

Regional Differences in higher educational Choice?

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Abstract:

This paper examines geographical differences in choice of field in Higher Education. Formerly, educational attainment differed considerable between rural areas and urban centres. Today these differences are pretty much offset. *What kind* of education students from different geographical areas pursue, is however less well known. Our article examines this question. We analyse data from public administrative registers on the entire Norwegian population born between 1955 and 1983. We find that people grown up close to a university more often study at a university, whereas people grown up near a university college, more often study at a university college. Corresponding differences are found in choice of educational field.

Keywords: educational choice; regional differences; higher education; educational fields; institutional decentralisation

Regional differences in higher educational choice?

This paper examines how choices of field and institution in Norwegian higher education vary between different parts of the country and between urban and rural municipalities. Studies in social mobility and educational attainment have by routine included variables measuring population density along the urban-rural dimension and regional differences (see e.g. Duncan and Reiss, 1956). Previously one would find considerable differences in educational attainment along the urban-rural dimension. Subsequently, these differences have been steadily shrinking (Lindbekk, 1998: 161). The educational system has expanded at both secondary and tertiary level, and the Norwegian education policy has consisted, among other measures, of establishing educational institutions throughout the country. The consequences for educational attainment have been enhanced equity and equality, and people from rural areas today pursue at least as much education as people from major cities (Heggen, 2002).

What kind of higher education people from different parts of the country choose is less well known. The educational expansion has increased the importance of choosing the right educational field, and Diane Reay and her co-authors conclude a study on educational choice by stating: “Increasingly, the relevant question to ask about both ethnicity and class in relation to higher education are not just about who goes? But also who goes where?” (Reay *et al.*, 2005: 137). This article examines the question of “who goes where” along the geographic dimension in Norway. The geographical dimension may be of greater importance for the choice of direction in higher education (Gibbons and Vignoles, 2012), and the current paper contributes to this line of research. A small population scattered throughout a comparatively large area¹, combined with free tuition and generous public subsidies for students in higher education makes Norway a well-suited test case for highlighting the geographic dimension of higher educational choice. The pecuniary costs of studying are low, whereas the geographic distances are considerable. Some of these traits are common to the other Nordic countries. Geographical disparities in peoples’ access to higher education is an important question in

many other countries as well, and the Norwegian case may highlight the geographical dimension since the economic barriers to higher education are lower.

Previous studies

Early research on educational attainment found considerable differences between urban and rural areas (Ramsøy, 1957). In 1961, Ramsøy and Herredsvela (1961:225) found that “Living in a city, especially in the capital, provides better opportunities for education to all young men, irrespective of social origin” (our translation). Subsequently, these differences have been eroded in Norway. Studies from the 1970s, concluded that the differences between urban and rural areas were smaller among men born in 1931 and 1941 compared to their fathers (Ramsøy, 1977: 102; Hernes and Knudsen 1976). Studies from the early 2000s show that the geographic differences have been levelled out completely. In fact, one study even suggests that women from peripheral municipalities more often enrol in higher education than women from the most urban areas do (Heggen, 2002). None of these studies, however, separate between different fields of higher education.

Internationally there still seem to exist differences in educational attainment according to geographical distance to a higher education institution. Both in the US; (Griffith and Rothstein, 2009), in Germany (Spiess and Wrohlich, 2010), in the Netherlands (Sá *et al.*, 2004; 2006), and in Sweden (Kjellström and Regnér, 1999) there have been found small but significantly negative effect of geographic distance on the likelihood of starting a university education. For the UK, the evidence is inconclusive. Dickerson and McIntosh (2013) found that distance between place of residence and the nearest higher education institution affects the participation in English higher education, particularly for people at the margin of participating in post-compulsory education. Gibbons and Vignoles (2012), however, found that “geographical distance has little or no impact on the decision to participate in England, but has a strong influence on institutional choice.” (Gibbons and Vignoles, 2012:98, see also e.g. Leppel, 1993; Kallio, 1995; Jepsen & Montgomery, 2009; Alm & Winters, 2009). The geographical

dimension, thus, seems to be of greater importance for the *choice of direction* in higher education, and the current paper contributes to this line of research.

It is well-known that labour market outcomes for college-educated individuals differ by field of study, an effect magnified by the generalized inflation of educational credentials across many Western countries (Reimer, Noelke and Kucel, 2008; Kelly, O’Connel and Smyth, 2010). Fields of postsecondary study vary substantially in terms of the advantages they confer on the labour market (for a review see Gerber and Cheung, 2008). Several studies find that individuals with more advantaged social backgrounds tend to choose prestigious fields of study, which translate into better labour market outcomes and higher incomes. Conversely, students from working class backgrounds tend to choose less selective fields of study, which pay smaller dividends on the labour market (Reimer and Pollak 2010; Zimdars, Sullivan and Heath 2009; Davies and Guppy 1997; Hällsten 2010; Ayalon and Yogev 2005; van de Werfhorst and Luijckx, 2010; Thomsen 2012). How choice of field varies along the geographic dimension is less well known.

Norwegian higher education

Norway is characterised by a scattered population, and the equalisation of geographical differences is the result of deliberate policy. “Education for all” has for long been a central aim of Norwegian education policy (Opheim, 2004). In primary and secondary school, this is *inter alia* expressed in a public school system encompassing most of the pupils (97.4%), and in a common national curriculum which “should be approximately the same for all pupils” (Imsen and Volckmar, 2014: 36). During the 1950s and 1960s, secondary schools were spread out over the entire country. Equal geographical access to higher education was central in the expansion of the sector in the 1960s and 1970s. Until 1946, when the University in Bergen was established, The University of Oslo was the only university in Norway. Norwegian higher education had until then expanded through the establishment of several scientific colleges (i.e. more narrowly specialized institutions at university level). During the 1970’s the system of higher education also expanded through the number of institutions. Existing

institutions educating teachers, nurses, engineers etc. were upgraded and given status as institutions of higher education from 1970 (Aamodt 1995), and new institutions (regional colleges) were established (Aamodt and Stølen 2003: 71). In the mid-nineties, the specialised institutions educating teachers, nurses, engineers etc. were merged with each other and in most counties with the district colleges, forming the public university colleges. From a situation where higher education in Norway included two universities and a few scientific colleges, we now have colleges in every county (Aamodt and Stølen 2003:86).

Norwegian higher education today consists of three kinds of institutions: universities, specialized universitiesⁱⁱ, and university colleges. The old and specialised universities, which offer the more prestigious degrees qualifying for elite professions, are still located in the major cities. Whereas state university colleges, which are spread out over all parts of the country, primarily offer degrees at bachelor's level in welfare, education, business administration and technical fields. Thus, there still are geographical differences in the kind of tertiary education offered.

Table 1 about here

Table 1 illustrates the Norwegian geography and geography divisions in Norwegian higher education. The number of the two kinds of institutions (the third and fourth column), is difficult to establish exactly because it is a moving target. Institutions have merged during the period, and some institutions have changed status. The numbers, do however illustrate that the most academic and prestigious institutions are spread less widely than the university colleges.

Admission to Norwegian higher education is centralized nationally, and grade point average from upper secondary school is the only sorting criteria when the number of applicants exceeds the number of available student places. Competition for admission to elite professional educations at

universities and specialized universities is particularly fierce, whereas many other programmes, especially at rural university colleges, have more available student places than applicants. ⁱⁱⁱ

Other political measures to promote equal outcomes in higher education are free tuition and the provision of generous student scholarships and loans. A consequence of this is that just one out of ten Norwegian students live with their parents (Otnes et al., 2011:75). The decentralised system of higher education and particularly low economic constraints to higher education participation, make Norway well suited for a study of geographical variation in choice of field and institution type in higher education.

