

REGIONAL POPULATION GROWTH AND REDISTRIBUTION IN THE U.S.S.R., 1970-1979

Richard H. Rowland

Department of Geography, California State College, San Bernardino, California, U.S.A.

and

Robert A. Lewis

Department of Geography, Columbia University, U.S.A.

Résumé — Les résultats du recensement récent de 1979 de l'Union Soviétique indiquent que les taux régionaux de la dynamique de la population entre 1970 et 1979 étaient en général plus bas que ceux de la période intersensitaire précédente et que des variations régionales étaient en général semblables à celles de la période 1959-1970. La population soviétique devient plus concentrée de nouveau, le changement le plus marqué étant vers le Sud non-slave, l'Asie Centrale surtout, qui se développe rapidement. Cependant, la mesure de la redistribution interrégionale semble diminuer. Une urbanisation appréciable continuait à se produire dans la plupart des régions, surtout dans les territoires occidentaux due à un accroissement rapide de l'urbanisation et à une dépopulation rurale qui s'accroît.

Abstract — Results from the recent 1979 census of the Soviet Union indicate that regional rates of population change between 1970 and 1979 were generally lower than those of the preceding intercensal period of 1959-70 and that regional variations were generally similar to those of 1959-70. The Soviet population is becoming more concentrated again, with the most pronounced shift being towards the rapidly growing non-Slavic South, especially Central Asia. However, the extent of interregional redistribution appears to be lessening. Appreciable urbanization continued to occur in most regions, especially in the western areas, due to rapid urban growth and deepening rural population decline.

Key Words — regional growth and redistribution, 1979 Soviet census, southern high fertility shift

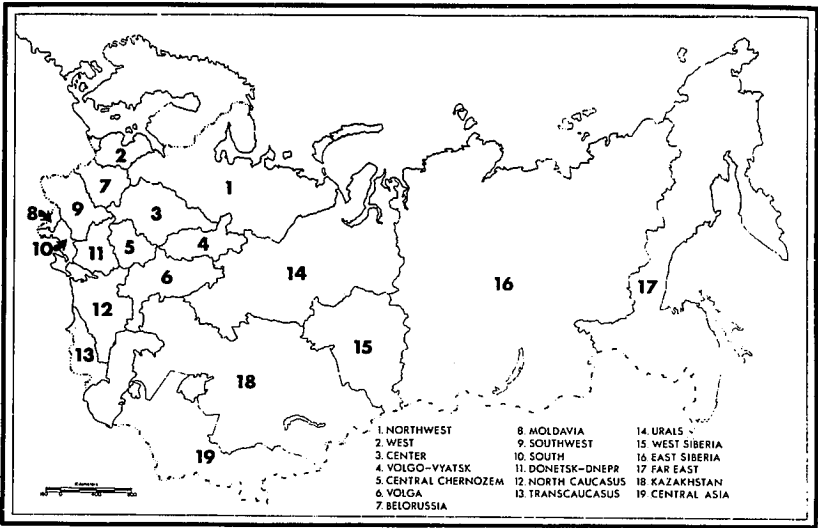
Regional population trends and the redistribution of population within a country can have a major impact on that society. In the U.S.S.R., a number of demographic and geographic forces will have a discernible impact on Soviet society, and many of these are concerned with population redistribution. These forces include a low and generally declining rate of population growth, sharp regional differentials in rates of population growth related to low Slavic and generally moderate to high non-Slavic fertility, an aging 'European' population, severe regional labour shortages resulting in part from the fact that migration is not meeting the needs of the economy, widespread rural depopulation in 'European' areas, rapidly growing rural populations in many 'non-European' areas, rapid urbanization, the maldistribution of population relative to industrial resources, the multinational character of the U.S.S.R. and the differential integration of the nationalities into the modern society, and very high and increasing female work force participation rates.

Recently published revised results from the 1979 Soviet census allow an up-to-date investigation of regional population growth and redistribution in the U.S.S.R. (*Vestnik Statistiki*, 1980: 11-30).¹ The primary purpose of this paper is to assess very broadly the regional growth and redistribution of the total, urban, and rural population of the U.S.S.R., as well as regional patterns of urbanization for the most recent intercensal period of 1970-79. A further purpose is to update our recent study of population redistribution in Russia and the U.S.S.R. between 1897 and 1977 (Lewis and Rowland,

1979). In order to investigate the continuity of trends, comparisons with preceding intercensal periods will also be undertaken, particularly with that of 1959-70.

The regional framework being utilized is composed of the 19 economic regions of 1961 — the comparable set of regions which we have used in other studies of Soviet population change and into which we have re-ordered data from the censuses of 1897, 1926, 1939, 1959, 1970, and now 1979 (Lewis and Rowland, 1979:30-41; Tsentral'nyy Statisticheskiiy Komitet Ministerstva Vnutrennikh Del, 1899-1905; Tsentral'noye Statisticheskoye Upravleniye SSSR, 1928-33; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972-84; *Vestnik Statistiki*, 1980) (Figure 1). These regions have, in turn, been amalgamated into two sets of gross regions: (1) the Western U.S.S.R. (regions 1 to 13 in Figure 1) and (2) Eastern U.S.S.R. (regions 14 to 19); and into four quadrants — Northern European U.S.S.R. or the northwestern part of the U.S.S.R. (regions 1 to 7 and 9 in Figure 1); the European Steppe or the southern part of the European U.S.S.R. (regions 8 and 10 to 12); the Russian East or Siberia (regions 14 to 17); and the Non-Slavic South or the south-central U.S.S.R. (regions 13, 18, and 19). A major advantage of these regionalization procedures is that they allow a broad comparative perspective of present-day patterns with those throughout the century. The discussion of trends in urban and rural population change and urbanization for 1959-79 will be based on the official Soviet definitions of urban and rural.

FIGURE 1. ECONOMIC REGIONS: 1961



Regional Total Population Trends

Two major regional total population trends between 1970 and 1979 were evident (Tables 1 and 2 and Figure 2). First, the U.S.S.R. as a whole, and virtually every region, had a lower average annual rate of total population change between 1970 and 1979 as compared to 1959-70; also, regional variations in rates of total population change for 1959-70 generally continued between 1970 and 1979.

Tables 1 and 2 reveal that every gross region and all but two of the economic regions (the Far East and Northwest) had a lower rate of total population change between 1970 and 1979. Indeed, unlike the 1959-70 period when no region declined in population, between 1970 and 1979 two regions, the Volgo-Vyatsk and Central Chernozem, experienced population decline, although the rate of the former region rounded off to 0.0. This marks a return to the pre-1959 situation, when each intercensal period included at least one region with population decline (Lewis and Rowland, 1979:75).

