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Evaluation of the career guidance programme BRIDGE in South Rotterdam

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Summary

Compared to North Rotterdam, the other big cities in the Netherlands and the remaining part of the Netherlands, South Rotterdam performs worse on many indicators, including unemployment. One of the factors responsible for the higher unemployment is the fact that young people in South Rotterdam reach a lower level of education and more often choose a field of study with poor labour market prospects. For that reason, career guidance is an important priority for the National Programme for South Rotterdam, which was developed to improve the situation in this part of Rotterdam. In 2012, a three-year project called BRIDGE was launched that enabled the schools in South Rotterdam to strongly intensify their career guidance activities. BRIDGE was subsidised by the European Commission. This paper deals with the evaluation of this project.

The paper provides empirical evidence that suboptimal education choices and early school leaving are responsible for about 30 per cent of the weaker labour market position of young people in South Rotterdam compared to young people living outside the four big cities. This justifies the use of career guidance as a policy measure. At the same time, it means that an even higher part of the difference is caused by other factors. These other factors are for the most part related to the fact that South Rotterdam has a high share of people with a migration background. Discrimination by employers is one of the problems people with a migration background have to cope with, but other factors like cultural factors also play a role.

The paper shows that BRIDGE has led to the introduction of new career guidance instruments and has thereby broadened the set of career guidance instruments available to school students in South Rotterdam, although not all of these new instruments have been successfully implemented. Furthermore, the participation in existing career guidance instruments has increased. Does more career guidance lead to better education choices? In the evaluation literature, only few studies deal with the effect of career guidance on the chance that students choose study fields in vocational education with better labour market perspectives. With respect to BRIDGE, a comparison between South and North Rotterdam does not provide evidence that this programme has been effective. However, the method used for this analysis is not watertight and a small positive effect, although unlikely, cannot be completely excluded.

Finally, the paper investigates what effect size is needed to produce benefits that are sufficient to cover the costs of BRIDGE. It appears that when a student shifts from a study field with a poor labour market perspective to one with a good perspective, the life-time benefits are substantial. When only one per cent of the students make such a shift, it may be enough to the costs of the career guidance activities.

The most important limitation of our evaluation is that we could not carry out a rigorous impact assessment. In the Dutch education sector, there is no support for a control group approach, particularly when it involves random assignment. Without good evaluations it will be difficult to make progress in Dutch career guidance policies. Recent research initiatives may give more insight in the effectiveness of career guidance in a few years time.

Keywords: career guidance, cost-benefit analysis, evaluation, labour market, vocational education

Introduction

This paper evaluates a programme called BRIDGE that was carried out between 2016 and 2019 in South Rotterdam. It consists of over twenty career guidance instruments that are applied in primary education, secondary general education and secondary vocational education (sve¹). Its main focus is on preparatory secondary general education (psev²), which prepares for secondary vocational education. The main objective of this programme is to encourage more young people in South Rotterdam to follow secondary vocational education in a field that offers them good opportunities for sustainable work. The second aim is to encourage them to complete their education at the highest possible level within secondary vocational education.

The background of the programme is that in socioeconomic terms South Rotterdam is lagging behind North Rotterdam, the other major cities (Amsterdam, The Hague and Utrecht) in the Netherlands and the remaining part of the Netherlands.³ In South Rotterdam unemployment and crime rates are higher and employment rates, educational level, income and housing quality are lower than elsewhere. These problems are all interrelated, which makes it difficult to solve them. That is why it is thought that it will take 20 years to bridge the gap with the other parts of the Netherlands. Therefore, a national programme for South Rotterdam (NPRZ) that was installed in 2012 to deal with the problem, will be active until 2032.

Compared to other cities and regions, young people from South Rotterdam not only reach a lower level in secondary vocational education, but also tend to choose fields of study that are less in demand in the labour market. That is why NPRZ decided to make education one of its priorities. Technology, health care and logistics are the areas in which NPRZ would like to see more young people graduate. With financial help from the UIA programme of the European Commission, the BRIDGE programme for career guidance was made possible. Already from the start it was envisaged that this three-year programme would not be enough to fully realise the goals set out by NPRZ with respect to education and that continuation of the interventions after BRIDGE would be needed.

There are several basic assumptions underlying the BRIDGE programme. The first assumption is that suboptimal choices in education are a major cause for the high youth unemployment in South Rotterdam. The second assumption is that these suboptimal choices are largely caused by the fact that children and their parents cannot make good educational choices due to a lack of labour market information and decision-making skills. The third assumption is that schools were not doing enough in the field of career guidance. BRIDGE provides the means to intensify the use of existing career guidance instruments and to develop and apply new ones. If these assumptions are true BRIDGE is potentially effective. However, effectiveness also requires adequate design and implementation of the interventions. This is the fourth assumption for an effective programme. In this paper, these assumptions are treated as hypotheses and together constitute the policy theory behind the programme. In the evaluation, each hypothesis will be examined.

The paper is largely based on a Dutch report (Gelderblom et al., 2019), but presents the material in a somewhat different way. Another difference is that the paper pays more attention to the

¹ Dutch abbreviation: mbo.

² Dutch abbreviation: vmbo.

³ South Rotterdam is the largest part of Rotterdam south of the river Maas. The remaining part of Rotterdam largely lies north of the river. Therefore, we use the term North Rotterdam for it.

international evaluation literature with respect to career guidance for school students. Furthermore, the paper tries to make a statistical estimate of the effect of BRIDGE on the chance that young people choose a study field in secondary vocational education with a good labour market perspective (technology, health care or logistics).

The paper concentrates on the effect of career guidance in psve and on one important career guidance intervention in sve. Psve is a four-year course that follows primary education.⁴ The first and second grade of psve consist of general education. In the second year, psve students choose a profile that is related to a particular type or group of occupations (technical occupations, for example). Then, the third and fourth grade are mostly devoted to subjects related to this specific type or group of occupations. This prepares them for secondary vocational education. The latter results in a diploma as a skilled craftsman. Career counselling can influence both the profile choice in psve and the choice to continue in sve in the same study field. The job guarantees scheme may also affect the choices. This scheme states that young people completing a course in the one of the sve study fields prioritised by BRIDGE are guaranteed to get a job.

The paper is structured as follows. Firstly, we give a review of the literature about career guidance. Secondly, we analyse to what extent suboptimal choices in vocational education are responsible for the fact that unemployment among young people in South Rotterdam is higher than in the remaining part of the Netherlands. Then we discuss the extent to which these suboptimal choices are due to factors that have to do with the quality of the decisions made or with other factors, for which career guidance provides no solution. The next section deals with the effectiveness of the interventions that were implemented during the BRIDGE program, followed by a section in which we try to estimate how large the effect size must be in order to yield benefits that are just enough to cover the costs of the programme. The last section contains the conclusions and some concluding remarks.

What is career guidance and what do we know about the effectiveness of career guidance for school children?

Career guidance has quite a long history, which goes back to the early twentieth century, when an American lawyer and engineer (Parsons, 1909; cited by Herr, 2013) laid the foundations for it. Parsons was concerned with the fact that, in his time, schools were mainly teaching by book-learning and that students were not trained in the skills needed in the labour market (Herr, 2013). He developed a model that basically contains the elements that are still thought to be important in career guidance: a) understanding of oneself in term of interests, abilities, etc., b) knowledge of requirements, abilities, compensation, opportunities, etc., and c) reasoning about the relations between the subjects mentioned under a) and b). Getting people to work is a critical element in his approach. This element is still reflected in later definitions. Herr mentions the following influential definition by Super (1957) who defines career guidance as:

“the process of helping a person to develop and accept an integrated and adequate picture of himself and of his role in the world of work, to test this concept against reality, with satisfaction to himself and to society”.

This definition reflects both the interest of the individual and that of society. Herr mentions that in the United States career guidance has been used to promote enrolment in courses in engineering

⁴ Career guidance already starts in the higher grades of primary education and could also affect the profile choice in psve. but the three-year period of BRIDGE was too short to determine this. Furthermore, there is evidence that career counselling in primary education is still in a premature stage.

and technology, because shortages in these fields were a danger to economic development. In more recent definitions the continuing relevance of career guidance during work life is stressed (see the OECD (2004), for example).

In this paper we concentrate on career guidance for school students in psve, who are quite young. When they must choose their study profile, most of them are 13 or 14 years old. Two years later they must make their choice for a study field in sve. For most of the children in this age category, educational and occupational choices are very difficult. They do not know much about the content of the occupations corresponding with the profiles and study fields, nor are they well informed about job chances, pay and working conditions in the various economic sectors. Furthermore, they have difficulties in reflecting on their own preferences and abilities and find it difficult to weigh off the positive and negative aspects of the various profiles and fields of study. Their choices of profile and study field are highly influenced by their social environment and particularly by their parents and their peers. However, the social environment is not always a reliable source of information for educational choices. This is particularly true for children from poor families. When their parents have work experience, it is often in unskilled work, which does not provide them with the type of information relevant for work at the level of secondary vocational education. The images that these children and their parents have of professions often do not correspond with reality. For example, work in the field of technology is often associated with dirty hands and poor working conditions, which is not representative anymore for modern manufacturing industry. It is also important to note that only eight years ago the idea that the manufacturing industry would disappear from the Netherlands altogether and that its economy would entirely become a service economy was widespread, even among policy makers. Now, this has completely changed in policy circles, but changing an image among the population takes more time. Culture also plays a role. In migrant families, office work has a higher status than work in technology or health care, while in reality the latter give a higher job chance and higher pay. In health care, the fact that nurses must nurse patients of the other sex is a barrier for some cultures.

It is questionable whether career guidance will always enable children in this age category to make a deliberate choice. Suppose that a given student is interested in economics and technology and has all the information and career skills needed for the choice between the two. He finds economics easier to do but appreciates technology more for its higher job chances and its higher pay. Then, the choice may still be very difficult to make. It is even possible that the student had a clear choice in mind but is confronted with more attractive options during a career guidance programme and becomes more indecisive as a result. Furthermore, the provision of career guidance to pupils by schools may not prevent parents from influencing their child. Parents may have different views about education choices than their child. Even when the parents are also provided with career guidance, it might not lead to a situation in which the parents agree with their child about the education choices. They may have different views about the ability of the child to complete a course in a technological field, for example. A test might then convince them both that the child can complete such a course or not. School can even consider giving a study advise to students that are still inconclusive after participating in career guidance activities. Particularly, for psve children who will not take the route to higher vocational education after completing secondary vocational education, it is extremely important to choose a field of vocational education that is in demand in the labour market. For example, for children that complete their courses in sve at level two, technology gives much better prospects of finding a job than the other fields. So, it is important that children who can complete such a course, are fully aware of the advantages of choosing it.

