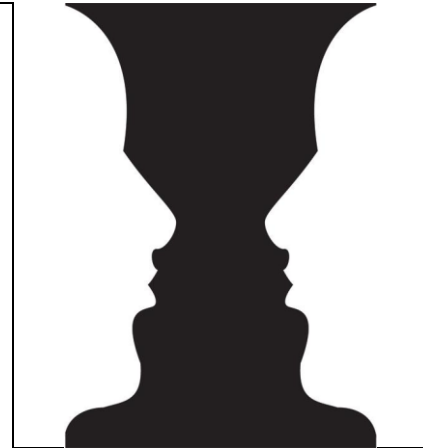


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## The reverse gender gap in education. A sociological case study on secondary education in Ialomița County, Romania

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### **Abstract**

*This article addresses the reverse gender gap in the performance of high school students through a case study in Ialomița County. The results show that boys face an average disadvantage compared to girls, which is a phenomenon consistently observed nationally and internationally. The study examines how the Covid-19 pandemic, gender, residence, specialization and other socio-demographic predictors contribute to educational inequalities. On one hand, it discusses the over-representation of girls in domains characterized by higher Baccalaureate graduation rates (theoretical and vocational). On the other hand, it documents the over-representation of boys in domains characterized by lower Baccalaureate graduation rates (technological). Moreover, the results indicate that high school admission and high school graduation average grades are predictors of Baccalaureate success, but they differ significantly between specialization domains. The article creates a typology of high school graduates and highlights problems related to grade inflation. These problems may hide the real competences of students, especially in the technological specialization areas. The study also notes a specific disadvantage for pupils affected by the COVID-19 pandemic.*

### **Keywords**

*Sociology of education; Gender gap; Educational inequalities; High school education; Covid-19 pandemic;*

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## **Introduction**

The contemporary world sometimes seems to be a world of permanent transition. It appears to us both as uniform, by considering the accentuation of similarities brought about by globalization, but also as diverse, by considering the different ways in which the transformations brought about by the global changes in the world are realized. Contemporary societies are in a period of profound change; the development of technology, the Covid-19 pandemic, and war-like conflict events portrayed in the media have had a profound effect on people's lives, with unforeseen consequences.

Gender inequality is a persistent and widespread feature, in various forms, in many societies today and throughout history. One of the important research themes in the social sciences concerns the manifestation of gender differences and their influence on the human capital that is acquired through education. In turn, gender differences in education are among the main factors determining gender disparities in socio-economic areas such as work, family and public life.

Discussions about gender are increasingly centered on the processes leading to gender equality as well as the difficulties experienced by women and girls in light of the numerous, long-lasting disadvantages that have been documented in previous centuries. In recent years, however, reversals of gender disparities are also emerging in many countries. Boys and men lag behind girls and women, especially in education.

## **Theoretical background**

### ***Gender as a social structure***

Gender is embedded in our personalities, in societal culture, in institutions, and is a source of social stratification. Risman (1998; 2004) conceptualizes gender as a social structure and examines how gender is embedded in the individual, interactional and institutional dimensions of society, contributing to social inequalities.

Gender serves as a basis for interpreting and socially organizing sex-related differences, allowing biological characteristics to acquire socially significant meanings and valences that are tightly coupled (Udry, 2000). Gender performativity, also known as doing gender, generates and perpetuates inequality in both stable and dynamic forms across time. Gender originates from social interactions, social expectations and responsibilities (West and Zimmerman, 1987). Lorber (1994) appreciates that gender is an institution that is embedded in all social processes in everyday life.

Gender is therefore a complex concept that influences many social processes that are a part of society. Gender is a social construct that encompasses social and power structures that have been developed throughout time based on the interpretations and meanings of many characteristics related to the body, sexuality, and reproduction, as well as classifications of individuals. The complexity of this concept goes beyond the specificity of historical periods because social constraints on both women and men have existed in different ways in many eras; they are different in both private and social life and are strongly influenced by cultural, economic and social values.

Cultural beliefs about gender influence both men's and women's behavior, performance and evaluations. Ridgway (1999) discusses the gender system and its implications for gender inequality. Thus, gender as a social phenomenon is not just an identity or role 'taught' in childhood and enacted in adult family relationships. Gender is a set of social norms that are continuously actualized for two important groups of people: men and women. It is used in a variety of social contexts to structure and occasionally challenge patterns of inequity based on the distinction between men and women (Risman, 2004).

In recent years, in many societies, the issue of women's disadvantage in many areas of life has become co-present with men's disadvantage in other areas. Some of these disadvantages of masculinity are old (such as higher suicide rates, lower life expectancy, higher risks of violence and incarceration, among others) - but others are recent, such as those in the educational sphere.

For example, Reeves (2022) captures the idea that American men are performing poorly in several areas of social life, such as: education, labor market, opportunities of acquiring new skills, income levels, fatherhood, and contribution to family income. These new aspects of men's roles actually affect society and there is also a need to address gender disparity as a form of reversed gender gap, complementing rather than replacing social disadvantages of femininity. The fact that men are almost absent from or have an increasingly reduced contribution in certain domains, especially those associated with care, education and health, unbalances social relations and the quality of life for both men and women.

### ***Gender gaps in education***

Reeves (2022) points out that the 1970s and 1980s were marked by a major gender gap to the disadvantage of women; therefore, the promotion of girls and women in education was pushed into the public consciousness. However, no one predicted the emergence of reverse gender inequality, i.e. the disadvantage of men over women. This trend happened in a very short period of human existence. For example, in the US school environment, following standardized assessments, it has emerged that girls outperform boys in English language, and have caught up in mathematics skills (Reeves, 2022). In terms of both college enrolment and graduation the trend is in favor of girls: they enroll more often in college and graduate more often than boys, thus emerging a gender gap favoring women in obtaining a university degree. In 1972 there was a 13% gap in favor of men obtaining a university degree, today there is a 15% gap in favor of women obtaining a university degree. Thus, the gender inequality we see in higher education is greater than it was 50 years ago and in reverse (Reeves, 2022).

Numerous other studies explore these social changes, in different countries. For example, Bertochi and Bozzano (2019) discuss gender differences in education, provide an overview of the gender gap and its influence, with reference to the period from 1850 to the present, in different regions of the world. The study analyses the gender gap in education, identifying the root causes of its early phase, related to historical context, labor

market, family and cultural norms of society. The increase in women's educational attainment and the continuing decrease in the gender gap in education started in the second half of the 19th century in Europe and the USA and is still manifest in today's society. However, for most of human history, women have had a relatively low level of education compared to men. Education was a privilege for girls and women who belonged to the nobility, the lower elites. The content and quality of education varied widely. When they began to be educated, girls were mostly trained in reading, writing, basic arithmetic, with an emphasis on subjects considered specifically female (sewing, household tasks). With the development of the modern economy, there was a large-scale expansion of mass schooling with industrialization in Western Europe and the USA. Even under these changing conditions, the educational opportunities were mainly for boys. It is only since the 20th century that progress has been made in women's access to education, and with modernization and economic development, undifferentiated access to education has been encouraged.

As society has evolved, access to education has been influenced by a wide range of factors, economic characteristics such as wealth and job opportunities, religious values, family structure and kinship relationships. Although there is a trend for gender inequalities to narrow, there are still large gaps between female and male education levels and between countries, and although many regions have achieved gender parity in primary education, disparities still exist. A World Bank report (2012) captures the fact that in primary and secondary education, almost equal participation rates for girls and boys have been achieved, while in tertiary education, women are ahead of men. With the introduction of compulsory education (until at least around age 14-16), secondary education expanded, with more young women (87%) than young men (81%) graduating from a secondary education programme by 2000 (OECD, 2015). At tertiary level, OECD data show that the share of women obtaining a degree has overtaken that of men, reaching 34% and 32% respectively by 2012. Among younger people aged 25-34, the share of women with tertiary education is higher than that of men (50% and 38% respectively) in 2017. Also, relative to the same age range for obtaining a Master's degree women represented the majority in 30 countries, obtaining a PhD in 11 countries (OECD, 2017).

The Programme for International Student Assessment (PISA) is an international benchmarking study initiated by the Organization for Economic Co-operation and Development (OECD) that assesses the mathematics, reading and science skills of 15-year-olds and focuses on students' ability to solve problems, think critically and communicate effectively, and cope with real-life challenges. Since they were first administered in 2000, it has been found that girls outperformed boys in reading, while boys did better in mathematics and results were balanced in science. Regarding young people's expectations for future education and occupations, 15-year-old girls showed more ambitious prospects than boys of the same age. The reasons for these results can be found in pupils' attitudes to learning, behavior at school, use of leisure time and self-confidence.

