The number of computerised tomography (CT) scanners and magnetic resonance imaging (MRI) units can be used to measure the diffusion of modern medical technology and, more specifically, diagnostic techniques based on medical imaging. Both of these technologies are used to diagnose a wide range of disorders.

Technology improves diagnosis...

Modern technology provides better diagnosis, helps in selecting better treatment and enhances quality of life by avoiding the need for certain operations. Increasingly precise imaging now provides better evidence of deep or very small lesions that cannot be identified by clinical examination alone. It can also detect early signs of cancer, greatly improving the prognosis. CT scanners can detect morphological anomalies. They provide anatomical images of bones and organs. MRI units visualise details of specific tissues which are less well analysed by CT scanners. They offer the added advantage of not exposing patients to ionising radiation.

... but high costs are a limiting factor

To improve patient monitoring, radiologists often use a combination of the techniques available. These scanners are partly substitutable and partly complementary. Both are expensive but the cost of an MRI unit (some USD 1.9 million) is markedly higher than that of a CT scanner (from USD 600 000 to USD 1 million).

Availability varies widely

Figures for 2004 show significant disparities in the diffusion of diagnostic techniques. Japan has far more CT scanners and MRI units per capita than other OECD countries (Figure 34.1). The United States, Korea and Belgium also have far more CT scanners than the OECD average, although far fewer than Japan. The United States and several European countries (Iceland, Switzerland, Austria, Finland and Italy) also have a relatively high number of MRI units per capita. Mexico and Poland, on the other hand, have few of either device. In both the Slovak and the Czech Republic, the number of MRI units is particularly low. The United Kingdom and Hungary have very few CT scanners.

