

Synthetic Indicators of Spanish Universities

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The approach of U-Ranking, the selection of variables on which the rankings compiled are based and the methodology used when treating the data have been thoroughly discussed by the Ivie team with a large group of experts on the assessment of universities, university information and management. We would like to thank these specialists from fourteen universities for their invaluable collaboration.

We would also like to acknowledge the support of the Valencian public universities in the initial stages of the project and the suggestions made by members of different Spanish universities since the presentation of the first results in June

2013, which have been followed with interest by many people. During the past year, the U-Ranking website has received close to 200,000 visits and more than 370,000 queries have been made to the results of the rankings. The project is also attracting international interest: 29% of the visits to the website come from outside of Spain, the majority from Latin America and the United States which jointly represent 24% of total foreign visits. Visits from major European countries such as Germany, France, United Kingdom, Italy and Portugal also have significant percentages. These data provide a stimulus to maintain the continuity of the project while making improvements.

We would like to give special thanks the IUNE Observatory¹ for their collaboration with research and innovation and technological development data, as well as participating in meetings on the availability and suitability of various sources and the problems of their treatment. In this regard, the IUNE Observatory, and specially the INAEUCU team, directed by Professor Elías Sanz-Casado, have provided complete Bibliometric data on all the Spanish universities (based on information

¹ The IUNE Observatory is the result of work carried out by a group of researchers from the universities that make up the “Alianza 4U” (Universidad Carlos III de Madrid, Universidad Autónoma de Madrid, Universitat Autònoma de Barcelona and Universitat Pompeu Fabra). The general coordinator

of IUNE is Elías Sanz-Casado, professor at the Department of Librarianship and Documentation of the Carlos III University Carlos III in Madrid and director of INAEUCU (Research Institute for Higher Education and Science).

provided by Clarivate), from which many of the indicators relating to research have been calculated.

Also, the U-Ranking team acknowledges the cooperation of the General Secretariat of Universities and, in particular, the General Sub-Directorate of University Research Activity of the Spanish Ministry of Science, Innovation and Universities, whom, for another consecutive year, has provided us access to the Integrated System of University Information (SIU). In addition, this Ministry, through the State Bureau of Investigation, by providing information on the research resources available to universities. The collaboration of all these institutions offers proof of their commitment to transparency and accountability, which are key elements for the university sector to be a profitable investment. It also allows the ranking to be independent from the information provided by the university institutions that appear in it, thus favouring independence with respect to them.

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The results of the U-Ranking project are, therefore, the results of the collaboration of many people and institutions that share the same interest in analyzing the performance of Spanish universities and facilitating comparable and synthetic images of them. With this 12th edition, we celebrate the continuity of a project that, by its nature, offers results that are more and more reliable as the data and basic indicators become more refined.

In this regard, it is also important to highlight that one of the advantages of the U-Ranking project approach is that it pays special attention to the wide range of activities that universities carry out, such as teaching, research and innovation, and, when the information allows, it also takes into account university outcomes in terms of labor market insertion of its graduates. This diversity of perspectives enriches the assessment of university results and shows the limitations of partial views, because the institutions analyzed have different levels of performance in the various areas. Due to this situation, it is important that the range of results offered be as complete as possible and based on reliable indicators.

The authors of the report are grateful to the BBVA Foundation and the Ivie for their long-standing support and, in any case, assume sole responsibility for the indicators presented and the resulting conclusions.

Introduction

01

This report presents the results of the research undertaken by the Ivie to develop the 12th edition of U-Ranking, based on an analysis of university teaching activities and research and innovation.

The 20 indicators chosen for the data bank of the project provide the basis for compiling different rankings of Spanish universities. The first of these rankings is denominated **U-Ranking** and analyzes the performance of the University System, synthesizing the universities' achievements in teaching, research and innovation regardless of their size.

The fact that a smaller university achieves good results is relevant, but we should not ignore that their impact on their environment may be far smaller than a large university with less outstanding results. For example, a university with 100 faculty members that produces 100 patents is more productive than if one with 1,000 members produces 500 patents. However, 500 patents will have more impact on the economy than 100. For this reason, we provide a second global ranking, the **U-Ranking Volume**, which considers the combined effect of both variables, results and size, and classifies the universities according to their total contribution to the universities' missions.

In addition to these two general rankings, we construct other more specific ones: **U-Ranking Dimensions**, focused on the classification of universities in the two dimensions that make up the mission of the universities (teaching and research and innovation). Also, **U-Ranking Degrees** ranks the degrees offered by the different universities, providing useful information to potential students for their decision making in the choice of a University.

All of these rankings are approximations of university results, allowing them to be compared from different perspectives. Through such comparisons, synthetic indicators assess their performance by answering to relevant questions, such as the following:

- Which Spanish universities are the most productive or efficient? Which achieve the greatest volume of results? Do the universities at the top of these rankings coincide and do larger universities operate more effectively?
- Do the positions of Spanish universities in international rankings meet the criteria in terms of volume of activity or in terms of output? Are the positions of Spanish universities in the U-Rankings in line with

the best-known international rankings such as that of Shanghai, QS or THE²?

- Do the universities with the best research and innovation results stand out for their teaching results? Are both results correlated?
- Do universities maintain their positions over time or do they vary?
- Are the general rankings on university activities as a whole similar to those obtained when comparing specific qualifications? Is the internal heterogeneity of universities high?

The answers to these questions can be of great interest in order to obtain a complete view of the Spanish University System. This is the only way to identify the strengths and weaknesses of each of the universities that form part of it, from a comparative perspective, and to classify them according to their position within the system from different relevant perspectives. That is the purpose of this project and report, as noted in other studies carried out by the Ivie and the BBVA Foundation (Pérez y Serrano [Dir.] 2012; Aldás [Dir.] 2016; Escribá, Iborra and Safón 2019; Pérez [Dir.] 2018; Pérez, Aldás y Peiró [dirs] 2021), the Spanish University System is far from being homogenous. Not acknowledging its heterogeneity makes its evaluation difficult. Despite the fact that this assessment requires that the different specialization and changing characteristics of each university be taken into account, as well as their real possibility of competing in different areas of its activity, both in teaching and research.

Along with the update of university rankings, the twelfth edition of U-Ranking includes a thorough analysis of the labor market insertion results of young graduates. The report presented in May 2024, "Graduate employment outcomes 2013-2023: trends, differences across fields of study, and gender gaps", examines the situation of university graduates in their early professional

years and allows to differentiate between those who entered the workforce during different cyclical contexts. The study provides an overview from two perspectives. On the one hand, it analyzes the evolution of the labor market in which graduates enter, focusing on the young population between the ages of 22 and 29. On the other, it examines the evolution and supply of bachelor's and master's degree university graduates, from 2013 to 2022, highlighting the significant changes in the last decade in number and makeup of graduates, both in terms of type of university (public or private) and field of study. Based on the database of the Ministry of Science, Innovation and Universities on the number of graduates registered in the Social Security agency, the research delves into the recent changes in the labor market insertion of the last six cohorts (from 2013 to 2018) and analyzes their characteristics and differences by field of study 4 years after graduation. In addition, the study addresses the differences in the characteristics of the labor market insertion of men and women. After reviewing the transit of both sexes through university and their results, an assessment is made to observe if there is any type of bias between men and women in the quantity and quality of insertion. The analysis of the evolution of the labor market insertion of university graduates and its characteristics over the last ten years indicates notable advancements in the employability of young people with this type of higher education.

Rankings as synthetic indicators of results

The performance of Spanish universities receives constant attention, and debates about the exploitation of the resources used and their results are increasingly frequent. This debate becomes even more common at times like now, when Spain's new Organic Law for Universities (no. 2/2023) has introduced significant changes in the regulation of the university system. The

² Academic Ranking of World Universities (ARWU) (CWCU 2024), QS World University Rankings (QS 2024b) and Times Higher Education World University Rankings (THE 2024).

driving force behind this interest is the significant amount of resources currently dedicated to these activities and the recognition of the important role universities play in generating and in the transmission of knowledge, two key areas in the social and economic development of countries today.

In Spain, discussions about university results frequently focus on public universities, for two main reasons: the volume of their activity accounts for most of the Spanish University System, and the origin of the majority of the resources used is public; the assessment of their results is therefore considered to be of general interest. There is also a more practical reason. In Spain, traditionally, it has been more feasible to assess the resources and results of public universities based on relatively homogeneous data, because until recently most of the already numerous private universities (currently, 39 active centers) did not provide the necessary data to carry out analyses. However, the participation of private universities in the Spanish university system is gaining importance and its presence in the public statistics and information systems is increasing. Therefore, a project such as U-Ranking, which aims to provide an overall view of the Spanish University System, should accept the challenge of including these institutions, as it has been doing recently. Thus, recent editions of U-Ranking have included in the ranking system private universities that provided sufficient information of adequate quality, so that the data is homogeneous with that of public universities in order to construct synthetic indicators.

The 12th edition of U-Ranking considers 22 of the 39 private Spanish universities that have been active during the 2022-23 academic year. All of those included have information on at least 18 of the 20 indicators used to calculate the synthetic index.

The published rankings include a list of private universities that are not included because of lack of comparable information. This means the reader has an enhanced overview of the system as a whole and will appreciate that if certain universities are not ranked, it is because they

do not provide enough available information. If they were included, they would appear below or above other universities in the ranking, that offer more transparency by disclosing e information to the ranking system.

Assessments to measure university results in many countries, as well as in Spain, are increasingly using rankings to classify institutions from different perspectives and with different criteria. Some international university rankings have found their place in debates about the quality of these institutions, becoming widely used references to assess the position of universities and national University systems. Thus, for example, the presence of 9 Spanish universities (10% of the total 89 public and private Spanish universities with activity) among the first 500 institutions of the world according to the Shanghai Ranking, in which in the latest edition all were placed beyond the 200th position, is a fact often mentioned as proof of the limited quality and insufficient international projection of our university system. However, assessing this issue has multiple facets Pérez, Aldás y Peiró [dirs.] et al. 2021). In this sense, the information used by U-Ranking to construct its national rankings is more complete and homogeneous than the data used by the best-known international rankings.

Researchers, public and private institutions, university associations, along with companies in information and media are increasingly taking more initiatives to compile rankings. The objectives and interests of such initiatives and their scope are diverse, both in terms of university activities studied (many rankings focus on research), as well as in terms of coverage (national and international), the data used and its treatment. Some of these rankings are carried out by firms or institutions with criteria that do not exclude the participation of the institutions evaluated in the process, nor the financing through these channels by which the ranking is disseminated.

Some recent reports (Rauhvargers 2011, 2013) stressed the importance of carefully assessing the criteria with which the rankings are compiled when demonstrating their significance and

interpreting results. Accordingly, IREG Observatory published in 2019 the *Guidelines for Stakeholders of Academic Rankings* that provides recommendations to help stakeholders (students, families, higher education institutions, policymakers, etc.) interpret and use rankings appropriately (IREG 2019).

Indeed, the rankings are a particular way to assess university results and their appeal lies in the fact that they offer simple and concise information. This facilitates comparisons while simplifying them and making them sensitive to the criteria and procedures followed when constructing indicators. It is for this reason that the value given to the rankings should not be separated from how they are compiled, nor from the metric used or the objectives of their authors. In this sense, it is important to emphasize that U-Ranking is a project with a transparent methodology, developed by non-profit institutions.

Among the most recent warnings about the inappropriate use of rankings is the recommendation not to use the rankings provided by universities in terms of research to evaluate the individual research results of their members (commitment no. 4 of the Agreement on Reforming Research Assessment of the Coalition for Advancing Research Assessment-COARA, July 2022).

These precautions are not always present when presenting the results or when using rankings. On the one hand, the reputation of a good position in a ranking turns them into an intangible asset to universities. Therefore, increasingly more universities develop strategies to convey information about themselves (signaling) by advertising their more favorable results, and also to improve their positioning in the rankings. Certainly, the expected return of a good position in a ranking is significant, given that it can affect areas as diverse as recruiting students, attracting researchers, obtaining resources and the social projection of institutions.

On the other hand, the growing interest in these classifications is because they are perceived as

useful tools (despite being imprecise) for various purposes and different stakeholder groups in universities as they:

- a) Provide the members of each university with external references on their strengths and weaknesses, contributing to the perception of their position.
- b) Offer the users of university services easy to interpret information in terms of attractiveness or quality of institutions.
- c) Provide comparative information to governments, with the possibility of being used to assign resources to the university systems or universities or for the accountability of universities to society.
- d) Complement the work of university quality assurance agencies and provide information to analysts interested in having homogenized indicators available.

Approach of the project

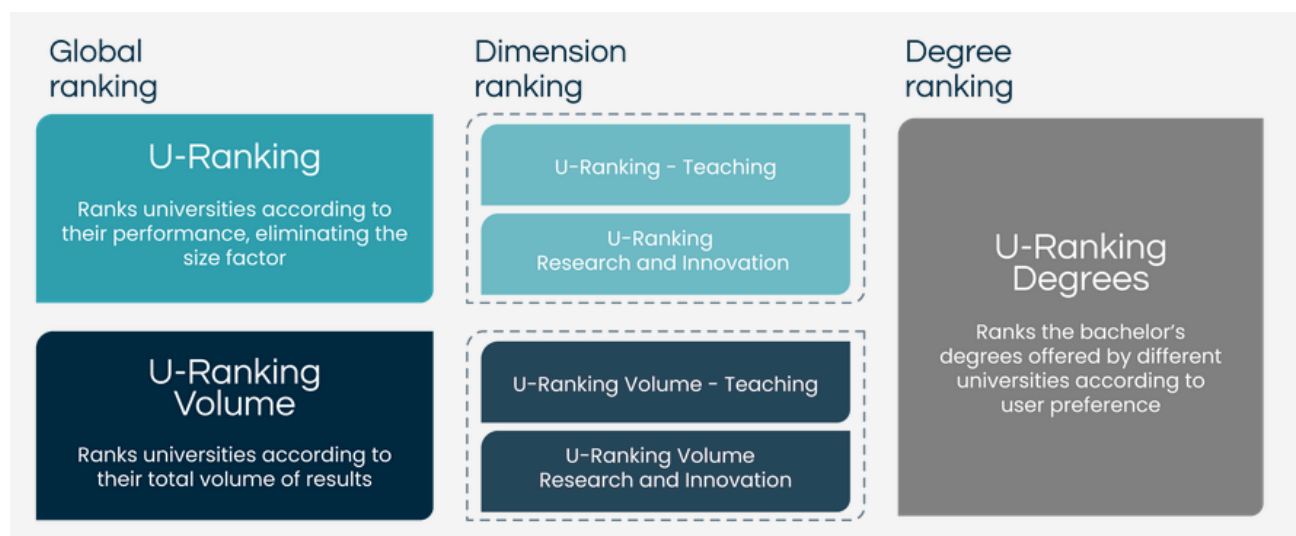
In Spain different university rankings are being regularly presented, compiled with diverse perspectives and methodologies. What sets this project apart is that its rankings (U-Ranking, U-Ranking Volume, U-Ranking Dimensions, U-Ranking Degrees) are developed according to criteria that respond to many international recommendations. One of them is that indicators should be created with the objective of studying university activities from a comprehensive approach, i.e. examining teaching, research, and innovation. Another important feature, is that it offers rankings by degrees (U-Ranking Degrees), giving guidance to students when choosing what to study.

The criteria used in developing U-Ranking that should be noted are:

- Offering multiple university rankings, in which university activities are examined from a general perspective, as well as in specific fields (teaching or research and innovation), but also in terms of the performance achieved (U-Ranking) or the total output (U-Ranking Volume) of each university.

- Taking into account the various perspectives and interests that potential users of the data have when using the rankings. In particular, special attention is paid to the importance that many people give to specific areas of activity, such as degrees, when comparing universities. To deal with this concern, a web tool has been developed which enables users to create personalized rankings in terms of bachelor's degrees (U-Ranking Degrees). It has been designed to guide students, families and counselors when choosing a university in which to study. The advantage of recognizing that users have different preferences is that the following problem can be avoided when constructing synthetic indicators: their excessive dependence on experts' opinions (subjective and sometimes contentious) regarding the weights that should be attributed to teaching or research. This perspective is also taken into account in the personalized rankings, allowing the user to give different weights to teaching and research and innovation according to their preferences and different from the general weights used to create U-Ranking.
- The project therefore offers two different products:
- A general collection of rankings on Spanish universities, based on the criteria of the project's team and the experts consulted, allowing each institution to be compared with others from different points of view: results (U-Ranking), volume of results (U-Ranking Volume) and areas of specialization in teaching and research (U-Ranking Dimensions).
 - A web tool that provides personalized rankings for different bachelor's degrees, grouped according to area of study and which allows to compare the degrees offered by the universities taking into account the interests and criteria of each user (mainly students enrolling in universities, their parents or school counselors) on their choice of studies, the regions considered when choosing where to study and the importance given to teaching and research and innovation: U-Ranking Degrees.
- Figure 1.1** summarizes the different rankings offered by U-Ranking.

Figure 1.1. Rankings included in the U-Ranking Project



It is important to point out that all the rankings have a standard information bases: the data correspond to the same set of variables, and the methodology followed in the treatment and aggregation of the variables is also the same. The differences between the various rankings come from the different levels of disaggregation of the variables (university, area of study, or family of degrees) and from the choices the users make to construct their personalized rankings. The adequacy of the information used is fundamental for the construction of the indicators offered.

The project U-Ranking relies on the valuable collaboration with the Spanish Ministry of Science, Innovation and Universities, allowing access to the Integrated System of University Information (SIIU). The SIIU is a web-based platform that collects, processes, analyzes and disseminates data of the Spanish University System providing, thanks to its continuous development, homogeneous and comparable statistical information of the Spanish universities. Through the SIIU, the Spanish Ministry aims to make the university system more transparent, so that citizens and researchers alike can analyze it, draw their own conclusions and generate proposals for improvement. Thus, the SIIU is a tremendously valuable project, which is a result of the commitment on behalf of the majority of universities and public administrations that allows society to know the reality and performance of the university system, a system that is key for economic and social development and in which a large amount of resources are allocated.

This platform provides information on the degrees offered by each university, in which schools they are taught, students in each degree and full-time equivalent teaching staff. Also, it includes information on students in international mobility programs, as well as by degree on success, performance and drop-out rates and percentage of foreign students in each degree. Since new information is continuously being

added and updated in the SIIU, U-Ranking can rely on this source to access other indicators that can be expected to become more accurate over time.

One of U-Ranking's main objectives is to provide the most useful and detailed information as possible for different groups of people which are the potential users. Consequently, the project includes additional information to the rankings, both in the ranking of universities and in the ranking by degree:

a) Results of each university:

A university ranking allows to observe the relative position of one institution with respect to others. But it is not easy for university managers or researchers to analyze in depth the performance of a specific university, to assess the aspects in which it stands out or its distance from the average of the system or from a certain university, or a group of universities that are taken as a reference. For this reason, the website <https://u-ranking.es>, includes the section **Data by University** that allows the user to consult the data and ranking results for each university. With this dynamic tool, the user can compare different universities, both for groups of universities (Spanish university system, public or private ownership, or by region), as well as individual universities. Proof of the interest and usefulness of this section are the 257,000 queries made in this section in the last edition.

For each university, the U-Ranking and U-Ranking Volume (global and dimensions) indexes obtained in this edition are offered, in relation to the average of the chosen comparison group. The panel also shows a **panel of indicators** for each university, which is a file containing the values for each of the 20 indicators that make up the synthetic index and are compared with the mean value of the universities so that managers can observe the relative distance with the reference group or with other universities. The added value³ of the indicators is presented on a scale of 0 (minimum value obtained by a

³ Without distinction by areas of study, fields of knowledge or degrees.

university of the system) to 100 (value given to the university that scores the most). In this way, it facilitates the comparison between very different indicators and it offers a general profile of each university.

The panel of indicators also contains the position obtained in U-Ranking and U-Ranking Volume in the last six editions. Other basic data on the university is provided, such as year of foundation, type of ownership, student body, faculty and number of degrees.

The information provided is completed with the results of specific analyses carried out in recent editions. Thus, for example, it includes the labor market insertion indicators published by the Ministry of Science, Innovation and Universities on the situation in 2022 of those graduates who obtained their bachelor's degree four years earlier. The indicators on enrollment rate, percentage of graduates with employment according to their educational level and their average salary for the National Insurance contribution calculation, served as the basis to prepare a ranking on the employability of universities in the 2020 edition (Pérez and Aldás [dirs.] 2020). Data from the INE's Graduate Employment Survey (*Encuesta de Inserción Laboral de los Universitarios*, EILU) was used to update and improve last year's edition of this study (Pérez and Aldás [dirs.] 2023). Also included are the results on the renewal of degree offerings in the last decade, which were analyzed in the 2021 edition (Pérez and Aldás [dirs.] 2021).

b) Personalized university rankings by degree:

The Choose a University tool allows to create customized rankings with nearly 3,600 degrees based on the user's preferences. In addition, along with the ranking results, it offers information on tuition costs, cut-off marks of the 2023-24 academic course and the most recent results on labor market insertion for each degree program obtained from the Spanish Social

Security System (Spanish Ministry of Science, Innovation and Universities 2024a).

c) Job placement ranking by field of study and database

U-Ranking website now includes a section on labor market insertion that offers students, families and guidance counselors information on the employability of university students in the different fields of study.

On the one hand, the Labor Insertion Ranking⁴ allows for an interactive consultation of the overall job placement results of 101 fields of study, which group together more than 4,000 bachelor's degrees. The classification is based on the information provided by the EILU and analyzes the employment situation in 2019 of graduates from the 2013-2014 academic year. The ranking of the fields of study is based on an index constructed from four indicators of insertion in each field: the employment rate, the percentage of employed persons with net earnings of 1,500 euros, the percentage of employed persons who have a job requiring a university education and the percentage of employed persons with a job related to the field of study pursued. This calculator, in addition to offering the result of the ranking that combines the four indicators, also generates a ranking based on each indicator separately, in case a student gives special importance to one of them.

On the other hand, the U-Ranking website also updates the interactive tool on the labor market results of graduates from each university, grouped into 122 fields of study. The tool offers information both on the number of graduates and on the six key job placement indicators analyzed in the report "Graduate employment outcomes 2013-2023: trends, differences across fields of study, and gender gaps". It also updates the rate of people registered as employed, the average Social Security contribution base and the adjustment of employment with the education level, measured by the percentage of

⁴ For more details on the methodology used in the labor market insertion ranking, see the report *Analysis of Labor Insertion of University Graduates*.

graduates registered in one of the contribution groups for professionals with higher education (engineers, postgraduates, senior management, graduates and technical engineers). For the first time, it includes the percentage of graduates with full-time contracts, open-ended contracts and self-employed.

In addition, the tool allows the user to choose the fields of study that most interest them and to customize the query based on university location (region), type of ownership, graduate gender and number of years since graduation. The list can be sorted according to the value of each indicator.

The data reflects the situation in March 2020 of university students 4 years after graduation and comes from the Integrated University Information System (SIU) of the General Secretariat of Universities and the Social Security General Treasury (Ministry of Inclusion, Social Security and Migration).

Easy access to this important information allows future university students to use through the decision-making process that will lead them to choose a degree in which to pursue their studies.

Structure of the document

After this introduction, the rest of this document is divided into five chapters, as follows. Chapter 2 describes the methodology used to prepare the rankings. Chapter 3 describes the approach adopted to allow users to personalize the rankings and the online tool constructed for the students. Chapter 4 presents an analysis of the main aggregate results, putting special emphasis on the comparison of the U-Rankings with the main international reference ranking (ARWU) (CWCU 2024). It also provides an analysis of the sensitivity of the results to changes in any of the assumptions used. The results are compared at the level of the university systems of the different autonomous communities. Finally, chapter 5 summarizes the main characteristics and results of the project.

Methodology

02

The U-Ranking project was born from the desire to closely examine the most important national and international rankings available, so as to identify possible ways of reducing their shortcomings. The most significant problems arising with rankings occur in the following areas: (1) university activities studied, (2) disaggregation by subject or type of studies, (3) data availability and use, (4) methodological rigor in the treatment of data and construction of indicators, (5) recognition of the user's perspective when creating and providing data, (6) user-friendly tools to select their preferences in the rankings, and 7) the impossibility of generating synthetic indexes that adapt to the user, making them create their own ranking directly from the indicators offered, which often are inadequate.

The project addresses all these shortcomings and looks for ways to overcome them.

In the first editions of U-Ranking, an extensive chapter was dedicated to the limitations of rankings and the improvements that a new tool like this one should include. The reader can view the corresponding reports —found on the U-Ranking website (<https://u-ranking.es>)— for a detailed analysis of these aspects, which are summarized in this edition.

2.1. THE DESIGN OF RANKINGS

The development and use of rankings entails certain **risks** that should be forewarned. First of all, it is not wise to base strategies on improving the variables studied, instead of on correcting the underlying problems: the improvement of the institutions should be based on principles of efficiency and the results are reflected in the indicators. For university administrators, the goal is to generate policies that will make their institutions improve in teaching, research and knowledge transfer, trusting that if a ranking is well designed those improvements will be reflected in the indicators used to prepare the ranking.

