

Originality/value of the research – the study provides a comprehensive assessment of internal youth migration processes as a key factor shaping the transformation of regional economies. The findings reveal an increasing imbalance in the territorial distribution of labor resources, accompanied by widening socio-economic disparities between migrant sending and migrant receiving regions. Recipient cities face growing pressure on social infrastructure, including education, healthcare, and housing, while donor regions experience a loss of human capital and innovation potential, thereby limiting their opportunities for sustainable development.

Findings – the results highlight the need to align youth and migration policies with territorial and infrastructure planning instruments. Such coordination is essential for preventing infrastructure overload in major cities, improving the management of migration flows, and promoting sustainable and balanced spatial development at the national level.

Keywords: youth, migration, economy, rural areas, youth policy, regional development, urbanization, government, capital, infrastructure.

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INTER-REGIONAL MOBILITY OF SCHOOL STUDENTS: TRENDS AND EVIDENCE FROM KAZAKHSTAN

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ABSTRACT

Purpose of the research – To examine inter-regional student mobility in Kazakhstan, focusing on flows toward the two dominant metropolitan centres, Astana and Almaty.

Methodology – Using administrative data from the National Educational Database covering the full population of students enrolled in general education schools from 2019 to 2025, the authors construct a longitudinal panel of approximately 20 million student-year observations spanning six transition periods and estimate linear probability models with oblast and year fixed effects.

Originality / value of the research – This is the first individual-level analysis of inter-regional student mobility in Kazakhstan; its findings carry implications for capacity planning in receiving regions and talent retention strategies in net-sending regions.

Findings – Student mobility toward the two cities is socially stratified – students attending private schools, selective schools, and those not receiving targeted social assistance are significantly more likely to move, and

private school attendance more than doubles the baseline mobility probability. The determinants differ between destinations: Russian-medium students are less likely to move to Astana but more likely to move to Almaty, reflecting distinct linguistic profiles of the two cities. School-level models confirm that mobility is concentrated within specific institutional types, with R-squared values reaching 0.31–0.39 compared to less than 0.01 at the individual level, while net flow analysis shows Astana absorbed over 52,000 students during the study period, with annual inflows tripling from 2020 to 2025.

Keywords: student mobility, internal migration, educational inequality, metropolitan concentration, Kazakhstan, administrative data.

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INTRODUCTION

Internal migration within developing and transition economies has received growing scholarly attention as a driver of regional inequality and human capital redistribution [1]. While much of this literature focuses on labour migration, educational mobility—the movement of students across administrative regions to access schooling—remains comparatively understudied, particularly in Central Asia. Yet the spatial concentration of educational opportunities in a small number of metropolitan centres creates powerful centripetal forces that reshape both sending and receiving regions [3]. Kazakhstan, the largest economy in Central Asia with a territory spanning 2.7 million square kilometres and twenty administrative regions of vastly unequal population density, provides a compelling context for examining these dynamics.

The concentration of educational infrastructure in Astana and Almaty has intensified since independence in 1991. Together the two cities host a disproportionate share of Nazarbayev Intellectual Schools, specialised lyceums, Bilim-Innovation Lyceums, and private schools. For families seeking high-quality schooling, relocation to one of these cities represents a rational strategy, yet it simultaneously depletes the human capital base of sending regions [8,11]. Understanding who moves, from where, and toward which destination is therefore a question of both educational equity and regional development policy.

The international literature on school-age student mobility has documented its effects on educational outcomes across diverse contexts. Research from India has shown that school shifting is associated with socioeconomic stratification [1], while studies from China have highlighted the educational inequities experienced by migrant children in urban school systems [2–4] and the psychosocial costs of mobility, including elevated depression among migrant and left-behind adolescents [5]. In Turkey, internal migration has been shown to affect both student achievement and the schooling process more broadly [8, 9, 10]. In the United States, Welsh [6] provides a comprehensive review of K–12 student mobility, documenting its association with academic disruption and socioeconomic disadvantage. More recent work has identified risk factors for student transfers across student, school, and neighbourhood characteristics [7]. Studies from Africa and South-East Asia have similarly documented the relationship between internal migration and children's schooling outcomes [11–14].

