COVID-19 Vaccines For Kids

Why school mandates don't make sense from a public health standpoint

LA City Health Commission Meeting
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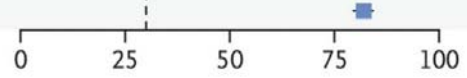
Topics

- What do the COVID-19 Vaccines Do?
- How are the COVID-19 Vaccines Different from other vaccines required for school?
- Harm-Benefit analyses in children and young people
- Areas of Uncertainty:
  - Effectiveness after infection, benefits in young people, benefits of the bivalent booster
- Current Risks to Children
- European Perspective
- Why COVID-19 Vaccine mandates don’t make sense

Efficacy through 5 months- original trial Moderna Vaccine

Subgroup	Placebo (N=14,164)	mRNA-1273 (N=14,287)	Vaccine Efficacy (95% CI)
	number of events		*percent*
Covid-19	744	55	93.2 (91.0–94.8)
Severe Covid-19	106	2	98.2 (92.8–99.6)
Covid-19 (secondary definition)	807	58	93.4 (91.4–94.9)
Death from Covid-19	3	0	100.0 (NE–100.0)
Covid-19 ≥14 days after first injection	769	56	93.3 (91.1–94.9)
Covid-19 regardless of previous SARS-CoV-2 status	754	58	92.8 (90.6–94.5)
Asymptomatic	498	214	63.0 (56.6–68.5)
Asymptomatic seroconversion	306	48	—
SARS-CoV-2 infection	1339	280	82.0 (79.5–84.2)



ORIGINAL ARTICLE

Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine

Lindsey R. Baden, M.D., Hana M. El Sahly, M.D., Brandon Essink, M.D., Karen Kotloff, M.D., Sharon Frey, M.D., Rick Novak, M.D., David Diemert, M.D., Stephen A. Spector, M.D., Nadine Rouphael, M.D., C. Buddy Creech, M.D., John McGettigan, M.D., Shishir Khetan, M.D., et al., for the COVE Study Group*

Article Figures/Media Metrics

February 4, 2021
N Engl J Med 2021; 384:403-416

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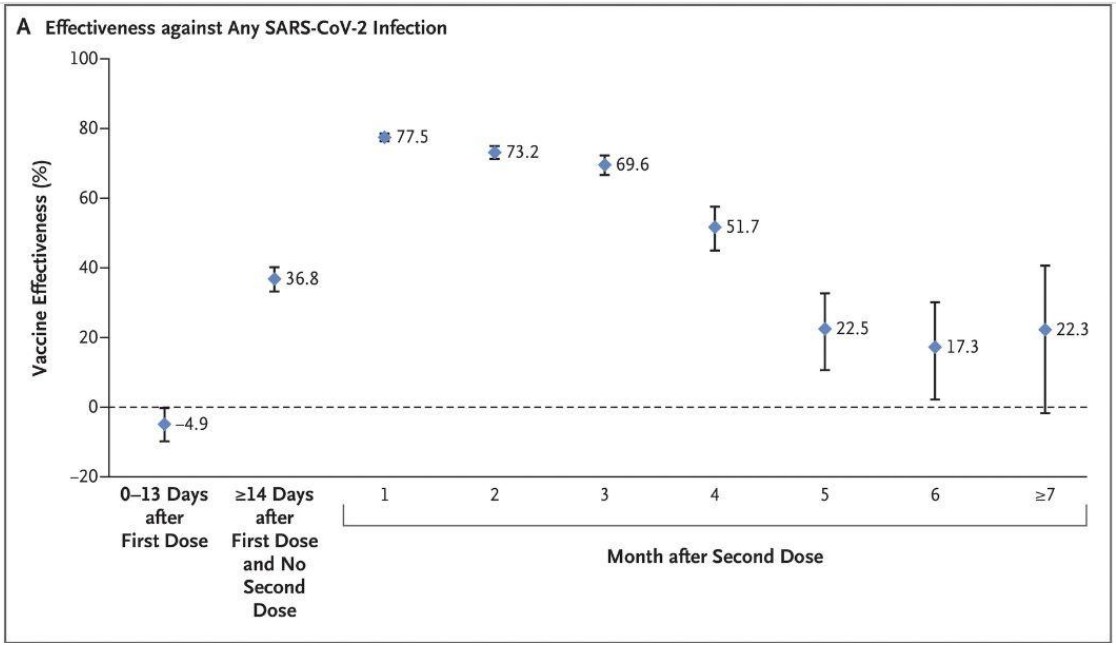
ORIGINAL ARTICLE