Theoretical perspectives

What, then, could one expect regarding geographic differences in choice of direction in higher education? The individual motivations for specific educational choices are manifold (e.g. Kallio 1995), and Hanssen & Mathiesen (2016) distinguish between factors related to the higher education institution (e.g. study quality, reputation, visibility, student community, and geographical distance to the students' home), and factors related to the host city (e.g. the local housing and labour market, cultural offers, transportation and geographical distance to the students' home). In our data, however, there is no information on students' motives, and we do not know how they vary along the geographical dimension. We are, thus, forced to focus on the geographical differences in the choices people in fact make.

If we turn to the educational attainment literature, one starting point is Boudon's (1974) distinction between the primary and secondary effects of social background. The primary effects are the direct effects of social background on school performance (which makes different educational choices possible) while the secondary is the effect social background has on the educational choices individuals make. If the primary effects lead to geographical differences, it would imply that the grades from upper secondary education were better in some part of the country, or in some type of municipality, than in others. There are some differences in average grades between different

counties but no differences by municipalities' degree of urbanisation (e.g. Støren *et al.*, 2007). These differences are probably not big enough to create differences in educational choice.

The secondary effects are, then, more probable suspects. The explanations of social differences caused by secondary effects are usually divided in two strands: the cultural reproduction strand (e.g. Bourdieu & Passeron 1990) and the rational action strand (e.g. Boudon 1974; Breen & Goldthorpe 1997). A cultural reproduction explanation of geographic differences in educational choice would imply that there are considerable cultural differences between urban and rural municipalities or between different parts of the country: e.g. that the cultural climate in one part of the country is more in favour of technical fields of study, than in other parts. Or, more generally, that the motivations for educational choices vary systematically along the geographical dimension. This may be the case, but theories on cultural globalisation often claim that childhood and adolescence is becoming more alike globally, and that cultural traits of different parts of the world are being homologized through television and computer screens, common toys and shared games (e.g. Frønes, 1998). If this is an accurate description of social development, it gives reasons to expect processes of cultural homologization at the national level as well as at the global level, also when it comes to appreciation of education and academic culture. The common national curriculum in primary and secondary school may also contribute to such cultural equalisation.

Taken together, tendencies towards cultural homologization, small geographic differences in achievement levels, free tuition and the generous student scholarships and loans, give reasons to expect:

H1: There are no geographic differences in choice of higher educational field.

There are, however, also some reasons to expect differences. In keeping with the insights of the cultural reproduction perspective, Hodkinson and Sparkes propose that students' "horizons for action," or "the arena within which actions can be taken and decisions made" (Hodkinson and Sparkes 1997:34), limit their educational choices. No students consider the entire range of

educational options before them, excluding many possibilities at the outset. The horizons for action narrow the range of possibilities, and the students' perceptions of what is possible, available or appropriate. Such horizons for action may vary along the geographic dimension. They may e.g. be influenced in part by the tertiary education institution in ones' home county.

In Boudon's rational action perspective, explanations focus on social differences in costs and benefits from education. Transferred to geographic differences in educational choice, this perspective would imply that the costs and benefits from different educational choices are different according to where the students live. It is not unlikely that the location of different types of educational institutions might affect the costs of different educational choices. Even though most Norwegian students can afford to move away from their parents (and 9 out of 10 do), one explanation may be purely economic. This may be an important reason for the ten percent of Norwegian students who live in their parents' house. Another explanation concerns the *social* costs of moving away from friends and family. To choose a place of study close to where one has grown up reduces these costs. Some students may thus prefer studying relatively close to home, and the institutional location pattern will lead to differences in what people from different parts of the country tend to choose. In a similar vein, Leppel (1993: 389) suggests five explanations of a tendency to choose higher education institutions close to home. First, potential applicants receive more information about the closest institution, (2) the transportation costs between home and place of study, (3) increasing competition with increasing distance (more institutions within the same distance), (4) the psychic cost may increase with distance to home, and, finally, (5) the bandwagon effect of peers.

Diego Gambetta (1987) offers another take on educational choice, and distinguishes three main views on educational choice: the structuralist-, "the pushed-from-behind-", and "the pulled-from-the-front" view. The former views human action as "channelled by external constraints which do not leave any substantial room for choice" (Gambetta, 1987: 8). Pushed-from-behind explanations assume that "behaviour follows from causes, either social or psychological, that are opaque to the

individual consciousness and, by acting behind their backs, push the agents towards a given course of action” (Gambetta, 1987: 11). The last (pulled-from-the-front) view “assumes that individuals act purposively in accordance with their intentions: when they are faced with multiple courses of action, it predicts that they will weigh them up and choose according to some expected future reward attached to each course of action” (Gambetta, 1987: 16).

After confronting the different explanations with empirical analyses, Gambetta found that all three explanations had both merit and shortcomings. In his concluding chapter, Gambetta states that “Educational decisions are the joint result of three main processes: of what one can do, of what one wants to do and, indirectly, of the conditions that shape one’s preferences and intentions” (Gambetta, 1987:168-169).

These mechanisms may also result in differences between people who have grown up in urban and rural municipalities. First, we have seen that the location of different types of higher education institutions is unevenly distributed along the geographic dimension. This may represent a structural constraint for some students, who may not have the money to move from their parents’ house in order to study somewhere else. The question of what one wants to do, is more or less the same kind of motivation as that described by Boudon, whereas the conditions that shape one’s preferences and intentions is similar to the cultural reproduction view described above. There are, thus, also reasons to expect the opposite of H1. Some students may have an inclination to study at an institution close to where they grew up. We thus, formulate the opposite hypothesis:

H2a: Student from rural areas choose typical university college educations like BA degrees in engineering, nursing, social work and teaching, more often than people grown up in big cities do.

H2b: People from the most urbanised municipalities choose university educations at the MA level and elite educations more often than students from rural areas do.

Data and variables

Answers to the questions raised above, will be sought in analyses of data from public registers, on everyone living in Norway, born between 1955 and 1983. The data are available through Statistics Norway. The Norwegian state registers a lot of information on each individual, and through personal identity numbers information from the different registers are matched. People may also be matched with their parents. In the analyses below, we use information from the register on completed education, place of residence (when people were 16 years old), year of birth and gender. We have also matched information of education and income of the parents.

We examine two outcome variables. The variable “higher educational field” differentiates between people without any higher education and the following higher educational fields of study: “BA degrees in science, engineering and other technical fields”, “BA degrees in health, arts, and social sciences”, “BA degrees in accounting and business administration”, “BA degrees in nursing, teaching and social work”, “Elite professional degrees at MA level”, and “Other degrees at MA level (in humanities, social science, natural science etc.)”.^{iv} Finally, we have included a group whose education is unknown (mainly because they have taken their education abroad).

The other dependent variable is type of higher educational institution from which the students have obtained their degrees. The Norwegian higher education system is undergoing changes, which make the classification of institutions less straightforward than before. Earlier the system mainly consisted of three different types of institutions: universities, specialised universities and university colleges. During the last decade, some former university colleges and a specialised university have become universities, which complicate matters somewhat. Here we have divided institution type in four categories “University colleges and new universities” (which consists of university colleges and former university colleges which now are universities (i.e. the universities in Agder, Stavanger and Bodø)), “Old and specialised universities”, “Higher education abroad” and the rest category “Higher

education, but unknown place of study". The latter category consists of people that we know have completed a higher education, but where we do not know at what institution. The main reason for this lack of knowledge is that the register does not contain information about institution before 1995.

