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| SDG Goal 3 | Good health and well-being |
| SDG Target 3.c | Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States |
| SDG Indicator 3.c.1 | Health worker density and distribution |
| Time series | Health workers with direct patient contact (practising concept) |

1. General information on the time series

- Date of national metadata: 23 May 2023
- National data: <http://sdg-indicators.de/3-c-1/>
- Definition: The time series measures the number of persons working in health services, expressed per 10,000 inhabitants (population as of 31 December of the reference year). The codes of the classification of occupations 2010 (KldB-2010) are comparable with the codes mentioned in the International Standard Classification of Occupations, the ISCO-08. According to the KldB-2010 the following codes are relevant for:
 - medical doctors: 81214, 81234, 81404, 81414, 81424, 81434, 81444, 81454, 81464, 81484, 81494, 81814
 - nursing and midwifery personnel: 81302, 81313, 81323, 81352, 81353, 81382, 81383, 81393, 82102, 82103, 82182, 82183
 - dentists: 81474, 81494
 - pharmacists: 81804, 81884
- Disaggregation: profession

2. Comparability with the UN metadata

- Date of UN metadata: December 2023
- UN metadata: <https://unstats.un.org/sdgs/metadata/files/Metadata-03-0c-01.pdf>
- The time series is compliant with the UN metadata. Traditionally, the time series has been estimated using two measurements: density of physicians, and density of nursing and midwifery personnel. In the context of the SDG agenda, the dataset has been expanded to physicians, nursing personnel, midwifery personnel, dentistry personnel and pharmaceutical personnel. The dataset is planned to progressively expand to cover all health cadres.

3. Data description

- The data on health workers by occupation is derived from the health personnel accounts of the Federal Statistical Office. The health personnel accounts is a secondary statistical calculation system that combines different data sources on employment in health services, such as administrative data, sample surveys or annual reports. About 30 statistics are included in the health personnel accounts, like the hospital statistics and the microcensus of the Federal Statistical Office as well as the employment statistics of the Federal Employment Agency and other statistics of various professional associations (e.g. German Medical Association, German Dental Association). Data gaps are closed by estimations and mathematical-statistical forecasting methods. In addition, consistency checks with results of the employment accounts (part of the National Accounts) are carried out. With reference year 2015 the updated classification of the occupations, the KldB-2010, was implemented. The existing data was calculated backwards until 2012 (only some occupations further back).

The data has been provided according to the “practising concept”, which comprises only health workers who work in direct contact with patients. The time series is disaggregated by occupations into:

- medical doctors (221, 2211 and 2212 of ISCO-08),
- nursing and midwifery personnel (2221, 2222, 3221 and 3222 of ISCO-08),
- dentists (2261 of ISCO-08), and
- pharmacists (2262 of ISCO-08).

The disaggregations are defined as the number of persons working in a specific sector according to the particular definition of the Joint Questionnaire between OECD, Eurostat and WHO-Europe on non-monetary health care statistics.

The population data comes from the intercensal population updates, the basis of which is the last census conducted in 2011. The population data is rolled forward using statistical results on natural population change (births, deaths) and migrations. For 2010, the population was calculated backwards using the 2011 census and migration, birth and death statistics.

4. Access to data source

- Health personnel: occupations in healthcare – GENESIS online 23621-0002:
<https://www-genesis.destatis.de/genesis//online?operation=table&code=23621-0002&bypass=true&language=en>
- Population: reference date – GENESIS online 12411-0006:
<https://www-genesis.destatis.de/genesis//online?operation=table&code=12411-0006&bypass=true&language=en>
- Population data based on Census 2011 – 1991 to 2011 (only available in German):
https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Bevoelkerungsstand/_inhalt.html

5. Metadata on source data

- Quality Report – Causes of Death Statistics (only available in German):
<https://www.destatis.de/DE/Methoden/Qualitaet/Qualitaetsberichte/Gesundheit/todesursachen.pdf>
- Quality Report – Intercensal population updates:
<https://www.destatis.de/EN/Methods/Quality/QualityReports/Population/einfuehrung.html>

6. Timeliness and frequency

- Timeliness: t + 12 months
- Frequency: Annual

7. Calculation method

- Unit of measurement: Per 10,000 inhabitants
- Calculation:

$$\text{Health workers}_i = \frac{\text{Health personnel by occupation } i [\text{number}]}{\text{Population}[\text{number}]} \cdot 10,000$$

$i \in \{\text{medical doctors; nursing and midwifery personnel; dentists; pharmacists}\}$