

A comparison of the NZDep index of socioeconomic deprivation and the Index of Multiple Deprivation (IMD)

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Clare Salmond
June Atkinson

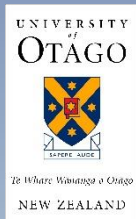


Outline

- Aims
- Methods
- Findings
- Conclusion and discussion

Acknowledgements

- Judy Reinken
- George Salmond
- Frances Sutton
- Auckland and Otago colleagues who have produced IMD
- Funders for NZDep: HRC, Ministry of Health, Stats NZ, UoO
- Users, communities



Statistics New Zealand Disclaimer Statement

- 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, nor the University of Otago.



Aims

Compare:

1. Theoretical and methodological bases for the two indexes
2. NZDep2013 small areas and IMD data zones
3. NZDep2013 and IMD in their rankings of all small areas
4. NZDep2013 and IMD in terms of their relationships with various health and social outcomes

Methods

- NZDep2013 used as a basis for comparison
- Stats NZ data lab access
- Literature

Aims

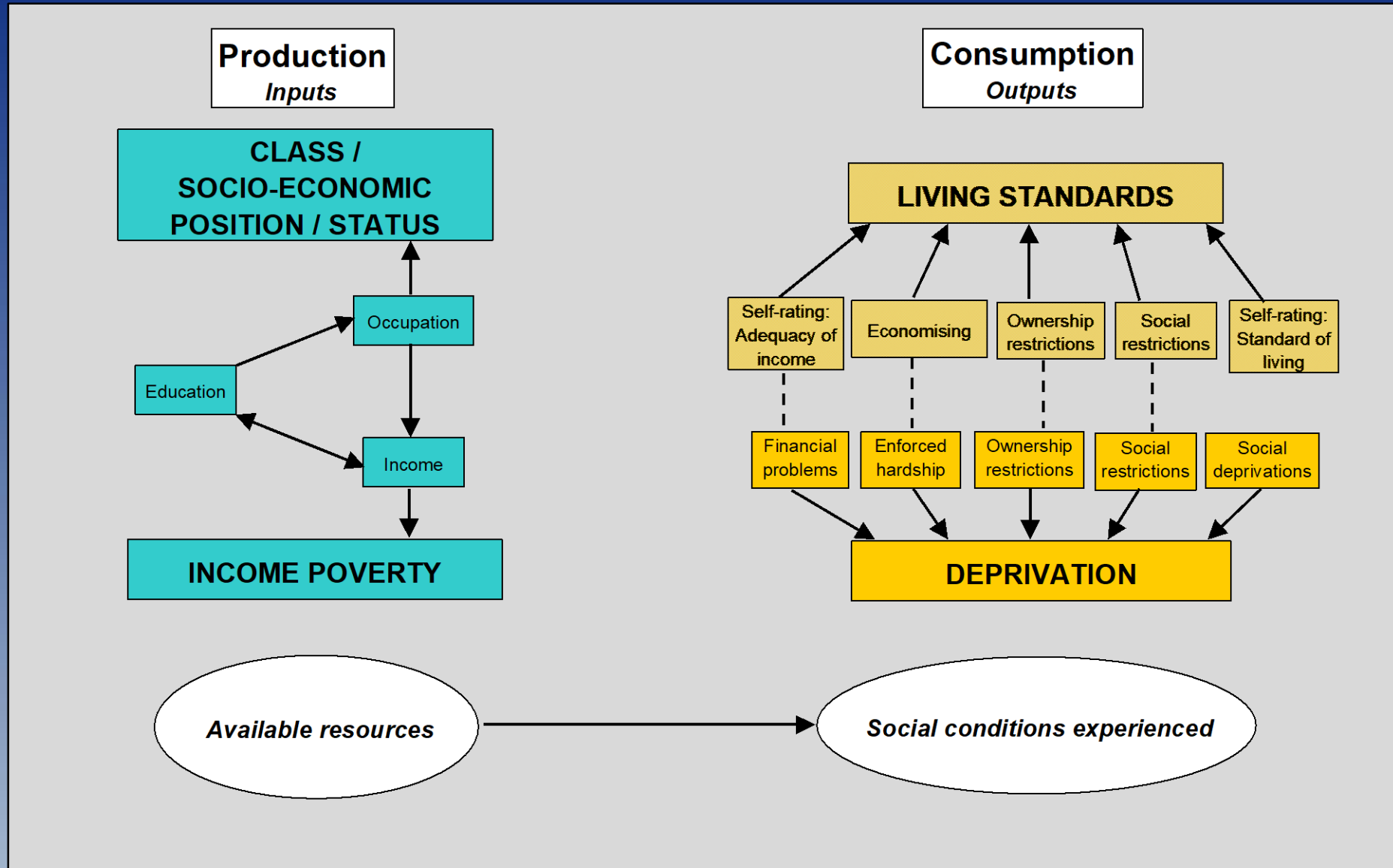
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Theoretical and methodological bases for the two indexes

1. Different theoretical approaches for selecting variables
2. Single vs multiple domains of deprivation that can be used individually or in combination
3. Statistically-derived vs judgement-based weights
4. Census and non-Census data sources
5. Different spatial boundaries
6. Age/sex standardisation of variables

