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Grau d'Enginyeria en Tecnologies Industrials

Measuring competition between university centers: the case of undergraduate degrees in Spain

Project Report

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Abstract

In the last years, Spain has seen an increase in the number of students enrolled at the university. This project aspires to understand the market of undergraduate studies in the Spanish system, to define a proper context for the study of competition in this market and to calculate and evaluate this competition.

The first phase of this work will involve the recollection of information that will allow the future study. This gathering will include the definition of topics such as market, competition and geographic accessibility, and the description of the Spanish market of undergraduate studies, with a focus on the students' habits and the available sources of information that will be used.

Once this ground has been built, the most relevant indicators of competition and geographical accessibility will be introduced. It will be necessary to consider the scope of the project in order to make a viable proposal of the indicators that will be used in the study.

Finally, the data study will be carried out. In order to do so, a database with all the study centres in Spain will be generated. Then, the relation between different categories of study centres will be studied, which together with a proper methodology will allow the calculation of accessibility and competition. Six different cases for each category will be studied (3 different radius, together with 2 substitution hypotheses), which will allow analysing the competition performance from different angles. Microsoft Excel will be the main program used for our project, because it includes all the needed formulas and it has the potential to produce long calculations. Some analysis will use Minitab, especially for the representation of data.

After the calculations have been carried out, the results will be added to the report via a Spanish map, which will provide a powerful way of visualization. Some additional analysis may be carried out in order to better understand the overall performance.

To conclude, some relation between competition and other factors is found, such as quality of studies and population of a province. It is important to notice that the main goal of the project is to develop an initial analysis of the Undergraduate studies' state in Spain, and therefore, this study may serve as a basis for future research on the topic.

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1. Introduction

The creation of policies defending the competition is one of the most relevant aspects in which a Government can influence the economy and social welfare of a country. Not allowing the existence of abusive practises or other unfavourable behaviours can greatly help consumers, both economically and socially. But, what are the advantages of competition? And how can it be studied?

Many benefits are associated with competition. The European Commission, one of the most relevant players of this topic, states [1] that competition is important because it provides lower prices for all, better quality of products, a wider range of choices and more innovation, both inside and outside the EU.

Therefore, it can be deduced that studying the competition of a product and knowing how its competition is distributed will be interesting when analysing its quality.

Many products can be studied nowadays, but thanks to Governmental Open Data measures, which focus on having more transparency and availability of data, studying public institutions is easier than ever. A product that is widely extended in Spain, known by the author and which competition can be relevant to study is the undergraduates' studies market.

Every year, the percentage of university studies enrolment (Number of university students between 18 and 24 divided by the total number of population between 18 and 24) increases, and nowadays, 3 out of 10 Spanish between 18 and 24 are studying at the university.
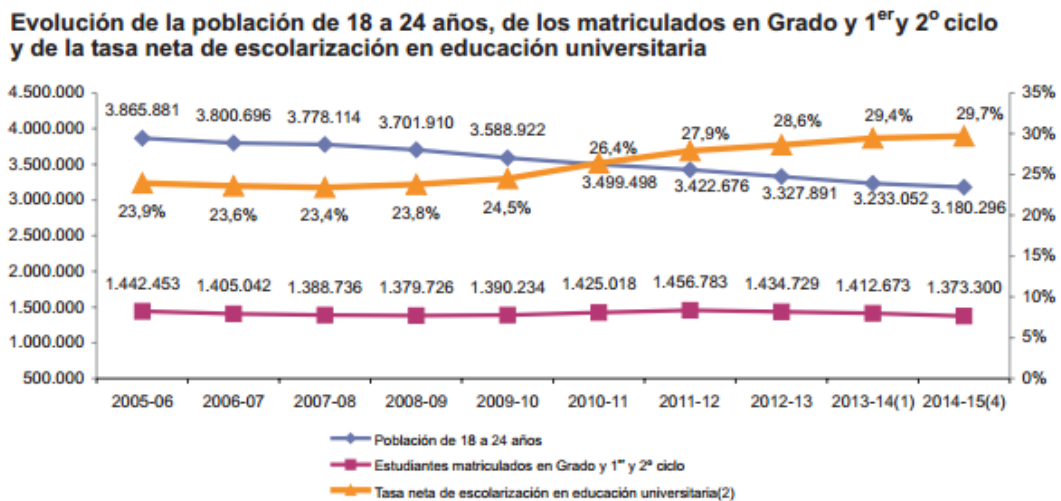

Image 1: Evolution of the graduation [2]

But do more students mean better education? And better competition? Is this competition distributed equally within all the Spanish territory?

Our work plans to answer these questions, among other interesting facts of the Spanish undergraduate system.

2. Objectives

The objectives of this project were clear since the beginning. The most relevant ones are the following:

- Definition of key concepts such as market, competition and geographic accessibility, while also identifying its relation with our study.
- Presentation of alternatives for concepts related to our competition, justifying each election.
- Definition of a clear methodology, which will be used for our future case study.
- Creation of a catalogue of study centres providing degrees in the Spanish public university system, including its supply, demand, matriculation, coordinates and a category depending on the branch of study.
- Development of key simplifications, in order to make the study more viable. Considering the huge amount of data that will be treated, the process and calculations are going to be necessarily optimized and uncomplicated.
- Analysis of the results, in order to relate them with concept defined. Also, distinction between areas with better competition and areas with poor competition using plotting software.

2.1 Scope

In order to define the boundaries of the project, the scope of it must be considered:

- Study centres from public universities were the only ones considered. Two reasons were the catalysts of this limitation:
  - First, more than 85% of Spanish students are enrolled in public universities, as shown in the following table:

Estudiantes matriculados en Grado y 1er y 2° ciclo. Previsión curso 2014-2015

	Total	%	Univ. Públicas	%	Univ. Privadas	%
Total	1.373.300	100,0%	1.202.383	87,6%	170.917	12,4%
Rama de enseñanza[1]						
Ciencias Sociales y Jurídicas	640.243	46,6%	544.113	45,3%	96.130	56,2%
Ingeniería y Arquitectura	277.968	20,2%	258.586	21,5%	19.382	11,3%
Artes y Humanidades	130.963	9,5%	124.828	10,4%	6.135	3,6%
Ciencias de la Salud	245.343	17,9%	197.744	16,4%	47.599	27,8%
Ciencias	78.783	5,7%	77.112	6,4%	1.671	1,0%

Image 2: Students enrolled in degrees in Spain [2]

This means that almost 9 out of 10 students of undergraduate studies are considered in our case, which is a good indicator of the performance of the totality of the university system.

- Second, the data available made reference only to public universities, and not private ones. In order to add these cases to our study, it was necessary a study for each private university case. Considering that there are 32 private universities in Spain, getting the information for each degree, faculty and

university was a really extensive, and as seen in the prior bullet point, unnecessary task.

- Only undergraduates' studies were considered. Although many degrees nowadays need a Master degree in order to have professional attributions, they are considered a minority when compared to the bulk of the undergraduate studies. Degrees considered in this study have, at least, 240 ECTS credits

3. Definitions

3.1 Market and competition

In order to give a better context to our future work, some key concepts need to be defined.

This work will mention many times in the following pages the concept "market". Although it is used in the common language, it also needs a proper definition. A market is a group of buyers and sellers of a particular good or service. The buyers, as a group, determine the demand of the product, and the sellers, also as a group, determine the supply of the product (Mankiw, 2008). And these markets are usually classified depending on its competition.

A competitive market is a market in which there are many buyers and sellers of the same good or service. More precisely, the key feature of a competitive market is that no individual's actions have a noticeable effect on the price at which the good or service is sold (Krugman, 2008).

On the other hand, if a producer can affect market prices, its industry is characterized by imperfect competition. The most evident case where imperfect competition exists is a monopoly. A monopoly is market where a firm is the sole supplier of a good that has no close substitutes, and therefore has too much power on that market. As it can be seen, a monopoly is a situation that must be avoided as much as possible, with government policies when necessary.

A market with few sellers but whose competition is not always aggressive is an oligopoly, as it happens with some industries in the United States – as seen in table 3 below. To get a better picture of market structure, economists often use the "four-firm concentration ratio", which asks what share of industry sales is accounted for by the top four firms. (Detailed explanation of the "Four-firm concentration ratio" and other indexes can be read at episode 4.2)

Four-Firm Concentration Ratios

Industry	Concentration ratio	Largest firms
1. Cigarettes	98.9	Philip Morris, R. J. Reynolds, Lorillard, Brown and Williamson
2. Batteries	90.1	Duracell, Energizer, Rayovac
3. Breweries	89.7	Anheuser-Busch, Miller, Coors, Stroh's
4. Light bulbs	88.9	Westinghouse, General Electric
5. Breakfast cereals	82.9	Kellogg's, General Mills, Post, Quaker Oats
6. Automobiles	79.5	General Motors, Ford, DaimlerChrysler

Image 3: Four-Firm Concentration Ratios. [Krugman 2006]

The table shows some industries with high ratios, which is a common characteristic of a non-competitive market. This produces, generally, a good or service with lower quality and higher prices, and should be a situation to prevent. Generally, markets with more evenly balanced firms are apt to be more competitive than markets where there are some firms that are larger and more powerful than their neighbours (Kessler and McClellan, 2000).

On a more detailed level, a market is categorized as monopolistically competitive if many sellers compete with each other by selling slightly different products. Those small differences may allow them to set the price for their own good, even if they compete with other producers. The existence of many different kinds of markets makes clear the importance of understanding their nature.

As seen, different kinds of competition mean different kinds of market.

Adapting the most important concepts mentioned to the scope of this work means relating these concepts to the market of undergraduate university studies:

a) Service or good. In the scope of undergraduate studies, the degree itself will be considered as the good offered. As mentioned in the episode "Scope", only degrees from public universities with more than 240 ECTS credits will be considered.

b) The competitors, or suppliers, can be considered either the degrees, competing against each other, or the study centres, to which the centres belong, depending on the interpretation of the market. Our case will consider the second option.

c) The high school students who want to enrol in an undergraduate degree in the Spanish university system will be considered as the buyers.

d) Supply will be defined as the maximum number of admissions available for each degree considered in our study.

e) The number of students that enrol in a specific degree will be considered as the demand. This number does not necessarily have to match the number labelled as demand on the tables provided by the Ministry, since small differences may occur.

3.2 Geographic accessibility concepts

The concept of geographic accessibility is crucial when analysing the most important factors of a market. Geographic accessibility is defined as the physical distance or travel time between the service delivery point and the user (Huerta, 2012).

For instance, a person living in Madrid who suffers a car accident will never consider the idea of asking the ambulance to carry him to a hospital in Bilbao if he wanted to keep his chances of staying alive. Therefore, it can be said that Basque hospitals have no geographic accessibility for people suffering of car accidents in Madrid. In other words, to study geographic accessibility helps to define if two suppliers compete against each other for a certain sector of a market or if they do not. The following map plots the number of pharmacies within an 800 m road travel distance of census dissemination blocks in Halifax, Nova Scotia. (Law, 2013)
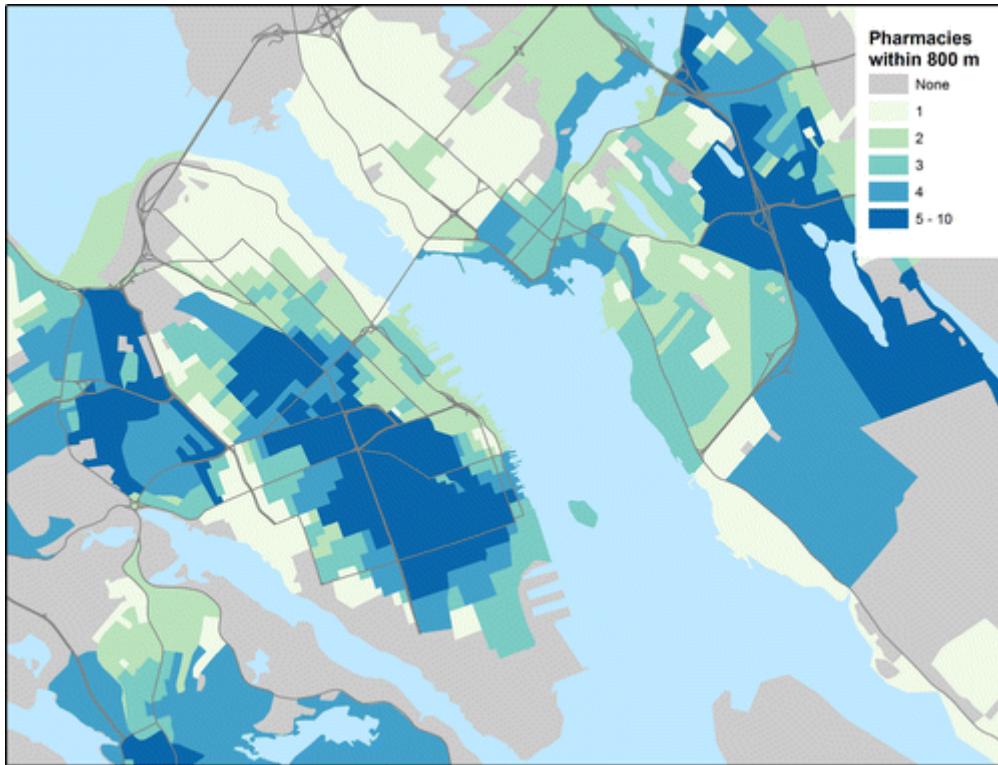
Image 4: Pharmacies within 800m, Halifax, Nova Scotia (Law, 2013)

There are multiple ways to define markets geographically, depending on the region and the market to be studied. Usually, the most accurate and used indicators are time and distance, as it will be seen in the following chapter. In some cases, accessibility is not defined by customers but by a larger entity, such as in the case of Electoral Colleges, assigned by the Government.

The existence of free web mapping tools, such as Google Maps or Open Street Maps, provides ease to calculations. In the case of coordinates, for example, it is much more precise and faster than using traditional maps.

Finally, understanding the key concepts to define the accessibility and defining the behaviour of customers will be crucial in order to define the accessibility.

4. Indicators of geographic accessibility

Once the main concepts of market, competition and geographic accessibility have been defined, it is necessary to m

4.1 Geographic accessibility

As explained in the prior episode, there are different ways of studying the geographic accessibility. The most relevant options are:

1) Political boundaries. This first strategy uses arbitrary areas, such as a city, a province or an autonomous community to define a market area. Since this method simplifies a lot the calculations, it is one of the most common methods used in similar studies, as it is the case of the use of Metropolitan Statistical Areas or Health Services Areas when analysing the health system (Gaynor and Vogt, 2000). In the end, there are a small number of possible political boundaries to choose from, and they are not likely to correspond to the right areas for most products and firms. Also, firms close to these boundaries may compete with others just at the other side, and these cases would not be captured with this method (Baker, 2001).

2) Fixed radius. The most common simplification is performing the calculations with distance is drawing a fixed radius of some distance. In similar health care studies, for example, it is common to consider a radius of 15 miles (Robinson and Luft, 1985).

3) Time that an individual takes to get to the different suppliers. On a first observation, it seems like the most obvious and accurate indicator, since the market is not defined arbitrarily. As it can be seen in the following map, extracted from a study of the US National Institute of Heal (Tian et. Al, 2011), there is a strong relation between maps of accessibility according to distance (left) and time (right).
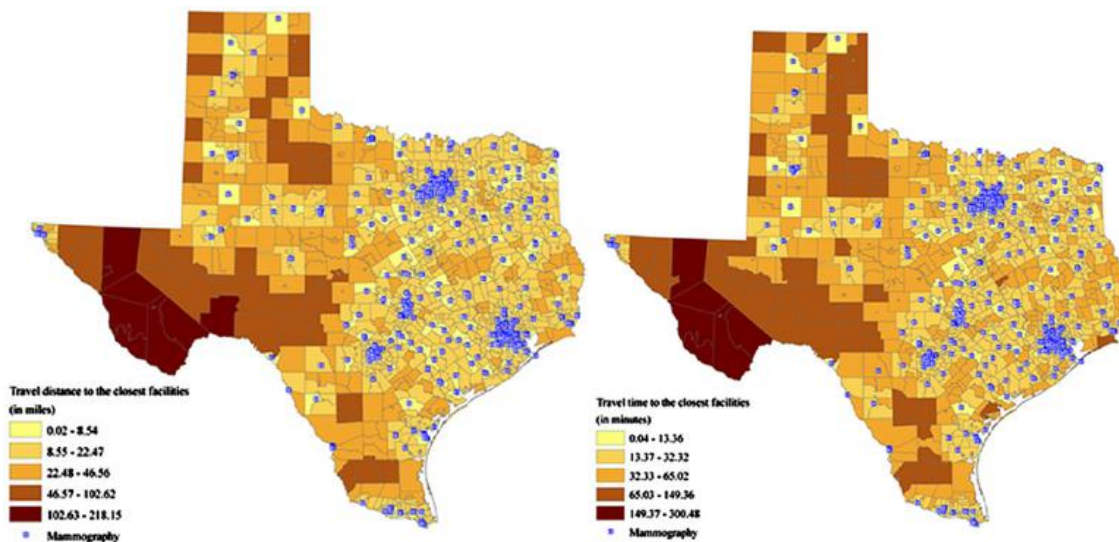
Image 5: Measure of accessibility to mammography facilities, Texas. Travel distance to closest facility (in miles), left, vs Travel distance to closes facility (In minutes), right. (Tian et. Al, 2011)

4) Variable radius. An improvement of the fixed radius method uses what is known as a variable radius. This approach takes into consideration geographical issues (Such as the sea, for example) and can help distribute the area in a different way for each supplier. This variation proposes a method which is more accurate than the fixed radius one, but it makes calculations and analysis much more complicated.

5) Consumer flow. This method also creates a unique market area for each competitor. The consumer flow approach directly uses patient origin data, and each faculty market would be defined as the collection of geographic areas, usually defined with zip codes, that send a relevant amount of patients to the faculty. An easy example of this case would be a local e-commerce, that could generate a database with the zip codes of the people buying their products, and they could easily elaborate a map with the concentration of their customers. Typical cases of this method include between 40 and 95% of the Zip Codes (Ecevit et al., 2010)

Although time is usually the best measure to study the geographic accessibility, fixed radius can be considered the optimum indicator of accessibility for our case. Fixed radius does not take into account the heterogeneity of the Spanish transport system, but calculations and other suppositions become much easier. Also, as seen in Image 6, the differences may not be appreciable if a proper criterion is followed during the analysis. Therefore, fixed radius will be the measure used for our study.

Once we know which geographic accessibility measure we are going to use, the final step is to find the fixed radius distance which will be considered for our study.

The Spanish Ministry of Public Works and Transport produced a study in 2006 about the habits of mobility of the Spanish citizens. This document, called Movilia [3], dedicates a whole chapter to the analysis of the mobility to the work and study centres, focusing in the last one. Movilia, in its 32nd chapter, provides us an interesting table which will help us understand the mobility habits of Spanish students.

MINISTERIO DE FOMENTO. MOVILIA 2006

CAPÍTULO 2. Movilidad a los centros de trabajo y estudio.

36. Centros habituales de estudio. Desplazamiento más habitual. Tiempo empleado por área metropolitana y tamaño de municipio

	Total centros	TRAMO DE DURACIÓN				
		Menos de 15	De 15 a 29	De 30 a 44	De 45 a 59	De 60 a 89	De 90 y más
Total	9.676,3	5.593,6	2.528,8	911,1	214,0	326,4	102,4

Image 6: Movilia study, grouping students by duration of displacement to the study centre

The table, which most relevant data is provided above (and which can be found complete at annex A), analyses the time dedicated into one shift to study centre, separating users by ranges depending the time of this trip.

Our objective is to find the market of study centres which could be associated to a student, so we will need to find a duration that includes almost all those students. A common tool for finding this range is known as the confidence interval, which in our case it will be the 95%. The 95% CI range means that, if picked a student randomly from the surveyed ones at the table above, there is only a 5% possibility that this student is not on the range, and therefore, a 95% of possibilities that it is.

The calculations, explained with detail at Annex A, prove that 95% of students' travel time will be less than 55 minutes.

Although this study may seem old, students' mobility habits have not changed during these years.

Recent studies carried out by Spanish universities such as "Universidad Carlos III de Madrid" [4] and "Universidad de Valladolid"[5] about their students habits showed similar numbers, with the confidence interval being around 50 minutes, again. Therefore, 55 will be the number considered as the range in time to the study center.

But our study uses the fixed radius as the tool to determine the market, so, how can we translate these 55 minutes into Kilometres?

Since the network infrastructure in Spain is heterogeneous, it is hard to determine how many kilometres can be made by a student in 55 minutes. The distance a student from a rural village in Burgos takes to attend classes is probably different than the time it will take a student from Valencia to attend to a centre in his own city. In order to determine an approximation of this value, we have picked four different examples, which are detailed in the following table:

Origin	Destination	Mode of travel	Time	Kilometers
Terrassa	UB - Barcelona	Train (Public)	55 minutes	37 km
Vic	UAB - Cerdanyola	Private car	50 min	59 km
Manresa	UPC - Barcelona	Private car	50 min	60 km
Vilanova i la Geltrú	UPF - Barcelona	Train (Public)	58 minutes	50 km
			Average	51,5 km
			CI 95	59,85 km

Image 7: Exemplification of some common Time-Distance routes

The example considered the two main ways of transport for students, public transportation and car, and exemplifies four different cases where travels about fifty minutes were made. Although these calculations do not illustrate the whole cases of students' travels into their study centres, they are useful in order to get a first estimation.

As shown in the table above, a distance of 60 Kilometres is considered as a good assumption for the road distance between the two points. But let's remember our study is going to use the Euclidean distance between two coordinates, not the road distance, and therefore, this distance needs to be adapted.

The Wiggle Factor (WF) is a correction factor defined as the ratio between the real distance travelled by road and the straight line between two points. It is commonly used to estimate route distances for land transport. (Dominguez-Caamaño, 2016)

In an article called "An improved methodology to determine the Wiggle Factor: an application for Spanish road transport", Pablo Domínguez-Caamaño performs a statistical analysis with more than 10.000 Spanish road routes, showing that the most common Wiggle Factor (1.2) is not a good approximation for Spanish roads, thus two different WF are presented: the first WF (1.36) characterizes mainly road infrastructure in rural areas while the second WF (1.29) characterizes high-capacity roads (typically motorways). This coefficients are a good approximation for long distances, but not useful enough for our study. In addition, the article presents an interesting graphic that relates the optimum WF coefficient depending on the straight line distance between the cities:
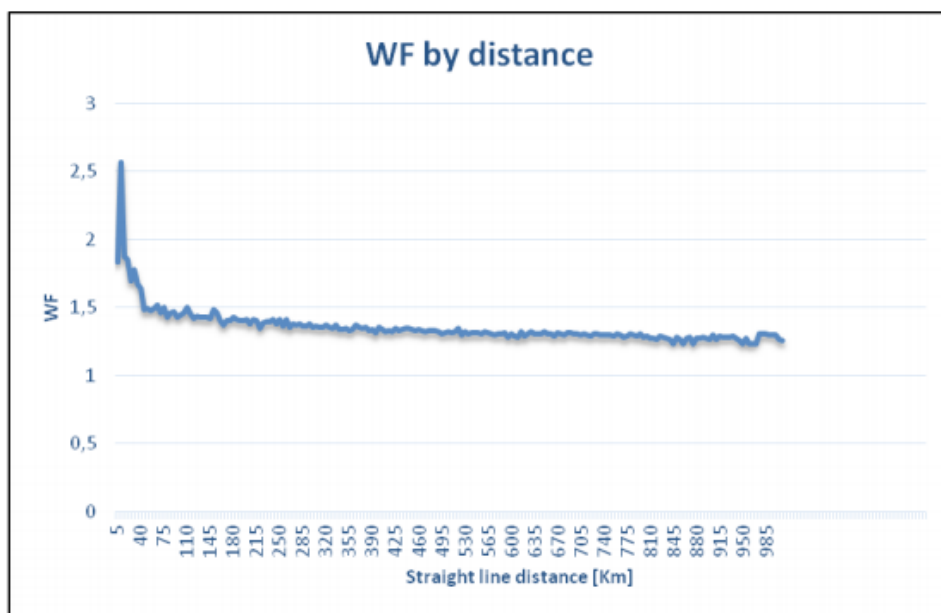
Image 8: Plot of the WF coefficient dependence with the Straight line distance
(Dominguez-Caamaño, 2016)

According to the graphic, the straight line distances greater than 50km tents to stabilization, while lower distances have a big variation of the WF coefficient.

In our case, a road distance of 60 km would need a WF coefficient of 1.5, and therefore, a straight line distance of 40 kilometres. This straight line distance, 40km, is going to be used for future calculations as our main fixed radius. As said before, this method supposes a great simplification in calculations, and despite not being the most exact scenario, it will make our study more straightforward.

Although this will be the most important case, the study will also consider the case of a fixed radius of 80km and 150km, in order to view the performance of competition from new angles.

4.2 Competition measures

Since many measures have been used to study competition – and none is, by definition, better than the rest – it will be necessary to determine the most useful for our study.

In economic theory, producer markets for a homogeneous product sold to many informed buyers will be competitive if there are many small sellers. The presence of more firms is, therefore, typically associated with more competition. Generally, markets with evenly balanced firms are apt to be more competitive than markets in which some firms are larger and more powerful than their neighbours. (Baker, 2001)

The simplest way of measuring competition is counting the number of firms competing with a product. This is an easily implementable solution, with an intuitive approach and results. Its shortcoming is the fact that it does not take into account the sizes of firms, which play a crucial role in the competition. (Terrés, 2016)

Professor Robert Pindyck, in his lectures at the Sloan School of Management at the Massachusetts Institute of Technology (2015) presents two quantitative models for concentration in these cases: the concentration ratio, CR_k, and the Herfindahl-Hirschman Index, HHI.

The Concentration Ratio, CR_k, measures the total combined market share of the k number of largest firms. Most widely used is the 4-Firm Concentration Ratio, CR(4), which is the combined market share of the four largest firms in the industry. Its general equation is the following:

$$CR_k = \sum_{i=1}^{k} S_i,$$

Where S_i is the market share of Firm i.

Concentration ratios are useful, but limited in terms of their information content. (Pindyck, 2015)

Another common measure of concentration is the Herfindahl-Hirschman index, known as HHI. This statistical measure of concentration has achieved a high degree of visibility for a statistical index because of its use by the Department of Justice and the Federal Reserve in the analysis of the competitive effects of mergers in the United States (Rhoades, 1993). Its general equation is the following:

$$HHI = \sum_{i=1}^{k} S_i^2,$$

Where once again Si is the market share of Firm i.

In a theoretical perfectly competitive industry, the HHI is approximately zero, and for a monopoly, it is 1. Both the number and relative size of firms are better captured in the HHI, probably the most common measure of competition (Baker, 2001).

To visualize the reasons why it is the most used measure, we will consider an example:

Let's consider two industries, A and B, both with a CR(4) of 90 percent. But these industries markets are totally different. In one hand, the four largest firms in industry A each have a market share of 22,5%, while in industry B the largest firm has a share of 75% and the next three firms each have shares of 5%. It is clear that the industry B is more concentrated than the industry A, even though they have the same CR(4).

On the other hand, when using the HHI Index, these differences in the size of companies are clearly seen. First, Industry A has an HHI index of 0,2025, while Industry B has an HHI index of 0,57, more than 2 times higher, despite both have the same CR(4).

