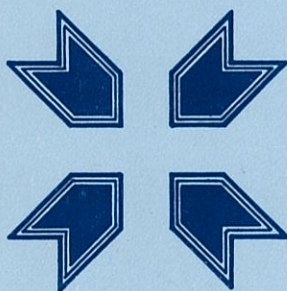# RAHVASTIKU-UURINGUD
POPULATION STUDIES

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HOUSING CONDITIONS OF
THE ELDERLY IN ESTONIA

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The paper belongs to the series of reports prepared in the framework of the Project *Population Aging in Estonia*. Based on the microdata from the 1989 population census, the paper concentrates on the housing characteristics of the elderly in Estonia.

In the paper, the housing characteristics of the population aged 50 and above are investigated. Particularly, the type of dwelling, tenure status, number of rooms, floor area, dwelling density and the level of equipment are examined. The differences in the housing conditions among the elderly are analyzed relative to age, sex, marital status, ethnicity, education and place of residence. To provide an insight into the relative status of the elderly, their housing conditions have been compared to younger population.

Housing is clearly associated with demographic development. Population numbers, age and household composition affect directly the need for dwellings of different size and amenities, other demographic trends such as those in marriage, cohabitation and marital dissolution are also important [Murphy 1989, Sternlieb and Hughes 1986]. On the other hand, shaping the immediate living environment, housing conditions have an important bearing on the activities, way of daily life and welfare of the inhabitants.

Considering the elderly, several aspects of housing deserve attention for their social relevance. Given the risk of impairments which inhibit the ability to carry out activities of daily living, the level of equipment of the dwelling gains substantial importance. The capability of an elderly person (individual) to maintain an independent living is known to depend on the type of heating, water supply system, toilet and bathing facilities as well as on the general ease of access. The absence piped water within the premises and stove heating involve physically demanding household tasks which, in the case of owner-occupied dwellings, are accompanied with the need for periodical repairs. The emergence of chronic conditions limiting the physical and mental performance generate the need for domestic assistance. When such help cannot be provided, the the low housing level may serve for a reason of institutionalization [Grundy 1992].

Advanced level of housing reduces the need for the direct support of the elderly. However, the maintenance of these facilities implies higher costs for heating, water, rent etc. As the household size decreases due to homeleaving of children and the entry into widowhood, the per capita housing costs to be paid tend increase at older ages. The decline in incomes which occurs after retirement, makes often the payload difficult to meet. This difficulties are thought to become more common because of gradual liberalization of rents and the general increase of housing costs which accompany the transition to market economy.

From another perspective, the dwellings form an important constituent of the economic position of the elderly. An examination of the economics of ageing reveals a significant accumulation of wealth among older persons in terms of housing stock [Kinsella, Taeuber 1993]. The role of the dwelling among the assets of the elderly should be especially underlined given the conditions of transition economy where the rapid inflation has dissolved the savings and where other financial assets have been virtually non-existent. Taking into account the dwelling stock, the average economic situation of the elderly may prove better than indicated purely by income sources.

Thus, the nature and extent of housing-related problems that an aged person faces depend on the characteristics of the dwelling. On the other hand, the elderly themselves form a diverse group with different needs and abilities. The degree to which the aged individuals are able to cope with these problems is known to vary across the subgroups of elderly. The older the persons are, the higher is the risk of disabilities and the greater the need for assistance. Elderly women are more likely than men to have chronic illnesses and are also much more likely than men to be widowed. The resources of married couples exceed those of the elderly living alone; persons with higher social status are in a better position to arrange help etc [Kinsella, Taeuber 1993]. Understanding these differentials becomes important in the building of elderly care policies.

In Estonia, there has been practically no research done on the housing conditions of the elderly people. Papers on population ageing have dealt mostly with the demographic determinants or regional differences in population aging [Katus 1990, Laas 1990]. Survey-based studies focusing on the economic position and housing conditions of the population have concentrated on working-age population [Puur 1991]. The absence of relevant research stems from the lack of individual-level data on the housing conditions of the elderly. Annually collected housing statistics reflecting the development of the housing stock do not provide combined information on demographic and social characteristics of the inhabitants. Also, there has been no nationwide surveys concentrating on the elderly to fill this gap.

1. METHODOLOGICAL ISSUES

The data from a single census lend themselves to a study of a snapshot picture of the population at the moment of observation. As the basic analytic approach, the present study builds on the construction of age-profiles reflecting different aspects of the housing conditions of the elderly people. Consistent with the methodology adopted by UN ECE PAU, the profiles start at age 50 and go until the most advanced ages [United Nations 1992]. To provide better understanding of the observed patterns, in some cases we have presented the profiles for younger population as well.

Cross-sectional profiles constructed on the basis of the censusdata are known to be shaped by the combined effect of several factors. On one hand, the census profiles reflect the dynamics of individual aging. As persons grow older, their needs, behaviour and preferences are subject to change. Regarding the housing conditions, the needs of individuals are most closely tied with the changes in the size and composition of households. In the case of a nuclear family, the regularity of these changes has been conceptualized, as a family life cycle, or as a life course of an individual. Despite there are several different operationalizations of the concept, one classically distinguishes between the periods of growth, stability and decline in the number of family members [see e.g. Glick, 1947, 1955, 1977]. Accordingly, the stages of family life cycle are demarcated by demographic events such as marriage, childbirth and other.

Transitions in the size and composition of the family bring about the transformation in housing needs. Obviously, the space requirements increase as a result of the birth of children. Emergence of children is also associated with changes in life activities which may affect the priority placed on various housing and location characteristics [Sweet 1988]. As children grow older they leave parental home to set up their own families. The departure of children initiates a new phase in the family life cycle which lasts until the marital dissolution by either separation or the death of a spouse.

This stage, which family demographers are used to call the empty nest, implies the decrease in the need for dwelling space together with the special requirements in terms of equipment and ease of access. Sometimes the onset of empty nest phase is accompanied by a move to smaller dwelling. In a typical life cycle, the next turning point is the entry into widowhood which also confronts the person with new housing choices, ranging between smaller dwelling, moving in with children or relatives and

institutionalization. Later in life, the housing transitions are likely brought about by the deterioration of health.

The nature of the relationship between individual life cycle and housing is indeed a complex one since it interacts closely not only with the changes in the composition and size of the household but also employment transitions, growth and decline in economic and health resources and individual preferences.

For most of the people, the change of the residence in the later years is relatively infrequent. The circumstances around the prime period of family formation tend to have substantial bearing on the type and characteristics of the dwelling in which many people will live for the rest of their lives [Murphy 1989]. Consequently, when explaining the differences between age groups one should consider not only individual life cycle but also cohort differences reflecting the historical development of dwelling stock and housing construction.

Indeed, the cross-sectional nature of the census data does not allow for the clear distinction between age and cohort effects. Still, the decomposition of aggregate profiles by marital status and the type of living arrangements can provide some insight into the impact of individual life cycle and cohort effects. As to the perspective, understanding of the contribution of these factors makes it possible to identify the future development of the housing characteristics among the elderly.

Within this general analytical framework, subgroups of the elderly have been compared according to ethnicity, migrant status and education. Given the large differences between the dwelling stocks in urban and rural areas, the housing conditions for urban and rural elderly were given separate treatment. Throughout the analysis the attention was paid to the identification particularly disadvantaged subgroups of the elderly, and people who are relatively better of.

2. THE 1989 CENSUS ON HOUSING CONDITIONS

The 1989 population census is the first comprehensive dataset in postwar Estonia allowing for the combined investigation of the characteristics of dwellings and population. Earlier censuses taken in the postwar period did not address the housing information, an overview of census data on housing conditions is available from [Tepp 1994]. Due to the absence of information on inhabitants, also the annually collected housing statistics does not provide for such analysis.

