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SETTLEMENT PATTERNS AND DEMOGRAPHIC TRENDS

MIGRATION DISTANCES IN RUSSIA: A DEMOGRPHIC PROFILE OF MIGRANTS

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The distance of migration is closely linked to life course events, which are, in turn, marked by age. It serves as a criterion for distinguishing migration from other forms of spatial mobility. This paper aims to calculate the average distance of domestic migrations in Russia between 2011 and 2020, considering various migrant profiles such as sex, age, and type of residential registration. The Euclidean distance between 130,000 geocoded Russian settlements was computed to estimate migration distances. These geospatial data enabled us to obtain estimations of migration distances by weighting the total distance of all migrations based on their respective numbers. The distance of internal migration was similarly estimated, taking into account age, sex, and type of residential registration. The findings revealed that 31.3 % of domestic residential relocations occurred within very short distances not exceeding 50 km, while 43.5 % took place within 100 km of the previous place of residence. Calculating the average migration distance allowed us to identify two peaks: one at the ages of 22—23, present only for men, and another at the ages of 50—70. In all other cases, there were no sex-specific differences in migration distances. Migrants who obtained permanent registration at their new place of residence tended to cover greater distances compared to those registered only temporarily. The shortest relocation distances were associated with the age of 16, which could be attributed to prospective students moving to the nearest town where a vocational school is located.

Keywords:
types of migrant registration, distance, women, men, age

State of research

Ernst Ravenstein claimed that most migrants move short distances, and migratory flows dwindle as the distance from the point of departure grows [1, p. 198]. His conclusion has been corroborated more than once: most migrants prefer to remain near their families, friends and social contacts, being

unwilling to lose the benefits of access to familiar public spaces and the social capital that they have accumulated, probably over a long period [2]. Amongst other significant factors are psychological considerations [3], attachment to the neighbourhood [4], and weaker awareness of distant territories than neighbouring areas [5; 6].

Of some importance, albeit lesser than that of potential economic gains, is the financial component of distance decay [7; 8], which does not grow in proportion to the distance but rises nevertheless. In large-area countries, such as Russia, not only does long-distance migration require much time and finance, but it is associated with substantial travel-related difficulties: the poor quality of roads, the unavailability of direct travel options, and the need to change between modes of transport. The nature and climate of one's region of origin may produce opposite effects: a migrant might strive to move to an area with similar or, on the contrary, entirely different conditions. Moreover, people may have very dissimilar ideas of these conditions. During our expeditions to Russia's North and Far East, we often encountered the opinion that one has to move to a place with a similar climate. This consideration was cited by residents of Sakhalin to explain the emergence of a 'Sakhalin colony' in St. Petersburg and the Leningrad region. Yet, we repeatedly heard the opposite: 12 % of respondents from Vorkuta named Krasnodar Krai as the preferred migration destination.

Along with external and context-dependent factors, the distance of migration is affected by the vicissitudes of one's life course events and the events involving one's friends and relations. It is generally believed that education is a principal migration-encouraging factor. A recent study [8] has shown that although it is the case in the UK and Sweden, where people move over more than 90 or 80 km respectively to their place of study, Australians rarely consider education a strong motive to change one's place of residence, regardless of the distance. Leaving the family home or divorcing a spouse are life events that often prompt people to migrate [9], usually over a short distance. Overall, the range of factors affecting the willingness to migrate and the distance of migration is vast [10].

For a long time, it has been assumed as an axiom that long-distance migration is motivated by career reasons and short-distance by moving house (the latter can be called residential mobility) [11; 12]. Housing considerations are a frequent cause of family migrations. The literature [8] links the growing importance of family reasons (broadly associated with de-standardisation of spatial-temporal life trajectories) to a decrease in the distance of migration.

Population migration is selective in terms of many characteristics, which has been demonstrated in a range of works starting with the 1938 book by Dorothy Thomas [13]. The characteristics that are most accessible for analysis are sex and age. Considering them as approximators of motives for migration events makes it possible to link the distance of migration and the dominant logic be-

hind the process. Particularly, studies conducted on the US [14] and Sweden [7] have shown that long-distance migration is more common among younger and more educated individuals. It has also been observed that having preschool-age children is associated with shorter-distance movement, while households with school-age children are less likely to engage in any kind of mobility, regardless of distance [14]. Additionally, households with school-age children tend to move distances that are approximately 7 % shorter compared to households without children [15].

