

Association between socioeconomic deprivation and community antibiotic dispensing in the Northern Region of New Zealand using a new measure of deprivation



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Background

- With the rise of antibiotic resistance, once treatable infections are becoming difficult to cure. This has led to rising costs to healthcare systems as well as individual and societal costs.¹
- Consumption of antibiotics in New Zealand has increased by as much as 49 per cent between 2006 and 2014.² It has also been shown to be higher than 22 other European countries.³
- By five years of age, 97% of New Zealand children have had at least one course of antibiotics.²
- Māori and Pacific children have been shown to have received more antibiotic courses than New Zealand European children, as well as children living in areas of high socioeconomic deprivation (a Census-based measure of deprivation)⁴ compared with children in least deprived areas.⁵

Aim

- To examine the relationship between area deprivation measured by the newly developed New Zealand Index of Multiple Deprivation (IMD)⁶ and antibiotic dispensing within the primary health care enrolled population of the Northern region of New Zealand in 2016.

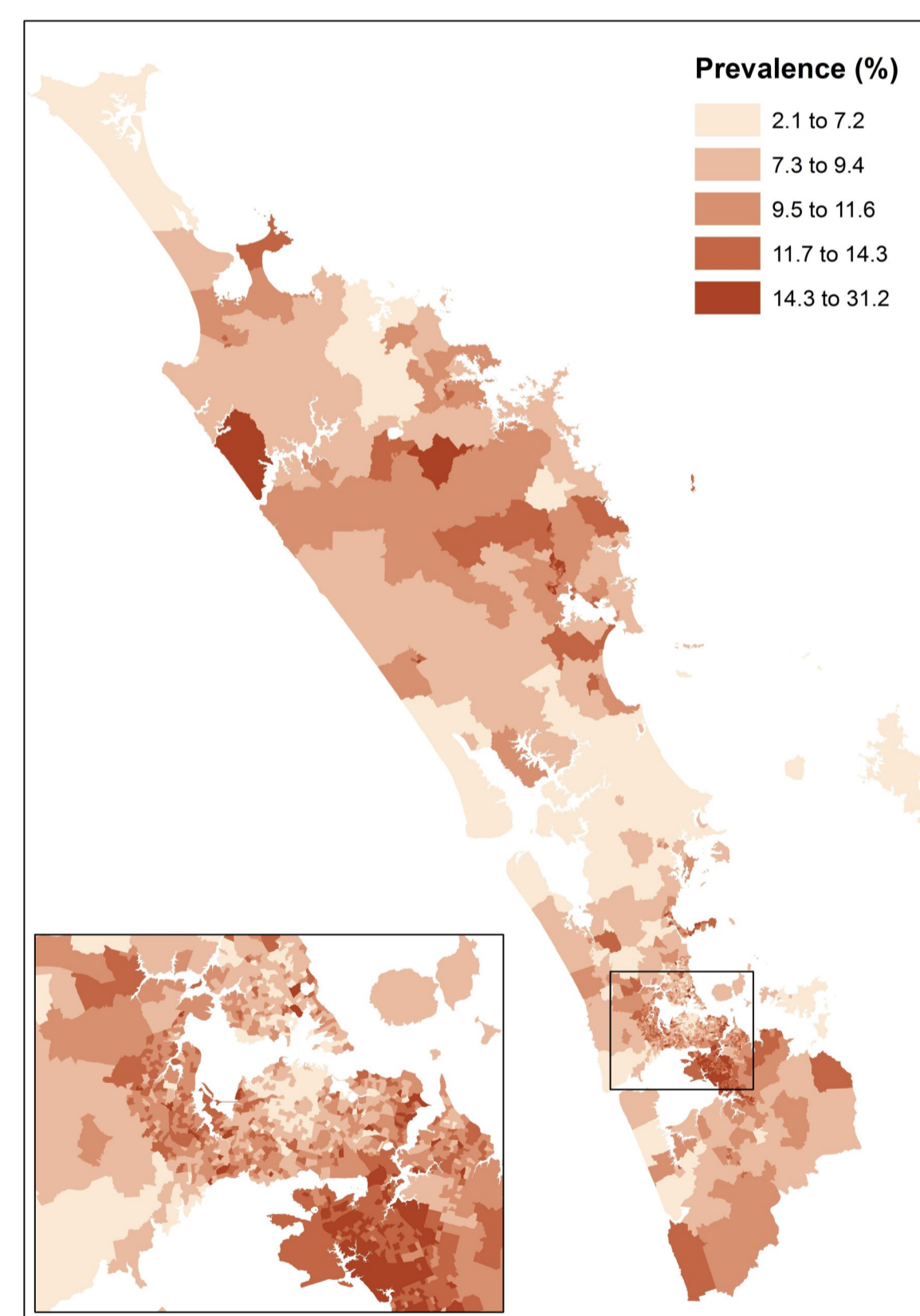
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Methods