Based on the international literature, the OECD concludes that most studies assessing the education, economic and social effects of career guidance for school children find significant positive effects. Studies finding negative effects are an exception. The OECD relies mostly on a literature review study by Hughes et al. (2016). The latter study reviews 73 studies, of which 33 use a randomly assigned control group approach. The other 40 studies also compare outcomes for participants of career guidance interventions with outcomes of non-participants, but only control for observed characteristics.⁵ It may well be that participants are more motivated than non-participants and that motivation also affects the outcomes positively. When motivation is not observed this would lead to overestimation of the effects of career guidance. This pattern has been observed in the evaluation of re-integration policies for the unemployed. Since randomised controlled trials have become customary in this field, the effects found tend to be lower than in the older literature that did not control for selection caused by unobserved factors. Therefore, the OECD is right in its warning that the results presented by Hughes et al. might be too optimistic.

With this warning in mind, we now turn to the results found by Hughes et al. They mention several types of career guidance interventions. However, their classification does not completely correspond with the types of interventions found in the BRIDGE programme. Work experience and work-related training, which are in the list of interventions mentioned by Hughes et al., are an integral part of Dutch secondary vocational education. In the apprenticeship (or 'dual') variant, students combine part-time education with a part-time job. In the theoretical variant, they have several internships throughout their study. Therefore, BRIDGE did not include interventions like these. Neither does it include 'volunteering' (volunteering in a workplace while in full-time education). Perhaps the societal internships that are part of BRIDGE bear some resemblance to work experience and volunteering. Another intervention lacking in the BRIDGE programme is 'enterprise' (an activity in which pupils work together to create an enterprise).

Interventions from the list that correspond to some degree with the BRIDGE interventions are 'careers provision' (career dialogue with a professional, learning to manage one's career and career information), 'job shadowing' (a short period of career exploration within a workplace) and 'transformative leadership' (for example training staff about their role in career guidance). Interventions aimed at parents are not explicitly mentioned by Hughes et al., although parents are known to have a great influence on the educational choices of their children. BRIDGE does contain an intervention aimed at parents. Company visits also form an important part of BRIDGE. In the typology used by Hughes et al. this probably falls under 'careers provision'. Each type of career guidance distinguished by Hughes et al. marks a large diversity in concrete interventions. For that reason, it will be difficult to compare the outcomes of the BRIDGE programme with the evidence about impacts reviewed in Hughes et al.

Given the focus of the BRIDGE programme, we take a closer look at the results found by Hughes et al. with respect to work experience, careers provision, job shadowing, mentoring and transformative leadership. Overall, about two thirds of the studies show generally positive effects, while only two studies show generally negative outcomes; the other studies give mixed results. This gives a clear indication that career guidance is helpful to young people. The same conclusion can be drawn when we specifically look at effects on education results, economic outcomes and social outcomes. Most

⁵ In case of random assignment, a well implemented experiment of sufficient size implies that the control group has the same composition as the experimental group. Non-experimental studies have to deal with the possibility that non-observed factors both influence participation in career guidance as well as the outcomes of the career guidance. If no correction is made for this, the effects measured will be biased. Motivation often leads to higher participation and better outcomes, which then leads to overestimated effects.

evidence is available for education results (45 studies measuring effects of 67 interventions), followed by economic results (27 studies measuring effects of 49 interventions) and social results (25 studies measuring effects of 36 interventions).⁶ It is more difficult to draw conclusions for each type of intervention. For example, for job shadowing there are only three studies about education effects, five about economic effects and one about social effects. We cannot draw reliable conclusions from such a small number of studies. When we require a minimum of 10 studies for a combination type of effect/type of intervention, only careers provision (for all three effects) and mentoring (only for education effects) meet this criterion. For the latter cases the evidence points in the same direction as for all studies taken together: about two-thirds of the studies has generally positive outcomes, while there are no studies with generally negative outcomes.

The literature reviewed by Hughes et al. is mainly American. They also included a reasonable number of studies from the UK. Only few studies from other countries are considered. The number of studies referring to continental Europe is very low. Only two Dutch studies (Kuijpers & Meijers (2009) and Huber, Sloof & Van Praag (2012)) and one Finnish study are included. There is no mention of German studies at all, while Germany has probably the most developed system of vocational education, which is an important supporting pillar of its economic success. It is quite possible that this limitation causes a bias in the study by Hughes et al. In the German system, which is largely based on apprenticeships, the connection with the labour market is inherent to the system. When a young person finds a place as an apprentice, it is very likely that he will get a job once he has completed his apprenticeship period.

The Dutch system is more like the German than the American or British system. In the Netherlands, schools for secondary vocational education provide the theoretical training that apprentices get in addition to their practical training in a part-time job. These schools also provide full-time vocational education. In that case, students have several short internships during which they gain work experience in the profession for which they are trained. For occupations in technology, health care and some other sectors such a system, in which young people are trained to become professionals within the education system, might work better than the American or British system. It is possible that systems like the German and the Dutch one at least partly require other types of career guidance. In these systems, relatively early, children must make choices that strongly determine for which profession they will be trained. This makes a right choice of study profile and study field highly important. So, in the latter countries career guidance should help young people make the right choices.

In a very interesting German study Solga, Baas & Kohlrausch (2011) investigate the effect of two occupational orientation ('Berufsorientierung') programmes for children who are at the end of lower secondary general education ('Hauptschule'), which is a two-year course. After this course they can enrol into the dual system, which means that already at the age of 13 or 14 they must choose a profession and find an employer. Career guidance is used to help them in this process. Increasingly, children add one or two years of general education to the 'Hauptschule' before they make the transition to the dual system.

The programmes studied by Solga, Baas & Kohlrausch serve two purposes. Firstly, at the end of lower secondary general education more children must be able to articulate an occupational wish. Secondly, the chance of finding an apprenticeship place under the dual system must increase. A

⁶ Some of the studies deal with more than one of the three outcomes (education, economic and social outcomes). This explains why the numbers of studies mentioned here add up to 97 instead of 73. Some studies measure the effect of more than one type of LOB. The total number of cases in which the effect of an LOB intervention is measured equals 152.

number of school classes participated in the programme. As a control group classes were used from the same schools that participated in the programme. Children in the latter classes could not take part in the programme. Regression analysis was used to control for differences in children's characteristics. Selection bias is not completely ruled out by this method but is less likely than in studies that compare participants in one school with non-participants in a different school. The study finds significant effects of the programmes. Particularly effective are internships of a somewhat longer duration.

In the Netherlands, a number of studies have been carried out with respect to careers education. An example is a study by Kuijpers & Meijers (2009). This study deals with the effects of interventions in general secondary education that particularly aim at teaching children how to manage their educational and professional careers. If children indicate that their skills in this area are improved, the interventions are seen as successful. What field of education and which occupation are chosen, is not investigated? A number of other Dutch studies have analysed choices of profiles and study fields in vocational education. Most of them deal with the choice for a study in technology, as already for many years there is a shortage of technicians. De Koning et al. (2010) find that the choice for a technical study is significantly affected by the following factors: interest in technology, proficiency in exact subjects and experience with technical work around the house, parents' support for a choice for a technical study, school advice and school test supporting the choice for a technical study, school priorities for technical studies, gender and migration background (girls and children with a migration background opting less for a technical study). Interest in a technical study depends significantly on perceived labour market perspective, perceived earnings, proficiency in exact subjects, and school priority for technology. Finally, parents' preferences for a technical study (as perceived by the student) depends on the student's interest in technology, proficiency in technology and school advice and school test supporting the choice for a technical study.

Fouarge, Künn-Nelen & Punt (2017) concentrate on the role of labour market information. Using data about young people who have completed their secondary vocational education, they find that the weight given to the labour market perspectives of the various fields of education in the study choice has a significant positive effect on labour market outcomes (employment and wages). The former students were surveyed twice: shortly after study completion to gather information about the educational choice and one and a half year later to find out how they were doing in the labour market.

Studies tend to concentrate on the significance of the coefficients found. The size of the effects is difficult to extract from most studies. Therefore, we cannot give an indication of it.

Can suboptimal choices in education explain why unemployment in the South of Rotterdam is so high?

A critical assumption underlying the BRIDGE programme is that if more children would opt for study fields aimed at technical professions and professions in health care and logistics, unemployment among young people would be lower. Secondary vocational education has four different levels, of which level two is seen as a minimum requirement for the labour market. In fact, a level one diploma is not aligned to a specific field of vocational education. Hence, we will concentrate on levels two and higher. BRIDGE also assumes that young people will be more successful in the labour market, the higher their diploma in secondary vocational education is.

We have tested these assumptions with the use of microdata. This data also contains information about young people in the other major Dutch cities and the remaining part of the Netherlands. We

follow young people who finished their vse course between 2006 and 2017 and then entered the labour market. This means that the length of the observation period varies from 1 to 12 years. The dependent (or outcome) variables are the employment fraction and the benefit fraction.

