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## Linked Employer-Employee Data: September 2008 quarter

### Highlights

This release focuses on labour market dynamics for New Zealand.

In the September 2008 year:

- The number of filled jobs increased 1.3 percent to reach 1,823,690.
- The number of jobs created was down 14.3 percent, compared with September 2007.
- Average quarterly earnings increased 5.7 percent to reach \$11,840.

In the September 2008 quarter:

- The number of filled jobs decreased 1.4 percent, a loss of 26,520 jobs.
- The 102,770 jobs created was the smallest number of jobs created since March 2003.
- The job and worker turnover rates were the lowest since the LEED series began in June 1999.

Measure	Sept 2008 quarter	Change from previous quarter (June 2008)	Change from previous year (Sept 2007)
Filled jobs	1,823,690	-1.4%	+1.3%
Average quarterly earnings	\$11,840	+3.1%	+5.7%
Job creation	102,770	-39.9%	-14.3%
Job destruction	129,290	-6.0%	+5.3%
Accessions	262,700	-26.4%	-11.0%
Separations	289,220	-10.6%	-2.9%
Job turnover rate	6.3%	-2.1	-0.4
Worker turnover rate	15.0%	-3.6	-1.5

For more information on LEED, see the Guide to Interpreting LEED Data. Additional data and breakdowns are available on [Infoshare](#) and [Table Builder](#) on the Statistics New Zealand website.

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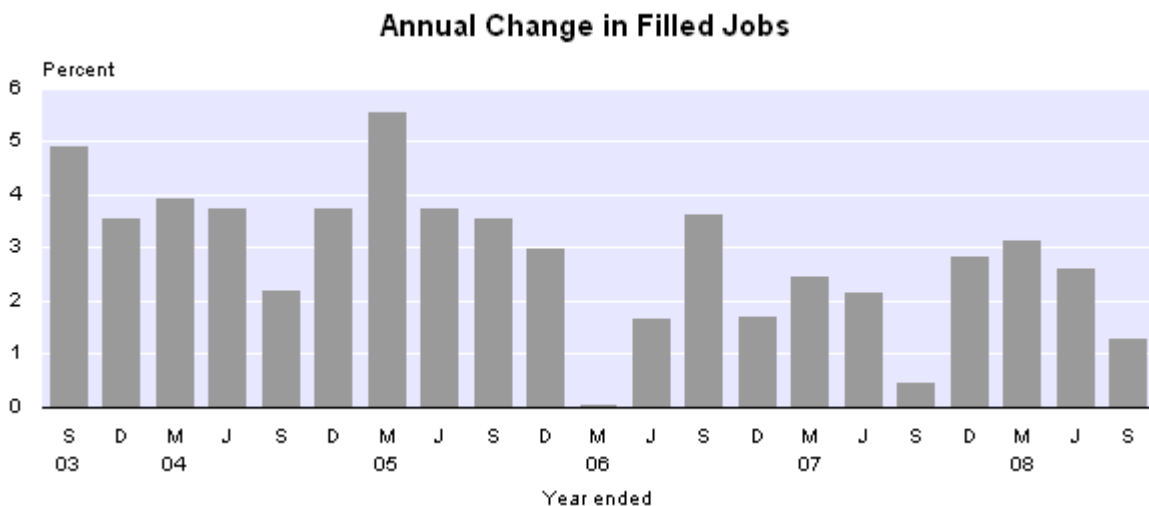
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# Commentary

## Filled jobs

The number of filled jobs increased 1.3 percent to reach 1,823,690 in the year to September 2008. While this was higher than the annual growth rate of 0.4 percent in the year to the September 2007 quarter, it was lower than the annual growth rates of the previous three quarters (December 2007, 2.8 percent; March 2008, 3.1 percent; and June 2008, 2.6 percent).

The number of filled jobs dropped 1.4 percent from the June 2008 quarter. This decline (26,520 jobs) was mainly due to the seasonal decrease in filled jobs in the administrative and support services industry, and the manufacturing industry.



