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Educational Expansion and
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between Young Adults and their Parents,
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Educational Expansion and Intergenerational Proximity in Sweden: Developments in Geographical Distance between Young Adults and their Parents, 1980-2007*

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Abstract: This study examines how educational expansion has affected trends in intergenerational distances between adult children and their parents in Sweden. Our study population consists of all couples who had a first child and their parents, in every year between 1980 and 2007. Tertiary education is typically associated with decreased intergenerational proximity. We examine how increased enrolment has influenced distance to parents by using administrative register data for the complete population of Sweden. We perform a decomposition analysis, examining how the big expansion of tertiary education in Sweden during our study period has influenced intergenerational proximity. An explicit policy goal of this expansion was to widen the geographical access to tertiary education, and the government increased enrolment at newer regional institutions during this period. We additionally explore if the expansion of these newer tertiary institutions influenced average distance to parents. We find that intergenerational distances increased over the study period, and that this mainly was attributed to the increased enrolment at older tertiary universities. The expansion of regional tertiary institutions throughout Sweden had a small negative effect on intergenerational distance.

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Introduction

Enrollment in tertiary education and the number and size of tertiary institutions have grown dramatically world-wide in the second half of the twentieth century (Altbach et al., 2009). The education phase of young adulthood has lengthened and this process has accompanied changes in family formation and family relationships (Schofer & Meyer, 2005). Sweden is a country which exemplifies this process of change. The number of Swedish men and women completing tertiary degrees has increased rapidly in the last 40 years. This study focuses on changes in patterns of average intergenerational proximity as a consequence of educational expansion. Because education is a major driver of geographic mobility, increasing enrollment in tertiary education across all social groups has likely led to higher mobility and thus a reconfiguration of family geography. This paper further aims to identify the role educational expansion and regionalization of tertiary education has played in changing distances between generations in Sweden since the 1980s. We examine the extent to which the recent increase in geographical proximity in the last decades can be explained by an increasing number of students finishing tertiary education, and what role the establishment of regional institutions played in these changes.

This study will compare the proximity of young couples (who are the unit of analysis) to the woman's and the man's parents over the study period, 1980-2007. All couples who have a first child during the study period are linked to their two sets of parents via register data, with distances calculated at the time of the first birth. The comparison of distances over this long time period makes it possible to examine how changes in educational attainment are related to changes in intergenerational proximity. This study will first describe the changes that have occurred in distance to parents. Further analysis will decompose the change to study the impact of the regionalized Swedish policy of educational expansion. Decomposition will

address the different effects that older institutions (located in larger cities, and traditional university towns) and newer institutions (more evenly distributed across the country) have on changes in Swedish family networks.

From a micro-level perspective, several studies have linked an individual's higher educational attainment to a greater distance to family members (e.g. Malmberg & Pettersson, 2007 in Sweden, Mulder & Kalmijn, 2006 in the Netherlands, Shelton & Grundy, 2000 in the UK). Previous research has shown that education has become an increasingly important determinant for migration within Sweden (Lundholm, 2007). Accordingly, the expansion of tertiary education in a country should also lead to larger intergenerational distances on average. As more young people reach higher levels of education, partner with other highly educated people, and move away from their home towns and parents, the aggregate patterns of family proximity should change as well. However, the macro-level effects of increasing educational attainment on patterns of family geography have not been studied.

Geographic proximity between family members matters because it structures opportunities for interaction, both in terms of concrete forms of family support, obligations, and care, as well as of the broader experience of kinship (Bengtson, 2001, Tomassini et al, 2003, Rossi & Rossi, 1990). Micro-level studies on the distance between adults and their parents have shown that proximity is associated with a number of indicators of family cohesion, including frequency of contact, emotional proximity, provision of child care, and old age support (e.g. Lawton et al, 1994). Increased distance between generations, on the other hand, has been linked to lower levels of communication, as well as financial and non-financial forms of support (Mulder & Cooke, 2009, Michielin et al, 2008). Changes in spatial configurations of families are thus likely to change the nature of family relationships. Living in proximity to parents also allows young adults to take advantage of "location-specific capital" built up when they were younger, such as social networks (DaVanzo, 1981). When young adults have

children, proximity to parents may become especially important as the new parents seek family support and interaction. Family networks have an acknowledged role in the residential decisions of young adults, because older parents can act as mobility attractors (Mulder, 2007, Michielin et al, 2008, Pettersson & Marlmberg, 2009). Due to this importance of geographic proximity for family relationships, changes in family proximity are an important subject for research.

Patterns of intergenerational proximity in Sweden are an interesting case because they are embedded in a welfare state with a long tradition of stressing individual independence (Trägårdh, 1997, Esping-Andersen, 1990). Swedish family policy and labor market legislation support high levels of individual autonomy. Sweden has relatively low rates of intergenerational co-residence, and tends to rank low on intergenerational proximity and intensity of contact with kin compared to other European countries (Hank, 2007, Bordone, 2009). Thus Sweden is a typical case of what has been described as a “weak family relationships” society (Reher, 1998), and presents a case comparable to similar countries including others in Scandinavia, the Netherlands, the United Kingdom and the United States. Sweden is also interesting to study from the educational expansion perspective both due to the dramatic growth in educational enrollment and due to the government policy shaping this growth. The Swedish government has actively promoted the regionalization of tertiary education by opening new universities across Sweden, which could counteract patterns of growing intergenerational distances (Andersson et al., 2004, Premfors, 1984).

We will first will provide a background discussion on the relationship between education and migration, Swedish educational policy, and educational expansion; then introduce the research design; review the data and method used in the study; present the results; and finally discuss our findings.