In the 1989 census, the information on housing conditions was collected from permanent population, temporary residents were not addressed with respective questions. The census questionnaire covered the type of dwelling, ownership, period of construction, construction material, number of rooms, total floor area and floor area of living rooms. As to the amenities, the presence of electric and water supply, sewer, central heating, hot water, bathing and cooking facilities was recorded [Katus, Puur 1993]. Regrettably, the data was not collected on the of telephone, elevator, number of stores and other characteristics which are relevant from the viewpoint of the elderly.

6

After the census the data were tabulated by the Statistical Office. Unfortunately, the set of official tabulations did not include any disaggregations of housing characteristics by the age of inhabitants limiting, thus, critically the possibilities for the investigation of the housing conditions of the elderly. Combined analysis became possible only due to the flexible access to the census microdata provided in the framework of the Dynamics of Population Ageing project.

3. HOUSING CHARACTERISTICS OF THE ELDERLY
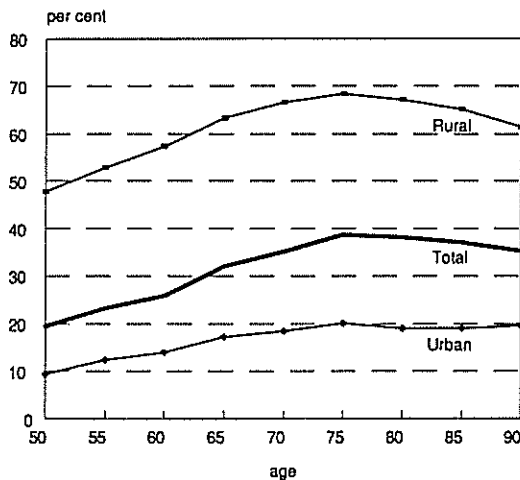

3.1. Type of dwelling

Type of dwelling refers to the combination of structural characteristics of the housing unit. Being associated with ownership status, dwelling size and the level of equipment, the dwelling type can be regarded as an integral characteristic synthesizing diverse dimensions of housing conditions.

In the 1989 Estonian census dwellings were classified into seven types. According to census instructions, single-family houses were considered detached buildings intended for habitation by one household/family. In case a house was occupied by two or more households/families, part of single-family house was recorded for the dwelling type. Dwellings in buildings divided into several housing units were classified into apartments; if an apartment was occupied by more than one household/family, part of apartment was recorded. Hostels referred to housing units meant for the coresidence of unrelated individuals, this category included students' and workers' dormitories as well as institutions for the care of elderly and disabled. In case individuals or families rented a dwelling from a private person, their housing unit was classified into subtenant's dwelling irrespective of its structural characteristics. The residual category referred to mobile houses and premises not intended for human habitation.

In the census, the dwelling type served for a key variable in respect to other housing characteristics. Ownership, period of construction, size and equipment level were recorded only for persons living in single-family houses, apartments, their parts and hostels. For subtenants and persons living in marginal housing units all information except the dwelling type was omitted.

Figures 1 to 3 present the proportion of the elderly living in different dwellings by age and urban/rural residence. The data reveal a steady increase in the number of persons living in single-family houses. At age 50, one in five individuals was living in such dwellings while around age 75 almost two fifths of the population lived in single-family houses. Similar pattern was observed both in urban and rural settings.

Figure 1 POPULATION LIVING IN SINGLE-FAMILY
HOUSES BY AGE AND RESIDENCE
Estonia 1989

After reaching a peak around 75 years of age, the level of single-family housing exposes a decline. Comparison of the profiles for urban and rural population shows the decline being limited to rural population. In urban areas the level stabilizes at advanced ages. Adding the elderly who shared their single-family houses with another household/family causes the decline observed among the oldest old to diminish significantly. The age-related increase in the number of such persons reflect probably part of the elderly moving in with their relatives. Combining the two above-mentioned dwelling types yields almost a half of the elderly living in single-family houses.
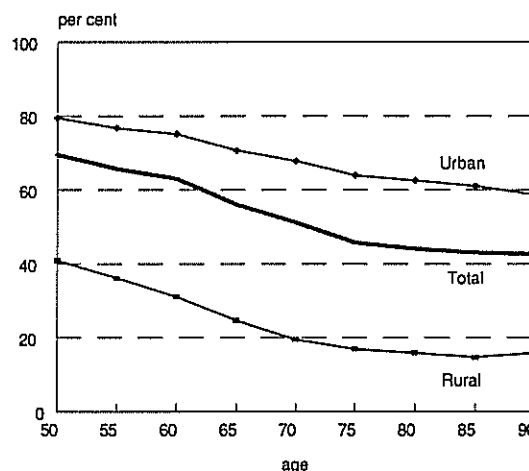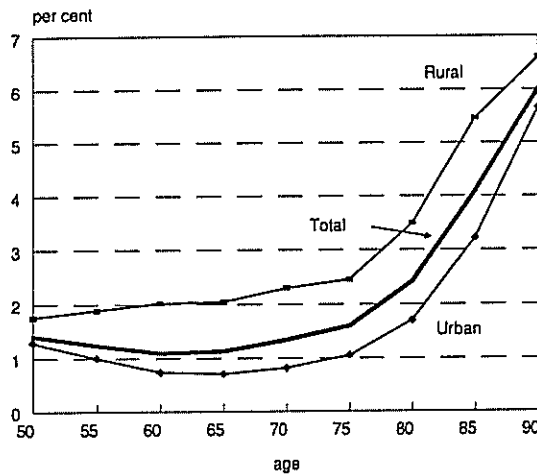
Expectedly, living in apartment houses displays the reverse pattern (Figure 2). Starting from age 50 one can observe a steady decline in the proportion of the elderly inhabiting in apartments; the level of apartment-housing decreases from two thirds to less than a half of the population among the oldest old. Regarding the future, the presented profiles suggest a shift towards more apartment-centered housing-pattern with each new generation of elderly people.

Figure 2 POPULATION LIVING IN APARTMENTS
BY AGE AND RESIDENCE
Estonia 1989

From the viewpoint of social policies, this shift is thought to involve an increase in the demand of housing allowance. As apartments tend to be better equipped with modern facilities, the need for housing-related services may decline respectively.

The relationship between age and the rate of institutionalization displayed an expected pattern (Figure 3). After relative stability in younger age groups, the institutionalization rate started to grow rapidly after age 75. Among the oldest old, nearly 6 percent lived in institutions, compared to developed Western the level of institutionalization is rather low in Estonia [Kinsella, Taeuber 1993]. The institutionalization rate appears slightly higher in rural areas. Delivery of the services to the rural areas is often logistically and financially more complicated. Given the census data, it is difficult to distinguish the extent to which the urban-rural difference reflects the spatial distribution of homes for old and disabled people and to which extent it results from the more frequent institutionalization of rural elderly.

8

Figure 3 POPULATION LIVING IN INSTITUTIONS
BY AGE AND RESIDENCE
Estonia 1989

Together, persons living in single-family houses, apartments and institutions constitute 95 percent of the elderly. From the rest five percent, two thirds lived in communal and one in every third was subtenant. The percentage of the elderly living in unconventional dwellings (mobile homes, ships, railroad cars etc) was negligible.

