ROBERT KOCH INSTITUT

# Coronavirus Disease 2019
# (COVID-19)
# Daily Situation Report of the Robert Koch Institute

21/01/2021 - UPDATED STATUS FOR GERMANY

| Confirmed cases | | 7-day incidence (7-di) | | Vaccination monitoring | DIVI-Intensive care register |
|---|---|---|---|---|---|
| Total[1] | Active cases[2] | Total population | No. of districts with 7-di > 50/100,000 pop | No. of vaccinations reported in the last 48h[4] | Change to previous day for cases currently in ICU |
| +20,398 (2,088,400) | -1,000 [ca. 276,400] | 119 cases/ 100,000 pop | -1 [392/412] | +64,777 1st vaccination +32,164 2nd vaccination | -49 [4,787] |
| Recovered[3] | Deaths | 60-79 years / 80+ years | No. of districts with 7-di > 100/100,000 pop | Total no. of vaccinated with one/two vaccine dose/s and share of population[4] | Completed ICU treatment; thereof deceased [%] |
| +20,500 (ca. 1,762,200) | +1,013 (49,783) | 93 / 259 cases/ 100,000 pop | -12 [243/412] | N1: 1,324,901 (1.6%) N2: 77,602 | +769 28% |

*Numbers in () brackets show cumulative values, numbers in [] brackets show current values. Footnotes can be found in the Annex.*

*COVID-19 cases are notified to the local public health department in the respective districts, in accordance with the German Protection against Infection Act (IfSG). The data are further transmitted through the respective federal state health authority to the Robert Koch Institute (RKI). This situation report presents the uniformly recorded nationwide data on laboratory-confirmed COVID-19 cases transmitted to RKI.*

*– Changes since the last report are marked blue in the text –*

## Summary (as of 21/01/2021, 12:00 AM)

- Currently, the number of transmissions in the population in Germany is high. RKI now assesses the level of threat to the health of the general population as **very high**.
- Yesterday, 20,398 new laboratory-confirmed COVID-19 cases as well as 1,013 new deaths associated with COVID-19 were transmitted to the RKI in Germany. The national 7-day incidence is 119 cases per 100,000 population. In Brandenburg, Saxony, Saxony-Anhalt, and Thuringia it is markedly above the national incidence.
- Of 412 districts, 392 have a high 7-day COVID-19 incidence. 243 districts have an incidence of >100 cases/100,000 population and of these, 22 districts have an incidence of >250-500 cases/100,000 population.
- The 7-day incidence of people 60-79 years is currently 93 and of people ≥80 years 259 cases/100,000 population.
- The high nationwide number of cases is caused by increasingly diffuse transmission, with numerous clusters especially in households, occupational settings and nursing and long-term care homes.
- On 21/01/2021, 4,787 COVID-19 patients were in intensive care (-49 cases fewer than the day before). In the preceding 24 hours, +769 existing patients had been discharged (28% of whom had died) and +720 patients were newly admitted. The resulting number of cases under treatment was -49 more than the prior day.
- Since 26/12/2020 a total of 1,324,091 people in Germany have been vaccinated once (vaccination rate 1.6%) and 77,602 people twice against COVID-19 (http://www.rki.de/covid-19-impfquoten).
- In this situation report, the following additional information is given: information from additional RKI based surveillance systems for acute respiratory illness, data on emergency department utilization

Note: The report is a snapshot and is continuously updated.

# Epidemiological Situation in Germany

In accordance with the international standards of WHO[1] and ECDC[2], the RKI considers all laboratory confirmations of SARS-CoV-2 and confirms these via nucleic acid based (e.g. PCR) or direct pathogen detection, irrespective of the presence and severity of clinical symptoms, as COVID-19 cases. Thus, in the following report the term "COVID-19 cases" covers acute SARS-CoV-2 infections as well as cases of COVID-19 disease.

**General current assessment**

After a sharp rise in case numbers at the beginning of December, a decrease during the holidays and an increase in the first week of January the case numbers seem to decrease slightly; depending on the region.

The R-value is currently slightly below 1. Due to the very high number of infected persons in Germany, this means a high number of new infections per day.

Outbreaks are being reported from various districts throughout Germany, currently particularly in nursing and long-term care homes, occupational settings, and households. Additionally, in many districts, there is an increasingly diffuse spread of SARS-CoV-2 without traceable transmission chains.