Waning of BNT162b2 Vaccine Protection against SARS-CoV-2 Infection in Qatar

Hiam Chemaitelly, M.Sc., Patrick Tang, M.D., Ph.D., Mohammad R. Hasan, Ph.D., Sawsan AlMukdad, M.Sc., Hadi M. Yassine, Ph.D., Fatiha M. Benslimane, Ph.D., Hebah A. Al Khatib, Ph.D., Peter Coyle, M.D., Houssein H. Ayoub, Ph.D., Zaina Al Kanaani, Ph.D., Einas Al Kuwari, M.D., Andrew Jeremijenko, M.D., et al.

December 9, 2021
N Engl J Med 2021; 385:e83
DOI: 10.1056/NEJMoa2114114

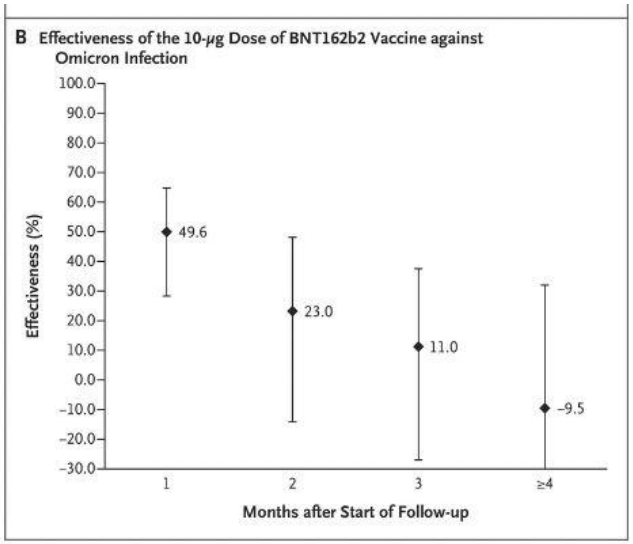


ORIGINAL ARTICLE

Covid-19 Vaccine Protection among Children and Adolescents in Qatar

Hiam Chemaitelly, Ph.D., Sawsan AlMukdad, M.Sc., Houssein H. Ayoub, Ph.D., Heba N. Altarawneh, M.D., Peter Coyle, M.D., Patrick Tang, M.D., Ph.D., Hadi M. Yassine, Ph.D., Hebah A. Al-Khatib, Ph.D., Maria K. Smatti, M.Sc., Mohammad R. Hasan, Ph.D., Zaina Al-Kanaani, Ph.D., Einas Al-Kuwari, M.D., et al.

