Technology plays an important role in health systems, allowing physicians to better diagnose and treat patients. However, new technologies can also drive up costs, particularly if they are overused or misused.

This section focusses on the use of three diagnostic imaging technologies that can help diagnose different health problems: computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET) exams. CT and MRI exams both show images of internal organs and tissues, while PET scans show other information and problems at the cellular level. Unlike more traditional radiography and CT scanning, MRI and PET exams do not expose patients to ionising radiation, which can increase the risk of cancer if the exposition of radiation is not properly managed. CT exams were first introduced in the 1970s, MRI exams in the 1970s and the 1980s, while PET exams were introduced later on, around the year 2000.

The most recent data from 2018 show that the use of these three diagnostic exams taken together was highest in Austria, France, Luxembourg, Belgium and Germany, with utilisation rates 50% higher than the average across EU countries. The utilisation rate was lowest in Romania and Bulgaria with rates more than 50% lower than the EU average (Figure 7.20).

Figure 7.21 highlights the large variation in the use of MRI exams between Western European countries and Central and Eastern European countries. While the use of MRI exams has increased over the past two decades in all countries, there remain in 2018 a ten-fold difference in their use between the three countries that use them the most (Germany, Austria and France) and the three countries that use them the least (Cyprus, Romania and Bulgaria).

In most countries, CT exams continue to be the most frequently used of the three diagnostic technologies considered here. This is notably the case in countries like Belgium, Luxembourg, Greece, Portugal, Cyprus, Romania and Bulgaria where the use of CT exams is still more than two-times greater than MRI exams (Figure 7.20). This is because the use of CT exams has continued to increase during the past two decades, although in most cases at a slower rate than that of MRI exams. In Germany, both CT exams and MRI exams have continued to increase over the past 15 years, but the use of MRI exams has increased more rapidly so that it is now almost equal to that of CT exams. The use of PET scans has also increased over the past two decades, but remain much more limited than that of CT exams and MRI exams.

Clinical guidelines have been developed in many countries to help physicians determine when they should use these different diagnostic technologies and to avoid overuse, although these guidelines are not always implemented in practice. Through the Choosing Wisely® campaign, which began in the United States in 2012 and emulated in other countries since then, medical societies have identified a number of cases when MRI or other imaging tests are frequently used but are unlikely to provide any benefit to patients. One example is to use MRI to seek a diagnosis for low back pain or for migraine. The Royal College of Physicians in the United Kingdom has recommended, based on evidence from the National Institute for Health and Clinical Excellence (NICE), that patients with low back pain or with suspected migraine do not routinely need an imaging test (Choosing Wisely UK, 2018).