TABLE 1. AVERAGE ANNUAL PERCENTAGE CHANGE IN THE TOTAL, URBAN, AND RURAL POPULATIONS BY GROSS REGION: 1959-79

Region	Total		Urban		Rural	
	1959- 70	1970- 79	1959- 70	1970- 79	1959- 70	1970- 79
Western USSR	1.1	0.6	2.8	2.0	-0.8	-1.4
Eastern USSR	1.8	1.4	2.7	2.1	0.8	0.4
Northern European USSR	0.8	0.5	2.8	2.1	-1.4	-1.9
European Steppe	1.6	0.8	2.7	1.7	0.3	-0.7
Russian East	0.9	0.8	2.1	1.7	-0.9	-1.3
Non-Slavic South	3.0	2.0	3.9	2.7	2.2	1.5
USSR total	1.3	1.0	2.8	2.0	-0.3	-0.8

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

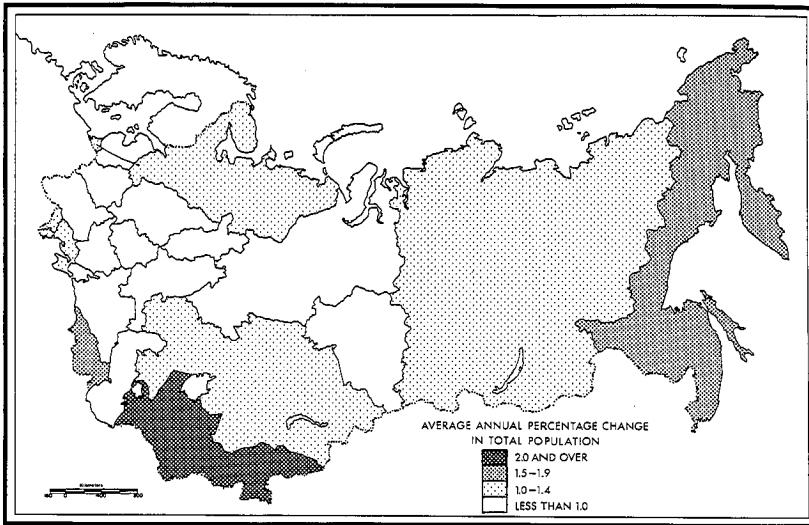
Although the 1970-79 period marked a departure from the 1959-70 period in terms of a general decline in rates of change, regional variations in these rates were very similar to those of the 1959-70 period (Tables 1 and 2). In terms of the gross regions, the Eastern U.S.S.R. continued to grow more rapidly than the Western U.S.S.R., and among the four quadrants, the most rapid growth by far in both periods was experienced by the Non-Slavic South. The other three quadrants continued to have much lower rates of growth, with the Northern European U.S.S.R. again having the lowest rate. The relatively low rate of increase of the Russian East marks a continuation of a trend established between 1959 and 1970, which was a reversal of previous trends (Lewis and Rowland, 1979:73).

TABLE 2. AVERAGE ANNUAL PERCENTAGE CHANGE IN THE TOTAL, URBAN, AND RURAL POPULATIONS BY ECONOMIC REGION: 1959-79

Region	Total		Urban		Rural	
	1959-70	1970-79	1959-70	1970-79	1959-70	1970-79
Northwest	1.0	1.0	2.2	1.8	-1.5	-1.8
West	1.2	0.8	2.8	2.2	-0.6	-1.4
Center	0.7	0.5	2.2	1.6	-2.5	-2.5
Volgo-Vyatsk	0.1	-0.0	2.9	1.8	-2.3	-2.5
Central Chernozem	0.3	-0.3	3.9	2.7	-1.6	-2.9
Volga	1.3	0.8	3.2	2.2	-1.1	-1.9
Belorussia	1.0	0.6	4.2	3.3	-0.9	-1.9
Moldavia	2.0	1.2	5.1	3.5	0.8	-0.2
Southwest	0.7	0.4	3.4	2.7	-0.7	-1.3
South	2.1	1.3	3.6	2.3	0.4	-0.3
Donetsk-Dnepr	1.2	0.5	2.0	1.3	-0.8	-1.5
North Caucasus	1.9	0.8	3.3	2.0	0.7	-0.3
Transcaucasus	2.3	1.5	3.3	2.4	1.4	0.5
Urals	0.9	0.4	2.0	1.6	-0.8	-1.7
West Siberia	0.4	0.3	2.0	1.4	-1.7	-1.5
East Siberia	1.4	1.2	2.9	2.3	-0.5	-0.9
Far East	1.5	1.7	2.0	2.2	0.3	0.4
Kazakhstan	3.1	1.4	4.3	2.1	1.9	0.5
Central Asia	3.4	2.8	4.2	3.6	2.9	2.3
USSR total	1.3	1.0	2.8	2.0	-0.3	-0.8

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

FIGURE 2. TOTAL POPULATION CHANGE: 1970-79



Rates of change by economic region also generally reflect the continuity of the regional patterns of growth (Tables 1 and 2 and Figure 2). Based on the 19 regions, the rank correlation (r_s) between 1959-70 rates and 1970-79 rates was .921, indicating that regional variations in both periods were very similar. The most rapid growth was experienced by the regions of the Non-Slavic South (Central Asia, the Transcaucasia, and Kazakhstan), as well as the Far East of the Russian East, which had a rate surpassed only by Central Asia. The rate of Central Asia, which still hovered around three per cent per year, was by far the highest of any of the 19 regions and, in fact, was on par with that of many underdeveloped countries. Furthermore, the Non-Slavic South alone accounted for nearly one half (44.1 per cent) of the total population growth of the U.S.S.R., despite having only about one fifth (20.7 per cent in 1979) of the total population. The slowest increases or even declines were found in regions of the Russian East, particularly the Urals and West Siberia, and in the Northern European U.S.S.R., especially the Volgo-Vyatsk and Central Chernozem, which, as mentioned before, had absolute declines.

Regional Distribution and Redistribution of the Total Population

Regional variations in total population growth rates influence, in turn, the regional redistribution of the total population. Regions with a rate of change above the national average will have a positive shift (that is, the per cent of the total population of the U.S.S.R. residing in the region will increase), while those with a rate below the average will have a negative shift.

The regional distribution and redistribution of the total population of the U.S.S.R. for 1970-79 is shown in Tables 3 and 4 and Figures 3 and 4. It is evident that the most pronounced shift between 1970 and 1979 was from the north to the south. The three northern quadrants of the Northern European U.S.S.R., the European Steppe, and the Russian East all had declining shares of the Soviet population, while the relatively rapidly growing Non-Slavic South had an increasing share, especially Central Asia; unlike previous periods, the shifts to Kazakhstan and the Transcaucasia — the other two regions of the Non-Slavic South — were no longer that great. Indeed, 1970-79 marked

the first intercensal period where three quadrants had declining shares while only one had an increasing share. The greatest decline was experienced by the Northern European U.S.S.R., which continued a status it held in all preceding periods as well. The decline experienced by the Russian East has occurred only since 1959, while that of the European Steppe was a new development of the 1970-79 period (Lewis and Rowland, 1979:48-62).

TABLE 3. TOTAL POPULATION DISTRIBUTION AND REDISTRIBUTION
BY GROSS REGION: 1959-79

Region	Percent Distribution			Redistribution:			
	1959	1970	1979	Total 1959- 70	1970- 79	Average 1959- 70	Annual ^a 1970- 79
Western USSR	69.8	68.1	66.7	-1.7	-1.4	-0.15	-0.16
Eastern USSR	30.2	31.9	33.3	1.7	1.4	0.15	0.16
Northern European USSR	47.9	45.1	43.5	-2.8	-1.6	-0.25	-0.18
European Steppe	17.4	17.9	17.8	0.5	-0.1	0.05	-0.01
Russian East	19.2	18.3	18.0	-0.9	-0.3	-0.08	-0.03
Non-Slavic South	15.6	18.7	20.7	3.1	2.0	0.28	0.22
USSR total	100.1	100.0	100.0				

^aCalculated by subtracting the earlier percentage from the later percentage and dividing the difference by the number of years in the period.

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

In order to provide a broader perspective on regional population redistribution between 1970 and 1979, comparisons with the preceding intercensal periods from 1897 to 1970 will be made (Lewis and Rowland, 1979:49, 51, 59). These comparisons further document the considerable magnitude of the 1970-79 shift to the Non-Slavic South in general, and to Central Asia in particular, as the average annual shift (overall shift divided by the number of years) to the Non-Slavic South was surpassed only by the same quadrant between 1959 and 1970, while the shift to Central Asia (0.17) was *the greatest* to any of the 19 economic regions *in any period*.

