Job satisfaction and motivation of graduate engineers and actuaries

A Research Report

presented to the

Graduate School of Business Leadership

University of South Africa

In partial fulfilment of the

requirements for the

MASTERS DEGREE IN BUSINESS LEADERSHIP,

UNIVERSITY OF SOUTH AFRICA

by

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November 2005

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ABSTRACT

This research has three main purposes. Firstly, it examines the level of job satisfaction and motivation of engineers and actuaries in South Africa and compares this with other groups. Secondly it examines the role of job design in their job satisfaction and motivation. Thirdly, it recommends ways to increase the level of satisfaction and motivation. The research methodology was based on Hackman and Oldham's Job Characteristics Model (JCM) and accompanying Job Diagnostic Survey. It states that high satisfaction, motivation and effectiveness will result from the presence of five job characteristics as long as certain intervening factors are also present.

It was found that Job design, as proposed by the model, does contribute to satisfaction and motivation. Relative to other groups of employees, actuaries and engineers in South Africa are satisfied. Of those surveyed, civil engineers had the highest level of satisfaction and electrical engineers the lowest. Actuaries scored higher than engineers. The results of this research suggest organisations should increase feedback to employees and improve opportunities for growth. Further research should be done on the intervening factors and the effects of demographic differences within the two groups.

ACKNOWLEDGEMENTS

I would like to thank my research supervisor, Stella Nkomo for her enthusiasm for organisational leadership which inspired me to do this research. In addition I would like to acknowledge the advice and input she contributed to this report.

Thanks also to my brother, Robert who persuaded the actuarial institute to support the research and Paul Roux, CEO of the engineering council who did the same.

Special thanks go to my wife Juliet who gave great support and carried extra responsibilities during this research as well as 4 years of part time study. To my young son Alessandro thanks for your understanding. We certainly share a love of learning.

I certify that, except where noted above, the report is my own work and all references used are accurately reported.

Signed

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1. ORIENTATION

Job satisfaction and motivation is a subject that intrigues, or at least should intrigue, every employee and manager. Work takes up perhaps 25% or more of the employee's time and for most is an important component of his or her life. It makes sense that being satisfied with work would have a profound effect on their quality of life and indeed physical and mental well-being. From the manager's point of view a satisfied and motivated employee would be willing to exert significantly more effort than one who is not.

This section gives an overview and discusses the research questions and objectives. The motivation, potential benefits and limitations are laid out. Key terms are defined to aid understanding.

1.1. INTRODUCTION

Herzberg (1987[1]) devised a theory of job satisfaction and motivation called the two-factor theorem hypothesizing that satisfaction hinges on factors distinct from those that generate motivation. The factors that generate motivation have a great deal to do with the design of the job itself and this led to theories of job design as related to satisfaction and motivation. One such theory is the Job Characteristics Model (JCM).

[1] Although the Author obtained this information from Herzberg's 1987 article, Nel (2001) states that he began work on the theory in 1954

In 1971, Hackman and Lawler began work on a theory of job satisfaction and motivation which was refined during 1974 and 1975 by Hackman and Oldham and became known as the Job Characteristics Model. It consists of three components. The JCM posits that five factors intrinsic to job design lead to internal satisfaction and motivation. Internal motivation is useful from an organizational point of view because it causes employees to perform at a high level with little supervision. The Job Diagnostics Survey (JDS) is an instrument used to measure not only job satisfaction but also the potential for motivation inherent in a particular job. This reveals areas of potential improvement in the design of the job which would improve job satisfaction and motivation. The Motivating Potential Score (MPS) allows a number to be attached to the motivating potential inherent in a particular job design.

In order for this type of analysis to be useful one needs to be able to analyse the data and use it to change job designs in order to increase satisfaction. This can be achieved through job enrichment which has been widely applied, often incorrectly. Theories of job enrichment have been proposed by many including Herzberg (1987) and Hackman and Oldham (1980). These theories dovetail well with the JCM, allowing jobs that are low on motivating potential to be altered to improve motivation.

The purpose of this research is to analyse the level of job satisfaction and motivation of graduate engineers and actuaries in South Africa and propose

ways to increase these factors within the professions. This was achieved by using the JDS and accompanying theory by Hackman and Oldham (1975) as well as that of Herzberg (1987). The JDS measures current job satisfaction and motivating potential. The data were analysed to reveal the relationships between subgroups within the main groups of employees and factors influencing motivation. These relationships were then used to propose changes to current job designs to increase satisfaction. The correlation between the motivating potential score and average satisfaction was investigated and the groups studied were compared with others to obtain a sense of their relative satisfaction.

This research should prove useful at a time when employees are questioning the requirement to work longer hours and managers their ability to motivate their workforce to overcome the increasing demands of a global market.

1.2. RESEARCH QUESTION AND ITS SUB COMPONENTS

The author has been working as an engineer in the industry for 10 years and feels that more attention should be paid to the design of engineering jobs to optimise motivation and inject some much needed excitement into a profession which should be very satisfying. Having spoken to an actuary, Rob Rusconi who is actively involved in the South African Institute of Actuaries, some of the

same thoughts arose for that profession and it was felt that both groups should be studied. Thus, the main research questions were as follows:

1) What is the level of job satisfaction and motivation of graduate engineers and actuaries in South Africa and how does this compare with other groups?
2) Does job design influence the level of job satisfaction and motivation of graduate engineers and actuaries in South Africa?
3) How can the level of job satisfaction and motivation be improved for engineers and actuaries?

In order to answer these questions, several components of the research questions were considered in designing the study;

- How does one measure job satisfaction and motivation?
- What job design factors lead to high satisfaction and motivation?
- What is the current level of job satisfaction and motivation and how does this compare with current data obtained on other groups of employees?
- Is there a correlation for this group between satisfaction on the one hand and job design on the other?
- Can job satisfaction and motivation be improved?
- What would be the benefits of these improvements for managers of engineers and actuaries and for the respective industries as a whole?

1.3. RESEARCH OBJECTIVES

Having outlined the research questions, this section defines the objectives. Tools discussed in the literature review were used to measure motivating potential and job satisfaction and an analysis of the results obtained for these two professions was performed. The objectives of the research were to determine:

- The current presence of the 5 job factors and satisfaction for the entire group and each of the sub groups.
- The level of correlation between the MPS and average satisfaction (this would indicate how effectively changes in the job design would affect average satisfaction)
- Whether the results for the sample are similar to those reported for other studies.
- Ways to change job design characteristics to improve the level of satisfaction.

1.4. MOTIVATION AND POTENTIAL BENEFITS

Engineering firms in South Africa are under pressure mainly due to, for example, global competition, rising and shifting stakeholder expectations, advanced technological advancement (Wiesner & Vermeulen, 1997: 175) and the strong rand. A major force acting on organisations is that customers are no longer content with products, they demand custom-made solutions (Graham

and Englund, 2004). Obtaining optimal performance from technical staff including engineers is critical to their survival. In addition to, and in some cases in response to, the increasing competition, the very nature of organizations is changing. Bureaucratic decision-making and rigid organizational structures are giving way to a more fluid, flatter structure that is continually adapting to its environment. Many are incorporating project work into their daily tasks, replacing the traditional chain of command by teams that are continually formed to identify and solve problems. Individuals are expected to actively seek opportunities for innovation and improvement. This environment demands motivation and passion. Although a literature review does not indicate that research has been done on these particular groups in South Africa there is research available on a wider cross section of South African employees. “Bosses have a lot to learn about encouraging employee commitment” states Bennet (2002) in her article entitled “South African workers can’t get no satisfaction”. To find the keys to motivating engineers would help this sector of the economy compete more effectively.

In terms of actuaries, Rob Rusconi, a fellow of the Institute of Actuaries made the following statement in an e-mail to the author:

“Research into job satisfaction could not come at a better time for the actuarial profession in South Africa. Rocked by challenges to established professional practices and standards, not only here but in other parts of the world, it would be very useful to determine the 'state of the nation' of this small, tight community of professionals and protégés" (Rusconi, 2004).

1.5. LIMITATIONS

Hackman and Oldham (1980) site the following as limitations of the JDS (Job Diagnostic Survey):

- **It is less appropriate for middle and upper level managers than professionals or lower level management**. This is not elaborated on but stems from the fact that manager's jobs are defined by role relationships rather than by the tasks they perform. To alleviate this concern, the survey incorporated a question regarding the proportion of management work performed. This research did not analyse the group in the level of detail that allows this kind of segregation but the data contains it, should further analysis be done at some stage.
- **Jobs should not be defined too broadly**. If they are it becomes difficult to draw conclusions regarding their strengths and weaknesses. To deal with this concern, the groups were subdivided into major areas such as "mechanical engineer" and then subdivided further according to specialist areas of work.
- **The job characteristics as measured by the JDS may not be entirely independent of one another**. Thus there is a tendency for jobs to be either good or poor in many respects. This may be a true reflection of the jobs in question or it may be that the way the various aspects are measured has not been perfected yet.

Other authors have pointed to the following:

- **The original version of the JDS contained several reverse score items**. Idaszak and Drasgow (1987) contend that this caused several inconsistencies[2]. They rewrote the JDS to become the revised JDS with only positively worded items. This revised version was used in this research to overcome these issues. However, some comparisons are drawn based on results with the earlier JDS and it is possible these were not very consistent.
- Boonzaier (2001), having researched the model contends that **the moderators should not form part of the formal survey** but should rather be included in job redesign efforts due to their diagnostic value. Moderators are discussed in the literature review but are not included in the survey or results due to recent research results such as those of Boonzaier.

In terms of this research, the following issues could influenced the results

- For both engineers and actuaries there was a concern about potential bias. As with most surveys, those who are particularly satisfied or unsatisfied are more likely to respond. Although anonymity was assured, if respondents doubted this they may have feared giving feedback that reflected negatively on their employer.

[2] Burk (1999) agreed to a point but stated that attention should be paid to careless answering as well.

- Engineers working in South Africa are not compelled to belong to the engineering council but all of those polled did. Respondents were randomly selected between young and old and both sexes. However it is possible that, as they all belong to the council, they tend to be more interested in their work, more willing to contribute to a larger group and more likely to find relevance in their work.

