IRSTI 04.51.53 https://doi.org/10.26577/JPsS.2024.v88.i1.07

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ANALYSIS OF THE RESULTS OF THE UNIFIED NATIONAL TESTING IN THE CONTEXT OF VARIOUS CHARACTERISTICS OF GRADUATES OF SCHOOLS IN KAZAKHSTAN

This article presents an analysis of the results of the unified national Testing (UNT) in Kazakhstan in the context of available socio-demographic characteristics. The main purpose of the study is to determine what the results of the final assessment of schoolchildren in various social groups are. The scientific significance of the work lies in the presentation of the formation of methods for analyzing such data. On the practical side, the results are important for a wide range of the public interested in understanding the problematic factors of the UNT. The research methodology covers quantitative and qualitative indicators: the data of the UNT results were obtained from open sources of the Republican State-Owned Enterprise (RSE) "National Testing Center" of the Ministry of Education and Science of the Republic of Kazakhstan, within the framework of the qualitative method, the results of other studies in relation to the studied topic were analyzed using the Desk-research method. The analysis revealed certain differences, among which there are gender differences in test results and the choice of educational programs, differences in the context of educational programs, quotas and periods of the UNT were confirmed. In general, it is of interest to further study this topic, to trace the dynamics of changes in the parameters analyzed in the article, as well as to expand the categories included, which provides the basis for a longitudinal study and continuation of the analysis demonstrated in the presented article.

Key words: integrated national testing, average certificate score, average grade, university admission, score analysis, pedagogical sciences.

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Қазақстан мектептері түлектерінің әртүрлі сипаттамалары тұрғысынан Ұлттық Бірыңғай Тестілеу нәтижелерін талдау

Бұл мақалада қолжетімді әлеуметтік-демографиялық белгілер тұрғысынан Қазақстандағы ұлттық бірыңғай тестілеу (ҰБТ) нәтижелерін талдау ұсынылған. Зерттеудің негізгі мақсаты-әртүрлі әлеуметтік топтардағы мектеп оқушыларын соңғы бағалаудың нәтижелері қандай екенін анықтау. Жұмыстың ғылыми маңыздылығы осындай деректерді талдау әдістерін қалыптастыруды ұсынуда жатыр. Практикалық тұрғыдан алғанда, нәтижелер ЕО-ның проблемалық факторларын түсінуге мүдделі қоғамның кең ауқымы үшін маңызды. Зерттеу әдістемесі сандық және сапалық көрсеткіштерді қамтиды: ҰБТ нәтижелерінің деректері ҚР Білім және ғылым министрлігінің "Ұлттық тестілеу орталығы" республикалық мемлекеттік қазыналық кәсіпорнының (РМҚК) ашық көздерінен алынды, сапалы әдіс шеңберінде зерттелетін тақырыпқа қатысты басқа зерттеулердің нәтижелерін Desk-research әдісімен талдау жүргізілді. Жүргізілген талдау белгілі бір айырмашылықтарды анықтады, олардың арасында тестілеу нәтижелері мен білім беру бағдарламаларын таңдауда гендерлік айырмашылықтар байқалады, білім беру бағдарламалары, квоталар және ҰБТ өткізу кезеңдері бойынша айырмашылықтар расталды. Тұтастай алғанда, осы тақырыпты одан әрі зерттеу, мақалада талданған параметрлердің өзгеру динамикасын қадағалау, сондай-ақ енгізілген санаттарды кеңейту қызығушылық тудырады, бұл бойлық зерттеуге және ұсынылған мақалада көрсетілген талдауды жалғастыруға негіз береді.

Түйін сөздер: ұлттық бірыңғай тестілеу, аттестаттың орташа балы, орташа баға, университетке түсу, балдарды талдау, педагогикалық ғылымдар.

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Анализ результатов Единого Национального Тестирования в разрезе различных характеристик выпускников школ Казахстана

В данной статье представлен анализ результатов единого национального тестирования (ЕНТ) в Казахстане в разрезе доступных социально-демографических признаков. Основной целью исследования является определить, каковы результаты финальной оценки школьников в различных социальных группах. Научная значимость работы заключается в представлении формирования методов анализа подобных данных. С практической стороны, результаты имеют значимость для широкого круга общественности, заинтересованных в понимании проблемных факторов ЕНТ. Методология исследования охватывает количественные и качественные показатели: данные результатов ЕНТ получены из открытых источников Республиканского государственного казенного предприятия (РГКП) «Национальный центр тестирования» Министерства образования и науки РК, в рамках качественного метода проведен анализ методом Desk-research результатов других исследований в отношении изучаемой тематики. Проведённый анализ выявил определённые различия, среди которых наблюдаются гендерные различия в результатах тестирования и выборе образовательных программ, подтвердились различия в разрезе образовательных программ, квот и периодов проведения ЕНТ. В целом представляет интерес дальнейшее изучение данной темы, прослеживание динамики изменений проанализированных в статье параметров, а также расширение включаемых категорий, что даёт основание для лонгитюдного исследования и продолжения анализа, продемонстрированного в представленной статье.