Background

Education and migration

Due to the fact that students tend to move to attend universities, the expansion of higher education will likely lead to increases in the distance between parents and children. Young adults in many countries have traditionally migrated long distances to attend university and settled densely around university areas while they are in school (Patiniotis & Holdsworth, 2005, Belfield & Morris, 1999, Statistics Sweden, 2003). As more young people pursue post-secondary education, education-related migration and subsequent, continued migration have both increased (Schofer & Meyer, 2005). Because many students have left their home towns for education, they may not be able to or want to return after they graduate. People with a university education are typically more mobile than those without it (Long, 1973, Greenwood, 1997, Brandén, 2013). This happens partly because those who have received specialized training are inclined to be more flexible geographically when looking for work. Furthermore, people tend to find partners living close to them (Haandrikman et al., 2008), and those who meet partners in university may thus not be interested in returning to their home town. For these reasons, education is tied to migration, and expansion of education can lead to decreasing intergenerational proximity.

Education is just one factor contributing to intergenerational distances, and other factors may have also been responsible for changes in intergenerational proximity. Levels of internal migration in Sweden are comparable to those in other European countries (Long, 1992). Most young people in Sweden leave the parental home after finishing their secondary education or before starting a family (Hajnal, 1982, Dribe, 2000, Dribe & Stanfors, 2005), both now and in the past. While migration rates at older ages have been stable and in some cases declined, there has been an increase in migration rates in early adulthood in Sweden the last decades

(Lundholm, 2007, Kupiszewski et al., 2001). In Sweden, very few young people continue living with their parents in adulthood (Sundström 1987). For cohorts born between 1965 and 1975, the median age for leaving parental home in Sweden is twenty for women and twenty two for men (Statistics Sweden, 2008). Not only do women leave the parental home earlier, but research has also shown that they move more often, further, and for different reasons than men (Brandén, 2013).

However with the exception of moves related to tertiary education, most young adults leaving the parental home do not move far away (Statistics Sweden, 2008). Studies focusing on older adults (Lundholm & Malmberg, 2009, Bordone, 2009) have shown that roughly 50% of adults aged older than 55 live within 25km of one of their children. On average, older Swedish adults tend to have at least one child nearby, and family networks in Sweden are not very dispersed geographically even in cases of family dissolution (Holmlund et al, 2013, Stjernström & Strömgren, 2012). However, tertiary education has been tied to higher migration propensity in Sweden (Lundholm, 2007), suggesting that an increase in tertiary-educated individuals could lead to greater intergenerational distances and weaker family relationships.

Educational expansion

Enrollment in post-secondary education has increased worldwide in the twentieth century, with the greatest growth in enrollment occurring after 1960. In 1900, just one percent of college-aged people around the world were enrolled in higher education, but by 2000 this number had grown to twenty percent of college-aged people (Schofer & Meyer, 2005). As enrollment has expanded, tertiary education has become more available to people from diverse class backgrounds, as well as to women, though socioeconomic inequalities in access to tertiary education persist (Erikson & Jonsson, 1996, Berggren, 2008).

In Sweden, the number of women earning a tertiary degree by age 30 has more than tripled between the 1948-1986 birth cohorts, and the number of men earning a degree by age 30 has nearly doubled (Hogskoleverket,). Tertiary education, in form of both post-secondary training and three-year academic degrees, has increasingly become a universal phase in young adulthood, and a motivator for many young adults to leave their home town. The structure of academic studies in Sweden is particularly conducive to students migrating permanently away from smaller home towns. Tertiary studies in Sweden tend to be more drawn out in time compared to other countries, as education is free and government subsidies and loans cover living expenses for up to 6 years (Johnstone, 2003, Deen, 2007). University education in Sweden is often interspersed with periods of work and typically continues over a longer period than in other countries. The significant time away from home towns and the subsequent development of location-specific capital in their new towns mean that Swedish students may be unlikely to return to their home towns after their extended education period. For these reasons, the expansion of higher education in Sweden would be likely to coincide with greater mobility for young people, and larger distances between generations.

Swedish education policy

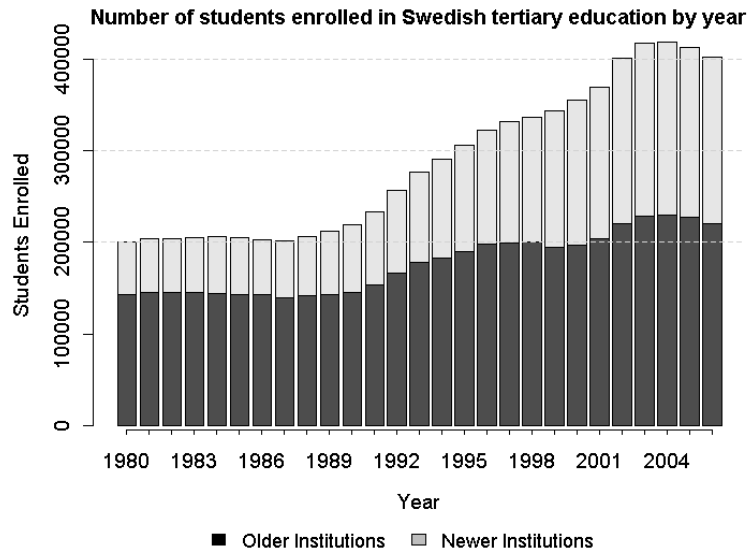
Tertiary educational expansion has been an explicit aim of Swedish policy in the last decades, and the government has opened new institutions throughout the twentieth century in order to increase access to education. In the mid-1940s, Sweden had two universities, two university colleges ('university colleges' are typically smaller and less research oriented than 'universities' in Sweden), and some institutions for professional training (for example medicine, teaching, engineering, nursing and business). Eleven new universities and university colleges opened in the late 1970s, but the reform took time, and the number of students enrolled did not begin to grow until after the 1980s (Andersson et al., 2004). While there were 200,000 people enrolled in any post-secondary course in 1980, there were about

400,000 students in 2007. Currently, there are 13 universities and 23 university colleges in Sweden which have the right to grant degrees up to the doctorate level (Hogskoleverket),).

