

MOCOS data for bulletin - Jan 31, 2022

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1. Specification of runs

We ran an agent based model tailored for Saxony. The configuration and setup includes:

- a) Simulated population
 - i) 4 076 893 individuals sampled based on Saxony population statistics
 - ii) Individuals distributed into 2 193 265 households
- b) Parameters set to fixed values based on available data & educated assumptions
 - i) All infections are due to delta variant
 - ii) Contact tracking has a delay of around 2 days
 - iii) Level of vaccinations in age groups according to this page
 - 1) 0-11: 2.5%
 - 2) 12-17: 38% (boost: 8.9%)
 - 3) 18-59: 65.3% (boost: 39.8%)
 - 4) 60+: 81.8% (boost: 63.5%)
 - iv) Assuming 30% of people are naturally immunized due to earlier infections (overall dark figure ~1.9)
 - v) Using social contact freq matrices from COVIMOD
 - vi) Screening of kids in schools 2 times per week
 - 1) Assuming 50% effectivity of single test
 - 2) Age range of kids screened: 8 - 16
 - vii) 37% of people having CoronaWarnApp or similar app that can help in contact tracking
 - 1) Assuming 6 hours of delay for testing for CoronaWarnApp users
 - viii) Distributions used in the disease progression:
 - 1) Incubation time:
 - (a) Delta: Log-normal distribution with log-mean 1.37 and scale 0.5
 - (b) Omicron: Log-normal distribution with log-mean 1.23 and scale 0.479
 - 2) Symptom onset time: Gamma distribution with shape $\alpha=0.87$ and scale $\theta=2.91$
 - 3) Onset - Hospitalization delay: Exponential distribution with mean 3.78 days
 - 4) Onset - death delay: Log-normal distribution with log-mean 1.70 and scale 1.21
- c) Parameters for the delta wave fitted before restrictions on Nov 22th:
 - i) q - Mild case detection probability: 0-0.4, best fitting for 0.1-0.2 range

- ii) b - Contact tracing detection probability: 0-0.6, best fitting for 0.15-0.3 range
- iii) c - level of restricting out-household contacts: 45%-50%
- d) On Nov 22th the level of restricting out-household contacts was increased to 65%.
- e) The level of restricting out-household contacts for the omicron wave was estimated to be 65-70%.

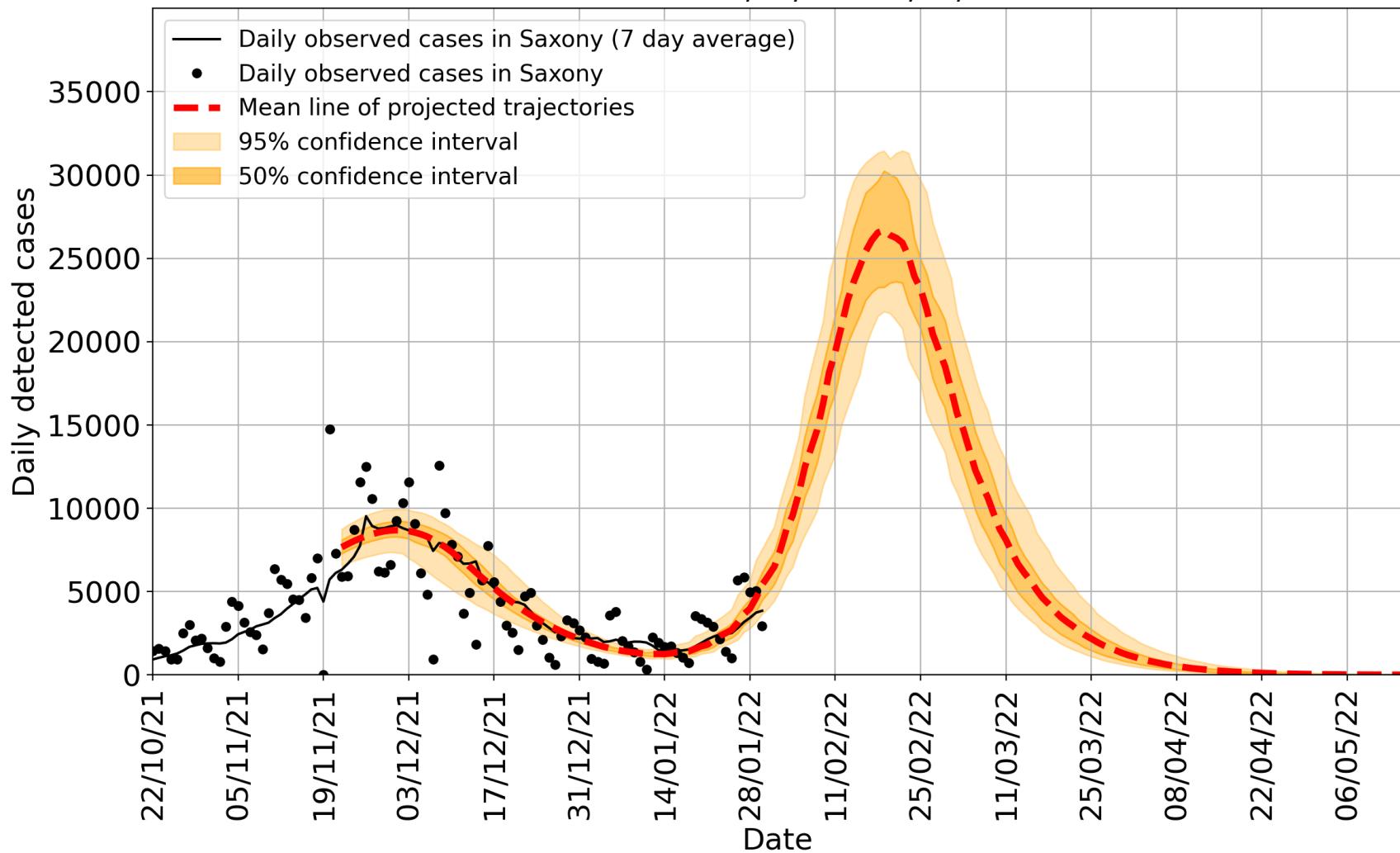
Group	Relative group size		Immunity against infection (omicron)	Susceptible population group size		A priori immunity against hospitalization (omicron)	A priori immunity against death (omicron)
	A, C	B		A, C	B		
Not vaccinated, not previously infected	26.1%	14.9%	0%	26.1%	14.9%	0%	0%
Not vaccinated, previously infected	11.2%	22.4%	30%	7.8%	15.6%	50%	50%
Vaccinated 2x, not infected	14.5%	18.5%	0%	14.5%	18.5%	60 %	80 %
Vaccinated 2x, previously infected	6.2%	2.2%	50%	3.1%	1.1%	87,5 %	93%
Booster, not infected	29.4%	37.4%	50%	14.7%	18.7%	87.5%	93%
Booster, previously infected	12.6%	4.5%	50%	6.3%	2.3%	94%	97%
Sum:	100%	100%		72.6%	71.2%		

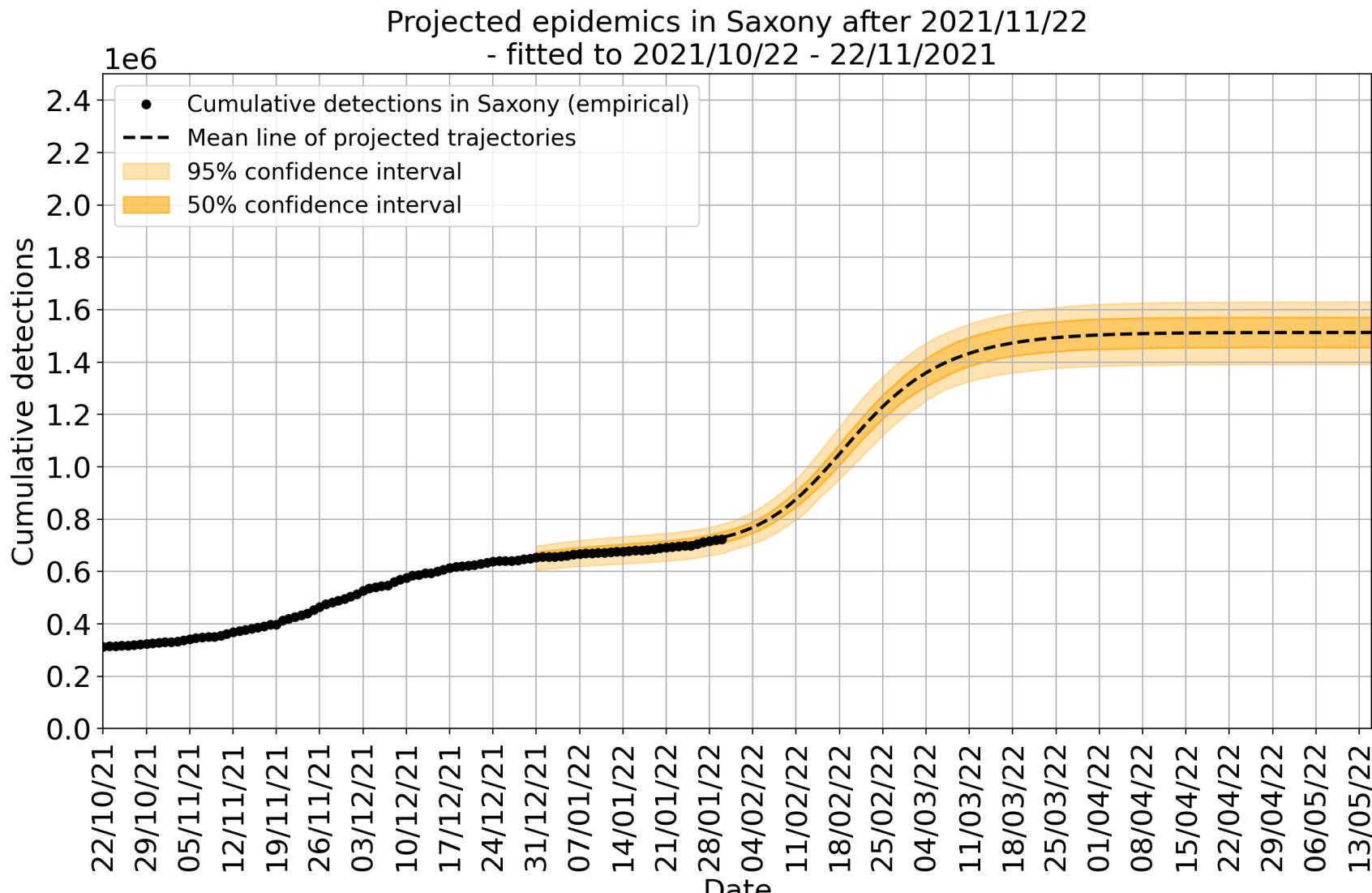
	Bulletin Scenario A balanced	Bulletin Szenario B optimistic	Bulletting Szenario C pessimistic
Protection Immunisation against Infection	Houshold study DK	Houshold study DK	Houshold study DK
Protection from Immunisation state against Infection (compared with unvaccinated)	Technical Briefing 31.12. England link	Technical Briefing 31.12. England link	Technical Briefing 31.12. England link
Biological reduction of omicron pathogenicity against hospitalisation (adjusted on immune state)	50%	66% (i.e. to 33% of delta-rate, Techn. Briefing 31.12. England link)	25% (i.e. to 75% of delta, south Africa study, link)
Length of Hospital stay	6 days	6 days	8 days
Percenter Population not vaccinated, but previously infected	As Reported (29.1.22)	Doubled	As Reported (29.1.22)
Additional omicron reduction pathogenicity regarding death (on top regarding reduction of risk for hospitalisation)	Additional omicron-related reduction factor 0.75 (i.e. 0.75*50% of delta)	Additional omicron-related reduction factor 0.50 (i.e. 0.5*33% of delta)	No additional reduction of Hospitalisation rate (i.e. 75% of delta, Danish data)

2. Scenario A

2.1. Detections forecast

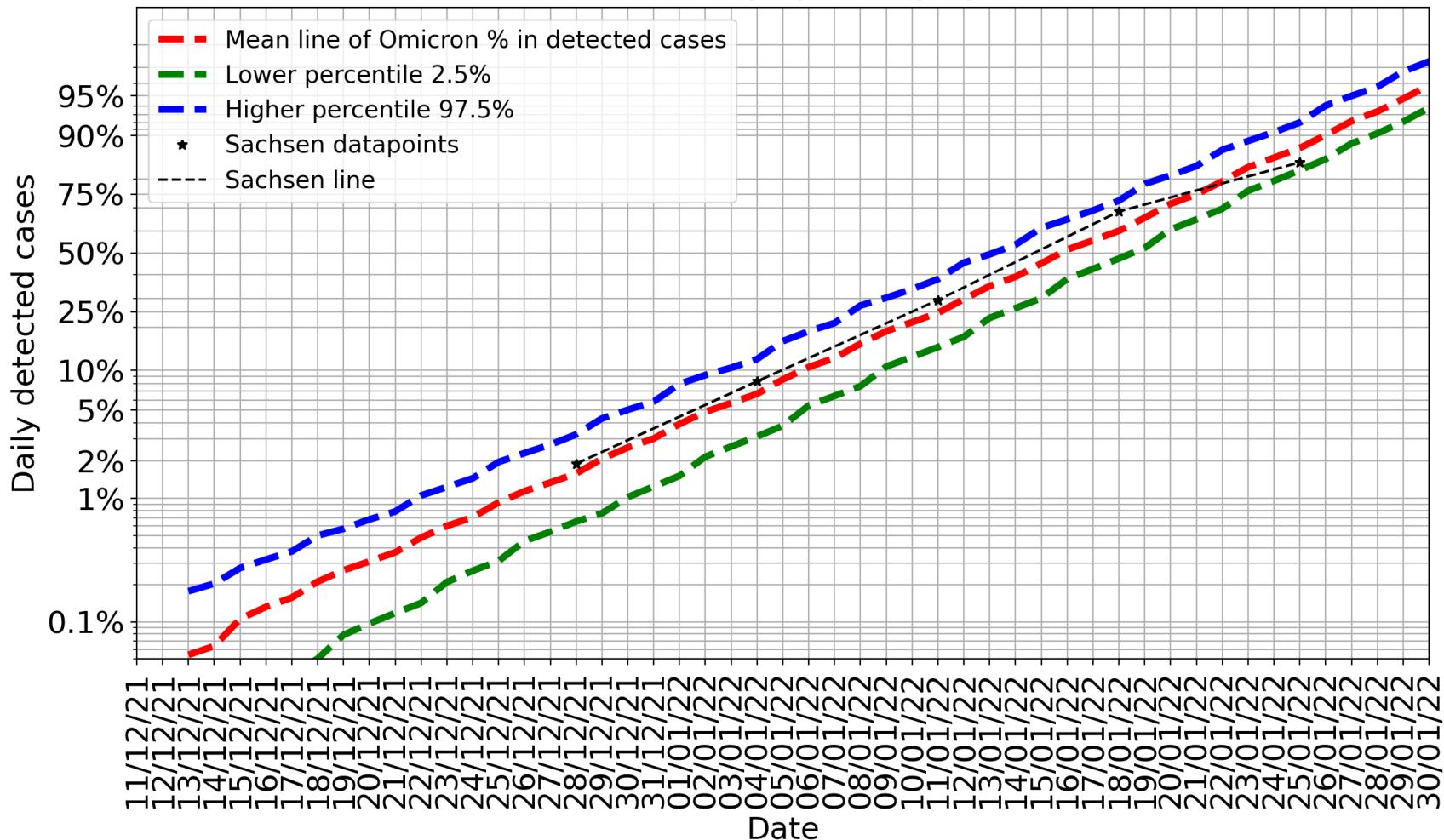
Projected epidemics in Saxony after 2021/11/22
- fitted to 2021/10/22 - 22/11/2021