Within the post-Soviet context, research has documented the role of large cities as centres of attraction for internal migrants [17] and the patterns of interregional youth migration in Russia [18]. In Kazakhstan, Jussibaliyeva et al. [19] have examined the impact of internal migration on regional economic development, while Thorez [16] has situated post-Soviet migration within broader spatial inequalities. However, these studies typically examine general population flows rather than school-age student mobility specifically. An earlier version of the present study, using aggregate regional totals, described the general pattern of student concentration in Astana and Almaty but lacked the individual-level data necessary for regression analysis or sociodemographic disaggregation.

The present study addresses these gaps by exploiting the full population of student records from Kazakhstan's National Educational Database (NEDB) covering the academic years 2019 through 2025. By linking individual students across consecutive years using unique identifiers, we construct a longitudinal panel of approximately 20 million student-year observations and identify inter-regional movers at the individual level. This approach enables us to estimate the relationship between student and school characteristics and the prob-

ability of mobility toward Astana and Almaty, using linear probability models with regional and year fixed effects [20, 21]. We complement the individual-level analysis with a school-level specification that identifies the institutional profiles most associated with student outflows.

The paper proceeds as follows. The next section describes the data, panel construction, and empirical strategy. The results section presents net mobility patterns across regions, descriptive comparisons of movers and stayers, and estimates from individual-level and school-level models. The final section discusses the findings in light of the existing literature and draws policy implications.

MAIN PART OF THE RESEARCH

Data and Methodology. Data source. This study uses individual-level administrative data from the National Educational Database (NEDB) of Kazakhstan, maintained by the National Center for Educational Research and Evaluation under the Ministry of Education. The NEDB assigns a unique identification number to every student enrolled in the national education system and records detailed information on enrolment, school characteristics, and student demographics. Unlike the aggregate regional totals used in the earlier version of this analysis, the present study exploits the individual-level structure of the database, enabling us to track each student across consecutive academic years and to link mobility outcomes with student and school characteristics.

Our dataset covers seven academic years from 2019 to 2025, encompassing the full population of students enrolled in general education schools across Kazakhstan. Annual cohorts range from approximately 3.3 to 3.9 million students. By linking student records across consecutive year-pairs using unique identifiers, we construct a longitudinal panel of approximately 20 million student-year observations spanning six transition periods (2019–2020 through 2024–2025). After applying listwise deletion on the analysis variables described below, the regression sample comprises 19,992,840 student-year observations corresponding to 5,094,844 unique students.

The NEDB records, for each student-year observation, the student's school identifier, grade level, gender, language of instruction, orphan status, receipt of targeted social assistance (ASP), and whether the student has a disability. At the school level, the database provides information on school type (gymnasium, lyceum, Nazarbayev Intellectual School, Bilim-Innovation Lyceum, elite school, private school, small school [MKSH]), geographic location (urban or rural), total enrolment, and administrative region (oblast) identified by the two-digit KATO code.

Panel construction. We construct the student panel by linking each student's record in year t to their record in year $t+1$ using the unique student identifier. A student is classified as an inter-regional mover if the oblast of their school in year t differs from the oblast of their school in year $t+1$. Specifically, we define mobility to Astana and Almaty as a binary indicator equal to one if a student enrolled in a school outside these two cities in year t appears in a school located in Astana (KATO code 71) or Almaty (KATO code 75) in year $t+1$. To ensure consistent regional assignment across the full study period, including the 2022 administrative reform that created three new regions, we construct a crosswalk mapping pre-2022 school locations to post-2022 boundaries using persistent school identifiers, achieving 97.9–99.2 percent coverage. We validate the panel by examining grade progression: 99.9 percent of linked students show the expected one-year advancement.

Variables. The dependent variable in our main analysis is a binary indicator for student mobility to Astana and Almaty. We also estimate separate models for mobility to Astana and to Almaty individually to examine whether the determinants of mobility differ across the two metropolitan destinations.