Margriet van Hek et al. (2016) addressed the phenomenon of reversing the gender gap in educational attainment for women and men. The study aimed to estimate the gender gap in educational attainment through a comparative analysis for women and men

belonging to cohorts born between 1950 and 1982 in 33 countries. It shows that women in most Western societies have overtaken men in educational attainment in recent decades, although there are many differences and specific conditions between countries. There are a number of individual and contextual factors that influence the educational attainment of women and men. These include women's participation in the labor market, the existence of favorable conditions for women's empowerment, and the degree of religiosity in society. Thus, a high level of female labor market participation in adolescence influences women's performance in education, while a high level of religiosity negatively affects women's educational attainment. Decreasing levels of religiosity and the role of religious institutions have influenced attitudes towards gender roles in society. Even though modernization has touched both men and women equally, women's roles in society have evolved as a result of economic and cultural shifts brought about by the shift from traditional to modern cultures,

Permanyerid and Boertien (2019) examined how gender disparities in education still exist as well as shifts in how global education is delivered to people. They come to the conclusion that, as education increases, women benefit more from it while men's educational advantages decrease. But alongside the ongoing modernization of the educational system, there is a structure in place to support cultural shifts that will contribute to the restoration of gender equality.

### Research methodology

As a means of social and cultural reproduction, education in schools not only shapes social inequality but also prepares students to participate in society as adults. The COVID-19 pandemic and other recent developments have brought about drastic changes to Romania's education system, affecting not only students but also teachers, parents, and other stakeholders. The changes have affected curriculum and legislation. All educational levels in Romania are pertinent to students' careers. Still, secondary school is a critical period where people gain foundational knowledge and skills necessary for higher education and future careers. This stage often determines their readiness and ability to succeed in college or academic settings.

Given this general framework, we will analyze secondary data on gender gaps in Baccalaureate (BAC) pass rates in Romania, and then continue with a case study on high school education in Ialomița County, with high school students as the unit of analysis.

The National Education Law, which was in effect at the time of the study (2011), describes the organization of the educational system as follows: three secondary school study routes that are part of the pre-university school network, each with a specific number of profiles and specializations.

- 1) The *Theoretical Education Route* includes the following profiles:
  - Sciences – majoring in mathematics-computer science and natural sciences.
  - Humanities – majoring in philology and social sciences.
- 2) The *Vocational Route* include the following profiles: sports, theological, artistic.
- 3) The *Technological Education Route* is organized as follows:

- *Services*: This includes the domains of technical services, environmental protection, natural resource extraction, and general services.
- *Industry*: This includes media production, polygraphic techniques, mechanics, electronics, automation, electrical, electromechanics, construction, installation and public works, deconstruction materials, industrial chemistry, textile and leather industry, manufacture of wood products.

In order to analyze the above-mentioned aspects, we compiled a database using purposive sampling. At the time of data collection in Ialomița county, the secondary school network included 17 high schools. We collected data from 9 high schools in Ialomița county. The 9 high schools in the sample represent the typology of the 3 types of high schools existing in the structure of the Romanian high school system. Thus, in the sample there are 3 *theoretical high schools* (out of the total of 4 in the county) – representing all areas of the county, namely Slobozia, Urziceni, Fetești, 4 *technological high schools* (out of the total of 10 in the county) – representing all areas of the county, namely Slobozia, Urziceni, Fetești, Țândărei. Moreover, 2 *vocational high schools* (out of the total of 3 in the county) are in Slobozia, with no other high schools of this type in the county. The resulting database has been named “Diagnosis of High School Trajectories 2015-2021” (DLT 2015-2021).

The database contains a series of information characterizing a number of 2211 high school graduates from Ialomița county: 1175 students were enrolled in 2015 and graduated in 2019 (2015-2019 Generation) – out of a total of 1704 students, and 1036 students were enrolled in 2017 and graduated in 2021 (2017-2021 Generation) – out of a total of 1642. Of these, 1018 are boys and 1193 are girls. Also, 1095 reside in urban regions and 1116 in rural areas.

The information that is in the collected database included the following variables: residence (rural/urban), gender (male/female), student’s family type (normal, single parent), student raised by grandparents (yes/no), student in foster care (yes/no), student with parents abroad (yes/no), student who is socio-economically disadvantaged (yes/no), student who has commuter status (yes/no), student benefiting from various social programmes such as High School Grants/Professional Scholarships/Welfare Grants (yes/no), average grade obtained in high school admission (1-10), average grade obtained in sciences during high school (mathematics, physics, biology, depending on the framework plans – 1-10), average grade obtained in ICT (Information and Communication Technology – 1-10), average grade obtained during the 4 years of study in high school (1-10), possession of ECDL Certificate (yes/no), average grade obtained in high school graduation (1-10), average grade obtained in the Bacalaureate exam (1-10), student’s status of passing the Bacalaureate exam (yes–average grade obtained on the Bacalaureate exam is above 6 / no–average obtained on the Bacalaureate exam is below 6), student continues his/her studies after high school graduation (yes/no), student is employed after leaving secondary school (yes/no), student went abroad after leaving secondary school (yes/no), student unknown situation when no information is available after leaving secondary school, information about the ICT equipment (phones, PCs, laptops, tablets).

We consider it relevant for the analysis to gather data about the two generations, 2015–2019 and 2017–2021, since the latter took the Bacalaureate exam in June 2021 following a school year that was largely impacted by the COVID-19 pandemic, while the former took the exam in June 2019 following a school year that was not affected by the pandemic. The 2020–2021 academic year was marked by restrictions in physical access to school, a decrease in face-to-face interactions, a preponderance of online learning activities, and the requirement that teachers utilize various digital and communication tools when working with students on educational projects. Data were collected from various sources: catalogs and registers, statistical reports, the county-level SIIR database, high school education quality analysis reports, and centralized county-level reports.

**Table 1. Network of secondary schools - Ialomița county.**

No.	Secondary school	Educational Route	Included in sample (Yes/No)
1	MIHAI VITEAZUL SLOBOZIA NATIONAL COLLEGE	Theoretical	Yes
2	GRIGORE MOISIL URZICENI NATIONAL COLLEGE	Theoretical	Yes
3	IONEL PERLEA HIGH SCHOOL OF ARTS SLOBOZIA	Vocational	Yes
4	MATEI BASARAB PEDAGOGICAL HIGH SCHOOL SLOBOZIA	Vocational	No
5	AL. IOAN CUZA SLOBOZIA	Vocational	No
6	ANGHEL SALIGNY FETEȘTI TECHNOLOGICAL HIGH SCHOOL	Technological	Yes
7	TECHNOLOGICAL HIGH SCHOOL OF FOOD INDUSTRY FETEȘTI	Technological	Yes
8	HOT-HOT-FAIR TECHNOLOGICAL HIGH SCHOOL	Technological	No
9	SLOBOZIA HIGH SCHOOL OF TECHNOLOGY “THE ASCENSION OF THE LORD” SLOBOZIA	Technological	Yes
10	IORDACHE ZOSSIMA TECHNOLOGICAL HIGH SCHOOL ARMĂȘEȘTI	Technological	No
11	MIHAI EMINESCU TECHNOLOGICAL HIGH SCHOOL SLOBOZIA	Technological	No
12	SF. ECATERINA URZICENI	Technological	No
13	ȚĂNDĂREI TECHNOLOGICAL HIGH SCHOOL	Technological	Yes
14	URZICENI TECHNOLOGICAL HIGH SCHOOL	Technological	No
15	CAROL I FETEȘTI THEORETICAL HIGH SCHOOL	Theoretical	Yes
16	PAUL GEORGESCU ȚĂNDĂREI THEORETICAL HIGH SCHOOL	Theoretical	No
17	THE HOLY ORTHODOX THEOLOGICAL SEMINARY. IOAN THE GOLDEN MOUTH SLOBOZIA	Vocational	Yes

Source: [https://www.isjIalomița.ro/files/inf\\_publice/IL\\_Starea%20Inv.%202018-2019.pdf](https://www.isjIalomița.ro/files/inf_publice/IL_Starea%20Inv.%202018-2019.pdf)

Note - the high schools marked in bold are those from which we collected the information.

The nine high schools in the sample (of a total of seventeen) are spread across the four regions of the county and correspond to the three categories of high schools specified by national legislation. The sample is described in Table 2.

