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How artificial intelligence contributes to competitiveness and workforce planning

European hubs of AI skills demand

Fact Sheet #18

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Introduction

AI is changing the skill requirements for employees. Our previous work study (see Fact Sheet #14) showed that 1.7% of EU job postings required in-depth AI skills in 2025 with varying shares among EU Member States. The highest shares were observed in Luxembourg, Denmark and Sweden, while several Eastern European countries lagged behind but showed rapid growth (Büchel et al., 2026a). Country averages, however, could potentially hide substantial variation within countries. Recent OECD evidence shows that AI diffusion across European regions is driven more by frontrunner regions extending their lead than by laggard regions catching up, with the most innovative regions adopting AI first and fastest (Kergroach/Héritier, 2025). If the adoption of AI is concentrating in a limited number of regions, the demand for the skills required to develop and adapt AI applications should follow a similar pattern. However, testing this requires analysing data at a smaller scale than the national level.

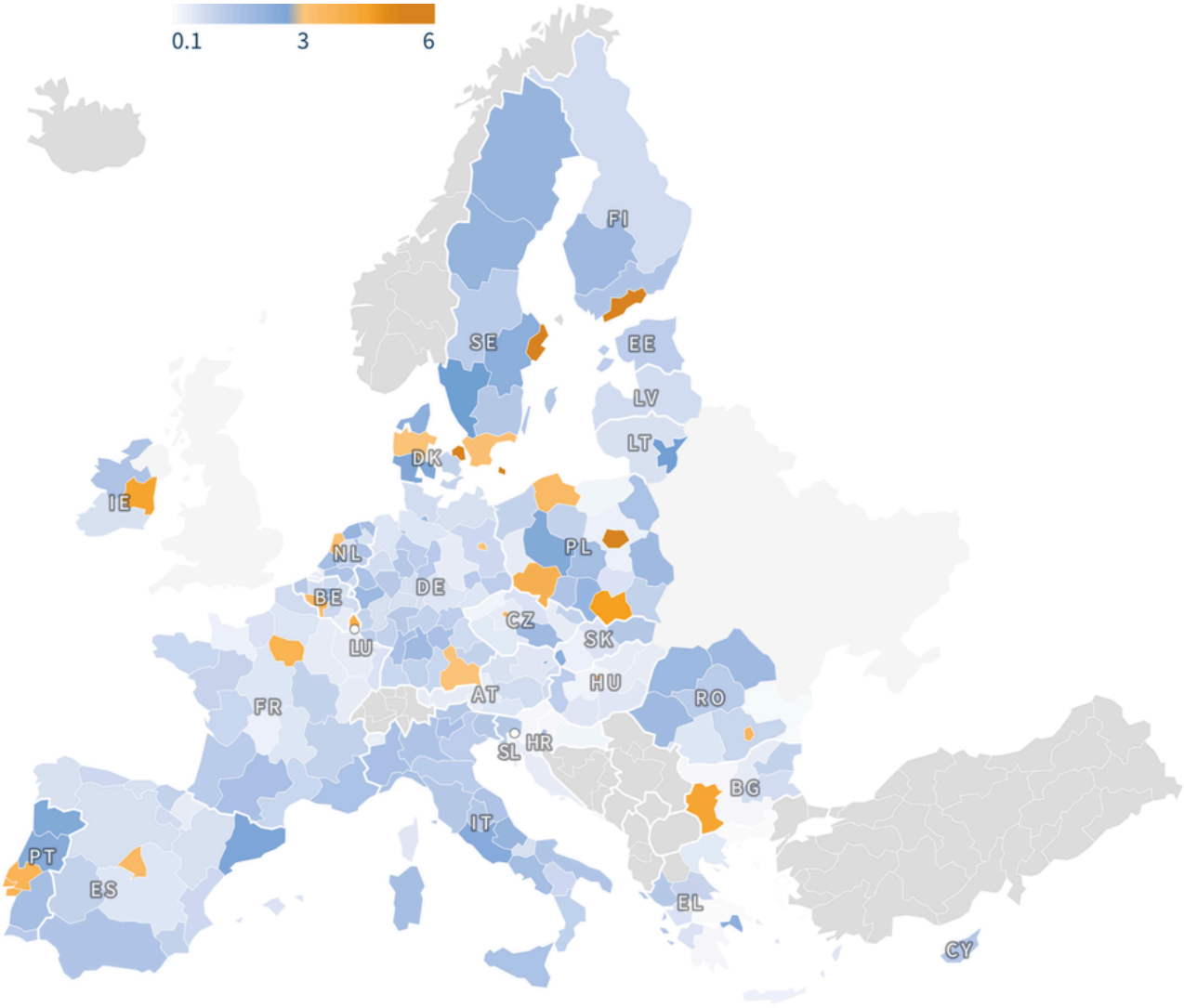
To this end, this fact sheet provides a **detailed regional analysis of the in-depth AI skills demand in the EU-27, aiming to uncover European hubs of demand for AI skills**. The analysis was based on a dataset from Lightcast (2026) that contains the full texts of approximately 182 million unique job postings that were advertised in the 27 EU Member States from 2022 to 2025. It used a multilingual, rule-based classification model that identifies EU job postings requiring in-depth AI skills (Büchel et al., 2026b). In-depth AI skills go beyond the general AI skills required to use AI applications effectively, instead enabling employees to develop or adapt AI-based solutions themselves, for example (Büchel et al., 2026a).

