Exploring paediatric COVID-19 outcomes among migrant and refugee children in New Zealand

28 - 30 June 2023

Presented by Linda Tran (AUT) for the 63rd Annual Conference of the New Zealand Association of Economists

Co-authored by Nadia Charania (AUT) & Janine Paynter (UoA)

IDI Disclaimer

The results in this paper are not official statistics; they have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand (Stats NZ). The opinions, findings, recommendations, and conclusions expressed in this paper are those of the authors, not Stats NZ.

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Access to the anonymised data used in this study was provided by Stats NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business, or organisation, and the results in this paper have been confidentialised to protect these groups from identification. Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI.

Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from www.stats.govt.nz.

Presentation structure

01 - Background

02 - Methods

03 - Descriptives

04 - Results

05 - Conclusion

The COVID-19 pandemic

Global pandemic with direct health impacts

750 million cases and over 7 million deaths (1)

Unprecedented efforts to develop a COVID-19 vaccine

Vaccinating children was an important aspect of the response

(1) World Health Organisation. (n.d.). WHO Coronavirus (COVID-19) Dashboard. Retrieved 5 June 2023 from https://covid19.who.int/

Response in New Zealand

Made available in New Zealand from January 2022

Two publicly-funded paediatric doses of the Pfizer vaccine 8 weeks apart (2)

Coverage rates among children has been mediocre

MoH target of 90% - only 50% of children partially vaccinated, 30% double vaccinated (3)

Vaccination coverage only available by ethnicity and region

Potential inequities by other demographic characteristics such as those with migrant and refugee backgrounds not available

(2) Ministry of Health. (2022a). COVID-19 vaccine: Children aged 5 to 11. Retrieved 16 May 2023 from https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-vaccines/covid-19-vaccine-children-aged-5-11
(3) Ministry of Health. (2022b). COVID-19: Vaccine data. Retrieved 16 May 2023 from https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics/covid-19-vaccine-data

Existing vaccination inequities

Suboptimal and inequitable uptake for nationally recommended (routine) vaccines among children with migrant and refugee backgrounds in NZ (4,5)

Factors contributing to disparities between migrant and non-migrant children include income, geographic origin, language proficiency (6-8)

(4) Charania, N. A., Gaze, N., Kung, J. Y., & Brooks, S. (2019). Vaccine-preventable diseases and immunisation coverage among migrants and non-migrants worldwide: A scoping review of published literature, 2006 to 2016. VACCINE, 37(20), 2661-2669. Charania, N. A., Gaze, N., Kung, J. Y., & Brooks, S. (2019). Vaccine-preventable diseases and immunisation coverage among migrants and non-migrants worldwide: A scoping review of published literature, 2006 to 2016. VACCINE, 37(20), 2661-2669.
(5) Charania, N. A., Paynter, J., & Turner, N. (2022). MMR vaccine coverage and associated factors among overseas-born refugee children resettled in Aotearoa New Zealand: A national retrospective cohort study. *[Manuscript submitted for publication]*.
(6) Charania, N. A., Paynter, P., Lee, A. C., Watson, D. G., & Turner, N. M. (2018). Exploring immunisation inequities among migrant and refugee children in New Zealand. Human Vaccines & Immunotherapeutics, 14(12), 3026-3033.
(7) Crawshaw, A., Farah Y, Deal A, Rustage K, Hayward SE, Carter J, Knights F, Goldsmith LP, Campos-Matos I, Wurie F, Majeed A, Bedford H, Forster AS, & S, H. (2022). Defining the determinants of vaccine uptake and undervaccination in migrant populations in Europe to improve routine and COVID-19 vaccine uptake: a systematic review. The Lancet Infectious Diseases. https://doi.org/10.1016/s1473-3099(22)00057-3
(8) Deal, A., Hayward, S. E., Crawshaw, A. F., Goldsmith, L. P., Hui, C., Dalal, W., Wurie, F., Bautista, M.-A., Lebanan, M. A., Agan, S., Hassan, F. A., Wickramage, K., Campos-Matos, I., & Hargreaves, S. (2022). Immunisation status of UK-bound refugees between January, 2018, and October, 2019: a retrospective, population-based cross-sectional study. The Lancet Public Health, 7(7), e606-e615. https://doi.org/10.1016/s2468-2667(22)00089-5

