Central and Eastern European Migration Review
Received: 6 March 2024, Accepted: 29 October 2025
Published online: 2 December 2025
Vol. 14, No. 2, 2025, pp. 415–429
doi: 10.54667/ceemr.2025.32

The Migration of Medical Graduates from Romania to EU Countries – Regulations as a Pull Factor

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This article explicitly examines the migration of medical graduates from Romania, ensuring clarity in scope. The study draws on the 2023 European Commission State of Health in the EU: Romania Country Profile, ensuring the use of the most recent data. While the number of graduates has increased in the last decade, the medical workforce remains below EU averages (3.2 doctors and 7.5 nurses per 1,000 inhabitants compared to 3.9 and 8.4, respectively). Romania ranked fifth in generating medical graduates (4,967) and third in nursing graduates (17,549) within the EU in 2019. However, migration significantly reduces the domestic healthcare workforce, influencing access to care and quality of life. My analysis thus uniquely explores the role of regulatory frameworks in shaping migration flows, offering a novel perspective on how policies in destination countries act as pull factors. My findings reveal that countries with deregulated or minimally selective residency admission systems attract significantly higher numbers of Romanian medical graduates. Among the most preferred destinations, Germany, the UK, France, Sweden and Belgium collectively account for over 70 per cent of intended migration cases. Residency systems without national exams saw an average migration preference rate of 69 per cent, while those with strict entry requirements saw a preference rate below 1 per cent. Higher expected wages and shorter residency durations were also significant pull factors. Another significant pull factor identified in the top destination countries is that graduates have the freedom to choose their specialization, rather than having it assigned based on exam performance.

Keywords: medical professional migration, brain drain, medical education, healthcare, Romania, European Union

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Introduction

Existing regulations shape the context of and influence the decision to stay or to leave the country. Both destination- and origin-country legislation plays a pivotal role in shaping migration flows; my paper investigates the migration of Romanian medical graduates. In it, I investigate the migration of Romanian medical graduates by examining how regulations in both Romania and other EU countries influence their decisions. Unlike previous studies focusing on general economic factors, my study uniquely highlights the regulatory dimension of the migration of medical graduates. To test my hypothesis, I analyse Romanian legislation over time and examine its correlation with annual emigration trends, providing a historical perspective on regulatory influences. I further investigate the medical residency requirements across 27 EU countries, the UK and EFTA nations, contrasting them with changes in migration patterns. This approach enables me to assess the extent to which different regulatory models impact on the decision of Romanian medical graduates to emigrate. The same applies to the institutional system in the EU countries. For instance, when Romanian regulations become harsher, one may expect increasing outmigration flows. When regulations in a certain destination country become attractive for immigrants from other EU countries, we expect an increase in the size of the flow of Romanian doctors migrating to that country. Therefore, my study connects regulatory changes in both destination and origin countries to the annual fluctuations in migration flows from Romania to various EU nations. In researching the migration of medical graduates from Romania it is useful to inspect such connections between legislative changes, since Eurostat 2020 data show that Romania leads the European chart in medical graduates with a rate of 26.3 per 100,000 inhabitants, highly surpassing the EU average of 15.9. In addition, there is a chronic 'special deficit' of medical professionals, affecting healthcare in various regions (Eurostat 2020).

My specific research question in this paper is: 'How do residency regulations in destination countries influence the migration decisions of medical graduates from Romania?' The methodological approach first involves analyzing Romanian legislation over time and examining the dynamics of emigration, subsequently correlating the 2 variables. Second, I analyze the requirements for medical residency in all 27 EU countries, the UK and EFTA countries; the results are then compared to the changes in the flow of new Romanian medical graduates included on the respective countries' medical registers over time.

In a world of fluid migration, this paper addresses the issue of the outmigration of a specific group of professionals – medical graduates. While earlier literature (Deliu, Fărcășanu, Mihail, Mustața, Vișinescu and Voicu 2022) stressed the various individual-level 'push and pull factors' (Lee 1966), this study stands out by examining the specific pull factors related to the regulation of the medical residency systems in destination countries. This approach considers one major source country for outgoing medical professionals – Romania – and looks to the potential associations of migration intentions of medical students with the regulations in the European destinations for their mobility.

