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RESEARCH REPORT

Absenteeism : An Investigation into
some socio Demographic Variables in a
Specific Empirical Setting

BY

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Synopsis

The study investigated absenteeism at Santoft Forest. The dependent variable was absence, and the independent variables were Age, Marital Status, Length of Service, Worker type (permanent and temporary) and Education. Data collection involved the examination of the organisation's personnel records for workers who had exited. A random sample of 61 workers was chosen for the study. The data analysis to test several hypotheses included the use of F tests, t tests and Cochran's modified t test. The results show that none of the five variables was significantly associated with absence levels. In addition, and in general, continuous absence appears not to be moderated by marital status, age and worker type, although temporary workers were found to be more inclined to take 3 day continuous absences and older workers were more inclined to take 6 and 7 day continuous absences, excluding weekends.

It was concluded that the relatively high absence levels prevalent were more likely to be a result of the nature of supervision encountered by workers, or more realistically, the nature of the work itself. It is hard and unpleasant.

Introduction

Preamble

Absenteeism has been the focus of many research studies since the Second World War when war time economies dictated the efficient use of resources, both human and material. In New Zealand, even more attention was directed towards the phenomenon, along with labour turnover, in the 1950's and 1960's, largely as a result of a severe labour shortage.¹ Interest now appears to be on the wane, largely, the writer suspects, because of the advent of unemployment. This is seen as unfortunate, since absenteeism is a costly problem regardless of the state of the economy.

Since most organisations are nominally interested in improving the efficiency of resource use, it was hoped that this study would offer some general insights into absenteeism in a specific empirical setting. Accordingly, various socio-demographic variables were examined to see if they were related to absenteeism at Santoft Forest.

Background Information on the Organisation

The New Zealand Forest Service, which was created in 1919, is a government organisation, with functions concerned with, inter alia, the stabilisation of soil, water quality preservation, the maintenance of indigenous forest protec-

¹. See, Gould, J., "The Rakes Progress" Hodder and Stroughton Wellington, 1982.

tion forests, and the manipulation and harvesting on a sustained yield basis of exotic forests.

Santoft Forest, where this study was carried out, is an exotic forest on the west coast of the southern north island. The forest was originally established to prevent the drift of sand dunes from the coast inland to farms. It appears that this has been largely successful and nowadays, the forest is an important element in local and regional wood supply. It is managed on a sustained yield basis.

To this end, the forest employs around 12 to 20 wage workers on general and silvicultural duties, as well as other contract workers. The numbers vary, because some of the work is seasonal, and the Forest Service, like all government departments is susceptible to the whims of politicians. Unemployment figures are artificially reduced by creating forestry projects in sensitive areas.

This study was concerned with the absence habits of the 12 to 20 wage workers normally employed. It covers a ten year period, during which time around 200 to 220 workers "cycled through" the organisation.

Perspectives on Absenteeism

In 1976 the New Zealand Department of Labour estimated that 5 percent of the workforce were absent on any one day, and

that absence accounts for 12 million man days lost production in any one year.² Obviously these statistics point to detrimental effects on the economy. No doubt many organisations monitor their absenteeism levels, but strangely, such a seemingly simple phenomenon is difficult to conceptualize or to put in perspective.

From some psychologists' perspective, work to an individual may be seen as something odious and conflict-ridden, for whatever reasons. In such circumstances people may experience a form of "flight or fight" response when confronted with the stressful conditions of the workplace. Basically, a continuum is suggested with withdrawal at one end wherein the individual simply avoids painful situations, and attack (or more likely, approach) at the other end, whereby the individual approaches conflict situation with a view to changing it or resolving it in some way. Absenteeism is thus seen as a withdrawal behaviour. This scheme suggests a lack of job satisfaction.

Much has been written about the connection between job satisfaction and absenteeism Herzberg, et al (1975) [1] and highly consistent results have occurred in studies that related overall job satisfaction to absenteeism. Kornhauser

². See Inter Alice, N.Z. Labour Department, "National Survey of Absence Rates in Industry", Research and Planning Division, 1975.

and Sharp (1932) [2], Waters and Roach (1971) [3]. However, a few other studies examined different variables. Stockford (1944) [4] reported that employees who incurred high levels of absenteeism felt that their previous job training was not as relevant for their present position as employees who incurred lower levels of absenteeism. Nicholson, Brown and Chadwick-Jones (1976) [5] concluded "the common view of absence as a pain-reductive response on the part of the worker to his work experience is naive, narrow and empirically unsupportable" (p. 735). While their study appears superior to many previous investigations in terms of methodological rigour their strongly worded conclusion regarding the relationship between absenteeism and job satisfaction is not consistent with the findings reported in many other studies which addressed the same topic.

Organisation size has been seen as an important factor in absenteeism studies, with size being proportional to absence. Indik (1965) [6] suggested that large size led to organisational processes which resulted in lower levels of communication and co-ordination and increased job specialisation. These in turn led to psychological states of dissatisfaction and lowered attraction to other organisation members. The psychological states themselves resulted in people leaving the organisation, or to increases in absenteeism, lateness and so on. In a sense, this may be seen in terms of the withdrawal-approach continuum suggested above.

An even broader approach may involve the placing of absenteeism in a societal setting. With the advent of the industrial revolution, the factory system evolved which implied different methods and relations of production than previously known. On one side was the employer who not only hired the labourer, and marketed the finished product, but supplied the capital equipment and oversaw its use. On the other side stood the worker; no longer capable of owning and furnishing the means of production and reduced to the status of a "hand". Binding the two parties were the economic relationship, the cash nexus and the functional one of supervision and discipline. The discipline was not new per se, but of a new variety. This factory discipline required, and partially created a new breed of worker, broken to the inexorable demands of the clock and the machine.

It was (and is) not surprising that workers would want to escape this system at regular intervals - giving rise to absenteeism. Thus, work itself, or a particular kind of job maybe at the root of work withdrawal - absenteeism.

However, most observers have noted that there are certain individuals who are "absence prone" in any given work situation, which gives rise to speculation regarding the socio-demographic attributes of these people.