Student-level covariates include gender (male = 1), language of instruction (with Kazakh-medium as the reference category, and dummies for Russian-medium and other languages), orphan status, and receipt of targeted social assistance (ASP). Grade level is captured through two dummies for primary school (grades 1–4) and upper secondary (grades 10 and above), with lower secondary (grades 5–9) as the reference category.

School-level covariates include a set of mutually exclusive school type indicators: selective schools (combining gymnasiums, lyceums, Nazarbayev Intellectual Schools, Bilim-Innovation Lyceums, and elite schools), private schools, small schools (MKSH), and rural schools (non-MKSH, non-selective). Urban regular schools serve as the reference category. School size enters the model as the natural logarithm of total enrolment.

Empirical strategy. We estimate a linear probability model (LPM) of the form:

$$Mobility_{it} = \alpha + X_{it}\beta + S_{jt}\gamma + \delta_o + \theta_t + \varepsilon_{it} \quad (1)$$

Where $Mobility_{it}$ is a binary indicator equal to one if student i in year t moves to Astana and/or Almaty by year $t+1$, X_{it} is a vector of student characteristics, S_{jt} is a vector of school characteristics for the student's school j in year t , δ_o denotes oblast fixed effects, and θ_t denotes year fixed effects. Standard errors are clustered at the school level to account for within-school correlation in mobility outcomes.

We choose the LPM over logit or probit for three reasons: the coefficients are directly interpretable as percentage-point changes in the probability of mobility; the model accommodates the large set of fixed effects without incidental parameter problems; and with a sample of nearly 20 million observations, the well-known heteroskedasticity of the LPM is addressed through robust clustered standard errors [20, 21].

In addition to the individual-level model, we estimate a school-level specification. We collapse the student panel to the school-year level, computing the share of students who move to Astana and Almaty as the dependent variable, and using school-year means of the student composition variables alongside the school type indicators as regressors. This model is weighted by school enrolment and estimated with robust standard errors.

Results. Aggregate mobility patterns. Table 1 presents the net student mobility summary across all twenty regions for the six-year period 2020–2025. Four regions record positive net inflows. Astana is the dominant destination, receiving 99,337 students from other regions while losing 46,878, yielding a net gain of 52,459 students (+111.9 percent relative to outflows). Almaty ranks second with a net gain of 21,215 (+31.6 percent). Kyzylorda region and Almaty region also show positive net balances, with gains of 11,379 and 7,160 students respectively.

The remaining sixteen regions are net senders. Turkestan region records the largest absolute loss at 26,160 students, followed by West Kazakhstan (–12,901) and Kostanay (–7,497). In proportional terms, the most severe outflows relative to total departures occur in Kostanay (–51.3 percent), Atyrau (–49.8 percent), and Shymkent (–49.4 percent).

Table 1 – Net student mobility by region, 2020–2025

Region	Inflows	Outflows	Net	Net, %
Astana City	99,337	46,878	+52,459	+111.9
Almaty City	88,382	67,167	+21,215	+31.6
Kyzylorda region	44,697	33,318	+11,379	+34.2
Almaty region	63,219	56,059	+7,160	+12.8
Aktobe region	9,197	10,563	–1,366	–12.9
Mangystau region	9,190	11,639	–2,449	–21.0
East Kazakhstan region	6,280	8,777	–2,497	–28.4
North Kazakhstan region	6,334	8,838	–2,504	–28.3
Akmola region	24,292	26,934	–2,642	–9.8
Shymkent City	2,779	5,489	–2,710	–49.4
Pavlodar region	7,688	10,402	–2,714	–26.1
Zhetisu region	4,366	7,293	–2,927	–40.1
Karaganda region	5,689	8,840	–3,151	–35.6
Zhambyl region	11,913	15,981	–4,068	–25.5
Abay region	7,638	13,134	–5,496	–41.8
Atyrau region	6,339	12,617	–6,278	–49.8
Ulytau region	11,904	18,757	–6,853	–36.5
Kostanay region	7,125	14,622	–7,497	–51.3
West Kazakhstan region	16,195	29,096	–12,901	–44.3
Turkestan region	34,615	60,775	–26,160	–43.0

Note – compiled by the authors based on NEDB data. Regression sample after listwise deletion

(N = 19,992,840). Positive net values indicate net receiving regions.