The benefit fraction is defined as total time spent in employment during the observation period divided by the length of the observation period. Some people may have found a job directly after school and have stayed employed since then. For them the employment share is 1. Others may have never found a job. In their case the employment share is 0. But those who find employment may lose their job, find employment again, etc. Hence, a person may experience several periods in employment. As an example, we take a person who could be observed for 5 years after leaving school. Suppose she finds her first job after six months, loses this job nine months later, becomes unemployed for nine months, before she finds a new job and keeps the latter job until the end of the observation period. Then the employment fraction EF is equal to:

$$EF = (9 \text{ months} + 36 \text{ months}) / (60 \text{ months}) = 0,80$$

It makes a difference when a person works part-time. Part-time work may point to a relatively weak labour market position. The person may not be able to find a full-time job. Therefore, we define an alternative employment fraction by weighting employment periods with a part-time factor. Suppose that in the previous example the first job is a full-time job, while the second one is a half-time job. Then the alternative employment fraction EFF is equal to:

$$EFF = (9 \text{ months} + 36 * 0,5 \text{ months}) / (60 \text{ months}) = 0,45$$

We have the following explanatory variables: study field in secondary vocational education, level of diploma in secondary education, year of finishing education, drop-out (yes or no), age, migration background (including first or second generation), region (province), highest level of education of parents, parents' income (percentile) and gender. The estimation results are given in the annex. Table 1 gives the additional effects of studies in technology, health care and logistics at different level compared to a study in 'other' study fields at the same level.⁷ The results indicate that a completed level three course in technology gives an employment fraction that is 14,9 percentage points higher than a completed course at the same level in the category other courses.⁸ For a level three course in health care the additional effect compared to 'other' courses is 11,1 percentage points and for logistics 13,5 percentage points. At all levels a completed course in technology and logistics has a positive effect on the employment fraction compared to a completed course at the same level in the category other fields. With respect to health care this is also the case for levels three and four, but not for level 2: a completed level two course in health care leads to a lower employment fraction compared to the category 'other' study field at level 2. The additional effect of changing to a level

⁷ In Gelderblom et. al slightly different results are presented. These results are based on regressions that do not include income and education of the parents. This was done because the number of observations on the latter variables is smaller. However, inclusion of these variables leads to similar results. This holds for both the employment fraction regressions and the benefit fraction regressions. By using the regressions with the social background variables tables 1, 2, 4 and 5 are based on the same regression outcomes as table 3.

⁸ This holds when we compare the two courses for a person with the same characteristics (except for the vse course followed).

four technology course is relatively small (but still positive). In many cases the effects for South Rotterdam are higher or similar than for the other big cities and the remaining part of the Netherlands. Only for North Rotterdam the effects are often somewhat higher.

Table 1 Additional effects per field and level of study on the employment fraction ^{a)} compared to the effect of 'other' study fields at the same level (percentage points differences)

		South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	Remaining part of the Netherlands
<i>Technology</i>	sve level 2	11,6%	10,4%	8,0%	11%
	sve level 3	14,9%	17,5%	14,1%	15,1%
	sve level 4	6,5%	9,2%	1,8%	7,3%
<i>Health care</i>	sve level 2	-4,1%	-7,9%	-7,2%	-10,2%
	sve level 3	11,1%	12,3%	7,8%	8,0%
	sve level 4	12,3%	13,1%	11,0%	10,1%
<i>Logistics</i>	sve level 2	9,4%	8,1%	11,4%	15,0%
	sve level 3	13,5%	11,2%	13,5%	12,4%
	sve level 4	11,6%	12,5%	13,2%	10,7%

a) Corrected for part-time work.

The same analysis has been done for benefit dependency (for the outcomes, see table 2). The effects (in percentage points) on the benefit fraction are lower than those on the employment fraction. However, it must be noted that for example in South Rotterdam the benefit fraction is one-eighth of the employment fraction. In relative terms the effects on the benefit fraction are often fairly high. In most cases a change from 'other' courses to technology, health care or logistics at the same level leads to a lower benefit fraction. Again, level two courses in health care form an exception. Changing from 'other' courses at level two to a course in health care at the same level, leads in all regions to a higher benefit fraction. The same is true for changing to a level four course in logistics in North Rotterdam. With respect to the benefit fraction the results for South Rotterdam do not differ much from the other big cities and the remaining part of the Netherlands. Again, the additional effect of changing to a level four technology course is relatively small.

Table 2 Additional effects per field and level of study on the benefit fraction compared to the effect of 'other' study fields at the same level (percentage points differences)

		South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	Remaining part of the Netherlands
<i>Technology</i>	sve level 2	-3,3%	-2,9%	-2,7%	-2,0%
	sve level 3	-3,5%	-3,0%	-3,5%	-2,0%
	sve level 4	-0,8%	-1,9%	-1,9%	-1,4%
<i>Health care</i>	sve level 2	0,5%	2,0%	2,0%	1,3%
	sve level 3	-5,4%	-5,8%	-4,2%	-4,7%
	sve level 4	-4,9%	-5,8%	-4,5%	-3,3%
<i>Logistics</i>	sve level 2	-0,4%	-0,8%	-2,7%	-2,2%
	sve level 3	-1,5%	-1,4%	-1,6%	-1,7%
	sve level 4	-1,5%	0,3%	-2,3%	-1,2%

Using the regression results, we computed the level of the employment fraction in the hypothetical case that South Rotterdam had the same demographic and social structure, the same employment situation and the same educational structure as the remaining part of the Netherlands. The same exercise was done for North Rotterdam and Amsterdam, The Hague and Utrecht.⁹ Table 3 shows that in that case, the employment fraction in South Rotterdam would have been more than 12 percentage points higher than the actual level and only a few percentage points lower than the actual level for the remaining part of the Netherlands. The differences with North Rotterdam and the other big cities completely vanish. Table 3 contains the contribution of the various factors to the difference between the actual employment fraction and the level it would have if these factors would take the values of the remaining part of the Netherlands. Education-related variables account for almost 30 per cent of the difference. Half of that has to do with higher drop-out in South Rotterdam and the other half is due to level and field of study. When we do the same for the benefit fraction, it appears that education-related factors are even more important. Almost half of the difference in benefit fraction is explained by education-related variables. Level and field of education account for 30 per cent of the difference.

Table 3 Contribution of the various factors to the difference between the actual values of the dependent variables (employment and benefit fraction respectively) and the values these would have had if South Rotterdam had the same socio-demographic structure and the economic situation as the remaining part of the Netherlands

	Employment fraction (corrected for part-time work)		Benefit fraction	
	Percentage point differences	% Share	Percentage point differences	% Share
Level and study field of education	-2,3%	18%	1,0%	30%
Drop-out	-1,3%	10%	0,6%	19%
Gender	-0,4%	3%	0,1%	4%
State of the business cycle in the year of study completion	-0,2%	1%	-0,1%	-2%
Age when leaving school	0,2%	-2%	0,6%	17%
Migration background	-7,1%	57%	0,7%	21%
Social background	-1,4%	12%	0,4%	12%
Total	-12,4%	100%	3,5%	100%

⁹ That is, calculating the employment and benefit fractions under the restriction of the same socio-demographic structure and economic situation as the remaining part of the Netherlands.

An important result is that almost 60 per cent of the difference in employment fractions is related to the larger share of children with a migration background in South Rotterdam. Discrimination in the labour market is likely to be one of the factors behind this result. Van den Berg et al. (2017) find that migration background has a strong negative effect on the chance of being invited for an interview after sending a motivation letter or a resume in response to a vacancy.¹⁰ The chances for applicants with a migration background were even lower than for applicants with a Dutch background who had a conviction for a violent offence. An important education-related factor might be that children with a migration background tend to choose the classroom variant¹¹ in secondary vocational education, while the practical training variant is much more popular among children with a Dutch, non-migrant background. The latter variant, which implies that students have a job for three or four days and go to school for the remaining one or two days, implies a higher chance of being employed after school completion. Partly, discrimination may also explain the lower interest of young people with a migration background for the apprenticeship variant. However, discrimination is not the only relevant factor related to migration background. Lack of information about the advantages of this variant may also be relevant. Furthermore, cultural factors, insufficient command of Dutch and a lack of social capital may play a role. Migration background is less important for the difference in the benefit fraction.

In South Rotterdam there are more low-income families than in the remaining part of the country, which accounts for slightly more than 10 per cent of the difference in employment and benefit fraction. Differences in gender and age composition and in the economic situation only play a minor role.

What generates a higher effect on the employment fraction: a shift to technology, health care or logistics or a shift to a higher level? Table 4 gives the results. The outcomes shown in table 4 are based on the same regression results as the results given in tables 1, 2 and 3. The effect of a shift from level two to level three in technology on the employment fraction for example, is obtained by taking the difference between the regression coefficients of level three courses and level two courses. As a second example we take the effect of a shift from a level two course in 'other' courses to a level two technology course. This is obtained by taking the difference between the coefficient of two level technology courses and the courses of 'other' courses at level two.

¹⁰ The study uses an experimental design where application letters only differed with respect to a few features like migration background and having been convicted.

¹¹ This variant also contains a practical component in the form of a number of relatively short internships with different employers. The time spent on internships during the course varies from 20 to 60 per cent. In the practical training variant this is 60 to 80 per cent (the remaining part of the time being spent on school education).

Table 4 Effects of shift in level and field of study on the employment fraction (corrected for part-time work) in South Rotterdam, percentage-point differences

Effect higher level	Increase from level 2 to level 3	Increase from level 3 to level 4	
Technology	11,4%	1,5%	
Health care	23,2%	11,0%	
Logistics	12,1%	8,1%	
Other	8,0%	9,9%	
Weighted average*	10,9%	9,0%	

Effect study field	Shift from 'other' to technology	Shift from 'other' to health care	Shift from 'other' to logistics
Sve level 2	11,6%	-4,1%	9,4%
Sve level 3	14,9%	11,1%	13,5%
Sve level 4	6,5%	12,3%	11,6%
Weighted average*	10,5%	7,4%	11,6%

* Based on the average educational choices with respect to study field and level during the observation period.

Table 4 shows that overall, the effects of a shift to a different field of study and a shift to a higher level within the same study field are of similar size. There are two exceptions. In technology, a shift from level 3 to level 4 does only induce a small increase in employment fraction. Secondly, a shift in field of study from 'other' to health care has a significantly negative effect for level two studies. However, it is important to note that for recent years the results have become more favourable for this shift. For recent cohorts a shift from level 2 course in an 'other' course to a level 2 course in health care already pays off.

When it comes to reducing the benefit fraction, in most cases a shift in level seems to have a larger effect than a shift in study field (see table 5). Only a shift from level three to level four in technology has a relatively small effect on the benefit fraction. Shifts away from 'other' courses are small in five cases: to technology at level four, to health care at level two and to logistics at all levels.

