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S452 Circulaton and suburbanisation

EDUCATION AND SUBURBANIZATION IN ESTONIA IN THE 1990s

Tiit Tammaru

Institute of Geography

University of Tartu

Vanemuise 46, Tartu 51014, Estonia

Tel: 372-7-375968

Fax: 372-7-375825

Tiit.Tammaru@ut.ee

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Introduction

Educational attainment is the most important determinant of life chances in modern societies (Gerber 2003, 243), and there are increasing returns to education across the world (Psacharopoulos 1994, 1330). The major exceptions were the formerly state socialist countries, where returns to education were modest (Helemäe et al. 2000, 97). Salaries were centrally designed and attempted to avoid social inequalities on the one hand, and to promote manual workers in industry and agriculture on the other. The situation changed rapidly since the demise of the Soviet Union and start of reforms. In the overall neoliberal atmosphere (Bockman and Eyal 2002) and turbulent societal changes during the transition from central redistributive state socialist to modern market oriented Western societies (Smith 1999; Smith and Pickles 1997), we find increasing evidence of returns to education (Róna-Tas 1994, 45; Brainerd 1998, 1105–1106; Chase 1998, 409–410; Titma et al. 1998, 123; Bisogno and Chong 2003, 327; Li 2003, 323). It is argued that market transition offers more opportunities to better educated (Nee 1989, 674–676), while the labour market outcomes are worse for least educated, who have higher probabilities to face with unemployment and other coping problems under the new economic circumstances (Szelényi and Kostello 1996, 1091; Ladányi and Szelényi 1998, 77). Thus, social stratification increases in countries in transition.

The most important feature of spatial population change in the countries in transition is suburbanization (Ravbar 1997; Kupiszewski et al. 1998; Rowland, 1998; Timár and Váradi 2001; Brown and Schafft 2002; Ainsaar 2003; Tammaru et al., 2004; Krisjane 2005; Ourednicek 2005). But despite the hypothesis of a close relationship between social stratification order and migration, the relationship is poorly studied due to unavailability of relevant data in countries in transition (Ladányi and Szelényi 1998, 70). One of the major exceptions is a recent study of migration intensities by population subgroups in Estonia in the beginning of the 1990s, which clearly showed the importance of education underlying an individuals migration behaviour (Kulu and Billari 2004, 692). Another one is a study of suburbanization in Budapest metropolitan area (Kok and Kovács 1999, 134). However, none of the studies have paid a special attention on the interdependencies between social stratification and residential change. The aim of the current article is to make a contribution to the field by focusing on education and how it is related to suburbanization in Tallinn metropolitan area. We focus on suburbanization, as this is the most important aspect of spatial population change in many countries in transition. Capital cities and their metropolitan areas experienced the most rapid change in the 1990s (Enyedi 1994, 176; Lichtenberger 1998, 146–147; Sjöberg 1999, 2230; Hamilton 1999, 143; Helemäe et al. 2000, 245; Antons 2003, 126), and the suburbanization rates were the highest there as well (Tammaru et al. 2004, 219). Finally, we study the metropolitan area of Tallinn (capital city of Estonia), as Estonia belongs to the forerunners among countries in transition (Bunce 1999, 765-767; Hamilton 1999, 138; Korhonen 2001, 449). Similar processes lag behind in Russia and other CIS countries, where socialist roots are deeper (Kostinsky 2001, 451), which makes the Estonian case especially interesting. The article proceeds as follows. In the two following sections we will discuss the educational system and returns to education in Estonia during the Soviet and transition periods. We proceed with presenting hypotheses of the study,

research data and methods. This leads to the main sections that analyses suburbanization by education in Tallinn metropolitan area. The article ends with conclusions and discussion of the results.

Educational system and returns to education during the Soviet period

The inter-War period of the 1920s and 1930s could be labelled as the period the expansion of primary education in Estonia. Transitions to secondary and university education were modest. This becomes evident in 1970 census data that indicates that two thirds of the people born during the 1920s had a primary education by 1970, while only seven per cent had a university degree (Helemäe et al. 2000, 34). The educational system and composition of population continued to change considerably during the Soviet period (1945–1991), as education was one of the important tools in the hands of central planners to impact on the choices, life careers and occupational and related spatial outcomes of individuals. Therefore, the institutionalization of individual lives began with the educational system; Soviet leaders viewed education less as a matter of individual choice and opportunity than as a vital collective resource for building the socialist society (Titma and Saar 1995, 38; Saar 1997, 140; Gerber 2003, 245–246).

The Soviet educational system, like elsewhere in countries under central planning, was partly modelled on the very stratified German system (Allmendinger 1989, 233; Blossfeld 1990, 166-167; Saar 1997, 140; Kerckhoff 2001, 8). Stratification refers to the proportion of a cohort that attains the maximum number school years provided by the system, coupled with the degree of differentiation within given educational levels (tracking) (Allmendinger 1989, 233). The aim of the stratification is to establish restrictive educational trajectories and opportunities to increase the match between education and occupation. Tracking starts typically at the level of secondary education (Kerckhoff 2001, 4) like it was in the Soviet Union where at about the age fourteen, students could opt for three tracks: 1) general secondary (prepared students for university education and higher non-manual professions), 2) specialized secondary (prepared students for low- and middle-grade non-manual professions) and 3) vocational (prepared students for skilled manual professions) schools (Gerber and Hout 1995, 617; Titma and Saar 1995, 38–40; Saar 1997, 140; Helemäe et al. 2001, 71; Gerber 2003, 245–246). For example, people with vocational and specialized secondary education had very slim chances for university admission in the former Soviet Union, due to outright prohibitions as well as other obstacles (Gerber 2003, 246). Only ten percent of graduates from vocational and specialized secondary schools were officially allowed to proceed with university education, and the actual numbers were lower still (Saar 1997, 140; Titma and Saar 1998, 40). As such, specialized secondary and vocational educations were dead end tracks for students. This was reinforced by the fact that the policy advanced in the 1960s to achieve mass secondary education was not coupled with the policy to increase university enrolments in the 1970 and 1980s. Rather, state tried to shape the social composition of students, and to guarantee equal access to university studies independent of parental background.

