

## SPATIAL ORGANIZATION OF INFRASTRUCTURE SECTORS IN THE SHIRVAN-SALYAN ECONOMIC REGION

N.H. Eminov

*Institute of Geography PLE, Ministry of Science and Education, Baku, Azerbaijan*

eminovnamin@gmail.com

DOI: 10.59423/gnr.2026.27.89.013

---

### Article history:

Received: June 13, 2025

Dispatched for revise:

September 20, 2025

Accepted: November 20, 2025

---

### Keywords:

Infrastructure,  
regions of Azerbaijan,  
Healthcare infrastructure,  
Tourism infrastructure  
Services  
Shirvan city

### Abstract

Infrastructure sectors play an important role in population settlement, employment provision, healthcare, recreation, and the functioning of other economic sectors. The density of their facility networks, the services provided, and the population served depend on the area's level of development, the growth of cities and settlements, the functions they perform, population size, and economic potential. In the regions of Azerbaijan, including the Shirvan-Salyan economic region, most infrastructure indicators are significantly below the national average. This is most evident in the sectors of healthcare, trade, paid services, household services, and tourism. The difficulties of the transition period, limited funding, and low social protection for workers have led to a decline in the number of enterprises and cuts in personnel. Therefore, it is essential to increase funding for these sectors and to encourage the creation of a network of private enterprises. This article analyzes the current state of development of the region's infrastructure sectors, identifies existing problems, and suggests solutions.

---

### 1. Introduction

The functioning of infrastructure facilities, the level of services provided, and the coverage of all segments of the population depend on the development level of countries and regions. The utilization of these sectors is significantly influenced by whether the population lives in cities or villages and by their income levels.

Infrastructure serving the population has a multi-faceted structure. Some services are used daily, others periodically, fulfilling the population's needs in education, health protection and recovery, and both material and non-material needs. Overall, the provision of infrastructure facilities and the level of services they provide in the regions, especially in rural areas, are below average. Therefore, expansion of activities in this sphere is required.

Study Area. The Shirvan-Salyan economic region is located in the east of Azerbaijan, at the mouth of the Kura River. Although it is one of the country's agricultural regions, it is also notable for the development of industry and the transportation-communication network. It includes the Shirvan city administrative district and the Bilasuvar, Hajigabul, Neftchala, and Salyan rayons (districts). The region covers an area of about

6,080 km<sup>2</sup>, and its population at the beginning of 2025 was 497,500 people, including 231,900 urban residents [6, p. 80]. The economic region accounts for 7.02% of the country's total area and 4.87% of its population, including 4.17% of the urban population. The region's economy is driven by oil and gas production, electric power generation, grain cultivation, cotton-growing, vegetable production, and fruit farming. [17].

### 2. Data and Methods

This study uses data from the State Statistical Committee of Azerbaijan on the social sphere and other infrastructure sectors, as well as information from scientific literature sources. The analyses were carried out using statistical, comparative, and historical-geographical methods.

### 3. Analysis and Discussion

Infrastructure is a multi-sectoral system, and its social components operate in all populated areas, playing a crucial role in meeting the population's material and spiritual needs. Education, healthcare, culture and arts, trade, provision of paid services, and household services are among the leading infrastructure sectors.

*Education* has a multi-level structure encompassing all segments of the population, and its institutions play an important role in children's

---

upbringing, the formation of worldview, and the training of personnel with technical-vocational, secondary specialized, and higher education.

The initial stage of education is preschool childcare institutions, which play a significant role in early childhood development. However, the network of these institutions in the regions remains weak, covering only a small fraction of children. The national average enrollment of children ages 1–5 in preschool institutions was 35.3% in 2023 [5, p. 192].

In the Shirvan-Salyan economic region, only 54 preschool institutions are in operation, with about 2.5 thousand children enrolled (Table 1). The number of children attending preschools has been growing slowly in both the region and the country, and in recent years the number of children has begun to decrease in both.

There are considerable disparities across the districts in preschool provision and enrollment. For example, Salyan and Neftchala districts each have 16–17 kindergartens with about 700 children in each district, whereas Hajigabul district has only 3 kindergartens serving 120 children, and Shirvan city has 6 kindergartens with 567 children. In recent years, the number of preschool institutions and enrolled children in these districts has changed little or tended to decrease. [13, s. 87].

