



Coronavirus Disease 2019 (COVID-19)

Daily Situation Report of the Robert Koch Institute

28/12/2020 - UPDATED STATUS FOR GERMANY

Confirmed cases		7-day incidence (7-di)		Vaccination monitoring	DIVI-Intensive care register
Total¹	Active cases²	Total population	No. of districts with 7-di > 50/100,000 pop	# of first vaccinations in preceding 24h	Change to previous day for cases currently in ICU
+10,976 (1,651,834)	-8,400 [ca. 366,000]	158 cases / 100,000 pop	-1 [391/412]	+21,419	+35 [5,597]
Recovered³	Deaths	60-79 years	No. of districts with 7-di > 100/100,000 pop	# of vaccinated with one vaccine dose	Completed ICU treatment; thereof deceased [%]
+19,000 (ca. 1,255,700)	+348 (30,126)	126 cases / 100,000 pop	-6 [321/412]	21,566	+786 33%
		80+ years			
		303			

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 28/12/2020, 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, **10,976** new laboratory-confirmed COVID-19 cases as well as **348** new deaths associated with COVID-19 were transmitted to the RKI in Germany. The national 7-day incidence is **158** cases per 100,000 population. In Saxony and Thuringia, it is markedly above the national incidence.
- **Almost all** of the 412 districts have a high 7-day COVID-19 incidence. **321** 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 **4** districts of >500 cases/100,000 population.
- The 7-day incidence of people **60-79** years is currently **126** and of people **≥80** years **303** 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 **28/12/2020 (12:15 PM)** **5,597** COVID-19 patients were in intensive care. In the preceding 24 hours, **786** existing patients had been discharged (**33%** of whom had died) and **821** patients were newly admitted. The resulting number of cases under treatment was **35** more than the prior day.
- On 12/19/2020, a new virus variant was reported in the UK. The ECDC has published a Rapid Risk Assessment on 20/12/2020. To date, it is unknown how the new virus variant will affect the COVID-19 pandemic. So far, **2** cases with the new variant virus have been reported in Germany (Baden-Württemberg, **Lower Saxony**). Further cases may be expected.
- **Since 26/12/2020 a total of 21,566 people in Germany have been vaccinated against COVID19** (<http://www.rki.de/covid-19-impfquoten>)
- On January 1, 2021 no situation report will be released. Testing and notification activities may be lower during the festive season, resulting in a putatively incomplete picture of the epidemiological situation in Germany.

Epidemiological Situation in Germany

In accordance with the international standards of WHO¹ and ECDC², RKI considers all laboratory confirmations of SARS-CoV-2, 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 slightly below 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 and educational settings. Additionally, in many districts, there is an increasingly diffuse spread of SARS-CoV-2 without traceable transmission chains.

Currently, the 7-day incidence increases in all age groups, particularly in persons aged 80 years or over. As the latter more often have more severe illness due to COVID-19, the number of serious cases and deaths is also increasing. 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 Rapid Risk Assessment on 20/12/2020. 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 Belgium, Denmark, Iceland, Ireland, France, and Sweden. It is expected that infections with the new variant will be detected in further countries. So far, **two cases** with the new variant virus have been reported in Germany (Baden-Württemberg, **Lower Saxony**). 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.

Note: On 01/01/2021 no Daily Situation Report will be published.

Reported COVID-19 cases should be interpreted with care during the festive season 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.

