SYMPOSIUM
REFUGEE JOURNEYS
Celebrating diversity, participation, and future thinking

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

30 November 2022

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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.

The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form or provided to Inland Revenue for administrative or regulatory purposes. Any person who has had access to the unit record data has certified that they have been shown, have read, and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes and is not related to the data's ability to support Inland Revenue's core operational requirements.

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.

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Presentation structure

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01 - Background

The COVID-19 pandemic

Global pandemic with direct health impacts

630 million cases and over 6.5 million deaths (WHO, n.d.)

Unprecedented efforts to develop a COVID-19 vaccine

Vaccinating children was an important aspect of the response

Suboptimal uptake with inequities

In the US, only 24% of eligible children received their first COVID-19 dose between Nov-Dec 2021, and there were inequities reported by age, ethnicity, and region (Murthy et al., 2022)

World Health Organisation. (n.d.). *WHO Coronavirus (COVID-19) Dashboard*. Retrieved 16 November 2022 from https://covid19.who.int/
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

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01 - Background

Paediatric COVID-19 vaccine

Made available in New Zealand from January 2022

Two publicly-funded paediatric doses of the Pfizer vaccine 8 weeks apart (MoH, 2022a)

Coverage rates among children has been mediocre

MoH target of 90% - only 50% of children partially vaccinated, 30% fully vaccinated (MoH, 2022b)

Vaccination coverage only available by ethnicity and region

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

Ministry of Health. (2022a). *COVID-19 vaccine: Children aged 5 to 11*. Retrieved 29 September 2022 from https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-vaccines/covid-19-vaccine-children-aged-5-11
Ministry of Health. (2022b). *COVID-19: Vaccine data*. Retrieved 29 September 2022 from https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics/covid-19-vaccine-data

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01 - Background

Existing vaccination inequities

Inequities for children with migrant and refugee backgrounds

Suboptimal and inequitable uptake for nationally recommended (routine) vaccines among overseas-born children with migrant and refugee backgrounds in NZ (Charania et al., 2018; Charania et al., 2022)

Similar inequities found in international studies

Factors contributing to disparities between migrant and non-migrant children include income, geographic origin, language proficiency (Charania et al., 2019; Crawshaw et al., 2022; Deal et al., 2022)

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. https://doi.org/10.1016/j.vaccine.2019.04.001
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]*.
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.
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
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

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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 (Murthy et al., 2022)

Australian report noted variations in COVID-19 adult uptake by English proficiency, citizenship status, and migration background (Biddle et al., 2022)

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

Biddle, N., Welsh, J., Butterworth, P., Edwards, B., & Korda, R. (2022). *Socioeconomic determinants of vaccine uptake: July 2021 to January 2022.* https://www.health.gov.au/sites/default/files/documents/2022/03/socioeconomic-determinants-of-vaccine-uptake-july-2021-to-january-2022.pdf
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

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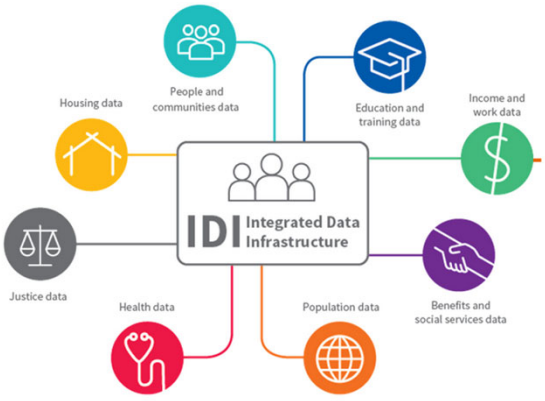
02 - Methods

