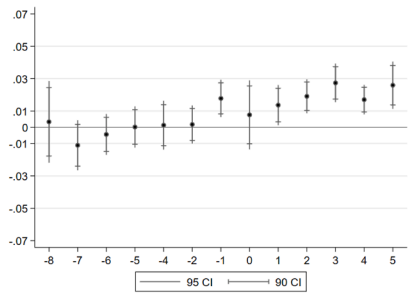
registered in work, education or as unemployed 1, 2 or 3 years following entry into upper secondary education. The results show a 1.5 percentage point reduction for “inactive, year t+1”, but no significant effects for “inactive, year t+2” or “inactive, year t+3”. It is also worth noting that this mirrors the coefficient on still being in school after one year, implying that the reduction in the fraction of students that go on to become inactive one year later is primarily driven by the increase in the proportion who stay longer in school.

As mentioned earlier, the number of cohorts included varies depending on the outcome. We checked that these differences in the sample were not driving the results by running regressions where we kept the sample fixed across outcomes (see Table 7). The coefficient for “in school, year t+2” is no longer statistically significant and neither is the coefficient for “normal progression, year t+2”, but the coefficients are similar in magnitude to the estimates for the full sample. Further, the coefficient for “inactive, year t+2” has increased in size and is now statistically significant.

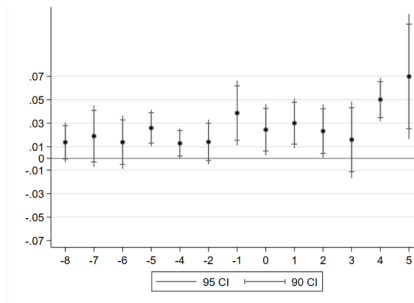
We also investigate whether there are differential effects by treatment cohorts – does the effect increase over time? We run the same set of

estimations while including a separate treatment-indicator for each post-treatment cohort; see Table 8 for results using our baseline specification with an asymmetric “doughnut hole” and the inclusion of control variables. The results show that for most of the outcomes the coefficients are smaller, and in most cases not statistically significant in period t, whereas they increase in size and become significant for later cohorts. This indicates that the implementation quality increases over time.<sup>15</sup> As seen in Table 8, we are not able to follow the last cohorts for our outcomes relating to completion and inactive status, a data constraint which leads us to be more cautious when interpreting these

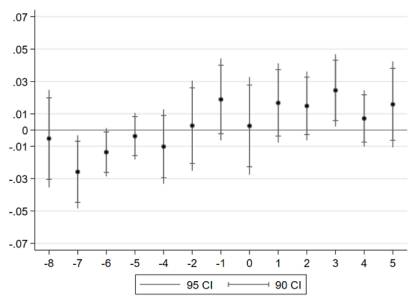
<sup>15</sup> The welfare counsellor programme has inspired the development of a similar programme at national level with some modifications. However, this programme has so far proved to be less successful (Reiling, Salvanes & Sandør 2020), possibly due to the fact that only a few treated cohorts could be included in the analysis. This, coupled with our results indicating that later cohorts had a greater benefit from the programme than early cohorts, suggests that it can be challenging for a new support service to move into schools and function optimally from day one, and that collegial support might be central to achieving a successful programme.



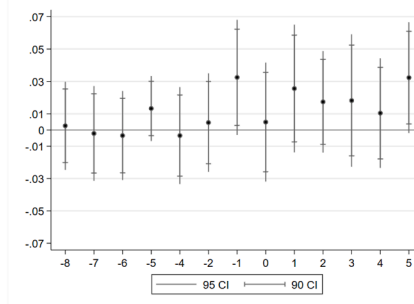
(a) Still in school, year t+1 (as of 1.10)



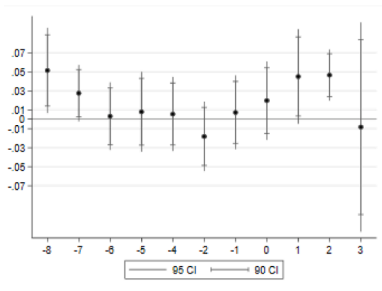
(b) Still in school, year t+2 (as of 1.10)



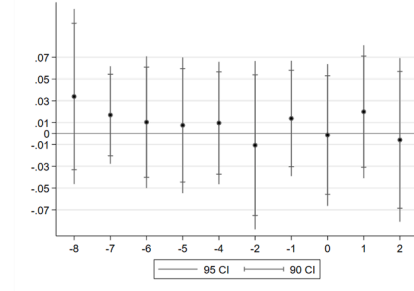
(c) Normal progression, year t+1 (as of Oct.)