The opposite approach, i.e. to try to improve the indicators so as to improve an institution's place in the ranking, is not only misguided, but also ineffective. In recent years we have seen examples of this misguided approach, such as the double assignment of the results of highly productive and highly cited researchers to universities in other countries seeking to improve their positions in the rankings, in exchange for financial compensation. Because the methodology used in U-Ranking, is of national scope and double assignments are not possible, is not susceptible to being altered by this type of practice, but still precaution should be taken to prevent the manipulation of the indicators. For this reason, the use of indicators that are not very robust, with values that are highly sensitive to the criteria of measuring the variables and aggregation procedures, and they must

adequately reflect, not only what can be measured, but what should be measured. Finally, a very common risk involving rankings is to focus only on the elite (world-class universities) and obliterate the rest. This practice can occasionally lead to an inadequate comparison of institutions that have very different specializations and resources.

Some published rankings show **limitations** that users should be aware of. In the case of universities outside the circle of the well-known universities, many rankings are exclusively centered on indicators that focus on research activity and unreliable reputation factors that are sometimes based on surveys⁵. These variables are, however, frequently unreliable when applied to national universities because the survey respondent can evaluate them using a snowball sampling technique, in which some universities notify the faculty members of other universities that they will receive the questionnaire and request an assessment, leaving ample scope for lack of freedom. The exclusive or majority use of these indicators to rank Spanish universities is in many cases inappropriate and risky, leading to wrong conclusions.

In the first three U-Ranking reports, a detailed review of the issues to be considered in the design of a good ranking was carried out and applied to the project. In this report it is not necessary to repeat in detail the aforementioned analysis, but, we will summarize some of the aspects considered:

- The study *Berlin Principles on Ranking of Higher Education Institutions* (IREG 2006, 2019) stresses, among other recommendations, to indicate clearly what the target audience of the ranking is, to be clear when detailing what each indicator measures to be methodologically scrupulous, to focus on the outcomes rather than on the inputs and to maintain a high ethical standard, given the responsibility and impact that rankings have.
- The results of discussions held by the European University Association (Loukkola,

Peterbauer y Gover 2020) and the International group of Experts in Rankings (IREG 2006, 2019) highlight the importance of providing a vision of all the institutions, addressing their multidimensional nature and diversity, respecting the user's perspective and maintaining the independence and temporal sustainability of the ranking.

The U-Ranking project expressly includes all the principles which were recently discussed internationally and proposed by the EU. The following sections of this chapter detail the many aspects that have been taken into account during the development of a project that has reached eleven editions, and has counted on these criteria to introduce improvements over time.

2.2. ACTIVITIES STUDIED

One of the main shortcomings of certain rankings in providing a general assessment of universities, particularly international ones, is that the activities are examined from a very partial perspective. The problem stems from the limited data availability on the results of teaching activities, and innovation and development technology, which are far less abundant than research.

In fact, most of the important rankings focus on analyzing research, taking little account of another significant function of universities which is teaching and barely considering technological development activities, despite their increasing importance. The rankings which are biased toward research are frequently interpreted as representative of university activity as a whole and they may not be. In fact, they are not, as the U-Ranking results show by the limited correlation between researcher and teacher performance.

There are three possible reasons for this: 1) the data available is used and, without a doubt, the abundance, quality and homogeneity of data on research is much greater than in the other two

⁵ THE which gives 33% of the weight of its indicators to a teaching and research reputation survey and QS which gives 45% to academic reputation and employability surveys.

areas; 2) research activity is considered the most important distinctive element of universities in the last two centuries; and 3) the hypothesis holds that the research quality of professors is a proxy variable for other areas, and therefore observing the results in this area is sufficient to predict the others.

The first reason is practical, but can induce bias by omission in indicators and rankings. The second needs some clarification in that it is a powerful argument regarding postgraduate studies but less so in relation to the degree, especially in mass university systems, such as those of most developed countries today. In fact, in many of these systems there is a significant concentration of research activity in a small number of universities, while in a large number of institutions there is fundamentally teaching activity. The third reason is a hypothesis, which validity should be tested by developing indicators for all activities and testing whether the correlation between teaching and research results is high. If the validity of this hypothesis is not tested, and given that the intensity of university teaching specialization, research and innovation and technological development varies greatly⁶, overlooking the direct indicators of teaching and/or of innovation and technological development can bias the rankings. In this sense, the experience of U-Ranking shows a low correlation between teaching and research and knowledge transfer, the importance of including teaching and research innovation indicators becomes more relevant. Chapter 4 offers more information.

Therefore, it is important to take advantage of the data available on university activity in the field of teaching, and innovation and technological development, so that the rankings reflect university activity as a whole more accurately. This also allows us to recognize the different specialization profiles of universities, as some focus more on basic research (as occurs in many of those most often included in the world rankings), others on higher education and professional development,

and others on applied research, innovation and technological development.

Currently, the public and homogeneous data available on the innovative activity of Spanish universities does not allow a rigorous, independent evaluation of their performance in the area of knowledge transfer with a sufficient basis, as only one suitable indicator is available. For this reason, "Research and Innovation" is considered a single dimension, which includes one of the indicators most commonly associated with innovation: patents.

Studying the different activities of the universities is a first step in the direction of addressing the different perspectives on university systems and the different interests that potential users of rankings may have. Thus, a degree student probably shows greater interest in teaching, while postgraduate students and teachers focus more on aspects related to the quality of research. If the data focuses solely on research results, ignoring the teaching results, then these approaches cannot be carried out accurately.

The U-Ranking system specifically studies the two categories of university activities and analyzes the data available on each of them in Spain. The national dimension of the project ensures that reasonably homogeneous data, with great detail, is available with a set of variables representing the activity of Spanish public universities and two-thirds of private universities. In the future, and even though much improvement has been made, it would certainly be desirable to have data available for the rest of the private universities of similar quality and homogeneity as those included in the ranking, which would improve the overall scope of the project. Universities cannot be included in U-Ranking in a partial manner, evaluating only those areas for which there is public information or which the university chooses to publish. Therefore, to evaluate all universities according to the same criteria, U-Ranking only analyzes those institutions that have public or

⁶ See Pérez and Serrano (dirs.) (2012, ch. 1 and 4) and Pérez and Aldás (dirs.) (2022, section 4.7).

official information on at least 18 of the 20 indicators used to calculate the synthetic index.

In U-Ranking 2024, the total amount of 70 universities included in the ranking is sufficiently high for the data available to allow a contrast of the hypothesis to which we referred earlier: if research results can predict correctly those of teaching or not. The project has examined this specific methodological objective, with the results presented in chapter 4.

2.3. DISAGGREGATION OF ACTIVITIES

A further shortcoming noticed when analyzing current rankings is that many deal with universities in a unitary manner, not recognizing the diversity of the areas of knowledge in which these institutions can offer professional development or conduct research or innovation. This problem needs little explanation: to be more useful, a ranking has to provide the user with as much information as possible on the specific areas or scientific fields of their choice, since universities may not be homogeneous in the quality of each of their scientific or teaching areas.

It is for this reason that ranking systems can be improved by providing disaggregated data by areas of study, fields of knowledge or specific degrees. This last level of detail could be very significant for students, given that their fundamental interest is generally linked to the quality of the specific studies that they want to pursue.

For the disaggregation, the U-Ranking project has worked in several directions. Firstly, it followed the criteria that it is important to start with the most disaggregated data available, maintaining its detail whenever possible, so as not to lose the wealth of its heterogeneity. Secondly, the disaggregated data had to be homogenized properly before adding it to the synthetic indicators. And third, the problems of combining (for the construction of some of the indicators studied) the data disaggregated according to scientific fields or

degrees with other data aggregated at university or area of study level had to be solved. When there is no disaggregated data, or its disaggregation makes no sense, the aggregated data has been allocated to the various elements of the set, following the criteria considered more reasonable in each case.

Addressing the above problems is not technically considered to be trivial. For example, in the case of the rankings on specific bachelor's degrees of Spanish universities, to deal with data on areas at different levels of disaggregation, a series of matrices have been created to connect one another. In order to do this, accurate connections had to be established between university, area of study, Web of Science category, areas of the National Evaluation and Foresight Agency (ANEP) and bachelor's degrees.

In allocating research results to each degree, the starting point was data disaggregated by the Web of Science categories (more than 250 items). Given that one classification is not perfectly nested in another, both classifications have been connected, and the two types of errors that could be made have been taken into account:

1. *Inclusion error.* That is, attributing to a given degree the research carried out by teachers from other areas. For example, attributing to the Pharmacy degree of a given university, the research in "Hematology" that has actually been conducted by teachers from the Faculty of Medicine and who only teach in Medicine.
2. *Exclusion error.* That is, excluding research by teachers in areas that are not exactly the subject of the degree courses they teach in, as a result of being too restrictive when allocating areas to degrees. For example, if in Economy we only allocate the category "Economics", then important research may be missed in the area of "Business and Finance", theoretically more related to Business Administration degrees but also carried out by professors who teach in the degree of Economy.

These problems do not have a perfect solution and one of the alternatives have to be chosen. Therefore, we have opted for a more inclusive criterion: when in doubt about whether to associate a category or scientific field to a degree we have chosen to include it, minimizing exclusion errors on the grounds that they are more serious errors.

2.4. INDICATORS, AREAS AND DIMENSIONS

The main pillar of a ranking system is the rigor of the procedure followed when dealing with existing problems so that the created classification is based on appropriate data and is treated with reasonable methodological criteria. Many of the rankings have clear shortcomings in this aspect, which international literature has analyzed in detail.

The U-Ranking system considers that a university ranking should consider all their activities and be structured according to the two following major dimensions:

- *Teaching*
- *Research and innovation*

The assessment of these two dimensions can take into account multiple areas of activity. However, many experts agree that an excessive number of indicators obscure the meaning of a ranking and complicate the construction of synthetic indices, a complex matter as it is. Following a criterion of (relative) simplicity, four **areas** have been studied in each of the dimensions aforementioned:

- *Access to financing*
- *Output obtained*
- *Quality (particularly in the results and in some cases, resources and processes)*
- *Internationalization of the activities*

The main reference to assess universities should be the results, but these can be studied from the perspective of total volume or from the perspective of their quality. If there were a market that assessed the differences in quality, then results showing a higher quality would have a higher price. However, these prices hardly exist in the area of public universities. The differences in rates, currently very diverse between regions and degrees, respond in many cases to factors that have nothing to do with quality. However, some indicators can supplement, in part, this limited information. Thus, for example, there are indicators on the quality of teaching and research and also on a very relevant feature today regarding the specialization (and quality) of universities: their internationalization.

The assessment of the quality of the output is incomplete if the impact of the university system on its environment is not taken into account. A university can generate high-quality products, but if its size is very small, its contribution to technological development or to the production of human capital through its graduates may have a much smaller influence on the productive environment than a university with somewhat lower levels of quality in its output but a significantly larger size. This obliges us to introduce also the size factor in the rankings system which is the reason for generating the U-Ranking Volume.

Each of the four areas mentioned has been analyzed using two and three indicators taking into account the dimension that is being studied for each area. Table 2.1 shows the indicators studied, after analyzing the availability of data and discussing alternatives with the group of experts working on the project. Agreements were reached by analyzing the suitability of each indicator in capturing significant data on the area and dimension it forms part of it.⁷ It is important to stress that the data used is obtained from sources allowing the project database and the rankings based on it not to require universities to provide data directly to U-Ranking.

⁷ In order to ensure the transparency of the process in developing indicators, the definition of each indicator, its source and its time frame are all included in Annex 1 and in the

following website of the project: <https://u-ranking.es/methodology>.

The logic underlying the selection of indicators, disclosed in summary form, is the following:

Teaching

- Teaching resources are characterized by budgetary allocations per student, and faculty and research staff per student, with special attention paid to faculty members with PhD.
- Teaching output is measured by using results obtained by students, analyzing how many students undergo evaluation, how many succeed in those evaluations and how many drop out.
- The quality of teaching is very difficult to observe, and we studied as a proxy the quality of students measured by the cut-off mark of each area and the percentage of post-graduate students.
- The internationalization of teaching is shown by the percentage of foreign students and the percentage of students participating in mobility programs.

Research and innovation

- The research process is characterized by data referring to two types of resources: competitive public funds raised and the provision of research staff, scholarships and qualified technical support.

- Output is accounted for by citable papers published in each area and the number of doctoral theses, which are an indicator of the training activity of a researcher in a given area. The number of patents is also included in this area.
- The quality of the research is reflected in the average impact the publications have and the citations that these papers generate.
- Finally, a greater proportion of international publications, international co-authoring and the percentage of research funds from external sources indicate a greater internationalization in research activity.

As shown in **table 2.1**, U-Ranking 2024 is calculated based on 20 indicators⁸, ten for the evaluation of teaching results and another ten for research and innovation activity. In the case of U-Ranking Universities, 16 of the 20 indicators are obtained by areas of study and the remaining four for the university as a whole. However, the level of detail increases in the case of the U-Ranking Degrees (see chapter 3), in which five of the ten indicators of teaching are obtained for each degree and five of the ten indicators of research and innovation are classified by degree groups, that is, an aggregation in 122 groups of the 3,584 degrees and double degrees offered by the Spanish universities analyzed.

⁸ See Annex 1 for a more detailed description of the definition, source of information and period considered.

Table 2.1. List of indicators, areas and dimensions

Dimension	Area	Indicator
Teaching	Resources	Faculty member per 100 students Budget per student Percentage of faculty member with PhD
	Production	Success rate Evaluation rate Drop-out rate
	Quality	Percentage of postgraduate students Cut-off mark ¹
	Internationalization	Percentage of foreign students Percentage of students in foreign exchange programs
Research and Innovation	Resources	Competitive public resources per faculty member with PhD Contracts with PhDs, research grants and technical support over total budget
	Production	Citable documents with ISI reference per faculty member with PhD Number of patents per 100 faculty members with PhD Number of theses defended per 100 faculty members with PhD
	Quality	Mean impact factor Percentage of publications in the first quartile Citations per document
	Internationalization	European research funds per faculty member with PhD Percentage of publications with international co-authorship

¹ Mark of the last student who gained admission to a degree with limited places.

Source: Author's own calculations

2.5. PERIOD COVERED BY THE DATA

University rankings aspire to offer an image of the current position of each institution, though they should not be conceived of as a snapshot of a given year. Many indicators have the character of a flow, and as such, can present high variability from year to year, both in the quality of the information and in the distance between the actual reality and what the information reflects, given the delays in the information registered and available. In addition, other indicators reflect the accumulation of results over long periods of time.

The rankings referred to usually recognize this problem by taking comparison periods longer than a single year, either using moving averages and even considering the complete history of the University (as in the case of the treatment of the Nobel Prize and Fields Medal winners in the

Shanghai Ranking). Considering multi-year periods when elaborating the indicators provides greater interannual stability of the rankings and permits specific random disturbances to be smoothed out by considering a longer time range.

Our approach follows this criterion, considering that one cannot reasonably expect abrupt changes in the universities' real situation. Thus, the ranking should avoid giving that impression. Therefore, as information has become available, we have converged toward a 6-year moving average for nearly all the indicators. All of the indicators on research and innovation are already calculated as a mean of six years. Furthermore, since the 6th edition of U-Ranking, teaching results are reached using data by university from six academic years, except for the cut-off mark.

Table 2.2. Time series used in U-Ranking 2024

Dimension	Area	Indicator	Period
Teaching	Resources	Faculty member per 100 students	2017-18 to 2022-23
		Budget per student	2017-2022
		Percentage of faculty member with PhD	2017-18 to 2022-23
	Production	Success rate	2017-18 to 2022-23
		Evaluation rate	2017-18 to 2022-23
		Drop-out rate	2017-18 to 2022-23
	Quality	Percentage of postgraduate students	2017-18 to 2022-23
		Cut-off mark ¹	2023-24
Internationalization	Percentage of foreign students	2017-18 to 2022-23	
	Percentage of students in foreign exchange programs	2017-18 to 2022-23	
Research and Innovation	Resources	Competitive public resources per faculty member with PhD	2017-2022
		Contracts with PhDs, research grants and technical support over total budget	2017-2022
	Production	Citable documents with ISI reference per faculty member with PhD	2017-2022
		Number of patents per 100 faculty members with PhD	2017-2022
		Number of theses defended per 100 faculty members with PhD	2017-2022
	Quality	Mean impact factor	2017-2022
		Percentage of publications in the first quartile	2017-2022
		Citations per document	2017-2022
Internationalization	European research funds per faculty member with PhD	2017-2022	
	Percentage of publications with international co-authorship	2017-2022	

¹ Mark of the last student who gained admission to a degree with limited places.

Source: Author's own calculations

Table 2.2 shows the important updating in terms of years and time series registered by the indicators used in the ranking for 2024. All the indicators include at least one additional year compared to the previous edition, covering data for the majority of indicators at least until the year 2022 or the 2022-23 academic year. In contrast to other editions, two new courses have been updated in most of the teaching indicators of this edition.

In sum, the methodology on which the calculation of the U-Ranking system is based leads one to expect that the rankings of universities will not present sudden changes from one year to another, but they contain new information that can generate changes. The existence of an inertia in the rankings seems to be a desirable attribute, since the quality of university institutions does not change radically in the short term, although some of their annual results may do so.

2.6. CRITERIA FOR THE CONSTRUCTION OF INDICATORS

A key aspect to trust the meaning of the rankings is that the processes used in its elaboration should be transparent with strong statistical foundations for the construction of indicators. In this regard, the project team contacted experts in the subject and analyzed the methodological principles established in the specialized literature, especially in the *Handbook on constructing composite indicators: Methodology and user guide* (Nardo et al. 2008).

The underlying process of drawing up any of the rankings of universities constructed is structured according to the following six steps—the fifth one being unnecessary in the case of the partial rankings of teaching and research and innovation:

Preparation of the data bank

1. Standardization of indicators
2. Weighting and aggregation of indicators within the areas of each dimension

3. Weighting and aggregation of area indicators, within the dimensions
4. Weighting and aggregation of the dimensions
5. Obtaining of rankings

Figure 2.1 graphically illustrates the time sequence of the steps. To complete each of them it is necessary to solve technical problems, as described and indicated below.

2.6.1. Constructing the database and missing data

The starting point is to have the necessary available information on the variables to be considered in order to construct each indicator. The data used for the synthetic indices are obtained from public information systems and statistical sources. The main source of information is the Integrated System of University Information (SIU) of the Spanish Ministry of Science, Innovation and Universities. The Bibliometric data regarding the research performance of all Spanish universities (based on information provided by Clarivate) and on patents is provided by the

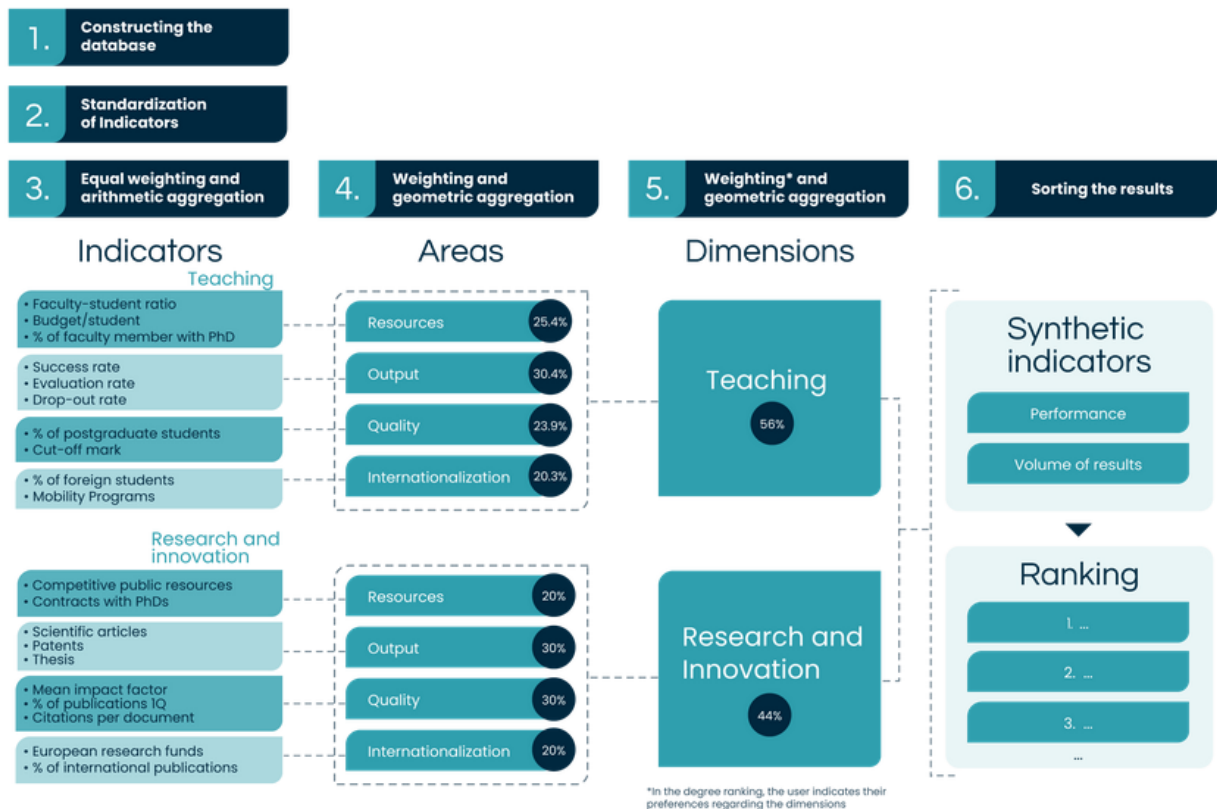
INAECU elaborated by the IUNE Observatory. Information has also been collected from the State Bureau of Investigation on competitive resources and research contracts. Information on European research funds has been obtained from the European Commission's Horizon Dashboard.

For data on the revenue of private universities, public annual accounts and other information from the universities' website section on transparency or audited reports have been used.

The data has been collected with the maximum level of disaggregation available (degree, area of study, area or field of study, ANEP areas), so that the standardizations within each field make the results more comparable.

The initial indicators of the ranking are obtained from the database, and when the information allows it, they are calculated by area of study. This disaggregation is available for 16 of the 20 indicators. In the case of the remaining four indicators, the value of the university for all the areas of study is considered.

Figure 2.1. Methodology



A first technical problem to be solved is the treatment of missing data from certain universities in some variables used. Such gaps may be due to several factors, whether technical (an error in loading the data), or of availability (the university may not have generated certain information or not done so in time) and even strategic (a university may opt not to give certain information because it is not in its interests to do so).

Not facing this problem rigorously would condition the comparability of the universities, the quality of the aggregate indices, and the final results. The methodology applied and the improvements made in the sources of information used have reduced the percentage of indicators with missing values to 0.8% of the more than 7,300 values of indicators used, thus, no further treatment is required to compensate the absence of data. The following are the criteria that have led to this methodological approach:

First, given that U-Ranking takes into account the specialization by areas of study of the different universities and operates in most indicators with this level of disaggregation, it is important to distinguish whether a possible lack of data is due to the absence of activity in that particular area—for example, a university does not register drop-out rates in Sciences because it does not offer classes for that area of study—or due to one of the reasons stated above. Therefore, the first step in identifying the missing data is to determine which areas of study are offered by a university. The following criteria are established to identify the areas of study in each university that are non-existent or of little importance for evaluating its performance:

- a) The teaching dimension does not take into account those areas of study in which a university does not offer degrees during the 2022-23 academic year.
- b) In the case of the research activity dimension, the areas of study with no full-time equivalent faculty members with PhD are not considered.

In the 2022-23 academic year, 87 of the 89 active universities offered bachelor's degrees. However, not all of them in all areas of study. **Table 2.3**

shows the number of universities that, according to the criteria indicated, do not offer bachelor's degrees or do not carry out research in each of the areas. While all the universities, except the recently created Universidad de Vitoria-Gasteiz Euneiz, offer degrees related to Social and Legal Sciences, 27 (25 of which are private) of them, do not offer degrees in Sciences.

Secondly, it should be noted that the indicators are based on the calculation of moving averages, 6 years for most of the cases. If a university does not present any data for the years considered, an average is estimated with data from the available years, thus, reducing the chances of a variable with no data.

In addition, for indicators in which there are a greater number of universities without data, the information is constructed from exhaustive administrative registers, so if a university does not appear it is because it has no activity or no results in that area and therefore its value is 0. This information is based on competitive resources and research contracts from the State Bureau of Investigation, national patents granted from the INVENES database or income data from European projects from Horizon Dashboard. Closely linked to the previous reasons is the improvement in the sources of information and their consolidation over time in the collection of university data.

Finally, the minimum requirement for a university to be evaluated in U-Ranking is that it has at least 18 of the 20 indicators used to calculate the synthetic index, as well as the three variables that measure size (student body, full-time equivalent faculty members with PhD and consolidated revenues). This prevents a university from being partially evaluated, offering incomplete images of its activity.

After applying these criteria, the number of data missing is considerably reduced. Out of the 7,339 indicators in U-Ranking 2024, 62 values are missing, which represents less than 1% of the total. It has been verified that the results do not suffer substantial differences if the missing values are not estimated. Therefore, to not estimate the missing data proves to be the most accurate

Table 2.3. Number of universities with no activity or degree offering in research by area of study

		Public universities	Private universities	Total universities
Teaching <i>With no degree offers in 2022-23</i>	Arts and Humanities	1	10	11
	Social studies and Legal studies	0	1	1
	Sciences	2	25	27
	Engineering and Architecture	0	6	6
	Health Sciences	4	7	11
Research and Innovation <i>With no full-time equivalent faculty member with PhD (on average in the last 6 years)</i>	Arts and Humanities	0	9	9
	Social studies and Legal studies	0	1	1
	Sciences	0	22	22
	Engineering and Architecture	0	5	5
	Health Sciences	1	6	7

Note: 87 off the 89 universities with teaching activity in the 2022-23 academic year offer degree programs.

