Treating the untreated: The long-term benefits of (mental) health screening in high school

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Abstract

While many children suffer from mental health issues, less than half of them receive treatment. To increase treatment uptake, the Dutch government introduced (mental) health screening in high schools. While results from a pilot study show positive effects on treatment uptake, causal estimates exploiting the staggered roll-out of the intervention show that screening does not significantly impact the utilisation of healthcare. In line with these null effects on healthcare utilisation, there are no significant improvements in educational and labor market outcomes either.

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JEL: I18, I24, J08, J22

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1 Introduction

One in two individuals will suffer from mental health issues at some point in their lifetime and the majority of those mental health issues emerge during childhood (OECD, 2014; Jones, 2013). These childhood mental health issues negatively affect educational outcomes (Currie et al., 2010) and they are associated with a range of worse long-run outcomes such as employment status, marital status and criminal behavior (Goodman et al., 2011; Anderson et al., 2015; Cornaglia et al., 2015).

Treatment for mental health issues can in some but not all instances be effective in mitigating these negative effects. Chorniy & Kitashima (2016) and Dalsgaard et al. (2014) find that ADHD medication reduces risky behavior and hospital use among youth. Currie et al. (2014) on the other hand find no effects of ADHD medication on academic outcomes. For depression, the use of pediatric antidepressants has also been found to improve academic outcomes (Busch et al., 2014). Similarly, access to youth mental health services reduces crime and improves educational outcomes (Cuellar & Dave, 2016; Deza et al., 2022; Jácome, 2020; Heller et al., 2017).

However, despite the promising effects of mental healthcare and increasing uptake of treatment in recent years, only about half of all children suffering from mental health issues receive treatment (Merikangas et al., 2010; Olfson et al., 2015). Increased uptake of treatment could therefore yield significant benefits. In this paper, I investigate one potential way to accomplish this, namely (mental) health screening in high school. Health screening in high school was introduced in the Netherlands in 2012 in response to reports of increased mental health issues among youth. The intervention comprised a one-hour in-class session in which students completed a questionnaire about their health. If the questionnaire pointed to potential health issues, students received a one-on-one consult and were referred to specialized care if needed. Section 2 discusses the intervention in detail.

Similar to the intervention being studied in this paper, previous papers have examined the effects of mental healthcare being offered within schools: care offered through school-based mental health services (SBMHs) and care offered through school counselors. Golberstein et al. (2023) find that the introduction of SBMHs increases mental health-

care treatment use but does not affect educational outcomes. The second form of mental healthcare being offered within a school is through school counselors. An increase in the number of school counselors does lead to reduced reports of problematic behavior, and in some cases also increases educational outcomes (Reback, 2010a,b). These counselors can provide some form of mental care but their role is broader implying that their positive impact could arise through various channels.

This paper contributes to the literature by examining an intervention in which the full population of children are actively screened for mental health issues and referred to care if needed. The intervention thus aims to increase demand for care. The various papers referred to above on the other hand examine increases in the supply of treatment. This distinction is important as individuals taking up treatment when supply increases, might be very different from individuals taking up treatment because of the intervention being studied in this paper. In particular, an increase in the supply is likely to affect individuals with a higher propensity to seek care, while the screening moment is specifically aimed at individuals with a relatively low propensity to seek treatment. This is especially relevant in the context of mental health, where various minority groups are much less likely to make use of mental health services (Sentell et al., 2007; Cook et al., 2017).

By exploiting the staggered roll-out of the screening moment throughout the Netherlands, I find that the screening moment does not significantly impact the utilisation of care. Heterogeneity analysis shows that these null effects hold for various subpopulations. In line with the absence of an impact on healthcare utilisation, there is no evidence of positive impacts on educational or labor market outcomes measured at the age of 21 or 24. The total completed years of education, the probability of being employed, the corresponding earnings, and the probability of receiving various social benefits are largely unaffected by the screening moment.

These results contradict the conclusions of the pilot study which was run prior to the national implementation of the screening moment (Wisse et al., 2014). This pilot study indicated that 10% of all students were referred to specialised care after the screening moment. One potential explanation between the conclusions of the pilot and this paper lies in the methodology. The conclusions of the pilot studies are only based on treatment

cohorts while this paper controls for the evolution of healthcare utilisation of control cohorts. In the absence of the screening moment, a significant share of the students in the pilot study might have sought care elsewhere offsetting the impacts found in the pilot study. This highlights the need for ex-post causal estimation of policy reforms.

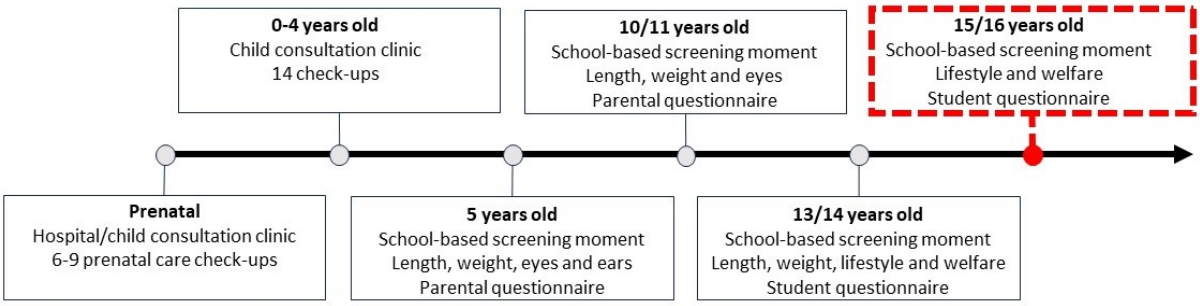
The remainder of this paper is organized as follows: A description of healthcare during childhood in the Netherlands and the exact intervention is given in Section 2 followed by a discussion of the data in Section 3. Sections 4.1 and 4.2 discuss the impact of the screening moment on healthcare utilisation and other outcomes respectively. Section 4.3 examines differential impacts of the reforms on various subpopulations and finally Section 5 concludes.

