

## 2. HEALTH

Data on the state of health of the population and on activities of the health service providers are received from the National Health Information System (hereinafter only referred to as the NHIS), which not only includes individual registers such as the National Register of Hospitalised Patients, but also data from the Programme of Statistical Surveys collected by means of individual statistical reports (questionnaires) from health service providers, for example, on the number of health care personnel (Table 2–16). The NHIS is defined in the Section 70 paragraph 1 of the Act No 372/2011 Sb, on Health Services and Conditions of Their Provision (Act on Health Services). The data upload to the System is provided by the Institute of Health Information and Statistics of the Czech Republic (hereinafter only referred to as the IHIS CR), which is the NHIS's administrator authorised by the Ministry of Health.

The Czech Statistical Office in cooperation with the Czech Social Security Administration (CSSA) ensures data on new reported cases of incapacity for work due to disease or injury (Tables 2–28 and 2–31). Data on the number of fatal occupational injuries (Table 2–31) come from the State Labour Inspection Office (SLIO). Data on the number of terminated cases of incapacity for work (Tables 2–32 and 2–34) come from the CSSA.

Information on health care expenditure (according to the System of Health Accounts – Tables 2–12 through 2–15) is derived from data of the Ministry of Finance, the Ministry of Labour and Social Affairs, health insurance companies, and data sources of the CZSO.

The Chapter uses the breakdown of diseases and related health problems according to diagnoses and chapters of the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10).

Besides the aforementioned sources, this Chapter uses **structural wage statistics**, namely in case of data on the average gross monthly wage of medical doctors and nurses and midwives (Tables 2–24 through 2–27). Data on students of and graduates from health fields of education (Tables 2–19 through 2–23) at universities in Czechia were obtained from data sources of the Ministry of Education, Youth, and Sports, namely from the system of the **Union Information from Students' Registers** (the SIMS database).

Data on international comparisons come from the database of Eurostat. In some cases, data on international comparisons may slightly differ, due to methodological reasons, from data presented in tables solely for the Czech Republic.

### **Health care personnel (Table 2–16)**

The data source is the Annual questionnaire on employers, the registered number of employees, and contractual workers E (MZ) 4-01 and questionnaires (reports) on components of salaries and wages and on personnel and operating equipment of the health service provider E (MZ) 2-01 and 3-01. Moreover, data on general practitioners, general practitioners for children and adolescents (paediatricians), and gynaecologists from the National Register of Reimbursed Health Services (Národní registr hrazených zdravotních služeb) were added.

Data provided in the Table 2–1 do not provide the actual number of health care personnel, it is rather a number of contracts of employment as at 31 December of the reference year. Primarily, the number of physicians also includes those performing that activity as a natural person (the own-account workers (the self-employed)) or as a legal person (e.g. a limited liability company). Since one physician, nurse, etc. may have multiple contracts of employment in different establishments concurrently, these numbers are higher than the numbers of health care personnel published by the Institute of Health Information and Statistics of the CR by means of a full-time equivalent per calendar year.

### **In-patient care in acute care hospitals (Tables 2–1 through 2–2)**

The data source is the National Register of Hospitalised Patients (NRHOSP).

Providers of **acute in-patient care** are as follows: university (teaching) hospitals, other hospitals providing acute care, specialised hospitals, and some mental health hospitals.

**Cases of hospitalisation** refer to the number of cases of hospitalisation in acute care hospitals. One case of hospitalisation shall mean every terminated hospitalisation at one department of acute in-patient care

either it has been terminated by a release or decease of a patient or the patient has been relocated to other department of the hospital or to other health establishment.

The **average time of treatment** shall mean the average time of treatment of a hospitalisation in days. It is calculated as an average number of days of treatment per one case of hospitalised patients.

The **average age of hospitalised patients** is the arithmetic mean of the age of all hospitalised patients during the calendar year for a given diagnosis (a group of diseases defined according to the ICD-10 classification).

Note: Year-on-year comparisons of measured data for the year 2020 (Tables 2–5 and graphs 2–3 and 2–5) are, besides the COVID-19 disease, also influenced by reclassification of the Bohnice mental institution to acute care hospitals.

## **Outpatient care (Tables 2–6 through 2–8)**

The source of information is the National Register of Reimbursed Health Services (Národní registr hrazených zdravotních služeb – NRHZS), which collects data reported to health insurance companies by all health care providers. The reporting units are all health insurance companies in the Czech Republic, which reimburse health care services provided to their policy holders (sickness-insured persons) from resources of the public health insurance system.