TABLE 4. TOTAL POPULATION DISTRIBUTION AND REDISTRIBUTION
BY ECONOMIC REGION: 1959-79

Region	Percent Distribution			Redistribution: Total Average Annual ^a			
	1959	1970	1979	1959- 70	1970- 79	1959- 70	1970- 79
Northwest	5.5	5.3	5.4	-0.2	0.1	-0.02	0.01
West	2.9	2.8	2.8	-0.1	0.0	-0.01	0.00
Center	11.9	11.1	10.7	-0.8	-0.4	-0.07	-0.04
Volgo-Vyatsk	4.0	3.5	3.2	-0.5	-0.3	-0.05	-0.03
Central Chernozem	4.2	3.7	3.3	-0.5	-0.4	-0.05	-0.04
Volga	6.0	5.9	5.8	-0.1	-0.1	-0.01	-0.01
Belorussia	3.9	3.7	3.6	-0.2	-0.1	-0.02	-0.01
Moldavia	1.4	1.5	1.5	0.1	0.0	0.01	0.00
Southwest	9.7	9.1	8.7	-0.6	-0.4	-0.05	-0.04
South	2.4	2.6	2.7	0.2	0.1	0.02	0.01
Donetsk-Dnepr	7.9	7.8	7.5	-0.1	-0.3	-0.01	-0.03
North Caucasus	5.6	6.0	6.0	0.4	0.0	0.04	0.00
Transcaucasus	4.6	5.1	5.4	0.5	0.3	0.05	0.03
Urals	8.9	8.4	8.2	-0.5	-0.2	-0.05	-0.02
West Siberia	4.9	4.4	4.2	-0.5	-0.2	-0.05	-0.02
East Siberia	3.3	3.4	3.4	0.1	0.0	0.01	0.00
Far East	2.1	2.1	2.3	0.0	0.2	0.00	0.02
Kazakhstan	4.5	5.4	5.6	0.9	0.2	0.08	0.02
Central Asia	6.5	8.2	9.7	1.7	1.5	0.15	0.17
USSR total	100.2	100.0	100.0				

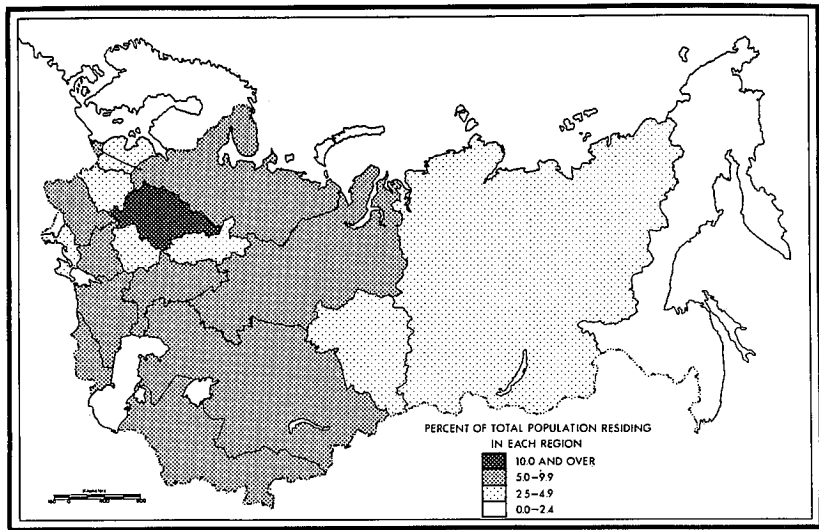
^aCalculated by subtracting the earlier percentage from the later percentage and dividing the difference by the number of years in the period.

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

FIGURE 3. TOTAL POPULATION REDISTRIBUTION: 1970-79



FIGURE 4. TOTAL POPULATION DISTRIBUTION: 1979



From the broadest intercensal perspective, that is, from 1897 to 1979, the population of Russia and the U.S.S.R. has undergone a west to east-and-south shift. Whereas the Eastern U.S.S.R. had only one fifth (19.2 per cent) of the total population in 1897, by 1979 this share had increased to exactly one third. The greatest shifts have been to the Non-Slavic South, particularly Central Asia, as well as

to the Russian East. However, between 1897 and 1959, the greatest shift was to the Russian East and West Siberia, and not the Non-Slavic South and Central Asia. But since 1959, as we have mentioned, the population has actually shifted away from the Russian East and become more accentuated towards the Non-Slavic South and Central Asia.

Despite the shifts away from the west, it should be remembered that the Western U.S.S.R. still contains roughly two thirds of the Soviet population (Table 3 and Figure 4). In addition, the Northern European U.S.S.R. is still the most populous of the quadrants, with nearly one half of the 1979 total population (262.4 million) of the U.S.S.R. — a figure more than twice that of any other quadrant. Furthermore, the Centre of the Western U.S.S.R. continues to have the largest population of any of the 19 economic regions, although it will be surpassed by Central Asia during the early 1980s, assuming a continuation of 1970-79 average annual rates.

The degree to which the Soviet population has redistributed since 1970 and whether it is becoming regionally more concentrated or dispersed can be measured by aggregate indicators, particularly the coefficient of redistribution and dissimilarity index. The coefficient of redistribution measures changes in the distribution of the population and is calculated by comparing the percentage distribution at one point in time with that of another point in time. The absolute value of the sum of either the positive or negative differences represents the coefficient of redistribution and can vary from 0 to 100, with 0 indicating no redistribution and 100 indicating complete redistribution.

Based on the 19 regions, the coefficient of redistribution for the U.S.S.R. between 1970 and 1979 was 2.1, but in order to provide a more precise perspective on the extent of redistribution of 1970-79 as compared to earlier periods, the coefficients of redistribution for each intercensal period have been divided by the respective number of years, to provide an average annual measure. Results indicate that the extent of redistribution between 1970 and 1979 was lower than that of all other periods except 1897-1926 (Table 5). This appears to be due chiefly to the fact that although Central Asia had an unprecedented degree of average annual redistribution (0.17), no other region had an appreciable shift, either positive or negative. The highest absolute value was 0.04, one surpassed by at least one region in each of the four 1897-1970 intercensal periods (Lewis and Rowland, 1979:59). The main explanation is that regional variations in growth rates were generally not as great as in preceding periods. The range, mean deviation, and standard deviation for average annual percentage changes of 1970-79 were lower than those for all of the preceding intercensal periods, while the 1970-79 coefficient of variation was the lowest for all periods except 1959-70 (Table 5).

From a broader perspective, the coefficient of redistribution between 1897 and 1979 was 18.4. This signifies that 18.4 per cent of the 1979 population of the U.S.S.R. — or nearly 50 million people (48.3 million) — would have to be moved in order to achieve the distribution of 1897.

The dissimilarity index measures the degree of concentration or dispersal of a population by comparing the percentage distribution of a population by region with the value that would represent an even regional distribution of the population, that is, an identical percentage of the population residing in each region. The dissimilarity index is the absolute value of the sum of either the positive or negative differences. A value of 0 indicates a uniform regional distribution of the population, and a value of almost 100 represents a complete concentration of a population in one region.