General secondary schools have a much wider coverage and larger student numbers. They operate in most rural settlements, towns, and cities,

encompassing all school-age children. In 2023, the region had 190 general secondary schools with 75.5 thousand students (Table 1). Of these students, 18.8% attended in second or third shifts, which is considerably below the national average. Despite many new schools being built and renovated in recent years, this indicator has been rising, indicating that overcrowding (multi-shift schooling) is again becoming an issue. [5, s. 197, 13, s. 87].

Shirvan-Salyan accounts for 4.3% of the general secondary schools in the country and 4.4% of the students. Since 2000, the number of schools in the region has increased slightly (by 6 schools), whereas 126 schools were closed nationwide [5, 6, 10]. The decrease in student numbers and an optimization policy (school network consolidation) were the main factors in these nationwide closures.

Within the region, the number of schools in each district is related to the number of rural settlements, while student numbers depend on the total population. For instance, Salyan district's 54 schools enroll about 22.1 thousand students, whereas Neftchala district's 51 schools enroll only 10.7 thousand students. Shirvan city has 16 secondary schools with 14.2 thousand students, 26.9% of whom attend second and third shifts – a higher rate than in the rural districts [13, s. 87]. After 2000, the number of schoolchildren in all the districts declined significantly as well.

**Table 1**
**Activity of educational institutions**

Administrative units	Year	Number of preschool institutions	Children in pre-schools	Preschool provision (children per 100 seats)	Number of general education schools (day)	Students in general education schools	Share of students in second/third shifts (%)
<b>Shirvan-Salyan Economic Region</b>	2000	56	3257	87	184	85800	27,0
	2010	48	2550	92	191	65396	33,1
	2015	51	2750	99	192	62635	12,1
	2020	55	3019	88	191	75802	16,1
	2023	54	2566	77	190	75530	18,8
<b>Republic of Azerbaijan</b>	2000	1790	111,0 <sup>1</sup>	76	4548	1654 <sup>1</sup>	75,6
	2010	1635	108,0	87	4539	1365	42,8
	2015	1722	117,2	90	4462	1353	28,5
	2020	1825	126,5	86	4431	1657	31,4
	2023	1844	118,1	80	4422	1704	31,5

1-The number of children and students is given in persons; national figures for children and students are given as total persons, not in thousands

Source: [1; 2; 3; 4; 7; 8; 9; 10; 12; 13]

Table 2

## Healthcare facilities and workforce

Administrative Unit	Year	Hospitals	Hospital beds	Doctors	Average number of Nurses & mid-level staff	Outpatient clinics	Outpatient capacity (visits/shift)	Recorded illnesses	Doctors per 10k pop.			
									Doctors per 10k pop.	Nurses per 10k pop.	Beds per 10k pop.	Outpatient capacity per 10k pop.
Shirvan-Salyan Economic Region	2000	38	3555	844	2410	95	6294	-	18,3	58,7	77,5	119,2
	2010	20	1519	1002	2608	85	5873	-	19,3	55,4	34,2	105,9
	2015	20	1499	884	2349	84	5619	51044	18,6	49,4	31,5	118,2
	2020	19	1392	716	2257	85	5574	67151	14,8	46,6	28,7	115,1
	2023	8	1216	679	2207	79	5539	110178	13,7	44,6	24,6	112,0
Republic of Azerbaijan	2000	735	69900	29033	60000	1614	105600	1354540	36,5	75,4	87,8	132,1
	2010	736	67400	32800	62900	1690	-	1604610	36,9	70,9	76,0	-
	2015	566	46432	32756	56148	1746	106279	1852918	34,6	59,3	49,0	112,2
	2020	570	44278	31829	55650	1726	106476	1805700	32,0	55,9	44,5	107,0
	2023	338	38172	33645	55591	1665	107549	2616715	33,0	54,6	37,5	105,6

Sources: [1; 2; 4; 5; 7; 8; 9; 10; 13; 14]

**Healthcare Infrastructure.** Healthcare is among the essential infrastructure sectors. Facilities in this sector serve to restore and protect people's health, so it is necessary for general and specialized healthcare institutions to operate in all cities and villages. However, during the independence period, especially since the 2000s, there have been significant reductions in the number of healthcare facilities in the region and in the numbers of doctors and nurses working in them (Table 2). Such a situation negatively affects the protection of the population's health and the treatment of diseases.

