

OECD Health Statistics 2023

Definitions, Sources and Methods

Positron Emission Tomography scanners

Number of **Positron Emission Tomography scanner units** (PET units).

PET is a highly specialised imaging technique using short-lived radioactive substances. This technique produces three dimensional images which are used mainly for the assessment of cancer spread in a patient's body.

Inclusion

- PET-CT systems using image fusion (superposition of CT and PET images)

Sources and Methods

Australia

Source of data: **Department of Health**. Unpublished data from Location Specific Practice Number register.

Reference period: Years reported are financial years 1st July to 31st June (e.g. data for 2012 are as at 30th June 2012).

Coverage: Data from 2008 onwards represent the number of units approved for billing to Medicare only. Units may be removed from one location and re-registered in another location.

Note: During the first wave of COVID-19 in Australia at the beginning of 2020, diagnostic imaging services decreased significantly. Existing imaging practices have chosen to consolidate their existing practices and services, resulting in a halt in the expansion of diagnostic imaging practices in Australia. In addition, there have been significant delays in the global supply chain for the replacement and upgrade of machines. All of these issues have combined to result in the observed changes to the number of machines that are being reported for 2020 and 2021.

Austria

Source of data: **Austrian Federal Ministry of Social Affairs, Health, Care and Consumer Protection** (Gesundheit Österreich GmbH, Monitoring of Medical Technology Development).

Reference period: 31st December.

Coverage:

- Included are all PET units in hospitals as defined by the Austrian Hospital Act (KAKuG) and classified as HP.1 according to the System of Health Accounts (OECD).

- The ambulatory sector is included (HP.3).

Belgium

Source of data:

Hospital (HP.1): **Federal Service of Public Health, DGGS** “Organisation of health provisions”; Ministry of the Flemish community and Ministry of the French community.

- Since 2016, data are based on the national registry for devices of medical image. Up to 2015, data were based on a hospital questionnaire.

Ambulatory care providers (HP.3): **Federal Agency for Nuclear control (FANC):** licenses delivered for use of nuclear machinery.

Reference period: 31st December.

Coverage:

- *Hospital (HP.1):* Data correspond to the number of hospitals with this technology until 2012 and from 2013 to the number of PET-scanners (including PET-CT).

- *Ambulatory care providers (HP.3)*: In principle, heavy medical machinery exams are not reimbursed in the ambulatory care sector.

Break in time-series: Since 2016, data are based on the national registry for devices of medical image. PET, PET-CT and PET-MRI are included.

Canada

Source of data:

- 2003-2012: **Canadian Institute for Health Information**, *National Survey of Selected Medical Imaging Equipment*. See <https://www.cihi.ca/en/types-of-care/specialized-services/medical-imaging>. Estimate for 2013.

- 2015, 2017 and 2019: **Canadian Agency for Drugs and Technology in Health (CADTH)**, *Canadian Medical Imaging Inventory*. See cadth.ca/medical-imaging.

Coverage:

- Includes all PET and PET-CT scanners that could be identified as installed in Canada. In 2015, CADTH has taken on the collection of data on medical imaging technologies in Canada and will continue to maintain the national inventory and publish a report of the findings every two years. The scanner counts were supplied to CADTH by provincial validators and include scanners in publicly funded sites only in 2015 while they also include some privately funded units in 2017 and 2019. For the years 2015 and 2017, no distinction between scanners in hospitals and free-standing imaging facilities is available from CADTH's reports *The Canadian Medical Imaging Inventory, 2015* and *The Canadian Medical Imaging Inventory, 2017* published on cadth.ca/medical-imaging.

Chile

Source of data: **Ministry of Health, Investment Division**.

- The data collection was conducted through an annual survey from the Ministry of Health to all country health services (by the office of Secretary for Care Networks, addressed to the Directors of Health and Experimental Centres, and Chief of the local Imaging Departments).

Methodology: the methodology used was to ask providers of this type of equipment their installed base of equipment in operation, for both public and private area.

Coverage:

- Public and private sector

- The information submitted reflects the capacity at 31st December, available in both public and private sectors of Health.

- Hospitalisation (Hospitals and Clinics) and ambulatory care (Medical Offices and clinics of specialties). Some equipment may be used for both hospital and outpatient care (they are shared equipment).

Break in time series: in 2013, there was a change in the methodology of the survey.

Colombia

Data not available.