Regional AI skills demand in the EU

The regional analysis was conducted at NUTS 2 level – the EU's standardised regional classification for statistical comparison across countries (Eurostat, 2024). NUTS 2 regions generally correspond to population sizes of 800,000 to 3 million inhabitants and form the main territorial level used to classify regions under EU cohesion policy (European Commission, 2003). Figure 1 shows the share of AI job postings in each of the EU's NUTS 2 regions in 2025.

The analysis reveals a strong AI skills demand in regions that contain national capitals, particularly in Nordic and Eastern European countries (Table 1). **In 2025, the share of AI job postings was highest in the Warsaw Capital Region (Poland), followed by the regions including Helsinki (Finland), Stockholm (Sweden) and Copenhagen (Denmark).** In addition, the regions containing Dublin (Ireland), Sofia (Bulgaria), Luxembourg and Paris (France) ranked among the 10 regions with the highest AI job posting shares. They were followed by the capital regions containing Lisbon (Portugal), Bucharest (Romania), Budapest (Hungary), Prague (Czechia), Madrid (Spain), Brussels (Belgium), Amsterdam (Netherlands) and Berlin (Germany), with AI job posting shares ranging from 3 to 3.8%. At the lower end of the distribution, selected Greek island regions and peripheral regions in Eastern and South-Eastern Europe recorded AI job posting shares between 0.1% and 0.3%.

Figure 1: Share of AI job postings in the EU-27 NUTS 2 regions in %, 2025



Source: German Economic Institute based on data from Lightcast

Table 1: Top 10 EU-27 NUTS 2 regions, 2025

NUTS 2 region	Country	National capital region	Share of AI job postings
Warsaw Capital Region	Poland	Yes	5.7%
Helsinki-Uusimaa	Finland	Yes	5.5%
Stockholm	Sweden	Yes	5.2%
Capital Region of Denmark (incl. Copenhagen)	Denmark	Yes	5.0%
Lesser Poland (incl. Kraków)	Poland	No	4.7%
Eastern and Midland (incl. Dublin)	Ireland	Yes	4.4%
South-West / Yugozapaden (incl. Sofia)	Bulgaria	Yes	4.4%
Luxembourg	Luxembourg	Yes	4.0%
Lower Silesia (incl. Wrocław)	Poland	No	3.8%
Île-de-France (incl. Paris)	France	Yes	3.8%

Source: German Economic Institute based on data from Lightcast

However, AI skills demand in the EU-27 was not purely concentrated in national capital regions. To provide valid evidence of concentration, a high share of AI job postings alone is not sufficient, as this could also be driven by non-AI-related sectors advertising fewer jobs. Furthermore, the total number of AI job postings in the country must also be concentrated in the national capital region to demonstrate a genuine concentration. An additional calculation of each region's share of the country's total AI job postings confirms this for **Bulgaria, Hungary and Slovenia, where over 80% of all national AI job postings were advertised in the capital region in 2025.**

