

## RESEARCH ARTICLE OPEN ACCESS

# Contributions of Residential and Income Mobility in Different Life Stages to Increasing Low-Income Rates in Suburban Neighbourhoods

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## ABSTRACT

Socioeconomic residential segregation has been increasing in many cities in Europe and globally. Selective migration is usually considered the main mechanism shaping the socioeconomic trajectories of neighbourhoods, although some studies have suggested it to have only minor contributions. However, it is worth looking, how persons in different life course situations affect these trajectories by their moves or income mobility. Living in a low-income neighbourhood may be related to a 'transit stage' in the life course, for example in the beginning of the work, housing, and family careers, and if the declining income level in the neighbourhood is related to such situations, it may be less indicative of problems in the area. This study explores how selective migration and income mobility have contributed to the income trajectories of suburban neighbourhoods experiencing downward trend in their income level in Finnish cities between 1997 and 2019, and how these contributions are related to different life course situations. We use individual-level register-based panel data covering the complete population of Finland and decomposition methods. Our findings emphasise the central role of selective migration in the increasing low-income rates. Particularly the residential mobility of young childless adults, commonly students, has increased the low-income populations. However, the main difference to other types of neighbourhoods is the net loss of employed middle-aged Finnish-born non-low-income residents. This calls for policies improving the attractiveness of these neighbourhoods for the non-low-income population.

## 1 | Introduction

Recently, studies have demonstrated increasing socioeconomic residential segregation in European cities (Musterd et al. 2017) and elsewhere (van Ham et al. 2021; Mijs and Roe 2021; Owens 2016). One trend observed in several countries has been the suburbanisation of poverty (e.g., Bailey and Minton 2018; Hochstenbach and Musterd 2018). Also in Finnish cities, income segregation has been increasing (Kurvinen et al. 2025), and increases in low-income rates have occurred particularly in

suburbs dominated by multi-storey housing (Kauppinen and Mukkila 2022).

The implications of an increasing low-income rate are different depending on the main mechanism contributing to this development. Selective migration has traditionally been assumed to be the central process in urban segregation, but also in situ change among non-movers can play an important role (Bailey 2020; Bolt 2018). If the latter mechanism is dominant, it could be an indication of neighbourhood effects on

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income, differential effects of macro-economic trends, or ageing (e.g., retirement). Knowledge about the reasons behind the change can help in choosing policy responses. However, results concerning the reasons for neighbourhood change are mixed.

Recent studies have arrived at different conclusions regarding the relative contributions of different processes to neighbourhood poverty. Some studies have found only minor contributions from residential mobility (Cooke 2010; Bailey 2012; Schouten 2021; Boje-Kovacs et al. 2021). Recently, however, Vogiazides and Mondani (2023) found downward neighbourhood trajectories in the Greater Stockholm Area to be mainly driven by selective migration. As well as illustrating that the driving process can differ between different types of neighbourhood change (cf. Hochstenbach and van Gent 2015), their result is important in showing that a process may be important in explaining neighbourhood *change* even if the aggregate changes it causes in neighbourhoods are minor in comparison to the overall levels (e.g., in poverty).

Demonstrating the main process of change still misses important information regarding the implications of neighbourhood change. Additional information about the people driving the change helps to interpret it, and this can be related to the role that neighbourhoods play in people's life courses. For instance, Bailey (2020) suggests that the movement of young adults through more deprived areas is not necessarily a sign of problems but indicates the normal functioning of the housing system. Living in a disadvantaged housing estate can be part of a 'transit stage' in an individual's life (Lelévrier and Melic 2018; Boje-Kovacs et al. 2021). Similarly, having a low income at the start of one's work, family and housing careers can also be part of this 'transit stage'. If the declining income level in a neighbourhood is related to such transitional phases, it might be less indicative of problems in the area. Combining an analysis of the contributions of different processes of change with a consideration of the life-course situations of the residents has so far been rare in research of neighbourhood change.

In this study, we combine the question of the driving process with the viewpoint on life-course situations of the residents. We contribute to earlier research particularly by applying this combination. Information on the significance of residential mobility versus other processes of change alone is less useful than combining it with information on who are these processes related to.

Our main research questions are:

1. To what extent have residential mobility on one hand, and in situ income mobility, on the other, contributed to changes in the low-income and non-low-income populations in suburban multi-storey neighbourhoods experiencing increasing share of low-income population?
2. How have residents in different life-course situations contributed to these changes?

In addition to the main research questions, we look at the significance of ethnic background for the results, we probe

the differences between cities, and we conduct a sensitivity analysis using a different age categorisation.

## 2 | Previous Research

### 2.1 | Migration and Other Processes of Neighbourhood Change

Bailey (2012) noted that it appeared to be taken for granted that selective migration is the dominant process in neighbourhood change, even though direct evidence was limited. He pointed out that migration flows are typically characterised by high levels of 'churn'—maintaining the *status quo*—and that many moves are 'horizontal', between neighbourhoods with similar statuses.

Several studies have shown how the individual background characteristics are related to moving to and from different types of neighbourhoods. For example, in Sweden, Andersson and BråmÅ (2004) found the in-movers to the most distressed neighbourhoods in the Stockholm County to have lower socioeconomic status than the stayers or the out-movers, and Andersson and Hedman (2016) found the impoverishment of the poorest neighbourhoods in Malmö during the economic crisis in the 1990s to have been due to both in situ changes and residential sorting. However, to assess the impact of the moves on the population composition of the neighbourhoods, the scale of the migration flows must be considered (Bailey 2012). Additionally, other processes such as ageing of the population may affect the development.

Since the 1990s, there have been several US and European studies aiming to estimate the relative contributions of the different processes—particularly selective migration and status change among non-movers. In the US, Quillian (1999) found that the out-migration by nonpoor African Americans from moderately poor neighbourhoods in metropolitan areas into nonpoor White neighbourhoods had been a key process in the formation of new high-poverty neighbourhoods, while Cooke (2010) concluded that most of the changes in poverty levels in inner suburbs were driven by transitions into and out of poverty, following general trends in the economy. Also Schouten (2021) suggested that residential mobility had only a modest impact on the income composition of suburban neighbourhoods, as both low-income and higher-income households had suburbanised. However, according to both Cooke (2010) and Schouten (2021), net out-migration of the nonpoor increased the low-income rate in *urban* neighbourhoods.

There are several differences in the study designs of these studies, which may explain the contrasting results. Only Quillian (1999) analysed the impacts of different processes on neighbourhoods differing in their *low-income rates*, while Cooke (2010) and Schouten (2021) focused on neighbourhood change in *different types of suburban neighbourhoods*. Additionally, the contribution of in situ change—income change among non-movers—to changes in neighbourhoods' income levels depends on the general economic development during the study period, and these studies analysed different periods. They still suggest that migration flows were important for the

creation of high-poverty neighbourhoods in the 1970s and 1980s and later in urban areas, while later shifts in income levels in suburban neighbourhoods seem to have been less affected by migration.