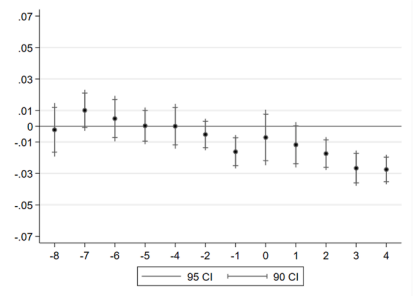
(d) Normal progression, year t+2 (as of Oct.)



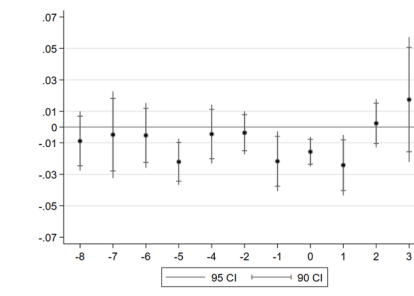
(e) On-time completion



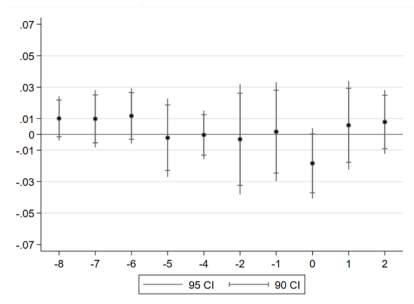
(f) Completed within 5 years (as of 1.10)



(g) Inactive, year t+1 (as of 1.10)



(h) Inactive, year t+2 (as of 1.10)



(i) Inactive, year t+3 (as of 1.10)

Fig. 3. Event-study estimates of the effect of welfare counsellors in schools.

**Table 10**  
Average effects, separate estimates for partially and fully treated.

	(1) DinD, w/o controls		(2) DinD, w. controls		# students	# schools
	Fully treated	Partially treated	Fully treated	Partially treated		
In school, t+1	0.018** (0.008)	0.011 (0.007)	0.018** (0.007)	0.011* (0.006)	254024	90
In school, t+2	0.020** (0.009)	0.012 (0.011)	0.014* (0.007)	0.013 (0.009)	235248	90
Normal progression, t+1	0.024* (0.012)	0.019 (0.015)	0.022** (0.011)	0.020 (0.013)	254024	90
Normal progression, t+2	0.025 (0.015)	0.017 (0.017)	0.015 (0.012)	0.018 (0.013)	235248	90
On-time completion	0.037** (0.017)	-0.024 (0.016)	0.013 (0.011)	-0.023** (0.010)	196900	90
Completed within 5 years	0.002 (0.021)	-0.009 (0.018)	-0.008 (0.012)	-0.011 (0.011)	169385	87
Inactive, t+1	-0.015** (0.006)	-0.012*** (0.004)	-0.015** (0.006)	-0.012*** (0.004)	216837	90
Inactive, t+2	-0.010** (0.005)	-0.006 (0.005)	-0.006 (0.004)	-0.006 (0.004)	193863	89
Inactive, t+3	-0.013 (0.010)	-0.002 (0.015)	-0.013 (0.010)	-0.005 (0.015)	169385	87

Significance Levels:

\*\*\* 1%,

\*\* 5%,

\* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{st}$  from Eq. (1). Control variables include school fixed effects, year fixed effects. In specification (2) additional controls are added: GPA, age indicators for gender, minority background, parental education and track in upper secondary school. *Inactive* means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts in when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

results.

Finally, we perform a set of subgroup-analyses based on GPA, parental education level, minority background and gender.<sup>16</sup> Students with a low GPA upon entering upper secondary education typically fare much worse than students with a higher GPA. In our sample, only 52% of the students in the 1<sup>st</sup> quartile of the GPA distribution follows a normal pace in upper secondary education compared to 86% of the students in the 2nd–4th quartile combined. Similarly, girls outperform boys, Norwegian-born students outperform students with a minority background and there is a social gradient with respect to parental educational level.

