

A BETTER
START

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A Better Start National Science Challenge: An update on recent findings

Barry Milne
Better Start Symposium
Wellington
10 November 2022

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

Host Institution

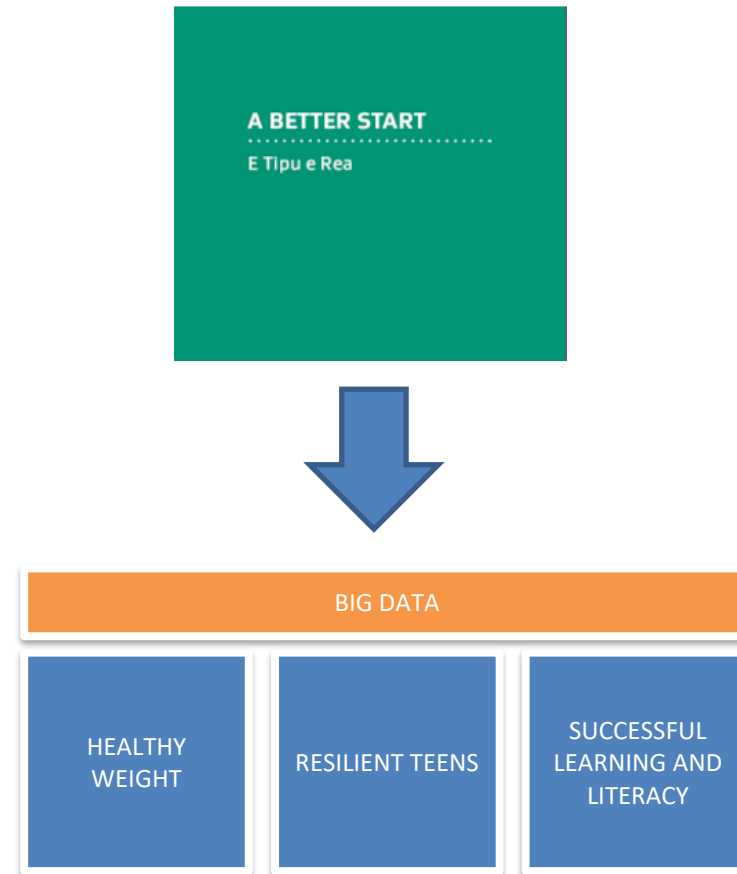


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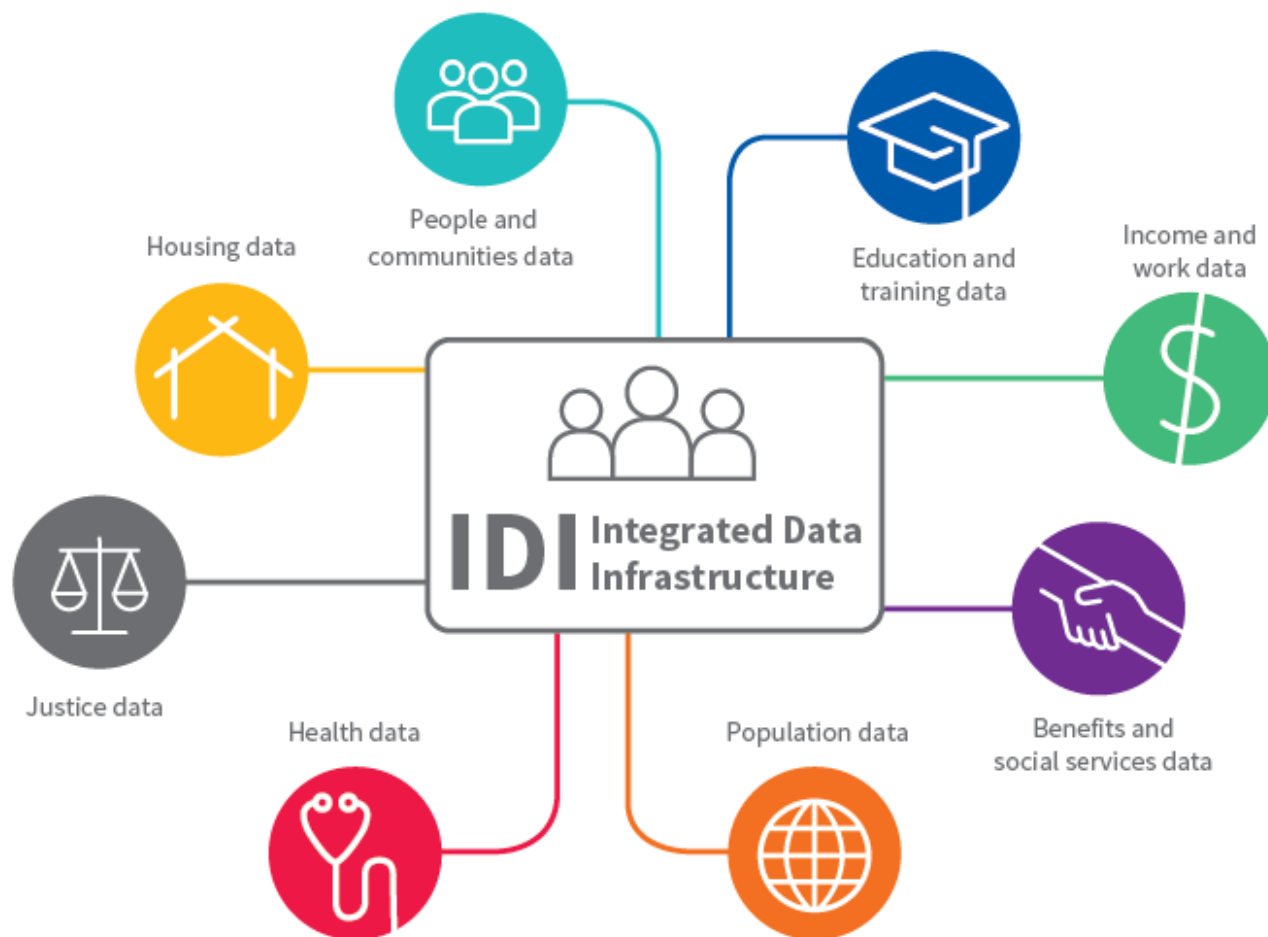


Big Data's role

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



Integrated Data Infrastructure (IDI)