01 - Background

Motivation for research

Important to examine uptake by migration background

Limited literature on paediatric COVID-19 vaccine uptake

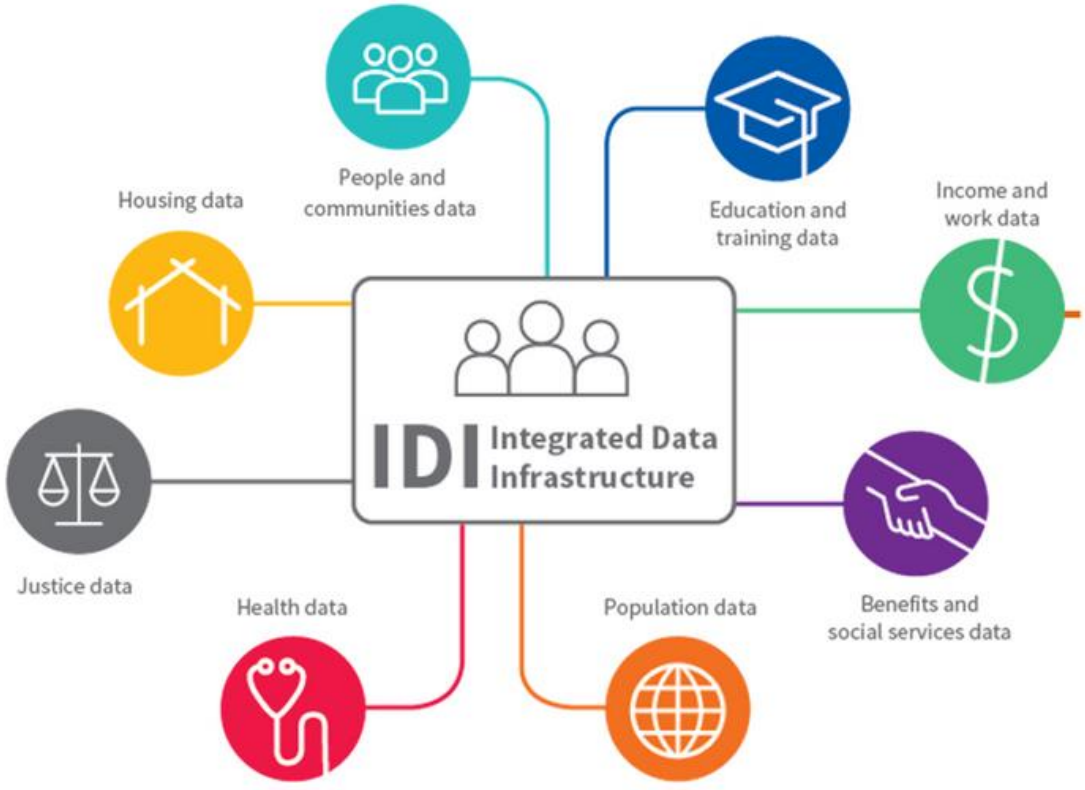
Focused on stratifying by age, sex, ethnicity and geographic region (2)

Australian report noted variations in COVID-19 adult uptake by English proficiency, citizenship status, and migration background (9)

To our knowledge, this is the first study to explore national paediatric COVID-19 vaccine uptake rates and contributing factors among migrant and non-migrant children in NZ

(9) Biddle, N., Welsh, J., Butterworth, P., Edwards, B., & Korda, R. (2022). Socioeconomic determinants of vaccine uptake: July 2021 to January 2022. Murthy, N. C., Zell, E., Fast, H. E., Murthy, B. P., Meng, L., Saelee, R., Vogt, T., Chatham-Stephens, K., Ottis, C., Shaw, L., Gibbs-Scharf, L., Harris, L., & Chorba, T. (2022, May). Disparities in First Dose COVID-19 Vaccination Coverage among Children 5-11 Years of Age, United States. Emerg Infect Dis, 28(5), 986-989