Ключевые слова: Единое Национальное Тестирование, средний балл аттестата, средняя оценка, поступление в университет, анализ баллов, педагогические науки.

Introduction

In general, the national examination system is practiced in many countries in order to allocate places at universities and assess the knowledge of high school graduates (Klein, 2012: 180), (Keeves, 1994: 24). Graduation exams nationwide are considered «a powerful tool to advance learning in the desired direction», holding schools accountable for the achievement of the school in the educational process and the results of their students. In this way, the work of secondary-level educational institutions is directed and coordinated with the goals of the education policy of each individual country (Keeves, 1994: 32-38). At the same time, this knowledge assessment system is the most convenient for government agencies, as it helps to build a scale of assessment of the mastered educational material by students and the level of knowledge provided by the school (Maag Merki, 2011: 177), (Woessmann, 2005: 57-76).

Igor Valdman, Director General of the autonomous non-profit organization «Electronic Education for the Nano industry», Candidate of Pedagogical Sciences, studying the peculiarities of national exams in a number of post-Soviet countries (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, Tajikistan), noted that in the early 2000s, work began in all the above-mentioned countries on the approbation and implementation of standardized independent exams. In all six countries, the introduction of national examinations for admission to higher education institutions had the following objectives:

1. Ensuring equitable access to higher education – overcoming social and territorial inequalities in university admission;
2. Improving the objectivity of assessing the knowledge of school students through the use of standardized measurement methodology;
3. Fighting corruption in universities during entrance exams (2020).

In addition, for Kazakhstan and Kyrgyzstan, a special goal is the distribution of state grants allocated for higher education institutions based on the results of the national exam. (Waldman I., 2020: 10)

The Unified National Testing System (hereinafter UNT) has been implemented in Kazakhstan since 1999 as a comprehensive test for admission to higher education institutions (universities) in Kazakhstan. Further, since 2004, this system has become mandatory for all graduates of Kazakhstani schools, a kind of measurement of academic performance according to a unified assessment methodology (Aigasin, 2020: 5). By order of the Ministry of Education, dated May 2, 2017, graduates of secondary schools take:

1. Exams in schools (for obtaining a certificate of secondary education and obtaining «Altyn belgi»).

2. The UNT, which will serve as an exam for admission to universities and a system for distributing state grants. (Ministry of Education and Science of the Republic of Kazakhstan, 2017)

Starting in 2019, changes have been made in the UNT format, after which the applicant passes two blocks consisting of 140 points maximum. As part of the first block, the examiner must answer questions on mathematical literacy (15 points), reading literacy (20) and the history of Kazakhstan (15); the second block consists of specialized subjects of the graduate's choice, each of which is rated at a maximum of 45 points. Thus, in total, the applicant can score 140 points if he answers all the questions correctly (Electronic government services, 2021).

Initially, the UNT was conducted on the basis of the National Testing Center (hereinafter NTC), starting in 2021, the UNT takes place on the basis of computerized centers (Committee of Preschool and Secondary Education of the Ministry of Education and Science of the Republic of Kazakhstan, 2021).

The activities of the NCT include conducting entrance exams for school graduates for admission to universities in Kazakhstan, as well as for admission to further education programs at the master's and doctoral levels. The main purpose of the center's activities is to provide organizational and technical equal conditions for all candidates participating in the testing (Abdiev, 2014: 62).

The UNT system has a number of advantages and disadvantages, which have been identified by various researchers and observers. Therefore, for example, in 2016, the former director of the National Testing Center, Doctor of Pedagogical Sciences Abdiyev and Candidate of Pedagogical Sciences Primbetova identified several problems of the UNT:

- incomplete coverage of UNT school graduates;
- assessment of the learning outcomes of schoolchildren without taking into account the profile of the educational institution where the graduates studied;
- high social burden;
- memorizing materials of UNT subjects to the detriment of other school subjects;
- the set of UNT subjects does not fully reflect the specifics of the future specialty. (2016)

Due to the high social and psychological burden on graduates during the UNT in Kazakhstan, suicide cases among adolescents aged 15-19 years have increased (Lee, 2013). Other researchers Bakas uulu and Smagulov write that over the past 10 years, suicide cases among teenagers in Kazakhstan have increased threefold, and every twelfth teenager has tried to commit suicide (2016). In his work, researcher Putwein identified 8 causes of stress in high school students who take exams, and emphasized that the mismatch of expectations and results or the fear of failure causes severe stress in adolescents (2011). Other researchers have noted a similar situation with teenagers in China: the experience before the exam leads children to psychological problems and in some cases even leads to suicide (Davey, 2005: 33-35).