Findings from the US may not be easily generalisable to European contexts. Residential mobility is particularly frequent in the US context, and economic segregation is intertwined with ethnic segregation to a stronger degree than in Europe (Bailey 2012). In England and Scotland, studies have found only modest impacts of selective migration on socioeconomic segregation (Bailey and Livingston 2008; Bailey 2012). Two studies have investigated the contributions of different processes in Nordic countries, with contrasting conclusions. Boje-Kovacs et al. (2021) concluded that selective migration has contributed to increasing the unemployment rate in deprived neighbourhoods in Denmark, but the scale of this contribution has been modest and declining. However, Vogiazides and Mondani (2023) found that the contributions of residential mobility and in situ change to the changes of the sizes of different population groups in the Greater Stockholm Area neighbourhoods in Sweden varied depending on the type of neighbourhood transition and the population group under consideration. Notably, downward trajectories ending in ‘vulnerability in the periphery’ were mainly driven by residential mobility, that is, by out-migration of higher-SES persons and in-migration of lower-SES persons and people born in less economically advanced countries.

The varying importance of the different processes in different types of neighbourhoods was also brought up by Hochstenbach and van Gent (2015) in their study of Amsterdam and Rotterdam in the Netherlands. They found that migration contributed particularly to socioeconomic upgrading in initially high-status neighbourhoods, while social mobility was more important for the upgrading in lower-status neighbourhoods. In ‘downgrading’ neighbourhoods, the positive net migration of low-income persons and slightly negative net migration of higher-income persons were important explanations for the downgrading.

An important consideration when evaluating the partly conflicting results of these studies is that they have focused on two different questions. One question is how much residential mobility has changed the population composition, for example how much the share of the low-income residents has changed (Bailey and Livingston 2008; Cooke 2010; Boje-Kovacs et al. 2021). Another question relates to the share of the *change* in the population composition that is due to residential mobility (Vogiazides and Mondani 2023). Answers to these questions may be different. When the study is focused on increasing shares of low-income residents, the second question is particularly important.

## 2.2 | Low-Income Neighbourhoods as Transit Stages or Permanent Destinations

Several studies have provided findings on the contributions of residential mobility and in situ changes to neighbourhood change, but less is known about how these contributions are related to specific population subgroups. When interpreting the

development of neighbourhoods, it may matter for example whether the development is mostly driven by transitory stages in young adulthood or by more permanent situations. For example, Lelévrier and Melic (2018) noted that for the middle classes, staying in a housing estate is typically related to a *transition* within the residential trajectory, while for the low-income groups, it is often the *end* of their residential trajectories. While low economic resources may be the main reason for living in a low-income neighbourhood for both groups, the reasons for the level of economic resources—such as the life stage—matter as well when considering the significance of concentrations of low-income residents.

Young adults can be important for neighbourhood change or reproduction both because they move often (Bernard 2017; Ghosh et al. 2019) and because they are in the start of their labour market and housing careers. There is typically a shortage of economic resources among young adults who start their own housing careers, and they often start from lower ranks of the ‘hierarchy of neighbourhoods’ (Bailey 2012). Poorer neighbourhoods function as the starting points of the housing careers in these situations, and living in them can also be a strategy that young people employ to afford getting an education or saving money for homeownership. Progress in the labour-market career, leading to increasing income and wealth, then tends to lead to moves to more affluent neighbourhoods. Bailey (2012) calls this age-related process the ‘demographic conveyor’.

Also the family career stage influences the permanence of residence in a neighbourhood and therefore the implications of low income for the neighbourhood. Moves among younger adults are often related to changing housing needs due to changes in family careers (Bernard et al. 2014). Childless young adults are therefore more mobile than families, particularly families with older children. Among families with children, the likelihood of moving declines as children grow older and reach the school age (Bernelius and Vilkkama 2019). At this life stage, families commonly seek peaceful neighbourhoods and a stable housing situation, typically homeownership. However, higher-income households can realise their preferences more easily than low-income households, who may often need to settle in poorer neighbourhoods to obtain homes with adequate space (Schouten 2021; Karhula et al. 2020; Vaalavuo et al. 2019). Therefore, the demographic conveyor does not work similarly for all.

Low-income neighbourhoods can function as temporary ‘transit stages’ also in other situations besides young adulthood. As the idealised process of the demographic conveyor relates to progress in the labour market career, it is particularly those with problems in the labour market such as the unemployed, whose residential locations may not follow this idealised process. Life-course events such as job loss or divorce lead to moves particularly among low-income households (Schouten 2021), and suitable housing may be more easily found in low-income neighbourhoods. Even though the social security system can be expected to reduce forced moves in contexts with extensive safety nets, such as the Finnish context, in another Nordic context Boje-Kovacs et al. (2021) identified unemployment as a trigger of moving to deprived neighbourhoods, and according to them these neighbourhoods function as a transit stage during unemployment.

Some residents never get into the demographic conveyor for example due to discrimination in the housing market, or their economic resources are more permanently low, perhaps after dropping out from the conveyor due to unemployment or other problems. For them, the low-income neighbourhoods may represent the end of their residential trajectories (Lel vri r and Melic 2018; Sharkey 2013; Kempainen et al. 2020). High and increasing low-income rates may raise concern especially if they are mostly related to situations which indicate dropping out from the ideal-typical progression, such as permanently low income due to long-term unemployment or low income level in families with (older) children. Also old-age pensioners are a group living in the neighbourhoods more permanently, but their income level may not be associated with other forms of disadvantage similarly to income level among the working-age population.

The housing stock of the neighbourhood shapes how the neighbourhood can serve residents in different kinds of life stages. For example, families with children may prefer single-family or terraced housing and homeownership more than other types of households, whereas rental multi-storey housing may attract residents in more transient life situations. The housing types and tenures also differ in the costs and ease of access. Economic resources are needed particularly for entry to homeownership, so neighbourhoods dominated by more easily accessible rental housing attract lower-income movers. Social rental housing typically has a regulated restricted access and potentially long waiting times, so particularly private rental housing can be expected to attract more temporary residents. However, where state subsidises student housing, such as in Finland, also subsidised rental housing may include a subsector with expected temporary stay.

### 3 | Research Design

#### 3.1 | Data

We used individual-level register-based panel data from Statistics Finland covering the complete population of Finland.<sup>1</sup> We limited our initial selection of neighbourhoods to the 10 largest cities in terms of population (Helsinki, Espoo, Vantaa, Tampere, Turku, Oulu, Kuopio, Jyv skyl , Lahti and Pori). Figure 1 shows their locations.<sup>2</sup> We included several cities to avoid the determination of the results by possibly idiosyncratic factors related to individual cities, and a limited number was selected due to availability of neighbourhood delimitation data and to keep the analysis focused on larger cities.

As the main study neighbourhoods, we selected initially all suburban neighbourhoods in which at least 75% of inhabited dwellings were in multi-storey housing in 1997. This way we focus on the type of neighbourhoods in which the low-income rates have increased the most (Kauppinen and Mukkila 2022), not on increases of low-income rates generally. We also compare some results to other types of neighbourhoods in the study cities. Neighbourhoods that were known to have primarily student housing were not included. By suburban neighbourhoods we refer to neighbourhoods that are located outside the centre of the urban region but still in urban instead of rural

area, as defined by the Finnish Environment Institute (Helminen 2011; Helminen et al. 2020). Except for Espoo and Vantaa (which belong to the Helsinki region), the included cities are the central cities of their urban regions.