Like in other countries with a stratified education system, the final aim of channelling students to such restrictive educational tracks was to increase the match between

education and occupational outcomes in the Soviet Union (Helemäe et al. 2000, 78–79; Gerber 2003, 246; cf. Allmendinger 1989, 239). To achieve this goal an additional measure was used in Soviet Union. Namely, state also administered tightly the school-to-work transitions by applying mandatory three year job assignments for university and vocational school graduates, based on the applications of enterprises, mediated by the planning institutions and distribution commissions attached to the educational institutions (Saar 1997, 140; Gerber 2003, 246–247). The later job transitions, especially for more educated people, were also tightly monitored by central planning authorities (Titma et al. 2003, 292). Although the mandatory job assignment and later controls of career mobility did not work ideally, they had a significant impact on the labour market outcomes of people, especially for people with the university degree (Solga and Konietzka 1999, 41). Similar features of the educational system and school-to-work transition were evident also in other countries under central planning (Meyer et al. 1979, 983–984; Kornai 1992, 216).

In the light of the policy aims of central planners, the following changes took place in the educational composition of population in the Soviet Union. First of all, the share of students proceeding to secondary education increased in the very beginning of the Soviet period (Helemäe et al. 2000, 20). But the introduction of the mass secondary education policy in the 1960s brought along a considerable expansion of secondary education in the 1970s and 1980s in Estonia (Gerber and Hout 1995, 618; Helemäe et al. 2000, 20; Kõiv and Titma 2001, 83; Eesmets 2004, 19), like elsewhere in the former Soviet Union (Gerber and Hout 1995, 618) and East and Central Europe (Micklewright 1999, 350). By 1980s, about seventy five to eighty five per cent of the corresponding birth cohort pursued for secondary education in Estonia (Saar 1997, 140; Helemäe et al. 2000, 61). Together with the expansion of the secondary education, inner differentiation (tracking) on this level of education started as well. In addition to general secondary schools, two other tracks (specialized secondary and vocational) plus elite general secondary schools were established in the 1960s (Helemäe et al. 2000, 36). Vocational schools attracted the least ambitious students (Titma and Saar 1995, 49), while best students were typically selected into general secondary schools, and especially to its elitist part (Titma and Saar 1995, 46–47). The elite secondary schools were located to major cities that further differentiated the educational opportunities of students.

There were only a couple of thousand people with a university education just after WWII in Estonia, as this number was small already before the Soviet annexation, and it decreased further as many of those people fled to the West in fare of repressions in 1944, or were deported to Siberia by the Soviet authorities in 1941 and 1949 (Helemäe et al. 2000, 193). This means that the majority of people with university education received their degree during the Soviet period, either in Estonia (titular population), or Russia (post War immigrant population). University admissions increased considerably in Estonia till the end of the 1960s, but remained unchanged thereafter despite continued expansion of the secondary education like elsewhere in the Soviet Union. The share of people with the university education was seven percent for the cohort born in the 1920s; the respective figure doubled for the cohort born in the 1930s, and stabilized on that level in subsequent cohorts (Helemäe et al. 2000, 34). While forty three percent of secondary school graduates were able to enter university in 1970 in Estonia, only twenty four

percent could proceed to university education in the very end of the Soviet period in 1990 (Helemäe et al. 2000, 62).

The reason for the relatively low level of university admission was related to the modest need for non-manual professionals in the Soviet economy; quite contrary, there was an increasing over-production of people with university education in the Soviet Union (Gerber 2003, 247–248). The increased enrolments to secondary education without respective change in university admission did not support the egalitarian aims of central planners of equal access in providing university education, as increased competition for entering universities over time made the enrolment to academic studies increasingly selective as well. Not only graduates from specialized secondary and vocational schools, but also graduates from ordinary general secondary schools faced increasing difficulties in competing with graduates from the elite general secondary schools. This means that elite general secondary schools took over the role of ordinary general secondary schools by the end of the Soviet period in preparing students for the university studies (Helemäe et al. 2000, 68–71; Saar 1997, 154).

Increased competition impacted also the composition of students, but contrary to state equalizing policies, which were most evident in the 1960s. Most importantly, university studies and merit were related in the Soviet Union (Gerber and Hout 1995, 623). But other factors contributed to the selection process as well. Parental class differences strongly impacted on the educational trajectories of children; as the admissions did not change since the 1960s, university education was increasingly reproduced over generations in the 1970s and 1980s (Helemäe et al. 2000, 193–194; Titma et al. 2003, 283). In Estonia like in many other areas of the former the Soviet Union, the education (Helemäe et al. 2000, 67) and occupation (Titma and Saar 1995, 46–47) of mothers had an especially strong impact on the educational trajectories of children. There was an important gender dimension in educational trajectories — vocational education masculinized and secondary education feminized over time. Subsequently, the share of women with university education increased as well. Taking together, educational achievement (high average grade/mark upon graduating from primary school), higher education and occupation of mothers, and being a girl were the tree most important factors in selecting students to general secondary education track (Titma and Saar 1995, 46–47) that led to university education and higher non-manual job (Gerber 2003, 245–246).

Thus, instead of declared egalitarian aims of the state, Soviet educational system was selective, and reproduced and reinforced educational inequalities over time (Gerber 2000, 222; Helemäe et al. 2000, 267). But this is only one side of the coin. The other side is equally interesting as there were no financial returns to higher education in the Soviet society. As mentioned above, there was an increasing overproduction of people with university education under the inefficient Soviet economic system despite relatively low levels of university admission. There was rather a constant need for manual workers — particularly for skilled manual workers —, and central planners steadily diminished pay differentials between manual and non-manual jobs (Gerber 2003, 248). As a result of this, professionals earned on average less than skilled manual workers and only barely more than unskilled manual workers in the Soviet Union (Gerber, 2003, 248). While educational differences typically lead to income differences, the association was weak in

countries under central planning. But there is one important gender dimension in the latter countries, as obtaining the university degree did bring along financial gains for women, while it did not for men (Helemäe et al. 2000, 105–106). Higher returns to education for women relative to men are evident globally as well (Psacharopoulos 1994, 1327).

When returns to education were modest and even non-existent for men, why did people pursue for university education? The major explanation focuses on other issues, including the values and cultural capital that children inherit from their parents. People with university education were able to avoid hard manual labour (Titma et al. 2003, 293), and an academic degree increasingly paved a way to the elite of the society (Konrad and Szelényi 1979; Gerber and Hout 1995, 624). Education and qualification rather than loyalty and Communist Party membership increasingly mattered in getting managerial and professional jobs in late Soviet Estonia (Palumets and Titma 2001, 110, 117). People with the university education were also better able to take an advantage of other social benefits in addition to direct salaries. Housing was one of the most desirable goods allocated by the central planning system, and people with university education (independent of occupation, economic branch and other personal variables) ended up in the most expensive houses in the cities (Põder and Titma 2001, 172), which were biggest in size and best equipped with facilities (Kulu 2003, 907). Shortly, educated parents focused on education as a fundamental asset to convey to their children during the Soviet period (Titma et al. 2003, 294) despite the modest direct financial returns of higher education.

