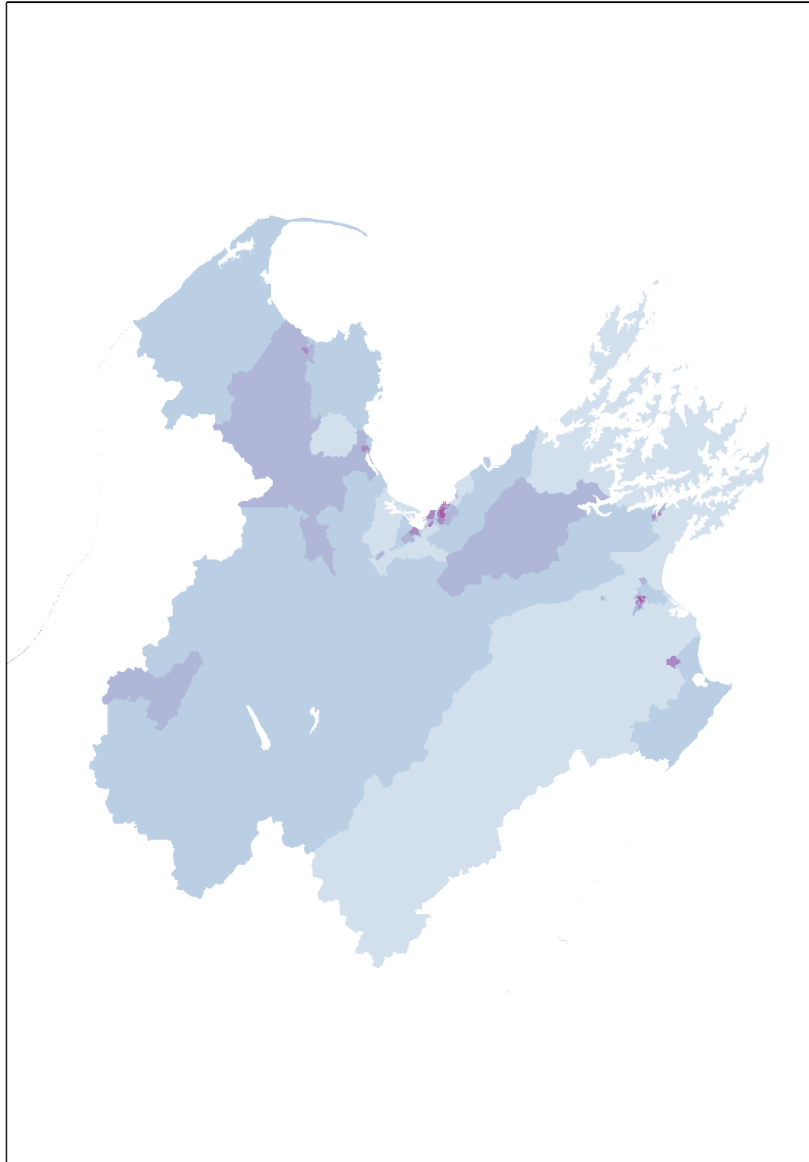# Deprivation in the Nelson Marlborough Region

Applying the New Zealand Indices of Multiple Deprivation

Figure 1 Map of the Nelson Marlborough Region showing Overall IMD Deprivation. The most deprived areas shaded darkest.

Report prepared for Child Poverty Action Group

Annie Chiang and Associate Professor Daniel Exeter

2019

STATISTICS NEW ZEALAND DISCLAIMER

ACKNOWLEDGMENTS

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INTRODUCTION

The purpose of this report is to describe the deprivation and demographic profile within the Nelson Marlborough Region. Using the New Zealand Indices of Multiple Deprivation, we will make comparisons between the Nelson Marlborough Region and the rest of New Zealand. Comparisons will also be made between the Territorial Authorities within the region, highlighting any areas of concern.

What is deprivation?

"A state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belongs." – Townsend, 1987.[1]

