Analysis on access to the Spanish university system and its implications on the Medicine Degree

Análisis sobre el acceso a la universidad española y sus implicaciones en el Grado en Medicina

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Abstract

The university entrance exam should be a mechanism to guarantee equal opportunities for access to higher education. In highly competitive studies, this test is decisive. The purpose of this article is to focus on the implications of the university entrance exam in the Spanish context, specifically on the situation of the Medicine Degree and its subsequent impact on the specialization exams for Resident Medical Interns (MIR). To do this, we will start by analysing the entry point to the system, i.e. access to university studies, and we will analyse with data what is happening in the Spanish context and by Autonomous Community, with cut-off marks, new enrolments and graduates, as well as the response of the Spanish National Healthcare System (SNS) to take in graduates from the university system. In order to develop this work, a longitudinal descriptive approach has been carried out for each of the objectives set, based on the analysis of official documents (documentary analysis technique). The results show that there is great heterogeneity in university entrance qualifications between the different Autonomous Regions, which has a negative effect on equality of opportunities. On the other hand, the average cut-off mark for the Bachelor's Degree in

Medicine increases significantly year after year, and on occasions is close to the maximum. If this trend continues, the system will become saturated. Finally, with regard to the MIR entrance exam, the number of places on offer satisfies the university system, but does not provide a response to the general situation.

Keywords: entrance exam, university, degree in medicine, cut-off mark, Internal Medical Resident.

Resumen

La prueba de acceso a la universidad debería ser un mecanismo que garantizara la igualdad de oportunidades para el acceso a una educación superior. En estudios universitarios de elevado carácter competitivo esta prueba resulta determinante. El propósito de este artículo es centrarnos en las implicaciones de la prueba de acceso a la universidad pública en el contexto español y focalizarlo en la situación del acceso al Grado en Medicina y sus posteriores repercusiones en las pruebas de especialización para Médico Interno Residente (MIR). Para ello, se partirá del análisis de la puerta de entrada al sistema, es decir, del acceso a los estudios universitarios, y se analizarán con datos lo que está sucediendo en el contexto español y por Comunidades Autónomas (CC.AA.), con las notas de corte, las matrículas de nuevo ingreso y los egresados, así como la respuesta del Sistema Nacional de Salud (SNS) para acoger a los egresados del sistema universitario. Para desarrollar este trabajo se ha llevado a cabo un planteamiento descriptivo longitudinal en cada uno de los objetivos planteados, basado en el análisis de documentos oficiales (técnica de análisis documental). Los resultados arrojan que existe una gran heterogeneidad en las notas de acceso a la universidad entre las distintas CC.AA. lo que redunda negativamente en la igualdad de oportunidades. Por otra parte, la media de nota de corte en el Grado de Medicina se incrementa significativamente año tras año, y en ocasiones próxima a la máxima. De seguir esta tendencia se saturará el sistema. Por último, en lo relativo a la prueba de acceso al MIR, la oferta de plazas satisface al sistema universitario, pero no da respuesta a la situación general.

Palabras clave: prueba de acceso, universidad, Grado en Medicina, nota de corte, MIR.

Introduction

University entrance exams are used in many countries around the world, varying in structure and name depending on the place. In general, this test aims to assess, on an equal footing, the level of knowledge and skills of students for access to university. In Spain, the university access exam,

known as "Selectividad", was established in 1974, and has had different names throughout its history, including "Prueba de Aptitud para el Acceso a la Universidad (PAA)", "Prueba de acceso a la Universidad (PAU)" until 2017, and "Evaluación de acceso a la Universidad (EvAU)" and "Evaluación del Bachillerato para el Acceso a la Universidad (EBAU)", since 2018.

The Ministry of Education and Vocational Training, together with the Autonomous Communities, is responsible for the preparation of university entrance examinations. The Ministry establishes the general criteria and guidelines for conducting the tests, and the autonomous communities have the autonomy to organise and manage these tests in their respective territories in terms of the structure of some of their elements and items (Royal Decree 310/2016; Royal Decree-Law 5/2016). In practice, this circumstance seems to result not in a standardised results, but rather in differentiated tests in each of the 17 autonomous communities (Ruiz-Lázaro et al., 2021, p. 235).

The purpose of this paper is to analyse the details of access to university, precisely coinciding with the presentation of a new entrance exam model by the Ministry of Education and Vocational Training, last July, (with fewer tests and a maturity assessment, which is intended to be fully implemented by the 2026-2027academic year). Furthermore, the goal is to structure this analysis around the access to the Bachelor's Degree in Medicine, one of the most sought-after programmes with a high cut-off mark. The study is also justified in the context of the specific social problem of the lack of medical professionals, which has already been highlighted in some studies (Vicenç Martínez Ibáñez et al., 2022) and which has recently been reported in the media and social networks.

All this puts universities in the spotlight in the search for solutions, which to a large extent has been reflected in the Ministry of Universities' measure to increase by up to 15% the places offered in the Degree in Medicine for the next academic year. This measure will be supported by a budget allocation for those universities that decide to implement it. However, some stakeholders in the health sector have raised doubts about the effectiveness of this measure (Echevarría, 2022), arguing that possible solutions should focus on increasing the number of MIR (Medical Internship Residents) places, increasing the number of specialists, or improving working conditions. In order to address this debate, it is advisable to start by analysing the entry point to the system, i.e. access to university studies, and to conduct a data-based analysis on what is happening in the Spanish context regarding cut-off marks, new enrolments

and graduates, as well as the response of the Spanish National Health-care System (SNS) in taking in graduates from the university system.

Status of the issue

The recent doctoral thesis by Judit Ruiz Lázaro is of great interest for an overview of the scientific literature on university entrance examinations in Spain. It provides a general overview of the different types of studies and approaches that have been carried out with respect to the analysis of university entrance in Spain up to 2020 (Ruiz Lázaro, 2021). In the same year when this system of access to higher education studies was launched, the *Revista de Educación* echoed the implications that this procedure could have on the system, and dedicated monographic issue no. 230 to access to higher education. A dozen papers examined the situation extensively, both from a general point of view, including the problem of selection in medical studies (Del Sol, 1974), as well as access systems in seven countries. Since then, and although the body of literature is not large, numerous studies have been published from multiple perspectives, all of them highlighting the complexity of such analysis.