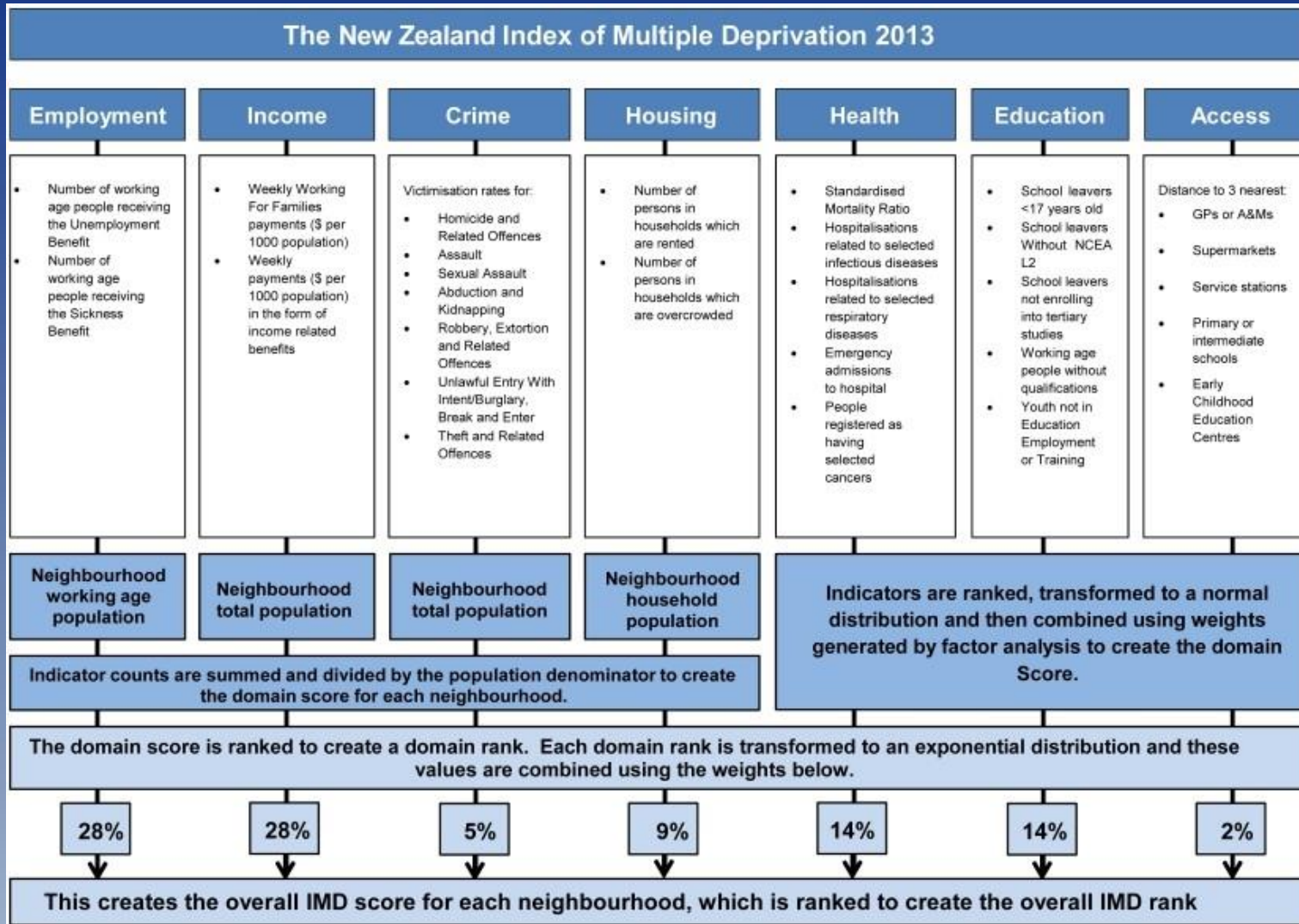
Some approaches to measuring socioeconomic position and socioeconomic wellbeing



NZDep2013 first principal component weights

Proportion of persons (with a lack of something)	2006	2013	Change
People aged <65 with no access to Internet at home	-	0.372	-
People aged 18-64 receiving a means tested benefit	0.371	0.364	-0.007
People living in households with equivalised income below an income threshold	0.356	0.356	0
People aged 18-64 unemployed	0.332	0.338	+0.006
People aged 18-64 without any qualifications	0.326	0.332	+0.006
People not living in own home	0.334	0.322	-0.012
People aged <65 living in a single parent family	0.333	0.317	-0.016
People living in households below an equivalised bedroom occupancy threshold	0.318	0.303	-0.015
People with no access to a car	0.311	0.286	-0.025
People with no access to any phone at home	0.314	-	-
Proportion of variance explained	55.4%	60.7%	5.3

