

A BETTER
START

E Tīpu e Rea

Big Data Research Outcomes

He waka eke noa
Better Together

Research excellence for healthy tamariki

A Better Start is funded by the Ministry
of Business, Innovation and Employment

Host Institution



LIGGINS
INSTITUTE

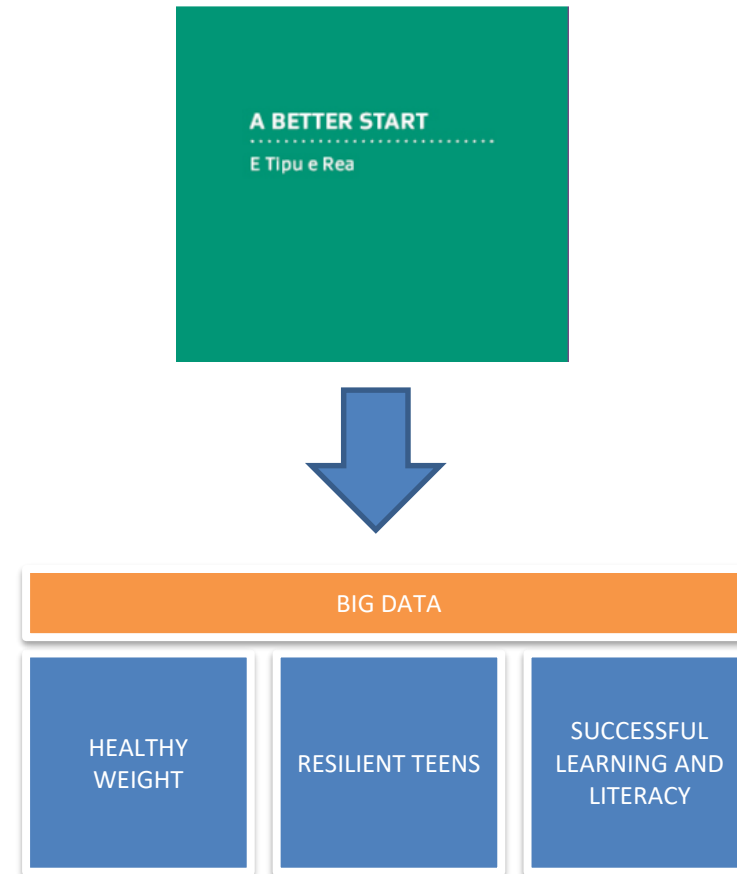


Our Team

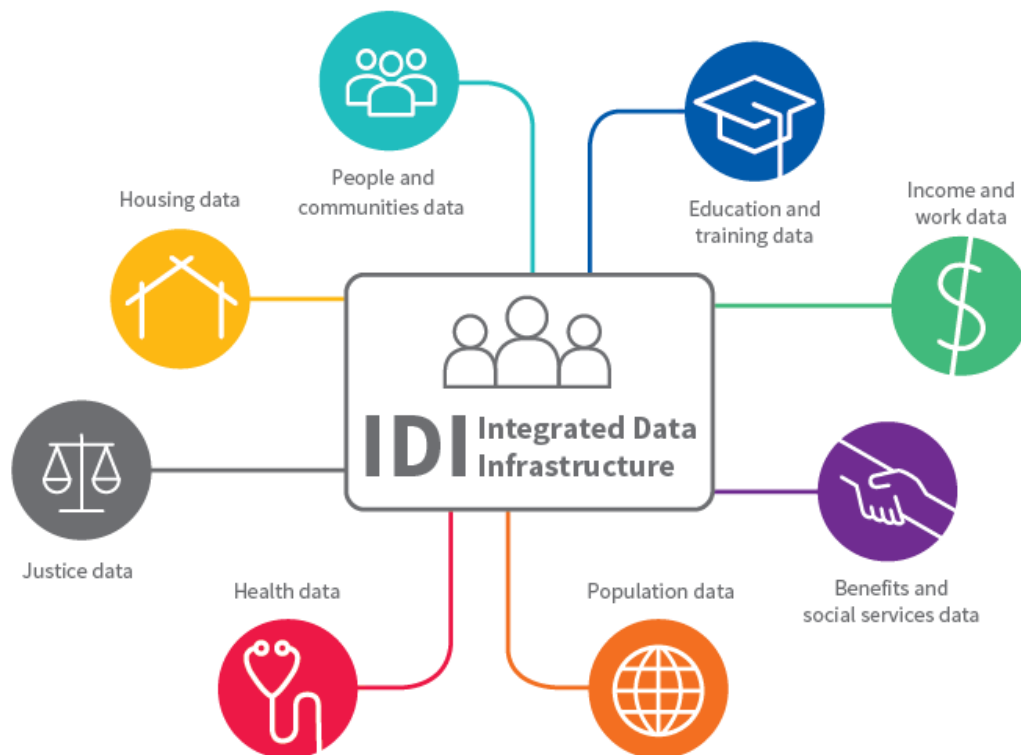
- Barry Taylor – Principal Investigator (DSM)
- Rick Audas – Theme co-lead (DSM)
- Justine Camp, Nick Bowden (DSM)
- Rose Richards, Jesse Kokaua (Centre for Pacific Health, Va'a o Tautai)
- Barry Milne – Theme co-lead (COMPASS)
- Nichola Shackleton, Sheree Gibb, Jessica McLay, Stephanie D'Souza (COMPASS)

Big Data's role

- Work with the three themes to assess time trends, spatial distribution, and answer other key questions using whole population data (IDI)
- Healthy weight
 - B4 School Check
- Resilient Teens
 - Pharmaceutical data
- Successful Learning and Literacy
 - B4 School Check, School data



Integrated Data Infrastructure (IDI)



DISCLAIMER

Access to the data presented was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistic Act 1975. Our findings are not Official Statistics. The opinions, findings, recommendations, and conclusions expressed are those of the researchers, not Statistics NZ, or the University of Auckland.

B4 School Check: Who misses out?

BMJ Open How universal are universal preschool health checks? An observational study using routine data from New Zealand's B4 School Check

Sheree Gibb,^{1,2} Barry Milne,^{2,3} Nichola Shackleton,^{2,3} Barry J Taylor,^{2,4} Richard Audas^{2,5}

B4 School Check

The B4 School Check is a nationwide programme offering a free health and development check for 4-year-olds.

The B4 School Check aims to identify and address any health, behavioural, social, or developmental concerns which could affect a child's ability to get the most benefit from school, such as a hearing problem or communication difficulty.

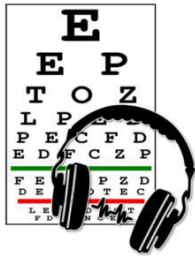
It is the 12th core contact of the Well Child Tamariki Ora Schedule of services.



B4 School Check

- Established September 2008 (we use 2010/2011 to 2015/2016)
- Eligible children are those who are enrolled with a PHO on their 4th birthday
- Coverage between 72-92%

B4 School Check: Who misses out?