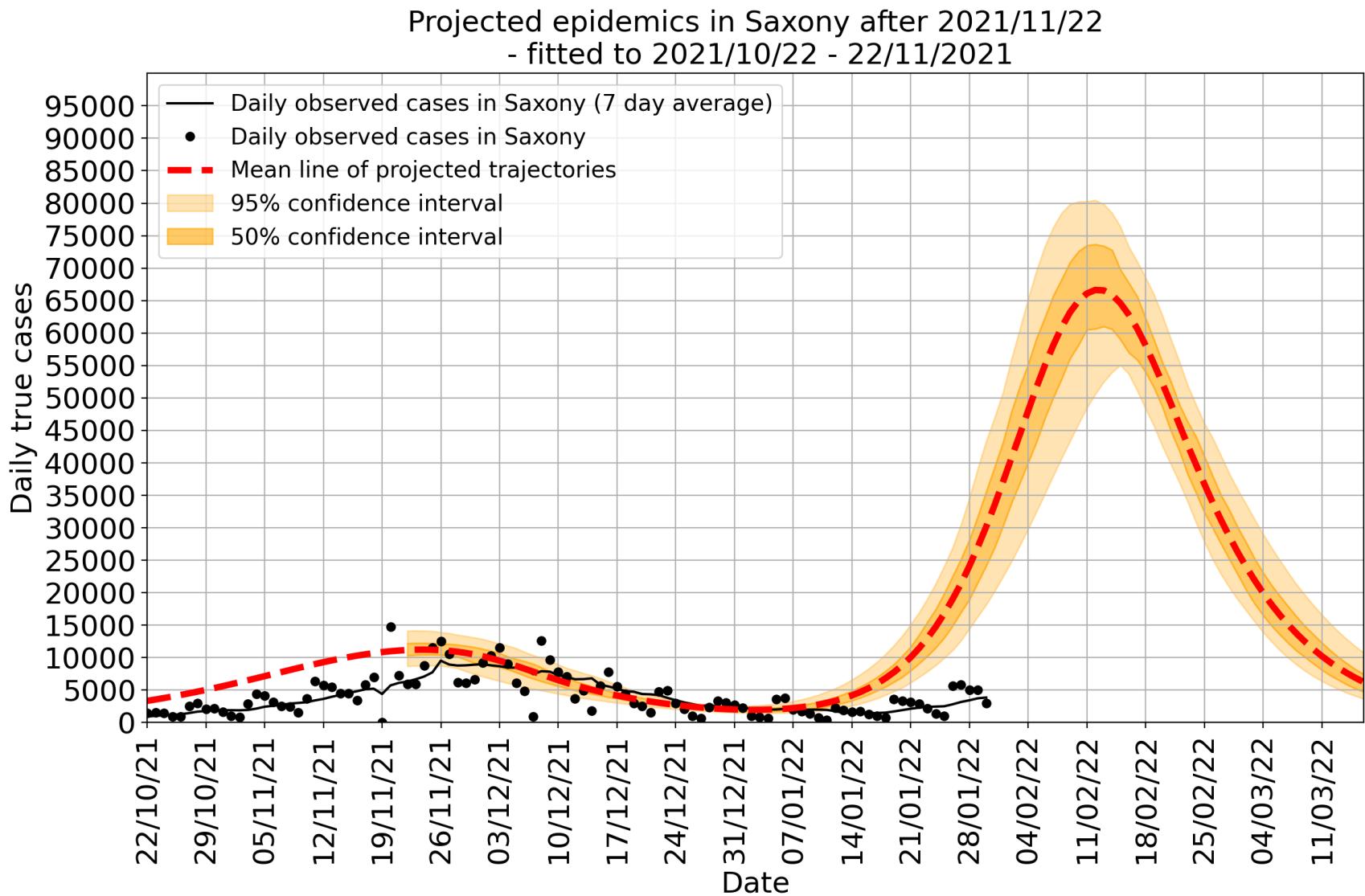


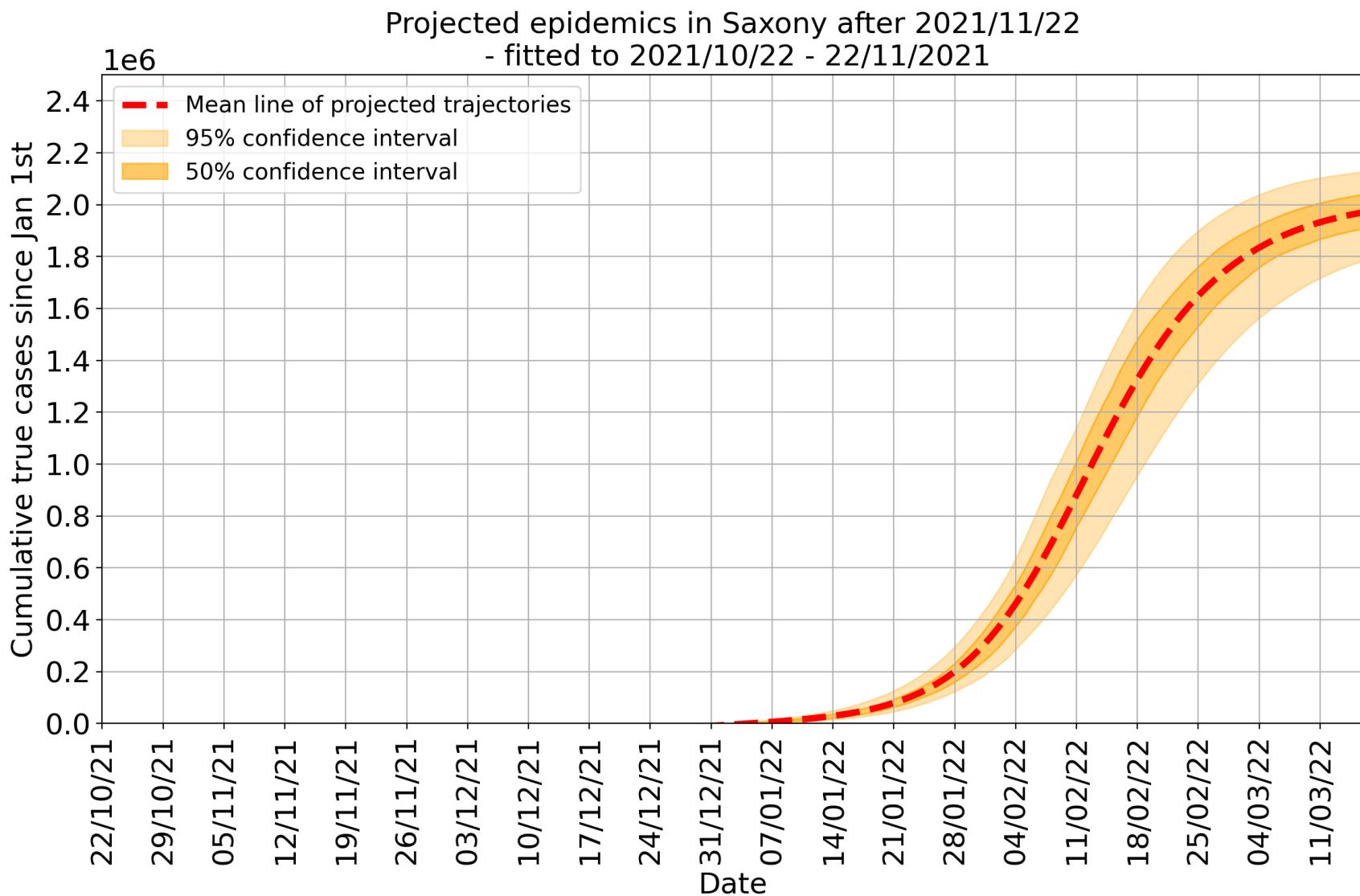
Logit of Omicron share among all detections:

Scenario A
Projected epidemics in Saxony after 2021/11/22
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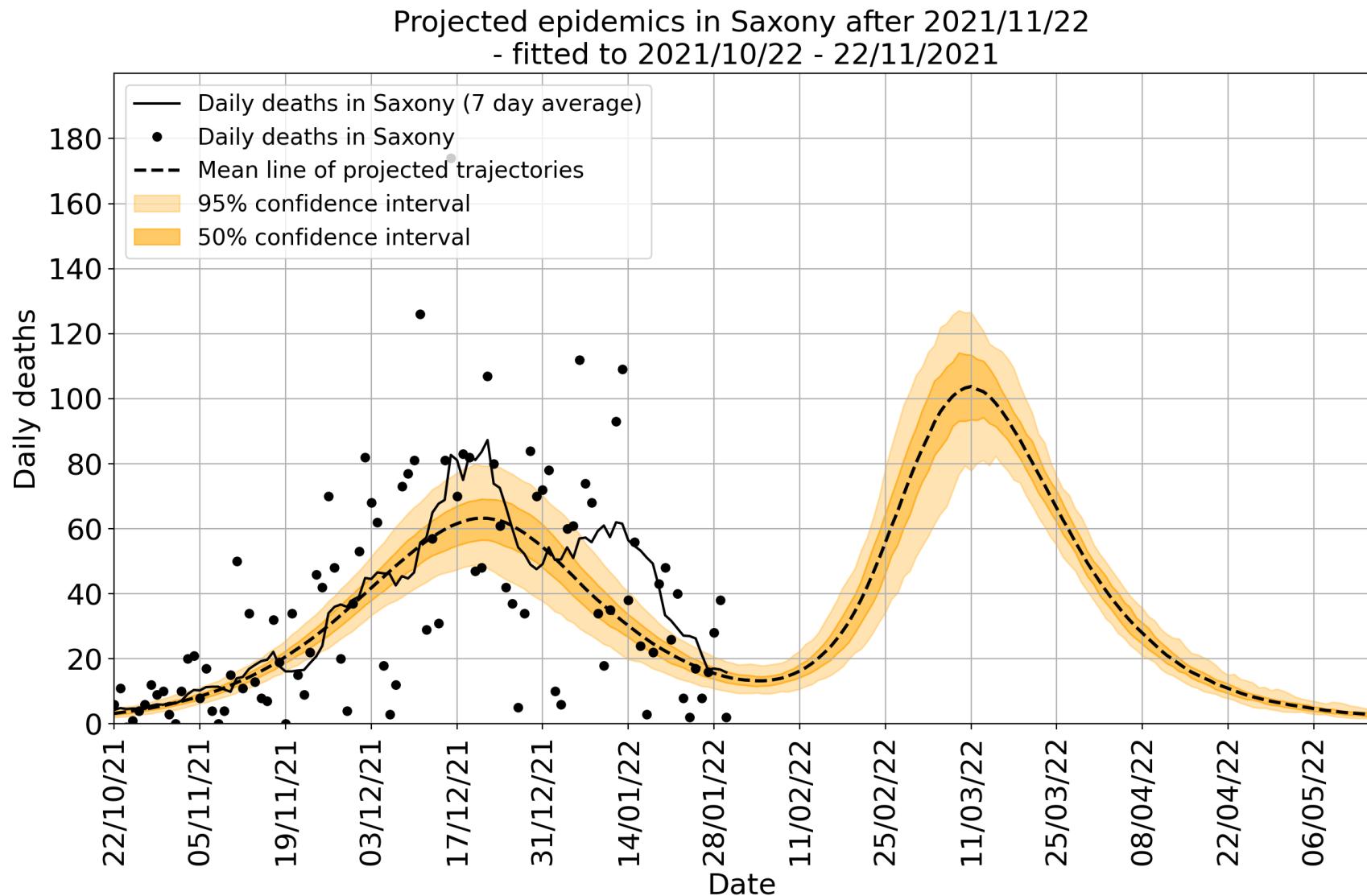