Variables in the Index of Multiple Deprivation

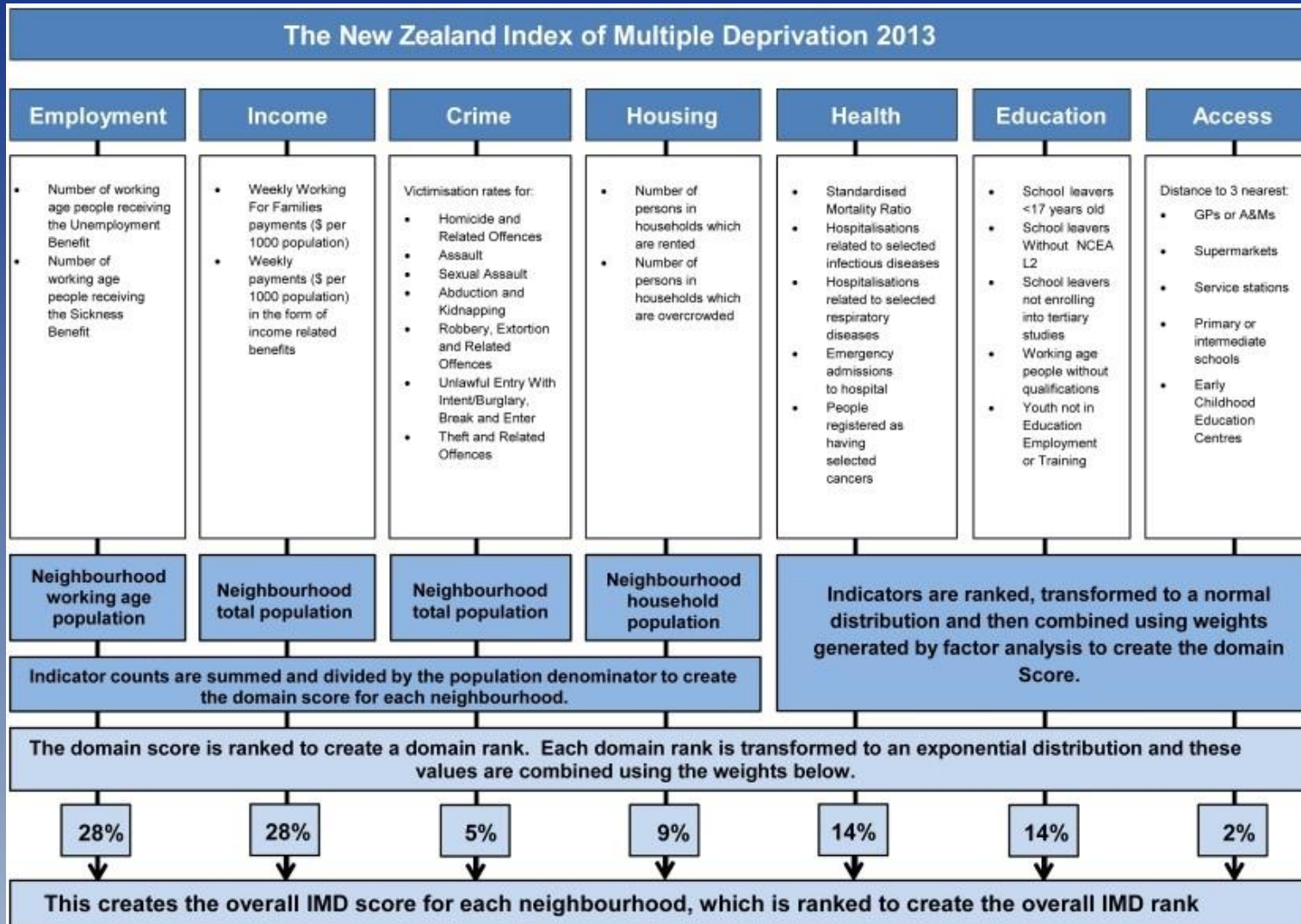


Source: Exeter, D., et al. (2017). "The New Zealand Indices of Multiple Deprivation (IMD): A new suite of indicators for social and health research in Aotearoa, New Zealand." PLoS One 12(8): e0181260.

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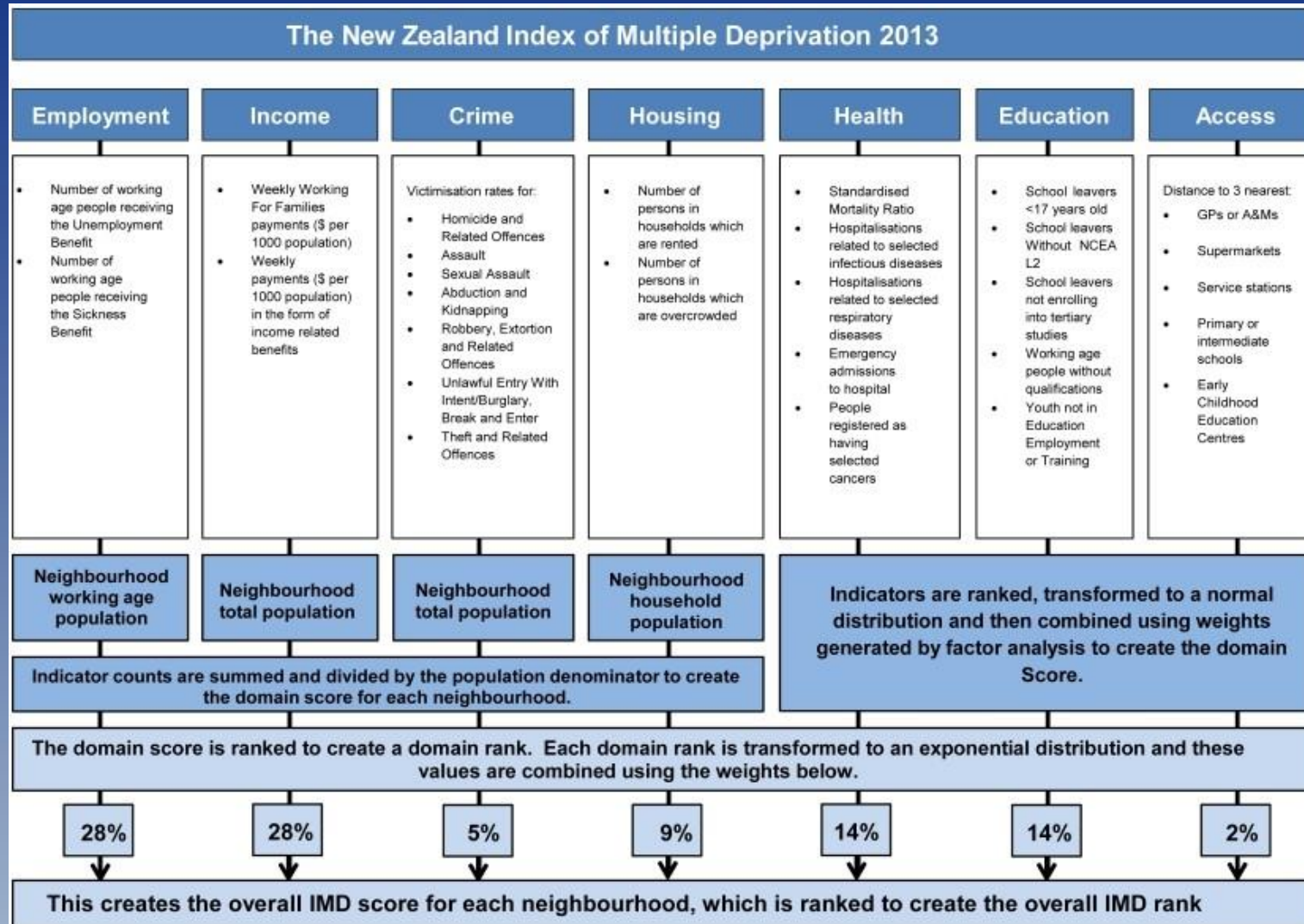
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Comparison of NZDep2013 small areas and IMD data zones