In Table 9, we investigate whether there are differential effects between students in the 1<sup>st</sup> quartile of the GPA distribution and students in the 2–4th quartile, minority students and other students, boys and girls and between students whose parents have completed primary education and those whose parents have completed a higher education level. From the table we see that some of the sub-group analysis reveals coefficients that are slightly different in magnitude, but in most cases the difference is not statistically significant except for the case of minority versus other students and for one outcome there is a significant difference between boys and girls. The counsellors appear to have increased the proportion of students enrolled in education one year after start-up by 3.3 percentage points for minority students, compared to 1.6 percentage points for Norwegian-born students.<sup>17</sup> The effect on the share of students still in school two years later is 4.6 percentage points for minority students compared to 1 percentage point for majority students. These differences are partly reflected in the outcome variables that measure whether students progress at a normal pace through upper secondary education.

<sup>16</sup> We also investigated whether there were differential effects for students in vocational compared to academic tracks. There were no significant differences between the two groups. Results are reported in the appendix in Table 0.3.

<sup>17</sup> The results of these tests are available upon request.

The effect on the share of students who are registered in year 2 one year after starting does not differ significantly between the two groups, while the effect of the share registered in year 3 two years after is greater for minority students, with a statistically significant difference. The results also suggest that there is a greater impact on on-time completion for minority students than for other students, but the difference is not significant ( $p$ -value is 0.413). Furthermore, for the proportion registered as inactive one and two years after starting upper secondary education, the reduction is greater for minority students than for majority students, although the differences are not significant (the  $p$ -values are 0.113 and 0.135, respectively). As for boys vs. girls the results are less clear, but the results on normal progression year t+2 suggest that there is a greater impact on normal progression for boys compared to girls, although the difference is not statistically significant ( $p$ -value is 0.473). And the impact on on-time-completion indicates a 3.1 percentage point increase for boys and close to a zero impact for girls – this difference is significant at the 10% level ( $p$ -value is 0.055).

## 6. Sensitivity analysis

### 6.1. Correcting for multiple hypothesis testing

Table 6 shows estimates for the ITT on eight outcome measures, and we therefore need to adjust for multiple hypothesis testing. As we expect our hypotheses to be correlated, we consider the Bonferroni correction to be too restrictive. We therefore use the false discovery rate method (Benjamini & Hochberg, 1995). We order the 9 outcomes from lowest to highest  $p$ -values and assign each outcome a rank – in rising order. Let  $k$  be the largest  $i$  for which:

$$P_i \leq \alpha * i/8,$$

**Table 11**  
Average effects, total effect for partially and fully treated.

	(1) DinD, w/o controls	(2) DinD, w. controls	# students	# schools
	Total, partially and fully treated	Total, partially and fully treated		
In school, t+1	0.016** (0.007)	0.016** (0.007)	254024	90
In school, t+2	0.017* (0.010)	0.013* (0.008)	235248	90
Normal progression, t+1	0.023* (0.013)	0.022* (0.012)	254024	90
Normal progression, t+2	0.022 (0.015)	0.016 (0.012)	235248	90
On-time completion	0.003 (0.017)	-0.007 (0.011)	196900	90
Completed within 5 years	-0.004 (0.018)	-0.010 (0.010)	169385	87
Inactive, t+1	-0.013*** (0.005)	-0.014*** (0.005)	216837	90
Inactive, t+2	-0.008** (0.004)	-0.006* (0.003)	193863	89
Inactive, t+3	-0.007 (0.012)	-0.009 (0.012)	169385	87

Significance Levels:

\*\*\* 1%,

\*\* 5%,

\* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{st}$  from Eq. (1). Control variables include school fixed effects, year fixed effects. In specification (2) additional controls are added: GPA, age indicators for gender, minority background, parental education and track in upper secondary school. *Inactive* means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

where  $P_i$  is the  $i^{\text{th}}$  ranked  $p$ -value, 9 refers to the 9 hypotheses to be tested and  $\alpha$  refers to the adjusted  $p$ -value threshold. All null hypotheses ranked  $k$  or below will be rejected. Table 0.4 and Table 0.5 in the appendix show the results when we use the 5 and 10% significance threshold, respectively. As we see from these tables, only the coefficients for “in school, t+1” and “inactive, t+1” pass this test at the 10% threshold. We are unable to reject the null hypothesis on the basis of this criterion for “normal progression, t+1” (the indicator for whether the student progresses through upper secondary education at a normal pace). However, our main finding still holds; welfare counsellors had a positive impact on the fraction of students who stayed in school, resulting in fewer students being inactive one year after entry into upper secondary education.

