

## 6. ADVANCED EDUCATIONAL QUALIFICATIONS

The ability to generate and make use of innovation depends, among other factors, on the skill level of the labour force working in the region. The proportion of the labour force with advanced educational qualifications is a common proxy for a region's capacity to absorb and produce innovation. Advanced educational qualifications include university level education, from courses of short and medium duration, to advanced research qualifications.

OECD countries show large differences in the educational attainment of their labour force. These differences hide even larger disparities among regions within the same country (Figure 6.1). The Czech Republic, the United States and Portugal show the largest regional variation in terms of tertiary educational attainment. For the Czech Republic, Prague displays a value twice the country average, while the region of Severozapad is more than 40 percentage points less than the country average.

The countries displaying the smallest regional variations are New Zealand, the Netherlands, Ireland, and Belgium. These four countries do show one or more regions with a value higher than the country average. Concentration of skilled labour force is therefore a major issue, also in countries with less regional dispersion.

For 23 out of the 26 countries taken into consideration, the capital region shows the highest percentage of labour force with advanced educational qualifications (Figure 6.2). Ontario is the OECD region with the highest percentage of skilled labour force (55%), followed by the Capital Territory in Australia, Pais Vasco in Spain and Brussels in Belgium.

More generally the correlation between the percentage of labour force with tertiary educational attainment and the percentage of urban population is positive in all the countries under examination, while in most of the countries high educational attainments are negatively correlated with the percentage of rural population (Figure 6.3). Concentration of tertiary-level attainment in urban regions is often the result of migration away from rural areas. The existence of a significant differential in the return to education between rural and urban areas is a major incentive for individuals with advanced educational levels to migrate to urban regions.

The geographic concentration index compares the geographic distribution of the labour force with tertiary education to the area of all regions. According to this index, varying from 1 to 100 (Figure 6.4), Sweden and Australia, showing a value above 50, are the countries with the highest concentration of skilled labour force. They are followed by the United States, Finland and Mexico, with the OECD average at 35. The country with the least concentration is the Slovak Republic, which was only marginally below Poland, Italy and Switzerland, none of which displayed an index value above 25.

### Definition

The labour force with advanced educational qualifications is defined as the labour force aged 15 and over that has completed tertiary educational programmes as a percentage of the total labour force. Tertiary education includes both universities qualifications and advanced professional programmes (ISCED 5 and 6).

The geographic concentration index offers a picture of the spatial distribution of the labour force with tertiary education within each country, as it compares the labour force weight and the land area weight over all TL2 regions (see Annex C for the formula). The index ranges between 0 and 100: the higher its value, the larger the regional concentration. International comparisons of the index can be affected by the different size of regions in each country.

The Spearman correlation coefficient measures the strength and direction of the relationship between two variables, in this case the labour force with advanced educational qualifications and the share of population in predominantly urban (PU), intermediate (IN) or predominantly rural (PR) regions. A value close to zero means no relationship (see Annex C for formula).

### Source

OECD Regional Database, <http://stats.oecd.org/WBOS>, theme: Regional Statistics.

See Annex B for more information on data sources and country related metadata.

### Reference years and territorial level

1999 and 2005; TL2

Data for Iceland, Japan and Turkey are not available at the regional level.

### Further information

OECD (2007), *Education at a Glance*, OECD, Paris.

OECD (1999), *Classifying Educational Programmes, Manual for ISCED-97 Implementation in OECD Countries*, OECD, Paris.

### Figure notes

Figure 6.1: As a percentage of the country average.

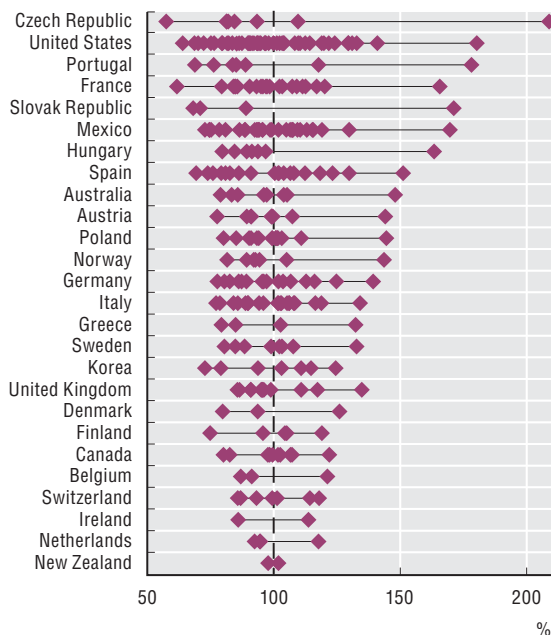
Figure 6.3: For each country three correlations are run between the regional labour force with tertiary education and the share of regional population living in PU, IN and PR regions.