Of the initial selection of 132 neighbourhoods, we selected by means of two-class latent class growth analysis (*traj* command in Stata) those 63 neighbourhoods that were on a trajectory of rapidly increasing share of low-income residents in 1997–2019, and from these we selected those that had an above-median share of low-income residents in 1997 (the median 16.9% was based on the initially selected 132 neighbourhoods). Here low income refers to the lowest national quintile of taxable personal income in the population aged 20 years or more. This selection led to 40 neighbourhoods, in nine cities because one of the cities (Espoo) did not have any neighbourhoods corresponding to the selection criteria. The mean share of low-income residents in the study neighbourhoods in 1997 was 21.5% (SD 2.9%), and the mean increase in 1997–2019 was 11.3%-points (SD 3.2%-points). Figure 2 illustrates for the cities of the Helsinki metropolitan area how the study neighbourhoods and other types of urban and suburban neighbourhoods are located (other cities not shown; blank areas in the map not included due to being rural, student, or military areas, or without residents; railroad and metro tracks existing during the study period shown).<sup>3</sup>

We focused on outcomes in the population aged 20 years and older. The analysis was conducted at the level of individual

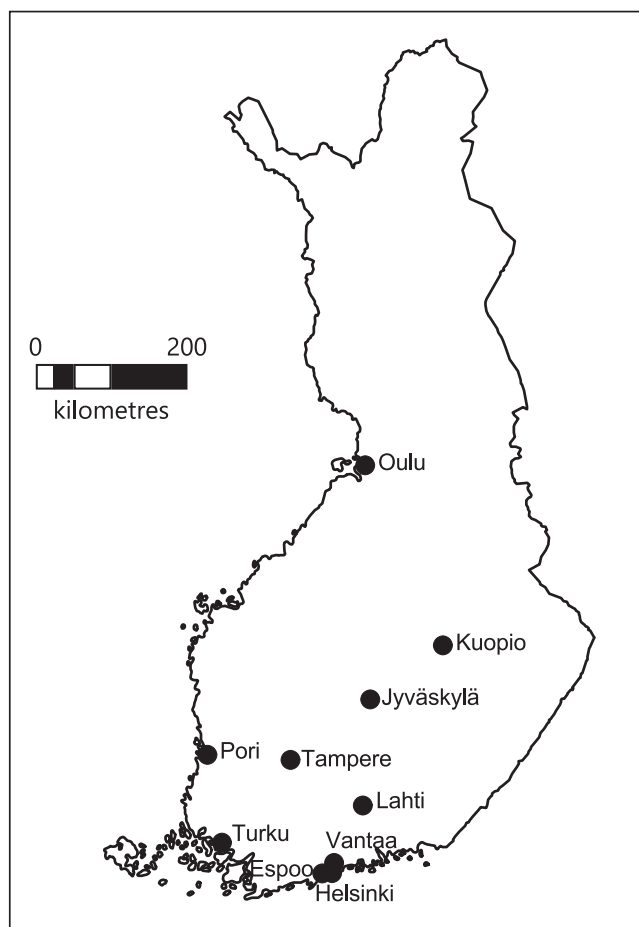
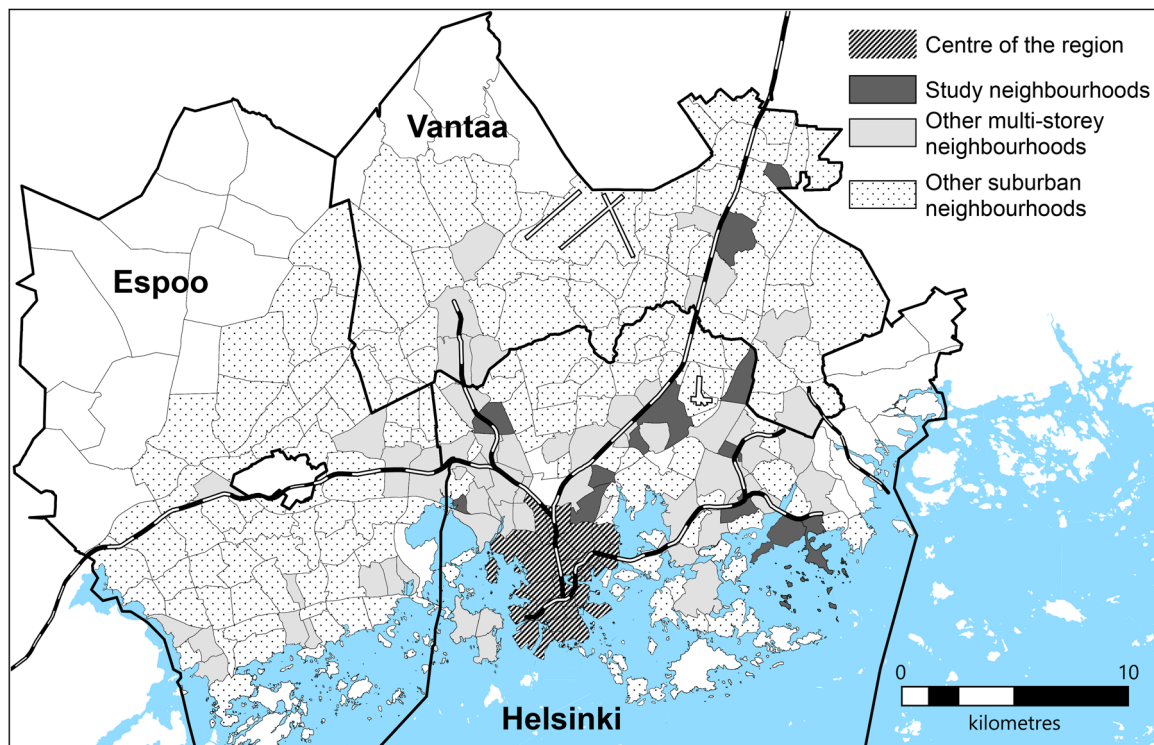


FIGURE 1 | The location of the study cities in Finland.



**FIGURE 2** | The location of the study neighbourhoods and other types of urban and suburban neighbourhoods in the cities of the Helsinki metropolitan area.

people instead of households to simplify the measurement of age, work career situations, income, and moves. We are interested in life course situations in adulthood, and we set the age limit to 20 years, because the 18–19-years-old are overwhelmingly categorised as low-income residents based on their personal income, and they are mostly studying and living with their parents. At the age of 20, around half have left the parental home and the secondary education has typically been completed. The total 20+ years old population in the study neighbourhoods was 144,000 in 1997 and 166,000 in 2019, which was 10.8% of the total 20+ years old population in the 10 cities in 1997 and 9.6% in 2019.

The individual-level income measurement used the same definition for low income as the neighbourhood-level measurement: the lowest national quintile of taxable personal income in the population aged 20 years or more. Personal income was used particularly due to the decision to simplify the analysis by doing it at the individual level. Moving decisions may be influenced particularly by household income, but our aim is not to explain moving decisions. One advantage of our choice is that changes in household structure do not directly affect the income measurement. Taxable social security benefits such as unemployment benefits are included, but nontaxable benefits such as housing allowance and the last-resort social assistance are not. This improves the comparability between cities, as *total* income would be artificially increased in the cities with less affordable housing due to receipt of housing benefits and social assistance. Using the lowest quintile as the criterion of low income, instead of for example a certain share of the median income as is often used in poverty research (Smeeding 2016), means that we measure

income rank. An advantage is that this way economic cycles affect the income measurement mainly through their effects at the individual level instead of through changing median incomes. As consequences of our choices, our results do not directly indicate economic hardship or poverty, the contributions of economic cycles to income changes may be reduced by design (but not eliminated), and our design does not distinguish between low-income residents with a low-income partner from low-income residents with a non-low-income partner. Additionally, our findings regarding low-income residents in suburban neighbourhoods with *less than 75%* of multi-storey dwellings may be even less indicative of economic hardship, as those neighbourhoods both have higher income levels and larger shares of residents living in families, and therefore low-income individuals could more often have a non-low-income partner.

