



COVID-19 DALY in Germany in 2020, 2021 and 2022: initial findings

Caoimhe Cawley, Michael Porst, Annelene Wengler,
Aline Anton, Elena von der Lippe, Alexander Rommel
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Background

- BoD COVID-19 for Germany in 2020 published
- Analysis has been updated to include calculations for Long COVID, and for years 2021 and 2022

Original Article

The COVID-19 Disease Burden in Germany in 2020

Years of Life Lost to Death and Disease over the Course of the Pandemic

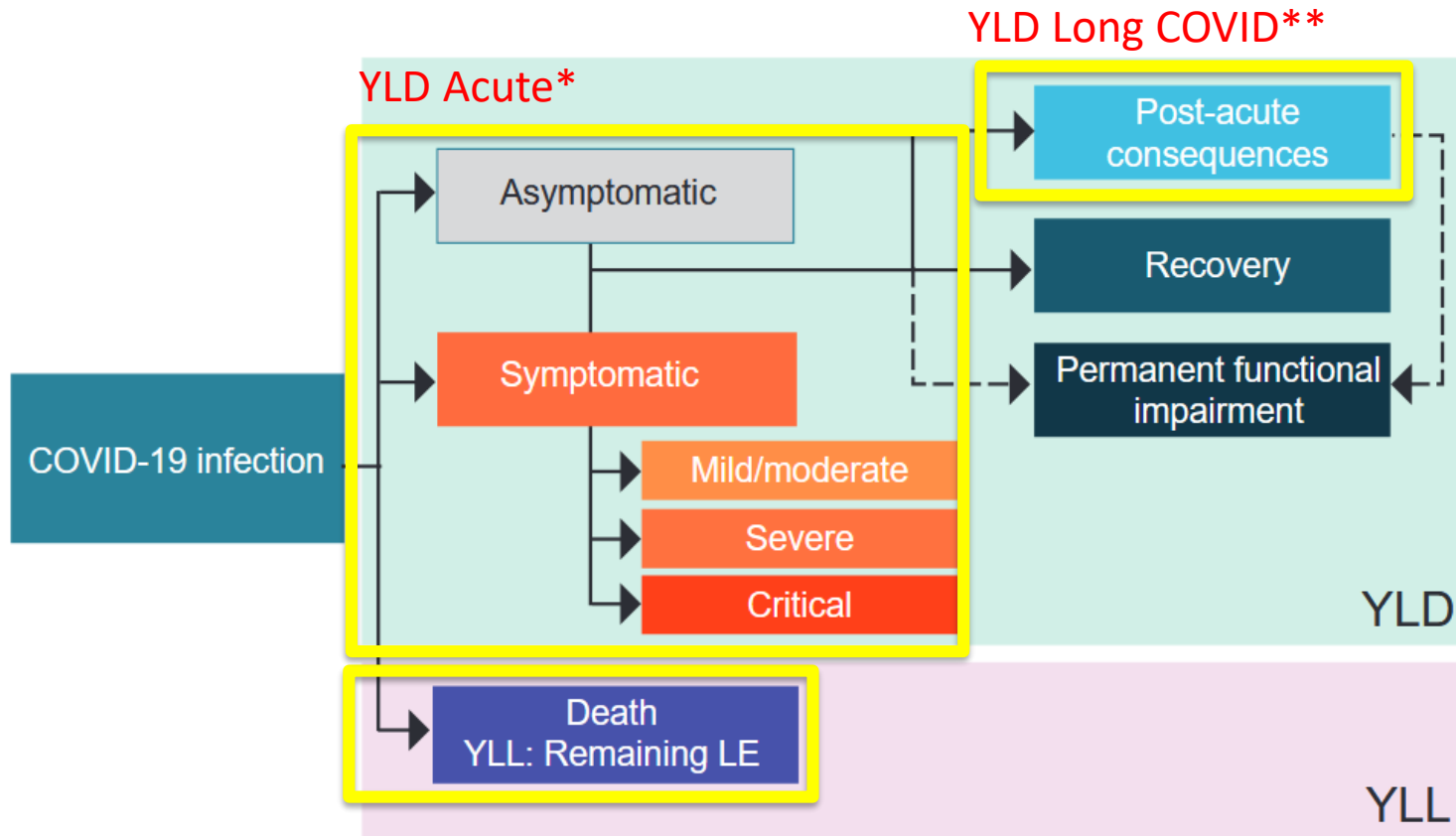
Alexander Rommel, Elena von der Lippe, Dietrich Plass, Thomas Ziese, Michaela Diercke, Matthias an der Heiden, Sebastian Haller, Annelene Wengler on behalf of the BURDEN 2020 Study Group

