

MULTIPLIERS FROM REGIONAL NON-SURVEY
INPUT-OUTPUT TABLES FOR NEW ZEALAND

by

L.J. Hubbard

&

W.A.N. Brown

AGRICULTURAL ECONOMICS RESEARCH UNIT
LINCOLN COLLEGE

I.S.S.N. 0069-3790

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Lincoln College, Canterbury, NZ.

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CHAPTER 1

INTRODUCTION

The aims of this study are to estimate, using a non-survey technique, input-output tables for the thirteen Statistical Areas of New Zealand (ref. Figures 1 & 2) and then to use these tables to derive output, income and employment multipliers for the individual regions.

The non-survey tables are estimated using regional output and employment data to make adjustments to a national input-output table, and from these regional tables, multipliers are derived in the conventional way. The methodology is detailed in Chapter 2. Readers who are familiar with non-survey I-O techniques and multiplier analysis can proceed directly to Chapter 3 which deals with the application of the theory to New Zealand data. The Department of Statistics' national 130 sector table for 1971-72 is used as the basis from which the regional tables are derived. Of particular relevance is the disaggregation of the Agricultural and Livestock Production Industry (represented as a single sector in the 130 sector national I-O table) into three sub-sectors. This step was considered necessary to attain a more accurate representation of the agricultural industry at the regional level.

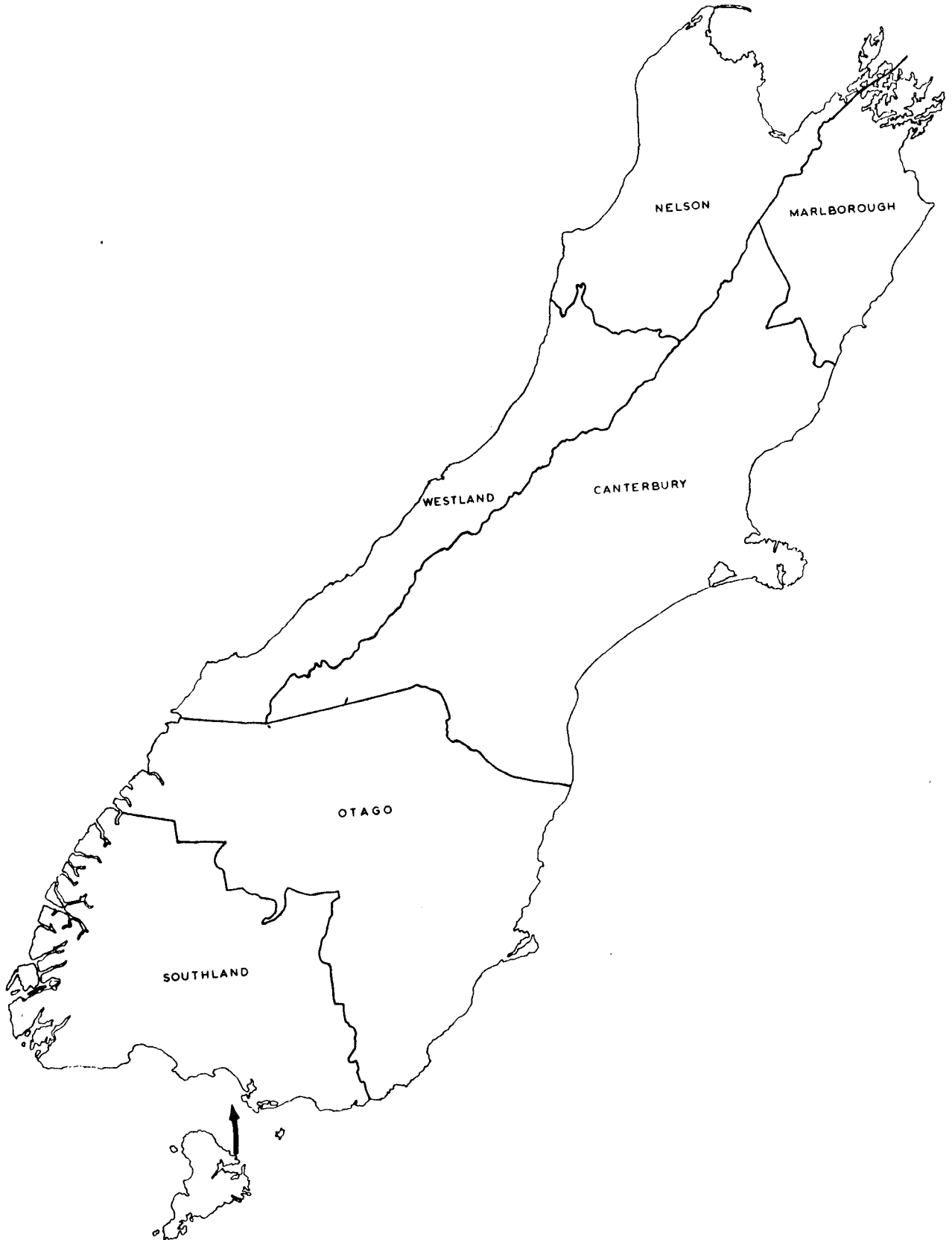
In Chapter 4, output, income and employment multipliers for the thirteen regions are presented. Prior to deriving the multipliers, each of the tables was condensed, through the aggregation of sectors, to form a 25 sector table correspondingly closer in classification to the Department of Statistics' national 25 sector table (N.Z. Department of Statistics, 1978; 1980). The second part of Chapter 4 is devoted to the evaluation and interpretation of the multiplier estimates. The summary and conclusions are presented in Chapter 5.

FIGURE 1
North Island Statistical Areas



FIGURE 2

South Island Statistical Areas



CHAPTER 2

METHODOLOGY

The most comprehensive approach to sectoral economic analysis involves the use of an input-output (I-O) model, which allows for the study of individual sectors within the economy and their inter-relationships as reflected in the sectoral multipliers. A major problem with this approach, however, is the vast amount of data required to derive the original I-O model. This means that for most regional studies, cost precludes the building of an I-O model from primary survey-based data. In an attempt to overcome this, some researchers have sought to achieve approximate I-O tables for regions by making adjustments to a national table based on readily available secondary data (usually regional employment). These 'non-survey' approaches to I-O modelling have, in recent years, attracted growing interest. As a compromise measure in obtaining regional I-O tables they are far less costly than survey based studies. An example of the way in which one of these non-survey techniques can be applied at the regional level will be explained later in this chapter after a more general treatise of I-O modelling.

2.1 The Input-Output Model

In an attempt to establish the interactions between all sectors of an economy it is necessary to think in terms of an equilibrium model, where the effects on an exogenous change in any one sector can be traced through the entire economy. Input-output modelling is a method of representing these interactions and is generally associated with the name of Leontief who was the first to represent empirically the concept of economic interdependence, in an I-O model of the American economy (Leontief, 1951). Since then, I-O analysis has become an accepted method by which to study the inter-dependencies that exist within an economy, though usually at the national level.

Inter-industry relationships within an economy are represented in the I-O model by the Transactions Matrix. This is constructed by first assigning a row and a column to each industry.¹ All inter-

¹ Dividing an economy into industries, or more correctly, industrial sectors, involves, even in large I-O models, a considerable degree of aggregation. Consequently, each 'industry' comprises several to many industries.

industry transactions are then inserted in their respective cells. Since one industry's output is frequently another industry's input, the interdependence of industries is built into the matrix on this 'from-to' or 'sales-purchases' basis.

That part of an industry's output not used by another industry as an input (e.g. exports, household consumption) passes into Final Demand. Similarly, those inputs that are not the output of another industry (e.g. imports, labour) are treated as Primary Inputs. The Transactions Matrix and Final Demand and Primary Inputs quadrants are represented in Figure 3. The fourth and remaining quadrant in the I-O table accounts for direct transactions between Primary Inputs and Final Demand (e.g. imports direct to the household sector).

The completed I-O table shows the source of each industry's inputs (reading down the columns) and the destination of each industry's output (reading across the rows). Row and column totals for each industry will be equal since total inputs must sum to total outputs.

D_i = output of sector i passing into Final Demand

or

$$X_i = \sum_{j=1}^n X_{ij} + D_i \quad i = 1, 2, \dots, n \quad (2)$$

X_{ij} as an input into sector j can be expressed as a proportion of that sector's total inputs,

$$X_{ij} = a_{ij} X_j$$

or

$$a_{ij} = \frac{X_{ij}}{X_j}$$

Equation (2) can then be rewritten as,

$$X_i = \sum_{j=1}^n a_{ij} X_j + D_i \quad i = 1, 2, \dots, n \quad (3)$$

In matrix notation, for all n sectors,

$$X = AX + D \quad (4)$$

$$\text{where } X = \begin{bmatrix} X_1 \\ X_2 \\ \cdot \\ \cdot \\ X_n \end{bmatrix}; \quad A = \begin{bmatrix} a_{11} \dots a_{1n} \\ \cdot \\ \cdot \\ \cdot \\ a_{n1} \dots a_{nn} \end{bmatrix}; \quad D = \begin{bmatrix} D_1 \\ D_2 \\ \cdot \\ \cdot \\ D_n \end{bmatrix}$$

The A matrix is the Transactions Matrix expressed in the form of coefficients and its a_{ij} elements are the 'technical' or input-output coefficients. These coefficients are treated as constants and thus the inputs used by an industry are assumed to vary in direct proportion to that industry's output. This precludes

economies of scale and input substitution.²

Rearranging (4) we have,

$$X - AX = D$$

$$(I - A) X = D$$

$$X = (I-A)^{-1}D$$

where $(I-A)$ is termed the Leontief matrix.

Thus, changes in the output of all sectors resulting from a change in Final Demand can be estimated using the inverse of the Leontief matrix. In the present context, I-O analysis is of particular interest in that multipliers can be easily derived for each sector using this inverse matrix.

2.2 Input-Output Multipliers

The elements, r_{ij} , of the $(I-A)^{-1}$ matrix show the direct and indirect output required from industries in response to a unit increase in Final Demand. A Simple Output Multiplier (direct and indirect output) can be

² The three main assumptions that underlie I-O analysis are (i) homogeneity, (ii) proportionality and (iii) additivity (Chenery and Clark, 1962; 33). These assumptions imply that each industry, or industry group, has an homogeneous product, or set of products, which is the output of that industry alone. To produce this output the industry uses inputs in fixed proportions and is assumed to exhibit a linear production function. This precludes substitution between inputs and implies constant returns to scale. Because the total effect of carrying on different types of production in the economy is assumed to be the same as the sum of the separate effects, external economies of scale are also precluded.

obtained for each sector by summing the columns of the inverted Leontief matrix.

$$\text{Simple Output Multiplier for sector } j = \sum_i r_{ij}$$

where r_{ij} = the direct and indirect requirement needed from sector i for a unit increase in the Final Demand of sector j .

The direct effect on income from an increase in the output of a sector can be estimated as the payments to households³, as shown in the Primary Inputs quadrant, expressed as a proportion of sector output, i.e. shown as a coefficient.

$$w_j = H_j / X_j$$

where w_j = payments to households per \$1 of output in sector j

H_j = payments to households in sector j .

The direct and indirect income resulting from an increase in the Final Demand of a sector can be estimated as,

$$Y_j = \sum_i r_{ij} W_i$$

³ Normally includes salaries and wages, all taxable allowances and employer contributions to employee benefit funds, but excludes income of working proprietors - refer Appendix 4, note 1.

where

Y_j = direct and indirect income generated from
a \$1 increase in the Final Demand of sector j .

w_j = the appropriate element in the column vector
of payments to households per \$1 of sector
output.

As such, y_j is the direct and indirect income multiplier
for the sector given an increase in sales to Final Demand.
Dividing this by the direct income effect, w_j , enables
the estimation of the Type 1 Income Multiplier, which
shows the direct and indirect income generated from a
unit increase in direct income.

$$\text{Type 1 Income Multiplier for sector } j = \frac{Y_j}{w_j}$$

The Simple Output Multiplier and the Type 1
Income Multiplier embody only the indirect effect
generated by a change in direct output or income. To
derive multipliers that include the induced effect,
initiated by consumer spending, the household row and
column, formerly in the Primary Inputs and Final Demand
quadrants respectively, must first be moved into the
Transaction Matrix. This, effectively, treats
households as an industrial sector. As such, payments
to households (as shown in the households row) and
consumer purchases (as shown in the households column)
become linear functions of sector output and household

income respectively. This means that the household income generated as a result of the direct and indirect effects induces further increases in output and income through consumer spending. Direct, indirect and induced effects can be derived from the inverse of the $(I-A^*)$ matrix, where A^* is the A matrix enlarged to $n + 1$ sectors to include households.

Summing the columns of the $(I-A^*)^{-1}$ matrix over the n non-household sectors gives an estimate of the Total Output Multiplier (direct, indirect and induced output).

$$\text{Total Output Multiplier for sector } j = \sum_{i=1}^n r_{ij}^*$$

where r_{ij}^* = the elements of the $(I-A^*)^{-1}$ matrix.

The elements in the households row of the inverted matrix represent the direct, indirect and induced income accruing to households as a result of a \$1 increase in the respective sector's output.

$$Y_j = r_{hj}^*$$

where

Y_j = the direct, indirect and induced income generated from a \$1 increase in the Final Demand of sector j .

r_{hj}^* = the appropriate element in the households row of the $(I-A^*)^{-1}$ matrix.

These households row elements also represent the direct, indirect and induced income multipliers, given a unit change in sales to Final Demand. The direct, indirect and induced income can also be expressed in terms of a Type 2 multiplier where, as with the Type 1 multiplier, the increase in income is divided by the direct income effect.

$$\text{Type 2 Income Multiplier for sector } j = \frac{Y_j}{w_j}$$

Employment multipliers can be calculated in a similar fashion to income multipliers. As employment is not explicitly included in the I-O model a vector of employment coefficients has to be estimated exogenously. These coefficients represent, for each sector, the amount of employment created by \$1 of output. Employment multipliers from the open model are then obtained as,

$$e_j = \sum_i r_{ij} u_i$$

where

e_j = direct and indirect employment generated from a \$1 increase in the Final Demand of sector j .

u_i = the appropriate element in the vector of employment coefficients.

The Type 1 employment multipliers are then obtained by dividing the direct and indirect employment by the coefficient of direct employment.

$$\text{Type 1 Employment Multiplier for sector } j = e_j / u_j$$

If the model is closed with respect to households,

$$E_j = \sum_{i=1}^n r_{ij} * u_i$$

where

E_j = the direct, indirect and induced employment generated from a \$1 increase in the Final Demand of sector j

and

$$\text{Type 2 Employment Multiplier for sector } j = E_j / u_j$$

As noted recently by West & Jensen (1980), there is some inherent confusion between the terms "direct", "indirect", and "induced", when applied to output, income and employment multipliers, which can lead to inconsistencies in interpretation. It is essential therefore that extreme care is exercised when using the multipliers derived, and that particular notice is taken of whether the multiplier used includes or excludes the initial final demand stimulus, and whether it relates to increases in one sector or all

sectors of the economy. Further reference to this problem is included in the discussion in a later section of this report.

2.3 A Non-Survey Procedure for Regional Tables

A serious limitation in the construction of an I-O model is the vast amount of data required which will invariably entail extensive and detailed survey work. That completed tables are usually published several years in arrears of the year to which they refer is indicative of the enormity of the undertaking.⁴ It is not surprising, therefore, that the data requirement precludes for most regional studies the building of an I-O model from survey-based data. However, non-survey procedures, as they have come to be known, overcome this data problem by using a national table as a basis from which a regional table can be approximated. The non-survey procedures concentrate largely on making adjustments to the Transactions Matrix, or, more usually, the A matrix of the national table. The Transactions Matrix of a regional I-O table will contain all transactions between those industries located in the region, and is of particular interest in the present study because it is these inter-industry

⁴ The 1971-72 I-O tables for the New Zealand economy were provisionally released in 1978 and finally published in 1980 (N.Z. Department of Statistics, 1980).

relationships that give rise to the regional multiplier effects.

At the regional level, multiplier effects are markedly reduced by a greater dependence on imports. Generally, a region will be more dependent than the nation on imports because, as well as having to import goods and services from other countries, it will also have to 'import' from other regions those domestically produced goods and services in which, as a region, it is deficient. This follows from the economics of location and comparative advantage. Generally, the smaller the region, the greater is likely to be the dependence on imports and, consequently, the smaller the multiplier effects. Conversely, for progressively larger regions the dependence on imports is reduced up to the point at which 'the region' becomes the nation, whereupon the regional multipliers assume national values.

In the A matrix of the regional table the greater dependence on imports is reflected in smaller a_{ij} coefficients, and the non-survey procedures are thus primarily procedures for reducing the a_{ij} coefficients of the national matrix so that they more closely represent inter-industry transactions at the regional level. There are several non-survey procedures that

can be employed at low cost to estimate a regional I-O table. Of these procedures the Simple Location Quotient (SLQ) approach, whereby the coefficients of the national A matrix are adjusted using location quotients (see below) has been used with some success.⁵

Schaffer and Chu (1969) examined alternative non-survey procedures in deriving I-O tables for the State of Washington. The non-survey procedures were evaluated by using chi-square tests of the column a_{ij} coefficients to compare the derived tables with a survey based table for Washington State. The SLQ approach was found to be the most successful. Morrison and Smith (1974) similarly found the SLQ approach to be the best of the non-survey procedures they tested in deriving I-O tables for the city of Peterborough. They used five statistical tests to measure the 'closeness' of the non-survey tables to an empirically derived table for the city.

With the SLQ approach to deriving a regional non-survey I-O table an underlying assumption is that, for each industry, the nation and the region have the same input mix (as shown by the column a_{ij} coefficients)

⁵ Readers who are interested in a detailed discussion of alternative non-survey techniques are referred to Jensen et al. (1977: 20-37).

and that, therefore, the a_{ij} coefficients in the regional A matrix will differ from those in the national A matrix only as a result of the region's greater propensity to import.⁶ Thus, the approach concentrates on splitting each a_{ij} coefficient into two parts; that which represents regional production and that which has to be imported. The former remains in the A matrix as the regional a_{ij} coefficient, while the latter is transferred to the Primary Inputs quadrant as an import coefficient. Location quotients are used as a means of estimating this division between local production and imports.

In the present study a location quotient (LQ) is used to provide, in terms of output or employment, a measure of the importance of an industry to a region relative to the importance of that industry to the nation.⁷ The location quotient for an industry can be calculated as,

⁶ The validity of this assumption will vary from region to region and, in some circumstances, may be a significant source of error.

⁷ More generally Hoover (1975: 147) defines a location quotient as "a statistical measure of the degree to which any two quantitative characteristics are dissimilarly distributed between any two areas".

$$LQ_{ij} = \frac{e_{ij} / \sum_i e_{ij}}{\sum_j e_{ij} / \sum_{ij} e_{ij}}$$

where e = output or employment
 i = industry (1,2...n)
 j = region (1,2...m)

For example, suppose that the output from the textile industry in a region is \$40m and total regional output is estimated at \$200m. If, at the national level, the output of the textile industry is \$10,000m, and national input, \$100,000m, then the location quotient for the local textile industry is

$$\frac{\$40m / \$200m}{\$10,000m / \$100,000m} = 2$$

This shows that the region has exactly twice its pro-rata share of output in the textile industry relative to the national level. On the assumption that the nation and the region exhibit similar demand patterns, location quotients can be used to show the relative level of local self-sufficiency in various industries. In the example above, the region can therefore be regarded as being twice as self-sufficient in textile production as the nation.

The first step in the adjustment procedure therefore is the calculation of LQs for all industries in the table using either output or employment data. For those industries where $LQ < 1$ it is assumed that local production will be insufficient to meet local demand and will therefore need to be supplemented by imports. In these instances the row a_{ij} coefficients in the national matrix will overstate regional inter-industry transactions and will need to be reduced. This is done by simply multiplying the row coefficients by the LQ of the producing sector. At the same time the residual quantities, i.e. $a_{ij} \times (1 - LQ_i)$, are transferred to the imports row of the Primary Inputs quadrant.

Where an industry appears in the national table but does not exist at the regional level (i.e. $LQ_i = 0$), then that industry's row coefficients are transferred in full to the imports row, leaving a row of zeros in the regional A matrix. This, effectively, accounts for non-competitive imports, i.e. imports which the region does not compete. For those industries with $0 < LQ < 1$ the imports will be competitive (i.e. the imports will compete with regional production). For those industries with $LQ \geq 1$ the row a_{ij} coefficients, as they appear in the national matrix, are left unaltered since regional production is assumed to be sufficient to meet local inter-industry demand. In the fully adjusted

A matrix each coefficient will therefore lie somewhere between its value in the national A matrix and zero, depending on the LQ of the producing sector.

An important point to bear in mind with this approach is that as the output or employment-by-industry data used in calculating the location quotients become more aggregated, the location quotients tend to unity, that is, the relative self-sufficiency in all industries approaches 100 per cent. This is because, as the data are aggregated, imports in some industries are balanced by exports in other industries. It follows, therefore, that if location quotients are to be used to scale down the coefficients in the national I-O table, then the sectors should be as disaggregated as possible if the regional coefficients are not to be substantially overstated. However, it must be remembered that when applying a non-survey procedure to a highly disaggregated national I-O table, regional output or employment data will be required at the same level of disaggregation. This requirement may limit the extent to which a highly disaggregated table, if available, can be used.

Having established coefficients for the A matrix and Primary Inputs quadrant of the regional I-O table, there remain the two problems of converting these coefficients to dollar transactions and estimating the Final Demand quadrant. The former is achieved by multiplying the column coefficients by the total value

of output for each sector. Total regional output for each sector, if unknown, will need to be estimated by apportioning national output on an employment or population basis.

The amount of each industry's output passing into Final Demand can then be estimated as the residual remaining after inter-industry sales are subtracted from total output. However, there still remains the problem of disaggregating this Final Demand component. As with regional output for each sector, the categories of Final Demand, other than exports, may need to be estimated as a direct proportion of the national column if no regional data are available. Once these categories have been estimated the export column can be derived as the residual.

A full methodology of Generating Regional I-O Tables (GRIT) incorporating the SLQ approach has been recently developed at the University of Queensland (Jensen, Mandeville and Karunaratne, 1977; 1979). GRIT is described by the authors as "a natural extension of recent trends in the input-output literature towards the production of less costly input-output tables. It provides a facility for potential users to develop regional input-output tables at relatively low cost but without substantial error." (Jensen et al. 1977:(i)).

The methodology comprises a fifteen step sequence that enables the user to derive standardised non-survey regional tables from a national table of one form or another -- refer Table 2.1.

A special feature of GRIT is the use of 'superior data' where appropriate. This means that after the SLQ procedure has been applied as a method of adjusting the national table, the analyst has the opportunity of incorporating regional data which is considered superior in quality to that in the existing table. For example, there may be primary data to suggest that a coefficient in the regionally adjusted table has been substantially over or under estimated, in which case the superior data can be substituted. These may be survey-based data or secondary data from other sources.

