New Zealand

Child poverty and health in New Zealand

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COMPASS Colloquium

Statistics New Zealand, Wellington

6 August 2020

hrc

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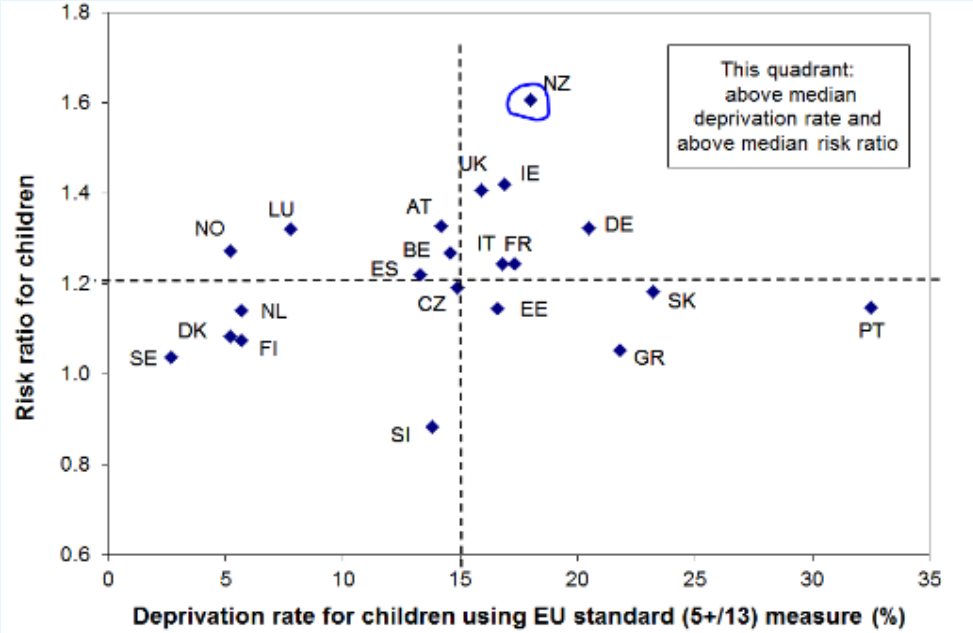
Poverty in NZ

- NZ Poverty Monitor 2019
  - ~250,000 children live in severe income poverty
    - Prevalence hasn't changed over the past 12 years
  - ~150,000 children live in material hardship
    - Recent decline in prevalence
- Poverty concentrated in childhood
  - Child poverty rate 1.6 x larger than poverty rate of general population



Poverty and Health

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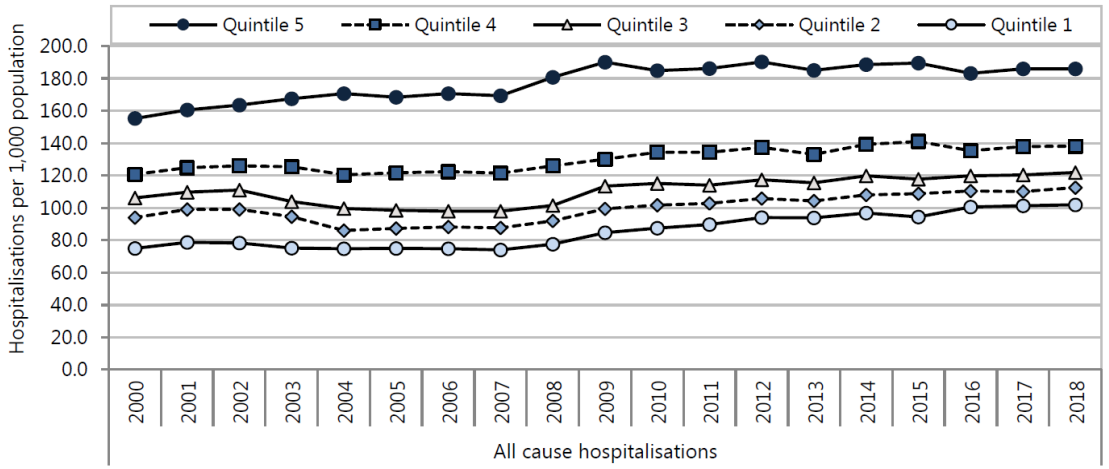
- Childhood hospitalisations in NZ strongly patterned by deprivation

