
THE NATURE AND MEASUREMENT
OF
LABOUR TURNOVER

by

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CHAPTER IINTRODUCTION1. LABOUR TURNOVER AS AN INTERDISCIPLINARY CONCEPT

Modern industrial man is, for the Social Scientist, a challenging field of study, whether that study be of the behaviour of man as an individual, or of men in groups. Nor does such study need to be purely descriptive in nature; the behaviour of man in industry is, in many of its aspects, amenable to measurement and, because industry is characterised by large groups stabilised in time and space by the work situation, such measurement is possible under conditions which are frequently subject to a quite considerable degree of control.

The behaviour of modern industrial man is, moreover, purposive. It is directed towards the realisation of more or less well-defined goals. The most clearly defined of these goals is the maximisation of material benefit, but academics and industrial leaders alike are becoming increasingly aware of the importance of the influence upon human behaviour in industry of social satisfactions arising from personal interactions among the members of the various kinds of group which are to be found in industry.

Wage-, salary-, and profit-levels give a clear indication of the degree to which material goals are being achieved by labour, management, and capital respectively, and levels of production can provide an objective assessment of technological progress. Measures of comparable accuracy for assessing the extent to which non-material goals are being achieved, are however, largely limited to attempts to express in quantitative terms the summarised results of the use of such tools as interviews and questionnaires to determine attitudes and opinions concerning the work situation.

The main purposes of this study are to examine the methods by which one particular aspect of industrial behaviour, namely that of the worker's final withdrawal from the work situation, can be measured; to offer a more refined technique for the measurement of such withdrawals, and thirdly to attempt to relate this measurable phenomenon of withdrawal, commonly known as Labour Turnover, to the less easily measurable phenomenon of the integration of the individual worker into his working group.

Labour Turnover - or the loss, over time, of employees

from an employing organisation - is normally regarded as a province of study appropriate to the field of Industrial Psychology, and to its related applied field of Personnel Management.

To a large extent, however, (as will be illustrated in Chapter II of this work) the results of such studies have proved inconclusive, and contradictory, and there is little evidence of progress towards a comprehensive understanding of the subject. This is undoubtedly due to the fragmentary nature of most studies in this field. These have generally been limited to the narrow confines of one particular aspect of the phenomenon, and consequently it has not been viewed against a sufficiently broad background.

It is not unrealistic to assume that Labour Turnover will be affected by, and may be the resultant of, factors in the individual, in the group or groups in which he finds himself, in the employing organisation, and in the economic climate at any given time. It is to be expected, therefore, that meaningful information regarding its nature is likely to be obtained through a combination of the disciplines of Industrial Psychology, Industrial Sociology, Industrial Management, and Economics. A first task of this chapter will be to establish the interrelated roles of these disciplines in the study of Labour Turnover, and the planning of the study, on an inter-disciplinary basis in terms of these subjects, will then be described.

2. THE ROLE OF FOUR DISCIPLINES IN THE STUDY OF LABOUR TURNOVER:

a) Industrial Psychology:

It is not surprising that, as was mentioned earlier, most of the work on Labour Turnover has taken place in the fields of Industrial Psychology and Personnel Management, for the orientation of these two fields is particularly suited to investigations of such a nature. It is worth noting, in passing, that Industrial Psychology as a separate discipline, is generally accepted as dating from the work of Münsterberg (1) in 1913. In the last three decades however, it has become one of the larger sub-sections of Social Psychology, mainly as a result of the increasing rate of development and of change in modern industry, and the financial support provided by industry for research in the field. This stems directly from the more applied nature of its findings, which frequently have a direct bearing on day-to-day problems in industry, and have in recent years especially, played a significant role

in assisting industry to adapt its relations with its labour force to the dictates of rapid technological change. In the words of Tiffin (2) "Through the techniques and procedures of industrial psychology, it is now possible to carry out systematic investigations that provide management with pertinent information regarding personnel problems. One of the common functions of an industrial psychologist is that of conducting personnel research - research directed towards the collection analysis and organisation of information about people in the work situation that can be used effectively by management in dealing with such problems".

The purpose of Industrial Psychology in general then - and personnel research in particular - is to study the behaviour of people at work. Because of its applied nature, such study will usually be undertaken with the objective of improving work performance. However, from the point of view of the psychologist, there will also be an interest in the individual worker, and in his need satisfactions in the work situation. The broad aim, then, should be integration of the needs of the employee with the objectives of the enterprise.

More specifically, in the study of Labour Turnover, the aim of the Industrial Psychologist can be seen to be as follows:

- i) to measure the phenomenon;
- ii) to establish the factors which underlie it; and
- iii) to relate those factors to the more effective functioning of industrial organisations, in the broadest sense.

It appears, however, that much of the measurement which has taken place in previous studies has not been based on a sound conceptual framework. The aim of any study of labour turnover should, as stated above, not only be to measure the phenomenon, but also to establish the nature of the process under study, and to provide a conceptual framework upon which measurement may be based. Unfortunately, whilst labour turnover has been measured often enough in the applied literature, very little attempt has been made to define it. No definition is offered in the widely-used standard text on Industrial Psychology (Tiffin, 3) and whilst Viteles (4) discusses it, he again offers no definition. The applied literature of Personnel Management likewise offers no theoretical background to the concept of labour turnover but Calhoun (5), Flipppo (6), Pigors and Myers (7), Scott, Clothier and Spriegel (8), White (9), and Yoder (10) all discuss the measurement of labour turnover, and offer a variety

of measures which may be applied to it, Not surprisingly, however, because there is no general agreement on what constitutes the phenomenon, the measures differ widely from each other, in line with the different viewpoints from which the subject is approached.

Industrial Psychology alone does not therefore, provide a complete interpretation of Labour Turnover.

b) Industrial Sociology:

More progress on the theoretical nature of labour turnover has been made in the field of Industrial Sociology, where it is often viewed as "horizontal mobility" in the general study of labour mobility.

One approach is that of Miller and Form (11) who see the worker as initially moving around until he finds a job which satisfies his abilities and aspirations, after which he settles down. Their emphasis, then, is on mobility as a goal-oriented search process. Argyris (12) however, is less optimistic about mobility being such a positive process. He notes that research shows most moves to be relatively aimless. In his opinion it is unlikely that the average employee will eventually be integrated into the organisation, and will strive towards its aims, for "there is a lack of congruency between the needs of individuals, and the demands of the formal organisation". Rather than settling, then, the worker is more likely to "float" and Caplow (13) refers directly to "floaters or drifters", and asks why it is that lifetime involvement is so rare among semi-skilled workers? He sees the answer in the jobs themselves, for even across industries today, none is very different from any other and the skills involved are general rather than specific. Modern production techniques are geared to the interchangeability of personnel, and to a series of simple operations which require no extraordinary ability. The result is that mobility is easier than it has ever been before, and as so many of the jobs are also monotonous, the act of leaving at least provides a change of scene. Thus we find that "it is almost impossible for the employee to acquire a vested interest in remaining where he is, He is too easily replaceable to be highly valued, but by the same token he will be equally valuable across the street, or in California" (14).

One vitally important positive aspect arises out of this rather negative conclusion, and that is that under the above circumstances, there is very little to differentiate one job

from another, except the personal relationships on that job. The work itself may be routinised, but it is performed in a group, and the personal relations within that group will dominate the working situation. Thus the individual's chances for advancement, or for securing the good opinion of his fellows, are more likely to depend on personal relations, than on his work performance, where variability is strictly limited. There are, in the words of Caplow (15) "no virtuosi on the automatic sewing machine". And even where the work situation does permit an individual to achieve outstanding performance, the informal limitation on output by the work group is a well-documented aspect of factory production.

Group interactions are therefore likely to be of prime importance in the employee's evaluation of the work situation, but satisfying interactions are unlikely in groups ⁱ⁾ which are temporary in nature, and are constantly in a state of erosion and replacement as a result of high labour turnover. Satisfying group interactions, then, will depend upon the existence of stable groups, which are cohesive in character, and facilitate positive relationships among group members.

Because of its important role in promoting job stability, group cohesiveness has received a considerable amount of attention from sociologists, and Etzioni (16) refers to it when specifically discussing labour turnover. He notes that if cohesive groups are to develop, there must be a certain amount of stability in the membership of the group, and high turnover is not conducive to this. He concludes that a low turnover rate is to the advantage of the organisation, in

i) The term "group" as it is used in this study, especially in the context of "group interactions" is not easily amenable to precise definition. Thus the factory worker is, at any one time, a member of, and interacts with, a number of groups. There is firstly the total work force in any particular factory, which is subject to the effects of top management policy, and the management "climate" of that particular factory. Then there is the departmental group, where interactions are likely to be of a more face-to-face nature, between worker and supervisors, and among the workers themselves, and finally, there are the more intimate contacts of the informal groups, and of the working groups brought into immediate proximity through the nature of the factory process. All these groups can be to a lesser or a greater extent, cohesive, and it is conceivable that lack of cohesion in one group could be offset by cohesiveness in another group, such as the factory as a whole. "Group" cohesiveness, at any one time, may therefore depend on the resultant of the employee's reaction to a number of groups. Exploration of these distinctions will not be attempted in this study; the term "group" will be used rather loosely, in the hope that its particular nature in any instance will be apparent from the context in which it is mentioned.

that, apart from the more tangible effects on recruiting and production, it promotes cohesive groups, and that members of these groups will be less inclined to leave, even if other rewards may be relatively unsatisfactory. Group affiliations could therefore conceivably override such factors as mediocre wages.

Blau and Scott (17) also note that there is a circular relationship between turnover and group formation. Where turnover is low, management and supervisors have more opportunity to get to know and train their workers, than in organisations with high turnover - this promotes more stable groups, and correspondingly lower turnover. High turnover, by contrast, has the opposite effect, and apart from the loss of valuable experience as older workers leave, social ties are also disrupted by the loss of personnel.

Etzioni (18) warns, however, that while increase in peer cohesion may cut down turnover, this may be because this lower turnover is coincidentally related to the intrinsic needs of the group, and not because the group necessarily supports the organisational norms. The commitment of the group is thus only to those norms which must be obeyed in order not to be fired, or expelled.

Katz and Kahn (19) make the same proviso that the norms of the peer group may set standards "which are not optimal from the Company's point of view".

March and Simon (20) are more specific when they say that low labour turnover should not necessarily be equated to high productivity and that production by the worker, absence, and turnover should not be viewed as points on a common continuum. Broom and Selznick (21) also point out that group cohesion can reduce absenteeism and turnover, but warn that a cohesive group can be used to defeat the ends of the organisation, unless it is positively oriented.

It can be seen from the foregoing that whilst there may be group conflict with organisational objectives, such conflict may not necessarily be a factor in labour turnover. In fact, the cohesive group may be very stable, and satisfy the needs of its members, in spite of being in conflict with Management. Conflict implies commitment, however, and from the arguments advanced it appears that labour turnover may be occasioned more by a lack of commitment resulting from indifference to a stereotyped work situation. It seems to

stem, therefore, from apathy rather than from antagonism.

Some basis for a study of labour turnover, from a social scientist's point of view, has thus been established. The working situation in which the average adult spends most of his waking life, can be regarded as a major need satisfier for the individual. Because of the nature of modern industry, as argued above, the only satisfactions which are likely to differentiate one job from another, are those to be found in interpersonal contacts in the working group, and other factors, such as wages and skills required, are likely to show little variation. Thus a major need satisfier is likely to be that of belonging to a cohesive and rewarding group, and if this need is not satisfied, the worker will very likely fail to adjust to the work situation, and will therefore more readily withdraw from it.

In such a situation, where interpersonal contacts are seen as major determinants of need satisfaction on the job, a measure of labour turnover is very likely to be a measure of the extent to which satisfying interactions are taking place, because turnover has been shown to be both a cause and a result of unsatisfactory interaction.

c) Industrial Management:

The argument thus far has emphasized the worker and his group, with only passing reference to the other important participant in the situation, namely the management. For the most part, little attention is given by management to the importance of groups in the work situation, and where the existence of distinct groups of individuals is recognised, the tendency is often to see them as a source of conflict and actively to discourage their formation. However, if it is accepted that relationships within the group are of great importance in a situation in which there are few other stabilising influences, then it would seem that management attention could profitably be given to promoting positively-oriented groups. Caplow (22) mentions the effect, on group attitudes to management, of layoffs at short notice, and he also notes that the organisation often unwittingly inhibits the formation of personal ties, as work groups are constantly changing due to workers being moved from one job to another as short-term production conditions alter.

Organisations, therefore, should strive for the creation of a series of integrated groups within the labour force and the speedy assimilation of the new worker - who usually

enters as a "solitary" - into one or more of these groups. Once this has been accomplished, one of the worker's most important needs, that for belonging to a group, has been satisfied, and this will then be a powerful agent in reducing those external forces acting upon the worker to leave the organisation. Once the worker is stabilised within such a group, other factors, such as the workers' commitment to organisational objectives, can be pursued, and appropriate managerial steps can be taken to motivate the groups within their organisation towards a positive contribution. However, unless and until such groups exist, and new workers are quickly integrated into them, all other efforts towards organisational effectiveness - as Katz and Kahn (23) point out - must suffer under the effects of labour turnover.

The need to consider both the individual and the group in which he finds himself, is of course a well-documented one in social research. Thus Katz and Kahn (24) point to the fact that "while the older theory of scientific management looked at the organisation and forgot about the people in it some recent psychological approaches look closely at people and forget their structured interdependence in the organisational context". Elton Mayo, was of course, in the forefront of this changed orientation from the individual to the group, and in his article on "Revery and Fatigue" (25) he notes how rest periods in a mill (introduced for supposedly physiological reasons) transformed the men from a "horde of solitaries" into "a social group".

But, as has already been mentioned earlier, the approach must be even wider. The groups being studied do not form spontaneously; they are part of the organisation of the enterprise, and as such they are subject to management control. Thus any explanation of labour turnover which is divorced from the framework of management, must lack reality. For just as labour turnover may legitimately be viewed as a function of variables within the individual and within the group, so it must be seen as also being affected by management variables such as decisions, policies and techniques, and especially by management policy towards personnel. Here, particularly, the management variable can be seen as being directly related to the psychological variables involved in personnel research and personnel management. The management variable then, and particularly the personnel management aspect thereof, must occupy a prominent place in any study of labour turnover.

d) Economics:

In the final analysis, all the interactions referred to thus far, will be seen as taking place against the background of the labour market. This will not be explored in any depth in this study, beyond accepting that labour is a saleable good, which is subject to the laws of supply and demand, and the fluctuations of the labour market.

The worker, if his needs are not satisfied in the work-situation may withdraw his labour. His right to do so, is firmly entrenched in democratic tradition, which determines that a worker must be free to sell his labour in the best market. In the same way, the organisation has the right to dismiss workers where they prove unsuitable, or are no longer required, although in some countries, this "right" is being increasingly contested by Trade Unions, and may in fact be curbed by social legislation where this is deemed desirable. The effects of labour turnover, then, are felt at various levels, on the worker as an individual, on the organisation, on society, and on the national economy. The latter is affected particularly in times of economic prosperity, when there is full employment and correspondingly easier movement among labour. As the goal of much of today's social planning is to maintain full employment it can be expected that, for economic reasons at least, labour turnover is likely to increase rather than decrease. In this context, and no doubt viewing the situation in the light of the present day labour position in Britain, Badger (26) says that "it is generally agreed that high labour turnover is one of the main economic wastages in any form of economy".

.....

The background against which the study of labour turnover should take place is now clearer, and the need for a multi-disciplinary approach should be apparent. The role of Industrial Psychology remains an important one, as it applies to the study of the individual's behaviour in the work situation, and to the Personnel Management function. In addition, factors in the field of two other disciplines are equally important; namely in Industrial Sociology, as it applies to the functioning of the group and of the organisation, and in Industrial Management, which determines the setting in which the individual and the group interacts with the organisation. In addition, these interactions must be viewed as taking place against the background of factors in the economy at the time. In the study to follow, the relevance of all these factors will be considered.

3. THE MAIN AIMS OF THE STUDY:

This study has three main aims:

- a) To investigate the nature of the process of labour turnover in industry.
- b) To establish whether existing measures of labour turnover offer an adequate basis for such an investigation.
- c) Arising out of a. and b. above, to suggest means for the control and reduction of labour turnover.

Against the background of these intentions it has been argued in the preceding sections that Labour Turnover is a multidimensional phenomenon, and that its causation is very likely to be complex. However, it has been reasoned on theoretical grounds, that in any specific industrial situation of the kind commonly found in much of industry today, labour force stability, and hence labour turnover, is likely to be primarily a function of satisfying group interactions, and the presence of cohesive groups.

This study will therefore focus on a specific sample of factory workers, and labour turnover in this setting will be viewed as a quantitative measure of the results of interactions between the employee and the employing organisation.

The theoretical argument referred to above that, in modern industry, the decision to separate from the work situation is more likely to depend on factors related to interpersonal contacts on the job, than on factors which are extrinsic to the working group, will be accepted. The study will attempt to relate findings from the analysis of labour turnover data to this working postulate, to show that labour turnover can profitably be viewed against the background of group cohesiveness which, on theoretical grounds, appears to be a major determinant of stability in the working force. An attempt will thus be made, in the study, to relate a number of the variables normally associated with labour turnover to this concept in order to establish whether as the result of a clearer understanding of the process, meaningful assessment and appropriate action against labour turnover can be facilitated.

If the concept proves helpful, then direct proof of group cohesiveness as a factor in the stability of a labour force must become a subject for further research, where it could be shown, for example, whether in fact more leavers

are found to come from less cohesive groups, or whether leavers were individually less well-integrated into existing groups than those who remain. An additional aim of this study will therefore be to determine whether or not the empirical data available supports the view

- i) that the concept of group cohesiveness will facilitate an understanding of the process of labour turnover;
- ii) that the encouragement of stable cohesive groups will be to the benefit of the employees - whose needs can thus be better met in the job situation - and to the benefit of the enterprise, which can best attain its objectives through a stable labour force; and
- iii) that the study and the measurement of labour turnover can be seen as providing an objective basis on which to evaluate the success of the interactions between the employee and the employing organisation, the purpose of such evaluation being the improvement of the situation through measures to combat turnover.

4. A BRIEF OUTLINE OF THE STUDY:

The subject of labour turnover has generated a healthy applied literature, and a first task of this study in Chapter II will be to review this in some detail. The findings of previous workers in the field will be used to assist in establishing those variables in the individual, in groups, and in the work situation, which are, or seem to be, related to labour turnover, and which should be studied further. The review will also lead directly to a first, main aim of the study, namely that of establishing reliable measures of the phenomenon under investigation.

Whilst the derivation of such measures can only proceed within some clear theoretical perspective, the first need in any study such as this should be to establish reliable methods of measurement of labour turnover as it occurs in Industry. For whether labour turnover is fully understood or not, it has, as a source of economic inefficiency, to be controlled, and control implies measurement. Whilst precise measurement should ideally rest on a comprehensive conceptual base, there are many instances in science when appropriate measurement has preceded full understanding. Thus, the study of electricity could not have proceeded, from its

nineteenth century foundations, without the concepts of volts, ampe and coulombs, but these measures were defined long before electro-magnetic theory could have been regarded as comprehensive.

The above does, of course, not imply that measurement can take place in isolation. A certain minimum theoretical basis is essential, and the purpose of measurement must at least be clearly defined. Furthermore, once measures of adequate sensitivity have been arrived at, it becomes possible to draw more reliable conclusions on the nature of the process being measured. For example in the literature survey to follow, it will be shown that many of the contradictory findings are due, not to inconsistencies in the parameters underlying turnover, but to statistical shortcomings in the measures themselves. It will be demonstrated through the measures to be developed, that these parameters can be more reliably investigated; and all the points mentioned above will be developed in more detail in Chapter IV of the work to follow.

Prior to this, however, in Chapter III, the methodology of the empirical section of the study will be described. The sample which formed the basis of the investigation was specifically chosen to represent a significant portion of the South African Footwear Industry, within which variables relating to the individual, the organisation and the industry as a sector of the larger economy could be seen as interacting. Whilst a smaller sample could have been studied in more detail, it could also have resulted in misleading generalisations arising out of the idiosyncracies of an individual firm or a particular region. A smaller sample, then, was not considered suitable for the main purposes of this study.

The analysis of the empirical data is described in Chapter V, and Chapter VI concludes the study by reviewing the main findings, on the nature, the measurement and the control of labour turnover.

CHAPTER II.A REVIEW OF THE LITERATURE

The British Institute of Management (27) describes Labour Turnoverⁱ⁾ succinctly as "the process of change in the composition of the labour force". Because of its profound effect on both the employing firm, and on the individual, it has, over a period of many years, from the early paper of P. Sargent Florence (28) in 1918, to the present, been the subject of a great deal of study.

Much of this work has not led to very conclusive results, and Bucklow (29), in a recent review, concludes that ".....little has been contributed to basic understanding of the main characteristics of Turnover". It is certainly difficult to separate the main trends of thought from the literature, and to classify them within some logical framework.

A. BROAD APPROACHES TO THE STUDY OF LABOUR TURNOVER.

Long (30) notes that there are two basic approaches to the study of labour turnover:

- i) To observe LTO trends over a period, and the influence upon them of conditions.
- ii) To examine differences in LTO at any one time by the statistical comparison of groups. This would include isolating those factors which appear to influence variations in turnover, and then relating them to the group or groups under study.

Long warns that the factors which affect differences in LTO vary greatly, and must be carefully separated in analysis.

1. LABOUR TURNOVER TRENDS:

There is no doubt that some mobility of labour is inevitable - Labour Turnover cannot be "eliminated". Indeed, Long (31) points out that a certain amount of mobility is beneficial to a firm, in that unsuitable persons are weeded out. She makes the point, however, that the overall effects of turnover are harmful, and there is no net gain from the effects of "new blood". The I.L.O. (32) agrees with Long, also noting that turnover is beneficial to the employee, who may better himself by moving, but again they conclude that on balance, both factory production, and the lives of the employees, are adversely affected by the phenomenon.

i) In much of the main text to follow, Labour Turnover will be abbreviated to "LTO" for convenience.

The fact that LTO is inevitable, does not however mean that its incidence cannot be reduced, and this is often overlooked. Greystoke (33) points out that "the state of the Labour Market is made the excuse for complacency or inertia..." this being in Britain. Nearer home, Bell's "Polygons" study (34) found that there was, generally, an acceptance of the fact that Labour was a commodity which could be easily replaced. The C.C.T.A. Study (35) frequently came across the opinion that LTO is "part of the African temperament", but Glass (36) in her study of the Black Industrial worker produced evidence, on the Witwatersrand to refute this, as did the C.C.T.A. study (37).

The British Institute of Management (38) in its comprehensive study of the problem, makes the fundamental point that turnover is not uniformly distributed among the working population, but that, particularly under full employment, the leavers form an unstable "floating minority" and that the rate of turnover apart from these is relatively low.

Rice, Hill and Trist (39) have studied this aspect of Labour Turnover in some detail, and have separated three distinct sub-groups of overall turnover. These are

- i) "Short term fluctuations produced directly by short-term personal and social forces".... which are mainly apparent among short service, weekly contract employees.
- ii) Long-term fluctuations produced by gross social and economic forces - including the almost obvious relationship, between turnover and level of employment.
- iii) A remaining level of turnover which was a function of factors within the organisation itself, and relatively constant for that organisation.

As a general scheme for the study of factors affecting LTO, this has much to recommend it, and in the discussion which follows, all the factors operating within these three sub-groups will be considered.

In a later paper, Hill (40) takes this theory a step further, and postulates LTO as "the resultant of a quasi-stationary social process". Briefly, he recognises fluctuations, due mainly to the level of employment, plus a constant component dependent on the characteristics of the employing firm.

In one of the earliest studies of labour turnover, Greenwood (41) suggested that rates of departure from factories could be seen as similar to crude death rates as used in the vital

statistics of actuarial science. And just as death rates are used as a measure of "sanitary efficiency", so turnover rates could be seen as reflecting the efficiency of factories.

Silcock (42) also approaches the problem from an actuarial point of view, and derives a formula based on "life tables" to show that the forces of separation acting upon employees at time t , are heavily influenced by the previous employment history of the firm, and that the current turnover rate of the firm is more likely to depend upon past events than on the present state of labour relations in the firm. Silcock's formula depends on the relation of length of service to LTO - which will be discussed at length a little later - but what is important here is that he uses it to reject Hill's hypothesis that the force of separation - which determines LTO - is a constant for a given firm. He argues - with good effect - that the force of separation is more likely to be determined by the interaction between employee characteristics, and those of the employing firm. This would explain, not only variations among firms, but also variations within a firm over a period of time, as the composition of its labour force changes.

Labour Turnover, according to Silcock (43) is an indicator of economic health - its general level will be higher as industrial activity - and hence employment - increases. But while a high level may indicate a healthy economy, the reverse is true inside the factory. A symposium of the South African Psychological Association found (44) that LTO results in a stream of half-trained workers, who are a burden on supervision. No stable groups are formed and morale is further lowered by the presence of dissatisfied potential leavers who remain in the work force. Also the worker's lack of security must disrupt his life, leading to frustrations and poor quality work. Pursuing this same line of argument, for a London sample, Raphael (45) states that a firm with high LTO receives a bad reputation, which in turn results in a lower level of applicants, who are less stable - and turnover rises in a vicious spiral. He also points to the atmosphere of fear and uncertainty in a work situation where there are a large number of dismissals. Tavernier (46) also mentions "the demoralising effect of turnover on the employees remaining".

2. SPECIFIC FACTORS INFLUENCING LTO:

Silcock (47) goes on to consider in more detail, those factors which have been shown to be directly related to LTO and he separates them into Strongly Marked, Less Prominent and Doubtful Characteristics. As they represent a good summary of the

published work along conventional lines, they will be listed here:

Strongly Marked Characteristics:

- i) The annual rate of Labour Turnover⁴ exhibits wide variation between different firms. This is true among factories in the same industry, as well as between different departments of the same factory (Rice 48)
- ii) The majority of terminations are at the request of the employee. This would seem to depend on a high general level of employment, where there is good expectation of re-engagement elsewhere.
- iii) The amount of wastage decreases as Length of Service increases. All studies of turnover have observed this, and have shown that the bulk of turnover is accounted for by short-service employees.
- iv) Wastage is higher among Females than Males, and higher among Married than Single women. There are exceptions to this statement, which will be illustrated in the research which follows.
- v) Wastage decreases as amount of skill increases. This is not easy to prove conclusively, as skills are not always capable of clear definition - and in any case related to age and length of service.

Less Prominent Characteristics:

- vi) The rate of wastage varies directly with the general level of employment. This has already been mentioned.
- vii) The Rate of Wastage tends to decline as age increases. This is not easy to separate from length of service, but Long (49) gives evidence to suggest that age is a separate factor.

Doubtful Characteristics:

- viii) Wages and similar economic forces do appear to exert some influence, attracting labour to positions offering better rewards or better prospects. This would include the opportunity for overtime earnings, even if the base rate remained the same. Thus a firm offering low wages or poor prospects can expect to lose labour, but the converse is not necessarily true (Hill, 50) However, the evidence is tenuous, and the importance of wages appears to have been over-emphasized in the past.
- ix) Finally, factors such as location of firm, size of firm, methods of selection, and working conditions have at times been put forward as affecting the level of turnover. Evidence is conflicting and they must be regarded as doubtful.

Knowles (51) reviews the literature and also attempts a classification of the factors affecting LTO. He suggests:

- i) External Factors, or those outside the control of the individual Company, such as level of employment and location.
- ii) Institutional Factors, within the firm itself, such as working conditions, pay, job skill, nature of

work groups (whether there is "team spirit" or not); quality of Management and Supervision, and size of Company.

- iii) Personal Characteristics of the Employee, namely, Intelligence and aptitudes, personal history, sex, age, length of service and interests.
- iv) The Employee's Reaction to his Job, involving, to a certain extent, interactions between (ii) and (iii) and giving rise to job expectations, job involvement and job satisfaction.

It will be clear from this classification that many factors will interact to determine turnover, and Knowles' conclusion that "LTO is an individual problem," is not surprising.

One of the earliest attempts at classification was made by Brissenden in 1922(52) who saw labour instability as a consequence of

- i) Seasonal, cyclical, and other fluctuations in industrial activity.
- ii) Dissatisfaction with the conditions of employment.
- iii) Dissatisfaction of the employer with the services of employees.

He considers that abnormal turnover can be differentiated from that due to external and uncontrollable forces, by comparison of the turnover of similar firms in the same locality. Silcock (53), however, rejects the possibility of comparing crude rates of separation among different firms. His reasons will be discussed later. Greystoke (54) also has reservations, and considers inter-industry comparisons to be of little value, although comparing within an industry, locality or size group may be helpful.

3. A SOCIOLOGICAL APPROACH:

Before proceeding to a discussion of the quantitative analysis of labour turnover, some comments on the rationale underlying the act of leaving should be mentioned.

Bucklow (55) draws upon Decision Theory (March & Simon, 56) to explain the phenomenon of LTO. The employee, she argues, is faced with a decision to participate in the employing organisation, or to withdraw. He will attempt to withdraw if the inducements to stay are smaller than the contribution expected from him. Not all such persons will withdraw, however, and not all dissatisfied workers will leave. Rather his dissatisfaction will become a cue for search behaviour, and if this search fails to yield suitable alternatives, he will

stay - but his level of aspiration will be reduced.

Therefore, the outcome of the balance between Inducements vs. Contribution will depend not only on satisfaction, but also on the perceived desirability of leaving the organisation, and the perceived ease of leaving it. The employee's dissatisfaction may arise quite simply from differences between his aspirations, and the realities of the job. But his "perceived ease of movement" depends on many factors, such as:

- other outside job alternatives;
- the level of business activity;
- the employee's propensity to search;
- the number of organisations visible;
- the employee's visibility to other firms; and
- personal factors, such as age, length of service, social status and skill.

From these points, Bucklow accounts for a number of familiar factors in LTO - such as the lower turnover among older workers, for these have less ease of movement. Lower-status workers, too will see movement as more difficult.

She concludes that Turnover should be seen as a loss from entrant groups and measured as a decreasing function of time, and that it arises out of the interaction of three sets of characteristics - those of

- i) The Organisation
- ii) The Individual and
- iii) The Employment Field

The characteristics of the Organisation include such factors as selection, type of work, working conditions, pay and promotion. Those of the Individual, his needs, expectations, aspirations, interests, abilities, aptitudes, job satisfaction, past experience, skills, socio-economic background, and extent of job seeking. The Employment Field is determined by the availability of alternatives, demands for jobs and skills, and the attractiveness of the alternatives.

It is clear that, during the early stages of employment there will be more conflicts among these factors, and hence more turnover, while the long-service employee will be bound by ties of habit, loyalty, seniority, status, pension schemes and the like.

who also sees two sets of forces which affect the probability of leaving - those acting on the person to make him remain in his job, and those acting in the direction of leaving. Vroom sees leaving as an effort to secure "outcomes" which cannot be obtained on the present job.

Another view, however (58) though unsupported by experimental evidence, is that "there is mounting evidence to suggest" that most voluntary separations are made before the worker has found a new job, and that in fact the minority of leavers do so because they are attracted to better jobs."

There is no doubt, however, that the availability of other jobs, in general, is a factor in whether an employee leaves or not.

B. QUANTITATIVE MEASURES OF LTO

1. VARIOUS TURNOVER RATES:

Even in the purely exploratory arguments advanced thus far, it has not been possible to avoid references to quantitative measures of Turnover, and before proceeding any further, it is necessary to review published methods of measuring and expressing Labour Turnover.

By far the most widely-used measures express those leaving, or those being hired to replace those who have left, as a percentage of the existing labour force, giving rise to a variety of "rates". The exact form of the calculation may be a function of

- i) The source of the data, or
- ii) The investigator's definition of what constitutes Labour Turnover.

Under (i), Barker's approach (59) is typical, and he takes the number of new employment registrations for a month, from Government statistics, subtracts any increases in employment that month (thus excluding any accessions due to increasing the labour force) and expresses this as a percentage of total employment that month. This, then, is Turnover measured via a "Replacement Rate".

Proceeding to (ii) there is little doubt that Brissenden and Frankel's (60) early definitive work on the subject had a great influence on subsequent investigators, for their basic ideas appear time and again in the literature. Their definition

of LTO is "the shift and replacement necessary for the maintenance of the work force". Their "Separation Rate" is the familiar

$$\frac{\text{No. of leavers} \times 100}{\text{average employment}}$$
 for a period, and includes "quits, fires and layoffs".

They also proposed:

- i) An Accession Rate, based on the number of employees hired.
- ii) A Replacement Rate, covering Separations, minus the excess of separations over accessions, i.e. excluding accessions which occur as a result of increasing the labour force.
- iii) A Labour Increment rate, which is a measure of the rate at which a factory is increasing its labour force.
- iv) A Labour Decrement Rate which is a measure of the rate at which a factory is reducing its labour force, and
- v) A "Flux Rate" comprising the Accession Rate plus the Separation Rate, which gives the total rate of labour change.

Following on Brissenden and Frankel, Arbous (61) also suggests (i) and (ii) above, and the International Labour Review (62) suggests Accession and Separation Rates, the lower of the two being considered the "Replacement Rate". This argument relates to Turnover being defined as necessary to maintain the work force, that is, the figures should not be distorted by an increasing or decreasing level of employment. Thus, if Turnover is calculated on accessions, it will be inflated at a time when the labour force is expanding; conversely, if calculated on dismissals, it will be distorted when the labour force is also being reduced by retrenchments.

Brissenden's concern that the "average number employed" in his calculations should be absolutely accurate, leads him to point out that payrolls can be an unreliable source of data, due to persons paid off during a month (say) being held on the payroll until the end of that month. He proposes 3,000 hours as the base for a "full year worker" and divides actual hours worked, by 3,000 to obtain the "number of full year workers" as a base for his calculations. The refinement appears to be an unnecessary one.

The C.C.T.A. (63) take as their definition of Labour Turnover "the rate at which replacements are made in a labour force of a given size" (own emphasis). Thus, if the labour force is increasing they use separations for calculating a

turnover rate, and if reducing, they use engagements. This argument leads them to propose the formula

$$LTO_p = \frac{\text{Min. (b,c)} \times 100}{\frac{1}{2} (a + (a + b - c))}$$

where a = labour force (at reference point)

b = engagements

c = separations

p = length of period

which allows for changes in the labour force.

However, a major weakness of this, and Brissenden's approach is that it makes no attempt to differentiate between what will be referred to in this study as "Controllable Turnover", and other types of labour movement. The C.C.T.A. Report goes on to list a number of criticisms from participating countries in the project, who point out that "unavoidable" turnover, such as retirements and deaths are included, and that the rate emphasizes the turnover of the undertaking as a whole, rather than illustrating where instability lies among the workers.

These are valid criticisms of all rates calculated from undifferentiated employment figures, and Byrt (64) suggests that a more detailed breakdown would be helpful showing Resignation Rates, Dismissal Rates and Retrenchment Rates. Yoder (65) also refers to "refined" rates which exclude unavoidable separations, and Calhoun (66) specifically mentions the exclusion of uncontrollable factors from LTO rates, if the rates are calculated "for the purpose of controlling change".

The argument for a rate which refers specifically to "Controllable" turnover is well-founded one, for if the rate is to be used as a basis for management decisions, it should be confined to those factors which lie within the sphere of influence of management. With this in mind, the British Institute of Management (67) defines its Turnover Rate as representing the "Index of the state of loss over a period", measured in terms of separations. Retrenchments, however, are excluded so that major reductions in the labour force at any time will not obscure the comparability of rates, and "Unavoidable" terminations due to deaths or retirement are also excluded as "uncontrollable".

There are, however, widely divergent opinions on what should be included under "controllable turnover". Both Long (68), Knowles (69) and Badger (70) rather surprisingly also exclude dismissals from their rates, claiming that these form a low and constant percentage of the whole (Long, 12% for Males and

9% for Females). Behrend (71) on the other hand, excludes retrenchments, and also retirement, death, marriage and pregnancy as "Uncontrollable", a classification also used by the United States Bureau of Census and Statistics (72)

The formula used in all the above is

$$\frac{\text{Number of leavers in a period}}{\text{Average employment in the period}} \times 100$$

This formula is of course, identical to Brissenden's "Separation Rate" (referred to on page 20) but the fact that, through exclusion of retrenchments and unavoidable turnover, it can be confined to Controllable Turnover, considerably extends its usefulness. It can be seen, however, that these differences of opinion as to what constitutes controllable turnover, make comparisons among many of the rates quoted in the literature, rather hazardous.

Although this Separation Rate is today widely used and accepted, Brissenden (73) recognised as early as 1922 that Turnover must in some way be related to length of service, and that a Separation Rate of 100% p.a. could indicate

- i) That the entire labour force had turned over once during the year
- ii) That half the labour force had turned over twice, the other half remaining stable
- iii) That a quarter had turned over four times, and so on.

Clearly, the picture in (iii) is a very different one from that in (i) yet the rates are the same - a point raised again many years later by Greystoke (74), who recognised that the majority of workers are stable, and that this stable core should be conserved and built up.

Brissenden proposes another measure of mobility, the "Labour Flux" which is best illustrated by an example;

Suppose in a labour force of 1,000, there were 600 separations and 750 accessions during the year, and at the end of the year there were 700 employees having one year's service or more. These 700 did not affect mobility during the year, which was caused by only 30% of the labour force (300). For every person on this "unstable labour force" of 300

- i) 2 left during the year $\left(\frac{600}{300}\right)$ and
- ii) $2\frac{1}{2}$ had to be hired $\left(\frac{750}{300}\right)$

His "Labour Flux" is $4\frac{1}{2}$, or the total number of movements in, or out, for every person on the unstable labour force.

He also suggested that the influence of the unstable labour force could be illustrated by comparing the rates of the total working force with the rates of that percentage of the labour force with under one year's service.

This early attempt by Brissenden to relate Turnover Rates to length of service has not been pursued in later studies, but it does illustrate the weaknesses of LTO rates alone.

A number of actuarial studies of LTO have illustrated, statistically, this same shortcoming in the "crude" LTO rate (and it follows, in any of the other "rates" calculated in a similar manner). Thus Hedberg (75) stresses that tenure and age are continuous variables which should be taken into account in any published LTO figures, and Lane and Andrew (76) point out that departments with a high proportion of short-service staff will have a high crude LTO rate - "whether or not the men are in fact less stable". This statement implies that there might be some sort of norm of expected turnover, for a particular length of service distribution. This point is taken up by B. Benjamin (77), commenting on this paper, and he suggests some sort of "standard length of service composition" against which variations may be evaluated when using crude LTO rates. Hedberg (78) notes that the diverging results of so many LTO studies have led to the conclusion that "the specificity of the situation is so great as to rule out universally applicable findings, as well as generalisations on the "cause" of LTO." However, he continues, most of these difficulties arise because the "crude LTO Rate" has been used as the measuring instrument.

Some proposed alternatives to such rates will now be discussed.

2. THE ANALYSIS OF LEAVERS:

One of the most significant papers on Labour Turnover is undoubtedly that of Silcock (79) where he points out the fundamental weaknesses in "crude turnover rates", as used widely in labour turnover recording and research. His statistical examination of the factors involved in LTO recording and interpretation serves as a sound basis for evaluating more empirical work, and it will be discussed at some length here.

a) A Statistical Approach:

Greenwood (80) in his 1919 paper, had illustrated (without comment, however) the reduction in wastage rates as length of service increased, and Silcock explored this relationship in more detail. Using the same analogy with actuarial life tables as Greenwood did, where termination is taken as equivalent to a "death" and length of service is substituted for "age", he derives a function $F(t)$ which may be called the "Survival Function". He then considers the "Force of Separation" acting on employees, and measured by a rate of labour wastage, as

$$\phi(t) = -\frac{d}{dt} \log F(t)$$

or, more simply that the rate of wastage is measured by the slope of the log function of a decreasing function of time.

Further, he proposes that the accepted LTO Rate is analogous to the "crude death rate" of vital statistics, and may be regarded as a weighted average from specific turnover rates, in which the weights are the number of survivors from successive annual groups of entrants. From this, he derives a function to show that a crude LTO Rate will be heavily influenced by the previous employment history of the firm - i.e. by the length of service distribution of the labour force. (The death rate of a population group is similarly influenced by the age distribution of its members).

Hill (81) had earlier argued (see also page 14) that labour turnover is the resultant of a "quasi-stationary process" and Rice, Hill and Trist (82) stated that the turnover characteristics of a particular firm will be relatively constant for that firm.

Silcock interprets this as implying that $\phi(t) = \alpha =$ a constant for a firm, but he rejects this after applying his previously derived function to Rice et al's data. He notes that Hill's α is defined in terms of factors within the firm, such as wages, working conditions and social relations in the factory, and that these will in fact be a constant in a particular firm. However, the force of separation α acting upon a particular employee, will in fact be determined by the reaction between the characteristics of the individual employee, and those of the firm, and there will thus be a series of values, $\alpha_1, \alpha_2, \alpha_3, \dots, \alpha_n$. Each, individual then, will have a constant α , but α will vary from one employee to another, with a probability distribution. By expanding this probability function of α and relating it to his previous survival function, Silcock shows that $\phi(t)$ - which was measured as a rate of labour wastage - is in fact a decreasing

function of time, falling steadily as length of service increases and not a constant α . A process of selection thus takes place, those with low α 's tending to stay with the firm, and acting as a diminishing factor on the overall rate of wastage.

The important implication is that the crude Turnover rate will be dependent very much upon the length of service distribution of the labour force, which will itself be a function of the firm's past history, as well as its present policies. Thus, if a large expansion in the labour force has taken place in recent years, there may be a disproportionate amount of short-service employees. It is obvious that the rates of this firm cannot be profitably compared with those of another firm which has predominantly long-service employees.

LTO Rates are often advanced as an indicator of morale, and Silcock is particularly critical of this. He agrees that a collapse of morale could conceivably cause the LTO rate to rise, but the converse is certainly not true, for a rising rate could be the result of many factors other than morale. It could certainly be due to a greater proportion of short-service operatives in the labour force (as argued above) or it may be that new employees are being engaged as a result of poor selection with high values of α .

Silcock extends his argument to explain the variation in Turnover rates with employment levels. In times of economic recession, there are more applicants for any vacancy, hence a better selection can be made, and persons entering will have lower values of α . The size of the entrant group will also be smaller, as fewer leavers will be replaced, and thus the proportion of short-service workers will be smaller. LTO rates will thus fall. The converse will apply under full employment, when LTO is characteristically high.

Silcock concludes that the difficulties of interpreting the crude rate are such that it would probably be better to abandon it altogether, and to seek an alternative measure of the employer's power to retain labour. (page 439). He suggests the "Half Life" of a group, or its "Median Length of Service" as an alternative, representing the time for a batch of entrants to be reduced, by terminations, to one half its original size. He quotes figures ranging from 1.2 months to 13.4 months for 8 undertakings, to show how this single figure can be related to the current turnover problems in the firms concerned.

The same idea is, of course, implicit in the "Continuance Rate" mentioned by Yoder (83) which he defines as "the proportion

of employees hired at a specific date, who remain on the payroll at the expiration of a given and fairly extensive period". For example, if 1,000 employees are hired, and after 5 years 900 remain, the rate is 90. The example (Yoder's) seems to indicate a more placid economy of an earlier age, when five years could be regarded as a suitable period over which to study change.

b) Other Simple Indices based on Length of Service:

i) The Skill Wastage Index:

This is proposed by Byrt (84) and is calculated as follows:

$$\frac{\text{No. of employees on payroll with more than 1 years service}}{\text{No. of employees on payroll a year ago}} \times 100$$

It shows to what extent the skilled labour force is being eroded by turnover. This is identical to Long's "Stability Rate" (85) and the I.L.O.'s (86) "Survival Rate".

It can be calculated once a year by census-taking, but Byrt illustrates a tabular method that enables the index to be arrived at on a monthly basis. Duncan (87) and Lewis (88) propose similar tabular methods.

ii) Skill Dilution Index:

This is calculated as follows:

$$\frac{\text{No. of persons of over 1 years Service now}}{\text{Total Employment now}} \times 100$$

Byrt proposes it as an indication of the necessity, due to wastage to have to dilute the skilled labour force with inexperienced workers. The I.L.O. (89) refer to this as an "Experience Dilution Factor".

c) The Follow-up of Entrant Groups:

In a subsequent paper, Silcock (90) elaborates on the practical application of his Median Length of Service to industry samples, and he proposes that Labour Turnover be recorded by following up the survival patterns of successive entrant groups. He illustrates how entrants were classified into groups at 3-monthly intervals, and how at the end of each 3-month period, for 15 months, the survivors in each group were expressed as a percentage of the original entrant group. He notes that the period for constituting each separate group should be as short as possible, but that the numbers of entrants should not fall below 100 in any one group.

In this way, successive "Survival Tables" are produced

and any significant deviation from an established pattern will be noted immediately. Analysis, action - and future warning predictions - can be based on present trends, therefore. He re-defines his median length of service as the "Half Life" of the group, being the time taken for half the members of an entrant group to separate.

Silcock also calculates a "Wastage Rate", again based on an entrant group, where the number of leavers in each quarter are expressed as a percentage of the number of survivors of the original entrant group at the beginning of the quarter in question.

In a more recent study, Mason (91) applies Silcock's method, and notes the typical negative acceleration in survival and wastage rates. He notes that any departure from this typical pattern should be regarded as significant, and he shows, for an Australian factory, how quite large variations in wastage trends were isolated by this method, while the separation rate remained fairly constant.

A problem inherent in this approach has been that unless entrant groups are large it cannot be applied. Knowles (92) has, however, used the concept successfully by ranking all leavers in a period in order of length of service, and expressing the median length of service of leavers as a measure of the stability of the labour force.

A result very similar to that obtained by the follow-up of entrant groups, but without the disadvantages of group size, can be obtained, however, by the method first used by Greenwood (93), in his analysis of 36,736 female munitions workers, over a period of two years. For the 24 month period, he groups leavers into cohorts, by length of service, into 3, 6, 9 months and so on, and relates these to the total number of leavers and stayers exposed in that service category. From this, he is able to calculate wastage rates and survival rates which correspond to those calculated by Silcock from his entrant-group analysis.

d) Survival Curves:

Bell (94) makes particularly good use of the fact that losses can conveniently be represented graphically as a decreasing function of time (length of service), and she uses her "Survival Curves" in a number of novel and useful ways.

Silcock's "Survival Tables" (mentioned on page 26) relate

survivors in successive length of service periods to an entrant group, and the resulting percentages can be used to produce a graph, of survivors versus length of service. Bell's "Survival Curves" are based on the same reasoning as Silcock's analysis of entrant groups, except that the calculations are done historically from past records, and are not based on a current entrant group. For each leaver, a reference is made to his date of engagement, the number engaged during the month of his engagement is taken into account, and he is then related to that entrant group. By tabulation, and the successive summing of leavers with equivalent lengths of service, percentage rates of survival are calculated for 6-monthly periods, over five years in this case.

These "Survival Curves", which relate number of survivors in successive groups to length of service, are used in several ways by Bell. Her first curves represent six periods of six months each from June 1957 to May 1960 and she claims that "each curve would show what percentage of an original total of men starting employment in each of these periods might be expected to survive periods of employment of lengths varying from 6 months or less, to five years, on the basis of current wastage rates" (page 14) She mentions that the curves can be used to show

- i) Survival rates related to Length of Service
- ii) The crucial periods of a worker's service when separation is most likely
- iii) At what stage stabilisation can be expected.

Bell uses these curves, initially, to show seasonal survival trends, and she also produces a curve, depicting all leavers in the period, which she suggests can be used as a basis for prediction of what percentage of workers will survive successive periods of service, assuming that wastage rates remain constant.

Then, for the major part of her study, she uses Survival Curves, based on twelve 3-monthly periods, "to determine in what way the pattern of separation of various categories of workers differed, at different stages in their employment history" (p.39). By grouping leavers with respect to the following biographical variables:

Country of origin, Tribal origin, Age, Marital Status, Wage, Skill, Type of Accommodation and Factory Department; she was able to contrast their survival patterns, and to investigate the effects of the above variables, whilst controlling for length of service.

The method used by Greenwood, and described earlier on page 27, can of course, also be used to yield survival curves, from data collected over a period of say, one or two years.

Lane and Andrew (95) after a very complex and rather obscure derivation of survival functions also based on actuarial assumptions, show that their "Stability Curves" and "Survival Curves" (not clearly differentiated) are approximately log-normal functions, and that it is therefore possible to calculate an "Expectation of Service" (rather as Bell suggested) which they offer "as a single measure of labour stability" (page 296) It is analagous to the actuarial "life expectation", but a number of assumptions are made, and the calculations are complex. It does not appear clear enough to apply to the average industrial situation.

The concept is criticised, in comments on the paper, by a number of persons. Thus B. Benjamin (96) accepts that stability curves are useful to illustrate the nature of the LTO function, but they show no rapid changes, and give no pointers for action. He feels that "..... rates of withdrawal themselves provide a more specific guide to action". Silcock (97) points out that expectations of service are comparable over time for the same department, but could not be used to compare departments which vary in their proportions of skilled, semi-skilled and unskilled workers.

e) The Work of the Tavistock Institute:

As part of a major investigation covering many years in the Glacier Metal Co. in London, the Tavistock Institute has also studied Labour Turnover in an attempt to elucidate the major factors underlying it.

Rice et al (98) note that most previous investigations of LTO were concerned with the rate at which employees leave a Company, and direct a study at following up entrants rather than investigating leavers. Turnover, to them does not consist of a series of leaving incidents, but is seen as a "locomotion" from entrant to leaver.

By eliminating short-term fluctuations from turnover data gathered over a number of years, they argue that a remarkably stable residue results, which they see as the result of "a quasi-stationary process" which is a function of the factory itself as an institution. (See also earlier discussion mentioned on page 14)

In order to explore this hypothesis they followed up successive entrant groups, expressing the numbers leaving, in 6 monthly periods, as a percentage of the total entrant group. These can conveniently be described as "Wastage Rates" and differ from Silcock's "Wastage Rates", where the number remaining at the beginning of each period is the denominator.

The resulting distribution - again a decreasing function of time - leads Rice et al to suggest that the Turnover process in a factory involves three stages

- i) A period of "Induction Crisis", characterised by rapid loss of entrants.
- ii) A period of "Differential Transit" when the rate of leaving diminishes as entrants either adjust to the situation or decide to leave.
- iii) A period of "Settled Connection" when numbers leaving in successive periods are approximately the same.

This "three stage" analysis has important implications, and is an improvement on the conventional dichotomy of "marginal" and "hardcore" groups, which recognises stages (i) and (iii) but ignores the important middle period. They make the valid point that reasons for staying, during this period, are as or more important than reasons for leaving.

In a more detailed analysis of the first period, they show by a weekly distribution of number of leavers, that there is an initial positive acceleration in the numbers leaving, before the negative acceleration of the Wastage Curve commences. They see this point of change as marking the end of the Induction Crisis period (4 weeks for the Glacier Co.)

All entrants over a period of four years were then followed up from Company records, and a wastage curve arrived at, to which a curve was fitted conforming to the general hyperbolic function

$$\eta = a\xi^{-b}$$

where b is the slope of the logarithmic function, and hence a measure of the negative acceleration of the process. Tests of fit showed close correlations between the curve and the actual data.

Rice et al now postulate that this curve is a representation of a relatively constant institutional process within the Glacier Co., and they then proceed to construct a contrasting curve for "Company X", to represent the differences in the turnover

processes between the two companies. This they evaluate statistically in rather considerable detail, the main points of interest being that the two curves, being hyperbolic functions, can be reduced to linearity logarithmically, and that the slope of the resulting straight lines contrast sharply the differences in the period of differential transit for the two Companies. Thus, entrants pass through "X Company" much quicker, and very few remain to establish a settled connection. It could also be shown that the period of induction crisis in Company X was during the first week.

Rice et al (page 370) conclude that if such a constant relationship between entrants and leavers for a Company can be established, it can be used to predict the numbers in any entrant group who will leave in successive periods, and this can be of assistance in manpower planning.

J.M.M. Hill (99), in a subsequent paper investigates whether such predictions can be made, and whether in fact the firm's "constant" survival pattern will return to normal after a major disturbance (in this case a large scale redundancy) has taken place. He claims that his predictions are consistent with the "quasi-stationary process" theory, and that the pattern did return to normal after the crisis, but his results are not entirely conclusive.

Rice and Trist (100) offer as further proof a study which relates changes in Turnover in the Glacier factory to changes in factory and departmental organisation. The argument appears to be that if the pattern of LTO is an institutional process any significant changes in the institution will result in a change in that pattern - and this is demonstrated.

Behrend, (101) however is sharply critical of the work at the Glacier Company. She maintains that whilst Rice had demonstrated a particular pattern, he has not shown that it is the same for succeeding entrant groups. Using some of Rice's published data, she proceeds to prove that the data does not support his conclusions, but that the "pattern" varies with outside events, and particularly with the entrance, after the war, of a large number of new workers who disrupted the length of service distribution, and hence the organisation's turnover. She rejects Rice et al's emphasis on factors within the firm as being the main determinants of LTO, which in her opinion is due to the interaction of numerous factors, some in the community and some in the firm. In another study, Behrend (102) gives evidence to show the powerful effect of outside economic forces (which determine level of employment) on Turnover, and uses these

findings to reject Rice, Hill and Trist's emphasis on internal factors as major determinants of turnover. The concluding remarks in her first paper are worth quoting, and provide an appropriate note on which to conclude the discussion of this section.

"There is no need for elaborate sociological or psychological terms nor for mathematical formulae where these do not serve a useful purpose (such as prediction) and where ordinary words can be made to convey the meaning far more adequately. This form of academic window dressing should be avoided by social scientists at all cost, unless it is absolutely essential. The mere use of elaborate terms, and mathematics in the analysis of human behaviour are not sufficient to constitute a scientific method. Scientific method consists in the selection of the most efficient and at the same time simplest available method of analysis which is appropriate to the subject matter".

C. CONCLUSIONS FROM STUDIES OF TURNOVER.

It will, by now, be clear from the foregoing that neither LTO nor its measurement are simple matters. The variety of the literature attests to this, and the phenomenon has been studied from many different angles. This diversity of approach makes classification of the work a problem; however, it is possible to generalise by saying that the majority of studies have been attempts to investigate those factors which appear to be related to turnover. In the discussion which follows, these factors, and the relevant studies, will be grouped under the following headings:

1. Factors relating to the individual in employment.
2. Factors outside the control of the employing organisation.
3. Factors related to the location and size, of the employing organisation.
4. Attitudes and Job Satisfaction among Employees.
5. Factors related to the field of Personnel Management.

There is also a distinct field of work not related to the above, namely

6. Statistical Studies of LTO Trends over Time.

1. FACTORS RELATING TO THE INDIVIDUAL IN EMPLOYMENT

a) Wages:

Money is popularly supposed to be one of the major motivators in the work situation. It is not surprising therefore, that

more investigation has been concentrated upon the possible relationships between wages and labour turnover, than upon any other single variable mentioned in the literature surveyed. The results of this work have been at best inconclusive; at times unexpected, and frequently contradictory. In the review which follows, an attempt will be made to place these results in some sort of perspective, against which the present study may later be viewed.

i) The Overall Relationship of Wages to Turnover:

One of the most sophisticated and widely-quoted attempts to relate wages and turnover is that of T.P. Hill (103) who studied 596 pits of the National Coal Board in Britain, covering some 700,000 employees, and 128,000 leavers. He demonstrates successfully that mean wastage declines fairly sharply at first as wages increase, but that it then levels off; that is, the marginal effect of wages on wastage diminishes as wages increase. Roughly speaking, average wastage was twice as high in pits with very low wages, as in those with very high wages.

After some theoretical discussion he concludes that the regression of wastage on wages is approximately linear, and he then demonstrates across the Industry the existence of a weak but undoubtedly significant negative correlation between wages and wastage. He admits, however, that it would hardly be possible to assess the effect of changes in wages on LTD, as these were small, and the sampling error would be much greater in the available data.

He proceeds also to establish a positive partial association between gross recruitment and wages, and interprets this as indicating that it is slightly easier for pits with high wages to fill their vacancies than for those with low wages (page 204)

Up to this point, his arguments are conclusive, and very much in line with seemingly obvious relationships. Having established these simple associations, however, he conducts a more searching mathematical investigation into, firstly, the association between recruitment and wages.

In a complex argument, he is then forced, among other assumptions to assume that there is no substantial feedback from recruitment to wastage; a proviso that is untenable in view of the clear effects of recruitment on the length of service distribution of the work force, and hence directly upon

wastage. (cf. Silcock's arguments). In spite of this oversimplified model, he still finds that the combined effects of wages, profits and changes in wages, on recruitment, are very small - although wages do have some effect on recruitment.

From all this complex mathematics, little emerges then, from the argument, except the virtual truism that recruitment closely matches wastage, or, put more simply, that people who leave are generally replaced.

The balance of the paper is devoted to an again rather involved mathematical consideration of regional variations in the relation of wages to wastage. His models are soundly conceptualised, however, and lead him to the not surprising conclusion, from the figures at his disposal, that "Location is probably by far the most powerful single explanatory variable available in a study of Labour Turnover" (page 216). In point of fact, the real determinant in this case appears to be level of employment in the areas concerned.

It is in this regional analysis that the argument developed in the early part of the paper, namely the clear correlation between wages and wastage, is almost demolished, for it appears that the industry-wide correlations which were obtained, arose from the resultant of contradictory findings which cancelled each other. Thus he finds a "spurious" correlation in the West Midlands, and in the East Midlands, "virtually no direct association between wages and wastage whatsoever" (page 226). In the latter area, relatively high wages were generally paid and it could be argued that minimum basic conditions regarding wages were more than satisfied, and that wages therefore ceased to be a major factor in the need-hierarchy of employees.

After a thorough examination of his correlations, in the light of the regional picture, Hill concludes that "the contribution made by wages over and above that made by other factors, notably location, is generally alarmingly small" (page 228) and he estimates that wages account for only 5 - 10% of inter-colliery wastage.

Hill's paper has been examined in some detail, for it is undoubtedly one of the most exhaustive studies relating to wages in the literature, and in spite of this, its findings are negative, or at best, ambiguous. Its major failing, however, is that it makes no reference to the strong associations between length of service and turnover, and the misleading correlations with turnover which may result from wages also being

correlated with length of service. This omission is probably due to the fact that the data at Hill's disposal did not permit him to consider Length of Service as a variable - a shortcoming which has also influenced the work of other authors.

Thus Kerr (104) finds that wages are one of only three significant factors in 24 which were attempted in his studies, and he obtains a correlation between wages and wastage of -0.71 . He confirms this in a further analysis giving, for males $r = -0.81$, but for women $r = -0.13$. Lundquist (105) in a Swedish study, finds a correlation of -0.86 between wages and turnover in one factory. Likewise van der Horst (106) finds some relation between wages and LTO, as does Cilliers (107) who shows, also in the Western Cape (where van der Horst worked), that in the lower wage groups, turnover was higher. Arbous (108) shows that LTO is highest in the lowest wage group, while Poidevin (109) found that the highest paid group had the lowest LTO, and vice versa.

There is no disputing these relationships - as stated, they are true. But the picture they present is a false one, for wages are clearly linked to length of service, and in view of the overriding importance of length of service as a determinant of job stability (as will be shown in b. to follow) a simple correlation between wages and turnover must be unacceptable.

Many studies, of course, reject this simple relationship. One of the earliest large scale studies to do this, was by Clarke (110) for the Wartime Prices and Trade Board. In 173 factories in the U.S.A. and 88 in Canada, he found no relation between weekly wages and turnover. Long (111) says that wages are not such a major factor as once supposed. She considers that adequate wage levels will result in the established labour force being better retained, and that the attraction of better wages does affect mobility at the unskilled level. But these are both easily overridden by other factors, and she quotes examples of factories with the same wages, but with turnover differing from 44% to 105%. She also found reverse relationships between wages and LTO in comparable factories.

Silcock (112) agrees on the effect among lower paid workers, but classifies wages as a "not so clear" factor, which is less important than popularly supposed. Cook (113) in an exhaustive review of the literature, and on the basis of his own work in Australia, concludes that no clear relationship has been established between wages and turnover.

Tavernier (114), from his review of the field, also concludes that "there is little substantiated evidence to show that money is a critical factor in turnover". Cilliers (115) is more specific: only 7% of his 500 Coloured leavers whom he interviewed in the Western Cape, gave wages as a reason for leaving. In fact, most of his terminators moved for the same wage, except for a small number in the lowest and highest paid groups.

T.P. Hill (116) suggests that low wages are more likely to repel labour, than high wages to attract it, but the supply of labour to different firms is nevertheless not very responsive to differences or changes in relative wages. Silcock (117) agrees, for, he argues, if wages were of prime importance, there would be a one-way traffic from lower, to higher-paid jobs. In fact there is no evidence that this is so, and he concludes that while the economic argument may have some validity, its importance has, in the past, been over-stressed.

ii) Wage Incentives and Turnover:

It is not uncommon to find "a reduction in labour turnover" cited among the advantages of Incentive Wages Systems, and Long (118) for example, speculates that LTO is likely to fall when Time and Motion Study is introduced.

There is some evidence that this may be so. Thus Deacon (119) working in a small Melbourne Textile firm, found that the introduction of an incentive scheme was coupled with a reduction in turnover, and at the end of the study, 80% of the labour force had more than four years of service. Knowles (120) also in Australia, investigated the introduction of incentive schemes in eight different area plants of a large undertaking. He is satisfied that the effects of the incentive resulted in a significant drop in labour turnover, (from an analysis of covariance) in all but one factory, where the nature of the task led to difficulties concerning quality.

Cilliers (121) found in his Cape Town study that firms with an incentive scheme had lower turnover than firms without, but as these were also the larger firms with better personnel practices, the extent of the incentive effect is difficult to assess.

However, Kerr (122) in a wide-ranging attempt to establish the correlates of labour turnover, found in an American plant of 10,000 employees that "Avoidable separation rate" correlated + 0.40 ($p < .05$) with Departments having incentive schemes.

He cautions that it is not easy to establish causality here, because a number of other factors may be interrelated. However, he argues that turnover in incentive departments may result from a dislike on the part of less efficient employees, for the competitive situation. This, however, has a "purifying influence" (page 370), and no doubt contributes to the interesting finding that departments with higher turnover were not lower than other departments in productive efficiency.

Wage incentive schemes can occur in a variety of guises and it is certainly too much to expect that any incentive scheme will reduce turnover. It should also be mentioned that the introduction of an incentive scheme is normally preceded by detailed investigations which result in improved management functions and control, and it has never been possible, in a situation such as this, to separate out the real effects of the monetary incentives, from the other factors which are also likely to affect the worker's reaction to his job.

iii) Other Wage Related Factors:

Kerr's study already referred to, (see p.36) drew attention to two more wage-related factors from among the 40 correlates which he studied.

He found that turnover correlated -0.52 ($p < .05$) with the sex-wage differential in Departments. In practice, this meant that males were low-paid in those departments, which could give rise to dissatisfaction due to their job status being seen as close to that of the women.

One of Kerr's most clear-cut correlations, however ($r = -0.76$, $p < .05$) was with "promotion probability" which was one of only three significant relationships in his first study ($n = 3000$). Long (123) also suggests that Long Service Awards may be a factor in the reduction of Turnover and Kerr feels that "minimal promotions" (page 368) which would act as tenure incentives are an important field for further investigation.

iv) Conclusion:

The situation regarding wages is well summed up by Parnes (124) in the "Encyclopedia of Social Sciences" when he concludes that "...Wages are by no means the only reason for separation as the purely economic approach would suggest. The physical characteristics of the workplace, the relationship between the employee and his supervisor and fellow-workers, the security and steadiness of the job, "fairness" of treatments

and degree of interest have all been identified as important factors. Therefore the influence of "net economic advantage" appears to be far more diluted than conventional theory suggests."

b) Length of Service:

Length of Service is undoubtedly the one factor that emerges most clearly and unambiguously from all studies of labour turnover where the data has allowed it to be investigated. The probability that a person will leave, decreases with increasing length of service, and this has been illustrated in most of the studies to be reviewed.

Greenwood, as already mentioned on page 14, was the first to show a relation between wastage and length of service,

Brissenden and Frankel (125) also drew attention to this in their 1922 study, when they contrasted percentages of workers on the payroll, with percentages of leavers, by length of service.

Thus, while there were only 13.1% on the payroll of less than 3 months of service, 52% of all leavers had less than 3 months service. By contrast, 58.9% of those on the payroll had over 2 years service, but only 10.7% of leavers had longer than two years service.

Both Long (126) and Arbous (127) mention this relationship of turnover to length of service, while Smith (128) notes among married women, that although 80% of her workers were stable, there was a high turnover among the short service groups. Kerr, (129) in his study of the correlates of LTO, finds a relationship with tenure in the job, although surprisingly it is not as clear-cut as might be expected ($r = -0.52$, $p < .05$)

Most authors find that the early periods of employment are the crucial ones; thus Cook (130) considers the first three months to be critical, while Bell (131) agrees that the crucial period for action against turnover is undoubtedly in the first three months, and that social-biographical factors affecting turnover are of least importance during this period.

Silcock's arguments on the relation of Length of Service to Turnover Rates have already been considered (page 25) and will not be dealt with again, save to note the overriding importance which he attaches to this factor.

Many studies have expressed the percentages of the total number of leavers for a period, falling into various length of service groups. Thus Greystoke (132) from a sample of 1,588 leavers, finds 17% of those leaving do so in under 1 month, a figure close to that of Long (133) who over a period of 1 year, finds that 20% left in the first month, in a "low turnover" factory. However, in a "high turnover" factory on the same study for the same period, she finds a figure as high as 50% for males and 38% for females leaving in the first month.

In the less-than-3 month category Long (134), Greystoke, (135), Clarke (136) van der Horst (137) and Raphael (138) all find that the figure is 30-40%, except Byrt (139) who finds it over 50% in an Australian textile undertaking.

At under 1 year, Raphael (140), found about two thirds left in 1937, and White (141) found that in the S.A. Leather Industry in 1943, two thirds of leavers had under one Year's service. In more recent years, this has varied from 69% in Long's "low turnover" factory, (142) to quite a few in the 80%'s, notably in South African studies by van der Horst (143) and Arbous (144).

Arbous further illustrates that the bulk of the leavers lie in the very short service categories, by noting that the average length of service for all leavers was between 9 and 12 months, but his "starter-leavers" who both came and went during the period of his study, had an average length of service of 6 to 8 weeks, 77.9% of these "starter-leavers" had less than 3 months service, and 59.3% less than six weeks.

Long (145) illustrates length of service effect in her study by showing that men of less than one year's service had a turnover rate of 121%, the rate then falling to 28% in the 1 - 5 year, group, and only 11% in the 6 - 10 year service group. Brodman and Hellman (146) are illustrating the same thing when they say that employees with less than 1 year's service separated 491% more frequently than those with greater than a year's service.

Mason (147) following on Silcock's work, and following-up entrant groups, considers it normal for wastage rates to decrease with length of service. If this is not so in any situation (as occurs in his study) the position should be investigated, as unusual factors will be found to be operating.