The GRIT methodology was originally used to estimate I-O tables for the State and regions of Queensland (Jensen, et al., 1977). These tables are being used to assess inter-industry linkages in the economies of the various regions, and the multipliers from the tables have been used to estimate the impact of local development projects (Mandeville & Jensen, 1978). Interest in the application of GRIT has since spread, and the methodology has been applied to develop regional

TABLE 2.1

The GRIT Methodological Sequence

<u>Step No.</u>	
	<u>Phase I Adjustments to National Table</u>
1	Start with national input-output table.
2	Adjust national table for price levels and updating.
3	Adjust for international trade.
	<u>Phase II Adjustment for Regional Imports</u>
(Steps 4-15 apply to <u>each</u> region)	
4	Calculate non-competitive imports.
5	Calculate competitive imports.
	<u>Phase III Definition of Regional Sectors</u>
6	Insert disaggregated superior data.
7	Aggregate sectors.
8	Insert aggregated superior data.
	<u>Phase IV Derivation of Prototype Transactions</u>
	<u>Tables</u>
9	Derive initial transactions tables.
10	Manually or iteratively adjust initial tables to derive prototype tables.
11	Aggregate to uniform tables if required.
12	Derive inverses and multipliers for prototype tables.
	<u>Phase V Derivation of Final Transactions</u>
	<u>Tables</u>
13	Insert final superior data and make any other adjustments.
14	Derive final transactions tables.
15	Derive inverses and multipliers for final tables.

Source: From Jensen et al. (1977: 59).

tables for South Australia (West, Wilkinson & Jensen, 1979) and the Northern Territory (West, Wilkinson & Jensen, 1980). Two applications have been undertaken in New Zealand -- one for deriving a simplified I-O table for the Otago region (Hubbard & Brown, 1979), and the other for assessing the regional impacts of the Tiwai Point Aluminium Smelter on the Southland economy (Brown, 1980).⁸

The original GRIT procedure, as exemplified by the 1977 Queensland study, has recently been modified in the version termed GRIT II (West, Wilkinson & Jensen, 1980). This later methodology includes an optimising procedure for assessing the relative importance of individual multipliers within the transactions matrix, and therefore the relative need for close scrutiny and refinement of the various coefficients. In addition, the terminology used to describe the multipliers has been revised for consistency and to avoid confusion. Neither of these modifications were incorporated in this study.

⁸ Other New Zealand applications of I-O at the regional level include work by Lowe (1977) and Moore (1980).

2.4 Multipliers from a Non-Survey Table

It should be noted that the multipliers from a non-survey I-O table, which can be derived as explained in the first part of this chapter, will almost certainly be overstated when compared with those from a corresponding survey based table. Schaffer and Chu (1969) found that all of the non-survey procedures they tested produced mean income multipliers which were substantially higher than those from the empirically derived table. The multipliers were least overstated with the SLQ procedure; the Type 1 income multipliers being, on average, 21 per cent higher than those from the survey based table, and the Type 2 income multipliers 47 per cent higher.⁹ These findings were confirmed by Morrison and Smith (1974) whose Type 1 and Type 2 income multipliers from the SLQ approach were, on average, 20 per cent higher and 27 per cent higher, respectively, than those from the survey-based table.¹⁰

Multipliers from non-survey tables are overstated as a result of the a_{ij} coefficients being overstated. As Morrison and Smith (1974: 13) point out,

⁹ Income multipliers from the other non-survey procedures were overstated by as much as 38 per cent (Type 1) and 79 per cent (Type 2).

¹⁰ However, note comment included in Appendix 4, note 2.

"In any study which applies non-survey methods, the volume of local transactions will probably be overestimated, since these methods almost all involve the implicit assumption of maximum local trade."

That is to say, it is assumed that if a firm can buy its inputs locally then it will do so.

Furthermore, as has been pointed out, in using the SLQ approach, the more aggregated the I-O model (i.e. the fewer the sectors) the greater will be the overstatement of the regional a_{ij} coefficients. Intra-sectoral transactions, in particular, are likely to be over-estimated in a highly aggregated regional table because what appear in the national table as intra-sectoral transactions may well be, at the regional level, items of inter-regional trade. Recognising this, Morrison and Smith modified their non-survey procedures by inserting zeros in the leading diagonal of the transactions matrix for those sectors where intra-sectoral transactions at the regional level were regarded as being negligible or non-existent. Predictably, this had the effect of improving the multiplier estimates. With the SLQ approach the amount by which the income multipliers were overstated was

reduced from 20 per cent to 12 per cent for Type 1 and from 27 per cent to 22 per cent for Type 2. For similar reasons Jensen et al. (1977) suggest the use of a net national table when using GRIT.¹¹

One further point should be mentioned in connection with the multipliers from an I-O table. In some studies, where a fairly large disaggregated national table is used as the basis from which to derive regional a_{ij} coefficients, it has been usual to condense the regional table by aggregating the sectors to form a smaller more manageable table prior to calculating the I-O multipliers. Aggregating the sectors in an I-O table to form a smaller table will usually involve what is known as aggregation bias. In practice, aggregation bias means that forecasts of sector outputs from the aggregated model will not equal those obtained by summing the individual forecasts from the original model. Several methods of aggregation are available that seek to minimise this bias. These methods employ some criterion by which to select the most suitable sectors for aggregation.

Rodgers (1978) has pointed out that the bulk of the literature on aggregation bias in I-O modelling has been concerned with inconsistencies in the forecasts

¹¹ That is a table with intrasectoral transactions excluded. Also refer Appendix 4, note 3.

of sector outputs, and very little with its effect on I-O multipliers. In the present context I-O multipliers rather than forecasts of sector output are of primary interest. Of the studies that have examined the effect of aggregation bias on I-O multipliers, Doeksen and Little (1968) showed empirically that there was very little relationship between the size of the multiplier for a sector and the number of sectors from an I-O table and recording the effect on the multipliers in these three sectors as all remaining sectors were randomly aggregated in cumulative steps until they were represented by a single sector. Rodgers (1977) demonstrated that Doeksen and Little's finding was true in principle and that the aggregation bias reflected in output multipliers was relatively small because it was of second order only. However, Rodgers (1978) has also shown that, unlike the output multipliers, income multipliers will generally exhibit first order aggregation bias. Thus, although the method of aggregation is likely to have little effect on the output multipliers, it will probably lead to more serious bias in the income multipliers.

Clearly, an I-O table derived using a non-survey technique is not a perfect substitute for an empirically derived table. However, as was mentioned at the

beginning of this chapter, non-survey techniques have attracted growing interest in recent years from regional economists as a means whereby economic relationships and inter-dependencies at the regional level can be approximated at low cost. The multipliers from a non-survey I-O model, though obviously needing to be interpreted with caution, have the major advantage of being disaggregated. As such, they can be used to estimate the impact of changes in different sectors of the regional economy.

CHAPTER 3

APPLICATION3.1 Regional Output and Employment Data

The 1971-72 130 Sector New Zealand Input Output Table (N.Z. Dept of Statistics, 1980) was used as the base table from which the regional tables were derived. No attempt was made to update this table and so the non-survey regional tables presented in the following chapter relate to 1971-72. The New Zealand I-O table is in approximate basic values, intra-sectoral transactions are shown in gross values and all imports are allocated directly.¹²

¹² Approximate Basic Values. Basic value relates to output valued at farm gate or factory door including distribution expenses to point of sale but excluding payment of commodity taxes or receipt of subsidies on that output. However, it is nearly impossible to remove the total effects of commodity taxes or subsidies which have been built into a firm's cost of inputs, and therefore the term "approximate basic value" is used.

Gross Tables. When an industry is made up of a number of separate establishments, and/or a sector is aggregated from a number of different industries, transactions between these establishments or industries are depicted at the column-row intersection of that sector as in the New Zealand 1971-72 tables. These "gross" tables contrast with presentation of the inter-industry accounts in "net" terms, where intra-sectoral transactions are excluded.

It would appear, following the discussion by Jensen, *et al.* (1977: 55-56), that derivation of regional tables from a net national table may be the preferred option, in that there is a no a-priori reason why commodities forming intra-sectoral transactions at the national level might also be intra-sectoral flows in the simpler, regional economy. Derivation of regional tables from gross national tables, may, therefore, overstate intra-sectoral cell entries. Since, however, the New Zealand national tables are published in gross terms, intra-sectoral transactions were not netted out for this study. Future development of GRIT regional tables could investigate the implications of these two methodological options further.

Direct Allocation of Imports. Imports are included in the column of the sector which makes the purchase. This convention contrasts with indirect allocation of imports, where imports are recorded in the column of the sector which would have produced them, and then distributed within the row of that sector.

In deriving the regional I-O tables, detailed industry output or employment data were required for each Statistical Area (S.A.). These data needed to be of sufficient detail to correspond with the 130 sectors of the national I-O table. The 130 sectors comprise 9 primary sectors, 87 manufacturing sectors and 34 tertiary sectors (refer Appendix 1 for sectoral definitions). For the agricultural sectors, regional output was estimated using the official agricultural statistics for 1971-72. The methodology for regional disaggregation of agricultural output is detailed in a following section of this chapter.

Statistics of industrial production for the 1971-72 year were collected by the Department of Statistics in their annual census of manufacturing establishments employing two or more people (Department of Statistics, 1974a). This survey provides regional data on the number of establishments and persons engaged for all industries at a regional level, and data on salaries and wages paid and value of production either by statistical area or, in some cases, combinations of statistical areas. The value of production represents "the selling value at the factory of all articles manufactured, assembled or processed". It is not, therefore, exactly analagous to industry

output measured in approximate basic values (as in the inter-industry study), mainly because the latter includes rent receipts, distribution expenses to point of sale, and the output of one man establishments.

Output data were therefore available at the S.A. level for the 87 manufacturing sectors of the I-O table. Although the Census records production statistics for more than 100 industries, two of the manufacturing sectors in the I-O table had to be combined with other sectors due to differences in sector classification between the census and I-O study (Sectors 10 + 12; Sectors 20 + 21). The number of manufacturing sectors was thus reduced to 85. Despite recording industrial production in considerable detail, some of the output data at the S.A. level in the census is withheld for reasons of confidentiality. In those cases where the output of an industry in a region was not available, output was allocated regionally using employment weights.

As noted previously, the total output from each industry recorded in the census did not, in most cases, match precisely the outputs shown in the I-O table. The census output data was therefore scaled, either up or down, so as to equate with the I-O totals. The

difference between output from a sector recorded in the Census of Industrial Production and the output for the same sector in the I-O table was, in most cases, less than 10 per cent.

For all of the remaining sectors the industry outputs recorded in the national I-O table were apportioned regionally using employment data from the 1971 Census of Population and Dwellings. Again, due to differences between the sector classification in the I-O table and that detailed in the population census, 8 of the sectors had to be aggregated with others, thus further reducing the total number of sectors to 120.

Sector output in each of the 13 S.A.'s therefore, was estimated using either the Department of Statistics' Agricultural Statistics 1971-72; the Census of Industrial Production 1971-72 or the Census of Population and Dwellings 1971. Differences in industry classification meant that the original 130 sector table had to be aggregated into 120 sectors. These estimates of regional sector output were then used for the calculation of location quotients for each industry in each region. However, it was decided that, prior to this, the agricultural and livestock industry (sector 1) in the I-O table should be disaggregated to allow for a more accurate representation of farming in each of the

13 S.A.s. The methodology for this disaggregation is detailed in the following section.

3.2 Disaggregation of Sector 1 - Agricultural and Livestock Production

Although the New Zealand economy is represented in considerable detail in the national I-O table, agricultural production is only represented by three sectors - 'agriculture and livestock production', 'poultry farming' and 'other farming n.e.c.' (I-O sectors 1 to 3 respectively). This level of aggregation does not allow even for broad regional differences in agricultural production and for this reason it was felt that greater disaggregation of the main agricultural sector was necessary. Consequently, 'agriculture and livestock production' (sector 1), which accounts for some 90 per cent of total agricultural production in the I-O table, was disaggregated into three component sectors - (i) sheep/beef farming, (ii) dairying and (iii) other main farming. This involved using the raw data from which the N.Z. Department of Statistics compute the row and column transactions of Sector 1 in the 130 sector table.¹³

¹³ In undertaking this disaggregation assistance from the Department of Statistics, Wellington, is appreciated.

In disaggregating the row transactions the gross output of Sector 1 was first broken down into its component commodities, e.g. live sheep, greasy wool, scoured wool, milk and cream, wheat, etc. and each commodity apportioned over the three farm types. The available data only allowed for two main farm types (sheep/beef farming and dairying) to be estimated, and so the third farm type (other main farming) made up the residual. The way in which the main commodity groups were apportioned over these three farm types is shown in Table 3.1. This table indicates the output characteristics of each farm type. It can be seen, for example, that of the output of sheep, lambs and wool, 99 per cent is apportioned to the sheep/beef farming sector and 1 per cent to the 'other main farming' sector. Similarly, for pigs, 9 per cent of the output is apportioned to the sheep/beef farming sector, 30 per cent to the dairying sector and 61 per cent to the 'other main farming' sector. For each farm type the commodities were then allocated over the 130 purchasing sectors in the table to produce three rows in place of the original row of Industry 1.¹⁴

¹⁴ In the compilation of the I-O table, a commodity can be purchased by many sectors. For example, the commodity 'milk and fresh cream' is allocated over many purchasing sectors in the table, although, on examination of these transactions, it is found that 98 per cent of the commodity is purchased by just three sectors.

TABLE 3.1

Percentage Breakdown of the Main Commodity Groups that
Comprise the Output of Industry 1

Main Commodity Group	Sheep/ Beef	Dairying	Residual	Agriculture and Livestock Production - Sector 1
Sheep	99	-	1	100
Lambs	99	-	1	100
Wool	99	-	1	100
Cattle	72	27	1	100
Pigs	9	30	61	100
Milk fat	-	100	-	100
Crops and seeds	68	2	30	100
Other farm production	12	6	82	100
Other non-farm production	68	24	8	100
Stock change	68	32	-	100
Value of Total Gross Output \$ (m)	715.2	410.4	56.2	1,181.8

Source: Computed and compiled from Department of Statistics unpublished data.

The column transactions of Industry 1 were disaggregated in a similar manner. The Department of Statistics derive the column transactions of Industry 1 from a detailed breakdown of farm expenditure itemised under the Farming Costs Price Index. In disaggregating the column of Industry 1, these expenditure items were apportioned between the three farm types and then reallocated over the 130 producing sectors. Each item of expenditure is likely to be allocated over more than one sector in the table, just as each commodity on the output side will invariably be allocated over more than one purchasing sector.

Thus, both the row and column of Industry 1 were disaggregated into three component parts to represent sheep/beef farming, dairying and other main farming. The outputs of these three sectors were valued at \$715.2m, \$410.4m and \$56.2m, respectively (1971-72 prices).

In the I-O tables presented in this study, therefore, agricultural production is represented by five industries - sheep/beef farming, dairying, other main farming, poultry farming and other farming n.e.c.¹⁵ Although further disaggregation of these

¹⁵ Not elsewhere classified.

agricultural sectors would be advantageous in terms of achieving a more accurate representation of the structure of agricultural production at the regional level, this was beyond the scope and resources of the present study.

The national output from each of the five agricultural production sectors was apportioned over the 13 S.A.s through the use of regional agricultural statistics recorded in the Department of Statistics 1971-72 Census of Agriculture (N.Z. Dept of Statistics, 1974b). The estimated regional breakdown of each of those commodities that together make up the gross output of 'agriculture and livestock production' (Sector 1 in the original I-O table) is shown in Table 3.2. The method of estimating the regional shares of the national total for each commodity is given in the notes that accompany Table 3.2. Essentially, regional production from sheep, cattle, dairying and pigs has been estimated on stock numbers, that for wool on the actual volume of wool produced regionally and that for crops and seeds on the area planted.

In the present study 'agriculture and livestock production' has been disaggregated into three component sectors and so the regional output totals shown in the furthestmost right hand column of Table 3.2 need to be apportioned between the three new sectors - i.e. sheep/beef farming, dairying and other main farming. This was

TABLE 3.2
'Agriculture and Livestock Production' (Sector 1) by Statistical Area and Commodity - 1971/72 (\$m)

Commodity ^a Statistical Area	Sheep and Lambs	Wool	Cattle	Pigs	Milk-Fat	Crops and Seeds	Other Farm Production	Other Non-farm Production	Stock Change	'Agriculture and Live-stock Production' - Sector 1
NORTHLAND	6.2	5.2	31.6	1.5	37.2	0.5	0.1	0.1	5.5	87.9
CENTRAL AUCKLAND	3.9	3.2	17.6	3.5	25.8	1.4	0.4	0.1	3.1	59.0
SOUTH AUCKLAND - BAY OF PLENTY	32.7	25.5	89.3	6.9	132.3	4.3	0.9	1.9	16.1	309.9
EAST COAST	9.3	7.5	14.6	0.2	1.0	1.7	0.3	0.1	2.8	37.5
HAWKES BAY	26.6	22.5	26.5	0.7	6.1	3.4	0.2	0.1	5.4	91.5
TARANAKI	6.0	4.4	23.8	3.8	47.4	0.5	0.2	-	4.3	90.4
WELLINGTON	35.2	28.4	40.1	3.7	28.5	6.2	0.5	0.2	7.9	150.7
MARLBOROUGH	5.3	4.1	4.4	1.0	2.1	1.7	0.5	-	1.0	20.1
NELSON	2.7	2.0	4.7	1.1	5.0	1.6	1.1	0.3	0.9	19.4
WESTLAND	0.7	0.6	3.0	0.1	2.7	0.2	0.1	-	0.5	7.9
CANTERBURY	37.2	27.4	15.3	4.0	6.8	40.9	4.8	0.3	3.9	140.6
OTAGO	28.9	21.6	11.9	1.0	3.2	12.2	0.4	0.2	2.9	82.3
SOUTHLAND	31.8	24.7	10.2	1.0	3.5	10.3	0.3	0.1	2.8	84.7
NEW ZEALAND	226.5	177.1	293.0	28.5	301.6	84.9	9.8	3.4	57.1	1181.9

^a The regional breakdown of the national value of the commodities included in Sector 1 was estimated as follows:

Sheep and lambs	- using total sheep numbers
Wool	- using wool production
Cattle	- using total cattle numbers
Pigs	- using total pig numbers
Milk fat	- using total dairy cattle numbers
Crops and Seeds	- using ha. of crops
Other farm production	- using capital expenditure of 'Other Farm Types'
Other non-farm production	- using ha. of exotic timber plantations
Stock change	- using total cattle numbers and wool production weighted at 0.8 and 0.2 respectively.

Note: Columns and rows may not sum to totals because of rounding.

Source: New Zealand Department of Statistics. Agricultural Statistics 1971-72 and Inter-Industry Study of the New Zealand Economy, 1971-72, together with unpublished data from the Department of Statistics, Wellington.

achieved by applying the percentage shares shown in Table 3.1 to the values of each of the output commodities in Table 3.2. For example, in Table 3.2 it can be seen that the output from cattle in Northland is estimated at \$31.6m, and from Table 3.1 72 per cent of this is attributable to the sheep/beef sector, 27 per cent to the dairying sector and 1 per cent to the residual other main farming sector. Applying these shares to the new Sector 1, \$8.5m to the new Sector 2 and \$0.3m to the new Sector 3.

The resulting total regional outputs for each of the three new sectors are shown in Table 3.3. This table also shows the estimated regional breakdown of the output from the remaining two agricultural production sectors included in the original I-O table.

3.3 Adjustment Procedure

With the disaggregation of the agriculture and livestock industry completed, regional output data (either actual or estimated through the use of regional employment data), were available for 122 industry groupings. The 130 sectors of the original I-O table therefore needed to be aggregated so as to match the 122 sectors for which output data were available

TABLE 3.3

Agricultural Production by Statistical Area and Sector - 1971/72

Statistical Area	Industry/ Sector	Sheep/ Beef 1a	Dairy 1b	Other Main Farming 1c	Poultry Farming 2	Other Farming n.e.c. 3
	 \$m				
Northland		38.3	48.1	1.5	0.4	3.1
Central Auckland		23.2	32.8	3.0	9.5	10.2
South Auckland - Bay of Plenty		137.8	164.5	7.7	8.4	24.5
East Coast		30.4	6.0	1.2	0.7	2.6
Hawkes Bay		74.1	15.2	2.3	2.9	10.8
Taranaki		31.0	56.5	2.9	1.9	0.5
Wellington		102.3	43.0	5.4	5.4	4.6
Marlborough		14.5	4.0	1.6	-	1.3
Nelson		10.2	7.1	2.1	0.8	7.3
Westland		3.9	3.8	0.2	-	0.1
Canterbury		107.1	14.3	18.9	12.7	6.6
Otago		69.5	7.7	5.0	4.8	3.9
Southland		72.9	7.4	4.4	0.8	0.1
New Zealand		715.2	410.4	56.2	48.3	75.6

Source: New Zealand Department of Statistics (1974).
Agricultural Statistics 1971-72 and Tables 3.1 and 3.2.

(10 + 12); 20 + 21; 97 + 98; 100-103; 107-110; 128-129 -- refer Appendix 1). The categories of Final Demand in the national I-O table were combined to form three sectors - household consumption, exports and other final demand;¹⁶ and the Primary Inputs were similarly aggregated into three sectors - compensation of employees, imports and other primary inputs.¹⁷ The modified national table therefore comprised 122 industry groups with three sectors in each of the Final Demand and Primary Inputs quadrants.¹⁸ This was used as the base table from which the 13 regional tables were derived.

Using the regional output data for the 122 sectors, location quotients for each Statistical Area were calculated and applied to the a_{ij} coefficients of the modified national A matrix. After the LQ adjustment the sectors were aggregated so as to achieve more manageable tables for the calculation of the multipliers. The

¹⁶ Other final demand includes government services, gross fixed capital formation and stock changes.

¹⁷ Other primary inputs include operating surplus, indirect taxes, subsidies, consumption of fixed capital, and second hand assets.

¹⁸ Industry aggregation reduced the 130 sector table to 120 sector. Two additional agricultural sectors results in data manipulation at the 122 sector level.

122 industry sectors were aggregated to form 25 sectors. The sequence of aggregation (shown in Appendix 1), for all but a few of the tertiary sectors, was the same as that used by the Department of Statistics in condensing their 130 sector table into the official 25 sector model. In aggregating the 122 sector table, the coefficients were weighted by regional sector output.