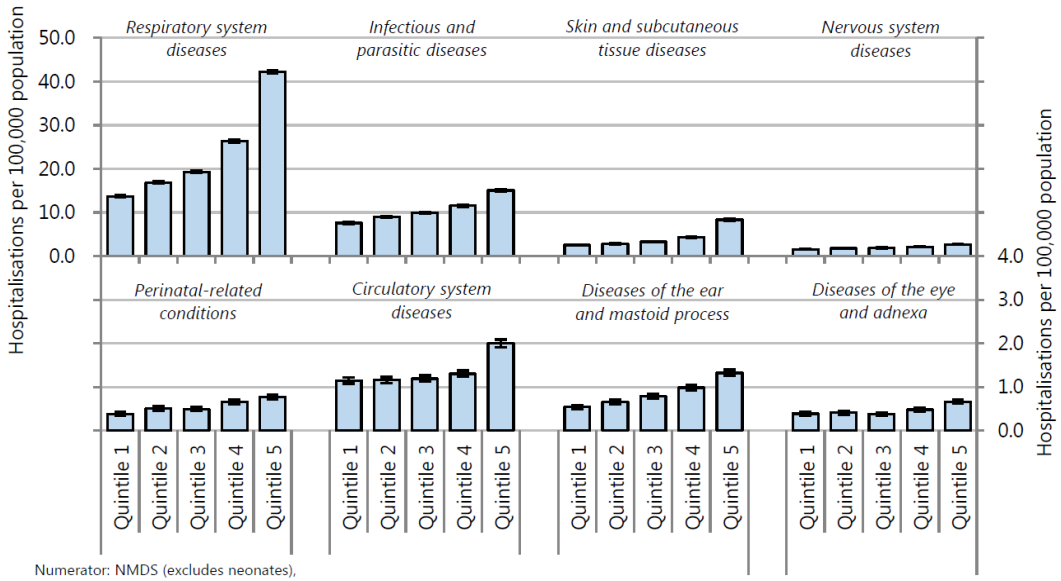
Figure 15. All-cause hospitalisation rates in 0-14 year olds, by deprivation score, New Zealand 2000–2018



Numerator: National Minimum Dataset (excludes neonates), Denominator: NZCYES Estimated Resident Population.
Quintile: NZDep2013 Index of deprivation (1= least deprived; 5 = most deprived)

Child Poverty Monitor 2019

Figure 21. Hospitalisation rate for medical conditions in 0–14 year olds, by ICD chapter and deprivation score, New Zealand 2014–2018



Numerator: NMDS (excludes neonates),
Denominator: NZCYES Estimated Resident Population.
Period: 2014–2018, Quintile: NZDep2013 Index of deprivation (1= least deprived; 5 = most deprived)

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Poverty and Health

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- Evidence needed that poverty is causally related to health outcomes
- Evidence that exists is mixed
  - Systematic Review by Cooper & Stewart, 2017
    - Effects on birthweight and other neonatal outcomes
    - Mixed evidence for the impact of income poverty on obesity and general health in later childhood
    - No evidence for effects on asthma, wheezing and other respiratory diseases

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Research plan

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- Three questions regarding the health effects of childhood poverty

1. What is the effect of childhood poverty on health, and for which health outcomes? Is there evidence of a causal association?
2. Which aspects of poverty dynamics (i.e., timing, duration) have the greatest impact on health outcomes?
3. Which factors most strongly mediate the association between child poverty and health, and what are the likely benefits of intervening on these factors?
   - household crowding, food insecurity, parental psychological distress, parental smoking

- Use linked administrative data to assess health outcomes for a longitudinal cohort
  - Survey of Families, Income and Employment (SOFIE)
    - 2002-2010

