ROBERT KOCH INSTITUT

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

12/05/2020 - UPDATED STATUS FOR GERMANY

Confirmed cases	Deaths	Deaths (%)	Recovered
170,508 (+ 933*)	**7,533** (+ 116*)	**4.4%**	**ca. 147,200****

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

**Change from previous day; **Estimate*

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

- In total, 170,508 COVID-19 cases and 7,533 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 (341), Baden-Wuerttemberg (301), Saarland (269) and Hamburg (269).
- Most cases (67%) are between 15 and 59 years old. Women (52%) and men (48%) are almost equally affected.
- People aged 70 years or older account for 86% of deaths but only 19% of all cases.
- COVID-19 outbreaks continue to reported in nursing homes and hospitals, some associated with a high number of deaths. In addition, outbreaks in meat plant workers have been reported from 3 federal states.

Epidemiological Situation in Germany

Geographical distribution of cases

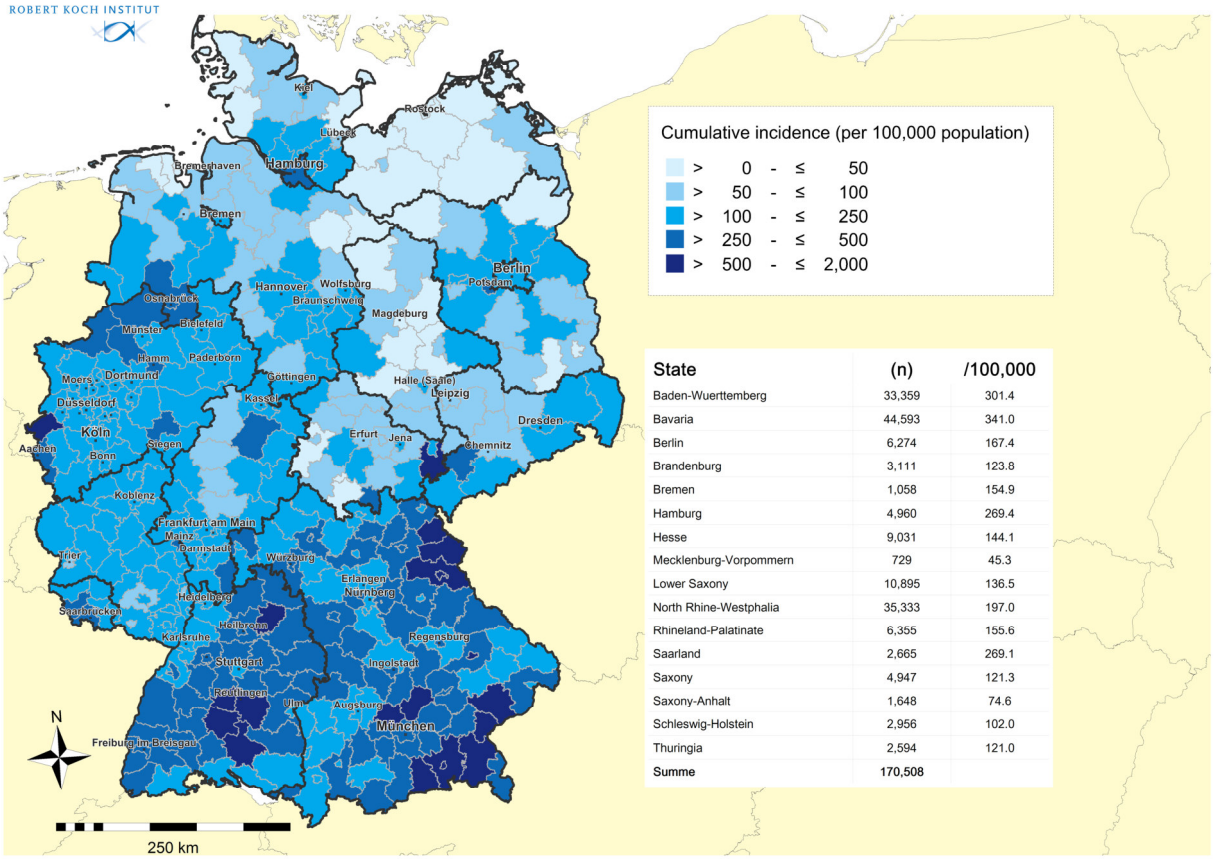
Epidemiological analyses are based on validated cases notified electronically to the Robert Koch Institute (RKI) in line with the Protection Against Infection Law (Data closure: 12:00 AM daily). Since January 2020, a total of 170,508 (+933) laboratory-confirmed cases of coronavirus disease 2019 (COVID-19) have been electronically reported to and validated by the RKI, including 7,533 deaths (see Table 1 and Figure 1). 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 (12/05/2020, 12:00 AM).