Costa Rica

Source of data:

- *From 2022*: Sistema Contable de Bienes Muebles de la **Caja Costarricense de Seguro Social** (Accounting System of Personal Property of the National Social Security Fund) and Annual Report from Private hospitals.

- *Till 2021*: Sistema Contable de Bienes Muebles de la **Caja Costarricense de Seguro Social** (Accounting System of Personal Property of the National Social Security Fund).

Coverage:

- *From 2022*: All public hospitals and some private hospitals.

- *Till 2021*: Data correspond only to public hospitals belonging to the Social Insurance.

Break in time series: 2022 (inclusion of some private hospitals).

Czech Republic

Source of data: **Institute of Health Information and Statistics of the Czech Republic**; Survey on medical

apparatus in health establishments.

Reference period: 31st December.

Coverage:

- From the year 2000, data cover all sectors.

Denmark

Source of data: **Danish Health Authority, Radiation Protection.** Annual survey of nuclear medicine equipment. It is required for departments to submit data in survey.

Reference period: 31st of December.

Coverage: In 2004, some PET/CTs might have been registered as gamma cameras, which could be the reason for the large changes in numbers of gamma cameras and PET units from 2004 till 2005.

Estonia

Source of data: **National Institute for Health Development,** Department of Health Statistics (since 2005).

Reference period: 31st of December.

Coverage:

- All providers. Since 2006 data have been included in the annual reports (“Health Care Provider”).

- Data on equipment were not collected routinely before 2005. Since 2006 data have been included in the annual reports of healthcare providers.

- The devices may also include combined devices like PET-CT, and it is possible that up to 2014 these devices are counted under both categories (i.e., under PET and CT units). The number of combined devices is not available. The first combined devices were purchased in 2007.

- From 2015 the combined devices PET-CT and PET-MRI are counted under PET category only.

- Data are collected from hospitals and ambulatory care providers.

Deviation from the definition: Due to the changes in the HP coding in 2014 according to the SHA2011 some providers, previously classified under HP3, were classified under HP4. To avoid data loss since 2014 also HP4 providers are included under category “ambulatory care”.

Finland

Source of data: **Radiation and Nuclear Safety Authority Finland and university hospitals.**

Coverage: All hospitals.

France

Source of data: **Ministère des Solidarités et de la Santé - Direction de la Recherche, des Études, de l'Évaluation et des Statistiques (DREES),** Sous-Direction de l'Observation de la Santé et de l'Assurance maladie, Bureau des Établissements de santé. Data are from **FINESS**.

Reference period: Equipment in service during the year (not necessarily during the whole year).

Coverage: Data refer to metropolitan France and D.O.M. (overseas departments).

Break in time series: 2015, 2019.

- During the year 2015, the source of data FINESS has been improved concerning the equipment: the source keeps now a better record of all the equipment actually in use. This improvement results in a higher number of equipment for 2015.

- Count of equipment in FINESS data changed in 2019: the repartition between ambulatory care equipment and hospital equipment has changed.

Germany

Source of data: **Federal Statistical Office,** Hospital statistics 2021 (basic data of hospitals and prevention or rehabilitation facilities); Statistisches Bundesamt 2022, *Fachserie 12, Reihe 6.1.1*, table 2.8.1 and internal tables; <http://www.destatis.de> or <http://www.gbe-bund.de>.

Reference period: 31st December.

Coverage:

- Data on medical technology include equipment installed in all types of hospitals (HP.1) in all sectors (public, not-for-profit and private).
 - Additional equipment in the ambulatory sector is not counted in official statistics.
- Break in time series: As of reporting year 2020, the hospital data also include PET/CT and PET/MRI hybrid devices. Data on these devices was not previously collected.

Greece

Source of data: **The Greek Atomic Energy Commission** (for HP1 & HP3) and **the Hospital Census of ELSTAT (HP1)**.

Reference period: 31st December.

Coverage: Country Total.

Hungary

Source of data:

- Until 2007: **Hungarian National Institute for Hospital and Medical Engineering** (ORKI in Hungarian).

www.orki.hu.

- From 2008 until 2011: **Healthcare Quality Improvement and Hospital Engineering** (EMKI in Hungarian).

www.emki.hu.

- From 2012 until 2013: **National Institute for Quality- and Organizational Development in Healthcare and Medicines** (GYEMSZI in Hungarian), www.gyemszi.hu.

- From 2014: **National Healthcare Service Center** (ÁEEK in Hungarian), www.aEEK.hu.