- NZDep2013 is based on 23,669 small areas that have a minimum population of 100, and average population of 179
- NZDep is reported at MB level (45,921 MBs)
- IMD is based on 5958 data zones with an average population of 712 (excluding outliers, the population range is 501-999)
- Data zones are almost four times the size (3.98) of NZDep small areas on average

Comparison of NZDep2013 small areas and IMD data zones

- Modifiable areal unit problem

Theoretical and methodological bases for the two indexes

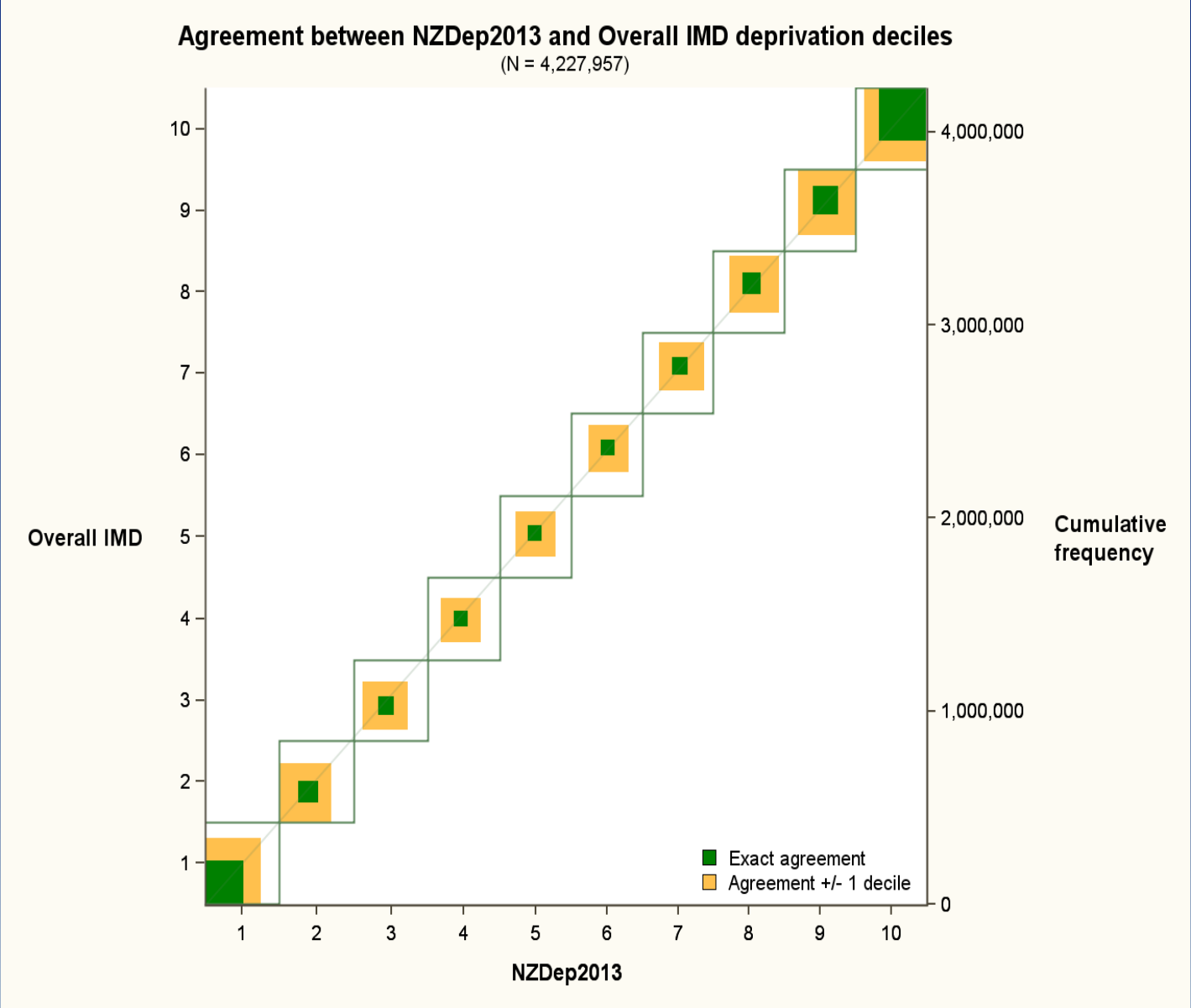
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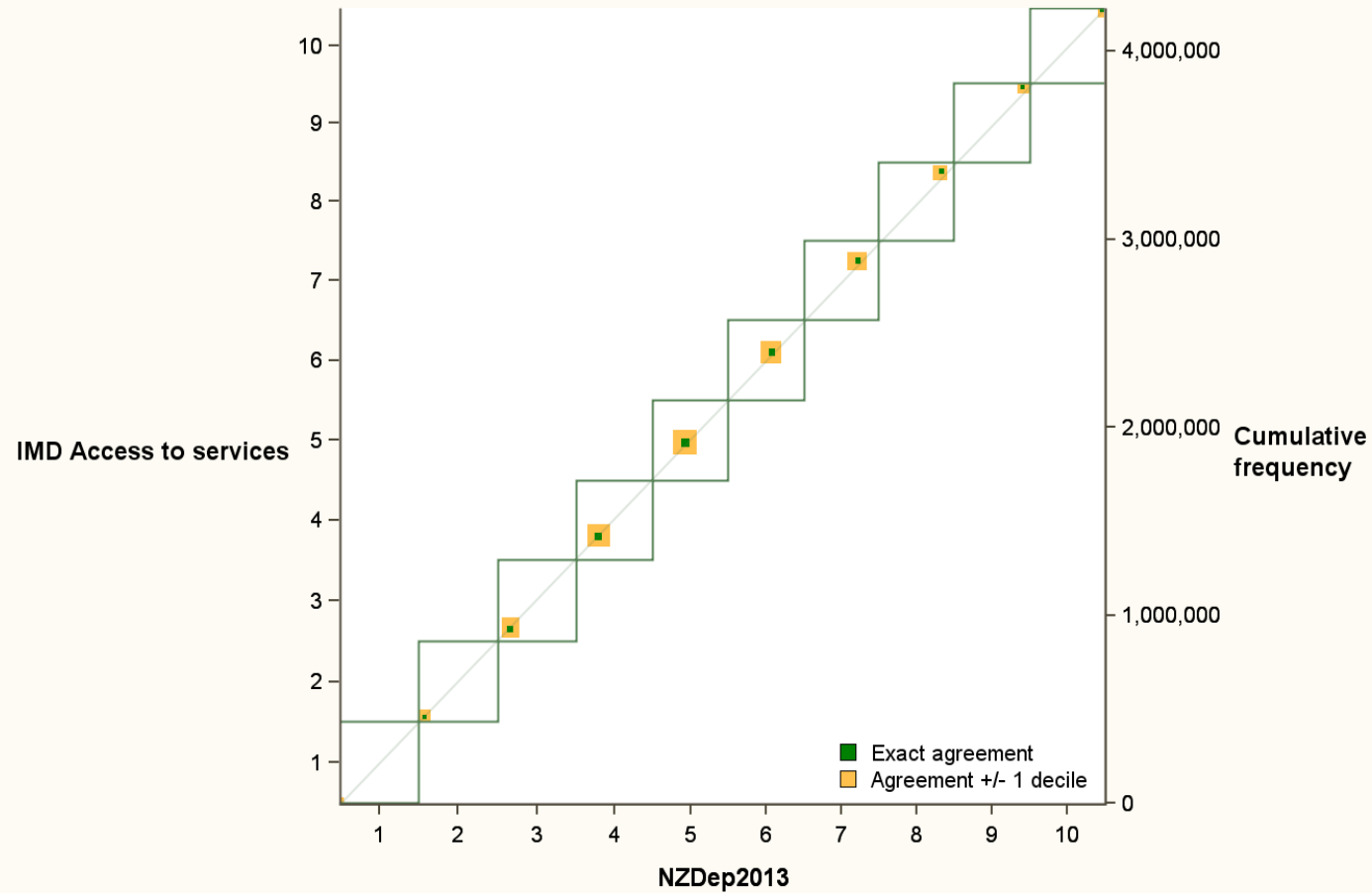
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Agreement between NZDep2013 and IMD deprivation deciles (unit of analysis: people)



Agreement between NZDep2013 deciles and IMD Access-domain deciles (unit of analysis: people)

Agreement between NZDep2013 and IMD Access to services deprivation deciles
(N = 4,227,957)