Romania becomes an ideal setting to study what attracts future medical specialists to move abroad. As mentioned above, my main research focus is on how the different healthcare systems influence migration decisions. Keeping the analysis focused on Europe, the proposed explanation builds upon push–pull theory and stresses the role of regulations. More-flexible arrangements for residency, less-restrictive admissions criteria, higher expected salaries and reduced competition are hypothesized as contextual variables to depict the role of host-country regulations in attracting graduates from abroad. More specifically, while the first-mentioned factors refer to aspects of regulation that can be adjusted to attract foreign graduates, the latter serves as a structural determinant of post-residency opportunities. To test which factors could be salient in attracting future medical specialists, I compiled a dataset on European health systems, conducted bivariate

analyses of migration intentions and, finally, ran several multivariate models. Such an approach is quite new in the field and provides original data with which to compare residency systems across Europe.

In the following sections, I first present the conceptual rationale for selecting the main pull factors, then discuss the findings and conclude with policy implications.

Theoretical background

The principles of the classic push–pull theory are valuable as a starting point. In 1966, Everett S. Lee's theory of migration emerged, positing that migration decisions stem from a complex interplay of factors categorised into four domains: characteristics of the origin location, attributes of the destination area, intervening obstacles hindering movement and the individual considerations of potential migrants. The theory was repeatedly refined but remains valid in its basic provision (Czaika and Reinprecht 2022; Faridi 2018; Moullan 2018).

As in any high-skilled migration, when considering that of medical staff, the push and pull factors are likely to be diverse (Mayda 2010; Păunică, Cosmina and Ștefănescu 2017; Voicu and Croitoru 2023). The migration of physicians from Romania is reported to be shaped by a combination of push and pull factors (Lee 1966) and, as argued for high-skilled migration, the push factors are likely to play a minor part (Mayda 2010).

Focusing on pull factors, the typical drivers for physicians – as stressed by the existing literature – include the lower unemployment rate (Urbański 2022), good remuneration (Becker and Teney 2020; Botezat and Ramos 2020; Kline 2003), a good medical infrastructure that enables professional development and higher prestige (Becker and Teney 2020), a demand for the medical profession, as seen in terms of an aging population (Botezat and Ramos 2020) or in a lower density of supply of medical service in terms of a low density of doctors (Moullan 2018) and health spending (Moullan 2018; Yakovlev and Steinkopf 2014); however, there is no consensus on the direction of the relationship. From there, I specifically identify the pull factors associated with the institutional framework, as previously discussed. A strong institutional framework is claimed to be among the most influential of pull factors for people in wealthier countries (Aziz, Chowdhury and Cooray 2022). However, the lower-level institutional framework referring to the medical profession is rarely considered when assessing the immigration of health professionals, despite being shown to differ quite considerably across countries even when these latter are in the same area. Cudalb and Greisser (2020) provide one of the few such assessments and compare the requirements for entering the profession after graduation in Poland, Romania and Germany, the former two being a source of doctors' migration for the latter.

Focusing on the level of Central and Eastern Europe (CEE), previous research by Botezat and Ramos (2020) notes that a lower unemployment rate, a demand for healthcare services and better medical technology in the receiving country are the main drivers for CEE doctors to migrate abroad. Gruber, Sarajlic and Vukovic *et al*. (2020) add a better quality of life to the list.

Moving on to medical students, it is evident that their intentions to migrate are high across all of Central and Eastern Europe (Boncea and Voicu 2019; Goštautaitė, Bučiūnienė and Milašauskienė *et al*. 2018; Janulyte, Puriene and Petrauskiene *et al*. 2011; Kolčić, Čikeš and Boban *et al*. (2014); Krajewski-Siuda, Szromek and Romaniuk *et al*. 2012; Milić, Vuksan-Ćusa and Jakab *et al*. 2023). In addition to earlier research, more-recent studies provide evidence that Romanian physicians' migration is shaped not only by economic incentives but also by institutional and regulatory dimensions. For example, Apostu, Dinu and Marinescu (2022) show how language proficiency and local professional requirements directly affect migration choices. Similarly, Zapata, Blidaru and Rafila *et al.* (2025) stress the importance

of policy frameworks in mitigating health workforce migration from Romania, highlighting lessons relevant for European policymakers.

