



Land Use Rural Panel of New Zealand - Revised

Motu Economic and Public Policy Research

Data Documentation

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Date accessed/created: October 2011

Motu Ref ID: U10026

Suggested Citation: Motu Economic and Public Policy Research. 2012. "Land Use Rural Panel of New Zealand – Revised," dataset derived by Motu in October 2011. Unrestricted dataset, information available online at www.motu.org.nz/building-capacity/dataset/land_use_rural_panel_of_new_zealand_-_revised (To include in citation: Data source, publishing/access date. "Data name," obtained by Motu research in date. Restricted dataset, information available online at www.motu.org.nz.)

Raw or derived data: Derived dataset

Restrictions: Unrestricted

Can Motu put this data on our website? Yes

Can Motu put this dataset documentation on our website? Yes

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Data Documentation

Please note that this is informal documentation intended to help users.
It is not a polished document. Additions/corrections are welcomed at info@motu.org.nz.

1. Main Motu contact for this data:

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2. Other contacts for this data:

Original dataset by Yun Liang and Joanna Hendy

3. Data keywords:

Land use, dairy, sheep & beef, area territorial authority, TA

4. Dataset abstract:

Constructed from the Rural Economies database (DDL10025), the Land Use Rural Panel (LURP) database separates pasture land into dairy and sheep & beef land according to stock numbers. The original dataset determined stocking rates using an optimization procedure by Liang and Hendy. This revised dataset uses Livestock Improvement Corporation (LIC) stocking rates.

5. Motu Working Papers using this data set.

Example: Grimes, Arthur; Cleo Ren and Philip Stevens. 2009. "The Need for Speed: Impacts of Internet Connectivity on Firm Productivity," Motu Working Paper 09-15.

6. Variables:

TA, year (1981-1996, 2002-2004), area in urban, horticulture, plantation forestry, dairy, sheep & beef (meat), doc, and scrub land. Total area.

7. Additional notes.

LIC stocking rates have been drawn from the LIC reports. These only give dairy stocking rates from 1998 to 2008. We use the logarithmic model specified by Anastasiadis and Kerr (2011) to extrapolate this trend.

Anastasiadis, Simon and Suzi Kerr. 2011. Final report: National Water Quality. Project with NIWA for The Parliamentary Commissioner for the Environment. Motu Economic and Public Policy Research.

Extracted from: "Producing a Map of 1996 Land Use.docx (Data for making 1996 map)

1.3. Rural Land Use Type Panel Dataset (LURP)

This dataset was constructed as part of a previous Motu project during the development of LURNZ. The dataset was initially named: "RuralLUType4Sept07.xls", and was found in the folder: "D:\Environment\LURNZ\Data\Projects\Land use dataset\Version 2\Final datasets".

Motu collected Statistics New Zealand (SNZ) data on land-use by TA for the entire country. This data includes all years between 1990 and 2004 for which an agricultural survey was conducted (an agricultural survey was not conducted in 1997 – 2001 inclusive).

The SNZ data recorded land used for pasture, forestry and scrub lands by Territorial Authority (TA). It also gave stock numbers by TA. Work at Motu was done by Kelly Locke, Joanna Hendy, Jason Funk and Yun Liang to clean the data and to separate pasture land into dairy and sheep & beef. This was done according to stocking rates as detailed in Lock et al. (2008), an extract from which is given in the appendix.

1.3.1. Data documentation

During the development of this dataset it was necessary for the authors to merge some TAs together. This process is documented in Liang and Hendy (2006). Which can be found at "D:\g\Research\Data_Library\Motu_Data\Free_Data\Rural_Economie_Database\Area by land use (calibrated to LCDB1, TA)", titled "Generating TA Level Land Use Data_v2.doc".

The document by Lock et al. (2008) can be found at "D:\Environment\LURNZ\Data\Projects\Land use dataset\Version 2", titled "Towards Predicting Rural Land Use In NZ_Yun.doc"

1.3.2. Earlier data versions

The following datasets are part of the research process to producing RLUT. "All - 0305 SNZ (ES) - Livestock and Land use TLA 1980-2003.xls" located in "D:\g\Research\Data_Library\Motu_Data\Free_Data\Enviromental_Raw_Data\Area by land use and animal numbers (TLA, County)" is believed to contain the raw SNZ data before any processing took place.