Figure 6.4: For Australia and Italy data refer to 2005 and 2001, for Finland, Korea, Mexico and the United States data refer to 2005 and 2000.

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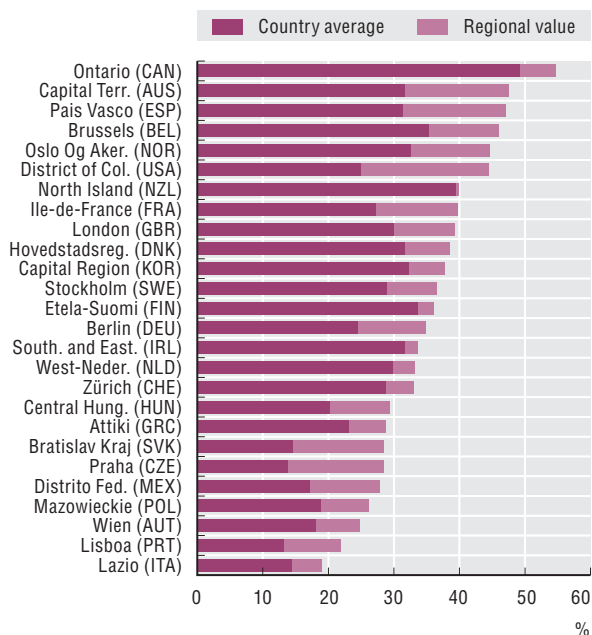
### 6.1 Range of labour force with tertiary educational attainment within the TL2 regions, 2005

The Czech Republic and the United States show the largest regional variations.



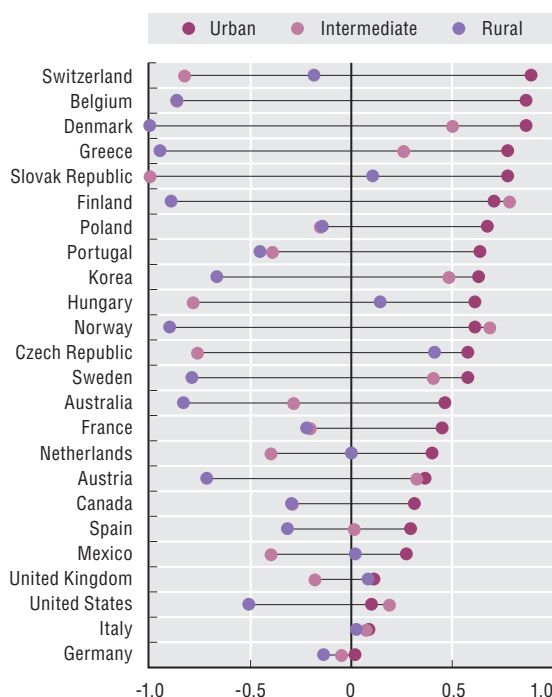
### 6.2 Regions with the highest percentage of labour force with tertiary educational attainments compared to their country average, 2005 (TL2)

In most OECD countries, the capital region shows the greatest percentage of labour force with higher education.



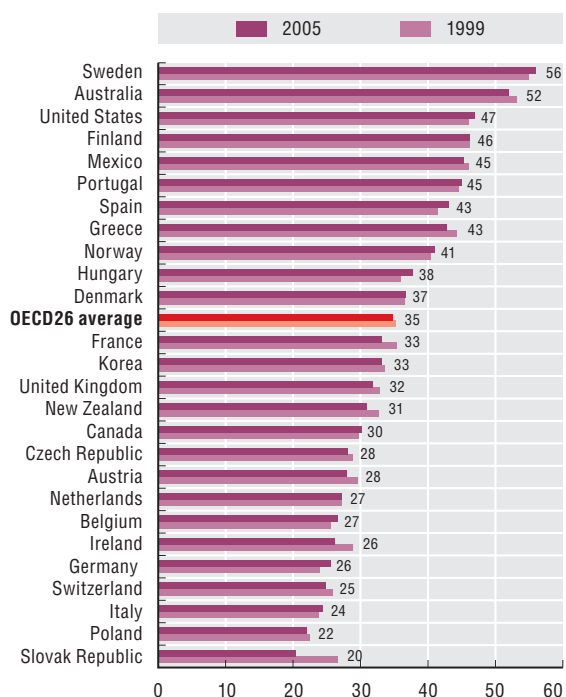
### 6.3 Spearman correlation coefficient between labour force with tertiary education and population share by regional type, 2005 (TL2)

Urban regions have the highest percentage of labour force with advanced educational qualifications.