1.6. DEFINITION OF KEY TERMS

The following terms are used in the discussion that follows. They are stated here to improve understanding.

Graduate engineer	An engineer whose qualification is a university degree.
Professional engineer	An engineer who has met with the requirements of ECSA (Engineering Council of South Africa) to be recognised as professional engineer.
Graduate actuary	A student member of the actuarial profession with a university degree but not the full qualification of a professional actuary.
Professional actuary	A full member of the profession who has written the required exams and fulfilled the experience requirements.
JCM	Job Characteristics Model. This is the overall model of Job satisfaction and motivation as defined by Hackman and Oldham

	which is expanded on in the literature review.
JDS	Job Diagnostic Survey (sometimes referred to in the text as original JDS). The survey that forms part of the JCM. This has since been updated by other researchers, Idazak & Drasgow (1987) to form the revised JDS as defined below.
Revised JDS	A 1987 revision of the JDS where the negatively worded items were revised to positively worded ones. Note that the version of the revised JDS used in this research contains items only related to the outcomes and job characteristics. The reasons are discussed in the literature review.
MPS	Motivating potential score. A score obtained using the JDS which indicates for a given job design, the potential to cause motivation.
Average satisfaction	A score derived from the personal outcomes namely internal work motivation, general job satisfaction and growth satisfaction.

Table 1: Key terms
Source: Author & Boonzaier (2001)

2. LITERATURE REVIEW

There is a large body of theory and research on motivation in work organizations. A comprehensive review of this body is beyond the scope of this research. However, the focus of the review is on the literature examining motivation and its intersection with job satisfaction, job design, and job enrichment.

2.1. HERZBERG'S TWO FACTOR THEOREM

The theory that first drew attention to the motivating elements of jobs is found in the 1950's work of Herzberg (1987). His two-factor motivation theory identifies two distinct sets of factors that influence motivation and job satisfaction. Hygiene factors do not motivate but if they are inadequately met, they cause dissatisfaction. On the other hand motivators can motivate people.

Thus, motivation does not occur along one continuum between low job dissatisfaction and high job satisfaction as traditional theories postulated. Instead two dimensions are involved. One moves between low job satisfaction and high job satisfaction (motivating factors) and the other between low job dissatisfaction and high job dissatisfaction (hygiene factors) (Gibson, 2003). Regarding these two dimensions, Herzberg (1987:91) explains them as follows:

"Two different needs of human beings are involved here. One set of needs can be thought of as stemming form mankind's animal nature – the built in drive to avoid pain from the environment, plus all the learned drives that become conditioned to the basic biological needs. For example, hunger a basic biological drive, makes it necessary to earn money, and then money becomes a specific drive. The other set of needs relates to that unique human characteristic, the ability to achieve and through achievement, to experience psychological growth. The stimuli for the growth needs are tasks that induce growth; in the industrial setting, they are the job content. Contrariwise, the stimuli inducing pain – avoidance behaviour are found in the job environment."

Hygiene factors are extrinsic to the job itself and include: company policy and administration, supervision, interpersonal relationships, working conditions, salary, status and security. Motivating factors that are intrinsic to the job are: achievement, recognition for achievement, the work itself, responsibility and growth or advancement. (Herzberg, 1987) These are the factors that motivate rather than simply stave off dissatisfaction. They sustain motivation and, as Herzberg (1987) puts it, they allow companies to install generators in employees instead of having to constantly top up their batteries with various extrinsic motivating factors.

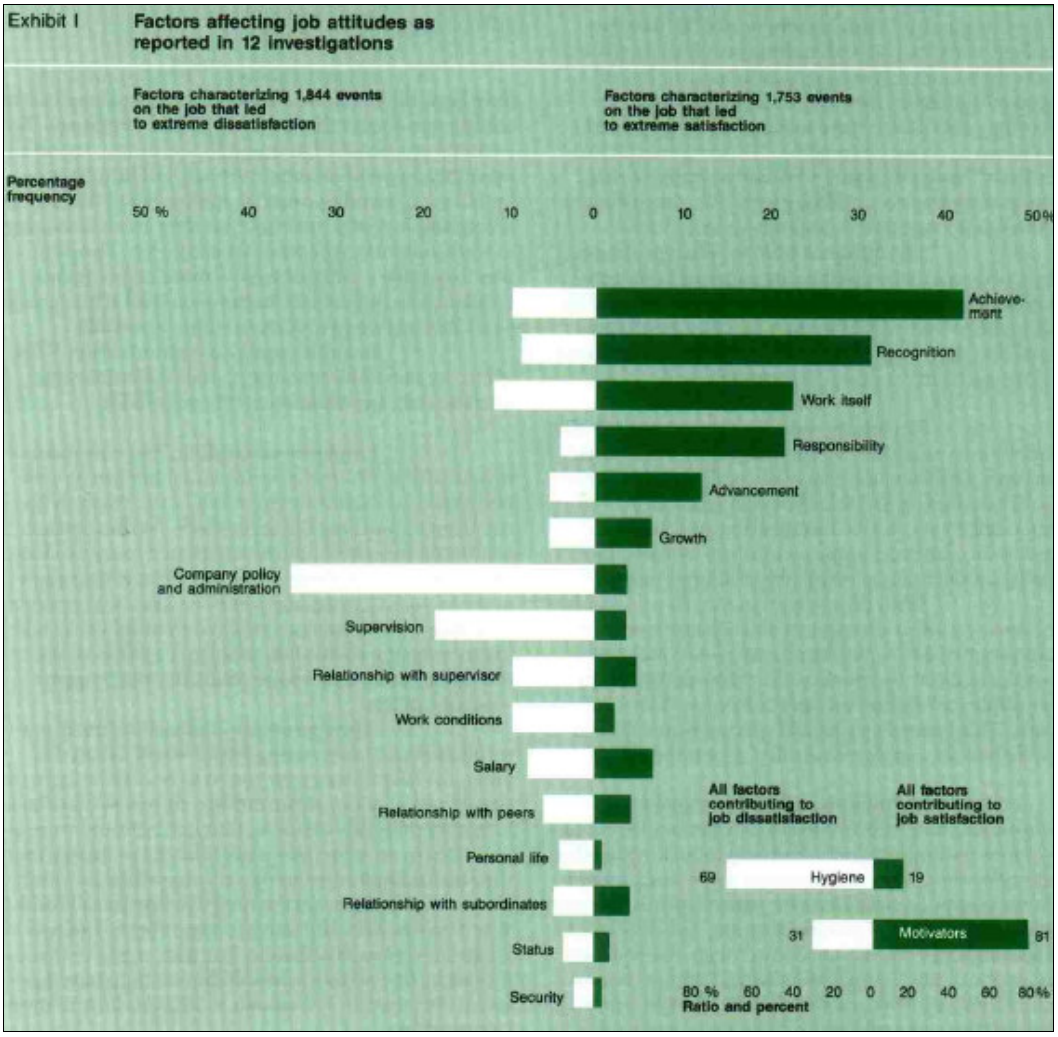


Figure 1 Factors affecting job attitudes as reported in 12 investigations
Source: Herzberg (1987: 90)

Figure 1, shows the results of 12 studies conducted by Herzberg on a total of 1685 employees in a wide variety of positions and countries. The wide-ranging nature of this research should quell some of the criticism of Herzberg's theory. For example it is stated that his theory was originally based on American accountants and engineers and was thus flawed because of the limited sample size (Gibson, 2003). However this, later, consolidated approach included:

"lower level supervisors, professional women, agricultural administrators, men about to retire from management positions, hospital maintenance personnel,

manufacturing supervisors, nurses, food handlers, military officers, engineers, scientists, housekeepers, teachers, technicians, female assemblers, accountants, Finnish foremen and Hungarian engineers." (Herzberg, 1987: 92) Thus, it seems, although the theory was originally built using small skewed samples, it has since been shown to work on larger samples which better represent the working population.

The subjects were asked questions about what events at work had led to extreme satisfaction or dissatisfaction. As can be seen in figure 1 the areas that caused satisfaction were, in most cases, different from those that caused dissatisfaction. The right hand side of the figure shows that, of all the factors contributing to job satisfaction, 81% were motivators. Of all the factors causing dissatisfaction, 69% were hygiene factors. As mentioned, his research has lead to debate for and against his work but definitely has some clear implications. The first is that areas of the work which cause dissatisfaction, if changed will not necessarily cause satisfaction or motivation. Changing these may only cause a lack of dissatisfaction. Consequently changing these factors is very unlikely to improve employee motivation. The other important area of his research is the focus he placed on job design which is closely related to the work of Hackman and Oldham discussed later.

The motivation-hygiene theory leads to **job enrichment theories** in order to bring about job satisfaction, motivation and ultimately more effective utilization of

personnel which from a company perspective is the ultimate goal. In order to do this, Herzberg suggests utilizing what is called vertical job loading, distinguished from horizontal job loading which tends to reduce the personal contribution of employees instead of giving them the opportunity for growth (Herzberg, 1987). According to Herzberg, vertical job loading has not yet been well defined but seven principles are given in table 2. (Herzberg originally wrote the article in 1967, so at that stage it had not been properly designed.)

Principle		Motivators involved
A	Removing some controls while retaining accountability	Responsibility and personal achievement
B	Increasing the accountability of individuals for own work	Responsibility and recognition
C	Giving a person a complete natural unit of work (module, division, area, and so on)	Responsibility, achievement and recognition
D	Granting additional authority to employees in their activity; job freedom	Responsibility, achievement and recognition
E	Making periodic reports directly available to the workers themselves rather than to supervisors	Internal recognition
F	Introducing new and more difficult tasks not previously handled	Growth and learning
G	Assigning individuals specific or specialized tasks, enabling them to become experts	Responsibility, growth and advancement

Table 2: Principles of vertical job loading
Source: Herzberg (1987: 93)

Several of these factors relate closely to those suggested by Hackman and Oldham (1975 & 1980) to create and sustain job satisfaction and motivation. Leading from this theory of vertical job loading, Herzberg suggests 10 steps that

employees can use to undertake job enrichment (Herzberg, 1987: 95) set out in annexure C.