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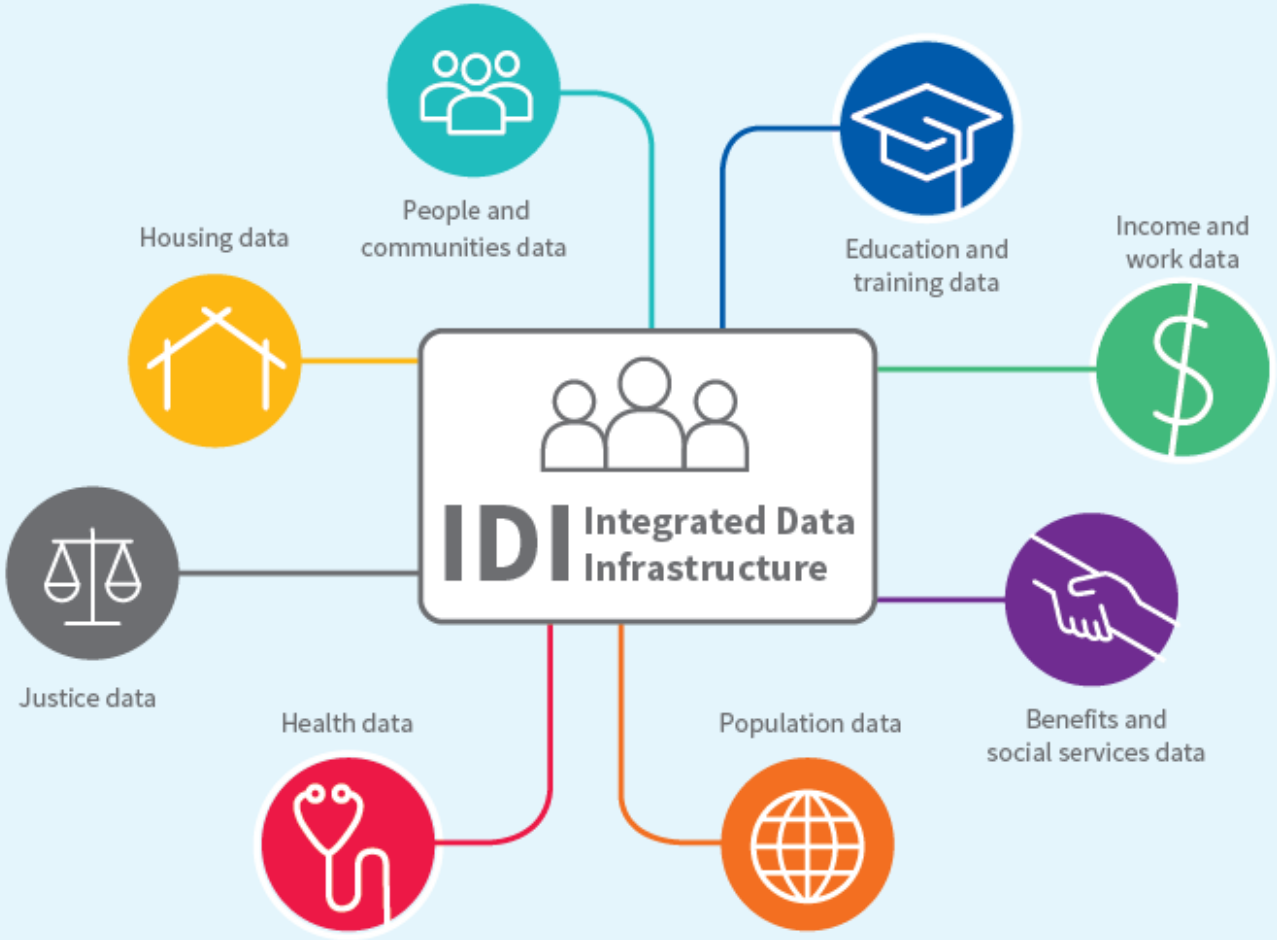
Integrated Data Infrastructure (IDI)



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. The opinions, findings, recommendations, and conclusions expressed in this paper are those of the authors, not Statistics NZ. Access to the anonymised data used in this study was provided by Statistics NZ under the 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 and to keep their data safe. 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.

The results are based in part on tax data supplied by Inland Revenue to Statistics 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.