In 2023, the economic region had 8 hospitals employing 679 physicians and 2.2 thousand nurses and other mid-level medical staff, with a total of 1,216 hospital beds (Table 2).

The Shirvan-Salyan region accounts for only 2.3% of the hospitals in Azerbaijan, 3.2% of hospital beds, 2.1% of the doctors, and 4.1% of the nurses and mid-level medical personnel. [5, 15]. Two main factors explain the region's low share.

The Shirvan-Salyan region accounts for only 2.3% of the hospitals in Azerbaijan, 3.2% of hospital beds, 2.1% of the doctors, and 4.1% of the nurses and mid-level medical personnel. Two main factors explain the region's low share. First, the vast majority of healthcare facilities and medical professionals in the country are concentrated in the capital city, Baku. For instance, 45.9% of the country's hospitals, 51.3% of hospital beds, 67.6% of doctors, and 44.1% of nurses are in Baku alone. [15, p. 87]. Second, the

regions have experienced declines in healthcare provision and staffing that negatively affect their capacity. Between 2000 and 2023, the number of hospitals in the Shirvan-Salyan region dropped to about one-fifth of its 2000 level (from 38 to 8), the number of beds to about one-third, and the numbers of doctors and nurses fell by 165 and 203, respectively (Table 2).

The low level of healthcare services in the region is also evident from relative indicators. For instance, the number of physicians per 10,000 population in the region is 2.36 times lower than the national average; the provision of nurses is only 84.0% of the national level, and hospital bed provision is about 65.6% of the national level [5, 15, p. 87]. Furthermore, these indicators have deteriorated significantly after 2000, both nationwide and in the region (Table 2).

Outpatient clinics play a critical role in providing daily medical care at the local level. In 2023, the region had 79 outpatient polyclinic facilities with a total capacity of 5,539 visits per shift, which amounts to 112.0 per 10,000 population.

For many years, the main center for medical services in the region was Salyan district. By 2000, Salyan had 13 medical facilities with 1,340 hospital beds, over 300 doctors, and up to 800 nurses and mid-level staff. [6]. In recent years, only 2 hospitals remain in Salyan, with the number of beds reduced to one-third of the former level. At present, most districts in the region have only one hospital, and their health service indicators lag 2–3 times behind the national average. [5,

15, p. 87]. Therefore, preventing further decline in healthcare services in the region is imperative.

**Cultural and Tourism Infrastructure.** Culture serves to raise the population's intellectual level, organize their recreation, and shape their worldview. This sector includes facilities such as cultural clubs, public libraries, museums, parks, and similar sites. However, due to low expenditures on maintaining these institutions and on the social protection of their employees, the network of facilities and the number of workers have steadily decreased, and the level of services provided has declined.

In 2023, the economic region had 144 public libraries with a total book collection of about 1.388 million volumes (Table 3). The region accounts for 4.94% of the country's public libraries and 5.01% of the book stock. [5, 13 p. 456] In recent times, the expansion of internet resources and their use has led to a decrease in the number of people using library services. There are also serious difficulties in providing new books to replenish library collections, due to insufficient funding.

Among the districts, Salyan has 45 public libraries, and Bilasuvar and Neftchala have 30–36 each, while Shirvan city has 6 public libraries (Table 3). In the early 2000s the region had 233 public libraries, but that number has dropped by 38.2% [1, 6, 10].

Although the Shirvan-Salyan area does not have very favorable conditions for tourism development, it does have hotels and similar accommodations for overnight stays. However,

these establishments have a small number of rooms and can only accommodate a limited number of guests at a time. The region currently has 8 hotels and similar facilities with a total one-time capacity of about 400 persons, and over the course of a year they accommodated approximately 6.4 thousand guests (Table 3). The hotels in the region are mainly located in the district centers.