In many countries, larger relocation distances are characteristic of more educated migrants, who can look for employment in the wider labour market and have greater spatial flexibility underpinned by their earlier experience of migration for study or career advancement [16; 17].

Although motivated by different drivers and forming different migration flows, students and pensioners move longer distances to concrete destinations: university towns and areas perceived to offer a better quality of life respectively [10; 18].

In the middle age group, migration distances may be shorter than in the younger cohorts. The mobility of 'older seniors' (aged 75 and older), which is often caused by tragic events, the inability to carry out farming, or the loss of a business, is mostly short-distance [19]. However, there is little consensus regarding migration in middle and senior age groups. For example, John Hipp and Adam Boessen [15] posit a U-shaped relationship between age and distance: households move the largest distances when the youngest and the oldest. The truing point is at the age of 37, suggesting that households headed by 37-year-olds migrate over the shortest distances.

Overall, it seems that certain migration distances correspond to certain stages of one's life, and the distance curve closely resembles the graph of the migration age profile [20].

Although there are numerous comparative studies of the migration behaviour of men and women [11; 21; 22 and others], including recent works by Russian scholars [23; 24], few conclusions have been made about the effect of sex on the distance of migration. Ravenstien believed that women migrated more often than men [1, p. 199], but over shorter differences [25, p. 288]. Over a century later, Thomas Niedomysl and Urban Franson [7] showed that women have a greater propensity for migration, yet they are less likely to move long distances than men [7]. On the other hand, women are responsible for interregional migration in Estonia, which, by implication, points to that women are mobile in terms of longer distance migration in the small-area country [26, p. 330].

Some works link migration distance to ethnicity [14; 17] and property ownership. It has been demonstrated for the US that estate owners move longer distances (by 75 %) than renters, albeit this difference is visible only as long as

short-distance is concerned and disappears for distances over 50 km [15]. A study into the situation in the Czech Republic [27] demonstrates that an increase in the proportion of estate owners causes the significance of long-distance migration to diminish, as estate owners seem to be particularly attached to their places of residence.

The concrete values of migration distance are affected by the size of the country, its geographical diversity, population density, settlements system (particularly, the distance between its main cores) and stage of urbanisation. In the Czech Republic, almost 50 % of migrations are within the range of 20 km; 70 % within 50 km. Overall, the situation in the country is described by the classical curve graph: migration intensity decreases as distance grows. Yet, the curve has a minor peak corresponding to the distance between Prague and Brno, which is about 210 km [27]. In the 1980s, 73 % in the US and 83 % in the UK moved within 50 km. But the average distance of migration in the former was thrice that in the latter [28]. The distances tend to reduce in countries with a high population density [29].

Direct inter-country comparisons of distances travelled by migrants are not entirely correct due to objective spatial and social differences, as well as the usage of national methodologies for measuring distances.

For instance, the calculations of migration distances in the US made at the same time but using different data and methods (by computing area centroids or based on migrants' accounts) yielded different results [28]. When employing the so-called areal methods based on population-weighted centroids and the areas of administrative units, the size and number of selected units become crucial factors [30]. In Sweden, migration distance reaches 80 km at the level of parishes (there are 1785 such units in the country); 141 km, municipalities (290); 297, NUTS-2 regions (8); 380 km, NUTS-1 (3) [7]. The dependence between the number of units and migrants is non-linear: a reduction in the number of administrative units does not entail a proportion decrease in the number of migrants.

To our knowledge, there are neither Soviet nor Russian studies into the connection between migration distance and motives as, until recently, the data required for understanding such dependencies were unavailable. At the national level, we have come across three works [31—33] looking at migration distances in Russia. All three use data on migration flows without considering any other information about migrants. This works aims to analyse how the distance of migrations carried out in Russia in the 2010s was affected by migrants' sex, age and type of resident registration. The article contributes to our understanding of the migration behaviour observed in Russia during the study decade. Its findings have implications as internal migration account for a significant share of all relocations and greatly affects the spatial pattern of settlement.

Methods and data

The data were used on 2011—2020 internal migrations in Russia, more precisely on resident registrations — permanent or temporary for at least nine months.

