

USSR Letter

Spatial variations in the Soviet health service

MICHAEL RYAN, RICHARD PRENTICE

According to the familiar propaganda, the Soviet Union is a "nation of nations" and, to quote from the state anthem, a "union of indissoluble republics." Arguably, it might also be identified as the last of the great empires, in which one half of the population rules over the numerous ethnic groups making up the other half. These mutually irreconcilable views are relevant to this article, since they both allow for a degree of autonomy in the development of health services in different parts of the USSR.

We analysed data on the numbers of doctors, middle grade staff, and hospital beds in each of the 15 Union republics, which are the main divisions of the Union's "territorial-administrative" structure. (In constitutional theory they enjoy the status of sovereign nation states and have the right to secede from the USSR.) The period covered ran from 1950 to 1980, respectively the first and, currently, the last postwar year for which published data are available.¹ During this period no discontinuity or historic break with the past occurred comparable with the inception of the National Health Service in the United Kingdom.

The indicators of development

VARIATION IN THE NUMBER OF DOCTORS

Substantial increases in the number of doctors were recorded for all 15 republics. We should emphasise that we do not have any evidence that might arouse suspicion that government statisticians have adjusted the data in any manner. Moreover, the analysis cannot be invalidated on the ground that the functions performed by doctors vary between the republics; it is merely incidental that Soviet doctors carry out a wider range of functions than their Western counterparts, and that the term doctor includes two categories of dentist.

Overall, the number of doctors in the USSR as a whole rose sharply from 265 000 in 1950 to 995 600 in 1980, almost quadrupling over the 30 years (table I). Although the perspective shifts when these data are related to the population, the increase from 14.6 to 37.4 doctors/10 000 people must still be accounted massive. Table I shows, however, that the aggregate figures for the Union conceal striking variations between republics. At the extremes of the range in 1950 were Georgia with 26.7 and Tadzhikistan with 8.4 doctors/10 000 people. In 1980 these republics occupied the same places in the rank order, with 46.7 and 23.4 doctors/10 000 people, respectively. Although the index of the best served republic as a multiple of the least served improved from 3.18 to 2.00, the gap between "have" and "have not" in 1980 can hardly be termed inconsiderable.

To concentrate only on extremes of the range is obviously not useful. Most appropriate as a measure of the extent of dispersion in this case is the index of variability, derived by means of the formula:

$$\frac{\text{upper quartile} - \text{lower quartile}}{2} \times \frac{100\%}{\text{median}}$$

Department of Social Policy, University College of Swansea, Swansea SA2 8PP

MICHAEL RYAN, PHD, lecturer
RICHARD PRENTICE, PHD, lecturer

TABLE I—Number of doctors by union republic, 1950 and 1980

	1950		1980	
	Absolute No of doctors (thousands)	Doctors/10 000 population	Absolute No of doctors (thousands)	Doctors/10 000 population
Russian Soviet Federated Socialist Republic	160.2	15.6	559.2	40.2
Ukrainian SSR	51.7	13.9	182.5	36.5
Belorussian SSR	7.2	9.3	32.7	33.9
Uzbek SSR	6.6	10.2	46.2	28.6
Kazakh SSR	6.4	9.5	47.8	31.7
Georgian SSR	9.5	26.7	23.6	46.7
Azerbaijan SSR	6.4	22.0	20.7	33.4
Lithuanian SSR	2.8	10.7	13.8	40.2
Moldavian SSR	2.5	10.3	12.6	31.4
Latvian SSR	2.9	15.1	11.1	43.9
Kirgiz SSR	1.8	9.9	10.6	29.1
Tadzhik SSR	1.3	8.4	9.4	23.4
Armenian SSR	2.6	18.9	11.1	35.5
Turkmen SSR	1.6	13.4	8.1	27.9
Estonian SSR	1.5	13.5	6.2	41.6
USSR	265.0	14.6	995.6	37.4

SSR = Soviet Socialist Republic.

With this measure it emerges that variation declined from 22.4% in 1950 to 15.7% in 1980. Thus although there continued to be substantial inequalities in the ratio of doctors to population in the Union republics, the extent of these inequalities had been reduced somewhat by 1980.