The only 'superior' data readily available for incorporation into the regional tables were the salary and wage payments detailed along with the regional output data in the 1971-72 Census of Industrial Production.¹⁹ These salary and wage data, relating to the manufacturing sectors in the 25 sector table (sectors 5-13 inclusive), were used to replace the existing coefficients in the salaries and wages row of the Primary Inputs quadrant (row 26). These salary and wage coefficients represent the direct income created by a \$1 increase in sector output and feature prominently in the calculation of the total output and Type 2 income and employment multipliers (i.e. those multipliers that encompass the induced effects of an increase in sector output). No similar salary and wage data were available for the 16 non-manufacturing sectors of the table.

¹⁹ Refer Appendix 4, note 4, for comment on this point.

It is appropriate here to comment on the Final Demand and Primary Inputs quadrants in the regional tables. As was explained in Chapter 2, the non-survey procedure used in this study concentrates on making adjustments to the a_{ij} coefficients in the A matrix. Little is done to adjust the coefficients in the other three quadrants of the I-O model, and in the absence of superior data these quadrants appear very much as they do in the national table. In the Primary Inputs quadrant the coefficients in the imports row have been adjusted as have the salary and wage coefficients for industries 5-13. All other coefficients in this quadrant are as they appear in the national I-O table.

The Final Demand quadrants contain even less region-specific data. The pattern of household consumption, as reflected in column 26, is assumed to be the same at all regional levels as at the national level. As a category of Final Demand, household consumption is an exogenous sector in the model. However, when included in the A matrix in the closed I-O table, the household consumption column and the salaries and wages row form an additional endogenous sector which is treated in the same way as the other endogenous sectors. It would seem reasonable to suppose that a sector with an LQ of less than 1.0, as well as

being unable to supply in full the demands made by other industry sectors, would be just as unlikely to supply all of the output demanded by local households. Therefore in the present study it was felt that the household consumption column should be subject to the same LQ adjustment as the other industry sectors. Consequently, the households column in the disaggregated table (column 123) was included in the LQ adjustment procedure prior to aggregation. The LQ of households as a producing sector (i.e. row 123) was taken to be 1.0.

No regional data were available for the adjustment of the 'export' and 'other' sectors of Final Demand. The 'other' category in the regional tables was apportioned from the national columns using employment data for each regional industry. The entries in the export column were then assumed to account for the residual output from each sector. In a few instances this residual came out as a negative quantity (i.e. for a particular sector inter-industry sales, plus sales to households and the other category of Final Demand, exceeded the total output from that sector). This would suggest that the row coefficients in the A matrix or the sales to Final Demand for the particular industry are overstated. However this

occurred in only a very few cases and involved small discrepancies, and since there was nothing to suggest whether the overstated entries occurred in the A matrix or household column (in which case the multipliers would be affected) or in the 'Other' Final Demand category, no adjustment was made to the tables.

Output, income and employment multipliers were calculated from the aggregated 25 sector tables. In calculating the employment multipliers, an employment vector for each region was estimated by dividing employment in each industry sector by the output from that sector.²⁰ The direct employment coefficients therefore reflect, as do the output and income coefficients inherent in the I-O tables, average rather than marginal changes per unit of output. The multipliers are presented in the following chapter.

²⁰ Employment data from the Census of Population and Dwellings 1971 were used to estimate the employment vector. Ideally, average employment data for the 1971-72 year should be used which, in most cases, would be higher than the Census figures. The employment multipliers derived in this study may, therefore, be marginally understated.

CHAPTER 4

RESULTS4.1 The I-O Multipliers

Using the aggregated regional GRIT 25 sector tables, multipliers have been derived as explained in Chapter 2. In the following tables, the output, income and employment multipliers are presented for each of the 13 Statistical Areas and for New Zealand as a whole (Tables 4.1 - 4.14).²¹

The simple output multipliers show the direct and indirect output generated in response to a unit increase in sales to Final Demand. The total output multipliers incorporate the induced effect of household consumption, and so account for the direct, indirect and induced output generated by a unit increase in Final Demand sales.

The income and employment multipliers reflect direct, indirect and induced incomes or employment impacts given a unit increase in Final Demand sales. It must be emphasised that these direct changes pertain to individual sectors, whereas "direct" in an output sense relates to all sectors -- one of the terminology inconsistencies referred to by West & Jensen (1980).

²¹ Appendix 3 contains the regional transactions tables from which these multipliers were derived.

Table 4.1
Sectoral Multipliers
Northland Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.407	1.578	.100	.186	.232	.084	.116	.131
2 Fishing & Hunting	1.364	1.771	.328	.444	.553	.142	.176	.221
3 Forestry & Logging	1.302	1.561	.196	.283	.352	.052	.075	.098
4 Mining & Quarrying	1.432	1.760	.224	.358	.446	.071	.109	.137
5 Mnf. of Food, Beverages & Tobacco	2.019	2.252	.096	.254	.316	.027	.112	.131
6 Textiles, Apparel & Leather Prod.	1.140	1.497	.343	.389	.485	.184	.201	.232
7 Wood & Wood Products	1.657	2.047	.257	.425	.529	.097	.148	.182
8 Paper, Printing & Publishing	1.131	1.528	.386	.432	.539	.110	.123	.157
9 Chemicals & Chemical Products	1.154	1.406	.226	.274	.342	.010	.022	.044
10 Non-Metallic Mineral Products	1.395	1.715	.238	.350	.436	.062	.093	.120
11 Basic Metal Industries								
12 Fabricated Metal Products	1.237	1.604	.324	.401	.499	.105	.128	.159
13 Other Manufacturing	1.154	1.499	.331	.376	.469	.064	.077	.106
14 Electricity, Gas & Water	1.601	1.875	.177	.300	.373	.046	.078	.101
15 Construction	1.570	1.950	.254	.414	.516	.080	.128	.160
16 W. & R. Trade	1.242	1.608	.327	.400	.499	.101	.123	.154
17 Transport & Storage	1.380	1.880	.429	.545	.679	.104	.138	.181
18 Communication	1.075	1.718	.675	.701	.873	.173	.180	.235
19 Business Services	1.196	1.517	.283	.351	.437	.077	.096	.124
20 Owner-Occup. Real Estate	1.308	1.388		.087	.108		.026	.033
21 Public Administration	1.224	1.890	.650	.727	.906	.127	.149	.206
22 Education Services	1.144	1.935	.819	.864	1.076	.168	.181	.249
23 Health Services	1.169	1.715	.539	.596	.743	.160	.177	.224
24 Other Community Services	1.265	1.877	.571	.668	.832	.183	.210	.263
25 Personal & Domestic Services	1.298	1.671	.307	.407	.508	.167	.197	.229

^a Refer Appendix 1 for Sector Definitions.

Table 4.2
Sectoral Multipliers
Central Auckland Statistical Area^a

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.360	1.713	.114	.212	.312	.114	.146	.176
2 Fishing & Hunting	1.514	2.314	.327	.480	.705	.142	.186	.255
3 Forestry & Logging	1.251	1.711	.196	.276	.406	.052	.074	.114
4 Mining & Quarrying	1.505	2.141	.226	.382	.561	.072	.115	.170
5 Mnf.of Food, Beverages & Tobacco	1.490	1.936	.147	.267	.393	.045	.087	.125
6 Textiles, Apparel & Leather Prod.	1.514	2.180	.255	.399	.587	.106	.154	.212
7 Wood and Wood Products	1.533	2.225	.261	.415	.610	.073	.117	.177
8 Paper, Printing & Publishing	1.509	2.215	.271	.424	.623	.086	.130	.191
9 Chemicals & Chemical Products	1.449	1.986	.198	.322	.474	.068	.105	.151
10 Non-Metallic Mineral Products	1.457	2.144	.275	.412	.605	.075	.114	.173
11 Basic Metal Industries	1.615	2.095	.144	.288	.423	.032	.071	.112
12 Fabricated Metal Products	1.508	2.204	.276	.417	.614	.083	.124	.184
13 Other Manufacturing	1.489	2.195	.285	.423	.622	.073	.113	.174
14 Electricity, Gas & Water	1.451	1.934	.183	.290	.426	.045	.072	.114
15 Construction	1.852	2.680	.254	.496	.730	.080	.150	.221
16 W. & R. Trade	1.403	2.158	.335	.453	.666	.096	.131	.196
17 Transport & Storage	1.496	2.426	.405	.558	.820	.096	.140	.220
18 Communication	1.130	2.326	.675	.718	1.055	.173	.185	.288
19 Business Services	1.316	1.927	.267	.367	.539	.071	.099	.151
20 Owner-Occup. Real Estate	1.499	1.728		.138	.202		.040	.059
21 Public Administration	1.346	2.617	.650	.763	1.121	.127	.158	.268
22 Education Services	1.194	2.659	.819	.879	1.292	.168	.185	.312
23 Health Services	1.266	2.306	.539	.623	.917	.160	.185	.275
24 Other Community Services	1.428	2.592	.547	.698	1.026	.178	.221	.321
25 Personal & Domestic Services	1.532	2.368	.329	.501	.737	.158	.210	.282

^a Refer Appendix 1 for Sector Definitions.

Table 4.3
Sectoral Multipliers
South Auckland - Bay of Plenty Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.470	1.702	.104	.202	.263	.076	.113	.133
2 Fishing & Hunting	1.272	1.748	.336	.415	.540	.139	.163	.203
3 Forestry & Logging	1.314	1.637	.196	.281	.366	.052	.076	.103
4 Mining & Quarrying	1.571	2.104	.293	.465	.604	.090	.140	.185
5 Mnf. of Food, Beverages & Tobacco	2.081	2.365	.074	.248	.322	.026	.110	.134
6 Textiles, Apparel & Leather Prod.	1.221	1.616	.279	.344	.447	.155	.180	.213
7 Wood and Wood Products	1.776	2.263	.234	.425	.553	.069	.123	.164
8 Paper, Printing & Publishing	1.548	1.974	.230	.371	.483	.056	.095	.131
9 Chemicals & Chemical Products	1.225	1.514	.187	.252	.328	.051	.070	.094
10 Non-Metallic Mineral Products	1.446	1.814	.186	.321	.418	.068	.107	.139
11 Basic Metal Industries	1.185	1.604	.311	.366	.476	.615	.633	.669
12 Fabricated Metal Products	1.267	1.676	.276	.356	.463	.087	.111	.145
13 Other Manufacturing	1.288	1.715	.289	.372	.484	.076	.100	.136
14 Electricity, Gas & Water	1.680	2.045	.177	.318	.414	.046	.083	.114
15 Construction	1.702	2.210	.254	.443	.576	.080	.136	.179
16 W. & R. Trade	1.304	1.778	.330	.414	.538	.099	.125	.165
17 Transport & Storage	1.475	2.096	.405	.542	.705	.099	.141	.193
18 Communication	1.091	1.898	.675	.704	.916	.173	.181	.249
19 Business Services	1.227	1.621	.272	.344	.447	.073	.093	.126
20 Owner-Occup. Real Estate	1.369	1.484		.100	.131		.030	.039
21 Public Administration	1.248	2.085	.650	.730	.949	.127	.150	.220
22 Education Services	1.171	2.166	.819	.868	1.130	.168	.182	.266
23 Health Services	1.198	1.887	.539	.601	.783	.160	.179	.237
24 Other Community Services	1.335	2.088	.539	.657	.855	.180	.214	.278
25 Personal & Domestic Services	1.384	1.892	.321	.443	.577	.159	.197	.239

^a Refer Appendix 1 for Sector Definitions.

Table 4.4
Sectoral Multipliers
East Coast Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.432	1.659	.117	.212	.277	.085	.125	.147
2 Fishing & Hunting	1.267	1.715	.337	.421	.549	.138	.167	.209
3 Forestry & Logging	1.309	1.612	.196	.285	.371	.052	.078	.106
4 Mining & Quarrying	1.436	1.811	.216	.352	.459	.074	.114	.149
5 Mnf. of Food, Beverages & Tobacco	1.806	2.169	.184	.341	.445	.048	.119	.153
6 Textiles, Apparel & Leather Prod.	1.169	1.482	.240	.293	.383	.139	.157	.186
7 Wood and Wood Products	1.484	1.915	.275	.405	.529	.119	.160	.200
8 Paper, Printing & Publishing	1.191	1.659	.371	.439	.573	.120	.139	.183
9 Chemicals & Chemical Products	1.120	1.420	.245	.281	.367	.185	.195	.223
10 Non-Metallic Mineral Products	1.399	1.734	.193	.315	.411	.071	.109	.140
11 Basic Metal Industries	1.193	1.491	.222	.281	.366	.043	.060	.088
12 Fabricated Metal Products	1.229	1.592	.265	.340	.444	.126	.150	.184
13 Other Manufacturing	1.212	1.676	.368	.436	.569	.178	.198	.241
14 Electricity, Gas & Water	1.647	1.975	.176	.308	.402	.046	.081	.112
15 Construction	1.537	1.972	.254	.409	.534	.080	.129	.170
16 W. & R. Trade	1.263	1.714	.338	.424	.553	.105	.132	.174
17 Transport & Storage	1.392	1.958	.410	.532	.693	.099	.137	.190
18 Communication	1.087	1.838	.675	.705	.920	.173	.182	.252
19 Business Services	1.217	1.636	.314	.393	.512	.092	.115	.154
20 Owner-Occup. Real Estate	1.304	1.400		.091	.118		.028	.037
21 Public Administration	1.231	2.010	.650	.731	.954	.127	.151	.224
22 Education Services	1.148	2.070	.819	.866	1.129	.168	.182	.268
23 Health Services	1.177	1.815	.539	.599	.728	.160	.179	.238
24 Other Community Services	1.317	2.020	.544	.661	.862	.178	.212	.277
25 Personal & Domestic Services	1.343	1.812	.322	.441	.572	.165	.203	.247

^a Refer Appendix 1 for Sector Definitions.

Table 4.5
Sectoral Multipliers
Hawkes Bay Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.502	1.759	.113	.219	.289	.075	.116	.139
2 Fishing & Hunting	1.241	1.728	.340	.415	.547	.137	.160	.203
3 Forestry & Logging	1.300	1.635	.196	.285	.377	.052	.077	.107
4 Mining & Quarrying	1.447	1.879	.225	.368	.485	.072	.112	.150
5 Mnf. of Food, Beverages & Tobacco	1.886	2.265	.159	.323	.426	.045	.117	.150
6 Textiles, Apparel & Leather Prod.	1.565	1.903	.163	.287	.379	.089	.137	.167
7 Wood & Wood Products	1.464	1.937	.270	.402	.531	.083	.122	.163
8 Paper, Printing & Publishing	1.207	1.726	.371	.442	.583	.124	.144	.189
9 Chemicals & Chemical Products	1.276	1.510	.113	.199	.262	.047	.072	.093
10 Non-Metallic Mineral Products	1.444	1.823	.196	.323	.426	.050	.087	.120
11 Basic Metal Industries	1.226	1.572	.228	.295	.389	.152	.172	.202
12 Fabricated Metal Products	1.308	1.689	.233	.324	.428	.085	.114	.147
13 Other Manufacturing	1.216	1.650	.304	.370	.488	1.952	1.973	2.011
14 Electricity, Gas & Water	1.644	2.007	.177	.309	.408	.046	.081	.112
15 Construction	1.600	2.096	.254	.422	.557	.080	.131	.174
16 W. & R. Trade	1.309	1.814	.339	.430	.567	.101	.129	.173
17 Transport & Storage	1.372	2.008	.426	.542	.715	.105	.140	.196
18 Communication	1.093	1.923	.675	.707	.933	.173	.182	.254
19 Business Services	1.225	1.646	.283	.358	.472	.078	.100	.137
20 Owner-Occup. Real Estate	1.331	1.441		.094	.124		.028	.038
21 Public Administration	1.237	2.094	.650	.729	.962	.127	.150	.224
22 Education Services	1.157	2.175	.819	.867	1.144	.168	.182	.271
23 Health Services	1.189	1.894	.539	.600	.792	.160	.179	.240
24 Other Community Services	1.331	2.102	.539	.656	.866	.177	.212	.279
25 Personal & Domestic Services	1.369	1.896	.327	.449	.592	.165	.204	.250

^a Refer Appendix 1 for Sector Definitions.

Table 4.6
Sectoral Multipliers
Taranaki Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.449	1.633	.093	.181	.230	.096	.136	.152
2 Fishing & Hunting	1.237	1.651	.332	.406	.517	.140	.163	.200
3 Forestry & Logging	1.219	1.488	.196	.265	.337	.052	.072	.096
4 Mining & Quarrying	1.493	1.956	.301	.455	.578	.092	.137	.179
5 Mnf. of Food, Beverages & Tobacco	2.038	2.301	.107	.259	.329	.030	.127	.150
6 Textiles, Apparel & Leather Prod.	1.212	1.581	.296	.362	.460	.148	.172	.205
7 Wood and Wood Products	1.380	1.797	.298	.410	.521	.093	.126	.163
8 Paper, Printing & Publishing	1.141	1.587	.390	.439	.558	.124	.138	.178
9 Chemicals and Chemical Products	1.254	1.438	.106	.181	.229	.056	.079	.095
10 Non-Metallic Mineral Products	1.346	1.704	.240	.352	.448	.120	.153	.185
11 Basic Metal Industries	1.465	1.822	.227	.351	.446	.043	.073	.105
12 Fabricated Metal Products	1.337	1.730	.285	.386	.491	.091	.120	.155
13 Other Manufacturing	1.223	1.610	.314	.380	.483	.141	.160	.194
14 Electricity, Gas & Water	1.618	1.928	.176	.305	.388	.046	.080	.108
15 Construction	1.553	1.976	.254	.416	.529	.080	.130	.167
16 W. & R. Trade	1.252	1.674	.339	.415	.527	.101	.125	.162
17 Transport & Storage	1.355	1.900	.426	.536	.681	.103	.137	.185
18 Communication	1.079	1.792	.675	.702	.892	.173	.181	.244
19 Business Services	1.190	1.568	.304	.372	.472	.086	.106	.139
20 Owner-Occup. Real Estate	1.310	1.403		.091	.116		.027	.036
21 Public Administration	1.212	1.947	.650	.723	.919	.127	.148	.214
22 Education Services	1.140	2.018	.819	.863	1.096	.168	.181	.259
23 Health Services	1.186	1.796	.539	.600	.762	.160	.179	.233
24 Other Community Services	1.258	1.934	.571	.664	.844	.183	.210	.270
25 Personal & Domestic Services	1.330	1.767	.320	.430	.546	.163	.198	.237

^a Refer Appendix 1 for Sector Definitions.

Table 4.7
Sectoral Multipliers
Wellington Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.475	1.838	.105	.216	.316	.085	.126	.158
2 Fishing & Hunting	1.368	2.111	.336	.441	.646	.138	.170	.234
3 Forestry & Logging	1.282	1.757	.196	.282	.413	.052	.076	.117
4 Mining & Quarrying	1.521	2.188	.236	.396	.579	.075	.120	.177
5 Mnf. of Food, Beverages & Tobacco	1.735	2.183	.120	.266	.390	.046	.108	.146
6 Textiles, Apparel & Leather Prod.	1.576	2.250	.245	.400	.586	.107	.163	.221
7 Wood and Wood Products	1.444	2.097	.260	.388	.568	.087	.124	.181
8 Paper, Printing & Publishing	1.387	2.096	.300	.421	.616	.087	.121	.182
9 Chemicals and Chemical Products	1.419	1.864	.151	.264	.387	.049	.082	.120
10 Non-Metallic Mineral Products	1.427	2.040	.235	.364	.532	.076	.113	.166
11 Basic Metal Industries	1.335	1.875	.227	.320	.469	.056	.082	.129
12 Fabricated Metal Products	1.377	1.900	.205	.309	.453	.069	.100	.145
13 Other Manufacturing	1.365	2.057	.305	.410	.601	.104	.136	.195
14 Electricity, Gas & Water	1.688	2.235	.177	.325	.476	.045	.084	.132
15 Construction	1.771	2.557	.254	.467	.683	.080	.143	.211
16 W. & R. Trade	1.396	2.158	.334	.453	.663	.100	.133	.199
17 Transport & Storage	1.509	2.443	.403	.555	.812	.100	.141	.222
18 Communication	1.138	2.350	.675	.720	1.053	.173	.185	.290
19 Business Services	1.332	2.029	.303	.415	.607	.085	.116	.176
20 Owner-Occup. Real Estate	1.468	1.688		.131	.192		.039	.058
21 Public Administration	1.340	2.624	.650	.762	1.115	.127	.159	.269
22 Education Services	1.201	2.683	.819	.880	1.288	.168	.185	.314
23 Health Services	1.275	2.326	.539	.625	.914	.160	.186	.276
24 Other Community Services	1.444	2.617	.535	.697	1.020	.180	.226	.327
25 Personal & Domestic Services	1.556	2.426	.334	.517	.756	.142	.196	.271

^a Refer Appendix 1 for Sector Definitions.

Table 4.8
Sectoral Multipliers
Marlborough Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.465	1.715	.106	.211	.281	.090	.134	.157
2 Fishing & Hunting	1.372	1.922	.334	.466	.621	.139	.177	.228
3 Forestry & Logging	1.316	1.657	.196	.289	.385	.052	.078	.110
4 Mining & Quarrying	1.473	1.904	.216	.364	.486	.069	.111	.151
5 Mnf. of Food, Beverages & Tobacco	1.864	2.250	.167	.327	.436	.041	.119	.155
6 Textiles, Apparel & Leather Prod.	1.255	1.716	.308	.390	.521	.133	.162	.204
7 Wood and Wood Products	1.513	2.020	.288	.429	.572	.131	.176	.223
8 Paper, Printing & Publishing	1.151	1.705	.415	.469	.625	.146	.161	.212
9 Chemicals and Chemical Products	1.207	1.475	.161	.227	.303	.108	.129	.153
10 Non-Metallic Mineral Products	1.408	1.826	.230	.354	.472	.072	.109	.147
11 Basic Metal Industries								
12 Fabricated Metal Products	1.252	1.837	.407	.494	.660	.111	.136	.190
13 Other Manufacturing	1.181	1.693	.378	.433	.578	.107	.123	.170
14 Electricity, Gas & Water	1.661	2.025	.174	.308	.411	.046	.081	.115
15 Construction	1.590	2.094	.254	.427	.569	.180	.133	.180
16 W. & R. Trade	1.283	1.773	.326	.415	.554	.103	.130	.175
17 Transport & Storage	1.431	2.066	.399	.538	.718	.095	.136	.194
18 Communication	1.107	1.948	.675	.712	.950	.173	.183	.260
19 Business Services	1.225	1.651	.282	.361	.481	.077	.099	.138
20 Owner-Occup. Real Estate	1.336	1.449		.096	.128		.030	.041
21 Public Administration	1.259	2.138	.650	.744	.992	.127	.154	.234
22 Education Services	1.156	2.183	.819	.869	1.159	.168	.183	.277
23 Health Services	1.195	1.912	.539	.607	.810	.160	.181	.247
24 Other Community Services	1.306	2.133	.582	.700	.934	.186	.218	.294
25 Personal & Domestic Services	1.348	1.870	.322	.442	.590	.174	.211	.259

^a Refer Appendix 1 for Sector Definitions.

