Deprivation in the Otago Region
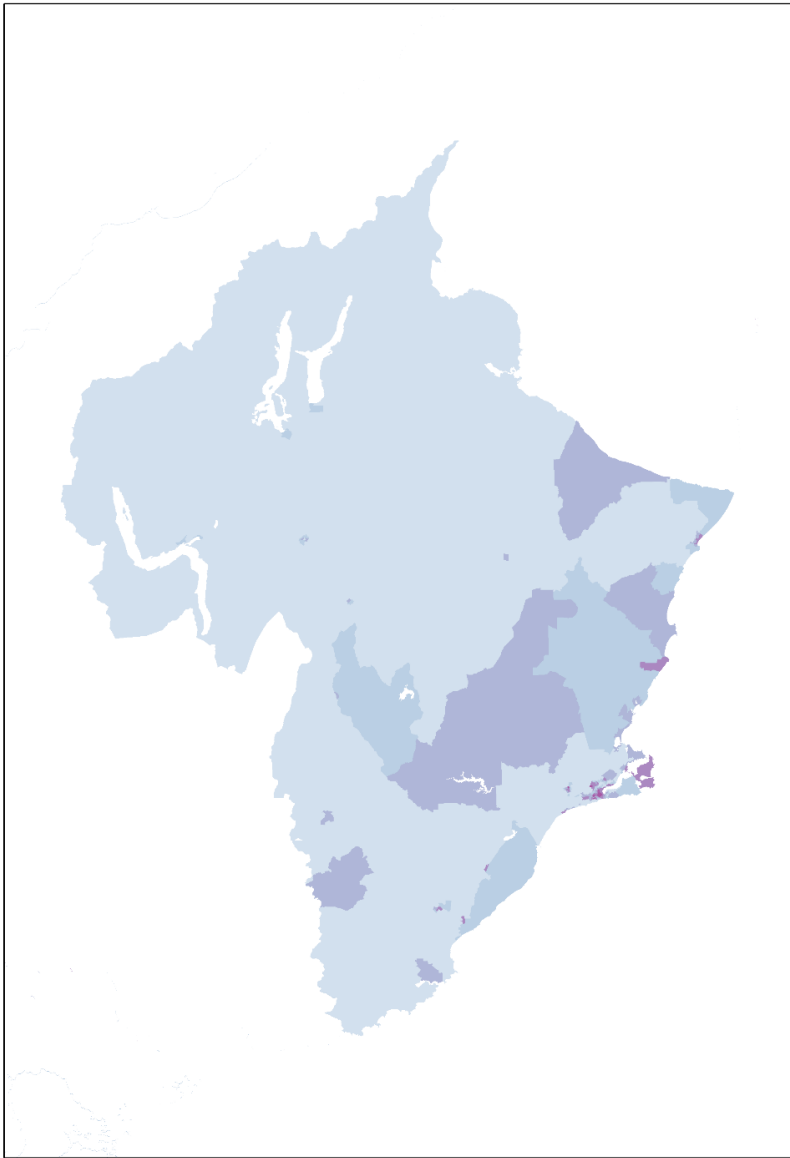

Figure 1 Map of the Otago Region showing Overall IMD Deprivation. The most deprived areas shaded darkest.