Table 2. High schools in the sample

Zone/total	High schools	High school type	Total classes by profile	Sample class	Comments
Slobozia - 7	NATIONAL COLLEGE "MIHAI VITEAZUL" SLOBOZIA	Theoretical	7 x theoretical classes	5 x theoretical classes	
	"IONEL PERLEA" HIGH SCHOOL OF ARTS SLOBOZIA	Vocational	2 x vocational classes 3 x theoretical classes	2 x vocational classes 2 x theoretical classes	Although it is a vocational high school it also has theoretical classes
	PEDAGOGICAL HIGH SCHOOL "MATEI BASARAB" SLOBOZIA	Vocational	2 x vocational classes 3 x theoretical classes	2 x vocational classes 2 x theoretical classes	Although it is a vocational high school it also has theoretical classes
	TECHNOLOGICAL HIGH SCHOOL "AL. IOAN CUZA" SLOBOZIA	Technological	4 x technological classes 2 x theoretical classes		Although it is a technological high school, it also has theoretical classes
	SLOBOZIA HIGH SCHOOL OF TECHNOLOGY "THE ASCENSION OF THE LORD" SLOBOZIA	Technological	1 x technological classes 1 x vocational classes	1 x technological classes 1 x vocational classes	Although it is a technological high school it also has vocational classes
	"MIHAI EMINESCU" SLOBOZIA TECHNOLOGICAL HIGH SCHOOL	Technological	3 x technological classes		
	ORTHODOX THEOLOGICAL SEMINARY "SF. IOAN THE GOLDEN MOUTH" SLOBOZIA	Vocational	1	1	
Slobozia area sample description		1 x theoretical high schools 2 x vocational high schools 1 x technological high schools	12 x theoretical classes 6 x technological classes 7 x technological classes	9 x theoretical classes 6 x vocational classes 1 x technological classes	
Urziceni - 5	NATIONAL COLLEGE	Theoretical	6	4	



	“GRIGORE MOISIL” URZICENI				
	TECHNOLOGICAL HIGH SCHOOL “SF. ECATERINA” URZICENI	Technological	5		
	URZICENI TECHNOLOGICAL HIGH SCHOOL	Technological	2		No more high school classes
	HOT-HOT-FAIR TECHNOLOGICAL HIGH SCHOOL	Technological	1 x technological classes 1 x theoretical classes		Although it is a technological high school, it also has a theoretical class
	TECHNOLOGICAL HIGH SCHOOL “IORDACHE ZOSSIMA” ARMĂȘEȘTI	Technological	1		No more high school classes
Urziceni area sample description		1 x theoretical high schools 4 x technological high schools	7 x theoretical classes 9 x technological classes	4 x theoretical classes 5 x technological classes	
Fetești - 3	THEORETICAL HIGH SCHOOL “CAROL I” FETEȘTI	Theoretical	6	4	
	“ANGHEL SALIGNY” TECHNOLOGICAL HIGH SCHOOL FETEȘTI	Technological	2	2	
	TECHNOLOGICAL HIGH SCHOOL OF FOOD INDUSTRY FETEȘTI	Technological	5	5	
Sample description Fetești area		1 x theoretical high schools 2 x technological high schools	6 x theoretical classes 7 x technological classes	4 x theoretical classes 7 x technological classes	
Țândărei - 2	PAUL GEORGESCU” THEORETICAL HIGH SCHOOL ȚÂNDĂREI	Theoretical	3		
	ȚÂNDĂREI TECHNOLOGICAL HIGH SCHOOL	Technological	2	2	

Sample description Țândărei area	1 x theoretical high schools 1 x technological high schools	3 x theoretical classes 2 x technological classes	2 x technological classes	
TOTAL HIGH SCHOOLS - 17	4 x theoretical high schools 3 x vocational high schools 10 x technological high schools	28 x theoretical classes 6 x technological classes 25 x technological classes	17 x theoretical classes 6 x technological classes 15 x technological classes	Of the 17 high schools in the 2022-2023 school year 2 no longer have day school classes.

Source: [https://www.isjIalomița.ro/files/inf\\_publice/IL\\_Starea%20Inv.%202018-2019.pdf](https://www.isjIalomița.ro/files/inf_publice/IL_Starea%20Inv.%202018-2019.pdf)

Note: The observations column of the table marks special situations, that is, situations not often encountered in the way the school network is set up in relation to the structure of secondary education, i.e. a technological secondary school comprising a theoretical path (humanities/philology) or a vocational secondary school or a vocational secondary school comprising a theoretical path (humanities/philology, real/mathematics/computer science). Naturally, the structure of a theoretical path in secondary school comprises the two specific profiles, real and humanities, the technological path in secondary school comprises the technical and service profiles and the vocational path comprises the artistic, sports and theological profiles.

### The reverse gender gap and other inequalities in education in Romania

Since 2009, a number of public reports have demonstrated that there is a gender disparity in secondary education completion at the national level. These reports note that girls are more likely than boys to graduate from secondary school, whether or not they take the Baccalaureate exam, and to obtain higher grades, regardless of whether they choose to pursue a theoretical, technological, or vocational educational route.

The Ministry of Education's Public Review Report *The State of Pre-University Education 2019-2020*, revised version, discuss some noteworthy discoveries in the national context. Approximately 70% of the 18-year-old population has graduated from secondary school in each of the last four academic years, according to the secondary school graduation rate (with and without the Baccalaureate exam), which is calculated by relating the number of secondary school graduates to the population of theoretical graduation age of 18. Throughout the whole time under analysis, the gender difference has favored the female population; in 2018–2019, it exceeded 10 percentage points (Table 3).

**Table 3. High school graduation rates, with and without Baccalaureate examination**

	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019
<b>Total</b>	79.9	76.2	79.5	90.6	81.0	89.1	70.8	71.2	69.5	71.7
<b>Female</b>	82.6	79.6	82.8	91.3	84.0	93.9	74.1	75.4	74.4	77.4
<b>Male</b>	77.4	72.9	76.4	89.9	78.1	84.6	67.7	67.3	64.9	66.3

Source: Data calculated from NSI information, 2009-2020,

[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar\\_rev\\_5.07.2021.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar_rev_5.07.2021.pdf)

The national high school graduation rate with Bacalaureate examination increased from the previous school year to 44.9% in 2018–2019. Similar to prior years, more women than men reported higher values, and the gender difference has grown over time to favor women by more than 16 percentage points (Table 4). The data analysis conducted at the national level since 2009–2010 indicates that girls pass the Bacalaureate exam at a higher rate than boys. The report notes that the data for the period 2009–2012 are calculated on the basis of NSI information. From 2012/2013 onwards, data are provided by MEC.

**Table 4. High school graduation rate with Bacalaureate examination**

	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022
<b>Total</b>	63.4	42.4	39.2	44.6	44.0	51.7	41.6	43.8	42.6	44.9	45.7	44.9	45.1
<b>Female</b>	70.3	51.1	48.1	53.8	53.0	61.9	49.1	51.9	47.9	53.2	53.5	52.8	52.5
<b>Male</b>	56.8	34.1	30.7	35.9	35.4	41.9	34.5	36.2	36.9	36.9	38.3	37.5	38.2

Source: Data calculated from NSI information, 2009–2020, available at:

[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar\\_rev\\_5.07.2021.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar_rev_5.07.2021.pdf)

[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2023/Transparenta/Rapoarte\\_sistem/Raport-Starea-invatamantului-preuniversitar-2022-2023.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2023/Transparenta/Rapoarte_sistem/Raport-Starea-invatamantului-preuniversitar-2022-2023.pdf)

In this context, it is necessary to discuss the average grades received on the national Bacalaureate exam. For instance, the average grade for the 2020 Bacalaureate (both sessions) was 7.93, which was a little higher than the previous year. Girls are more likely to be found in the higher average ranges and boys in the lower ones, indicating that the female population outperformed the male population (Table 5).

**Table 5. Distribution of passed students, by category of average grade obtained on the Bacalaureate exam 2020.**

Average grade obtained	No. of students promoted			%		
	Total	Female	Male	Total	Female	Male
10	308	243	65	0.3%	0.4%	0.1%
9,50-9,99	9814	7092	2722	9.2%	12.0%	5.7%
9,00-9,49	16070	10740	5330	15.0%	18.1%	11.1%
8,50-8,99	14712	8939	5773	13.7%	15.1%	12.0%
8,00-8,49	13473	7654	5819	12.6%	12.9%	12.1%
7,50-7,99	11617	5959	5658	10.8%	10.1%	11.8%
7,00-7,49	11273	5502	5771	10.5%	9.3%	12.0%
6,50-6,99	12741	5745	6996	11.9%	9.7%	14.6%
6,00-6,49	17209	7353	9856	16.1%	12.4%	20.5%
<b>Total students promoted</b>	107217	59227	47990	100.0%	100.0%	100.0%
<b>Overall average</b>	7,93					

Source: MEC, 2020, data available at:

[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar\\_rev\\_5.07.2021.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar_rev_5.07.2021.pdf)

Regarding the 2020 Baccalaureate exam (Table 6), the *Theoretical Education Route* had the highest success percentage (84.2%) and the *Technological Education Route* had the lowest pass rate (46.5%). These patterns observed in Tabel 6 continue from year to year (Table 6), and they might be observed also from an examination of the county of Ialomița's own database (DLT 2015–2021).