Table 5 Effects of shift in level and field of study on the benefit fraction in South Rotterdam, percentage-point differences

Effect higher level	Shift from level 2 to level 3	Shift from level 3 to 4	
Technology	-4,9%	-1,1%	
Health care	-10,7%	-3,2%	
Logistics	-5,7%	-3,8%	
Other	-4,7%	-3,8%	
Weighted average*	-5,5%	-3,5%	

Effect study field	Shift from 'other' to technology	Shift from 'other' to health care	Shift from 'other' to logistics
Sve level 2	-3,3%	0,5%	-0,4%
Sve level 3	-3,5%	-5,4%	-1,5%
Sve level 4	-0,8%	-4,9%	-1,5%
Weighted average*	-2,3%	-3,5%	-1,2%

* Based on the average educational choices with respect to study field and level during the observation period.

The results obtained imply that the lower employment fraction and the higher benefit fraction in South Rotterdam compared to the remaining part of the Netherlands are partly caused by the fact that more children in South Rotterdam choose 'other' study fields instead of the more promising study fields in technology, health care or logistics. The fact that children in South Rotterdam tend to complete their vocational education at a lower level also explains part of the difference. This justifies the use of career guidance interventions, assuming that the latter are effective in adapting education choices to the labour market. At the same time, we have seen that suboptimal education choices and results only account for a limited part of the differences in employment and benefit fractions compared to the remaining part of the Netherlands. Other factors are more important and should also be considered by policymakers.

Has BRIDGE intensified and broadened the use of career guidance?

The BRIDGE programme consists of 22 different LOB interventions, 16 of which are applied to psve.

¹²They can be grouped in five categories:

- a) Discovering and experiencing different types of work;
- b) Reflecting on desires, abilities and opportunities, and choosing an education;
- c) Getting informed about and connected with the labour market;
- d) Additional support;
- e) Professionalisation of staff.

The interventions in the category 'discovering and experiencing different types of work' do exactly this. Given the focus in BRIDGE on technology, health care and logistics, one would expect that companies in the corresponding sectors would get extra attention. Reflecting on desires, abilities and opportunities, and choosing an education aims at stimulating more deliberate choices. Getting informed about and connected with the labour market has the direct purpose of increasing the chance of finding a job. Additional support is given to grades 3 and 4 of psve. The last category deals with training teachers in LOB education.

Of the 16 interventions, 13 are targeted to students. Of the remaining three, two are for teachers and one for parents.

There are two ways by which BRIDGE aimed at increasing participation in LOB. Firstly, its purpose was to add new interventions to the existing ones. Half of the 16 interventions are new or mostly new for psve. However, some of the new interventions (employee skills training, support at home and (for teachers) getting to know occupations and sector) have not really got off the ground. Secondly, BRIDGE aims at increasing the number of participants in LOB interventions that were already applied before BRIDGE. In the remaining part of this section we deal with the latter aspect. Table 6 contains all interventions that are applied in psve. For each intervention, the table indicates to which type the intervention belongs, whether an intervention is applied in the lower and/or higher grades+ of psve, and whether it is new or existing.

In addition to the interventions listed in table 6, one intervention applied in sve is also relevant. This is the job guarantees scheme, which applies to part of the technical studies, to the studies in health care and to studies related to harbour logistics. A job guarantee does not always mean that students who complete their study are sure of a job. Sometimes it means that they are sure of help to find a job, or it is used as a signal by employers that there are enough vacancies. The purpose of job guarantees is that it makes the studies involved more attractive for students. The study choice for

¹² Several of these interventions are also applied in other types of education.

sve takes place in psve. Therefore, it is logical that one of the LOB interventions in psve deals with information about this scheme.

Table 6 The BRIDGE interventions applied in psve

Intervention	In the lower grades of psve	In the higher grades of psve	Existing or new
Discovering the harbour	Yes	Yes	New
Company visits: 'flash internships'	Yes	No	Existing
Company visits: 'flash internships' for sve studies with a job guarantee	No	Yes	New
Events for getting to know occupations	Yes	Yes	Existing
Social internships	Yes	Yes	Existing
Studying on a trial basis	No	Yes	Existing
Digital talent portfolio	Yes	Yes	Existing
Career discussions student/teacher/parent(s)	Yes	Yes	Mostly new
Mentors in South Rotterdam	Yes	Yes	Existing
Job application training	No	Yes	Existing
Employee skills training	Yes	Yes	New
Organising support classes in order to facilitate transitions to a higher level within psve	No	Yes	New
Support at home by district teams	No	Yes	New
Getting to know occupations and sectors for teachers	Yes	Yes	New
Training how to conduct a career interview	Yes	Yes	New
Empowerment programme for parents	Yes	Yes	Existing

The most reliable information about participation in LOB is available for measures that are implemented by external agencies and can be obtained from these agencies. Table 7 provides information about eight of these measures, mostly based on the latter information source. The latter measures are all applied in psve. The process technology week, the McPort event and the harbour programme are also accessible to students from secondary general education. The general variant of the flash internships is also open to children from primary education. Flash internships targeted towards career start guarantees are only and Mentors in South Rotterdam mainly for psve students.

With only one exception (the process technology week) the number of participants has increased. For one other measure (Mentors in South Rotterdam) participation has still grown during the first year of BRIDGE, but has stabilised during BRIDGE. The other six measures show a considerable growth in participation during BRIDGE. One of the latter measures (flash internships at companies that participate in the job guarantees scheme) was introduced during BRIDGE. The total number of students in preparatory vocational education per study year is about 1.200. In case of some measures (like the flash internships) students can participate more than once a year. Even then, participation seems quite high for six of the eight measures.

There is also a registration of the measures schools plan to apply. This information also points to an increase in participation owing to BRIDGE, although plans may not always come true.

All in all, the data suggest that BRIDGE has broadened the set of available measures (although not all of them have been implemented) and has increased participation in most measures that already existed when BRIDGE started. However, we cannot exclude substitution. Without BRIDGE, schools

may have found other resources for increasing their LOB efforts. Or, they may have reduced their own expenses on LOB when LOB activities could be financed through BRIDGE.

Table 7 Number of participants from South Rotterdam in some of the interventions based on data from suppliers of interventions

Instrument	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Process technology week (psve, grade 2 and secondary general education, grade 3)		150 ^{a)}	150 ^{a)}	125	165	146	
McPort event (also for secondary general education)				45	150		
Harbour programme (also for upper level secondary education)				74	0	A few hundred	1287
Flash internships (also for primary education) ^{b)}	2592 ^{a)}	2948 ^{a)}	3860 ^{a)}	4708	6253	697	7000 to 8000 ^{c)}
Flash internships at companies that participate in the job guarantee plan (highest classes of psve)						227	1037
Mentors in South Rotterdam (mainly for psve)			323	644	1023	906	973
Job application training (psve)			885 ^{a)}	1085	1329	2276	
“Go for a job” (Manifestation of vocational training courses and professions linked to career start guarantees (psve) ^{d)}			249	286	443	676	1541 ^{e)}

Source: NPRZ and LOB providers, processed by SEOR

a) On the basis of yearly NPRZ reports

b) Pupils can go to flash internships several times a year. The numbers refer to participations.

c) Estimates based on different sources.

d) Attendees, also involving teachers and others.

e) Planned number of participants. In previous years attendance rates were 70-75%. This is the first year that pupils from grade 2 could also participate.

Did BRIDGE have effects on career skills and on education choices?

A comparison between education choices between South and North¹³ Rotterdam

The BRIDGE project was carried out in South Rotterdam. Although we lack information about career guidance activities in North Rotterdam, it is likely that during the school years 2016/2017, 2017/2018 and 2018/2019 participation in career guidance activities has been considerably higher in psve schools located in South Rotterdam than in psve schools located in North Rotterdam. Owing to financial restrictions and high work pressure in schools, it is not likely that schools in North

¹³ There are also other parts of Rotterdam than South and North Rotterdam. These other parts, which are relatively small, are included in the figures for North Rotterdam.

Rotterdam were able to realise the same level of activity in career guidance from their own resources. Although it is possible that children from South Rotterdam go to psve schools in North Rotterdam, and vice versa, we do not believe that this is taking place on a large scale. Both South and North Rotterdam have quite a number of psve schools and children tend to choose a school in their neighbourhood. Education choices may depend on external factors like the industrial structure, the state of the economy and social factors. These factors may change over time. It is reasonable to assume that these changes affect both parts of Rotterdam in a similar way. Therefore, a comparison of education choices between both parts of Rotterdam may give an indication of the effects of the BRIDGE programme on education choices.

The goal of the career guidance activities is that more students are going to follow courses in technology, health care and logistics in secondary vocational education. Therefore, we look at the student shares of these study fields at the start of the first year of secondary vocational education. Of course, it is not only crucial that more students enrol in these study fields, but also that they complete their studies. However, the latter can only be analysed after a few years.

In order to explain the measure used, we take the case of technology. For both South and North Rotterdam, we compute the share of technology students in the total numbers of students. Our measure is then the difference between the two shares. If BRIDGE had an effect, we would expect that this measure is higher after than before the start of this programme.¹⁴

Figure 1 shows the difference between South Rotterdam and North Rotterdam for first-year students in technology, health care and logistics at the start of the year. These are the three study fields that BRIDGE tried to stimulate. We also display the sum of the three (named 'sum' in the figure). It is possible that the attempts to stimulate the three study fields also leads to some substitution between them.

In interpreting the figure, it is important to note that BRIDGE started at the end of 2016. Therefore, an effect of BRIDGE in 2016 is unlikely. In 2017 the joint share of technology, health care and logistics did increase. However, in 2018 it decreased to a level below the 2016 level. A decrease also took place in 2010, suggesting that a fluctuation such as the one in 2018 is not unique. What the figure suggests is a rising trend from 2007 onward, with fluctuations around it. When we regress the difference between South and North on a linear trend and a BRIDGE dummy (1 in 2017 and 2018 and zero before 2017) we find that the trend is significant, but the BRIDGE dummy is not (see the annex for the regression results). Does this result completely rule out that Bridge has had a positive effect on the joint share of the three study fields? The answer is no. It is possible that the drop in 2018 is caused by an unknown factor. In the regression results the 2018 observation has the largest error. When we remove this observation the BRIDGE dummy is positive, but still insignificant.