Researcher Zhumabayeva noted that the UNT does not show the real level of knowledge of the applicant on the system of multiple-choice questions. Referring to the OSCE's 2007 reports on education in Kazakhstan, she drew attention to cases where students with good grades at school cannot score passing points. (2016) According to the results of a study conducted in the United States, graduates of schools in some states who were supposed to take the final exam score less on the Scholastic Aptitude Test (SAT) than those who should not take the exam. Thus, the results showed that mandatory testing at the end of school does not always objectively reflect the level of knowledge of applicants (Marchant, 2005: 11).

The Russian Unified State Exam (analogous to the UNT) was originally designed to solve the problem of educational inequality when enrolling graduates of schools in large cities and remote villages of Russia, but the unified exam system did not completely solve the problem. Thus, researchers Omelchenko and Lukyanova write, «The transition to a new form of exams, on the contrary, is perceived as a threat to the accessibility of higher education. Graduates of rural schools, as well as children from low-income, mostly working-class families, are among the most vulnerable groups. Their problems are not limited only to the lower quality of school education or insufficient academic performance; they also lack accurate and complete information about the unified state exam». (Omelchenko, 2006: 332-333). A similar problem is noted in Kazakhstan; however, the specifics of the graduate's school are not taken into account, for example, such specifics as rural small schools (Abdiev, 2016: 27-29).

Despite the above-mentioned problems, changes are being made every year to the format of questions and testing, which as a result gives some hope for solving the problematic aspects of the assessment situation at the end of secondary education. Thus, in

order to reduce the psychological burden on applicants, the Ministry of Education and Science of the Republic of Kazakhstan (MES RK) introduced the «two attempts» program in 2021, which gives the right to take the UNT twice, thereby reducing the stress experienced by graduates to a certain extent and increasing the chances of admission to universities in the country (Forbes Kazakhstan, 2021).

One of the most discussed issues in recent years has been the testing format, in which the applicant chooses one answer (multiple-choice questions or MCQ) from several proposed options. After analyzing this format, social science researchers, as well as experts from the field of education, concluded that this format is already outdated and does not meet modern requirements for measuring and evaluating the level of education. Researcher Polat M. notes that testing units in schools mainly rely on multiple choice questions because these types of questions are reliable, non-resource intensive and time-saving; however, they measure only superficial information in a particular skill or subject, while other skills such as critical thinking and synthesis cannot be evaluated using MCQ (2020). In another paper, the scientist proved that exams consisting only of multiple-choice questions would not be enough for a student to show his real level of knowledge of a certain subject (Stanger-Hall K. F., 2012: 302-304). The relevant regulatory body has taken measures to address this issue. Since 2021, the subjects of the second block include 20 test questions with a choice of one correct answer from five suggested and 10 questions with a choice of one or more correct answers from a variety of suggested ones. The last 10 questions are based on critical thinking and are rated two points (National Testing Center, 2021).

Starting in 2021, the testing format has switched to digital format, which reduces the waiting time for results to several minutes. In addition, the digital format increases the observance of academic integrity. According to scientists at the University of Minnesota, the results of a comparative analysis of online and traditional exam formats showed that students showed better grades when taking online (Jorczak, 2014: 5-6). When registering online for the test, the applicant can independently choose the place and time of the test, which creates favorable conditions for the graduate (Committee of Preschool and Secondary Education of the Ministry of Education and Science of the Republic of Kazakhstan, 2021). In addition, the UNT period has increased from 7-10 days to 3 months, which is important for the preparation and organization of high-quality UNT measures. In turn, Minister of Education and Science Askhat Aimagambetov noted the effectiveness of the new UNT format (Nurbai, 2021). Another advantage for the state of the transition to the digital format is the financial aspect. Since, taking into account the reports of the former director of the NTC Didar Smagulov, more than 1 billion tenge was spent from the state budget in 2020 on holding the UNT using the traditional method, and holding the UNT-2021 cost more than twice as much (about 400 million tenge). Despite the fact that the number of participants has not changed (Gorbunova, 2021).

