ROBERT KOCH INSTITUT

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

25/05/2020 - UPDATED STATUS FOR GERMANY

Confirmed cases	Deaths	Deaths (%)	Recovered
178,570	**8,257**	**4.6%**	**ca. 161,200****
(+ 289*)	(+ 10*)		

*Change from previous day; **Estimate*

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

Summary (as of 25/05/2020, 12:00 AM)

- In total, 178,570 COVID-19 cases and 8,257 deaths due to COVID-19 have been electronically reported to the Robert Koch Institute in Germany.
- The cumulative incidence (cases per 100,000) of COVID-19 is currently highest in Bavaria (354), Baden-Wuerttemberg (311), Hamburg (275) and Saarland (274).
- Most cases (67%) are between 15 and 59 years old. Women (52%) and men (48%) are almost equally affected. Slightly more men (55%) than women (45%) died.
- People aged 70 years or older account for 86% of deaths but only 19% of all cases.
- COVID-19 outbreaks continue to be reported in nursing homes and hospitals.
- Outbreaks of COVID-19 have been reported in several federal states (including in institutions for asylum seekers and refugees, in connection with a religious event or in meat processing plants).

Epidemiological Situation in Germany

Geographical distribution of cases

Epidemiological analyses are based on validated cases notified electronically to the Robert Koch Institute (RKI) in line with the Protection Against Infection Law (Data closure: 12:00 AM daily). Since January 2020, a total of 178,570 (+ 289) laboratory-confirmed cases of coronavirus disease 2019 (COVID-19) have been electronically reported to and validated by the RKI, including 8,257 deaths (see Table 1 and Figure 1). A total of 96 districts reported no cases in the past 7days. Information on confirmed cases is also available on the RKI website at https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Fallzahlen.html and https://corona.rki.de.

Table 1: Number and cumulative incidence (per 100,000 population) of notified laboratory-confirmed COVID-19 cases and deaths for each federal state, Germany (25/05/2020, 12:00 AM).

Federal State	Total Number of cases	Number of new cases	Cases/ 100,000 pop.	Cases in the last 7 days	7-day incidence	Number of deaths	Number of deaths/ 100,000 pop.
Baden-Wuerttemberg	34,431	32	311	378	3.4	1,698	15.3
Bavaria	46,326	120	354	712	5.4	2,382	18.2
Berlin	6,642	5	177	177	4.7	191	5.1
Brandenburg	3,214	0	128	17	0.7	154	6.1
Bremen	1,312	13	192	85	12.4	41	6.0
Hamburg	5,069	3	275	24	1.3	241	13.1
Hesse	9,770	8	156	361	5.8	460	7.3
Mecklenburg-Western Pomerania	760	0	47	10	0.6	20	1.2
Lower Saxony	11,578*	0*	145*	364*	4.6*	572*	7.2*
North Rhine-Westphalia	37,298	75	208	850	4.7	1,565	8.7
Rhineland-Palatinate	6,596	6	161	96	2.4	228	5.6
Saarland	2,716	3	274	21	2.1	157	15.9
Saxony	5,231	10	128	101	2.5	205	5.0
Saxony-Anhalt	1,694	0	77	15	0.7	54	2.4
Schleswig-Holstein	3,062	0	106	60	2.1	137	4.7
Thuringia	2,871	14	134	124	5.8	152	7.1
Total	**178,570**	**289**	**215**	**3,395**	**4.1**	**8,257**	**9.9**

* Yesterday no data could be transfered from Lower Saxony due to technical problems.