In merger and other antitrust applications, the Department of Justice and Federal Trade Commission usually express the market shares as percentages, so that the HHI ranges from 0 to 10,000. Based on their experience, the Agencies generally classify markets into three types:

- Unconcentrated Markets: HHI below 1500
- Moderately Concentrated Markets: HHI between 1500 and 2500
- Highly Concentrated Markets: HHI above 2500

In our examples, Indexes would be 2025 for Industry A, considered "Moderately Concentrated Market" and 5700 for industry B, clearly a "Highly Concentrated Market" (U.S. Department of Justice and the Federal Trade Commission, 2015). The following images illustrate the example stated above.
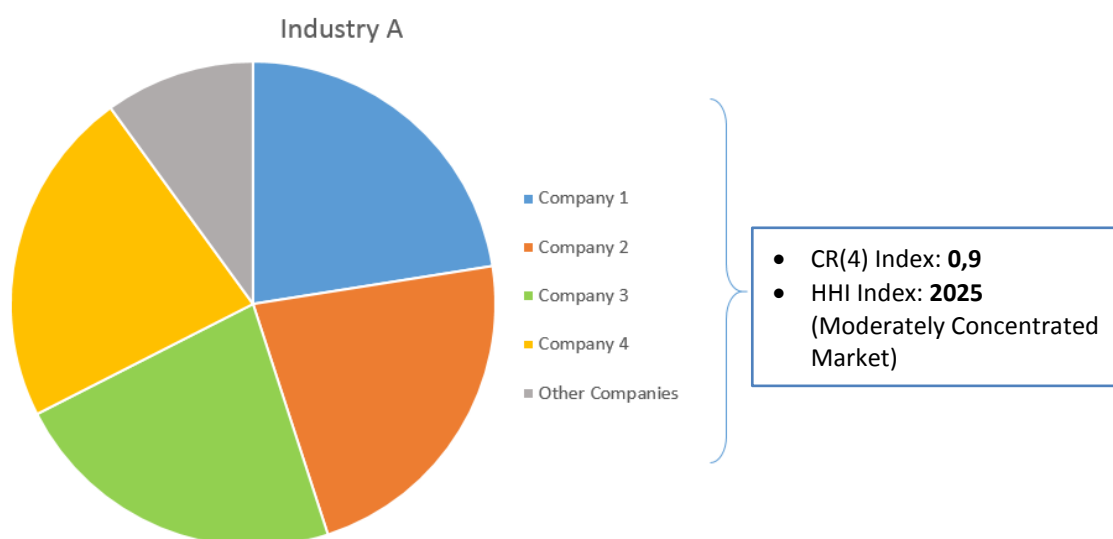
Image 9: Example 1 of a CR(4) of 0,9 and a HHI of 2025.
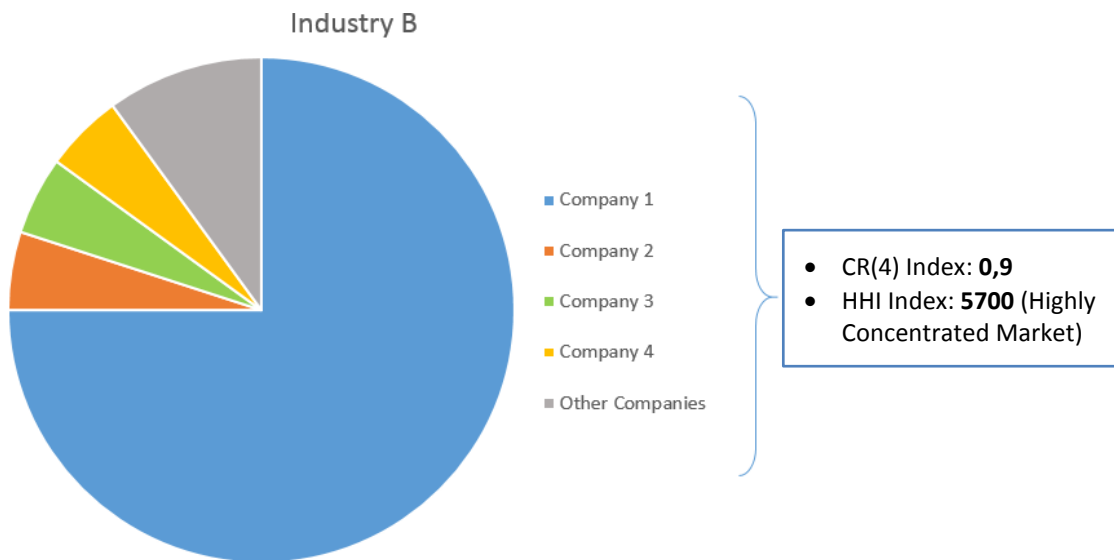
Image 10: Example 1 of a CR(4) of 0,9 and a HHI of 5700.

As proved below, HHI index is a much precise and illustrative measure of competition, and despite it is harder to calculate, this increment in the difficulty is worth.

5. Methodology

Before carrying out with the calculations and data study, it is necessary to sum up the methodology that our study will use.

- Geographic market area: A **fixed radius of 40KM** in straight line is going to define our market area for each consumer. Additional cases of **80km** and **150km** will be studied, in order to expand our analysis.
- Measure of competition: The **Herfindahl-Hirschman index**, HHI, is the measure of competition used for the study. The formula used for the HHI calculation, explained in detail at 6.3.2, is the following:

$$HHI_x = \frac{\sum_y^N (w_{x,z} \cdot \beta_{x,y} \cdot S_y)^2}{(\sum_y^N w_{x,z} \cdot \beta_{x,y} \cdot S_y)^2} \cdot \alpha$$

- Reference: In our case, the distances will be calculated **between each province capital in Spain** and **every university centre** offering a degree.
- Substitution: The study will consider two different scenarios: One where degrees from other fields can be considered as substitutes, and one where there cannot. Further detail of this measure is explained at episode 6.2.

Therefore, each category will have six different HHI results:

1. HHI with a fixed radius of 40km, considering substitute products
2. HHI with a fixed radius of 80km, considering substitute products
3. HHI with a fixed radius of 150km, considering substitute products
4. HHI with a fixed radius of 40km, without considering substitute products
5. HHI with a fixed radius of 80km, without considering substitute products
6. HHI with a fixed radius of 150km, without considering substitute products

6. Data study

In this episode, important questions referring to the data usage are going to be answered. First, how it has been extracted and processed from public database. Second, how it is interpreted and understood, in order to give answer to our needs. And finally, all the calculations that have been carried out are explained in detail, together with the formulas and Excel sheets used.

6.1 Catalogue extraction and processing

In order to develop the case study, a catalogue of centres will have to be elaborated. Thus, it is important to define the Spanish university system and consider the availability of the data needed. We can identify two different kinds of universities according to the source of their management and funding (U.S. Department of Homeland Security, 2013): public universities – those depending on the government for their funding – and private universities – which rely on private capital and management. The fact that public universities are managed by the Spanish governmental institutions will allow us to obtain large datasets about public schools from websites property of the "Ministry of Education, Culture and Sports" and will be useful for the performance of the study.

In our case, Spanish ministry of Education, Culture and Sport ("Ministerio de Educación, Cultura y Deporte") publishes annually what he calls "Series de oferta, demanda y matrícula", where it provides information about supply, demand and enrolment of each public degree in Spain from 2001 to 2016. [6]

Concretely, the information provided by the Governmental agency includes:

1. Autonomous community
2. University name
3. Branch of the degree
4. Code of the degree
5. Name of the degree
6. University centre
7. Type of the centre (Own centre or adscript)
8. Cut-off mark
9. Supply
10. Demand
11. Students

Despite the information provided was excellent and sufficient for our study, it must be stated that it was presented in a way more prone to be watched, and so more aesthetic, and was therefore hard to process. Despite this would not be relevant in other cases, considering there were about 3.000 rows of data, some data was necessarily introduced manually instead of via formulas, which could have been avoided with more structured data.

After the data was processed, it was included in an Excel sheet and was organized using dynamic tables, grouping it by faculties, and then each faculty in a university category. Although university grouping was not necessary, since our study focus on the competition

between study centres, it was carried out in order to differentiate between two faculties with the same name. (Facultad de Derecho, UAB; Facultad de Derecho; UB, Facultad de Derecho; UAlc,...)

Finally, once we got supply, demand and students' data for each study centre, two extra features were needed to be added to each case: The category in which the centre was and its coordinates.

The first one, the category of each study centre, was added manually, since study centre's names were not always explanatory of the degrees that could be pursued there (E.g. "Centro Universitario Cardenal Cisneros" from "Universidad de Alcalá"). Although data originally contained the branch of the study, it separated the studies in only five categories (Social and juridical sciences, Engineering and architecture, Art and humanities, Health sciences and Sciences), which was initially considered not enough for our study. These categories play an important factor when studying competition, and more detail was considered to be necessary. (Explained at 6.2)

The second feature to add to our database was the coordinates of each faculty. Although Google Maps does not include all the study centres, and some were had to be found through official websites, the task was carried out using the mentioned software. An easier approach would have considered a single coordinate for each university, but this would have produced mistakes in some centres where the study centre is adscript and thus far away from the university campus.

The coordinates of the provinces and of each study centre used for our study can be found at the annex (Annex F and Annex G, respectively).

6.2 Data interpretation: Relation between categories

Before proceeding with the HHI calculations, it is important to notice that all the study centres do not compete with each other identically. Different categories of centres might compete against each other in a smaller degree if the degrees offered are notoriously different. In similar studies carried in the world of banking, the contribution of each competitor to the HHI index calculation was pondered according to the difference of the product – in that case, we would be speaking about a rating-weighted HHI which would help differentiate banks according to the type of their credit (Christodoulakis and Satchell, 2007). Thus, it will be important to find the degree of competition between the different categories of study centres to perform a better calculation of the HHI.

The study centres are categorized considering the field of studies of their degrees. The following classifications and numerical codes have been considered:

1. Engineering
2. Science
3. Health sciences
4. Law / Labour relations

5. Business administration / Tourism
6. Humanities / Art
7. Psychology / Sociology
8. Education
9. Journalism

Each group of faculties is considered to have a competition of 1 with other faculties of the same categories. When compared to faculties of other groups, the similar the field of study is, the higher is the coefficient is. Since a study centre may place a higher competition to a centre with similar studies rather than to a faculty with degrees of a different branch, we need to find a correct way of selecting these coefficients.

In order to calculate these relations, we will compare the study plans of the degrees pursued in the different categories. Concretely, we will compare the subjects between which we consider the most illustrative degrees of each category, in order to understand which similitudes these degrees hold. Although students' decisions when choosing a degree are not solely dependent on the subjects of this degree, it is considered a good exemplification of the similarity between these studies. The following degrees have been considered for each category:

1. Engineering: Degree in Industrial Technologies engineering (UPC – ETSEIB)
2. Science: Degree in Biology (UB)
3. Health sciences: Degree in Medicine (UAB)
4. Law / Labour relations: Degree in Law (UB)
5. Business administration / Tourism Degree in Business Administration. (UB)
6. Humanities / Art: Degree in humanities (UPF)
7. Psychology / Sociology: Degree in Psychology (UB)
8. Education: Degree in Early Childhood Education (UAB)
9. Journalism: Degree in Journalism (UAB)

The study plan of each representative degree has been added at the annex B. Calculations in detail of these coefficients are added at annex C. The following table sums up the relation between similar credits and total credits (Without considering the last year, and therefore, out of 180 credits):

	1	2	3	4	5	6	7	8	9
1	1								
2	30/180	1							
3	18/180	72/180	1						
4	6/180	0/180	0/180	1					
5	36/180	12/180	12/180	18/180	1				
6	0/180	0/180	0/180	18/180	12/180	1			
7	0/180	18/180	24/180	0/180	12/180	18/180	1		
8	0/180	0/180	0/180	0/180	12/180	18/180	48/180	1	
9	0/180	0/180	0/180	12/180	12/180	36/180	6/180	18/180	1

Image 11: Relation between degrees, out of 180

And the following table sums up the coefficients that will be used for our calculations of the HHI coefficient:

18

	1	2	3	4	5	6	7	8	9
1	1								
2	0,17	1							
3	0,1	0,4	1						
4	0,03	0	0	1					
5	0,2	0,07	0,07	0,1	1				
6	0/180	0	0	0,1	0,07	1			
7	0/180	0,1	0,13	0	0,07	0,1	1		
8	0/180	0	0	0	0,07	0,1	0,27	1	
9	0/180	0	0	0,07	0,07	0,2	0,03	0,1	1

Image 12: Relation between degrees, out of 1

For example, a study centre of the category 1 will be considered to have a coefficient of 0,17 when competing with a study centre of the category 4 (And vice versa).

Although one may think that these are a bit low, it must be remembered that each faculty already has a big portfolio of degrees, which are already placing competition among them. Therefore, competition with degrees outside these faculties tends to be lower, since the competition between degrees in each faculty is relevant.

But these coefficients are not perfect. There are some cases where the enrolment for a category is low, and the high enrolment of a substitute category creates a low HHI coefficient (High competition) that does not entirely represent the reality. A clear example of this phenomenon may be the province of Salamanca, which has an HHI of 1220 (Which can be considered as good) with only one study centre in the category 1. The presence of an economics faculty (0.2 similarity coefficient) and five different science study centres (0.17 similarity coefficient) creates a market which does not accurately represent the reality of engineering students in that province.

Cases like the one mentioned above are not common but are still existent, so the study will add an extra point of view, and will consider also the case without any substitute. This means, when studying a category, faculties from other categories will have a weight of 0, while faculties from the same category will have a weight of 1. This will provide clearer information in those cases while adding a new outlook to our study.

6.3 Data processing

Considering 9 categories and 52 provinces were used, a total of 468 excel sheets were produced, with more than 800 rows each sheet. That is a lot of data to be processed, so calculations had to be as stepped and simple as possible in order to avoid making mistakes and overcharging the computer and the software. In this episode, the formulas and processing used with our data will be explained in detail. First, it is explained how the distance between each study centre and each province has been measured. Next, the HHI calculation and an Excel sheet example are clarified.

6.3.1 Distance

Initially, the distance between each faculty and the origin considered were calculated. Since the coordinates for each faculty and the origin were found, a formula calculating the distance between two coordinates was used: the Haversine equation.

The Haversine equation provides simplicity for computational uses and calculates the distance between two points in a sphere. This equation is often used for navigation purposes due to its great precision for small distances (Amaro et al., 2015). In our case, the distances are still considered small enough, and therefore, we are in proper conditions to use this equation.

Our study uses the Haversine Formula expressed in terms of a two-argument inverse tangent function, to calculate the great circle distance between two points on Earth. This is the method recommended for calculating short distances by Bob Chamberlain of Caltech, and NASA's Jet Propulsion Laboratory, as described on the U.S. Census Bureau Web Site. Although this formula does not take into account the non-spheroidal (ellipsoidal) shape of the Earth, and it will overestimate and underestimate some distances, the values used for the radius of the Earth are optimized for locations around 40 degrees, which are similar to the coordinates we use.

In order to process the formula easily, the calculation process can be divided in three steps:

$$a = sin^2\left(\frac{\Delta\emptyset}{2}\right) + \cos(\emptyset_1) \cdot \cos(\emptyset_2) \cdot sin^2\left(\frac{\Delta\lambda}{2}\right)$$

Where a is the square of half the chord length between two points, $\Delta\emptyset$ the difference between latitudes, $\emptyset_1$ is the latitude of point 1, $\emptyset_2$ the latitude of point 2 and $\Delta\lambda$ the difference between longitudes.
It must be noted that, since these sinus are squared, the order of the points is irrelevant, which upon more consideration seems obvious: a distance must always be positive.

Then, the angular distance expressed in radians is:

$$c = 2 \cdot \text{atan2}(\sqrt{a}, \sqrt{1-a})$$

Finally, the distance is expressed by:

$$D = R \cdot c,$$

Where R is the Radius of the Earth, and was considered 6.371 Km in order to approximate better the shape of Earth in our latitude, c is the magnitude calculated before and D is the Euclidean distance between the two points.

Luckily, Excel formulas included all the following functions, so calculations could be carried out, step by step, to find the distance. For future references, it must be noted that while the tan2 formula is by other programs considered as atan2(x,y), Excel inverts the order of the variables, being then atan2(y,x).

6.3.2 HHI Calculation

Once the distance has been calculated, we are capable of deciding if a faculty is considered or not as a competitor for a market.

As stated, the HHI formula was the indicator chosen to measure competition. In generic terms, the formula used is the following:

$$HHI_x = \frac{\sum_y^N (w_{x,z} \cdot \beta_{x,y} \cdot S_y)^2}{(\sum_y^N w_{x,z} \cdot \beta_{x,y} \cdot S_y)^2} \cdot \alpha$$

Where:

a) The index x represents the province studied in that case
b) The letter N represents the total amount of study centres
c) The index y represents the study centre studied
d) The letter w represents the weight of the competitor x in the category z.
e) The letter z represents the category which is being studied.
f) The letter β represents a Boolean binary variable, which takes "TRUE" if the study centre y is considered as a competitor at the province x, and false otherwise. In
g) The letter S represents the students' number of the study centre y.
h) The letter α is Boolean variable, which takes "True" if there is a student centre of the category z on the market of the province x and "False" otherwise.

This formula is a rewriting of the original HHI formula, explained at 4.2, but where the total students' number has been taken as a common factor, in order to simplify the Excel calculations.

The Boolean α plays an important role in the equation, since it makes possible not considering markets where there are only substitute products.

6.3.3 Example of an HHI calculation with Excel

The core of this project is the calculation of the HHI coefficient of each province with Excel, and therefore, the author feels necessary to create an episode explaining how the sheets calculating the HHI work. In order to not overcharge the computer, an Excel book for each category and case were created. (A total of 6 cases and 9 categories, 54 Excel books, each one with 52 sheets, one for each province)

Let's consider the following example: Category 6, province of Barcelona. Considering a fixed radius of 40km and also considering other categories as substitutes. The first part of the Excel looks like this:

41.3850° N, 2.1733° E [1]						LAT	LON
	Barcelona					41,3851 [2]	2,1734
	Categoría [red]		[3] Earth Radius	6371			
[4]						Coordenadas reales	
	Oferta [5]	Demanda [6]	Matrícula [7]	Categoría [8]	LAT [9]	LON [10]	
Universidad autónoma de Barcelona	8345	11267	7874				
EINA. Centro Universitario de Diseño y Arte	110	130	115	6	41,40262	2,11431	
Escuela de Ingeniería	595	658	614	1	41,50147	2,10401	
Escuela de Prevención y Seguridad Integral (EPSI)	30	73	73	4	41,43998	2,09546	
Escuela Massana. Centro Municipal de Arte y Diseño	95	105	89	6	41,38111	2,16383	
Escuela Universitaria de Enfermería del Hospital de la Santa Creu i San P	80	108	84	3	41,41229	2,17559	
Escuela Universitaria de Enfermería y Fisioterapia Gimbernat	400	454	373	3	41,43056	2,07121	
Escuela Universitaria de Enfermería y Terapia Ocupacional de Terrassa	245	248	216	3	41,56256	2,01668	
Escuela Universitaria de Informática Tomàs Cerdà	50	13	11	1	41,43056	2,07121	

The header indicates some crucial aspects of each case. 1 indicates the coordinates of each province, which are then treated to fit our numerical requirements at 2. (For example, if it was W instead of E, 2 would include a minus sign). 3 is the Earth radius considered for our study, which is optimized for regions around 40º of latitude.

Column tagged as 4 is the name of each study centre, with the title of the University above them. Columns tagged as 5, 6 and 7 are the data that has been extracted from the public database, and includes the aggregated supply, demand and matriculation of each study centre. 8 is the category of each centre, as explained at "6.2, Data interpretation". 9 and 10 are the coordinates of each study centre.

dlat [11]	dlon [12]	a [13]	c [14]	DISTANCE [15]	IN? [16]	Weight [18]	Matriculation weighted [19]	Sqrd [20]	Real Market [21]
				40 [17]					
0,00031	-0,00103	1,73E-07	0,000832	5,30014	VERDADERO	1	115	13225	1
0,00203	-0,00121	1,24E-06	0,002225	14,1739	VERDADERO	0	0	0	0
0,00200	-0,00136	1,26E-06	0,002243	14,3309	VERDADERO	0,1	7,3	53,29	0
-0,00007	-0,00006	1,76E-09	8,38E-05	0,53409	VERDADERO	1	89	7921	1
0,00047	0,00004	5,65E-08	0,000475	3,02336	VERDADERO	0	0	0	0
0,00184	-0,00178	1,29E-06	0,002275	14,4939	VERDADERO	0	0	0	0
0,00310	-0,00274	3,45E-06	0,003714	23,661	VERDADERO	0	0	0	0
0,00184	-0,00178	1,29E-06	0,002275	14,4939	VERDADERO	0	0	0	0
0,00200	-0,00135	1,26E-06	0,002241	14,2767	VERDADERO	0,07	15,12	228,614	0

These columns are focused on calculations. First, let's remember the Haversine formula.

$$a = sin^2\left(\frac{\Delta\varnothing}{2}\right) + \cos(\varnothing_1) \cdot \cos(\varnothing_2) \cdot sin^2\left(\frac{\Delta\lambda}{2}\right)$$

Of the formula stated above, column 11 is $\Delta\varnothing$, column 12 is $\Delta\lambda$, and column 13 is a. All the calculations are carried out in radians. Column 14 is c, from the following formula:

$$c = 2 \cdot \tan2(\sqrt{a}, \sqrt{1-a})$$

Finally, the distance is expressed by column 15, and is the multiplication of C, 14, by the Earth Radius, 3. Column 16 is a Boolean that expresses if the faculty in that row can be considered in the market of that province, and 17 is the maximum radius considered for that market. Column tagged as 18 is the weight of each category, as explained at "6.2 Data interpretation". As seen this case supposes the existence of substitutes. 19 is the multiplication of 18 by 7, and is considered the "Weighted matriculation". 20 is 19 squared, in order to perform the future HHI calculation. Column 21 is added in order to avoid cases with no product, where a substitute product was the only possible supply. For example, in the case of Badajoz, there is no study centre within a radius of 40km that provides degrees in that category. Although there are substitutes, they cannot be considered relevant since the product desired does not exist, and is therefore considered as "No Product". A cell of column 21 has a value of 1 if the weight, 18, is 1 and the column 16 value is "Verdadero".

22 is the sum of all column 19, and 23 is the sum of all column 20 and 26 is the sum of the column 21. Now let's take a look at the HHI formula used for the calculations:

$$HHI_x = \frac{\sum_y^N (w_{x,z} \cdot \beta_{x,y} \cdot S_y)^2}{(\sum_y^N w_{x,z} \cdot \beta_{x,y} \cdot S_y)^2} \cdot \alpha$$

Once 22 is calculated, it is squared in 24, and then 23 is divided by 24, in order to find the HHI, 27. The coefficient is multiplied by 10.000 and by the Boolean α (False if 26 is equal to zero, True otherwise) at 28, which is the final HHI coefficient for the category 6 and the province of Barcelona. In order to facilitate future access to the HHI final result, it was also included at the heather of each sheet.

7. Results

7.1 HHI Results, by province

The most relevant results of the HHI for each province, the case of 40km and considering other categories as substitutes, have been summed up in the following table. Each column corresponds to a study category, as explained in previous episodes. Last column, "Rank", is a classification of each province depending on the sum of its HHI ranking, where 1 is the province with the better competition (And therefore, lower HHI) and 52 is the province with the worse competition.

The results added in the following table are considering a fixed radius of 40km and the existence of substitution between study centres, with the coefficients explained at episode 6.2

Cases marked with "–"mean no study centre of the category was found in a 40km range of that province capital.

	1 Engineering	2 Science	3 Health Science	4 Law	5 Economics	6 Humanities	7 Psychology	8 Education	9 Journalism	*Rank
Álava	3838	4975	2912	4739	2053	7852	-	3271	-	27
Albacete	2411	1841	3123	5014	4525	2265	-	8579	-	22
Alicante	2348	1576	1854	4367	4065	-	3877	6215	-	16
Almería	5319	3445	3639	6521	5203	3812	2628	5770	-	18
Asturias	2843	1240	1478	5139	2310	5298	1705	3511	2074	7
Ávila	6288	-	9423	-	-	-	-	10000	-	50
Badajoz	3107	4732	4483	-	4275	-	-	6228	-	34
Barcelona	401	443	407	1560	772	796	633	2199	680	2
Burgos	6720	2811	3677	5554	3628	5979	-	8282	-	29
Cáceres	5484	-	3534	5609	5690	4848	-	5967	-	32
Cádiz	3198	1705	1286	5952	2454	4298	-	3219	-	14
Cantabria	3095	2098	2015	6094	4184	2990	-	8282	-	24
Castellón	8240	-	5436	9584	-	-	9029	-	-	47
Ciudad Real	2970	2603	2217	8428	-	6381	-	8493	-	31
Córdoba	-	4482	3056	8299	-	5986	-	3849	-	37
La Coruña	1269	1602	1327	3811	3560	2790	1873	4990	1908	5
Cuenca	6354	-	7536	5787	-	4873	-	5881	4001	35
Gerona	5381	3669	2198	5933	2640	2969	-	4537	-	21
Granada	1659	3835	1684	3008	3821	2550	1403	3018	-	11
Guadalajara	4116	2467	2706	3679	2994	3566	-	3846	-	15
Guipúzcoa	2005	1483	2472	4378	3885	4464	3881	4620	-	12
Huelva	-	3641	4424	2633	5884	4444	-	8795	-	30
Huesca	5395	-	6257	-	3642	-	-	9704	-	44
Baleares	4106	2708	3192	5241	2904	-	2757	7125	2873	13

Jaén	4261	3392	4376	9513	-	-	-	7812	-	40
León	4012	2916	2880	3951	4830	4721	-	5018	-	23
Lérida	4162	-	3757	8021	-	4427	-	6967	-	38
Lugo	5057	4043	5136	-	4797	4362	-	9071	-	33
Madrid	417	473	500	462	447	698	670	1234	1248	1
Málaga	1610	2493	1941	3698	2094	4264	2014	3805	2872	6
Murcia	1578	1433	1505	3817	3675	3837	1597	3282	-	10
Navarra	5418	-	5379	5922	4680	-	8381	-	-	42
Orense	9287	-	6725	-	-	-	-	-	-	51
Palencia	7891	-	8725	-	-	-	-	10000	-	52
Las Palmas	2386	1438	3032	6831	4123	2016	-	4964	-	17
Pontevedra	3339	997	883	2175	2046	2173	-	3116	2574	8
La Rioja	4220	-	5198	7363	4028	-	-	9382	-	43
Salamanca	1220	1457	1340	3762	3328	2260	1921	3509	-	9
Segovia	8347	-	-	-	3097	-	-	6012	-	45
Sevilla	1322	660	742	2371	1611	1245	941	2496	1738	3
Soria	3783	-	4154	-	4975	7230	-	8300	-	39
Tarragona	2227	1612	2755	5907	4041	4373	-	7950	-	25
Tenerife	2788	2986	4772	5576	4313	5638	-	7581	3665	20
Teruel	9376	-	4161	-	-	10000	-	-	-	49
Toledo	3516	6334	-	-	-	4093	-	5596	-	41
Valencia	1033	903	967	4483	2353	1898	1614	2517	2941	4
Valladolid	2612	2058	2411	3817	2776	6281	-	7201	-	19
Vizcaya	2491	-	3257	2326	1650	4519	-	8492	6767	26
Zamora	8887	-	7551	6250	-	-	-	-	-	48
Zaragoza	5554	2668	2076	3142	4557	-	-	3390	-	28
Ceuta	4060	-	7474	5072	4369	-	-	4429	-	36
Melilla	-	-	6052	-	-	5230	-	-	-	46
*Average by categories	4347	4949	3809	6073	5121	5874	7787	6318	8333	

Image 14: HHI coefficients for each category and province

* Both the average by categories and the rank have been calculated supposing an HHI of 10.000 (Like in a monopolistic situation) for the cases with no offer, in order to not distort average calculations.

The provinces that are best performing are, from top 1 to top 10, Madrid, Barcelona, Sevilla, Valencia, La Coruña, Málaga, Asturias, Pontevedra, Salamanca and Murcia.

On the other hand, the ten worst performing provinces, from top 52 to top 43, are Palencia, Orense, Ávila, Teruel, Zamora, Castellón, Melilla, Segovia, Huesca and La Rioja

Top 3 best performing categories are 3 (Health sciences), 1 (Engineering) and 2 (Experimental Sciences). Contrarily, the worst 3 performing categories are 9 (Journalism), 7 (Psychology) and 8 (Education)

7.2 Graphics of each category:

After the calculations were carried out and the results were obtained, all the HHI coefficients were plotted into a Spanish map of provinces, in order to have a more visual approach.

The graphic is programmed in Excel (Its code is added at annex D) and is based on a design made by Enrique Arranz Sabater, in which the author of this project made notable modifications to make the Excel more suitable and useful for our purpose.

The scale of colours used offers more detail in the scale between 0 and 6000, in order to determine more precisely the level of competition in these cases. This level of detail is not considered relevant in cases where the HHI is above 6000.

As stated, each category has 6 different HHI results (3 different radius, 40-80-150km, and considering substitution or not) and therefore, each category has 6 graphics, that will let us observe the competition from different angles.

