TOWARDS A RESTRUCTURING OF RACING ACTIVITY: A CLASSIFICATION BASED INVESTIGATION INTO SUPPLY AND DEMAND ASPECTS OF SERVICE PROVISION IN THE NORTH ISLAND

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ABSTRACT

The research problem involves the classification of Racecourses in the North Island. The problem evolved because of inertia exhibited by the Racing Clubs in their location compared to the rapidly changing space-economy of the North Island. The service sector, the general conceptual environment of the Racing Industry is analysed on a general and then specific theoretical basis. The importance of population thresholds, economies of scale, and distance are explored. Emphasis is placed on examining possible growth strategies forthe activity. Behavioural and market area analysis which is also important to this type of study were not used because of insufficient data. Two main areas of concern were studied in depth. They were, firstly the establishment of a classification of Racecourses, and the testing of the results of the classification against certain hypothesised relationships (dealing with population and course capital investment). Secondly and on the basis of the earlier results the training function was examined. The concepts of distance, and scale economies were explored by using the transportation problem.

The positive results obtained in the analysis have implications in the type of policies which may be used to guide Racing activity. The results from the investigation of the training function points to the importance of each particular situation and hence a more specific investigative frame is necessary in any further examination of this function.

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C O N T E N T S

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

The New Zealand Racing Industry has for some time been in economic difficulties. This is highlighted by the precarious financial position of many Racecourses[1] and Racing Clubs.[2] The situation facing the industry is such that a comprehensive investigation of Racecourses and Racing Clubs, and their ancillary activities, is necessary as a basis for developing a comprehensive development strategy for Racing. The development of such a strategy is dependent upon the collection and ordering of data relating to the industry which should involve a classification[3] of the industries activities. This step would provide a framework for setting out and interpreting future developments in the industry.

The dimensions of the economic problem confronting the industry results from the interaction of three primary factors; the imbalance of industry supply and demand, changing perspectives about the activity and growth of the industry, and recent restructuring and policy changes in the industry. All of these factors have affected the direction of industry evolution. The supply side of the indus-

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1 Defined as courses which hold totalisator meetings.

2 Defined as Galloping and Trotting Clubs which hold a totalisator license.

3 Discussions with the Racing Authority resulted in a major study, involving classification of the activity with a consideration of the training function, being undertaken.

try is the location of Racecourses, while demand refers to the distribution of population. The emergence of imbalance between supply and demand has been due to evolutionary changes in the space-economy, and the sport rather than industry decision-making frame within which the early administrators worked. Changes in attitudes have been more evolutionary than revolutionary resulting in a relatively slow process of adaptation. Allied to this change has been the establishment of the New Zealand Racing Authority (N.Z. R.A.) as the chief administrative entity of the industry (Racing Act, 1971). This development, the outcome of recommendations from the Royal Commission on Horse Racing, Trotting and Dog Racing in New Zealand (1970) brought an organising influence to the industry. Through its various accounts the N.Z.R.A. has sought to alleviate the short term difficulties facing the industry. These policies, however, treat the effect rather than the cause of the economic problems. The underlying causes, and hence the central interest to this thesis, are to be found in the internal structure and spatial organisation of Racing especially in terms of the correspondence between the provision of racing activities (supply, via Racecourses and Clubs), and the components of demand (population).

To facilitate the study of the industry's problems and to assist in the classification of Racecourses and Clubs, Racing is viewed as a service activity. This viewpoint enables objective analysis, in terms of the attributes the industry exhibits, and against standard evaluative measures. The investigation of Racing within this framework, at both general and specific levels, is undertaken in Chapter 2.

The characteristics and relationships of the service sector are defined and Racing's position in relation to this theoretical framework explored. A number of sector growth characteristics such as the importance of population thresholds, the attainment of economies of scale and influence of distance form the basis for later interpretative discussion of the industry classification. Chapter 2 also briefly reviews the spatial distribution of the service sector in New Zealand, comparing this in descriptive terms with the distribution of Racing activity, and noting the effect of economic development on both spatial patterns.

With the theoretical framework of the problem environment established, the nature of specific industry issues, and problems, areas pertinent to the study are considered (Chapter 3). The chapter concentrates on the origins of Racing's structural organisation, and the effect this has had on capital investment, and planning policies pursued in the industry. Stress is placed on identifying implicit goals in present shortrun policies, and the manner in which the policies are expected to serve the industry.

Following the synthesis of the theoretical background, and the presentation of the state of the industry, the research problem is formally defined; the identification of a number of major questions indicates the scope and direction of the investigation. The study, concerned with identifying the existing characteristics and growth potential of Racecourses and Racing Clubs, involves a classification of Racing activity, with a view to aiding decision-making relating to the allocation of scarce industry resources. In addition, a classification permits scrutiny of the extent to which the supply of racing activity matches demand for

the activity. Further, the study is confined to the North Island because of impracticalities in the collection of data.

Methodological discussion on classification in Chapter 4 emphasises the use of classification in resolving difficulties in resource allocation. Classification provides a means of ordering past and present data, concommitantly it carries implications for possible growth strategies of identified classes of courses or clubs. The use of two complementary classification approaches ensures more accurate definition of different levels of Racecourses and Racing Clubs. The resulting classification of activity is used as background for a subsidiary consideration in the thesis, that of the organisation of training in the industry. Concentration here is on transportation costs and the influence of distance on the spatial distribution of training.

The thesis results are dealt with separately in Chapters 5 and 6. The former, details the results of the alternative classification methods, integrates the findings into a single classification, and tests the internal consistency and external fit of the classification. The latter chapter on training incorporates results from the Transportation Analysis of transport costs, along with other aspects arising from the review of the training function.

Various implications of both sets of results are discussed in Chapter 7. These are examined from two viewpoints, that of the private component of the industry (Racecourses and Clubs and Training Centres) and the public coordinating body, the Racing Authority. Avenues of policy open to the N.Z.R.A. especially with regard to Amentities, Stakes Subsidy, and Distribution Account are looked at.

Emphasis is placed on exploring long term objectives aimed at promoting growth rather than short term problem orientated policies.

The thesis is thus concerned with classifying racing activity; an essential prerequisite in the centralised development of the industry.

Chapter 2

RACING AS A SERVICE INDUSTRY

Racing's emergence as an industry, is a result of a gradual evolution of behavioural factors affecting its development. Two principle behavioural questions are involved, namely, private enterprise versus Government participation, and a sport versus industry debate. The first case, especially at the club level, has been resolved in favour of private enterprise. The only intrusion of government have been the Totalisator Agency Boards' (hereafter referred to as the T.A.B.) monopoly of betting, (though this is not challenged as clubs ultimately receive all the profits), and the establishment of the New Zealand Racing Authority to administer racing. These along with the Government tax on betting, have been contentious issues. Submissions on these matters took up large amounts of time at the last two Royal Commissions into the industry. These regulatory agencies appear to be the price the industry has to pay for continuing virtually unshackled by Government. The recent decision by Government not to implement a policy of regionalisation is simply a continuation of the policy of non-involvement.

The sport versus industry debate has evolved for the most part in favour of racing being described as an industry. There are, however, certain sectors within the industry whose participation is solely on a sports basis. The behavioural dichotomy - sport and industry - reflects differ-

ing action spaces[4] of the individuals involved (Dicken, 1971; Krumme, 1969 and 1970; and Andrews, 1971). For example, owners do not expect and in reality rarely make a profit. The same may be said of many of the voluntary workers on the Racing clubs. Significantly for the industry today the general change in opinion has been relatively recent with the result that historical decisions in terms of investment were made by individuals set in a sports orientated action space. The spatial and temporal results of this can be seen in the conglomeration of small courses based on rural communities or small urban areas.

Many locational and investment decisions, are of course made in each decision-making situation. Krumme (1969, 33) classifies the spatial location and investment decisions in terms of either enlargement, rationalisation, or replacement. There has been since 1950 some rationalisation in Racing (e.g. Rangitikei to Awapuni, Napier Park to the Hawkes Bay Jockey Club) but generally, the initial spatially diffuse pattern has continued. Capital investment decisions have concentrated on replacement of capital stock with some enlargement or upgrading of existing amenities. So although some opinions and attitudes may have changed, the spatial pattern has not, because of inertial considerations, and it will take either some rearrangement of the pattern or the implementation of policies to alter functions within this pattern for the industry to match population (demand) to Racecourses (supply).

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4 This refers to the total environment with in which information is received, interpreted and decisions made.

Professionals (trainers, jockeys) involved in the industry work within a different action space. They are economically motivated with the result that their spatial distribution should reflect efforts to secure viable locations. Hence the training function epitomises a small scale market orientated service operation and will be analysed as such.

From an overall view then, present day Racing can be regarded and analysed in terms of an industry.

RACING AS A SERVICE ACTIVITY

In establishing the characteristics of Racing as a service activity it is necessary to view the system on two levels. Firstly, a general level, to examine where the industry is situated in the broad spectrum of service categories. Secondly, at a specific level, to determine the parameters of the system, the effect on the industry of its position (in general terms), and its structure (in specific terms) viz a viz social, and economic forces in the external environment.

General level of Analysis

The general view is epitomised by Katouzian's (1970, 362-383) classification of service industries and Fuch's work on the general characteristics of service industries. Katouzian developed a new approach with a thesis that the service sector should be categorised according to the economic growth rates of its constituent industries. This differentiation within the sector is based on the heterogeneity of products in this sector compared to other sectors. He also postulated that they would have varying income elasti-

cities, a fact which Fuchs bore out for the United States of America (Fuchs in fact found that income elasticity in this sector was not much greater than unity for most products). Katouzian's three basic divisions of the service sector were:

(1) New Services; this category coincides with stages put forward by two other growth theorists on which Katouzian's work is based (Clark, 1957 and Rostow, 1971). In the case of the former this equates with Fisher's definition of tertiary products. The Rostovian stage of mass consumption triggers the growth of this sector in that growth model. Demand for these services is sensitive to changes in per capita income and similarly is a function of the amount of per capita leisure-time.

(2) Complementary services; these as the term infers are complementary to the process of industrialisation and urbanisation. They include banking, finance, transportation and wholesaling. This complementarity has two aspects, one being the factors related to urbanisation, and the second those related to the production process.

Government is given special treatment by Katouzian as the services produced by it are becoming increasingly important, and fall into all of the categories, though the actual distribution varies between countries. Its unique situation is a result of the inability to make generalisations about it across the world as its structure is determined by political ideologies and not economic factors. Government therefore may or may not be important in any given situation.

(3) Old Services; are defined as those whose growth cycle peaked before industrialisation and since then have declined. Domestic service is the best example of this (Katouzian, 1970, 367). The decline in this area is due to changes in the social and economic environment, and has been more than compensated for by growth in the other divisions of the sector.

Within Katouzian's classification the utility offered to race patrons by clubs on Racecourses is difficult to define. Characteristics applying to all three categories can be detected. New service characteristics are exhibited in Racing's general growth especially in the number of horses racing, (1969/70, 3691 horses raced; 1974/75, 4844 horses raced; to June 4th for both seasons) reflects increased leisure time and higher per capita income which allows for widespread horse ownership, although syndication (allowing up to ten owners of one horse) has played a part. The expansion of the horse population has had repercussions on the professional area of the industry, namely trainers, jockeys, veterinarians, and stud-farmers. This area of the industry is complementary to and a function of ownership. However, it is also effected by factors which are important in the manufacturing industry, notably economies of scale (for trainers larger teams are becoming the norm). Therefore, in terms of horse ownership the industry exhibits features of a new service, with professional services being a function of this.

Conversely the comparative drop in betting as a percentage of Personal Disposable Income, Salaries and Wages, and

Private Disposable Income (Figures 1 and 2) would seem to argue that a certain amount will be spent on gambling, but this may not necessarily increase in proportion to income. Thus, the industry exhibits some characteristics of an old service. However, this proposition is not entirely sustainable because the declines shown by the graphs are not continual.

So the characteristics suggested by these figures are indeterminant within Katouzian's framework, although the complementary service category is the only one not explicitly excluded by the data. The levelling out of the graphs would tend to support the view that there is a threshold peccentage of income which will always be invested on the totalisator. This would however be extremely difficult to prove.

A number of other factors may have played a part in the decline of totalisator turnover in the 1950s and early 1960s. The increased participation in other high cost leisure activities (e.g. golf) with correspondingly high income elasticities, and the concommital growth in the use of time saving consumer durables has provided alternative avenues for spending and these may have affected totalisator turnover.

Reinforcing the possibility of including totalisator betting as a complementary service, is the fact that technological change is important in the growth of this area of the industry. Quinella, treble, and computerised betting facilities have over the past three years been forces in sustaining the growth of totalisator turnover (Figure 3). It would appear therefore that the gambling aspect of the

FIGURE 1

ON AND OFF-COURSE TOTALISATOR TURNOVER

AS A PERCENTAGE OF PRIVATE DISPOSABLE INCOME

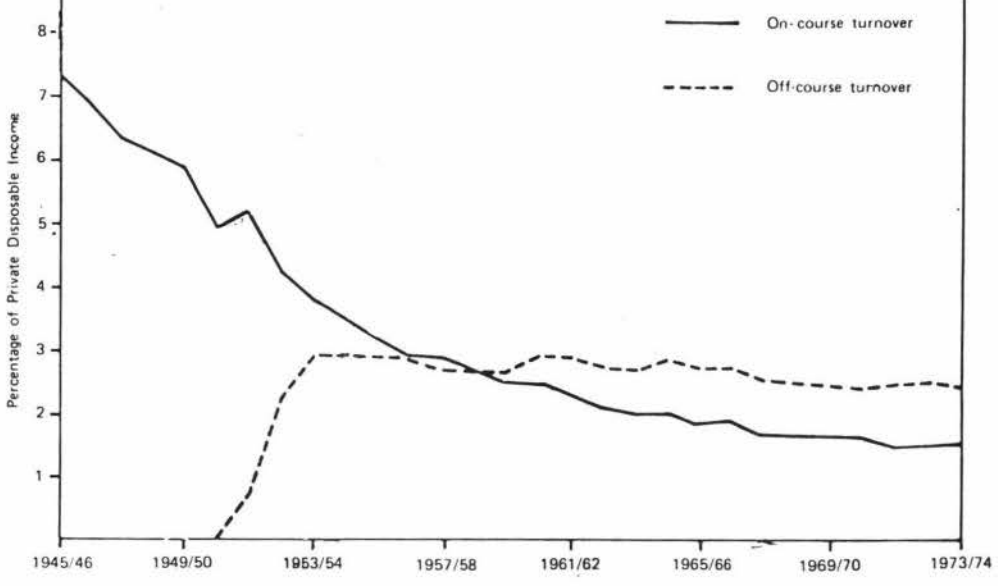
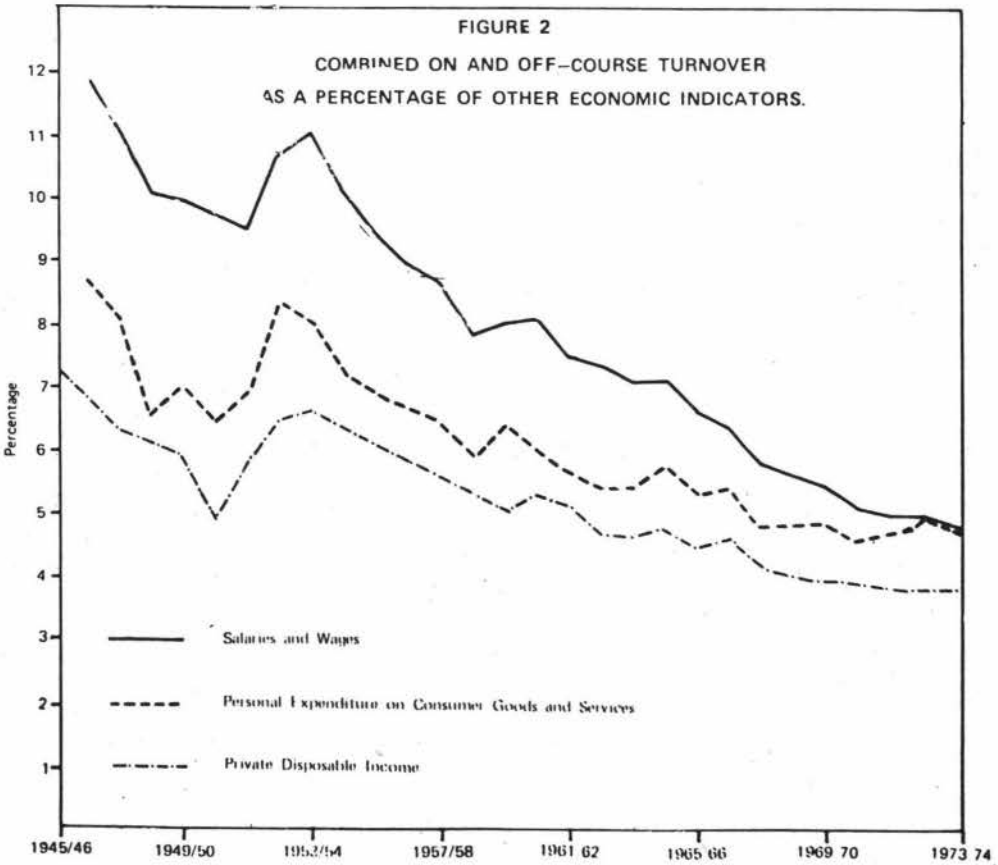


FIGURE 2

COMBINED ON AND OFF-COURSE TURNOVER

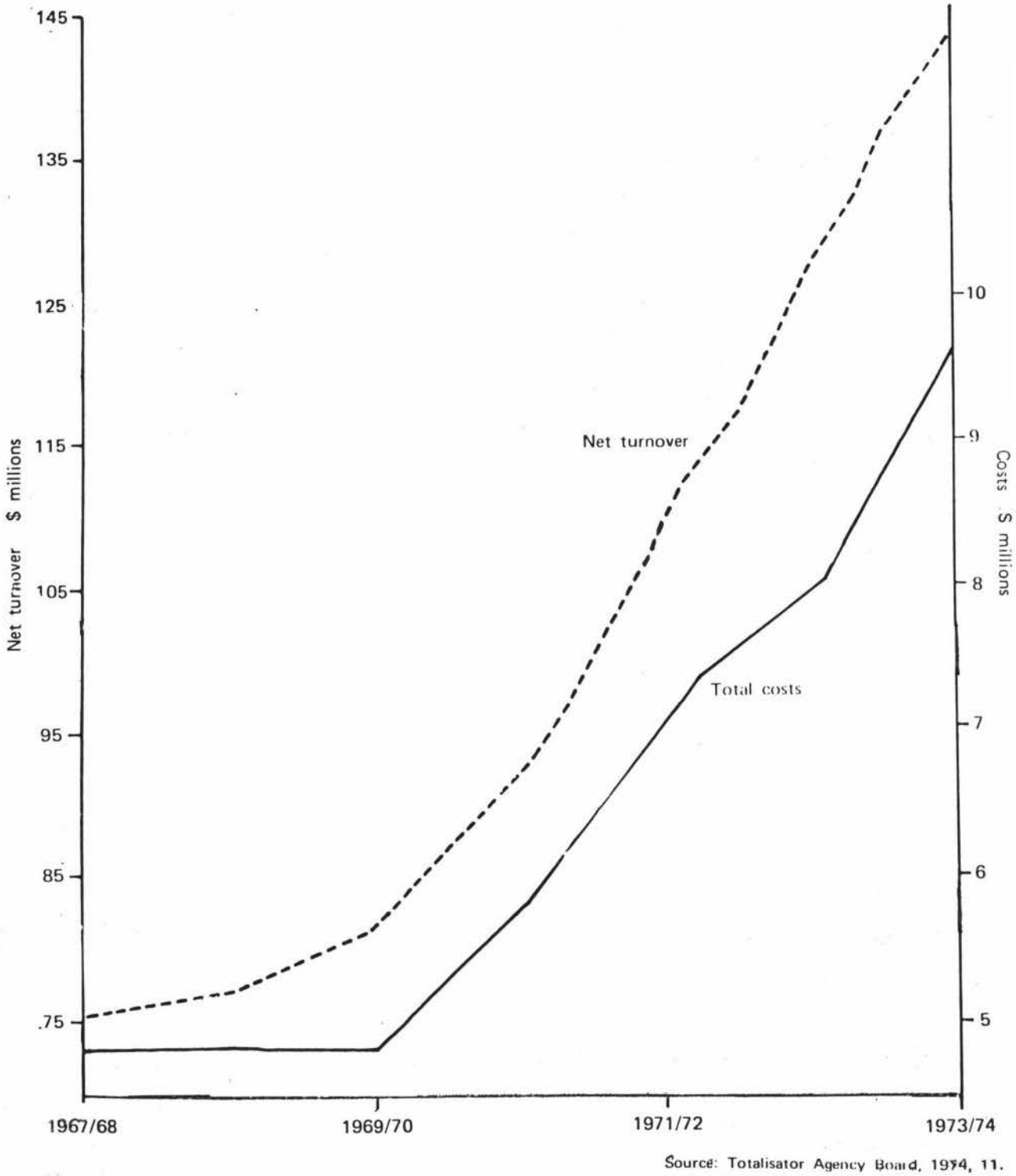
AS A PERCENTAGE OF OTHER ECONOMIC INDICATORS.