2.2. True cases forecast

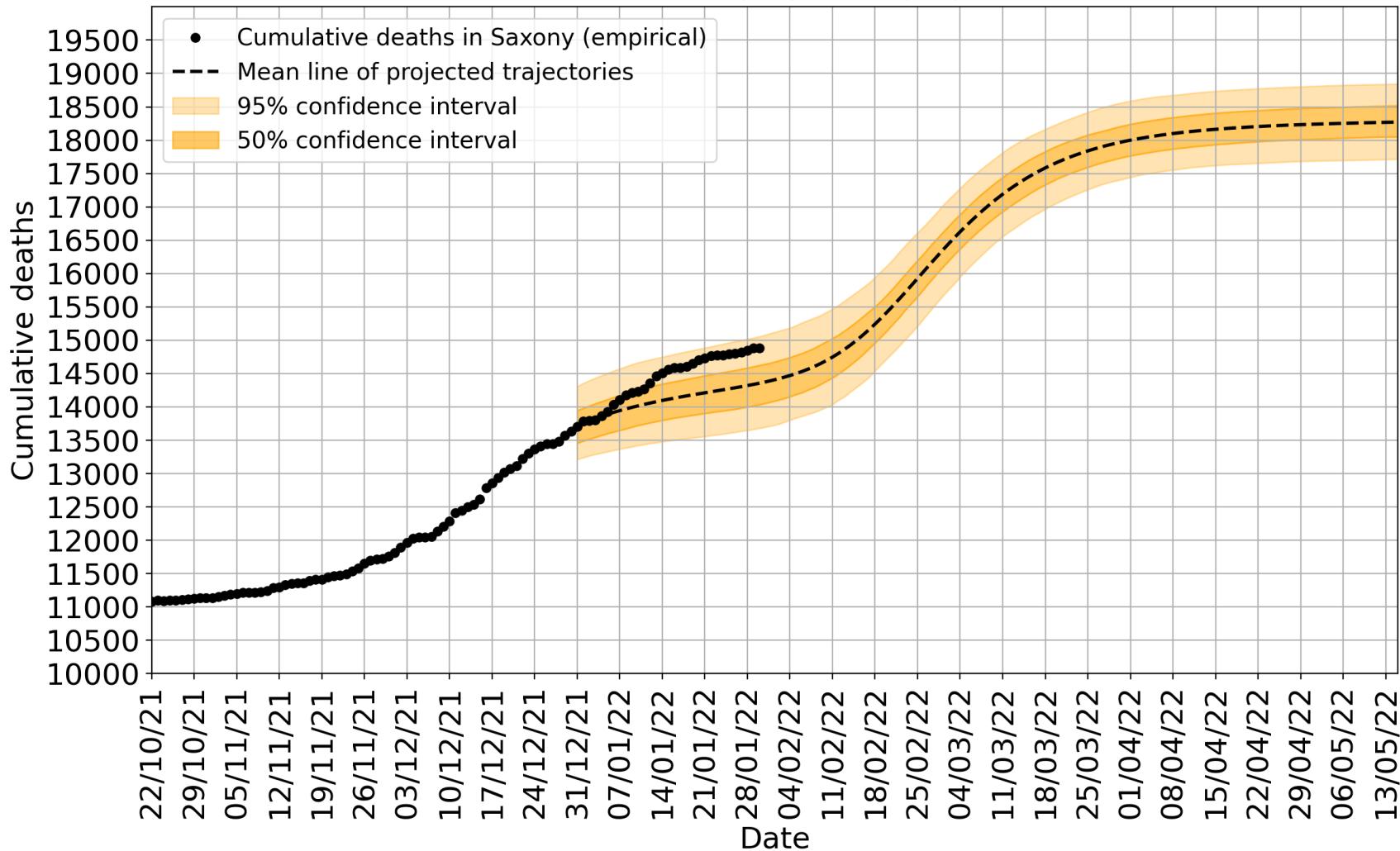




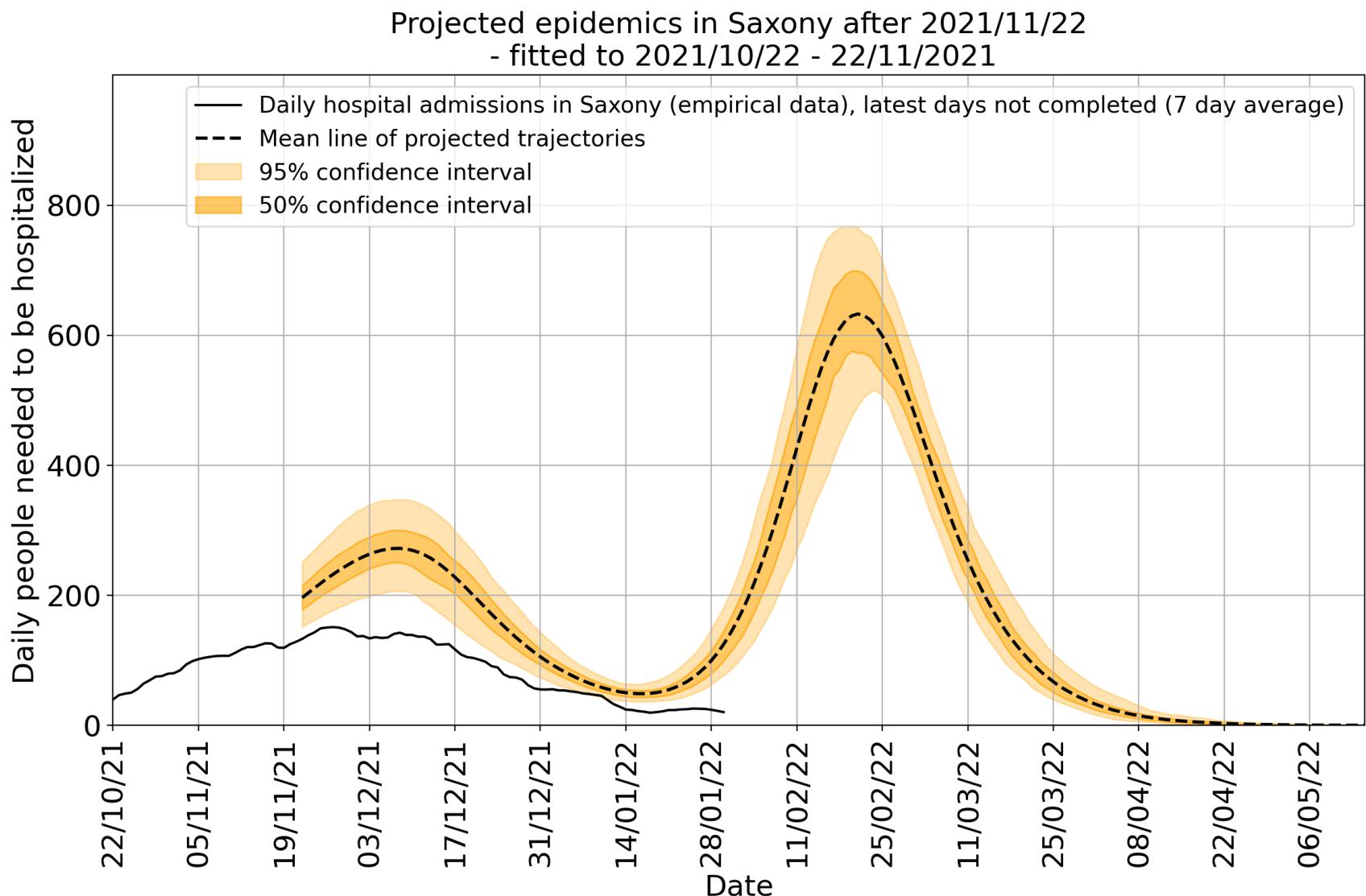
2.3. Deaths forecast

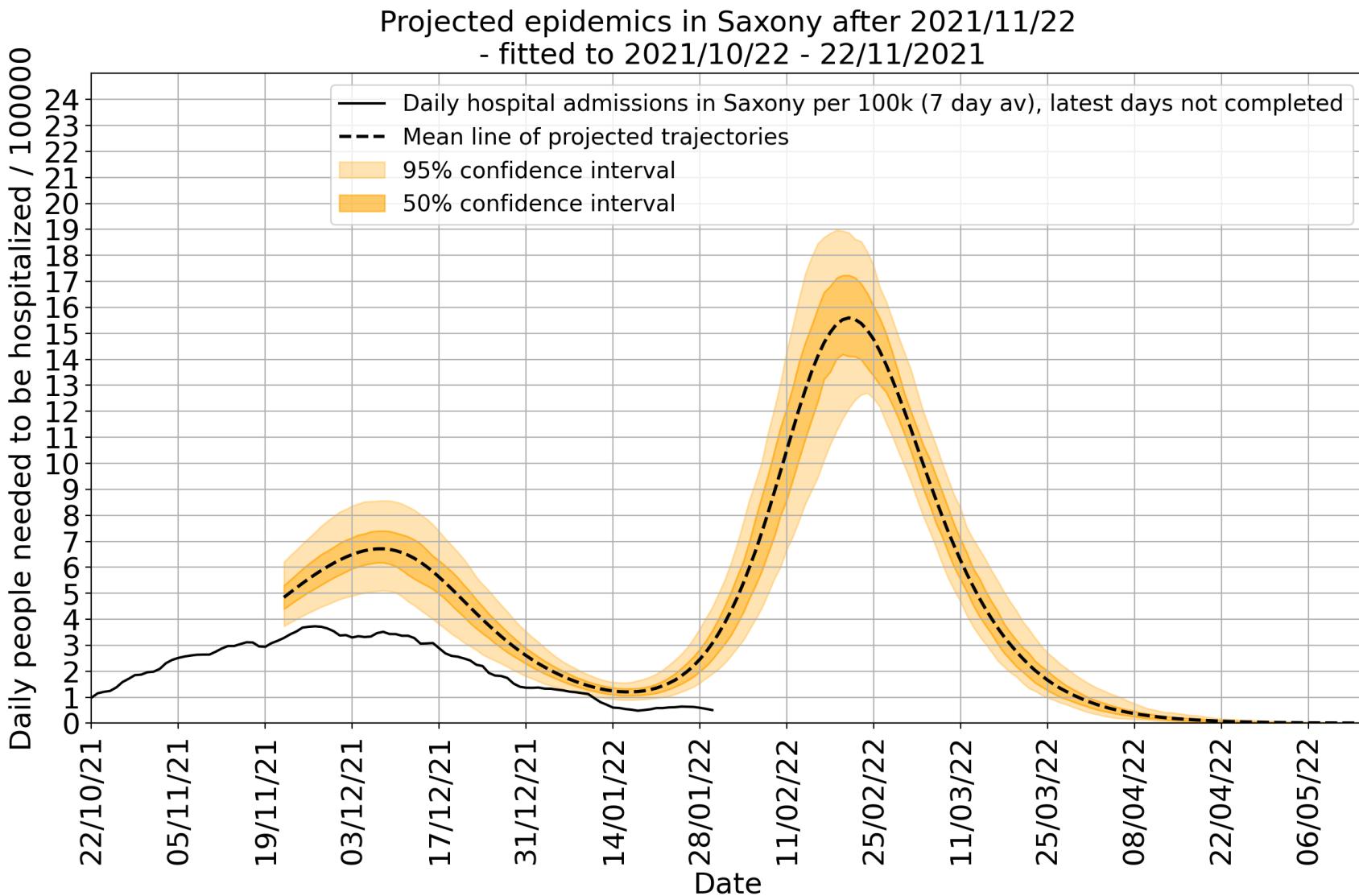


Projected epidemics in Saxony after 2021/11/22
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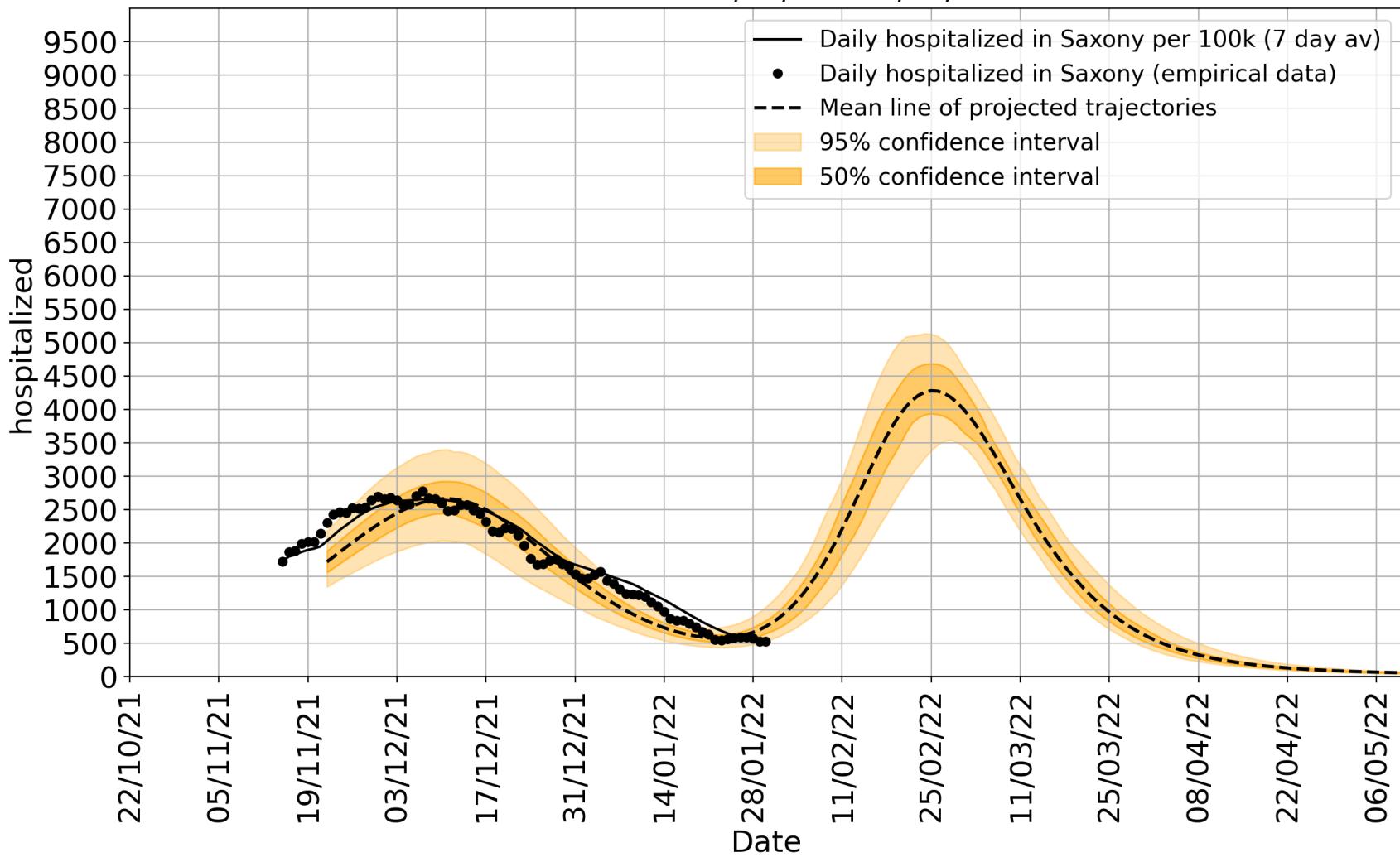