This long period includes the COVID-stricken year of 2020, which was marked by a slight reduction in the number of domestic migrations, primarily in the second quarter. Probably, short-term changes that occurred within one year did not have a significant effect on the calculated values since the analysis covered a much longer period. Moreover, there is no reason to believe that COVID affected migration distances as the statistics do not show considerable changes in migration destinations in 2020.

The work used de-identified data on migration with places of origin and destination indicate for each instance. The calculations and analysis factored out 'automatic returns', i.e. the expiration of temporary resident registrations counted by Rosstat as migration movements. Thus, the study focused on primary registration data. Rosstat assumes that after the expiration of temporary resident registration people return to the place where they have permanent registration rather than leaving for a different location. Over the study period, there were 8.1 million 'automatic returns', which are included in 38.9 of all domestic migrations recorded by Rosstat [34].

It seems unreasonable to take into account 'automatic returns' when analysing migration distance as they essentially double the number of relocations involving temporary resident registration in the total quantity of registered migration, whilst having no specific direction and being indistinguishable in terms of distance.

Movements between all Russian settlements, i.e. 2,300 cities and towns, and about 153,200 villages (however, according to the 2020 census, 24,800 of the latter were unpopulated). Using the geographical coordinates of each settlement, the Euclidean distance, which is the shortest distance between two points taking into account the earth's curvature, was calculated in kilometres for each instance of migration. Before that, 3,800 pairs of distances between Russian settlements were computed experimentally. The settlements were selected so that they represented actual migration movements in the country: intramunicipal, intraregional and interregional. Euclidean distances were calculated along with the lengths of transport routes (roads or, for poorly accessible areas, air routes). Euclidean distances were found to be 1.3—1.5 times shorter than the lengths of actual transport routes followed by migrants. This factor remains the same for all the territories, regardless of whether short- or long-distance migrations are considered. Therefore, it can be assumed that Euclidean distances present an accurate picture of migration distances.

Euclidean distances were used to compute the distance of migration: the total distance of all migration movements was weighted by the total number of migrations. The distance of migrations by Russian citizens was calculated in a similar manner according to age, sex and type of registration.

Permanent resident registration does not expire. Usually, one obtains it after purchasing real estate or moving in with relatives. In this respect, it is a near analogue of 'property owners' migration, a notion used in international studies. Temporary registration valid for from nine months to five years (sometimes longer), which is classified by Rosstat as long-term migration, is often obtained when moving into rented accommodation or halls of residence. Russian statistics consider migrants with both types of registration as long-term migrants and include them in the net migration rate.

Out of 30.8 million migrations recorded in 2011—2020, 'automatic returns' excluded, 11.1 million or 36 % were accompanied by temporary resident registration. The largest proportion of temporary resident registrations, 79.3 % of all cases, was accounted for by 15—22-year-olds, with a peak at the age of 18 (Fig. 1). People of this age are the most active migrants, often relocating for study purposes. Most study migrants obtain a temporary resident registration.
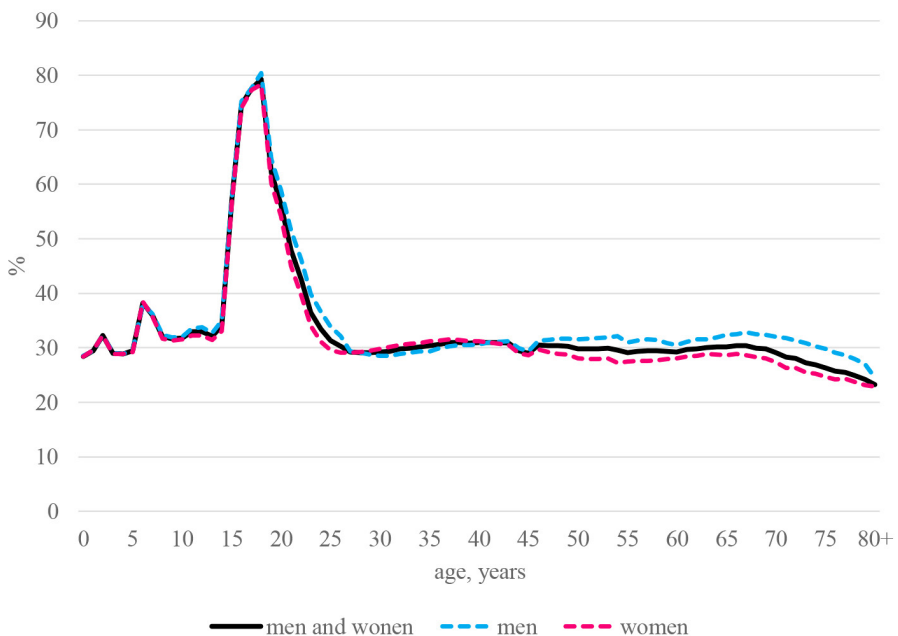