Following the classification proposed by the author in her doctoral thesis on research studies on university entrance in Spain, the first aspect that can be underlined is that no scientific work has been published on "*the entrance model in Spain*" for more than a decade. This category initially includes studies linked to the implementation of the university entrance exam system, followed by an analysis of different aspects of the subject from a more general perspective, focusing on the debate. Apart from the aforementioned monograph in the *Revista de Educación*, the monograph on "Selectividad y Educación" in the journal *Documentación social. Revista de Desarrollo Social*, no. 15, also published in 1974, emphasised at the time what the entrance system could mean in terms of the limited number of places (then numerus *clausus*) implemented in the access to studies. On another level, this aspect, after the various reforms, would lead to what is known as "cut-off marks", a minimum score that determines which students are admitted to a degree course, which depends on the demand and the number of places available at each university, with a great impact on access to higher education studies. Some years later, in 1997, the *Revista de Educación* once again published a monographic

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issue, no. 314, on "*University entrance exams*". The studies on the then existing model and its impacts, agreed on two main conclusions: first, that it was necessary to achieve a fair and equitable procedure that, in a valid manner, could ensure access to university studies, and second, that society should realise that if not all students can study what they want, it is not a problem of access but of the mismatch between supply and demand (Muñoz-Repiso and Murillo, 1997, p. 47). On the other hand, "*the autonomy of the Communities and universities cannot and should not, under any circumstances, result in a situation of injustice that violates the principle of equal opportunities for all students*" (Murillo, 1997, p. 62).

In relation to cut-off marks, subsequent regional analyses show that there has been a general progressive increase in these scores (Ruiz-de Gauna and Sarasua, 2011), and that this has a significant effect linked to graduation rates (Jiménez García et al., 2021). In addition, there are several studies showing from different approaches that there are notable differences between test results in the different autonomous communities (Ruiz and González, 1997; Muñoz-Repiso et al., 1997; Boal et al., 2008; Ruiz and González, 2017; Ruiz-Lázaro and González, 2017; Pérez-Cárceles, and Martínez-Martínez, 2019; Mengual, 2019; Ruiz-Lázaro et al., 2021; Faura-Martínez et al., 2022). The differences studied reveal multiple aspects such as disparity in the criteria provided to correctors depending on the university district, or diversity in the structure and contents of various subjects for access to university. This could have socio-economic effects in the different autonomous communities, since the differences in the average access marks determine the ability to study in the region of origin and, consequently, in the case of being below average, be detrimental to the students themselves (Pérez-Cárceles and Martínez-Martínez, 2019, p. 88).

However, the analysis of the difficulties and room for improvement in order to ensure effectiveness of entrance exams undoubtedly requires detailed analyses that take into consideration the multiple variables involved in this process, such as contextual variables related to the results, psychometric characteristics of the tests, alternative access routes to university, or the relevant comparison with the entrance system implemented in other countries, all of which are dimensions addressed by reference publications in Spain (Ruiz Lázaro, 2021, pp. 121-154).

Focusing this context on medical studies, it is worth noting that, globally, access to medical studies in almost all countries of the world is pursued, and has been very competitive for years (Laurence et al., 2013). It

has also become clear that the literature on general selection policies for access to this type of university education is scarce, and that more sophisticated evaluation approaches using multidisciplinary theoretical frameworks are required to address these issues (Patterson, 2018). Admission methods for medical studies in different countries around the world are based on various models of individual assessment (e.g. end-of-school examinations, admission interviews, aptitude tests, etc.). Ideally, the methods should follow general policies. But these models mostly respond to political strategies that are adopted on the basis of both universal and local criteria. Universal criteria are applicable anywhere in the world, and the most common are academic or intellectual capacity and the potential to master professional skills. However, local criteria depend on a country's needs, capacity (e.g. available resources) and socio-cultural values (Soemantri et al., 2020). All of which makes it clear that there is no shortage of elements in the analysis required for the study of university access at this crucial time, to which we hope to make our small contribution.

Background and objectives

Access of future medical professionals to the SNS is subject to two selective tests at two different times. On the one hand, the admission processes for pre-university students to Spanish public universities require them to pass a series of tests structured in two phases, one general and one specific (voluntary), depending on the modality they have previously studied (Organic Law 3/2020). The final mark for admission is the sum of the average mark of the Upper Secondary Education (60%) and that of the selection test (40%) and the result of this mark will determine access to the degree to be studied. Variability in the access mark is, therefore, influenced to a greater extent by the differences in the average mark of the Upper Secondary Education, which is the result of different factors, not least of which is the school where it was studied and other factors specific to the autonomous community, linked, among others, to the different school and assessment culture of each place and the differences in the autonomous community curricula.

On the other hand, access to specialised medical training for graduates in Medicine is determined by means of an annual examination (MIR exam), one single exam for all Spain (Law 44/2003). The test consists of

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a multiple-choice exam and reserve questions related to medical studies. The final mark is the sum of the average mark obtained in the Medicine degree -and the doctoral thesis if applicable-, (10%), and the result of the MIR exam (90%). Likewise, the final grade obtained will determine the possibility to choose the speciality in which they wish to train. Both procedures, therefore, place the requirements for the medical profession at a very high level, perhaps one of the most demanding ones in Spain.

If we analyse the different stages of the process, initially, future professionals must access university through 17 different exams, designed by and for each of the Autonomous Communities. This could influence the average cut-off mark required to enter the Medicine degree that in Spanish public universities has been above 13 points (out of a maximum mark of 14) in the last two years. Once admitted to the Spanish university system (SUE), both public and private (private universities establish their own admission criteria, which are not necessarily bound to the entrance grade), students will face a six-year Bachelor's Degree programme in Medicine at a total of 48 Spanish universities (Registro de Universidades Centros y Títulos, RUCT, 2022). In each of the universities, they will study a different curriculum, designed by the different universities, and assessed initially and on an ongoing basis in their verification reports, by the evaluation agencies responsible in each case. Thus, heterogeneity of the processes, until they reach the MIR exam, is a striking aspect. All the more so if students will then have to face a selective test that will define their professional development.

Therefore, although the MIR test is considered to be a determining factor in the entire career path towards the profession, the university entrance mark, as well as the training they receive during their six years at university, will influence their results. Regarding the education received, some studies have shown that, although it accounts for only 10% of the final mark, there is a direct relationship between the marks obtained throughout the medical degree and the score they obtain in the test, objectively showing its influence on the order number they will obtain in the MIR test (Baladrón Romero et al., 2022; Baillès et al., 2020). Concerning the university access mark, a study carried out in the 2008-2014 promotion, in 29 medical schools in 12 Autonomous Communities , shows that there is no correlation between the cut-off mark of each university and performance in the MIR exam (Sentí et al., 2016). In any case, a comprehensive study of the situation would be required, from access to university itself to the possibilities offered by the SNS to university graduates.