The migration of medical graduates from Romania is likely to be shaped by a combination of push and pull elements, out of which I particularly highlight the ones related to institutional frameworks, as previously argued. In this respect, I consider the system of residency as potentially rendering the country of destination more or less attractive. Within this system, one may ask which are the requirements at entry, which are the costs in terms of time spent on training and which are the potential benefits, in terms of expected wages, as set out below.

- *The national residency exam* can act as an entry barrier. It is very challenging and there are not enough positions advertised to be filled by those who have passed the exam; it should thus act as a factor to repell potential immigrants. If slightly easier, it could facilitate access for newcomers.
- *Economic factors*. Romanian medical graduates may be driven to migrate due to higher wages and more career-advancement opportunities in other countries, compared to Romania. *Pull factors* that attract medical Romanian graduates to emigrate may include:
  - The absence of a national residency examination.
  - Higher wages and better career opportunities: other countries offer higher salaries and better career prospects for physicians and this can be a significant pull factor for medical graduates who are seeking professional growth and better financial stability.
  - Recognition and professional development: having access to advanced medical technology and equipment, research opportunities and professional recognition can be strong pull factors for medical graduates seeking to enhance their skills and expertise.
  - Quality of life: better healthcare services for themselves and their families, better education systems for their children and improved living conditions could weigh a lot in a future medical specialist's decision to emigrate from Romania.

Motivations for emigration are multifaceted, leading to the formation of distinct migration patterns. Glinos and Buchan (2014) contribute a typology of health migrants, encompassing individuals seeking improved livelihoods, career-oriented migrants, 'traveller migrants' who view migration as a travel opportunity alongside work, 'commuter migrants' and those engaging in irregular care work abroad (e.g., temporary migration for eldercare, childcare or care of the sick).

Suciu, Popescu, Ciumăgeanu and Buzoianu's (2017) research on Romanian physicians records the`roots' of the migration of medical professionals. The authors of the paper examine the emigration intentions of 957 graduates of the 'Iuliu Haţieganu' Faculty of Medicine in Cluj Napoca between 2013 and 2015. Their study's findings are not at all encouraging for the Romanian health system because, in their study, 84.7 per cent of graduates planned on seeking employment abroad after graduation and, of this shocking number, nearly half – 44.5 per cent – have enrolled in language classes and 26.5 per cent have already applied online for jobs.

Higher incomes, better living and working conditions, career opportunities, the 'shortage of residency" in the selected specialty and dissatisfaction with the Romanian healthcare system are some of the reasons why medical graduates emigrate. I therefore conclude that, when national decisions are made about the future of the health system, all factors in favour of a potential migration must be taken into consideration. A stable wage is undoubtedly the primary driving force behind emigration decisions, although non-salary-related aspects can restrict/reduce migration (Vujicic, Zurn and Diallo *et al*. 2004).

The Romanian situation

The situation is far from being new. For several years, Romania has been facing a severe crisis of human resources in health. Low incomes, poor working conditions, a lack of equipment and limited opportunities for professional development are just some of the factors that have led, over time, to this crisis.

According to official data from the Ministry of Health,[1] the number of physicians who held a licence to practice medicine in Romania was 48,461 in 2018, 49,267 in 2019, 50,287 in 2020, 53,414 in 2021 and 54,683 in 2022. During the period 2016–2022, 7,839 Certificates of Good Standing were issued, while 4,398 medical-school graduates did not sign up for a residency programme in Romania. The Certificate of Good Standing is issued by the Romanian College of Physicians and is mandatory for any medical graduate or physician who wants to work abroad. Far from being an absolute indicator – as it strictly highlights the intention of doctors to practice abroad and not their actual move to another system – the figures from the Romanian College of Physicians are the most relevant benchmark. Even the Ministry of Health does not have exact statistics on the number of those who have left thus far.

The Romanian authorities lack information regarding both the destination countries chosen by graduates from Romanian medical faculties, the precise motivations prompting them to pursue their specialisation abroad, the factors that attract them to those particular countries and the deficiencies perceived in the Romanian healthcare system. However, the massive wave of departures from the system, which started with Romania's entry into the European Union in 2007, generated losses of hundreds of millions of euros. We are referring here mainly to the state's expenses for the schooling and specialisation of physicians. In the medium and long term, the exodus has resulted in shortages in certain medical specialties, a decline in the quality of healthcare services and long waiting times for patients seeking specialist consultations.