- **Vision and Hearing Tests**



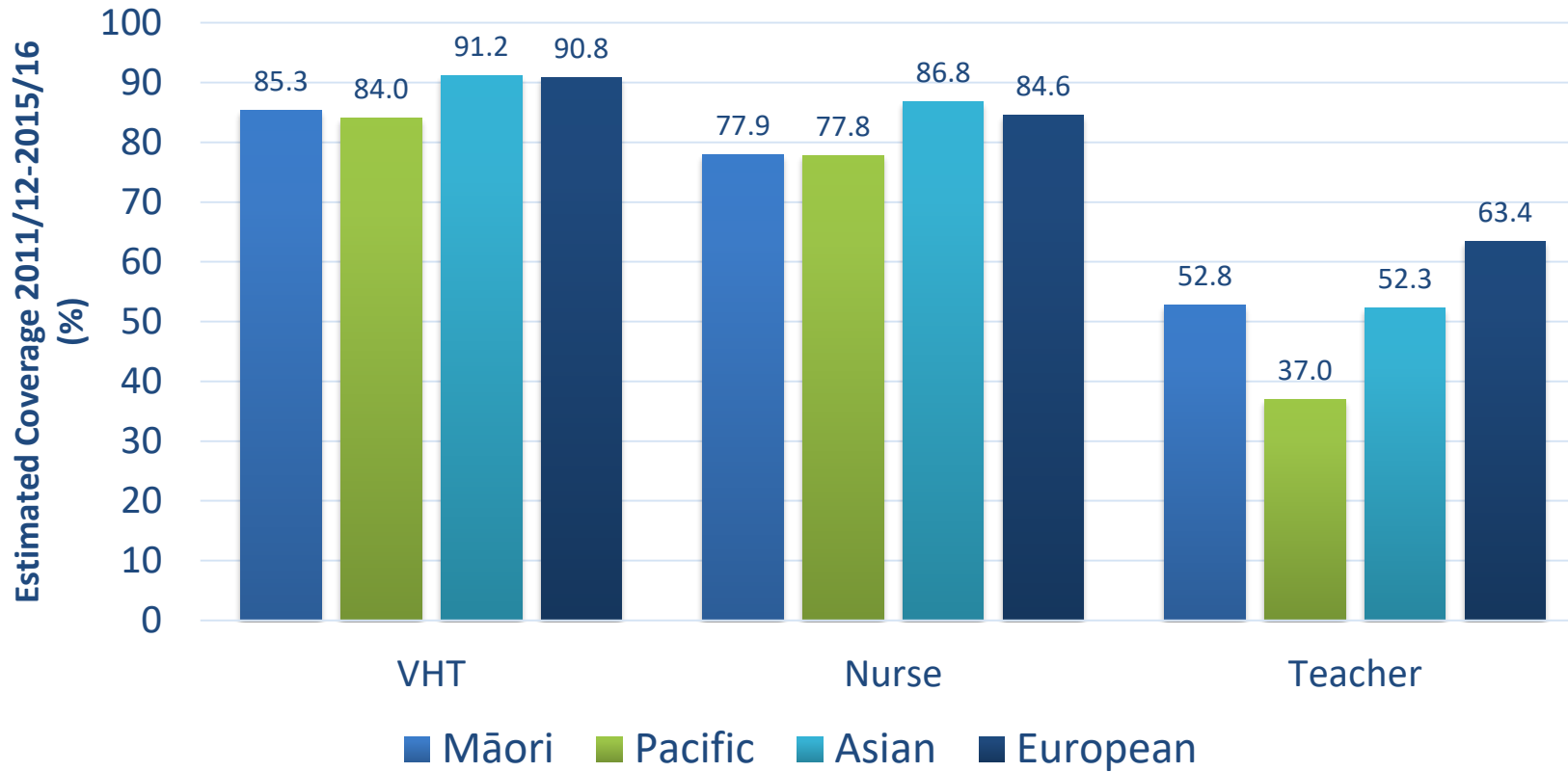
- **Nurse Checks**

- Growth
- Dental
- Immunisation
- Parents Evaluation of Developmental Status (PEDS)
- Strengths and Difficulties Questionnaire (SDQ)