Individuals can experience multiple forms of deprivation.[2] Material deprivation is a lack of access to goods and services and the physical conditions in which people live and work. Social deprivation refers to the societal structures, culture, community and interpersonal relationships. The New Zealand Indices of Multiple Deprivation captures these different ideas and allows one to understand disadvantage in Overall terms, as well as in terms of Employment, Income, Crime, Housing, Health, Education and Access.
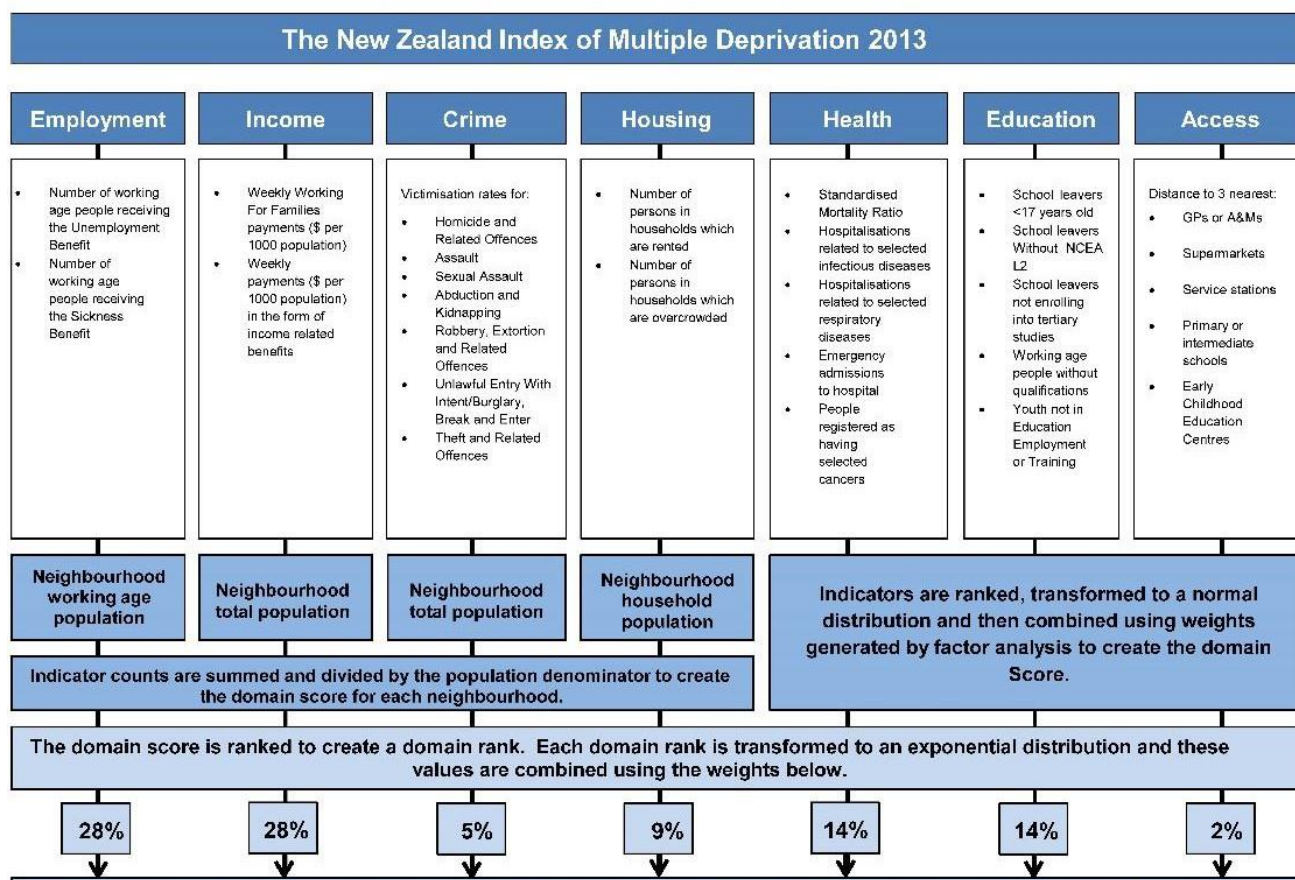
Figure 2 Flow diagram showing the IMD, its indicators, domains and weights. Adapted from Figure 4.2 SIMD 2012 Methodology, in Scottish Index of Multiple Deprivation 2012. Edinburgh: Scottish Government (Crown copyright 2012).

THE NEW ZEALAND INDEX OF MULTIPLE DEPRIVATION

The New Zealand Index of Multiple Deprivation (IMD) allows one to look at disadvantage in overall terms, as well as in terms of seven domains of deprivation: Employment, Income, Crime, Housing, Health, Education and Access. To construct the index, the seven areas of interest or domains are weighted to reflect the relative importance of each domain in representing the key determinants of socio-economic deprivation, the adequacy of their indicators and the robustness of the data that they use. Figure 2 shows the IMD's 28 indicators and weightings of the seven domains.

The IMD measures deprivation at the neighbourhood level using custom data zones that were specifically developed for social and health research. The New Zealand (NZ) land mass has 5,958 neighbourhood-level data zones, each containing an average of 712 people. In urban settings, data zones can be just a few streets long and wide. Data zones of this size are able to capture whole neighbourhoods but are small enough so that the level of deprivation experienced is relatively uniform within each data zone.

Data zones are ranked from the least to most deprived (1 to 5958). A lower rank score means that based on the indicators seen in Figure 2, a data zone would be less disadvantaged compared to data zones that have a higher score. The data zones are then split into quintiles, where Q1 (light shading) represents the least deprived 20% of data zones in the whole of NZ; while Q5 (dark shading) represents the most deprived 20%.