The question remains insufficiently studied, which parameters affect the results of the UNT and the further choice of applicants for professional educational programs. The question also arises, if any correlations are observed, what is their direction and strength of connection.

Literature review

The formats of the exam and the system of allocation of places at the university are not the same, so this issue is always open to research. The scientists investigated and analyzed the format of the questions, the content of the texts of the questions, as well as the system of assessing the level of knowledge separately and in comparison with other types of national testing.

In European countries, two types of exams can be distinguished: *national ones like* PAU (Spain) and UEE (Turkey), which are held and evaluated only in one country, and general ones like Abitur (Germany and Austria), Matura (Switzerland, Albania, Czech Republic, Poland, Italy, Hungary, etc.), which are quoted in several countries. Newman, Gashi, Gregor, Elatia, Krebl, Kutin, Demukay, Peternel, Trautwein and Nagi analyzed the general national exams in their works. In addition, the results of analyses of national exams taking place in only one European country, such as PAU and UEE, can be found in the studies of Vaes, Berberoglu, Kozan, Tezer, He K., Stockford, Meadows, Ruiz and Davila.

According to Greenwood, the stakes in national exams in Asian countries are very high (2018), and therefore the topic of national exams is comprehensively studied by such authors as Davey, De Lian, Higgins, Levin, Ksyu, Zhang, Zhuokin, Dai, Chen, Hushing (national exam in China), Yoshinori, Allen (Japan), Bus, Kyung, Lee M., Shin D. (South Korea), Hussain, Al Amin, Greenwood (Bangladesh).

In post-Soviet countries, as mentioned above, there is also a gradual transition to a standardized exam format. In the works of Havenson, Solovyova, Malinetsky, Podlazov, Peresetsky, Davtyan, Borusyak, Omelchenko, Lukyanova, Bolotov, and Bochenkova the main topic of the study was the Unified State Exam. Other authors analyzed problems with the national exam in other post-Soviet countries Abdiev, Primbetova, Balykbayev, Smagulov, Bakas uulu, Zhumabayeva, Aigazin, Bauyrzhan, Bekishev and Pak (UNT – Kazakhstan), Salmorbekova and Shamatov (ORT – Kyrgyzstan), Ginchuk and Shevlyakova-Borzenko (Republic of Belarus). As well as Waldman, Stanley, Vlardingerbrook, Taylor, Rechitz and Heineman showed interest in a comparative study of national exams from different countries.

Methodology

In order to understand which of the available parameters correlate with the UNT results, as well as whether there are differences in UNT scores in the context of various characteristics, the authors of this article conducted various statistical analysis methods: analysis of averages, contingency tables, correlation analysis.

The results of the unified national testing in Kazakhstan are available on the website of the National Testing Center (NTC): www.testcenter.kz. At the time of writing, the results for 2019, 2020 and 2021 were available, respectively; the analysis is limited to the available data. In general, the UNT results database consists of the applicant's data, such as: surname, first name, patronymic; individual testing code (ICT); the sum of points scored according to the results of the UNT; the average score of the certificate of applicants in the context of educational programs; university admission and specialty. For further statistical processing, the data were adapted by encoding, except for UNT scores and the average grade of the certificate – these two variables are quantitative, respectively, they were left unchanged. The encoded data was exported to the IBM SPSS Statistics statistical processing program. Since our research interests are focused on pedagogical specialties, that is, what correlations and dependencies are observed in this direction, the designated categories were included in the database of results for analysis. At the same time, in order to compare pedagogical specialties with other areas, other categories of educational programs were included in the analysis. At this stage, the analysis includes ten categories of specialties that have been coded accordingly: 1 – Pedagogical Sciences; 2 – Humanities; 3 – Social Sciences; 4 – Business, Management and Law; 5 – Natural Sciences, mathematics and statistics; 6 – Information and communication technologies; 7 – Engineering, manufacturing and construction industries; 8 – Agriculture and bio resources; 9 – Healthcare; 10 – Services.

The data were analyzed using frequency analysis, contingency tables, correlation analysis, and an analysis of averages was applied. In order to use correlation analysis, the variables of the categories of educational directions indicated above were recoded into dichotomous variables, where 1 means the chosen direction and, accordingly, 0 means not selected.