- From 2019: **National Institute of Health Insurance Fund Management** (NEAK, in Hungarian),

www.neak.gov.hu.

Reference period: 31st December.

Coverage:

- The number includes only those units that are owned by healthcare institutions contracted by the health insurance company.

- In 2014, a new institution, the National Center for Health Care (ÁEEK), started collecting data, and unfortunately not all data providers responded to their request. Therefore, between 2014 and 2017, we were only able to provide estimates.

Iceland

Source of data: **Icelandic Radiation Safety Authority**.

Reference period: 31st December.

Ireland

Source of data: **Environmental Protection Agency** (<https://www.epa.ie/>).

Reference period: Figures as at end of December.

Coverage:

- All figures are taken from the EPA's licensing database and were calculated at the end of each calendar year.

- Figures reflect the number of machines licensed by the EPA in Ireland. Under the licensing system used, the EPA assigns purposes to each item of equipment which indicates the clinical use of that item e.g. mammography, fluoroscopy, CT etc. This designation is based upon data supplied from equipment users. Therefore, the figures reflect how they describe the equipment.

Israel

Source of data: The data are based on the Medical Institutions License Registry maintained by the Department of Medical Facilities and Equipment Licensing and the Health Information Division in the **Ministry of Health**.

Reference period: End of the year.

Coverage: Includes all licensed PET units.

Note: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities.

The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Italy

Source of data: **Ministry of Health - General Directorate of digitalisation, health information system and statistics - Office of Statistics.** www.salute.gov.it/statistiche.

Reference period: 1st January.

Coverage:

- Data on DSA, PET and mammography units were available for the first time in 2007.
- PET units include a modern PET-CT unit system that uses image fusion-superposition of CT and PET images.
- Available equipment both in hospital and territorial facilities is counted. Territory private facilities not accredited by the National Health Service are not covered. However, data on equipment in hospitals refer to both public and private hospitals, including private hospitals not accredited by the National Health Service.

Deviation from the definition: Territory private facilities not accredited by the National Health Service are not covered.

Estimation method: None

Break in time series: None

Japan

Source of data: **Ministry of Health, Labour and Welfare**, Survey of Medical Institutions (several issues).

Coverage:

- In hospitals only until 2002, and in all hospitals and medical clinics in 2005.
- The survey items on medical technology are included in the large-scale survey conducted every three years.
- Figures of 2011 exclude data of Ishinomaki medical area and Kesenuma medical area of Miyagi Prefecture, and Fukushima Prefecture.

Break in time series: 2005.

Korea

Source of data: **Health Insurance Review & Assessment Service**, Healthcare resources by provider.

Latvia

Source of data: **Centre for Disease Prevention and Control**; Statistical Report.

Reference period: 31 December.

Lithuania

Source of data: **Radiation Protection Centre**. Report "Health Statistics of Lithuania", available from <http://www.hi.lt/health-statistic-of-lithuania.html>. Available on Official Statistics Portal of Statistics Lithuania <http://osp.stat.gov.lt/en>.

Reference period: 31st December.

Coverage: The number of licensed equipment. Since 2007 – the number of functioning equipment.

Luxembourg

Source of data: **Direction de la Santé**, Division de la Radioprotection.

Reference period: Data as of December 31.

Coverage: Includes all equipment in use.

Mexico

Source of data: **Ministry of Health**. National Health Information System (SINAIS).

- For 2012 to 2021, it was possible to identify information by type of provider, based on the same sources, because they have information on medical unit and not aggregated as in previous years.

Coverage:

- Includes information only from public institutions (MOH, IMSS-Bienestar, Services of the Federal District, IMSS, ISSSTE, PEMEX, SEDENA, SEMAR, state health hospitals, university hospitals).

- From 2004 onwards, the equipment was identified by type of provider, using the same source, associating the unique ID included in the catalog of health establishments of health facilities (CLUES) by medical unit to confirm whether it is a hospital or ambulatory unit.

Deviation from the definition: PET-CT units are excluded.

Netherlands

Source of data:

- 2006 onwards: **Annual reports social account** which the hospitals are required to deliver; the survey on imaging diagnostics is included in this report.

- Up to 2005: **Jaarenquête Beeldvormende Diagnostiek** (annual survey imaging).

New Zealand

Source of data: **Office of Radiation Safety, Ministry of Health.**

Coverage:

- The figures provided include all healthcare facilities, both public and private providers.

- The database does not distinguish between hospital and ambulatory care settings.