Integrated Data Infrastructure



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02 - Methods

Sample creation

Total Sample N = 451,323

Cohort A

Overseas-born migrant children

N = 15,679
3.5% of sample

Cohort B

NZ-born migrant children

N = 141,123
31.3% of sample

Cohort C

NZ-born non-migrant children

N = 294,522
65.3% of sample

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

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03 - Methods

Analysis

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

- 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
  - 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 vaccination status (0, 1, 2+)
  - Flag if child has tested positive for COVID

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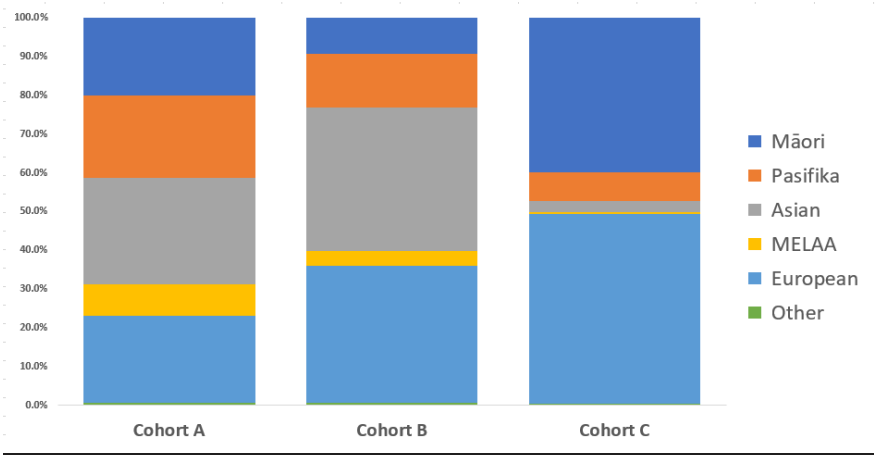
03 - Descriptives

Cohort demographics

By ethnicity



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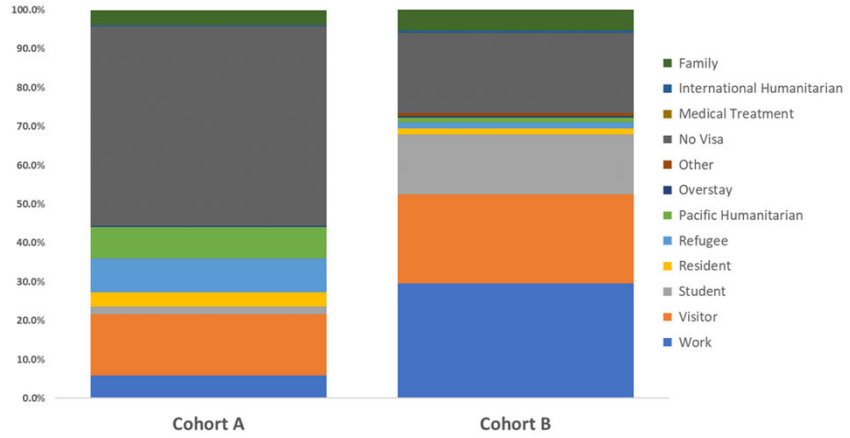
03 - Descriptives

Cohort demographics

By visa group



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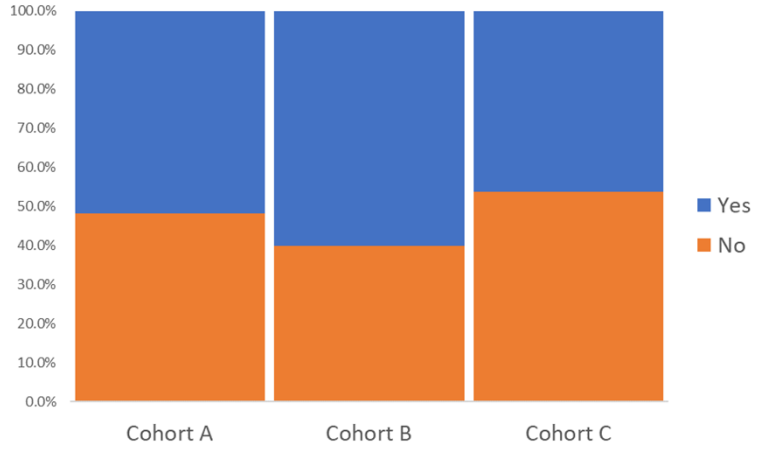
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group