Category 1: Engineering:

| 40 km | 80 km | 150 km |

With substitutes

Without substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer

Images 15 to 20:
(From left to right, up to down)
Cases 1 to 6 , category 1

Category 2: Sciences:

40 km   80 km   150 km

With substitutes

Without substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer

Images 21 to 25:
(From left to right, up to down)
Cases 1 to 6, category 2

Category 3: Health sciences:

40 km

80 km

150 km

With substitutes

| 0-1000 |
| 1000-2000 |
| 2000-3000 |
| 3000-4000 |
| 4000-5000 |
| 5000-6000 |
| 6000-8000 |
| 8000-10000 |
| No offer |

Without substitutes

Images 22 to 27:
(From left to right, up to down)
Cases 1 to 6, category 3

29

Category 4: Law / Labour relations:

40 km

80 km

150 km

With substitutes

Without substitutes

| 0-1000 |
| 1000-2000 |
| 2000-3000 |
| 3000-4000 |
| 4000-5000 |
| 5000-6000 |
| 6000-8000 |
| 8000-10000 |
| No offer |
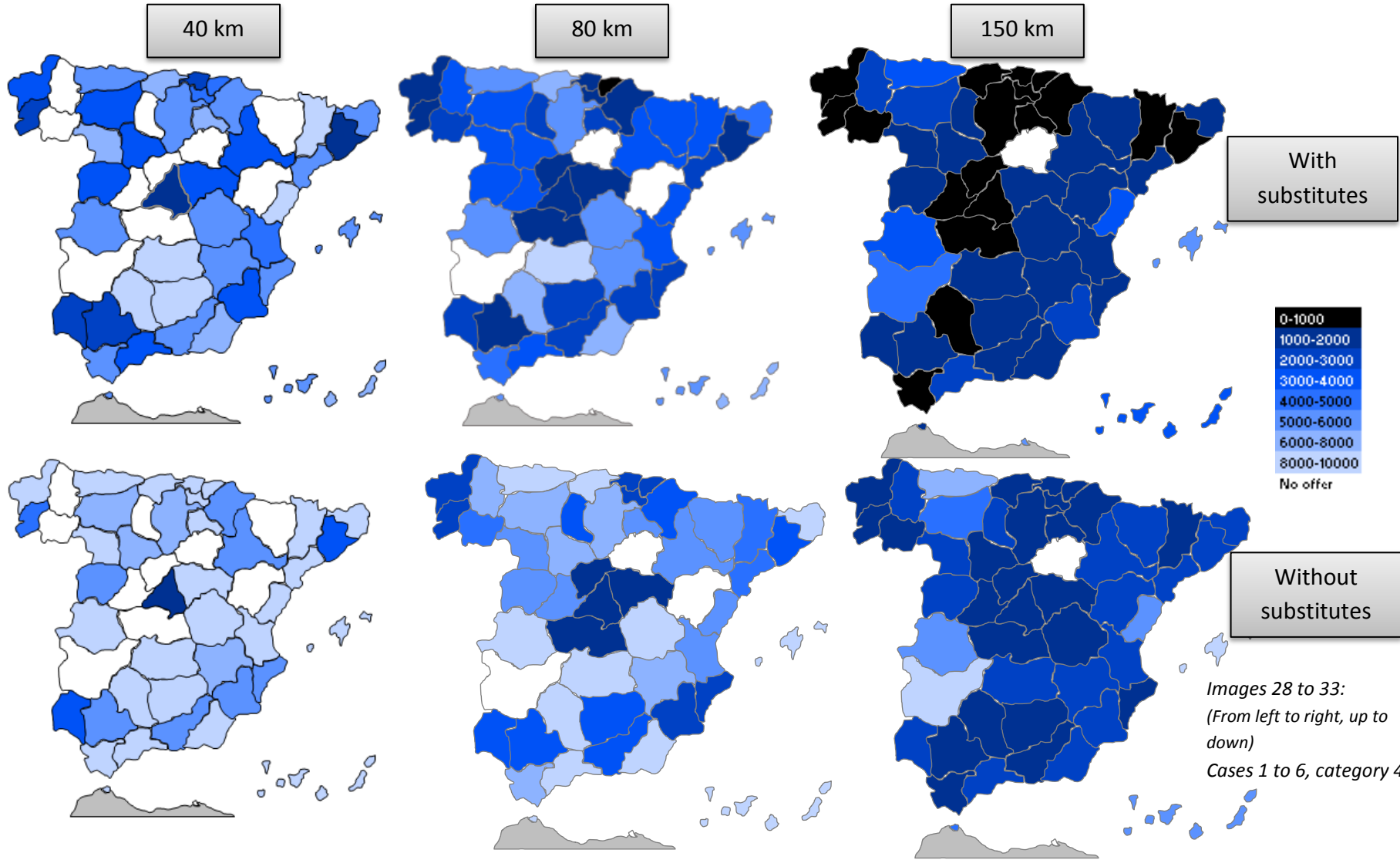
Images 28 to 33:
(From left to right, up to down)
Cases 1 to 6, category 4

Category 5: Business administration / Tourism:

40 km   80 km   150 km

With substitutes

Without substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer
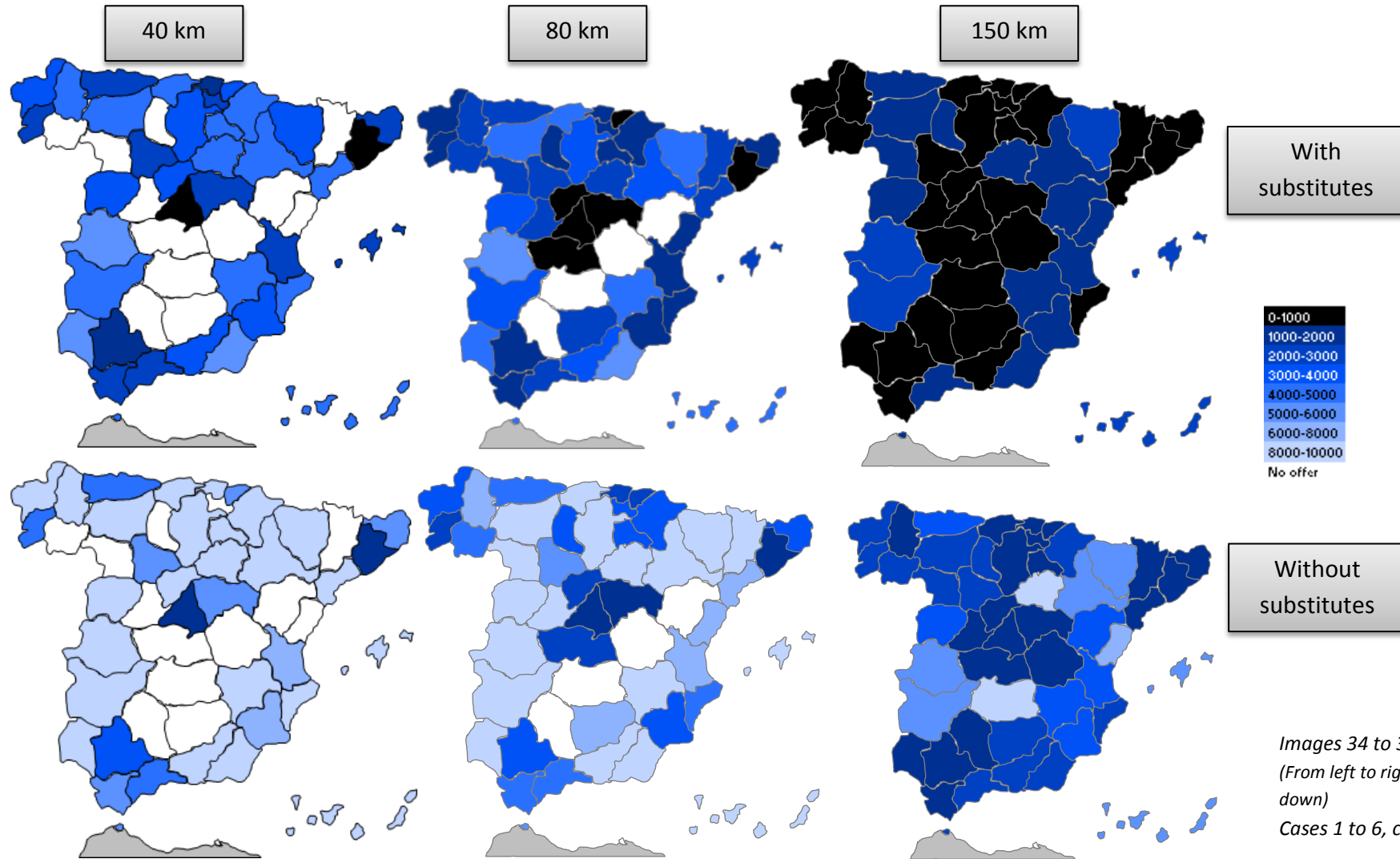
Images 34 to 39:
(From left to right, up to down)
Cases 1 to 6, category 5

Category 6: Humanities / Art:

40 km 80 km 150 km

With substitutes

Without substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer

Images 40 to 45:
(From left to right, up to down)
Cases 1 to 6, category 6

Category 7: Psychology / Sociology:

40 km

80 km

150 km

With substitutes

Without substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer
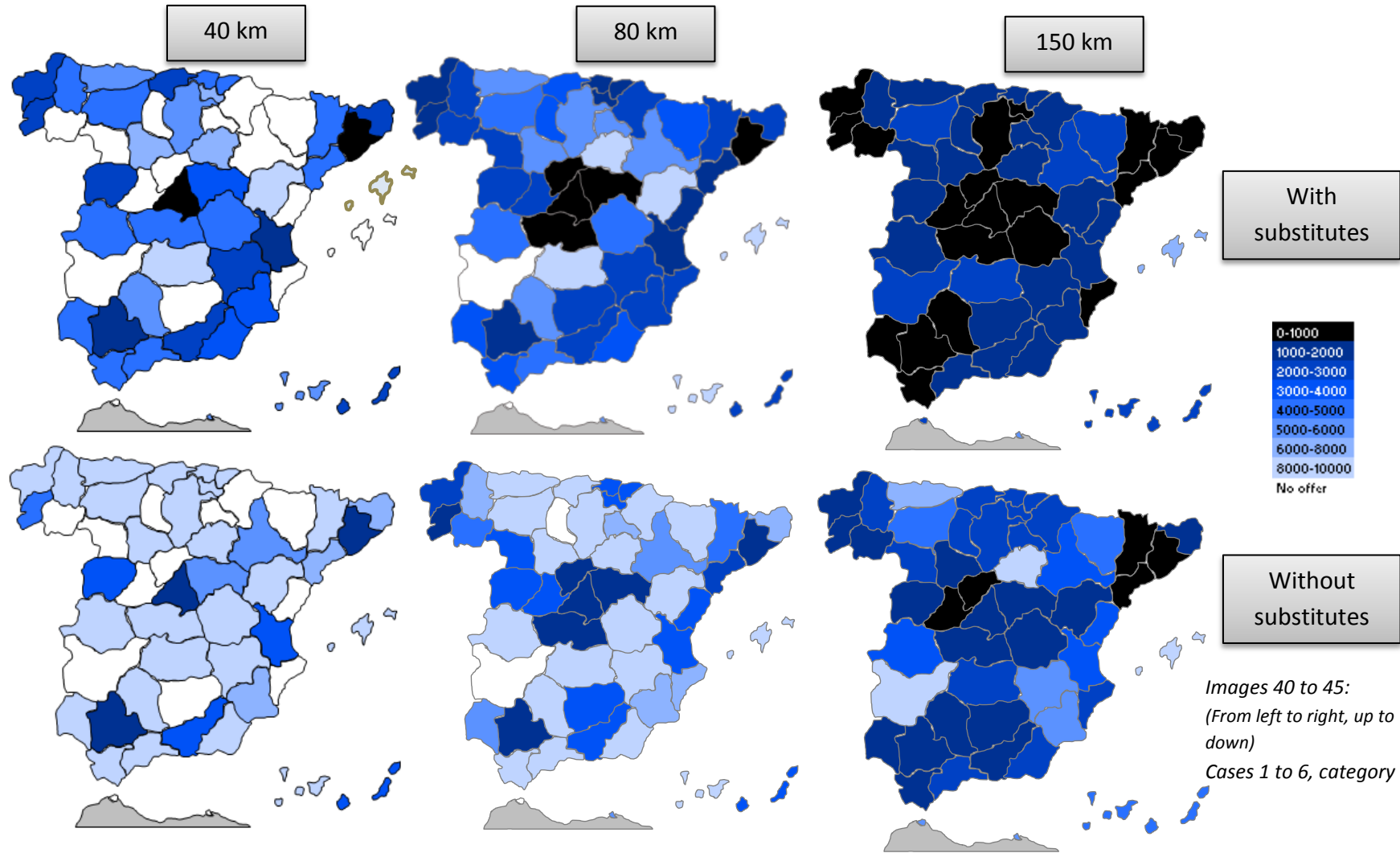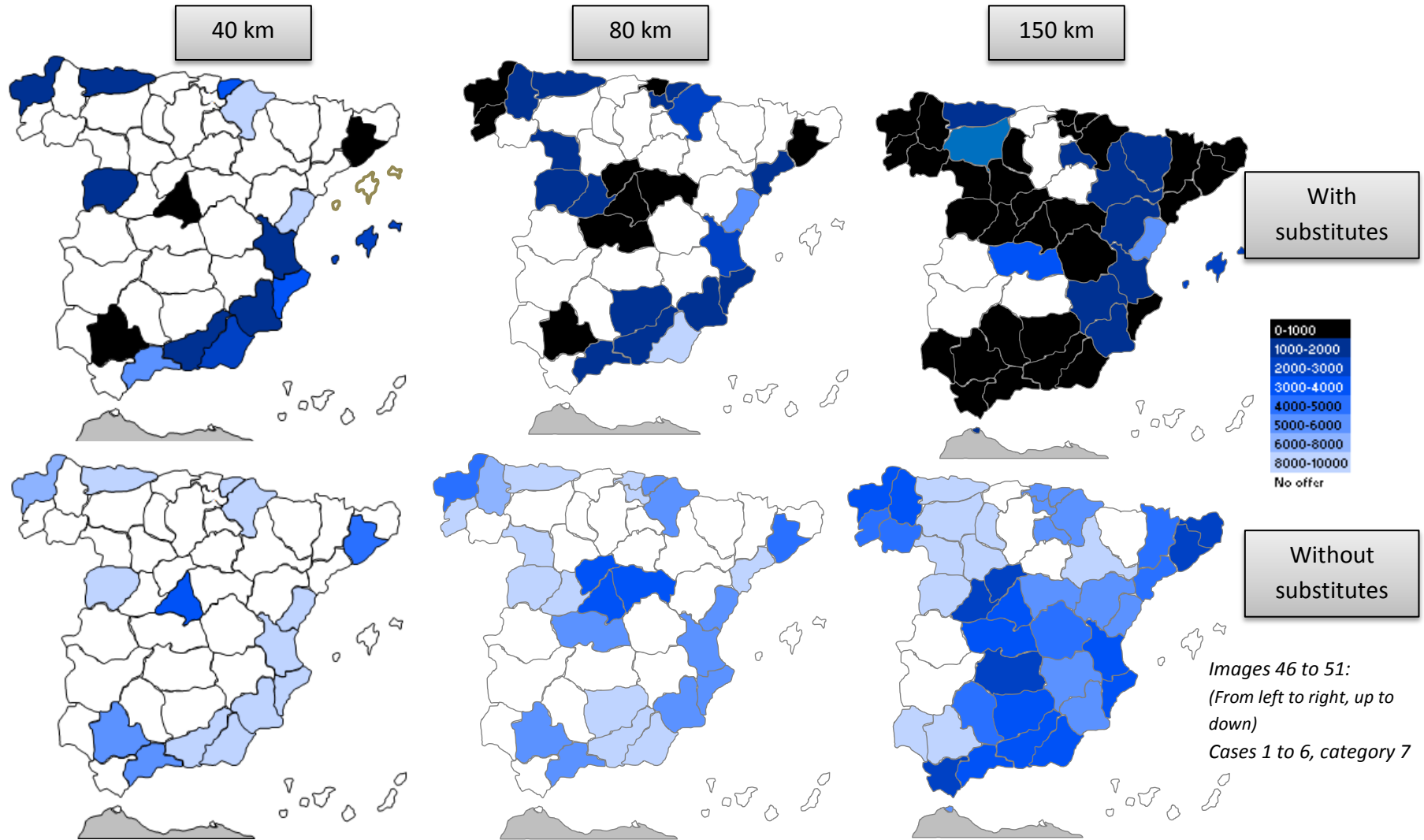
Images 46 to 51:
(From left to right, up to down)
Cases 1 to 6, category 7

Category 8: Education:

| 40 km | 80 km | 150 km |

With substitutes

Without substitutes

Legend:
0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer

Images 52 to 57:
(From left to right, up to down)
Cases 1 to 6, category 8

Category 9: Journalism:

40 km

80 km

150 km

With substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer

Without substitutes
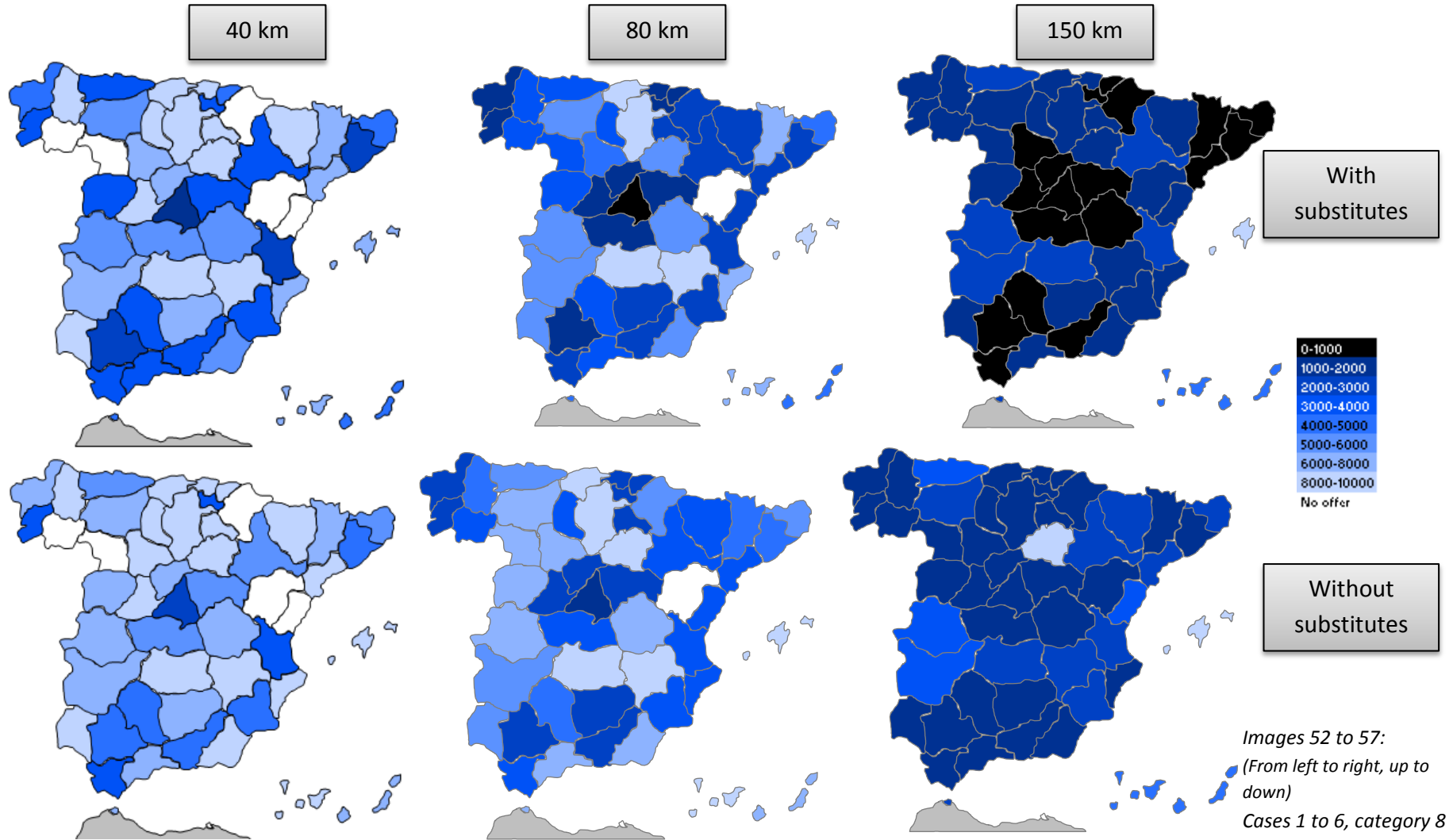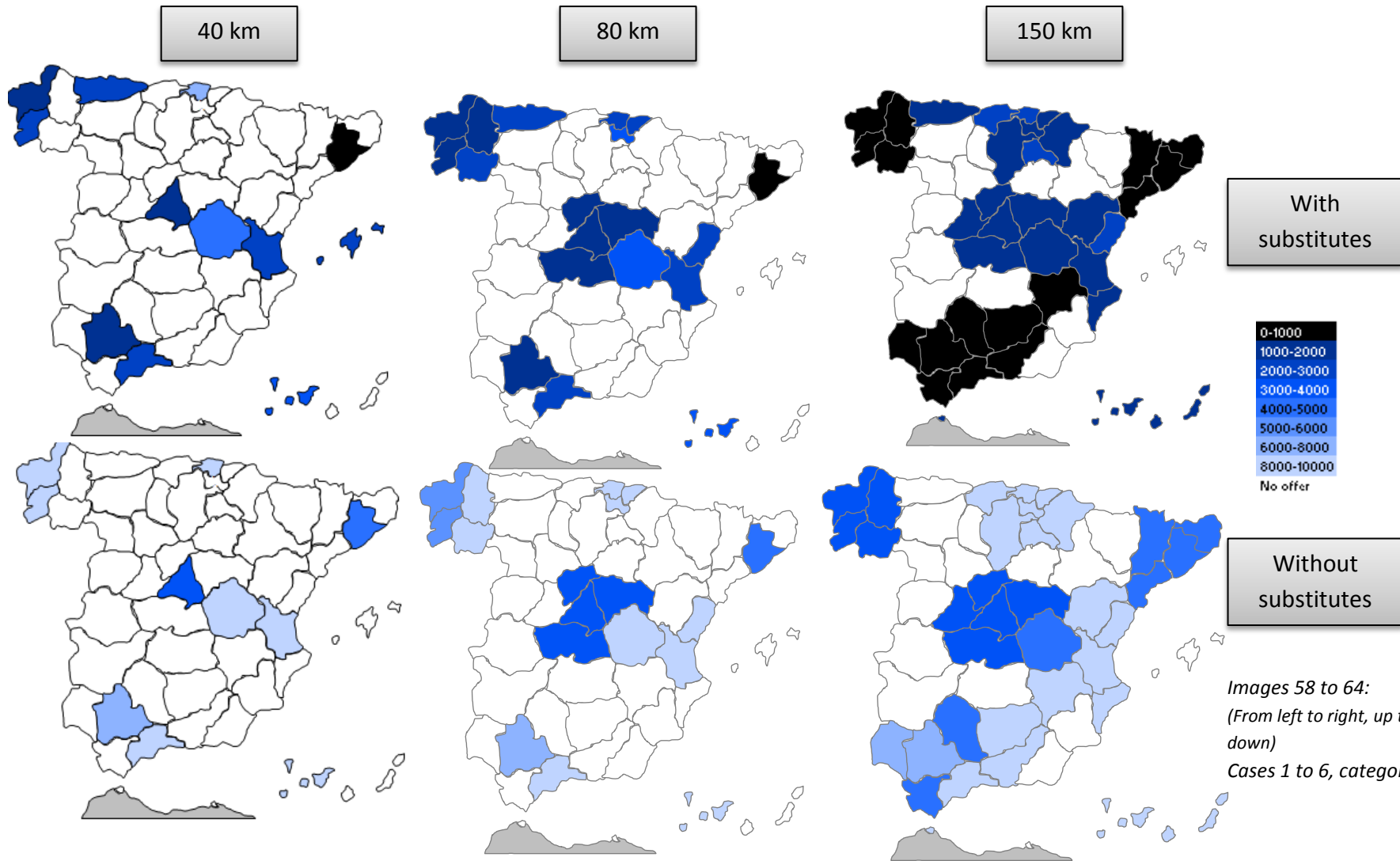
Images 58 to 64:
(From left to right, up to down)
Cases 1 to 6, category 8

35

Finally, to observe the general performance of each province, the arithmetic average of the HHI coefficient has been calculated. The results for each of the six cases are the following: (Note: In cases without offer, lack of product has been considered equivalent to an HHI of 10.000, in order to not distort the average)

40 km

80 km

150 km

With substitutes

Without substitutes

0-1000
1000-2000
2000-3000
3000-4000
4000-5000
5000-6000
6000-8000
8000-10000
No offer
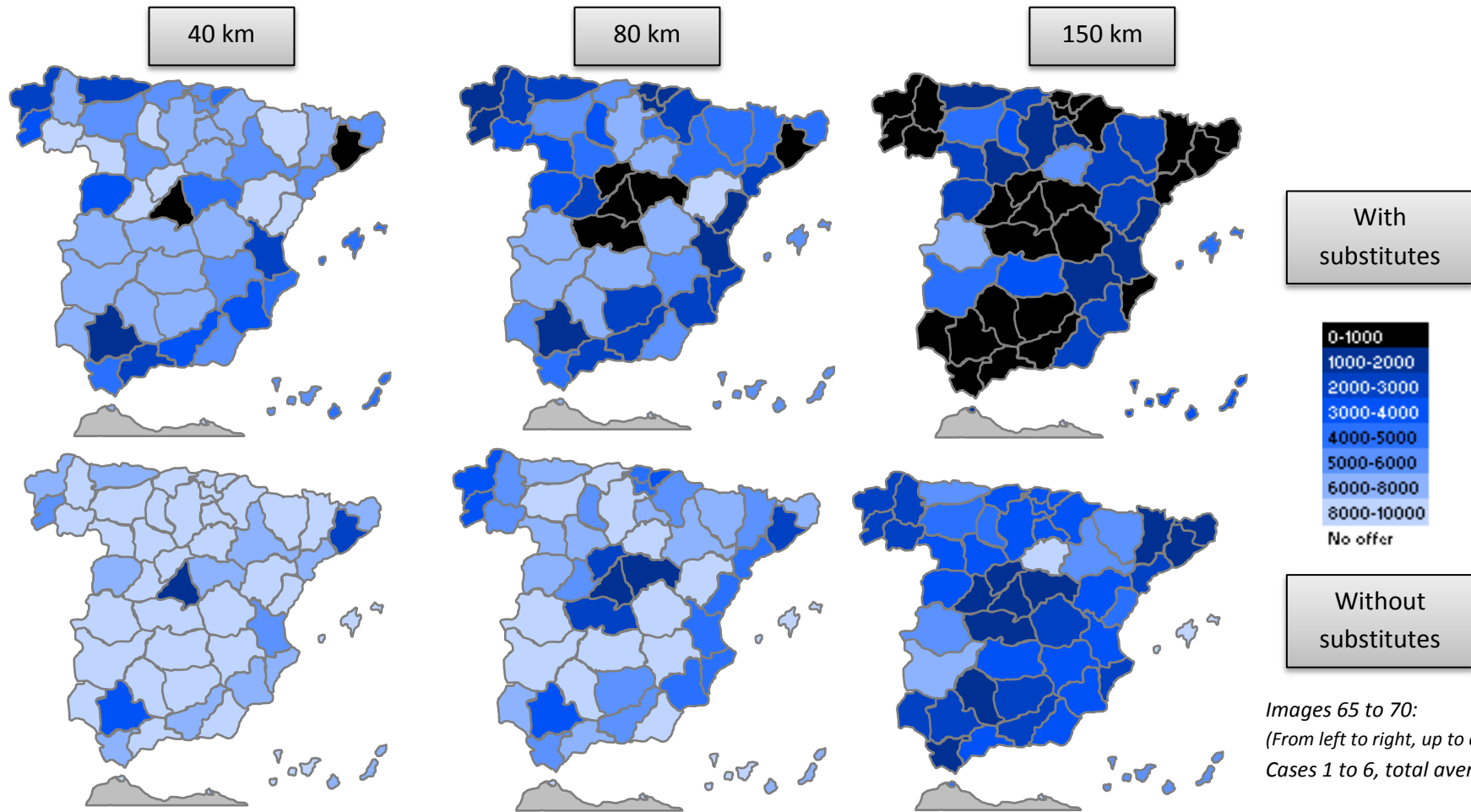
Images 65 to 70:
(From left to right, up to down)
Cases 1 to 6, total average

7.3 Additional results

As stated before, 40km was considered to be the distance in straight line which most students may travel to attend their study centre, but extra calculations were carried out with different radius and suppositions.

