

# Childhood vaccination uptake among children born in Aotearoa New Zealand based on parental nationality

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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](http://www.stats.govt.nz).

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# Presentation structure

01 - Background

02 - Methods

03 - Descriptives

04 - Results

05 - Conclusion

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## 01 - Background

# Existing immunisation inequities among migrant and refugee children

## Migration is at unprecedented levels

281 million migrants live outside their home country - 3.6% of the global population (1)

## Migrants and refugees have lower immunisation coverage

...and higher vaccine preventable burdens compared to their host population (2)

## Several factors contribute to these disparities

Including nativity, country of origin, citizenship status and language proficiency (2-7)

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(5) Buelow VH, Van Hook J. Timely immunization series completion among children of immigrants. *Journal of Immigrant & Minority Health*. 2008;10(1):37-44.

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(7) Wolf E, Rowhani-Rahbar A, Tasslimi A, Matheson J, DeBolt C. Parental Country of Birth and Childhood Vaccination Uptake in Washington State. *Pediatrics*. 2016;138(1).

## 01 - Background

# Immunisations in New Zealand

### **All children under 18 eligible for publicly funded vaccines**

Vaccines in the National Immunisation Schedule (NIS) are free regardless of immigration or citizenship status (8)

### **Coverage rates are suboptimal and inequitable**

Māori (the indigenous people of NZ) have lower vaccination rates compared to other ethnic groups, reflecting barriers to vaccine access, impacts of colonisation and systemic racism. More rural and deprived communities also face vaccination inequities (9-11)

### **Vaccination coverage only available by ethnicity and region**

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

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(11) 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.

## 01 - Background

# Motivation for research

### Parent-child nativity appears important for vaccination uptake

Overseas-born migrant children had lower age-appropriate vaccination rates compared to NZ-born children of non-migrant parents. However, NZ-born children of migrant parents had the highest age-appropriate vaccination rates (3)

### Understanding differences in coverage between cohorts

Our research looked to understand what contributed to these differences and to understand how immunisation and programmes can be tailored for more equitable outcomes

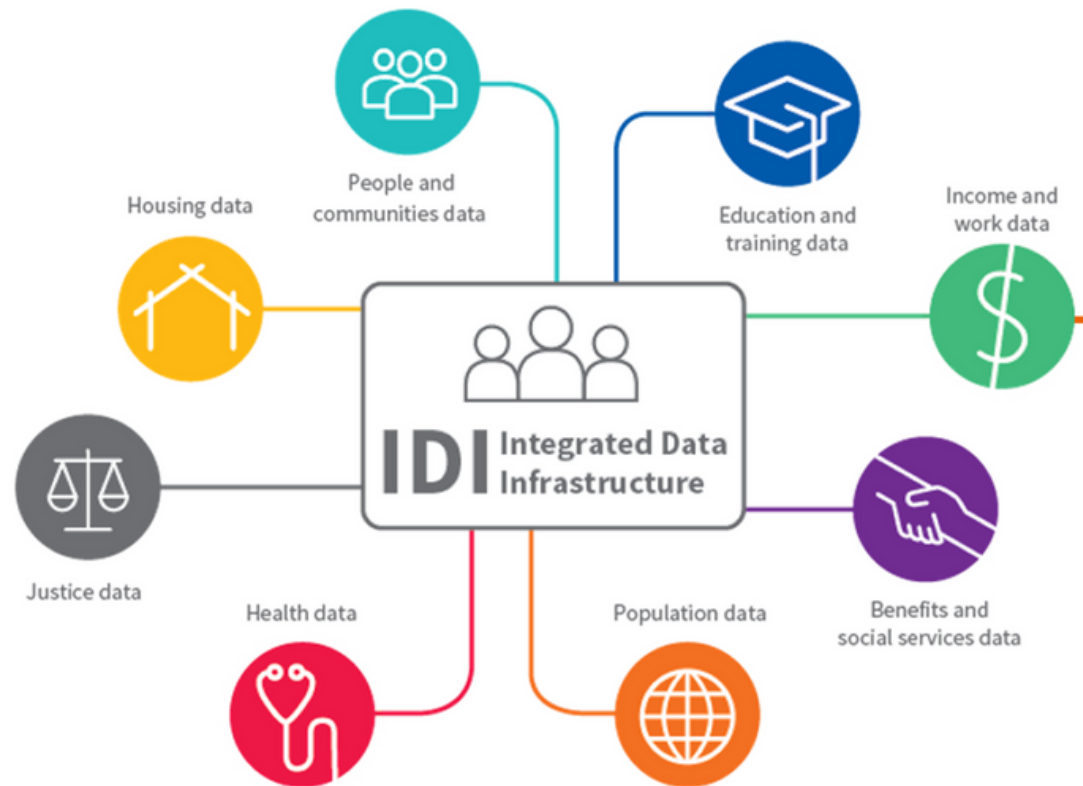
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# Integrated Data Infrastructure