Dissimilarity indexes for each census year indicate that the Soviet population was becoming more dispersed between 1897 and 1959, but since 1970 has become slightly more concentrated again. In particular, between 1897 and 1959, the dissimilarity index declined from 23.8 to 19.9; in 1970, it remained at 19.9; but in 1979, it increased again to 20.4 (Table 5). Although the deconcentration between 1897 and 1959 involved, of course, the general shift away from the main area of settlement in the west, the increased concentration since 1970 does *not* signify a shift back to the western areas. Quite the contrary. What has happened is that the shift to Central Asia in recent years has been so

TABLE 5. SUMMARY INDICATORS OF TOTAL POPULATION DISTRIBUTION AND REDISTRIBUTION

Coefficient of Redistribution	Indicators of Deviation based on Average Annual Percentage Rates of Population Change:					
	Total	Average Annual ^a	Range	Mean Deviation	Standard Deviation	Coefficient of Variation
1897-1926	5.0	0.17	4.4	0.67	1.06	0.88
1926-39	5.1	0.42	5.4	0.95	1.28	0.91
1939-59	6.7	0.34	3.1	0.74	0.87	1.74
1959-70	3.9	0.35	3.3	0.69	0.87	0.62
1970-79	2.4	0.27	3.1	0.53	0.68	0.76

Dissimilarity Index^b

	Equal Population	Land Area
1897	23.8	60.9
1926	23.3	58.1
1939	21.1	55.5
1959	19.9	52.2
1970	19.9	51.8
1979	20.4	51.7

^aCalculated by dividing the coefficient of redistribution by the number of years in the period.

^bIn the case of a dissimilarity index based on the 19 economic regions, an additional refinement was necessary. Because an equal distribution here means 5.3 percent in each region (100.0 percent divided by 19), the sum of the percentages is 100.7 (5.3 percent times 19). There was, thus, a substantial difference between the positive and negative differences. Therefore, the dissimilarity index here was calculated by summing the absolute values of the positive and negative differences and dividing the sum by two.

Sources: Lewis and Rowland, 1979: 48-83; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

substantial that the Soviet population has reached the stage where it is actually becoming more concentrated again, but this time in a new centre of concentration. Dissimilarity indexes, based on the distribution of population as compared to the distribution of land area, also suggest that this aspect of the deconcentration of the Soviet population since the turn of the century has now apparently almost ended (Table 5).

Regional Urban and Rural Population Trends

Regional patterns in average annual rates of urban and rural population change between 1970 and 1979 were quite similar to those of the total population (Tables 1 and 2 and Figures 2, 5, and 6). Urban and rural rates for 1970-79 were generally lower than those of 1959-70 and similar to regional variations of 1959-70 (based on the 19 regions, the rank correlation coefficients between 1959-70 and 1970-79 rates were .789 and .940 for the urban and rural populations, respectively). Regional variations in total population change on the one hand, and urban and rural change on the other hand, were also fairly similar, although some notable differences between total and urban rates occurred (the r_s between total and urban change was only .402, while that for total and rural change was .822).

Similar to the total population, the highest rates of urban growth in terms of the two sets of gross regions were experienced by the Eastern U.S.S.R. and the Non-Slavic South, and in terms of the economic regions, two regions of the Eastern U.S.S.R. and Non-Slavic South—Central Asia and Kazakhstan—as well as Moldavia, had relatively high urban growth rates. Relatively slow urban and total growth was characteristic of the Western U.S.S.R., European Steppe and Russian East, and such highly industrialized economic regions as the Centre, Donetsk-Dnepr, Urals, and West Siberia.

However, some appreciable differences between regional total and urban growth rates also existed. Most notably, the Northern European U.S.S.R., the quadrant with the lowest total population growth rate, was not only an area of average urban growth, but in fact included many regions with the most rapid urban growth rates in the U.S.S.R., especially Belorussia, the Southwest, and Central Chernozem (Tables 1 and 2 and Figures 2 and 5).

Regional variations in rural population change between 1970 and 1979 were, as noted above, closer to those of total growth than were patterns of urban growth. The highest rates of rural increase were experienced by the Eastern U.S.S.R., the Non-Slavic South, and the three regions of the latter—Central Asia, the Transcaucasus, and Kazakhstan (Tables 1 and 2 and Figure 6). Indeed, the *rural* growth rate of Central Asia actually exceeded the *urban* growth rate of the majority (11) of the other 18 regions (Table 2). These regions, along with the Far East, were, in fact, the only regions to continue to experience rural population increase between 1970 and 1979, since between 1959-70 and 1970-79 the number of economic regions with rural population decline increased from 12 to 15.

The greatest rates of rural decline were experienced by the regions with the slowest total population growth rates: the Northern European U.S.S.R. and the Russian East and inclusive regions of each—especially the Central Chernozem, Centre, Volgo-Vyatsk, Volga, Belorussia, Northwest, Urals, and West Siberia, each of whose rural population declined by roughly two per cent per year, with the first three regions having annual declines approaching three per cent. It appears that the regional rates of rural population decline experienced in the post-1970 period were greater than those experienced in any intercensal period in Russia and the U.S.S.R. between 1897 and 1970, although the pre-1970 data are based on a different definition of rural (Lewis and Rowland, 1979:360-372).

Regional Urbanization Trends

Regional variations in urban and rural rates of change govern, in turn, variations in rates of urbanization, which is another major facet of population redistribution. Because urban growth rates for all regions between 1970 and 1979 exceeded corresponding rates for the total and rural populations, the level of urbanization for every region, of course, increased between 1970 and 1979 (Tables 1, 2, 6, and 7).

FIGURE 5. URBAN POPULATION CHANGE: 1970-79

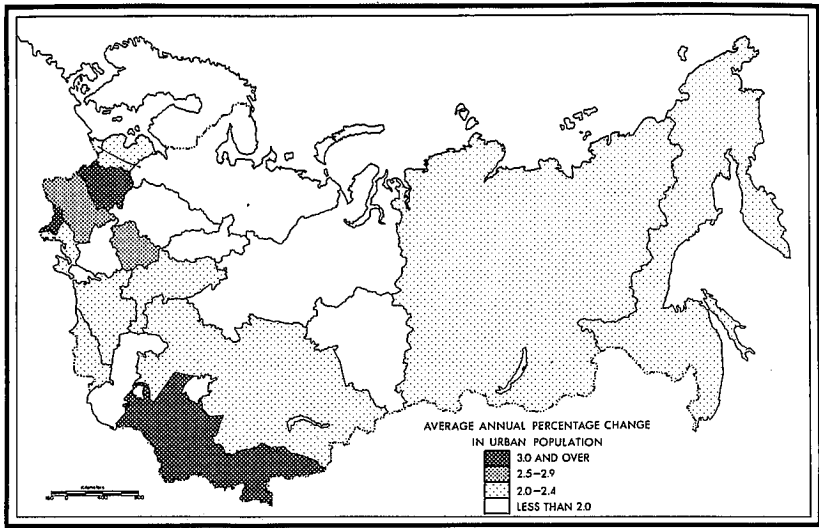
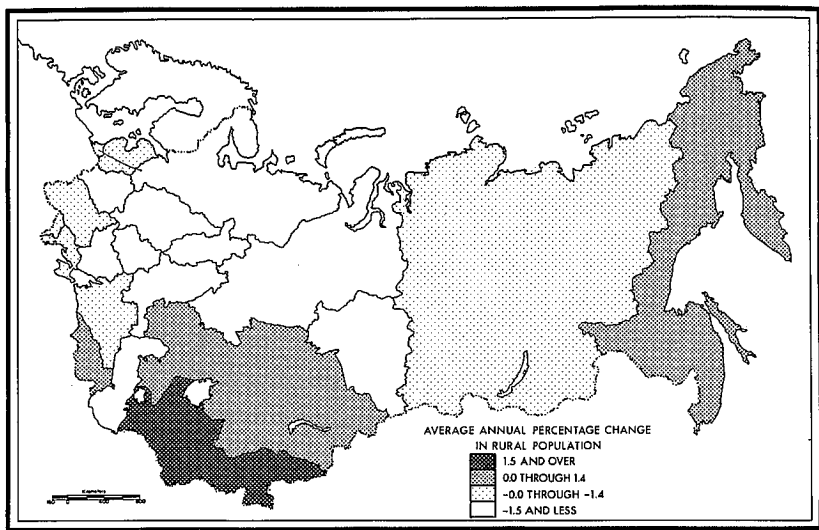