### 6.4 Concentration index of the labour force with tertiary education, 1999 and 2005 (TL2)

Sweden and Australia are the countries where the skilled labour force is the most concentrated.

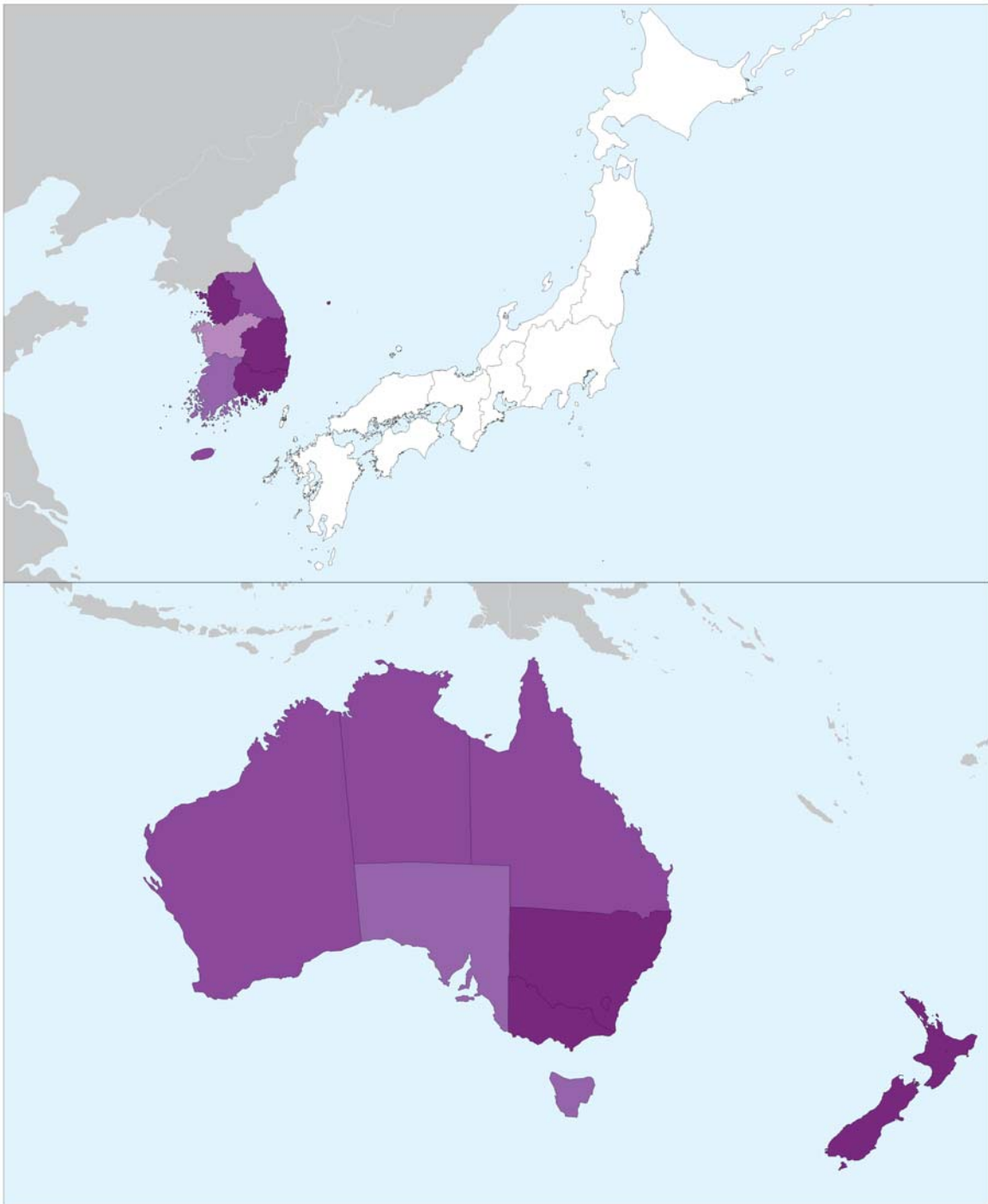


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### 6.5 Percentage of labour force with advanced educational qualifications: Asia and Oceania