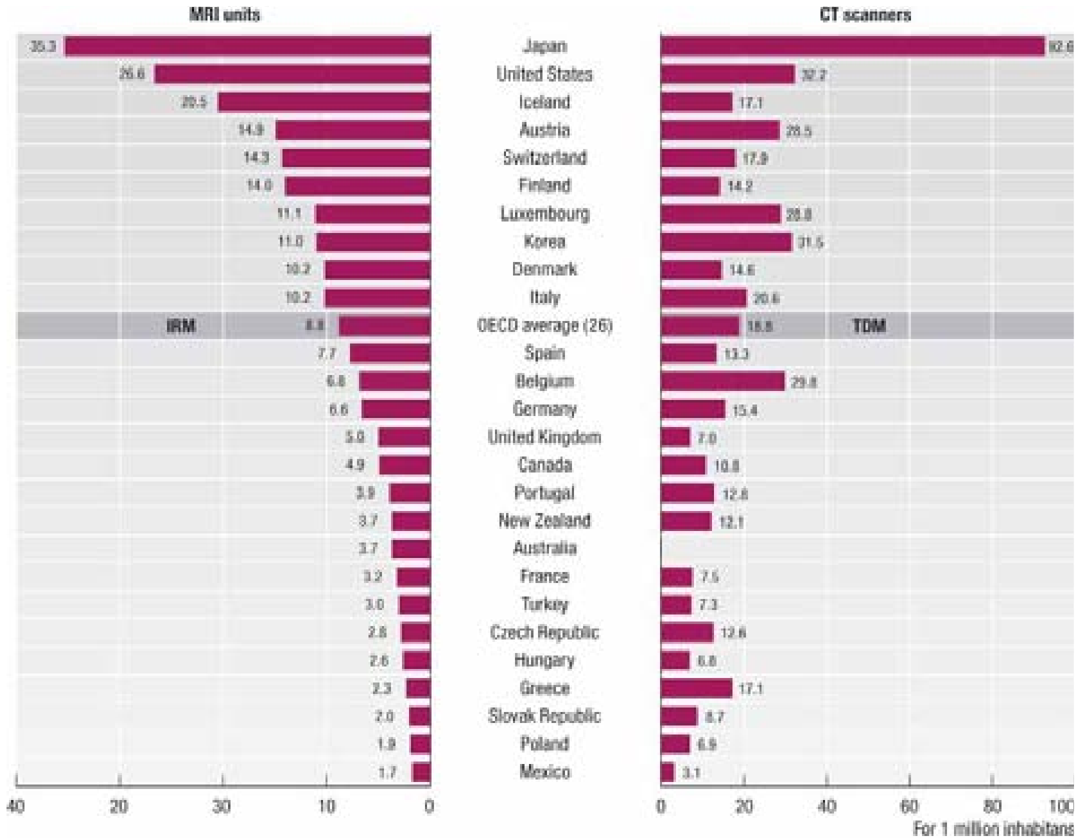
Significant regional variations

Turkey, at the bottom of the list for the diffusion of diagnostic technology, also suffers from a very uneven spread of such equipment across the country (Figure 34.2). And while Italy is above average for both types of equipment, it is having difficulty ensuring even access to them throughout the country. The number of CT scanners in parts of southern Italy is much higher than the national average, threefold in Campania, which has fewer MRI units, and 1.5 times more in Molise, which also has more MRI units. At the other end of the scale, the Trento area has no equipment of either type. The fact that healthcare provision is organised on a regional basis may explain these disparities, given the cost of such equipment.

Definition

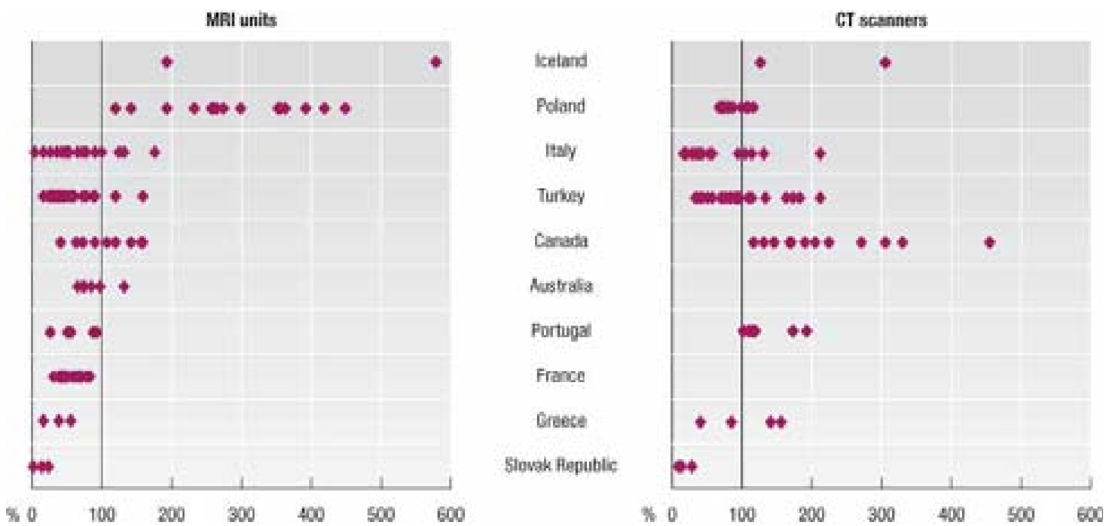
Number of magnetic resonance imaging (MRI) units and computerised tomography (CT) scanners used in radiology to scan a cross-sectional plane of all or part of the body and to produce an image generated by computer synthesis of x-ray transmission data.