Integrated Data Infrastructure



Sample creation

Total Sample

N = 451,323

Overseas-born migrant children

N = 15,679
3.5% of sample

NZ-born migrant children

N = 141,123
31.3% of sample

NZ-born non-migrant children

N = 294,522
65.3% of sample

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* Note that the sample sizes do not exactly add up to 100% due to StatsNZ random rounding 3 (RR3) rules

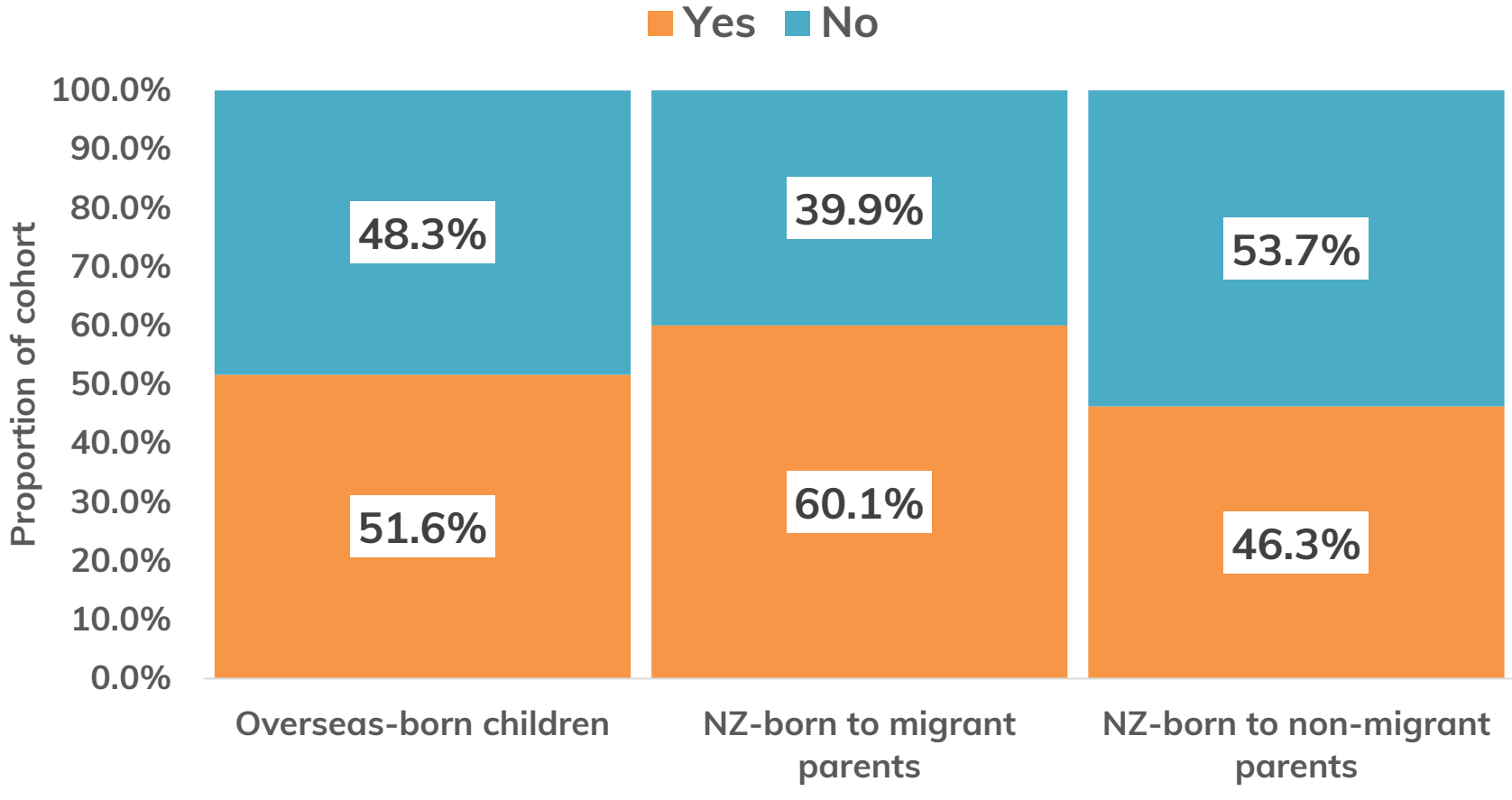
Analysis - between cohorts

$$logit(p_i) = \alpha + \beta_1 C_i + \beta_i' X_i' \gamma$$

- p(i) likelihood of receiving (at least one dose of) the COVID-19 vaccine
- C(i) which cohort child belongs to
- X'(i) matrix of explanatory variables
  - Ethnicity (Māori, Pacific, Asian, European, MELAA)
  - Gender
  - Age
  - Family income (Low, Medium, High)
  - Family type (both parents or single parent)
  - Deprivation (Low, Medium, High)
  - Primary Health Organisation (PHO) region
  - Parent’s COVID-19 vaccination status (0, 1, 2+)
  - Flag if child has tested positive for COVID