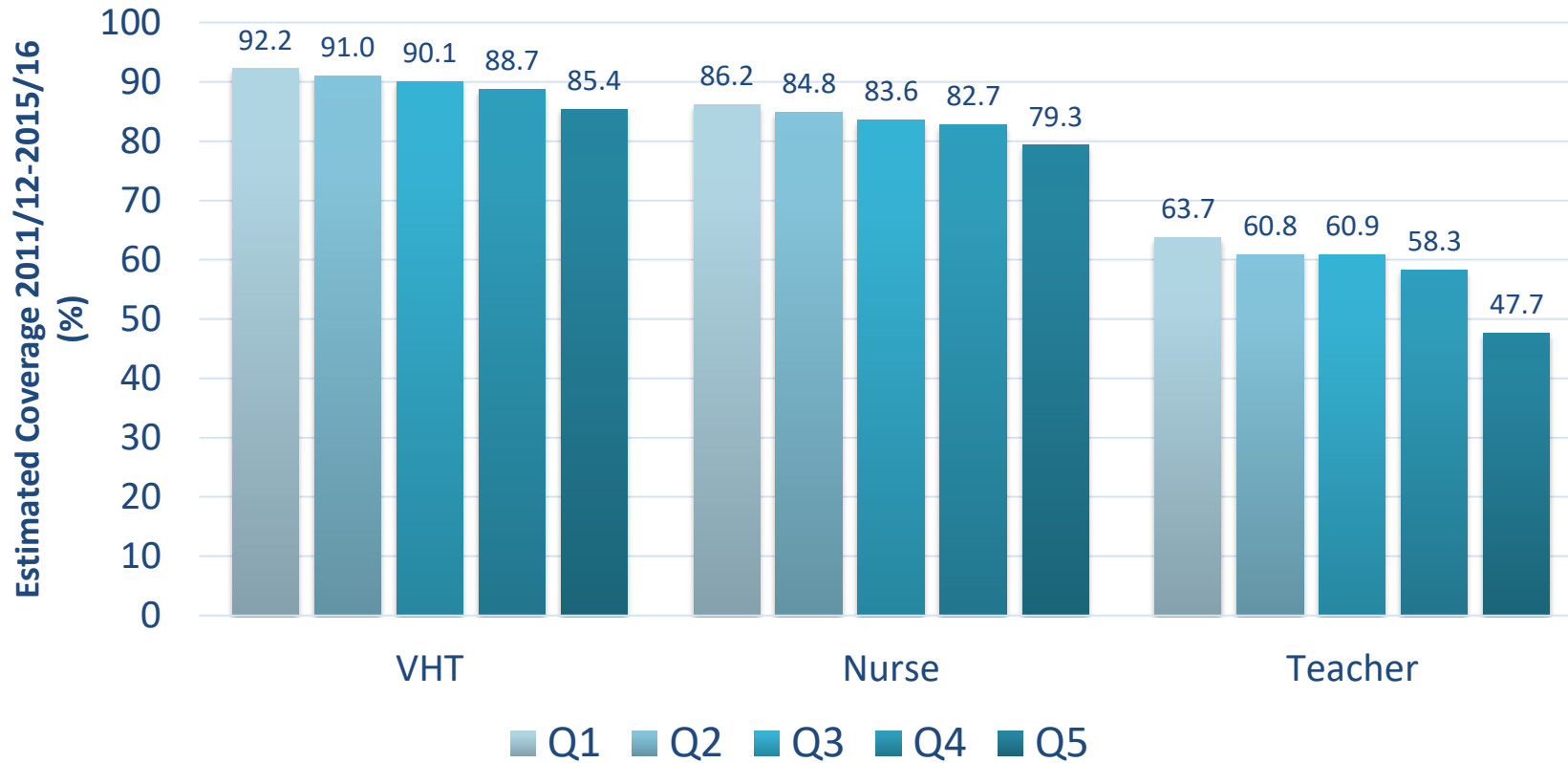


- **ECE Teacher**

B4 School Check: Who misses out? Ethnicity



B4 School Check: Who misses out? Deprivation



B4 School Check: Who misses out?

