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Effectiveness of vaccination with symptoms by age groups

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ABSTRACT

This paper examines effectiveness of vaccination with symptoms by age groups in the US and Hamamatsu city in Japan. The efficacy of vaccination has been reported in Singapore, but both datasets such as the US CDC dataset and the Hamamatsu dataset contradict the Singapore results. Both local government and government datasets are publicly available for peer review and reader validation.

1. Introduction

Two datasets are used to compare the effects of Singapore and Hamamatsu. Effectiveness of BNT162b2 Vaccine against Omicron in Children 5 to 11 Years of Age was reported by Tan et al. [1], but only rarely moderate to severe symptoms are observed in Hamamatsu [2]. We understand that the effects of vaccines wane over time. However, no vaccination dates are available for both datasets. The survey period differs between Singapore and Hamamatsu, with Singapore running from January 21, 2022 to April 8, 2022, and Hamamatsu from January 1, 2022 to August 11, 2022. Both datasets include a period of rapid spread of omicron variants.

There are four types of COVID-19 symptoms in Hamamatsu dataset: asymptomatic (asx), mild (mi), moderate (mo) and severe (sev) in Hamamatsu city of Shizuoka prefecture as local government. The retrospective study from January 1 to August 11, 2022 as shown in Table 1-1 and 1-2 shows that there are very rare moderate and severe symptoms in age groups (0–10 and 10–19). Therefore, the data cannot support Tan's study. Severe symptoms are very rare in all age groups included in the Hamamatsu dataset. However, the effects of vaccination on moderate symptoms in the 50 s, 60 s, 70 s, and 80 s were all negative as shown in Table 1-3 to 1-6, respectively. In other words, the more times the vaccine is administered, the more moderate patients there will be.

Using the CDC (Centers for Disease Control and Prevention) dataset on vaccination effectiveness in the US, Fig. 1 shows the effectiveness between vaccinated and unvaccinated in the US. After May 2022, there is no vaccination effectiveness between vaccinated and unvaccinated for all age groups in the US.

Dataset is stored in CDC official site [3]. The study period is from April 1, 2022 to August 1, 2022. All figures were generated by vuv.py [4]. The mortality rate of vaccinated population is calculated by the number of fully vaccinated COVID-19 deaths divided by fully vaccinated population. Similarly, the mortality rate of unvaccinated population is based on the number of unvaccinated COVID-19 deaths divided by unvaccinated population. No vaccination dates are available for CDC dataset.

There is the same trend on the effectiveness between vaccinated and unvaccinated in Hamamatsu and the US. In other words, the effectiveness of vaccination of Singaporean children contradicts results from Hamamatsu and the US. respectively.

2. Conclusion

Both local government and government datasets such as the US CDC dataset and the Hamamatsu dataset contradict the Singapore results.

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Table 1–1
Age group (0–10): asymptomatic, mild, moderate and severe with vaccination.

total infects	asx 0 dose	asx 1 dose	asx 2 doses	asx 3 doses	asx 4 doses	mi 0 dose	mi 1 dose	mi 2 doses	mi 3 doses	mi 4 doses	mo 0 dose	mo 1 dose	mo 2 doses	mo 3 doses	mo 4 doses	sev 0 dose	sev 1 doses	sev 2 doses	sev 3 doses	sev 4 doses
65,738	1315	9	18	1	0	9310	55	220	7	0	10	0	0	0	0	1	0	0	0	0

Table 1–2
The teens (10–19): asymptomatic, mild, moderate and severe with vaccination.

total infects	asx 0 dose	asx 1 dose	asx 2 doses	asx 3 doses	asx 4 doses	mi 0 dose	mi 1 dose	mi 2 doses	mi 3 doses	mi 4 doses	mo 0 dose	mo 1 dose	mo 2 doses	mo 3 doses	mo 4 doses	sev 0 dose	sev 1 doses	sev 2 doses	sev 3 doses	sev 4 doses
65,738	395	9	333	48	0	4443	155	4890	738	0	1	0	4	0	0	0	0	0	0	0

Table 1–3
50 s moderate symptoms.

mo 0 dose	mo 1 dose	mo 2 doses	mo 3 doses	mo 4 doses
5	0	9	6	0

Table 1–4
60 s moderate symptoms.

mo 0 dose	mo 1 dose	mo 2 doses	mo 3 doses	mo 4 doses
6	1	7	11	2

Table 1–5
70 s moderate symptoms.

mo 0 dose	mo 1 dose	mo 2 doses	mo 3 doses	mo 4 doses
19	3	20	41	17

Table 1–6
80 s moderate symptoms.