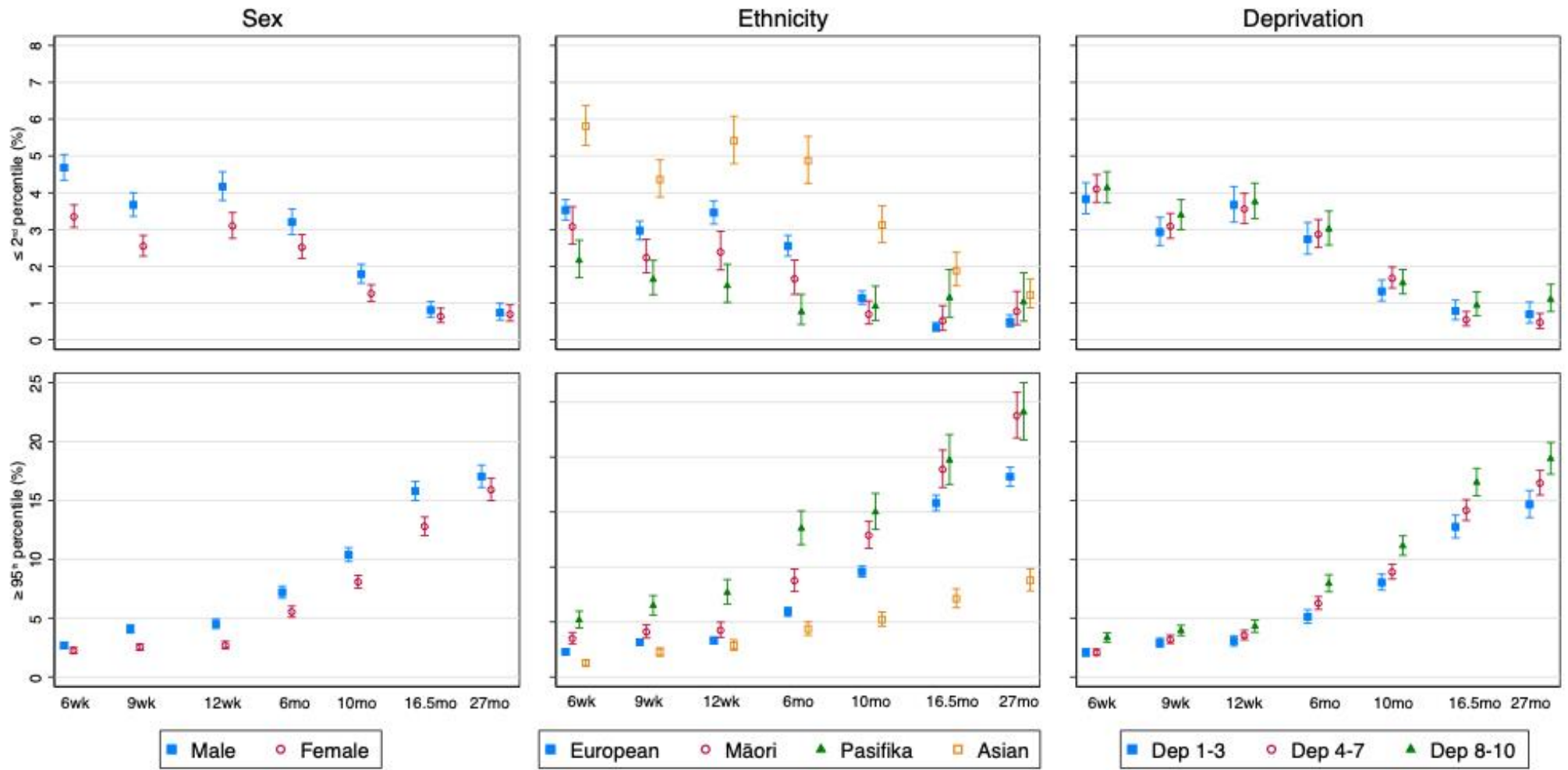
DISCLAIMER

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.






Healthy weight

1. Early growth (0–27 months)
 - Data: Plunket
 - Lead: Lisa Daniels
2. Trends in healthy weight, 2011–2019
 - Data: B4SC
 - Lead: Nichola Shackleton & Lisa Daniels

Daniels L, Haszard JJ, Taylor RW, Taylor BJ. Prevalence of low and high BMI during the first 3 years of life: using New Zealand national electronic health data (Under review: Pediatric Obesity)



Further reductions in the prevalence of obesity in 4-year-old New Zealand children from 2017 to 2019

Lisa Daniels ^{1,2,3}✉, Barry J. Taylor ^{1,2}, Rachael W. Taylor^{2,3}, Barry J. Milne ^{4,5}, Justine Camp³, Rose Richards ⁶ and Nichola Shackleton ^{4,5}

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OBJECTIVE: To examine whether the prevalence of age- and sex-adjusted BMI at, or above, the 85th, 95th and 99.7th percentiles continues to decline in New Zealand preschool children, over time.

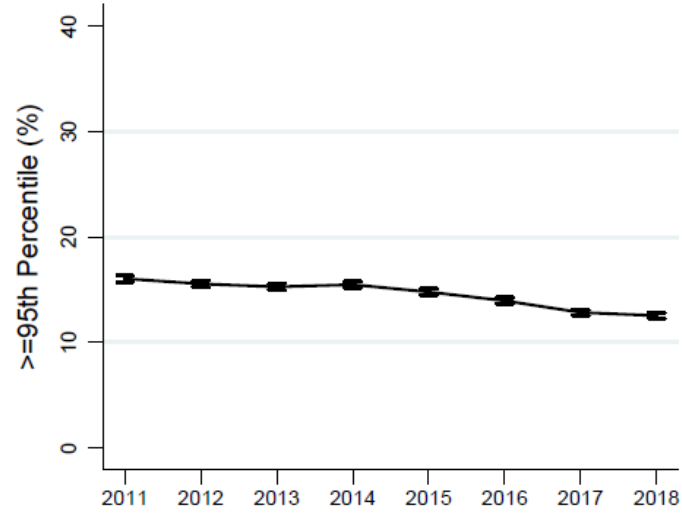
METHODS: As part of a national screening programme, 438,972 New Zealand 4-year-old children had their height and weight measured between 2011 and 2019. Age- and sex-adjusted BMI was calculated using WHO Growth Standards and the prevalence of children at, or above, the 85th, 95th, and 99.7th percentiles and at, or below, the 2nd percentile were determined. Log-binomial models were used to estimate linear time trends of ≥ 85 th, ≥ 95 th and ≥ 99.7 th percentiles for the overall sample and separately by sex, deprivation, ethnicity and urban-rural classification.