## 6.2. Event-study specification

Fig. 3 plots coefficients from event-study specifications (see e.g. Bailey & Goodman-Bacon, 2015) as well as the 90 and 95% confidence intervals for all outcomes. Year 0 represents the first year the welfare counsellor was present at treated schools at the beginning of the school year. Year -3 is the last year that was never-treated, and we use this as the reference year. Years -8 to years -4 are the pre-treatment years and years -2 and -1 are partly treated. We would therefore expect the coefficients to be statistically significant from year -2 at the earliest if there is a treatment effect, but not earlier.<sup>18</sup>

From the figures, we see that most coefficients for the years -8 to -4 are not significant. The results indicate that the experimental and

comparison groups experienced similar time trends prior to the treatment years. For some outcomes these results are more convincing than for others: Fig. 3a, showing the development in the proportion registered as being in education one year after start-up, and Fig. 3g, showing the proportion registered as inactive one year after start-up, both have coefficients close to zero and narrow confidence intervals in all the years before year -1. The larger confidence intervals in Figures f, i, h can be explained by smaller sample sizes, as we were able to follow fewer individuals with these outcomes. This is especially true for Fig. 3d,f, which include the lowest number of observations.

## 6.3. The inclusion of partially treated individuals

Our main specification excludes partially treated individuals from the analysis in order to capture the full effect of treatment. Tables 10 and 11 investigate the sensitivity of our results when these individuals are included in our analysis. Table 10 adds a separate indicator variable for partially treated individuals. We observe that the coefficients on fully treated individuals are not substantially different from the results presented in Table 6, and that for some outcomes there are statistically significant effects even for partially treated individuals, albeit slightly weaker than for the fully treated.<sup>19</sup> Table 11 includes both partially and fully treated individuals in the treatment group. The results show that the coefficients are somewhat smaller in magnitude compared to the results in Table 6. Overall, this tells us that there are some effects for partially treated individuals, and they seem to be somewhat smaller than for the fully treated. However, our main results are not sensitive to how

<sup>18</sup> Due to the gradual roll-out of the treatment we can follow the different timing groups for a different number of relative years after treatment. This means that in the final periods the confidence intervals are typically larger because few treatment schools are included.

<sup>19</sup> For on-time completion, the estimate for partially treated when including controls is negative and significant but the estimate for fully treated individuals is more or less the same as in Table 6.

we deal with the partially treated cohorts.

#### 6.4. Goodman-Bacon decomposition

Recent research has shown that the standard difference-in-differences approach with staggered timing can be biased in the presence of dynamic treatment effects (see Goodman-Bacon, 2021; Callaway & Sant'Anna, 2021; Sun & Abraham, 2021; Athey & Imbens, 2022). Goodman-Bacon (2021) shows that the standard difference-in-differences approach in a staggered design is equal to a weighted average of all two-period/group fixed effects estimators in the data, where weights are proportional to group sizes and the variance of the treatment dummy in each group. If a major part of the identifying variation is attributable to treatment timing when there are dynamic treatment effects, the resulting estimate from difference-in-differences is misleading.

We follow the decomposition proposed in Goodman-Bacon (2021) to assess the weights assigned to the different types of two-by-two comparisons.<sup>20</sup> In our staggered design we have 5 timing groups and one untreated group, resulting in 25 different two-by-two comparisons. We run the Goodman-Bacon decomposition for all the outcomes listed in Table 5.<sup>21</sup> Reassuringly, the resulting decomposition shows that the majority, at least 97.8%, of the identifying variation comes from comparing treated to never treated. This is perhaps not surprising, given that a large part of our sample consists of never-treated schools.

## 7. Conclusion

Completing upper secondary education is increasingly considered a minimum requirement for participation in the labour market, yet many students continue to slip through the cracks of the educational system. This is true also in Norway where about a quarter of students do not complete upper secondary education. Counselling and mentoring are suggested by the OECD to be efficient means of reducing dropout, yet little is known about the causal impact of different types of counselling services. Are welfare counsellors able to help at-risk upper secondary school students?