Since patients in older age groups more often have more severe illness due to COVID-19, the number of serious cases and deaths remains on a high level. These can be avoided if all prevent the spread of the SARS-CoV-2 virus with the help of infection control measures.

It is therefore still necessary for the entire population to be committed to infection prevention and control, e.g. by consistently observing rules of distance and hygiene - also outdoors -, by ventilating indoor spaces and, where indicated, by wearing a community mask correctly. Crowds of people - especially indoors - should be avoided.

Several variants of SARS-CoV-2 are currently being detected worldwide, for which both their effect on the spread of SARS-CoV-2 and the effectiveness of vaccinations are being examined in detail. Since mid December there have been reports of the increasing spread of a new virus variant (B.1.1.7) in the United Kingdom. By now there is increasing clinical-diagnostic as well as epidemiological evidence of increased infectiousness of this variant. Currently there is no evidence that infections with variant B.1.1.7 lead to more serious diseases. At least for the mRNA vaccine Comirnaty by BioNTech/Pfizer, an effectiveness against B.1.1.7 could be shown in first studies.

Also in December 2020, an increased occurrence of a SARS-CoV-2 variant in South Africa was reported, which has displaced other variants. Therefore, an increased infectiousness is conceivable. The effectiveness of vaccines is currently being tested for this variant as well.

Both variants have already been detected in Germany. With increased sequencing and data acquisition in the German Electronic Sequence Data Hub (DESH - https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/DESH/DESH.html) the infection process is increasingly monitored by integrated molecular surveillance.

In Brandenburg, some health authorities experienced a backlog in data entry and thus in data transmission to the RKI. In some cases, this leads to large discrepancies between locally reported incidences and case numbers compared to those reported by the RKI.

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[1] *World Health Organization, https://www.who.int/publications/i/item/WHO-2019-nCoV-Surveillance_Case_Definition-2020.1*
[2] *European Centre for Disease Prevention and Control, https://www.ecdc.europa.eu/en/covid-19/surveillance/case-definition*

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## Geographical distribution of cases

Epidemiological analyses are based on validated cases notified electronically to the RKI in line with the Protection Against Infection Law (Data closure: 12:00 AM daily). Since January 2020, a total of 2,088,400 (+20,398) laboratory-confirmed cases of COVID-19 have been reported to and validated by the RKI (Table 1).

Table 1: Number and cumulative incidence (per 100,000 population) of laboratory-confirmed COVID-19 cases and deaths for each federal state electronically reported to RKI, Germany (21/01/2021, 12:00 AM). The number of new cases includes positive cases notified to the local health department at the same day, but also at previous days.

| Federal State | Cumulative cases | | | Last 7 days | | Cumulative deaths | |
|---|---|---|---|---|---|---|---|
| | Total number of cases | Number of new cases | Cases/ 100,000 pop. | Cases in the last 7 days | 7-day incidence/ 100,000 pop. | Number of deaths | Number of deaths/ 100,000 pop. |
| Baden-Wuerttemberg | 279,479 | 2,353 | 2,518 | 10,979 | 99 | 6,419 | 57.8 |
| Bavaria | 383,107 | 2,812 | 2,919 | 15,715 | 120 | 9,282 | 70.7 |
| Berlin | 114,606 | 731 | 3,123 | 4,245 | 116 | 1,957 | 53.3 |
| Brandenburg* | 60,825 | 1,340 | 2,412 | 5,126 | 203 | 1,805 | 71.6 |
| Bremen | 15,151 | 124 | 2,224 | 522 | 77 | 240 | 35.2 |
| Hamburg | 43,613 | 285 | 2,361 | 1,527 | 83 | 950 | 51.4 |
| Hesse | 162,321 | 1,583 | 2,581 | 7,499 | 119 | 4,257 | 67.7 |
| Mecklenburg-Western Pomerania | 17,553 | 383 | 1,092 | 1,824 | 113 | 340 | 21.1 |
| Lower Saxony | 132,095 | 1,628 | 1,653 | 7,216 | 90 | 2,829 | 35.4 |
| North Rhine-Westphalia | 460,709 | 3,854 | 2,567 | 19,851 | 111 | 9,635 | 53.7 |
| Rhineland-Palatinate | 87,040 | 916 | 2,126 | 4,144 | 101 | 2,187 | 53.4 |
| Saarland | 23,628 | 208 | 2,394 | 1,074 | 109 | 645 | 65.4 |
| Saxony | 170,784 | 1,841 | 4,194 | 7,572 | 186 | 5,433 | 133.4 |
| Saxony-Anhalt | 45,448 | 954 | 2,071 | 4,286 | 195 | 1,289 | 58.7 |
| Schleswig-Holstein | 32,297 | 455 | 1,112 | 2,565 | 88 | 707 | 24.3 |
| Thuringia | 59,744 | 931 | 2,800 | 4,801 | 225 | 1,808 | 84.7 |
| **Total** | **2,088,400** | **20,398** | **2,511** | **98,946** | **119** | **49,783** | **59.9** |