Rommel et al 2021, Deutsches Ärzteblatt International: <https://www.aerzteblatt.de/int/archive/article/218064>



Methods

Disease model for COVID-19



*Wyper et al 2021, Int Jnl Public Health: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8565264/>

**GBD Long COVID Collaborators 2022, JAMA: <https://pubmed.ncbi.nlm.nih.gov/36215063/>



Methods YLD Long COVID – Health States and DWs*

Table 1. Health States, Symptom Descriptions, and Disability Weights Used for the 3 Long COVID Symptom Clusters

Symptom cluster	Health state	Symptom description	Disability weight (95% UI) ^a
Ongoing respiratory problems			
Mild symptoms	Mild chronic respiratory problems	Cough and shortness of breath after heavy physical activity, but able to walk long distances and climb stairs	0.02 (0.01-0.04)
Moderate symptoms	Moderate chronic respiratory problems	Cough, wheezing, and shortness of breath even after light physical activity; feel tired and can only walk short distances or climb a few stairs	0.23 (0.15-0.31)
Severe symptoms	Severe chronic respiratory problems	Cough, wheezing, and shortness of breath all the time; great difficulty walking even short distances or climbing any stairs, feel tired when at rest, and have anxiety	0.41 (0.27-0.56)
Cognitive problems			
Mild symptoms ^b	Mild cognitive problems	Some trouble remembering recent events and find it hard to concentrate and make decisions and plans	0.07 (0.05-0.10)
Severe symptoms ^b	Moderate cognitive problems	Memory problems and confusion, feel disoriented, hear voices sometimes that are not real, and need help with some daily activities	0.38 (0.25-0.51)
Persistent fatigue with bodily pain or mood swings	Postacute consequences of an infectious disease	Always tired and easily upset; feel pain all over the body and have depression	0.22 (0.15-0.31)

Abbreviation: UI, uncertainty interval.

^a Quantifies health loss as a fraction of time lived within a health state (0 indicates full health; 1 indicates complete loss of health).

^b Also used in the Global Burden of Disease Study for mild and moderate dementia. Additional details appear in eSection 1 in Supplement 1.

*Table from: GBD Long COVID Collaborators 2022, JAMA: <https://pubmed.ncbi.nlm.nih.gov/36215063/>

YLD Long COVID – Incidence proportions and Durations*



Table 3. Global Proportion of Individuals With at Least 1 of the 3 Long COVID Symptom Clusters

	Proportion with Long COVID symptom clusters among survivors, % (95% UI) ^a	
	3 mo after symptom onset	12 mo after symptom onset
All individuals	6.2 (2.4-13.3)	0.9 (0.3-2.0) ^b
Both sexes aged <20 y ^c	2.8 (0.9-7.0)	0.3 (0.1-0.8)
Women aged ≥20 y	10.6 (4.3-22.2)	1.7 (0.7-3.6)
Men aged ≥20 y	5.4 (2.2-11.7)	0.8 (0.3-1.8)
Hospitalized		
Needed care in a general hospital ward	27.5 (12.1-47.8)	11.1 (4.7-19.7)
Females	34.8 (16.5-57.3)	15.1 (5.8-29.7)
Males	21.6 (8.9-40.3)	8.2 (2.9-17.7)
Needed care in an ICU	43.1 (22.6-65.2)	20.5 (9.8-32.9)
Females	51.9 (29.7-73.6)	26.6 (11.5-47.8)
Males	35.8 (17.1-58.1)	15.7 (6.0-31.9)
Not hospitalized		
All individuals	5.7 (1.9-13.1)	0.7 (0.2-1.5)
Both sexes aged <20 y ^c	2.7 (0.8-6.7)	0.3 (0-0.8)
Women aged ≥20 y	9.9 (3.4-21.2)	1.3 (0.3-3.4)
Men aged ≥20 y	4.8 (1.5-11.3)	0.6 (0.1-1.5)

Durations:

- Mild/mod (community cases): **4 months**
- Severe/critical (hospitalised): **9 months**