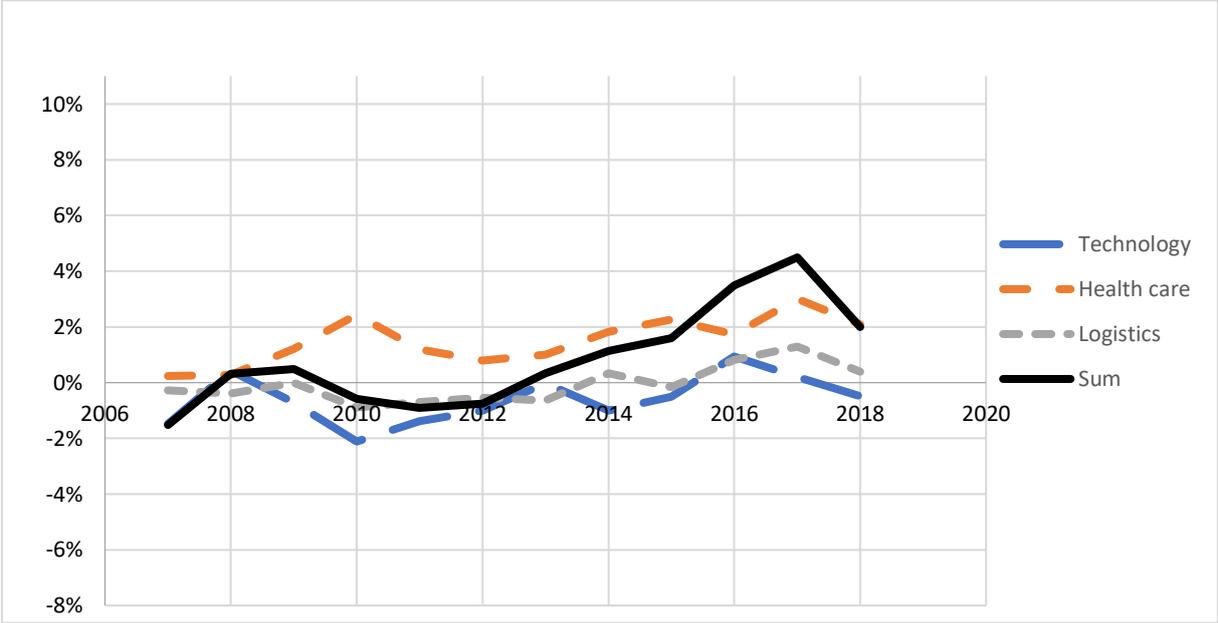
Further analysis reveals that there is no significant trend between 2007 and 2012. A variable that is zero until 2012 and follows a linear trend from 2012 onward is highly significant. This suggests that the upward trend is connected to the National Programme for South Rotterdam, but the data needed to test for a causal relationship is not available.

Career guidance is not only provided in the higher grades of psve to help psve students choose their study field in vse, but also in the lower grades to help students choose their profile for the higher grades. Therefore, one might expect that BRIDGE also influences the latter choice. However, for several reasons it is difficult to draw conclusions from the data. For South Rotterdam we observe a

¹⁴ It must be noted that these inflow figures are also influenced by changes from one to the other study field and from one study level to the other.

considerable increase in the share of students with a technology profile (which includes logistics) between 2006 and 2018 compared to North Rotterdam, but this increase mostly takes place before BRIDGE. Since 2013, the number of psve schools offering courses in technology has increased.

Figure 1 Differences between Rotterdam South and Rotterdam North with respect to the student shares of technology, health care and logistics at the start of the first year of a specific course of vse, and the sum of the differences (2007-2018)



Most of this increase took place before BRIDGE. We do not know what happened before 2013, which makes it difficult to control for this factor. In psve, health care and well-being form one profile and cannot be separated. Theoretically, it is possible that the career guidance activities did not increase the total number of students opting for this profile, but still increased the interest in health care at the cost of well-being. What also makes a comparison with North Rotterdam difficult is that in the latter part of Rotterdam a larger part of the students follows an intersectoral program that includes health care.

Owing to BRIDGE also career guidance in primary education was enhanced. The career guidance received by a child during primary education might affect its education choices in psve. However, if there is an effect, it will only become visible after 2018.

What effect size would create just enough societal benefits to cover the costs of BRIDGE?

Based on the evaluation outcomes, it seems unlikely that BRIDGE has had a large effect on the share of children choosing for a study field in technology, health care or logistics. However, relatively small effects could still provide enough societal benefits to outweigh the costs. In the neighbouring policy field of re-integration policy, we usually find small effects. A random controlled trial with respect to the work first initiative ‘WerkLoont’ (‘Work Pays Off’), which was carried out in Rotterdam, showed that this measure has an average effect of only three percent points on the employment fraction of

participants, over a three-year period (De Koning et al., 2018). However, the savings on social assistance benefits were enough to outweigh the costs of the measure. In light of this, we tried to estimate the effect size of the BRIDGE interventions, the break-even point, that would be just enough to cover the costs of BRIDGE.

There are several potential benefits to society when a young person, who would have chosen one of the 'other' study fields, is convinced by career guidance to change to a study in technology, health care or logistics. In the first place, we would expect a higher employment fraction and, as a result, lower unemployment and a lower benefit dependency. Secondly, given the shortages in occupations in technology, health care and logistics, we would expect higher wages and therefore higher income tax revenues. On the other side, the study costs may be higher, particularly for studies in technology. These are the types of benefits and costs we will take into account in our analysis.

However, there might be other benefits too. Low employment rates are often associated with high crime rates and poor health. Hence, a higher employment rate may entail a lower crime rate and lower health costs. However, these effects are not clear-cut. For example, the relationship between employment and health is two-way: being employed may have a positive effect on health and in turn being healthier increases the chance of being employed. Studies that correct for the simultaneous nature of this relationship find that there is a clear positive causal relation from health to employment, but a much weaker causal relation from work to health (see Antonisse and Garfield (2018) for a literature review).

There is no data available that allows us to follow individuals during their entire work life with respect to their yearly wage income and their yearly income from social benefits. We can do that only for the period between 2007 and 2017. To replicate an entire work life, first, we take individuals aged between 17 and 25 who completed a secondary vocational education in one of the 'other' fields of study (i.e. not technology, nor health care¹⁵) in 2007 and entered the labour market. The individuals are selected in such a way that their background (migration background or Dutch background) and the level of their diploma (sve level 2, 3 or 4) match the composition of the children from South Rotterdam who completed one of the 'other' courses.

For these individuals we measure the development of their wage income and their income from social benefits between 2007 and 2017. Then we select a group aged between 25 and 35 with the same composition. Their yearly growth rates with respect to wage income and income from social benefits are used to estimate how these variables will develop between 2017 and 2027 for the people graduated in 2007. We do the same for people aged from 35 to 45, 45 to 55 and 55 to 65 years of age.

In this way we obtain estimates of the yearly development of wage income and income from social benefits for 2007 graduates from secondary vocational education in 'other' fields of study that match the composition of young people in the South Rotterdam for a period of 40 years. It is important that the selected groups are representative with respect to labour market status. The groups include employed people, unemployed people and people not participating in the labour market.

Then we do the same for technology and health care. The composition of the groups selected with respect to the level of their study and their background is the same as for the people selected with a diploma in one of the 'other' courses. Therefore, the estimated yearly wage income and income from social benefits over a period of 40 year can be seen as what graduates from one of the 'other' studies

¹⁵ Logistics was excluded from the 'other' fields.

would have obtained during their work life if they had switched to technology or health care. For technology the matching has been made for men only and for health care for women only. The share of women in technical employment is very low. In health care, the employment share of men is very low (especially at the lower and secondary level).

We basically assume that the pattern of wage changes between 2007 and 2017 will continue after 2017. We think that this assumption is defensible. The labour market for technicians with a secondary vocational education is already tight, but the energy transition, the switch from fossil fuels to sustainable energy, will lead to a further increase in the demand for them. For example, most households have to change from natural gas to durable energy, which will lead to a growing need for engineers. It is expected that the energy transition will take at least 30 years. At the same time the population is ageing and more people will go in retirement, while the number of young people entering the labour market is diminishing. The ageing of the population will also lead to a growing demand for caregivers and nurses. On the other hand, the expectation is that the demand for people with an economic or administrative specialisation will diminish. Owing to the tighter future labour market for people with a technical or health care specialisation, we expect that wage increases for the later groups will also remain higher.¹⁶

No estimates for logistics are available. The number of students in logistics is small compared to studies in health care, technology and other fields of education, making a matching procedure as described for logistics difficult.

In the annex, more background information about the cost-benefit analysis is given. This includes information about wage development between 2007 and 2017, the way in which we take price increases into account and our assumption concerning the discount rate.

Firstly, we discuss the results for the comparison between people with a technical and a 'other' field of specialisation. For both groups we compute the discounted sum of yearly wage incomes over work life in euros of 2006. The difference between the two is the total additional value created for society when a student decides to choose a technical study instead of one of the 'other' specialisations. Total additional value is slightly more than 96.000 euros per student.

We also compute the additional value for different actors. Almost 55 per cent of total additional value accrues to the government and the remaining part to the individual. For employers there is no gain. However, we do not take into account that an increase in the number of workers with a technical specialisation may reduce the number of unfilled vacancies for technical personnel and the production lost as a result of it, while a moderate shift from 'other' studies to technical studies will not affect employment for people with one of the 'other' studies. It may also lead to a reduction in hiring costs. As a result, employers may also gain from the increase in the number of workers with a technical specialisation. Furthermore, the gains for society as a whole may be higher than table 6 suggests.

A study in technology is more expensive than one in the 'other' fields. The additional costs are about 4.600 euro per student. Therefore, net benefits to society are about 91.500 euro. As the government takes care of the study costs, the net benefits for the government and the student become fairly similar.

¹⁶ Bakhshi et al. (2017) conclude, on the basis of detailed data analysis, that employment prospects for engineering and government related occupations like care workers and teachers are quite good, while they are bad for administrative occupations.