Source: Spanish Ministry of Universities (2024d) and Author's own calculations

decision, since it is robust with the methodology applied previously, it simplifies the calculation method, making it easier to reproduce the ranking.

Treatment of the outliers can be done once the database from which the various indices are obtained is available. An outlier is considered to be any variable outside the interval defined by the percentile value 25 minus one and a half times the interquartile range and the percentile value 75 plus one and a half times the interquartile range of this same ratio. These values are corrected by assigning them the maximum or minimum value — depending on the case— of this interval.

2.6.2. Standardization of indicators

One of the pillars upon which the construction of synthetic indicators is based is the proper standardization of the information, that is, its transformation in order to homogenize it and make possible its comparison and aggregation. There are numerous systems of standardization, such as the Gaussian standard (subtracting from each variable its arithmetic mean and dividing by its standard deviation), relative order (ordering the values according to their relative value), distances from the mean or the median, and the ratio between the variable and its mean or its median.

The standardization chosen must be in consonance with the method of aggregation to be used subsequently. Because as a general rule the geometric aggregation method has been chosen, requiring the value of the standardized variables to be positive, we must exclude the Gaussian and absolute distances from the mean and from the median, which necessarily generate negative values, as alternatives of standardization.

For this reason, the standardization method chosen is the ratio between the variable and its median. Taking into account that the median separates each distribution into two halves, the standardized results will be centered on the value 1: values below the median are bounded between 0 and 1, while those above will be greater than 1.

As previously highlighted, one of the key aspects of U-Ranking is that its methodology takes into account the different areas of study of the universities. Thus, whenever information by areas of study is available, each indicator in level I is calculated for each area of study and university. Subsequently, each one of the 5 indicators per area of study is standardized by dividing by the median of its area and finally the 5 standardized indicators of each university are aggregated by calculating the arithmetic average weighted by the

weight of the student body in each area and university (if the indicator belongs to the teaching dimension) or by the weight of the faculty members with PhD (if it belongs to the research and innovation dimension).

2.6.3. Weighting and aggregation of indicators within an area

Once the 20 standardized indicators for each university is obtained, they are aggregated to obtain a synthetic indicator for each area. Thus, for example, to obtain the indicator for the *quality* area in the *Research* dimension we aggregate the standardized values of the *Mean impact factor of publications* and the *Percentage of publications in the first quartile*.

As in the case of standardization, there exist numerous aggregation procedures, such as the arithmetic, the geometric or those based on factor analysis. The choice of one or the other has implications in the substitutability of the indicators or the importance of extreme values (both large and small). The aggregation criterion chosen implies a weighting of the indicators, which is important to bear in mind.

It must be taken into account that some universities might have zeros in some indicator of a specific area (for example, they may not possess *Patents*). For this reason we have opted in this phase for an arithmetic aggregation, ruling out the geometric aggregation because the presence of a zero in the product would cause the whole area analyzed to take a nil value.

As the weighting of the indicators shows the importance assigned to each variable when aggregating it into a synthetic indicator, we also reflect on this question. This is a classic problem in the construction of synthetic indices and generally requires a judgment on the relative importance of each element. In the case of economic aggregates the weights are offered by prices—which reflect the market valuation of the goods, services or factors exchanged—but in many other cases there are no prices and the indicators have to be constructed following other criteria, frequently based on subjective opinions.

There are three possible approaches to weighting: 1) assignation of identical weights (which also implies a judgment, since the weight of one indicator is conditioned by the number of indicators included); 2) reference consultation among experts to identify the most widely held opinions (by means of surveys or methods such as the Delphi); 3) weighting according to the user's preferences. These three alternatives have been used according to the level of aggregation to be achieved.

At this first level of aggregation (changing of simple indicators into synthetic indicators for each area) we have opted for the first system, that is, equal weighting. This is because in most cases the indicators capture different aspects of the area analyzed, but there are no clear arguments for granting one of them greater or lesser importance. Also, the nature of the information that each indicator captures is fairly homogeneous and in that case there is less interest in giving greater weight to one indicator or another, because in many cases they are correlated. This occurs, for example, in the case of the mean impact of publications index and the percentage of these in the first quartile. Consequently, the different simple indicators will enter into the calculation of the arithmetic mean with the same weight.

2.6.4. Weighting and aggregation of the area indicators within each dimension

At the second level of aggregation the indicators of the different areas are grouped into an indicator for each of the dimensions considered: teaching and research and innovation and technological development. At this stage there are reasons for following a different criterion, as after the arithmetic aggregation of the previous stage no area indicator presents zeros. A *geometric* aggregation method will be used.

Among the most interesting properties of geometric aggregation is that it limits the substitutability among the components that it aggregates. In other words, geometric aggregation penalizes the universities that have neglected any of the four transversal areas (*Resources, Output, Quality, Internationalization*) as against those that attend to them in a balanced manner.

	Resources	Production	Quality	Internationalization
Teaching	25.4	30.4	23.9	20.3
Research and Innovation	20	30	30	20

Source: Author's own calculations

One reason for using weights instead of an equal distribution is that if all the areas were aggregated with the same weight, this being a geometric mean the number of areas considered would influence the result. For example, if we had decided to group the indicators of quality and internationalization in a single area, their influence on the dimension would have been less than if considered separately. Another reason is that, unlike what occurred with the basic indicators, in this case there may be reasons to grant different values to each area.

Thus the decisions on the number of areas to be considered and their weights are relevant, and we have preferred to ask experts about the importance that should be given to each area. To make this valuation easier we followed the criterion that the number of areas should be small, and similar within each dimension. A survey of former university experts was conducted by applying the Delphi method⁹. **Table 2.4** shows the weights given to the different areas by the experts consulted.

2.6.5. Weighting and aggregation of the dimensions to obtain the rankings

The last phase of the methodology establishes how the different rankings of the project are drawn up. The result of the previous phase offers rankings for the two dimensions separately, so no further step beyond those described in the above sections is necessary. The global rankings, U-Ranking and U-Ranking Volume, combine the two dimensions of teaching and research and innovation, a new geometric aggregation is

needed and the most reasonable criteria for doing so should be decided.

In the transition from the dimensions to the final ranking we consider that the importance attributed to each dimension can be different depending on the interests of the people contemplating the ranking, that is, of its potential users: students, researchers, managers, society. For this reason, we have concluded that the user's perspective can be the key to giving more or less importance to each of the dimensions. It could be unconvincing to impose weights from a specific standpoint — for example, that of a group of experts, who consider that research is the most important—.For individuals with another standpoint, such as students or the career guidance staff, it is more important to attend to the teaching aspects, while for firms the capacity of technological transfer of the universities.

After due reflection, therefore, we have opted to consider two alternatives.

1. First, U-Ranking Degrees offers the option of the system earlier described as *personalized ranking*, based on the user's own preferences. We understand that in this case users are more likely to seek to compare the universities with fairly closely defined interests and diverse criteria, probably different from those of the experts. For this reason, with the help of a web tool, users can decide the importance of each of the two dimensions when placing the degrees in order, and the tool automatically offers them the ranking corresponding to the preferences revealed by the user.

⁹ Two rounds of consultations were carried out, after which a 2.1 percentage point reduction was obtained in the

average interquantile range.

To apply this first approach we have considered various alternatives for the choice of weights by the user. We opted for the procedure known as Budget Allocation Process, that is, for the distribution by the user of 100 points among the dimensions to be valued. This method, widely used in marketing to find out a consumer's valuation of the characteristics of a product, has the principal advantage of forcing the user to adopt a more active and reflexive position by distributing points, being therefore more aware of the opinion that he/she displays.

2. Second, for the general rankings (U-Ranking and U-Ranking Volume), corresponding to the universities' activities as a whole, the two dimensions are weighted on the basis of the experts' opinions, according to a survey such as that mentioned above when aggregating areas into dimensions, and a Delphi process to achieve convergence among the experts' opinions.

The weights to be given to teaching and research and innovation are, respectively, 56% and 44%. These weights are included as a default option for calculating the personalized.

2.7. PERFORMANCE RANKINGS VS. VOLUME RANKINGS

When comparing universities, it is relevant whether or not their size is taken into account. Making one choice or the other is not in itself a methodological advantage or failure, but implies adopting a particular perspective which affects the rankings and must be borne in mind when interpreting the results.

In the same way as when analyzing the activity of a firm or a country we can consider its volume of output or its achieved performance, and both positions are reasonable, the same occurs in the analysis of the results of universities. Neither of the two approaches is, *a priori*, more valid than the other, and the choice depends on the intended use of the results. The per capita GDP is more useful than total gross domestic product (GDP) when comparing the quality of life between countries or regions, but the volume or the growth

of GDP are also important for explaining, for example, the employment generated or the importance of a country in the global economy. So, although in some cases the performance reached to obtain the results may be more important than their volume, in other cases the size may be relevant. A very productive and at the same time large university is more beneficial to society than one that offers the same level of productivity but has a small size; likewise, a very large university with a poor level of results is a much bigger problem than a small university with the same level of results.

2.7.1. Interest in both approaches

Another reason to pay attention to this aspect is that the existing rankings adopt on occasions an approach based on the performance by which the results are obtained and in other cases deal with the volume of results. For example, some widely cited international rankings —especially, the Academic Ranking of World Universities (ARWU), known as the Shanghai Ranking— are, mainly, volume rankings.

The Shanghai Ranking is rather one of volume, because most of the variables from which it is built —number of Nobel prize- winners or Fields medalists among their ex-students or staff, widely cited researchers, publications in Nature or Science, articles published in indexed journals— are not relativized by the size of the university. Such variables make up the greater part of the weight in the ranking, while only one indicator (academic performance) is expressed in *per capita* terms. So, the universities' positions in this ranking are conditioned both by their quality and by their size, both qualities being necessary for reaching good positions.

Other rankings, on the other hand, make their comparisons from the point of view of quality. It is the case of the QS World Universities Ranking, whose indicators are taken from surveys of academic reputation or are variables standardized by size. There are rankings that expressly contemplate both approaches, and make differentiated comparisons based on quality or on

the total volume of results, as does the I-UGR Ranking¹⁰ of research results.

The reason for acknowledging the interest of both approaches is that the size of institutions can be relevant for valuing the contributions of the universities, but correcting the results for size allows to compare the universities from a perspective that makes them more homogeneous. However, given that, as we said earlier, for the university system as a whole it makes a difference whether a university with high (low) productivity is large or small, we must consider whether universities would have the same position in the performance rankings as in the production volume rankings and bring out the specific significance of each ranking. To sum up:

- The rankings of volume of production are based on indicators not relativized by size, and depend on both the university's performance and its size. Thus, a university may generate a greater volume of research results than another of smaller size, even though the second is more productive.
- The performance rankings are based on indicators of results corrected by size, and seek to measure the output per unit of inputs or resources used. For example, scientific output is measured as a function of the number of faculty members with PhD and the teaching results are relativized by the number of students. This enables some smaller universities to obtain a better final result in the ranking than other much larger ones.

An interesting question is whether size influences performance positively or negatively, that is, whether performance/efficiency increases or decreases with the size of the university. In the first case, the universities' positions in the rankings of volume would be favored by two factors (size and performance). The testing of the two hypotheses is an empirical matter, which can be analyzed by drawing up both types of rankings using the same approach, as will be presented later.

2.7.2. Treatment of the size of universities

All of the simple indicators with which we started with are relativized by the most appropriate variable (students, faculty members, budget, etc.), so that size does not have a direct influence on the results. Consequently, the general scheme of the methodology leads to measuring each university's results independently of its size, so these are performance rankings. Therefore, to construct volume rankings, the size variable has to be added to the indicators. This task has been undertaken following the criteria detailed below.

The first criterion is to preserve, as far as possible, the methodological homogeneity of both rankings, calculating them on the basis of the same set of indicators and the same aggregation criteria. For this reason the ranking of volume was not drawn up simply by not relativizing those indicators that can be expressed in total terms—for example, reflecting the income from patents or the doctoral theses read without dividing them by the number of faculty members with PhD—as the Shanghai Ranking does. It is not reasonable to proceed in that way because some variables cannot be presented in absolute terms, being rates or indices, such as the percentage of publications in the first quartile or the mean impact of publications factor. If some variables are expressed in absolute terms and others are not, the relative importance of the size within the results would fall only on the variables that can be expressed in absolute terms. In that case, the importance accorded to size would depend implicitly on the proportion of variables that can be expressed in absolute terms. For example, in the variables considered in our study only 14 of the 20 indicators used could be expressed in absolute terms, which would be equivalent to the acknowledged importance of size being 70%. This percentage would be arbitrary because it would reflect the number of indicators that form part of the database expressed in absolute terms.

This solution is unsatisfactory, and we have explored other alternatives for introducing size. The option chosen consists of calculating the volume

¹⁰ This ranking was last updated in 2014.

of results of each university by multiplying the performance index by a measure of size. We have considered three indicators of the size of a university: the number of faculty members, the number of students, and the budget. Each one has its specificities and can be a better proxy of different aspects of the university's activity that do not have the same importance in each of them. To avoid skewing the size proxy in one or other direction in the most general indices—which could favor some institutions by giving greater weight to one of the aspects—we have taken as indicator of size the arithmetic mean of the three variables, previously standardized by its mean value.

2.8. PRIVATE UNIVERSITIES

U-Ranking 2024 analyzes 48 public and 22 private universities. Private universities are an important part of the Spanish University System.

As shown in **figure 2.1**, they have experienced a large growth in the last twenty years, quadrupling in number to 43 institutions out of the 93 that make up the Spanish University System today (see panel a), 89 of them with activity during the 2022-23 academic year. In the past 5 years, 10 universities have been created, of which 5 are in Madrid, 1 in Galicia, 1 in the Basque Country, 1 in the Canary Islands and 2 more in Andalucía. In 2019, ESIC and CUNEF, previously considered centers attached to public universities, were recognized as universities. In addition, two universities were created this year, Universidad Internacional de Villanueva and Universidad de les Hespérides, and Universidad Internacional de la Empresa in 2020. In 2021, Universidad Euneiz and Universidad Intercontinental de la Empresa were established and in 2022, the establishment of Universidad de Diseño, Innovación y Tecnología was approved. Finally, in 2023, two new universities were created in Andalusia, Universidad CEU Fernando III and

Universidad Tecnológica Atlántico-Mediterráneo. Of these 43 private universities, 39 carried out their teaching activity during the 2022-23 academic course¹¹.

Likewise, the number of bachelor's and master's degree students has multiplied eightfold, from 52,000 to more than 415,191 students in the 2022-23 academic year, which represents one out of every four university students studying in Spain, compared to 4% 28 years ago.

An important characteristic of private universities, apart from their young age of existence, is their smaller size. If we compare the number of private universities as a percentage of the total (47%) and the number of private university students as a percentage of the total (22.5%), it becomes clear that private universities are generally smaller.

Another distinctive feature is their greater degree of specialization in postgraduate studies, especially master's degrees. Private universities have placed great emphasis on these type of degrees, as the makeup of their students shows¹². Whereas the proportion of master's degree students in public universities is 11%, in private universities it is 33%. Indeed, almost half of master's degree students in Spain study at a private university.

Due to the idiosyncrasies of private universities, one of the indicators defined in the methodology, Cut-off marks¹³ (Teaching), is not applicable to these institutions. Students must pass a university admissions test in order to study a degree regardless of whether it is offered by a public or private university. However, for private universities, the mark obtained does not always constitute a criterion of admission, since they have their own procedures, based on specific tests, personal interviews and academic record, or, in some cases, the need to fill vacancies.

¹¹ The four universities with no teaching activity are: Universidad de las Hespérides, la Universidad de Diseño, Innovación y Tecnología, Universidad CEU Fernando III and Universidad Tecnológica Atlántico-Mediterráneo.

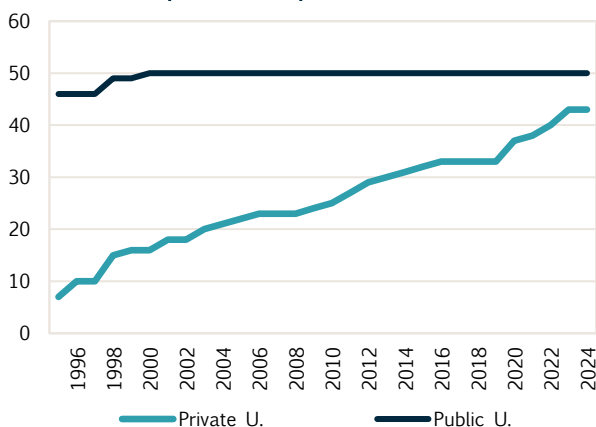
¹² This hyperspecialization has led the administration to establish in Article 5.1 of Royal Decree 640/2021, of July 27, on the creation, recognition and authorization of universities and university centers, and institutional

accreditation of university centers, a minimum number of degrees (10) to create a university.

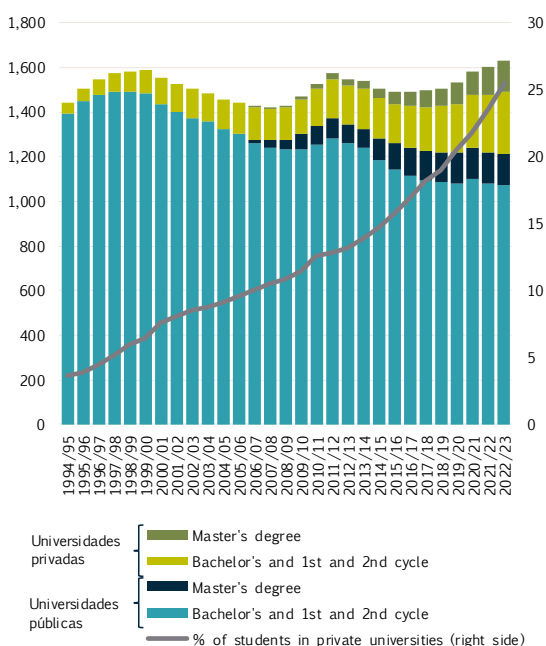
¹³ The cut-off mark is the mark of the last student who gained admission to a degree with limited places. This mark is only a guideline and varies from one year to the next, depending on the number of available places and the marks of the students registered.

Figure 2.1. Evolution of the number of universities and students. 1995-2024

a) Number of public and private universities



b) University students by level of studies and type of university. 1994/95 to 2022/23 academic years (number and percentage)



Source: Spanish Ministry of Science, Innovation and Universities (2024c, 2024f).

As a result, private universities do not publish cut-off marks for their degrees.¹⁴ Therefore, for private universities this variable will be set at 5. This limitation also affects the UNED, to the extent that, due to its characteristics, cannot set cut-off marks, it must accept all enrollment requests from

¹⁴ For private universities, the cut-off mark for each degree is 5 since the prerequisite is to pass the university admissions test.

¹⁵ Since the indicators are based on moving averages, the

students who have passed the university entrance tests regardless of the mark.

It is more frequent for private universities to present information gaps in certain variables than public universities, limiting, in some cases, their comparability. The U-Ranking 2024 edition has reviewed all the information available for private universities following the criteria to include those institutions that provide at least 18 out of the 20 indicators considered for the public system¹⁵, as well as the three variables that measure for size (student body, full-time equivalent faculty members with PhD and consolidated revenues). As a result, in the 12th edition of U-Ranking the following 22 private universities are analyzed:

- IE Universidad
- Mondragon Unibertsitatea
- Universidad a Distancia de Madrid
- Universidad Camilo José Cela
- Universidad Cardenal Herrera-CEU
- Universidad Católica de Valencia San Vicente Mártir
- Universidad Católica San Antonio
- Universidad de Deusto
- Universidad de Navarra
- Universidad Europea de Canarias
- Universidad Europea de Madrid
- Universidad Europea de Valencia
- Universidad Internacional de La Rioja
- Universidad Internacional de Valencia
- Universidad Nebrija
- Universidad Pontificia Comillas
- Universidad San Pablo CEU
- Universitat Abat Oliba CEU
- Universitat de Vic-Universitat Central de Catalunya
- Universitat Internacional de Catalunya
- Universitat Oberta de Catalunya
- Universitat Ramon Llull

When comparing the 2023 list of universities with the U-Ranking 2024 edition, Universidad Alfonso X el Sabio is no longer included.

requirement has been for each of the chosen indicators to have information on the years that are necessary to calculate them.



User personalized rankings

03

Universities develop different actions, but also different profiles exist of people and organizations interested in them: undergraduate or graduate students, professors, managers, members of the governing body or Board of Directors, heads of university policy in the Public Administration, journalists, citizens, companies, social agents, administrations, etc. The importance granted by people or groups to the different activities of the universities may be different and their interest may focus basically on one or more of their activities. For example, students are likely to focus on aspects related with the degree that they wish to study and teachers may focus more on research. Therefore, aggregating the information on each of the aspects is not only a complex problem, but the criteria may depend on the user.

Given the high number of users that might value the universities' activity from a particular viewpoint, it makes sense to consider the possibility of drawing up personalized rankings, established in a way in which they take into account the different interests of the user. The U-Ranking project considers this question and in the case of bachelor's degrees, it offers a tool that provides information on the ranking of degrees to students, their families and careers

advisers, personalized according to their specific interests.

3.1. EXAMPLES OF PERSONALIZED RANKINGS

Constructing synthetic indicators by acknowledging the preferences of users has been available thanks to the interactivity permitted by web tools. Through them, the user can value personally each one of the dimensions considered, indicating which areas they want to consider and which are the most important for them. Web technology allows these preferences identified by the users themselves to be incorporated and combined with other elements contributed by the experts, such as the selection of variables and aggregating them in intermediate indicators according to criteria as described in chapter 2.

Two interesting examples of this approach, referring to very distinct areas, are those corresponding to the "Talent Attractiveness" Index, developed by the OECD (2023), and the CHE Ranking, a ranking of university degrees drawn up by the German Center for Higher Education (CHE 2024a).

The OECD (2023) draws up a synthetic index that ranks countries according to their ability to attract and retain talent based on three types of migrants: university students, entrepreneurs and workers with higher education. The index rates country performance based on different dimensions: quality of opportunities, income and taxes, future prospects, family environment, skills, inclusion and quality of life. In order to calculate the index, the user must specify the importance given to each of the dimensions considered.

Experts justify and prepare the set of relevant dimensions and variables and, once the user has introduced their valuation of each area, the web

tool shows a synthetic index of talent attraction that takes into account the importance given by the user, as well as the category it belongs to.

A similar approach is used by one of the university rankings analyzed, the CHE Ranking, drawn up by Germany’s Center for Higher Education for the journal *Zeit*. In this case, the student who wishes to choose a degree needs to select the subject they wish to study, the type of course of their interests and the aspects they consider to be most important (teaching, subsequent employment opportunities, research, etc.). A personalized university ranking is created based on their preferences.

Figure 3.1. Talent Attraction Index

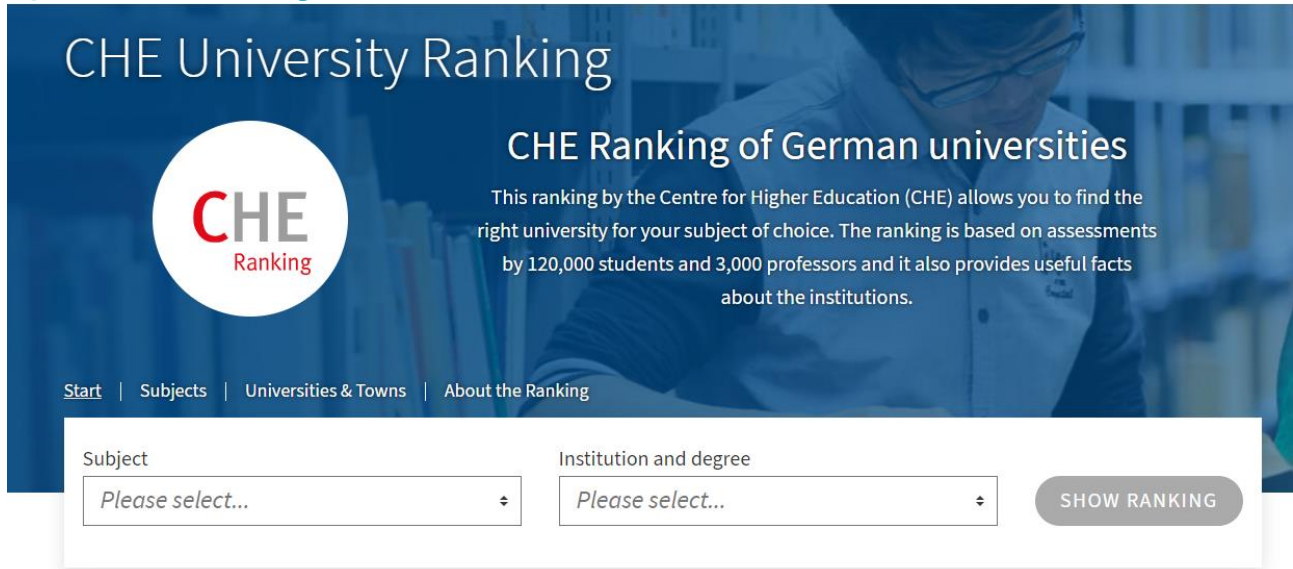
Rank your priorities and see how countries compare

- › Compare two countries of your choice
- › Compare countries in each dimension
- › Research and methodology



Source: OECD (2023).