**Table 6. Baccalaureate exam pass rate, out of total students, by path: theoretical, technological, vocational**

School year	Total	Educational Route		
		Theoretical	Vocational	Technology
2013/2014	62.6%	79.6%	73.0%	41.7%
2014/2015	69.0%	83.8%	74.9%	48.6%
2015/2016	69.4%	83.6%	73.3%	47.3%
2016/2017	73.9%	86.2%	76.2%	52.9%
2017/2018	71.5%	84.8%	76.1%	47.5%
2018/2019	73.3%	86.2%	75.9%	50.1%
2019/2020	69.5%	84.2%	77.1%	46.5%

Source: MEC, 2020, data available at:

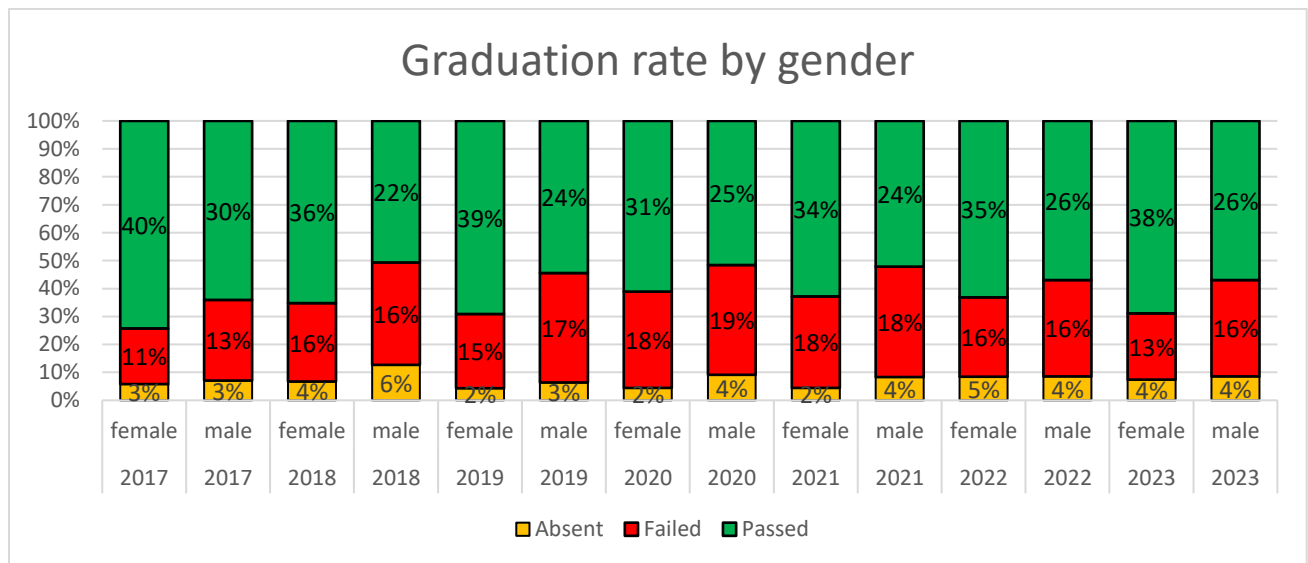
[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar\\_rev\\_5.07.2021.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar_rev_5.07.2021.pdf)

The analysis of Ialomița County's own database (DLT 2015-2021) and the reports from the official Baccalaureate exam computer application, published at [bac.edu.ro/bac](http://bac.edu.ro/bac), reveals the following:

- With regard to the relationship between the average pass rate in the Baccalaureate exam (it must be a minimum of 6) according to gender, it can be seen that girls had higher BAC averages than boys from 2017 to 2023, with differences of more than 10 percentage points in most years of the period analyzed (*Figure 1*).
- With regard to the relationship between the average pass rate in the Baccalaureate exam (it must be a minimum of 6), according to the students' background (rural, urban), it can be seen that students from rural areas pass the Baccalaureate exam much less than those from urban areas, with differences of more than 15 percentage points in most years of the period analyzed (*Figure 2*).
- With regard to the relationship between the average pass rate in the Baccalaureate exam (it must be a minimum of 6), according to the students' affiliation to the secondary school educational route (these being theoretical, technological, vocational), it can be observed that students that followed the *Technological Education Route* pass the Baccalaureate exam much less than those belonging to the *Theoretical Education Route*, with differences of more than 20 percentage points, the differences compared to those from the *Vocational Route* are not so great in most years of the period analyzed (*Figure 3*).

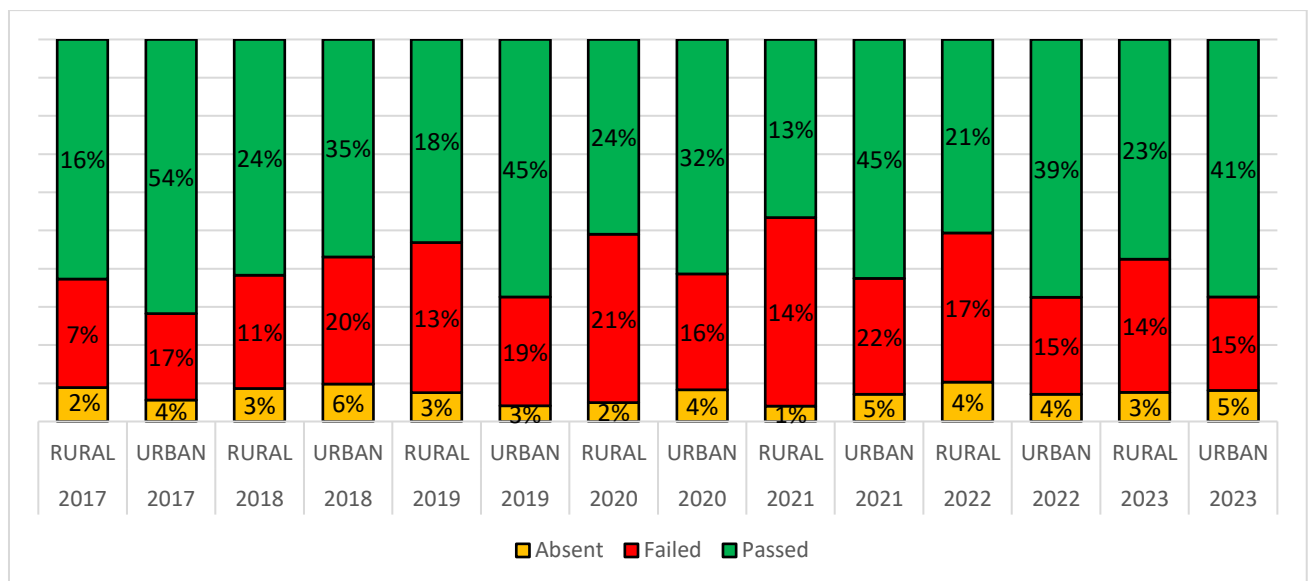
So, all these existing reports at both national and county level show a range of data supporting the manifestation of the reverse gender gap as well as other school inequalities. Thus, it is manifested both with regard to the completion of secondary education at national level, with girls doing better than boys, and with regard to graduation from secondary school, with and without the Bacalaureate examination, and with regard to the grades obtained, with the theoretical, technological and vocational secondary school educational routes also being described.