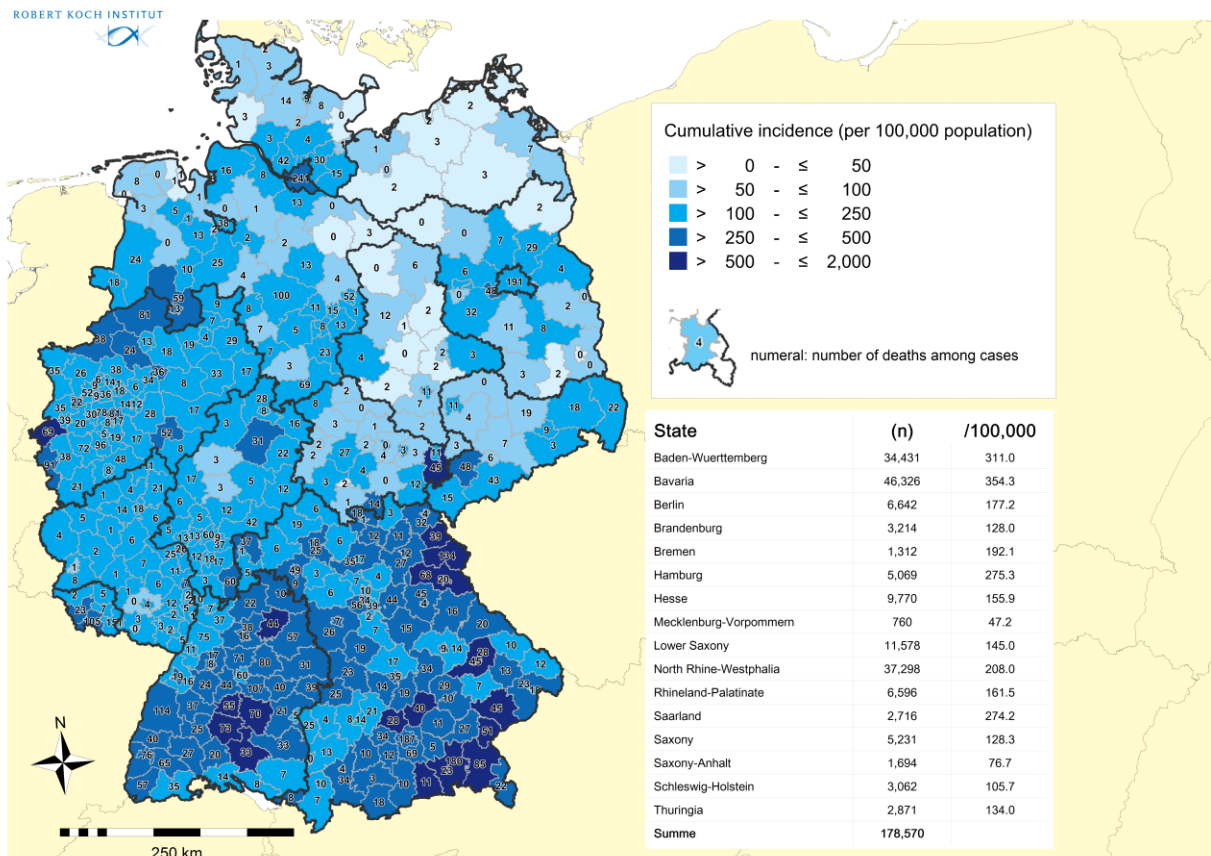Note: The report is a snapshot and is continuously updated.

Figure 1: Number and cumulative incidence (per 100,000 population) of the 178,570 electronically reported COVID-19 cases in Germany by county and federal state (25/05/2020, 12:00 AM). Please see the COVID-19 dashboard (https://corona.rki.de/) for information on number of COVID-19 cases by county (local health authority).