## Filled jobs by industry

Growth in filled jobs over the September 2008 year was driven by the professional, scientific, and technical services; health care and social assistance; and public administration and safety industries. However, the number of filled jobs also declined across a number of industries over this period, including the manufacturing; retail trade; accommodation and food services; financial and insurance services; and the rental, hiring, and real estate service industries. The number of filled jobs in the manufacturing industry fell for the third consecutive September year, dropping a further 2,870 jobs (1.3 percent), a total of 10,870 filled jobs (4.8 percent) since the September 2005 year.

Growth in the construction industry continued to slow for the third consecutive September year – easing from a high growth rate of 12.0 percent in the year to September 2005, down to 0.7 percent in the year to September 2008. During the September 2008 quarter, the construction industry recorded the first decline in the number of filled jobs since March 2001 – dropping by 2.4 percent (3,020 jobs) from the June 2008 quarter.

## Filled jobs by sector

The majority of filled jobs (80.3 percent) were in the private sector, with 19.7 percent in the public sector. In the September 2008 quarter, the public sector grew by 5,320 jobs

(up 1.5 percent), while the private sector shrunk by 31,840 jobs (down 2.1 percent) from the previous quarter. The public sector had stronger growth in filled jobs over the September 2008 year (up 11,500 jobs, 3.3 percent), compared with the private sector (11,350 jobs, 0.8 percent).

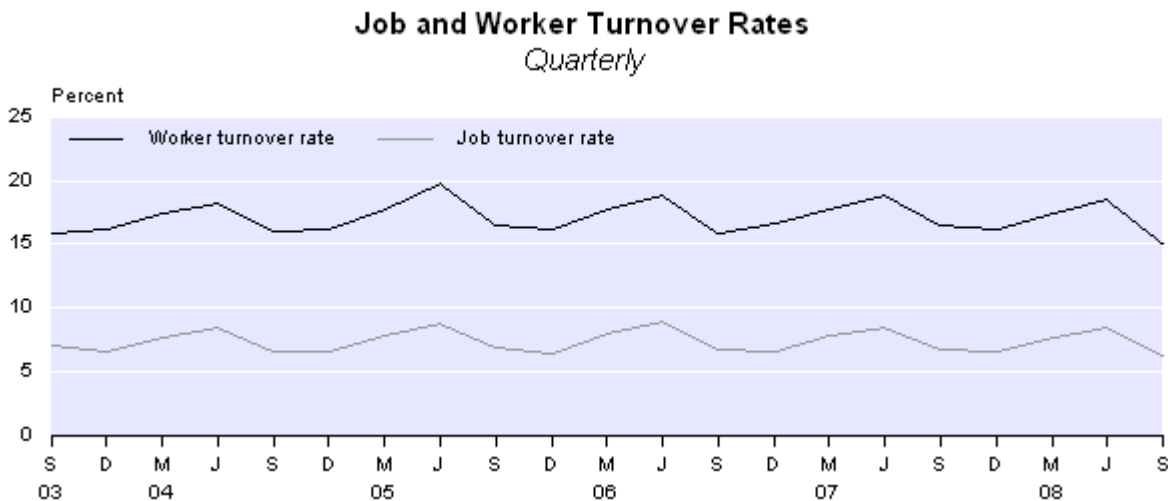
**Filled jobs by sex and age**

The total number of filled jobs held by males and females was almost evenly split at 50.3 percent and 49.7 percent, respectively. In the September 2008 quarter, the number of filled jobs decreased for both males (down 15,130 jobs, 1.6 percent) and females (down 11,400 jobs, 1.2 percent) from the June 2008 quarter. The percentage growth in filled jobs over the September 2008 year was similar for males (up 1.3 percent, 12,210 jobs) and females (up 1.2 percent, 10,650 jobs).

The decrease in filled jobs in the September 2008 quarter (26,520 jobs), was mainly due to a drop of 16,080 jobs (4.6 percent) held by those aged 15-24 years. The number of filled jobs held by people in this age group declined across all industries (except the arts and recreation services industry). In the year to September 2008, the number of filled jobs for those aged 15-24 years and 30-34 years decreased by 2.5 percent and 2.0 percent, respectively. The number of filled jobs held by those aged 45-59 increased (3.6 percent), and those aged 60 years and over had the largest percentage increase in filled jobs, up 11.1 percent, over the September 2008 year.