The data used to develop the IMD was sourced from national health, social development, taxation, education, police databases, geospatial data providers and the 2013 Census. The 2013 Census was used to construct the IMD as it was the most recent dataset available at the time of development. Future updates of the IMD will utilise the data from the 2018 Census, once this becomes available

A DEMOGRAPHIC PROFILE OF THE NELSON MARLBOROUGH REGION

According to Census 2013, the Nelson Marlborough Region had a collective population of 137,010, which accounted for 3.2% of the total New Zealand population. The Tasman Region had the largest population, at 47,157. Nelson City had the smallest population with a population of 43,416. The median age in the Marlborough, Nelson and Tasman Regions were 45 years, 42.5 years and 44.2 years, respectively - all much higher than the national median of 38 years. In all three regions, the age structure of the population is older than the total New Zealand population. These regions have a larger proportion of individuals aged 65 years and over, and a smaller proportion under 15 years of age, compared to New Zealand as a whole. Table 2 shows the distribution of ethnicities in the Nelson Marlborough Region compared to all of New Zealand. The Nelson Marlborough Region has a larger proportion of Europeans and a smaller proportion of Maori, compared to New Zealand as a whole. The Tasman Region has the largest European population at 93.1%. Maori are underrepresented in all three regions.

Ethnicity	Nelson Marlborough		New Zealand	
	Population	Proportion	Population	Proportion
European	118,947	86.8%	2,969,391	70.0%
Maori	12,384	9.0%	598,602	14.1%
Pacific Peoples	2,250	1.6%	295,944	7.0%
Asian	4,020	2.9%	471,708	11.1%
MELAA	0	0.0%	46,953	1.1%
Other	3,072	2.2%	67,752	1.6%

Table 1 Distribution of ethnicity within Nelson Marlborough Region using Total Response Output. Data sourced from Statistics New Zealand Census 2013.[3]

A PROFILE OF THE NELSON MARLBOROUGH REGION

For the purposes of this report, the Nelson Marlborough Region represents an amalgamation of the Nelson, Marlborough and Tasman Regions. The Nelson Marlborough Region contains 196 data zones, comprised of 62 data zones from the Marlborough Region, 65 from Nelson City and 69 from the Tasman Region.
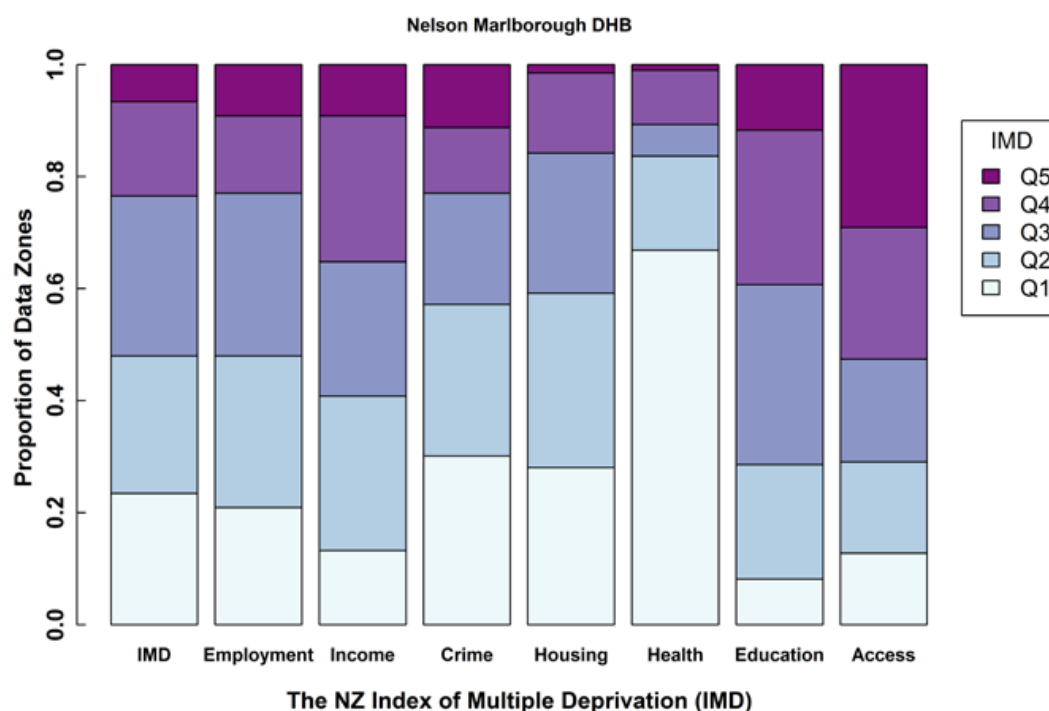
Figure 3 Stacked bar chart showing Overall deprivation and seven domains in the Nelson Marlborough Region.