Educational system and returns to education since the demise of the Soviet Union

Significant changes started in the educational system of Estonia after regaining independence. The share of people with primary education continued to decrease between 1989 and 2000, while the share of people with secondary and university education continued to increase (**Figure 1**). As a result of this people with secondary education became the biggest educational group, and the respective shares of people with primary, secondary and university educations were thirty nine, forty eight and thirteen percent in 2000. However, the most important change in the 1990s was related to the dramatic growth in the number of university students. This continued in the 2000s and today, the number of students annually enrolled into universities almost equals with the size of the generation aged 18, and since 1998 significantly exceeds the number of secondary school graduates (Estonian … 2004, 174). This means that people who graduated from secondary schools some years ago are also attracted by university education, today. But the share of secondary school graduates entering universities has also grown: this figure dropped from forty three to twenty four percent between 1970 and 1989, but started to increase thereafter (Loogma 1998, 19) and reached the sixty one percent level by the year 2000 (Estonian … 2004, 174). The overall number of university students increased by a factor of 2.5 between 1990 and 2004 (**Figure 2**). Only about half of these students enjoy free and state granted education, the other half pays for their studies themselves. Such a growth in the number of students is impressive and we can argue that the dramatic expansion of university education takes place in Estonia in the 1990s and 2000s, similar to the expansion of secondary education in the 1970s and 1980s. As a result, a

considerable change in the educational composition in Estonia will take place in the coming decades.

FIGURE 1 ABOUT HERE
FIGURE 2 ABOUT HERE

The attractiveness of university education is due to the considerably increased returns to education in the 1990s. By the year 1994, when the first political and economic reforms were launched in Estonia (Lauristin and Vihalemm 1997, 78; Helemäe et al. 2000, 213), significant educational differences in labour market outcomes and income were evident. First of all, employment among people with primary education decreased considerably during the most turbulent years of transition, while it did not change for people with secondary education and increased for people with university education (Noorkõiv et al. 1998, 488). People with primary education lost jobs in all branches with higher exit rates for women, while the relative demand for educated people rose in the majority of branches, especially in most quickly growing financial intermediation, where the entry rates of men were considerably higher compared to women (Noorkõiv et al. 1998, 488–489). When unemployment was non-existent in late Soviet Estonia, every fifth person with primary education was unemployed by the mid-1990s, but unemployment was almost nonexistent among people with a university degree (Puur 1997, 264–265). Similar tendencies are also evident in other countries in transition (Ladányi and Szelényi 1998, 68). In addition to that, people with university education earned almost twice as much compared to people belonging to other educational groups in the mid-1990s (**Figure 3**).

FIGURE 3 ABOUT HERE

The sharpest increase in returns to education occurred between 1989 and 1992, but continued thereafter (Noorkõiv et al. 1998, 492–493). The increased returns to education seem to be widespread across countries in transition (Róna-Tas 1994, 45; Brainerd 1998, 1105–1106; Chase 1998, 409–410; Titma et al. 1998, 123; Bisogno and Chong 2003, 327; Li 2003, 323). There are two other important aspects in the returns to education in countries in transition from the perspective of the current study. First, data on Estonia indicate that while wage inequality increased across educational groups, it decreased within educational groups during the transition period (Noorkõiv et al. 1998, 492–493). Second, cross-country comparisons suggests that the more radical and faster are the reforms, the higher are the returns to education as well (Chase 1998, 410–411; Li 2003, 326).

There are many explanations for the increased returns to education in countries in transition. First, the egalitarian wage policies favouring manual jobs led to a very compressed earnings structure during the communist period (Li 2003, 323; Szydlik 1994, 211), which is very exceptional in the contemporary world (Psacharopoulos 1994, 1330). Second, demand for educated people rose considerably as the reforms started, especially in the new and most quickly growing branches in private sector (Noorkõiv et al 1998, 488–489; Cao and Nee 2000, 1183). Third, the quality of education improves during the transition period, and fourth, the costs of education for an individual increase on account to the introduction of tuitions and forgone earnings due to prolonged schooling (Li 2003, 324). Thus, educational system changes and both society and people themselves invest

increasingly into improvement of education, which brings along the need for higher returns to it as well compared to the period of state socialism.

Hypotheses of the study

Based on the growingly selective nature of the Soviet educational system on the one hand, and the increasing returns to education during the post-Soviet period on the other, the polarization of society grows during the transition period (Kok and Kovács 1999, 124–125). Changes in the social stratification order bring along spatial segregation of population in the metropolitan areas (Enyedi 1998, 27–28; Kostinsky 2001, 459), where the dominant migration trend is suburbanization in countries in transition. Such an argument gains strength in a comparative perspective, as in the Western countries suburbanization has had the tendency to increase spatial segregation (Thomas 1974, 24). Furthermore, it is argued that suburbanization itself is an important dimension in the post-socialist stratification order that also increases polarization in society (Kostinsky 2001, 459; Timár and Váradi 2001, 356). This leads us to four hypotheses for the study of suburbanization by education in Tallinn metropolitan area, Estonia. We believe that the hypotheses hold true in comparing suburbanizers both with people living in Tallinn and in the suburbs.

Hypothesis 1. People with the university education have a higher probability to suburbanize compared to people with secondary education.

The suburbanization of people with the university education was modest during the Soviet period. Due to restrictions to in-migration (Torpey 1997), living in large cities became an important social value in countries under central planning (Rykiel 1984, 68). It is also argued that the homogenizing state housing policy aimed to avoid the impoverishment of central cities as a consequence of suburbanization (Pichler-Milanovich 1994, 106; cf. Mieszkowski and Mills 1993, 136–137). Therefore, suburbanization of people with university education was also modest, and they rather lived in the best housing stock of the major cities (Põder and Titma 2001, 172; Kulu 2003, 907;). These people made a significant contribution to the process of suburbanization in the Western countries (Berg et al. 1982, 30; Mieszkowski and Mills 1993, 139), especially in the United States (Johnston 1974, 9). Therefore, one could guess that the housing career of better off people and people with the university education is under a similar change also in countries in transition. Instead of staying, they have the opportunity to leave the city where standardized and crowded large-scale Soviet time housing estates dominate (Kostinsky 2001, 455–456), and to move into the better housing conditions in green suburbs (Kupiszwski et al. 1998, 280; Sýkora and Čermák 1998, 410–411; Kok and Kovács 1999, 134).

Hypothesis 2. People with university education move most likely to the most attractive areas of suburbs.