2.2. THE JOB CHARACTERISTICS MODEL OF HACKAM AND OLDHAM

Hackman and Oldham took job design a step further than Herzberg in their job characteristics model. Their model is used to analyse job design in order to improve motivation, satisfaction and performance.

2.2.1. Overview of the job characteristics model

An outline of the model is given in figure 2.

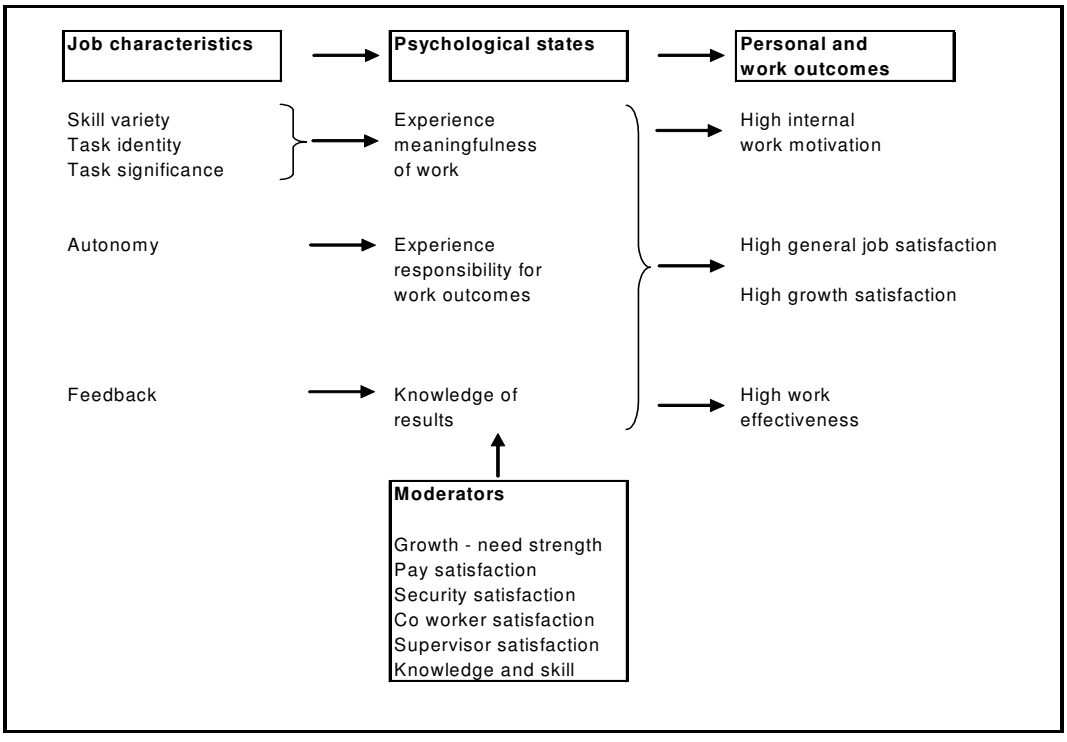


Figure 2: An outline of The Job Characteristics Model
Source: Hackman and Oldham (1980: 90)

The model postulates the following: workers achieve a high internal work motivation, high general job satisfaction, high growth satisfaction and high work effectiveness if they experience the following factors in their work:

- they perceive their work to be meaningful
- they experience responsibility for the outcomes of their work
- they have knowledge of the outcomes of their work.

These three factors are created and enhanced by five factors inherent in the design of the job itself namely: skill variety, task identity, task significance, autonomy, and feedback. As shown, meaningfulness of work is caused by skill variety, task identity and task significance, that is, the former are the dependent and the latter the independent variables. Experiencing responsibility for work outcomes is a dependent variable of autonomy and knowledge of results the dependent variable of feedback.

It is worth considering further the concept of internal motivation. There is an interesting link between this and what Herzberg refers to as the internal generator. This is the kind of motivation companies need to strive for, the kind where employees only need coaches not managers because they do what is required and more without having to be asked. The rewards tend to be internal not external.

Hackman and Oldham (1980) ask the question, “Why is it that golfers are willing to exert such time and effort to play a game for no external reward?” The answer is that all three of the psychological states required for high motivation are present. Golfers experience meaningfulness, they experience responsibility and they experience knowledge of results (for non golfers, think of another game you enjoy!). The last two factors are fairly self-explanatory. Although golfers may blame external factors such as a sudden gust of wind, they know that the quality of the shot is mainly dependent on how well they hit it. Also the results are self evident and immediate. Regarding meaning, golf, like other games continually tests the player’s skills and abilities and this provides meaning. Returning to the work situation, Hackman and Oldham (1980) state that it is remarkable that even people who consider themselves relatively lazy will put in a great deal of effort when these three factors are richly experienced.

Another ironic observation prevalent in most organization with which the author has had contact is that when a task is identified as critical, autonomy and feedback are often removed from the job. Managers are so preoccupied with the effect the employees may have on the task that they totally forget what effect the job may have on the employee and ultimately the quality of work. As an example consider an assembly process in an engineering company. The quality of a certain assembly is brought into question so a detailed set of instructions and a checklist is drawn up. Once completed the assemblies are checked by a separate QC department. By doing this, autonomy and internal feedback have been removed from the employee carrying out the assembly.

The result will more than likely be a decline in job satisfaction and motivation and an increase in defective parts, which is exactly what management is trying to avoid!

2.2.2. Definition of the variables

Boonzaier (2001: 12) defines the variables developed by Hackman and Oldham (1975, 1976) as follows:

A. Job characteristics

- ***Skill variety*** – the degree to which a job requires a variety of different activities in carrying out the work which involves the use of a number of different skills and talents of the employee.
- ***Task identity*** - the degree to which the job requires completion of a 'whole' and identifiable piece of work – that is to say, doing a job from beginning to end with a visible outcome
- ***Task significance*** – the degree to which the job has a significant impact on the lives or work of other people, whether in the immediate organization or in the external environment
- ***Autonomy*** – the extent to which the job allows the employee substantial freedom, independence and discretion in scheduling the work and in determining the procedures to be used in carrying it out

- ***Feedback*** – the extent to which performing the work activities required by the job results in the employee obtaining direct and clear information from the job about the effectiveness of her or his performance.

B. Critical psychological states

- ***Experience meaningfulness of the work*** – the degree to which the employee experiences the job as one which is generally meaningful, valuable and worthwhile
- ***Experience responsibility for work outcomes*** – the degree to which the employee feels personally accountable and responsible for the results of the work he or she does.
- ***Knowledge of results*** – the degree to which the employee knows and understands, on a continuous basis, how effectively he or she is performing the job

The value of these psychological states is questioned in some of the literature. All are in agreement regarding the relationship between the job characteristics and the outcomes. However they state that the three psychological states cannot be regarded as mediators. (Boonzaier, 2001) They recognize that these states make sense intuitively but that they have not been well researched. Fried and Ferris (1987: 312) state that, "It appears, however, that the results fail to support the mediating effect of the core psychological states on the job characteristics – work performance relationships. This might suggest that there

are possibly other psychological states unspecified by the model that mediate the relationship between job characteristics and performance. Another possibility is that work performance is affected mainly by organizational motivators associated with the job." Due to these uncertainties the modified JDS shown in annexure A does not contain questions or results of the psychological states. This does not affect the usefulness of this research which seeks to examine the relationship between the job characteristics and outcomes which together make up satisfaction and motivation.

C. Personal outcomes

- ***Internal work motivation*** – the degree to which the employee is self – motivated to perform effectively on the job, that is, the employee experiences positive internal feelings when working effectively on the job, and negative internal feelings when doing poorly.
- ***General job satisfaction***: an overall measure of the degree to which the employee is satisfied and happy with the job
- ***Growth satisfaction*** – the degree to which an individual is satisfied with opportunities for growth in the job. This particular outcome is the result of elaborations on the original model by Hackman as indicated by Pearce and Wolfe (1978:293) in Boonzaier (2001: 12)

D. Work outcomes

- ***Work effectiveness*** – the model does not provide a definition of work effectiveness as this factor is unique to particular work settings. Note that this is not included in the revised JDS as given in annexure A.

In addition to the job characteristics influencing outcomes via the psychological states there are also six moderating variables at play (see types and definitions below). These variables influence the extent to which job characteristics influence the psychological states and also the extent to which the psychological states influence the personal and work outcomes. In other words, for a job with a given motivating potential, different employees will derive a different level of satisfaction and motivation depending on the relevance of the moderators to those employees.

It should be noted that this area of the theory appears to be the least developed aspect. For instance in Hackman and Oldham (1974) only employee growth need strength is defined. In Hackman and Oldham (1980) there are three moderating variables namely: knowledge and skill, growth need strength and "context satisfaction". However it appears in appendix C of Hackman and Oldham (1980: 305) that context satisfaction includes questions on job security, compensation satisfaction, satisfaction with co-workers and satisfaction with supervision. Thus all the factors defined below are included in the original JDS

except job skill as explained below. Thus the moderators are defined by Hackman and Oldham (1975, 1976) in Boonzaier (2001: 12) as follows:

- ***Growth need strength*** – workers' need for personal accomplishment, for learning, and for developing themselves beyond where they are at present.
- ***Pay satisfaction*** – the degree of satisfaction with basic compensation and benefits as well as satisfaction with the extent to which the organization's compensation relates to the individual's contribution to the organization.
- ***Security satisfaction*** – the degree of satisfaction with the amount of general security experienced as well as with prospects of security
- ***Co – worker satisfaction*** – the degree of satisfaction with other workers with whom contact is made in the work situation, as well as satisfaction with opportunities to get to know and help people
- ***Supervision satisfaction*** – the degree of satisfaction with the treatment, support and guidance received from supervisors, as well as the degree to which the general quality of supervision is considered satisfactory
- ***Knowledge and skill as a moderator variable*** is not specifically defined as they are unique to particular work settings.

It is worth noting that Hackman and Oldham (1980) attach particular importance to the relationship between satisfaction with the work context and growth need strength as illustrated in table 3.

Hackman and Oldham (1980: 87) state the following: "The strongest relationships between MPS and the outcomes were obtained for these

employees who were highly desirous of growth satisfaction and simultaneously satisfied with the work context (that is, those employees in the upper right-hand cell of table 3) and when both growth need strength and context satisfaction were at low levels (the lower left-hand cell), some negative relationships were obtained between MPS and the outcomes-a quite unusual finding. Apparently those individuals who were both low in growth need strength and dissatisfied with the work context found a complex and challenging job so far out of line with their needs that they were unable to perform well on it".