**Job and worker turnover**

Job turnover and worker turnover help explain net changes in employment. Their relationship and the effect of seasonality on quarterly turnover are shown in the graph below. The job turnover rate uses job creation and job destruction to provide a measure of labour market stability, and the worker turnover rate uses accessions and separations to provide a measure of stability in the workforce. A lower percentage for either of these measures indicates more stability (for more details see the Technical notes section of this release).



During the September 2008 quarter, 102,770 jobs were created and 129,290 jobs were destroyed. This was the smallest number of jobs created during a quarter since March

2003. The number of jobs created was down 14.3 percent, and job destruction was up 5.3 percent, compared with the September 2007 quarter.

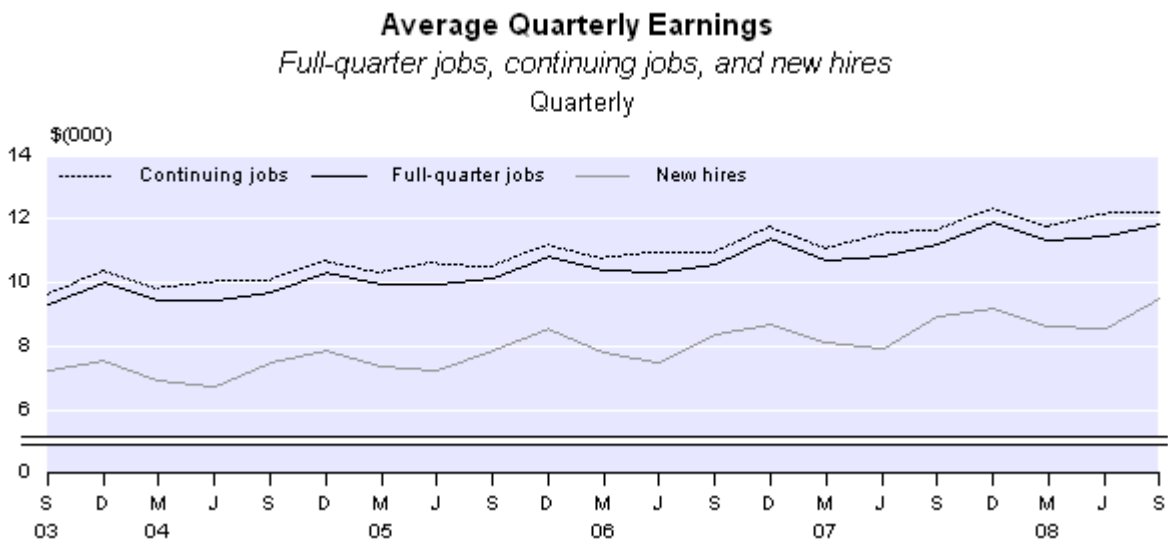
There were 262,700 worker accessions and 289,220 worker separations in the September 2008 quarter. The number of worker accessions and separations were down compared with the September 2007 quarter (11.0 percent and 2.9 percent, respectively).

The job turnover rate was 6.3 percent, and the worker turnover rate was 15.0 percent in the September 2008 quarter. These were the lowest job and worker turnover rates since the LEED series began in June 1999. Both the job and worker turn-over rates were lower than those in the previous September quarter (6.7 percent and 16.5 percent, respectively).

### Quarterly earnings

Quarterly earnings are calculated from full-quarter jobs. Movements in quarterly earnings reflect changes in pay rates, as well as compositional, seasonal, and other changes.

Average quarterly earnings increased 5.7 percent to reach \$11,840 in the September 2008 year. Quarterly earnings for continuing jobs increased 5.3 percent to \$12,240, while earnings for new hires rose 6.8 percent to \$9,530.



### Earnings by industry

The main contributors to the 5.7 percent increase in quarterly earnings were the professional, scientific, and technical services; health care and social assistance; and public administration and safety industries. These industries were influential because they are relatively large industries, in terms of the number of filled jobs, and had substantial increases in quarterly earnings.

### Earnings by sector

In the September 2008 year, the public sector had stronger growth in quarterly earnings (up 7.3 percent, to \$14,630) than the private sector (up 5.1 percent, to \$11,100). In the

September 2008 quarter, quarterly earnings increased 5.3 percent in the public sector, and 2.3 percent in the private sector.