Fig. 1. Percentage of people with temporary resident registrations
by one-year and sex groups, 2011—2020

Calculated by the authors using unpublished Rosstat data.

In the other age groups, migrants with temporary registrations comprise about 30 %, with a minor peak at 6—7 years, probably explained by the need to register children before they start school.

The sex difference in the proportion of migrants obtaining temporary resident registrations is insignificant in Russia, as shown in Figure 1. We expected that, between ages 25 and 45, the proportion of women with a temporary resident registration certificate would be higher. According to our field observations, temporary resident registration certificates are often issued to women with children about to start school or kindergarten. Statistics show that, on the contrary, men obtain temporary registration slightly more often than women.

Results

According to the calculations, 43.5 % of all domestic migrations are within the range of 100 km (Table 1, Fig. 2). Almost a third of migrants move 50 km or less, i. e., a distance that can be covered by a commuter, for example, in the Moscow agglomeration [35]. Russia is a very large country, where, as Andrei Treivish demonstrated [36, p. 252], the average distance between major cities is from 45 to 75 km even in the relatively densely populated European part (compared with 10—20 km in the centre of Europe). But most migrants travel rather short distances nevertheless. Relocation frequency rapidly declines with distance. Putting concrete figures aside, one may conclude that the frequency-distance curves obtained for Russia are similar to those characteristic of Sweden [7], the Czech Republic [27], and Hungary [37].

Table 1

Migration distribution in Russia by distance, 2011—2020

Distance, km	Number of movements, million people			% of all relocations		
	Total migration	Permanent resident registration	Temporary resident registration	Total migration	Permanent resident registration	Temporary resident registration
Less than 10	2.4	2.0	0.4	7.7	10.2	3.2
from 10 to 50	7.3	5.5	1.8	23.6	27.6	16.4
From 50 to 100	3.8	2.5	1.3	12.3	12.3	12.2
From 100 to 200	4.0	2.4	1.6	13.1	12.4	14.2
From 200 to 500	4.1	2.3	1.8	13.4	11.8	16.3
From 500 to 1000	3.0	1.6	1.4	9.8	8.3	12.5

Distance, km	Number of movements, million people			% of all relocations		
	Total migration	Permanent resident registration	Temporary resident registration	Total migration	Permanent resident registration	Temporary resident registration
From 1,000 to 5,000	5.5	3.0	2.5	18.0	15.3	22.7
Over 5,000	0.7	0.4	0.3	2.2	2.1	2.5
Total	30.8	19.7	11.1	100.0	100.0	100.0

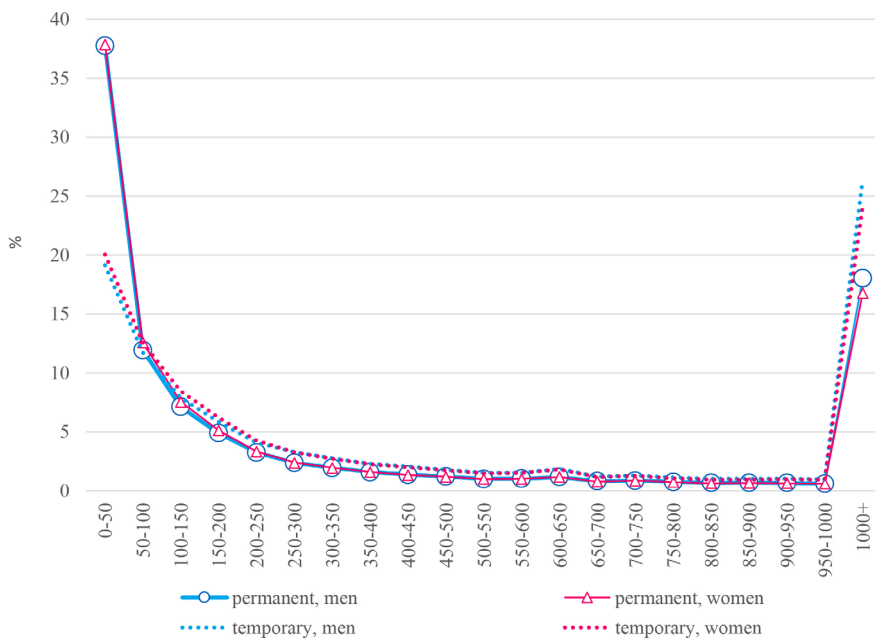Calculated by the authors using unpublished Rosstat data.