Source Totalisator Agency Board.

FIGURE 3

TOTALISATOR AGENCY BOARD NET TURNOVER AND TOTAL COSTS 1967/68 – 1973/74



Source: Totalisator Agency Board, 1974, 11.

industry encourages categorisation of the industry as a complementary service.

Within the framework of economic growth theories the importance of the service sector has largely been overlooked. The Export Base Theory (North 1955, Tiebout 1956), for instance, stresses the importance of division of labour and specialisation, but the validity of the theory depends on the size of the region being analysed, and the time period involved (Hermansen 1968, 198). The theory treats the service sector as minor, because generally services add more to self sufficiency than to the export base of a region. The service's relationship to the export base is most important, as it is the interaction of these two which is the main propulsive force in growth.

The same cannot be said for the various Stage Theories. The service sector is, Hermansen argues, placed in a strategic position.

> '(a) Service trades play an expanding role particularly for employment growth, as the regional economy develops.
>
> (b) Since service trades are normally located in the centres the shift to services means a shift to services means a shift to the centre.
>
> (c) The growth of the service sector in the regional economy implies the creation of continuous growth impulses from the centre.
>
> (d) The growth of service employment in the centres is a fundamental force in the alteration of settlement patterns.'
>
> (Hermansen, 1968).

A later expansion of the service sector within the general theories of growth poles and growth centres has been documented by Moseley (1974). He differentiates between producer services (similar to Katouzian's complementary ser-

vices) which are demanded by industry, and consumer services which are concerned with final demand, as is this thesis. The main concept involved in this service is, Moseley argues, that of population thresholds which are defined as 'the minimum amount of purchasing power necessary to support a given service in a given location' (Moseley, 1974). This threshold rigidly established by central place influences, has over the past decades been undergoing change, the result being a rise in thresholds by greater urban concentrations. From this it follows, if linkages between service and other industries are important, that this reduction in services in remote areas will have a cumulative effect.

A major demand factor put forward explaining relocation is increased mobility which has led to increased multi-purpose trips, assisted on the supply side by the establishment of shopping complexes. For example, increasing per capita income has assisted this mobility, and has also resulted in a shift in demand to luxury items, (with higher demand elasticities) which are found in the larger centres. During multipurpose trips, staple items (with inelastic demand) may also be obtained with a resultant decline in demand for these at the community level.

Economies of scale, epitomised by the growth of labour relative to capital costs has reinforced the shift (e.g. computer betting facilities). Results of this have been an increase in fixed compared to variable costs and increased indivisibility of capital investment. While all of these effects may apply to the Racing industry it would appear that the supply factors do reflect more of the broad changes in the industry over the past two decades.

Within the general level of analysis racing fills a specialised cell of the service sector. Spatially and within the framework of this thesis the most useful analysis is Moseley's who postulates an increasing aggregation of activity thus excentuating the movement of industry and population up the urban hierarchy. Katouzian's analysis is complementary in that it defines temporal relationships which could affect and be affected by future movements in the economy. While this analysis has determined the external interaction and growth characteristics, specific analysis of the industry is necessary to ascertain the internal structure of Racing.

Specific Level of Analysis

A model of the parameters of the service sector has been established by Rathmell (1974, 140). This relatively simple model defines the relationships between the factors involved in the industry, and is a necessary starting point from which specific characteristics may be ascertained. The basic interacting factors as put down by the model therefore are the Racecourse and its amenities, the horses which race, specifically those trained on the course, the public, Racing Clubs, the professional groups and the regulating agencies. The relative positions of the interacting forces are important for spatial efficiency and optimal location of Racing and, it is on this area the thesis will concentrate.

By establishing the characteristics within a general service industry framework comparisons within the industrial sector may be reached. Rathmell (1974, 6) distinguishes two broad groups of characters which work within the system parameters. These have been delineated as primary and sec-

ondary characteristics.

(1) Primary Characteristics

a) There is no transfer of ownership in the sale of a service (e.g. entry charges).

b) Services are first sold and then produced and consumed (e.g. the racemeeting itself).

c) The capacity to produce a service must be present before it can be offered for sale.

d) With few exceptions uniform standards are difficult to maintain (This especially is true in the present study).

(2) Secondary Characteristics

a) Services cannot be purchased and then resold.

b) With the exception of utilities and transportation, services are relatively non-polluting.

c) As services cannot be owned there is no pride of ownership, but this in turn is replaced with a pride of performance (hence the parochial nature of many racing clubs).

d) Certain aspects of the sector are characterised by heterogeneity rather than homogeneity (This is reflected in the industry/sport debate).

The Racing industry generally reflects the above characteristics though there are exceptions. For instance, while the service as a whole cannot be owned, factors within it may be (e.g. horses). The exceptions, however may be categorised in the fourth of the secondary characteristics, namely that of heterogeneity.

From the model and the characteristics pertaining to it,

the major linkages involved in the industry may be extrapolated. The important linkages to be studied are between the Racecourses and the public, and Racecourses and the input factors. Implicit to the study are the linkages between these factors and the regulatory agencies as the study is being made from a problem solving, hence policy making framework. So while the actual relationships are not under scrutiny a basic knowledge of them is necessary for the problem solving to have any practical relevance. Before this can take place, an analysis of the spatial distribution of the service sector, especially Racing, and the effects, economic development has had on this, need to be examined.

SPATIAL DIMENSIONS OF THE SERVICE INDUSTRY IN NEW ZEALAND

The general spatial distribution of service industries in New Zealand has been described by Cant and Johnston (1973, 15-41). They suggest that the main function of this sector in New Zealand is to mobilise the flow of goods and services within the country and between New Zealand and the outside world. However, the whole sector is not, as the above indicates, evenly distributed. It is postulated that the urban hierarchy has been delineated on the basis of retail trading functions, because various commodities (notably consumer durables) demand a certain threshold of population before an outlet for them will be economically viable (this follows Moseley's postulates). The distribution of the headquarters of firms is used as an example of how some service distributions parallel metropolitan industrial functions (Johnston 1973, 33).

The Racing industry is equally affected by the threshold factor and like all service activities, (e.g. doctors)

it is implicity tied to population distribution. Unlike other such activities however there appears a spatial inertia which maybe a cause of many of the problems faced by the industry. For the elaboration of this dimension the spatial organisation of the industry must be defined.

The distribution of courses in the North Island shows two important aspects of the function and early locations of Racecourses. Firstly, the spatial concentration of courses in two areas. The Auckland-Waikato region, and the Manawatu-Wellington region. These concentrations include 26 of the 37 Racecourses on which totalisator meetings are carried out. This may have some ramifications, and will be referred to later when studying areas of optimal location and the spatial distribution of certain classifications within the industry. Their close proximity and high number of racedays (70 percent of all Racecourses, and 76 percent of race days 1973/74), would tend to reduce transport costs between these courses and may allow economies of scale to be generated. This spatial configuration has sound economic foundations, but any study based on this hypothesis would be a case of proving the obvious. There is, however, within the context of an optimisation study, the possibility for research on a more specific scale. The second major spatial pattern is that of courses established on a linear pattern (the Waverley, Hawera, Stratford and New Plymouth link is the major example). Thames, Paeroa, Te Aroha, and Matamata are also in this pattern but their proximity to one another, and to other courses places them in the regional configuration. The third aspect of location would appear to be courses in isolation, Gisborne, Whangarei, and Dargaville being those involved. They are also on major route-

ways, so have some claims to the second pattern but their existence is due to community need, rather than a relationship with other courses forming circuits, which was the norm some years ago. The economic aspects of the latter two distributions are less pronounced, for although they do have large population bases, the training of horses and other allied services are concentrated within the first spatial pattern. This concentration of activity reinforces the thesis stressing the importance of linkages between factors being the economic basis of the first pattern. This may mean the importance of transport costs in the industry and may provide an area for analysis.

More specific research into the New Zealand service sector has been carried out by Golledge (1963), and Davey (1973). The latter involved the centralisation, decentralisation dichotomy in the locational decisions of head offices. The spatial result of this decision tended to be an increasing concentration in the central city, the major factor cited, in location being the access to contacts. The spatial moves in the industry have also been towards centralisation. In this case of smaller courses which now rent or are shareholders in other courses that exhibit a better spatial location. A table with examples of the origins and destinations of Racing Clubs which have moved from their own course within the last twenty years, shows that the moves are generally to courses in towns with larger populations.

Table 1: Origins and Destinations of some Migrating Racing Clubs.

Club	Course Origin	Course Destination	Distance of move
Rangitikei R.C.	Bulls	Palmerston North	18 miles
Napier Park R.C.	Napier (Greenmeadows)	Hastings	10 miles
Opunake R.C.	Opunake	Hawera	25 miles

Source: Field Survey, 1976.

The Rangitikei and Opunake moves exemplify the centralisation concept. The Napier Park situation, demonstrates centralisation in the concentration of activity on only one course as opposed to two. This move exhibits a temporal investment decision rather than a spatial shift. Some reaction to general economic changes has therefore occurred by some spatial and temporal restructuring of the relationships.

The development of these factors and factor linkages has not been in isolation however, and has been affected by social and economic changes within the North Island space-economy. Early changes resulted in a gradual evolution of the spatial structure of Racing. An elaboration then of the North Islands' development spatially and temporally, is necessary on two counts. Firstly, to understand the factors which underpin the economic viability of the industry. Secondly, and as a corollary to the first is the future position and effects of these factors, and the feedback this will have on the Racing industry.

ECONOMIC DEVELOPMENT AND THE INDUSTRY

Early development in New Zealand was of a regional

nature, based on intra- and interregional links by way of coastal shipping and later by road and rail. Settlements were therefore based on major routeways and coastal ports resulting in a specifically linear pattern. The difficulty of communications and the relatively sparse population resulted in a large number of Racecourses being developed by local communities. This was organised somewhat in the late nineteenth century by the establishment of the Racing and Trotting Conferences.

The overwhelming importance of the primary sector was instrumental in the large scale establishment of Racecourses. These were often based on the local community, with race days being one time that all the community met, and they were thus well attended. With the improvement in communications through the early decades of the 1900 till 1950 the basic spatial structure of the industry was established. Not surprisingly, courses were still based on small communities with economic considerations secondary. With the changing economic and social environment over the past quarter of a century, however the underlying bases of Racecourses has changed. The result being that more stringently controlled finances are necessary for clubs to survive. This has had spatial repercussions which have affected the industry because of its relative inertia compared to those factors affecting it.

The spatial reorganisation of the economy is most graphically seen in the population movements, firstly to the north of the North Island (increase in population in the statistical areas of Northland, Central Auckland, Southern Auckland, and The Bay of Plenty by 10.5 percent 1966/71 and

9.1 percent 1971/74 whereas the rest of the island increased by only 5 percent, and 4.6 percent in the same periods; Hearn and Slater 1973, 24). This is significant, as only 17 of the 37 courses in the North Island are in this area. If this trend in population and economic movement continues there will be important repercussions on courses in the lower half of the island.

This, along with the spatial configurations of courses already evidenced may be paramount in the future growth of the industry in these areas. The restructuring of the New Zealand economy therefore has taken on two distinctive spatial structures (Hearn and Slater, 1973, 27). These are (1) an historically diffuse primary industry structure and (2) the spatially concentrated manufacturing structure. The concentration of this second structure is due to at least interindustry linkages, the growth of import and market orientated industries, all of which encourage population concentration.

Racing's spatial distribution is orientated to the primary industry structure and the population changes accompanying the second structure have in many cases isolated Racecourses from their market. The inertia exhibited by courses is caused by economic (the high cost of capital investment) and social factors (tradition very important), and appears to be one of the main reasons for their economic difficulties.

The effect this concentration of growth in nodal growth centres should be shown in a classification of Racecourses. The gravity model, incorporating distance as a surrogate for interaction would prove whether any relationship exists.

Allied to this the development of market area analysis, (Golledge, 1967, 239-259) has placed greater stress on the behavioural system, as a determinant of the spatial market. The result has been the establishment of tolerance zones, similar to threshold analysis Golledge (1967) defines three such zones.

(1) Zone of Maximum Advantage.
- ideal state where a firm holds a monopoly.

(2) Zone of Competition.
- competition increases with distance from the course.

(3) Zone of Disadvantage.
- where another competitor has a monopoly, (Golledge, 1967, 243).

In the above situation two spatial distributions are of importance. These are distance from population, and distance from competitors. Once related to the behavioural system the zones may be defined. The establishment of such catchments however are beyond the bounds of this thesis because of the problem of data collection, and the lack of knowledge of general relationships within the industry.[5]

The evolution of these spatio-temporal forces has had differential effects on the North Island space-economy. This along with characteristics of the system parameters al-

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5 The Royal Commission into Horse Racing, Trotting and Dog Racing in New Zealand (also referred to as the McCarthy Commission) came to the conclusion that a 40 mile radius or one hour of travelling time from a course was the most those attending the races in any significant number would travel. (Royal Commission, 1969, 49). There is however no empirical evidence to back this up.

ready mentioned are the major spatial results and determinants of the present problem. From the interplay of these various and often conflicting forces, has evolved the structure and relationships of the activity. This internal structure will now be evaluated to complete the investigation of factors pertinent to the problem.

Chapter 3

THE STRUCTURE OF THE INDUSTRY AND EVOLUTION OF POLICIES

The importance of administrative structure is apparent firstly in policy planning, and secondly in capital investment decision making, which has led to an increasingly unbalanced spatial distribution of Racecourses. The latter factor is due to behavioural aspects (action spaces) of the system parameters. The structure itself is purely hierarchial and until the New Zealand Racing Authority was established there was no apex to the structure, but rather two peaks made up of the New Zealand Racing conference and Trotting Conference (N.Z.R.C., and N.Z.T.C.). Each concerning themselves primarily with their own organisations. The establishment of the N.Z.R.A. was in line with the main recommendation of the Royal Commission into Horse Racing, Trotting and Greyhound racing in New Zealand.

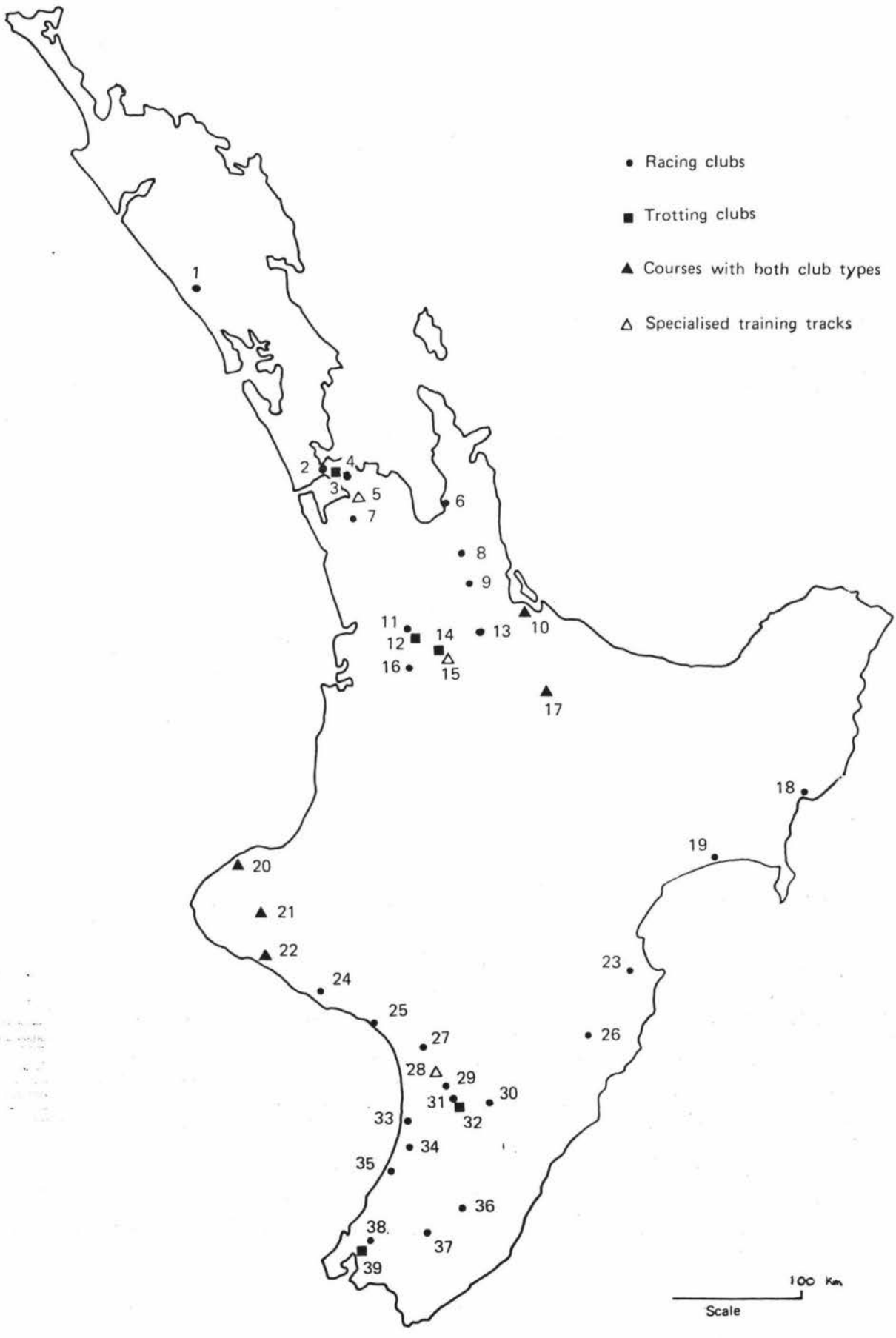
Underlying the recommendation were three main disabilities which the commission saw in the industry as it then functioned.