Hill and Trist (1955) [7] suggested that a worker was employed and paid to be present and able to work certain hours; if he or she was not present the action taken by

those to who he or she was responsible depended on how the absence was perceived in the absence culture operating in the organisation. Within this culture, it was suggested that absences, other than those arising from accidents, might be grouped according to their position on parallel scales, one sociological and the other psychological - the first in terms of the degree of sanction received from the employing authority and the second in terms of the degree to which the individual him/herself accepted responsibility for his/her actions. There were two main classes - the sanctioned and the unsanctioned. The former of these, the sanctioned absences, might be further subdivided into those few (able-bodied) absences which were sanctioned prior to the event and the very much larger number of retrospectively sanctioned absences comprising both certified and uncertified sickness and those able-bodied absences where an acceptable reason was given on return to work. Unsanctioned absences where the above was not the case and either no excuse was given by the individual on return to work or the excuse given was unacceptable and his/her conduct condemned, comprised the large group of "no - reason" able-bodied absences.

Empirical Studies

Despite the conceptual value and the undoubted necessity of schema and models such as those presented above, probably the most vexing problem associated with absenteeism as a

concept involves its measurement. Gaudet (1963) [8], in a famous article, reported at least 41 different measures of absenteeism have been used in the past. Nicholson, Brown, Chadwick-Jones and Sheppard (1976) [9] were concerned with the reliability and stability of such measures in an industrial setting. Behrend (1951) [10] employed multiple measures of absenteeism in an attempt to support the Time Lost Index of absence. These and other studies all point out the extreme range of reliability of absence measures; some are fairly reliable, e.g. a frequency index of 71, and some are totally unreliable, for instance, the "Blue Monday Index" at 0. In addition, results and measures are not consistent across studies.

Although reliability of measures has been reported upon, Muchinsky (1977) [11] could find no attempts of studies which directly addressed the validity of measures. Lyons (1972) [12] in this regard described absenteeism research as "representing a hodgepodge of conceptually and operationally differing definitions ... Some studies used total absences; some differentiated types of absenteeism such as excused, inexcused, sickness and so on; and many did not specify which measure was used". Authors often did not report even whether they were using days absent or times absent - two measures of differing reliabilities. (Huse and Taylor, 1962) [13].

Hackman and Oldham (1976) [14] describe the problems of collecting and interpreting absenteeism data in interorganisational research. Absenteeism is not a clear cut behavioural act, and definitional problems are accordingly rife. In an operational sense, there may be several ways of researching the concept. It may be approached via Attitudinal studies; the study of Organisational Factors; the relationship between Absenteeism and Turnover; at the Individual or Group level, and by examining the relationship between absenteeism and personal socio-demographic factors. In the current research, Socio-Demographic factors are considered.

Stockford (1944) [15] reported that high absence employees had greater personal debt and had a longer distance to travel to work than did low absence employees. Noland (1945) [16] reported that years of education were inversely related to absenteeism, although neither the measure of absenteeism nor the range of education were described.

Several studies have examined the relationship between age and absenteeism. Jackson (1944) [17] identified a curvilinear relationship between age and absenteeism, with younger and older workers incurring higher absenteeism than middle age workers. Schenet (1945) [18] found age and absenteeism to be unrelated in a sample of factory workers. De la Mare and Sergeant (1961) [19] and Cooper and Payne (1965) [20] reported positive relationships between age and

absenteeism. Wyatt, Marriott and Hughes (1943) [21] in a study of women ordnance workers during war time found that younger women lost more time than older women. The inverse relation between age and absenteeism was noticeable among married women but less apparent among single women. Marital status seemed to be a moderating variable. A series of investigations carried out by the Industrial Psychology Division (D.S.I.R.) [22] between November 1942 and August 1943, suggested "To a considerable extent absenteeism is a problem of youth" which is highly questionable since the assertion was made on the simple examination of raw percentages.

Miller (1974) [23] in a study of absenteeism in the Australian Public Service found that for both sexes, the average length of individual absences increased with age. However, it may well be that Age and Length of Service as variables may be co-contaminants since Miller found that in general, the greater the length of service, the longer was the duration of sickness absences. Against this, in the same study, he found "straight out absence rates (non sickness) did not increase or decrease with length of service".

Jackson (1944) [24] reported a negative relationship between length of service and absence. Jackson hypothesized that as workers develop service in an organisation, they also develop feelings of loyalty, which are manifested by decreased

absenteeism. Hill and Trist (1955) [25] reported no relationship between tenure and absenteeism in a longitudinal study of factory workers. Mill (1974) [26] found that the two were positively related in the case of sickness.

Marital status and family size may be related with respect to absenteeism. Wyatt, Marriott and Hughes (1943) [27] found that married women lost more time than single women, (as mentioned earlier) and as a rule their absences were spread over a greater time period. They tended to have more longer and fewer shorter absences than single women. Two studies investigated the relationship between family size and absenteeism. Noland (1945a) [29] and Naylor and Vincent (1959) [29] both reported a positive relationship between these two.

Muchinsky (1977) [30] has concluded, "that some consistency has been found in personal predictors of absenteeism (family size) but an even greater amount of inconsistency has been reported involving the relationship between absenteeism and age and with tenure (length of service). While continued research is needed to clarify the findings, it is also imperative that investigators stipulate the measure of absenteeism in their research."

Problem Statement

To what extent are age, marital status, length of service (tenure), education and worker type (temporary and regular) associated with absenteeism?

Theoretical Framework

The variable of primary interest to this research was the dependent variable of absenteeism. Five independent variables were used in an attempt to explain workers' absenteeism. These five were Age, Length of Service (tenure), Marital Status, Worker Type (temporary or regular) and Education.

As the period of time served in an organisation increases it is suggested that the amount of commitment felt by a worker increases. When people stay long enough with an organisation they tend to form an attachment to the place, fellow workers and so on. Under such circumstances, the propensity to take untoward absences decreases.

Following on from the preceeding argument, age may go hand in hand with length of service. Obviously, as tenure increases, so does age. Therefore, older workers who have usually been with the organisation longer may feel greater attachment with it than their younger counterparts. This may be because seniority carries with it some status and prestige. However, increasing age means an increasing

susceptibility to sickness, and so, older workers may be more inclined to take longer 'sickness' absences. It is expected that the frequency with which older workers take absences is lower than for younger workers, but when taken, the absences are longer. Against this, it must be said that growing tenure implies a feeling of familiarity for workers with an organisation and perhaps, therefore, a lower threshold at which any individual absence will be incurred. Older workers may come to understand and exploit the absence culture in an organisation more fully than younger individuals.

Increasing age usually goes hand in hand with increasing responsibilities. Getting married normally implies an increasing financial indebtedness and the need to maintain a viable flow of funds into the household. Hence, the threshold or barrier to taking a day off work is raised. Contrarily, sick children may demand the workers' presence at home, leading to greater absenteeism.

