Bubble baths and better data

Getting a better understanding of replacement rate for workforce analyses

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Disclaimer

Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the authors, not Statistics NZ.
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Overview of study
Context for this research

• Lots of organisations do workforce analyses
  – Tertiary providers
  – Industry groups
  – Government departments

• Used to:
  – Create policy e.g. for immigration settings
  – Set investment levels in tertiary training
An ideal workforce is like a nice bath

- Enough workers
- With skills
- With experience
Flows into, and out of, the bath

Bubble bath mix poured right into the bath

Just one tap (cold water)

Bubble bath mix into the cold water at the tap

Slow, steady heating

The plug is out
Sources of demand in the workforce

**Workforce growth** (the bathtub needs to be more full)

**Skill growth** (need more bubble bath mix to get a frothier bath)

**Replacement demand** (water, heating and soap to replace that lost down the plughole)
What do we want to know?

• How long do employees stay around for in an industry?
• How likely are new employees to stick around?
• What age are employees when they enter an industry?
• How are these answers impacted by age, gender or ethnicity?
Our approach
What we are analysing

Workforce at a point in time = March 2008

This person works intermittently in the industry

This person works continuously for 10+ years in the industry

Illustrative only (not derived from IDI data)
Tenure as a measure

Illustrative only (not derived from IDI data)
Results I: Dairy farming
How long does it take someone to work for 1 year?

Time taken to complete 12 months of tenure in the dairy farming industry

- 61% Never
- 15% Exactly 1
- 13% 1-2
- 2% 2-3
- 2% 3-4
- 2% 4-5
- 2% 5+
- 5% 5+

60% of new recruits are retained for less than one year.
How much experience does the workforce have?

Tenure profile of individuals in the dairy farming industry in 2013 (% of total workforce)

A flatter profile = more experienced workforce. Steeper profile = less experienced workforce.
Segmentation of workforce

Illustrative only (not derived from IDI data)
Replacement rate

Total net replacement rate = \( \frac{A+B}{A+B+C} \)

This is the net replacement of individuals with any level of tenure so far.

Core net replacement rate = \( \frac{B}{B+C} \)

This is the net replacement of individuals that have accumulated more than one year of tenure so far.

Fabricated data for illustration purposes only – this image is not derived from IDI data
Net replacement rates in the dairy farming industry

**Size of core workforce (000s)**

- Workforce
- Leavers
- Recruits

**Core net replacement rate**

- 2010: 11.7%
- 2011: 12.0%
- 2012: 11.9%
- 2013: 13.7%

**Size of total workforce (000s)**

**Total net replacement rate**

- 2010: 28.2%
- 2011: 28.8%
- 2012: 28.6%
- 2013: 33.1%
Cohort retention

Retention of individuals entering the dairy farming industry in the period 2005-2015

This is the proportion of new individuals entering the industry that go on to accumulate a given number of years of tenure.
Age at first employment

Approximately 50% of industry entrants are over 25 when they first start dairy farming.
Month of initial employment

Number of recruits into dairy farming per month
Results II: Comparison with other industries
Comparing tenure profiles between industries

Dairy farming:
- 0-1 year: 15%
- 1-2 year: 10%
- 2-3 year: 8%
- 3-4 year: 7%
- 4-5 year: 7%
- 5-6 year: 7%
- 6-7 year: 5%
- 7-8 year: 5%
- 8-9 year: 5%
- 9-10 year: 5%
- 10+ years: 26%

Beef and sheep:
- 0-1 year: 14%
- 1-2 year: 9%
- 2-3 year: 7%
- 3-4 year: 6%
- 4-5 year: 6%
- 5-6 year: 6%
- 6-7 year: 6%
- 7-8 year: 5%
- 8-9 year: 5%
- 9-10 year: 5%
- 10+ years: 32%

Forestry:
- 0-1 year: 17%
- 1-2 year: 11%
- 2-3 year: 9%
- 3-4 year: 6%
- 4-5 year: 5%
- 5-6 year: 6%
- 6-7 year: 5%
- 7-8 year: 5%
- 8-9 year: 4%
- 9-10 year: 5%
- 10+ years: 27%

Years of experience
Comparing tenure profiles of non-primary industries

Carpentry

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<th>0-1</th>
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General practice medical services

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Conclusions
So what can we conclude from this?

• Tenure is a useful measure of movements to and from an industry.
• We need a robust measure of replacement rate.
• Retention of new recruits is low.
• A large number of new recruits are aged 25+.
• Further work is required to refine this measure.