Quality checks and data cleaning by the health authorities and regional offices can lead to corrections to cases previously transmitted (e. g. detection of duplicate reports). This can occasionally lead to negative values for the number of new cases.
*In Brandenburg. some health authorities experienced a backlog in data entry and thus in data transmission to the RKI. In some cases, this leads to large discrepancies between locally reported incidences and case numbers compared to those reported by the RKI.

Note: The report is a snapshot and is continuously updated.

## Distribution of cases over time

The first COVID-19 cases in Germany were notified in January 2020. Figure 1 shows COVID-19 cases transmitted to RKI according to date of illness onset from 01/03/2020 onwards. Of these cases, the onset of symptoms is unknown for 1,123,364 cases (54 %) thus their date of reporting is provided in Figure 1.
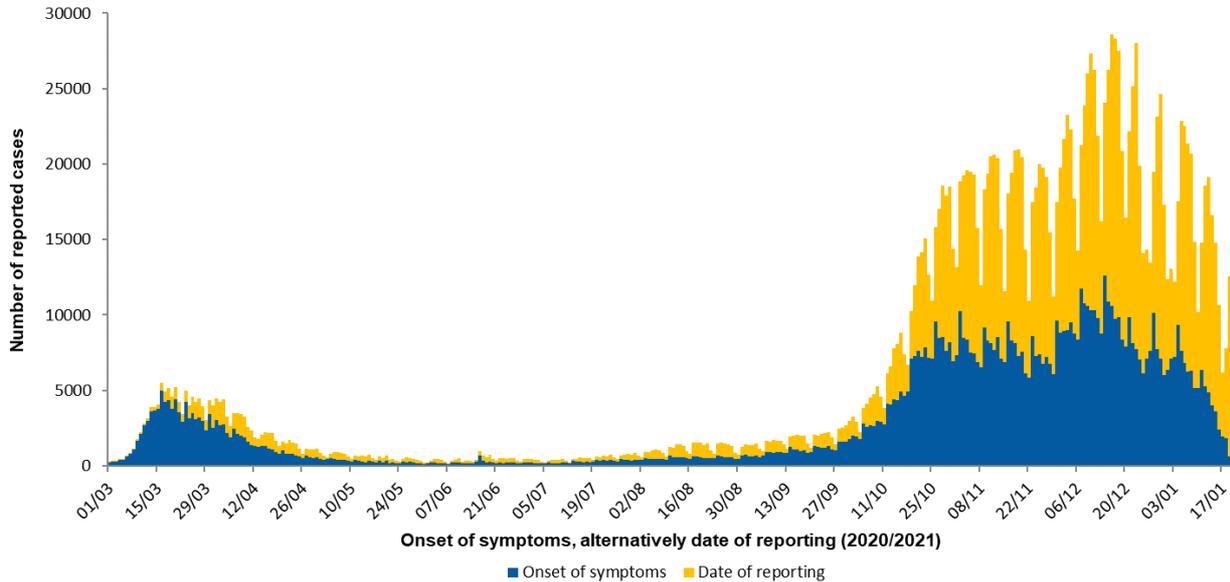


Figure 1: Number of COVID-19 cases in Germany electronically reported to the RKI by the date of symptoms onset or – if unknown – alternatively by date of reporting since 01/03/2020 (21/01/2021, 12:00 AM).