Norway

Source of data: **The Norwegian Radiation and Nuclear Safety Authority (DSA).** Undertakings that expect to acquire, lease, use or handle radiation sources that are subject to registration shall register their activities and each radiation source to DSA via DSA's radiation source registration system (<https://ems.dsa.no/>). Equipment that is no longer in use is also reported through the same registration system.

Reference period: The reported data include registrations of equipment that have been registered and processed by DSA as of December 31 each year. Due to delays in the processing of registrations the actual number of equipment might be slightly higher or lower than reported on this date.

Coverage:

- PET/MR (3) is also included.

- Equipment is reported for HP.1 and HP.3 together (hospital and ambulatory sector). It is not possible to differentiate between HP.1 and HP.3 in the source data.

- The reported data is limited to equipment that is subject to authorization from DSA according to the Radiation Protection Regulations (see "Strålevernforskriften på engelsk" here: <https://dsa.no/regelverk/>). DSA's radiation source registration system was updated in 2016, and data before this is therefore not easily accessible.

Poland

Source of data:

In year 2013 and earlier:

Ministry of Health:

- MZ-12 - report on activity and workers in outpatient specialised healthcare. Data as at 31st December.

- MZ-29 - report on activity of general hospital. Data as at 31st December.

Ministry of Interior and Administration:

- MSW-33 - report on nursing and residential care facilities. Data are collected on an annual basis. Data as at 31st December.

From 2014 to 2018:

Ministry of Health:

- MZ-11 - report on activity and workers in outpatient healthcare. Data as at 31st December.

- MZ-29 - report on activity of general hospital. Data as at 31st December.

Ministry of Interior and Administration:

- MSW-33 - report on nursing and residential care facilities. Data are collected on an annual basis. Data as at 31st December.

Since 2019:

Ministry of Health:

- MZ-11 - report on activity and workers in outpatient healthcare. Data as at 31st December.

- MZ-29 - report on activity of general hospital. Data as at 31st December.

Ministry of Interior and Administration:

- MSWiA-32 - report on the outpatient activities of independent public healthcare units. Data as at 31st December.

- MSWiA-43 - report on activities of general hospital and specialised hospital. Data as at 31st December.

Break in time series:

- 2014: change in data source as described above.

- 2019: change in data source as described above.

Portugal

Source of data:

- For all sectors (inpatient and outpatient facilities) of public hospitals in the mainland: **Ministry of Health** - Survey of High-tech Facilities.

Coverage:

- Data include the total installed equipment.

- Since 2011, data are only available for PET scanners in hospitals.

Slovak Republic

Source of data: **National Health Information Center.**

Reference period: 31st December.

Coverage: Medical technologies available regardless of frequency of use.

Type of healthcare facilities:

- HP.1 (hospital) - Institutional care including out-patient units included in general hospital, specialised hospital and sanatorium.

- HP.3 (ambulatory sector) - Out-patient healthcare included in general out-patient care unit, specialised out-patient care unit, emergency out-patient unit, facility providing day care, residential healthcare unit, healthcare centre, nursing care service, facility for common.

Slovenia

Source of data: **Slovenian Radiation Protection Administration**, registry of radiation sources in medicine and veterinary medicine.

Reference period: 31st December.

Coverage: Refers to all institutions in Slovenia.

- Number of Positron Emission Tomography scanner units (PET units): Gamma camera that enables a limited PET diagnosis.

Spain

Source of data:

- Up to 2009: **Ministry of Health** from **National Catalogue of Hospitals** (several issues).

- Since 2010: **Ministry of Health** from **Specialised Care Information System** (Sistema de Información de Atención Especializada - SIAE).

<http://www.sanidad.gob.es/estadEstudios/estadisticas/estHospiInternado/inforAnual/homeESCRI.htm>.

Reference period: 31st December.

Coverage:

- Until 2009, data relate only to devices available in hospitals; they do not include equipment in other healthcare facilities.

- Since 2010, data are available for equipment in hospitals and ambulatory sector.

Break in time series: 2010.

- Change in data source.
- Information about medical technology and diagnostic activity for centers HP.3 included since 2010.

Sweden

Source of data:

- **Swedish Association of Local Authorities and Regions** (earlier Federation of Swedish County Councils). Statistics collected mainly from healthcare Regions and The Swedish Radiation Safety Authority.

Reference period:

- 2015 December.
- 2016 December.
- 2017 December.
- 2018 December.
- 2019 December.