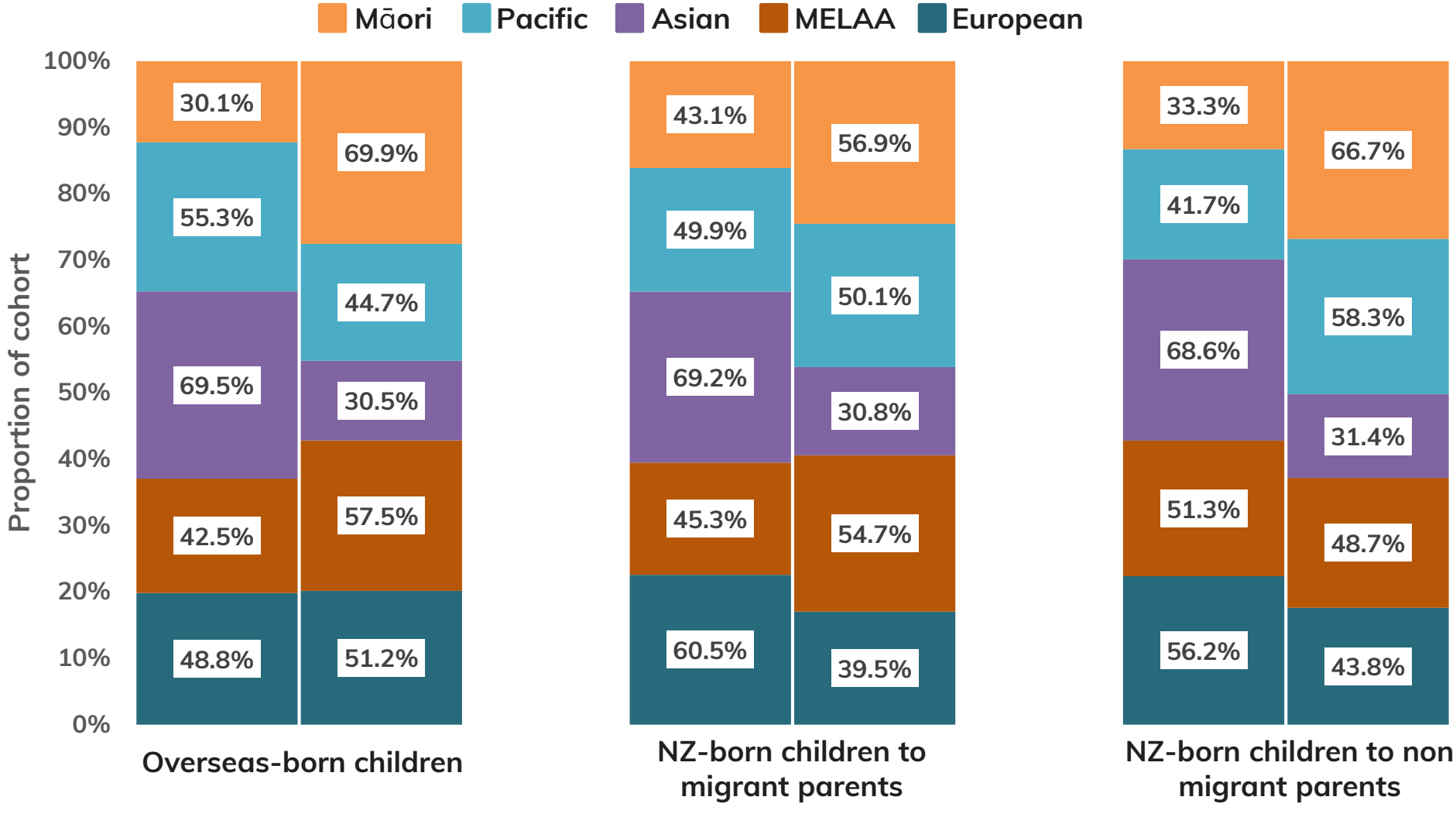
COVID-19 vaccination status

Binary results by cohort group



COVID-19 vaccination status

Binary results by cohort group & ethnicity



Differences by migration status

	Odds Ratio	95% CI		Signif.
Overseas-born migrant children	24.5%	19.3%	29.9%	***
NZ-born children of migrant parents	17.8%	15.7%	19.9%	***
NZ-born children of non-migrant parents	*Reference group*			

Inequities by ethnicity

	Odds Ratio	95% CI		Signif.
Māori	-41.9%	-43.0%	-40.8%	***
Pasifika	-23.2%	-25.3%	-21.1%	***
Asian	70.5%	66.2%	74.8%	***
MELAA	-36.1%	-39.5%	-32.5%	**
Other	13.9%	3.7%	25.0%	***
European	*Reference group*			

Family income and deprivation

	Odds Ratio	95% CI		Signif.
High ($70,000 +)	94.2%	89.3%	99.2%	***
Medium ($25,000 - $69,999)	18.3%	15.6%	21.1%	***
Low (< $25,000)	*Reference group*			

Inverse relationship with deprivation – children living in the highest deprivation (quintile 5) were 39% less likely to be vaccinated compared to the least deprived children (quintile 1).

Regional differences

Children from Auckland were **more likely** to have received a COVID-19 vaccination, compared to almost all regions.

Rural regions had **significantly lower likelihood** of children being vaccinated for COVID-19 (compared to Auckland) - Bay of Plenty and Northland (**49% less likely**) and Lakes and Taranaki (**42% less likely**).