## Estimation of the reproduction number (R)

The reproduction number, R, is defined as the mean number of people infected by one infected person. The estimation of the R-value is based on the so-called nowcasting (Figure 2), a statistical procedure that shows the development of the number of cases after the onset of the disease and also forecasts it for the last few days. This forecast is subject to uncertainty, which is also reflected in the prediction intervals given for the R-value. After other case reports have been received at the RKI, the R-value is adjusted for the past days and, if necessary, corrected upwards or downwards. In recent weeks, values reported at the beginning of a week were typically corrected slightly upwards. They had thus slightly underestimated the real COVID-19 events in Germany, values estimated towards the end of a week were more stable. The currently estimated course of the R-value is shown in Figure 3.

| 4-day R-value | 7-day R-value |
|---|---|
| 0.84 | 0.93 |
| (95%-prediction interval: 0.73 – 0.94) | (95%-prediction interval: 0.87 – 0.99) |

Delays in reporting of case numbers at weekend days can lead to cyclical fluctuations of the 4-day R-value. The 7-day R-value is less affected because all week days are used to determine the value.

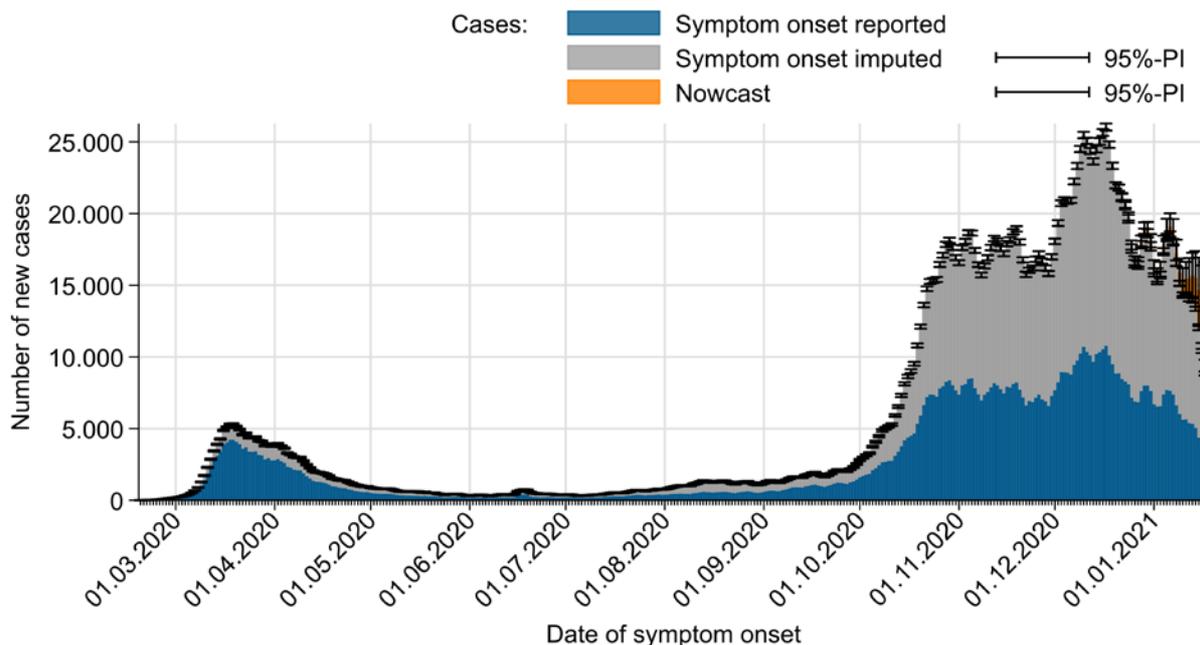Note: The report is a snapshot and is continuously updated.