The geographical dimension is measured by two variables, both constructed from the municipality where people lived at age 16. The first separates between five parts of Norway. The second separates between municipalities according to centrality. In order to measure the urban-rural continuum, we employ Statistics Norway's definition of municipal centrality. This operationalization of the urban-rural variable, is based on distance to the nearest densely populated area and the size of this area.^y Municipal centrality is divided in four categories: "Least central municipalities", "less central municipalities", "quite central municipalities" and finally "central municipalities". In the analyses below, the six regional centres (Oslo, Kristiansand, Stavanger, Bergen, Trondheim and Tromsø) are separated from the other central municipalities.

The control variables are age, gender, parents' income, and mother's and father's education. We have divided in three age groups: people born between 1955 and 1964, between 1965 and 1974 and between 1975 and 1983. For both fathers and mothers we separate between four educational levels: lower secondary education or less, upper secondary, higher education, BA level, and higher education, MA level or higher. In order to include as many as possible in the analyses, we have included people whose parents' education is unknown as a separate category. Parental labour income is registered annually. We use the average of the sums of the mother and father's annual income in the years when the son or daughter was between 10 and 18 years old. We have then divided these averages into deciles relative to the birth year of each child.

Table 2 shows cross tabulations between educational field and the two geography variables. In order to have some other variables to compare with, the table also includes gender and mother's educational level.

Table 2, about here

The table clearly shows that the differences are considerably smaller along the geographical dimensions than they are between men and women, and between people by mother's education. There is a weak tendency towards people grown up in big cities more seldom choosing the typical university college educations like a BA degree in nursing, social work or teaching, and more often choosing educations at the MA level. Similar differences can be found between the regions: people who have grown up in the eastern part of Norway relatively seldom choose a BA degree in nursing, social work or teaching, and people from the Northern part of the country more seldom choose higher education at the MA level.

In table 3, we present the distribution on type of higher education institution in the same way.

Table 3 about here

We see that the geographic differences to some extent reflect the location of different types of institutions. A larger share of people who have grown up in big cities study at old or specialised universities, while people grown up in less urban municipalities more often study at university colleges. The share studying abroad is also somewhat larger in the big cities. People grown up in the eastern part of Norway have the largest share in the old universities and abroad.

Analyses

Bivariate correlations, as reported in table 2 and 3, are of course affected by the distribution on, and effect of, other variables. In order to, at least to some degree, isolate the effects of the different

variables in table 2 and 2, we have conducted multinomial logistic regression^{vi}. It is worth keeping in mind that this method does not identify causal relationships. We will not know if possible differences between people from different kinds of municipalities are caused by their different location. What we will learn, however, is the degree to which people from different kinds of municipalities choose different educational fields and different kinds of higher education institutions, controlled for gender, birth cohort and parents' education and income, and may only speculate about different causal mechanisms. The number of potentially confounding variables are large. One obvious confounder worth investigating would be grades from upper secondary, but this variable is not available for most of the period of interest here. This is of course highly correlated with educational choice (and with social origin), but is (as already mentioned) not correlated with the geographical variables.

We have excluded those who have not completed any higher education. Several separate analyses gave more or less identical results, so we conclude that the interaction effects are negligible, and show only separate analyses for men and women. The multinomial regressions coefficients and their standard errors are presented in the appendix (tables A1 and A2). Such coefficients are not very intuitively comprehensible. Here they give the impacts on the logarithm of the odds of falling into a specific category on the dependent variable (educational choice) rather than into the reference category of one unit changes in the independent variables. A further difficulty is that positive effects on the odds not necessarily indicate positive effects on the probabilities of these outcomes. In order to simplify the interpretation, table 4 illustrates the results through estimated predicted probabilities for different fields of study by municipality type, gender and age group. For the sake of parsimony, we present estimations only for the eldest and the youngest cohorts. The other variables are held constant, and the estimated probabilities apply to people who grew up in the eastern part of Norway, whose mother and father earned a total income at the sixth decile, and have completed upper secondary school. The values we choose on the control variables are quite arbitrary and not

important, as it will only affect the overall level of the probabilities and not the geographical differences, which is the focus here.

Table 4 about here

The gender differences in table 4 are remarkable, but the geographical differences are quite similar for men and women. The probability of completing an elite profession is somewhat higher in the big cities than in less central municipalities for both sexes. Among men, there also is a similar tendency in the probability of choosing business administration at the BA level. When it comes to the probability of choosing the traditional university college degrees in engineering, for men, and in nursing, teaching and social work, among women, we see an opposite tendency.

The geographic differences are not large, but the differences we do observe point in the direction expected in H2. People from the least densely populated areas more often choose educational fields that are offered at the educational institutions located in more peripheral areas of the country (at the university colleges), and people from big cities more often choose elite professional educations which mainly are offered at universities located in central areas. Below, we examine this question more directly by studying the type of educational institution from which the students have obtained their degrees.

Again, we have conducted multinomial logistic regression separately for men and women. We have excluded those who have not completed a higher education and people born earlier than 1973^{vii}. The independent variables are the same as in the analyses above, with the exception that instead of three age groups, we have included a set of dummy variables, one for each year. The results are presented in the appendix tables A3 and A4. In table 5, we present estimated probabilities for different places of study, by municipality type and gender. We hold the other variables constant and

the estimated probabilities apply to people born in 1978, who grew up in the eastern part of Norway, whose mother and father earned an income in the 6th decile and who have completed upper secondary school.

Table 5 about here

The table shows similar tendencies as we have seen above. Students from big cities more often study abroad or at the more prestigious “old and specialised universities”, while people from less densely populated municipalities more often choose studies at university colleges and new universities. The latter difference between the most urbanized and the most rural municipalities are around 15 percentage points, which is quite substantial. These geographical differences are more or less the same for men and women.

Discussion

Above, we have seen some quite small geographic differences when it comes to the proportion of the cohorts pursuing higher education, which may indicate processes of cultural homologisation, *inter alia* through the national curriculum in primary and secondary school. On the other hand, other differences in educational field and institutional type along the urban – rural continuum are quite substantial. Women from rural municipalities more often choose nursing, teaching and social work and university colleges, and men from the same kind of municipality more often choose “BA degrees in science, engineering and other technical fields”, also at university colleges. People from big cities, on the other hand, more often tend to choose prestigious degrees qualifying for elite professions (such as law, graduate engineering, medicine and MBA), and more often study at old and specialised universities or at universities abroad.

Keeping in mind that the old universities and the specialised universities (where the prestigious elite professional educations are offered), are located in the major cities, and that the state university colleges, which primarily offer degrees at bachelor's level, are located in less urbanised areas, these results may indicate that people tend to choose studies close to where they grew up.

A limitation of these analyses is the lack of information on the individual motives and on grades from upper secondary, and to collect data containing such information remains a challenge for future research. As mentioned above, we do not make any causal claims with the method we have used, i.e. we do not know for sure if the differences in educational choice we have observed between people from different kinds of municipalities are caused by their different location. However, the fact that in Norway, the very important alternative explanation about economic constraints is minimised, may strengthen the findings somewhat. At the same time, the special case of Norwegian higher education reduces the generalisability of the findings: in countries with considerably higher pecuniary costs and shorter geographical distances, other mechanisms might dominate. Below, we suggest some possible explanations of our results in the Norwegian context.

How, then, may these results be understood? As Gambetta (1987) established in his book on educational choice “[...] there is no reason to believe that the final aggregate outcome of individual decisions should be the result of just one mechanism” (Gambetta, 1987: 28). We have already mentioned the location of different types of higher education institutions as one structural factor that is unevenly distributed along the geographic dimension. This would certainly be a weak form of structural constraint for most students, but for some it may be a restricting factor. The arguments against moving – economic, social or psychological – may be too strong for some, and their only option would then be the higher education institution closest to home.