**Retail Trade and Services.** Retail trade serves to meet the material needs of the population by supplying consumer goods. The value of retail trade turnover depends on the population size, the urban or rural settlement pattern, income levels, and the functioning of the retail trade network. In 2023, the retail trade turnover in the Shirvan-Salyan region was 1,841.4 million AZN. [10, p. 782-845]. The region's turnover accounted for only 3.11% of the country's retail trade, a very small share. Since more than half of the country's retail turnover occurs in Baku, the shares of individual regions are generally low. The per capita retail turnover in the region was about 61.2% of the national average [5, p. 298].

Although the overall and per capita retail turnover in the region are low, the region's share of national retail trade has been declining further in recent years. In Shirvan city and most of the region's districts, annual retail trade turnover is on the order of 390–400 million AZN each. Their individual shares in the national total are below 1%, although their per capita turnovers have been rising over time [10, p. 782-845].

**Table 3**
**Cultural infrastructure and tourism activity**

Administrative Unit	Year	Public libraries	Book collection (thous. copies)	Books per 1000 people (copies)	Club facilities	Museums	Museum visitors (thous. persons)	Visitors per 1000 people	Parks	Hotels & similar facilities	Rooms	One-time capacity (persons)	Persons accommodated (per year)	Overnight stays (person-nights)
Shirvan-Salyan Economic Region	2000	233	1743,6	4219	161	7	100,7	191,0	-	-	-	-	-	-
	2010	212	1582,9	4079	135	14	161,7	190,8	-	-	-	-	-	-
	2015	157	1365,9	-	126	14	134,4	-	11	11	249	444	4641	18482
	2020	143	1380,1	-	97	14	59,4	-	12	10	239	439	6601	9151
	2023	144	1388,0	-	97	14	112,1	-	12	8	203	404	6420	9750
Republic of Azerbaijan	2000	2374	38,7 mln.	4867	3354	155	1196 min	151	-	87	5259	9403	68845	160554
	2010	3947	36,1 mln.	4012	2772	226	1804 min	202	-	499	14158	30793	438479	1358286
	2015	3242	32,6 mln.	3403	2650	234	2578 min	270	347	536	17953	37278	838145	1644056
	2020	2922	31,6 mln.	3160	2231	240	711 min	71	-	655	24195	50687	668813	999786
	2023	2913	27,7 mln.	2718	2214	243	2417 min	239	-	809	28688	59407	1945059	3422324

Sources: [1; 2; 3; 4; 5; 7; 8; 9; 10; 11; 13]

Paid services represent the expenditures by the population on services used on a daily, periodic, or long-term basis. The volume of paid services also depends on household incomes and the range of available services. In 2023, the total value of paid services in the Shirvan-Salyan region was 278.8 million, with a per capita average of 538.32 AZN [10, p. 782-845]. The region's share in the country's paid services was 2.44%, and its per capita figure was only 47.05% of the national average. [5].

Within the region, Shirvan city had paid services totaling 260.9 million, the highest per capita level (687.19 AZN per person). Salyan district stood out in total volume (80.0 million AZN), but its per capita services were lower (569.22 AZN). In Bilasuvar district, the annual value of paid services was over 60.0 million AZN, and both total and per capita figures have been increasing over time. [10, p. 782-845].

Household services (domestic services for households) form a distinct subset of paid services. In 2023, the value of household services in the region was 40.6 million AZN, or 78.47 AZN per capita. The region's share in national household services was 3.2%, and its per capita level was 63.08% of the national average [10, p. 782-845].

Shirvan city leads in per capita household services with 136.49 AZN per person, which is above the national average. In Hajigabul district, the per capita figure is above the regional average. This is attributed to the dense network of household service facilities and the diversity of services in these urban centers. In the other districts, about 7–8 million AZN worth of household services are provided per year in each. [5].

Public catering establishments (food service outlets) are another component of paid services. This sector includes places where the public can purchase meals, such as restaurants, cafés, tea houses, and snack bars [21]. In 2023, the turnover of public catering establishments in the region was 40.2 million AZN, which corresponds to 77.50 AZN per capita [10, p. 782-845].