Table 4.9
Sectoral Multipliers
Nelson Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.382	1.667	.130	.229	.310	.198	.246	.274
2 Fishing & Hunting	1.391	1.931	.327	.434	.588	.142	.175	.227
3 Forestry & Logging	1.334	1.398	.196	.293	.396	.052	.079	.114
4 Mining & Quarrying	1.638	2.301	.335	.533	.721	.102	.159	.223
5 Mnf. of Food, Beverages & Tobacco	1.650	2.040	.166	.313	.424	.052	.145	.182
6 Textiles, Apparel & Leather Prod.	1.188	1.639	.302	.362	.490	.199	.222	.265
7 Wood and Wood Products	1.775	2.328	.243	.445	.602	.080	.141	.194
8 Paper, Printing & Publishing	1.191	1.748	.381	.448	.606	.124	.143	.196
9 Chemicals and Chemical Products	1.243	1.626	.236	.308	.416	.127	.150	.187
10 Non-Metallic Mineral Products	1.559	2.006	.183	.359	.486	.048	.098	.141
11 Basic Metal Industries	1.208	1.616	.266	.328	.444	.622	.641	.681
12 Fabricated Metal Products	1.232	1.532	.170	.241	.326	.057	.079	.107
13 Other Manufacturing	1.195	1.749	.384	.445	.602	.447	.466	.520
14 Electricity, Gas & Water	1.708	2.110	.174	.323	.437	.046	.086	.124
15 Construction	1.669	2.218	.254	.441	.596	.080	.136	.189
16 W. & R. Trade	1.287	1.816	.335	.425	.575	.101	.130	.181
17 Transport & Storage	1.416	2.095	.419	.546	.739	.100	.139	.204
18 Communication	1.099	1.982	.675	.709	.960	.173	.183	.267
19 Business Services	1.239	1.682	.275	.356	.482	.074	.098	.140
20 Owner-Occup. Real Estate	1.393	1.530		.110	.149		.033	.046
21 Public Administration	1.265	2.184	.650	.739	1.000	.127	.153	.241
22 Education Services	1.168	2.252	.819	.871	1.179	.168	.184	.288
23 Health Services	1.210	1.970	.539	.611	.826	.160	.183	.256
24 Other Community Services	1.359	2.192	.535	.670	.907	.179	.219	.299
25 Personal & Domestic Services	1.380	1.939	.322	.450	.608	.166	.206	.260

^a Refer Appendix 1 for Sector Definitions.

Table 4.10
Sectoral Multipliers
Westland Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.307	1.463	.094	.165	.211	.084	.113	.129
2 Fishing & Hunting	1.182	1.559	.338	.399	.509	.138	.160	.197
3 Forestry & Logging	1.308	1.577	.196	.284	.362	.052	.078	.105
4 Mining & Quarrying	1.635	2.161	.358	.555	.708	.108	.168	.220
5 Mnf. of Food, Beverages & Tobacco	1.646	1.869	.116	.236	.301	.038	.096	.118
6 Textiles, Apparel & Leather Prod.	1.230	1.605	.321	.397	.505	.182	.215	.252
7 Wood and Wood Products	1.678	2.083	.257	.428	.545	.079	.130	.170
8 Paper, Printing & Publishing	1.139	1.571	.406	.457	.582	.133	.148	.192
9 Chemicals and Chemical Products	1.124	1.338	.188	.226	.288	.114	.126	.147
10 Non-Metallic Mineral Products	1.427	1.811	.268	.407	.518	.075	.117	.155
11 Basic Metal Industries								
12 Fabricated Metal Products	1.184	1.562	.339	.399	.509	.339	.363	.401
13 Other Manufacturing	1.159	1.564	.377	.429	.546	.182	.199	.239
14 Electricity, Gas & Water	1.694	1.999	.175	.322	.411	.046	.086	.116
15 Construction	1.578	1.980	.254	.424	.541	.080	.134	.174
16 W. & R. Trade	1.263	1.652	.328	.411	.524	.111	.137	.176
17 Transport & Storage	1.436	1.937	.396	.529	.674	.096	.139	.189
18 Communication	1.091	1.759	.675	.706	.900	.173	.182	.249
19 Business Services	1.196	1.580	.331	.406	.518	.094	.116	.155
20 Owner-Occup. Real Estate	1.333	1.428		.101	.128		.031	.041
21 Public Administration	1.221	1.913	.650	.732	.933	.127	.151	.220
22 Education Services	1.151	1.972	.819	.868	1.106	.168	.183	.265
23 Health Services	1.172	1.741	.539	.602	.767	.160	.180	.237
24 Other Community Services	1.281	1.941	.586	.697	.889	.187	.218	.284
25 Personal & Domestic Services	1.335	1.753	.323	.441	.562	.163	.202	.243

^a Refer Appendix 1 for Sector Definitions.

Table 4.11
Sectoral Multipliers
Canterbury Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.641	2.109	.107	.260	.393	.083	.140	.182
2 Fishing & Hunting	1.477	2.337	.336	.478	.722	.139	.182	.260
3 Forestry & Logging	1.301	1.819	.196	.288	.435	.052	.078	.125
4 Mining & Quarrying	1.501	2.198	.230	.388	.586	.073	.118	.181
5 Mnf. of Food, Beverages & Tobacco	1.925	2.599	.189	.375	.567	.056	.135	.196
6 Textiles, Apparel & Leather Prod.	1.581	2.398	.291	.454	.686	.125	.185	.258
7 Wood and Wood Products	1.550	2.358	.287	.450	.679	.082	.130	.202
8 Paper, Printing & Publishing	1.351	2.107	.308	.420	.635	.098	.130	.198
9 Chemicals and Chemical Products	1.341	1.939	.231	.333	.502	.074	.103	.157
10 Non-Metallic Mineral Products	1.412	2.158	.288	.415	.627	.087	.124	.191
11 Basic Metal Industries	1.320	1.979	.272	.366	.553	.119	.148	.208
12 Fabricated Metal Products	1.444	2.171	.270	.404	.610	.087	.128	.193
13 Other Manufacturing	1.367	2.092	.291	.403	.609	.113	.146	.211
14 Electricity, Gas & Water	1.681	2.268	.179	.327	.493	.045	.084	.137
15 Construction	1.795	2.672	.254	.488	.737	.080	.149	.228
16 W. & R. Trade	1.410	2.231	.334	.457	.690	.098	.136	.210
17 Transport & Storage	1.509	2.514	.401	.559	.844	.097	.144	.235
18 Communication	1.135	2.430	.675	.720	1.088	.173	.186	.302
19 Business Services	1.305	1.992	.281	.382	.577	.176	.105	.167
20 Owner-Occup. Real Estate	1.453	1.689		.131	.198		.039	.060
21 Public Administration	1.344	2.720	.650	.765	1.156	.127	.160	.284
22 Education Services	1.203	2.788	.819	.882	1.332	.168	.187	.329
23 Health Services	1.275	2.405	.540	.628	.949	.160	.187	.389
24 Other Community Services	1.434	2.713	.554	.712	1.075	.180	.225	.340
25 Personal & Domestic Services	1.520	2.419	.328	.500	.755	.160	.213	.294

^a Refer Appendix 1 for Sector Definitions.

Table 4.12
Sectoral Multipliers
Otago Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.585	1.923	.100	.226	.322	.078	.128	.158
2 Fishing & Hunting	1.335	2.001	.342	.447	.635	.136	.170	.230
3 Forestry & Logging	1.337	1.776	.196	.294	.418	.052	.080	.120
4 Mining & Quarrying	1.538	2.152	.243	.412	.585	.077	.125	.181
5 Mnf. of Food, Beverages & Tobacco	1.857	2.365	.177	.341	.484	.053	.123	.169
6 Textiles, Apparel & Leather Prod.	1.576	2.251	.312	.453	.644	.137	.190	.251
7 Wood and Wood Products	1.490	2.127	.286	.427	.607	.095	.137	.195
8 Paper, Printing & Publishing	1.290	1.904	.317	.412	.585	.095	.122	.178
9 Chemicals and Chemical Products	1.370	1.742	.139	.249	.354	.057	.090	.124
10 Non-Metallic Mineral Products	1.534	2.110	.230	.387	.549	.068	.114	.166
11 Basic Metal Industries	1.341	1.730	.166	.261	.371	.141	.177	.211
12 Fabricated Metal Products	1.373	2.000	.305	.421	.598	.112	.150	.206
13 Other Manufacturing	1.275	1.848	.297	.385	.546	.129	.155	.207
14 Electricity, Gas & Water	1.672	2.156	.179	.325	.461	.045	.084	.128
15 Construction	1.695	2.373	.254	.455	.646	.080	.142	.203
16 W. & R. Trade	1.373	2.033	.330	.443	.629	.101	.135	.195
17 Transport & Storage	1.467	2.286	.406	.550	.781	.100	.144	.218
18 Communication	1.111	2.172	.675	.712	1.012	.173	.184	.280
19 Business Services	1.285	1.873	.297	.395	.561	.083	.111	.164
20 Owner-Occup. Real Estate	1.412	1.592		.121	.171		.037	.053
21 Public Administration	1.302	2.424	.650	.753	1.070	.127	.157	.259
22 Education Services	1.188	2.496	.819	.877	1.247	.168	.185	.304
23 Health Services	1.240	2.160	.539	.617	.877	.160	.184	.267
24 Other Community Services	1.405	2.437	.546	.693	.984	.179	.221	.315
25 Personal & Domestic Services	1.461	2.188	.333	.488	.693	.153	.201	.267

^a Refer Appendix 1 for Sector Definitions.

Table 4.13
Sectoral Multipliers
Southland Statistical Area

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.544	1.753	.099	.209	.268	.080	.127	.145
2 Fishing & Hunting	1.332	1.768	.332	.438	.560	.140	.175	.214
3 Forestry & Logging	1.285	1.567	.196	.283	.362	.052	.077	.102
4 Mining & Quarrying	1.603	2.121	.330	.520	.666	.100	.156	.202
5 Mnf. of Food, Beverages & Tobacco	1.948	2.285	.183	.338	.432	.046	.125	.155
6 Textiles, Apparel & Leather Prod.	1.491	1.705	.101	.215	.275	.116	.153	.172
7 Wood and Wood Products	1.581	2.034	.293	.458	.586	.099	.149	.190
8 Paper, Printing & Publishing	1.475	1.870	.259	.396	.507	.056	.094	.129
9 Chemicals and Chemical Products	1.289	1.478	.099	.190	.243	.044	.070	.087
10 Non-Metallic Mineral Products	1.466	1.855	.243	.390	.500	.063	.107	.142
11 Basic Metal Industries	1.517	1.808	.166	.292	.373	.022	.052	.078
12 Fabricated Metal Products	1.340	1.742	.303	.403	.515	.127	.156	.192
13 Other Manufacturing	1.248	1.694	.377	.448	.573	.201	.221	.260
14 Electricity, Gas & Water	1.570	1.872	.178	.303	.388	.045	.079	.105
15 Construction	1.648	2.091	.254	.444	.568	.080	.137	.177
16 W. & R. Trade	1.265	1.681	.334	.417	.534	.101	.126	.163
17 Transport & Storage	1.384	1.930	.426	.547	.700	.105	.142	.190
18 Communication	1.088	1.791	.675	.706	.963	.173	.182	.244
19 Business Services	1.223	1.606	.307	.385	.492	.087	.109	.143
20 Owner-Occup. Real Estate	1.359	1.465		.106	.136		.032	.041
21 Public Administration	1.240	1.970	.650	.733	.938	.127	.151	.216
22 Education Services	1.158	2.024	.819	.869	1.112	.168	.182	.259
23 Health Services	1.180	1.779	.539	.601	.769	.160	.179	.232
24 Other Community Services	1.294	1.958	.559	.666	.853	.181	.212	.270
25 Personal & Domestic Services	1.332	1.760	.318	.430	.550	.169	.204	.242

^a Refer Appendix 1 for Sector Definitions.

Table 4.14
Sectoral Multipliers
National Table

Sector ^a	Output Multipliers		Income Multipliers			Employment Multipliers (x10 ⁻³)		
	Simple	Total	Direct	Direct + Indirect	Direct + Indirect + Induced	Direct	Direct + Indirect	Direct + Indirect + Induced
			Income paid/\$ of output, 1971-72 prices			No's employed/\$ of output, 1971-72 prices		
1 Agriculture	1.662	2.212	0.105	.252	.397	.086	.141	.188
2 Fishing and Hunting	1.539	2.599	.335	.485	.766	.139	.185	.276
3 Forestry & Logging	1.415	2.098	.196	.313	.493	.052	.085	.143
4 Mining & Quarrying	1.679	2.729	.276	.481	.759	.086	.145	.234
5 Mnf. of Food, Beverages & Tobacco	2.181	2.966	.139	.359	.566	.042	.140	.207
6 Textiles, Apparel & Leather Prod.	1.675	2.633	.260	.438	.691	.115	.181	.262
7 Wood & Wood Products	1.864	2.921	.255	.484	.763	.078	.144	.234
8 Paper, Printing & Publishing	1.710	2.754	.276	.478	.754	.080	.138	.227
9 Chemicals & Chemical Products	1.472	2.094	.158	.285	.449	.055	.093	.146
10 Non-Metallic Mineral Products	1.692	2.673	.248	.449	.708	.073	.130	.214
11 Basic Metal Industries	1.651	2.359	.167	.324	.511	.042	.086	.146
12 Fabricated Metal Products	1.528	2.389	.251	.395	.622	.082	.125	.198
13 Other Manufacturing	1.519	2.472	.292	.436	.688	.089	.132	.213
14 Electricity, Gas & Water	1.732	2.474	.178	.339	.535	.045	.088	.151
15 Construction	1.999	3.154	.254	.529	.834	.080	.161	.260
16 W. & R, Trade	1.482	2.506	.334	.469	.739	.099	.140	.227
17 Transport & Storage	1.582	2.846	.407	.579	.913	.098	.149	.257
18 Communication	1.151	2.731	.675	.723	1.141	.173	.187	.321
19 Business Services	1.350	2.213	.283	.395	.624	.077	.109	.183
20 Owner-Occup. Real Estate	1.567	1.906		.155	.245		.046	.075
21 Public Administration	1.392	3.085	.650	.775	1.222	.127	.163	.307
22 Education Services	1.244	3.189	.819	.890	1.405	.168	.189	.355
23 Health Services	1.322	2.711	.539	.636	1.003	.160	.190	.308
24 Other Community Services	1.495	3.061	.545	.717	1.131	.180	.229	.362
25 Personal & Domestic Services	1.598	2.724	.328	.515	.813	.156	.213	.309

^a Refer Appendix 1 for Sector Definitions.

4.2 Interpretation of the I-O Multipliers

The multipliers from the non-survey I-O tables need to be interpreted with caution for a number of reasons. Some of these reasons pertain to multipliers in general, some to those multipliers derived from an I-O table, and some specifically to the multipliers derived by way of a non-survey I-O table.

The multiplier estimates pertain to data for 1971-72. It is unfortunate not to be able to generate estimates for more recent years to see how changes in the structure of the national economy have affected the estimates for 1971-72. However, without updating the national I-O table, the 1971-72 estimates are the most recent available.²²

In general, the multipliers from an I-O model need to be interpreted with reference to the matrix from which they are derived. There are some important assumptions pertaining to the coefficients of the I-O table and these have a direct bearing on any derived multipliers. The most important of the assumptions

²² The Department of Statistics is currently working on the preparation of the national I-O model for 1976-77, using primary data sources.

in this respect is that of linearity. The column coefficients in the table are treated as constant and are representative of average rather than marginal input requirements. Constant returns to scale are implied, and economies of scale precluded. Related to this is the implicit assumption that all sectors in the economy are operating at full capacity.²³ If, for any reason, some industries are operating at less than full capacity, then there is likely to be an opportunity for these industries to increase their output without increasing all of their inputs, particularly labour and fixed capital. Thus, where excess capacity exists in an economy, the multipliers are likely to overstate any income or employment impacts, particularly in the short run (e.g. Fookes, 1980).

The multipliers for a particular region are also likely to overstate the impacts on the local economy if the supply from local firms, in response to the increased demand made upon them, is anything less than perfectly elastic. Supply constraints in the local market are likely to be made good by imports, and with a larger import component the regional multiplier effects will be reduced. Similarly, it is assumed that the additional resources used by local

²³ Or maintaining a constant level of excess capacity.

firms to meet the increased demand have zero opportunity cost. Where this is not the case, increased output in some sectors may cause a decrease in output from other sectors. If such decreases occur within the region then the local multiplier effects will again be reduced. (If, however, the output of firms outside of the region suffers as a result of this reallocation of resources, then the regional multipliers will not be affected, although the region's increased output will not necessarily be reflected in increased national output -- the implicit assumption in most cost-benefit studies).

When using the multiplier of an existing sector in an I-O table to estimate the impact of a change in output in the economy, it is assumed that the change in output does not alter the structure of the economy. A change of this type would alter the a_{ij} coefficients in the I-O table which would, in turn, have repercussions on the derived multipliers.

When interpreting the income and employment multipliers and the total output multipliers it must be remembered that all involve the use of either the household income or employment vector. The household income and employment coefficients are, of course,

subject to the same linearity assumptions as the a_{ij} coefficients in the A matrix. Any increase in output is assumed to lead to a directly proportional increase in household income and employment. A further point relating particularly to the interpretation of the income and employment multipliers is the incidence of aggregation of the original 130 sector table. The income and employment multipliers are likely to be subject to a greater degree of aggregation bias than the output multipliers, but no attempt has been made in the present study to quantify this.

As was pointed out in Chapter 2 the multipliers derived from a regional non-survey I-O table are likely to be larger than their counterparts from a more accurate survey based table. Location quotients are largely to blame for this by underestimating regional imports. Consequently, the multiplier estimates are overstated because the a_{ij} coefficients are overstated. To restate Morrison and Smith (1974: 13), "In any study which applies non-survey methods, the volume of local transactions will probably be overestimated, since these methods almost all involve the implicit assumption of maximum local trade," (i.e. the assumption that if a firm can buy its requisite inputs locally, then it will do so).

The accuracy of the I-O tables for the 13 Statistical Areas, and thus the derived multipliers, could be considerably improved by the incorporation, when available, of a greater amount of 'superior' data, particularly where these pertain to the more important sectors of the regional economy. Whilst improved accuracy of any of the multipliers would be advantageous, more emphasis should probably be placed on the overall significance of individual multipliers and on their inter-regional differences than on their precise values. Such an extension of this study could follow the coefficient optimisation procedure suggested by West (1980).

Finally, it should be pointed out that although it is theoretically possible, with multiplier estimates, to assess the overall impact on the economy of an expansion in one or more sectors, it is another matter to estimate the time horizon over which the multiplier effects will operate. The multipliers themselves give an indication of the total impact that eventuates when the economy has reached a new equilibrium. How long it will take for this new equilibrium to be reached in practice will depend on the velocity of transactions within the economy. Some injections may have an

immediate impact, others a more gradual one. The time lags involved with the multiplier effects are relevant to planning and regional development and should not be overlooked. However, as with the multiplier effects themselves, these time lags are far from easy to quantify.

CHAPTER 5

SUMMARY AND CONCLUSIONS

This study has been concerned with estimating non-survey I-O tables for each of the 13 Statistical Areas in New Zealand and using these tables to derive regional output, income and employment multipliers. The basic methodology used in estimating the non-survey tables relied on the Simple Location Quotient (SLQ) approach as incorporated in a full methodology of generating regional I-O tables (GRIT) developed at the University of Queensland (Chapter 2). Extensive use was made of existing regional output and employment data compiled by the N.Z. Department of Statistics, employment being used as a proxy measure for output where actual regional output data was unavailable (Chapter 3).

Prior to the adjustment procedure the agriculture and livestock industry in the national 130 sector I-O table was disaggregated into three component sectors with a view to deriving an improved regional breakdown of the agricultural industry. Following the SLQ adjustment the disaggregated regional tables were consensed to form 25 sector tables. These regional I-O tables offer approximate models of the economy in each of the Statistical Areas of New Zealand.

The accuracy of the tables, and the multipliers, could undoubtedly be improved by the use of more regional 'superior' data, and with methodological refinements. These multipliers do, however, reveal differences both between sectors within a region and between regions for a particular sector. They will, therefore, be of use in analysis of the economic structure of different regions in New Zealand and in assessing the relative output, income and employment impacts of alternative investment programme options. While the actual figures have to be interpreted with caution, and could be improved with further research, they will contribute to economic analysis at a regional level and strengthen this component of policy formulation and investment appraisal.

REFERENCES

- Brown, W.A.N. 1980. The Economic Impacts of the Tiwai Point Aluminium Smelter on the Southland Region. A report prepared for Comalco Ltd., Auckland.
- Brown, W.A.N. & Hubbard, L.J. 1980. "The Regional Development Impacts of Irrigation Schemes", Paper presented to the Second National Conference of the New Zealand Irrigation Association, Oamaru, April 15-17.
- Chenery, H.B. and Clark, P.B. 1962. Inter Industry Economics. John Wiley & Sons, New York.
- Doekson, G.A. and Little, C.H. 1968. Effect of Size of the Input-Output Model on the Results of an Impact Analysis. Agricultural Economics Research 20(4) : 134-138.
- Fookes, T.W. 1980. Social and Economic Impact of the Huntly Power Station. 1978-79 Progress Report. Working Paper No. 10, School of Social Sciences, University of Waikato.
- Hoover, E.M. 1975. An Introduction to Regional Economics. 2nd ed. Knopf, New York.
- Hubbard, L.J. & Brown, W.A.N. 1979. The Regional Impacts of the Irrigation Development in the Lower Waitaki. Research Report No. 99, Agricultural Economics Research Unit, Lincoln College, Canterbury.
- Jensen, R.C. 1980. "An Introspective Evaluation of the Regional Input-Output Technique." Paper to the First World Regional Science Congress, Cambridge, Mass.
- Jensen, R.C., Manderville, R.D. & Karunaratne, N.D. 1977. Generation of Regional Input-Output Tables for Queensland. Report to the Co-ordinator General's Department and the Department of Commercial and Industrial Development, Department of Economics, University of Queensland.
-
- , 1979.
- Regional Economic Planning : Generation of Regional Input-Output Tables, Groom Helm, London.
- Jensen, R.C. & West, G.R. 1980. The Effect of Relative Coefficient Size on Input-Output Multipliers. Environment & Planning, Vol 12 : 659-670.
- Leontief, W.W. 1951. The Structure of American Economy, 1919-1939. 2nd ed. Oxford University Press, New York.
- Lowe, R.J. 1977. "Regional Employment Impact of Possible Economic Development Work", pp. 126-141 in King Country Land Use Study, Department of Lands & Survey Report of the Economic Working Party, Wellington.