Results

Because of the formation of the database for analysis, data from 78,653 applicants in 2019, 2020 and 2021 were processed, in ten categories of educational areas. The frequency analysis of the data as a whole showed that a significant share is made up of educational programs in the engineering, manufacturing and construction industries – in our database this category is at the level of 40%-44% of the total number of analyzed programs. Next in prevalence are natural sciences, mathematics and statistics (14%-16%); information and communication technologies (12%-19%). Pedagogical sciences are in fourth place and account for 8%-10% of the total number of educational categories. There are no significant changes in the context of years, that is, such a distribution is observed throughout all the years of the study. Detailed results of the distribution of educational categories by year are presented in Table 1 – the data are consistent with the allocated educational grants from the state, namely grants allocated because of a general competition.

It should be noted that individual quotas and other government special programs were excluded from the analysis, since they do not show the real picture of the overall distribution of grants on a competitive basis. For example, in 2019, in the specialty «B003 – Pedagogy and methods of primary education», grants were allocated on the basis of a general competition to applicants who scored at least 111 in the general competition and 108 in the rural quota, whereas according to the pedagogical quota of the Arkalyk State Pedagogical Institute named after Y. Altynsarin could apply for a grant by scoring 69 and 60 points, respectively. However, it was possible

to enroll in the S. Amanzholov East Kazakhstan University with a special pedagogical quota with 74 points, and in order to receive a state grant for a rural quota, it was necessary to score a minimum threshold score (70 points) at all. The analysis did not take into account the above-mentioned pedagogical quotas and other special programs, for example, «Serpin» and grants for Candace. Kandas – is an ethnic Kazakh and (or) members of his family of Kazakh nationality who were not previously citizens of the Republic of Kazakhstan, who arrived in their historical homeland and received the appropriate status in accordance with the procedure established by the Law «On Migration of the Population». All these special programs are aimed at supporting various groups of the population, providing them with benefits for admission to higher education institutions in Kazakhstan.

Table 1 – The distribution of categories of educational directions in the context of the years of admission and in general *

	2019		2020		2021	
	Frequency (n)	Percentages (%)	Frequency (n)	Percentages (%)	Frequency (n)	Percentages (%)
	23378	100%	26573	100%	28702	100%
Pedagogical sciences	1974	8%	2494	9%	2939	10%
Humanities	957	4%	995	4%	597	2%
Social Sciences	253	1%	220	1%	238	1%
Business, Management and Law	527	2%	600	2%	666	2%
Natural sciences, mathematics and statistics	3190	14%	3960	15%	4488	16%
Information and communication technologies	2771	12%	3048	12%	5409	19%
Engineering, manufacturing and construction industries	10332	44%	11494	43%	11430	40%
Agriculture and bioresources	938	4%	690	3%	696	2%
Healthcare	1437	6%	1955	7%	1444	5%
Services	999	4%	1117	4%	795	3%

* The differences are significant at the level of $p<0,05$

An analysis of the categories of educational directions in the context of gender showed that there are significant differences ($p<0.05$): girls are much more likely than boys to prefer to study in educational programs of pedagogical sciences, in educational programs of natural sciences, mathematics and statistics, as well as health care and services. Educational programs of information and communication technologies are more widespread among boys than among girls; engineering, manufacturing and construction industries. Similar differences were observed throughout the years studied (Table 2).

Table 2 – Distribution of categories of educational directions by gender and year of admission * Services

	2019 year		2020 year		2021 year	
	Man	Woman	Man	Woman	Man	Woman
Pedagogical sciences	5%	12%	4%	14%	4%	17%
Humanities	3%	5%	3%	5%	1%	3%
Social Sciences	0,3%	2%	1%	1%	0,3%	1%
Business, Management and Law	2%	3%	2%	3%	2%	3%
Natural sciences, mathematics and statistics	8%	19%	9%	21%	9%	23%
Information and communication technologies	15%	9%	16%	8%	25%	12%
Engineering, manufacturing and construction industries	59%	30%	59%	29%	52%	26%
Agriculture and bioresources	3%	6%	2%	3%	2%	3%
Healthcare	3%	9%	4%	10%	3%	7%
Services	3%	6%	2%	6%	1%	4%

* The differences are significant at the level of $p<0.05$

The average value of UNT points in 2019 was 98.90 points, according to 2020 data – 85.41 points, in 2021 the points rose again to 92.69 points, that is, there is a decrease in UNT points in 2020 ($p<0.05$). A decrease in scores is observed in all categories of educational programs, comparative data on the average values of UNT scores are shown in Figure 1 – the data are ranked in descending order of points by 2020. It should be noted here that since March 2020, Kazakhstani schoolchildren have been studying online due to the spread of the coronavirus pandemic. Perhaps this was the reason for the decrease in the results of the final assessment of the knowledge of school graduates.