The region's share in national public catering turnover was 1.97%, a very small figure. Nevertheless, food service revenues in the region have been growing steadily. Shirvan city and Bilasuvar district each had an annual public catering turnover of over 12.0 million AZN, whereas Hacıqabul and Neftchala districts recorded only 4.3–4.4 million AZN and Salyan 7.1 million AZN. In most districts, the per capita turnover was around 20

AZN, while in Shirvan city it reached 134.5 AZN per person [5].

**Transport and Communication Infrastructure.** Transport is one of the leading sectors of the economy and plays an important role in creating links between settlements and economic facilities. This sector serves the movement of goods and passengers. The development of transport is a key indicator in the development of territories and the exploitation of mineral resources. [17, 20]. The Shirvan-Salyan region has 911 km of highways, which is about 5.47% of the country's total road network. The length of roads changes only slowly over time. Among the districts, Hajigabul, Salyan, and Neftchala each have over 200 km of roads, while Bilasuvar district lags significantly behind in this regard. [16, p. 41-42].

In 2023, road freight transport in the region amounted to 2.882 million tonnes, and 84.2 million passengers were carried by road transport. The region's share in these indicators was 2.15% of the country's total freight tonnage and 4.97% of passenger traffic [10, p. 782-845; 16].

The economic region lies along major highway and railway routes, in a very favorable transport-geographical position. The Baku–Gazakh, Baku–Astara, and Baku–Hajigabul–Shirvan–Bilasuvar–Füzuli highways, which connect the Absheron region (Baku) with the central, western, and southern regions of the country, pass through this area. Railway lines run in parallel to these road corridors. Additionally, a railway spur from Osmanlı station extends into Neftchala district, which for many years was used to transport oil, iodine-bromine products, and fish and fish products from the district. [18].

Over 57 thousand motor vehicles are in use in the region for the transport of cargo and passengers, including about 45.1 thousand private cars. [16].

Thanks to its favorable economic geographical position, Salyan district has especially high levels of freight and passenger transport and a larger number of vehicles. Salyan's road transport system also serves surrounding districts, and thus it stands out for its higher development

#### 4. Conclusion and Recommendations.

- The network of preschool education facilities in the region is weak. As a result of low funding for this sector, the level of preschool enrollment is also low.

- Healthcare reforms have led to the merger of facilities and a sharp reduction in their number. Consequently, the availability of medical personnel in the region has declined. These factors have

caused a drop in the relative performance indicators of healthcare facilities. Services in the culture and tourism sectors are also at a low level in the region.

- Owing to the low incomes of the population, retail trade turnover and paid services in the region are below the national averages. Nonetheless, the value of turnover in these sectors has been rising steadily over time.

- In order to raise the level of socio-cultural services provided to the population in the Shirvan-Salyan economic region, it is crucial to increase the funding allocated to these sectors, improve the staffing of institutions, and enhance the social protection of their personnel. Strengthening investment in infrastructure and encouraging private sector involvement would help address current gaps and improve service provision in the region.