Deprivation Profile

The stacked bar chart in Figure 3 shows the proportion of data zones in the Nelson Marlborough Region that belong to each deprivation quintile for Overall IMD deprivation and the seven domains in 2013. If the deprivation circumstances were the same for all of NZ, we would see 20% of the Nelson Marlborough Region's 196 data zones in each quintile.

In terms of the Overall IMD, 23.5 % of Nelson Marlborough data zones are amongst the 20% least deprived in New Zealand (Q1). In Nelson Marlborough, 6.6% of data zones are amongst the 20% most deprived. The largest proportion of data zones are ranked within the Q3 and Q2, at 28.6% and 24.5%, respectively. Compared to other regions in New Zealand, Nelson Marlborough has the fourth largest proportion of Q1 data zones, that is, the least deprived data zones as shown in Table Two below.

Regions	Q1	Q2	Q3	Q4	Q5
Nelson Marlborough	**23.5%**	**24.5%**	**28.6%**	**16.8%**	**6.6%**
Southland	45.8%	27.1%	10.2%	13.6%	3.4%
Otago	34.9%	23.5%	21.0%	16.0%	4.6%
Canterbury	33.1%	24.2%	17.4%	17.9%	7.5%
Wellington	20.9%	26.5%	29.6%	13.8%	9.2%
Auckland	19.6%	19.3%	20.4%	17.5%	23.2%
Hawke's Bay	16.7%	14.5%	18.1%	25.8%	24.9%
Taranaki	16.0%	19.9%	28.2%	26.3%	9.6%
Waikato	12.6%	18.9%	20.3%	23.9%	24.4%
West Coast	12.5%	27.1%	20.8%	29.2%	10.4%
Manuwatu	10.9%	18.1%	18.6%	26.2%	26.2%
Bay of Plenty	7.6%	14.4%	18.5%	27.4%	32.1%
Gisborne	6.3%	14.1%	15.6%	18.8%	45.3%
Northland	2.2%	7.1%	19.0%	23.9%	47.8%

Table 2 Proportion of data zones in each quintile for Overall IMD.

The largest proportion of Nelson Marlborough data zones are amongst the 20% least deprived in New Zealand in terms of the Crime and Health Domains. As seen in below, the largest proportion of data zones are ranked within Q2 in terms of the Income and Housing Domains. In terms of the Employment and Education Domains, the largest proportion on data zones in the Nelson Marlborough Region are ranked amongst the Q3 quintile, at 29.6% and 32.1%, respectively.

The Nelson Marlborough Region has the largest proportion of its data zones amongst the 20% most deprived (Q5) in New Zealand in terms of the Access Domain, at 29.4%.

Nelson Marlborough Region	Q1	Q2	Q3	Q4	Q5
Employment	20.9%	26.5%	29.6%	13.8%	9.2%
Income	13.3%	27.6%	24.0%	26.0%	9.2%
Crime	30.1%	27.0%	19.9%	11.7%	11.2%
Housing	28.1%	31.1%	25.0%	14.3%	1.5%
Health	66.8%	16.8%	5.6%	9.7%	1.0%
Education	8.2%	20.4%	32.1%	27.6%	11.7%
Access	12.7%	16.2%	18.3%	23.4%	29.4%

Table 3 Proportion of data zones in each quintile for each IMD Domain for the Nelson Marlborough Region.

DEPRIVATION PROFILES OF TERRITORIAL AUTHORITIES WITHIN THE NELSON MARLBOROUGH REGION

Overall IMD

Marlborough and Tasman Districts experience less deprivation than what would be expected if deprivation was evenly distributed across New Zealand. The overall IMD ranks most data zones in the Tasman District within the Q1 (least deprived) and Q2 quintiles. The majority of Marlborough District data zones are ranked with Q1 and Q3. The Marlborough District also has the largest proportion of Q1 data zones in the Nelson Marlborough Region. The largest proportion of data zones in Nelson City are ranked within Q3 and Q2, at 26.2% and 21.5%, respectively.

Nelson City has the largest proportion of data zones ranked within the Q5 (most deprived) quintile, at 15.4%. Marlborough District has just 4.8% of its data zones ranked within the Q5 quintile, while Tasman District has no data zones in the most deprived quintile.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	29.0%	19.4%	29.0%	17.7%	4.8%	62
Nelson City	18.5%	21.5%	26.2%	18.5%	15.4%	65
Tasman District	23.2%	31.9%	30.4%	14.5%	0.0%	69
Total Data Zones	46	48	56	33	13	196
	23.5%	24.5%	28.6%	16.8%	6.6%	

Table 4 Proportion of data zones in each quintile for Overall IMD.