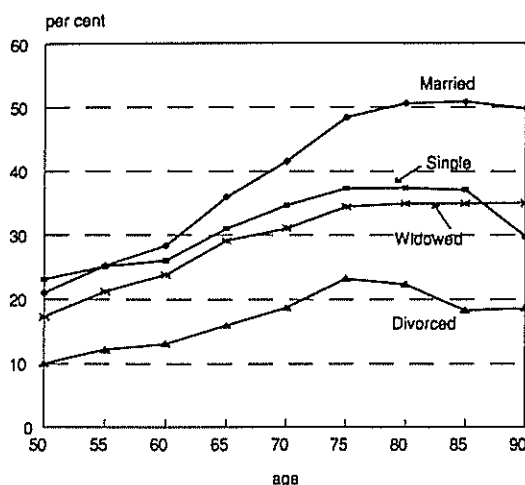From the demographic perspective, the age-specific propensity to live in different types of dwellings can be regarded as a combined outcome of life-cycle and cohort effects. Despite that the cross-sectional nature of the census data do not allow for the clear distinction between the contribution of each of the two factors, the development of Estonian housing stock during the postwar period suggests that the patterns regarding single-family and apartment housing are dominated by cohort effect. Among younger age groups, the age-related increase in the propensity to live in single-family houses is also endorsed by individual housing careers. As the probabilities of movement from apartments to single-family houses become less frequent after certain age, between ages 50 to 75 the profiles are thought to reflect inter-cohort differences.

The decline in single-family housing observed among the oldest old reflects the individual life cycles. Deteriorating ability to maintain independent housing leads a certain number of the elderly to move in with children and other relatives as well as into institutions. Despite the single-family housing can be regarded an ultimate goal of individual housing careers, it involves responsibilities for the maintenance and repair of the building which may prove to be beyond the strength of an elderly person. In apartment houses these responsibilities are usually taken care in collective manner. As it will be shown below, the houses of the elderly lack frequently modern facilities which involves the need to perform physically demanding household tasks. In rural areas, also the distance to local shop, post-office etc may become an additional obstacle for independent living.

Thus, the contribution of cohort and life cycle effects seems to vary with age. The impact of individual life cycle can be examined more closely by looking at differences in housing characteristics by age and marital status. The data presented in Figure 4 indicate that single-family housing is the most common among married couples; after age 75 almost half of the married elderly inhabited in such dwellings. The lowest rate of single-family housing was observed among divorcees, with widowed and never-married elderly characterized by intermediate levels. The higher the age, the bigger the differences between status groups became.

The tendency of married couples to inhabit in single-family houses is thought to reflect their greater ability to maintain independent housing. It is interesting to note that among married couples the rate increases even beyond age 75. The difference between the curves for married and widowed persons, which is quite insignificant among

Figure 4 POPULATION LIVING IN SINGLE-
FAMILY HOUSES BY AGE AND MARITAL
STATUS, Estonia 1989

middle-aged, increases rapidly after age 70 suggesting that the loss of a spouse is frequently followed by a change in housing arrangements. The higher is the age at which the widowhood occurs, the greater seems to be the probability of subsequent housing transition.

The relatively low level of single-family housing among divorcees reflects the tendency of marital disruptions to occur earlier in marriage than widowhood. Frequently, the dissolution of marriage interrupts individual housing careers much before than the h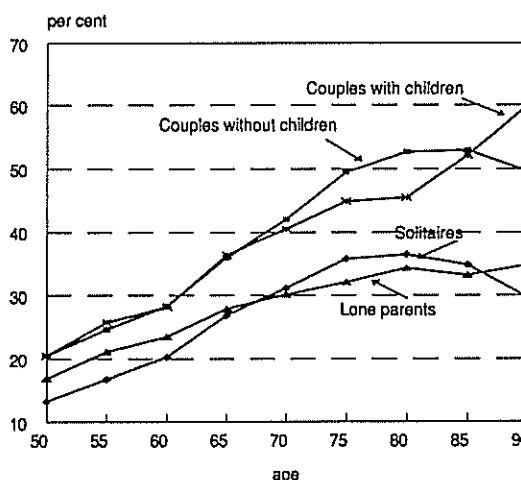omeownership could be reached. Marital dissolution has also been shown to be selective of economically disadvantaged persons, while remarriage is selective of those who is better off [Sweet 1988]. Also, differently from widowhood, the marital disruption is usually accompanied with the division of property which leads to the worsening of housing conditions for at least one of the spouses.

Quite expectedly, the smallest age-related differences in single-family housing were found among never-married persons. Under age 50, single persons were characterized by the highest level of one-family housing which can be explained with their greater propensity to stay at parental home.

The comparison of profiles specific to marital status shows that the decline in the propensity to maintain single-family housing, observed in the advanced ages, is limited to divorcees and never-married persons. Profiles for urban and rural population reveal basically the same patterns except the mutual position of widowed and never-married elderly. If taken separately, the level of single-family housing was found lower among never-married in both settings. Expectedly, the profile for apartment housing displays a pattern reverse to that of single-family housing. The highest levels of apartment housing can be observed among divorced and widowed, followed by married and single elderly.

Among the oldest old couples, the presence of children contributes to the capability of the elderly to stay in single-family houses (Figure 5). Old people belonging to extended families can more frequently be found in apartment houses suggesting that they have moved in with younger relatives.
As to the differences by gender, the higher rate of single-family housing among males reflects men being more

Figure 5 POPULATION LIVING IN SINGLE-
FAMILY HOUSES BY AGE AND FAMILY
TYPE, Estonia 1989

10

able to cope with physically demanding household duties. Expectedly, the housing patterns of married men and women are very similar. However, the discrepancy in the levels observed after age 80 signals some widowed women misreporting their marital status.

Figure 6 POPULATION LIVING IN INSTITUTIONS BY AGE AND MARITAL STATUS
Estonia 1989

The examination of the elderly living in institutions indicates a clear-cut association between marital status and institutionalization (Figure 6). Consistent with expectations, the rate of institutionalization is lowest among married persons with widowed being characterized by the second lowest level. Consequently, the rapid increase in the general level of institutionalization, which occurs after age 75, is due to never-married and divorced people. In the advanced ages one fifth of single and one fourth of divorced elderly live in institutions. In younger age groups, the rate of institutionalization is the highest among never-married reflecting probably the concentration of disabled persons in this category.
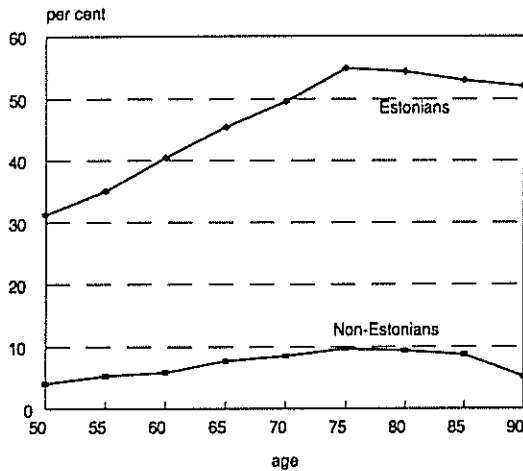
The high level of institutionalization among the divorced was somewhat surprising, especially in comparison with widowed persons. Evidently, this finding suggests the kin support networks being less developed in the case of divorcees. Given the increase in the percentage of divorcees in younger cohorts, this may imply an increasing need in the institutions of elderly care in future.

Considering the limited capacity of old people's homes, childless elderly were given a priority in the admission to old peoples home in Estonia. Despite little difference between the elderly having one and two surviving children, positive relationship between parity and institutionalization was observed. Regarding the gender perspective, the crossover between sexes should be noted. Irrespective of marital status, the rate of institutionalization among males exceeded that of females under age 70. Beyond that, however, the female institutionalization took slightly over.