Figure 1. Bacalaureate graduation rates by gender, 2017-2023



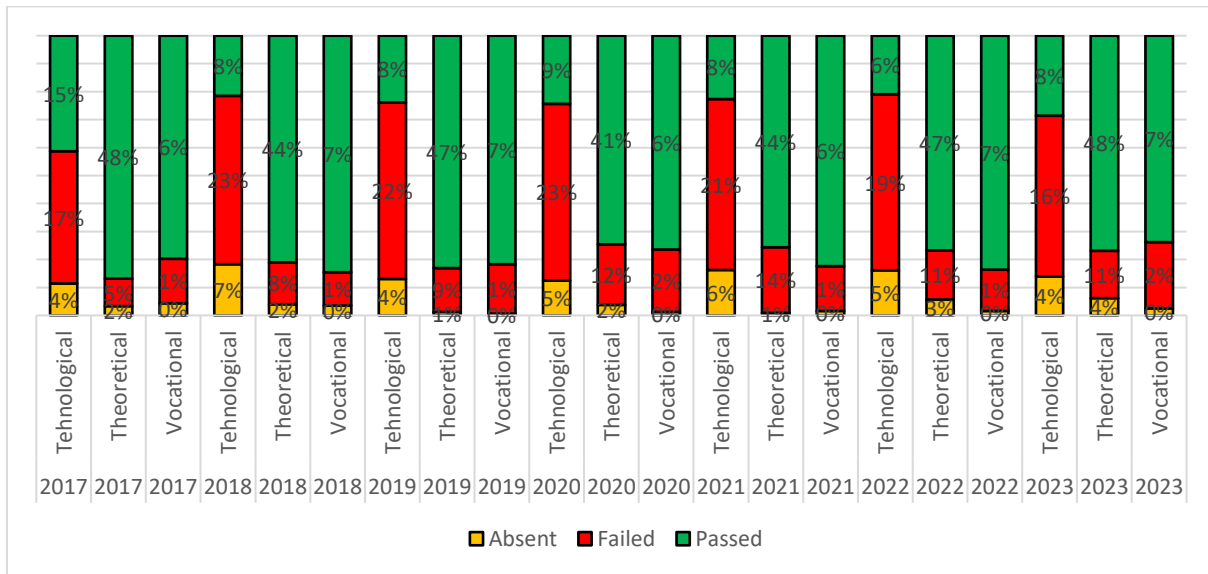
Source authors' analysis based on DLT 2015-2021 and bac.edu.ro/bac software application

Figure 2. Bacalaureate graduation rates by residence, 2017-2023



Source authors' analysis based on DLT 2015-2021 and bac.edu.ro/bac software application

**Figure 3. Bacalaureate graduation rates by study path, 2017-2023**



Source: Authors’ analysis based on DLT and bac.edu.ro/bac computer application

In the following we present the analysis of the data collected through the methodology presented above, in a group of high schools in Ialomița county, based on the DLT 2015-2021 dataset that we have developed. This exploratory descriptive analysis of the database captures possible ways in which the education system produces social inequality.

The number of students registered for the Bacalaureate exam decreased from 2780 in 2008 to 1921 in 2020 (Table 8). Furthermore, not all of the students who have registered for the Bacalaureate exam appear in this photo; roughly 5% of enrolled students do not appear. An examination of the Bacalaureate exam results over the previous 13 years reveals that, on average, 60% of students pass the exam and 40% do not. High school graduates must pass the Bacalaureate exam in order to continue their education or obtain employment. Therefore, it’s probable that social inequality stems from secondary school students’ limited access to further education or the labor market as a result of their inability to pass the Bacalaureate exam.

Table 7. Comparative situation of Baccalaureate examination candidates (2021-2008).

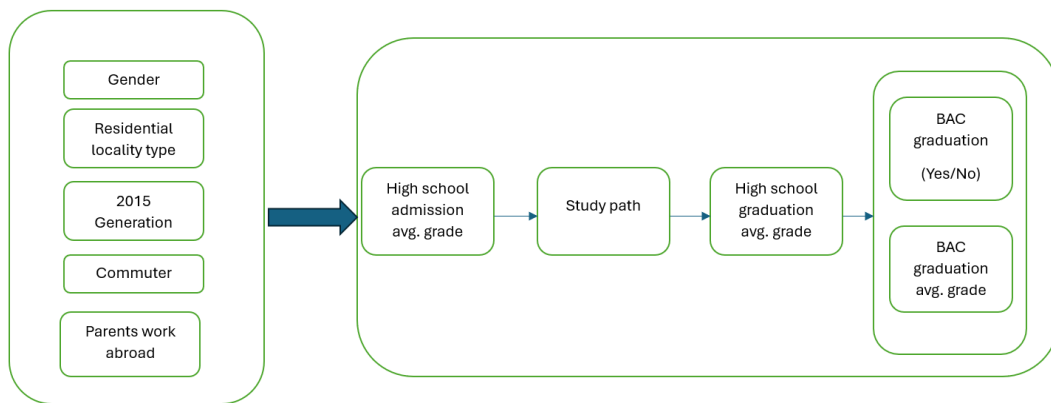
Indicator	No. of enrolled students	No. of participating students	No. of non-participating students	No. of expelled students	No. of failed students	% failed students	Average for failed students		No. of graduated students	% graduated students	Average for graduated students				
							< 5	5 - 5.99			6 - 6.99	7 - 7.99	8 - 8.99	9 - 9.99	10
BAC 2021	1642	1541	101	1	588	38,22	510	78	952	61,78	249	255	250	196	2
BAC 2020	1921	1792	129	6	705	39,34	624	81	1081	60,32	220	244	327	285	6
BAC 2019	1704	1616	88	3	549	33,87	477	72	1064	65,84	221	228	302	309	4
BAC 2018	1774	1608	166	0	566	35,20	488	78	1042	64,80	225	263	271	280	3
BAC 2017	1736	1625	111	0	419	25,78	337	82	1206	74,22	246	328	380	250	2
BAC 2016	1628	1542	86	0	493	31,97	367	126	1049	68,03	299	283	281	186	0
BAC 2015	2025	1897	128	4	588	31,00	441	147	1305	68,79	352	328	396	229	0
BAC 2014	1955	1841	114	8	776	42,15	622	154	1057	57,41	350	328	231	148	0
BAC 2013	2092	1950	142	2	830	42,56	664	166	1118	57,33	354	314	299	151	0
BAC 2012	2499	2264	235	8	1258	55,57	1143	115	998	44,08	355	264	240	137	2
BAC 2011	2673	2430	243	9	1423	58,56	1245	178	998	41,07	329	308	260	101	0
BAC 2010	2675	2613	62	3	1333	51,01	1170	163	1277	48,87	372	348	352	205	0
BAC 2009	2706	2644	62	7	984	37,22	960	24	1653	62,52	289	524	497	342	1
BAC 2008	2780	2713	67	4	1099	40,51	1068	31	1610	59,34	187	500	620	303	0

Source: Authors' analysis based on LTP 2015-2021

### **Analysis of gender gaps in Baccaureate success**

School assessments, as opposed to research examining test scores, highlight the fact that academic performance is not exclusively determined by the cognitive capacities of the participants (boys and girls) in educational research. A combination of cognitive and behavioural traits that are impacted by a socio-cultural context are truly needed to acquire school results and diplomas, even if they are perceived as indicators of cognitive capacity. When examining gender inequalities in schooling from a sociological perspective, non-cognitive behavioural elements must be taken into consideration. Thus, in addition to cognitive considerations, social settings also affect non-cognitive aspects of students' academic achievement.

**Figure 4. The relationship between socio-economic predictors and high school trajectory: an exploratory model.**



Source: Authors' analysis based on LTP 2015-2021

### *Correlational analysis*

The variables (admission grade, educational route, graduation grade) that characterize a student's high school trajectory have a very high correlation coefficient with both the BAC average grade and graduation, as can be shown in Table 8. As a result, high school admission has an impact on graduation success, which perpetuates educational disparities via high school education. For instance, there is a 0.757 correlation between the average high school admission grade and Baccaureate graduation (yes/no), and a 0.718 association between the high school graduation average grade and the BAC graduation grade (which can be anywhere between 6 and 10). Notable indicators for several aspects of the high school trajectory include gender, residence, pre-pandemic generation (Generation 2015), student commuter status, parental unemployment, and students leaving for job overseas (after receiving their Baccaureate).



Table 8. Bravais Pearson bivariate correlations between variables in the model.

		BAC Graduation (Y/N)	BAC graduation avg. grade	High school graduation avg. grade	High school admission avg. grade	Educational Route: Theoretical or Vocational
<b>BAC Graduation (Y=1 /N=0)</b>	Pearson Correlation	1	0.625**	0.706**	0.757**	0.677**
	Mr (2-tailed)		0.000	0.000	0.000	0.000
	N	2034	1318	1872	1712	2034
<b>BAC graduation avg. grade</b>	Pearson Correlation	0.625**	1	0.662**	0.718**	0.501**
	Mr (2-tailed)	0.000		0.000	0.000	0.000
	N	1318	1320	1318	1217	1320
<b>High school graduation avg. grade</b>	Pearson Correlation	0.706**	0.662**	1	0.667**	0.548**
	Mr (2-tailed)	0.000	0.000		0.000	0.000
	N	1872	1318	1884	1598	1884
<b>High school admission grade</b>	Pearson Correlation	0.757**	0.718**	0.667**	1	0.707**
	Mr (2-tailed)	0.000	0.000	0.000		0.000
	N	1712	1217	1598	1848	1848
<b>Study path: Theoretical or Vocational</b>	Pearson Correlation	0.677**	0.501**	0.548**	0.707**	1
	Mr (2-tailed)	0.000	0.000	0.000	0.000	
	N	2034	1320	1884	1848	2211
<b>Gender</b>	Pearson Correlation	0.158**	0.103**	0.340**	0.161**	0.164**
	Mr (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	2034	1320	1884	1848	2211
<b>Residence (Urban=1 / Rural=0)</b>	Pearson Correlation	0.181**	0.216**	0.168**	0.186**	0.179**
	Mr (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	2034	1320	1884	1848	2211
<b>Generation 2015</b>	Pearson Correlation	-0.013	0.118**	-0.074**	0.030	0.012
	Mr (2-tailed)	0.569	0.000	0.001	0.199	0.580
	N	2034	1320	1884	1848	2211
<b>Commuter status</b>	Pearson Correlation	-0.216**	-0.228**	-0.182**	-0.192**	-0.217**