The effect of education on absenteeism is difficult to define and understand. Rising educational levels imply raised expectations from work, which if not met, are usually conducive to rising disenchantment and absenteeism. However, it may well be that education is important as a socializing mechanism. The values of a society are imparted to ensure social cohesiveness, economic viability and so on.

Thus, the so called virtues of work are imparted which means, later in life, more formally educated employees are absent less often.

If a worker is employed on a temporary basis, then he or she will not feel particularly motivated to "make a fist" of the work, and would be more inclined to be absent than permanent or regular workers. This trend would be further exacerbated if such a person took days off in search of regular work.

On the basis of the above arguments it is theorized that there would be negative but weak relationships between age, length of service and marital status. Since there are convincing counterarguments to each of the main propositions as discussed, two tailed or non directional tests were used to test the hypotheses. For the variable, education, it was felt that its effect was largely indeterminable, and so two tailed test were used once again. Lastly, it was considered that temporary (special) workers were more inclined to take absences than regular workers. Two tailed tests were used once again.

The argument that older workers take longer, or sickness, absences has led to the theory that older workers take more two, three, four, five, six and seven day continuous absences than younger workers. Further, there may be a similar relationship with married workers taking only

genuine sickness absences, that is longer but fewer absences, compared to single workers. It is possible that regular workers show similar absence patterns to older and married workers as well. In all cases, two tailed tests were used.

From the theoretical framework discussed, the following hypotheses were developed:-

- HA:1. Married workers show lower levels of absenteeism than do single workers.
- HA:2. Regular (permanent) workers show lower levels of absenteeism than special (temporary) workers.
- HA:3. Workers with lower levels of secondary education show lower levels of absenteeism (because of the low levels of gratified expectations arising from the work).
- HA:4. Older workers show lower levels of absenteeism than younger workers.
- HA:5. Longer service workers show lower levels of absenteeism than shorter service workers.

- HA:6. Married workers show higher levels of continuous (two through seven days inclusive) absence than single workers.
- HA:7. Older workers show higher levels of continuous (two through seven days inclusive) absence than younger workers.
- HA:8. Regular workers show higher levels of continuous (two through seven days inclusive) than special workers.

Note 1. Length of service was broken up into the following categories: less than six months; > 6 to 12 months; > 12 to 18 months; > 18 months to 5 years; greater than 5 years. The results show separate hypotheses for each category.

Note 2. As the research progressed it became obvious that variances of divisions within the categories were dissimilar, so F tests required the setting up of more hypotheses before the main hypotheses could be tested. This is explained in the "method" section which follows.

Methods

1. Population and Sample

The population for the study comprised workers who had worked at Santoft Forest in the years 1971 - 1984, but who had left employment there. Santoft has a workforce of between 12 to 20 wage workers at any one time, and during the timespan mentioned just over 220 workers worked there and left. Of the population of just over 220, the sample comprised 61 workers.

2. Data Collection Methods

The organisation's personnel record cards for wage workers were in alphabetical order. These were examined and for Santoft Forest, usually every 4th card was included in the sample. Sometimes the sampling frequency was higher to ensure a reasonable number of workers was included. For each case, the following details were noted. 1. Age at the time of hiring 2. Levels of education 3. Worker type (special or regular). The Forest Service has for many years employed workers referred to it by the Labour Department under various schemes, such as temporary employment schemes or project employment schemes. Workers were given jobs for fixed periods, sometimes up to a 6 month maximum. Such individuals were usually known as special workers and the term is employed here. (Much anecdotal

evidence abounds in the organisation which suggests that these people were more likely to be absent than regular workers.) 4. Marital Status 5. Length of service. Appended to the record cards were carbon copies of every pay slip received by the workers concerned. These showed all absences and holidays taken, and were classified according to absence type. These details were noted according to an encoding schema, but for the purposes of this study the only two types of absence considered were "AWOL" (absent without leave) and "special leave" which was often a form of absence that was condoned after the event. Note: sick leave was left out of the research, since the author was concerned unscheduled non sick leave. Accident leave was also discarded.

Sample Characteristics

There were no females in the sample. Fifty of the workers were single and eleven were not; sixteen were regular workers and forty five were special workers; thirty four had less than three years secondary education and twenty seven had three years or more secondary education; ages ranged from sixteen years to fifty six years at the time of hiring, the mean age being twenty one years; forty eight workers stayed for less than six months, and of the remainder, eleven stayed for up to five years and more than six months, and two stayed for more than five years. Complete details are shown in the appendix.

Measures

Workers were placed into each of the categories of the five variables: Marital Status, Worker Type, Length of Service,³ Age,⁴ and Education,⁵ and mean absence rates and their variances were found for each category. The absence formula used was:-

6

Time Lost Index = $\frac{\text{Total Number of Days Lost Through Absence}}{\text{Total Number of Days Rostered}}$

Next, it was intended to compare the means of each of the categories of the variables using Students t tests. Use of these tests assumes that the two population variances are the same and that the populations are normally distributed. Accordingly F⁷ tests were carried out, and if the variances were found to be equal, comparisons of means were facilitated using the formula:-

$$\text{Student's } t = \frac{x_1 - x_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$\text{where } s = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

-
3. Classes of L.O.S. were as follows : < 6 months; > 6 months - 12 months; > 12 months - 18 months; > 18 months - 5 years plus.
 4. Age was broken into < 20 years and > 20 years.
 5. Education was broken into < 3 years and > 3 years.
 6. Absence = AWOL and SPECIAL LEAVE.
 7. The F test criterion is $F = S_1^2 / S_2^2$ where S_1^2 is the larger mean square variance. This is then tested for its significance using F distribution tables. Reject null hypothesis if $F > F_{\alpha}$; .05 significance level.

x1 = mean of sample 1
x2 = mean of sample 2
n1 = number in sample 1
n2 = number in sample 2
s1 = variance of sample 1
s2 = variance of sample 2
s = "pooled" variance

NOTE: this formula was used since in all cases, the criterion that $n \geq 30$ and $n \geq 30$ was not met.

If the variances were found not to be equal, the following procedure was utilized.⁸

1. Calculate a t value according to the formula

$$t' = (\bar{x}_1 - \bar{x}_2) / \sqrt{(s_1^2/n_1 + s_2^2/n_2)}$$

2. To find the significance level, use t tables for $(n - 1)$ and $(n2 - 1)$ d.f. Call these values t_1 and t_2 respectively.