Figure 3.2. CHE Ranking



RANKING FOR

Business Administration

Universities

LEARN MORE ABOUT THIS SUBJECT

The image displays the search results for "Business Administration" on the CHE ranking website. At the top, there is a "RANKING FOR Business Administration Universities" header with a "LEARN MORE ABOUT THIS SUBJECT" button. Below the header, there is a navigation bar with "Change criteria", "Sort by", and "Layout" options. The main content area shows "54 Institution(s) found" and a list of three universities: RWTH Aachen, Alanus HS/Alfter (priv.), and Uni Augsburg. Each university entry includes an "Overall study situation (S)" and "Support in the study entry phase [points] (F)". A detailed overlay window is open, showing a list of criteria for selection, including "Academic studies and teaching", "International orientation", "Job market and career-orientation", "Research", "Result of study", "Students", and "Town and University". The overlay also shows a "YOUR SELECTION (4 of max. 6)" section with buttons for "DEFAULT" and "APPLY".

Source: CHE (2024a).

3.2. DESCRIPTION OF THE WEB TOOL FOR GENERATING PERSONALIZED RANKINGS OF DEGREES

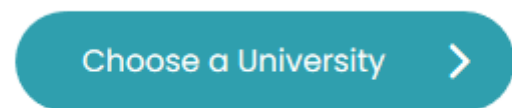
This personalized ranking approach has been used in U-Ranking to classify degrees in order, constructing rankings of universities for the different bachelor's degrees. In the future it is intended to extend this approach to other university activities, for example, to master's degrees, when the necessary databases are available. The first step in this direction is the analysis carried out in the 2022 edition of U-Ranking on postgraduate education.

The value of a web tool like this depends much on the effort made to facilitate its use. The objective of U-Ranking is to present a simple, easy-to-use tool to minimize the number of clicks needed to obtain the relevant information, which is above all the corresponding ranking. This simple approach must be present both when limiting the degrees to be compared and when permitting the user to declare their preferences in order to draw up the personalized rankings. With the aim of making the procedure more user-friendly, the website has been redesigned, as well as the Choose a University tool, which can be accessed by clicking on the icon that appears at the top of the website¹⁶ (**Figure 3.3**). Next, three questions are displayed that must be answered by the user to obtain a personalized ranking by degree, according to the student's interests in three aspects (**Figure 3.4**):

- *What to study*
- *Where to study*
- *Study and research*

In order to harmonize the tool with the most frequent potential users we performed trials among students ages 17 to 18 years old, who are less familiar with the concepts used in the university world than the experts participating in the project. Based on these trials, the necessary corrections were made to better adapt the tool to the students and to make the results easier to understand. The tool is presented on the screen of the project's website via the *Select University* tab.

Figure 3.3. Choose a university



In the first step, the user must choose the bachelor's degree or degrees they wish to study. The nearly 3,600 degrees offered by 70 universities analyzed are classified into 122 *groups of degrees* to simplify the selection process. To make the user's decision even easier, the degree groups are clustered into 26 families of degrees.

When choosing a family of degrees, as for example "Economy and Business Administration", the bachelor's degrees included in this family of degrees are displayed. This list of degrees is not extensive or literal, since "Business intelligence" and "Business analytics" have been grouped together.

The grouping of the degrees is intended to facilitate the user's selection process but does not reduce the results of the ranking. Thus, regardless of this initial simplification, the final results show all the degrees included in the selection, as well as the center where they are taught whenever there are several options.

¹⁶ <https://u-ranking.es/>

Figure 3.4. Steps to create a personalized ranking

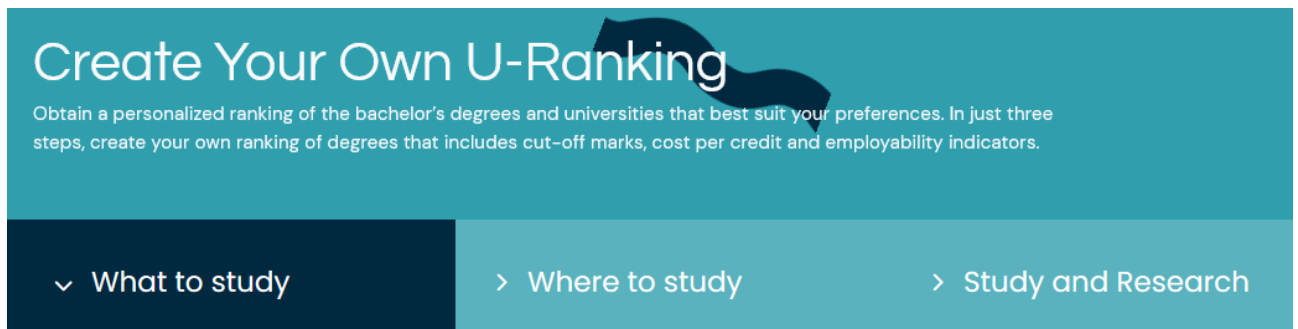
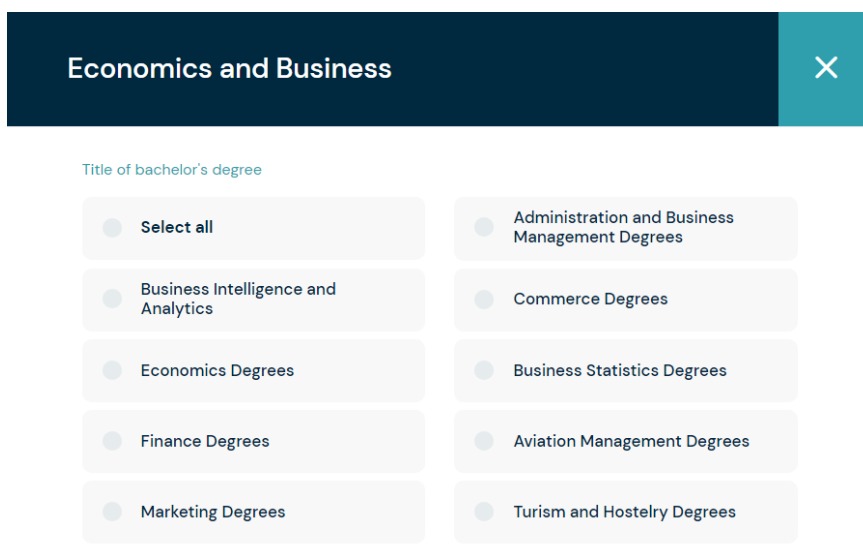


Figure 3.5. Step 1. Choose a bachelor's degree



The user can choose either one or several groups of degrees, whether they belong to the same family or not. For example, he/she could select the “Degree in Analytics and Business Intelligence” (from the Economics family) and the “Degree in Engineering and Data Science (from the Computer Science and Telecommunications family).

The following step is to choose the autonomous community or regions considered as places in which to study (**figure 3.6**). Thus, the user must mark those chosen in the corresponding list. If the user does not want to geographically limit their choice, they can “Select all”. The option of restricting the search to specific autonomous

communities is a response to the fact that many students do not contemplate the idea of moving as an alternative or a restriction. In this case, their interest will be to know which of the studies offered are valued best in the territories considered. In any way, complementary information is offered to position their options in relation to the remaining offers in the Spanish University System.

Thirdly, the user must declare their preference regarding the importance they give to study and research when valuing the universities’ profiles (**figure 3.7**), by distributing the 100 points available to the importance they grant to teaching and to research. The resulting ranking

will order the degrees and universities taking into account these weights. By default, 56 points are given to teaching and 44 to research and innovation, which are the weights used for the U-Ranking calculation.

Once these three steps are completed, the personalized ranking corresponding to the criteria introduced is displayed (figure 3.8). The ranking places in order the universities that offer the bachelor’s degrees chosen in the pre-selected territories according to their preference.

The first column shows the position of each degree considered in the personalized ranking. The second shows the value of the index reached for each specific degree. The official name of the degree appears in the third column.

As we observe in the example, various bachelor’s degrees can occupy the same position in the ranking, since the indices are rounded to one decimal point because greater precision is not considered to reflect, more accurately, differences among the degrees. In these cases, the degrees are ordered according to the value of the index, considering all the decimals. In the fourth column, in addition to the name of the university, the campus where the degree is taught appears. Clicking on the name of the university takes you to its website. The last five columns contain complementary information which is useful in the decision process. The cut-off mark of the last year, the price per credit on first registration and information on graduate employability which will be described in the next section.

Figure 3.6. Step 2. Choose a Spanish region

Choose the regions where you would like to study
Select one or several options

Figure 3.7. Step 3. Indicate percentage of importance given to Teaching and Research and Innovation

Indicate, on a scale of 0 to 100, how important the relationship between quality of teaching and research and innovation is for you.

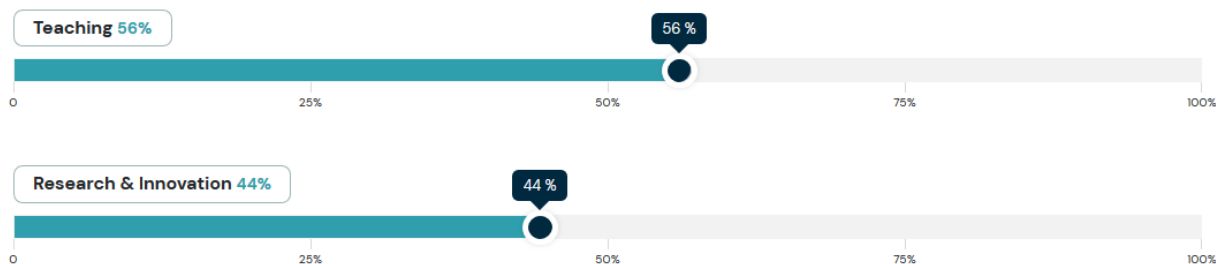


Figure 3.8. Personalized ranking of degrees

✕ Economics and Business
DOWNLOAD PDF

In the selected regions there are 28 options for the chosen degrees

Ranking	Index	Degree	University	Cutt-off mark	Credit Cost €	Employment rate	Employed as graduates	Average contribution base
1	1,6	Grado en Management and Technology / Empresa y Tecnología	Universidad Carlos III Getafe (Comunidad de Madrid)	12.69	16.92	-	-	-
2	1,4	Grado en Datos y Analítica de Negocio / Bachelor in Data and Business Analytics	IE Universidad	See +		-	-	-
2	1,4	PCEO Grado en Administración de Empresas y Datos / Grado en Analítica de Negocios (Dual Degree Business Administration and Data and Business Analytics)	IE Universidad	See +		-	-	-
3	1,3	Grado en Empresa y Tecnología	Universitat Autònoma de Barcelona Cerdanyola del Valles (Cataluña)	9.28	17.69	93.5	62.8	-
3	1,3	Grado en Análisis de Datos en la Empresa / Bachelor in Business Analytics	Universidad Autónoma de Madrid (Comunidad de Madrid)	11.71	19.43	-	-	-
3	1,3	Grado en Inteligencia Empresarial y Análisis de Datos	Universitat Ramon Llull Barcelona (Cataluña)	See +		-	-	-

Table 3.1 shows the level of disaggregation of each of the indicators included in the calculation of the personalized ranking of degrees¹⁷. These indicators are the twenty that are used to calculate the rankings by institutions. The sources and the years used are also the same; however, the level of disaggregation varies. While the indicators in the general ranking are collected at area of study or university level, more disaggregated information is used for the personalized ranking when available. Thus, 9 of the 20 indicators involved in the calculation of the synthetic index of each degree correspond to a degree or group of degrees. It should be noted that the only difference with regards to the methodology of the general ranking is that the standardization of the indicators of the

personalized ranking of degrees is done by groups of degrees, not by area of study. In other words, the reference group for each degree would be the one that belongs to the same family of degrees and therefore, it is the median value of this family used for the standardization.

To sum up, the web tool for constructing personalized rankings is easy to use, very flexible, and is underpinned by a rigorous methodology identical to the one described in previous sections on how general rankings are constructed. Therefore, it is a complement to the latter with a high interest potential for students, families and careers counselors, as well as for universities themselves.

¹⁷ The dimensions, areas, and indicators used, as well as the definition of the indicators, sources, and period coincide with what is described in Annex 1 (overall ranking).

As shown in the table, the only variation is in the column of level of disaggregation.

Table 3.1. Indicators and level of disaggregation of the information used for the ranking by degree

Dimension	Area	Indicator	Level
Teaching	Resources	Faculty member per 100 students	Area of study
		Budget per student	University
		Percentage of faculty member with PhD	Area of study
	Production	Success rate	Bachelor's Degree
		Evaluation rate	Bachelor's Degree
		Drop-out rate	Bachelor's Degree
	Quality	Percentage of postgraduate students	Area of study
		Cut-off mark	Bachelor's Degree
	Internationalization	Percentage of foreign students	Bachelor's Degree
		Percentage of students in foreign exchange programs	University
Research and Innovation	Resources	Competitive public resources per faculty member with PhD	Area of study
		Contracts with PhDs, research grants and technical support over total budget	Area of study
	Production	Citable documents with ISI reference per faculty member with PhD	Area of study
		Number of patents per 100 faculty members with PhD	University
		Number of thesis defended per 100 faculty members with PhD	Area of study
	Quality	Mean impact factor	Group of degrees
		Percentage of publications in the first quartile	Group of degrees
		Citations per document	Group of degrees
	Internationalization	European research funds per faculty member with PhD	University
		Percentage of publications with international co-authorship	Group of degrees

Source: Author's own calculations.

The more than 43,500 personalized rankings that have been calculated in the last year testify to the level of interest in the tool. For this interest in the tool to be effective and useful, it is essential to keep all the supporting information up-to-date and to constantly improve the data offered, taking the users' experience into account. Along this line, last year's edition included information on the labor market insertion by degrees. In addition to an update of this data, this year's edition has improved the usability of the tool.

3.3. COMPLEMENTARY INFORMATION ON GRADUATE EMPLOYABILITY

Graduate employability according to the degrees offered by a university influences the users' valuations of its services. The demand can be reinforced if a university offers degrees with a

favorable employability outlook, especially if a certain degree has better employability results than those of the same degree in another university. Consequently, since the 8th edition of U-Ranking, employability indicators are offered instead of environmental data as in previous editions.

An analysis of graduate employability is carried out with data from the report "Inserción laboral de los egresados universitarios" (Ministry of Universities 2019) on the Spanish Social Security system affiliation rates of bachelor's degree students four years after their graduation. In 2014, the Ministry of Universities published its first report with employability data along with the corresponding indicators on graduates from the 2009-10 academic course (Ministry of Education, Culture and Sports and CCS 2014), focusing on 1st and 2nd cycle students. The 8th edition published the labor market results of the second wave of indicators corresponding to the situation

from 2015 to 2018 of students who graduated in 2013-2014.

Currently, U-Ranking includes the latest data offered by the Ministry of Science, Innovation and Universities corresponding to the situation in 2022 of bachelor's degree students who graduated in 2017-2018.

We have focused our attention on the employment situation of university graduates four years after obtaining their degree¹⁸, taking into account three indicators of degree employability:

a) Percentage of university graduates in 2022 affiliated to the Spanish Social Security system four years after graduating

b) Percentage of graduates in 2022 affiliated to the Spanish Social Security system in contribution categories compatible with a university degree four years after graduating.

c) Average annual salary for the National Insurance contribution calculation base in 2022 for graduates who work full-time 4 years after obtaining the degree.

Data on employability is presented as a supplementary to the ranking of degrees. The

web tool offers the value of the degree for each one considered, with information for nearly 1,700¹⁹ degrees.

As in previous editions, 2024 also includes the price per credit for over 3,584 bachelor's degrees analyzed by U-Ranking, based on university statistics provided by the Spanish Ministry of Science, Innovation and Universities (2024b). These prices, despite the maximum limit set by the Spanish Ministry, can vary depending on the region, the university, the level of degree —bachelor, master, doctorate— the level of experimentality of the degree and the type of ownership of the center²⁰ offering that degree. As can be seen in **table 3.2**, the current range of fees by regions is considerable, even more if differences of experimentality and level of degree are considered.

For this reason, it is relevant that the U-Ranking user will be able to easily know the price per credit at first registration for each bachelor's degree. The prices included in U-Ranking correspond to those established for the 2023-2024 academic year. Also, the cost was included by degree course or by credit offered by private universities when available on their webpage.

¹⁸ The report provides the data one year after graduation, but this information distorts the reality of degrees that require qualifying master's degrees to practice or additional national tests such as the MIR in medicine that make insertion unlikely one year after graduation.

¹⁹ Of these, there are 103 degrees with no employment information in 2022 and the 2020 data is provided for

graduates in the 2015-2016 academic year, which is indicated with an asterisk (*).

²⁰ U-Ranking also includes bachelor's degrees imparted by private centers affiliated to public universities. In general, the price of these degrees includes an extra cost added on to the public prices.

Table 3.2. Public price per credit at the time of first enrollment by region. 2023-2024 academic year (€/credit)

Region	Average price	Min. price	Max. price
Andalusia	12.62	12.62	12.62
Aragon	18.20	13.10	20.02
Asturias	12.34	8.63	15.70
The Balearic Islands	15.48	11.18	20.08
The Canary Islands	12.45	9.47	14.59
Cantabria	13.34	9.95	15.56
Castile-La Mancha	15.81	12.13	18.87
Castile and Leon	16.40	11.50	20.38
Catalonia	18.14	17.69	18.46
The Valencian Community	15.26	12.79	18.00
Extremadura	14.22	9.88	17.74
Galicia	11.96	9.85	13.93
Madrid	18.53	16.92	20.68
Murcia	15.70	14.38	16.78
Navarre	19.12	15.10	21.38
Basque Country	16.51	13.42	18.92
La Rioja	16.89	14.08	22.68
UNED	16.21	13.00	21.60
Total Public universities	15.62	8.63	22.68

Note: In Catalonia, the Generalitat de Catalunya, the public universities and the Universitat Oberta de Catalunya (UOC), through the Agency for Management of University and Research Grants (AGAUR), have applied the “Equidad” (Equity) grants, which involve a reduction in the price paid per credit of enrollment by bachelor’s and master’s degree students of these universities, based on the level of family income, so the resulting prices, after deducting the grant, are those set out in Annex 6 of the Price Decree.

Source: Spanish Ministry of Science, Innovation and Universities (2024b).

Main results

04

This chapter reviews the principal results obtained in the 12th edition of U-Ranking, corresponding to 2024, in which the rankings by university and the personalized rankings of bachelor's degrees have been updated. All the rankings are available at the project's website <https://u-ranking.es>.

The 2024 rankings will be analyzed in this section from four different perspectives in order to emphasize the contribution made by the project and its methodology: a) comparing them with existing rankings to evaluate their similarities and differences; b) assessing the sensitivity of the results to changes in some of the hypotheses set forth, specifically the relative weights assigned to teaching and research activities, and the importance of considering or not the size of the university; c) comparing the results of 2024 with the 2023 edition; d) and examining the differences in the performance of the various regional university systems.

4.1. U-RANKING

Table 4.1 offers the ranking of 70 Spanish universities classified according to their indices of performance (U-Ranking). Keeping in mind that performance is the relationship between the volume of university results in the areas analyzed and the resources used to accomplish them. Thus, if two universities generate the same results, the one that makes use of less resources to achieve them will have a higher performance.

The order is based on the value of the synthetic indicator obtained for each university which is offered in the second column. The universities are ordered according to the value of this indicator, rounded to one decimal as a greater detail of the index would not reflect the differences among universities more accurately, given the set of decisions adopted in the process of construction of indicators already described in chapter 2. As shown in the table, various universities obtain the same index and therefore occupy the same position in the ranking. As a result of this criterion, the 70 universities are grouped into 11 levels of performance. Within each group of universities with similar results, the universities are ordered according to the complete value of the index, however, the differences in second place are not necessarily important.

Universities that are 15 years or younger are marked with an asterisk (*) in table 4.1, so the reader can put into context the results in the following sense. Universities must be able to show their teaching potential from the start, because graduates must acquire all the competences associated to a degree. This is the result of the need to create research teams and to obtain equipment and infrastructure, as well as the needed organizational requirements to develop their potential. Pointing out the universities with 15 years or less of existence allows to keep in mind that the research and transfer results of these younger universities are often lower, and this may be due to their youth.

Table 4.1 shows a list of the universities that have not been grouped due to lack of sufficient information to construct the indices. The purpose of including this group is to highlight the transparency of the universities that are included in the rankings, as they generate and disclose the information required in order to be included, regardless of their final position. Twelve universities that are not in the ranking list are marked with an asterisk because they belong to the group that have existed less than 15 years.

When interpreting the results of a university included in the ranking, it is important to bear in mind, therefore, that a large part of the private university system is not included due to lack of information.

Thus, it is probable likely that any university in the ranking could conceivably have an indeterminate number of universities behind it, even at the lowest level of performance (11th place in the 2024 ranking) because of insufficient information to construct the indices.

The cardinal and ordinal aspects of the universities that constitute notable differences are discussed below. A first aspect worth mentioning is that the range of the index from which this ranking is derived continues to show, as in previous editions, significant differences in performance among Spanish universities, with the most productive ones having results that are three times higher than those in end positions.

Table 4.1. U-Ranking of Spanish universities 2024

University	Ranking	Index	University	Ranking	Index	University	Ranking	Index
Universitat Politècnica de València	1	1.5	Universidad Pablo de Olavide	5	1.1	Universidad Europea de Madrid	9	0.7
Universidad Carlos III de Madrid	1	1.5	Universidad de Zaragoza	5	1.1	U. Internacional de La Rioja*	9	0.7
Universitat Politècnica de Catalunya	2	1.4	Universidad de Almería	5	1.1	Universidad Cardenal Herrera-CEU	9	0.7
Universitat Pompeu Fabra	2	1.4	Universidad del País Vasco	5	1.1	Universidad Católica de Valencia	9	0.7
Universidad Politécnica de Madrid	2	1.4	Universidad de Salamanca	5	1.1	Universidad Camilo José Cela	10	0.6
Universitat Autònoma de Barcelona	3	1.3	Universidad Pública de Navarra	5	1.1	Universidad Abat Oliba CEU	10	0.6
Universidad Autónoma de Madrid	3	1.3	Universitat de les Illes Balears	5	1.1	UDIMA	10	0.6
Universitat de Barcelona	3	1.3	Universidad de La Rioja	6	1.0	U. Internacional Valenciana	10	0.6
Universitat Rovira i Virgili	3	1.3	Universidad de Sevilla	6	1.0	Universidad Europea de Canarias*	11	0.5
Universitat de València	4	1.2	Universitat Oberta de Catalunya	6	1.0	Universidad Europea de Valencia*	11	0.5
Universidad de Navarra	4	1.2	Universidad de León	6	1.0			
Universidad de Cantabria	4	1.2	Universidad de Valladolid	6	1.0			
Universidad de Alcalá	4	1.2	Universidad de Jaén	6	1.0			
U. Miguel Hernández de Elche	4	1.2	Universidad de Oviedo	6	1.0			
U. de Santiago de Compostela	4	1.2	Universidad de Málaga	6	1.0			
Universidade de Vigo	4	1.2	Universidad de Murcia	6	1.0			
Universitat de Girona	4	1.2	Vic-Universitat Central de Catalunya	6	1.0			
IE Universidad	4	1.2	Universidad Rey Juan Carlos	6	1.0			
Universidad de Burgos	4	1.2	Universidad de Cádiz	6	1.0			
Universidad de Granada	4	1.2	Universidad de Huelva	7	0.9			
Universitat Ramon Llull	5	1.1	Universidad de Extremadura	7	0.9			
U. Politécnica de Cartagena	5	1.1	Universidad Pontificia Comillas	7	0.9			
Universidad Complutense de Madrid	5	1.1	Universidad de Castilla-La Mancha	7	0.9			
Universidad de Deusto	5	1.1	Universidad de La Laguna	7	0.9			
Universitat de Lleida	5	1.1	U. de Las Palmas de Gran Canaria	7	0.9			
U. Internacional de Catalunya	5	1.1	Universidad Nebrija	7	0.9			
Universitat Jaume I de Castellón	5	1.1	Universidad San Pablo-CEU	7	0.9			
Universidad de Alicante	5	1.1	Universidad Católica San Antonio	7	0.9			
Universidade da Coruña	5	1.1	Mondragón Unibertsitatea	7	0.9			
Universidad de Córdoba	5	1.1	UNED	8	0.8			

Note: Universities are ordered and grouped according to the index obtained to one decimal place and within each group according to the full index value. The 19 universities without a score could not be analyzed due to lack of data. Private universities are highlighted in bold

* Universities 15 years or younger.

Source: BBVA Foundation-Ivie (U-Ranking 2024).

The leading group in U-Ranking is made up of 20 universities occupying from the first to the fourth positions (various universities share the same position), increasing their results to 20% above the national average. At the top of the ranking is Universitat Politècnica de València, which, for the first time, shares first place with Universidad Carlos III de Madrid. They are followed in second place by Universitat Politècnica de Catalunya, Pompeu Fabra, and Universidad Politécnica de Madrid. In third place are four other public universities: Universitat Autònoma de Barcelona, Autònoma de Madrid, Universitat de Barcelona and Universitat Rovira i Virgili. These nine universities that occupy the first to third positions are the same as in the 2023 edition.