		Growth need strength	
		Low	High
Satisfaction with the work context	High	Moderate positive relationship	Strong positive relationship: The higher the MPS of the job, the higher the motivation and performance of the job incumbent.
	Low	No relationship (or small or negative relationship): Motivation and performance are unrelated (or slightly negatively related) to the MPS of the job	Moderate positive relationship

Table 3: Relationship between motivation potential and motivation and performance
Source: Hackman and Oldham (1980: 87)

As with the psychological states, there are serious questions being asked about the moderating variables. Refer to Johns, Xie and Fang (1992) for a detailed analysis of the moderating variables, which they note as being far less researched than the remaining, core part of the theory. They again reiterate what other researchers have said about the relationships between the job

characteristics and the outcomes, saying that the relationships are sound and well proven but they question the effects that Hackman and Oldham have attributed to the moderating effects. Their research indicates that, at times, these effects deviate from Hackman and Oldham's predictions.

Boonzaier (2001) includes a thorough analysis of research into the moderators. He summarizes as follows. "Internal work motivation, general job satisfaction and growth satisfaction serve as valid dependent variables. The five job characteristics, namely skill variety, task identity, task significance, autonomy, and feedback are verified as valid independent variables. However, original formulations of the model are shown to specify inappropriate and inadequate worker and work environment characteristics and moderators / mediators of the relationship between the independent and dependent variables." (Boonzaier, 2001: 23) Hence the moderators are also left out of the revised JDS in annexure A which focuses purely on the job characteristics and outcomes.

2.2.3. The Job Diagnostic Survey (JDS)

The job diagnostic survey was created in conjunction with the job characteristics model to enable researchers to get a quantitative evaluation of the motivating potential of a particular job as it is currently structured. This will also indicate weak areas of a job structure which, if improved will increase the positive psychological states and hence the work outcomes leading to raised motivation

and job satisfaction. In addition to the five factors in the JCM, the JDS adds the following, namely (Boonzaier, 1994: 104):

- ***Feedback form agents*** which represents the degree to which the employee receives clear information from co – workers and supervisors on his or her performance
- ***Dealing with others*** which is the degree to which the job requires the employee to work closely with others both within and outside the company

Boonzaier (2001) suggests that these two additional factors are not entirely necessary and their presence has not been well validated. However he does state that the two may be useful for particular interventions in job redesign and so are worthy of discussion if not formal research.

A copy of the revised job diagnostic survey is given in annexure A. Scores are indicated on a scale of 1 to 7 with 1 low and 7 high. It is important to clarify that all aspects of the JCM were included in the original JDS as indicated in figure 3 which is a useful summary for comparative purposes. The revised JDS does not consider the moderators or psychological states as discussed above but is adequate for the purpose of this research as it included the outcomes and job characteristics. Figure 3 is referred to later in the research as a yardstick with which to compare the results.

Research has shown the JDS to be both reliable and valid. Boonzaier (1994) refers to his 1989 article which summarises the reliability coefficients of the personal outcomes across various studies. The results vary between 0.68 and 0.84 indicating satisfactory internal consistency when compared with Nunnally's (1967) standards.

	Researchers (see notes below)							
	1		**2**		**3**		**4**	
Job characteristics								
Skill variety	4.3	1.6	4.7	1.6	3.7	1.1	4.4	1.4
Task identity	4.5	1.3	4.7	1.4	5.1	1.1	4.7	1.3
Task significance	5.4	1.4	5.5	1.3	4.9	1.2	5.3	1.3
Autonomy	4.6	1.5	4.9	1.4	4.1	1.2	4.7	1.3
Feedback from job	4.7	1.3	4.9	1.3	5.1	1.1	5.0	1.3
Feedback from agents[1]	4.3	1.3	4.1	-	4.2	1.4	4.0	1.5
Dealing with others[1]	5.4	1.2	5.6	-	-	-	5.4	1.2
Critical psychological states								
Experience meaningfulness of the work	5.2	1.3	5.2	1.1	4.8	0.9	6.0	-
Experience responsibility for work outcomes	4.8	1.1	5.2	1.0	5.1	0.8	5.8	-
Knowledge of results	4.7	1.3	5.0	1.1	4.9	1.0	5.0	-
Affective outcomes								
Internal work motivation	5.2	1.0	5.6	-	5.2	0.7	5.7	-
General satisfaction	4.7	1.4	4.7	-	4.4	1.1	5.6	-
Growth satisfaction	5.0	1.5	4.8	-	4.5	1.2	5.5	-
Moderators								
Job security	5.2	1.4	4.9	-	Combined		5.5	-
Pay	4.2	1.7	4.3	-	score		5.0	-
Co workers	5.4	1.0	5.4	-			5.7	-
Supervision	4.9	1.5	4.9	-	4.9	0.7	5.8	-
Growth need strength A	5.7	1.4		-	-	-	5.3	-
Growth need strength B	3.2	0.5		-	3.1	0.8	3.1	-
Growth need strength combined	-	-	5.0	-	-	-	-	-
Motivating potential score	114		128		98		122	
	4012		6930		135		269	

Researcher 1:
Boonzaier (1989): This sample of 4012 represents 89% of the total work force at a community service organization with 46 organizational units spread throughout the republic of South Africa and Namibia. The subjects represent 93 different occupations ranging from semi-skilled to highly skilled managerial and professional workers. Note that the author requested a more detailed analysis of the groups that the survey applied to but unfortunately Boonzaier does not have this information.

Researcher 2:
Oldham, Hackman and Stepina (in Hackman and Oldham, 1980): These American norms are based on the responses of 6930 employees representing 876 different jobs in 56 organizations. Some standard deviations are reported by Fried and Ferris (1987).

Researcher 3:
Forshaw (1985): These figures were compiled from the responses of 135 non – supervisory clerical insurance personnel at a Cape Town based company. The data represents 33 different jobs and qualifications range from standard 8 to 10.

Researcher 4:
Graham (1978): This study was conducted at 27 Western Cape organizations. A sample of 269 employees was selected in such a manner to ensure realistic comparisons between high verses low qualified workers, old versus young workers, male versus female workers, strong versus weak growth need strength workers, managerial versus non-managerial workers as well as workers with a rural upbringing versus those with an urban background.

Note: The South African norms of Researcher 1 were computed by calculating the mean score for the subjects according to the variables. The American norm was computed by averaging the scores of employees who work on each of the 876 jobs and then computing overall means across those jobs.

Figure 3 Job Diagnostic Survey Norms
Source: Boonzaier (1994: 105)

The validity of the model in the South African context was shown by Boonzaier's (2001) 1989 study of 4012 employees of a community service organisation. It gave partial correlation coefficients between motivating potential score and personal outcomes of between 0.41 and 0.58.

2.2.4. The Motivating Potential Score (MPS)

It is useful to be able consolidate the JDS into one composite score in order to quickly gauge and compare the motivating potential of a particular job. The

MPS, as calculated in the original JCM (Hackman and Oldham, 1980) is given by:

$$MPS = \left(\frac{skill\,\mathrm{var}iety + taskidentity + tasksignificance}{3} \right) \times autonomy \times feedback$$

with scores of the five factors being anywhere between 1 and 7, giving an MPS score between 1 and 343. The relevance of this multiplicative model has been questioned. Boonzaier (2001) comments that although Hackman and Oldham recommended the algorithm as stated above they don't indicate how they arrived at it. He further states that based on current research by, among others: Evans and Ondrack (1991), Arnold and House (1980), Fried and Ferris (1987) and Hinton and Biderman (1995) the simple additive index is recommended for job redesign interventions. In fact, Hackman and Oldham appear to agree to a point, they state the following (Hackman and Oldham, 1980: 313). "It is just as good empirically – and usually better – simply to add up the scores of the five motivating job characteristics to get an overall estimate of the motivating potential of a job, rather than to use the more complex formula for the motivating potential score suggested in Chapter 4.The advantage of the MPS score (in its multiplicative form) is that it derives directly form the motivational theory on which the Job Diagnostic Survey was based. The disadvantage is that the computation of the score involves multiplying the job characteristics, which is generally a dubious proposition with measures that are less than perfectly reliable, and especially so when those measures tend to be inter correlated". This still doesn't completely clarify the issue. The author assumes that what they mean by "derives directly from….was based" is that the theory groups skill