TL2 regions, 2005

- Higher than 32%
- Between 32% and 27%
- Between 27% and 23%
- Between 23% and 18%
- Between 18% and 14%
- Lower than 14%
- Data not available

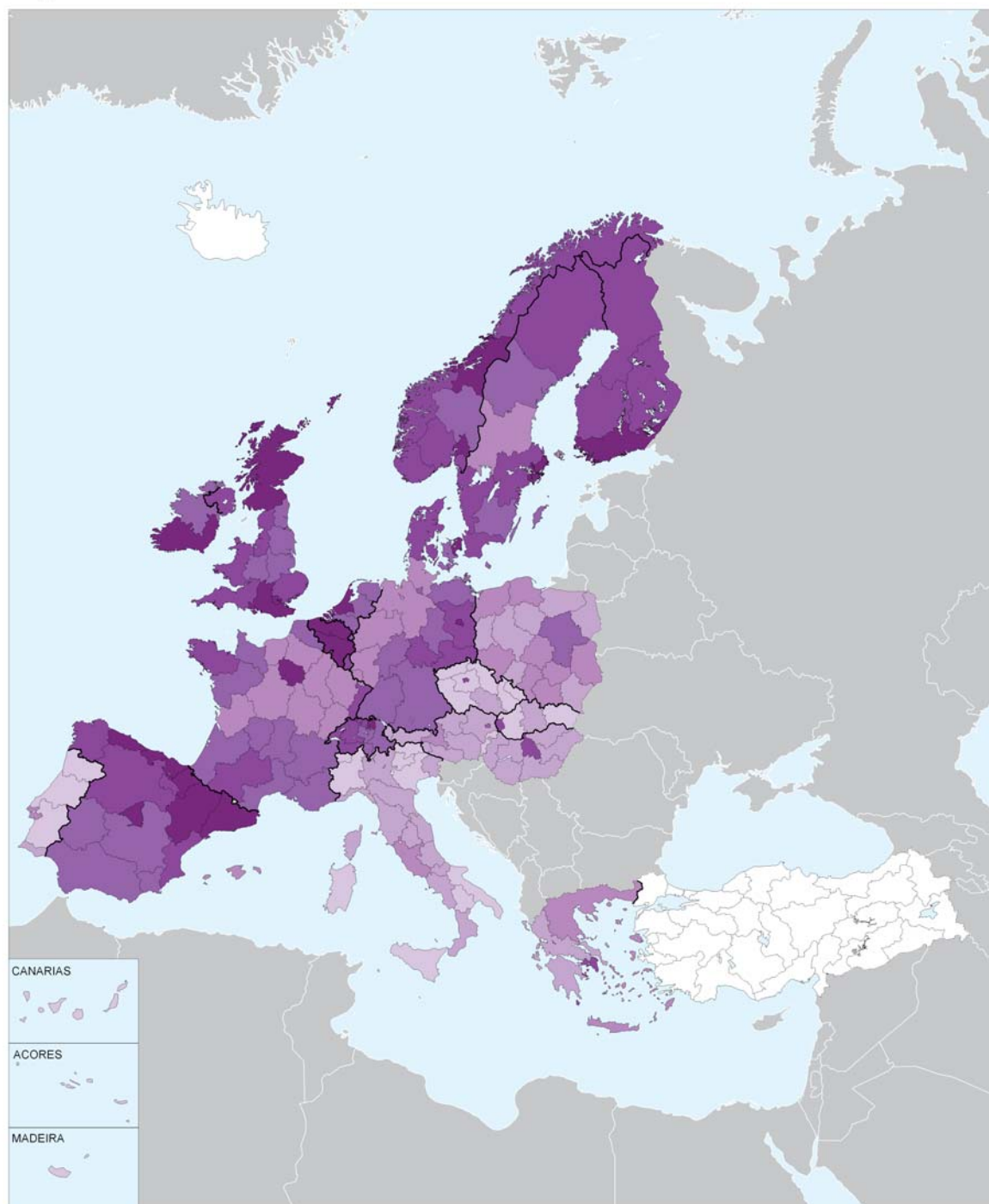



StatLink  <http://dx.doi.org/10.1787/524505338135>

### 6.6 Percentage of the labour force with advanced educational qualifications: Europe

TL2 regions, 2005

- Higher than 32%
- Between 32% and 27%
- Between 27% and 23%
- Between 23% and 18%
- Between 18% and 14%
- Lower than 14%
- Data not available