The implications for healthcare policy include the development and implementation of strategies to prioritise access, affordability and quality of healthcare services in order to meet the evolving needs of the population. These strategies may involve addressing healthcare disparities, promoting preventative care and supporting medical innovation and research. Healthcare employers must also adapt to changes in service delivery – such as telemedicine and remote consultations – and must invest in technologies that improve patient care. Additionally, recruitment and retention strategies must be strengthened in order to address potential workforce shortages and ensure a skilled healthcare workforce. Migration policies should also consider the demand for healthcare professionals in different regions and countries, balancing international labour mobility with national healthcare system sustainability.

Methodology

To test my hypotheses, I use a *combination of quantitative and qualitative data sources*, which combines information from a survey of medical students who were asked about their migration intentions, along with country-level information for all potential European destinations. Therefore, the empirical approach was based on three major sources:

1. Medical students *from 6 major Romanian medical universities* were surveyed in 2016 (N=1,117). The universities were: Iași, Bucharest, Cluj-Napoca, Târgu-Mureș, Craiova and Sibiu.
2. *Regulatory information on medical residency* was collected from official government portals and national medical boards and, when missing, was completed by directly approaching via email the relevant clerk in the corresponding countries.

3. *Eurostat healthcare workforce statistics* (OECD, European Observatory on Health Systems and Policies 2021, 2023) provide additional information.

Each data source has been carefully assessed for relevance and comparability over time. Regression models, including OLS and Tobit models, were carried out at country level, to analyse the relationships between regulatory frameworks and migration trends. More precisely, I set up a database at country level. The dependent variable is the percentage of students intending to migrate to the respective country. The respective indicator is derived from the above-mentioned survey at Romanian universities.

Unfortunately, currently, there is no centralised source of national records of the state medical staff in Romania, and the data on the existing human resources in the state medical system are, in one form or another, under the management of several institutions (Ministry of Health, Romanian College of Physicians, National Institute of Statistics, public health units, National Health Insurance House, National Center for Informatics and Statistics in Public Health, ministries with their own networks, private health units, etc.).

Therefore, as the dependent variable, I use the intentions to migrate expressed by medical students. To compute them I use a survey carried out in 2016 in 6 out of the 9 universities that were awarding degrees in medical studies in Romania (Iaşi, Bucharest, Cluj, Sibiu, Târgu Mureş and Craiova). The results are reported in Boncea and Voicu (2019) and show the percentage of students who intended to emigrate to various European countries out of the total sample (N=1,117).

Respondents were asked whether they intend to emigrate or not. The answer choices were: 'Yes, I would like to and I have started preparing to leave', 'Yes, I would like to but I have no definite plans yet', 'No, never' and 'I do not know, I have not decided yet'. Those in the first 2 categories were asked to indicate their potential destinations. The higher percentages are observed for Germany (53 per cent out of the sample), France (35 per cent), the UK (46 per cent), Sweden (26 per cent), Portugal (37 per cent), Spain (17 per cent) and Belgium (17 per cent). For 12 countries (Croatia, Cyprus, Czech Republic, Estonia, Greece, Iceland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta and Slovenia), there was no one in the sample who indicated them as a potential target. These percentages constitute the dependent variable. To avoid attributing different effects due to sample size, 2 different scenarios will be used in my analysis. First, the analysis includes all the places where the countries and those for which no one opted are indicated with a 0 percentage (Croatia, Cyprus, Czech Republic, Estonia, Greece, Iceland, Latvia, Lichtenstein, Lithuania, Luxembourg, Malta and Slovenia). Second, the analysis is restrained for the countries to which at least one student indicated intentions to migrate.

Nevertheless, intentions to migrate do not always convert into actions. However, they provide a good indicator of the attractiveness of the potential destination (Lee 1966). Looking at intentions allows us to order countries according to their attractiveness – as with my intention to inspect the pull factors. Following the considerations in the previous sections, several independent variables were considered. They depict each health system and specifically refer to the density of inhabitants per physicians, the duration of training between graduating medical school and starting residency, the requirements in order to be accepted for residency, the imperative of undergoing a residency exam, the moment at which the decision on specialisation is taken, the duration of residency years, the required level of language proficiency and the salary as resident. Each of these variables may act as pull factors.