Figure 2: Number of notified COVID-19 cases with known date of illness onset (dark blue), estimated date of illness onset for cases without reported date of onset (grey) and estimated number of not yet notified cases according to illness onset electronically reported to RKI (orange) (as of 21/01/2021, 12 AM, considering cases up to 17/01/2021).
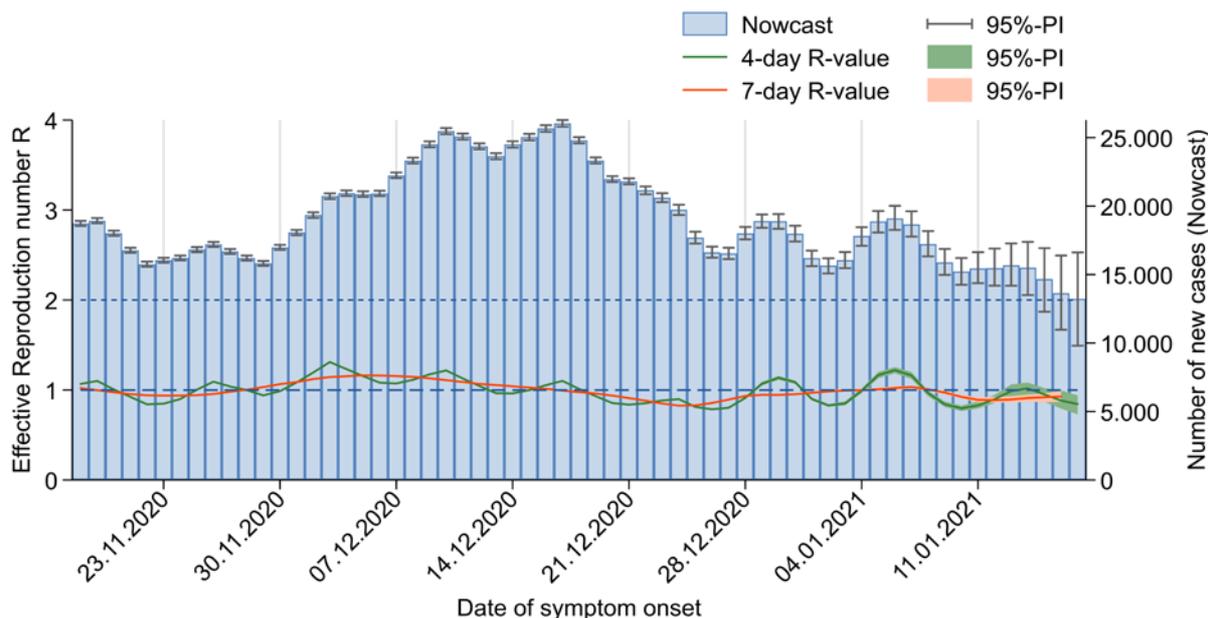


Figure 3: The estimated R-values (in green and orange) over the last 60 days, against the background of estimated number of COVID-19 cases according to illness onset (as of 21/01/2021, 12 AM, considering cases up to 17/01/2021).

The R-value is currently slightly below 1. Due to the very high number of infected persons in Germany, this means a high number of new infections per day.

Sample calculations as well as an excel sheet presenting both R-values with daily updates can be found under www.rki.de/covid-19-nowcasting. A detailed description of the methodology is available at https://ww.rki.de/DE/Content/Infekt/EpidBull/Archiv/2020/17/Art_02.html (Epid. Bull, 17 | 2020 from 23/04/2020).

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# DIVI intensive care register

The German Interdisciplinary Association for Intensive and Emergency Medicine (DIVI) has in collaboration with RKI established a registry to document the number of available intensive care beds as well as the number of COVID-19 cases treated in participating hospitals on a daily basis. Since 16/04/2020, all hospitals with intensive care beds are required to report (https://www.intensivregister.de/#/index).

As of 21/01/2021, a total of 1,281 hospitals reported to the DIVI registry. Overall, 27,071 intensive care beds were registered, of which 22,836 (84%) are occupied, and 4,235 (16%) are currently available. The number of COVID-19 cases treated in participating hospitals is shown in Table 2.

Table 2: COVID-19 patients requiring intensive care (ICU) recorded in the DIVI register (21/01/2021, 12:15 PM).

| | | Number of patients | Change to previous day* |
|---|---|---|---|
| **Currently** | Currently in ICU | 4,787 | -49 |
| | - thereof with invasive ventilation | 2,725 (57%) | -52 |
| | New admissions to ICU | | + 720 |
| **Total** | Discharged from ICU | 60,617 | + 769 |
| | - thereof deaths | 16,913 (28%) | + 218 (28%) |

*The interpretation of these numbers must consider the number of reporting hospitals and therefore the number of reported patients may change from day to day. On certain days, this can explain an occasionally important decrease or increase in the cumulative number of discharged patients or deaths compared with the day before.

# Information from additional RKI based surveillance systems for acute respiratory illnesses

GrippeWeb ("FluWeb") is a web interface at RKI for monitoring the activity of acute respiratory illness (ARI), utilizing information from the population. In week 2, 2021, the rate of ARI ("ARI rate") remained stable. The ARI rate has been below the level of the previous years since week 36, 2020. Further information can be found under https://grippeweb.rki.de/.