> '1. The importance of decisions where racing and trotting are in conflict.
>
> 2. The building up of harmful conflicting pressures within the codes themselves and at Government level.
>
> 3. Inadequate recognition of the part played by organisations and people other than clubs and club members.'
>
> (Royal Commissions Report, 1969,140)

It is significant that all these problems are tied in with the existing administrative structure. Hence a defi-

FIGURE 4

DISTRIBUTION OF NORTH ISLAND RACE COURSES
1976



1 Awakino Point
Northern Wairoa Racing Club

2 Avondale
Avondale Jockey Club

3 Alexandra Park
Auckland Trotting Club
Franklin Trotting Club
Thames Trotting Club

4 Ellerslie
Auckland Racing Club
Pakuranga Hunt

5 Takinini Training Track

6 Parawai
Thames Jockey Club

7 Pukekohe
Franklin Racing Club

8 Paeroa
Paeroa Racing Club
Maramarua Hunt

9 Te Aroha
Te Aroha Jockey Club

10 Gate Pa
Bay of Plenty Racing Club
Bay of Plenty Trotting Club
Whakatane Racing Club

11 Te Rapa
Waikato Racing Club
Waikato Hunt
Cambridge Jockey Club

12 Claudelands
Waikato Trotting Club

13 Matamata
Matamata Racing Club

14 Cambridge
Cambridge Trotting Club
Morrinsville Trotting Club

15 Cambridge Training Track

16 Te Awamutu
Waipa Racing Club
Taumaranui Racing Club

17 Arawa Park
Rotorua Racing Club
Rotorua Trotting Club
Rotorua and Bay of Plenty Hunt

18 Makaraka
Poverty Bay Turf Club
Poverty Bay Hunt

19 Te Kupenga
Wairoa Racing Club

20 New Plymouth
Taranaki Jockey Club
Taranaki Trotting Club
Taranaki Hunt

21 Te Kapua Park
Stratford Racing Club
Stratford Trotting Club

22 Hawera
Egmont Racing Club
Hawera Trotting Club
Opunake Racing Club

23 Hastings
Hawkes Bay Jockey Club
Hawkes Bay Hunt
Dannevirke Hunt
Napier Park Racing Club

24 Waverley
Waverley Racing Club

25 Wanganui
Wanganui Jockey Club
Egmont-Wanganui Hunt

26 Waipukurau
Waipukurau Jockey Club

27 Marton
Marton Jockey Club
Rangitikei Hunt

28 Rangitikei Training Track

29 Feilding
Feilding Jockey Club

30 Woodville
Woodville District Jockey Club
Pahiatua Racing Club

31 Awapuni
Manawatu Racing Club
Rangitikei Racing Club
Manawatu Hunt
Ashhurst Pohangina Racing Club

32 Manawatu Raceway
Manawatu Trotting Club
Wanganui Trotting Club

33 Foxton
Foxton Racing Club

34 Levin
Levin Racing Club

35 Otaki
Otaki Maori Racing Club

36 Opaki
Masterton Racing Club

37 Tauherenikau
Wairarapa Racing Club
Carterton Racing Club

38 Trentham
Wellington Racing Club

39 Hutt Park Raceway
Wellington Trotting Club
Otaki Trotting Club
Masterton Trotting Club

nitive review of the structure is necessary so that the factors involved in decision-making may be defined. Implicit to this is the spatial organisation of the structure and this aspect will be stressed in the ensuing discussion.

THE RACING CONFERENCE

This is an amalgamation of clubs, and derives its authority from the rules of Racing.

Table 2: Voting Powers on the New Zealand Racing Conference 1969.

	Number of Clubs	Days Racing	Votes
Metropolitan Clubs	10	88	91
District Clubs	61	166	91

Source: Royal Commissions Report, 1969, 31.

It is obvious from the table that the Metropolitan clubs in the Conference have a great advantage in voting powers. This has historical origins and exemplifies the importance of regional centres, and the problems of communication in New Zealand a century ago. Unfortunately this structure especially due to the uneven distribution of voting, has an inbuilt rigidity. This rigidity resulted in paralysis where decisions concerning the closing of courses, and the allocating of capital investment by way of the Amenities Account were concerned. The result was a distribution of investment monies to the clubs on the basis of their tote turnover (50 percent On-course and 50 percent Off-course) with no directions as to how it should be best spent, to serve the industry.

THE TROTTING CONFERENCE

This conference works in the same way as the N.Z.R.C. except that there is no preferential voting. Each club has only one vote with the exception of the Auckland Trotting Club which has two, to redress the imbalance between the North and South Islands' (North Island votes = 19, South Island votes = 29). This structure has resulted in similar problems to those faced by the N.Z.R.C., however the spatial component is less important here as there are no district committees. The distribution of courses in the North Island reveals that only five courses are used exclusively for trotting (Figure 4). This is due to the relatively late growth in interest in the sport in the North Island which has resulted in fewer clubs being established.

Accentuating the problem faced by the two conferences was the increasing cost of capital replacement caused by inflation. Allied to this was the relatively few times a large capital item such as a stand may be used in a year. The problem was further complicated by the deteriorating financial positions of the clubs, due to smaller crowds, therefore reduced on-course turnovers, and rapid escalation in maintenance costs, and wages. These have all resulted in the eroding away in real money terms of stakes offered, and an increase in deferred maintainence at a time when large injections of capital were needed to activate the growth cycle. Along with the fiscal and internal structural problems was the lack of combined planning between the two organisations which drew comment from the Royal Commission. So in essence then the problem of misallocation of resources was due to intra and interstructural deficiencies

combined with fiscal problems. These factors were in part surrogates for the deeper social and economic forces already developed in the New Zealand space economy.

THE EFFECT OF THE NEW ZEALAND RACING AUTHORITY

The N.Z.R.A. was established by the Racing Act of 1971, as a statutory body. Its powers and functions are clearly delineated by the act.

Functions and Powers

12. Functions of Authority - The general functions of the Authority shall be -

(a) To initiate, develop, implement, or recommend such policies as will in its opinion be conducive to -

(i) The economic development and the financial welfare of racing, trotting, and greyhound racing, and the financial security of the organisations and persons whose livelihood is derived from or in connection with racing, trotting, or greyhound racing; and

(ii) The public interest in matters relating to racing, trotting, and greyhound racing, including the maintenance and improvement of the standard of facilities and amenities for the benefit of the public:

(b) To administer the Distribution Account:
(c) To administer the Amenities Account:
(d) To administer the Stakes Subsidy Account:

13. General powers of Authority - (1) The Authority shall have all such powers as may be reasonably necessary to enable it to carry out its functions. (2) Without limiting the generality of the Authority's powers under subsection (1) of this section, the Authority may -

(a) At the request of the Minister or on its own initiative, from time to time advise the Minister on matters relating to racing, trotting, and greyhound racing, including -

(i) The aggregate number of days on which the use of totalisators should be authorised in each racing year under section 37 of this Act;

(ii) The distribution as between racing and trotting of the total number of totalisator licences;

(iii) The distribution, as between individual galloping, trotting, and hunt clubs, of totalisator licences, and the dates and racecourses on which race meetings should be held under totalisator licences;

(iv) Whether a totalisator licence should or should not be granted in any particular case; and

(v) Such other matters which require the Minister's approval, authorisation, decision, determination, or recommendation under this Act:

(b) Undertake research and investigation in respect of matters relating to racing, trotting and greyhound racing, and report or make representations thereon to the Minister or any other appropriate organisation or authority.

14. Authority to consult with parties - In the performance and exercise of its functions and powers under sections 12 and 13 of this Act, the Authority, so far as is practicable -

(a) Shall call for submissions from and consult with the Executive Committee of the Racing Conference, of the Trotting Conference, or of the Greyhound Racing Association, as the case may require; and

(b) May call for submissions from and consult with organisations and persons whose livelihood is derived from or in connection with racing, trotting, or greyhound racing, as the case may require (Racing Act, 1971, 9).

By way of its powers and functions the N.Z.R.A. has overcome the structural limitations mentioned earlier. Also because it has effective, and unrestricted control of the major sources of finances of clubs it has hegemony over all aspects of policy and investment. The evolution of investment policy firstly by the N.Z.R.C. and N.Z.T.C. and secondly by the N.Z.R.A., exemplifies the differing aims of the organisations involved, and is a comment on the organisational problems inherent in the Conferences.

EVOLUTION OF POLICY

No clear long term policy up till now has been attempted in the history of Racing activity. This is a result of (1) the private enterprise action and (2) the organisational problems of the Conferences. It was not till the establishment of the T.A.B. in the early 1950s that Racing received any large scale finance for investment which could be used as a policy tool. The potential for any policies has therefore only spanned the last two decades, well after the basic spatial and temporal structure of the industry had evolved.

The investment policy was carried out by the T.A.B. until this function was superseded by the Racing Authority in 1972. It involved a basic allocation of T.A.B. profit to Galloping and Trotting Clubs (e.g. 15 percent of each codes fund till 1969) according to their turnover the remainder allocated by the On and Off-course turnovers of Clubs for the year.[6] In addition to this a half percent levy on T.A.B. turnover was allocated to clubs as of right for capital works projects.[7] This half percent was initially given in five year periods (in payment of the damage to courses by the military during the war), but in the mid-sixties it was decided by Government to pay it in perpetuity.

The N.Z.R.A.'s policy moves since its inception in 1972 has been to review the distribution of T.A.B. profit. Rather than dividing the profit equally between the two turn-

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6 Till 1969 15 percent of T.A.B. profit was distributed evenly (1969 10 percent to each club) and the distribution of the remainder based on their turnover.

7 This is usually referred to as the Amenities Account.

overs, a basic allocation of 3,450 to all Galloping Clubs and 2,530 to Trotting Clubs were made the balance divided 52.5 percent on On-course turnover, 40 percent on Off-course turnover, and 7.5 percent on stakes paid, by the clubs. The Amenities Account provides the largest area of change in policy however, The N.Z.R.A. established a minimum disbursement scheme which provides for a certain amount of finance to be apportioned to eligible Racing Clubs for a five year period.[8] This is important as it increases the stability in the industry. Clubs can more easily plan their future capital works. Also the Authority has now stopped clubs calling on the fund as of right, all capital works must be approved by the N.Z.R.A. before money from the account can be used. By this method a surplus is being accumulated which may be used in a time of crisis (e.g. fire destroying a stand). In addition to these changes a further half percent levy was allocated to the N.Z.R.A. (thus reducing Government tax from 9.32 to 8.82 percent), for subsidising stakes.

The policy of the N.Z.R.A. in this area has been in line with certain goals, (1) to help owners, trainers, and others who depend on stakes or a percentage of stakes for their livelihood, (2) to establish a more equitable distribution of stakes between clubs thereby helping smaller clubs, and (3) to redress the balance between the North and South Islands. Results of this have been the attaining of the minimum stake of $1,000 and the allocating of $40,000 and

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8 The only eligible clubs are those who administer a course.

$20,000 for non-tote maiden gallopers and trotters races respectively. As well as this a dollar for dollar subsidy of South Island classic races and a 75 percent subsidy for all North Island events. The same (75 percent) subsidy applies to Weight For Age races in the South Island, but has been dropped to 40 percent in the North Island. For stake subsidies then an egalitarian policy has been pursued. The relative importance of the three spheres of investment can be seen in the 1974/75 totals for the accounts.

Stakes subsidy	$1,188,272
T.A.B. Distribution	$4,245,500
Amenities Account	$1,113,203

The situation as it stands at present is that investment covers the major areas of the activity namely the owners, and professionals, Club finances, and stakes, and the public.

While the most important in terms of finances is the Distribution Account there would appear to be little room to manœuvre for policy in this area. This is especially so in the short term as any radical change could destroy the stability of the industry, because it provides an important percentage of income for all clubs. The Amenities Account is not in general use however, so major policy moves may be carried out in the short term through this account, but because it is not in general use its affect will only be in certain areas. The use of the Stakes Subsidy Account as a short-term policy tool would appear to be the most effective. Since the basic stake has been established the increased returns, due to inflation and growth in betting, may be directed into new areas of investment. The two half percent levies thus would appear to be the best short term

policy tools to maintain or generate growth in the activity.

Chapter 4

DEFINITION OF THE PROBLEM, ITS PARAMETERS, AND STATEMENT OF METHODOLOGY.

The thrust of this chapter is in two areas. Firstly, the practical definition of the problem evolved from chapters 2 and 3, and secondly, the development of a suitable methodology to handle the questions posed by the problem. The physical parameters of the system under study were defined as the contiguous North Island.

The study was limited to the North Island for a number of reasons. Firstly, the area reflects the change in New Zealand's spatial distribution of population and economy. For instance in generating data the North Island offered the largest coverage (over 60 percent of horse population), and interaction in a viable area for collection. Secondly, economic inequalities which have evolved between the two islands have been reflected in the stakes and finances of South Island compared to North Island clubs' (1971/72 South Island 41 percent of race days, 32 percent of stakes paid). Any classification including the whole of New Zealand would therefore give South Island courses a low rating when in many ways there is little interaction between the two systems. Allied to this the two islands may work on different cost structures as far as training is concerned. For example many trainers pointed out that the best oats are grown in the South Island and due to transport costs their price may have doubled in parts of the North Island. The actual difference between the two islands may not be large, but because the most accurate data sources are those of returns

to investment equal cost structures must be assumed. So any classification including the whole of New Zealand inter-island variance may be greater than that of intra-island variance.

Allied to the establishment of the system parameters are assumptions on which the study has proceeded. Their statement is necessary before the research problem may be established.

(1) Racing is a service activity and not a sport. This is derived from the theoretical analysis of the second chapter.

(2) The activity has the characteristics as postulated by Rathmell (1974, 6).

(3) Attendance and therefore population proximity are the major determinants of Racecourse growth strategies. All theoretical and historical reviews pointed to these factors exerting a threshold effect on the activity.

(4) Transport (distance) is a major force in all aspects of the industry. This is explicitly stated in the theoretical examination of the activity.

THE RESEARCH PROBLEM

From the synthesis of earlier analysis the problem appears one of classification of resources in the Racing industry. The problem was, due to a relocation of demand factors (population and industrial movement within the North Island) along with comparative inertia of supply factors. Allied to this has been the change in the decision-making frame of the industry's administrators, which in turn has determined policy action. Internally this has had important repercussions on the location of those involved in the

industry, and the external effects of changes in patronage and tote turnover may be seen in the change in status of some courses. The problem therefore presents itself in terms of course factors (e.g. amenities), the financial position of the clubs, and is influenced by the industry's characteristics system parameters and interactions. From this problem area a number of questions arise which provide the basis for the investigation.

(1) Upon what basis (criteria) can scarce resources be allocated within the multi-regional industry in the North Island?

(2) What are the relevant aspects of the industry for determining the allocation of resources?

The first question establishes the need for a classification of courses and clubs throughout the North Island. This it would seem is the only basis on which resources can be allocated. The subjective nature of the classification systems however necessitates the thorough evaluation of the classificatory criteria and thus answers the second question. The difficulty of objectively evaluating the criteria may be overcome by empirical testing of the classification results. The application of this involved the use of two classification techniques. The two approaches to the same end result in a double check of the criteria. From the basis of this classification other questions may also be applied.

(3) Is there a misallocation of resources in space in the North Island?

(4) Do optimal location points in terms of population coincide with actual location points of racecourses?

To determine whether there is resource misallocation in the North Island, or if effective and actual location

points correspond a benchmark must be established. The third and fourth questions therefore overlap and to answer them provides the second part of the methodology, and the major areas to be investigated. The approach selected involves testing correlations between the Racecourse classifications and population potentials for the North Island (the potentials were for defined areas of over 1,500 population in the 1971 census). Population potentials performed a dual function as they were a test of optimum location as well.

Following this investigation, total investment in courses since 1955 will be correlated to course classification to determine areas of effective capital investment, and as a test of internal consistency. From this effective location areas should become obvious. The investigation of the training function may also shed light on possible optimum allocations of resources hence the use of transportation analysis. Allied to threshold and optimal location analysis are behavioural tests into the motives and motivations for race attendance. They are, however, outside the scope of this research for a number of reasons. Firstly, the problem of data collection because of the size of the study area is almost insurmountable. Secondly, there would be difficulty in establishing direct or indirect causation to the problem being investigated, and thirdly, there is doubt whether results would give clear indications to possible future policies.

Thus the problem involves a classification of Racecourses and Racing Clubs. From this basis, analysis of spatial patterns, and development of policy implications will be possible. Allied to this general approach the anal-

ysis of the training function provides a specific area for investigation.

METHODOLOGY FOR RACECOURSE CLASSIFICATION

To extrapolate meaningful results from the data on Racecourses it is first necessary to order the data. From this relationships with other related factors may be tested. A classification of courses is necessary, and it is on this basis that the research hinges.

The importance of classification is that it can answer a certain problem within a hypothesis testing methodology, (Johnston, 1970, 293, Harvey, 1969) and it is with this aim that the research has proceeded. Within the wide range of techniques available the approach used involves two aspects of classification. The divisive approach whereby certain classes are established and each Operational Taxonomic Unit (O.T.U.) in this case Racecourses are assigned to a particular class, and the agglomerative approach where like O.T.U.'s are grouped together to form classes (this approach can be used through various levels of generality).

The problem faced in both these approaches is that the decision on what variables to use in the classification is subjective (Johnston, 1968, 575-590), though the working of the classification especially that of the agglomerative technique is objective. The subjective areas of the classifications will be stringently tested to reduce any chance of error. Both techniques will be used because while the divisive approach places a course in a group (stressing inter-group relationships) the agglomerative method brings out aspects of intra-group relationships. A large number of criteria are available, location however was not considered

to be a viable factor for three reasons. (Johnston, 1970).

(1) As it is to be implimented later in the study it would have resulted in an undue weighting.

(2) It has no relevance to the aims of this area of study which is to order the data.

(3) As Johnston concludes 'the question of spatial contiguity requires a separate hypothesis and test after the classification has been produced' (Johnston, 1970,302).

The Agglomerative Technique

The agglomerative technique[9] (Johnston, 1968, 1970), because of its strong methodology, has been developed by many disciplines. McQuitty's (1966) technique was implemented because of its relative simplicity, and it represents a culmination of earlier work by the author (1955, 1960) resulting in an efficient yet simplistic method.

The index of association is computed by comparing all the O.T.U.'s with each other over a number of variables. The scores must fall within a certain threshold of each other before they can be considered similar in the particular variable. In successive matrices three types of association could be possible, O.T.U. with O.T.U.'s; O.T.U.'s with paired O.T.U.'s; and paired O.T.U.'s with paired O.T.U.'s (McQuitty 1966). The index of association for the second and the third phases must be recomputed using the average of the two indices (O.T.U.'s) for each variable against the original O.T.U. score if unpaired or the average of the two if they are.

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9 Also referred to as division from below (Harvey, 1969) and polythetic technique (Sokal and Sneath, 1963).

the variables used are in fact surrogates for a number of factors. For example tote turnover is a surrogate for the level of amenities, outside interest which in turn may be affected by the horses running, also number of tote windows, efficiency, and climatic conditions. Many of these factors are not quantifiable, hence the use of surrogates which are.