However, this is not always the case. **Poland is such a counterexample where AI skills demand is spread across several AI hubs, with only 29% of Polish AI job postings located in the capital region.** The non-capital regions of Lesser Poland and Lower Silesia also ranked among the 10 EU regions with the highest AI job posting shares. However, the AI skills demand in these regions was mainly driven by the dynamic urban cores of Kraków and Wrocław. This metropolitan pattern is not unique to Poland but can also be observed in other Member States: non-capital AI hubs such as Barcelona (Spain), Munich (Germany), Porto (Portugal), Milan (Italy), and Cluj and Iaşi (both Romania) indicate that AI skills demand also occurs in major regional economic and innovation centres other than the national capital region. What drives high AI skills demand might not be the status of a region as the capital region as such, but its underlying economic and innovative structure – a structure that capital regions usually, but not exclusively, provide.

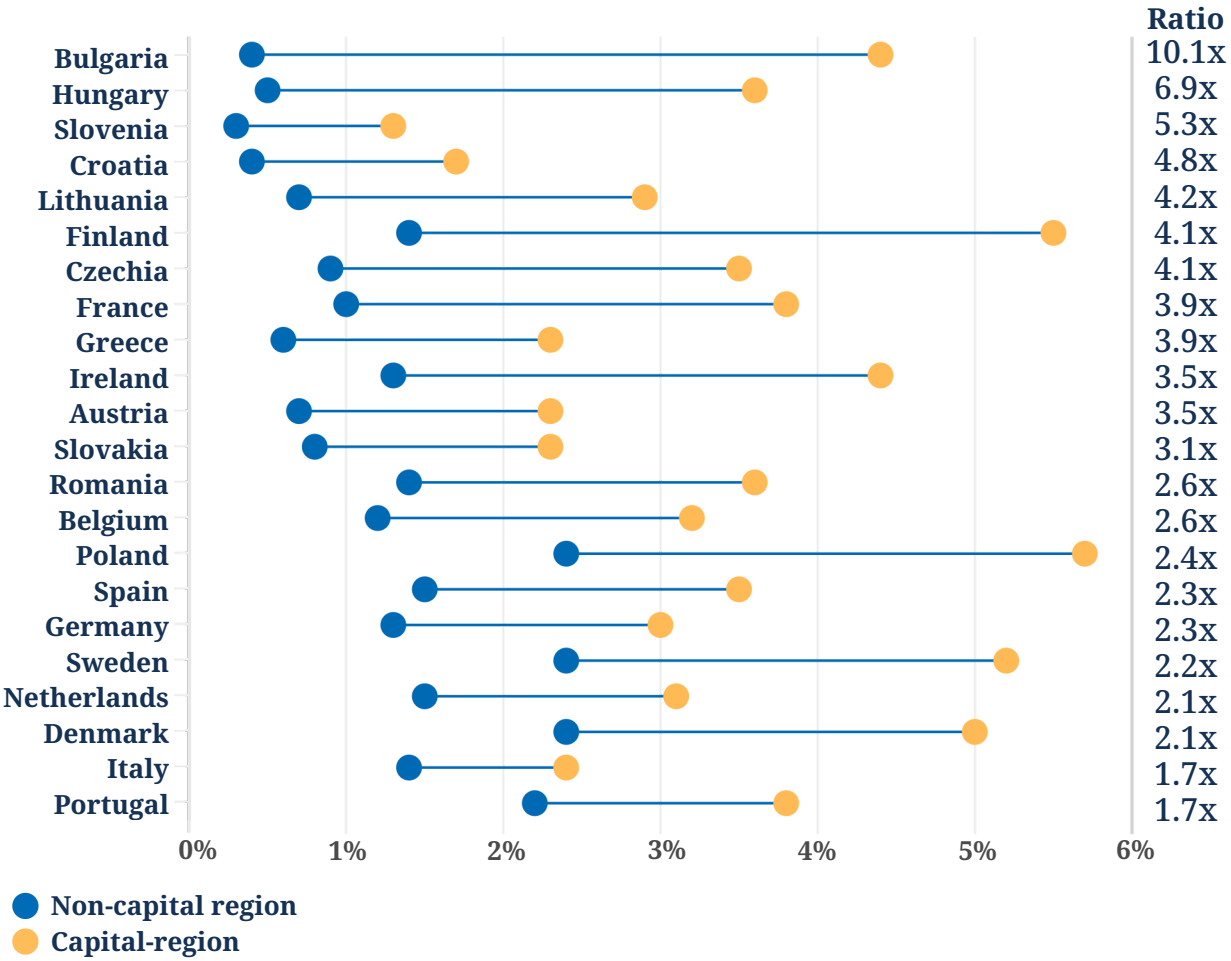
Although the capital and metropolitan concentration is strong, Germany and Italy are examples of EU Member States in which AI skills demand is more evenly distributed across regions. In both countries, only 13% of all nationwide AI job postings in 2025 were advertised for the national capital region. However, Germany and Italy illustrate two different forms of regional dispersion: in Germany, the distribution of AI skills demand is genuinely polycentric, reflecting the spatial distribution of automotive, IT-services and consulting companies as well as their research and headquarters' locations (Büchel et al., 2025a). Italy, in contrast, needs to be interpreted considering the country's long-standing North-South divide. In terms of volume, AI skills demand was clearly concentrated in the North, which accounted for 61% of all Italian AI job postings in 2025, with Lombardy alone accounting for 24%. This mirrors evidence on the concentration of AI-related economic activity and talent in the North, particularly in Lombardy (Pal/Schneider, 2025). In Lombardy, AI is also gaining relevance in traditional service sectors such as hospitality, as a business case on the regional hotel association Federalberghi Lombardia shows (Bösehans, 2026). Relative to the size of regional labour markets, however, the picture was more balanced: the AI job posting share in Lombardy (2.2%) was similar to that in southern regions such as Campania (2.7%) or Apulia (2.7%).