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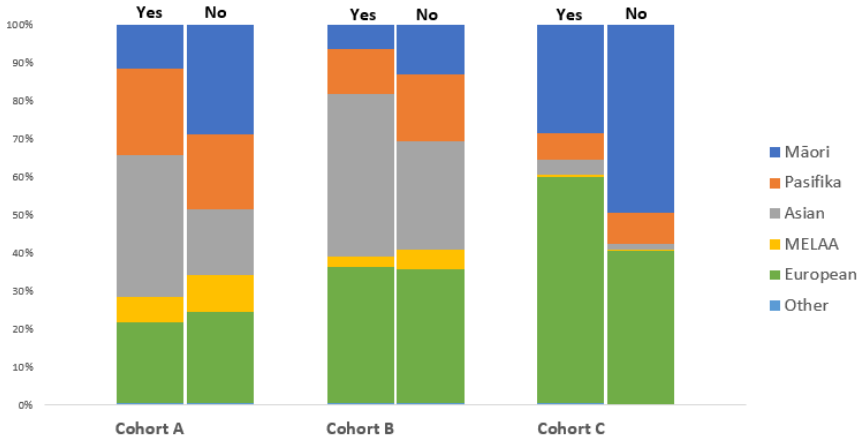
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group & ethnicity



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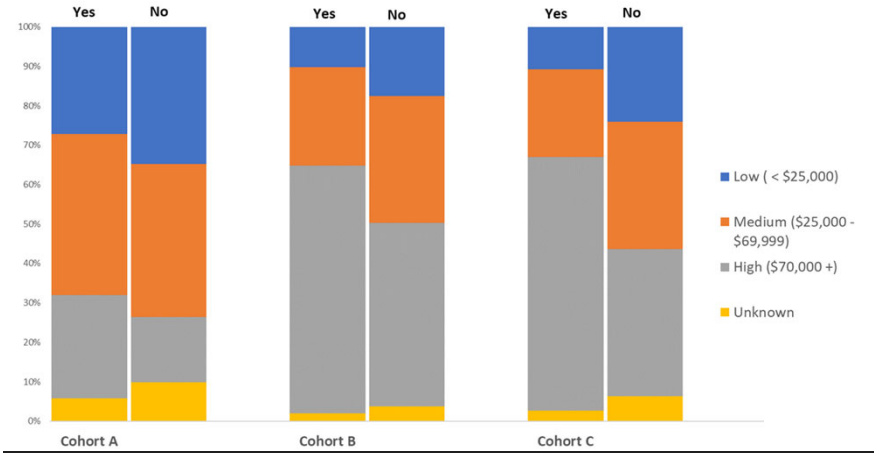
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group & family income



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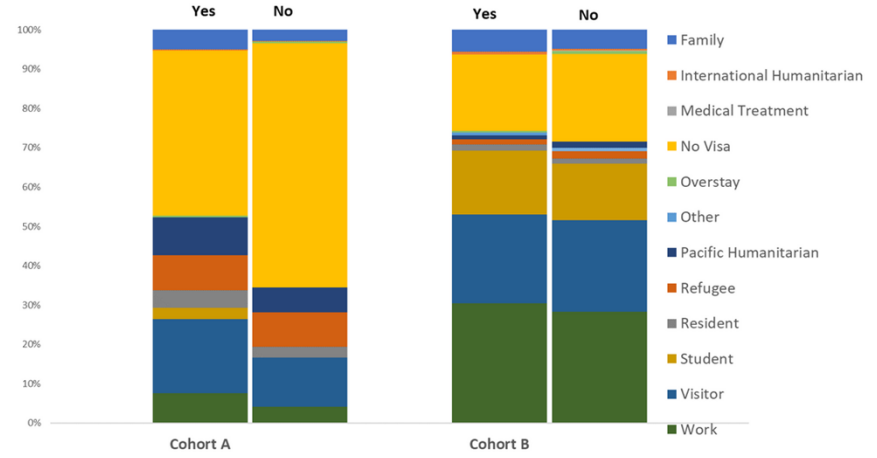
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group & visa group