In this episode, we will put into context the reason of these new cases, and we will try to understand its meaning. For example, considering a radius of 80km could mean an enhancement in the means of transport between a province capital and a faculty, or the special sacrifice in time by a student to enrol in a study centre of his interest.

Both cases of 80km and 150km can also be considered as the market for a student willing to spend the weekdays at the city of the study centre, while going home at the weekend. This is a common practice in undergraduate studies, especially in areas with poor supply or means of transport. As seen, there are some cases that were not analysed considering only a fixed radius of 40km, and that is the reason it was extended to the cases of 80 and 150km.

In the following matrix, which follows a similar style as the growth-rate matrix [7], the HHI with 40km and HHI with 80km are plotted and 3 main areas are distinguished.
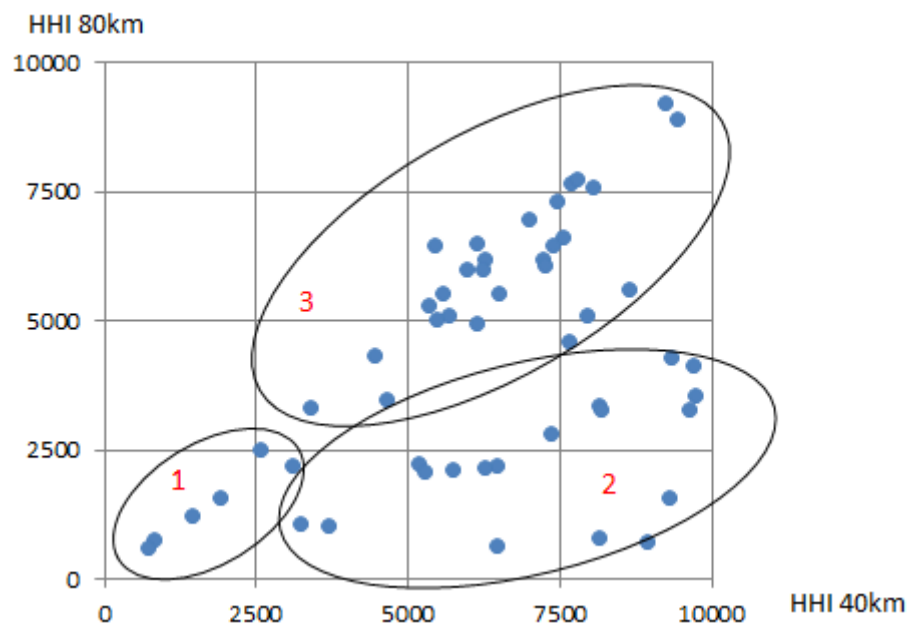
Image 71: Representation of the HHI coefficient of provinces, when a radius of 40km is considered (X-axis), and when a radius of 80km is considered (Y-axis). Both cases consider substitutes

The results have been separated in three different categories:

1. These provinces already had good competition (Low HHI) considering a radius of 40km, and become only a bit better when the radius of 80km is considered. Examples of this category are Barcelona, Madrid, Sevilla and Valencia.

2. These provinces have a big margin of improvement. Their HHI performance with a radius of 40km is poor (With high HHI coefficients) but they become much better when a radius of 80km is considered. Examples of this category are Ávila, Zamora, Orense or Palencia. The reasons of this enhancement are strongly related with the distance of these cities with other important study centres.

3. These cases are considered to be poor performers (Above 2.500 HHI) and have no main improvements when a radius of 80km is considered. The reasons for this lack of improvement are related to geographical isolation, either because of the sea (Tenerife, Balearic Islands) or its position (Teruel), or simply because a lack of supply.

Also, as explained in the data interpretation episode, 6.2, cases with and without substitution were considered, in order to analyse the state of the market from a different angle.

7.4 Discussion

Taking a quick look at the maps and the tables (All the numeric results are added at Annex F) is enough to develop two conclusions from the case study: the importance of accessibility – vital to give students different options and improve the competition – and the value of the existence of multiples universities offering the degrees. In this episode, we are going to discuss the most relevant results of each category.

Category 1: In the case of engineering, some interesting conclusions can be extracted from the results. First, a high competition in Madrid, Barcelona, Valencia and the Basque Country are key indicators that those areas are top performers in this field. As commented in the episode 6.2, considering or not substitutes shows an interesting fact. The market of the province of Salamanca, for example, has a single faculty for engineering, but shows high competition indexes in the first graphic. This is because other study centres place a high degree of competition acting as a substitute. The existence of the image 18 helps, a study without competition and a fixed radius of 40km, helps clarifying this situation and shows the poor competition in the area.

When considering high fixed radius, such as 150km, market tends to a high degree of competition, which can be considered as a good sign of the state of engineering in Spain. The fact that with a fixed radius of 40km, only three provinces are not considered to have supply, becoming only one (Melilla) when 80km is considered helps prove this statement.

Category 2: The case of science becomes interesting when the relation with the categories of engineering and health science are considered. Since centres in these two categories are the most common and its relation with science is high (Coefficient between engineering-science is 0,17, between health science – science is 0,4), the difference between considering or not substitute products is noticeable.

Category 3: Health sciences is the case were competition is higher. Although it is not the category with the higher similitude coefficient with others, almost all universities provide study centres that fit in this category, such as nursery or medicine. The fact that all the provinces except Segovia and Toledo have at least a faculty of this category is also an important factor for its competition. Curiously, the competition in these two provinces

becomes extremely high when the radius of 80km is considered, since they both also consider faculties in the province of Madrid. When the case of 150km is considered, the competition in all provinces except Cáceres, Badajoz and the ones that are aisled (Melilla, Canarias Islands and Balearic Islands) is under the 1.000 HHI, which can be considered as excellent competition.

Category 4: In this case, competition in Lleida when a radius of 150km is considered to be better than Barcelona's, due to the proximity of the first case with the University of Zaragoza. Again, Soria is the only province without supply in this case. Guipúzcoa is the best performer both when a radius of 80km is considered and 150km. In this situation, the university from La Rioja, Navarra and the Basque country place a high competition in the province.

Category 5: High differences are seen in the category of Business Administration between rural areas and non-rural, which clearly indicate a lack of supply in some provinces. Also, it must be added that this category is the one were the private universities would place a more important role, with almost 20% of students of this category studying in non-public institutions[2], which would modify a bit the scenario.

Category 6: Competition in provinces Toledo and Segovia, when considering a radius of 150km and no substitutes, is better than in Madrid. This is because Salamanca's University can be considered for the rank of the first two, but not Madrid. And since this university has an extended portfolio of centres in this category (A total of five study centres), competition in those areas become better.

Category 7: The case of psychology reflects again the use for our study of the HHI analysis without the consideration of substitute products. Provinces such as Madrid, Barcelona or Sevilla seem extremely competitive when substitutes are considered, but that does not happen when they are not considered. The overall supply can be considered as poor, since only 23 study centres in Spain fall into this category.

Category 8: Education is the third worst category by HHI (Therefore, the third category with a higher coefficient) but has a good overall performance. The case of Catalonia is particular, since despite having 9 different centres in the market of education studies, the HHI cannot be considered top tier (less than 1.000). The study centre "Facultad de Educación", from "Universitat de Barcelona" comprises 1.426 enrolments out of the 4.362 of the total. Although it is clearly not a monopolistic trait, the fact that a single producer has more than 30% of the market share does not produce a high-ranked competition.

Category 9: Journalism is the category with worse competition. This category places low coefficients with other universities, which together with the fact that only 17 study centres in our study are considered in this category, makes an overall poor competitive performance. Considering there are only 20 universities in Spain providing those studies [8], the study can be considered to be accurate to reality

As seen, many differences are noticeable between each province and category, which makes this study relevant and interesting.

8. Project scheduling and budget

An approximate schedule and budget plan of the project is going to be carried out in this episode.

ETSEIB's normative stipulates that the "Treball de fi de Grau" has 12 credits [9], and since each credit has an equivalence of 25 hours, this project can be considered to need 300 hours. Despite the number of real hours dedicated is higher, this number is a really good approximation of the work that has been put into this thesis.

As it can be seen in the figure below, the activities have been grouped in 8 different categories, including the elaboration of the memory, which are the main topics of work of the project.
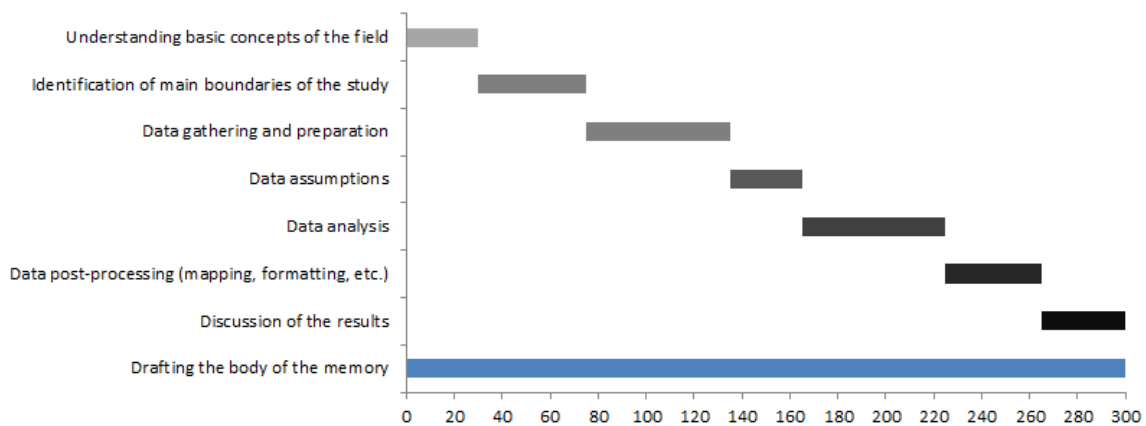
Image 73: Gantt diagram of this project

The areas than consumed more time were the data gathering and preparation, the Data analysis and the discussion of the results, which were considered from the beginning to be the core of the thesis.

In order to estimate the costs of the project, a base salary of 13,5 €/hour has been considered, as stipulated by the BOE as the salary for an engineer. [10]

Therefore, the cost of the project is:

$$Cost = 13{,}5 \frac{€}{hour} \cdot 300 \ hour = 4.050€$$

Considering a 21% VAT, the total cost would be:

$$Final \ cost = Cost \cdot \left(1 + \frac{21}{100}\right) = 4.900{,}5 \ €$$

Other costs such as internet, electricity, computer or software have been neglected, since they are available for free in public resources such as ETSEIB's library.

9. Social and environmental impact

Nowadays, taking into account the social and environmental repercussion is a must for any project, especially if it is in the engineering field.

In our case, the environmental impact can be considered minimum, since no excessive amount of natural resources were used in order to produce this project.

Nevertheless, it is true that a better understanding of Spanish university system for undergraduate studies can help in some way the environment. Knowing students' habits, problems and concerns could help redefine the supply of studies, in order to reduce displacements and ultimately, environmental pollution and energy consumption.

On the other hand, the study may also raise concerns about the fact that some rural areas with low population, even the case of some capitals of province, lack some undergraduates' studies. This may put in a disadvantageous position some groups of students, who may choose a degree that do not fulfil their expectations as a substitute product in case of lack of supply.

10. Conclusions

This study has helped to prove that the competition in the market of undergraduate studies in Spain is quite different from perfect competition. Although there is a high total supply, with more than 1,3 millions of students and about 800 study centres in 50 public universities, the way it is distributed may be responsible for problems of quality or enrolment in those studies.

The method used initially was to calculate the HHI, the competition coefficient adopted, with a fixed radius of 40km centred in each capital of province of Spain. This method was the most viable option to calculate with the available data and it provided good information for a first inspection. After that initial approach, further analyses were carried out, supposing radius of 80km and 150km. The first case, 80km, would suppose a first scenario were a student was willing to do a big sacrifice in order to attend a study centre, and therefore, he would spend more time travelling. The second case, the 150km radius, would also include the possibility of spending the weekdays in the city of study and the weekend at the native town.

Since it was observed that some cases could lead into confusion, an extra scenario was drawn, in which the competition between categories was considered not relevant and only study centres in the same category were considered competitors. Three different new situations, one for each radius, were considered in this case.

Some conclusions can be drawn from the results.

· In general terms, it is seen how zones with higher competition indexes, and therefore low HHI coefficient, also have the best universities in rankings. For example, according to "Ranking de Universidades Españolas – 2016" from the Spanish newspaper "El Mundo" [11], from the Top-10 universities in Spain, 4 are situated at Madrid province, 4 at Barcelona province, 1 at Valencia province and 1 at Navarra province (Although this last one is private, and therefore is not relevant for our study). It is not casual that these provinces are also top performers in our study, being Madrid the best one, Barcelona the 2nd and Valencia the 4th, close to the third. As explained before, a higher level of competition makes, generally, a better product, and these results prove that statement.

· The heterogenic situation of Spain is noticeable. The differences between provinces, even some contiguous such as Madrid or Ávila, prove how difficult is generalizing about Spanish students, and generally, citizens.

· Although this work has not considered the population of each province for the study, it looks like there is some relation between the competition of each province and its population. From the top 10 provinces in population, 5 are also top 10 performers at our HHI study. With the worst performers, the example is even clearer, with 6 out of the 10 worst performers being at the top 10 provinces with less population in Spain.

When the relation between the HHI coefficient (With 40km of fixed radius, considering substitution) and the population is plotted, the conclusions seem to become even clearer. The data, both for population and the HHI, has big variance, and therefore needs an adaption, such as a logarithmic transformation. A scatterplot, made with Minitab program, shows the following result:
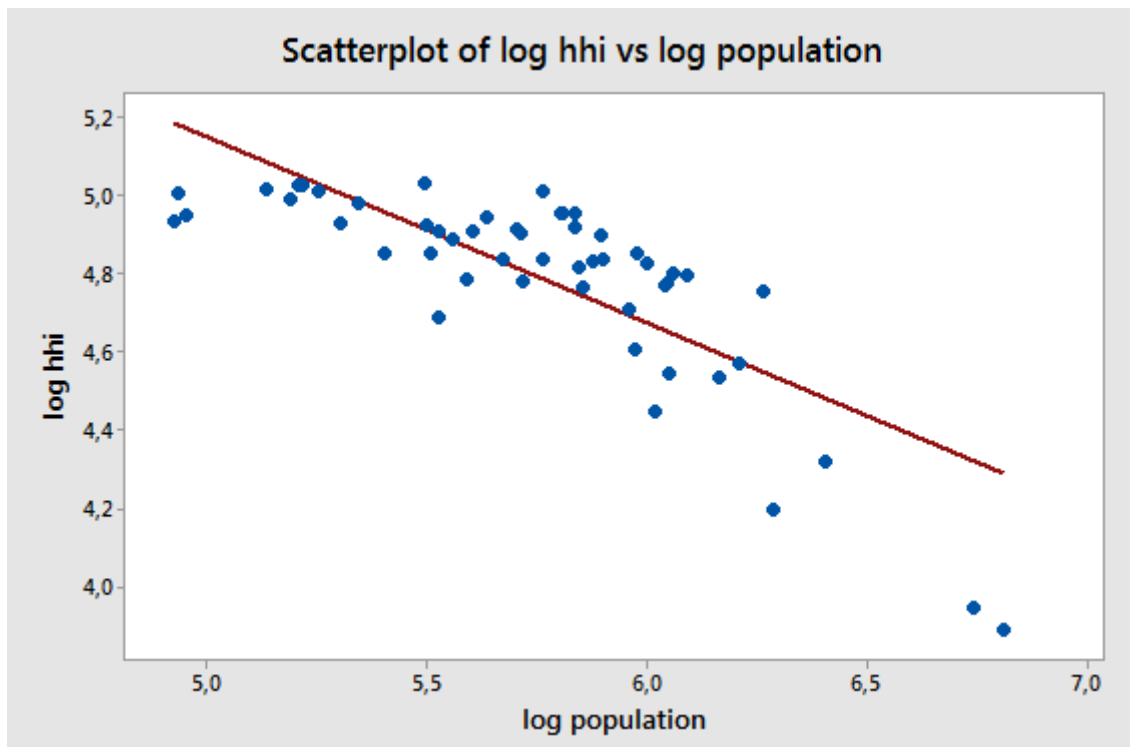
Image 74: Scatterplot of the results of log(HHI) and log(population) of each province in Spain

The plot illustrates an interesting and relevant tendency: The lower the population is, the higher the HHI becomes – and therefore, the worse competition is.

This difference in competition between faculties, so in quality of the studies, between urban and rural areas could lead into bigger differences, both in population and economy, between those areas.

· As commented in episode 7.3, some extra conclusions can be drawn out of the additional calculations, carried out with fixed radius of 80km and 150km.

> · Considering a fixed radius of 80km enhances the competition of studies in almost all provinces. The cases with the biggest improvements are Segovia, Ávila, Guadalajara, Palencia and Zamora. It is noticeable that these provinces, although initially had poor competence, once the radius is increased also include study centres allocated in other relevant capitals, such as Salamanca (The case of Ávila and Zamora) or Madrid (Segovia, Guadalajara and Toledo). This relative proximity puts in a much better place these provinces, when compared to other ones with similar HHI with a radius of 40km but that do not have relevant improvements when the radius considered is 80km.

> · In some exceptional cases, the HHI does not improve even when considering 150km. It is the case of isolated provinces, such as Melilla, Tenerife, Las Palmas or the Balearic Islands, since they are so far away from the rest of provinces that this increase in radius is still insufficient.

· This study has tried to separate faculties in nine categories, in order to provide more detailed and accurate results. Although this has been possible in some cases, such as Law, other cases such as Journalism or Psychology may seem incomplete. Some of these degrees are taught at faculties from other categories, such as in study centres from category 6 (Humanities) and therefore, may be overlooked in our study. Although it was worth a mention, it is not a common trait in our study, which considers, 17 out of the 20 centres providing journalism degrees in Spain. [8]

· Finally, I believe it is important to state the importance of all the baggage acquired during the studies of Industrial Engineering at ETSEIB in order to perform this work. Statistic knowledge, used to make important assumptions or draw some final conclusions, together with economical knowledge and analytical skills were crucial in order to produce the thesis. Also, Excel knowledge obtained during my internship made it possible to develop a powerful worksheet to perform the final data analysis in a simplified manner.

10.1 Future research

This work has intended to cover in the most exhaustive and rigorous way the undergraduate market of studies in Spain, but there are some ways in which it could be expanded for future research. Two main directions are suggested:

- First, considering time to define the geographic accessibility market would produce more detailed results, and can be considered as an interesting way to develop future research. Time is usually a more accurate indicator, and although other works in the field have use it (Terrés, 2016), this complexity was not considered for the scope of this work. As stated previously, this work has focused on simpler calculations since the number of scenarios was high, with about 800 study centres, 52 provinces and 9 categories.
- Working with bigger databases of the Spanish geography and demography would allow more detailed calculations, especially when considering different references. Instead of using the province capitals, an expansion study could use each municipal location when plotting the results. This would probably require the use of big data software and extensive databases that were not available to the author of this work, and therefore were not considered relevant.

Acknowledgments

Finally, as a personal note, I would like to thank some people who have helped me during the development of this work and my studies as an industrial engineer.

First, I would like to express my special thanks of gratitude to this paper tutor, Jordi Olivella. Thanks to his help, motivation and guidance, I have been able to produce a quality piece of work that was unbelievable some months ago.

I also feel the necessity of thanking my parents for all the moral support I have received from them during the course of my studies and the development of this project. It has not been easy at all, but their trust and hope has shaped me into the person I am today.

Finally, I believe all the professors and personal from the school deserve a special mention. Thanks to all the teachers that want us to be curious, to go for the extra mile, to be better students and people. They make this school, ETSEIB, a life-changer.

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Annex:

Annex A: Finding the range of kilometres

MINISTERIO DE FOMENTO. MOVILIA 2006

CAPÍTULO 2. Movilidad a los centros de trabajo y estudio.

36. Centros habituales de estudio. Desplazamiento más habitual. Tiempo empleado por área metropolitana y tamaño de municipio

	Total centros	TRAMO DE DURACIÓN					
		Menos de 15	De 15 a 29	De 30 a 44	De 45 a 59	De 60 a 89	De 90 y más
Total	9.676,3	5.593,6	2.528,8	911,1	214,0	326,4	102,4
Menos de 10.000 habitantes	1.954,7	1.154,3	441,5	200,2	54,4	71,9	32,4
De 10.000 a 50.000	2.633,3	1.641,6	607,7	202,7	52,8	88,8	39,7
De 50.000 a 500.000	3.607,2	2.055,7	1.068,2	299,5	61,3	96,8	25,7
Más de 500.000	1.481,2	742,1	411,5	208,7	45,5	68,9	4,5
Municipios de áreas metropolitanas	5.204,6	2.794,3	1.476,6	579,2	117,1	198,6	38,7
Menos de 10.000 habitantes	279,9	169,6	58,1	33,6	2,5	12,4	3,8
De 10.000 a 50.000	1.031,7	584,2	266,2	105,1	22,8	41,2	12,3
De 50.000 a 500.000	2.411,7	1.298,5	740,8	231,9	46,3	76,1	18,0
Más de 500.000	1.481,2	742,1	411,5	208,7	45,5	68,9	4,5
Otros municipios	4.471,8	2.799,3	1.052,2	331,9	96,9	127,7	63,7
Menos de 10.000 habitantes	1.674,8	984,7	383,4	166,7	51,9	59,4	28,6
De 10.000 a 50.000	1.601,5	1.057,4	341,5	97,6	30,0	47,6	27,4
De 50.000 a 500.000	1.195,5	757,2	327,3	67,6	15,0	20,7	7,7

In the episode 4.1, our objective is to find the market of university studies associated to a single student, and in this first step, as a measure of time. In order to do so, it will be necessary to find a duration that includes almost all the students.

Similar to a method used in descriptive statistics, known as "Confidence Interval of 95%", we will find the smallest range in where the 95% of students can be included, starting with the lowest time possible.

The numbers showed above classify the students in six different categories of time duration, so, in order to have a better precision when finding the 95% range, we will have to separate them in single time duration. Although it is unknown to us how is the people arranged in a category, we will simplify it by dividing the total number of people by the range, and therefore, supposing the same number of people in each number of a category.

The following table uses the data from the table above, and calculates the accumulated people, "Acc People" column, and the percentile of each time segment. As stated in the point 4.1, we find that the percentile 95% is found at the time 55.

Time	Acc people	Percentile
5	559,36	5,8%
6	1118,72	11,6%
7	1678,08	17,3%
8	2237,44	23,1%
9	2796,8	28,9%
10	3356,16	34,7%
11	3915,52	40,5%
12	4474,88	46,2%
13	5034,24	52,0%
14	5593,6	57,8%

Time	Acc people	Percentile
15	5762,186667	59,5%
16	5930,773333	61,3%
17	6099,36	63,0%
18	6267,946667	64,8%
19	6436,533333	66,5%
20	6605,12	68,3%
21	6773,706667	70,0%
22	6942,293333	71,7%
23	7110,88	73,5%
24	7279,466667	75,2%
25	7448,053333	77,0%
26	7616,64	78,7%
27	7785,226667	80,5%
28	7953,813333	82,2%
29	8122,4	83,9%

Time	Acc people	Percentile
30	8183,14	84,6%
31	8243,88	85,2%
32	8304,62	85,8%
33	8365,36	86,5%
34	8426,1	87,1%
35	8486,84	87,7%
36	8547,58	88,3%
37	8608,32	89,0%
38	8669,06	89,6%
39	8729,8	90,2%
40	8790,54	90,8%
41	8851,28	91,5%
42	8912,02	92,1%
43	8972,76	92,7%
44	9033,5	93,4%

Time	Acc people	Percentile
45	9047,766667	93,5%
46	9062,033333	93,7%
47	9076,3	93,8%
48	9090,566667	93,9%
49	9104,833333	94,1%
50	9119,1	94,2%
51	9133,366667	94,4%
52	9147,633333	94,5%
53	9161,9	94,7%
54	9176,166667	94,8%
55	9190,433333	95,0%
56	9204,7	95,1%
57	9218,966667	95,3%
58	9233,233333	95,4%
59	9247,5	95,6%

Time	Acc people	Percentile
60	9258,38	95,7%
61	9269,26	95,8%
62	9280,14	95,9%
63	9291,02	96,0%
64	9301,9	96,1%
65	9312,78	96,2%
66	9323,66	96,4%
67	9334,54	96,5%
68	9345,42	96,6%
69	9356,3	96,7%
70	9367,18	96,8%
71	9378,06	96,9%
72	9388,94	97,0%
73	9399,82	97,1%
74	9410,7	97,3%
75	9421,58	97,4%
76	9432,46	97,5%
77	9443,34	97,6%
78	9454,22	97,7%
79	9465,1	97,8%
80	9475,98	97,9%
81	9486,86	98,0%
82	9497,74	98,2%
83	9508,62	98,3%
84	9519,5	98,4%
85	9530,38	98,5%
86	9541,26	98,6%
87	9552,14	98,7%
88	9563,02	98,8%
89	9573,9	98,9%

Time	Acc people	Percentile
90	9580,3	99,0%
91	9586,7	99,1%
92	9593,1	99,1%
93	9599,5	99,2%
94	9605,9	99,3%
95	9612,3	99,3%
96	9618,7	99,4%
97	9625,1	99,5%
98	9631,5	99,5%
99	9637,9	99,6%
100	9644,3	99,7%
101	9650,7	99,7%
102	9657,1	99,8%
103	9663,5	99,9%
104	9669,9	99,9%
105	9676,3	100,0%

Annex B: Study plans used in our study

Category 1: Engineering – Degree in Industrial Technologies engineering. (UPC – ETSEIB)

Link: https://etseib.upc.edu/ca/estudis/graus/pla-destudis-geti

Grau en Enginyeria en Tecnologies Industrials [2010]

Curs 1	Quadrimestre Tardor (Q1)	Àlgebra Lineal (6 ECTS)	Càlcul I (6 ECTS)	Mecànica Fonamental (6 ECTS)	Química I (6 ECTS)	Fonaments d'Informàtica (6 ECTS)
	Quadrimestre Primavera (Q2)	Geometria (6 ECTS)	Càlcul II (6 ECTS)	Termodinàmica Fonamental (6 ECTS)	Química II (4.5 ECTS)	Expressió Gràfica (7.5 ECTS)
Curs 2	Quadrimestre Tardor (Q3)	Electromagnetisme (6 ECTS)	Mètodes Numèrics (4.5 ECTS)	Materials (4.5 ECTS)	Equacions Diferencials (6 ECTS)	Informàtica (4.5 ECTS) — Mecànica (6 ECTS)
	Quadrimestre Primavera (Q4)	Economia i Empresa (6 ECTS)	Estadística (6 ECTS)	Dinàmica de Sistemes (4.5 ECTS)	Projecte I (3 ECTS) — Teoria de Màquines i Mecanismes (6 ECTS)	Optatives (3 ECTS)
Curs 3	Quadrimestre Tardor (Q5)	Tecnologia del Medi Ambient i Sostenibilitat (6 ECTS)	Termodinàmica (6 ECTS)	Electrotècnia (6 ECTS)	Mecànica dels Medis Continus (4.5 ECTS) — Tècniques Estadístiques per a la Qualitat (3 ECTS)	Tecnologia i Selecció de Materials (4.5 ECTS)
	Quadrimestre Primavera (Q6)	Mecànica de Fluids (6 ECTS)	Organització i Gestió (4.5 ECTS)	Resistència de Materials (6 ECTS)	Projecte II (3 ECTS) — Màquines Elèctriques (6 ECTS)	Optimització i Simulació (4.5 ECTS)
Curs 4	Quadrimestre Tardor (Q7)	Gestió de Projectes (6 ECTS)	Electrònica (7.5 ECTS)	Sistemes de Fabricació (4.5 ECTS)	Termotècnia (6 ECTS)	Control Automàtic (6 ECTS)
	Quadrimestre Primavera (Q8)	Treball de Fi de Grau (12 ECTS)		Bloc Optatiu (18 ECTS)		

Category 2: Experimental sciences – Degree in Biology (UB)

Link: http://www.ub.edu/biologia/guia_grau_biologia/index.htm

Intensificacions: • Biodiversitat • Biologia Molecular, Cel·lular i de Sistemes

Formació bàsica
Obligatòries
Optatives (OT)
Treball final de grau (TFG)

Titulació de 240 crèdits
30 crèdits per semestre

1r any

1r semestre	2n semestre	2n any 1r semestre / 2n semestre	3r any 1r semestre	2n semestre	4t any 1r semestre	2n semestre
Biologia I — 6 cr.	Biologia II — 6 cr.	Fisiologia Animal — 12 cr.	Biologia Cel·lular — 6 cr.	Ecologia d'Ecosistemes — 6 cr.	Disseny Experimental i Anàlisi de Dades — 6 cr.	OT — 6 cr.
Química — 6 cr.	Estadística — 6 cr.	Botànica — 12 cr.	Fisiologia Vegetal — 12 cr.		OT — 6 cr.	OT — 6 cr.
Matemàtiques — 6 cr.	Bioquímica Estructural — 6 cr.	Zoologia — 12 cr.	Ecologia Evolutiva — 6 cr.	OT — 6 cr.	OT — 6 cr.	OT — 6 cr.
Sistema Terra — 6 cr.	Antropologia Biològica — 6 cr.	Genètica Molecular — 6 cr. / Genètica: Anàlisi Genètica — 6 cr.	Bioquímica Metabòlica — 6 cr.	OT — 6 cr.	OT — 6 cr.	TFG
Física — 6 cr.	Citologia i Histologia — 6 cr.	Microbiologia — 12 cr.	Evolució — 6 cr.	OT — 6 cr.	OT — 6 cr.	TFG — 12 cr.