To this end, first, we will analyse the situation of the university entrance exam using data that will allow us to find out the degree of participation, in terms of the number of people enrolled, and the average marks for this entrance exam, as well as the situation of the average cut-off mark for the Bachelor's Degree in Medicine. This study will also be addressed in the context of the population range of 17-18 year olds who enter university, as they constitute the majority of the access range. A comparative study of the situation in the different Autonomous Regions will also be carried out, with the aim of determining whether the entrance exam produces the same results based on the Autonomous Region of origin.

In a second stage, we plan to analyse the evolution of the university entrance exam cut-off marks of students of the Degree in Medicine over the last four years, and additionally to do so broken down by Autonomous Community. Likewise, in the academic context and for this period, the enrolment of new students in the different universities will be shown, as well as the number of graduates that the university system provides in these same courses. The aim of this analysis is to assess the advantages and disadvantages of the current system as a starting point for decision-making on the new university entrance exam, which is currently being drawn up.

Third, we present, based on existing data, the possibilities offered by the SNS to take on graduates from the university system, showing how many places, in each of the years under study, are offered for access to the MIR status. The aim in this case is to identify whether or not there is a match between the places offered for the MIR and the number of Medicine graduates, and to try to contribute to the discussion on whether it is necessary to increase the number of places for new entrants to the Medicine Degrees.

Hypothesis and Methodology

For these three objectives of analysis, the following hypotheses are put forward. On the one hand, the system of equal access to university might not be effective. This would determine access to the most sought-after degrees, such as the Bachelor's Degree in Medicine.

On the other hand, the increase in cut-off marks in general, and in particular for the Bachelor's Degree in Medicine, could lead to saturation of the system, if the approach to the university entrance exam is not changed.

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Finally, access to the SNS for medical graduates should be rethought. A reasonable solution could be to opt for an alternative university education (degree) that would provide a response for the system.

Design

This is a study based on secondary data analysis (purely quantitative-positivist in nature), using previously collected data and focusing on the objective and quantitative analysis of these data to meet the research objectives.

For its development, a longitudinal descriptive approach has been carried out for each of the objectives set, based on the analysis of official documents (documentary analysis technique) (Bowen, 2009; Peña Vera, 2022) followed by a comparative analysis.

Participants

For the study, we have taken as a reference the 17 and 18 year-olds who sit the entrance exam, as they are the main age range within those who sit the exams. The students who, ordinarily, sit these tests do so in the year in which they turn 18 and, therefore, approximately half of them will be 17 years old and the other half 18. On the other hand, data on new students and those graduating in the same year from medical degrees have been used to establish a snapshot of the situation at any given time, and to analyse whether the Ministry's measure to increase the number of new entry places by 15% could respond to the needs of the SNS. Finally, data on the population of people taking the MIR exam in Spain were used.

Variables and sources of information

To begin with, for the study of enrolment in the university entrance exam, the University Entrance Examination Statistics (EPAU) of the Ministry of Education and Vocational Training and the Ministry of Universities (EDUCAbase) were reviewed. For this purpose, the upper secondary education/vocational training entrance path has been selected. These data have been compared in the analysis with those of the National Institute of Statistics (population by autonomous communities and provinces,

age and sex). This study has been carried out since 2015, in order to provide a wider perspective when it comes to knowing the population and academic evolution of the situation.

With regard to the cut-off marks for the Bachelor's Degree in Medicine, numerous websites have been consulted that provide data on the cut-off marks for each year. In all cases, a detailed study of the data was carried out to verify that there were no significant differences (which in many cases in the temporal analysis depend on when they are published). The range of analysis in this period varies from 2018 to 2022, based on the years in which the SNS has disclosed the results of the allocation of MIR places.

In the study of the admission and graduation and exit of Medicine graduates, the Integrated University Information System (SIIU) has been used as an official source, with data up to the academic year 2020-2021.

Finally, concerning SNS data, the Ministry of Health website (Formación Sanitaria Especializada) has been consulted until the 2021-2022 academic year, which offers a general summary of the MIR entrance exam data.

Procedure and data analysis

Firstly, a descriptive analysis of the extracted data is conducted, describing the data by means of statistical averages and percentages. This analysis provides an overview of the characteristics and distribution of the variables under study. A trend analysis has also been carried out, looking at the data and searching for any upward, downward or seasonal trends in the values over time. Finally, a comparative and integrated study is performed with the different existing situations.

Results

Individuals enrolled in the university entrance examination as a share of the total population of 17-18 year olds

The number of students signing in Spain for the university entrance exam (from Upper Secondary Education/Vocational Training) in the general stage has increased in recent years, with a very significant rise in 2020, coinciding with the first year of the pandemic. Without considering the

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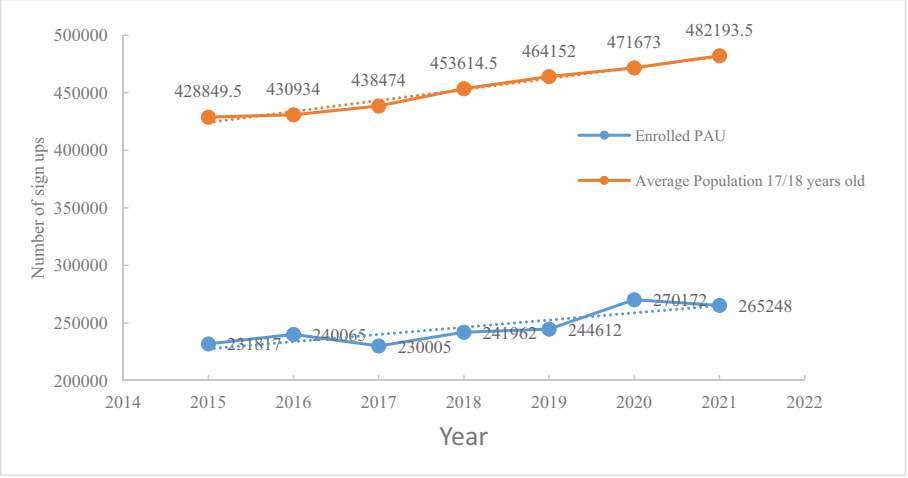
exceptional nature of this academic year, in 2021 the increase was also significant with respect to the year before the pandemic, as it increased by 20,636 students, which shows that the number of people who wish to enter university, in absolute quantitative terms, follows a clearly increasing trend year after year (Figure I).