We do not measure the permanence of stay in the neighbourhoods, mainly because that cannot be measured at the time of arrival. Instead, we measure the life course situations of the residents using coarse classifications of the person's work, family and housing status corresponding to ideal-typical stages of these careers. Work status was categorised as (1) student, (2) unemployed, (3) employed, (4) pensioner, or (5) other. Family situation was categorised as (1) with parents, (2) (not with parents and) no children, or (3) with children. Housing status was categorised as (1) less than 25 years old with parents, (2) other (~private) rental, (3) state-subsidised rental, (4) owner, or (5) other. Additionally, we used coarse age categories 20–29, 30–59, and 60+. Certain combinations of these statuses may be seen as 'beginning' or 'transitory' stages based on an ideal-typical or traditional progression, for example, all the

20–29-years-old, and particularly in the younger age groups also students, the unemployed, childless persons, and those in private rental housing.

In addition to life course situations, we measured the ethnic origin of the residents, as the ethnic dimension is known to be important in residential segregation and there might therefore be ethnic differences in the findings. We used the Statistics Finland definition to classify those persons whose both parents or the only known parent were born abroad as persons with foreign origin. Those who were born abroad and whose parents' data are not available are included in this group as well as those born in Finland before 1970 with a foreign native language.

### 3.2 | Methods

We decomposed the changes in the numbers of low-income and non-low-income residents in the study neighbourhoods in the years 1998–2019 into parts contributable to three processes: (1) residential mobility, (2) in situ income change among non-movers, and (3) ageing and mortality. All migration, including immigration and emigration, is included in residential mobility, as are moves between household population and the non-household population. Those who moved between the study neighbourhoods are considered as movers. Among entries to the study population (in-migration and ageing), the income status was measured in the year of entry, and among exits (out-migration and mortality), it was measured in the last year when the person still lived in the neighbourhood at the end of the year.

The net contributions of different processes, in numbers of low-income and non-low-income people, were measured annually during the follow-up. This was done by subtracting the number of exits from the income group via a given process from the number of new entrants coming to the income group via the same process during the year. For example, the number of out-movers was subtracted from the number of in-movers. Equation (1) presents this decomposition for one income group, neighbourhood, and year. In the equation, *inmigr* refers to number of people migrating to the neighbourhood, *outmigr* to number of people migrating out, *ininc* to income mobility within the neighbourhood to this income group, *outinc* to income mobility within the neighbourhood out of this income group, *inage* to ageing into the study population, *outage* to ageing out (not applicable when studying the whole population but applicable in case of younger age groups), and *mort* to mortality.

Equation (1). The decomposition of the total change in the number of persons in income group *i* in neighbourhood *j* during year *k*.

$$\Delta n_{ijk} = (inmigr_{ijk} - outmigr_{ijk}) + (ininc_{ijk} - outinc_{ijk}) + (inage_{ijk} - outage_{ijk} - mort_{ijk}) \quad (1)$$

The population changes decomposed in Equation (1) were summed over all neighbourhoods and all years, and rates of change per 1000 over 20-years-old residents were calculated

(see Equation 2, where *J* refers to the total number of study neighbourhoods). The calculations within the three main parentheses in Equation (2) produce the contributions under analysis for one income group. This equation produces the same results as calculating weighted averages of annual rates, with annual sizes of the total study population as weights. Similar rates were also calculated relative to the corresponding income group instead of the total population, that is, contributions to the low-income and non-low-income populations as rates.

Equation (2). The decomposition of the total rate of population change per 1000 residents aged 20 and over for income group *i* in the study neighbourhoods (*J*) combined.

$$\begin{aligned} \text{rate of change} &= 1000 \times \frac{\sum_{j=1}^J \sum_{k=1998}^{2019} \Delta n_{ijk}}{\sum_{j=1}^J \sum_{k=1998}^{2019} n_{jk}} \\ &= \left( 1000 \times \frac{\sum_{j=1}^J \sum_{k=1998}^{2019} (inmigr_{ijk} - outmigr_{ijk})}{\sum_{j=1}^J \sum_{k=1998}^{2019} n_{jk}} \right) \\ &\quad + \left( 1000 \times \frac{\sum_{j=1}^J \sum_{k=1998}^{2019} (ininc_{ijk} - outinc_{ijk})}{\sum_{j=1}^J \sum_{k=1998}^{2019} n_{jk}} \right) \\ &\quad + \left( 1000 \times \frac{\sum_{j=1}^J \sum_{k=1998}^{2019} (inage_{ijk} - outage_{ijk} - mort_{ijk})}{\sum_{j=1}^J \sum_{k=1998}^{2019} n_{jk}} \right) \quad (2) \end{aligned}$$

We further decomposed these contributions to parts contributable to persons in different life-course situations. This was done by calculating Equation (2) separately for each life-course situation under analysis. For every new person either in the low-income or the non-low-income population in the study neighbourhoods, the life-course situation was measured at the end of the year during which the person became part of this income group. For each person who left either income group, the life-course situation was measured at the end of the last year when the person still belonged to this group. For example, the net contribution of in situ income change to the number of 20–29-year-old unemployed low-income residents was calculated by subtracting the number of those who moved out in the present year and were 20–29-year-old unemployed low-income residents at the end of last year from the in-movers who were 20–29-year-old unemployed low-income residents in the neighbourhood at the end of the present year. Even if the income of the out-movers increased during the present year or they became employed, their exits are counted as exits of low-income unemployed residents in this calculation, as the focus is on people's situations *while living in the neighbourhood*.

Our method is similar to the decomposition methods used by Quillian (1999), Cooke (2010) and Vogiazides and Mondani (2023). However, we do the decomposition initially for each individual neighbourhood, instead of neighbourhood types as Quillian (1999) and Cooke (2010), so we identify also moves between the study neighbourhoods. Additionally, unlike Quillian (1999), we calculate the rates of change relative to the total neighbourhood populations (aged 20 and over) instead of only relative to the population sub-groups under study.

Therefore, our focus is more on the neighbourhoods than on specific groups of residents.