- Children most in need may miss referrals for programs and interventions that could increase their readiness to enter school
- A potential reinforcing of existing inequalities
- More effort needed to ensure that those with the greatest need get access to health services, programmes and interventions

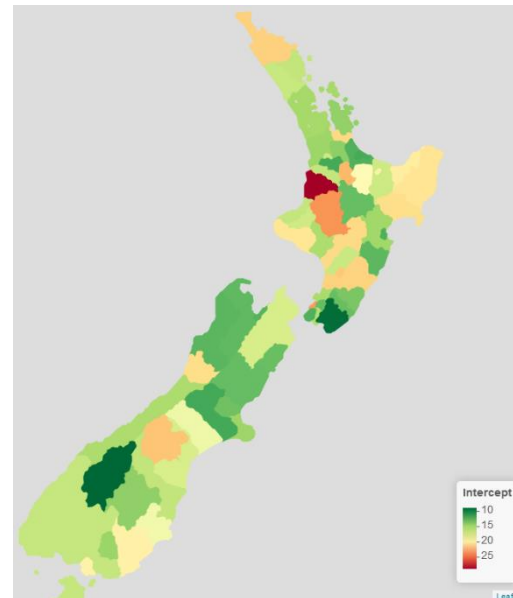
Healthy weight: Community level trends

Child obesity prevalence across communities in New Zealand: 2010-2016

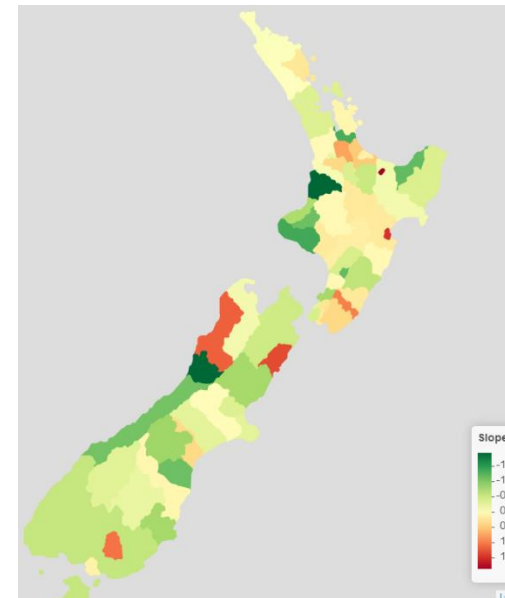
Sheree Gibb,^{1,2} Nichola Shackleton,^{2,3} Rick Audas,^{2,4} Barry Taylor,^{2,4} Boyd Swinburn,⁵ Tong Zhu,^{2,3} Rachael Taylor,^{2,6} José G.B. Derrak,^{2,7} Wayne Cutfield,^{2,7} Barry Milne^{2,3}