### **Earnings by sex**

Females had a larger rise in quarterly earnings than males (up 6.8 percent and 5.0 percent, respectively) in the year to September 2008. The increase in quarterly earnings for females (up to \$9,470) was driven by the education and training, and health care and social assistance industries. The increase in quarterly earnings for males (up to \$14,170) was driven by the professional, scientific, and technical services, and public administration and safety industries. All of these industries were influential because they have a large number of filled jobs held by females or males, and had relatively large increases in quarterly earnings.

### **More information**

For more information on LEED see the [Guide to Interpreting the LEED Data](#). Additional data and breakdowns are available on [Infoshare](#) and [Table Builder](#) on the Statistics New Zealand website.

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### **Next release ...**

*Linked Employer-Employee Data: December 2008* quarter will be released on 23 February 2010.

# Technical notes

## Background to LEED

Official quarterly statistics produced from the Linked Employer-Employee Data (LEED) measure labour market dynamics at various levels – including industry, regional, territorial authority, firm size, sector, sex, and age – providing an insight into the operation of New Zealand's labour market. Statistics New Zealand releases other official labour market statistics that show changes in employment at an aggregate level. Statistics from LEED, such as job and worker flows, help to explain what causes these aggregate movements and are therefore useful for explaining changes in the labour market.

## Data sources

The LEED dataset is created by linking a longitudinal employer series from the Statistics NZ Business Frame to a longitudinal series of employer monthly schedule (EMS) payroll data from Inland Revenue.

The Inland Revenue dataset is collected for the purpose of administering New Zealand's taxation system. It consists of data from EMS and contains details of earnings, tax type, and tax deducted. It does not contain any information relating to the number of hours worked for those earnings.

The Business Frame is a regularly maintained list of all economically significant businesses and organisations (with a turnover greater than \$30,000) engaged in the production of goods and services in New Zealand. Information derived from the Business Frame includes:

- industry
- sector (private or public)
- the number of geographical units (physical locations)
- the count of employees at each geographical unit
- the ownership structure of firms.

Historically, the Business Frame was based on and updated from annual survey questionnaires. Since 2002, the coverage of the Business Frame has been extended to include more businesses, and its employment information has been maintained using monthly tax data.

The base data received from LEED is of high quality, but cleaning, transformation, and integration processes are required before robust official statistics can be produced. This is necessary because these datasets are collected for different purposes and are not primarily designed for the production of statistics. Integration processes are required to merge the two sources, as the datasets are constructed differently. One of these processes allocates jobs from an IRD number to geographical units or physical locations associated with that employer.

There is a very small amount of error present in the base data or arising from LEED processes. This is negligible at aggregate levels, but can affect statistics for small categories, for example mean earnings results for small territorial authorities (TAs), regions, or industrial categories. A direct measure of the error is not available, but some caution should be exercised in interpreting statistics based on relatively small numbers of people.

It is important to note that Statistics NZ surveys are specifically designed to collect the data required, and the information requested is targeted to the desired measures. In comparison, the LEED measures are limited by the characteristics of the base data.

## **Population**

LEED covers all individuals ('employees') who receive income from which tax is deducted at source. These payments are made by organisations that are registered with Inland Revenue. Note that the data from LEED includes social assistance payments, such as paid parental leave, student allowances, benefits, pensions, and Accident Compensation Corporation payments, although these are excluded from the quarterly measures. For confidentiality purposes, some individuals are withheld from the data provided to Statistics NZ by Inland Revenue.

In LEED, the employer is the geographical unit or physical location of the business, rather than the administrative reporting unit. For example, a nationwide retail chain may have one Inland Revenue reporting unit covering all of its retail branches. In LEED, each branch is considered to be a distinct employer. This approach has been taken to allow regional, and now TA level, statistics to be produced. It also ensures that LEED is comparable with similar international statistics.

The fundamental basis of the LEED quarterly measures is 'jobs'. A job is defined as a unique employer-employee pair present on an EMS in the reference quarter.

For inclusion in the LEED quarterly statistics, the job must:

- relate to a person 15 years of age and over
- have PAYE tax deducted at source
- be in relation to 'paid employment' rather than a social assistance payment
- have a valid IRD identifier.