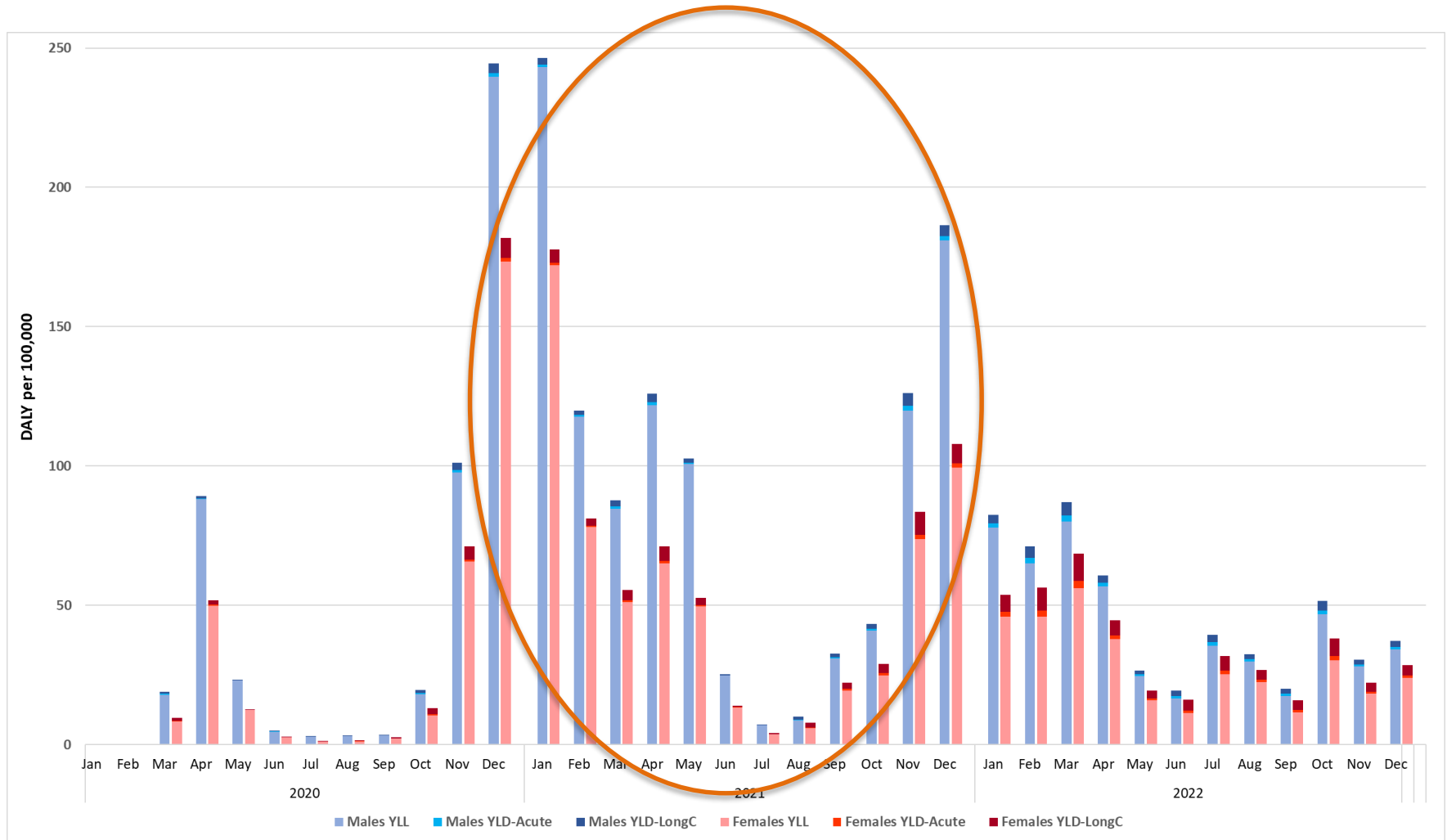
*Table from: GBD Long COVID Collaborators 2022, JAMA: <https://pubmed.ncbi.nlm.nih.gov/36215063/>