Distribution of cases over time

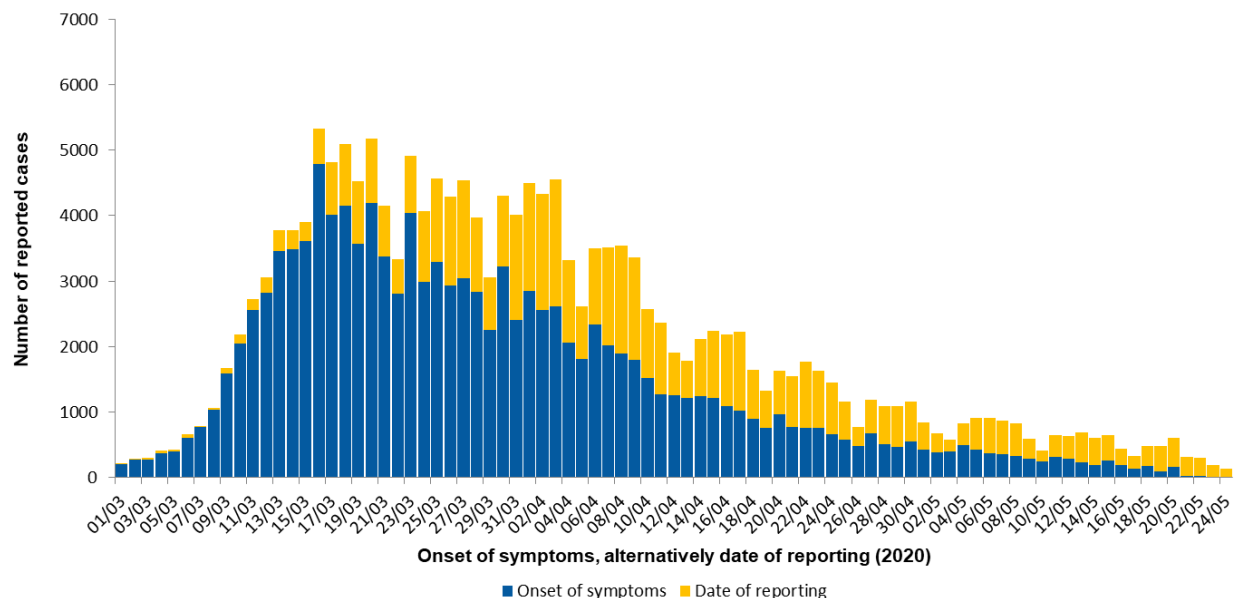The first COVID-19 cases in Germany were notified in January 2020.

Figure 2 shows COVID-19 cases transmitted to RKI according to date of illness onset from 01.03.2020 onwards. With regard to all reported cases, the onset of symptoms is unknown in 55,646 cases (31%). When the the onset of symptoms is unknown, the date of reporting is provided in the figure.
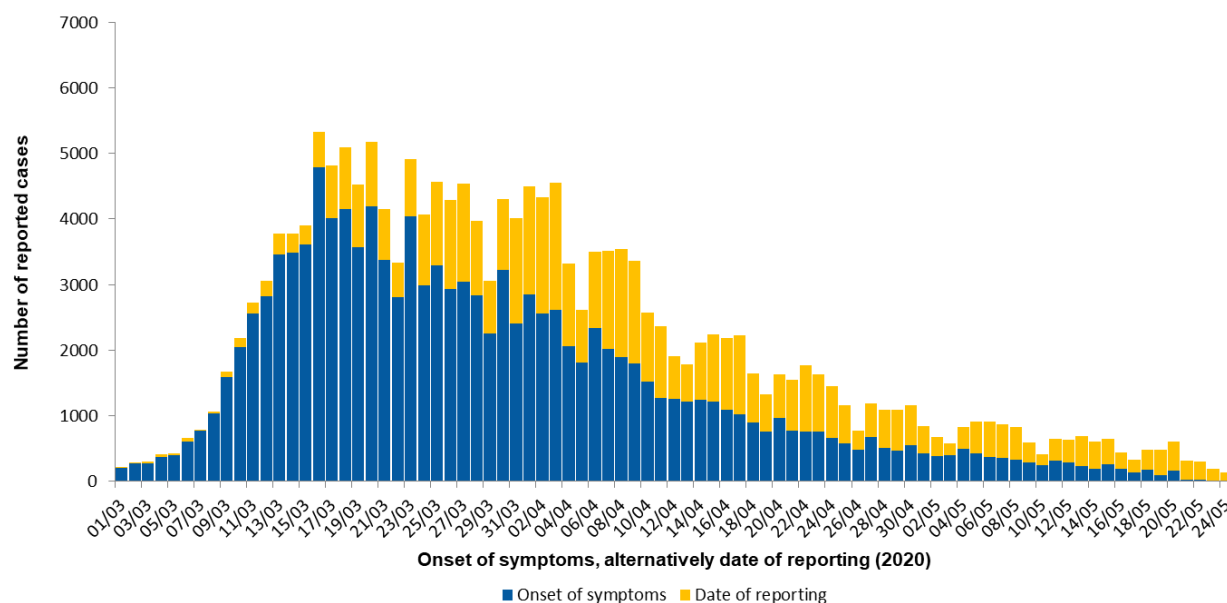
Note: The report is a snapshot and is continuously updated.

Figure 2: Number of electronically reported COVID-19 cases in Germany by date of symptom onset and by date of reporting from 01/03/2020 (25/05/2020, 12:00 AM).