As to other types of dwelling, divorcees and single persons were clearly overrepresented among the persons living in communal flats and among subtenants. Evidently, the disruption of marriage contributes to the deterioration of housing conditions in their case.

One of the specific features that has to be taken into account when dealing with Estonian population is the heterogeneity of population. After being incorporated into the Soviet Union after World War II Estonia became a country of mass immigration. As a result, today a sizeable part of the population consists of immigrants and their descendants. The rough but easiest way to distinguish between these two major subpopulations is to do it by ethnicity with Estonians representing native and non-Estonians representing immigrants population.
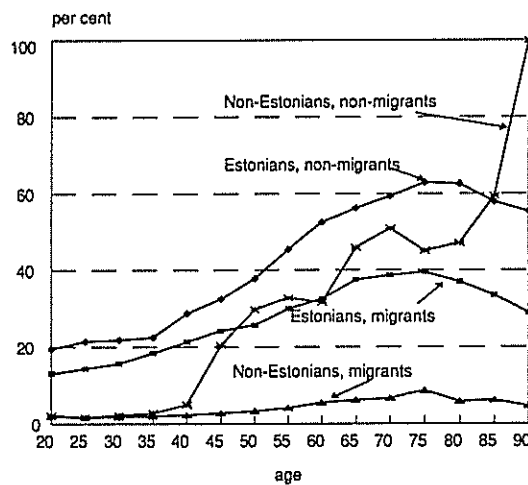
11

Figure 7 POPULATION LIVING IN SINGLE-
FAMILY HOUSES BY AGE AND ETHNICITY
Estonia 1989

per cent

The largest difference in the housing patterns between Estonians and non-Estonians concerns the prevalence of single-family and apartment housing. Living in single-family houses appears to be five times more common among Estonians than non-Estonians while the latter are overrepresented in apartment houses (Figure 7). In the urban setting, adding the elderly who shared their single-family houses with others produced even an eightfold difference. It must be noted that the observed pattern stems from the immigrant status of non-Estonians rather than from ethnicity.

Figure 8 POPULATION LIVING IN SINGLE
FAMILY HOUSES BY AGE, EHNICITY AND
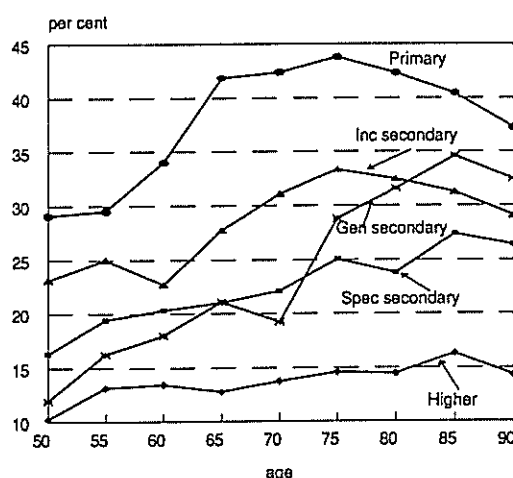MIGRANT STATUS, Estonia 1989

per cent

Decomposition of profiles by migrant status reveals that the housing characteristics of non-Estonians who were living in Estonia before World War II resemble closely the pattern of ethnic Estonians (Figure 8). As the profiles show little tendency towards convergence, the differential effects on these two subpopulations should be continuously considered when planning and implementing housing policies in Estonia.

To characterize the housing conditions of the elderly by social background, the educational attainment was used. Regarding the type of dwelling, the data reveal an inverse relationship between education and the propensity to live in single-family houses. In ages between 50 and 90, only one in seven persons with higher education lived in one-family house while more than two fifths of persons with primary education resided in such dwellings. Observed both among urban and rural populations, this relationship could be explained with higher mobility of more educated people and the concentration of relevant jobs in areas with predominantly apartment housing. Also, the higher level of education did not seem to have been a major advantage in avoiding communal flats or institutionalization. If to ascribe the single-family house a higher status compared to other dwelling types, then one can say that higher education has not involved better housing in the postwar Estonia.

Figure 9 POPULATION LIVING IN SINGLE-
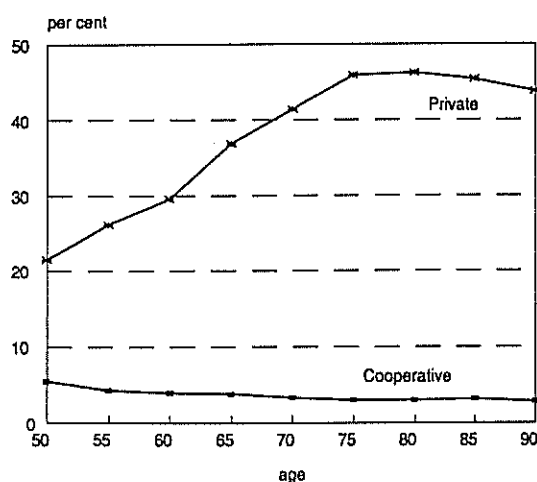FAMILY HOUSES BY AGE AND EDUCATION
Estonia 1989

per cent

age

3.2. Type of ownership

Ownership of the dwelling reflects primarily the wealth-related aspects of housing. Referring to the ownership of the building, ownership should not be confused with tenure, i.e. the arrangements under which the inhabitants occupy their dwellings. In broad terms, the information on ownership was collected to distinguish between the housing under the responsibility of public and private sectors.

In the 1989 Estonian census, buildings were classified into three categories according to ownership. The first category included dwellings provided by state rental sector and managed by state-owned housing management companies. Also, this category covered dwellings provided by different establishments and organizations, equivalent to employer-provided housing. The second and third category consisted of buildings belonging to housing cooperatives and private persons respectively.

While until recently there has been no private rental sector in Estonia, the age-pattern of private ownership follows closely the profile for single-family housing. As a major regularity, the data revealed the sharp increase in the proportion of private housing among the elderly (Figure 10). In urban areas one in four and in rural areas three in four elderly lived in privately owned houses. Cooperative housing, which was almost exclusively limited to urban setting, did not exceed five-percent level. The propensity to live in housing cooperatives declines with age as the first housing cooperatives were established only in the middle of 1960s in Estonia.

Figure 10 POPULATION BY AGE AND
OWNERSHIP OF DWELLING
Estonia 1989

per cent

age

From the demographic perspective, the age-related increase in private housing mirrors mostly the shift towards public housing which has occurred in Estonia. The reversal of the curve after age 75 is associated with older people moving in

13

with their relatives and entering institutions. In terms of the maintenance of the dwelling, the high level of private housing means greater responsibilities for the elderly inhabitants. On the other hand in terms of housing wealth, high level of privately owned dwellings could be regarded as a positive contribution to the economic status of the elderly but the heterogeneity by age, size, equipment level and location of the dwellings do not allow for such generalization. Given the advancement of the privatization process, the patterns of ownership are among the first housing characteristics recorded in the 1989 census to be outdated.
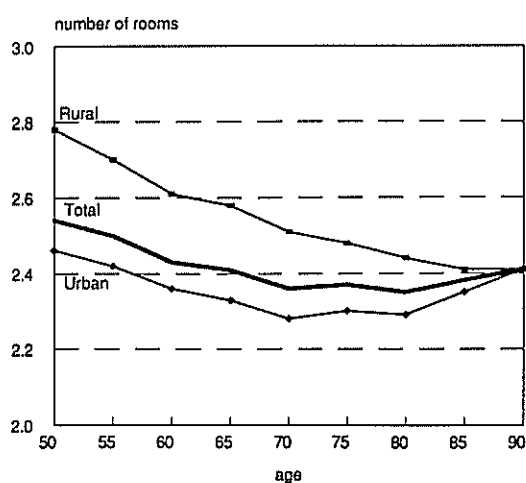
3.3. Size of dwelling

Size is perhaps one of the most important characteristics when considering the adequacy of the dwelling in view of the housing needs. Small size of the dwelling given the number of occupants leads to overcrowding which tends to have negative impact on the personal welfare of the inhabitants. Normally, more spacious dwellings are regarded as a manifestation of better housing level.