As demand for higher education has grown, governments—including Sweden’s—have sought to open smaller university colleges and cater to students in non-central regions as a way to counter education-related migration (Teichler, 2008, Osborne, 2003, Andersson et al., 2004). Educational expansion in Sweden has, from its beginning, been the product of specific policy to make education more accessible to those who lived in less densely populated areas (Premfors, 1984, Andersson et al., 2004). By opening post-secondary institutions away from traditional university cities, the government tried to ensure that young adults who lived in more rural settings, or were not prepared to move far to gain tertiary education, could have an opportunity to attend a university or college closer to their hometowns (Premfors, 1984).

Figure 1 shows details about enrollment in tertiary institutions, in which we have classified institutions as “older” and “newer”. The older institutions include the universities in Uppsala, Lund, Umeå, Linköping, Gothenburg and Stockholm, as well as older specialized institutions for economics, medicine, and technology (concentrated in Stockholm and Gothenburg). Newer institutions include other more recent tertiary institutions throughout the country. As Figure 1 shows, the number of students enrolled in these “newer” institutions has increased steadily from 1990 and onwards. The number of students in the “older” institutions has also climbed, from about 150 000 to over 200 000. Newer institutions may have provided opportunities for young adults to stay in the regions they are from, but older institutions continue to exert a geographic pull for young people. These different effects will be addressed through the decomposition analysis.

Figure 1: Enrolled students in old and new (regional) tertiary education institutions



Source: Swedish administrative register data, authors own calculations.

Research Design

The first aim of this study will be to show changes in distance between adult children and their parents over the study period, and the secondary aim is to identify the role of educational expansion in these changes.

The index population for this study will be new couples who have had a child together each year, and distance will be measured to each of the four known parents, because the couples' parents may no longer live together. We thus examine the "flow" of new unions, rather than the current "stock" of unions within a year. For several reasons, single-sex analysis could be inappropriate for the study of family-networks which involve partnerships, so this study focuses on couples. . The advantages of our couple design are the following:

Firstly studying couples allows us to measure distances at the time of the birth of a first child, which constitutes a measure of social age, rather than chronological age. This measure is preferable as it is a consistent point for comparison over a thirty year time period when ages

at union formation and childbirth have steadily increased (Andersson & Kolk, 2011). In contrast, studying individuals in their mid-twenties would present a misleading picture of family relationships, as people increasingly settle down and form families at later ages throughout the study period. This trend would exaggerate the changes in the distances between adults with children and their parents. Likewise, migration patterns for young adults differ substantially before and after family formation—long-distance migration becomes much less common after the birth of a child (Rossi & Rossi, 1990). Distance to kin at the time of family formation is thus more informative about the family environment the new family will be operating in.

Furthermore, couples are a good unit of study because they effectively have two sets of parents. A person living far away from their parents but close to their partner's parents should not be analyzed as not having any family in the proximity. In addition to studying changes in distance between the parents of the couple separately, our analysis also takes into account changes in distance to the closest parent. This measures access to any family member which, in turn, indicates access or obligations to care from family members.

Another positive aspect of using couples as the level of analysis is that it allows us to observe actual households. Because women are typically, several years younger than their male partners (Kolk, 2012), men and women of the same ages are in different stages of their family formation process. Therefore, comparing intergenerational proximity of men and women of identical ages would be misleading. For these reasons, distances in the study will be measured from the couple to each of four parents.

In order to discuss the role education has played in family changes, descriptive distance results will be followed by a decomposition analysis. This analysis will help reveal which part of changes in family distance is due to greater mobility at every educational level, and

which part is due to more people being in the more mobile educational categories. This analysis is important as it is not clear whether educational expansion by itself has affected geographic family networks. There are a number of other factors which could have driven changes in intergenerational proximity. Among them are increased labor market migration, changing urban-rural migration dynamics, growing openness to living further apart, changes in values, and so on. The decomposition analysis will help see how the rates of educational attainment have changed distances.

Furthermore, our decomposition analysis will address the nature of tertiary education in Sweden. Tertiary educational expansion occurred via increased enrollment at existing universities and the creation or expansion of smaller regional institutions. We perform a further decomposition by tertiary institution type in order to assess the effect of these more geographically dispersed universities on proximity to family.

Data

To measure and analyze the changes in family proximity patterns, we use information on both partners in all couples who had a first birth in the years 1980- 2007, drawn from Swedish administrative register data. Using first births allows the analysis to capture cohabiting as well as married couples in order to more completely describe relationships in Sweden. We only look at biological births and births to couples who shared residence at the time of the birth. This restriction omits the very small percentage of all births in Sweden to single mothers (Thomson & Eriksson, 2013).

The data were assembled using Swedish registers to link generations and include geographic coordinates of municipality population-weighted midpoints for the couple and the couples'

four respective parents.¹ Though there are more detailed geographic measures, municipalities are the smallest geographical area for which we have comparable time series, starting in the 1980s. A map of the municipalities of Sweden is available in Appendix A. The data make it possible to measure whether the couple lives in the same municipality as one or both sets of parents and if not, the distance to the municipality for each of the four parents of our index couple. Data is also available on the age and educational level of both partners in the couple. Educational level is collected from administrative registers, and the highest educational level recorded in 2007 is coded into primary, (any) secondary, or (any) tertiary categories. Couples are also classified according to the type of educational institution they attended. Information on which tertiary institution they attended is drawn from the tertiary education register, which includes information on year, term, and institution attended by each individual.

Our main outcome variable is distance between municipalities of residence for the index couple and the parents. For the sake of analysis we use two strategies when presenting these data. The first is the calculation of mean geographical distance for every year for new parents with different educational levels. We also look at the distribution of geographical distances by categorizing distance the following way; 0 (same municipality), 1-20km, 20-50 km, 50-300 km, 300+km. These categorizations are meant to correspond roughly to travel times and expected frequencies of face-to-face contact.