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 **1,651,834 (+10,976)** 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 (28/12/2020, 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 per 100,000 pop.	Number of deaths	Number of deaths/100,000 pop.
Baden-Wuerttemberg	230,029	1,136	2,072	16,947	153	4,486	40.4
Bavaria	312,972	1,881	2,385	22,022	168	6,265	47.7
Berlin	93,796	815	2,556	6,235	170	1,149	31.3
Brandenburg	37,137	342	1,473	3,524	140	788	31.2
Bremen	13,205	40	1,938	611	90	183	26.9
Hamburg	35,331	221	1,913	2,565	139	589	31.9
Hesse	131,804	370	2,096	9,582	152	2,511	39.9
Mecklenburg-Western Pomerania	11,055	116	687	1,239	77	143	8.9
Lower Saxony	103,244	394	1,292	7,690	96	1,802	22.5
North Rhine-Westphalia	380,487	2,382	2,120	26,430	147	6,066	33.8
Rhineland-Palatinate	69,197	439	1,690	5,073	124	1,272	31.1
Saarland	19,322	172	1,958	1,499	152	412	41.7
Saxony	124,189	1,739	3,050	15,121	371	2,733	67.1
Saxony-Anhalt	27,438	374	1,250	4,014	183	515	23.5
Schleswig-Holstein	23,524	191	810	2,496	86	376	12.9
Thuringia	39,104	364	1,833	6,149	288	836	39.2
Total	1,651,834	10,976	1,986	131,197	158	30,126	36.2

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 922,822 cases (56%) thus their date of reporting is provided in Figure 1.

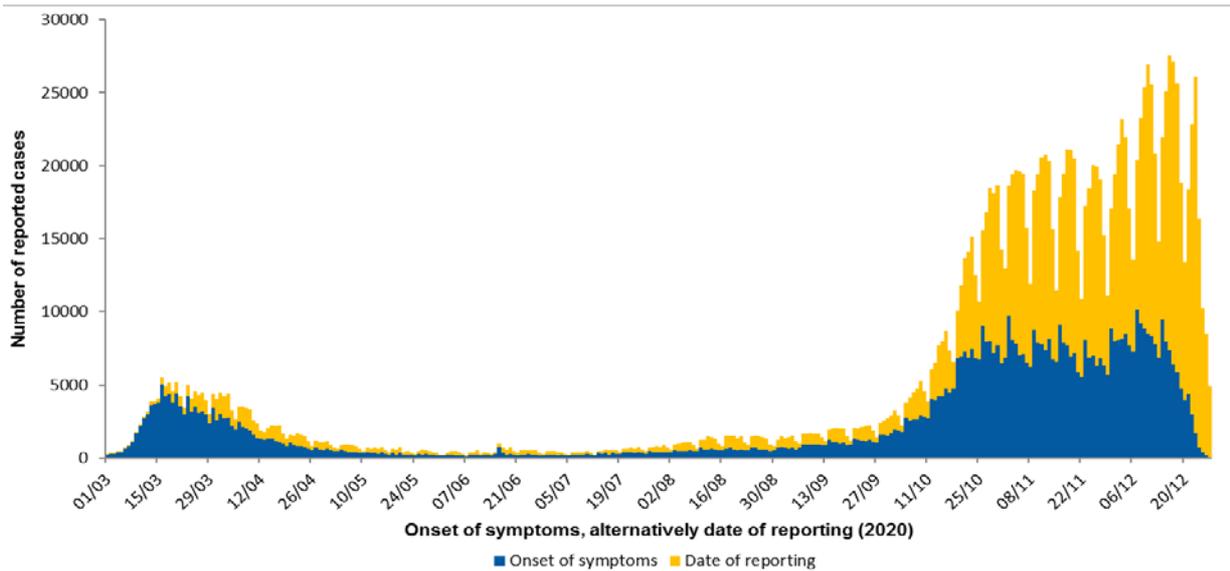


Figure 1: Number of COVID-19 cases in Germany electronically reported to the RKI by the date of symptoms onset or – if unknown – alternatively by date of reporting since 01/03/2020 (28/12/2020, 12:00 AM)*.

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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=214,702 cases; 28/12/2020, 12:00)*

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	13,248	9,368 / 71%	8,440	1,771	9,100
	Occupation in facility	42,966	3,312 / 8%	1,368	41	37,900
§ 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*	43,576	n.a.	482	3	40,100
	Occupation in facility	21,449	1,676 / 8%	478	17	19,400
§ 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	62,200	47,275 / 76%	9,871	8,529	40,900
	Occupation in facility	31,263	3,682 / 12%	871	88	26,900

*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.