Hospitalisation Outcomes

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- Children linked to hospitalisation data in IDI
- Household equivalised income before and after housing costs

	Overall	Wave1	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7	Wave8
n (children)	39459	6258	5646	5127	4833	4683	4437	4278	4197
n (households	21759	3423	3090	2823	2670	2568	2472	2394	2316
Hospitalisations	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
All hospitalisations	7.3	8.1	7.3	6.7	6.9	6.7	7.3	7.2	7.5
Preventable	3.1	3.9	3.3	2.9	2.9	2.9	3.0	2.7	2.8
Respiratory	1.0	1.1	0.9	0.9	0.9	0.9	1.1	0.9	0.9
Infectious	3.0	3.7	3.2	2.8	2.9	2.9	3.1	2.8	2.8
Oral Health	0.5	0.5	0.4	0.5	0.6	0.5	0.5	0.3	0.4
Otitis Media	0.6	0.7	1.0	0.6	0.5	0.6	0.5	0.5	0.5

Cross-sectional associations

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	Not in poverty (%)	In poverty (%)	RR
Before Housing Costs			
Otitis Media	0.56	0.72	1.28 (0.98;1.66)
Oral Health	0.45	0.54	1.18 (0.88;1.60)
Infectious	2.90	3.43	**1.18 (1.04;1.32)**
Respiratory	0.91	1.09	1.20 (0.97;1.49)
Preventable	2.97	3.43	1.16 (1.03;1.30)
All hospitalisations	7.13	7.66	1.07 (0.99;1.16)
After Housing Costs			
Otitis Media	0.52	0.76	**1.43 (1.11;1.85)**
Oral Health	0.42	0.55	1.28 (0.96;1.72)
Infectious	2.83	3.47	**1.23 (1.10;1.39)**
Respiratory	0.89	1.10	1.23 (1.00;1.51)
Preventable	2.88	3.53	**1.23 (1.10;1.40)**
All hospitalisations	6.94	7.89	**1.13 (1.06;1.22)**

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Longitudinal Associations

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Fixed effect models	Otitis Media	Oral Health	Infectious	Respiratory	Preventable	Any admission
	OR	OR	OR	OR	OR	OR
Income poverty	0.75 (0.39;1.11)	0.49 (0.23;0.75)	0.82 (0.64;1.01)	1.26 (0.68;1.84)	0.77 (0.60;0.95)	0.89 (0.75;1.02)
	β	β	β	β	β	β
Log of income	1.43 (0.94;1.93)	1.29 (0.78;1.79)	1.10 (0.95;1.25)	0.92 (0.66;1.17)	1.10 (0.95;1.26)	1.00 (0.91;1.09)
Number of children	162	162	873	273	837	1857
observations	1029	1023	5103	1470	4905	11007

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Timing

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	Otitis Media	Oral Health	Infectious	Respiratory	Preventable	Any admission
Before Housing Costs						
0 - 4 yrs	1.14 (0.81;1.61)	0.87 (0.54;1.40)	1.12 (0.97;1.31)	1.25 (0.98;1.57)	1.11 (0.96;1.28)	1.09 (0.97;1.22)
5 - 10 yrs	1.40 (0.89,2.19)	1.22 (0.79;1.89)	1.21 (0.97;1.54)	0.76 (0.41;1.39)	1.12 (0.89;1.40)	1.05 (0.91;1.21)
11 - 17 yrs	1.10 (0.38, 3.17)	2.40 (0.96;6.11)	1.09 (0.81;1.46)	1.09 (0.49;2.40)	1.18 (0.84;1.68)	1.04 (0.90;1.20)
After Housing Costs						
0 - 4 yrs	1.21 (0.87;1.69)	0.95 (0.61;1.49)	1.17 (1.01;1.35)	1.24 (0.98;1.55)	1.13 (0.98;1.29)	1.12 (1.00;1.25)
5 - 10 yrs	1.52 (0.97;2.36)	1.24 (0.81;1.89)	1.31 (1.05;1.66)	0.80 (0.45;1.42)	1.19 (0.96;1.49)	1.09 (0.96;1.25)
11 - 17 yrs	1.54 (0.57;1.41)	**3.10 (1.20;8.03)**	0.97 (0.73;1.30)	0.89 (0.41;1.96)	1.17 (0.83;1.64)	1.12 (0.97;1.28)