Moving to single family houses is an important aspect of suburbanization. The majority of people of Tallinn living in the large housing estates would like to live in detached houses (Loogma 1997, 180). Similar preferences are evident also elsewhere in countries

in transition (Kostinsky 2001, 462). For example, suburbanizers in Budapest metropolitan area refer to the poor housing quality or lack of environmental quality as their main reason to leave for suburbs (Kok and Kovács 1999, 139). Selling ones apartment can be used for making the down payment of a mortgage, and thus it forms an important precondition for households to make such move (Timár and Váradi 2001, 355). As people with the university education had the best housing conditions in the late Soviet time one the one hand, and returns to education increased during the transition period on the other, one could expect that people with the university education had the highest probability to take an advantage of the emerging mortgage market in the 1990s, and to suburbanize into the most attractive housing in the suburbs (cf. Ladányi and Szelényi 1998, 69; Sýkora and Čermák 1998, 410–411).

The move to detached houses requires considerably more financial resources compared to the moves to multi family houses. Real estate prices in coastal areas of Tallinn metropolitan area are also higher compared to inland areas. Again, as returns to education increased considerably since the very beginning of the 1990s, these form the ground for the second hypothesis that people with university education have the highest probability to suburbanize into single family houses and coastal municipalities, the most expensive and attractive destinations in the suburbs. This is supported by previous studies in western countries, which reveal that those who move to suburbs tend to form homogenous communities (Mieszkowski and Mills 1993, 137). Therefore, better-off people with higher education cluster into the most attractive parts of the metropolitan areas (Thomas 1974, 24).

Hypothesis 3. People with primary education have a higher probability to suburbanize compared to people with secondary education.

Both social polarization (Węcławowicz 1998) and living costs in the capital cities (Marksoo 1999) increased considerably in countries in transition. The economic hardships were most severe in the very beginning of the transition period, and people with primary education had the highest probabilities both to become unemployed and to fall into the lowest income brackets (Helemäe et al. 2000, 97). This could make them to leave for suburbs where living costs were lower, adding a specific character to the process of post-socialist suburbanization (Ladányi and Szelényi 1998, 81).

Hypothesis 4. People with primary education move least likely to the most attractive areas of suburbs.

As people with primary education suffer the most from the economic hardships during the transition period, one could expect that they have the lowest probability to suburbanize into single family houses and coastal municipalities in Tallinn metropolitan area, as this requires considerable financial resources that people with primary education lack compared to other educational groups. Therefore, one could guess that they rather move to multi family houses, which are (with some exceptions in the nearby settlements of the capital city) considerably cheaper compared to similar housing in the capital city. The move to inland municipalities is generally cheaper as well compared to coastal municipalities.

Data and methods

Data for the study come from the anonymous individual 2000 census records. This dataset has both strengths and weaknesses from the perspective of current study. The strength are related to the facts that census data enables a much more detailed analyses of suburbanization by population subgroups compared to sample surveys, and its data quality is high compared to Estonia's population register (Sjöberg and Tammaru 1999). What regards weaknesses, we have to be cautious in using and interpreting time-varying variables as we do not know the exact timing of the change of place of residence (Kulu and Billari 2004, 681). All we know is the place of residence in 1989 and 2000 of those people, who lived in Estonia at these two points of time, and the personal characteristics as in 2000.

The most time-sensitive variables in our study are occupation and economic branch due to dramatic labour market changes in Estonia in the 1990s. For example, the specific feature of suburban areas in the Soviet Union was the high dominance of agricultural production in employment (Ioffe and Nefedova 1998, 1329; Tammaru 2001, 1352). Although the share of people working in agriculture in the suburban area of Tallinn was lower than elsewhere in late Soviet Estonia (Kulu and Billari 2004, 685), losses of agricultural jobs is one of the most important aspects in the changing suburbia in the capital city metropolitan area. Despite the problems related with time-varying variables, they do reflect the individual's ability to adapt during the transition period, which is of central concern in the current study. Thus, despite some drawbacks related to the census data, the analysis of Tallinn metropolitan area based on census returns enables us to considerably expand our knowledge about post-socialist suburbanization.

We focus our analysis on the composition of people who lived in Tallinn both in 1989 and 2000 (stayers in Tallinn), people who lived in the suburbs both in 1989 and 2000 (stayers in suburbs), and people who lived in Tallinn in 1989, but in the suburbs in 2000 (suburbanizers). Tallinn gained migrants from the rest of the country, but lost to its suburbs in the 1990s like it was in the 1980s (cf. Marksoo 1990, 61). There were 19,307 people who suburbanized between 1989 and 2000. These are the people that are of particular interest in the current study. We use a set of binary logistic regression models to compare them with stayers in Tallinn and in the suburbs. To achieve comparable group sizes for these three research populations for logistic regression, a random sample of 19,307 people was drawn both from the stayers in Tallinn and suburbs. We can formalise the logistic regression model as follows:

$$\log \frac{p(Y_i = 1)}{1 - p(Y_i = 1)} = \alpha + \sum_{k=1}^{K} \beta_k X_{ik}$$

Where $p(Y_i = 1)$ is an individual's $i = 1, \ldots I$ probability to move from Tallinn to suburbs between 1989 and 2000 and $1 - p(Y_i = 1)$ is an individual's $i = 1, \ldots I$ probability to live in Tallinn (Model 1 through Model 4) or in the suburbs (Model 5 through Model 8) both

in 1989 and 2000. α is constant, X_{ik} is the value of the variable for an individual, and β_k is the parameter describing the impact of this variable, with K variables. We focus on education in data analysis. In Models 1 and 5 we compare suburbanizers with stayers in Tallinn and suburbs, respectively. We include only the level of education of people as the main research variable and a dummy control variable indicating whether people had any type of vocational/specialized secondary education (labelled vocational education in this section) into the models. In Models 2 and 6, we add socio-demographic, and in Models 3 and 7 housing and location related variables. In addition to the main effects, we study also interaction terms. Model 4 that compares suburbanizers with stayers in Tallinn includes also two-way interactions between education and living in a single family house. Model 8 that compares suburbanizers with stayers in suburbs includes interactions between education, and living in a single family house and residence in coastal municipality.

Overall, there were 57,921 people in the research population — thirty eight percent with primary or lower (up to ninr years of schooling), forty four percent with secondary and eighteen percent with university education (**Table 1**). People with primary education have expectedly the oldest age structure. The feminization of secondary and university educations is evident as well. The educational composition of ethnic minorities is more polarized compared to Estonians. The share of people with primary and with university education is higher among ethnic minorities. The share of married people differs widely across educational groups: only a third of people with secondary education are married compared to half among people with primary and university education. There were also considerable differences in occupation by education. People with university education work most likely in offices (as managers and specialists), while people with primary and secondary education hold manual jobs. The inactivity and unemployment rates are the highest among people with primary education. Their high inactivity rate is mainly due to their older age structure, while their highest unemployment rate indicates their worst position on the labour market, especially compared to people with the university degree.