Employment Domain

The Employment Domain as seen in Table 5, reflects the proportion of working age people who were receiving the Unemployment or Sickness Benefits in 2013. Having large proportions of data zones in Q5 (most deprived) and Q4 would suggest that unemployment is an area of concern in the District.

Nelson has the largest proportion of data zones among the 20% most deprived in New Zealand, at 24.6% (16/65). Marlborough and Tasman Districts each have very low proportions at just 1.6% (1/62) and 1.4% (1/69) in the Q5 quintile, respectively. The majority of data zones in the Nelson Marlborough Region are ranked within the Q2, Q3 and Q4 quintiles. This suggests that there are a relatively fewer data zones experiencing extremes of employment deprivation or affluence.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	33.9%	25.8%	25.8%	12.9%	1.6%	62
Nelson City	10.8%	21.5%	30.8%	12.3%	24.6%	65
Tasman District	18.8%	31.9%	31.9%	15.9%	1.4%	69
Total Data Zones	41	52	58	27	18	196
	20.9%	26.5%	29.6%	13.8%	9.2%	

Table 5 Proportion of data zones in each quintile for the Employment Domain.

Income Domain

The Income Domain measures the amount of money per person paid by the government in the form of Working for Families payments and income-tested benefits. Given the large proportions of data zones in Q5 (most deprived) and Q4 low income levels are a key area of concern in the Nelson Marlborough region.

Nelson City has the a largest proportion data zones among the 20% most deprived in New Zealand, with 23.1% (15/65) of data zones in the Q5 quintile. The Marlborough and Tasman Regions have 1.6% (1/62) and 2.9% (2/69) in the Q5 quintile, respectively. The majority of data zones in the Nelson Marlborough Region are ranked within the Q2, Q3 and Q4 quintiles. This suggests that there are a relatively fewer data zones experiencing extremes of income deprivation or affluence.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	22.6%	25.8%	21.0%	29.0%	1.6%	62
Nelson City	7.7%	21.5%	21.5%	26.2%	23.1%	65
Tasman District	10.1%	34.8%	29.0%	23.2%	2.9%	69
Total Data Zones	26	54	47	51	18	196
	13.3%	27.6%	24.0%	26.0%	9.2%	

Table 6 Proportion of data zones in each quintile for the Income Domain.

Crime Domain

Rather than measuring offending rates, the Crime Domain measures victimisations per 1000 people and is largely driven by thefts (55%), burglaries (24%) and assaults (18%).

Nelson City has the a largest proportion data zones among the 20% most deprived in New Zealand, with 15.4% (10/65) of data zones in the Q5 quintile. The Tasman and Marlborough Regions have 13.0% (9/69) and 4.8% (3/62) in the Q5 quintile, respectively. Over 50% of data zones in the Nelson Marlborough Region are ranked within Q1 and Q2 quintiles. This suggests that there are low levels of crime within the Nelson Marlborough Region.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	30.6%	30.6%	21.0%	12.9%	4.8%	62
Nelson City	21.5%	18.5%	24.6%	20.0%	15.4%	65
Tasman District	37.7%	31.9%	14.5%	2.9%	13.0%	69
Total Data Zones	59	53	39	23	22	196
	30.1%	27.0%	19.9%	11.7%	11.2%	

Table 7 Proportion of data zones in each quintile for the Crime Domain.

Housing Domain

The Housing Domain measures the proportion of people living in overcrowded households (60% of the weighting) and in rented dwellings (40%). The measure of overcrowding used in the IMD was the Canadian National Occupancy Standard (CNOS), which determines the number of rooms required based on factors such as age and sex of the occupants and the relationships between individuals living

in the same dwelling.[5] High deprivation ranks for the Housing Domain suggests that more individuals are likely to be living in overcrowded and/or rented housing.

Nelson City has the a largest proportion data zones in the Nelson-Marlborough district among the 20% most deprived in New Zealand, with 3.1% (21/65) of data zones in the Q5 quintile. There was a single data zone in the Marlborough Region in the Q5 quintile, accounting for 1.6% (1/62). There were no Q5 data zones for the Housing Domain in the Tasman Region. Almost 60% of data zones in the Nelson Marlborough Region are ranked within Q1 and Q2 quintiles. This suggests that there are low levels of housing deprivation within the Nelson Marlborough Region.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	27.4%	27.4%	25.8%	17.7%	1.6%	62
Nelson City	21.5%	27.7%	27.7%	20.0%	3.1%	65
Tasman District	34.8%	37.7%	21.7%	5.8%	0.0%	69
Total Data Zones	55	61	49	28	3	196
	28.1%	31.1%	25.0%	14.3%	1.5%	

Table 8 Proportion of data zones in each quintile for the Housing Domain.

Health Domain

The Health Domain consists of five indicators: standard mortality ratio, acute hospitalisations related to select infectious and respiratory diseases, emergency admissions to hospital, and people registered as having selected cancers.