- Manderville, T.D. (ed). 1978. Proceedings of the Input-Output Workshop of the Second Meeting of the Australian and New Zealand Section of the Regional Science Association at the University of New South Wales. Department of Economics, University of Queensland.
- Manderville, T.D. & Jensen, R.C. 1978. The Impact of Major Development Projects on the Gladstone/Calliope, Fitzroy, Queensland, and Australian Economies : An Application of Input-Output Analysis. Report to the Department of Commercial and Industrial Development and Comalco Ltd. Department of Economics, University of Queensland.
- Miernyk, W.H. 1965. Elements in Input-Output Analysis, Random House, New York.
- Moore, C. 1980. A Survey Based I-O Table of the Northland Region (draft) Thesis, University of Auckland.
- Morrison, W.I. & Smith, P. 1974. Non-Survey Input-Output Techniques at the Small Area Level - An Evaluation. Journal of Regional Science 14 (1) : 1-14.
- New Zealand Department of Statistics. 1974a Industrial Production 1971-72. Government Printer, Wellington.
- _____, 1974b Agricultural Statistics 1971-72. Government Printer, Wellington.
- _____, 1975a Inter-Industry Study of the New Zealand Economy 1965-66, Parts 1 and 2. Government Printer, Wellington.
- _____, 1975b New Zealand Standard Industrial Classification Manual. Department of Statistics, Wellington.
- _____, 1975c New Zealand Census of Population and Dwellings, 1971 : Industries and Occupations. Vol 4, 1971 Census Series. Government Printer, Wellington.
- _____, 1978. Inter-Industry Study of the New Zealand Economy, 1971-72. Supplement to the Monthly Abstract of Statistics, Jan-Feb 1978. Government Printer, Wellington.
- _____, 1979. Provisional New Zealand Input-Output Tables, 1976-77. Misc. Series No. 14, Government Printer, Wellington.
- _____, 1980. Inter-Industry Study of the New Zealand Economy 1971-72. Cat. 13.001 Government Printer, Wellington.

- Rodgers, J.R. 1977. A Note on "Effect of Size of the Input-Output Model on the Results of an Impact Analysis". Agricultural Economics Research 29(4) : 154-155.
- _____, 1978. A Methodology for Aggregating Industries of Input-Output Models, with Application to New Zealand Inter-industry Data. Thesis M.Appl.Sc. Lincoln College, University of Canterbury, New Zealand.
- Schaffer, W.A. & Chu, K. 1969. Non-Survey Techniques for Constructing Regional Interindustry Models. Papers of the Regional Science Association, XIII: 83-101.
- Scott, C.D. 1980. Regional Development Objectives and Policies : An Appraisal. Planning Paper No. 7, New Zealand Planning Council, Wellington.
- West, G.R. 1980. A Procedure for Accuracy Optimisation in Input-Output Coefficients. pp 126-154, in West, Wilkinson & Jensen (1980).
- West, G.R. & Jensen, R.C. 1980. Some Reflections on Input-Output Multipliers. pp 109-125 in West, Wilkinson & Jensen, 1980.
- West, G.R., Wilkinson, J.T. & Jensen, R.C. 1979. Generation of Regional Input-Output Tables for the State and Regions of South Australia. Report to the Treasury Department, the Department of Urban and Regional Affairs and the Department of Trade and Industry, University of Queensland.
- _____, 1980. Generation of Regional Input-Output Tables for the Northern Territory. Report to the Northern Territory Department of the Chief Ministry. University of Queensland.

APPENDICES

APPENDIX 1

AGGREGATION OF THE 25 SECTOR GRIT TABLE

Industry Aggregation 25 Sector GRIT Table	Industry Name & Sector 130 Sector National Table	N.Z. Standard Industrial Classification
1. Agriculture	1 Agriculture and livestock) production) ^a	Major group 111 excl.groups 11145 1118 and 1119 and part of 11142
	2 Poultry farming	Group 11145
	3 Other farming n.e.c.	Groups 1118,1119,11142(part)
	4 Agricultural services	Major group 112
2. Fishing & Hunting	5 Hunting, trapping and game propagation	Major group 113
	7 Fishing	Division 13
3. Forestry & Logging	6 Forestry and logging	Division 12
4. Mining & Quarrying	8 Coal Mining and natural gas production	Division 21,22 excl.group 2201
	9 Mining and quarrying	Division 23,29
<u>1971-72 Industrial Production Census Industry</u>		
5. Manufacture of Food, Beverages & Tobacco	10 Meat freezing & preserving) ^b	200
	11 Ham,bacon and smallgoods	205,207
	12 Abattoirs and rural and poultry slaughterhouses) ^b	Not included in Industrial Production Census
	13 Butter, cheese and other milk products	210-211(229)
	14 Milk processing stations	212
	15 Ice cream	209
	16 Fruit & vegetable preserving	216
	17 Fish preserving	218
	18 Vegetable and animal oils and fats	372
	19 Grain milling	219
	20 Bread bakeries)	220
	21 Cake,pastry & pie factor-) ^b ies and kitchens)	Not included in Industrial Production Census
	22 Biscuits	222
	23 Cocoa,chocolate & sugar confectionery	224
	24 Food preparations n.e.c.	229
	25 Feeds for animals & fowls	227
	26 Distilling,rectifying and blending of spirits	231
	27 Wine making	230
	28 Malting and the brewing of ale and stout	232-234
	29 Aerated waters and cordials	236
30 Tobacco,cigars & cigarettes	240	
6. Textiles,Wearing Apparel & Leather Products	31 Wool scouring	250
	32 Woollen milling	251
	33 Canvas goods	286
	34 Made up textiles (other than wearing apparel)	289
	35 Hosiery & other knitting mills	260
	36 Other spinning & weaving	254,262,263
	37 Textiles n.e.c.	269
	38 Wearing apparel except footwear (includes bespoke tailors and dressmakers)	270,272-279,282
	39 Tanning	350
	40 Fellmongery	353
	41 Leather goods	356
	42 Footwear other than rubber	284
7. Wood & Wood Products	43 Sawmills	300
	44 Planing mills and timber preservation	302
	45 Plywood and veneer	308
	46 Joinery	304
	47 Wood products n.e.c.	306,309
	48 Furniture	320
	49 Mattresses	325

Appendix 1 (cont'd)

Industry Aggregation 25 Sector GRIT Table	Industry Name & Sector 130 Sector National Table	1971-72 Industrial Production Census Industry
8. Paper, Printing & Publishing	50 Pulp, paper & paperboard	330
	51 Cardboard boxes, cartons and containers	335
	52 Paper bags and sacks	336
	53 Paper products n.e.c.	339
	54 Printing and publishing	340
	55 Job and general printing 56 Service industries for printing trade	343 346
9. Chemicals & Chemical Petroleum, Coal, Rubber and Plastic Products	57 Chemical products n.e.c.	389
	58 Chemical fertilisers	370
	59 Paint and varnish	380
	60 Pharmaceuticals, toilet goods and cosmetics	383
	61 Soap	377
	62 Ink	376
	63 Petroleum & coal products	390
	64 Bituminous paving and roofing materials	393
	65 Motor vehicle tyres and tubes	360
	66 Vulcanising & tyre retreading	366
	67 Rubber goods other than motor vehicle tyres and tubes 68 Plastics	363 488
10. Non-metallic Mineral Products except products of Petroleum & Coal	69 Pottery, china & earthenware	403
	70 Glass and glass products	407
	71 Structural clay products	400
	72 Cement	405
	73 Lime	412
	74 Concrete products	409
	75 Ready-mixed concrete	410
	76 Non-metallic mineral products) n.e.c. (includes monumental) and stone masons))	415,419
11. Basic Metal Industries	77 Basic metal industries	420
12. Fabricated Metal Products	78 Sheetmetal working	430
	79 Wireworking and nail making	434,436
	80 Electro-plating and metal polishing	437
	81 Metal products n.e.c.	326,439
	82 Agricultural and pastoral machinery	440
	83 Machinery n.e.c.	449
	84 Range making	450
	85 Electrical machinery, appliances n.e.c. & repairs	459
	86 Radio & television assembly	455
	87 Boat building & ship repairing	460 plus Naval Dockyard
	88 Motor vehicle assembly	464
	89 Motor body building	466
	90 Aircraft manufacture, maintenance and repair	470
91 Transport equipment n.e.c.	472,479 + NZ Railway Workshops	
92 Optical, surgical and dental etc., equipment	480	
13. Other Manufacturing Industries	93 Jewellery	482
	94 Brushes and brooms	484
	95 Toys and sports goods	486
	96 Manufacturing industries n.e.c.	489
14. Electricity, Gas & Water	97 Electric light and power)	Group 4101
	98 Gas manufacture & distribution)	Group 4102
	99 Water works and supply	Group 4200

N.Z. Standard Industrial Classification

Appendix 1 (cont'd)

Industry Aggregation 25 Sector GRIT Table	Industry Name & Sector 130 Sector National Table	N.Z. Standard Industrial Classification
15. Construction	100 Residential building)	Major division 5(part)
	101 Other building)	Major division 5(part)
	102 Construction other than building(civil engineering))	Major division 5(part)
	103 Ancillary building & construct- ion(including maintenance by)	Major division 5(part)
16. Wholesale & Retail Trade, Restaurants & Hotels	104 Wholesale & retail trade	Division 61 and 62
	105 Restaurants, cafes & other eating & drinking services	Major group 631
	106 Hotels, rooming houses, camps and other lodging places	Major group 632
17. Transport & Storage	107 Rail transport)	Group 7111
	108 Passenger road transport)	Group 7112,7113
	109 Freight transport by road) b	Group 7114
	110 Supporting services to land transport)	Group 7116
	111 Water transport	Major group 712
	112 Air transport	Major group 713
	113 Storage, warehousing, and services incidental to transport	Major group 719
18. Communication	114 Communication	Division 72
19. Financing, Ins- urance, Real Estate & Business Services	115 Financial institutions and services	Division 81
	116 Insurance	Division 82
	117 Real estate	Groups 83101,83102,83109
	119 Business services	Major group 832
	120 Renting & leasing machinery and equipment	Major group 833
20. Owner-occupied Real Estate	118 Owner-occupied real estate (special national accounting sub-group)	Group 83101
21. Public Administration	121 Public administration	Groups 91011-6,9102
22. Education Services	123 Education services	Major group 931
23. Health Services	124 Health services	Groups 9331,9332
24. Sanitary Services, Welfare Institut- ions & Social & Related Community Services	122 Sanitary & similar services	Division 92
	125 Welfare institutions	Major group 934,group 9391
	126 Social and related community services	Major groups 932,935, group 9399
25. Recreational & Cultural Services, Repair Services & Personal & Domestic Services	127 Recreational & cultural services	Division 94
	128 Repair of motor vehicles) and motorcycles) b	Group 9513
	129 Repair services n.e.c.)	Groups 9511,9512,9514,9519
	130 Personal & domestic services	Major groups 952,953,959
<u>Primary Inputs</u>		
26. Compensation of Employees	131	
27. Other Primary Inputs	132-138	
28. Imports	139,140	
<u>Final Demand</u>		
26. Household Consumption	131,133	
27. Other Final Demand	132,134-137	
28. Exports	138	

Footnotes to Appendix 1

- a Divided to three sub-sectors -- refer Appendix 2.
- b Aggregated because of lack of individual sectoral data.

These adjustments meant data were handled at the 122 sector level.

Note on Date Sources

1. For most sectors, regional output and/or employment data were taken from the 1971 Census of Population & Dwellings (N.Z. Department of Statistics 1975c), and the 1971-72 Census of Industrial Production (N.Z. Department of Statistics 1974a). The former was used for sectors 4-9 and 97-130, while the latter was used for the manufacturing sectors, 10-96.
2. For the agricultural sectors, 1-3, regional output data were estimated from Agricultural Statistics of 1971-72 (N.Z. Department of Statistics, 1974b).
3. For owner-occupied real estate, sector 118, regional estimates were derived from population weights.

Interpretative Note

While the definitions for each of the 130 sectors, except one, are analagous to those used by the Department of Statistics in their 130 sector table (N.Z. Department of Statistics, 1980), the aggregation to the 25 sector levels contains some discrepancies in Sectors 21-25. The two aggregated tables are therefore not exactly similar. The one minor definitional change was that all Industry 229 was allocated to Sector 24, whereas in the Department of Statistics table, part is allocated to Sector 24, part to Sector 13.

APPENDIX 2

DISAGGREGATION OF SECTOR 1 --
"AGRICULTURE AND LIVESTOCK PRODUCTION"

ROWS

Purchasing Sector ^a	Sheep/ Beef	Dairy	Other Main Farming ^b	Agriculture and Livestock Production
	(\$m)	(\$m)	(\$m)	(\$m)
1.1	100.6	18.6	5.3)	
1.2	20.6	7.2	1.7)	158.1
1.3	1.6	1.0	1.5)	
2	10.0	0.3	4.4	14.7
3	0.2	-	-	0.2
5	0.1	-	-	0.1
6	0.1	-	-	0.1
10	277.1	44.3	8.0	329.4
12	48.0	16.7	8.1	72.8
13	-	264.3	-	264.3
14	-	26.9	-	26.9
16	0.4	-	0.2	0.6
18	0.5	-	0.2	0.7
19	10.0	0.3	4.4	14.7
22	0.1	-	-	0.1
23	0.3	0.3	0.1	0.7
24	0.1	0.1	-	0.2
25	5.3	0.2	2.3	7.8
26	0.2	-	0.1	0.3
28	1.1	-	0.5	1.6
32	7.0	-	0.1	7.1
36	2.8	-	0.1	2.9
37	2.8	-	-	2.8
39	-	-	0.1	0.1
42	0.1	-	-	0.1
44	0.4	0.2	-	0.6
9	0.8	0.4	-	1.2
10	-	1.1	-	1.1
13	-	0.3	-	0.3
16	-	0.2	0.2	0.4
18	0.1	0.7	0.1	0.8
19	-	0.1	0.2	0.3
24	0.1	0.1	-	0.2
25	0.2	5.4	0.2	5.8
31	2.6	-	-	2.6
34	1.9	-	-	1.9
36	0.8	0.2	-	1.0
38	0.5	0.2	-	0.7
42	-	0.1	-	0.1

Appendix 2 (cont'd)

Producing Sector ^a Columns	Sheep/ Beef	Dairy	Other Main Farming ^b	Agriculture and Livestock Production
	(\$m)	(\$m)	(\$m)	(\$m)
43	1.5	0.8	0.9	3.2
44	0.7	0.3	-	1.0
46	0.1	-	0.1	0.2
47	0.6	-	0.6	1.2
48	-	-	0.1	0.1
50	0.3	0.3	-	0.6
53	0.2	0.1	-	0.3
54	1.1	0.8	-	1.9
55	0.4	0.2	-	0.6
56	-	-	0.1	0.1
57	4.9	2.7	2.4	10.0
58	31.2	17.4	2.6	51.1
59	1.9	0.8	-	2.7
60	1.9	1.4	-	3.3
61	-	0.5	-	0.5
63	3.6	2.2	-	5.8
65	0.6	0.2	0.8	1.6
66	-	-	1.3	1.3
67	-	0.9	-	0.9
46	0.1	-	-	0.1
47	0.1	0.1	-	0.2
48	0.1	-	-	0.1
100	0.4	0.1	-	0.5
101	0.1	0.1	-	0.2
102	0.1	0.1	-	0.2
104	0.1	-	-	0.1
105	0.3	1.5	0.1	1.9
106	0.1	0.3	-	0.4
111	-	-	0.1	0.1
118	0.2	0.1	-	0.3
121	0.1	-	-	0.1
123	0.2	0.1	-	0.4
124	0.2	0.3	0.1	0.6
126	0.2	0.1	-	0.3
127	0.4	-	0.2	0.6
Household Consumption	16.5	4.6	10.7	31.8
Other Final Demand excl. exports	39.8	18.1	0.3	58.2
Exports	166.8	3.9	7.6	178.3
TOTAL OUTPUT	715.2	410.4	56.2	1,181.8

Appendix 2 (cont'd)

COLUMNS

Producing Sector ^a	Sheep/ Beef	Dairy	Other Main Farming ^b	Agriculture and Livestock Production
	(\$m)	(\$m)	(\$m)	(\$m)
1.1	100.6	20.6	1.6)	
1.2	18.6	7.2	1.0)	158.1
1.3	5.3	1.7	1.5)	
4	47.3	11.5	-	58.7
68	1.0	0.9	-	1.9
73	2.6	1.0	-	3.6
74	1.4	1.2	-	2.6
75	-	0.1	-	0.1
76	0.2	0.1	-	0.3
77	3.2	1.8	-	5.0
78	0.1	0.9	-	1.0
79	0.4	0.1	-	0.5
81	1.7	1.7	0.3	3.6
82	3.7	2.0	0.3	6.0
83	0.9	1.1	0.9	2.9
85	-	-	0.2	0.2
87	-	-	0.1	0.1
88	-	0.1	0.1	0.2
91	-	0.1	0.1	0.2
93	0.1	0.1	-	0.2
94	0.1	-	-	0.1
96	-	-	0.1	0.1
97	4.0	5.2	-	9.2
99	-	-	0.9	0.9
102	1.9	0.8	0.8	3.5
103	0.4	0.3	-	0.8
104	23.8	13.3	2.0	39.0
105	0.1	0.1	0.2	0.4
106	-	-	0.1	0.1
107	2.8	0.5	1.0	4.2
108	0.2	-	0.1	0.3
109	14.3	2.4	3.2	19.9
110	-	-	0.8	0.8
111	0.1	0.1	1.2	1.4
112	4.2	2.3	0.3	6.9
113	0.4	0.2	0.7	1.3
114	3.2	2.2	-	5.4
115	10.2	5.7	0.8	16.7
116	3.3	1.5	-	4.8
117	5.0	2.8	0.8	8.6
119	6.4	2.4	1.7	10.5
120	-	-	0.1	0.1
121	0.4	0.2	0.1	0.8
124	2.1	1.4	1.1	4.6
126	2.3	0.8	-	3.1

Appendix 2 (cont'd)

COLUMNS

Producing Sector ^a	Sheep/ Beef	Dairy	Other Main Farming ^b	Agriculture and Livestock Production
	(\$m)	(\$m)	(\$m)	(\$m)
127	0.1	0.1	-	0.2
128	4.9	2.8	0.4	8.1
129	0.1	0.1	0.3	0.5
Salary and Wages	53.7	35.2	10.8	99.7
Other Primary Inputs excl. imports	309.1	218.4	10.9	538.9
Imports	23.2	16.4	3.0	42.6
Total Inputs	715.2	410.4	56.2	1,181.8

^a Sectors numbered as in the 130 sector table (N.Z. Department of Statistics, 1980). Refer Appendix 1.

^b The residual.

NOTE: Totals may not add due to rounding errors.

Source: Estimated from unpublished data from the N.Z. Department of Statistics.

APPENDIX 3

REGIONAL TRANSACTIONS TABLES

1971-72

(\$'000)

Note: For sectoral definitions, refer Appendix 1.
Sector 29 contains row and column sums.

A3.1 Northland Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	14234	3	3	0	45161	0	18	0	0	0	0	0	0	0
2:	0	8	0	0	468	0	0	0	0	0	0	0	0	0
3:	0	0	448	0	0	0	995	0	0	0	0	0	0	0
4:	90	0	7	228	70	0	0	0	182	980	0	1	8	25
5:	254	17	0	0	955	0	0	0	5	0	0	0	0	0
6:	19	0	0	0	19	95	0	0	0	0	0	1	0	0
7:	296	8	4	7	22	0	681	0	5	0	0	95	0	0
8:	138	0	0	0	31	3	4	9	0	12	0	9	0	6
9:	4479	27	25	24	129	1	10	3	1118	84	0	5	0	7
10:	492	0	5	11	91	0	4	0	24	555	0	9	0	3
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	378	199	14	22	102	2	21	4	88	32	0	349	0	7
13:	17	0	0	0	0	1	0	0	0	0	0	0	4	0
14:	849	0	9	67	412	7	54	12	165	409	0	70	4	3213
15:	316	0	43	69	225	2	29	7	129	112	0	109	0	57
16:	2410	49	120	105	1403	97	160	54	2281	395	0	420	15	72
17:	1584	67	247	316	2341	19	152	39	1004	736	0	224	4	72
18:	441	9	12	13	83	5	18	23	38	19	0	51	0	24
19:	2003	54	50	43	448	30	57	58	62	148	0	145	8	178
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	30	0	2	0	16	1	0	2	0	0	0	1	0	28
22:	0	0	0	0	0	0	0	0	0	0	0	1	0	3
23:	268	0	0	0	9	0	0	0	0	0	0	0	0	3
24:	133	0	0	1	59	1	5	6	0	0	0	2	0	2
25:	717	10	36	32	30	2	17	3	0	13	0	17	0	12
26:	9562	523	875	673	6944	794	1232	814	9540	2935	0	2720	119	1703
27:	45802	404	2214	1007	7690	261	739	515	4181	3839	0	1139	68	3569
28:	11319	216	360	392	5387	995	602	561	23332	2088	0	3024	130	643
29:	95831	1594	4474	3010	72095	2316	4798	2110	42154	12357	0	8392	360	9627

A3.1 Northland Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	35	233	12	0	0	10	11	22	45	7	21	2656	4995	28365	95831
2:	0	48	0	0	0	0	1	0	3	0	0	65	231	770	1594
3:	136	0	0	0	0	0	2	0	0	0	0	0	1793	1100	4474
4:	342	3	0	0	1	81	7	7	6	6	2	44	69	651	3010
5:	3	768	19	0	0	0	6	20	71	2	0	8443	3283	58249	72095
6:	1	7	9	1	0	0	3	0	10	2	5	1847	65	232	2316
7:	1668	43	8	0	5	222	6	29	7	4	12	305	396	975	4798
8:	40	465	23	8	141	0	21	32	8	20	46	558	29	507	2110
9:	188	164	235	10	28	1	35	9	14	16	76	1204	1503	32759	42154
10:	1922	37	0	0	9	81	5	15	2	0	10	42	779	8261	12357
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	566	97	181	6	10	54	97	8	10	5	48	1057	2593	2442	8392
13:	0	0	0	0	0	0	0	0	0	0	13	235	24	66	360
14:	165	607	70	25	112	14	63	166	103	82	91	2469	73	316	9627
15:	6814	359	2520	13	119	844	122	178	31	29	103	196	28052	823	41301
16:	2243	2195	727	44	365	385	162	78	289	131	525	31174	3385	5797	55081
17:	699	563	1046	166	138	69	106	158	128	57	192	2812	3006	4947	20992
18:	108	628	119	0	354	0	108	80	83	58	136	2258	134	724	5526
19:	697	2901	318	23	1460	788	276	50	146	72	281	5666	285	2265	18512
20:	0	0	0	0	0	0	0	0	0	0	0	11522	0	1	11523
21:	197	53	19	2	19	2	32	2	3	54	42	76	6026	155	6762
22:	0	7	4	0	4	3	6	3	0	2	3	1385	7647	32	9100
23:	0	5	0	0	2	0	6	0	105	3	12	3595	5705	-82	9631
24:	43	195	9	3	73	0	63	39	130	64	11	825	992	412	3068
25:	134	575	327	7	106	2	37	30	29	14	275	4118	529	1093	8165
26:	10501	18027	8999	3729	5237	0	4394	7455	5192	1750	2508	0	0	0	106226
27:	4289	18112	3512	1162	8540	7206	91	130	1904	67	1696	8048	872	0	127057
28:	10310	8889	2835	327	1789	1761	1102	589	1312	623	2057	59729	7985	0	148357
29:	41301	55081	20992	5526	18512	11523	6762	9100	9631	3068	8165	150329	80451	150860	830419