Article

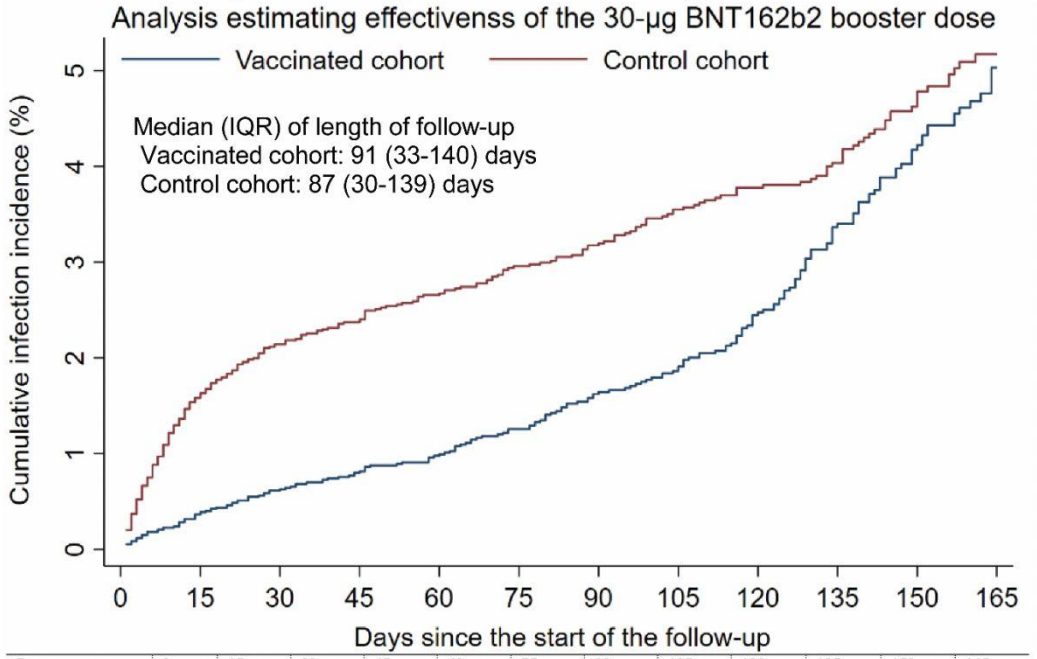


Omicron Infection in Children 5 to 11 Years of Age, According to Vaccination Status, and Effectiveness of the 10-μg Vaccine Dose.

Metrics

November 17, 2022
N Engl J Med 2022; 387:1865-1876
DOI: 10.1056/NEJMoa2210058

Figure S6. Cumulative incidence of SARS-CoV-2 infection in adolescents aged 12-17 years who received the 30-µg BNT162b2 third (booster) vaccine dose compared to unvaccinated controls in the analysis estimating effectiveness of the 30-µg BNT162b2 booster dose.



Days	0	15	30	45	60	75	90	105	120	135	150	165
No. at risk												
Vaccinated cohort	9,510	8,497	7,275	6,538	5,839	5,396	4,806	4,229	3,525	2,825	1,908	1,003
Control cohort	9,510	8,387	7,144	6,404	5,707	5,262	4,677	4,092	3,400	2,733	1,815	919

List of 10 required vaccine

Measles, mumps, polio and **rubella** reliably prevent outbreaks when local vaccination rates reach a certain threshold = “herd immunity”

The **hepatitis B**, and **varicella (chickenpox)** vaccines afford protection against infection for years, diminishing long-term transmission risks.

The **tetanus** vaccine provides only individual protection, but it is administered in combination with vaccines for diphtheria and pertussis, which protect against outbreaks over the long term.