Only Marlborough had data zones among the 20% most deprived in New Zealand for the Health Domain, at 3.2% (2/62). All the data zone in Nelson City and Tasman District fall within the Q1 (least deprived) and Q2 quintiles. These proportions suggest that as a whole, the Nelson Marlborough experiences low levels of health deprivation.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	24.2%	24.2%	17.7%	30.6%	3.2%	62
Nelson City	76.9%	23.1%	0.0%	0.0%	0.0%	65
Tasman District	95.7%	4.3%	0.0%	0.0%	0.0%	69
Total Data Zones	131	33	11	19	2	196
	66.8%	16.8%	5.6%	9.7%	1.0%	

Table 9 Proportion of data zones in each quintile for the Health Domain.

Education Domain

The Education Domain measures retention, achievement and transition to education or training for school-leavers; the proportion of working age people 15-64 with no formal qualifications; and the proportion of youth aged 15-24 years not in education, employment or training (NEET).

All regions contain data zones that are among the 20% most deprived in New Zealand in terms of the Education Domain. The largest proportion of Q5 data zones is in the Nelson Region, at 12.3% (8/65). Tasman follows with 11.6% (8/69) of its data zones in Q5, then Marlborough at 11.3% (7/62). The

majority of data zones in the Nelson Marlborough Region are ranked within the Q2, Q3 and Q4 quintiles. This suggests that there are a relatively fewer data zones experiencing extremes of education deprivation.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	6.5%	22.6%	27.4%	32.3%	11.3%	62
Nelson City	7.7%	21.5%	32.3%	26.2%	12.3%	65
Tasman District	10.1%	17.4%	36.2%	24.6%	11.6%	69
Total Data Zones	16	40	63	54	23	196
	8.2%	20.4%	32.1%	27.6%	11.7%	

Table 10 Proportion of data zones in each quintile for the Education Domain.

Access Domain

The Access Domain measures the distance from the population weighted centre of each data zone to the nearest three GPs, supermarkets, service stations, schools and early childhood education centres. High deprivation ranks for the Access Domain suggest that people living in these data zones would need to travel further for these amenities.

All districts within the Nelson Marlborough Region have data zones ranked amongst the 20% most deprived in New Zealand in terms of the Access Domain. The highest proportion of Q5 data zones for the Access Domain is in the Tasman region, at 50.7% (35/69). Marlborough and Nelson have 30.2% (19/62) and 62.% (4/65) of its data zones in the Q5 quintile, respectively. This suggests that access deprivation is an area of concern for the Marlborough and Tasman districts.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Marlborough District	11.1%	19.0%	19.0%	20.6%	30.2%	63
Nelson City	15.4%	20.0%	24.6%	33.8%	6.2%	65
Tasman District	11.6%	10.1%	11.6%	15.9%	50.7%	69
Total Data Zones	25	32	36	46	58	197
	12.7%	16.2%	18.3%	23.4%	29.4%	

Table 11 Proportion of data zones in each quintile for the Access Domain.

CASE STUDY: NELSON & BLENHEIM

Not all areas experience the same form of disadvantage and as the IMD ranks all data zones in order of deprivation for each of the seven domains, it is very useful for showing the nuances of deprivation. For example, an area may score highly on one form of deprivation, but much lower on others. These differences point to the need to tailor policy responses differently in each area. This section will present case studies of selected data zones within the region to demonstrate the analytical power of the IMD to illustrate local area differences in the level of deprivation along each of the seven domains.