Category 3: Health Sciences – Degree in Medicine. (UAB)
Link: http://www.uab.cat/web/informacio-academica/grau-de-medicina/pla-d-estudis-1345666288994.html

UAB Facultat de Medicina

PLA D'ESTUDIS DEL GRAU DE MEDICINA

Actualitzat a 06/05/2015

Unitat Docent Ciències Mèdiques Bàsiques (Campus UAB)

1r		2n	
Anatomia humana: Generalitats i aparell locomotor (103592)	6,0	Anatomia humana: Esplancnologia (103593)	6,0
Biologia cel·lular (102954)	6,0	Bioètica i comunicació (102950)	3,0
Bioquímica estructural i Biologia molecular (103596)	6,0	Fisiologia Mèdica I (102957)	8,0
Introducció a les Ciències de la Salut (102952)	6,0	Genètica Humana (102958)	4,5
Pràctica clínica assistencial I (104070)	2,0	Psicologia Mèdica (102946)	6,0
Anatomia humana: Cardiovascular, Cap i Coll (103594)	4,0	Anatomia humana: Neuroanatomia (103595)	4,0
Aprenentatge Integrat en Medicina I (103633)	4,0	Aprenentatge Integrat en Medicina II (103634)	3,0
Bioquímica metabòlica (103597)	7,0	Fisiologia mèdica II (103629)	9,0
Fisiologia general (103632)	3,0	Nutrició humana (103645)	2,5
Histologia (103631)	3,0	Pràctica clínica assistencial II (104071)	2,0
Bioestadística (102947)	6,0	Estructura Microscòpica d'Aparells i Sistemes (102955)	6,0
Biofísica (102962)	7,0	Optatius 6 ECTS	

Unitat Docent Hospitalària

3r		4t		5è		6è	
Bases de la Cirurgia Clínica (103630)	5,0	Aprenentatge Integrat en Medicina IV (103636)	3,0	Medicina Legal i Toxicologia (102951)	4,5	Pràctica clínica assistencial IV (104073)	
Farmacologia General (102930)	4,0	Medicina i Cirurgia I (102945)	7,5	Medicina Preventiva i Salut Pública (102948)	6,0		
Aprenentatge Integrat en Medicina III (103635)	3,0	Malalties mèdic-quirúrgiques de l'aparell locomotor [7,5]				Pràctica clínica mèdica i assistència primària [22,0]	33,0
Epidemiologia (102949)	3,0	Medicina i Cirurgia II (102944)	4,0	Aprenentatge Integrat en Medicina V (103637)	3,0		
Immunologia mèdica (102928)	4,0	Malalties mèdic-quirúrgiques de l'aparell cardiovascular [5,0]	13,5	Farmacologia Clínica (102931)	5,5		
Pràctica clínica assistencial III (104072)	2,0	Malalties mèdic-quirúrgiques de l'aparell respiratori [5,0]		Dermatologia Clínica (102938)	4,0		
Fisiopatologia i Semiologia Clínica (102936)	11,0	Malalties de la sang [3,5]		Medicina i Cirurgia IV (103608)			
		Medicina i Cirurgia III (103607)	13,0	Malalties mèdic-quirúrgiques de l'aparell neurològic [5,0]	14,0	Pràctica clínica quirúrgica [11,0]	
		Malalties mèdic-quirúrgiques de l'aparell digestiu [5,5]		Malalties mèdic-quirúrgiques de l'aparell endocrí [5,0]			
Microbiologia i Parasitologia Mèdiques (102933)	8,0	Malalties mèdic-quirúrgiques de Nefro-Urologia [4,5]		Malalties infeccioses [4,0]		Pràctica clínica assistencial V (104074)	
		Geriatria [3,0]				Pràctica clínica pediàtrica [4,5]	
Patologia Estructural i Molecular (102927)	8,0	Obstetrícia i Ginecologia (102937)	8,0	Pediatria (102935)	11,0	Pràctica clínica obstètrica i ginecològica [4,5]	15,0
		Oftalmologia Clínica (102939)	4,5			Pràctica clínica salut mental [6,0]	
Radiologia Clínica (102929)	6,0	Otorinolaringologia Clínica (102940)	4,5	Psiquiatria (102941)	6,0	Treball de Fi de Grau (102926)	6,0
Optatius 6 ECTS		Optatius 6 ECTS		Optatius 6 ECTS		Optatius 6 ECTS	

Category 4: Law – Degree in Law. (UB)
Link: http://www.ub.edu/dret/guia_grau_dret/docs/pla_estudis.pdf

Category 5: BA / Tourism – Degree in Business Administration. (UB)
Link: http://www.ub.edu/economiaempresa/grau/ade/pla_estudis.html

Category 6: Humanities / Art – Degree in humanities (UPF)
https://www.upf.edu/fhuma/elsestudis/grau/presentacio/

PRIMER CURS

Codi assignatura	Assignatura	Trimestre	Crèdits
Assignatures de formació bàsica			
20001	Introducció a la Història	1	6
20002	Metodologia d'Estudi i Escriptura Acadèmica	1	6
20006	Introducció als Estudis Literaris	2	6
20010	Literatura Espanyola	3	6
20012	Art Antic i Medieval	3	6
Assignatures obligatòries			
20003	Temes Fonamentals de la Filosofia	1	4
20004	Fonaments de la Història i Teoria de l'Art	1	4
20005	Prehistòria	2	4
20007	Cultura Clàssica i Tradició Occidental	2	6
20009	Història Antiga	2	4
20008	Llengua Anglesa per a les Humanitats	3	4
20011	Pensament Antic i Medieval	3	4

SEGON CURS

Codi assignatura	Assignatura	Trimestre	Crèdits
Assignatures de formació bàsica			
20014	Geografia Humana	1	6
20018	Art del Renaixement i del Barroc	2	6
20027 20028 23280	Llengua Francesa per a les Humanitats * Llengua Alemanya per a les Humanitats * Llengua i Literatura Llatina I *	2	6
(*) A triar una assignatura com a bàsica. La resta es podran cursar com a optatives a tercer o quart curs			
20022	Art dels Segles XVIII i XIX	3	6
20023	Literatura Catalana	3	6

TERCER CURS

Codi assignatura	Assignatura	Trimestre	Crèdits
Assignatures obligatòries			
20025	Història Contemporània II	1	5
20020	Grans Tradicions Religioses	1	5
20024	Art Contemporani	2	5
20026	Literatura de Tradició Europea I	2	5
20033	Pensament Contemporani	3	5
20168 20169	Literatura Tradició Europea II * Discursos i Trad. Artístiques des de la Modernitat *	3	5
(*) A triar una assignatura com a obligatòria. L'altra assignatura es podrà cursar com a optativa a tercer o quart curs			

Category 7 Psychology / Sociology – Degree in Psychology (UB)
http://www.ub.edu/dyn/cms/print/p.jsp?u=/continguts_ca/estudis/oferta_formativa/graus/fit
xa/P/G1048/index.html

Category 8: Education – Degree in Early Childhood Education (UAB)
http://www.uab.cat/web/estudiar/llistat-de-graus/pla-d-estudis/estructura-del-pla-d-8217-
estudis/educacio-infantil-1345467811493.html?param1=1232089769177

1r curs	2n curs
• Educació i Contextos Educatius • Societat, Ciència i Cultura • Comunicació i Interacció Educativa I i II • Desenvolupament de la Personalitat (0-6 anys) • Context Social i Gestió Escolar • Pràcticum I (**)	• Observació Sistemàtica i Análisi de Contextos • Societat, Família i Escola (*) • Processos Educatius i Aprenentatge (0-6 anys) • Organització de l'Espai Escolar, Materials i Habilitats Docents • Els Centres Educatius d'Educació Infantil • Aspectes Instrumentals de les Llengües • Didàctica de la Llengua Oral en Educació Infantil • Pràcticum II (*) • Teories i Pràctiques Contemporànies en Educació

3r curs	4t curs
• Inclusió Educativa: Necessitats Educatives Específiques • Infància, Salut i Alimentació (*) • Didàctica del Coneixement del Medi Natural i Social en Educació Infantil I i II • Didàctica de la Llengua Escrita i la Literatura en Educació Infantil • Educació de les Arts Visuals en Educació Infantil I i II • Didàctica de la Música en l'Eapa d'Educació Infantil I • Les Matemàtiques en el Currículum d'Educació Infantil • Didàctica de l'Educació Corporal en Educació Infantil • Pràcticum III	• La Pràctica Matemàtica en l'Aula d'Educació Infantil • Educació Psicomotriu en els Centres d'Educació Infantil • Didàctica de la Música en l'Etapa d'Educació Infantil II • Pràcticum IV • Treball de Fi de Grau

Category 9: Journalism – Degree in Journalism (UAB):
http://www.uab.cat/web/estudiar/llistat-de-graus/pla-d-estudis/estructura-del-pla-d-8217-estudis/x-1345467811493.html?param1=1265293768091

1r curs	2n curs
- Història de la Comunicació - Estructura Social i Política - Llenguatges Comunicatius Escrits i Audiovisuals - Llengua Catalana Estàndard en els Mitjans de Comunicació - Escriptura en Premsa - Teoria i Tècnica dels Gèneres Periodístics - Estructura de la Comunicació - Estàndard Oral i Escrit de la Llengua Espanyola - Història Contemporània de Catalunya i d'Espanya - Escriptura Audiovisual	- Teories de la Comunicació - Escriptura Periodística en Multimèdia i Interactius - Mètodes, Tècniques, Fonts i Organització del Treball Periodístic - Producció, Expressió i Disseny en Premsa - Tecnologies de la Informació i la Comunicació - Deontologia Periodística i Llibertat d'expressió - Producció i Expressió Periodística en Multimèdia i Interactius - Teoria i Estructura Econòmica - Producció i Expressió Audiovisual - Mètodes de Recerca en Comunicació
3r curs	4t curs
- Teoria i Pràctica del Periodisme Especialitzat - Història del Periodisme a Catalunya i Espanya - Economia de la Comunicació - Informatius en Radio i Televisió - 2 assignatures optatives de l'oferta del 1r semestre - Politiques de Comunicació - 3 assignatures optatives de l'oferta del 2n semestre	- Treball de Final de Grau - Pràcticum

Annex C: Comparing study plans

As explained briefly in the point 6.3, the similarities between categories will be calculated through the comparison of a representative degree of each category of faculties. The degrees chosen and its study plans are explained in the prior annex, B

Getting into more detail, an intuitive and empiric way of comparing degrees is comparing their subjects, in order to determine how similar or different their studies are.

Almost all degrees studied are structured different, so they have an unequal number of credits for the elective subjects and the final degree thesis. Therefore, this study will only consider the three first years of the degree. Since the degrees studied have, at least, 240 ECTS credits, the calculations will be made out of 180 credits. In some cases, subjects had different weights, but in order to homogenize the study, all the subjects have been supposed to have 6 ECTS credit, which is the most common number.

Subjects have been considered similar depending on its name. Although same subjects may vary depending on the degree pursued (E.g., chemistry taught at Engineering may be different than the one taught at Biology), they have been considered to be similar due to these differences being small.

Reciprocity between degrees has been considered, since competitiveness between categories is symmetric. Also, all the subjects have been considered to have 6 credits.

The following list shows the similarities between the degrees stated. The information is in the following format: **x -- y; subject (6)**, where

X is the first category analysed, Y is the category which is compared to, subject is the name of the subject, according to X program, in Catalan.

1--2	química (6), matematiques (6), física (6), estadística (6), sistema terra (6)
1--4	mec fon (6), química (6), estadísticca (6)
1--5	economia (6)
1--6	economia (6), calc 1 (6), calc 2(6), estadística I(6), estadística 2(6), organització industrial (6),
1--7	-
1--8	-
1--9	-
2--3	bio1(6), quimica(6), matematiques(6), fisica(6), bio2(6), bioquimica estructural(6), estadística(6), bio celular (6), microbiologia(6), genètica molecular (6), microbiologia(12),
2--4	-
2--5	matemàtiques(6), estadística(6),
2--6	-
2--7	biologia 1(6), estadística (6), psicobiologia(6)
2--8	-
2--9	-
3--4	-
3--5	estadística (6),
3--6	-
3--7	biologia (6), estadística (6), psicologia (6), psiquiatria (6),
3--8	-
3--9	-
4--5	fonaments de dret (6), economia(6), dret mercantil (6),
4--6	dret romà (6), filosofia del dret (6), història del dret (6),
4--7	-
4--8	-
4--9	estructura social i política (6), deontologia periodística (6),
5--6	sociologia (6), història economica (6)
5--7	estadística (6), sociologia (6),
5--8	sociologia (6), rrhh (6)
5--9	economia(6), historia (6),
6--7	filosofia (6), geografia humana (6), pensament contemporani (6),
6--8	historia (6), historia contemporania (6), filosofia (6)
6--9	historia (6), historia contemporania (6), filosofia (6), estudis literaris (6), literatura europea (6), pensament contemporani (6)
7--8	conducta (6), historia (6), societat i benestar (6), psicologia social (6), aprenentatge i motivació (6), percepció i atenció (6), llenguatge i comunicació (6), psicologia social (6)
7--9	deontologia periodística (6)
8--9	historia (6), llenguatges comunicatius (6), historia contemporania (6)

Annex D: Excel plotting code

In order to plot each province HHI, an Excel made by Enrique Arranz, from www.excelyvba.com was used. It was modified in order to fit our needs for this project, and the code for the program is the following:

```
Sub Color_provincias()

Application.ScreenUpdating = False

Dim Rng_Color As Range
Dim Provincia As String
Dim Color_Fondo As Double
Dim R, G, B As Integer


    For i = 6 To 57
        Provincia = Cells(i, "L")
        Set Rng_Color = Cells(i, "M")
        Color_Fondo = Rng_Color.Interior.Color

            R = (Color_Fondo Mod 256)
            G = ((Color_Fondo \ 256) Mod 256)
            B = (Color_Fondo \ 65536)

        ActiveSheet.Shapes(Provincia).Select
        Selection.ShapeRange.Fill.ForeColor.RGB = RGB(R, G, B)


    Next i

    Range("a1").Select
End Sub
```

Each province in the map is represented as an object with the name of the province as the name assigned.

The interface of the book is plain and simple: On the left, the Spanish map is plotted. On the right part of the sheet, there is a list of provinces with a coloured cell next to each one. This cell colour will determine de province colour on the map, after clicking the button "Colorear Provincias". This button is situated at the upper right part of the sheet, as shown in the following image, and act as the trigger that activates the macro that will colour the map.

Finally, on the left part, a colour scale acts as a reference for each range of HHI values.

		Col	Provincias
HHI	6447		Álava
HHI	5553		Albacete
HHI	5153		Alicante
HHI	5940		Almería
HHI	2537		Asturias
HHI	9610		Ávila
HHI	7530		Badajoz
HHI	801		Barcelona
HHI	6968		Burgos
HHI	7376		Cáceres
HHI	5647		Cádiz
HHI	6251		Cantabria
HHI	9299		Castellón
HHI	7447		Ciudad Real
HHI	7208		Córdoba
HHI	3197		La Coruña
HHI	7676		Cuenca
HHI	6121		Gerona
HHI	4623		Granada
HHI	6446		Guadalajara
HHI	5264		Guipúzcoa
HHI	7256		Huelva
HHI	8636		Huesca
HHI	5428		Islas Baleares
HHI	8123		Jaén
HHI	6212		León

Legend:
- 0-1000
- 1000-2000
- 2000-3000
- 3000-4000
- 4000-5000
- 5000-6000
- 6000-8000
- 8000-10000
- No offer

Colorear Provincias

60

Annex E: List of provinces considered

Province	Coordinates of the province		Province	Coordinates of the province	
	Latitude	Longitude		Latitude	Longitude
Álava	42,8591	-2,6819	Lérida	41,6176	0,6200
Albacete	38,8037	-1,9882	Lugo	43,0097	-7,5568
Alicante	38,4610	-0,4908	Madrid	40,4168	-3,7038
Almería	37,1036	-2,3024	Málaga	36,7213	-4,4214
Asturias	43,3614	-5,8593	Murcia	37,9922	-1,1307
Ávila	40,6935	-4,8936	Navarra	42,8125	-1,6458
Badajoz	38,8801	-6,9702	Orense	42,3358	-7,8639
Barcelona	41,3851	2,1734	Palencia	42,0097	-4,5288
Burgos	42,3381	-3,5813	Las Palmas	28,1235	-15,4363
Cáceres	39,4753	-6,3725	Pontevedra	42,4299	-8,6446
Cádiz	36,6362	-5,8987	La Rioja	42,2871	-2,5396
Cantabria	43,1828	-3,9878	Salamanca	40,9701	-5,6635
Castellón	39,9864	-0,0513	Segovia	40,9429	-4,1088
Ciudad Real	38,9170	-4,0695	Sevilla	37,3891	-5,9845
Córdoba	37,8882	-4,7794	Soria	41,7666	-2,4790
La Coruña	43,3623	-8,4115	Tarragona	41,1189	1,2445
Cuenca	40,0704	-2,1374	Tenerife	28,4636	-16,2518
Gerona	42,0407	2,9376	Teruel	40,3457	-1,1064
Granada	37,1773	-3,5986	Toledo	39,8628	-4,0273
Guadalajara	40,6325	-3,1602	Valencia	39,4699	-0,3763
Guipúzcoa	43,0756	-2,2237	Valladolid	41,6523	-4,7245
Huelva	37,6060	-6,9209	Vizcaya	43,2630	-2,9350
Huesca	42,1362	-0,4082	Zamora	41,6096	-5,8987
Baleares	39,5696	2,6502	Zaragoza	41,6489	-0,8897
Jaén	37,7796	-3,7850	Ceuta	35,8894	-5,3213
León	42,5987	-5,5671	Melilla	35,2923	-2,9381

Annex F: Additional results

This annex shows the results for each province and each category, considering additional cases.

The following table provides the results **considering substitutes** and a fixed radius of **80km**.

80 km	1	2	3	4	5	6	7	8	9	Rank
Álava	1010	977	1272	1170	1228	1940	1059	1559	3040	13
Albacete	2529	1928	3191	5014	4723	2265	-	8579	-	40
Alicante	1376	812	847	2109	1983	2210	1485	2175	-	14
Almería	5319	3445	3539	6521	5203	3812	2628	5771	-	48
Asturias	1970	1241	1488	5139	2328	5218	1706	3511	2074	29
Ávila	1030	1402	1222	3737	2762	2050	1381	1918	-	17
Badajoz	2612	4480	4280	-	3814	-	-	5153	-	41
Barcelona	394	487	427	1544	771	796	633	2197	679	4
Burgos	6720	2812	3677	5554	3628	5978	-	8282	-	49
Cáceres	3919	-	2733	5399	5140	4849	-	5967	-	42
Cádiz	1601	1312	1031	4057	1624	3877	-	2707	-	24
Cantabria	2789	2035	1984	6039	4068	2990	-	8282	-	38
Castellón	936	879	879	3117	1986	1640	2025	2104	2615	16
Ciudad Real	2495	2606	2208	8459	-	6381	-	8493	-	45
Córdoba	3146	2839	2158	7760	-	5986	-	3849	-	37
La Coruña	522	704	1127	1499	1519	1335	729	1980	1020	7
Cuenca	6355	-	7536	5787	-	4873	-	5881	4001	50
Gerona	3429	2542	1845	4886	1958	2693	-	4306	-	31
Granada	1296	2946	1360	2504	3059	2295	1136	2200	-	21
Guadalajara	438	515	474	1043	422	654	656	1213	1200	2
Guipúzcoa	910	794	1045	978	974	1753	1373	1377	2800	9
Huelva	5840	2361	2660	2513	4245	3865	-	5363	-	44
Huesca	4735	2170	1563	3095	4031	3673	-	2528	-	34
Baleares	4106	-	3192	5241	2904	6098	2757	7153	-	43
Jaén	1107	2831	1329	2443	2527	2213	1120	2184	-	19
León	2882	2627	2717	3797	4254	4722	-	5018	-	36
Lérida	1524	1012	1594	3510	2366	2469	-	3722	-	25
Lugo	936	1171	1001	3569	2863	2062	1382	3464	1940	26
Madrid	422	497	465	1041	409	635	592	914	1158	1
Málaga	1829	2540	1798	3698	2177	4264	1986	3806	2872	30
Murcia	1208	782	817	2072	1683	2321	1461	2156	-	12
Navarra	1543	868	1476	1900	1816	2544	2694	2452	-	18
Orense	3458	931	798	2135	2006	2173	-	3116	2574	27
Palencia	1958	1119	1322	2270	1670	3118	-	3016	-	20
Las Palmas	2705	1537	3221	6831	4498	2017	-	4964	-	35
Pontevedra	1384	584	1018	1162	1134	1088	670	1576	1070	6
La Rioja	1532	3236	1467	2789	1374	5289	-	2144	-	28
Salamanca	1097	1363	1186	3654	3048	2256	1879	3509	-	23

Segovia	488	628	560	1211	491	747	720	1229	1295	3
Sevilla	1244	689	716	1897	1453	1165	802	1852	1569	8
Soria	2649	-	2399	-	2904	-	-	5788	-	39
Tarragona	567	778	677	2976	2661	1411	1326	2342	-	11
Tenerife	2788	2986	4772	5576	4313	-	-	7581	3664	47
Teruel	4907	-	3360	-	-	10000	-	-	-	52
Toledo	528	494	608	1171	486	671	983	1819	1429	5
Valencia	908	867	872	3108	1960	1640	2025	2104	2615	15
Valladolid	2763	1756	1963	3771	2689	5912	-	4727	-	33
Vizcaya	923	795	1023	1169	1121	1744	963	1526	2859	10
Zamora	1344	1385	1201	3670	2168	2256	1877	3609	-	22
Zaragoza	4229	2109	1539	3077	3927	3673	-	2528	-	32
Ceuta	4060	-	7474	5072	4369	-	-	4429	-	46
Melilla	-	-	6052	-	-	5230	-	-	-	51
Average by categories	125106	94886	105163	189839	130565	163959	102253	199353	118483	

The following table provides the results **considering substitutes** and a fixed radius of **150km**.

150 km	1	2	3	4	5	6	7	8	9	Rank
Álava	629	467	572	760	652	652	922	977	1954	24
Albacete	1167	688	699	1710	1508	15508	1259	1629	718	48
Alicante	478	404	414	1257	887	887	755	1084	1276	17
Almería	620	1464	690	1360	1160	1159	594	1255	-	29
Asturias	1350	835	902	3535	1743	1744	1214	2462	1500	41
Ávila	335	326	294	805	315	315	412	619	916	1
Badajoz	1741	2130	1716	4172	2440	2440	-	2765	-	46
Barcelona	307	349	304	1002	664	553	435	1122	491	5
Burgos	682	489	553	843	573	573	-	1043	1989	23
Cáceres	1549	1768	13886	3661	2146	17575	-	2656	-	51
Cádiz	518	402	353	888	598	747	479	893	792	10
Cantabria	820	531	617	895	686	1421	-	1180	2393	31
Castellón	798	811	820	3067	1838	1827	2023	1960	2584	40
Ciudad Real	1121	1014	863	1955	627	1317	-	2024	-	37
Córdoba	397	438	324	773	616	614	361	733	561	4
La Coruña	704	540	672	900	883	843	513	1220	764	18
Cuenca	433	500	447	1065	423	665	635	978	1319	11
Gerona	369	432	375	1304	656	699	547	1563	591	12
Granada	596	995	532	1124	908	1062	502	874	681	20
Guadalajara	412	478	428	1027	395	599	561	758	1086	8
Guipúzcoa	651	489	610	762	658	1127	938	977	1956	26
Huelva	636	403	392	1178	749	750	480	1005	999	14
Huesca	1848	1187	921	1794	2057	2335	1663	1757	-	42

Baleares	2591	1800	3166	5109	2600	6026	2705	7081	-	50
Jaén	521	987	517	1146	979	1108	557	1028	731	22
León	871	565	596	2246	1160	25355	833	1662	-	49
Lérida	354	338	290	885	598	552	406	1033	460	3
Lugo	517	374	495	1464	957	1248	498	1021	957	19
Madrid	413	475	423	969	396	572	562	781	1065	7
Málaga	632	1127	570	1253	1019	1196	574	1054	766	25
Murcia	836	630	679	1727	1332	1972	1341	1887	-	36
Navarra	925	625	579	935	866	1181	802	843	1608	28
Orense	715	438	672	900	883	843	513	1220	764	16
Palencia	1178	705	782	11446	1112	1641	915	1398	-	43
Las Palmas	1392	1360	2295	3373	2243	2207	-	3263	1939	44
Pontevedra	705	438	672	900	883	843	513	1220	764	15
La Rioja	746	586	753	859	763	1281	1090	1007	2216	32
Salamanca	1267	689	628	1693	1232	1217	754	1359	-	34
Segovia	339	334	307	806	317	452	418	619	913	2
Sevilla	642	399	382	1034	791	726	427	850	918	13
Soria	1388	-	630	-	1144	1487	-	1039	-	35
Tarragona	323	385	338	1148	651	645	498	1383	552	9
Tenerife	1392	1360	2295	3373	2243	2207	-	3263	1939	44
Teruel	847	638	576	1744	1347	1062	1411	1145	15404	47
Toledo	391	442	391	927	385	561	553	798	1080	6
Valencia	598	505	528	1603	1178	1139	1271	1461	1775	33
Valladolid	916	535	503	1237	843	1054	567	993	-	21
Vizcaya	643	491	622	770	675	1200	970	1041	2030	27
Zamora	1023	624	576	1576	1094	1332	734	1358	-	30
Zaragoza	1666	1066	797	1760	1903	2126	1534	1590	-	39
Ceuta	1028	1115	758	1930	1069	2427	1099	1598	1671	38
Melilla	-	-	6052	5230	-	5230	-	-	-	52
Average by category	1019	800	1062	1827	1112	2390	911	1533	1523	

The following table provides results **without considering substitutes** and a fixed radius of **40km**.