Eleven universities occupy fourth place, in which the first two private universities (Navarra and IE Universidad) appear together with the public universities of Valencia, Cantabria, Alcalá, Miguel Hernández, Santiago de Compostela, Vigo, Girona, Burgos and Granada.

In fifth place, still above the average, are 17 universities. Other groups of universities with similar levels of performance are: twelve that share sixth place, ten in seventh position that make up the first group below the average of the system, in eighth place is found the only non-face-to-face public university, and from then on, the rest of the positions are occupied by private universities: four occupy the ninth position and another four share tenth place. Finally, two universities occupy the eleventh place which is the last place of the system to be included in the ranking, although we insist that behind these universities there may be a good number of institutions that do not appear in the ranking because they do not offer sufficient information and are shaded in gray at the end of the list.

The twenty universities in the top four groups are basically the same universities as in the 2023 edition²⁰. The main changes are the rise by one position of the Universitat Politècnica de València, which leads the ranking for the first time along with Universidad Carlos III de Madrid. The Politècnica de

Madrid also moved up to second place -shared with Politècnica de Catalunya and Universitat Pompeu Fabra- and Miguel Hernández also improved from fifth to fourth place. On the other hand, Universitat Politècnica de Catalunya and Universitat Pompeu Fabra dropped one place to second position and Universitat Autònoma de Barcelona moved up to third position. Finally, Deusto drops one position, from fourth to fifth.

4.2. U-RANKING VOLUME

Table 4.2 shows the index and the ranking of the 70 Spanish public universities analyzed according to their volume of results (U-Ranking Volume). It differs from that of the previously discussed performance ranking because it calculates the size of each university. The volume index is justified because a small university can also have a great performance (i.e., its researchers can publish almost all of their articles in first quartile [Q1] journals), but if its size is very small, its impact on the environment and university system as a whole will be limited. In turn, a very large university may have a low performance rate (i.e., the percentage of articles published in Q1 journals is small), but if its size makes the total output bigger (the total number of published Q1 articles is higher), its total impact will be significantly relevant.

In the volume ranking there are many more different positions in the ranking because there are less universities that share the same position with others as a group. Unlike the performance ranking, in which universities are grouped in 11 levels, in U-Ranking Volume, the 70 universities analyzed are ordered in 32 different positions, indicating the greater heterogeneity in the university system in terms of the size-performance binomial, adding variability to the ranking.

Table 4.2 shows significant differences among universities. Universidad Complutense de Madrid stands out notably, occupying first position with an index of 5.5, one point behind the second place, Universitat de Barcelona (4.5). In third position, Universitat de

²⁰ In the 2022 ranking, 20 universities were placed between the first and fourth positions.

València follows closely behind Barcelona with an index of 4.3, while the universities of Granada (4.2) and U Sevilla (4.0) occupy fourth and fifth place. These five universities, with indexes above 4, show a high volume of results. Sixth place is occupied by the University of the Basque Country (3.8) and the polytechnics of Valencia and Madrid share 7th place, both with an index of 3.6. The Autonomous University of Barcelona and the Polytechnic University of Catalonia (8th, index 3.3), followed by the Autonomous University of Madrid (9th, index 3.2) and the University of Zaragoza (10th, index 2.9) complete the top ten positions. These twelve universities occupying the first ten places are the same as in the previous edition, showing the great stability of the results. Between the

eleventh and seventeenth positions are thirteen more universities, all of them public.

The ranking by volume shows the smaller size of private universities compared to public ones. Due to their size, they rank lower in the ranking by volume of results than in the ranking by performance. Thus, in table 4.2, it can be observed that all the private universities are located in the lower half of the list from 1 to 32. The UOC, is the first private university, in eighteenth place, and the Universidad de Navarra and Universitat Ramon Llull are in nineteenth place. These three are the highest-ranking private universities in terms of volume of results when combining better results with a larger size.

Table 4.2. U-Ranking Volume of Spanish universities 2024

Universidad	Ranking	Index	Universidad	Ranking	Index	Universidad	Ranking	Index
Universidad Complutense de Madrid	1	5.5	Universitat Pompeu Fabra	19	1.3	U. Internacional de Catalunya	28	0.4
Universitat de Barcelona	2	4.5	Universidad de Navarra	19	1.3	Universidad de La Rioja	28	0.4
Universitat de València	3	4.3	Universitat Ramon Llull	19	1.3	Vic-Universitat Central de Catalunya	28	0.4
Universidad de Granada	4	4.2	Universidade da Coruña	19	1.3	Universidad Nebrija	28	0.4
Universidad de Sevilla	5	4.0	Universidad de Extremadura	19	1.3	Mondragón Unibertsitatea	28	0.4
Universidad del País Vasco	6	3.8	Universidad de La Laguna	19	1.3	Universidad Cardenal Herrera-CEU	28	0.4
Universitat Politècnica de València	7	3.6	Universitat Rovira i Virgili	20	1.2	Universidad Católica de Valencia	28	0.4
Universidad Politécnica de Madrid	7	3.6	Universitat Jaume I de Castellón	21	1.1	U. Internacional Valenciana	29	0.3
Universitat Politècnica de Catalunya	8	3.2	U. de Las Palmas de Gran Canaria	21	1.1	Universidad Camilo José Cela	30	0.2
Universitat Autònoma de Barcelona	8	3.2	Universidad de Cantabria	22	1.0	IE Universidad	31	0.1
Universidad Autónoma de Madrid	9	2.9	U. Miguel Hernández de Elche	22	1.0	Universidad Abat Oliba CEU	31	0.1
Universidad de Zaragoza	10	2.6	Universitat de Girona	22	1.0	UDIMA	31	0.1
UNED	11	2.4	Universidad de Almería	22	1.0	Universidad Europea de Valencia*	31	0.1
U. de Santiago de Compostela	12	2.3	Universitat de les Illes Balears	22	1.0	Universidad Europea de Canarias*	32	<0.1
Universidad de Málaga	12	2.3	Universidad de Jaén	22	1.0	CUNEF Universidad*		
Universidad Carlos III de Madrid	13	2.1	U. Internacional de La Rioja*	22	1.0	ESIC Universidad*		
Universidad de Murcia	14	2.0	Universidad Pablo de Olavide	23	0.9	Universidad Alfonso X El Sabio		
Universidad Rey Juan Carlos	14	2.0	Universitat de Lleida	24	0.8	Universidad Católica Sta.Teresa de Jesús de Ávila		
Universidad de Alicante	15	1.9	Universidad Pública de Navarra	24	0.8	Universidad del Atlántico Medio*		
Universidad de Salamanca	15	1.9	Universidad de León	24	0.8	Universidad Euneiz*		
Universidad de Valladolid	16	1.7	Universidad de Deusto	25	0.7	Universidad Europea del Atlántico*		
Universidad de Oviedo	16	1.7	Universidad de Huelva	25	0.7	Universidad Europea Miguel de Cervantes		
Universidad de Castilla-La Mancha	16	1.7	Universidad Europea de Madrid	25	0.7	Universidad Fernando Pessoa-Canarias (UFP-C)*		
Universidad de Alcalá	17	1.5	Universidad de Burgos	26	0.6	Universidad Francisco de Vitoria		
Universidade de Vigo	17	1.5	Universidad Pontificia Comillas	26	0.6	Universidad Intercontinental de la Empresa*		
Universidad de Córdoba	18	1.4	Universidad San Pablo-CEU	26	0.6	Universidad Internacional de Andalucía*		
Universitat Oberta de Catalunya	18	1.4	Universidad Católica San Antonio	26	0.6	Universidad Internacional de la Empresa*		
Universidad de Cádiz	18	1.4	U. Politécnica de Cartagena	27	0.5	Universidad Internacional Menéndez Pelayo		
						Universidad Internacional Villanueva*		
						Universidad Loyola Andalucía*		
						Universidad Pontificia de Salamanca		
						Universidad San Jorge		

Note: Universities are ordered and grouped according to the index obtained to one decimal place and within each group according to the full index value. The 19 universities without a score could not be analyzed due to lack of data. Private universities are highlighted in bold.

* Universities 15 years or younger.

Source: BBVA Foundation-Ivie (U-Ranking 2024).

4.3. U-RANKING VOLUME VS. U-RANKING PERFORMANCE

The comparison of the above two tables indicates that the differences are substantial between U-Ranking Volume and U-Ranking, which measures performance. But both approaches can be useful, depending on the question to be answered.

The differences in the values of the indicators are much greater in the volume ranking due to the importance of size. The indicator of total results ranges from 5.5 to less than 0.1, very much wider than for the indicator of performance, which goes from 1.5 to 0.5.

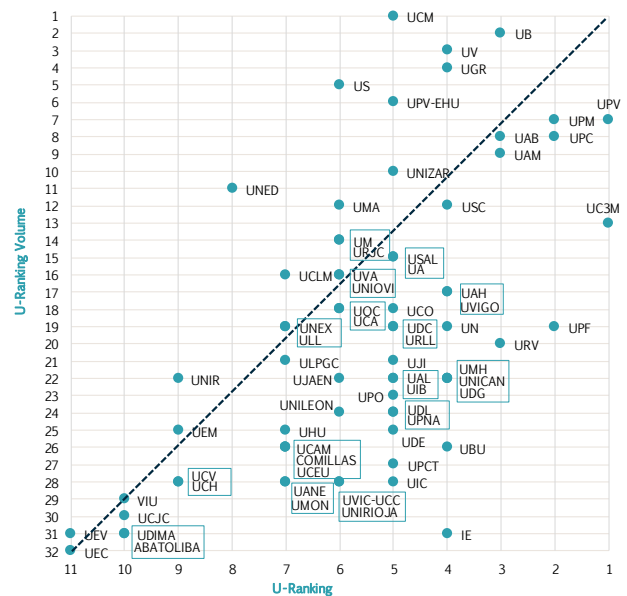
Figure 4.1 combines the two types of rankings and facilitates the comparison of the position of each university in both. The results of U-Ranking Volume, which depend on the size, are shown on the vertical axis, while on the horizontal axis the results of U-Ranking, which measures the performance and corrects the effects of size, are seen.

The universities are ordered from top to bottom on the first axis and from right to left on the second. In each case the scale is different, to reflect that each ranking establishes a different number of groups of universities with the same index. As can be observed, the dispersion of points in the figure is significant and reflects that there is no definite correlation between the two rankings. Therefore, size does not seem, in general, to have a clearly positive or negative influence on performance.

The universities with the highest output are located in the upper part of the figure: Universidad Complutense, Universitat de Barcelona, Universitat de València, Universidad de Granada, Universidad de Sevilla, Universidad del País Vasco, Universitat Politècnica de València, Universidad Politécnica de Madrid, Universitat Autònoma de Barcelona, Universitat Politècnica de Catalunya, Universidad Autónoma de Madrid, Universidad de Zaragoza and UNED.

Figure 4.1. U-Ranking vs. U-Ranking Volume of Spanish universities

Position in each ranking



Note: See appendix 2 for a list of abbreviations.
Source: BBVA Foundation-Ivie (U-Ranking 2024).

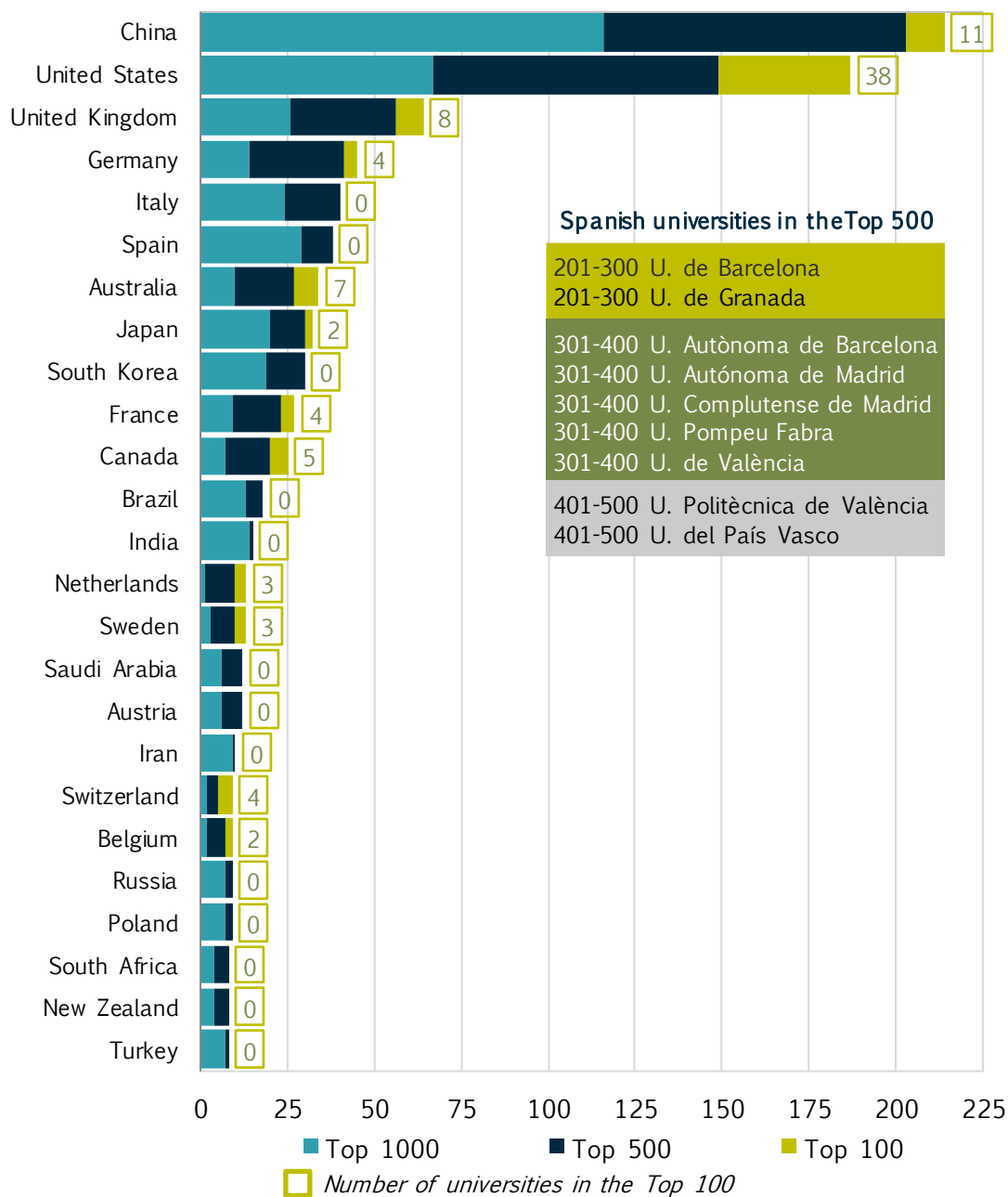
However, not all of these large universities show a good performance (not all are on the right side of the figure), while other smaller ones stand out in this regard and do appear on the right side. An example of the former case is UNED, a large university with a great volume of results that is placed among the top 13 universities in U-Ranking Volume. An example of the latter are Universidad Carlos III or Universitat Pompeu Fabra, which are in first and second place in performance in U-Ranking, but appear in the middle of the U-Ranking Volume, as do other very productive medium- or small-sized universities such as Universitat Rovira i Virgili.

In fact, examples of higher or lower performance can be found among universities of very different sizes.²¹ **Figure 4.2** shows the relationship in panel a (all the universities) and b (universities with a U-Ranking Volume index inferior to or same as 1.5) between size on the horizontal axis and the index of U-Ranking Volume for each university on the vertical axis. Those situated above the diagonal

²¹ As mentioned previously, the indicator of size is the result of calculating the standardized arithmetic mean of the number

of students, faculty members and income of each university.

Figure 4.3. Spanish universities in the 2023 Shanghai Ranking



Note: Ordered from the countries' highest to lowest number of universities in the Top 1,000.

Source: CWCU (ARWU 2024).

The results of U-Ranking Volume and Shanghai Ranking are much more similar than if we compare our two U-Rankings (performance and volume) with each other, as shown in the following figures. The reason is that ARWU uses indicators that, in general, do not minimize because of size. Only one of the six indicators it uses, with a weight of 10% in the ranking, takes into account size, that is measured by the number of full-time equivalent faculty members it has. **Figure 4.4** represents on the horizontal axis the position of the Spanish universities in U-Ranking Volume and in the vertical axis, their place in the Shanghai Ranking. Regardless of the different number of levels that each ranking sets, both offer a similar order, and therefore the universities are mostly grouped around areas I and III of the figure.

The universities located in area IV of the figure have comparatively a better position in our ranking. The case of Universidad Politècnica de Catalunya stands out, occupying a clearly better position in U-Ranking Volume than in the Shanghai Ranking. The universities in area II, on the contrary, are comparatively better placed in the Shanghai Ranking. The common denominator in many cases is that these are small but more productive universities, such as Pompeu Fabra, whose greater efficiency already became apparent in the U-Ranking's measurement of performance.

In figure 4.4, the universities that are among the Top 500 of the 2023 Shanghai Ranking are highlighted with dark blue colored squares. Almost all are among the top universities in U-Ranking Volume: Universidad Complutense de Madrid, Universitat de Barcelona, Universitat de València, Universidad de Granada, Universidad del País Vasco, Universitat Politècnica de València, Universidad Autónoma de Madrid and Barcelona. The Universitat Pompeu Fabra has a more discreet position in U-Ranking Volume due to its smaller size.

The differences with ARWU are much more substantial in the case of the U-Ranking of performance (**figure 4.5**) since the Shanghai Ranking scarcely corrects the indicators used to take into account size and, therefore, it is more a ranking of volume of results than of performance.²²

To view the position of universities that stand out in both of the U-Rankings classifications (performance and volume) and their position in the Shanghai Ranking, the shaded area in figure 4.6 shows the fifteen universities that stand out in U-Ranking, both for their high performance and volume of results. The universities listed in the 2023 Shanghai Ranking are highlighted in dark blue.

The shaded area contains all the universities also highlighted by the Shanghai Ranking. On the other hand, six universities appear in prominent positions in U-Ranking (shaded area) but not in the Shanghai Top 500 of the 2023 Ranking: Universidad Carlos III and Politècnica de Madrid and Politècnica de Catalunya, which have not yet been included in the Top 500 of the international ranking; the Universidade de Santiago de Compostela and the Universidad de Sevilla, which do not appear in the Top 500 this year, and the Universidad de Zaragoza. These three universities are placed among the 601-700 universities in the latest edition.

To illustrate at the same time the extent to which the three rankings compared generate different groupings of the universities a Venn diagram can be used that represents the ones that form part of the first quartile in each of the classifications and the intersections among the three. Of the 70 universities analyzed, 28 appear at the top of at least one of the three rankings (Top 500 of the Shanghai ranking or in the first quartile of U-Ranking or U-Ranking Volume).

²² As an example, the Shanghai Ranking uses as an indicator of teachers' quality the number of teachers who have

received a Nobel Prize or a Fields Medal, not this number divided by the number of professors of the university.

In the middle area of the diagram (**figure 4.7**) appear the six universities situated in the first quartile of the three rankings, namely, Universitat de Barcelona, Universitat de València, Universitat Politècnica de València, Universidad Autónoma de Barcelona and Madrid and Universidad de Granada. Seven other universities are in the first quartile in two of the rankings: Universitat Pompeu Fabra, in Shanghai and U-Ranking; Universidad Complutense de Madrid and Universidad del País Vasco-EHU, in Shanghai and U-Ranking Volume; Universidad del País Vasco-EHU, and, in Shanghai and U-Ranking Volume; and the Polytechnics of Cataluña and Madrid, along with Universidad Carlos III, in U-Ranking (performance) and U-Ranking Volume. Finally, fifteen universities stand out by only one of the three criteria considered.

In sum, these results show important coincidences between the rankings when identifying the universities that stand out, but also significant differences that reflect the different approach of each ranking. It is especially interesting to observe that of the nine Spanish universities that the Shanghai Ranking places in its Top 500, six also appear in the first quartile of our two rankings, in the intersection of the three circles of the diagram; four other ones are found in the two top positions in the ranking of performance (Universitat Politècnica de València and Universitat Pompeu Fabra) and volume (Universidad Complutense de Madrid and Universitat de Barcelona).

Therefore, it can be said that, of the nine Spanish universities included in the Top 500 of the Shanghai Ranking, all (except Universitat Pompeu Fabra) are found in our first quartile because of their greater volume of results according to U-Ranking Volume and seven among our most productive universities according to U-Ranking of performance. Consequently, our classifications, especially of volume, present a substantial harmony with those of the Shanghai Ranking, which strengthens their interest as instruments for identifying best practice and greatest impact. They also allow us to see that there may be differences in the rankings according to the perspective with which they are drawn up, but indicate that some universities are well positioned from any perspective.

The issue that arises is if the synthesis between U-Ranking Volume and Shanghai is high, what contribution does the U-Ranking project make? First, it includes the entire Spanish university system while ARWU leaves out a large part of it. If the indicators are to be used as a benchmark by the universities to identify weaknesses and strengths and to set strategic policies, U-Ranking allows this task, while ARWU does not. Also, we have seen that the ARWU approach is only volume-based, while the U-Ranking project also offers productivity analysis, which is a valuable approach to answer questions about performance. Finally, ARWU does not perform a comprehensive analysis of the dimensions of university activity, leaving aside the teaching dimension, which is present in U-Ranking.

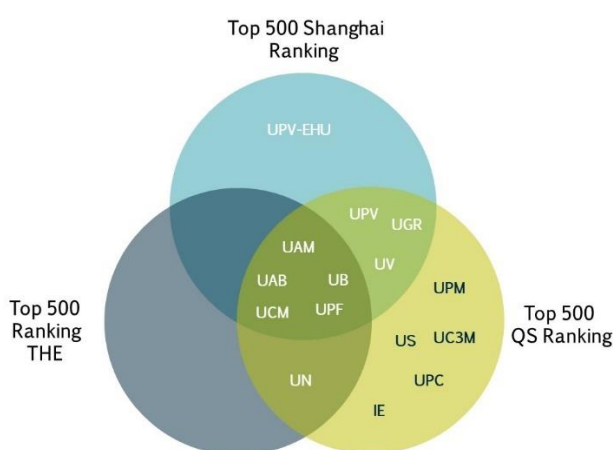
4.5. COMPARISON OF RESULTS WITH OTHER INTERNATIONAL RANKINGS

Although the Shanghai Ranking is consolidating its influence as the most cited international indicator, there exist other initiatives of high international repute, such as the Times Higher Education (THE) or the QS Ranking. The principal differences between these two and the Shanghai Ranking are that they (i) consider the role of teaching and (ii) incorporate subjective valuations based on surveys of international employers and experts. The results for the Spanish universities that appear in the three initiatives present similarities but also some differences, as shown in figure 4.8.

In the intersection of the three rankings we find five universities (Universidad Autónoma de Madrid, Universitat Autònoma de Barcelona, Universitat de Barcelona, Complutense de Madrid and Universitat Pompeu Fabra) which also appear in the top positions of our rankings and belong to the group of universities at the *frontier* of figure 4.6—that is, universities that are not dominated by hardly any other university—. If we compare the universities that appear in the international rankings mentioned in **figure 4.8** with the efficient frontier of figure 4.6 for U-Ranking, only one, Universidad de Navarra, appears in more than one of the rankings, namely, QS and THE, but is not in our efficient frontier, and another, IE University, is listed in QS and is not in our efficient frontier either.

These results confirm the presence of a group of Spanish universities in the top positions our university system, regardless of the prism with which they are analyzed and that the discrepancies between our ranking and any of the well-known international rankings are not any greater than those among them.

Figure 4.8. Comparison of the results of three international rankings. 2023-2024



Note: See appendix 2 for a list of abbreviations.

Source: CWCU (ARWU 2024), THE (2024) and QS (2024).

4.6. RESEARCH VS. TEACHING: SENSITIVITY ANALYSIS

One of the biggest problems inherent to any composite indicator is the effect of the relative weight of the elements composing it. The U-Ranking methodology expressly considers that teaching and research and innovation can be regarded differently important to each user of university services. Therefore, the web tool [“Choose a university”](#) allows to draw up personalized rankings that take into account each user’s preferences in this sense.

The question posed in this section is how much the general rankings of the universities would change if the weights allocated to teaching and to research were to change. In the results presented above the weights used to calculate the rankings were those obtained by applying the Delphi method that captures the opinions of the experts who collaborated in the design of the project as well as other available information.²³

Given that other experts or users of rankings may have different valuations about the weights that should be assigned to different activities, we should analyze whether the results are sensitive or not—in the latter case we will say that they are *robust*—to changes in the weights.

Would the results differ much if a greater weight was granted to research, as in other well-known rankings? Can a university occupy a high place in a ranking if the weights of teaching and research and innovation change to better suit its strengths? The answers to these questions are important in assessing whether the results of a ranking are reliable, in other words, if they are oversensitive to the arbitrary nature of the weight assigned to research or any other university activity. As we shall see, the answer to each question is very different.

