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High maximum incidence of SARS-CoV-2 Delta and Omicron variants in children was associated with low cumulative infection rate and vaccination coverage in Estonia

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Conflict of Interest



x	No, Nothing to disclose
	Yes, please specify

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Background & aim

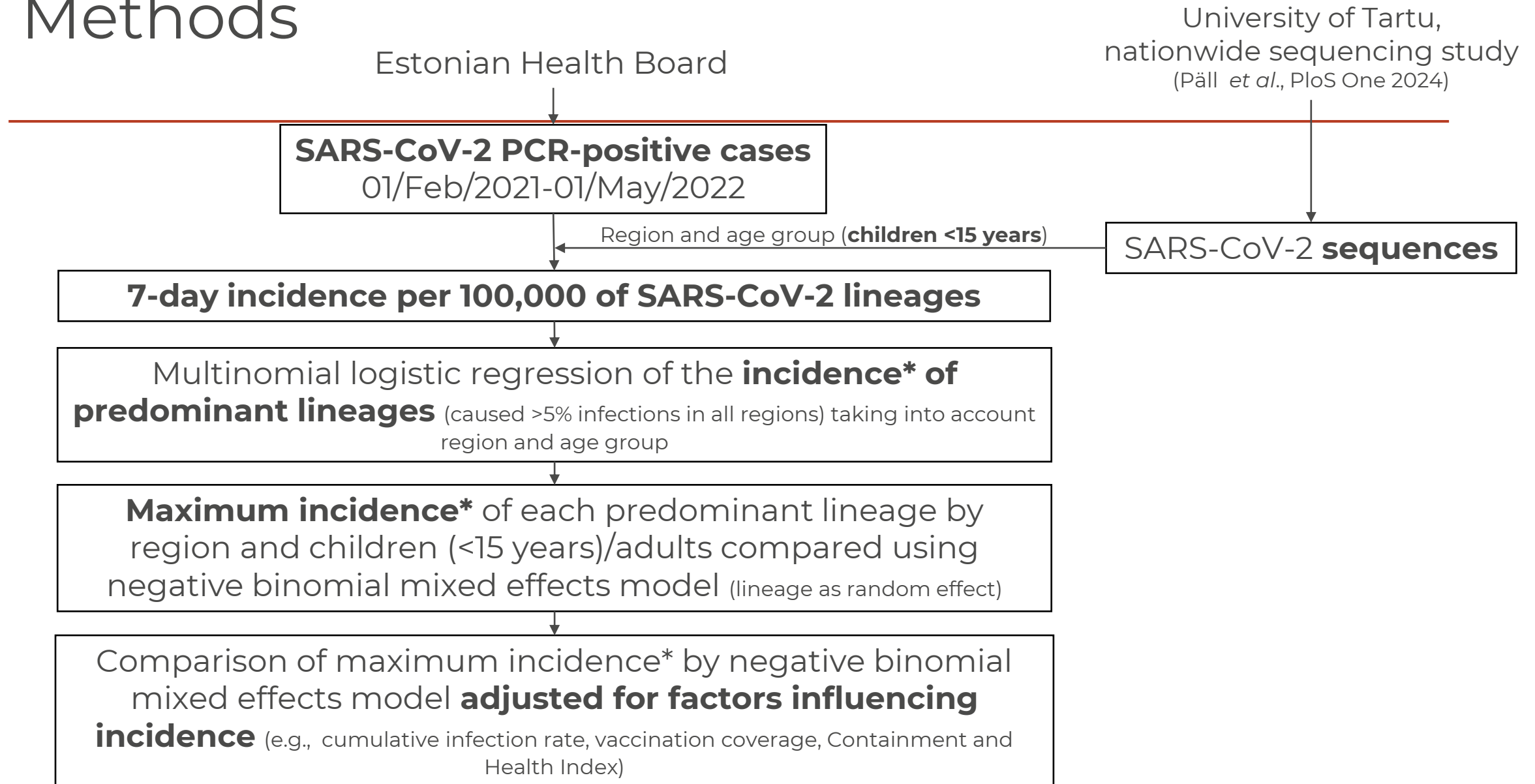
Increasing number of pediatric COVID-19 cases was observed during **Delta** and **Omicron** waves (Chiwandire et al. 2023, Khemiri et al. 2022).