Fig. 2. Migration distribution in Russia by distance, 2011—2020, %

Calculated by the authors using unpublished Rosstat data.

A distance of 200—300 km, which separates Moscow from regional capitals bordering on the Moscow region or Krasnodar from Rostov-on-Don, is travelled by 6.3 % of Russia's internal migrants.

A distance of 1,000 km is covered by slightly above 20 % of migrants. It is comparable to the way from Moscow and Ufa, from Nizhny Novgorod to Ekaterinburg, and from Ekaterinburg to Novosibirsk. In the vast expanses of the eastern part of the country, a distance of 1000 km seems insignificant. Yet, it is travelled only by every fifth migrant. To compare, in Hungary, each fifth moves more than 100 km [37].

Temporary resident migration is obtained more often by migrants moving longer distances than those issued permanent resident certificates. Probably, obtaining registration when moving a short distance is virtually meaningless: no one will wonder about the registration of a resident of a neighbouring municipality or district. A resident of the Moscow region can live at a relative's place in Moscow without registration and not violate the law, and vice versa. Registration certificates are issued at halls of residence. But a person living 10 km away from the place of work or study would not need it, unlike the one living 100 km away and farther.

Probably, relocations within the range of 50 km, particularly those followed by obtaining permanent registration, fall into the category of residential mobility or are closely linked to it. Some of them involve moving from cities to suburbs or dachas (with registration obtained), which are becoming year-round homes and essential components of modern Russian residential mobility. These migrations, short-distance by Russian standards, are accompanied by little change: movers retain their employment; their children may still go to the same school or, less often, kindergarten; the family continues to use the services of the same public institutions. According to an earlier study [38], 62 % of respondent's families residing in the Moscow region have at least one family member working or studying in Moscow. The logic behind such relocation is very close to that behind commuting and is slightly at odds with the idea put forward in [39, p. 617], i.e., that a mover turns into a migrant after covering a distance 'set at the point at which commuting to work becomes so time-consuming and expensive as to require the substitution of a change of residence'.

Moreover, such migration satisfies the traditional idea linking movements to certain stages in life: at 30 families are expected to move from cities to suburbs looking for more spacious accommodation and a children-friendly environment [40; 41]. Children under 14 are the most frequent movers in the range of 10—50 km (Table 2), but since they do not relocate on their own, the data on this group mark the movements of parents with children.

Table 2

**Distribution of movements at selected ages by distance, 2011—2020,
total migration, %**

Distance, km	Age, years							
	0—14	15—19	Including		20—24	25—49	50—64	65 and older
			16	18				
< 10	9.9	3.4	3.7	2.2	5.0	8.0	9.2	8.3
From 10 to 50	29.8	19.0	28.0	13.2	17.5	23.2	24.7	25.4

The end of Table 2

Distance, km	Age, years							
	0—14	15—19	Including		20—24	25—49	50—64	65 and older
			16	18				
From 200 to 500	11.5	16.5	12.2	19.7	16.1	13.4	11.4	12.8
From 500 to 1000	8.2	9.0	5.7	10.9	11.1	10.5	9.3	9.1
From 1000 to 5000	14.5	14.0	9.2	15.9	20.3	19.0	21.6	17.0
Over 5000	1.8	1.4	1.1	1.4	2.2	2.3	3.2	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Calculated by the authors using unpublished Rosstat data.