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

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 **almost every** district (409/412). There are **41** districts with incidences of >250 to 500 cases/100,000 and **4** 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 particularly in households and retirement and nursing homes, but also in various occupational settings, hospitals and facilities for asylum seekers and refugees, community facilities such as kindergartens and schools, and in the context of religious gatherings continue to contribute to the elevated incidence.

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
0,71 (95%-prediction interval: 0,61 – 0,83)	0,74 (95%-prediction interval: 0,69 – 0,79)

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.**

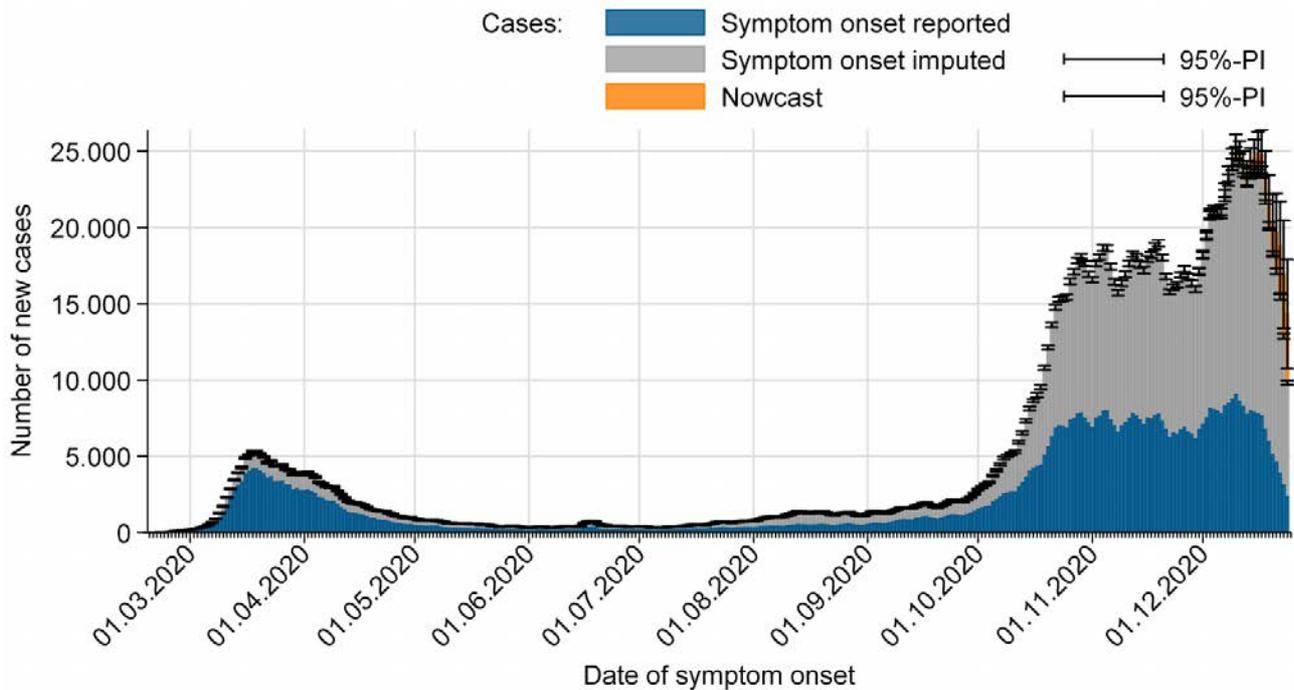


Figure 2: Number of notified COVID-19 cases with known date of illness onset (dark blue), estimated date of illness onset for cases without reported date of onset (grey) and estimated number of not yet notified cases according to illness onset electronically reported to RKI (orange) (as of 28/12/2020, 12 AM, considering cases up to 24/12/2020).