[TABLE 1 ABOUT HERE]

Service jobs are most common for people in all educational groups. But there are significant differences as well as people with the university education work more likely in public administration and business services (including financial intermediation), which are the most attractive parts of the labour market, while people with primary and secondary education work more likely in industry. There are striking differences in the sources of income by education. Two thirds of people with primary education rely on other sources of income (mainly different types of social security benefits). The respective figure for people with university education is twenty percent. The share of both wage earners and entrepreneurs is the highest among people with the university education. We can conclude that university degree guarantees most likely a job in the most attractive parts of the labour market what regards both occupation and industry, and decreases the dependence on state's social security benefits.

The housing conditions and place of residence in the metropolitan area are also related to education. Most importantly, the higher the level of education the higher the probability

that a person lives in a house built in the 1990s. Less than ten percent of people with primary education, but as much as twenty percent of people with the university education live in such houses. Differences in dwelling type, living space and facilities do not vary by education. Commuting probabilities increase with the rise in the level of education. There is a clear pattern what regards differences in location by education. People with university education live more likely in rural and coastal municipalities compared to people belonging to other educational groups. The higher the level of education the higher the probability to live in Tallinn, and the lower the level of education the higher the probability to live in the most distant municipalities of the metropolitan area. Forty one percent of people with the university education live in Tallinn and five percent in the most distant municipalities. The respective figures are thirty five and seven percent for people with secondary education, and twenty seven and twelve percent for people with primary education. This also means that the level of education is lower for people living in the suburbs compared to people living in the capital city.

The higher share of people with the university education living in Tallinn reflects the Soviet legacy effects, as these people were engaged in suburbanization in Western countries (Berg et al. 1982, 30; Mieszkowski and Mills 1993, 136–137). But suburbanization was modest in countries under central planning (Ladányi and Szelényi 1998, 69; Kostinsky 2001, 461–462). People with university education migrated to cities more likely due to job related reasons compared to people with lower levels of education (Tonsiver 1975, 114), and stayed there (Sýkora and Čermák 1998, 408). Instead of suburbanization, they made up their housing career in the cities, and ended up in the best part of housing stock of the cities (Ladányi and Szelényi, 1998, 80; Põder and Titma, 2001, 172; Kulu, 2003, 907). The lower education of the people living in suburbs is in contrast to the Western countries, where the opposite is true and differences in education between people living in central cities and suburbs are smaller (Scott and Crowder 1997, 531). But the situation started to change in the 1990s in countries in transition, when the suburbanization of higher status groups and people with higher levels of education became a major trend (Ioffe and Nefedova 1998, 1338–1339; Ladányi and Szelényi 1998, 80 , Sýkora and Čermák 1998, 410–411; Kok and Kovács 1999, 135–136). Our data also reveal similar tendencies. The educational composition of suburbanizers is closer to the educational composition of the population of the capital city than to the educational composition of the population of the suburbs (**Table 2**). Education of the people living in the capital city is still higher compared to the two other populations. But the relatively high suburbanization rate of people with university education (see also Uiboupin 2003, 93–94) brings along the reduction of the differences in the educational structure of the people living in Tallinn and in the suburbs. This seems to be quite common, at least in the initial stages of suburbanization (Thomas 1974, 24–25), and similar results are evident also in the other countries in transition (Kok and Kovács 1999, 138). The equalization of the educational composition in central cities and suburbs opposes to the argument of the polarizing nature of the suburbanization process (Kostinsky 2001, 459; Timár and Váradi 2001, 356), at least between central cities and suburbs. But we will elaborate further this discussion in the next section.

TABLE 2 ABOUT HERE

Suburbanizers and stayers in Tallinn metropolitan area

Migration from Tallinn to suburbs became the dominant migration trend in Tallinn metropolitan area in the end of the 1970s, and the process intensified in the 1980s (Marksoo 1990, 61). But the suburbs preserved their semi-rural character like elsewhere in countries under central planning (cf. Enyedi 1998, 15). The similarity of employment in suburbs to rural areas and the continued importance of agriculture were in stark contrast to the urbanization of suburbs in Western countries (Gober 1989). A good pay established by central planners in agriculture to cure food shortages was an important consideration that attracted in-migrants to suburban locations, where the wealthiest agricultural production units were typically located (Marksoo 1984, 53; 1992, 131; Kaup 1986, 80; Kliimask 1997, 15). Suburbanization continued in the 1990s (Tammaru et al. 2004), but the underlying causes changed. Moves for agricultural jobs lost their significance due to the dramatic losses in agricultural jobs in the very beginning of the 1990s (Kulu and Billari 2004, 685), and residential considerations gained importance. Both the losses of agricultural jobs and expansion of residential development projects are the two main features of the changing post-socialist suburbia, especially in the capital city metropolitan areas where both of these developments are the most intense (Leetmaa 2003).

Next we will examine closer the composition of people who moved from Tallinn to suburbs (suburbanizers) compared to people who lived in Tallinn and suburbs both in 1989 and 2000 (stayers), focusing on the differences by education. First, we compare suburbanizers with stayers in Tallinn. It becomes evident that suburbanizers have lower education (they have more likely primary and less likely university education) than people who lived in Tallinn both in 1989 and 2000 (**Table 3, Model 1**). People with vocational education do not differ from others. The differences by education are reinforced after introducing socio-demographic and housing related variables (**Table 3, Model 2 through Model 4**), indicating that the role of education becomes more important in the process of suburbanization when we eliminate the compositional differences between people with different levels of education. Thus, the hypotheses that people with primary education suburbanize more likely than people with secondary education is confirmed, while the hypotheses that people with university education suburbanize more likely than people with secondary education is rejected in comparing suburbanizers with stayers in the capital city.

[TABLE 3 ABOUT HERE]

Other variables yield the following results. In model two, we introduced socio-demographic characteristics of populations. It becomes evident that suburbanizers are younger than stayers in Tallinn, and men and married people have a higher probability to move to the suburbs than women and unmarried people. There is nothing particular in the suburbanization of families with children (Sýkora and Čermák 1998, 410; cf. Champion 2001, 148; Mulder and Hooimeier 1999, 174; Thomas 974, 25). But the very young age structure of suburbanizers does not correspond with findings in the other countries in transition. For example, the opposite is true in Budapest metropolitan area, where middle aged people suburbanize most likely (Kok and Kovács 1999, 134). Although the age

structure of suburbanizers has become considerably younger in Prague metropolitan area, older people dominate there (Sýkora and Čermák 1998, 410).