Figure 1 decomposes total inter-regional movers by destination type for each year. Total mobility doubled from approximately 42,700 students in 2020 to 91,000 in 2021, consistent with a post-pandemic rebound. After a dip to 72,100 in 2022, volumes stabilised at approximately 85,000–90,000 per year through 2025. Astana's share of total movers increased steadily from 6,550 in 2020 to 21,704 in 2025, while Almaty's share peaked at 17,703 in 2021 and subsequently declined to 16,156 by 2025. The growing divergence between the two cities suggests that Astana's pull factors have strengthened relative to Almaty's over the study period.

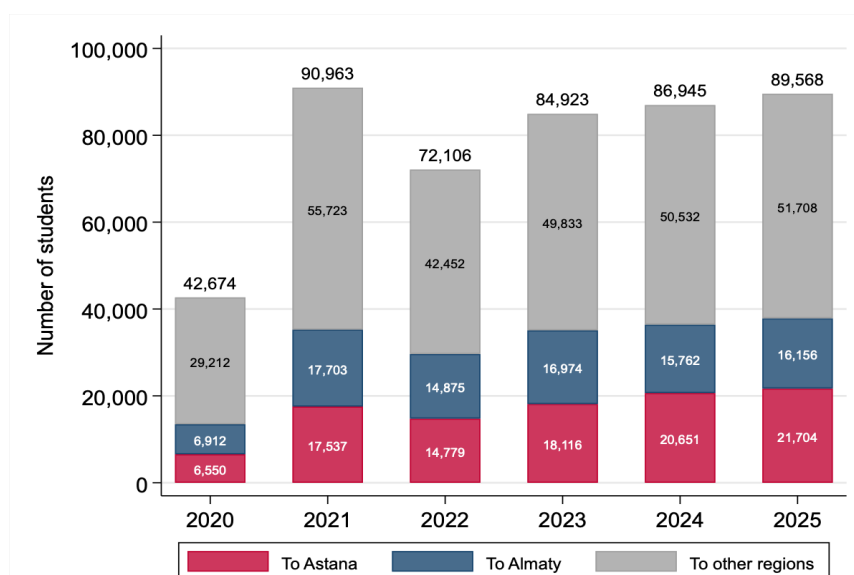


Figure 1 – Inter-regional student movers by destination, 2020 - 2025

Note – compiled by the authors based on NEDB data. Bars show number of students who changed oblast between consecutive academic years. Destination year labels (e.g., 2020 = students in a school in year 2019 who appeared in a different-oblast school in 2020).

Descriptive statistics. Table 2 presents descriptive statistics for the regression sample, comparing students who remained outside Astana and Almaty (stayers, $N = 19,805,121$) with those who moved to one of the two cities (movers, $N = 187,719$). The overall mobility rate is 0.94 percent, reflecting the rarity of inter-regional moves to the two metropolitan centres in any given year.

Movers and stayers are broadly similar on most observable characteristics, though several differences emerge. Movers are slightly more likely to be in primary grades (49.5 vs. 46.3 percent), less likely to be in upper secondary (3.9 vs. 5.6 percent), and substantially less likely to receive targeted social assistance (3.0 vs. 5.3 percent) or to be orphans (0.14 vs. 0.20 percent). Movers are more likely to attend selective schools (31.3 vs. 27.3 percent) and markedly more likely to attend private schools (6.7 vs. 3.1 percent), while they are less likely to attend urban regular schools (26.1 vs. 32.1 percent). These patterns suggest that mobility to the two major cities is positively selected on school quality indicators and negatively associated with markers of socioeconomic disadvantage.