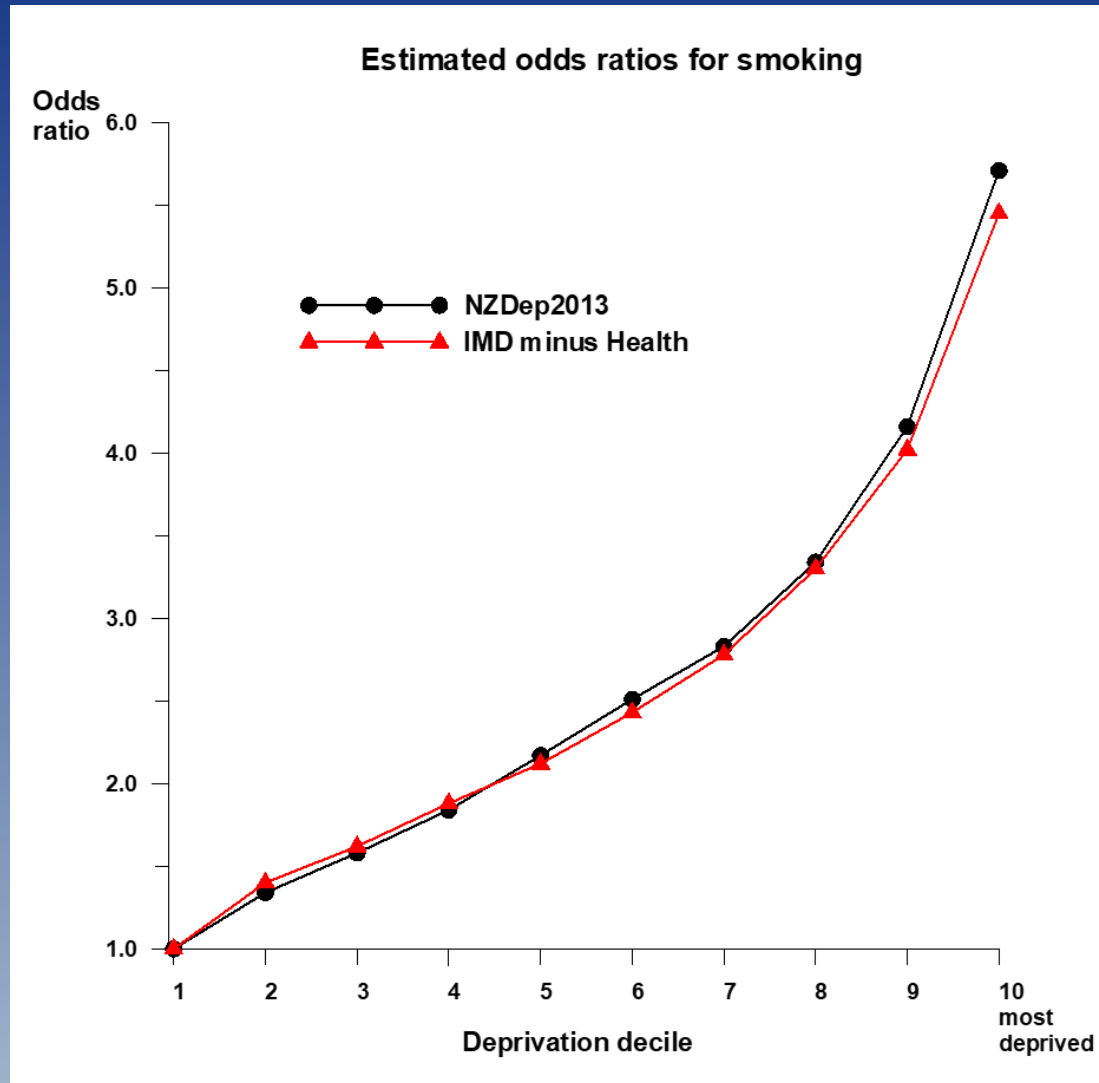


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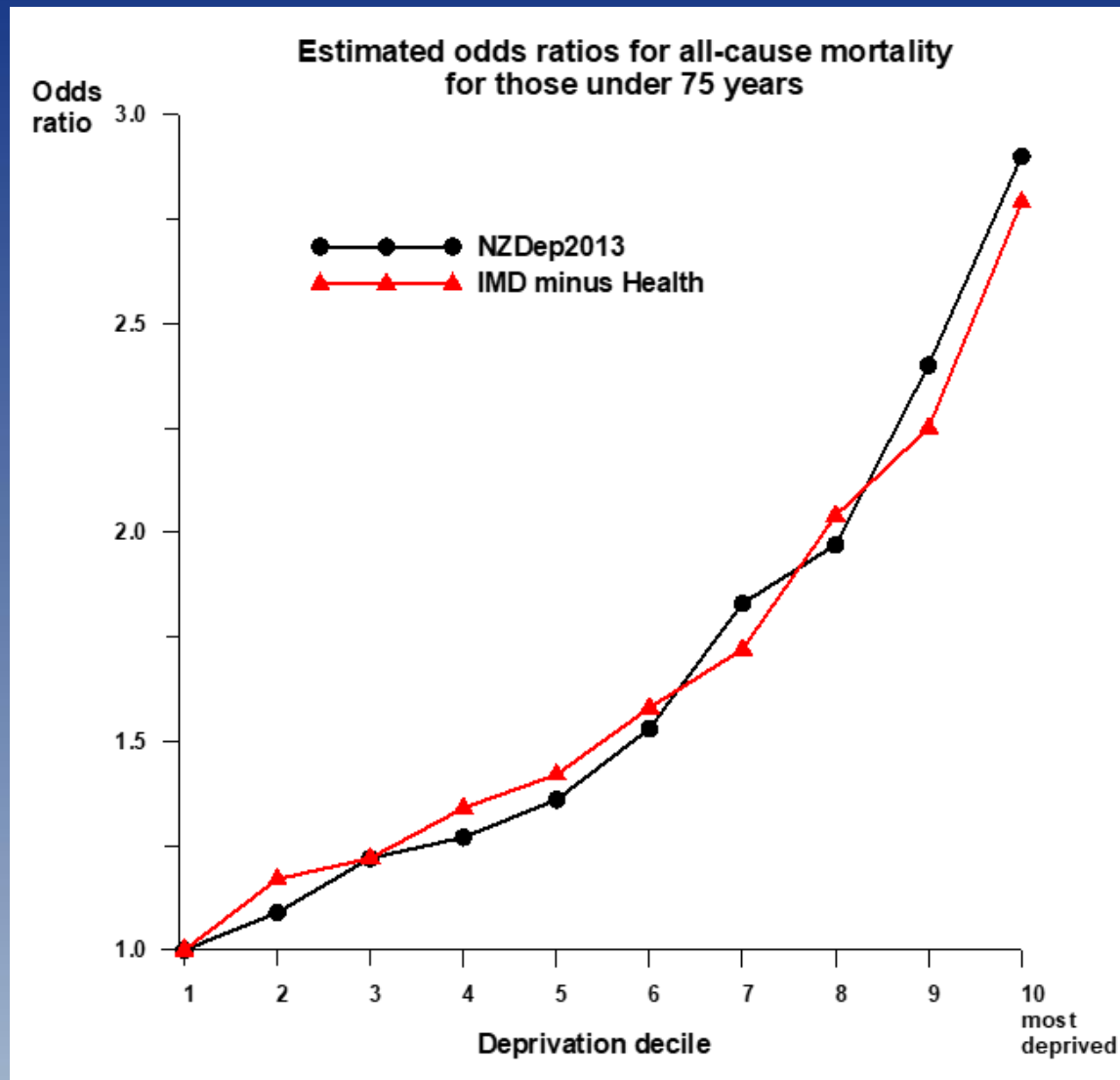
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