Statistically, the size of dwellings can be measured in several different ways. In the 1989 Estonian census the information was collected on the number of rooms as well as on total and useful floor area. Number of rooms referred to the number of living-rooms suitable for year-round use, kitchens, bath-rooms, toilet-rooms, passageways, lobbies, verandahs and other auxiliary rooms were not counted. Respectively, the useful floor area excluded the area of auxiliary rooms while the total floor area included them.

In case part of the dwelling was rented to other persons, the number of rooms as well as the floor area were recorded as if they were used exclusively by landlord. In communal flats, the number rooms and the useful floor space referred to living-rooms actually used by a given household. For each household residing in a communal flat, the total floor area included also a part of the area of common rooms proportional to the number of the members of given household. Similarly in hostels, the total floor area included a proportional part of the common rooms (except entrance halls, staircases, elevators etc).

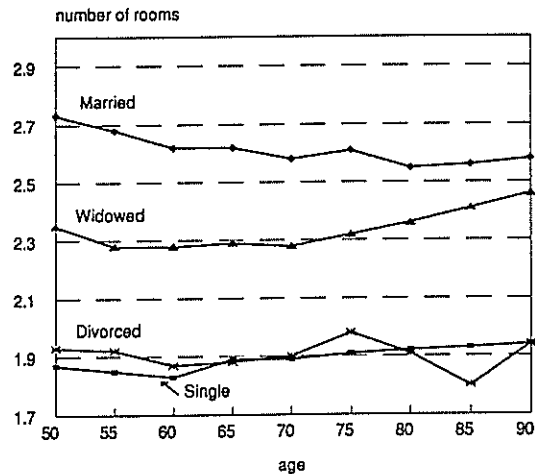Figure 11 TOTAL NUMBER OF ROOMS BY AGE AND RESIDENCE
Estonia 1989

Regarding the absolute size of the dwelling, Figure 11 presents the average number of rooms by age and urban/rural residence. Beyond age 50, the profiles indicate a slight decline which continues until the stabilization among the oldest age groups. Different structure of the housing stock results in more spacious dwellings in rural areas. It is interesting to note that this difference, being almost 1/2 rooms around age 50 disappears towards the upper end of the age scale. After age 50, the total floor space declines from 65 to 55 square meters in

14

rural areas, in urban areas the decline is much smaller.

Decomposition of profiles reveals significant differences by marital status. The increase in dwelling size observed in younger ages is limited to married and widowed persons referring, thus, to the close association between family life cycle and housing transitions. On the average, never-married and divorced elderly have one room less than married couples. Evidently, the smaller dwellings of divorcees reflect their interrupted marital and housing careers. Judging upon Figure 12, individual housing careers overrun any other impact at age under 50. The convergence of the curves for married and widowed persons after age 70 suggests that persons who enter widowhood at higher ages tend to move in with their relatives rather than to change into smaller dwellings.
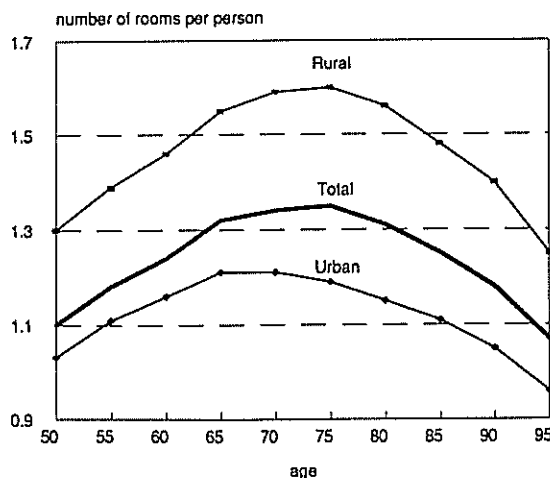
Figure 12 TOTAL NUMBER OF ROOMS BY
AGE AND MARITAL STATUS
Estonia 1989

Profiles for various types of living arrangements suggest the coresidence with children as well as belonging to an extended household being expectedly accompanied with bigger dwelling. Between ages 50 and 75 the level for childless couples and couples with children remains almost unchanged. In this view, the decline in the general profile for married persons could be at least partly related to homeleaving of children. The stability of profiles for these two relatively homogeneous groups speak for the absence of major cohort differences in absolute size of dwelling. As to the gender dimension, it is interesting to note that the decline in dwelling size is characteristic to females only, among males the number of rooms stabilizes on the level 2.5 rooms.

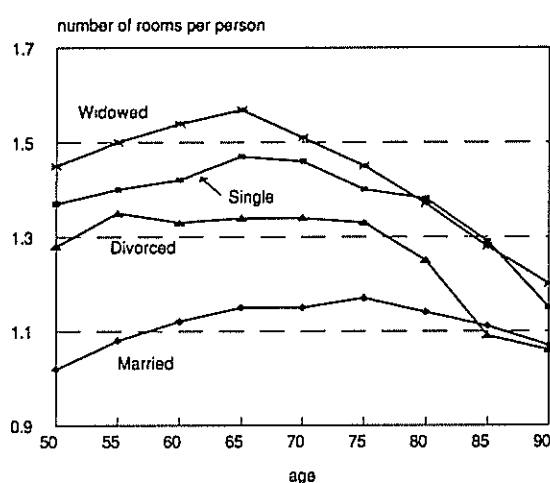To evaluate the adequacy of the dwelling to housing needs, the size of the dwelling has to be coordinated with the number of occupants. As it appears from Figure 13, an increase in per capita number of rooms continues considerably longer than the increase in absolute size of dwelling. Among the urban population, the dwelling density reaches its lowest level at age 65 with 1.2 rooms per person, in rural areas the peak is reached around age 75.

Figure 13 NUMBER OF ROOMS PER
PERSON BY AGE AND RESIDENCE
Estonia 1989

In relative terms, the most spacious housing situation is characteristic to widows and widowers, followed by never-married and divorced elderly (Figure 14). Consistent with their bigger households/families, the dwelling density appears to be highest among married persons. The differences by marital status

15

are at highest around age 65, later the curves convergence due to increase in dwelling density among never-married and widowed. Expectedly, the decomposition by the type of living arrangements reveals the presence of children and belonging to an extended family being accompanied with higher dwelling density. Comparison of currently childless couples by the number of ever-born children showed that the parity-specific differences in dwelling size remain after the children have left parental home.

Figure 14   NUMBER OF ROOMS PER PERSON BY AGE AND MARITAL
Estonia 1989

number of rooms per person

1.7

Widowed

1.5

Single

1.3   Divorced

1.1

Married

0.9

50   55   60   65   70   75   80   85   90

age

The profile of dwelling density seems to be dominated with individual life-cycle effects. Under age 50, an increase in the floor area per occupant should mostly be explained with individual housing careers. Beyond that age, the profiles are thought to be dominated by the homeleaving of children and a loss of a spouse. The reversal of curve around age 75 may reflect a combination of the increasing propensity of the elderly to move in with their children and other relatives, the age-related growth in frequency of institutionalization as well as the tendency to move into smaller dwellings. Again, the relative stability of the profiles across the principal types of living arrangements does not support any major differences by cohort.