There are also significant differences in the categories of educational programs: graduates of schools with the highest UNT scores were more likely to choose educational programs for business, management, law and healthcare. Further, there are differences by year: in 2019, social sciences were in third place in terms of the average UNT score, in 2020, humanities were in third place. The category of pedagogical sciences is in fifth or sixth place in terms of the average UNT score among all categories of educational programs. Applicants with the lowest UNT average scores enrolled in educational programs in engineering, manufacturing, construction industries, as well as agriculture and bio resources (Figure 1).

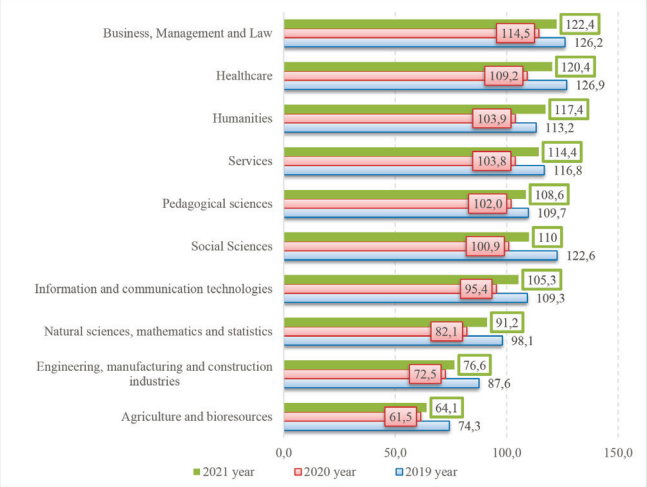

Figure 1 – Comparison of average UNT scores by categories of educational programs, 2019-2021

The analysis of averages showed that the average score of UNT results for girls is significantly higher than for boys – the differences are significant at the level of $p<0.05$. This trend is observed according to the results of 2019: girls (103,46; Std.dev.20,8) and the boys (94,26; Std.dev.21,9), according to the results of 2020: girls (88.64; Std.dev.20.1) and boys (81.73; Std.dev.20.6); such differences are also shown by the results of 2021: girls (97.45; Std.dev.20.2) and boys (88,35; Std.dev.22,8). At the same time, the average UNT score changed more for girls than for boys: Compared to 2019, in 2020, the decrease was 12.5 for boys and 14.8 for girls; in 2021, the increase was 6.7 for boys and 8.9 points for girls (Figure 2).