FIGURE I. PAU sign ups and population aged 17 and 18 in Spain (2015-2021)

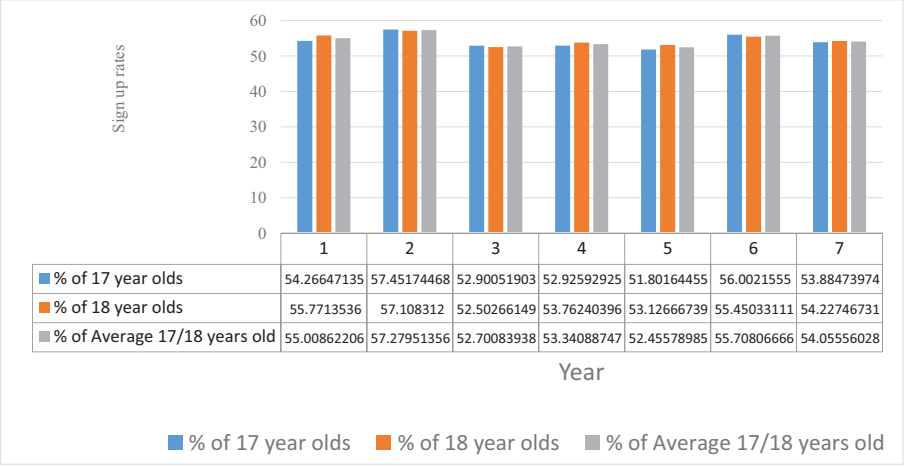


Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). National Institute of Statistics. Population by communities and provinces, age and sex. Prepared by the authors.

In order to analyse this increase, in relation to the change in the total population, absolute figures are compared with the majority population taking these tests (17 and 18 year-olds). Figure II shows the percentages of those signing up over the time analysed with respect to the population aged 17, 18 and the 17 and 18 year-old average, according to what is stated in the methodology section (participants). The data collected from the National Institute of Statistics, show that the percentage of individuals signing barely changes over time and remains constant as a percentage of the general population. Therefore, the share of the average population aged 17 and 18 taking the university entrance exam ranges between 52.5% and 57.3% of the total population (Figure II).

When analysing the data by Autonomous Regions, in absolute terms, we can see in Figure III that most of the students seeking access

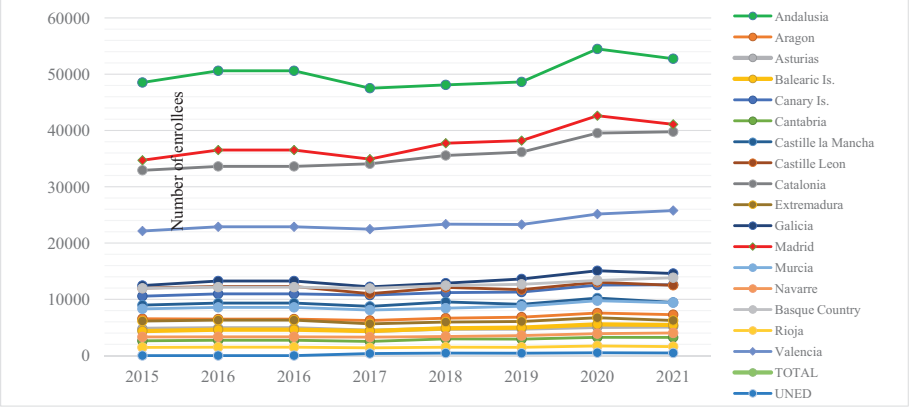
FIGURE II. Percentages of sign ups of total population aged 17, 18 and 17 and 18 year old average population



	1	2	3	4	5	6	7
% of 17 year olds	54.26647135	57.45174468	52.90051903	52.92592925	51.80164455	56.0021555	53.88473974
% of 18 year olds	55.7713536	57.108312	52.50266149	53.76240396	53.12666739	55.45033111	54.22746731
% of Average 17/18 years old	55.00862206	57.27951356	52.70083938	53.34088747	52.45578985	55.70806666	54.05556028

Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). National Institute of Statistics. Population by communities and provinces, age and sex. Prepared by the authors.

FIGURE III. Signups by Autonomous Community



Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). Prepared by the authors.

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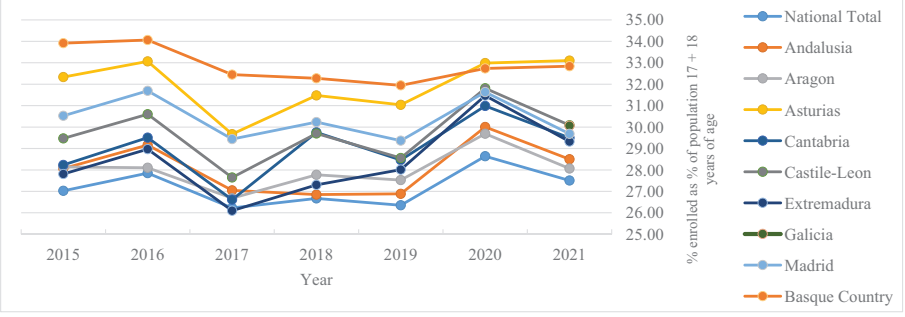
to the university system come from Andalusia, followed, with a significant difference, by Madrid and Catalonia. The figures in these three are significantly higher than in the rest. These are, admittedly, the most populated Autonomous Communities, but it is clear that most of the students entering the Spanish university system come from these communities.

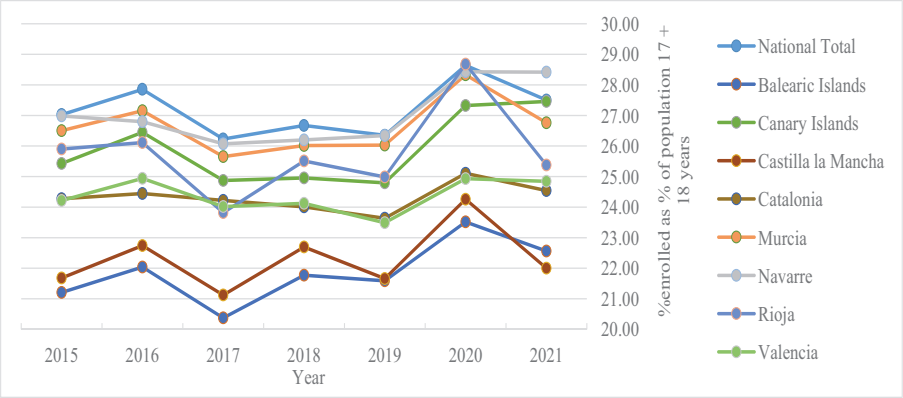
If we consider these data not in absolute terms, but in proportion to the number of sign ups in each Autonomous Community aged between 17 and 18, the data indicate that students aged 17-18 who sign up for the university entrance exam in nine Autonomous Communities (Andalusia, Aragon, Asturias, Cantabria, Castile and Leon, Extremadura, Galicia, Madrid and the Basque Country) are above average, while in eight (Balearic Islands, Canary Islands, Castile and Leon, Extremadura, Galicia, Madrid and the Basque Country) they are above average. (Andalusia, Aragon, Asturias, Cantabria, Castile and Leon, Extremadura, Galicia, Madrid and the Basque Country) are above the average, while in 8 of them (Balearic Islands, Canary Islands, Castile-La Mancha, Catalonia, Murcia, Navarre, La Rioja and Valencia) they are below the average (Figure IV and V).