The choice of not moving away from ones' home region may, of course, also be what “one wants to do” and, such a preference is also (at least partly) shaped by the social environment in which one has grown up. There may be cultural differences between geographical areas shaping one's preferences

for different educational fields, as well as one's horizons for action. The professional educations at BA level, offered at the university colleges, are more practical and vocational than the more theoretical elite educations offered at the old universities. One possible interpretation of the observed differences could be that "rural culture" is somewhat less "academic" and more practically oriented, and that such differences may shape preferences for short vocational educations offered at the university colleges.

A pulled-from-the-front-view of educational choice may also contribute to our understanding of the observed patterns. The choice of studying at a higher education institution may, of course, be completely intentional, and based on a weighing up of different alternatives "according to some expected future reward" and different kinds of costs (social and economic). Following Boudon, these costs may be both economic and social, and the rewards may vary between regions according to variations between different local labour markets.

At a more practical policy level, we may pose the question whether or not the observed differences between people from big cities and less urban municipalities represents a problem. In part, the answer to this question will depend on which of the above proposed explanations one puts weight on. If one stresses the structuralist view, it may seem unfair that people from big cities have more options than people from rural municipalities have. In an equity perspective, it may be problematic that the most prestigious educations are concentrated in the major cities, and hence not providing completely equal opportunities for people from different parts of the country. The elite professions, not only entails high status and prestige, but also high income.

If one, however, views educational decisions as intentional and purposive, the observed pattern may seem less problematic. A more positive angle on the observed differences may be that the decentralised university colleges, in fact, enable people from rural areas to pursue a higher education. In the same vein, one might suggest that the regional university colleges ensure the supply of highly qualified labour to their regional labour markets. In two recent studies, Gythfeldt

and Heggen (2012) and Røberg (2014) found that, students who have studied in the same county as they grew up have a considerably higher probability of working in the same county five years after graduation than those who have studied in another county. In the same vein, Andersson et al. (2009) find that the Swedish policy of decentralisation of higher education affects regional development through increased innovation and creativity, and that “aggregate productivity was increased by the deliberate policy of decentralization”. (Andersson et al. 2009: 3)

ⁱ Norway is the sixth biggest country in Europe by area (km²) and the 28th biggest by population (http://en.wikipedia.org/wiki/List_of_European_countries_by_population and http://en.wikipedia.org/wiki/List_of_European_countries_by_area, visited 150330)

ⁱⁱ The specialized universities are institutions at university level offering education only in certain areas such as architecture, music, or business administration.

ⁱⁱⁱ Regrettably, our data do not include information about upper secondary GPA. We do not think, however, that this is an unsurmountable problem. Grades are not correlated with municipality degree of urbanisation, and our control for social background factors (i.e. mothers’ and fathers’ education and parents’ income) takes care of some of the potential problems (because these background characteristics are highly correlated with grades).

^{iv} We include the two categories at the MA level because students in elite professional educations do not need to complete a BA degree, but follow unitary programs (e.g. in law or medicine) lasting six years. The rest category “Other MA degrees” is singled out from degree holder in the same subjects at the BA-level because university colleges normally offer degrees only at the BA-level, whereas universities offer degrees at both levels.

^v <http://www4.ssb.no/stabas/ItemsFrames.asp?ID=5285601&Language=en&VersionLevel=ClassVersion>, (Accessed 28 September 2012)

^{vi} Issues regarding estimation have been raised in treatments of non-linear models such as ours (Allison 1999). These issues concern the so-called scaling problems in residuals of the outcome variables. One way to tackle this issue is to compare results with the average marginal effects or simple cross-tabulations. We have done both (not shown), and neither deviate from standard estimated marginal effects, which may suggest that the scaling problem is not a big issue here.

^{vii} Because institution is not registered before 1995.

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Appendix tables

Tables:

Table 1: illustrative information on the geography divisions in Norwegian Higher education.

| Region | County | University colleges & new universities | Old & specialised universities (ca. 2000) | Population size (16+) (2015) ¹ | Inhabitants per square km ² | Share of 16+ population with a higher education ¹ |
|---------------------------|------------------|--|---|---|--|--|
| Eastern Norway | | | | | | |
| | Akershus | 1 | 2 | 469618 | 123 | 36,7 |
| | Oslo | 10 | 6 | 540285 | 1462 | 49,0 |
| | Østfold | 1 | 0 | 236100 | 72 | 24,9 |
| | Vestfold | 1 | 0 | 199832 | 111 | 28,9 |
| | Buskerud | 1 | 0 | 225389 | 19 | 28,8 |
| | Telemark | 1 | 0 | 142171 | 12 | 25,4 |
| | Oppland | 2 | 0 | 156797 | 7 | 24,7 |
| | Hedmark | 2 | 0 | 162628 | 7 | 24,5 |
| South (Agder) | | | | | | |
| | Aust-Agder | 1 | 0 | 93206 | 14 | 27,8 |
| | Vest-Agder | 3 | 0 | 145861 | 26 | 28,8 |
| Western Norway | | | | | | |
| | Rogaland | 4 | 0 | 370689 | 53 | 31,4 |
| | Hordaland | 6 | 2 | 415116 | 34 | 33,2 |
| | Sogn og Fjordane | 1 | 0 | 88483 | 6 | 26,6 |
| | Møre og Romsdal | 3 | 0 | 214944 | 18 | 26,6 |
| Middle (Trøndelag) | | | | | | |
| | Sør-Trøndelag | 3 | 1 | 254685 | 17 | 34,4 |
| | Nord-Trøndelag | 1 | 0 | 110216 | 6 | 25,4 |
| Northern Norway | | | | | | |
| | Nordland | 4 | 0 | 198905 | 7 | 24,9 |
| | Troms | 2 | 1 | 134492 | 6 | 30,9 |
| | Finmark | 2 | 0 | 62162 | 2 | 26,5 |

¹ <http://www.ssb.no/utdanning/statistikker/utniv/aar/2016-06-20?fane=tabell&sort=nummer&tabell=270238>

² <http://www.ssb.no/a/aarbok/tab/tab-050.html>

Table 2: Cross tabulation: Percentages in different fields of study by childhood municipality type, childhood region, mothers' education, and gender.

| | No higher education | Technical / science BA | Health, arts, social, BA | Business adm. BA | Nursing, teaching, social work, BA | Other MA | Elite professional | Unknown education | Total |
|---------------------------------|---------------------|------------------------|--------------------------|------------------|------------------------------------|----------|--------------------|-------------------|---------|
| <u>Municipality type</u> | | | | | | | | | |
| Least central | 65,7 | 5,8 | 5,5 | 3,0 | 12,1 | 3,2 | 4,1 | 0,7 | 203841 |
| less central | 61,6 | 6,3 | 5,9 | 3,3 | 13,3 | 3,8 | 5,1 | 0,6 | 121550 |
| Quite central | 63,1 | 5,8 | 5,6 | 3,6 | 11,7 | 3,8 | 5,7 | 0,8 | 297036 |
| Central | 64,0 | 5,4 | 5,4 | 3,8 | 9,9 | 4,2 | 6,4 | 1,0 | 593482 |
| Regional centres | 60,0 | 5,3 | 6,1 | 3,9 | 9,0 | 5,5 | 8,8 | 1,4 | 296416 |
| <u>Childhood region</u> | | | | | | | | | |
| Eastern Norway | 63,5 | 5,2 | 5,5 | 4,0 | 9,2 | 4,5 | 7,0 | 1,2 | 671352 |
| South (Agder) | 64,0 | 5,4 | 5,9 | 2,8 | 11,4 | 4,0 | 5,8 | 0,8 | 93100 |
| Western Norway | 62,3 | 6,2 | 5,6 | 3,6 | 11,4 | 4,2 | 6,0 | 0,7 | 420585 |
| Middle (Trøndelag) | 62,6 | 5,8 | 5,8 | 3,3 | 11,8 | 4,0 | 6,0 | 0,6 | 144978 |
| Northern Norway | 63,4 | 5,6 | 6,0 | 3,1 | 12,8 | 3,4 | 4,9 | 0,9 | 182310 |
| <u>Mother's educ</u> | | | | | | | | | |
| Lower secondary | 69,0 | 5,3 | 4,6 | 3,3 | 10,3 | 2,7 | 3,9 | 0,9 | 1138068 |
| Upper secondary | 50,9 | 7,0 | 7,6 | 5,5 | 10,9 | 6,6 | 11,1 | 0,4 | 116692 |
| HE, BA level | 37,4 | 6,9 | 10,5 | 4,9 | 13,8 | 10,7 | 15,6 | 0,3 | 189331 |
| HE, MA level | 25,6 | 5,2 | 11,1 | 4,3 | 6,1 | 17,8 | 29,5 | 0,4 | 16973 |
| Unknown educ | 67,0 | 4,6 | 4,8 | 2,4 | 7,9 | 3,1 | 5,4 | 4,8 | 51261 |
| <u>Gender</u> | | | | | | | | | |
| Men | 68,4 | 8,2 | 4,3 | 3,4 | 3,1 | 3,9 | 7,6 | 1,1 | 769272 |
| Women | 57,6 | 2,9 | 7,0 | 3,9 | 18,4 | 4,4 | 5,0 | 0,8 | 743053 |
| Total | 63,1 | 5,6 | 5,6 | 3,6 | 10,7 | 4,2 | 6,3 | 0,9 | 1512325 |