34.1. **National diffusion of advanced diagnostic equipment, 2004**



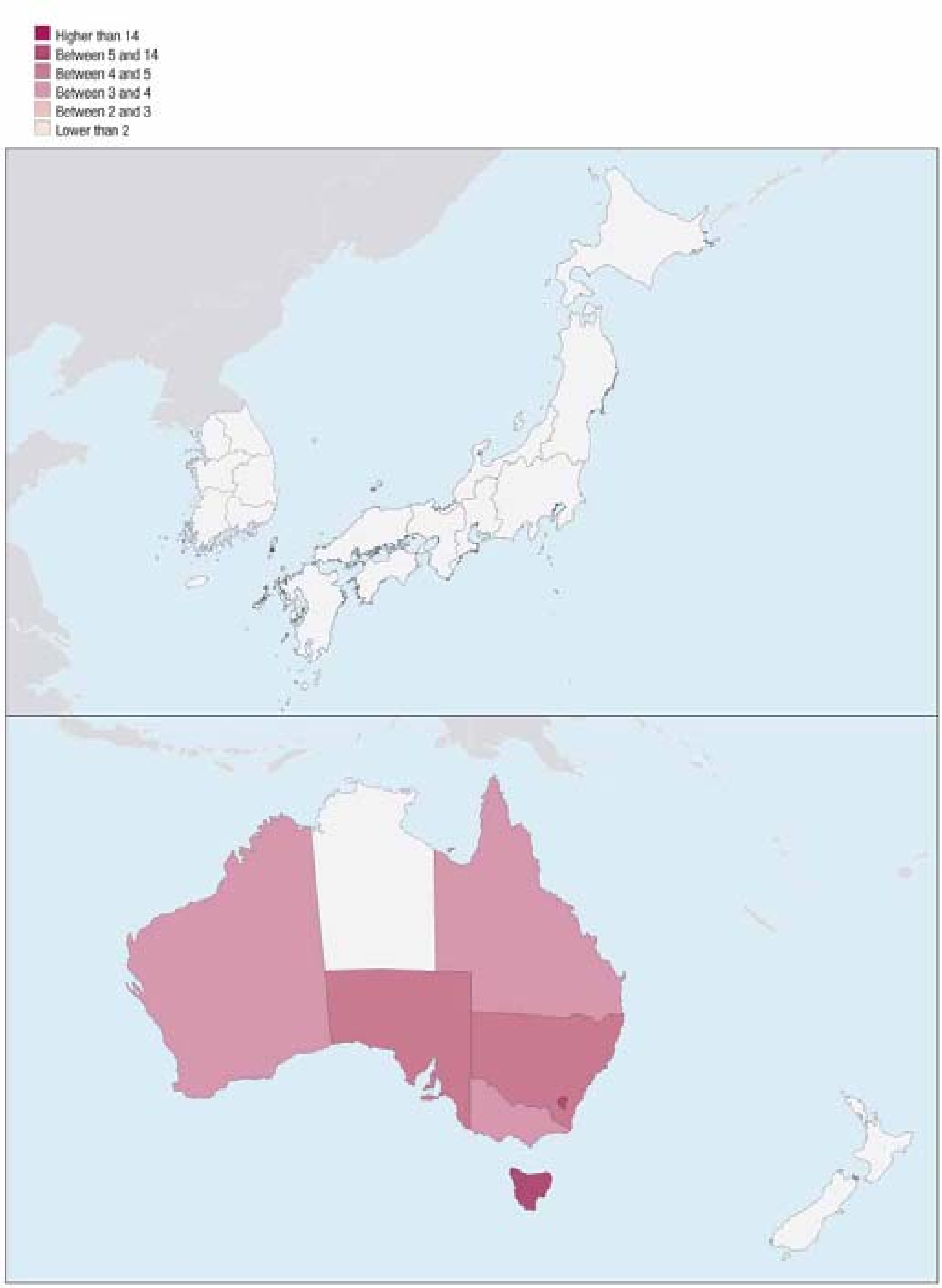
34.2. **Regional variations in the number of MRI units and CT scanners, 2004**

Percentage of OECD (10) average, 2004 (TL2)