⁸. This procedure comes from Snedecor, G.W. and Cochran W.G., "Statistical Methods" 6th Ed., 1971, pp. 114-116.

3. The significance level of t is approximately:

$$t_a = \frac{(w_1 t_1 + w_2 t_2)}{(w_1 + w_2)} \quad \text{where } w_1 = s_1^2 / n_1$$
$$w_2 = s_2^2 / n_2$$

When $|t'| > t_a$ the null hypothesis is rejected.

The method employed for continuous absences was as follows:-

The number of times any worker took a continuous absence of 2 days was noted. The workers were then placed into one of the categories available in each of the variables - Marital Status, Age and Worker Type.

For each of the categories the mean and the variance for the number of times 2 day continuous absences were taken was calculated. Means and variances were then calculated, then F tests were run to test the equivalences of the variances. If the null hypothesis, that the variances were equal, was sustained a comparison between means was facilitated by the ordinary t test. If the variances were dissimilar, then Cochran's modified t was used.

This procedure was repeated for 2, 3, 4, 5, 6 and 7 day continuous absences.

Results

It was hypothesized that various personal factors of workers had an impact on the levels of absenteeism. These hypotheses were tested by taking means of absenteeism for the personal factors and comparing them using two tailed t tests.

1. MARITAL STATUS

Question : Is there a difference in the absenteeism levels of married and single workers?

Null Hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative Hypothesis : There is a difference between means

$$\mu - \mu \neq 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_{\alpha/2}$ where $\alpha/2 = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
Single	.131947	.01577	50	.3573
Married	.14728	.02056	11	

$t_{\alpha/2} = 1.960$ with infinite degrees of freedom

The null hypothesis is sustained.

2. WORKER TYPE

Question : Is there a difference in the absenteeism levels of regular and special (or temporary) workers?

Null Hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative Hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H if $|t| > t_{\alpha}$ where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
Regular	.10769	.022356	16	1.05023
Special	.14684	.014372	45	

$t_{\alpha} = 1.96$ with infinite degrees of freedom.

The null hypothesis is sustained.

3. EDUCATION

Question : Is there a difference in the absenteeism levels of workers with less than 3 years secondary education and those with greater than or equal to 3 years secondary education?

Null Hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative Hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H if $|t| > t_{\alpha}$, where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
≤ 3 yrs Ed.	.13565	.01529	34	.00596473
> 3 yrs Ed.	.13545	.018978	27	

$t_a = 1.960$, with infinite degrees of freedom.

The null hypothesis is sustained.

4. AGE

Question : Is there a difference in the absenteeism levels of workers aged 20 years or less and those aged more than 20 years?

Null Hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative Hypothesis : There is a difference between means

$$\mu - \mu \neq 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_a$ where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
≤ 20 years	.11553	.013822	34	1.3225
> 20 years	.15887	.019134	27	

$t_a = 1.960$ with infinite degrees of freedom

The null hypothesis is sustained.

5. LENGTH OF SERVICE (TENURE)

5a.

Question : Is there any difference in the absenteeism levels of workers with less than 6 months and those with 6 to 12 months service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative Hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H if $|t| > t_{\alpha}$, where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
< 6 months	.15149	.02412	48	.5248
≥ 6 - 12 months	.11648	.02013	6	

$t_{\alpha} = 1.960$ with infinite degrees of freedom

The null hypothesis is sustained.

5b.

Question : Is there a difference in the absenteeism levels of workers with 6 to 12 months service and those with 12 to 18 months service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_{\alpha/2}$, where $\alpha/2 = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
> 6 - 12 months	.11648	.02013	6	.36693
> 12 - 18 months	.08404	.0048531	2	

$t_{\alpha/2} = 2.447$ with 6 degrees of freedom

The null hypothesis is sustained.

5c.

Question : Is there a difference in the levels of absenteeism of workers with 12 to 18 months and those with 18 months to 5 years service?

Null Hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_{\alpha/2}$, where $\alpha/2 = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
> 12 - 18 months	.08408	.0048531	2	
> 18 months - 5 years	.2376	.1002482	3	.642957

$t_a = 3.182$ with 3 degrees of freedom

The null hypothesis is sustained.

5d.

Question : Is there a difference in the levels of absenteeism of workers with 18 months to 5 years and those with more than 5 years service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_a$, where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
>18 months - 5 years	.2376	.100248	3	.920
5 years +	.068795	.0004808	2	

$t_a = 4.363$

The null hypothesis is sustained.⁹

5e.

Question : Is there any difference in the levels of absenteeism of workers with less than 6 months service and those with 12 to 18 months service?

⁹. In this case, Cochran's modified t' test is used because the variances were found not to be equal; $F = 208.5$
 $F_a = 199.5$

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H if $|t| > t_{\alpha}$, where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
< 6 months	.15149	.02412	48	.60689
>12 - 18 months	.08404	.0048531	2	

$t_{\alpha} = 1.960$ with infinite degrees of freedom

The null hypothesis is sustained.

5f.

Question : Is there any difference in the levels of absenteeism of workers with less than 6 months service and those with 18 to 60 months (5 years) service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H if $|t| > t_{\alpha}$ where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
< 6 months	.15149	.02412	48	.876939
>18 months - 5 years	.2376	.100248	3	

ta = 1.960 with infinite degrees of freedom

The null hypothesis is sustained.

5g.

Question : Is there any difference in the levels of absenteeism of workers with less than 6 months service and those with more than 5 year service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

	Mean Absenteeism	Variance	Sample Size	t Value
< 6 months	.15149	.02412	48	.745497
5 years +	.068795	.0004808	2	

ta = 1.960 with infinite degrees of freedom

The null hypothesis is sustained.

5h.

Question : Is there any difference in the levels of absenteeism of workers with 6 months to 12 months service and those with 18 months to 5 years service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_{\alpha/2}$ where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
>6 months - 12 months	.11648	.02013	6	.82581
>18 months - 5 years	.2376	.1002482	3	

$t_{\alpha} = 2.306$ with 8 degrees of freedom

The null hypothesis is sustained.

5i.

Question : Is there any difference in the levels of absenteeism of workers with 6 months to 12 months service and those with more than 5 years service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu = 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_{\alpha/2}$ where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
> 6 months -				
12 months	.11648	.02013	6	.44881
5 years +	.068795	.0004808	2	

$t_a = 2.447$ with 6 degrees of freedom

The null hypothesis is sustained.

5j.

Question : Is there any difference in the levels of absenteeism of workers with 12 months to 18 months service and those with more than 5 years service?