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04 - Results

Findings from the model

Likelihood of children aged 5 to 11 receiving a COVID-19 vaccination

Controlling for a range of factors:

- migrant and refugee background (cohort)
- gender
- ethnicity
- age
- family type
- family income
- deprivation
- region
- parent's vaccination status
- if they recorded a positive COVID-19 test

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04 - Results

Cohort

Overseas-born migrant children (Cohort A) were **24% more likely** to have received a COVID-19 vaccination, compared to NZ-born non-migrant children (Cohort C).

NZ-born migrant children (Cohort B) were **18% more likely** compared to NZ-born non-migrant children (Cohort C).

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04 - Results

Ethnicity

Children who identified as Asian and Other were **70% and 14% more likely** (respectively) to have received a COVID-19 vaccination, compared to European children.

Compared to European children, Māori (42%), Pasifika (23%) and MELAA (36%) children were **less likely (%)** to have received the COVID-19 vaccine.

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04 - Results

Gender and age

Statistically small differences were found by gender.

Older children were **more likely** to be vaccinated than younger children.

Family type

Single parents with children were **14% less likely** to have vaccinated their children for COVID-19, compared to families with both parents.

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04 - Results

Family income and deprivation

Children from high- and medium-income households were **94% and 18% more likely** (respectively) to have received a COVID-19 vaccination, compared to children from low-income households.

As deprivation increased, the likelihood of receiving a COVID-19 vaccination decreased. Children living in the highest deprivation (quintile 5) were **39% less likely** to be vaccinated compared to the least deprived children (quintile 1).

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04 - Results

PHO region

Children from Auckland were **more likely** to have received a COVID-19 vaccination, compared to almost all regions, except for Capital and Coast (**29% more likely**).

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

22

04 - Results

Had tested positive for COVID

Children who had tested positive for COVID-19 were 12% more likely to be vaccinated for COVID-19 compared to children who had not tested positive.

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04 - Results

Parent's vaccination status

The most significant impact on the likelihood of children receiving the COVID-19 vaccination was parent's vaccination status.

Children whose parents had not received any COVID-19 vaccinations were 95% less likely to be vaccinated themselves, compared to children whose parents had received at least two doses. They were 90% less likely compared to children with parents who had received one dose.

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05 - Conclusion

Differences in the uptake of COVID-19 vaccination exists

Differences by ethnicity, age, household income, deprivation, and region.

Parents' perspectives likely to play a role in vaccinating their own children.

Szilagyi, P.G., et al., *Parents' Intentions and Perceptions About COVID-19 Vaccination for Their Children: Results From a National Survey.* Pediatrics, 2021. 148(4).
Humble, R.M., et al., *Parents' perceptions on COVID-19 vaccination as the new routine for their children < 11 years old.* Prev Med, 2022. 161: p. 107125.
Megget, K., *How New Zealand's covid-19 strategy failed the Māori.* BMJ, 2022. 376: p. 180.

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05 - Conclusion

Migrant children had higher COVID-19 vaccination rates

Contrary to most international literature for routine immunisations where migrants had immunisation inequities compared to local populations (Charania et al., 2019).

Similar to previous NZ research that found that NZ-born migrant children (cohort B) had the highest recorded age-appropriate vaccination rates compared to overseas-born migrant (cohort A) and NZ-born non-migrant children (cohort C) (Charania et al., 2018).