## 02 - Methods

# Sample

### Total Sample

N = 760,269 children born in NZ, under 18 as of Dec 2021  
who received all vaccinations for which they were due



**NZ-born children of  
migrant parents**  
32.9% of sample



**NZ-born children of  
non-migrant parents**  
67.1% 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  
Also note that children who were not vaccinated or partially vaccinated were excluded from the analysis



# Timely and complete vaccinations

## Measles, mumps and rubella (MMR)

Chosen due to purported link to autism and widespread misinformation, and highly infectious nature.

Timely if received:

- 1st dose by 12 (or 15) months
- 2nd dose between 15 and 54 months

## Pertussis

Chosen due to highly infectious nature.

Timely if received:

- 1st, 2nd and 3rd dose between 1-6 months after birth
- 4th dose between 4 and 4.5 years old (booster)
- 5th dose between 11 to 12 years old (booster)

## Human papillomavirus (HPV)

Chosen due to reported misconceptions, fear of encouraging sexual activity and limited knowledge of disease itself.

Timely if received:

- 1st dose after 11 years old
- 2nd dose before 14 years

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\* For MMR, 12 months or above if born after December 2019 when the schedule changed for MMR, 15 months if born prior  
For HPV, only female children included

# Between-cohort analysis

$$\text{logit}(p_i \mid \text{Received} = 1) = \alpha + \beta_1 C_i + \beta'_i X'_i \gamma$$

- $p(i)$  likelihood of receiving all scheduled vaccinations on time, conditional of having received all scheduled dosage
  - $C(i)$  which cohort child belongs to (NZ-born children of migrant or non-migrant parents)
  - $X'(i)$  matrix of explanatory variables
    - Gender
    - Age group
    - Parent's highest education (No qualification, Level 1-6 Certificate/Diploma, Bachelors, Postgraduate, Overseas Secondary)
    - Parent's ability to speak English (Yes/No)
    - Family income (Low, Medium, High)
    - Family type (both parents or single parent)
    - Deprivation quintile (1 - lowest, 5 - highest deprivation)
    - Primary Health Organisation (PHO) region
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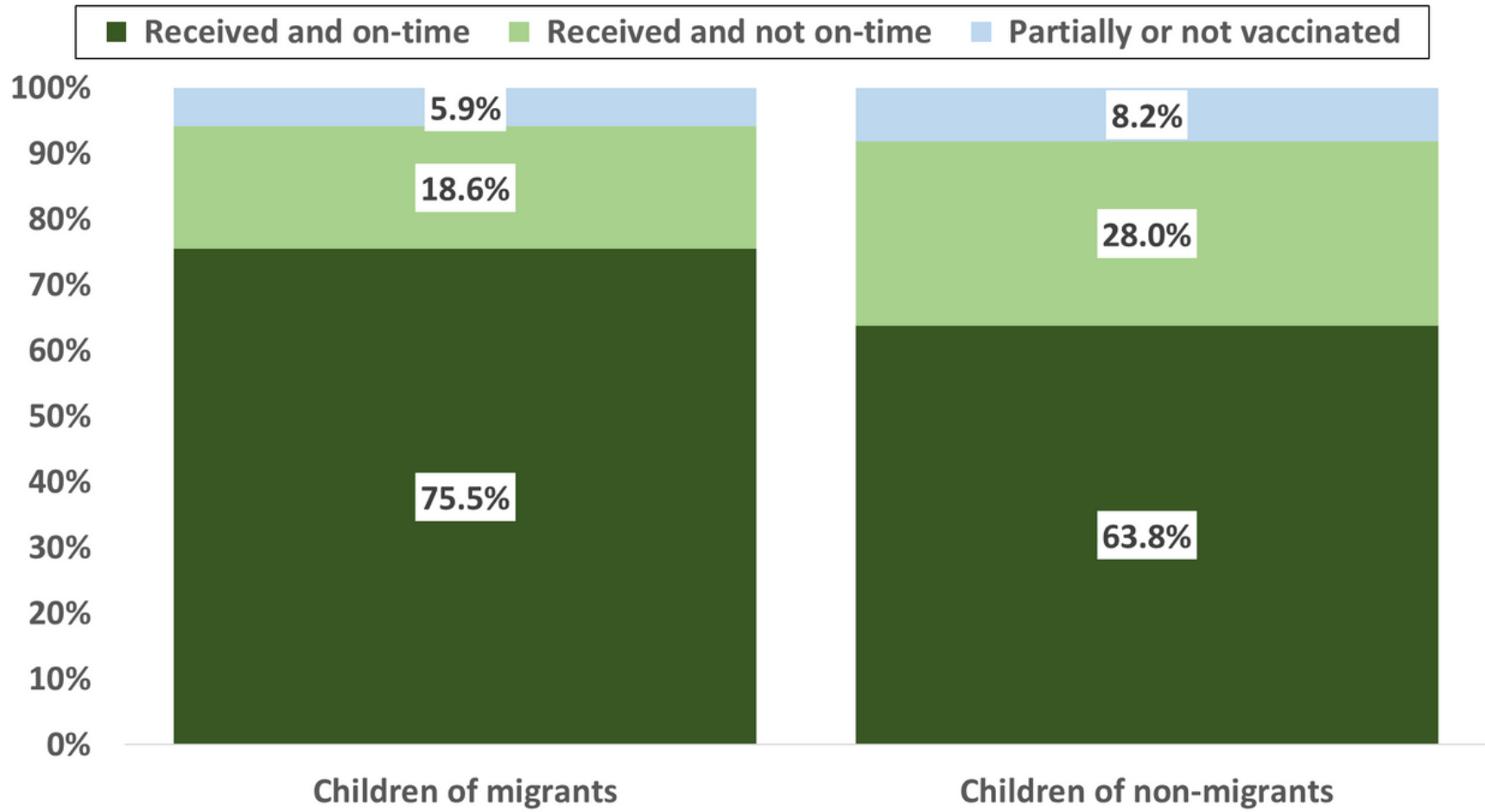
# Migrant-specific analysis