Tavernier (148) considers the relation of length of service and age factors, and states that the former overrides the latter. Thus a man of 50 would be as likely to leave after 3 years service as a man of 20. He leads no evidence for this conclusion, which appears to be one that has not been critically examined in any studies. Its importance in personnel decisions is obvious - will the older worker be more stable than his younger counterpart other things being equal, or is length of service the only real determinant of stability?

c) Age:

If age were not a factor in Turnover, it would be reasonable to assume that the age distribution amongst persons leaving a Company, persons joining and those in stable employment with the Company, should be roughly similar. This is, of course, not so, as Hedberg (149) showed in his study of a number of Swedish factories. In fact, those leaving and those joining had much the same age distribution, showing the interchange taking place most of the time between these two groups, but in the "employed" group there were far fewer young people.

Long (150) mentions the relationship between age and turnover while Silcock (151) also notes that LTO declines as age increases. According to him, age is a separate factor from length of service, but its effect is not as important. Again, no evidence is given for this.

Cilliers (152) also mentions the relationship, and notes that 80.9% of his "Chronic Terminators" were in the 15-24 age group, while there were no chronic terminators in the over 40 years, group. Hedberg (153) in a more detailed analysis of younger workers, shows that from 14 years old, the rates of loss increase rapidly to a maximum around 20 years old. White (154) found that two thirds of her European male leavers were under 18 years old.

To show the consistent relationship of LTO decreasing with increasing age, Greystoke (155) related the number of leavers in an age group, to the percentage of that age group in the labour force as a whole. This showed clearly that although there was a lower proportion of young workers in the labour force, there were, proportionally, many more leavers in these age groups. As age increased, so the older workers, although in the majority, caused less and less of the total of labour turnover. From this analysis, Greystoke was able to show that the 15-20 and 21-30 year old male groups were unstable;

for example 20.9% of the leavers over a period were under 21, although persons under 21 constituted only 6.9% of the labour force. However, among females in the same study the instability lay in the 15-20's as before, but then in the 31-40 group who were less stable than the 21-30's. This finding would seem to contradict that of Mountain (156) who found from an Australian survey that employers considered women over 35 to be more stable than younger women.

Another reversal of a consistent age trend was found by Bell (157) in the "Polygons" study where Rhodesian African workers were divided into three groups, of 24 and under, 25-39 and 40 years and over. Consideration of Survival Curves for the groups showed that the middle group was by far the least stable, probably due to pressures of tribal custom in this age group, which caused voluntary separations.

Some studies have quoted separate turnover rates in various age groups; thus Arbous (158) again with Africans but in Johannesburg, found a rate of over 100% for the 16-20 year old group.

It is, of course, highly likely that the three factors discussed thus far, namely, length of service, wages and age, will be interrelated to a greater or lesser extent and Glass (159) notes this, as well as the linked factors of Marital Status and Skill as well. She found high separations among young, unmarried, short-service and low-earning men.

From the studies reviewed, it would seem safe to assume age as a factor in turnover, provided possible cultural factors are borne in mind which might affect this relationship at particular stages. As mentioned in (b) on page 40 however, the extent to which age and length of service are interrelated cannot be deduced at this stage.

d) Marital Status:

Long (160) mentions Marital Status as a factor in turnover, but does not elaborate. Cilliers (161) found, for both sexes (although Coloured females predominated) that single workers were less stable than married workers and that there were more "chronic terminators" among single than among married persons. Arbous (162) for African males in Johannesburg, found turnover rates for single workers to be three times that of married ones. By contrast, Bell's study in Rhodesia (163) found, from comparative survival curves, that unmarried males were better throughout the length of service range. It would seem

that we have in these two studies a useful contrast between a settled, urban population, and one where the workers still have strong tribal ties.

Among females, wastage has generally been found to be high for married women. Thus Greystoke (164) derives coefficients for married and single women, based on

$$\frac{\% \text{ Married or Single among Leavers}}{\% \text{ Married or Single in labour force}}$$

and arrives at 0.54 for single women, and 2.04 for married showing that among the latter, there are relatively more leavers than amongst single women. Silcock (165) notes higher turnover among married than single women generally, with some exceptions, and wonders whether married females do not re-enter their jobs at a later stage. Cilliers (166) found that a large percentage (57%) of female leavers intended returning to the industry, and he mentions (page 56) that married women who leave because of pregnancy, mostly return to their work again. Smith (167) also found high wastage among married women, but on shift work, the rates differed considerably. Thus on the midday shift, the Turnover Rate was 104%, 62% on the afternoon shift and 50% on the morning shift. (Compared with 46% for full-time employees).

Bucklow (168) in an Australian survey - in which no details are given however - found that married females showed better stability than single girls. She makes the proviso, too, that age should be controlled when correlating Marital Status with Turnover, and presumably she did this.

Generally, it would seem that married females show poorer stability, from the studies cited, although specific circumstances can obviously reverse this relationship.

e) Skill:

A number of studies have stressed the relatively clear relationship between Skill and Turnover (Brissenden, (169), Cilliers (170), Lipset (171), and have shown that Turnover decreases as skill demanded by the job increases. From Survival Curves, Bell's study (172) showed that, in the long term, skilled workers showed better survival than unskilled, while Silcock (173) found that there was some evidence of more Turnover in unskilled and semi-skilled work groups. He noted, however, that degree of skill was not easy to define clearly, a point also raised by Greystoke (174) who considered his results under this heading to be "most disappointing" for this reason. He found no great effect of skill, but considered

that his figures should be treated with reserve. Long (175) found that among skilled workers, turnover was less than 11%, but for semi-skilled and unskilled it was 28% and upwards. She considered this to be due to different attitudes to work itself, but also cautioned that the factor appeared to be easily obscured by others.

In a study by Baldamus (176) the relation between skill and turnover is argued at some length. He considers 11 factories, where turnover ranking remained fairly constant over two years, ranging from 11 to 105% p.a., and he argued that differences in skill required, best explained these differences in turnover. He considered type of work done to be a major factor in Turnover, as it directly affected the motivation of the worker, and he also argues that Turnover rates are inversely related to level of skill, and to the shortness of the work cycle.

His arguments are plausible, and in line with exceptions, but a major weakness is that he does not control his comparative data - consisting of crude turnover rates - for length of service, when comparing factories. Skill level is very likely to be related to length of service, and here, as with the other length of service - dependent variables, it is not easy to separate out its true effect.

f) Sex:

This appears to be another variable where, as in the case of Wages, a superficial analysis of available figures seems to point to fairly clear-cut conclusions. However, on closer inspection, contradictions abound, and a number of important reservations have to be considered.

Raphael, in 1937 (177) found that for the London area, overall turnover rate for males was 18%, and 51% for females. However, 5 of his 31 factories had turnovers of over 100% for females and in one the figure was over 200%. Silcock (178) would seem to agree with this picture, and he states that turnover for females is generally greater than for males. Kerr (179) merely notes that the ratio of females to males in a department, affects turnover in that department. Greystoke (180) from examination of overall figures, also agrees that female Turnover is generally much higher than that of males. Thus in Sheffield, Females = 38%, Males = 22%, while in Birmingham Females = 61%, Males = 31%. He cautions, however, that these overall figures conceal inter-company variations from 12% Males and 10% Females, to 112% Males and 153% Females,

and he has some reservations about drawing general conclusions. For example, he notes that where women are in the minority in a predominantly male department, their turnover is frequently better than that of the men. Long (181) quotes ranges of turnover rates from her study, of 5 - 95% for males, and 17 - 133% for females, and accepts that male rates are generally lower than for females. But she warns that this is very likely to be a result of the female labour force being generally less skilled, and that single female rates were frequently comparable to male rates, where skills were equivalent. Cook (182) reviewing a number of studies on the subject, finds that Turnover varies with sex, but that there are some contradictions.

Allied with a general acceptance of higher turnover rates for women, is the belief that most of them terminate because of "domestic reasons". Raphael's (183) comparative figures illustrate this to a certain extent: (percent of total turnover by reason).

	Resigned	Dismissed	Retrenched	Other
Males	54	25	9	12
Females	42	12	9	37

In the first two categories, females are clearly superior, but this is offset by the high percentage of "other" in which pregnancies could well be a major factor.

In the light of the above, Smith's study (184) also in the London area, is interesting, for he found on careful follow-up, that although "domestic reasons" were often recorded against a leaver, the majority of his females had in fact left for better jobs elsewhere. The danger of generalising on exit interviews is again apparent, a point also noted by Long (185) in her study.

Some of the more specific "contradictions" mentioned earlier, can now be dealt with. Byrt (186) found in an Australian Textile Factory, that male LTO was greater than Female. This was due to the males being a new group in the factory - the effect of length of service is obvious in this instance. Pearce (187) reviewing Long's work, points out that differences in turnover between males and females (single and married) are often less than assumed. For example, in 5 cases out of 9 which he mentions the single female rate was better than the male. Part-time married females also had a good record. Cilliers (188) showed that 39.7% of men were chronic terminators, but only 26.2% of women. He found a large number of incidental terminators among his Coloured women,

many of whom returned to the industry again.

Bucklow (189) comments in some detail on the differences between male and female rates. She quotes Australian rates from 1954 to 1960 in a large clerical organisation showing ranges of 4.7 to 8.1% for men and 20.5% to 26.6% for women, but rejects this as evidence of "male superiority in the employment field, and of the inherent instability of women as employees". She shows (from a study of loss from entrant groups) that while loss over a year was similar for males and females (26.4% and 27.8%) the men showed a high initial loss and then settled, while the losses for the women were more evenly distributed over the period of time. However, she points out, two factors must be considered in comparing these two groups. One is that the age distribution of the women was very different from that of the men - two thirds of the female intake were under 21, compared with only 20% of the males. This is a result of the second factor, namely that while the employing firm offered long-term careers for men, women were employed in a subsidiary role, to provide routine services. "The suggestion is" she says "that differences in total rates for men and women are largely culturally determined", where social and cultural factors determine long-term goals for men, and short-term goals for women.

It is not surprising, then, given these differences in age, skill and commitment demanded by the job, and cultural factors (which in some cases prescribe the resignation of women on marriage) that female turnover, in general, is greater than male. There is, however, no guarantee that such generalisations will hold where these determinants do not operate in a job situation - and this no doubt explains some of the contradictions referred to in the literature.

g) Race:

Only one direct reference to this variable was found in the literature, and Smelser (190) mentions in passing that, in the U.S.A., Negro men tended to show higher mobility rates than white men. This is to be expected, in view of the wide differences in culture and economic circumstances which are likely to be related to race differences, and this variable will prove of obvious importance in the multi-racial context of South African industry.

h) Other Biographical Variables:

From the relationships discussed in a. to g. thus far, it is apparent that biographical data can be used as pointers to

turnover behaviour. Thus Cilliers (191) found that "terminators" were younger, and held less responsible jobs than "stayers". They were also single, and many had a previous history of terminations. A number of studies have similarly tried to relate these and other variables to turnover.

Knowles (192), using Silcock's half-life concept, divided a factory group into leavers and stayers on this basis, and then did a χ^2 analysis on 13 variables. At the 1% level, he found number of past job changes and rated performance on current job to be significant. Also significant at this level, was whether the new entrant attained his expected wage level, on an incentive scheme, after training. As base rates were relatively high, it was the discrepancy between actual and expected wages that appeared to cause dissatisfaction, rather than the factor of wage level. He also found (at the 5% level) that short service on a previous job indicated possible early termination on the present job, and that workers who were married with children, were less likely to separate.

Ley (193) contrasted a turnover group (mean length of service 2.5 months) with a steady group (mean 33.8 months) and found that workers who terminated were younger ($p < .01$), had more jobs in two previous years, and earned higher wages on their previous jobs ($p < .05$). Wickert, (194) on groups of women employees of the Bell Telephone Company in three cities, found that LTO was not related to psychological test data, to wages, or to supervision, but to the employee's feeling of ego-involvement, that is, the chance, to make decisions, and to feel that she made a contribution to the job.

For an African labour force, the C.C.T.A. study (195) found a negative correlation between LTO and degree of urbanisation of the worker. This was further revealed by the fact that LTO rates were higher in rural than in urban areas. The effect of tribal custom has already been mentioned in discussing the Polygons study by Bell (196), and Glass (197) also mentions this factor. Clearly, tribal ties can be a disruptive influence which may promote turnover. Alternatively, Tribal Africans do not necessarily see fixed employment as socially desirable, and may terminate their service whenever immediate needs have been satisfied by earning a certain sum of money.

i) The Concept of "Proneness" in Turnover:

In personnel statistics, the concept of "Proneness" is normally used to describe a situation where a small proportion of a group is responsible for a large proportion of the

occurrence of some phenomenon amongst the group - as in accident proneness.

There is evidence that a similar situation prevails in Labour Turnover, and that a significant proportion of wastage results from the "floating workers" (a term first coined by Long, (198) which factories are forced to take on during periods of full employment, in the hopes that some may stay; or whom they take on simply because they are not aware of the implications. Long notes that in her 1949-50 sample, 15% of the workers in the sample caused 36% of the total number of job changes. Byrt (199) also found that more than half the resignations were accounted for by less than a quarter of the employees. Both these are classic "Proneness" situations.

Cilliers (200) explores the matter in much more detail. He found that 56% of those employed had had no previous terminations, but that 34% of Terminators (during the period of his survey) had had 3 to 9 terminations. By contrast, only 8% of those employed had had more than 3 terminations previously. This leads him to define "Chronic Terminators" in terms of the ratio
$$\frac{\text{No. of Terminations}}{\text{Total length of service in years}}$$

For such persons, the ratio would be larger than 2. Armed with this quantitative definition of a "Turnover Prone" worker, he shows that 28.3% of his leavers were "chronic terminators". Among workers, 28% had spent more than 6 years with one employer, but only 0.4% of Chronic Terminators had done so. By contrast, only 11% of workers had under 1 years' length of service, but 82.6% of Chronic Terminators had served less than a year.

There is thus clear enough evidence of the role of a limited number of "Turnover Prone" individuals in inflating the wastage of a group of employees, Whether this results from lack of motivation or lack of ability is not so clear - Greystoke (201) speaks of a labourer, aged 46 who "wanted a change" after only two months with a particular employer, as a typical example. By contrast, Cilliers' "Chronics" (202) separated mainly through dismissal or retrenchment. Either way, Turnover Prone employees form a fairly distinct and identifiable group, and this has important implications for employment policy in industry.

2. FACTORS OUTSIDE THE CONTROL OF THE EMPLOYING ORGANISATION

a) Economic Factors and the Level of Employment

P. Sargent Florence (203) in 1924, was the first to associate the level of Turnover with the business cycle. Long (204), Silcock (205) and Cook (206) all consider it a generally accepted fact that labour turnover is directly proportional to the level of employment, and Long also points out that during full-employment it becomes necessary to employ a larger percentage of "floating" workers, who are responsible for greatly inflating the turnover rate, as seen in the previous section.

One of the most carefully-controlled studies on this topic was that of Behrend (207), who investigated LTO in the Midlands in England, during a period from mid 1951, when unemployment was a minimum, to mid 1952 when it had more than doubled, and a number of firms had been working short-time.

She specifically excluded factories where redundancy had been experienced, as the effect of this on turnover could not easily be predicted. She also noted that during the period there were no significant changes in management practices, no differential changes in wages (only a general rise) and uncontrollable turnover had remained at its previous low level. By means of a chi square analysis, and t-tests, she showed that the total turnover for men decreased in 25 out of 30 factories and in 15 out of 18 factories for women. She was further able to show that Turnover rates in the Midlands were higher than in other areas of Britain, where there was more unemployment than in the Midlands.

A number of other studies have confirmed or commented upon this relationship. Thus Knowles (208) found the expected relationship between external economic conditions and turnover in Australia, over a period of seven years. The C.C.T.A. study (209) found Turnover in Africa to be "lower than expected" probably, they speculate, because of the need to keep a job in most of the areas studied. Barker (210) found that as the threat of unemployment increased in the Border areas from 1956 to 1962, LTO declined from 119% to 58% p.a. Cilliers (211) considers the relative ease of finding jobs a major determinant of turnover in the clothing industry.

The relationship appears to be well-founded, and no further comment is necessary.

b) Seasonal Factors in Labour Turnover:

Any analysis of Labour Turnover figures in an industry or area over a period of time is bound to reveal some seasonal fluctuations, with varying degrees of regularity, and this has been noticed by most of the workers in the field. Long (212) is perhaps alone in considering seasonal factors of lesser importance, although noting some influence of holidays.

Seasons in themselves are of course not the determinants, but rather the significance of the season to the community involved. In two studies of comparatively rural Africans, (Bell (213), and Barker (214)) turnover was higher in the summer period, when workers would go home to harvest their crops, than in winter, when other employment was scarce.

Generally speaking (Silcock (215), Arbous (216), Byrt (217), S.A. Department of Labour (218)), turnover is high in January probably a reaction to the New Year being a good time for a new job. In the Southern Hemisphere, where vacations are taken over Christmas, turnover should be lower in December (S.A. Department of Labour (219)) shortly before bonuses and leave become due. Silcock (220), also notes an autumn peak in the U.K., possibly due to this being the start of a new working year after the summer holidays. High Spring Turnover is mentioned by Brissenden and Frankel (221), and Silcock (222) due possibly to movement of labour into seasonal jobs offering better return. Winter is generally a quiet period, in the Southern Hemisphere (Byrt, (223), Bell (224), Barker (225) while both Greystoke (226) and Silcock (227) note a drop in summer in the U.K. - probably the effect of coming holidays.

There is no point in further proliferation of the results. Seasonal variations obviously can and do exist. Their nature, and their significance can only be evaluated on the basis of the climatic and cultural environment of the labour force concerned. One further point should, however, be noted, namely that seasonal retrenchments may have some effect on turnover. Cilliers (228) notes that winter is a slack period in the clothing industry, but that 70% of the firms do not follow a policy of seasonal retrenchment.

3. FACTORS RELATED TO THE SIZE AND THE LOCATION OF THE EMPLOYING ORGANISATION

a) Size of Factory:

The only consistent conclusion that can be drawn from the literature on this subject is that there is no clear relation between size of factory and labour turnover. Greystoke (229) who agrees, offers as a reason, the fact that large companies can offer the advantages of prestige and personnel management services, but in smaller companies, the existence of face-to-face relationships would also operate to reduce turnover, in spite of absence of other advantages. These tendencies cancel each other out and no clear trends result, as he found in his own study (230).

Van der Horst (231), studying Africans in the Cape found no significant relationship between size of firm and turnover, as did Russell (232) in Australia, and Silcock (233) considers size to be "not important". Hill (234) in 596 pits of over 300 workers, found no relation, but wastage was highest and most variable in the smallest pits, below 300 workers. Baldamus (235) considers that turnover will be lower in larger plants, but offers no evidence. Brissenden and Frankel (236) found that this was so, but it is conceivable that employment practices have improved in smaller firms since 1922. Cilliers (237) found turnover higher in smaller, newer factories, but this could be due to a greater number of short-service workers in these factories.

Long (238) finds a tendency towards lower turnover in smaller firms, but she notes that the British Institute of Management Surveys differed from her findings. White (239) likewise found a tendency towards higher turnover in the smallest companies, but her figures are inconclusive.

Perhaps on balance it can be said that the evidence points to lower turnover in larger companies, but is not clear.

b) Location of Factory:

Only one dissenting note is cast on this variable; that of Cook (240) who found, from a survey of 106 Australian firms, that there was no clear relation between location and turnover. He offered this finding as support for his theory that LTO is a social process, more likely to be a function of the interaction of many factors.

However, if it is accepted, as discussed in 2a on page 48

that LTO is a function of the level of employment in any area, it must follow that as this varies by area, so must labour turnover. It is not surprising, therefore that the weight of evidence is in favour of location of a factory being a factor in the level of its turnover.

Hill (241) finds from his study of Collieries that "location is probably by far the most powerful single explanatory variable available in a study of labour turnover". Long, (242), Silcock (243) and Bell (244) all agree that location is important, and that the availability of alternative employment in an area will affect the turnover in individual companies. Brissenden and Frankel (245) found in 1922, a big variation due to locality, but they also found big variations among different types of industry. In a recent study (1968) by Russell (246) this type of variation was, however, properly controlled. He matched 162 Australian companies in a metropolitan area with 162 in a non-metropolitan area, for number of employees in each company, and for industry groups. He found turnover in the Metropolitan Companies to be generally higher, even across branches of the same company.

There seems little doubt that locality must be taken into account in any comparison of labour turnover figures.

c) Distance Travelled to Work:

Allied to location of a factory, is its accessibility to its employees. Two studies are available on this variable; that of Long (247) who found that only those who travelled longer than half an hour to work showed higher turnover, and Bucklow (248) who found higher LTO amongst those who were far from their work.

There are sound a priori grounds for the above findings, with the proviso that the relationship will also depend on the availability of alternative employment nearer to the homes of those workers who travel long distances.

4. JOB SATISFACTION AND ATTITUDES IN THE FACTORY

It is difficult to separate out the factors involved in Job Satisfaction, Morale and Reaction to Supervision. However, in relation to Turnover, it can be argued that Job Satisfaction is a desirable aim; good Morale contributes to Job Satisfaction, and Morale is determined, at worker level, mainly by contacts with Supervision. This, then is the order in which these three factors will be dealt with.

a) Job Satisfaction and Turnover

Job satisfaction will be initially considered here as being satisfaction at workplace level, and will embrace personal relations in the factory. Long (249) suggests that such relations are a factor in turnover, and Lundquist (250) more specifically, finds a correlation of -0.69 between Turnover and "Satisfaction with fellow workers". Póidevin (251) finds evidence that low job satisfaction affects Turnover.

The more specific studies in this field all relate to women, and that of Wickert (252) has already been mentioned as demonstrating the importance of ego-involvement. Ross and Zander (253) for female skilled workers, found that if workers' personal needs were satisfied on a job, they were more likely to remain. These needs were seen to be recognition, achievement and autonomy.

Hulin (254) in a study of female clerical workers found that those who quit were less satisfied than those who stayed - a not very surprising statement. In a later study Hulin (255) investigated a Canadian company in which female clerical turnover was 30% and where job satisfaction of leavers was found to be lower than that of stayers. Wages and "dead-end" jobs were most cited as reasons for leaving. After a programme to increase job satisfaction, Turnover dropped to 12%. (The above studies were all based on exit interviews, as were most of the studies reported in this section).

Monie (256) produced some interesting results - again on females - when she studied changes of job satisfaction in time. She found that satisfaction was generally high among new, short-service employees; it dropped sharply to a minimum at about 1 year's service, and then rose again and levelled off at about 2-3 years.

Tavernier (257) makes a distinction between job satisfaction and satisfaction with the company, when he discusses the experiences of the Philips Co., Eindhoven, in 1965. They found that satisfaction with the Company was much higher than satisfaction with the job among unskilled workers. This is an interesting finding, in view of the fact that job satisfaction, per se, is difficult to imagine in some of the simpler, more repetitive industrial processes. In this respect, it is interesting to note that Kerr (258) found that "Monotony of job" correlated 0.73 ($p < .05$) with Turnover.

b) Morale:

No attempt will be made to define "Morale" here; suffice

it to quote Brown (259) who says "Good morale (or bad morale) is not a quality that wells up from below, - it is something that trickles down from above".

Labour Turnover is so often cited, in more popular Management literature, as an indicator of morale that one would expect a fairly prolific literature on the subject. This is not so however, nor are the few references at all conclusive.

Cook (260) says that it cannot be assumed that LTO and morale are related and Lindquist (261) found that a "morale index" correlated only 0.17 with LTO.

The C.C.T.A. study (262) finds a correlation between "Workers Attitudes to Management Practices", but Lundquist, (263) from 284 exit interviews, concludes that there is only slight evidence that this affects turnover at all.

Knowles (264) observed the effect of industrial unrest on LTO, and found in one factory that the median length of service was 7.5 months during a settled period, but that this dropped to 5 months during a period of strikes and unrests.

Morale itself is obviously an ill-defined concept, and when one of its accepted major constituents - attitude to supervision - is considered the results are much clearer.

c) Attitudes to Supervision:

There are two dissentients here - Cook (265) finds no relation between LTO and Supervision, and Wickert (266) that the attitudes of her women clerical workers to supervision were not related to turnover as expected.

Poidevin (267) however, finds some evidence of a relation between dissatisfaction with Supervision, and turnover, in a small Australian company. The C.C.T.A. study (268) found that turnover correlated with supervisory practices (as rated) and Glass (269) speaking also of Africans found that they stressed the importance of supervisor adequacy, and of security, above all other factors sampled.

Clarke (270) related the size of the work group to Turnover, and he argues that the smaller group will be closer to the foreman, and hence more satisfied. He found lower turnover in smaller groups.

A number of Psychological studies have explored attitudes to supervision in some detail. Fleishman and Harris (271) found that supervisors who were rated high in "proficiency" by Management, were high in "Structure" (i.e. job-centred) and low in "consideration". This was found to be related to high LTO among their workers, and low satisfaction, as well as to grievances, accidents and absences. Specifically LTO and Consideration correlated to $r = -0.69$, and LTO and Structure to $r = 0.63$, Ley (272) obtained composite rankings on Authoritarianism for supervisors, and found that these correlated with Turnover. Smith and Kerr (273) analysed exit interview data from a spread of companies, and noted the number of times which items out of 16 possible topics were mentioned. From a cluster analysis of the data, they found "ability of supervisor" present in 4 out of 5 clusters.

It would seem reasonable to conclude, both from a priori grounds, and from the results of the studies cited, that job satisfaction and the related factor of the workers' attitudes to supervision, are related to LTO.

5. FACTORS WITHIN THE FIELD OF PERSONNEL MANAGEMENT

It was P. Sargant Florence (274), who in 1918, first proposed Labour Turnover as an index of the overall efficiency of Personnel Management in an undertaking. In the same way as an Accountant may draw Management's attention to the extent and location of inefficient use of money, so the competent Personnel Manager, through his records, can show up the inefficient wastage of manpower, and like the accountant, he may be instrumental in taking steps to improve the position over a period of time. A relationship between Turnover, and Personnel Policy would therefore not be unexpected, and in fact Raphael (275) found, in 31 London factories in 1936, that variations in LTO were due to differences in Personnel Policies among the factories, rather than to location or type of industry. Long (276) also found personnel policy to be important, and Cilliers (277) found that his larger companies - which had lower LTO - also had Personnel Managers. He suggests that the absence of Personnel Management staff may, in fact, contribute to Turnover.

Cook (278) is again alone in finding no relation between the extent of Personnel Management and Turnover. However, Glass (279), from her own work and that of the C.C.T.A. (280) sums up the situation up rather well when she points out that an unstable work situation attracts an unstable work force. If Management creates a stable environment a more responsible

worker will be attracted, and a better organised industry will attract better men. A clear, sound Personnel Policy is, in her opinion, necessary to create such a situation.

This need not necessarily come about via a separate Personnel Department, but it is certainly more likely where such a department does exist. We can now consider some specific fields of Personnel Management work which have been related to Labour Turnover.

a) Hours of Work:

As long ago as 1924, Elton Mayo (281) noted that LTO improved after the introduction of two ten minute rest pauses per five hour shift. "Symptoms of melancholy preoccupation disappeared". Long's (282) workers were obviously less pre-occupied, for she found, 25 years later, the effect of working hours easily overridden by other factors.

Shift Work has attracted some attention, but Cook (283) again found no evidence of its effect in his Australian sample. Ley (284) disagrees, and finds significantly higher Turnover in the less popular second and third shifts. J.H. Smith (285) finds, for part-time women workers, distinct differences in turnover by shift: 50% for the morning shift, 104% for the midday shift, and 62% for the afternoon shift.

Lundquist (286) found a small, positive association between hours of work, overtime and LTO.

b) Working Conditions

Long (287) finds working conditions easily overridden by other factors, Silcock (288) admits some effect, but sees no clear evidence, and Cook (289) again finds no relation.

Van der Horst (290) considers that LTO will decrease as the advantages of particular employment increase - she notes that for her Bantu, there was lower LTO in firms which provided hot meals, health services, proper training, and promotion opportunities - all, of course, aspects of sound personnel policy. Knowles (291) found that among a number of changes, improved ventilation resulted in reduction in turnover. (From an analysis of co-variance).

Bucklow (292) introduces some useful perspective, however, when she warns against the dangers of generalising from working conditions alone. Thus in her investigations, Foundry

work, for example - which had the worst working conditions - did not have the highest turnover as expected, because the workers in that Department were all long-service staff.

c) Selection, Induction and Training:

Knowles (293) in the study cited above, found a high positive relationship between an improved placement policy and the significant decrease in LTO. Silcock (294) agrees to the existence of some effect, but says the evidence is not clear, while Cilliers (295) is confident that proper selection would improve matters, but he notes that most of his employers made no effort to select stable workers, and did not look at age, marital status or sex as factors when engaging staff.

Long (296) mentions a relationship between Induction and Training, and LTO while Poidevin (297) gives inadequate induction and training as causes of Turnover.

Bald-mus (298) attempts to establish a relation between training period and turnover, and he shows that jobs with a two-week training period have a turnover of 96%, compared with 3% for those jobs with a 5-year training period. This can hardly be regarded as a valid comparison however, for besides the vast differences in skills and type of worker involved, the situation will be so dominated by the effect of length of service, that all other variables are completely obscured. In fact, this is a good example of the dangers of generalising from turnover rates alone, and the argument can, of course, to a lesser or greater extent, be applied to many of the other findings in this review.

Cilliers (299) mentions an important point when he shows that those factories who took the trouble to train labour which proved unsatisfactory at first, found labour much easier to obtain than factories which worked on the basis of summarily discharging workers for unsatisfactory work.

In all these studies, dealing with Personnel Management, many of the variables are difficult to define clearly, and can obviously be obscured by one or more of the more powerful influences which were discussed in the earlier sections. Nevertheless, the Personnel Department must perform a valuable function - even if only to bring Turnover to the notice of management - and the importance of its role must be accepted.

6. STUDIES OF LABOUR TURNOVER TRENDS:

Most of the studies reviewed thus far have been attempts to relate the phenomenon of Labour Turnover to certain factors occurring in the work situation, sometimes across an industry, but often in a particular factory or office. They focus, therefore, mainly on the detail of the determinants of labour turnover.

Some valuable findings have emerged, however, from studies of the relationships occurring within labour turnover figures, many of them extending over quite long periods. These findings, which help to shed light on the nature of the process of Turnover, will now be considered.

a) Long-Term Trends in Turnover Rates:

The International Labour Office suggests (300) that there is a long-term trend towards lower turnover rates, resulting from improved Personnel Management techniques, and economic policies designed to counter cyclical fluctuations in the health of the economy.

Mention has already been made of the large number of ways of expressing crude rates of turnover (see pages 19-21). Unfortunately, this makes meaningful comparisons over the time span of the literature very difficult; the validity of such comparisons across a number of industries is also questionable. Neither is the argument of the Industrial Labour Organisation entirely sound - improvements in Personnel Management can be expected, but adjustments in the economics of the developed countries have been directed towards maintaining a reasonably stable level of full employment, and this, it can be argued, would increase rather than decrease rates of turnover. The matter must, therefore, continue to rest on speculation.

b) Variation in LTO Rates:

Many authors (Silcock (301), Cook (302), Byrt (303), for example) from Brissenden (304) onwards, have commented on the wide variation in rates between industries, and even among the firms of a particular industry, or in a particular area. Rice (305) finds these variations even within the departments of the same firm, as does Bell (306) who sees differences in departmental survival curves as possibly related to skill. Rice and Trist (307) see a department as "an industrial sub-institution", where rates will vary in response to internal factors, as well as to those factors affecting the factory as

a whole.

Enough of the factors which may determine labour turnover have already been considered to indicate that wide fluctuations in crude rates are to be expected; regionally because of differences in the level of employment, and between factories because of varying length of service distributions, to name but two of the more clear-cut factors. That these ranges of variation can be surprisingly large will be indicated in the next sub-section.

c) Ranges of Turnover Rates:

Cilliers (308) notes that many Managements in his industry accepted that labour turnover was "inevitable" and projected the turnover figure in their own factory - usually a high one - as being "normal" for the industry. This effectively absolved them from further action on the matter.

What is "normal" for an industry is a doubtful concept, and again, differences in means of expressing LTO rates makes it difficult to make cross-comparisons within the literature, However, the rates to be quoted are roughly comparable "Labour Turnover Rates", as defined on page 20 although some may be both "Controllable" and "Other" turnover. The differences, for the purpose of the argument here, are not too great however.

White, (309) in a study of 146 firms in the Footwear Industry in S.A. (1943) recorded a range of 7% to 275.1% p.a. From a total of 14,722 employees, 5,142 had left - a mean figure then of 35%. Silcock (310) gives 5 - 143% p.a. for a 1948 survey in Britain. Byrt (311) also for 1948 in Australia, finds a range of 60-96% p.a.

Bell (312) found in Rhodesia that ranges for her study were 21.0 - 62.5% p.a., while on the Copper Mines the range was 16.5 - 38.0%. Earlier the C.C.T.A. study (313) had found a range of 40 - 73% p.a. for Rhodesia.

Van der Horst (314) also studying Bantu, but in an area of much fuller employment (the Western Cape) found a range from 50 - 225% p.a. with an average of over 100%.

It can be seen therefore, that there can be no "typical" level of turnover to comfort an employer who would rather ignore the phenomenon. A further breakdown of the broad concept of "turnover" into some of its constituents provides even less reason for complacency.

d) The Preponderance of Voluntary Turnover:

Allied, in some employer's minds, to the concept of a "normal" level of turnover, is the belief that most turnover is "necessaary" in order to maintain authority in the factory and to weed-out unsatisfactory workers. The implication is, that most terminations take place at Management's request.

Given the difficulty of clearly separating "Voluntary" turnover from "Dismissals" (Hill, 315) - for the former may frequently take place before the latter precipitates the issue - the preponderance of employee-initiated separations appears in most of the literature, in direct contrast to the belief discussed above.

Thus Hill (316), Byrt (317), Silcock (318) and Rice (319) all put the proportion of voluntary to total turnover between 80 - 90%. Rice finds Voluntary separations varying from 65 - 90%, but this drops to 46% in 1949, due to retrenchments and a recession. The effect of level of employment is therefore a most important one. Knowles (320) in an Australian study from 1958 to 1964, finds that fluctuations in turnover are almost entirely due to voluntary separations, and to a lesser extent, retrenchments. Taken together, these accounted for over 80% of the turnover. Dismissals were fairly constant over the 7 years period. Clarke (321) found that more than twice as many resign as are dismissed, a proportion roughly similar to the findings of Cilliers (322) - 67.1% Voluntary, 32.9% Dismissed. White (323) found that 75% of the separations in her study were voluntary.

By contrast, however, Bell (324) found a high percentage of dismissals among separations involving Africans in the highest wage groups. She argues that these persons saw no further chance of promotion, and thus lost interest in their jobs, resulting in dismissal. In other groups, however Voluntary separations predominated, in line with the C.C.T.A. study for Rhodesia (325).

It would seem, then that Management's assumption that it determines its own level of separations, is fallacious. Besides losing "unsuitable" people through dismissal, a far larger number of persons is being lost, who could, with advantage have been retained in the work force.

e) The Relationship between Reasons for Separation

That there appears to be some relationship between the percentages of Voluntary and other types of turnover, has been

commented upon by some authors. Thus Glass (326) notes that factories with high retrenchments, also have high rates of voluntary separation, and of dismissals. The latter follows for if workers are being paid off, a less lenient dismissal policy would normally also be followed. Voluntary separations may also increase, however, for insecurity among the remaining workers could result in some of them looking for other work. This, of course, presupposes that alternative employment is easily available, otherwise voluntary rates are more likely to fall.

Arbous (327) found a varying proportion of dismissals, depending on the overall turnover level. Thus in departments where turnover was highest, dismissals and desertions accounted for the greatest proportion of turnover. Cilliers (328) illustrated almost the converse of this, namely that firms with a low overall turnover rate, had a high percentage of "Other" or unavoidable turnover, as well as also noting that high turnover firms had a high percentage of voluntary separations and of dismissals. Greystoke (329) noted that this residue of "other" was 12% p.a. for Sheffield and 10.6% p.a. for the whole country.

This then, would seem to be near to the "ideal" turnover, where it has been reduced to its unavoidable remainder of deaths, retirements and similar separations. It is unlikely that such a figure will be reached under conditions of full employment, but it does constitute a target, and is worth the attention of those firms whose rates are far higher.

D. THE COST OF LABOUR TURNOVER.

a) Introduction:

Greystoke (330) has the following to say about the position in Sheffield during his study. "It is difficult to avoid the conclusion that the state of the labour market is being made an excuse for complacency or inertia, and that if the cost of LTO were fully realised, it would be found that the more obvious positive costs involved in scientific selection would be only a small fraction of the more concealed costs arising through excessive LTO". At about the same time (the 1950's) the British Institute of Management (331) estimated that the savings from a reasonably attainable improvement in LTO could add as much as 10/- weekly to the wage of each employee in Britain.

Nearer home, and more recently, it was estimated at the 1966 symposium of the S.A. Psychological Association (332) from Department of Labour records for 1964, that, given a per separation cost of R80, and if turnover were halved, some R1,626,500 could have been saved in that year. Such a reduction in turnover is not unreasonable given proper attention to the matter, and R80 per separation is very conservative. It can be seen, therefore, that the potential for cost saving through turnover reduction is considerable.

b) Factors Determining Cost:

It is not the intention of this review to cover in great detail the computation of Labour Turnover costs, (although some relevant literature is cited) but rather to deal with the subject in outline only. From a number of studies, then (S.A. Psychological Association (as above), Choularton (333), Kangan (334)) the following points have been extracted as a summary of factors contributing towards the cost per separation:

- i) Personnel Department administration costs, covering termination, recruitment, selection and placement.
- ii) The cost of output lost during any delay in filling the vacancy.
- iii) Training costs, including excess wages paid while unproductive.
- iv) The cost of experienced employees' time, who may be diverted on to training or additional supervision tasks.
- v) The cost of overtime to make up lost production.
- vi) Increased spoilage costs.
- vii) Additional maintenance on machines due to improper use by learners.
- viii) Under-utilisation of plant by learners.
- ix) The cost of an increase in accidents.
- x) In addition, Gaudet (335) mentions the rather less tangible cost of lowered morale amongst those remaining.

It should be apparent that all these costs will not necessarily be incurred for every separation, but even a selection from the list can, in aggregate, represent a considerable total cost per separation.

c) Estimates of Cost per Separation:

The British Institute of Management (336) and the Institute of Cost and Works Accountants (337) have made recommendations for methods of assessing the cost of turnover.

A method developed by Choularton (338) based on "profits foregone" has also been used successfully for a number of studies.

To quote ranges of cost, many of which are out of date, is not very enlightening. Nevertheless they do serve as a base, albeit a broad one. Cook (339) reviewing in 1951 gives a range of from £8 to £88 per separation. Clarke (340) in the U.S.A. in 1946, gives \$ 127 to \$ 227. More recently Choularton, (341) by the method mentioned, arrives at a figure of A \$ 371 per separation, in a textile factory where semi-skilled workers required \pm 3 weeks of training. The S.A. Psychological Association (342) puts U.S.A. costs at between R44 - R740, with an average of R74. Skill grades are not defined. Tavernier (343) quotes the formula used by a firm of American Management Consultants, as Hourly rate x 300, per separation. Gaudet (344) quotes a recent American Management Association survey giving the cost per separation of an Aircraft Assembly worker as \$ 1000 and a clerical worker at \$ 700.

d) Other Factors in Turnover Cost:

The above figures (c) show that cost per separation while it varies, can be considerable. Kangan (345) considers that most studies in the past have under-estimated costs. He points out that under full employment, it takes longer to fill a vacancy, and poorer recruits have often to be accepted. These cost more to train, and often leave again soon after hiring. He proposes a more realistic assessment, under these conditions, as the "cost per effective replacement", which is calculated as follows:

$$\text{Cost of engaging one man} \times \frac{\text{no. of men hired}}{\text{no. who reached piece-rates}}$$

e) Conclusions:

From the above, it can be seen that labour turnover costs, while not easy to assess accurately, are usually higher than expected, and highlight the necessity for taking action to limit excessive turnover.

E. COMBATTING LABOUR TURNOVER

From the discussion thus far, it is apparent that the causes of labour turnover cannot be simply and clearly defined, and it is thus to be expected that there will likewise be no clear and infallible formula for countering it. Cook (346) comes to the same conclusion when he says: "..... no one has yet been able to establish any one cause or combination of causes that will satisfactorily explain LTO, or to point to

any remedy or remedies that can be depended upon to give the desired results". However, the fact that cause and effect cannot always be clearly established, does not rule out the possibility of effective action against LTO, and there are a number of references in the literature to combatting Turnover. Most of these - as can be expected - concern actions in the field of Personnel Management, and these will be grouped into some order in the discussion which follows.

a) The Importance of Sound Personnel Policy:

The S.A. Psychological Association (347) points out that Turnover can be reduced by a sound Personnel Policy, and proper personnel management techniques, while Cilliers (348) also advises improvements in this field. The C.C.T.A. (349) lists the following factors as important in Personnel Policy, namely job security, adequate pay, good supervision, and a fair dismissal policy.

Glass contrasts (350) two factories, one with high labour turnover, and points to the influence of stable work conditions, adequate wages, and positive Management interest in the better of the two firms.

b) The Influence of Length of Service:

Many of the studies reviewed have revealed the high incidence of turnover during the first, few months of service, and it is thus not surprising to find Long (351) suggesting that measures be aimed primarily at the younger workers, Silcock (352) reviewing LTO research, also concludes that attention be concentrated on the first three months of service. Indeed, Greystoke (353) mentions the value of vocational guidance - even before employment and Long (354) comments on the effect of this on turnover among the under 20 age group. The S.A. Psychological Association (355) also stresses the need for proper placement, and for the counselling of new employees.

c) Selection, Induction and Training:

Cilliers (356) pleads for improved selection to counter labour turnover, and mention is also made in Lane and Andrew's (357) paper of the need to select at the outset those who are likely to stay; persons who, according to Silcock (358) will have characteristics which interact with those of the firm to give low values of α . Byrt (359) stresses the need for induction to help the newcomer to adjust.

More specifically Rice (360) contrasts the marked difference in lengths of the periods of "induction crisis" of the Glacier Metal Company and Company X (which showed very high losses in the first week). He considers that this difference is the result of the careful selection and induction techniques used at Glacier. Factory X had no such procedures. Goulding (361) describes how, in an Australian factory, planned induction had resulted in a drop in those leaving in the first month of service. Gaudet (362) discussing the work of consultants in this field, records improvements of up to 35% in Turnover Rate as a result of better recruitment and selection.

Cilliers (363) considers that properly organised training is the best way to make people stay, and Byrt (364) notes that this helps the newcomer to adjust. The S.A. Psychological Association (365) considers that the Government should actively encourage training in industry.

d) Wages:

Hill (366) after his lengthy investigations (see also page 33) considers that improved wages are a step in the right direction, but cannot be relied upon to reduce turnover. He views wage increases as expensive and inefficient compared with spending money on other aspects of personnel management. Cilliers (367) makes the positive suggestion that it would be better to revise minimum and maximum wages, rather than upgrade wages generally.

e) The Influence of Supervision:

Clarke (368) reports evidence that foremen training if accepted and applied by the foreman, reduces Turnover.

f) Other Findings:

Gaudet (369) mentions that turnover in an Insurance Co. dropped 20% as a result of moving to a new building, and that a firm which introduced morale surveys dropped its turnover to 1/3 of the industry rate in the area. Hulin (370) in a study mentioned earlier (page 52) found that a company programme to increase job satisfaction resulted in a drop in the turnover rate from 30% p.a. to 12% p.a. Knowles (371) studied an Australian factory where improved placement, ventilation, and the introduction of an incentive scheme each resulted in improvement in turnover.

g) The Timing of Measures:

Greystoke (372) discusses when measures to combat Turnover can be most effective. He mentions the value of a follow-up interview with new employees a month after joining, and also the use of activities of a semi-social nature (such as factory competitions) at danger points in the seasonal LTO cycle.

h) The Importance of Personnel Records:

A first step in combatting LTO should be the compilation and analysis of regular records of labour movement (Raphael, 373) and Bucklow (374) notes that existing wage records will provide most of the information needed. Long (375) is strongly in favour of proper personnel records, which she considers to be as important as financial accounts. She points out that money at present spent on exit interviews by some firms, could be better utilised for the compilation and analysis of LTO records.

i) The Encouragement of Long Service:

Length of Service has been shown to be one of the clearest determinants in Turnover. The importance of the first few months has already been discussed in b) and c) above, but it is also important to provide incentives to encourage the new employee to stay with the Company and to become a long-service employee, for the more such persons in the labour force, the lower the turnover.

Rice and Trist (376) mention the efforts of the Glacier Metal Co. to promote long service, and to conserve skilled labour, while Tavernier (377) describes the Wates scheme, where manual workers are given staff status after 1 year's service. Introduction of this proviso, together with preferential interest housing loans for longer-service men, resulted in a drop in LTO from 198% to 44%.

Cilliers (378) notes the problem of turnover among learners, and also among the higher grades, where better workers often leave the Textile industry. He advocates attention to the more rapid advancement of learners from the minimum wage levels, and also acceptance of the policy of more promotions from within to Supervisor, to create a more favourable career image in the industry.

F. GENERAL

The purpose of this review has been to provide a background to the present study, rather than to draw conclusions.

However, some general observations should be made about the many conflicting findings which have been reported. Cook (379) for example, found very few clear relationships in his study, and he concludes that customary techniques are unlikely to shed much light on the causes of Turnover, and that it should be studied as a "social process". Greystoke (380) however, sees the problem as one relating to the individual company. Smith and Kerr (381) agree, when they say "undoubtedly avoidable turnover differs from one enterprise to another in qualitative ways because of differing organisational climates, and the patterns or syndromes of reasons for quitting should, in part, be products of these climates". Byrt (382) says there are no general factors - each undertaking must examine LTO and solve it according to local conditions.

A situation such as this may well pose problems for the research worker seeking general trends - at factory level, however, it presents no insuperable difficulties. To return to the analogy of accounting, for the moment, firms do indeed use general principles and methods of analysis to solve their financial problems. But the approach always involves a close study of detailed accounting records, and there are no ready-made solutions.

In the same way, labour turnover can be approached by the application of systematic record keeping and analysis, and problems can be solved by the intelligent application of available knowledge. One of the aims of the study which follows will be to show how this can conveniently be accomplished.

CHAPTER IIIMETHODOLOGY

The data on which this study is based, were collected over a period of 13 months, from May 1967 to May 1968. The method of collection and analysis of the data is described in this chapter.

A. THE SAMPLE

Nine footwear factories were chosen, with mean employment and annual production as shown in Table 1 below:

TABLE 1
MEAN EMPLOYMENT AND APPROXIMATE PRODUCTION OF SAMPLE FACTORIES

Code	Region	Ave. no. of employees during year of survey	Approx. Annual Production (pairs of shoes)
A	Cape	425	350,000
B	Cape	737	700,000
C	Cape	602	900,000
D	Cape	346	500,000
E	Natal	1,397	2,000,000
F	Natal	668	1,500,000
G	Natal	918	4,000,000
H	Natal	1,480	2,000,000
J	Transvaal	306	150,000

Compared with figures for the Industry as a whole, for the period concerned, (383) these factories represent 33% of total employment in the Industry, and are responsible for 43% of the annual production of conventional boots and shoes.

It was not possible to sample systematically from factories in the industry, and the nine above were chosen because:

- i) They were sufficiently well-organised to provide regular and reliable returns.
- ii) They were willing to participate voluntarily in the project.
- iii) They were drawn from the three major shoemaking regions, namely the Cape (East and West), Natal and the Transvaal, and were numbered among the larger firms in their areas.

Further details of the location, size, and average composition of the work force of the nine selected factories during the year of the survey are as follows:¹⁾

TABLE 2

AVERAGE EMPLOYMENT DURING YEAR MAY 1967 - MAY 1968 IN NINE FACTORIES TOGETHER WITH PERCENTAGE OF TOTAL WORK FORCE IN THESE FACTORIES ACCOUNTED FOR BY 4 RACE/SEX GROUPS

FACTORY	EM		EF		NEM		NEF		ALL EMPS
	N	%*	N	%*	N	%*	N	%*	
<u>W. CAPE</u>									
A	5	1.2	...	...	213	50.1	207	48.7	425
B	34	4.6	8	1.1	370	50.2	325	44.1	737
<u>E. CAPE</u>									
C	35	5.8	96	15.9	360	59.8	111	18.5	602
D	27	7.8	85	24.6	152	43.9	82	23.7	346
<u>ALL CAPE</u>	101	4.8	189	8.9	1095	51.9	725	34.4	2110
<u>NATAL</u>									
E	3	0.2	3	0.2	1300	93.1	91	6.5	1397
F	1	0.1	1	0.1	629	94.2	37	5.6	668
G	...	...	...	...	918	100.0	...	...	918
H	15	1.0	2	0.1	1317	89.0	146	9.9	1480
<u>ALL NATAL</u>	19	0.4	6	0.1	4164	93.3	274	6.2	4463
<u>TRANSVAAL</u>									
J	12	3.9	16	5.2	213	69.6	65	21.3	306
<u>ALL REGIONS</u>	132	1.9	211	3.1	5472	79.5	1064	15.5	6879

* = Percent of Total Work Force

It can be seen that the factories chosen varied in size, geographical location, and racial composition of the work force. In this respect, factories varied from the relatively homogeneous all-male labour force of factory G, to the heterogeneous composition of factory C, where the largest number of race/sex groups were present in significant proportions. It would appear reasonable to presume, on the basis of this sample, that findings which applied throughout all or most of the factories, could be presumed to be of general validity, and due to factors common to the LTO process in this particular industry. These factors could very likely apply more generally to other South African industries as well.

i) For the balance of this study, the following abbreviations will be used: EM = European Males; EF = European Females; NEM = Non-European Males; NEF = Non-European Females; Labour Turnover = LTO.

After a month's pilot study in two local factories, data collection from the nine factories in the sample was commenced on April 15th 1967, the date coinciding with the new Wage Agreement which came into force in the industry at that time. The required returns were received from the factories on a weekly basis until the 31st May 1968. The number of leavers during the study period was as follows, in Table 3:

TABLE 3
NUMBER OF LEAVERS ACCORDING TO RACE/SEX DURING PERIOD
MAY 1967 - MAY 1968

FACTORY	E.F.	E.M.	N.E.F.	N.E.M.	ALL
A	-	1	79	110	190
B	2	1	126	122	251
C	56	2	42	144	244
D	14	3	42	44	103
ALL CAPE	72	7	289	420	788
E	-	-	34	290	324
F	-	-	3	102	105
G	-	-	-	192	192
H	-	7	119	315	441
ALL NATAL	-	7	156	899	1062
J TRANSVAAL	16	6	76	144	242
ALL REGIONS	88	20	521	1463	2092

It can be seen from Table 3 that, with the exception of the EM, who are a very small group in the industry as a whole, a fair sized sample of leavers was available for analysis.

At the end of the study, a census was taken by members of the Research staff, of all those on the work force of the participating factories. Table 4 summarises the results of this census, and describes the group which will be referred to as "Stayers" in the analysis to follow. It was not possible to analyse the factory payrolls, in the detail needed, on a monthly basis, and the figures recorded at the end of the study period were assumed to be a fair sample of average employment during the year in which data were collected. Comparisons of the totals in column 5, All, of Table 4, with mean total employment figures in Table 1, will show that this assumption appears reasonable.

TABLE 4

NUMBER OF STAYERS ACCORDING TO RACE/SEX ON THE WORK
FORCE AT DATUM POINT - 31.5.68

FACTORY	EF	EM	NEF	NEM	ALL
A	-	5	208	217	430
B	8	34	341	368	751
C	88	36	125	380	629
D	83	16	92	136	327
CAPE	179	91	766	1101	2137
E	3	2	88	1205	1298
F	1	1	41	661	704
G	-	-	-	948	948
H	2	12	155	1352	1521
NATAL	6	15	284	4166	4471
J TRANSVAAL	11	12	89	216	328
ALL REGIONS	196	118	1139	5483	6936

In addition to the actual numbers on the work force at datum point, biographical data (comparable to that obtained for leavers) for each person in employment was recorded, thus making possible a comparison of leavers and stayers as well as the computation of LTO rates in various categories, in the manner to be described on page 77.

B. COLLECTION OF DATA

All factories are, by law, required to send weekly returns of new engagements, and copies of Service Certificates for every employee leaving employment for whatever reason, to the Leather Industry Provident Fund. Most of the information needed for the purpose of this study was available from these forms (See Appendix 1 & 2) and it was decided that an additional carbon copy of these forms would be used, thus obviating a great deal of extra clerical work by the participating factories. Some additional information was also entered on the Service Certificate copy, namely:

- i) Marital Status
- ii) Whether "Learner" or "Qualified"
- iii) Breakdown of reason for leaving
- iv) Department of leaver (for those factories which had requested a departmental analysis of their own particular data).

This information was provided by ticking blocks on the Service Certificate Copy Sheets supplied (Appendix 3). The person responsible for the records was carefully instructed as to classification particularly as regards "Reasons for Leaving" (See page 73).

Carbon copies of the Weekly Return covering engagements were also returned

These weekly returns were then summarised on to Computation sheets (Appendix 4) and in addition a card (Appendix 5) was filled in for every leaver, with the information on the service certificate, and these cards were filed directly according to factory, race/sex and length of service, thus obviating sorting at the end of the survey.

The only other additional information required from the factories, was a return of monthly employment strengths according to race and sex, at the beginning of the study and thereafter at the end of each month. These figures were needed for the calculation of LTO rates.

Factories were assured of anonymity and each factory was assigned a code letter which was used during the period of the study, and in the analysis of data.

The pilot study referred to in Section A went smoothly and no gaps in the method of data collection were apparent.

A letter together with stationery, was sent to all the participating factory managers setting out clearly the aims of the study and giving detailed instructions as to procedure and information required. Personal contact was made with each factory before the study commenced.

The advantages of this method of data collection are manifold:

- i) Most of the previous studies of LTO have been historical i.e. based on past records. Gaps or discrepancies in the records are often encountered and statistical shortcomings ensue. This is particularly marked in "Reasons for Leaving" and many studies are marred by this omission or by the inclusion of all leavers for whatever reason, in the calculation of LTO rates (see discussion under c). Using current returns with careful provision for accurate recording of "Reasons for Leaving" ensured a high degree of accuracy, in this respect.

- ii) Arising out of the above, the use of current information about LTO on a weekly basis, meant that any omissions or anomalies in the returns could be queried immediately. Furthermore, receiving weekly information regarding all accessions as well as terminations, made possible an additional check on the employment strength figures supplied at the end of each month and again, any discrepancies could be speedily dealt with.
- iii) The interest of the factory was assured because of the feedback of information on LTO to them. Quarterly reports were sent to each individual factory together with LTO rates for the nine participating factories. At the end of the study period comparative figures for the year of the study were issued.

The aims of the study could thus be actively pursued, free of any concern over the accuracy of the data available, and using data gathered specifically for the purposes of the study.

C. DEFINITIONS

a) Controllable Turnover:

The purpose of this investigation has been stated to be the study of labour turnover, which results from interaction between the employee and the employing organisation. It follows, then, that only such turnover should be measured, and as the control of turnover has been stated to be one of the aims of measurement, the term "Controllable Turnover" will be used to distinguish it from total turnover, which includes all losses. Turnover due to factors outside the influence of management (See Chapter II, page 21) will therefore be excluded, and "Controllable Turnover" can now be defined as follows:

"Controllable LTO is the avoidable loss of personnel - avoidable because management action could have been taken to reduce, minimise or prevent such loss - the loss being the result of an interaction between the characteristics of the employee and the employing organisation".

In order to make the necessary distinction between Controllable turnover and Unavoidable turnover, in line with the above definition, Types of Separation were divided into four categories, and only the first two were included in the calculation of controllable LTO rates.

b) Types of Separation:

i) Dismissal (D):

In the present study, Dismissal refers to the discharge of an employee as unsatisfactory, for any reason whatever. No distinction was made between dismissals for disciplinary reasons, or because of unsuitability. Although some studies (Long 384) have excluded dismissals from controllable turnover, it was felt that dismissals could be mainly avoided if due attention was given by management to the selection of suitable persons, and the encouragement of stable groups.

ii) Voluntary (V):

Another reason given for the exclusion of D in some studies is that the majority of leavers will do so of their own accord. Such an assumption was shown not to hold in this study (among NEM in some factories, Voluntary and Dismissal occurred in about equal proportions), and the distinction between Voluntary and Dismissal proved helpful. All voluntary terminations, or resignations which did not fall under "Other" (see iv below) were included in this category. A more detailed breakdown of this category into individual reasons for voluntary terminations was not pursued in this study, as often leavers do not give the true reason for their resignation, and an element of inaccuracy and subjective judgment is then introduced into the data. (see also page 173, Chapter V).

All terminations falling into (i) or (ii) above were included in Controllable Turnover, and the analysis of the data was only concerned with leavers in these two categories. The following categories were excluded from Controllable Turnover:

iii) Retrenchment (R):

This can be defined specifically as a discharge due to a reduction in the size of the labour force, as a result of reduced or reorganised activity in the Company or Department.

Seasonal fluctuations in production in industry do result in retrenchments occurring from time to time, and these may sometimes involve fairly large losses of labour (as was the case with Factory E during one period of the Study). Factories were instructed that this category applied only to genuine reductions in staff i.e. where the post would not be filled in the immediate future. Such retrenchments owing to external economic factors, or internal factory re-

organisation, were excluded from Controllable Turnover. (See also Chapter IV, page 81).

iv) Other (0):

This category includes resignations for health reasons (such as lengthy illness), retirement, death and pregnancy. A number of studies (e.g. Bell 385) include voluntary and involuntary resignations under one category but involuntary resignations are outside the scope of management - employee interaction, and thus do not fall under the definition given previously of Controllable Turnover. The inclusion of involuntary resignations under the heading of 'Other' in this study results in Controllable Turnover being undiluted by such terminations as are listed above.

Pregnancy was excluded from Controllable Turnover for the following reasons:

1. It is outside the control of management unless they cease to employ young women.
2. It is not turnover in the true sense of the word as many females leaving for this reason, do so only temporarily, and on returning to employment do not need induction and training, as would be the case with a new employee.

(Cilliers, 386, refers to this,)

At the end of the study the terminations owing to pregnancy received special attention. There were only 40 such terminations in all factories, all were NEF's and 20 of them were in Factory A. Out of this total of 40, 17 terminations took place towards the end of the survey so that not enough time had elapsed for them to have their confinements and return to work. Of the remaining 23, 14 returned to work and were re-engaged in their original place of employment after periods of absence ranging from two to eight months. The exclusion of pregnancy from Controllable Turnover thus appears to have been justified, retrospectively.

It must also be noted that inter-departmental transfers were not included among terminations and no records were kept of these except insofar as they affected monthly departmental employment strength figures.

d) LTD Rates:

Controllable LTD rates were calculated in accordance with the method used by the British Institute of Management (387) and the Australian Department of Labour and National Service (38B)

namely:

$$\text{LTO Rate} = \frac{\text{Number of Leavers (V \& D)}}{\text{Average number employed}} \times 100$$

i) Monthly Rates:

The average number employed was obtained by adding the number on the payroll at the beginning of the month, to those on the payroll at the end of the month, and dividing by 2. Any rates derived from the above calculation were multiplied by 12 to give a resulting per annum rate.

Brissenden had noted previously (Chapter 2, page 20) that payrolls can be an unreliable source of data due to persons being paid off during the month but held on the payroll at the end of the month. Some factories did in fact follow this practice, but as records of all terminations and accessions were received weekly, adjustments could be made to the payroll figures and the accuracy of the totals used to obtain the average was thus ensured.

ii) Annual Rates:

For these rates, average number employed is obtained by adding the number on the payroll at the end of each month in the year, and dividing by 12. This rate is the true per annum rate.

It should be noted here that the factories in the sample closed for 3 weeks during December and January, and these two months were treated as one for the purpose of calculating LTO rates. It is because of this shutdown period that the "year" of the study, May 1967 to May 1968, is in fact 13 months.

The formulae as calculated above can be applied for departmental rates, for rates for different race/sex groups, for length of service periods, or for any other subdivisions required. All rates subsequently referred to in this study (unless specified) are per annum rates, and apply to Controllable Turnover only.

Bell (389) mentions that the disadvantage of overall Turnover rates is that they mask retirements and other involuntary separations. Because this study has made the necessary distinction between voluntary and involuntary resignations and has only included dismissals and voluntary terminations in the computation of LTO rates, the rates are a more accurate representation of the turnover which should be the concern of personnel research, and do not suffer from

the same handicap as rates where no such discrimination is made.

D. ANALYSIS OF DATA

a) In Broad Outline:

The data were analysed, for each factory on a race/sex basis, for each region, and for all regions combined. The data on leavers could be analysed immediately upon completion of the study, as the cards referred to (page 71) had already been classified into appropriate sub-divisions.

It was considered desirable, for a complete picture, to relate the important biographical variables of leavers to those of "stayers", and the Census Data were used for this purpose. The following variables were used for purposes of comparison between the groups:

- i) Length of Service
- ii) Age
- iii) Wages
- iv) Marital Status

The analysis can conveniently be viewed in two parts, for descriptive purposes, but in Chapter V, where the findings are reported, the two methods were not separated. They are

- 1) The Analysis of Leavers
- 2) The use of the census data for comparing means and distributions, and calculating LTO rates in various groups and sub-groups of workers.

b) Statistical Methods:

These are mainly described in the text where appropriate, but some general points can be mentioned here. Where means were calculated, these were originally supported by Standard Deviations, and where it was thought necessary, t-tests were applied for the significance of differences between means. The additional data thus gained did not facilitate or clarify the arguments materially, and they have thus not been included in the tabulations given.

Mention should also be made, with regard to tests of significance, to the frequent use of chi square in the study. It could be argued that as the factories involved do not constitute a random sample, tests of significance are not

appropriate. However, the rationale followed was that of Hagood (390) who states that when sampling from an existing finite universe, and estimates are to be made, or hypotheses tested which relate to the infinite universe of possibilities, then formulae for infinite universes can be used. Briefly, the finite universe is seen as a random sample from some infinite "superuniverse", defined as an "infinite hypothetical universe of possibilities" that could have been produced at the time of observation under the conditions obtaining. The nine factories constituting the study sample may thus be regarded as a sample in time, and chi-square tests were used to determine whether observed sample differences were significant, or merely due to chance variation. Where these were found to be significant, differences between groups could be inferred to apply to factories over a longer period of time.

Additionally, as much of the data was in discrete categories, chi-square was the appropriate test of significance. It also has the advantage of being non-parametric.

Because the small number of classes normally precluded the use of measures of correlation such as Pearson's product moment correlation coefficient; C , the Coefficient of Contingency (391) was calculated, to describe the degree of association between variables, once a significant chi-square had been found.

c) The Use of the Census Data:

The census of all employees on the payroll of the nine factories, taken at a datum point at the end of the survey, has already been mentioned on page 69. Biographical data on date of engagement, date of birth, wage, marital status and whether learner or qualified, was recorded in the same way as for leavers. At factory H, however, marital status for EM and NEM was not available from the records, and this factory was therefore excluded when LTO rates according to marital status were calculated.

Although the data on stayers was used for comparisons of median length of service, mean age and wage, and frequency distribution on all the variables, the main purpose of collecting this information was in order to calculate LTO rates for various sub groups.

Instead of average number in employment in any category (such figures were not available on a monthly basis from the factories) as a denominator for calculating LTO rates, the number of stayers at datum point was used. In this manner,

LTO rates could be calculated for all the categories in each variable according to the number of leavers and stayers in each category (see also Chapter IV, page 84).

d) The Need for Detailed Analysis:

In the normal factory situation, where the personnel manager is dealing with an applied situation, calculations in such detail would not be necessary, but it should be borne in mind that the purposes of this study were to investigate the nature of the turnover process and its measurement. It was for this reason that many of the more detailed calculations were necessary, and in Chapter V to follow, it will be shown how these analyses were used experimentally to evaluate some of the multiplicity of measures which are in use for the study of LTO, and how a proposed new set of measures were developed as a result.

CHAPTER IVA CRITICAL APPRAISAL OF THE CONCEPT AND
MEASUREMENT OF LABOUR TURNOVERA. THE CONCEPT OF LABOUR TURNOVER, AND THE CRUDE LTO RATE

Bucklow's comment (392) that the work to date has done little to contribute to a basic understanding of LTO is a valid one. To Hedberg (393) the confusion in research findings is a direct result of the use of what he calls "the crude LTO rate".

These observations point to two factors which have received insufficient attention in research in this field, namely that any measures used in quantitative analysis will depend on

- i) The definition of what constitutes LTO and
- ii) the purpose for which the measurement is being made.

To a certain extent, the two are related, for the statistician who is investigating long-term trends in labour turnover will work to a more general definition of what constitutes LTO, than the social scientist who is investigating interaction in the work situation.

Much of the published research has not taken account of these two factors, however, with the result that differences in the concept of what constitutes labour turnover, as well as differences in the measures used, have led to a situation where divergent or conflicting findings can be expected. As a result of, or in addition to the above, many studies also show serious methodological shortcomings of a statistical nature..

In this study, however, the aim of measuring turnover is seen in relation to the interactions which take place in the work situation, and primarily to provide information, on the basis of which steps can be taken to encourage more cohesive groups, and thus to limit turnover. To do this, it will be necessary to study some of the underlying factors in labour mobility, and these, as Hill (394) has shown fall into two main groups, namely outside economic factors, and those factors within the firm which affect the stability of employees. For the purposes of this study, the control of Economic factors

such as level of employment will be considered to be outside the scope of the study, and will not be dealt with in any detail. Whilst they can be regarded as constant in the short term for any one particular factory, they can however show regional differences, and may be differential in their effects on various race groups, for example, and this will be explored.

It is the factors within the organisation, however which will be the particular concern of this study, and the effect of these factors on the individual employee. Thus Silcock (395) for example, sees the decision of an employee to stay or leave as being the resultant of an interaction between the characteristics of the employee, and the characteristics of the firm, and it is plain that such an interaction can involve many complex sociological variables. The aim of any measure of such a situation should not only be to provide an indication of the resultant of these variables, (as with an overall Turnover Rate) but also to indicate to the investigator where closer study may be needed (for example in race, sex, or length of service groups). An acceptable measure - or measures - should be able to exclude the effects of some variables where necessary (such as length of service) and to limit the effects of others where this may clarify the situation (as when two or more variables are interrelated).

Many of the measures in current use fall short on these requirements. Thus the British Institute of Management definition of LTO as "the process of change in the composition of the labour force" (as mentioned on page 13) does not mention the necessity of indicating where that change takes place. Brissenden and Frankel's earlier definition of "the shift and replacement necessary for the maintenance of the labour force" (see page 20) emphasizes the idea of maintaining some sort of static level of employment, and leads both Arbous (396) and the International Labour Review (397) to propose a multiplicity of rates in order to cater for increases or decreases in the labour force.

If the purpose of measurement is, as mentioned earlier to study labour turnover as a process of interaction, with a view to better understanding of the process, and in order to control it, then it follows that only that proportion of turnover should be measured which is amenable to control, and "Controllable Turnover" has already been defined on page 72 as follows:

"Controllable LTO is the avoidable loss of personnel - avoidable because management action could have been taken to reduce, minimise or prevent such loss - the loss being the result of an interaction between the characteristics of the employee and the employing organisation".

