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What ETER tells us about the regional dimension of European higher education

Highlights

- **The regions with a large number of HEIs are large metropolitan areas (in particular capital cities) and university towns.**
- **On the average, a student can find a HEI by travelling less than 50 km.**
- **Several areas in the south and east of Europe, in the north of UK and in parts of France of Germany have low spatial density of HEIs.**
- **PhD-awarding HEIs are more concentrated in large cities.**

The regional spread of higher education institutions is an important dimension of the EU's agenda for the modernization of higher education and, more broadly, to the goals of the Europe 2020 strategy. On the one hand, higher education institutions (HEIs) within or in proximity to densely populated areas, allow students to access higher education without having to move to other regions and therefore, represent an important contribution towards achieving the target of 40% of young people completing higher education or equivalent studies by 2020.

On the other hand, having universities geographically close is a major advantage for firms and social actors that make use of research inputs, as these partnerships provide direct knowledge flows through information exchanges and face-to-face collaboration. Therefore, the presence of one or more HEIs in a region is an asset that helps foster knowledge flows between education, research and business in order to promote a balanced development of European regions.

ETER represents a useful tool for policymakers to improve the alignment between regional development strategies and higher education policies. ETER allows for more fine-grained analyses of the localization and other associated factors (legal status, mission, subject focus, educational vs. research orientation) of individual higher education institutions in Europe when compared with EUROSTAT, which provides regional level data. For example, ETER may allow for the closer inspection of regional smart specialization strategies, as they relate to regions' economic and social profiles relative to the geographical distribution of HEIs, particularly when combined with data on research output and technology transfer.

In this brief, we focus on the distribution of HEIs by regions, adopting the EUROSTAT NUTS3 level of analysis (see at page 4), which broadly corresponds to cities together with surrounding areas and to small regions. We also provide a specific analysis for HEIs delivering the PhD ("universities"), since these HEIs are the most relevant for research and knowledge transfer. By normalizing for population, we get a fairly precise idea of the density of HEIs in Europe.

How are HEIs distributed between regions?

Figure 1 is a map of European regions by number of HEIs. In the countries currently covered by ETER, there are 36 regions (red) with more than 10 HEIs, 71 with 4-10 HEIs (brown) and 124 with three HEIs (strong orange). On the other hand, there are 580 regions without HEIs (grey), 334 with just one HEI (yellow) and 169 with two HEIs (light orange). We consider these regions as zero density or low density. Overall, it appears that some countries have a more geographically distributed higher education system: among them Nordic countries, Netherlands; Ireland and Italy. Policies to provide access to higher education at a regional level have therefore been moderately successful in Europe, but regional differences remain important.

On average, a student in Europe can find a HEI by traveling 50 km, but, 181 million people – one-third of the European population – live in regions where students may find a HEI only by traveling more than 50 km. These areas are found in large and dispersed countries (Norway, Sweden) but also in largely populated countries such as the UK, Germany, France and Spain, and in some parts of Eastern Europe.

The number of regions without HEIs needs to be relativized. Many of these regions are small and not very far from places where HEIs are located – the regional level we are considering here (NUTS3) is very fine-grained in some countries – Germany for example has 402 regions at these level ("Kreise"). Moreover, HEIs might have secondary branches in some of these regions, which are not identified in ETER. Areas with no HEIs are quite important in southern European regions (Spain, Portugal, Italy and Greece), in the centre of France and Germany, in Eastern European countries, and in northern England.

Most HEIs are in metropolitan areas

HEIs are concentrated in a limited number of metropolitan areas. The 36 regions with more than 10 HEIs include one-third of all HEIs in Europe. All of them are large cities in which the first university dates back in history, but it has been followed, in particular in the second part of the 20th century, by the creation of many institutions due to the large number of student population. Most regions with more than 10 HEIs are capital cities, the list being championed by Paris, Warsaw, Berlin and Lisbon. This group also includes a few large cities, like Hamburg, Munich and Lyon. London is a special case since, for administrative reasons, it is divided between different NUTS 3 regions.

The regions with 4-10 HEIs can be classified in four main groups. The remaining capital cities in middle-sized countries (Copenhagen, Helsinki), large non-capital cities in large countries (Milan, Manchester, Frankfurt), the suburbs of very large metropolitan areas, like Paris. The final group are ancient university towns, like Heidelberg, Urbino and Coimbra. They are small cities in which we find universities created in past centuries, followed by other institutions, often specialized by discipline or by degree (for example, in postgraduate education).