40 km	1	2	3	4	5	6	7	8	9
Álava	6060	10000	10000	10000	10000	10000	-	3984	-
Albacete	3631	10000	5008	6468	10000	10000	-	10000	-
Alicante	3873	4713	3439	5289	10000	-	10000	10000	-
Almería	10000	10000	10000	10000	10000	10000	10000	74000	-
Asturias	3231	3624	4172	10000	4029	10000	10000	5365	-
Ávila	10000	-	10000	-	-	-	-	10000	-
Badajoz	5318	10000	10000	-	10000	-	-	6610	-
Barcelona	634	1430	1123	3486	1600	1167	4500	4540	4008

Burgos	10000	10000	10000	7793	10000	10000	-	10000	-
Cáceres	10000	-	5028	10000	10000	10000	-	7041	-
Cádiz	5759	5448	2346	10000	5855	10000	-	3583	-
Cantabria	4805	10000	3484	10000	8514	8977	-	10000	-
Castellón	10000	-	7055	10000	-	-	10000	-	-
Ciudad Real	4242	10000	3755	10000	-	10000	-	10000	-
Córdoba	-	10000	5137	10000	-	10000	-	4194	-
La Coruña	1683	10000	2703	10000	8205	10000	6543	6451	10000
Cuenca	10000	-	10000	10000	-	10000	-	6277	10000
Gerona	10000	10000	5081	10000	5125	6130	-	5270	-
Granada	3360	10000	3117	5348	10000	3540	10000	4250	-
Guadalajara	7180	5925	7160	10000	5889	5807	-	5112	-
Guipúzcoa	3078	10000	10000	10000	5963	10000	10000	10000	-
Huelva	-	10000	10000	3384	10000	10000	-	10000	-
Huesca	10000	-	6737	-	10000	-	-	10000	-
Baleares	10000	10000	6727	10000	10000	10000	-	10000	-
Jaén	5321	10000	10000	10000	-	-	-	7812	-
León	7449	10000	5054	6359	10000	10000	-	6145	-
Lérida	5111	-	5001	9339	-	10000	-	7324	-
Lugo	10000	10000	10000	-	10000	10000	-	10000	-
Madrid	625	1248	1485	1398	1753	1248	3579	2491	3955
Málaga	2399	10000	5619	10000	4357	8327	5053	7402	10000
Murcia	4662	6481	2301	5318	7945	6915	10000	4327	-
Navarra	6924	-	10000	10000	10000	-	10000	-	-
Orense	10000	-	10000	-	-	-	-	-	-
Palencia	10000	-	10000	-	-	-	-	10000	-
Las Palmas	3104	10000	7177	10000	10000	3528	-	6759	-
Pontevedra	5036	2557	2589	4222	4583	4326	-	3782	10000
La Rioja	5351	-	10000	10000	10000	-	-	10000	-
Salamanca	10000	2182	5271	5142	10000	3088	10000	6555	-
Segovia	10000	-	-	-	10000	-	-	6442	-
Sevilla	2094	1930	2608	5102	3609	1974	5000	4270	6671
Soria	10000	-	5078	-	10000	10000	-	10000	-
Tarragona	3916	5391	5073	10000	10000	6574	-	10000	-
Tenerife	5238	10000	8628	10000	10000	10000	-	10000	10000
Teruel	10000	-	10000	-	-	10000	-	-	-
Toledo	4264	10000	-	-	-	10000	-	5724	-
Valencia	1482	2555	3430	10000	6002	3341	10000	3894	10000
Valladolid	3756	10000	5550	7500	5929	10000	-	10000	-
Vizcaya	2774	-	5842	10000	10000	10000	-	10000	10000
Zamora	10000	-	10000	10000	-	-	-	-	-
Zaragoza	9071	10000	5343	5006	9607	5461	-	5183	-
Ceuta	10000	-	10000	10000	5500	-	-	6168	-
Melilla	-	-	10000	-	-	5230	-	-	-

The following table provides results **without considering substitutes** and a fixed radius of **80km**.

80 km	1	2	3	4	5	6	7	8	9
Álava	1335	6695	3030	2740	3010	3686	10000	2079	10000
Albacete	3631	10000	5008	6468	10000	10000	-	10000	-
Alicante	2264	2773	1407	2739	4642	6069	5897	3106	-
Almería	10000	10000	10000	10000	10000	10000	10000	7400	-
Asturias	3221	3823	4172	10000	4029	10000	10000	5365	-
Ávila	3618	2182	4237	5142	9187	3088	10000	2604	-
Badajoz	3514	10000	10000	-	10000	-	-	5435	-
Barcelona	568	1431	1123	3488	1584	1167	4499	4540	4008
Burgos	10000	10000	10000	7793	10000	10000	-	10000	-
Cáceres	5370	-	3498	10000	10000	10000	-	7041	-
Cádiz	2356	5448	1962	6876	4223	10000	-	3019	-
Cantabria	4201	10000	3484	10000	8514	8977	-	10000	-
Castellón	1240	2555	2235	5003	6002	3341	5434	3894	10000
Ciudad Real	3392	10000	3755	10000	-	10000	-	10000	-
Córdoba	5112	10000	3404	10000	-	10000	-	4195	-
La Coruña	1162	1316	2789	2763	3777	2365	4260	2750	5936
Cuenca	10000	-	10000	10000	-	10000	-	6277	10000
Gerona	5301	10000	3659	10000	3247	6130	-	5270	-
Granada	2577	7813	2463	3606	10000	3540	10000	2755	-
Guadalajara	593	1248	1415	1342	1594	1174	3579	2491	3955
Guipúzcoa	1123	6695	2392	2151	2324	3686	5405	2079	10000
Huelva	10000	10000	5863	3384	10000	5461	-	5879	-
Huesca	7829	10000	3079	5006	8700	10000	-	3504	-
Baleares	10000	10000	6727	10000	10000	10000		10000	-
Jaén	2074	7813	2463	3606	7483	3540	10000	2755	-
León	4473	10000	5054	6359	10000	10000	-	6145	-
Lérida	2271	5391	2557	4868	10000	4241	-	4264	-
Lugo	1569	5482	1838	6733	6763	6815	6543	4290	10000
Madrid	568	1192	1415	1342	1578	1159	3579	1604	3955
Málaga	2399	10000	4485	10000	4357	8327	5053	7402	10000
Murcia	1932	2774	1351	2739	3632	6915	5897	3107	-
Navarra	1823	10000	3621	3467	3180	10000	5405	5011	-
Orense	3905	2557	2064	4222	4583	4326	-	3782	10000
Palencia	2443	5510	2812	3825	3945	5283	-	3763	-
Las Palmas	3104	10000	7177	10000	10000	3528	-	6759	-
Pontevedra	2448	1016	2895	2251	2782	1795	10000	2107	5042
La Rioja	3226	10000	2589	5028	3969	7952	-	2499	-
Salamanca	4458	2182	4087	5021	10000	3088	10000	6565	-
Segovia	637	1522	1677	1554	2086	1360	3579	2356	3955
Sevilla	2094	1830	1925	3558	3188	1974	5000	2816	6671
Soria	4622	-	5078	-	10000	10000	-	10000	-

Tarragona	790	2112	1457	4527	7051	2626	10000	3745	-
Tenerife	5238	10000	8628	10000	10000	10000	-	10000	10000
Teruel	5053	-	10000	-	-	10000	-	-	-
Toledo	653	1344	1863	1446	2604	1243	5239	3893	3955
Valencia	1195	2555	2235	5003	6002	3341	5434	3894	10000
Valladolid	3226	10000	3845	7500	5929	10000	-	6022	-
Vizcaya	1288	4199	2469	2752	2604	3287	10000	2077	10000
Zamora	10000	2182	4087	5021	10000	3088	10000	6565	-
Zaragoza	6746	10000	3079	5006	8700	5461	-	3504	-
Ceuta	10000	-	10000	10000	5499	-	-	6168	-
Melilla	-	-	10000	-	-	5230	-	-	-

The following table provides results **without considering substitutes** and a fixed radius of **150km**.

150 km	1	3	5	6	7	8	9	10	11
Álava	840	3174	1213	1479	1538	2310	5405	1372	10000
Albacete	1985	2522	1123	2240	3285	5497	5897	2233	10000
Alicante	667	1279	857	1954	2118	2126	3725	1592	10000
Almería	1214	5009	1171	2271	2484	2106	3720	1722	-
Asturias	2253	2788	1996	6674	3141	7537	10000	3585	-
Ávila	474	809	801	1053	1138	778	2798	1043	3955
Badajoz	2686	10000	2669	10000	5194	10000	-	3068	-
Barcelona	453	1129	722	2008	1224	884	2939	1794	4008
Burgos	873	2819	1106	1634	1605	2271	-	1255	10000
Cáceres	2476	10000	2124	5607	5194	3497	-	3068	-
Cádiz	819	1312	835	1810	1257	1361	2621	1323	4050
Cantabria	1023	2818	1304	1887	1886	2681	-	1439	10000
Castellón	1020	2555	2140	5003	6002	3341	5434	3513	10000
Ciudad Real	1605	3211	1678	2214	10000	2790	2078	2196	-
Córdoba	626	1627	683	1341	1064	1017	4260	1042	4051
La Coruña	1127	930	1774	1699	2141	1550	3579	1615	3854
Cuenca	586	1422	1167	1485	1440	1126	4499	1819	4652
Gerona	540	1262	990	2847	1345	1052	2772	2804	4008
Granada	1029	3102	999	1811	2294	1866	3579	1250	10000
Guadalajara	558	1193	1217	1329	1538	1094	5405	1247	3744
Guipúzcoa	863	3174	1360	1479	1538	2323	5000	1372	10000
Huelva	1083	1133	1003	2387	1611	1321	10000	1349	6671
Huesca	2639	10000	1619	2676	5481	4199	-	2516	-
Baleares	10000	10000	6727	10000	10000	10000		10000	-
Jaén	807	3209	963	1813	2889	1876	3361	1377	10000
León	1281	2192	1249	4303	2220	4711	10000	2333	-
Lérida	519	1123	678	1700	1343	823	4500	1678	4008
Lugo	874	839	1267	2672	1987	2296	3726	1405	3854
Madrid	562	992	1197	1246	1578	1032	3579	1310	3744

Málaga	1110	3603	1018	2022	2611	2060	3361	1416	10000
Murcia	1191	2522	1158	2317	3074	5813	5897	2681	-
Navarra	1089	4321	1210	1819	2057	2115	5405	1225	10000
Orense	1127	930	1774	1699	2141	1550	4260	1614	3854
Palencia	1582	2745	1645	2491	2831	2980	10000	1775	-
Las Palmas	1998	6631	4481	5353	5080	4012	-	4369	10000
Pontevedra	1128	930	1774	1699	2141	1550	4260	1615	3854
La Rioja	954	4511	1693	1732	1875	2336	5405	1590	10000
Salamanca	2285	1792	1346	2436	3604	1844	10000	1851	-
Segovia	477	809	884	1055	1138	778	2799	1043	3955
Sevilla	1084	1167	872	1809	1982	1278	10000	1095	6671
Soria	1786	-	5078	-	10000	10000	-	10000	-
Tarragona	471	1265	793	2342	1425	969	4500	2346	4008
Tenerife	1998	6631	4481	5353	5080	4012	-	4369	10000
Teruel	1169	2056	1410	2812	3730	1938	5434	1862	8357
Toledo	525	1120	1077	1187	1578	1005	3579	1356	3955
Valencia	802	1574	1150	2288	3287	3019	3530	2513	10000
Valladolid	1558	1362	1185	1892	2170	1714	10000	1285	-
Vizcaya	850	3174	1371	1479	1597	2516	5405	1473	10000
Zamora	1618	1519	1338	2454	2718	2057	10000	1915	-
Zaragoza	2368	10000	1353	2676	5131	3769	10000	2248	-
Ceuta	1564	4449	1530	4266	2100	5230	5053	2305	10000
Melilla	-	-	10000	-	-	5230	-	-	-

Annex G: List of faculties considered

	SUPPLY	DEMAND	ENROLMENT	CATEGORY	LATITUDE	LONGITUDE
Universidad autónoma de Barcelona	8345	11267	7874			
EINA. Centro Universitario de Diseño y Arte	110	130	115	8	41,403	2,1143
Escuela de Ingeniería	595	658	614	1	41,501	2,1040
Escuela de Prevención y Seguridad Integral (EPSI)	90	73	73	6	41,500	2,0955
Escuela Massana. Centro Municipal de Arte y Diseño	95	105	89	8	41,381	2,1698
Escuela Universitaria de Enfermería del Hospital de la Santa Creu i San Pau	80	108	84	5	41,412	2,1756
Escuela Universitaria de Enfermería y Fisioterapia Gimbernat	400	454	373	5	41,491	2,0712
Escuela Universitaria de Enfermería y Terapia Ocupacional de Terrassa	245	248	216	5	41,563	2,0167
Escuela Universitaria de Informática Tomàs Cerdà	50	13	11	2	41,491	2,0712
Escuela Universitaria de Turismo y Dirección Hotelera	270	242	216	7	41,500	2,0960
Escuela Universitaria Salesiana de Sarrià	210	157	139	1	41,396	2,1265
Facultad de Biociencias	480	756	496	3	41,501	2,1040
Facultad de Ciencias	570	746	580	3	41,501	2,1040
Facultad de Ciencias de la Comunicación	440	722	448	11	41,501	2,1040
Facultad de Ciencias de la Educación	560	1019	575	10	41,501	2,1040
Facultad de Ciencias Políticas y Sociología	280	304	285	9	41,501	2,1040
Facultad de Derecho	455	609	489	6	41,501	2,1040
Facultad de Economía y Empresa	720	884	746	7	41,501	2,1040
Facultad de Filosofía y Letras	1270	948	842	8	41,501	2,1040
Facultad de Medicina	490	1372	538	5	41,501	2,1040
Facultad de Psicología	440	718	446	8	41,501	2,1040
Facultad de Traducción e Interpretación	310	391	309	8	41,501	2,1040
Facultad de Veterinaria	185	610	190	5	41,501	2,1040
Universidad Autónoma de Madrid	6029	8421	5517			
Centro Superior de Estudios Universitarios La Salle	580	363	407	9	40,467	-3,7824
Escuela de Enfermería de la Cruz Roja	80	103	94	5	40,447	-3,7098
Escuela de Enfermería de La Fundación Jiménez Díaz	75	45	82	5	40,438	-3,7192
Escuela Politécnica Superior	268	372	268	1	40,546	-3,6961
Facultad de Ciencias	1040	1369	1025	3	40,546	-3,6961
Facultad de Ciencias Económicas y Empresariales	750	928	695	7	40,546	-3,6961
Facultad de Derecho	685	776	656	6	40,546	-3,6961
Facultad de Filosofía y Letras	1116	1107	1011	8	40,546	-3,6961
Facultad de Formación de Profesorado y Educación	665	717	515	10	40,546	-3,6961
Facultad de Medicina	420	1894	421	5	40,546	-3,6961
Facultad de Psicología	350	747	343	9	40,546	-3,6961
Universidad Carlos III de Madrid	3555	5290	3426			
Escuela Politécnica Superior	1230	1446	1201	1	40,316	-3,7267
Escuela Politécnica Superior. Sección Colmenarejo	80	81	81	1	40,316	-3,7267

Facultad de Ciencias Sociales y Jurídicas	1475	2626	1459	6	40,316	-3,7267
Facultad de Ciencias Sociales y Jurídicas. Sección Colmenarejo	230	228	225	6	40,316	-3,7267
Facultad de Humanidades, Comunicación y Documentación	540	909	460	8	40,316	-3,7267
Universidad Complutense de Madrid	14340	22510	13483			
Centro de Enseñanza Superior Cardenal Cisneros	340	334	260	6	40,450	-3,7245
Centro de Enseñanza Superior en Humanidades y Educación Don Bosco	340	174	133	8	40,458	-3,7156
Centro de Enseñanza Superior Instituto de Estudios Bursátiles	70	19	14	7	40,419	-3,6913
Centro de Enseñanza Superior Real Centro Universitario Escorial-María Cristina	50	19	16	7	40,588	-4,1511
Centro de Enseñanza Superior Villanueva	355	311	205	6	40,421	-3,6873
Centro de Estudios Superiores Felipe II	60	233	57	8	40,031	-3,6063
Centro Universitario de Estudios Financieros CUNEF	360	301	270	7	40,452	-3,7206
Escuela Universitaria de Profesorado de E.G.B. Escuni	300	169	150	10	40,377	-3,7517
Escuela Universitaria de Profesorado de E.G.B. Fomento de Centros de Enseñanza	160	98	58	10	40,377	-3,7517
Facultad de Bellas Artes	400	1004	413	8	40,450	-3,7245
Facultad de Ciencias Biológicas	350	423	338	3	40,450	-3,7245
Facultad de Ciencias de la Documentación	100	71	77	11	40,450	-3,7245
Facultad de Ciencias de la Información	1240	1785	1281	11	40,450	-3,7245
Facultad de Ciencias Económicas y Empresariales	700	850	712	7	40,450	-3,7245
Facultad de Ciencias Físicas	350	625	358	4	40,450	-3,7245
Facultad de Ciencias Geológicas	150	160	129	3	40,450	-3,7245
Facultad de Ciencias Matemáticas	298	459	296	4	40,450	-3,7245
Facultad de Ciencias Políticas y Sociología	715	759	635	9	40,450	-3,7245
Facultad de Ciencias Químicas	371	483	382	3	40,450	-3,7245
Facultad de Comercio y Turismo	530	530	564	7	40,450	-3,7245
Facultad de Derecho	1231	1760	1280	6	40,450	-3,7245
Facultad de Educación	940	1313	948	10	40,450	-3,7245
Facultad de Enfermería, Fisioterapia y Podología	390	1372	445	5	40,450	-3,7245
Facultad de Estudios Estadísticos	100	115	103	4	40,450	-3,7245
Facultad de Farmacia	400	640	415	3	40,450	-3,7245
Facultad de Filología	905	986	865	8	40,450	-3,7245
Facultad de Filosofía	160	221	154	8	40,450	-3,7245
Facultad de Geografía e Historia	680	744	624	8	40,450	-3,7245
Facultad de Informática	375	538	359	2	40,450	-3,7245
Facultad de Medicina	500	2788	499	5	40,450	-3,7245
Facultad de Odontología	100	443	111	5	40,450	-3,7245
Facultad de Óptica y Optometría	170	171	208	1	40,450	-3,7245
Facultad de Psicología	500	1156	537	8	40,450	-3,7245
Facultad de Trabajo Social	325	291	318	8	40,450	-3,7245
Facultad de Veterinaria	250	1153	262	5	40,450	-3,7245
Instituto Superior de Derecho y Economía (ISDE)	75	12	7	7	40,422	-3,6908
Universidad de A Coruña	3349	3740	2964			

Escuela Politécnica Superior	170	145	121	1	43,481	-8,2248
Escuela Técnica Superior de Arquitectura	200	170	131	1	43,327	-8,4098
Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos	160	83	75	1	43,333	-8,4099
Escuela Técnica Superior de Náutica y Máquinas	100	102	86	1	43,370	-8,4205
Escuela Universitaria de Arquitectura Técnica	120	64	50	1	43,328	-8,4083
Escuela Universitaria de Diseño Industrial	70	128	78	1	43,482	-8,2237
Escuela Universitaria de Enfermería A Coruña	60	142	69	5	43,346	-8,3878
Escuela Universitaria de Relaciones Laborales	100	51	51	6	43,349	-8,4110
Escuela Universitaria de Turismo	80	42	30	7	43,368	-8,4153
Escuela Universitaria Politécnica	110	60	55	1	43,369	-8,4162
Facultad de Ciencias	130	171	171	3	43,366	-8,4121
Facultad de Ciencias de la Comunicación	50	103	59	11	43,366	-8,4121
Facultad de Ciencias de la Educación	375	560	447	10	43,366	-8,4121
Facultad de Ciencias de la Salud	50	69	62	5	43,366	-8,4121
Facultad de Ciencias del Deporte y la Educación Física	120	243	134	10	43,366	-8,4121
Facultad de Ciencias del Trabajo	70	34	30	9	43,366	-8,4121
Facultad de Derecho	174	260	197	6	43,366	-8,4121
Facultad de Economía y Empresa	390	467	428	7	43,366	-8,4121
Facultad de Enfermería y Podología	110	116	117	5	43,366	-8,4121
Facultad de Filología	225	134	129	8	43,366	-8,4121
Facultad de Fisioterapia	60	237	66	5	43,366	-8,4121
Facultad de Humanidades y Documentación	90	18	16	7	43,366	-8,4121
Facultad de Informática	240	253	257	2	43,366	-8,4121
Facultad de Sociología	95	88	105	9	43,366	-8,4121
Universidad de Alcalá	3675	4581	3489			
Centro Universitario Cardenal Cisneros	500	208	213	10	40,499	-3,3612
Escuela de Arquitectura	100	80	97	1	40,509	-3,3445
Escuela de Arquitectura, Sección Guadalajara	75	23	32	1	40,509	-3,3445
Escuela Politécnica Superior	600	663	665	1	40,632	-3,1678
Facultad de Biología, Ciencias Ambientales y Química	390	546	409	3	40,509	-3,3445
Facultad de Ciencias Económicas, Empresariales y Turismo	425	426	445	7	40,509	-3,3445
Facultad de Ciencias Económicas, Empresariales y Turismo, Sección Guadalajara	180	254	181	7	40,632	-3,1678
Facultad de Derecho	150	174	164	6	40,509	-3,3445
Facultad de Educación	300	370	288	10	40,509	-3,3445
Facultad de Farmacia	130	191	163	3	40,509	-3,3445
Facultad de Filosofía y Letras	290	318	260	8	40,509	-3,3445
Facultad de Filosofía y Letras, Sección Guadalajara	100	112	111	8	40,632	-3,1678
Facultad de Medicina y Ciencias de la Salud	360	1096	382	5	40,509	-3,3445
Facultad de Medicina y Ciencias de la Salud, Sección Guadalajara	75	120	79	5	40,632	-3,1678
Universidad de Alicante	6150	6474	4966			
Escuela Politécnica Superior	1035	856	738	1	38,385	-0,5125
Escuela Universitaria de Relaciones Laborales	60	6	5	6	38,385	-0,5125

Facultad de Ciencias	440	537	451	3	38,385	-0,5125
Facultad de Ciencias de la Salud	300	688	317	5	38,385	-0,5125
Facultad de Ciencias Económicas y Empresariales	1485	1040	1007	7	38,385	-0,5125
Facultad de Derecho	955	1186	863	6	38,385	-0,5125
Facultad de Educación	900	1372	869	10	38,385	-0,5125
Facultad de Filosofía y Letras	975	789	716	9	38,385	-0,5125
Universidad de Barcelona	10729	16571	10967			
ENTI - Escuela de Nuevas Tecnologías Interactivas	80	105	86	2	41,388	2,1626
Escuela de Hostelería y Turismo-CETT	270	381	308	7	41,435	2,1477
Escuela Superior de Cine y Audiovisuales de Cataluña	90	121	108	8	41,561	2,0228
Escuela Superior de Comercio y Distribución (ESCODI)	60	31	31	7	41,559	2,0230
Escuela Superior de Relaciones Públicas	120	241	137	11	41,388	2,1474
Escuela Universitaria de Enfermería	470	903	475	5	41,346	2,1033
Escuela Universitaria de Enfermería Sant Joan de Déu	150	185	160	5	41,385	2,1029
Facultad de Bellas Artes	400	566	408	8	41,381	2,1152
Facultad de Biblioteconomía y Documentación	130	208	140	10	41,381	2,1388
Facultad de Biología	520	851	572	3	41,386	2,1168
Facultad de Derecho	1030	1589	1092	6	41,386	2,1168
Facultad de Economía y Empresa	1620	1985	1665	7	41,386	2,1168
Facultad de Educación	1375	2086	1426	10	41,438	2,1445
Facultad de Farmacia	500	792	516	3	41,386	2,1168
Facultad de Filología	910	897	797	8	41,386	2,1636
Facultad de Filosofía	200	212	196	8	41,386	2,1636
Facultad de Física	230	310	244	4	41,386	2,1636
Facultad de Geografía e Historia	800	856	743	8	41,386	2,1636
Facultad de Geología	130	190	130	3	41,386	2,1636
Facultad de Matemáticas	190	275	206	4	41,386	2,1168
Facultad de Medicina	299	1590	315	5	41,386	2,1168
Facultad de Odontología	120	406	124	5	41,386	2,1168
Facultad de Psicología	480	933	487	9	41,386	2,1168
Facultad de Química	335	387	361	3	41,386	2,1168
INSTITUT NACIONAL D'EDUCACIÓ FÍSICA DE CATALUNYA (INEFC)	150	357	163	10	41,365	2,1467
Instituto de Seguridad Pública de Catalunya	70	114	77	9	41,554	2,2259
Universidad de Extremadura	5775	9832	4043			
Centro Universitario de Mérida	245	269	154	2	38,907	-6,3381
Centro Universitario de Plasencia	300	375	228	5	40,036	-6,0843
Centro Universitario Santa Ana	300	95	64	10	38,677	-6,3969
Escuela de Ingenierías Agrarias	280	167	138	1	38,895	-6,9699
Escuela de Ingenierías Industriales	300	352	231	1	38,883	-7,0037
Escuela Politécnica	625	425	269	1	38,883	-7,0037
Facultad de Ciencias	485	655	349	3	38,883	-7,0037
Facultad de Ciencias de la Documentación y la Comunicación	140	275	122	10	38,883	-7,0037
Facultad de Ciencias del Deporte	90	291	91	10	39,479	-6,3442

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Facultad de Ciencias Económicas y Empresariales	595	504	371	7	38,883	-7,0037
Facultad de Derecho	240	336	171	6	39,479	-6,3442
Facultad de Educación	490	871	442	10	38,883	-7,0037
Facultad de Enfermería y Terapia Ocupacional	160	363	159	5	39,479	-6,3442
Facultad de Estudios Empresariales y Turismo	320	353	249	7	38,883	-7,0037
Facultad de Filosofía y Letras	365	312	191	8	38,883	-7,0037
Facultad de Formación del Profesorado	435	612	413	10	39,479	-6,3442
Facultad de Medicina	265	2578	264	5	38,883	-7,0037
Facultad de Veterinaria	140	999	137	5	38,883	-7,0037
Universidad de Girona	3685	4280	3554		0,000	0,0000
Escuela de Realización Audiovisual y Multimedia (ERAM)	90	83	80	8	41,978	2,7951
Escuela Politécnica Superior	650	565	505	1	41,964	2,8287
Escuela Universitaria de Turismo CETA	80	75	72	7	41,400	2,1640
Escuela Universitaria de Turismo EUROAULA	100	121	112	7	41,388	2,1589
Escuela Universitaria de Turismo Mediterrani	195	228	212	7	41,380	2,1521
Escuela Universitaria de Turismo Sant Pol de Mar	30	26	24	7	41,602	2,6267
Escuela Universitaria del Deporte y la Salud (EUSES)	310	455	327	10	41,969	2,7930
Escuela Universitaria Formatic Barna	80	65	56	7	41,393	2,1639
Facultad de Ciencias	305	343	332	3	41,964	2,8287
Facultad de Ciencias Económicas y Empresariales	340	326	308	7	41,964	2,8287
Facultad de Derecho	300	404	316	6	41,964	2,8287
Facultad de Educación y Psicología	480	678	525	10	41,985	2,8272
Facultad de Enfermería	130	216	133	5	41,985	2,8272
Facultad de Letras	315	212	225	8	41,985	2,8272
Facultad de Medicina	80	199	103	5	41,985	2,8272
Facultad de Turismo	200	284	224	7	41,985	2,8272
Universidad de La Rioja	1000	2449	976		0,000	0,0000
Escuela Técnica Superior de Ingeniería Industrial	125	202	111	1	42,466	-2,4273
Escuela Universitaria de Enfermería	75	713	78	5	42,466	-2,4273
Facultad de Ciencias Empresariales	175	282	147	7	42,466	-2,4273
Facultad de Ciencias Jurídicas y Sociales	125	296	137	6	42,466	-2,4273
Facultad de Ciencias, Estudios Agroalimentarios e Informática	200	350	191	2	42,466	-2,4273
Facultad de Letras y de la Educación	300	606	312	10	42,466	-2,4273
Universidad de Lleida	2310	3269	2096			
Escuela Politécnica Superior	230	213	200	1	41,608	0,6230
Escuela Técnica Superior de Ingeniería Agraria	290	439	270	1	41,628	0,5969
Escuela Universitaria de Relaciones Laborales	60	20	13	6	41,616	0,6123
Escuela Universitaria de Turismo OSTELEA	100	26	23	7	41,381	2,1495
Facultad de Derecho y Economía	385	420	367	6	41,608	0,6230
Facultad de Educación, Psicología y Trabajo Social	500	662	539	10	41,615	0,6183
Facultad de Enfermería y Fisioterapia	185	527	206	5	41,615	0,6183
Facultad de Letras	250	190	165	8	41,615	0,6183
Facultad de Medicina	215	616	211	5	41,615	0,6183
INSTITUT NACIONAL D'EDUCACIÓ FÍSICA DE CATALUNYA	95	156	102	10	41,608	0,6230