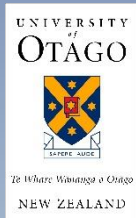
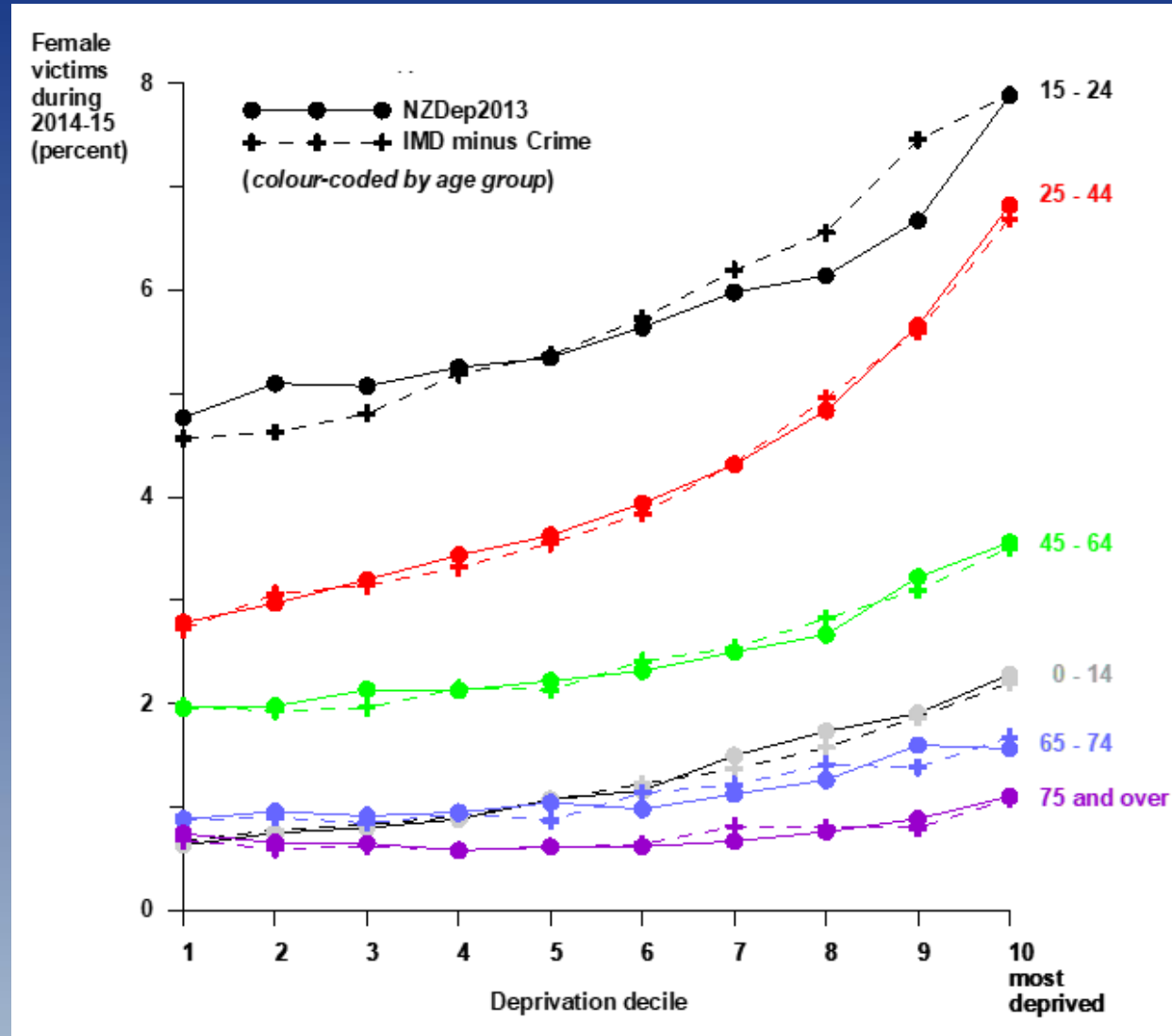
Estimated odds ratios for smoking for NZDep2013 and IMD-minus-Health, controlling for age and sex



