DEATH CAUSES OF RESIDENT POPULATION AND MIGRANTS IN MEGALOPOLIS

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Background.

Nowadays population censuses account only one population category – resident (de-jure) population that includes people permanently residing in a certain settlement or temporarily staying there during certain time period (usually non less than 6 months). At that, current records of demographic events could register persons from the category "de-facto population" i.e. permanently residing in another settlement, but who died and were officially registered in this settlement. This arises certain lack of comparability of numerator and denominator while estimating demographic indicators. For regions with high migration mobility of populations and especially those characterized by high share of illegal migrants, affect of migration component on demographic indicators is highly essential. In this regard, big cities and especially megalopolises experience the biggest problems.

The study purpose was to detect peculiarities of dearth causes structure in resident population and migrants who died in megalopolis by an example of Moscow.

Methods and data.

The study information base includes depersonalized database of deaths in Moscow in 2003 and 2013. We used methods of comparative analysis of death causes in Moscow residents and migrants who were not officially registered in the capital.

Existing system of recording and coding of place of residence of deceased allows to differentiate all deaths into the following groups: persons having address of residence in Moscow; persons who died in Moscow but their place of residence was in another Russian regions or other countries; and persons of no fixed address. Analysis showed that among non-residents who died in Moscow, persons of no fixed address accounted in 2003 – 90% and in 2013 – 100%. This doesn't mean that all of them could be considered as marginals but they didn't have fixed address in Moscow.

Results.

In 2003 deaths of non-residents of Moscow as a whole estimated 11.3% of all deaths that occurred and were registered in Moscow. At that, their input into cancer deaths estimated 5.3% and 6.3% in men and women respectively; deaths from cardio-vascular diseases – 8.4% and 6.0% respectively; but more than one third of male deaths from infections, from traumas and poisonings as well as ill-defined conditions, and more than a quarter of female deaths were determined by non-residents (tab. 1). Thus we could for sure confirm that non-residents in Moscow are represented predominantly by marginal groups.

Table 1. Distribution of deaths in Moscow in 2003 and 2013 depending upon their official residential status in Moscow.

	2003		2013	
Death causes	Total number of deaths	including non Moscow residents, %	Total number of deaths	including non Moscow residents, %
	Men			
Cardio-vascular diseases	33825	8.4	26363	9.2
Respiratory diseases	2986	17.6	1780	14.5
Digestive diseases	3019	9.5	2458	12.2
Ill-defined conditions	4503	35.2	5286	29.6
Infections	1060	38.1	968	29.4
Traumas and poisonings	9274	32.0	4428	34.8
Neoplasm	11116	5.3	11332	7.0

	Women			
Cardio-vascular diseases	44221	6.0	37420	5.7
Respiratory diseases	1408	12.7	1117	9.3
Digestive diseases	2326	7.9	2274	8.4
Ill-defined conditions	1585	25.6	1890	18.4
Infections	347	28.2	470	21.9
Traumas and poisonings	3350	20.7	1767	18.2
Neoplasm	12046	6.3	13265	7.1

The role of different population groups in formation of scales and structure of mortality in Moscow becomes even more demonstrative when we analyze the separate age groups (tab. 2).

As to children under 1 year, in 2003 the majority of deaths from socially-determined causes of death in the city occurred in non-residents; their shares estimated 31.4% deaths from respiratory diseases, 26.5% - from infections; 42.9% - from traumas and poisonings and 28.1% - from ill-defined conditions. In other words, the share of preventable infant deaths in fact occurs essentially lower as far as it concerns only Moscow residents which is supported by statistics analysis.

Calls attention that fact that 2 of 6 deaths from cancers in infants under 1 year were also determined by non-residents. One of explanations of the fact is the situation that Moscow having extensive net of highly specialized medical care accumulates patients with severe pathology from Russian regions and from abroad, and part of them dies in Moscow medical institutions and makes their input into Moscow mortality statistics. According to the data on shares in cancer deaths, this presumption seems reasonable.

According to 2013 data, the situation with infant mortality changed, but not in its quality. Within 10 years infant mortality in Moscow essentially reduced firstly due to minimization of socially determined causes and also among non-residents. Up to 2013 the majority of death causes concentrated in perinatal diseases preventable to a great extent, and in congenital malformations that are not preventable in their majority. Both in first and second cases non-residents made their essential input into mortality from these causes (46.7% and 39.8% respectively).