The criteria defined for the study aimed to cover the various areas of the activity exemplified in Rathmell's model. The areas being the course amenities, (capital goods) the training function, (operating goods) the attendance, general public evaluation of the course, and the service output itself. Fourteen of the 20 criteria used were also implemented in the divisive classification. This list is in the Appendix 4 along with explanations for their use.

The use of the extra criteria especially relating to training tracks was an attempt to incorporate all aspects of the activity. While it was possible to compare, by the agglomerative classification, two courses on the basis of training facilities it is not possible to determine the importance of these facilities in terms of a hierarchial classification of courses (the divisive method). It would be presumptous to state emphatically that a metropolitan course should or should not have training as a part of its function, as there has been no prior research into this field. The present situation cannot be used as the results would then be defining the criteria and not vice versa. Generally then the extra criteria instigated in this classification was because of training's importance in terms of Racecourse function, and could not for technical reasons be incorporated into the divisive classification.

In the analysis there are a number of assumptions. These hinge on the concepts of imperfect hierarchial and pure types.[10] The deficiencies of the first two types are insufficient to cause bias in the classification when the method of classification involves the isolation of internally consistent classes. The steps involved in the determination of these classes is outlined by McQuitty:

> (1) Compute an index of association between every "imperfect" type with every other "imperfect" type to yield a matrix of interassociations between "imperfect" types.
>
> (2) Isolate the reciprocal pairs.
>
> (3) Specify the common characteristics for each reciprocal pair. These define a "hierarchical" type. It is now possible to compute an index of association between either, (a) two "hierarchical" types, or (b) between a "hierarchical" type and an "imperfect" type.
>
> (4) Substitute the "hierarchical" types for the "imperfect" types which produced them.
>
> (5) Prepare a new matrix of interassociations between types, using only the retained imperfect types in the hierarchial types which replaced the discarded imperfect types.
>
> (6) Isolate reciprocal pairs.
>
> (7) Continue these steps till the analysis is finished.
>
> (McQuitty, 1966, 255).

A test of consistency for joining hierarchial types, is the principle of maximum classification. This is based on the assumption that "Pure" types are best approached by maximising the O.T.U.'s and the characters on which they

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10 Imperfect types exist in reality (O.T.U.'s) but pure types only in theory. Hierarchical types are the result of classifying imperfect types into large, internally consistent groups. They are between reality (imperfect types) and theory (pure types).

agree. For example before two hierarchial types may join into a group the total O.T.U.'s multiplied by the characters on which they agree must be equal to or greater than scores produced by the original O.T.U.'s multiplied by the characters on which they agreed. By this method it is aimed to produce tighter groups and result in more accurate classification by reducing within group variation.

From this theoretical basis the practical nature of the study can be enunciated. The first step involves the establishment of variables and an initial decision on the number used must be made. Sokal and Sneath (1963) have put forward two factors to take cognisance of before establishing the number of variables. There is the statistical consideration of the reliability of the results. A graph is used (Sokal and Sneath, 1963, 115) to show the changes in the 95 percent confidence level for two correlation coefficients as sample size or in this case the number of variables increases. So the total number of variables possible must be considered and then decide what percentage must be covered at the various confidence levels. The second factor is not acceptable however as any collection of variables would represent only a small percentage of the genome. It therefore cannot be used as a factor in establishing the number of characteristics. In fact there has been little written explicitly stating what would be considered a necessary number and much depends on the particular situation. Michner and Sokal (1957) argued for no less than 60 which seems excessive and the criteria used in the two classifications do not reach this number (14 in the divisive, and 21 in the agglomerative). Though it should be remembered that many of the factors are surrogates.

When establishing criteria in both agglomerative and divisive classification qualitative factors and, the weighting of variables was not used for a number of reasons (Sokal and Sneath, 1963, 118-120). Qualitative factors because of the high degree of subjectivity already involved in the study. Any large scale use of such data could compromise the results, even with the use of ordinal scaling (the problem in ordinal scaling would be trying to differentiate and rank 36 courses on any particular characteristic). The elimination of weighting relates to the basic aim of any classification which is to order data into categories, any weighting of criteria would presuppose the existence of these categories.

The strong methodology exemplified by this technique concentrates on reducing within group variance, and is therefore important in establishing internal consistency in the classification. The divisive technique though because of methodological constraints, must be empirically tested to determine its accuracy.

The Divisive Technique

As mentioned earlier this takes the population of O.T.U.'s as a whole and then subdivides them according to certain criteria. Johnston (1970) states that the major deficiency in this approach is that the population is divided on one characteristic. Sokal and Sneath (1963) refers to this type of classification as monothetic. Harvey (1969, 335) takes this further, and argues that for this type of classification to be successful a large amount must be known about the O.T.U., as the classification will be affected firstly by the criteria selected, and secondly by the order

they are involved.

To partially overcome this problem a number of variables have been used. These have been divided by the use of thresholds into four classes. The classification was limited to four classes so the numbers within each group would be practical from a planning viewpoint. The classes were divided on the basis of service provision offered by Racecourses. The divisions of service function were:

(1) Service provision which ranks the course as a national course incorporating amenities equal to those offered by the better overseas courses.

(2) Service provision resulting in regional hegemony of the course.

(3) Service provision incorporating the local community.

(4) Minimum service provision.

The classification was obtained by scoring each variable, 1-4 according to its threshold[11] in each criteria (1 for the lowest, and 4 for the highest level of service provision). The scores for each individual were summed, and divided on the basis of 14-25 score representing the fourth level, 25.1-36 the third level, 36.1-47 the second level, and 47.1-56 being the first level of courses (14 was used as the base point because under the scoring system this was the

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11 The thresholds were subjectively devised by (defined in Appendix B) questioning a number of informed people (e.g. Racing Club secretaries, Stipendary Stewards, and trainers) to gain their opinions as to the various standards. By this method the majority of bias should be eradicated.

lowest score possible).

This not only gives a classification but also a ranking of O.T.U.'s. To ensure O.T.U.'s do not fall into classes to which they bear no relation, because of extreme scores, an O.T.U. must score at least half of its individual variables within the group it joins. O.T.U.'s not meeting this requirement will fill separate groups for study. Thus the results of any one criteria do not hold the course in that class it is the aggregate score which is important.

There were four methodological problems involved in this classification. Firstly the problem of classifying specialised trotting courses which naturally do not fall within the scope of the first three criteria divisions when compared to galloping courses (Appendix,4A). It was decided that these courses should all be given a score of 3 for the first two criteria as there is very little difference in the widths of the trotting courses (10 feet) and this is less important on a smaller track. Also there is debate of over the optimum size of a trotting track, and the differing sizes (within reason) do not cause the same danger a tight galloping track might. Lastly these tracks have the best surfaces for trotting in the North Island thus it would be incorrect to score them below the second level. The criteria for the use of a false rail, and irrigation of the course was not applicable to trotting tracks, as they use a metal dust, lime, or shell surfaces (use a water truck rather than large scale irrigation). Those factors were incorporated because of the importance of them to the number of days racing a grass track can stand, (a movable running rail will rest the inside 15 feet of the track which most used and so more race days are possible,). There is the

removal of a possible dangerous situation as heavy rain after a dry period makes a track slippery but regular irrigation would remove this possibility. The trotting courses score was therefore based on 12 criteria and the mean of that was added on to make the classification up to 14 criteria. While this is not a particularly acceptable method it is the only way a comparison with the galloping and combined courses may be made.

The second methodological problem was that of dividing the classes by scores when only a present/absent answer was possible. This was the case in three of the criteria. Here a resolution similar to that of tied scores in Spearman's rank correlation was used. Therefore a level one or two course answer would result in a score of 3.5 and a level three or four course a score of 1.5. This was the most equitable resolution of the problem. Thirdly the division of the total scores caused concern. This was resolved on the basis that the lowest possible score was 14 and the highest possible 56. The divisions used were therefore aimed at allocating four groups within this range. The final divisions being 14-25, 25.1-36, 36.1-47, 47.1-56.

The fourth area of concern was the possibility of a course being placed in a certain class (this would apply only to the second, third levels) simply because its scores were in either of the two extremes. This could result in an averaging effect placing the course in a class to which it bears little resemblance. To overcome this possibility a threshold number of scores were defined as necessary to agree with the class allocation. In this situation 50 percent was used as the threshold so seven out of the 14

criteria had to fall into the class which the course ultimate joined. This had the secondary effect of being a check on the divisions, as obviously any course with more than 50 percent of its scores in one class should be in that class according to the final divisions. The only problem with this was the possibility of the criteria being split fifty-fifty, or if no one threshold scored 50 percent. In both cases the course would form a class of its own, in reality however neither eventuated. All the course had at least 50 percent of their criteria falling into one class.

These methodological problems necessitated the investigation of the classification. This was done by correlating the course classification to investment in the course (from 1955-1975) and then to population potential (as a surrogate for interaction).

RACECOURSES AND RACING CLUBS

Because of the close ties between courses and the Club administering it, that Club's classification is included in the course classification. Other Clubs using the Racecourse facilities on a rental basis are to be classified separately (only criteria referring to their raceday activity being used). For example the Hawke's Bay Jockey Club will have the classification of the Hawke's Bay Racecourse, the Napier Park Racing Club, and Hawke's Bay and Dannevirke Hunt Clubs being classified separately. In the case of Racecourse Companies (at Hawera, Tauherenikau, and Woodville) the classification of the course was allocated to all Clubs in the company.

The principal classification is of the Racecourse as the renting Clubs make only marginal use of the facilities

(only one or two racedays per annum). The course therefore provides the major evaluative frame for classification.

POPULATION POTENTIAL

A model was used because it simplifies reality and allows theoretical relationships to be determined. The importance of the model is highlighted because of the lack of behavioural data referring to Racecourse catchment areas. The measure for population and distance used is the gravity model (the major advantage being its simplicity). This model was evolved from Newtonian physics and has been used for migration analysis (Ravenstein 1885, and Stewart 1956), and latterly as an empirical basis for transportation analysis (Ullman, 1956 and Isard, 1960).

Its logical basis is stated by Abler, Adams and Gould (1971, 221) as: 'Two places interact with each other in proportion to the product of their incomes and inversely according to some function of the distance between them'.

$$\text{or } Iij = f\left(\frac{MiMj}{dij^a}\right)$$

Iij = the number of interactions between i and j during some time period.

dij = the distance between them.

a = an exponent of that distance.

M = some measure of mass, in this case population, of the pair.

The potential interaction for each town will be the sum of all its interactions or

$$Ii = \sum_{j=1}^{n} \frac{MiMj}{dij^a}$$

Because of the impracticality of trying to generate the

model manually a computer programme was devised and run on the Burroughs 6700. The results of this will be correlated with the devisive ranking of courses. The programme was run using distance and distance squared to see if this had any affect on the results. The correlation coefficients used, in the testing of the classification, were Pearson's (r) product moment, and Spearman's rank correlation coefficient. By these methods both the actual scores and the ordinal scale of the data sets could be defined.

Methodology for Investigating the Training Function

Within the sphere of training centres[12] the distance function was again implemented, this time in the form of the transportation problem. By the definition of training centres there are relatively few involved, and therefore the inerations were done manually. The study was one of minimum aggregate travel or in this case cost. The measures used were the number of horses from each centre which started in the 1968/69, and 1973/74 Racing seasons, and the number of horses which started at each course in the same seasons. The cost of transport in 1968/69 was used as the only change over the years had been in scale due to inflation.

The particular method used was that put forward by Scott (1971). The transport model as used here is a purely norm-

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12 Training centres are defined as a race track on which an average of seventy starters per month are trained. Number of starters are used as it is in this form that the data was available. A training centre therefore by definition could stand alone and continue as a large scale operation whether Racing was carried out on the course or not.

ative mechanism. Its aim is not to describe the real system, but to represent an optimal state to which the real system aspires.

Because of the essentially decentralised state of the system, the transport model is especially applicable, and it readily complies with the assumptions of the model which are:

(1) There must be many suppliers of a given commodity so that no one supplier may gain a monopoly.

(2) Similarly there must be many consumers.

(3) Information about the market must be perfectly free.

(4) Sellers must be perfect profit maximisers.

(5) Buyers will always buy at the lowest price.

(6) The commodity must be sufficiently homogeneous that (price considerations aside) consumers are indifferent to their source of supply.

The only assumption that may not hold is that of indifference to the course on which the horse is to race. However a random sample carried out showed that horses on average do not race more at any particular course (e.g. only 20 percent of starts were on their home course).

Because not all tracks where horses are trained are included there will be an excess of demand over supply. Therefore a column with slack variables has been incorporated into the model. To add to the reality of the model a threshold was placed on the number of horses from a particular training centre which could race at a particular course (20 percent) the threshold being established by a random sample of horses from the turf register 1973/74 calculating

the percentage of starts they had on their own course. This being used as a upper limit for number of starters at any Racecourse.

Had this threshold not been invoked the optimal solution would have had all the horses from a training centre Racing on that course simply because aggregate data was being used. In actual fact race days are distributed over the year but horses generally only race over part the year therefore this loading in a few courses in reality could not occur.

The actual working of the model is very simplistic with the aim being to reduce transport costs.

e.g. total transport costs $= \sum_{i=1}^{nj=1} tij\ Xij$

xij = magnitude of flow i to j

tij - unit cost of transport i to j.

There are two constraints on the system.

(1) That total shipments out of the ith source must be less than or equal to the capacity of that source or:

$$= \sum_{j=1}^{m} xij \leq si$$

(2) Conversely total movement to the jth destination must be equal to or because of the slack variable used less than demand at that destination.

From this approach the optimum location in terms of distance may be ascertained. Also the importance of distance costs as a factor in the training function should become apparent.

Test of the Classification and Training Function

The investigation was based on the assumptions put forward in Chapter 2. Capital investment and population potentials.should exhibit a strong positive relationship with Racecourse classification. This would imply that Racecourse classification has been affected by population potential, and capital investment into the courses. The results will show the response of the industry (at the Race course level) to the changes which are occurring in the North Island space economy. The reaction of the industry to these changes, is of paramount importance for its future growth potential.

Along with these tests, an investigation of the ancilliary training function aimed to define the importance of distance, and scale economies to this function is to be carried out. The former (distance) referring to training within the broader Racing framework and the latter in regard to training itself. In terms of scale economies training centres will be tested for those incurring lower transportation costs per horse raced. The result implying optimum location points (these would probably be the larger training centres). In the case of courses to which horses are assigned the optimum solution should result in most horses being allocated to higher classified courses (i.e. level one and two of the divisive classification). The verification of this would show (1) the close proximity of these courses to training centres and (2) there may be a relationship between the training function and Race course classification. The results and implications, for relationships within the activity, and for future policies occurring to it, are the concern of the remaining three chapters.

Chapter 5

CLASSIFICATION AND SPATIAL RELATIONSHIPS OF NORTH ISLAND RACECOURSES

This chapter will review and interpret the results of the classifications and their investigations with special reference to the spatial aspects of the results (these are presented in Figures 7 and 8 for the alternative classifications).

The classifications are based on data generated by a survey taken of all North Island Racecourses. The data used for the most part was of a primary nature.[13] The other major sources of data apart from the survey were the Turf, and Trotting Registers 1959, 1964, 1969 and 1974. Also, the files of the Racing Authority, and a mail questionnaire which was sent to all secretaries of clubs which rented courses (a 60 percent return was received). In addition to these some secondary data was also used, principally submissions to the Royal Commission of 1969, the report of that Commission, and the annual Stipendary Stewards report. The data then represented all aspects of the problem area.

THE AGGLOMERATIVE CLASSIFICATION

The grouping was carried out in five phases. The most relevant grouping for any planning policy should be between

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13 Primary data referring to raw figures obtained from various sources, secondary data are interpreted figures not presented in their original form.