A LLEIDA						
Universidad de Murcia	6743	16170	6274			
Escuela Universitaria de Enfermería	50	151	49	5	37,619	-0,9719
Escuela Universitaria de Turismo	300	110	95	7	37,980	-1,1449
Facultad de Bellas Artes	100	219	102	8	38,025	-1,1764
Facultad de Biología	251	649	250	5	38,025	-1,1764
Facultad de Ciencias del Deporte	95	438	96	10	38,025	-1,1764
Facultad de Ciencias del Trabajo	240	183	233	6	38,025	-1,1764
Facultad de Ciencias Sociosanitarias	130	309	129	5	38,025	-1,1764
Facultad de Comunicación y Documentación	310	754	309	10	38,025	-1,1764
Facultad de Derecho	620	1192	630	6	38,025	-1,1764
Facultad de Economía y Empresa	733	944	722	7	38,025	-1,1764
Facultad de Educación	870	1649	863	10	38,025	-1,1764
Facultad de Enfermería	226	832	229	5	38,025	-1,1764
Facultad de Filosofía	76	66	56	8	38,025	-1,1764
Facultad de Informática	200	363	204	2	38,025	-1,1764
Facultad de Letras	820	1126	725	8	38,025	-1,1764
Facultad de Matemáticas	90	157	90	4	38,025	-1,1764
Facultad de Medicina	372	3985	379	5	38,025	-1,1764
Facultad de Óptica y Optometría	70	90	68	1	38,025	-1,1764
Facultad de Psicología	288	788	290	9	38,025	-1,1764
Facultad de Química	300	597	305	3	38,025	-1,1764
Facultad de Trabajo Social	150	244	152	10	38,025	-1,1764
Facultad de Veterinaria	150	1121	151	5	38,025	-1,1764
ISEN Formación Universitaria	302	203	147	7	37,605	-0,9929
Universidad de Santiago de Compostela	4549	8261	4352		0,000	0,0000
Escuela Politécnica Superior	200	94	97	1	42,874	-7,5390
Escuela Técnica Superior de Ingeniería	115	238	123	1	42,997	-8,5565
Escuela Universitaria de Enfermería	68	103	65	5	42,874	-8,5565
Escuela Universitaria de Relaciones Laborales	65	35	31	6	42,874	-8,5565
Escuela Universitaria de Trabajo Social	80	60	63	10	42,874	-8,5565
Facultad de Administración y Dirección de Empresas	170	88	89	7	42,874	-7,5390
Facultad de Biología	132	211	129	3	42,874	-8,5565
Facultad de Ciencias	110	129	90	3	42,874	-7,5390
Facultad de Ciencias de la Comunicación	140	397	149	11	42,874	-8,5565
Facultad de Ciencias de la Educación	359	529	398	10	42,874	-8,5565
Facultad de Ciencias Económicas y Empresariales	350	368	358	7	42,874	-8,5565
Facultad de Ciencias Políticas y Sociales	125	142	130	8	42,874	-8,5565
Facultad de Derecho	190	255	200	6	42,874	-8,5565
Facultad de Enfermería	150	287	150	3	42,874	-8,5565
Facultad de Farmacia	200	326	199	3	42,874	-8,5565
Facultad de Filología	325	302	289	8	42,874	-8,5565
Facultad de Filosofía	65	46	49	8	42,874	-8,5565
Facultad de Física	100	147	105	4	42,874	-8,5565

Facultad de Formación del Profesorado	180	142	186	10	42,874	-7,5390
Facultad de Geografía e Historia	255	270	247	8	42,874	-8,5565
Facultad de Humanidades	90	32	32	8	42,874	-7,5390
Facultad de Matemáticas	130	222	140	4	42,874	-8,5565
Facultad de Medicina y Odontología	410	2360	452	5	42,874	-8,5565
Facultad de Óptica y Optometría	60	57	71	2	42,874	-8,5565
Facultad de Psicología	150	500	153	9	42,874	-8,5565
Facultad de Química	130	169	148	3	42,874	-8,5565
Facultad de Relaciones Laborales	90	80	98	6	42,874	-8,5565
Facultad de Veterinaria	110	672	111	5	42,874	-7,5390
Universidad de Valencia	9215	16301	8847		0,000	0,0000
Centro Florida Universitaria	455	74	92	10	39,401	-0,4148
Centro Universitario EDEM	50	43	41	7	39,462	-0,3288
Escuela Técnica Superior de Ingeniería	338	285	369	1	39,513	-0,4244
Escuela Universitaria de Enfermería La Fe	70	322	73	5	39,443	-0,3760
Escuela Universitaria de Enfermería Nuestra Señora del Sagrado Corazón	70	80	70	5	40,003	-0,0427
Facultad de Ciencias Biológicas	368	833	371	3	39,508	-0,4215
Facultad de Ciencias de la Actividad Física y el Deporte	200	777	203	10	39,479	-0,3578
Facultad de Ciencias Matemáticas	80	117	110	4	39,508	-0,4215
Facultad de Ciencias Sociales	580	544	543	8	39,480	-0,3454
Facultad de Derecho	890	1584	900	6	39,480	-0,3454
Facultad de Economía	1320	2056	1331	7	39,480	-0,3454
Facultad de Farmacia	514	710	525	3	39,508	-0,4215
Facultad de Filología, Traducción y Comunicación	720	1283	705	11	39,477	-0,3601
Facultad de Filosofía y Ciencias de la Educación	440	446	409	10	39,477	-0,3601
Facultad de Física	130	295	159	4	39,508	-0,4215
Facultad de Geografía e Historia	550	433	485	8	39,479	-0,3578
Facultad de Medicina y Odontología	400	2578	400	5	39,477	-0,3601
Facultad de Psicología	530	991	517	9	39,477	-0,3601
Facultad de Química	180	152	179	3	39,508	-0,4215
Facultat de Fisioteràpia	160	579	159	5	39,477	-0,3601
Facultat de Magisteri	850	1571	852	10	39,480	-0,3454
Facultat d'Infermeria i Podologia	320	548	354	5	39,480	-0,3645
Universidad de Vigo	3679	4440	3547		0,000	0,0000
Escuela de Ingeniería de Telecomunicación	150	173	158	2	42,170	-8,6878
Escuela de Ingeniería Forestal	45	31	28	1	42,440	-8,6371
Escuela de Ingeniería Industrial	514	605	526	1	42,224	-8,7394
Escuela de Negocios Afundación	60	47	46	6	42,225	-8,7136
Escuela Superior de Ingeniería Informática	110	117	130	2	42,340	-7,8664
Escuela Técnica Superior de Ingeniería de Minas	100	68	69	1	42,170	-8,6878
Escuela Universitaria de Enfermería (Ourense)	50	99	50	5	42,334	-7,8702
Escuela Universitaria de Enfermería (Pontevedra)	50	78	51	5	42,428	-8,6377
Escuela Universitaria de Enfermería Meixoeiro	50	129	50	5	42,215	-8,6847
Escuela Universitaria de Enfermería Povisa	70	116	75	5	42,228	-8,7292

Escuela Universitaria de Estudios Empresariales	115	81	73	7	42,227	-8,7345
Escuela Universitaria de Profesorado de E.G.B. María Sedes Sapientiae	150	100	114	10	42,214	-8,6998
Facultad de Bellas Artes	130	180	133	8	42,225	-8,7320
Facultad de Biología	75	110	77	3	42,225	-8,7320
Facultad de Ciencias	135	95	96	3	42,225	-8,7320
Facultad de Ciencias de la Educación	300	338	311	10	42,225	-8,7320
Facultad de Ciencias de la Educación y del Deporte	250	399	273	10	42,225	-8,7320
Facultad de Ciencias del Mar	70	78	67	3	42,225	-8,7320
Facultad de Ciencias Económicas y Empresariales	310	350	319	7	42,225	-8,7320
Facultad de Ciencias Empresariales y Turismo	160	152	126	7	42,225	-8,7320
Facultad de Ciencias Jurídicas y del Trabajo	150	180	162	6	42,225	-8,7320
Facultad de Ciencias Sociales y de la Comunicación	190	313	179	11	42,225	-8,7320
Facultad de Derecho	70	82	77	6	42,225	-8,7320
Facultad de Filología y Traducción	220	259	202	8	42,225	-8,7320
Facultad de Fisioterapia	50	163	50	5	42,225	-8,7320
Facultad de Historia	45	42	37	8	42,225	-8,7320
Facultad de Química	60	55	68	3	42,225	-8,7320
Universidad del País Vasco	8694	15151	8329		0,000	0,0000
Escuela Técnica Superior de Arquitectura	150	149	119	1	43,312	-2,0109
Escuela Técnica Superior de Ingeniería de Bilbao	470	589	457	1	43,262	-2,9483
Escuela Técnica Superior de Naútica y Máquinas Navales	120	56	39	1	43,327	-3,0243
Escuela Universitaria de Enfermería de Donostia-San Sebastián	120	270	120	5	43,294	-1,9676
Escuela Universitaria de Enfermería de Leioa	165	398	171	5	43,330	-2,9657
Escuela Universitaria de Enfermería de Vitoria-Gasteiz	80	179	81	5	42,855	-2,6920
Escuela Universitaria de Estudios Empresariales de Bilbao	250	153	183	7	43,260	-2,9331
Escuela Universitaria de Estudios Empresariales de Donostia-San Sebastián	230	354	234	7	43,311	-2,0112
Escuela Universitaria de Estudios Empresariales de Vitoria-Gasteiz	140	96	98	7	42,838	-2,6690
Escuela Universitaria de Ingeniería de Vitoria-Gasteiz	320	219	203	2	42,839	-2,6748
Escuela Universitaria de Ingeniería Técnica de Minas y de Obras Públicas	150	88	81	2	43,263	-2,9506
Escuela Universitaria de Ingeniería Técnica Industrial de Bilbao	400	599	400	2	43,264	-2,9514
Escuela Universitaria de Ingeniería Técnica Industrial de Eibar	70	130	75	2	43,180	-2,4895
Escuela Universitaria de Magisterio de Bilbao	460	945	500	10	43,333	-2,9730
Escuela Universitaria de Magisterio de Donostia-San Sebastián	270	481	284	10	43,312	-2,0096
Escuela Universitaria de Magisterio de Vitoria-Gasteiz	250	370	266	10	42,840	-2,6743
Escuela Universitaria de Relaciones Laborales	120	126	118	6	42,840	-2,6703
Escuela Universitaria de Trabajo Social de Vitoria-Gasteiz	125	161	126	10	42,840	-2,6698
Escuela Universitaria Politécnica de Donostia-San Sebastián	439	392	270	1	43,309	-2,0099
Facultad de Bellas Artes	300	483	310	8	43,330	-2,9657

Facultad de Ciencia y Tecnología	590	1098	646	2	43,330	-2,9693
Facultad de Ciencias de la Actividad Física y del Deporte	100	188	101	10	42,832	-2,6871
Facultad de Ciencias Económicas y Empresariales	580	909	600	7	43,311	-2,0112
Facultad de Ciencias Químicas	80	104	80	3	43,306	-2,0105
Facultad de Ciencias Sociales y de la Comunicación	570	958	579	11	43,331	-2,9678
Facultad de Derecho	210	408	214	6	43,307	-2,0119
Facultad de Derecho. Sección Bizkaia	90	205	98	6	43,334	-2,9839
Facultad de Farmacia	290	492	303	3	42,838	-2,6690
Facultad de Filosofía y Ciencias de la Educación	245	359	246	8	43,312	-2,0109
Facultad de Informática	145	168	140	2	43,307	-2,0110
Facultad de Letras	550	672	519	8	42,840	-2,6712
Facultad de Medicina y Odontología	365	2683	409	5	43,330	-2,9657
Facultad de Psicología	250	669	259	9	43,307	-2,0090
Universidad deValladolid	**5180**	**8607**	**4372**		**0,000**	**0,0000**
Escuela de Ingeniería Informática de Segovia	45	52	32	2	40,943	-4,1143
Escuela de Ingeniería Informática de Valladolid	145	216	151	2	41,663	-4,7057
Escuela de Ingenierías Industriales	575	849	517	1	41,644	-4,7431
Escuela Técnica Superior de Arquitectura	120	203	102	1	41,650	-4,7405
Escuela Técnica Superior de Ingenierías Agrarias	170	123	83	1	41,988	-4,5163
Escuela Técnica Superior de Ingenieros de Telecomunicación	190	156	110	2	41,663	-4,7060
Escuela Universitaria de Enfermería Dr. Dacio Crespo	100	121	113	5	41,998	-4,5186
Escuela Universitaria de Ingeniería Técnica Agrícola INEA	60	41	34	1	41,604	-4,7929
Escuela Universitaria de Ingenierías Agrarias	80	42	25	1	41,753	-2,4705
Facultad de Ciencias	235	408	219	3	41,663	-4,7057
Facultad de Ciencias Económicas y Empresariales	450	522	410	7	41,659	-4,7106
Facultad de Ciencias Empresariales y del Trabajo de Soria	115	88	44	7	41,752	-2,4699
Facultad de Ciencias Sociales, Jurídicas y de la Comunicación	415	588	335	10	40,943	-4,1142
Facultad de Comercio	180	202	163	7	41,659	-4,7106
Facultad de Derecho	230	378	239	6	41,652	-4,7213
Facultad de Educación de Palencia	220	185	163	10	41,987	-4,5172
Facultad de Educación de Segovia	200	196	125	10	40,950	-4,1180
Facultad de Educación de Soria	120	211	98	10	41,752	-2,4699
Facultad de Educación y Trabajo Social	400	618	432	10	41,663	-4,7060
Facultad de Enfermería	130	303	131	5	41,655	-4,7176
Facultad de Enfermería de Soria	60	200	63	5	41,752	-2,4693
Facultad de Filosofía y Letras	555	780	405	8	41,659	-4,7106
Facultad de Fisioterapia de Soria	50	261	49	5	41,752	-2,4699
Facultad de Medicina	265	1715	261	5	41,652	-4,7213
Facultad de Traducción e Interpretación	70	149	68	8	41,752	-2,4699
Universidad Jaume I de Castellón	**3065**	**2951**	**2750**		**0,000**	
Escuela Superior de Tecnología y Ciencias Experimentales	770	562	622	1	39,994	-0,0673
Facultad de Ciencias de la Salud	320	706	320	5	39,994	-0,0673

Facultad de Ciencias Humanas y Sociales	985	1052	949	9	39,994	-0,0673
Facultad de Ciencias Jurídicas y Económicas	990	631	859	6	39,994	-0,0673
Universidad Miguel Hernández de Elche	2590	3151	1975		0,000	
Escuela Politécnica Superior de Elche	375	264	294	2	38,277	-0,6874
Escuela Politécnica Superior de Orihuela	120	64	52	2	38,067	-0,9827
Escuela Superior de Gestión Comercial y Marketing (ESIC-VALENCIA)	200	68	72	7	39,474	-0,3521
Facultad de Bellas Artes de Altea	110	60	63	8	38,600	-0,0564
Facultad de Ciencias Experimentales	150	156	140	3	38,275	-0,6861
Facultad de Ciencias Sociales y Jurídicas	620	576	457	6	38,275	-0,6861
Facultad de Ciencias Sociales y Jurídicas de Orihuela	100	65	62	6	38,085	-0,9497
Facultad de Ciencias Sociosanitarias	285	532	278	5	38,275	-0,6858
Facultad de Farmacia	125	121	118	3	38,275	-0,6858
Facultad de Medicina	435	1237	421	5	38,275	-0,6858
Inst. Mediterráneo Estudios de Protocolo	70	8	18	6	38,341	-0,4883
Universidad Politécnica de Cartagena	1165	1182	921			
Centro Universitario de la Defensa	95	0	53	1	41,698	-0,8745
Escuela Técnica Superior de Arquitectura y Edificación	150	156	98	1	37,607	-0,9795
Escuela Técnica Superior de Ingeniería Agronómica	60	71	62	1	37,607	-0,9795
Escuela Técnica Superior de Ingeniería de Caminos, Canales y Puertos y Minas	125	50	40	1	37,607	-0,9788
Escuela Técnica Superior de Ingeniería de Telecomunicación	140	167	136	2	37,607	-0,9788
Escuela Técnica Superior de Ingeniería Industrial	385	564	381	1	37,607	-0,9788
Escuela Técnica Superior de Ingeniería Naval y Oceánica	50	55	37	1	37,607	-0,9788
Facultad de Ciencias de la Empresa	160	119	114	7	37,599	-0,9878
Universidad Politécnica de Catalunya	5520	6223	5220			
Centro de la Imagen y la Tecnología Multimedia	110	168	123	2	41,562	2,0195
Centro Universitario EAE	130	171	138	7	41,380	2,1488
Centro Universitario Euncet	200	159	155	7	41,600	2,0147
Escuela de Ingeniería de Igualada	80	64	45	1	41,586	1,5934
Escuela de Ingeniería de Telecomunicación y Aeroespacial de Castelldefels	330	300	271	2	41,276	1,9877
Escuela de Ingeniería de Terrassa	390	441	397	1	41,564	2,0222
Escuela Politécnica Superior de Edificación de Barcelona	210	156	120	1	41,384	2,1125
Escuela Politécnica Superior de Ingeniería de Manresa	275	176	161	1	41,737	1,8292
Escuela Politécnica Superior de Ingenieria de Vilanova i la Geltrú	350	319	308	1	41,222	1,7298
Escuela Superior de Agricultura de Barcelona	200	163	162	1	41,276	1,9877
Escuela Técnica Superior de Arquitectura	380	440	378	1	41,384	2,1125
Escuela Técnica Superior de Arquitectura del Vallés	120	150	118	1	41,470	2,0706
Escuela Técnica Superior de Ingeniería de Telecomunicación	340	375	352	2	41,384	2,1125
Escuela Técnica Superior de Ingeniería Industrial de Barcelona	565	687	606	1	41,384	2,1125
Escuela Técnica Superior de Ingenierías Industrial y Aeronáutica de Terrassa	300	406	316	1	41,563	2,0228

Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos	240	220	195	1	41,384	2,1125
Escuela Universitaria de Ingeniería Técnica Industrial	600	854	628	1	41,387	2,1482
Facultad de Informática	400	569	426	2	41,384	2,1125
Facultad de Matemáticas y Estadística	50	86	54	4	41,384	2,1125
Facultad de Náutica	150	194	169	1	41,382	2,1847
Facultad de Óptica y Optometría de Terrassa	100	125	98	1	41,568	2,0236
Universidad Politécnica de Madrid	6125	7714	4935			
Centro Superior de Diseño de Moda de Madrid	50	44	25	8	40,389	-3,6288
Escuela Técnica Superior de Arquitectura	410	726	462	1	40,440	-3,7316
Escuela Técnica Superior de Edificación	400	150	137	1	40,440	-3,7316
Escuela Técnica Superior de Ingeniería Aeronáutica y del Espacio	600	1010	560	1	40,440	-3,7316
Escuela Técnica Superior de Ingeniería Civil	325	170	148	1	40,407	-3,6863
Escuela Técnica Superior de Ingeniería de Montes, Forestal y del Medio Natural	365	210	204	1	40,450	-3,7215
Escuela Técnica Superior de Ingeniería de Sistemas Informáticos	300	363	274	2	40,389	-3,6288
Escuela Técnica Superior de Ingeniería y Diseño Industrial	475	889	503	1	40,406	-3,7008
Escuela Técnica Superior de Ingeniería y Sistemas de Telecomunicación	340	457	271	2	40,389	-3,6288
Escuela Técnica Superior de Ingenieros Agrónomos	410	608	265	1	40,440	-3,7316
Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos	350	293	327	1	40,440	-3,7316
Escuela Técnica Superior de Ingenieros de Minas y Energía	340	297	311	1	40,442	-3,7002
Escuela Técnica Superior de Ingenieros de Telecomunicación	390	466	385	2	40,452	-3,7268
Escuela Técnica Superior de Ingenieros en Topografía, Geodesia y Cartografía	60	12	13	1	40,389	-3,6302
Escuela Técnica Superior de Ingenieros Industriales	510	957	435	1	40,440	-3,6902
Escuela Técnica Superior de Ingenieros Informáticos	330	320	292	1	40,405	-3,8396
Escuela Técnica Superior de Ingenieros Navales	120	94	100	1	40,440	-3,7316
Escuela Universitaria de Ingeniería Técnica Agrícola	150	90	76	1	40,443	-3,7301
Facultad de Ciencias de la Actividad Física y del Deporte (INEF)	200	558	147	10	40,438	-3,7331
Universidad Politécnica de Valencia	4580	5737	4221			
Centro Florida Universitaria	140	29	58	1	39,401	-0,4135
Centro Universitario EDEM	50	19	22	1	39,462	-0,3287
Escuela Politécnica Superior de Alcoy	445	279	390	1	38,695	-0,4757
Escuela Politécnica Superior de Gandía	290	231	232	1	38,996	-0,1656
Escuela Técnica Superior de Arquitectura	360	357	330	1	39,482	-0,3449
Escuela Técnica Superior de Ingeniería Agronómica y del Medio Natural	380	513	387	1	39,482	-0,3449
Escuela Técnica Superior de Ingeniería de Edificación	100	62	59	1	39,482	-0,3449
Escuela Técnica Superior de Ingeniería del Diseño	655	1509	650	1	39,481	-0,3385
Escuela Técnica Superior de Ingeniería Geodésica, Cartográfica y Topográfica	75	20	32	3	39,481	-0,3380

Escuela Técnica Superior de Ingeniería Informática	375	506	375	2	39,482	-0,3449
Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos	190	89	118	1	40,447	-0,3732
Escuela Técnica Superior de Ingenieros de Telecomunicación	165	145	163	2	39,482	-0,3449
Escuela Técnica Superior de Ingenieros Industriales	585	866	576	1	39,483	-0,3430
Facultad de Administración y Dirección de Empresas (ADE)	320	438	329	7	39,481	-0,3428
Facultad de Bellas Artes San Carlos	450	674	500	8	39,479	-0,3712
Universidad Pompeu y Fabra	3670	5784	3920			
Elisava Escuela Superior de Diseño	300	287	264	1	41,378	2,1761
Escuela Superior de Ciencias de la Salud Tecnocampus	160	227	214	5	41,528	2,4338
Escuela Superior de Ciencias Sociales y de la Empresa Tecnocampus	310	359	334	7	41,528	2,4338
Escuela Superior de Comercio Internacional	110	175	123	7	41,388	2,1817
Escuela Superior de Enfermería del Mar	85	114	96	5	41,384	2,1928
Escuela Superior Politécnica	265	364	297	2	41,403	2,1942
Escuela Superior Politécnica Tecnocampus	340	325	306	2	41,528	2,4338
Facultad de Ciencias de la Salud y de la Vida	120	640	134	5	41,385	2,1927
Facultad de Ciencias Económicas y Empresariales	540	970	572	7	41,379	2,1789
Facultad de Ciencias Políticas y Sociales	180	323	206	8	41,404	2,1934
Facultad de Comunicación	240	634	266	11	41,404	2,1934
Facultad de Derecho	620	900	678	6	41,389	2,1913
Facultad de Humanidades	170	182	173	8	41,390	2,1904
Facultad de Traducción e Interpretación	230	284	257	8	41,379	2,1790
Universidad Pública de Navarra	1755	3108	1715			
Escuela Técnica Superior de Ingenieros Agrónomos	150	157	116	1	42,799	-1,6341
Escuela Técnica Superior de Ingenieros Industriales y Telecomunicación	520	678	495	1	42,799	-1,6341
Facultad de Ciencias de la Salud	160	718	165	5	42,805	-1,6719
Facultad de Ciencias Económicas y Empresariales	325	530	323	7	42,799	-1,6341
Facultad de Ciencias Humanas y Sociales	450	788	465	9	42,799	-1,6364
Facultad de Ciencias Jurídicas	150	237	151	6	42,799	-1,6364
Universidad Rey Juan Carlos	9964	10923	8569			
Centro de Educación Superior CEDEU	155	73	75	7	40,433	-3,6730
Centro Universitario Gestión IEB Global	75	60	63	7	40,418	-3,6909
Escuela Superior de Ciencias Experimentales y Tecnología. Campus de Móstoles	737	410	588	3	40,337	-3,8747
Escuela Superior de Ciencias Experimentales y Tecnología. Campus de Vicálvaro	72	47	58	3	40,337	-3,8743
Escuela Superior de Gestión Empresarial y Marketing (ESIC)	405	303	325	7	41,396	2,1458
Escuela Superior ESERP Fundación Universitaria	280	125	205	7	40,458	-3,6752
Escuela Técnica Superior de Ingeniería de Telecomunicación. Campus de Fuenlabrada	213	175	171	2	40,283	-3,8221
Escuela Técnica Superior de Ingeniería Informática. Campus de Móstoles	347	582	297	2	40,336	-3,8750
Escuela Técnica Superior de Ingeniería Informática.	70	59	58	2	40,336	-3,8749

Campus de Vicálvaro						
Escuela Universitaria de Artes y Espectáculos TAI	250	83	155	8	40,421	-3,6892
Facultad de Ciencias de la Comunicación. Campus de Fuenlabrada	760	822	765	11	40,283	-3,8221
Facultad de Ciencias de la Comunicación. Campus de Vicálvaro	341	379	300	11	40,336	-3,8749
Facultad de Ciencias de la Salud. Campus de Alcorcón	670	1286	649	5	40,350	-3,8448
Facultad de Ciencias Jurídicas y Sociales. Campus Aranjuez	717	783	656	6	40,033	-3,5966
Facultad de Ciencias Jurídicas y Sociales. Campus de Alcorcón	250	447	227	6	40,347	-3,8396
Facultad de Ciencias Jurídicas y Sociales. Campus de Fuenlabrada	1634	1978	1414	6	40,283	-3,8221
Facultad de Ciencias Jurídicas y Sociales. Campus de Móstoles	682	415	580	6	40,336	-3,8750
Facultad de Ciencias Jurídicas y Sociales. Campus de Vicálvaro	2306	2896	1983	6	40,336	-3,8749
Universidad Rovira y Virgili	3295	3999	2982			
Centro de Estudios Superiores de la Aviación (CESDA)	40	24	22	1	41,146	1,1424
Escuela Técnica Superior de Arquitectura (ETSA)	60	47	41	1	41,144	1,1197
Escuela Técnica Superior de Ingeniería	330	242	227	1	41,133	1,2439
Escuela Técnica Superior de Ingeniería Química	180	172	160	1	41,133	1,2439
Escuela Universitaria de Deportes y Salud de Terres de l'Ebre	120	101	89	10	40,708	0,5787
Facultad de Ciencias de la Educación y Psicología	520	712	565	10	41,133	1,2409
Facultad de Ciencias Jurídicas	310	333	296	6	41,123	1,2488
Facultad de Economía y Empresa	410	400	365	7	41,146	1,1188
Facultad de Enfermería	200	379	233	5	41,119	1,2596
Facultad de Enología	80	97	85	3	41,120	1,2604
Facultad de Letras	515	445	352	8	41,122	1,2493
Facultad de Medicina y Ciencias de la Salud	280	747	297	5	41,122	1,2493
Facultad de Química	130	187	151	3	41,122	1,2493
Facultad de Turismo y Geografía	120	113	99	8	41,122	1,2493
Universidad de Almería	3270	3964	2720			
Centro de Trabajo Social	225	68	108	10	36,832	-2,4528
Escuela Superior de Ingeniería	600	424	401	1	36,829	-2,4068
Facultad de Ciencias de la Educación	600	1101	595	10	36,830	-2,4043
Facultad de Ciencias de la Salud	195	515	199	5	36,830	-2,4043
Facultad de Ciencias Económicas y Empresariales	525	592	506	7	36,830	-2,4043
Facultad de Ciencias Experimentales	300	233	226	3	36,830	-2,4043
Facultad de Derecho	375	497	326	6	36,830	-2,4043
Facultad de Humanidades	300	226	210	8	36,830	-2,4043
Facultad de Psicología	150	308	149	9	36,830	-2,4043
Universidad de Cádiz	4978	6765	4446			
Centro de Enfermería Salus Infirmorum	80	93	78	5	36,531	-6,2999
Centro de Magisterio Virgen de Europa	180	93	89	10	36,160	-5,3501