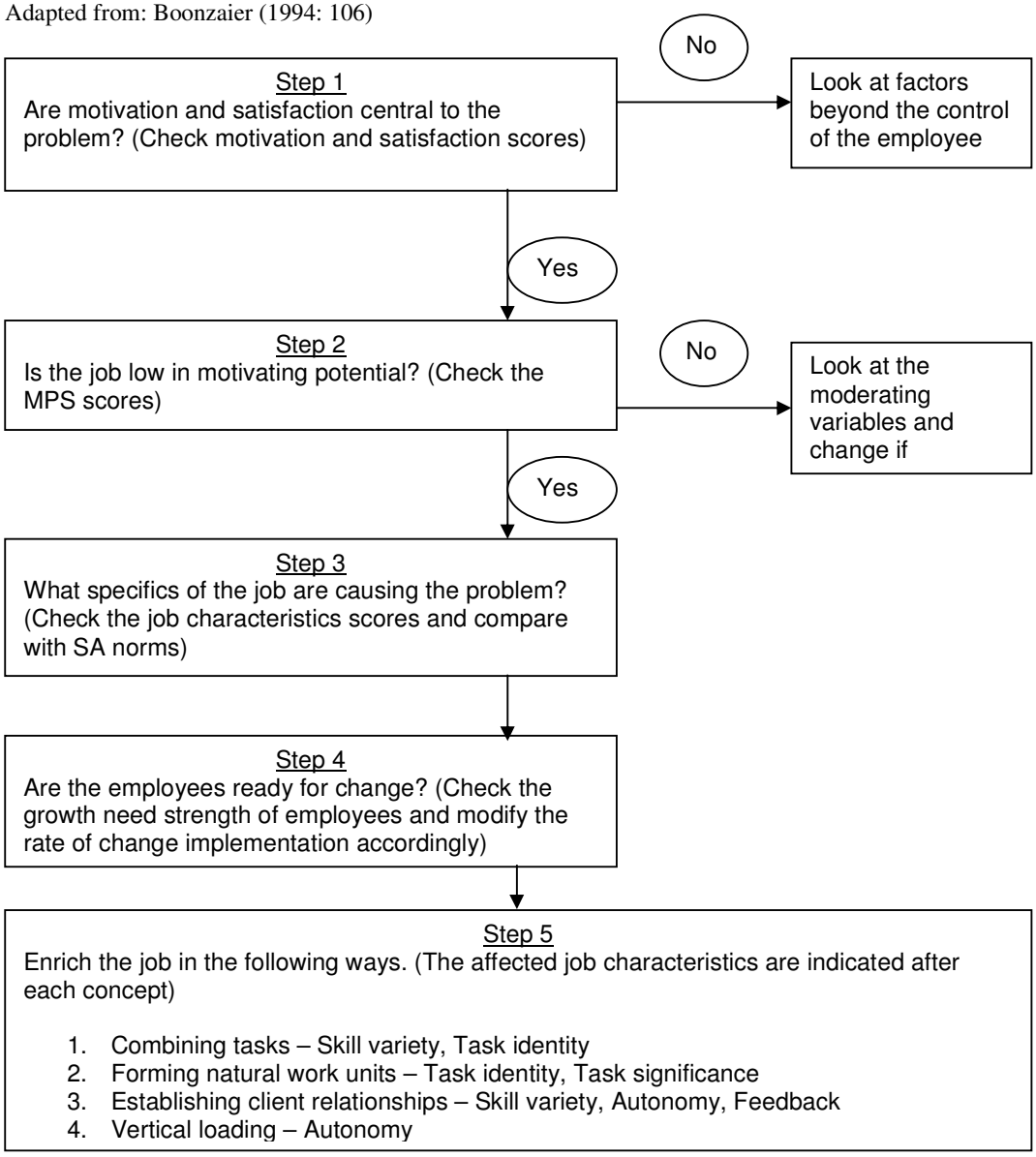
variety, task identity and task significance together and autonomy and task feedback on their own. This is in line with the JCM model where each of these 3 factors is directly related to each of the 3 psychological factors. This may be true, but it still doesn't give a good reason why the formula should involve multiplication. A distinct disadvantage of using the additive formula is that there is likely to be less data available using this method which makes comparison with previous surveys more difficult.

To summarize: for this research the additive method is used, but if it is desirable to compare the results with previous studies the multiplicative version is also calculated. It is also noted that the survey authors themselves caution the use of the JDS alone because of the inter correlation issues. Thus the information obtained with this score needs to be tempered with the scores obtained by the individual factors.

2.2.5. Using the results to improve job satisfaction

The following schematic (figure 4) should be used to analyse the results of the JDS with a view to improving motivation and job performance. It is adapted from the framework of Hackman et al and Straw (1991) in Boonzaier (1994). For more detail around the proposed actions, refer to Boonzaier (1994). Note that the survey used for this research does not provide details on factors outside the design of jobs or intervening factors. The most relevant part of the figure is step 5 which provides suggestions to remedy low job factor scores.

Figure 4: Process to facilitate change
Adapted from: Boonzaier (1994: 106)



2.3. LITERATURE ON THE JOB SATISFACTION OF ENGINEERS

As mentioned previously, virtually no literature directly related to the satisfaction of engineers in South Africa was found, but there is some work in the USA that may be referred to. The journal “Machine Design” runs an annual survey

focused primarily on salaries but it does contain questions related to job satisfaction. The survey respondents are primarily mechanical engineers, but those from other fields of engineering do reply as well. The level of satisfaction of respondents over the years is relatively high. In the survey of 2004, 78% of respondents said they would recommend engineering to their children or friends (Reitz, 2004). Asked what the three most important areas contributing to satisfaction were, they said:

1. Challenging work assignments
2. Work environment and colleagues
3. Constantly changing technology

In a survey conducted by the University of Central Florida (2003), the ASME (American Society of Mechanical Engineers) was used to provide respondents. A section was devoted to job satisfaction. As predicted by Herzberg, areas that caused satisfaction were different from those that caused dissatisfaction. Satisfaction causing areas revolved around the job itself such as solving problems and being creative. Those that caused dissatisfaction were areas such as company policy / administration and politics.

2.4. LITERATURE REVIEW SUMMARY

During the 1950's Herzberg (1987) developed the two-factor theory of motivation and job satisfaction. This highlighted the importance of job design. This area was further refined by Hackman and Oldham (1975 & 1980) who proposed the Job Characteristics Model and associated Job Diagnostic Survey.

The model proposes five areas of job design that, if present, will result in satisfied and motivated employees. The survey tests the presence of these areas as well as the current level of satisfaction.

3. HYPOTHESES

The hypotheses tested by the research are as follows:

1. **Motivating potential scores are positively correlated with average satisfaction.**
2. **The job satisfaction and motivation scores of graduate engineers and actuaries are higher than those of a cross section of employees but lower than those of other professional samples.**

The first is intended as a test of the methodology. If it fails, one cannot draw conclusions about the impact of job design on job satisfaction. The second takes a position on the level of job satisfaction and motivation of South African engineers and actuaries, tested against the scores from other studies. Note that other objectives have been stated but are areas of investigation rather than hypotheses. These include examining the level of satisfaction and suggesting areas of improvement.

4. METHODOLOGY

This section describes the research method, the survey used and details of how data were collected. The methods to determine statistical significance of the results and test the hypotheses are described.

4.1. RESEARCH METHOD

Primary data were collected using a quantitative approach by making use of the modified JDS. The actual data collection method is described below. To supplement the data and aid in the discussion process informal interviews were also held with members of the professions. Secondary data were collected by studying literature. This consisted of popular and academic journal articles, popular newspapers and online articles and textbooks. These data were used to compare with the primary data, to create an understanding and background for the research and to acquire skills necessary to undertake the research.

4.2. SURVEY INSTRUMENT

An existing survey, the Revised Job Diagnostic Survey (see annexure A) was used to gather data from the chosen group. Details of the use of this survey as opposed to the original JDS are discussed in the literature review. The revised

JDS was found to provide measurement equivalence across worker populations in research by Idaszak, Bottom and Drasgow (1988). The validity and reliability of the survey and accompanying model were shown by Boonzaier (1994) to be both valid and reliable. Boonzaier (1994), in his 1989 study obtained correlations between MPS and the 3 personal outcomes of between 0.41 and 0.58. In terms of reliability, Boonzaier (1994) refers to his 1989 article which summarises the reliability coefficients of the personal outcomes across various studies. The results vary between 0.68 and 0.84 indicating satisfactory internal consistency when compared with Nunnally's (1967) standards.

The scoring procedure is given in annexure B. This is a structured questionnaire which provides quantitative results based on Hackman and Oldham's theory. Two sections were added to it in order to gather additional demographic information on the respondents. One was added for actuaries and one for engineers. The types of questions are the same for both groups but the answer options available were customized for each of them. These sections were set up to obtain the following information:

- The respondent's age
- The period worked in the profession
- The period spent in the current job
- Whether more or less than half the respondent's time is spent managing
- Whether the respondent is a member of the relevant professional body

- The area worked in.
- For engineers these areas were:
    - Designing materials, components, systems or processes
    - Planning the capacity and location of infrastructure
    - Investigating, advising and reporting on engineering problems
    - Improvement of materials, components, systems or processes
    - Managing or operating plant and processes
    - Managing implementation or construction projects
    - Implementing designs or solutions
    - Research, development and commercialization of products
- For actuaries these areas were:
    - Pensions
    - Life insurance
    - Short term insurance
    - Investments
    - Other

In order to confirm the appropriateness of the survey, it was pilot tested by the following people:

- Mechanical engineer Mr M. Fehrsen
- Electrical engineer Mr A. Da Silva
- Actuary Mr R. Rusconi

They found it to be easy to understand and use. Hence, no changes were necessary. The survey provides the following:

- Scores from 1 to 7 for each of the following job characteristics: Skill variety, Task identity, Task significance, Autonomy and Feedback.
- Scores from 1 to 7 for each of the personal outcomes: Internal work motivation, General Job satisfaction and Growth satisfaction.

The job characteristics provide information on the motivating potential of a particular job. This gives insight into the job structure and highlights potential areas which limit motivation and job satisfaction. These can be seen as the independent variables.

The job characteristics results are used to calculate the Motivating Potential Score (MPS) which consolidates the scores and provides a single value for comparison.

The personal outcomes provide information on the current state of satisfaction and motivation of the employee and can thus be seen as the dependent variables. These results are consolidated into a score, average satisfaction.

Only some of the detailed demographic information such as age and area of specialisation was used for this research. However, it may well be useful for further study.

4.3. DATA COLLECTION METHOD

Only a written version of the survey existed so it was necessary to re-write an electronic alternative and incorporate features to make it easy to use in order to maximise the return rate. It was written in MS Excel and incorporated drop-down menus so that respondents could fill it out using only their pointing device. Not visible to the respondents was a second sheet of the survey which automatically calculated required results such as the MPS. The survey took at most 10 minutes to complete. It was sent as an attachment in a covering e-mail which explained how to fill the survey in, save it and then return the e-mail with the survey attached.

The data for actuaries were collected by the actuarial society. They sent out the survey data and collected the results. Approximately 1300 surveys were sent out and useable ones were obtained from 197 of them. This yielded a response rate of 15%. The e-mail addresses for the engineers were obtained from ECSA, the Engineering Council of South Africa. They selected a random sample. The author then sent out the surveys to these addresses and received the results. In all, 830 surveys were sent out to engineers and correctly filled in ones were obtained from 148. This yielded a response rate of 18%. The intention initially

was to send out the same number of surveys to engineers and actuaries but as the process progressed it was decided to get as large a sample as possible. This was because the return rate was very unpredictable and also many of the e-mail addresses obtained were no longer valid. Table 4 shows the breakdown of the various groups.