In children 1-14 years we have found similar regularities. In 2003 non-residents determined essential share of socially-determined pathologies and death causes that shouldn't cause any deaths at a present stage of health care development. In 2003 non-residents estimated 32.0% deaths from respiratory diseases in children under 15 years; 41.7% deaths from infections; 21.7% deaths from traumas and poisonings and 55.0% deaths from ill-defined conditions. At that, non-resident population also made essential input into mortality from causes the least preventable at a current stage of development of medical knowledge and technologies. Thus, in 2003 among cancer deaths in children 1-14 years 41.0% deaths were non-residents. Excluding cancers, exogenous preventable component of children mortality determined by non-resident population occurs even higher than in infants under 1 year. In its turn, it attracts higher attention to reduction of children mortality in Moscow and especially among non-resident population.

Up to 2013 the problems of children mortality concentrated in non-resident population even more. Thus, share of non-residents in mortality from presumably exogenous preventable causes nearly didn't reduce, and even increased – from cancers.

Exogenous component of adolescent mortality in 2003 was determined to a greater extent by Moscow residents, non-residents estimated only one quarter of deaths from traumas and poisonings – the main death cause in this age group, 15.4% deaths from respiratory diseases, 22.2% deaths from digestive diseases, 14.3% deaths from ill-defined conditions. Only mortality from infections which from adolescent age are primarily determined by TB and HIV, was determined by non-residents. Also mortality from cancers in this age was also to a great extent "non-Moscow" problem because 42.5% deaths were non-resident adolescents.

Up to 2013 input of non-residents into adolescent mortality similarly to children of younger ages also increased. This relates presumably to exogenous preventable causes but also to cancers.

As to young working population, from quarter to one third of deaths from main causes were determined by non-residents in 2003. In case of infections the share of deaths of non-residents

estimated nearly a half. It is difficult to say what is the share of non-residents in young working population, but it is possible to suppose that they estimate not one third or one half of it. Thus, effect of outrunning growth of mortality in this population group and marginalization of its cause structure are to great extent determined by drift of labour into the capital which also brought related mortality risks.

In all cancer deaths share of non-residents is lower than in deaths from exogenous pathologies and external causes. In fact, it is possible to state that in 2003 input of non-residents into cancer mortality was nearly totally concentrated in children ages and was determined (as it was shown earlier) by concentration of severely ill patients in Moscow medical centers. Looks surprisingly high input of non-residents into mortality from cardio-vascular diseases: 28.3% men and 26.7% women because cardio-vascular diseases similarly to cancers are considered presumably endogenous death causes. But in-depth analysis shows that in young ages the majority of cardio-vascular deaths are determined by alcoholic cardiomyopathy. In other words, death from cardio-vascular disease in an age 20-39 years is nearly totally determined by a lifestyle and could be considered as exogenous, and from the point of view of social portrait of deceased it is just slightly different from respiratory or digestive diseases, infections or traumas.

Up to 2013, input of non-residents into mortality of young working adults increased, and especially it affected external causes, respiratory and digestive diseases in men. Pretty much, the progress was achieved only in infections. At the background of reducing infectious mortality in Moscow, the share of non-residents' deaths from these causes reduced from 52.7% to 29.6% in men and from 46.3% to 23.5% in women.

In older working ages 40-59 years old input of non-residents into mortality from main causes is lower than in previous age group. Obviously, it is determined by younger average migrants' age. Visible mortality reduction relates to mortality from cancers and cardio-vascular diseases. At that, in case of infections, traumas and ill-defined conditions in 2003 non-residents determined more than one third of deaths in older working ages. Thus effect of mortality marginalization manifests itself not so much in its size as in deformation of causes structure, increasing exogenous component of mortality. 2013 confirmed this regularity.

In the elderly non-residents in 2003 estimated just 4.4% and 5.4% deaths from cardio-vascular diseases (men and women respectively) in ages over 60; 3.8% and 5.9% - from cancers – two main deaths causes for this age group. At that< the role of non-residents remains considerable in case of death from infections – 25.5% and 13.7%; traumas and poisonings – 23.0% and 11.3%; and ill-defined conditions – 36.2% and 23.3% in men and women respectively. It is essential, that up to 2013 input of non-residents into mortality from all presumably exogenous causes and ill-defined conditions reduced.

Table 2. Distribution of deaths from main causes in Moscow in 2003 and 2013 depending upon their official residential status in Moscow and age group, %.