Risk-Benefit Analysis for Pfizer in Adolescents

Results

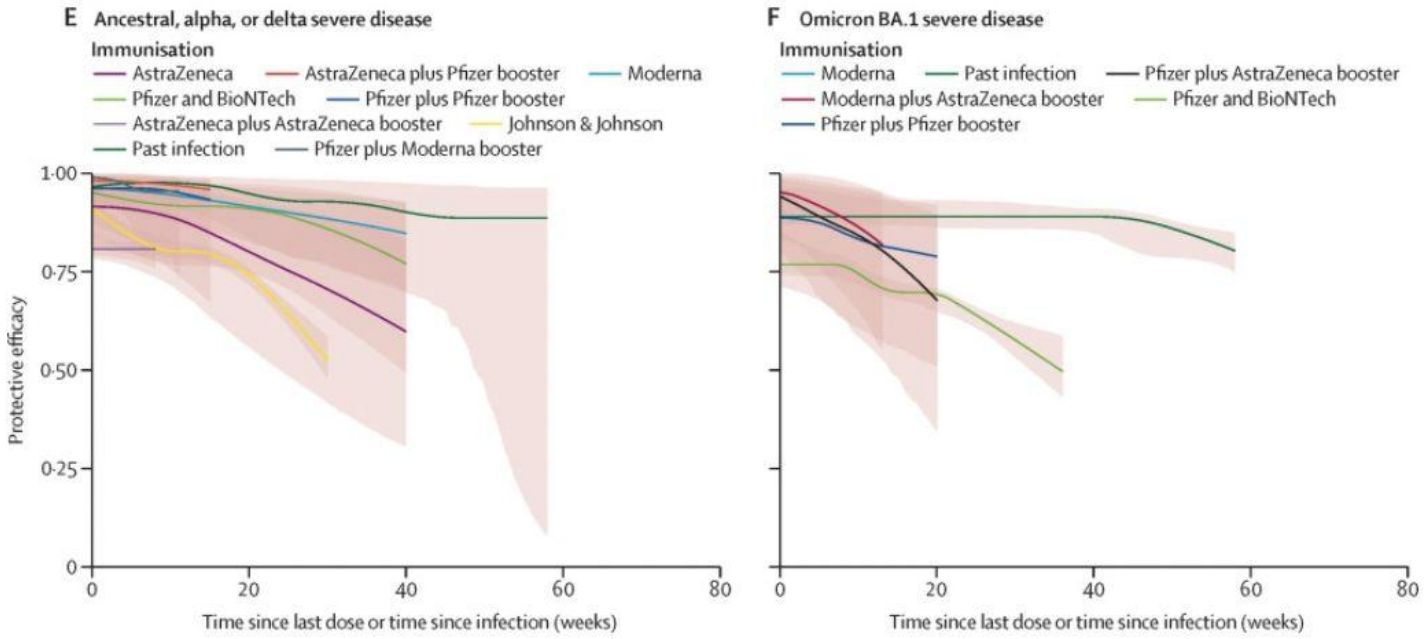
Cases of myo/pericarditis (n = 253) included 129 after dose 1 and 124 after dose 2; 86.9% were hospitalized. Incidence per million after dose two in male patients aged 12–15 and 16–17 was 162.2 and 93.0, respectively. Weighing post-vaccination myo/pericarditis against COVID-19 hospitalization during delta, our risk-benefit analysis suggests that among 12–17-year-olds, two-dose vaccination was uniformly favourable only in nonimmune girls with a comorbidity. In boys with prior infection and no comorbidities, even one dose carried more risk than benefit according to international estimates. In the setting of omicron, one dose may be protective in nonimmune children, but dose two does not appear to confer additional benefit at a population level.

Conclusions

Our findings strongly support individualized paediatric COVID-19 vaccination strategies which weigh protection against severe disease vs. risks of vaccine-associated myo/pericarditis. Research is needed into the nature and implications of this adverse effect as well as immunization strategies which reduce harms in this overall low-risk cohort.

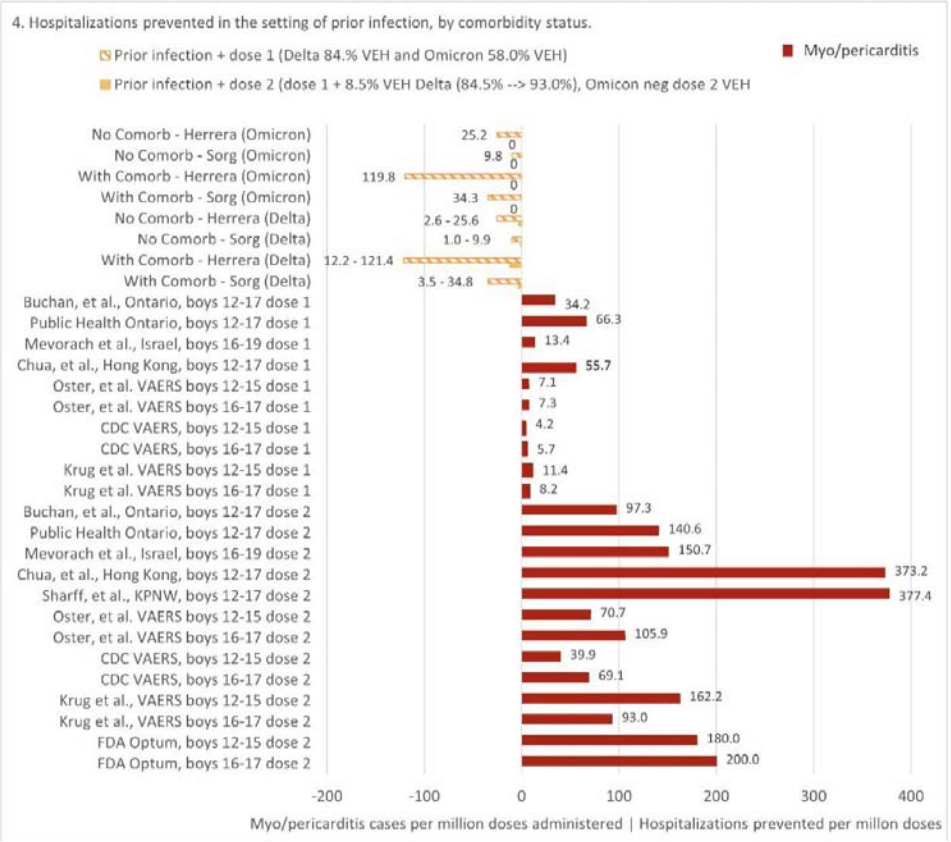
Krug A, Stevenson J, Høeg TB. BNT162b2 Vaccine-Associated Myo/Pericarditis in Adolescents: A Stratified Risk-Benefit Analysis. Eur J Clin Invest. 2022 May;52(5):e13759. doi: 10.1111/eci.13759. Epub 2022 Mar 4. PMID: 35156705; PMCID: PMC9111575.