	Mr (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	2023	1320	1883	1844	2200
<b>Unemployed parent(s)</b>	Pearson Correlation	-0.224**	-0.300**	-0.133**	-0.199**	-0.197**
	Mr (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	2002	1315	1846	1728	2040
<b>Raised by grandparents</b>	Pearson Correlation	-0.074**	-0.023	-0.066**	-0.125**	-0.089**
	Mr (2-tailed)	0.001	0.403	0.004	0.000	0.000
	N	2034	1320	1884	1848	2211
<b>Went to work abroad</b>	Pearson Correlation	-0.282**	-0.321**	-0.178**	-0.295**	-0.266**
	Mr (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	2006	1316	1850	1736	2051
<b>Socioeconomically disadvantaged student</b>	Pearson Correlation	-0.104**	-0.001	-0.164**	-0.045	-0.142**
	Mr (2-tailed)	0.000	0.975	0.000	0.052	0.000
	N	2034	1320	1884	1848	2211
<b>Student who benefitted from social programs</b>	Pearson Correlation	-0.251**	-0.097**	-0.168**	-0.243**	-0.197**
	Mr (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	2006	1317	1858	1825	2166
<b>Student in foster care</b>	Pearson Correlation	-0.003	-0.031	-0.001	-0.014	0.022
	Mr (2-tailed)	0.903	0.265	0.979	0.546	0.292
	N	2034	1320	1884	1848	2211
<b>Student with parents working abroad</b>	Pearson Correlation	-0.006	-0.003	-0.025	-0.057*	-0.008
	Mr (2-tailed)	0.798	0.924	0.280	0.015	0.723
	N	2034	1320	1884	1848	2211
<b>Student from a single-parent family</b>	Pearson Correlation	0.016	0.006	0.023	-0.048*	-0.016
	Mr (2-tailed)	0.466	0.814	0.308	0.038	0.461
	N	2034	1320	1884	1848	2211

Source: Authors' analysis based on LTP 2015-2021

\*. Correlation is significant at the 0.05 level (test for two ends - en.two tail).

\*\* . Correlation is significant at the 0.01 level (test for two ends - en.two tail).

The 2017-2021 generation has a slightly higher gender gap than the 2015-2019 generation (Table 9). Bacalaureate achievement does not differ substantially between the two generations.

**Table 9. Distribution of Bacalaureate graduation rates by gender, total sample and by generation.**

			Gender		Total
			Male	Female	
<b>Generation 2017-2021</b>	BAC Graduation	No	47%	29%	37%
		Yes	53%	71%	63%
	Total		100%	100%	100%
<b>Generation 2015-2019</b>	BAC Graduation	No	45%	32%	38%
		Yes	55%	68%	62%
	Total		100%	100%	100%
<b>Total N=2034</b>	BAC Graduation	No	46%	30%	37%
		Yes	54%	70%	63%
	Total		100%	100%	100%

Source: Authors' analysis based on LTP 2015-2021

Students from urban areas have a substantially higher BAC graduation rate than those from rural areas, with a difference of 17 percentage points (Table 10). The reverse gender gap is more pronounced for pupils from urban areas (18 percentage points advantage for girls) than for those from rural areas (14 percentage points advantage for girls). We also note that the gender disadvantage of boys is quantitatively similar to the disadvantage brought about by the residence (specifically by being raised in the rural environment).

**Table 10. Distribution of Bacalaureate pass rates by gender, total sample and differentiated by residence.**

Residence			Gender		Total
			Male	Female	
<b>Rural</b>	BAC Graduation	No	54%	40%	46%
		Yes	46%	60%	54%
	Total		100%	100%	100%
<b>Urban</b>	BAC Graduation	No	38%	20%	29%
		Yes	62%	80%	71%
	Total		100%	100%	100%
<b>Total N=2034</b>	BAC Graduation	No	46%	30%	37%
		Yes	54%	70%	63%
	Total		100%	100%	100%

Source: Authors' analysis based on LTP 2015-2021

In Table 11, we observe that the gender differences are maintained for the *Technological Education and Vocational Routes*, but are much smaller for the *Theoretical Education Route*. We also note the very high predictive relevance of the educational route for BAC success, with the *Theoretical and Vocational Education Routes* having much higher Baccalaureate graduation rates than the *Technological Education Route*. From these associations, it follows that it is important to examine the extent to which gender structures the educational trajectory and pupils' school success also through their enrolment in a specific educational route, not just independently of it.

**Table 11. Distribution of Baccalaureate graduation rates by gender, in the total sample and differentiated by study path.**

High school educational route			Gender		Total
			Male	Female	
Technological	BAC Graduation	No	83%	77%	80%
		Yes	17%	23%	20%
	Total			100%	100%
Theoretical	BAC Graduation	No	15%	13%	14%
		Yes	85%	87%	86%
	Total			100%	100%
Vocational	BAC Graduation	No	13%	2%	7%
		Yes	87%	98%	93%
	Total			100%	100%
Total	BAC Graduation	No	46%	30%	37%
		Yes	54%	70%	63%
	Total			100%	100%

Source: Authors' analysis based on LTP 2015-2021

We can see in Table 12 that there is a difference in the educational attainment of girls compared to boys. Only 32% of girls follow the *Technological Education Route*, compared to 48% of boys, who are thus more exposed to the low Baccalaureate success rate specific to this pathway. We can see that the gender differentiation is socially manifested during high school by pupils' separation into educational routes with unequal rates of academic success. The gendered allocation on educational routes is a major factor that explains the reverse gender gap in BAC graduation.

**Table 12. Relevance of gender to the study path.**

		Gender		Total
		Male	Female	
High school educational route	Technological	48%	32%	39%
	Theoretical	37%	53%	46%
	Vocational	15%	15%	15%
Total		100%	100%	100%

Source: Authors' analysis based on LTP 2015-2021

In Table 13, we note that the disadvantage of pupils from rural areas is substantially higher for those in the *Theoretical Education Route* (16 percentage points) than for those in the *Vocational Route* (2 percentage points). Surprisingly, pupils in the *Technological Education Route* from rural areas have a slightly higher graduation rate in the Baccalaureate (22% compared to 18%).

**Table 13. Distribution of Baccalaureate graduation rates by residential locality type, in the total sample and differentiated by study path.**

High school educational route			Residence		Total
			Rural	Urban	
<b>Technological</b>	BAC Graduation	No	78%	82%	80%
		Yes	22%	18%	20%
	Total		100%	100%	100%
<b>Theoretical</b>	BAC Graduation	No	24%	8%	14%
		Yes	76%	92%	86%
	Total		100%	100%	100%
<b>Vocational</b>	BAC Graduation	No	6%	8%	7%
		Yes	94%	92%	93%
	Total		100%	100%	100%
<b>Total N=2034</b>	BAC Graduation	No	46%	29%	37%
		Yes	54%	71%	63%
	Total		100%	100%	100%

Source: Authors' analysis based on LTP 2015-2021

### **Regression models explaining the BAC graduation average grade (GPA) for the total sample**

In Table 14, we observe that all three predictors have substantial and statistically significant relevance. Therefore, gender (female), residence (urban), and generation (2015) introduce an advantage for the average Baccalaureate graduation grade (compared to the male gender, rural residential locality type and generation 2017, respectively). This minimalist model, including only three aspects of social structure at the macro-social level, explains 7.3% of the total variance of the Baccalaureate GPA, so it is clear that other social, psychological, etc. factors have an important influence.

**Table 14. Regression model no.1: BAC GPA by gender, residential locality type and generation.**

Model	Non-standardised coefficients		Standardised coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.220	0.085		85.070	0.000
Gender	0.348	0.077	<b>0.120</b>	4.505	<b>0.000</b>
Residential locality type	0.619	0.076	<b>0.218</b>	8.196	<b>0.000</b>
Generation 2015 (vs. 2017)	0.312	0.075	<b>0.111</b>	4.166	<b>0.000</b>

Dependent variable: Bacalaureate GPA

Adjusted R Square = 7.0%

Source: Authors' analysis based on LTP 2015-2021

In Table 15, we have included, in addition to gender, residence and generation, additional indicators that capture different forms of students' socio-economic disadvantage. In this model we see that residence is no longer a substantial predictor (nor is it statistically significant, for that matter). This means that the relevance of residence derives from the specific risks it poses to the situations of socio-economic disadvantage captured in the model by the supplementary indicators. The predictive power of residence is made irrelevant by the newly introduced predictors. Of these, those that have a substantial (and statistically significant) effect, independently of each other, are: students' commuting status, students going abroad and being beneficiaries of social programmes. Each of these introduces a disadvantage for the Bacalaureate average grade. The variable 'socio-economically disadvantaged pupil' has a weakly positive coefficient, which is probably a statistical artefact given that it is hard to argue for a comparative advantage of this situation. The relevance of the 2015 generation to 2017 also decreases in this model in which different sources of social disadvantage are controlled.