FIGURE 5

POPULATION-POTENTIALS (D) WITHIN THE NORTH ISLAND

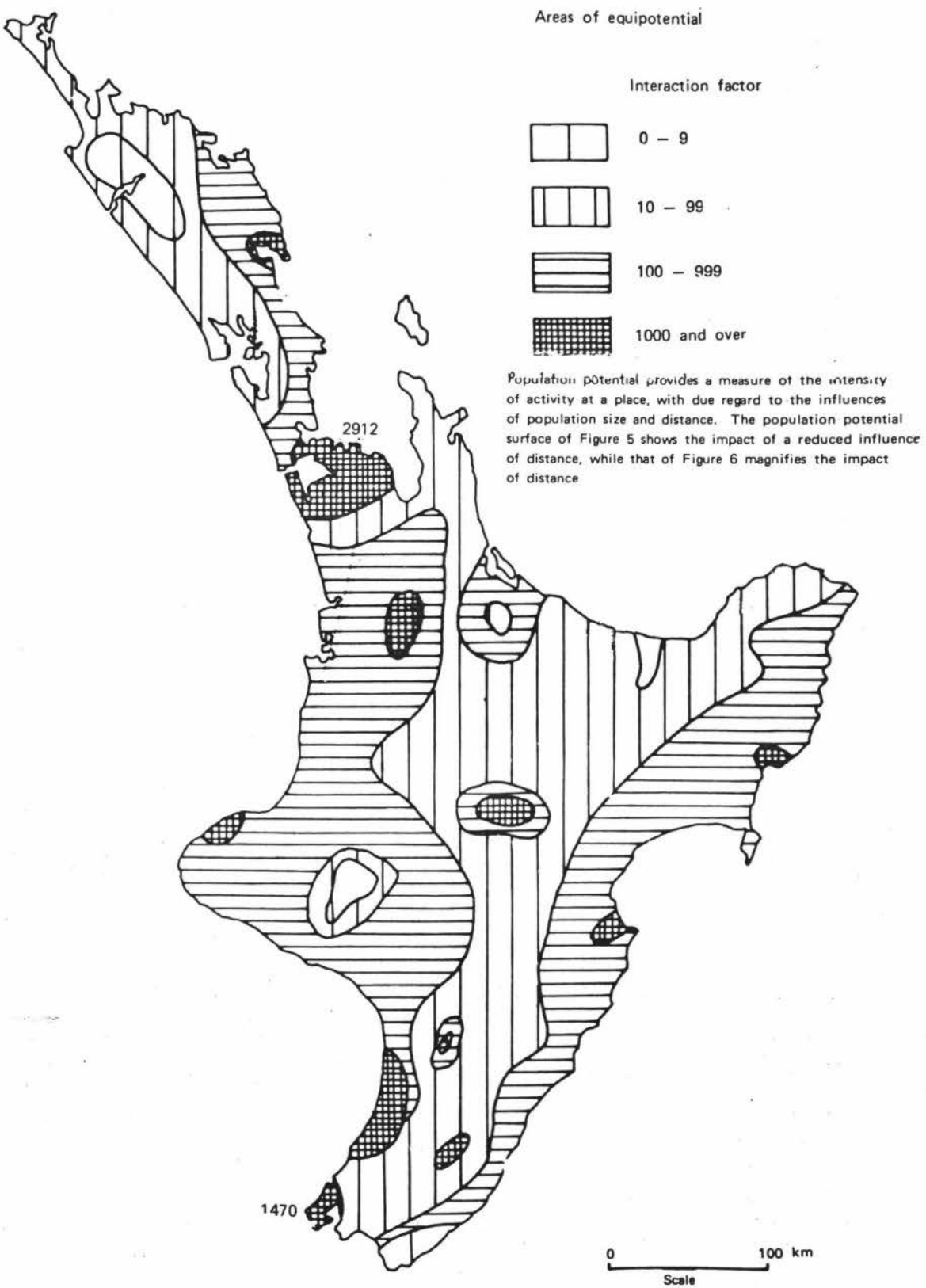
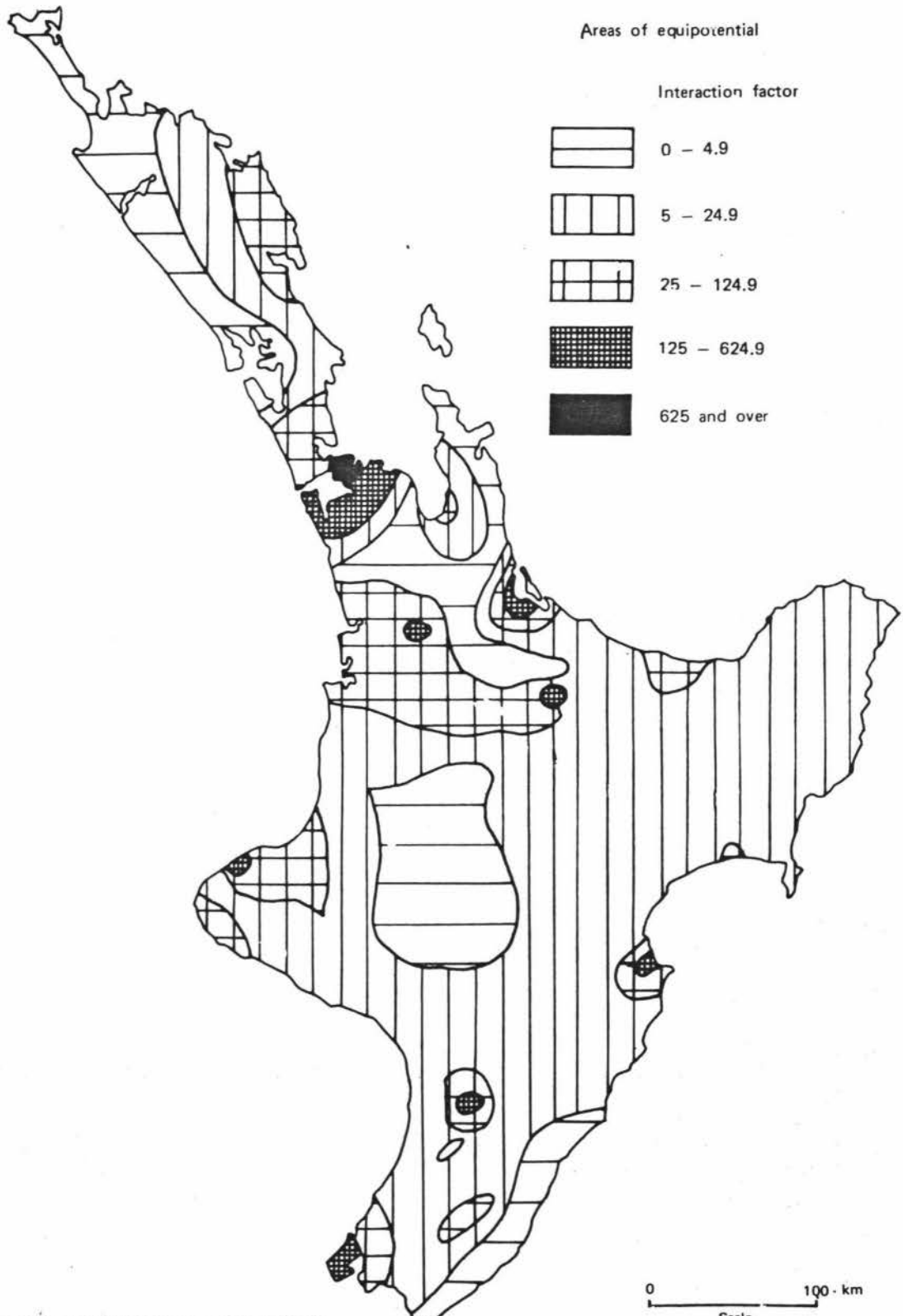


FIGURE 6

POPULATION POTENTIALS (D^2) WITHIN THE NORTH ISLAND



Population potential provides a measure of the intensity of activity at a place, with due regard to the influences of population size and distance. The population potential surface of Figure 5 shows the impact of a reduced influence of distance, while that of Figure 6 magnifies the impact of distance.

FIGURE 7

DISTRIBUTION OF NORTH ISLAND COURSES BY AGGLOMERATIVE CLASSIFICATION

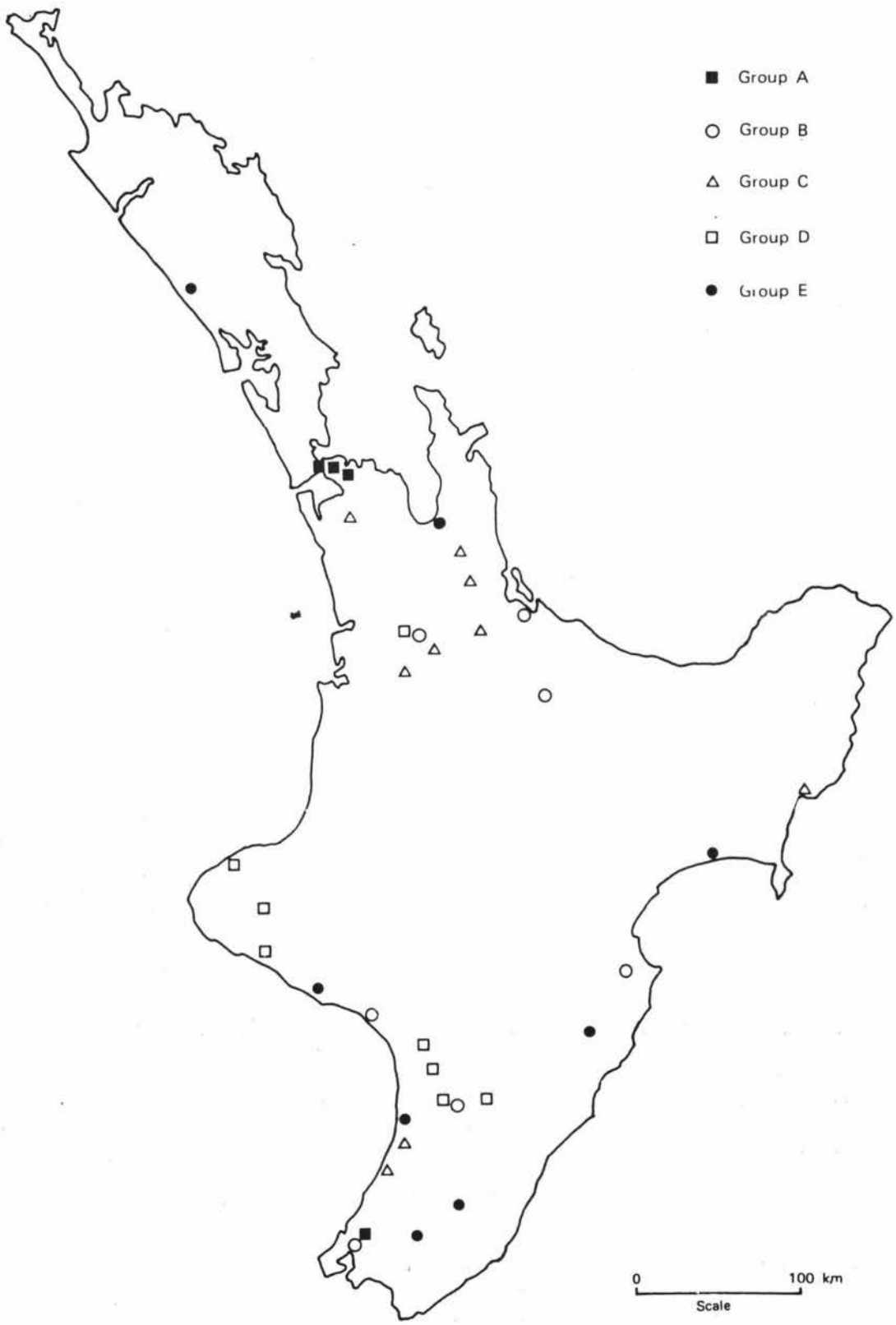
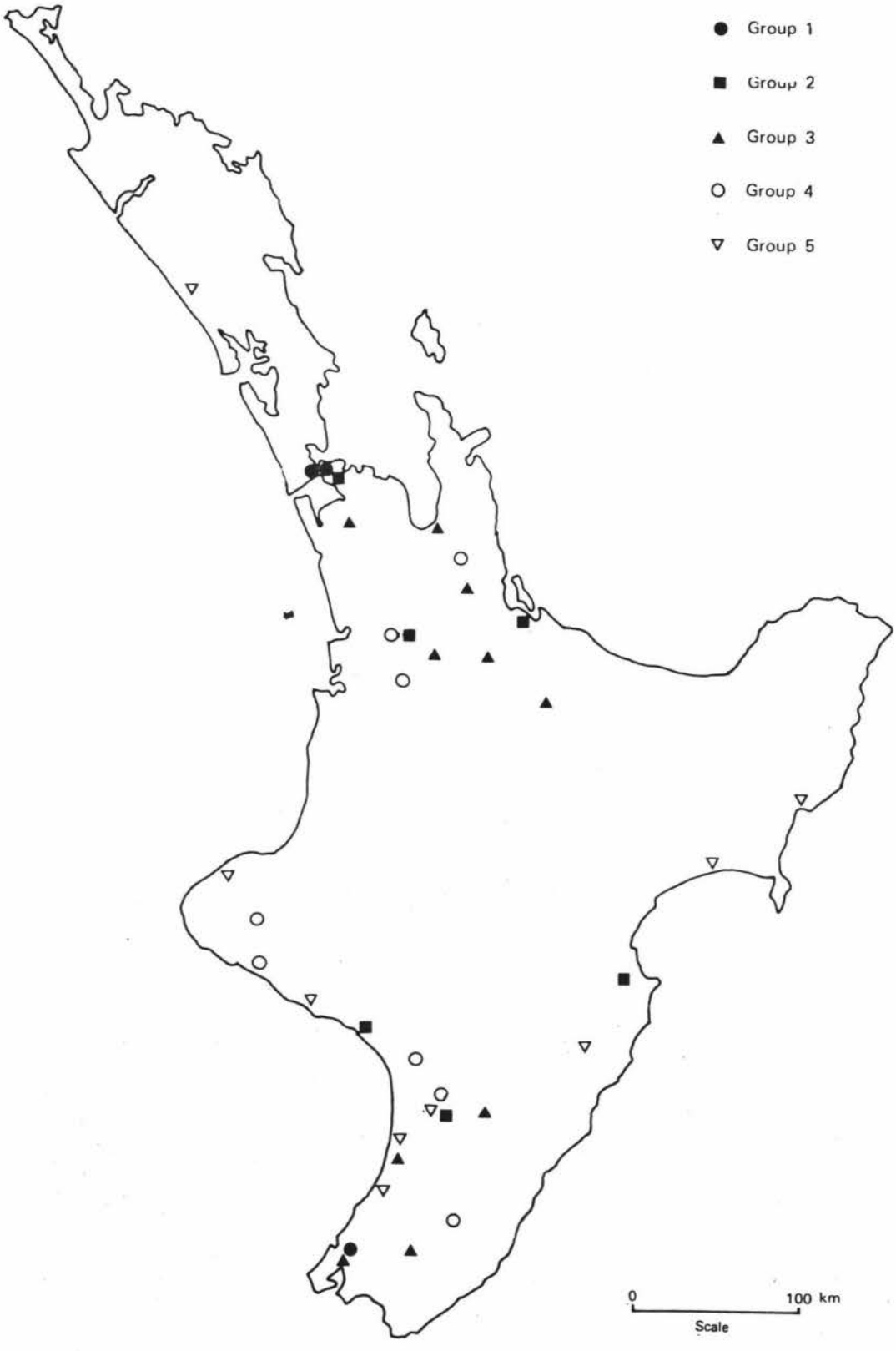


FIGURE 8

DISTRIBUTION OF NORTH ISLAND COURSES BY DIVISIVE CLASSIFICATION



the very general (two or three groups), and more specific classifications (eight or nine groups). Phase two and three in the grouping appear to be the most relevant. Phase three, because of the smaller number of groups (five) involved the best. The problem with this type of classification is that it lacks an intrinsic hierarchial structure, and especially in the lower order groups (C, D, and E) a hierarchial structure is difficult to ascertain.

The results show a close relationship between Racecourse classification and the urban hierarchy. By comparing the spatial distribution of the classification to the maps of population potential it was found that all courses in the A and B category are located in the cities with high population potentials. Three cities with high population potential, but with courses outside this group are New Plymouth, Masterton and Gisborne. The exception of these three may be tied in with the slow economic progress of the regions these centres dominate. The influence of population may not be all important, buying power being a more relevant concept.

In groups C, D, and E the relationship to the urban hierarchy is less pronounced though still apparent in some cases. For example in group E with the exception of Masterton all other Racecourses are based on towns with relatively low populations and which are some distance (30 miles) from large urban settlements. (e.g. Wairoa, Waipukurau, and Waverley). The blurring of the relationship further down the urban hierarchy is because of the relatively small numbers involved in the study, due to the small size of the country.

The spatial distribution of the agglomerative classifi-

cation, produces some interesting regional patterns. Some of the groupings appear to have a regional basis. Group D for instance (Figure 7), is spatially concentrated in two areas. Firstly, around Palmerston North in a tight almost concentric pattern, and secondly in the Taranaki in a linear distribution. It is most likely that these courses have similar catchment areas and therefore similar economic bases. Allied to this is their close proximity to one another which has probably been a factor in stifling their growth. As none of the courses has inputed a large capital works programme or injected into stakes the relative supply characteristics offered have remained essentially the same and so therefore have the resultant demand functions.

Overall there appear to be two regional hierarchies based (1) on the Auckland and (2) on the Wellington urban areas. The regions extend through South Auckland and Waikato in the former and include Manawatu, and Wairarapa in the latter. A full range of service functions exist in the Wellington region but only three levels in Auckland (possibly due to the larger population base being able to support more high level courses). The regional boundaries are buffered by the physiology of the North Island, and a number of relatively isolated courses (Wanganui, Taranaki, and Hawke's Bay) whose population, and economic bases cannot support a regional hierarchy of courses.

Spatially there is a lack of a regional hierarchy in groups C, D, and E. This is due to no over-riding factor but rather that each course classification depends on its relative spatial location to population other courses, and temporal factors which may be unique to that course. This lack of explicit results is caused by the complexity

of the situation and the descriptive grouping used here. However more analytical tests are able to be instituted in the alternative classification and this should result in a more succinct appraisal of the activity's structural relationships.

THE DIVISIVE CLASSIFICATION

The spatial distribution of this classification may reveal more than the agglomerative classification as explicit in this classification is a hierarchy of Racecourses (while it was implicit in the earlier classification it was not easily discernible). Certain North Island and regional hierarchies are revealed (Figure 8), the level one courses being located in Wellington and Auckland forming the major regional hierarchies. Other regional concentrations are based on the main urban areas, with certain exceptions (New Plymouth is in group five). To have either a group one or two course towns seem to need a certain population threshold. This naturally has important implications in the future planning of Racecourse growth strategies. The relatively low classification of the majority of the courses in the Manawatu, Waikato, and Taranaki regions may be due to excessive competition within relatively small areas with all courses having similar economic bases. The distribution of group five courses follows no discernible pattern. This category therefore may be caused by local factors, such as lack of community interest, resulting in small turnover and income, allied to and resulting in poor track and amenities (these factors interacting to stagnate growth). Other courses in this category may forfill a social need and although amenities may be crude, attendance and local support, in some cases,

is relatively high (e.g. Wairoa). As with the agglomerative distribution the spatial pattern becomes clearer further up the hierarchy. This is because the higher classed Racing Clubs have been less affected by local factors, tend to have followed similar growth strategies, and have been influenced by the general economic trends of population and capital investment. The importance of more insular determinants (varying economic bases, community interest) further down the hierarchy has lead to the confused spatial pattern exhibited there.

Investigation of the Divisive Classification

Because of the explicitly hierarchical nature of this classification and as scores were used to establish the classes, the classification was investigated by correlating the scores to investment in the courses, and various population potentials. The investigations were necessary in this classification because of the subjective nature of the establishment of the criteria (Chapter 2). The investigations may also extrapolate the theoretical relationships discussed earlier. It therefore embodies a two-fold purpose.

The investigative frame was based on the assumption that race course classification is a function of population location, and investment into the Racecourse ($C = (f)\ PI$). Population potential (Chapter 2) was used implementing distance (d) and distance squared (d^2) in the computation to ascertain the importance of this variable as it relates to Racecourses. The maps of the potential surfaces are shown in Figures 5 and 6.

The classification was correlated with the population potentials (d) and (d^2) by using Spearman's Rank Correlation

and Pearson's Product Moment correlation coefficient. The tests were run firstly by using only the town or city nearest the course, and secondly that town, plus the county and any other settlements with 20 miles of a course. Where two courses were situated within the same county the population potential of the county was divided in half, 50 percent going to each. Within the classification itself two alternatives were run. Firstly, with the scores for each course as they stood and secondly by aggregating the scores of courses which were based on the same towns. Aggregated data was used because this reflected the total supply offered to the community. The fact of whether there were one or two service outlets was deemed less important than the total service being offered, and as the population of the community was an aggregate figure it is only reasonable to compare them in this form. This only affected the major urban areas of Auckland, Hamilton, Palmerston North, and Wellington. Therefore eight correlations with each population potential (d) and (d^2) were obtained and are tabled below.

Table 3: Correlation of Population Potentials (d) and (d^2) to the Divisive Classification

Population Potential (d)				
	Pearson's		Spearman's	
	To Nearest Town	Town and County	To Nearest Town	Town and County
Individual Course Scores	0.70	0.82	0.64	0.60
Aggregated Scores	0.77	0.91	0.57	0.63

Population Potential (d^2)				
	Pearson's		Spearman's	
	To Nearest Town	Town and County	To Nearest Town	Town and County
Individual Course Scores	0.78	0.90	0.51	0.58
Aggregated Scores	0.86	0.92	0.53	0.58

Source: Field Survey, 1976.

The lower score in the Spearman's Rank correlations were obtained because it compared the ordinal ranks of the data and not the data itself. Further discussion of the results will therefore be confined to the Pearsons results. Because of the hierarchical nature of the population distribution in the North Island, Aggregate course scores and towns with county population potentials showed the highest correlations. The very slight variation in the two sets (d) and (d^2) of correlations, (e.g. 0.82 and 0.90 and 0.91 and 0.92) implies that distance is not a major factor in the results. Therefore the lack of behavioural data establishing catchment areas of courses or population thresholds may not be important because of this, and with future improvements in transport facilities this situation will be reinforced.

Scatter diagrams of the two highest individual course correlations (0.82, and 0.90) are presented (Figures 9, and 10). By this technique courses which differ in a major way from the general trend will be identified.