Table 2 – Descriptive statistics: movers vs. stayers

	Full Sample		Stayers		Movers	
	Mean	SD	Mean	SD	Mean	SD
Moved to Astana or Almaty	0.009		0.000		1.000	
Male	0.510	(0.500)	0.510	(0.500)	0.505	(0.500)
Kazakh-medium instruction	0.659	(0.474)	0.659	(0.474)	0.673	(0.469)
Russian-medium instruction	0.312	(0.463)	0.312	(0.463)	0.321	(0.467)
Other language of instruction	0.029	(0.168)	0.029	(0.168)	0.006	(0.076)

	Full Sample		Stayers		Movers	
	Mean	SD	Mean	SD	Mean	SD
Orphan	0.002	(0.045)	0.002	(0.045)	0.001	(0.038)
Targeted social assistance (ASP)	0.052	(0.223)	0.053	(0.223)	0.030	(0.171)
Primary school (grades 1–4)	0.463	(0.499)	0.463	(0.499)	0.495	(0.500)
Lower secondary (grades 5–9)	0.481	(0.500)	0.481	(0.500)	0.466	(0.499)
Upper secondary (grades 10+)	0.056	(0.231)	0.056	(0.231)	0.039	(0.193)
Selective school	0.273	(0.446)	0.273	(0.445)	0.313	(0.464)
Private school	0.032	(0.175)	0.031	(0.174)	0.067	(0.249)
Small school (MKSH)	0.052	(0.222)	0.052	(0.222)	0.040	(0.196)
Rural school	0.323	(0.468)	0.323	(0.468)	0.320	(0.467)
Urban regular school (ref.)	0.320	(0.467)	0.321	(0.467)	0.261	(0.439)
Log school enrollment	—		—		—	

Note – compiled by the authors based on NEDB data. Regression sample after listwise deletion. Stayers: N = 19,805,121; movers: N = 187,719. Standard deviations in parentheses.

Individual-level determinants of mobility. Table 3 reports the individual-level LPM estimates. All three specifications include the full set of student and school covariates, oblast fixed effects, and year fixed effects, with standard errors clustered at the school level. The three columns correspond to the combined Astana-and-Almaty outcome, Astana only, and Almaty only. Coefficients are multiplied by 100 for readability and represent percentage-point changes.

Among student characteristics, gender has a small but statistically significant negative association with mobility to Astana (–0.018 percentage points, $p < 0.001$), with no detectable effect for Almaty. The language of instruction results are particularly striking: Russian-medium students are significantly less likely to move to Astana (–0.189 pp) but more likely to move to Almaty (+0.065 pp), suggesting that the two cities attract students from different linguistic backgrounds. Students studying in other languages (primarily Uzbek and Uighur) are substantially less mobile to both destinations. Orphan status and receipt of social assistance are both negatively associated with mobility, with ASP recipients showing a 0.154 pp lower probability of moving to Astana and a 0.161 pp lower probability of moving to Almaty. While these effects appear small in absolute terms, they are substantial relative to the baseline mobility rate of 0.94 percent, representing reductions of approximately 16–17 percent.

School characteristics show larger effects than student demographics. Private school attendance is the strongest predictor, associated with a 1.47 pp higher probability of moving to Astana and Almaty combined—more than doubling the baseline rate. Selective school attendance raises mobility by 0.34 pp. Conversely, students at small rural schools (MKSH) and regular rural schools are less likely to move. Larger schools are associated with higher mobility to Astana but not to Almaty.

Table 3 – Determinants of student mobility: individual-level LPM

	(1) Astana and Almaty		(2) Astana		(3) Almaty	
	Coef.	SE	Coef.	SE	Coef.	SE
Male	–0.018***	(0.005)	–0.018***	(0.003)	0.001	(0.004)
Russian-medium	–0.123***	(0.027)	–0.189***	(0.020)	0.065***	(0.015)
Other language	–0.632***	(0.030)	–0.349***	(0.018)	–0.284***	(0.023)
Orphan	–0.168***	(0.047)	–0.133***	(0.033)	–0.035	(0.032)
ASP recipient	–0.315***	(0.014)	–0.154***	(0.010)	–0.161***	(0.009)
Primary school	0.080***	(0.007)	0.076***	(0.005)	0.004	(0.005)
Upper secondary	–0.264***	(0.016)	–0.189***	(0.007)	–0.075***	(0.014)
Selective school	0.340***	(0.035)	0.194***	(0.027)	0.146***	(0.018)
Private school	1.470***	(0.118)	0.691***	(0.057)	0.782***	(0.095)
Small school (MKSH)	–0.148*	(0.069)	–0.082	(0.051)	–0.066	(0.042)