Methods

The first section of the results is descriptive, and includes frequency graphs and plots of average distances from couples to their parents. The study period is 1980-2007, and

¹ In 2007 Sweden has 9,174,464 inhabitants living in 299 different municipalities. The median municipality population was 15,297, and the median area was 673 square km.

descriptive graphs refer to the year of birth of the couple's first child. The second step in the study is the decomposition analysis. The purpose of this decomposition is to better understand the components of change in intergenerational distances. The classic method of decomposition, expressed by Kitagawa (1955) separates the average changes in different groups from changes in the weight of different groups. In the case of this study, the changes in the average distance $dist$ for each group with educational attainment edu can be separated from the change in the relative weight of the educational group (n_{edu}/n) between one time period t_1 and another t_2 . The decomposition formula is presented below. Here, n_{edu} is the number of couples within each educational category at time t , and $dist_{edu}$ is the average distance between couples of a certain educational level and their parents at time t .

Total Change

$$\begin{aligned}
&= \sum_{edu} \left(\frac{\frac{n_{edu}(t_2)}{n(t_2)} + \frac{n_{edu}(t_1)}{n(t_1)}}{2} \right) * (dist_{edu}(t_2) - dist_{edu}(t_1)) \\
&+ \sum_{edu} \left(\frac{dist_{edu}(t_2) + dist_{edu}(t_1)}{2} \right) * \left(\frac{n_{edu}(t_2)}{n(t_2)} - \frac{n_{edu}(t_1)}{n(t_1)} \right)
\end{aligned}$$

The analysis will decompose the changes in the average distance from parents within educational groups from the impact of rising educational attainment in Sweden. Thus, we compare how much of the overall change in distance (measured in kilometers between municipalities) can be explained by an increase in the number of people with higher education, and how much by changing distances within each educational group. The first term in the decomposition (which we call the “composition”) can be interpreted as the change over time that is due to increasing enrollment, and the second term (“propensity”) can be interpreted as the change that is due to other factors. Distances to the mother's mother and the father's mother will be decomposed by the unique educational combinations in a couple. These combinations are based on grouping educational attainment into primary, secondary,

and tertiary, and grouping couples by the men's and women's educational attainments (e.g., woman secondary and man secondary or woman tertiary and man secondary).

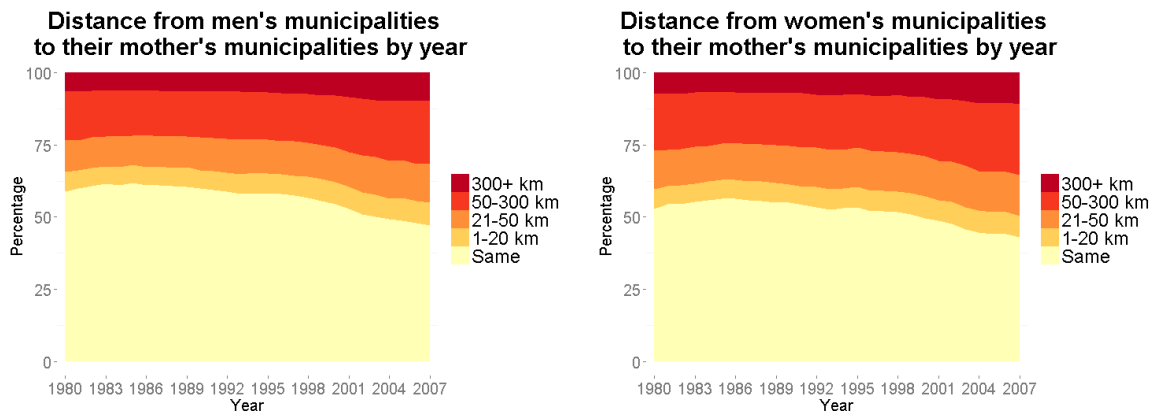
The results are further broken down based on the educational institutions attended by the couple. As discussed above, Swedish educational expansion was carried out with a distinct regionalization aim, and new colleges were opened throughout the country. We have classified institutions in two groups to separate older and newer institutions (the list of educational institutions and their classification can be found in Appendix B). Couples where either partner attended a tertiary institution were thus classified according to the nature of the institution. So if a member of a couple attended an older university, they are included in the "older institution" group for the purposes of decomposition, and vice versa. If one member of the tertiary-educated couple attended an older university and the other member attended a newer institution, the couple is classified in the "older institution" group. Thus, the further decomposition relies on distance measures for thirteen distinct educational groups. These groups include the couples where both partners attended primary or secondary education (4 categories), while the combinations involving a tertiary educated partner are further split to indicate newer/older institutions (8 categories where one partner has tertiary education, and 1 category where both attended tertiary education).

Results

We will first present trends in the average distance to parents at first parenthood over the study period. Figure 2 shows the results for average distance to the women's mothers and the men's mothers. The results for the couple's fathers are not shown, but they are very similar, though the number of fathers that can be linked in the register is slightly lower than the number of mothers. The plots in Figure 2 show the share of couples within different categories of distances. Distances are calculated between the midpoints of municipalities of

residence for the couple and their parents. Overall distances are similar to both men's and women's mothers, though couples tend to live closer to the men's parents. For the entire period more than half of the couples live in the same municipality as their parents. When examining the change over time one can see big continuities but also an increasing fraction of couples who live far away (50 km+) from their parents. There is evidence that there has been a decline in intergenerational geographical proximity over the study period.

Figure 2: Distance to the woman's mother and the man's mother. Swedish couples who had a first birth between 1980 and 2007



In Table 1 we show the changes in the educational compositions of couples analyzed. The table presents nine different educational categories representing primary, secondary, and tertiary education for the man and woman in the couple. The table is split into three time periods, the 1980s, the 1990s, and the 2000s. The table shows clearly the trend of educational expansion in Sweden. The share of new parents where at least one partner had a tertiary education increased from 43% of all couples who had a first birth in the 1980s to 58% of all couples in the 2000s. Meanwhile the percentage of couples with only secondary and primary education declined. The majority of first born children born in 2000-2007 have at least one tertiary-educated parent. The table also shows that women with a first born child on average have higher educational levels than men in Sweden throughout the period, and, consequently,

that partnerships where women have more education than men are more common than vice versa.