The amount of variance in Figure 10 is much less than that in Figure 9, due to its higher correlation (0.90 as opposed to 0.82). The divergent elements can be divided into

FIGURE 9

CLASSIFICATION SCORE COMPARED TO POPULATION POTENTIAL (D)
OF THE CITY OR TOWN AND NEAREST COUNTY

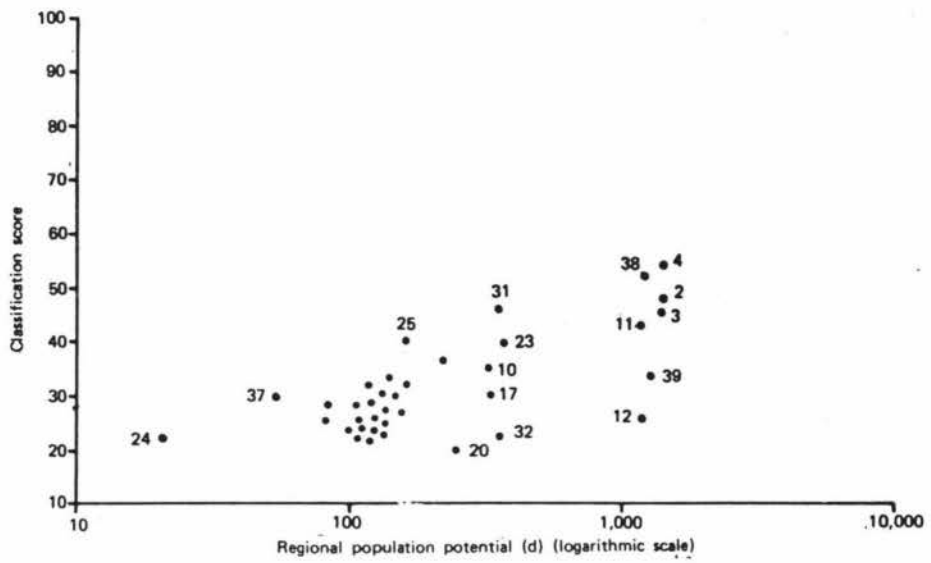
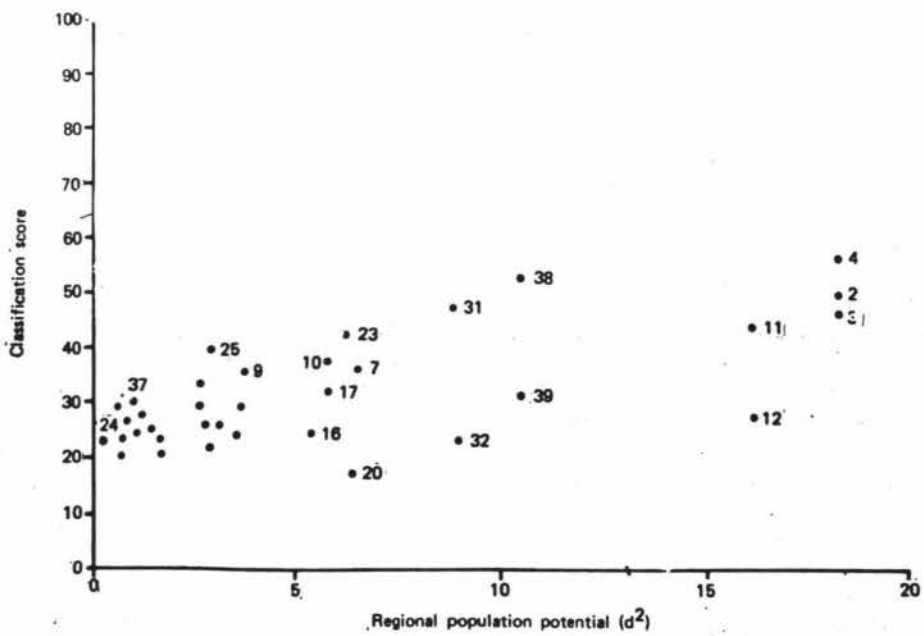


FIGURE 10

CLASSIFICATION SCORES COMPARED TO POPULATION POTENTIAL (D^2)
OF THE REGION



two types. Those that demonstrate a higher classification than the norm, relative to their population potential, and vice versa. Those significantly above the norm in both figures (regression line was plotted in both cases but are not included in the figures), are Racecourses in the first two levels of the classification (Hawkes Bay, Trentham, Te Rapa, Awapuni, Wanganui, and the Auckland courses). This emphasises the importance of these courses as focal points for regions, especially Auckland where all three courses are above the regression line in Figure 10.

Concommitantly those significantly below the regression line are courses in the lower levels of the classification. These courses most obviously Waverley, and Taranaki, reflect areas of slow post-war economic growth. Claudelands, Hutt Park, and Manawatu Raceway provide lower status functions, ancillary to that of the major course (Te Rapa, Trentham, and Awapuni) of those cities, hence their lower positions in the Figures.

The investment into Racecourses, in this case gallops and dual courses from 1955-75, because of a lack of data, was also correlated to individual course classification. The result ($r = 0.88$) was especially high as many of the facilities at courses were developed before this 20 year period. Stands (a very high capital cost item) were in most cases erected by 1955 and those built since then have usually been to replace old ones. So although the data covered the past 20 years, major capital costs (virtually fixed costs when looked at in the short term) had already been incurred, so to some extent correlation was higher than expected.

The very high correlations of the population potential

and investment to classification scores reveals that the classification was not compromised by the various methodological problems encountered. This confirms the various methods used to answer the specific methodological problems. The high correlations also reinforce the theoretical proposition stated earlier that course classification is ultimately a function of population, and investment. A test of investment (in course) compared to population, was carried out to ascertain the distribution of investment within the urban system, and as a cross check back to the Racecourse classification, which resulted in a high correlation with both.

Table 4: Correlation of Population Potential (d) and (d^2) to Capital Investment.

	Town	Town and County
(d)	0.73	0.87
(d^2)	0.80	0.78

Source:

The resultant correlations are what would be expected between two factors which, while they have no apparent casual relationship, both appear to have a relationship with Race Course classification.

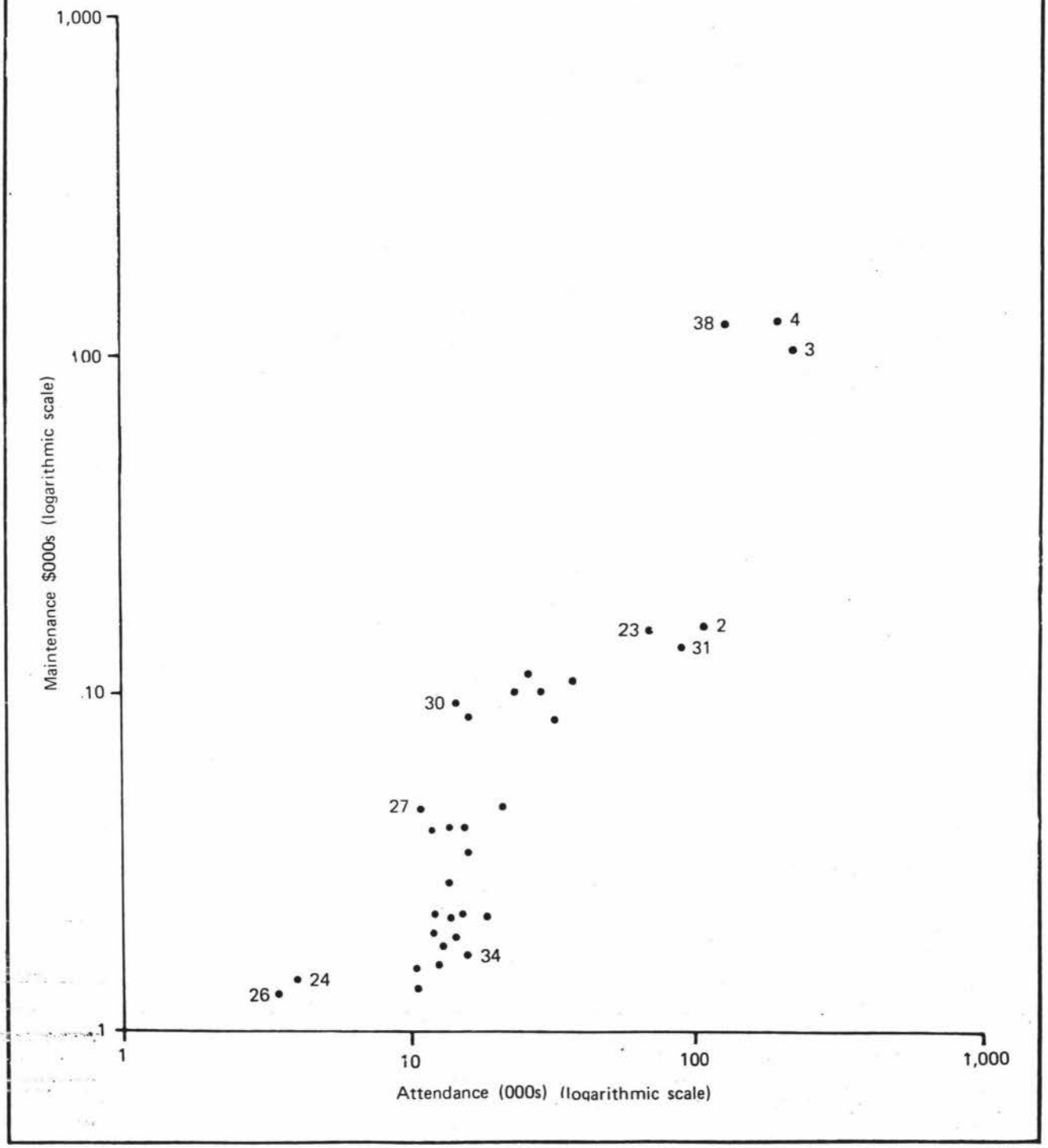
A test was also run to examine whether the internal structure of the industry was affected by scale economies. This was done by correlating maintanence costs to attendance. This was done on an average and total basis for the 1973/74 season. As most of the Racecourses have some training on them this can be viewed generally as a fixed cost in terms of maintainence costs. The work on the other areas of the course being the variable cost, and primarily a function of

total attendance (this is a surrogate for numbers of race days and amount of use). Pearson's r value, computed for average maintenance per race day and average attendance and total attendance for 1973/74, revealed high correlations (average data, r = 0.82, total data, r = 0.90) indicating possible relationship may exist. The total maintenance data is presented in Figure 11. The relationship there is certainly not linear with the major cut off point appearing in the Hawkes Bay, Avondale and Manawatu courses, which have large increases in attendance, but only slight increases in maintenance costs (the use of a logarithmic scale to some extent straightens the curvilinear nature of the relationship). A second cut off is between these three and the Auckland Racing, and Trotting Clubs and the Wellington Racing Club. The large scale courses, therefore, exhibit scale economies in terms of maintanence costs. Because this only affects the higher classified courses it may be a relatively recent phenomena in New Zealand. It does suggest though that the affected courses will have a relative advantage in future growth strategies over other Race courses.

So interpretation of the spatial patterns and relationships exhibited by the two classifications defines a number of major points. Firstly, the designation of two major regional groupings, (based on Auckland and Wellington), divided by physical barriers, and transitional zones (Taranaki, and Hawke's Bay). Secondly, the close relationship Racecourse classification bears to the urban hierarchy, especially evident further up the hierarchy, and thirdly the concentration of small courses (groups three, four, five, C, D, and E) eminating from dependence on similar economic and social bases and resulting in a stifling or at least a reduction in

FIGURE 11

MAINTENANCE COSTS COMPARED TO ATTENDANCE FIGURES
NORTH ISLAND COURSES



possible growth. This then is the effect, the causes were identified by the analysis of the classification. The analysis showed important relationships may exist between population, distance, (from population potential). Racecourse investment, with Race course classification. Inferences to scale economies were also found in the internal functioning of the industry. That this only affected the larger courses may be a factor in the faster growth of these relative to the small Race courses. These underlying relationships would appear to be of tantamount importance for the future growth of the industry and the determination of a common policy.

COMPARISON OF THE TWO CLASSIFICATIONS

A comparison of the two classifications shows that they agree on 23 out of the 36 courses. These 23 therefore, make up the basis of any classification, the other 13 obviously being on the margins of groups. To define a single classification equal status between groupings of the alternative classifications must be assumed. The class divisions used were based on the four concepts of service offered (Chapter 4). These were defined as Metropolitan, Regional, Subregional[14] and Picnic Racecourses.

Metropolitan refers to courses which could be compared internationally, and provide the highest standard of service in the country (therefore heading any national hierarchy). These would therefore be based on the major urban industrial

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14 As five groups were used in both classifications the Subregional class was divided into subregional one and two. This gave a pointer to the internal structure of the group.

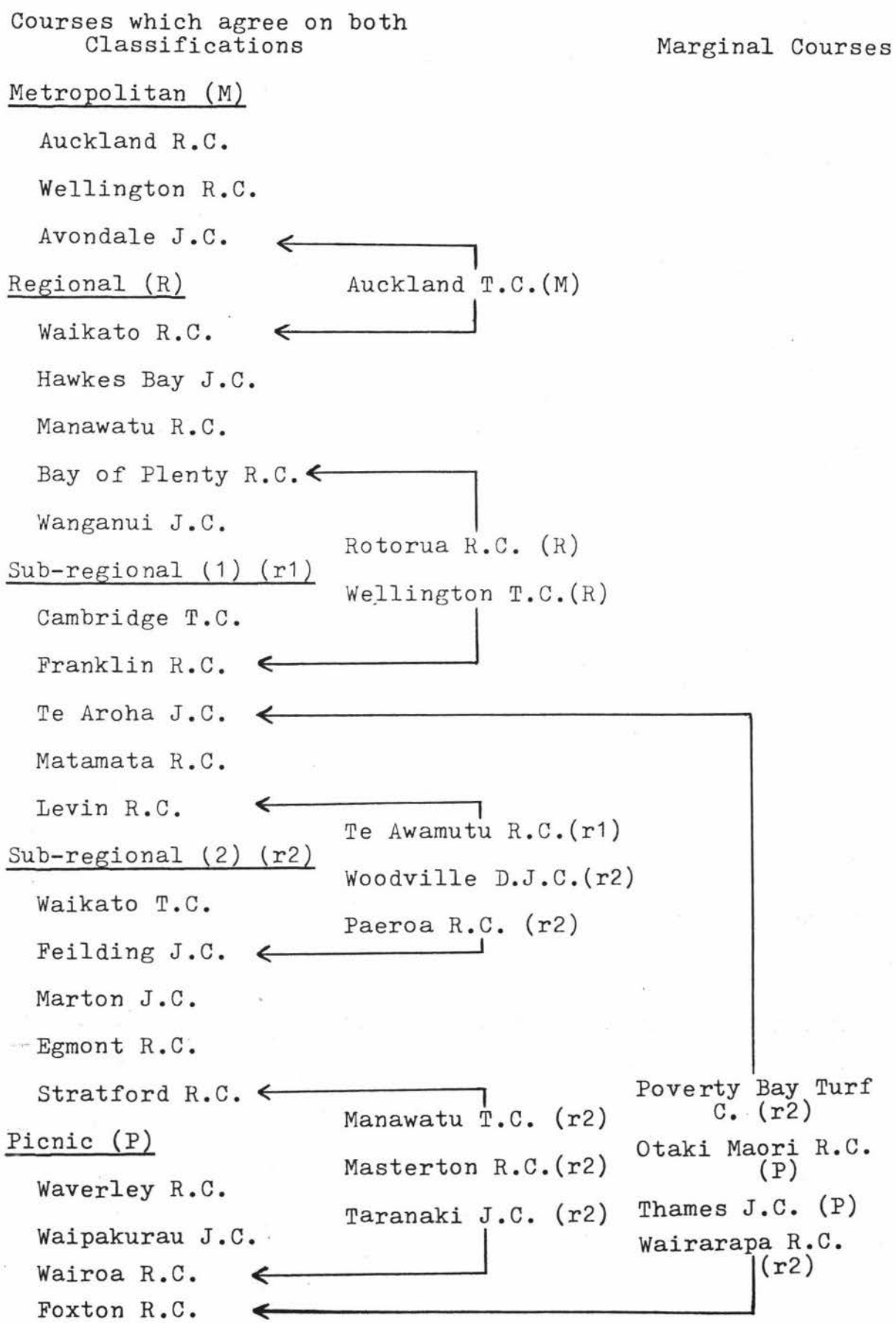
centres, equal to groups A and one. Regional Racecourses provide a lower standard but their boundaries of influence still encompass other Racecourses. Their regions may be defined by physical boundaries or the influence of another Regional or Metropolitan course. They equate with groups B and two, and are thus based on secondary population centres.

While the spatial distributions of the afore mentioned is relatively sparse that of the Subregional (corresponding to groups three, four, C and D), and Picnic (groups five and E) varies according to past and present population distributions, in investment, and local factors. The delineation of two groups within this area of service provision is due to a differentiation of function rather than the service offered as was the case before. The function of the Subregional Racecourses are of economic importance to the industry, by providing the bulk of lower class racing, and betting opportunities. The Picnic courses provide more a community, and social function. The closure of these Race courses could reduce economic costs to the industry, but could result in greater social costs to the communities involved. The majority of the marginal courses fall within the Subregional (one or two) and Picnic classification, while the final position of these must be determined by policy decisions, a discussion of their economic future may point to their ultimate classification.

Table 5, lists the basic and marginal groups with the arrows pointing to the alternative groups the marginals were placed in by the two classifications.

To decide on possible classifications for these courses a certain criterion for division must be established. The determinants of the allocation were the population po-

Table 5: North Island Racecourse Classification.



tentials and the economic future of the various regions as these appear to be the most important factors, from the earlier research which affect Racecourse growth rates. All other factors directly applicable to the courses, have already been inputed in the criteria of the classifications, the use of these would result in an unfair weighting of factors which would bias the ultimate classification. A consideration, however, of a club's recent growth may be necessary as a surrogate for a courses relationship to general economic growth within its environment (e.g. number of new racedays since 1959). Each marginal course therefore must be reviewed individually. The decision as to which group they are to be allocated will thus be made upon the criteria of; population potential of the region and how it relates to the population potential of regions of similarly classified courses; a consideration of the growth strategy of that region; the growth of the course in terms of facilities and the service offered over the last two decades.

The marginal courses will be examined from the top of the hierarchy to determine their possible positions in the combined classification. The position of the Auckland Trotting Club may be resolved by placing it in the Metropolitan class. The reasons for this being the concentration of economic growth and population migration on the Auckland area and the concommital growth in the Auckland Trotting Club's activities over the past twenty years (e.g. 1959, 15 race days, 1974, 25 race days).

The Rotorua course and Hutt Park Raceway also reflect areas of growth. By the population potential Rotorua is

equal to Wanganui, Tauranga, and Palmerston North all of which have Regional courses. Rotorua's economic growth reflects that exhibited generally by the volcanic plateau region. Spatially therefore, this area has a potentially large catchment growth. Because of this Rotorua is included in the Regional class. Hutt Park Raceway reflects the growth in popularity of trotting in the North Island (e.g. Auckland Trotting Club), and domiciled in Petone it is close to the urban areas of Lower and Upper Hutt. These factors lend support to the thesis that the course has a healthy future and for these reasons it was also included in the Regional classification.