Metropolitan areas also tend to show a higher density of HEIs. There are 130 regions in Europe with 1-3 HEIs per 1,000,000 inhabitants and 163 with 4-5. The regions with the largest density are as follows: 189 with 6-7 HEIs, 100 with 8-10 HEIs and a small group of 13 regions with extremely high density (more than 10 HEIs per million inhabitants). As shown in table 1, these regions are all large in terms of their population and include either capital cities (Warsaw, Prague, Paris) or other regions located around rather large cities (Rennes, Brno, Hamburg).

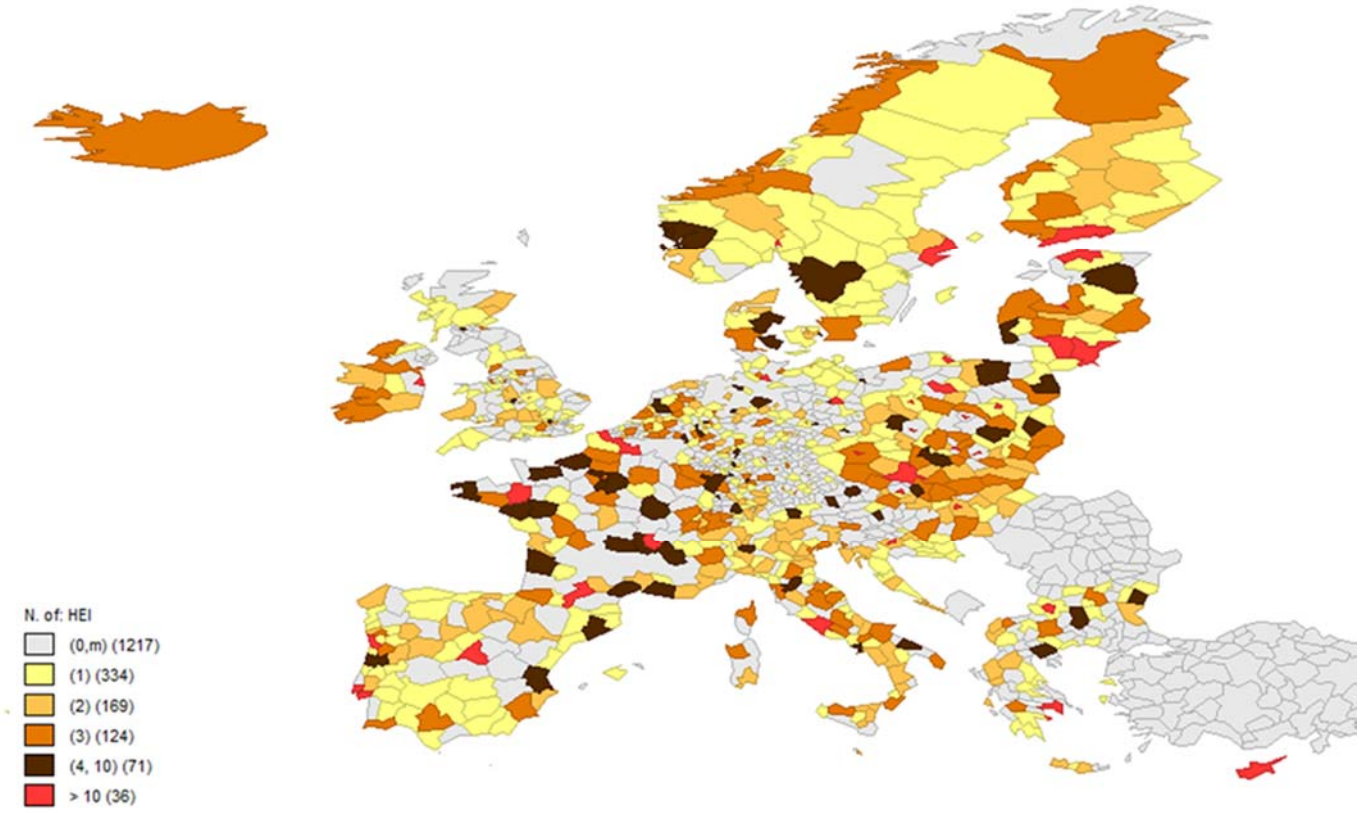

Figure 1. Number of HEIs by region (EUROSTAT, NUTS regions level 3)