A3.2 Central Auckland Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	3032	1	0	0	25205	516	57	0	23	0	0	0	0	0
2:	0	6	0	0	385	2	0	0	0	0	0	0	0	0
3:	0	0	55	0	0	0	358	128	0	0	0	0	0	0
4:	50	0	5	619	144	9	0	56	492	2217	255	46	88	75
5:	973	19	0	0	25338	1042	0	58	803	71	0	0	74	0
6:	269	0	0	0	558	34637	423	0	416	143	206	465	552	0
7:	459	49	6	6	862	151	8981	198	220	67	0	1918	248	0
8:	388	0	0	0	7614	2155	628	15652	3879	1759	69	2947	1060	147
9:	3627	10	24	54	2672	2860	2458	3526	13236	271	85	6535	1351	26
10:	245	0	6	44	4743	0	323	3	473	2333	0	425	74	17
11:	335	0	3	22	173	0	270	148	93	84	13373	16071	333	17
12:	1176	401	59	263	3569	803	2122	884	4032	1281	2949	40154	396	246
13:	32	0	0	0	229	821	178	50	259	71	0	332	808	0
14:	558	0	7	153	1839	755	434	896	1020	698	1288	1950	192	12817
15:	271	0	39	241	1286	482	213	380	469	529	134	1666	79	305
16:	3021	97	148	451	11938	10884	5630	8772	7320	3033	3840	23742	1838	541
17:	2257	101	244	1042	14220	4241	2828	5275	3841	2744	2006	8332	957	386
18:	379	14	12	45	815	558	292	590	613	260	199	1555	72	152
19:	2764	128	80	227	6216	4473	2084	3540	3995	1397	1085	9240	1167	1424
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	54	0	3	0	72	45	0	76	57	0	0	187	0	759
22:	0	0	0	0	0	0	0	0	0	0	0	44	0	17
23:	235	0	0	0	8	0	0	0	0	0	0	0	0	17
24:	325	0	0	4	238	68	11	118	41	147	0	95	0	12
25:	576	14	36	107	511	138	133	146	141	119	66	898	0	68
26:	9510	781	822	2188	46982	47239	19706	31479	26433	15152	9160	93842	7869	9933
27:	37018	600	2080	3210	41622	27760	11543	22750	26952	12648	11110	52781	5715	20398
28:	15871	166	574	1015	122299	45632	16765	21247	38757	10153	17925	76758	4773	7014
29:	83425	2387	4203	9691	319538	185271	75537	115972	133565	55177	63750	339983	27646	54371

A3.2 Central Auckland Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	55	1124	65	0	0	14	49	108	200	28	92	12033	4348	36475	83425
2:	0	196	0	0	0	0	2	0	12	0	0	227	346	1211	2387
3:	124	0	0	0	0	0	3	0	0	0	0	0	1685	1850	4203
4:	3239	26	0	0	6	500	72	51	28	34	24	239	221	1195	9691
5:	25	18781	174	0	0	0	91	264	757	21	0	95520	14551	160976	319538
6:	74	2437	272	25	156	0	126	0	485	98	358	70915	5202	67454	185271
7:	15748	1246	144	0	401	1468	230	439	152	68	277	12616	6236	23347	75537
8:	1790	14432	1182	390	5944	544	1690	1437	358	1061	1676	14562	1605	33003	115972
9:	7720	2949	1290	18	524	2538	501	260	2071	142	1338	17487	4762	55230	133565
10:	17921	481	0	0	156	439	50	177	50	0	106	1921	3479	21711	55177
11:	1577	161	54	0	78	415	76	51	25	0	49	329	6901	23112	63750
12:	21151	5206	11790	319	1217	2283	2542	292	599	152	2165	47544	105027	81361	339983
13:	329	340	0	0	165	393	50	169	75	65	355	5371	1847	15707	27646
14:	874	4588	537	134	1402	146	769	1044	687	548	747	12658	410	7093	54371
15:	46455	3203	17968	96	1866	5962	1621	1476	243	320	1224	1378	196479	4896	289281
16:	20740	25915	8799	442	6270	3734	2693	853	3046	1481	5577	283064	32866	58057	534792
17:	5603	8850	14047	1846	2572	597	1856	1432	1166	667	1908	25139	29694	63511	207362
18:	786	6350	1617	0	4927	0	1538	709	700	666	1386	16940	1002	720	41457
19:	8300	45329	5011	269	31836	8637	6023	680	1888	1249	3951	63868	4089	46934	265884
20:	0	0	0	0	0	0	0	0	0	0	0	83658	0	-2	83656
21:	2605	981	379	24	531	24	831	25	50	561	992	1034	82341	768	92399
22:	0	80	76	0	58	24	101	25	0	18	49	11811	65236	89	77628
23:	0	53	0	0	24	0	99	0	959	50	171	29184	46315	1071	78186
24:	275	1764	95	20	945	0	727	273	900	870	118	9233	8831	2197	27307
25:	1089	7591	2468	48	2054	24	640	298	270	159	4066	42128	4677	3763	72228
26:	73552	178998	84009	27974	70963	0	60044	63598	42153	14923	23774	0	0	0	961084
27:	30037	177274	34222	8719	127788	52323	1237	1112	15458	276	14131	58113	6294	0	803271
28:	29212	26337	23163	1133	6001	3591	8738	2855	5854	3850	7694	168539	57658	0	723574
29:	289281	534792	207362	41457	265884	83656	92399	77628	78186	27307	72228	1085538	692102	710289	5728625

A3.3 South Auckland-Bay of Plenty Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	53969	25	54	0	159285	7	269	0	7	0	0	0	0	0
2:	0	7	0	0	294	0	0	0	0	0	0	0	0	0
3:	0	0	7835	0	0	0	18867	7572	0	0	0	0	0	0
4:	315	0	108	1176	1020	4	0	925	367	1444	3	7	3	753
5:	2088	16	0	0	4579	0	0	15	16	0	0	0	1	0
6:	248	0	0	0	58	1322	0	0	0	0	0	29	0	0
7:	2099	43	108	59	269	7	12712	3954	34	0	0	441	26	0
8:	866	0	0	0	1014	49	223	4984	69	23	0	160	26	50
9:	17615	31	359	74	829	79	576	1062	792	135	1	336	26	26
10:	1810	0	91	40	77	0	11	84	74	208	0	8	0	18
11:	52	0	2	1	3	0	3	3	1	1	3	77	0	1
12:	3391	142	458	132	970	30	733	950	230	173	8	4142	11	67
13:	20	0	0	0	38	49	34	26	6	1	0	17	20	0
14:	3296	0	150	310	1519	78	1026	4749	245	149	12	455	19	17277
15:	1197	0	702	1720	800	33	529	871	113	173	1	284	8	292
16:	10347	106	2209	552	6055	945	3548	4881	1735	751	21	4072	105	421
17:	6906	79	3092	1599	9766	163	2472	3494	665	859	12	1409	58	377
18:	1450	20	180	69	367	38	322	424	52	32	1	233	4	112
19:	9052	83	977	263	1696	338	1362	1735	300	255	5	1185	64	1062
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	132	0	32	0	43	6	0	6	3	0	0	13	0	156
22:	0	0	0	0	0	0	0	0	0	0	0	8	0	16
23:	1039	0	0	0	45	0	0	0	0	0	0	0	0	16
24:	1005	0	0	62	357	11	92	22	4	3	0	16	0	15
25:	2660	23	620	115	152	20	283	251	11	78	0	180	0	67
26:	37142	967	14373	4842	19142	5135	19113	22159	5365	2608	156	18077	522	8786
27:	167875	803	36365	3963	31408	2385	13260	23203	4571	3549	70	9028	349	18416
28:	33903	534	5770	1551	18928	7752	6095	14889	14092	3554	209	25321	563	1762
29:	358477	2879	73485	16528	258714	18451	81530	96223	28752	13996	502	65498	1805	49690

A3.3 South Auckland-Bay of Plenty Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	163	1248	29	0	0	44	53	124	239	49	130	14732	18684	109366	358477
2:	0	148	0	0	0	0	7	0	10	0	0	200	418	1795	2879
3:	668	0	0	0	0	0	9	0	0	0	0	0	29448	9086	73485
4:	2508	26	0	0	21	354	53	69	156	24	24	515	376	6277	16528
5:	5	5852	32	0	0	0	25	88	274	3	0	38043	11781	195896	258714
6:	10	244	65	8	0	0	23	0	84	16	52	14495	518	1279	18451
7:	13116	506	67	0	73	1318	65	247	56	25	134	3513	6731	35927	81530
8:	1100	2868	154	65	984	189	204	316	80	163	288	3194	1332	77858	96223
9:	1804	827	851	26	141	317	157	58	290	69	385	5550	1025	-4689	28752
10:	8731	115	0	0	55	151	18	69	14	0	37	127	883	1375	13996
11:	36	3	1	0	1	9	1	1	0	0	1	7	54	241	502
12:	5524	1215	2137	57	122	530	311	76	113	43	640	16625	20233	6435	65498
13:	49	49	0	0	20	21	5	28	13	7	38	881	121	362	1805
14:	800	3011	275	102	632	69	323	801	501	313	502	11106	374	1596	49690
15:	31540	1688	11550	51	698	3704	587	824	141	118	605	849	129838	2248	191164
16:	11675	11467	3569	193	2086	1908	854	402	1486	809	2600	148771	16223	26195	263986
17:	2902	3006	3048	702	718	246	497	757	590	307	869	12247	11511	12033	80384
18:	449	2707	444	0	1614	0	468	332	342	312	610	8772	519	1594	21457
19:	3901	17210	1511	113	8900	3901	1629	282	835	463	1624	31603	1515	6673	98537
20:	0	0	0	0	0	0	0	0	0	0	0	50585	0	1	50586
21:	1012	284	74	7	115	9	172	8	17	163	282	364	29031	646	32575
22:	0	35	10	0	20	13	32	12	0	12	22	6414	35430	139	42163
23:	0	24	0	0	9	0	33	0	513	20	77	16527	26228	-255	44276
24:	170	846	46	9	344	0	219	124	442	517	61	4587	4592	656	14200
25:	670	3318	1498	25	672	12	204	149	143	70	1744	21757	2450	673	37845
26:	48605	87148	32548	14486	26768	0	21170	34541	23871	7657	12162	0	0	0	467343
27:	19849	87090	13974	4515	46835	31638	436	604	8754	-155	7505	34855	3775	0	574920
28:	35877	33051	8501	1108	7709	6153	5020	2251	5312	3195	7453	204763	34582	0	489898
29:	191164	263986	80384	21467	98537	50586	32575	42163	44276	14200	37845	651082	387672	493407	3475874

A3.4 East Coast Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	8387	11	2	0	12604	0	3	0	0	0	0	0	0	0
2:	0	4	0	0	166	0	0	0	0	0	0	0	0	0
3:	0	0	339	0	0	0	172	0	0	0	0	0	0	0
4:	39	0	5	47	14	0	0	0	0	63	0	0	1	0
5:	149	9	0	0	1082	0	0	0	0	0	0	0	0	0
6:	76	0	0	0	37	71	0	0	0	0	0	0	0	0
7:	60	1	2	1	6	0	57	0	0	0	0	5	0	0
8:	91	0	0	0	311	13	1	28	0	2	0	8	1	8
9:	44	0	2	1	0	0	0	0	0	0	0	0	0	0
10:	76	0	1	1	0	0	0	0	0	5	0	0	0	2
11:	6	0	0	0	0	0	0	0	0	0	0	3	0	0
12:	227	73	11	4	362	3	4	2	1	12	0	71	0	4
13:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
14:	296	0	6	14	328	16	10	9	4	4	1	19	0	2057
15:	174	0	30	9	118	8	6	4	0	8	0	15	0	35
16:	1513	48	107	28	1058	102	70	87	9	43	2	161	3	56
17:	1187	36	159	66	1426	47	30	56	4	48	1	54	1	46
18:	195	9	9	3	78	6	4	12	0	1	0	11	0	14
19:	1134	32	39	10	509	39	13	41	3	12	1	43	1	122
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	23	0	2	0	3	0	0	1	0	0	0	1	0	15
22:	0	0	0	0	0	0	0	0	0	0	0	1	0	2
23:	133	0	0	0	0	0	0	0	0	0	0	0	0	2
24:	76	0	0	0	9	0	1	2	0	0	0	1	0	1
25:	358	9	28	7	51	1	3	2	0	5	0	7	0	8
26:	5331	378	622	131	5935	558	285	609	58	135	10	601	17	1029
27:	19432	317	1575	209	3299	376	153	323	67	175	7	362	7	2166
28:	6653	196	243	76	4789	1086	225	464	92	185	22	900	15	294
29:	45661	1123	3182	607	32185	2326	1037	1640	238	698	44	2263	46	5861

A3.4 East Coast Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	15	101	4	0	0	5	6	13	29	4	13	1420	2380	20664	45661
2:	0	16	0	0	0	0	1	0	2	0	0	27	163	744	1123
3:	63	0	0	0	0	0	1	0	0	0	0	0	1275	1332	3182
4:	233	1	0	0	0	39	3	3	0	2	1	11	14	131	607
5:	1	360	7	0	0	0	3	10	45	1	0	4172	1466	24880	32185
6:	0	59	4	0	0	0	1	0	7	1	5	1233	65	767	2326
7:	432	12	2	0	2	51	2	8	2	2	4	88	86	214	1037
8:	35	367	19	7	93	11	24	32	9	18	39	357	23	143	1640
9:	11	11	20	0	4	0	2	0	2	0	14	51	8	68	238
10:	565	7	0	0	2	12	2	5	1	0	2	5	44	-32	698
11:	3	0	0	0	0	1	0	0	0	0	0	1	5	25	44
12:	241	49	93	3	3	26	36	4	5	1	24	435	700	-131	2263
13:	0	0	0	0	0	0	0	0	0	0	2	30	3	10	46
14:	74	289	29	11	50	6	36	85	59	32	50	1059	44	1273	5861
15:	2980	173	1081	5	38	415	69	88	17	14	61	81	12266	354	18059
16:	1241	1186	397	23	175	244	103	47	202	53	300	14712	1663	3419	27052
17:	307	350	393	82	69	33	65	82	75	25	97	1262	1235	1390	8626
18:	46	316	54	0	163	0	60	39	46	26	69	916	54	111	2242
19:	383	1656	142	8	699	422	188	29	84	36	149	1958	123	101	7977
20:	0	0	0	0	0	0	0	0	0	0	0	4958	0	715	5673
21:	118	37	10	1	11	1	25	1	2	16	34	43	3410	71	3825
22:	0	4	2	0	2	2	4	1	0	1	2	677	3781	20	4499
23:	0	3	0	0	1	0	4	0	67	2	8	1695	3190	282	5387
24:	12	59	3	1	23	0	20	10	41	28	4	440	358	21	1110
25:	68	359	143	3	57	2	25	17	19	6	180	2207	260	188	4013
26:	4592	9152	3538	1512	2506	0	2487	3686	2904	603	1291	0	0	0	47970
27:	1875	9047	1468	471	3445	3547	51	64	1065	10	815	3324	360	0	54010
28:	4764	3438	1217	115	634	856	607	275	704	229	849	20935	3298	0	53161
29:	18059	27052	8626	2242	7977	5673	3825	4499	5387	1110	4013	62097	36374	56770	340515

A3.5 Hawkes Bay Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	20405	18	4	0	59962	1413	36	0	1	0	0	0	0	0
2:	0	4	0	0	534	0	0	0	0	0	0	0	0	0
3:	0	0	411	0	0	0	510	0	0	0	0	0	0	0
4:	74	0	5	89	59	4	0	0	65	388	1	2	0	17
5:	66	4	0	0	2240	227	0	0	0	0	0	0	0	0
6:	333	0	0	0	114	1416	2	0	1	0	0	5	0	0
7:	438	9	6	2	145	0	878	0	8	0	0	84	0	0
8:	216	0	0	0	1993	64	14	114	18	12	0	89	1	20
9:	4614	0	4	3	186	21	29	11	227	94	0	68	0	1
10:	506	0	4	4	148	0	3	0	76	49	0	2	0	4
11:	20	0	0	0	2	0	1	0	1	0	2	44	0	0
12:	867	51	37	25	2709	49	91	22	78	62	5	1450	0	29
13:	1	0	0	0	4	1	0	0	0	0	0	0	0	0
14:	779	0	10	37	1067	189	69	34	98	68	5	168	1	4703
15:	353	0	40	33	411	64	25	19	57	44	0	87	0	68
16:	3829	63	168	71	4405	750	483	316	931	214	10	1204	4	131
17:	3130	51	303	192	4745	379	308	226	523	236	6	461	2	115
18:	387	10	11	6	153	53	21	28	18	5	0	67	0	27
19:	3033	37	65	26	2391	318	129	153	95	67	2	450	2	289
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	42	0	2	0	9	1	0	3	1	0	0	8	0	38
22:	0	0	0	0	0	0	0	0	0	0	0	2	0	4
23:	293	0	0	0	2	0	0	0	0	0	0	0	0	4
24:	248	0	0	0	50	2	2	6	1	1	0	5	0	3
25:	863	13	44	18	458	6	20	10	2	17	0	54	0	19
26:	12911	487	959	356	21583	2108	2093	2212	1212	772	44	4241	19	2398
27:	48712	419	2452	524	14489	2338	1148	1118	1758	988	30	3200	14	5025
28:	12015	267	420	193	17889	3537	1897	1690	5548	914	86	6546	19	664
29:	114135	1433	4955	1579	135748	12940	7759	5962	10719	3931	191	18237	62	13559

A3.5 Hawkes Bay Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	37	302	22	0	0	13	15	31	71	12	43	4493	5949	21308	114135
2:	0	46	0	0	0	0	2	0	4	0	0	78	208	557	1433
3:	127	0	0	0	0	0	2	0	0	0	0	0	1986	1919	4955
4:	462	4	0	0	1	84	6	6	4	4	3	38	36	227	1579
5:	0	2327	29	0	0	0	7	23	104	5	0	14561	6181	109974	135748
6:	4	309	23	2	3	0	5	0	28	6	18	3945	363	6363	12940
7:	2254	142	17	0	25	297	17	54	19	10	36	1535	641	1142	7759
8:	88	1242	83	31	362	0	101	106	24	79	155	1482	83	-415	5962
9:	299	83	53	0	13	110	7	3	27	4	52	344	382	4084	10719
10:	1767	31	0	0	12	35	4	14	4	0	11	30	248	1039	3931
11:	11	1	0	0	0	3	0	0	0	0	0	3	21	82	191
12:	2108	442	196	23	67	259	82	24	42	12	162	2948	5633	764	18237
13:	1	2	0	0	1	0	0	1	0	0	3	32	4	12	62
14:	194	938	120	28	189	19	87	207	152	104	164	3432	102	595	13559
15:	6570	466	3298	12	165	994	139	182	37	38	171	223	31812	1528	46836
16:	3244	3892	1455	60	654	691	248	114	517	190	922	48325	5404	9645	87940
17:	893	1304	1815	203	264	106	163	219	210	91	324	4382	4704	7492	32847
18:	97	814	168	0	449	0	114	76	93	74	176	2381	141	460	5829
19:	993	5953	661	28	2812	1222	468	75	254	137	541	9028	463	383	30075
20:	0	0	0	0	0	0	0	0	0	0	0	15961	0	2	15963
21:	223	87	31	2	31	2	43	2	5	35	81	101	8072	239	9058
22:	0	10	5	0	6	4	8	3	0	2	6	1664	9191	33	10938
23:	0	8	0	0	3	0	9	0	159	7	24	5118	8123	-39	13711
24:	30	195	15	2	79	0	45	24	100	109	15	1512	1225	119	3788
25:	177	1154	517	7	214	5	59	42	48	21	571	7175	810	189	12513
26:	11909	29814	13998	3933	8508	0	5886	8960	7393	2042	4092	0	0	0	147940
27:	4863	29333	5549	1226	13925	9983	121	157	2711	9	2528	10772	1167	0	164609
28:	10545	8991	4792	272	2292	2136	1420	615	1705	797	2415	61653	10688	0	160006
29:	46836	87940	32847	5829	30075	15963	9058	10938	13711	3788	12513	210216	103637	167702	1073263

A3.6 Taranaki Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	14016	3	1	0	75742	4	18	0	1	0	0	0	0	0
2:	0	1	0	0	82	0	0	0	0	0	0	0	0	0
3:	0	0	68	0	0	0	232	0	0	0	0	0	0	0
4:	83	0	2	170	406	1	0	0	89	108	47	1	2	150
5:	1114	4	0	0	1333	10	0	0	30	0	0	0	0	0
6:	87	0	0	0	79	409	0	0	0	0	5	10	0	0
7:	196	2	2	5	46	1	524	0	5	0	0	50	1	0
8:	160	0	0	0	142	16	7	13	19	2	2	52	1	9
9:	4856	2	5	6	329	17	30	3	365	2	9	61	2	2
10:	164	0	1	2	0	0	0	0	0	10	0	0	0	2
11:	394	0	1	3	40	0	12	3	18	3	1374	741	6	3
12:	946	21	18	32	495	16	55	16	99	17	144	1485	2	21
13:	6	0	0	0	7	7	2	0	1	0	0	2	1	0
14:	885	0	3	44	666	25	43	16	86	9	176	140	2	3218
15:	272	0	15	250	351	13	21	9	40	15	12	69	0	50
16:	2804	19	55	86	2652	296	317	100	716	75	343	1185	12	85
17:	1410	18	92	211	3397	61	133	59	335	81	177	311	5	66
18:	346	3	4	9	125	13	14	23	18	3	16	63	0	19
19:	1972	15	18	36	791	75	60	77	94	20	67	286	5	191
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	28	0	1	0	15	1	0	2	0	0	0	6	0	22
22:	0	0	0	0	0	0	0	0	0	0	0	3	0	2
23:	283	0	0	0	14	0	0	0	0	0	0	0	0	3
24:	120	0	0	5	86	3	3	7	0	0	0	8	0	2
25:	708	4	15	17	69	8	14	5	7	8	7	59	0	13
26:	8903	168	351	764	12923	1712	1536	1178	1060	336	1647	5114	73	1725
27:	46287	135	387	583	12813	761	733	685	1911	340	1141	2840	49	3625
28:	5396	113	254	318	8377	2332	1403	823	5074	373	2088	5435	73	588
29:	95436	508	1793	2541	120980	5781	5157	3019	9968	1402	7255	17921	234	9796