2.4. Hospitalization forecast

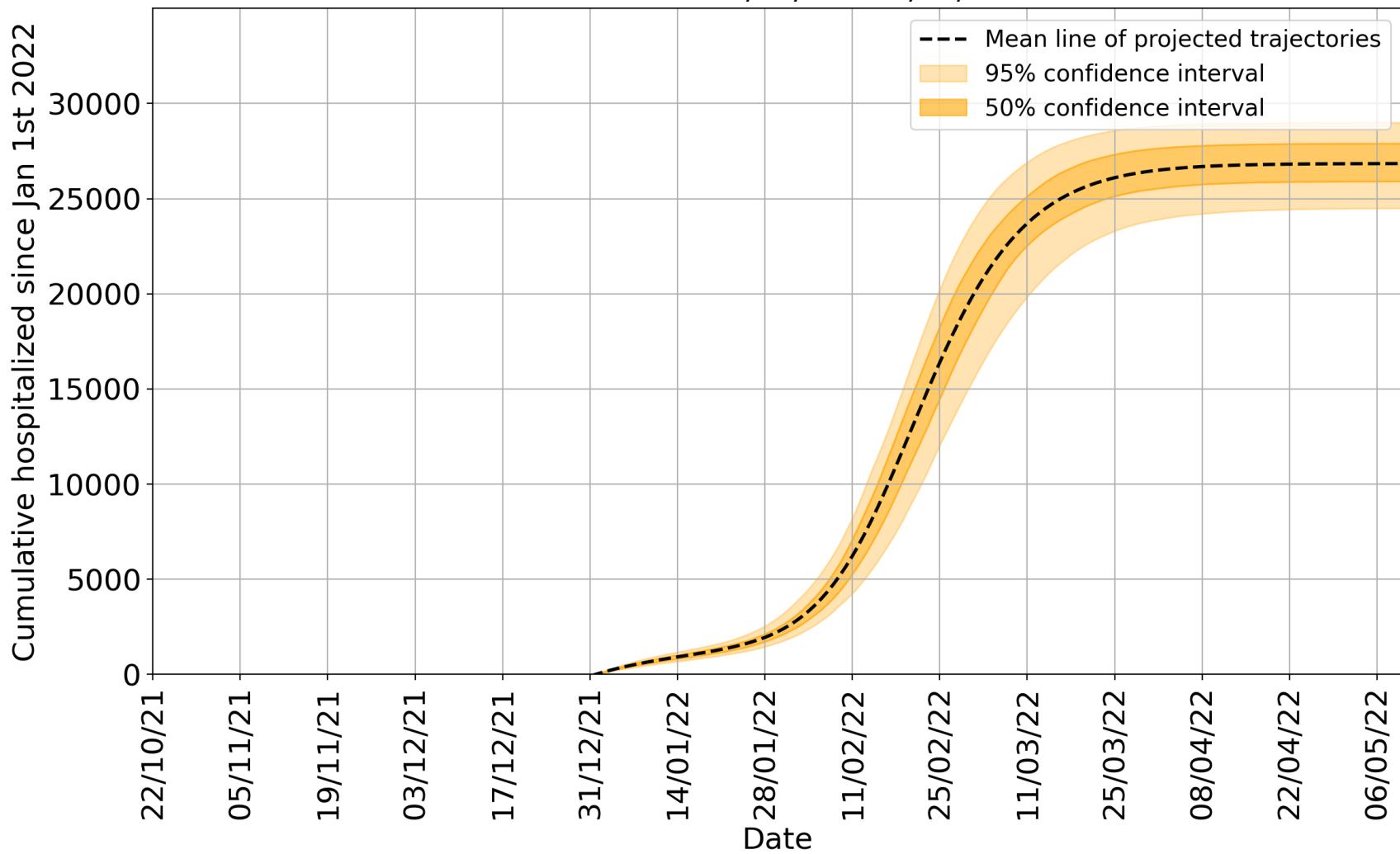




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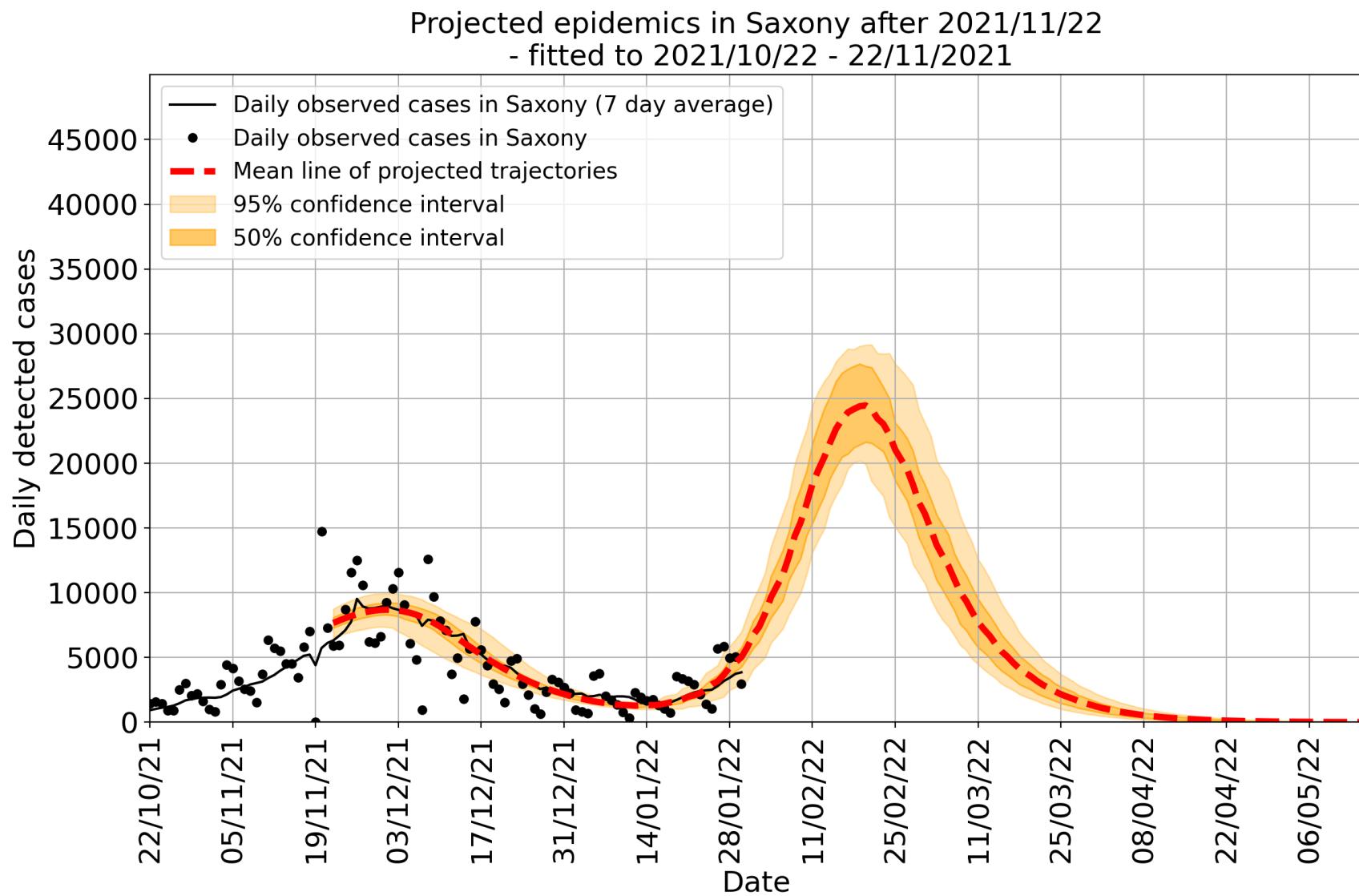


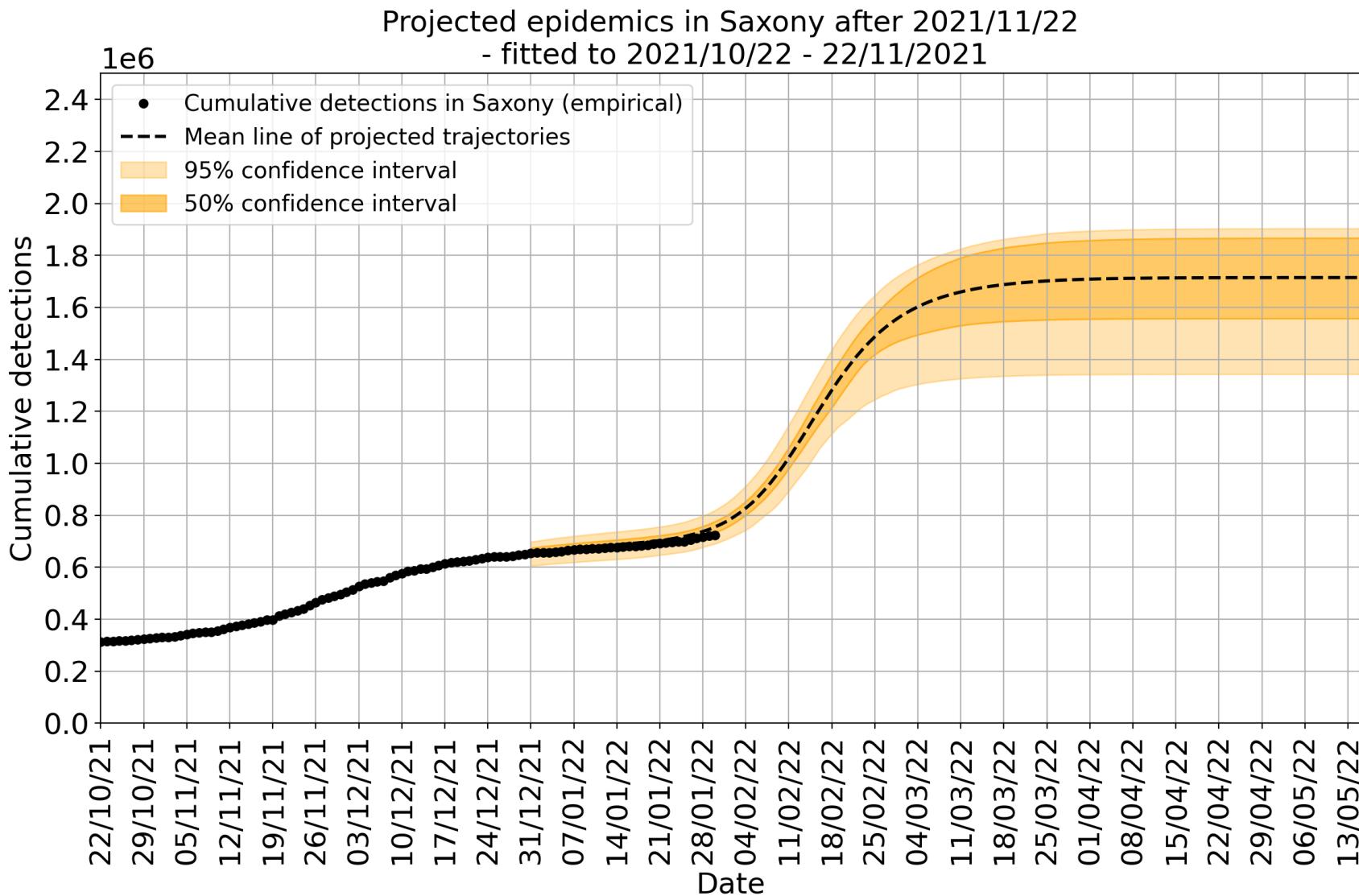
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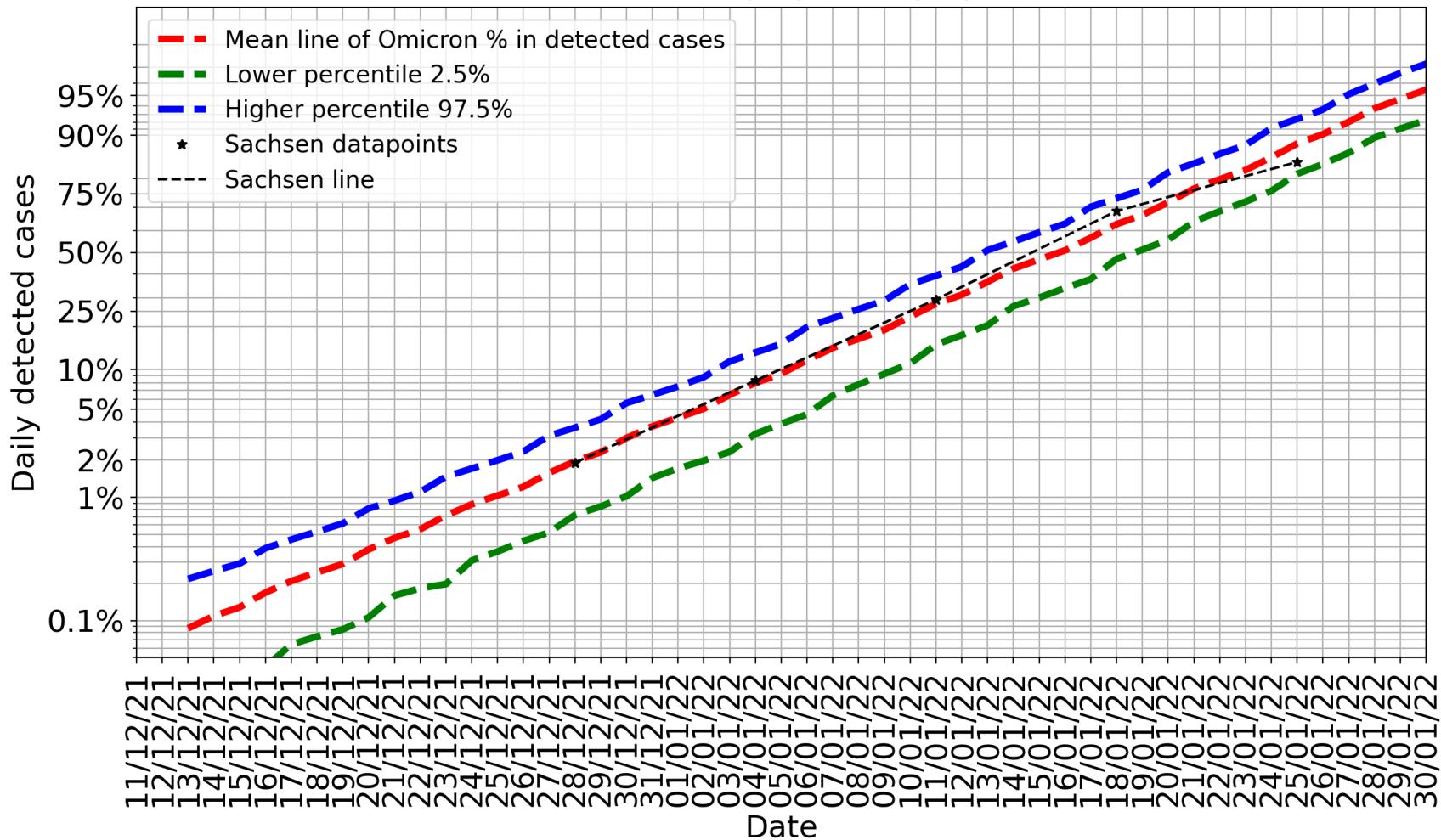
3. Scenario B

3.1. Detections forecast

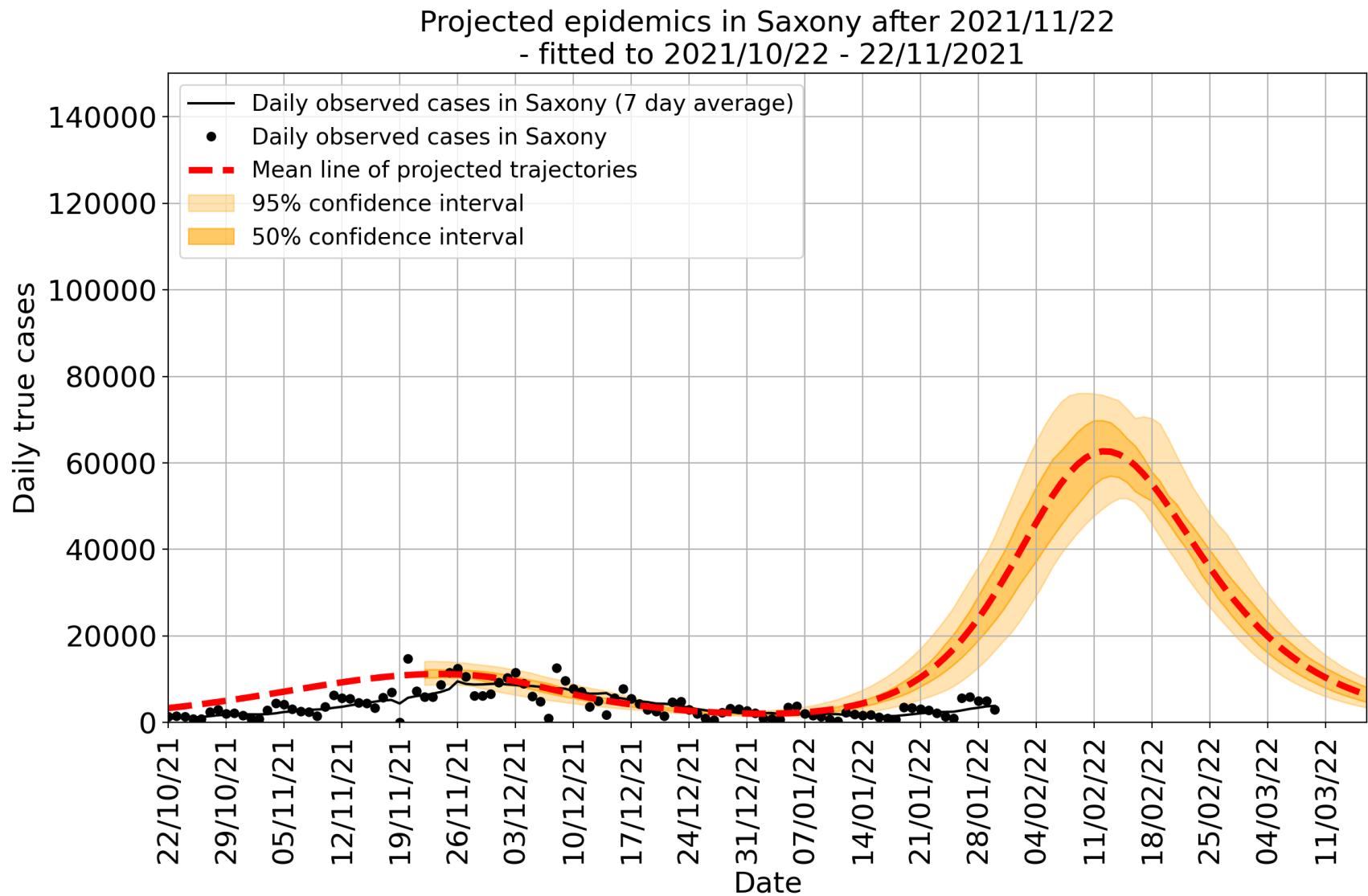


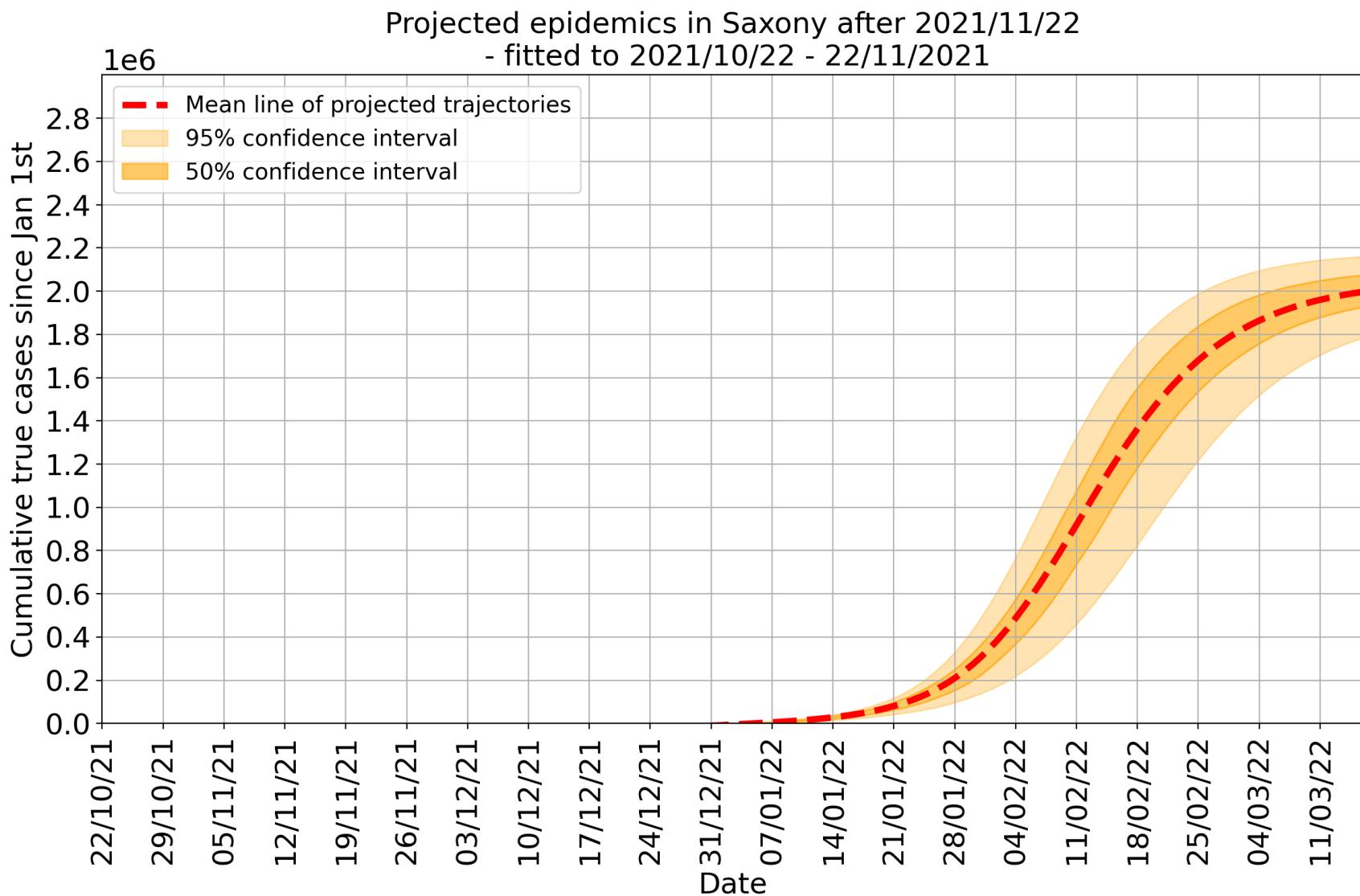


Scenario B
Projected epidemics in Saxony after 2021/11/22
- fitted to 2021/10/22 - 22/11/2021