Sub Group	Final number of surveys	Response rate (%)
Total group	345	16
Actuaries	197	15
Engineers	148	18
Chemical Engineers	35	17
Civil Engineers	38	18
Electrical Engineers	32	16
Mechanical Engineers	43	20

Table 4: Usable Survey Statistics
Source: Survey results and author calculations

An MS Excel spreadsheet was drawn up to automatically pull the results of the surveys into a single sheet. It is shown in annexure D. Various filters were added for sorting and this formed the basis for creating the results tables and graphs seen in the remainder of this document.

4.4. TESTING THE STATISTICAL SIGNIFICANCE OF THE RESULTS

4.4.1. Aim

As with most statistical analyses, the data obtained are a sample of the population. Although differences between the sample results may appear

significant it is important to consider whether the assumptions drawn can be applied to their populations. It is thus necessary to evaluate the statistical significance of the differences between the various results.

4.4.2. Background

The t-statistic for determining the significance of the difference between two means, assuming that they have the same population variance is as follows (Larson, 1982):

$$T = \frac{\sqrt{(\overline{X} - \overline{Y}) * \frac{(m \times n)}{(m+n)}}}{S}$$

Where

$\overline{X}$ is the observed mean of the values in sample size n of one variable

$\overline{Y}$ is the observed mean for the other variable, sample size m

S is given by

$$S = \sqrt{\frac{\sum_{i=1}^{n} (\overline{X}_i - \overline{X})^2 + \sum_{i=1}^{m} (Y_i - \overline{Y})^2}{m+n-2}}$$

and the sum for the $X's$ runs from 1 to n and for the $Y's$ from 1 to m, in other words they are the sum of the squared differences of observations and their mean.

T is then compared to the table of t-statistics with m + n – 2 degrees of freedom.

4.4.3. Method

A statistics tool "PH stat"[3] was used. An analysis was carried out for each major result, using the highest and lowest scores. The null hypothesis was that the mean of each of the two populations being compared were the same. Thus, if the null hypothesis was rejected then it indicated that there *was* a significant difference between the two population means for that category. The chosen level of significance was 0.05. A typical set of results are shown in table 5.

Growth satisfaction - Actuaries and Mechanical engineers	
Data	
Hypothesized Difference between population means	**0**
Level of Significance	**0.05**
Population 1 Sample (Actuaries)	
Sample Size	**197**
Sample Mean	**5.5**
Sample Standard Deviation	**0.93**
Population 2 Sample (Mechanical engineers)	
Sample Size	**43**
Sample Mean	**5.08**
Sample Standard Deviation	**1.14**
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	42
Total Degrees of Freedom	238
Pooled Variance	0.941612
Difference in Sample Means	0.42
t-Test Statistic	2.571432
Two-Tailed Test	
Lower Critical Value	**-1.96998**
Upper Critical Value	**1.969984**
***p*-Value**	**0.010736**
Reject the null hypothesis	

Table 5: Typical calculation output for testing significance
Source: Author calculations using PH Stat from Levin (2001)

In this case the null hypothesis was rejected, indicating a statistically significant difference between the corresponding mean scores.

Whether or not there is a significant difference between two results is influenced not only by the difference between the sample mean scores but also by the sample size and standard deviation.

So for example there may be a large difference between two scores that indicates that the difference is significant. However if one or both of the scores have a high standard deviation the test might show that the difference is not significant.

4.5. METHOD OF HYPOTHESIS TESTING

Each hypothesis is restated below and then its method of testing discussed.

4.5.1. Motivating potential scores are positively correlated with average satisfaction.

Testing this hypothesis involves comparing the average satisfaction with the motivating potential score and determining whether there was a correlation between the two. The implication of the hypothesis is that the higher the motivating potential score, the higher the average satisfaction, the average

[3] Software included with Levine (2002)

score of the personal outcomes, general job satisfaction, internal work motivation and growth satisfaction. The MPS is a consolidation of the job characteristics scores.

The relationship between MPS and average satisfaction was compared using Excel and PHStat2, an excel statistics add-on included with Levine (1999). The method used was to do a simple linear regression and then to study the outcome from a number of viewpoints. This included a visual inspection of the scatter and residual plots and an ANOVA analysis.

4.5.2. The job satisfaction and motivation scores of graduate engineers and actuaries are higher than those of a cross section of employees but lower than those of other professional's samples.

This couldn't be proved as such because the author does not have the complete statistical data from other, comparable studies. However the means and standard deviations of each of the five job characteristics and three personal outcomes are available. From these, the MPS and Average satisfaction were calculated for the studies together with their standard deviations. In this way, the mean values obtained from this research could be compared with those of the other studies to see if they varied by a statistically significant amount. This gave a good indication even though it was not a rigorous analysis.

5. RESEARCH RESULTS

This section begins with an overview of the results divided into the following sections:

a) The MPS and average satisfaction

b) The five job factors

c) The personal outcomes

d) The influence of age and area of work

e) Summary of all results

It then moves on to considering the two hypotheses. The first involves the correlation between MPS and Average satisfaction. The second discusses the relative satisfaction of this group of professionals relative to others.

5.1. OVERVIEW OF THE RESULTS

5.1.1. MPS and Average satisfaction

The first table (table 6) shows the summary scores for the various groups. Both the additive and multiplicative MPS are included. As discussed in the literature review the additive one is recommended but several studies have used the multiplicative version which is thus retained to aid with comparisons.

MPS and Average satisfaction	Average additive MPS	MPS std dev	Average satisfaction	Average satisfaction std dev	Ave Multiplicative MPS	Multiplicative std dev
Entire group	5.43	0.672	5.37	0.831	161.11	64.59
Actuaries	5.47	0.634	5.45	0.760	160.59	58.03
Engineers	5.38	0.721	5.27	0.911	161.79	72.61
Chemical Engineers	5.47	0.688	5.31	0.772	164.07	64.65
Civil Engineers	5.48	0.655	5.47	0.956	168.15	80.72
Electrical Engineers	5.24	0.755	5.22	0.935	155.67	75.82
Mechanical Engineers	5.32	0.750	5.11	0.966	158.87	70.77

Table 6: MPS and average satisfaction
Source: Survey results and author calculations

Figure 5 shows the additive MPS and average satisfaction for each of the groups. It has been arranged in descending order of MPS score.

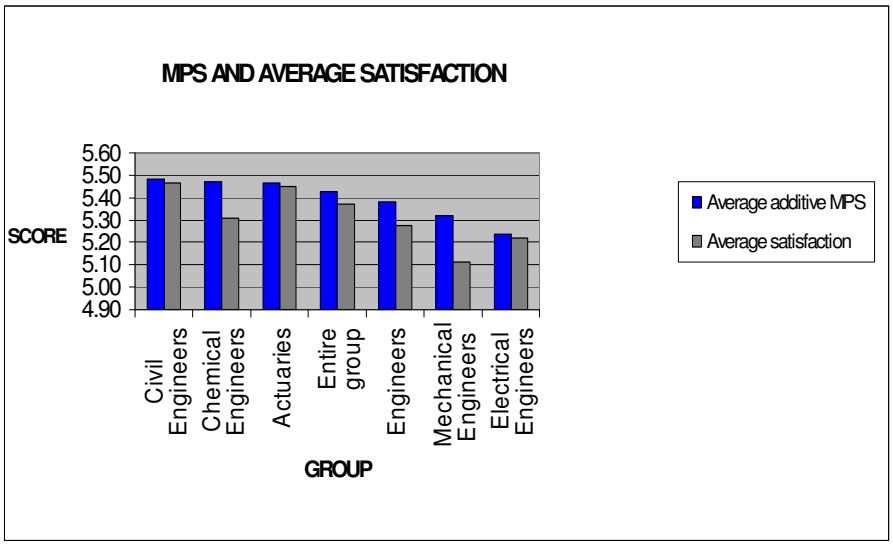


Figure 5: MPS/Satisfaction in descending order of MPS
Source: Survey results and author calculations

The MPS is a summary figure of the ability of the job in its current format to provide satisfaction and motivation. Figure 6 shows the same information but sorted in descending order of average satisfaction.

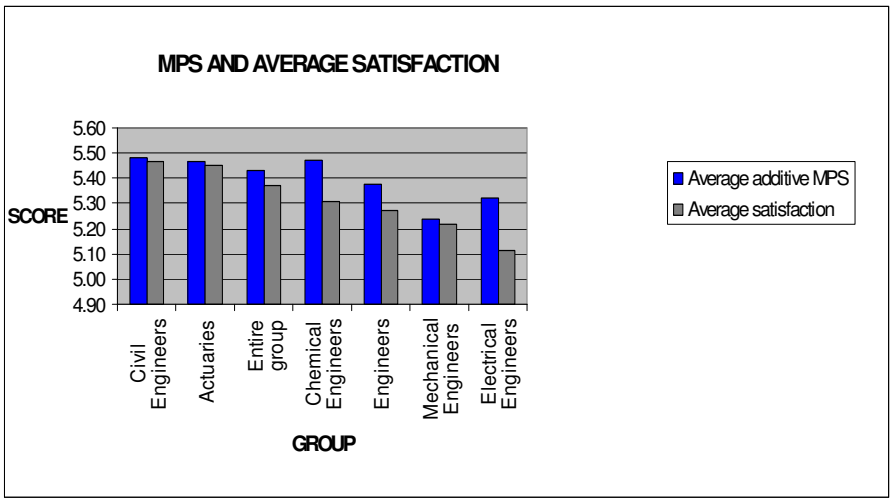


Figure 6: MPS/Satisfaction in descending order of Satisfaction
Source: Survey results and author calculations

Table 7 shows a summary of the significance testing done on all the results which follow. A more detailed analysis is given in annexure E, created in order to gain an understanding of the statistical significance of the results being discussed. For each category such as task significance, the highest and lowest scores were analysed to determine if their difference was significant. A comment related to this table is made under each section.