Estonians suburbanized more likely than ethnic minorities in the 1980s (Marksoo 1992, 141; Raagmaa 1996, 129). This process continued also in the 1990s, as ethnic minorities have a considerably lower probability to suburbanize than Estonians. There seems to be a modest relationship between occupation and suburbanization. The majority of occupational categories do not differ significantly from the reference group (manual workers) with the exception of managers who have the highest probability to suburbanize. Managers and other professionals dominate also in the suburbanization process in Budapest metropolitan area (Kok and Kovács 1999, 134). The lowest probability to suburbanize is, in contrast, among inactive people. Differences by economic branch are modest (and statistically insignificant) as well, but reveal that people working in public administration tend to suburbanize most likely and people working in education and health tend to suburbanize least likely.

Variables added in models three and four do not change considerably those included in model two. Only the higher probability of managers to suburbanize becomes statistically insignificant, and the lower probability of specialists and unemployed to suburbanize becomes statistically significant compared to manual workers. Wage earners and entrepreneurs do not suburbanize more likely than people with other sources of income. But the higher probability of entrepreneurs to suburbanize compared to wage earners is evident. Similar results have been obtained also in other studies (Kok and Kovács 1999, 134). Thus, our results what regards the social composition of suburbanizers are mixed. There are both people who are with a relatively low (primary education) and high (public administration, entrepreneurs) social status among those who have the highest probabilities to suburbanize.

In model three, we introduced housing related variables. Suburbanizers live more likely in single family houses and in new houses built in the 1990s, but they are not able to improve their housing conditions what regards its size. They also have to be content with less facilities compared to stayers in Tallinn. This reflects the overall differences in the facilities between the capital city and suburbs; most of the housing stock in Tallinn is equipped with all the modern facilities, while the same is not true for the suburbs, where many houses are not integrated into the central water and sewage system.

As a final step, we also investigated interaction terms in addition to the main effects of the variables (**Table 3, Model 4**). As it is considerably more expensive to move into single family houses than into multi family houses, and the financial resources of people with university education are better, we expected that people with the university education are more likely to move into detached houses as well, while the opposite could be expected for people with primary education. The signs of regression coefficients confirm these expectations, but the differences are statistically insignificant for people with primary education. Thus, while overall people with the university education have the lowest probability to suburbanize compared to other educational groups, but if they do leave for suburbs they move into the most attractive destinations (single family houses). This supports the argument of the polarizing nature of the process of suburbanization.

Next, we will compare suburbanizers with stayers in the suburbs. We see that the probability to suburbanize increases together with the increase in the level of education (**Table 4, Model 5**), which is reverse compared to previous models (**Table 3, Model 1 through Model 4**). People with vocational education have a lower probability to suburbanize compared to others. The differences in the probability to suburbanize somewhat decrease over the following models (**Table 4, Model 6 through Model 8**), but remain statistically significant. Thus, the hypothesis that people with primary education have a higher probability to suburbanize compared to people with secondary education is rejected, but the hypothesis that people with the university education suburbanise more likely than people with secondary education is confirmed in comparing suburbanizers with stayers in suburbs.

[TABLE 4 ABOUT HERE]

The other compositional differences between suburbanizers and stayers in the suburbs are as follows. In model six, we introduced socio-demographic characteristics of populations. This reveals that suburbanizers are younger than stayers in suburbs, and men and married people have a higher probably to suburbanize compared to women and unmarried, which is similar to the differences between suburbanizers and stayers in Tallinn. Ethnic origin yields different results. Estonians suburbanized more likely compared to stayers in Tallinn, but less likely compared to stayers in suburbs. We can conclude that ethnic differences in suburbanization were not as straightforward as in the 1980s, when Estonians were dominantly behind the process. Managers, specialists and service workers have higher probabilities to suburbanize compared to other occupational groups. The probability to suburbanize is lowest among unemployed. What regards economic branch, people working in business services are most likely and people working in agriculture are least likely to suburbanize. Similarly to the comparison with stayers in the capital city, wage earners suburbanize least likely and entrepreneurs most likely. This means that the social structure of suburbanizers is clearer in comparison with stayers in suburbs than with stayers in the capital city. They are better educated, work in the most attractive segments of the labour market and are more likely entrepreneurs.

These findings summarized above remain in force after adding housing and location related variables (**Table 4, Model 7**). Similarly with the comparison of stayers in Tallinn, suburbanizers have a higher probability to live in the houses built in the 1990s compared to stayers in the suburbs. There are no differences in dwelling type, but suburbanizers have slightly less space than stayers in suburbs. Suburbanizers have a higher probability to be a commuter. Location related variables yield the following results. There is a clear distance decay evident in the process of suburbanization. Suburbanizers have the highest probability to live in nearby municipalities and the lowest probability to live in the most distant ones. But suburbanization also brings along a considerable dispersion of population across the metropolitan area as they live much more likely in rural than in compact urban municipalities compared to stayers in the suburbs. Coastal areas that were occupied by Soviet military troops during the Soviet period (Jauhianen 1997) attract suburbanizers as well. Together with the nearby municipalities of the capital city, they are the most attractive areas of residential development in Estonia (Leetmaa 2003, 113). As a final step, we analysed interaction terms (**Table 4, Model 8**). Again, the impact of

new variables on previous ones was modest. Only the higher probability of suburbanizers to live in single family houses becomes evident. The interactions between education and dwelling type and place of residence confirm our hypotheses and indicate that people with primary education have the lowest probability to move into single family houses and coastal municipalities, while the opposite is true for people with the university education. Thus, people with primary education move to the least attractive, and people with a university education move to the most attractive destinations in the suburbs. This also supports the argument that suburbanization increases spatial segregation in the suburbs and thereby is an important dimension in the stratification order of countries in transition (Kostinsky 2001, 459; Timár and Váradi 2001, 356).

Conclusions and discussion

The analyses of suburbanization by education revealed, first, that the educational composition of the population of Tallinn is higher compared to the population of suburbs. The higher share of people with higher education in the capital cities reflects the Soviet legacy effect. The suburbanization of people with the university education was modest during the Soviet period, as they rather ended up in the best part of housing stock of the cities (Põder and Titma 2001, 172; Kulu 2003, 907). Second, it became evident that the educational composition of suburbanizers is closer to the population of Tallinn than to the population of the suburbs, although the level of education of the inhabitants of the capital city is slightly higher compared also to suburbanizers. Still, this means that suburbanization levels off differences in the educational composition between populations living in the capital city and suburbs, rather than reinforces them.