RESULTS: The percentage of children at, or above, the 85th, 95th and 99.7th percentile reduced by 4.9% [95% CI: 4.1%, 5.7%], 3.5% [95% CI: 2.9%, 4.1%], and 0.9% [95% CI: 0.7%, 1.2%], respectively, between '2011/12' and '2018/19'. There was evidence of a decreasing linear trend (risk reduction, per year) for the percentage of children ≥ 85 th (risk ratio (RR): 0.980 [95% CI: 0.978, 0.982]), ≥ 95 th (RR: 0.966 [95% CI: 0.962, 0.969]) and ≥ 99.7 th (RR: 0.957 [95% CI: 0.950, 0.964]) percentiles. Downward trends were also evident across all socioeconomic indicators (sex, ethnicity, deprivation, and urban-rural classification), for each of the BMI thresholds. Larger absolute decreases were evident for children residing in the most deprived compared with the least deprived areas, at each BMI threshold. There appeared to be no consistent trend for the percentage of children ≤ 2 nd percentile.

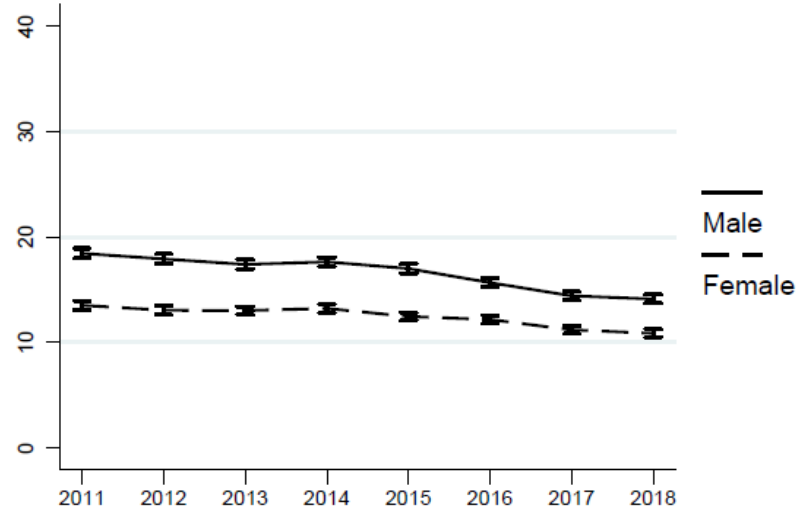
CONCLUSIONS: Reassuringly, continued declines of children with age- and sex-adjusted BMI at, or above, the 85th, 95th and 99.7th percentiles are occurring over time, overall and across all sociodemographic indicators, with little evidence for consistent trends in the prevalence of children at, or below, the 2nd percentile.

International Journal of Obesity (2022) 46:1176–1187; <https://doi.org/10.1038/s41366-022-01095-2>