2 Healthcare during childhood in the Netherlands

Figure 1 gives an overview of the standard healthcare moment during childhood in the Netherlands.[1] During low-risk pregnancies, there are 6 to 9 check-ups at either child consultation clinics or at hospitals. Once a child is born, the child consultation clinic becomes the main provider of care and children receive approximately 14 check-ups between the moment of birth at their fourth birthday. Provision of care is most intensive during the first year with 9 of the 14 consultations happening within that first year. Once a child turns four and enters lower school, check-ups at the consultation clinic end and youth healthcare providers take over. These youth healthcare providers (30 in total) each have their own geographic catchment area.[2] The providers have some flexibility in the services they offer, but the general setup of services is as follows.

Prior to 2012, youth healthcare providers offered three health screening moments in lower and high school. The first screening moment takes place when children are 5 years old. During this screening moment, a nurse goes to the school and checks the length and weight of all children and administers an eye and ears test. Additionally, parents fill in a questionnaire about the health of their child. If either the checks performed by the nurse or the questionnaire filled in by the parents indicate any health issues a paediatrician follows up and invites the parents and child for a consult. If necessary, the paediatrician refers the child to a specialised (health)care provider. The second school-based screening moment takes place when the child is 10 or 11 years old. This second screening moment

Figure 1: Overview of standard healthcare moments during childhood in the Netherlands



[1]The overview shows the care being provided to a child without any health issues. The provision of care can be scaled up if deemed necessary.

[2]See Appendix Figure A.1 for a map of the Netherlands showing the geographic catchment area of each youth healthcare provider.

is very similar in setup to the first screening moment, the only exception being that the hearing of children is not checked.

The third screening moment in school takes place in the second grade of high school when children are usually 13 or 14 years old. Parental involvement decreases as now the children have to fill in a questionnaire about their own health, instead of the parents filling in a questionnaire. Additionally, a nurse again measures length and height and discusses general lifestyle and welfare aspects with the child. In case any healthcare issues become evident, the parents are informed and the child is referred to a paediatrician. Prior to 2012, this screening moment was the final scheduled moment of contact between youth healthcare services and the child.

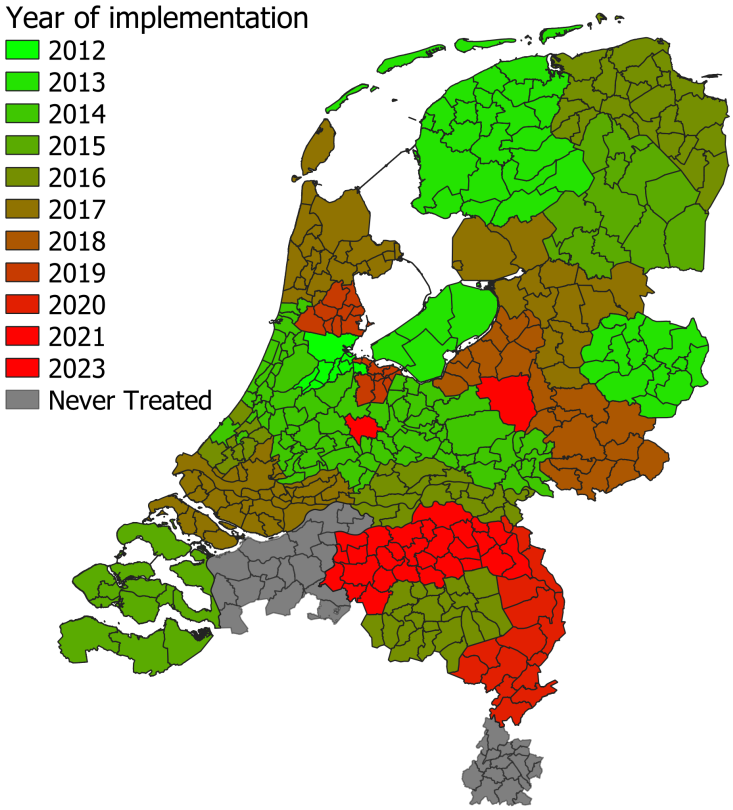
2.1 The reform: Additional health screening in high school

From the mid-2000s onward, various interest groups called for additional health screening of adolescents.[3] As a result, the National Institute for Health and Environment ordered an investigation to be done concerning the desirability and potential set-up of an additional screening moment for children aged between 13 and 18. The resulting policy rapport published in 2008 indicated that such a screening moment was indeed desirable and should take place in the fourth grade of high school when children are aged 15 or 16 years old (TNO, 2008). The screening moment should mainly focus on lifestyle and welfare aspects, with a strong focus on unhealthy/risky behavior and mental health. In particular, the goal of the screening moment should be to detect health(care) issues among students who had no prior indications of issues. In 2009, the National Institute for Health and Environment advised the government to implement the screening moment as recommended in the original policy rapport (RIVM, 2009).

The government followed this advice and made funding available for the youth healthcare service providers from 2012 onward. The actual implementation of the screening moment was however optional, which led to a staggered adoption across the youth healthcare providers. Figure 2 shows how the adoption evolved over time, with the first providers starting in 2012 and 2 providers still not administering the screening moment in 2024.

[3]Among these interest groups were the Medical Association of Paediatricians and the Association of Dutch Municipalities.

Figure 2: Overview of the roll-out of the screening intervention across the Netherlands



The actual setup of the screening moment differs slightly between the providers but most regions use some questionnaire focused on lifestyle and welfare. If the screening moment indicates any potential health issues, students are first referred to either a nurse or a paediatrician. Students can be referred onwards to (health)care specialists if necessary.