The Influenza Working Group (AGI) monitors ARI through a sentinel network of physicians in private practices. In week 2, 2021, the overall number of patients visits due to acute respiratory infections (ARI rate) decreased. The ARI rate was on a markedly lower level compared to previous years. Within the viral surveillance of the AGI, respiratory viruses were detected in 29 of 138 sentinel samples (21%) in week 2, 2021. Among those, SARS-CoV-2 was identified in 15 samples (11%), rhinovirus in 11 samples (8%), human seasonal coronavirus in two samples (1%) and parainfluenzavirus was found in one sample (1%). Since week 40, 2020, SARS-COV-2 has been found in 137 (9%) of 1,601 samples. Influenza virus or Respiratory Syncytial Virus have been detected none of the 1,608 samples tested since week 40, 2020. In previous seasons (since 1997/98), influenza virus has been detected in at least one sample by week 2. Further information can be found under https://influenza.rki.de/.

A third, ICD-10 code-based system monitors severe acute respiratory illness (SARI) in hospitalized patients (ICD-10 codes J09 to J22: primary diagnoses influenza, pneumonia or other acute infections of the lower respiratory tract). In week 1, 2021, the total number of SARI cases remained stable. The number of SARI cases aged 80 years and above remained on a very high level, comparable to the level at

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the peak of previous influenza seasons. The number of SARI cases in children aged 0 to 14 years has been below the usual level since week 40, 2020.

Since week 45, 2020, more than half of the reported SARI cases per week have been diagnosed with COVID-19 (ICD-10 code U07.1!) (Figure 4). In week 1, 2021, the proportion of COVID-19 infections decreased slightly to 65%. The proportion of COVID-19 infections among SARI by age groups can be found in Table 4. The proportions of COVID-19 cases in all age groups in the weeks 40 to 53, 2020 have been more than twice as high as in spring (weeks 12 to 20, 2020). In week 1, 2021, the proportion of COVID-19 cases was exceptionally high in the age groups above 14 years, comprising more than 60% of the SARI cases in this week. This proportion was highest in SARI cases aged between 15 to 34 years and 35 to 59 years at 75% and 73%, respectively. Within the 72 sentinel hospitals, there was one COVID-19 case among SARI patients below 15 years of age in week 1, 2021. Please note that due to data availability only patients with an ICD-10 Code for SARI as the main diagnosis and hospitalisation duration of up to one week were included in this analysis.
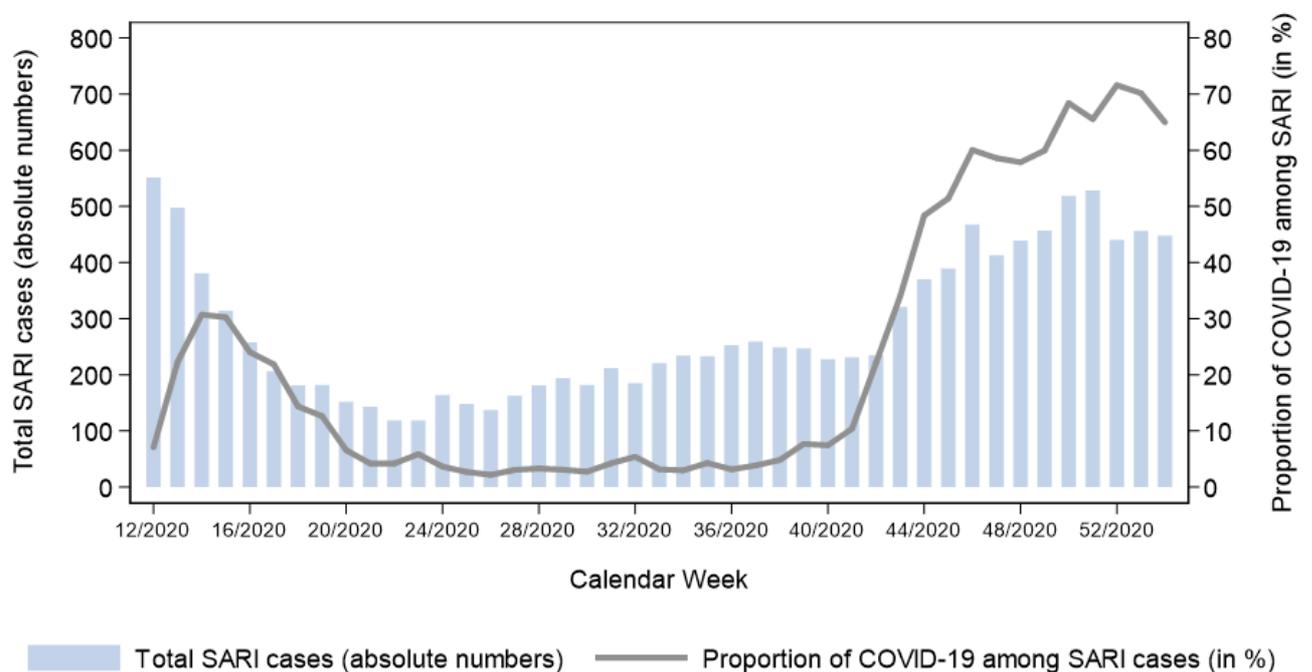