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Duration

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	Otitis Media	Oral Health	Infectious	Respiratory	Preventable	Any admission
Before Housing Costs						
In poverty	%	%	%	%	%	%
0 waves (63.0%)	0.50	0.43	2.33	0.69	2.34	6.50
1 wave (15.0%)	0.83	0.55	2.98	0.49	2.77	7.07
2 waves (22.0%)	0.66	0.61	2.69	0.66	2.78	6.51
Pearson Chi-squared	**p<0.05**	p>0.05	**p<0.05**	p>0.05	p>0.05	p>0.05
After Housing Costs						
In poverty	%	%	%	%	%	%
0 waves (56.7%)	0.46	0.44	2.25	0.64	2.20	6.32
1 wave (16.7%)	0.87	0.37	3.04	0.74	3.22	7.38
2 waves (26.5%)	0.59	0.67	2.79	0.63	2.79	6.75
Pearson Chi-squared	**p<0.01**	p>0.05	**p<0.01**	p>0.05	**p<0.05**	**p<0.05**

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Across the full income distribution

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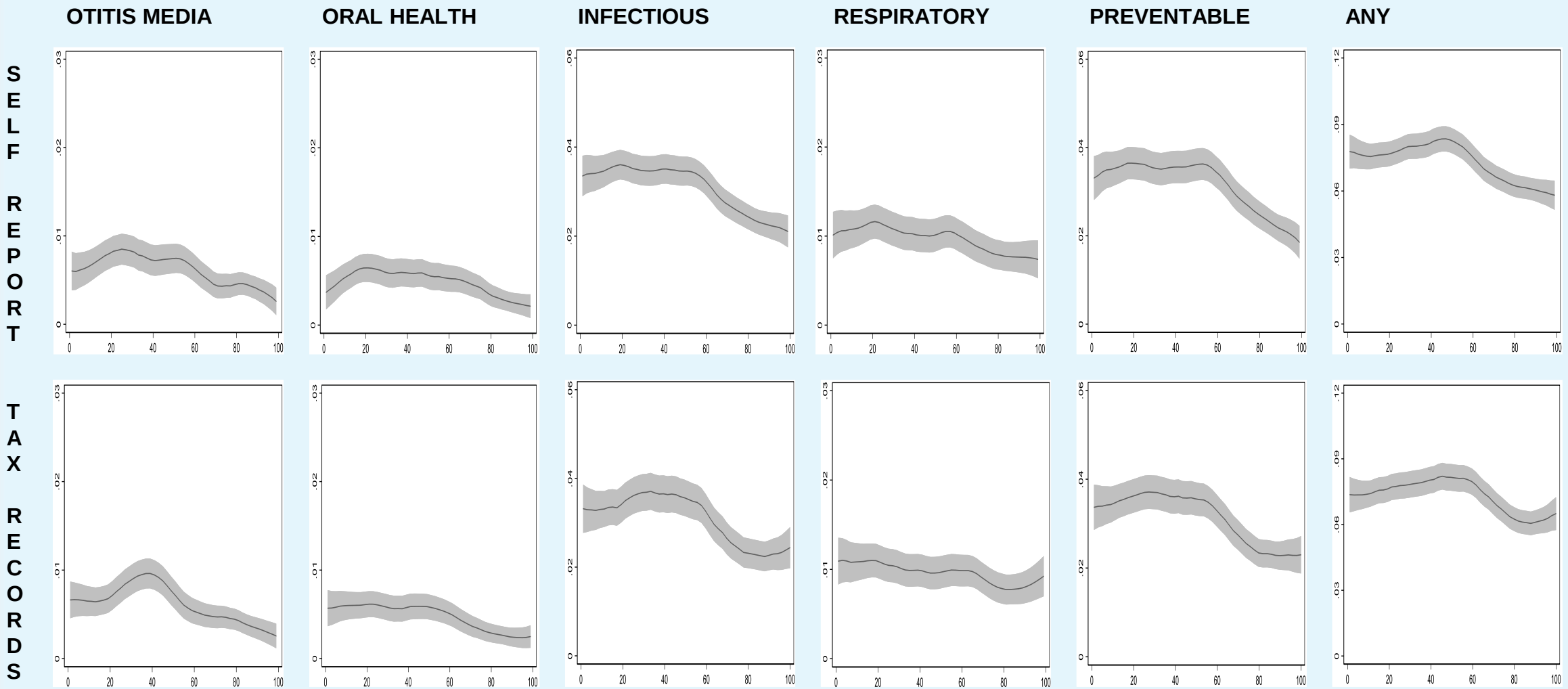

A different poverty measure?