An exception is the total earnings measure, which includes all jobs with PAYE tax deducted at source (irrespective of age and IRD identifier) apart from those relating to social assistance payments.

It should be noted that a small number of working proprietors, partners, or other self-employed individuals choose to pay their income tax at source and have not been separated from the 'true' jobs.

## Definitions of measures

The following table provides the definitions for each measure in the tables included in this release and also those available from the Statistics NZ website. Other necessary definitions are:

- The calendar year is divided into four quarters, each with three months. The latest quarter is the 'reference quarter'.
- The 'reference date' is the 15th of the middle month of the reference quarter.
- 'Full-quarter jobs' are jobs that exist continuously over the reference quarter.
- All the earnings measures represent quarterly earnings.
- All the earnings measures are inclusive of tax.
- All the earnings measures include payments reported as lump sums to Inland Revenue.

Annual averages for the year are discussed throughout this release. An annual average represents the average quarterly level for the year. Additionally, job and worker flow statistics have been rounded using graduated random rounding, and earnings statistics have been rounded to base 10 or base 100 for confidentiality purposes. LEED statistics are affected by seasonal variations such as production cycles, school years, and processing procedures associated with the source data.

A [Guide to Interpreting the LEED Data](#) is available from the Statistics NZ website.

Definition and relevance of filled job measures		
Measure	Definition	Relevance
Total filled jobs	The number of jobs (defined as an employer-employee match) on the 15th of the middle month of the reference quarter. Filled job figures included in the quarterly release are averages of the quarterly value over the year.	An indicator of economic activity.
Accessions	The number of employees who have joined employers since the previous reference date.	What industries or regions are gaining or losing the most workers? Are there differences by sex/age?
Separations	The number of employees who have left employers since the previous reference date.	
Worker turnover rate	The ratio of the average of the total accessions and separations to the average of the total jobs in the reference quarter (t) and the previous quarter (t-1), as represented in the formula: $\frac{(\text{accessions} + \text{separations})/2}{(\text{jobs}(t) + \text{jobs}(t-1))/2}$	A measure of workforce stability. This reflects change at a worker level. What types of workers (age, sex) have higher or lower turnover rates?

Job creation	The number of jobs created, since the previous reference date, when businesses expand or start up. For example, a business employing 100 workers with 10 accessions and five separations has job creation of five.	What industries, sector or regions are creating or destroying jobs? To what extent do job creation or destruction rates vary by firm size or other firm characteristics?
Job destruction	The number of jobs lost, since the previous reference date, when businesses contract or shut down. For example, a business employing 100 workers with five accessions and 15 separations has job destruction of 10.	
Job turnover rate	The ratio of the average of the total creations and destructions to the average of the total jobs in the reference quarter (t) and the previous quarter (t-1), as represented in the formula: $\frac{(\text{creation} + \text{destruction})/2}{(\text{jobs}(t) + \text{jobs}(t-1))/2}$	A measure of labour market stability. This reflects change at a business level. Which industries have higher or lower turnover rates?
Mean/median earnings	Mean or median earnings of all full-quarter jobs.	What industries or regions have the highest or lowest mean or median earnings?
Mean/median earnings for continuing jobs	Mean or median earnings for jobs that were full-quarter in the reference quarter and previous quarters.	How do earnings for new employees compare with those for existing employees? What are the earnings outcomes for these different groups?
Mean/median earnings for new hires	Mean or median earnings for jobs that were full-quarter in the reference quarter and began sometime in the previous quarter, but were not present in the four previous quarters.	
Mean/median earnings ratio	The ratio of the mean or median earnings for new hires to the mean or median earnings for continuing jobs.	
Total earnings	The sum of all earnings paid in the reference quarter, including employees with invalid IRD identifiers and individuals under 15 years of age.	An indicator of economic activity.

**Note:** Job creation and destruction are job flow measures, while accessions and separations are worker flow measures.

### **Accessions, separations, and worker turnover rate**

The worker turnover rate is calculated using the counts of accessions and separations, which are defined using the reference date concept. Other workers may join and leave during the reference quarter but not be present at either reference date. These workers are not included in the counts of accessions or separations and are therefore excluded from the worker turnover rate.