Most rankings place great emphasis on research because the information on the results of this activity is abundant and seems more precise and reliable. This bias tendency, based on the “use of what can be measured”, is attempted to be minimized by arguing that teaching and research are highly correlated. However, this hypothesis has barely been tested due to a lack of indicators of teaching results or lack of consensus on which most appropriately reflect an institution’s quality of life. Thus, studying the sensitivity of the rankings to changes in the weight of teaching and research and innovation is not an easy task, but allows us to analyze whether the results of universities in both activities are indeed correlated or whether these

²³ The weights used are 56% for teaching, 34% for research and 10% for innovation and technological development. The weights were established on the basis of the opinion of the experts consulted and agree practically with the distribution of resources among the teaching and research activities in the universities’ budgets. It also reflects an intensity of

research activity in accordance with the results of the Spanish universities: if we consider that in the top universities of the world by their research results these activities had a weight of 85-90%, the corresponding figure for the Spanish universities would be 35%.

one-dimensional rankings offer a partial view that should be recognized.

The fact that research dimension is easier to measure should not be an excuse to not measure quality of teaching. Likewise, the existence of a positive correlation between the quality of teaching and that of research should not hide the fact that disparity is also possible: if for the same level of research quality there are different teaching results between two universities, ignoring this information biases the results in favor of one and against the other. This fact becomes more evident since there is a strong disparity in the importance attributed to research by universities in the Spanish University System depending on whether they are public or private, and other features, such as their age, location or strategies.

To value the effect of the selection of the weights given to teaching and to research and innovation we performed an analysis of sensitivity to their variations on the ranking of performance. We calculated three rankings that are differentiated by the very different relative weights of research and of teaching and innovation:

- Option 1: Teaching 30% / Research and innovation 70%
- Option 2: Teaching 70% / Research and innovation 30%
- U-Ranking 2022: Teaching 56% / Research and innovation 44%

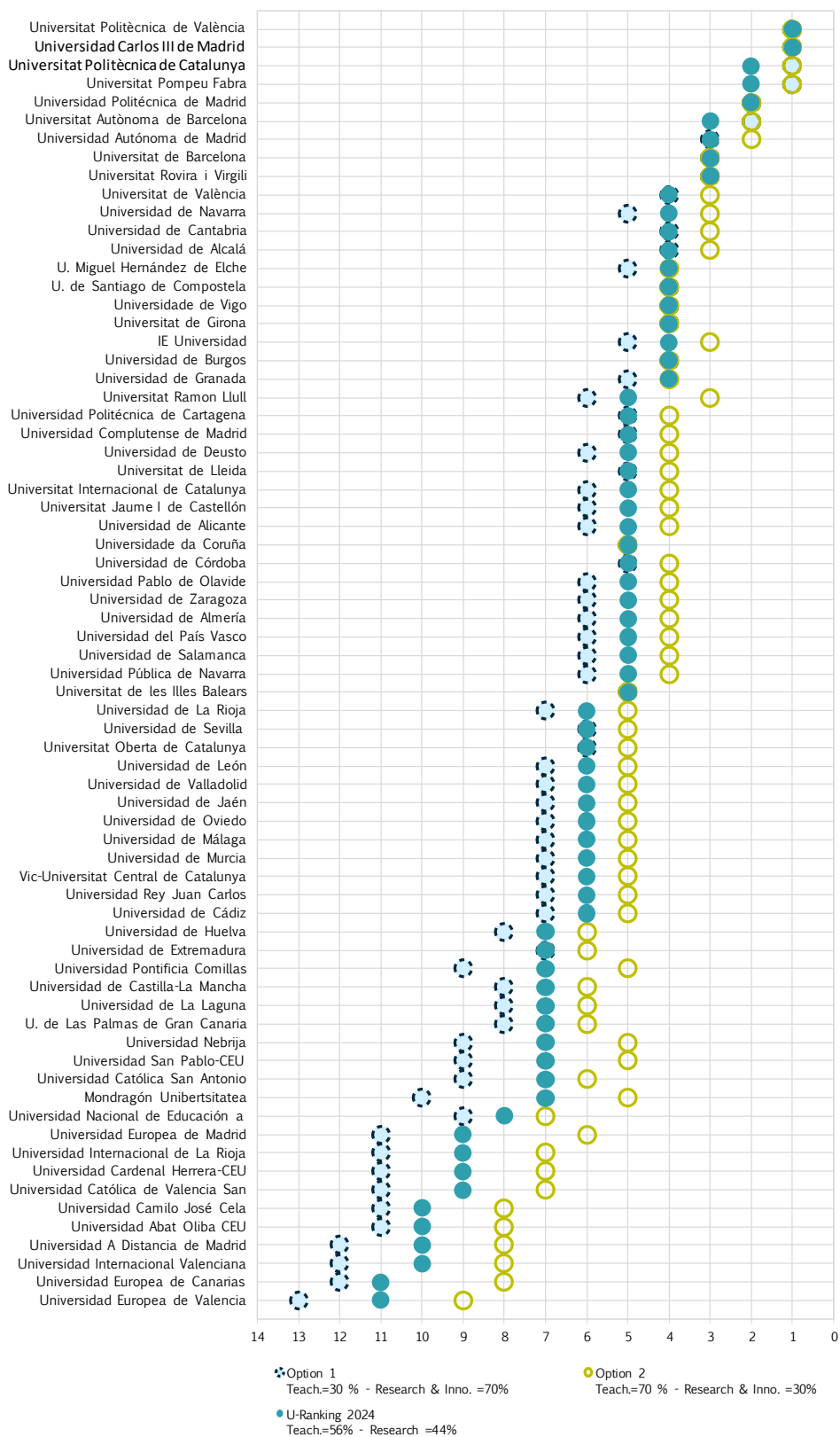
Figure 4.9 shows the effect on the position in the ranking of each of Spain's 70 universities analyzed when the weight of research and innovation varies, according to the three weightings chosen.

The changes in position in the ranking are visible by right to left movements of the solid-colored circle that represents the position with the weights of U-Ranking 2024, which corresponds to the third option, are characterized by:

- If the weight of research and innovation were to increase to 70% (option 1), the gaps in the results would widen, generating 13 levels in the ranking instead of the current 11, and only one private university would change its position by 3 places. The main pattern of these changes is that the worsening in the ranking is more intense among private universities, since they are institutions with less research activity. From the 22 private universities, 11 would fall 2 places, 9 would fall 1 would not vary. In the case of public universities, the variations would be much more moderate, since 21 universities maintain their position and 24 go down one place. The increase in the weight of research imply improvements in one position for 3 universities.
- On the other hand, if the weight given to research and innovation were reduced to 30% (option 2), there would be only a few improvements in position. Note that the ranking generates 11 levels, instead of 9, because, as will be explained in section 4.7, the differences in teaching performance are less than the differences in research performance. As the weight given to teaching increases, the number of groups decreases. Thus, 57 of the 70 universities would improve at least one position, including all the private ones given their higher degree of teaching specialization. Two private universities, the European universities of Madrid and the Canary Islands would improve 3 places, 13 would improve 2 places and the remaining 7 would move up 1 position. Public universities that improve their position would rise 1 place at the most, as happens in 35 of the 48 public universities.

These result reveals a pattern of sensitivity of the ranking to changes in weights: because of their high degree of specialization in teaching, private universities are much more sensitive than public universities to increases in the weight of research and innovation.

Figure 4.9. Evolution of U-Ranking according to variations in the weight of research and innovation



Note: Universities are ordered by their position in the global performance ranking with the following weights: 56/44

Source: BBVA Foundation-lvie (U-Ranking 2024).

Thus, the rankings are sensitive to changes in the weights given to teaching and to research and innovation, if we compare weightings as different as those corresponding to our options 1 and 2. However, a university does not pass from the top places to the bottom ones no matter how substantial the changes in the weights may be, although, it is true that some can improve in the ranking if greater importance is accorded to teaching or research. In U-Ranking, we have been able to verify that radical changes in the weights never generate variations in more than two positions, except for the three positions of three universities: the European universities of Madrid and the Canary Islands by greatly reducing the weight of research and Mondragón by increasing it.

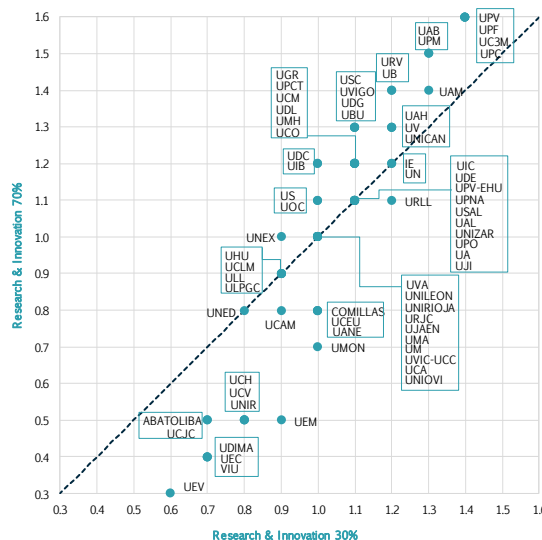
We must consider that, as with any type of measuring instrument, the sensitivity to changes is desirable. If the instrument is insensitive to very significant changes in the weights that reflect a different attribution of importance to different factors, it would not be useful if it does not react to changes, it cannot be expected to react to changes in indicator levels, which is what makes a university better or worse in the ranking. In this sense, U-Ranking proves to be tolerant to moderate changes in the weights, but reacts to significant changes.

If instead of focusing on the analysis of sensitivity of the ranking, in other words, in the positions of the universities, we consider the values of the index by which U-Ranking is obtained, we observe that their stability when changing the weights of teaching and research and innovation is also notable. **Figure 4.10** presents the synthetic indicator from which U-Ranking is derived for research and innovation weights of 30% (horizontal axis) and 70% (vertical axis). It shows that a radical change that gives a weight to research of 70% instead of 30% would lead to an improvement in the index of two tenths of a point for fourteen universities, all of them public. In the opposite direction, a worsening of the index, the index of the European University of Madrid would fall by four tenths of a point and that of the European universities of the Canary Islands and Valencia, the International University of Valencia (VIU), UDIMA, Catholic University of Valencia, Mondragón, UNIR and Cardenal Herrera University by three tenths of a point. Five other private

universities reduced their index by two tenths: Comillas, Universidad Nebrija, Universidad San Pablo CEU, Universidad Camilo José Cela and Universidad Abat Oliba.

Figure 4.10. U-Ranking for two different weights in research

Weights of Teaching / Research and Innovation: 70/30 vs. 30/70. Index



Note: See appendix 2 for a list of abbreviations.
Source: BBVA Foundation-Ivie (U-Ranking 2024).

4.7. TEACHING AND RESEARCH AND INNOVATION RANKINGS

The methodology used constructs indicators with the results of the universities in teaching and research and innovation, which are then aggregated to draw up the two global rankings presented (U-Ranking and U-Ranking Volume). The partial results for each university in each of the two dimensions can be arranged in order to obtain a *teaching ranking* and a *research and innovation ranking*. Each of them can be calculated according to both variants: volume of results and performance. This is a different way to consider whether universities are different in their teaching and research and innovative performance, without entering a debate on the importance of both types of activities.

Figure 4.11 shows by means of *box plots* the distribution corresponding to the indices of the different dimensions and the global index of a university in the case of performance (panel a) and volume of results (panel b). It shows the distributions for the university system as a whole and for public vs. private universities. The extremes of the green lines represent the maximum and minimum values reached by the indices in each dimension and define the range of variation of the index; the top of the central box indicates the 75% percentile and the 25% percentile is marked by the bottom of the box, so that between them is situated 50% of the distribution (interquartile range). The border between the two parts of the box defines the median value. From the comparative analysis of the panels, four essential features stand out:

- The differences between public universities are much greater if their volume of results is analyzed instead of their performance. This feature is observed in both dimensions, but is greater in research and innovation activities than in teaching. Given the total weight of public universities in the university system, this pattern applies to the average of the system.
- In private universities, since they all have a smaller size, the situation is the opposite, and the volume index has much greater homogeneity than the performance index. The heterogeneity of performance is superior in research activities.
- Differences in performance are greater in general in research than in teaching for both public and private universities. The range of the teaching index is 0.6 points and 1.7 for research. This result is important because it makes research the main discriminating factor in U-Ranking positions.
- The median for the total number of universities in the distribution of the indices is 1 (see figure 4.11, panels a1 and b1). However, when we analyze private universities (figure 4.11, panels a3 and b3), we clearly observe the difference that exists in specialization to which we have been making reference. Fixing our attention on the indices of performance, the median is higher than the average of the system in teaching and, meanwhile, it is half in research and innovation.

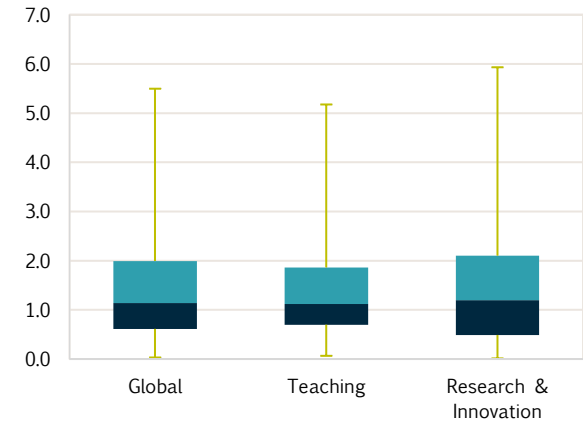
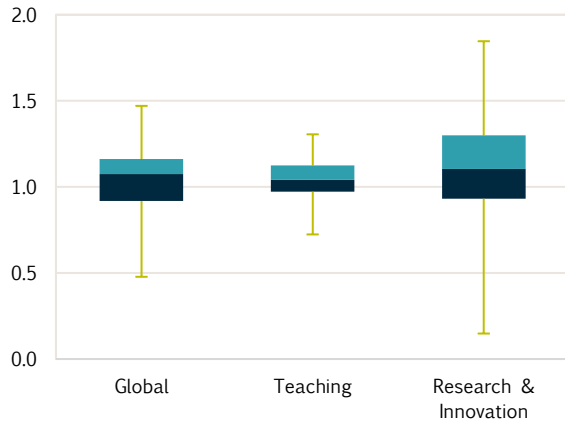
Figure 4.11. U-Ranking. Distribution of the indices obtained in each dimension

a) U-Ranking (performance)

b) U-Ranking Volume

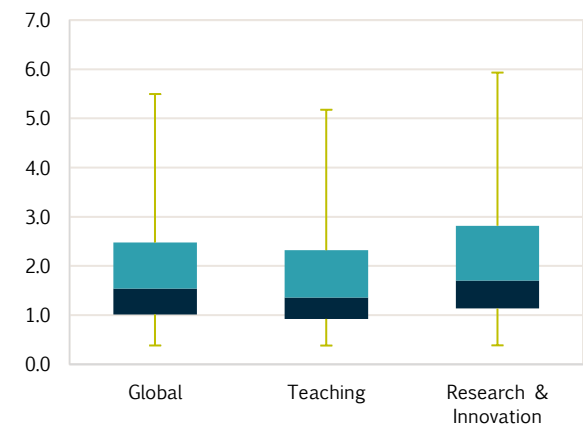
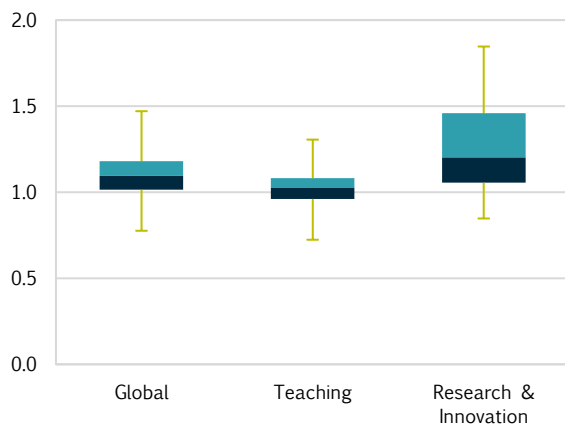
a1. Total universities

b1. Total universities



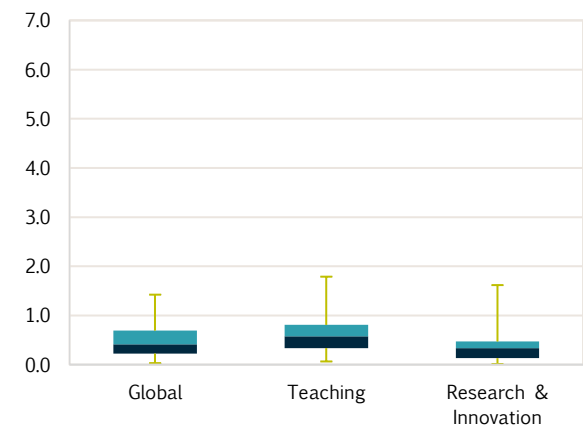
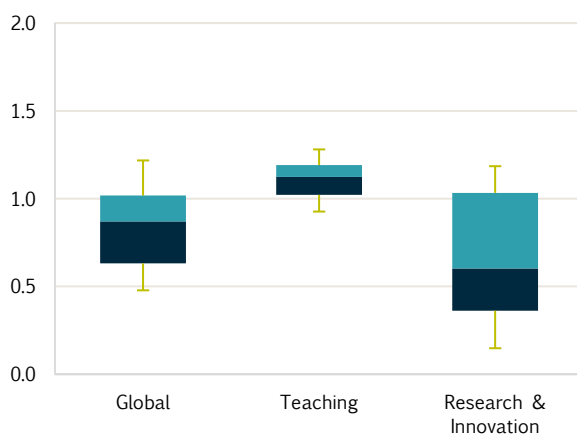
a2. Public universities

b2. Public universities



a3. Private universities

b3. Private universities



Source: BBVA Foundation-lvie (U-Ranking 2024).

Table 4.4. U-Ranking of Spanish universities 2024. Teaching

University	Ranking	Index	University	Ranking	Index	University	Ranking	Index
Universitat Politècnica de València	1	1.3	Universitat de Lleida	4	1.0	U. de Las Palmas de Gran Canaria	5	0.9
Universidad Carlos III de Madrid	1	1.3	Universidad de Cantabria	4	1.0	Universidad de Cádiz	5	0.9
Universitat Ramon Llull	1	1.3	U. Politècnica de Cartagena	4	1.0	Universidad de Castilla-La Mancha	5	0.9
Universidad de Navarra	1	1.3	Universidad Cardenal Herrera-CEU	4	1.0	Universidad de Extremadura	5	0.9
Universidad Europea de Madrid	1	1.3	Universidad de Zaragoza	4	1.0	Universidad de La Laguna	5	0.9
Universitat Politècnica de Catalunya	2	1.2	Universidad Abat Oliba CEU	4	1.0	UNED	6	0.7
U. Internacional de La Rioja*	2	1.2	Universidad de León	4	1.0			
Universidad Europea de Valencia*	2	1.2	Universidad de La Rioja	4	1.0	CUNEF Universidad*		
Universitat Pompeu Fabra	2	1.2	Universidad de Oviedo	4	1.0	ESIC Universidad*		
Universidad Pontificia Comillas	2	1.2	Universidad de Alicante	4	1.0	Universidad Alfonso X El Sabio		
Mondragón Unibertsitatea	2	1.2	Universidad Católica San Antonio	4	1.0	Universidad Católica Sta.Teresa de Jesús de Ávila		
Universidad San Pablo-CEU	2	1.2	Universidad de Almería	4	1.0	Universidad del Atlántico Medio*		
Universitat de València	2	1.2	Universidad de Salamanca	4	1.0	Universidad Euneiz*		
Universidad Autónoma de Madrid	3	1.1	Universidad de Jaén	4	1.0	Universidad Europea del Atlántico*		
IE Universidad	3	1.1	Universidad Católica de Valencia	4	1.0	Universidad Europea Miguel de Cervantes		
Universidad Nebrija	3	1.1	Universidad de Girona	4	1.0	Universidad Fernando Pessoa-Canarias (UFP-C)*		
U. Internacional Valenciana	3	1.1	Universidad de Córdoba	4	1.0	Universidad Francisco de Vitoria		
Universidad Politècnica de Madrid	3	1.1	Universidad Rey Juan Carlos	4	1.0	Universidad Intercontinental de la Empresa*		
Universidad Europea de Canarias*	3	1.1	Universidad de Málaga	4	1.0	Universidad Internacional de Andalucía*		
U. Internacional de Catalunya	3	1.1	UDIMA	4	1.0	Universidad Internacional de la Empresa*		
Universitat de Barcelona	3	1.1	Universidad de Burgos	4	1.0	Universidad Internacional Isabel I de Castilla*		
Universidad de Deusto	3	1.1	Universidad de Vigo	4	1.0	Universidad Internacional Menéndez Pelayo		
Universidad de Alcalá	3	1.1	Vic-Universitat Central de Catalunya	4	1.0	Universidad Internacional Villanueva*		
Universidad de Granada	3	1.1	Universidade de Santiago de Com-	4	1.0	Universidad Loyola Andalucía*		
Universidad Pública de Navarra	3	1.1	Universidad de Valladolid	4	1.0	Universidad Pontificia de Salamanca		
Universidad Pablo de Olavide	3	1.1	Universidade da Coruña	4	1.0	Universidad San Jorge		
Universitat Autònoma de Barcelona	3	1.1	Universidad de Huelva	5	0.9			
Universitat Rovira i Virgili	3	1.1	Universidad de Sevilla	5	0.9			
U. Miguel Hernández de Elche	3	1.1	Universidad de Murcia	5	0.9			
Universitat Jaume I de Castellón	3	1.1	Universitat de les Illes Balears	5	0.9			
Universidad Complutense de Madrid	3	1.1	Universidad Camilo José Cela	5	0.9			
Universidad del País Vasco	3	1.1	Universitat Oberta de Catalunya	5	0.9			

Table 4.5. U-Ranking of Spanish universities 2024. Research and Innovation

University	Ranking	Index	University	Ranking	Index	University	Ranking	Index
Universitat Pompeu Fabra	1	1.8	Universitat Jaume I de Castellón	7	1.2	Universidad Cardenal Herrera-CEU	1	0.4
Universitat Autònoma de Barcelona	1	1.8	Universidad de Sevilla	7	1.2	Universidad Católica de Valencia	1	0.4
Universitat Politècnica de Catalunya	1	1.8	Universidad de Navarra	7	1.2	Universidad Camilo José Cela	1	0.4
Universidad Politècnica de Madrid	2	1.7	Universidad de Deusto	8	1.1	Universidad Europea de Madrid	1	0.4
Universidad Carlos III de Madrid	2	1.7	Universidad del País Vasco	8	1.1	U. Internacional de La Rioja*	1	0.4
Universitat Politècnica de València	2	1.7	U. Internacional de Catalunya	8	1.1	Universidad Abat Oliba CEU	1	0.3
Universitat Rovira i Virgili	3	1.6	Universidad de Cádiz	8	1.1	UDIMA	1	0.3
Universitat de Barcelona	3	1.6	Universidad Pablo de Olavide	8	1.1	U Internacional Valenciana	1	0.2
Universidad Autónoma de Madrid	3	1.6	Universidad de Valladolid	8	1.1	Universidad Europea de Canarias*	1	0.2
U. de Santiago de Compostela	4	1.5	Universidad de Murcia	8	1.1	Universidad Europea de Valencia*	1	0.1
Universidade de Vigo	4	1.5	Universidad de Málaga	8	1.1			
Universidad de Cantabria	4	1.5	Universidad Pública de Navarra	8	1.1	CUNEF Universidad*		
Universidad de Burgos	4	1.5	Vic-Universitat Central de Catalunya	9	1.0	ESIC Universidad*		
Universitat de Girona	5	1.4	Universidad de La Rioja	9	1.0	Universidad Alfonso X El Sabio		
Universidad de Alcalá	6	1.3	Universidad de Jaén	9	1.0	Universidad Católica Sta.Teresa de Jesús de Ávila		
Universitat de València	6	1.3	Universidad Rey Juan Carlos	9	1.0	Universidad del Atlántico Medio*		
U. Miguel Hernández de Elche	6	1.3	Universidad de León	9	1.0	Universidad Euneiz*		
Universidade da Coruña	6	1.3	Universidad de Extremadura	9	1.0	Universidad Europea del Atlántico*		
Universidad Politècnica de Cartagena	6	1.3	Universitat Ramon Llull	9	1.0	Universidad Europea Miguel de Cervantes		
Universitat de les Illes Balears	6	1.3	Universidad de Oviedo	9	1.0	Universidad Fernando Pessoa-Canarias (UFP-C)*		
Universidad de Córdoba	7	1.2	Universidad de La Laguna	9	1.0	Universidad Francisco de Vitoria		
Universidad de Granada	7	1.2	Universidad de Castilla-La Mancha	9	1.0	Universidad Intercontinental de la Empresa*		
Universidad Complutense de Madrid	7	1.2	Universidad de Huelva	10	0.9	Universidad Internacional de Andalucía*		
Universidad de Lleida	7	1.2	U. de Las Palmas de Gran Canaria	10	0.9	Universidad Internacional de la Empresa*		
Universidad de Alicante	7	1.2	UNED	11	0.8	Universidad Internacional Isabel I de Castilla*		
IE Universidad	7	1.2	Universidad Católica San Antonio	12	0.7	Universidad Internacional Menéndez Pelayo		
Universidad de Almería	7	1.2	Universidad Nebrija	12	0.7	Universidad Internacional Villanueva*		
Universidad de Salamanca	7	1.2	Universidad Pontificia Comillas	12	0.7	Universidad Loyola Andalucía*		
Universidad de Zaragoza	7	1.2	Universidad San Pablo-CEU	13	0.6	Universidad Pontificia de Salamanca		
Universitat Oberta de Catalunya	7	1.2	Mondragón Unibertsitatea	13	0.6	Universidad San Jorge		

Note: Universities are ordered and grouped according to the index obtained to one decimal place and within each group according to the full index value. The 19 universities without a score could not be analyzed due to lack of data. Private universities are highlighted in bold

*Universities 15 years or younger.