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. https://doi.org/10.1016/j.vaccine.2019.04.001
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.

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05 - Conclusion

Importance of parents' vaccination views and status

International evidence of a link between parents' own COVID-19 vaccination status and their intentions to vaccinate their own child for COVID-19 (Rane et al., 2021; Szilagyi et al., 2021; Humble et al., 2022).

Higher likelihood to vaccinate among parents of older children (Szilagyi et al., 2021; Humble et al., 2022).

High COVID-19 uptake amongst parents, but low intentions to vaccinate (Humble et al., 2022)

Rane MS, Robertson MM, Westmoreland DA, Teasdale CA, Grov C, Nash D. Intention to vaccinate children against COVID-19 among vaccinated and unvaccinated US parents. JAMA Pediatr. 2022;176:201–3.
Szilagyi, P.G., et al., *Parents' Intentions and Perceptions About COVID-19 Vaccination for Their Children: Results From a National Survey.* Pediatrics, 2021. 148(4).
Humble, R.M., et al., *Parents' perceptions on COVID-19 vaccination as the new routine for their children < 11 years old.* Prev Med, 2022. 161: p. 107125.

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05 - Conclusion

Inequities by ethnicity

May be attributed to differing vaccine perceptions and experiences

- Asian people have reported pro-immunisation views and ease of vaccine access (Pal et al., 2014)
- Māori Māmā have reported being supportive of vaccines, but against coercive actions (Brown et al., 2021)
- Rates among Pacific had been improving prior to COVID-19 (Paterson eta l., 2006), but have reported barriers related to deprivation, low health literacy, and limited access to culturally-appropriate services (Tafea et al., 2022)

Brown S, Toki L, Clark TC. Māori Māmā views and experiences of vaccinating their pēpi and tamariki: A qualitative Kaupapa Māori study. Auckland: New Zealand Work Research Institute 2021.
Pal M, Goodyear-Smith F, Exeter D. Factors contributing to high immunisation coverage among New Zealand Asians. J Prim Health Care. 2014;6(4):304–311.
Paterson J, Schulter P, Percival T, Carter S. Immunisation of a cohort Pacific children living in New Zealand over the first 2 years of life. Vaccine. 2006;24(22):4883–4889. doi:10.1016/j.vaccine.2006.02.050.
Tafea V, Mowat R, Cook C. Understanding barriers to immunisation against vaccine-preventable diseases in Pacific people in New Zealand, Aotearoa: an integrative review. Journal of Primary Health Care. 2022;14(2):156-163.

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05 - Conclusion

Implications

Need to address parental vaccine hesitancy

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

(Szilagyi et al., 2021; Humble et al., 2022)

Value of inclusive campaigns and clear communication strategies

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

Szilagyi, P.G., et al., *Parents' Intentions and Perceptions About COVID-19 Vaccination for Their Children: Results From a National Survey.* Pediatrics, 2021. 148(4).
Humble, R.M., et al., *Parents' perceptions on COVID-19 vaccination as the new routine for their children < 11 years old.* Prev Med, 2022. 161: p. 107125.

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05 - Conclusion

Implications

Address inequities and uphold obligations to Te Tiriti o Waitangi

Instances of Kaupapa Māori approaches to engage Māori to improve uptake (Megget, 2022)