Applying the New Zealand Indices of Multiple Deprivation

Report prepared for Child Poverty Action Group

Annie Chiang and Associate Professor Daniel Exeter

2019

STATISTICS NEW ZEALAND DISCLAIMER

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

The purpose of this report is to describe the deprivation and demographic profile within the Otago Region. Using the New Zealand Indices of Multiple Deprivation, we will make comparisons between the Otago 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.
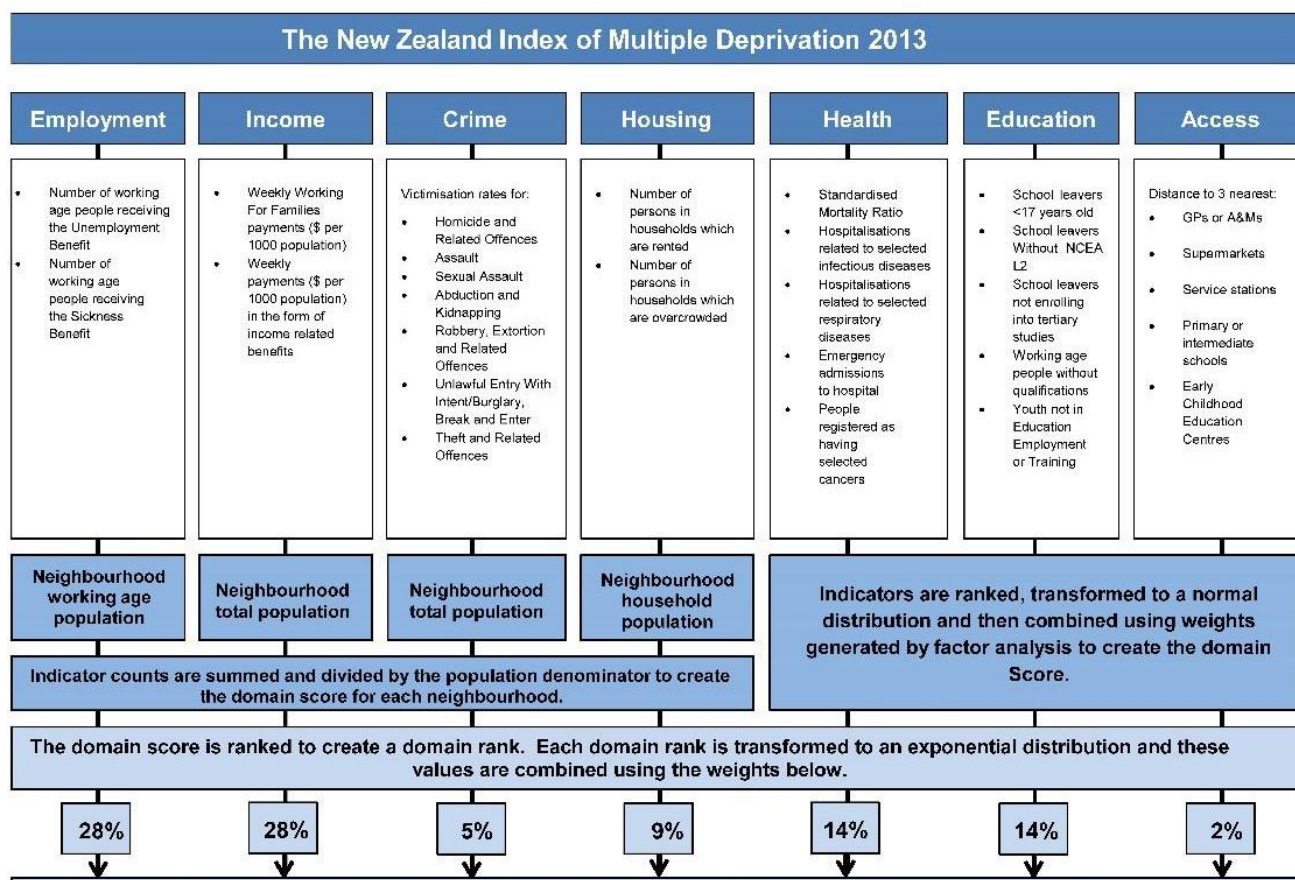
Figure 2 Flow diagram showing the IMD, its indicators, domains and weights. Adapted from Figure 4.2 SIMD 2012 Methodology, in Scottish Index of Multiple Deprivation 2012. Edinburgh: Scottish Government (Crown copyright 2012).