Job characteristic	Reject / Do not reject the null hypothesis	Can one say there is a significant difference between the results?
MPS	Do not reject	No
Average satisfaction	Reject	Yes
Task significance	Reject	Yes
Skill variety	Do not reject	No
Autonomy	Do not reject	No
Task identity	Reject	Yes
Feedback	Do not reject	No
Internal work motivation	Reject	Yes
Growth satisfaction	Reject	Yes
General job satisfaction	Reject	Yes

Table 7: Significance of research results
Source: Survey results and author calculations

Figure 5 & 6 highlight the following information:

a) In terms of the motivating potential of their jobs, civil engineers have the highest score, followed by chemical engineers, actuaries, mechanical engineers and electrical engineers. A more detailed breakdown of how these scores were obtained can be found in section 5.1.2 which discusses each of the five job factors individually. The breakdown shows that civil engineers returned impressive results.

b) In terms of average satisfaction, again civil engineers are ranked highest followed by actuaries then chemical engineers, mechanical and electrical. In other words the structure of civil engineering jobs not only provides potential for creating satisfaction but achieves it as well. At the other extreme the electrical engineers group has a big difference between motivating potential and average satisfaction. This indicates that factors apart from the job structure are hindering the satisfaction of this group.

c) As a whole actuaries are ranked higher than the combined engineering group both in motivating potential and actual satisfaction. In addition this group achieved a closer relationship between motivating potential and actual satisfaction.

d) The difference between the highest and lowest MPS scores is not statistically significantly, but the corresponding difference between average satisfaction scores is. (See table 7)

5.1.2. The five job factors

Skill variety

Skill variety is the degree to which a job requires a variety of different activities in carrying out the work which involves the use of a number of different skills and talents of the employee (Boonzaier, 2001: 12)

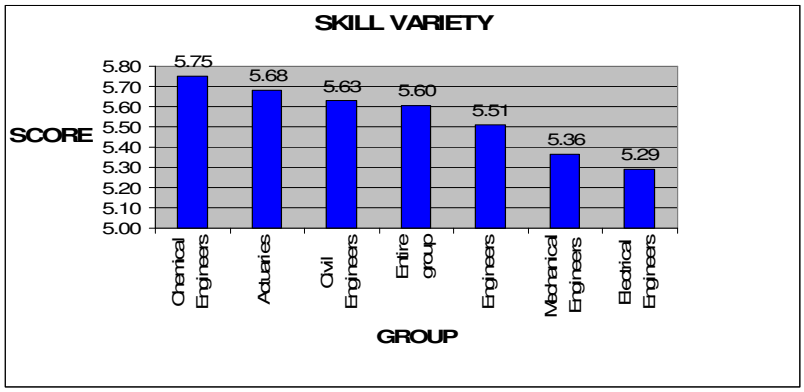


Figure 7: Skill variety for each group
Source: Survey results and author calculations

Chemical engineers scored highest here at 5.75 with electrical engineers lowest at 5.29. Actuaries scored better than engineers by almost 0.2. The results, as shown in figure 7, are not statistically significantly different.

Task identity

Task identity is the degree to which the job requires completion of a 'whole' and identifiable piece of work – that is to say, doing a job from beginning to end with a visible outcome. (Boonzaier, 2001: 12).

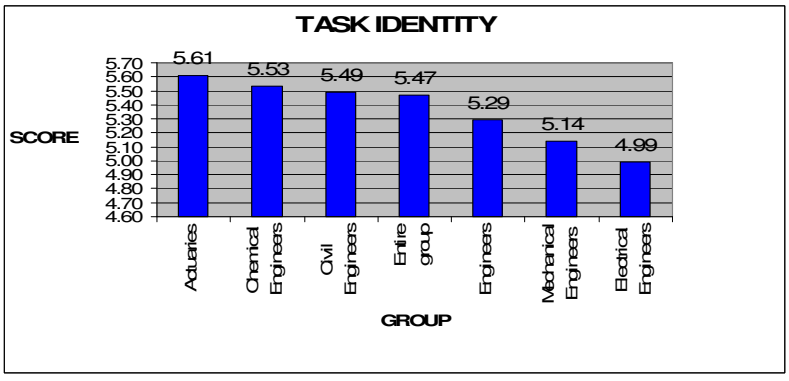


Figure 8: Task identity for each group
Source: Survey results and author calculations

Here actuaries scored highest at 5.61 with electrical engineers at 4.99. In addition actuaries were more than 0.3 higher than engineers as a whole. One explanation for this could be that engineers tend to be involved in larger projects for which each task is only one small part. This is discussed further in the conclusions. The difference between the highest and lowest scores is statistically significantly.

Task significance

Task significance is the degree to which the job has a significant impact on the lives or work of other people, whether in the immediate organization or in the external environment. (Boonzaier, 2001: 12).

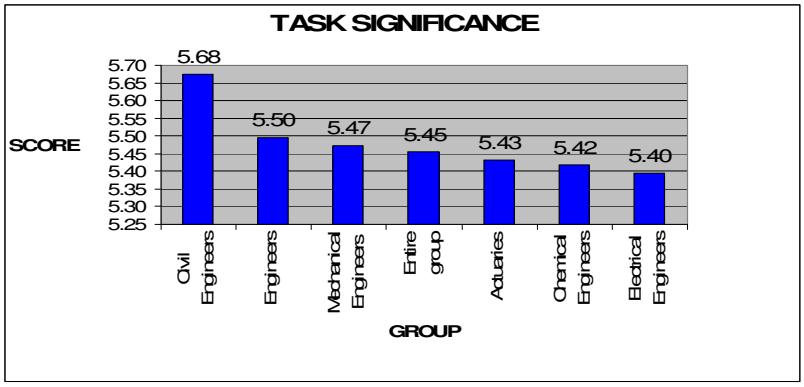


Figure 9: Task significance for each group
Source: Survey results and author calculations

This was an interesting result with civil engineers scoring significantly higher than any other group. The difference between the highest and lowest scores is statistically significant.

Autonomy

Autonomy is the extent to which the job allows the employee substantial freedom, independence and discretion in scheduling the work and in determining the procedures to be used in carrying it out. (Boonzaier, 2001: 12).

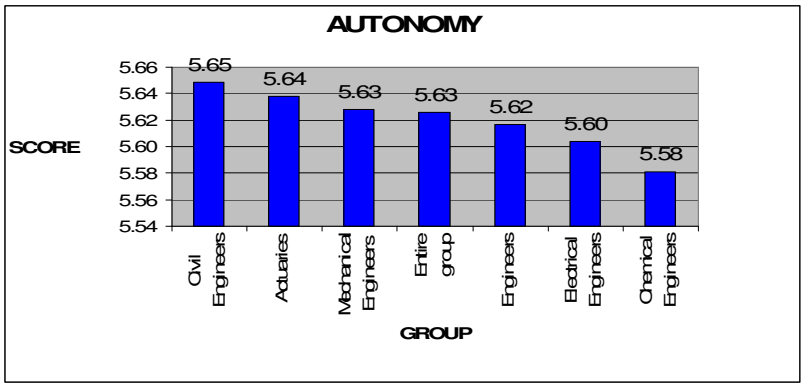


Figure 10: Autonomy for each group
Source: Survey results and author calculations

The highest score for this is very similar to the preceding two at 5.65 and is also held by civil engineers. Bear in mind that civil engineers held the highest MPS in the preceding section and now it is becoming clearer why that is. Notice that these scores are relatively close, the difference between the highest and lowest is only 0.17. The difference between the highest and lowest scores is not statistically significant.

Feedback

Feedback is the extent to which performing the work activities required by the job results in the employee obtaining direct and clear information from the job about the effectiveness of her or his performance. (Boonzaier, 2001: 12).

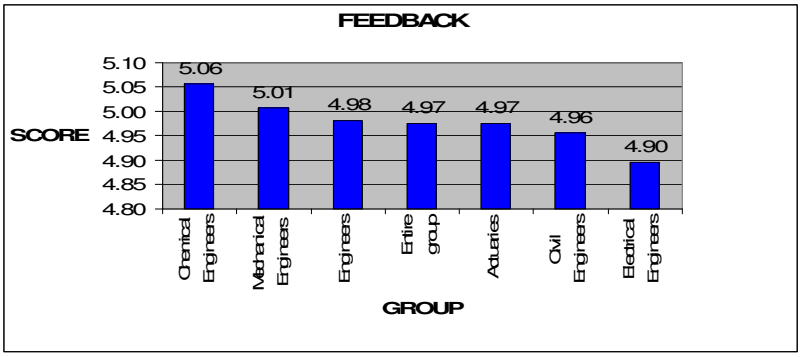


Figure 11: Feedback for each group
Source: Survey results and author calculations

This, overall, was the lowest score of all. Engineers were higher than actuaries by only 0.01, hardly significant. For the entire group this is an area needing improvement. The difference between the highest and lowest scores doesn't constitute statistical significance.

5.1.3. The personal outcomes

Internal work motivation

Internal work motivation is the degree to which the employee is self–motivated to perform effectively on the job, that is, the employee experiences positive internal feelings when working effectively on the job, and negative internal feelings when doing poorly. (Boonzaier, 2001: 12)

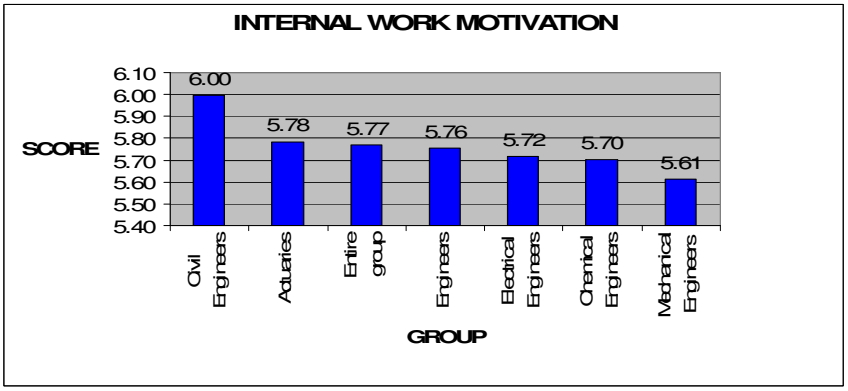


Figure 12: Internal work motivation for each group
Source: Survey results and author calculations

Civil engineers obtained the highest score by a clear margin and it is this group of three factors which contributes to them having the highest average satisfaction score. Two experienced civil engineers were interviewed to give their input on this. Their comments are included in the concluding section. The other point worth mentioning is that the overall scores here are higher than the other personal outcomes. The difference between the highest and lowest scores is statistically significant.