Source: BBVA Foundation-ivie (U-Ranking 2024).

Table 4.6. U-Ranking Volume of Spanish universities 2024. Teaching

University	Ranking	Index	University	Ranking	Index	University	Ranking	Index
Universidad Complutense de Madrid	1	5.2	Universidad de Extremadura	18	1.2	Vic-Universitat Central de Catalunya	26	0.4
Universitat de València	2	4.0	Universidad de La Laguna	18	1.2	Universidad de La Rioja	26	0.4
Universidad de Granada	2	4.0	Universidad Europea de Madrid	18	1.2	U. Internacional de Catalunya	26	0.4
Universitat de Barcelona	3	3.8	Universidade da Coruña	19	1.1	Universidad Camilo José Cela	27	0.3
Universidad de Sevilla	4	3.7	U. de Las Palmas de Gran Canaria	19	1.1	UDIMA	28	0.2
Universidad del País Vasco	4	3.7	Universitat Pompeu Fabra	20	1.0	Universidad Europea de Valencia*	28	0.2
Universitat Politècnica de València	5	3.2	Universitat Rovira i Virgili	20	1.0	IE Universidad	29	0.1
Universidad Politécnica de Madrid	6	3.0	Universitat Jaume I de Castellón	20	1.0	Universidad Abat Oliba CEU	29	0.1
Universitat Politècnica de Catalunya	7	2.7	Universidad de Jaén	20	1.0	Universidad Europea de Canarias*	29	0.1
Universitat Autònoma de Barcelona	8	2.6	U. Miguel Hernández de Elche	21	0.9	CUNEF Universidad*		
Universidad Autónoma de Madrid	9	2.5	Universidad de Cantabria	21	0.9	ESIC Universidad*		
Universidad de Zaragoza	9	2.5	Universidad de Almería	21	0.9	Universidad Alfonso X El Sabio		
UNED	10	2.3	Universidad Pablo de Olavide	21	0.9	Universidad Católica Sta.Teresa de Jesús de Ávila		
Universidad de Málaga	10	2.3	Universitat de Girona	22	0.8	Universidad del Atlántico Medio*		
Universidad Rey Juan Carlos	11	2.0	Universitat de les Illes Balears	22	0.8	Universidad Euneiz*		
U. de Santiago de Compostela	12	1.9	Universidad de León	22	0.8	Universidad Europea del Atlántico*		
Universidad Carlos III de Madrid	12	1.9	Universidad Pública de Navarra	22	0.8	Universidad Europea Miguel de Cervantes		
Universidad de Murcia	12	1.9	Universidad San Pablo-CEU	22	0.8	Universidad Fernando Pessoa-Canarias (UFP-C)*		
Universidad de Salamanca	13	1.8	Universidad Pontificia Comillas	22	0.8	Universidad Francisco de Vitoria		
Universidad de Alicante	13	1.8	Universitat de Lleida	23	0.7	Universidad Intercontinental de la Empresa*		
U. Internacional de La Rioja*	13	1.8	Universidad de Deusto	23	0.7	Universidad Internacional de Andalucía*		
Universidad de Oviedo	14	1.7	Universidad de Huelva	23	0.7	Universidad Internacional de la Empresa*		
Universidad de Castilla-La Mancha	15	1.6	Universidad Católica San Antonio	23	0.7	Universidad Internacional Isabel I de Castilla*		
Universidad de Valladolid	15	1.6	Universidad Cardenal Herrera-CEU	24	0.6	Universidad Internacional Menéndez Pelayo		
Universidad de Alcalá	16	1.4	Universidad Católica de Valencia	24	0.6	Universidad Internacional Villanueva*		
Universitat Ramon Llull	16	1.4	Universidad de Burgos	25	0.5	Universidad Loyola Andalucía*		
Universidade de Vigo	17	1.3	U. Politécnica de Cartagena	25	0.5	Universidad Pontificia de Salamanca		
Universidad de Córdoba	17	1.3	Universidad Nebrija	25	0.5	Universidad San Jorge		
Universitat Oberta de Catalunya	17	1.3	Mondragón Unibertsitatea	25	0.5			
Universidad de Cádiz	17	1.3	Universidad Internacional Valenciana	25	0.5			
Universidad de Navarra	17	1.3						

Table 4.7. U-Ranking Volume of Spanish universities 2024. Research and Innovation

University	Ranking	Index	University	Ranking	Index	University	Ranking	Index
Universidad Complutense de Madrid	1	5.9	Universitat Rovira i Virgili	21	1.5	Universidad Nebrija	31	0.3
Universitat de Barcelona	2	5.6	Universidad de Extremadura	22	1.4	Universidad Cardenal Herrera-CEU	31	0.3
Universitat de València	3	4.6	Universidad de La Laguna	22	1.4	Universidad Católica de Valencia	31	0.3
Universidad de Granada	3	4.6	Universidad de Cantabria	23	1.2	Mondragón Unibertsitatea	32	0.2
Universidad de Sevilla	3	4.6	Universidad de Girona	23	1.2	IE Universidad	33	0.1
Universidad Politécnica de Madrid	4	4.5	Universidad de Navarra	23	1.2	Universidad Camilo José Cela	33	0.1
Universitat Autònoma de Barcelona	5	4.3	U. Miguel Hernández de Elche	23	1.2	U. Internacional Valenciana	33	0.1
Universitat Politècnica de València	6	4.1	Universitat de les Illes Balears	24	1.1	UDIMA	33	0.1
Universidad del País Vasco	7	3.9	Universitat Jaume I de Castellón	24	1.1	Universidad Abat Oliba CEU	34	<0.1
Universitat Politècnica de Catalunya	8	3.8	Universitat Ramon Llull	24	1.1	Universidad Europea de Valencia*	34	<0.1
Universidad Autónoma de Madrid	9	3.5	Universidad de Almería	24	1.1	Universidad Europea de Canarias*	34	<0.1
U. de Santiago de Compostela	10	2.9	U. de Las Palmas de Gran Canaria	25	1.0	CUNEF Universidad*		
Universidad de Zaragoza	11	2.8	Universidad de Jaén	25	1.0	ESIC Universidad*		
UNED	12	2.7	Universidad Pablo de Olavide	26	0.9	Universidad Alfonso X El Sabio		
Universidad Carlos III de Madrid	13	2.5	Universitat de Lleida	27	0.8	Universidad Católica Sta.Teresa de Jesús de Ávila		
Universidad de Málaga	14	2.4	Universidad de León	27	0.8	Universidad del Atlántico Medio*		
Universidad de Murcia	15	2.2	Universidad de Burgos	27	0.8	Universidad Euneiz*		
Universidad de Salamanca	16	2.1	Universidad Pública de Navarra	28	0.7	Universidad Europea del Atlántico*		
Universidad de Alicante	16	2.1	Universidad de Deusto	28	0.7	Universidad Europea Miguel de Cervantes		
Universidad Rey Juan Carlos	16	2.1	Universidad de Huelva	28	0.7	Universidad Fernando Pessoa-Canarias (UFP-C)*		
Universidade de Vigo	17	1.9	U. Politécnica de Cartagena	29	0.6	Universidad Francisco de Vitoria		
Universidad de Valladolid	18	1.8	U. Internacional de La Rioja*	30	0.5	Universidad Intercontinental de la Empresa*		
Universidad de Castilla-La Mancha	18	1.8	Universidad Católica San Antonio	30	0.5	Universidad Internacional de Andalucía*		
Universidad de Alcalá	19	1.7	Universidad San Pablo-CEU	31	0.4	Universidad Internacional de la Empresa*		
Universidad de Oviedo	19	1.7	Universidad Pontificia Comillas	31	0.4	Universidad Internacional Isabel I de Castilla*		
Universidad de Córdoba	20	1.6	Vic-Universitat Central de Catalunya	31	0.4	Universidad Internacional Menéndez Pelayo		
Universitat Oberta de Catalunya	20	1.6	Universidad de La Rioja	31	0.4	Universidad Internacional Villanueva*		
Universitat Pompeu Fabra	20	1.6	U. Internacional de Catalunya	31	0.4	Universidad Loyola Andalucía*		
Universidade da Coruña	20	1.6	Universidad Europea de Madrid	31	0.4	Universidad Pontificia de Salamanca		
Universidad de Cádiz	20	1.6				Universidad San Jorge		

Note: Universities are ordered and grouped according to the index obtained to one decimal place and within each group according to the full index value. The 19 universities without a score could not be analyzed due to lack of data. Private universities are highlighted in bold

*Universities 15 years or younger.

Source: BBVA Foundation-Ivie (U-Ranking 2024).

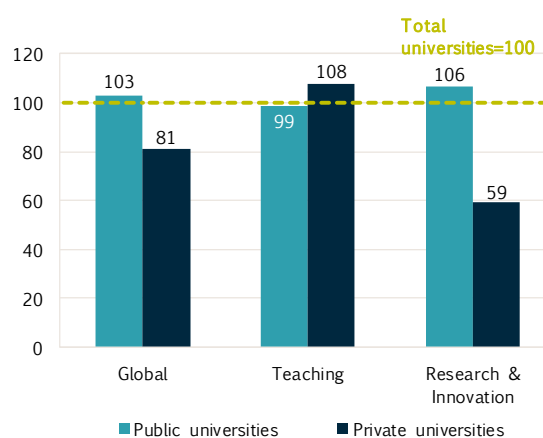
4.8. PUBLIC AND PRIVATE UNIVERSITIES' RESULTS COMPARED

The increased weight of private universities in the Spanish University System is making the comparison of the results depending on the ownership of the universities –public or private- much more relevant. It is undeniable that many variables may cause non-equivalent results: private universities are much younger on average, many are located in geographic areas with higher per capita income, a less diversified range of courses than the public system, to a greater extent because their age of existence has allowed them to decide which degrees to specialize in, and also a smaller size. But to determine the differences in the results its necessary to find first evidence that these differences do exist. The indices of the U-Ranking system allow us to address this issue with accurate data.

Figure 4.13 shows the average results for U-Ranking indices for teaching and research and innovation, as well as in the global index of results. If we take the average of the system as basis 100, built as an average weighted by the weight of the individual indices of universities, the performance of the private universities is 22 points less than the public system. This result is due, primarily, to a specialization in these universities, that is much more focused on the teaching dimension, in which they achieve a greater performance than public universities (9 points), but with research results that are well below those of public universities (their performance being 47 points lower).

Figure 4.13. Average performance of the Spanish public and private universities

Total universities=100



Source: BBVA Foundation-lvie (U-Ranking 2024).

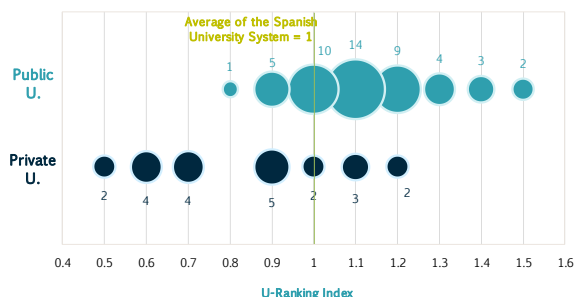
Averages may hide a more complex reality characterized by a great heterogeneity of results. The heterogeneity shared by private and public university systems, is clearly visible in **figure 4.14**. In all the panels (global, teaching and research and innovation) we observe how the distribution of both types of universities along the range that represents the index indicates diversity in the results.

In short, public and private university systems are both heterogeneous with respect to the performance of the institutions that comprise them, there being a great diversity in the global, teaching and research and innovation results. However, the public university system stands out with respect to private universities in their research achievements and innovation results. On the other hand, the teaching specialization of the private system achieves better results in this dimension.

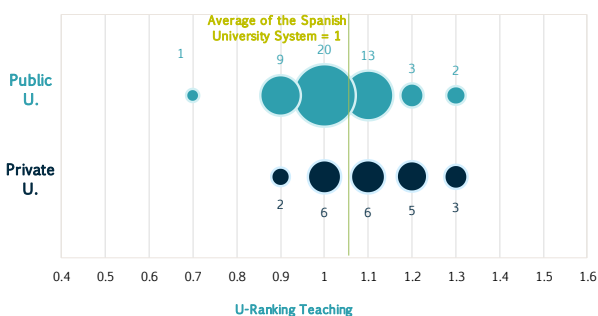
Figure 4.14. Index and number of universities with the same index

Index and number of universities with the same index

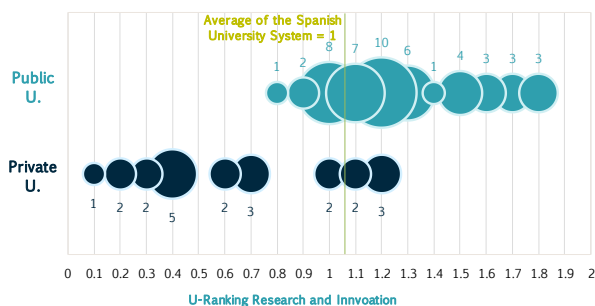
a) Global



b) Teaching



c) Research and innovación



Source: BBVA Foundation-Ivie (U-Ranking 2024).

4.9. U-RANKING 2023 AND 2024

The aim of this section is to evaluate the stability of results of the different editions of U-Ranking. For this purpose, two types of comparisons are offered between the results of this edition and the one in 2023. First, the correlation between the results of both editions is calculated (table 4.8) and then the dispersion of the indices in both editions is presented.

The results obtained by U-Ranking 2023 are highly correlated with those presented in 2024. The coefficients of correlation between the indices and the rankings corresponding to the two editions are very high. All the correlations, both those referring to the positions in the ranking (Spearman) and to the values of the synthetic indicator (Pearson), are significant to 1% and, for the global index are around the maximum value of 1 in all cases. This result is important because it means that the small changes introduced and data updates have not significantly altered the results confirming the reliability of the methodology used. and, at the same time, that there have been no significant structural changes in the system caused by a specific event, but rather the mere natural evolution of the system over the course of a fiscal year.

	Performance		Volume	
	Index	Ranking	Index	Ranking
Global	0.99	0.98	1.00	1.00
Teaching	0.99	0.97	1.00	1.00
Research and innovación	0.99	0.97	1.00	1.00

Note: The ranking values are calculated by means of a Spearman correlation coefficient and the index values by means of a Pearson correlation coefficient.

Source: BBVA Foundation-Ivie (U-Ranking 2024).

4.10. REGIONAL UNIVERSITY SYSTEMS

Universities undertake their teaching and research activities in a certain geographic context that influences them. On the one hand, if they are public, investment efforts as well as incentive policies, fees, quality assurance and plans to boost internationalization vary greatly from one region to another. On the other hand, the socio-economic environments of each region are different: there are differences in the levels of income, the population’s educational levels, type of industries, labor market, urbanization, etc.

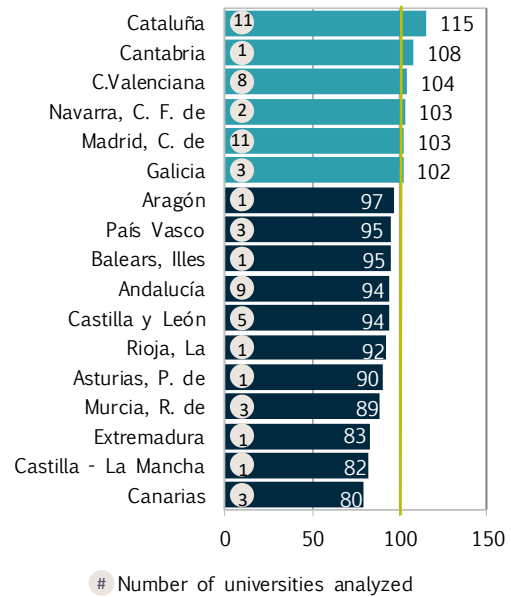
Many of these circumstances influence the location of private universities, which are clearly concentrated in the most prosperous regions of Spain, so that the number of regional public and private universities is uneven. For all these reasons, it is interesting to analyze the performance of the so-called *regional university systems*. To the extent that the variables used to calculate the rankings reflect these regional differences, the synthetic indicators will show that the performances of the university systems are not the same.

Panel a of **figure 4.17** shows the averages of the 2024 U-Ranking index of all universities, both public and private, of each autonomous community. The five distance-learning universities have been removed from this analysis because, given their teaching method, it would be difficult to assign their scope of action to a particular region. Panel b shows the regional averages of the index if only on-site public universities are taken into account. Both graphs show the number of universities in each region, which shows that the size and complexity of the systems vary greatly.

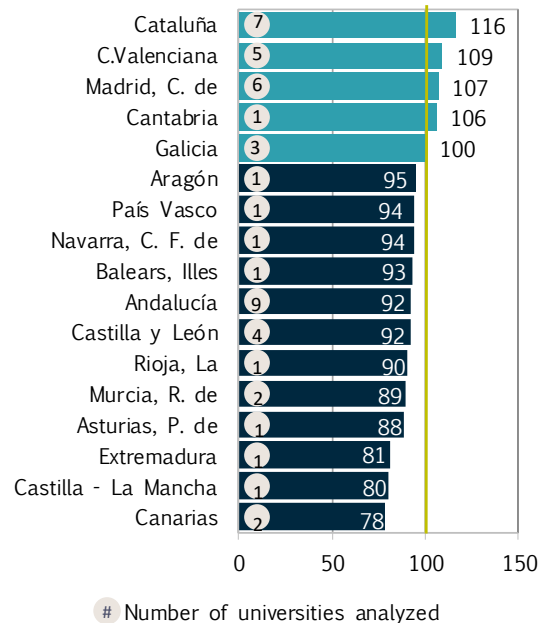
The results show, in fact, large differences regarding performance among the regional university systems: the autonomous community with the highest performance exceeds by 35 percentage points the region with the lowest performance.

Figure 4.17. Performance of the regional university systems in U-Ranking. Spain=100

a) On-site univiersities



b) On-site public universities



Note: On-line universities not included.

Source: BBVA Foundation-lvie (U-Ranking 2024).

The best-performing university systems are those of Catalonia (11 of the universities analyzed in U-Ranking), and Cantabria (with just one university), which have performance indices of 15% and 8%, respectively. They are followed by the Valencian Community (+4%), Navarra and Madrid (+3%) and Galicia (+2%) all of which are above average.

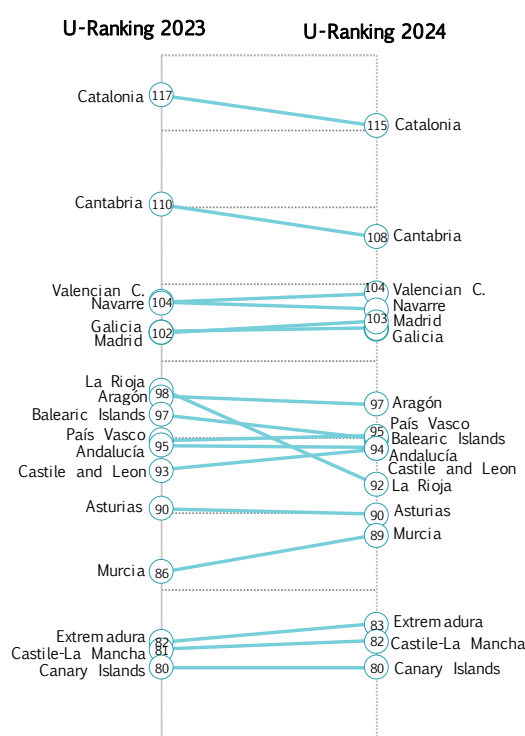
Among the regional university systems with performance levels below the average, we can distinguish several levels: some do not reach 5% —Aragon, Basque Country and Balearic Islands—, others are less than 10% —Andalusia, Castile and Leon, La Rioja and Asturias—. While other communities are over 10%, as is the cases of Murcia, Extremadura, Castile-La Mancha and Canary Islands.

Panel b of figure 4.17 analyzes regional performance based only on on-site public universities. When compared with panel a, the changes allow us to see how the performance of private universities affects the performance of the region. Thus, the Valencian Community and Madrid significantly improve their position when only public universities are taken into account, while Navarra's performance worsens. Catalonia maintains first place in both cases.

When comparing the regional university systems, we must take into account that private universities, which on average have a lower performance, tend to be concentrated, as we already have seen, in regions with high levels of income and large potential markets. However, this does not prevent the regional university systems with the highest concentration of private universities, especially Madrid, Valencia and Catalonia, from occupying advanced positions, since these communities have powerful and numerous public institutions that stand out for their performance.

Finally, **figure 4.18** compares the results obtained by the autonomous communities in the 2023 edition with the results from the present edition. In general, we can highlight their stability, but some changes should be noted. The gap between the community with the highest and lowest performance indexes has narrowed from 38 to 37 points. Thus, a continuation of the convergence process experienced in recent years can be seen.

Figure 4.18. Evolution of the regional university systems. 2023 and 2024.
Spain =100



Note: On-line universities not included.

Source: BBVA Foundation-ivie (U-Ranking 2024).



Conclusions

05

The aim of U-Ranking is to generate classifications that allow to analyze the Spanish universities with broad datasets that consider the main dimensions of their activities: teaching, research and innovation. Two main rankings are obtained with this project: U-Ranking, which correcting for size, measures the performance of Spanish universities and ranks them according to their level, and U-Ranking Volume, which measures the results without considering their size. The methodology used in U-Ranking is rigorous and in harmony with the recommendations of recent international studies on this subject.

Adding the information on the results of the universities in different areas has its challenges. However, not considering them and examining the numerous indicators that can be considered separately is not a practical solution, since most of the people interested in comparing universities want information presented in a simple manner, not large and complex volumes of information. Therefore, students, faculty members, guidance counselors, researchers, university managers or politicians, and communications media appreciate having synthetic indicators available. Rankings, if constructed with suitable criteria and clear metrics, can be useful in this sense, because they condense the results of universities in several areas, reducing the effort that users have to make to obtain and analyze the information, which in many cases, the user has to do personally.

U-Ranking indices allow to analyze the results in teaching, research and innovation of all the public universities in Spain (48) and 22 private universities that offer the information needed to make the comparison. Data for the rest of the private universities that are currently not included will be added in the future when information on their activities becomes available and can be compared with the data offered by the 70 universities that are now included.

The rankings were constructed from 20 variables that take into account the following aspects: (i) the universities' different missions (teaching, research and innovation); (ii) the existence of differences in the results of a university in the different areas of study; and (iii) the importance of considering the preferences of the users of university services when constructing some rankings.

The project generates two general university rankings —volume of performance (U-Ranking) and volume of results (U-Ranking Volume)— and four partial rankings: two of teaching and two of research and innovation, in terms both of volume and of performance. These six university profiles can be of interest for assessing them from different perspectives, since the images projected of a university by each ranking are not the same for all of them. It corresponds to the users of the information —university or political leaders, researchers, students, guidance counselors, analysts, etc.— to consider which images are the most relevant for their needs or interests.

The main results of the 2024 edition of U-Ranking are:

1. The synthetic indicators from which the rankings are obtained show that the differences in performance among universities are relevant: the level of the indicator of those with better results triples that of the universities with lower performance levels.
2. The differences among universities in terms of volume of results are much greater, since they are influenced by performance and the different sizes of the universities.
3. Public universities dominate the Spanish University System. The Universitat Politècnica de València, for the first time, and the Universidad Carlos III de Madrid lead U-Ranking 2024. They are followed by the Polytechnic Universities of Catalonia and Madrid, which moves up one place, and the Universitat Pompeu Fabra. Four universities share the third position: the Autonomous Universities of Barcelona and Madrid, U. of Barcelona and U. Rovira i Virgili.
4. The first private universities appear in the fourth position, where Universidad de Navarra and IE Universidad appear together with six public universities that already appeared in this position last year: Cantabria, Universitat de València, Alcalá, Santiago de Compostela, Vigo and Girona and three that have risen in this edition: Burgos, Miguel Hernández and Granada.
5. The universities that lead in terms of volume of results are also public and are ranked from first to fifth place in the following order: Complutense de Madrid, Universitat de Barcelona, Universitat de València, Universidad de Granada and Universidad de Sevilla.
6. The leadership of some of public universities is especially outstanding in the research and innovation, especially those located in Catalonia. Positions 1 to 3 are occupied by 9 universities, all of them public. More than half (5) are located in Catalonia, three in Madrid and the other one in Valencia. The Universitat Pompeu Fabra heads the research and innovation ranking along with U. Autònoma de Barcelona and the U. Politècnica de Catalunya. The second position is occupied by U. Carlos III de Madrid and the polytechnique universities of Madrid and Valencia.
7. In terms of volume of scientific production and transfer, the ranking is headed by the Universidad Complutense de Madrid, followed by Universitat de Barcelona and in third place by Universitat de València, Universidad de Granada and Universidad de Sevilla.
8. The teaching ranking is headed by a group of 5 universities, two public (U. Politècnica de València and U. Carlos III) and three private (U. Ramon Llull, U. de Navarra and Europea de Madrid).
9. As already highlighted, there is a group of universities, made up of institutions with varied profiles among which predominate those of larger dimension that occupy the prominent places regarding volume of results and also performance. Most of them appear among the top 500 universities in well-known international rankings, such as Shanghai, THE and QS. U-Ranking confirms that Spanish universities that appear in the international rankings with greater volume of results are more productive. The repeated signals of quality sent by these institutions allow us to identify them as excellent universities, a conclusion that is repeated with different classification criteria. Consequently, efforts to improve the positioning of Spanish universities at international level should focus on these institutions.
10. In private universities, the ranking confirms their high specialization and remarkable performance in teaching which exceeds by 9 percentage points the average of public universities. Three out of five universities with a high level of performance in teaching are private. When evaluating this result, it is important to note that the private universities that have been included in the ranking have higher indicators than the majority of private

ones that are not included due to lack of information, in view of the values which are available. Thus, the average level of the teaching results of private universities could be lower if U-Ranking included all the private universities.