	(1) Astana and Almaty		(2) Astana		(3) Almaty	
	Coef.	SE	Coef.	SE	Coef.	SE
Rural school	−0.142***	(0.043)	−0.044	(0.031)	−0.098***	(0.027)
Log enrollment	0.120***	(0.036)	0.110***	(0.029)	0.010	(0.017)
Oblast FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Observations	19,992,840		19,992,840		19,992,840	
R ²	0.005		0.005		0.008	

Note – compiled by the authors based on NEDB data. Coefficients multiplied by 100 (percentage points). All specifications include oblast and year fixed effects. Standard errors clustered at school level in parentheses. Reference categories: female, Kazakh-medium, lower secondary (grades 5–9), urban regular school. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

School-level determinants. Table 4 presents the school-level results, where the unit of observation is the school-year and the dependent variable is the share of students moving to each destination. This specification yields substantially higher explanatory power, with R-squared values of 0.31 for the combined outcome, 0.34 for Astana, and 0.39 for Almaty, compared to less than 0.01 at the individual level. The improvement reflects the fact that mobility is heavily clustered within certain types of schools.

The school-level coefficients are broadly consistent with the individual-level results but reveal additional patterns. The share of orphans enrolled at a school has a large negative association with outflows to the two cities (−5.86 pp for a unit increase in share), indicating that schools serving vulnerable populations retain their students. Private schools stand out as the strongest predictor at the school level: a private school sends, on average, 1.36 pp more of its students to the two cities compared to an otherwise similar urban regular school. The Russian-medium effect persists at the school level: schools with a higher share of Russian-medium students send significantly fewer students to Astana but more to Almaty.

Table 4 – Determinants of student mobility: school-level LPM

	(1) Astana and Almaty		(2) Astana		(3) Almaty	
	Coef.	SE	Coef.	SE	Coef.	SE
Share male	−0.003	(0.191)	−0.075	(0.085)	0.072	(0.167)
Share Russian-medium	−0.204***	(0.025)	−0.274***	(0.018)	0.070***	(0.016)
Share other language	−0.763***	(0.027)	−0.440***	(0.015)	−0.324***	(0.020)
Share orphans	−5.860***	(0.799)	−3.860***	(0.529)	−2.000***	(0.489)
Share ASP recipients	−1.210***	(0.073)	−0.641***	(0.051)	−0.572***	(0.047)
Share primary grades	0.579***	(0.113)	0.395***	(0.054)	0.183	(0.096)
Share upper secondary	0.765*	(0.315)	0.387***	(0.085)	0.378	(0.298)
Selective school	0.313***	(0.019)	0.178***	(0.014)	0.136***	(0.011)
Private school	1.360***	(0.073)	0.624***	(0.035)	0.734***	(0.060)
Small school (MKSH)	−0.148***	(0.039)	−0.090**	(0.031)	−0.058*	(0.023)
Rural school	−0.146***	(0.026)	−0.051*	(0.021)	−0.094***	(0.015)
Log enrollment	0.116***	(0.019)	0.108***	(0.016)	0.008	(0.009)
Oblast FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
School × Years	45,595		45,595		45,595	
R ²	0.308		0.339		0.386	

Note – compiled by the authors based on NEDB data. Coefficients multiplied by 100 (percentage points). Dependent variable: share of students moving to destination. Weighted by school enrolment. Robust standard errors in parentheses. All specifications include oblast and year fixed effects. Reference category: urban regular school. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

CONCLUSIONS

This study provides the first individual-level analysis of inter-regional student mobility in Kazakhstan, exploiting the full population of the National Educational Database across seven academic years (2019–2025). By constructing a longitudinal panel of nearly 20 million student-year observations, we move beyond the aggregate flow tables of earlier work to identify the student and school characteristics associated with mobility toward the country's two dominant metropolitan centres.