Two data zones have been chosen for this case study: data zones 5200045 and 5300037, as shown in Figure 4.[6]
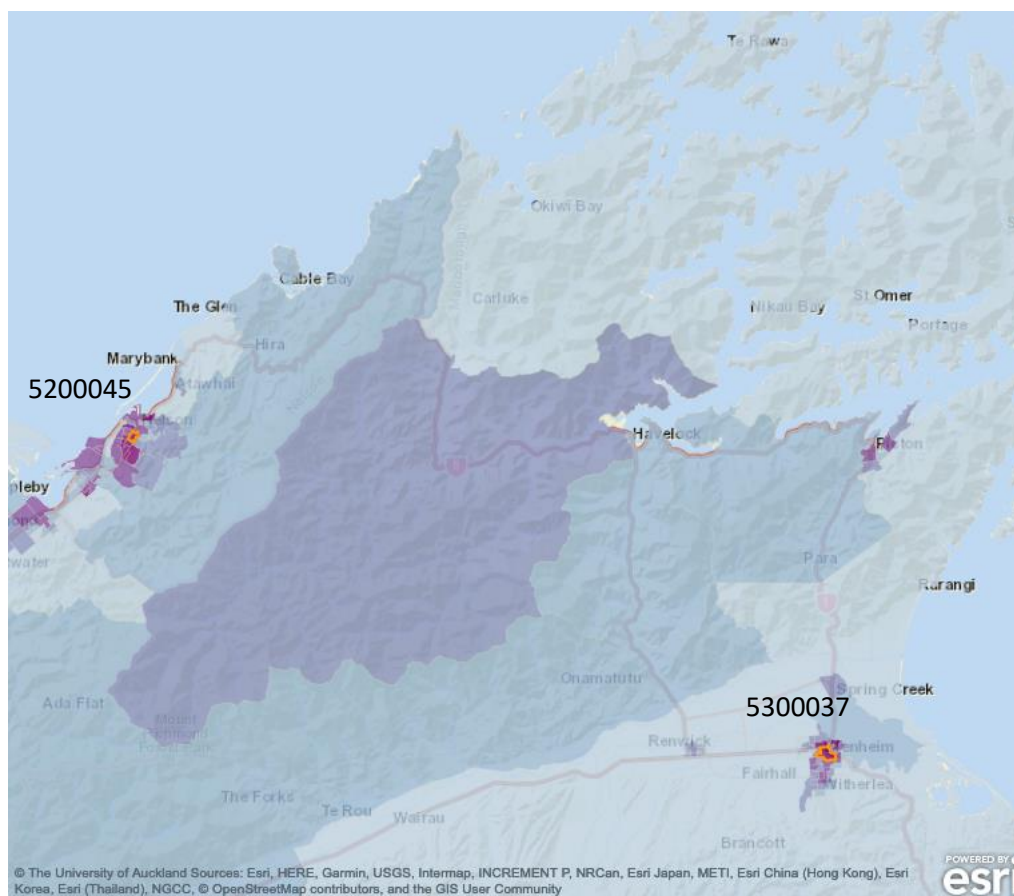

Figure 4 Map containing data the two case study data zones – outlined in orange. Image sourced from:
http://www.imd.ac.nz/NZIMD_Single_animation_w_logos/atlas.html.[6]

Data zone 5200045 is located in centre of Nelson City. It is bordered by Northesk Street, Rutherford Street, Gloucester Street and St Vincent Street. This data zone has a usually resident population of 825 individuals. This data zone falls within the Q5 (most deprived) in terms of the Overall IMD. As shown in **Error! Reference source not found.**, this data zone is amongst the 20% most deprived data zones in New Zealand based on the Overall IMD, Employment, Income and Crime Domains. In terms of the Housing and Education Domains, this data zone is ranked within the Q4 quintile. This data zone is amongst the 20% least deprived in terms of the Health and Access Domains.
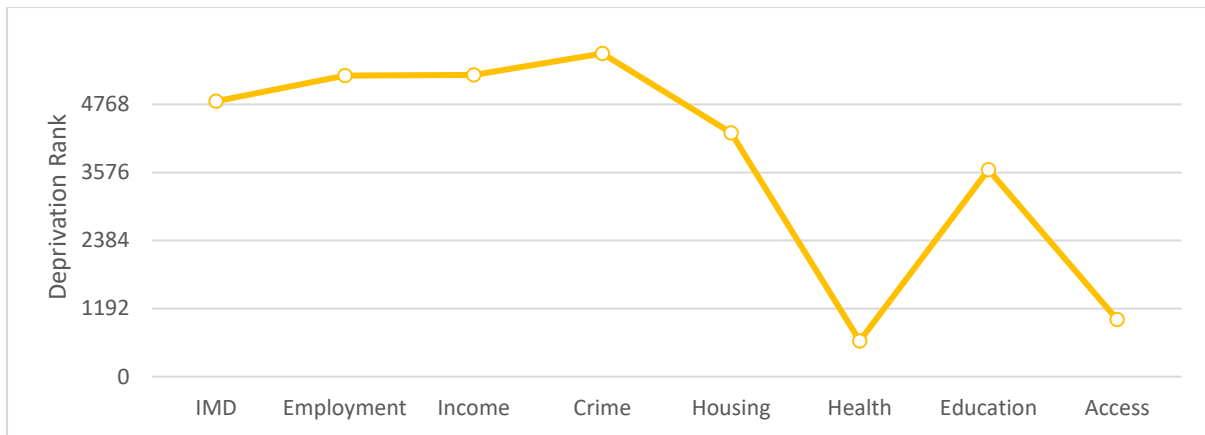
Figure 5 Deprivation ranking for data zone 5200045 by Overall IMD and deprivation Domains. Graph sourced from the IMD online interactive maps. Available at: http://www.imd.ac.nz/NZIMD_Single_animation_w_logos/atlas.html. [6]