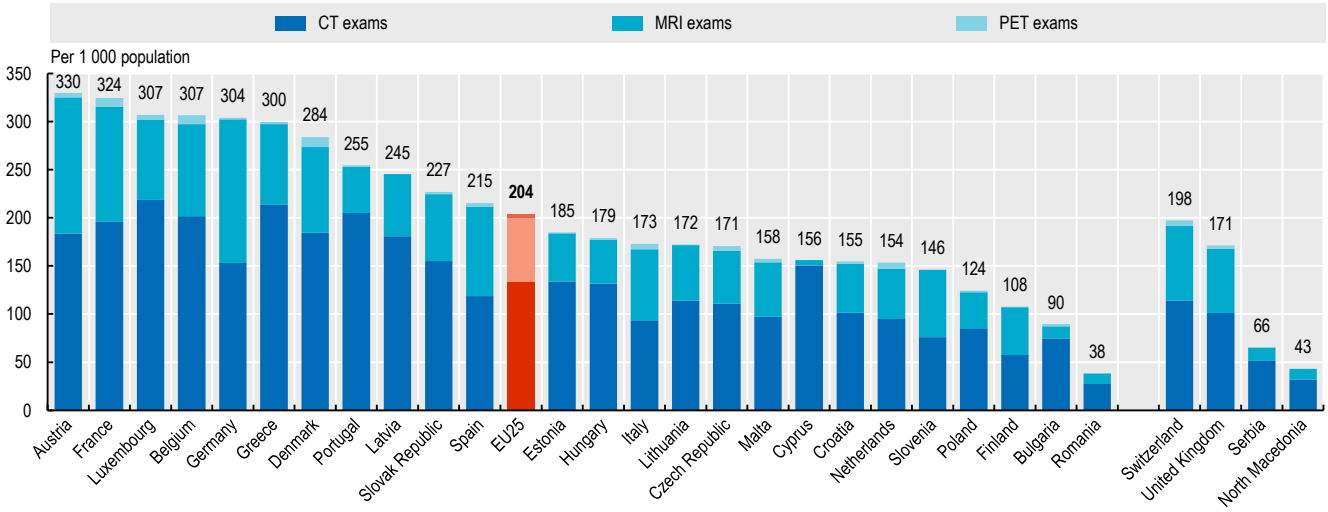
Definition and comparability

While the data in most countries cover CT, MRI and PET exams in hospitals as well as in the ambulatory sector, the data coverage is more limited in some countries. Any CT, MRI and PET exams performed outside hospitals are not included in Portugal, Switzerland and the United Kingdom. Exams in Cyprus only cover public hospitals. The Netherlands only report data on publicly financed exams.

References

Choosing Wisely UK (2018), Clinicians Recommendations: Royal College of Physicians, *http://www.choosingwisely.co.uk/i-am-a-clinician/recommendations/*.

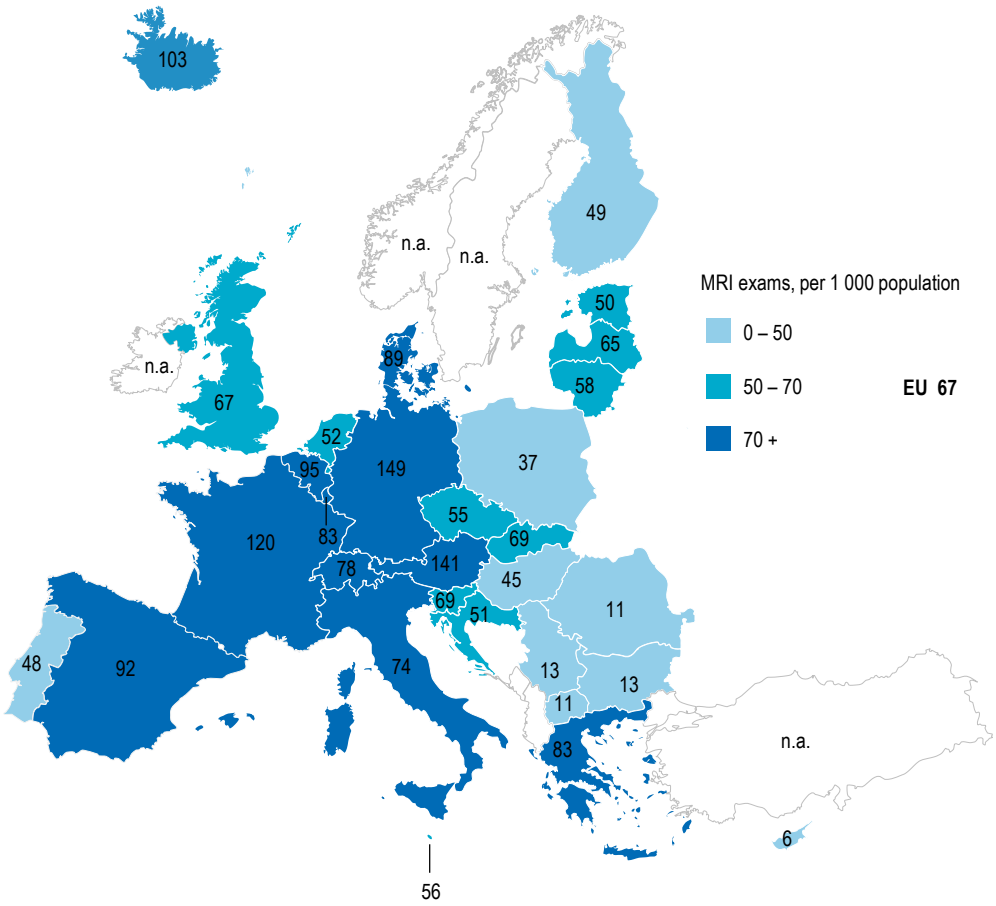
Figure 7.20. **CT, MRI and PET exams per 1 000 population, 2018 (or nearest year)**



Note: The EU average is unweighted. 1. Any exams outside hospital are not included in Portugal, Switzerland and the United Kingdom (resulting in an under-estimation).
Source: OECD Health Statistics 2020; Eurostat Database.

StatLink https://stat.link/jws7oh

Figure 7.21. **MRI exams per 1 000 population, 2018 (or nearest year)**



Note: The EU average is unweighted. Exams outside hospital are not included in Portugal, Switzerland and the United Kingdom (resulting in an under-estimation).
Source: OECD Health Statistics 2020; Eurostat Database.

StatLink https://stat.link/6jibr3

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