Three principal findings emerge. First, the metropolitan concentration of student flows has intensified over the study period. Astana alone absorbed a net gain of over 52,000 students, with annual inflows tripling from 6,550 in 2020 to 21,704 in 2025. This acceleration, interrupted only by the COVID-19 disruption, signals a structural trend rather than a temporary fluctuation. Astana has overtaken Almaty as the primary destination, reversing a pattern documented in earlier years. The growing divergence may reflect Astana's expanding institutional infrastructure, including the concentration of specialised schools and new educational facilities associated with the capital's development.

Second, student mobility to the two cities appears to be socially stratified. Students from more advantaged backgrounds—those attending private and selective schools, not receiving social assistance, and not classified as orphans—are significantly more likely to move. The magnitude of the private school effect is notable: attending a private school more than doubles the probability of moving to Astana or Almaty relative to the baseline rate. This finding is consistent with the broader internal migration literature, which documents that mobility is selective on socioeconomic status [7, 14, 19]. For policymakers, this means that the benefits of metropolitan educational opportunities may be disproportionately captured by students from relatively privileged backgrounds, which could exacerbate rather than mitigate regional inequality.

Third, the determinants of mobility differ meaningfully between Astana and Almaty. Russian-medium students are less likely to move to Astana but more likely to move to Almaty, consistent with Almaty's historical role as the more cosmopolitan, Russian-speaking city and Astana's stronger orientation toward Kazakh-medium education [16, 18]. These asymmetries suggest that the two cities occupy distinct positions in the educational mobility landscape and should be addressed by differentiated rather than uniform policy responses.

The school-level analysis complements these individual-level findings. The sharp increase in R-squared—from below 1 percent at the individual level to 31–39 percent at the school level—confirms that mobility is heavily concentrated in certain school types. Private schools, selective schools, and larger urban schools serve as the primary conduits of student outflows. For regional education administrators concerned about talent retention, these findings identify the specific institutional profiles from which students are most likely to depart.

Several limitations should be acknowledged. First, the NEDB does not contain direct measures of household income, parental education, or academic performance, all of which likely shape mobility decisions. We use targeted social assistance receipt and school type as proxies for socioeconomic status, but these are imperfect. Second, our analysis documents associations, not causal effects. Students who move to Astana or Almaty may differ from stayers on unobserved dimensions, and the low individual-level R-squared confirms that most variation in mobility is driven by factors outside our model. Third, we observe only inter-oblast mobility; within-oblast moves are not captured. Fourth, our mobility measure is based on year-to-year school enrolment changes, which may conflate family relocations with individual student transfers.

For policy, the central implication is that Astana and Almaty should prepare for continued and likely accelerating student inflows in the years ahead. Educational infrastructure planning in these cities should account not only for internal population growth driven by birth rates but also for the substantial and growing stream of inter-regional student migration documented here. With annual inflows to Astana already exceeding 20,000 students and showing a consistent upward trajectory, projections of school capacity needs that rely solely on demographic forecasts within city boundaries will systematically underestimate demand. Regional and municipal education authorities should incorporate inter-regional mobility estimates into their planning models when determining where to build new schools and how to allocate teaching staff. In net-sending regions, the selective nature of outflows suggests that improving the quality and diversity of local educational options may be a more effective retention strategy than general incentives [15].

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ОҚУШЫЛАРДЫҢ ӨНІРАРАЛЫҚ МОБИЛЬДІЛІГІ: ҚАЗАҚСТАНДАҒЫ ҮРДІСТЕР МЕН ДЕРЕКТЕР

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АНДАТПА

Зерттеу мақсаты – Қазақстандағы өңіраралық оқушы мобильділігін зерттеу, атап айтқанда, екі негізгі мегаполис – Астана мен Алматыға бағытталған ағымдарды талдау.

Әдіснамасы – 2019–2025 жылдар аралығында жалпы білім беру мектептеріндегі оқушылардың толық контингентін қамтитын ҰБДБ әкімшілік деректерін пайдалана отырып, авторлар алты өтпелі кезеңді қамтитын шамамен 20 миллион оқушы-жыл бақылауынан тұратын лонгитюдтік панель құрастырып, өңір мен жыл бойынша тіркелген эффектілері бар сызықтық ықтималдық модельдерін бағалады.