Table 3: Cross tabulation: Percentages in different places of study by childhood municipality type, childhood region, mothers' education, and gender.

| | University colleges & new universities | Old & specialised universities | Higher education abroad | HE, unknown place of study | No HE. | Total |
|---------------------------------|--|--------------------------------|-------------------------|----------------------------|--------|---------|
| <u>Municipality type</u> | | | | | | |
| Least central | 14,6 | 5,9 | 0,8 | 12,3 | 66,4 | 203841 |
| less central | 16,1 | 6,9 | 1,1 | 13,7 | 62,3 | 121550 |
| Quite central | 14,8 | 7,3 | 1,4 | 12,7 | 63,8 | 297036 |
| Central | 13,1 | 8,4 | 2,1 | 11,5 | 65,0 | 593482 |
| Regional centres | 11,5 | 10,9 | 2,9 | 13,3 | 61,4 | 296416 |
| <u>Childhood region</u> | | | | | | |
| Eastern Norway | 11,9 | 9,1 | 2,3 | 12,1 | 64,7 | 671352 |
| South (Agder) | 15,2 | 6,5 | 1,6 | 11,9 | 64,8 | 93100 |
| Western Norway | 14,4 | 7,8 | 1,7 | 13,1 | 63,0 | 420585 |
| Middle(Trøndelag) | 14,5 | 8,2 | 1,4 | 12,7 | 63,2 | 144978 |
| Northern Norway | 15,9 | 6,9 | 1,0 | 12,0 | 64,2 | 182310 |
| <u>Mother's educ</u> | | | | | | |
| Lower secondary | 12,2 | 5,1 | 1,1 | 11,8 | 69,9 | 1138068 |
| Upper secondary | 17,6 | 13,9 | 3,7 | 13,5 | 51,3 | 116692 |
| HE, BA level | 21,0 | 21,4 | 5,0 | 15,0 | 37,7 | 189331 |
| HE, MA level | 13,3 | 38,5 | 9,0 | 13,2 | 26,0 | 16973 |
| Unknown educ | 7,8 | 5,0 | 1,4 | 14,0 | 71,8 | 51261 |
| <u>Gender</u> | | | | | | |
| Men | 8,9 | 8,0 | 1,7 | 12,0 | 69,5 | 769272 |
| Women | 18,4 | 8,4 | 2,0 | 12,9 | 58,4 | 743053 |
| Total | 13,6 | 8,2 | 1,9 | 12,4 | 64,0 | 100,0 |
| N | 204929 | 123788 | 28022 | 187446 | 968140 | 1512325 |

Table 4: Estimated probabilities* for choosing different fields of study by municipality type, gender and age group (among people who have completed a higher education).

| | Technical/ science BA | Health, arts, social, BA | Business adm. BA | Nursing, teaching, social work | Other MA | Elite professional |
|-------------------------|--------------------------|-----------------------------------|---------------------|---|-------------|-----------------------|
| Men born 55-65 | | | | | | |
| Least central | 0,33 | 0,14 | 0,10 | 0,09 | 0,11 | 0,23 |
| less central | 0,31 | 0,13 | 0,10 | 0,09 | 0,12 | 0,25 |
| Quite central | 0,29 | 0,13 | 0,11 | 0,09 | 0,12 | 0,26 |
| Central | 0,30 | 0,13 | 0,12 | 0,08 | 0,12 | 0,25 |
| Regional centres | 0,25 | 0,13 | 0,12 | 0,07 | 0,13 | 0,28 |
| Men born 75-83 | | | | | | |
| Least central | 0,31 | 0,14 | 0,13 | 0,09 | 0,13 | 0,19 |
| less central | 0,30 | 0,14 | 0,13 | 0,09 | 0,14 | 0,20 |
| Quite central | 0,28 | 0,14 | 0,15 | 0,09 | 0,13 | 0,21 |
| Central | 0,28 | 0,13 | 0,16 | 0,08 | 0,14 | 0,20 |
| Regional centres | 0,24 | 0,14 | 0,17 | 0,07 | 0,15 | 0,22 |
| Women born 55-65 | | | | | | |
| Least central | 0,08 | 0,20 | 0,07 | 0,46 | 0,09 | 0,09 |
| less central | 0,08 | 0,20 | 0,07 | 0,45 | 0,10 | 0,10 |
| Quite central | 0,08 | 0,20 | 0,07 | 0,45 | 0,09 | 0,10 |
| Central | 0,08 | 0,20 | 0,07 | 0,43 | 0,10 | 0,11 |
| Regional centres | 0,08 | 0,21 | 0,08 | 0,38 | 0,12 | 0,12 |
| Women born 75-83 | | | | | | |
| Least central | 0,08 | 0,19 | 0,12 | 0,38 | 0,12 | 0,12 |
| less central | 0,08 | 0,18 | 0,12 | 0,38 | 0,12 | 0,12 |
| Quite central | 0,08 | 0,18 | 0,12 | 0,38 | 0,11 | 0,12 |
| Central | 0,08 | 0,18 | 0,12 | 0,36 | 0,12 | 0,13 |
| Regional centres | 0,08 | 0,18 | 0,13 | 0,31 | 0,14 | 0,15 |

*The probabilities are estimated from the coefficients in table A1 and A2. The other independent variables are held constant, and the probabilities are estimated for people who grew up in the eastern part of Norway, the parents' income were in the 6th decile, and whose mother and father have completed upper secondary school.

Table 5 Estimated probabilities* for different places of study by gender and type of municipality.

| | Old & specialised universities | | Higher education (HE) abroad | | University colleges & new universities | | HE, unknown place of study | |
|------------------|--------------------------------|--------------|------------------------------|--------------|--|--------------|----------------------------|--------------|
| | <u>Men</u> | <u>Women</u> | <u>Men</u> | <u>Women</u> | <u>Men</u> | <u>Women</u> | <u>Men</u> | <u>Women</u> |
| Least central | 0,35 | 0,26 | 0,10 | 0,09 | 0,50 | 0,64 | 0,05 | 0,01 |
| less central | 0,37 | 0,27 | 0,13 | 0,11 | 0,46 | 0,61 | 0,04 | 0,01 |
| Quite central | 0,36 | 0,26 | 0,13 | 0,11 | 0,47 | 0,62 | 0,03 | 0,01 |
| Central | 0,36 | 0,27 | 0,16 | 0,14 | 0,44 | 0,57 | 0,03 | 0,01 |
| Regional centres | 0,40 | 0,32 | 0,22 | 0,19 | 0,35 | 0,48 | 0,02 | 0,01 |

*The probabilities are estimated from the coefficients in table A3 and A4. The other independent variables are held constant, and the probabilities are estimated for people born in 1978 that grew up in the eastern part of Norway, the parents' income were in the 6th decile, and whose mother and father have completed upper secondary school.