Null hypothesis : There is no difference between means

$$\mu - \mu = 0$$

Alternative hypothesis : There is a difference between means

$$\mu - \mu \neq 0$$

For the two tailed test, rejection region given $\alpha = .05$

Reject H_0 if $|t| > t_a$ where $\alpha = \frac{\alpha}{2} = .025$

	Mean Absenteeism	Variance	Sample Size	t Value
> 12 months -				
18 months	.08404	.0048531	2	
5 years +	.068795	.0004808	2	

$t_a = 1.960$ with infinite degrees of freedom

The null hypothesis is sustained.

Results Summary

Category	$t = \frac{\alpha}{2} = .025$	t_{α}	df	Null Sustained	Null Rejected
Marital Status					
(Single v Married)	.3573	1.960	∞	✓	
Worker Type					
(Regular v Special)	1.05023	1.960	∞	✓	
Education					
(< 3 yrs v > 3 yrs)	.005965	1.960	∞	✓	
Age					
(< 20 yrs v > 20 yrs)	1.3225	1.960	∞	✓	
Length of Service					
(< 6 mths v 6 - 12 mths)	.5248	1.960	∞	✓	
(6 - 12 months v					
12 - 18 months)	.36693	2.447	6	✓	
(12 - 18 months v					
18 months - 5 years)	.64296	3.182	3	✓	
(18 months - 5 years					
v 5 years +)	.920	4.363	3		Cochran's modified t
(< 6 months v 12 - 18					test was used for this
months)	.60689	1.960	∞	✓	result
(< 6 months v 18 months					
to 5 years)	.87694	1.960	∞	✓	
(< 6 months v 5 years)	.7455	1.960	∞	✓	
(6 months - 12 months v					
18 months - 5 years)	.82581	2.360	8	✓	
(6 months - 12 months					
v 5 years +)	.44981	2.447	6	✓	
(12 months - 18 months					
v 5 years +)	.29520	1.960	∞	✓	

Discussion

None of the five variables examined (Marital Status, Worker Type [Regular and Temporary], Education, Age and Length of Service) produced results of any significance in the t test.

On average, married workers were just as likely to be absent as single workers. All the workers in this survey were male which may have some bearing, since the Wyatt, Marriott and Hughes (1943) [32] study found that married women were absent more frequently than single women, and they tended to be absent for longer time periods. In general it cannot be said that the extra responsibilities which are assumed to exist in marriage had any effect on absenteeism. However, family size, which wasn't considered in this study may be a factor worthy of examination. Noland (1945a) [33] and Naylor and Vincent (1959) [34] both reported a positive relationship between absenteeism and family size. Presumably, children's sickness demanded the parents attention at home - creating absenteeism. It has been hypothesized that special workers knowing their jobs were only temporary, took no interest in them. This research partly refutes the argument, at least at Santoft Forest. There appears to be no significant difference in absenteeism rates between special and regular workers.

In this study, education appears to have no effect on absenteeism. Workers with less than 3 years secondary education were just as likely not to be at work as those with 3 years or more of secondary education. This finding is not in line with Noland's (1945a) [35] study which found that years of education were inversely related to absenteeism for factory workers.

Parallel with the results discussed so far, no significant relationship was found between the age of workers and their levels of absenteeism. In a study of machine shop workers, Jackson (1944) [36] identified a curvilinear relationship between age and absenteeism, with younger and older workers increasing higher absenteeism than middle age workers. For the purposes of the current study, such a trichotomy was not possible because only one worker was older than 40 years (i.e. 56 years) and only four were older than 30 years. For the purposes of the study, a dichotomy was made at the approximate median age of 20 years. Thus, the relative overall youth of the workers may have contributed to the lack of significance. Generally, previous studies of age and absenteeism indicate somewhat conflictionary and inconclusive results. Schenet (1945) [37] found both to be unrelated in a sample of factory workers, while Naylor and Vincent (1959) [38] found a similar lack of relationship for female clerical workers. Conversely, De la Mare and Sergean (1961) [39] and Cooper and Payne (1965) [40] reported posi-

tive relationships between age and absenteeism. The point is that the findings presented in this research are not out of the ordinary with respect to age and absenteeism. In addition, some of the earlier research, for instance Report number 1, D.S.I.R. 1943 Industrial Psychology Divisions work on Industrial Absenteeism [41], suggested "to a considerable extent absenteeism is a problem of youth". The conclusion was reached on the basis of a mere "eyeballing" of averages of absenteeism against age. The writer contends that much more analysis was needed before the conclusion could have been drawn. Of such things myths are born!

The last of the five variables examined produced no conclusive or significant result. Length of service appears not to moderate workers absenteeism levels. Varying tenure lengths were compared and none rose above a t level of .826. As with the findings on age, such a result appears not to be out of the ordinary. Jackson (1944) [42] reported a negative relationship between absenteeism and tenure. Jackson hypothesized that as workers develop tenure in an organization they also develop feelings of loyalty, which are manifested by decreased absenteeism. Conversely, Hill and Trist (1955) [43] reported no relationship between tenure and absenteeism in a longitudinal study of factory workers.

Muchinsky (1977) [44] maintained that it is conceivable that the conflicting findings such as those outlined above could be attributable to non-comparable measures of absenteeism.

Using the simple definition of absenteeism as outlined earlier and the resulting index (Time Lost Index) it is clear that no onle single variable as utilised in this research showed any significant correlations. Cooper and Payne (1965) [45], utilizing Jaques (1951 p. 251) notions maintained that ecological variables may determine norms of employee behaviour, thus contributing to an organisations unique culture. Part of this was the absence culture, meaning the degree to which employees are inclined or otherwise to take leave.

Results - Continuous Absences

Hypothesis Testing 1. 'F' Tests

Hypothesis 1

Ho : The variances of single and married workers about their means of absences for 2 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 2.879. At $p = .05$, the tabulated result was 2.69. The null hypothesis is rejected.

Hypothesis 2

Ho : The variances of regular and special workers about their means of absences for 2 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 3.914. At $p = .05$, the tabulated result was 1.75. The null hypothesis was rejected.

Hypothesis 3

Ho : The variances of younger workers (≤ 20 years) and older workers (> 20 years) about their means of 2 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 3.857. At $p = .05$, the tabulated result was 1.74. The null hypothesis is rejected.

Hypothesis 4

Ho : The variances of single and married workers about their means of absences for 3 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 1.829. At $p = .05$, the tabulated result was 2.69. The null hypothesis is not rejected.