FIGURE 6. RURAL POPULATION CHANGE: 1970-79



Similar to rates of total, urban, and rural change, rates of urbanization for the 1970-79 period were generally somewhat lower than those for the 1959-70 period. Reflecting the fact that the rate of urbanization for the U.S.S.R. as a whole was somewhat lower between 1970 and 1979 than between 1959 and 1970, the average annual percentage point change in the level of urbanization for all gross

TABLE 6. URBANIZATION BY GROSS REGION: 1959-79

Region	Percent of Total Population Residing in Urban Centers:			Average Annual Percentage Point Change in Level of Urbanization: ^a	
	1959	1970	1979	1959-70	1970-79
Western USSR	47.1	56.8	64.1	0.88	0.81
Eastern USSR	49.8	55.1	58.9	0.48	0.42
Northern European USSR	45.3	56.6	65.2	1.03	0.96
European Steppe	52.3	59.0	64.0	0.61	0.56
Russian East	56.3	64.1	70.2	0.71	0.68
Non-Slavic South	40.6	45.1	48.1	0.41	0.33
USSR total	47.9	56.3	62.3	0.76	0.67

^aCalculated by subtracting the earlier level from the later level and dividing the difference by the number of years in the period.

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

regions, and for 12 of the 19 economic regions, was lower during the 1970-79 period (Tables 6 and 7). Of those seven regions with increasing rates, none had appreciable increases. The general decline in the rate of urbanization reflects the situation that because urbanization is a finite process (100 per cent is the limit), rates of urbanization inevitably decline as higher levels are reached. The rank correlation coefficient based on the 19 regions between the level of urbanization of 1970 and the rate of urbanization from 1970 to 1979 was in fact negative ($- .242$).

Also, similar to the experience of total, urban, and rural population change, regional variations in rates of urbanization for the 1959-70 period generally continued between 1970 and 1979 (the r_s between 1959-70 and 1970-79 rates based on the 19 regions was .910) (Tables 6 and 7). In terms of gross regions, the Western U.S.S.R. continued to urbanize more rapidly than the Eastern U.S.S.R., and the Northern European U.S.S.R. continued to urbanize more rapidly than the other three quadrants, with the Non-Slavic South continuing to have by far the lowest rate. With respect to economic regions, the most rapid urbanization was, generally speaking, again experienced by the Central Chernozem, Belorussia, the Volgo-Vyatsk, the Southwest, and the Volga — all regions of

TABLE 7. URBANIZATION BY ECONOMIC REGION: 1959-79

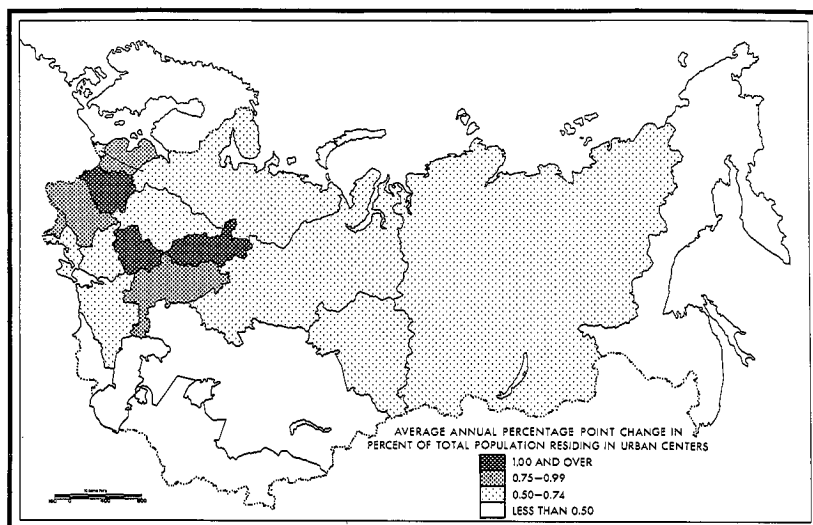
Region	Percent of Total Population Residing in Urban Centers:			Average Annual Percentage Point Change in Level of Urbanization: ^a	
	1959	1970	1979	1959-70	1970-79
Northwest	64.6	73.3	79.3	0.79	0.67
West	48.2	57.4	65.1	0.84	0.86
Center	60.8	72.4	79.1	1.05	0.74
Volgo-Vyatsk	38.9	52.9	62.3	1.27	1.04
Central Chernozem	26.9	40.1	52.5	1.20	1.38
Volga	48.4	59.8	68.3	1.04	0.94
Belorussia	30.8	43.4	55.0	1.15	1.29
Moldavia	22.3	31.7	39.3	0.85	0.84
Southwest	28.7	38.7	47.4	0.91	0.97
South	48.7	57.1	62.9	0.76	0.64
Donetsk-Dnepr	65.7	72.1	76.9	0.58	0.53
North Caucasus	42.4	49.5	54.6	0.65	0.57
Transcaucasus	45.9	51.1	55.4	0.47	0.48
Urals	56.4	63.5	70.0	0.65	0.72
West Siberia	52.9	63.0	68.8	0.92	0.64
East Siberia	52.5	61.4	68.0	0.81	0.73
Far East	69.6	73.4	76.4	0.35	0.33
Kazakhstan	43.7	50.3	53.9	0.60	0.40
Central Asia	34.9	38.0	40.7	0.28	0.30
USSR total	47.9	56.3	62.3	0.76	0.67

^aCalculated by subtracting the earlier level from the later level and dividing the difference by the number of years in the period.

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 11-30.

the Northern European U.S.S.R. — while the slowest was again experienced by Central Asia and the Far East (Tables 6 and 7 and Figure 7). The rapid urbanization of the Northern European U.S.S.R. reflects the rapid urban growth, slow total population growth, and sharp rural population decline of this region. The considerable urban process of the older, western areas is a newly-emergent trend of the post-1959 period, as these areas previously had a slower urban process (Lewis and Rowland, 1979: chapter 4). The slow urbanization of the Non-Slavic South occurred despite its urban growth rate being the highest of any of the four quadrants, because its rates of total and rural change were also the highest.

FIGURE 7. CHANGE IN URBANIZATION: 1970-79



The experience of the Non-Slavic South exemplifies the fact that the relationship between regional urbanization and urban growth rates was quite low (the rank correlation co-efficient based on the 19 regions was .188), while, as expected, that between rates of urbanization and rural change was high and negative ($-.754$). Indeed, it could be said that urbanization variations in the U.S.S.R. are now more related to rural change variations than to urban growth variations. The relatively weak relationship between urbanization and urban growth and relatively strong relationship between urbanization and rural change also continues a development of the 1959-70 period, which marked a reversal of pre-1959 trends and relationships (Lewis and Rowland, 1979:243).

By 1979, the U.S.S.R. and most of its regions had a majority of their population in urban centres (Table 7 and Figure 5). Especially high levels (70 per cent or more) were characteristic of such major industrialized regions as the Centre, Northwest, Donetsk-Dnepr, and Urals, as well as the Far East. Only three regions still had a level of less than 50 per cent — Moldavia, the Southwest, and Central Asia.