"LURNZv2_LandUse_TA8104.xls" located in "D:\g\Research\Data_Library\Motu_Data\Free_Data\Rural_Economie_Database\Area by land use (calibrated to LCDB1, TA)" is believed to be part way through the process of separating pasture land. Yun Liang believes this file was produced by Joanna Hendy.

Regression Model Coefficients

Regression coefficients by TA are given in the following table.

The model is: $\text{Stocking rate} = a \log(\text{year} - b)$

Where a is a scaling constant and b is the base year.

If we observe $b = 500$, this means that the linear trend in the data is downwards sloping and hence the logarithmic model is a poor choice as it requires non-negative slopes (by nature of its specification).

In these cases we assume stocking rates are constant at the mean stocking rate between 1999 and 2008. Stocking rates in 1998 are excluded from the regression. See Anastasiadis and Kerr (2011) for a justification of this methodology.

Due to our confidence combining data from two different data sources we do not update the dairy and sheep & beef land area estimates for Auckland City, Hutt District, Queenstown-Lakes District and Waitakere City.

Due to our confidence extrapolation the trend in LIC data back beyond 1999 we limit the separation of pasture to dairy land and sheep & beef land to 1994-1996 (from extrapolation) and 2002-2004 (actual observed data).

TA	A coef.	B coef.
Ashburton	1.0435	1981.9
Banks Peninsula	0.5598	1973.2
Buller	0.6277	1962.6
Carterton	0.3688	500
Central Hawkes Bay	0.7796	1966.4
Christchurch City	1.0839	1985.2
Clutha	0.5785	1890
Dunedin City	0.5956	1924.9
Far North	0.4742	1918.9
Franklin	0.6058	1945.3
Gisborne	0.3714	500
Gore	0.3724	500
Grey	0.7852	1987.5
Hamilton City	1.0254	1986.1
Hauraki	0.709	1956.8
Horowhenua	0.6399	1936.2
Hurunui	0.8776	1974.3
Invercargill	0.7246	1968.3
Kaikoura	0.7723	1971.1
Kaipara	0.5434	1949
Kapiti Coast	0.3453	500
Kawerau/Whakatane	0.723	1955.6
Manawatu	0.6665	1945.9
Manukau City	0.7487	1968.6
Marlborough	0.7886	1974.3
Masterton	0.8214	1970.7
Matamata-Piako	0.9036	1972.6

Napier/Hastings	0.8149	1978
Nelson City	0.7208	1963
New Plymouth	0.6677	1950.5
New Zealand	0.752	1964.9
North Island	0.7396	1962.2
Opotiki	0.6556	1937.7
Otorohanga	0.7881	1964.3
Palmerston North City	0.3756	500
Papakura	0.3341	500
Rangitikei	0.8016	1970.9
Rodney	0.6358	1969.6
Rotorua	0.7406	1965.4
Ruapehu	0.7005	1970.3
Selwyn	1.0612	1985.7
South Island	0.8173	1975.7
South Taranaki	0.7053	1938.9
South Waikato	0.8425	1971.7
South Wairarapa	0.7367	1962.6
Southland	0.6861	1954.5
Stratford	0.4444	1636
Tararua	0.6024	1914.3
Tasman	0.7922	1974.2
Taupo	0.8651	1982.8
Tauranga	0.7705	1967.8
Thames-Coromandel	0.6616	1955.2
Timaru/MacKenzie	0.9291	1974.9
Upper Hutt City	0.2786	500
Waikato	0.8617	1976.9
Waimakariri	0.9928	1987.2
Waimate	1.0218	1984.2
Waipa	0.9244	1977.5
Wairoa	0.3601	500
Waitaki/Central Otago	0.8803	1974.4
Waitomo	0.7717	1972.8
Wanganui	0.7638	1972.8
Western Bay of Plenty	0.846	1971.9
Westland	0.6653	1984
Whangarei	0.6809	1976