Demographic distribution of cases

Of all reported cases, 52% are female and 48% are male. Among notified cases, 3,553 were children under 10 years of age (2.0%), 7,842 children and teenagers aged 10 to 19 years (4.4%), 77,108 persons aged 20 to 49 years (43%), 55,931 persons aged 50 to 69 years (31%), 28,888 persons aged 70 to 89 years (16%) and 5.126 persons aged 90 years and older (2.9%). The age is unknown in 122 notified cases. The mean age of cases is 49 years (median age 50 years). The highest incidences are seen in persons aged 90 years and older (Figure 3).
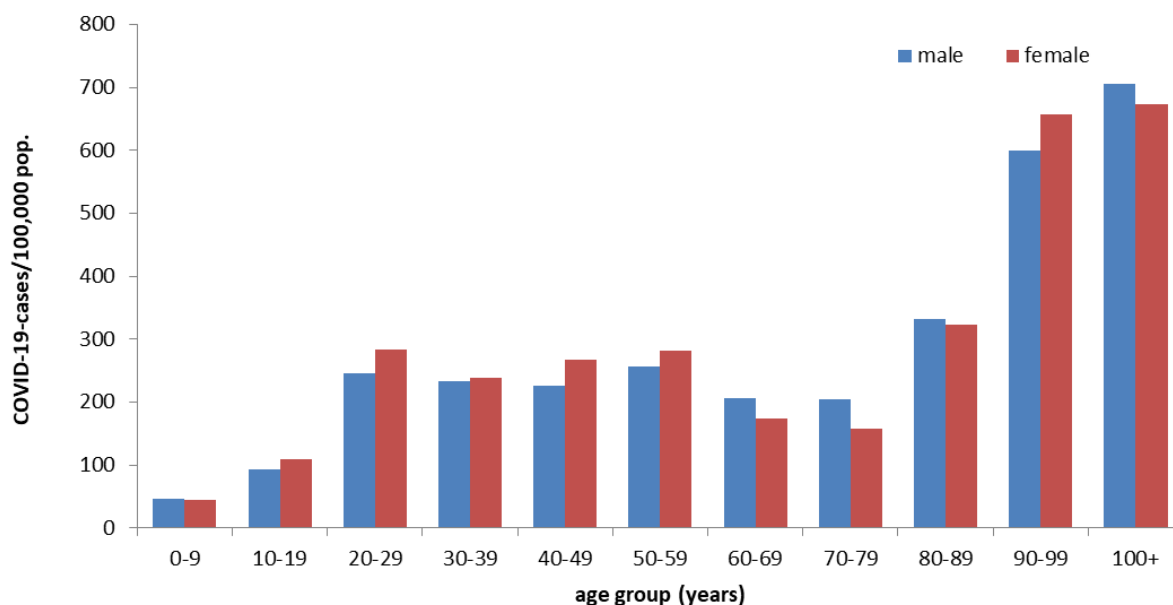

Figure 3: Electronically reported COVID-19 cases/100,000 population in Germany by age group and gender (n=178,196) for cases with information available (25/05/2020, 12:00 AM).

Clinical aspects

Information on symptoms is available for 149,985 (84%) of the notified cases. Common symptoms are cough (49%), fever (41%) and rhinorrhoea (21%). Pneumonia was reported in 4,457 cases (3.0%). Since

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calendar week 17, cases are reported to the RKI as a distinct COVID-19 surveillance category. Since then, loss of smell and taste can also be entered as symptoms. At least one of these two symptoms was reported in 1,737 of 11,573 cases (15%). Hospitalisation was reported for 26,730 (18%) of 150,287 COVID-19 cases with information on hospitalisation status.

Approximately 161,200 people have recovered from their COVID-19 infection. Since the exact date of recovery is unknown in most cases, an algorithm was developed to estimate the number of recovered cases.

In total, 8,257 COVID-19-related deaths have been reported in Germany (4.6% of all confirmed cases). Of these, 4,572 (55%) are men and 3,680 (45%) are women (see table 2; gender was unknown in five cases). The median age was 82 years. Of all deaths, 7,112 (86%) were in people aged 70 years or older, but only 19% of all cases were in this age group. So far, three deaths among COVID-19 cases under 20 years of age have been reported to the RKI. Pre-existing medical conditions were reported for all three.