Возраст	2003				2013			
	Total number of deaths	including non Moscow residents, %	Total number of deaths	including non Moscow residents, %	Total number of deaths	including non Moscow residents, %	Total number of deaths	including non Moscow residents, %
	Men		Women		Men		Women	
	Cardio-vascular diseases							
0	1	-						
1-14	2	50.0			1	100.0		
15-19	21	19.0	6	16.7	4	50.0	3	33.3
20-39	1117	28.3	296	26.7	1002	32.4	257	24.5
40-59	8364	17.6	2749	12.7	5649	20.4	1795	12.8
60 +	24320	4.4	41170	5.4	19706	4.8	35365	5.2
	Respiratory diseases							

0	15	46.7	20	20.0				
1-14	14	21.4	9	55.6	12	25.0	14	14.3
15-19	8	25.0	5	0.0	4	75.0	2	50.0
20-39	280	33.6	68	32.4	169	41.4	68	30.9
40-59	1160	22.8	262	21.4	481	25.2	148	20.3
60 +	1509	10.2	1044	8.8	1113	5.4	885	5.6
	Digestive diseases							
0	1	-						
1-14			1	-	2	50.0	3	66.7
15-19	5	40.0	4	-	3	33.3	1	0.0
20-39	394	16.8	136	22.8	349	23.8	128	22.7
40-59	1388	10.2	660	8.3	994	14.8	520	11.3
60 +	1231	6.4	1525	6.4	1108	6.0	1622	6.2
	Ill-defined conditions							
0	19	31.6	13	23.1				
1-14	12	58.3	8	50.0	29	27.6	26	46.2
15-19	28	10.7	14	21.4	22	40.9	14	28.6
20-39	1037	36.6	242	32.2	2482	37.7	452	28.5
40-59	2363	34.4	643	25.2	1751	27.5	494	19.6
60 +	1044	36.2	665	23.3	992	12.1	900	11.6
	Infections							
0	17	35.3	17	17.6				
1-14	4	25.0	8	50.0	20	40.0	18	22.2
15-19	13	46.2	6	50.0	2	50.0		
20-39	283	52.7	95	46.3	460	29.6	238	23.5
40-59	543	35.2	126	24.6	338	34.6	95	25.3
60 +	200	25.5	95	13.7	148	15.5	119	16.0
	Traumas and poisonings							
0	7	14.3	7	71.4	1	100.0		
1-14	83	21.7	51	21.6	51	35.3	26	30.8
15-19	253	24.1	118	29.7	116	50.0	24	33.3
20-39	2921	39.2	717	34.2	1777	49.6	356	44.1
40-59	3940	32.1	930	24.3	1429	33.7	371	21.3
60 +	2070	23.0	1527	11.3	1041	8.8	986	6.9
	Neoplasm							
0	1	-	5	40.0				
1-14	49	42.9	24	37.5	57	63.2	39	59.0
15-19	24	50.0	16	31.3	18	66.7	11	63.6
20-39	240	23.3	259	18.5	239	30.1	258	18.2
40-59	2649	7.3	2386	6.1	2334	11.1	2320	11.0
60 +	8153	3.8	9356	5.9	8684	4.7	10637	5.7

Conclusions.

In 2003 11.3% deaths that occurred and were recorded in Moscow fell at people who haven't fixed place of residence in Moscow, which increases scales of mortality in the city. In 10 years – up to 2013 input of non-residents into mortality slightly reduced and estimated 10.5%.

One could judge about qualitative composition of non-resident population by dominating affect of main causes on mortality in separate ages. Generally, it is possible to state predominantly marginalized composition of this population category, because it makes maximal input into mortality from exogenous causes (respiratory diseases, infections, traumas and poisonings) and also ill-defined conditions in working and young ages determining from one third to one half of deaths from these causes. The role of socially adapted non-residents manifests itself in higher children mortality from preventable at current stage of healthcare development causes of death. As a result, Moscow having means of highly specialized medical care accumulates severely ill patients from other Russian regions and from abroad.

Thus, if we take into consideration only Moscow resident population than mortality level there will be lower than according to official statistics, and death causes structure will be more

civilized due to reduced share of exogenous causes. At that, need in high-tech medical care would be lower even in children.

With due respect to results received for Moscow it is reasonable to move to differential estimation of mortality in different social groups, and to allocate mortality of Moscow resident and migrants as a minimum. This will allow to develop differently oriented measures for population groups that make significant input into mortality from infections, respiratory and digestive diseases, traumas and poisonings and ill-defined conditions especially in young ages which makes death causes structure in Moscow less civilized.