In line with this definition it would seem acceptable to exclude turnover due to retirement, illness, death, marriage or pregnancy. The exclusion of retrenchments is also proposed, although it could be argued that management action may have prevented such a step. In practice, however, retrenchments may very often be the result of outside economic factors, not within management control. There is also a need for comparability of statistics over a period of time, and as retrenchments are normally infrequent and involve large losses in a short period of time, they would seriously distort measures of turnover, and limit their comparability. For this reason at least, they should also be excluded.

Having now arrived at a meaningful concept of turnover, as a basis for further study, there still remains the need for measures which can control or emphasize certain factors in the situation. Referring to the "Conventional" Separation Rate, as defined earlier, even Brissenden (as already mentioned on page 22) had noted that it gives no indication where turnover lies, and that two equal rates may represent very different situations.

In spite of this, the "crude LTO rate" continues to be used in a large number of studies. Statisticians, however, have been severely critical of much of this work, and the previously quoted papers of Silcock, Lane and Andrew, and Hedberg are typical. They all stress that Length of Service is such a fundamental factor in turnover that it must be controlled before any measurements are made. Silcock (398) makes the important point, from a Personnel Management angle, that the present turnover rate of a Company (however it is measured) is more likely to be a function of the firm's past employment history, (which determines the length of service composition of its present labour force) than of current factors in the present situation, such as morale, or working conditions. Other authors (Greenwood, Knowles, Rice, Bell) have over the years, also explored aspects of the Length of Service dimension in turnover, but in spite of this, the "crude LTO rate" remains the pre-eminent measure.

Thus, in many of the studies reviewed, the use of the crude rate has, in some and may have, in others, resulted in erroneous conclusions. Some of these are mentioned here

again, to illustrate the misleading conclusions which have been drawn.

(see pp.33-35)

T.P. Hill sought a correlation between wages and LTO rates. His findings did emphasize the effects of another major determinant of LTO, namely regional differences due to level of employment, but neither his conceptual model nor the data at his disposal, allowed him to control for length of service, which could conceivably be correlated with wages and no doubt accounts for the trends which he was able to show. His results, however, were conflicting, which is not surprising, as it is very likely that the older pits may well have paid lower wages, but may also have had a larger percentage of long-service workers. Turnover would therefore have been relatively lower than in newer pits. Kerr (399) Lundquist (400), van der Horst (401), Cilliers (402) and Poidevin (403) all mention the relation between wages and LTO, but do not comment on the possible effect of length of service.

Baldamus (404) correlates skill and related factors with LTO rates, but with no mention of the relationship between skill and length of service. Cilliers (405) finds LTO higher in smaller, newer factories, but he does not mention if these have a higher percentage of short-service workers than the older factories.

Only two authors mention length of service as a factor in relating LTO rates to other variables. Bucklow (406) notes that despite working conditions in the foundry department of a factory being the worst, LTO rates were the lowest because this department had the highest percentage of long-service staff. Byrt (407) who found male LTO to be higher than female in an Australian firm, noted that this was due to the males being a newer, shorter service group than the females.

We have therefore, the situation where the effects of length of service are reasonably well-documented in the literature, but where many studies still fail to take account of this in their findings. The implications of this, and of the shortcomings of some of the accepted measures, will be explored in the next section, in relation to the data collected in the present study.

B. THE EVALUATION OF SOME MEASURES OF LABOUR TURNOVER

Bearing the discussion under A in mind, we can now proceed to evaluate some accepted and some new measures of labour turnover, and to establish which of these meet the criteria laid down for a valid measure, as follows:

- i) That labour turnover in this study is viewed as the result of interaction between the worker and the organisation, and that its analysis and measurement is undertaken with a view to understanding it and controlling it.
- ii) As a result of (i), the main interest of any analyses will be confined to Controllable Turnover, as previously defined.
- iii) The overriding importance of Length of Service as a factor must be considered in any analysis.
- iv) Any measure of Turnover should not only indicate the extent of labour movement, but also where such movement lies in the labour force.
- v) Where appropriate, a measure or measures should also be able to compare or separate out some of the effects of the interrelated variables which are involved in turnover.
- vi) Data required for any analysis should be readily available from factory records.

Bearing these points in mind, and in particular the importance of (iii) above, some existing measures will be critically reviewed in order to assess whether or not they conform to the stated requirements.

The procedure followed will be to apply certain measures to some of the Survey Data, with a view to evaluating their utility, or demonstrating their shortcomings. In this way, certain measures will be developed, which are acceptable in terms of the criteria laid down above, and which will then be applied to a full analysis of the Survey Data.

1. LTO RATES AND RELATED MEASURES:

If length of service was not a factor in Turnover, then LTO rates calculated for different length of service groups, should show no major differences.

In this study, rates were calculated for the nine factories for NEF and NEM, in the length of service categories shown in Table 5. (Blank spaces denote no stayers in that category, or too few leavers to provide comparable figures; n.e. denotes "not employed"). The calculation of these rates

was based on the census data, already referred to in Chapter III, page 77. Instead of using average number in employment as a denominator in the formula for the LTO rate as given on page 75, the numbers of stayers at datum point become the denominator. For example, to calculate the LTO rate for workers in the under 1 year length of service category the formula was as follows:

$$\frac{\text{Number of leavers with less than 1 years service}}{\text{Number of stayers with less than 1 years service}} \times 100$$

TABLE 5
LTO RATES (PER CENT) BY LENGTH OF SERVICE

Non-European Females						
Length of Service						
Factory	Under 3 mnths	Under 1 yr.	1 - 2 yrs	2 - 5 yrs	Over 5 yrs	All
A	80.0	67.5	21.9	18.0	14.7	38.1
B	100.0	55.5	44.3	21.6	22.8	36.9
C	66.7	33.9	26.3	36.0	-	37.8
D	91.7	68.1	38.1	8.3	-	48.5
E	160.0	58.6	40.0	29.6	17.6	36.2
F	-	-	-	-	-	8.1
G	n.e.	n.e.	n.e.	n.e.	n.e.	-
H	87.2	100.0	42.3	30.8	NIL	81.7
J	117.8	84.0	183.3*	50.0	-	108.0

Non-European Males						
Length of Service						
Factory	Under 3 mnths	Under 1 yr.	1 - 2 yrs	2 - 5 yrs	Over 5 yrs	All
A	270.6	116.7	26.0	29.8	11.1	51.2
B	283.3	93.3	28.9	21.5	13.0	31.1
C	100.0	61.1	36.2	28.4	21.0	39.2
D	333.1	120.8	27.3	12.1	8.8	26.4
E	96.4	83.6	30.7	10.5	8.4	21.4
F	39.0	34.0	16.8	10.0	7.4	15.7
G	56.5	54.6	24.3	17.6	5.3	20.2
H	70.6	67.2	27.5	15.4	8.4	22.9
J	97.1	97.7	86.7	44.8	26.5	63.3

* Small group

It can be seen that, with a few exceptions, mainly among the NEF, there is a general decline in turnover rates as length of service increases and that this holds for all factories, for both NEF and NEM.

One of the exceptions is Factory J (indicated thus *) where there were so few stayers in the 1 - 2 year category that the rate has been unduly inflated. In fact, the turnover of this factory has been such in recent years that few newcomers have survived to provide a base group having 1 - 2 years employment.

This study has again demonstrated, therefore, the relationship between Labour Turnover and length of service, and it will be apparent that the overall turnover rate which is given for each factory, will be a function of the rates in the various length of service groups, and of the numbers in those groups.

The use of tabular data across the nine factories is typical of the rationale which will be used in many of the analyses in this study. It was contended (Chapter III, page 68) that these nine factories, both by size and by geographical location, constitute a significantly large sample of the industry as a whole. The postulate was offered, therefore, that if a proposition holds consistently across all the data, then its validity can be presumed, at least for the rest of the South African footwear industry, and possibly, on a more generalised basis, for cases outside this specific industry as well.

Still pursuing the previous hypothesis; if separations were uniformly distributed amongst the labour force as a whole, i.e. if there was the same tendency to separate amongst long service employees as among short-service ones, there should be little difference between the median length of service of leavers and stayers. (See Chapter II, page 25)

In fact, this is by no means so, as Table 6 illustrates.

TABLE 6
MEDIAN LENGTHS OF SERVICE OF LEAVERS AND STAYERS IN MONTHS

Factory	Non-European Females		Non-European Males	
	Leavers	Stayers	Leavers	Stayers
A	6.8	17.8	4.8	20.0
B	12.4	> 24	8.7	> 48
C	16.0	16.6	11.1	> 24
D	7.2	11.6	7.3	> 36
E	12.0	21.0	10.5	> 36
F	too few	16.5	15.7	> 24
G	-	-	14.6	> 36
H	5.5	8.9	11.2	> 48
J	4.1	4.7	8.5	19.1

For both NEF and NEM, for all factories, the table shows the Median Length of Service of leavers to be less than that of stayers, indicating that shorter-service persons predominate amongst the leavers. The effect is less marked among NEF where shorter terms of service than among NEM are characteristic.

It can be noted at this stage that the Median Length of Service of Leavers (MLOS) taken together with the LTO rate, provides a useful broad picture of the turnover position. Thus the Rate indicates the level, and the Median Length of Service of leavers shows where the bulk of turnover is occurring. Comparing the NEF Rates for factories A & C, these are similar at 38.1 and 37.8% respectively, but the median lengths of service of leavers are 6.8 and 16.0 months. Reference to the length of service breakdown of Turnover rates will show that A's turnover lies to a greater extent in the shorter service categories, whereas that in C is more evenly distributed even into the 2 - 5 year category. This position is reflected in the longer MLOS of C.

In factory D, the LTO Rate of 26.4% for NEM is the lowest for the Cape, but the MLOS is also low at 7.3 months. Here again, reference to the breakdown of turnover rates will show that LTO rates were high in the short-service categories (333.3% at under 3 months and 120.8% under 1 year) which is reflected in the low MLOS of leavers. In factory A, with a high LTO for NEM (51.2%) and a very low MLOS (4.8 months), LTO rates in the under 3 months (270.6%) and the under 1 year (116.7%) categories are also high, but a much higher percentage of the labour force is involved, giving rise to the higher overall rate of 51.2%. The two measures taken together are good indicators of the extent of the turnover problem amongst this group.

It can be seen therefore, that if the MLOS is read with the LTO rate, considerably more information is available than from either of these measures on their own.

Two important conclusions arising from the discussion thus far, can be separately stated at this point:

- i) That because of the established variation of LTO rates with length of service, such rates should ideally be expressed in relation to length of service categories to provide the maximum information. This method does depend, however, on a census of "stayers" at a particular time, which may give rise to distortions where small groups are involved. Continuous records could be kept

enabling LTO rates in Length of Service groups to be calculated, but the clerical routines involved are cumbersome.

- ii) Alternatively, the Median Length of Service of Leavers can be used as a summarising central measure in conjunction with the overall turnover rate. The rate will then indicate the extent of turnover, and the MLOS will show where, in the length of service continuum the bulk of turnover lies.

2. WASTAGE RATES AND SURVIVAL CURVES:

Actuarial studies of the relationship between Turnover and length of service have led to the finding that wastage rates are a decreasing function of time, and that curves of survival show a typical negative acceleration in survival rates, with time.

These two measures - wastage rates and survival rates - are not the same, and their relative value as useful measures was assessed with reference to some of the data of this study.

a) Wastage Rates:

In labour turnover analysis, as in Vital Statistics, the analysis of wastage is best carried out by following up entrant groups, and Silcock's work in this respect was described on pages 26 and 27 of Chapter II. He expressed the number of leavers in each quarter as a percentage of the number of survivors of an original entrant group, at the beginning of the quarter in question. Rice also studied wastage rates, although his method differed slightly from that of Silcock (see pages 29 and 30).

The method used by Greenwood (see page 27) in which leavers are grouped into cohorts, by length of service, and related to the total number of leavers and stayers exposed in a particular Length of Service category, was used initially in this study, to investigate the general finding of the literature that wastage rates are a decreasing function of time. For the Natal and Cape regions, the results were as follows:

TABLE 7
WASTAGE RATES (GREENWOOD) BY LENGTH OF SERVICE,
IN NATAL AND CAPE REGIONS

	Length of service to which exposed (months)					
	3	6	9	12	15	18
NATAL						
NEF	11.6	8.1	10.4	6.9	5.3	2.1
NEM	3.7	2.6	1.8	1.8	1.3	1.1
CAPE						
NEF	5.9	4.9	4.9	3.3	3.9	2.6
NEM	8.5	4.5	3.3	2.3	1.8	1.5

The decrease in wastage rates with length of service is clearer among males than among females. In Natal, particularly, the decline among females is not consistent, possibly due to the NEF being a comparatively recent addition to the labour force there. No general conclusions can be drawn on the basis of the above figures, however, except that wastage rates do decrease with time, a trend which is obviously related to the decrease in LTO rates with length of service.

Additionally for factories E and H, NEM entrant groups (combined over a period of 3 and 2 months respectively) were large enough to follow up by Silcock's method, and wastage rates were calculated as follows:

TABLE 8
WASTAGE RATES (SILCOCK) BY LENGTH OF SERVICE, IN TWO FACTORIES

	Factory E	Factory H
Under 3 months	17.6	22.2
3 - under 6	10.7	12.8
6 - under 9	9.3	11.5
9 - under 12	4.4	11.1
12 - under 15	1.5	10.4
	N = 102	N = 90

For both factories, the expected decline in wastage rates was shown, and it is clear from the figures that the group in E showed a much lower wastage, in all length of service categories, than the one in factory H.

It was considered unlikely, from the experience of this study, and because of the relatively more complex data and calculations required, that Wastage Rates would provide the sort of information required for study and control purposes

at factory level, No further use was made of them, therefore especially as the Survival Curves, to be discussed next, proved so much more useful.

b) Survival Curves:

Generally, these show the number of survivors in successive periods, related to an entrant or base group of some sort. And as has already been mentioned the rates are generally characterised by a negative acceleration with respect to time. Rice et al (408) propose that the shape of such a curve will be characteristic for a particular firm, unless the employment situation within the firm changes, as it affects, or is perceived by, the employee. Mason (409) also speaks of "typical" curves (his curves are based on those of Silcock) and he uses variations as a pointer for investigation, at the same time noting that such changes can take place while the overall Turnover Rate remains unaltered.

Bell (as discussed on page 28) uses Survival Curves to contrast the behaviour of groups on biographical variables, and shows this to be a far superior comparative technique to LTO rates.

Greenwood (410) was the first to contrast survival rates on the basis of a biographical variable, namely age, and his approach could conceivably also be used to provide Survival Curves for similar comparative analyses, and of course Silcock, in advocating the comparison of successive entrant groups is using the same logic.

Survival curves are based on the number of leavers in each length of service category, which is a function of the wastage rates in those categories. If wastage rates remain constant, for a subsequent period, the curve will not alter, but the interesting implication is that if these rates do alter for subsequent periods, or if two groups with different rates are contrasted by means of the curves, they will show where changes have taken place or where differences exist. This enables the curves to be used to contrast the survival of groups, as Bell did on her biographical variables (see page 28).

In spite of the usefulness of this comparative technique which effectively controls for the important length of service variables in comparisons, its use has not been noted, anywhere else in the available literature, nor does the general topic

of Survival Curves appear to have been taken up by many other workers in the field. This is not surprising, for all three approaches discussed in the Literature Survey, raise practical problems. Silcock's method requires a minimum size of entrant group in a short period to be of real value, and this is seldom possible in the smaller factory of under 1,000 employees. Both Bell and Greenwood's curves require detailed records over a long period of time, and rather complex computations.

If it is borne in mind at this stage that one of the objectives of the social scientist in personnel research is to provide measures which can be utilised in the work situation, then it becomes important, for any technique, to establish whether:

- i) Factory records can be so arranged to make use of the more complex methods.
- ii) The methods themselves can be simplified to conform to the limitations of the records of the average factory and of the personnel available to process these.

In this study, the first line of approach had to be rejected, as none of the factories which represented a relatively "enlightened" section of the Footwear Industry, could be persuaded to furnish complex data, especially that relating to monthly employment strengths over long past periods. Generally speaking, this information, where available at all, was filed with old wage records, in such a way as to make it almost inaccessible. The alternative, namely to classify employment records in such a way as to enable this data to be readily obtained in the future, was rejected, as this study was not expected to encompass more than 18 months at the most.

Accordingly, the second line of investigation was followed. A first clue to a possible hypothesis came again, from the work of Silcock.

i) The Survival of Leavers Curve:

It will be recalled that Silcock (see page 26) proposed the Median Length of Service (or Half Life) as a measure of central tendency of the distribution, by length of service, of the leavers from any entrant group.

Knowles (411) subsequently demonstrated the value of this concept when applied to a distribution of all leavers over a period. It has already been shown in this study (page 86) that the Median Length of Service of all leavers in a period

can be applied, to good effect, in exactly the same way as for leavers from an entrant group, and can provide useful information in interpreting labour turnover.

The hypothesis was now framed that, if the measure of central tendency of a distribution of all leavers has been shown to be valid and useful as a measure, then the distribution itself must likewise be acceptable for informative and comparative purposes.

A distribution of leavers, by length of service, could be represented as a histogram, but it can also be converted to a general "survival curve" form, where leavers, from successive length of service groups, are shown as survivors from the total group of leavers. The curve therefore shows the periods survived in service, before separation took place. The resulting smooth curve is more easily comparable for successive or other contrasted groups. It will be referred to as a Survival of Leavers Curve (SLC). Such a curve shows where from the length of service continuum in the labour force, the leavers are being drawn - for example, is there a preponderance of short-service leavers? For comparative purposes, the smooth curve which results is superior to histograms which show a raw distribution of leavers by length of service.

Let the following be assumed:

A study period of length T months is taken. During this period, a total number of leavers L have left.

Among these leavers L, are a number L_1 , who have had period d_1 , or less of service, and numbers $L_2, L_3 \dots L_n$ who have served periods $d_2, d_3 \dots d_n$ such that

$$L_1 + L_2 + L_3 \dots + L_n = L$$

For each successive period $d_1, d_2, d_3 \dots d_n$, where $d_2 = 2d$, and $d_3 = 3d$, and so on, (d , for example, could be a period of time, such as one month) a curve similar in form to Silcock's curve is drawn, showing the distribution of leavers, expressed as survivors from a total group L, after periods d_1, d_2 , etc.

Such that at the end of period d_1 ,

$$\text{Survivors} = \frac{L - L_1}{L} \%$$

and at the final period d_n ,

$$\text{Survivors } \frac{L - (L_1 + L_2 \dots + L_n)}{L} = 0$$

The general form is thus similar to Silcock, but L represents all leavers during a study period, and not those from an original cohort; the leavers in fact, come from different cohorts.

ii) Silcock's Survival Curves:

For comparative purposes, the general form of a Silcock survival curve can be presented as follows:

Let N = an original entrant group of workers, starting at a point T_0 in time. Let $d_1, d_2, d_3 \dots d_n$ be service periods as before.

At the end of period d_1 , L_1 workers have left.

$N - L_1$ survivors remain, and expressed as a rate:

$$\text{Survival rate at end of period } d_1 = \frac{N - L_1}{N}$$

At the end of period d_2 , a further L_2 workers have left, and, $N - (L_1 + L_2)$ survivors remain

$$\text{Survival rate at end of period } d_2 = \frac{N - (L_1 + L_2)}{N}$$

At the end of period d_n , a further L_n workers have left, and $N - (L_1 + L_2 + L_3 \dots + L_n)$ survivors remain.

$$\text{Survival rate at end of period } d_n = \frac{N - (L_1 + L_2 \dots + L_n)}{N}$$

Silcock's curve is a follow-up of a single entrant group, as persons leave from the group.

The SLC however, is derived from a group of leavers, taken over a period T . These leavers, who are drawn from different entrant groups, may have commenced service at any time during the period T , or prior to it.

As the assumption that wastage rates will always be higher in the short service categories (Chapter II, page 27) can be accepted, it is clear that the curves will have a similar form, that is they will show a negative acceleration with a greater proportion of leavers in the shorter service categories.

A disadvantage of Silcock's method is that it represents an historical follow-up - unless the group is followed over

a number of years, only the behaviour of short-service leavers will be illustrated. Whilst this will represent the bulk of turnover if records of successive groups are kept, occasions do arise when movement among longer service workers may need investigation, as will be shown later in this study. Silcock's survival curves, therefore, are related to the labour force as a whole only insofar as the leaving behaviour of a particular group is representative of trends amongst other leavers at the time.

The SLC does investigate a sample of all leavers, covering all lengths of service periods, over a current period - say six months. Bell (412) also used such a current sample, and a detailed consideration of her method is of interest at this stage.

iii) Bell's Survival Curves:

In the same way as for the SLC, a study period of T months is taken. During this period, a total number of leavers L will have left. Still as for the SLC, there will be among these leavers, groups or persons, $L_1, L_2, L_3 \dots L_n$ who have periods $d_1, d_2, d_3 \dots d_n$ of service, such that, as before

$$L_1 + L_2 + L_3 \dots + L_n = L$$

Now, in period T, a number of entrant groups, $M_1, M_2, \dots M_t$ (where t = the number of months in the period T) of workers will have been engaged. It is from these groups only, that leavers of d_1 service could have been drawn, in order to have been included in period T.

Let these be E_1 , of one month's service (say).

Similarly, leavers of 2 months service would have been drawn from entrants during this period, minus those engaged in the last month of the period (who have not been exposed to two months service), plus entrants from the month before the start of period T. Let these be E_2 ; and so on.

Thus after period d_1 Survivors of $\geq d_1$ service were $E_1 - L_1$

$$\text{Expressed as a rate: } \frac{E_1 - L_1}{E_1}$$

For subsequent periods:

$$d_2 \text{ Survivors} = E_2 - L_2$$

$$\text{and rate} = \frac{E_2 - L_2}{E_2}$$

Now, let M_1, M_2, \dots, M_n be the monthly engagements during the period T , and such periods previous to T , counting backwards until the period of engagements of L_n - i.e. the leaver/s who had n months of service.

$$\text{Now } E_1 = M_1 + M_2 + \dots + M_t$$

where t is the T th month in the period of study

$$\text{and } E_2 = M_2 + M_3 + M_4 + \dots + M_{t+1} - L_1$$

(i.e. those exposed to 2 months Length of Service, minus those who left in first month).

$$E_3 = M_3 + M_4 + M_5 + \dots + M_{t+2} - (L_1 + L_2)$$

$$\text{and } E_n = M_n + M_{n+1} + M_{n+2} + \dots + M_{t+n-1} - (L_1 + L_2 + \dots + L_n)$$

And for the final category of leavers,

$$\text{Survival rate} = \frac{E_n - L_n}{E_n}$$

referring to leavers who had d_n months of service.

This represents at each time interval d_1, d_2, \dots, d_n

the number of survivors of service d_1, d_2, \dots, d_n expressed as a percentage of those exposed to an equivalent number of months of service

Now - from period d_1

$$\frac{E_1 - L_1}{E_1} \times 100\% \text{ survived to be exposed to period } d_2$$

∴ those surviving period d_2 , are

$$\frac{E_1 - L_1}{E_1} \% \times \frac{E_2 - L_2}{E_2} \% \text{ of those who were originally exposed}$$

Similarly those surviving period d_3

are $\frac{E_3 - L_3}{E_3} \%$ of those who survived the previous period, or

$$\frac{(E_1 - L_1) (E_2 - L_2) (E_3 - L_3)}{E_1 E_2 E_3} \%$$

Successively to the final percentage

$$\frac{(E_1 - L_1) (E_2 - L_2) \dots (E_n - L_n)}{E_1 E_2 \dots E_n}$$

In effect, what Bell is doing is to take an original group $M_1 + M_2 + \dots + M_6$ exposed to one month of service. Knowing the number of leavers from this group, who left during the first month, she is able to calculate a survival rate in the same way as Silcock would if this were an entrant group

assembled over n months. She now calculates a survival rate for those exposed to two months service, and uses this as a percentage to diminish the percentage which survived one month. And so on.

She is therefore, constructing a survival curve based on a current sample of leavers, but representing the result of successive survival rates, calculated by expressing leavers in each length of service group, in relation to the cohort from which they were originally drawn. It is worth noting again that her group of leavers would be the same as the group of leavers in a SLC for an equivalent period.

Expressed symbolically,

for Bell, Survival rate for period $d_1 = \frac{E_1 - L_1}{E_1}$

For SLC, Survival rate for period $d_1 = \frac{L - L_1}{L}$

iv) Shortcomings of Survival Curves:

None of the three "Survival Curves" discussed can, in itself present a complete picture of labour turnover in a factory. All are useful when, for example, successive groups of leavers are to be compared, or when groups of leavers are to be compared on some biographical variable. All the curves merely relate leavers to length of service; none attempts to show the rate of movement in the labour force from which the leavers are drawn, although Bell does take this into account indirectly by relating her leavers to the entrant groups from which they came.

On its own, therefore, the SLC provides only a distribution of leavers, by length of service. If, however, the labour turnover rate for the work force from which the leavers were drawn is also given, then the total information is increased considerably. We now have, in the two measures,

- i) The rate at which persons are separating from the labour force.
- ii) What section of the labour force in terms of length of service those separating are being drawn from.

It is important to note that the SLC is essentially a distribution of leavers by length of service. It is not intended to be a convenient approximation of Bell's more complex method, nor can it be seen as a parallel to Silcock's

follow-up of entrant groups.

In the same way as with entrant group curves, inferences from the SLC about the labour force as a whole can only be made with caution, and only if the period from which leavers are drawn is a relatively long one. Supporting the SLC by Labour Turnover rates does, however, relate its findings to the labour force as a whole, and in this respect the combined measures are superior to Silcock's approach.

There are, however, certain similarities between the three methods, and it can, for example, be demonstrated empirically that the SLC is in fact a resultant of successive entrant group curves. (This has been done, using the study data, and is described in Appendix 6)

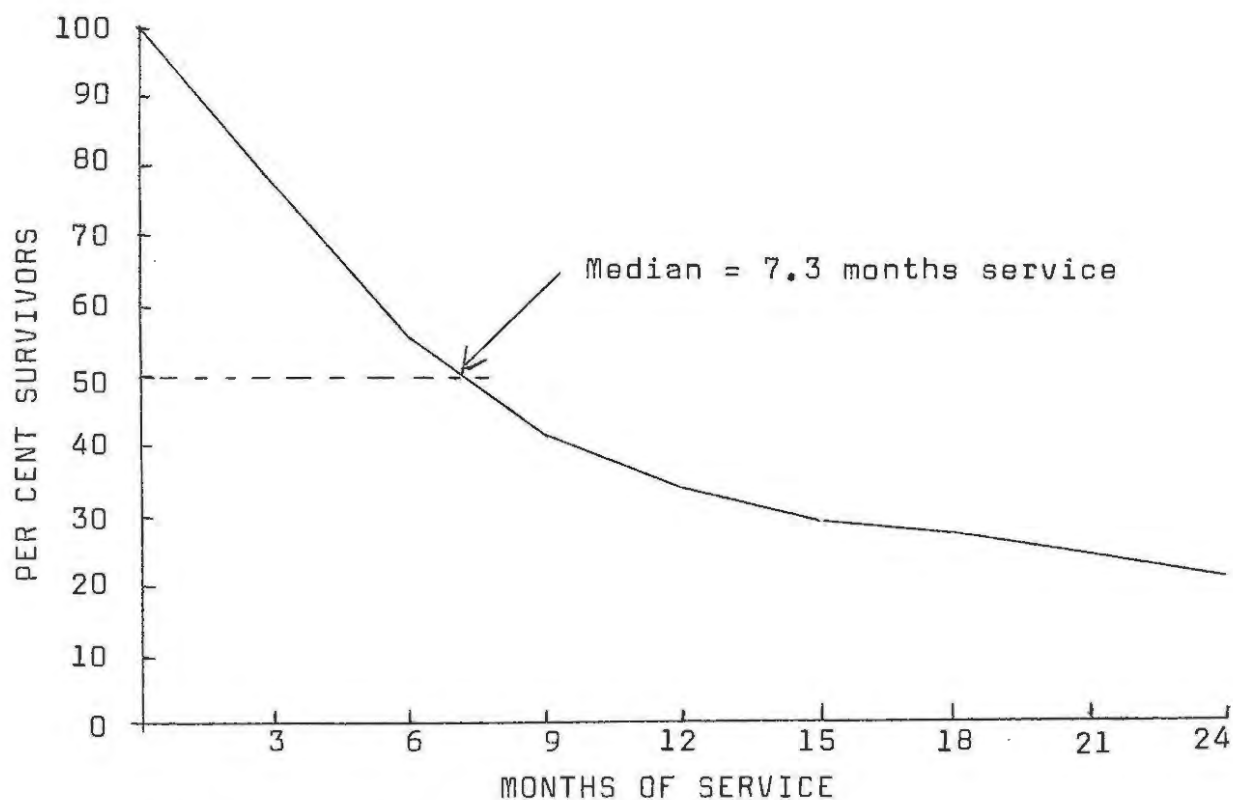
There are some more general similarities too; for example, in the short term, if wastage rates remain constant, Silcock's curve for a typical entrant group, will be similar to an SLC for a group of leavers in a comparable period, except that the entrant group N will always be larger than L , the number of leavers, where groups of equivalent size are being considered. Thus the entrant group Survival Curve will always diverge upwards from the SLC, with increasing length of service.

The SLC is related to Bell's Survival Curve, because the same leavers are involved in comparable periods. If wastage rates are high, the difference between $E_1 - L_1$ and $L - L_1$ will be small, and survival rates calculated by both methods will be similar. Note that wastage rates are usually high in the short service categories, but thereafter the Survival Curve will diverge upwards from the SLC.

It can now be demonstrated empirically, using the data from the study, how the combination of these two measures (the LTO rate and the SLC) can provide a useful diagnostic tool in LTO analysis.

v) Some General Applications of the SLC:

Using the total number of NEM leavers (classified as controllable) for factory D for the period of the study, a typical SLC was drawn as in the figure overleaf: (factory D was chosen as representing an average turnover situation without any special features).



N = 44 LTO RATE = 26.4%

FIGURE 1

SURVIVAL OF LEAVERS CURVE - NEM IN FACTORY D

The Curve illustrates the negative acceleration in wastage rates, as a result of a higher percentage of losses in the shorter length of service groups, giving rise to a more rapid drop in survivors at first. Leavers over a period of 12 months are represented.

It can further be noted that, if the points are joined by a smooth curve, then between any two points on such a curve, the slope of a tangent to the curve will represent the rate of leaving over the period of time concerned. That is, the steeper the curve, the greater the rate of leaving of the persons on whom the curve is based. It will be recalled that Rice et al (413) used this concept, on his Wastage Curves, to show the rate of wastage during the differential transit period.

The curve has been taken to 24 months only, and 80% of the leavers had served for less than this period; however the curve could be extended to include those leavers who had longer service than 24 months. By definition, the Median Length of Service is that period of service below which 50% of the leavers, ranked by their Length of Service, would lie,

and this is shown to be 7.3 months.

It has been mentioned earlier (page 89) that two groups with different wastage rates could be contrasted by means of Survival Curves. In the same way, the distribution of two groups of leavers can be contrasted by means of SLC and in figure 2, two factories, F and A are contrasted on the basis of such a distribution of leavers over a period of 12 months (although a shorter period such as six months would be feasible where there is a large enough group).

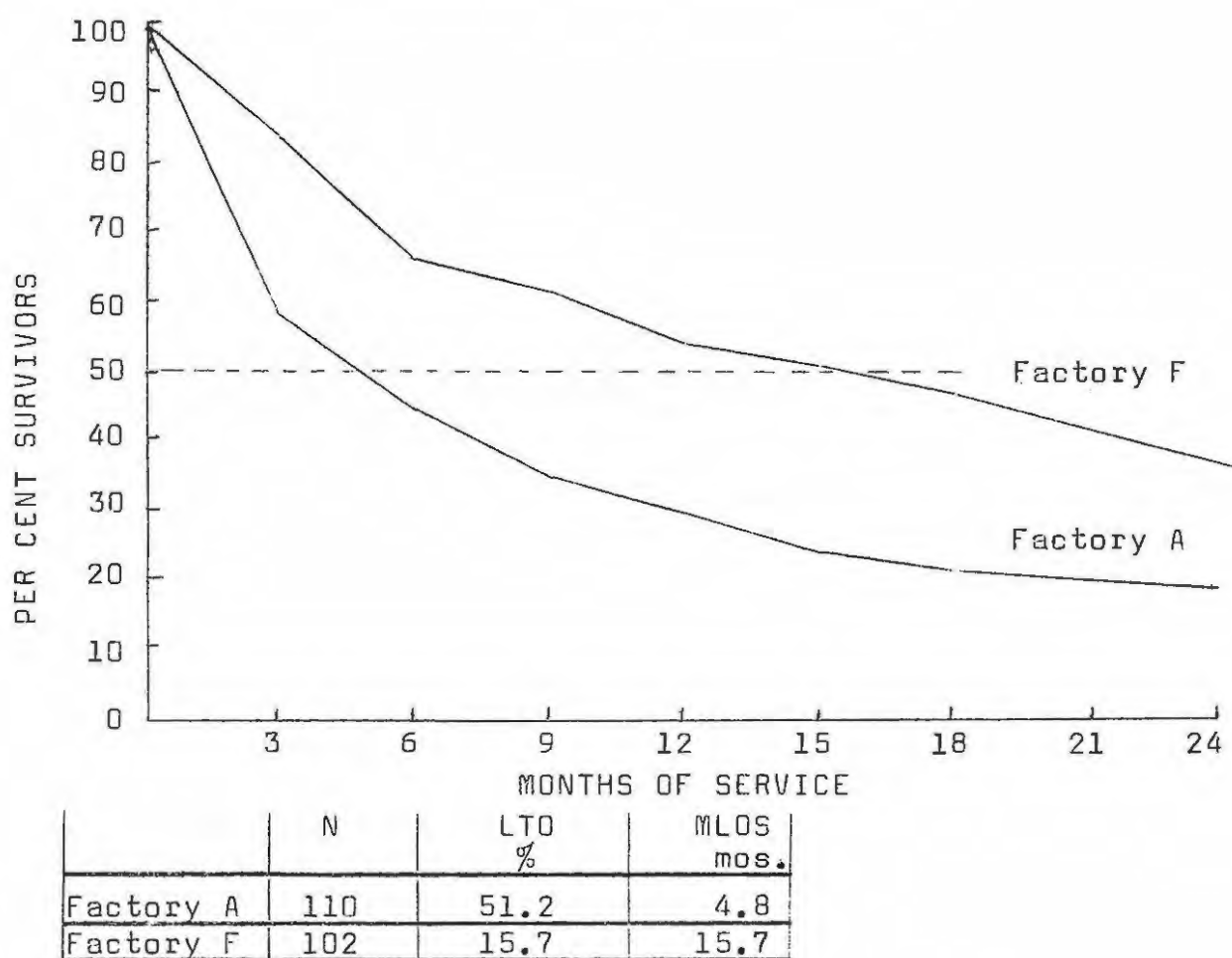


FIGURE 2
COMPARISON OF TWO FACTORIES USING SLC's

Clearly, factory A suffered a far greater percentage of short-service leavers than F, and there were proportionally far fewer leavers with over 24 months service. The median lengths of service of 4.8 and 15.7 months reflect the difference between the two curves.

The general point has already been made (page 95) that it is necessary to specify LTO rates together with the SLC, to indicate the extent of the losses taking place, and to relate the curve to the labour force as a whole. Where comparisons between two or more curves are to be made, it is even more necessary to specify LTO rates.

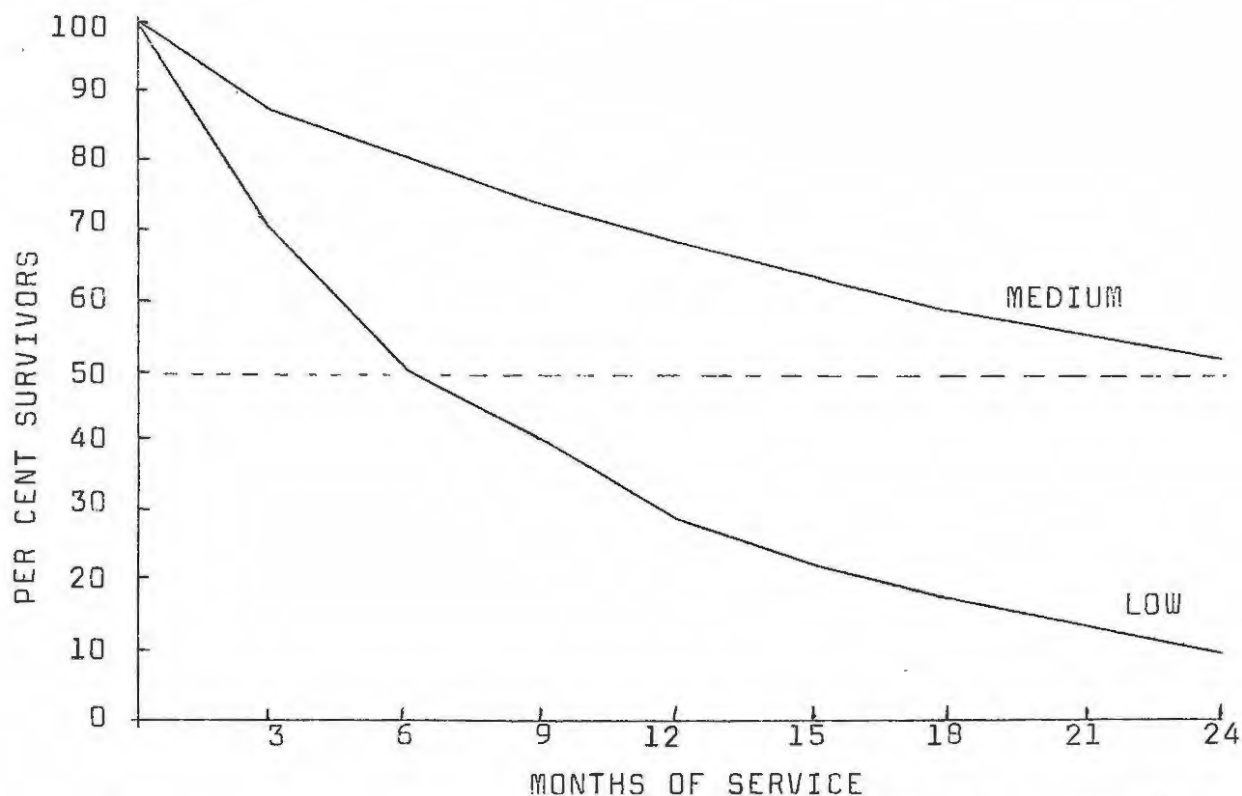
Thus the situation could conceivably arise where two factories having the same LTO rate could generate curves as for A and F, these showing A's losses, (though proportionately the same as F's from the LTO rates) to be predominantly in the short-service category, for the period selected. Conversely, a factory with a low LTO rate could conceivably, in a particular period, generate a curve below that of another factory (i.e. less area under the curve) with a higher Turnover rate, if such a factory, for short-term reasons, suddenly suffered an unusual loss among its short-service employees.

This illustrates an important aspect of Survival Curve analysis, namely that when comparing curves, those curves which are allied to higher LTO rates, will generally be below those which are allied to lower LTO rates. Such a situation was illustrated by Rice (414) in his comparison of the wastage rate curves of Glacier Metal and "Factory X". The reason for this is that high turnover - in the main - is allied with a higher percentage of short-service persons on the payroll and hence a higher percentage of short-service leavers, giving rise to steeper or "lower" curves. This point was emphasized by Silcock (as mentioned on page 15 of Chapter II), where he holds that LTO is more likely to depend on past events (i.e. those determining the length of service composition) than on present factors such as labour relations. When this relationship does not hold, however, unusual, short-term factors can be expected in the turnover situation. This matter will be referred to again with reference to the factories in this study.

There is a further necessity for quoting LTO rates when comparing across unrelated groups (such as two factories, or two successive periods). Supposing, in two subsequent periods, there is a major change only in the Length of Service and wastage of the under 3 months employees. For the first period, 100 are employed, the LTO rate is 100% and there are thus 100 leavers. For the next period, 200 are employed, but the LTO rate because of unusual circumstances, drops to 50%. There are again 100 leavers, and on a survival curve, this will show no difference over the previous period. However, the overall LTO rate for the group (relating the number of leavers to the size of the labour force) will drop, and quoting comparative rates for the two periods will indicate the need for further investigation.

One other general comparison should be noted, and that is the use of Survival Curves to compare groups of leavers

on the basis of a particular variable, while controlling for length of service. Bell's use of this is mentioned in Chapter II page 28 . In the comparison in figure 3 below for example, wages are the particular variable investigated, and the curves indicate that the medium wage leavers showed a better survival than the low wage leavers.



		N	LTO %	MLOS mos.
MED. WAGE	R 11-19.99	422	15.7	24+
LOW WAGE	R 5-10.99	437	47.8	6.3

FIGURE 3
SLC, BY WAGE GROUPS, NATAL NEM

The median lengths of service of 5.3 months and over 24 months are a useful summarising measure of the situation and the LTO rates show the relatively greater movement among the low wage earners.

It can be seen that the higher-wage leavers showed better survival than the low wage leavers, in all length of service categories. The generality of a comparison such as this can of course, be questioned: To what extent is the situation specific to this particular group of leavers and to what extent can it be generalised further?

It will be recalled that Bell (See Chapter II page 28) suggested that her survival curves could be used as a basis for the prediction of what percentage of workers would survive

successive periods of service, the assumption being that wastage rates remained constant. If the same assumption of no major change in wastage rates is applied to the logic of the SLC, then it can be seen that subsequent groups of leavers will show a similar distribution by length of service. In the particular case being considered here, it can be said that, unless there is a substantial change in the pattern of wastage rates, high wage workers can be expected to show better survival at all length of service periods, than low wage workers.

vi) Greenwood's Survival Tables:

Greenwood was the first to propose survival tables, and it was mentioned earlier (See Chapter II, page 28) that these tables could be used to construct Survival Curves. In the same way as Bell, Greenwood draws on all leavers over a period, but relates these to the whole labour force - leavers and stayers - in his "cohorts" analysis. To investigate this method, Survival Curves were drawn for all leavers in the Natal and Cape areas.

The curves for the Natal area (see figure 4, page 102) show poorer survival among NEF than NEM.

The curves for the Cape area (see figure 5, page 102) illustrate that NEF show poorer survival than NEM after 6 months, but are better in the earlier stages of under 6 months service. Some of this information is, of course, also apparent from a consideration of the Median Length of Service of leavers (NEF 8.9 months, NEM 7.6 months) and from Labour Turnover rates for the Cape (Table 9)

TABLE 9
LTO RATES BY LENGTH OF SERVICE, CAPE REGION

	NEF	NEM
Under 3 months	83.8	180.5
3 - 6	47.4	60.2
6 - 9	77.5	63.9
9 - 12	30.3	41.7
12 - 18	44.0	35.5

These figures also show the generally lower LTO of NEF up to 12 months. The reversal in the 6 - 9 month category is a function of the number of stayers at the time of census, this being a weakness inherent in the calculation of LTO rates over short periods of time such as this.

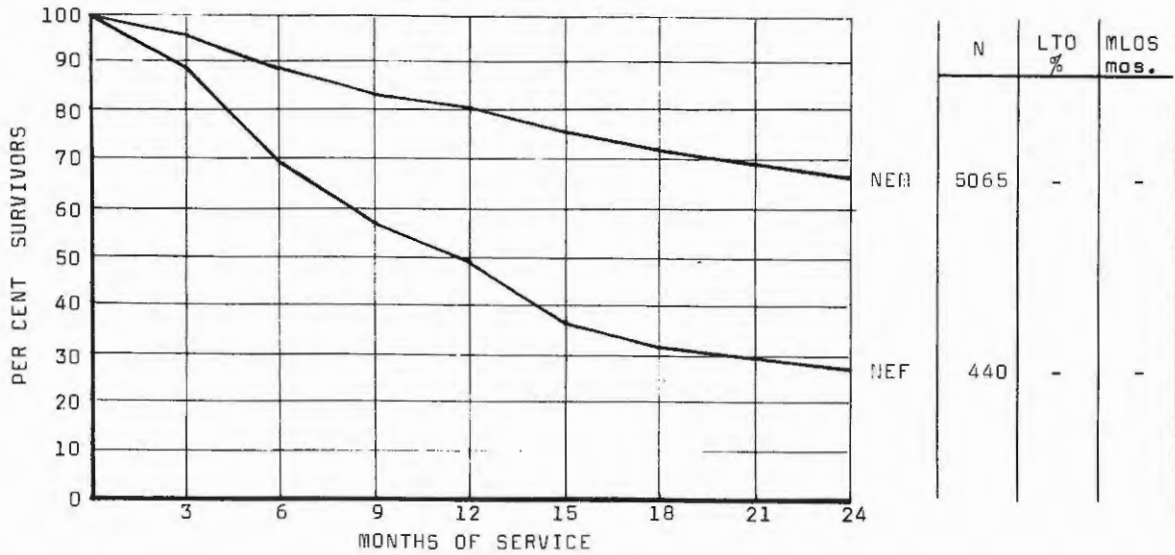


FIGURE 4 : GREENWOOD SURVIVAL CURVES - ALL NATAL

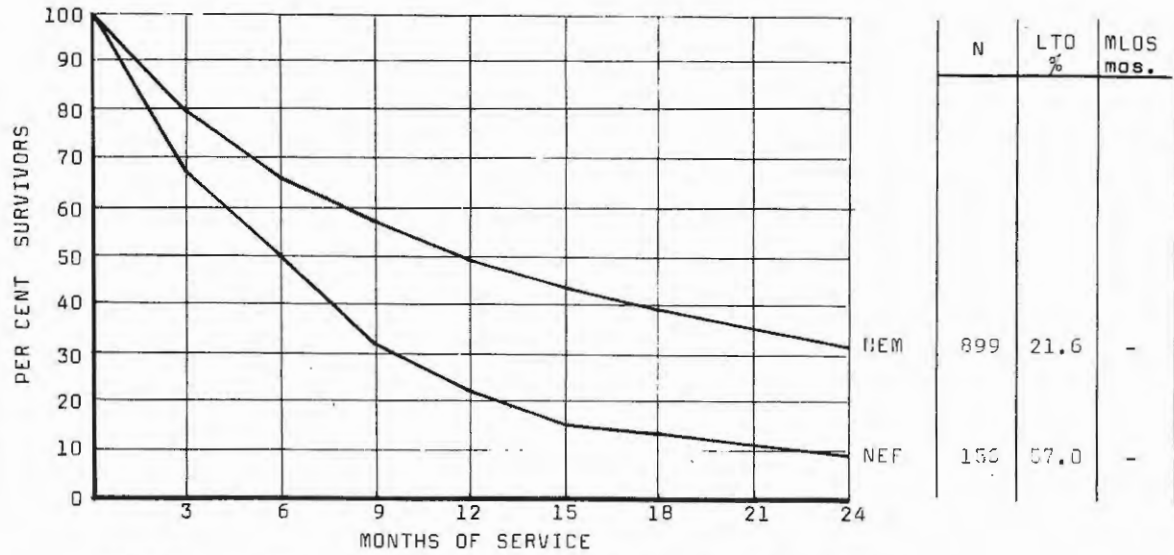


FIGURE 6 : COMPARISON OF SLC's, ALL NATAL NEF & NEM LEAVERS

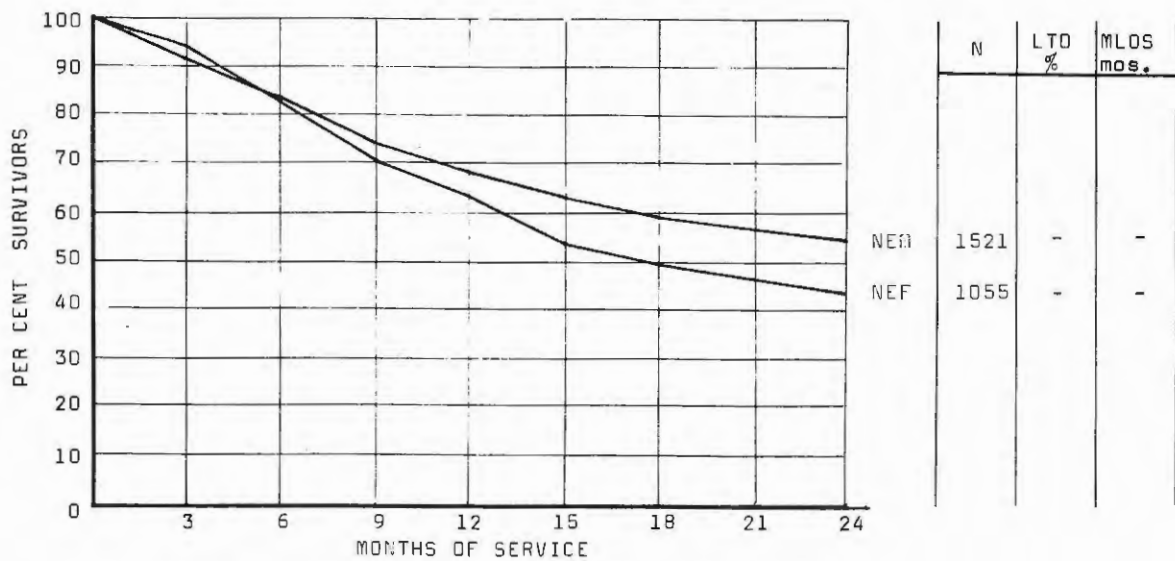


FIGURE 5 : GREENWOOD SURVIVAL CURVES - ALL CAPE

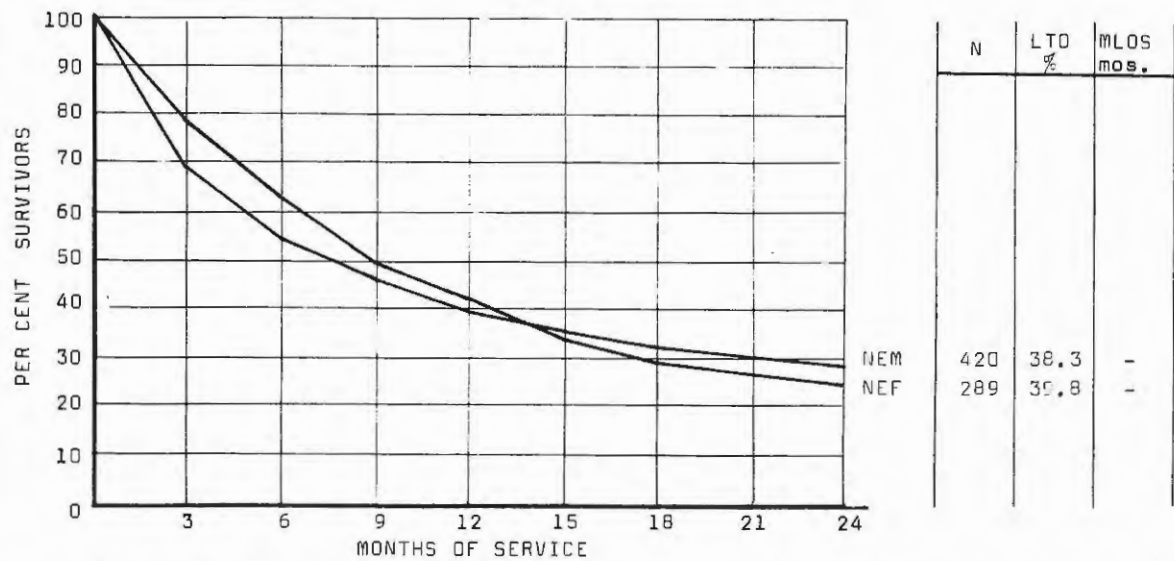


FIGURE 7 : COMPARISON OF SLC's : ALL CAPE NEF & NEM LEAVERS

The Greenwood curve shows a reversal at 6 months, this curve also being related to the number of stayers in each length of service category. However, due to the method of calculation, it is not strictly comparable to the LTO rate analysis, and does not illustrate the same short-term fluctuations.

If the equivalent SLC's are now compared (see figures 6 and 7 page 102) the picture for Natal is the same for both curves, namely that NEM show consistently better survival than NEF. Comparing the curves for the Cape, the SLC shows the reversal in NEF/NEM rates taking place at 1 year. As the SLC is based on leavers only, it is not affected by the labour force composition in particular Length of Service groups at any time.

It is suggested that the SLC provides a better picture in this instance; certainly it reflects the difference in overall LTO rates up to 12 months consistently:

NEF	57.1%
NEM	86.9%

There appears to be no advantage in the Greenwood curves over the SLC. They are much more difficult to calculate, requiring census data on stayers, as well as data on leavers, and the use of "cohorts" in each Length of Service category tends to distort the curve upwards, so that the negative acceleration in survival rates, which is characteristic of the other curves - and of the LTO process - is not as clearly shown.

vii) Advantages of the SLC:

Proceeding from the argument on page 90 regarding the relationship of Silcock's Half-Life of a group, to the Median Length of Service of all leavers, and extending this relationship also to Survival Curves, it has been shown that the SLC's can be used in similar ways to the more complex curves, and have the advantage of being much simpler to calculate.

They have one other advantage over the more complex approaches however, and that is that the situation which they represent is topical. For example, if entrant groups are followed up, virtually to finality, as Rice et al (415) did 6 years after their entrance, then an analysis is being made of a group of leavers exposed to varying conditions over a number of years. To a lesser extent this is true also of

Silcock's approach, if groups are followed up over long periods.

But if a SLC is drawn, representing all the leavers in the past year, for example, then these persons, irrespective of their length of service, all left as a result of conditions (whatever these may have been) prevailing in the immediate past, and the influence of these conditions on persons of all length of service categories is measured. Over such a period, the SLC will also show less short-term distortions than successive entrant groups, and will illustrate the behaviour of leavers over a useful period of time.

From all the foregoing arguments, then, it is proposed that the SLC best meets the criteria of ease of calculation and of illustrating the essential features of the turnover process in a particular situation. This new measure will therefore be applied to the analysis of the data of this study.

3. STABILITY INDICES:

In addition to the measures discussed thus far, four other indices which take note of the effect of length of service on turnover were investigated, as part of the evaluation of those measures which might assist in the study of the turnover process. The indices, are as follows:

a) The Skill Wastage Index (416). This index, by the same or other names, has been the subject of a good deal of work (Long (417), International Labour Office (418), Duncan (419), Lewis (420)).

b) The Skill Dilution Index (Byrt (421), and International Labour Office (422)) is similarly based.

c) Brissenden and Frankel's "Percentage of Unstable Workers" (423)

d) The Labour Flux Rate.

In order to investigate the utility of these measures, they were applied to some of the data from this study, with a view to evaluating whether they contributed any more information than that available from other measures such as LTO rates and Median Length of Service.

a) The Skill Wastage Index:

This is calculated as follows:

$$\frac{\text{No. on payroll of over 1 year's service now}}{\text{No. on payroll a year ago}} \times 100$$

and the index is meant to show the erosion of the skilled labour force (i.e. those over 1 year's service) by LTO. Thus, the higher the index, the less this erosion.

Indices calculated for the nine factories for all NEF and all NEM, are given in Table 10 below:

TABLE 10

SKILL WASTAGE INDICES, ALL FACTORIES

	A	B	C	D	E	F	G	H	J
NEF	61.6	77.1	70.4	64.3	67.0	77.8	-	59.3	36.4
NEM	71.9	79.4	75.4	77.2	75.2	85.7	86.8	82.9	59.9

A first analysis reveals that for each factory, NEM are better than NEF, in keeping with the fact that the NEM are more stable, longer-service groups. In the same way, for Factory J, the low figures taken with the high LTO (108.0 for NEF, 68.3 for NEM) appear to define the situation well.

However, a rank-difference correlation between turnover rates for all employees and the skill wastage index for all, in each factory, resulted in

$$\rho = 0.93,$$

showing that both measures are very likely to be measuring the same sort of thing.

It can be noted in passing here, that a similar rank difference correlation between LTO rates and Median Length of Service yields

$$\rho = 0.82$$

and a similar argument could be advanced, only less strongly, it seems. However, LTO rates are related to Median Length of Service mainly because LTO, when it rises, normally does so in the shortservice categories, and hence Median Length of Service goes down accordingly. That this is not necessarily so, however, is shown by factory C, where despite a fairly high turnover among NEF (37.8%) the Median Length of Service at 16.0 months indicates that this LTO was distributed among the longer-service categories as well.

By contrast, factory A (NEF) has a similar LTO but a low median length of service (38.1%, 6.8 months) indicating that turnover took place predominantly among short-service employees - yet the Skill Wastage Index is the lowest of the Cape factories at 61.6. This, by definition, should reflect erosion of the skilled labour force, rather than of short-service employees, but without comparison with the previous year's figures, no conclusions about where turnover has occurred are possible from a single index.

Further shortcomings in this measure become apparent when it is noted that for Factory E, the Skill Wastage Index ranks seventh for NEM, but the corresponding LTO ranks third. It was found that in factory E which suffered a large number of retrenchments during the year; that the effect of this was to produce a low Skill Wastage Index, as the the denominator was relatively large, and the possible total of employees who might have reached one year's service was smaller because of the retrenchments. Downward changes in the total labour force therefore distort this measure seriously.

Regionally, the Skill Wastage Index may be contrasted with LTO as is shown in Table 11 below:

TABLE 11
REGIONAL SKILL WASTAGE INDICES AND LTO RATES

		Cape	Natal	Johannesburg
NEF	SWI	70.1	65.7	36.4
	LTO	39.8	57.0	108.0
NEM	SWI	76.3	81.7	59.9
	LTO	38.3	21.6	63.0

It can be seen that the Indices rank in the same order as labour Turnover rates, and provide no additional information to that already available from LTO rates, median length of service of leavers, and survival of leavers curves; all of which are more accurate and more detailed indicators, and are not influenced by retrenchments or other downward labour force changes.

b) The Skill Dilution Index:

This is calculated as follows:

$$\frac{\text{No. of persons over 1 year's service now}}{\text{Total on payroll now}} \times 100$$

The index according to Byrt, indicates the necessity, due to turnover, to dilute the skilled labour force with workers of under one year's service. The following figures were obtained for the factories on the survey:

TABLE 12
SKILL DILUTION INDICES, ALL FACTORIES

	A	B	C	D	E	F	G	H	J
NEF	60.1	68.3	55.2	48.9	67.0	68.3	-	32.9	22.5
NEM	69.6	79.6	66.8	82.3	84.3	79.1	82.8	81.9	58.8

The index could perhaps be more profitably viewed as a measure of the length of service composition of the labour force, as it indicates no more than the proportion of persons of over 1 year's service who are at present employed. Thus, from the figures in table 12, factory E has a high Index for NEM due to the retrenchments, which apparently resulted in a higher percentage of long-service workers remaining on the labour force, as mainly short service workers were retrenched. This index, if computed before the retrenchments, would presumably have been lower. Retrenchments would cause it to rise and this could be taken as an indicator of reduced LTO rates to come (if only length of service distribution factors were operating). This in fact did occur in this factory, where turnover dropped from 21.4% in the month before the retrenchments, to 20.8% in the month of retrenchment and 16.6 in the month following.

By contrast, factory H doubled its NEF employment during the period of the survey, and its Index is correspondingly low at 32.9% as a result. In factory J, too, the Index at 22.5% gives a good comparative picture of the very small stable core of NEF workers.

It has been argued earlier that Length of Service distribution and Turnover will be closely related. Table 13 contrasts the Skill Dilution Indices for the three regions with the corresponding LTO rates.

TABLE 13
REGIONAL SKILL DILUTION INDICES AND LTO RATES

		Cape	Natal	Johannesburg
NEF	SDI	61.6	48.6	22.5
	LTO	39.8	57.0	108.0
NEM	SDI	73.6	82.4	58.8
	LTO	38.3	21.6	63.0

It can be seen that the relationship for the three regions is consistent, with the highest turnover groups having the lowest indices. This consistency does not, however hold for all the factories. Thus in factory F, with the lowest LTO rate the Skill Dilution Index for NEF and NEM is also low for Natal. This simply shows that factors other than Length of Service alone are acting as determinants of LTO in this particular factory. The apparent inconsistency is clarified by the Median Length of Service (15.7 months) which shows that losses are evenly distributed among Length of Service groups, rather than preponderantly among short service persons as in the other factories.

Generally, however, the assumption will hold that an increase in total employment will dilute the labour force with short-service workers - and that a decreasing labour force will result in a higher percentage of long-service employees - the latter may however not necessarily be the case.

Thus, in the case of EF the number employed in this group has reduced considerably during the period, but no assumptions can be made regarding the length of service of those leaving or remaining. The single index, therefore, cannot be interpreted as representing any more than the current position in this group.

(SDI = 78.6%)

It appears then, that this index, if computed at intervals for a group, can serve as an indicator of changes in the length of service composition in the group. Predictions as to whether LTO would rise or fall in a period to follow, could be made on this basis of such comparison, if length of service is assumed to be a dominant influence in the level of LTO. This measure will not be used in the subsequent analysis of this study, however, as it provides little additional information to that given by LTO rates and the Median Length of Service of Leavers.

c) Brissenden's "Percentage of Unstable Workers":

It will be recalled that Brissenden and Frankel (see page 23) found it useful to contrast the "stable core" of workers of over one year's service with those who had less than one year's service, and they compared the LTO rates (their "mobility rates") of the total working force with the rates of those of under one year's service. They also found it useful to express the "percentage of unstable workers", namely those of under 1 year's service, as a percentage of the total employed. This is, of course the inverse of the Skill Dilution

Index.

The measure shows clearly that most factories have a stable core, and that mobility is normally caused by a small percentage of the total.

It is this percentage of "turnover prone" persons which increases under full employment, and is responsible for the rise in LTO rates at such times.

For all the employees in the present study, 24.2% were responsible for mobility in the year under review - 75.8% did not turn over at all.

d) The Labour Flux Rate:

It was mentioned earlier (page 22) that Brissenden and Frankel proposed a measure of mobility, the "Labour Flux Rate" to overcome the disadvantage of a simple LTO rate, which did not indicate where turnover was taking place.

To explore the usefulness of this measure, Flux Rates were computed regionally, for both Controllable Turnover, and all turnover, using the method described. The results were as follows:

TABLE 14
REGIONAL LABOUR FLUX RATES

	Controllable Turnover	All
Cape (LTO 36.6)	2.8	3.0
Natal (LTO 23.8)	2.8	3.0
Transvaal (LTO 74.1)	3.2	3.2

Rates were also calculated for each factory, but with similar results to the above; the measure produced an insufficiently large range, and did not discriminate adequately among regions or factories, having known differences in their turnover situation, which could be better expressed by other methods.

The measure will not be used in any subsequent analysis.

C. CONCLUSIONS

It is contended, at this stage that:

- i) The concept of Controllable Turnover;
- ii) The calculation of Length of Service-Specific LTO rates for detailed comparative purposes;
- iii) The LTO Rate read in conjunction with the Median Length of Service of Leavers as a broad measure of the extent and location of turnover; and,
- iv) The use of Survival of Leaver Curves as a means of representing certain essential characteristics of the turnover process; and for contrasting the effects of particular variables;

meet the criteria laid down at the beginning of this section (page 83) for measures of labour turnover. More particularly, three of the above can be regarded as fulfilling the requirements for the control of labour turnover in the work situation. Thus, the LTO rate indicates the extent of turnover, the median length of service of leavers indicates in what length of service group leavers are predominant and the survival of leaver curves provide a graphic picture of the distribution of leavers by length of service, as well as facilitating the comparison of leavers on particular variables. All these measures require only current data, available from factory wage records.

These measures, separately or in combination, together with simple tabular comparisons where appropriate, will now be applied to the study data, in order to investigate some of the variables known to be related to Labour Turnover.

CHAPTER VANALYSIS OF THE STUDY DATA

From the preceding arguments, a combination of measures have been proposed which, it is suggested, meet the criteria laid down on page 83 of Chapter IV. These measures, together with such other tabulations and graphical representations, as may be appropriate, can now be applied to the study data. The analysis will proceed with three distinct aims in mind, which will of necessity have to be dealt with concurrently, but will be separated out in summary form at the conclusion of the analysis. These aims are:

- i) To demonstrate the use, in particular, of the measures proposed thus far, namely Median Length of Service of Leavers, taken with LTO rates, and Survival of Leaver Curves, and to show how these measures compare, in providing meaningful information, with some of the more conventional methods of analysis.
- ii) To investigate the variables which are involved in the interaction between employer and employee, in the industrial situation, and to relate these to the concept of group cohesiveness in order to illustrate their effect on labour turnover. The data collected from the factories involved in this study, will be used experimentally for this purpose.
- iii) To establish how the findings in (ii) above may be related to the aim of reducing labour turnover.

In a further attempt to produce an orderly analysis of a field in which there are a number of interrelated variables, the discussion which follows will be subdivided in terms of the main variables which were studied. These are as follows:

- A) Length of Service
- B) Age
- C) Wages
- D) Marital Status
- E) Types of Termination
- F) Race, and
- G) Sex

The analyses will be concerned mainly with the two broad groups, Non European Females (NEF) and Non European Males (NEM) who constitute by far the greatest percentage of the labour force in the Footwear Industry. Among the European Males (EM) and European Females (EF), groups were generally too small for any factory analyses to be done. Where numbers permit it, in the analyses which follow, Overall or Regional figures for these groups will be given.

A. LENGTH OF SERVICE

The importance of the length of service variable in any analysis of labour turnover has already been argued on pages 84 - 87 of Chapter IV, where two measures were proposed which effectively take account of the influence of Length of Service. They are the Median Length of Service of Leavers (MLOS) and the Survival of Leavers Curve (SLC).

This section, then, will be commenced by using these measures (together with the LTO rate) to illustrate differences between factories and regions which were studied on the Survey.

Due to the importance of length of service as a variable, and the fact that it is very likely to be inter-correlated with some of the other variables such as Age and Wages, a more detailed analysis of the nine factories comprising the sample will be given under this heading. Initially, this analysis will be by Survival of Leaver Curves, supported by LTO rates, and Median Lengths of Service. Only the two main groups, NEM and NEF, will be considered, but a more detailed breakdown into other groups will be given under the variable "Race".

In all the sections to follow, survival of leaver curves will be presented consecutively at the end of the section to which they refer.

1. SURVIVAL OF LEAVER CURVES ANALYSIS:

The curves used in this section have, for convenience of scale, been drawn to include leavers of up to 24 months service only. It follows that the length of service scale could be extended to include the length of service of the longest-serving leaver (when the curve will touch the X-axis) but in practice, the slope of the curves does not alter greatly after 24 months, due to the much smaller number of leavers.

a) Regional Differences:

Clear differences were apparent across the three regions of the Cape, Natal, and Johannesburg (figures 8, 9 and 10) (only one factory - the largest in the area - was represented in the latter region).

i) Non-European Males:

Among the males, the differences are closely related to the employment situation in the areas, it being generally conceded that labour is most easily obtainable in Natal, and

in short supply in Johannesburg. Natal NEM show the lowest LTO rate (21.6%), the highest median length of service of leavers (11.7 months) and a higher percentage survival at all length of service categories. The Johannesburg and All Cape LTO rates are 63.3% and 38.3% respectively, but the factory J Survival of Leavers Curves which is above the Cape Survival of Leavers Curve up to 12 months, shows the higher proportion of long-service persons who are leaving - and at a much greater rate than in the Cape. The MLOS figures of 8.5 and 7.6 months respectively reflect this difference, and the comparison of curves and rates gives a clear picture of the serious Turnover occurring in Factory J.

ii) Non-European Females:

The comparative stability of the Non-European Female in the Cape is well-illustrated by the measures, with the LTO rate, MLOS and SLC all being markedly better than for the other two regions. The Cape figures also show that the NEF compares very favourably with the NEM in stability in this area.