## 4 | Results

We start by looking at the total contributions of residential mobility, in situ income mobility, and cohort change (ageing to the study population and mortality) to the changes in the low-income and non-low-income populations of the study neighbourhoods. Figure 3 shows that residential mobility and cohort change have contributed to increasing the share of low-income residents: these processes have increased the low-income population (on average by 9.1 and 6.9 persons annually per 1000 residents aged 20 and over) and decreased the non-low-income population (by 5.4 and 4.3 persons per 1000 residents). *In situ* income mobility has had the opposite net effect, shifting people from the low-income population to the non-low-income population (by 8.8 persons per 1000 residents). Therefore, residential mobility appears to be the main process contributing to the increasing share of low-income residents. Altogether, the impact of the three processes has amounted to an increase of the low-income population that corresponds to 7.2 persons annually per 1000 residents aged 20 and over, and the decrease of the non-low-income population has been 0.9 persons per

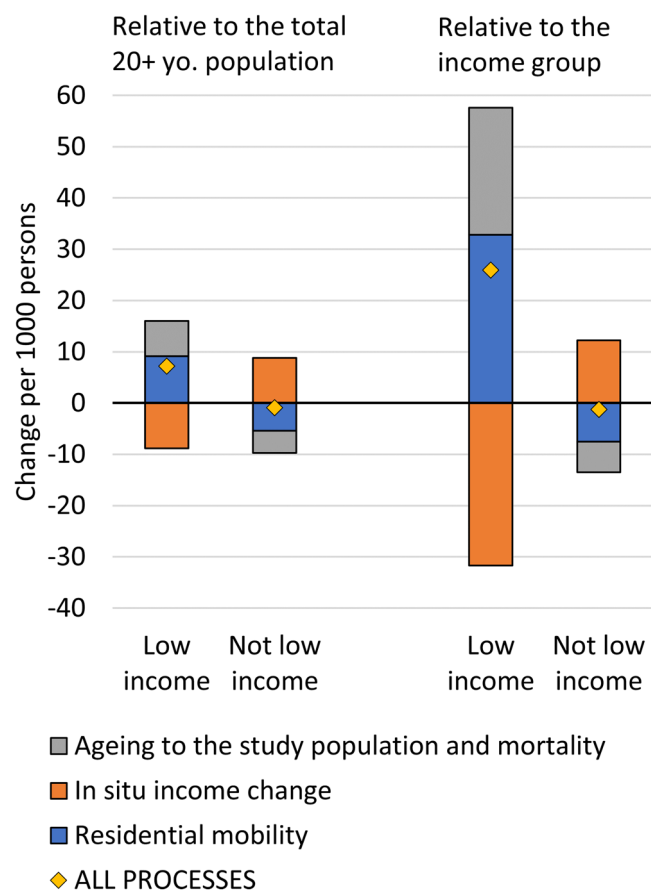
1000 residents. The columns on the right in Figure 3 additionally show that since the low-income population has been a minority in the study neighbourhoods, the relative impacts of the processes on the population sizes of the income groups have been much larger in the case of the low-income group. In total, the low-income population has increased by 25.9 persons per 1000 low-income residents and the non-low-income population decreased by 1.3 persons per 1000 non-low-income residents.

Next, we look closer at the movers and stayers, considering their life phases. Figure 4 divides the contributions of the population-change processes to those relating to different age groups and work career situations. According to these results, the 20–29-years-old, particularly students, are the main group contributing to increasing numbers of low-income residents, via residential mobility and ageing to the study population. The 30–59-years-old employed residents are the main group contributing to decreasing numbers of non-low-income residents, via residential mobility, together with the 60+ years old pensioners (via mortality). Additionally, decreasing income among the 30–59-years-old unemployed residents, perhaps due to a decreasing level of unemployment benefits after long-term unemployment, has had a role in increasing the share of low-income residents.

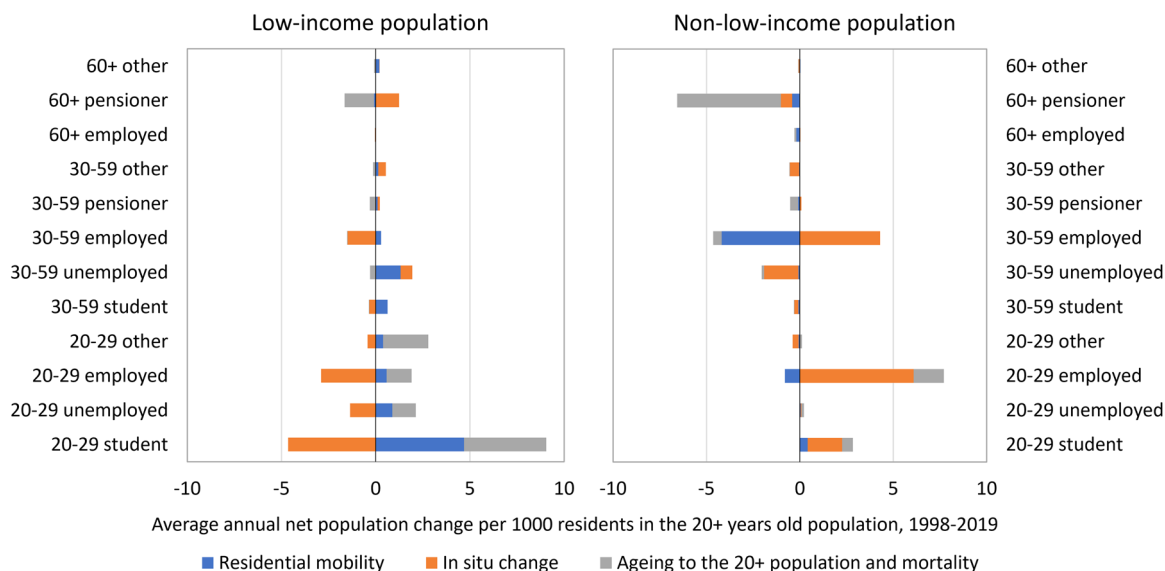
Figure 5 shows a similar decomposition related to family careers. The positive net migration in the low-income population is related particularly to childless young adults, while the negative net migration in the middle-aged non-low-income population occurs particularly among families with children. Upward income mobility seems to occur mainly among young adults. It is less visible among the middle-aged population probably because the trend has been opposite among the employed and non-employed residents (Figure 4), and the categories of the family situation are internally heterogeneous in respect to employment.

Decomposition by the housing career status (Figure 6) shows that the positive net migration of low-income residents concerns particularly young adults in rental dwellings, both state-subsidised (which can be student housing) and other rental dwellings. The negative net migration among the non-low-income population is not as clearly concentrated in a particular combination of age and housing tenure, although the largest contribution comes from the middle-aged population in subsidised rental dwellings. The upward income mobility is related mostly to young adults in rental accommodation.

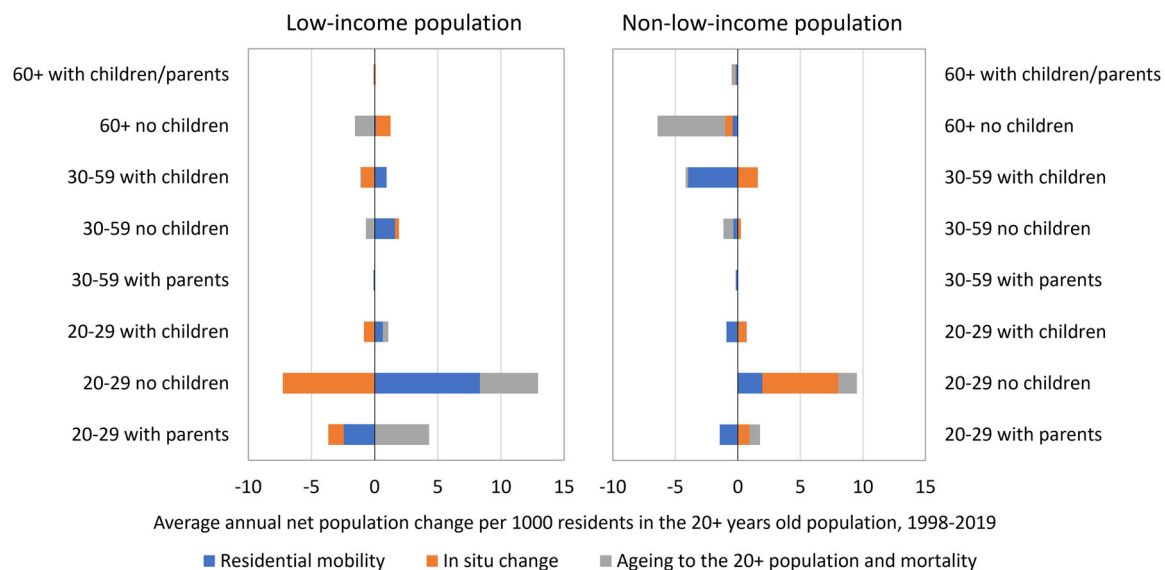
The contributions of the different processes to the changes in the numbers of low-income residents are rather similar in the study neighbourhoods and in the other suburban multi-storey neighbourhoods of the cities (Table 1). The main difference is in the contribution of residential mobility to the numbers of non-low-income residents: in the other multi-storey neighbourhoods, residential mobility has *increased* the numbers of non-low-income residents. Therefore, the total change in the non-low-income population is positive in these neighbourhoods. In closer inspection (not shown here), the difference can be seen particularly among the 30–59-years-old non-low-income employed population: migration had only a small negative impact on the size of this group in the other multi-storey