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Tax Records			
Otitis Media	0.62	0.59	0.95 (0.72;1.26)
Oral Health	0.42	0.61	**1.43 (1.06;1.92)**
Infectious	2.99	3.30	1.11 (0.98;1.25)
Respiratory	0.91	1.12	1.22 (0.98;1.50)
Preventable	2.99	3.45	**1.16 (1.03;1.30)**
All hospitalisations	7.32	7.31	1.00 (0.93;1.08)

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Another dataset - Census

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	SoFIE			Census		
	Not in poverty (%)	In poverty (%)	RR	Not in poverty (%)	In poverty (%)	RR
Before Housing Costs						
Otitis Media	0.56	0.72	1.28 (0.98;1.66)	0.41	0.51	1.23 (1.15, 1.32)
Oral Health	0.45	0.54	1.18 (0.88;1.60)	0.45	0.80	**1.77 (1.67, 1.87)**
Infectious	2.90	3.43	1.18 (1.04;1.32)	2.73	3.48	1.27 (1.24, 1.31)
Respiratory	0.91	1.09	1.20 (0.97;1.49)	0.85	1.13	1.33 (1.27, 1.39)
Preventable	2.97	3.43	1.16 (1.03;1.30)	2.69	3.56	1.33 (1.29, 1.36)
All hospitalisations	7.13	7.66	1.07 (0.99;1.16)	7.02	8.16	1.16 (1.14, 1.18)
Tax records						
Otitis Media	0.62	0.59	0.95 (0.72;1.26)	0.43	0.45	1.04 (0.97, 1.11)
Oral Health	0.42	0.61	1.43 (1.06;1.92)	0.49	0.77	1.56 (1.48, 1.65)
Infectious	2.99	3.30	1.11 (0.98;1.25)	2.86	3.35	1.17 (1.15, 1.20)
Respiratory	0.91	1.12	1.22 (0.98;1.50)	0.89	1.11	1.25 (1.20, 1.31)
Preventable	2.99	3.45	1.16 (1.03;1.30)	2.83	3.44	1.22 (1.19, 1.25)
All hospitalisations	7.32	7.31	1.00 (0.93;1.08)	7.22	7.90	1.09 (1.08, 1.11)