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 OTAGO REGION

The Otago Region has a population of 202,467, which accounts for 4.8% of the total New Zealand population. Dunedin City has the largest population in the region, at 120,249. Clutha District has the smallest population in the region with a population of 16,890. The median age in the Otago Region is 39 years, slightly higher than the national median of 38 years. A larger proportion of individuals are aged 65 years and over (15.7%), while smaller proportion are under 15 years of age (17.2%), compared to 14.3% and 20.4%, respectively, for all of New Zealand. Table 2 shows the distribution of ethnicities in the Otago Region compared to all of New Zealand. The Otago Region has a larger proportion of Europeans and a smaller proportion of Maori, compared to New Zealand as a whole. Central Otago District has the largest European population at 92.9%, whilst Maori are most underrepresented in the Queenstown-Lakes District, at 5.4%.

Ethnicity	Otago		New Zealand	
	Population	Proportion	Population	Proportion
European	171,615	84.8%	2,969,391	70.0%
Maori	14,388	7.1%	598,602	14.1%
Pacific Peoples	3,933	1.9%	295,944	7.0%
Asian	10,038	5.0%	471,708	11.1%
MELAA	2,043	1.0%	46,953	1.1%
Other	4,164	2.1%	67,752	1.6%

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

A PROFILE OF THE OTAGO REGION
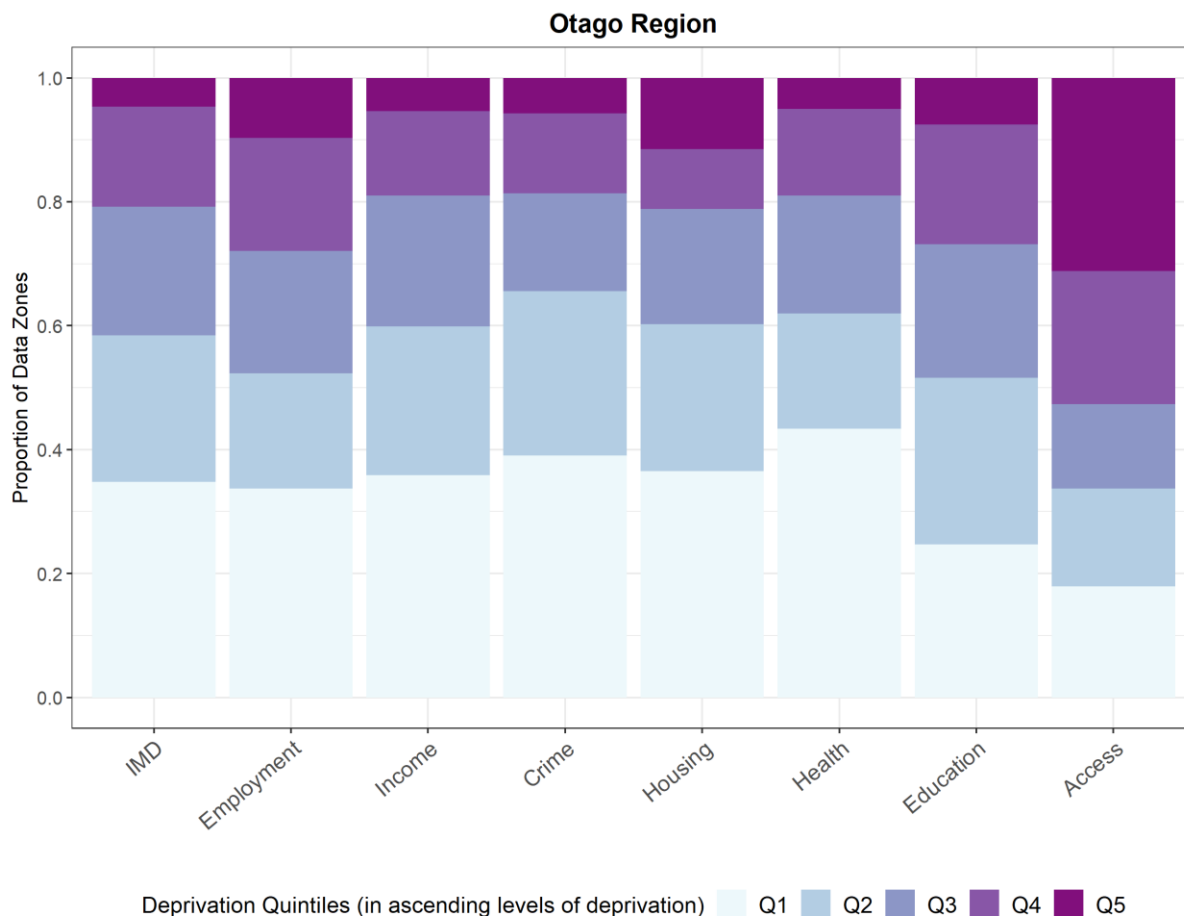
Figure 3 Stacked bar chart showing Overall deprivation and seven domains in the Otago Region.