Coverage:

- Most of the healthcare givers from local regions are included. Some non-radiation equipment owned by private healthcare providers may be excluded.
- Two regions have not reported data for 2022; for these two regions imputation have been done using their data from 2021.

Switzerland

Source of data:

- HP.1+HP.3 together: **Federal Office of Public Health (FOPH)**, Bern, Division of Radiological Protection, full administrative data.
- HP.1: **Federal Statistical Office (FSO)**, Neuchâtel, Hospitals statistics; yearly census.

Reference period: Data as of December 31.

Türkiye

Source of data: **General Directorate for Health Services, Ministry of Health.**

Reference period: It is the number of PET scanners belonging to the institutions serving during the year. If the institution closed during the year, the data belongs to the date of closing. If not, the data dated 31 December is used.

Coverage:

- Data cover the number of devices in the MoH, university hospitals, private and other sector (other public establishments, local administrations and since 2012 MoND-affiliated facilities) in addition to those used by outsourcing in Türkiye.
- The strong increase in 2012 is mainly due to improvements in data reporting and not to a real increase in the capacity.

United Kingdom

Source of data:

- **'A framework for the development of Positron Emission Tomography Services in England'** (www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4121029).
- **Royal College of Radiologists** (<http://www.rcr.ac.uk/Publications.aspx?pageid=310&PublicationID=214>).
- 2019 onwards: **NHS Improvement Annual Census.**

Coverage:

- England NHS HP.1.
- 2006-2018: no England data available so a UK level estimate not created.
- 2019 onwards England only at HP.1 hospitals.
- No data has been available from sources in Northern Ireland, Scotland and Wales in recent years.

Estimation method:

- 2019 onwards England only census is adjusted (grossed up) to represent a UK value based upon a pro-rate population using the official Mid Year Population Estimates of UK Nations and the UK as a whole.

Break in time series:

- 2019 onwards data represent a break in any previous time series. From 2019, data is available for hospitals (HP.1) only.

United States

Source of data: **IMV Medical Information Division: Benchmark Reports**, PET units, selected years: 2020, 2019, 2018, 2015, 2014, 2012, 2011, and 2008. <http://www.imvinfo.com>.

Coverage: Nationwide. IMV's PET reports utilize a survey methodology to query hospital and non-hospital sites in the United States performing PET procedures using fixed PET or PET/CT scanners or using mobile PET or PET/CT services. The survey results are projected to the universe of identified sites performing PET procedures. Candidate PET sites are identified using proprietary IMV databases, supplemented by the American Hospital Association's AHA guide (The AHA Guide to the Health Care Field), and site lists identified through secondary research.

Deviation from the definition: Data match OECD definition.

- Hospital based - Represent fixed PET and PET&CT scanners units.

- Ambulatory - U.S. ambulatory sector data provides the estimated number of units in non-hospital sites which include: 1) imaging centres owned/co-owned by a hospital or healthcare systems, and 2) freestanding (i.e. independent) imaging centres not owned by hospitals or healthcare systems, and 3) estimates for PET and PET/CT scanners in mobile vans with serve hospital and non-hospital sites. Mobile units were estimated assuming that the mobile vans are scheduled with no downtime between sites.

- A source of error in the sample is the possible omission of sites from the universe of all sites, which have thus far still escaped identification, particularly non-hospital sites.

Estimation method: Further information on the estimation method for the selected IMV Benchmark Reports can be found at <http://www.imvinfo.com>.

Break in time series: No breaks in time series.

NON-OECD ECONOMIES

Bulgaria

Source of data: **National Centre for Public Health and Analyses at the Ministry of Health.**

Reference period: 31st of December.

Coverage: The study is with annual periodicity. All types of health establishments except hospices are included.

Croatia

Source of data: **Croatian Institute of Public Health**, Medical Equipment Database.

Reference period: Status on December 31st.

Coverage: Data includes PET units in all public and private hospitals and other healthcare providers in Croatia, except prison hospital.

Romania

Source of data: **National Institute of Statistics**, the activity of the sanitary and healthcare network— annual survey performed by NIS.

Reference period: data as of 31st December.

Coverage: For the period 2005-2006 the data covers all hospitals from public sector, starting with 2007 data refers to hospitals and ambulatory care units of public and private sector. Data collection for 2005 and 2006 does not cover ambulatory care sector (HP3).

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<http://www.oecd.org/health/health-data.htm>