Table 1: Educational combinations within a couple for Swedish couples who had their first birth in the 1980s, 1990s and 2000s.

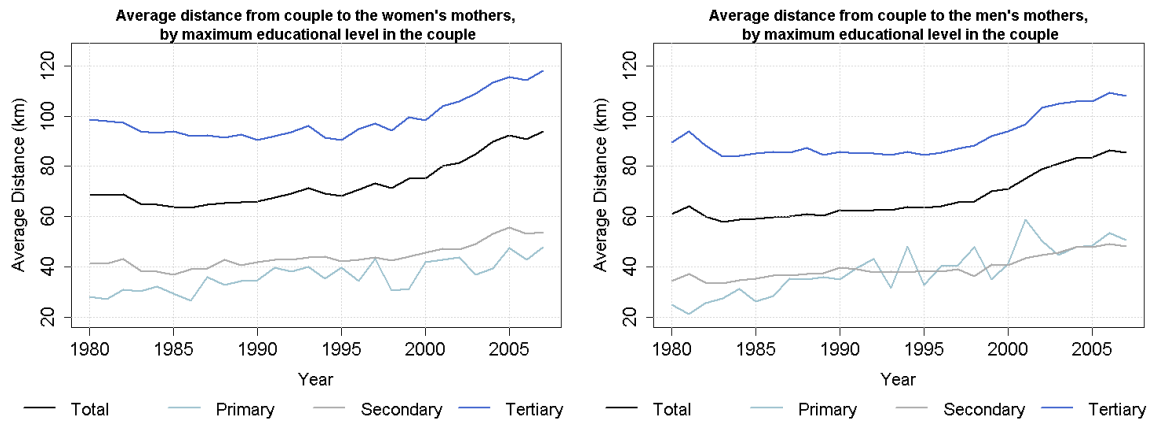
1980-1989				1990-1999				2000-2007			
	W1	W2	W3		W1	W2	W3		W1	W2	W3
M1	3.4%	11.9%	3.5%	M1	1.6%	7.1%	2.3%	M1	2.0%	4.9%	1.6%
M2	5.5%	32.0%	14.4%	M2	3.9%	35.1%	17.1%	M2	4.1%	29.2%	17.7%
M3	0.8%	9.3%	19.2%	M3	0.5%	9.9%	22.5%	M3	0.5%	8.4%	31.7%

W=Woman, M=man, 1=primary education, 2=secondary education, 3= tertiary education

To examine how this educational expansion has affected overall geographical distance, we analyze changes in intergenerational proximity by educational level in Figure 3. This figure shows an increase in mean geographical distance between couples and their parents over time, by the highest level of education within the couple. During the study period 1980-2007, average intergenerational distance increased by 15-20 km. The changes in categorical distance presented in Figure 2 suggest that this change can be attributed to less couples living in the same municipality as their parents, and instead living up to 300 km away. As Figure 3 shows, couples with at least one college-educated partner live further away from their parents than couples with less educated partners. At the end of the study period a couple with a tertiary educated partner lived on average 120 km away from their parents, while the equivalent number for a couple when the highest level was secondary education was a little less than 60 km. We can see that while geographical distance increased for couples within all

educational categories over the study period, the largest increase was among tertiary educated couples.

Figure 3: Mean distance to the woman’s mother and the man’s mother, by maximum educational level of the couple.



We further extend the analysis by showing the change in distance to the closest parent over the study time period (Figure 4). As discussed above, since a couple effectively has two sets of parents, measuring distances to just one parent at a time does not give the full picture of the family network. As shown in Figures 4 and 5, slightly more couples tend to live closer to the man’s parents than the woman’s parents, and this slight difference has remained constant over the study period. This is likely due to both lower educational enrollment levels for men, and to men’s lower propensity for moving away from home. We can see in figure 5 that the average distance to the closest parent increased over the study period compared to distances between specific parent-child pairs, and the overall distances are much smaller. At the end of the study period, the closest parent for all couples lived an average of less than 35 km away, and less than 15 km away for couples without tertiary education. Our results show that availability of any parent is significantly higher than the availability of any specific parent.

Figure 4: Percentage of all couples where the closest parent is the woman's parent, the man's parent, or where both parents are equidistant. Figure 5: Mean distance to the couple's closest parent, by maximum educational level of the couple.