mo 0 dose	mo 1 dose	mo 2 doses	mo 3 doses	mo 4 doses
36	0	53	104	22

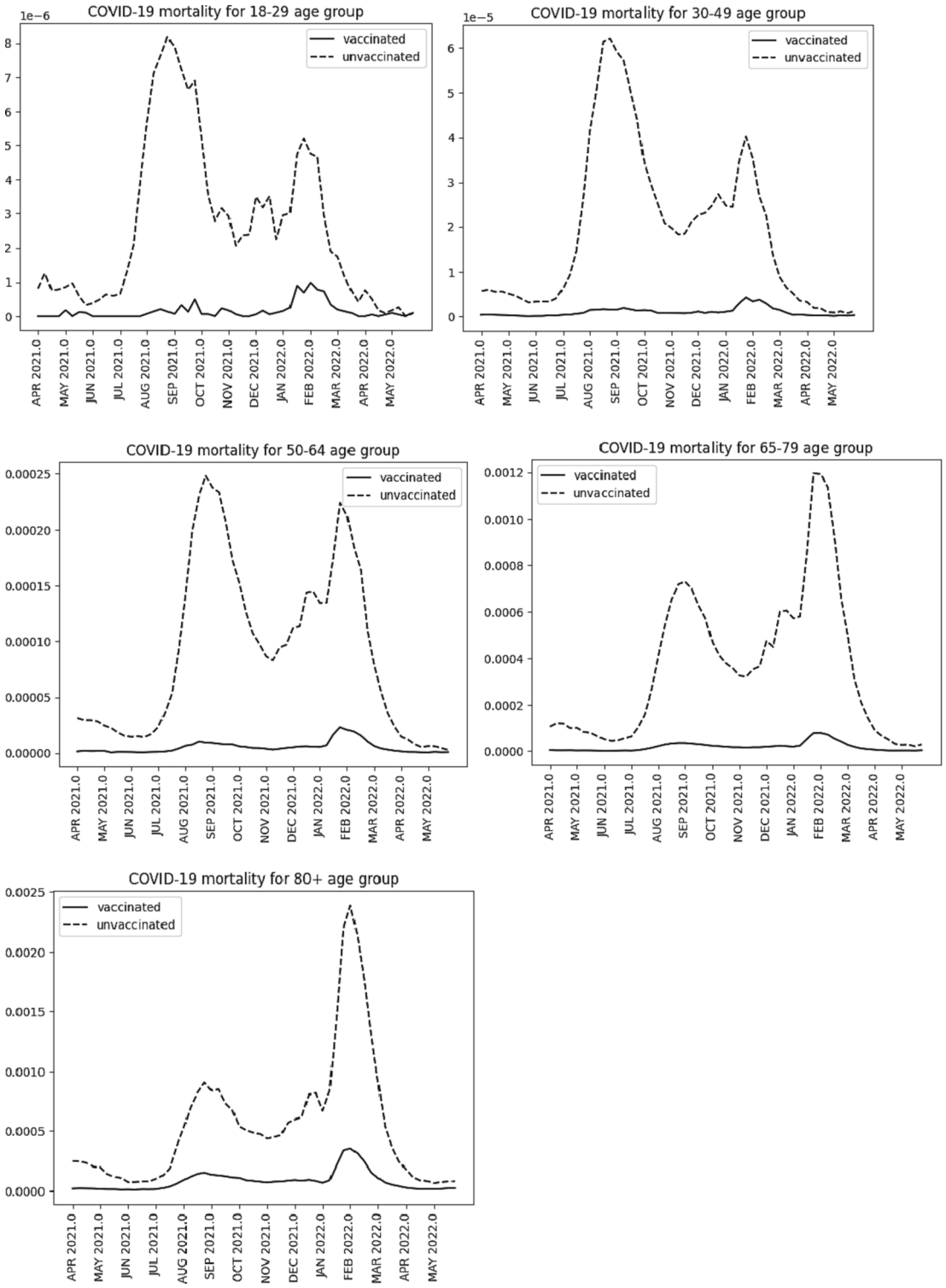

Fig. 1. COVID-19 mortality rates by age group with CDC dataset.

YT completed this research and wrote Python programs and this manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

References

[1] N. Engl, J Med 387 (2022) 525–532.
[2] DOI: 10.1056/NEJMoa2203209.
[3] The following Hamamatsu link is not available so that the dataset file is uploaded to GitHub site.
[4] https://static.hamamatsu.odpf.net/opendata/v01/221309_patients_vaccination_symptoms/221309_patients_vaccination_symptoms.csv.

Further reading

[5] https://github.com/ytakefuji/safety_vaccine/blob/main/221309_patients_vaccination_symptoms.csv.
[6] https://data.cdc.gov/api/views/3rge-nu2a/rows.csv.
[7] https://github.com/ytakefuji/safety_vaccine/blob/main/vuv.py.