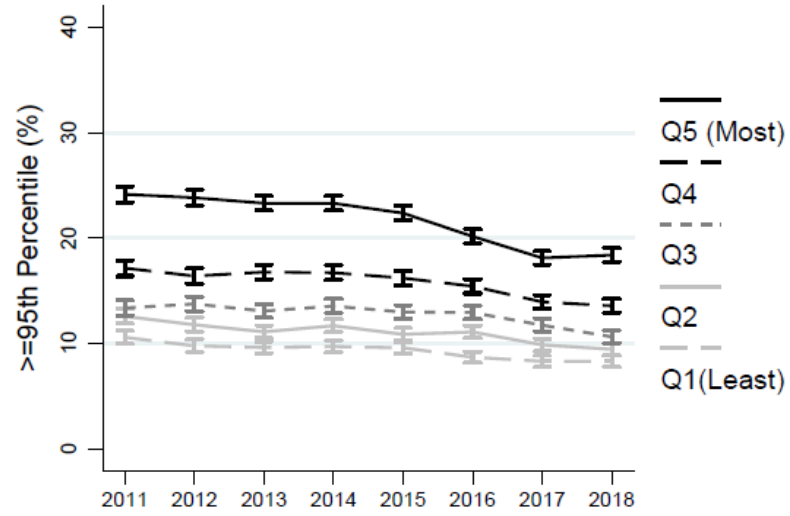
Overall



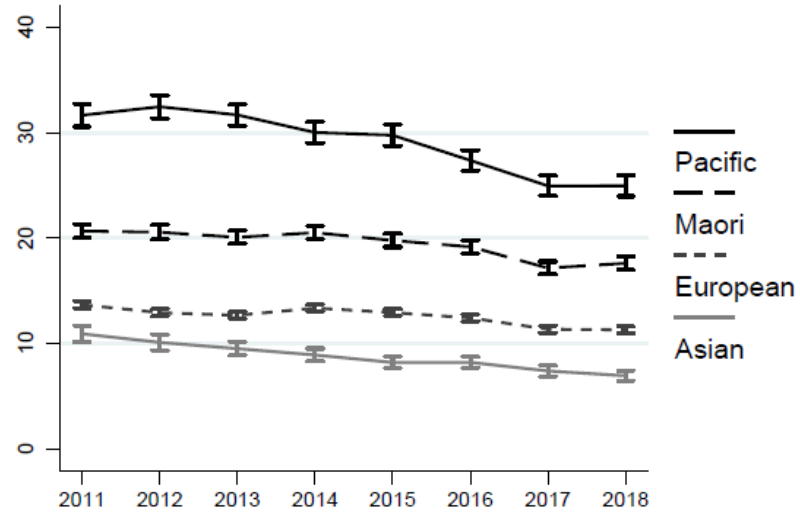
Sex



Area Deprivation



Ethnicity

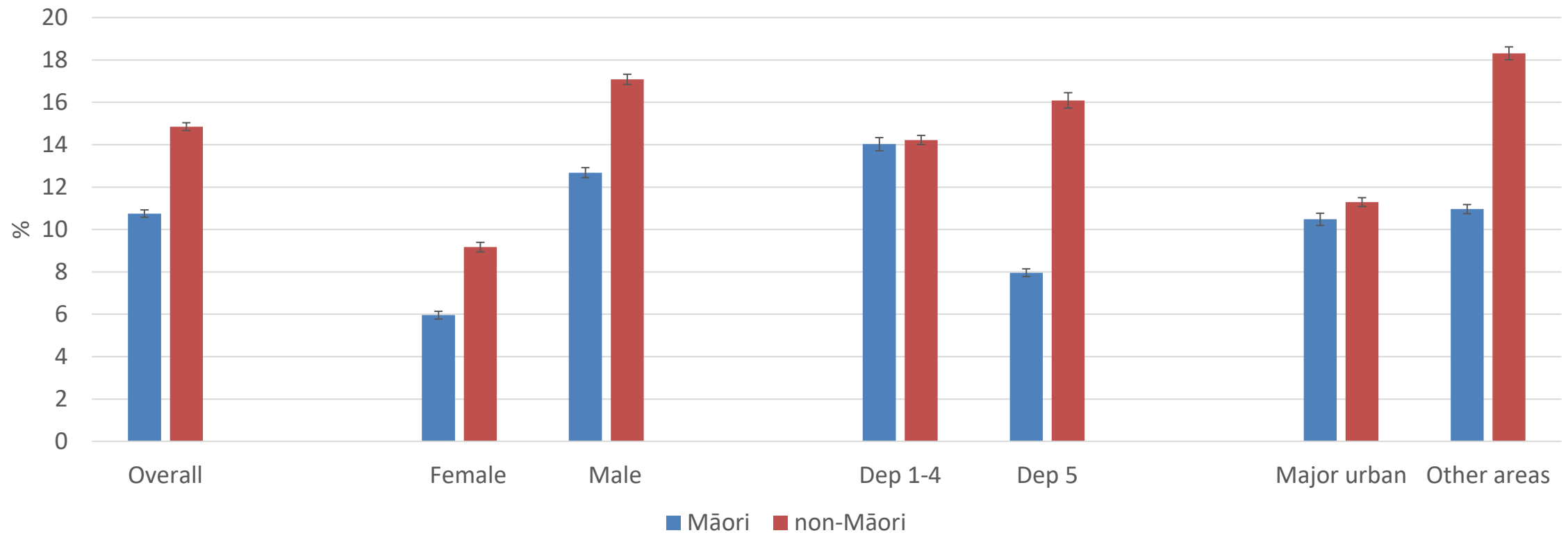


Resilient Teens

1. ADHD: medication use trends, medication use by those with ADHD concerns
 - Data: NMDS, PHARMS, B4SC
 - Lead: Steph D'Souza
2. Autism Spectrum Disorder: identification, polypharmacy, criminal justice system interactions, educational support
 - Data: NMDS, PRIMHD, Socrates, PHARMS, MOJ, MOE
 - Lead: Nick Bowden
3. Understanding mental health in Pacific communities
 - Data: New Zealand Health Survey
 - Lead: Barry Milne, Jesse Kokaua, Anita van der Veer, Ata Forrest

Medication dispensing amongst Māori and non-Māori screened for preschool ADHD (Accepted, NZMJ)

ADHD medication dispensing among those with ADHD concerns



Association Between High-Need Education-Based Funding and School Suspension Rates for Autistic Students in New Zealand

Nicholas Bowden, MCom; Sheree Gibb, PhD; Richard Audas, PhD; Sally Clendon, PhD; Joanne Dacombe; Jesse Kokaua, PhD; Barry J. Milne, PhD; Himang Mujoo, PhD; Samuel William Murray, MPP; Kirsten Smiler, PhD; Hilary Stace, PhD; Larah van der Meer, PhD; Barry James Taylor, MB, ChB

JAMA Pediatr. 2022;176(7):664-671. doi:10.1001/jamapediatrics.2022.1296
Published online May 16, 2022.