Improve vaccine access, particularly in rural areas

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

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

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Acknowledgements

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

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Appendix

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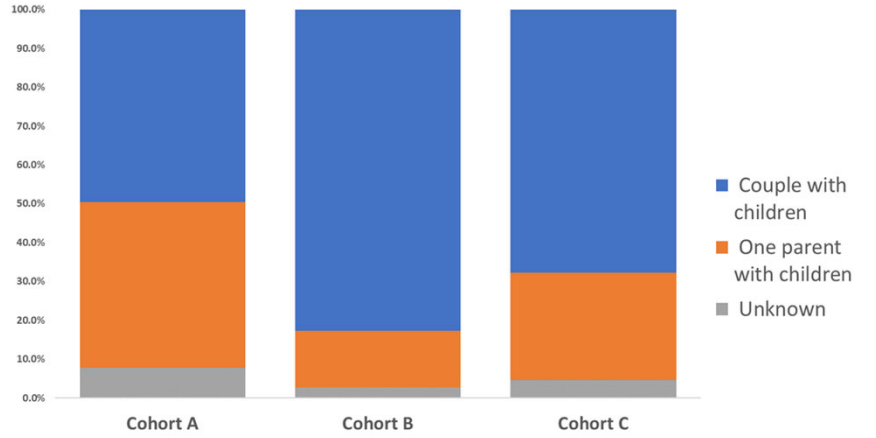
03 - Descriptives

Cohort demographics

By family type



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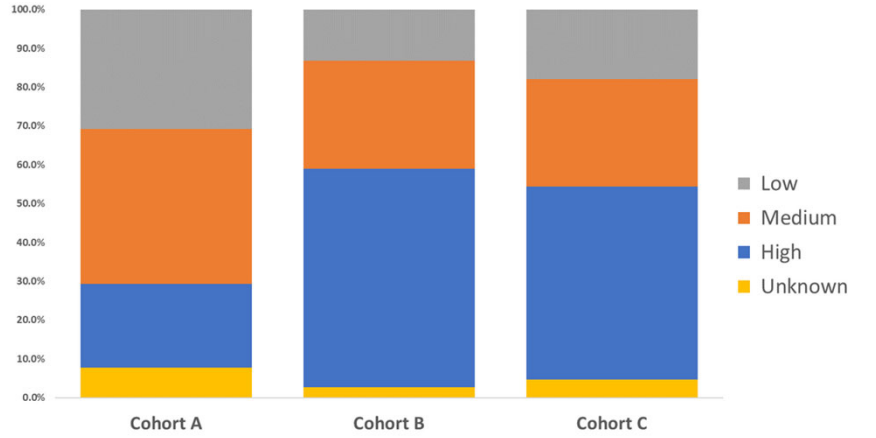
03 - Descriptives

Cohort demographics

By family income



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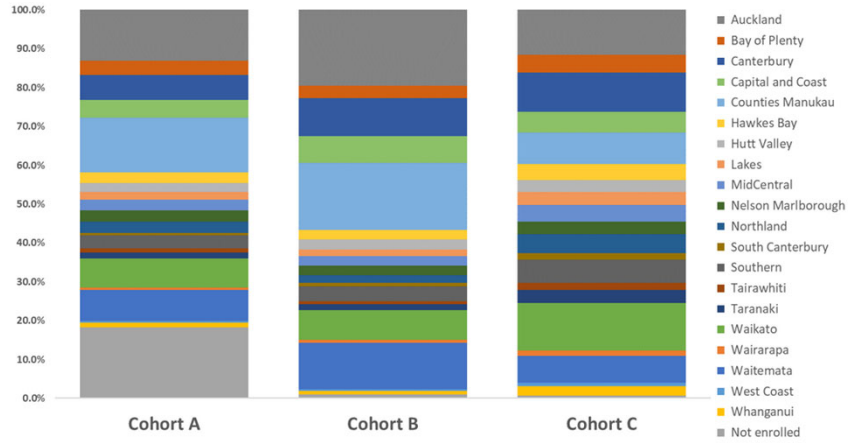
03 - Descriptives