The national capital region effect

The examples above illustrate what this fact sheet refers to as the national capital region effect: the tendency of AI skills demand to cluster in the NUTS 2 region that contains a country's capital. However, these examples rely on selected countries. Moreover, a high AI job posting share in a national capital region alone does not indicate concentration, as it may occur alongside an equally high demand in the rest of the country. What matters is the gap between the national capital region and domestic non-capital regions. To measure this gap consistently across all EU-27 Member States, the AI job posting share in each of the national capital regions was compared to the weighted average share of all domestic non-capital regions (Figure 2). Non-capital regions were weighted by their total number of job postings, which was used as a proxy for the regional labour market size.

Figure 2: The national capital region effect

Share of AI job postings in national capital NUTS 2 regions and weighted average share of all domestic non-capital NUTS 2 regions per EU Member State, 2025, sorted by ratio



In Luxembourg (4%), Malta (1.6%), Cyprus (1.4%), Estonia (1.2%) and Latvia (0.8%), the entire country consists of only one NUTS 2 region containing the national capital.

Source: German Economic Institute based on data from Lightcast

The highest capital-to-non-capital ratio was observed in several Eastern European countries: **in Bulgaria, the share of AI job postings in the region containing Sofia (4.4%) was more than 10 times higher than the weighted average share of all non-capital regions in the country (0.4%), followed by Hungary (6.9x), Slovenia (5.3x), Croatia (4.8x), Lithuania (4.2x), Finland (4.1x) and Czechia (4.1x)**. This overlaps with a similar finding that significant urban-rural gaps in digital skills occur in Bulgaria, Hungary and Croatia (Cedefop, 2023). Although there is no direct compelling link between digital skills among individuals and employers' AI skills demand, the parallelism, however, could indicate that both developments are not entirely independent of one another. As shown above, the concentration in these countries is also reflected in the share of national AI job postings advertised in the capital region, which exceeded 80% in Bulgaria, Hungary and Slovenia.

The observed national capital region effect in the EU-27 is consistent with OECD evidence showing that innovative activity is generally highly concentrated in large metropolitan areas and that digital technologies tend to reinforce the position of leading cities (OECD, 2019). This reflects agglomeration effects: large cities provide firms with easier access to specialised human capital, research institutions, finance and knowledge networks, for example. Rodríguez-Pose (2023) also highlights that knowledge spill-overs are geographically bounded and that regions outside large agglomerations often lack the critical mass needed to generate and absorb new knowledge. These mechanisms help to explain why national capital and metropolitan regions dominate the AI skills demand.