Table 6 Work life benefits for society and various actors when a student changes his study field from 'other courses' to technology

	Employers	Government	Students	Total
'Super' gross wage income (including value added tax, income tax and social premiums) ¹	+ € 96.131			€ 96.131
Net wage income ²	- € 49.027		+ € 49.027	€ 0
Taxes and social premiums ³	- € 47.104	+ € 47.104		€ 0
Insurance-based unemployment benefits		- € 31	+ € 31	€ 0
Social assistance benefits for the unemployed		+ € 5.620	- € 5.620	€ 0
Total	€ 0	€ 52.693	€ 43.438	€ 96.131

- 1) For society as a whole, 'super' gross wage income is taken as the measure of the value produced by a worker. It consists not only of net wage income, income tax and social premiums, but also of value added tax.
- 2) Net wage income is obtained by multiplying 'super' gross wage income with the average percentage paid as net wages (source: Statistics Netherlands).
- 3) The amount of taxes and premiums is obtained by multiplying 'super' gross wage income with the average percentage paid as taxes and premiums (source: Statistics Netherlands).

Looking at the case in which a student decides to opt for a study in health care instead of one of the 'other' studies, we also find that the shift is beneficial to society. However, the additional benefits are lower than in the case of technology. They amount to slightly more than 80 thousand euros. There is only a small difference in the study costs between studies in health care and 'other' studies.

The yearly costs of the BRIDGE programme are approximately 900 thousand euros (in wages of 2007). This means that the break-even point is already reached when LOB induces slightly more than 1 per cent of the students that would otherwise enrol in 'other' courses to change to technology or health care (and complete their study).

Tabel 7 Work life benefits for society and various actors when a student changes his study field from 'other courses' to health care

	Employers	Government	Students	Total
'Super' gross wage income (including value added tax, income tax and social premiums)	+€ 81.660			€ 81.660
Net wage income	-€ 41.646		+€ 41.646	€ 0
Taxes and social premiums	-€ 40.013	+€ 40.013		€ 0
Insurance-based unemployment benefits		+€ 6.302	-€ 6.302	€ 0
Social assistance benefits for the unemployed		+€ 936	-€ 936	€ 0
Total	€ 0	€ 47.251	€ 34.409	€ 81.660

Conclusions and final remarks

After school completion, young people in South Rotterdam face a lower employment rate and a higher dependency on unemployment benefits than young people elsewhere in the Netherlands. When we follow them over a period of several years, the fraction of this period (the 'employment fraction') spent in employment is also lower, while the fraction spent in benefits is higher. For slightly less than 30 per cent, the lower employment fraction is caused by the fact that in this part of Rotterdam children tend to choose fields of secondary vocational education that are less in demand in the labour market, reach a lower level in secondary vocational education and have a higher chance

of becoming a drop-out in education. The higher benefit fraction is even caused for almost 50 per cent by the poorer education results.

At least theoretically, career guidance can lead to education choices that are better adjusted to the labour market, and lead to lower drop-out and to school completion at a higher level. The empirical international literature about career guidance provides evidence that it can have positive education, social and economic benefits. From this perspective, giving career guidance a central role in the National Programme for South Rotterdam was a logical choice. The overall aim of this programme is that in the early 2030's, South Rotterdam will no longer stay behind North Rotterdam, the other big cities in the Netherlands and the remaining part of the country. The long programme period is seen as crucial, as South Rotterdam is facing several interrelated problems (poverty, high unemployment and crime rates, poor health and poor housing quality), which makes solving them difficult.

With financial help of the UIA programme of the European Commission, the three-year programme for career guidance BRIDGE was developed for South Rotterdam and carried out between 2016 and 2019. The most important goal was to ensure that more young people follow a course in technology, health care or logistics. During the programme, monitoring and evaluation activities were carried out. However, by 2019 students participating in the programme's career guidance activities had not yet completed their vocational education. Therefore, it was not possible to observe how they perform in the labour market. What we could do, was investigate to what extent career guidance has led to a shift in study profiles in preparatory vocational education and in study fields in secondary vocational education. Furthermore, we could analyse to what extent study field determined the employment fraction of sve graduates during the period between 2006 and 2018.

Our first conclusion is that following a sve course in technology, health care or logistics leads to much better employment opportunities than taking courses in economics or in other fields. It is also likely that this will continue to be the case in the next decades. Hence, the objectives set out by BRIDGE seem justified. Secondly, the results indicate that BRIDGE has indeed stimulated the participation of psve students in career guidance. However, there is no evidence that the intensified career guidance of psve students has led to a shift from study fields with less labour market perspective to technology, health care and logistics. Given the limitations of the analysis and the short observation period (which makes it impossible to observe an effect of career guidance in primary education on study choices in psve), we cannot completely rule out the possibility of a small effect. A cost-benefit analysis indicates that a small effect of only one percentage point would generate enough benefits to outweigh the costs of BRIDGE. The data does show a rising trend in the joint share of sve students in technology, health care and logistics. The trend begins around the year 2012, which coincides with the start of NPRZ. However, the data needed to test for a causal relationship is not available.

There are several reasons why BRIDGE may not have had an effect or only a very small effect. Firstly, although suboptimal education choices are a significant explanatory factor for the lower employment fraction of young people in South Rotterdam, other factors are more important. Secondly, suboptimal education choices are partly caused by factors that are not or only weakly related to career guidance. One example is the fact that several psve schools in South Rotterdam do not have technology as one of the profiles offered. Another example is that many children live in an environment with several social problems. Career guidance can give some compensation for these problems, but probably only to a limited extent. The fact that we do not find effects of career guidance may also have to do with design and implementation. Our observation is that career guidance provided by schools is still strongly oriented towards general career skills and does not focus on stimulating profile and study choices that offer a better labour market perspective. Furthermore, some interventions (particularly the job guarantees) are not widely known among psve

students. Finally, BRIDGE pays only limited attention to the level at which children complete their vocational education. Still, a considerable part of the students complete their secondary vocational education at sve level two while level three and four give much better job opportunities. This means that there are still many possibilities to improve the career guidance provided to psve children.

The international literature shows that career guidance can make a difference when it is delivered in the right way. We have also seen that already a small shift away from courses with poor labour market perspectives provides enough benefits to cover the costs of it. However, suboptimal education choices only account for 30 per cent of the lower employment fraction in South Rotterdam. Therefore, also other policies than career guidance must be considered. More particularly, policies aimed at employers must get more attention.

In the Netherlands reliable impact assessment studies on career guidance are not available. The educational sector does not support experiments with a randomised control group for ethical and practical reasons. Reliable non-experimental designs are available, but application of these designs requires the cooperation of many schools and the willingness to provide data. Some new initiatives may in a few years' time shed more light on the effects of career guidance interventions.

References

Antonisse, L. & R. Garfield (2018), *The Relationship Between Work and Health: Findings from a Literature Review*, Washington DC, KFF

Bakhshi, H., J. Downing, M. Osborne and P. Schneider (2017), *The Future of Skills: Employment in 2030*, London, Pearson and Nesta.

Berg, C. van den, L. Blommaert, C. Bijleveld & S. Ruiter (2017), Veroordeeld tot (g)een baan. Hoe delict- en persoonskenmerken arbeidsmarktkansen beïnvloeden (How characteristics of an offense and personal characteristics influence labour market chances), *Tijdschrift voor Criminologie*, No 1/2.

Fouarge, Künn-Nelen en Punt (2017). *De rol van arbeidsmarktinformatie in de opleidingskeuze van MBO'ers (the role of labour market information in choosing the type of course in secondary vocational education)*, Maastricht, ROA.

Gelderblom, A., P. de Hek, J. de Koning, A.J. van de Toorn & E. de Vleeschouwer (2019), *BRIDGE: de brug van school naar werk, Eindrapport monitoring en evaluatie (BRIDGE: the BRIDGE from school to work, final monitoring and evaluation report)*, Rotterdam, SEOR.

Herr, E.L. (2013), Trends in the History of Vocational Guidance, *The Career Development Quarterly*, Volume 61, pp. 277-282.

Huber, L., R. Sloof & M. Van Praag (2012), The effect of early entrepreneurship education: evidence from a randomized field experiment, *European Economic Review*, Vol. 72, pp. 76-97.

Hughes, D., A. Mann, S.-A. Barness & B. Baldauf (2016), *Careers education: an international review*, Coventry, Warwick Institute for Employment Research.

Koning, J. de, P. de Hek, E. de Vleeschouwer, M. Fenger & L. van der Torre (2018), The work first measure 'werkloont': net effects and cost-effectiveness after three years, *SEOR Working Paper No. 2018/2*, Rotterdam, SEOR.

Koning, J. de, A. Gelderblom & J. Gravesteijn (2010), *Techniek: exact goed (Technology: exactly right)*, Rotterdam, SEOR.

Kuijpers, M. & F. Meijers (2009), Learning environment for career learning: a study of the relations between the learning environment and career competencies in students in pre-vocational and secondary vocational training, *Pedagogische Studien*, pp. 93-109.

OECD (2004), *Career Guidance and Public Policy: Bridging the Gap*, Paris, OECD.

Parsons, F. (1909), *Choosing a vocation*, Boston, MA: Houghton Mifflin.

Solga, H., M. Baas & B. Kohlrausch (2011), Übergangschancen benachteiligter Hauptschülerinnen und Hauptschüler: Evaluation der Projekte Abschlussquote erhöhen - Berufsfähigkeit steigern 2 und Vertiefte Berufsorientierung und Praxisbegleitung, *IAB-Forschungsbericht*, No. 6/2011, Institut für Arbeitsmarkt- und Berufsforschung (IAB), Nürnberg.

Annex

Regression results for employment and benefit fractions

Table A.1 contains the results of regressions in which the benefit and the employment fraction are regressed on the following variables:

- Field (technology, health care, logistics and 'other', crossed with sve level (levels 2, 3 and 4) a dummy for completed course in secondary vocational education;
- Early school leaving crossed with sve level (2, 3 or 4);
- Early school leaving crossed with highest diploma attained;
- Gender;
- Year of leaving school;
- Migration background;
- Province;
- Education level parents;
- Income parents.