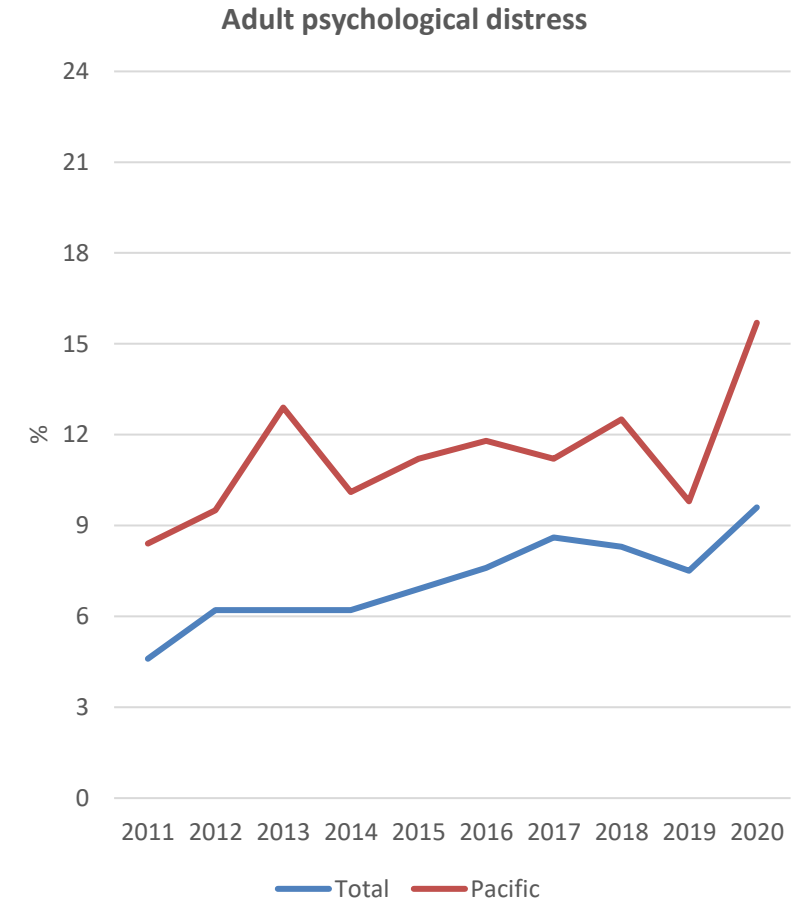
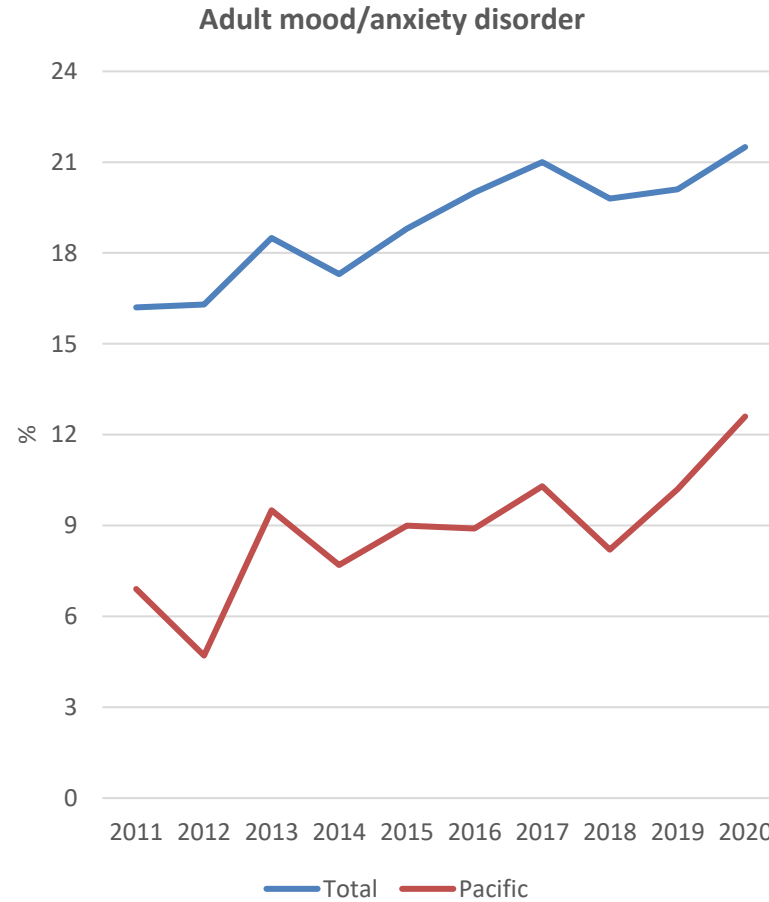
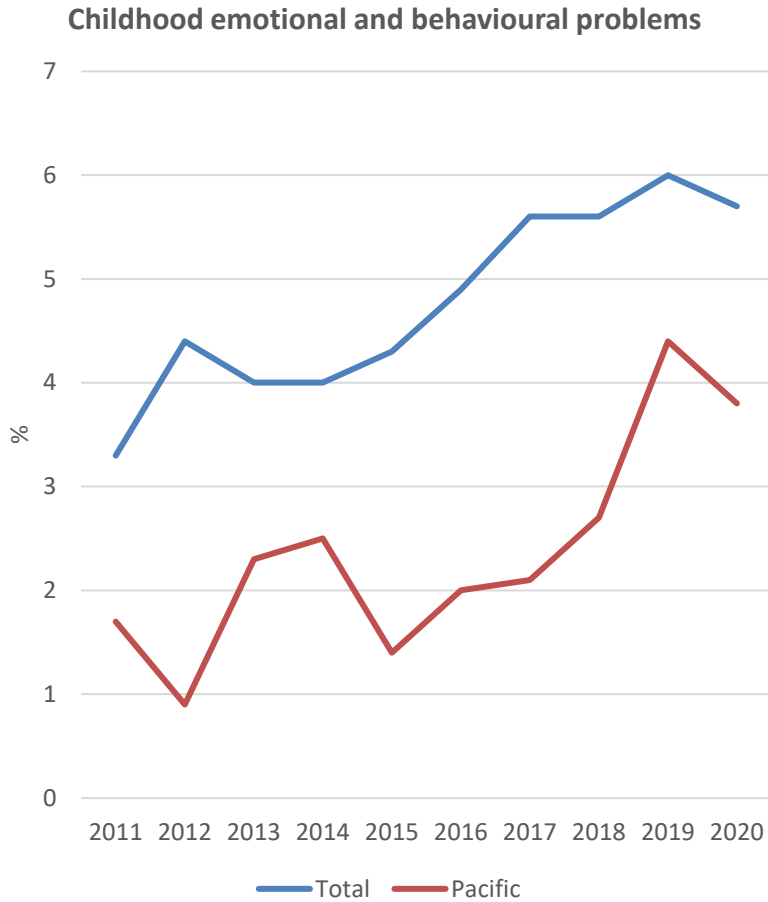
Table 2. Suspension Rates for Students With or Without Autism and Complete-Case Unadjusted and Adjusted Odds of Suspension Based on Autism Status

Students	Suspension rate, No. (%)	Odds ratio (95% CI)	
		Unadjusted	Adjusted ^a
With autism (n = 9741)	504 (5.2)	3.15 (2.86-3.47)	2.81 (2.55-3.11)
Without autism (n = 727 170)	13 845 (1.9)	1 [Reference]	1 [Reference]

Table 4. Suspension Rates of Autistic Students Who Received or Did Not Receive High-Need Education-Based Funding and Complete-Case Unadjusted and Adjusted Odds of Suspension Based on High-Need Education-Based Funding Status

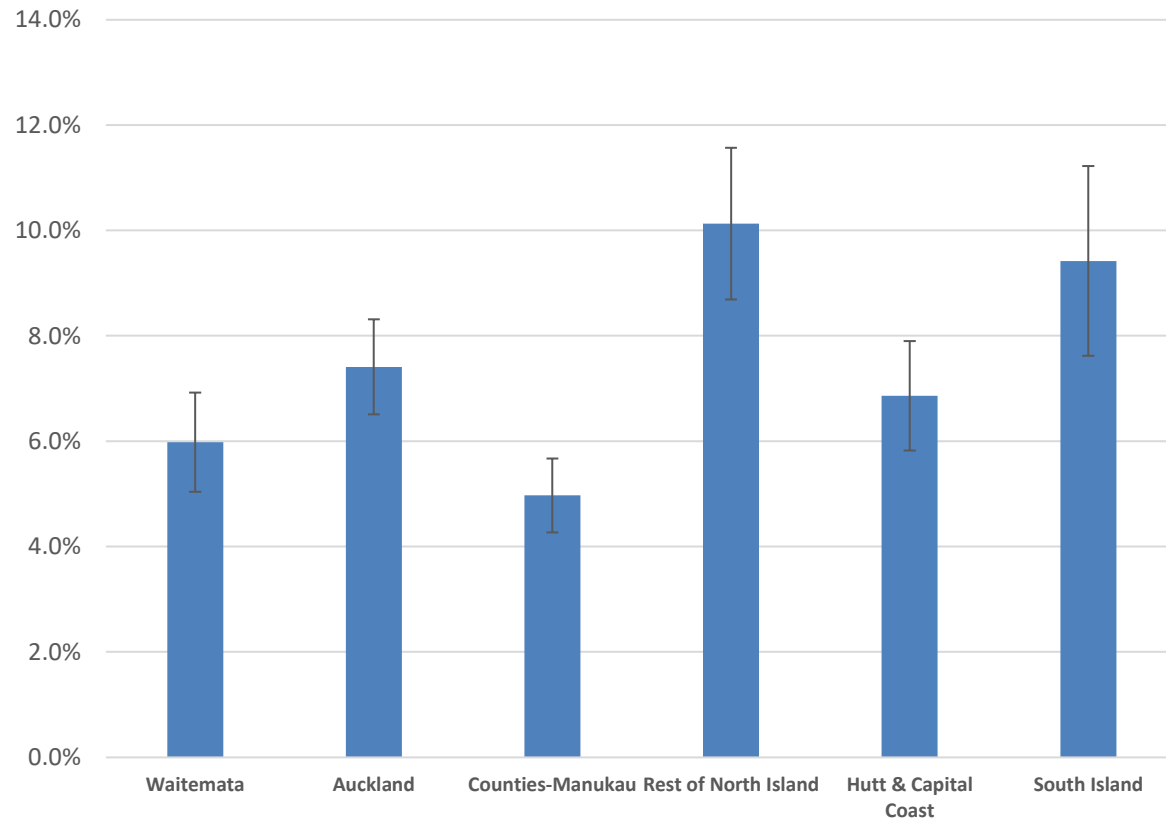
Funding status	Suspension rate, No. (%)	Odds ratio (95% CI)	
		Unadjusted	Adjusted ^a
Received funding (n = 2895)	57 (2.0)	0.31 (0.23-0.41)	0.29 (0.21-0.40)
Did not receive funding (n = 6849)	447 (6.5)	1 [Reference]	1 [Reference]