Results

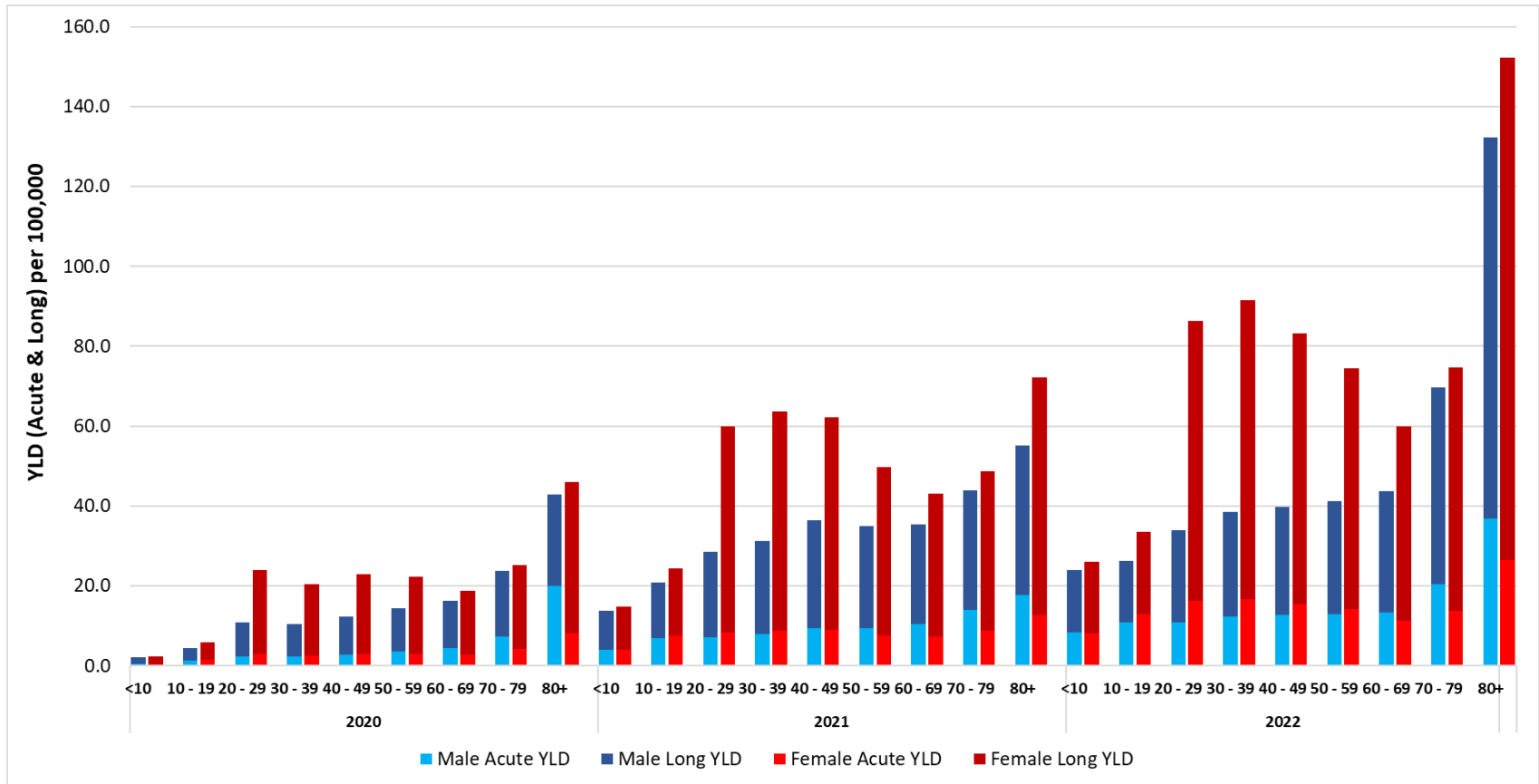


COVID-19 DALY per 100,000 by month, 2020-2022

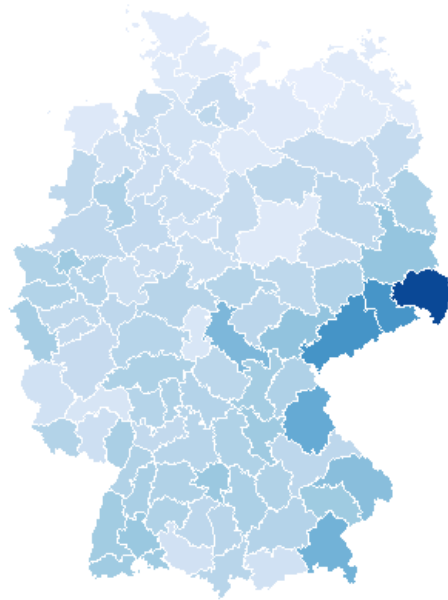




COVID-19 YLD (Acute & Long) per 100,000 by age and sex

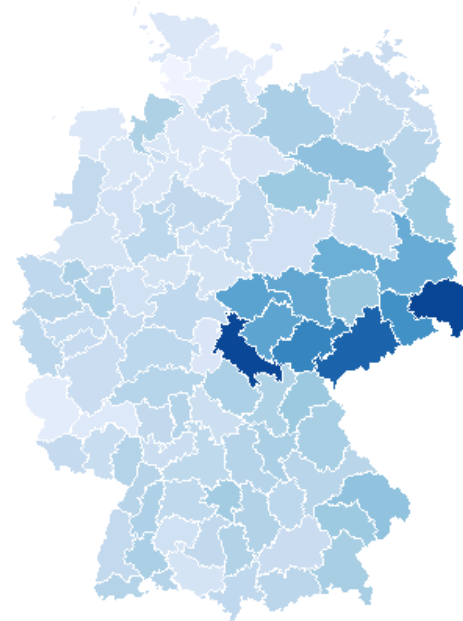


COVID-19 DALY per 100,000 by region



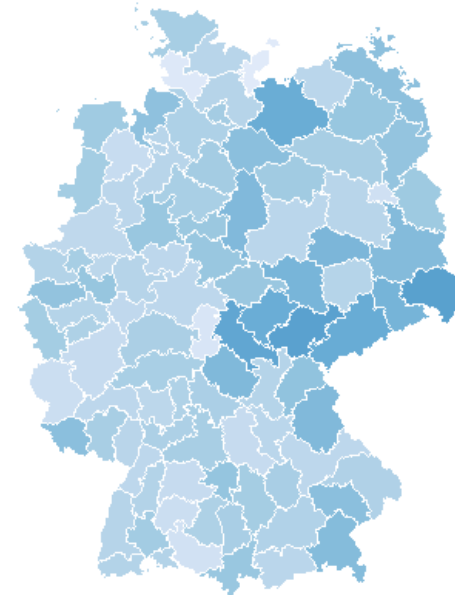
DALY
per
100,000
2020

1500
1000
500
0



DALY
per
100,000
2021

3000



DALY
per
100,000
2022

1500
1000
500
0



Strengths and Weaknesses

Strengths:

- Deaths data quite robust

Weaknesses:

Underestimation of YLD due to Long COVID?

- Under-reporting of cases
- Only 3 main health states considered for Long COVID



DANKE

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THANKS



Questions?



Methods YLD Acute

Name	Health State Definitions	Disability Weight	Duration of illness
Asymptomatic	No reported symptoms corresponding to COVID-19	-	-