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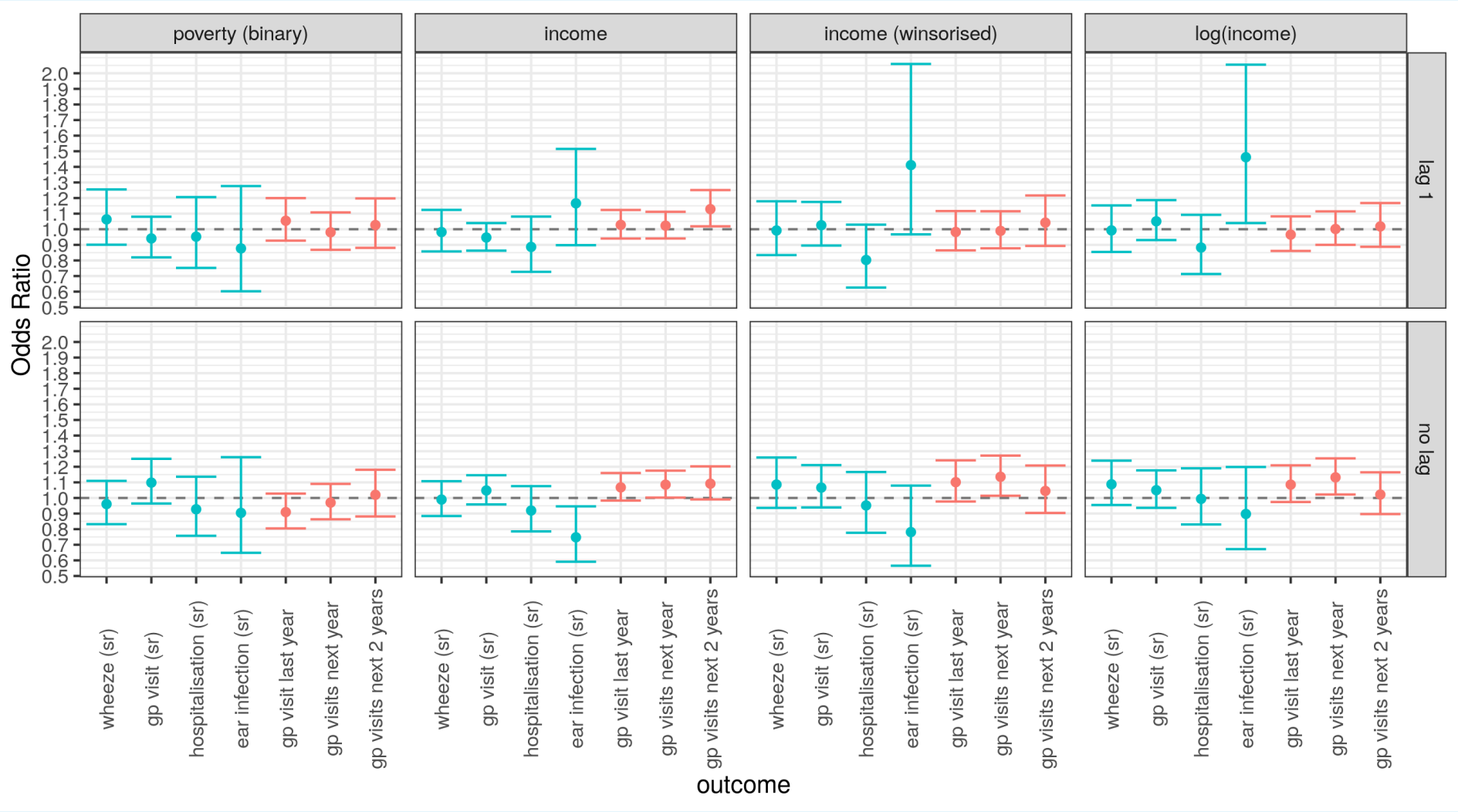
Another another dataset
LSAC



Deprivation measures

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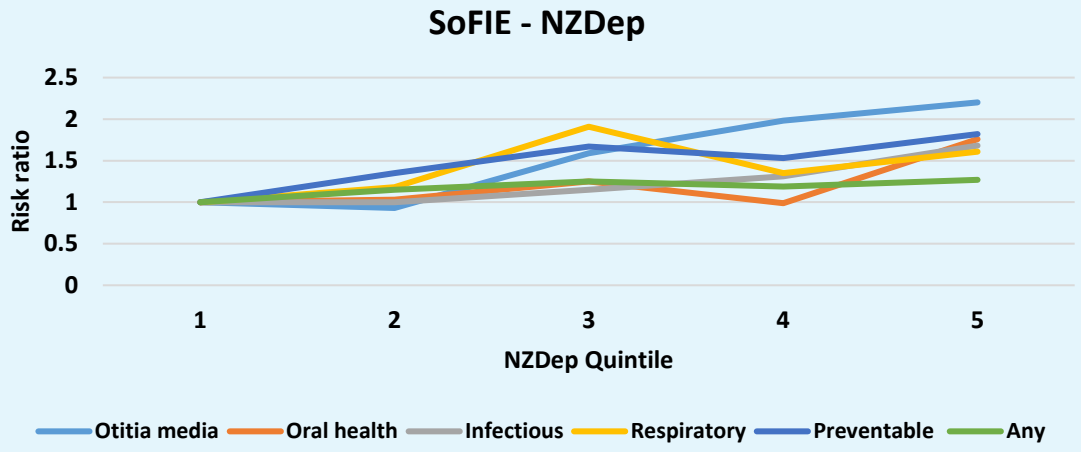