A pilot study executed in five high schools by the youth healthcare provider of the city of Amsterdam in the 2011/2012 academic year showed that approximately 60% of the students had (elevated risk of) health issues and were referred to a nurse or peadiatrician(Wisse et al., 2014; Wisse, 2014). Approximately 25% of all screened students received an indication because of mental health-related issues. Among all students that were referred to a nurse or paediatrician, one in four were referred onwards to a specialised healthcare provider or a different kind of youth care provider. In total, 12% of all screened high school students were thus referred for further care. Heterogeneity by educational level was significant, with students at the lowest educational level being twice as likely to be referred to a nurse or paediatrician, compared to students at the higher educational levels.

3 Data

Several administrative datasets covering the entire Dutch population provided by Statistics Netherlands are combined to obtain a complete picture of healthcare utilisation and a range of outcomes for all Dutch high school students. These individual-level data are complemented with data collected on the roll-out of the intervention.

3.1 Sample of interest

The national educational register is used to construct the sample of interest: cohorts of treated and untreated students. The register contains information on the grade and level of education every student is in, in every academic year. Table 1 shows the number of students in each cohort year and the fraction of that cohort living in a treated municipality. The educational data also contains the highest completed level of education in 2023. This will be used as one of the outcome variables in the analysis.[4]

Table 1: Cohort sizes and fraction in treated municipalities

Cohort year year	Cohort size[a]	Percentage living in treated municipality
2009-2011	158.161	0.0%
2010-2011	156.850	0.0%
2011-2012	153.478	1.1%
2012-2013	159.591	10.8%
2013-2014	160.193	16.8%
2014-2015	163.669	33.6%
2015-2016	166.152	42.9%
2016-2017	166.502	57.7%
2017-2018	164.761	72.0%
2018-2019	164.085	74.6%
2019-2020	155.783	77.4%

(a) Number of students in grade 4 in a given academic year

Background characteristics of the students are obtained through the municipal administration database and the tax registers. The municipal administration database allows linkage between students and their parents and it contains information on the age, gender,

[4]The educational data additionally contains information on grades, field of study and grade retention. These measures will be used as additional outcomes in the future

nationality and municipality of residence. These background characteristics are obtained for the student and both parents. Parental characteristics are also complemented with information on annual income from the tax register.

3.2 Data on healthcare utilisation

Information on healthcare utilisation is obtained through the health insurance system. The data set contains yearly expenditures covered by basic health insurance for the years 2009 through 2020. Given the mandatory nature and broad coverage of basic health insurance in the Netherlands, it encompasses the majority of all health utilisation. Expenditures are reported in distinct categories. These categories are grouped into mental healthcare, non-mental healthcare and pharmaceuticals.[5] It should be noted that from 2015 onward, data on mental healthcare expenditures is only available for individuals aged 18 and above. For later cohorts in the sample, there is thus a gap in the mental healthcare data from 2015 until the year they turn 18.

3.3 Data on labor market outcomes

Lastly, data on labor market outcomes will be used as the main long-term outcomes. These outcomes are obtained through the tax registry and contain the monthly employment status, wage earnings, labor earnings. Additionally, the monthly panel data contains indicators for the receipt of various social benefits such as unemployment benefits, sickness/disability benefits and other social benefits. These data are available for the years 2009 to 2022. This makes it possible to follow students for up to 10 years for the first cohorts being treated in 2012.

3.4 Descriptive statistics

Table 2 shows descriptive statistics of the 2011-2012 cohort of students. This cohort is the last cohort consisting of only untreated students given that the earliest implementation of the screening moment was in the 2012-2013 academic year. Given that the intervention

[5]See Appendix Table A.1 for the classification of expenditure categories into mental healthcare, non-mental healthcare and pharmaceuticals.

aimed to increase the uptake of treatment, and given the large differences in treatment uptake between various demographic groups, the table shows descriptive statistics for both the entire population of students and for the subpopulation of students receiving some form of mental health treatment in 2012. Differences in the composition between these two samples indicate differences in the uptake of treatment in various subpopulations.

Table 2: Descriptive statistics of the full 2011-2012 cohort and the subsample receiving some form of mental healthcare in 2012

	Full 2011-2012 cohort	Subsample receiving mental healthcare[a]
Annual healthcare utilization[d]:		
Receiving mental healthcare	9.2%	100.0%**
Mental healthcare expenditures	403.90	4,373.41**
Receiving pharmaceuticals	17.8%	21.8%**
Pharmaceutical expenditures	53.19	69.00**
Physical healthcare expenditures	594.55	1,049.98**
Demographics:		
Age	15.2	15.2
Female	51.3%	50.2%**
Dutch native	78.5%	80.6%**
Educational outcomes:		
Educational track[b]:		
VMBO	56.3%	67.6%**
HAVO/VWO	43.7%	32.3%**
Total years of education[c]	14.5	13.5**
Parental background[e]		
Father's age	48.1	48.1
Mother's age	45.4	45.3
Father native	81.8%	85.1%**
Mother native	78.3%	81.0%**
Single parent household	18.7%	28.8%**
Father's years of education	14.0	14.0
Mother's years of education	13.1	13.2*
Fathers income	€65,597.24	€66,186.12
Mothers income	€24,367.24	€25,169.15**
Household income	€78,402.30	€72,973.35**
Number of individuals	153,478	14,134

(a) all individuals with positive mental healthcare spending in 2012, (b) educational track in grade 4, (c) Total years of education corresponding to the highest completed level of education in 2022, (d) Annual healthcare utilization measured in 2012, (e) Parental background measured in 2012

9.2% of the entire sample received some form of mental health treatment in 2012,

with an average spending of approximately €4300,-. In terms of non-mental healthcare utilization, those receiving mental healthcare are also more likely to use pharmaceuticals and their non-mental health expenditures are approximately twice as large as those of the full sample. This thus indicates the presence of comorbidities.

In 2012, the students were in the fourth grade of high school and their average age was approximately 15. Females and Dutch natives are over-represented in the sample receiving mental healthcare, indicating that they have a higher propensity to receive treatment. In terms of educational level, slightly more than half of all students are in the lower 4-year VMBO track with the remaining students being either in the 5-year HAVO or 6-year VWO track. Mental healthcare utilisation is significantly higher in the lower VMBO track.