**Table 15. Regression model 2: GPA by gender, residence background and generation plus indicators of socio-economic disadvantage**

Model	Non-standardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.807	0.135		57.872	0.000
Gender	0.364	0.073	<b>0.126</b>	4.986	<b>0.000</b>
Residential locality type	0.134	0.127	0.047	1.058	0.290
Generation 2015	0.249	0.072	0.088	3.446	0.001
Student commuter	-0.583	0.129	<b>-0.204</b>	-4.510	<b>0.000</b>

Student going abroad to work after graduation	-3.072	0.253	<b>-0.304</b>	-12.135	<b>0.000</b>
Socio-economically disadvantaged student	0.386	0.135	0.085	2.865	0.004
Student beneficiary of social programs	-0.689	0.164	<b>-0.117</b>	-4.191	<b>0.000</b>
Student with parents working abroad	0.118	0.125	0.024	0.947	0.344
Student from a single-parent family	0.051	0.138	0.009	0.374	0.708

Dependent variable: Bacalaureate GPA

Adjusted R Square = 18.5%

Source: Authors' analysis based on LTP 2015-2021

The model in Table 16 explains about 68% of the variation in BAC GPA, with very good predictive power. Basically, most variability in pupils' school success is predicted by indicators of their high school trajectory. The most important predictors are the high school admission average grade and the high school graduation average grade. Both grades have strong effects, independently of each other. The pre-pandemic generation still has an advantage in terms of the average BAC graduation grade, when we keep the high school admission and graduation grades under control. Gender and the residential locality type are no longer significant predictors, their relevance being absorbed by the indicators of educational trajectory. Basically, gender is not consequential for Bacalaureate GPA independently of the high school entrance average grade, students' educational route, and their high school graduation average grade.

**Table 16. Regression model 3: BAC GPA by gender, residential locality type and generation plus indicators of socio-economic disadvantage and benchmarks of educational trajectory.**

Model	Non-standardised coefficients		Standardised coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-4.665	0.357		-13.067	0.000
Gender	-0.085	0.052	-0.029	-1.619	0.106
Residential locality type	-0.155	0.083	-0.054	-1.856	0.064
Generation 2015	0.318	0.049	<b>0.112</b>	6.437	<b>0.000</b>
Student commuter	-0.408	0.084	<b>-0.140</b>	-4.841	<b>0.000</b>
Student going abroad to work after graduation	-1.188	0.177	<b>-0.117</b>	-6.702	<b>0.000</b>
Socio-economically disadvantaged student	0.119	0.090	0.026	1.326	0.185
Student beneficiary of Social Programs	-0.142	0.111	-0.023	-1.276	0.202
Student with parents working abroad	0.015	0.081	0.003	0.186	0.853
Student from a single-parent family	-0.063	0.091	-0.012	-0.690	0.490

High school admission avg. grade	0.415	0.035	<b>0.320</b>	11.952	<b>0.000</b>
Theoretical educational route	0.812	0.117	<b>0.265</b>	6.919	<b>0.000</b>
Vocational educational route	0.909	0.111	<b>0.269</b>	8.210	<b>0.000</b>
High school graduation avg. grade	0.972	0.048	<b>0.438</b>	20.192	<b>0.000</b>

Dependent variable: Baccaureate GPA

Adjusted R Square = 67.3%

Source: Authors' analysis based on LTP 2015-2021

### **Cluster analysis of students' high school trajectory**

We performed a classification of the students in the database using the K-means cluster method. This is an automated classification method in which the statistical program starts from an arbitrary initial allocation of the first individuals into the specified number of types (clusters), iterating through the allocation of each additional individual into the type to which it most closely resembles. Iterations continue until types are obtained that are as internally homogeneous as possible and as different from each other as possible, so that individuals will no longer be reclassified from one type to another, achieving classification stability.

We have specified the requirement for classification into three types, as classification into four types does not generate additional relevant information. The classification criteria are the defining benchmarks of the high school trajectory, i.e. high school admission average grade, high school graduation average grade, and whether or not they passed the Baccaureate. We used this indicator and not the average grade obtained at the Baccaureate, because the average grade has more missing cases and we wanted to include as many students as possible in this typology (The GPA is only available for students that passed all Baccaureate exams; thus, students who were totally or partially absent are missing for this variable). A total of 1586 students had information for the three criterion variables and were allocated to the three types according to their similarities and differences (Table 17).

**Table 17. Classification of students by K-Means Cluster method into 3 types according to their high school trajectory.**

	Cluster		
	"Very low success probability"	"Quasi-integral success"	"High success probability"
High school admission average grade	5.51	9.10	7.66
High school graduation average grade	7.31	9.12	8.43
BAC Graduation	0.11	0.99	0.82
Number of cases per cluster N total = 1586 Missing values = 625	355	727	504
% cases per cluster	22%	46%	32%

Note: Classification convergence was obtained in iteration 34.

Source: Authors' analysis based on LTP 2015-2021



We labeled the three student categories based on their respective mean values for the variables used as criteria (Table 18). As a result, only 11% of students in the category known as “very little success probability” graduate high school with a Baccalaureate degree; in general, these students had a 5.51 average when they started high school and a 7.31 average upon graduation. The second category, referred to as “quasi-integral success” has a 99% Baccalaureate graduation rate; on average, pupils in this category had a 9.10 average at admission to high school and a 9.12 average upon graduation. The third category, “high success probability”, is characterized by 82% Baccalaureate graduation rate. These pupils had an average of 7.66 when they were admitted to high school, and they graduated with an average of 8.43.

We observe that first-type students, with very little probability of success, may appear to advance academically during their high school years, as measured by their grades. Their average grade at graduation is 1.80 points higher than their average grade at admission. But this progress is either insufficient to pass the Baccalaureate, or it is illusory, based on inflated grades that do not reflect genuine achievement. Conversely, although their graduation average is only 1.12 points higher, students in the third category have a noticeably different Baccalaureate success rate. The explanation can be partially found in each type’s predominant high school educational routes, as Table 18 illustrates. The *Technological Education Route* is the predominant sphere for the extremely low success probability type (14% theoretical, 8% vocational, and 78% technological), whereas the *Theoretical Education Route* is the predominant sphere for the quasi-integral success (85%, with the remaining 15% in the vocational path). With only 19% following the *Technological Education Route*, the high success probability type is divided between the theoretical (50%) and vocational (31%) educational route.

In Table 18 we might observe visible differences in the socio-demographic, socio-economic vulnerability and educational routes for the three types. The very high success probability type is more common in the 2015 generation. The majority gender is female, with an at-about-average proportion of student commuters. Half of the members of this type followed the *Theoretical Education Route*, about a third attended the *Vocational Route*. The average Baccalaureate graduation grade is 7.40. The “quasi-integral success” type is also more common in the 2015 generation. The majority gender is female, with a relatively low proportion of student commuters. Moreover, 85% of the members of this type are in the *Theoretical Education Route*, 15% in the *Vocational Route*, and this type is virtually absent in the *Technological Education Route*. The Baccalaureate average grade is 8.69. The “very low success probability type” is less common in the 2015 generation. Female/male gender membership is balanced, with a relatively high proportion of commuter students. Only 14% of the members of this type are in the *Theoretical Education Route*, 8% in the *Vocational Route*, while about three quarters, i.e. 78% are in the *Technological Education Route*. The average grade obtained in the Baccalaureate is 4.98 (the minimum total average Baccalaureate grade required for graduation is 6.00, though each individual exam may be graduated with 5.00).