People of school-leaving age also move short but not the shortest distances. At the age of 16, relocations over 20—40 km are common, this distance loosely corresponding to the catchment areas of vocational schools in district centres. Parents rarely agree to let children of this age move farther for study, believing its necessary to retain parental control and embracing the 'weekdays at school, weekends at home' system.[1] The range of 20—40 km includes distances between the centres of villages within a municipality and is also associated with intramunicipal migration.

At 18, after leaving school, people are more likely than the population of any other age group to move distances corresponding to those between the own 'periphery' and regional capitals, i. e., 100—200 km, which is also consistent with the catchment area of regional universities.

Longer distances are usually travelled by people starting or finishing their careers, i. e., at the ages of 20—24 and 50—64. They are more likely to move distances over 1000 km than any other age group. Probably, a major factor in these movements is that the migrants either do not yet have a family in the former case or do not have underage children any more in the latter. Long-distance migration may also be linked to leaving Russia's North after having worked there long

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[1] Let us quote an excerpt from an expert interview conducted in the town of Borisoglebsk, the Voronozh district, during a HSE expedition to the Voronezh and Samara regions: 'Few people leave Borisoglebks after the ninth school year as the town has its own vocational school, and the middle-school graduates are too young for the parents to let them go. Yet, migration at this age is large-scale in local villages and other districts. Living 'at a babushka's' (renting a room in a flat) is more expensive than staying at a hall of residence, but still very popular. Parents often try to settle their middle-school graduate kids 'at a babushka's' to make sure that they know their schedule, do not oversleep or play truant' (https://foi.hse.ru/openrussia/migration-boris).

enough for 'northern' retirement, which is five years earlier than in the other parts of the country. In most cases, this is relocation from regions with extreme natural conditions where migration has become inextricably linked to 'northern' retirement [42]. Amongst pensioners, the share of long-distance movements decreases and short-distance grows.

The average distance of all migrations is 654 km; for those permanent resident registration, 581 km; and temporary resident registration, 789 km. These figures are significantly lower than those obtained in 1966 (1,457 km for the urban population of the RSFSR [32]) and in the 1990s—2000s: 2130 km in 1989, 2,345 km in 1994, and 1937 km in 2002 [33]. However, today's calculations are incomparable to previous ones due to several reasons:

— the calculations in this article, unlike the earlier ones, take into account intraregional migration, which, by definition, is associated with shorter distances but makes a considerable contribution to total national migration, being thus capable of affecting the balance;

— the calculation methodology has changed (in this study, Euclidean distances are computed for all towns and villages, without aggregation, whilst earlier contributions employed the so-called 'areal' method for calculating migration distance for aggregated units and selected modes of transport [for more detail, see corresponding articles]).

Using an adjustment coefficient to make a transition from Euclidean distances taking into account the earth's curvature to actual route lengths makes the obtained figures reach 850—915 km for all relocations, bringing them closer (but not making them equal) to earlier results.

The average migration distance travelled by different age group points to dissimilarities in the 'logic' of migration depending on sex, age and type of resident registration (Fig. 2). The migration distance curves tend to have two peaks: one at 22—23 years old and the other, albeit less pronounced, at 50—70. Reductions in migration distance are observed at the ages of 0, 6, and 15—19 years (as long as temporary resident registration is considered).

The reason behind the short-distance migration of children aged 0 (or more precisely, of families with infants) is much less obvious. Probably, the short-distance movement can be explained by residential mobility, as families often seek new accommodation once they have welcomed a new member. This could be a contributing factor to the observed trend. When children reach the age of six, parents have an incentive to register them at the rented accommodation so that applying to a nearby school becomes possible; some other families move closer to a selected school.

The sharp decline in relocation distance after finishing secondary school (nine years) is a sign of student migration. Moving to study at vocational schools usually involved shorter distances than moving to study at university after having finished high school (11 years).