**FIGURE 3** | Net contributions of the population-change processes to the sizes of low-income and non-low-income populations aged 20 and over in the study neighbourhoods in 1998–2019, per 1000 residents aged 20 and over in the total population and in the corresponding income group.



**FIGURE 4** | Contributions of the population-change processes to the changes of the numbers of low-income and non-low-income residents according to the age and work-career situation of the residents.



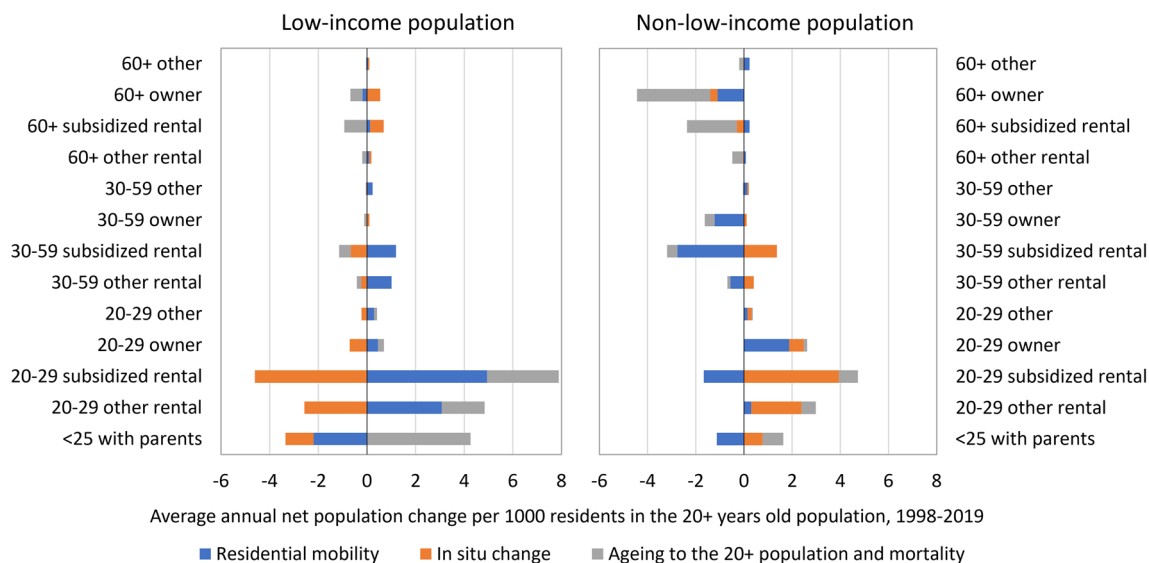
**FIGURE 5** | Contributions of the population-change processes to the changes of the numbers of low-income and non-low-income residents according to the age and family-career situation of the residents.

neighbourhoods (and increased the 20–29-years-old non-low-income employed population).

In suburban neighbourhoods with less than 75% multi-storey dwellings ('Other suburban neighbourhoods' in Table 1), mainly ageing to the study population has increased the low-income population, while migration has had a negligible role in this respect. Inspection of results by age group (not shown here) indicates that both residential and income mobility among the 20–59-years-old population have increased the non-low-income population, and migration among the 60+ years old population has slightly decreased the non-low-income population. In the central areas of the cities, the increases of the low-income population are even more clearly related to moves of 20–29-years-old students than in the study neighbourhoods. What is different is that the migration of the

20–29-years-old has increased also the *non*-low-income population.

As the negative net migration in the non-low-income 30–59-years-old population seems to differentiate the study neighbourhoods most clearly from the other types of neighbourhoods, we looked closer at the out-movers in this group. In terms of most common characteristics while still living in the study neighbourhoods, a typical out-mover in this group was employed, had no children, and lived in rental housing. The most common destination was a suburban neighbourhood in the study cities with less than 25 percent multi-storey housing (37% of the moves among those remaining in the household population of Finland; only 9% of moves were to another study neighbourhood and 17% to other multi-storey suburban neighbourhoods). There



**FIGURE 6** | Contributions of the population-change processes to the changes of the numbers of low-income and non-low-income residents according to the age and housing-career situation of the residents.

were no clear overall changes in the employment rate or in the share having children among the out-movers in the year of the move, but housing tenure distribution changed: the homeownership rate increased (from 33% to 48%) while the share living in state-subsidised rental housing decreased (from 39% to 23%). Therefore, the main changes were in the housing tenure and the type of neighbourhood, towards homeownership and less multi-storey housing in the neighbourhood.

Residential mobility has increased the numbers of both Finnish- and foreign-origin low-income residents, although the contribution of foreign-origin movers is slightly larger (Table 2). In the case of Finnish-origin movers, this process is mainly related to young students, while among the foreign-origin population, residential mobility has contributed more equally to increases in different age and work-career categories. The increase of the low-income population is mostly based on residential mobility in the case of foreign-origin population, while ageing to the study population is even more important in the Finnish-origin population. The negative net migration in the non-low-income population is related to Finnish-origin persons, particularly to employed 30–59-years-old persons. Income mobility among the stayers has decreased the low-income rate in both groups, although the Finnish-origin residents have a larger role in this process. However, income mobility has been similar in these groups in proportion to the group sizes: net change (flow from the low-income population to the non-low-income population) has been 3.1 percent of the mean population among the Finnish-origin population and 3.4 percent in the foreign-origin population.

Although we did not focus on differences between cities, we checked whether the results differ if the analysis is restricted to the capital region, the Helsinki metropolitan area. A third of the study neighbourhoods were from this region (11 in Helsinki and two in Vantaa; 32% of the study population in 2019). The results concerning the overall

contributions of the three processes and the work-career results were very similar to the results presented above. However, income mobility had a slightly more prominent role in this region in shifting people from the low-income population to the non-low-income population, and ageing and mortality had a slightly larger role in increasing the low-income population and decreasing the non-low-income population. The smaller role of residential mobility in increasing the numbers of low-income residents can be seen particularly among the 20–29-years-old students: among them, ageing to the study population has been a more important mechanism in this respect. This corresponds to the observation by Bailey and Livingston (2008) that adverse selective migration was more significant in slacker housing markets; the Helsinki metropolitan area has the tightest housing market of the study cities.