Mild	General signs of illness, sore throat, runny nose, disturbance of smell or taste, diarrhoea	0.006	14 days
Moderate	As above also with: fever, cough or pneumonia	0.051	14 days
Severe	Hospitalised, non-intensive care	0.133	21 days
Critical	Intensive care	0.655	32 days

Rommel et al 2021, Deutsches Ärzteblatt International: <https://www.aerzteblatt.de/int/archive/article/218064>



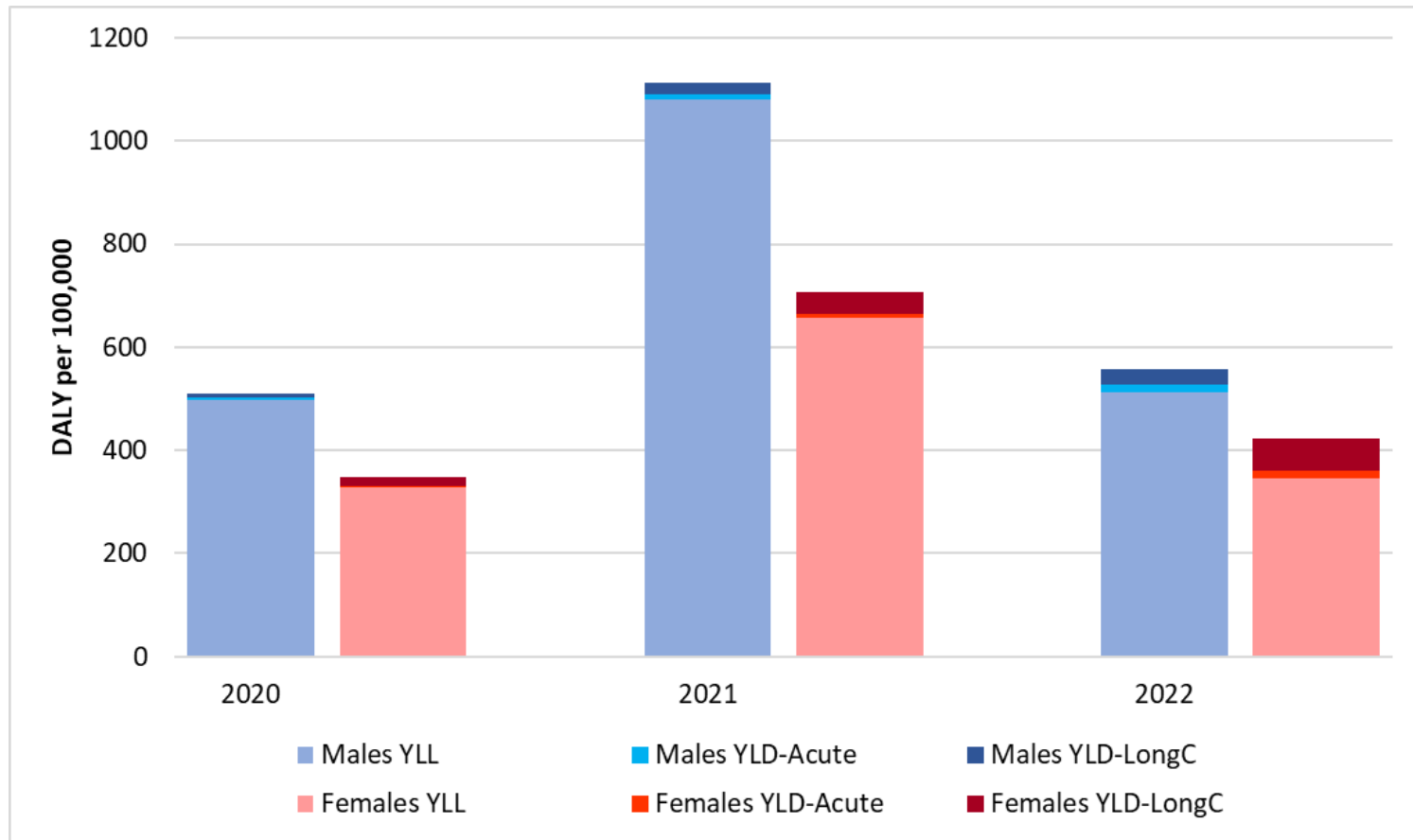
	YLL	YLD Acute*	Post-acute / YLD Long COVID**
Deaths	Surveillance data (deaths due to COVID)		
Life Expectancy	Federal Statistics Office, 2017 values		
Population data	Federal Statistics Office	Federal Statistics Office	Federal Statistics Office
Cases		Surveillance data	Derived from acute cases, based on GBD Long COVID Study
Severity distribution		Symptoms data available for all cases	
Disability weights		Burden-EU model	Taken from: GBD Long COVID Collaborators study
Durations		As for 2020 analysis, based on German data	