Separate logistic regressions for NZ-born children of migrant and refugee parents only. Additional variables included:

- Parents' years since arrival to New Zealand (as of January 2022)
  - Parents' earliest visa group
    - Family
    - International Humanitarian
    - Medical Treatment
    - No visa required (from New Zealand, Australia and Pacific Nations)
    - Overstay
    - Pacific Humanitarian
    - Refugee
    - Resident
    - Student
    - Visitor
    - Work
    - Other
  - Parent's origin region (Africa, Americas, Asia, Europe, Oceania)
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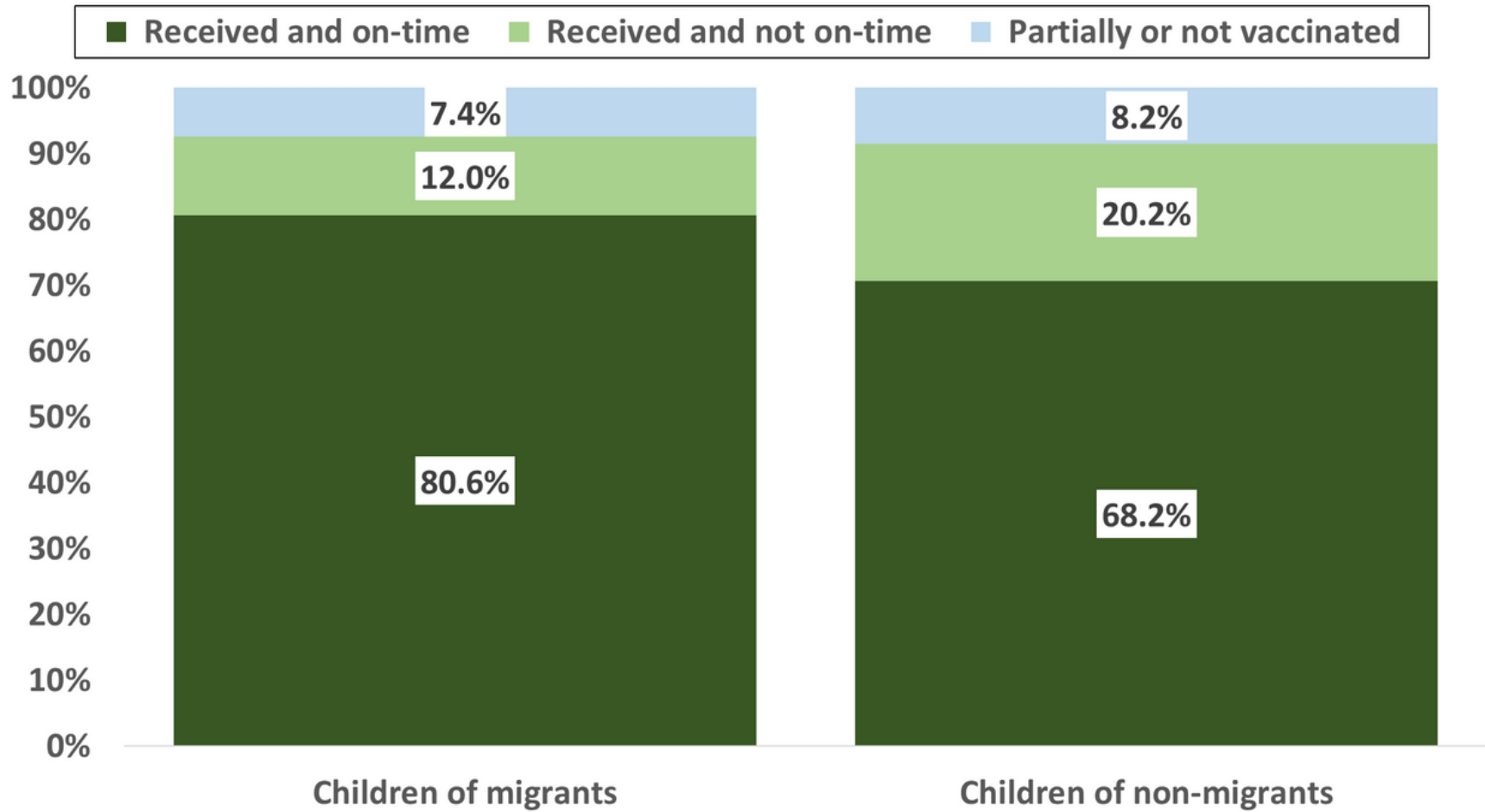
## 03 - Descriptives