The regressions were carried out for South Rotterdam, North Rotterdam, the other three big cities (Amsterdam, The Hague and Utrecht) and the remaining part of the Netherlands.

The data used apply to all students who left their secondary vocational education between 2006 and 2018, either with or without a diploma.

In absolute terms, the estimated coefficients for the combination field and level of secondary vocational education for South Rotterdam are often higher than for North Rotterdam, the other three cities and the remaining part of the Netherlands. The difference is larger the higher the education level is.

Table A.1 Regressions with respect to benefit fractions and employment fractions of school leavers, followed up to 13 years after school leaving

	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities
	<i>Benefit fraction</i>				<i>Employment fraction</i>			
Completed course in vse; field of education crossed with level of education								
Technology*level 2	-3.73*** (0.797)	-2.19*** (0.631)	-2.69*** (0.352)	-1.96*** (0.077)	11.56*** (1.208)	10.41*** (0.994)	7.95*** (0.564)	11.00*** (0.160)
Technology*level 3	-8.19*** (1.272)	-7.26*** (0.895)	-7.34*** (0.571)	-5.97*** (0.092)	22.92*** (1.928)	24.60*** (1.409)	19.02*** (0.914)	19.33*** (0.192)
Technology*level 4	-9.30*** (1.283)	-8.96*** (0.896)	-7.98*** (0.529)	-7.51*** (0.099)	24.45*** (1.945)	24.13*** (1.409)	11.24*** (0.848)	15.98*** (0.206)
Logistics*level 2	-0.44 (0.944)	-0.76 (0.762)	-2.67*** (0.774)	-2.24*** (0.128)	9.36*** (1.430)	8.12*** (1.200)	11.39*** (1.241)	15.03*** (0.267)
Logistics*level 3	-6.17*** (1.311)	-5.70*** (1.082)	-5.44*** (1.499)	-5.62*** (0.221)	21.48*** (1.987)	18.27*** (1.702)	18.39*** (2.402)	16.62*** (0.460)
Logistics*level 4	-9.94*** (1.617)	-6.78*** (1.114)	-8.40*** (1.873)	-7.31*** (0.234)	29.55*** (2.452)	27.47*** (1.753)	22.57*** (3.002)	19.36*** (0.488)
Health*level 2	0.53 (0.758)	1.98*** (0.642)	2.01*** (0.344)	1.33*** (0.098)	-4.06*** (1.150)	-7.86*** (1.010)	-7.24*** (0.551)	-10.24*** (0.204)
Health*level 3	-10.13*** (1.183)	-10.03*** (1.025)	-8.05*** (0.643)	-8.65*** (0.115)	19.15*** (1.793)	19.35*** (1.613)	12.76*** (1.031)	12.16*** (0.240)
Health*level 4	-13.33*** (1.099)	-12.89*** (0.857)	-10.61*** (0.533)	-9.41*** (0.108)	30.19*** (1.666)	28.07*** (1.348)	20.44*** (0.854)	18.71*** (0.225)
Other*level 2	<i>Reference education category</i>							
Other*level 3	-4.72*** (0.632)	-4.27*** (0.510)	-3.87*** (0.282)	-3.95*** (0.066)	8.03*** (0.958)	7.10*** (0.802)	4.92*** (0.452)	4.21*** (0.137)
Other*level 4	-8.48*** (0.668)	-7.09*** (0.520)	-6.09*** (0.284)	-6.11*** (0.065)	17.93*** (1.013)	14.97*** (0.818)	9.42*** (0.455)	8.64*** (0.136)
Early school leaver (ESL), crossed with level course when leaving school								
ESL*level 4	13.72*** (1.124)	11.59*** (0.819)	11.30*** (0.437)	12.64*** (0.124)	-33.21*** (1.703)	-28.68*** (1.288)	-23.64*** (0.700)	-29.89*** (0.259)
ESL*level 3	10.93*** (1.103)	10.01*** (0.887)	10.83*** (0.488)	11.20*** (0.131)	-21.16*** (1.672)	-20.26*** (1.397)	-19.47*** (0.782)	-23.10*** (0.274)
ESL*level 2	10.44*** (0.848)	9.87*** (0.645)	10.26*** (0.366)	9.51*** (0.106)	-17.21*** (1.285)	-16.11*** (1.015)	-16.66*** (0.586)	-21.56*** (0.222)

	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities
	<i>Benefit fraction</i>				<i>Employment fraction</i>			
Early school leaver (ESL), crossed with highest diploma obtained								
ESL* (psve plus or upper general secondary education)	-4.13***	-3.69***	-3.93***	-4.64***	8.89***	6.25***	7.07***	9.76***
	(0.968)	(0.735)	(0.397)	(0.113)	(1.467)	(1.157)	(0.636)	(0.236)
ESL* (psve basic or sve level 1)	-4.84***	-3.90***	-1.96***	-2.81***	6.82***	4.96***	3.79***	7.78***
	(0.966)	(0.755)	(0.422)	(0.121)	(1.464)	(1.188)	(0.677)	(0.253)
Female	3.80***	2.60***	2.20***	2.20***	-10.80***	-8.75***	-4.08***	-10.94***
	(0.431)	(0.184)	(0.043)	(0.043)	(0.654)	(0.527)	(0.294)	(0.091)
Year of leaving school								
2006	<i>Reference year</i>							
2007	-0.75	-0.36	1.61**	0.55***	3.36	0.08	-0.91	-1.03***
	(1.872)	(1.490)	(0.769)	(0.173)	(2.838)	(2.345)	(1.232)	(0.361)
2008	-0.53	-0.38	1.71**	0.82***	1.99	-2.21	-3.33***	-2.55***
	(1.864)	(1.484)	(0.766)	(0.172)	(2.825)	(2.336)	(1.228)	(0.360)
2009	-0.79	0.37	2.38***	1.27***	0.14	-5.72**	-6.05***	-4.90***
	(1.858)	(1.486)	(0.765)	(0.172)	(2.817)	(2.339)	(1.226)	(0.359)
2010	-0.44	1.15	2.91***	1.37***	-3.20	-6.73***	-7.87***	-6.75***
	(1.857)	(1.478)	(0.760)	(0.171)	(2.816)	(2.326)	(1.218)	(0.357)
2011	1.62	1.98	3.04***	1.27***	-7.11**	-9.44***	-8.81***	-7.49***
	(1.848)	(1.475)	(0.758)	(0.171)	(2.801)	(2.321)	(1.214)	(0.357)
2012	-0.06	1.86	3.16***	1.19***	-7.55***	-11.19***	-10.37***	-8.70***
	(1.854)	(1.476)	(0.757)	(0.171)	(2.811)	(2.323)	(1.213)	(0.356)
2013	-1.37	0.52	2.36***	0.60***	-4.99*	-11.02***	-11.22***	-9.45***
	(1.862)	(1.477)	(0.756)	(0.171)	(2.823)	(2.325)	(1.211)	(0.356)
2014	-1.56	-1.12	0.61	0.13	-9.93***	-13.18***	-11.27***	-10.32***
	(1.848)	(1.476)	(0.751)	(0.170)	(2.802)	(2.323)	(1.203)	(0.355)
2015	-1.94	-1.95	0.43	-0.16	-9.38***	-12.70***	-12.58***	-11.52***
	(1.834)	(1.468)	(0.748)	(0.169)	(2.780)	(2.310)	(1.198)	(0.353)
2016	-4.46**	-3.07**	-1.24*	-1.07***	-10.34***	-13.32***	-12.49***	-13.78***
	(1.824)	(1.457)	(0.746)	(0.169)	(2.765)	(2.292)	(1.195)	(0.352)
2017	-6.56***	-4.69***	-3.54***	-2.70***	-10.20***	-16.37***	-14.96***	-16.57***
	(1.822)	(1.454)	(0.745)	(0.168)	(2.762)	(2.288)	(1.193)	(0.350)

	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities
	<i>Benefit fraction</i>				<i>Employment fraction</i>			
Age when leaving school	2.10***	1.77***	1.65***	1.16***	0.76***	0.81***	1.10***	0.80***
	(0.083)	(0.066)	(0.038)	(0.009)	(0.125)	(0.103)	(0.062)	(0.019)
Migration background								
Migration background 1st generation	0.82	2.78***	1.09***	1.58***	-13.60***	-16.75***	-13.59***	-13.92***
	(0.618)	(0.535)	(0.287)	(0.096)	(0.938)	(0.842)	(0.460)	(0.199)
Migration background 2nd generation	*1.55***	2.97***	1.81***	0.94***	-14.09***	-15.45***	-13.45***	-10.15***
	(0.443)	(0.337)	(0.196)	(0.054)	(0.672)	(0.530)	(0.315)	(0.113)
Province								
Groningen	<i>Reference province</i>							
Friesland				-1.12***				0.70***
				(0.121)				(0.253)
Drenthe				-1.65***				2.95***
				(0.131)				(0.273)
Overijssel				-2.43***				5.00***
				(0.110)				(0.229)
Flevoland				-4.03***				5.86***
				(0.132)				(0.276)
Gelderland				-3.57***				6.25***
				(0.103)				(0.214)
Utrecht				-4.82***				8.59***
				(0.119)				(0.248)
Noord-Holland				-4.79***				8.00***
				(0.105)				(0.219)
Zuid-Holland				-4.71***				8.48***
				(0.102)				(0.212)
Zeeland				-3.98***				6.34***
				(0.145)				(0.302)
Noord-Brabant				-3.99***				7.40***
				(0.101)				(0.210)
Limburg				-3.55***				6.21***
				(0.112)				(0.234)