Figure 4: Weekly number of SARI cases (ICD-10 codes J09-J22) and proportion of cases with a diagnosis of COVID-19 (ICD-10 code U07.1!) among SARI cases with duration of hospitalization of up to one week and with date of admission in weeks 12, 2020, to 1, 2021, from 72 sentinel hospitals

Table 3: Total number of SARI cases (ICD-10 codes J09-J22) and proportion of cases with a diagnosis of COVID-19 (ICD-10 code U07.1!) among SARI cases by age groups for different time periods since week 12, 2020; only patients with duration of hospitalization of up to one week, data from 72 sentinel hospitals

| Age group | | week 12 - 20, 2020 | week 21 - 39, 2020 | week 40 - 53, 2020 | week 1, 2021 |
|---|---|---|---|---|---|
| **0 to 14 years** | SARI cases (total) | 322 | 869 | 481 | 17 |
| | Proportion of COVID-19 (%) | 0.3% | 0.2% | 3.3% | 5,9% |
| **15 to 34 years** | SARI cases (total) | 178 | 189 | 315 | 20 |
| | Proportion of COVID-19 (%) | 19% | 13% | 56% | 75% |
| **35 to 59 years** | SARI cases (total) | 534 | 510 | 1,173 | 84 |
| | Proportion of COVID-19 (%) | 31% | 13% | 67% | 73% |
| **60 years and older** | SARI cases (total) | 1,689 | 2,075 | 3,525 | 327 |
| | Proportion of COVID-19 (%) | 19% | 2.5% | 56% | 65% |
| **Overall** | SARI cases (total) | 2,723 | 3,643 | 5,494 | 448 |
| | Proportion of COVID-19 (%) | 19% | 4.0% | 54% | 65% |

# Data on emergency department utilization

In collaboration with the National Emergency Department Register AKTIN (https://www.aktin.org/en/), and with the ESEG project partners (https://www.rki.de/EN/Content/infections/epidemiology/ESEG/ESEG_node.html), the RKI analyses emergency department utilisation, and prepares weekly situation report: https://www.rki.de/EN/Content/Institute/DepartmentsUnits/InfDiseaseEpidem/Div32/sumo/sumo.html

Within the emergency department situation report of the 20 January 2021, data from 21 emergency departments have been included from 01 January 2019 up to and including 17 January 2021. In week 2-2021, 10,414 admissions were recorded; which was a +0.4% change compared to last week, and a -33.8% average change compared to the mean of the pre-pandemic year 2019 (see Figure 5).
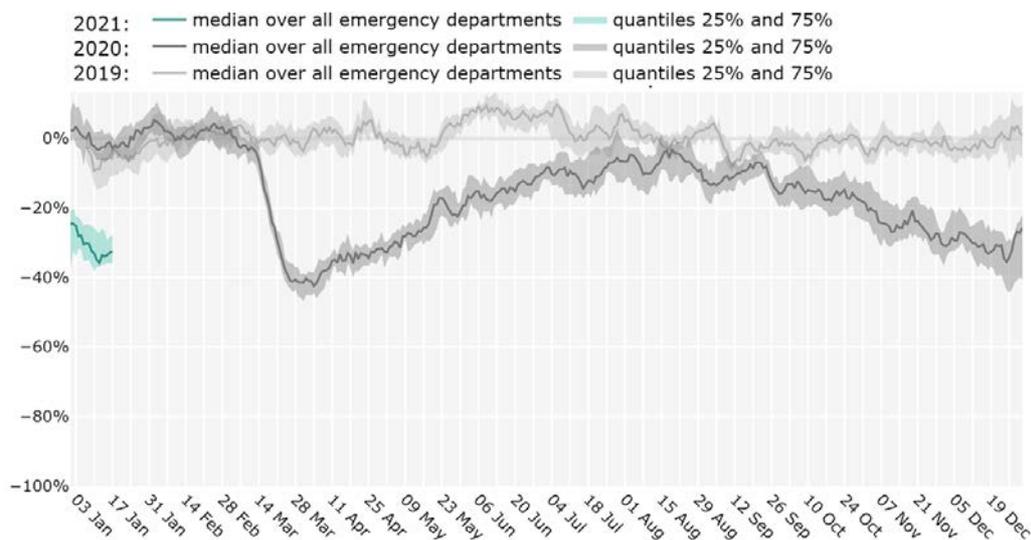