The Otago Region is divided into five Territorial Authorities– Waitaki, Central Otago, Clutha, Dunedin City and Queenstown-Lakes Districts. Dunedin City has the largest number of data zones in the Otago Region (164/279) followed by the Queenstown-Lakes District (39/279). There are 26 data zones in Waitaki and Central Otago Districts and a further 24 data zone in Clutha.

Deprivation Profile

The stacked bar chart in Figure 3 shows the proportion of data zones in the Otago 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 Otago Region's 279 data zones in each quintile.

In terms of the Overall IMD, just 34.9% of Otago data zones are amongst the 20% least deprived in New Zealand (Q1), with more data zones in Q1 than any other quintile. In Otago, 4.6% of data zones are amongst the 20% most deprived. Compared to other regions in New Zealand, Otago has the second largest proportion of Q1 data zones, that is, the least deprived data zones as shown in below.

Regions	Q1	Q2	Q3	Q4	Q5
Otago	**34.9%**	**23.5%**	**21.0%**	**16.0%**	**4.6%**
Southland	45.8%	27.1%	10.2%	13.6%	3.4%
Canterbury	33.1%	24.2%	17.4%	17.9%	7.5%
Wellington	25.3%	21.9%	19.1%	18.8%	14.9%
Nelson Marlborough	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 Otago data zones are amongst the 20% least deprived in New Zealand in terms of the Employment, Income, Crime and Housing Domains. As seen in Table 3 below, the largest proportion of data zones are ranked within Q2 (26.7%), followed by Q1 (24.6%) in terms of the Education Domain. In terms of the Access Domain, the largest proportion on data zones in the Otago Region are ranked amongst the Q4 quintile, at 21.4%.

The Otago 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 31.7%.

Otago Region	Q1	Q2	Q3	Q4	Q5
Employment	33.8%	18.5%	19.9%	18.1%	9.6%
Income	35.9%	24.2%	21.0%	13.5%	5.3%
Crime	38.8%	26.3%	16.4%	12.8%	5.7%
Housing	36.3%	23.8%	18.9%	9.6%	11.4%
Health	50.8%	21.5%	21.9%	0.0%	5.8%
Education	24.6%	26.7%	21.7%	19.6%	7.5%
Access	17.8%	15.7%	13.5%	21.4%	31.7%

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

DEPRIVATION PROFILES OF TERRITORIAL AUTHORITIES WITHIN THE OTAGO REGION

Overall IMD

All Territorial Authorities in the Otago Region 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 region within the Q1 and Q2 (least deprived) quintiles.