There are also notable differences in parental characteristics between students receiving mental healthcare and the full population of students. Similar to their own nationality, parents of children receiving mental healthcare are also more likely to be Dutch natives. Additionally, students receiving mental healthcare are much more likely to live in single-parent households. The higher mothers' income of students receiving mental healthcare is driven by the fact that more of these mothers are single-earners. Total household income is significantly lower among the sample receiving mental healthcare.

Summing up, the descriptive statistics show that approximately 1 in every 10 children received some form of mental healthcare before the intervention. Mental healthcare utilisation was higher among Dutch natives and females and for students in the lower educational VMBO track. Differences based on parental education are limited. To determine whether the intervention has differentially affected different subpopulations, heterogeneity analysis will be performed based on these background characteristics.

4 Empirical analysis

The staggered implementation of the screening moment as shown in Figure 2 creates quasi-exogenous variation in treatment status. This variation can be used in a difference-in-difference setup to estimate the causal impact of the screening moment. The treatment

status in this setup depends on three different aspects, the region a student lives in, the cohort year of the student and the grade the student is currently in. Students living in a treated region become treated once they reach the fourth grade if their cohort year is greater or equal to the implementation year in that region.

It is important to note that the exact estimation strategy differs based on the outcome of interest. For healthcare utilisation, the outcome is observed over time, both before and after the screening moment. However, the educational and labor market outcomes are only observed after treatment. For these outcomes, repeated cross-sections must be used to estimate the impact of the screening moment. Subsection 4.1 first discusses the exact estimation strategies and results for healthcare utilisation. The estimation strategy and results for educational and labor market outcomes are discussed in Subsection 4.2. Subsection 4.3 finally discusses heterogeneity of the impact of the screening moment.

4.1 Impact on healthcare utilisation

Healthcare utilisation is observed annually both before and after treatment occurs. This makes it possible to compare the evolution of healthcare utilisation over time of students who do and students who do not receive the screening moment through a standard difference-in-difference analysis. Recent literature has shown that comparisons between already-treated and not-yet-treated students in a staggered-implementation framework can lead to biased estimates Goodman-Bacon (2021); Borusyak et al. (2021). To avoid these biases, I implement the (Callaway & Sant'Anna, 2021) estimator. This estimator computes separate event-studies for every control group with a different implementation date. A weighted average of these separate event studies is then computed to obtain average dynamic treatment effects. I thus estimate the following specification for each implementation year.

$$H_{irt} = \sum_{l} \beta_l D_{ir} * \tau_t + \tau_t + \tau_r + \varepsilon_{irt}$$

with H a measure of healthcare utilisation for individual i in region r and calendar year t. β_l are the parameters of interest, as they show the deviation in healthcare utilisation of

all students in treated cohorts ($D_{ir} = 1$) compared to students in untreated cohorts. This deviation is normalized to zero at the year prior to the implementation of the screening moment. τ_r and τ_t are region and calendar time fixed-effects. The analysis includes the 2012 to 2015 cohorts, to ensure that all students can be followed for at least 2 years before until 5 years after the intervention. The analysis relies on the parallel trends assumption. The treated student should have had the same evolution of healthcare utilisation as the untreated students, had they not been treated. The pre-implementation β_l estimates can be used to test the parallel trend assumption.

Figure 3 shows the estimated event-study impact on mental healthcare expenditures, physical healthcare expenditures and the use of pharmaceuticals. For all three measures, the pre-implementation estimates are centred around zero implying that students in treated regions followed similar trends as students in untreated regions in the six years before the actual screening moment took place. The post-intervention estimates show that utilisation of mental healthcare, physical healthcare and the use of pharmaceuticals are not affected by the screening moment. For mental healthcare and pharmaceuticals, null effects are found on both the probability of use and annual spending. [6]

The null effects on healthcare utilisation are in contradiction to the conclusions found in the pilot study of the screening moment. One potential explanation for this contradiction is that students with health issues are referred to non-healthcare specialists. Students could for example be referred onward to (school)-counselors or youth workers. Alternatively, students being referred onward to care in the screening moment might also have sought care elsewhere in the absence of the screening moment. To confirm or reject these two explanations, further analysis using additional data is required.

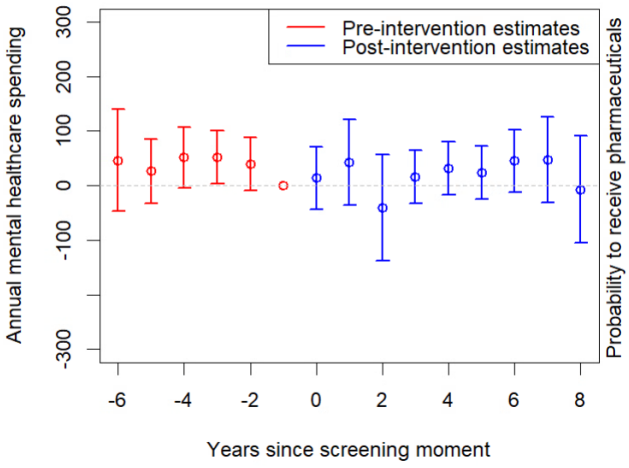
4.2 Impact on educational and labor market outcomes

While the previous section indicates null effects of the screening moment on healthcare utilisation, the screening moment could have impacted non-healthcare aspects such as the use of school-counselors or youth workers. This section therefore examines impacts on educational and labor market outcomes. From a methodological perspective, this creates

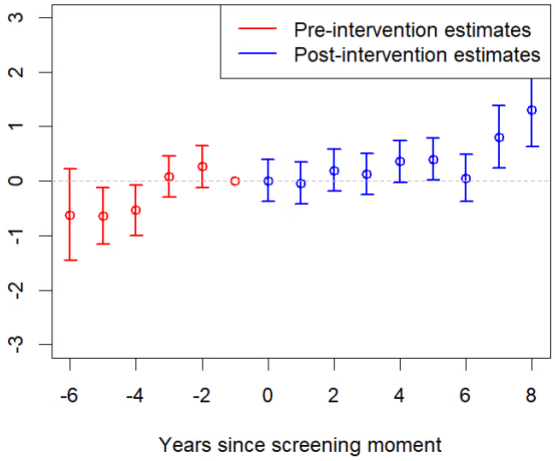
[6] Placebo estimation on earlier cohorts also shows no significant impacts on healthcare utilisation.