Our results suggest that welfare counsellors led to more students staying in school, resulting in fewer students becoming inactive – not in school, employment or registered as a job seeker by the local welfare office. There are however no consistent results showing that this translates into increased completion rates in upper secondary education. There may have been an impact on on-time completion, but the estimate is not significant in our preferred specification. When we investigate the impact on upper secondary completion within 5 years – a more standard measure of upper secondary completion in the Norwegian context that allows the students more time to complete – we do not detect any impact on completion rate. This suggests that positive effects were short-lived. Our results indicate that the effect of welfare counsellors increases for later cohorts, likely due to increased implementation quality as the

welfare counsellors settled into their new roles. The subgroup analyses on ability, parental education, gender and minority background, reveal that there are no consistent differences between these groups except when we consider minority background: the effect is twice as large for minority students compared to other students. However, for on-time completion, the effect for boys is about 3 percentage points whereas there is virtually no impact on on-time completion for girls – and this difference is statistically significant at the 10% level.

There are at least three possible explanations for why we do not find stronger evidence that the welfare counsellors increase upper secondary completion rates even though we find that they do have a beneficial effect in the shorter run. First, it is more difficult to complete upper secondary education than to stay one year longer in school, and the additional support of welfare counsellors may not be sufficient in itself to enable students to complete their schooling. Second the students who respond to the treatment may end up spending more than five years to complete a three- or four-year programme. In Norway, about 7% of individuals complete their upper secondary education when they are in their twenties (Albæk et al., 2020). Unfortunately, we were not able to follow treated individuals long enough in our data to capture a longer term completion rate. Third, our findings indicate that the implementation quality may rise over time – leading to larger treatment effects for later treated cohorts. While we were able to follow six cohorts for our “in school” and “normal progression” outcomes, we were only able to follow three cohorts for completion rate outcomes. Our results indicate that the effects are larger and more stable for later cohorts, suggesting that that some caution should be exercised when considering outcomes where only the first treated cohorts are included.

Our results suggest nonetheless that welfare counsellors have the potential to improve outcomes for at-risk students. Researchers and policy-makers are increasingly focusing on the potential of tight monitoring, through counselling and mentoring, to reduce dropout. Although our results are somewhat less optimistic regarding completion rates, they do suggest that bringing support services closer to students can play a crucial role in keeping students longer in school.

#### CRediT authorship contribution statement

**Rune Borgan Reiling:** Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition. **Kari Vea Salvanes:** Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft, Funding acquisition, Project administration. **Astrid Marie Jorde Sandsør:** Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing.

#### Appendix

<sup>20</sup> Goodman-Bacon decomposition requires a strongly balanced dataset with so we can only perform this when we include partially treated cohorts in the analysis.

<sup>21</sup> The resulting graphs are shown in appendix Figure 0.1.