A3.6 Taranaki Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	29	137	8	0	0	11	8	15	32	5	17	2394	4974	-1979	95436
2:	0	23	0	0	0	0	1	0	2	0	0	41	73	285	508
3:	47	0	0	0	0	0	1	0	0	0	0	0	719	726	1793
4:	455	6	0	0	5	78	11	13	34	5	5	123	58	689	2541
5:	3	1126	18	0	0	0	6	19	70	2	0	10726	5509	101010	120980
6:	2	83	10	2	0	0	5	0	23	4	9	4647	162	244	5781
7:	1732	65	8	0	9	201	10	31	9	4	17	622	426	1191	5157
8:	49	729	32	10	174	0	35	42	11	26	73	783	42	590	3019
9:	189	105	97	2	15	36	21	10	92	16	70	990	355	2281	9968
10:	915	12	0	0	4	21	2	7	1	0	3	8	88	162	1402
11:	206	19	6	0	3	60	6	5	3	0	6	48	785	3510	7255
12:	1659	455	341	31	39	173	69	20	42	12	181	3109	5536	2887	17921
13:	5	5	0	0	2	2	1	2	1	1	8	123	16	42	234
14:	146	601	64	21	105	10	60	142	98	73	101	2545	74	443	9796
15:	5415	338	2015	10	84	770	109	137	27	23	114	180	25615	1758	37712
16:	2350	2500	777	43	357	470	171	76	326	112	592	34369	3836	7695	62419
17:	584	692	913	128	129	67	100	124	115	46	178	2695	2830	4807	19764
18:	78	579	93	0	292	0	88	56	66	42	120	1883	111	545	4609
19:	611	3276	284	15	1373	871	284	43	131	64	274	4876	278	2011	18098
20:	0	0	0	0	0	0	0	0	0	0	0	12086	0	0	12086
21:	175	60	18	1	17	2	32	1	3	47	52	78	6180	195	6936
22:	0	7	3	0	4	2	5	2	0	1	4	1223	6753	28	8037
23:	0	5	0	0	2	0	6	0	100	3	15	3590	5697	-99	9619
24:	37	203	8	3	75	0	63	34	127	52	12	778	901	259	2786
25:	131	732	304	5	114	3	41	28	31	14	348	4970	559	424	8638
26:	9589	21133	8426	3110	5507	0	4507	6584	5185	1590	2765	0	0	0	105886
27:	3916	20837	3308	969	8005	7559	93	115	1901	64	1746	8473	918	0	130694
28:	9389	8691	3031	259	1783	1750	1201	531	1189	580	1928	56911	8406	0	132296
29:	37712	62419	19764	4609	18098	12086	6936	8037	9619	2786	8638	158271	80901	129704	841371

A3.7 Wellington Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	22615	17	4	0	64069	2411	79	0	11	0	0	0	0	0
2:	0	4	0	0	358	0	0	0	0	0	0	0	0	0
3:	0	0	243	0	0	0	516	0	0	0	0	0	0	0
4:	89	0	7	222	111	10	0	0	348	804	15	10	30	133
5:	624	15	0	0	8562	112	0	0	592	2	0	0	1	0
6:	992	0	0	0	529	17734	52	0	212	12	16	370	81	0
7:	342	14	8	4	217	18	2014	0	62	0	0	664	31	0
8:	504	0	0	0	4696	994	90	5085	3323	243	6	1728	181	166
9:	6701	37	81	58	1802	1314	543	1910	10583	147	11	8497	253	62
10:	364	0	11	22	857	0	51	0	251	297	0	324	10	17
11:	204	0	2	3	24	0	22	27	13	9	321	1908	44	6
12:	2041	208	99	128	1773	382	515	455	3757	363	214	20021	82	194
13:	49	0	0	0	95	287	46	27	104	5	0	256	132	0
14:	1296	0	16	121	1616	608	217	451	1155	219	149	1592	64	20540
15:	624	0	75	205	930	249	93	213	411	176	11	730	5	348
16:	5965	105	277	246	7340	5515	1926	5344	7599	1043	311	20917	444	592
17:	5221	91	486	651	9184	2643	1051	3540	4443	1229	183	5551	239	519
18:	813	20	23	26	517	311	94	371	480	56	17	990	16	161
19:	5794	97	148	127	3749	2191	558	2143	2868	384	88	4473	241	1665
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	111	0	6	0	48	20	0	56	27	0	0	82	0	358
22:	0	0	0	0	0	0	0	0	0	0	0	19	0	21
23:	515	0	0	0	9	0	0	0	0	0	0	0	0	19
24:	600	0	0	6	210	38	11	100	27	7	0	62	0	21
25:	1178	18	64	53	472	56	55	83	97	71	5	447	0	76
26:	18157	802	1539	1279	25960	22343	6627	21702	18759	4084	1300	52507	2195	10512
27:	76019	671	3893	1715	25698	13708	3782	13365	23563	4050	901	32344	1544	21997
28:	22262	287	886	545	57717	20164	7113	17465	45197	4174	2178	102605	1614	1688
29:	173080	2386	7868	5411	216543	91108	25455	72337	123882	17375	5726	256097	7207	59295

A3.7 Wellington Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	124	768	33	0	0	38	136	92	142	78	157	9230	9021	64055	173080
2:	0	129	0	0	0	0	19	0	8	0	0	161	346	1361	2386
3:	239	0	0	0	0	0	10	0	0	0	0	0	3153	3707	7868
4:	1760	15	0	0	9	264	76	34	31	35	20	168	123	1097	5411
5:	1	10331	104	0	0	0	121	185	512	16	0	70626	9861	114878	216543
6:	59	2029	203	24	70	0	167	0	354	58	357	53274	2558	11957	91108
7:	8979	535	71	0	124	892	188	248	66	35	156	5321	2101	3365	25455
8:	954	10364	797	390	4363	328	2232	1109	235	1084	1808	10885	1001	19761	72337
9:	6987	3248	2422	78	653	1982	1184	286	1622	308	1298	19018	4417	48380	123882
10:	10937	257	0	0	58	211	64	117	19	0	71	330	1096	2011	17375
11:	380	37	12	0	11	97	31	13	6	0	14	77	620	1845	5726
12:	15917	3917	5716	329	627	1631	2521	234	418	191	1483	42181	79112	71588	256097
13:	243	203	0	0	139	344	56	108	44	66	324	3205	482	992	7207
14:	986	4612	570	208	1355	93	1297	1246	663	772	1071	14622	447	3307	59295
15:	38883	2585	18045	104	1080	4850	2338	1280	186	293	1423	1118	160064	-651	235668
16:	15923	20322	7583	468	5167	2956	3828	723	2283	2328	5373	224169	25550	40454	415751
17:	4957	7358	10501	2132	2333	502	2834	1365	969	1075	2047	21807	23317	46601	162829
18:	662	5117	1232	0	4708	0	2232	618	540	985	1488	13832	1061	7524	43894
19:	6704	34364	3864	270	27619	6854	8285	562	1363	1519	3646	47710	3243	40364	210893
20:	0	0	0	0	0	0	0	0	0	0	0	66239	0	-2	66237
21:	2128	765	281	26	370	19	1169	21	37	655	1188	818	115591	5933	129709
22:	0	62	45	0	53	19	142	21	0	37	61	9341	55041	634	65496
23:	0	39	0	0	33	0	132	0	676	53	199	21770	34550	334	58329
24:	281	1739	106	26	1064	0	1240	277	820	1679	150	8503	11794	7706	36467
25:	850	5876	2170	46	1463	19	878	242	193	192	4644	33107	4521	12948	69824
26:	59920	138868	65640	29618	63803	0	84290	53659	31446	19518	23342	0	0	0	757870
27:	24470	137759	27476	9231	91260	41428	1736	938	11531	-570	12703	45886	4970	0	632068
28:	32312	24452	15958	944	4531	3710	12503	2118	4165	6060	6801	133743	45527	0	576919
29:	235668	415751	162829	43894	210893	66237	129709	65496	58329	36467	69824	857141	599567	510149	4525724

A3.8 Marlborough Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	4035	10	1	0	5835	1	4	0	0	0	0	0	0	0
2:	0	5	0	0	103	0	0	0	0	0	0	0	0	0
3:	0	0	111	0	0	0	141	0	0	0	0	0	0	0
4:	20	0	2	98	5	0	0	0	0	93	0	0	12	0
5:	81	15	0	0	391	0	0	0	0	0	0	0	0	0
6:	28	0	0	0	15	192	0	0	0	0	0	5	0	0
7:	57	3	1	2	5	0	89	0	0	0	0	14	0	0
8:	41	0	0	0	15	4	1	3	3	2	0	4	0	3
9:	81	0	1	2	1	1	1	0	14	0	0	11	0	1
10:	85	0	1	5	1	0	0	0	0	14	0	0	0	1
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	195	176	5	13	45	1	5	2	3	5	0	193	0	2
13:	3	0	0	0	0	2	0	0	0	0	0	0	6	0
14:	151	0	2	30	95	7	9	5	3	7	0	23	6	1157
15:	92	0	11	18	60	3	5	2	2	12	0	26	0	19
16:	718	53	39	55	417	107	45	25	27	58	0	201	28	31
17:	797	53	72	153	707	25	36	19	12	76	0	95	12	30
18:	98	10	3	6	33	5	4	10	3	2	0	22	0	9
19:	599	39	16	20	156	31	13	27	10	17	0	54	14	73
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	16	9	1	0	6	1	0	1	0	0	0	1	0	6
22:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23:	88	0	0	0	1	0	0	0	0	0	0	0	0	1
24:	35	0	0	0	7	1	1	2	0	0	0	1	0	1
25:	174	10	10	15	20	3	3	1	0	6	0	11	0	5
26:	2378	442	230	269	2241	590	277	347	78	232	0	1396	216	570
27:	9544	362	582	429	1453	231	140	196	89	246	0	412	101	1205
28:	3105	144	89	132	1819	711	187	196	237	237	0	965	178	154
29:	22421	1322	1177	1247	13431	1916	961	836	481	1007	0	3434	573	3269

A3.8 Marlborough Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	12	61	4	0	0	3	13	5	14	2	8	706	1169	10518	22421
2:	0	17	0	0	0	0	2	0	1	0	0	19	192	983	1322
3:	43	0	0	0	0	0	2	0	0	0	0	0	471	409	1177
4:	181	1	0	0	0	27	7	1	0	2	1	8	28	761	1247
5:	0	285	7	0	0	0	5	5	24	0	0	2946	612	9060	13431
6:	1	9	9	1	0	0	9	0	11	1	4	1547	54	30	1916
7:	417	13	3	0	2	50	6	6	2	0	3	91	79	118	961
8:	18	222	24	3	64	0	32	10	3	7	19	201	12	145	836
9:	106	11	18	0	3	55	3	0	1	0	11	46	17	97	481
10:	582	7	0	0	3	9	4	3	1	0	2	1	63	225	1007
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	193	41	347	2	3	13	143	3	9	2	13	439	1061	520	3434
13:	0	0	0	0	0	0	0	0	0	0	4	65	38	455	573
14:	55	202	36	8	34	1	66	42	32	24	28	714	25	507	3269
15:	2278	129	1273	4	40	278	146	44	10	7	35	55	9376	-120	13805
16:	930	952	500	18	140	158	231	24	118	44	183	10461	1195	2685	19443
17:	289	338	720	86	64	29	176	47	53	21	72	1058	1616	4628	11284
18:	39	239	82	0	123	0	139	21	29	17	45	677	43	108	1767
19:	287	1218	193	9	530	299	401	15	57	24	102	1838	93	-71	6064
20:	0	0	0	0	0	0	0	0	0	0	0	3348	0	441	3789
21:	125	36	19	1	12	1	73	1	2	36	25	40	7221	477	8101
22:	0	2	2	0	1	1	7	1	0	0	1	346	1913	0	2275
23:	0	2	0	0	1	0	9	0	40	1	4	1144	1885	7	3183
24:	14	70	4	1	24	0	75	10	43	18	4	192	298	120	921
25:	52	233	169	2	39	1	49	9	11	5	89	1348	159	39	2463
26:	3510	6332	4507	1192	1709	0	5266	1865	1716	536	792	0	0	0	36691
27:	1433	6386	1902	372	2828	2370	108	33	629	25	516	2244	243	0	34079
28:	3240	2517	1465	68	444	454	1129	130	377	149	502	12393	2227	0	33389
29:	13805	19443	11284	1767	6064	3789	8101	2275	3183	921	2463	41927	30090	32142	229329

A3.9 Nelson Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	2842	1	5	0	6508	4	35	0	2	0	0	0	0	0
2:	0	5	0	0	409	0	0	0	0	0	0	0	0	0
3:	0	0	1098	0	0	0	1461	0	0	0	0	0	0	0
4:	18	0	15	361	43	0	0	0	5	1427	0	1	1	153
5:	110	8	0	0	726	0	0	0	2	0	0	0	0	0
6:	6	0	0	0	5	64	0	0	0	0	0	0	0	0
7:	368	22	15	23	18	0	1559	0	1	2	0	105	0	0
8:	57	0	0	0	218	4	8	13	10	5	0	29	0	9
9:	370	0	11	2	63	2	55	3	55	1	0	99	0	1
10:	107	0	5	3	6	0	1	0	0	137	0	6	0	2
11:	2	0	0	0	0	0	0	0	0	0	0	6	0	0
12:	278	120	35	17	256	2	48	2	25	15	1	565	0	9
13:	1	0	0	0	0	0	0	0	0	0	0	0	0	0
14:	237	0	18	86	176	6	86	9	14	384	1	90	0	3435
15:	118	0	98	820	91	2	42	5	3	60	0	64	0	57
16:	1009	40	362	189	1017	83	426	83	72	332	2	1512	2	97
17:	1008	44	617	551	1288	20	343	63	31	751	1	408	1	87
18:	123	6	30	28	55	4	36	15	5	5	0	72	0	25
19:	619	41	124	89	380	27	138	49	32	131	0	207	1	244
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	17	0	5	0	13	0	0	1	0	0	0	2	0	12
22:	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23:	95	0	0	0	1	0	0	0	0	0	0	0	0	4
24:	108	0	0	35	15	1	9	4	0	5	0	1	0	4
25:	214	6	91	25	68	1	26	2	2	4	0	22	0	14
26:	3710	324	2014	1795	4037	453	2012	662	332	1638	10	3087	18	1690
27:	12145	248	5096	982	3158	191	1283	358	311	3215	6	1936	8	3574
28:	4775	126	658	359	5718	636	709	464	507	838	16	9939	14	273
29:	28537	991	10297	5365	24269	1500	8277	1733	1409	8950	37	18151	45	9693

A3.9 Nelson Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	18	153	10	0	0	6	7	14	47	8	17	1766	1487	15607	28537
2:	0	28	0	0	0	0	0	0	3	0	0	36	144	366	991
3:	94	0	0	0	0	0	1	0	0	0	0	0	4126	3517	10297
4:	352	4	0	0	3	58	8	9	33	4	4	68	122	2676	5365
5:	0	532	12	0	0	0	3	12	67	1	0	6221	1105	15470	24269
6:	1	9	7	1	0	0	2	0	10	2	4	1160	42	187	1500
7:	1735	76	12	0	12	216	10	31	14	6	19	574	683	2775	8277
8:	34	436	26	8	127	0	27	29	11	30	44	412	24	172	1733
9:	124	32	16	0	4	59	7	5	76	5	25	307	50	37	1409
10:	732	9	0	0	5	47	3	4	4	0	5	84	564	7226	8950
11:	3	0	0	0	0	1	0	0	0	0	0	0	4	21	37
12:	724	114	214	4	13	92	85	8	14	7	47	2401	5607	7448	18151
13:	0	0	0	0	0	0	0	0	0	0	3	33	3	5	45
14:	108	400	52	17	77	5	44	101	97	60	68	1460	73	2589	9693
15:	4425	255	1825	8	96	604	93	106	30	24	85	112	18216	-420	26819
16:	1923	1932	719	37	317	368	151	60	370	169	442	22059	2465	3880	40118
17:	532	604	887	147	128	58	102	110	150	74	155	1993	2255	3336	15744
18:	75	502	103	0	272	0	89	51	68	75	106	1383	84	263	3495
19:	510	2822	299	19	1327	739	275	38	184	98	253	4354	211	292	13703
20:	0	0	0	0	0	0	0	0	0	0	0	6842	0	1404	8246
21:	171	53	19	1	19	2	33	1	4	34	46	58	4605	71	5167
22:	0	5	3	0	3	2	5	2	0	2	3	827	4566	13	5434
23:	0	4	0	0	1	0	6	0	118	5	11	2339	5598	1269	9451
24:	30	155	10	2	59	0	44	21	120	124	11	820	896	295	2769
25:	101	527	242	4	95	2	34	21	33	14	249	3042	363	407	5609
26:	6819	13424	6592	2358	3771	0	3358	4451	5095	1481	1805	0	0	0	70936
27:	2785	13328	2636	735	6487	5157	69	78	1868	-36	1142	4587	497	0	71844
28:	5523	4714	2060	154	887	830	711	282	1015	582	1065	22755	4551	0	70161
29:	26819	40118	15744	3495	13703	8246	5167	5434	9451	2769	5609	85693	58341	68907	468750

A3.10 Westland Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	954	5	3	0	2005	0	13	0	0	0	0	0	0	0
2:	0	2	0	0	30	0	0	0	0	0	0	0	0	0
3:	0	0	590	0	0	0	2265	0	0	0	0	0	0	0
4:	8	0	8	321	17	0	0	0	0	50	0	0	3	55
5:	3	2	0	0	180	0	0	0	0	0	0	0	0	0
6:	4	0	0	0	0	104	0	0	0	0	0	0	0	0
7:	28	2	7	23	13	0	845	0	0	0	0	2	0	0
8:	13	0	0	0	16	2	7	2	0	0	0	2	0	3
9:	5	0	4	3	0	0	0	0	0	0	0	0	0	0
10:	39	0	0	0	0	0	0	0	0	4	0	0	0	1
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	11	7	15	9	16	0	35	1	1	1	0	16	0	2
13:	1	0	0	0	0	1	0	0	0	0	0	0	2	0
14:	73	0	10	71	46	4	120	3	3	7	0	5	2	1232
15:	28	0	53	889	23	1	62	2	0	7	0	4	0	21
16:	250	28	177	147	216	53	270	15	6	17	0	40	7	32
17:	180	23	282	472	301	9	255	10	3	16	0	9	2	30
18:	40	6	16	26	24	2	43	5	0	1	0	3	0	9
19:	172	15	58	77	60	11	106	13	1	5	0	12	2	77
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	5	0	4	0	3	1	0	1	0	0	0	0	0	8
22:	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23:	23	0	0	0	1	0	0	0	0	0	0	0	0	1
24:	13	0	0	23	4	0	10	1	0	0	0	0	0	1
25:	62	6	48	16	9	1	29	1	0	1	0	2	0	5
26:	775	238	1082	1767	716	329	2158	201	30	104	0	230	60	609
27:	3909	201	2739	747	1196	115	1407	115	48	101	0	107	28	1287
28:	1659	166	437	346	1282	393	756	127	67	73	0	246	53	115
29:	8271	702	5533	4937	6158	1026	8381	497	159	387	0	678	159	3489

A3.10 Westland Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	7	26	0	0	0	2	2	2	9	1	3	215	431	4593	8271
2:	0	10	0	0	0	0	1	0	1	0	0	14	102	542	702
3:	37	0	0	0	0	0	1	0	0	0	0	0	2218	422	5533
4:	140	1	0	0	1	19	4	2	14	2	1	24	112	4155	4937
5:	0	312	1	0	0	0	1	1	12	0	0	1300	280	4066	6158
6:	1	6	5	1	0	0	2	0	8	0	2	820	29	44	1026
7:	613	15	5	0	1	64	4	7	4	0	5	85	492	5966	8381
8:	12	133	13	3	26	0	10	6	4	4	14	131	7	89	497
9:	6	5	26	0	2	0	1	0	1	0	6	25	6	69	159
10:	196	2	0	0	0	5	1	1	0	0	1	0	24	113	387
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	93	16	7	1	1	6	4	1	3	1	6	166	210	49	678
13:	0	0	0	0	0	0	0	0	0	0	4	48	11	92	159
14:	43	153	39	8	20	2	22	28	43	19	23	524	26	973	3489
15:	1756	93	1401	4	13	200	45	29	13	5	29	40	7228	-1305	10641
16:	693	622	447	16	74	110	68	15	146	33	134	7351	830	1704	13501
17:	192	187	388	65	31	17	45	30	62	15	49	674	1286	4350	8983
18:	30	172	58	0	77	0	43	14	38	13	35	496	39	434	1624
19:	167	659	120	5	223	226	101	8	51	14	52	735	50	220	3261
20:	0	0	0	0	0	0	0	0	0	0	0	2455	0	293	2738
21:	90	24	13	1	5	1	21	0	2	28	21	28	2201	16	2473
22:	0	1	1	0	1	1	2	0	0	0	1	226	1249	2	1485
23:	0	1	0	0	0	0	3	0	51	1	4	839	2429	742	4100
24:	11	48	4	1	16	0	23	6	56	15	3	131	236	127	729
25:	39	181	181	2	22	1	16	6	14	4	84	1064	120	-56	1858
26:	2706	4429	3556	1095	1081	0	1605	1217	2211	427	599	0	0	0	27226
27:	1105	4466	1563	341	1372	1712	33	21	811	20	373	1646	178	0	25661
28:	2684	1939	1145	81	295	372	415	91	546	127	409	11706	1633	0	27173
29:	10641	13501	8983	1624	3261	2738	2473	1485	4100	729	1858	30743	21627	27690	171830