The Queenstown-Lakes District has the largest proportion of Q1 data zones at 71.8% (28/39), followed by the Central Otago District at 53.9% (14/26). Dunedin City is the only district in the Otago Region to have data zones that are among 20% most deprived in New Zealand with 7.9% (13/164) of its data zones in the Q5 quintile.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	53.8%	23.1%	23.1%	0.0%	0.0%	26
Waitaki District	21.4%	28.6%	28.6%	21.4%	0.0%	28
Clutha District	33.3%	25.0%	20.8%	20.8%	0.0%	24
Dunedin City	25.6%	21.3%	24.4%	20.7%	7.9%	164
Queenstown-Lakes District	71.8%	28.2%	0.0%	0.0%	0.0%	39
	98	66	59	45	13	281
	34.9%	23.5%	21.0%	16.0%	4.6%	

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

Employment Domain

The Employment Domain shown in Table 5 below, 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 a key area of concern in the District.

Dunedin City and Clutha Districts are the only two districts in the region that have data zones among the 20% most deprived in New Zealand, accounting for 15.9%(26/164) and 4.2% (1/24) of the district's data zones, respectively. The majority of data zones in the Queenstown-Lakes District and Central Otago District are ranked within the Q1 (least deprived) quintile, at 94.9% and 69.2%, respectively. In Waitaki and Clutha Districts the largest proportion of data zones are within the Q2 and Q3 quintiles. This suggests that the Otago Region has low levels of employment deprivation.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	69.2%	15.4%	11.5%	3.8%	0.0%	26
Waitaki District	14.3%	28.6%	28.6%	28.6%	0.0%	28
Clutha District	20.8%	33.3%	25.0%	16.7%	4.2%	24
Dunedin City	18.9%	18.3%	23.8%	23.2%	15.9%	164
Queenstown-Lakes District	94.9%	5.1%	0.0%	0.0%	0.0%	39
	95	52	56	51	27	281
	33.8%	18.5%	19.9%	18.1%	9.6%	

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 Otago Region.

Dunedin City has the a largest proportion data zones among the 20% most deprived in New Zealand, with 8.5% (14/164) of data zones in the Q5 quintile. The only other district with Q5 data zones is Waitaki District, at 3.6% (1/28). The majority of data zones in the Otago Region ranked are amongst the Q1 (least deprived) and Q2 quintiles. This suggests that the Otago Region has low levels of income deprivation overall.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	38.5%	38.5%	19.2%	3.8%	0.0%	26
Waitaki District	21.4%	28.6%	21.4%	25.0%	3.6%	28
Clutha District	33.3%	29.2%	25.0%	12.5%	0.0%	24
Dunedin City	28.0%	22.0%	25.0%	16.5%	8.5%	164
Queenstown-Lakes District	79.5%	17.9%	2.6%	0.0%	0.0%	39
	101	68	59	38	15	281
	36%	24%	21%	14%	5%	

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%).

Four of the five districts in the Otago Region have data zones among the 20% most deprived in New Zealand for the Crime Domain. However, the proportions are very low with Queenstown-Lakes District having the highest proportion of Q5 data zones at 7.7% (3/39), followed by Dunedin City at 6.7% (11/164). There are no Q5 data zones for the crime domain in Central Otago District. The majority of Districts in the Otago Region have the largest proportion of their data zones within Q1 (least deprived) and Q2, suggesting that most districts in the region experience relatively low crime rates.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	46.2%	26.9%	19.2%	7.7%	0.0%	26
Waitaki District	35.7%	35.7%	14.3%	10.7%	3.6%	28
Clutha District	29.2%	37.5%	20.8%	8.3%	4.2%	24
Dunedin City	35.4%	24.4%	17.7%	15.9%	6.7%	164
Queenstown-Lakes District	56.4%	20.5%	7.7%	7.7%	7.7%	39
	109	74	46	36	16	281
	38.8%	26.3%	16.4%	12.8%	5.7%	