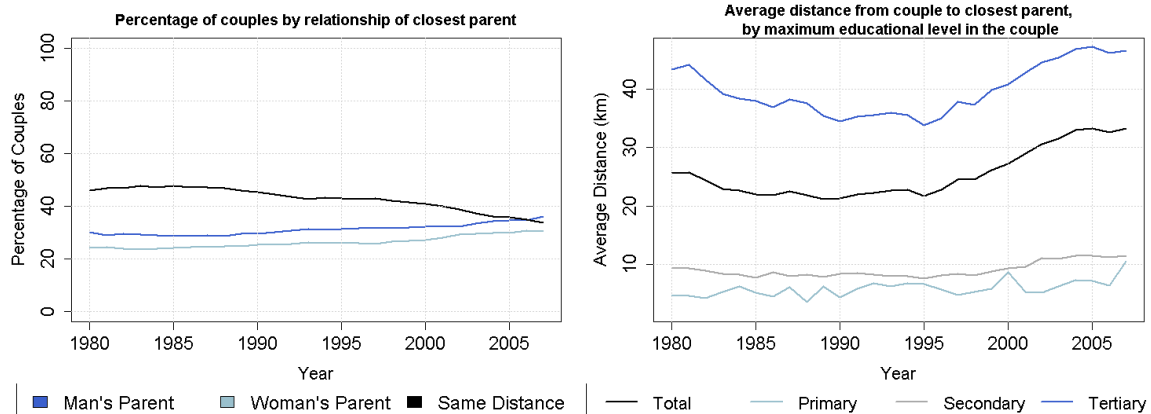


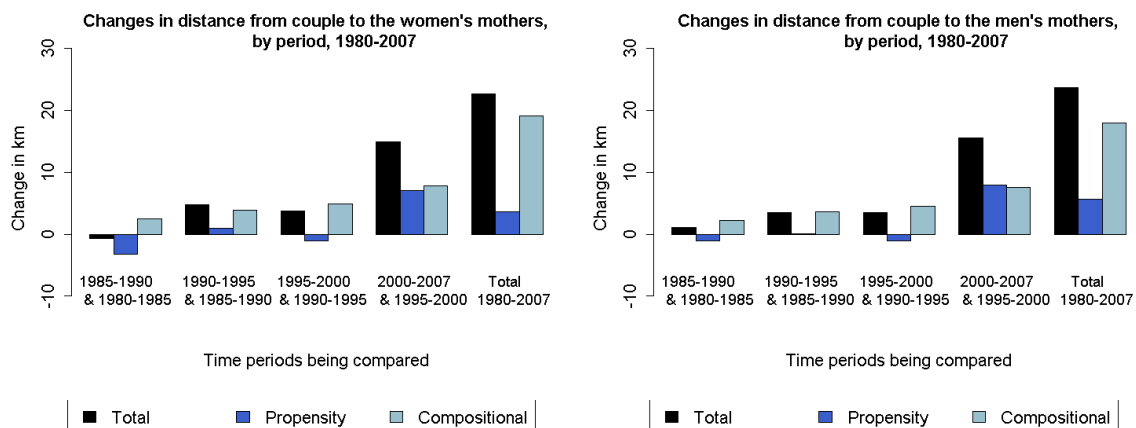
Figure 3 showed how geographical distance, disaggregated by educational level, has changed over the study period. One can observe that the increase in mean distance for all couples over the period was larger than when examining couples within any individual educational category. This suggests that one important reason for decreasing intergenerational proximity is a compositional change, i.e. that educational expansion has increased the number of more educated, more mobile individuals. To test this hypothesis we perform a formal decomposition, comparing how much of the population level decrease in intergenerational proximity can be explained by a compositional change in the number of couples at different educational combinations, and how much is due to a potential increase in migration propensity within couples with a certain education.

In Figure 6 we present the decomposition of changes in distance to women's mothers and for men's mothers, though the patterns are very similar for both genders. We show the total change between 1980 and 2007, as well as changes between each five year interval. The total change in average distance in kilometers is decomposed into two parts: the change in the mean distances to parents within each educational combination, and the change in the number of couples within each educational combination. These results clearly show the dominating

role of educational expansion—growth in the number of couples within higher educational categories—in explaining increasing geographical distance. When stratifying the decomposition into 5 year time intervals, we can see the importance of changes in 2000-2007 compared to 1995-2000 in particular.

Educational enrollment increased most rapidly in Sweden in the 1990s, and the large increase in the number of parents with tertiary education took place in the late 1990s and early 2000s (cf. table 1). It makes sense that it is in the latest period, when educational expansion contributed most strongly to increasing intergenerational distance, that we see the biggest increase in distances. As the figures show, compositional changes have had a steady positive effect on changes in mean distance. Earlier educational expansion also had a positive, but less drastic effect on intergenerational proximity. The propensity of couples to live further or closer away at each educational level has not changed consistently over the time period, and has contributed positively to overall distances only between the late 1990s and the 2000s. While we can see that intergenerational distances grew as more people received tertiary education, enrollment grew in both newer and older institutions.

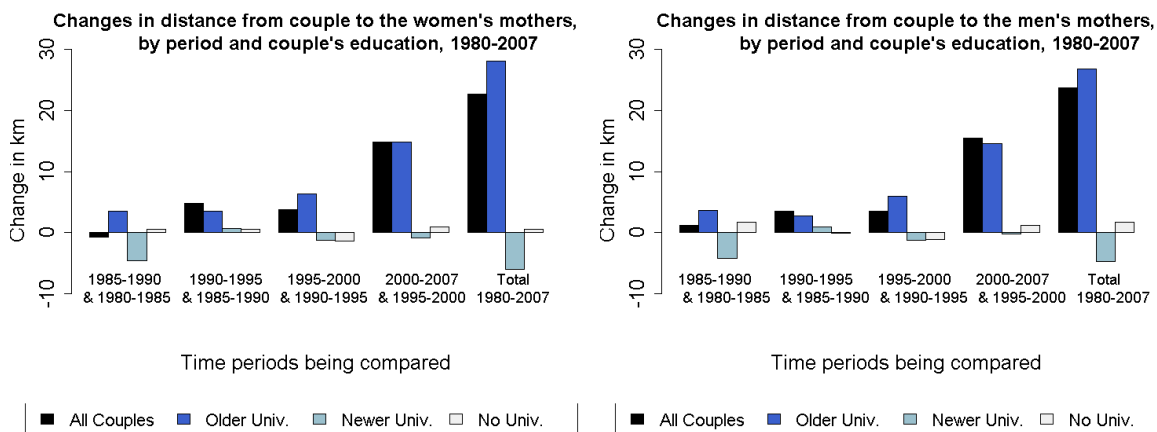
Figure 6: Decomposition of total distance changes between couples and their parents into changes due to composition and distance propensity.