VARIATION IN THE NUMBERS OF PARAMEDICAL STAFF

The second category of staff, conventionally described as intermediate medical personnel, is by no means homogeneous, since it embraces a wide range of job descriptions. The main subgroups included in the designation are feldshers, feldsher midwives, midwives, environmental health officers, nurses, medical laboratory staff, radiotherapists, and dental technicians. Unfortunately, it is impossible to establish how the make-up of this category varies between republics.

Table II shows that the total number of paramedical staff rose from 719 400 to 2 789 900 over the 30 years, which represents almost the same rate of increase as occurred among doctors. The ratio of paramedical staff to population for the whole Union improved from 39.6 to 104.8/10 000 people. Regarding the extremes of the range, Tadzhikistan in central Asia again occupied the lowest position in both years with ratios of 21.9 and 65.0 paramedical staff/10 000 population, compared with ratios of 46.9 and 115.9/10 000 population at the top of the range. Azerbaijan in the trans-Caucasus region headed the league in 1950 but had been displaced by the Baltic republic of Latvia in 1980. The index of the best served as a multiple of the least served republic declined from 2.14 to 1.78, thus showing some reduction of spatial inequality. The index of variability also showed a movement towards less unequal distribution, declining from 17.9% to 11.2%.

In the USSR there may possibly be some interchangeability of doctors and paramedical staff. Given that the Soviet state could remake the "packages" of staff deployed in health service units without encountering effective resistance from organised interests, it might be hypothesised that paramedical staff are used as doctor-surrogates to a greater extent in the underdoctored than in the well doctored republics. The substitution of less expensive and less trained staff could form a key component of a strategy aimed at eliminating inequalities of access

to medical staff. If this substitution effect was operating the relation between the two staffing levels would be inverse—that is, a negative correlation coefficient would be obtained. In fact, however, the reverse applies, the R_s correlation coefficients being positive in both 1950 and 1980. Furthermore, the derived coefficients of determination show the relations to be strong, with 68% and 72% of variation in each staff level explained by variation in the other.

VARIATION IN THE NUMBER OF HOSPITAL BEDS

Table III shows that the supply of hospital beds also expanded dramatically over the decades. The absolute number for the whole Union increased more than threefold, and the ratio of beds to population rose by 124%, from 55.7 to 124.9/10 000 population. By international standards the latter figure represents a very high (perhaps wasteful) level of provision, and it might be conjectured that the total is inflated by the inclusion of beds in sanatoria. The official sources, however, record these beds separately, and they are excluded from the figures given here.

TABLE II—Number of intermediate medical staff by union republic, 1950 and 1980

	1950		1980	
	Absolute No (thousands)	No/10 000 population	Absolute No (thousands)	No/10 000 population
Russian Soviet Federated Socialist Republic	450.5	43.8	1560.6	112.3
Ukrainian SSR	136.4	36.6	511.1	102.2
Belorussian SSR	24.4	31.3	94.1	97.6
Uzbek SSR	15.1	23.2	139.3	86.2
Kazakh SSR	20.6	30.7	150.1	99.7
Georgian SSR	16.5	46.5	55.5	109.8
Azerbaijani SSR	13.8	46.9	51.5	83.1
Lithuanian SSR	5.8	22.6	38.2	110.9
Moldavian SSR	7.8	32.6	38.1	95.2
Latvian SSR	6.4	33.0	29.2	115.9
Kirgiz SSR	4.8	27.0	31.5	86.3
Tadzhik SSR	3.4	21.9	26.1	65.0
Armenian SSR	4.5	33.5	26.6	85.1
Turkmen SSR	5.4	43.8	22.4	77.3
Estonian SSR	4.0	35.7	15.6	105.0
USSR	719.4	39.6	2789.9	104.8

SSR = Soviet Socialist Republic.