Federal State	Total Number of cases	Number of new cases	Cases/100,000 pop.	Number of deaths	Number of deaths/ 100,000 pop.
Baden-Wuerttemberg*	33,359	169*	301	1,568	14.2
Bavaria	44,593	225	341	2,182	16.7
Berlin	6,274	2	167	165	4.4
Brandenburg	3,111	5	124	136	5.4
Bremen	1,058	3	155	35	5.1
Hamburg	4,960	180*	269	216	11.7
Hesse	9,031	19	144	415	6.6
Mecklenburg-Western Pomerania	729	1	45	20	1.2
Lower Saxony	10,895	41	136	507	6.4
North Rhine-Westphalia	35,333	201	197	1,456	8.1
Rhineland-Palatinate	6,355	42	156	206	5.0
Saarland	2,665	0	269	144	14.5
Saxony	4,947	32	121	190	4.7
Saxony-Anhalt	1,648	5	75	50	2.3
Schleswig-Holstein	2,956	-1*	102	125	4.3
Thuringia	2,594	9	121	118	5.5
Total	**170,508**	**933**	**205**	**7,533**	**9.1**

*The day before yesterday, a district in Baden-Wuerttemberg, did not transmit 148 cases, which were reported yesterday; thus, the correct number of cases is presented today. The data from Hamburg were validated again, resulting in 180 additonal cases compared to yesterday, including cases with a reporting date from longer ago. In Schleswig-Holstein, individual cases were corrected, therefore 1 case less than yesterday is reported.

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



State	(n)	/100,000
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Bavaria	44,593	341.0
Berlin	6,274	167.4
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Saxony-Anhalt	1,648	74.6
Schleswig-Holstein	2,956	102.0
Thuringia	2,594	121.0
Summe	**170,508**	

Figure 1: Number and cumulative incidence (per 100,000 population) of the 170,508 electronically reported COVID-19 cases in Germany by county and federal state (12/05/2020, 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 from01.03.2020 onwards. When the the onset of symptoms is unknown, the date of reporting is provided (55,211 cases).