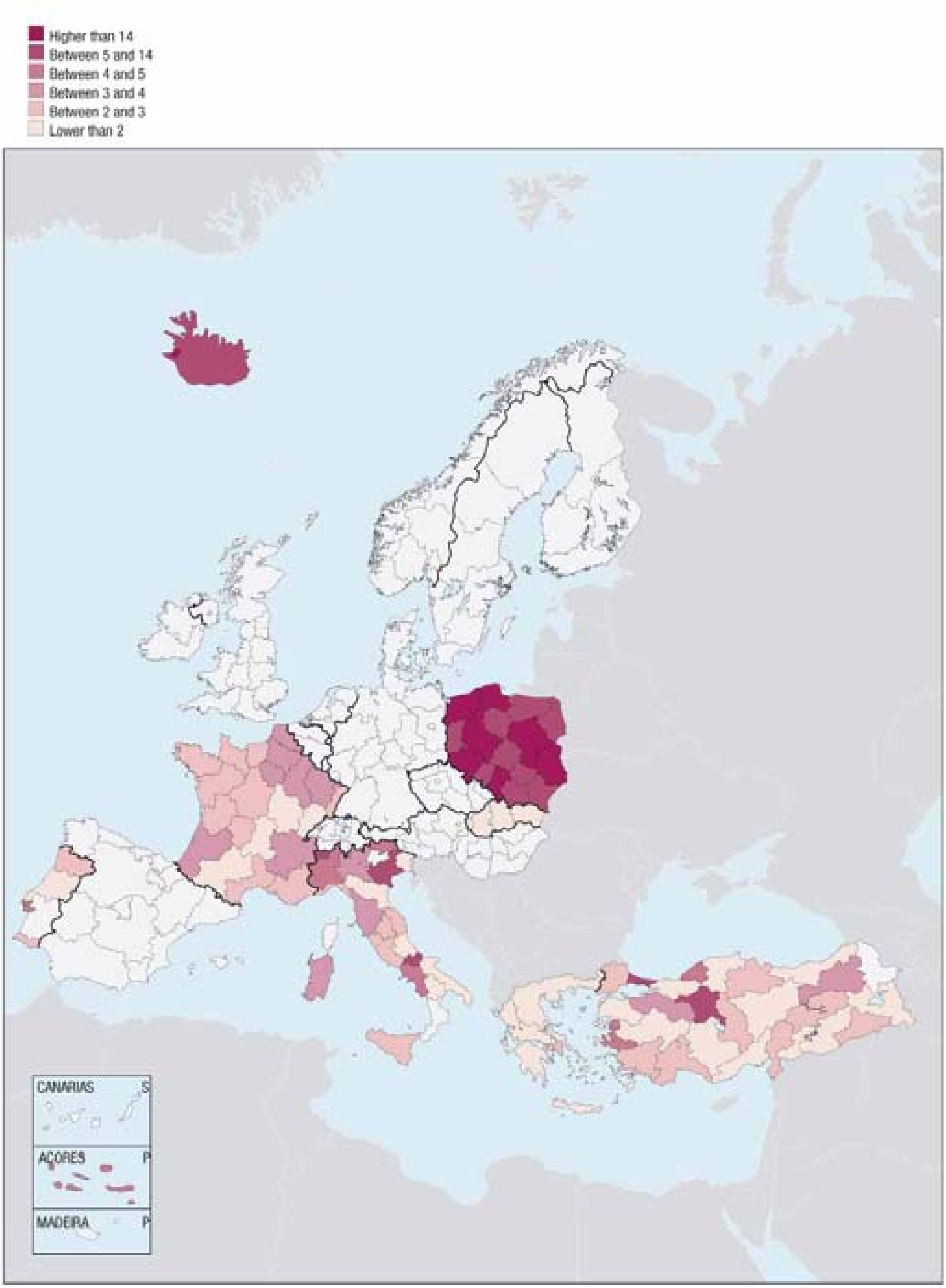
StatLink http://dx.doi.org/10.1787/814648674464