The variables used for the residency regulatory framework were derived through a content analysis of the national regulations governing medical residency programmes, supplemented by data obtained from representatives of the relevant institutions in each country (including Ministries of Health, Ministries of Education and national medical boards or equivalent organisations). A systematic research process was employed for each country, followed by direct outreach to official representatives via email.

While some provided direct responses, others offered guidance or did not respond. Whenever feasible, data triangulation was applied to enhance reliability and ensure cross-country comparability. Given the number of countries analysed and the space limitations within this paper, further methodological details and specific country-level findings are available upon request from the author.

The data on *physician density*, which come from Eurostat, show the number of people per physician in each country. This number varies across Europe, ranging from 137.68 in Italy to 323.28 in Romania. For the remaining pull factors, I performed a search of existing resources on the Internet, combined with personal consultations with country-level experts.

The *duration of required training* between graduating and starting residency is provided in months and varies from 0 (in several countries) to 24 months (Hungary, Malta, the UK).

The requirements to be accepted for residency were coded as a categorical variable and are also ordinal, indicating the specific type or nature of the examination in question. Consequently, I identified 3 types of examination for admission to a medical residency programme for each country analysed:

- *deregulated* (meaning that there is no national test for admission to medical residency and the selection of 'future medical specialists is made locally and by medical discipline depending on internship vacancies (or equivalent) in hospitals' (Hardy-Dubernet 2008: 336);
- *mild examination* (for instance, the exam can have 2 parts – written and oral – and the residency student can apply twice a year; alternatively, there is an exam where the candidates must expand on 2 topics from a given list); and
- *hard examination* (medical graduates sit for a major national examination, after which they can choose their area of specialisation – this examination can usually test any aspect of medicine).

The *imperative of undergoing a residency exam variable* is also categorical and refers to the presence (yes) or absence (no) of an entrance examination for admission to the medical residency programme. Another variable refers to when the *decision on specialisation* is taken and here there are also 3 categories:

- after 'graduation'(in light of the results obtained in the national residency examination);
- when choosing a 'residency' programme (depending on internship vacancies or the equivalent in hospitals); or
- a 'mixed' system (the applicants must choose a principal training-base for their specialisation programme but can rearrange the training cycles within a year and through their residency programme).

The duration of residency years represents a numerical variable that spans from 2 years (geriatric in Belgium) to 8 years (surgery in Ireland and the United Kingdom). The *required level of language proficiency* is a variable that falls within the categories B1, B2 and C1. In my dataset, no destination country required only basic levels such as A1 or A2. However, since only 2 countries ask for B1 level, they were merged into a common category B1/B2 and the variable was added to the analysis as a dummy. The *salary as a resident* is the final continuous variable that enables me to observe the minimum, gross annual salary in Euros for first-year resident doctors, which can vary from 20,000 Euros in Greece, Lithuania and Poland to 80,000 Euros in Switzerland.

My first analysis is bivariate, contrasting the 8 independent variables with the 1 dependent variable. Finally, OLS models were set up, to understand which effects remain important when controlling for the other confounders. Among the variables, those referring to population size, the density of physicians, the demand from the population (inhabitants per physician) and migration intentions were skewed and logarithmic transformations were applied.

Given that the dependent variable is the percentage of students in medical schools who intend to migrate to each European country, it is continuous but censored above and below (it takes values between 0 and 100). A Tobit model was run and the results were similar to those resulting from OLS estimations. For simplicity, I have opted to reveal here only the results from the OLS models (which are easier to interpret).

For the low number of cases for which full information is available (see Table 1), 2 strategies are employed. First, a set of models including only continuous predictors is run, with the aim of retaining, for subsequent models, only the most influential predictors. In these first models, the predictors include the indicators mentioned in Table 1 as control variables (population size, density of physicians), wages during residency (at start and end) and the duration of residency (minimal or maximal). After selecting the most suitable predictors, several sets of models added the remaining factors related to the institutional framework: the harshness of entry requirements, conditions for language proficiency, length of training between graduation and residency and time before the decision upon specialisation is made.