Figure 3: Estimated event-study estimates and 95% CI of the impact of the screening moment on healthcare utilisation

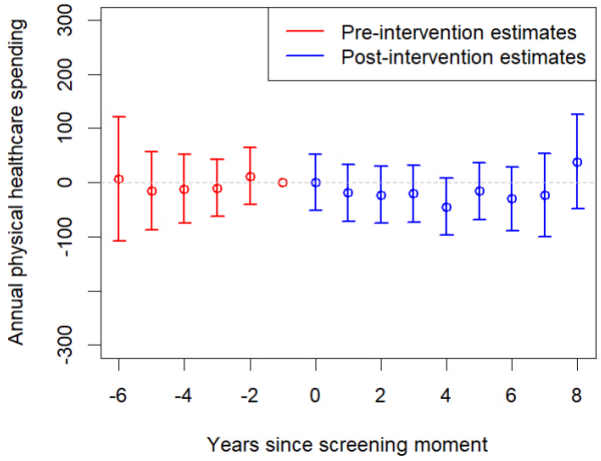
(a) Mental healthcare expenditures



(b) Pharmeceutical utilisation



(c) Physical healthcare expenditures



a challenge as these outcomes are only observed at later ages, and the screening moment has taken place. It is thus no longer possible to analyse the evolution of the outcome over time. To resolve this challenge, variation in treatment status between cohorts across regions is exploited.

In untreated regions, all subsequent cohorts are untreated. In treated regions, cohorts that reach fourth grade before the year of implementation are untreated, while cohorts that reach fourth grade after the year of implementation are treated. This variation in treatment status can be exploited to estimate the impact of the screening moment on post-treatment outcomes. The methodological approach is similar to that used for the impact on healthcare utilisation. There are two main methodological differences compared to the analysis of healthcare utilisation. First of all, every individual is in the data only once. The outcome for this individual is measured at a fixed age. I consider outcomes when students are either 21 or when they are 24. The second main difference is that the "time" variable in all plots is cohort-year since implementation instead of calendar-years since implementation.[7]

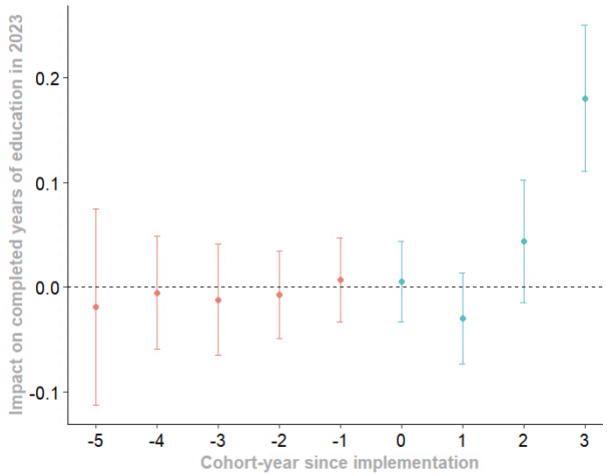
Figure 4 shows the estimated impacts when looking at outcomes measured at age 21. For illustrative purposes, assume that the screening moment is implemented in all treated regions in 2012. This implies that in treated regions, the 2009 until 2011 cohorts are untreated while the 2012 until 2015 cohorts are treated. The event-study analysis compares the outcomes of these subsequent cohorts, to the 2009 until 2015 control cohorts which are all untreated. The estimate corresponding to -3 on the x-axis in Figure 4 for example compares the cohort that was in the fourth grade 3 years prior to the implementation in the treated region, to the same cohort in the control regions. In the setting where the screening moment was implemented in 2012, this point thus compares the 2009 cohorts in the treated region to the 2009 cohort in the control region. Both of these cohorts are untreated and all of the estimates prior to 0 thus test for parallel trends in the cohort-by-cohort evolution before the screening moment was implemented.

The estimate corresponding to 0 in the x-axis, compares the first cohort that received the screening moment, to a control cohort. In this example, it thus compares the 2012

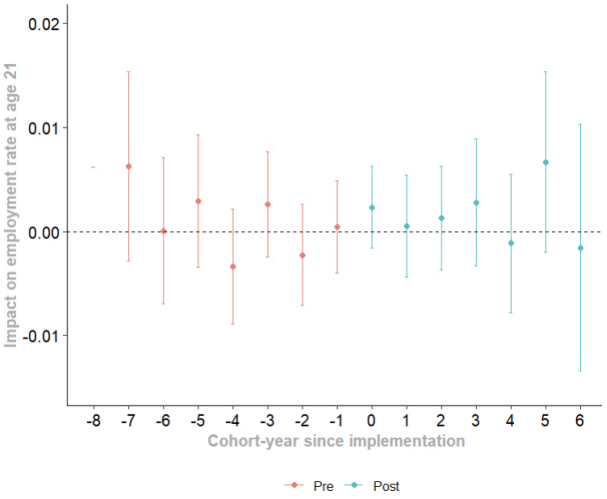
[7]This methodological approach can also be used for healthcare utilisation. Results are similar.