34.3. **MRI units per 1 million population: Asia and Oceania, 2004**



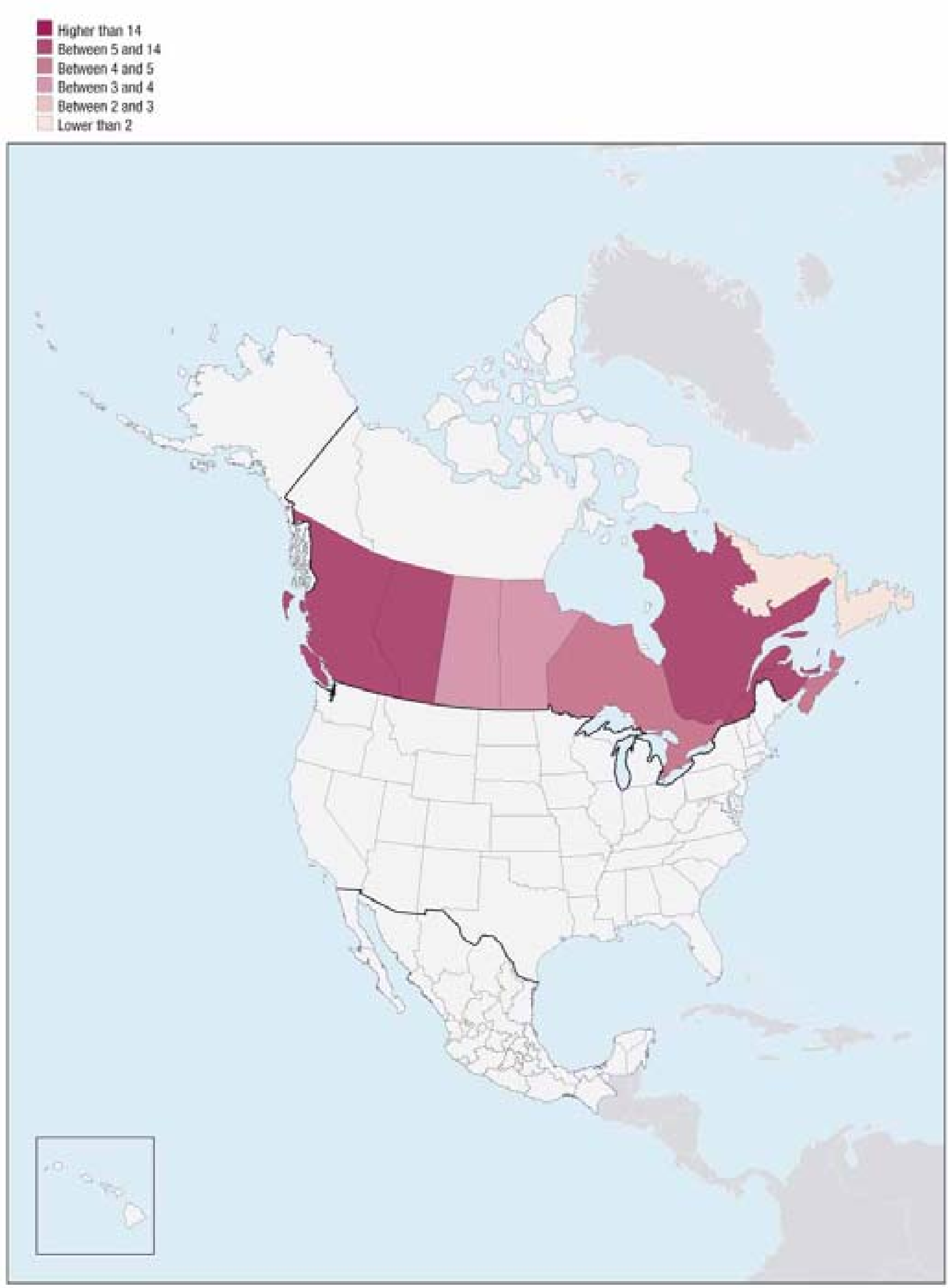
StatLink http://dx.doi.org/10.1787/658443863616