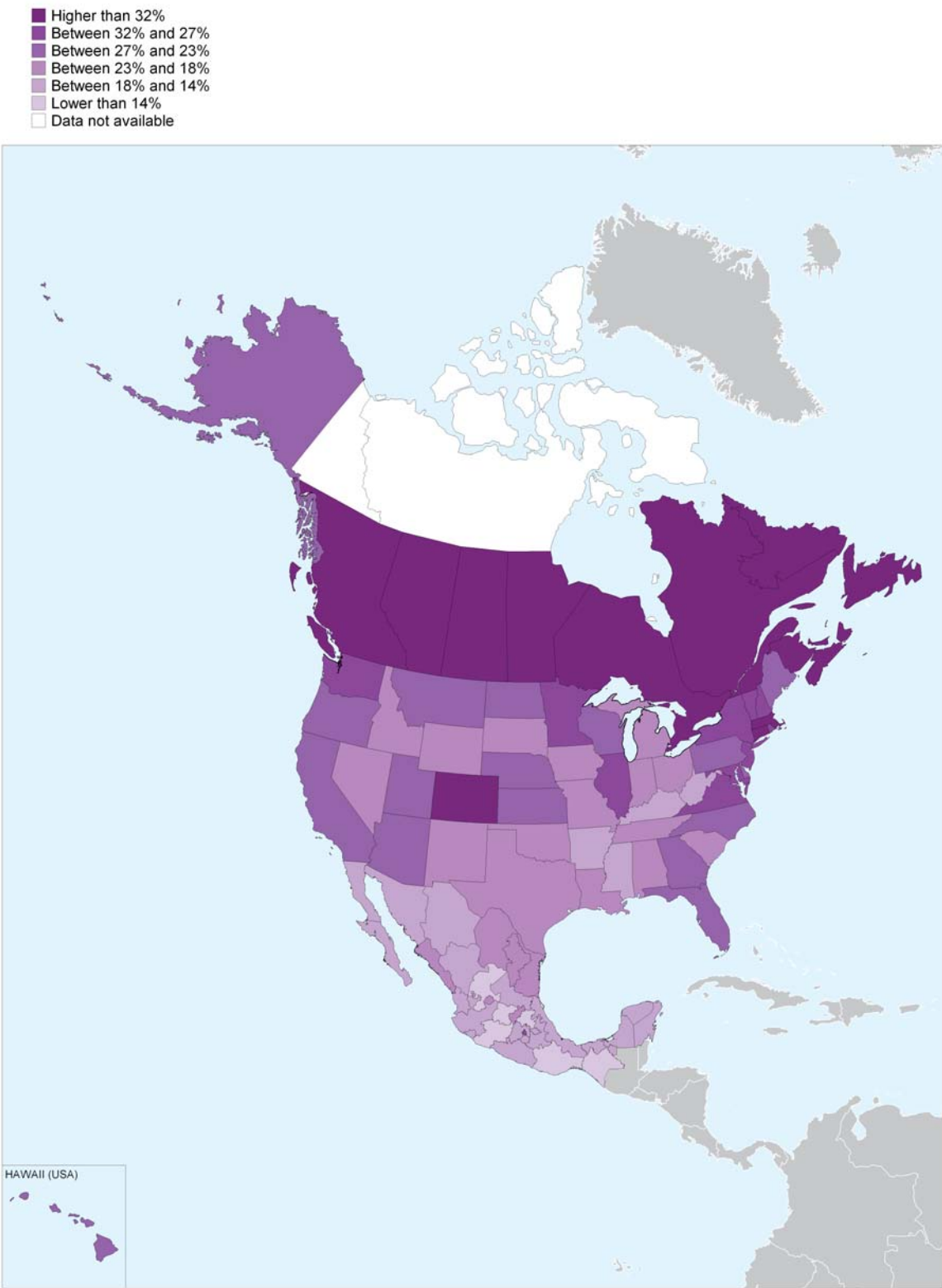
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### 6.7 Percentage of the labour force with advanced educational qualifications: North America

TL2 regions, 2005



Data for the United States refer to the percentage of population aged 18 and over with tertiary educational qualifications and not to the population in the labour force (see Annex C).