Despite the observed reversal of the profiles among the oldest old, in terms of dwelling density, the elderly are clearly in a more favorable position than any other group of population. However, considering the poor income maintenance of the elderly, the spacious housing conditions may have turned into a problem under the economic transition.

Before market reforms the housing was one of the sectors where the prices were most distorted. Rents, fixed at the unit price per square meter, were not permitted to increase since 1945, resulting in the continuously growing subsidies for rental housing. Prior to the rent reform of March 1992 the rent covered only about 10 percent of housing maintenance costs. Due to low tariff levels the facilities were poorly maintained and now require substantial investment.

Starting from May 1993, the rents were included a charge for capital and capitalized repairs but still, the amount of renovation is smaller than before economic transition and lags several times behind the need both in public and private sectors. Experts assess the need of renovation being about 600 thousand square meters per year, actually only less than hundred thousand square meters were renovated annually in the beginning of the 1990s. Due the poor quality of the panel construction of the recent decades, these investments have to be rather big to cut the energy consumption per square meter which, for example, is known to be about 5 times higher in Tallinn than in Helsinki [World Bank 1993].
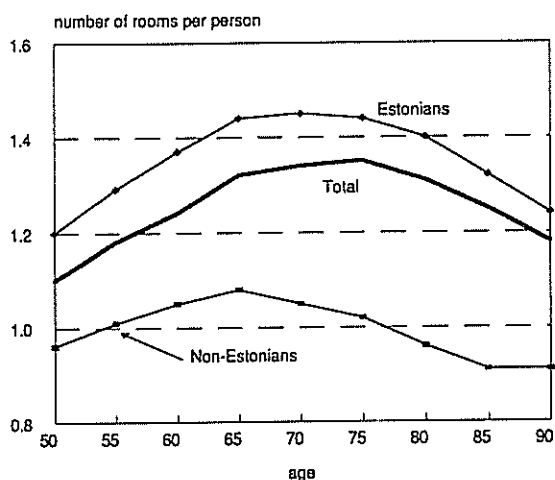
16

Given the need for investment, the implementation of market reforms in housing leads inevitably to the increase in housing costs. Among the subgroups of the population, elderly are one of the most vulnerable regarding this development. On one hand, the low dwelling density involves higher payload for occupants. On the other hand, low retirement income leaves the elderly often with insufficient resources to meet the payload, especially in apartments with modern equipment. The evidence from population economics suggests that, together with medical expenditure, per capita costs for housing are the only item of consumption expenditure that increases with age, all other types of consumption decline with age [Börsch-Schupan 1992]. The increase in per capita housing costs reflects primarily the immobility of the old in spite of reduction in the household size. After the death of a spouse, housing expenses double, if the surviving spouse remains in the home.

Across the subgroups of the elderly, the lowest dwelling density and highest payload tends to be accompanied with the reduced economic potential. On the average, there was about 30 square meters of total floor area per person around age 75. However, behind this average, married couples were charachterized by 25 square meters per person while among solitaires the per capita floor area accounted for 40 square meters.

To address the issue, an housing allowance was introduced in 1993. Eligibility covers all household/families whose housing expenses exceed one fourth of the household income, given that the floor area does not exceed 18 square meters per person plus 15 meters per household. Floor area exceeding these limits remains uncovered by allowance which may result in the increased mobility of elderly households, especially after the large-scale privatization dwellings has started.

As to other dimensions, elderly Estonians were expectedly characterized by lower dwelling density (Figure 15). Around age 70, Estonians have total floor area 33 square meters per person while non-Estonians have 23 square meters. Again, the decomposition of profiles revealed that higher dwelling density is not because of ethnicity but mostly due to migrant status of Non-Estonians. Educational attainment had only negligible influence on the dwelling size.

Figure 15 NUMBER OF ROOMS PER PERSON BY AGE AND ETHNICITY
Estonia 1989

number of rooms per person

3.4. Period of construction

Being a measure of the age of the building, the period of construction is related to the level of equipment and to its current condition. In the 1989 Estonian census, the buildings were classified into seven categories according to the year of completition. The duration of these periods was measured partly in terms of historical events (before 1918 and between 1918-1940), partly in terms of decennial periods. In case the parts of the building were constructed at different times, the period of construction refers to dominating construction elements.

17

In Estonia, the period of construction gets an additional meaning due to the restitution process. Of approximately four millions square nationalized in 1940, 2.3 millions has been estimated to exist today [World Bank 1993]. Therefore, the distribution of population by the age of the housing stock determines the groups which are primarily affected by the restitution.

Figure 16 POPULATION BY AGE AND PERIOD
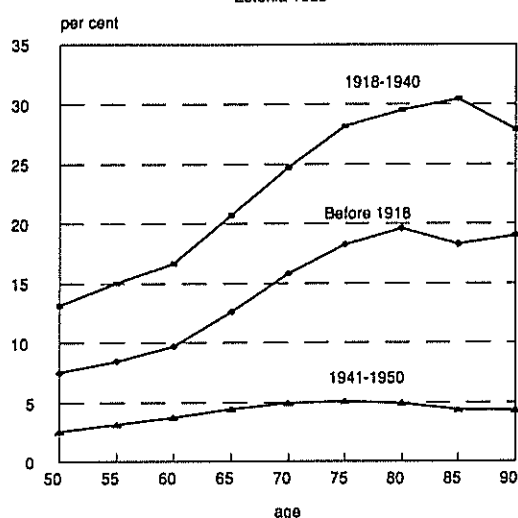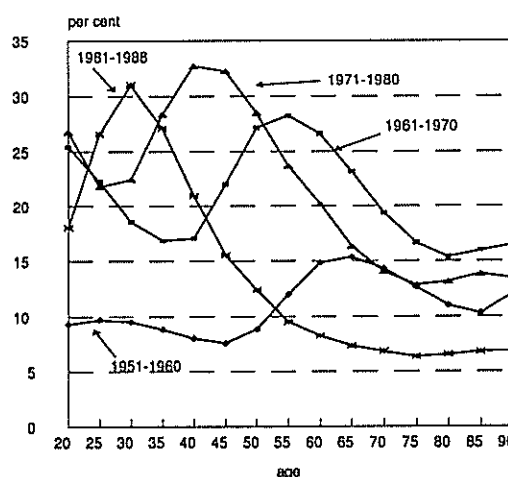OF DWELLING CONSTRUCTION
Estonia 1989

Figure 16 displays a positive relationship between the age of inhabitants and the age of the dwelling. The percentage of population residing in houses built before 1918 and between 1918-1940 shows a clear increase with age. Around age 50, about quarter of the population lived in houses built before the Second World War while among the oldest old one in every two lived in such buildings. In rural areas the percentage of the elderly living in old houses accounted for nearly 70 percent reflecting the past concentration of housing construction into the urban areas.

Presented age-profiles suggest the elderly being affected by the restitution process to a significantly greater extent than younger age groups. Inter alia this may call for a greater interference to cushion the effects of restitution, especially after 1997 when the rents on private rental properties will be liberalized. The concentration of the elderly in older dwellings could become a problem also for the new owners who are in need of resources for the maintenance and renovation of the buildings.

Figure 17 POPULATION BY AGE AND PERIOD
OF DWELLING CONSTRUCTION
Estonia 1989

The relationship between the age of dwelling and its inhabitants stems from the fact, that for most people, starting a home of their own takes place in the period of family formation. Once people have started own home, the change of the dwelling becomes relatively infrequent. The synchronization of family and housing careers produces sharp cohort effects in housing characteristics which can be easily observed by looking at the distributions of inhabitants living in dwellings built during the post-1940 decades.