Post Infectious immunity vs vaccine-based immunity against severe disease



Myocarditis in adolescent boys is a serious adverse event occurring approximately 1/3000 second pfizer doses. The risk appears to be higher for moderna *ECJI. 2/2022.* By Krug, Stephenson & Høeg

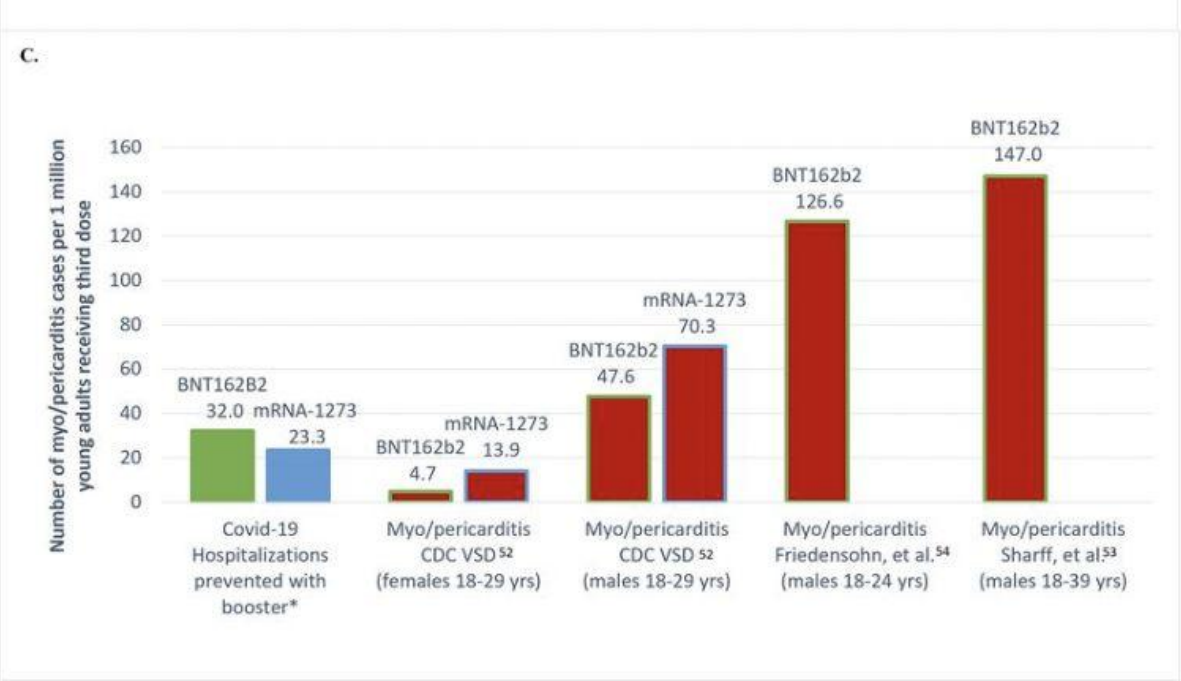
Figure 4. Risk-benefit analysis comparing additional hospitalizations prevented by dose one and dose two vaccination* among children with a history of prior infection vs. vaccine-associated myo/pericarditis following BNT162b2 in boys 12-17, stratified by vaccination dose, comorbidity status and variant.**