While suburbanization equalizes the distribution of population by education between central city and suburbs, a more detailed analysis reveals also the selective and polarizing dimensions of the process of suburbanization, both what regards education and other variables reflecting the social composition of population. We hypothesized that both people with primary and university educations are more likely to suburbanize than people with secondary education compared to stayers in Tallinn and suburbs. The comparison with stayers in Tallinn confirmed the first hypothesis, while rejected the other one. The hypotheses that people with university education move most likely to the single family houses and people with primary education tend to end up in the multi family houses, were confirmed. Thus, people with the university education stay in Tallinn rather than suburbanize, but when they do leave for suburbs, they move to more likely to the most attractive part of the housing stock (single family houses) than people with lower levels of education. The opposite is true for people with primary education.

Comparing suburbanizers with stayers in the suburbs, we also hypothesized that both people with primary and university education are more likely to suburbanize than people with secondary education. The first hypothesis is rejected, while the other is confirmed. As such, the results of the comparison of suburbanizers with stayers in suburbs yield a directly opposite result than the comparison of stayers in Tallinn. But similar results emerged as well that confirm also the argument that people with higher education who occupied the best housing stock in the cities during the socialist period started to move to the most attractive parts of suburbs during the transition period (Ioffe and Nefedova

1998, 1338–1339; Ladányi and Szelényi 1998, 80; Sýkora and Čermák 1998, 410–411; Kok and Kovács 1999, 135–136). More specifically, our study revealed that people with higher education move most likely into the single family houses and coastal municipalities. The higher probability of people with primary education to leave Tallinn and move into multi family houses compared both to stayers in Tallinn and suburbs, and inland municipalities compared to stayers in suburbs indirectly supports the argument that economic hardships had a role to play in the process of post-socialist suburbanization (Ladányi and Szelényi 1998, 75; Timár and Váradi 2001, 355). We can also conclude that while suburbanization equalized the educational composition of people living in Tallinn and suburbs, it did increase spatial segregation by education within the suburbs.

The other variables related to the social composition of population reveal also a mixed nature of the suburbanization process. The most straightforward determinants of suburbanization are being an entrepreneur and working in public administration. There is also some support for the higher probability of managers to suburbanize. It is also evident that their job market is in the capital city rather than in suburbs, as their commuting probabilities are considerably higher compared people belonging to other occupational groups in the suburbs. Unemployed people, on the other hand, have the lowest probability to suburbanize. Our mixed results of the analyses of suburbanization by education and other variables related to the social composition of the population support the argument that in addition to environmental reasons and increased wealth of some of the population subgroups, specific features related to transition also impact the process (Ladányi and Szelényi 1998, 82). However, we do not have enough grounds to argue that people suffering from economic hardships were pushed out of the cities. It is true that the probability to suburbanize was the highest among people with primary education in comparing suburbanizers with stayers in Tallinn on the one hand, but the suburbanizing probability of unemployed people was low on the other hand. It rather seems that the mobility of unemployed decreased and they stayed in the cities (Marksoo 1992, 134; 1995, 185). The study of migration motives also reveals that moves to poorer housing conditions were rare in Estonia in the 1990s (Ainsaar 2004, 83). Similar tendencies have been found elsewhere as well (Kok and Kovács 1999, 125, 132).

There are two questions that arise as especially significant for discussing about the future trends of suburbanization in countries in transition. The first is related to future stratification order. Economic hardships are most severe in the beginning of transition period, when the polarization of societies increases as well. Now as the major reforms are launched and some of the countries, including Estonia, and they are members of the European Union since 2004, the transition period is coming to an end as well (Lauristin and Vihalemm 1998, 685). As the specific features of post-socialist suburbanization start to evade (economic hardships have left behind in many countries in transition), the economies grow quickly and translate to income growth, the interest rates of the mortgages are low and increasingly availably to people, the expansion of the whole process of suburbanization could be expected. Such an expectation is based on previous studies, which reveal that economic expansion (Manson et al. 1984, 74) and the increase of incomes (Margo 1992, 306–307) intensify suburbanization.

The other important dimension of future suburbanization is related to the changes in the educational composition under way in Estonia. As university admissions have increased

dramatically, the share of people with university education increases very considerably in the coming decades as well. People with the university education prefer/are able to live more likely in single family houses compared to people with lower levels of education, as both the current study and studies of housing differences by education in during the Soviet period reveal (Põder and Titma 2001, 172; Kulu 2003, 907). If this trend remains, the inevitable result is the continuation of suburbanization, as the available land for single family housing construction is limited in the capital city. But the other inevitable result of the spread of the university education is lower selectivity in university admissions. The expansion of secondary education in the 1970s and 1980s brought along the inner differentiation of secondary education (different tracks were established plus elite general secondary schools emerged). Thus, one could expect that similar inner differentiation will take place in university levels in the future, both what regards different types of universities (for example academic and applied), and the increased importance of the new levels of education (especially master studies, which expands considerably in the future as well). Time will tell, whether the housing and suburbanization experiences for people belonging to all these different categories of university education remain similar to previous generations of people with the university education. But it is clear that future studies of migration trends by education have to take account the inner differentiation of people with university education.

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Table 1. Research variables (percent)

		Total	Primary	Secondary	University
Education	Primary	34.8			
	Secondary	45.5			
	University	19.7			
Research population	Stayer in Tallinn	33.3	27.3	34.8	41.5
	Suburbanizer	33.3	29.3	35.0	38.4
	Stayer in suburb	33.3	43.4	30.1	20.1
Age	15–29	25.4	32.3	25.6	10.2
	30–49	36.7	20.2	45.6	49.7
	50–64	22.5	22.2	20.5	28.4
	65+	15.4	25.3	8.3	11.7
Gender	Male	46.3	50.9	43.1	44.3
	Female	53.7	49.1	56.9	55.7
Ethnic origin	Estonian	65.6	68.4	61.2	70.5
	Ethnic minority	34.4	31.6	38.8	29.5
Civil status	Married	60.8	49.2	35.2	51.1
	Unmarried	39.2	50.8	64.8	48.9
Occupation	Manager	8.7	3.8	6.5	20.7
	Specialist	15.0	6.0	12.8	32.9
	Clerk	3.3	2.1	4.6	2.3
	Service worker	6.7	5.4	9.5	2.2
	Manual worker	19.9	25.1	23.6	4.2
	Unemployed	6.6	8.4	6.1	5.2
	Inactive	39.7	49.2	36.8	32.4
Economic branch	Agriculture	3.7	6.8	2.8	2.3
	Manufacturing	27.9	32.2	28.2	22.2
	Construction	8.7	11.4	8.0	7.1
	Public administration	8.5	6.3	7.6	13.4
	Business services	12.1	7.6	10.0	22.7
	Other services	39.1	35.7	43.4	32.3
Source of income	Wage	53,7	35,1	61,8	73,7
	Entrepreneur	3,2	1,8	3,2	6,1
	Other	43,1	63,2	35,0	20,2
Time when house was built	In the 1990s	12.1	9.0	11.8	19.4
	Before 1990s	87.9	91.0	88.2	80.6
Availability of facilities	Higher-order facilities	66.7	65.0	67.6	68.2
	Lower-order facilities	33.3	35.0	32.4	31.8
Living space	55 m^2 and more	44.5	43.6	45.3	44.6
	Less than 55 m^2	55.5	56.4	54.7	55.4
Dwelling type	Single family house	25.9	28.1	24.2	25.7
	Multi family house	74.1	71.9	75.8	74.3
Commuting	Non-commuter	84.3	91.4	82.2	74.2
	Commuter	15.7	8.6	17.8	25.8
Place of residence in Tallinn or suburbs	Tallinn	33.1	27.3	34.9	41.4
	Inner ring suburbs	35.8	34.4	35.9	38.4
	Middle ring suburbs	22.4	26.4	22.0	15.1
	Outer ring suburbs	8.6	11.9	7.2	5.1
Place of residence in rural or urban area	Rural municipality	76.5	76.4	74.5	81.8
	Urban municipality	23.5	23.6	25.5	18.2
Place of residence in inland or coastal area	Inland municipality	64.8	67.6	65.1	56.8
	Coastal municipality	35.2	32.4	34.9	43.2

