ROBERT KOCH INSTITUT

Coronavirus Disease 2019 (COVID-19)

Daily Situation Report of the Robert Koch Institute

03/01/2021 - 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 in last 24h	Change to previous day for cases currently in ICU
+10,315	-3,800	140		+2	+40,665	+36
(1,765,666)	[ca. 349,500]	Fälle/ 100.000 EW		[392/412]		[5,762]
Recovered[3]	Deaths	60-79 years	80+ years	No. of districts with 7-di > 100/100,000 pop	Total no. of vaccinated with one vaccine dose	Completed ICU treatment; thereof deceased [%]
+13,800	+312	115	287	-1	238,809	+429
(ca. 1,381,900)	(34,272)	Fälle/ 100.000 EW		[288/412]		42%

Numbers in () brackets show cumulative values, numbers in [] brackets show current values.

[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.*

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 03/01/2021, 12:00 AM)

- Currently, the number of transmissions in the population in Germany is high. RKI now judges the level of threat to the health of the general population as **very high**.
- Yesterday, 10,315 new laboratory-confirmed COVID-19 cases as well as 312 new deaths associated with COVID-19 were transmitted to the RKI in Germany. The national 7-day incidence is 140 cases per 100,000 population. In Saxony and Thuringia, it is markedly above the national incidence.
- All 412 districts have a high 7-day COVID-19 incidence. 288 districts have an incidence of >100 cases/100,000 population and of these, 41 districts have an incidence of >250-500 cases/100,000 population and 2 districts of >500 cases/100,000 population.
- The 7-day incidence of people 60-79 years is currently 115 and of people ≥80 years 287 cases/100,000 population.
- The high nationwide number of cases is caused by increasingly diffuse transmission, with numerous clusters especially in households and nursing and long-term care homes.
- On 03/01/2021 (12:15 PM) 5,762 COVID-19 patients were in intensive care. In the preceding 24 hours, 429 existing patients were discharged (42% of whom had died) and 465 patients were newly admitted. The resulting number of cases under treatment was +36 more than the prior day.
- On 12/19/2020, a new virus variant was reported in the UK. The ECDC published a Risk Assessment on 29/12/2020. To date, it is unknown how the new virus variant will affect the COVID-19 pandemic. So far, a few cases of this new variant have been transmitted to the RKI. Further cases may be expected.
- Since 26/12/2020 a total of 238,809 people in Germany have been vaccinated against COVID-19 (http://www.rki.de/covid-19-impfquoten).
- Testing and notification activities may be lower during the festive season, resulting in a putatively incomplete picture of the epidemiological situation in Germany.

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 temporary stabilisation of case numbers at a higher level in late August and early September, a steep increase in case numbers ensued in October in all federal states. Due to measures implemented at the beginning of November the rise in cases could be stopped, albeit no considerable reduction in case numbers ensued. Since the beginning of December case numbers have been sharply increasing again.

The R-value is currently around 1. Nevertheless, the daily number of new cases remains high due to the large number of current cases. Furthermore, during the festive season the detection, notification and transmission of COVID-19-cases is delayed, thus the R-value may be underestimated.

Outbreaks are being reported from various districts throughout Germany in various settings, particularly in households and increasingly in nursing and long-term care homes, but also in occupational settings. 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.

On 12/19/2020, a new virus variant (B.1.1.7) was reported in the UK. The ECDC has published a Risk Assessment on 29/12/2020. To date, it is unknown how the new virus variant will affect the COVID-19 pandemic. Cases with the new variant have already been detected in numerous countries around the world. It is expected that infections with the new variant will be detected in further countries. So far, a few cases of this new variant have been transmitted to the RKI. Further cases may be expected. WHO has also reported another new virus variant detected in South Africa possibly associated with higher transmissibility and more severe disease.

COVID-19 cases reported during the festive season and the first few days of the new year must be interpreted with caution as there may be fewer medical consultations, less sampling and diagnostic testing during that time. This may lead to fewer notified cases at the local level and hence to fewer transmitted COVID-19 cases to the RKI. Furthermore, not all local and state health authorities transmit data to the RKI on all days.