In these spatial relationships Te Awamutu and Woodville both occupy similar positions. Both being adjacent to a large urban area, and also being principle training tracks. The population potential of Te Awamutu ($d = 2.2$) however is much greater than Woodville ($d = 0.35$) and this difference is multiplied to fifteen times greater when d^2 was used. Connected to this are proposed new amenities for Te Awamutu and these factors should result in a growth in the course relative to Woodville. Therefore it may be best to allocate Te Awamutu to the Subregional one group, and Woodville to the Subregional two group. Paeroa is in a similar position to Woodville except that it has no large population concentration nearby. The region is basically agrarian in character with a subsequently slow growth rate. Paeroa was also placed in the Subregional two category.

The differentiation within the Subregional category is probably the most contentious division within the classification structure. It must be remembered however, that this division was not necessarily made for establishing varying

policies between the two groups, but to give an indication, because of the large size of the Subregional category, of where the courses lay within it.

The Manawatu Raceway, Masterton and Taranaki Racecourses, pose an interesting juxtaposition in that they are all in urban concentrations. Manawatu's low classification is most easily explained as there is the long established Manawatu Racing Club also domiciled in Palmerston North. The increase in interest in trotting and the region's strong economic growth prospects, auger well for the future however. The other two courses also seem to have potential for a higher rating, Taranaki because of the provinces projected economic boom and Masterton through government decentralization policy (e.g. Government printer moved to Masterton). Also in Taranaki are the proposed multi-million dollar developments by the Council which will involve the course. For these reasons the courses best fit into the Subregional two category as their function is obviously more complex than that of Picnic courses.

The remaining group are the most difficult to define as they fitted either into the Subregional one or the Picnic category, thereby missing out the Subregional two stage of the hierarchy. The problem inherent here, is that faced by the activity as a whole in microcosm. Whether to invest large amounts of capital and upgrade a course with some Subregional one characteristics (usually the number of race days, and total stakes), to that status, or whether to allow it to continue with a Picnic function. The courses involved here are at Poverty Bay, Otaki, Parawai (Thames), and Tauherenekau. The populations of the regions are large except for Thames, however, school holiday crowds result in its large

attendances. In this lies the answer for Thames as the course depends on these holidays for its abnormally high crowds a picnic atmosphere, and function should be encouraged, and therefore a Picnic rating given to the course. Poverty Bay is in a unique position in that it is situated within close proximity to an urban area, and has a large rural catchment as its nearest competitor is Wairoa, 60 miles away (a picnic course which races only three times a year). Although the region has a slow economic growth rate (designated a priority region by the Government), the course does have six race days a year. The deflationary spiral caused by low turnover, leading to low income, low stakes, poor fields and therefore, back to low turnover again has resulted in its low rating on the divisive scale. A possible category would appear to be Subregional two as a service greater than the picnic function is obviously necessary, and in some respects offered, but the future growth possibilities are not strong enough to generate a Subregional one classification.

Otaki and Tauherenikau occupy similar situations in that they both rely on the Wellington urban area to swell the crowds at their meetings. The ultimate classification of the two depends more on factors relating to the course amenities than their environments. Otaki situated on the Gold coast in relatively close to the courses at Levin (r1), and Trentham (M). This competition reduces the possibility of Otaki establishing a satisfactory growth stretegy. The fastest growth in this area is concentrated on the Levin course which is in direct competition with Otaki. To the south its growth is barred by the Wellington courses, therefore, it seems it will continue to forfill a picnic function, backing this up are the Otaki amenities which would necessitate

a large capital injection to lift its standard. Taukerenikau's competition are the two Wellington courses and Masterton, this places it in somewhat the same position as Otaki, nested between other courses, although it is not overshadowed by Masterton as Otaki is by Levin. The amenities of the course are also superior to Otaki's. It has a low off course turnover because the club races New Year and Easter, therefore clashing with many other clubs (Feilding and Hawkes Bay respectively in the lower North Island). Considering its greater potential a possible classification may be Sub-regional two, rather than the classes it displayed in the alternative classifications.

The ultimate allocation of these courses may be altered by changes in policy. Given the present situation though the earlier decisions regarding the marginal Racecourse classifications will hold. While this classification directly affects the Racing Club administering the course (hence that Club takes the same classification) it also indirectly affects renting Clubs and their classifications.

Classification of the Renting Clubs

There are 29 clubs in this position, an important portion of them, 11 in fact, classify themselves as Hunt clubs. These are virtually picnic type Clubs which race exclusively in the winter and whose programmes are designed specifically for jumping and amateur races. It is therefore argued that this group should stand as they are, for they constitute a group of clubs distinct from any other. Their tight internal structure makes any alternative categorisation extremely difficult. The remaining eighteen were classified using the criteria which was applicable to the Club, naturally

Table 6: Classification of Renting Racing and Trotting Clubs

Course Level	Club
Sub-regional 2	Ashhurst - Pohangina R.C.
	Cambridge R.C.
	Franklin T.C.
	Napier Park R.C.
	Otaki T.C.
	Rangitikei R.C.
	Taumarunui J.C.*
	Thames T.C.
	Whakatane R.C.
Picnic	Bay of Plenty T.C.
	Masterton T.C.
	Morrinsville T.C.
	Northland T.C.
	Rotorua T.C.
	Stratford T.C.
	Taranaki T.C.
	Te Awamutu T.C.
	Wanganui T.C.

* a special case is involved here.

course and amenity criteria could not be used. This was because these clubs often have only joined the course they now use within the last 20 years. The general classification of the course is established by the Club which owns or leases the course and not by a renting Club. A further problem was caused by the Whangarei Racing Club, and the Northland Trotting Club who are in the throws of developing a new course at Ruakaka. The Northland Trotting Club being a renting club was included in the survey but the Whangarei Racing Club was not and will have to be done separately, some date after the course was completed and functioning.

The Racing Clubs fell into two classes (Table 6) as would be expected many mirrored the courses which they rent, and On and off-course turnover generated is generally similar though almost always less than the major club on the course. The only problem in this classification is the Taumaranui Jockey Club which has many Regional characteristics, but the Race course it uses, Te Awamutu, has a Subregional one classification. The problem stems from the record breaking jackpot meetings of the early 1970s, which Taumaranui hosted twice. The great increase in income it received from these enabled the Club to establish a growth cycle by increasing stakes, thereby attracting better horses, which in turn caused a rise in attendance, turnover, and therefore income. This is an important example as it shows what can be done by an injection of investment, though it may be argued that this is a special case as the club hires the course, thereby having reduced overheads, and having only one race day a year, a jackpot type crowd would have more effect on the finances than if three or four days were raced. Marton and Matamata also hosted jackpot meetings but the effect on these clubs

was lessened by course upkeep and other racedays reducing the effect. Because of its unique set of circumstances the Tauramanui Racing Club is held to be a Subregional two club even though it has characteristics of higher classified clubs. It would not be methodologically sound to give a club a higher classification than the course on which it races. The club therefore is viewed as a special case caused by the then jackpot system which is no longer in existence. The situation therefore, cannot be replicated.

So the classification procedure encompasses both the spatial distribution, the resident clubs, and also any clubs which may hire the course. A further factor ultimately affecting any investing decisions is the training function which will not be investigated. From the two bases of the classification and the analysis of the training function policy implications should become apparent.

Chapter 6

SPATIAL ASPECTS OF THE TRAINING FUNCTION IN THE NORTH ISLAND

Within the examination of the training function, the concept of distance, the relationship of course location to training centre location, and the concept of scale economies will be examined. The application of the transportation problem aimed to give a simple indication of the importance of distance relative to other factors such as, land prices, location of other associated services, and social factors (the spatial imbalance of costs has already been covered). After the transportation results have been interpreted the other factors cited will be evaluated. The difficulty of generating data for adequate investigation of the other factors restricted further empirical testing.[15]

The training function as investigated here only involves Racecourses and not trotting tracks. The reason for this is that the area required to train a trotter is much less than that for a galloper. Consequently a large number of trotting trainers use private tracks so there is no reliable or extensive use of the trotting courses in the North Island except for some fast work immediately prior to racing. Investigation of this area of activity was not within the bounds of this thesis, and therefore all consideration of the training of trotters was excluded from the study.

THE TRANSPORTATION PROBLEM

The variables of supply and demand were filled firstly by the number of starts horses from any training centre over

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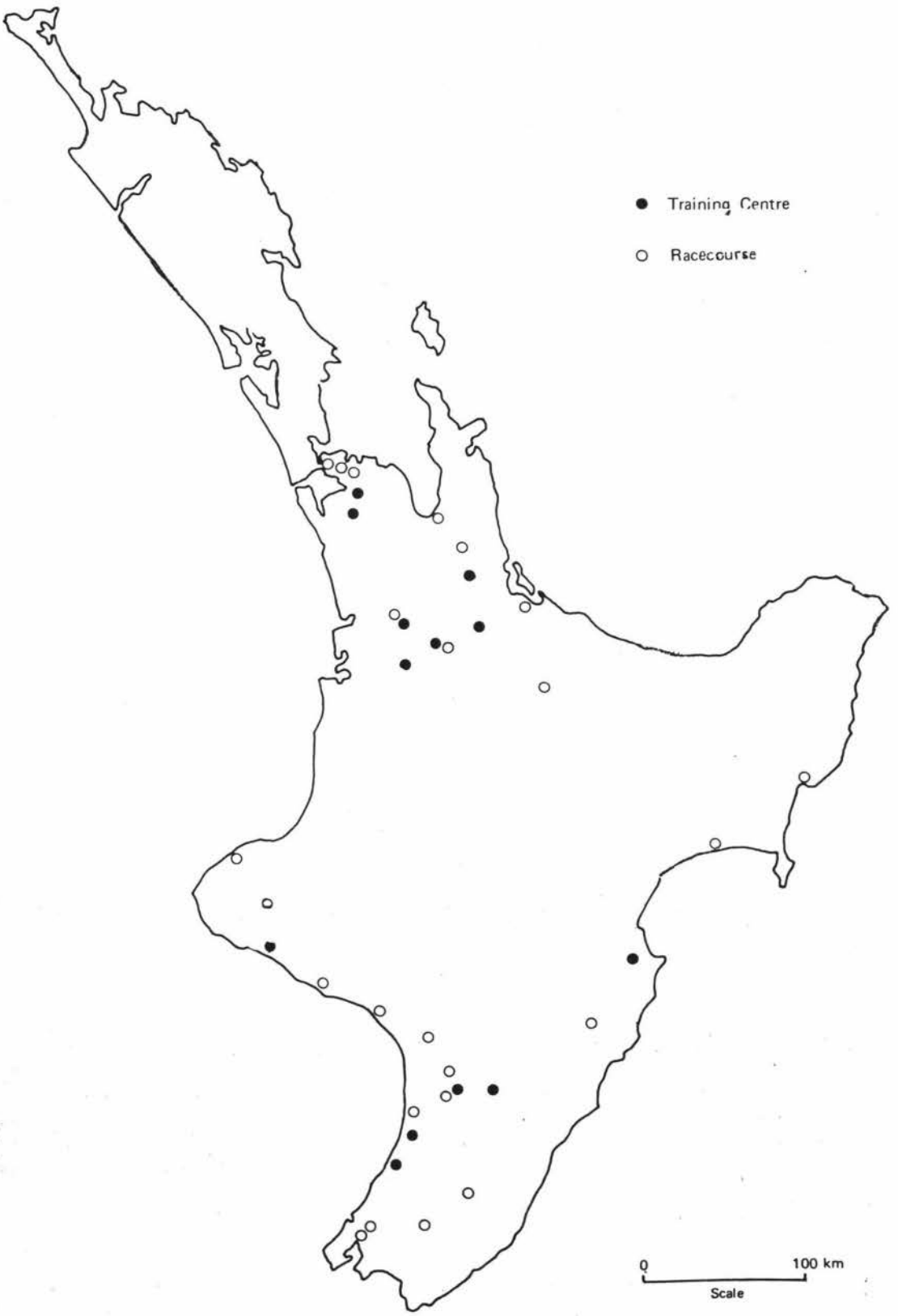
15 Ideally the optimal allocation should be compared to actual figures. This proved impossible however because of the difficulty in obtaining the required data.

FIGURE 12

DISTRIBUTION OF NORTH ISLAND TRAINING CENTRES



a year had, and the total number of starters at Racecourses over the same period. A slack variable was used because not all courses where training is carried out were included in the study, therefore the supply did not equal the demand. The transportation costs inputed were actual costs of transporting horses as in 1969. The same costs were used in the manipulation of the 1973/74 data as in the 1968/69 data, because transportation costs had increased relatively over the period.

Because of the relatively small number of supply and demand locations used the data was manipulated manually. The results of this can be seen in Table 7 for the two time periods.

There has been a dramatic increase in the number of horses trained since 1968/69 hence the addition of three more courses to the training centre category. As a test for economies of scales an average transportation cost per start was computed. The results do not bear this out however, those with the lowest costs being in the lower quartille in terms of number of horses starting. This was reinforced by comparing the increase or decrease in average costs in the two time periods for the 10 centres. The same result was obtained here with virtually all centres in the lower quatile experiencing a reduction in average transport costs per start (an aggregate reduction of 10.30). Those above the mean however had an increase in aggregate of 7.10. So scale economies in distance costs are not in evidence. It should be noted though that the large increase in the number of horses racing (1968/69 to 1973/74) has not been adequately compensated by an increase in the number of licenses allocated.

Table : The Transportation Problem Results

	Transport Costs ($) to or from the Racecourse 1968/69	1973/74	Average Cost per Start ($) to or from the Racecourse 1968/69	1973/74
Takanini	30,900	34,700	9.90	10.80
Pukekohe	-	5,500	-	6.10
Te Aroha	-	6,800	-	8.60
Te Rapa	13,300	24,100	8.30	12.10
Cambridge	14,900	18,200	11.40	10.00
Te Awamutu	13,700	15,700	9.10	9.80
Matamata	17,800	29,000	8.50	12.30
Hawkes Bay	23,600	15,400	14.00	12.80
Woodville	12,100	8,000	8.60	8.80
Awapuni	13,200	10,300	9.40	6.40
Levin	-	8,000	-	8.00
Otaki	9,600	7,300	12.00	9.70
Hawera	7,000	9,100	7.40	6.70

Source: Field Survey, 1976.

Therefore horses at the largest training centres in the model had to travel further for starts. It also appears that transportation costs are not a major cost in the training function and while scale economies do not accrue here they may exist elsewhere in the activity.

The most obvious test of this would be to compare maintenance costs to the number of horses trained. There is however, usually no distinction between track and other course maintenance in annual reports of Racing Clubs. In addition wages which are a significant factor here are differentiated into those paid for track and those for facility repair. A test comparing Maintanence costs to Attendance resulted in a strongly positive correlation ($r = 0.90$). The implication from this is that it may apply in terms of maintaining training centres. The problem of diseconomies of scale would probably not apply in New Zealand because of the spatially diffuse horse population. This is reinforced by the fact that scale economies in the test carried out, did not come into force until near the top of the classification hierarchy and therefore may be a relatively recent phenomena.

As well as the scale economies exhibited on the courses are those economies obviously involved in the actual training of horses. For trainers the increased costs of training, can to some extent be met by increasing the numbers of horses trained. This is not specifically under study, however for investment in training centres it should be remembered that they have grown up in response to the demand from trainers and will continue to do so, therefore the location decisions of trainers is a necessary area for future investigation.

Along with the testing of transportation costs, the spatial distribution of the slack variable were reviewed to evaluate any patterns which may have occurred. Those courses which had slack variables to balance their demand are defined in Table 8.

Table 8: Distribution of the Slack Variable.

	Number of extra Starters	
	1968/69	1973/74
Dargaville and Whangarei R.C.	80	50
Avondale J.C.	10	-
Auckland R.C.	20	30
Rotorua R.C.	40	10
Bay of Plenty R.C.	40	-
Poverty Bay Turf C.	60	70
Hawkes Bay J.C.	100	140
Wanganui J.C.	10	70
Wellington R.C.	110	140
Wairarapa R.C.	50	50
Masterton R.C.	60	30
Taranaki J.C.	40	50
Stratford R.C.	20	20
Egmont R.C.	30	30
Manawatu R.C.	-	70

Source: Field Survey, 1976.

Approximately 40 percent of the Racecourses necessitated starters from the slack variable. These courses can be divided into three types. Firstly, those courses with a large number of racedays, hence starters, which with the

implimentation of the threshold (20 percent) and a reduced number of horses (only 10 training centres) supplied loadings in the courses which fall short of their total (e.g. Wellington R.C.). In reality this does not happen as these courses have high stakes, and therefore can attract horses from further a field, and attract a percentage of those horses trained at courses not defined as training centres. The second type are those courses which are on the periphery and thus do not attract many starters (Poverty Bay,). These were all placed in the Subregional category which would appear correct because of the difficulties they face in attracting starters.

A third group which is a combination of the first two is also apparent these being important courses but on the periphery. This spatial classification shows the poor locations of the second class relative to other Racecourses and Racing Clubs. The importance of this, however, should not be over estimated as a large number of horses were trained outside the defined training centres. Further for this group of Racecourses population distribution would appear to be a more important variable than transport costs.

Scale economies in course maintenance, together with economies of scale implicit within the training function, are important for understanding the organisation of the training activity. These functions while most important are not the only influence. Important factors which emerge from location decisions within the activity, such as, track amenities, the cost of land and social factors must be considered. This specifically refers to the factors affecting the location of individual trainers. The weekly cost of training a horse varies considerably throughout New Zealand but spa-

tial differentiation within the North Island is not great (the higher charges being in the Auckland-Waikato region). This does not however seem to deter owners, and the influence of a spatially variable cost structure seems to be slight.

Amenities offered on the courses vary considerably throughout the North Island. Some courses having no schooling facilities or sand track. The training centres, however, all maintain a very high standard some even with all weather tracks (e.g. Takanini, Matamata). So in terms of facilities there are only slight variation in what training centres offer. But for many tracks to attract trainers and eventually establish themselves as training centres they would need to provide a higher standard of facilities. Therefore a threshold level of facilities appears necessary encompassing all aspects of training (e.g. adequate grass tracks, exercise area, stalls for training). For future policy this implies the need to inject capital investment into courses, which are potential training centres. This alone however, will not guarantee the success of any project, so that other parallel policies must necessarily be pursued.

The importance of social factors are that they highlight the difficulty of establishing a simple yet effective policy frame. They are difficult to adequately define because of their qualitative nature. Some qualitative factors can be estimated by referring to the migration of the New Zealand population, which while in general economic, also has some social overtones (Johnston 1973, 132-174). Therefore, the establishment of training activities must necessarily be close to a reasonably sized urban area. This is shown by two situations within the industry. Firstly, the fact that the population of the three new training centres in 1973/74,

Pukekohoe 7,500, Levin 13,000 and Te Aroha 3,200 were reasonably high. The first two having relatively high population growth rates (Pukekohe 13.74 percent between 1966-71). Secondly, that the smalltraining track at Bulls (population 1,900) had no resident jockey, stunting potential growth as the local trainer had to rely on apprentices. A further criteria for a training centre therefore would appear to be a population of at least 3,000 to provide adequate services and obviously, a location relatively close to other courses. By definition therefore it must be within the two concentrations of courses in the Auckland-Waikato and Wellington-Manawatu regions.