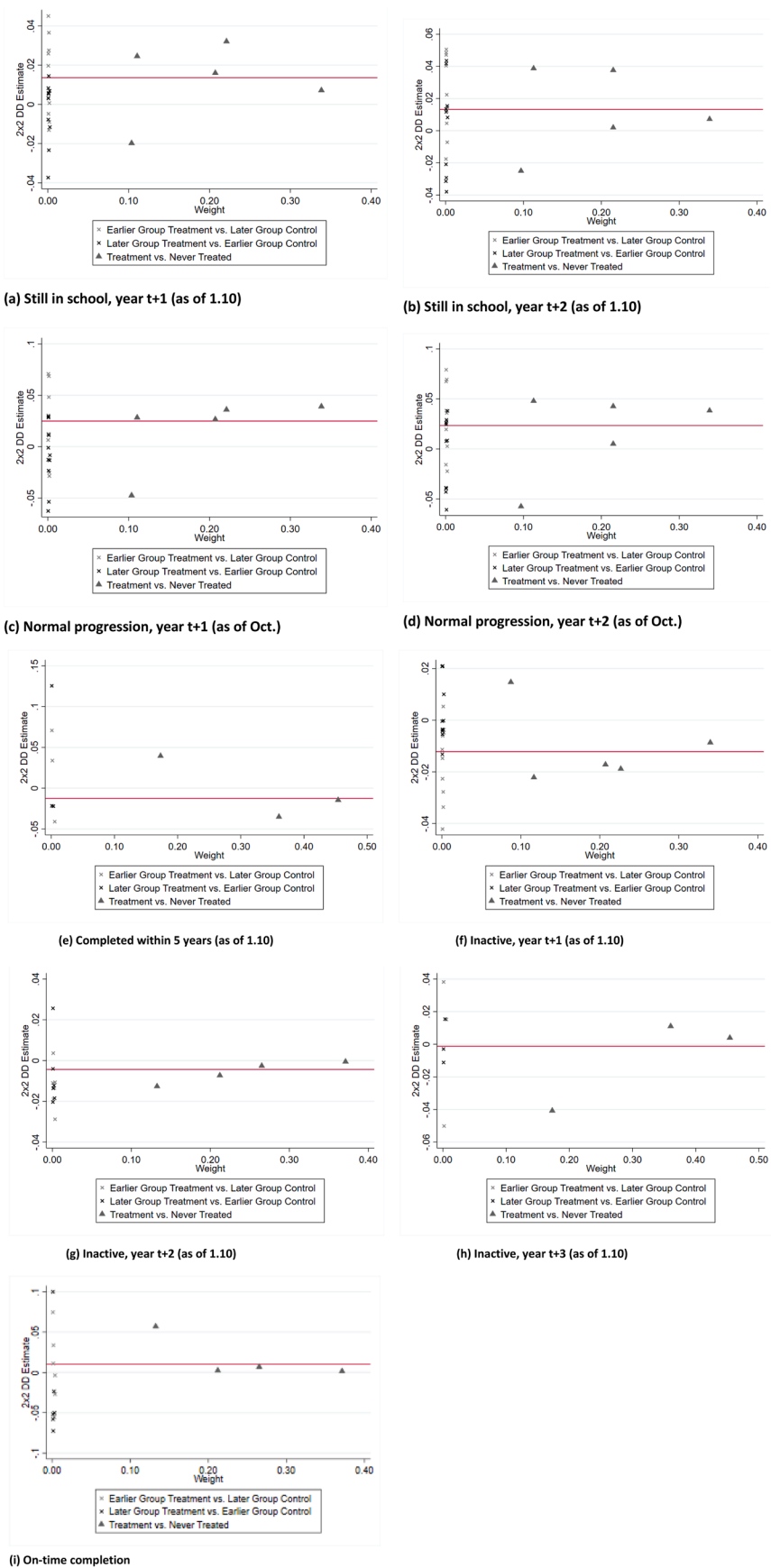


Fig. 0.1. Goodman-Bacon decomposition – single 2 by 2 difference-in-differences and corresponding weights.

**Table 0.1**  
Data availability.

Outcomes	Last year of available data	Last cohort included in the analysis *	Number of included treatment schools
<b>Educational outcomes:</b>			
In school, t+1	2016	2015/2016	9
In school, t+2	2016	2014/2015	9
Normal progression, t+1	2016	2015/2016	9
Normal progression, t+2	2016	2014/2015	9
On-time completion	2016	2012/2013	8
Completed within 5 years	2016	2011/2012	7
Inactive, t+1	2014	2013/2014	9
Inactive, t+2	2014	2012/2013	8
Inactive, t+3	2014	2011/2012	7

\* Cohort is defined as the year students enter upper secondary education for the first time.

**Table 0.2**  
Average effects for fully treated, excluding one control county at a time.

County excluded	In school, t+1	In school, t+2	Normal progression, t+1	Normal progression, t+2	Completion within 5 years	Inactive, year t+1	Inactive, t+2	Inactive, t+3	On-time completion
Akershus (2)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	-0.01 (0.01)	0.015 (0.012)
# Students	171505	158392	171505	158392	111295	145554	128988	111295	131826
# Schools	62	62	62	62	59	62	61	59	62
Hedmark (4)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.02*** (0.01)	-0.01* (0.00)	-0.01 (0.01)	0.019* (0.011)
# Students	224897	207866	224897	207866	149169	191097	170655	149169	173030
# Schools	78	78	78	78	75	78	77	75	78
Oppland (5)	0.02*** (0.01)	0.01* (0.01)	0.02** (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.02*** (0.01)	-0.01 (0.00)	-0.01 (0.01)	0.017 (0.011)
# Students	224036	207056	224036	207056	148538	190393	169965	148538	172205
# Schools	79	79	79	79	76	79	78	76	79
Buskerud (6)	0.02*** (0.01)	0.01* (0.01)	0.03** (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.02*** (0.01)	-0.00 (0.00)	-0.01 (0.01)	0.016 (0.011)
# Students	214040	197792	214040	197792	141659	181887	162371	141659	164690
# Schools	78	78	78	78	75	78	77	75	78
Vestfold (7)	0.02*** (0.01)	0.01* (0.01)	0.03** (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.02*** (0.01)	-0.00 (0.00)	-0.01 (0.01)	0.018 (0.011)
# Students	212730	196595	212730	196595	140849	180734	161365	140849	163772
# Schools	82	82	82	82	79	82	81	79	82
Telemark (8)	0.02*** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.02*** (0.01)	-0.01 (0.00)	-0.01 (0.01)	0.016 (0.011)
# Students	226779	209746	226779	209746	150841	193088	172484	150841	174801
# Schools	80	80	80	80	77	80	79	77	80