Appendix tables:

Table A1: Multinomial logistic regression predicting different fields of study. Women

| | Technical/ science BA | | Health, arts, social, BA | | Business adm. BA | | Other MA | | Elite professional | | Unknown education | |
|---------------------------------|--------------------------|------|-----------------------------|------|---------------------|------|--------------|------|-----------------------|------|----------------------|------|
| | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. |
| <u>Mother's educ</u> | | | | | | | | | | | | |
| Upper secondary | 0,22 | 0,03 | 0,32 | 0,02 | 0,20 | 0,02 | 0,49 | 0,02 | 0,57 | 0,02 | -0,53 | 0,10 |
| HE, BA level | -0,11 | 0,03 | 0,34 | 0,02 | -0,27 | 0,02 | 0,59 | 0,02 | 0,47 | 0,02 | -0,79 | 0,10 |
| HE, MA level | 0,27 | 0,09 | 0,90 | 0,05 | 0,05 | 0,08 | 1,45 | 0,05 | 1,37 | 0,05 | -0,21 | 0,35 |
| Unknown educ | 0,28 | 0,10 | 0,18 | 0,07 | -0,02 | 0,09 | 0,19 | 0,09 | 0,51 | 0,08 | 1,63 | 0,11 |
| <u>Father's educ</u> | | | | | | | | | | | | |
| Upper secondary | 0,20 | 0,02 | 0,15 | 0,02 | 0,05 | 0,02 | 0,25 | 0,02 | 0,34 | 0,02 | -0,34 | 0,06 |
| HE, BA level | 0,31 | 0,03 | 0,36 | 0,02 | 0,09 | 0,02 | 0,63 | 0,02 | 0,72 | 0,02 | -0,45 | 0,09 |
| HE, MA level | 0,35 | 0,04 | 0,64 | 0,02 | 0,01 | 0,03 | 1,10 | 0,03 | 1,29 | 0,03 | -0,37 | 0,14 |
| Unknown educ | -0,10 | 0,11 | 0,19 | 0,07 | -0,05 | 0,09 | 0,38 | 0,09 | 0,33 | 0,08 | -0,11 | 0,12 |
| <u>Age group</u> | | | | | | | | | | | | |
| 1965 to 1974 | 0,19 | 0,03 | 0,08 | 0,02 | 0,71 | 0,03 | 0,33 | 0,02 | 0,40 | 0,02 | -0,23 | 0,05 |
| 1975 to 1983 | 0,20 | 0,03 | 0,08 | 0,02 | 0,68 | 0,03 | 0,39 | 0,02 | 0,37 | 0,02 | -0,94 | 0,06 |
| <u>Municipality type</u> | | | | | | | | | | | | |
| less central | 0,03 | 0,04 | -0,02 | 0,03 | -0,01 | 0,04 | 0,09 | 0,03 | 0,04 | 0,03 | 0,41 | 0,13 |
| Quite central | 0,06 | 0,03 | -0,02 | 0,02 | 0,00 | 0,03 | -0,01 | 0,03 | 0,06 | 0,03 | 0,60 | 0,09 |
| Central | 0,12 | 0,03 | 0,03 | 0,02 | 0,06 | 0,03 | 0,10 | 0,03 | 0,16 | 0,03 | 1,07 | 0,09 |
| Regional centres | 0,27 | 0,03 | 0,21 | 0,02 | 0,28 | 0,03 | 0,41 | 0,03 | 0,46 | 0,03 | 2,03 | 0,09 |
| <u>Childhood region</u> | | | | | | | | | | | | |
| South (Agder) | -0,42 | 0,04 | -0,19 | 0,03 | -0,60 | 0,04 | -0,39 | 0,03 | -0,44 | 0,03 | -0,83 | 0,09 |
| Western Norway | -0,05 | 0,02 | -0,15 | 0,02 | -0,26 | 0,02 | -0,18 | 0,02 | -0,19 | 0,02 | -0,88 | 0,06 |
| Middle(Trøndelag) | 0,10 | 0,03 | -0,16 | 0,02 | -0,43 | 0,03 | -0,20 | 0,03 | -0,24 | 0,03 | -1,25 | 0,09 |
| Northern Norway | -0,09 | 0,03 | -0,12 | 0,02 | -0,35 | 0,03 | -0,17 | 0,03 | -0,13 | 0,03 | -0,67 | 0,08 |
| <u>Parent's income</u> | | | | | | | | | | | | |
| 2. decile | -0,04 | 0,05 | -0,08 | 0,03 | -0,07 | 0,04 | -0,06 | 0,05 | -0,06 | 0,05 | -0,99 | 0,07 |
| 3. decile | -0,12 | 0,05 | -0,08 | 0,03 | -0,07 | 0,04 | -0,07 | 0,04 | -0,10 | 0,05 | -1,47 | 0,08 |
| 4. decile | -0,16 | 0,04 | -0,08 | 0,03 | -0,04 | 0,04 | -0,02 | 0,04 | -0,07 | 0,05 | -1,63 | 0,08 |
| 5. decile | -0,13 | 0,04 | -0,07 | 0,03 | -0,01 | 0,04 | -0,06 | 0,04 | -0,04 | 0,04 | -1,87 | 0,08 |
| 6. decile | -0,10 | 0,04 | -0,03 | 0,03 | -0,01 | 0,04 | 0,01 | 0,04 | 0,02 | 0,04 | -2,16 | 0,09 |
| 7. decile | -0,10 | 0,04 | -0,02 | 0,03 | 0,09 | 0,04 | 0,07 | 0,04 | 0,15 | 0,04 | -2,23 | 0,09 |
| 8. decile | -0,01 | 0,04 | 0,01 | 0,03 | 0,18 | 0,04 | 0,17 | 0,04 | 0,28 | 0,04 | -2,37 | 0,10 |
| 9. decile | 0,01 | 0,04 | 0,07 | 0,03 | 0,36 | 0,04 | 0,27 | 0,04 | 0,48 | 0,04 | -2,64 | 0,11 |
| 10. decile | 0,06 | 0,05 | 0,14 | 0,03 | 0,71 | 0,04 | 0,40 | 0,04 | 0,89 | 0,04 | -2,40 | 0,11 |
| Constant | -2,11 | 0,05 | -1,24 | 0,03 | -2,09 | 0,04 | -2,34 | 0,05 | -2,51 | 0,05 | -2,11 | 0,10 |

Number of obs: 224708; Pseudo R²: 0,046; Log likelihood: -349480.4

Baseline dep. var: Nursing, teaching, social work. Most coefficients are significant at p< 0.05, those in **bold** and *italics* are not.