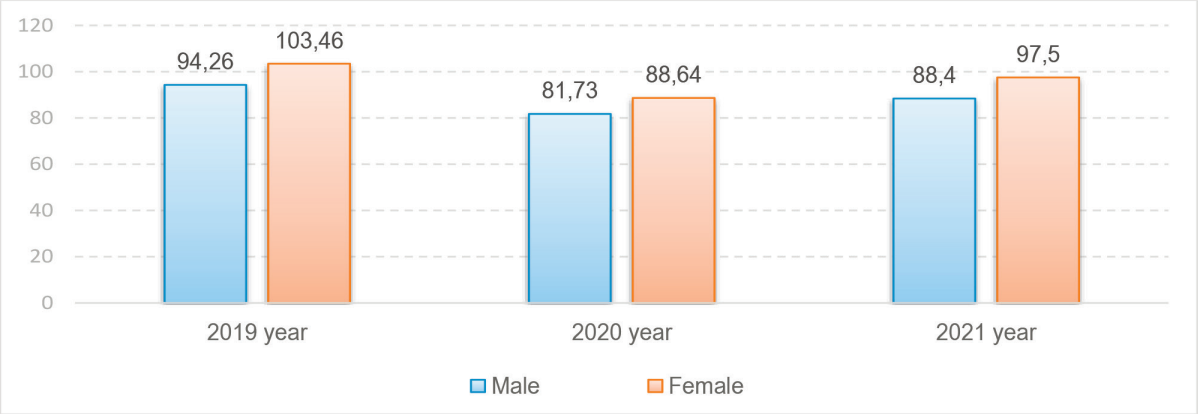

Figure 2– Comparison of average UNT scores by gender, 2019-2021

In order to support young people from rural areas, as well as to motivate them to return to their villages after studying at educational institutions and getting a profession, rural quotas are allocated for them. If an applicant has a rural quota, the chances of receiving a grant increase, this happens due to a decrease in the number of applicants for a grant in the specialty. According to the Rules for awarding an educational grant in the Republic of Kazakhstan: «The competition for groups of educational programs for which a quota is set for citizens from among rural youth is conducted as follows: 70 percent of the total number of grants for these groups of educational programs are awarded in the order of a general competition, and for the remaining 30 percent of grants, a competition is held only for citizens from among rural youth» (Information and legal system of normative legal acts of the Republic of Kazakhstan, 2023). The rural quota is not set for all educational programs, but only for specialties required for the development of rural settlements. Accordingly, the list of educational programs for which the rural quota is valid changes every year. For all graduates who have studied under the rural quota, there is an obligation to return to the village and work in their specialty for a certain time, the so–called «working out». The rural quota was used by 13% of applicants in 2019 and 2020 and 11% in 2021. An analysis of the average values of UNT scores showed that there were differences ($p<0.05$), holders of rural quotas scored on average less UNT points than the rest of the applicants, on average the difference was about 4 points. This trend was observed by the results of 2019 and by the results of 2020. According to the results of the 2021 data, there are no significant differences ($p>0.05$), that is, despite the difference of 0.77 points, holders of rural quotas scored on average similar points as those entering the general competition (Figure 3).

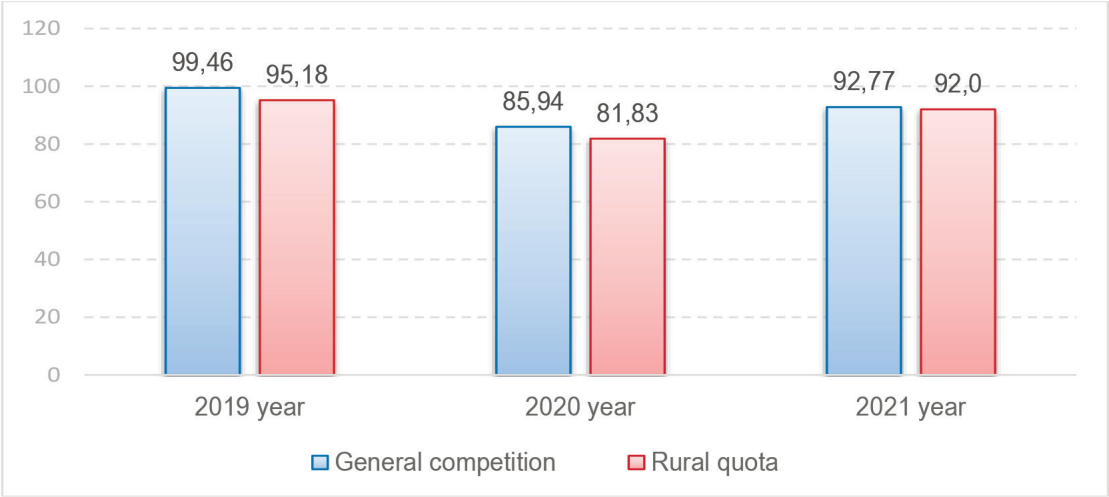

Figure 3 – Comparison of average UNT scores in the context of the general competition and rural quota, 2019-2021

It should be noted that in 2020, the average value of certificate grades (4.45) was higher than in 2019 (4.35), and then in 2021, the average certificate score decreased again (4.28). Thus, UNT results in 2020 are lower, and school grades are on average higher than in 2019 and 2021.

Table 3 shows the average values of school certificates by years and categories of educational programs. The analysis of the average values indicates certain trends observed throughout the studied years. Thus, applicants with the highest school certificate scores (4.8 in 2019; 4.9 in 2020 and 4.9 in 2021) choose educational programs for business, management and law. The further ranking of the categories of educational programs varies from year to year. The fact remains unchanged that applicants with the lowest average values of certificates (3.7-4.2) go to study for educational programs in engineering, manufacturing, construction industries, agriculture and bio resources.

Table 3 – The average grade of the certificate in the context of categories of educational directions and the year of admission *

	2019 year			2020 year			2021 year		
	The average grade of the certificate	N	Std.dev.	The average grade of the certificate	N	Std.dev.	The average grade of the certificate	N	Std.dev.
Total	**4,35**	**23378**	**0,57**	**4,45**	**26573**	**0,52**	**4,28**	**28702**	**0,56**
Business, Management and Law	4,79	527	0,16	4,91	600	0,19	4,92	666	0,19
Information and communication technologies	4,56	2771	0,12	4,57	3048	0,24	4,8	5409	0,23
Social Sciences	4,80	253	0,16	4,76	220	0,32	4,64	238	0,45
Humanities	4,44	957	0,60	4,82	995	0,25	4,6	597	0,29
Pedagogical sciences	4,50	1974	0,52	4,80	2494	0,34	4,58	2939	0,41
Services	4,61	999	0,23	4,36	1117	0,20	4,51	795	0,40
Healthcare	4,32	1437	0,31	4,60	1955	0,60	4,46	1444	0,37