StatLink  <http://dx.doi.org/10.1787/524505338135>

### What is the relationship between a region's current and future stock of human capital?

Human capital is a key driver for a successful regional innovation system. The percentage of the labour force with advanced educational qualifications and the enrolment rate in tertiary education programmes are indicators respectively of a region's current and future stock of human capital. The number of students in tertiary education can also be used as a proxy for the presence of important Higher Education Institutions (HEIs). The presence of human capital and universities and their interconnection are fundamental elements for the development of well-functioning regional systems of innovation.

The distribution of the student enrolled in tertiary education depends mainly on the location of institutions providing tertiary level educational programmes. HEIs are innovation assets in themselves as they usually are the main recipients of public innovation-related funds and are, more and more often, active research partners for private firms. The presence of HEIs in regions is therefore an important asset not only as trainer of the future labour force but also for their function as an access point of new knowledge and technical support for businesses.

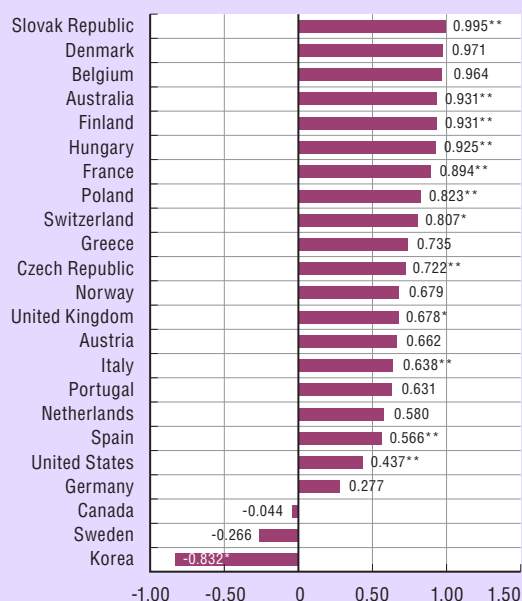
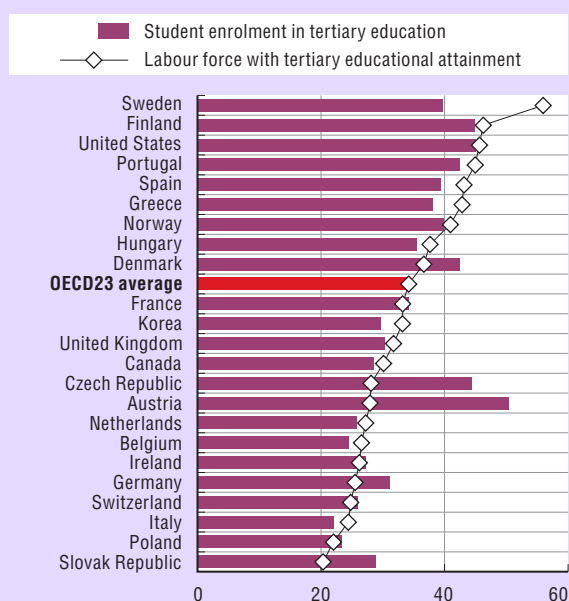
The highly skilled labour force has the tendency to move where the wage return to education is higher. Workers with advanced qualifications have a strong incentive to migrate toward places where people with similar skills are highly concentrated. The geographic concentration index shows that in 2005 Sweden was the country with the highest concentration of skilled labour force, while the concentration index of students in tertiary education is much lower, suggesting that HEIs were more evenly distributed among regions. In general the two concentration indices display similar values for most countries. Only in the Czech Republic and Austria do students participating in tertiary education seem to be significantly more concentrated than the skilled labour force (Figure 6.8).

The correlation between the per cent of skilled labour force and the rate of students in tertiary education is positive for 20 out of the 23 countries considered, suggesting a connection between the presence of students and HEIs and the skilled labour force (Figure 6.9).

#### 6.8 Concentration index of student enrolment in tertiary education and the labour force with tertiary educational attainment, 2005 (TL2)

#### 6.9 Correlation between rate of students enrolled in tertiary education and rate of labour force with tertiary educational attainment, 2005 (TL2)

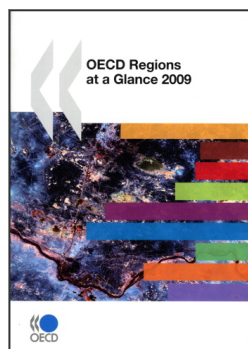
There is a connection between the presence of students in higher education institutions and the skilled labour force.



\* Correlation is significant at the 0.05 level.

\*\* Correlation is significant at the 0.01 level.

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