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

Two of the five districts in the Otago Region have data zones among the 20% most deprived in New Zealand for the housing domain. Queenstown-Lakes District has the highest proportion of Q5 data zones at 20.5% (8/39), followed by Dunedin City at 14.6% (24/164). Over 60% of data zones in the Otago Region are ranked within Q1 and Q2 quintiles. This suggests that there are low levels of housing deprivation in the Otago Region overall.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	42.3%	38.5%	19.2%	0.0%	0.0%	26
Waitaki District	42.9%	21.4%	32.1%	3.6%	0.0%	28
Clutha District	54.2%	33.3%	8.3%	4.2%	0.0%	24
Dunedin City	35.4%	18.3%	20.7%	11.0%	14.6%	164
Queenstown-Lakes District	20.5%	33.3%	7.7%	17.9%	20.5%	39
	102	67	53	27	32	281
	36.3%	23.8%	18.9%	9.6%	11.4%	

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.

Dunedin City is the only district within the Otago Region with data zones among the 20% most deprived in New Zealand for the health domain, with 8.5% (14/164) in the Q5 quintile. Over 60% of data zones in the Otago Region are ranked within Q1 and Q2 quintiles. This suggests that overall there are low levels of health deprivation in the Otago Region.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	84.6%	11.5%	3.8%	0.0%	0.0%	26
Waitaki District	81.5%	14.8%	3.7%	3.7%	0.0%	27
Clutha District	50.0%	36.4%	13.6%	9.1%	0.0%	22
Dunedin City	23.2%	17.7%	28.7%	22.0%	8.5%	164
Queenstown-Lakes District	76.9%	20.5%	2.6%	0.0%	0.0%	39
	123	52	53	0	14	281
	43.8%	18.5%	18.9%	0.0%	5.0%	

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 districts, with the exception of Queenstown-Lakes District, have 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 Waitaki District, at 14.3% (4/26). Over 50% of data zones in the Otago Region are ranked within Q1 and Q2 quintiles. The high proportion of districts with low levels of education deprivation (Q1 and Q2) suggests that there are low levels of education deprivation in the Otago Region.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	3.8%	38.5%	23.1%	26.9%	7.7%	26
Waitaki District	0.0%	14.3%	32.1%	39.3%	14.3%	28
Clutha District	12.5%	12.5%	25.0%	41.7%	8.3%	24
Dunedin City	28.7%	27.4%	19.5%	16.5%	7.9%	164
Queenstown-Lakes District	46.2%	33.3%	20.5%	0.0%	0.0%	39
	69	75	61	55	21	281
	24.6%	26.7%	21.7%	19.6%	7.5%	

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 Otago Region contains Q5 data zones for the access domain. The largest proportion of Q5 data zones was in Queenstown-Lakes District, at 74.4% (29/39). With over 50% of Otago data zones in the Q5 (most deprived) and Q4 quintiles, this suggests that access is a key area of concern in Otago Region, which is not surprising given the geography of the province.

Territorial Authority	Q1	Q2	Q3	Q4	Q5	Total Data Zones
Central Otago District	3.8%	19.2%	11.5%	11.5%	53.8%	26
Waitaki District	7.1%	17.9%	17.9%	21.4%	35.7%	28
Clutha District	4.2%	8.3%	20.8%	4.2%	62.5%	24
Dunedin City	28.0%	18.9%	14.0%	26.2%	12.8%	164
Queenstown-Lakes District	0.0%	2.6%	5.1%	17.9%	74.4%	39
	50	44	38	60	89	281
	17.8%	15.7%	13.5%	21.4%	31.7%	