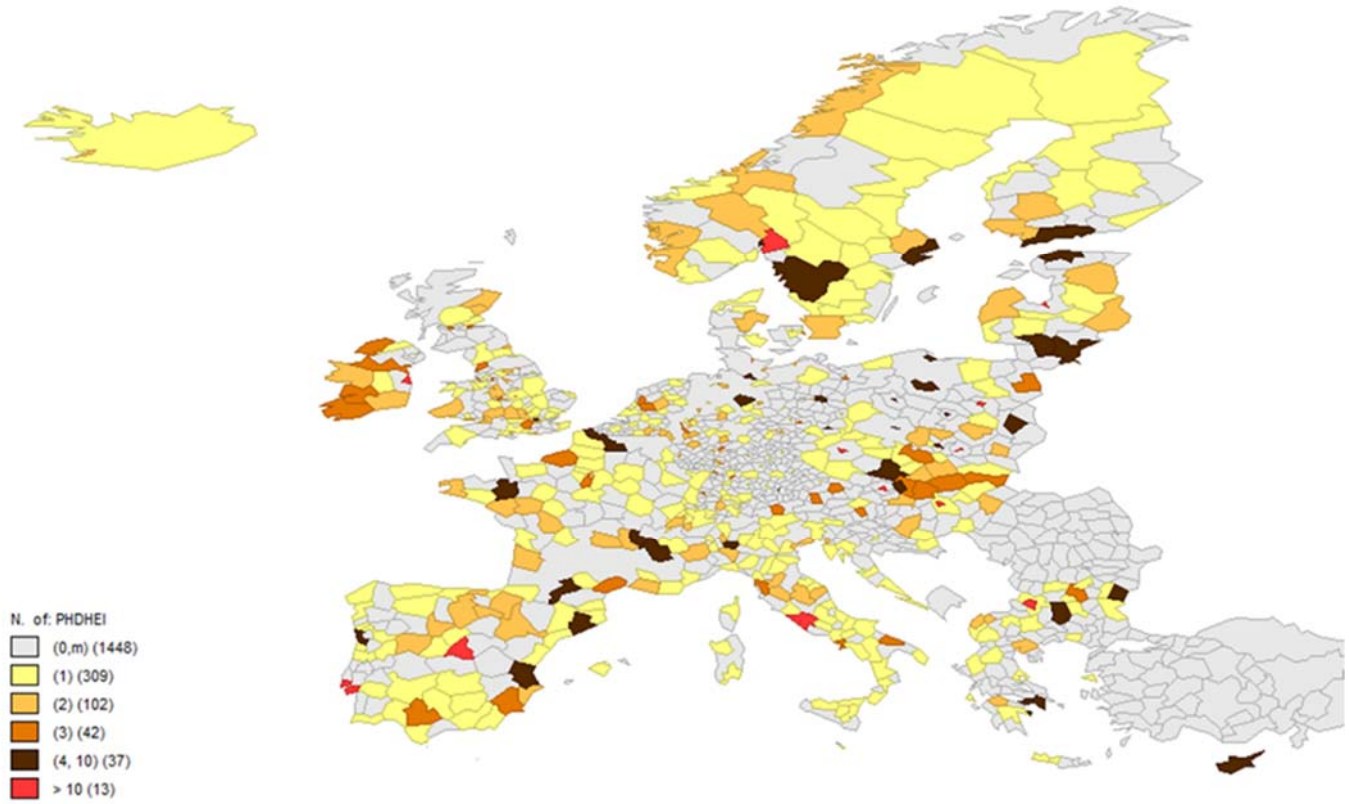

Figure 2. Number of HEIs delivering PhDs by region (EUROSTAT, NUTS regions level 3)

NUTS 3	Number of HEIs	Population	HEIs per 1 million inahbitants
Warszawa	44	1,709,459	25.7
Praha	32	1,246,780	25.7
Paris	47	2,229,621	21.1
Sofia	23	1,302,316	17.7
Grande Lisboa	33	2,035,859	16.2
Budapest	28	1,735,711	16.1
Grande Porto	19	12,78,941	14.9
Ille-et-Vilaine (Rennes)	15	1,019,923	14.7
Wien	21	1,741,246	12.1
South Moravian (Brno)	13	1,168,650	11.1
Rhône	19	1,779,845	10.7
Hamburg	18	1,734,272	10.4
Berlin	34	3,375,222	10.1

Table 1. Large high-density regions

Universities are more concentrated

The picture changes greatly if we focus on PhD awarding HEIs, that is, on universities only. These institutions have an institutional mission which includes not only education but also research and the so-called third mission of contributing to regional engagement and innovation.