Figure 5: Relative deviation of admissions in each emergency department compared to its mean in 2019, from January 2019 to January 2021 (as of 20 January 2021), averaged over all emergency departments.

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# Risk Assessment by the RKI

In view of persistently high case numbers, the RKI currently assesses the threat to the health of the general population to be **very high**. The revised version highlights the increasingly diffuse SARS-CoV-2 transmission as well as the occurrence of outbreaks especially in households, occupational settings and nursing and senior care homes.

Therefore, more rigorous case finding and contact tracing as well as better protection of vulnerable groups is essential. Vulnerable persons can only be reliably protected if the number of new infections can be reduced substantially. On 12/01/2021, the risk assessment was updated with reference to the new SARS-CoV-2 variants. The current version can be found here:

https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Risikobewertung.html (*in German*)

# Measures taken in Germany

- Recommendations on COVID-19-vaccination (08.01.2020. *in German*) https://www.rki.de/DE/Content/Infekt/Impfen/ImpfungenAZ/COVID-19/Impfempfehlung-Zusfassung.html
- Further governmental resolutions regarding additional containment measures (Lockdown. 05/01/2021. *in German*) https://www.bundesregierung.de/breg-de/themen/coronavirus/mpk-beschluss-corona-1834364
- Vaccination started in Germany on the 26th of December 2020 http://www.rki.de/covid-19-impfquoten  (*in German*)
- Regulation to entry to Germany (13/01/2021. *in German*) https://www.bundesgesundheitsministerium.de/fileadmin/Dateien/3_Downloads/C/Coronavirus/Verordnungen/Corona-Einreiseverordnung_BAnz.pdf
- First Regulation Amending the Coronavirus Test Regulation (15/01/2021). in German) https://www.bundesgesundheitsministerium.de/fileadmin/Dateien/3_Downloads/C/Coronavirus/Verordnungen/1._AEV_TestVO_BAnz.pdf
- Information on the designation of international risk areas (17/01/2021) https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Risikogebiete_neu.html
- Third law on protection of the population in the event of an epidemic of national concern (18/11/2020. *in German*) https://www.bundesgesundheitsministerium.de/service/gesetze-und-verordnungen/guv-19-lp/drittes-bevoelkerungsschutzgesetz.html
- National Testing Strategy – who will be tested for SARS-CoV-2 in Germany (30/11/2020. *in German*) https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Teststrategie/Nat-Teststrat.html
- Important information and guidance on the novel coronavirus SARS-CoV-2 for returning travellers (08/11/2020) https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Transport/BMG_Merkblatt_Reisende_Tab.html
- Selected and regularly updated information on COVID-19 https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/COVID19.html
- The ministry of health has published a record of all measures implemented in Germany since 27/01/2020 *(in German)* https://www.bundesgesundheitsministerium.de/coronavirus/chronik-coronavirus.html
- Information from the Ministry of Health for travellers entering Germany: Frequently asked questions and answers *(in German)* https://www.bundesgesundheitsministerium.de/coronavirus-infos-reisende/faq-tests-einreisende.html

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- Corona-Warn-App
  https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/CWA/CWA.html
- Information on additional regulations at the regional level regarding control measures such as physical distancing or quarantine regulations for persons entering from other countries can be accessed here *(in German)*:
  https://www.bundesregierung.de/breg-de/themen/coronavirus/corona-bundeslaender-1745198
-
Data on current disease activity can be found on the RKI dashboard: https://corona.rki.de/

# Annex

[1] The difference to the previous day relates to data entry at RKI; due to delay in data transmission former cases may be included.

[2] Active cases were calculated from the number of transmitted cases minus deaths and the estimated number of recovered cases.

[3] The algorithm for estimation of recovered cases considers information about disease onset and hospitalization but not for late effects because such data were not recorded regularly.

[4] Data on COVID-19 vaccinations are only updated on weekdays. On Sundays, no updated figures are reported.

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