Table 1. Table of descriptives for variables in the models (country level)

Type	Variable	Specifications	N	Mean/%	SD	Min	Max
Dependent variables	Migration intentions: % of medical students' intention to migrate to the respective country	Full sample	31	7.48	14.12	0.0	53.7
		Only those >0	19	12.6	16.59	0.19	53.7
Independent variable: institutional framework (residency)	Duration of residency in years	Minimum	31	3.75	0.95	2.0	5.0
		Maximum	31	5.72	1.08	2.0	8.0
	Test for admission to residency	Deregulated	21	66.0			
		Mild examination	8	25.0			
		Hard examination	3	9.0			
	Decision upon specialisation	Graduation	9	27.0			
		During residency	8	25.0			
		Mixed	15	48.0			
	Proficiency level	B1	2	2.5	0.62	1.0	3.0
		B2	12				
		C1	18				
Independent variable: wages	Start wage as resident (minimum, gross, thousands of Euros per year)		31	41.71	20.66	0.02	80.0
	Last year's residency (maximum, gross, thousands of Euros per year)		25	58.31	29.48	0.03	116.0
Control variables	Population size (in millions)		31	16.59	23.01	0.04	84.36
	Inhabitants/physicians (in thousands)		21	0.19	0.05	0.12	0.32
	GPs per 100,000 inhabitants, 2021		27	105.57	54.85	46.81	298.18

The second analytical strategy referring to OLS models considers the robustness of the findings. Since the number of countries that attract no one is quite high, the models were also run for a subsample that

includes only the destinations that attracted at least 1 student. The findings were virtually unchanged, confirming their stability.

Findings: Bivariate analysis

When contrasting the migration intentions of medical students from Romania with the admission requirements for medical residency in the analysed countries, we observe that the top countries in order of preference are Germany, the United Kingdom, France, Sweden and Belgium. Except for France, none of them has a national residency exam and medical residents can select or change their speciality during residency. Some 69 per cent of students prefer destinations without a national residency exam, while 31 per cent favour countries with stricter admissions criteria. Additionally, the average percentage of students intending to migrate to countries with a less-rigorous examination stands at less than 1.

Regarding the required language proficiency level among the top destinations, Belgium and France require B2, while the other 3 countries ask for C1. Considering all 32 countries in our sample, those asking for B1 tend to show an average attraction for 6 per cent of the students, while B2 = 38 per cent and C1 = 56 per cent.

First-year resident salaries vary across the 5 countries: Belgium (€38,557–€69,280, average €55,557), Germany and France (around €60,000), the UK (around €67,000) and Sweden (around €70,000). By comparison, the minimum gross annual salary as a medical resident in Romania is 23,496 Euros.

Findings: Multivariate analysis

The initial models, with only continuous predictors, indicate that starting wages and ending wages cannot coexist due to collinearity. Norway acts as a significant outlier, influencing the relationship shape concerning duration. Both density (GPs per inhabitant) and demand (inhabitants per physician) are found to be non-significant.

Decisions were made to run models without Norway and to use density, which includes fewer missing values. Minimal duration of residency proves to have no effect but maximal duration has a low negative effect in these models, meaning that a longer period for residency deters migration intentions (see tst01a, tr11a, p01a and s01a in Table 2). The decision is to keep this maximal duration in subsequent models.

Table 2 summarises the results for the analyses run on the entire sample. A core set of predictors was kept unchanged, taping for structural conditions (population size), potential market (density), expected financial benefits (wages) and the salient indicator for the institutional framework of residency – its duration. Then, in each model, another factor related to the institutional model was added. As noted, the low number of cases does not allow the addition of more than one factor in each model.

The duration of residency remains significant in almost all models (see tst01a, tr11a, p01a and s01a in Table 2), showing its stable effect. Students are less attracted by health training systems where residency takes longer.

However, the other residency-related factors do not matter when controlling for the core predictors. The type of admission maintains the differences between categories with the sample (see tst01a and tst02a in Table 2), meaning that students display higher migration intentions towards countries where the examination is absent or loosely regulated and prefer, to a lesser extent, countries where a tougher exam is in place.