Зерттеудің бірегейлігі / құндылығы – бұл Қазақстандағы өңіраралық оқушы мобильділігін жеке деңгейде талдайтын алғашқы зерттеу болып табылады; нәтижелер қабылдаушы өңірлердегі сыйымдылықты жоспарлау мен жіберуші өңірлердегі талантты ұстап қалу стратегиялары үшін маңызды.

Зерттеу нәтижелері – оқушы мобильділігі әлеуметтік тұрғыдан стратификацияланған – жеке мектептерде, таңдаулы мектептерде оқитын және нысаналы әлеуметтік көмек алмайтын оқушылар көшуге бейімдірек, ал жеке мектепте оқу мобильділік ықтималдығын екі еседен астам арттырады. Бағыттар арасында айырмашылықтар бар: орыс тілінде оқитын оқушылар Астанаға азырақ, бірақ Алматыға көбірек көшеді, бұл екі қаланың тілдік профильдерінің айырмашылығын көрсетеді. Мектеп деңгейіндегі модельдер мобильділіктің белгілі бір мекеме түрлерінде шоғырланғанын растайды, мұнда R-квадрат мәндері жеке деңгейдегі 0,01-ден аз көрсеткішпен салыстырғанда 0,31–0,39-ға жетеді. Таза ағым талдауы Астананың зерттеу кезеңінде 52 000-нан астам оқушыны тартқанын, жыл сайынғы келудің 2020-ден 2025-ке дейін үш есеге өскенін көрсетеді.

Түйін сөздер: оқушылар мобильділігі; ішкі көші-қон; білім беру теңсіздігі; мегаполистік шоғырлану; Қазақстан; әкімшілік деректер

Алғыс. Бұл зерттеу Қазақстан Республикасы Ғылым және жоғары білім министрлігінің Ғылым комитеті тарапынан BR24993019 нөмірлі грант аясында қаржыландырылды.

МЕЖРЕГИОНАЛЬНАЯ МОБИЛЬНОСТЬ УЧАЩИХСЯ: ТЕНДЕНЦИИ И ДАННЫЕ ПО КАЗАХСТАНУ

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АННОТАЦИЯ

Цель исследования – изучить межрегиональную мобильность учащихся в Казахстане, исследуя потоки к двум основным метрополитенским центрам – Астане и Алматы.

Методология – на основе административных данных Национальной образовательной базы данных (НОБД), охватывающих полный контингент учащихся общеобразовательных школ с 2019 по 2025 год, авторы построили лонгитюдную панель из приблизительно 20 миллионов учеников-лет наблюдений за шесть переходных периодов и оценили линейные вероятностные модели с фиксированными эффектами области и года.

Оригинальность / ценность исследования – это первый анализ межрегиональной мобильности учащихся на индивидуальном уровне в Казахстане; результаты имеют значение для планирования мощностей в принимающих регионах и стратегий удержания кадров в отдающих регионах.

Результаты исследования – мобильность учащихся социально стратифицирована – учащиеся частных, селективных школ и те, кто не получает адресной социальной помощи, значительно чаще переезжают, при этом обучение в частной школе более чем вдвое увеличивает базовую вероятность мобильности. Направления различаются: учащиеся с русским языком обучения реже переезжают в Астану, но чаще в Алматы, что отражает различные языковые профили двух городов. Модели школьного уровня подтверждают, что мобильность сконцентрирована в определённых типах учреждений, при этом значения R-квадрат достигают 0,31–0,39 по сравнению с менее чем 0,01 на индивидуальном уровне. Анализ чистых потоков показывает, что Астана приняла более 52 000 учащихся за период исследования, при этом ежегодный приток утроился с 2020 по 2025 год.

Ключевые слова: мобильность учащихся; внутренняя миграция; образовательное неравенство; метрополитенская концентрация; Казахстан; административные данные.

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