Table 2. Research population by education (percent)

	Stayers in Tallinn	Stayers in suburb	Suburbanizers	Total
Primary	31.0	48.6	33.4	34.8
Secondary	46.9	40.4	46.3	45.5
University	22.1	11.0	20.3	19.7

Table 3. The comparison of suburanizers with stayers in Tallinn

	Model 1	Model 2	Model 3	Model 4
Education (Base: Secondary)				
Primary	0.065***	0.167***	0.173***	0.177***
University	-0.085***	-0.207***	-0.315***	-0.352***
Vocational education (Base: No)				
Yes	-0.003	-0.044*	-0.030	-0.031
Age (Base: 15–29)				
30–49		-0.023	-0.028	-0.028
50–64		-0.469***	-0.437***	-0.437***
65+		-1.041***	0.923***	0.925***
Gender (Base: Female)				
Male		0.154***	0.079***	0.079***
Civil status (Base: Married)				
Unmarried		-0.502***	-0.525***	-0.526***
Ethnic origin (Base: Estonian)				
Ethnic minority		-0.961***	-0.821***	-0.822***
Occupation (Base: Manual worker)				
Manager		0.311***	0.016	0.018
Specialist		-0.058	-0.205***	-0.206***
Clerk		0.064	-0.051	-0.050
Service worker		-0.050	-0.086	-0.086
Unemployed		-0.057	-0.100*	-0.101*
Inactive		-0.118***	-0.118***	-0.126***
Economic branch (Base: Manufacturing)				
Construction		0.026	-0.074	-0.074
Public administration		0.105	0.150**	0.149**
Business services		-0.069	-0.076	-0.077
Education and health		-0.166***	-0.154**	-0.155**
Other services		-0.012	-0.055	-0.055
Source of income (Base: Other)				
Wage		-0.338***	-0.187***	-0.189***
Entrepreneur		0.089	0.115	0.112
Time when house was built (Base: Before 1990s)				
In the 1990s			2.197***	2.198***
Availability of facilities (Base: Lower-order facilities)				
Higher-order facilities			-0.589***	-0.589***
Living space (Base: Less than 55 m^2)				
55 m^2 and more			0.035	0.035
Dwelling type (Base: Multy family house)				
Single family house			1.134***	1.098***
Interactions				
Primary*Single family house				-0.026
University*Single family house				0.196**
-2 log likelihood	54869.32	51819.87	42208.50	42200.87

Table 4. The comparison of suburanizers with stayers in suburbs

	Model 5	Model 6	Model 7	Model 8
Education (Base: Secondary)				
Primary	-0.516***	-0.467***	-0.415***	-0.334***
University	0.575***	0.463***	0.346***	0.215***
Vocational education (Base: No)				
Yes	-0.193***	-0.186***	-0.182***	-0.185***
Age (Base: 15–29)				
30–49		-0.314***	-0.224***	-0.231***
50–64		-0.446***	-0.339***	-0.345***
65+		-0.788***	-0.611***	-0.610***
Gender (Base: Female)				
Male		0.181***	0.123***	0.119***
Civil status (Base: Married)				
Unmarried		-0.430***	-0.438***	-0.435***
Ethnic origin (Base: Estonian)				
Ethnic minority		0.197***	0.221***	0.051*
Occupation (Base: Manual worker)				
Manager		0.617***	0.223***	0.255***
Specialist		0.450***	0.137***	0.166***
Clerk		-0.177***	-0.042	-0.028
Service worker		0.222***	0.150***	0.161***
Unemployed		-0.119**	-0.154***	-0.160***
Inactive		-0.006	-0.022	-0.037
Economic branch (Base: Manufacturing)				
Agriculture		-0.611***	-0.445***	-0.458***
Construction		0.320***	0.129*	0.154**
Public administration		0.177***	0.180***	0.166**
Business services		0.623***	0.347***	0.335***
Education and health		-0.058	-0.019	-0.005
Other services		0.359***	0.117**	0.108**
Source of income (Base: Other)				
Wage		-0.088	-0.201***	-0.194***
Entrepreneur		0.325***	0.266***	0.278***
Time when house was built (Base: Before 1990s)				
In the 1990s			1.199***	1.190***
Availability of facilities (Base: Lower-order facilities)				
Higher-order facilities			0.049*	0.057*
Living space (Base: Less than 55 m^2)				

55 m^2 and more			-0.053*	-0.056*
Dwelling type (Base: Multi family house)				
Single family house			0.003	0.069*
Commuting (Base: Non-commuter)				
Commuter			0.865***	0.876***
Distance from Tallinn (Base: Inner ring)				
Middle ring			-0.515***	-0.913***
Outer ring			-0.974***	-1.560***
Place of residence in rural or urban area (Base: Rural municipality)				
Urban municipality			-0.226***	-0.264***
Place of residence in inland or coastal area (Base: inland municipality)				
Coastal municipality			0.069***	0.335***
Interactions				
Primary*Single family house				-0.156***
University*Single family house				0.190**
Primary*Coastal municipality				-0.101*
University*Coastal municipality				0.225***
-2 log likelihood	53739.89	52303.77	44792.64	44420.73