Figure 4: Estimated event-study estimates and 95% CI of the impact of the screening moment on educational and labor market outcomes at age 21

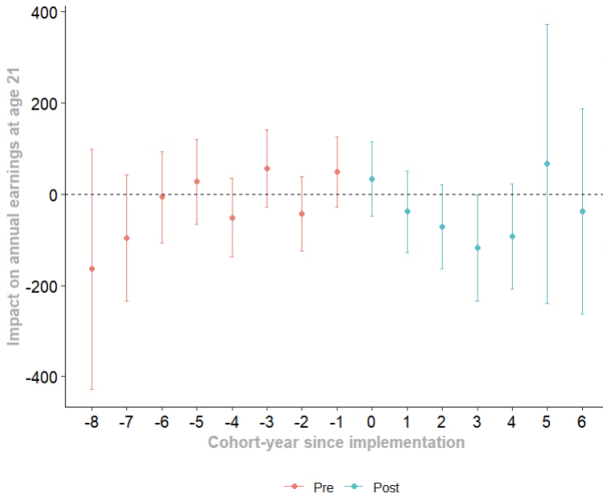
(a) Years of education



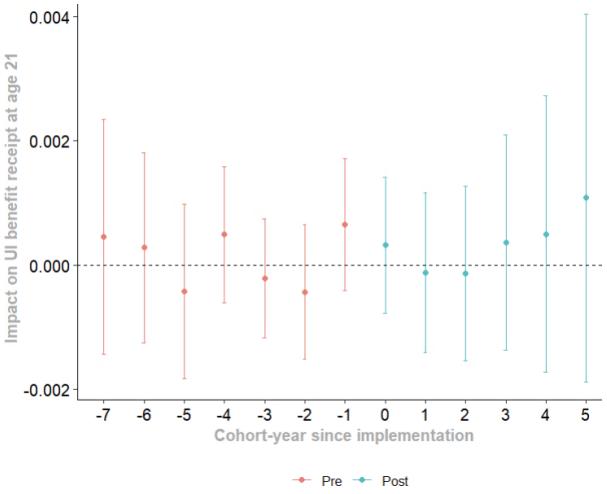
(b) Employment



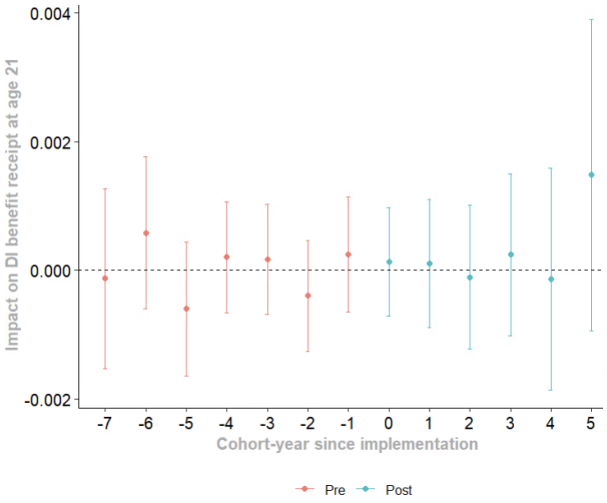
(c) Earnings



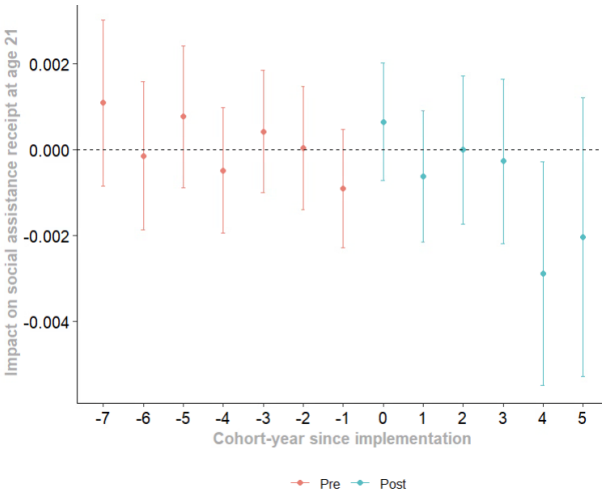
(d) Unemployment benefits



(e) Disability benefits



(f) Social assistance



cohort in the treated region to the 2012 cohort in the control region. The treated cohort has received the screening moment and hence this estimate shows the impact of the screening moment on the outcome. The estimates for higher years should be interpreted with caution, as they compare cohorts entering fourth grade many years after the implementation of the screening moment. For these cohorts, other aspects of the healthcare or educational system might also have changed.

The estimates in Figure 4 (a) show that the total years of completed education are unaffected by the reform. The estimate for the cohort that entered fourth grade 3 years after the implementation is most likely an outlier. This estimate is only based on treated 2015 cohorts in regions where the screening moment was implemented in 2012. The estimated impacts on the various labor market outcomes for the cohorts after the implementation of the screening moment are also insignificantly different from zero.

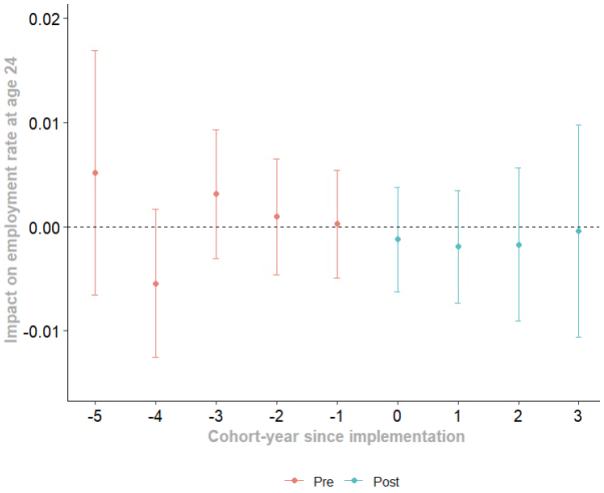
One potential reason for these null effects might be that a large share of the cohorts are still in school at the age of 21. Figure 5 therefore shows the estimated impacts when considering outcomes measured at age 24. It should be noted outcomes at age 24 are only observed for students in the 2014 cohort or earlier cohorts. The sample is therefore smaller and the treated regions correspond to providers which implemented the screening moment relatively early. The estimated impacts again suggest null effects of the screening moment on labor market outcomes at age 24. Some of the age 24 estimates are borderline significant but these significant estimates are not concentrated in one (or multiple) unique cohort and differ significantly between the various treated cohorts. The estimates should therefore be interpreted with caution.