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Table 2: Number of notified COVID-19 deaths by age group and gender (Data available for 8,252 of notified deaths; 25/05/2020, 12:00 AM)

Gender	Age group (in years)										
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+
Male		2	6	14	45	211	565	1,249	1,951	524	5
Female	1		2	6	17	72	202	602	1,753	980	45
Total	1	2	8	20	62	283	767	1,851	3,704	1,504	50

Occupation, accommodation or care in facilities

In accordance with the Protection Against Infection Law (IfSG), the RKI receives information on occupation, accommodation or care in a facility relevant for infection control for reported COVID-19 cases (Table 3).

Since information on care/attendance, accommodation and occupation in these facilities is missing in 29% of cases, the proportion of cases cared for, accommodated or working in these facilities shown here should be considered minimums values. Among the COVID-19 cases reported as being cared for/attending, accommodated in or working in all of the above mentioned facilities, the proportion of cases that actually acquired their infection in these settings is unknown.

Until now, 12,393 cases with a SARS-CoV-2 infection have been notified among staff working in medical facilities as defined by Section 23 IfSG. Among the cases reported as working in medical facilities, 73% were female and 27% male. The median age was 41 years, 20 persons died.

The low number of cases among persons who attend or work in facilities providing child care or education (Section 33 IfSG) reflects the low incidence in children observed thus far. The high number of cases among people cared for or working in various care facilities (Section 36 IfSG) is consistent with numerous reported outbreaks, especially in nursing homes.

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Table 3: Notified COVID-19-cases according to possible occupation, accommodation or care in facilities relevant for transmission of infectious diseases (177,642* cases, no data available for 52,412 cases; 25/05/2020, 12:00 AM)

Facility according to		Total	Hospitalised	Deaths	Recovered (estimate)
§ 23 IfSG (e.g. hospitals, outpatient clinics and practices, dialysis clinics or outpatient nursing services)	Cared for / accommodated in facility	2,822	1,967	534	2,040
	Occupation in facility	12,393	567	20	11,938
§ 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	2,074*	56	1	1,941
	Occupation in facility	2,390	112	7	2,318
§ 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, repatriates and refugees as well as other mass accommodation and prisons)	Cared for / accommodated in facility	15,757	3,549	3,138	11,162
	Occupation in facility	8,935	382	46	8,468
§ 42 IfSG (e.g. kitchens in the catering trade, in inns, restaurants, canteens, cafés, or other establishments with or for communal catering)	Occupation in facility	2,281	145	54	1,880
Neither cared for, accommodated in nor working in a facility		78,578	14,250	3,104	73,003

*for care according to § 33 IfSG only cases under 18 years of age are taken into account, as other information may be assumed to be incorrect.
IfSG: Protection Against Infection Law

Outbreaks

Currently, the 7-day-incidence is elevated in the district of Coburg and Lichtenfels in Bavaria, the city of Regensburg in Bavaria, and in the district of Sonneberg in Thuringia.

The increase in new COVID-19 cases in the Coburg district is related to infected persons in nursing homes, which are related to dialysis treatment. The health authorities immediately took action to interrupt this chain of infection. These measures include series of tests in the care facilities, separation measures and visitor bans.

In the district of Lichtenfels an outbreak was reported in a nursing home with altogether over 20 cases.

In Regensburg, an outbreak was detected among residents of an accommodation for asylum seekers. Moreover a COVID-19 outbreak was detected among residents and staff in a refugee facility in St. Augustin in Northrhine-Westphalia. In the district of Sonneberg high incidences are related to outbreaks in nursing homes and medical facilities.

As of 23.05.2020, 9 participants of a closed event in a restaurant in the district of Leer in Lower Saxony tested positive for COVID-19; about 70 contact persons were quarantined. According to investigations by public health authorities, there were indications that contact restrictions were not followed. This is under investigation.

A COVID-19 outbreak in the context of a religious event of a Baptist church in Frankfurt/Main in Hesse is currently under investigation. To date, 107 cases meeting the RKI reference case definition have been identified. Local health authorities are still investigating the circumstances of the outbreak.