NEF in Natal and Factory J again have very similar SLC's but again the LTO rate in factory J (108.0%) is far higher than for NEF in Natal (57.0%). Whilst the service distribution of leavers is similar, the rate of leaving is nearly double in Johannesburg.

b) Factory Comparisons:

Accepting from the above that the situation in factory J is the worst for both NEF and NEM, the remaining comparisons can be within the Cape and Natal regions.

CAPE: (Figures 11 - 14)

i) NEF:

For Factories A, B & C, the SLC for female leavers is better than for NEM, at least in the shorter service categories. NEF leavers also show a longer MLOS than NEM. At C, in fact, the NEF show better survival up to 36 months of service. NEF LTO rates are lower than NEM, except in factory B (36.9% NEF, 31.1% NEM) where a rather larger percentage of longer-service NEF separated. Factory D is not typical of the Cape with a much higher LTO (48.5%) and a poorer SLC, for NEF than for NEM.

ii) NEM:

Factories B and C show very similar characteristics, in their SLC's with C's rate of leaving being rather higher (39.2% to 31.1%) with rather more leavers among the longer-service workers (MLOS 10,1 to 8.7 months). Factory A has a high LTO (51.2%), and a very low MLOS (4.8) while factory D shows a low LTO (26.4%). The relatively low MLOS of 7.3 months (when considered in relation to the low LTO rate) indicates a very stable core of long service workers, with such losses as are occurring, being mostly among short service workers.

NATAL: (Figures 15 - 18)

i) NEF:

Because of the very stable group of NEF in factory F (only 3 leavers), curves are only available for factories E and H. In factory E, the NEF show a comparable distribution of leavers when compared with NEM. The LTO rate for NEF is higher, however (36.2% to 21.4%) but the relatively high MLOS of 12.5 months suggests that this group generally shows satisfactory length of service before leaving. The group is small, however. In H, NEF show high LTO (81.7%) and poor survival, and are a very unstable group.

ii) NEM:

The NEM show surprisingly little variation among the four factories, except that F is rather better than the others (LTO 15.7%, MLOS 15.7 months). The stability of the males in Natal is well-illustrated by these curves and figures.

2. THE INFLUENCE OF LEARNERS:

In planning this study, a good deal of attention was paid to separating out Learners from other leavers, as it was generally accepted in the Industry that Learners constitute an LTO problem.

This was borne out by the results of this study, as the LTO rates in Table 15 show.

TABLE 15
LTO RATES AMONG LEARNERS: ALL FACTORIES

	A	B	C	D	E	F	G	H	J
NEF	55.1	43.9	34.2	52.0	81.8	11.5	...	93.4	81.2
NEM	73.7	101.7	60.9	83.3	48.0	23.9	50.6	65.1	140.7

When these rates are compared with the "all service groups" rates in Table 16 to follow, it can be seen that they are consistently higher than the overall rates for each factory.

However, it soon became apparent that, from the very nature of their contract, learners were bound to be of short service, young, and of low wages. It proved more helpful, therefore, to base analyses on these variables, namely length of service, age, and wages, rather than on a relatively undifferentiated concept such as "learners". It can be accepted, however, that any findings based on the short-service categories (under 1 year) will apply almost in their entirety to any groups designated "learners", as will the lower age and wage categories, to be mentioned in subsequent discussions.

TABLE 16
L.T.O. RATES (PER CENT) BY LENGTH OF SERVICE ALL FACTORIES

Non-European Females						
Length of Service						
Factory	Under 3 mnths	Under 1 yr.	1 - 2 yrs	2 - 5 yrs	Over 5 yrs	All
A	80.0	67.5	21.9	18.0	14.7	38.1
B	100.0	56.5	44.3	21.6	22.8	36.9
C	66.7	33.9	26.3	36.0	-	37.8
D	91.7	68.1	38.1	8.3	-	48.5
E	160.0	58.6	40.0	29.6	17.6	36.2
F	-	-	-	-	-	8.1
G	n.e.*	n.e.	n.e.	n.e.	n.e.	-
H	87.2	100.0	42.3	30.8	NIL	81.7
J	117.8	84.0	183.3**	50.0	-	108.0

Non-European Males						
Length of Service						
Factory	Under 3 mnths	Under 1 yr.	1 - 2 yrs	2 - 5 yrs	Over 5 yrs	All
A	270.6	116.7	26.0	29.8	11.1	51.2
B	283.3	93.3	28.9	21.5	13.0	31.1
C	100.0	61.1	36.2	28.4	21.0	39.2
D	333.1	120.8	27.3	12.1	8.8	26.4
E	96.4	83.6	30.7	10.5	8.4	21.4
F	39.0	34.0	16.8	10.0	7.4	15.7
G	56.5	54.6	24.3	17.6	5.3	20.2
H	70.6	67.2	27.5	15.4	8.4	22.9
J	97.1	97.7	86.7	44.8	26.5	63.3

* not employed

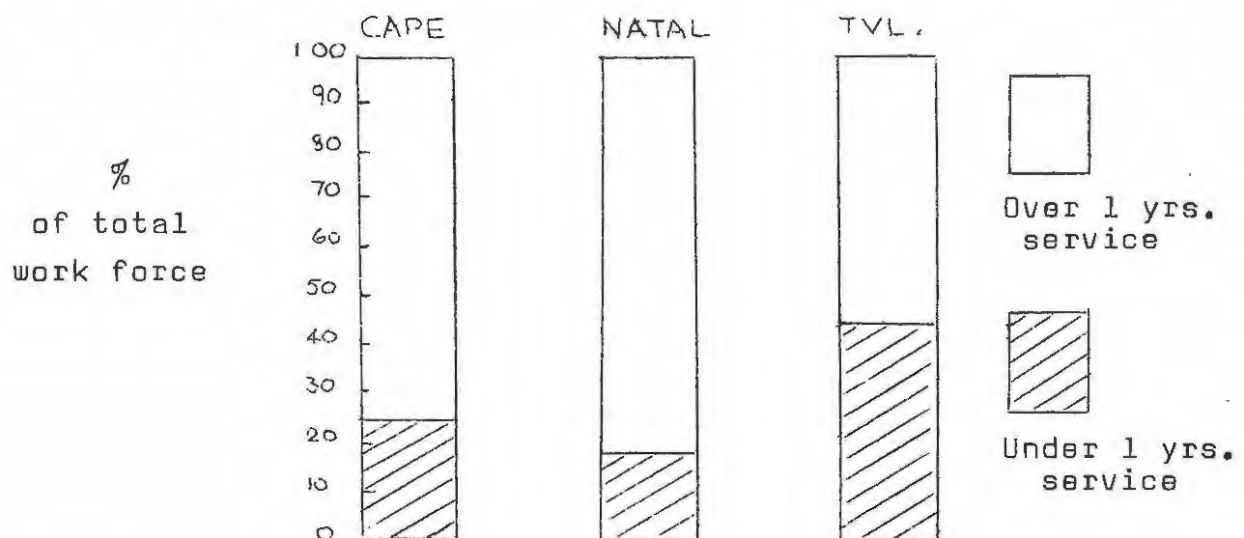
** Small group

The table above, which has previously been shown in Chapter IV, page 84 is given here again primarily to illustrate the extreme instability of the short-service groups in some factories, and particularly among Non-European Males.

The position is particularly serious among NEM in the Cape (A, B, C & D) where three factories have LTO rates in the under 3 months category, of near to or over 300%. The under 1 year rates are also high. In Natal, the under 3 months category is much better, suggesting that the learner group settles in better in this area.

NEF, by contrast, show much better rates all round in the under 3 months category.

A further indication of the effect of learners (or at least, short service operatives) on the overall LTO rates, is shown by figure 19 below.



	LTO RATES %		
Overall NEM:	38.3	21.6	63.0
Work force under 1 yrs. service	86.9	62.4	97.7
Work force over 1 yrs. service	20.6	12.8	44.9

FIGURE 19 : EFFECT ON LTO RATE OF WORK FORCE OF UNDER 1 YEAR'S SERVICE

The above figure shows that regionally, at least, the proportion of short-service workers in the labour force does appear to be directly related to the LTO rates in this category and to the overall LTO rates.

The above relationship is, however, not inevitable, and nor was it consistent among all the factories on this survey. A notable exception is Factory F, which, when compared with factory A, has almost the same proportion of learners among its NEM leavers and stayers.

	% of Learners among	
	Leavers	Stayers
Factory A	50.9	35.0
Factory F	54.9	35.4

But whilst factory A has one of the highest NEM LTO's (51.2%) factory F has the lowest (15.7%). These learners in F do account for the highest percentage of F's turnover, but the rate itself is low (23.9%) showing that environmental factors within a factory can have an influence on learner LTO (the Learner LTO rate for A is 73.7%)

In this study, over 50% of all leavers were learners, and it would seem appropriate to direct any action aimed at reducing LTO at this, and other short-service groups. The experience of F above suggests that such action could be successful.

3. THE DISTRIBUTION OF LEAVERS AND STAYERS:

As mentioned earlier (Chapter II, page 38) Brissenden and Frankel found large differences when they contrasted the percentage of leavers and stayers in short and long service groups.

The findings for the present study are as follows:

TABLE 17
PERCENTAGE LENGTH OF SERVICE DISTRIBUTION
AMONG LEAVERS (L) AND STAYERS (S)

FACTORY	N.E. FEMALES				N.E. MALES			
	Under 3 months		Over 2 years		Under 3 months		Over 2 years	
	L	S	L	S	L	S	L	S
A	25.3	12.0	17.7	40.4	41.8	7.8	18.2	46.6
B	15.1	5.6	30.2	50.4	27.9	3.3	32.0	67.4
C	28.6	14.4	42.8	40.0	27.8	10.5	34.7	54.4
D	26.2	13.0	4.8	26.1	22.7	2.2	20.5	66.1
E	29.5	6.8	32.3	50.1	18.3	4.6	26.5	69.4
F	too few	too few	too few	too few	15.7	6.2	37.3	73.9
G	NIL	NIL	NIL	NIL	20.3	7.3	33.8	66.3
H	34.4	30.3	3.4	16.1	24.4	8.1	33.1	69.3
J	43.4	31.5	9.2	15.7	23.6	16.2	21.6	45.0

For NEF, all factories show a higher percentage of leavers than stayers in the under 3 months service category, with the reverse being true for the over two years category. C is an exception (in the over 2 years group) due to the heavy losses

suffered among long-service operators after this factory was re-located in a new area.

For NEM the effect is consistent, although for C again, in over two years, the effect is not as marked, for the same reason as above.

As the above categories are almost at opposite ends of the Length of Service continuum, a contrast can reasonably be expected. It is of interest to see at what stage the reversal takes place, as this point, where stayers begin to exceed leavers, could be seen as the beginning of a period of "settled connection", as defined previously by Rice et al, (see Chapter II, page 30) and this can be determined, for all leavers and stayers, from the Histograms of Figures 20 and 21. For both NEF and NEM, there is a decline in the excess of leavers over stayers, up to about 18 months, after which stayers increasingly exceed leavers as the categories progress.

Various studies (see Chapter II, page 39) have also noted the percentage of leavers in specific categories such as under 3 months (30-40%, Long, Greystoke, Clarke, van der Horst, Raphael) and under one year (White, 66% of leavers i.e. 34% survived to end of 12 months).

The overall figures for this study, on a regional basis show the following percentage of leavers who left within the first 3 months.

	$\frac{NEM}{NEF}$	$\frac{NEF}{NEM}$
Cape	30.9	21.4
Natal	20.6	32.7
Transvaal	23.6	43.4

There are, as is to be expected, quite large differences within factories for such figures, as is illustrated by the percentages surviving to the end of 12 months, as shown in Table 18.

TABLE 18
PERCENTAGE OF LEAVERS SURVIVING TO END OF 12 MONTHS

	A	B	C	D	E	F	G	H	J
NEF	29.1	51.6	54.8	23.8	50.0	-	-	12.6	23.7
NEM	30.0	42.6	46.5	34.1	45.5	53.9	53.6	47.9	39.6
ALL	29.5	47.0	46.7	33.3	46.0	53.3	53.6	38.3	35.1

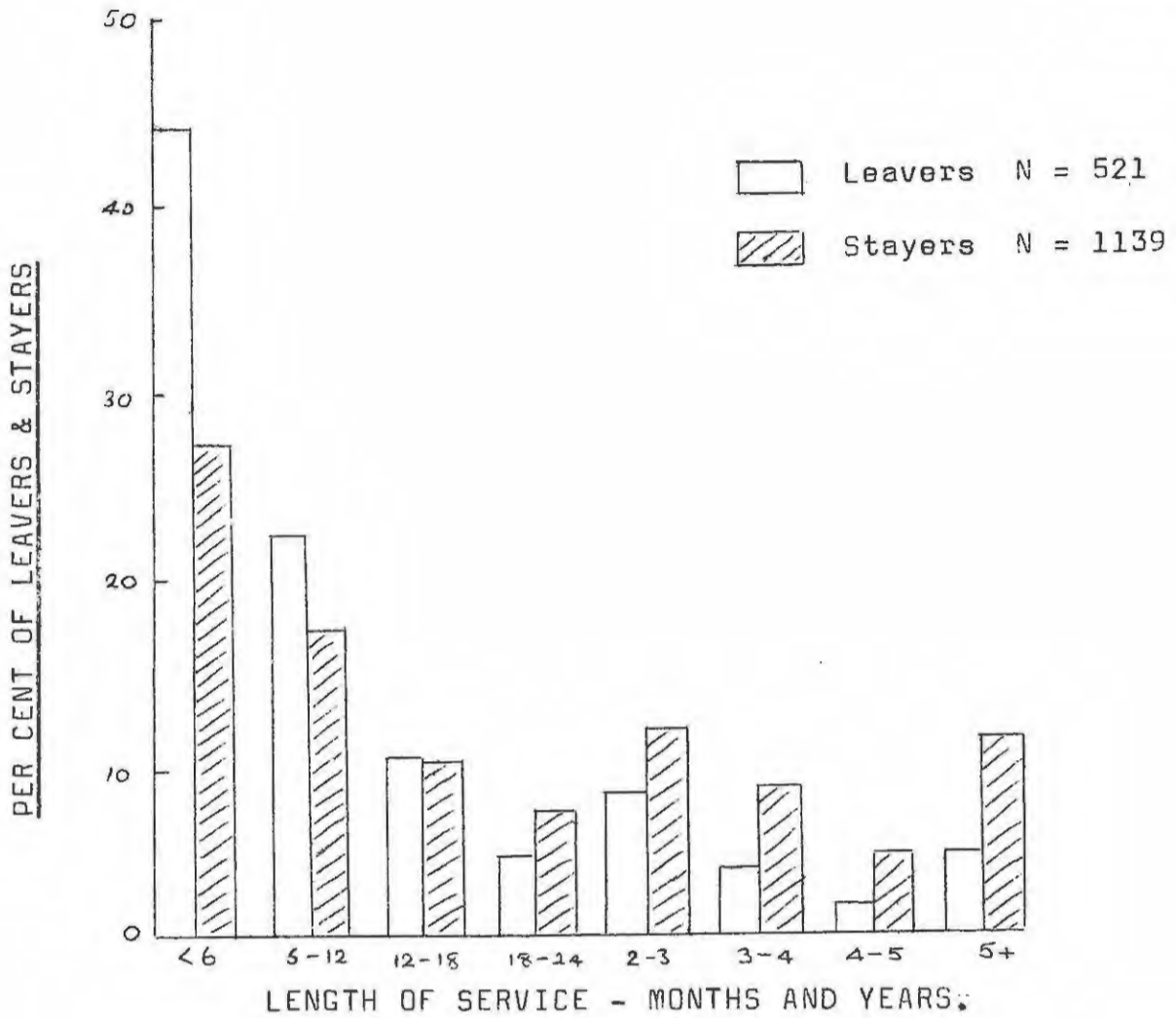


FIGURE 20

LENGTH OF SERVICE DISTRIBUTION - ALL NEF LEAVERS & STAYERS

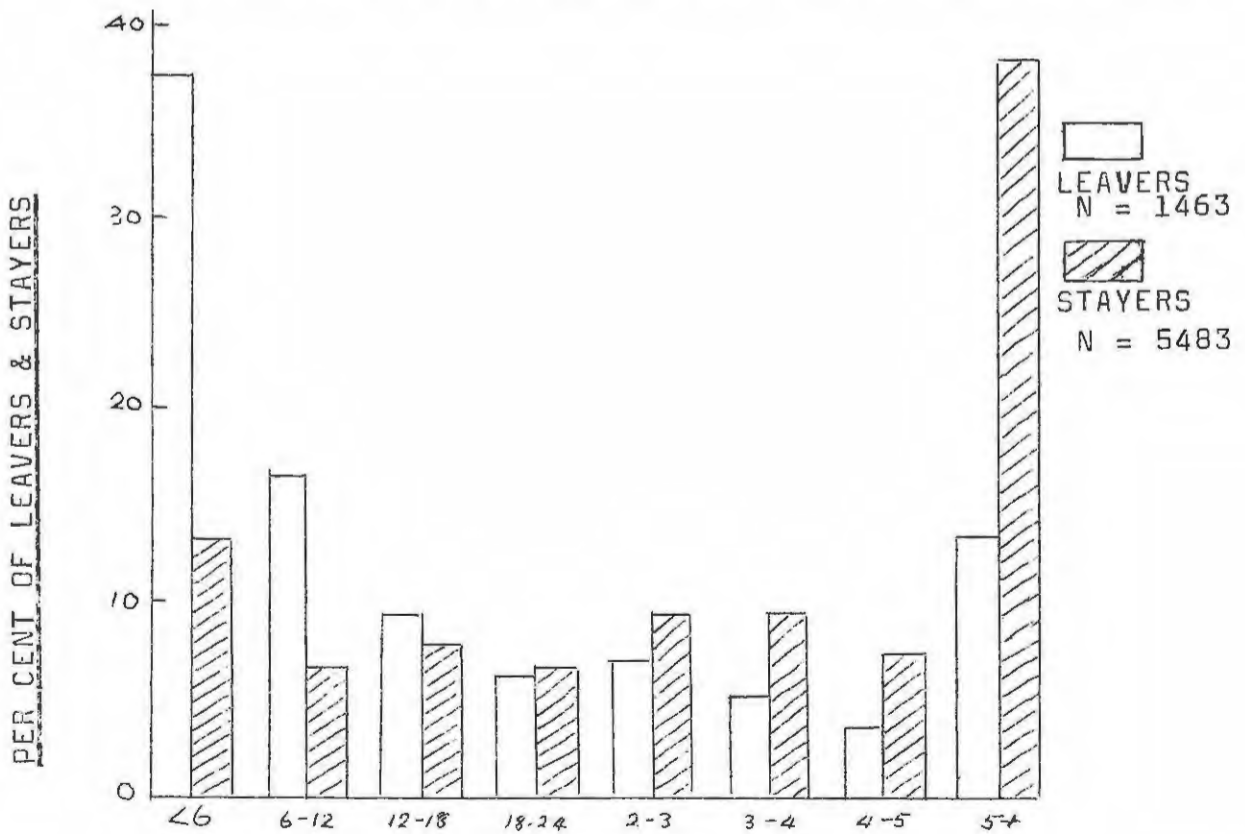


FIGURE 21

LENGTH OF SERVICE DISTRIBUTION - ALL NEM LEAVERS & STAYERS

From this it can be seen that factories A, D and J approximate to White's findings, but that generally, the 1967-68 picture is rather better than in 1943.

4. CONCLUSIONS:

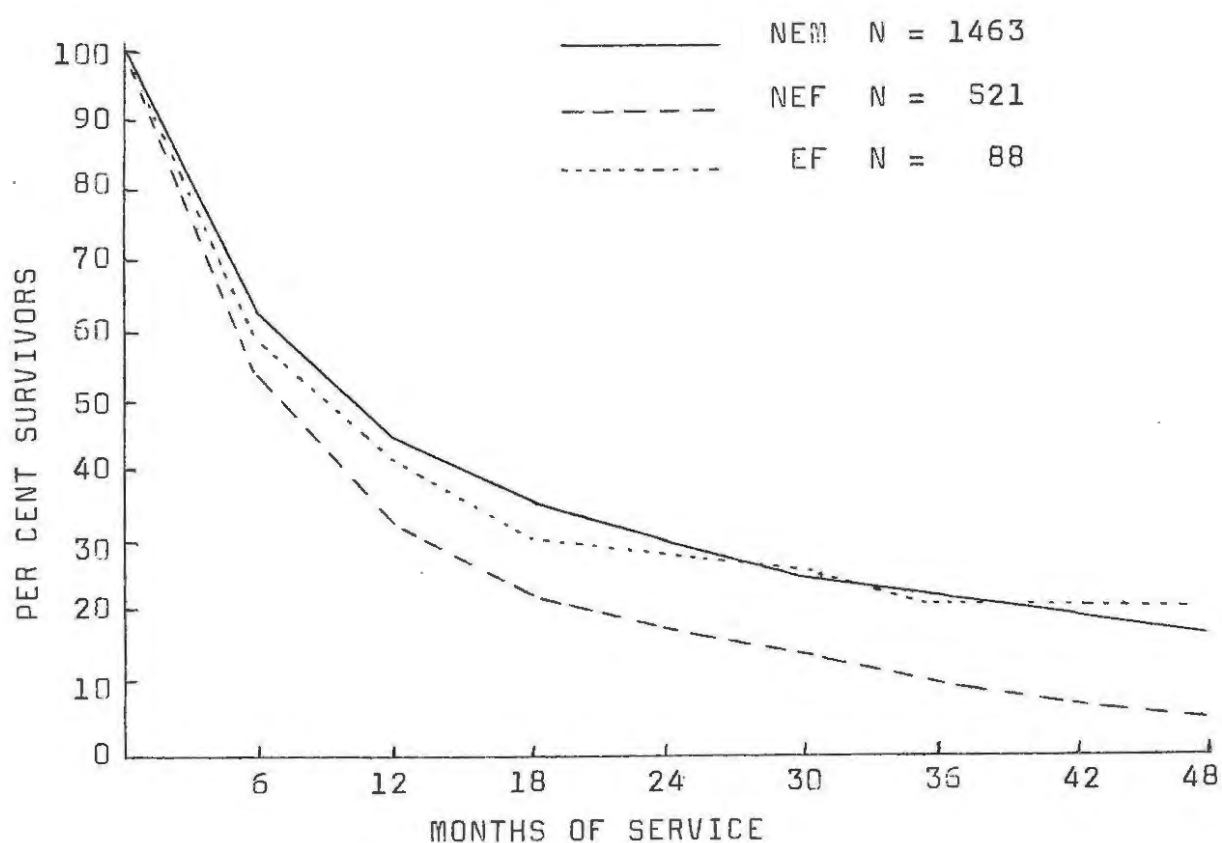


FIGURE 22 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE:
ALL LEAVERS

Consideration of the above Survival Curve of Leavers for All Leavers shows very clearly the relation of length of service to the percentage of leavers. There is a high percentage loss in the early months of service, decreasing progressively as length of service increases.

From this curve, and from the other figures given, it can be concluded that there is a clear relationship between length of service and turnover, with the greatest amount of loss in the short length of service groups.

The finding that length of service is a major factor in labour turnover is important with respect to the relationship between group cohesiveness and worker stability. It lends weight to the view that the longer the period of contact with the group, the greater the likelihood of the new employee becoming integrated into the group.

The high level of turnover among short-service employees suggests that the majority are not integrated into the working group. However, the position was shown to be better in Natal, illustrating that level of employment is also a factor in group formation. If a new employee finds no satisfaction in the work situation, and he has plenty of other alternatives, he leaves to try elsewhere. Mobility is easy, because of the lack of job specificity, as argued in Chapter I (page 4), and high turnover results. A relative lack of alternatives, however (as in Natal) promotes greater stability.

The findings in factory F, nevertheless, show that learners can be integrated into the group, and that high turnover is not inevitable. This emphasizes the need to direct action at this group.

It is suggested, from the findings on page 118, that the period of "settled connection", as defined by Rice et al, (See Chapter II, page 30) commences after about 18 months. Thereafter, factors external to the group, are likely to assume increasing importance as determinants of turnover.

Finally, the value of using the three proposed measures, namely LTO rates, median length of service of leavers, and Survival of Leaver Curves for comparative purposes, has been illustrated.

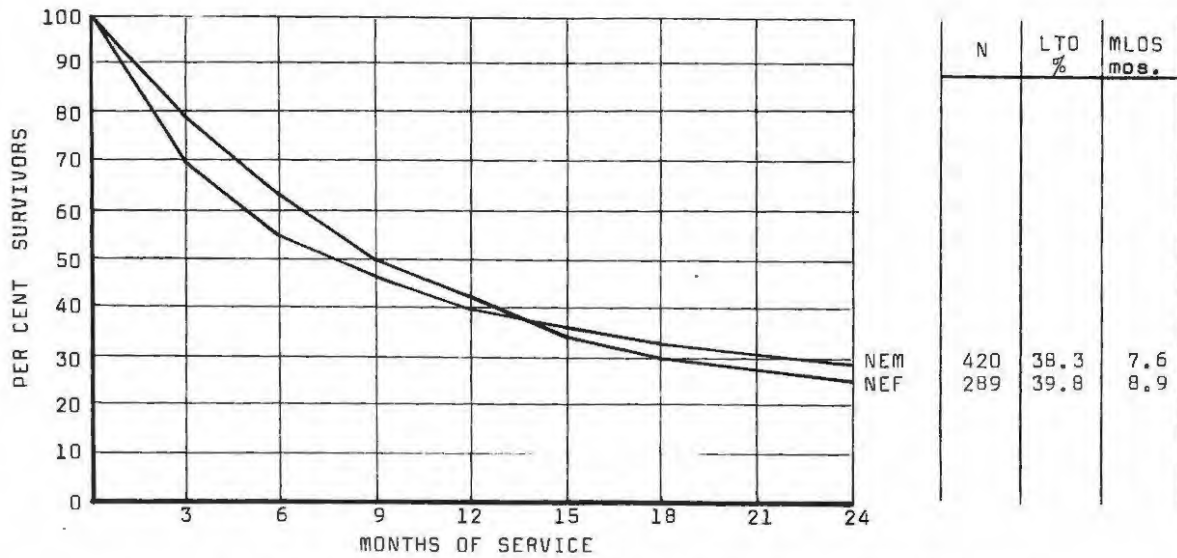


FIGURE 8 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, ALL CAPE

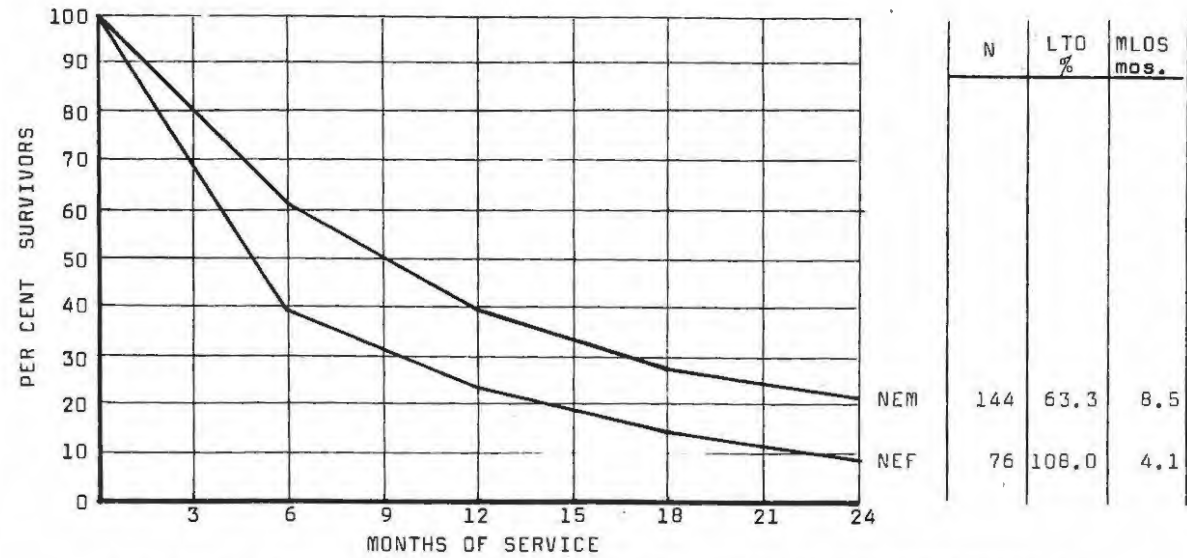


FIGURE 10 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY J

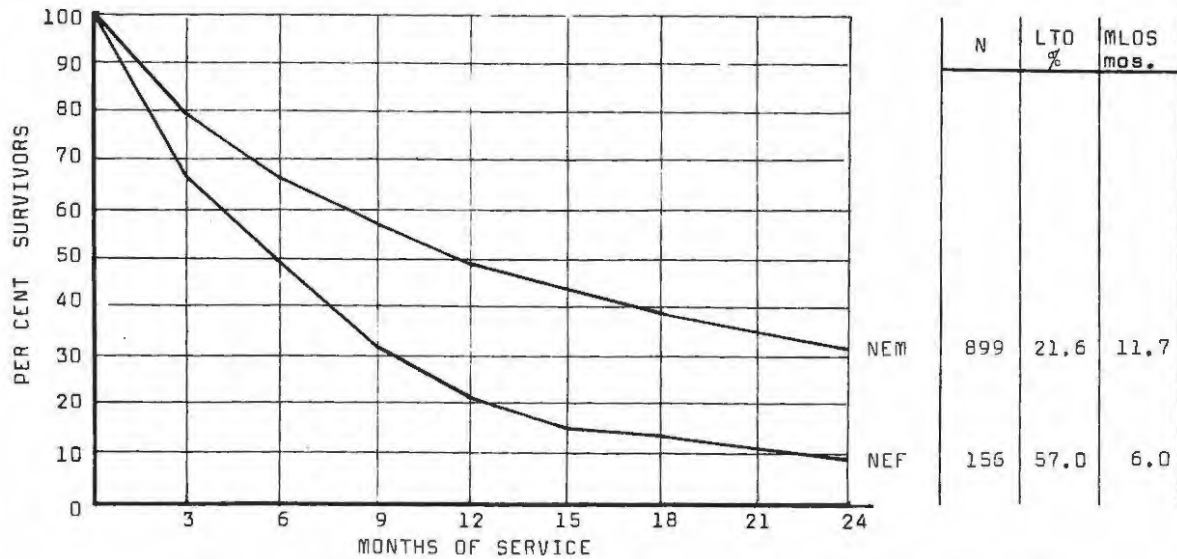


FIGURE 9 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE - ALL NATAL

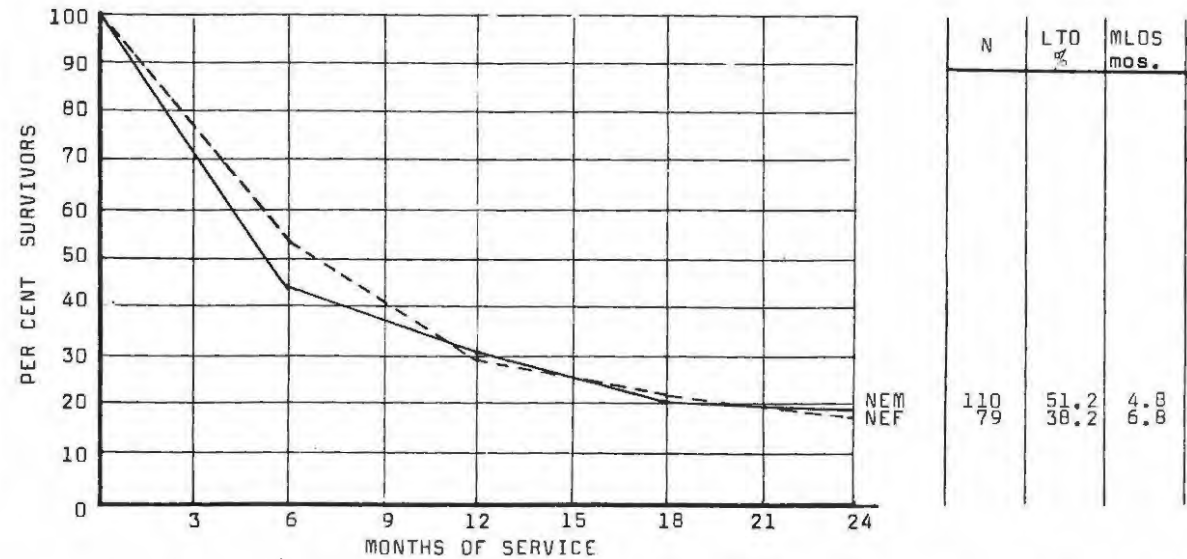


FIGURE 11 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY A

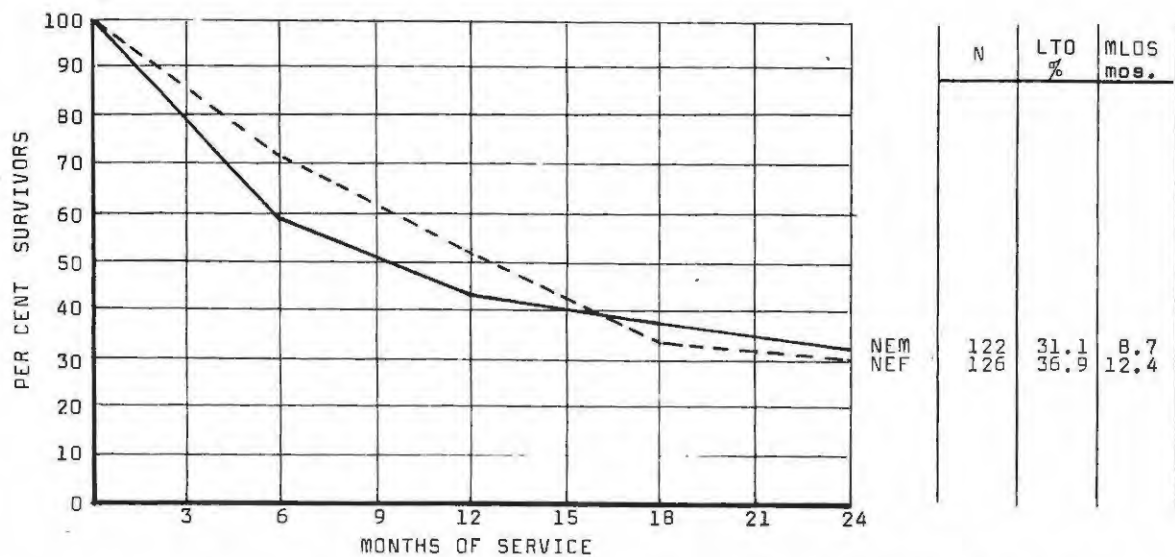


FIGURE 12 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY B

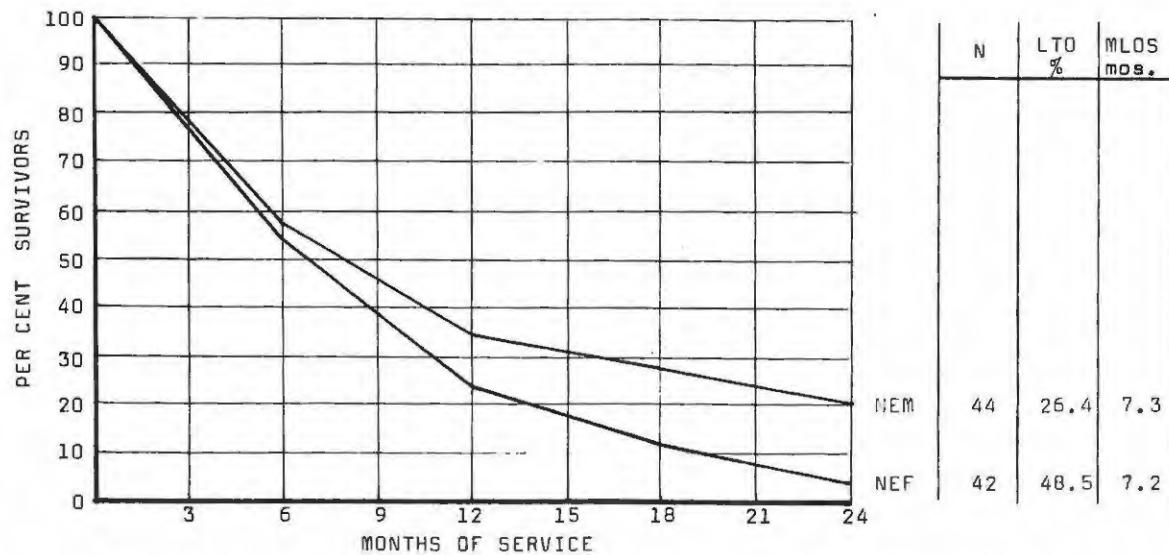


FIGURE 14 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY D

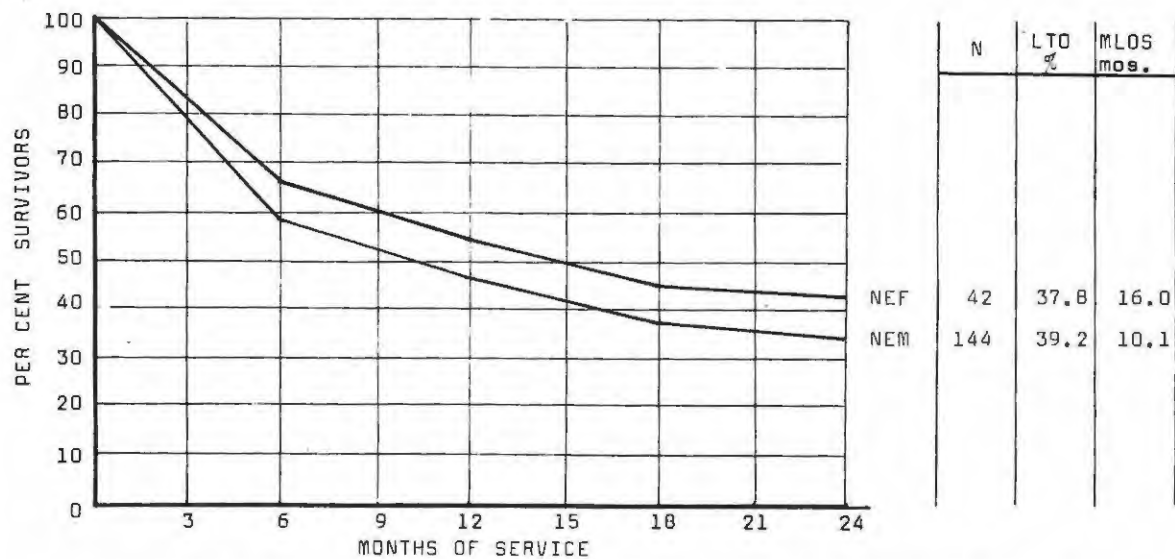


FIGURE 13 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY C
(note: NEF curve crosses NEM curve at 36 months, and dips sharply)

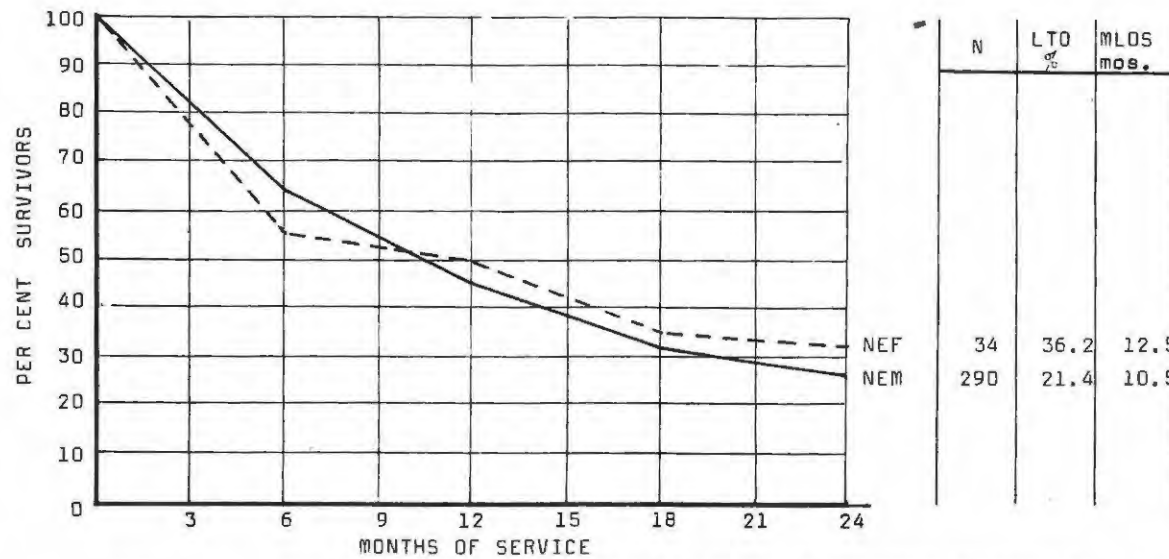


FIGURE 15 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY E

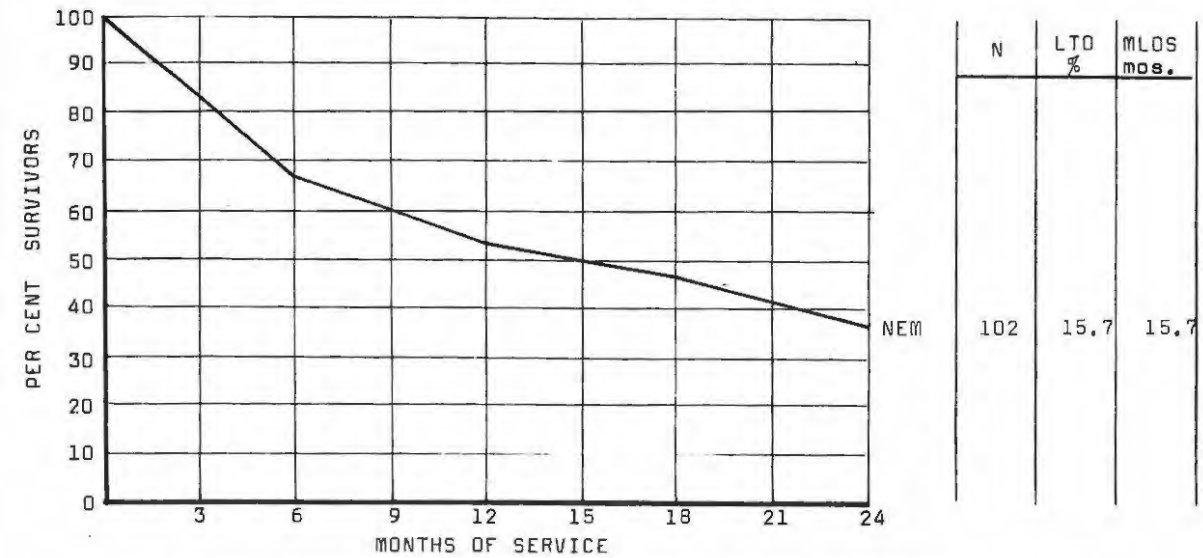


FIGURE 16 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY F

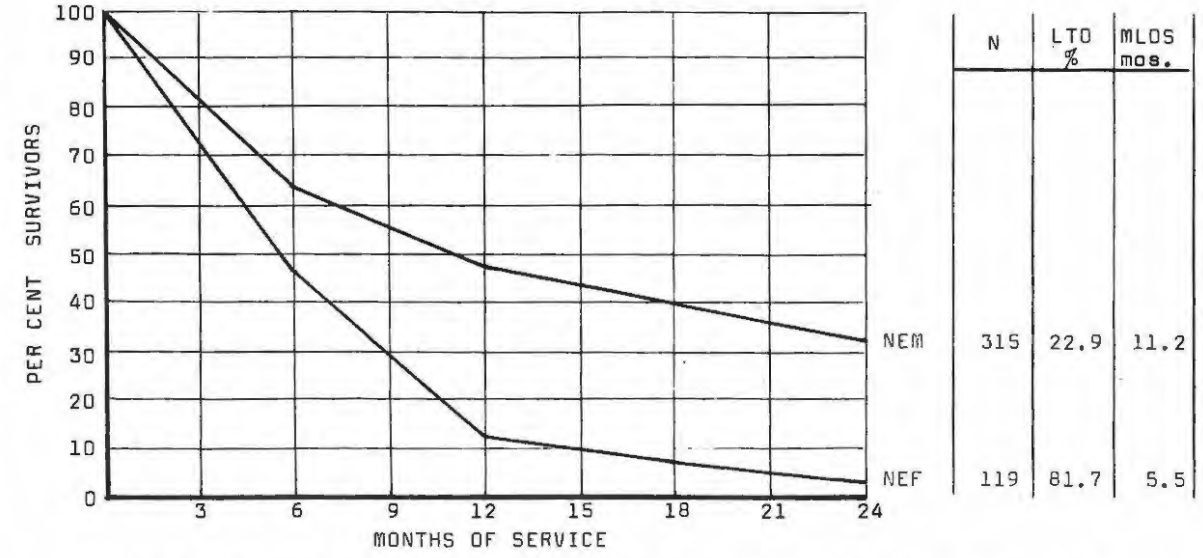


FIGURE 18 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY H

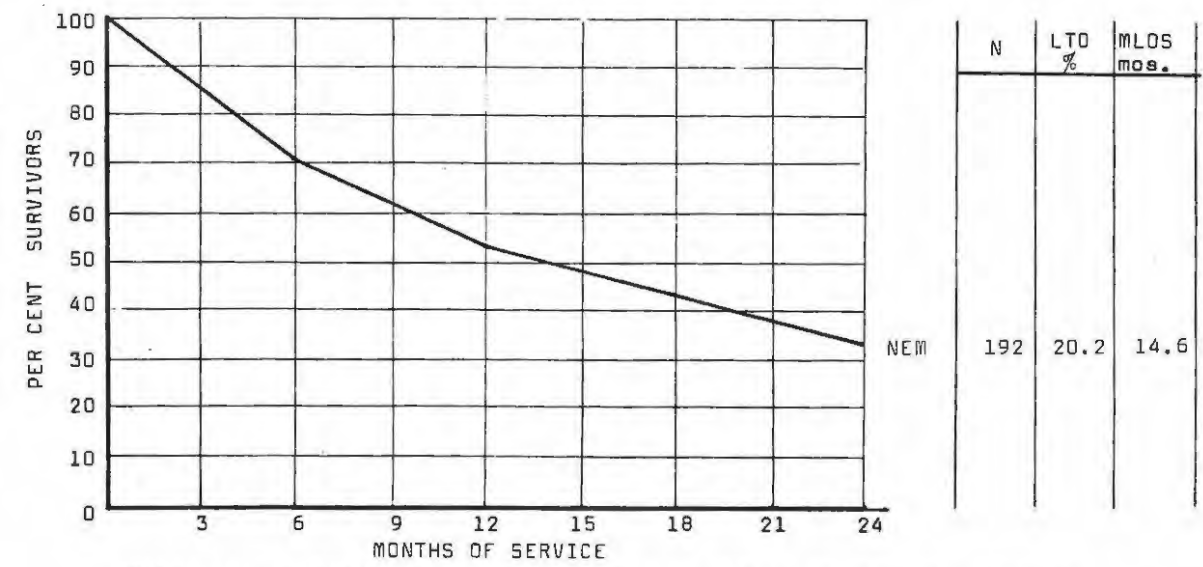


FIGURE 17 : SURVIVAL OF LEAVERS RELATED TO LENGTH OF SERVICE, FACTORY G

B. AGE.1. Age and LTO Rates

The relationship between age and LTO rates, referred to in the literature survey, was also demonstrated in this study, as the tables below show:

TABLE 19
LTO RATES BY AGE, NEM

	A	B	C	D	E	F	G	H	J
<20	74.7	79.8	64.1	80.0	50.4	22.4	41.3	67.2	110.1
20-35	40.0	21.5	36.1	16.9	19.8	12.4	14.4	18.3	59.2
35 +	24.4	15.0	24.8	11.1	10.4	4.2	15.3	11.5	25.7

For all factories, the rates show a consistent downward trend with age (except for a small reversal in G) as well as emphasizing the relative instability of the under 20 group.

TABLE 20
LTO RATES BY AGE, NEF

	A	B	C	D	E	F	G	H	J
<20	48.0	36.0	35.8	43.5	41.7	*	NIL	94.8	83.6
20-35	35.5	41.7	27.4	41.4	43.7	*	em-	77.9	103.7
35 +	25.6	26.3	*	*	28.6	*	ployed	37.9	*

* Groups too small for reliable rates to be given

Whilst the table does show a reduction in rates for the older groups in all factories, the age effect is not nearly as clear-cut as for the NEM, and it is clear that age is less of a factor in turnover among the NEF group. The tables above also show, especially for the Cape, that young females generally have a much lower turnover than young males.

From these figures there would seem to be a clear relation between LTO and Age, but the problem in interpreting any age-based data is to establish to what extent age and length of service are inter-related; and which variable is exerting the stronger influence. From the point of view of the employing organisation, it is obviously important to know, when faced with two applicants for a job, whether the older person will be more likely to remain than the younger, other things being equal. From a priori considerations, one would expect the older worker to be the more stable, i.e.

Turnover is inversely related to age, irrespective of length of service. Bucklow, for example (Chapter II, page 18) speculates that older workers will have less ease of movement and therefore their turnover will be lower. Unfortunately none of the literature has produced any quantitative evidence in this regard, nor has any attempt been made to assess the relative importance of age and length of service. Tavernier's unsupported statement (Chapter II, page 40) that age is not as important as length of service, is typical. In the discussion which follows, some attempt will be made to separate these variables, from the data available.

2. Mean ages of Leavers and Stayers:

TABLE 21
MEAN AGES - LEAVERS AND STAYERS

FACTORY	N.E. FEMALES		N.E. MALES	
	Leavers	Stayers	Leavers	Stayers
A	24.3	26.2	22.9	26.2
B	24.8	25.3	23.1	28.7
C	24.4	23.1	27.4	30.7
D	20.7	20.0	20.8	26.0
E	30.3	30.7	23.7	28.8
F	21.8	23.4	20.9	24.7
G	-	-	23.8	26.6
H	23.1	25.9	25.1	30.6
J	20.9	21.9	23.5	28.6

The analysis of NEF and NEM must again be separated, as different forces appear to be acting.

Thus, for NEF, the relationships are not very clear - C, D and E show some small reversals, and for the others, the differences are small, although in the expected direction i.e. stayers are older than leavers.

For NEM, the trend is much clearer in all nine factories and there is a consistent mean age difference of about 3 - 5 years between leavers and stayers.

TABLE 22
MEAN AGE - LEAVERS & STAYERS: ALL REGIONS

	NATAL		CAPE		TRANSVAAL	
	Leavers	Stayers	Leavers	Stayers	Leavers	Stayers
EF	NONE	too few	36.2	42.5	42.5	52.3
EM	20.9	33.5	44.4	44.9	too	few
NEF	24.7	26.9	24.0	24.6	20.9	21.9
NEM	23.9	28.3	24.3	28.6	23.5	28.6

Tests of significance on the regional figures (Table 22) (t-tests) showed that except for NEF in the Cape and Transvaal the difference between the means is significant at the 0.1% level.

The regional analysis also reflects the consistent age difference between NEM leavers and stayers, and emphasizes, for all regions, that NEF and NEM, both leavers and stayers, are a very young group, especially when contrasted with the much older EF in the industry. Because of this, the analyses in this section have been based on an under 20, 20-35 and over 35 division, rather than the more commonly used classification (Long, 424) of under 25, 25-40 and over 40. Such a classification did not appear meaningful for a population in which the working life begins at 15, and where, at present, there are comparatively small number of workers in the over 40 category.

In terms of Hedberg's argument, therefore (see page 40) that if age were not a factor in turnover, the mean ages of leavers and stayers would be similar, it can be concluded from the above that age appears to be a clear factor in LTO among NEM, but is less clear for NEF. Whether, however, age or length of service is the causal factor, is not apparent at this stage.

3. Distribution of Leavers and Stayers, by Age

In Table 23 the percentage of leavers, in three age groups, is related to the percentage in the labour force in those age groups. It will be recalled that Greystoke (Chapter II page 40) used such an analysis to illustrate how the bulk of turnover lies among the younger workers, in spite of the older workers being the larger proportion of the work force.

For NEF, the percentage of leavers and stayers are much the same for all age ranges, except that there is a tendency (though not consistent) for stayers to exceed leavers in the over 35 category.

TABLE 23
 PERCENTAGE DISTRIBUTION BY AGE - LEAVERS (L) AND STAYERS (S) ALL FACTORIES

	A		B		C		D		E		F		G		H		J	
	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S		
<u>NEF</u>											N=3		NIL EMPLOYED					
< 20	45.6	36.1	36.5	37.5	45.3	42.4	64.3	67.4	14.7	13.6	33.3	29.3			46.2	37.5	60.5	61.8
20-35	40.5	43.2	51.6	45.8	40.4	49.6	28.6	31.5	61.7	54.6	66.7	70.7			44.5	43.9	38.9	30.4
35+	13.9	20.7	11.9	16.7	14.3	8.0	7.1	1.1	23.6	31.8	-	-			9.3	18.6	2.6	7.8
<u>NEM</u>																		
< 20	59.1	40.1	54.9	22.8	34.7	20.5	63.6	25.7	46.6	22.2	60.8	41.9	43.2	21.2	42.9	15.0	53.9	31.9
20-35	30.9	39.2	33.6	51.9	42.3	44.4	31.8	61.1	41.7	50.7	35.2	43.7	44.8	62.9	41.6	53.4	34.1	37.5
35+	10.0	20.7	11.5	25.3	23.0	35.1	4.6	13.2	11.7	27.1	4.0	14.4	12.0	15.9	15.5	31.6	12.0	30.6

This is similar, in its implications, to the findings in 2) above regarding mean ages of NEF. If it is now noted, from the Length of Service analysis, that NEF showed much clearer evidence of length of service being a factor in turnover, but that with age as the variable being investigated, neither Turnover Rates, Mean Ages nor the results of Table 23 showed age to be a clear factor, it can be argued that, for NEF age is a less powerful determinant of separations than length of service.

For NEM, there is a consistently higher percentage of leavers than stayers in the under 20 group. In the remaining two groups however, stayers are generally higher than leavers, and the findings are consistent with those of Greystoke (see page 127). Age is clearly a factor in turnover among this group, but its effects still cannot be separated from Length of Service.

4. Median Length of Service of Leavers:

TABLE 24
REGIONAL MEDIAN LENGTH OF SERVICE, IN MONTHS, BY AGE GROUPS

	CAPE			NATAL			TRANSVAAL		
	Under 20	20-35	35+	Under 20	20-35	35+	Under 20	20-35	35+
NEF	6.5	12.9	15.75	5.3	6.8	6.6	3.5	5.0	-
NEM	4.6	17.0	21.0	6.4	19.3	36+	5.4	14.2	19.0

If the figures in Table 24 are considered in conjunction with the higher turnover rate of the younger workers, it can be seen that the older NEM worker clearly has a low turnover and a high median length of service, while the reverse is true for the younger workers. Again it is not possible to separate the effects of length of service from these figures, but it does appear that the older a worker is, the less likely he is to separate in the first few months of employment. The figures illustrate again the more stable nature of the NEM in Natal, in all age categories.

For NEF, much the same as for NEM applies for the Cape, but for Natal and the Transvaal, the groups are much less stable in all age categories.

5. Survival of Leavers Curves:

These curves were used in this instance to contrast the survival of leavers in different age groups, by length

of service. Figure 23 for Cape NEM leavers, illustrates the method.

It can be seen for this group, that older leavers showed better survival than younger leavers, at all length of service categories. This relationship was consistent for all the regional analyses, with some minor reservations which are noted in the discussion of the curves below.

Figure 24: NEM Natal: The relationship holds.

Figure 25: NEM Transvaal: Except for a reversal (due to small numbers) at 3 months, the relationship holds.

Contrasting the Natal Curves with the other two, the better survival of the NEM in this area, in all age categories is apparent.

Among the NEF, Figure 26 for Cape NEF shows a consistent relationship except for the effect of some older, short-service leavers in the under 3 months category. This will be discussed further under Marital Status. Figure 27 for Natal, and Figure 28 for Transvaal are mainly consistent in the under 20 and 20-35 categories. The 35+ groups are small, and unstable - as was also apparent from the Median Length of Service figure for Natal. Comparison of the curves again shows the Cape NEF to show better survival at all Length of Service categories.

Figure 29 for all EF (there were too few leavers for a regional analysis) shows the expected age effect, although there is no great difference until after 2 years service.

The generality of the relationship between age and survival across the leavers of this study, appears to have been demonstrated. If the argument on page 100 (Ch. IV) is accepted it can be stated that older persons generally will show better survival, at all length of service categories, than younger persons. The effects of age and length of service appear to have been separated in this instance, therefore. This finding is important from the point of view of the employing organisation, for it implies that if a choice is to be made between two applicants for a job, then, other things being equal, the older worker is likely to show better survival than the younger one.

Tavernier's contention (425) that ".....a man of 50 is as liable to leave in his third year of service as a man of 25 in the same circumstances" does not appear to have

been upheld in this study.

It could, of course, still be argued that age effects have not been genuinely excluded, and that the older workers are more likely to have been exposed to long service than the younger ones. This argument could perhaps be tenable in the two years and over categories, but in the first 12 months - where the bulk of turnover has been shown to lie - older workers have no measurable advantages over younger ones.

Some of the information presented by the curves can, of course, also be deduced from the actual numbers of leavers involved.

Thus, for all Cape NEM, 121 out of 210 leavers, or 57.6% in the under 20 age group left within the first six months. In the over 35 group, 15 out of 60, or 25% left in the first six months.

For all Natal NEM, 201 out of 415, or 48.4% of the under 20's, left in the first six months. In the over 35 group, however, 20 out of 110, or 18.2% left in the first six months. It can still be argued, however, that in the over 40 age group, there are a large percentage of leavers who have had long service, and that this distorts the picture in favour of this group. What is really required, then, is an older entrant group to show how these fared in contrast to a younger entrant group. This was the next analysis made.

6. Entrant Group Analysis:

From the two entrant groups followed up in factories E and H, it was possible to contrast the survival pattern of the under 20 group with that of the over 25 group. Small numbers precluded a more detailed breakdown. The hypothesis was that a much larger percentage of the younger entrants would leave in the first year of service.

Factory E:

There was an entrant group of 64 NEM under 20 years of age, and 32 of these, or 50% left in the first year. By contrast, in the over 25 year group, there were 12 entrants and 4 of these, or 33.3% left during the first 12 months.

Factory H:

There were 43 entrants of under 20, of whom 24, or 55.9% left within 12 months. The over 25's were 27 in number, of whom 9 or again 33.3% left within 12 months.

Although the numbers involved were small, the hypothesis appears to have been upheld. All these persons had no previous service with the Companies, and although the condition of "other things being equal" which was stated at the outset cannot necessarily be assumed, it does appear that age has been a determinant, independent of length of service, in this instance.

7. The Relation Between Age and Length of Service:

It has been shown in (6) above that there are circumstances in which the effects of age can be separated from those of length of service. More generally, however, it can be demonstrated that there usually is an association between age and length of service, and that this can vary for different groups.

By means of a chi-square analysis it can be shown whether there is an association between age and length of service of leavers, and from this, a Contingency Coefficient C, can be obtained to show the degree of association between the variables (426). This was calculated for the various regions as follows:

Cape:

$$\begin{aligned} \text{NEF: } \chi^2 &= 33.35, \quad \text{df} = 4, \quad p < .001 \\ C &= \sqrt{\frac{\chi^2}{N + \chi^2}} = 0.32 \end{aligned}$$

As C cannot exceed 0.86 for a 3 x 3 table, this is considered to be "a fair degree of association".

$$\begin{aligned} \text{NEM: } \chi^2 &= 73.79, \quad \text{df} = 4, \quad p < .001 \\ C &= 0.38, \quad \text{considered to be "a fair degree} \\ &\text{of association"} \end{aligned}$$

These figures show that age and Length of Service are more closely related for NEM than for NEF. It will be recalled (page 129) that an earlier analysis showed age to be a less clear determinant of Turnover than Length of Service among NEF, and this is confirmed.

Natal:

$$\begin{aligned} \text{NEF: } \chi^2 &= 11.75, \quad \text{df} = 4, \quad p < .02 \\ C &= 0.26 \end{aligned}$$

$$\begin{aligned} \text{NEM:} \quad \chi^2 &= 214.03, \quad \text{df} = 4, \quad p < .001 \\ C &= 0.43 \end{aligned}$$

Thus, in Natal for NEM, there is a greater association between age and Length of Service than in the Cape, and also a bigger difference between Males and Females than in the Cape. The survival curves for age in Natal also show this difference, and in the same way, when survival of leavers curves for NEF and NEM in the Cape are contrasted, they show a much greater similarity than those for Natal.

Transvaal:

The NEF groups were too small for useful comparisons.

$$\begin{aligned} \text{NEM:} \quad \chi^2 &= 29.43, \quad \text{df} = 4, \quad p < .001 \\ C &= 0.41 \end{aligned}$$

This high association is due to the peculiar age distribution of this labour force, with a relatively large group of older workers, and few workers in the middle age group.

All Leavers:

$$\begin{aligned} \text{NEF:} \quad \chi^2 &= 44.2, \quad \text{df} = 4, \quad p < .001 \\ C &= 0.28 \end{aligned}$$

$$\begin{aligned} \text{NEM:} \quad \chi^2 &= 318.61, \quad \text{df} = 4, \quad p < .001 \\ C &= 0.42 \end{aligned}$$

These figures show clearly that an association does exist between age and length of service.

8. Conclusions:

In this section, the use of the SLC has again been contrasted with accepted measures. It has again been demonstrated that the information obtained is consistent with that available from other measures, and that the curves are simple to calculate and present data in a clear and concise manner.

This section has also investigated age as a biographical factor in labour turnover, and the findings can now be interpreted in terms of the formation and maintenance of stable groups.

At the outset of this section, it was cautioned that whilst age is an easily-established factor in the labour force, and it is tempting to relate it directly to turnover, it should be borne in mind that age is very likely to be related to length of service. This relationship was clearly shown by

the Contingency Coefficient in this section. The findings of the previous section are very likely to apply to age as well; thus the older worker will show greater stability as does the longer-service worker. To a large extent, however, the dominant factor in group formation will be length of service, as already shown. The important findings of this section, therefore, relate to the extent to which the variable of age is a factor independent of length of service.

The question is, therefore, whether older workers adapt and settle better than younger workers when entering a new work group? This study shows that they do. From the point of view of the group, and from that of the management, the older worker is likely to be more skilled and hence more productive, he is therefore more readily taken up into the working team, and he is more likely to be familiar with factory atmosphere and routines. Another important factor however, is that due to widely-held negative stereotypes about the older worker, he finds it less easy to obtain new employment after reaching a certain age. In any area where work is not plentiful, therefore, the older worker will be less likely to leave present employment, and this has been illustrated by the greater stability of the older workers in the Natal area on this study, when compared with the Cape and Johannesburg.

It was also shown that for the female worker, age has a less consistent effect than for the male, primarily because, for the NEF especially, age and length of service, are much less closely related. This, and other aspects of the female's orientation to the job situation, will be discussed in more detail in Section G to follow.

The findings of this section have therefore shown that, in any employment situation, other things being equal, the older worker will be more stable than the younger worker.