The proportion of <19 years was 11%, 17% and 29% during COVID-19 waves before Delta, Delta and Omicron variants, respectively (Chun et al. 2022).

Increased risk of infection with Delta and Omicron variants but also immunity gap in children has been suggested.

We aimed to compare the maximum incidence of SARS-CoV-2 Delta and Omicron variants between children and adults.

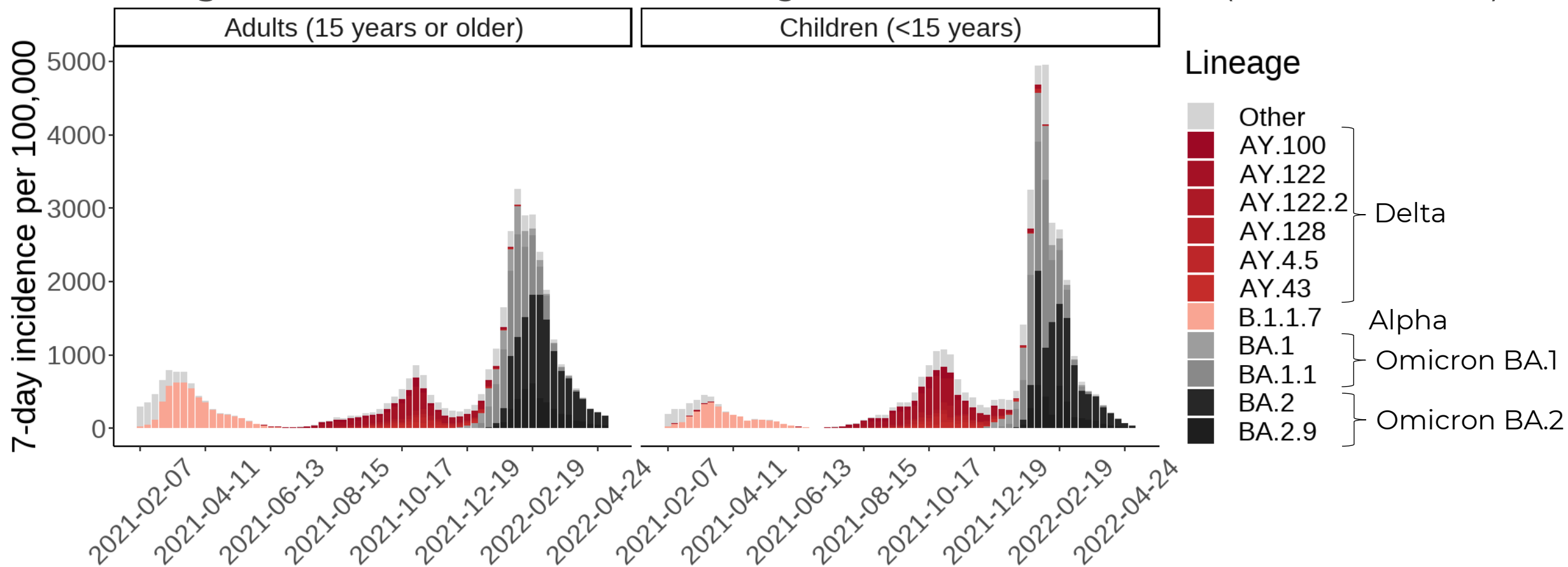
Methods



* 7-day incidence per 100,000

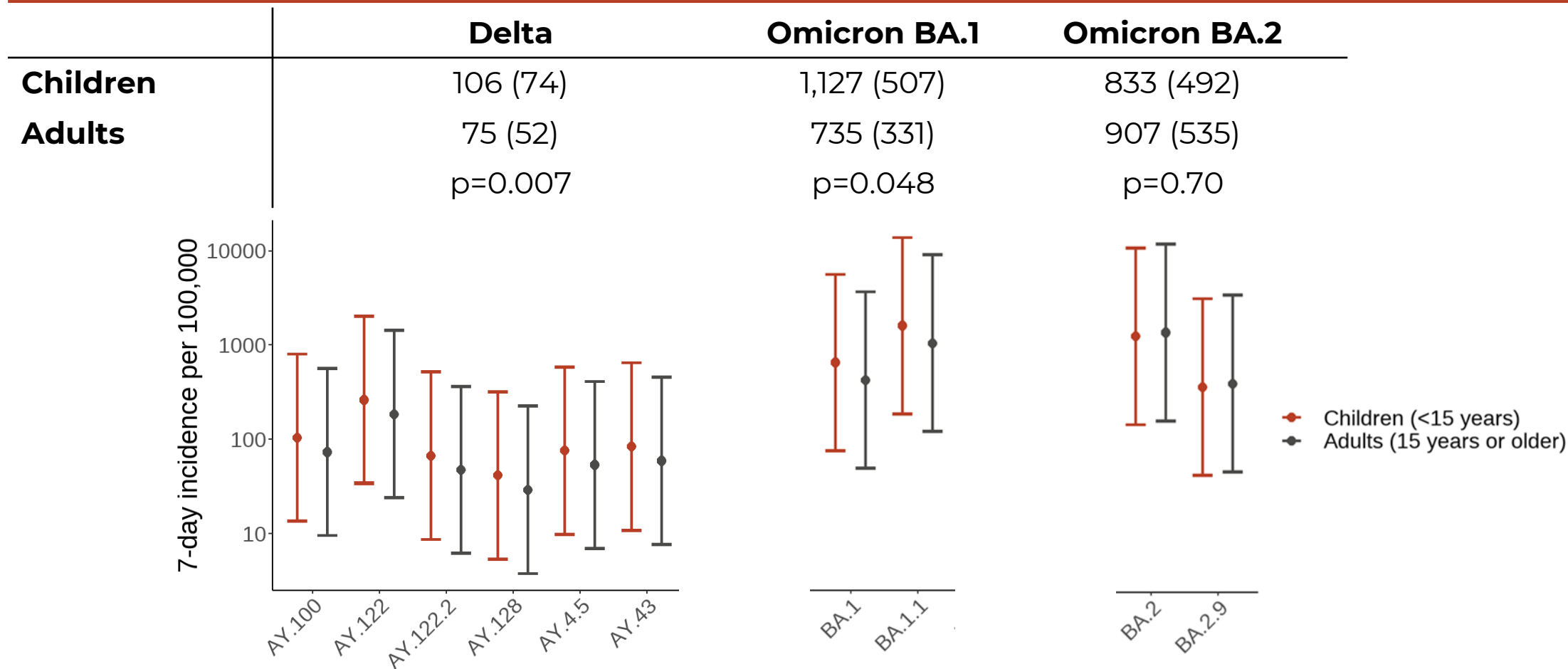
7-day incidence per 100,000 & lineages

In Estonian **population of 1,329,755**, a total of **518,294 cases** (19,861 **(3.8%) sequenced**).
11 lineages caused >5% infections in all regions in at least one week (**85.6% of cases**).