Discussion

An explanation of regional population trends and redistribution requires a discussion of regional natural increase and migration. Unfortunately, appropriate data by every economic region for the late

1970s (and thus the entire 1970-79 period) are lacking, as it appears that the Soviets have, in fact, generally reduced the amount of published data by region for the latter 1970s. However, absolute natural increase data by economic region are available for 1970, 1972, and 1973, and thus afford a limited assessment of regional rates of natural increase and, as a residual, net migration from January 1970 to January 1974; for comparative purposes, rates for 1959-70 will also be utilized. Rates for both 1959-70 and 1970-74 are shown in Tables 8 and 9. Although these rates are rather crude, they are probably quite representative of actual regional natural increase and migration trends. Population trends for 1970-74 are also probably very indicative of those of 1970-79 trends as a whole. Rank correlation coefficients based on the 19 regions between 1970-79 growth rates on the one hand, and growth rates for 1970-74 and 1974-79 on the other, both exceeded .900 (.975 and .959, respectively).

TABLE 8. NET MIGRATION AND NATURAL INCREASE BY GROSS REGION: 1959-74

Region	Annual Net Migration		Annual Natural Increase	
	1959-70	1970-74	1959-70	1970-74
	as Percent of:		as Percent of:	
	July 1964 Population	January 1972 Population	July 1964 Population	January 1972 Population
Western USSR	0.1	0.1	1.0	0.6
Eastern USSR	-0.0	-0.1	1.8	1.5
Northern European USSR	-0.1	+0.0	0.9	0.5
European Steppe	0.5	0.3	1.1	0.7
Russian East	-0.4	-0.3	1.3	0.9
Non-Slavic South	0.4	0.1	2.5	2.1

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972. For a discussion of other sources and the calculation procedures of these variables, see footnote 2.

From Tables 8 and 9, it is apparent that the general decline in regional rates of population change from 1959-70 to 1970-79 was due primarily to a decline in the crude natural increase rates of all regions. This, in turn, reflects the fact that the total Soviet growth rate has slowed (Table 1) because of a generally declining crude birth rate and increasing crude death rate. As Table 10 shows, annual crude birth rates in the 1960s were generally in the range of 17-25 births per 1000 people, while in the 1970s they have been only roughly 17-18; crude death rates in the 1960s were only roughly 7-8, whereas in the late 1970s they were approximately 8-10; and, accordingly, crude rates of natural increase in the 1960s were roughly 9-18, while in the 1970s they were only approximately 9-10. Indeed, the recorded mortality rate has apparently increased not only on an unstandardized crude basis, but also on an age standardized basis (Dutton, 1980).

TABLE 9. NET MIGRATION AND NATURAL INCREASE BY ECONOMIC REGION:
1959-74

Region	Annual Net Migration		Annual Natural Increase	
	1959-70	1970-74	1959-70	1970-74
	as Percent of:		as Percent of:	
	July 1964 Population	January 1972 Population	July 1964 Population	January 1972 Population
Northwest	0.2	0.4	0.9	0.5
West	0.4	0.5	0.8	0.6
Center	0.1	0.2	0.6	0.3
Volgo-Vyatsk	-0.9	-0.7	1.0	0.5
Central Chernozem	-0.5	-0.9	0.8	0.3
Volga	0.2	0.2	1.1	0.6
Belorussia	-0.3	-0.1	1.3	0.8
Moldavia	0.2	0.1	1.7	1.3
Southwest	-0.3	-0.1	1.0	0.7
South	1.1	0.7	1.0	0.7
Donetsk-Dnepr	0.2	0.2	0.9	0.5
North Caucasus	0.6	0.3	1.2	0.8
Transcaucasus	+0.0	+0.0	2.3	1.6
Urals	-0.4	-0.5	1.2	0.8
West Siberia	-0.7	-0.7	1.1	0.8
East Siberia	-0.1	-0.0	1.4	1.1
Far East	0.2	1.0	1.3	1.1
Kazakhstan	0.6	-0.0	2.3	1.7
Central Asia	0.4	0.2	3.0	2.7

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1962-63; Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1972. For a discussion of other sources and the calculation procedures of these variables, see footnote 2.

TABLE 10. CRUDE BIRTH, DEATH, AND NATURAL INCREASE RATES
OF THE U.S.S.R.: 1959-78

Year	Crude Birth Rate	Crude Death Rate	Crude Rate of Natural Increase
1959	25.0	7.6	17.4
1960	24.9	7.1	17.8
1961	23.8	7.2	16.6
1962	22.4	7.5	14.9
1963	21.1	7.2	13.9
1964	19.5	6.9	12.6
1965	18.4	7.3	11.1
1966	18.2	7.3	10.9
1967	17.3	7.6	9.7
1968	17.2	7.7	9.5
1969	17.0	8.1	8.9
1970	17.4	8.2	9.2
1971	17.8	8.2	9.6
1972	17.8	8.5	9.3
1973	17.6	8.7	8.9
1974	18.0	8.7	9.3
1975	18.1	9.3	8.8
1976	18.4	9.5	8.9
1977	18.1	9.6	8.5
1978	18.2	9.7	8.5

Sources: Narodnoye Khozyaystvo SSSR v 1970 G.: 47; Narodnoye Khozyaystvo SSSR za 60 Let: 69; Vestnik Statistiki, No. 11 (1978): 80; and Narodnoye Khozyaystvo SSSR v 1978 G.: 24.

In order to investigate these factors in greater detail, we will examine the quadrants in order of their rates of total population growth and the factors which accounted for such rates. The relatively rapid

growth of the regions of the Non-Slavic South was primarily the result of their higher rates of fertility and natural increase, especially Central Asia (Tables 8 and 9). In addition, Central Asia also had a moderate rate of net in-migration both prior and subsequent to 1970, while in contrast, of the other two regions of the Non-Slavic South, the Transcaucasus had a negligible net in-migration rate and Kazakhstan switched from being a region of relatively high net in-migration between 1959 and 1970 to one of net out-migration after 1970.

Although below the total Soviet rate, relatively moderate rates of total population change were characteristic of the European Steppe and Russian East. The moderate rate of the European Steppe was maintained by generally moderate rates of natural increase and net in-migration to all of its regions after 1970, especially the South, which includes the Crimean resorts (Tables 8 and 9).

However, the European Steppe, along with Kazakhstan, had a relatively great decline in its total growth rate from 1959-70 to 1970-79. This seems chiefly the result of not only a general decline in natural increase, but also of a decline in net in-migration rates, especially for the South and North Caucasus, which have traditionally been major regions of net in-migration (Table 9).

The moderate rate of the Russian East could be explained by the fact that although it contained two regions with high net out-migration rates (Urals and West Siberia), this was somewhat neutralized by all regions of the quadrant generally having relatively moderate natural increase rates. Furthermore, one of its regions, the Far East, had the highest rate of net in-migration of any of the 19 regions, and another, East Siberia, had only a low rate of net out-migration. Both regions contain parts of the Baykal-Amur Mainline (BAM), the new railroad in this area (Shabad and Mote, 1977). In addition, as Tables 8 and 9 suggest, the extent of out-migration from the east (particularly from West and East Siberia and the Far East) has been reduced since 1970, and it is possible to conclude that recent Soviet efforts to reduce out-migration from Siberia by means of wage incentives may be having some effect (Lewis and Rowland, 1979:151).