In contrast to these results, the ratio of AI skills demand in the national capital region and the domestic non-capital regions was below 2.5 in Poland, Spain, Germany, Sweden, the Netherlands, Denmark, Italy and Portugal. This indicates that other AI hubs, such as Milan, Porto, Midtjylland and Munich, coexist with the national capital regions in these countries. Between 2022 and 2025, the national capital region effect widened in most EU Member States: Bulgaria and Hungary recorded the largest increases in the ratio. This widening pattern mirrors the OECD's observation for AI adoption by businesses: acceleration is driven more by frontrunner regions extending their lead than by laggard regions catching up (Kergroach/Héritier, 2025). The present analysis shows the same dynamic at work on the AI skills demand side. This dynamic occurs within countries, not only between them. However, Slovakia is a notable counterexample where AI skills demand in the national capital region and the domestic non-capital regions have converged in recent years. Denmark was another exception, with its second-largest region, Midtjylland, growing fast enough to close the gap with the national capital region.

Rural versus urban areas

The analysis provides evidence of a strong metropolitan and national capital region effect on AI skills demand across EU Member States. However, it remains unclear whether the AI job posting share is generally higher in urban regions (including smaller cities) than in rural areas. This cannot be answered at NUTS 2 level, as these regions typically combine a major city with its surrounding rural areas, so that urban and rural demand are averaged out within the same region. The analysis was therefore conducted at NUTS 3 level, which comprises 1126 instead of 242 regions (NUTS 2). These smaller units are largely homogeneous and can thus be classified as urban, intermediate or rural. **On average, the share of AI job postings in rural regions was only 0.8% in 2025, compared to 1% in intermediate regions and a substantially higher share of 2.4% in urban regions.** The latter rose sharply from 1.4% in 2024. This provides evidence that AI skills demand in the EU-27 is particularly high in urban regions.

However, it does not automatically mean that AI talent is also concentrated in urban areas. On the one hand, AI job postings only reflect the demand side of the labour market. It remains unclear whether companies find suitable AI talent to fill their vacancies. On the other hand, an employee's place of work does not necessarily have to be the same as their place of residence. Especially in the case of AI professionals, evidence from Germany illustrates that remote work is widespread: in 2024, German companies offered remote work in every second AI job posting (Büchel et al., 2025b). The option of remote work (up to full remote work) occurred more frequently in AI job postings in comparison to job postings from the same companies hiring at the same qualification level but without AI relevance. This pattern indicates an AI-driven effect in the recruitment strategy that could be due to a tight labour market for AI talent that might have caused employers to offer greater flexibility to fill these AI roles.

Conclusion

Although countries in Eastern Europe often lag behind in total AI job posting shares (Büchel et al., 2026a), there are rapidly growing hubs in the major cities of these countries. Overall, the analysis shows high AI skills demand in urban EU-27 regions, especially in metropolitan and national capital regions. A similar pattern was observed for AI adoption in the EU-27 (Kergroach/Héritier, 2025). Taken together, these patterns could have contributed to a self-reinforcing cycle in which AI adoption in firms generates AI skills demand that builds a local talent pool, thereby enabling even more versatile use of AI. In rural areas with lower AI skills demand, there is a risk that neither side of this loop is set in motion. Two conclusions can be drawn from this.



First, it is important that, in the future, more companies in rural EU areas benefit from AI potentials. Against this backdrop, the existing network of European Digital Innovation Hubs (EDIHs) could be an effective instrument to provide small and medium-sized enterprises with access to AI-related testing, training and support in finding finance and innovation networks (European Commission, 2026). The EDIH network covers nearly 90% of European regions and approximately 90% of the assessed firms showed an increase in their digital maturity score following EDIH support (Carpentier et al., 2025). EDIHs may therefore serve as useful levers for supporting AI adoption. Future regional policy in the EU-27 should build on these instruments to strengthen AI adoption across European regions and to address regional gaps in AI skills demand.

Second, it is positive that several hubs with considerable AI skills demand have been established across Europe that bundle research, innovation and commercial AI applications and benefit from agglomeration effects, particularly if the EU aims to play a significant role in international AI competition with China and the US (Büchel, 2026). In this context, multiple AI hubs across the EU can strengthen regional connectivity and resilience.

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