FIGURE IV. ACs with percentage of sign ups in 17-18 year-olds above the national average



Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). National Institute of Statistics. Prepared by the authors.

FIGURE V. ACs with percentage of signups aged 17-18 below the national average



Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). National Institute of Statistics. Prepared by the authors.

Cut-off marks in university entrance exams

Regarding the evolution of the cut-off marks of the entrance exams (general phase, out of 10 points) in the different Autonomous Communities, it should be noted that since 2015 the average has been rising substantially, standing at 6.12 points in 2021. In the evolution in the years 2015-2021, the Basque Country has the highest average (6.51), while the Balearic Islands has the lowest (5.61), a situation that is maintained in the last year under study.

With regard to the distribution of the scores of the other ACs, it should be noted, as shown in the following figures (VI, VII and VIII), that seven are below the average (Andalusia, Balearic Islands, Castile La Mancha, Galicia, Madrid, Murcia and Valencia); five are above the average (Aragon, Asturias, Cantabria, Basque Country and Navarre); and five are around the national average (Castile Leon, Catalonia, Extremadura, La Rioja and the Canary Islands).

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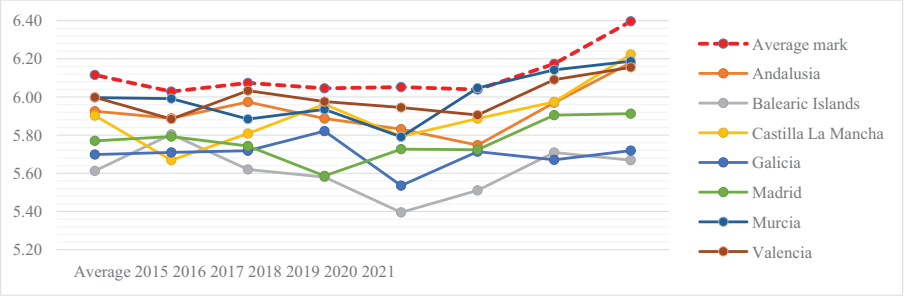
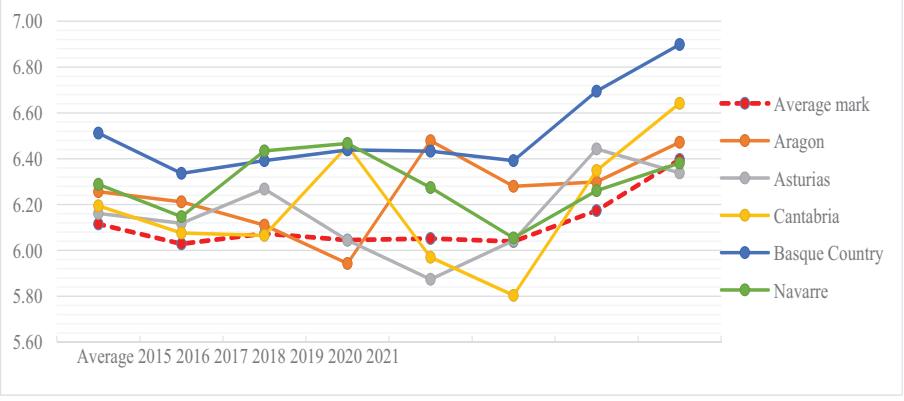
FIGURE VI. Average general stage entrance examination marks by Autonomous Community (below the national average)



Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). Compiled by the authors.

FIGURE VII. Average general stage entrance examination marks by Autonomous Community (above the national average)



Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). Prepared by the authors.

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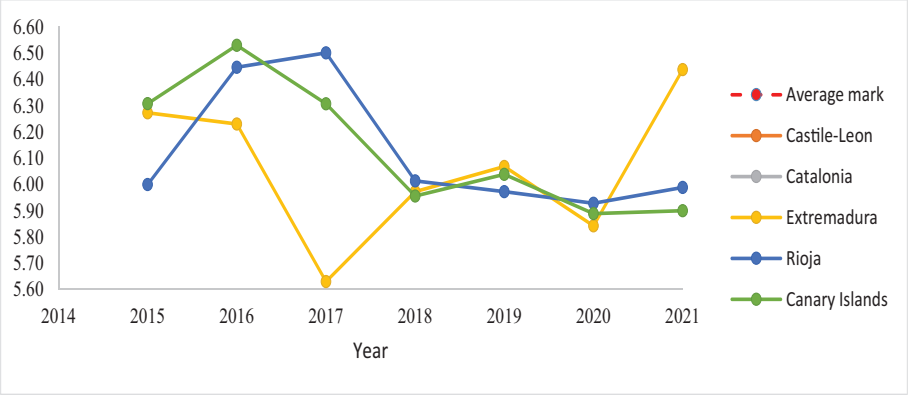
FIGURE VIII. Average general stage entrance examination marks by Autonomous Community around the national average



Source: Ministry of Education and Vocational Training and Ministry of Universities. EDUCAbase. University Entrance Examination Statistics (EPAU). Compiled by the authors.

Cut-off marks for the Bachelor's Degree in Medicine

In general terms, the cut-off marks for Health Sciences degrees are the highest in the system. Since the 2018-2019 academic year, the average mark in public universities for entry to the Bachelor's Degree in Medicine has risen from 12.653 to 13.171 (out of 14) in the 2022-2023 academic year. This gradual rise, in the period under study, shows a significant jump in the academic year 2020-2021, the year of the pandemic, which also coincides with the increase in the number of students signing up for the entrance exam, where the average mark increased by half a point (Figure IX).