Escuela de Ingeniería Naval y Oceánica	80	72	65	1	36,530	-6,2120
Escuela de Ingenierías Marina, Náutica y Radioelectrónica	170	121	107	1	36,530	-6,2122
Escuela Politécnica Superior	220	130	118	1	36,136	-5,4535
Escuela Superior de Ingeniería	465	645	474	1	36,538	-6,2024
Facultad de Ciencias	270	415	267	3	36,530	-6,2120
Facultad de Ciencias de la Educación	558	1151	562	10	36,530	-6,2120
Facultad de Ciencias del Mar y Ambientales	150	272	144	3	36,530	-6,2121
Facultad de Ciencias del Trabajo	130	92	117	10	36,531	-6,3047
Facultad de Ciencias del Trabajo. Sede de Algeciras	75	29	31	10	36,133	-5,4480
Facultad de Ciencias del Trabajo. Sede de Jerez	100	151	101	10	36,687	-6,1299
Facultad de Ciencias Económicas y Empresariales	375	361	364	7	36,531	-6,3050
Facultad de Ciencias Económicas y Empresariales. Sede en Algeciras	150	114	118	7	36,136	-5,4535
Facultad de Ciencias Económicas y Empresariales. Sede en Jerez	150	212	151	7	36,685	-6,1178
Facultad de Ciencias Sociales y de la Comunicación	470	550	438	10	36,686	-6,1176
Facultad de Derecho	330	451	333	6	36,686	-6,1177
Facultad de Derecho. Sede de Algeciras	80	150	80	6	36,136	-5,4535
Facultad de Enfermería	80	130	82	5	36,508	-6,2786
Facultad de Enfermería y Fisioterapia	175	403	177	5	36,697	-6,1377
Facultad de Enfermería y Fisioterapia. Sede de Jerez	60	123	62	5	36,697	-6,1377
Facultad de Filosofía y Letras	475	409	333	8	36,535	-6,3031
Facultad de Medicina	155	598	155	5	36,534	-6,3027
Universidad de Córdoba	3691	5532	3248			
Centro Magisterio "Sagrado Corazón"	250	154	169	10	37,896	-4,7854
Escuela Politécnica Superior de Bélmez	185	62	49	1	38,267	-5,2074
Escuela Politécnica Superior de Córdoba	420	404	356	1	38,267	-5,2073
Escuela Técnica Superior de Ingeniería Agronómica y de Montes	225	133	129	1	37,852	-5,2388
Facultad de Ciencias	440	393	419	3	37,885	-4,7678
Facultad de Ciencias de la Educación	525	723	531	10	37,868	-4,8015
Facultad de Ciencias del Trabajo	240	246	232	10	37,892	-4,7774
Facultad de Derecho y Ciencias Económicas y Empresariales	420	611	420	6	37,884	-4,7685
Facultad de Filosofía y Letras	490	477	435	8	37,880	-4,7822
Facultad de Medicina y Enfermería	291	1056	296	5	37,880	-4,7822
Facultad de Veterinaria	205	1273	212	5	37,880	-4,7822
Universidad de Granada	11200	18311	10474			
Centro de Magisterio La Inmaculada	350	242	247	10	37,207	-3,6119
Escuela Técnica Superior de Arquitectura	160	212	149	1	37,181	-3,6071
Escuela Técnica Superior de Ingeniería de Caminos, Canales y Puertos	200	174	177	1	37,182	-3,6076
Escuela Técnica Superior de Ingeniería de Edificación	250	93	85	1	37,181	-3,6071
Escuela Técnica Superior de Ingenierías Informática y de Telecomunicación	400	564	401	2	37,197	-3,6247
Facultad de Bellas Artes	285	481	287	8	37,191	-3,5963

Facultad de Ciencias	1300	2020	1309	3	37,182	-3,6076
Facultad de Ciencias de la Educación	1207	1574	1217	10	37,194	-3,6003
Facultad de Ciencias de la Salud	320	1158	329	5	37,189	-3,6059
Facultad de Ciencias de la Salud de Ceuta	135	104	136	5	35,891	-5,2978
Facultad de Ciencias del Deporte	190	713	193	10	37,191	-3,5964
Facultad de Ciencias del Trabajo	365	311	339	6	37,180	-3,6048
Facultad de Ciencias Económicas y Empresariales	1063	1441	1074	7	37,191	-3,5963
Facultad de Ciencias Políticas y Sociología	455	539	449	8	37,180	-3,6046
Facultad de Ciencias Sociales de Melilla	180	137	108	8	35,290	-2,9532
Facultad de Comunicación y Documentación	165	327	118	10	37,191	-3,5963
Facultad de Derecho	575	956	582	6	37,178	-3,6021
Facultad de Educación y Humanidades de Melilla	275	205	167	8	35,290	-2,9532
Facultad de Educación, Economía y Tecnología de Ceuta	410	261	227	7	35,891	-5,2978
Facultad de Enfermería de Melilla	110	139	112	5	35,290	-2,9531
Facultad de Farmacia	485	828	487	5	37,191	-3,5963
Facultad de Filosofía y Letras	1160	1439	1111	8	37,194	-3,6003
Facultad de Medicina	253	2176	255	5	37,187	-3,6047
Facultad de Odontología	85	365	87	5	37,194	-3,5970
Facultad de Psicología	370	961	372	9	37,194	-3,6003
Facultad de Trabajo Social	180	249	181	10	37,189	-3,6113
Facultad de Traducción e Interpretación	272	642	275	8	37,175	-3,6039
Universidad de Huelva	2828	2581	2273			
Escuela Técnica Superior de Ingeniería	660	350	359	1	37,202	-6,9208
Facultad de Ciencias de la Educación	683	960	704	10	37,268	-6,9231
Facultad de Ciencias del Trabajo	130	112	104	6	37,274	-6,9258
Facultad de Ciencias Empresariales	455	335	355	7	37,263	-6,9522
Facultad de Ciencias Experimentales	165	86	113	3	37,271	-6,9261
Facultad de Derecho	130	190	139	6	37,271	-6,9236
Facultad de Enfermería	130	227	138	5	37,273	-6,9255
Facultad de Humanidades	345	203	227	8	37,269	-6,9209
Facultad de Trabajo Social	130	118	134	6	37,269	-6,9209
Universidad de Jaén	3990	3720	3040			
Centro Universitario Sagrada Familia (Úbeda)	220	189	186	7	38,012	-3,3802
Escuela Politécnica Superior (Jaén)	625	412	381	1	37,789	-3,7781
Escuela Politécnica Superior (Linares)	600	282	227	1	38,086	-3,6477
Facultad de Ciencias de la Salud	215	442	215	5	37,788	-3,7784
Facultad de Ciencias Experimentales	225	178	187	3	37,788	-3,7784
Facultad de Ciencias Sociales y Jurídicas	825	798	716	6	37,788	-3,7784
Facultad de Humanidades y Ciencias de la Educación	1140	1268	987	10	37,788	-3,7784
Facultad de Trabajo Social	140	151	141	10	37,788	-3,7784
Universidad de Málaga	7870	12208	7875			
Centro de Enfermería Virgen de la Paz (Ronda)	65	96	75	5	36,749	-5,1665
Centro de Magisterio María Inmaculada (Antequera)	165	143	145	10	37,022	-4,5639
Escuela Politécnica Superior	535	653	550	1	36,715	-4,4941

Escuela Técnica Superior de Arquitectura	75	170	78	1	36,728	-4,4196
Escuela Técnica Superior de Ingeniería de Telecomunicación	350	322	336	2	36,715	-4,4766
Escuela Técnica Superior de Ingeniería Industrial	415	532	427	1	36,715	-4,4766
Escuela Técnica Superior de Ingeniería Informática	335	537	344	2	36,715	-4,4766
Facultad de Bellas Artes	85	187	87	8	36,728	-4,4196
Facultad de Ciencias	595	710	609	3	36,715	-4,4727
Facultad de Ciencias de la Comunicación	390	774	396	11	36,714	-4,4707
Facultad de Ciencias de la Educación	780	1489	800	10	36,716	-4,4694
Facultad de Ciencias de la Salud	360	1105	367	5	36,716	-4,5009
Facultad de Ciencias Económicas y Empresariales	800	1115	815	7	36,728	-4,4179
Facultad de Comercio y Gestión	375	498	373	7	36,715	-4,4941
Facultad de Derecho	435	747	437	6	36,716	-4,4694
Facultad de Estudios Sociales y del Trabajo	430	489	440	9	36,715	-4,4941
Facultad de Filosofía y Letras	955	972	857	8	36,728	-4,4179
Facultad de Medicina	170	738	176	5	36,716	-4,4694
Facultad de Psicología	355	704	358	9	36,728	-4,4179
Facultad de Turismo	200	227	205	7	36,715	-4,4727
Universidad de Pablo de Olavide	**2530**	**3261**	**2241**			
Centro Universitario San Isidoro	430	173	158	10	37,408	-6,0070
Escuela Politécnica Superior	60	69	57	1	37,353	-5,9385
Facultad de Ciencias Empresariales	440	570	436	7	37,355	-5,9387
Facultad de Ciencias Experimentales	240	439	235	3	37,355	-5,9387
Facultad de Ciencias Sociales	420	531	419	8	37,355	-5,9387
Facultad de Derecho	480	756	481	6	37,355	-5,9387
Facultad de Humanidades	300	386	294	8	37,355	-5,9387
Facultad del Deporte	160	337	161	10	37,355	-5,9387
Universidad de Sevilla	**12431**	**20081**	**11318**			
Centro de Enfermería de la Cruz Roja	70	55	71	5	37,401	-5,9829
Centro de Enfermería San Juan de Dios	55	57	57	5	37,373	-6,0856
Centro de Enfermería Virgen del Rocío	90	331	92	5	37,366	-5,9848
Centro de Estudios Universitarios Cardenal Spínola	640	299	288	10	37,370	-6,0881
Centro de Estudios Universitarios Francisco Maldonado	472	327	292	5	37,238	-5,0998
Centro Universitario EUSA	440	160	158	11	37,375	-5,9812
Escuela Politécnica Superior	520	755	517	1	37,376	-6,0025
Escuela Técnica Superior de Arquitectura	320	444	315	1	37,362	-5,9868
Escuela Técnica Superior de Ingeniería	875	1533	877	1	37,360	-5,9872
Escuela Técnica Superior de Ingeniería Agronómica	225	213	221	1	37,353	-5,9388
Escuela Técnica Superior de Ingeniería de Edificación	361	104	151	1	37,362	-5,9868
Escuela Técnica Superior de Ingeniería Informática	580	754	572	2	37,361	-5,9867
Facultad de Bellas Artes	240	426	242	8	37,392	-5,9932
Facultad de Biología	261	460	261	3	37,361	-5,9867
Facultad de Ciencias de la Educación	950	2070	948	10	37,375	-5,9812
Facultad de Ciencias del Trabajo	275	352	263	9	37,375	-5,9812
Facultad de Ciencias Económicas y Empresariales	923	1293	925	7	37,375	-5,9812

Facultad de Comunicación	584	1342	591	11	37,410	-6,0066
Facultad de Derecho	639	1087	641	6	37,375	-5,9812
Facultad de Enfermería, Fisioterapia y Podología	320	967	319	5	37,406	-5,9927
Facultad de Farmacia	355	647	354	3	37,361	-5,9881
Facultad de Filología	565	560	514	8	37,380	-5,9920
Facultad de Filosofía	120	266	122	8	37,375	-5,9812
Facultad de Física	140	199	142	4	37,361	-5,9867
Facultad de Geografía e Historia	575	722	561	8	37,380	-5,9920
Facultad de Matemáticas	195	392	198	4	37,361	-5,9867
Facultad de Medicina	354	2099	358	5	37,406	-5,9927
Facultad de Odontología	90	411	92	5	37,405	-5,9935
Facultad de Psicología	262	825	266	9	37,405	-5,9935
Facultad de Química	160	165	161	3	37,361	-5,9867
Facultad de Turismo y Finanzas	775	766	749	7	37,375	-5,9812
Universidad de Zaragoza	6572	13531	5918			
Escuela de Ingeniería y Arquitectura	1045	1482	1032	1	41,683	-0,8876
Escuela Politécnica Superior	110	112	87	1	42,117	-0,4467
Escuela Universitaria de Enfermería Hospital General Obispo Polanco	33	151	32	5	40,330	-1,1100
Escuela Universitaria de Enfermería Hospital General San Jorge	54	89	54	5	42,133	-0,4181
Escuela Universitaria de Turismo	80	36	18	7	41,655	-0,8833
Escuela Universitaria Politécnica	306	116	96	1	41,480	-1,3764
Facultad de Ciencias	487	825	445	3	41,642	-0,9003
Facultad de Ciencias de la Salud	300	984	306	5	41,643	-0,9056
Facultad de Ciencias de la Salud y del Deporte	216	1106	216	10	42,143	-0,4055
Facultad de Ciencias Humanas y de la Educación	240	240	243	10	41,642	-0,9003
Facultad de Ciencias Sociales y del Trabajo	360	451	361	6	41,642	-0,9003
Facultad de Ciencias Sociales y Humanas	435	747	337	8	41,642	-0,9058
Facultad de Derecho	388	625	387	6	41,641	-0,8995
Facultad de Economía y Empresa	900	1078	880	7	41,647	-0,8880
Facultad de Educación	360	708	358	10	41,642	-0,9003
Facultad de Empresa y Gestión Pública	110	52	47	7	42,143	-0,4055
Facultad de Filosofía y Letras	760	932	631	8	41,641	-0,8975
Facultad de Medicina	180	2700	179	5	41,642	-0,9043
Facultad de Veterinaria	208	1097	209	5	42,117	-0,4467
Universidad de Oviedo	x	x	8089			
Escuela de Ingeniería de Minas, Energía y Materiales de Oviedo	x	x	34	1	43,362	-5,8540
Escuela de Ingeniería Informática	150	221	147	2	43,355	-5,8515
Escuela Politécnica de Ingeniería de Gijón	x	x	749	1	43,523	-5,6260
Escuela Politécnica de Mieres	x	x	167	1	43,241	-5,7774
Escuela Politécnica Superior	465	504	399	1	43,362	-5,8469
Escuela Superior de Marina Civil	x	x	54	1	43,526	-5,6292
Escuela Universitaria de Turismo del Consejo Insular de Eivissa y Formentera	100	0	64	7	38,906	1,4330

Escuela Universitaria de Turismo Felipe Moreno	120	0	49	7	39,568	2,6514
Facultad de Biología	140	349	135	3	43,356	-5,8733
Facultad de Ciencias	404	630	400	3	43,358	-5,8540
Facultad de Comercio, Turismo y Ciencias Sociales Jovellanos	x	x	411	7	43,524	-5,6145
Facultad de Derecho	x	x	759	6	43,356	-5,8733
Facultad de Economía y Empresa	1085	1205	1059	7	43,354	-5,8723
Facultad de Educación	645	853	764	10	43,358	-5,8543
Facultad de Enfermería de Gijón	70	88	70	5	43,362	-5,8465
Facultad de Enfermería y Fisioterapia	221	868	278	5	43,356	-5,8713
Facultad de Filosofía y Letras	x	x	910	8	43,368	-5,8404
Facultad de Formación del Profesorado y Educación	445	650	439	10	43,358	-5,8543
Facultad de Geología	x	x	51	3	43,358	-5,8543
Facultad de Medicina y Ciencias de la Salud	335	2122	337	5	43,356	-5,8733
Facultad de Psicología	260	643	320	9	43,358	-5,8543
Facultad de Química	x	x	136	3	43,356	-5,8733
Facultad de Turismo	180	266	182	7	43,368	-5,8622
Facultad de Turismo de Oviedo	x	x	33	7	43,368	-5,8622
Facultad Padre Ossó	x	x	142	7	43,356	-5,8455
Universidad de La Laguna	5127	6927	4225			
Escuela Politécnica Superior de Ingeniería	610	292	231	1	28,479	-16,3202
Escuela Superior de Ingeniería y Tecnología	380	523	360	1	28,483	-16,3216
Escuela Universitaria de Enfermería Ntra. Sra. de la Candelaria	60	151	58	5	28,448	-16,2840
Facultad de Ciencias	382	572	370	3	28,479	-16,3202
Facultad de Ciencias de la Salud	750	2091	725	5	28,471	-16,3064
Facultad de Ciencias Políticas, Sociales y de la Comunicación	400	438	299	11	28,471	-16,3064
Facultad de Derecho	420	557	417	6	28,470	-16,3062
Facultad de Economía, Empresa y Turismo	655	752	565	7	28,470	-16,3062
Facultad de Educación	655	750	624	10	28,479	-16,3202
Facultad de Humanidades	815	801	576	8	28,485	-16,3131
Universidad de Las Palmas de Gran Canaria	5187	11112	4489			
Escuela de Arquitectura	150	140	73	1	28,073	-15,4537
Escuela de Ingeniería de Telecomunicación y Electrónica	120	98	71	2	28,071	-15,4540
Escuela de Ingeniería Informática	195	417	203	2	28,073	-15,4537
Escuela de Ingenierías Industriales y Civiles	855	798	511	1	28,070	-15,4556
Escuela Universitaria de Turismo de Lanzarote	100	79	64	7	29,013	-13,5406
Estructura Teleformación ULPGC	695	1450	551	2	28,099	-15,4185
Facultad de Ciencias de la Actividad Física y del Deporte	100	451	106	10	28,069	-15,4567
Facultad de Ciencias de la Educación	415	1156	415	10	28,111	-15,4250

Facultad de Ciencias de la Salud	360	2314	361	5	28,080	-15,4168
Facultad de Ciencias de la Salud. Sección Fuerteventura	50	59	48	5	28,495	-13,8619
Facultad de Ciencias de la Salud. Sección Lanzarote	50	84	51	5	29,060	-13,5603
Facultad de Ciencias del Mar	100	216	101	3	28,073	-15,4526
Facultad de Ciencias Jurídicas	695	1207	719	6	28,079	-15,4505
Facultad de Economía, Empresa y Turismo	740	1215	729	7	28,073	-15,4537
Facultad de Filología	180	322	184	8	28,079	-15,4505
Facultad de Geografía e Historia	200	141	118	8	28,112	-15,4250
Facultad de Traducción e Interpretación	110	249	110	8	28,112	-15,4250
Facultad de Veterinaria	72	716	74	5	28,112	-15,4250
Universidad de Cantabria	2552	5635	1981			
Centro Internacional de Estudios Superiores del Español (CIESE-Comillas)	50	7	4	8	43,386	-4,2995
Escuela Politécnica de Ingeniería de Minas y Energía	90	73	61	1	43,337	-4,0508
Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos	180	69	48	1	43,472	-3,7995
Escuela Técnica Superior de Ingenieros Industriales y de Telecomunicación	390	467	342	1	43,472	-3,7995
Escuela Técnica Superior de Náutica	160	94	63	1	43,463	-3,7903
Escuela Universitaria de Enfermería Casa Salud Valdecilla	75	372	79	5	43,456	-3,8316
Escuela Universitaria de Fisioterapia Gimbernat-Cantabria	140	481	134	5	43,337	-4,0508
Escuela Universitaria de Turismo Altamira	80	51	30	7	43,481	-3,7896
Facultad de Ciencias	192	303	160	3	43,471	-3,8022
Facultad de Ciencias Económicas y Empresariales	360	394	341	7	43,472	-3,7995
Facultad de Derecho	250	282	198	6	43,472	-3,7995
Facultad de Educación	325	590	327	10	43,471	-3,8033
Facultad de Filosofía y Letras	140	78	70	8	43,472	-3,7995
Facultad de Medicina	120	2374	124	5	43,471	-3,8033
Universidad de Burgos	2180	2880	1734			
Escuela Politécnica Superior	640	545	354	1	42,351	-3,6893
Escuela Universitaria de Relaciones Laborales	55	40	36	6	42,335	-3,7030
Facultad de Ciencias	95	125	113	3	42,340	-3,7267
Facultad de Ciencias de la Salud	125	477	148	5	42,340	-3,7267
Facultad de Ciencias Económicas y Empresariales	395	291	195	7	42,340	-3,7267
Facultad de Derecho	305	381	249	6	42,340	-3,7267
Facultad de Educación	365	523	384	10	42,340	-3,7267
Facultad de Humanidades y Comunicación	200	498	255	8	42,340	-3,7267
Universidad de León	2620	4708	1943			
Escuela de Ingenierías Industrial e Informática	460	650	306	1	42,614	-5,5614
Escuela Superior y Técnica de Ingeniería Agraria	130	36	26	1	42,584	-5,5896
Escuela Superior y Técnica de Ingenieros de Minas	190	47	25	1	42,614	-5,5606
Escuela Universitaria de Trabajo Social Ntra. Sra. del	60	9	2	10	42,602	-5,5680

Camino						
Facultad de Ciencias Biológicas y Ambientales	240	344	224	3	42,614	-5,5614
Facultad de Ciencias de la Actividad Física y del Deporte	80	331	83	10	42,614	-5,5614
Facultad de Ciencias de la Salud	200	733	208	5	42,612	-5,5612
Facultad de Ciencias del Trabajo	100	44	45	6	42,612	-5,5612
Facultad de Ciencias Económicas y Empresariales	350	457	319	7	42,612	-5,5612
Facultad de Derecho	150	132	143	6	42,612	-5,5612
Facultad de Educación	240	384	245	10	42,614	-5,5614
Facultad de Filosofía y Letras	265	197	148	8	42,614	-5,5614
Facultad de Veterinaria	155	1344	169	5	42,614	-5,5614
Universidad de Salamanca	6435	13923	4586			
Escuela Aeronáutica Adventia (European College of Aeronautics)	60	65	29	1	40,941	-5,4990
Escuela Politécnica Superior de Ávila	415	26	15	1	40,651	-4,6792
Escuela Politécnica Superior de Zamora	390	150	100	1	41,512	-5,7351
Escuela Técnica Superior de Ingeniería Industrial	230	68	36	1	40,385	-5,7607
Escuela Universitaria de Educación y Turismo	220	175	119	10	40,652	-4,6839
Escuela Universitaria de Enfermería de Ávila	50	157	49	5	40,663	-4,6958
Escuela Universitaria de Enfermería SACYL	60	57	60	5	41,510	-5,7375
Escuela Universitaria de Enfermería y Fisioterapia	140	1107	140	5	40,964	-5,6753
Escuela Universitaria de Magisterio	160	93	102	10	40,964	-5,6750
Escuela Universitaria de Relaciones Laborales	50	10	9	6	41,507	-5,7442
Facultad de Bellas Artes	150	354	150	8	40,983	-5,6616
Facultad de Biología	220	715	218	3	40,964	-5,6753
Facultad de Ciencias	376	568	313	3	40,961	-5,6708
Facultad de Ciencias Agrarias y Ambientales	150	138	119	3	40,972	-5,6774
Facultad de Ciencias Químicas	200	229	186	3	40,960	-5,6710
Facultad de Ciencias Sociales	320	555	309	6	40,960	-5,6710
Facultad de Derecho	445	1390	434	6	40,969	-5,6768
Facultad de Economía y Empresa	570	689	361	7	40,969	-5,6768
Facultad de Educación	360	792	361	10	40,959	-5,6599
Facultad de Farmacia	200	492	201	3	40,965	-5,6786
Facultad de Filología	698	622	451	8	40,962	-5,6655
Facultad de Filosofía	50	66	51	8	40,962	-5,6655
Facultad de Geografía e Historia	270	285	199	8	40,960	-5,6710
Facultad de Medicina	226	3675	225	5	40,964	-5,6753
Facultad de Psicología	250	1203	252	9	40,983	-5,6616
Facultad de Traducción y Documentación	175	242	97	8	40,962	-5,6666
Universidad de Valladolid	40	48	41			
Facultad de Ciencias del Trabajo	40	48	41	6	41,658	-4,7142
Universidad de Castilla-La Mancha	5985	11518	4842			
Escuela Politécnica de Cuenca	110	77	38	1	40,079	-2,1477
Escuela de Arquitectura	50	138	50	1	39,865	-4,0403
Escuela de Ingeniería Industrial de Toledo	140	153	88	1	39,865	-4,0403
Escuela de Ingeniería Minera e Industrial de Almadén	120	76	48	1	38,772	-4,8341

Escuela de Ingenieros Agrónomos de Ciudad Real	50	39	29	1	38,987	-3,9200
Escuela de Ingenieros Industriales	245	293	156	1	38,990	-3,9270
Escuela Superior de Informática	150	206	144	2	38,987	-3,9200
Escuela Superior de Ingeniería Informática	130	181	112	2	38,979	-1,8572
Escuela Técnica Superior de Ingeniero de Caminos, Canales y Puertos	60	42	20	1	39,859	-4,0252
Escuela Técnica Superior de Ingenieros Agrónomos y de Montes	100	84	61	1	38,978	-1,8563
Escuela Técnica Superior de Ingenieros Industriales	130	239	134	1	38,979	-1,8560
Escuela Universitaria de Enfermería y Fisioterapia	150	754	152	5	38,993	-3,9267
Facultad de Bellas Artes	130	181	95	8	40,078	-2,1482
Facultad de Ciencias Ambientales y Bioquímica de Toledo	150	315	111	3	39,865	-4,0408
Facultad de Ciencias de la Educación y Humanidades	110	95	69	10	40,079	-2,1477
Facultad de Ciencias del Deporte	90	281	92	10	39,865	-4,0403
Facultad de Ciencias Económicas y Empresariales	235	357	214	7	38,984	-1,8456
Facultad de Ciencias Jurídicas y Sociales	410	542	354	6	39,953	-4,8440
Facultad de Ciencias Sociales	200	164	131	8	39,953	-4,8440
Facultad de Ciencias Sociales en Talavera de la Reina	210	162	116	8	39,953	-4,8440
Facultad de Ciencias y Tecnologías Químicas de Ciudad Real	180	272	166	3	38,994	-3,9211
Facultad de Derecho	235	318	175	6	38,984	-1,8456
Facultad de Derecho y Ciencias Sociales	340	442	321	6	38,994	-3,9211
Facultad de Educación de Albacete	210	454	207	10	38,979	-1,8572
Facultad de Educación de Ciudad Real	210	352	218	10	38,994	-3,9211
Facultad de Educación de Cuenca	210	263	210	10	40,078	-2,1482
Facultad de Educación de Toledo	210	415	205	10	39,865	-4,0403
Facultad de Enfermería de Albacete	105	360	105	5	38,984	-1,8456
Facultad de Enfermería de Ciudad Real	105	242	105	5	38,994	-3,9211
Facultad de Enfermería de Cuenca	100	180	100	5	40,079	-2,1477
Facultad de Farmacia	60	200	60	3	38,984	-1,8456
Facultad de Humanidades de Albacete	70	28	21	8	38,984	-1,8456
Facultad de Humanidades de Toledo	45	44	34	8	39,865	-4,0408
Facultad de Letras	320	352	195	8	38,994	-3,9211
Facultad de Medicina de Albacete	115	1420	114	5	38,984	-1,8456
Facultad de Medicina de Ciudad Real	60	1104	60	5	38,994	-3,9211
Facultad de Periodismo	70	256	70	11	40,079	-2,1477
Facultad de Relaciones Laborales y Recursos Humanos de Albacete	70	66	52	6	38,984	-1,8456
Facultad de Terapia Ocupacional, Logopedia y Enfermería en Talavera de la Reina	180	311	166	5	39,953	-4,8440
Facultad de Trabajo Social de Cuenca	120	60	44	6	40,079	-2,1477
UIB						
Escuela Politécnica Superior	465	504	399	1	39,670	2,5502
Facultad de Ciencias	100	0	64	4	39,670	2,5502
Facultad de Derecho	254	385	255	6	39,670	2,5502
Facultad de Economía y Empresa	350	530	355	7	39,670	2,5502

Facultad de Educación	520	580	543	10	39,670	2,5502
Facultad de Filosofía y Letras	645	853	764	8	39,670	2,5502
Facultad de Medicina	221	868	278	5	39,670	2,5502
Facultad de Psicología	510	458	373	9	39,670	2,5502
Facultad de Turismo	110	256	174	7	39,670	2,5502
Facutad de Enfermería y Fisioterapia	180	266	182	5	39,670	2,5502