Figure 2 shows a more sparse picture than Figure 1. The data show that while PhD-granting institutions are more concentrated in capital cities and metropolitan areas, and in university towns, non-PhD institutions are more geographically diffused. Universities offering PhD degrees are present in large numbers only in capital cities and in a small number of university towns, or medium-sized cities with more than one university.

In terms of density of universities per million inhabitants, Scandinavian countries and Baltic countries, and Ireland are characterized by the largest density. In other countries, particularly in large Continental European countries, the density is more scattered: in addition to capital cities there are a few university towns, but also many empty regions and cities. Some countries, such as France, have a much better distribution with respect to HEIs in general, than with respect to universities only. These exhibit significant density only in a few cities. A similar situation is visible in some Eastern European countries, such as Poland and Czech Republic.

This dynamic creates delicate policy issues, in particular for peripheral areas in which there is a need for both the creation of human capital and knowledge spillovers from research activities. The ability of ETER data to provide views of the spatial distribution of HEIs by their characteristics and activities—particularly education vs. research—represents an important asset for policy analysis.

Regional data in ETER. Potential use

ETER provides each HEI with the following geographical information: the city of the main seat, its postal code and geographical coordinates derived from the postal code; additionally the regional codes by EUROSTAT (NUTS regions at levels 2 and 3). A limitation is that little information is available on campuses located in other regions – it is estimated that about 10% of the HEIs are located in multiple cities.

These data allow regional classifications to be attributed to HEIs, including the Nomenclature for Territorial Units for Statistics (NUTS; http://ec.europa.eu/eurostat/web/nuts/overview) the standard classification used by EUROSTAT. In this brief, we use NUTS3 level of analysis, which broadly corresponds to small regions (Kreise in Germany and Départments in France). NUTS3 regions should have a population of around several hundred thousand inhabitants, but there are large differences between countries in their structure. Their size in terms of population, for those areas with at least one HEI, is comprised between 28,501 (Aland) and 6,414,620 (Madrid). EUROSTAT provides data on tertiary education students and graduates for the NUTS2 regions (corresponding to main regional units in most countries).

ETER data provides two advances. First, it is possible to use other spatial classifications since ETER provides the exact geographical location of HEIs. In this brief, we use the more fine-grained NUTS3 classification, but the EU-OECD classification of Functional Urban Areas can be adopted (FUA; http://www.oecd.org/cfe/regional-policy/functionalurbanareasbycountry.htm). The latter is better suited to regional analyses since it is not based on administrative structures, but on functional economic units.

Second, a wealth of data can be analysed at the regional level. ETER allows the study of the characteristics of HEIs by region. There are for example some types of HEIs, like research universities or specialized institutions, more centrally concentrated than colleges or private HEIs. It is also possible to combine variables on geography with mobility, investigating whether central regions attract a higher share of mobile students from abroad. Finally, ETER facilitates the production of data on resources and HEI personnel and thereby the investigation of differences in the distribution of resources – for example testing whether HEIs in central regions are better endowed with resources with respect to the student enrolment.

ETER in a nutshell

The European Tertiary Education Register (ETER) database provides a core set of data on a subset of educational institutions that are issuing degrees at the tertiary level. ETER is a project funded by the European Commission's Directorate-General of Education, Youth, Sport and Culture in close collaboration with EUROSTAT and the National Statistical Authorities in the participating countries.

ETER provides information on more than 2,500 HEIs in EU-28 countries, plus EEA-EFTA countries and candidate countries. For a few countries (the French-speaking region of Belgium, Slovenia and Romania, Montenegro) only descriptive information is available.

ETER provides the following information on HEIs:

- Descriptors that identify the HEIs and their official status, and provide information on foundation and history.
- Geographical information localizes HEIs by region, city and geographical coordinates, and provides information on whether there are campuses in other regions aside the location of their main seat.
- Staff data categorizes HEI personnel by academic and non-academic; for academic staff, information is provided on gender, nationality, scientific field, and the number of full professors.
- Numbers of students and graduates broken down by educational level (diploma, bachelor, master), field, gender, nationality and mobility.
- Financial data includes total revenues and their breakdown between core and third party funding, as well as student fees and the composition of expenditures.
- R&D activities include the number of PhD students and graduates, as well as the volume of R&D expenditures.

ETER data can be downloaded from the project website (www.eter-project.com) and used for analytical purposes. .

Key references

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