The percentage of population living in houses built in the 1980s peaks around 30 year of age. Similarly, the percentage of persons living in houses built in the 1970s reaches maximum around age 40. The profile for houses built during sixties is at highest at age 55 while the curve for the 1950s-built housing peaks at 65 (Figure 17). Thus, whatever

18

cohort to take, the housing conditions around the time people entered their thirties, tend to have substantial impact on the type and quality of housing in which they live for the rest of their lifetime.

Figure 18 POPULATION LIVING IN DWELLINGS BUILT BEFORE 1940 BY AGE AND MARITAL STATUS, Estonia 1989

per cent

The synchronization of family formation and the period of construction of the building helps to explain the profiles specific to marital status. As never-married persons tend to stay at parental home more frequently, they were found in older buildings than their ever-married counterparts (Figure 18). As a result, the restitution may concern to a greater extent single elderly who tend to have weaker kin support networks.

Among the oldest old this pattern was somewhat modified with married persons having the highest propensity to live in houses built before the Second World War. The observed crossover results from never- and formerly married persons being institutionalized or moving in with their relatives. On the other hand, married couples are known for their better ability to maintain independent living.

Regarding other dimensions, the more educated the person is, the higher is the probability that he/she lives in newer building, evidently due to greater mobility of highly educated people. The percentage of the elderly living in houses built before 1918 among persons with primary education was almost three times higher than among those with higher education. Expectedly, both in urban and rural areas older buildings were inhabitated predominantly with native population.
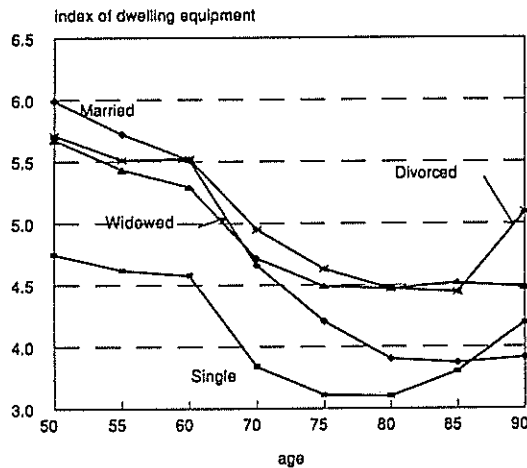
3.5. Level of equipment

From the viewpoint of the elderly, the level of equipment of the dwelling is relevant in terms of the capability of to maintain independent living. Low level of equipment involve physically demanding household tasks, which in the case of owner-occupied dwellings are accompanied with the need for periodical repairs. Making the everyday life of old people easier the modern equipment, however, implies higher costs for the maintenance of the facilities. In Estonia, the retirement income falls often short to meet these costs calling for financial support.

In the 1989 Estonian census, the information was collected on the presence of electric supply, piped water, sewer, central heating, hot water, bathing facilities, gas and electric stove. Piped water referred to a tap inside living quarters, central heating meant both district heating as well as local heating system, the same was true regarding hot water. Bathing facilities referred to fixed bath or shower installation.

19

the profile for married elderly continues to decline until the most advanced ages while for other groups a slight increase in equipment level is observed.

Figure 21 INDEX OF DWELLING EQUIPMENT
BY AGE AND MARITAL STATUS
Estonia 1989

index of dwelling equipment

Differences by living arrangements reveal that for the elderly, coresidence with children or belonging to an extended family tends to involve dwellings with better equipment. As the profile for solitaires does not show any reversal at the most advanced ages, improvement of housing level among widowed, divorced and single elderly should be explained by moving in with children or other relatives. Thus, the worst level of equipment is observed among solitaires who are thought to have the lowest capacity to cope with heavy household tasks.

Comparison of the level equipment across the ethnic dimension reveals that, consistent with the younger housing stock, the dwellings of Non-Estonians are generally better equipped than those of Estonians. As the mentioned pattern can be observed both among urban and rural populations, it cannot does not result from specific spatial distribution of Estonians and non-Estonians. The difference in the value of the equipment index increases with age and is at greatest among the oldest old.

Again, the decomposition of profiles by duration of residence indicate that the difference between Estonians and non-Estonians is mostly due to migrant status rather than due to ethnicity.

Figure 22 INDEX OF DWELLING EQUIPMENT
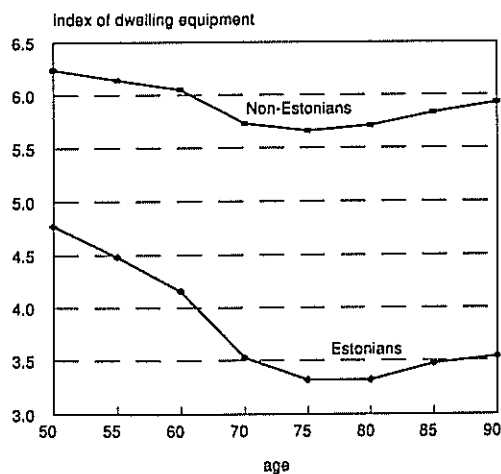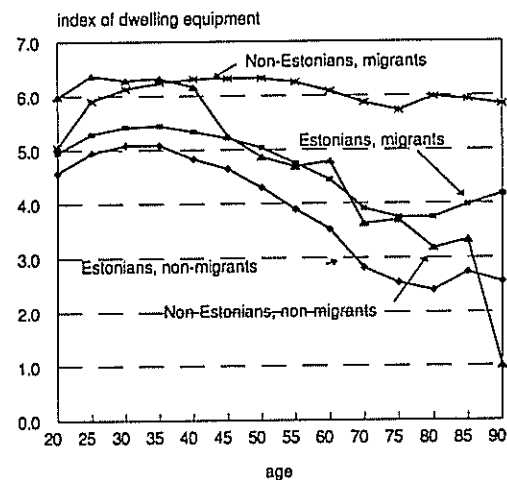BY AGE AND ETHNICITY
Estonia 1989

Figure 23 INDEX OF DWELLING EQUIPMENT
BY AGE, ETHNICITY AND MIGRANT STATUS
Estonia 1989

As to educational attainment, better educated elderly tend to live in dwellings with higher level of equipment. When measured by the index of dwelling equipment,
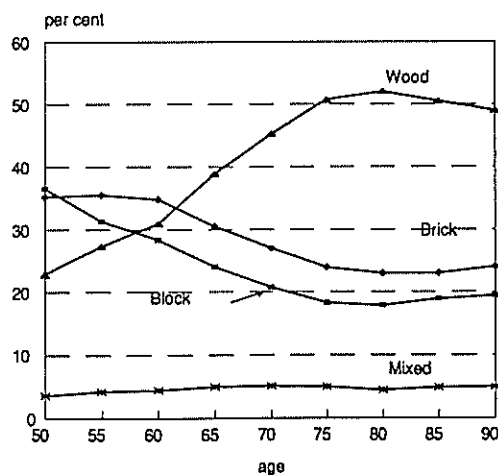
21

differences by education account to nearly 50 percent and display rather remarkable stability across the age scale (Figure 24). The present finding is consistent with the propensity of more education to live in apartment houses and reflects greater mobility and concentration in urban areas rather than their particularly advantaged position in terms of housing.