11. The specialization in teaching of private universities has its counterpart in a worse relative position with respect to the public system in terms of research performance which is 47percentage points lower than that of public universities, with the first private universities (IE Universidad and Universitat Oberta de Catalunya) appearing in seventh place in the research and innovation ranking. None of the 19 universities with best performance in research is private. Public universities present higher levels of performance in research, and innovation.
12. Research activity is much more visible among public universities, however it varies greatly in terms of intensity and results. Thus, specialization in teaching is also an aspect that distinguishes the public university system. The greater intensity of the differences in research and innovation performance indexes is evidence that this mission of the university is significantly more concentrated than teaching in some areas of the university system, as well as within the universities in specific areas and individuals.
13. Some well-known international initiatives —such as the Shanghai Ranking or THE— have increased the visibility of the classifications of universities and the social demand for such rankings. But these rankings emphasize the indicators of research and training of high international prestige, often at graduate level, leaving out most of the activity of our university system, which focuses on the teaching of bachelor's degrees and does not compete in the world leagues. The orientation towards research indicators is also characteristic of other national rankings, drawn up with guarantees of quality but are based on indicators of the activities of universities that are too partial since they include very few on teaching activities. Our results highlight the key importance of combining research performance with teaching performance measurements. Using the former as a proxy for the latter offers a very biased view of reality because the correlation between the two measures is low. The incorporation of private universities blurs the relationship between the two dimensions because they combine strong teaching performance and (in many cases) weak research performance, confirming the need to acknowledge the heterogeneity of the Spanish University System.
14. Differences in the results of the universities are also seen at regional level. Catalonia, whose university system is clearly the leader, Cantabria, Valencian Community, Navarre, Galicia and Madrid have the most productive university systems, with performance levels above the Spanish average. Differences in performance among the regional university systems are great: 35,9 percentage points between the best-performing region and the worst-performing region.
15. The analysis of regional performance levels of only on-site public universities reveals that in some regions—Madrid and the Valencian Community—the importance of private universities lowers their performance as public university systems outperform the national average to a greater extent. While, in other regions —Comunidad Foral de Navarra— private universities make them improve their performance, and in other regions —Catalonia— it has no effect, indicating a greater homogeneity of performance between the public and private universities in those regions.
16. The 12th edition once again updates the Choose a University tool that allows families and future students to learn more about each university and to compare the nearly 3,600 bachelor's degrees that exist in Spain according to their preferences. In addition to the results of the ranking, it offers information on tuition costs, cut-off marks for the 2023-24 academic year and the most recent job placement results for graduates of 1,700

degrees with data obtained from the database of the Ministry of Science, Innovation and Universities in collaboration with the Social Security.

Annexes

Annex 1: Glossary of Indicators and statistical sources

Dimension	Area	Indicator and definition	Source	Period	Level
Teaching	Resources	Faculty member per 100 students: Full-time equivalent faculty and research staff in centers belonging to the University per 100 full-time equivalent students in studies of 1st and 2nd cycle, bachelor's and master's degrees and students in doctoral degrees (all of these students registered in centers belonging to the University)	SIU	2017-18 to 2022-23	Area of study
		Budget per student: Effective income of the University by number of full-time equivalent students in studies of 1st and 2nd cycle, bachelor's and master's degrees and of students in doctoral degrees (all of these students registered in centers belonging to the University)	SIU SABI WEB	2017-18 to 2022-23	Universidad
		Percentage of faculty member with PhD: Full-time equivalent faculty members with PhD in centers belonging to the University over total full-time equivalent faculty and research staff in centers belonging to the University	SIU	2017-18 to 2022-23	Area of study
	Production	Success rate in bachelor's degree studies: Number of credits passed by grade students registered in an academic year over total credits evaluated within the same course (excluding transfer and recognized credits)	SIU	2017-18 to 2022-23	Area of study
		Evaluation rate in bachelor's degree studies: Number of credits evaluated by grade students registered in an academic year over total credits registered within the same course (excluding transfer and recognized credits)	SIU	2017-18 to 2022-23	Area of study
		Overall dropout rate in undergraduate studies: sum of the dropout rates in the first, second and third years of undergraduate studies	SIU	2017-18 to 2022-23	Area of study
	Quality	Percentage of postgraduate students: Full-time equivalent students registered in master's degrees over the total number of full-time equivalent students registered in studies of 1st and 2nd cycle, bachelor's and master's degrees (all of these students registered in centers belonging to the University)	SIU	2017-18 to 2022-23	Area of study
		Cut-off mark: Mark of the last general group1 student that gained admission to a degree with limited places	SIU	2023-24	Area of study
	Internacionalization	Percentage of foreign students: Non-Spanish students of 1st and 2nd cycle, bachelor's and master's degrees over the total number of students of 1st and 2nd cycle, bachelor's and master's degrees	SIU	2017-18 to 2022-23	Area of study
		Percentage of students in international mobility programs: Number of bachelor's and master's degree students who study abroad through a mobility program over total number of bachelor's and master's degree students	SIU	2016-17 to 2021-22	Universidad

Dimension	Area	Indicator and definition	Source	Period	Level
Research and innovation	Resources	Competitive public resources per faculty member with PhD: Competitive public resources for undirected research projects, including both projects and complementary actions and ERDF funds, over the total number of faculty members with full-time equivalent PhD	Agencia Estatal de Investigación SIIU	2017 to 2022	Area of study
		Contracts with PhDs, research grants and technical support over total budget: Competitive resources obtained for research staff training, Juan de la Cierva, Ramón and Cajal and support technicians over total effective income	Agencia Estatal de Investigación SIIU SABI WEB	2017 to 2022	Area of study
	Production	Citable documents with ISI reference per faculty member with PhD: Documents with ISI reference published per faculty members with full-time equivalent PhD	IJUNE (Thomson Reuters) SIIU	2017 to 2022	Area of study
		Number of patents per 100 faculty members with PhD: Number of national patents granted to each Spanish university by the Spanish Patents and Trade Marks Office per 100 faculty members with PhD	IJUNE (INVENES) SIIU	2017 to 2022	University
		Doctoral theses read per 100 faculty members with PhD: Doctoral theses read per 100 faculty members with full-time equivalent PhD	SIIU	2017 to 2022	Area of study
	Quality	Mean impact factor: Mean impact factor of the publications with at least one author affiliated to the University	IJUNE (Thomson Reuters)	2017 to 2022	Area of study
		Percentage of publications in the first quartile: Publications corresponding to journals in the first quartile of relevance within the Thomson Reuters classification by areas, over the total number of publications belonging to that area	IJUNE (Thomson Reuters)	2017 to 2022	Area of study
		Citations per document: Citations received per document from the date of publication to the date of data gathering	IJUNE (Thomson Reuters)	2017 to 2022	Area of study
	Internacionalization	European research funds per faculty members with PhD: Funding received by the university from EU research funds per every 100 full-time equivalent faculty members with PhD	European Commission (Horizon Dashboard) SIIU	2017 to 2022	University
		Percentage of publications with international co-authorship: Publications with at least one co-author affiliated to a foreign institution over the total number of publications	IJUNE (Thomson Reuters)	2017 to 2022	Area of study

Annex 2: List of university abbreviations

Abbreviation	University	Type of ownership
ABATOLIBA	Universitat Abat Oliba CEU	Private
COMILLAS	Universidad Pontificia Comillas	Private
IE	IE Universidad	Private
UA	Universidad de Alicante	Public
UAB	Universitat Autònoma de Barcelona	Public
UAH	Universidad de Alcalá	Public
UAL	Universidad de Almería	Public
UAM	Universidad Autónoma de Madrid	Public
UANE	Universidad Nebrija	Private
UB	Universitat de Barcelona	Public
UBU	Universidad de Burgos	Public
UC3M	Universidad Carlos III de Madrid	Public
UCA	Universidad de Cádiz	Public
UCAM	Universidad Católica San Antonio	Private
UCEU	Universidad San Pablo-CEU	Private
UCH	Universidad Cardenal Herrera-CEU	Private
UCJC	Universidad Camilo José Cela	Private
UCLM	Universidad de Castilla-La Mancha	Public
UCM	Universidad Complutense de Madrid	Public
UCO	Universidad de Córdoba	Public
UCV	Universidad Católica de Valencia San Vicente Mártir	Private
UDC	Universidade da Coruña	Public
UDE	Universidad de Deusto	Private
UDG	Universitat de Girona	Public
UDIMA	Universidad A Distancia de Madrid	Private
UDL	Universitat de Lleida	Public
UEC	Universidad Europea de Canarias	Private
UEM	Universidad Europea de Madrid	Private
UEV	Universidad Europea de Valencia	Private
UGR	Universidad de Granada	Public
UHU	Universidad de Huelva	Public
UIB	Universitat de les Illes Balears	Public
UIC	Universitat Internacional de Catalunya	Private
UJAEN	Universidad de Jaén	Public
UJI	Universitat Jaume I de Castellón	Public
ULL	Universidad de La Laguna	Public
ULPGC	Universidad de Las Palmas de Gran Canaria	Public
UM	Universidad de Murcia	Public
UMA	Universidad de Málaga	Public
UMH	Universidad Miguel Hernández de Elche	Public
UMON	Mondragon Unibertsitatea	Private
UN	Universidad de Navarra	Private
UNED	Universidad Nacional de Educación a Distancia	Public
UNEX	Universidad de Extremadura	Public
UNICAN	Universidad de Cantabria	Public
UNILEON	Universidad de León	Public
UNIOVI	Universidad de Oviedo	Public
UNIRIOJA	Universidad de La Rioja	Public
UNIR	Universidad Internacional de La Rioja	Private
UNIZAR	Universidad de Zaragoza	Public
UOC	Universitat Oberta de Catalunya	Private
UPC	Universitat Politècnica de Catalunya	Public
UPCT	Universidad Politécnica de Cartagena	Public
UPF	Universitat Pompeu Fabra	Public
UPM	Universidad Politécnica de Madrid	Public
UPNA	Universidad Public de Navarra	Public
UPO	Universidad Pablo de Olavide	Public
UPV	Universitat Politècnica de València	Public
UPV-EHU	Universidad del País Vasco/Euskal Herriko Unibertsitatea	Public
URJC	Universidad Rey Juan Carlos	Public
URLL	Universitat Ramon Llull	Private
URV	Universitat Rovira i Virgili	Public
US	Universidad de Sevilla	Public
USAL	Universidad de Salamanca	Public
USC	Universidade de Santiago de Compostela	Public
UV	Universitat de València	Public
UVA	Universidad de Valladolid	Public
UVIC-UCC	Vic-Universitat Central de Catalunya	Private
UVIGO	Universidade de Vigo	Public
VIU	Universidad Internacional Valenciana	Private

References

- AGUILLO, I. F. «Ranking Web of World Universities: Methodology». Madrid: Cybermetrics Lab, Consejo Superior de Investigaciones Científicas (CSIC). Available at: <http://www.webometrics.info/en/Methodology> [date of access: May 2023].
- AGUILLO, I. F., J. BAR-ILAN, M. LEVENE and J. ORTEGA (2010). «Comparing university rankings». *Scientometrics* 85, n.º 1: 243-256. <https://doi.org/10.1007/s11192-010-0190-z>
- ALDÁS, J. (dir.), A. ESCRIBÁ, M. IBORRA and V. SAFÓN (2016). *La universidad española: Grupos estratégicos y desempeño*. Bilbao: Fundación BBVA. <https://www.fbbva.es/publicaciones/la-universidad-espanola-grupos-estrategicos-y-desempeno/>
- ALTBACH, P. G. (2006). «The dilemmas of ranking». *International Higher Education* n.º 42. <https://doi.org/10.6017/ihe.2006.42.7878>
- BENGOETXEA, E. and G. BUELA-CASAL (2013). «The new multidimensional and user-driven higher education ranking concept of the European Union». *International Journal of Clinical and Health Psychology* 13, n.º 1 (January): 67-73. [https://doi.org/10.1016/S1697-2600\(13\)70009-7](https://doi.org/10.1016/S1697-2600(13)70009-7)
- BUTLER, D. (2007). «Academics strike back at spurious rankings». *Nature* 447, n.º 7144 (May): 515. <https://doi.org/10.1038/447514b>
- CHE (Centrum für Hochschulentwicklung). CHE Ranking. Available at: <https://www.daad.de/en/studying-in-germany/universities/che-ranking/> [date of access: May 2024a].
- __. CHE Ranking: Methodology. Available at: <https://methodik.che-ranking.de/> [date of access: May 2023].
- CLARIVATE ANALYTICS. Web of Science (WOS). Philadelphia. Available at: <https://clarivate.com/products/web-of-science/> [date of access: febrero de 2024].
- CWCU (Center for World-Class Universities of Shanghai Jiao Tong University). Academic Ranking of World Universities 2023 (ARWU). Available at: <https://www.shanghairanking.com/rankings/arwu/2024> [date of access: May 2024].
- ECCLES, C. (2002). «The use of university rankings in the United Kingdom». *Higher Education in Europe* 27, n.º 4: 423-432. <https://doi.org/10.1080/0379772022000071904>
- ERKKILÄ, T and O. PIIRONEN (2018). *Rankings and global knowledge governance. Higher education, innovation and competitiveness*. Helsinki: Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-68941-8>
- ESCRIBÁ, A., M. IBORRA and V. SAFÓN (2019). *Modelos de dirección estratégica en universidades españolas de alto desempeño*. Bilbao: Fundación BBVA. <https://www.fbbva.es/publicaciones/modelos-de-direccion-estrategica-en-universidades-espanolas-de-alto-rendimiento-2/>
- ESPAÑA (2014). «Real Decreto 96/2014, de 14 de febrero, por el que se modifican los Reales Decretos 1027/2011, de 15 de julio, por el que se establece el Marco Español de Cualificaciones para la Educación Superior (MECES), y 1393/2007, de 29 de octubre, por el que se establece la ordenación de las enseñanzas universitarias oficiales». Boletín Oficial del Estado n.º 55, March 2014: 20151-20154. <https://www.boe.es/boe/dias/2014/03/05/pdfs/BOE-A-2014-2359.pdf>

- GARCÍA, J. A., R. RODRÍGUEZ, J. FERNÁNDEZ, D. TORRES and F. HERRERA (2012). «Ranking of research output of universities on the basis of the multidimensional prestige of influential fields: Spanish universities as a case of study». *Scientometrics* 93, n.º 3 (December): 1081-1099. <https://doi.org/10.1007/s11192-012-0740-7>
- GONZÁLEZ, B., V. P. GUERRERO and F. MOYA (2010). «A new approach to the metric of journals' scientific prestige: The SJR indicator». *Journal of Informetrics* 4, n.º 3 (July): 379-391. <https://doi.org/10.1016/j.joi.2010.03.002>
- HERNÁNDEZ, J. (dir.), J. A. PÉREZ and J. HERNÁNDEZ (2010). *La Universidad española en cifras 2010*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). https://www.crue.org/wp-content/uploads/2020/02/UEC_2010.pdf
- HERNÁNDEZ, J. and J. A. PÉREZ (dirs.) (2015). *La Universidad española en cifras 2013-2014*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). https://www.crue.org/wp-content/uploads/2020/02/UEC_13-14.pdf
- ___ (2016). *La Universidad española en cifras 2014-2015*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). https://www.crue.org/wp-content/uploads/2020/02/UEC_14-15.pdf
- ___ (2017). *La Universidad española en cifras 2015-2016*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). https://www.crue.org/wp-content/uploads/2020/02/UEC_Digital_WEB.pdf
- ___ (2018). *La Universidad española en cifras 2016-2017*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). <https://www.crue.org/wp-content/uploads/2020/02/2018.12.12-Informe-La-Universidad-Espa%C3%B1ola-en-Cifras.pdf>
- ___ (2023). *La Universidad española en cifras 2019/2020*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). Available at: https://www.crue.org/wp-content/uploads/2023/04/CRUE_UEC_22_1-PAG.pdf
- INE (Instituto Nacional de Estadística) (2020). *Encuesta de Inserción Laboral de los Titulados Universitarios EILU-2019*. Madrid. https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176991&menu=ultiDatos&idp=1254735976597
- IREG (Observatory on Academic Ranking and Excellence) (2006). «Berlin Principles on Ranking of Higher Education Institutions». Warsaw, Poland. https://www.ihep.org/wp-content/uploads/2014/05/uploads_docs_pubs_berlinprinciplesranking.pdf
- ___ (2019). *IREG Guidelines for Stakeholders of Academic Rankings*. Warsaw, Poland. <https://ireg-observatory.org/en/wp-content/uploads/2019/12/ieg-guidlines-for-stakeholders-of-academic-ranking.pdf>
- LOUKKOLA T., H. PETERBAUER and A. GOVER (2020). *Exploring higher education indicators*. Geneva: Brussels: European University Association (EUA). <https://eua.eu/component/attachments/attachments.html?id=2824>
- MARGINSON, S. (2007a). «Global University Rankings: Implications in general and for Australia». *Journal of Higher Education Policy and Management* 29, n.º 2: 131-142. <https://doi.org/10.1080/13600800701351660>
- ___ (2007b). «Global university rankings: where to from here?». Presented at: *Ranking Systems: Universities of Choice*. National University of Singapore, 7-9 March 2007.
- MICHAVILA, F. (dir.) (2012) *La Universidad española en cifras 2012*. Madrid: Conferencia de Rectores de las Universidades Españolas (CRUE). https://www.crue.org/wp-content/uploads/2020/02/UEC_12-13.pdf
- MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES. Indicadores de afiliación a la Seguridad Social de los egresados universitarios. Madrid. Available at: <https://www.universidades.gob.es/indicadores-de-afiliacion-a-la-seguridad-social-de-los-egresados-universitarios/> [date of access: January 2024a].

- __. Estadística de precios públicos universitarios: Curso 2023-24. Madrid. Available at: <https://www.universidades.gob.es/estadistica-de-precios-publicos-universitarios> [date of access: April 2023b].
- __. Registro de Universidades, Centros y Títulos (RUCT). Madrid. Available at: <https://www.educacion.gob.es/ruct/home> [date of access: May 2024c].
- __. Sistema Integrado de Información Universitaria (SIIU). Madrid. Available at: <https://www.universidades.gob.es/sistema-integrado-de-informacion-universitaria> [date of access: May 2024d].
- __. Clasificaciones estadísticas universitarias. Madrid. Available at: <https://www.universidades.gob.es/clasificaciones-estadisticas-universitarias> [date of access: April 2024e].
- __. Estadística de estudiantes. Madrid. Available at: <https://www.universidades.gob.es/estadistica-de-estudiantes> [date of access: May 2024f].
- MINISTERIO DE EDUCACIÓN, CULTURA Y DEPORTE y CCS (Conferencia de Consejos Sociales) (2014). *Inserción laboral de los egresados universitarios. La perspectiva de la afiliación a la Seguridad Social*. Madrid. Available at: https://www.universidades.gob.es/wp-content/uploads/2022/10/Insercion_laboral_egresados-2009-2010.pdf
- NARDO, M., M. SAISANA, A. SALTELLI, S. TARANTOLA, A. HOFFMANN and E. GIOVANNINI (2008). *Handbook on constructing composite indicators. Methodology and user guide*. Paris: OCDE; Ispra (Italy): Joint Research Centre. <https://doi.org/10.1787/9789264043466-en>
- OCDE (Organización para la Cooperación y el Desarrollo Económicos). OECD Indicators of Talent Attractiveness. Paris. Available at: <https://www.oecd.org/migration/talent-attractiveness/> [date of access: May 2023].
- PASTOR, J.M. (dir.), J. ALDÁS, F.J. GOERLICH, P. J. PÉREZ, L. SERRANO, A. CATALÁN, Á. SOLER, I. ZAERA and S. MOLLÁ (2019). *La contribución socioeconómica del sistema universitario español: Informe SUE 2018*. Madrid: CRUE (Conferencia de Rectores de las Universidades Españolas): Conferencia de Consejos Sociales. http://dx.medra.org/10.12842/INFORME_SUE_2018
- PÉREZ, F. J. ALDÁS (dirs.), R. ARAGÓN and I. ZAERA (2017). *U-Ranking 2017: Indicadores sintéticos de las universidades españolas. 5.ª edición*. BILBAO: Fundación BBVA; València: Ivie. <https://www.fbbva.es/wp-content/uploads/2018/06/Informe-U-Ranking-FBBVA-Ivie-2017.pdf>
- __ (2019). *U-Ranking 2019: Indicadores sintéticos de las universidades españolas. 7.ª edición*. BILBAO: Fundación BBVA; València: Ivie. https://doi.org/10.12842/RANKINGS_SP_ISSUE_2019
- __ (2021). *U-Ranking 2021: Indicadores sintéticos de las universidades españolas. 9.ª edición*. BILBAO: Fundación BBVA; València: Ivie. http://doi.org/10.12842/RANKINGS_SP_ISSUE_2021
- __ (2023). *Análisis de la inserción laboral de los universitarios. Diferencias entre titulaciones*. Bilbao: Fundación BBVA; València: Ivie. http://doi.org/10.12842/URANKING_INSERTION_LABORAL_2023
- __ (2024). *La inserción laboral de los universitarios: 2013-2023: evolución, diferencias por estudios y brechas de género*. Bilbao: Fundación BBVA; València: Ivie. http://doi.org/10.12842/URANKING_INSERTION_LABORAL_2024
- PÉREZ, F., J. ALDÁS-MANZANO (dirs.), R. ARAGÓN, A. PANTOJA and I. ZAERA (2022). *U-Ranking 2022: Indicadores Sintéticos de las Universidades Españolas. 10ª edición*. Bilbao: Fundación BBVA; València: Ivie. http://doi.org/10.12842/RANKINGS_SP_ISSUE_2022
- PÉREZ, F., J. ALDÁS (dirs.), R. ARAGÓN, I. ROSELL and I. ZAERA (2020). *U-Ranking 2020: Indicadores sintéticos de las universidades españolas. 8.ª edición*. BILBAO: Fundación BBVA; València: Ivie. http://doi.org/10.12842/RANKINGS_SP_ISSUE_2020
- PÉREZ, F., J. ALDÁS, J. M. PEIRÓ (dirs.), B. MIRAVALLS, I. ROSELL and I. ZAERA (2021). *Universidades líderes en el mundo: El posicionamiento de España*. Bilbao: Fundación BBVA. <https://www.fbbva.es/publicaciones/universidades-lideres-en-el-mundo-2/>

PÉREZ, F., L. SERRANO (dirs.), J. M. PASTOR, L. HERNÁNDEZ, Á. SOLER and I. ZAERA (2012). *Universidad, universitarios y productividad en España*. Bilbao: Fundación BBVA. <https://www.fbbva.es/publicaciones/universidad-universitarios-y-productividad-en-espana/>

QS (Quacquarelli Symonds) (2024a). «QS World University Rankings methodology: Using rankings to start your university search». Available at: https://www.topuniversities.com/qs-world-university-rankings/methodology?check_logged_in=1

__. QS World University Rankings 2024. Available at: https://www.topuniversities.com/world-university-rankings?tab=indications&sort_by=rank&order_by=asc [date of access: May 2024b].

RAUHVARGERS, A. (2011). *Global University Rankings and their impact*. Brussels: European University Association asbl. <https://eua.eu/downloads/publications/global%20university%20rankings%20and%20their%20impact.pdf>

__ (2013). *Global University Rankings and their impact: Report II*. Brussels: European University Association asbl. <https://eua.eu/downloads/publications/global%20university%20rankings%20and%20their%20impact%20-%20report%20ii.pdf>

REHN, C., U. KRONMAN and D. WADSKOG (2007). *Bibliometric indicators: Definitions and usage at Karolinska Institutet*. Estocolmo: Karolinska Institutet. <https://kib.ki.se/media/38/download>

SALMI, J. (2009). *The Challenge of Establishing World-Class Universities*. Washington D. C.: World Bank. <http://hdl.handle.net/10986/2600>

SALMI, J. and A. SAROYAN (2007). «League tables as policy instruments: Uses and misuses». *Higher Education Management and Policy* 19, n.º 2. <https://doi.org/10.1787/hemp-v19-art10-en>

THE (Times Higher Education). Times Higher Education World University Rankings 2024. Available at: <https://www.timeshighereducation.com/world-university-rankings/2024/world-ranking> [date of access: May 2023].

TORRES, D., E. DELGADO, N. ROBINSON, I. TRIGUERO and F. HERRERA (2013). *Rankings I-UGR de universidades españolas según campos y disciplinas científicas. 4ª Edición – 2013*. Granada: Universidad de Granada, EC3: Evaluación de la Ciencia y la

Comunicación Científica. <http://hdl.handle.net/10481/26633>

VAN VUGHT, F. and F. ZIEGELE (eds.) (2011). *U-Multirank. Design and Testing the Feasibility of a Multidimensional Global University Ranking. Final Report*. Consortium for Higher Education and Research Performance Assessment CHERPA-Network.



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