4.3 Heterogeneity of impact

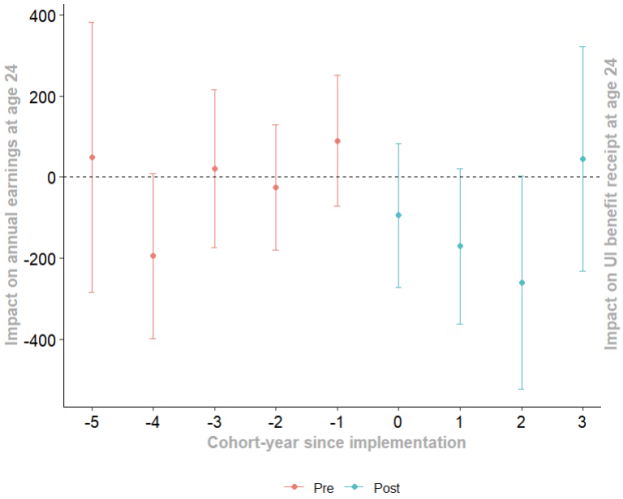
The screening moment was introduced to uncover health issues among students who were not receiving treatment yet. Given that the uptake of treatment can differ strongly between various subgroups of the population, the screening moment might have affected these different subgroups differentially as well. Specifically, for a fixed level of health, subgroups with an ex-ante low probability of using treatment could have benefited more from the screening moment. If this would be the case, the gap in treatment uptake

Figure 5: Estimated event-study estimates and 95% CI of the impact of the screening moment on educational and labor market outcomes at age 24

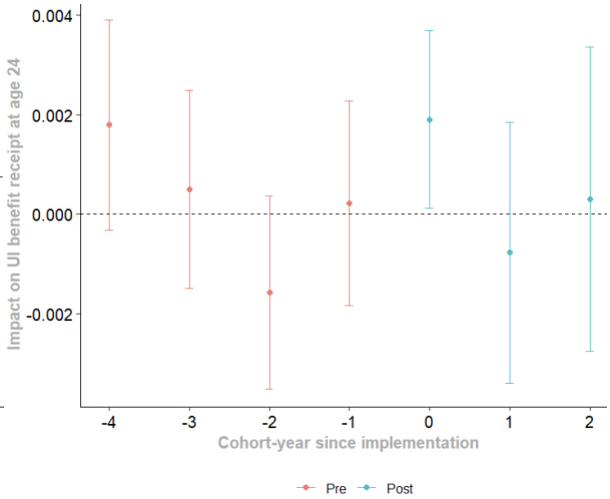
(a) Employment



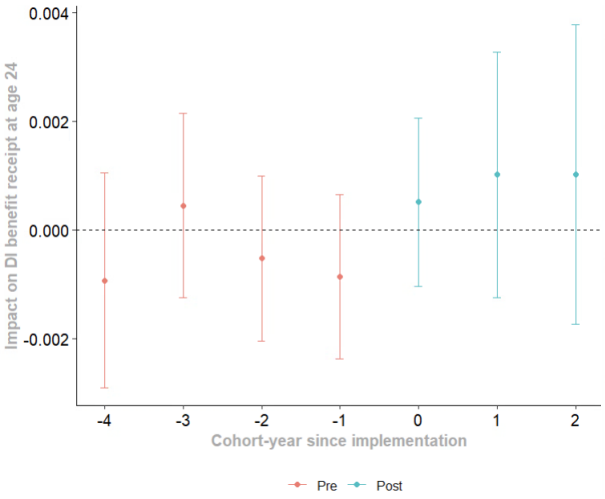
(b) Earnings



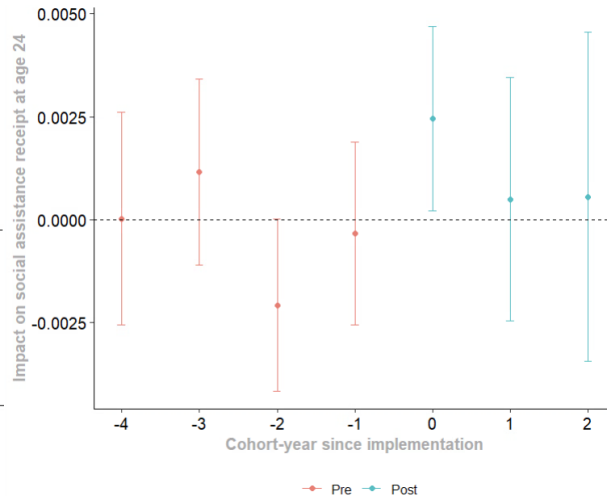
(c) Unemployment benefits



(d) Disability benefits



(e) Social assistance



between these groups should decline.

To test whether this is indeed the case, Table **??** shows the heterogeneity of the impact of the screening moment. Estimates are obtained using split sample analysis. For all outcomes, the table shows the average outcome of the last cohort comprised of only untreated students (the 2011-2012 cohort) and the difference-in-difference estimate of the impact on healthcare utilisation and employment measured at the age of 21. The baseline averages show that the utilisation of healthcare differs strongly based on the background characteristics of the students. The utilisation of care is highest among females, students who followed the lowest educational track (VMBO) and students from either single-parent or below-average household-income families. Note that these differences in treatment uptake could either be caused by a higher propensity to use care conditional on health, worse health, or a combination of both.

The estimates in Table **??** show that the screening moment did not impact any of the healthcare, educational or labor market outcomes for any of the subgroups considered. The screening moment was thus not successful in increasing treatment uptake among groups with low pre-intervention healthcare utilisation.