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In addition, COVID-19 outbreaks among workers of meat processing plants have been reported in several federal states, among others in North Rhine-Westphalia, Bavaria and Lower Saxony.

Another outbreak occurred at a German Parcel Service (DPD) branch in the district of Heinsberg. The 7-day COVID-19 incidence has decreased following implementation of control measures.

Estimation of the reproduction number (R)

The presented case numbers do not fully reflect the temporal progression of incident COVID-19 cases, since the time intervals between actual onset of illness and diagnosis, reporting, as well as transmission to the RKI vary greatly. Therefore, a nowcasting approach is applied to model the true temporal progression of COVID-19 cases according to illness onset. Figure 4 shows the result of this analysis.
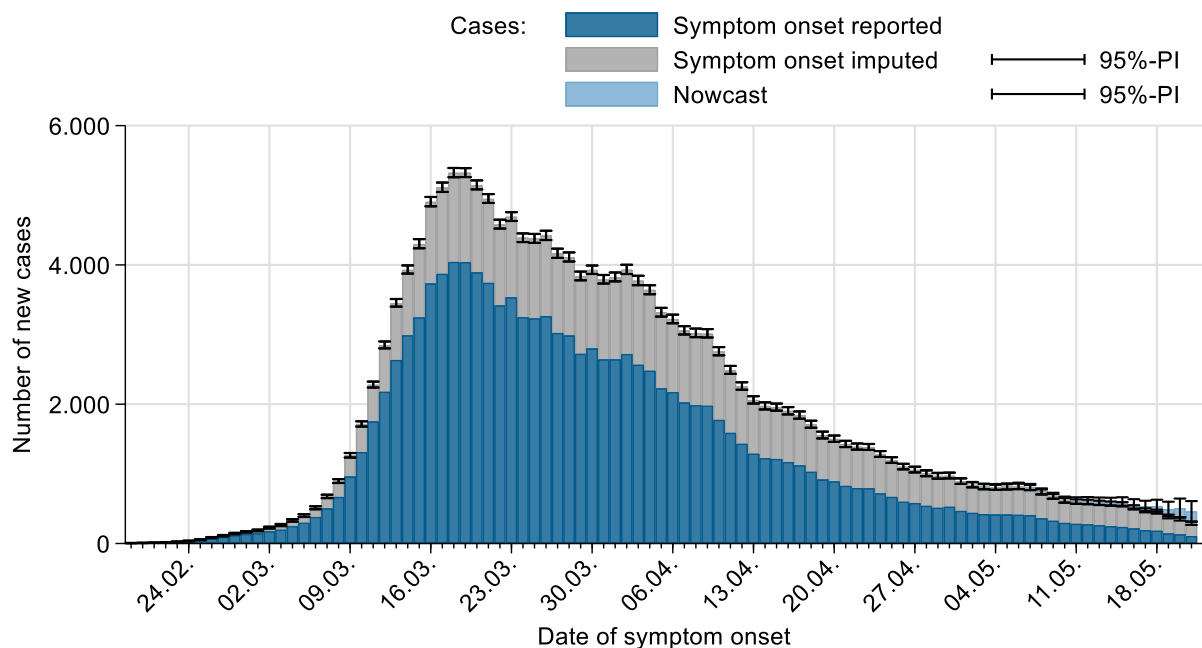

Figure 4: Display of cases with known onset of the disease (dark blue), estimated onset of the disease for cases where the onset of the disease has not beed reported (grey) and estimated course of already symptomatic cases (light blue) (as of 25/05/2020 12 AM, taking into account cases up to 21/05/2020).

The reproduction number, R, is defined as the mean number of people infected by an infected person. R can only be estimated based on statistical analyses such as nowcasting and not directly extracted from the notification system.

The R-value reported to date reflects the trend in the number of incident cases with a high degree of sensitivity. This value is thus sensitive to short-term changes in the number of cases - such as those caused by individual outbreaks - which can lead to relatively large fluctuations, especially if the total number of new cases is relatively low. In addition to this sensitive R-value, the RKI therefore now provides a second, more stable 7-day R-value, which is based on data from a longer time period and is therefore less subject to short-term fluctuations. Thus, it reflects trends more reliably, but is based on infections that occurred on average earlier than those on which the more sensitive R-value is based.