The worker turnover rate is calculated at the geographic unit level, not the enterprise level. This means that employees who transfer between geographic units within an enterprise will be counted as accessions and separations.

### **Annual job creation and destruction**

Annual job creation and destruction figures are currently not part of the official set of LEED quarterly statistics. The quarterly job creation and destruction statistics have been designed to explain the change in aggregate jobs between two specific points in time – the 15th of the middle month of the reference quarter and the 15th of the middle month of the previous quarter. They compare the number of jobs at each geographic unit on these two dates. Changes in the number of jobs between these two dates are not included in the statistics.

Some users may attempt to produce annual job creation and destruction figures by summing together four quarters of data. This approach is not recommended. Instead Statistics NZ recommends averaging the quarterly job creation and destruction statistics over the year (which is the approach taken in LEED quarterly publications). Estimates of annual job creation and destruction are available on request. These statistics are produced on the same basis as the quarterly series, by comparing employers' job levels between two snapshots a year apart. This method produces significantly less job creation or destruction than adding together four quarters worth of data. Summing quarterly job creation and destruction figures can be seen as overstating permanent job creation and destruction by including seasonal and temporary variations in employment. A similar argument can be made against summing four quarters of worker accessions and separations to produce annual worker flow statistics. However, conceptually it is more appropriate to include seasonal or temporary factors when measuring these worker flows.

### **Net job change**

The difference between the counts of job creation and job destruction (job flows) is equal to the total change in jobs at the aggregate level – the net job change. Job flows reveal the amount of job turnover at the business level underlying the net job change. Similarly, the difference between the counts of accessions and separations (worker flows) is also equal to the net job change. Worker flows reveal the turnover of individual employees underlying the net job change.

These relationships do not necessarily hold for subnational breakdowns. Businesses and individuals may change characteristics, such as industry or age group, over time. This causes a change in the total jobs for that characteristic, but does not affect the job or worker flows.

### **Continuing jobs and new hires**

An employee has a continuing job if they have been with the same employer

continuously over the current and previous quarter. A new hire is an employee who has been with the same employer continuously for the current quarter but began the job sometime in the previous quarter. New hires must not have been employed with the same employer in the 12 months prior to the job start date. As a result, seasonal staff and employees who have been rehired within this time period are excluded from new hires.

### **Patterns in the data**

The counts of job creation and destruction, and worker accessions and separations, show an obvious seasonal pattern. This pattern is caused by the annual update of employee counts on the Business Frame, resulting in larger counts of destruction and creation in one quarter than in the other three.

This seasonal pattern changes from the March 2003 quarter. This change is caused by the implementation of a programme to improve the Business Frame maintenance practices and a consequent change in LEED methodology. Methods are being investigated to minimise the changes caused by administrative updating processes.

### **Compositional changes**

Movements in mean earnings statistics are influenced not only by changes in employees' remuneration, such as changes in wage rates, salaries, and hours worked, but also by changes in the composition of the paid workforce from period to period. Compositional changes include variations in relative numbers of males and females, full- and part-time employment, and employment in different industries or within industries.

### **Dimensions available**

Dimensions available on [Table Builder](#) on the Statistics NZ website (on an ongoing basis) are:

- quarter
- industry of employer
- region of employer
- sex of employee
- age of employee
- firm size
- sector of employer – private or public institutional sector of ownership
- territorial authority (TA) of employer.

These dimensions, with the exception of TA, are also available on [Infoshare](#) on the Statistics NZ website.

The industry statistics are based on ANZSIC 2006 (or ANZSIC06), the latest edition of the Australian and New Zealand Standard Industrial Classification. The 1996 version of ANZSIC (ANZSIC96), used in industry outputs in previous releases, has been updated to the 2006 edition. Note that industry outputs defined using ANZSIC06 are not comparable with those based on ANZSIC96. For more information about [ANZSIC06](#) go to the Statistics NZ website.

The regional statistics refer to the regional council area of the employer, meaning that all statistics are based on the employer's address and not the employee's. Regional statistics are compiled from 16 regions:

- Northland
- Auckland
- Waikato
- Bay of Plenty
- Gisborne
- Hawke's Bay
- Taranaki
- Manawatu-Wanganui
- Wellington
- Tasman
- Nelson
- Marlborough
- West Coast
- Canterbury
- Otago
- Southland.