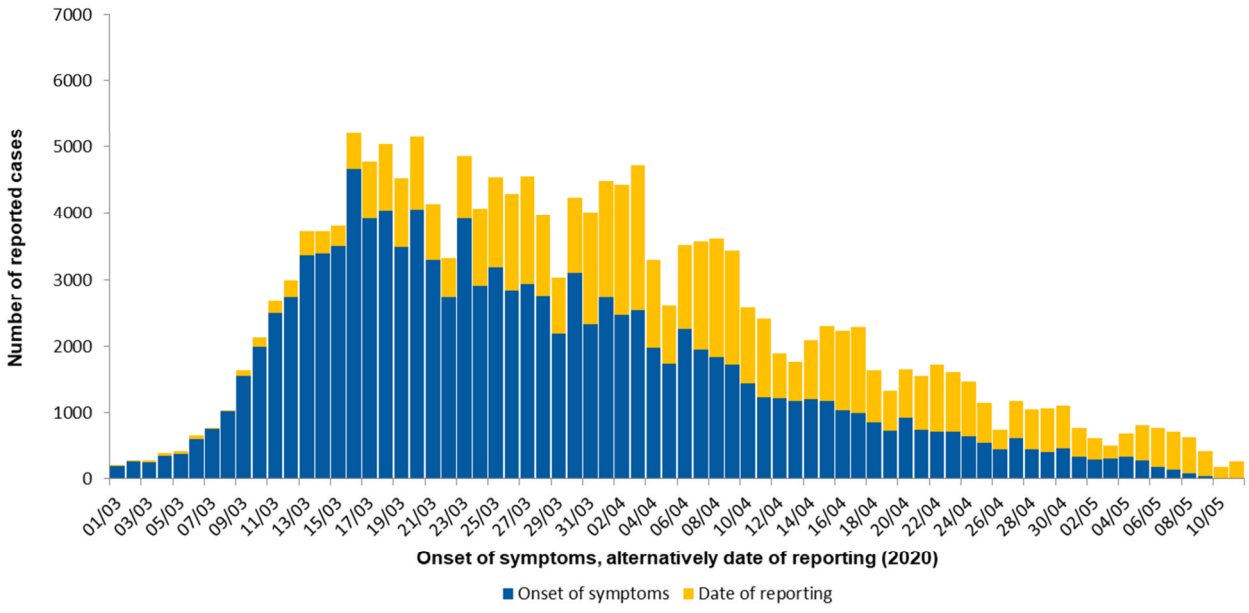

Figure 2: Number of electronically reported COVID-19 cases in Germany by date of symptom onset and by date of reporting from 01/03/2020 (12/05/2020, 12:00 AM).

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

Demographic distribution of cases

Of all reported cases, 52% are female and 48% are male. Among notified cases, 3,137 were children under 10 years of age (1.8%), 7,306 children and teenagers aged 10 to 19 years (4.3%), 73,265 persons aged 20 to 49 years (43%), 54,059 persons aged 50 to 69 years (32%), 27,722 persons aged 70 to 89 years (16%) and 4,877 persons aged 90 years and older (2.9%). The age is unknown in 142 notified cases. The mean and median age of cases are both 50 years. The highest incidences are seen in persons aged 90 years and older (see Figure 3).

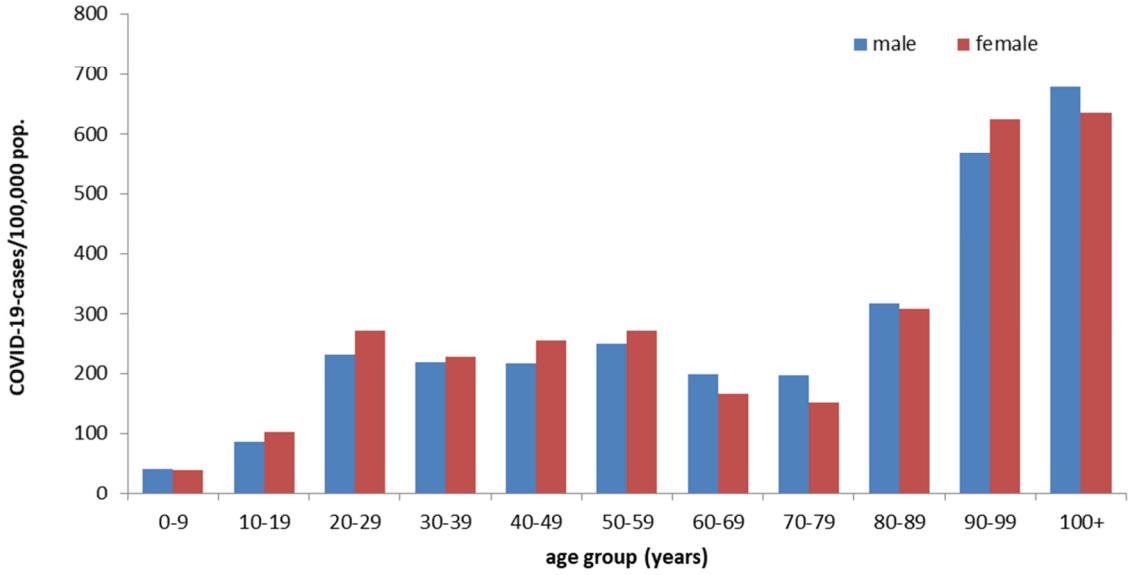

Figure 3: Electronically reported COVID-19 cases/100,000 population in Germany by age group and gender (n=170,004) for cases with information available (12/05/2020, 12:00 AM).