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

CASE STUDY: NORTH DUNEDIN & KAIKORAI

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 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 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 7100113 and 7100075, as shown in Figure 4 below.[5]
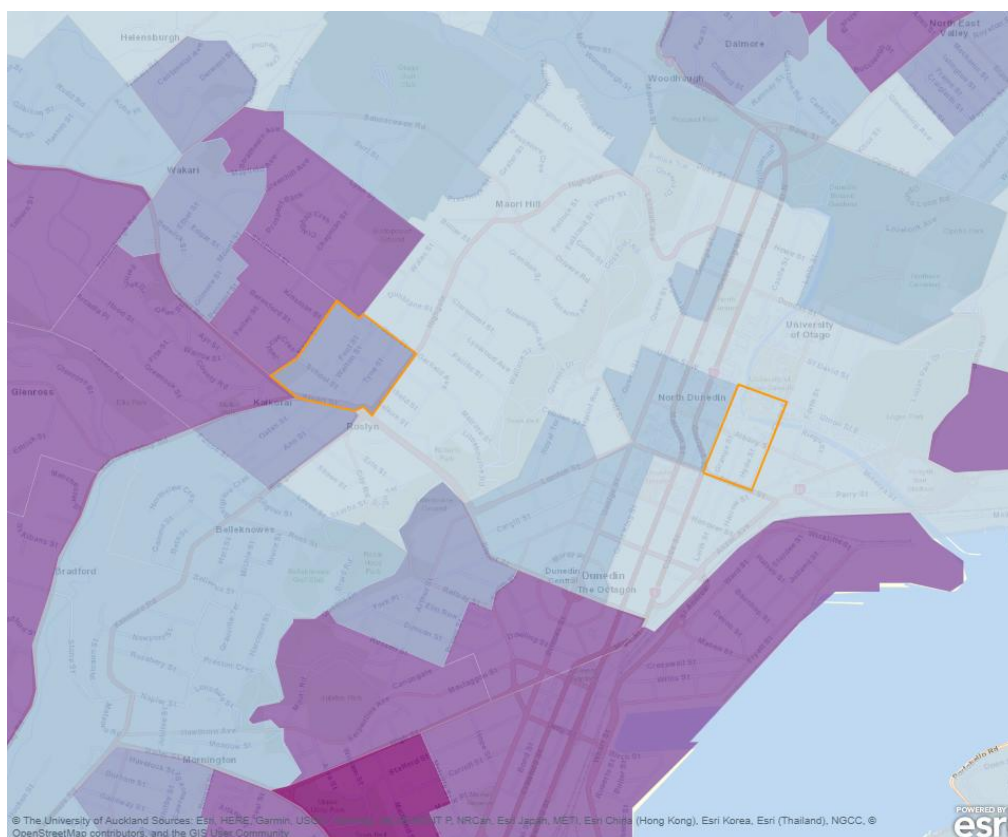
Figure 4 Map containing data the two case study data zones – outlined in orange. Image sourced from: http://www.imd.ac.nz/NZIMD_Single_animation_w_logos/atlas.html.[6]

Data zone 7100113 is bordered by Frederick Street, Clyde Street, the University of Otago Campus and Ethel Benjamin Place. This data zone has a usually resident population of 567 individuals. This data zone falls within the Q1 (least deprived) in terms of the Overall IMD. As shown in **Error! Reference source not found.**, this data zone is amongst the 20% least deprived data zones in New Zealand based on the Overall IMD, Employment, Income, Health, Education and Access Domains. However, this data zone is amongst the 20% most deprived in terms of the Housing Domain and falls within the Q4 quintile in terms of the Crime Domain.

Figure 5 Deprivation ranking for data zone 7100113 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]

Close by is data zone is data zone 7100075. This data zone is located in Kaikorai, encompassed Oban Street, Nairn Street, Stuart Street and Highgate. This data zone contains a usually resident population of 624 individuals. This data zone falls within the Q3 in terms of the Overall IMD. As seen in Figure 6, there are low levels of deprivation in terms of Crime and Access Domains. However, this data is ranked among the 20% most deprived in New Zealand in terms of Access. This data zone is ranked within the Q3 quintiles in terms of Overall IMD, Employment, Income, Housing and Education Domains, while ranking in the Q4 quintile in terms of the Health Domain.