[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*

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 1,765,666 (+10.315) 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 (03/01/2021, 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.

	Cumulative cases			Last 7 days		Cumulative deaths	
Federal State	Total number of cases	Number of new cases*	Cases/ 100,000 pop.	Cases in the last 7 days	7-day incidence per 100,000 pop.	Number of deaths	Number of deaths/ 100,000 pop.
Baden-Wuerttemberg	243,914	1,170	2,197	14,266	129	4,925	44.4
Bavaria	332,619	1,764	2,534	20,621	157	6,868	52.3
Berlin	98,097	460	2,673	4,443	121	1,285	35.0
Brandenburg	42,713	329	1,694	4,462	177	993	39.4
Bremen	13,713	10	2,013	556	82	202	29.7
Hamburg	37,535	242	2,032	2,180	118	661	35.8
Hesse	139,965	597	2,226	8,437	134	2,962	47.1
Mecklenburg-Western Pomerania	12,454	92	774	1,459	91	177	11.0
Lower Saxony	110,271	461	1,379	7,114	89	2,028	25.4
North Rhine-Westphalia	400,594	1,916	2,232	22,030	123	6,751	37.6
Rhineland-Palatinate	73,915	370	1,805	4,822	118	1,466	35.8
Saarland	20,141	30	2,041	895	91	441	44.7
Saxony	138,332	1,301	3,397	13,425	330	3,353	82.3
Saxony-Anhalt	31,497	789	1,435	3,826	174	687	31.3
Schleswig-Holstein	25,540	293	880	2,248	77	443	15.3
Thuringia	44,366	491	2,080	5,310	249	1,030	48.3
Total	**1,765,666**	**10,315**	**2,123**	**116,094**	**140**	**34,272**	**41.2**

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.
*During the festive season COVID-19 cases are detected, notified and transmitted with delays.

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 987,429 cases (56%) 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 (03/01/2021, 12:00 AM).
*During the festive season COVID-19 cases are detected, notified and transmitted with delays.

Occupation, accommodation or care in facilities

In accordance with the Protection Against Infection Act (Infektionsschutzgesetz, IfSG), the RKI receives information on occupation, accommodation or care in a facility relevant for infection control for reported COVID-19 cases.

Since information on occupation, accommodation or care in these facilities is missing in many cases, the numbers of cases working, accommodated or cared for in these facilities reported here should be considered minimum values. Among the COVID-19 cases reported from the above-mentioned facilities, the proportion of cases that actually acquired their infection in these facilities is unknown.

Table 2: Notified COVID-19-cases according to possible occupation, accommodation or care in facilities relevant for transmission of infectious diseases according to the Protection Against Infection Act (IfSG), reported to RKI (n=229,002 cases; 03/01/2021, 12:00 AM)*.

Facility according to		Total	≥60 years, number / prop.	Hospitalised	Deaths	Recovered (estimate)
§ 23 IfSG (e.g. hospitals, outpatient clinics and practices, dialysis clinics or outpatient nursing services)	Cared for / accommodated in facility	14,291	10,228 / 72%	9,061	1,981	9,900
	Occupation in facility	45,992	3,556 / 8%	1,441	44	41,400
§ 33 IfSG (e.g. day care facilities, kindergartens, facilities for after school care, schools or other educational facilities, children's homes, holiday camps)	Cared for / accommodated in facility*	44,929	n.a.	490	3	42,900
	Occupation in facility	22,378	1,750 / 8%	489	17	21,000
§ 36 IfSG (e.g. facilities for the care of older, disabled or other persons in need of care, homeless shelters, community facilities for asylum-seekers, prisons)	Cared for / accommodated in facility	67,718	52,076 / 77%	10,653	9,583	46,000
	Occupation in facility	33,694	3,940 / 12%	911	100	29,700

*for care according to § 33 IfSG only cases under 18 years of age are considered, as other information may be assumed to be incorrect.
Due to changes in the variables, no notifications according to §42 are listed here.
*During the festive season COVID-19 cases are detected, notified and transmitted with delays.