Hypothesis 5

Ho : The variances of regular and special workers about their means of absences for 3 continuous days absence are equal.

Ha : The variances are not equal.

No regular workers took 3 days continuous absence. Accordingly, the variances are not equal.

Hypothesis 6

Ho : The variances of younger workers and older workers about their means of absences for 3 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 8.120. At $p = .05$, the tabulated result was 1.74. The null hypothesis is rejected.

Hypothesis 7

Ho : The variances of single and married workers about their means of absences for 4 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 1035.00. At $p = .05$, the tabulated result was 2.69. The null hypothesis is rejected.

Hypothesis 8

Ho : The variances of regular and special workers about their means of absences for 4 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 368.369. At $p = .05$, the tabulated result was 1.75. The null hypothesis was rejected.

Hypothesis 9

Ho : The variances of younger workers and older workers about their means of absences for 4 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 166.333. At $p = .05$, the tabulated result was 1.74. The null hypothesis was rejected.

Hypothesis 10

Ho : The variances of single and married workers about their means of absences for 5 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 20.366. At $p = .05$, the tabulated result was 2.69. The null hypothesis is rejected.

Hypothesis 11

Ho : The variances of regular and special workers about their means of absences for 5 continuous days absence are the same.

Ha : The variances are not the same.

Fisher's 'F' test produced a result of 11.908. At $p = .05$, the tabulated result was 1.75. The null hypothesis is rejected.

Hypothesis 12

Ho : The variances of younger workers and older workers about their means of absences for 5 continuous days absence are equal.

Ha : The variances are not equal.

Fisher's 'F' test produced a result of 5.665. At $p = .05$, the tabulated result was 1.74. The null hypothesis is rejected.

In the cases of 6 and 7 days continuous absences, for each of marital status, worker type and age, one of categories had no workers registering a continuous absence. Accordingly, in each case, the null hypothesis that the variances were equal was rejected.

Results Summary - Variances

Category	F	Fa i a = .05	df	Null Sustained	Null Rejected
2 Continuous Days Absence					
Marital Status	2.879	2.69	v1 = 50 - 1 v2 = 11 - 1		✓
Worker Type	3.914	1.75	v1 = 16 - 1 v2 = 45 - 1		✓
Age	3.857	1.74	v1 = 27 - 1 v2 = 34 - 1		✓
3 Continuous Days Absence					
Marital Status	1.829	2.69	v1 = 16 - 1 v2 = 45 - 1	✓	
Worker Type	NB: There were no regular workers who took this category of absence.				
Age (Older narrower)	8.120	1.74	v1 = 27 - 1 v2 = 34 - 1		✓
4 Continuous Days Absence					
Marital Status	1035.00	2.69	v 1 = 50 - 1 v 2 = 11 - 1		✓
Worker Type (Regs. narrower)	368.369	1.75	v 1 = 16 - 1 v 2 = 45 - 1		✓
Age (Younger Narrower)	166.333	1.74	v 1 = 27 - 1 v 2 = 34 - 1		✓
5 Continuous Days Absence					
Marital Status	20.366	2.69	v1 = 50 - 1 v2 = 11 - 1		✓
Worker Type (Spec. narrower)	11.908	1.75	v1 = 16 - 1 v2 = 45 - 1		✓
Age	5.665	1.74	v1 = 34 - 1 v2 = 27 - 1		✓
6 Continuous Days Absence					
Marital Status	NB: No such absences from married workers				
Worker Type	NB: No such absences from special workers				
Age	NB: No such absences from younger workers				
7 Continuous Days Absence					
Marital Status	NB: No such absences from single workers				
Worker Type	NB: No such absences from special workers				
Age	NB: No such absences from younger workers				

Results - Continuous Absence

Hypothesis Testing 2. 't' Tests (Cochran Modified)

Hypothesis 1

Ho : There are no mean differences between the number of times single workers and married workers take 2 day continuous absences.

Ha : There are difference between the two groups. Cochran's modified t' test showed no significant differences between the mean for single workers of 1.08 and that for married workers of .7272 ($t' = .907$; $t_a = 2.143$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 2

Ho : There are no mean difference between the number of times single workers and married workers take 3 day continuous absences.

Ha : There are differences between the groups. As there were no differences in variances in this case, an ordinary t test was done. There were no significant differences between the mean for single workers of .22 and married workers of .182 ($t' = .1463$; $t_a = 1.960$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 3

Ho : There are no mean differences between the number of times single workers and married take 4 day continuous absences.

Ha : There are differences between the two groups. Cochran's modified t' test showed no significant differences between the mean for married workers of .091 and single workers of 2.24 ($t' = 1.563$; $t_a = 2.009$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 4

Ho : There are no mean differences between the number of times single workers and married workers take 5 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for single workers of .62 and that for married workers of .2727 ($t' = 1.053$; $t_a = 2.048$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 5

Ho : There are no mean differences between the number of times single workers and married workers take 6 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for single workers of .02 and married workers of 0 ($t = 1.000$; $t_a = 2.008$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 6

Ho : There are no mean differences between the number of times single workers and married workers take 7 day continuous absences.

Ha : There are no differences between the groups. Cochran's modified t' test showed no significant differences between the mean for single workers of 0 and married workers of .091 ($t' = .999$; $t_a = 2.228$; $\alpha = .05$; two tailed tests). The null hypothesis is sustained.

Hypothesis 7

Ho : There are no mean differences between the number of times special workers and regular workers take 2 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for special workers of .777 and regular workers of 1.8125 ($t' = 1.690$; $t_a = 2.122$; $\alpha = .05$; two tailed tests). The null hypothesis is sustained.

Hypothesis 8

Ho : There are no mean differences between the number of times special and regular workers take 3 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed significant differences between the mean for special workers of .2889 and regular workers of 0 ($t' = 2.165$; $t_a = 2.021$; $\alpha = .05$; two tailed test). The null hypothesis is rejected; special workers are more inclined to take 3 day absences.

Hypothesis 9

Ho : There are no mean differences between the number of times special and regular workers take 4 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for special workers of .044 and regular workers of 1 ($t' = 1.563$; $t_a = 2.009$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 10

Ho : There are no mean differences between the number of times special and regular workers take 5 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for special workers of .2889 and regular workers of 1.3125. The null hypothesis is sustained.

Hypothesis 11

Ho : There are no mean differences between the number of times special and regular workers take 6 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for special workers of 0 and regular workers of .065 ($t' = .980$; $t_a = 2.131$; $\alpha = .05$; two tailed test).