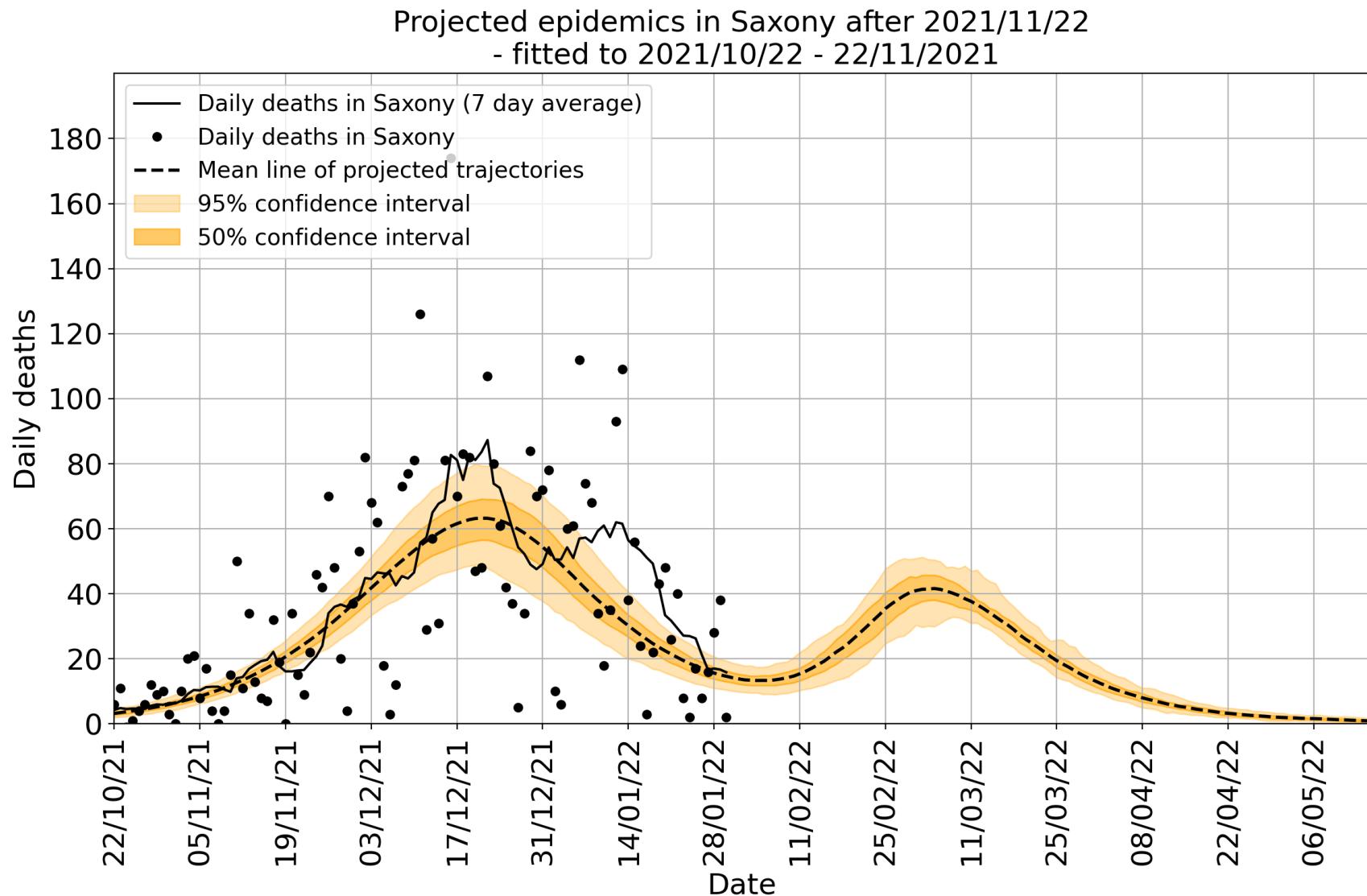


3.2. True cases forecast

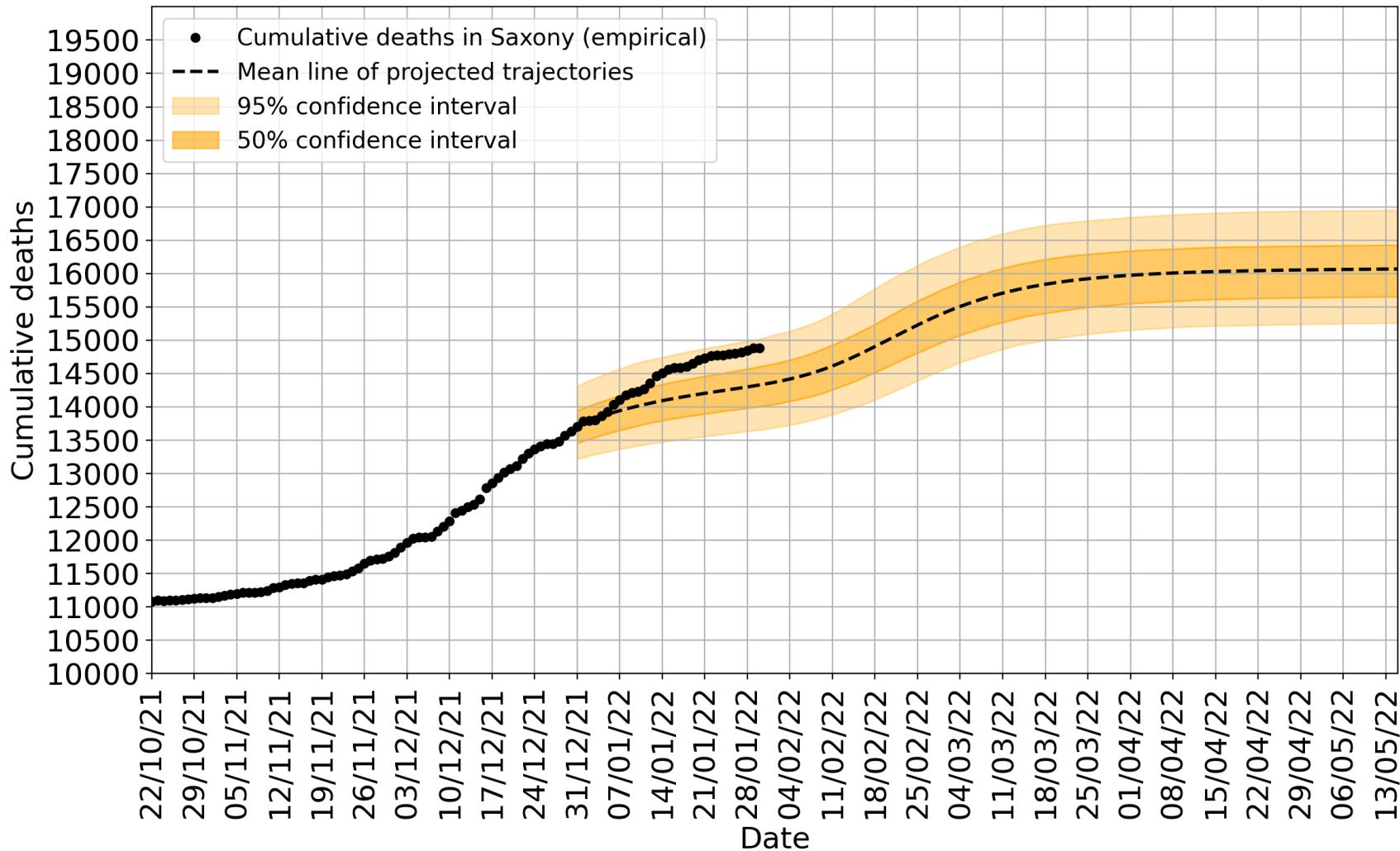




3.3. Deaths forecast

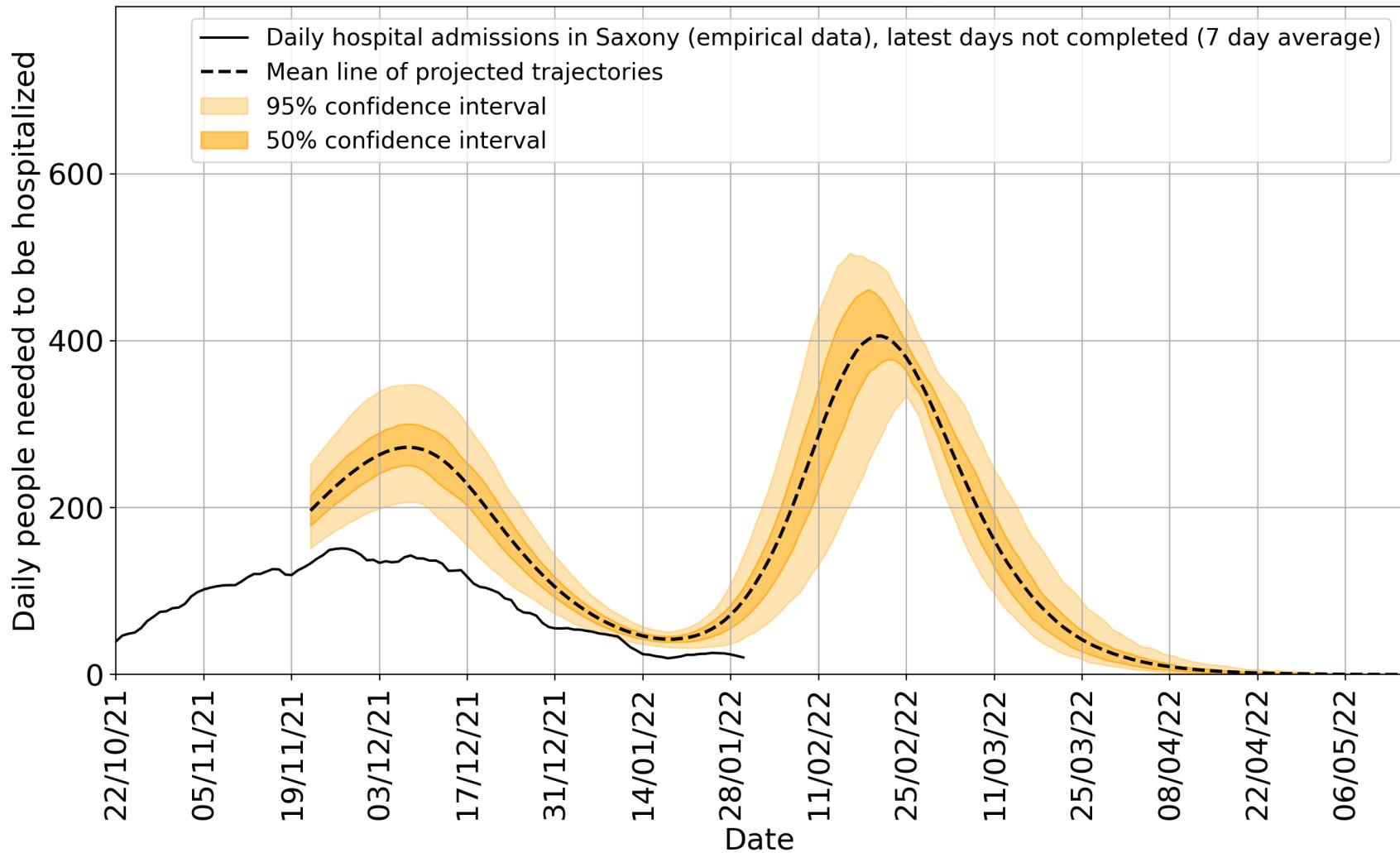


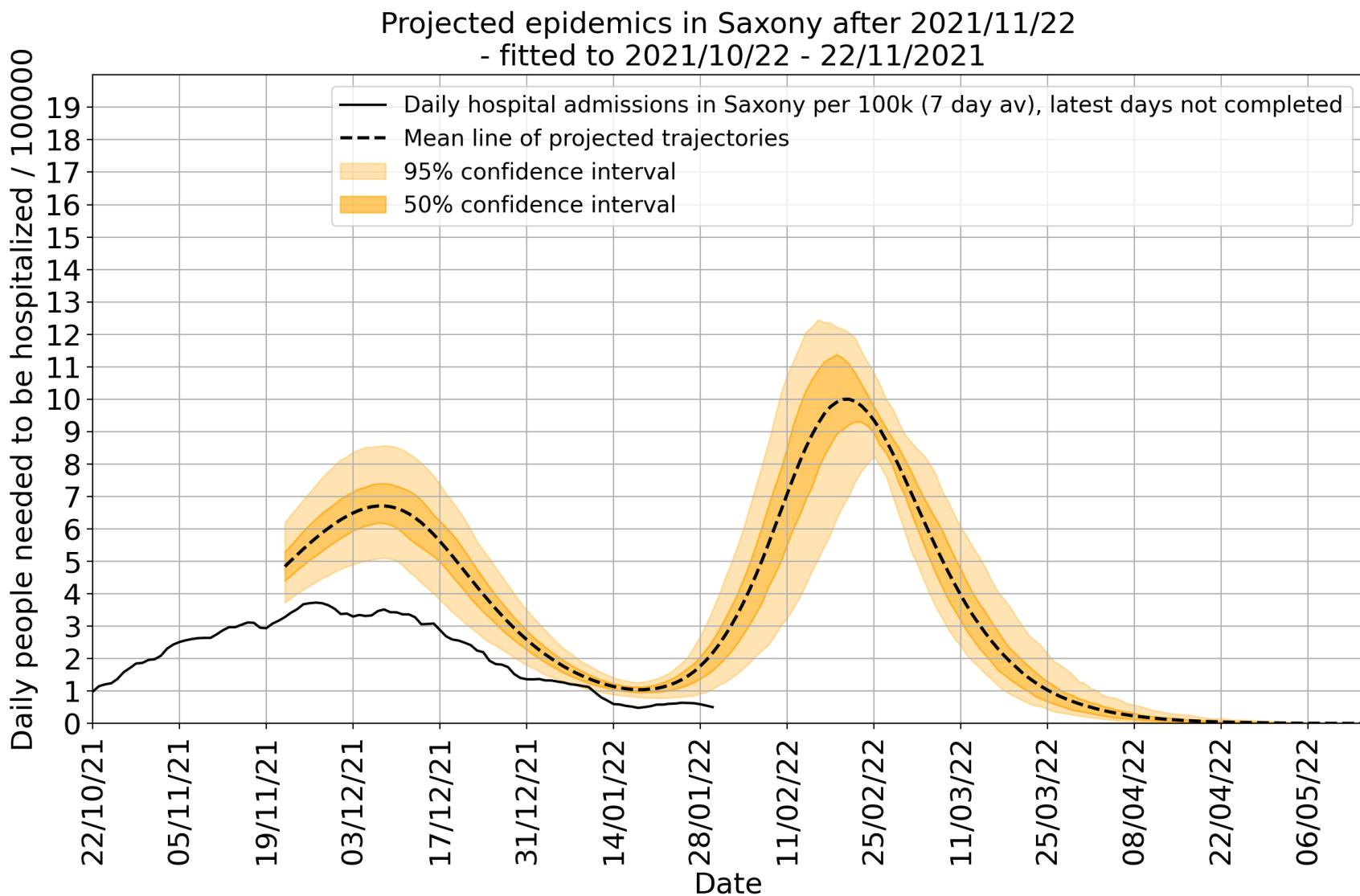
Projected epidemics in Saxony after 2021/11/22
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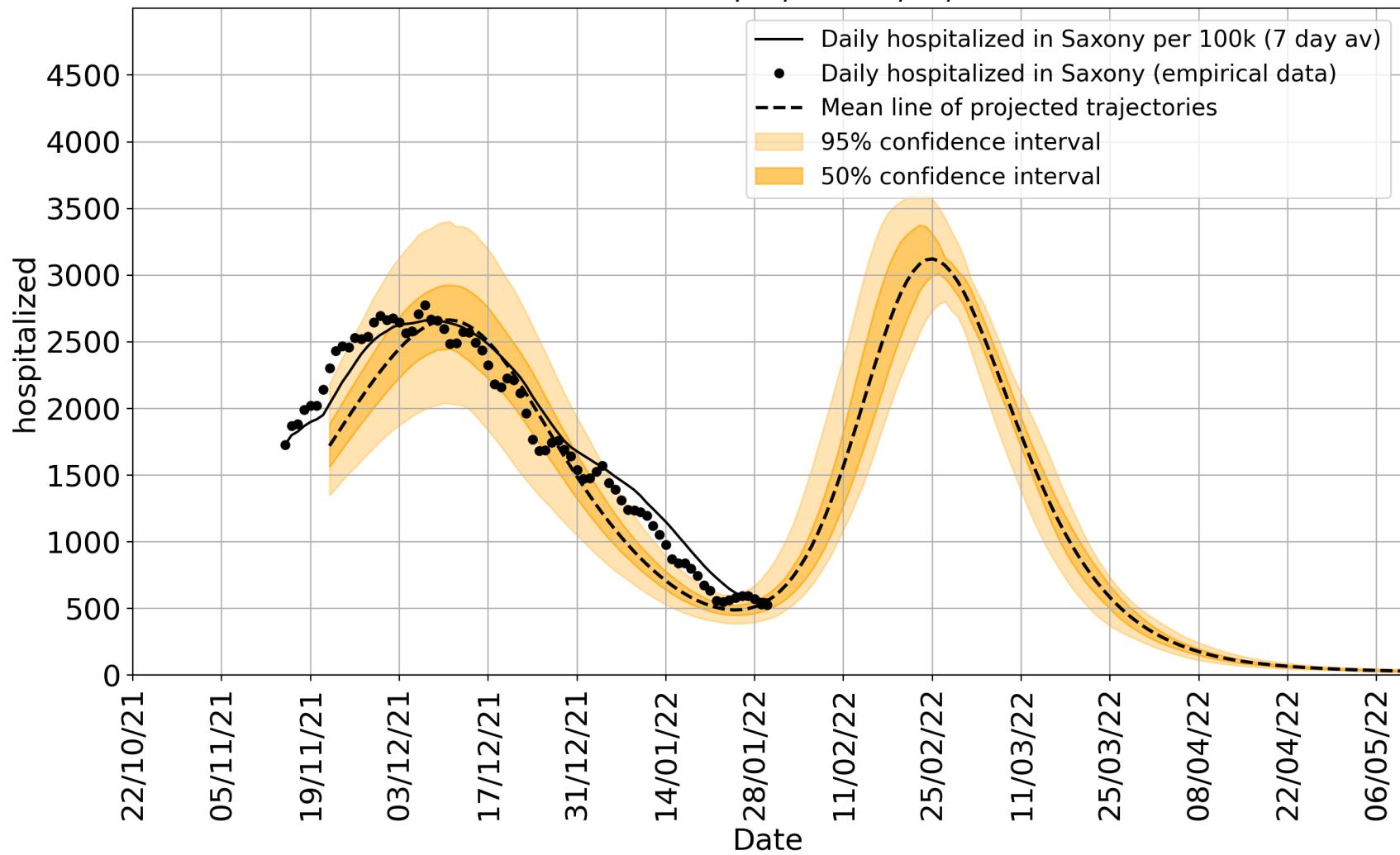
3.4. Hospitalization forecast