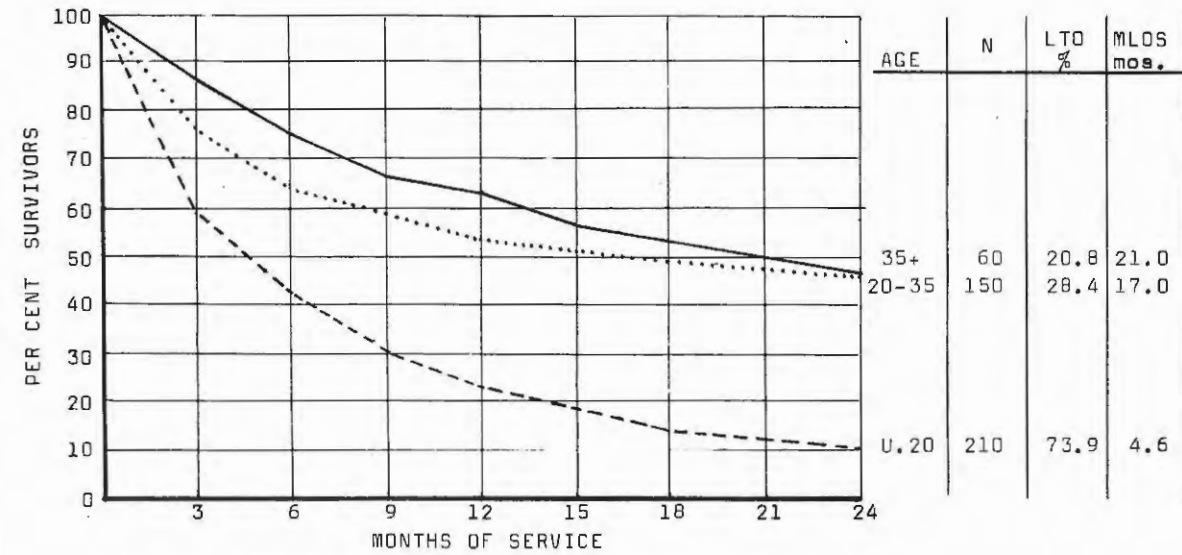


FIGURE 23 : SLC'S IN THREE AGE GROUPS : CAPE NEM

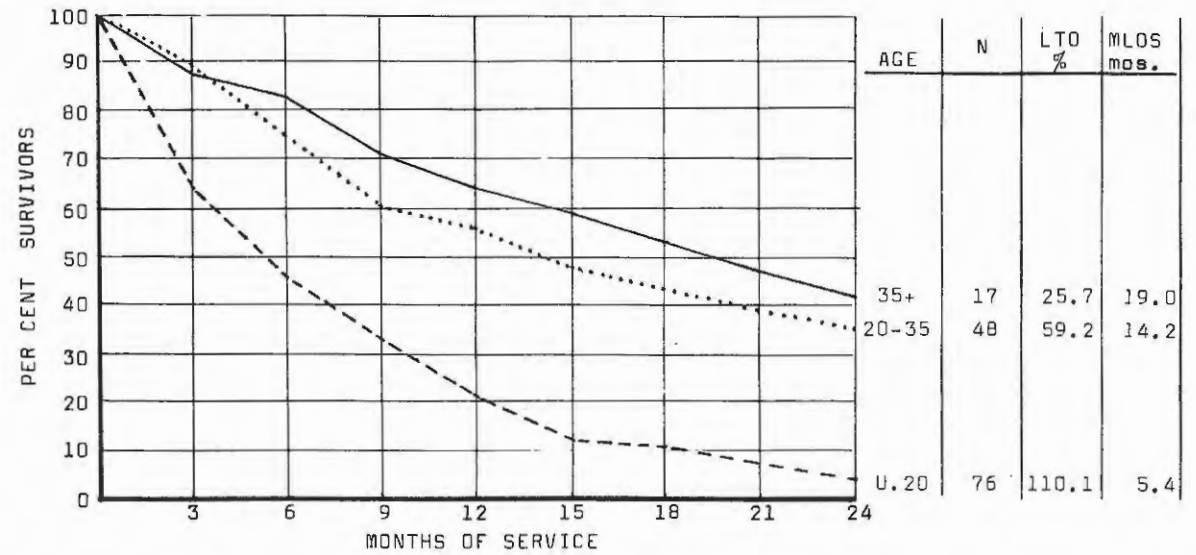


FIGURE 25 : SLC'S IN THREE AGE GROUPS: TRANSVAAL NEM

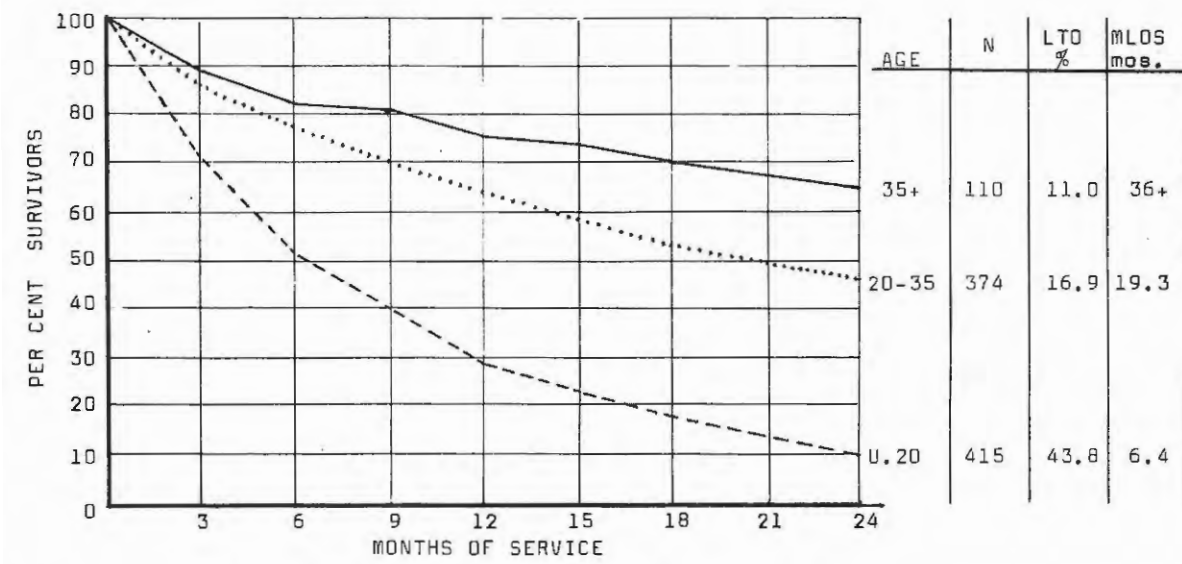


FIGURE 24 : SLC'S IN THREE AGE GROUPS: NATAL NEM

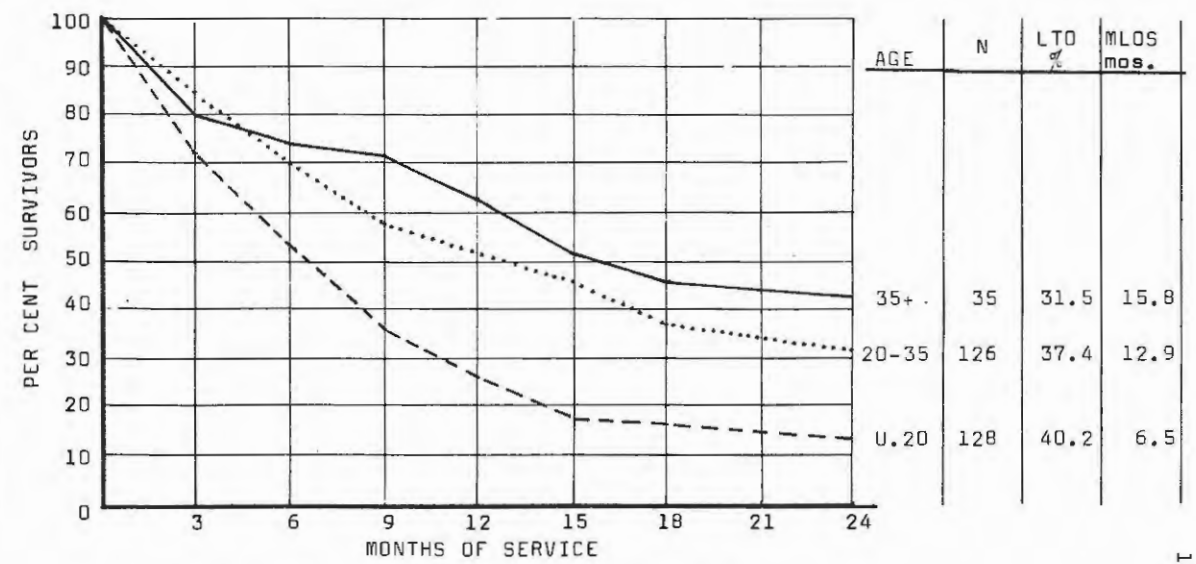


FIGURE 26 : SLC'S IN THREE AGE GROUPS : CAPE NEF

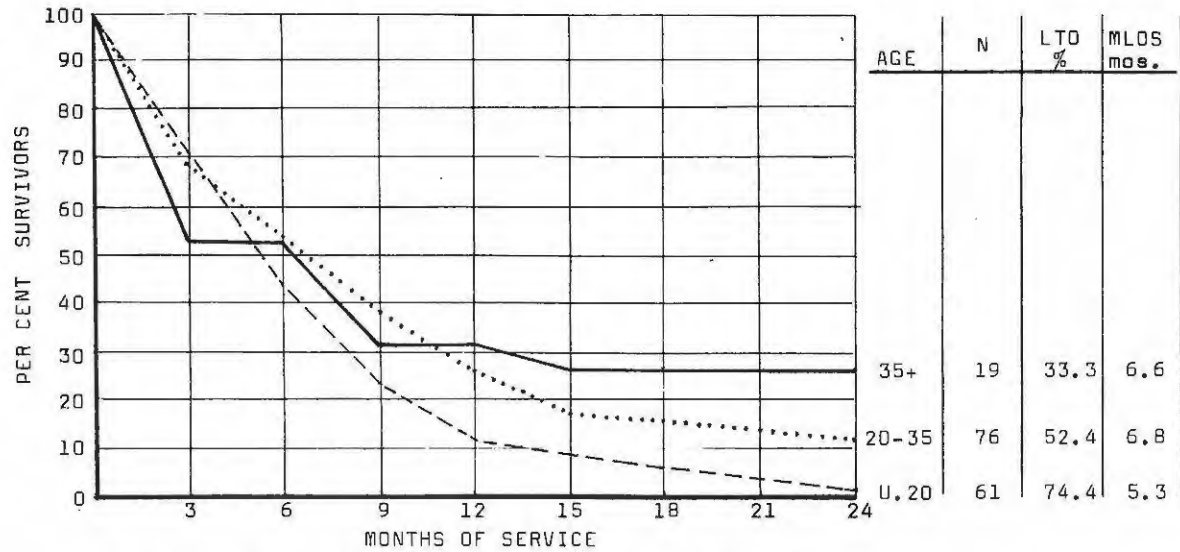


FIGURE 27 : SLC's IN THREE AGE GROUPS : NATAL NEF

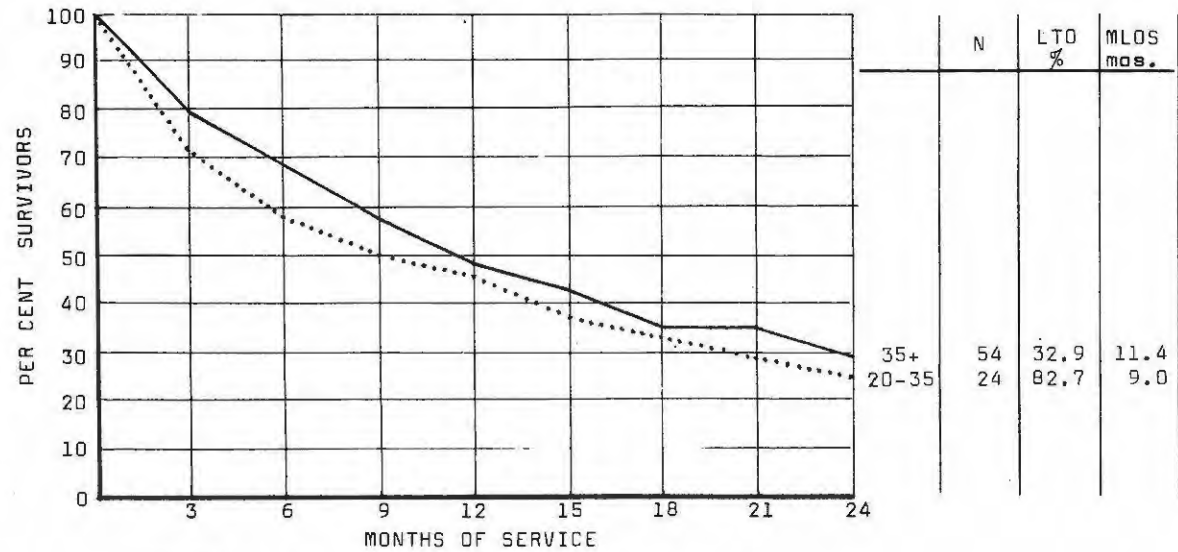


FIGURE 29 : SLC's IN TWO AGE GROUPS - ALL EF

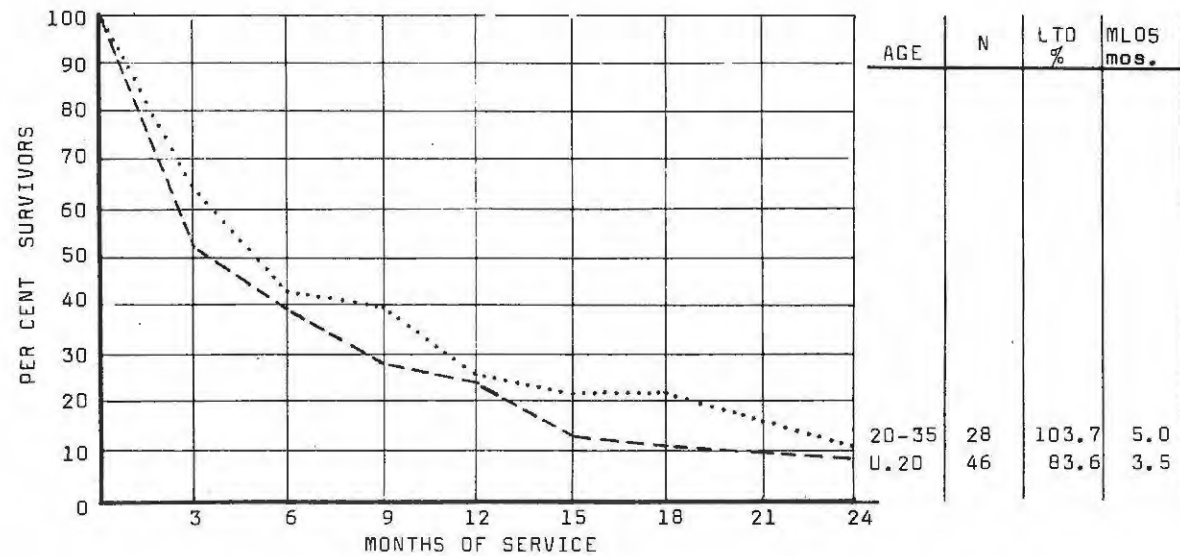


FIGURE 28 : SLC's IN TWO AGE GROUPS : TRANSVAAL NEF

C. WAGES

Mention has already been made, in the literature survey, of the contradictory findings on the relation of Wages to Turnover. Perhaps the most clear-cut single contradiction to emerge from this study, is that the factory with the lowest mean wages for both leavers and stayers (Factory F) also had the lowest overall turnover of all the factories in the survey. This, of course, is the opposite of Hill's finding (page 33) that wastage was twice as high in pits with very low wages, as in those with very high wages.

It was also surprising to find that Factory G, also situated in the Natal area, some 15 miles from F, had the second lowest overall turnover (20.2%) for the period of the survey, but paid the highest wages of any Natal factory on the survey.

The relevant figures were as follows:

TABLE 25
MEAN WEEKLY WAGES - LEAVERS AND STAYERS

		<u>Leavers</u>	<u>Stayers</u>
All Factories	NEF	9.51	11.19
	NEM	11.80	14.95
Factory F	NEF	6.04*	9.51
	NEM	10.55	13.24
Factory G	NEM	11.85	16.54

* 3 leavers only

These contradictions are a suitable preface to the findings which are to follow, and adequately illustrate the caution that must be exercised in interpreting any findings on wages and LTO.

The data available, has however, been treated by conventional analyses, in the first instance, to yield conventional findings - along the same lines as those of Kerr, Lindquist, van der Horst, Cilliers and Poidevin - as already referred to in the literature.

When these have been considered, in the light of the discussion above, some attempt will be made to bring them into a better perspective beside the variables of Age and Length of Service.

1. WAGES AND LTD:

In order to compare these factors, it was necessary to divide wages into two or more categories, chosen with due regard to the ruling wage divisions in the Industry. A wide range of rates exists in the National Agreement, but it was possible to use broad groupings which approximated to recognisable groups of workers in the factory.

Although the Agreement provides for the remuneration of learners in the more skilled operations at rates as high as R18.00 per week, very few employees remain as learners for the four-and-a-half years required to reach this rate. The practice is for learners to graduate to qualified rates well before the five-year learnership period has been completed.

This means that practically all NEM learners fall into the R5.00 - R10.99 category. There are no qualified workers in this group as the minimum qualified wage is R13.69.

The R11.00 - R19.99 NEM group, therefore, is likely to include very few learners, mainly in the more highly-skilled and highly-paid operations. The bulk of qualified, semi-skilled employees throughout the factory will, however, tend to fall into this category. The R20.00+ category is confined to qualified employees performing the more highly skilled operations and is a distinct group.

Although identical wage rates are laid down for male and female workers in the footwear industry, the wages paid to females tend, on average, to be lower than those paid to males. This is the result of the tendency to employ females mainly on operations to which the lower rates apply. The most highly-paid operations in the industry, e.g. clicking etc., continue to be an exclusively male preserve.

It is, therefore, more realistic to use a different set of categories for the analysis of female wages. Once again, the lowest category (R5.00 - R8.99) comprises only learners and includes practically all such employees. The middle category (R9.00 - R13.00) again comprises only learners. In the survey it was found that scarcely any workers fell into this category, the largest group being 6 leavers and 5 stayers in factory A. The category was therefore excluded from the survey.

All qualified female workers fell into the highest category (R13.00+) which is unlikely to have included any learners.

As a result of a wage revision among NEF at factory H (* see table 26) during the study, a distorted picture emerged when the census of stayers was taken, and this factory's NEF have been excluded.

TABLE 26
LTO RATES IN WAGE GROUPS

Factory	N.E. FEMALES		N.E. MALES		
	Low R5-8.99	High R13+	Low R5-10.99	Medium R11-19.99	High R20+
A	50.0	29.2	89.8	46.7	8.9
B	41.4	33.3	100.0	24.3	8.4
C	32.9	32.7	71.8	32.8	20.0
D	52.7	18.7	75.7	18.2	too few
E	54.5	36.5	53.6	17.1	10.7
F	-	-	23.3	11.1	3.4
G	-	-	48.1	17.1	3.3
H	*	-	70.6	15.1	49.2
J	87.1	95.6	124.6	49.2	12.9

For NEF, there is a consistent drop in LTO rates from low to high wages, except for C, where a factory relocation distorted turnover patterns, and J where extreme instability was evident in all wage categories.

For NEM there is a consistent downward trend in all factories.

2. WAGES AND MEDIAN LENGTH OF SERVICE:

TABLE 27
MEDIAN LENGTH OF SERVICE (IN MONTHS) BY WAGE GROUPS

Factory	N.E. FEMALES		N.E. MALES		
	Low	High	Low	Medium	High
A	5.4	9.0	3.0	7.1	36.0
B	5.6	20.0	4.2	36.0	48.0+
C	8.2	36.0+	5.1	17.0	60.0+
D	6.6	too few	4.9	15.0	too few
E	Under 3	15.0	5.7	21.7	36.0+
F	-	-	9.4	36.0+	60.0+
G	-	-	9.6	20.4	too few
H	5.0	24.0+	5.0	24.0+	48.0+
J	3.0	6.0	5.9	15.5	too few

These figures show, even more clearly than the LTO rates, the nature of the instability among NEF at factory A and

factory J. Otherwise they demonstrate, for NEM and NEF, the consistent increase in Median Length of Service in the higher wage groups.

Also worthy of note is the very low Median Length of Service for NEM in the low wage group, where in 7 out of 9 factories, the figure did not reach six months. This means that half of the NEM leavers had separated before they had completed six month's service.

3. MEAN WAGES, LEAVERS AND STAYERS:

TABLE 28
MEAN WAGE - LEAVERS AND STAYERS

Factory	N.E. FEMALES		N.E. MALES	
	Leavers (R)	Stayers (R)	Leavers (R)	Stayers (R)
A	10.69	12.03	11.55	15.96
B	11.54	12.15	12.14	18.80
C	10.00	9.99	13.31	15.72
D	6.70	8.13	10.65	14.20
E	13.59	14.59	12.04	15.28
F	-	-	10.55	13.24
G	-	-	11.85	16.54
H	6.59	10.40	11.48	15.48
J	8.92	9.15	11.53	14.77

Except for C, for reasons already discussed, NEF leaver wages are all lower than those of stayers. The same relationship holds, but the differences are much larger, for NEM. This relationship can be quantitatively expressed by comparing the proportion of leavers and stayers in each of the three wage categories and calculating χ^2 , the null hypothesis being that the proportions will be the same in each category.

$\chi^2 = 445.64$, $df = 2$, $p < .001$, and Coeff. of Contingency $C = 0.24$, i.e. there is a fair degree of association.

For all NEF, however, $\chi^2 = 4.4$, which is not significant.

4. WAGE DISTRIBUTION AMONG LEAVERS AND STAYERS:

See Table 29, page 141.

Among the NEF's there is a fairly consistent but small relationship (except for C again) with more leavers than stayers in the low wage groups, and more stayers than leavers in the higher wage groups. For NEM, the same applies, but the trend is more consistent and much clearer.

TABLE 29
 PERCENTAGE WAGE DISTRIBUTION AMONG LEAVERS (L) AND STAYERS (S)

	A		B		C		D		E		F		G		H		J	
	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S
NEF																		
R5-8.99	41.8	31.7	36.5	32.6	57.1	58.4	92.9	80.4	17.6	12.5	-	-	-	-	92.4	20.7	71.0	69.6
*9-12.99	7.6	2.4	3.2	0.6	4.1	2.4	NIL	2.2	NIL	3.4	-	-	-	-	3.4	57.7	-	4.6
13 +	50.6	66.3	60.0	66.8	38.0	39.2	7.1	17.4	82.4	84.1	-	-	-	-	4.2	21.9	29.0	25.8
NEM																		
5-10.99	56.4	31.8	51.6	17.1	35.4	18.7	56.8	24.3	48.3	21.7	61.7	40.8	40.7	17.1	49.6	16.3	56.2	30.1
11-19.99	39.1	42.4	41.8	57.1	55.6	64.2	36.4	64.7	45.2	73.7	36.3	50.3	56.7	67.1	46.0	71.0	41.0	55.6
20 +	4.5	25.9	6.6	25.8	9.0	17.1	6.8	11.0	6.5	14.6	2.0	8.9	2.6	15.8	4.4	12.7	2.8	14.3

*This is group excluded from LTO rates.

5. ANALYSIS BY SURVIVAL OF LEAVER CURVES:

The findings from 1 to 4 have been fairly consistent with what may be called "the popularly expected relationship" between labour turnover and wages. No mention has been made thus far, however, about the possible effect of the other two variables already studied, and which are obviously related to wages, namely length of service and age. The literature showed that these three variables had never been satisfactorily separated from each other in any studies, although some (but not all) authors recognised their inter-correlation.

From the point of view of the employing organisation, the consequences of inaccurate decisions based on a confusion of length of service determinants with age determinants are unlikely to be very serious, but a number of very wrong and very costly decisions could result from the uncritical acceptance of wages as a primary factor in turnover. It is necessary, therefore, to look very carefully at these three variables, acting together, and to try, as much as possible, to unravel their effects.

Methodologically, it would be desirable to study an entrant-group follow-up, thus providing a uniform base for length of service, and then matching say three groups for age and wages. Unfortunately, due to the small numbers involved in entrant groups at any one time, this was not possible in this study, and is seldom found, even in large companies. It is necessary, therefore, to try to separate the factors by other means, and Survival of Leaver Curves were used in this study.

a) Wages and Length of Service:

By grouping wages into 2 or 3 categories, we can draw Survival of Leaver Curves in terms of Length of Service. The argument which was used for age and length of service (page 130) can be applied here, namely that for the first 12 months, at least, probability of exposure does not seriously affect the picture, and we can say that wages and length of service are the major factors being considered.

On this basis, for NEF, there is a consistent relationship across the three regions, (Figures 30, 31, and 32) namely that a lower percentage of low paid leavers survive for any period than high paid leavers. For example, in the Cape, at 12 months, 58% of a high wage group of leavers had

survived, but only 24% of the low wage group. (Figure 30).

For NEM, the same holds for the Cape (Figure 33) and Johannesburg (Figure 34). (Note, no high wage curve possible), whilst for Natal (Figure 35) there is little to choose between the behaviour of the medium and high wage groups for the first 12 months.

Generally, the number of leavers in the high wage groups are small. If the rather unstable Johannesburg groups are excluded, then the curves for NEF for the Cape and Natal, (Figures 30 and 31) and also those for NEM for both regions, (Figures 33 and 35) are very similar.

The relationships, it can be argued, refer only to the behaviour of particular groups of leavers during the survey period. On the other hand, the groups on which the curves are based are large, and show the behaviour of all leavers over a period of one year. It will be recalled that both Silcock (Chapter II, page 27) and Bell (Chapter II, page 28) refer to the predictive value of their Survival Curves, and it would seem reasonable to assume that the relationships which have been demonstrated will, provided that there is no great change in wastage rates, hold for ensuing periods as well.

b) Wages and Age:

Whilst wages and length of service were the two main factors being considered in (a) above, there is of course, no certainty that they are the only two factors operating. In fact, the other variable of age cannot be ignored, and an attempt was made to investigate the possible relationship between wages and age.

The hypothesis framed was that there would be a close relationship between age and wages, and that if this relationship was consistent, Survival of Leaver Curves for appropriate age and wage categories would be measuring substantially the same groups of people, and would be similar in shape and in position on the axes. To investigate this, the curves already constructed for age were superimposed upon those for wages.

It could however be argued that two curves being compared need not necessarily represent the same populations, and that the situation could arise where two different populations could generate the same curves. Cross-Tabulations were therefore made for each of the groups compared as a check

on this.

i) NEM:

Figure 36 shows the superimposed curves for ages, in three categories, and wages, in three categories, for Cape NEM.

The low wage and under 20 curves are very similar, showing the relationship between age and wages in these groups. This finding is, of course, not unexpected, if it is borne in mind that all learners - and only learners - are found in the low wage category, and that by law, an NEM learner must be under 21 years of age. For the low wage categories at least, there is therefore a "built-in" relationship with age, which should not be overlooked. In fact, a cross tabulation shows that 90% of the under 20's are in the low wage group.

In the medium wage category, the curves correspond even more closely, showing that the close age-wage relationship continues to hold for the 20-25 age group.

An important point is apparent from the high wage versus 35+ age curves, however, namely that there are a number of older workers who are not necessarily earning high wages, and the effect of these is to produce a lower age curve.

The relationship between age and wages was checked further for this Cape NEM group, by χ^2 tests with the same wage and age groups as the curves.

For the 3 x 3 table,

$$\chi^2 = 297.77, \quad df = 4. \quad p < .001$$

and $C = 0.64$, which shows a high degree of association.

Figure 37 shows the comparisons for Natal NEM. The relationship for low wage - under 20 is even clearer than for the Cape, and both the medium and high wage comparisons show reasonable similarities. The numbers involved in the high wage group do not support the statement that the same persons as the 35+ group are being measured, but the curves show that both groups are substantially more stable, after six months, than the other groups.

Cross-tabulations, in the same way as for Cape NEM, showed that 91.6% of leavers under 20 were in the low wage group.

Also, with the same groupings as for the curves,

$$\chi^2 = 602.83, \quad df = 4, \quad p < .001$$

and $C = 0.63$

These cross tabulations, and the calculations for C , confirm the relationship which is illustrated by the curves, namely that wages are not independent of age in the groups studied.

It would appear that, to a large extent, the same people are represented by the compared curves (except in the highest wage category) and that they are distributed by length of service in the same proportion. It can be said therefore, that for males, in the Cape and Natal, leaving behaviour of NEM classified by age differs little from that classified by wages.

(Due to the small groups involved, the Transvaal factory was not included in these analysis).

ii) NEF:

It will be recalled that the age relationships with LTO, shown for NEF's were not as clear as those related to length of service, and it can therefore be expected that the relationship between age and wages will also be less for this group, bearing in mind that wages and LTO do vary consistently.

A further factor that must be taken into account, is that there is no age restriction on NEF learners, i.e. a female of any age can be taken on at the learner rate. As the NEF workers also generally tend to stay in employment for shorter periods than the NEM, it can be expected that their age-wage characteristics will differ materially from that of the NEM.

It was found, for NEF, that very small numbers made up the medium wage group of R9 - 12.99, and this group was therefore combined with the high wage group of R13+ to give one "over R9" category. For comparison, this necessitated reducing the age categories to two as well, and here again, the small number of persons in the 35+ age category, indicated that a 20+ grouping would be more realistic.

On this basis, Figure 38 illustrates the position for Cape NEF, comparing SLC's for wages and age. The curves are very similar, the low age curve being slightly higher

than the low wage curve, due to the presence it is suggested, of some young but higher wage earners, while in the higher age groupings, the age curve is below the wage curve, as a result of some older, low wage leavers.

This situation is clearly apparent, also from the cross-tabulation in Table 30 below:

TABLE 30

CAPE NEF : CROSS-TABULATION OF AGE AND WAGE GROUPS OF LEAVERS

	Under 20	20 - 35	35+	TOTAL
R5 - 8.99	112	26	4	142
R9 +	16	100	31	147
TOTAL	128	126	35	289

The table shows that:

87.5% of the under 20 wage category are low wage earners, and 81.4% of those over 20 earn over R9.

Stated conversely, 78.9% of the low wage category are under 20, and 89.1% of the higher wage category are over 20

From the above table, it can be calculated whether there is an association between age and wages, and

$$\chi^2 = 136.22, \quad df = 2, \quad p < .001$$

C = 0.56, showing that there is a "fairly high" degree of association for Cape NEF.

Figure 39 contrasts the situation among Natal NEF, which is rather different from that in the Cape.

For the low-wage, under 20 comparison, the relationship between age and wages holds very well. However, in the other category, the curves diverge widely, and there is clearly no relationship between wages and age. As the age curve is below the wage curve, this suggests the presence of older, but low-wage leavers in the group, and this is confirmed from the cross-tabulations in Table 31.

TABLE 31

NATAL NEF : CROSS TABULATION OF AGE AND WAGE GROUPS OF LEAVERS

	Under 20	20 - 35	35+	TOTAL
R5 - 8.99	58	51	10	119
R9.00 +	3	25	9	37
TOTAL	61	76	19	156

The table shows a larger number of low-wage leavers, even in the 35+ group, and while 95.1% of those under 20 earned under R9, only 37.9% of those over 20 earned over R9. Conversely, again, only 48.7% of low wage category are under 20, but 91.9% of the high wage category are over 20.

The presence of older persons, working at learner rates as mentioned, is apparent here.

As before,

$\chi^2 = 21.14$, $df = 2$, $p < .001$,
and $C = 0.34$,

showing that an association does exist between age and wages, but to a much lesser extent than for Cape NEF.

The very clear association between wages and age, among NEM leavers in the Cape and Natal, and among NEF leavers in the Cape, has been demonstrated. In Natal, the relationship for NEF is less clear, due to a larger number of older learners in the work force. Which factor is the most strongly operative, is not clear, but it has been shown that, generally the effects of age and wages upon leavers are so closely related, that any conclusions about turnover and wages alone, are likely to be highly speculative.

c) The Inter-relationship of Wages, Age and Length of Service:

It has been shown, in the preceding arguments, that LTO varies with Length of Service, Age, and Wages. It has also been demonstrated that these are by no means unrelated variables, and that age and length of service, wages and length of service and wages and age, are related and in varying degrees.

It has not been possible, from the data available on this study, to assess to what extent each of the three variables contributes to the total variance, represented by the LTO of a particular group at a particular time. This must remain a matter for further research, in a situation where entrant group size permits the matching of comparative groups on these variables.

It is, however, interesting to compare Contingency Coefficients for the three sets of relationships as stated above, and to consider the implications. This is shown in Table 32, which incorporates the χ^2 and C figures already quoted for Age and Length of Service, and Wages and Age.

χ^2 and C were also calculated for Wages and Length of Service. The comparison is for NEM in the Cape and Natal only, as, for NEM in the Transvaal, numbers were too small to provide 3 age categories, thus reducing the degrees of freedom of the χ^2 table to two, and making C not comparable with the other figures.

In the same way, for NEF, no comparisons could be made, as small groups resulted in different degrees of freedom in some of the categories.

TABLE 32
 χ^2 AND C FOR THREE VARIABLES AGE, WAGES AND LENGTH OF SERVICE*

	AGE & LOS	WAGES & AGE	WAGES & LOS
NATAL	$\chi^2 = 214.03$ C = 0.43	$\chi^2 = 602.83$ C = 0.63	$\chi^2 = 245.75$ C = 0.46
CAPE	$\chi^2 = 73.79$ C = 0.38	$\chi^2 = 297.77$ C = 0.64	$\chi^2 = 91.58$ C = 0.42

* df = 4, $p < .001$

It can be seen that the Contingency Coefficients C, for Age and Length of Service are slightly lower than for Wages and Length of Service that C for wages and age is much higher.

C for wages and Length of Service is higher than for age and Length of Service, because while there are very few young workers in the higher wage categories, there are some short-service workers in the higher age groups.

The strong relationship between age and wages, is not unexpected, due to the "built-in" relationship between these factors in young, low wage learners, already referred to on page 144.

For NEF, it can only be concluded, from the data available that the effect of length of service among NEF is much less clear than for NEM, and that this also affects the degree of relationship between the other variables.

It does not, therefore, appear possible, on the basis of the above figures, to draw any conclusions on the relative importance of the three variables, as factors affecting LTO.

6. WAGES AND SKILL:

No mention has been made thus far of another variable which is undoubtedly related to Length of Service, age and wages, namely skill. As mentioned earlier (Chapter II, page 42) a number of references in the literature (Brissenden, Cilliers, Lipset, Bell, Silcock) have suggested a relationship between skill and turnover, but Greystoke found that degree of skill was not easy to define, and considered his results to be "most disappointing".

No Job Evaluations are available for the Footwear Industry, and in many of the traditional skills, mechanisation has seriously eroded the skill levels which are at present reflected in the wage rates. It is accepted, in fact, that skills and wages may diverge quite widely in certain departments.

Some indirect evidence was however, available from the Departmental analyses which were made in some factories, on the basis of turnover rates. An hypothesis could be argued that, as Clicking and Closing are the two operations acknowledged to be the most skilled, these two departments should show lower LTO rates than other, less skilled departments.

i) Clicking:

This (the cutting out of the leather components) is generally accepted as one of the highest skilled operations in the Industry. Wages are also high, but no higher than certain other key operations. For Factory A, there were 37 NEM in this department, and the LTO rate of 21.4% was the lowest of all departments. Factory B had 31 NEM in this Department, and the turnover of 22.1%, though not the lowest, was well below average (39.1%) for the factory.

In factory D, among 15 NEM the turnover of 27.2% was not below the average of 26.4 for the factory but still fairly low. The small group could have distorted rates here. In factory G, at 8.5% the turnover was the lowest of any Departmental rate. Some relationship between skill and LTO could be presumed in these instances, but more data, especially on length of service, would be needed for firm conclusions.

ii) Closing:

Relationships among NEM are bound to be obscured here by the fact that this department is traditionally staffed by women, and that NEM wages tend to be rather low where

they are employed.

In factory C, there were 52 NEM and 106 NEF in the Department. The NEM rate was the second highest for the factory. In factory D however, the rate for 27 NEM was very low, at 18.7%. For Factory G, where only NEM are employed, and better wages than the agreement rates are paid in this Department, LTO was 22.9 compared with 20.2 average. Many departments were, however, higher. No conclusions can be drawn from these figures.

The variable of skill was not pursued further in this study, as much more carefully controlled data would be needed before valid findings can be expected.

7. WAGE INCENTIVES:

Some of the factories studied operated incentive schemes of one sort or another, and it was possible to see if this was in any way related to Turnover. Only factories C and H had all employees on a scheme, and Factory H was the only factory where a proper time-studied, standard minutes scheme was being used.

TABLE 33
WAGE INCENTIVES AND LTO RATES - ALL FACTORIES

FACTORY	LTO RATE	PER CENT OF EMPLOYEES ON INCENTIVE
J	74.1	25%
A	44.5	nil
C	39.6	ALL
B	32.3	Introduced
H	29.0	ALL
D	27.8	nil
E	22.1	nil
G	20.2	nil
F	15.3	25%

The table shows no clear relationship. Factory H, had the highest turnover in Natal, for NEM and NEF, in spite of its scheme. Cilliers finding (Chapter II, page 36) that the factories with Incentive Schemes, in his study, had the lowest turnover, is not borne out here.

In factory B, an incentive scheme was introduced during the study, commencing December 1968. NEF were the first on bonus, introduction being from December to March, and their

monthly rates (from November to June) are as follows:

40.8, 47.4, 28.2, 42.1, 21.1, 21.2, 10.4

A drop in rates is apparent, and these findings would appear to support those of Deacon and Knowles, in Australia (See Chapter II, page 36). However, the data quoted above was not able to be controlled for other variables, nor could the study be extended to assess whether the drop in turnover rates was maintained. (The scheme has since been discontinued)

Insufficient information was available for NEM.

8. CONCLUSIONS:

On the face of it, both LTO rates and median lengths of service of leavers were shown to be closely related to wages. However, it was also shown that age and wages were so closely related, that conclusions on the basis of wages alone could not be considered valid. This relationship held for most of the groups, except the NEF in Natal.

This study has shown, therefore, that wages are not a major causal factor in turnover, and this is consistent with the proposition that group cohesion is a primary factor in limiting turnover. Because mobility in the industry is relatively easy, and there are no great differences in wage rates among factories, it follows that wages should not be a primary factor in the creation of stable groups, and this has been borne out in the study findings. It was clear, from the experience of factory F (with the lowest mean wages and the most stable workers) that other factors within the group can easily override wages.

It was not possible, in this study, to separate out the differential effects of length of service, age and wages. It appears most likely, however, on a priori grounds, that the most important variable involved is Length of Service, for as has already been argued, this is more likely to be related to those factors which can be seen as true determinants of an employee's decision to stay or to leave. These factors include the formation of group ties, the establishment of habit patterns and a sense of familiarity with the job situation, and other tangible and intangible benefits which arise from long service.

Other factors such as age and wages are most likely to be correlated with length of service, and may not, in themselves,

be factors which are directly related to stability.

However, the influence of these factors should not be entirely discounted, for earning a higher wage can undoubtedly have a stabilising effect in its own right. For example, it may be less easy to obtain other employment at a similar wage, or the worker's position, in the wage hierarchy in the factory or community may confer upon him a status which he will not lightly jeopardise by moving to a new and possibly unknown work situation. In the same way, being an older person, may mean that there are fewer alternative avenues of employment available, or again, that the worker's age confers a status upon him in his particular work group. All these factors can be independent of length of service, but it is not possible at present to assess their relative effects.

By using Survival of Leaver Curves, however, it has been possible to hold length of service constant, and to illustrate these independent effects of age and wages, even if it has not been possible to contrast their importance.

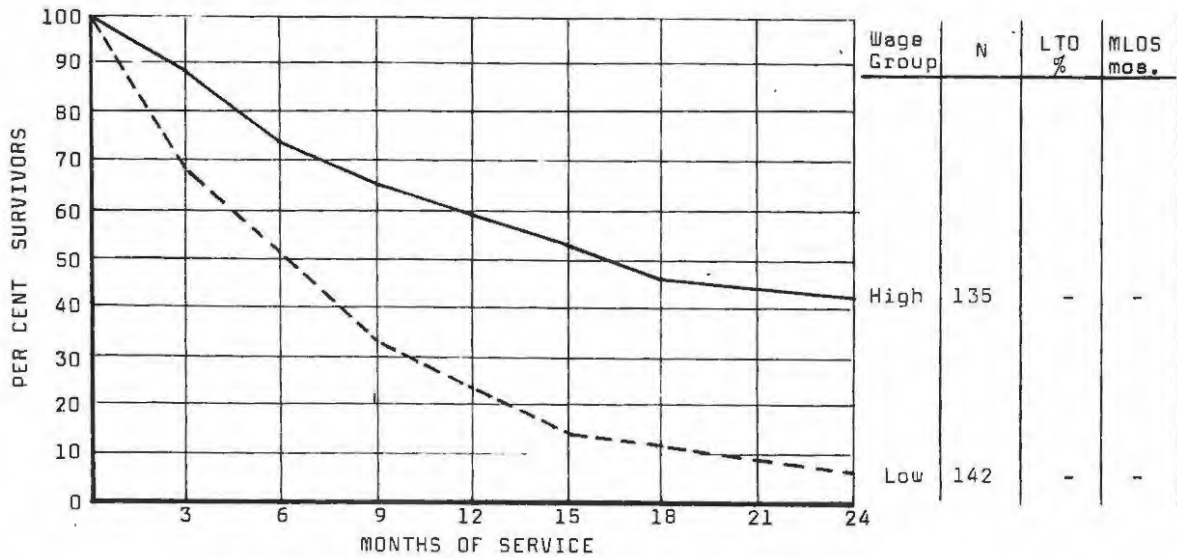


FIGURE 30 : SLC's IN TWO WAGE GROUPS : CAPE NEF

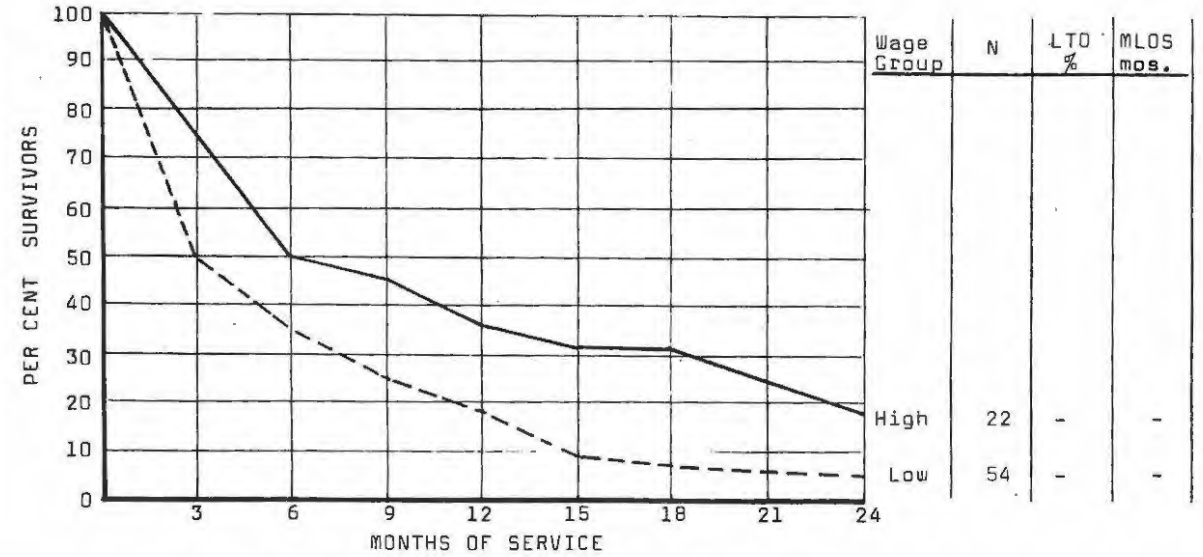


FIGURE 32 : SLC's IN TWO WAGE GROUPS : TRANSVAAL NEF

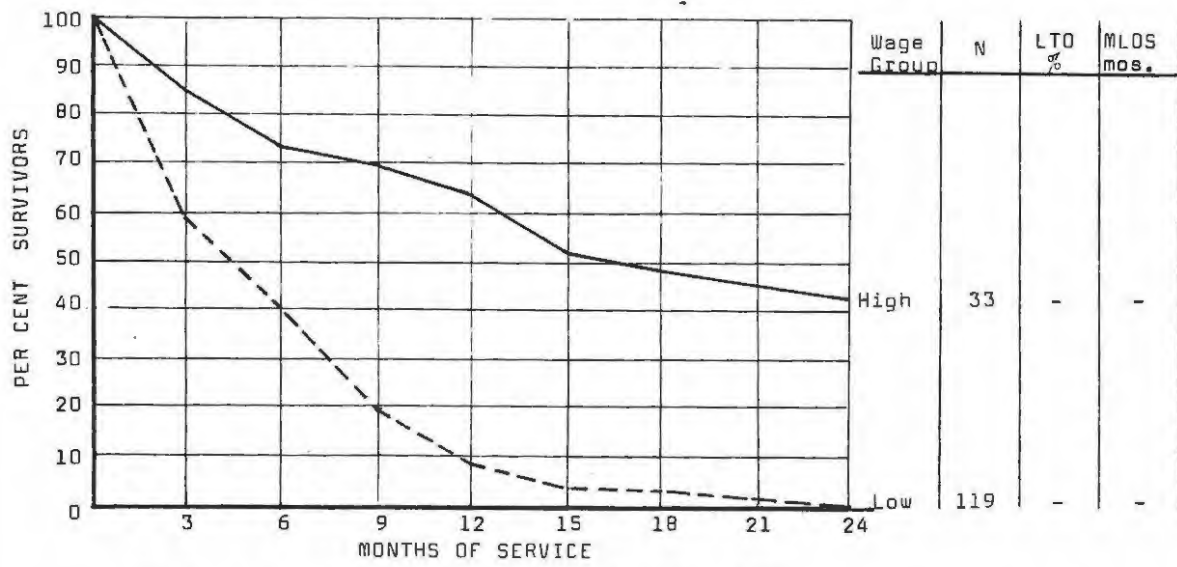


FIGURE 31 : SLC's IN TWO WAGE GROUPS: NATAL NEF

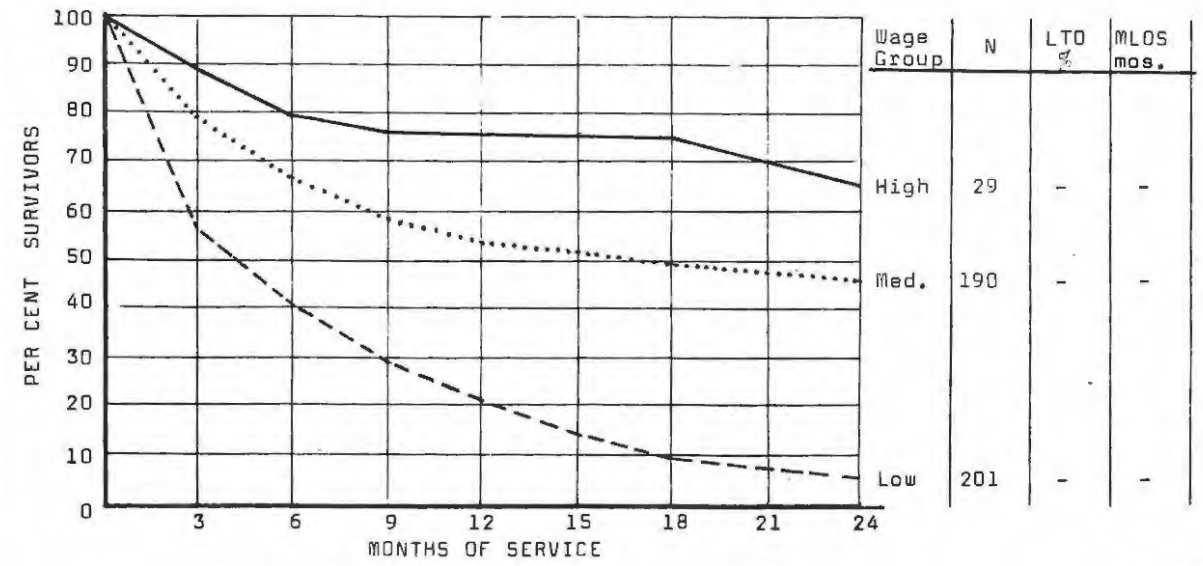


FIGURE 33 : SLC's IN THREE WAGE GROUPS ; CAPE NEM

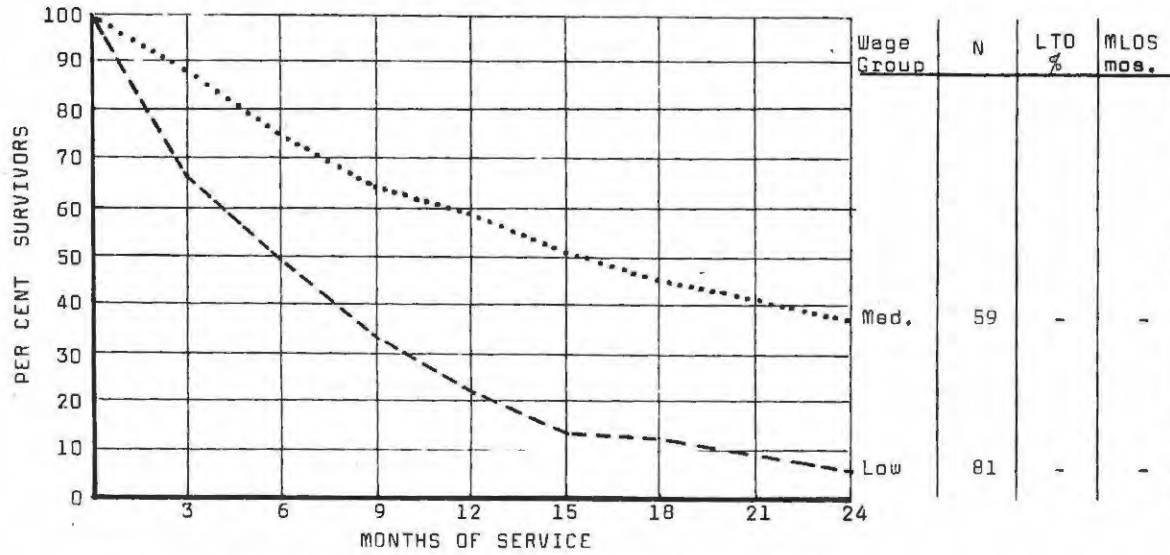


FIGURE 34 : SLC's IN TWO WAGE GROUPS : TRANSVAAL NEM

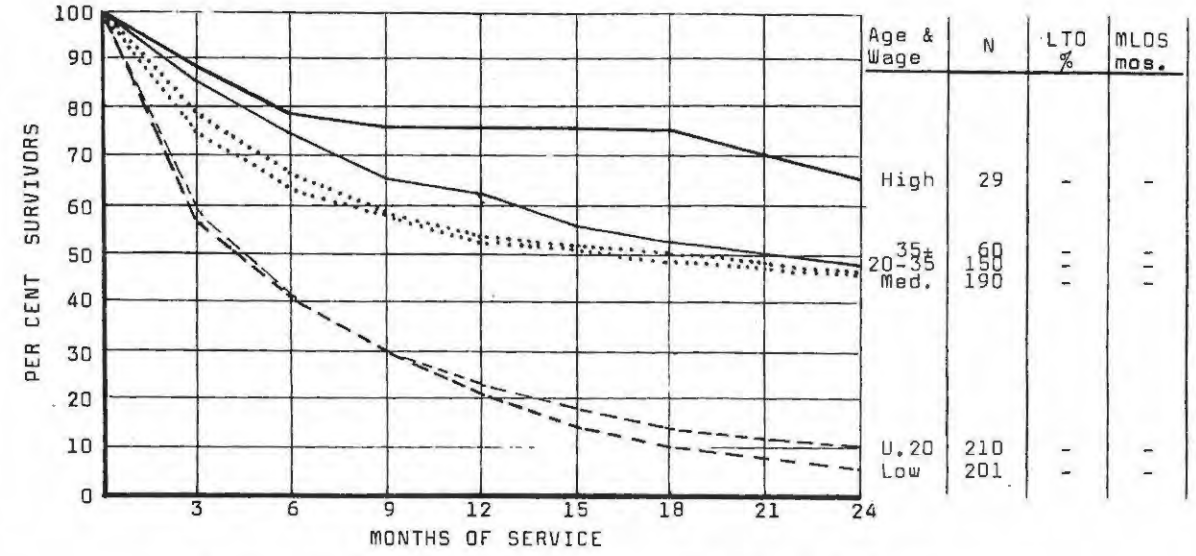


FIGURE 36 : SUPERIMPOSITION OF AGE & WAGE SLC's : CAPE NEM

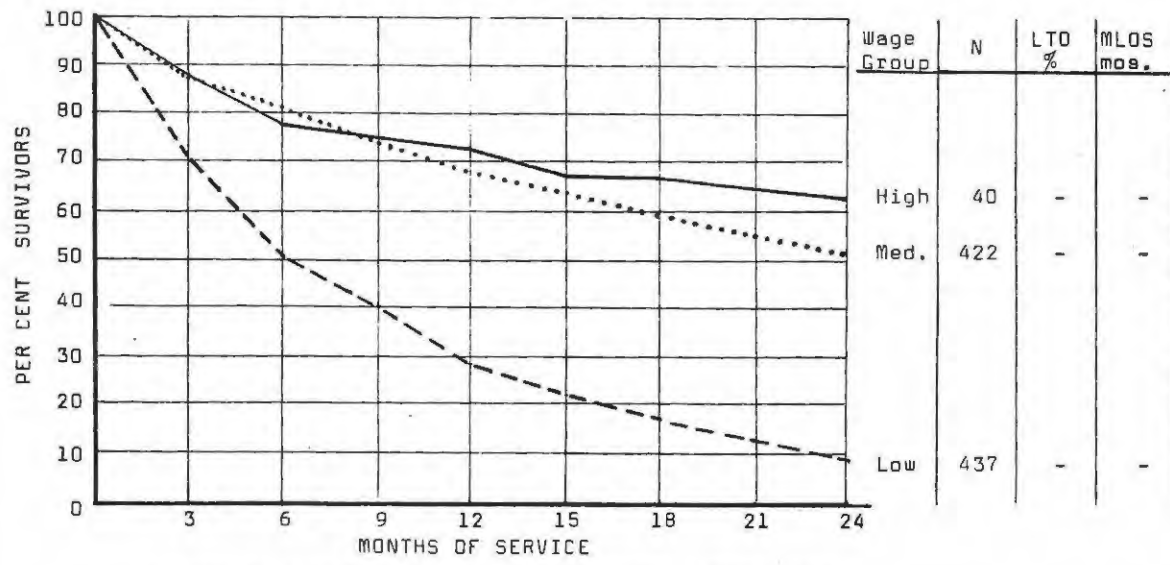


FIGURE 35 : SLC's IN THREE WAGE GROUPS : NATAL NEM

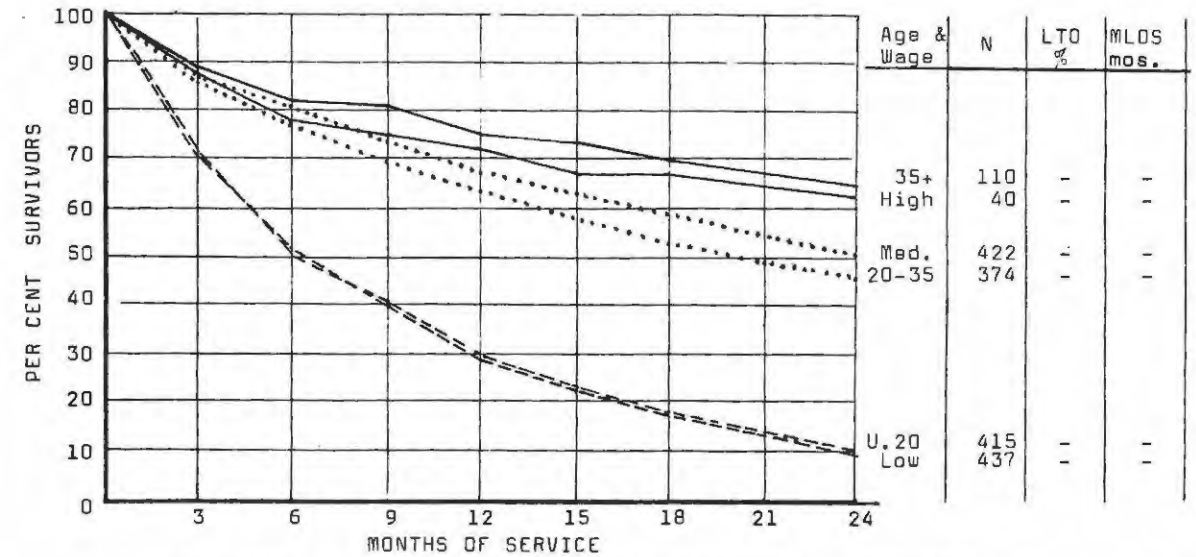


FIGURE 37 : SUPERIMPOSITION OF AGE & WAGE SLC's : NATAL NEM

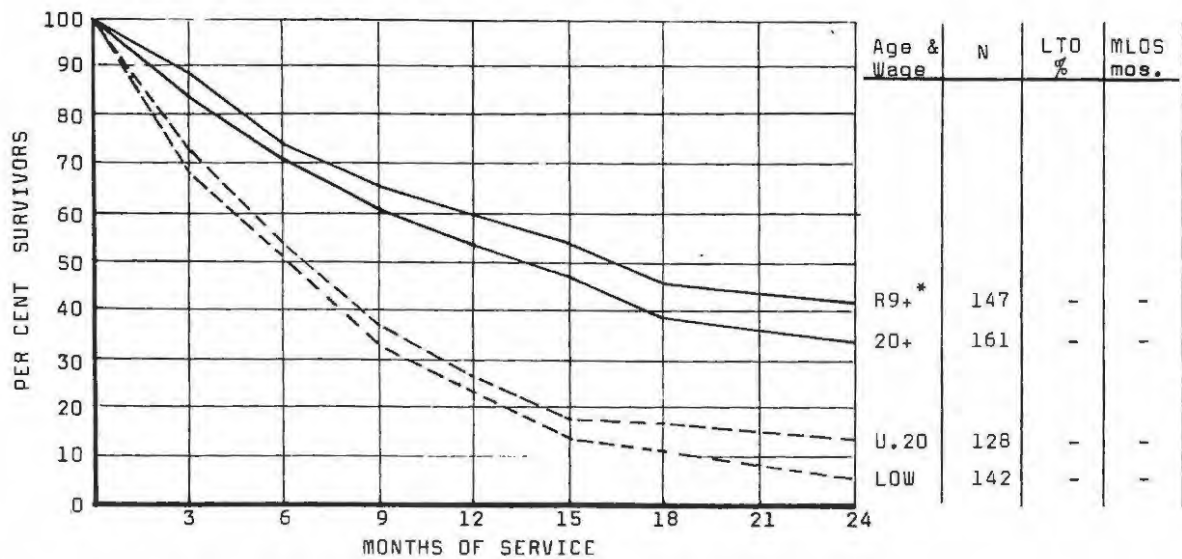


FIGURE 38 : SUPERIMPOSITION OF AGE AND WAGE SLC's : CAPE NEF

(*new wage and age categories - see text)

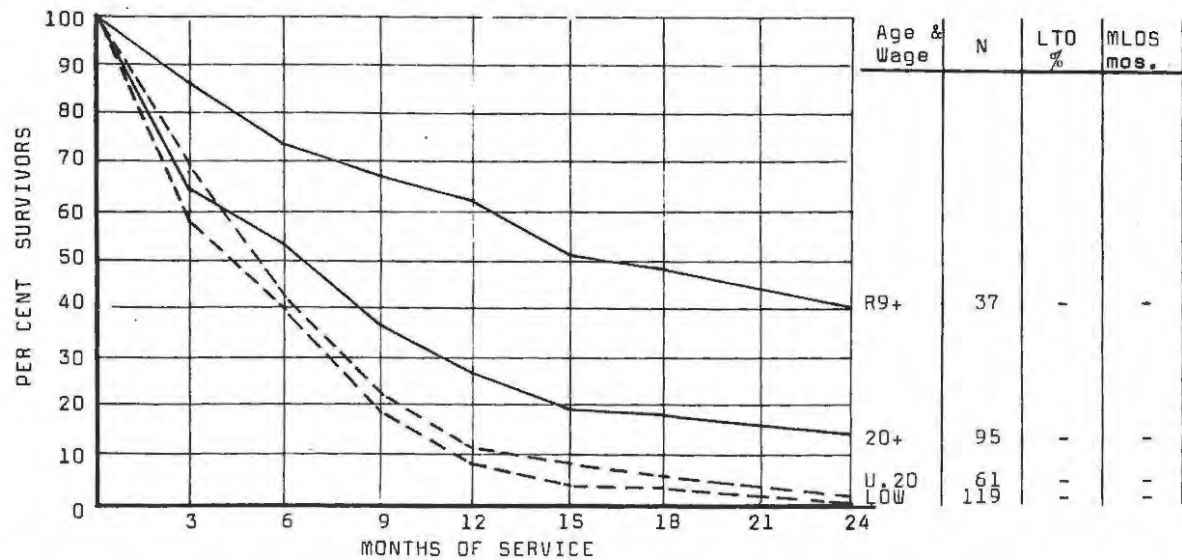


FIGURE 39 : SUPERIMPOSITION OF AGE AND WAGE SLC's : NATAL NEF

D. MARITAL STATUS

Marital Status is a biographical factor which is normally recorded for every employee, even if only for tax purposes. The belief that the married employee will generally be the more stable, is widely and uncritically held, and obviously affects employment practices.

The extent of the relationship between marital status and turnover, and its possibly differing effects for males and females, was investigated on this study. It was also possible to determine to what extent, for different groups, age and marital status are interrelated.

1. LTO RATES, AND MARITAL STATUS:

TABLE 34
LTO RATES AND MARITAL STATUS

FACTORY	NEF		NEM	
	Married	Single	Married	Single
A	36.4	38.9	31.2	63.3
B	57.3	26.3	18.3	45.1
C	46.4	29.9	32.0	44.8
D	100.0*	43.2	13.6	46.7
E	40.4	36.1	12.2	34.8
F	-	-	9.5	18.2
G	-	-	10.4	28.2
H	56.9	86.4	see	note
J	115.4	80.3	39.2	89.1

* small group

The table above contrasts the turnover for Married and Single NEF and NEM, for the 9 factories. Note that in all the analyses to follow, no data on Marital Status of Stayers was available for the EM and the NEM of factory H.

a) NEF:

It can be seen that no very clear trend is apparent, but with the exception of A and H, the turnover for married persons is generally higher than for singles. The overall figure for all NEF is 50.9% for married, and 43.5% for single. This concurs with the findings of both Silcock and Greystoke (See Chapter II, page 42) for single and married females, although the difference is not great.

b) NEM:

For this group, the married persons show consistently lower rates for all factories, than the single persons. In the Cape, overall, the LTO rate for single workers is almost double that of married (50.0% and 25.5% respectively). Whilst in Natal, the single rates are 28.0% compared with a married rate of 11.1%.

These figures clearly reflect the fact that the married workers are generally more stable. They are, of course, also likely to be of longer service (see 2 following) and older - a relationship which will be discussed in more detail later.

c) EF:

With the numbers available, only overall LTO figures can be quoted, these being 39% for married, and 74.3% for single women. These figures, when compared with those for NEF show opposite tendencies, although the difference between the two groups is much greater for EF. This is due to the married women in this group being a predominantly older group, while suitable single girls are not being attracted to the industry, nor are all leavers being replaced.

d) EM:

With only 13 leavers in the period, results must be interpreted with caution (Married LTO = 9.3% and Single LTO = 25.8%) but the picture is very similar to that for EF.

2. MEDIAN LENGTH OF SERVICE OF LEAVERS, BY MARITAL STATUS.

Median Length of Service figures, for married and single provide a useful picture of where the predominant LTO is occurring in the labour force, and as argued earlier, add considerably to the usefulness of the crude LTO rates.

TABLE 35
 MEDIAN LENGTH OF SERVICE (IN MONTHS) OF LEAVERS, BY MARITAL
 STATUS

FACTORY	NEF		NEM	
	Married	Single	Married	Single
A	5.2	7.5	6.7	4.0
B	15.0	7.5	36.0+	6.6
C	7.5	17.2	19.0	5.4
D	too few	7.1	too few	6.0
E	12.7	5.7	21.0	8.8
F	-	-	48.0+	11.6
G	-	-	36.0	11.6
H	< 3	6.0	36.0+	7.8
J	3.9	4.3	14.0	7.4

a) NEF:

The general picture is again an inconsistent one, in keeping with the generally young and unstable nature of this section of the labour force.

Factory A is a good example of general instability, with many short-service losses in married and single groups. As with LTO, the marrieds again show poorer survival.

Factory B, has a high married turnover rate (57.3%) and a high median length of service of 15 months, indicating large losses among longer-service persons. This may have been the result of a factory re-location to an outlying area, and the consequent loss of a large number of married women who previously lived near their work, and considered the new location to be too far away.

Factory C also re-located, but in fact moved closer to where most of its Non European workers lived. No explanation can be offered for the long-service losses among single women (Median Length of Service = 17.2 months), but the LTO rate was not high (29.9%)

Factory E is a good example (Median Length of Service 12.7, LTO 40.4%) of an acceptable level of turnover (for this NEF group) after satisfactory service.

In factory H and J the low median length of service figures for both married and single, reflect the general instability in these two factories.

b) NEM:

In general, the median length of service figures for this group show a complete contrast again (as 1(b)) to the NEF, with the married persons, in general, having a consistently much higher median length of service.

More specifically, for single leavers, factory A shows a low median length of service (4 months) and a high LTO rate (65.3%) with married leavers also having a low median length of service (6.7 months). By contrast, Factory B is a good example of a stable position, with a low LTO rate (18.3%) and high Median length of service (36+ months) among married men.

Factory C has predominantly short-service LTO among single men, but comparing the married Median Length of Service of B and C (19.0 months) shows that there is a marked contrast in favour of B. Factory D similarly features predominantly short-service and serious LTO among single workers, but the married men form a stable core (only 8 leavers during the period).

The other factories are generally stable.

This section has been argued in some detail, on a factory basis, to illustrate again the value of taking median length of service figures in conjunction with crude LTO rates.

3. PERCENTAGE MARRIED AMONG LEAVERS AND STAYERS:

The purpose of Table 36 below, is to investigate the hypothesis that there will be a greater percentage of married persons among stayers than among leavers, indicating that married persons are more stable.

TABLE 36
PERCENTAGE MARRIED AMONG LEAVERS AND STAYERS

FACTORY	NEF		NEM	
	Leavers	Stayers	Leavers	Stayers
A	35.4	37.0	26.4	42.8
B	53.2	34.3	24.6	44.6
C	30.9	22.4	45.8	54.2
D	9.5	4.3	18.2	43.4
E	61.8	59.1	26.9	47.5
F	-	-	19.6	31.9
G	-	-	22.9	44.7
H	24.4	32.2	31.7	N/A
J	19.6	14.6	26.4	44.9

a) NEF:

The figures merely serve to reinforce the picture already gained from the other measures, and show, on the whole, that there are more married leavers than stayers. The two exceptions are A, where the difference is slight, and H, where the trend is reversed (as it was for LTO rates). The hypothesis above is therefore not upheld for NEF.

Read in conjunction with the other figures, however, these figures do indicate the composition of the labour forces concerned; for example, in factory D, the small proportion of married leavers and stayers is indicated, and in general the figures show the NEF in the industry to be a predominantly unmarried group.

b) NEM:

The figures show a consistently greater percentage of married stayers, again merely reinforcing the previous figures and upholding the hypothesis.

4. SURVIVAL OF LEAVER CURVES:

The significant trends related to Marital Status have been illustrated by conventional analysis through selected measures. The same groups will now be studied with the aid of Survival of Leaver Curves, the purpose being, again to show that these curves can convey similar information to a conventional analysis, and in addition can provide a more comprehensive representation of the leaving process.

a) NEF:

The SLC's for the four Cape factories (figures 40 - 43) show considerable divergencies, and to an even greater extent than with some of the other measures, it is not possible to generalise on a regional basis for NEF.

For example, in factory B (Figure 40) married women leavers show much better survival than single leavers. But the LTO rate of 57.3% for the married leavers, compared with 26.3% for single leavers, suggests an atypical situation (see Chapter IV, page 99) which in this case was heavy losses among longer service married persons. This might well have been the result of the factory re-location referred to. Factory C (Figure 41) by contrast, shows very good survival among single leavers with a median length of service of 17.2 months, compared with 7.5 months for married leavers. In factory A (Figure 42) there is little difference between single and married leavers up to about 24 months; thereafter married are clearly better. Groups are small in Factory D, figure 43, but single survival is again better.

In the Natal region, a similar position prevails. Factory F had too few NEF leavers for curves to be constructed and factory G employed only NEM. In the remaining two factories, married leavers showed better survival than single in Factory E (N = 21 and 13 respectively, Figure 44) although the differences were small, and married LTO rates slightly higher; while in factory H (figure 45) single leavers were better than married, but after 6 months, the differences were very small. Here again, single leavers show a higher LTO rate than married, but the SLC shows that there are fewer losses in the under 12 months groups. Figure 46 shows a similarly inconclusive picture for Factory J.

The overall conclusions that can be drawn from these SLC's are that they show the same lack of a definite relationship between Marital Status and leaving, which has been shown by the other measures. However, a clearer picture can be obtained of the leaving process from these curves, and by comparison of the curves of individual factories (by superimposition) specific differences in survival characteristics can be quickly identified. The example of Factory B has already been mentioned.

b) NEM:

Although an analysis of individual factory curves shows some expected differences among the firms, there is nevertheless a clear trend evident in all of them, and this is illustrated by the regional curves of figures 47, 48 and 49.

The curves illustrate the same relationship shown by the other measures concerned, namely that married NEM show far better survival than single.

Again, a simple superimposition of the curves enables the three regions to be compared. Natal leavers show the best survival, which confirms the general stability of this group, which has been demonstrated on the other variables thus far. No gross differences are evident in the curves for the Cape and the Transvaal, but both show distinctly poorer survival than the Natal leavers.

c) EF:

Insufficient leavers were available for a regional analysis, and Figure 50 shows the position for All EF leavers. The single curve is influenced by the composition of this group, which consists of a young and unstable short-service group, and an older and stable group of long-service persons. The Curve for married leavers shows no inconsistencies, and is, in fact, very similar to the curve for all NEF (not shown).