Hypothesis 12

Ho : There are no mean differences between the number of times special and regular workers take 7 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for special workers of 0 and regular workers of .065 ($t' = .980$; $t_a = 2.131$; $\alpha = .05$; two tailed test) The null hypothesis is sustained.

Hypothesis 13

Ho : There are no mean differences between the number of times younger workers (≤ 20 years) and older workers (> 20 years) take 2 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for younger workers of 1 and older workers of .8529 ($t' = .3585$; $t_a = 2.052$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 14

Ho : There are no mean differences between the number of times younger workers and older workers take 3 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for younger workers of .3703 and older workers of .08824 ($t' = 1.296$; $t_a = 2.054$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 15

Ho : There are no mean differences between the number of times younger workers and older workers take 4 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for younger workers of .59259 and older workers of .05882 ($t' = .899$; $t_a = 2.056$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 16

Ho : There are no mean differences between the number of times younger workers and older workers take 5 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed no significant differences between the mean for younger workers of .7777 and older workers of .38235 ($t' = .734$; $t_a = 2.053$; $\alpha = .05$; two tailed test). The null hypothesis is sustained.

Hypothesis 17

Ho : There are no mean differences between the number of times younger workers and older workers take 6 day continuous absences.

Ha : There are differences between the groups. Cochran's modified t' test showed significant differences between the mean for younger workers of 0 and older workers of .29412 ($t' = 10.000$; $t_a = 2.03$; $\alpha = .05$; two tailed test). The null hypothesis is

rejected. Older workers take more 6 day continuous absences than younger workers.

Hypothesis 18

Ho : There are no mean differences between the number of times younger workers and older workers of 0 and older workers of .29412 ($t' = 10.000$; $t_a = 2.03$; $\alpha = .05$; two tailed test). The null hypothesis is rejected. Older workers take more 6 day continuous absences than younger workers.

Results Summary - Cochran's t' test

Category	t'	(two tailed) t _a ; α = .05	d.f.	Null Sustained	Null Rejected
2 Continuous Days Absence					
Age	.35858	2.052	t1 = 26 t2 = 33	✓	
Worker Type	1.690	2.122	t1 = 44 t2 = 15	✓	
Marital Status	.907	2.143	t1 = 49 t2 = 10	✓	
3 Continuous Days Absence					
Age	1.296	2.054	t1 = 26 t2 = 33	✓	
Worker Type	2.165	2.021	t1 = 44 t2 = 15		Special workers are inclined to take 2 days absence. ✓
Marital Status	.14634	1.960		✓ This result used the stan- dard t test because vari- ances were O.K.	
4 Continuous Days Absence					
Age	.899	2.056	t1 = 26 t2 = 33	✓	
Worker Type	.955	2.131	t1 = 44 t2 = 15	✓	
Marital Status	1.563	2.009	t1 = 49 t2 = 10	✓	
5 Continuous Days Absence					
Age	.734	2.053	t1 = 26 t2 = 33	✓	
Worker Type	1.208	2.128	t1 = 44 t2 = 15	✓	
Marital Status	1.053	2.048	t1 = 49 t2 = 10	✓	
6 Continuous Days Absence					
Age	10.000	2.03	t1 = 26 t2 = 33		✓ Older workers in- clined to take 6 days absences
Worker type	.980	2.131	t1 = 44 t2 = 15	✓	
Marital Status	1.000025	2.008	t1 = 49 t2 = 10		
7 Continuous Days Absence					
Age	10.000	2.03	t1 = 26 t2 = 33		✓ Older workers in- clined to take 7 days

Discussion

Conventional t tests could not be carried on most of the data pertaining to 2 to 7 days continuous absence, because the variances were so dissimilar. In all but one case, the null hypothesis using the F test was rejected. The exception was marital status, given 3 continuous days absence. Accordingly, a conventional t test was applied to this category only.

There are several explanations offered for the existence of the unequal variances. Firstly, at a purely statistical level, it is frequently found that the standard deviation () tends to change, although slowly, when the mean (U) changes, which makes the assumption that $\sigma_1 = \sigma_2$ suspect. (Snedecor and Cochran 1971, p. 115) [46]. The writer feels that in this particular instance, such an explanation has some power, because the means, although low, do vary considerably. It is suspected that lying behind the phenomenon, the number of times any given worker takes extended absence decreases with increasing levels of continuous absence. Thus, any occurrence of such absence influences the mean (U) to a reasonable extent, the longer the continuous absence which is under consideration. Two workers in particular took numerous periods of extended absence. In addition to the above, Snedecor and Cochran (p. 115) [47] maintain that variances may not be equal when samples from populations are

markedly skew. In many such populations the relation between (the standard deviation) and U (the mean) is often relatively strong. This leads to the second area of consideration which is less concerned with statistics per se.

A low variance implies that a sample exhibiting it (and inferentially the population) has a strong tendency or propensity to engage in the particular behaviour in question at the level of the mean (at least in social science terms). In other words, there appears to be a high degree of conformity associated with a given behaviour. Thus, it may be asserted that although in nearly all cases Cochran's modified t test did not show any differences between means, narrow variances associated with one of 2 means in each case, indicate a tendency for the group concerned to engage in a particular behaviour. Examination of the results reveals that, in the main, workers aged 20 years or less are not inclined to take extended absences when compared with older workers, and the variance exhibited by them is lower than older workers. As will be discussed later, the t test fails to discriminate between most of the means, but the point is, the younger workers variance figures indicate that the propensity to engage in a particular form of absence

behaviour which is more pronounced than for older workers. In the cases of six and seven consecutive days absences, such assertions may be unwarranted since no younger workers

were absent for these time periods.

A similar pattern was found for workers' marital status. t tests mostly failed to reveal any difference between means, although married workers persistently showed lower means and lower variances. In other words married workers were more inclined to exhibit the absence behaviour indicated by their mean, which was lower than single workers, given any category of extended absence. The exception to this was 7 days consecutive absence, when one married worker took this length of time off, and no single workers did.

Similar results were found for the category 'worker type'. Special workers consistently exhibited lower mean continuous absences than regular workers, and apart from 2 days continuous absence, Cochran's t test didn't discriminate between the means concerned. However, special workers variance figures indicate a tighter cluster around the means. Once again, the phenomenon of a propensity to engage in a particular behaviour is seen.

A caveat must be raised at this point. For the category "Marital Status" generally a larger sample size is associated with a higher mean and a wider variance. Thus, single workers have higher means and wider variances than married workers, and there were 50 single workers and 11

married workers in the samples. This trend doesn't appear evident in the other two categories of "age" and "worker type".