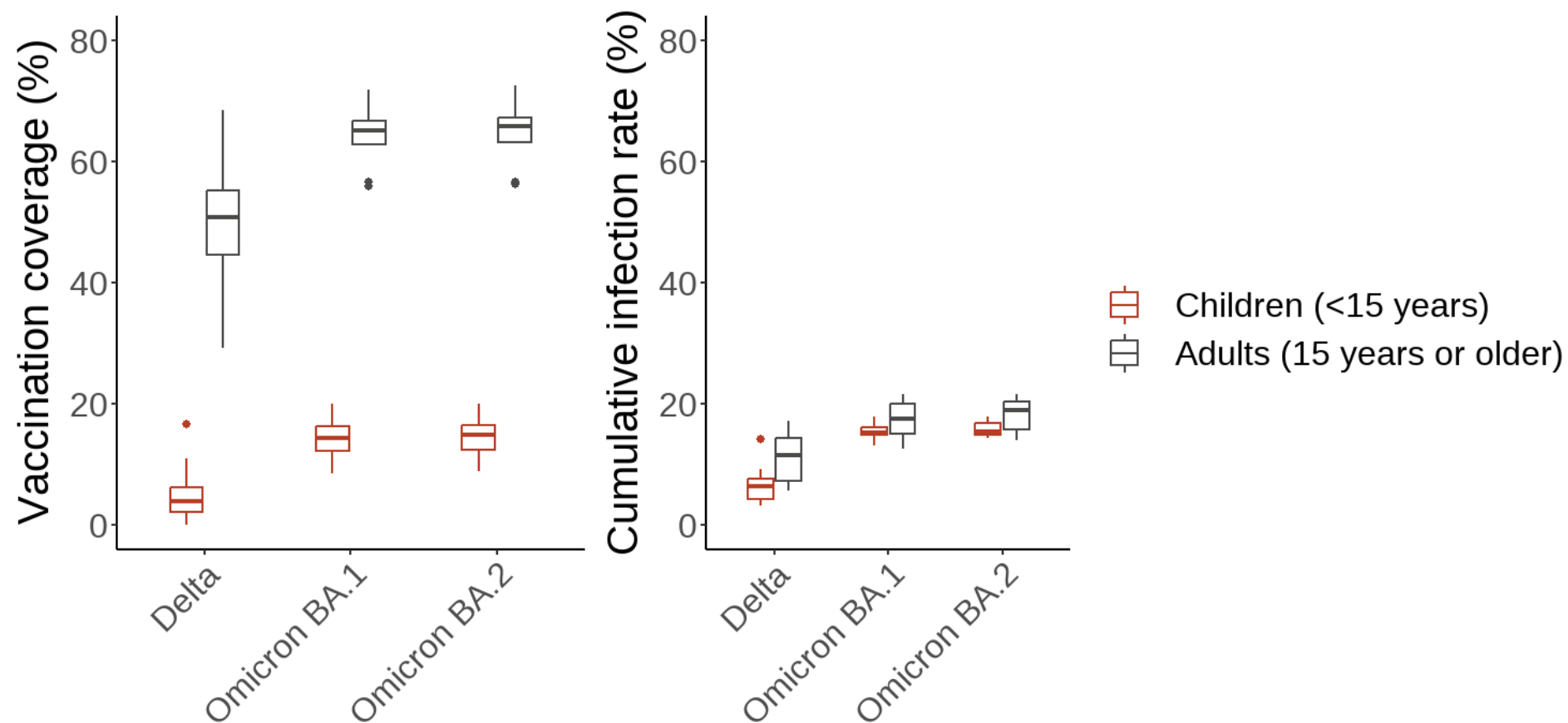
The maximum incidences of lineages

Mean (standard deviation) 7-day incidence per 100,000; based on unadjusted negative binomial regression