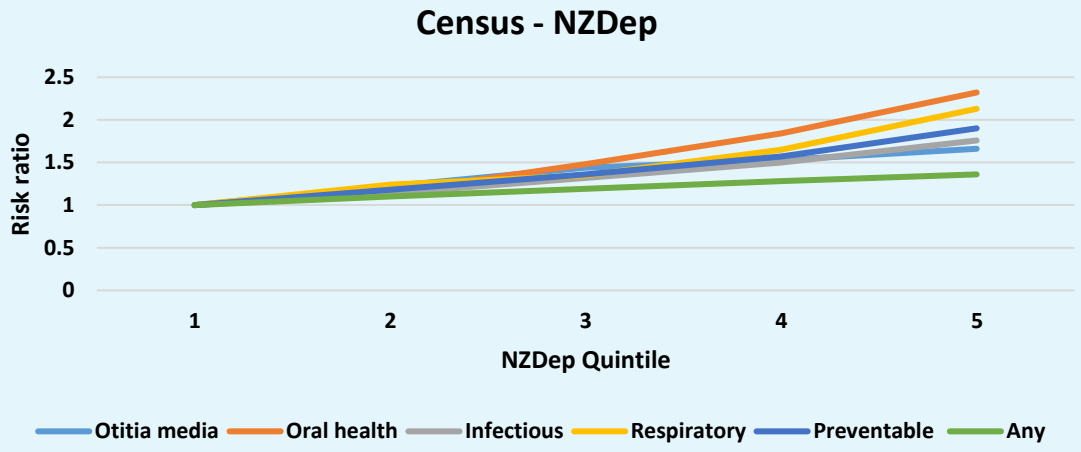

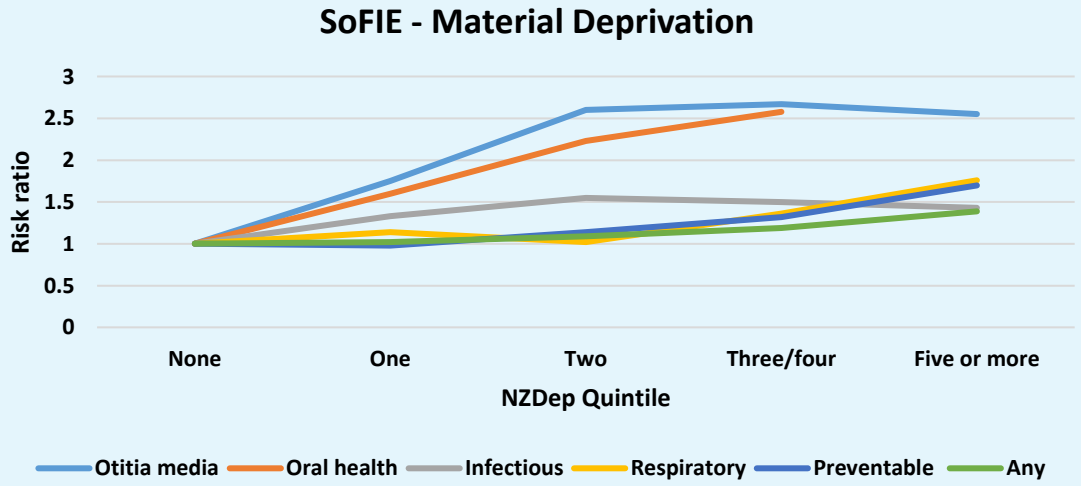

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Conclusions

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- Income poverty weakly (at best) associated with child hospitalisations; no evidence of causal association
  - Intervening on income a waste of time?
  - Are hospitalisations the best measure?
  - Service use bias?
  - Limits of admin data?
- Stronger associations with deprivation measures
- Mediation analysis not possible (nothing to mediate)

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Prospect Theory

- Prospect Theory (loss aversion)
  - Experience of a loss has a larger impact than a similar sized gain
- Applied to
  - Behavioural economics
  - Wellbeing and GDP
- Might it apply to household income and health??
  - Investigating