Mental health in Pacific communities

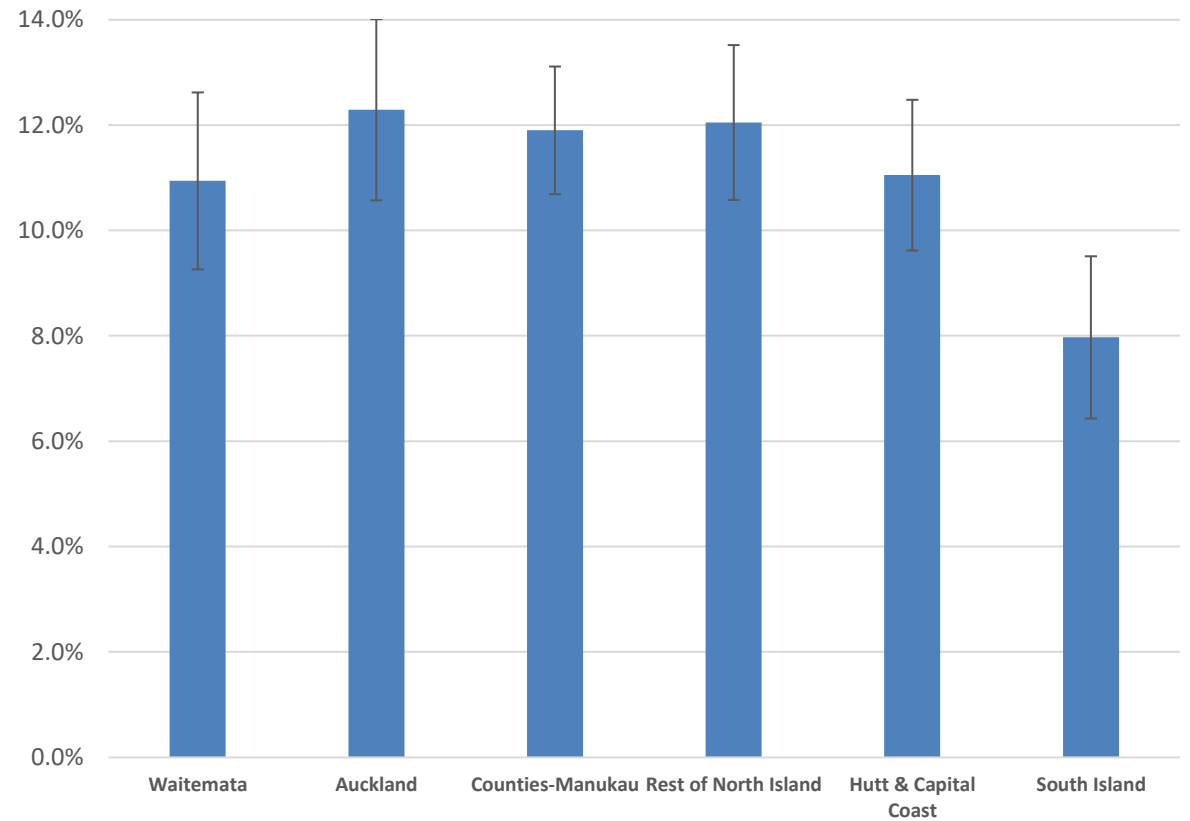


Mental health in Pacific communities

Depression



Psychological Distress

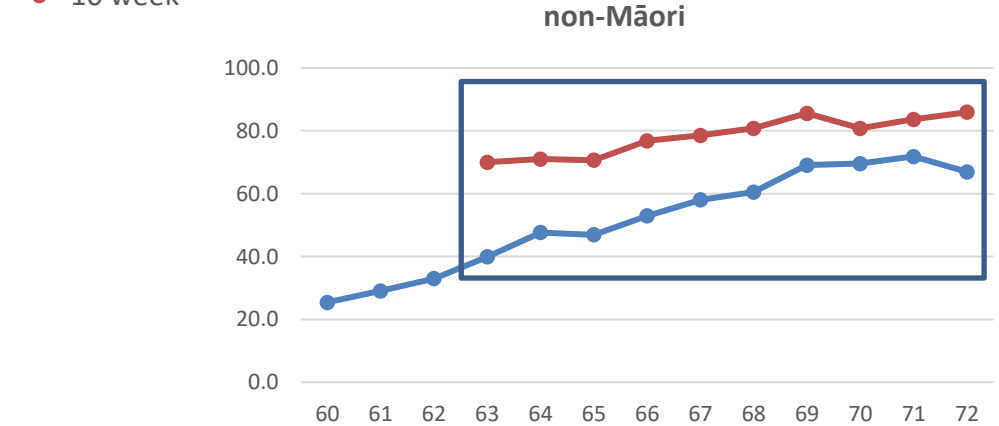
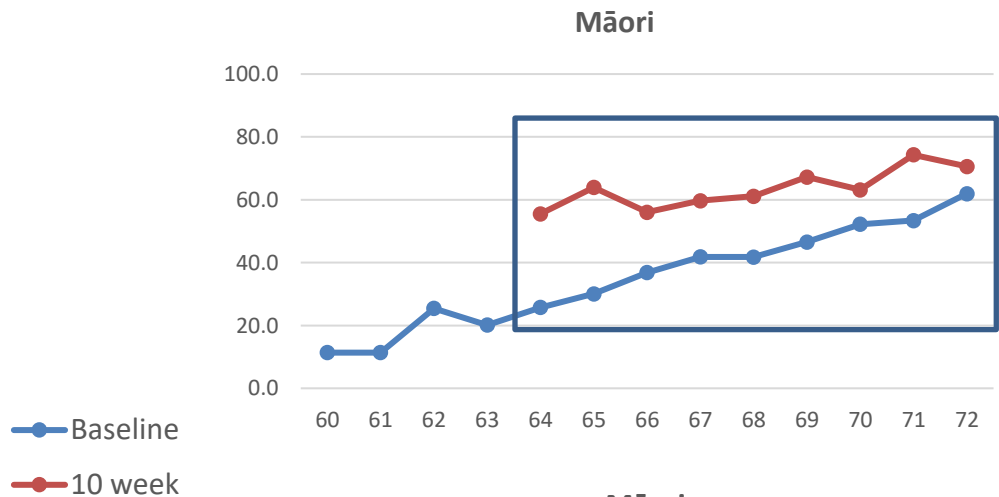
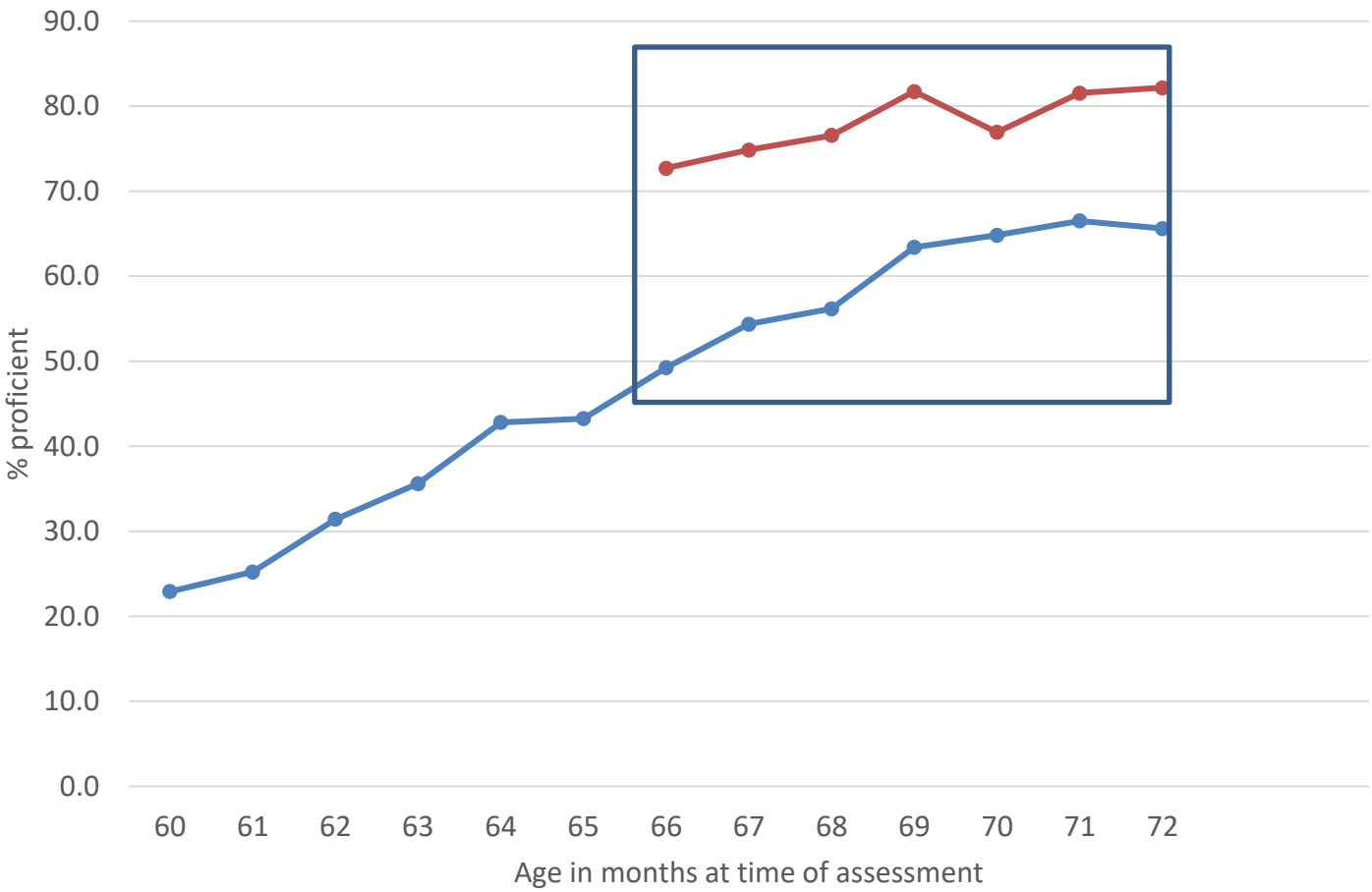


Successful Learning and Literacy

1. Evaluation of the Better Start Literacy Approach (BSLA)

- Advances skills essential for the development of reading among children in their first year of school.
- “The term more appropriately conveys how teachers monitor children’s response to the BSLA teaching and then scaffold, adapt activities, or increase teaching intensity as necessary to ensure all children progress towards their next steps for learning.” (Gillon et al., 2022)
- Data: BSLA
- Lead: Sheree Gibb, Megan Gath

Proficiency in the phoneme identity task



What's Next?

1. Impact of *Ka Ora Ka Ako* (free school lunch programme) in the Hawkes Bay (funded!)
 - Lead: Boyd Swinburn
2. Simulation Modelling of A Better Start Interventions (proposed)
 - Lead: Barry Milne

First Page
 Model input
 Scenario Builder
 Table Builder

Project upload

Choose Project File

Browse... No

Scenarios Run

Select Scenario for comparison:

Name the Project:

Latest Update:
 2019-03-06
 Contact email:

Instruction

HOVER OVER an arrow to see the coefficient and citation for that path.

CLICK ON an arrow to open the citation for that coefficient.

HOVER OVER a bubble to see the levels of that variable.

CLICK ON a bubble to highlight all paths for models involving that variable. NB., clicking on a variable will pre-load this variable in scenario builder and table builder – click on scenario builder or table builder to go there.