5. RELATION OF AGE AND MARITAL STATUS:

The picture provided by the Survival of Leaver curves for both NEF and NEM in 4 above is consistent with the age characteristics of these two groups in general. Thus the NEF tend to marry and have children at an early age, and the Marital Status curves are thus contaminated by some very young persons among the married group.

By contrast, NEM generally tend to marry at a much later age, and married persons are likely to be an older and stabler group generally. The mean ages are shown in Table 37 below.

TABLE 37

MEAN AGE, MARRIED AND SINGLE LEAVERS, ALL NEF AND ALL NEM

	NEF	NEM
Mean age married	29.8	34.3
Mean age single	20.6	19.8

It is inevitable therefore that age and marital status are likely to be intercorrelated, and this can again be qualitatively demonstrated by superimposing the SLC's for age on those for marital status.

The question immediately arises as to which two age categories can be used for such a comparison. For NEM, the choice of 25 as a dividing line seems a reasonable one - whilst there will be some younger married leavers below this point, and some older single persons above it, a fairly even division can be shown to result (see page 166)

For NEF, however, the dividing line between married and single leavers is not as clearly related to age as for NEM, and of two alternatives considered, neither gave balanced percentages of married and single persons. Thus in the Cape, only 67.6% of single leavers were under 20, but 92% of married leavers were over 20. Alternatively, 90.3% of single leavers were under 25, but only 67.8% of married leavers were over 25.

As the single leavers constituted the larger group, and as there are far more NEF in the Cape than in Natal, the latter division was chosen.

Age-based survival curves were now constructed (figures 51 - 55) for the under 25 and over 25 years group, and superimposed on the Marital Status curves and a good deal of similarity between the appropriate curves was apparent. As before (Wages page 144) cross-tabulations were also made to check the comparability of the groups.

In addition, to obtain another quantitative measure of the relationship between the groups being compared, Point Biserial correlations were determined between age and marital status, from the formula (427)

$$r_{pbi} = \frac{M_p - M_t}{\sigma_t} \cdot \sqrt{\frac{p}{q}}$$

Where M_p = Mean of dichotomous variable with highest \bar{x}

M_t = Mean of whole sample

p = proportion of total sample in dichotomous variable with highest \bar{x}

q = proportion of remainder

The resulting figures for the NEF and NEM groups in the regions are given below, the hypothesis to be tested being that valid inferences cannot be drawn about the leavers on the

basis of Marital Status alone, because substantially the same group of leavers is involved, as in the age analysis, and in fact a similar survival pattern will result for marital status as for age.

a) NEF:

i) Cape:

Figure 51 shows the similarity of the survival curves, particularly in the under 25 vs. single group. The married curve indicates slightly poorer survival than the over 25 years group, due to the presence of some young married leavers in this curve (determined from the cross-tabulations), but it is not possible to say whether the poorer survival of these persons was due to their being younger, or to being married.

These cross-tabulations of leavers, by age and marital status, showed that 90.3% of single leavers were under 25, and 67.8% of married leavers were over 25.

Also $\chi_{pbi}^2 = 0.57$, significant at the 1% level.

The hypothesis is therefore upheld especially for the single leavers. χ_{pbi}^2 shows that there is a relationship between the two variables, and both the percentages and the survival curves show that, for single leavers, substantially the same group is being measured in both survival curves. For married leavers, the relationship is not quite as clear.

ii) Natal:

Only 83% of single leavers were under 25, there being some older, single persons among leavers here. This is reflected in the slightly better Survival Curve (figure 52) for the single leavers. Otherwise the curves show reasonable agreement. Only 60% of married leavers were over 25; the association between age and marital status is the same at

$\chi_{pbi}^2 = 0.57$, significant at the 1% level.

iii) Johannesburg:

No curve could be drawn for the Johannesburg NEF due to the small number of married leavers but it could be shown that 90.2% of single leavers were under 25. Only 46.1% of married leavers, however, were over 25, but only 13 persons made up this group. χ_{pbi}^2 was 0.42, which was not significant.

b) NEM:

i) Cape:

The Survival Curves in Figure 53 show very close similarities between the groups being compared. The cross-tabulations show that 89.2% of single leavers were under 25, and 89.5% of married leavers were over 25.

$\chi^2_{pbi} = 0.74$, which is significant at the 1% level.

ii) Natal:

The Survival Curves in Figure 54 are again almost identical for the two groups compared, which in this case are for Asiatic Males only, due to Bantu Males showing very different survival characteristics (see 6 to follow). 90.8% single leavers were under 25, and 91.0% married leavers were over 25.

$\chi^2_{pbi} = 0.75$, significant at the 1% level.

iii) Johannesburg:

Although similar, the curves (Figure 55) differ rather more than in the other two regions, due to the presence of more older single leavers, and more younger, married leavers. This is reflected in the lower percentages in the cross-tabulations, namely 88.1% single leavers under 25, and 84.2% married leavers over 25.

$\chi^2_{pbi} = 0.73$, also significant at the 1% level, however.

From the above analyses, for NEM, it can be concluded on the face of it, that marital status is a reliable predictor of survival behaviour. However, whether marital status is the determining variable here, or whether the effect shown is due to age, cannot be deduced from the data. Age has already been shown to be a powerful determinant in earlier analyses, and as Marital Status is closely related to age in this group, it follows that it too, will be closely related to LTC.

For NEF, however, the role of marital status in turnover is not easy to unravel. Certainly there is not the clear relationship between age and marital status which holds for NEM, as married NEF are generally much younger than their male counterparts. They will not, therefore, match the long-term stability of the older NEM, especially as they are also not, generally speaking, career-oriented and their working lives are much more likely to be divided into a series of shorter service periods, before marriage, and at intervals

thereafter. At the same time, the figures do show that the younger, single NEF do settle into their jobs quicker, and, in the Cape at least, generally serve longer than their male counterparts.

It has also been shown that married women have a higher turnover, yet in two factories serve longer than single leavers. This apparent anomaly could be due to the smaller groups involved, and here the Survival Curves are possibly a better indicator, though still inconclusive. In the Cape, the effects of factory relocation on one large group may be a factor in this apparent anomaly, the resignation of a large number of longer service workers not being indicative of a consistent trend.

A further attempt to control for age and length of service was made, by contrasting the LTO rates, by length of service groups, for single and married NEF, in two age groups as shown below:

The age division of 30 years was chosen as being a realistic one, above which the family responsibilities of the married woman were likely to be diminishing.

TABLE 38
MARRIED AND SINGLE LTO RATES, IN AGE AND LENGTH OF SERVICE
GROUPS: CAPE AND NATAL

	CAPE				NATAL			
	Single		Married		Single		Married	
	u.30	30+	u.30	30+	u.30	30+	u.30	30+
3 months	71.9	100.0*	142.8	100.0	59.1	80.0	200.0	275.0
3 - 12	43.3	100.0*	59.4	64.0	112.0	20.0	53.8	33.3
12- 60	20.5	27.3	59.4	33.3	25.5	83.3	28.6	22.8
60 +	14.3	9.1	140.0*	16.7	NIL	11.1	NIL	15.8
No.of stayers	502	38	81	145	150	25	33	76

* small groups

In the Cape, the single under 30 group is a good one, generally, with a large number of stayers - 253 - in the 12 - 60 months category. In the older single group, mainly longer service persons are involved (and then not many) and these probably do constitute a longer-serving career-oriented single group. The married under 30 group is poorer, and does not show a decreasing LTO with length of service. Few reach long service, and this would appear to be a group whose conflicting roles may cause instability in the work situation.

The older married group is much better, and shows progressive improvement with Length of Service, once the first 3 months period has been survived.

In Natal, the single under 30 group is fair, but there are few in the long-service category, as this group is comparatively new to the industry. In the over 30 single group the numbers are too few for conclusions. The younger married group is poor as for the Cape, and, although smaller numbers are inclined to distort the picture, the older married group shows better stability than the younger married one, and rates are also lower than for single under 30, after 3 months service. The effect of these older, short service married leavers has already been revealed by the SLC analysis mentioned on page 130.

In Johannesburg, the groups available - especially stayers - were too small for conclusions to be drawn.

This analysis does show, fairly clearly, that young single females are a relatively stable group, and that older married women are also reasonably stable, once they have survived the first few months of employment. It seems reasonable to surmise here, that once the older married woman has made provision for her domestic responsibilities to be taken care of and has adjusted again to her working role, she can be a stable employee. Many new entrants, however, do not survive this transitional stage.

Age and Marital Status are obviously very closely related for both Males and Females, Bucklow's warning (Chapter II, page 42) that age must be controlled in any analysis of Marital Status, would therefore seem to be well founded.

6. BANTU MALES:

Finally it was possible to investigate a group of 50 Bantu leavers in factory G, and the SLC showed that from 3 to 18 months service, single Bantu survived rather better than married. Thereafter the position was reversed. The data available does not support any conclusions on the conflicting findings of Bell and Arbous. (Chapter II, page 41)

7. CONCLUSIONS:

It can be expected that marriage will have differential effects upon the stability of males and females, and this was demonstrated in this study. The findings are best considered separately, therefore.

a) NEM:

For this group, marital status has been shown to be correlated with age, and hence with length of service, and the married male is therefore very likely to be older and of longer service than the single male. It was not possible to separate out the effects of these three variables, but it was clearly shown that married NEM were much more stable than single NEM.

Notwithstanding the factors of age and length of service, it can reasonably be expected that the married male will have more responsibilities, and will therefore be less likely to leave of his own accord, in response to pressures from within or without the working group. Other things being equal, he is therefore likely to be a more stable employee than the single male.

b) NEF:

The orientation of the female to her work situation is very different from that of the male. In this study, the NEF were mainly younger, and not career-oriented in the same way as the NEM. However, the younger single NEF proved to be much more stable than her male counterpart, and a number of reasons can be suggested for this, in terms of group cohesion. Firstly, the NEF is no doubt assimilated quicker into a work group in which there is relatively less of an age and a status hierarchy, (few in the group have really long service) and she also in turn probably demands less security and intrinsic job satisfactions than does the young male. The young married NEF is unstable, however; the dual roles in the home and at work are obviously incompatible for her.

The older married NEF exhibits some of the expected stability of older workers in general (as outlined on page 134), provided that she can make satisfactory arrangements for her domestic responsibilities. Short-term losses among some of this group, and stability among others, suggests that specific procedures directed at assisting them during the induction period, could result in more of them being integrated into the working group.

The need to consider age as well when evaluating marital status as a factor in turnover among females, was therefore demonstrated.

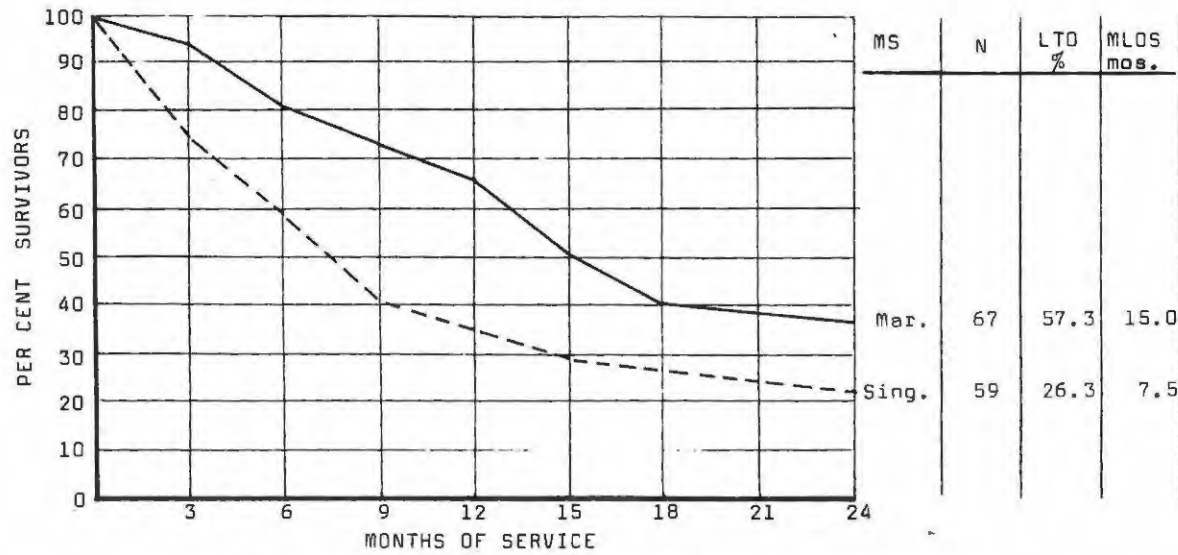


FIGURE 40 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY B

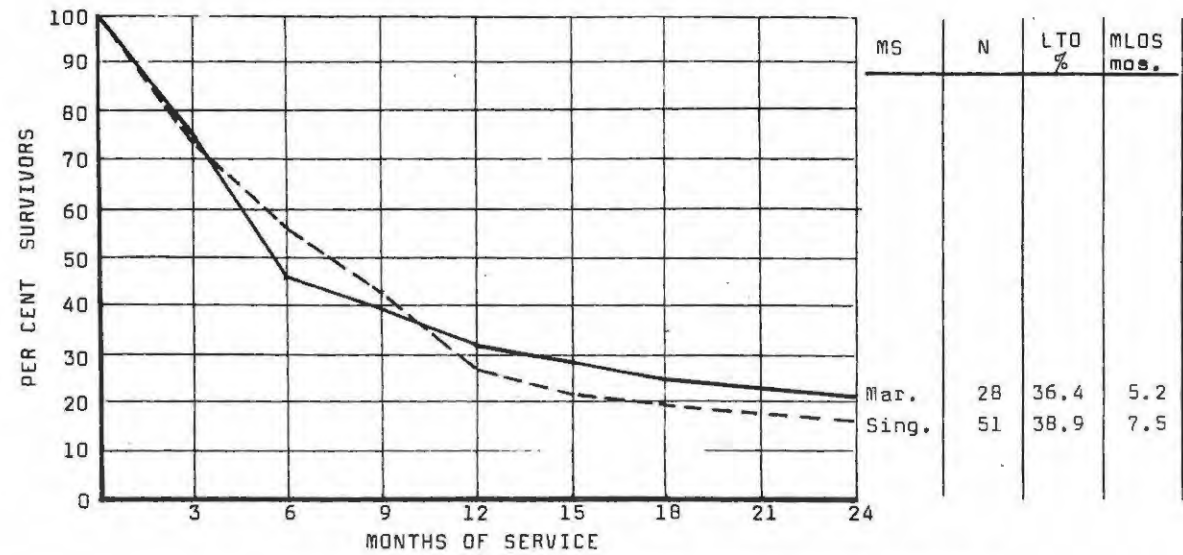


FIGURE 42 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY A

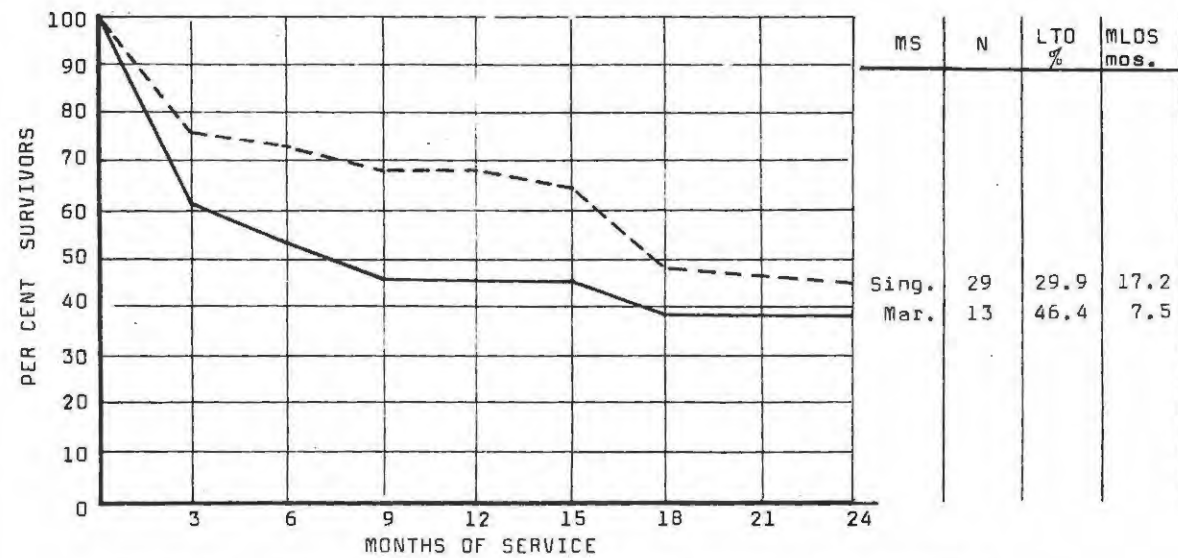


FIGURE 41 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY C

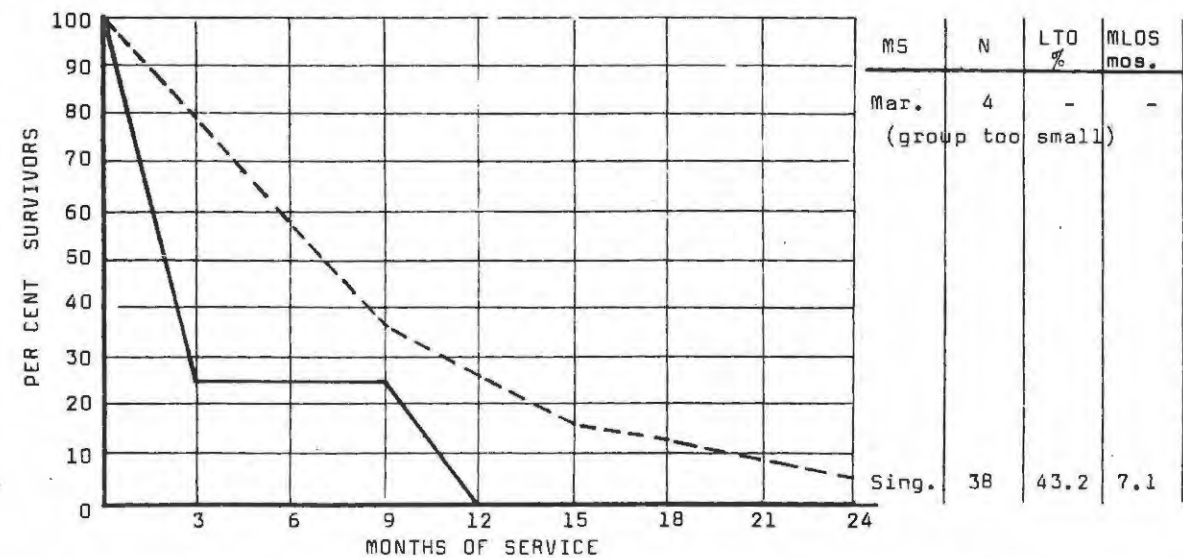


FIGURE 43 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY D

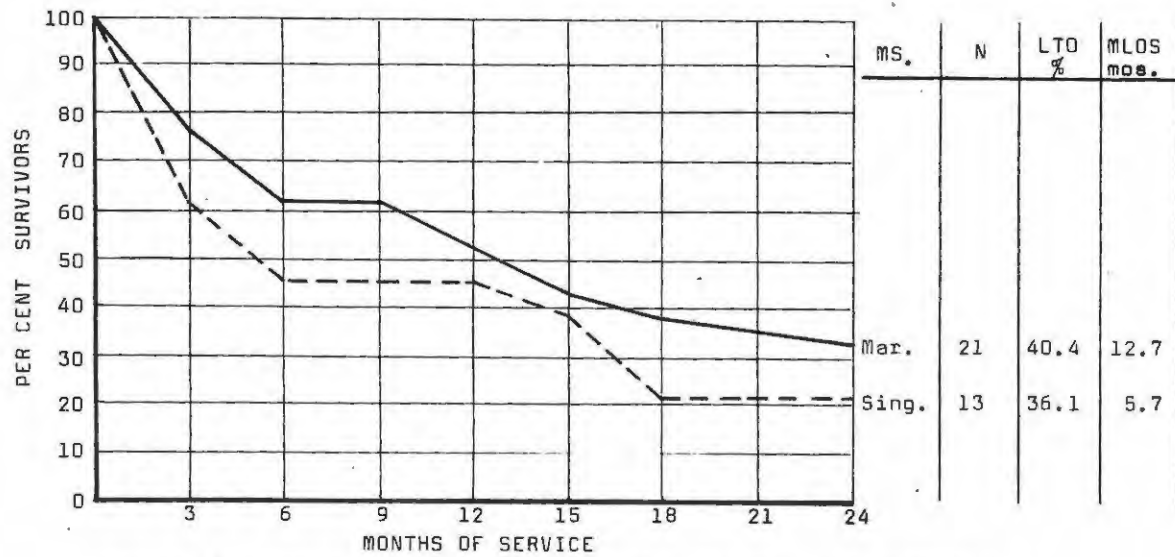


FIGURE 44 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY E

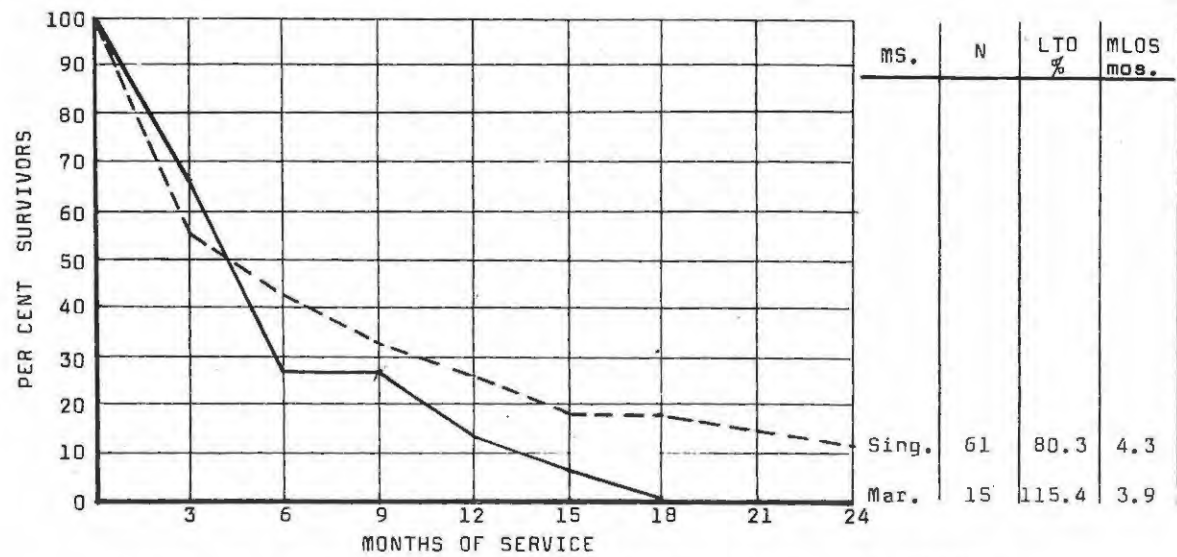


FIGURE 46 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY J

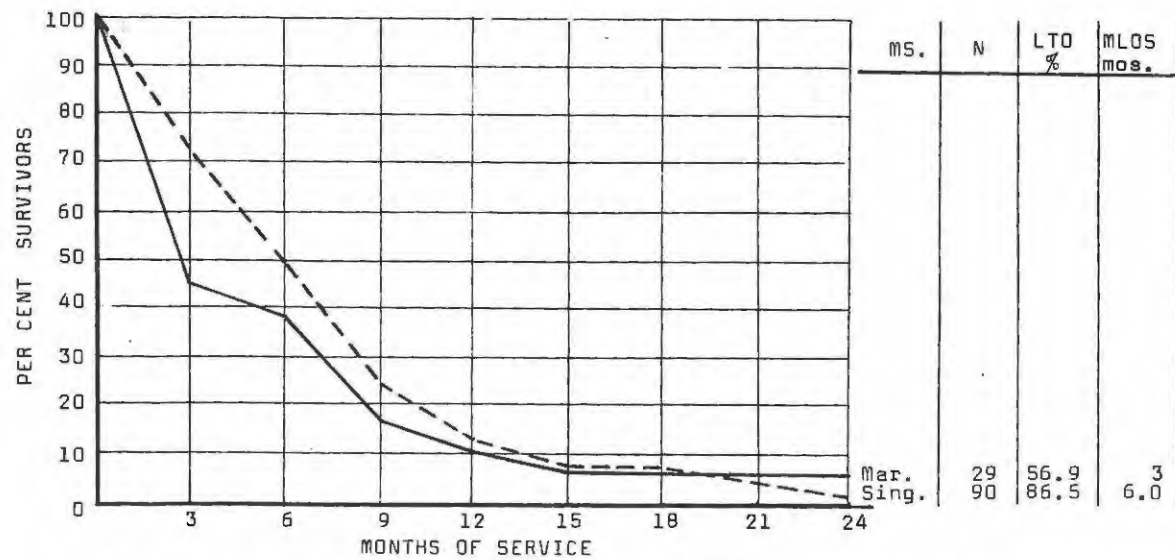


FIGURE 45 : SURVIVAL OF LEAVERS BY MARITAL STATUS : NEF FACTORY H

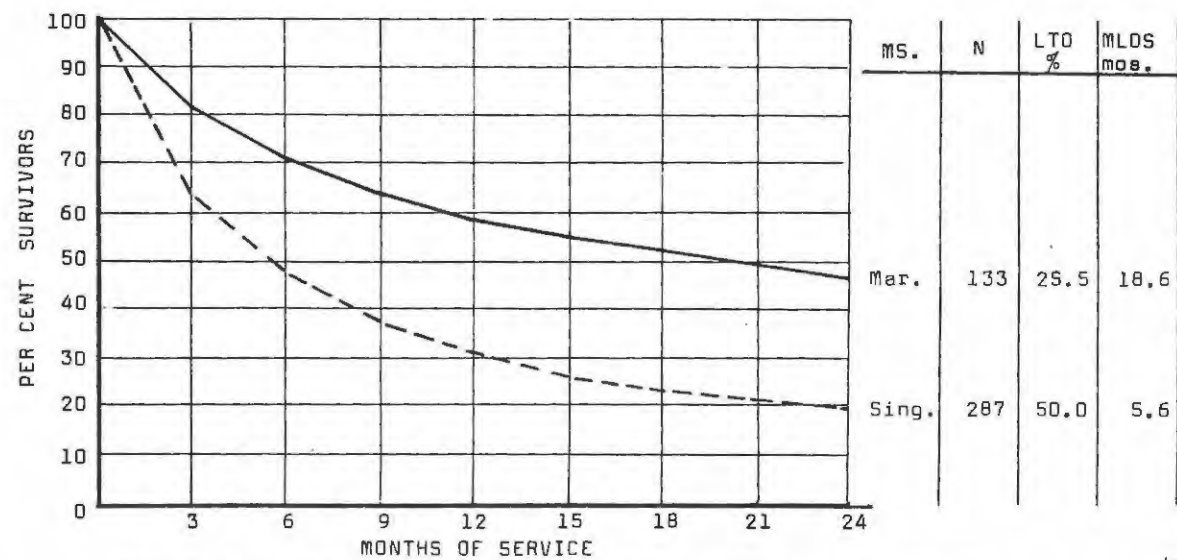


FIGURE 47 : SURVIVAL OF LEAVERS BY MARITAL STATUS : ALL CAPE NEM

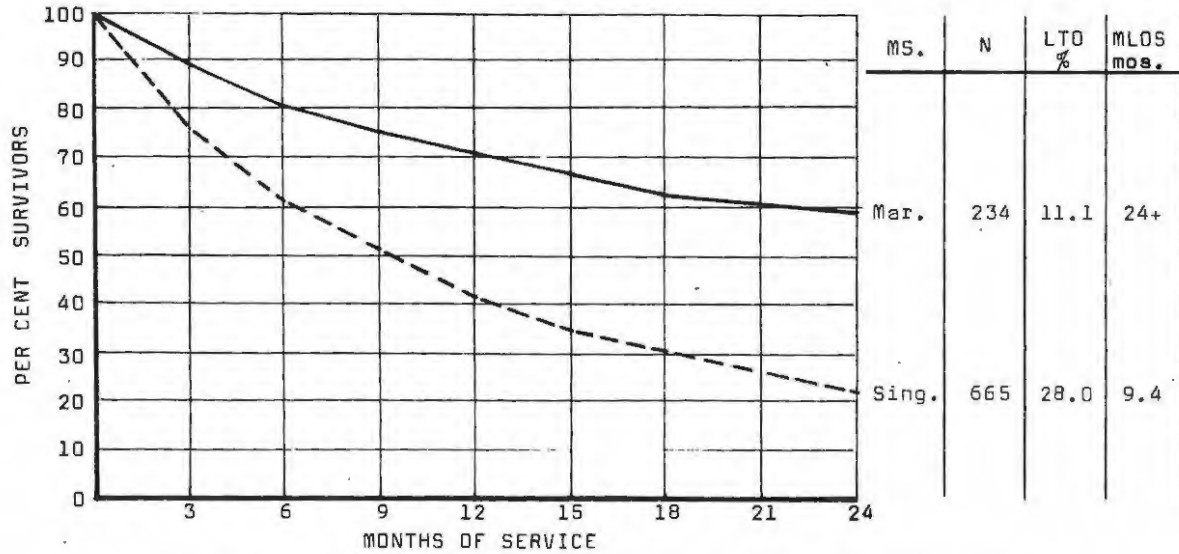


FIGURE 48 : SURVIVAL OF LEAVERS BY MARITAL STATUS : ALL NATAL NEM

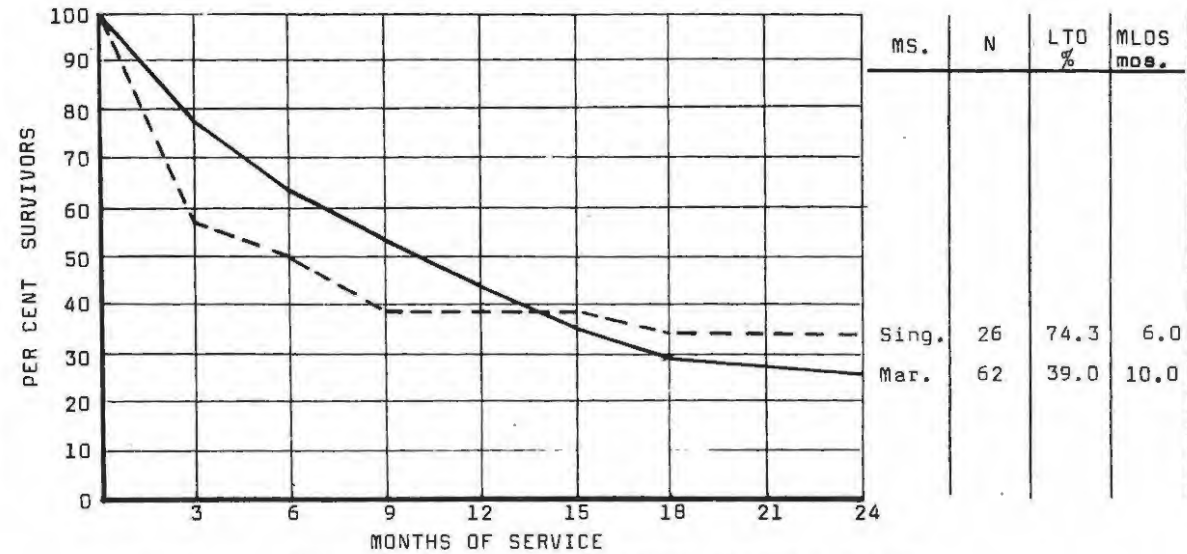


FIGURE 50 : SURVIVAL OF LEAVERS BY MARITAL STATUS : ALL EF

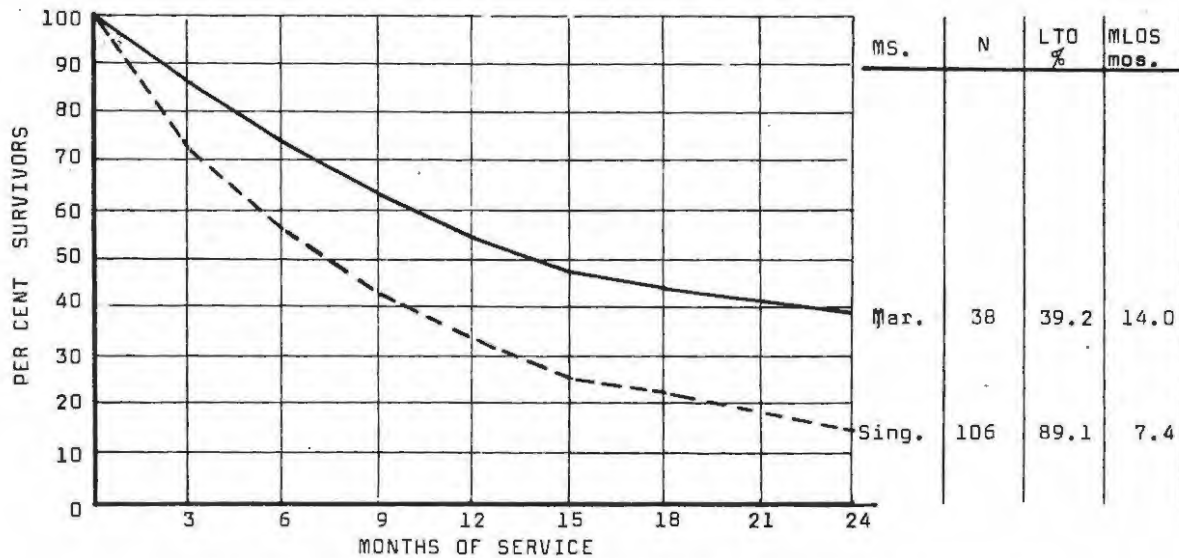


FIGURE 49 : SURVIVAL OF LEAVERS BY MARITAL STATUS : ALL TRANSVAAL NEM

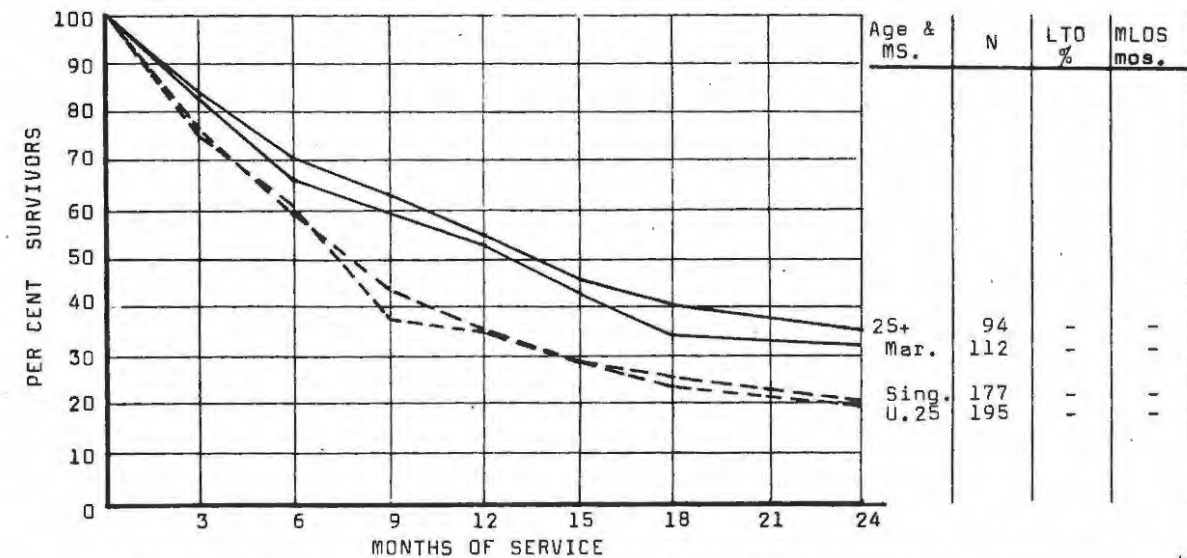


FIGURE 51 : SUPERIMPOSITION OF AGE AND MARITAL STATUS SLC's : CAPE NEF

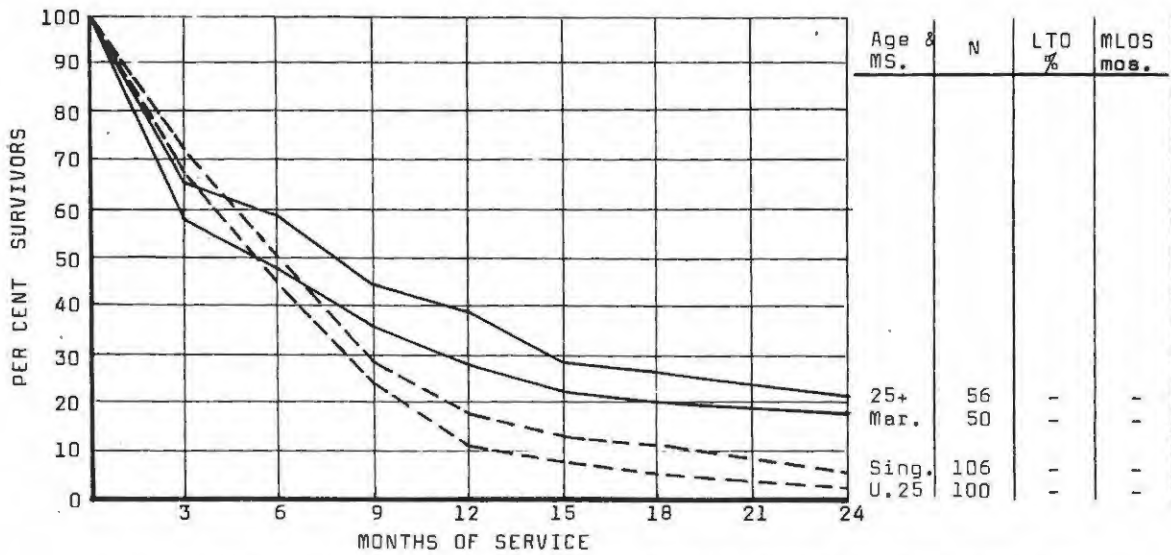


FIGURE 52 : SUPERIMPOSITION OF AGE AND MARITAL STATUS SLC's : NATAL NEF

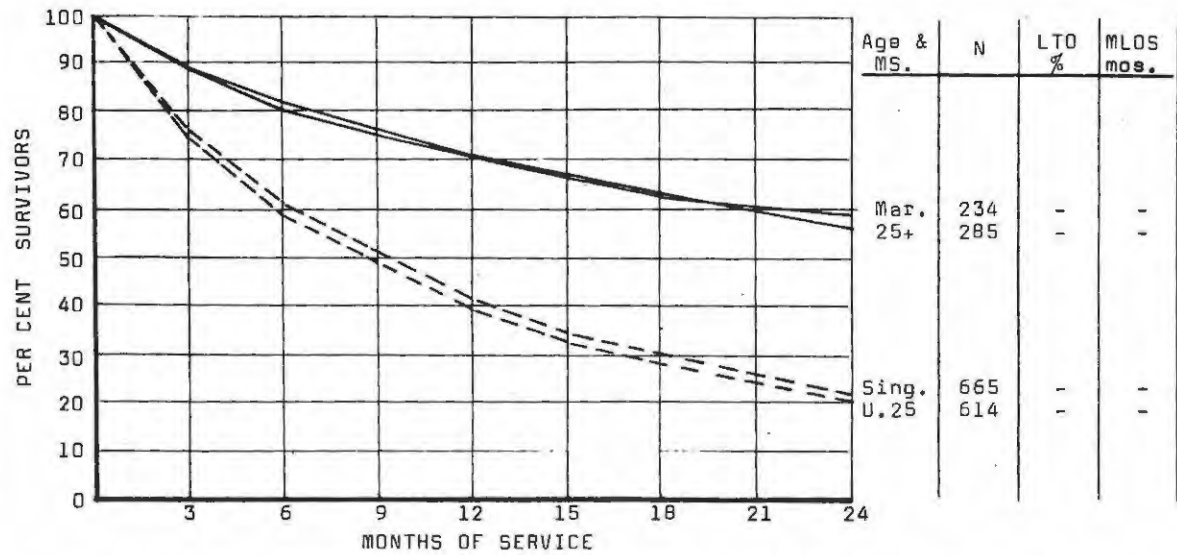


FIGURE 54 : SUPERIMPOSITION OF AGE AND MARITAL STATUS SLC's : NATAL NEM

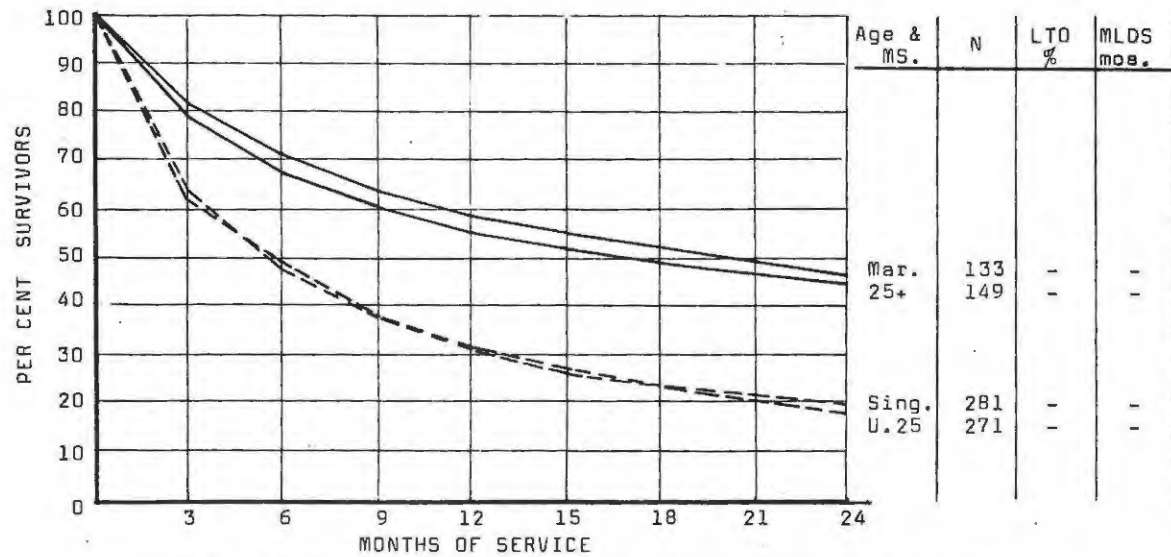


FIGURE 53 : SUPERIMPOSITION OF AGE AND MARITAL STATUS SLC's : CAPE NEM

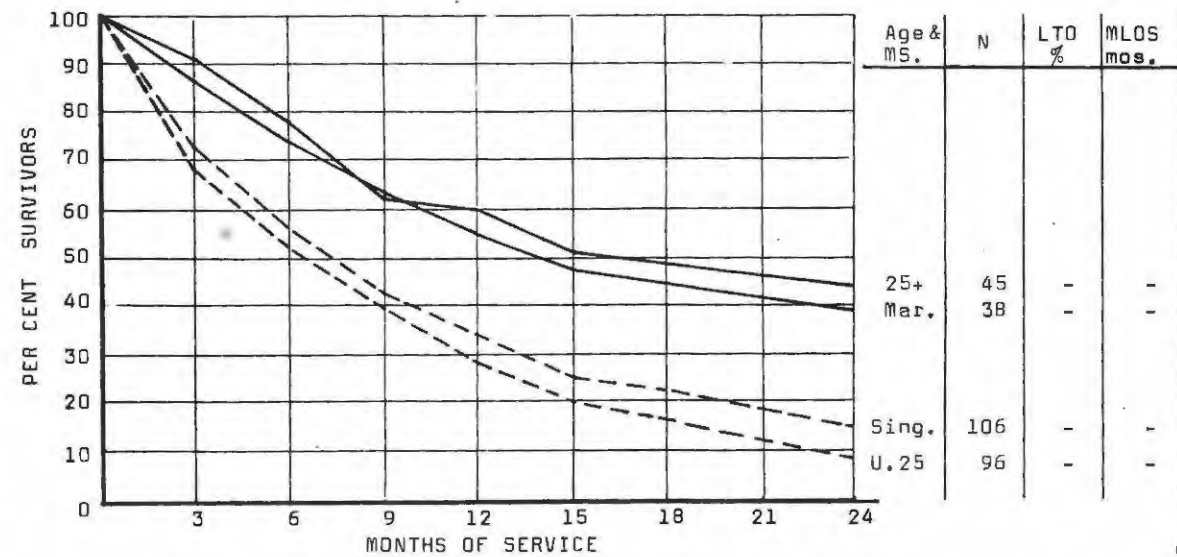


FIGURE 55 : SUPERIMPOSITION OF AGE AND MARITAL STATUS SLC's TRANSVAAL NEM

E. TYPES OF SEPARATION

1. INTRODUCTION:

"Reason for leaving" frequently occupies a prominent place in factory records of labour turnover. Reasons such as "Dismissal" or "Retrenchment" are relatively verifiable and straightforward but "Voluntary" separations may be the result of widely differing circumstances. Management interest in these reasons is no doubt based on the rationale that if it can be established why workers are leaving, it will be easier to take steps to reduce the number of leavers in future. In practice however, there is little to motivate the separating worker to give a truthful reply; in fact the opposite is more likely to result when the true reason for leaving is in any way contentious. The separating worker, having made up his mind to leave, is usually anxious to get out as speedily as possible, and without further confrontation with any agent of the management. So he gives, as his reason for leaving, something which will evoke the minimum of discussion. Smith (See Chapter II, page 44) followed up some of his leavers, it will be recalled, and found that "Domestic Reasons" (among females) frequently turned out to be a better job with another Company.

For these reasons, and as previously mentioned under "Methodology", reasons for leaving in this study were confined to the relatively verifiable categories of "Voluntary", "Dismissed", "Retrenched" and "Other".

For All Separations in this study, the following percentages were recorded:

V = 49.2%
 D = 35.5%
 R = 10.4%
 O = 4.9%

Reference to the literature in Chapter II (page 59) shows that, by comparison with other studies, (Hill, Byrt, Silcock, Rice, Clarke, Cilliers), Turnover in the Footwear Industry is characterised by a rather high percentage of dismissals; a fact that will become apparent in the more detailed analyses to follow. While Voluntary separations are still in the majority, they do not approach the 75% recorded in the Footwear Industry by White (428) in her 1943 study. At 4.9%, "Other" is low compared to Greystoke's findings (see Chapter II, page 60) of 12% for the Sheffield area, and the British Institute of

Management figure for all Britain, which he gives as 10.6%. However, Greystoke (429) notes that his Sheffield group consisted of older than average workers and in addition, it referred to males only. The figure also includes over 4% for "National Service". When these points are borne in mind the above 4.9% for "Other" is consistent with a younger group in which there were few deaths and retirements.

2. RANGES OF VOLUNTARY AND DISMISSED:

Knowles (see Chapter II, page 59) found over a period of seven years, that fluctuations in Turnover were caused largely by fluctuations in the level of voluntary separations. It is difficult to make generalisations on the basis of only 13 months' figures, but regional analyses showing the levels of voluntary separations, and dismissals, were made. Rather large monthly fluctuations were apparent, but these were smaller for dismissals than for voluntary. The graph in figure 56, for all regions, shows a clearer trend, with a fairly constant level of dismissals.

The ranges of variation in monthly rates were as follows:

Dismissed: 8.3 - 13.7%

Voluntary: 11.9 - 26.5%

Knowles' finding is therefore upheld in this study, and Voluntary separations appear to account for the larger fluctuations in turnover.

3. VARIATIONS OF VOLUNTARY AND DISMISSED:

In the interaction between employer and employee, the hypothesis frequently put forward by the former, is that losses in the early months of employment are employer-initiated, while after longer employment, terminations are employee-initiated. If this were so, it could be expected that Dismissal will be greater than Voluntary for short-service employees, and vice-versa for long-service.

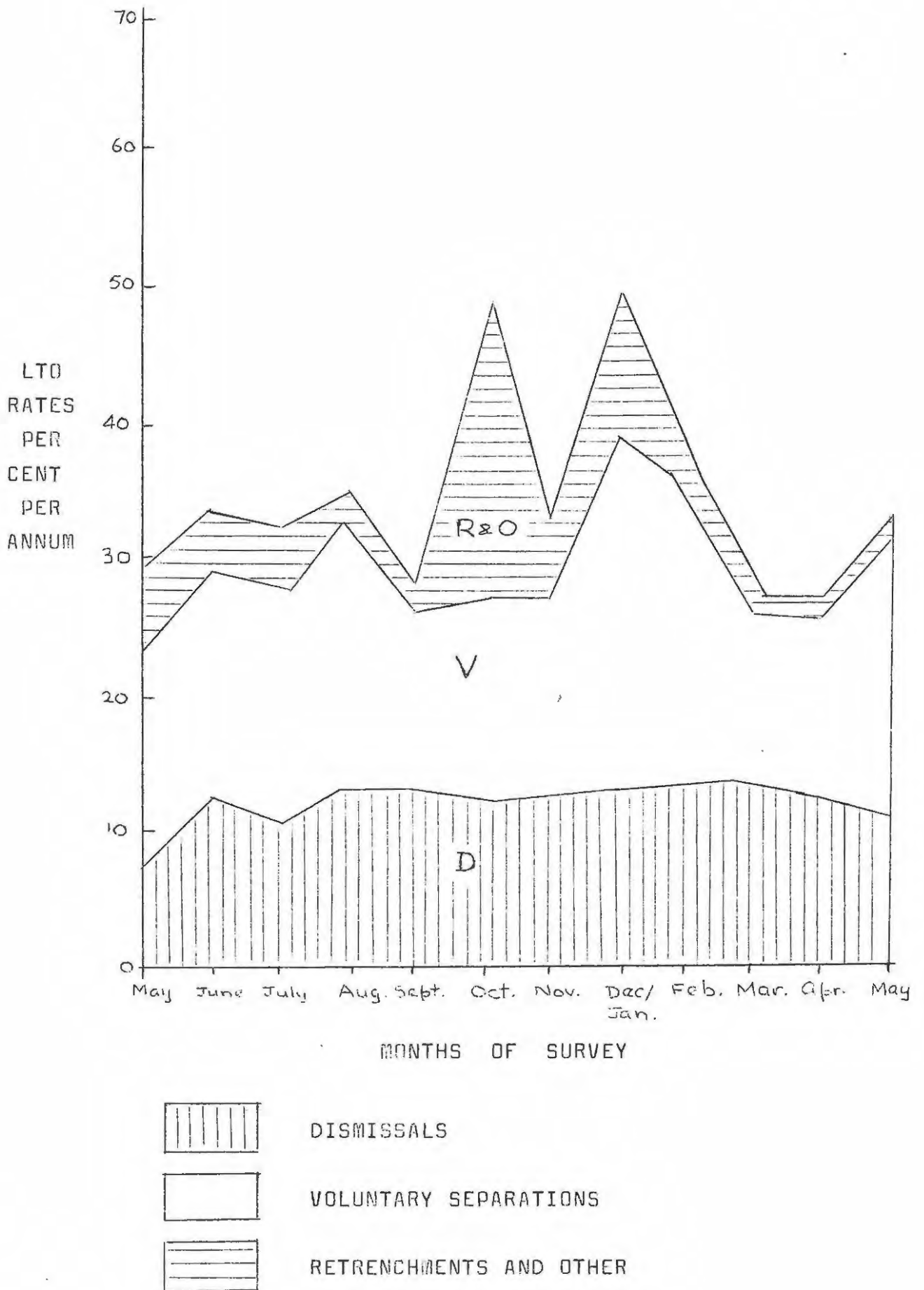


FIGURE 56

MONTHLY TURNOVER RATES ACCORDING TO TYPE OF SEPARATION

TABLE 39
 PERCENTAGE OF VOLUNTARY (V) AND DISMISSED (D)
 IN CONTROLLABLE LTO

	CAPE		NATAL		JOHANNESBURG	
	Vol.	Dis.	Vol.	Dis.	Vol.	Dis.
NEF						
< 6 months	18.0	19.0	28.2	21.9	38.2	22.4
6 - 12	12.5	8.7	17.3	11.6	9.2	6.6
1 - 2 years	13.5	3.5	8.3	3.2	11.8	2.6
2 - 5 years	12.1	5.5	5.7	1.9	6.6	2.6
over 5	6.9	0.3	0.6	1.3	-	-
total	63.0	37.0	60.2	39.8	65.8	34.2
NEM						
< 6 months	26.1	18.8	18.0	16.0	31.9	7.0
6 - 12	6.7	8.6	7.8	9.2	13.2	8.4
1 - 2 years	5.9	5.7	8.1	9.3	11.0	6.9
2 - 5 years	8.6	5.8	9.3	8.5	4.9	4.2
over 5	9.0	4.8	7.7	6.1	9.7	2.8
total	56.4	43.6	50.9	49.1	70.3	29.7

Table 39 shows the relationship between Voluntary and Dismissed for varying service lengths for the three areas.

NEF: In the Cape, the percentage of Voluntary is fairly constant up to five years, and, except for the first six months, exceeds Dismissed. In Natal, there is a high percentage of both Voluntary and Dismissed in the first six months; Voluntary again predominates. Much the same applies in Johannesburg.

NEM: There were more dismissals in the longer service categories in Natal than in the Cape, and rather more voluntary leavers in the first six months in the Cape and Johannesburg. The preponderance of Voluntary in the latter, where turnover is high, can be clearly seen.

The hypothesis cannot be said to have been upheld except among NEF in the Cape. Despite regional differences, it is apparent that Voluntary is high in all length of service categories, for NEF, and especially in the short service categories for NEM. In Natal, the level of Dismissed is higher, by comparison, than in the other regions, which is possibly a function of the easier availability of labour in this area. Dismissals are generally high throughout the service ranges for NEM in all areas, however.

In an effort to find an overall relationship between Voluntary and Dismissed, and length of service, χ^2 analyses were made for NEF and NEM in the three regions, with frequencies of Voluntary and Dismissed according to length of service category.

For NEF in the Cape,

$$\chi^2 = 25.75 \quad df = 4 \quad p < .001$$

and $C = 0.28$, showing a fair degree of association, (D descending with length of service) i.e. that length of service and type of separation are not completely independent of one another although there is some separate variation. No significant relationships were found for any of the other groups, however. This analysis was therefore not very revealing, and general conclusions on the relationship between Voluntary and Dismissed are made difficult by quite large regional and other variations. It is fairly clear, however, that contrary to the first part of the hypothesis voluntary separations also predominate in the first six months of service.

Figures were also available for all EF as follows:

TABLE 40
PERCENTAGE VOLUNTARY AND DISMISSED
IN CONTROLLABLE LTO FOR ALL EF

	Voluntary	Dismissed
Under 6	32.9	8.0
6 - 12	16.0	1.1
1 - 2	12.5	1.1
2 - 5	10.3	2.2
over 5	12.5	3.4
	84.2	15.8

From this it can be seen that only 15.8% of leavers were dismissed, in total, and that EF leavers show a high percentage of Voluntary separations.

In order to investigate the proportions of Voluntary and Dismissed in more detail, histograms, were constructed at 3-monthly intervals on both a factory and regional basis, as it was suspected that quite large individual variations might exist.

Figures 57 and 58 show All Cape and All Natal NEM, and both show decreasing amounts of Voluntary and Dismissed with quite large losses in the first 3 months in the Cape. Losses were more evenly spread throughout the service periods in Natal, which is, of course, the more stable group (based on

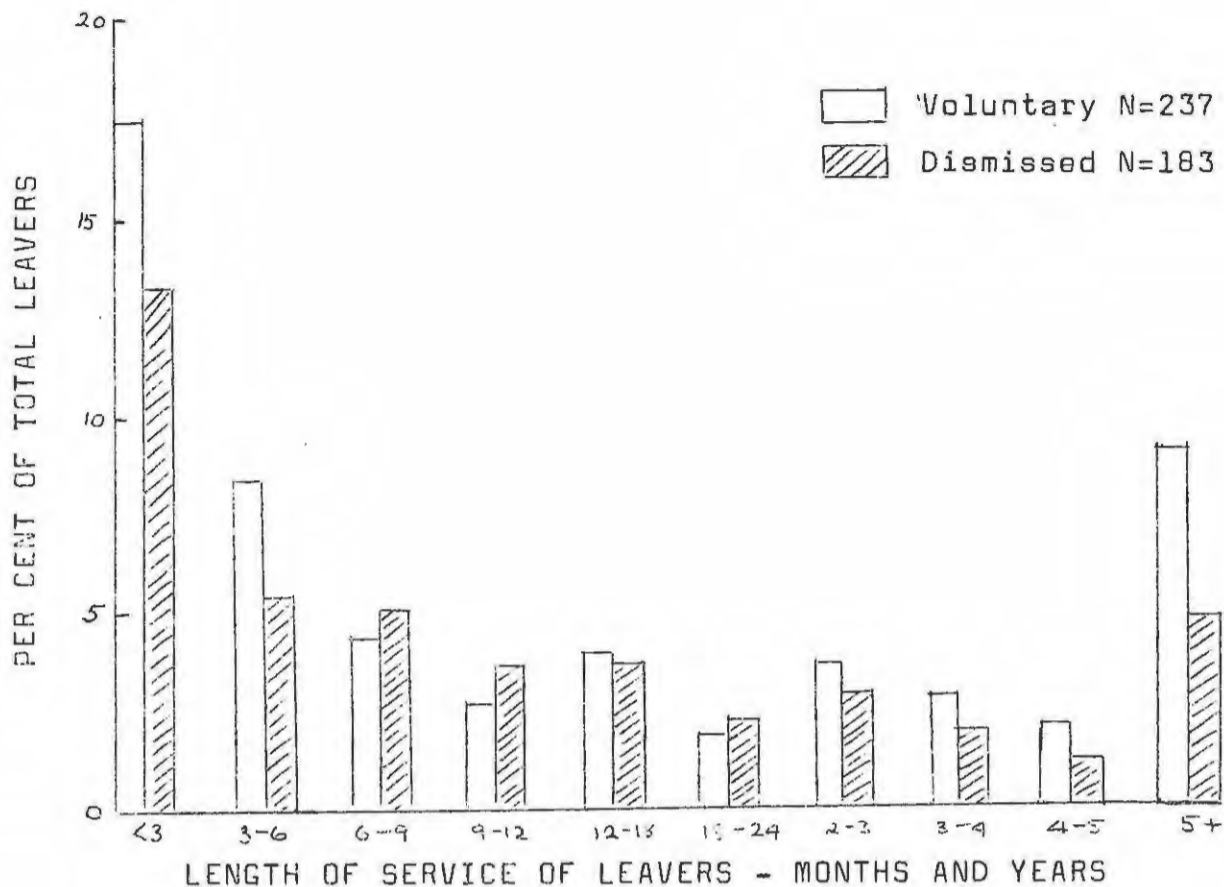


FIGURE 57

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: CAPE NEM

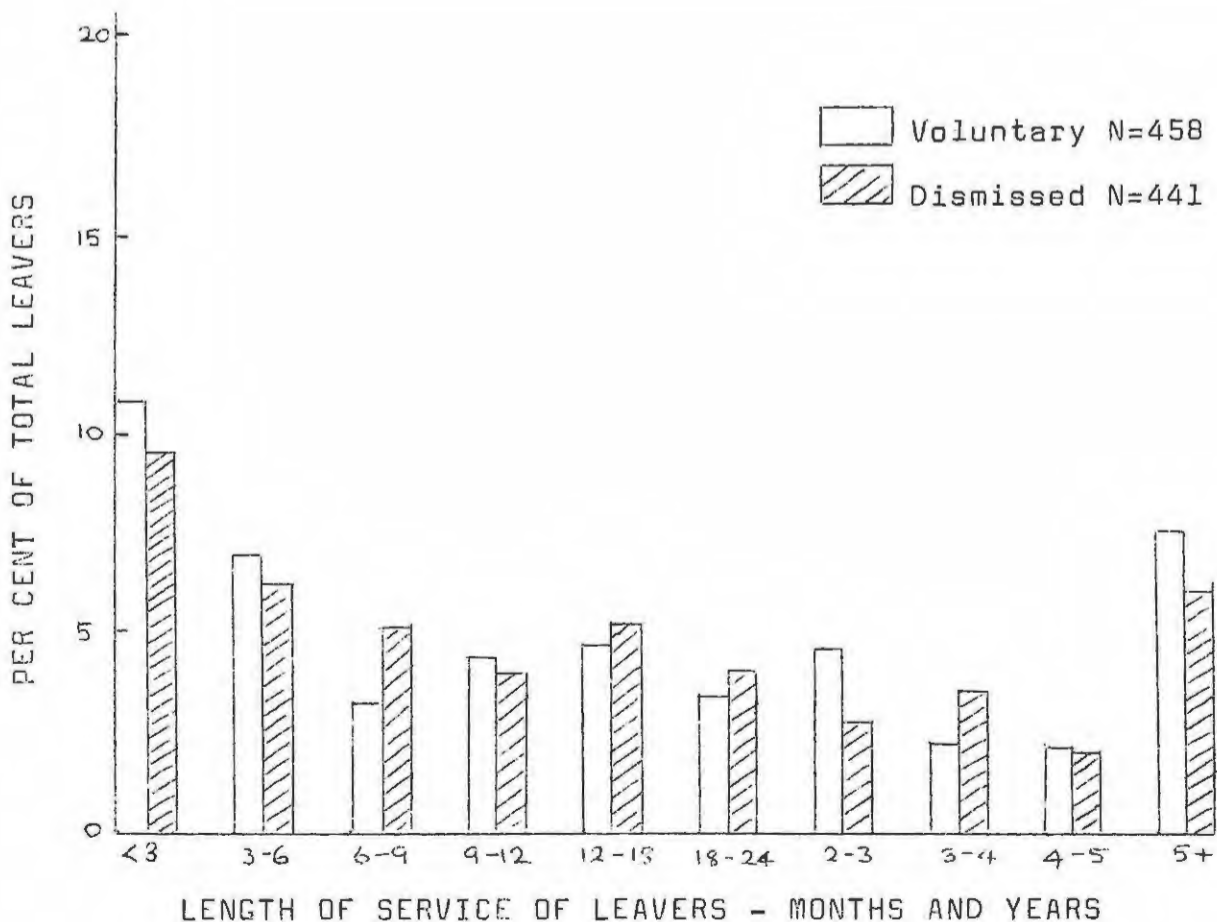


FIGURE 58

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: NATAL NEM

LTO rates).

Figure 59 shows Cape NEF, but there is an averaging effect here between the leavers of A (Figure 60) with a high percentage of dismissals) and C (Figure 61) with a high percentage of voluntary separations. No generalisations are possible, and the four factories differ considerably from each other. Natal (Figure 62) shows a steady decrease of both Voluntary and Dismissed in all length of service categories.

Generally, all these histograms show the high percentage of voluntary separations and dismissals during the first 3 months.

An analysis of factory histograms (not shown) showed large inter-firm differences, and it does not, therefore appear possible to generalise about the proportion of Voluntary and Dismissed at different length of service groups, as this appears to be a function of the conditions in a factory, at any time. Certainly the keeping of records contrasting Voluntary and Dismissed would seem worth-while, as changes in the relationship are likely to reflect changing factors in the employment situation.

The histograms, when compared, reveal few consistent relationships, but it is interesting to note the even distribution of Dismissals at all length of service levels in Factories F and G (Figures 63 and 64). When it is remembered that these two factories have the lowest turnover rates it can be speculated whether perhaps the consistent dismissals represent an apparently strict employment policy, which is carried out irrespective of seniority. That it is seen as fair by the workers is likely and the low LTO rates offer evidence in this regard.

This section can be concluded by showing the comparative percentages Voluntary and Dismissed for the nine factories, for the two main race/sex groups, and comprising controllable turnover only. (Table 41).