Natural sciences, mathematics and statistics	4,44	3190	0,64	4,59	3960	0,36	4,28	4488	0,398
Engineering, manufacturing and construction industries	4,20	10332	0,66	4,24	11494	0,59	3,89	11430	0,49
Agriculture and bioresources	4,12	938	0,30	4,10	690	0,07	3,68	696	0,29

* The differences are significant at the level of $p<0,05$

It is of interest to study whether there is a relationship between the average grades of the school leavers' certificate and the value of UNT scores, but unfortunately, there is no access to information about the average grades of the applicants' school education certificates. The information available in the database is about the average scores of the incoming certificates in the context of educational programs, that is, for each educational program, what is the average score of the incoming school certificate.

It should be noted that in the generated database, the average value of UNT scores correlates with the average grade of the certificate of the categories of educational programs: there is a direct positive correlation of moderate strength between the indicated variables, as evidenced by the correlation analysis, the results of which are presented in Table 4. The presence of correlation is indicated by the significance, the value of which is significantly less than 0.05; the positive sign of the Pearson correlation coefficient indicate the positive direction; at the same time, the value of the Pearson correlation coefficient, which is 0.455, indicates a moderate correlation between these two variables (Table 4). Thus, it can be assumed that the higher the average grade of the certificate, the more likely the UNT score will be higher, but, as noted above, to more accurately confirm this assumption, it is necessary to study whether there is a relationship between the average grades of the school leavers' certificate and the value of the UNT scores obtained during the final test.

Table 4 – The results of the correlation analysis between the two variables

Correlations			
		UNT score	The average grade of the certificate
UNT score	Pearson Correlation	1	,455**
	Significant. (double-sided)		,000
	N	78653	78653
The average grade of the certificate	Pearson Correlation	,455**	1
	Significant. (double-sided)	,000	
	N	78653	78653
**. The correlation is significant at 0.01 (double-sided).			

Conclusion

Thus, it is possible to state that the measures taken to increase the prestige of pedagogical specialties have a positive effect, they are chosen by applicants with fairly high UNT scores, so among the ten analyzed educational categories, pedagogical sciences are in fifth place (according to 2021 data) in terms of the average UNT score among all categories of educational programs and make up relatively good scores. In addition, the designated specialties are among the five-mastered educational grants allocated by the state, so in the analyzed database pedagogical sciences are in fourth place and account for 8%-10% of the total number of educational categories.

The analysis confirmed gender differences in the choice of educational programs, representatives

of the female part are much more likely than men to prefer to study in educational programs of pedagogical sciences, natural sciences, mathematics and statistics, as well as health care and services; boys choose educational programs of information and communication technologies more than girls; engineering, manufacturing and construction industries. Gender differences in the academic performance of school graduates are evidenced by the analysis of averages, which showed that girls have an average score of UNT results significantly higher than boys, this trend do is observed at the end of all three years for which the analysis was made.

In 2020, there is a decrease in scores in all categories of educational programs, perhaps this was the result of online schooling for schoolchildren, to which they were transferred due to the spread of the coronavirus pandemic. It should be noted that in 2020, the average value of certificate grades was higher than in 2019, and then in 2021, the average certificate grade decreased again. Thus, UNT results in 2020 are lower, and school grades are on average higher than in 2019 and 2021.

At the same time, the analysis of the average values of the certificate assessment indicates certain trends observed throughout the studied years, applicants with the highest school certificate scores choose educational programs for business, management and law, further ranking of categories of educational programs varies from year to year, but the fact remains unchanged that applicants with the lowest average values of certificates go to study for educational programs in engineering, manufacturing, construction, agriculture and bio resources.

Statistical analysis has shown that the average value of UNT scores correlates with the average grade of the certificate, there is a direct positive correlation of moderate strength between the indicated variables, but to accurately confirm the correlation, it should be studied whether there is a relationship between the average grades of the school leavers' certificate and the value of UNT scores obtained during the final test. In general, it should be noted that further study of this topic is of interest, tracing the dynamics of changes in the analyzed parameters, which provides the basis for a longitudinal study and continuation of the analysis shown in the presented article.

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Статья на английском: Analysis of the results of the unified national testing in the context of various characteristics of graduates of schools in Kazakhstan

Статья на казахском: Қазақстан мектептері түлектерінің әртүрлі сипаттамалары тұрғысынан ұлттық бірыңғай тестілеу нәтижелерін талдау

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Келіп түсті 27 шілде 2023 жыл
Қабылданды 28 ақпан 2024 жыл