The migration distance peak at the age of university graduation and first career steps is mostly associated with male migrants. It is the age at which sex differences in migration distance are the most pronounced (Fig. 3).
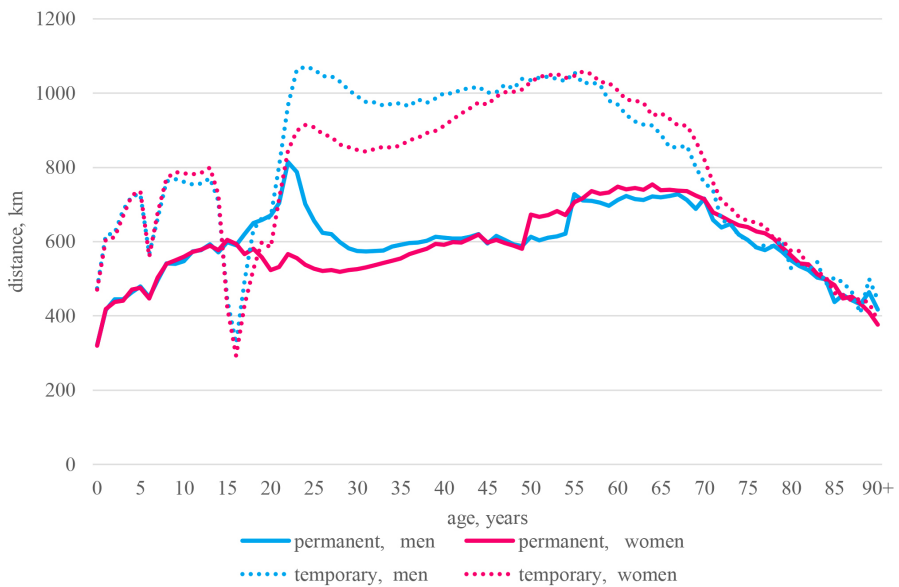

Fig. 3. Average migration distance for different ages and sex, 2011—2020, km

Calculated by the authors using unpublished Rosstat data.

The distance peak for migrants obtaining permanent resident registration is accounted for by men, whilst there is no difference as long as temporary resident registration is examined (Fig. 4). Higher average migration distance values for men are observed until the age of 40—45, after which the figures become similar. This difference may be due to men marrying later and thus staying 'free' to move greater differences or being incarcerated at penitentiary institutions.[1] The assumption that such migrants are mostly single is supported by the fact that people aged 25—40 travel over longer distances than children aged 0—14. Since children do not migrate on their own, the age group of 25—40-year-olds can be divided into those with children, moving short distances, and singles moving longer ones.

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[1] This involves registration and is recorded by Rosstat as instances of migration.
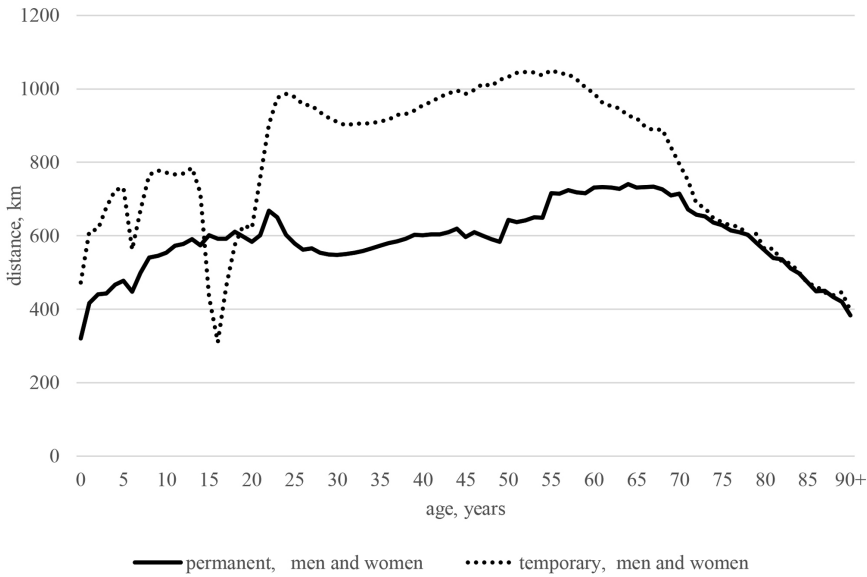
Fig. 4. Average migration distance in different age groups,
according to resident registration type, 2011 — 2020, km

Calculated by the authors using unpublished Rosstat data.

Longer migration distances associated with pre- and early retirement ages are in general conformity with the 'empty nest' effect [43] and the exodus from the North, which makes a substantial contribution to total migration at these ages [44]. The figures remain relatively high until the age of 75, after which they decrease to low values. Apparently, 'older seniors' are not actively involved in long-distance migration; in most cases, they move closer to the family once they can no longer look after themselves.