Gender, family type and previous COVID-19 infection

Gender	Odds Ratio	95% CI		Signif.
Male (ref female)	-2.7%	-4.0%	-1.3%	***
Family type				
Single parent (ref couple)	-14.3%	-16.1%	-12.4%	***
Previously tested positive for COVID-19				
Yes (ref No)	12.1%	10.0%	14.2%	***

Parent's vaccination status

	Odds Ratio	95% CI		Signif.
No doses	-90.3%	-91.3%	-89.2%	***
1 dose	-95.4%	-95.7%	-95.2%	***
2+ doses	*Reference group*			

05 - Conclusion

Implications for the future

Need to address parental vaccine hesitancy

- Address concerns about vaccine safety and side effects
- Use trusted sources, such as their child’s doctors

Value of inclusive campaigns and clear communication strategies

Higher uptake of the vaccination in populations that have typically seen inequities

Implications for the future

Address inequities and uphold obligations to Te Tiriti o Waitangi

Instances of Kaupapa Māori approaches to engage Māori to improve uptake

Improve vaccine access, particularly in rural areas

Clear differences in vaccination rates by region, especially in more rural regions

(17) Megget, K., *How New Zealand's covid-19 strategy failed the Māori.* BMJ, 2022. 376: p. 180.

Acknowledgements

This study was funded by a grant from the Health Research Council (18/586).

Thank you to the members of the Monarch Collaboration (www.monarchcollaboration.org) for their support