*Wyper et al 2021, Int Jnl Public Health: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8565264/>

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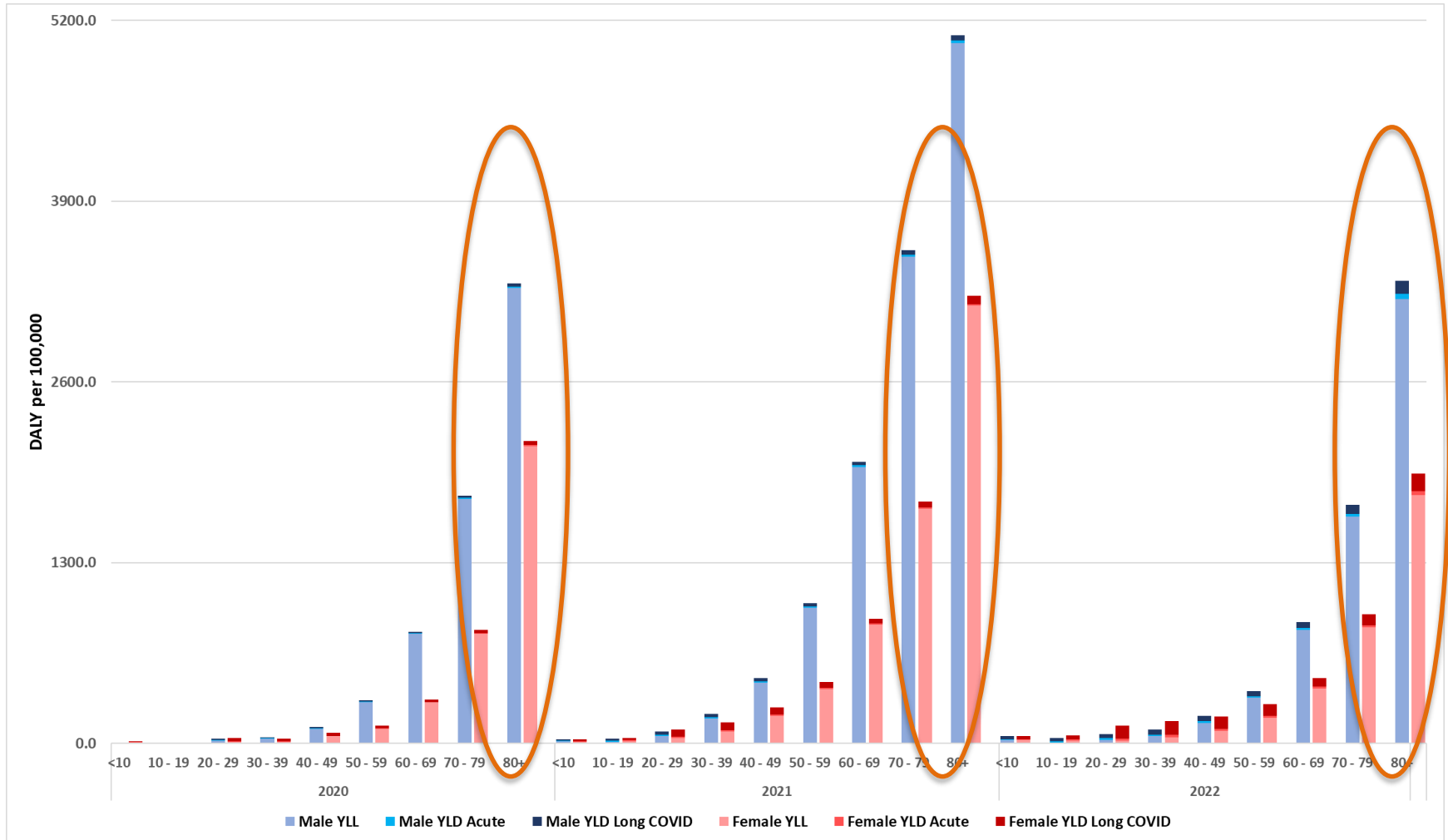