Cohort demographics

By PHO region



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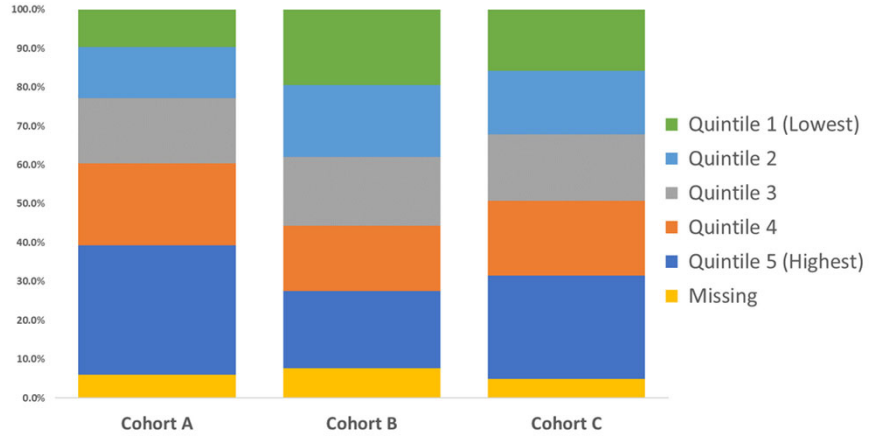
03 - Descriptives

Cohort demographics

By deprivation



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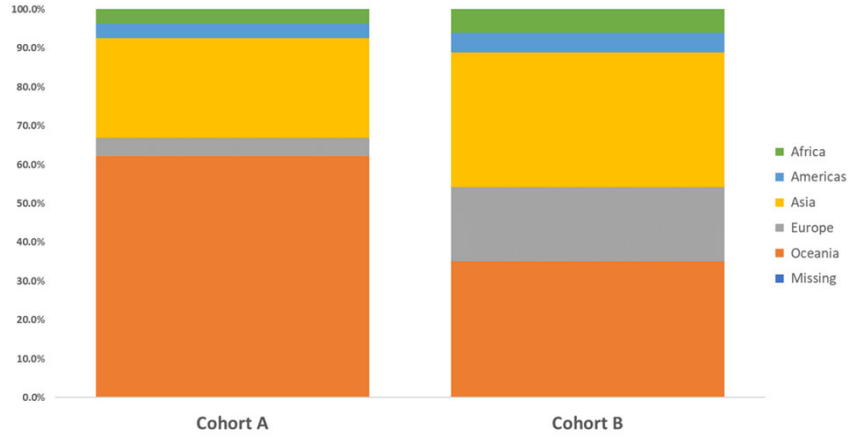
03 - Descriptives

Cohort demographics

By UN region



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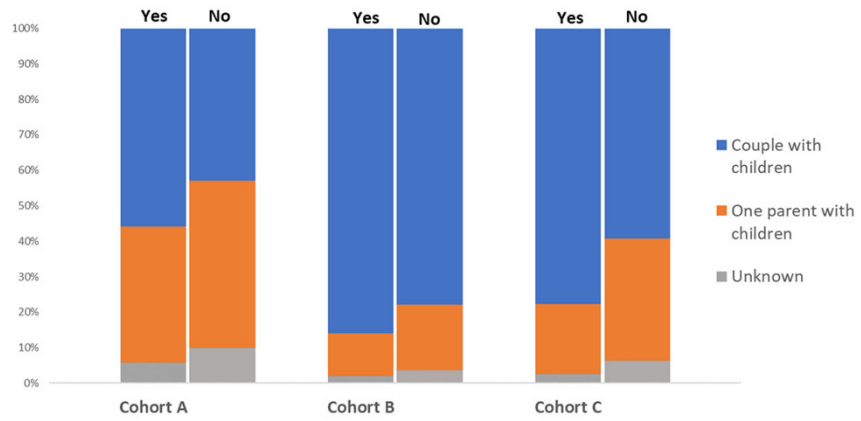
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group & family type