Healthy weight: Community level trends

Prevalence



Slope

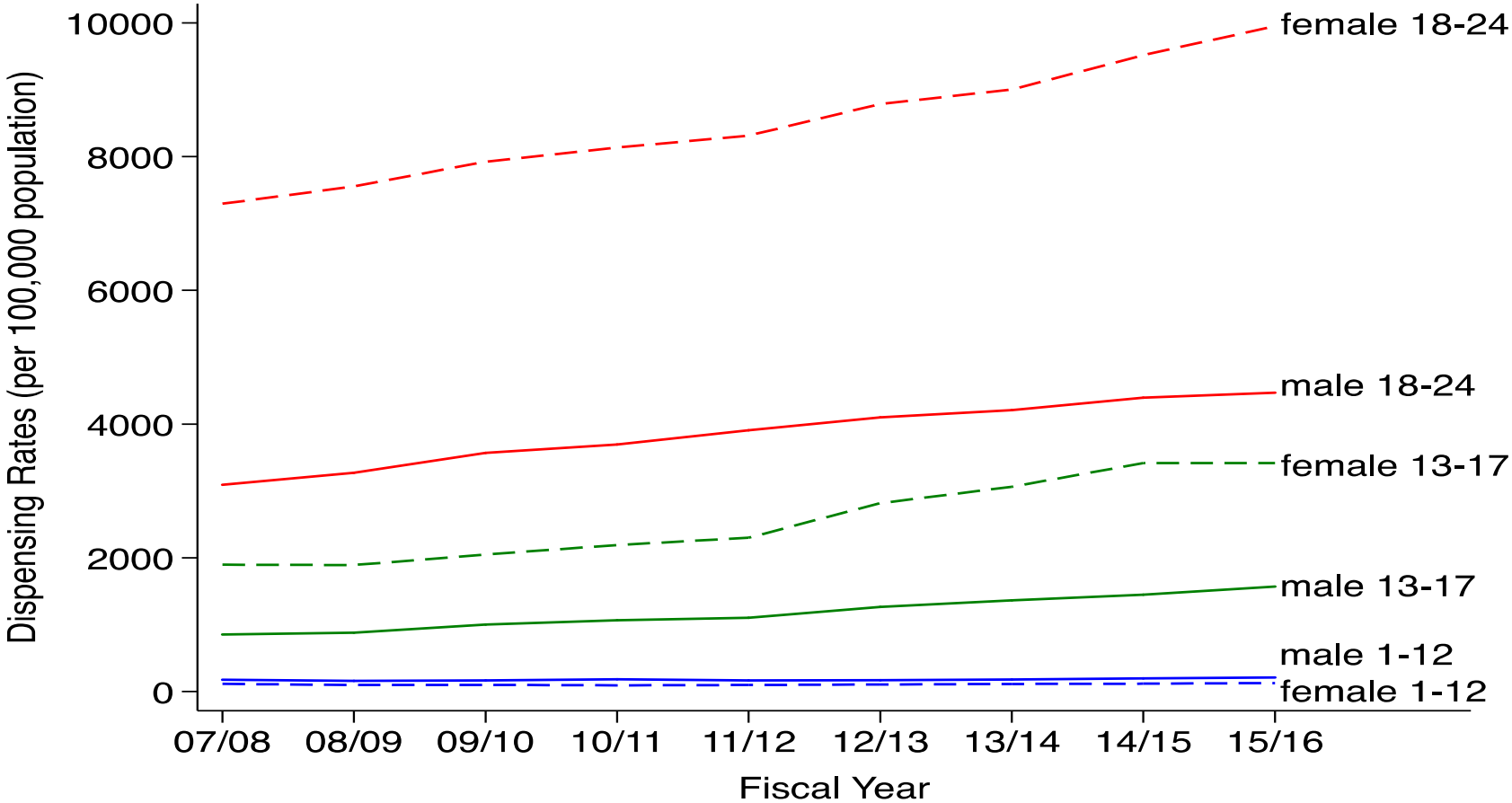


<https://compassnz.shinyapps.io/BetterStart/>

Healthy weight: Community level trends

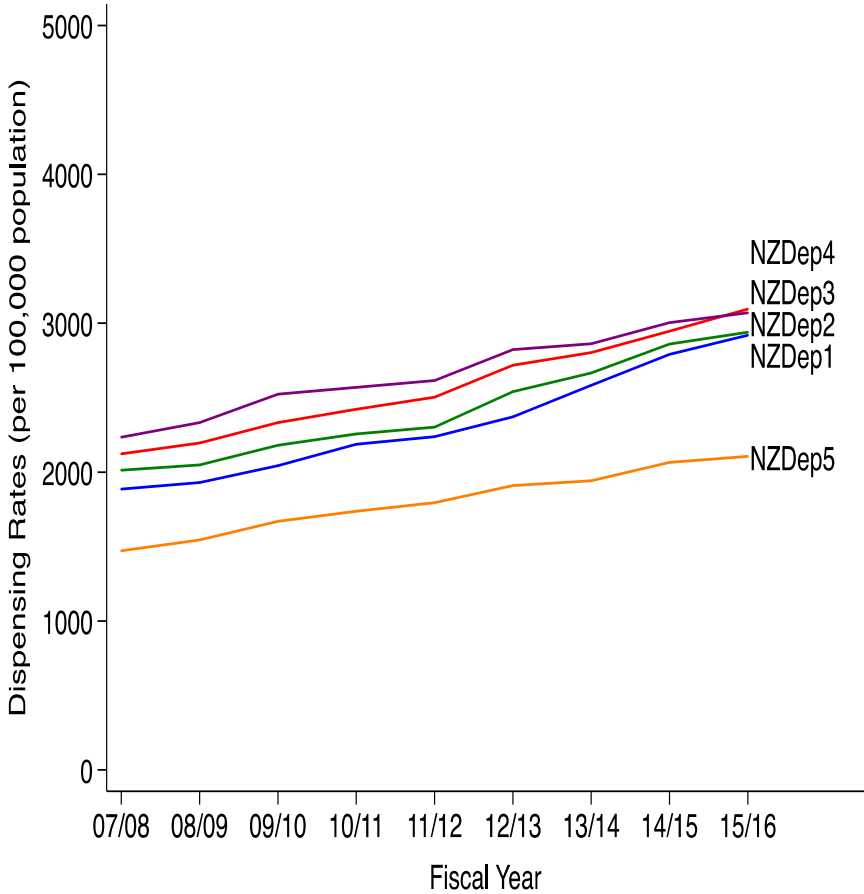
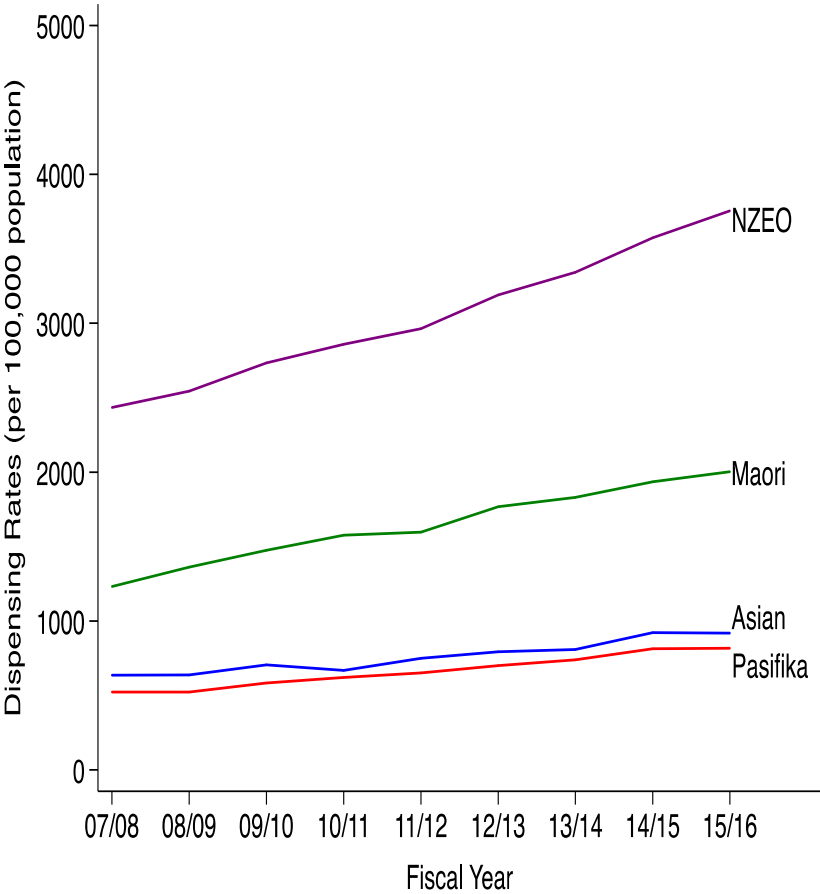
- Do levels of childhood obesity vary between communities in NZ?
 - We found considerable community-level differences in obesity prevalence, ranging from less than 10% to over 25%.
- Do trends in childhood obesity in 2010/11 to 2015/16 vary between communities?
 - the pattern of change over time was similar across communities, with the majority of communities experiencing a similar rate of decline in obesity.
- To what extent can variations in obesity between communities be explained by differences in socioeconomic deprivation, ethnic composition and urbanicity?
 - More than a third of the variation in community obesity prevalence could be explained by the socioeconomic and urban composition of the community, with around a further 10% explained by ethnic composition of communities