The number of COVID-19 cases was highest among persons cared for or employed in care facilities according to § 36 IfSG, among persons employed in medical facilities according to § 23 IfSG and among

persons cared for in educational facilities according to § 33 IfSG (Table 2). The number of deaths was particularly high among persons cared for in facilities according to §§ 23 and 36. The high number of cases among people cared for or working in various care facilities (§ 36 IfSG) is consistent with numerous reported outbreaks, especially in nursing homes.

Outbreaks

An increased incidence of >25 cases in 7 days/100,000 population was reported for every district (412/412). There are 41 districts with incidences of >250 to 500 cases/100,000 and 2 districts with an incidence of >500 cases/100,000 in the last 7 days. The dashboard (https://corona.rki.de) shows all affected districts.

In most districts, the transmission is diffuse, with several cases clustering in households. Many outbreaks continue to contribute to the elevated incidence particularly in households and retirement and nursing homes, but also in various occupational settings, hospitals and facilities for asylum seekers and refugees, and in the context of religious gatherings.

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
1.11	0.91
(95%-prediction interval: 0.93 – 1.33)	(95%-prediction interval: 0.82 – 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. **During the festive season COVID-19 cases are detected, notified and transmitted with delays, thus the R-value may be under-estimated.**

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 03/01/2021, 12 AM, considering cases up to 30/12/2020).
*During the festive season COVID-19 cases are detected, notified and transmitted with delays.

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

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 03/01/2021, 12 AM, considering cases up to 30/12/2020).
*During the festive season COVID-19 cases are detected, notified and transmitted with delays.

The R-value is currently around 1. Nevertheless, the daily number of new cases remains high due to the large number of current cases. Furthermore, during the festive season the detection, notification and transmission of COVID-19-cases is delayed, thus the R-value may be underestimated.

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).

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 03/01/2021, a total of 1,287 hospitals or departments reported to the DIVI registry. Overall, 26,551 intensive care beds were registered, of which 21,894 (82%) are occupied, and 4,657 (18%) are currently available. The number of COVID-19 cases treated in participating hospitals is shown in Table 3.

Table 3: COVID-19 patients requiring intensive care (ICU) recorded in the DIVI register (03/01/2021, 12:15 PM).

		Number of patients	Change to previous day*
Currently	Currently in ICU	5,762	+36
	- thereof with invasive ventilation	3,171 (55%)	+42
	New admissions to ICU		+465
Total	Discharged from ICU	51.674	+429
	- thereof deaths	13.603 (26%)	+182 (42%)

*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.

Risk Assessment by the RKI

In view of persistently high case numbers, the RKI now judges 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 substantially reduced. 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

- Vaccination started in Germany on the 26th of December 2020
- Regulation to protect against entry-related infection risks regarding novel mutations of the coronavirus SARS-CoV-2 (21/12/2020. *in German*)
  https://www.bundesgesundheitsministerium.de/fileadmin/Dateien/3_Downloads/C/Coronavirus/Verordnungen/CoronaSchV_BAnz_AT_21.12.2020_V4.pdf
- Information on the designation of international risk areas
  https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Risikogebiete_neu.html
- Recommendations on COVID-19-vaccination (17.12.2020. *in German*)
  https://www.rki.de/DE/Content/Infekt/Impfen/ImpfungenAZ/COVID-19/Impfempfehlung-Zusfassung.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
- Further governmental resolutions regarding additional containment measures (Lockdown. 13/12/2020. *in German*) https://www.bundesregierung.de/breg-de/themen/coronavirus/merkel-beschluss-weihnachten-1827396
- 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
- Corona-Warn-App
  https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/CWA/CWA.html

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

- 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/
- A distance of 1.5 metres to other individuals must be maintained in public spaces: *(in German)*
  https://www.bundesregierung.de/breg-de/themen/coronavirus/besprechung-der-bundeskanzlerin-mit-den-regierungschefinnen-und-regierungschefs-der-laender-1733248
- (Non-medical) face masks must be worn on public transport and in shops in all federal states.