Figure 6 Deprivation ranking for data zone 7100075 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]

Comparing **Error! Reference source not found.** and Figure 6, show contrast between these two data zones. Where North Dunedin experiences high levels of crime and housing deprivation, Kaikorai appears better off in terms of these measures. In terms of Employment, Income Health and Education it appears that Kaikorai experiences more deprivation compared to North Dunedin. Despite the graphs being juxtaposed, North Dunedin is ranked significantly lower in terms of the Overall IMD compared to Kaikorai. This is due to Kaikorai experiencing more employment and income deprivation. The Employment and Income Domains contribute the largest weighting to the Overall IMD rank. This demonstrates that small improvements in these two domains have a relatively large effect on the Overall picture of deprivation in a particular area. Understanding the different impacts of the deprivation domains has the potential to contribute informing intervention priorities.

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

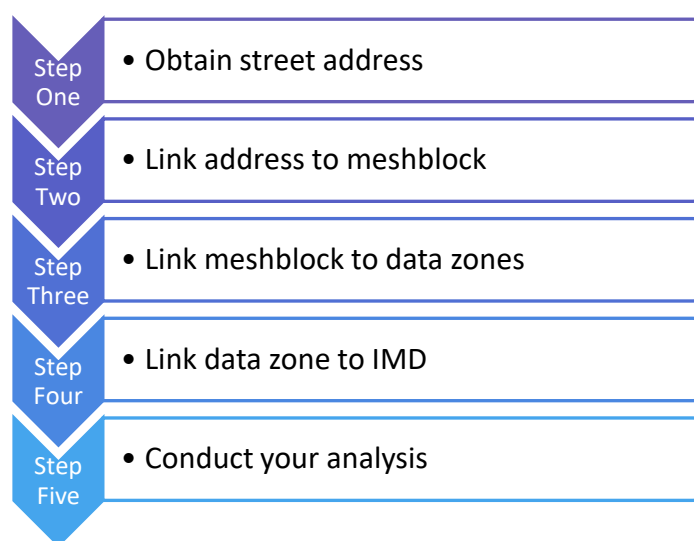| Step One | • Obtain street address |
Step Two	• Link address to meshblock
Step Three	• Link meshblock to data zones
Step Four	• Link data zone to IMD
Step Five	• Conduct your analysis

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.[7]

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.[8] 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.

REFERENCES

1. Townsend P. Deprivation*. Journal of Social Policy. 1987 Apr;16(2):125–46.

2. Exeter DJ, Zhao J, Crengle S, Lee A, Browne M. The New Zealand Indices of Multiple Deprivation (IMD): A new suite of indicators for social and health research in Aotearoa, New Zealand. PLOS ONE. 2017;12(8):e0181260.

3. Statistics New Zealand. 2013 Census QuickStats about culture and identity [Internet]. Statistics New Zealand. 2014 [cited 2018 May 1]. Available from: http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-culture-identity.aspx

4. Canada Mortgage and Housing Corporation. 2011 Census/National Household Survey Housing Conditions Series: Issue 2 The Geography of Core Housing Need in 2011. Canada: CMHC; 2014.

5. Interactive maps of deprivation in New Zealand - The University of Auckland [Internet]. [cited 2019 Feb 21]. Available from: https://www.fmhs.auckland.ac.nz/en/soph/about/our-departments/epidemiology-and-biostatistics/research/hgd/research-themes/imd/maps.html

6. NZIMD [Internet]. [cited 2017 Oct 28]. Available from: http://www.imd.ac.nz/NZIMD_Single_animation_w_logos/atlas.html

7. New Zealand Index of Multiple Deprivation (IMD) - The University of Auckland [Internet]. [cited 2019 Feb 21]. Available from: https://www.fmhs.auckland.ac.nz/en/soph/about/our-departments/epidemiology-and-biostatistics/research/hgd/research-themes/imd.html

8. Geographic Boundary Viewer [Internet]. [cited 2019 Feb 21]. Available from: http://statsnz.maps.arcgis.com/apps/webappviewer/index.html?id=6f49867abe464f86ac7526552fe19787

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.