For confidentiality purposes, this release combines data for the Tasman, Nelson, Marlborough, and West Coast regions.

The firm size dimension refers to the size of the business at an enterprise level, not at the geographic unit level. Firm size is based on the employee count on the 15th of the middle month in the quarter of interest.

The TA statistics are compiled from 72 TAs, which cover 16 city councils and 56 district councils. Data from the Chatham Islands territory have been included in estimates for Christchurch city to reduce the impact of errors for a small population. For confidentiality reasons, data from TAs that overlap regional boundaries have been modified by adding the sensitive portion of the overlapping TA to a neighbouring TA in the same region.

There are six modified TAs:

- Waitomo district
- Taupo district
- Whakatane district
- Hastings district
- Ruapehu district
- Rangitikei district.

The allocation of jobs to a particular TA is carried out on the basis of the employer's address on the Business Frame. Therefore, all TA level statistics are based on the employer's address and not the employee's.

The job creation, job destruction, and total earnings measures cannot be generated for age or sex dimensions. This is because job flows are calculated at the geographic unit

level, and the total earnings measure includes those with invalid IRD identifiers that have no age or sex classification.

The figures in the tables have been rounded, and discrepancies may occur between sums of components and totals. Some businesses are not able to be assigned to an industry. This contributes to the difference between the New Zealand totals and the sum of the industry totals for the earnings, jobs, and job and worker flow measures. All businesses are associated with a region and TA, and therefore the difference between the New Zealand totals and the sum of the region or TA totals for these measures is small.

## **Frequency of outputs**

LEED job measures are generated as a quarterly series, although tax data is received monthly. This is done to reduce volatility caused by the variable number of pays per month and to ensure comparability with other statistics.

## **Timing of the measures**

LEED measures are produced as counts of jobs at a point in time, or means and medians of earnings for jobs existing for a full quarter.

Counts of jobs or workers are taken on the 15th of the middle month of the quarter.

Measures relating to means and median earnings are produced using the full-quarter concept. A disadvantage of the point-in-time approach is that the earnings for a job relate to the entire month regardless of the actual days worked. Therefore, mean or median earnings statistics per job produced under this concept would include people who worked one day (or even one hour) in the month with people who worked all month.

The total earnings measure does not use either the point-in-time or the full-quarter concept, and is instead a simple sum of all earnings paid out at any time in the reference quarter.

## **Timeframe for production**

The timeliness of LEED is dependent on a number of factors:

- Employers take time to complete their EMS schedules and supply them to Inland Revenue.
- Inland Revenue requires time for processing and supply to Statistics NZ.
- Statistics NZ requires further time for receipt, data transformation, and the production of output data.
- The derivation of full-quarter outputs requires data for an additional quarter after the reference quarter.

In addition, late returns and updates are received in LEED well after the end of the reference period. These can distort the measures produced, particularly the estimates of change.

LEED statistics are therefore published 12 months after the reference quarter. A delay of this length ensures that the published value is sufficiently close to the real world value. The statistics are then revised with updates from Inland Revenue for an additional two quarters. Updates after this stage have an immaterial impact on the statistics, therefore 18 months after the reference quarter the data is considered final, and subsequent updates from Inland Revenue are ignored.

## **More information**

For more information on LEED, see the [Guide to Interpreting the LEED Data](#). Additional data and breakdowns are available on [Infoshare](#) and [Table Builder](#) on the Statistics New Zealand website.

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## **Timing**

Timed statistical releases are delivered using postal and electronic services provided by third parties. Delivery of these releases may be delayed by circumstances outside the control of Statistics NZ. Statistics NZ accepts no responsibility for any such delays.

## Tables

The following tables are printed with this Hot Off The Press and can also be downloaded from the Statistics New Zealand website in Excel format. If you do not have access to Excel, you may use the [Excel file viewer](#) to view, print, and export the contents of the file.

1. Filled jobs and mean quarterly earnings, by industry, region, sector, sex, and age
2. Filled jobs, and job and worker turnover, by industry, region, sector, sex, and age
3. Filled jobs, by industry, region, sector, sex, and age
4. Filled jobs, and job and worker turnover, by quarter
5. Mean quarterly earnings, by quarter