18-29 year old male COVID-19 booster risk-benefit analysis

COVID-19 vaccine boosters for young adults: a risk benefit assessment and ethical analysis of mandate policies at universities

Kevin Bardosh,[1,2] Allison Krug,[3] Euzebiusz Jamrozik,[4] Trudo Lemmens,[5] Salmaan Keshavjee,[6] Vinay Prasad,[7] Marty A Makary,[8] Stefan Baral,[9] Tracy Beth Høeg[10,11]



Current risks to most children are very low

- Around 95% of US children have been infected
- UK study - omicron infection fatality rate 1/million; globally was 3/million previously
- No children previously infected died with subsequent infection
- MIS-C (Multi-inflammatory syndrome in children) has disappeared worldwide
- Risk of Long Covid in children very low according to the best designed studies

Areas of Uncertainty

Benefits in Previously Infected

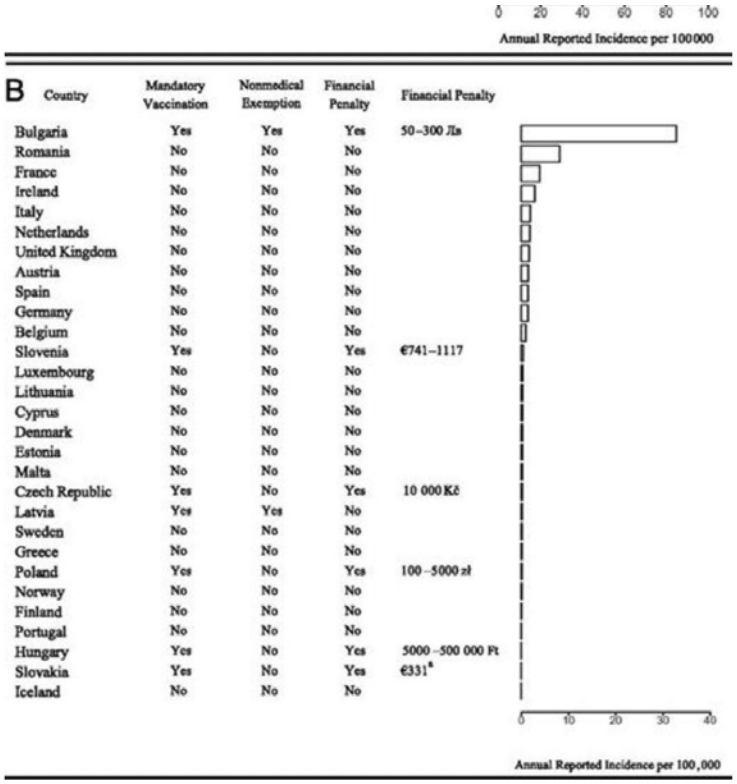
Current Vaccine Benefits against Severe disease in Children

Benefits of the Bivalent Booster

European Perspective

- Denmark no longer offering the COVID-19 to non high-rks children <18
- France as of next year will not vaccinate those <65 who are not high risk
- European CDC/Scandinavia bivalent boosters for only those over 50-65
- No School Mandates