- Non-identifiable PHO data of individuals residing in the Northern Region of New Zealand were matched to antibiotic dispensing data for 2016.
- Multivariate logistic regression was used to calculate unadjusted and adjusted odds ratios for the association between deprivation and the dispensing of antibiotics.

Figure 1: Prevalence of PHO enrolled population receiving three or more antibiotics in 2016 by data zone.



Results

- A total of 1,676,332 individuals were included in the analysis of which 715,141 (42.7%) had one or more antibiotics dispensed and 175,905 (10.5%) had three or more dispensed.
- The prevalence of having three or more antibiotics dispensed varied throughout the Northern Region (Figure 1).
- Area deprivation was strongly associated with increasing odds of having three or more antibiotics dispensed with an increasing trend as area deprivation increased (Figure 2).

Figure 2: Unadjusted and adjusted odds ratios for the association between neighbourhood deprivation and dispensing of three or more antibiotics in 2016 (all ages).

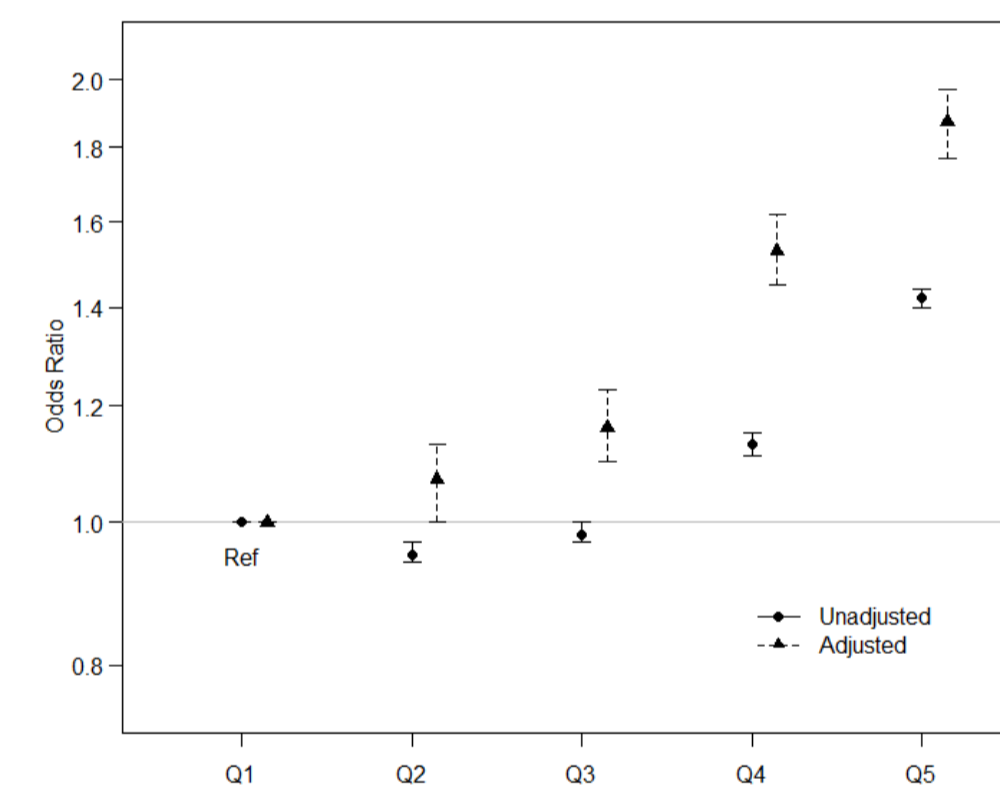


Figure 3: Unadjusted and adjusted odds ratios for the association between ethnicity and dispensing of three or more antibiotics in 2016 (all ages).

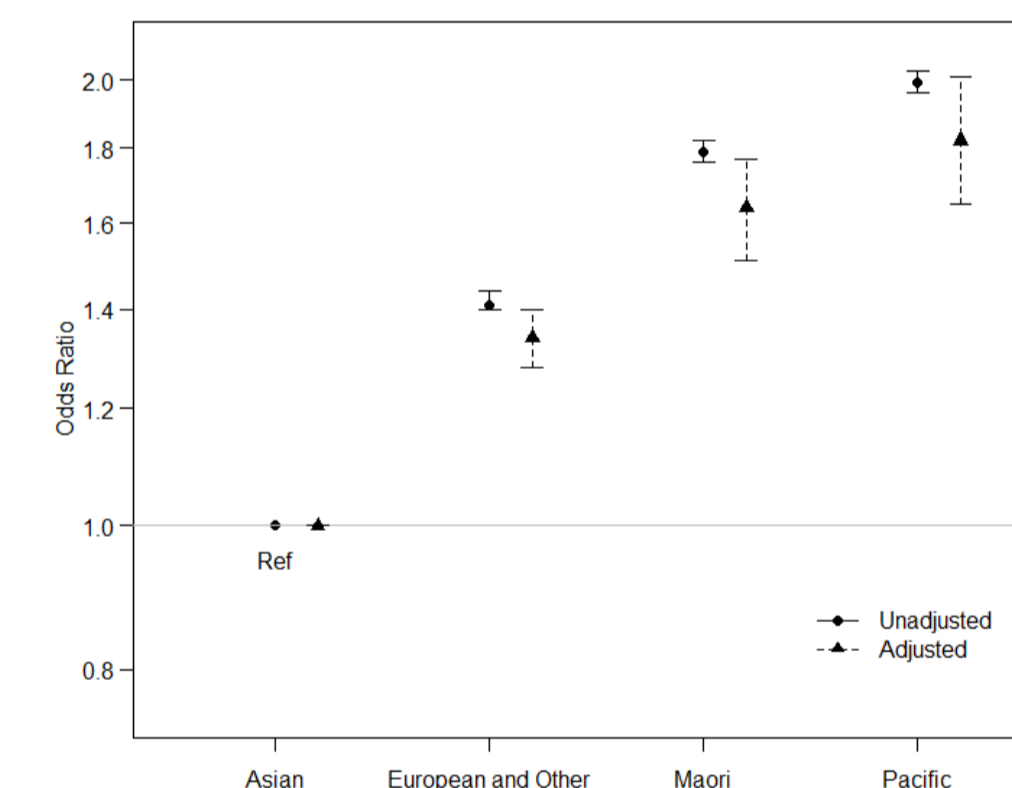
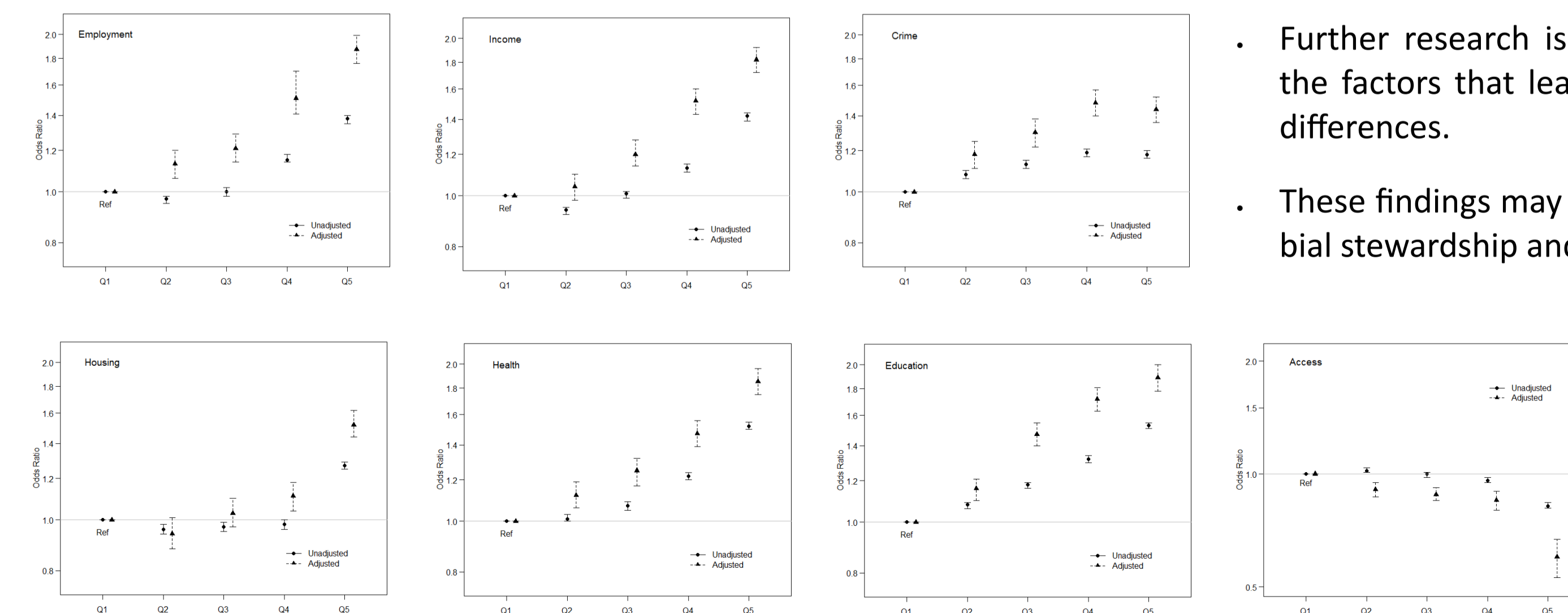


Figure 4: Unadjusted and adjusted odds ratios for the association between the IMD domains and dispensing of three or more antibiotics in 2016 (all ages).



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- Pacific (adjusted OR 1.82; 95% CI: 1.65 to 2.01) and Māori (adjusted OR 1.64; 95% CI: 1.51 to 1.77) ethnicities were more likely to have three or more antibiotics dispensed than individuals of Asian ethnicity (Figure 3).
- Compared with quintile 1, individuals living in quintile 5 data zones were 87% more likely to have three or more antibiotics dispensed.
- Individuals residing in employment, health, income and education quintile 5 data zones were over 80% more likely to have three or more antibiotics dispensed than individuals residing in quintile 1 data zones within the same domains (Figure 4).

Conclusions

- In this study differences in the prevalence of antibiotic dispensing can be seen throughout the Northern Region of New Zealand.
- Deprivation, as measured by the IMD, and individuals of Pacific or Māori ethnicity were found to have a strong and consistent association with increased odds of antibiotic dispensing.
- Further research is required to better understand the factors that lead to ethnic and socioeconomic differences.
- These findings may have implications for antimicrobial stewardship and public health campaigns.