A further illustration of differences between the cities is in Figure 7. It shows how common two different cases have been in the populations of the study neighbourhoods of each city. The cities have had a similar development in their study neighbourhoods regarding the second case, a middle-aged employed non-low-income person with children in homeownership: this type of a resident has become less common in a rather similar pace in each city, although there are differences in the level. The differences are more prominent in the first case, a young low-income student without children living in rental accommodation. In the study neighbourhoods of one group of cities, this type of a resident has become much more common, while in the other cities the increase has been clearly smaller. The cities in the first group are all university cities with relatively small immigrant populations, while the cities in the latter group are either university cities with larger immigrant populations or nonuniversity cities. Therefore, the significance of young adults in the beginning of their work, family and housing careers may be pronounced in university cities without sizable immigrant populations. But this remains a tentative conclusion.<sup>4</sup>

**TABLE 1** | Contributions of the different processes to the numbers of low-income and non-low-income 20+ years old residents in the study neighbourhoods and in the other neighbourhood types in 1998–2019, average annual net change per 1000 residents in the total 20+ years old population.

	Study neighbourhoods		Other suburban multi-storey neighbourhoods				Other suburban neighbourhoods		City centre neighbourhoods	
	Low-income population	Non-low-income population	Low-income population	Non-low-income population	Low-income population	Non-low-income population	Low-income population	Non-low-income population	Low-income population	Non-low-income population
Residential mobility	9.1	-5.4	5.4	2.9	1.9	9.3	9.7	3.8	9.7	3.8
In situ income change	-8.8	8.8	-6.4	6.4	-5.5	5.5	-9.6	9.6	-9.6	9.6
Ageing and mortality	6.9	-4.3	5.2	-5.5	7.6	-2.6	4.3	-5.9	4.3	-5.9
TOTAL OF ALL PROCESSES	7.2	-0.9	4.2	3.9	4.0	12.2	4.4	7.5	4.4	7.5

#### 4.1 | Sensitivity Analysis: Analysing a Slightly Older Population

We conducted alternative analyses focusing on the population aged 25 years and over, to assess the sensitivity of our findings to the age limit (i.e., whether the typical age of studying in higher education is included). In this alternative analysis, we also selected the study neighbourhoods based on the low-income rate and its development among the population aged 25 and over (37 neighbourhoods, of which 30 belong to the study neighbourhoods of the main analysis). We also used a more detailed age categorisation (25–34, 35–49, 50–64, 65+). In addition to the basic analysis of the contributions of the three population-change processes, we looked at the results related to work career situations.

The main finding of the centrality of residential mobility as the process increasing the low-income rate persists in the alternative analysis. This process has both increased the low-income population and decreased the non-low-income population. However, negative net migration among the non-low-income population has a bigger role than in the main analysis, corresponding to an average annual decrease of 8.1 persons per 1000 residents aged 25 and over. The impact of residential mobility in increasing the numbers of low-income residents is smaller in this analysis (4.6 per 1000 residents aged 25 and over), as the youngest in-movers (< 25) now become part of the study population via ageing, after the move (if they stayed until the age of 25). However, also the combined contribution of residential mobility and ageing is smaller than in the main analysis (9.0 per 1000 residents, 16.0 in the main analysis), probably because ageing to the study population also increased the non-low-income population in this analysis. The combined impact of the three processes on the decrease of the non-low-income population is larger than in the main analysis (an average annual decrease of 3.0 persons per 1000 residents aged 25 and over), whereas the increase of the low-income population is similar (7.0 persons per 1000 residents aged 25 and over).

In situ income mobility decreases the low-income rate both in this analysis and in the main analysis, although this impact is clearly weaker than in the main analysis (2.0 persons per 1000 residents). This is presumably because income increase is generally common particularly among young adults, for example during the transition from education to the labour market. Income decrease among the middle-aged unemployed residents is observed both among the 35–49 years old and among the 50–64 years old.

Students have a smaller role in the alternative analysis, as expected, while the 25–34-year-old employed residents have had the main impact on the population changes: ageing to the study population and in situ income change have increased the numbers of non-low-income residents in this age group, while migration has decreased this group. Negative net migration has decreased the non-low-income population particularly among the 25–34-years-old and also among the 35–49-years-old.

All in all, residential mobility increased the low-income rate and income mobility decreased the low-income rate among the population aged 25 and over, as in the main analysis. The relative contributions of different processes differ to some extent, however, and

**TABLE 2** | Contributions of the different processes to the numbers of low-income and non-low-income 20+ years old residents in the study neighbourhoods by age and work-career category and ethnic origin in 1998–2019, average annual net change per 1000 residents in the total population aged 20 and over.

Age and work category	Low-income population						Non-low-income population					
	Residential mobility		In situ income change		Ageing and mortality		Residential mobility		In situ income change		Ageing and mortality	
	Finnish	Foreign	Finnish	Foreign	Finnish	Foreign	Finnish	Foreign	Finnish	Foreign	Finnish	Foreign
60+ other	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60+ pensioner	-0.1	0.0	1.1	0.1	-1.4	-0.2	-0.4	0.0	-0.6	-0.1	-5.5	-0.1
60+ employed	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0
30–59 other	-0.1	0.3	0.3	0.1	-0.1	0.0	0.0	0.0	-0.4	-0.1	0.0	0.0
30–59 pensioner	0.1	0.0	0.1	0.0	-0.3	0.0	-0.1	0.0	0.1	0.0	-0.4	0.0
30–59 employed	0.0	0.3	-0.8	-0.7	0.0	0.0	-4.8	0.6	2.6	1.7	-0.4	0.0
30–59 unemployed	0.4	1.0	0.8	-0.2	-0.3	0.0	-0.1	0.1	-1.7	-0.2	-0.1	0.0
30–59 student	0.0	0.6	0.0	-0.3	0.0	0.0	-0.1	0.0	-0.2	0.0	0.0	0.0
20–29 other	-0.4	0.8	-0.4	-0.1	2.1	0.3	-0.1	0.0	-0.3	0.0	0.1	0.0
20–29 employed	0.1	0.5	-2.2	-0.7	1.2	0.2	-1.3	0.5	5.2	0.9	1.5	0.2
20–29 unemployed	0.3	0.5	-1.2	-0.2	1.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0
20–29 student	3.8	0.9	-4.2	-0.4	3.7	0.7	0.4	0.0	1.7	0.1	0.5	0.1
TOTAL	4.2	5.0	-6.5	-2.3	5.8	1.1	-6.7	1.3	6.5	2.3	-4.4	0.1