This analysis does not include private universities, for which in it is not possible to obtain this information many cases, as it is usually not a determining factor for admission to Medicine studies at these institutions. However, if we look at the regions, it is worth noting that there are some Autonomous Regions that are consistently above the average. This is clearly the case in Andalusia, which seems to be a growing preference for those wishing to study Medicine.

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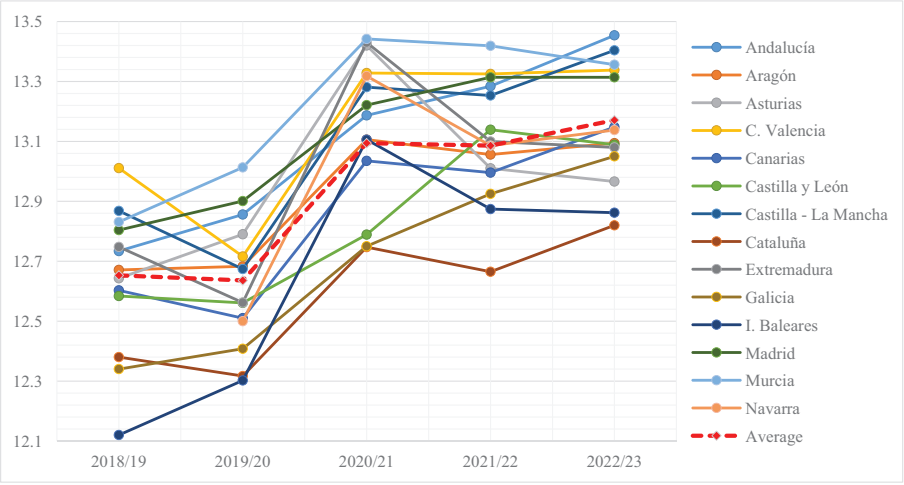
FIGURE IX. Average entry marks in the Medicine Degree by Autonomous Region



Source: Educaweb.com; Notasdecorte.es; Distrito unico andaluz (notas de corte) et al.

In this sense, as Figure IX shows, although the general trend is a high average mark for access to Medicine studies, as it happens in more than 50% of the universities studied throughout the period, we can see that it is in the academic year 2020-2021 were we can find the highest number of universities exceeding the national average, with 9 of the 14 universities (64.3%). It is not until the academic year 2021-2022 that the number drops to 5, i.e. 35.7% of the universities included in the study.

The highest entry grades in Spain, which exceed the cut-off mark of 13.3, are found in the Autonomous Communities of Madrid (13.314), Valencia (13.338), Murcia (13.356), Castile-La Mancha (13.404) and Andalusia (13.454), the latter being the highest. We can see that in the case of the Andalusian universities, the progression towards a higher cut-off mark is always increasing between the academic years 2018-2019 and 2022-2023, going from being the eighth highest in the academic year 2020-2021 to, in two academic years, becoming the most demanding autonomous community at the time of admission to the studies of Medicine.

On the other hand, although the academic year 2019-2020 is marked by a decrease in the entry mark in 50% of the autonomous communities analysed in this study, the academic year 2020-2021 is a turning point in the level of demand for the new entry of students to the degree of Medicine in our country. Thus, the entry grade continues to rise in the regions of Andalusia, Castile-La Mancha and, very slightly, Valencia, despite being the ones with the highest cut-off marks, and in Galicia. The rest of the Autonomous Communities recorded a decrease in the entrance examination marks. It is the 2021-2022 academic year that will see an increase in this cut-off mark in 50% of the autonomous communities that incorporate Medicine students to the system.

Catalonian universities are the ones with the lowest cut-off marks for admission to Medicine studies throughout the historical sequence analysed, with the highest cut-off mark of 12.82 recorded in the academic year 2022-2023, which is 0.36 points below the national average and 0.63 points below the highest in the system in that academic year.

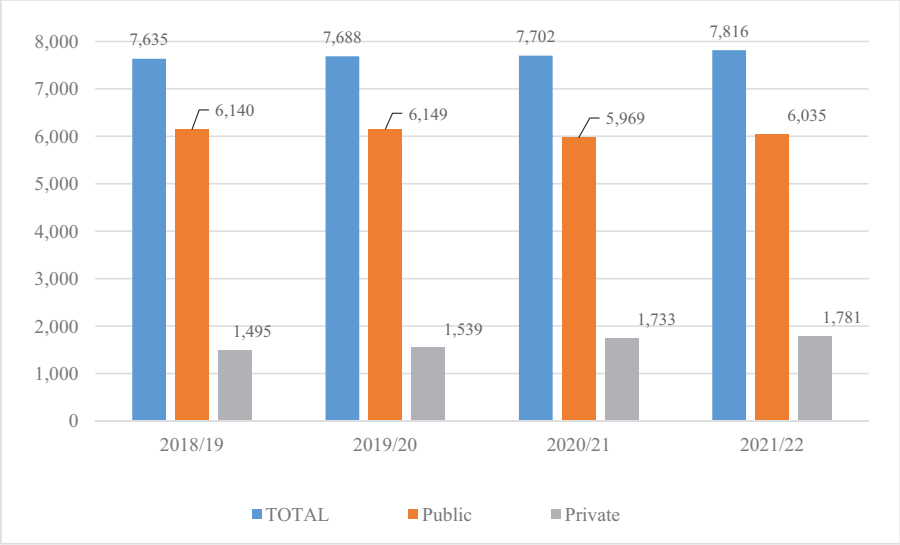
New students/graduates in the Bachelor's Degree in Medicine

The number of students enrolled as new students in the Bachelor's Degrees in Medicine throughout Spain has been increasing in recent years, although such increase has not taken place in the same extent in public and in private universities. Figure X, shows that private universities have been progressively increasing the number of newly enrolled students, whereas in public universities the number of places has decreased by 105 from 2018 to 2021.

By Autonomous Communities, Madrid, Catalonia, Andalusia and Galicia have the largest number of newly enrolled medical students, and the other Autonomous Communities lie far behind. Additionally, in these three cases, the number of newly enrolled students has decreased considerably in the case of Catalonia, in Andalusia where it is below the 2018 academic year, as well as in Galicia, where it is also slightly below the 2018 figure (Figure XI).