Table 2: The COVID-19 cases reported to the RKI according to gender and the proportion of hospitalization and deceased for the reporting weeks 10 - 19 (12.05.2020, 12AM).

Week	10	11	12	13	14	15	16	17	18	19
Total cases	900	6,371	22,380	33,999	36,022	27,182	17,276	12,391	7,375	6,061
Mean age	43	45	46	48	51	52	52	51	49	47
Men	53%	56%	55%	49%	45%	43%	45%	45%	48%	48%
Women	47%	44%	45%	50%	55%	56%	55%	55%	52%	52%
Number with details of hospitalisation	788	5,416	18,437	28,033	29,757	22,639	14,460	10,146	6,080	4,743
Number hospitalized	167	494	2,095	4,819	5,705	4,385	3,094	2,040	1,189	794
Percent hospitalized	21%	9%	11%	17%	19%	19%	21%	20%	20%	17%
Number deceased	11	73	456	1,376	2,067	1,662	1,034	574	213	66
Percent deceased	1.2%	1.1%	2.1%	4.1%	5.8%	6.2%	6.0%	4.7%	2.9*%	1.1*%

*Data not yet meaningful, as the outcome of cases is still unclear

Table 2 shows the mean age, the gender distribution, the proportion of hospitalized cases and case fatality rates across the weeks 10-19. The case fatality rates in weeks 18 and 19 are not yet meaningful, as the outcome of the cases reported in these weeks is still unclear.

The depiction of notified COVID-19 cases in Germany by proportion of cases according to age groups and week of reporting shows a noticible increase in the proportion of cases among those over 70 years

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

of age in weeks 12 to 15 (Figure **4**). The increase can be explained, among other things, by an increase of outbreaks in retirement residences, nursing homes and hospitals. Since week 18, the percentage in this age group has decreased slightly.

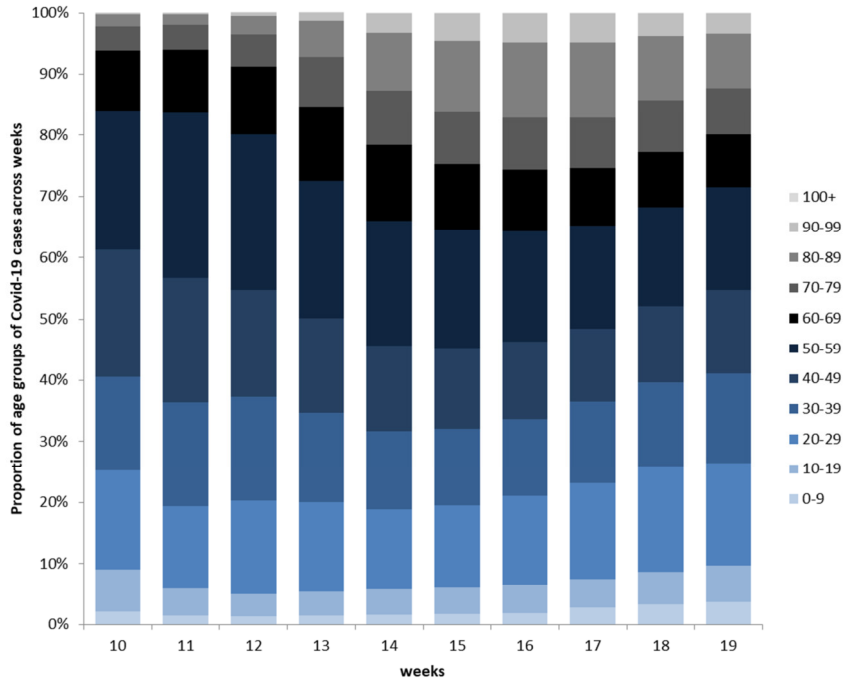

Figure 4: Display of the proportion of registered Covid-19 cases by age group and week (n=169,820 cases with respective data in the weeks 10 to 19 as of 12/05/2020 12 AM).