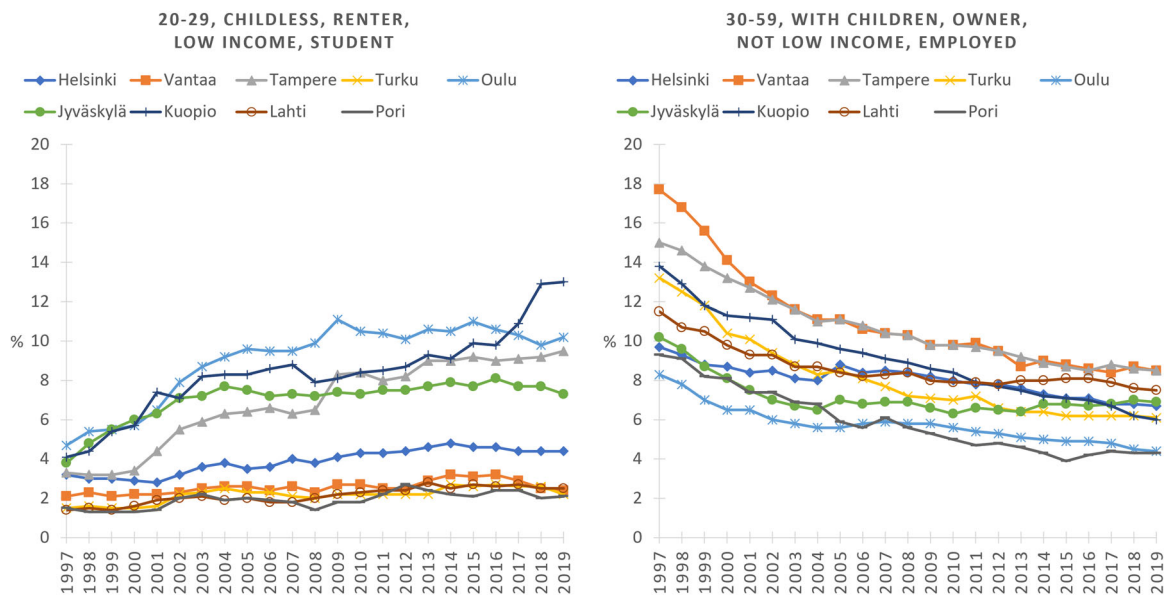


FIGURE 7 | Changing shares of two example cases in the population aged 20 and older in the study neighbourhoods, by city.

the main impact of residential mobility now comes from the negative migration balance among the non-low-income population.

## 5 | Discussion and Conclusion

Our findings emphasise the central role of selective migration in the increasing low-income rate in suburban multi-storey neighbourhoods in Finnish cities. Income mobility, on the other hand, has been generally positive. This seems to contradict the conclusions of those previous studies that found only minor contributions from migration (e.g., Bailey and Livingston 2008; Boje-Kovacs et al. 2021). However, our study—and that of Vogiazides and Mondani (2023) which arrived at a similar conclusion—focused on explaining *change*, while the other studies focused on the size of the contribution relative to the total population. A process changing the population composition relatively little can still be a major part of the overall change. Furthermore, some of the previous studies (Cooke 2010; Schouten 2021) analysed US suburbs that are a rather different context, while Bailey (2012) included the whole Scotland instead of just the urban regions. It appears that at least in Nordic urban contexts, migration is an important part of downward income dynamics of suburban neighbourhoods. The results could be different, however, if the analysis had focused on times of economic downturns, when also the macro-economic change decreases incomes.

Particularly young adults contributed to the increasing low-income populations. This is largely common to multi-storey suburban neighbourhoods generally, illustrating their significance as destinations in the early housing careers, in addition to central city locations. What set the study neighbourhoods more clearly apart was the net loss of (Finnish-born) employed middle-aged non-low-income residents, via residential mobility. Intra-regional residential mobility among the Finnish-origin population has been shown to increase ethnic segregation in the Helsinki region (Kauppinen and van Ham 2019), and the present results suggest that it has also contributed to the declining income level in low-income

neighbourhoods in the largest Finnish cities. This could be an indication of avoidance or ‘flight’ behaviour (e.g., BråmÅ 2006).

We aimed to contribute to existing research by combining the analysis of the contribution of different processes such as residential and income mobility with a life-course perspective. We were able to elaborate on the significance of the processes by pointing out which life situations they are most related to. Our findings show that this combined perspective needs to be supplemented at least by taking ethnic differences in the processes into account.

Increasing low-income rate due to transitory population may be seen as less problematic than downward income mobility among more permanent residents or residential mobility of those with permanently low income to the lowest-income neighbourhoods (cf. Lel vri r and Melic 2018). From that perspective, the importance of residential mobility of young adults in the start of their housing, work, and family careers for the increasing numbers of low-income residents could be seen as unproblematic for the persons themselves and for the neighbourhoods. However, some reservations must be kept in mind. First, we did not analyse the duration of stay in the neighbourhoods. Second, the emphasis on the youngest adults concerns mostly Finnish-origin residents, so the interpretations are not the same for all ethnic groups. Third, even though the low income of the temporary residents may not be a cause for concern regarding potential negative effects of the low-income rate for example on children growing up in the area, a high turnover rate of the population due to the transitory residents may have effects for example on local social capital (e.g., Bailey et al. 2012). The population of the study neighbourhoods also increased during the study period, so effects of new housing construction may have shaped the results, and findings might differ in neighbourhoods with stagnant or declining populations.

We focused on neighbourhoods having a downward income development. The benefit of this approach is that we did not have to make the unrealistic assumption that the processes

driving the change are similar in different types of neighbourhoods. The central processes may be different in the poorest neighbourhoods (Bailey 2012; Hochstenbach and van Gent 2015). From the policy perspective, there is also demand particularly for findings concerning those neighbourhoods that will be most likely targeted by interventions. However, the results cannot be generalised to all types of neighbourhoods, and a more complete picture of the significance of different processes needs an analysis of all types of neighbourhoods, as recommended by Vogiazides and Mondani (2023). Our own results show, for example, that in city-centre neighbourhoods, changes in the low-income population are even more strongly related to young adults (while less related to foreign-origin population). Our findings may be most relevant in contexts where low-income rates have been the highest in suburban housing estates and less directly applicable in contexts where the suburbanisation of poverty is a more recent phenomenon (see Bailey and Minton 2018; Hochstenbach and Musterd 2018; Schouten 2021; Haandrikman et al. 2023).

Regarding other differences between national contexts, in countries with extensive safety nets, such as Finland, the social security system can be expected to reduce forced moves due to job loss, because social security benefits soften the impacts of decreases of market income. This could decrease the contribution of residential mobility. Additionally, immigration is still quite a new phenomenon in Finland (starting in larger numbers in the 1990s), and the immigrant-origin population is growing rather rapidly, which could amplify the ethnic differences in the processes. Third, the early nest-leaving among Finnish young adults, with median age of leaving the parental home being around 20 years (van den Berg et al. 2021), can be expected to increase the importance of young adults in explanations of the low-income rate. Finally, in similar analyses in countries with lower rates of dual-earner households than in Finland, using household income instead of individual income might be necessary, as discrepancies in personal incomes between partners are larger.

The negative migration balance among the non-low-income middle-aged Finnish-origin population seems to be the central explanation for the fastest increases of low-income rate in suburban multi-storey neighbourhoods. Policies aiming to slow or prevent these increases might therefore need to increase the attractiveness of these neighbourhoods for those who have better resources for neighbourhood selection. This could involve for example increasing such housing options that attract these residents or investing to local services and the physical environment.

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### Conflicts of Interest

The authors declare no conflicts of interest.

### Data Availability Statement

The data that support the findings of this study are available from Statistics Finland. Restrictions apply to the availability of these data, which were used under license for this study.

### Endnotes

<sup>1</sup>Licence number: TK/1823/07.03.00/2022

<sup>2</sup>Base map (country boundaries): National Land Survey of Finland, licensed under a Creative Commons Attribution 4.0 International License.

<sup>3</sup>Base map: City Survey services of the Urban Environment Division of the city of Helsinki, licensed under a Creative Commons Attribution 4.0 International License.

<sup>4</sup>The figure is rather similar also without restriction to students in the first case, although then there is slightly more increase among the second group of cities and the levels are generally a few percentage-points higher.

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