Discussion

t Tests for Consecutive Absences

In contrast to the examination into the incidence of absenteeism by way of the index measure discussed previously, consideration of length of absences produced some significant results. In this instance only three socio-demographic variables were considered. Age, Worker Type and Marital Status. Lengths of absence considered were 2, 3, 4, 5, 6 and 7 days, which excluded weekends and statutory holidays.

The variable, age, produced most of the significant results, and it was found that older workers were more likely to take 6 and/or 7 days continuous absence than younger workers. Miller (1974) [48] found results similar to these in a study of the Australian Public Service, and his survey included both sexes. He found that the average length of individual absences increased with age. In addition, it was stated that while the amount of time lost through sickness increased with age, the number of absences taken decreased. Cooper and Payne (1965) [49] found that the length of certified sickness absence increases with age, along with the frequen-

cy of certified sickness absence. Their sample was made up of factory workers. In a sense, these findings come as no surprise, since as workers become older, they take on more financial responsibilities and therefore are less inclined to take single or "unnecessary" absences. However, when they do incur absences, sickness is more likely to be the cause, and so any absences are likely to be longer. Cooper and Payne (1965) [50] add some caveats to their research, which are important to this study. They maintained that it was still not possible to assert that the observed increases in absences result from age increases - they may have equally been due to external factors of economic and social change. Cartwright and Zander (1960) [51] speculating on a study of clerical workers by Jackson, suggested that more competent workers were so secure concerning their relations with the company that they could freely stay away from work whenever it seemed necessary. It may well be that increasing age, going hand in hand with increasing tenure are confused. Perhaps the longer people stayed with given organisations, the more secure they felt. Jacques (1951) in Hill and Trist (1955) [52] writes of an absence culture, which determines the norms of an employees absence behaviour, and Cooper and Payne (1965) [53] in this connection suggest that studies of the age - absence relationship should take into account such contaminating relationships.

In a study of women working in ordnance factories during

World War Two, Wyatt, Marriott and Hughes (1943) [54] maintained that married women were absent more frequently than single women and they tended to be absent for longer periods. They suggested that six shift absences, due to sickness, were more numerous amongst married than single women. In no cases were similar results found in the current research. Probably comparisons are invalid because the research is old, the subjects were all women and it was conducted in war time. However, one of their main findings was that younger women (up to 25 years of age) lost more time than older women. The inverse relation between absenteeism and age was particularly noticeable among married women but was less apparent among single women.

The variable 'worker type' produced only one significant result, whereby special (or casual, or temporary) workers were found to be more inclined to take 3 consecutive days absence than regular workers. This result cannot be compared with any other research because such worker classifications (as discussed previously) appear unique to the New Zealand, and more especially, the forestry scene.

Summary

This research attempted to discover if there was any relationship or association between absenteeism and age, length of service, marital status, education and worker

type. The general conclusion must be there were no relationships between variables.

Students' t tests revealed no differences in absence rates between younger and older workers, married and single workers, temporary and permanent workers, workers with varying lengths of service and workers with less than 3 years secondary education and those with 3 years secondary education and more.

Fisher's F tests revealed that variances for the samples of younger workers as against older workers, married as against single workers and temporary as against permanent workers were not equal when continuous absences were considered.

Consequently, Cochran's modified t' tests revealed that mean continuous absence levels for younger as against older workers; married as against single workers and temporary as against permanent workers were not dissimilar. Exceptions to this were that temporary workers were more inclined to take 3 day continuous absences than permanent workers, and older workers were more likely to take 6 and 7 day continuous absences than younger workers.

The absenteeism rates of these workers were generally higher than those found by the Department of Labour for other industries in New Zealand.¹⁰

¹⁰. N.Z. Department of Labour, "National Survey of Absence Rates in Industry", Research and Planning Division, 1975.

The author, having worked for some years in the Forest Service, suspects that there may be two factors contributing to the absenteeism:

1. Poor supervision. The technical training of Forest Service supervisors is inadequate, their management and supervision training is not so good.
2. The nature of the work is probably the main contributing factor. The work is hard and monotonous.

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OK, RUN PETER

1=Reg 4ms 2=2yr Sec 1=5
2=Temp 3=3yr Sec 2=M
4=24r Sec

OK, RUN PETER

WORKER TYPE Age Educ MARITAL STATUS Sex

WORKER	ABSENCES	TOTAL DAYS
1	8	84
1	10	83
1	3	78
1	9	79
1	2	80
1	8	77
1	4	76
1	10	74
1	7	78
1	4	73
1	6	75
1	6	77
1	4	77
1	7	77
1	4	77
1	6	78
1	5	73
1	8	82
1	9	73
1	6	77
1	8	74
1	9	79
1	7	77
1	9	79
1	7	77
1	11	79
1	8	75
1	5	75
1	10	68
1	9	75
1	1	75
1	4	78
1	7	56
1	8	77
1	7	79
1	7	80
1	6	83
1	8	76
1	4	74
1	10	75
1	7	80
1	6	80
1	3	78
1	6	80
1	6	72
1	6	73
1	8	74
1	7	75
1	8	81
1	7	79
1	2	77
1	7	79
1	8	81
1	9	80
1	8	74
1	6	75
1	2	75

WORKER	ABSENCES	TOTAL DAYS
2	17	200
3	6	410
4	156	1850
5	14	80
6	8	45
7	1	10
8	13	100
9	54	550
0	3	20
1	4	205
2	12	345
3	81	1520
4	4	30
5	7	40
6	14	60
7	8	30
8	0	10
9	4	55
0	1	65
1	0	10
2	3	35
3	6	60
4	8	50
5	0	30
6	15	35
7	4	20
8	6	65
9	0	10
0	1	10
1	0	10
2	1	10
3	9	165
4	6	10
5	40	600
6	3	10
7	1	110
8	4	80
9	61	120
0	1	30
1	1	30
2	3	30
3	4	10
4	6	135
5	18	120
6	15	90
7	7	40
8	10	65
9	20	80
0	18	50
1	6	25
2	24	95
3	8	45
4	3	15
5	3	40
6	7	55
7	2	100
8	3	90

OK, RUN PETER

WORKER	ABSENCES	TOTAL DAYS
1	7	77
1	9	79
1	2	80
1	10	71

OK, COMO -END

WORKER	ABSENCES	TOTAL DAYS
9	0	65
0	2	80
1	7	40
2	2	10