The next step in the analysis was to further test the impact of the regionalization policy on mean distances between adults and their parents, by comparing the increase in enrollment in

newer and older tertiary institutions. Figure 7 below shows a further decomposition of total change in each time period into the average change experienced by groups with different educational backgrounds. As the figure shows, differently educated couples had a different impact on total changes in distance over each time period. The figure also shows that there were almost no gender differences in proximity changes to the men's and women's parents. The couples where at least one person studied at an older university experienced the biggest change in distance, while couples where both individuals studied at a newer institution contributed negatively to average distance. These results show that more people moved further to older institutions, while the newer universities allowed more people to study near their parents. Thus, though Swedish expansion policy achieved greater accessibility and increased intergenerational proximity, the simultaneous increased enrollment in older institutions led to an increase in overall average distance between family members.

Figure 7: Decomposition of geographical distance to the woman's parents and the man's parent by educational type.

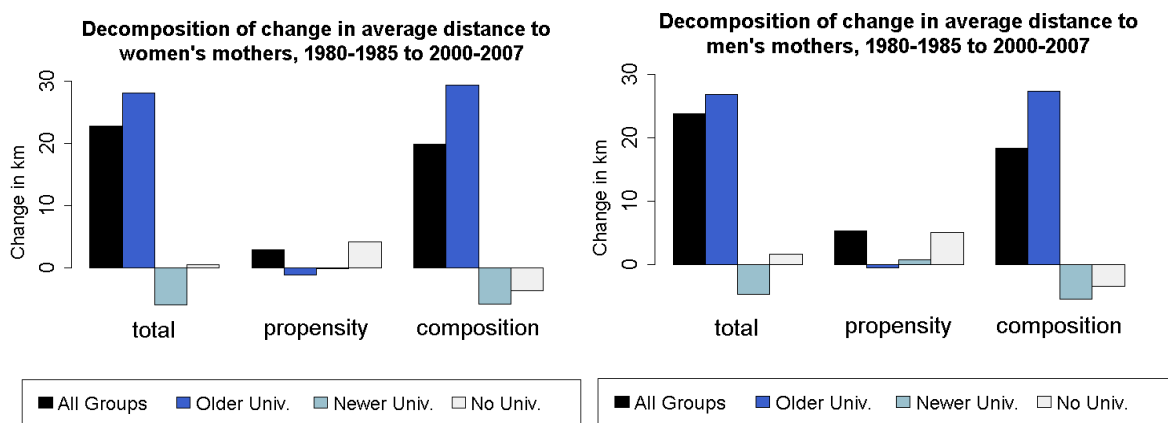


In Figure 7 we showed how much of the total change in distance was related to an increasing enrollment in older and new tertiary institutions. The final figure (8) shows how the total changes by tertiary education type can be disaggregated into propensity (the change in mobility for couples from newer/older institutions were) and compositional changes (the

change in number of couples from newer/older institutions). This figure compares changes in distances between couples with different educational backgrounds between the periods 1980-1985 and 2000-2007. By separating the changes into two terms, Figure 8 shows that, mean distance change was the same for couples with members attending older and newer institutions, and that all distance change can be attributed to compositional changes. More specifically, these changes occurred due to increases in enrollment at older institutions.

Figure 8 also shows more clearly the compositional effect of increased enrollment in newer institutions on distance between family members. During the times of biggest educational expansion, the compositional effect of higher enrollment in newer regional institutions had a pronounced negative effect on total intergenerational distance. We further examined the results in figure 8 by changes in composition and propensity (Appendix C). These results confirm that the expansion of older institutions in the last period was the main contributor to increases in intergenerational distance.

Figure 8: Decomposition of changes in distance from couples to their mothers by type of university attended.



The expansion of tertiary education predictably had only minor effects for couples where neither member attended university, though the propensity of these couples to live further away increased slightly. The major component of increased intergenerational distances was a

large increase in distances due to expansion of traditional universities, which was to some degree counteracted by an expansion of geographically dispersed newer institutions.

Conclusions

The aim of this study was to examine the degree to which educational expansion had affected geographical distance between generations in the last decades. Our results confirm micro-level findings that individuals with higher educational levels tend to live further away from their parents, and that women tend to live slightly further away from their relatives than men (Pettersson & Malmberg, 2009, Mulder & Cooke, 2009, Løken et al, 2013). Our results furthermore show that as the number of educated individuals has grown, there has been a moderate increase in geographical distance between adults and their parents in Sweden between 1980 and 2007. The results show that changes in the intergenerational proximity of couples to the men and women's parents were similar during the study period. This result is particularly interesting because women have experienced a faster growth in university enrollment over the period and tend to live further away from their parents on average. Our decomposition shows that educational expansion is an important explanation for decreasing intergenerational proximity, in particular after the 1990s. We can show that this increase in educational expansion was primarily a compositional effect, due to an increase in the number of tertiary educated people, rather than due to changes in average intergenerational distances within educational groups.

The expansion of tertiary expansion in Sweden was guided by explicit government policy, which saw regionalization as a way to widen access to tertiary education. While educational expansion overall increased intergenerational distances, this was entirely due to increases in enrollment at older traditional university institutions. The establishment and growth of newer tertiary intuitions was associated with an increase in geographical proximity. Though most of

the increase in enrollment took place in newer institutions (cf. Figure 1), the increased intergenerational distances observed in this study were driven by an increase in enrollment in older institutions.

Due to the involvement of the government and explicit planning of educational expansion, Sweden is an interesting case for the study of education expansion and intergenerational proximity. Our results suggest that this regionalization policy was successful in helping some students achieve a tertiary education without increasing distance to their parents and home towns. This is in line with research showing that newer institutions enroll students who stay closer to home, and who are less likely to migrate to the older universities in Sweden (Kjellström & Regner 1999). However, this study is also generalizable to places where expansion of tertiary education has been accompanied by a greater geographic dispersion of universities, due to the fact that the major effects we observe come from migration to larger universities as is typical elsewhere (for examples in Europe and California, see (Osborne, 2003) and (Douglass, 2001)). Our study was also the first to examine the impact of growth in educational enrollment on aggregate patterns of distance between family members, one possible structural consequence of growth in tertiary education.