## REFERENCES

1. Statistical Indicators of Azerbaijan – 2004. (2005) Baku: State Statistical Committee (SSC), Ed. A. Valiyev, “Seda” Publishing, 868 p.
2. Statistical Indicators of Azerbaijan – 2011. (2012) Baku: SSC, No. 9 Printing House, 814 p.
3. Statistical Indicators of Azerbaijan – 2015. (2016) Baku: SSC, No. 9 Printing House, 824 p.
4. Statistical Indicators of Azerbaijan – 2020. (2021) Baku: SSC, No. 9 Printing House, 746 p.
5. Statistical Indicators of Azerbaijan – 2023. (2024) Baku: SSC, Ed. T. Budagov, “AZMEGA GROUP” LLC, 692 p.
6. Population of Azerbaijan – 2024. (2025) Baku: SSC, “Narinci Publishing House” LLC, 134 p.
7. Regions of Azerbaijan – 2007. (2008) Baku: SSC, Ed. A. Valiyev, “Seda” Publishing, 711 p.
8. Regions of Azerbaijan – 2010. (2011) Baku: SSC, Ed. A. Valiyev, No. 9 Printing House, 768 p.
9. Regions of Azerbaijan – 2016 (2017). Baku: SSC, Ed. T. Budagov, No. 9 Printing House, 804 p.
10. Regions of Azerbaijan – 2023. (2024) Baku: SSC, Ed. T. Budagov, “AZMEGA GROUP” LLC, 849 p.
11. Education, Science, and Culture in Azerbaijan – 2015. (2016) Baku: SSC, 506 p.
12. Education, Science, and Culture in Azerbaijan – 2018. (2019) Baku: SSC, 504 p.
13. Education, Science, and Culture in Azerbaijan – 2023. (2024) Baku: SSC, Ed. T. Budagov, “AZMEGA GROUP” LLC, 494 p.
14. Health Care, Social Protection, and Housing Conditions in Azerbaijan – 2014. (2015) Ed. T. Budagov. Baku: SSC, No. 9 Printing House, 280 p.
15. Health Care, Social Protection, and Housing Conditions in Azerbaijan – 2023. (2024) Ed. T. Budagov. Baku: SSC, “AZMEGA GROUP” LLC, 262 p.
16. Transport in Azerbaijan – 2023. (2024) Baku: SSC, Ed. T. Budagov, “AZMEGA GROUP” LLC, 494 p.
17. Geography of the Republic of Azerbaijan. (2015) Vol. II: Economic, Social, and Political Geography. Baku, 327 p.
18. Geography of the Republic of Azerbaijan. (2015) Vol. III: Regional Geography. Baku, 400 p.
19. Eminov, Z.N. (2023) Socio-Demographic Development and Employment Problems in the Republic of Azerbaijan. “CN Polygraph” LLC, Baku, 451 p.
20. Demographic Development Problems and Settlement of the Population in the Aran Economic Region. (2022) Editor-in-Chief: Z.N. Eminov. Baku: “Region-Press” LLC, 350 p.
21. Eminov, Z.N., Rzayeva, S.I. (2022) The Current State of Quality of Life of the Population in the Republic of Azerbaijan. Baku: “Region-Press” LLC, 240 p.

## ŞİRVAN-SALYAN İQTİSADI RAYONUNDA İNFRASTRUKTUR SAHƏLƏRİNİN ƏRAZİ TƏŞKİLİ

N.H.Eminov

İnfrastruktur sahələri əhalinin məskunlaşması, məşğulluğunun təmin edilməsi, sağlamlığının bərpası və istirahətinin təşkilində, təsərrüfat sahələrinin fəaliyyətində əhəmiyyətli yer tutur. Bura daxil olan obyektlər şəbəkəsinin sıxlığı, göstərdiyi xidmətlərin və onu əhatə edən əhalinin sayı ərazilərin inkişaf səviyyəsindən, şəhərlər və qəsəbələrin inkişafından, yerinə yetirdiyi funksiyalardan, əhalisinin sayından və iqtisadi potensialından asılıdır.

Azərbaycanın regionlarında, o cümlədən Şirvan-Salyan iqtisadi rayonunda infrastruktur sahələri üzrə göstəricilərin əksəriyyəti orta respublika səviyyəsindən xeyli aşağıdır. Bu göstəricilərin aşağı olması səhiyyə, ticarət, pullu xidmətlər, məişət xidməti və turizm sahələrində özünü daha aydın şəkildə özünü göstərir. Ona görə ki, keçid dövrünün çətinlikləri, ayrılan vəsaitlərin azlığı, işçilərin sosial müdafiəsinin aşağı səviyyəsi müəssisələrin sayının azalmasına, işçilərin ixtisar edilməsinə gətirib çıxarır. Ona görə bu sahələrə ayrılan vəsaitlərin çoxaldılması, özəl müəssisələr şəbəkəsinin yaradılmasına imkan verilməsi vacibdir. Məqalədə regionun infrastruktur sahələrinin inkişafının müasir vəziyyəti, mövcud problemlər, onların həlli yolları təhlil edilir.

**Açar sözlər:** infrastruktur, Azərbaycanın regionları, səhiyyə infrastrukturu, turizm infrastrukturu, xidmətlər, Şirvan şəhəri.