The third major area of concern are land prices, which have become a major problem, in the establishment of young trainers in developed centres. This factor tends to run against the earlier mentioned criteria which stresses the close tie to population. Major work in the area of land values has been carried out by Johnston, (1976, 30-56) and many of his observations are relevant to this research problem. Major points concerning rural land are that until the mid 1960s, it was tied to export prices and performance. Since then, however, an inflationary trend similar to urban prices has evolved. This was due to a number of factors, the absence of a capital gains tax, the falling return from other forms of investment (e.g. stakes and shares) and speculation on land on the periphery of cities, in expectation of high returns later. The latter factor is of most importance in the training function, as most training establishments are on the periphery of urban areas near Racecourses. In some cities the course has been almost, or completely enclosed by urban expansion (Hawkes Bay, Te Rapa). Trainers

are therefore faced with extremely high prices if they wish to buy or a greater incentive to sell, if they are already established. This problem has its classic case in Takanini, which with Auckland's continued expansion, has become surrounded by houses; new trainers finding difficulty in meeting the capital costs of establishing there. The ultimate result of this may be the stifling of the growth of such tracks.

The possibility of establishing training centres in small rural hamlets, may not be effective as the other criteria obviously run against this. The need is for the careful use of resources as they stand today. Possible policy criteria in this covers three areas. Firstly, the Racing Authority or Clubs to push for the special zoning of land for training at national and local government level (a zoning distinct from the rural andurban zonings used at present). The special zoning is necessary because of the nature of the spatial pattern (i.e. being affected by speculation). Secondly, the buying of land where development is possible (in terms of the earlier criteria), by the course concerned or the Racing Authority. The renting of this land in five or ten acre blocks at low rental to trainers, would even if agreement with local bodies cannot be reached, be a method of preserving training centres, from urban sprawl. Thirdly, a possible change in attitude of trainers may be necessary. The concept of a trainer using two areas of land, a five to ten acre lot for stabling of horses in work close to the track, and possibly a larger area of 20 acres, further into the country for horses which are spelling, rather than 25 acres near the city. This could mean an overall reduction in

investment in land. The excess land a trainer may own could be brought by the Club, divided and rented to other trainers. This proposition naturally would depend completely on the good will, and attitude of those concerned.

In conclusion, then a course needs to fulfill certain criteria before it has the potential to be a training centre. The factors of distance, social and course amenities define this potential. The problem of land acquisition will be paramount in attracting trainers to the course. The result of this study therefore, gives the general framework and the planning of any future developments, should be based on the criteria above.

Chapter 7

CONCLUSIONS AND POLICY IMPLICATIONS

Results of the classification methodology and the tests of it shows the hierarchial nature of the Racing Industry. The investigation determined that the industry has generally responded to changes in the North Island space-economy, though this response is temporal rather than spatial in its content. Accruing from this are certain relationships within the industry which may have relevance to its future growth strategies. The relationship of population to Racecourse classification implies that the hierarchy of courses will continue, and may be accentuated if urban relative to rural growth continues. The spatial consequence of this will be a concentration of growth (in racedays, turnover, and attendance) in urban areas and the deferment of lower class functions to rural courses.

Capital Investment's relationship to the classification indicates that the Amenities Account may be a most important policy tool for the N.Z.R.A. Both these relationships (Capital investment and population) seem to be crucial (population for determining potential growth and classification of a Racecourse, and investment to ensure that this is attained), issues for the understanding of the industry. A further factor affecting the industry internally, appears to be scale economies (especially at the top of the hierarchy). This in term could affect future growth rates within the hierarchy (Metropolitan and large Regional courses growing faster than others in the hierarchy). The investigation of this concept in terms of training centres

proved inconclusive, however, the basic factors affecting this area of the industry were enumerated. On the basis of these results then policy options relating to Racecourses and the training function were derived. This was done with reference to the investment accounts, which the N.Z.R.A. administers and the evolution of policies under which they have functioned (Chapter 3).

The policy options from the classification of courses encompass two areas. These are an establishment of minimum facilities relating to the classification, and also a differentiation in the class of races to be offered at courses.[16] The former is extremely important for the continual economic health of the activity. The specific establishment of this criteria would involve an in depth study of the courses within each classification, and what the public demand for services is in each case (the public may not expect first class facilities at courses rated Subregional and Picnic). The problem of servicing loans for large capital investments appears to be too great in the case of these courses. Their, income, cash flows, and potential use of any large facility do not justify its erection. The facilities for the higher class Racecourse, should also be brought under a certain criteria. Large modern stands incorporating any facilities for the public now appear to be the prerogative of Regional, and Metropolitan courses. The reason for this is implicit in the results obtained from the training centre study, where scale onomies are found

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16 Class of Race refers to the differentiation of races within the galloping and trotting cases, refer to Appendix

to accrue to courses, in the Regional and Metropolitan categories (Chapter 5). Because scale economies occur in this area it is fair to assume that these courses can cope with a large capital outlay without draining the Racing Authorities, Amenities Account and risking bankruptcy. It would seem then that distinction is necessary between the shelter type stands for Picnic and Subregional courses (e.g. those erected at the Manawatu Raceway), and large fully serviced stands (e.g. Manawatu Racing Clubs Public Stand). The aim must also be to allow more of the Amenities Account to be drawn off for capital investment into training track facilities (e.g. land for trainers and all weather tracks) which may in the future produce a return. The goals and objectives in this area must therefore be specifically drawn up.

Secondly, there may need to be a differentiation in the types and stakes of races to be offered at courses. This must be aligned with their specific classification and would give a clearer differentiation of function between groups of courses. By this method Subregional and Picnic Racecourses, could if they had no or fewer Class one races raise the stakes of other races by reallocating funds from their first and second legs, and still continue these races with only slightly higher stakes than other races. This would have a two fold effect, firstly, by lifting the stakes of lower class races it would help owners and professionals, dependent on percentages or stakes for their income. Secondly, it would mean that the yearly increase in the Stakes Subsidy Account could be channelled into bolstering the stakes of major races (e.g. the classics). This could result in the better horses remaining in New Zealand rather

than travelling to Australia for major races and by their added attraction boosting On course attendance. Allied to this is the policy of Racing Clubs to pay travelling expenses. Though there is no overall policy in this area, considering the oversupply of horses the payment of subsidies to anything but class 1 horses seems an extravagence clubs can ill afford. This is especially so considering the reduction in importance of off-course betting (which is the major reason for bringing horses from a large distance to the course) as a generator of income through the distribution account. For instance in the 1974/75 season the Feilding J.C. needed to gain a return for the money invested in travelling expenses, increased off-course turnover of $600 for every extra dollar invested in travelling. For the Hawkes Bay Jockey Club the ratio was 1000:1. Only class 1 horses would generate this type of betting when sums of $40-50 travelling expenses are involved. Admittedly the acceptance of horses from another region may increase local interest in the meeting as well as outside betting, but this would only be a marginal increase and constitute only a fraction of the amount needed to recoup the expenditure. Closely associated to this is the spatial issue that racedays are allocated to cater for horses in a specific region. Should horses from outside that region be given monetory incentives to attend meetings in the region, and possibly deny local horses a start? The answer to this question would appear to be no, as to affirm it would work against the established policy of allocating racedays to the spatial location of the horse population. This then forms a major issue which the industry must resolve.

The differentiation of races by the classification of the course may also reduce the problem of too many horses and not enough opportunities for these in the lower classes. A number of races of each class could be allocated to clubs on the basis of the number of horses in each class near the end of the last season. By this method a Subregional or Picnic Club could continue to have perhaps one major race, usually the cup named after the club or course, and a major sprint Class 1 races. Naturally this reallocation could have to continue up the hierarchy with Metropolitan and Regional courses being allocated all class 1, 2, 3 and possibly 4 races, to make up the Class 1 races lost at the Subregional two or Picnic courses. This change would necessarily have to be combined with a redistribution of race days to ensure racing in all the classes in the two major geographical areas each eek (Auckland, Waikato and the lower North Island), especially with Class 1 races on the weekend to attract betting. By this method a more equitable distribution of betting may be implemented.

A spatial problem apparent in this is that areas (notably Taranaki) will have very few Class 1 races, but has a significant number of Class 1 horses trained on courses in the Taranaki region (70 at Hawera). The particular situation such as this may be answered by allowing extra Class one races in this area or upgrading the course which would not run against the earlier policy of restricting the allocation of Class 1 races as the former method would.

A problem free of the implementation of any policy are Racing Clubs which are rated in categories below that of the course they rent (this is the general case). In this situation the club is able to use facilities of a higher

classified club. The resolution of this is simply that the club has an advantage over similar classed clubs hence pointing to the advantages inherent in regionalisation.

By the criterion for training centres the use of highly rated courses as a large scale training centre, may be the best utilisation of the resources at hand. In the long term however, with city growth impinging on these areas, a movement to slightly smaller centres may occur. The effect of social factors should not be discounted, though and any movement down the urban hierarchy, will not be great. More probably the large training centres will continue, although they could stagnate in horse population, and new rapidly training centres may emerge. The investment by the N.Z.R.A. or specific Racing Clubs in land, to be set aside for training, or the development of specialised zoning, may reduce the effect of this. Training function policy then depends on the amount of investment available for injection into this area. The spatial implication of this situation would appear to be the concentration of the training function on or in close proximity to larger urban areas. The long term ramifications of this may result in a two fold function for Racecourses similar to that evolved in Australia. This being based on (1) a few central 'city' Racecourses providing the Metropolitan and Regional function, and (2) a number of smaller 'country' courses providing the Sub-regional and Picnic function. A system such as this would clearly accommodate the demands of the public and the professional bodies involved.

The major result of this research has been to identify the structures involved in the growth of the activity, to establish their relationships in terms of the locational

problem served by clubs, and to discuss possible policy measures to alleviate the problems. The general framework used here lays the basis for applied research in the future. The most obvious areas being behavioural aspects (defining of Racecourse catchments), and the locational decision making of trainers (which could be related back to theservice offered by training establishments). These appear to be the most pressing areas for research, to determine other growth factors of the major relationships (established by this research) involved in the activity. A common policy, incorporating the whole industry must be elaborated, aiming to direct resources in the industry into growth areas.

Appendix 1:

AGGLOMERATIVE CLASSIFICATION PROCEDURE

(1) Compare the variables of each course with those for every other course in turn and put the number agreed on into a matrix (for the variables refer to research paper).[17]

(2) Group together those courses that agree on over 50 percent of the variables (a threshold of 10 percent was used when comparing two variables e.g. course A B these agree on the variable of stand capacity 2,400 2,600 stand capacity as the scores are within 10 percent of each other).

(3) Construct a further matrix made up of the grouped courses and those still unattached.

(4) Compare the groups again. A simple method of doing this is to sum the various scores from the first matrix and average the result e.g.

First Matrix

A	15	7	8
	B	11	9
		C	16
			D

Courses A, B and C and D are grouped in the first matrix.

Second Matrix

AB	x
	CD

x is computed by summing the scores of the first matrix and dividing to

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17 The club or clubs which run the course are included in the course classification, renting clubs being classified later.

obtain the average, $x = \frac{AC + AD + BC + BD}{n}$

$$= \frac{7 + 8 + 9 + 11}{4}$$

$$= 8.75$$

(5) This could be continued until there is only one class.

(6) The best classification from a policy point of view would have four or five classes as this disaggregates the courses enough to show a pattern but is not so complex that it confuses the issue.

Appendix 2:

DIVISIVE CLASSIFICATION PROCEDURE

(1) The scores for the variables[18] (refer to the research paper) were summed to result in the total score for each course (the variables were divided into four, refer Appendix 4).

(2) These were then divided into classes. Class divisions being equally divided between the highest and the lowest possible scores (refer Thesis, Chapter 3). These equalled 14-26, 26.1-37, 37.1-48, 48.1-58.5.

(3) The score of two was divided in two because of the large number of courses within it. The division was not made for the differentiation of policies but rather to give a clearer differentiation of courses within the group.

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18 If new variables are used three steps must be added to the start of the classification.

a. Establishment of criteria, and reasons for using them.

b. Division of these into the number of classes wanted.

c. The hierarchial scoring of these classes to be defined. e.g. 1, 2, 3, 4.

Appendix 3:

CLASSES OF RACES AS DEFINED 1st AUGUST, 1976

Gallopers (Class 1 = C1)

Maidens (those who have yet to win a race)

C5 = winning stakes (first place only) 0 - $1,000

C4 = $1,001 - $2,000

C3 = $2,001 - $3,000

C2 = $3,001 - $4,500

C1 = over $4,500

Jumping races (Class A = CA).

CA = over $3,000

CB = 0 - $3,000

Trotting Races

Pacers	Trotters
CO = non-winners	CO = non-winners
C1 = one win	C1 = one win
C2 = two wins	C2 = two wins
C3 = three wins	C3 = three wins
C4 = four wins	C4 = four wins
C5 = five wins	C5 = five wins
C6 = six wins	C6 = six wins
C7 = seven wins	OC = seven wins and over.
C8 = eight wins	
C9 = nine wins	
OC = ten wins and over.	

Appendix 4:

CLASSIFICATION VARIABLES

Agglomerative

(1) Course circumference

(2) Width of course proper

(3) Use of false or movable rail

(4) Number of boxes and stalls

(5) Course ownership

(6) Average attendance per day

(7) Average on course turnover per day

(8) Average off course turnover per day

(9) Stand capacity

(10) Total number of race days

(11) Total stakes

(12) Average stakes per race

(13) Use of facilities for other functions

(14) Course irrigation

(15) Number of other clubs using course

(16) Number of horses trained on course and started 1973/74 season

(17) Course use status, gallops, trotting or dual use

(18) Number of grass training tracks

(19) Availability all weather training tracks

(20) Provision of sand, plough, hurdle and steeplechase facilities

Divisive

(1) Course circumference

(2) Width of course proper

(3) Use of false or movable rail

(4) Number of boxes or stalls

(5) Course ownership

(6) Average attendance per day

(7) Average on course turnover per day

(8) Average off course turnover per day

(9) Stand Capacity

(10) Total number of race days

(11) Total stakes

(12) Average stakes per race

(13) Use of facilities for other functions

(14) Course irrigation

Appendix 5:

DIVISION OF DIVISIVE CRITERIA

	Level 1	Level 2	Level 3	Level 4
Course Circumference	1750-1849 metres	1700-1749 or 1850-1899 metres	1650-1699 or 1900-1949 metres	under 1650 or over 1949 metres
Width Course Proper	30 metres +	26.1-29.9 metres	23.1-26 metres	20-23 metres
Use of false or Movable Running Rail	Present	Present	Absent	Absent
Number of Boxes and Stalls	120+	100-119	80-99	under 80
Ownership	Owned	Owned	Race Course reserve	Other lease
Average Daily Attendance	8,000+	5,500 - 7,999	4,000 - 5,499	under 4,000
Average On course Turnover per day	400,000	250,000 - 399,999	100,000 - 249,999	under 100,000
Average Off Course Turnover per Day	500,000	400,000 - 499,999	300,000 399,999	under 300,000
Stand Capacity	4,000+	3,000 - 3,999	2,000 - 2,999	0-1,999
Racedays (Annual)	15+	10-14	4-9	0-3
Total Stakes	400,000+	160,000 - 399,999	30,000 - 159,999	0-29,999
Average Stakes per Race	3,000	2,000 - 2,999	1,000 - 1,999	under 1,000
Use of facilities for Other Functions	100+	80-99	60-79	under 59
Irrigation Used	Present	Present	Absent	Absent

Appendix 6:

TABLE OF COURSE SCORES IN DIVISIVE CRITERIA

Racecourse	Criteria														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Awakino Point	1	2	1.5	2	3.5	3	1	1	1	1	1	2	1	1.5	22.5
Avondale	4	4	3.5	1	3.5	4	4	3	4	3	3	4	3	3.5	47.5
Alexandra Park	3.5	3.5	3.3	4	3.5	4	3	2	4	4	4	3	1	3.3	46.1
Ellerslie	3	4	3.5	3	3.5	4	4	4	4	4	4	4	4	3.5	52.5
Parawai	3	2	1.5	3	3.5	4	2	2	2	1	2	2	2	1.5	31.5
Pukekohe	2	1	1.5	3	3.5	2	3	4	3	2	2	3	2	3.5	35.5
Paeroa	4	1	1.5	3	3.5	1	2	3	1	2	2	2	1	1.5	28.5
Te Aroha	4	4	1.5	1	3.5	2	2	4	3	2	2	3	1	1.5	34.5
Gate Pa	4	3	1.5	3	1.5	3	2	3	4	2	2	3	2	3.5	37.5
Te Rapa	4	4	1.5	4	3.5	3	3	3	3	3	3	3	4	3.5	45.5
Claudelands	3.5	3.5	2.1	3	1.5	2	2	2	1	2	2	2	1	2.1	29.7
Matamata	1	3	1.5	4	3.5	2	2	3	2	2	2	2	2	1.5	31.5
Cambridge	3.5	3.5	2.4	3	3.5	2	2	2	3	2	2	2	1	2.4	34.3
Te Awamutu	1	2	1.5	3	3.5	2	2	3	1	2	2	2	1	1.5	27.5
Arawa Park	1	3	1.5	3	3.5	3	2	2	3	2	2	3	1	3.5	35.5
Makaraka	3	1	1.5	3	3.5	1	1	1	1	2	2	1	1	1.5	23.5
Te Kupenga	2	2	1.5	3	3.5	1	2	1	1	1	1	2	1	1.5	23.5
New Plymouth	1	1	1.5	1	1.5	1	1	1	1	2	2	1	1	1.5	17.5
Te Kapua	1	1	1.5	4	3.5	2	2	1	3	2	2	2	1	1.5	27.5
Hawera	4	1	1.5	1	3.5	1	2	3	2	2	2	2	1	1.5	27.5
Hastings	3	3	3.5	4	3.5	3	2	3	4	3	3	3	1	3.5	42.5
Waverley	4	2	1.5	3	1.5	1	1	3	2	1	1	1	1	1.5	24.5
Wanganui	4	3	3.5	3	3.5	3	2	3	4	2	2	2	1	3.5	39.5
Waipukurau	4	2	1.5	1	3.5	1	1	2	1	1	1	2	1	1.5	23.5
Marton	1	1	1.5	1	3.5	1	2	3	2	2	2	2	1	3.5	26.5
Feilding	1	1	1.5	1	3.5	2	2	1	2	2	2	2	2	3.5	26.5
Woodville	3	2	1.5	2	3.5	1	2	3	2	2	2	2	2	3.5	31.5
Awapuni	4	4	3.5	4	3.5	3	3	3	4	3	3	3	2	3.5	46.5
Manawatu Raceway	3.5	3.5	1.7	1	3.5	1	1	1	1	2	2	1	1	1.7	24.9
Foxton	4	1	1.5	1	1.5	3	2	2	1	1	2	2	1	1.5	24.5
Levin	4	1	1.5	3	3.5	3	2	4	1	2	2	2	1	1.5	31.5
Otaki	4	1	1.5	1	3.5	2	2	2	1	2	2	2	1	1.5	26.5
Opaki	1	1	1.5	3	3.5	2	2	3	3	1	2	2	1	1.5	27.5
Tauherenikau	4	2	1.5	4	3.5	3	2	1	3	2	2	2	1	1.5	32.5
Trentham	1	4	3.5	4	3.5	4	4	4	4	4	4	4	4	3.5	51.5
Hutt Park Raceway	3.5	3.5	2.4	2	1.5	3	2	2	3	2	2	3	1	2.4	34.5

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