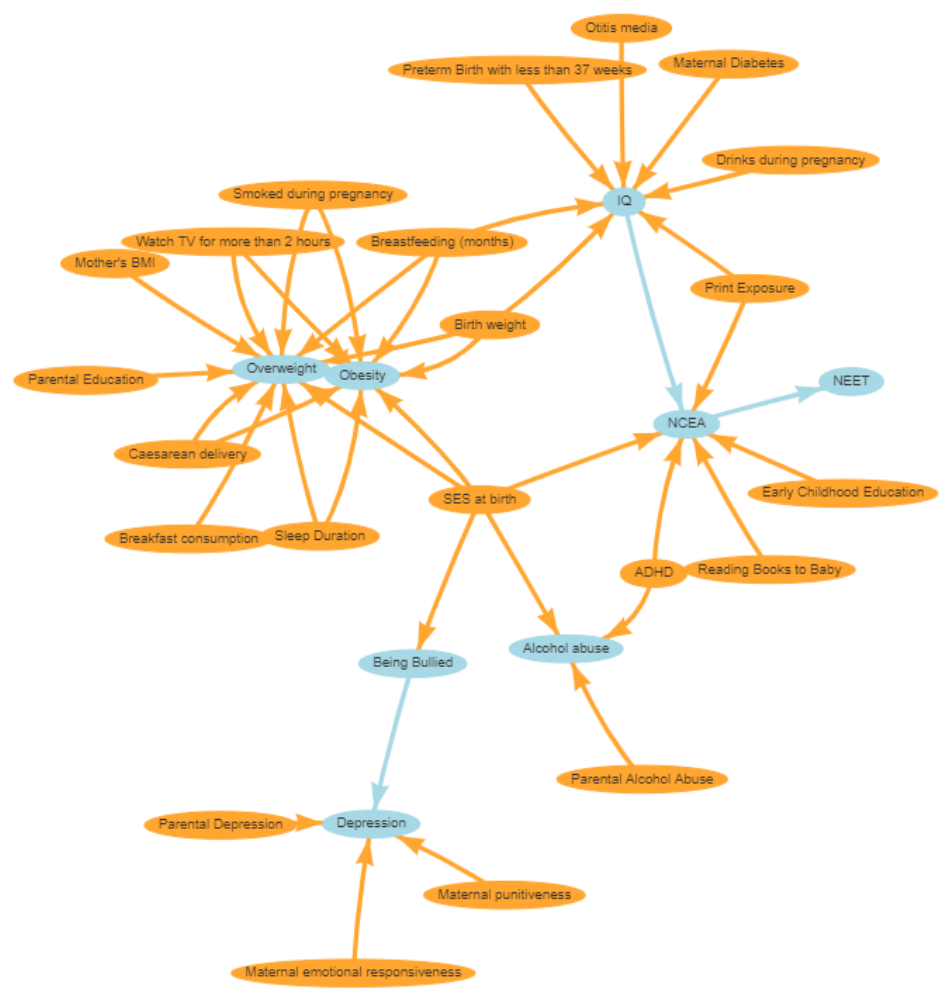
Comments and Suggestions

We encourage users to provide comments and suggestions about the conceptual framework and estimates. In particular, we welcome suggestions for changes and additions where supporting evidence from the literature can be provided.

Contact email:

[Barry Milne](#)
[Kevin Chang](#)

Conceptual Framework



Big Data summary

- Worked with experts in weight, mental health, and literacy to co-produce a number of publications, reports and analyses
- Primarily IDI work but also
 - Plunket data
 - New Zealand Health Survey
 - Data collected in schools
- Evaluation research planned and simulation modelling proposed for 2023–24

Publications

- Bowden, N., Gibb, S., Audas, R., Clendon, S., Dacombe, J., Kokaua, J., Milne, B. J., Mujoo, H., Murray, S. W., Smiler, K., Stace, H., van der Meer, L., & Taylor, B. J. (2022). Association Between High-Need Education-Based Funding and School Suspension Rates for Autistic Students in New Zealand. *JAMA Pediatrics*, 176(7), 664–671. <https://doi.org/10.1001/jamapediatrics.2022.1296>
- Bowden, N., Milne, B., Audas, R., Clasby, B., Dacombe, J., Forster, W., Kokaua, J., Gibb, S., Hughes, N., MacCormick, C., Smiler, K., Taylor, B., & Mirfin-Veitch, B. (2021). Criminal justice system interactions among young adults with and without autism: A national birth cohort study in New Zealand. *Autism*, 13623613211065540. <https://doi.org/10.1177/13623613211065541>
- Bowden, N., Thabrew, H., Kokaua, J., Audas, R., Milne, B., Smiler, K., Stace, H., Taylor, B., & Gibb, S. (2020). Autism spectrum disorder/Takiwātanga: An Integrated Data Infrastructure-based approach to autism spectrum disorder research in New Zealand. *Autism*, 24(8), 2213–2227. <https://doi.org/10.1177/1362361320939329>
- Bowden, N., Thabrew, H., Kokaua, J., & Braund, R. (2020). National prescribing rates and polypharmacy for children and young people in New Zealand with and without autism spectrum disorder. *Research in Autism Spectrum Disorders*, 78, 101642. <https://doi.org/10.1016/j.rasd.2020.101642>
- Cargo, T., Stevenson, K., Bowden, N., Milne, B. J., Hetrick, S., & D’Souza, S. (in press). Medication dispensing amongst Māori and non-Maori screened for preschool ADHD. *New Zealand Medical Journal*.
- Gillon G, McNeill B, Denston A, Scott A, Macfarlane A. (2020). Evidence-based class literacy instruction for children with speech and language difficulties. *Topics in Language Disorders*, 40(4), 357–374. <https://doi.org/10.1097/TLD.0000000000000233>
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- Gillon G, McNeill B, Scott A, Denston A, Wilson L, Carson K, Macfarlane AH. (2019). A better start to literacy learning: Findings from a teacher-implemented intervention in children’s first year at school. *Reading and Writing*, 32(8), 1989–2012. <https://doi.org/10.1007/s11145-018-9933-7>
- Daniels, L., Taylor, B. J., Taylor, R. W., Milne, B. J., Camp, J., Richards, R., & Shackleton, N. (2022). Further reductions in the prevalence of obesity in 4-year-old New Zealand children from 2017 to 2019. *International Journal of Obesity*. <https://doi.org/10.1038/s41366-022-01095-2>
- D’Souza, S., Bowden, N., Gibb, S., Shackleton, N., Audas, R., Hetrick, S., Taylor, B., & Milne, B. (2020). Medication dispensing for attention-deficit/ hyperactivity disorder to New Zealand youth. *New Zealand Medical Journal*, 133(1522), 84–95.