Clinical aspects

Information on symptoms is available for 141,172 (83%) of the notified cases. Common symptoms are cough (49%), fever (41%) and rhinorrhoea (21%). Pneumonia was reported in 4.041 cases (2.9%). Hospitalisation was reported for 24,890 (18%) of 140,906 COVID-19 cases with information on hospitalisation status. Since calendar week 17, cases are reported to the RKI as a distinct COVID-19 surveillance category, similar to other reported infectious diseases. Since then, loss of smell and taste can also be entered as symptoms. At least one of these two symptoms were reported in 1,029 of 7,029 cases (15%) recorded in the COVID-19 category.

Approximately 147,200 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, 7,533 COVID-19-related deaths have been reported in Germany (4.4% of all confirmed cases). Of these, 4,204 (56%) are men and 3,324 (44%) are women (see Table 3; gender was unknown in five cases). The median age was 82 years. Of all deaths, 6,511 (86%) were in people aged 70 years or older, but only 19% of all cases were in this age group. COVID-19 outbreaks continue to be reported in nursing homes and hospitals. In some of these outbreaks, the number of deaths is relatively high.

Table 3: Number of notified COVID-19 deaths by age group and gender (Data available for 7,528 of notified deaths; 12/05/2020, 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	5	13	40	194	504	1.146	1.801	494	5
Female	1		2	6	14	62	177	544	1.603	874	41
Total	**1**	**2**	**7**	**19**	**54**	**256**	**681**	**1.690**	**3.404**	**1.368**	**46**

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 (see Table 4).

Since information on care/attendance, accommodation and occupation in these facilities is missing in 32% 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.

Table 4: Notified COVID-19-cases according to possible occupation, accommodation or care in facilities relevant for transmission of infectious diseases (169,606 cases, no data available for 54,833 cases; 12/05/2020, 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	**2,522**	1,670	466	1,500
	Occupation in facility	**11,217**	502	17	10,400
§ 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	**1,833***	52	1	1,700
	Occupation in facility	**2,203**	109	7	2,100
§ 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	**13,937**	3,156	2,786	8,900
	Occupation in facility	**8,134**	335	37	7,300
§ 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	**1,828**	118	56	1,100
Neither cared for, accommodated in nor working in a facility		**73,099**	13,239	2,851	66,300

*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

Until now, 11,217 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, 17 persons died.

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. 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.

Outbreaks

After COVID-19 outbreaks in six retirement homes in the district of Greiz, Thuringia, the reported incidence in this district in the past 7-days has been decresasing to 54 cases per 100,000 inhabitants. In the district of Sonneberg, an increase of the reported incidence in the past 7-days to 53 cases per 100,000 inhabitants has been observed. Since the end of April, COVID-19 outbreaks were also reported in meat processing plants in Baden-Wuerttemberg, North Rhine-Westphalia and Schleswig-Holstein, with case numbers ranging from 100 to 350.

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 5 shows the result of this analysis.

The reproduction number, R, is defined as the mean number of people infected by a case. R can only be estimated based on statistical analyses such as nowcasting and not directly extracted from the notification system. The nowcasting analysis and the R-estimate are based on all COVID-19 cases reported to the RKI with an illness onset up to 3 days before data closure. Cases with a more recent illness onset are excluded from this analysis since their as yet low number would lead to unstable estimates.

The number of incident cases estimated using the nowcasting approach is presented as a moving 4-day average to compensate for random effects of individual days (Fig. 5). With this approach, the point estimate of R for a given day is estimated as the quotient of the number of incident cases on this day divided by the number of incident cases four days earlier. The current estimate is R= 0.94 (95% prediction interval: 0.79 - 1.10) and is based on electronically notified cases as of 12/05/2020, 12:00 AM.