5 Conclusion

The onset of the majority of all mental health issues occurs during childhood and these childhood mental health issues are associated with a wide range of negative short- and long-term outcomes (Currie et al., 2010; Goodman et al., 2011). Despite this negative association, less than one-in-two children with mental health issues receive treatment for these issues (Merikangas et al., 2010). To increase the uptake of treatment, the Dutch government introduced a (mental) health screening moment in high school. A pilot study showed that one-in-ten students were referred to specialised care in such a screening moment.

By exploiting the staggered roll-out of the screening moment throughout the Netherlands, I show that the screening moment does not significantly impact the utilisation of mental healthcare, physical healthcare or the use of pharmaceuticals. I subsequently analyse the impact on educational and labor market outcomes and found no significant improvements. The total completed years of education of students who are screened for health issues in high school is similar to that of untreated students. Looking at labor market outcomes there is no significant impact of the screening moment at the age of 21 and 24.

The null effects found in this paper contradict the results of the pilot study on the screening moment. One potential explanation for this is that students are referred to non-healthcare specialists such as school counsellors or youth workers. Alternatively, the students who are referred to specialised care after the screening moment might also have sought care elsewhere in the absence of the screening moment. The contradiction between the pilot study and the results in this paper does highlight the need for ex-post causal analysis of policy reforms.

The null results found in this paper are very different from the positive impacts found by Golberstein et al. (2023) when looking at the introduction of school-based mental health services. Further research is required to determine whether interventions which actively screen for health issues could be effective if implemented in a different format.

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A Appendix

Figure A.1: The geographic catchment area of the 30 youth healthcare providers

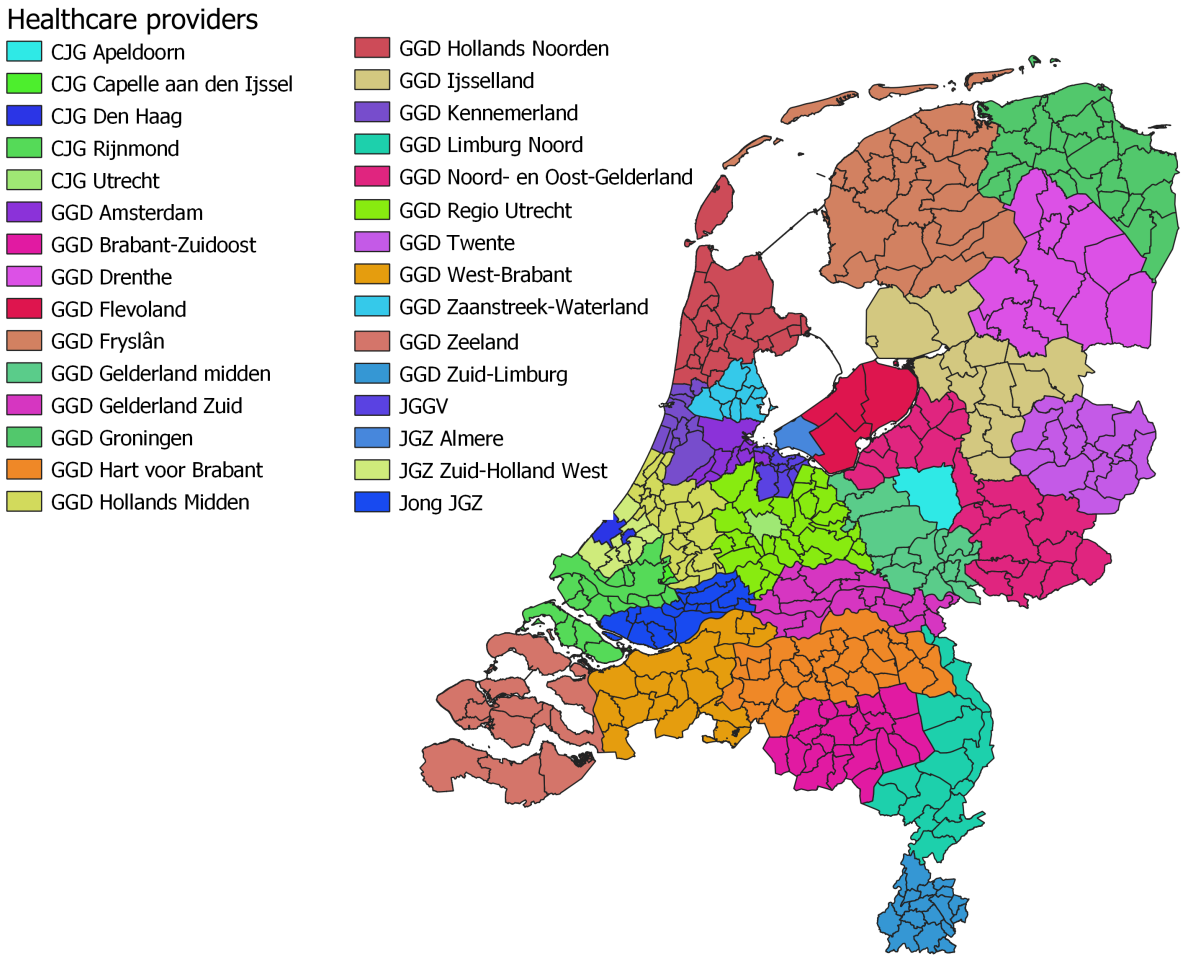

Table A.1: Construction of mental healthcare expenditures and physical healthcare expenditures based on expenditure categories used by Statistics Netherlands

Mental healthcare	Non-mental healthcare	Pharmaceuticals
First-line psychological healthcare	General practitioner	Pharmacy
Mental healthcare	Hospital healthcare	
Basic-mental healthcare	Paramedical healthcare	
Specialist mental healthcare	Nursing without stay	
Geriatric rehabilitation healthcare		

Note: Several expenditure categories, such as healthcare abroad and other costs, as used by Statistics Netherlands are excluded from all categories as it is not clear to which category they belong.