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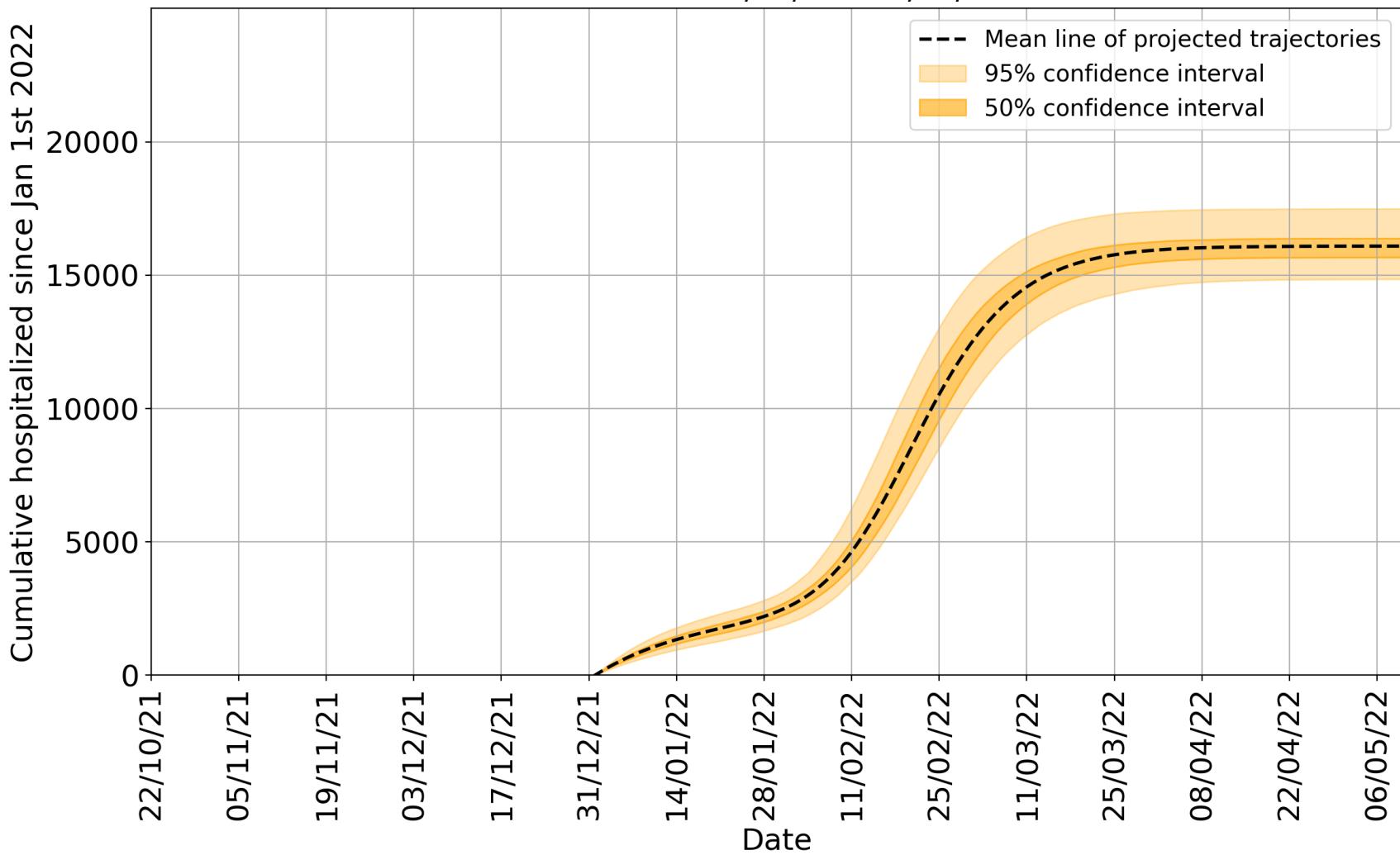




Projected epidemics in Saxony after 2021/11/22
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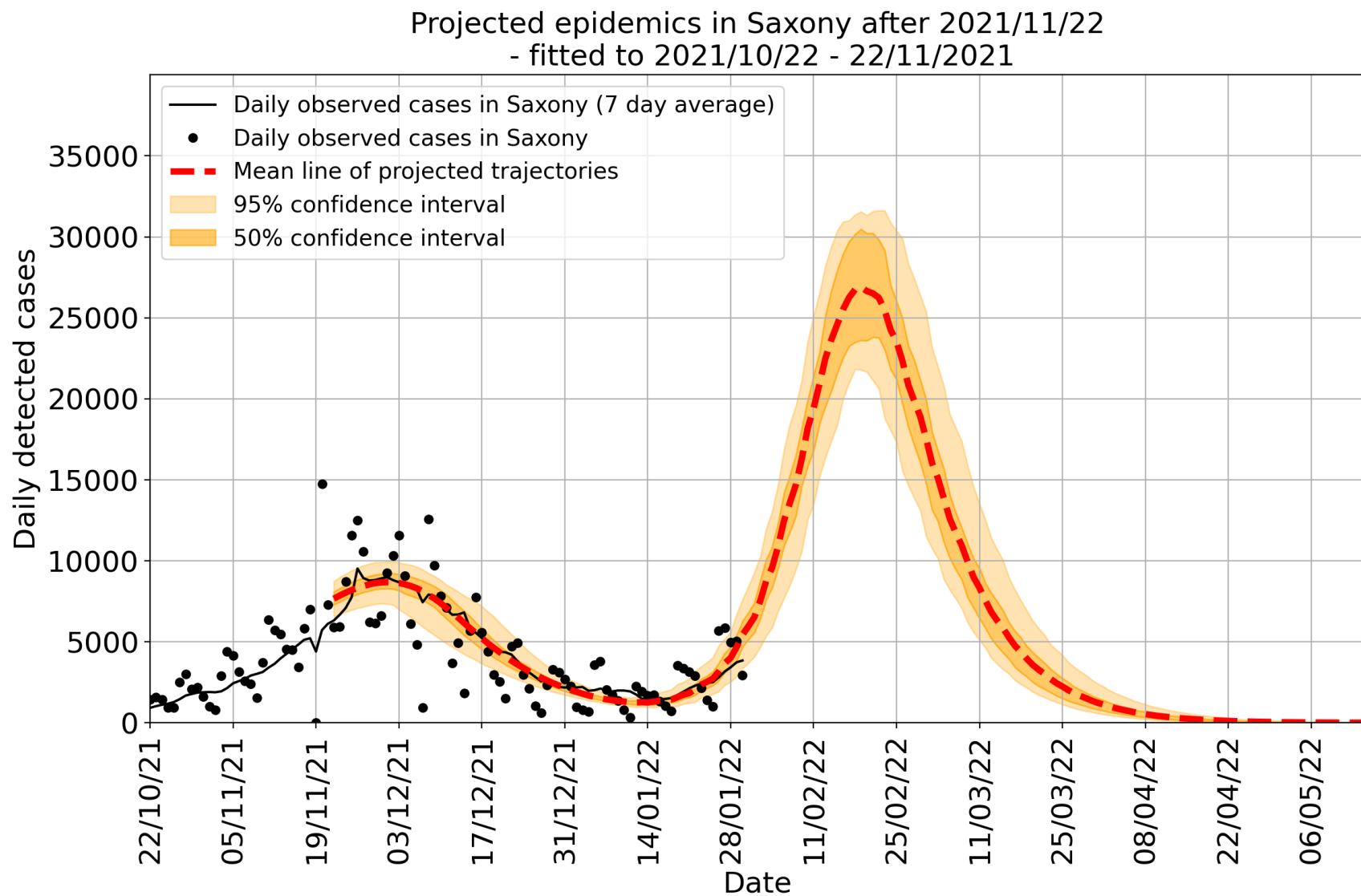


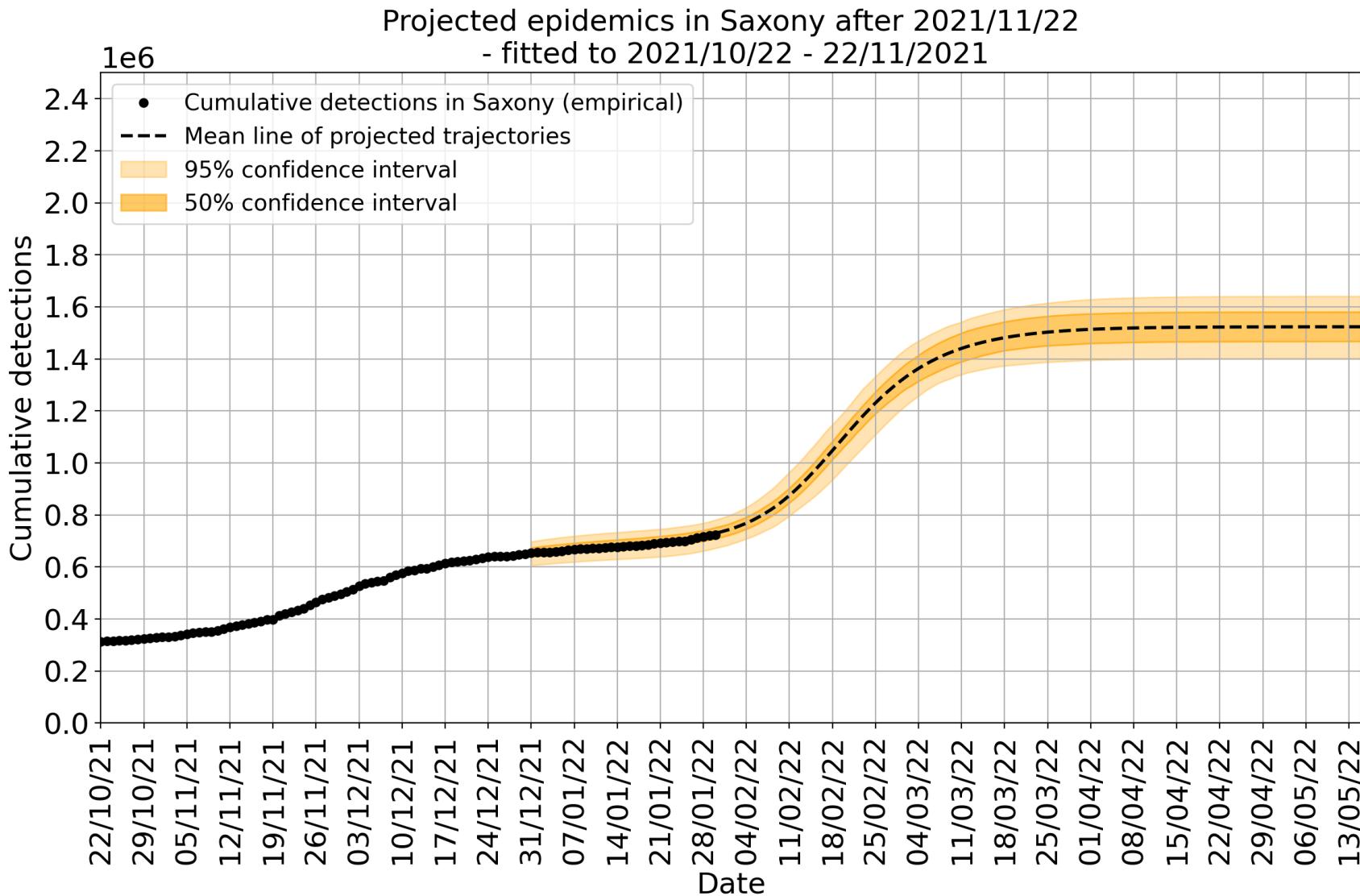
Projected epidemics in Saxony after 2021/11/22
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4. Scenario C - Corrected