Table 2. Results from regression models: all countries, irrespective of student migration intentions

	Model name:	tst01a	tst02a	tr11a	tr12a	p01a	p02a	s01a	s02a
Institutional framework	Type of admission: Deregulated	0.00	0.00						
	Type of admission: Mild.examination	-0.75	-1.13						
	Type of admission: Hard.examination	-0.26	-0.48						
	Training between graduation and residency (traineeship) (months)			0.01	0.00				
	Required proficiency: B1/B2					0.00	0.00		
	Required proficiency: C1					0.37	0.40		
	Decision on specialisation: Graduation							0.00	0.00
	Decision on specialisation: Mixed							0.44	0.48
	Decision on specialisation: Residency							0.86	1.02
Expected wage	Duration of residency years: maximum	-0.56*	-0.56†	-0.49**	-0.38†	-0.43**	-0.34†	-0.26	-0.13
	Start wage as resident (minimum, gross, thousands of Euros per year)	0.03**		0.04***		0.03***		0.03**	
	Wage last year's residency (maximum, gross, thousands of Euros per year)		0.02†		0.02*		0.02**		0.02†
Density: GPs per 100,000 inhabitants (logarithmic)		0.14	0.37	-0.05	0.08	-0.07	0.05	-0.07	0.02
Population size (millions, logarithmic)		0.64***	0.63**	0.61***	0.56***	0.61***	0.57***	0.52***	0.46**
	Constant	1.34	0.81	1.46	0.69	1.10	0.48	0.15	-0.64
	Observations	26	23	26	23	26	23	26	23
	Adjusted R^2	0.649	0.486	0.650	0.465	0.669	0.492	0.676	0.506

Note: Reference categories: B1/B2 proficiency, decision on specialisation: Graduation. Type of admission: Deregulated.

The number of months needed for training between graduation and residency produces no effect at all, irrespective of how we model it (see tr11a and tr12a in Table 2). Proficiency levels are also insignificant and keep showing that, within the sample, students slightly prefer the countries where a higher proficiency level is required (see p01a and p02a in Table 2). However, without knowing students' abilities in

speaking the host country language, one could not jump to a clear conclusion in this respect. Also insignificant, the moment of the decision about specialisation is loosely associated with the sample concerning their migration intentions: the students have a slightly higher preference for systems that postpone the decision about specialisation to a later stage.

The results remain virtually unchanged when the sample is reduced to the countries to which at least 1 student intends to migrate. Overall, we are left with the strong and stable effect of residency duration (see tst01a, tr11a, p01a, s01a in Table 2) and with the attraction of higher payments and bigger countries.

Discussion and implications

The paper explores the complex interplay between regulations, the migration intentions of medical graduates from Romania and the dynamics of healthcare systems. The analysis reveals that medical graduates from Romania who emigrate are influenced by various pull factors, stressing the main factors related to residency that increase the attractiveness of European destinations.

Germany, the United Kingdom, France, Sweden and Belgium were the top choices as European destinations for Romanians. The bivariate analysis highlighted the preferences of medical students, revealing that 69 per cent of them expressed an intention to migrate to countries without a national exam requirement for admission to medical residency, while 31 per cent preferred countries with a rigorous examination. Among those considering destinations with a stringent national exam, 48 per cent specifically favoured France, 23 per cent Spain and 21 per cent Italy. The percentage of students who opted for countries with mild examinations is less than 1 per cent – at 0.4 per cent.

When considering the multivariate analysis, only residency duration (see tst01a, tr11a, p01a, s01a in Table 2) and expected wages (see tst01a, tst02a, tr11a, tr12a, p01a, p02a in Table 2) emerged as significant drivers of migration preferences. The longer the residency takes, the less attractive the country becomes. Conversely, higher wages at both the start and the end of a residency, enhance a country's appeal. While the size of the country also plays a role (all models), market demand does not significantly influence migration intentions.

A significant pull factor identified in the top destination countries is the ability for graduates to choose their specialisation, rather than having it assigned based on their exam performance. A later decision on specialisation manifests a positive effect (see s01a and s02a in Table 2) within the sample but is not significant, thus not allowing the generalisation of these findings. The same applies to the higher requirement for language proficiency (see p01a and p02a in Table 2) which, within the sample of countries, slightly increases migration intentions. Romania faces a critical need to improve its medical residency system in order to address factors driving physicians' migration. This includes reforming the current entry system for medical residency students. Romania should consider models like those in Germany or Switzerland, which are known for their transparency, meritocratic selection and emphasis on practical training. Additionally, addressing issues of low wages, inadequate working conditions and limited opportunities for professional growth remains crucial to retaining skilled healthcare workers and alleviating the nation's shortage of medical professionals. Destination countries, particularly those identified in the study, also have a responsibility. They should consider the ethical implications of attracting foreign medical talent and ensure that their healthcare systems can effectively accommodate and integrate these professionals.