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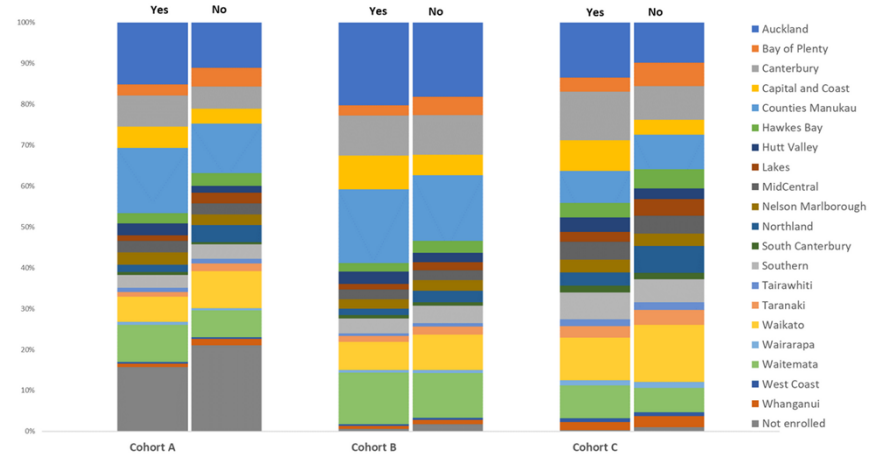
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group & PHO region



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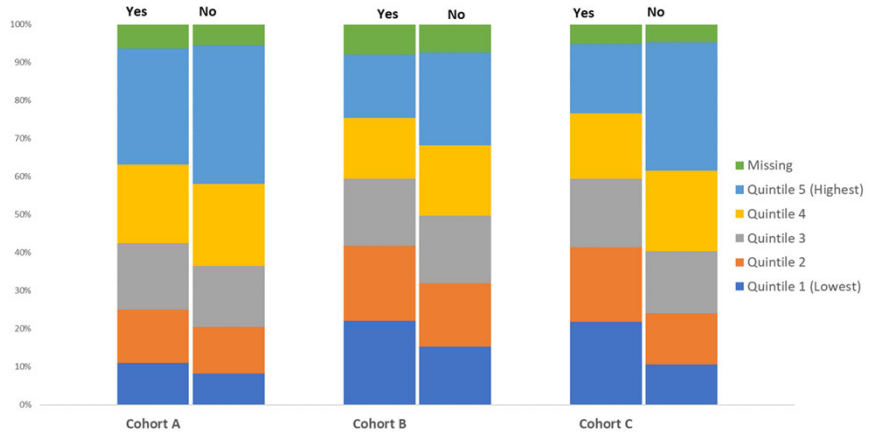
03 - Descriptives

COVID-19 vaccination status

Binary results by cohort group & deprivation



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03 - Descriptives

COVID-19 vaccination status

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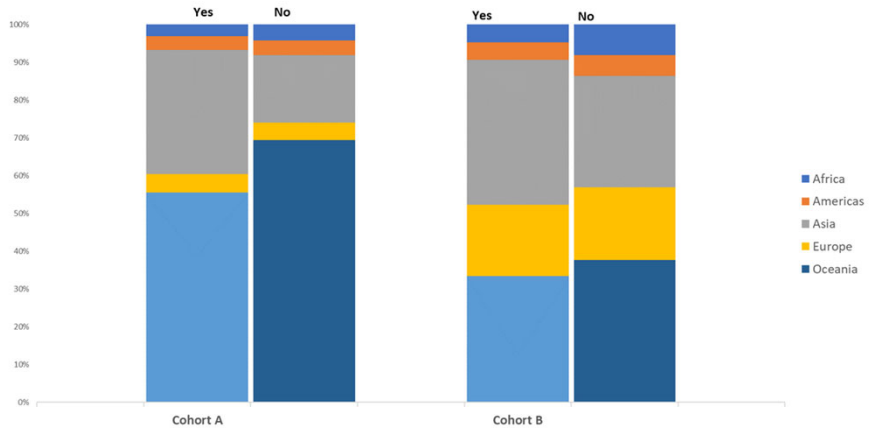

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