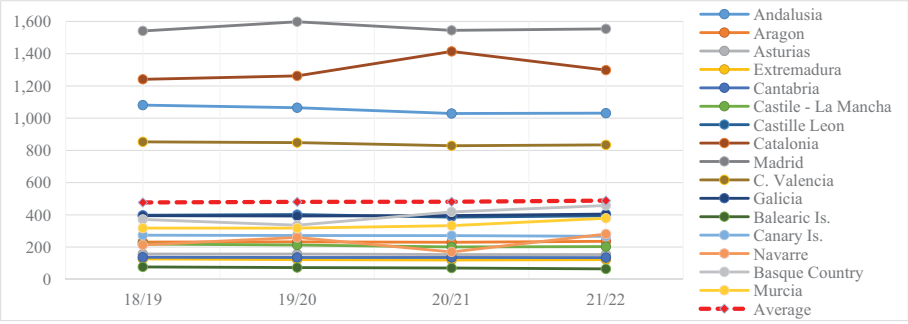
The rest of the universities have maintained the enrolment of new entrants practically constant since the 2018-2019 academic year, with two exceptions: The Basque Country, where enrolment has increased exponentially since the 2019-2020 academic year, and Navarre, where enrolment fell in the 2020-2021 academic year, even though the Public

FIGURE X. Evolution of new enrolments in the Degree in Medicine



Source: Integrated University Information System (SIIU). Compiled by the author.

FIGURE XI. Evolution of new enrolment in the Degree in Medicine by Autonomous Community

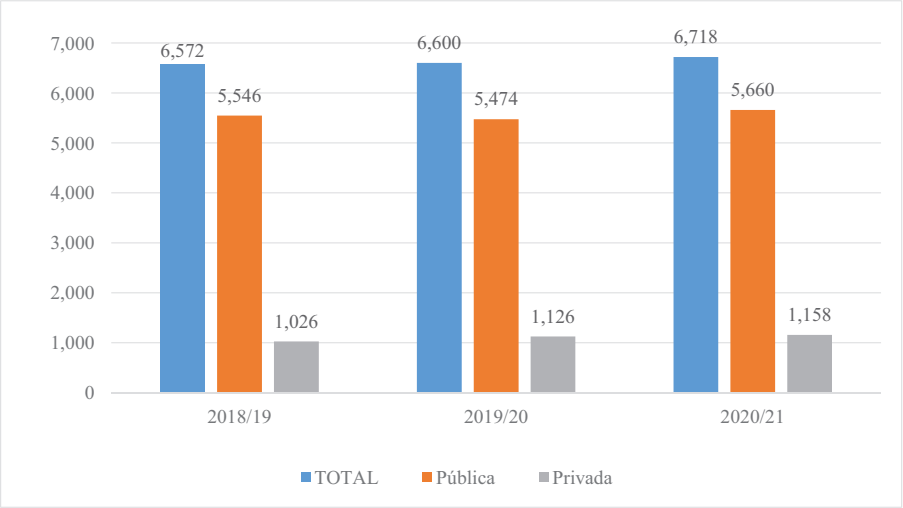


Source: Integrated University Information System (SIIU). Compiled by the author.

University of Navarre had introduced the Bachelor's Degree in Medicine for the first time in 2019.

With regard to the number of medicine students graduating annually from the Spanish university system (Figure XII), up to the academic year

FIGURE XII. Evolution of graduates of the Degree in Medicine



Source: Integrated University Information System (SIIU). Compiled by the author.

for which the data are available, this has remained constant (6,572, 6,600 and 6,718), with around one thousand fewer students graduating than the number entering university every year. If the average number of new entrants over these years is 7,710, the average number of graduates over these years is 6,630. But the proportion in this case is different if they have done so in public or private universities. In the case of public universities, an average of 91% of those entering each year graduate. In the case of private universities, the average is 67%.

In the analysis by Autonomous Regions, as in the case of new entrants, four are the Autonomous Regions with the highest number of graduates in the years under study. In relation to this aspect, of the four, Andalusia is the one with the smallest difference between the number of new entrants and graduates (76, 84 and 47 students per academic year), whereas in Catalonia this difference is larger and keeps increasing, with the difference in the number of students being 268, 342, and 468, respectively in the 2018-2019, 2019-2020 and 2020-2021 academic years, probably due to the increase in the number of new entrants. In

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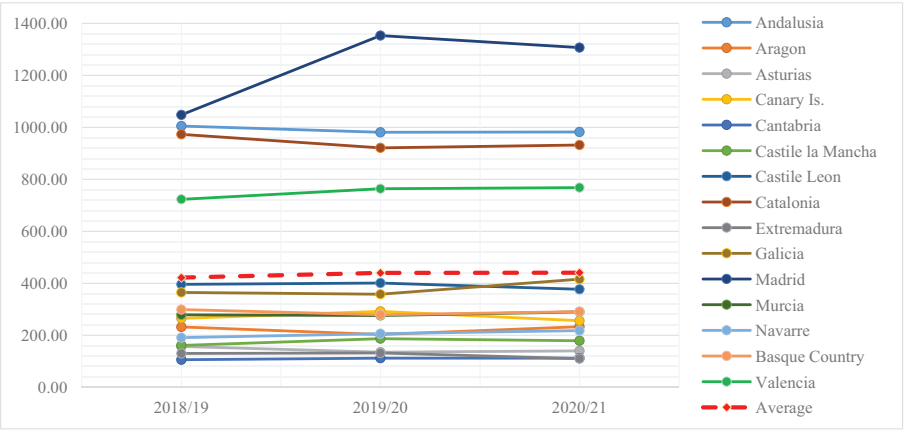
the other range, as in the case of new enrolments, the number of graduates remains constant, with the exception of Castile Leon, the Canary Islands and Extremadura, where there was a slight decrease in the last year. In these cases, the difference between the number of new entrants and graduates in these years is practically nil, and in some years it is even higher (Figure XIII).

FIGURE XIII. Evolution of graduates of the Degree in Medicine by Autonomous Community



Source: Integrated University Information System (SIIU). Compiled by the author.

Summary of MIR exam data

According to the general summaries of the MIR calls published in the website of the Ministry of Health (Specialised Healthcare Training) over the last four years, as shown in the following table, the number of places offered by the health system has progressively increased by almost 1,400 places since 2018. While this increase has taken place, the same has not happened with the number of applications submitted and admitted to the exam. Since 2020-2021, there has been a clear decrease in the number of individuals taking the MIR entrance exam.

TABLE I. Summary of MIR exams

ADMISSION STAGE	2018/19	2019/2020	2020/2021	2021/2022
Applications submitted	16,582	16,964	15,166	13,080
Number of candidates admitted to the examination	15,700	16,263	14,452	11,827
SELECTION STAGE	**2018/19**	**2019/2020**	**2020/2021**	**2021/2022**
No, of candidates taking the exam	14,187	14,986	13,332	11,827
Candidates eliminated after cut-off mark	2,983	2,796	2,527	1,895
Candidates with order number	11,204	12,174	10,805	9,932
AWARD STAGE	**2018/19**	**2019/2020**	**2020/2021**	**2021/2022**
Places offered	6,797	7,615	7,988	8,188
Places allocated	6,796	7,615	7,987	8,095
Unallocated places	1	0	1	93

Source: Ministry of Health. Spanish Government. Compiled by the author.