COVID-19 DALY per 100,000 in Germany, 2020-2022

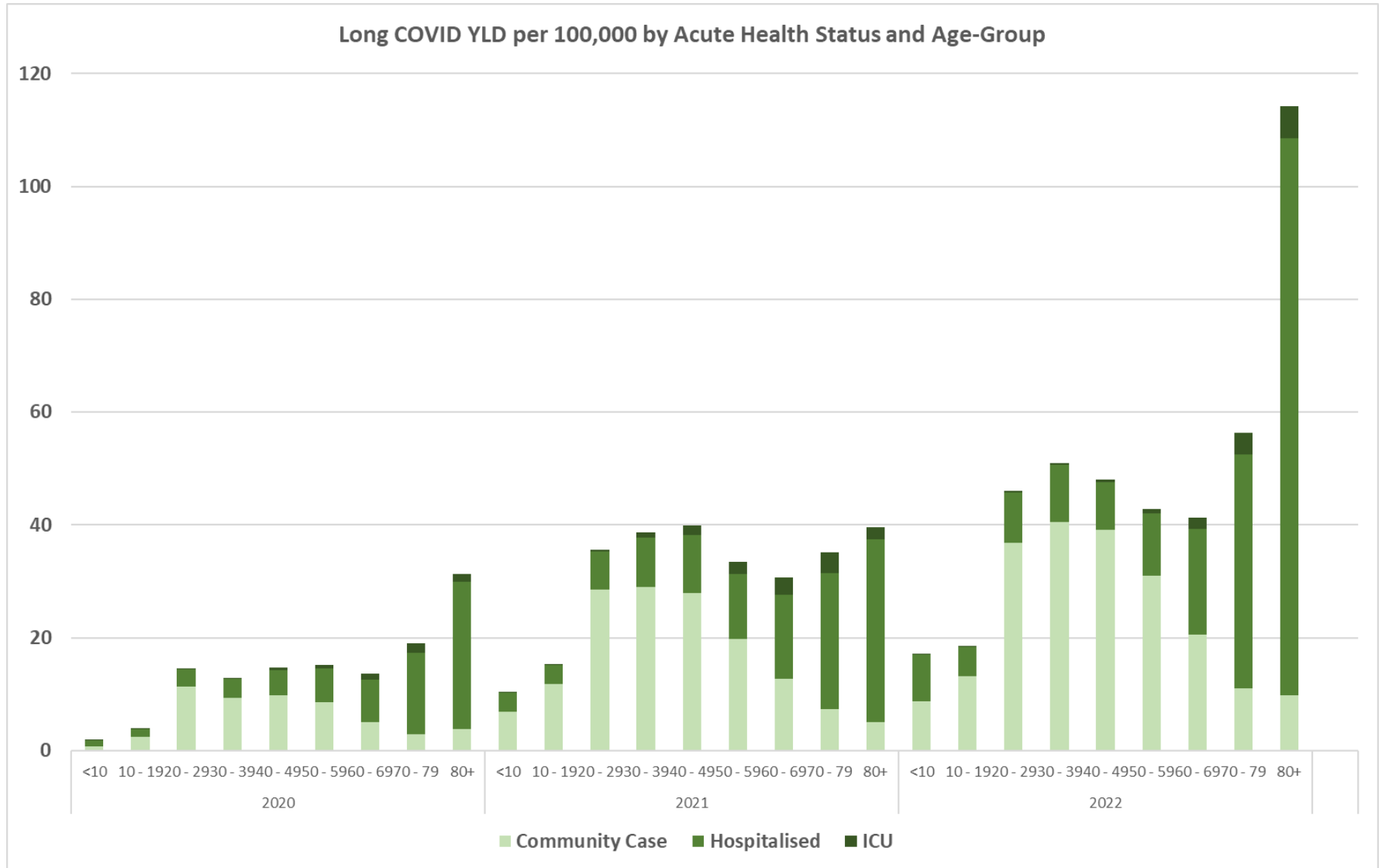




COVID-19 DALY per 100,000 by age-group, 2020-2022

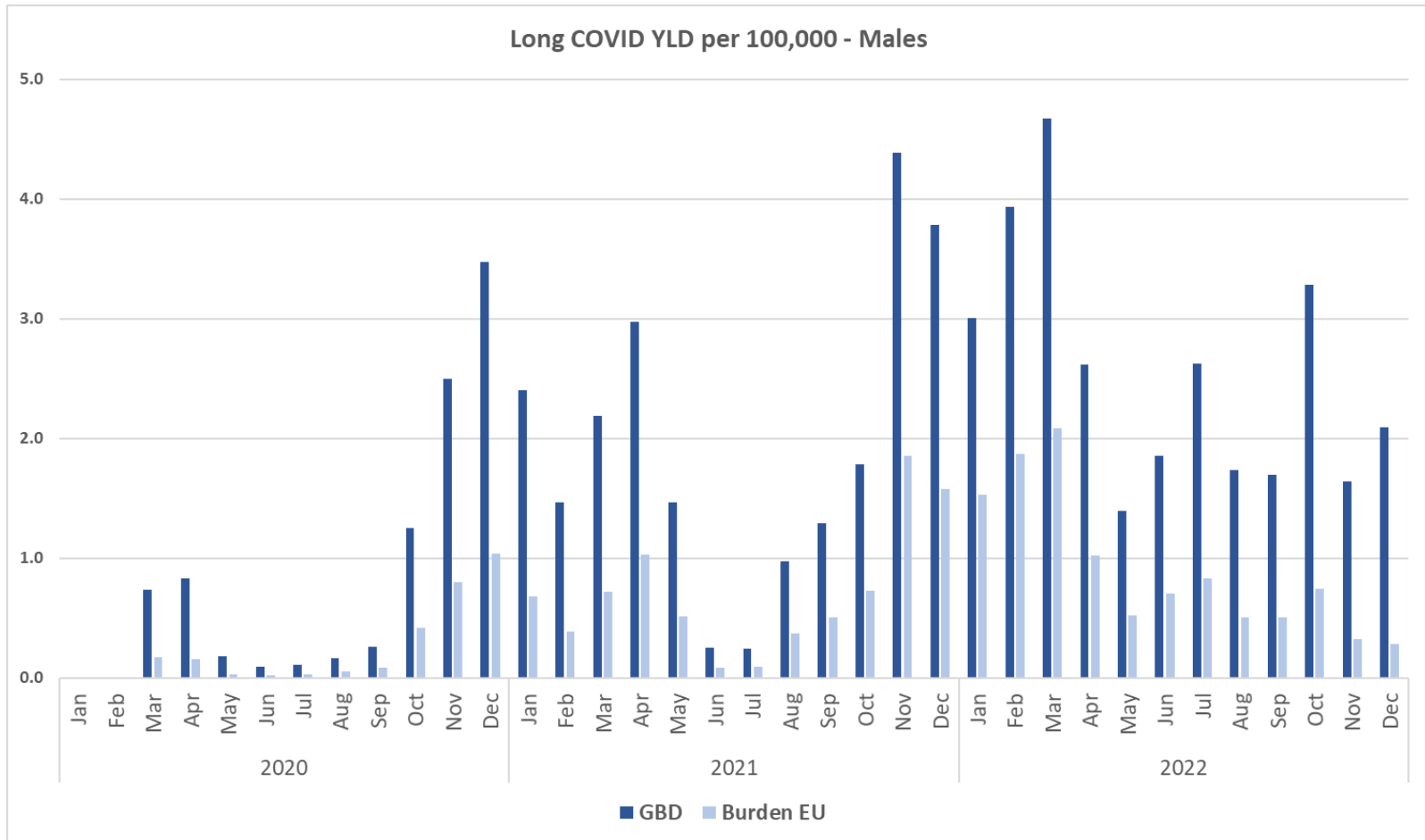


Long COVID YLD by Acute Health Status





Long COVID YLD Rates – comparison GBD vs Burden-EU, Males





Long COVID YLD Rates – comparison GBD vs Burden-EU, Females