34.4. **MRI units per 1 million population: Europe, 2004**



StatLink http://dx.doi.org/10.1787/658443863616

34.5. **MRI units per 1 million population: North America, 2004**



StatLink http://dx.doi.org/10.1787/658443863616

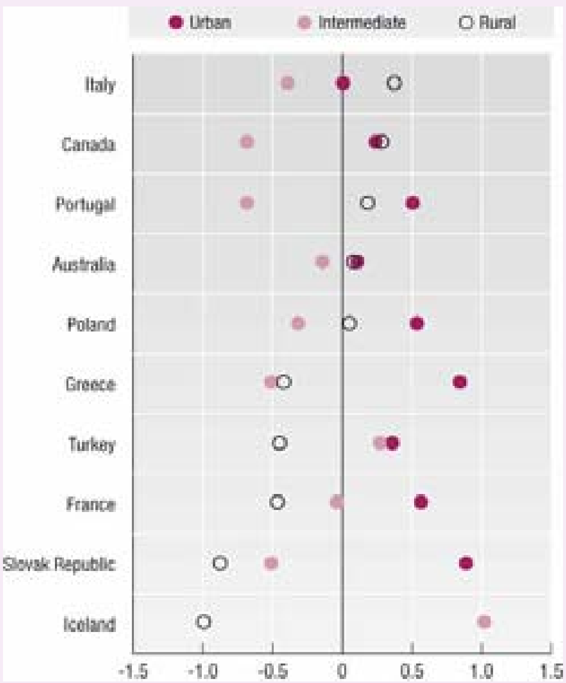
Regional distribution of medical imaging technologies by type of region

The regions best equipped with medical imaging units are usually those in which the population lives primarily in urban areas. In a majority of OECD countries for which such information is available, the number of MRI units and CT scanners per capita is positively correlated with the proportion of the regional population living in urban areas (Figure 34.6 and 34.7). Canada and Italy are the only countries where the number of medical imaging units is positively correlated with the proportion of the regional population living in rural areas.

These patterns, however, do not provide a full picture of the accessibility of medical technologies. While the number of MRI units and CT scanners per capita is a measure of the resources available in regions, their physical accessibility depends on the geographical distance from patients. In fact, a region may have a high number of MRI units and CT scanners per capita but accessibility may be low if they are located far from its inhabitants. Additional indicators – such as the number of tests and the time of utilisation – would be necessary in order to measure the actual accessibility of these technologies at the regional level.

34.6. **Correlation between the number of MRI units per inhabitant and the distribution of population by type of region**

Spearman correlation coefficient, 2004 (TL2)



34.7. **Correlation between the number of CT scanners per inhabitant and the distribution of population by type of region**

Spearman correlation coefficient, 2004 (TL2)

StatLink http://dx.doi.org/10.1787/814648674464

Symbols and Abbreviations

OECD (25) average	Unweighted average of 25 OECD countries.
OECD (25) total	Sum over all regions of 25 OECD countries.
OECD (25)	Range of variation over all regions of 25 OECD countries.
TL2	Territorial Level 2.
TL3	Territorial Level 3
NOG	Non Official Grid
*	Differences in the definition of data or regions. Please check the "Sources and Methodology" section.
PU	Predominantly Urban
IN	Intermediate
PR	Predominantly Rural
PPP	Purchasing Power Parity
USD	United States Dollar

I. REGIONS AS ACTORS OF NATIONAL GROWTH

1. GEOGRAPHIC CONCENTRATION OF POPULATION
2. GEOGRAPHIC CONCENTRATION OF THE ELDERLY POPULATION
3. GEOGRAPHIC CONCENTRATION OF GDP
4. REGIONAL CONTRIBUTIONS TO GROWTH IN NATIONAL GDP
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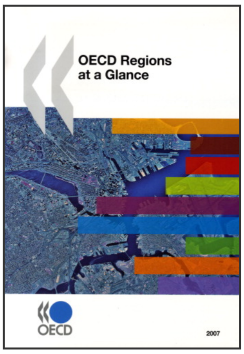
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