Of those who were finally admitted (approximately 90%) and took the exam, the share has been increasing, standing at around 83% at in the last year under study, In addition to this fact, the gap between the number of applicants with a qualifying number and the number of places offered has been narrowing, being the smallest in the 2021-2022 call for applications, where the difference was 1,744, compared to the 2019-2020 call for applications, where the difference between those who passed the cut-off mark and the places offered was 4,559,

Finally, it should be noted that in two of the years under study, and according to the published data, one vacancy was not awarded respectively, as compared to the 93 vacancies that have not been awarded in 2021-2022. All of them belong to the speciality of Family and Community Medicine.

Conclusions

As it has been exposed, the road leading to the medical profession is a complex one, which entails access to university. And it is significant that

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in order to respond to the deficit of professionals in the SNS, the university has been called upon to increase the number of places in medicine by up to 15%. This decision has led us to consider a general reflection on access to the system, focusing on the case of the Bachelor's Degree in Medicine. We are aware that the study has been approached with too much ambition, and that it therefore poses serious limitations.

In recent years, the number of people taking the university entrance exam has been increasing steadily, but, as we have seen, this is a consequence of the fact that the population has also been growing proportionally. The exception to this situation happened in 2020, the year in which the pandemic was declared, when the trend was broken, with a significant increase in the number of people wanting to enter university. When the analysis is made in proportion to the relevant population in each Autonomous Community in that age range, it is striking that the data show a situation in which, over time, in some Autonomous Communities the rate of people applying in proportion to those who can access university is above the average, while in others it is constantly below. What aspects could be defining these differences between Autonomous Communities? This situation would undoubtedly merit an analysis, which goes beyond the scope of this paper, linking this situation to other variables (e.g. immigration, urban vs. rural population, socio-economic and language factors, etc.).

Two questions could be raised in this regard. The first of these refers to the unquestionable interest of the study of the effects of the pandemic on access to university. There are many questions that can be raised in this regard: did the change in the examination model cause this increase, was it a generalised desire or was it focused on the desire to access the health professions, which played such a crucial role throughout this period? The second question links the increase in the number of people entering university with the cut-off marks, which have also increased progressively over the years. But it cannot be ignored that the cut-off marks are the result of the number of places that universities offer, and of the social demand. Therefore, if universities have not increased their offer of places in the years under study, this may have led to a general increase in the cut-off marks.

On the other hand, the results of the 17 existing entrance exams in Spain show a heterogeneity in the scores that has a negative effect on equal opportunities for access in general, and specifically for access to

medical studies. If the university entrance exam is understood as a single gateway to the system, it makes no sense that, over a sustained period of time, some regions are below the average, while others are above the average. Instead, they should all be around the average. Another aspect that deserves further study is the fact that the highest cut-off mark for studying medicine, and with an upward trend, is found in Andalusia, while the lowest one Catalonia. The language issue could be considered among the causes of the latter situation, but this would also merit further study.

In the analysis of the heterogeneity of grades, it would be interesting to introduce a study of the university entrance examination itself, since the literature has shown that there are numerous aspects that require further standardisation. One example of how to correct differences could be to review the grading scale used (Veas et al., 2020). It would be very relevant, and it is a major limitation of this work, to carry out a study of successful access systems in other countries, and extrapolate those issues that could help to improve the system.

On the other hand, the progressive increase in the cut-off marks for Medicine studies shows that the trend will continue to rise in the coming years, in some cases, such as in Andalusia, it will approach 14 points. This aspect could be corrected with the 15% increase in the number of places proposed by the Ministry for the coming academic year, which will be confirmed in the near future. But while this may be a modulating measure for the cut-off mark, it is not yet clear that it could be a corrective measure for the problem of the lack of medical professionals, since the data show that the correlation between the two remains constant, with an average of 91% of graduates in the case of public universities compared to those enrolled that year, and an average of 67% in the case of private universities. In other words, it is possible that these figures are linked to the drop-out rate, an aspect that should be studied, or to the creation of new universities. Notwithstanding, it is another major limitation of this study not to have carried out a longitudinal study in this case.

Finally, with regard to the MIR entrance exam, it might seem obvious that the number of places on offer meets the numbers of the university system. In 2018-2019, 2019-2020 and 2020-2021 respectively 6,572, 6,600 and 6,718 medical students have graduated from university and the number of places for access to the MIR in these years has been: 6,797, 7,615

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and 7,988. However, if we analyse the number of physicians taking the exam, which is practically twice as high, we can understand that there is a population of graduates (and foreigners) who have not entered the SNS yet, and continue to take the exam in successive call. Additionally, it is striking that in the 2021-2022 call for applications, 8,188 vacancies have been offered, the highest number in recent years. And for the first time, according to the Ministry's official data, in the annual summary published, 93 places appear "pending awarding" (in previous years, 2). All of them in the speciality of "Family and Community Medicine", Primary care. The data presented here on the number of graduates and the number of applicants do not initially seem to fit this situation. This could be due to the fact that it is not a speciality in demand and could also be a response to the high number of people who take the MIR exams each year compared to the number of places offered. Therefore, it is possible that there are people already in the health system in the speciality of "Family and Community Medicine" who try to obtain a place in another speciality every year and leave primary care. It is therefore worth considering whether there is a shortage of physicians in general or a shortage of specialists, and rethink the need to increase the 15% of new places in medicine in the university system, as this does not seem to be the solution to the problem.

In this scenario, the increase in the number of places in medical programmes could increase the number of graduates, but this needs to be proven. Increasing the number of graduates would increase the number of MIR places in all specialties, but what about Family and Community Medicine? The struggle in the system regarding access to medical studies does not seem to satisfy the professional outlets. Perhaps in the area of training future doctors, the university could contribute something more than just merely increasing the number of new places in this degree. Access to specialisation for medical graduates could be rethought, separating training in primary care, either by creating a specialised degree in this area, or by creating a professional-leading postgraduate programme for nursing graduates. This would make it possible to organise the system, admit to the field of medicine those people who could not gain access because of the cut-off mark, and regulate the tension that apparently arises among current graduates to fill the vacancies on offer. In this case, once again, the university, as a public service, could provide the solution.

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