

Recent advances in medical imaging technologies are improving diagnosis of a wide range of diseases, but also involve substantial costs in purchasing the equipment and using it. This section presents data on the availability and use of two diagnostic imaging technologies: computed tomography (CT) scanners and magnetic resonance imaging (MRI) units. CT scanners and MRI units help physicians diagnose a range of conditions by producing images of internal organs and structures of the body. Unlike conventional radiography and CT scanning, MRI exams do not expose patients to ionising radiation.

The availability of CT scanners and MRI units has increased rapidly in most European countries over the past two decades. In 2014, Germany, Italy, Greece and Finland had the highest number of MRI units per capita among EU member states, while Denmark, Latvia, Germany and Greece had the highest number of CT scanners per capita. Iceland and Switzerland also have a large number of both MRI and CT scanners on a per capita basis (Figures 7.17 and 7.18). The numbers of MRI units and CT scanners per population were the lowest in Hungary, Romania and the United Kingdom.

There is no general guideline or benchmark regarding the ideal number of CT scanners or MRI units per population. However, if there are too few units, this may lead to access problems in terms of geographic proximity or waiting times. If there are too many, this may result in an overuse of these costly diagnostic procedures, with little if any benefits for patients.

Data on the use of these diagnostic equipment show that the number of MRI exams per capita in 2014 (or nearest year) was highest in Germany, France, Luxembourg and Belgium (Figure 7.19). The number of CT exams per capita was highest in the same group of countries, with the exception of Germany (Figure 7.20).

There are large variations in the use of CT and MRI scanners not only across countries, but also within countries. For example, in Belgium, there was almost a two-fold variation in the use of MRI and CT exams between those provinces with the highest and lowest rates in 2010. In the United Kingdom (England) where the utilisation rate of both types of diagnostic exams is generally much lower, the variation across regions was even greater, with almost a four-fold difference between those Primary Care Trusts (PCTs) that had the highest rates and lowest rates of MRI and CT exams in 2010/11 (OECD, 2014).

Clinical guidelines have been developed in some European countries to promote a rational use of these diagnostic technologies. In the United Kingdom, since the

creation of the Diagnostic Advisory Committee by the National Institute for Health and Clinical Excellence (NICE), a number of guidelines have been issued on the appropriate use of MRI and CT exams for different purposes (NICE, 2012).

A 2013 Council Directive (2013/59/EURATOM), which is to be implemented by EU member states in 2018, establishes legal requirements and an appropriate regime of regulatory control designed to provide basic safety standards for protection against the dangers from exposure to ionising radiation, based on the principles of justification, optimisation and dose limitation (European Union, 2013).

Definition and comparability

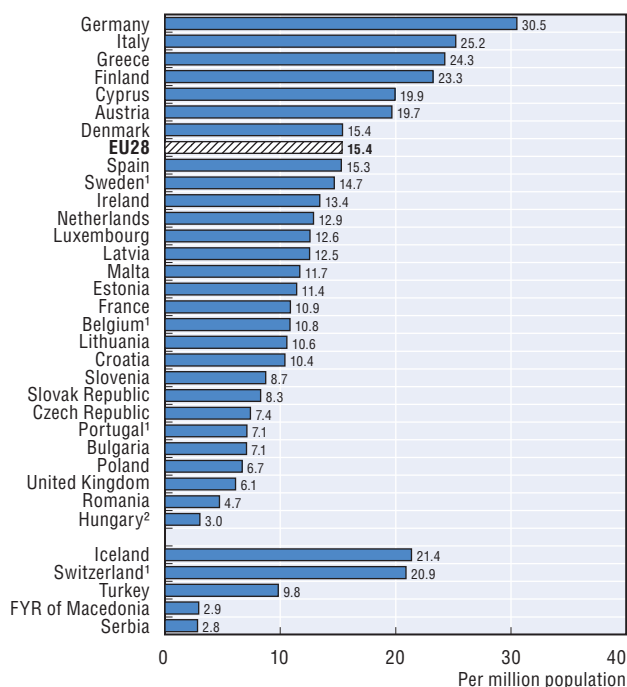
While the data in most countries cover CT scanners and MRI units installed both in hospitals and the ambulatory sector, the data coverage is more limited in some countries. CT scanners and MRI units outside hospitals are not included in some countries (e.g. Belgium, Portugal and Sweden, as well as Switzerland for MRI units). For the United Kingdom, the data only include scanners in the public sector. For Hungary, the data cover only equipment eligible for public reimbursement.

Similarly, MRI and CT exams performed outside hospitals are not included in some countries (e.g. Austria, Cyprus, Ireland, Portugal, Switzerland and the United Kingdom). Furthermore, MRI and CT exams for Cyprus and Ireland only cover public hospitals. The Netherlands only report data on publicly-financed exams.

References

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- NICE (2012), *Published Diagnostics Guidance*, National Institute for Health and Clinical Excellence, London and Manchester, <http://guidance.nice.org.uk/DT/Published>.
- OECD (2014), *Geographic Variations in Health Care Use: What Do We Know and What Can Be Done to Improve Health System Performance?*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264216594-en>.