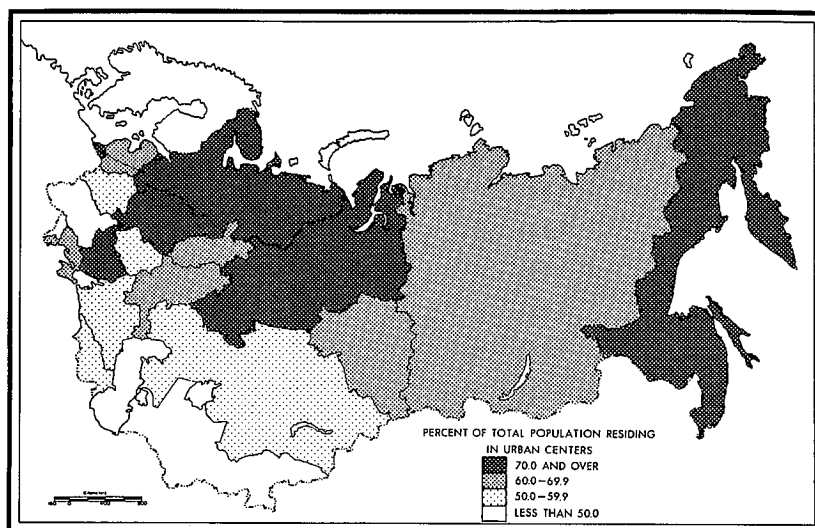
Finally, the very low rate of population increase (an even decline in certain cases) of the Northern European U.S.S.R. was due to the fact that many of its regions had net out-migration and all had relatively low rates of natural increase and fertility (Tables 8 and 9). Indeed, levels of fertility in these Slavic and Baltic areas are now below or near replacement levels (Borisov, 1976:78). The existence of total population decline in the Central Chernozem and Volgo-Vyatsk regions was due to their especially high rates of net out-migration and low rates of natural increase.

The Northern European U.S.S.R. was also one of the few areas where relative rates of total, urban, and rural change were not similar. It continued to have relatively rapid urban growth, but also slow total growth, and the greatest rate of rural population decline, leading to rapid urbanization. The rapid urban process was evidently due to a continuation of substantial industrial investment in many portions of this quadrant. Relatively rapid urban growth and industrial production growth continued to be characteristic after 1970 of such regions as Belorussia, the Southwest, Central Chernozem, the Volga, and the West, most notably Lithuania (Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR, 1976:199). The rapid urbanization, urban growth, and industrialization of the extreme western regions have been recent developments of the post-1959 period, as prior to 1959 a relatively slow urban and industrial process was characteristic of this area (Lewis and Rowland, 1979:225-242).

Summary and Conclusions

The purpose of this paper has been to assess broadly the regional growth and redistribution of the Soviet population during the most recent intercensal period of 1970-79. Results indicate that regional rates of population change between 1970 and 1979 were generally lower than those of 1959-70, primarily due to a general decline in natural increase rates. In addition, regional variations in rates of population change for the 1970-79 period were similar to those of the 1959-70 period. More

FIGURE 8. LEVEL OF URBANIZATION: 1979



specifically, newly-emergent or reversal trends for the 1959-70 period have largely continued. The most pronounced shift has been to the Non-Slavic South, especially Central Asia, while all other quadrants to the north now have declining shares of the total population. Indeed, it is becoming increasingly apparent that whereas it used to be appropriate to discuss the U.S.S.R. in terms of east-west differences, the more appropriate framework is now that of a north-south dichotomy (and it might be added that the same could be said for the United States, although the north-to-south or Snowbelt-to-Sunbelt shift in the U.S.A. is more the result of migration, rather than natural increase differentials). The U.S.S.R. has apparently reversed its long-term trend of deconcentration in the sense that the population as a whole is becoming more concentrated again, but this time in a new area of concentration, Central Asia. The shift to Central Asia was the major movement between 1970 and 1979, as the period was characterized by relatively little redistribution due to the comparative lack of sharp regional variations in growth rates among the remaining eighteen regions.

Although slowed slightly, the urbanization pace continued to be quite rapid due to appreciable urban growth and apparently unprecedented rural population decline. Regional trends of 1959-70 continued as rapid urbanization, rapid urban growth, and sharp rural decline occurred in the Northern European U.S.S.R., while slow urbanization, rapid urban growth, and rapid rural growth occurred in the Non-Slavic South.

Thus we can see that, from a number of perspectives, the Soviet population is becoming more concentrated. Generally speaking, the patterns for 1970-79 correspond to those discussed in our recent book for 1970-77, and follow expected patterns (Lewis and Rowland, 1979).

As an extension of this book and the 1979 census results, it might be worthwhile to make some guarded forecasts for the next decade or so. Total population growth will probably continue to slow down with an increasing crude death rate and a generally declining crude birth rate. The recorded mortality rate, both standardized and unstandardized, has been increasing, and the crude death rate will increase with an aging of the population. The aging will in turn be enhanced by a probable fertility decline as the U.S.S.R. modernizes. Fertility decline will occur, in part, because the level of

urbanization will undoubtedly continue to increase. The U.S.S.R. is not yet as urbanized as most advanced nations, and if recent trends continue, we should expect a level of 70 to 80 per cent to be reached in the next decade or so. The urbanization process will be favoured by the continued presence of a huge rural population of nearly 100 million people — a major potential source of rural-to-urban migration — and an intensification of rural population decline with rural out-migration and declining rural natural increase. However, the urbanization rate will inevitably slow down as the 100 per cent level is approached, and it is possible, though not probable, that Soviet policies to reduce rural out-migration will be carried out more effectively than they have thus far (Lewis and Rowland, 1979: chapter 5).

In terms of regional growth and redistribution, it appears that the extent of redistribution has been lessening and may continue to be quite minimal. On a quadrant level, the extent of net out-migration from the east appears to be declining, and relatively little net migration has also been occurring for the other three quadrants (Tables 8 and 9). Indeed, for all quadrants and a majority of the 19 economic regions, the net migration rate shifted in the direction of 0.0 per cent from 1959-70 to 1970-74 (Tables 8 and 9). Also contributing to a lessening of redistribution will be a probable decline in fertility of all regions with modernization, and a general convergence of fertility and mortality, and thus natural increase — a situation similar to that of the United States.

On the other hand, it should be kept in mind that there is still considerable potential for redistribution, particularly because of the potentially explosive situation with regard to the Turkic-Muslim peoples of Central Asia. Although still predominantly rural, the high fertility and rapid population growth of this area should generate substantial local rural out-migration. Thus, it can be expected that substantial urbanization will occur in this region, as well as in others which are currently not highly urbanized. Indeed, Soboleva (1980:58-61) has made a multiregional population projection to 2024 and concluded that two of the chief Soviet shifts will be away from rural areas and to Central Asia.

TABLE 11. DISTRIBUTION OF MAJOR NATIONALITIES OF CENTRAL ASIA AND KAZAKHSTAN BY TITULAR REPUBLIC: 1970-79

Nationality (Titular Republic)	Percent of Total Population of Nationality Residing in Titular Republic	
	1970	1979
Uzbeks (Uzbek SSR)	84.0	84.9
Kazakhs (Kazakh SSR)	79.9	80.7
Kirgiz (Kirgiz SSR)	88.5	88.5
Tadzhiks (Tadzhik SSR)	76.3	77.2
Turkmens (Turkmen SSR)	92.9	93.3

Sources: Tsentral'noye Statisticheskoye Upravleniye pri Sovete
Ministrov SSSR, 1972; and Vestnik Statistiki, 1980: 24-30.