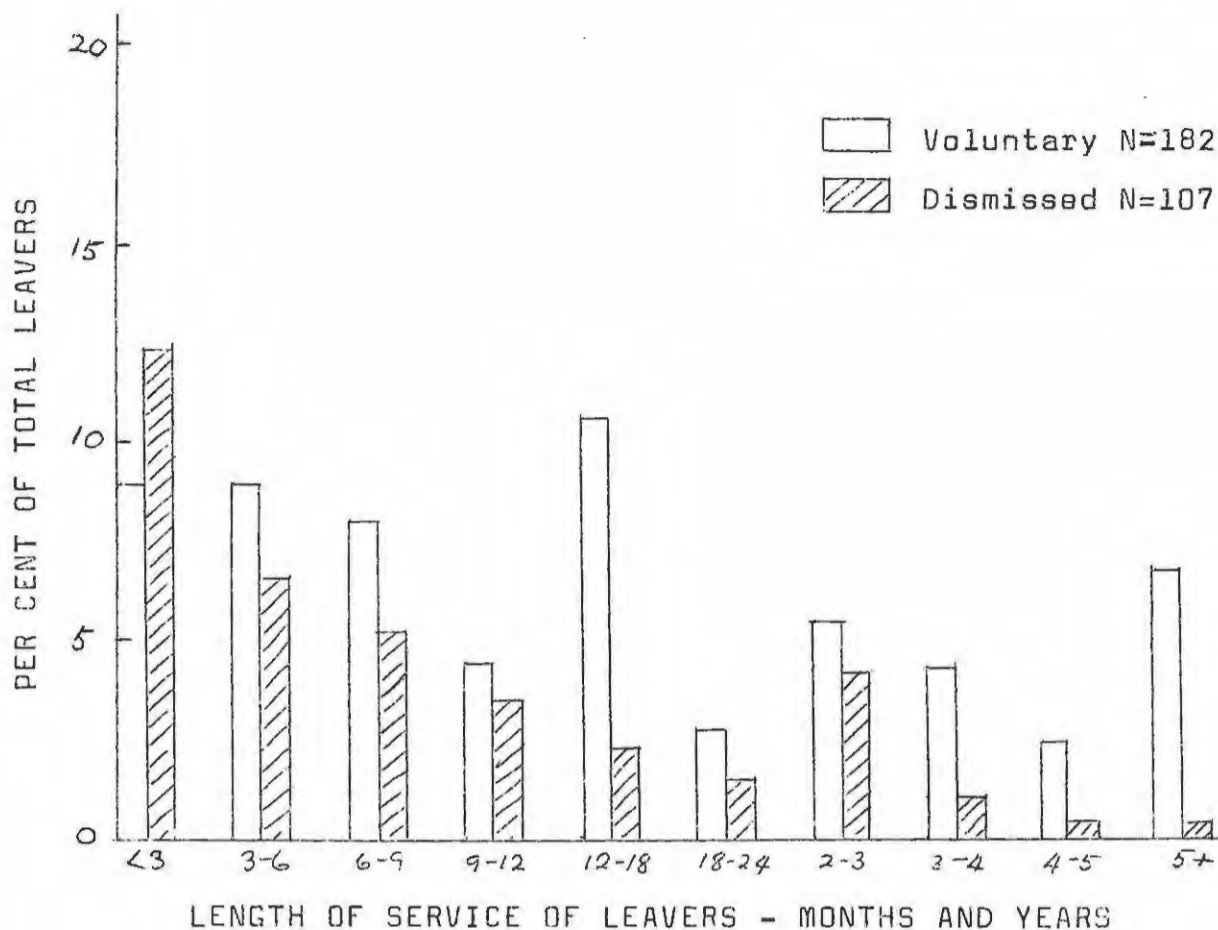


FIGURE 59

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: CAPE NEF



FIGURE 60

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: FACTORY A, NEF

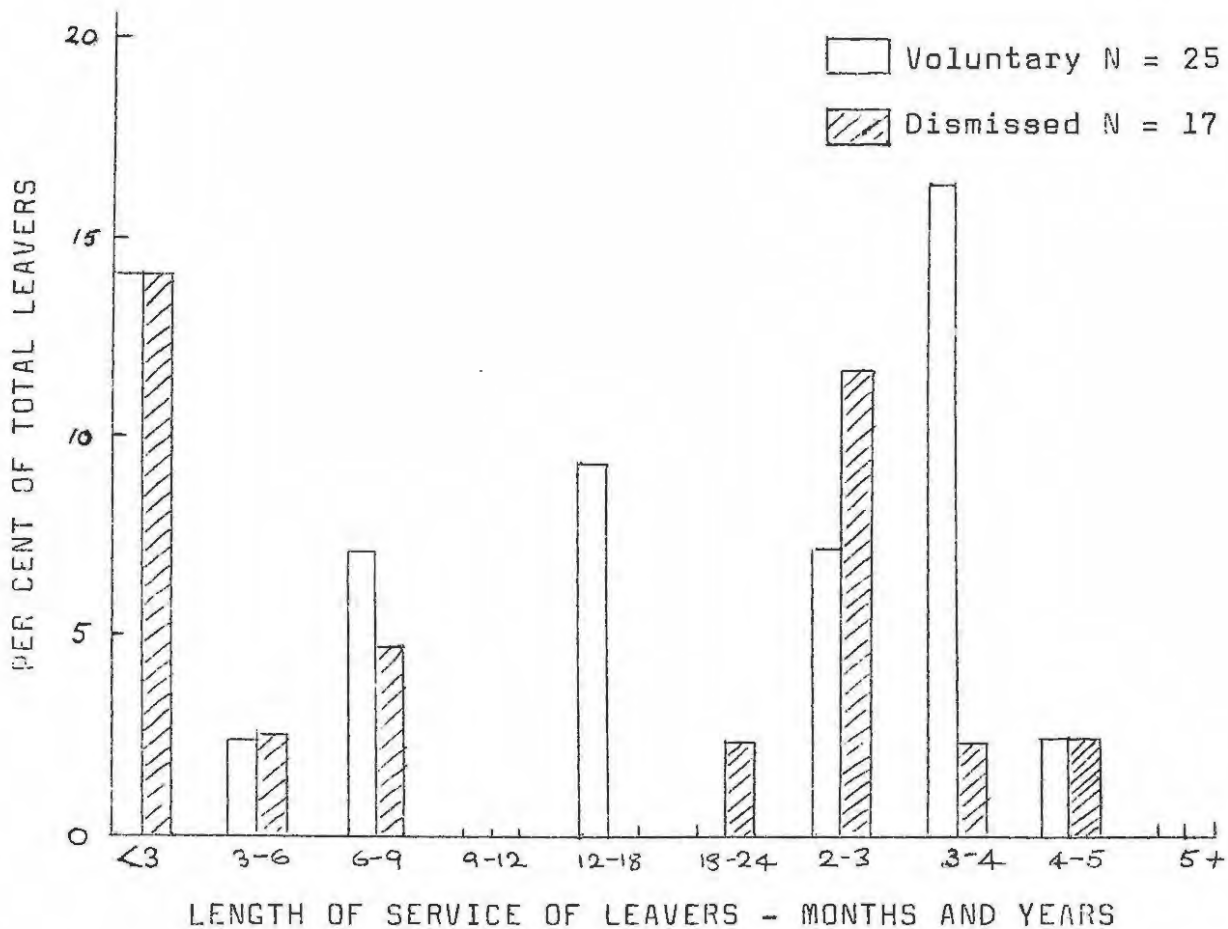


FIGURE 61

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: FACTORY C, NEF

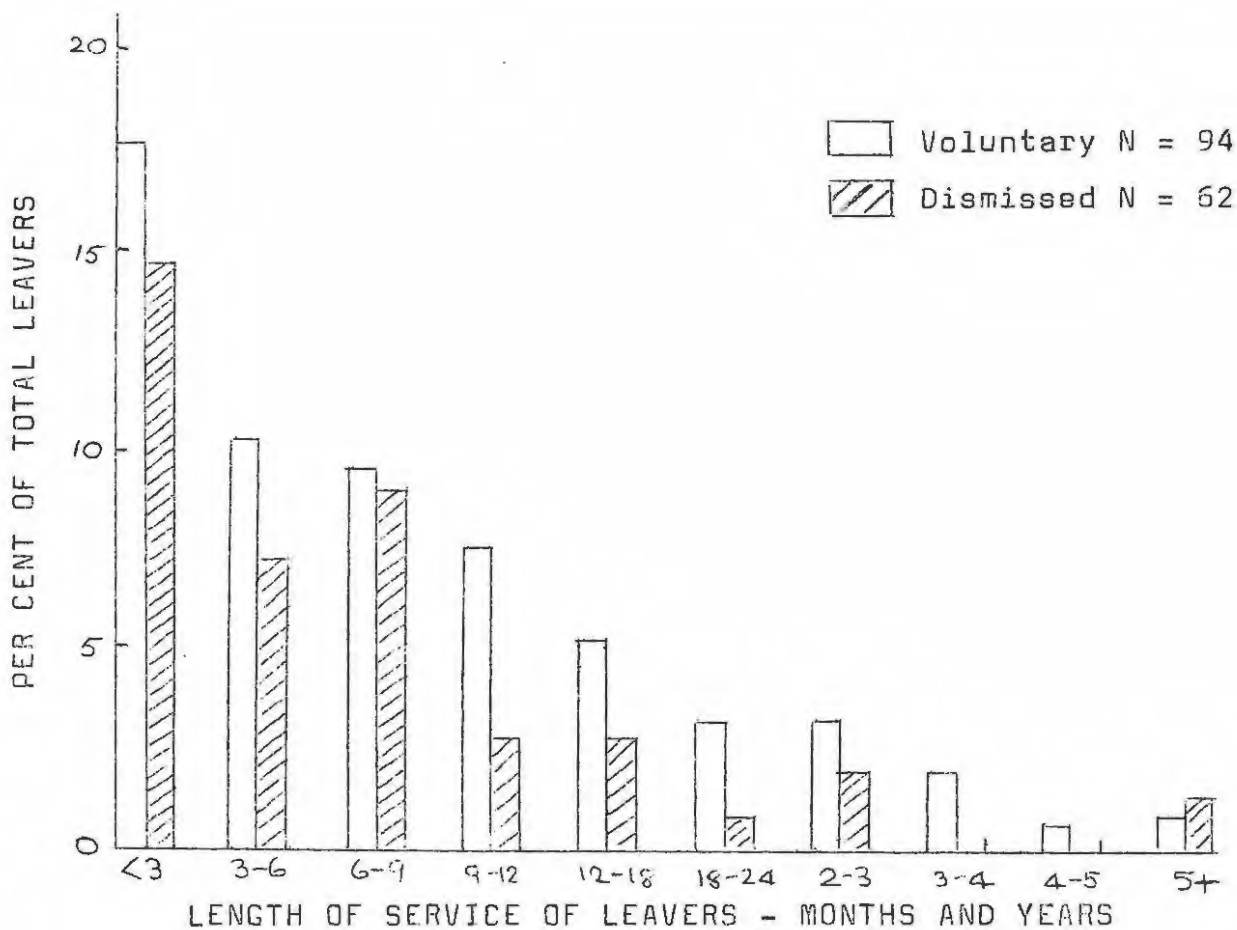


FIGURE 62

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: NATAL NEF



FIGURE 63

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: FACTORY F, NEM

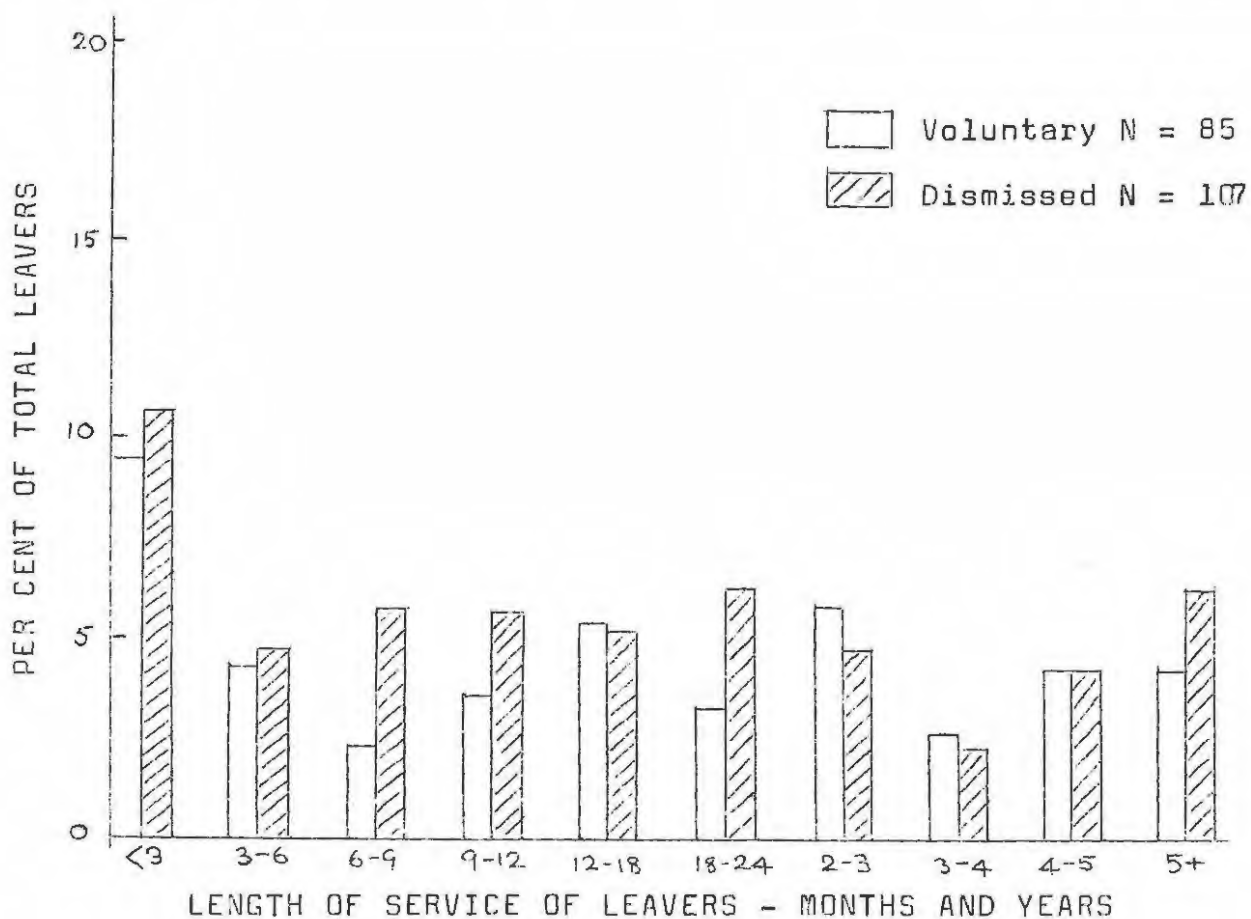


FIGURE 64

PERCENTAGE OF LEAVERS, VOLUNTARY AND DISMISSED, BY LENGTH OF SERVICE: FACTORY G, NEM

TABLE 41
COMPARATIVE PERCENTAGES OF VOLUNTARY SEPARATIONS
AND DISMISSALS

FACTORY	N.E. FEMALES		N.E. MALES	
	Voluntary Separations	Dismissals	Voluntary Separations	Dismissals
A	40.5	59.5	55.5	44.5
B	83.3	16.7	65.6	34.4
C	59.5	40.5	47.9	52.1
D	47.6	52.4	61.4	38.6
E	52.9	47.1	54.5	45.5
F	-	-	50.0	50.0
G	-	-	44.3	55.7
H	61.3	38.7	52.1	47.9
J	65.8	34.2	70.3	29.7

These overall figures largely bear out what has been found in the more detailed analysis. Thus generally, more NEF left voluntarily than were dismissed, with the exception of factory A - which follows a declared policy of hire and fire as a means of selection - and Factory D. The high percentage of Voluntary in factory B has already been referred to and is probably the result of re-location.

For NEM, the high turnover in factory J is predominantly Voluntary and Voluntary is again high at factory B. At G, the dismissal policy is fairly severe, but in the remaining factories too, there is a quite a high percentage of dismissals, averaging around 50-50. Regionally, the figures for NEM are as follows:

TABLE 42
PERCENTAGE VOLUNTARY (V) AND DISMISSED (D) AMONG NEM: REGIONAL

Cape		Natal		Johannesburg	
V	D	V	D	V	D
56.4	43.6	50.9	49.1	70.3	29.7

The tendency is for dismissals to be highest in the Natal areas, where labour is easiest to obtain and lowest in Johannesburg, where competition from other industries is most severe. This would seem to bear out the point advanced by Rice (Chapter II page 59) that Voluntary declines when there is a surplus of work-seekers.

Summarising then, it can be said that factories show quite large differences in percentages of Voluntary and Dismissed. However, the large percentage of both Voluntary and Dismissed

in the first three months of employment (for e.g. factory A 23.6% of all NEM leavers were dismissed in the first three months) points to a haphazard employment policy. Thus more careful selection, and a planned induction programme aimed at more speedily assimilating the newcomer into factory routines, and into the working group, could have a substantial effect on overall turnover figures.

4. THE EFFECT OF WAGE LEVELS:

Bell (see Chapter II, page 59) in the Polygons study, argued that Bantu males, in the higher wage groups, were more frequently dismissed as they saw no prospects of advancement and lost interest in their jobs. Such an argument seems unlikely to apply to a settled, urban labour force, and in this study the hypothesis was framed that workers in the higher wage groups would be more likely to separate voluntarily as they would easily be able to secure employment due to the general shortage of skilled workers in the Industry. In the light of the findings on wages and length of service, however, it can be expected that these two factors will be interrelated and that findings on the basis of wages will have to be interpreted with caution.

The regional analysis for NEM is as follows:

TABLE 43
REGIONAL PERCENTAGE OF NEM SEPARATING VOLUNTARY (V) AND
DISMISSED (D) BY WAGE GROUPS

	Cape		Natal		Johannesburg		All	
	V	D	V	D	V	D	V	D
LOW	56.7	43.3	51.5	48.5	75.3	24.7	55.6	44.4
MED.	55.8	44.2	50.5	49.5	64.0	35.6	53.2	46.8
HIGH	58.6	41.4	52.5	47.5	75.0	25.0*	56.2	43.8

* Small group

The hypothesis as stated earlier is not supported here and it can only be concluded that there are more Voluntary leavers than Dismissed leavers in all wage categories. The analysis also illustrates the Industry's high dismissal rate, of over 40% (all leavers) in all wage groups.

The regional picture for NEF is shown in Table 44. Wages are expressed in two categories only:

TABLE 44
REGIONAL PERCENTAGE OF NEF SEPARATING
VOLUNTARY (V) AND DISMISSED (D) BY WAGE GROUPS

	Cape		Natal		Tvl.		All	
	V	D	V	D	V	D	V	D
5 - 8.99	50.0	50.0	59.5	40.5	64.8	35.2	56.1	43.9
13+	76.3	23.7	63.9	36.1	68.2	31.8	73.1	26.9

In this case, a clear trend is apparent, and the percentage of Voluntary is much higher in the higher income group. This trend again follows the length of service figures shown in Table 39.

Summarising it can be said that the NEM figures reflect instability - or lack of security - at all wage levels, as dismissals do not decrease markedly as wages increase. But with NEF, the higher paid workers most often separate voluntarily. The parallel with the length of service position is apparent.

5. MARITAL STATUS AND REASON FOR LEAVING AMONG NEF:

TABLE 45
MARITAL STATUS AND PERCENTAGE SEPARATING
VOLUNTARY (V) AND DISMISSED (D) AMONG NEF: REGIONAL

	Cape		Natal		Tvl.		All	
	V	D	V	D	V	D	V	D
Married	83.0	17.0	72.0	28.0	93.3	6.7	80.8	19.2
Single	50.3	49.7	54.7	45.3	59.0	41.0	53.2	46.0

A regional analysis was again necessary, in order to obtain sufficient numbers. The hypothesis here is that married women would more often leave of their own accord, presumably to attend to domestic responsibilities. This is clearly upheld by the figures in Table 45 but again it should be remembered that the married women are likely to be older, and earning higher wages, and the net effect of Marital Status alone cannot be assessed from these figures.

For all EF the figures were as follows:

	V.	D.
Married	82.2	17.8
Single	88.5	11.5

No firm conclusions are possible, except again that most EF leave of their own accord.

6. TURNOVER RATES AND REASONS FOR LEAVING:

Table 46 shows the Turnover Rates for the nine factories, for NEF and NEM and also the proportions of Voluntary and Dismissed for each group in each factory.

TABLE 46
PERCENTAGE VOLUNTARY SEPARATIONS AND DISMISSALS
IN RELATION TO CONTROLLABLE LTO - ALL FACTORIES

	N.E. FEMALES			N.E. MALES		
	LTO Rate	Voluntary Separations	Dismissals	LTO Rate	Voluntary Separations	Dismissals
A	38.1	40.5	59.5	51.2	55.5	44.5
B	36.9	83.3	16.7	31.1	65.6	34.4
C	37.8	59.5	40.5	39.2	47.9	52.1
D	48.5	47.6	52.4	26.4	61.4	38.6
E	36.2	52.9	47.1	21.4	54.5	45.5
F	8.1	-	-	15.7	50.0	50.0
G	-	-	-	20.2	44.3	55.7
H	81.7	61.3	38.7	22.9	52.1	47.9
J	108.0	65.8	34.2	63.3	70.3	29.7

Conflicting opinions were expressed in the literature on the relationship between overall turnover, and reasons for leaving and this was discussed in Chapter II, page 60. Thus Arbous showed that high turnover was accompanied by a high percentage of Dismissed, the implication being that the sort of authoritarian management which used dismissal indiscriminately would also be the cause of high labour turnover in total. By contrast, Cilliers showed that high turnover was accompanied by a high percentage of Voluntary.

From the table for NEF in the Cape, factory D has the highest turnover, and 52.4% Dismissals, which is the second highest. A has the highest Dismissals at 59.5%, but its turnover is about average. B which has the lowest Turnover, has the lowest Dismissals at 16.7%. Of the factories remaining, H and J have the highest turnover, but also the highest percentage of Voluntary. The evidence is therefore conflicting again, and generalisation is not possible.

For NEM, there is again no clear relationship in the Cape, whereas in Natal, the two highest LTO factories, E and H, have the lowest percentage dismissals. By contrast, in factory F, with the lowest LTO, Dismissed and Voluntary were 50:50. Johannesburg with the highest turnover had the highest percentage of Voluntary (70.3%).

In summary there appears to be more evidence for Cilliers hypothesis that high turnover factories have a higher percentage of Voluntary. This does not imply however, that a consistent relationship exists, or that the converse is also true.

7. THE EFFECT OF RETRENCHMENTS:

The graph in figure 56 also indicated the level of retrenchments and showed a sharp rise in October 1967. This occurred mainly in Natal, where the LTO rate for retrenchments only, rose from under 5% for the preceding 5 months to 30% in October.

At the same time the LTO rate for voluntary separations dropped as follows:

August	15.5
Sept.	11.2
Oct.	11.3
Nov.	9.6

In the two other areas, by contrast, November rates were higher than October.

Glass had noted earlier (as mentioned in Chapter II, page that factories with high retrenchments also have a high percentage of Voluntary, and of Dismissed. She considered that Voluntary would increase as those remaining found more secure jobs elsewhere. However, in this study, the opposite clearly occurred and Voluntary dropped. It can be argued in this instance, that in an area where there is not full employment, Voluntary is likely to fall as a result of retrenchments.

It was also possible, to check the effect of these retrenchments on the LTO rate for dismissals, which were as follows:

August	13.3
Sept.	11.6
Oct.	10.4
Nov.	8.0

The findings of Glass were therefore not supported in this instance either.

One further point already mentioned (Chapter IV, page 107) is that retrenchments may result in a decrease in the number of short-service workers on the labour force, and this in itself would reduce LTO. This should be borne in mind in any evaluation such as that above.

8. CONCLUSIONS:

Type of Separation is not a variable in the same sense as the others which are being considered in this Chapter for it does not in any way relate to the formation of stable groups, nor is it involved in group interaction during the employment period. However, the manner in which employees terminate their relationship with the job situation, can be indicative of factors in that situation, and, as this section has shown, can be of assistance in understanding the turnover process.

This study again showed that the majority of terminations are initiated by the employee, i.e. are voluntary, and that voluntary separations account for the larger fluctuations in turnover. Turnover therefore, can be seen as largely worker-initiated, rather than management-initiated, emphasizing again that stability is essentially a function of worker satisfaction with the job situation.

In general, voluntary separations exceeded dismissals at all length of service levels, but in the first three months especially, there was a high percentage of both voluntary separations and dismissals. It is during this early period of employment particularly, when a very high percentage of labour turnover takes place, that management action could be most effectively taken. Attention to improved selection would reduce the number of dismissals due to unsuitability, and induction procedures aimed at the integration of the new worker into the job situation would limit the number of voluntary leavers.

For NEM specifically, a disturbing finding of this study was the high percentage of dismissals which occurred at all length of service levels, in comparison with other studies. The NEM worker appears to be under the constant shadow of dismissal, often irrespective of length of service, and comparatively large-scale retrenchments were also observed in two factories during the study period. The tendency to higher dismissals and lower voluntary terminations was related to easier availability of labour in the Natal area. Caplow's warning regarding the effect of such management policies on group cohesiveness was mentioned in Chapter 1, page 7, and within the terms of reference of this study, the situation described above must be viewed as a major factor causing labour turnover in the industry.

It was further found, for NEM, that type of termination was not related to wage levels, and this can be regarded as a

further indication that factors extrinsic to the working group, such as wages, are of secondary importance to factors which are related to the formation of group ties.

Analyses in this section have again demonstrated that the NEF has a very different work orientation from that of the NEM. Thus a greater percentage of NEF leave voluntarily, than NEM. The difference is most marked in the higher wage groups, where there are far more voluntary terminations among NEF. This was shown to be related to length of service, showing again that the NEF enters employment for a specific period, (rather than as a career, as does the NEM) and separates of her own accord when family responsibilities demand it, or when her contribution to the family income is no longer a necessity.

F. RACE1. INTRODUCTION:

In all the preceding analyses, the data for the two main race/sex groups, namely Non-European Females and Non-European Males, has been analysed separately, as has that for European Females, where sufficient numbers have been available. Not surprisingly, wide differences have been shown in Turnover behaviour among these groups.

The position, is, however, further complicated by the fact that the large general grouping under "Non-European Males" in fact consists of a number of sub-groups, namely Coloured Males in the Cape (with very few exceptions) and in Natal, of Coloured, Asiatic and Bantu Males. It is to be expected that members of such different races, with widely-differing norms of behaviour, and cultural attitudes, should react differently in the work situation, and that this will be reflected in any analysis of labour turnover among these groups.

Much of the data on which the section to follow is based, have already been presented in earlier analyses, and will not be repeated in the same form. Rather, an attempt will be made to present the main characteristics of each group, as reflected in the data available, and to contrast these groups where such comparisons are meaningful.

Thus, the EF and NEF groups will be contrasted, as a whole. Coloured Males in the Cape will be compared, where relevant, with Coloured Males in Natal, and within Natal, the comparison will be between the main Asiatic group (2,690 stayers in this study) and the smaller Bantu (660) and Coloured (149) groups. It should be noted that these figures exclude the Males in Factory F, where the necessary breakdown by race was not available.

As mentioned above, much of the data referred to in the comparisons to follow, have already been presented, and will not be repeated, for clarity in the text. For the same reason, new tabulations will be presented in an appendix at the end of this section, and supporting figures for arguments will be confined to essentials.

2. EUROPEAN FEMALES:

a) A Fading Group:

This group is essentially a contracting one in the industry (23.3% of labour force in 1945, and 5.5% in 1968) and they are at present employed only in the Cape and in the Transvaal as production workers, with a few Supervisors in Natal. Generally speaking, there exists, within Industry a stereotype of the EF as a stable worker, and the NEF as a relatively unstable one. It is interesting to examine this in the light of the study findings.

Within the group, there are two distinct sub-groups namely an older and more settled group, many of long service, and a shorter-service and very unsettled group. Thus 39.8% of the stayers had over 5 years service, while only 21.4% of stayers had less than 1 years service, showing that there are relatively few newcomers. (NEF 44.7% with less than 1 years service, but only 11.7% of more than 5 years). There are very few EF persons under 20 on the labour force, and hardly any learners; this group is thus not being replaced as it leaves.

b) An Older Group:

Table 47 shows that EF leavers and stayers are a much older group than NEF. They are also mostly married (Table 48) and generally earn higher wages than NEF (Table 49).

c) LTO, Rates, and Median Length of Service of Leavers:

Taken over all, EF LTO rates at 43.0% are very similar to NEF rates at 49.0%, the respective median lengths of service being 8.7 and 7.2 months.

However, when the rates are presented in length of service categories, as in Table 50, it can be seen that there is a much higher LTO amongst EF than among NEF in the shorter service groups, but in the long service category (the stable, older group already referred to) the LTO rates are very similar to those for NEF. A similar picture is presented when LTO rates are broken down by age (Table 51) showing how very unstable all except the older EF are.

A comparison of single and married LTO rates for EF (74.3% and 39.0% respectively) shows the instability of the single EF, but reference to the relevant Survival of Leaver Curve (marital status, Figure 50, page 171) will show that single EF are again two distinct groups, the more stable half being a group of older, longer-service single women.

d) Types of Separation:

Table 52 shows that single EF have a much higher percentage of Voluntary leavers than NEF but for married leavers, the figures are very similar. All EF then, leave predominantly of their own accord.

3. NON-EUROPEAN FEMALES:a) A Young and Growing Group:

Before 1960, Non-European females were not employed in the Footwear Industry to any great extent outside the Western Cape area; since then, their numbers have increased rapidly in all areas, so that from 4.6% (705 employees) of the working population in 1945, they were 15.8% (3,371 employees) in 1968.

They are predominantly a young group (Table 47) and mostly unmarried. (Table 48). They also have the highest percentage of learners of any group (47.9% among stayers).

In contrast to the European females, they have a large percentage of short service stayers (under 1 year, 44.7%) and a small percentage of long service stayers (over 5 years 11.7%).

b) LTO rates and Median Length of Service of Leavers:

As mentioned earlier, although overall rates are higher, the NEF shows lower LTO than the EF in the short service categories, and thereafter the rates are very similar (Table 50).

If however, the rates are calculated by age groups (Table 51) the NEF is better in all groups. This is not a strictly true picture, however, as the EF labour force is contracting, leavers are not being replaced, and this results in higher LTO rates.

Single NEF show a lower LTO (43.5%) than married (50.9%) but the married median length of service is better. (9.1 to 6.8 months). This "unusual" relationship is in fact, the result of a high LTO among young married NEF, and a much lower LTO among older married NEF, who also separated after longer periods of service (see Marital Status, page 166).

d) Types of Separation:

Possibly because they represent a relatively untapped and plentiful supply of labour, which is prepared to work for the low learner rates, a high percentage of dismissals occurs among NEF leavers in the first few months of service. Of all

Controllable Turnover, 12.6% is represented by dismissals in the first three months, predominantly from among the younger, single NEF.

In summary, the picture that emerges is one of a contracting EF labour force, where the small numbers of newcomers who do enter the industry soon leave, resulting in high short-service LTD. The stable core of relatively older, longer-service workers is therefore not being replaced as it is eroded by turnover.

By contrast the NEF are an expanding group with a large number of short-service entrants, who nevertheless exhibit comparatively low turnover. Whilst there are relatively fewer long-service workers than among the EF, a labour force of satisfactory stability is being built up, in some ways superior to the NEM, in the Cape at least. In Natal, however, the NEF group is a relatively much more recent one and in most factories, rather more unstable than the NEM. That this need not necessarily be so, however, is shown by the very low NEF turnover in factory F. (8.1% p.a.)

4. COLOURED MALES (CAPE):

a) Introduction:

It is necessary, because they are two very different groups, to consider the Coloured males in the Cape separately from those in Natal. There is little point, however, in too direct a comparison between the Cape Coloured males and the other male groups, because there is very little interchange between them in industry. It is of very limited significance, therefore, to compare the Asiatic male directly with the Cape Coloured male. Firstly, the two groups are drawn from two very different labour markets, which undoubtedly influences their leaving behaviour (as could other regional factors in centres which may be over a thousand miles apart) and secondly, even if the Asiatic is intrinsically a more stable worker (which in view of the above, cannot be concluded from the data available), the employer in the Cape is not at liberty to replace his Coloured workers by Asiatics.

This group will therefore be contrasted only superficially with the other three male groups, namely Coloured Male, Natal; Asiatic Male (AM) and Bantu Male (BM).

b) LTO Rates and Median Length of Service of Leavers:

Table 53 compares Cape Coloured males with the other three groups, and the picture is one of a relatively unstable CM group, with the highest LTO rate in the overall group, and in the under 3 months category, and the lowest median length of service among leavers. In fact, the figures suggest that Cape and Natal Coloured Males are not that different, but this is not strictly so, as will become apparent when the Natal group is considered.

c) Length of Service, Age, and Wages:

Table 54 shows that LTO rates decline consistently with length of service for this group, and as can be expected, LTO will also decline with increasing age (Table 55) and with increasing wages (Table 56).

The high under one year LTO is also reflected in a high low-wage LTO rate (to an even greater extent) and in a high LTO rate among the under 20's. As can be expected, the Learner LTO rate is also high. (Table 57). It is possible here that low wages are a strong contributing cause, and that the young Coloured male is not prepared to accept the low learner wage rates in the industry. The high percentage of voluntary terminations (17.6% of all terminations) in the under-three months service category appears to bear this out.

If median lengths of service for leavers are now contrasted in age and wage groups (Table 58) it can be seen that the median length of service in the low wage group is slightly lower than that in the under twenty group, further supporting the possibility that low learner wages are a major factor in turnover among this group.

d) Marital Status:

It has already been shown, for Non-European males generally, that married workers are more stable than single workers. The breakdown for the four race groups is shown in Table 59, which shows that married Coloured Males have rather higher LTO rates than the other married groups. However, the high median length of service, compared with the Natal Coloured Males, indicates a situation where long-service persons are leaving in the Cape.

e) Types of Separation:

Table 60 shows percentages of those leaving Voluntarily, and those Dismissed, and includes all NEF for comparison.

It can be seen that there is a high percentage of dismissals among the Cape Coloured Male (43.6%) and that this is characteristic of all the NEM groups. By contrast, the NEF group has fewer dismissals, at 37.0%.

5. COLOURED MALES (NATAL):

a) Two Sub-Groups:

Coloured Males, though a small group in Natal, proved interesting in that an analysis of turnover showed clearly the existence of two distinct sub-groups, namely a young, very unstable section and an older high wage (Table 61) elite group which proved to be one of the most stable in the area. This situation was clearly revealed in all the analyses made.

Thus, although Table 53 shows Coloured Males in Natal to have high overall LTO rates, Table 54, also shows the very high under 1 year LTO rates of 129.6%.

However, it is Table 55, of LTO rates by age, that illustrates the two groups most clearly, with the highest LTO (107.1%) in the under 20 category, and the lowest (5.3%) in the 35+ age group. In Table 58, Coloured Males also have the lowest Median Length of Service of the low age groups (4.5 months), but the low wage Median length of Service is again lower than the low age Median Length of Service, suggesting that here too, as in the Cape, the young Coloured Male has alternative avenues of employment open to him, and is not prepared to work for the low learner rates. This appears to be borne out by the high percentage of Voluntary in the under three months-category (17.9% against 11.4% for Asiatic Males and 5.6% for Bantu Males) and by the fact that the learner LTO rate at 111.1%. (Table 57) is the highest by far for Natal, and considerably higher than for the Cape.

The existence of two distinct groups is again apparent from Table 59 where the Married LTO rate is low at 9.3% but the single rate is the highest for Natal and the Cape at 78.1%.

To what extent these two distinct groups are a function of two groups of Coloured people in the area - one from Sparks Estate and "the rest" (as suggested by one factory); or a function of low wages and alternative avenues of employment for the Coloured people, could not be established on this study.

b) Induction and Group Cohesiveness:

An interesting point arises out of a consideration of the relative percentages of leavers in the first six weeks, among the four NEM groups (Table 62), and emphasizes the instability of the young Coloured worker in the labour force. The possibility of this being an effect of low wages, and alternative employment avenues has already been mentioned, but there is no doubt that the Coloureds, in the Cape and Natal, (as will become apparent when the Asiatic Males and Bantu Males have been discussed) are generally a more unstable group. Sociological causes for this cannot be ruled out, and these may include marginality, a discrepancy between expectations and actual opportunities, status incongruency, and a lack of homogeneity and a common culture among the Coloureds. It is not within the scope of this study to investigate these social processes, but the data on the variables makes it abundantly clear that any attempt to reduce LTO must take cognisance of the special needs of the Coloured workers. In particular, attention should be paid to induction procedures aimed especially at integrating the young Coloured into the labour force.

6. ASIATIC MALES:

a) LTO Rates and Median Length of Service of Leavers:

This, the largest of the NEM groups in Natal, and the bulk of the labour force there, is a stable group compared with Cape NEM, but in Natal it falls somewhere between the Coloured Males and the Bantu Males on a number of measures. This can be seen from the LTO rates and median length of service in Tables 53 and 54.

b) Relative Instability among Older Workers:

In contrast to the Coloured Male in Natal, where there was a very stable older, high wage group, the Asiatic Male is the least stable of the three Natal groups in these groups. Reference to Table 55 will show that LTO rates decrease in the three age categories, but that in the 35+ category, the Asiatic Male at 13.8% has a much higher rate than both the Bantu Male and the Coloured Male in Natal.

The Survival of Leaver Curve for Asiatic Males by wages shows this very clearly (Fig.65,p.197)the survival of the high wage Asiatic Male leavers having been poorer than the medium wage leavers up to 15 months.

An analysis by Marital Status reveals much the same situation, and Table 59 shows the relatively high Married

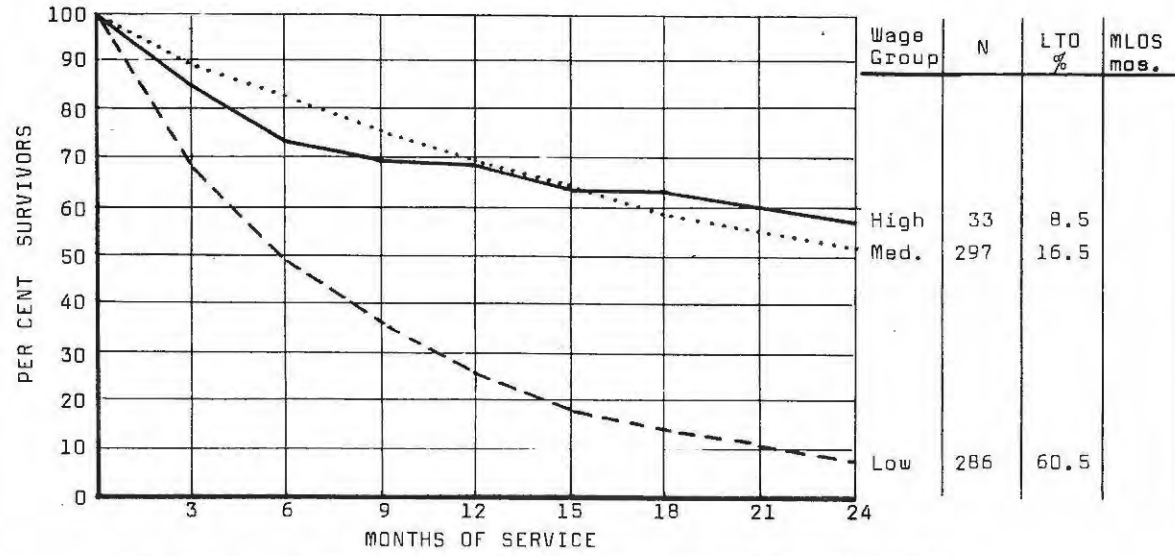


FIGURE 65 : SURVIVAL OF NATAL AM LEAVERS IN THREE WAGE GROUPS

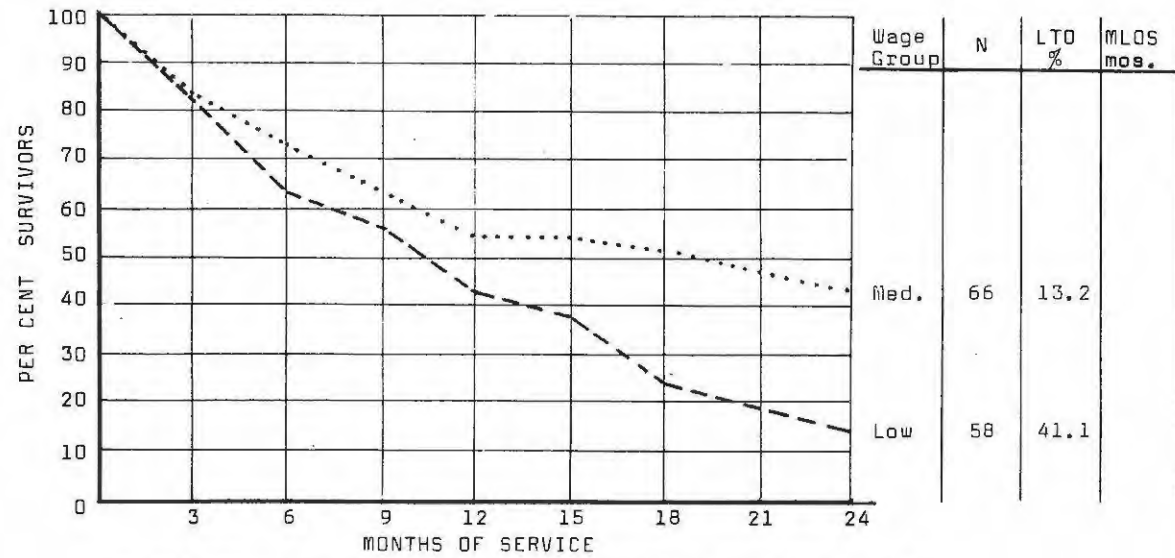


FIGURE 66 : SURVIVAL OF NATAL BM LEAVERS IN TWO WAGE GROUPS

LTO rate of 13.6% and the fact that for this group, there is the smallest difference between married and single LTO rates. The accompanying median length of service of over 36 months shows that a high proportion of this turnover is among long-service workers, and much of it is apparently voluntary. 19.2% of all controllable turnover among Asiatic Males was Voluntary, in the over two years service category.

No simple reason can be advanced for this situation. It is well-known that the Industry's wage agreement provides no incentive for long-service, nor are any direct factory privileges generally accorded to longer-service workers, but why should this specifically affect Asiatic Males more than it does the other groups? A possible reason may lie in the unique structure of the Asian urban family. The extended family group is still the cultural norm, and patrilocal residence generally follows on marriage. The effect of this on the married Asiatic Male is that he has less domestic and financial responsibility than his Coloured or Bantu counterpart, and thus more freedom to change his job.

The reduction of LTO among this group, who are mainly in the skilled grades, should be effected in terms of the special needs of the group. A more detailed study of cultural and other factors involved in maintaining cohesive groups amongst the Asiatic Male labour force would be necessary as a basis for action.

7. BANTU MALES:

Although employed in small numbers in other areas, mostly on non-production work this group only reaches a significant size in the Natal area, to which the analysis to follow refers. Bantu Males are undoubtedly the most stable of all the race-sex groups represented in this study.

a) Length of Service:

The LTO rates in Tables 53 and 54 show Bantu Males to have the lowest rates in virtually all Length of Service categories. The median lengths of service for leavers and stayers are also the longest of all.

Thus a particular feature of this group is its stability in all length of service categories, and Table 62 shows the small percentage of leavers who separated in the first six weeks. (9.6%).

By contrast to the two Coloured Male groups, the Bantu Male labour force appears to be stable and integrated. It seems probable that the new Bantu worker is integrated into the work group more quickly and easily, owing to the "intricate network of social ties and connections" among the urban Bantu (Mayer, 430). To a lesser extent, this may also apply to the young Asiatic Male (12.0% separating in the first six weeks), but this cohesiveness is obviously lacking among the Coloureds, where (as shown earlier) especially in Natal, there is a stable core of long-serving workers, but the new Coloured worker is not so easily accepted by this work force, which appears to have no common social bonds with him.

b) Age:

In spite of the above, it is interesting to note, from Table 55, that the under 20 years LTO rate for Bantu Males (59.7%) is greater than that for Asiatic Males (49.2%). This relationship also holds if LTO rates are compared in the R5 - 7.99 category to include the youngest Bantu Male, Bantu Male rates being 100.0, compared with Asiatic Males at 77.2%. The numbers are, however, small, as the Bantu Males are mainly a rather older group, as illustrated by Table 63, From Table 58 however, it can be seen that the median length of service for Bantu Males is longest in both the lowest age and lowest wage groups, showing that, irrespective of age or wage, the Bantu Male serves longer before he leaves.

We therefore have the situation where the short-service Bantu Male has relatively low LTO rates, but that this is not necessarily so for the very young Bantu Male. The relationship between age and length of service is apparently not as close for Bantu Males as for the other groups, and this is shown by the Contingency Coefficients between age and length of service, (Calculated as in Section B, page 132) where, for Bantu Males, $C = 0.35$, compared with $C = 0.45$ for Asiatic Males and 0.42 for Coloured Males in Natal.

c) Wages:

As for length of service, Bantu Males have the lowest LTO rates in all wage categories (Table 56). They also have, as Table 61 shows, the lowest mean wage for leavers and stayers, of all the NEM groups.

In spite of receiving the lowest wages, and of having a higher percentage of learners (21.2%) on the work force than Asiatic Males (17.8%), Bantu Males have the lowest LTO rates in all wage and length of service categories, and also

the lowest learner LTO rate (31.9%, Table 57).

This, in the opinion of the Chairman of the District Committee of the National Industrial Council ⁽ⁱ⁾ is due to the fact that Footwear Industry wage rates in the area are better, for Bantu males, than equivalent rates in the local Rubber and Textile industries. There is therefore a ready source of Bantu Male labour attracted to the Footwear Industry by higher wage rates. As the Industry only employs a limited number of Bantu, on certain operations, this relatively desirable avenue of employment is scarce, and it can be expected that those securing jobs, will try to remain in them, thus accounting for the stability of the Bantu Male group.

It is of interest to note, from this situation, that LTO is not related to some absolute in wage rates, but rather to relative wage rates available to a particular group. In this case, it appears that, whilst wage rates for Bantu Males are low for the Industry, they are higher than Bantu Males can earn elsewhere, and it is possible that wages are here exerting a real influence on LTO.

The Survival of Leaver Curve for Bantu Males (Figure 66, p.197) shows that the low wage curve (up to R10.99) is far superior to that for Asiatic Males (Figure 65) in the low wage group, and it is in fact the best of all the groups in this category. There is less difference between the low and medium wage curves in the first 12 months, than for other race groups, due to this stability among the low wage earners.

d) Marital Status:

Table 59 shows that the single LTO among Bantu Males is again not the lowest, at 36.1% but that the median length of service is the longest at 11.9 months. It is of interest to note from this table that Marital Status has only a small effect on median length of service (12.0 months for married) mainly due to an unusual distribution among the married leavers, with very few leavers in the 1 - 5 years category and by contrast relatively few leavers among the shorter service single men.

e) Types of Separation:

Table 60 shows the very high percentage of Dismissals among the Bantu Males. In fact, this was the only group with

(i) Personal communication, 1968, from E.C. Peacock

a higher percentage of Dismissals than Voluntary leavers in every length of service group.

Voluntary is particularly low in the under 3 months category, where it is 5.6% of all controllable turnover, compared with Asiatic Males 11.4% and Coloured Males Natal 17.9% for this category. At the other end of the service scale, Dismissals accounted for 20.0% of Controllable LTO in the over two years category compared with 12.3% and 12.5% for Asiatic Males and Coloured Males respectively in this group.

The above figures do, however, present rather a distorted picture, by obscuring the fact that because Voluntary terminations among Bantu Male are low, LTO is also low, and therefore the dismissals constitute a higher percentage of the total separations.

The real situation becomes clearer by reference to Table 64 showing the actual LTO rates for those leaving Voluntary and Dismissed, i.e. the number of leavers in each category is related to the total in the work force, and not merely to the total of leavers, as with Table 60. Table 64 shows the low LTO rate for Bantu Voluntary, compared with the other two Natal groups, but the relative proportion of dismissals, represented by an LTO rate of 11.7% is much more on a par with that of Asiatic Males at 10.4%.

In conclusion therefore, the Bantu Males group has a very low percentage of voluntary separations, resulting in a low LTO rate, and because of this, a relatively high percentage of dismissals.

8. CONCLUSIONS:

It is to be expected that the different cultural patterns of the various race groups in industry will affect their behaviour in the job situation. In a primarily quantitative and statistical study such as the present one, there was little opportunity for detailed study of cultural factors, but it has been possible to compare the relative stability of the race groups involved. Where it proves possible to relate these findings on turnover to known cultural differences, useful information may be obtained on which to base personnel policy in the working situation, directed at the encouragement of stable and cohesive groups.

European females were found to be a diminishing group on this study, and this seems to be characteristic of manufacturing industry generally in the Republic at present. Non-European females are increasingly replacing the EF, with whom they compare well in stability. NEF, especially in the young, short-service groups, are quickly integrated into the labour force, and in this respect; in the Cape, they are superior to the equivalent NEM group.

It is when comparing Coloured Males, Asiatic Males and Bantu Males, that the need for specific study on which to base any action against turnover in industry becomes apparent, for they exhibit widely-differing behaviour in the work situation. Thus, among Coloured Males in both the Cape and Natal, short-service losses among the learner group are very high indeed. That this may be a reaction to low wages - suggested by the high percentage of Voluntary - has been proposed, but the situation can also be seen in terms of the failure of the newcomer to be integrated into the stable sector of the work force. It would appear that a lack of close cultural ties among the Coloured males results in the newcomer having nothing in common with the established work force, and he receives no support from the group to help him to adapt to his new surroundings.

It is plain - in such a situation - that the employers of such a group have a special duty to facilitate the newcomer's integration into the work situation, if the present large-scale losses are to be reduced.

By contrast the new, young, Bantu male is quickly integrated into the work situation, and it has been suggested that the existence of close social ties among the Bantu is a factor in his rapid acceptance into the group in the factory. The same applies, but to a lesser extent, to the young Asiatic male.

However, among longer-service Asiatic Males, the high percentage of voluntary separations again suggest that further investigation and specific action are needed if stable groups are to be maintained. Among the Bantu Males, voluntary turnover is very low, and this may be due to the relatively favourable wage structure for this group in the Footwear Industry in Natal.

Clearly then, race and culture play their part in determining stability in the work situation. As it is not usually

possible, due to the numbers involved, to direct action to reduce turnover at the individual, group factors such as those discussed should be borne in mind when personnel policy is determined at management level.

APPENDIX - RACE

TABLE 47
MEAN AGE, ALL EF AND ALL NEF LEAVERS AND STAYERS

	EF	NEF
Leavers	37.0	23.8
Stayers	43.0	24.9

TABLE 48
PERCENTAGE MARRIED AMONG ALL EF AND NEF LEAVERS AND STAYERS

	EF	NEF
Leavers	70.4	34.0
Stayers	81.9	30.5

TABLE 49
MEAN WAGES PER WEEK, ALL EF AND NEF LEAVERS AND STAYERS

	EF	NEF
Leavers	R14.87	R 9.51
Stayers	R15.25	R11.19

TABLE 50
LTD RATES ALL EF AND NEF, BY LENGTH OF SERVICE GROUPS

	EF	NEF
Under 6 months service	171.4	74.7
6 - 12 months service	71.4	59.0
1 - 2 years service	36.4	38.6
2 - 5 years service	23.2	23.7
5 years +	19.2	18.0

TABLE 51
LTD RATES AND MEDIAN LENGTH OF SERVICE, ALL EF AND NEF BY AGE

	EF		NEF	
	LTD	MONTHS MLOS	LTD	MONTHS MLOS
Under 20 years	333.0*	< 3	51.6	5.7
20 - 35	82.7	9.0	45.2	8.8
Over 35 years	32.9	11.4	32.0	12.0

* Small group

TABLE 52
PERCENTAGE VOLUNTARY SEPARATIONS AMONG MARRIED AND SINGLE
EF AND NEF LEAVERS

	EF	NEF
Single	86.9	50.3
Married	81.6	83.0

TABLE 53
CAPE AND NATAL MALE GROUPS: LTO RATES AND MEDIAN
LENGTH OF SERVICE, LEAVERS AND STAYERS

	CM Cape	CM Natal	AM	BM
Overall LTO Rate	38.3	34.9	22.9	17.8
LTO Rate under 3 mos.	180.5	138.5	72.4	68.1
MLOS Leavers (Mos.)	7.6	8.0	11.4	11.9
MLOS Stayers (Mos.)	36+	36+	36+	48+

TABLE 54
CAPE AND NATAL MALE GROUPS - LTO RATES BY LENGTH OF SERVICE

	CM Cape	CM Natal	AM	BM
Under 1 year	86.9	129.6	66.6	63.6
1 - 2 years	29.9	29.2	28.8	23.4
2 - 5 years	24.3	20.9	14.0	14.2
5 + years	14.5	10.6	8.2	5.1

TABLE 55
LTO RATES IN AGE CATEGORIES FOR FOUR NEM GROUPS

	CM Cape	CM Natal	AM	BM
Under 20	73.9	107.1	49.2	59.7
20 - 35	28.4	35.4	16.5	18.7
35+	20.8	5.3	13.8	8.3

TABLE 56
LTO RATES IN THREE WAGE CATEGORIES FOR FOUR NEM GROUPS

	CM Cape	CM Natal	AM	BM
Low (R5 - 10.99)	85.2	93.3	60.2	41.1
Medium (R11-19.99)	30.0	35.5	16.5	13.2
High (R20+)	12.5	6.8	8.0	3.7*

* Small group

TABLE 57

LTO RATES FOR LEARNERS: FOUR NEM GROUPS

	CM Cape	CM Natal	AM	BM
Learner LTO Rates	78.1	111.1	60.3	31.9

TABLE 58

MEDIAN LENGTH OF SERVICE OF LEAVERS ACCORDING TO AGE AND WAGE
IN FOUR RACE GROUPS (MONTHS)

	CM Cape	CM Natal	AM	BM
Under 20	4.6	4.5	5.9	9.75
Low wage group	4.2	3.0	5.8	10.5
20 - 35	17.0	19.5	20.8	15.9
Medium wage group	16.5	24.0	24+	19.5

TABLE 59

LTO RATES AND MEDIAN LENGTH OF SERVICE BY MARITAL STATUS FOR
CAPE AND NATAL MALE GROUPS (MONTHS)

	CM Cape		CM Natal		AM		BM	
	LTO	MLOS	LTO	MLOS	LTO	MLOS	LTO	MLOS
Single	50.0	5.6	78.1	6.0	29.4	8.6	36.1	11.9
Married	25.5	18.6	9.3	15.0	13.6	36+	6.3	12.0

TABLE 60

PERCENTAGE OF VOLUNTARY AND DISMISSED AMONG LEAVERS IN
RACE GROUPS

	All NEF	CM Cape	CM Natal	AM	BM
Voluntary	63.0	56.4	51.8	54.4	34.4
Dismissed	37.0	43.6	48.2	45.6	65.6

TABLE 61

MEAN WAGES LEAVERS AND STAYERS, IN FOUR RACE GROUPS (R)

	CM Cape	CM Natal	AM	BM
Leavers	12.23	11.69	11.98	10.70
Stayers	16.11	18.64	15.86	14.54

TABLE 62

PERCENTAGE OF ALL LEAVERS SEPARATING IN FIRST SIX WEEKS
OF SERVICE

	CM Cape	CM Natal	AM	BM
	20.5	25.5	12.0	9.6

TABLE 63

MEAN AGE OF LEAVERS AND STAYERS IN FOUR RACE GROUPS

	CM Cape	CM Natal	AM	BM
Leavers	24.3	21.8	24.2	25.8
Stayers	28.6	31.3	28.2	31.8

TABLE 64

LTD RATES AMONG THOSE SEPARATING VOLUNTARY AND DISMISSED
IN NATAL NEM GROUPS

	CM Natal	AM	BM
Voluntary	18.1	12.5	6.1
Dismissed	16.8	10.4	11.7

G. SEX

To an even greater extent than with the previous section on Race, the purpose of this analysis under the heading of "Sex" is to summarise those findings, under each of the variables, where a comparison was made on the basis of sex.

Most of the information to be used has already been presented in previous analyses, and except for brief references to the source of data (where considered necessary) a minimum of new tabulation will be given. As in Race, such tabulation will be placed in an Appendix to this section, to make the main text as clear and as brief as possible.

As the number of European male leavers during the study period was only 20, no comparisons will be made between European males and European females. All the data and discussion which follows will therefore apply to Non-European males (NEM) and Non-European females (NEF).

In particular, this section will show that gross generalisations on the basis of sex alone should be avoided. For example, while the overall LTO rate for all NEF (49.0%) is higher than for all NEM (26.7%) in three factories the NEM LTO rate was higher than the NEF.

	NEM	NEF
Factory A	51.2	38.1
Factory C	39.2	37.8
Factory F	15.7	8.1

In the sections which follow, it will be shown that due regard should be paid to the variables of Length of Service, Age and in particular Marital Status when comparisons are made between the LTO rates of males and females.

1. LENGTH OF SERVICE:

The clearest fact that emerges from an analysis based on length of service, is that the short-service female worker is considerably more stable than the short-service male. Table 16, page 115 showed that, in all factories except factory H, LTO rates for NEF in the under 1 year period were lower - in some cases much lower - than for NEM.

The difference is most marked in the under 3 months service category in the Cape, where the NEF LTO rate of 83.8% is less than half that of the equivalent NEM group which has

an LTO rate of 180.5%. These figures show that the new NEF employee settles in much better than the new NEM.

The NEF labour force is more stable in the Cape than in the other centres, as NEF have been employed for a much longer period in that area. Thus, in the four Cape factories, NEF LTO rates were of the same order as NEM rates, up to 5 years service (Table 16, page 115). This is also illustrated by the regional Survival of Leavers Curve for the Cape (Figure 8 page 122) where NEF show better survival up to 12 months. Thereafter, the curves diverge, with NEM becoming progressively better in the longer service categories.

Generally, NEF have a smaller difference between overall LTO rates, and rates in the under 1 year category, showing that length of service is not such a major factor in LTO as with NEM. The males, by contrast, are characterised by a very high short-service LTO, and a very low long-service rate. The same is apparent if median length of service of female leavers is compared with males. There is a much smaller difference between the median length of service of NEF leavers and stayers, than in the case for males.

In these groups, therefore, and especially in the Cape, females do not leave as quickly from a new job as males do; in the Cape 20.5% of all NEM leavers left within the first 6 weeks whilst only 9.7% of NEF left within the first 6 weeks. But on the other hand they do not settle down after the first year or two of service to the same extent as males. This points to a different career-orientation. Women have characteristically been found to value the "temporary" aspects of their working environment rather than security and advancement (Wickert, 431), and the findings of this study on length of service appear to confirm this.

2. AGE:

In the previous discussion on Age (page 132) it was shown by χ^2 analyses, and the calculation of contingency coefficients, that there was a much greater association between length of service and age for NEM than for NEF. For all NEM $C = 0.42$, and for all NEF $C = 0.28$. This relationship is borne out again when the findings on length of service and age for NEM are compared with NEF. Thus, while the young NEM shows much higher LTO than the young NEF (Tables 19 and 20, Age, page 125), the older NEM shows increasing stability, but this is not necessarily the case with the older NEF. Table 20, shows that NEF LTO rates do not show such a large

decrease with increasing age, as is the case with NEM.

All the other relations mentioned in 1. above generally hold for age as they did for length of service, again showing clearly the better stability of the young female, but the more stable, older career group among NEM.

The situation can in this case be most clearly illustrated by a consideration of the Survival of Leavers Curves, Figures 23-28, under the previous Age analysis (pages 135 to 136)

In the Cape, females under 20 have better survival patterns and lower LTO rates, than males, up to 4 years service. (The curves are only taken to 24 months). Similarly, in the 20-35 category, females are better than males but only for the first 12 months of service. In Natal and the Transvaal, males in most age groups have better survival than females, the one exception being female leavers under 20 in the Transvaal who show better survival up to 12 months service.

It is interesting to speculate from these findings whether the superior stability of the young female is a function of the fact that young women are generally more mature than young men, or whether the reason lies in the low learner rates which are paid in the industry. It is possible that the young female is more prepared to work for these low rates in the footwear industry, whereas the young male tends to seek more lucrative employment elsewhere.

3. WAGES:

The close relationship between wages, length of service and age, has already been demonstrated in the major analysis under these headings. Much the same picture as emerged in 1 and 2 above, can therefore be expected under this heading.

On page 140 of the previous discussion on Wages, regional χ^2 analyses of the relationship between wages and LTO showed a significant association for NEM, but not for NEF, again indicating the differences between leaving behaviour for the two groups. In fact, LTO rates for high-wage NEF are generally lower than for low-wage NEF - as is the case for NEM - but while for NEM the converse is also true, namely that low-wage NEM will have very high rates, low wage NEF rates show a much smaller difference (Table 26, Wages, page 139).

As can be expected, in view of the relationship between wages, length of service and age, low-wage NEF show lower LTO

rates and longer median lengths of service (Tables 26 and 27, Wages, page 139) than low-wage NEM in the Cape. In the high-wage group, NEM have much lower rates than NEF in all regions, again pointing to a settled, long service and older high-wage group among NEM. Again a comparison of mean wages of NEF leavers and stayers, shows much less difference than among NEM (Wages, Table 25, page 137).

The picture is again confirmed by Survival of Leavers Curves, (Figures 30-35, pages 153 to 154) and they show, for both NEM and NEF, the large differences in leaving patterns according to income groups. In the Cape, the Survival of Leaver Curves of low income group NEF shows better survival for this group than for low income group NEM up to two years, again demonstrating the greater stability of the female in the lower wage and shorter Length of Service categories in this region.

4. MARITAL STATUS:

In the main analysis, under the heading of Marital Status, a detailed breakdown of the differences between NEF and NEM has already been given. The purpose of this analysis will therefore be to consider the differential effects of marriage upon the two groups, as reflected by their turnover, and to contrast them directly by re-stating the previous findings in summary form.

a) Marriage and Motivation:

There is no doubt that marriage has a differential effect on the motivation of men and women. The man, as the primary bread-winner, will have increased financial responsibility, and can be expected to be more stable in the work situation, seeking security and promotion. The woman will have increased domestic responsibility, and her primary orientation is likely to be towards home rather than work, resulting in a lesser degree of job stability. Weiss (432) says that "Married women at work are never far away from home - their domestic problems and their emotional attachments are of major importance to them, and determine and influence their working life".

This was borne out, in this study, by the finding that married women were less stable than married men; thus for all leavers, 34.4% of NEF were married, but only 26.6% of male leavers were married. By contrast, a larger percentage of NEM stayers (44.2%) were married, than NEF stayers (30.5%). This study, has however, also shown the large number of married NEM who left after long service. For example, 33.8% of all

married NEM left after 5 years service. It is relevant to pose the question here whether the NEM is in fact in a position to commit himself to long-term goals, and whether his employment can offer him security and promotion. The answer seems to be no; the basic insecurity of the Coloured Male's position in the Cape is such that he lives mainly for the present, and this lack of well-integrated long-term goals is reflected in his job instability, irrespective of his Marital Status. The relatively high LTO among long service and married Asiatic Males in Natal has already been referred to (page 198) and the high percentage of separating married NEM, referred to above, should be a matter for concern.

b) Age and Length of Service:

In the earlier analyses of Marital Status (page 162) it was shown that married NEF were much younger than married NEM, (for all leavers, 31% of married NEF were under 25, and only 10.3% of married NEM were under 25), and that their LTO rates were higher than those of the married NEM. However, it appeared that the higher LTO Rate among NEF could be ascribed to their being married, rather than to being younger.

Clearly then, there is a relationship between Marital Status and Age (and hence length of service) and this relationship differs for males and females. Point-biserial correlations (calculated as on page 163) between age and marital status for all leavers were as follows

NEM:	$r_{pbi} = 0.75$
NEF:	$r_{pbi} = 0.57$

both significant at the 1% level, but showing a weaker association between Age and Marital Status for NEF than for NEM.

For NEM, it can be generally accepted that the older male is likely to be married, and much more stable than the single male. Whether this stability results from age, or from being married could not be established. For the NEF, however, the interrelation of age, marriage and length of service is rather more complex, and on page 166 of the previous analysis of Marital Status, it was shown that young, single females are relatively stable, as are the older married women, provided the latter can survive the first few months of service. The young, married female, however, was shown to be unstable and to account largely for the higher overall LTO among all married NEF. It is also of interest to note that if LTO rates in the under 3 months length of service group are calculated for married women, the picture is very similar. Thus the rates were as follows:

Cape 118.7, Natal 233.3, Johannesburg 150.0 (per cent)

c) Regional Differences:

These have already been discussed with reference to the Survival of Leavers Curves under Marital Status. It was shown that there was no consistent relationship between Marital Status and leaving for NEF, and the reason for this lies in the interrelationships between age and marital status referred to in b. above. Any analysis which fails to differentiate between young married and older married NEF can be expected to give conflicting results. This has, of course, important implications for employment policy with regard to married NEF.

For NEM, the curves showed clearly the better survival of the Married leavers in all regions.

d) Marital Status and LTO rates:

All the above has served to emphasize that LTO rates of males and females should not be compared, unless Marital Status is taken into account.

Thus it has been shown that married NEM are a stable group, and that single NEF are the more stable group among NEF. It can be seen from Table 34, Marital Status (page 156) that except in factory E, single NEF have lower overall LTO rates than single NEM. The single NEF rates, however (except in factory C) are not as low as the married NEM.

In the Cape, there is a smaller difference between single NEF and married NEM rates, than in the other areas, partly because the single NEF in this area shows relatively low LTO rates, and partly because the NEM rates are relatively higher. In Natal, however, married NEM rates are much lower than in the Cape, but single NEF rates show quite large factory differences. It has already been mentioned that the female labour force in Natal is relatively new; also the majority of NEF are Asiatic, and the prevailing norms and cultural attitudes towards women in employment are presumably different from those affecting the Cape Coloured women.

Single NEF in Johannesburg have high LTO rates, compared with the Cape.

Married NEF rates are obscured by the age relationship already noted, but on the basis of the rather small married over 30-years group available, (Marital Status, Table 38, page 166) it does seem as if the stability of the older, married woman

is on a par with the younger, single female, except in the early stages of employment.

5. LEARNERS:

In all regions, there is a higher percentage of learners among NEF (leavers and stayers) than among NEM as shown in Table 65 in the Appendix following this section.

This is to be expected from the previous findings on Age and Length of Service, where the NEF were shown to be generally a younger and shorter service group.

As can be expected from the Age and Length of Service relationship of learners, the rates again show the relative stability of the NEF learner in the Cape, and in the Transvaal (Table 66). In both these areas, the effect of wages should also be taken into account, and it seems probable that the NEF are more prepared to work for a low learner wage, than the NEM, for whom alternative avenues of employment are open.

In Natal, the higher rates of the NEF have already been commented upon (above). The low male learner LTO rate is very likely a function of the relatively easier labour market there, where learners have fewer opportunities, are prepared to work for lower rates, and are less likely to leave voluntarily. In addition, the more plentiful supply of labour will enable management to make a better selection, and there should thus be fewer dismissals because of unsuitability among this group.

6. TYPE OF SEPARATION:

Generally speaking, a greater percentage of female leavers leave of their own accord, than do male leavers. For all leavers, 62.6% of NEF left voluntarily, as against 54.5% NEM.

The greatest difference between the sexes is apparent when marital status is related to type of separation. The regional analysis to be presented below, will show the extremely high percentage of married females who left voluntarily compared with single females, whereas among males the proportion of voluntary resignations and dismissals is very similar for both single and married NEM, except in the Transvaal, where it is the single male that has a higher proportion of voluntary resignations.

a) Cape:

There is a higher proportion of Voluntary among female

leavers than among males (63.0% NEF left Voluntary, 56.4% NEM left Voluntary) and at higher wage and skill levels, the NEF have an even greater proportion of voluntary terminations than NEM. (NEF 76.3%, Voluntary, and NEM 58.6% Voluntary.) Table 67 in the Appendix following this section shows the relationship between Marital Status and type of separation, commented on above.

Although overall Voluntary for NEF is greater than for NEM, 17.3% of all NEM terminations were Voluntary in the first three months, but only 9.0% of all NEF terminations were voluntary. This reflects, partly, the better settling-in of the young female referred to earlier (page 209) and also the higher percentage of dismissals among short service females. It is also of interest to note the high percentage of Dismissed among married NEM, which exceeds Dismissed for single NEM.

b) Natal:

In this region, the proportion of voluntary terminations among NEF is higher than for males in all income groups and at all length of service periods. The percentage of Voluntary for females in the first 3 months is much higher than in the Cape (17.9% of all terminations) and much lower for males (11.0%) with no evidence of a quick settling-in as previously.

In broad categories, type of termination and marital status (Table 68) reveal the same general relationship as in the previous table.

The high proportion of dismissals among both single and married males in this region has already been commented upon. (page 183).

c) Transvaal:

This is the only region where NEF have a lower Voluntary than NEM. (NEF 65.8% Voluntary, NEM 70.3% Voluntary). This reversal is the result of the very high percentage of voluntary terminations among NEM, rather than lower Voluntary among NEF.

When marital status is taken into account, as in Table 69 in the Appendix following, it can be seen that there is a very large percentage of voluntary terminations among married women in this area.

The unusually high percentage of Voluntary separations among single males corroborates the earlier findings of high

LTO rates among learners in this area, probably as a result of the relatively low wage rates.

7. CONCLUSIONS:

There is an unmistakable trend in South African industry generally towards the employment of more Non-European females. This trend can be expected to continue as mechanisation proceeds, and the heavier, more skilled tasks are replaced by sedentary, semi-skilled machine operations. In terms of the orientation of this study, therefore, the question must be asked whether the employment of females is likely to aid in the creation of stable, cohesive groups in the labour force. The findings show the answer to be a qualified "no"; no, because the female does not generally have the long-term career orientation of the male, and qualified, because if efforts can be made to meet the special needs of the female in employment, they can make a useful contribution towards the enterprise. In times of full employment too, the employer often has no choice but to employ women; it is to his advantage therefore, to be aware of their reactions to the work situation, in order that organisational steps may be taken to utilise them to the best advantage.