# MMR Overview



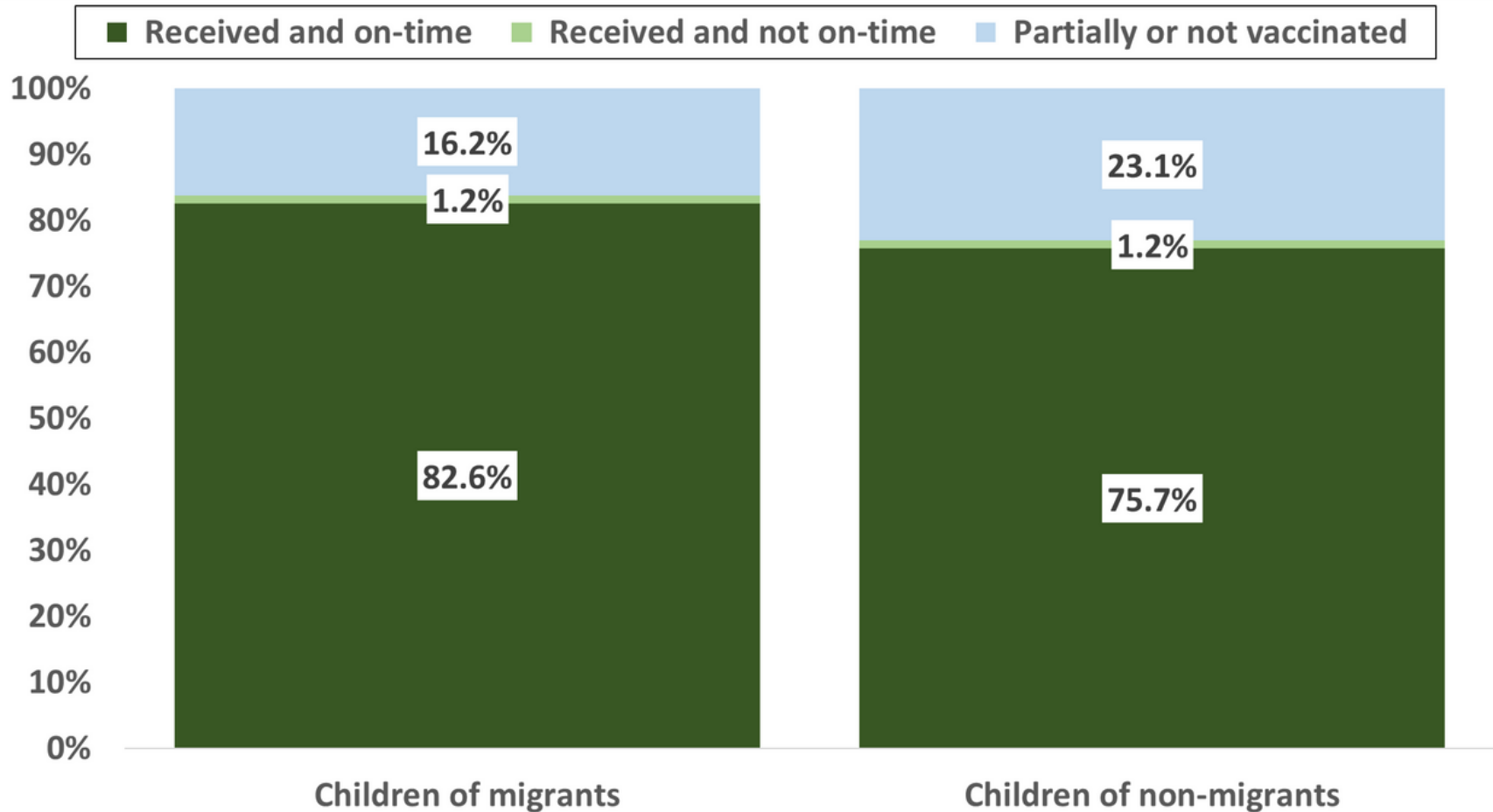
## 03 - Descriptives

# Pertussis Overview



## 03 - Descriptives

# HPV Overview



## 04 - Results

# MMR & Pertussis - between cohorts

NZ-born children of migrant parents were significantly more likely to be vaccinated for MMR and pertussis on-time, compared to NZ-born children of non-migrant parents

Māori and Pacific children were significantly less likely to be vaccinated on-time compared to European children

Children living in more deprived areas were significantly less likely to be vaccinated on-time compared to those living in the less deprived areas

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## 04 - Results

# MMR & Pertussis - migrant-only

NZ-born children of migrant parents who had been in NZ for over 10 years were significantly more likely to be vaccinated for MMR and pertussis on-time, compared to children of parents who had lived in NZ for shorter periods of time

Children whose parents arrived on international humanitarian or refugee visas were significantly more likely to be vaccinated on-time compared to those who did not require a visa when entering NZ

Children whose parents were from Asia and Poly/Micro/Melanesia were significantly more likely to be vaccinated compared to parents from New Zealand and Australia

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## 04 - Results

# HPV - between cohorts

No significant differences in the likelihood in HPV uptake between NZ-born children of migrant and non-migrant parents

Māori, Pacific and Asian children were significantly more likely to be vaccinated on-time compared to European children

Children living in the most deprived areas were significantly more likely to be vaccinated on-time compared to those living in the least deprivation

No significant differences in the likelihood in HPV uptake by family structure, household incomes, parental education or English-speaking

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## 04 - Results

# HPV - migrant only

NZ-born children of migrant parents who had been in NZ for over 10 years were significantly more likely to be vaccinated for HPV, compared to children of parents who had lived in NZ for shorter periods of time