Data zone 5300037 is located in the centre of Blenheim. It is encompassed by Beaver Street, Francis Street, Stuart Street and Parker Street. This data zone contains a usually resident population of 732 individuals. This data zone falls within the Q5 in terms of the Overall IMD. As seen in Figure 6, there are low levels of deprivation in terms of the Access Domains. However, this data is ranked among the 20% most deprived in New Zealand in terms of Crime. This data zone is ranked within the Q4 quintile in terms of the Employment, Income, Housing and Education Domains.
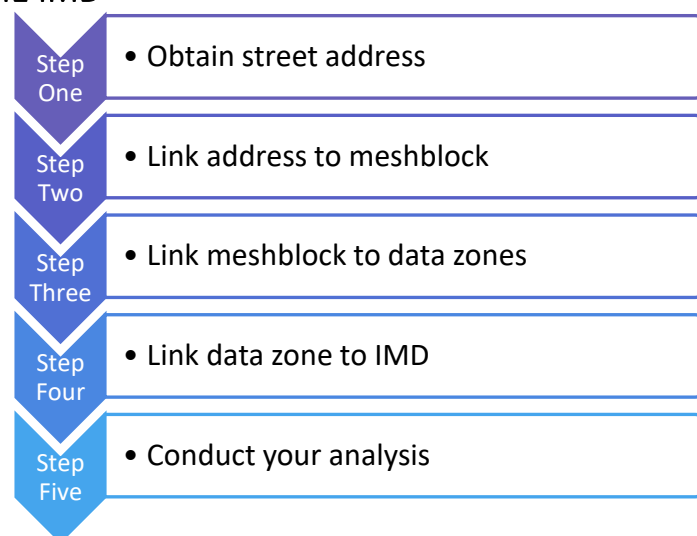

Figure 6 Deprivation ranking for data zone 5300037 by Overall IMD and deprivation Domains. Graph sourced from the IMD online interactive maps. Available at: http://www.imd.ac.nz/NZIMD_Single_animation_w_logos/atlas.html. [6]

There are some similarities between these two data zones. There are high levels of crime in both data zones, though Blenheim ranks marginally higher for this domain, compared to Nelson. In terms of the Employment and Income Domains, Blenheim experiences less deprivation than Nelson. The two data zones both experience moderate levels of deprivation in terms of the Housing, Education and Access Domains. The largest difference between these two data zones is seen in the Health Domain ranking. While Nelson is ranked within the least deprived (Q1) quintile, Blenheim is ranked within the most deprived (Q5) in terms of health deprivation. Contrasts such as this are useful in identifying areas where targeted initiatives could be directed. For example, both data zone could benefit from initiatives aimed at addressing employment, income, crime, housing and education deprivation. However, Blenheim may benefit from an initiative to reduce the number of hospitalizations, which may not be as relevant for Nelson.

Conclusion

The IMD is a useful tool for informing policy and decision-making. The key strengths of the IMD and its accompanying resources are its scalability, transparency and availability. The IMD allows one to examine the profile at the deprivation of small-areas, such a single data zone or on larger scales such as Territorial Authority, Region or District Health Board. As the indicators and relative weighting of the domains have been provided, this makes the IMD a powerful tool for understanding the variation in deprivation between areas. Potential applications could include identifying intervention priorities or areas that are in the greatest need. The IMD resources, including spreadsheets, interactive maps and reports are publically available online.

HOW TO USE THE IMD

Step One	• Obtain street address
Step Two	• Link address to meshblock
Step Three	• Link meshblock to data zones
Step Four	• Link data zone to IMD
Step Five	• Conduct your analysis

Figure 7 Steps in using the IMD in your own research.

The resources required to apply the IMD are publically available at www.fmhs.auckland.ac.nz/IMD.[8]

This website includes interactive online maps, Microsoft Excel spread sheets for linking meshblocks, datazones and IMD, DHB profiles and publications explaining the IMD.

For example, if you are interested in finding out if individuals living near a liquor stores are more likely to be in more deprived areas compared to those who do not, you could use the IMD resources to answer this question.

Firstly, the address should be collected for the individuals you are interested in. This address linked to a meshblock. To identify the meshblock the address belongs to, visit the Geography Boundary Viewer by Statistics New Zealand.[9] On the Layer List, select "Meshblock – 2013" or "Meshblock – 2018" from the Meshblock dropdown menu. Enter the address into the search box on the top right-hand corner. The meshblock identifier is a seven-digit number. This meshblock number can be linked with data zones using the Meshblocks spreadsheet, provided on the IMD website. Once the "Data zone ID" has been obtained, this can be linked with the IMD spreadsheet, which gives the Overall IMD rank for each data zone, as well as each data zone's rank for the seven domains.

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FURTHER INFORMATION

For more information about the IMD, NZ data zones for this profile, please contact Dan Exeter at d.exeter@auckland.ac.nz. For downloadable spreadsheets of the IMD or NZ data zones, online interactive maps, publications and technical documentation, please go to the IMD website.