This study underscores the necessity for Romania to reform its residency training system, particularly regarding transparency in admissions, alignment with European best practices and

improved financial incentives. Additionally, destination countries must consider the ethical implications of attracting foreign-trained medical professionals to ensure sustainable workforce planning. These findings are in line with more recent studies emphasising that institutional pull factors remain decisive. Zapata *et al.* (2025) argue that adequate policy responses can mitigate migration, while Apostu *et al.* (2022) provide evidence on the importance of language and professional requirements. Incorporating such perspectives reinforces the policy relevance of our results and suggests that reforms in Romania should target both regulatory transparency and professional development opportunities. My study provides a fresh perspective on how regulatory frameworks shape medical graduates' migration patterns. Unlike prior research that primarily emphasised economic incentives, our findings highlight the importance of institutional structures in determining migration flows. Future research should explore longitudinal data across a greater number of years and conduct in-depth interviews with migrating physicians in order to better understand their motivations.

The data used to measure students' intentions to emigrate are derived from 2016, reflecting the latest available information. Unfortunately, due to limitations in data accessibility, more recent data could not be obtained. It is crucial to acknowledge that intentions expressed by Romanian medical students may evolve and that the study's findings should therefore be interpreted with caution given the age of the data. Additionally, it is imperative to note the inherent challenge in obtaining precise information regarding the intentions of Romanian medical students to emigrate to specific countries. The lack of available data from official institutions such as the Ministry of Health or the Romanian College of Physicians poses limitations and the study relies on alternative sources to capture insights into this complex phenomenon.

Data from 2016 may seem old for assessing the current situation. However, the analyses revealed patterns that show associations between phenomena for which the period constraint is unlike to occur. I nevertheless believe that, despite more recent changes in society, the findings remain relevant for understanding the structural factors driving the migration intentions of Romanian medical students. For instance, it might be the case that Brexit removed (or not) the UK from the list of top destinations but the fact that entry requirements or foreseeable wages act as pull factors remains. In addition, I stress once more that this study is among the very few that discuss medical *students*' intentions to migrate, while the bulk of the literature is devoted to the emigration of medical *doctors*. Nevertheless, further research to confirm the stability of the findings with data collected in the coming years would be more than welcome.

Note

1. Response to address no. 1934/a/08.02.2023.

Acknowledgments

In the pursuit of understanding the intricate dynamics surrounding the migration of Romanian medical graduates and the pivotal role of legislation, I would like to extend my heartfelt appreciation and gratitude to the following people, who demonstrated remarkable patience and kindness by generously sharing insights into the legislative processes within their respective countries: José Durão and João Carlos Ribeiro, MD, PhD, Professor of Otorhinolaryngology, Centro Hospitalar Universitário de Coimbra, President of National Medical Education Council, Faculty of Medicine, University of Coimbra from Portugal, Mette-Louise Mørk, MD, Education, The Danish Health Authority, Denmark, Tina Šapec,

Secretary General, Medical Chamber of Slovenia, Mag. Helene Wöger-Kamleitner, MA, Fachexpertin Internationale Angelegenheiten, Abteilung Recht, Team Internationale Angelegenheiten from Austria and Liina Saar, Chief Specialist, Department of Health Care Services from Estonia. Special thanks are extended to: Kaisa Halinen, Senior Ministerial Adviser, Medical affairs, Department for Clients and Services in Healthcare and Social Welfare, Clients and Personnel Unit (ASI) from Finland and Elisaveta Petrova, Executive Assistant to Head of Mission and Deputy Head of Mission, OSCE Office for Democratic Institutions and Human Rights (ODIHR) from Bulgaria for providing valuable website recommendations from their countries. This collaborative effort underscores the importance of international cooperation and shared knowledge in addressing the complex issues surrounding the migration of medical professionals.

Conflict of interest statement

No conflict of interest was reported by the author.

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How to cite this article: Nicula M. (2025). The Migration of Medical Graduates from Romania to EU Countries – Regulations as a Pull Factor. *Central and Eastern European Migration Review* 14(2): 415–429.