TABLE III—Number of hospital beds by union republic, 1950 and 1980

	1950		1980	
	Absolute No (thousands)	No/10 000 population	Absolute No (thousands)	No/10 000 population
Russian Soviet Federated Socialist Republic	609.8	59.2	1801.9	129.6
Ukrainian SSR	194.2	52.2	627.1	125.4
Belorussian SSR	32.0	41.2	120.8	125.2
Uzbek SSR	32.4	49.7	182.8	113.1
Kazakh SSR	35.1	52.1	195.8	130.1
Georgian SSR	19.4	54.6	54.1	107.1
Azerbaijani SSR	17.0	57.8	60.0	96.8
Lithuanian SSR	10.8	42.1	41.2	119.8
Moldavian SSR	10.8	45.1	48.0	120.0
Latvian SSR	14.0	71.7	34.5	136.8
Kirgiz SSR	7.1	40.3	43.7	119.7
Tadzhik SSR	6.8	43.9	39.6	98.8
Armenian SSR	6.5	47.6	26.0	83.4
Turkmen SSR	7.5	61.3	30.3	104.5
Estonian SSR	7.3	66.1	18.4	124.1
USSR	1010.7	55.7	3324.2	124.9

SSR = Soviet Socialist Republic.

TABLE IV—Extent of variation in outputs explained by variations in measures of need (figures are percentages)*

	1980			1950-80		
	A: No of doctors/10 000 population	B: No of intermediate personnel/10 000 population	C: No of hospital beds/10 000 population	Rate of increase in A	Rate of increase in B	Rate of increase in C
% decrease in proportion of rural population 1950-80	44	60	42	16	5	8
% of people resident in rural areas in 1980	59	46	23	0	0	7
Rate of increase in population (%) 1950-80	57	63	42	19	5	8

*Coefficients of determination derived from R_s . Italic figures indicate negative relations.

Like the other indicators of health service development, the number of hospital beds shows substantial and continuing variation between the Union republics. At the extremes of the range in 1950 were Kirgizia, in central Asia, and Latvia with, respectively, 40.3 and 71.7 beds/10 000 people; in 1980 these positions were occupied by Armenia and Latvia with 83.4 and 136.8 beds/10 000 people. The index for the best served as a multiple of the least served republic declined only slightly, from 1.78 to 1.68. The index of variability fell from 14.4% to 9.3% over the three decades.

Discussion

When seeking to elucidate long term trends in the health service it is by no means inappropriate to assume that a developed socialist society would make determined progress towards eliminating variation between republics. Yet this statistical analysis of the three main indicators of development has shown a complex pattern of associations, which calls into question the existence of any egalitarian imperative at the heart of the planning process.

It may be argued that, given the massive increases registered in all three variables, the Soviet government could have engineered a far more uniform level of provision. While the extent of variation certainly declined, the persisting inequalities can hardly be regarded as defensible; the gross disparity between the least and most favoured republics is clearly not explicable by reference to variation in such factors as age structure and patterns of morbidity. Here it is relevant to recall that in 1980 Georgia had a doctor to population ratio that was twice that of the Tadzhik republic.

Furthermore, the analysis yielded no evidence of policies intended to favour those republics that were less well provided for in 1950. Any strategy for reducing inequalities would have required disproportionate increases in the levels of service per 10 000 population in the poorly supplied republics, and that did not occur. Increases in the variables were either independent of the 1950 levels or such as to compound the then existing inequalities. Only 5% and 2%, respectively, of the variation in the numbers of hospital beds and paramedical staff per 10 000 population in 1980 was explained statistically by variation in the numbers for 1950. With regard to the ratio of doctors to population a surprising result emerged: although 42% of the variation in the 1980 figures was explained by the 1950 figures, the relation turned out to be positive and not negative as would be expected if attempts were being made to correct imbalances in these variables.

The analysis also showed that patterns of investment over the 30 years did not confirm the existence of other planning objectives that could be reasonably assumed. Thus, as table IV shows, investment proved to be independent of the extent of rurality and population increase. The strong negative coefficients indicate that the more rural republics continued to be relatively deprived of trained medical staff.