	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities	South Rotterdam	North Rotterdam	Amsterdam, The Hague and Utrecht	The Netherlands except the four big cities
	<i>Benefit fraction</i>				<i>Employment fraction</i>			
Highest education level parents								
Lower	<i>Reference level education</i>							
Secondary	0.69*	-0.50	-0.05	-0.24***	0.42	0.98*	2.06***	0.93***
	(0.412)	(0.331)	(0.192)	(0.043)	(0.624)	(0.521)	(0.308)	(0.090)
Higher	-0.97	-0.42	0.15	0.39***	0.16	-2.03***	-2.75***	-2.57***
	(0.717)	(0.489)	(0.274)	(0.057)	(1.087)	(0.769)	(0.438)	(0.118)
Income parents (percentiles)	-0.03***	-0.04***	-0.04***	-0.03***	0.10***	0.12***	0.10***	0.06***
	(0.009)	(0.007)	(0.004)	(0.001)	(0.014)	(0.010)	(0.006)	(0.002)
Constant term	-31.25***	-25.73***	-25.37***	-11.37***	40.02***	43.85***	37.06***	44.44***
	(2.434)	(1.933)	(1.052)	(0.261)	(3.691)	(3.041)	(1.685)	(0.544)
Number of observations	9,744	14,845	43,660	492,012	9,744	14,845	43,660	492,012
R-squared corrected	0.148	0.148	0.129	0.142	0.257	0.288	0.206	0.235

Analysis difference in share targeted study fields between South Rotterdam and North Rotterdam

For both South Rotterdam and North Rotterdam, we compute the student share of the targeted study fields (technology, health care and logistics) in the total number of students at the start of the first year in secondary vocational training. The dependent variable in our analysis is the difference between these shares. Our hypothesis is that the BRIDGE programme has had a positive effect on this difference. To test the hypothesis the dependent variable is regressed on a linear trend term ('Trend') and a dummy variable ('Dummy BRIDGE'). The dummy variable is 1 during the years that BRIDGE was active and data are available (2017 and 2018) and 0 in the other years. The data consist of yearly figures for the year 2007-2018. In the first variant we use a trend from 2007 onward. In the second variant the trend starts in 2012. The second variant contains both trend terms. The results are as follows:

Table A.2 Regression impact BRIDGE on the student share of the targeted study fields

Variable	Variant 1		Variant 2		Variant 3	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Constant	-0,01554 *	0,00796	-0,00574	0,00423	-0,00334	0,01092
Trend from 2007 onward	0,003476 **	0,00128			-0,00072	0,00300
Trend from 2012 onward			0,006210 **	0,00180	0,00726	0,00476
Dummy BRIDGE	0,007985	0,01187	-0,00221	0,01202	-0,00313	0,01327
R-squared corrected	0,59		0,68		0,64	
N	12		12		12	

The results suggest that there is a up-going trend from 2012 onward, which is the start of the National Programme for Rotterdam South. However, the dummy for the Bridge programme is not significant. Serial correlation is absent in all the variants. However, the last observation has the largest error and can be seen as an outlier. When we remove this observation the BRIDGE dummy is positive but still insignificant in all the variants.

More details of the cost-benefit analysis

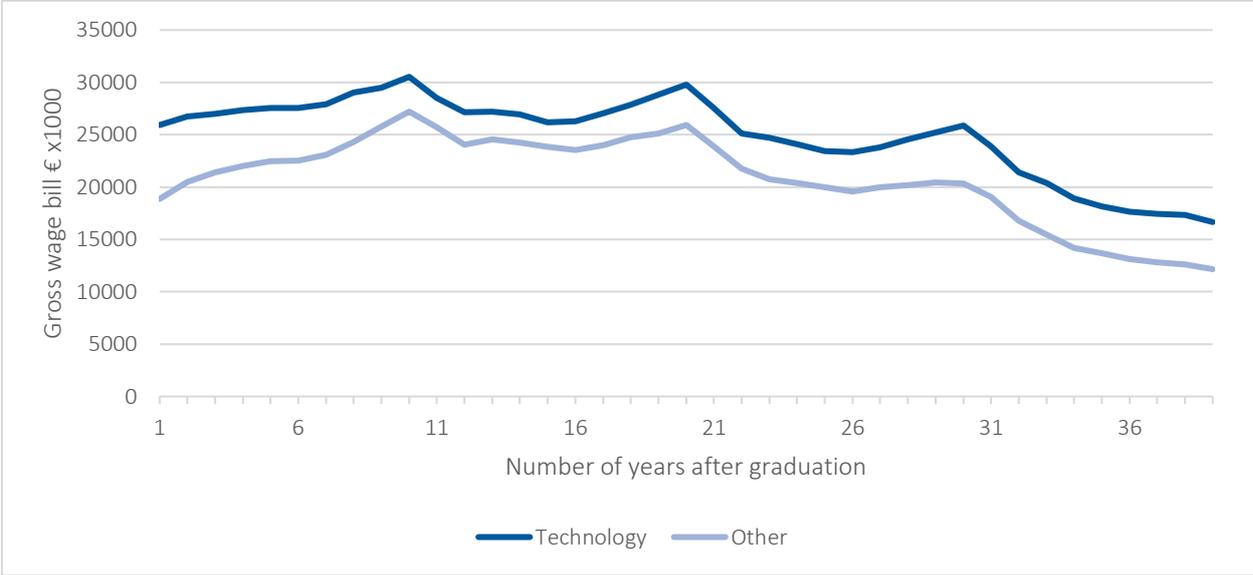
Gross wage bill of workers with a secondary vocational education in technology

As stated in the main text, we use gross wages as an indication for the contribution to social production (benefits). This measure incorporates several components: the number of people working, the average number of hours they work and hourly wages. Figures A.1 and A.2 show the development of gross wages for respectively technology and health care (both compared to 'other' fields of study). With regard to technology, the number of hours worked per person employed is higher than for people in 'other' study fields (that is other than technology and health care), while the participation rate is approximately the same. The hourly wage is also somewhat higher for

people who have chosen a technical education. On balance, gross wages are therefore higher for technology than for other study fields.

The figure shows that, on average, opting for technology generates more wage income at all points in the life cycle. The gross wage bill for both groups increases at the start of the working life, after which there is a decreasing trend, particularly for the older age groups. This decrease is mainly due to the declining participation rate: the later in the life course, the lower the percentage of people that have a job.

Figure A.1 Development of the real gross wage bill¹⁷



Source: CBS microdata, adjustments by SEOR

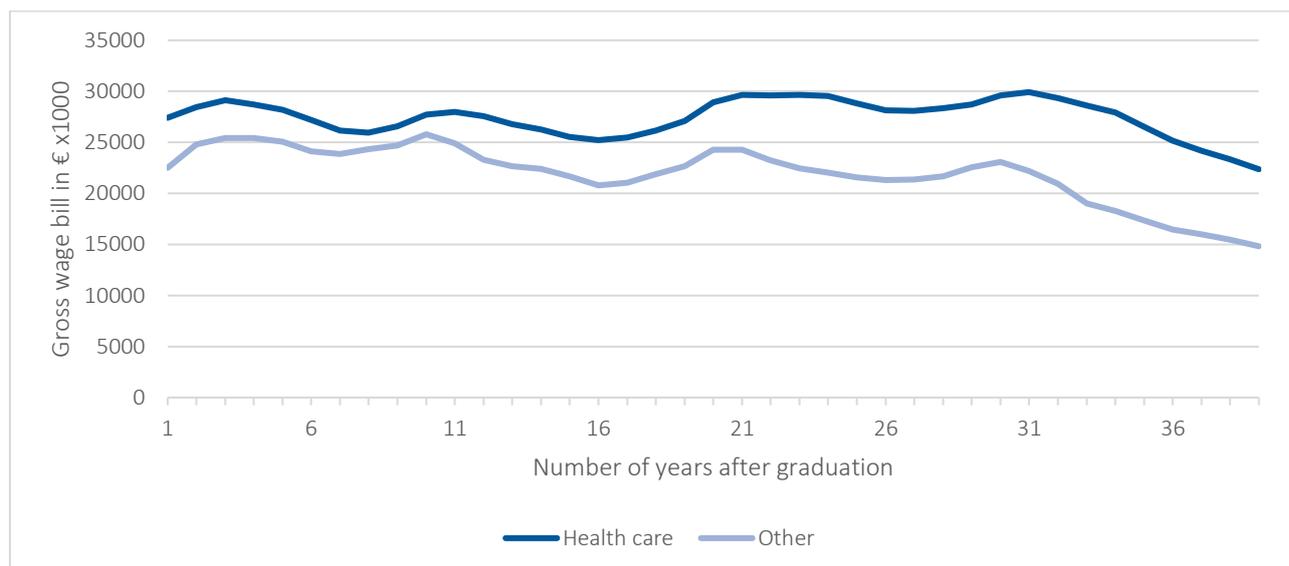
Gross wage bill of workers with a secondary vocational education in health care

For health care, the number of hours worked per person employed is lower compared to ‘other’ study fields, and the percentage of people employed is approximately the same for the two groups. However, hourly wage for health care is considerably higher than for other study fields. This higher hourly wage compensates for the lower number of hours worked and thus ensures that the gross wage bill in health care is higher compared to other fields.

The figure shows that the wage bill remains fairly constant over the life course for both groups. A clear decline can only be seen at the end of the life course. This is again mainly due to a decrease in the participation rate for older age groups. The conclusion that can be drawn from this figure is that a choice for a health care education compared to a study in other directions on average yields a higher wage bill. Furthermore, the gap between the wage sums is larger for older age groups than for younger age groups.

¹⁷ The "peaks" patent in the figure are caused by the economic situation. We follow 4 cohorts in the 2007-2017 period. In the first years of each cohort, we see a decline in wages as a result of the crisis years (2008-2010), while in the last years of a cohort we see an increase in wages.

Figure A.2 Development of the real gross wage bill



Source: CBS microdata, adjustments by SEOR

Discounting and correcting for inflation

In order to obtain one amount of life-time benefits, we discount the costs and benefits of the various training courses to one point in time, namely 2007, the starting year of the analysis. We do this by using a standard discount rate of three percent as proposed by the discount rate working group.¹⁸

This discount rate corrects for the fact that people prefer the certainty of consumption in the present to uncertain consumption in the future. To give up current consumption in exchange for riskier future consumption, individuals will therefore demand a higher return on their savings.

Next to this, we also correct for inflation by measuring all amounts in prices of the starting year of the analyses (2007). The original microdata on wages and unemployment benefits were all in current prices, so we corrected this by using an index for inflation with base year 2007. We obtained inflation rates from 2007 onwards from the Statistics Netherlands.¹⁹

¹⁸ Report Discount Rate Working Group (2015).

¹⁹ <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/70936ned/table?ts=1583758809392>