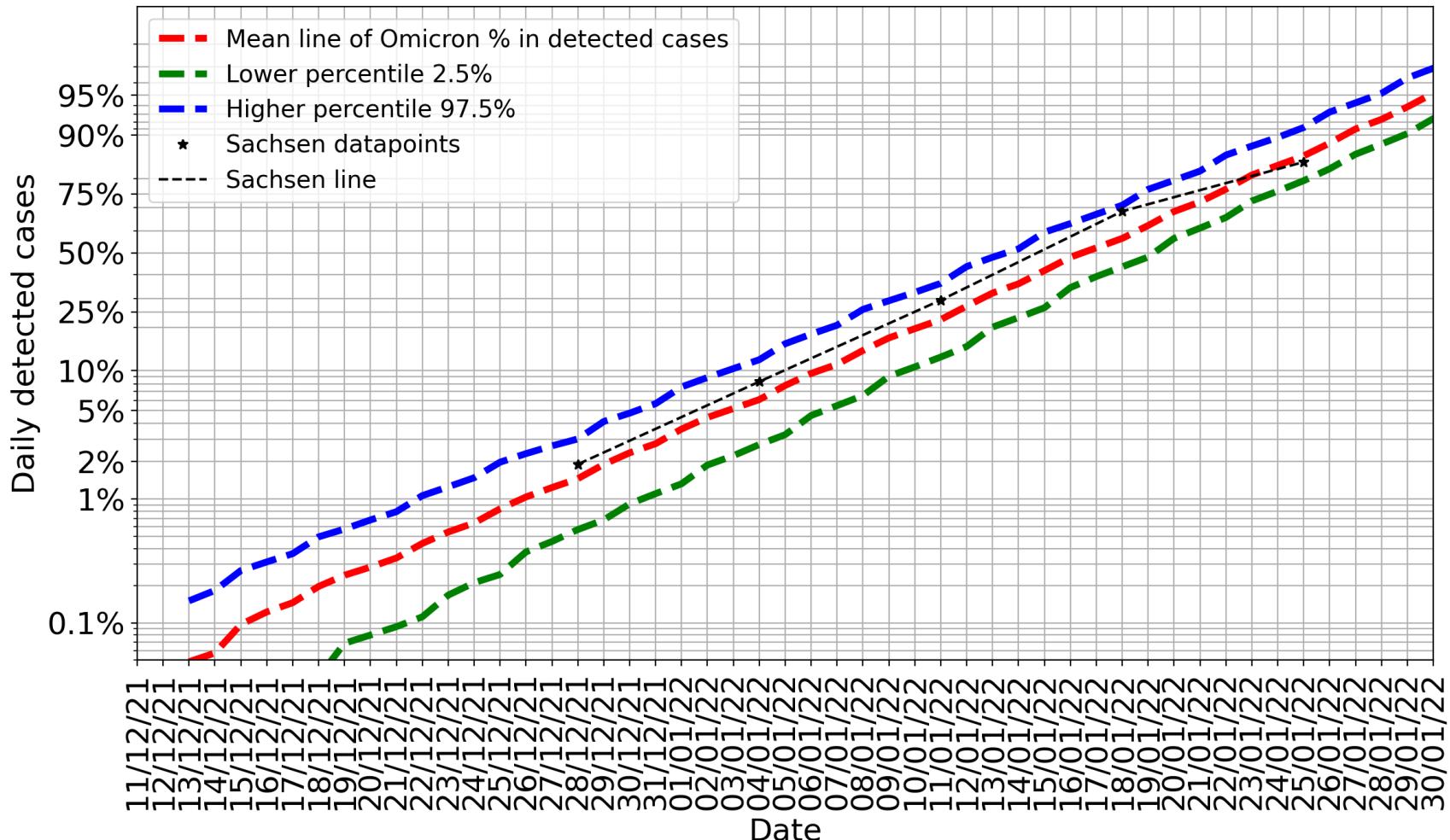
4.1. Detections forecast



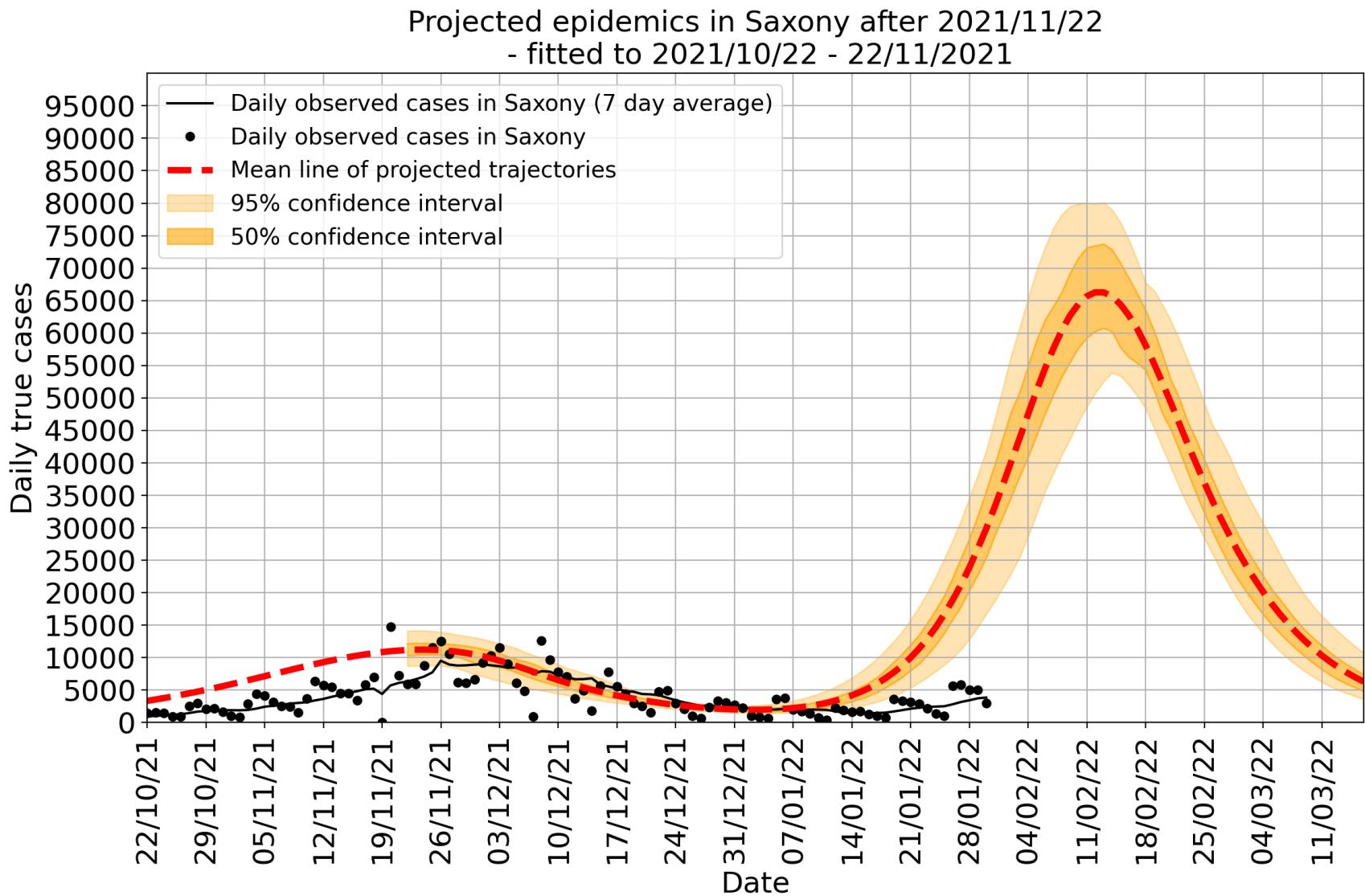


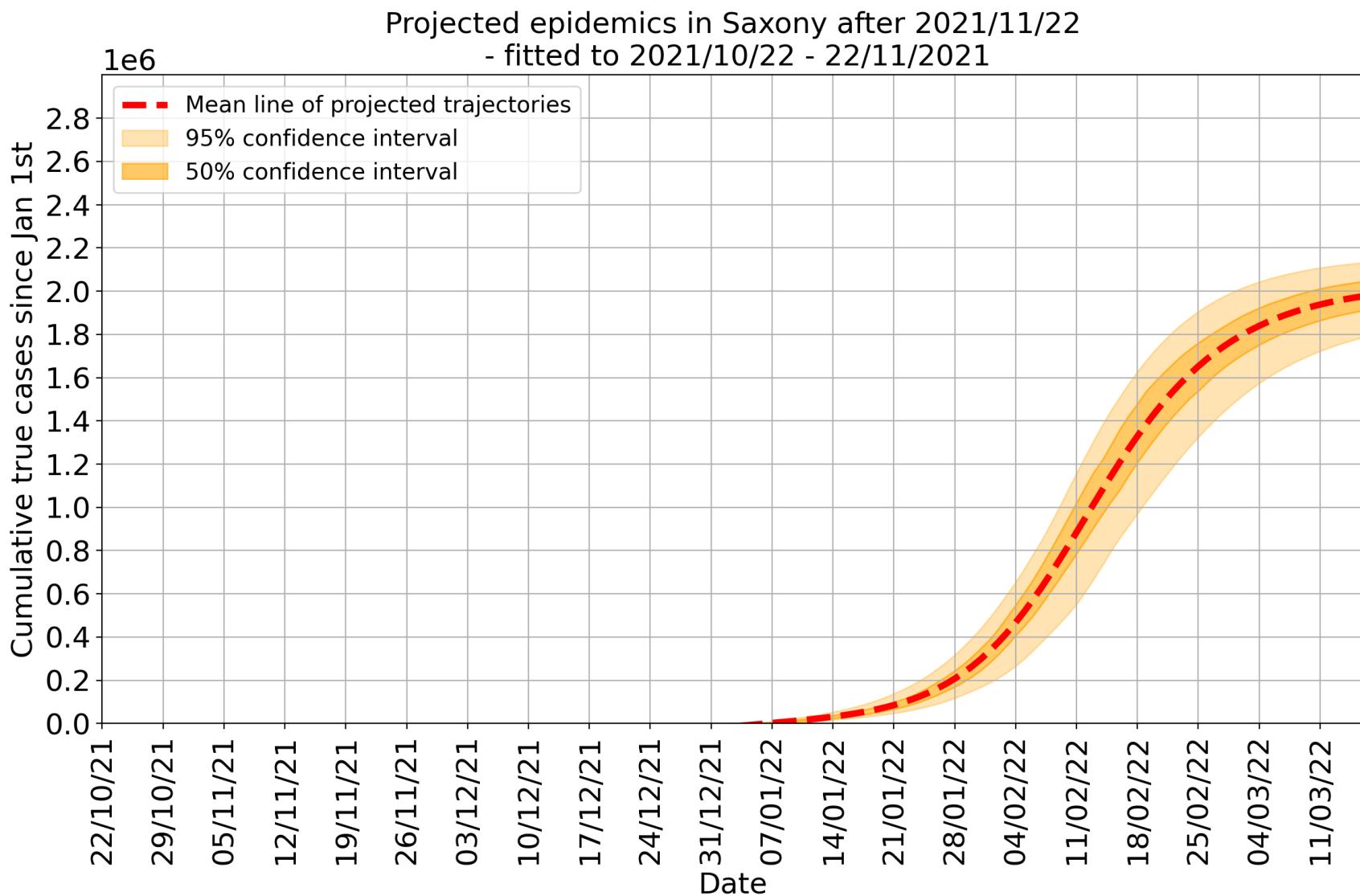
Scenario C

Projected epidemics in Saxony after 2021/11/22 - fitted to 2021/10/22 - 22/11/2021

