# Analysis of New Zealand Data from the International Adult Literacy Survey Demographic Predictors of Low Literacy Proficiency

## Executive Summary

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The International Adult Literacy Survey (IALS) was undertaken in New Zealand in 1996. This survey's purpose was to review a representative sample of the NZ population with regard to their demographic characteristics and literacy skills, with the aim of providing an indication of literacy proficiency for any one country participating. The IALS used five levels of literacy proficiency where a score of two or below indicated a low literacy level, and those at 3 or above were assumed to have what was termed 'functional literacy' – the literacy skills necessary to function adequately within today's economic market (OECD, 2000).

The Department of Communication and Journalism in conjunction with the Statistics Consulting Centre, both of Massey University, were commissioned by the Ministry of Education to analyse the NZ data further. The report extends the analysis of the NZ IALS data with the primary aim of determining which demographic characteristics could predict low literacy proficiency levels (as indicated by the IALS). The 1996 Census and the 2001 Census were used in combination with the IALS to build a statistical model which in turn derived predictions of the number and proportions of those at Levels 1 and 2 literacy proficiency for 1996, 2001, and 2004. Predictions of proportions of people at these literacy levels by region (territorial land authority areas) were also made for these years.

Proportions and numbers of those of literacy levels 1, 2, and 3 or more separately, who were participating in an adult training course, were derived from the 1996 IALS and adjusted for the 1996 Census and the 2001 Census. The main pattern noted was that participation in adult training increased as literacy proficiency increased. Furthermore, it was noted that those most likely to be participating in adult training, were also most likely to be engaged in full-time work regardless of literacy level.
It was also interesting to observe that those employed within the higher occupational categories, the professional and business occupations, were also the most likely to participate in adult training. Therefore, those with the higher literacy levels, in those

occupations that encourage literacy practices, are the most likely to indulge in adult training opportunities.

Ethnicity was another demographic characteristic influencing participation in adult training programmes. Those with a level 1 literacy proficiency were similar in their participation rates across ethnicities, whereas those within level 2 showed a significantly higher participation rate of Pacific Peoples over and above the other ethnic groups. What exactly these courses are by ethnicity is an area still to be investigated.

In terms of predictive variables, the strongest predictor found by the model was educational attainment. This predictor variable was the strongest overwhelmingly for all three categories of literacy as measured by the IALS: prose, document, and quantitative.

Ethnicity was the next strongest predictor for low literacy proficiency levels after educational attainment for all three categories of literacy. It is important to note however, that in other studies, a confounding influence on the importance of ethnicity on literacy proficiency is language proficiency. Since the IALS measures literacy in English only for the NZ sample, it is possible that the effect of ethnicity in predicting subsequent literacy levels is confounded by English not being the first language of certain respondents.

Other predictor variables used in this model did not show large differences from others in their predictive power. While some were seen to be stronger than others (as was the case with the ethnicity variable), the classification trees method used implies that those variables that are close to each other in position within the tree are not necessarily different in their strength of predictive effect (thus, they may have similar effects on literacy proficiency, but the tree just chose to split one variable before it attempted the second one). However, further variables of interest within the NZ sample included four labour force factors: labour force participation, occupation type, industry type, and income level.

Labour force participation showed a strong association with literacy proficiency overall, with those in Level 1 more likely to not be working or looking for work, than to be in work. Within Level 2 literacy proficiency, there were similar proportions of the sample within each of the four categories: full-time, part-time, looking for work and no work. Those of levels 3 and above were most likely to be in work, than to be looking for or not in work.

Occupational and industry type was also associated with literacy proficiency overall. It was found that those within an 'unskilled' occupation were more likely to have level 1 literacy proficiency than any other level. Those in level 2 however, while a proportion are situated within unskilled occupations, are a lot more likely than those in level 1 to be found within professional, clerical, service, or skilled occupations. Within industry, it was found that those with a level 1 literacy proficiency were most likely to be found working within the Manufacturing and Agriculture, Hunting and Fishing industries and least likely to be found working in the Business industry (of which the exact opposite pattern was found for those with a literacy level of 3 or above). Those with level 2 literacy proficiency were found to be similar across most of the industry types; however the most common industries for this level were Agri-

culture, Manufacturing, Construction, and Trade, while the least common were Communications, Business, and the Social Industries.

As a matter of interest, the associations of health (as measured by the IALS) and literacy proficiency were explored. It was found that learning disabilities and 'other' disabilities or health impairments that had been prevalent for six months or more, were the strongest indicators of low literacy proficiency levels out of all the health factors measured. While vision and speech impairments were also found to be associated with later literacy levels, hearing impairments had no direct effect on literacy proficiency. However, hearing impairments did have an effect on educational attainment, thus the effect on literacy proficiency may be indirect.

The full report summarised here outlines the IALS and criticisms of its approach before moving on to objectives of the current project. The various methods used in the design of the statistical model are summarised, which is followed by a discussion of the results. Here, proportions analyses comparing the 1996 sample with the 1996 population through the Census data are described and the results from the analyses of the 1996 IALS NZ data presented. Each of the predictor variables determined to be important in predicting later literacy proficiency levels 1 and 2 are then discussed in-depth, with reference to international literature. Predictions of regional proportions are displayed with the help of GIS software. The report concludes with a discussion of the limitations of the statistical model, future research proposals, and a summation of the information presented.