The estimate of the reproduction number R has been slightly above 1 in the last few days, which shows that the decline in the number of new cases we have observed in recent weeks has levelled off and may be reaching a plateau. So far we do not expect to see an increasing trend again. The slowdown in the decline in new cases is also related to local outbreaks, for example in the vicinity of slaughterhouses. Moreover, since case numbers in Germany are slowly decreasing overall, these outbreaks have a greater impact on the value of the reproduction number R than if total case numbers were higher. Overall, therefore, the development of the number of new cases must be observed in the next few days in order to rule out a merely temporary slowdown in the decline. Statistical uncertainties are represented by the prediction interval.

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)

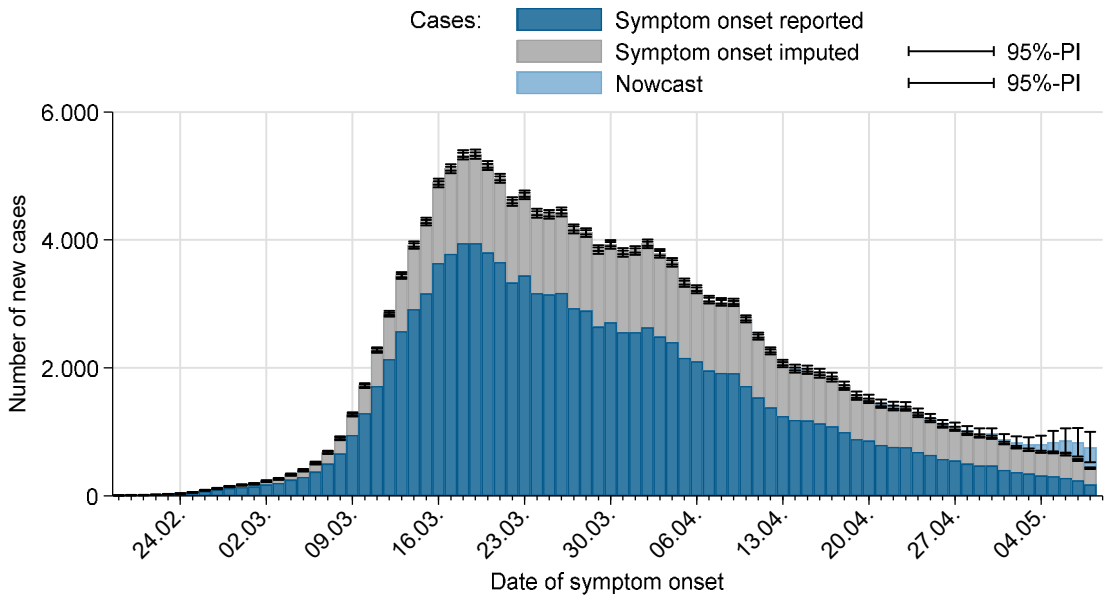

Figure 5: Display of cases with known onset of the disease (dark blue), estimated onset of the disease for cases where the onset of the disease has not beed reported (grey) and estimated course of already symptomatic cases (light blue) (as of 12/05/2020 12 AM, taking into account cases up to 08/05/2020).

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 12/05/2020, a total of 1,219 hospitals or departments reported to the DIVI registry. Overall, 31,611 intensive care beds were registered, of which 19,468 (62%) are occupied, and 12,143 beds (38%) are currently available. The number of COVID-19 cases treated in participating hospitals is shown in Table 5.

Table 5: COVID-19 patients requiring intensive care (ICU) recorded in the DIVI register (12/05/2020, 9:15 AM).

	Number of patients	Percentage	Change to previous day
Currently in ICU	1,539		-37
- of these: mechanically ventilated	1,020	66%	-43
Discharged from ICU	11,131		+202
- of these: deaths	3,083	28%	+51

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.

Measures taken by Germany

- (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.
- In public spaces, a distance of 1.5 metres to other indivduals must be maintained https://www.bundesregierung.de/breg-de/themen/coronavirus/besprechung-der-bundeskanzlerin-mit-den-regierungschefinnen-und-regierungschefs-der-laender-1733248 *(in German)*
- 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 social distancing measures https://www.bundesregierung.de/breg-de/themen/coronavirus/fahrplan-corona-pandemie-1744202 (*in German*)