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

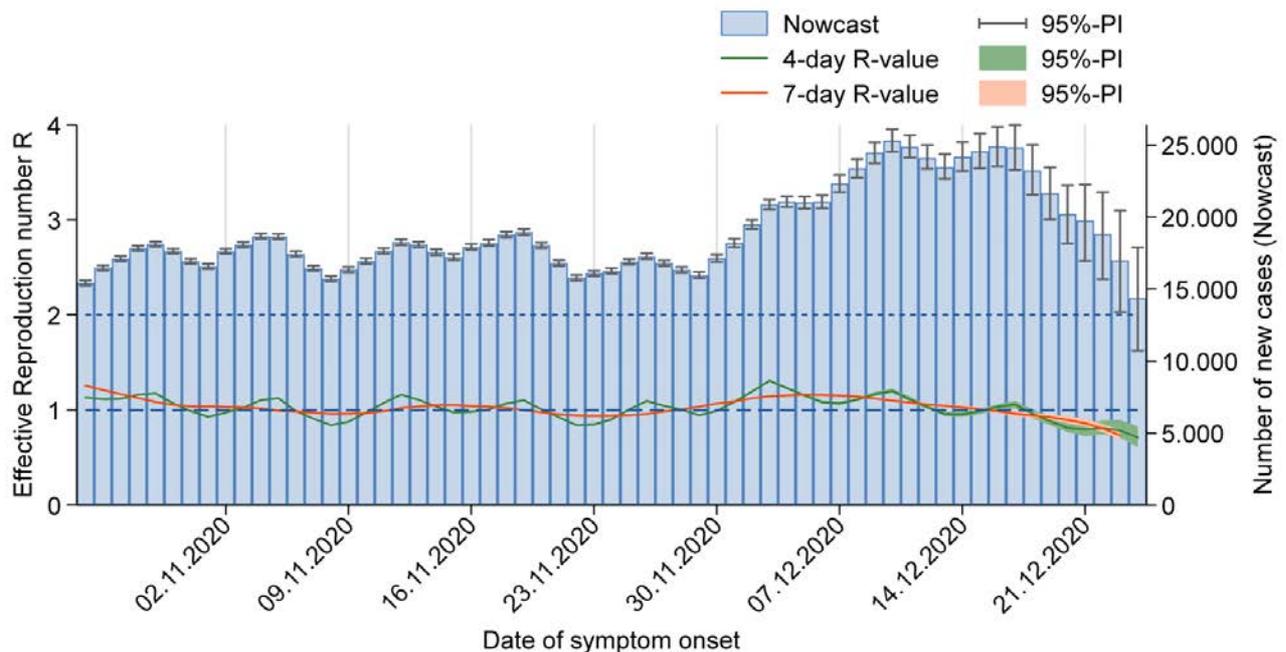


Figure 3: The estimated R-values (in green and orange) over the last 60 days, against the background of estimated number of COVID-19 cases according to illness onset (as of 28/12/2020, 12 AM, considering cases up to 24/12/2020).

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The R-value is currently slightly below 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://www.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 28/12/2020, a total of **1,287** hospitals or departments reported to the DIVI registry. Overall, **26,667** intensive care beds were registered, of which **21,634** (81%) are occupied, and **5,033** (19%) 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 (28/12/2020, 12:15 PM).

		Number of patients	Change to previous day*
Currently	Currently in ICU	5,597	+35
	- thereof with invasive ventilation	3,017 (54%)	+57
	New admissions to ICU		+821
Total	Discharged from ICU	47,870	+786
	- thereof deaths	12,303 (26%)	+263 (33%)

*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

- General ruling: Ban on flights from the United Kingdom of Great Britain and Northern Ireland to the Federal Republic of Germany to protect against entry-related infection risks regarding novel mutations of the coronavirus SARS-CoV-2 (20/12/2020. *in German*)
<https://www.bmvi.de/SharedDocs/DE/Anlage/LF/allgemeinverfuegung-flugverbot-uk.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>
- 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.