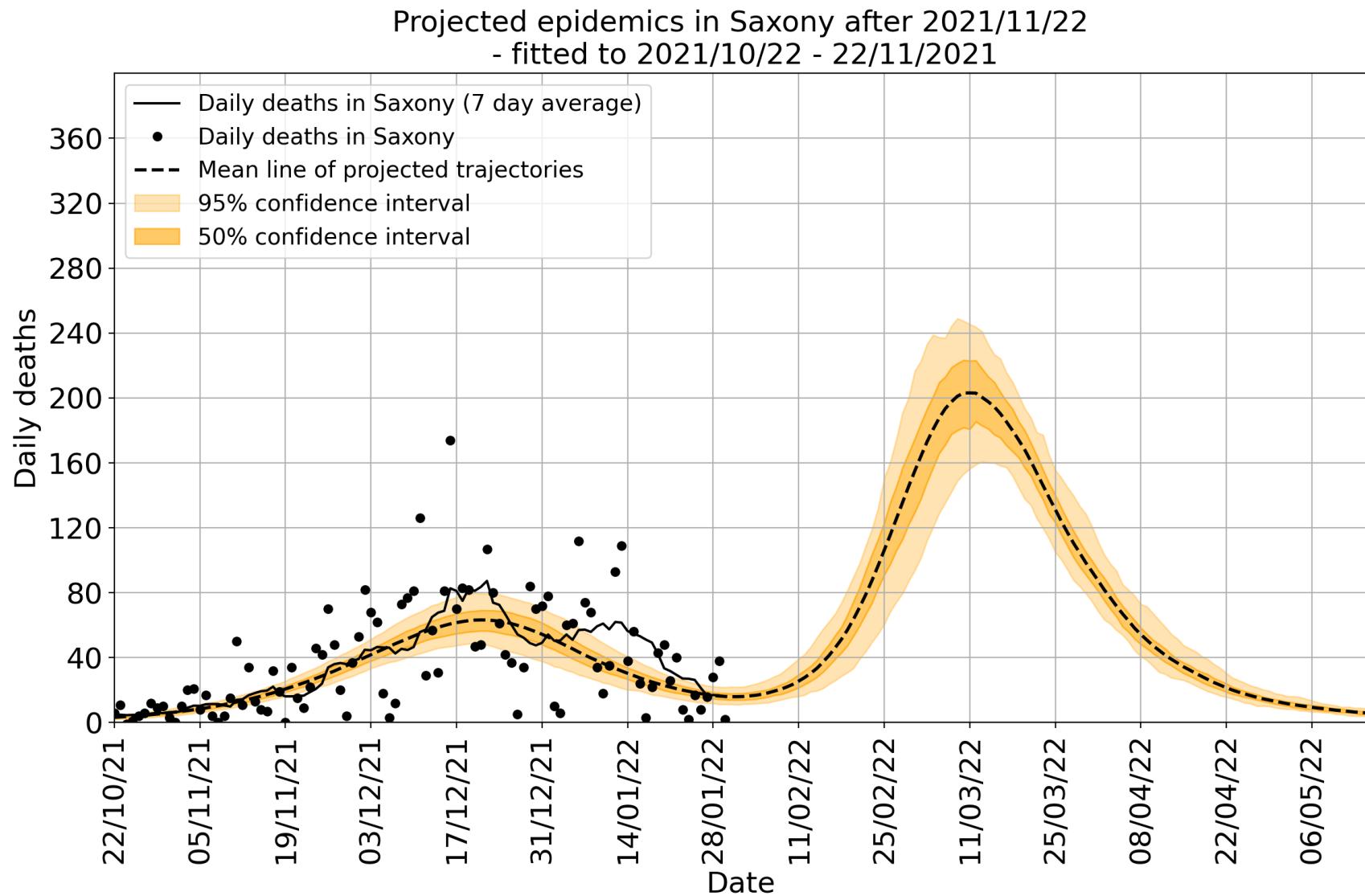


4.2. True cases forecast

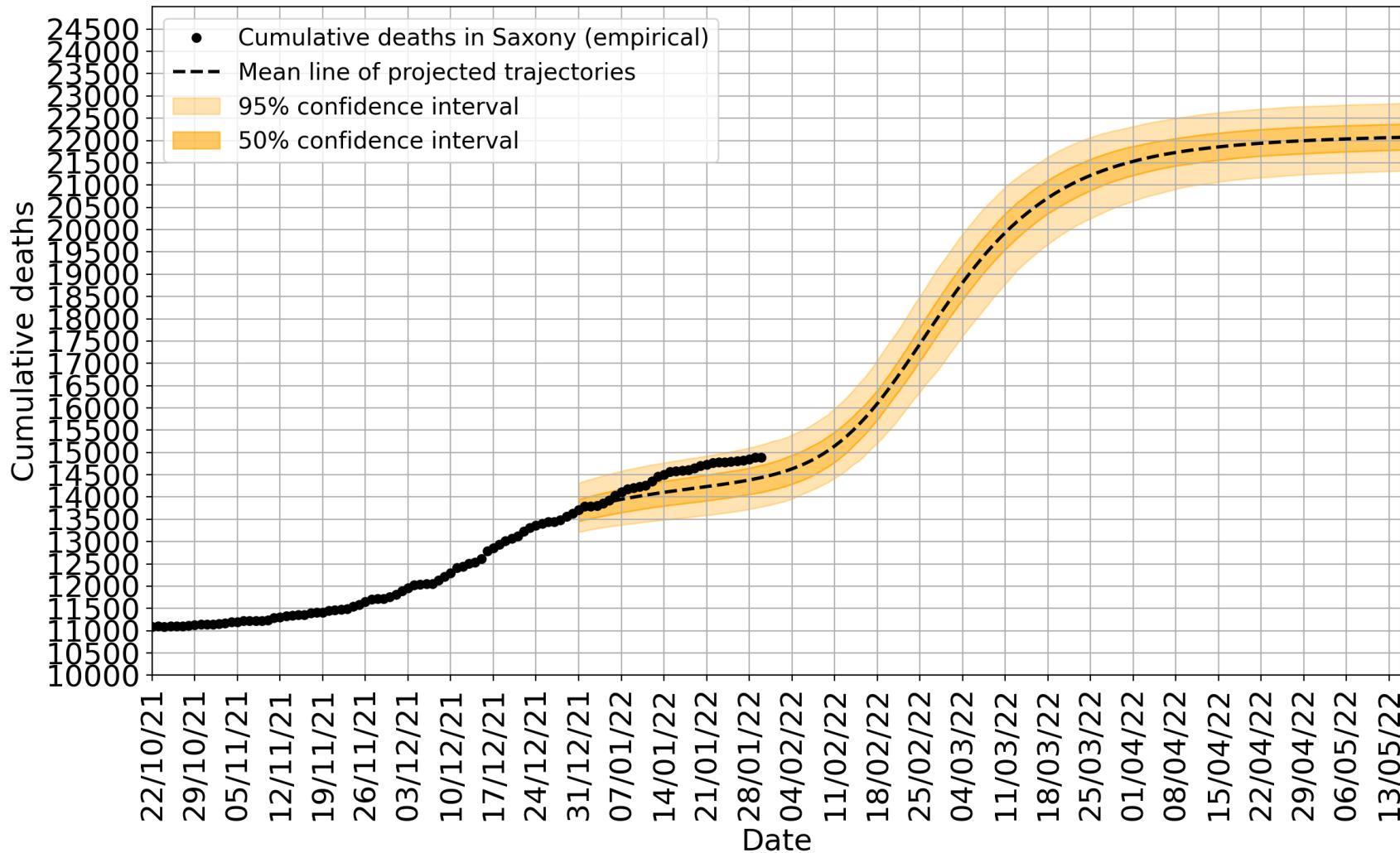




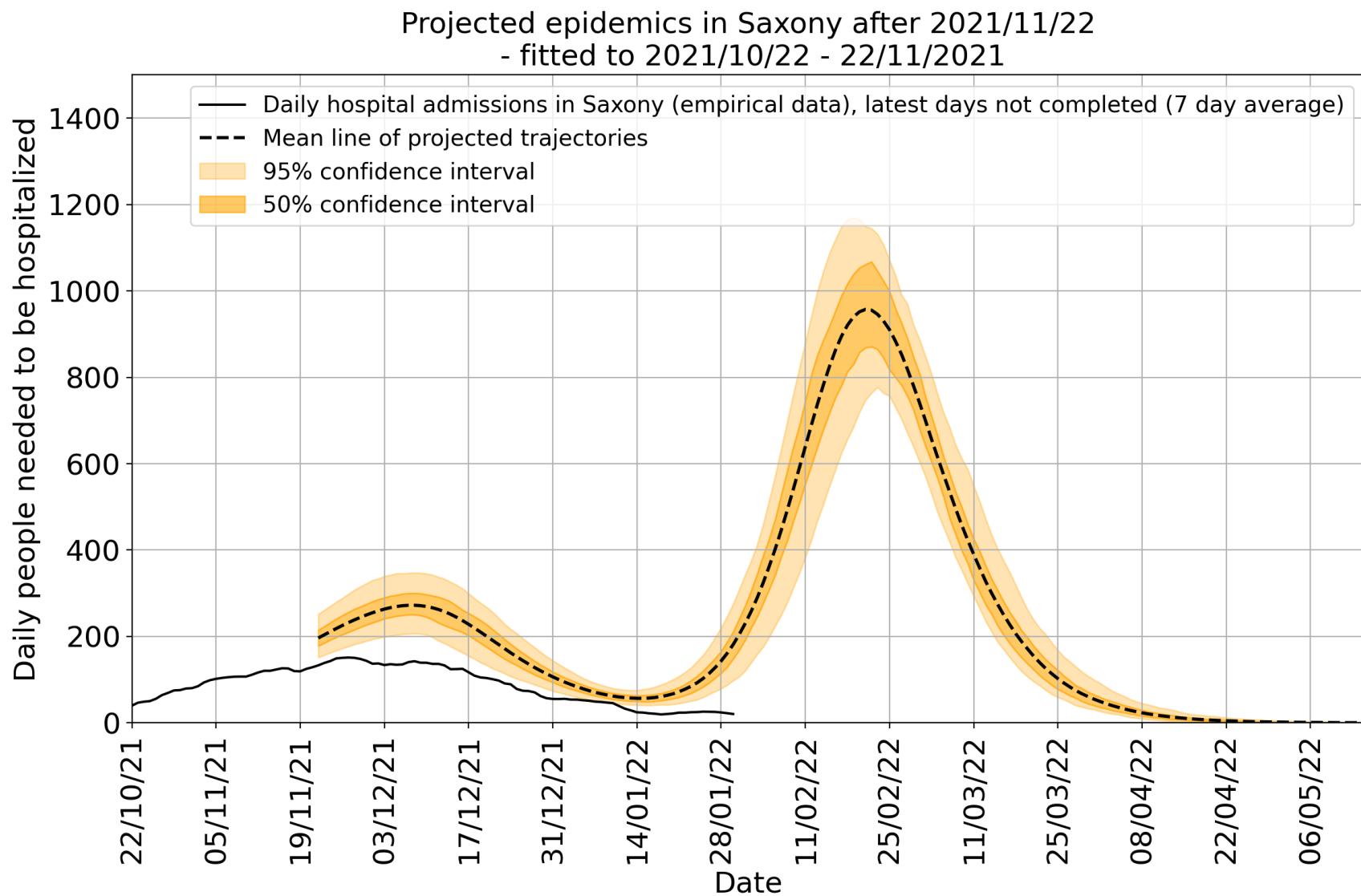
4.3. Deaths forecast

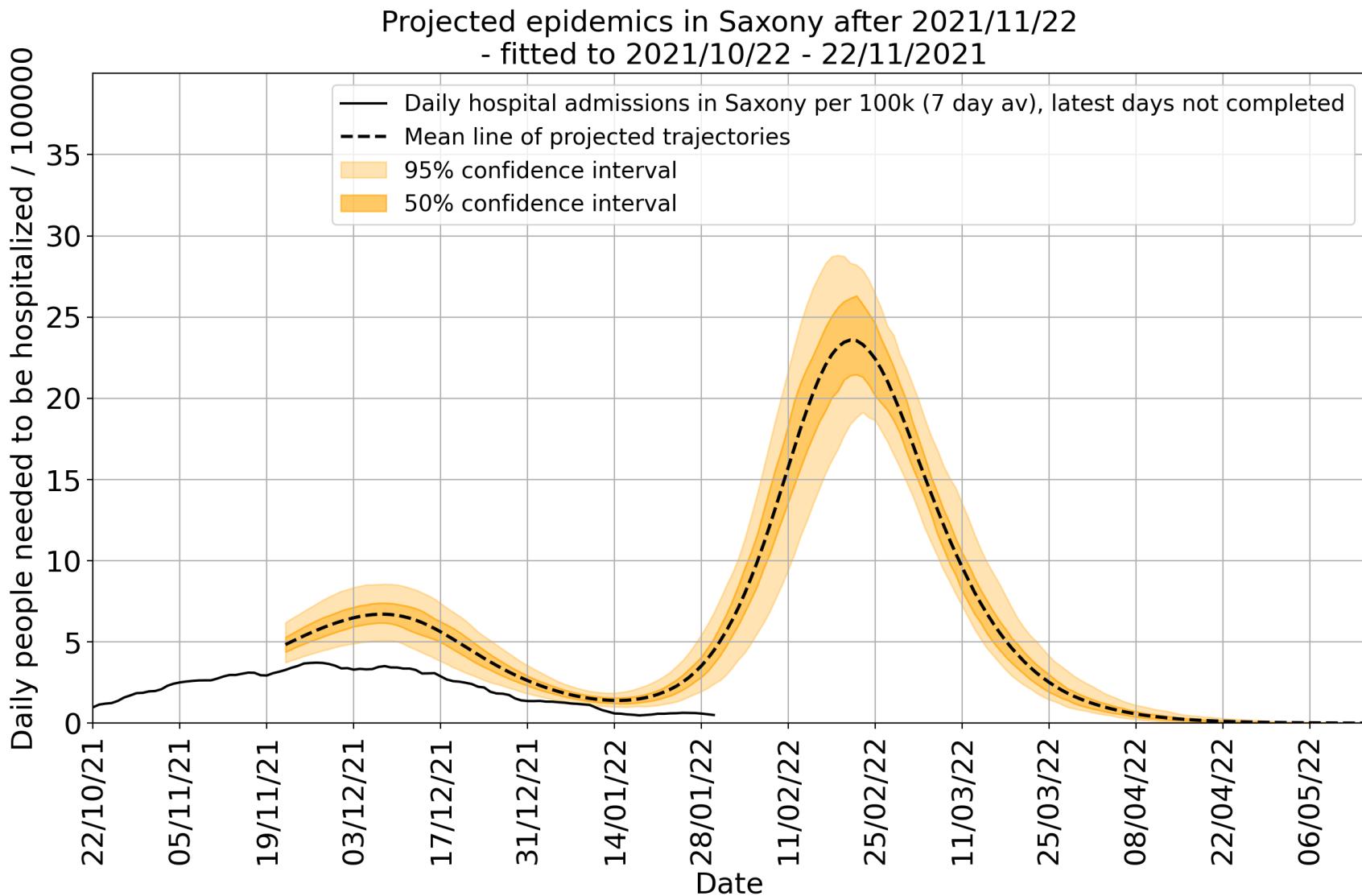


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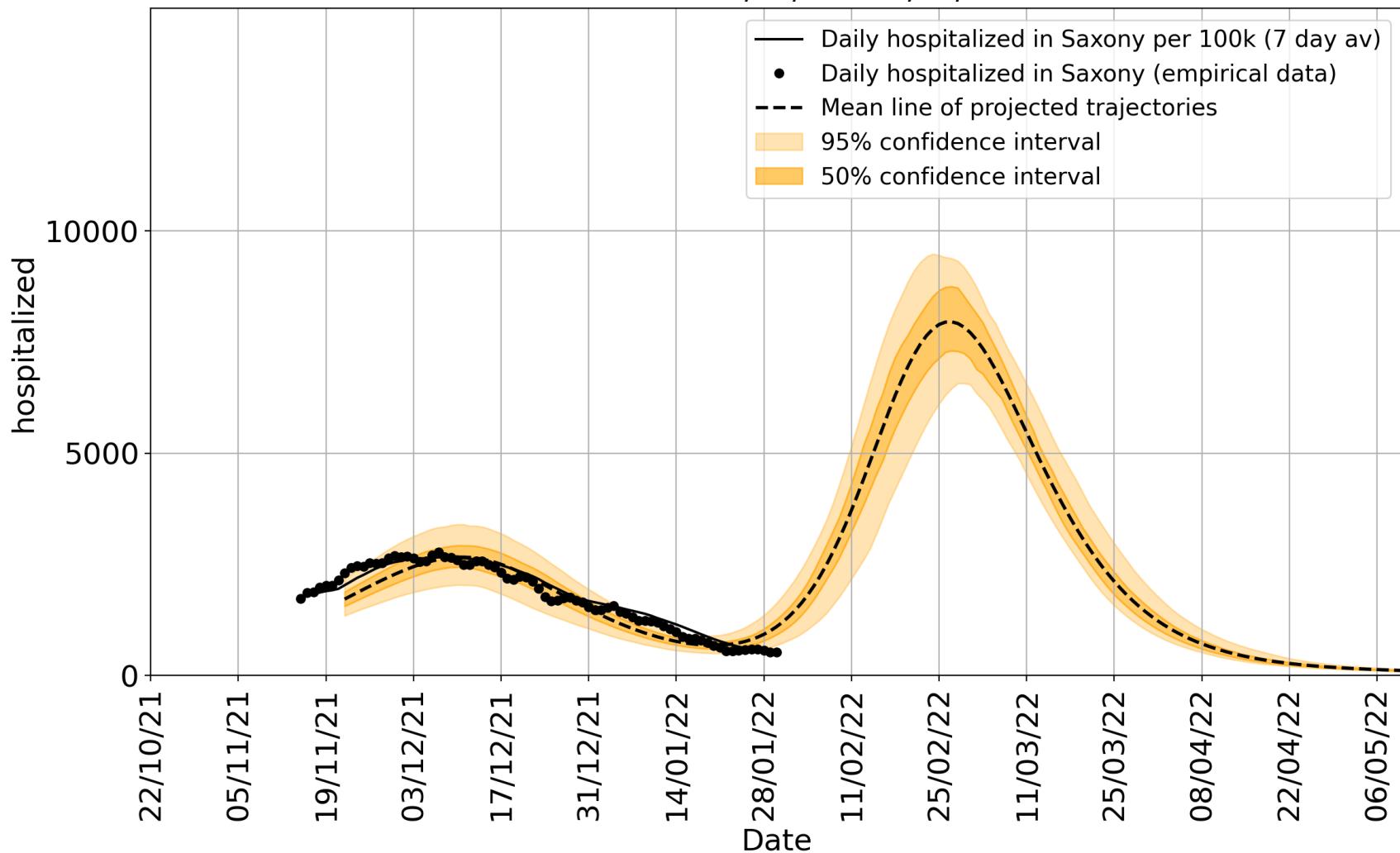


4.4. Hospitalization forecast





Projected epidemics in Saxony after 2021/11/22
- fitted to 2021/10/22 - 22/11/2021



Projected epidemics in Saxony after 2021/11/22
- fitted to 2021/10/22 - 22/11/2021