This study has again illustrated that because they generally lack a long-term career orientation, NEF do not settle into long-serving groups in the same way as NEM. The question arises to what extent this is the result of management policy towards female employees; it will be recalled that Bucklow noted (Chapter 2, page 45) that women were not generally employed on tasks which led to long-term careers. In this instance, however, it seems to be safe to assume that no such managerial strategy exists; in fact, the situation in the Footwear Industry is one in which there are few career inducements even to males on the factory floor, and no discrimination between males and females in this respect can be argued.

It has also been shown that when comparing labour turnover between males and females, the variables of length of service, age, and (particularly) marital status must be taken into account if inaccurate generalisations are to be avoided.

Considering Length of Service first, the main differences between NEM and NEF become apparent, namely that the short-service female is much more stable than her male counterpart. Thus the NEF were found to settle in quickly and to form stable groups - but these groups could not match the long-term stability shown by the males. In an industry such as footwear manufacture,

however, where many jobs are semi-skilled and easily learnt, the female worker who seeks employment for a few years only, rather than a career, can usefully be employed.

Because for the NEF, length of service is related to a far lesser degree to age and wages than it is for NEM, it was shown that none of the generalisations which hold for males on these variables can be applied to females.

It was shown, for NEM, that turnover among married persons was high enough to suggest a lack of commitment to long-term goals, and this should be a matter for concern. Nevertheless, the fact that marital status among males is generally related to age and length of service, does mean that the married male is consistently much more stable than the single male.

For NEF, however, as with length of service, there is not the consistent relationship between marital status and turnover which holds for NEM. In this instance, marital status, and the special responsibilities which marriage holds for the female, is probably the determining variable in her job stability, and in this study, it was shown that age and marital status must be considered together in order fully to understand the situation. Thus it was shown (Table 38) that the young married female, who is likely to have the greatest responsibilities to family and home, is the least stable of the NEF groups, while the older married female can be a stable employee once the transition period into the dual role demanded by work and marriage has been survived. By contrast to these two groups, the young single female proved relatively stable, in the short term at least.

The specific problems of the married woman have been mentioned and in Chapter III, page 74, it was noted that many women returned to their jobs after pregnancies. The preponderance of short service, Voluntary terminations among older married women, referred to on page 166, shows that some action to assist the settling-in of these women during the first few months of service, when they are probably experiencing conflict arising out of their dual roles, could result in the retention in employment of a larger number of very useful skilled employees.

Whilst women in industry must be prepared to conform to the conditions of employment in industry, there are limits within which the special needs of the married woman can be met, without seriously disrupting production routines. In

fact, the disruption may prove less than that occasioned by the present high labour turnover.

Cilliers (433) makes various suggestions in this regard, such as part-time employment, and Industrial Council action to provide creches for young children. However, as the problem appears to be more acute in the first few months, a policy of placing such workers on jobs other than key jobs, and providing special facilities for excused absence may have the desired effect of greater stability amongst this section of the labour force.

APPENDIX - SEX

TABLE 65

PERCENTAGE LEARNERS AMONG NEF AND NEM LEAVERS AND STAYERS

	CAPE		NATAL		TRANSVAAL	
	Leavers	Stayers	Leavers	Stayers	Leavers	Stayers
NEF	51.5	42.3	80.1	55.6	68.4	52.8
NEM	43.3	21.2	46.7	21.1	71.9	25.0

TABLE 66

REGIONAL COMPARISON OF LTO RATES AMONG NEF AND NEM LEARNERS

	Cape	Natal	Transvaal
NEF	46.0	79.1	81.2
NEM	78.1	47.7	140.7

TABLE 67

PERCENTAGE VOLUNTARY (V) AND DISMISSED (D) AMONG CAPE NEF AND NEM BY MARITAL STATUS

	Married		Single	
	V	D	V	D
NEF	83.0	17.0	50.3	49.7
NEM	54.1	45.9	57.5	42.5

TABLE 68

PERCENTAGE VOLUNTARY (V) AND DISMISSED (D) AMONG NATAL NEF AND NEM, BY MARITAL STATUS

	Married		Single	
	V	D	V	D
NEF	72.0	28.0	54.7	45.3
NEM	50.0	50.0	51.4	48.6

TABLE 69

PERCENTAGE VOLUNTARY (V) AND DISMISSED (D) AMONG TRANSVAAL NEF AND NEM, BY MARITAL STATUS

	Married		Single	
	V	D	V	D
NEF	93.3	6.7	59.0	41.0
NEM	57.9	42.1	75.5	24.5

CHAPTER VISUMMARY OF THE MAIN CONCLUSIONS AND RECOMMENDATIONS

In Chapter I, arguments were advanced for the establishment of a conceptual basis on which to approach the study of labour turnover, and it was argued that the causes of the phenomenon were multidimensional. It was suggested that labour turnover could only be reliably evaluated in a total setting, in terms of variables in the individual, in the working group and in the management of the employing organisation. In addition, the economic background, particularly as it affects level of employment, has also to be borne in mind. These variables, then, many of them interrelated, were seen as factors in the interaction between the employer and the employee in the work situation, and it was argued that the measurement of labour turnover could provide an objective basis for evaluating the success or otherwise of these interactions. It was noted that in the particular setting of modern industry, and against the background of full employment, the major factors in need satisfaction for the employee were likely to lie within the working group, and that personal relations within that group would dominate the working situation. The factor of group cohesiveness was therefore suggested as a possible major determinant of worker stability, and it was proposed to study the process of labour turnover with due regard to this factor.

At the same time, the need for appropriate measures was established, and this was accepted as a pre-requisite for the achievement of the main aim of the study. A further subsidiary aim, in terms of the orientation of the Industrial Psychologist to the subject, was that measurement and study would be directed at the objective of controlling and reducing labour turnover in industry.

In Chapter II, the literature was surveyed, and the variables which appeared to be related to labour turnover, and which could be pursued further on this study were established. In particular the findings of this chapter emphasized the inadequacy of currently accepted measures of labour turnover, which had given rise to many conflicting conclusions.

In Chapter III, the collection of data from the nine factories involved was described, and the methodology of the study was briefly outlined. This led to a further critical appraisal of the measurement of labour turnover in Chapter IV, as a result of which a set of new measures was proposed.

In Chapter V, these and other measures were applied experimentally to the study data, and the main conclusions arrived at can now be summarised and discussed, in terms of the main aims, under the following headings:

- A) Conclusions on the measurement of labour turnover;
- B) Conclusions on the nature of the process of labour turnover in industry and
- C) Arising out of B, proposals for the control and limitation of labour turnover.

A. CONCLUSIONS ON THE MEASUREMENT OF LABOUR TURNOVER

In this section, the outcome of the study will be described in some detail, in view of the importance, already stressed, of adequate measures in any investigation of labour turnover. The application of the measures proposed in Chapter IV has clarified their properties, and has indicated in what manner they may most profitably be used. This will be emphasized in the discussion to follow.

1. THE CONCEPT OF CONTROLLABLE TURNOVER:

One of the aims of the Industrial Psychologist in the study of labour turnover, is to assist Management to control the phenomenon. It therefore follows that, that part of turnover which can be controlled by management should be separated from total turnover, and this was discussed in some detail in Chapter II, page 21 and again in Chapter III page 72. Only "Controllable Turnover", as defined, has been included in the analyses of this study, and this specifically excludes turnover occasioned by illness, marriage, pregnancy, retirement or death. Retrenchments are also excluded.

2. CRITERIA FOR THE MEANINGFUL MEASUREMENT OF LABOUR TURNOVER

The following criteria are proposed:

i) That as labour turnover is measured and studied with a view to understanding and controlling it, analysis should be confined to controllable turnover.

ii) That any measure (or measures) used should take account of length of service as a major variable in turnover.

iii) Measurement must not only indicate the extent of labour movement, but also where such movement lies, in terms of length of service.

iv) It should be possible to compare or separate out some of the effects of the interrelated variables which are involved

in turnover.

v) If labour turnover is to be measured as a part of industrial routine, then data-gathering must take place within a practicable framework, and records and computations should be simple.

It has been shown that no one measure will satisfy all the above criteria, and three measures have been suggested, namely Labour Turnover Rates, Median Lengths of Service of Leavers, and Survival of Leavers Curves.

The first two measures, used in combination as shown on this study, have only been applied separately in previous work, and the Survival of Leavers Curve has been developed as a result of research conducted on this investigation.

3. LABOUR TURNOVER RATES AND MEDIAN LENGTH OF SERVICE OF LEAVERS

Labour Turnover (LTO) rates, even in the "crude" form, remain a useful measure, in that they do indicate the rate at which people are leaving in any period. They should be calculated in separate race/sex groups, in view of the differences shown in this and previous studies, and at intervals of approximately three months. This study indicated considerable short-term fluctuations in monthly rates. For comparability, all rates should be converted to per annum figures.

Because of the effects of length of service, LTO rates should not be expressed except with some reference to this variable. Separate rates in length of service categories are preferable, but complex data are needed, and computations are cumbersome. As an alternative, all leavers in a period may be classified by length of service, and the Median Length of Service then given in addition to the relevant LTO rate.

In such a combination, the LTO rate indicates the level of turnover, and the median length of service shows where, in the length of service continuum, the majority of leavers lie. It has been shown (Chapter IV, page 99) that LTO, when it rises, does so to a greater extent in the short service categories, and that median length of service will therefore normally decrease as the LTO rate rises. If it does not, the situation merits special attention, This will be referred to again in the discussion on Survival of Leavers Curves.

4. THE SURVIVAL OF LEAVERS CURVE:

Silcock and Bell (as discussed in Chapter IV, page 89) in

particular had shown the value of Survival Curves in investigating certain aspects of the Turnover process. By representing the distribution of all leavers in a period, by length of service, (of which the median length of service is a central measure) in the form of a Survival Curve, showing percentages surviving successive periods of service, a Survival of Leavers Curve (SLC) was obtained, and its use in the measurement of LTO was demonstrated. Used in conjunction with the LTO rate, which indicates the rate of leaving, the curve shows from where in the labour force, in terms of length of service, the leavers are being drawn. It was also shown how the curves could be used to compare groups, to contrast them on biographical variables, and to show the effects of variables such as age, wages and marital status, while holding length of service constant.

Some properties, limitations and advantages of these curves can now be considered.

a) Properties of the Survival of Leavers Curves:

i) Groups of leavers should not be too small, or drawn from too short a period, or short-term distortions may affect the curves. Six months would seem a reasonable minimum period.

ii) The curves illustrate rate of survival, (based on rate of leaving) as a decreasing function of time, and in this sense are similar to the general hyperbolic form of wastage curve described by Rice (See Chapter II, page 30). The rate of survival at any point on the curve is indicated by the slope of the curve measured by the angle of a tangent to the curve and the X axis.

iii) Because, as mentioned earlier for the median length of service, LTO when it rises does so proportionately more in the shorter service categories, a "steep" curve will normally be associated with a higher LTO rate than a "shallow" curve. This has already been shown with reference to the study data, but an empirical illustration in rather more general terms will serve better to illustrate this important aspect of Survival of Leaver Curve analysis.

The concept of "high" or "low" turnover implies a norm of "satisfactory" turnover, and this is of course not a tenable concept. However, just as in this study a range of turnover rates emerged, giving rise to a continuum from low to high, so in a factory situation, comparable groups can be contrasted over time, and rates may be "higher" or "lower".

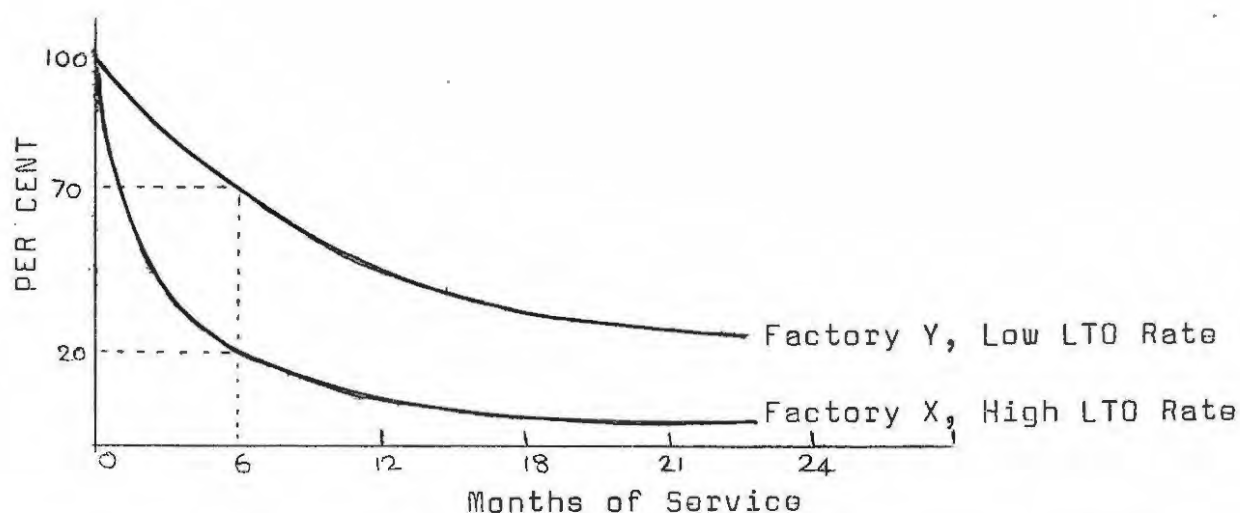


FIGURE 67 : HYPOTHETICAL SURVIVAL OF LEAVERS CURVES SHOWING TYPICAL "HIGH" AND "LOW" TURNOVER SITUATIONS.

Thus, in figure 67 above, two extreme situations are shown, the slopes of the curves indicating the survival rates. Factory X, of high LTO rate, shows many short-service losses with 80% of all leavers having less than 6 months service. Few newcomers survive in order to build up a stable labour force.

Factory Y, of low LTO rate, shows few short service losses - only 30% of leavers had less than six months service - and a greater percentage of leavers come from the longer service categories. The situation shown is similar to that for factories A and F in the survey, as shown in Chapter IV, figure 2, page 98.

The above situations are as expected, in terms of Silcock's findings. But if a curve such as that of Y were allied to a high LTO rate, further investigation would be indicated as the rate of leaving among the larger proportion of long service workers is now high. A similar situation was shown for the NEM leavers in factory C, Chapter V, figure 13 (page 123). Conversely, if X has a relatively low LTO, this would show that newcomers are not staying, but that the stable core is relatively unaffected by turnover. Factory D, Chapter V, Figure 14, was an example of this, and was discussed on page 114.

b) Limitations of the Survival of Leavers Curves:

Unless the Survival of Leavers Curve is supported by another measure such as the LTO rate, no inferences can be made from it to the labour force as a whole, as it represents only a distribution of leavers in a particular period. If there is no major change in wastage rates over time, however, successive groups of leavers will generate similar curves, and

the curves may be used for purposes of predicting future losses, provided this assumption holds. Rice (434) and Mason (435) consider that such an assumption is normally tenable.

It has been shown (Chapter IV, page 99, and above), that two different situations may generate the same curve and this is a further argument for use of the LTO rate in conjunction with the Survival of Leavers Curves.

The curves are not suitable for use on small groups of leavers, as an irregular, stepped curve results. For this reason, and to avoid short-term distortions, six months is suggested as the minimum period for such curves.

c) Advantages of the Survival of Leavers Curves:

This study has shown that the Survival of Leavers Curve can be used in the same way as the survival curves of Silcock and Bell, and is in fact superior to Silcock's approach, as it takes account of all leavers in a period, and not just those from a particular entrant group. Its use in the comparison of the leaving behaviour of groups has been demonstrated, and it has been used to separate the effects of interrelated variables.

It is particularly suitable for use in a factory situation, as it requires simple data on current leavers only.

5. SUMMARY

In view of all the above, it is suggested that LTO records for the purpose of personnel research or personnel administration should be confined to controllable turnover only, and that LTO rates in the appropriate race/sex groups should be supported by either Median Lengths of Service of Leavers (as a simple measure) or by Survival of Leavers Curves for more detailed investigation, based on data from all leavers in the period covered by the LTO rates.

The use of these measures takes due cognisance of the overriding importance of the variable of length of service, and of Silcock's important proviso (Chapter II, page 15) that the force of separation is more likely to depend on past events - governing the length of service composition of the labour force - than on the present state of labour relations in any situation. Labour turnover rates are still frequently regarded as an indicator of morale, or as a means of comparing labour stability amongst factories or departments, but crude

rates are bound to be misleading in the absence of controlling measures for length of service. One of the greatest advantages of the Survival of Leavers Curves approach is that it enables other variables to be contrasted in terms of length of service, and alternatively, if a simpler measure is desired, the Median Length of Service of Leavers with the LTO rate, offers a measure of central tendency in terms of length of service.

B. CONCLUSIONS ON THE GENERAL NATURE OF THE LABOUR TURNOVER PROCESS

It was apparent from Chapter II that, with the exception of a few studies, little attention has been paid to the establishment of a proper theoretical background against which the measurement of LTO could proceed, and that few attempts had been made to place in perspective those factors which influence the leaving process.

In this section, some of the major findings of previous workers in the field will be compared with the results of this study. An attempt will be made to place the factors influencing turnover in a logical order, and to incorporate some of the new findings regarding the relationship of variables into this classification.

The classification of these factors will be in terms of the overall orientation of this study, namely that of the interaction between the worker and the employing organisation, and the role of cohesive groups in promoting stability. Three broad divisions are proposed, namely

1. Outside factors, in terms of which decisions to leave the working group are influenced by available alternatives.
2. Organisational factors, which determine the size, location and management structure of the organisation in which the working groups exist.
3. Employee factors, namely the relevant characteristics of the persons who constitute the working groups.

1. OUTSIDE FACTORS:

a) The Level of Employment:

Behrend (as mentioned in Chapter II, page 31) sees outside economic forces as a prime factor in turnover, and other authors are in general agreement. This was borne out in this study, where LTO among NEM was lowest in Natal, in a relatively easy labour market, and highest in Johannesburg,

where there is severe competition from other industries for labour. The suggestion by Rice (see Chapter II, page 59) that Voluntary separations will be less where alternative avenues of employment are limited, is also borne out; Voluntary was low among Natal NEM, and high in Johannesburg. This has borne out what could be expected on a priori grounds, namely that any rational decision to leave the group will be based, in part on the perceived availability of alternative avenues of employment.

b) Wages:

As an outside factor, wages are here viewed in terms of National Wage Agreements (such as apply to the Footwear Industry), which lay down minimum wage rates at various levels for a whole industry.

The difficulty of separating the effect of wages from those of other factors (such as length of service and age) will be referred to again, but it does appear as if some more general effects of wages have been shown in this study. If work is seen as providing need satisfaction, then as Maslow (436) has proposed, there will be a "hierarchy" of needs, so that certain basic needs (such as subsistence) must be satisfied first, before higher-order needs, such as belonging to a group, will act as motivators. It can be expected then that very low wages may cause the employee to separate (as basic needs are not being met) but that adequate or high wages would not necessarily motivate him to stay, as he would seek the satisfaction of higher-order needs, in the group, once wages were enough to satisfy basic needs. The level of "subsistence" would of course, not be independent of the availability of alternative employment at better wages. Thus, where work is scarce, a lower level of wages would be acceptable.

There was evidence in this study that the Coloured Males, in the Cape and Natal, were not prepared to work for the low "learner" rates in the industry, and that alternatives were available to them. A high LTO rate and a high percentage of Voluntary separations (V) suggest this. By contrast, in Natal, where work for Asiatic Males is less easy to obtain, the learner wage rate appears more acceptable, and both LTO and V are much lower. For Bantu Males at all grades in Natal, wage rates are relatively better than in other industries, and LTO - and V - are very low.

The NEF worker too, appears to be prepared to work for the low learner wages (but her EF counterpart is not) and LTO

rates for the low wage NEF group are superior to NEM rates in this group.

It appears that low wages relative to other industries can affect LTO, but that the effect is by no means consistent, as shown by Factories F and G (page 137). In fact, there can be wide differences between factories, and to explain these adequately, reference must be made to factors within the organisation.

2. ORGANISATIONAL FACTORS:

As this was essentially a statistical study, the organisation itself in relation to turnover was not investigated in any detail.

The effects of size, of factory location, and of level of Personnel Management can however, be briefly noted.

a) Factory Size:

If turnover is viewed as being primarily related to factors intrinsic to the working group, then size of factory should not necessarily be related consistently to stability among employees. Thus, the larger factory can be expected to be more impersonal, but this may be offset by more attention to personnel management functions, for example, and management generally may be more enlightened and aware of the need to avoid depersonalisation in the work situation. In the smaller factory however, there is likely to be face-to-face contact between employer and employee, and a greater awareness of mutual aims and responsibilities. This may, however, be (offset by poorer working conditions and less benefits for the employee.

In this study, no consistent relationship between size and labour turnover could be established. Thus, for all factories, ranked by size and LTO, a moderate degree of negative association was found ($Rho = -0.53$) but this must be considered with caution, as the three largest factories were all in the Natal area, where LTO rates were much lower generally. In fact, the smallest Natal factory on the survey, had the lowest rates.

b) Factory Location:

Where there are differences in the level of employment in different centres, labour turnover will obviously show regional differences, and this aspect of factory location has

already been discussed under 1a. above.

Where a factory re-locates within a particular centre, it can be expected that habit patterns related to its accessibility to employees, and group factors involved in transport arrangements, may be disrupted. In this study, the effect of such re-location in two factories was to increase long-service terminations, presumably because the new location proved inconvenient.

Mainly because of regional economic factors, however, locality can be regarded as a relatively important factor in labour turnover.

c) Level of Personnel Management:

Personnel management, in the broadest sense, namely the attitudes and policies of management towards its employees, is accepted as one of the major determinants of morale in any industry, and as such can be expected to be very closely related to the formation of cohesive work groups. Organisational details, and the management "climate" of the factories involved in this study were not investigated, and the only objective factor that was recorded was whether the factory possessed a specific Personnel Management department, or not.

Only two factories, G and H, had such departments; G had the second lowest turnover in the Natal area, while H had the highest. Factory F, with the lowest turnover on the study, did not have a Personnel Management department.

The mere existence of a Personnel Management department is of course no guarantee that sound personnel policies are being practised - the department may be (and frequently is, in South African industry) no more than an employment office. In terms of the assumptions made on this study, unless personnel management and personnel policy are directed at the creation and maintenance of stable, cohesive groups, they are likely to have little or no influence on labour turnover. And, conversely, of course, there is no reason why enlightened management, in the absence of a specialist department, should not itself promote group cohesiveness among its employees.

3. EMPLOYEE FACTORS:

In the sub-sections to follow, which cover the main findings of the study, those factors in the employee, and in his or her direct relationship to the work situation, which may or may not facilitate the creation and maintenance of

stable cohesive groups, will be discussed.

a) Length of Service:

This study has again shown the overriding effect of length of service as a determining factor in LTO, and all the analyses for all groups showed a high percentage loss in the early months of service, decreasing in subsequent periods. The effect was less marked among some female groups, but for males it was consistent.

This finding is in accordance with the assumptions made regarding group cohesiveness, for it can be expected that the longer the contact with the group, the greater the chance that the employee will become integrated with it, and will find, in the group, a means of need satisfaction.

The differential effect of length of service among males and females is also consistent with the assumption. Thus the female in industry makes fewer demands on the working group. Her major needs are likely to be satisfied within the home and family, and the working group has, mainly, to satisfy needs for social interaction, and for the earning of extra - but not always essential - money. It is to be expected that she will integrate more quickly into a new working environment, and be relatively stable for the period which she chooses to remain in employment.

The male, by contrast, also has a need for social interaction in the work situation, but he also seeks security and prospects of advancement, as well as job satisfaction through the exercise of some skill. He strives too, after a feeling of worth, as a result of approval either by management, or his peers, or both. Clearly, the demands for need satisfaction which he makes on the working group will be more difficult to meet, and will take longer. His chances of separation, during the early stages of employment, and in the absence of measures to promote stability, are likely to be high.

If group cohesiveness, then, is seen as one of the major determinants of stability in the work situation then length of service can be expected to be a major variable in this situation, and this has been shown by this study.

b) Age:

The question which must be answered under this heading, is to what extent a worker's age influences his integration into a stable cohesive group and his stability within that group?

The study showed very clearly that for males especially, age and length of service are very closely related. The older a worker is, the more likely he is to be of long service, and older workers showed better survival than younger (and shorter service) workers. In terms of the arguments in a) above, however, it can be expected that length of service is the dominant variable.

The study also showed age to be, to a certain extent, independent of length of service, and that the degree of independence differed materially for males and females.

For Non-European Males, a number of factors were mentioned (page 134) which are likely to aid the integration of the worker into the group. The older worker is likely to be familiar with factory routines; he is probably skilled, and productive, which aids both his acceptance by the group and by management. He is also likely to be subject to factors which limit what Bucklow (see Chapter II, page 18) has called "perceived ease of movement", which will depend on the availability of alternative employment. The latter especially, was shown to be true in this study.

The different job-orientation of the Non-European female was discussed in a) above, and the fact that she is less likely to settle into a long-service career pattern, accounts for the fact that there is a much less clear relationship between age and length of service for this group, although the findings for males do apply to a lesser extent.

Through the use of Survival of Leavers Curves, it was possible, in this study, to separate some of the effects of age from length of service, and it can be concluded ceteris paribus, that the older worker is likely to be a more stable employee than the younger, irrespective of his length of service in any particular group.

c) Wages:

In terms of the assumptions of this study, wages should not prove to be a major factor in labour turnover. Cohesive groups have been regarded as forming to provide need satisfactions for their members, and wages, a mainly extrinsic factor to group formation, should not exert any great influence. This was borne out by the study findings. No great wage differentials existed within the industry, mobility (within a region at least) was easy, and the experience of factory F showed that other factors could easily override relatively low

wages, with resulting low labour turnover.

It was apparent, from the results of this study, that length of service, age and wages were intercorrelated variables, and it was not possible within the limits of the data, to separate out the effects of wages alone. Length of service appeared to be the dominant variable, but as already noted, its effects are less strong for females than for males, and therefore relations among the three variables can be expected to be less clear for this group.

For NEM, leaving behaviour by age differs little from that by wages, and these two variables are so closely related that the use of unsupported LTD data based on wages alone must be warned against. Wages are, of course, also related to length of service. In fact, if the worker is of short-service young, or low wage, he is likely to be unstable; if of long service, old, or of high wage, he is likely to be stable. However, as with age, wages can be expected to exercise some independent effect (besides that already referred to on page 227), as high wages do confer status in the working group. It was shown in the Survival of Leavers Curves analysis that the high wage worker is less likely to separate than the low wage worker, at all length of service categories, but whether wages or age is the determining variable, independent of length of service, must remain a question for further research.

For NEF, the young low-wage female is much more stable than her male counterpart. Both age and wages appear to have less effect on turnover, than length of service, showing that, even with the shorter employment periods which are characteristic of female employees, factors which are related to the growth of group bonds are more important than extrinsic factors.

The role of wages in the total work and social situation of the worker has far-reaching implications for industry and for society, and the generality of the findings of this section must be considered very carefully. The finding that wages are not a major factor in turnover is in agreement with the generally-accepted position among industrial psychologists that wages are not a prime motivator in the work situation (McGregor 437). The position of Maslow has already been stated, (page 227) and Herzberg et al. (438) regard wages as a "hygiene" factor, rather than a "motivator". They accept that a certain minimum level of wages is necessary, but that thereafter wages no longer play a positive motivating role in the group.

This "accepted" view is in sharp contrast with the findings of Goldthorpe et al (439) who found among an "affluent" group of British skilled and semi-skilled workers, that level of pay was a predominant factor in their motivation. Their orientation to work was purely instrumental, and need satisfactions were not sought in the work situation, but in the social setting of family and home.

This finding would however seem to be confined to "affluent" workers in the atmosphere of social security of present day Britain. Their orientation is not that of the traditional working class community, which is often characterised by a "fatalistic social philosophy" (440), borne out of experience of economic insecurity. Rather, it is a striving and purposive orientation aimed at improvement in the life situation of the worker and his family - in such a situation, wages are seen as a prime motivator.

The findings of Goldthorpe et al probably apply only to their rather unique group, but the importance of their work lies in the attention which it directs at the influence of the worker's social and family background on his reaction to the work situation. It seems safe to assume that the South African Non-European worker's attitude to his work is still largely expressive, and that he will seek need satisfactions largely through the group in the job situation. The level of wages is not high enough to compensate for the lack of satisfactions in the work itself, nor high enough to enable him effectively to seek satisfactions entirely outside the job situation. The formation of group ties and interactions within the group will therefore be relatively more important, and wages are likely to be of secondary importance in such a situation.

This conclusion will, however, only hold if the orientation of the worker to job, society and family remains unaltered.

d) Sex and Marital Status:

Although the effects of these two variables were considered separately in the main text, they will be dealt with together here because of the important relationships which exist between them. Findings on the variable of sex, many of which have already been dealt with under previous headings, where relevant, will be mentioned only briefly again.

It can be expected, on a priori grounds, that both sex and marital status will affect the worker's orientation and reaction to the work situation. As a result of this, no doubt,

there is a widely and uncritically held stereotype of the female worker being generally much less stable than the male. This study has, however, shown again that generalisations on the basis of sex alone can be erroneous. More specifically, it showed that the young, short-service female employee is considerably more stable than her male counterpart.

There can thus be no simple answer to the question of whether male or female employees result in more cohesive working groups. The variables of length of service, age, and marital status all interact to varying degrees in relation to the stability of the worker.

For sex, specifically, it has already been argued that the orientation of the female towards employment is very different from that of the male. The factors involved (see also page 231) result in the female being assimilated much more quickly, (into a group where there is less of an age and status hierarchy) than the male, but by contrast, not proceeding to the long-term association which is characteristic of the career-oriented male.

When Marital Status is superimposed on this relatively simple relationship, however, the position becomes rather more complex.

For Non-European males, length of service and age were found to be very closely related to marital status, but it was not possible to assess the relative strength of these three variables. It can only be said that the married male - who is also very likely to be older and of longer service - is much more stable than the single male, and any of the female groups. It can be expected, however, that the fact that a male employee is married, will affect him in any decision to remain in or to withdraw from the working group, and as such, marital status will be a determinant of stability, quite separate from other variables.

For Non-European females, the lack of a clear relationship between length of service, age and turnover has already been discussed and it seems likely that marital status is the main determining variable in job stability in this group. The stability of the young, single female has already been commented upon, and by contrast, the young married female was shown to be the least stable of all. It appears that this group experiences the greatest conflict between the demands of work and of home and a family. The older married

NEF, however, is much more stable, once an initial period of employment has been survived,

For females especially, it has been shown, therefore, that age and marital status must be taken together in order to evaluate their roles in group stability.

e) Race:

Race, like Sex, appeared in the study findings to a large extent as a summarising variable, and some of the findings under this heading will already have been discussed, and will not be repeated. The emphasis in this section will be briefly to note again those culturally-determined factors which appear to be related to race, and which give rise to significantly different reactions to the group situation in the working environment. Specifically, the main differences were found among Coloured Males, Asiatic Males and Bantu Males.

Among Coloured Males, the problem appears to be a lack of group ties, resulting in the new worker having little or nothing in common with the settled group. Turnover among short service Coloureds is therefore high. By contrast, Bantu Males and Asiatic Males exhibit stronger social ties within their respective cultural groups, and this appears to aid in the assimilation of the newcomer into the working group. However, among Asiatic Males, a higher percentage of long-term losses were shown, and it was speculated that this may have been due to the extended family ties common to this group. Family responsibilities of the individual worker are not as great, and separation from the working group can be more lightly considered. The need here, from the employer's point of view, is to encourage long-serving persons to remain within the group. Bantu males proved stable at all length of service categories.

It has been mentioned, however, (page 202) that the above arguments must be viewed with caution: cultural factors were not investigated specifically on this study, and the effect of wage rates and alternative avenues of employment for different race groups must be borne in mind in any assessment.

f) Types of Separation:

It has already been mentioned (page 188) that Type of Separation cannot be seen as an individual variable in the same sense as those dealt with in a. to e. above. Nevertheless it is obviously of importance to know, when considering labour

turnover in the light of group cohesiveness, whether groups are broken up at the instigation of management, or by the voluntary withdrawal of the workers.

In this study, as in many others previously, it was shown that Dismissals form a relatively constant proportion of turnover, while fluctuations over time or locality are mainly determined by fluctuations in Voluntary separations. This finding is consistent with the view that group stability is a function of worker satisfaction with the job situation.

Sex differences were apparent; thus a much higher percentage of females separated voluntarily, as could be expected from their more "temporary" orientation to the job. Among males the high percentage of Voluntary and Dismissed in the short-service categories, emphasized the problems of integrating the new worker into the group, but of particular concern was the high percentage of Dismissals and Retrenchments, in the longer-service categories. This policy must seriously undermine the security of those remaining and in terms of the orientation of this study, this has been suggested as a major factor causing high turnover in the groups studied. Personnel policy should be directed at the retention of long-service personnel, and the promotion of stable groups, but this did not appear to be the case in most of the factories studied.

It would appear that the tendency to regard labour as "expendable" is still widely-practised. Such a policy is short-sighted at any time, but under full employment it can have very serious consequences for the employer.

4. CONCLUSIONS:

The resultant of all the above factors is reflected in the decision of the individual employee to leave or to stay. For the group, the outcome of a large number of such decisions over a period of time, will determine whether cohesive groups build up within the organisation, or not. In total then, the outcome of all interactions between employer and employee, in terms of the factors discussed thus far, will be related to labour turnover, or the rate at which people leave the organisation.

If interactions are generally successful such that employee needs are satisfied, and the enterprise attains its goals with a minimum of disruption, then labour turnover will be low. If not, the lack of success will be reflected in higher rates of turnover.

But the rate of turnover alone is not a sufficient measure of the success of such interactions. Just as length of service has been shown to be a major variable related to the formation of cohesive groups, so it should also be a major part of any measure of the process of turnover. A certain amount of turnover is inevitable. However, when separations occur after long service, then interactions have been successful, for a period at least. But if these separations are accompanied by short length of service, then interactions can be generally seen as unsuccessful.

Length of service has also been shown to be a variable related to the formation of cohesive groups. The turnover rate, by itself, does not clearly show whether workers are leaving because they are not being accepted into established groups, or because established groups are disintegrating. A short median length of service would suggest the former, a longer median length of service the latter. The need for a length of service measure to supplement the labour turnover rate is therefore apparent, and in this respect, the three measures proposed can be viewed as being appropriate to the process under investigation.

The study also showed the merit of the classification by Rice (see Chapter II, page 30), of labour turnover into three distinct periods. Thus the period of induction crisis can be viewed as one during which there is little or nothing to hold the new entrant to the working group, and his decision to stay or leave is influenced largely by how he perceives, the factory, his job, and the management. During the period of differential transit, group bonds are being formed and strengthened, and these begin to enter into the employee's evaluations; thus he may weigh group satisfactions against dissatisfactions related to the organisation or to the job itself. Finally, in settled connection, he is an integrated member of a cohesive working group, and his satisfactions in this group will loom large in any decision to separate. In fact, the emphasis of any decision can be seen to have shifted from "do I find this a satisfying place to work for?" to "are other places likely to be more satisfying?" The stronger the group ties and the more stable the group, the less attractive these alternatives are likely to be.

It should, however, be added that this classification did not hold consistently for Non-European Female groups, due to their different orientation. There was less evidence of an induction crisis, demands on the job situation being

less, and acceptance into the group easier. The differential transit period was similar to that for males, but the concept of a settled connection did not apply to the same extent as for the males.

Finally, it can be said that the analyses of the empirical data of the study have shown that the assumptions made regarding group cohesiveness have proved helpful. Through this concept, it has been possible to place the findings of the study into a consistent perspective, and a clearer picture of labour turnover has emerged as a result. It has been shown on this study, that the level of labour turnover, when quantified by appropriate measures, does appear to be a satisfactory indicator of the success or otherwise of group interactions, and of the presence or absence of group cohesiveness in the labour force.

Clearly, there is a relationship between group cohesiveness and labour turnover. The extent of such a relationship, and the limits within which it holds, could not be defined in this study, nor can direct causality be inferred. It does, however, appear that further research into this relationship could be rewarding. If, in a suitably controlled situation, an acceptable psychological or sociological measure of group cohesiveness, or group interaction, could be shown to be directly related to labour turnover in that group, then causality could be inferred, and it would be possible to say, with more confidence, that the detailed analysis of labour turnover, as illustrated on this study, can be used as an objective measure of group satisfactions in the job situation. In a situation in which there are, at present, few objective measures, this would be a significant achievement.

C. AREAS FOR ACTION IN CONTROLLING AND COMBATTING LABOUR TURNOVER.

Mention was made in Chapter I of the role and aims of the Industrial Psychologist in personnel research, and the need to initiate action through the personnel management function was noted as his ultimate objective. This aspect has been mentioned from time to time in previous sections, and to conclude the study, some of the findings on the nature of labour turnover will be related to their application in combatting it.

It has been shown in this study that the assumption that those factors which are important variables in labour turnover

can also be related to group cohesiveness, appears to be tenable. It is to be expected, therefore, that action against turnover should, in a large measure be directed at the formation and maintenance of satisfying, cohesive groups, and that such action will concern, primarily, the field of personnel management.

a) Personnel Policy:

The importance of sound personnel policy in combatting labour turnover has been stressed in previous studies (see Cilliers, and S.A. Psychological Association, Chapter II, page 63). Aspects of this, such as job security, a fair dismissal policy and adequate wages will be mentioned again, but it should be noted here that personnel policy should recognise individual differences such as race and sex, and the need to take these into account when planning procedures such as the recording of labour turnover. Whilst actions based on stereotypes of race and sex are to be avoided, it is necessary to separate such factors in analyses, and the value of this was illustrated particularly in respect of the differences between Coloured, Asiatic and Bantu males.

b) Personnel Records:

Accurate measurement is a pre-requisite to understanding and action, and there is no doubt that the maintenance and proper interpretation of adequate records is essential in the control of any business activity, whether this be finance or personnel management. Thus a major factor in the control of labour turnover will be the maintenance of records on which action may be based.

Most of the information needed for the compilation of labour turnover records, using the measures proposed on this study, is usually already available from factory wage records. Additionally, details for each leaver should be recorded separately, together with reasons for leaving, in broad categories, as described in Chapter III (pages 73-74). Such records can be used for study, control, and as a basis for prevention.

c) Selection, Induction and Training:

i) Selection:

Systematic selection is not generally practised in South African industry; certainly it was not a feature of the factories included in this study. Scientific selection through tests and other more sophisticated procedures will not be considered here, but rather some very simple routines

which, in the light of the study findings, should not be ignored.

Knowles noted (Chapter II, page 46) that the number of past job changes was significantly related to LTO, and Cilliers (Chapter II, page 47) also emphasized that the "turnover prone employee" should be isolated at the selection stage. In many industries, including Footwear, a Service Record Card must be presented on employment and as past job history is clearly endorsed thereon it is an easy matter to exclude employees who show evidence of persistent job instability.

In employing Non-European Females, both age and marital status must be taken into account, and suggestions in this regard have been made. Briefly, the young, single female is relatively stable; the young married is unstable, and the older married female can be satisfactory if initial settling-in problems can be avoided.

Finally, other things being equal, the older worker should be given preference at selection as it is very likely that he will show better survival than a younger worker.

Proper selection should thus be seen as an important first stage in the establishment of cohesive work groups.

ii) Induction:

It was apparent, from this study, that nearly 50% of all separations were from among the "Learner" group, and it is clear that short-service groups generally need more careful orientation to the work situation; and more effort at integrating them with groups already in existence. Any action aimed at reducing LTO in an organisation could usefully be directed at these groups in the first instance.

iii) Training:

Systematic training will also reduce short-service losses, and Cilliers' finding (See Chapter II, page 56) that those factories who took the trouble to train labour which proved unsatisfactory at first, found labour much easier to obtain than factories which worked on the basis of summarily discharging workers for unsatisfactory work, is worth repeating here.

All the above procedures become especially important in times of full employment when not only does a poorer quality of entrant come forward, but it is that much more important to choose the right persons, who can then be

encouraged to stay.

d) Wages:

Wages have, in this study, been viewed as a factor extrinsic to the maintenance of stable groups, and it does not appear possible to combat labour turnover by general wage increases. Wage rates must be viewed in relation to those in other adjoining industries, and in this respect it is suggested, for the Footwear Industry, that an improvement in the very low learner rates, or more rapid advancement to higher rates, may have beneficial results where these rates are at present low relative to other industries.

e) Promoting Long Service:

The effect of length of service on labour turnover has been clearly demonstrated. Longer-service workers were shown to be much less likely to separate than short-service workers, and it follows that the higher the proportion of long-service workers on the labour force, the lower the labour turnover which can be expected. Every effort should therefore be made to encourage long service, and to retain older and longer service workers on the labour force.

The importance of induction and training, in assisting the new employee to adapt to the working environment, has already been discussed, but special mention must be made, that the reduction of dismissals and retrenchments among long-service employees will do much to provide a feeling of security for all employees, thus encouraging the maintenance of cohesive groups. Kerr (see Chapter II, page 37) had noted that "promotion probability" was a factor in reducing labour turnover, but at present, in many industries (such as Footwear) there are no benefits allied to long service, and it is not surprising that employees of as much as five years' service and more have been shown to separate voluntarily on a very minor pretext. Long-service wage premiums are a possibility, and can be economically justified if they reduce turnover, but other benefits such as monthly salary and increased notice periods, or additional leave privileges during slack periods, all add to the status of the longer-service employee and discourage him from leaving.

In Chapter I, it was mentioned that the effects of LTO impinge on the Organisation, on the people in it, and on the Economy as a whole. The emphasis in this study has been on the employee in the Organisation, and on Management control

of LTO, but it is appropriate before concluding to mention that measures against turnover can also be taken in the sphere of social planning by legislation. Thus, in the United States of America, Employers' payroll taxes in certain states are reduced in rough proportion to their ability to provide stable employment. (Yoder, 441). In particular, taxes increase if separations (by dismissal or retrenchment) are followed by periods of unemployment. In Britain the provisions for Redundancy Pay, likewise limit this phenomenon, and encourage managements to plan ahead to avoid seasonal or casual retrenchments, and to offer stable employment. There appears to be some state recognition in these countries, therefore, of the fact that employment stability is socially desirable, but its desirability from the point of view of the stable cohesive group in the factory, has yet to be more fully appreciated.

The above brief discussion has shown that there are no simple remedies to labour turnover, which, as has been demonstrated in this study, is a very complex phenomenon. Ideally, it should be studied in detail within the individual organisation. The large variations in labour turnover among factories, even in the same region, have shown that high labour turnover is not inevitable, even under relatively full employment, and suggestions have been made to control and to limit it. In the final analysis, they emphasize that proper Personnel Management cannot be ignored in the establishment and maintenance of a stable labour force.

Furthermore, if the theoretical basis, discussed at the outset of this study is accepted, that the encouragement of group cohesiveness is the only means by which an employer can compensate for the lack of other stabilising influences in modern industry, then attention to this aspect of management becomes a vital necessity, and not merely a subsidiary function in the organisation, as it so often is at present.

NATIONAL INDUSTRIAL COUNCIL OF THE LEATHER INDUSTRY OF SOUTH AFRICA

SERVICE CERTIFICATE

No. of Certificate.....

Section of the Industry

Name and Address of Employer

I hereby certify that the undermentioned person was employed by me and that the particulars hereunder are correct:-

1. Surname (or Native Name) Fund No.

2. Christian Names Factory No.

3. Address

4. Date of Birth Sex Race

5. Operations

6. Wage paid on date of leaving Wage Group (a) S.F. (b) P.F.

7. Date of entering service

8. Date of leaving service

9. Reason for leaving

10. Date of last increase in terms of Agreement

11. Name of previous Employer and date of leaving

12. SICK FUND

(a) No. of Contributions to date

(b) Benefit accrued to date Hours

ISSUED at

THIS DAY OF 19.....

.....
*Signature of Employer/Secretary***N.B.—This copy to be forwarded to Secretary, N.I.C. Leather Industry, P.O. Box 2221,
Port Elizabeth**

PLEASE RETURN TO : LEATHER INDUSTRIES RESEARCH INSTITUTE, P.O. BOX 2240, PORT ELIZABETH.
SERVICE CERTIFICATE COPY

DEPT.....

LEARNER

MARRIED

SINGLE

REASONS FOR LEAVING: (see instructions)

REDUCTION IN STAFF

DISMISSAL

OWN ACCORD

OTHER (death, retirement etc.)

FACTORY.....						RACE/SEX.....	
						DEPT.....	
W/E	STRENGTH	ACCESSIONS	SEPARATIONS.				T/O RATES
			VOL	D	OTHER	R TOTAL	

APPENDIX 4 : PORTION OF COMPUTATION SHEET

RACE/SEX.....	P.F. No.....	FACTORY.....
NAME.....		DEPT.....
MARITAL STATUS.....		REASON FOR LEAVING.....
WAGE.....		AGE.....
OCCUPATION.....		L. OF S.....
DATE OF ENTERING EMPL.....		
DATE OF LEAVING EMPL.....		

APPENDIX 5 : LEAVER'S RECORD CARD

APPENDIX 6EMPIRICAL SIMILARITIES AMONG THE SLC, AND THE SURVIVAL CURVES
OF SILCOCK AND BELL

On pages 90-95 of Chapter IV mathematical derivations of the general forms of the SLC, Silcock's Entrant Group Curves, and Bell's Survival Curves were given, and certain similarities - under certain conditions - were remarked upon.

The use of the SLC has been illustrated in this study, and its validity as a measure in the study of LTO appears to have been established. As, however, it has been proposed that the SLC, which is easily computed from current data, can be used to replace the more complex curves, it is of interest to see how it compares in practice with the other methods. This will be explored in two sections, namely:

The relationship of the SLC to

- 1) Silcock's entrant group curves, and
- 2) Bell's Survival curves.

1. SILCOCK:

If wastage rates remain reasonably constant over a period of time, it can be expected that all leavers, by length of service, will show a similar distribution to leavers from a particular entrant group. In fact, the leavers which constitute any SLC over a particular period can be viewed as being drawn from successive entrant groups, and provided that wastage rates over the periods compared have not changed, the resultant curve (the SLC) will be very similar to the Survival Curves of the entrant groups from which all the leavers were drawn.

a) Entrant Groups and the SLC:

For two factories in the Survey, E and H, it was possible to obtain sufficiently large entrant groups to enable Silcock's method of constructing survival curves to be used. The opportunity was therefore taken to contrast these curves with the SLC for the period of the study.

For factory H, an entrant group of 90 NEM was followed up, and the Survival Curve showing three-monthly survivors as a percentage of the entrant group was compared with the SLC for 315 NEM leavers during the year of the study. The two curves are shown overleaf, the SLC not being extended beyond 15 months, (which is the limit of the entrant group

figures) in this comparison.

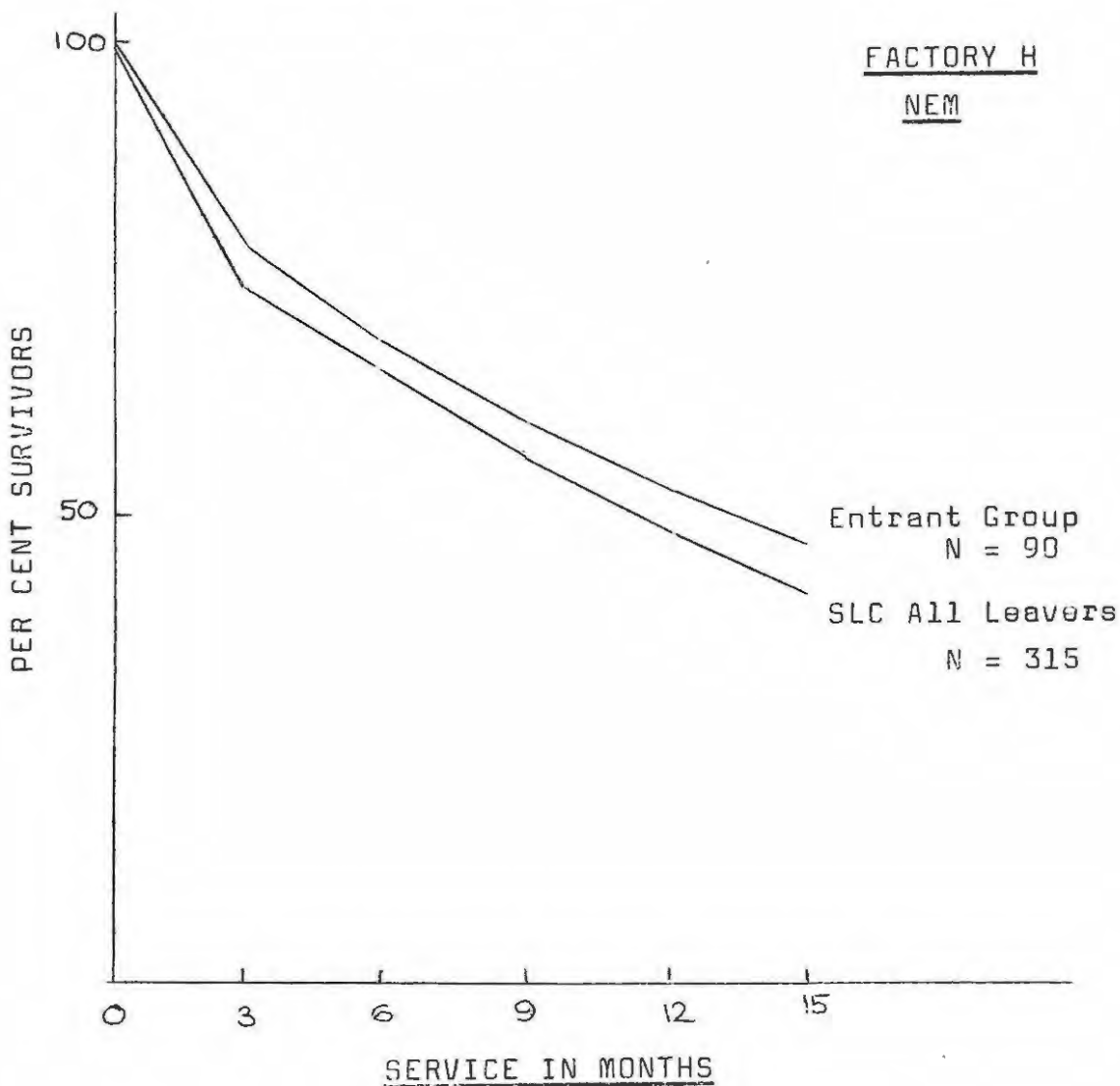


FIGURE 68
COMPARATIVE CURVES - SILCOCK AND SLC

It can be seen that the two curves are very similar, and as has already been argued, this should be so wherever wastage rates remain relatively constant over the periods compared. The entrant group curve diverges upwards, as mentioned on page 96, Chapter IV.

A similar comparison was made for the NEM leavers in factory E, but here it was clear, for a number of reasons, that wastage rates of the entrant group were significantly different from those of all leavers, and survival rates were not at all similar. For both factories,

	H	E
% Entrant group leaving within 15 months	52.2	37.7
% All leavers leaving within 15 months	56.1	63.2

and the similarity of the two figures in H bear out the fact that the entrant group was a reasonably typical one, but that the one at E was not. Unfortunately, no other entrant

groups of sufficient size were available for further comparisons.

b) The SLC as a Resultant:

The second hypothesis was also investigated, namely that the SLC can be seen as the resultant of successive entrant group curves, and that, provided wastage remains constant, this resultant will be substantially similar to its component parts.

To test this relationship, an hypothetical situation was conceived, akin to that in factory H at the time of the entrant group follow-up. It was suggested that:

i) Four groups of 90 entrants were engaged, from January 1967, at 6-monthly intervals, e.g. January 1967, July 1967, January 1968 and July 1968.

ii) Each of these groups were followed-up in exactly the same way as the entrant group in a. above, and

iii) It was assumed that wastage rates for each group, and hence the survival curves, would be identical. Based on the figures obtained at H, each successive group would therefore produce the following situation:

TABLE 70
SURVIVAL RATES FOR EACH ENTRANT GROUP

Length of Service	No. of Leavers	Survivors	Survival Rate
3 months	20	70	77.8
3 - 6	9	61	67.8
6 - 9	7	54	60.0
9 - 12	6	48	53.3
12 - 15	5	43	47.8

If all the leavers for a year from October 1967 to September 1968 were now taken, and a SLC constructed, this curve would include some leavers from all four entrant groups, namely most of the two centro groups, the tail end of the first, and the beginning of the fourth group, and if this is tabulated on a monthly basis, the following is obtained:

TABLE 71
LEAVERS FROM THREE SUCCESSIVE ENTRANT GROUPS

Entrants	Month of separation										
	1967				1968				1969		
Month of engagement	N	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J
Jan 67	90	20	9	7	6	5	3	2			
Jul 67	90			20	9	7	6	5	3	2	
Jan 68	90					20	9	7	6	5	3
Jul 68	90							20	9	7	6
					SLC PERIOD						

Adding diagonally, the leavers in each length of service group will be as follows

<3 mos.	40
3-6 mos.	18
6-9 mos.	14
9-12 mos.	12
12-15 mos.	10
N =	<u>94</u>

This accounts for the number of leavers from the entrant groups. An assumption now has to be made regarding the number of leavers, included in the SLC who came from earlier entrant groups, who left in this period, and therefore constitute part of the denominator of the SLC. (Note that they are not measured as leavers in this portion of the curve, as all will have served over 21 months, i.e. those who entered employment before the first entrant group analysis in 1967).

Here again, the situation at H was used to give a realistic basis for an assumption. In the actual SLC for H, 56.1% of NEM leavers had under 15 months length of service. Applying the same percentage to the hypothetical total of leavers already accounted for (N = 94) this gives a denominator (total number of leavers) of 167 on which to base the survival curve.

The resulting survival percentages are compared with those of the entrant group already given, (table 70) in table 72 overleaf, and the curves are shown in Figure 69 contrasting the 6 monthly entrant groups, the true SLC for factory H, and the SLC as arrived at above.

TABLE 72
COMPARATIVE SURVIVAL PERCENTAGES

Length of Service	Entrant Group	SLC
3 months	77.8	76.0
3 - 6	67.8	65.3
6 - 9	60.0	56.9
9 - 12	53.3	49.7
12 - 15	47.8	43.7

The important finding is that the hypothetical SLC differs very little from the 6-monthly entrant group curves, and the assumption that successive entrant group curves will generate a resultant which is similar to the entrant curves, appears to be upheld, provided that wastage rates remain constant.

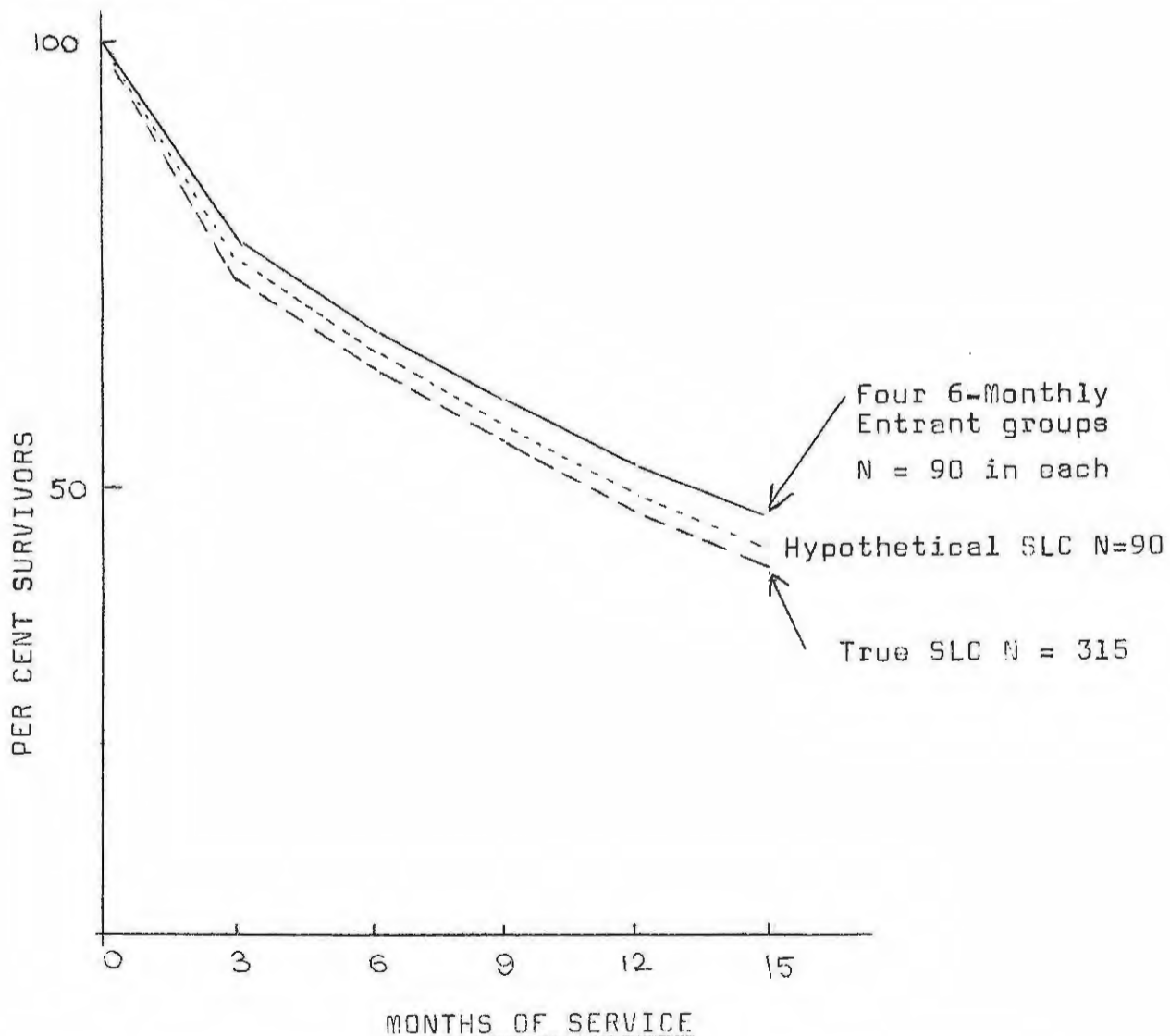


FIGURE 69

COMPARISON OF TRUE SLC AND RESULTANT OF ENTRANT GROUPS:
NEW FACTORY H

2. BELL:

It was also possible to apply Bell's method to some of the data at factory H, and to compare her Survival Percentages with those for a corresponding SLC table. For this purpose, a group of 153 NEM leavers, for the period December 1967 to May 1968 were used to calculate SL percentages, as in Column B in the table on page 253.

This period was chosen because, in order to utilise Bell's method, numbers of engagements for previous periods are needed, and these were only available for the survey period. Accordingly, the last period of the Survey was chosen in order that the greatest number of previous engagements might be available.

TABLE 73
SURVIVAL PERCENTAGES - BELL'S METHOD AND SLC

MONTH ENGAGED	MONTH OF SEPARATION						Engage-ments M	No. left in 6 month period N	Survi-vals S M - N	Diagl. Addns. d
	67 DEC	68 JAN	FEB	MAR	APR	MAY				
APRIL 67	2	1	2	1	-	2	34	8	26	2
MAY	1	1	-	-	-	-	25	2	23	0
JUNE	-	1	2	2	-	-	29	5	24	1
JULY	1	-	1	1	-	-	36	3	33	2
AUG.	-	1	3	-	2	2	29	8	21	5
SEPT.	-	-	1	1	1	-	31	3	28	8
OCT.	2	2	1	-	-	1	19	6	13	5
NOV.	-	-	1	1	1	-	14	3	11	4
DEC/JAN	-	1	-	2	1	2	22	6	16	6
FEB.	-	-	3	-	2	2	38	7	31	5
MAR.	-	-	-	1	1	2	18	4	14	9
APR.	-	-	-	-	1	1	22	2	20	4
MAY	-	-	-	-	-	-	44	-	44	6

Period of Accessions	Numbers Exposed = Z	Leavers d	Survivors K (z - d)
Apr - Sept.	173	8	165
May - Oct.	157	5	152
Jun - Nov.	147	4	143
Jul - Dec/Jan.	140	6	134
Aug - Feb.	140	5	135
Sep - Mar.	134	9	125
Oct - Apr.	127	4	123
Nov - May	158	6	152

Length of Time Exposed	BELL				SLC METHOD	
	Z	K	$\frac{P}{Z}$ (100K)	Progressive %	Number Survived	As % of Total Leavers
Eight Months	173	165	95.37	72.0	106	69.3
Seven Months	157	152	96.81	75.5	114	74.5
Six Months	147	143	97.27	78.0	119	77.8
Five Months	140	134	95.71	80.2	123	80.4
Four Months	140	135	96.42	83.8	129	84.3
Three Months	134	125	93.28	86.9	134	87.6
Two Months	127	123	96.85	93.2	143	93.4
One Month	158	152	96.20	96.2	147	96.1

Col. A

Col. B

Reading upwards from the bottom of columns A and B, it is possible to contrast the monthly survival percentages for a period of 8 months using Bell's method, and the SLC method. Curves have not been drawn, as the differences are so small as to produce virtually identical points.

One other comparison was attempted, and that was to apply the SLC method to a portion of Bell's data, and to compare the resulting curves.

Using Bell's data (442) survival percentages related to all leavers (i.e. the SLC method) were calculated, and could be compared with the percentages given by Bell and used for her curve. This is shown in the table below:

TABLE 74
COMPARISON OF SLC AND BELL'S SURVIVAL PERCENTAGES

LDS Months	No. of leavers	Survival from All leavers (see note)	SLC Survival %	Bell's Survival %
3	32	153	83.6	82.8
3 - 6	32	131	67.2	66.1
6 - 9	23	108	55.4	53.8
9 - 12	21	87	44.6	38.1
12 - 15	20	67	34.3	31.1
15 - 18	14	53	27.2	25.5
18 - 21	9	44	22.6	21.2

Note: One important assumption was needed in order to construct the above SLC Survival Table, and that is the total number of leavers during the period, which Bell does not use in her calculation, and does not specifically state. However, Bell does state that the percentage loss of personnel during the first six months "is shown to have been considerable, and similar in all six periods, an average of 32.8%" (443). In the above data, 64 left in the first six months, and if this is taken as 32.8%, a denominator of 195, the estimated total of leavers for the period, results, and was used to calculate the SLC survival percentages.

The two Survival Curves are compared in figure 70.

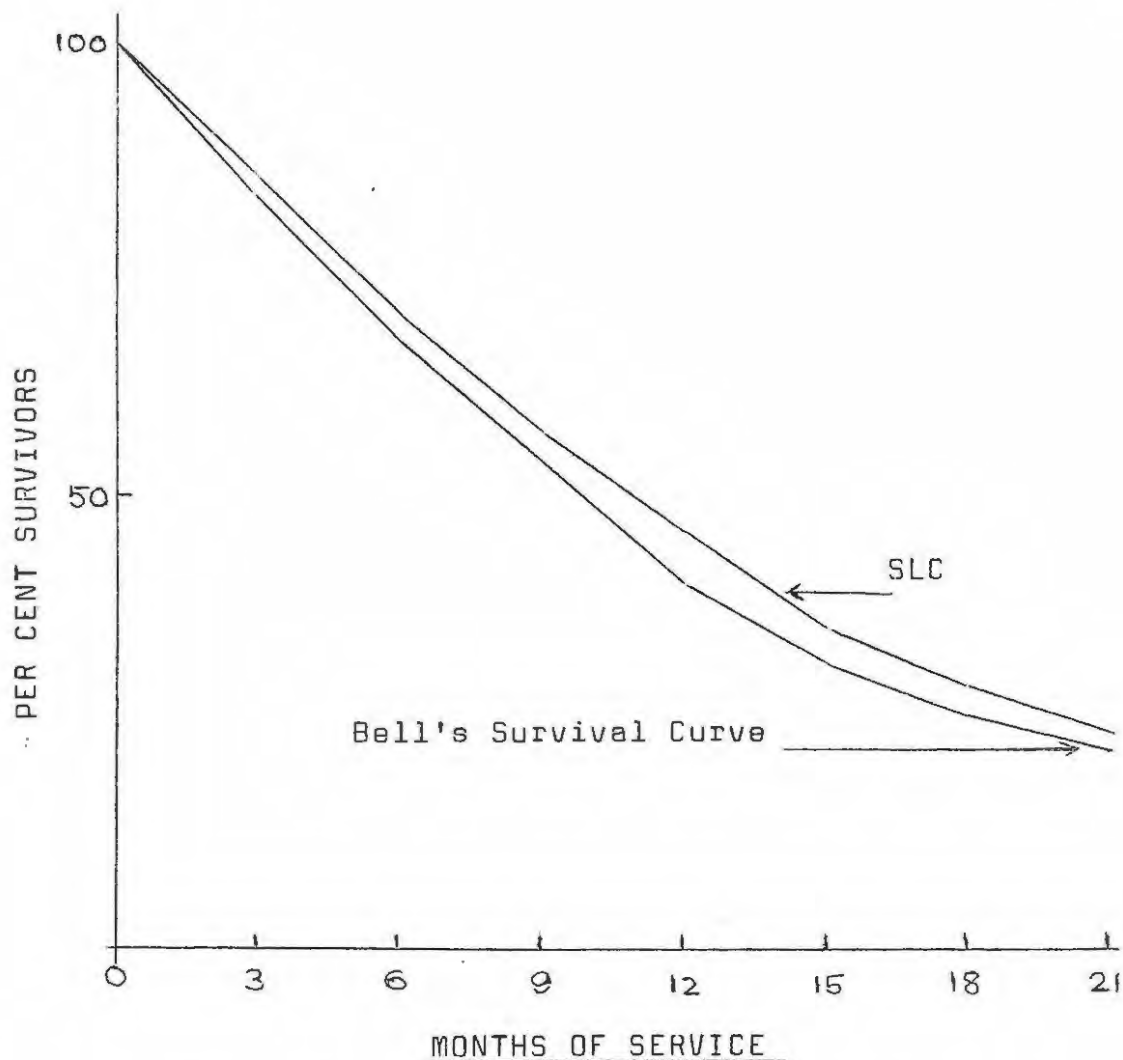


FIGURE 70
COMPARISON OF CURVES USING BELL'S DATA

The two curves are again very similar. It will be noted that the SLC is above the other curve, and not below, as argued in Chapter IV, page 96. This is undoubtedly due to the approximation in the total number of leavers used to construct the SLC, and it would appear that the estimate of 195 was too low.

3. CONCLUSION:

By using empirical data from the survey, and from Bell's study, it has been demonstrated that there are striking similarities in the curves generated by the methods of Silcock, Bell and the SLC. It would seem safe to assume, from the above empirical assessment at least, that provided wastage rates do not change appreciably in the short term - and this has been shown to be a tenable assumption - the SLC can be used in the same way as Silcock's entrant group survival curves. The similarity between the SLC and Bell's Survival Curves was set out on page 96 of Chapter IV and the empirical comparisons have confirmed this. It appears safe to say that

the simpler SLC technique can with advantage, and with little loss of accuracy or generality, be used in place of Bell's much more cumbersome approach.

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Note: In view of the large number of references involved, and the frequent references to particular works by some authors, a convention has been followed whereby op.cit. references are indexed back to the first and full reference of the relevant work.

Thus: LONG: op.cit. (30) Ch.iv
refers the reader to reference no.30 where Long's work was first cited in full.

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