Figure 24   INDEX OF DWELLING EQUIPMENT BY AGE AND EDUCATION Estonia 1989

3.6. Material of construction

Construction material refers to the type of the outer walls of the building. The information on the building material supplements other characteristics of the housing unit by adding to the possibilities of quality appraisal. The material of outer walls is relevant in terms of the assessment of durability and of the current condition, which in turn, may be related to repair needs and the market value of the building.
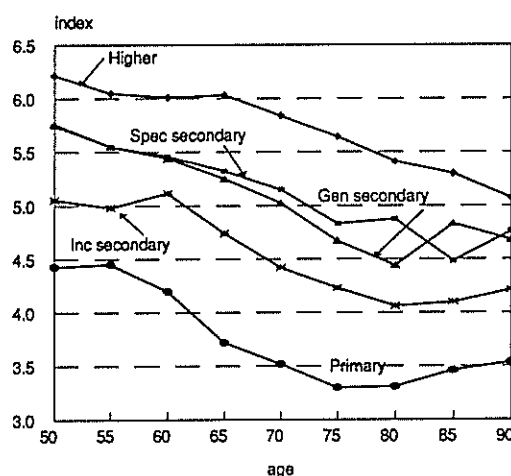
In the 1989 Estonian census the distinction was made between buildings made of brick, concrete, wood, adobe, other and mixed material. If several materials were combined, the predominant material was reported. Mixed material refers to the combination of brick and wood. Regarding wooden houses lined with brick, wood was considered the main construction material.

Figure 25   POPULATION BY CONSTRUCTION MATERIAL OF THE DWELLING AND AGE Estonia 1989

The profiles presented in Figure 25 indicate a clear relationship between age and the material of outer walls. Between ages 50 and 65, brick, concrete and wood appear in almost equal proportions, in among older people wooden houses become clearly overrepresented. Among the oldest old on in two lives in wooden house, this percentage becomes even higher when mixed material is added. Looking at the entire age-scale one can observe how the dominating material reflects the shifts in the methods construction. Under age 50 concrete appears the most commonly used material, brick dominates among people in their fifties and wood takes over after age 60. Other construction materials appear only seldom in Estonia. The relationships between the construction material and other social and demographic characteristics were in line with conclusions made on the basis dwelling type and the age of the building.

22

4. CONCLUSIONS

The housing conditions of the elderly have been characterized by several features that distinguish them from the rest of population. Reflecting the shift towards public housing that has occurred in Estonia during the postwar period, single-family housing is the most frequent among the elderly, and conversely the propensity to live in apartments was found to decline with age. Regarding the future, the presented profiles suggest a shift towards more apartment-centered housing-pattern among the new generations of the elderly. From the viewpoint of elderly policies, this shift may involve an increase in the demand of housing allowance. As apartments tend to be better equipped with modern facilities, the need for housing-related services may decline. Similarly, regarding younger elderly, the main concern is thought to be high housing costs while among older elderly this is added by coping with daily activities.

Among the oldest old, the deteriorating ability to maintain independent housing declines leading the part of the elderly to move in with their children and other relatives, or into the institutions. The houses elderly reside in lack often modern facilities which involves the need to perform physically demanding household tasks. In rural areas, also the distance to local shop, post-office and other vital institutions may become an obstacle for independent housing. The change in housing arrangements often follows the entry into widowhood, with married couples having the greatest ability to stay in one-family houses.

The rapid increase in the level of institutionalization after age 75 occurs mostly due to never-married and divorced elderly. Given the expected increase in the percentage of divorcees in younger cohorts, this may imply an increasing need in the institutions of elderly care in future.

In terms of dwelling density, the housing situation of elderly is quite favorable. In relative terms, the most spacious dwellings are characteristic to widows and widowers, followed by never-married and divorced elderly. The decline in dwelling density stems from the combined effect individual housing careers, homeleaving of children and entry into widowhood. Around age 75, the decline in dwelling density comes to an end reflecting an increasing propensity of the elderly to move in with their children and other relatives, the age-related growth in frequency of institutionalization as well as the tendency to move into smaller dwellings.

Considering the poor income maintenance of the elderly, the spacious dwellings have turned into a problem under economic transition. To address the issue, an housing allowance was introduced in 1993 for those whose expenses for housing exceeded one fourth of the total household income, given that the floor area did not exceed 18 square meters per person plus 15 meters per household. However still, floor area exceeding these limits remains uncovered by housing allowance which may result in the increased mobility of elderly households, especially after the large-scale privatization dwellings.

As to the period of construction, the elderly tend to live in older dwellings, the synchronization of family and housing careers produces sharp cohort effects in housing characteristics. Older dwellings means the elderly being affected by the restitution process to a significantly greater extent than younger people. Inter alia this

may call for a greater interference to cushion the effects of restitution, especially after 1997 when the rents on private rental properties will be liberalized. Mostly due to their older dwellings, the level of dwelling equipment is significantly below average among the elderly. Regarding the future, the age-pattern observed in equipment level means that the equipment will improve with each new elderly cohort.

Across the subgroups of the elderly, the housing patterns differ significantly between Estonians and non-Estonians. Living in single-family housing appears to be five times more common among Estonians while non-Estonians are over-represented in apartment houses. Decomposition revealed of this pattern being due to immigrant status of non-Estonians rather than due to ethnicity. Given the differences in dwelling type, Estonians tend to live in more spacious dwellings while the dwellings of non-Estonians are characterized by higher level of equipment.

As to other characteristics, reflecting the higher mobility and concentration in urban areas, the elderly with higher education tend to live in apartments while single-family housing was more common among less educated. Consequently, more educated people tend to live in newer and better equipped dwellings.

Being the first study of housing conditions based on the 1989 census microdata, the analysis should be extended in several directions. Given the development of housing market, the patterns described in the paper may have undergone certain modification since that period. Under the socialist economy dwellings were not purchased but were distributed via other mechanisms. Low tariff levels permitted to keep the dwelling even after the need for housing space had diminished due to homeleaving of children and loss of the spouse. This setup could be hypothesized to have had a positive impact on the housing status of the elderly in the past. Increase in costs for rents and maintenance of the dwellings has made a housing of the elderly a social problem and contributed to the formulation policies meant to cushion the effects of rising housing costs on the most vulnerable groups of population. Despite the introduction of housing allowance, increased housing costs may have caused a certain part of the elderly to move into smaller and/or cheaper dwellings. Due to varying housing patterns, the change in the situation concerns more closely the population residing in dwellings with modern facilities, i.e. urban elderly and non-Estonians.

To test these hypotheses the comparison with more recent datasets as well as with other settings should be attempted. Regarding Estonia, the data from the 1995 Labour Force Survey which inter alia collected the information on housing conditions from the nationally representative sample of individuals in ages 15-74. Due to the retrospective supplement, the go beyond cross-sectional design and study the true housing transitions that have occurred since 1989. The data from the Labour Force Survey also provides an insight into the characteristics of housing allowance recipients and permits to estimate redistributive effects of the system across different subgroups of the population. Census samples from other countries provided in the framework of the Dynamics of Population Ageing could be used for international comparisons. To clarify the dynamics of housing costs, the data from family expenditure surveys could be applied. Methodologically the analysis could be extended by the application of multivariate methods.

Besides that, the data from the 1989 population and housing census could be used for different kind of applied calculations. Life table analysis could be used to estimate the amount and characteristics of dwellings that will remain vacant due to the death of inhabitants. Detailed information with regional breakdown could be obtained on the number and characteristics of the elderly living in dwellings with especially low level of equipment, partially uncovered with housing allowance, potentially concerned with restitution of dwellings etc. The information could be used by decisionmakers on local and regional level. Given the privatization process, the distributive effects of the voucher system should be studied in respect of different population groups.

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