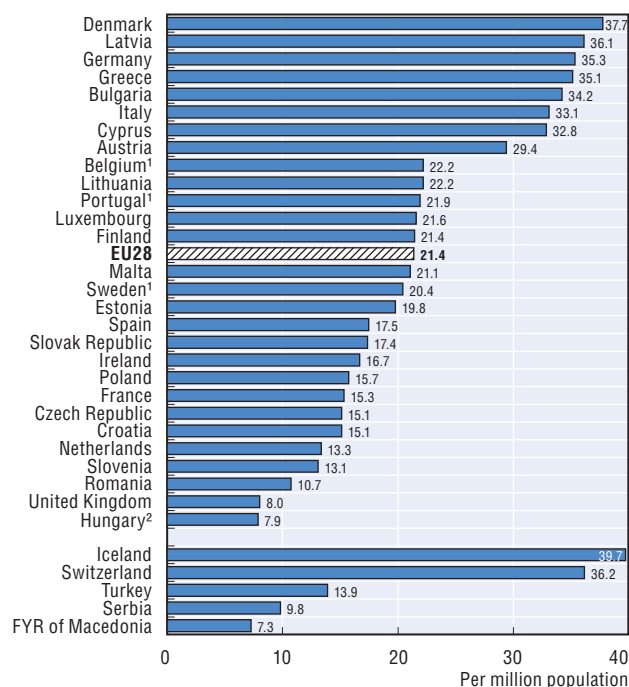
7.17. MRI units, 2014 (or nearest year)



1. Equipment outside hospital not included.
 2. Only equipment eligible for public reimbursement.
- Source: OECD Health Statistics 2016; Eurostat Database.

StatLink <http://dx.doi.org/10.1787/888933429862>

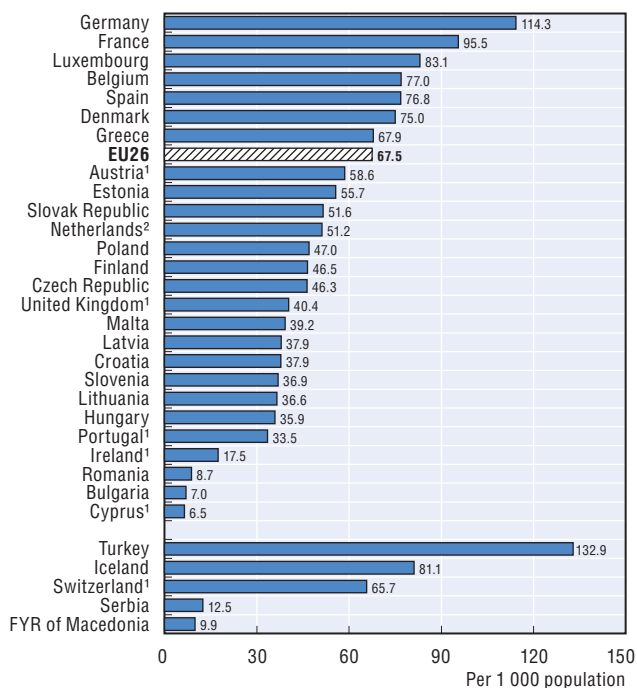
7.18. CT scanners, 2014 (or nearest year)



1. Equipment outside hospital not included.
 2. Only equipment eligible for public reimbursement.
- Source: OECD Health Statistics 2016; Eurostat Database.

StatLink <http://dx.doi.org/10.1787/888933429875>

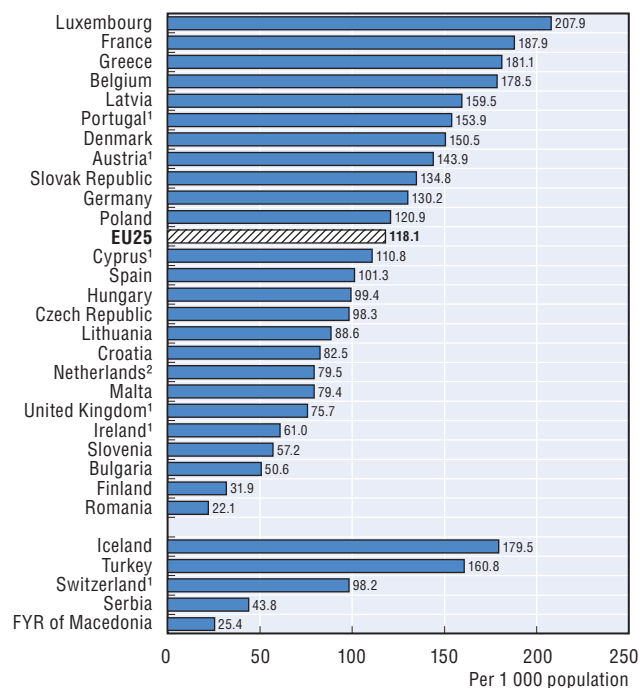
7.19. MRI exams, 2014 (or nearest year)



1. Exams outside hospital not included (in Cyprus and Ireland, exams in private hospital also not included).
 2. Exams privately-funded not included.
- Source: OECD Health Statistics 2016; Eurostat Database.

StatLink <http://dx.doi.org/10.1787/888933429883>

7.20. CT exams, 2014 (or nearest year)



1. Exams outside hospital not included (in Cyprus and Ireland, exams in private hospital also not included).
 2. Exams privately-funded not included.
- Source: OECD Health Statistics 2016; Eurostat Database.

StatLink <http://dx.doi.org/10.1787/888933429896>



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