A3.11 Canterbury Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	30511	30	6	0	58147	2680	96	0	4	0	0	0	0	0
2:	0	14	0	0	1050	27	0	0	0	0	0	0	0	0
3:	0	0	398	0	0	0	1166	0	0	0	0	0	0	0
4:	69	0	6	116	54	5	0	0	104	608	8	7	9	52
5:	1048	43	0	0	9057	1555	0	0	127	15	0	0	7	0
6:	977	0	0	0	451	16174	101	0	96	22	11	144	56	0
7:	895	44	11	4	344	62	4684	0	44	20	0	732	100	0
8:	436	0	0	0	1995	803	143	1584	823	426	3	956	130	99
9:	8931	20	52	21	803	1083	642	669	3107	120	3	2225	159	11
10:	659	0	9	11	1195	0	121	0	166	775	0	193	8	10
11:	190	0	2	2	20	0	32	10	12	10	215	1676	16	4
12:	2499	547	109	79	1653	338	767	196	884	395	142	14608	95	145
13:	50	0	0	0	40	192	48	7	30	11	0	72	52	0
14:	1269	0	18	70	1275	593	313	178	617	357	96	1068	33	13603
15:	695	0	73	89	607	230	120	78	155	174	7	569	9	218
16:	6040	158	286	141	4886	4676	2408	2007	3129	1078	199	9741	377	394
17:	6925	139	497	371	6465	1900	1320	1273	2013	1125	117	3732	229	337
18:	692	29	24	15	340	298	137	165	182	83	11	629	8	109
19:	5995	136	142	66	2620	1922	857	882	1044	435	53	3164	185	1078
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	120	0	6	0	44	18	0	24	11	0	0	66	0	317
22:	0	0	0	0	0	0	0	0	0	0	0	14	0	14
23:	733	0	0	0	1	0	0	0	0	0	0	0	0	14
24:	761	0	0	2	176	44	13	47	11	69	0	57	0	14
25:	1287	29	71	34	171	62	71	37	29	52	4	377	0	54
26:	18032	1213	1584	704	30261	25199	9947	8787	12102	5877	1057	34660	1663	7052
27:	66432	1008	4008	995	16872	12669	5206	5441	9347	4567	576	18993	1207	14685
28:	12580	204	797	340	21421	16002	6491	7186	18468	4185	1386	34827	1376	1263
29:	167977	3614	8099	3060	159948	86532	34683	28571	52505	20404	3888	128510	5719	39473

A3.11 Canterbury Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	92	355	43	0	0	32	64	108	173	43	121	10561	8755	55656	167977
2:	0	218	0	0	0	0	13	0	14	0	0	246	524	1508	3614
3:	231	0	0	0	0	0	6	0	0	0	0	0	3246	3052	8099
4:	970	9	0	0	2	172	23	20	14	17	8	83	70	634	3060
5:	11	9430	86	0	0	0	50	173	495	17	0	50394	7284	80156	159948
6:	15	1404	156	13	19	0	53	0	259	51	177	34855	2430	29067	86532
7:	8349	673	85	0	141	950	120	274	90	40	145	6438	2863	7574	34683
8:	541	6651	517	183	1993	237	752	745	170	592	777	6427	395	1193	28571
9:	2527	1537	963	14	217	649	249	135	918	100	669	7963	1872	16796	52505
10:	7812	244	0	0	39	214	22	94	28	0	62	971	1287	6484	20404
11:	243	27	8	0	8	73	12	10	4	0	8	52	421	833	3888
12:	10377	2694	4895	158	397	1259	1249	178	322	107	1056	20632	39699	23030	128510
13:	129	113	0	0	41	283	14	69	24	36	111	1816	382	2199	5719
14:	612	3421	393	106	714	84	501	915	523	537	540	9476	297	1864	39473
15:	22445	1727	10927	50	647	3309	801	880	134	193	614	685	97668	694	143798
16:	10335	14344	4988	238	2517	2132	1399	527	1738	1080	2987	145503	17942	50692	291945
17:	3014	5174	6966	1086	1117	360	1025	992	734	517	1121	14111	15355	29211	107226
18:	404	3600	860	0	2121	0	809	450	410	463	752	8959	540	266	22356
19:	3851	23912	2572	142	12054	4882	2965	401	1029	801	2026	31891	1608	-2158	104555
20:	0	0	0	0	0	0	0	0	0	0	0	44330	0	3444	47774
21:	1288	533	187	13	201	14	420	15	28	483	504	526	41870	297	46985
22:	0	44	30	0	25	14	51	16	0	14	25	6050	40010	1306	47613
23:	0	29	0	0	11	0	51	0	551	31	88	15151	26209	1377	44246
24:	171	1221	73	13	498	0	449	202	622	753	81	5507	6328	2456	19568
25:	550	4197	1561	26	791	14	329	185	155	112	2104	21624	2486	1983	38395
26:	36562	97413	43023	15086	29392	0	30532	39006	23854	10837	12601	0	0	0	496444
27:	14931	96723	18133	4702	48673	29880	629	682	8747	204	7597	29721	3219	0	425847
28:	18334	15752	10760	526	2937	3216	4397	1536	3210	2540	4221	81212	29488	0	304755
29:	143798	291945	107226	22356	104555	47774	46985	47613	44246	19568	38395	555184	352248	319614	2884490

A3.12 Otago Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	18537	48	5	0	31565	2308	29	0	1	0	0	0	0	0
2:	0	8	0	0	319	38	0	0	0	0	0	0	0	0
3:	0	0	698	0	0	0	767	0	0	0	0	0	0	0
4:	85	0	11	219	84	15	0	0	96	736	9	4	1	139
5:	237	21	0	0	6213	1838	0	0	262	1	0	0	1	0
6:	288	0	0	0	164	3048	18	0	7	1	2	11	5	0
7:	343	22	7	4	158	6	769	0	16	6	0	141	18	0
8:	243	0	0	0	1555	205	34	577	285	53	2	377	18	56
9:	4151	6	10	6	286	82	37	217	284	22	0	126	6	3
10:	332	0	9	11	252	0	6	0	36	502	0	38	0	6
11:	114	0	2	2	12	0	8	4	5	2	103	443	1	2
12:	788	275	61	51	690	63	123	83	167	87	52	2763	14	60
13:	12	0	0	0	10	5	2	1	3	0	0	2	1	0
14:	654	0	16	68	719	259	74	90	96	226	48	333	2	8256
15:	361	0	69	143	434	102	31	55	44	64	4	233	0	140
16:	3338	154	253	138	3118	1375	566	885	852	366	99	2222	59	240
17:	3101	108	410	365	3625	700	351	556	504	583	57	1002	37	198
18:	417	32	21	15	215	125	30	98	59	22	5	125	1	67
19:	2938	98	105	61	1440	548	159	418	223	159	24	842	16	612
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	42	0	4	0	12	2	0	11	1	0	0	10	0	147
22:	0	0	0	0	0	0	0	0	0	0	0	5	0	8
23:	328	0	0	0	0	0	0	0	0	0	0	0	0	8
24:	394	0	0	5	82	6	5	30	1	19	0	11	0	8
25:	641	29	59	29	89	8	19	24	6	15	2	73	0	30
26:	9508	1143	1403	753	16606	9104	2494	4575	1594	1234	280	9953	269	4316
27:	39345	1003	3550	951	11120	4125	1243	2901	2199	2369	286	4698	202	8968
28:	9044	394	483	274	14910	5237	1947	3888	4665	907	712	9201	257	809
29:	95271	3341	7176	3095	93678	29199	8712	14423	11426	7974	1685	32613	908	24073

A3.12 Otago Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	48	476	19	0	0	15	23	65	111	22	70	5242	4966	31721	95271
2:	0	99	0	0	0	0	4	0	8	0	0	110	485	2270	3341
3:	230	0	0	0	0	0	4	0	0	0	0	0	2874	2603	7176
4:	947	9	0	0	4	153	16	26	34	13	9	106	70	309	3095
5:	6	4361	28	0	0	0	14	89	247	9	0	21360	4266	54725	93678
6:	8	349	25	3	7	0	9	0	73	12	21	8979	820	15349	29199
7:	2735	169	25	0	29	334	19	93	33	15	42	1684	719	1325	8712
8:	241	2629	199	75	762	56	226	379	74	246	385	2724	200	2822	14423
9:	743	200	131	2	36	100	29	41	319	32	121	1723	407	2276	11426
10:	3006	59	0	0	12	142	10	36	13	0	21	283	503	2697	7974
11:	118	11	4	0	2	33	4	5	2	0	4	23	182	599	1685
12:	3501	675	650	31	69	375	272	64	83	33	240	5028	10074	6241	32613
13:	39	15	0	0	4	117	1	14	3	9	7	196	61	406	908
14:	307	1516	172	46	273	38	153	485	291	235	264	4233	181	5038	24073
15:	11910	808	6179	23	228	1603	259	493	79	95	331	323	49030	-853	72188
16:	5190	6289	2361	104	978	977	427	280	968	478	1360	64995	7700	19520	125292
17:	1383	2001	2419	398	388	145	276	511	385	210	474	5712	6726	14337	46972
18:	203	1545	342	0	869	0	246	238	228	213	361	3995	236	68	9776
19:	1623	8908	996	48	4466	2156	793	186	481	320	787	11461	619	-209	40278
20:	0	0	0	0	0	0	0	0	0	0	0	19802	0	2086	21888
21:	442	156	53	4	51	4	88	6	11	120	180	160	12782	60	14346
22:	0	18	8	0	11	6	16	8	0	6	13	2703	21219	1231	25252
23:	0	12	0	0	5	0	16	0	307	15	47	6768	14597	2539	24642
24:	36	526	34	6	202	0	137	107	346	340	38	2460	2736	881	8460
25:	262	1805	743	10	288	6	98	94	82	48	1070	9609	1146	1409	17694
26:	18355	41389	19079	6598	11971	0	9321	20686	13285	4620	5888	0	0	0	215024
27:	7496	41376	8113	2056	17956	13691	192	362	4872	56	3375	13276	1438	0	197219
28:	13309	9891	5392	372	1667	1937	1693	984	2307	1313	2586	55042	13172	0	162413
29:	72188	125292	46972	9776	40278	21888	14346	25252	24642	8460	17694	247997	157209	169450	1315018

A3.13 Southland Statistical Area

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	17787	23	3	0	53698	11	22	0	0	0	0	0	0	0
2:	0	17	0	0	1116	4	0	0	0	0	0	0	0	0
3:	0	0	285	0	0	0	775	443	0	0	0	0	0	0
4:	59	0	6	299	175	19	0	76	45	406	102	2	3	147
5:	219	46	0	0	2038	429	0	0	5	0	0	0	0	0
6:	274	0	0	0	17	32	0	0	0	0	1	0	0	0
7:	346	28	5	17	101	0	1044	295	9	0	0	51	0	0
8:	154	0	0	0	364	3	23	950	19	10	4	28	1	12
9:	3727	0	1	1	23	0	1	23	109	57	0	5	0	0
10:	451	0	5	8	58	0	3	7	45	64	0	3	0	3
11:	361	0	3	4	42	0	10	11	18	6	2844	490	6	3
12:	740	343	20	19	188	19	45	66	17	86	208	520	0	13
13:	4	0	0	0	0	0	0	0	0	0	0	0	0	0
14:	509	0	7	63	667	56	61	356	42	54	343	66	1	2939
15:	354	0	36	650	413	43	34	80	37	52	29	58	0	58
16:	2940	157	126	150	2420	204	339	612	500	202	773	605	7	93
17:	2632	156	223	432	2899	87	225	434	279	210	444	269	2	78
18:	341	24	9	19	92	2	21	52	8	9	37	38	0	23
19:	2221	137	43	71	1156	63	81	201	31	63	159	173	3	200
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	34	0	2	0	23	0	0	2	0	0	0	3	0	41
22:	0	0	0	0	0	0	0	0	0	0	0	1	0	2
23:	246	0	0	0	1	0	0	0	0	0	0	0	0	3
24:	158	0	0	16	72	0	5	6	0	0	0	3	0	2
25:	699	29	33	22	68	0	20	25	0	15	15	28	0	13
26:	8965	1301	735	1458	19395	325	1941	2790	537	930	2317	2856	52	1763
27:	38144	1049	1861	840	8301	917	952	2475	837	955	2363	1427	23	3679
28:	9577	505	359	355	12567	1015	1012	1866	2904	706	4287	2814	39	776
29:	90972	3915	3762	4424	105894	3229	6614	10770	5442	3825	13926	9440	137	9898

A3.13 Southland Statistical Area (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	31	91	7	0	0	9	9	9	18	6	15	1625	4742	12866	90972
2:	0	53	0	0	0	0	2	0	3	0	0	74	568	2078	3915
3:	120	0	0	0	0	0	2	0	0	0	0	0	1507	630	3762
4:	536	7	0	0	6	89	13	13	32	6	6	132	101	2014	4424
5:	2	813	22	0	0	0	6	17	70	2	0	10388	4822	87015	105894
6:	0	238	7	0	0	0	0	0	4	0	5	567	91	1993	3229
7:	2621	83	12	0	9	291	11	35	9	6	21	531	546	543	6614
8:	289	1076	72	19	242	45	60	66	21	47	78	1019	149	6019	10770
9:	26	11	11	0	2	6	1	0	2	2	13	42	194	1185	5442
10:	2024	35	0	0	7	38	4	12	2	0	8	30	241	777	3825
11:	254	22	9	0	3	63	7	5	3	0	7	51	1507	8187	13926
12:	1140	206	238	9	14	117	105	11	17	8	104	1627	2916	644	9440
13:	0	0	0	0	0	0	0	0	0	0	6	96	9	22	137
14:	180	756	92	23	123	18	75	129	94	73	105	2494	75	447	9898
15:	8005	469	3025	13	107	933	147	150	30	30	134	218	32954	457	48516
16:	3299	3404	1170	56	481	538	228	80	343	160	726	41055	4540	8675	73883
17:	907	1114	1538	201	191	84	147	146	136	69	246	3598	3965	6975	27687
18:	115	774	171	0	392	0	118	51	72	60	147	2270	134	567	5556
19:	883	4172	474	20	1863	980	361	45	138	83	334	5597	322	1090	20964
20:	0	0	0	0	0	0	0	0	0	0	0	12739	0	-2	12737
21:	250	78	29	2	22	2	42	1	3	49	58	91	7270	156	8158
22:	0	7	4	0	4	2	6	2	0	1	3	1170	6463	25	7690
23:	0	6	0	0	2	0	7	0	87	3	13	3448	5472	-51	9237
24:	45	233	13	3	82	0	66	28	109	72	13	956	1015	241	3138
25:	175	958	405	7	129	3	49	28	31	16	354	5259	619	651	9551
26:	12336	24676	11790	3749	6436	0	5301	6301	4980	1753	3033	0	0	0	125720
27:	5038	24518	4548	1168	9125	7967	109	110	1826	35	1977	8955	970	0	130269
28:	10130	10163	3950	286	1724	1552	1282	441	1207	657	2145	63242	8885	0	144566
29:	48516	73883	27587	5556	20964	12737	8158	7690	9237	3138	9551	167274	90077	143204	899920

A3.14 National Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1:	239139	206	100	0	751630	13689	1028	0	103	0	0	0	0	0
2:	0	103	0	0	6932	105	0	0	0	0	0	0	0	0
3:	0	0	14500	0	0	0	34552	9244	0	0	0	0	0	0
4:	1201	0	200	4473	3416	316	0	1130	4312	11865	711	104	209	4324
5:	10906	309	0	0	87901	5791	0	514	3285	104	0	0	105	0
6:	7104	0	0	0	3416	93717	720	0	821	208	305	1242	837	0
7:	8505	413	200	203	3114	316	50904	4827	616	104	0	5900	628	0
8:	5803	0	0	0	30942	5054	1954	64196	9856	3435	102	7867	1674	905
9:	67351	413	1400	508	12758	5950	6376	9244	36549	1561	203	23498	1988	302
10:	6904	0	200	203	11051	0	720	103	1540	15508	0	1760	105	101
11:	5603	0	100	102	603	0	517	411	308	208	19805	34885	628	101
12:	21112	4023	1900	1220	18384	1895	5964	3598	11498	3539	4367	101261	628	1106
13:	500	0	0	0	904	1895	514	205	513	104	0	932	1151	0
14:	11407	0	300	1220	11452	2948	2777	7293	4107	2914	2742	6936	419	100953
15:	5003	0	1300	5184	5927	1264	1234	1746	1540	1457	203	4037	105	1709
16:	47728	1135	4800	2541	45124	25483	17070	24138	27514	7910	5687	67597	2930	2916
17:	42425	1031	8400	7014	65298	10951	10592	16434	14887	9471	3352	23602	1674	2514
18:	6404	206	400	305	3114	1474	1131	1952	1540	520	305	4037	105	804
19:	47127	1135	2500	1423	24813	10741	6479	10477	9240	3435	1625	21842	1779	8145
20:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:	901	0	100	0	402	105	0	205	103	0	0	414	0	2212
22:	0	0	0	0	0	0	0	0	0	0	0	104	0	101
23:	4603	0	0	0	100	0	0	0	0	0	0	0	0	101
24:	4903	0	0	203	1708	211	206	411	103	312	0	311	0	101
25:	10406	206	1200	508	2311	316	720	616	308	416	102	2277	0	402
26:	144584	8767	26600	16976	217253	114950	68578	97620	66299	36645	16157	225762	13090	52085
27:	610555	7220	57301	16162	178415	65918	41854	73440	77307	37053	15453	129914	9313	108595
28:	48928	1031	4400	3253	68211	77501	14911	26192	148350	10720	24883	236332	7534	4625
29:	1379502	26198	136001	61498	1559179	441590	268901	354096	420699	147489	97002	901214	44902	292102

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A3.14 National Table (Continued)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1:	1002	8508	402	0	0	300	601	901	1705	406	1110	98200	71900	191700	1382730
2:	0	1501	0	0	0	0	100	0	100	0	0	1900	3800	11600	26141
3:	4106	0	0	0	0	0	100	0	0	0	0	0	54500	20000	137002
4:	15424	200	0	0	200	2401	601	501	1103	203	202	3400	1400	2900	60796
5:	100	79071	804	0	0	0	501	1402	4112	102	0	487999	71000	801300	1555306
6:	306	10009	1005	100	401	0	501	0	2006	305	1413	286200	12400	20200	443210
7:	82626	5105	703	0	1102	9203	1001	2003	702	305	1211	51000	22200	13900	266791
8:	10416	57652	4221	1708	20239	2901	7208	6310	1505	4570	6963	60800	4900	32400	353681
9:	35154	16114	11557	301	2605	10403	3404	1402	8825	1219	6862	99400	15000	15500	416847
10:	77518	1802	0	0	401	3101	300	701	201	0	505	7600	9300	4700	144324
11:	6410	601	201	0	200	1700	300	200	100	0	202	1300	10500	12500	97585
12:	90438	20218	36982	1306	3306	9703	10211	1202	2407	711	8880	225500	278400	30100	900559
13:	1502	1301	0	0	601	2201	200	701	301	305	1413	21900	3000	2800	42943
14:	5008	23621	2713	804	5711	600	3904	5910	3711	3148	4137	73300	2200	700	290935
15:	193996	12611	83110	402	5310	25107	6607	6010	1003	1219	5045	5600	798600	0	1175329
16:	84529	98889	34771	1809	20339	15304	10912	3406	12335	7312	22603	1125499	123600	168700	2016581
17:	24738	35732	47936	8239	9017	2601	8009	6410	5215	3453	8476	109300	107500	155600	749871
18:	3305	24822	5628	0	17233	0	6307	2905	2908	3148	5752	69300	4100	2400	170105
19:	33852	171053	18592	1105	104599	35510	23926	2704	7622	5382	15843	254300	12900	3000	841249
20:	0	0	0	0	0	0	0	0	0	0	0	342900	0	0	342900
21:	10616	3703	1306	100	1603	100	3304	100	201	2640	4036	4100	326600	2700	365551
22:	0	300	201	0	200	100	400	100	0	102	202	46800	258500	0	307110
23:	0	200	0	0	100	0	400	0	3911	203	706	117200	186000	300	313824
24:	1402	8408	502	100	4008	0	3504	1302	4413	5179	605	42600	40200	1700	122392
25:	4507	29526	11155	201	6412	100	2603	1202	1103	711	16953	170300	18700	1700	284961
26:	298957	670301	305706	114439	237654	0	238160	252009	159285	67737	94651	0	0	26200	3581265
27:	122086	666297	126524	35668	396236	214453	4905	4407	62078	0	56105	229900	24900	10100	3383269
28:	67804	63057	56679	3316	11322	7102	28531	5609	17049	15944	24924	358200	228100	29300	1594008
29:	1175796	2011202	750698	169598	838799	342900	366500	307597	314001	124304	288799	4294498	2690200	1562000	21367265

APPENDIX 4

REVIEWER'S COMMENTS

A draft copy of this report was circulated for comment in August, 1980. Feedback from reviewers was particularly useful in the final editing of the report. This Appendix summarises those detailed comments which the authors feel aid in the understanding of the methodology used and the interpretation of the results.

1. Proprietor Income. Mr R.J. Lowe emphasised that the exclusion of working proprietor income from the household income sector tends to underestimate the induced impacts associated with increases in regional output. Adjustment of the national table to include working proprietor income in the household row overcomes this deficiency -- refer Lowe (1977). There is also a case for adjusting the household row further to take account of regional leakages due to direct taxation.

2. Mr Moore has pointed out that comparing multipliers which include the initial impact makes the errors appear to be much less than they actually are, and that this comparison makes non-survey methods

appear to be much better than they are. To take a specific example, say the survey based multiplier is 1.3 and the non-survey based multiplier is 1.5. The 1.0 part representing the direct impact is common to each and not part of the multiplier effect at all. Relating the difference of 0.2 (1.5 - 1.3) to the true figure of 1.3 indicates an "error" of "only" 15%. It may as validly (or more validly) be compared to 0.3 (1.3 - 1.0) to indicate that the indirect impact is actually overstated by 67% ($0.2/0.3$), more fully $(1.5 - 1.3)/(1.3 - 1.0)$. Both measures are "true" for what they do, but the latter approach is a more reliable guide to how comparable survey and non-survey tables actually are.

3. Intra-sectoral Transactions. Mr Lowe commented that he was not fully convinced that intra-sectoral transactions were likely to be inter-regional rather than intra-regional as a general rule. To consider a number of large intra-sectoral transactions, aerial top-dressing for pastoral farmers will generally be intra-regional, sales of grain to poultry farmers and of electricity to electricity distributors for example will often be largely intra-regional, and so on. He doubts that one can generalise on this point so a careful study of intra-sectoral transaction components would be necessary before deciding finally which approach was preferable.

4. Superior data -- sometimes termed "region specific" data. Mr Lowe noted that the report discussion may imply that the only "superior" data readily available were from the "Industrial Production Statistics". There is however, a great deal more in the way of "superior" data available, much of it as readily available.

More specifically, a substantial body of data on the distribution industry, local government and hospital board expenditure, and the electricity supply industry is readily available in published form, and, with some effort admittedly, it is possible to use unpublished Department of Labour records to estimate region-specific wage and salary payments for all industries for all employment districts which would produce more reliable type II income multipliers. The published data even gives purchases of electricity by sector by region. There are a lot of other data which could be used to significantly improve a regional transactions table and while difficult to include into the standard GRIT programme, it is not difficult to produce a modified version embodying similar principles, which does enable their use.

Of course to take advantage of all or most of it represents a large total effort, but it is misleading to imply that so little was/is available. The comparatively small use of "superior" data constitutes a serious limitation to the results.

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