Significance Levels:

\*\*\* 1%,

\*\* 5%,

\* 10%.

Notes: Each row represents the regressions in column (2) in Table 4 where one county in the control group is excluded one at a time. Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{it}$  from Eq. (1). Control variables include school fixed effects, year fixed effects. All regressions control for the following background characteristics: GPA, age indicators for gender, minority background, parental education and track in upper secondary school. Inactive means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

**Table 0.3**  
Subgroup analysis, by track in upper secondary education.

	Track in upper secondary education		p-value
	Academic	Vocational	
In school, t+1	0.01* (0.01)	0.01 (0.01)	0.419
# Students	143947	103622	
# Schools	84	85	
In school, t+2	0.01* (0.01)	0.00 (0.01)	0.138
# Students	132616	96177	
# Schools	84	85	
Normal progression, t+1	0.02 (0.01)	0.02 (0.01)	0.893
# Students	143947	103622	
# Schools	84	85	
Normal progression, t+2	0.00 (0.01)	0.02 (0.01)	0.379
# Students	132616	96177	
# Schools	84	85	
On-time completion	0.00 (0.01)	0.01 (0.01)	0.773
# Students	109856	81659	
# Schools	84	85	
Completed within 5 years	0 -0.02	-0.03*** -0.01	0.109
# Students	93710	71271	
# Schools	81	82	
Inactive, t+1	-0.01 (0.01)	-0.01* (0.00)	0.835
# Students	121338	89044	
# Schools	84	85	
Inactive, t+2	-0.01** (0.00)	0.00 (0.01)	0.24
# Students	106827	81386	
# Schools	83	84	
Inactive, t+3	0.00 (0.01)	-0.01 (0.01)	0.508
# Students	93710	71271	
# Schools	81	82	

Significance Levels:

- \*\*\* 1%
- \*\* 5%
- \* 10%.

Notes: Robust standard errors clustered at school level are reported in parentheses. Each estimate comes from a separate regression and is the coefficient on  $d_{st}$  from Eq. (1). Control variables include school fixed effects, year fixed effects, GPA, age indicators for gender, minority background and parental education. *Inactive* means that the individual is not working, in school or registered as unemployed. Parental education is measured the year the student turns 16. Due to data limitations, we are unable to include all cohorts when studying all the different outcomes, i.e. the sample size varies somewhat across outcomes.

**Table 0.4**  
FDR adjustments – 5% significance threshold.

Outcomes	p-values	rank	(i/9) *0.5
Inactive, 1 year later	0.008	1	0.006
Still in school after 1 year	0.012	2	0.011
Registered in year 2 one year later	0.042	3	0.017
Still in school after 2 years	0.065	4	0.022
On-time completion	0.141	5	0.028
Inactive, 3 years later	0.207	6	0.033
inactive, 2 years after	0.209	7	0.039
registered in year 2 two years later	0.212	8	0.050
Complete upper secondary education within 5 years	0.540	9	0.050

**Table 0.5**  
FDR adjustments – 10% significance threshold.

Outcomes	p-values	rank	(i/9) *0.1
Inactive, 1 year later	0.008	1	0.011
Still in school after 1 year	0.012	2	0.022
Registered in year 2 one year later	0.042	3	0.033
Still in school after 2 years	0.065	4	0.044
On-time completion	0.141	5	0.056
Inactive, 3 years later	0.207	6	0.067
inactive, 2 years after	0.209	7	0.078
registered in year 2 two years later	0.212	8	0.100
Complete upper secondary education within 5 years	0.540	9	0.100

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