Cumulative infection rate & vaccination coverage

Lower in children vs adults at the emergence (incidence >1/100,000) of lineages



Factors associated with 7-day incidence per 100,000

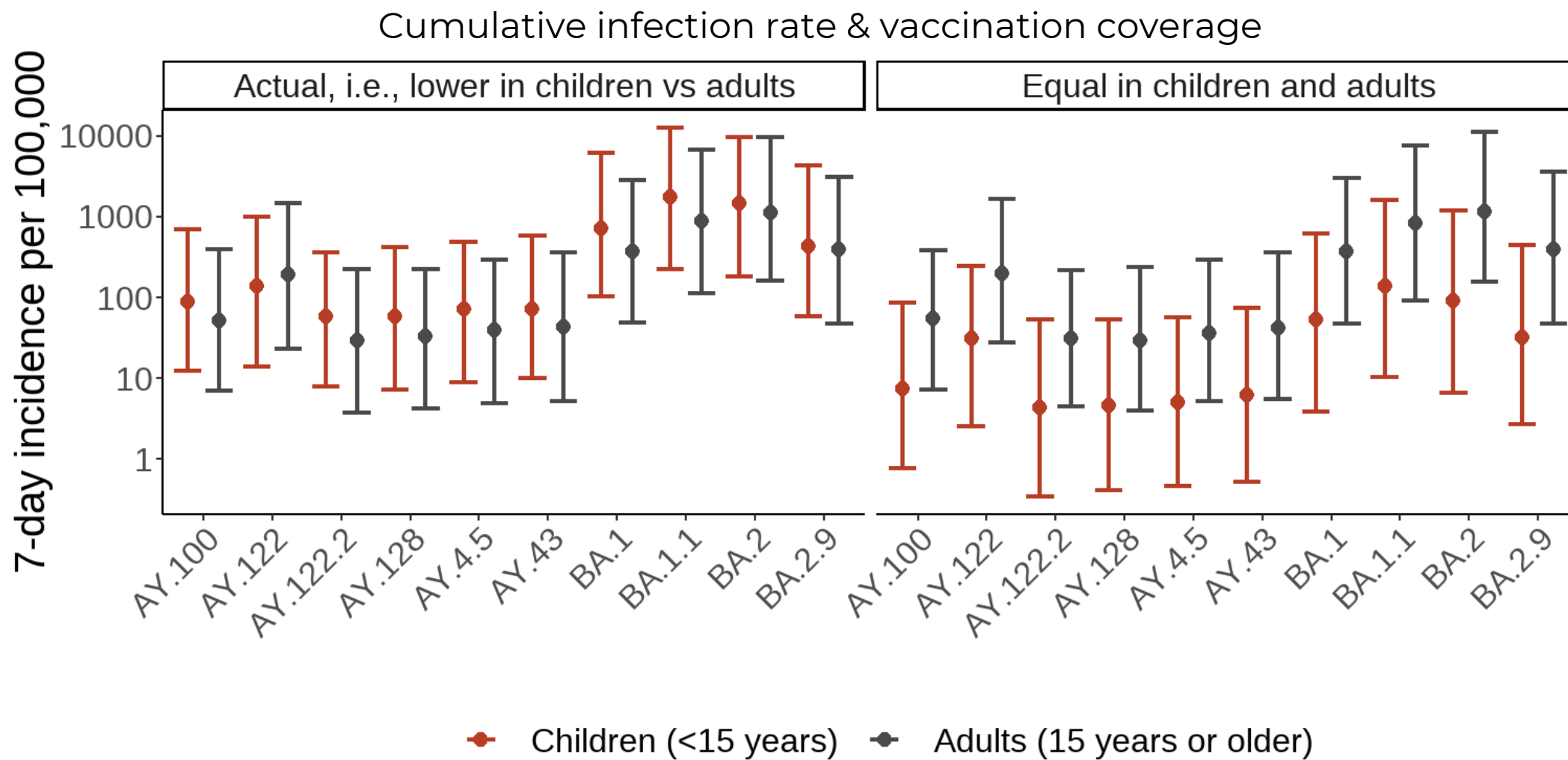
Negative binomial regression model

	Change in log(7-day incidence per 100,000) (standard error)	p-value
CHI* by 10 points ↑	-0.45 (0.17)	0.01
Cumulative infection rate by 10% ↑	-0.98 (0.24)	<0.001
Vaccination coverage by 10% ↑	-0.42 (0.12)	<0.001
The impact of SARS-CoV-2 variant in children vs adults**		
Delta	-1.96 (0.63)	0.002
Omicron BA.1	-1.90 (0.65)	0.004
Omicron BA.2	-2.50 (0.66)	<0.001

*Containment and Health Index (Hale *et al.* Nat Hum Behav 5, 529–538 (2021))

**if their cumulative infection rate and vaccination coverage are equal

Predictions of maximum incidences from the model



Conclusion

- More strict **response to pandemic**, shown by Containment and Health Index
- Larger **cumulative infection rates**
- Larger **vaccination coverage**



Lower **maximum incidence** of Delta, Omicron BA.1 and Omicron BA.2 variant lineages.

More extensive spread of Delta and Omicron BA.1 observed in children compared to adults was facilitated by **lower cumulative infection rate and vaccination coverage in children.**



THANK YOU

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