As we have argued elsewhere, the increasing labour surpluses in the southern areas and labour shortages in the north should lead to a significant south-to-north migration (Lewis and Rowland, 1979:412-424; Lewis, Rowland, and Clem, 1976:343-387). In particular, we contend that with the build-up of population pressures in the rural areas of the Non-Slavic South, not only should a local rural-to-urban migration occur, but because the cities of the Non-Slavic South will not be able to accommodate all of the rural out-migrants, given current levels of investment and because labour shortages exist and will intensify elsewhere in the U.S.S.R., a south-to-north migration should eventually develop. The Non-Slavic South, especially Central Asia, will be, at least in the near future, the last major source of surplus labour in the U.S.S.R.. Given the ethnic differences between the migrants, who are predominately Turkic-Muslims (Turkic language and/or Muslim religion — for example, Uzbeks and Kazakhs), and the peoples of the north, who are predominately Slavic, ethnic intermixing and tensions within northern cities should transpire — a situation which would be somewhat similar to the recent experiences of the United States and Europe. Published data from the 1979 census indicate that such an out-migration has not occurred as of yet. Indeed, the major nationalities of Central Asia and Kazakhstan are slightly more concentrated in their respective union republics than they were in 1970 (Table 11). Our projection, however, was for the migration to occur in the 1980s and 1990s. Thus, we must await additional data, such as the next Soviet census, to explore further the validity of this contention.

Acknowledgment

The authors would like to express their thanks to Jane Rowland for her excellent typing.

Footnotes

- 1 Some recent studies have been based on preliminary results (Clem, 1980; Bond and Lydolph, 1979).
- 2 In order to complete the series of data for January 1970 to January 1974 (1970, 1971, 1972, and 1973), we have roughly estimated 1971 absolute natural increase by computing the average annual natural increase for 1970, 1972, and 1973, and applying this figure to 1971; namely, by summing the 1970, 1972, and 1973 figures and dividing by three. Subtraction of absolute natural increase from total population change for the January 1970 to January 1974 period results in an estimate of net migration for 1970-74. In order to make comparisons with the longer 1959-70 period, absolute natural increase and net migration figures for each period were divided by four and eleven, respectively, in order to estimate average annual natural increase and net migration. Rates of natural increase and net migration for each period were derived by dividing average annual natural increase and net migration figures by the midpoint population of the region (January 1972 for the 1970-74 period, and July 1964 for the 1959-70 period). January 1974 populations, which are official estimates, and natural increase data for 1970, 1972, and 1974, can be found in *Naseleniye SSSR, 1973* (Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR) January 1972 populations, which are also official estimates, come from *Narodnoye Khozyaystvo SSSR 1922-72 GG* (Tsentral'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR). For a discussion of 1959-70 estimates, see Lewis and Rowland, 1979:115.

References

- Bond, A.A., and P.E. Lydolph. 1979. Soviet Population Change and City Growth 1970-79: A Preliminary Report. *Soviet Geography: Review and Translation* 20:461-488.
- Borisov, V.A. 1976. *Perspektivy Rozhdayemosti*. Moscow: Statistika.
- Clem, R.S. 1980. Regional Patterns of Population Change in the Soviet Union, 1959-1979. *Geographical Review* 70:137-156.
- Dutton, J. 1980. Changes in Soviet Mortality Patterns. *Population and Development Review* 5:267-291.
- Lewis, R.A., and R.H. Rowland. 1979. *Population Redistribution in the U.S.S.R.: Its Impact on Society, 1897-1977*. New York: Praeger.
- _____, R.H. Rowland, and R.S. Clem. 1976. *Nationality and Population Change in Russia and the U.S.S.R.: An Evaluation of Census Data, 1897-1970*. New York: Praeger.
- Shabad, T., and V.L. Mote. 1977. *Gateway to Siberian Resources (The BAM)*. Washington, D.C.: Scripta.

Regional Population Growth and Redistribution in the U.S.S.R.

- Soboleva, S. 1980. Migration and Settlement: 8. Soviet Union. Laxenburg, Austria: International Institute for Applied Systems Analysis.
- Tsentrāl'nyy Statisticheskiiy Komitet Ministerstva Vnutrennikh Del. 1899-1905. Pervaya Vseobshchaya Perepis' Naseleniya Rossiyskoy Imperii, 1897 G. St. Petersburg. 89 volumes.
- Tsentrāl'noye Statisticheskoye Upravleniye pri Sovete Ministrov SSSR. 1962-63. Itogi Vsesoyuznoy Perepisi Naseleniya 1959 Goda. Moscow: Gosstatizdat. 16 volumes.
- _____. 1972. Narodnoye Khozydstvo SSSR 1922-72 GG. Moscow: Statistika, 12-18.
- _____. 1972-74. Itogi Vsesoyuznoy Perepisi Naseleniya 1970 Goda. Moscow: Statistika. 7 volumes.
- _____. 1975. Naselemiye SSSR, 1973. Moscow: Izdatel'stvo Statistika 14-25, 84-89.
- _____. 1976. Narodnoye Khozyaystvo SSSR v 1975 G. Moscow: Statistika, 199.
- Tsentrāl'noye Statisticheskoye Upravleniye SSSR. 1928-33. Perepis' Naseleniya 1926 Goda. Moscow. Izdtniye Tssu SSSR. 66 volumes.
- Vestnik Statistiki. 1980. 2:11-30.

Received February, 1981; revised July, 1982.

RELATIVE AND POTENTIAL INCOME AND FERTILITY

Eileen Crimmins

University of Southern California, California, U.S.A.

and

Phyllis A. Ewer

Northwestern University, Evanston, Illinois, U.S.A.

Résumé — Cette étude examine en détail les corrélations parmi le revenu potentiel, ses composantes y compris le revenu relatif, et le revenu courant. L'analyse aide à clarifier combien efficacement une mesure de revenu empiriquement disponible tel que le revenu courant agit en mandataire pour des mesures plus appropriées théoriquement dans la relation revenu/fécondité et aussi dans les relations parmi les mesures de revenu théoriques alternatives. Les mesures de revenu se rapportent aussi à trois mesures de fécondité. Ni le revenu potentiel de la famille ou du mari, ni le revenu relatif du mari se rapporte d'une manière significative à soit fécondité courante ou désirée ou la durée de la première naissance; la substitution des mesures du revenu potentiel ou relatif ne change pas les résultats obtenus en utilisant le revenu courant du mari non plus. Cependant, l'analyse démontre l'importance du revenu de l'épouse versus le revenu du mari en ce qui concerne la fécondité.

Abstract — This paper investigates the interrelations among potential income, its components including relative income, and current income. The analysis helps clarify how well an empirically-available income measure, such as current income, proxies for more theoretically-appropriate measures in the income/fertility relationship and also the relations among alternative theoretical measures of income. Income measures are also related to three fertility measures. Neither family or husband's potential income nor husband's relative income is significantly related to either current or desired fertility or the timing of the first birth; nor does the substitution of measures of potential or relative income alter the results obtained using husband's current income. However, the analysis demonstrates the importance to fertility of wife's income versus husband's income.

Key Words — income, relative income, potential income, fertility

Introduction

Becker assumed, in his initial socio-economic model of fertility, that the relationship between fertility and income would be positive when fertility came under voluntary control (Becker, 1960). Empirical evidence of this hypothesized relationship has been ambiguous at best. One response to the failure to confirm this positive income/fertility relationship has been to refine the concept of income. Current income, it is argued, is not necessarily the appropriate income measure for household decisions having long-term consequences. Potential income and relative income have been suggested as more appropriate than current income to the household decision making model of fertility (Becker, 1965; Easterlin, 1969; Freedman, 1963).

In this paper, we examine the effects of substituting measures of husband's relative and family potential income for the commonly-used husband's current income. First, we discuss the concepts of potential and relative income and their operationalization. Then we examine the interrelationships between potential income and its components, including relative income. Finally, we use data from a consumer panel study to relate the various measures of income to fertility.