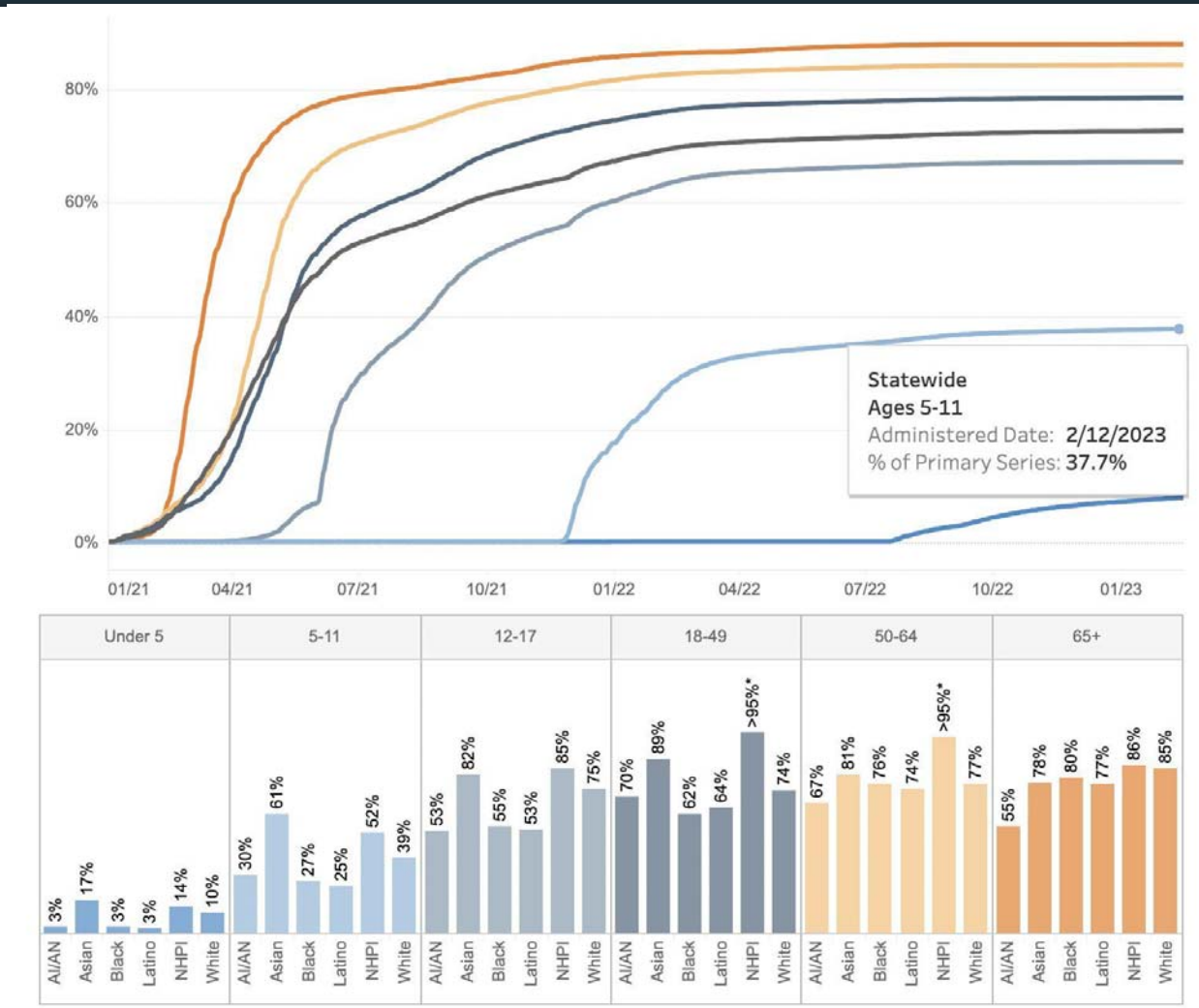
Very few European Countries mandate any vaccines for school



COVID-19 vaccine particularly inappropriate to mandate

- Poor at preventing transmission; any protection transient
- Vaccine benefits not well understood after infection w different variants
- The 2 dose vaccine has not been shown to have benefits that outweigh the risks in all children
- Vaccination should be an individual decision
- Current risk to most children very low and vaccination rate is low
- Mandates may cause conflict between parents and the schools
- Children will likely need to be moved back to remote (will disproportionately affect already disadvantaged students)

Current CA COVID-19 vaccination rates-primary series



Thank you!

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