For all age groups, except for students and seniors, there is a connection between longer average migration distances and temporary resident registration. This link might be due to migrants not being required to obtain resident registration when moving shorter distances. Another possible explanation is the cases resembling residential mobility.

Conclusions and discussion

The above distance of migration analysis leads to important conclusions about the essence of human migration that go beyond considerations concerning the number of kilometres covered when moving. Migration distances were calculat-

ed for 30.8 million intra- and interregional movements undertaken by Russians within the country in 2010—2010 between about 130,000 points in space.[1] The massive scale of calculations prompted us to compute migration distances using Euclidean distances (the shortest between two points but taking into account the earth's curvature), which proved practical. If our focus were on the contribution of different modes of transport to migration or the share of the population for whom relocation becomes technically impossible due to the absence of transport links or poor spatial cohesion, we would have concentrated on calculating the precise length parameters of transport routes. Our goals, however, were different. We sought to understand the general proportion of the population moving different distances and whether migration distances differ between demographic groups.

The calculations show that 31.3 % of relocations are associated with very short distances, not more than 50 km. These are movements between neighbouring villages belonging to different municipalities, between cities and their suburbs, i. e., between territories, the distance between which can be associated with migration and commuting alike.

The data obtained through observations and field studies have provided empirical evidence that individuals tend to travel relatively short distances when they enter vocational school. The distance of migration to university is classified as medium-length. Yet, very few 16- and 18-year-olds move distances shorter than 10 km. Individuals in these age groups are typically not involved in extremely short migrations. Instead, they tend to cover more substantial distances, such as moving to a different city or region, which may be motivated by factors such as attending university or gaining residency in a specific area, such as living in a hall of residence and obtaining corresponding resident registration.

The obtained estimate of the average distance of migration in Russia at 654 km, which seems quite modest in comparison to the country's vast area, would be much longer if actual transport routes had been measured. If, wherever possible, the calculations were of the lengths of roads, the adjusted average distance would reach 850—915 km.

The migration distance analysis and calculations for selected ages confirmed our assumption about the effect of an individual's age on migration destinations and provided a clearer picture of the phenomenon:

[1] According to the 2020 national census, Russia has 155,599 villages and towns, 24,700 of them unpopulated (Itogi VPN-2020, Tom 1 Chislennost' i razmeshchenie naseleniya, tabl. 3 [2020 Census Results, Volume 1 Population size and distribution, Table 3]).

— relocations after finishing secondary or high school, albeit both instances of study migration, have different logic and goals behind them. The network of vocational schools is more dispersed, with its institutions usually located in municipal centres, than that of universities, which tend to concentrate in regional centres and thus are less accessible [45]. Therefore, despite both forms of mobility involving relocation to the nearest large settlement, their destinations differ in their position in the urban hierarchy, and migrants who have finished secondary school (9 years) tend to travel shorter distances.

— in Russia, migration at pre- or early retirement age often means travelling longer distances, for instance, from the northern territories to regions with a milder climate or as return migration across the country;

— unlike the migration of 'younger seniors', the reduction in migration distances at older ages is very similar to that observed internationally and is explained by moving in with the family and receiving necessary care [44];

— at the age of starting a family, people usually move short distances, for example, to suburbs. Earlier, this conclusion was drawn for Moscow and the Moscow region [46].

Migrants obtaining temporary resident registration travel longer distances than those issued permanent resident registration. This means that the change in statistical methods for measuring migration, which took place in 2011, not only resulted in an increase in total migration (from 2 to 4 million internal migrants) but also altered its statistical visibility. Since 2011, the statistics have been capable of discerning a significant number of long-distance movements. Our calculations basically confirmed the conclusion made by Olga Chudinovskikh [47] who emphasised the catastrophic scale of unrecorded student migration, which was the case until 2011. About 80 % of student migrants, who obtained temporary registration, remained below the radar of statistics. In the other age groups, about 30 % of relocations weren't taken into account, most of them long-distance, as is now apparent. Changes in the statistical methods for measuring long-term migration made it possible to solve most of the completeness problems of the 2010s (albeit new issues, such as 'automatic return' have arisen). This circumstance increases the significance of our findings.

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