New Zealand industry training demand forecast 2019

This factsheet presents the Ministry of Education’s 2019 forecast of the demand for industry training and describes the forecast methodology used.

Background

Since 1992, industry training has been providing workplace-based training that leads to qualifications, mainly at Levels 1–4 on the New Zealand Qualifications Framework (NZQF). Training is mostly on-job with off-job components which is arranged by registered industry training organisations. The purpose of industry training is to provide opportunities for employees to develop and update their skills to meet industries’ needs.

From 2014, the New Zealand Apprenticeships Scheme replaced the Modern Apprenticeships Scheme¹ to provide additional support for apprentices of all ages, who are in industry training programmes at Level 4, and their employers.

The cost of training is funded by both government (through the industry training fund) and industry. In 2018, the government contributed $182.4 million towards industry training. This represented 59% of funding for designated groups training² and 6.2% of all funding administered by the Tertiary Education Commission.

Introduction

The New Zealand Treasury produces two economic and fiscal updates each financial year; the half year economic and fiscal update (HYEFU), and the Budget economic and fiscal update (BEFU). BEFU is used in the government’s Budget to inform expenditure decisions over the subsequent four-year period.

The forecast of demand for industry training is information the Ministry of Education considers when developing its annual Budget advice. Demand is measured as the number of standard training measures (STMs³) consumed by learners whom are actively training, that is they gain one or more credits per year, referred to as active STMs. The aim of the forecast is to ensure that the amount of money the government has budgeted for industry training is adequate for the expected demand.

Forecast methodology

The forecast is produced using statistical predictive modelling. Predictive forecasts use the past to predict the future. They do not seek to reflect or explain the many factors that shape individuals’ choices about training. The predictive forecast methodology is used because it produces accurate results.

Historical active STM counts are regressed against historical estimates of predictor variables, and the strongest model which satisfies the assumptions underpinning the statistical regression is selected. Official future projections of these predictor variables are then used to forecast active STMs.

Two main predictor variables are currently used: the New Zealand population aged 18 to 25 (youth population), and the New Zealand total unemployment rate, lagged one year.⁴ The youth population data is produced by Statistics New Zealand while the total unemployment rate is produced by the Treasury. Including a categorical variable that represents the global financial crisis or interactions between predictor variables can result in a stronger model.

The Ministry of Education tests the predictor variables in each forecast round. A different multivariate log-linear regression model may be selected with each additional year of actual active STMs. Time itself is not used as a predictor variable as the model is not a time series model.

In January 2018, the government introduced the tertiary education and training fees-free policy for first-year eligible learners. As at BEFU 2019, there was only one year of enrolment data available under this policy. For this reason, no predictor variable representing the fees-free effect could be included in the forecast model.

Table 1 shows the actual number of active STMs in 2014–2018 and the most recent forecast (with its margin of error⁵) for Budget 2019.

The BEFU 2018 forecast can be found in the Appendix.

¹ From 2001 to 2013, the Modern Apprenticeships Scheme provided support for 15 to 21 years old apprentices in industry training programmes at Levels 3 and 4 and their employers.
² Training for these designated groups also includes:
  Youth Guarantee—provides fees-free tertiary places for eligible domestic students aged 16 to 19 studying towards NCEA at Levels 1–2 or another qualification at Levels 1–3 on the NZQF, and Gateway—gives senior school students access to structured workplace learning which is integrated with school-based learning.
³ One STM is the amount of training that required for an industry training learner to achieve 120 credits in an approved training programme.
⁴ We use the previous year’s total unemployment rate as the predictor for the number of active STMs in any one year.
⁵ The margin of error is defined as half the width of the 95% confidence interval of the forecast.
Table 1  BEFU 2019 active STMs actual (2014–2018) and forecast with the margin of error (2019–2023).

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</tr>
</thead>
<tbody>
<tr>
<td>Active STMs</td>
<td>34,840</td>
<td>37,730</td>
<td>37,750</td>
<td>37,520</td>
<td>36,450</td>
<td>36,730</td>
<td>36,860</td>
<td>36,730</td>
<td>36,360</td>
<td>36,020</td>
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<tr>
<td></td>
<td>(+1,970)</td>
<td>(+1,990)</td>
<td>(+1,970)</td>
<td>(+1,920)</td>
<td>(+1,880)</td>
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1. The numbers of actual active STMs in 2014–2018 have been revised and may differ from those previously reported.

Table 2 shows the statistical details of the regression model used in the BEFU 2019 forecast.

Table 2  Details of the BEFU 2019 regression model.

<table>
<thead>
<tr>
<th>Number of data points</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>MAPE</th>
<th>Predictor variables in the model</th>
</tr>
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<tbody>
<tr>
<td>12</td>
<td>0.808</td>
<td>0.736</td>
<td>1.1%</td>
<td>1. Log of unemployment rate (lagged by one year)</td>
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<td>2. Interaction of log of unemployment rate (lagged by one year) and log of youth population</td>
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<td>3. Interaction of log of unemployment rate (lagged by one year) and GFC indicator</td>
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1. GFC is a categorical variable representing the global financial crisis years 2008–2010.
2. R² indicates the proportion of total variation in the number of active STMs explained by the model. The higher the R² the better the model fit.
3. The adjusted R² is used to select the best model. It is the R² with an adjustment for the number of predictors in the model.
4. MAPE stands for mean absolute percentage error. It measures the size of the difference between actual and predicted historical active STMs in percentage terms. The smaller MAPE the better the model.
## APPENDIX

**Table A1** BEFU 2018 active STMs actual (2013–2017) and forecast with the margin of error (2018–2022).

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</tr>
</thead>
<tbody>
<tr>
<td>Active STMs</td>
<td>34,480</td>
<td>34,880</td>
<td>37,750</td>
<td>37,860</td>
<td>37,620</td>
<td>37,900 (+1,450)</td>
<td>38,100 (+1,450)</td>
<td>38,150 (+1,450)</td>
<td>37,920 (+1,440)</td>
<td>37,550 (+1,400)</td>
</tr>
</tbody>
</table>

Tertiary Sector Performance Analysis  
Graduate Achievement, Vocations and Careers  
Ministry of Education  

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