A SOVIET STATEMENT

The results of our analysis are a major indictment of the Soviet investment policy if it is assumed that the policy embraces

egalitarian objectives. To test that assumption we examined a recent authoritative statement of the principles that underlie health service planning; the article in question emanated from the planning and financial directorate of the USSR Health Ministry.²

Not surprisingly, the account restated well known generalities; perhaps the most relevant is that there exists a unitary plan for the health service, which in turn forms a constituent element in the state plan for the economic and social development of the USSR. The ideological bases for this planning, of course, are "the principles elaborated by the direct participation of V I Lenin and creatively developed in subsequent years." In addition to making such vapid statements, however, the article refers to certain institutional factors that, by all appearances, include major obstacles to achieving equality of provision.

These factors arise from "democratic centralism," which may be termed the Soviet theory of relations between central and local government. Deriving directly from this theory are the rights enjoyed by Union republics and more local "administrative-territorial" units to develop their health services beyond the level indicated in all-Union guidelines. Similarly derived—and crucially important—is the interaction between the all-Union "sector" plan for the health service and "territorial" plans that strongly reflect the level of economic development in a given area. No element of contradiction is perceived here by the source, which affirms that: "The organic unity of sector and territorial plans for the health service means that the growth rate of the network of health service establishments and of their personnel is

planned in conformity with the growth rate of industrial enterprises, the agricultural economy, social and cultural establishments, construction of dwellings etc in the area being planned for."

Nevertheless, there is a strong possibility that territorial plans will have a regressive impact, given the likelihood that economic development will be greater in areas of existing economic growth. In any event, the article makes no reference to institutional arrangements specifically designed to reduce geographical disparities regarding access to medical care for people at equal risk. It is not possible, either from this source or from any other known to us, to infer the existence of an overtly redistributive formula and associated measures designed to promote "territorial justice" within the health service. The statistical data presented above strongly suggest that, unless the concept of territorial justice is accepted, the Soviet health service will continue to display spatial inequalities of substantial dimensions.

References

- ¹ *Narodnoe Khozyaistvo SSSR* for various years and *Naselenie SSSR 1973*. Moscow: Statistika, 1975.
- ² Golovtsev VV. Planovost—osnova razvitiya sotsialisticheskovo zdravookhraneniya. *Sovetskoe Zdravookhranenie* 1982;12:49-55.

(Accepted 22 February 1983)

Letters to a Young Doctor

Administration

PHILIP RHODES

It is unbelievable that administration should be such a dirty word among doctors. It would not be so if they understood what it was and realised that they were concerned with it every day of their lives. When two or more people meet to get something done they need some rules by which to conduct their business and they need to understand one another and the basis on which their transactions are founded. Mostly these are left to be understood between the two people, but everyone knows what a mess this can lead to. In conversation or over the telephone each thinks he knows what has been agreed between them, but later the remembrance differs and each has acted in ways that the other never thought possible.

Many friendships have been ruined and business partnerships broken up because neither person has properly defined the course of action to be pursued by each of them. They have not appreciated that each has progressed from a different point of departure along a quite different road. Misunderstandings may then occur, each person assuming that the other knew what he

was thinking and acted accordingly. Only after the event do they realise that they were mistaken. Then comes anger that the other silly fool agreed to one thing and then did another. The scene is altogether too familiar. They did not even begin to realise that they had never met on the same ground in their assumptions, thinking, and the actions based on them. They ignored the useful dictum, "You judge yourself by your intentions and you judge others by their actions."

Reconciliation of conflict

All this may not matter too much in individual lives, but in big organisations where several individuals and groups proceed from unstated and badly thought out assumptions and beliefs to a variety of actions some reconciliation of what they are doing becomes essential. This is administration.

Courses of action by one person or a group may clash with those of others. Sometimes by a little forethought clashes may be avoided and tempers controlled or not allowed to rise. This is administration too. Surgeons may wish to operate on cold cases after 5 pm. Nurses do not wish to staff the operating lists, nor do the anaesthetists or porters. Physicians may want pathological or radiological investigations done at a time that is unsuitable for the laboratory or the x ray department. The varying needs and desires of the groups need reconciliation

University of Southampton, South Block, Southampton General Hospital, Southampton SO9 4XY

PHILIP RHODES, MB, FRCS, professor of postgraduate medical education, and dean of graduate medicine for the Wessex region