Resilient teens: Antidepressant trends



Bowden et al., under consideration *Journal of Child Psychology and Psychiatry*

Resilient teens: Antidepressant trends



Bowden et al., under consideration *Journal of Child Psychology and Psychiatry*

Successful learning and literacy: Pacific Literacy Interventions

SCIENTIFIC REPORTS




OPEN

Patterns of early primary school-based literacy interventions among Pacific children from a nationwide health screening programme of 4 year olds

Received: 12 February 2018

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Published online: 17 August 2018

Philip J. Schluter ^{1,2}, Jesse Kokaua³, El-Shadan Tautolo⁴, Rosalina Richards⁵, Tufulasi Taleni⁶, Hyun M. Kim¹, Richard Audas⁷, Brigid McNeill⁸, Barry Taylor⁵ & Gail Gillon⁶

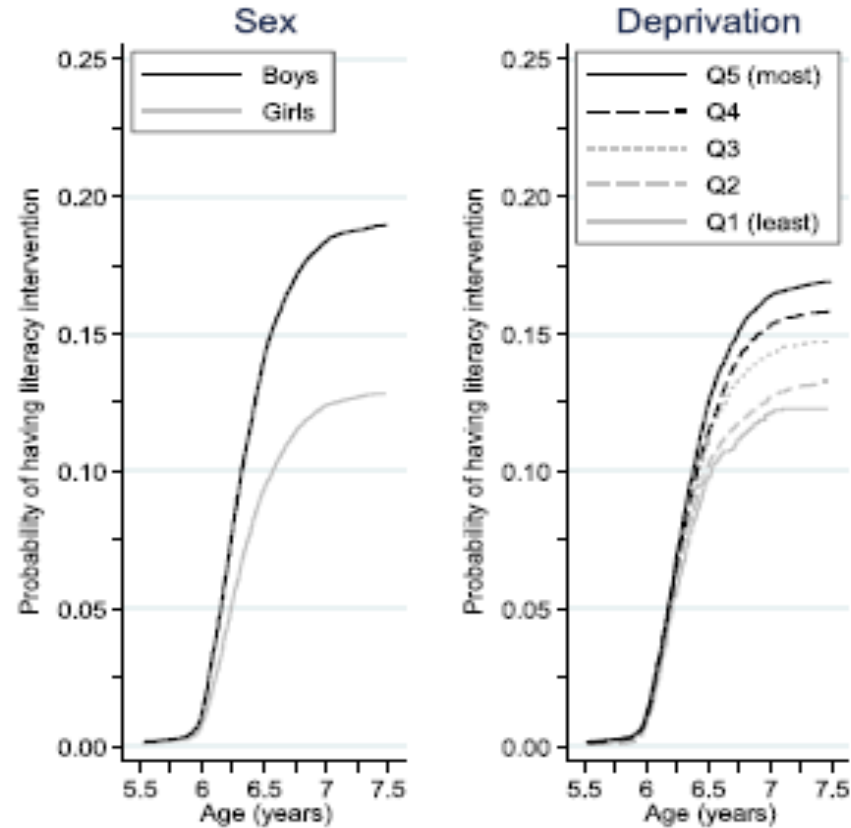
National
SCIENCE
Challenges

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Successful learning and literacy: Pacific Literacy Interventions

- Some demographic factors do predict literacy intervention among Pacific children
- But... predictive ability of B4 School Check data is poor (AUC = 0.592)



Big Data summary

- Developed research projects with each of the themes which make use of whole population (IDI) data
- Other projects
 - Antibiotics and obesity
 - Trends in ADHD medication dispensing
 - Use of whole population data to identify cases of Autism Spectrum Disorder (ASD)
 - Caesarean births and child education outcomes
- Exploring more possibilities using family links