**Visits to (contacts with) outpatient care establishments** – a visit (contact) is a set of all acts made when treating a natural person in an outpatient care establishment during a single patient's visit. Also a contact with a patient in order to make administrative work (to write out a medical prescription, to confirm a certificate, etc.) is considered to be a visit (contact). Acts are performed by a physician/practitioner or by a nurse according to a physician's instructions. Also consultations over the phone, the number of which significantly increased in 2020 due to COVID-19 disease, are included in the number of contacts.

**Patients of outpatient care establishments** shall mean the number of persons who for a given group of diagnoses received, at least once in the reference year, in-patient health care reimbursed by a health insurance company. The total number of patients in in-patient care establishments is not a sum for individual groups of diseases (chapters of the ICD-10), because one patient may visit a physician due to multiple reasons during a year.

**Diabetics under treatment** – it applies to patients treated by drugs used in diabetes (ATC subgroup/code A10) for type 1 and 2 diabetes mellitus regardless of whether they are treated at the diabetology (including outpatient parts of hospitals) or in a surgery of a general practitioner for adults.

**Numbers of notified cases of tuberculosis (TB)** involve new notified cases including relapses in the reference year and encompass pulmonary tuberculosis, which makes up almost 90% of all cases, and tuberculosis of other organs. The TB Register is the data source.

## **Incapacity for work due to disease or injury**

### **New notified cases (Tables 2–28 and 2–31)**

Data for years before 2012 are based on the processing of a statistical questionnaire of the CZSO. The questionnaire (report) had to be filled in by all businesses (economic entities) or their subordinate organisational units, which independently fulfilled duties concerning sickness insurance. The processing also included total figures submitted by the District Administrations of Social Security for entities that did not settle health insurance claims by themselves.

Since 2012, the CZSO has obtained the data by processing of data from an administrative data source of the Information System of the CSSA. The Information System of the CSSA registers cases of temporary incapacity for work in the Czech Republic, which were reported by a physician (or a dentist) electronically by means of the application called in Czech "eNeschopenka" (before 2020, they completed a printed form called "Decision on the temporary incapacity for work"). The statistics of temporary incapacity for work captures all diseases and injuries, which caused at least one-day long incapacity for work of the sickness-insured persons. Administrative data in the Information System of the CSSA are reported as data for all employees of legal and natural persons and separately for the own-account workers (the self-employed). Data of the CSSA do not include members of the Police of the CR, the Fire and Rescue Service of the CR, the Customs Administration of the CR, the Prison Service of the CR, the Inspectorate General of the Security Forces of the CR, the Security Information Service, the Office for Foreign Relations and Information, professional soldiers, persons serving a sentence of imprisonment (convicts) who work while serving a sentence of imprisonment,

and persons accused that are working while in custody (Section 5(a) points 2 and 14 of the Act No 187/2006 Sb). Data since 2012 are not fully comparable with data for the previous years.

**New notified cases of incapacity for work** are registered based on the reported beginning of a sick leave (incapacity for work) of the sickness-insured persons. The number of cases of incapacity for work due to disease include, besides diseases, quarantines, too. Namely, it applies to the quarantine of a person that is eligible for a sickness insurance benefit, submits an application and the application is acknowledged by the attending physician or by a public health authority.

The **number of days of incapacity for work** is the sum of calendar days, during which the sickness-insured employees were incapacitated for work (based on reports on the beginning and termination of incapacity for work).

The **average duration of 1 case of incapacity for work** expresses how many calendar days of the incapacity for work there are on average per one new notified case of the incapacity for work.

The **average daily number of persons temporarily incapacitated for work due to disease or injury** is calculated as a share of calendar days of the temporary incapacity for work in the number of calendar days in the reference period. The indicator shows the number of the sickness insured who were on average daily absent at work due to incapacity for work in the reference period (year).

The **average percentage of temporary incapacity for work** – the indicator shows how many of 100 sickness-insured persons is on average incapacitated for work due to disease or injury every day. It takes into account both the total number of cases of incapacity for work (how often people take a sick-leave) and the average duration of one case of incapacity for work (how long they remain on a sick-leave).

**New notified cases of temporary incapacity for work due to occupational injury** are registered based on notifications on start of incapacity for work of the sickness-insured persons. **Occupational injuries** are injuries that occurred to employees when they were fulfilling their work assignments or in direct connection with them.

A **fatal occupational injury** is such health damage that occurred to employees while fulfilling their work assignments or in direct connection with the fulfilment of these assignments leading to death of the suffering employee within one year at the latest. The State Labour Inspection Office is the source of data.

**Note on the cartograms 2–3 and 2–4:** Breakdown by Region and District is based on a piece of data on the registered office of a unit, which keeps records of wages for the employer of a person who is incapacitated for work. In the town of Jeseník, there is an accounting department of foster care for professional foster parents in the CR. Professional foster parents usually do not take a sick leave, because even during a sick leave (incapacity for work) they have to take care of their foster child. However, they are included in the denominator of the indicator of the average percentage of incapacity for work within the number of the sickness-insured in the District.