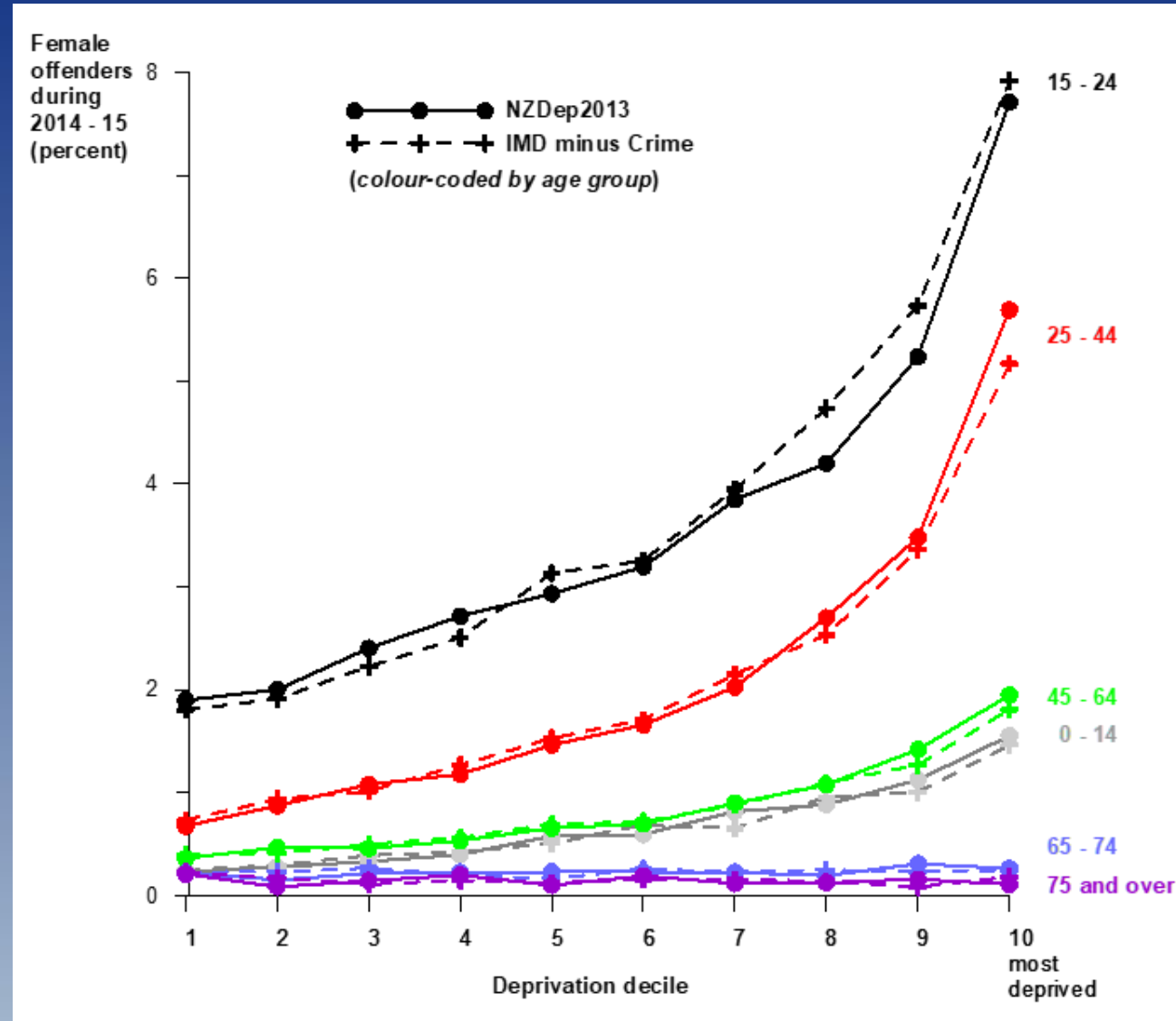
Estimated odds ratios for all-cause mortality for those under 75 years for deciles of NZDep2013 and IMD-minus-Health, controlling for age group and sex



Percent victims-of-crime during 2014-15 by deciles of NZDep2013 and IMD-minus-Crime, by age group, females



Percent offenders during 2014-15 by deciles of NZDep2013 and IMD-minus-Crime, by age group, females



Conclusions

- There are theoretical and methodological differences between the two indexes
- It doesn't matter greatly which index you use in a large data set
- Data zones are innovative new area boundaries
- NZDep small areas are smaller than Data Zones, so may pick up pockets of deprivation missed by data zones

Conclusions continued

- IMD uses more input variables and data
- IMD demonstrates the value of non-census data sources (IDI)
- Both depend on a census, NZDep wholly, IMD only in part (eg housing)
- NZDep is age/sex standardised
- Further analyses to come