It is important to note that we treat all tertiary education as equivalent in our analysis. It should be noted that tertiary education has become less selective over our study period, and that institutions might differ in scope and prestige of their tertiary education. In particular, it is likely that the more recent tertiary institutions provide education which might be valued less on the labor market. Students from these institutions may have a different propensity for labor-market migration.

Further research should examine the macro level effects of educational expansion in other countries and contexts, where educational expansion was independent of regional policies. In

countries where educational expansion was carried out on a large scale, but without a policy of widening geographical access, the effects of educational expansion on intergenerational proximity might be larger. It would also be interesting to examine contexts such as the US, where tertiary education is more decentralized, and where both students and universities are affected to a larger degree by supply and demand factors. In this context the location of tertiary institutions might be influenced to a larger degree by students' preferences for the geography of their university.

Our results highlight the importance of taking macro-level structural changes into account when examining individual characteristics such as distance to parents. Educational expansion is one of the larger structural changes in the last decades, and while the micro level differentials between different educational categories have been examined, few social scientists have investigated the macro level patterns of increasing educational levels on family geography and family demography. Some studies have examined the relationship between this expansion and demographic events (Blossfeld & Jaenichen, 1992, N Bhrolcháin & Beaujouan, 2012), as well as broader socio-economic impacts (Meyer, 1977, Temple, 2001, Hannum & Buchmann, 2005). Overall, our research showcases the importance of going beyond the assessment of micro-level effects in research on intergenerational proximity by examining macro-level changes.

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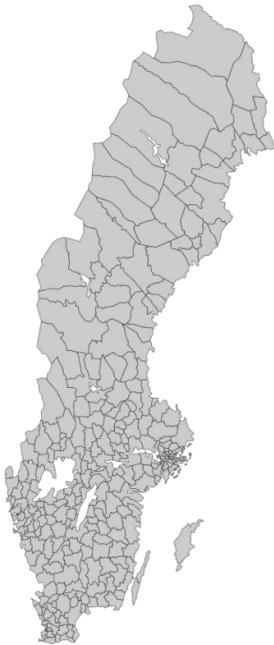
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Appendix A: Map of municipalities in Sweden



Appendix B: List of old and new tertiary institutions, classified by the authors.

Older Institutions

Chalmers tekniska högskola
Göteborgs universitet
Handelshögskolan i Stockholm
Karolinska institutet
Kungl. Tekniska högskolan
Lärarhögskolan i Stockholm
Linköpings universitet
Lunds universitet
Stockholms universitet
Sveriges lantbruksuniversitet
Umeå universitet
Uppsala universitet

Newer Institutions

Blekinge Internationella Hälsohögskola
Bohusläns vårdhögskola
Danshögskolan
Dramatiska institutet
Ersta högskola
Grafiska institutet
Hälsohögskolan i Jönköping
Hälsohögskolan i Stockholm
Hälsohögskolan i Umeå
Hälsohögskolan i Värmland
Hälsouniversitetet i Östergötland
Högskolan Dalarna
Högskolan i Borås
Högskolan i Gävle/Sandviken
Högskolan i Halmstad
Högskolan i Jönköping
Högskolan i Kalmar
Högskolan i Karlstad
Högskolan i Luleå
Högskolan i Örebro
Högskolan i Östersund
Högskolan i Skövde
Högskolan i Sundsvall/Härnösand
Högskolan i Växjö
Högskolan Kristianstad
Ingesunds musikhögskola
Kalmar läns vårdhögskola
Kommunal högskoleutbildning i Ängelholm
Kommunal högskoleutbildning i Borås
Kommunal högskoleutbildning i Gävle
Kommunal högskoleutbildning i Göteborg
Kommunal högskoleutbildning i Härnösand
Kommunal högskoleutbildning i Helsingborg

Kommunal högskoleutbildning i Kalmar
Kommunal högskoleutbildning i Linköping
Kommunal högskoleutbildning i Luleå
Kommunal högskoleutbildning i Malmö
Kommunal högskoleutbildning i Norrköping
Kommunal högskoleutbildning i Örebro
Kommunal högskoleutbildning i Östersund
Kommunal högskoleutbildning i Solna
Kommunal högskoleutbildning i Stockholm
Kommunal högskoleutbildning i Sundsvall
Kommunal högskoleutbildning i Umeå
Kommunal högskoleutbildning i Uppsala
Kommunal högskoleutbildning i Värnamo
Kommunal högskoleutbildning i Västerås
Kommunal högskoleutbildning i Växjö
Konstfack
Kungl. Konsthögskolan
Kungl. Musikhögskolan i Stockholm
Mälardalens högskola
Operahögskolan i Stockholm
Röda korsets sjuksköterskeskola
Sjöbefälsskolan i Göteborg
Sjöbefälsskolan i Härnösand
Sjöbefälsskolan i Kalmar
Sjöbefälsskolan i Malmö
Sjöbefälsskolan i Stockholm
Skaraborgs vårdhögskola
Socialpedagoginstitutet
Sophiahemmet sjuksköterskeskola
Stiftelsen Stora Sköndal
Teaterhögskolan i Stockholm
Vårdhögskolan Boden
Vårdhögskolan Falun
Vårdhögskolan Gävle
Vårdhögskolan i Borås
Vårdhögskolan i Eskilstuna
Vårdhögskolan i Göteborg
Vårdhögskolan i Halland
Vårdhögskolan i Malmö
Vårdhögskolan i Örebro
Vårdhögskolan i Östersund
Vårdhögskolan i Sundsvall
Vårdhögskolan i Uppsala
Vårdhögskolan i Vänersborg
Vårdhögskolan i Västerås
Vårdhögskolan i Växjö
Vårdhögskolan Kristianstad
Vårdhögskolan Lund/Helsingborg

Appendix C: Decomposition of changes in distance from couples to their mothers by type of university attended and by period