#### **Terminated cases (Tables 2–32 and 2–34)**

The Czech Social Security Administration also keeps a record of, processes, and publishes data on terminated cases of incapacity for work for individual quarters, see <https://www.csz.cz/web/cz/nemocenska-statistika> (Czech only). Differences in the numbers of new notified and terminated cases of temporary incapacity for work are due to a different methodology for data collection.

The CSSA in its statistics offers other breakdown of published data than the CZSO, namely by age of the temporarily incapacitated for work and by diagnosis that caused the incapacity for work.

#### **Expenditure of health insurance companies (Tables 2–12 through 2–15)**

It applies to expenditure on health care guaranteed by the Act No 48/1997 Sb, on the Public Health Insurance and amendments to certain related acts as subsequently amended. The main source of data on expenditure of health insurance companies are data on health care reported by health establishments and recognised by health insurance companies.

##### **Expenditure of health insurance companies per sickness-insured person (policy holder) by sex and age group**

The average is calculated as a weighted arithmetic mean of costs where the numbers of sickness-insured persons in respective age groups are taken as the weights.

## **Wages of health professionals (Tables 2–24 through 2–27)**

Data on **wages** of medical doctors (Tables 2-24 and 2-25) and nurses and midwives (Tables 2-26 and 2-27) come from **structural employee wage statistics**. The structural wage statistics is generated by merging of data from the sample survey of the **Information System on Average Earnings** of the Ministry of Labour and Social Affairs, which covers the wage sphere, and of the administrative data source of the **Salary Information System of the Ministry of Finance**, which exhaustively covers the salary sphere. Within the structural wage statistics, wages of individual employees are measured directly (not total volumes on the level of businesses or organisations obtained from statistical reports (questionnaires) from businesses for the CZSO), which serve to detailed analyses of the labour market and its development within individual occupations by sex, age, education, the salary sphere versus the wage sphere, or a Region, in which they work. Data provided in these tables are also different due to the methodology from the data on remuneration of health professionals published by the Institute of Health Information and Statistics of the CR, which come from their statistical questionnaires (reports).

The **wage sphere** includes all private health establishments including regional and municipal hospitals (joint stock companies).

The **salary sphere** includes health establishments directly controlled by the Ministry of Health (e.g. university (teaching) hospitals and specialised therapeutic institutions / medical institutes) or semi-budgetary organisations of Regions.

The **average gross monthly wage** – the following are included in the calculation: basic wages and salaries, payments additional to wage or salary, bonuses, compensation for wages and salaries, bonuses for standby duty, and other wage or salary components charged to be paid to employees in a given period. The wages do not include compensation of wages or salaries for temporary incapacity for work and quarantine paid by the employer. They are gross wages, i.e. before premiums for public health insurance and social security, income tax advances of natural persons, and other statutory deductions or deductions agreed with the employee. It is the arithmetic mean.

The **median gross monthly wage** – when we arrange wages of all employees from the highest wage down to the lowest one, then the employee who is right in the middle with his/her wage takes the median wage.

The **Classification of Occupations (CZ-ISCO)** was used to define selected groups of health professionals. The following two main categories of employees in the health sector were selected by means of the classification:

**Medical doctors** except for dentists (subgroup 221);

**Nursing and midwifery professionals** and **Nursing and midwifery associate professionals** (subgroup 222+322);

**Nurses** (subgroups 2221 nursing professionals + 3221 nursing associate professionals) and **midwives** (subgroups 2222 midwifery professionals + 3222 midwifery associate professionals) are further broken down, according to the CZ-ISCO classification, to those with a specialism or without a specialism. The difference between nurses and midwives with a specialism and the nurses and midwives without a specialism should be determined according to the character of work they perform. The qualification in a specialism is confirmed by a certificate in the relevant field, which a nurse obtains after she passes a medical certification examination before the medical certification committee. Nurses and midwives **with a specialism** include, for example, ward sisters (charge nurses), nurses and midwives for intensive care and operating theatre (operating room) nurses, and further e.g. paediatric nurses and nurses for internal medicine and surgical fields. **Sisters without a specialism** include nurses of general practitioners and dentists and other outpatient specialists. Besides those categories of nurses, also the following work in the health sector: hospital matrons / principal nursing officers (head nurses / nurses in charge) (ISCO 13424) and medical assistants (ISCO 3256), who are not part of the aforementioned nurses / nursing and midwifery professionals.