Children whose parents arrived on international humanitarian, refugee, student, visitor and work visas were significantly more likely to be vaccinated on-time compared to those who did not require a visa when entering NZ

Children whose parents were from most Asian regions and Micro/Melanesia were significantly more likely to be vaccinated compared to parents from New Zealand and Australia

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# Inequities by ethnicity and region

Our research found notable inequities for MMR and pertussis by ethnicity, especially for Māori and Pacific children, who also tend to live in the most deprived and rural regions.

Previous research point towards barriers to vaccine access and acceptance experienced by Māori and Pacific families (10-11, 15)

## 05 - Conclusion

# Inequities by ethnicity and region

On the contrary, the same inequities were not observed for HPV with Māori and Pacific children having a higher likelihood of being vaccinated on-time compared to European children, and those living in the most deprived areas compared to those in the least deprived.

HPV is a school-based immunisation programme in NZ (compared to primary-based for MMR and HPV) which can help address individual and family level barriers to vaccination that appear to play a role in vaccination uptake

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## **Factors associated with migrant parents**

While migrant populations can face many barriers to vaccination, including language and communication, this appeared mostly insignificant in our results

Children of international humanitarian and refugee parents were most likely to be age-appropriately vaccinated. This likely reflects the differences in support offered to refugees to engage in primary care services during their resettlement process

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## **Implications for policy and practice**

NZ-born children of migrant parents do not seem to experience the same immunisation inequities observed among overseas-born children.

As childhood vaccination is a parental decision, immunisation services may be addressing common vaccine barriers among migrant parents.

However, uptake rates are still below national target. Continued efforts needed to develop and implement interventions to address needs and access barriers.

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