Table A2: Multinomial logistic regression predicting different fields of study. Men

| | Health, arts, social, BA | | Business adm. BA | | Nursing, teaching, social work | | Other MA | | Elite professional | | Unknown education | |
|---------------------------------|-----------------------------|-------------|---------------------|-------------|--------------------------------------|-------------|--------------|-------------|-----------------------|-------------|----------------------|-------------|
| | <u>Coef.</u> | <u>S.E.</u> | <u>Coef.</u> | <u>S.E.</u> | <u>Coef.</u> | <u>S.E.</u> | <u>Coef.</u> | <u>S.E.</u> | <u>Coef.</u> | <u>S.E.</u> | <u>Coef.</u> | <u>S.E.</u> |
| <u>Mother's educ</u> | | | | | | | | | | | | |
| Upper secondary | 0,13 | 0,03 | 0,09 | 0,03 | -0,02 | 0,03 | 0,31 | 0,03 | 0,35 | 0,02 | -0,50 | 0,08 |
| HE, BA level | 0,43 | 0,02 | -0,02 | 0,03 | 0,34 | 0,03 | 0,64 | 0,02 | 0,46 | 0,02 | -0,73 | 0,08 |
| HE, MA level | 0,71 | 0,06 | -0,05 | 0,08 | 0,02 | 0,10 | 1,01 | 0,06 | 0,78 | 0,05 | 0,12 | 0,20 |
| Unknown educ | 0,01 | 0,10 | -0,07 | 0,10 | -0,08 | 0,11 | 0,28 | 0,09 | 0,31 | 0,08 | 1,06 | 0,11 |
| <u>Father's educ</u> | | | | | | | | | | | | |
| Upper secondary | 0,03 | 0,02 | -0,03 | 0,02 | -0,06 | 0,02 | 0,13 | 0,02 | 0,18 | 0,02 | -0,69 | 0,05 |
| HE, BA level | 0,30 | 0,02 | 0,02 | 0,03 | 0,12 | 0,03 | 0,51 | 0,02 | 0,57 | 0,02 | -0,78 | 0,07 |
| HE, MA level | 0,47 | 0,03 | -0,12 | 0,04 | 0,05 | 0,04 | 1,03 | 0,03 | 1,08 | 0,03 | -0,48 | 0,11 |
| Unknown educ | 0,26 | 0,10 | -0,11 | 0,11 | 0,04 | 0,12 | 0,23 | 0,10 | 0,26 | 0,08 | 0,07 | 0,11 |
| <u>Age group</u> | | | | | | | | | | | | |
| 1965 to 1974 | 0,09 | 0,02 | 0,37 | 0,03 | 0,24 | 0,03 | 0,09 | 0,02 | 0,14 | 0,02 | -0,01 | 0,04 |
| 1975 to 1983 | 0,09 | 0,02 | 0,35 | 0,03 | 0,06 | 0,03 | 0,20 | 0,02 | -0,17 | 0,02 | -0,45 | 0,05 |
| <u>Municipality type</u> | | | | | | | | | | | | |
| less central | 0,01 | 0,04 | 0,07 | 0,04 | 0,07 | 0,04 | 0,11 | 0,04 | 0,11 | 0,03 | 0,23 | 0,09 |
| Quite central | 0,09 | 0,03 | 0,25 | 0,03 | 0,13 | 0,03 | 0,14 | 0,03 | 0,22 | 0,03 | 0,42 | 0,07 |
| Central | 0,01 | 0,03 | 0,29 | 0,03 | 0,01 | 0,03 | 0,15 | 0,03 | 0,17 | 0,03 | 0,81 | 0,07 |
| Regional centres | 0,20 | 0,03 | 0,50 | 0,04 | 0,03 | 0,04 | 0,40 | 0,03 | 0,42 | 0,03 | 1,47 | 0,07 |
| <u>Childhood region</u> | | | | | | | | | | | | |
| South (Agder) | 0,09 | 0,03 | -0,38 | 0,04 | 0,15 | 0,04 | -0,06 | 0,04 | -0,03 | 0,03 | -0,88 | 0,08 |
| Western Norway | -0,09 | 0,02 | -0,33 | 0,02 | -0,03 | 0,02 | -0,13 | 0,02 | -0,14 | 0,02 | -0,81 | 0,05 |
| Middle(Trøndelag) | -0,01 | 0,03 | -0,28 | 0,03 | 0,29 | 0,03 | -0,14 | 0,03 | -0,05 | 0,03 | -1,06 | 0,07 |
| Northern Norway | 0,19 | 0,03 | -0,29 | 0,03 | 0,43 | 0,03 | -0,05 | 0,03 | 0,00 | 0,03 | -0,33 | 0,06 |
| <u>Parent's income</u> | | | | | | | | | | | | |
| 2. decile | -0,10 | 0,05 | -0,04 | 0,05 | 0,09 | 0,05 | -0,02 | 0,05 | -0,08 | 0,04 | -1,00 | 0,06 |
| 3. decile | -0,11 | 0,04 | -0,01 | 0,05 | 0,07 | 0,05 | 0,04 | 0,05 | 0,00 | 0,04 | -1,32 | 0,06 |
| 4. decile | -0,08 | 0,04 | 0,02 | 0,05 | 0,08 | 0,05 | 0,02 | 0,05 | 0,01 | 0,04 | -1,73 | 0,07 |
| 5. decile | -0,07 | 0,04 | 0,01 | 0,05 | 0,11 | 0,05 | 0,04 | 0,05 | 0,03 | 0,04 | -1,96 | 0,07 |
| 6. decile | -0,10 | 0,04 | 0,09 | 0,05 | 0,11 | 0,05 | 0,02 | 0,05 | 0,09 | 0,04 | -2,03 | 0,07 |
| 7. decile | -0,11 | 0,04 | 0,11 | 0,05 | 0,12 | 0,05 | 0,08 | 0,05 | 0,12 | 0,04 | -2,17 | 0,08 |
| 8. decile | -0,13 | 0,04 | 0,17 | 0,05 | 0,09 | 0,05 | 0,08 | 0,05 | 0,23 | 0,04 | -2,44 | 0,08 |
| 9. decile | -0,11 | 0,04 | 0,29 | 0,05 | 0,00 | 0,05 | 0,17 | 0,05 | 0,38 | 0,04 | -2,38 | 0,09 |
| 10. decile | -0,14 | 0,04 | 0,63 | 0,05 | -0,16 | 0,05 | 0,22 | 0,05 | 0,74 | 0,04 | -2,35 | 0,09 |
| Constant | -0,93 | 0,05 | -1,38 | 0,05 | -1,37 | 0,05 | -1,52 | 0,05 | -0,96 | 0,04 | -0,78 | 0,08 |

Number of obs: 169658; Pseudo R²: 0,043; Log likelihood: -290476,9,

Baseline dep. var: Technical/ science BA. Most coefficients are significant at p< 0.05, those in **bold** and *italics* are not.

Table A3: Multinomial logistic regression predicting different types of place of study. Women