The following occupations were selected according to the CZ-ISCO classification to be included in other selected health professions in the Table 2–27:

**Pharmacists** (subgroup 2262);

**Medical and pharmaceutical technicians** (subgroup 321);

**Physiotherapy technicians and assistants** (subgroup 3255);

**Medical assistants** (subgroup 3256);

**Ambulance workers** (subgroup 3258).

## **Students of and graduates from health fields of education at universities (Tables 2–19 through 2–23)**

Data on students of and graduates from health (fields of education) were obtained from the system of the **Union Information from Students' Registers** (the SIMS database). The source SIMS database is continually completed and updated including retrospective corrections; the data presented in this publication refer to the database status as at 20 January 2021. Data for university students are always as at 31 December of a given year; data on graduates are for the whole calendar year. The SIMS database only contains data on public and private universities, i.e. it does not include data on two state universities (currently the Police Academy of the Czech Republic in Prague and the University of Defence, established by the Ministry of the Interior and by the Ministry of Defence, respectively). For details see methodological notes to Chapter 3 – Education of this publication.

Health studies are defined based on the Classification of Fields of Education (CZ-ISCED-F 2013), namely by means of a narrowly specified field of 091 Health, which encompasses the following fields of education defined in details:

Dental studies (0911);

Human medicine – hereinafter only referred to as medicine (0912), which mainly comprises preparation of physicians;

Nursing and midwifery (0913);

Medical diagnostic and treatment technology (0914);

Therapy and rehabilitation (0915);

Pharmacy (0916);

Traditional and complementary medicine and therapy (0917).

Numbers of students and graduates are given as headcount, i.e. each student is included in a particular piece of data only once, including students who study in more study programmes concurrently. The total numbers of students and graduates thus do not have to be equal to the sums of students of and graduates from respective types of study programmes.

Data source for **contraception** is the annual questionnaire on activities of health establishments for gynaecology. Data give the numbers of women using hormonal contraceptives or intra-uterine devices as at 31 December of a given year. The data given for the period before 2000 do not include data from health establishments of other bodies of central government; since 2000, the data have covered the whole health care system. Data for 2014 were adjusted according to the trend of the times series because the transition to a new electronic data collection system resulted in a lower response rate (71%) of the statistical questionnaire for 2014.

Data source for **congenital malformations** is the National Register of Congenital Malformations and since 2000 also the National Register of Newborns. Before 1997, solely congenital malformations as defined in the chapter XVII Congenital malformations, deformations and chromosomal abnormalities of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) were monitored. Since 1997, also congenital malformations not mentioned in the chapter XVII have been observed. The data given apply to live births in the reference year, in which a congenital malformation was diagnosed and notified within the first year of life.

## **COVID-19 disease by age group and sex in 2020 (tab. 2–11)**

Data come from the Information system on infectious diseases (in Czech abbreviated as ISIN), the processor of which is the National Institute of Public Health and the controller of which is the Ministry of Health.

**COVID-19 positive persons** – persons recorded in the Information system on infectious diseases (ISIN) as COVID-19 positive.

**Deaths with COVID-19 disease** – persons recorded in the Information system on infectious diseases (ISIN) who died in 2020 with COVID-19 disease.

**Cases of hospitalisation with COVID-19 disease** – persons recorded in the Information system on infectious diseases (ISIN) who were hospitalised in 2020 with COVID-19 disease.

The number of **deaths by cause of death** is based on processing of data on causes of death or on diseases, conditions, or prospective other medical or other characteristics related to a death, stated on the “Death certificate (Report on examination of the deceased person)”, before 2012 by means of filling the statistical Report on death. An underlying cause of death is a basis for statistical classification; the underlying cause of death is defined by the World Health Organization as (a) the disease or injury that initiated the train of events leading directly to death or (b) the circumstances of the accident or violence which produced the fatal injury. Causes of death have been coded (since 1994) according to the International Statistical Classification of Diseases and Related Health Problems in the wording of the 10th decennial revision (ICD-10) and its subsequent, in the Czech Republic adopted, updates. In 2020, COVID-19 disease was newly included in the classification of diseases; the U07 code from the chapter of Codes for special purposes was assigned to it.

**Age-specific mortality rates:** the number of deaths (deceased persons, females or males) at a given age per 1 000 mid-year population of the same age.

**Index of male excess mortality** (in the Graph 2-31) shows the male mortality rate to the female mortality rate ratio at a given age.

**Life expectancy at certain ages (at a given age):** the average number of years to be still lived by a person who is now at a given age while mortality conditions for individual ages in a given calendar year are maintained. It is a resulting indicator of so-called life tables.

**Further information, data, and analyses of the CZSO can be found on the websites mentioned below:**

Publications devoted to health: <https://www.czso.cz/csu/czso/public-health>

Statistical Yearbook of the Czech Republic: <https://www.czso.cz/csu/czso/25-health-xrt7z36d0v>

Regional yearbooks: <https://www.czso.cz/csu/czso/regional-yearbooks>