Both R-values are estimated on the basis of nowcasting. The nowcasting predicts the number of cases with illness onset up to the date of 4 days ago, as no reliable prediction can be made about the number of new cases in the last 3 days.

The sensitive R-value reported so far can be estimated using a moving 4-day average of the number of incident cases as estimated by nowcasting. It compares the 4-day mean of incident cases on one day

with the corresponding mean 4 days before. Thus, taking into account that infection occurs four to six days before the onset of symptoms, the daily sensitive R-value represents the course of infection approximately one to two weeks ago. The current estimate is R= 0.83 (95% prediction interval: 0.69 – 0.98) and is based on electronically notified cases as of 25/05/2020, 12:00 AM.

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Similarly, the 7-day R-value is estimated by using a moving 7-day average of the nowcasting curve. This compensates for fluctuations more effectively. The 7-day R-value then compares the 7-day average of the new cases on one day with the 7-day average four days earlier. The 7-day R thus represents a slightly later course of infection of about one to a little over two weeks ago. The 7-day R-value is estimated at 0.84 (95% predictation interval: 0.77 – 0.94) and is based on electronically notified cases as of 25/05/2020, 12:00 AM.

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 methodological explanation of the more stable R-value is also available there. More general information and sample calculations for both R-values can also be found in our FAQs (www.rki.de/covid-19-faq).

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

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

As of 25/05/2020, a total of 1,261 hospitals or departments reported to the DIVI registry. Overall, 32,069 intensive care beds were registered, of which 19,394 (61%) are occupied, and 12,635 beds (39%) are currently available. The number of COVID-19 cases treated in participating hospitals is shown in Table 4.

Table 4: COVID-19 patients requiring intensive care (ICU) recorded in the DIVI register (25/05/2020, 9:15 AM).

	Number of patients	Percentage	Change to previous day
Currently in ICU	873		-16
- of these: mechanically ventilated	547	63%	-15
Discharged from ICU	12,937		+28
- of these: deaths	3.464	27%	+14

Assessment by the RKI

At the global and the national level, the situation is very dynamic and must be taken seriously. Severe and fatal courses occur in some cases. The number of newly reported cases, hospitalisations and fatalities in Germany is decreasing. The RKI currently assesses the risk to the health of the German population overall as **high** and as **very high** for risk groups. The probability of serious disease progression increases with increasing age and underlying illnesses. The risk of disease varies from region to region. The burden on the health care system depends on the geographical and age distribution of cases, health care capacity and initiation of containment measures (isolation, quarantine, physical distancing etc.), and may be very high in some geographical regions. This assessment may change on short notice as a result of new findings.

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Measures taken by Germany

- For persons entering Germany from EU countries, Schengen-associated countries or the UK the federal and state governments recommend quarantine if the country of origin has a high COVID-19 incidence (>50 cases/100,000 inhabitants in the past 7 days). https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Quarantaene_Einreisen_Deutschland.html *(in German)*
- (Non-medical) face masks must be worn on public transport and in shops in all federal states.
- Data on current disease activity can be found in the daily situation reports and on the RKI dashboard https://corona.rki.de/.
- RKI teams are currently supporting outbreak containment measures with a focus on outbreaks in retirement and health care homes as well as hospitals in several federal states.
- A distance of 1.5 metres to other indivduals must be maintained in public spaces https://www.bundesregierung.de/breg-de/themen/coronavirus/besprechung-der-bundeskanzlerin-mit-den-regierungschefinnen-und-regierungschefs-der-laender-1733248 *(in German)*
- German parliament passes second law to protect the population in the event of an epidemic situation of national importance on 14/05/2020 *(in German)* https://www.bundesgesundheitsministerium.de/presse/pressemitteilungen/2020/2-quartal/covid-19-bevoelkerungsschutz-2.html
- A new federal law was implemented on 28/03/2020 for the protection of the public in the event of epidemic situations, granting the federal government additional competencies for the control of epidemics: https://www.bundesgesundheitsministerium.de/presse/pressemitteilungen/2020/1-quartal/corona-gesetzespaket-im-bundesrat.html *(in German)*
- On 15/04/2020, the German government and the federal states agreed to gradually reduce physical distancing measures https://www.bundesregierung.de/breg-de/themen/coronavirus/fahrplan-corona-pandemie-1744202 (*in German*)

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