| | Old & specialised universities | | Higher education abroad | | HE, unknown place of study | | Unknown education | |
|---------------------------------|--------------------------------|------|-------------------------|------|----------------------------|------|-------------------|------|
| | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. |
| <u>Mother's educ</u> | | | | | | | | |
| Upper secondary | 0,35 | 0,02 | 0,36 | 0,03 | -0,08 | 0,08 | -0,66 | 0,16 |
| HE, BA level | 0,43 | 0,02 | 0,33 | 0,03 | -0,30 | 0,08 | -0,72 | 0,16 |
| HE, MA level | 1,07 | 0,04 | 0,89 | 0,06 | 0,11 | 0,23 | 0,23 | 0,41 |
| Unknown educ | 0,20 | 0,08 | 0,43 | 0,10 | -0,11 | 0,29 | 1,42 | 0,14 |
| <u>Father's educ</u> | | | | | | | | |
| Upper secondary | 0,20 | 0,02 | 0,22 | 0,03 | 0,05 | 0,06 | -0,36 | 0,11 |
| HE, BA level | 0,48 | 0,02 | 0,40 | 0,03 | -0,12 | 0,08 | -0,51 | 0,15 |
| HE, MA level | 0,92 | 0,02 | 0,63 | 0,04 | -0,12 | 0,11 | -0,57 | 0,26 |
| Unknown educ | 0,42 | 0,08 | 0,32 | 0,11 | -0,09 | 0,31 | 0,34 | 0,16 |
| <u>Municipality type</u> | | | | | | | | |
| less central | 0,05 | 0,03 | 0,23 | 0,06 | 0,14 | 0,12 | 0,10 | 0,28 |
| Quite central | 0,02 | 0,03 | 0,21 | 0,05 | 0,28 | 0,10 | 0,40 | 0,18 |
| Central | 0,14 | 0,03 | 0,53 | 0,04 | 0,28 | 0,09 | 0,90 | 0,17 |
| Regional centres | 0,46 | 0,03 | 0,99 | 0,05 | 0,40 | 0,10 | 2,13 | 0,17 |
| <u>Childhood region</u> | | | | | | | | |
| South (Agder) | -0,55 | 0,03 | -0,59 | 0,05 | -0,48 | 0,12 | -0,81 | 0,15 |
| Western Norway | -0,27 | 0,02 | -0,38 | 0,03 | 0,09 | 0,06 | -1,12 | 0,11 |
| Middle(Trøndelag) | -0,29 | 0,03 | -0,59 | 0,04 | -0,42 | 0,11 | -1,50 | 0,18 |
| Northern Norway | -0,15 | 0,03 | -0,56 | 0,05 | -0,36 | 0,10 | -0,88 | 0,17 |
| <u>Parent's income</u> | | | | | | | | |
| 2. decile | -0,03 | 0,04 | -0,06 | 0,07 | 0,01 | 0,13 | -1,20 | 0,11 |
| 3. decile | -0,07 | 0,04 | -0,25 | 0,07 | -0,13 | 0,13 | -1,99 | 0,14 |
| 4. decile | -0,06 | 0,04 | -0,12 | 0,06 | -0,18 | 0,13 | -2,39 | 0,17 |
| 5. decile | -0,04 | 0,04 | -0,16 | 0,06 | -0,13 | 0,13 | -2,41 | 0,17 |
| 6. decile | 0,03 | 0,04 | -0,10 | 0,06 | -0,29 | 0,13 | -2,59 | 0,18 |
| 7. decile | 0,07 | 0,04 | 0,01 | 0,06 | -0,11 | 0,13 | -2,88 | 0,20 |
| 8. decile | 0,18 | 0,04 | 0,08 | 0,06 | -0,11 | 0,13 | -2,71 | 0,19 |
| 9. decile | 0,36 | 0,04 | 0,31 | 0,06 | -0,09 | 0,13 | -3,17 | 0,23 |
| 10. decile | 0,61 | 0,04 | 0,68 | 0,06 | 0,27 | 0,13 | -3,20 | 0,26 |
| Constant | -1,47 | 0,05 | -3,21 | 0,08 | -2,80 | 0,14 | -2,41 | 0,19 |

Number of obs: 119747, Pseudo R²: 0,08, Log likelihood: -107596, includes controls for birth year (1974-83)

University colleges & new universities (base outcome, dep. variable). Most coefficients are significant at $p < 0.05$, those in **bold** and *italics* are not.

Table A4: Multinomial logistic regression predicting different types of place of study. Men

| | Old & specialised universities | | Higher education abroad | | HE, unknown place of study | | Unknown education | |
|---------------------------------|--------------------------------|------|-------------------------|------|----------------------------|------|-------------------|------|
| | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. | Coef. | S.E. |
| <u>Mother's educ</u> | | | | | | | | |
| Upper secondary | 0,25 | 0,02 | 0,21 | 0,04 | -0,25 | 0,05 | -0,51 | 0,11 |
| HE, BA level | 0,35 | 0,02 | 0,20 | 0,03 | -0,73 | 0,05 | -0,85 | 0,12 |
| HE, MA level | 0,74 | 0,05 | 0,53 | 0,07 | -1,07 | 0,25 | 0,13 | 0,27 |
| Unknown educ | 0,30 | 0,09 | 0,22 | 0,12 | -0,13 | 0,20 | 1,12 | 0,13 |
| <u>Father's educ</u> | | | | | | | | |
| Upper secondary | 0,12 | 0,02 | 0,15 | 0,03 | -0,03 | 0,04 | -0,67 | 0,09 |
| HE, BA level | 0,38 | 0,02 | 0,27 | 0,03 | -0,51 | 0,05 | -0,82 | 0,11 |
| HE, MA level | 0,79 | 0,03 | 0,45 | 0,04 | -0,80 | 0,09 | -0,53 | 0,17 |
| Unknown educ | 0,25 | 0,09 | 0,47 | 0,12 | 0,01 | 0,20 | 0,38 | 0,14 |
| <u>Municipality type</u> | | | | | | | | |
| less central | 0,14 | 0,04 | 0,35 | 0,07 | 0,02 | 0,07 | 0,39 | 0,18 |
| Quite central | 0,09 | 0,03 | 0,33 | 0,06 | -0,26 | 0,06 | 0,52 | 0,14 |
| Central | 0,17 | 0,03 | 0,59 | 0,05 | -0,23 | 0,06 | 0,90 | 0,13 |
| Regional centres | 0,50 | 0,03 | 1,15 | 0,05 | -0,40 | 0,06 | 1,74 | 0,13 |
| <u>Childhood region</u> | | | | | | | | |
| South (Agder) | -0,54 | 0,03 | -0,70 | 0,05 | 0,03 | 0,07 | -1,00 | 0,12 |
| Western Norway | -0,22 | 0,02 | -0,45 | 0,03 | 0,60 | 0,04 | -0,82 | 0,08 |
| Middle (Trøndelag) | -0,30 | 0,03 | -0,75 | 0,05 | -0,24 | 0,07 | -1,16 | 0,12 |
| Northern Norway | -0,28 | 0,03 | -0,70 | 0,05 | -0,14 | 0,07 | -0,57 | 0,12 |
| <u>Parent's income</u> | | | | | | | | |
| 2. decile | -0,09 | 0,05 | -0,30 | 0,08 | 0,00 | 0,09 | -1,26 | 0,09 |
| 3. decile | -0,05 | 0,05 | -0,24 | 0,07 | -0,09 | 0,09 | -1,54 | 0,10 |
| 4. decile | -0,06 | 0,05 | -0,36 | 0,07 | -0,22 | 0,08 | -1,99 | 0,11 |
| 5. decile | -0,04 | 0,05 | -0,28 | 0,07 | -0,15 | 0,08 | -2,29 | 0,12 |
| 6. decile | 0,00 | 0,05 | -0,18 | 0,07 | -0,19 | 0,08 | -2,64 | 0,14 |
| 7. decile | 0,03 | 0,05 | -0,20 | 0,07 | -0,10 | 0,08 | -2,67 | 0,14 |
| 8. decile | 0,09 | 0,04 | -0,04 | 0,07 | -0,17 | 0,09 | -3,00 | 0,16 |
| 9. decile | 0,25 | 0,04 | 0,17 | 0,06 | -0,14 | 0,09 | -2,76 | 0,16 |
| 10. decile | 0,55 | 0,05 | 0,64 | 0,06 | -0,02 | 0,10 | -2,76 | 0,17 |
| Constant | -0,69 | 0,05 | -2,34 | 0,09 | -1,41 | 0,09 | -1,29 | 0,15 |

N: 83773; Pseudo R²: 0,07; Log likelihood: -92237,0, includes controls for birth year (1974-83)

University colleges & new universities (base outcome, dep. variable). Most coefficients are significant at $p < 0.05$, those in **bold** and *italics* are not.