**Table 18. Profile of types identified by cluster analysis.**

	Cluster		
	1 Very low success probability	2 Quasi-integral success	3 High success probability
Generation 2015 (1=Gen. 2015, 0=Gen. 2017)	0.54	0.55	0.47
Gender (1=Female, 0=Male)	0.41	0.67	0.53
Residential locality type (1=Urban, 0=Rural)	0.42	0.66	0.49
Student commuter	0.55	0.32	0.48
Theoretical educational route	0.14	0.85	0.50
Vocational educational route	0.08	0.15	0.31
Technological educational route	0.78	0.00	0.19
<b>BAC GPA</b>	<b>4.98</b>	<b>8.69</b>	<b>7.40</b>

Source: Authors' analysis based on LTP 2015-2021

## Conclusions

Romania's education system faces a number of significant challenges, which were rendered more visible and aggravated by the Covid-19 pandemic. Romania has missed its targets under the Europe 2020 strategy, both for early school leaving, reaching 15.3% in 2019, compared to a 11.3% target, and for access to tertiary education, reaching 25.8% for 30–34-year-olds in 2019, compared to a 26.7% target ("Educated Romania" Report, 2021). These problems are related to a high poverty rate, especially among children. In 2019, 35.8% of children in Romania were at risk of poverty or social exclusion, the highest rate in the EU (UNICEF, 2020). Thus, there is a significant school inequality at the education system level that stems from the participation rate in educational levels, which is influenced by school dropout - both early and during school, as well as from what happens within the system in terms of the academic results of high school students and in the national Baccalaureate exam.

To this general picture, this article contributes with a case study that analyses the manifestation of the reverse gender gap in school results among high school students, as well as other social inequalities related to the students' residence and their educational route (theoretical, vocational, or technological). The article also creates a typological profile of high school students' educational trajectories.

Thus, in this case study we observe a reverse gender gap in the studied student population, with boys being, on average, disadvantaged compared to girls. The disadvantage is persistent and has also been observed at national level in statistical data from previous years, in line with what the literature also notes at European and world levels.

From a quantitative point of view, the reverse gender gap (boys' disadvantage), in this case study on Ialomița county, is similar to the gap induced by residence (i.e. rural disadvantage).

This disadvantage is evident from the moment of high school admission and persists throughout, mostly influencing the study route. More precisely, boys are overrepresented

in the *Technological Education Route* and have a significantly lower Bacalaureate pass rate than girls, who are overrepresented in the *Theoretical and Vocational Education Routes* and have a high Bacalaureate pass rate.

Because the *Technological Education Route* replicates the early performance hierarchy of high school students, the high school admission GPA is the primary predictor of the Bacalaureate average grade for this route of study. On the other hand, the high school graduation GPA is the primary predictor of the Bacalaureate average grade for the *Theoretical and Vocational Education Routes*. This indicates that, in these routes, a high school education results in a more significant reranking of students based on their performance during these four years of attendance.

Based on their high school trajectory, students were categorized into three groups using cluster analysis. The “very low graduation success probability” type had BAC average graduation rate of 7.31, about 1.12 GPA points less than the “very high graduation success” type. This suggests that there might be a process of grade inflation in relation to children’s real abilities, which might be due to the way teachers carry out periodic assessment of pupils during high school. In practice, students with low average grades who are accepted into high school—particularly those pursuing the *Technological Education Route*—acquire better grades than their entrance GPA, which is frequently at or below the norm of 5. Even so, a sizable percentage fail the Bacalaureate exam after completing secondary education. It is important to keep in mind that the Romanian educational system just requires passing the national assessment exam in the 8th grade to be admitted to high school. There is no minimum grade requirement. Since students at-risk, who are primarily in the *Technological Education Route*, receive grades that indicate they may succeed in the Bacalaureate, it is therefore possible that parents and students in this category may not receive the appropriate warning signals during their high school years due to grade inflation.

We also observe a drawback for the 2017 generation, which experienced the COVID-19 epidemic, with reference to the Bacalaureate graduation rate in the population under study. The *Technological Education Route*, which has a very low pass rate overall, does not exhibit this disadvantage. However, this disadvantage is visible for the *Theoretical and Vocational Education Routes*.

Further studies might broaden the representativeness of this study to a nationwide scale. Qualitative studies could shed more light on the factors underlying the reversed gender gap and the significant perpetuation of educational inequality during the high school year.

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## REFERENCES

- Bertocchi, G., Bozzano, M. (2020). Gender gaps in education. Modena. Italia: RECent Center for Economic Research. Retrieved from:  
<https://iris.unimore.it/bitstream/11380/1293555/1/REcent-wp142.pdf>
- Hek, M., K., G., Wolbers, M.H.J. (2016). Comparing the gender gap in educational attainment: the impact of emancipatory contexts in 33 cohorts across 33 countries. *Educational Research and Evaluation*, 22(5-6), pp. 260-282.
- Institutul de Științe ale Educației. (2018). *Raport național PISA 2018*. Retrieved from:  
[https://www.ise.ro/wp-content/uploads/2020/03/PISA-2018\\_raport-national.pdf](https://www.ise.ro/wp-content/uploads/2020/03/PISA-2018_raport-national.pdf)
- Lorber, J. (1994). *Paradoxes of gender*. Yale University Press. Retrieved from:  
<https://yalebooks.yale.edu/book/9780300064971/paradoxes-of-gender/>
- Ministerul Educației. (2021). *Raport privind starea învățământului preuniversitar 2020-2021*. Retrieved from:  
[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar\\_rev\\_5.07.2021.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2020/Transparenta/Stare%20invatamant/Stare%20preuniversitar_rev_5.07.2021.pdf)
- Ministerul Educației. (2022). *Raport stare învățământ preuniversitar 2021-2022*. Retrieved from:  
[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2022/Transparenta/Starea\\_invatamantului/Raport-Starea-invatamantului-preuniversitar-2021-2022.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2022/Transparenta/Starea_invatamantului/Raport-Starea-invatamantului-preuniversitar-2021-2022.pdf)
- Ministerul Educației. (2023). *Raport stare învățământ preuniversitar 2021-2022*. Retrieved from:  
[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/Minister/2023/Transparenta/Raport-Starea-invatamantului-preuniversitar-2022-2023.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2023/Transparenta/Raport-Starea-invatamantului-preuniversitar-2022-2023.pdf)
- Ministerul Educației. (2023). *Sinteză Raport neparticipare BAC*. Retrieved from:  
[https://www.ise.ro/wp-content/uploads/2024/01/Sinteza\\_Raport\\_neparticipare\\_BAC\\_sesiunea-iunie-2023.pdf](https://www.ise.ro/wp-content/uploads/2024/01/Sinteza_Raport_neparticipare_BAC_sesiunea-iunie-2023.pdf)
- Ministerul Educației-Centrul Național de Politici și Evaluare în Educație. (2023). *Raport național PISA*. Retrieved from:  
[https://www.edu.ro/sites/default/files/\\_fi%C8%99iere/studii%20si%20analize/PISA\\_2022\\_Raport\\_national\\_RO.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99iere/studii%20si%20analize/PISA_2022_Raport_national_RO.pdf)
- OECD. (2001). Technical Report. First results from OECD Programme for International Student Assessment. *Knowledge and Skills for life*, Paris. Retrieved from:  
<https://www.oecd-ilibrary.org/docserver/9789264195905->

- en.pdf?expires=1707652062&id=id&accname=guest&checksum=CB3357F20BA7685DC18BA9691D174AB0â
- OECD. (2015b). *The ABC of gender equality in education, aptitude, behavior, confidence*. OECD Publishing, Paris. Retrieved from: <https://oecd.org/education/the-abc-of-gender-equality-in-education-9789264229945-en.htm>
- OECD. (2017). *The pursuit of gender equality, an uphill battle*. OECD Publishing, Paris. Retrieved from: <https://doi.org/10.1787/9789264281318-en>.
- Parlamentul României. (2011). *Legea educației naționale 2011*. Retrieved from: [https://www.edu.ro/sites/default/files/legea-educatiei\\_actualizata%20august%202018](https://www.edu.ro/sites/default/files/legea-educatiei_actualizata%20august%202018)
- Permanyer, I., Boertien, D. (2019). A century of change in global education variability and gender differences in education. *PloS one*, 14, (2).
- Președinția României (2021). *Raport România educată*. Retrieved from: <http://www.romaniaeducata.eu/wp-content/uploads/2021/07/Raport-Romania-Educata-14-iulie-2021.pdf>
- Reeves, R. V. (2022). *Of Boys and Men. Why the modern male is struggling, why it matters, and what to do about it*. London: Editura Swift Press.
- Ridgway, C. L., Smith-Loving, L. (1999). The gender and system interaction. *Annual Review of Sociology*, 25, pp.191-216.
- Risman, B., J. (2004). Gender as social structure. Theory wrestling with activism. *Gender&Society*, 18, p. 429.
- Udry, J. R. (2000). Biological limits of gender construction. *American Sociological review*, 65, pp. 443-57.
- West, C. and Zimmerman, D. (1987). Doing Gender. *Gender&Society*, 1, pp. 25-51.
- World Bank. (2012). *World development report 2012, gender equality and development*. World Bank, Washington. Retrieved from: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/492221468136792185/main-report>

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