General job satisfaction

General job satisfaction is an overall measure of the degree to which the employee is satisfied and happy with the job. (Boonzaier, 2001: 12).

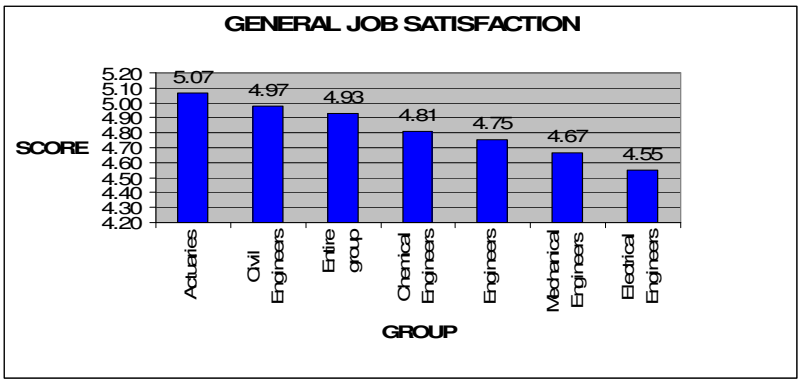


Figure 13: General job satisfaction for each group
Source: Survey results and author calculations

Actuaries scored highest here with the civil engineers second. Electrical engineers are a full 0.52 points lower then actuaries which is a significant amount and a point of concern for that group. The difference between the highest and lowest scores is statistically significant.

Growth satisfaction

Growth satisfaction is the degree to which an individual is satisfied with opportunities for growth in the job. This particular outcome is the result of

elaborations on the original model by Hackman as indicated by Pearce and Wolfe (1978:293) in Boonzaier (2001: 12).

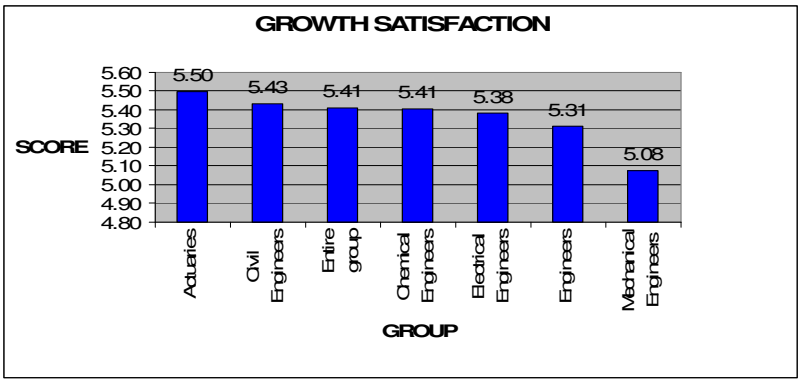


Figure 14: Growth satisfaction for each group
Source: Survey results and author calculations

Here again civil engineers and actuaries obtained the top two scores. The others were relatively close behind except mechanical engineers who scored much lower than the others. In fact they were 0.42 behind actuaries. This is discussed further in the concluding section. The difference between the highest and lowest scores is statistically significant.

5.1.4. The influence of age and area of work

A section was added to the survey to gather details on the respondents such their age, the time in their current job and their area of work. These areas were not investigated in detail; instead the results of some analyses are stated here briefly allowing room for further investigation.

The group of actuaries was analysed to determine if there was a marked difference in average satisfaction between those employed in investment, life insurance, pensions, short term insurance or other. The results are shown in

table 8. Those working in short term insurance are the most satisfied with a score of 5.58. Those working in investment scored 5.3, a difference of 0.28.

Actuary area of work	Average satisfaction
Short term insurance	5.58
Other	5.56
Life insurance	5.50
Pensions	5.31
Investment	5.30

Table 8: Average satisfaction of Actuaries per area of work
Source: Survey results and author calculations

Table 9 shows the group of engineers subdivided into their area of work. The results have been arranged in descending order. The engineers show a far greater variation in satisfaction amongst the groups than actuaries with a difference of 0.67 between the highest and lowest score. The highest is in managing and implementing of construction projects.

Engineer area of work	Average satisfaction
Managing implementation of construction projects	5.60
Designing materials, components, systems or processes	5.41
Improvement of materials, components, systems or processes	5.32
Research, development and commercialization of products	5.26
Investigating, advising and reporting on engineering problems	5.19
Managing or operating plant and processes	5.12
Implementing designs or solutions	5.07
Planning the capacity and location of infrastructure	4.93

Table 9: Average satisfaction of engineers by area of work
Source: Survey results and author calculations

5.1.5. Summary of all results

Table 10 summarises the results discusses thus far. The rows are ordered in such a way that the scores of the group “entire group” are ordered in

descending order. It thus gives an overview of the relative scores of the various factors. Figure 15 shows this graphically.

Summary of all Results (In descending order of entire groups scores)	Internal work motivation	Autonomy	Skill Variety	Task Identity	Task Significance	Average additive MPS	Growth satisfaction	Average satisfaction	Feedback	General job satisfaction
Entire group	5.77	5.63	5.60	5.47	5.45	5.43	5.41	5.37	4.97	4.93
Actuaries	5.78	5.64	5.68	5.61	5.43	5.47	5.50	5.45	4.97	5.07
Engineers	5.76	5.62	5.51	5.29	5.50	5.38	5.31	5.27	4.98	4.75
Chemical Engineers	5.70	5.58	5.75	5.53	5.42	5.47	5.41	5.31	5.06	4.81
Civil Engineers	6.00	5.65	5.63	5.49	5.68	5.48	5.43	5.47	4.96	4.97
Electrical Engineers	5.72	5.60	5.29	4.99	5.40	5.24	5.38	5.22	4.90	4.55
Mechanical Engineers	5.61	5.63	5.36	5.14	5.47	5.32	5.08	5.11	5.01	4.67

Table 10: Summary of results (Ordered by column according to entire group scores)
Source: Survey results and author calculations

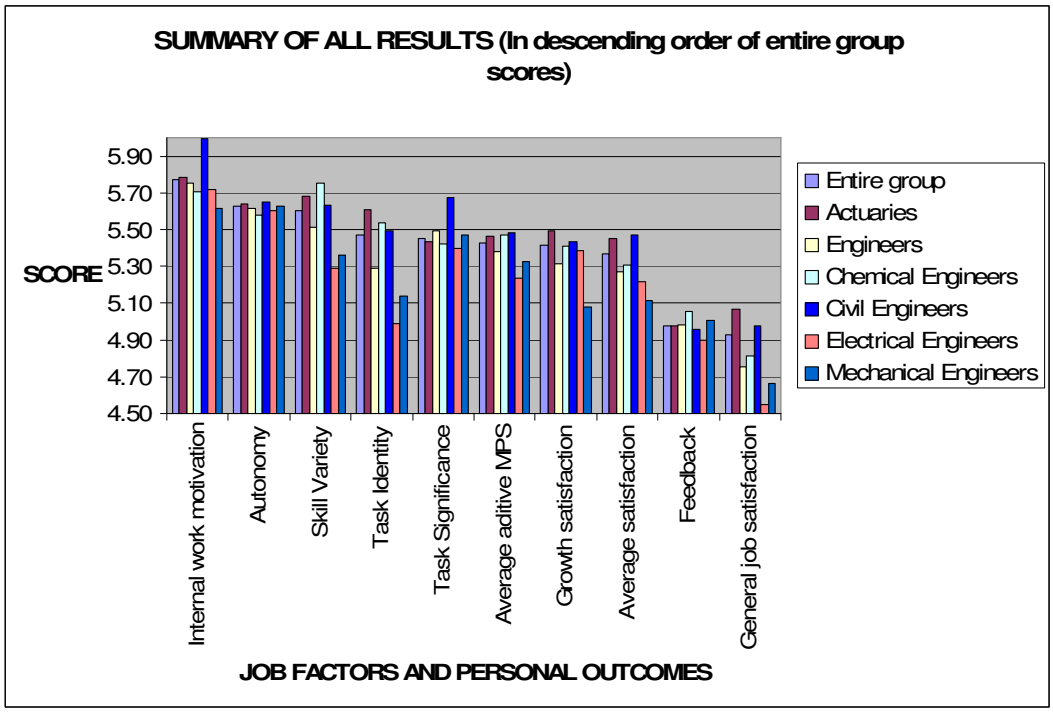


Figure 15: Summary of all results by factors
Source: Survey results and author calculations

Table 10 and figure 15 show the following:

- Of the five job factors autonomy obtained the highest score and feedback the lowest by a significant margin. It is so much lower than the other four factors that it is the only one below MPS which is the average of the five.
- Of the personal outcomes, internal work motivation is the highest followed by growth satisfaction and general job satisfaction. The highest of all scores was obtained by civil engineers for internal work motivation at 6.00 and the lowest was obtained for electrical engineers for general job satisfaction at 4.55.

Table 11 gives the same results as 10 but is ordered differently. The rows are arranged in descending order, according to MPS.

Summary of all Results (In descending order of MPS scores)	Internal work motivation	Autonomy	Skill Variety	Task Identity	Task Significance	Average additive MPS	Growth satisfaction	Average satisfaction	Feedback	General job satisfaction
Civil Engineers	6.00	5.65	5.63	5.49	5.68	5.48	5.43	5.47	4.96	4.97
Chemical Engineers	5.70	5.58	5.75	5.53	5.42	5.47	5.41	5.31	5.06	4.81
Actuaries	5.78	5.64	5.68	5.61	5.43	5.47	5.50	5.45	4.97	5.07
Entire group	5.77	5.63	5.60	5.47	5.45	5.43	5.41	5.37	4.97	4.93
Engineers	5.76	5.62	5.51	5.29	5.50	5.38	5.31	5.27	4.98	4.75
Mechanical Engineers	5.61	5.63	5.36	5.14	5.47	5.32	5.08	5.11	5.01	4.67
Electrical Engineers	5.72	5.60	5.29	4.99	5.40	5.24	5.38	5.22	4.90	4.55

Table 11: Summary of results (Ordered by row according to MPS scores)
Source: Survey results and author calculations

Figure 16 shows the same information in a graphical format.

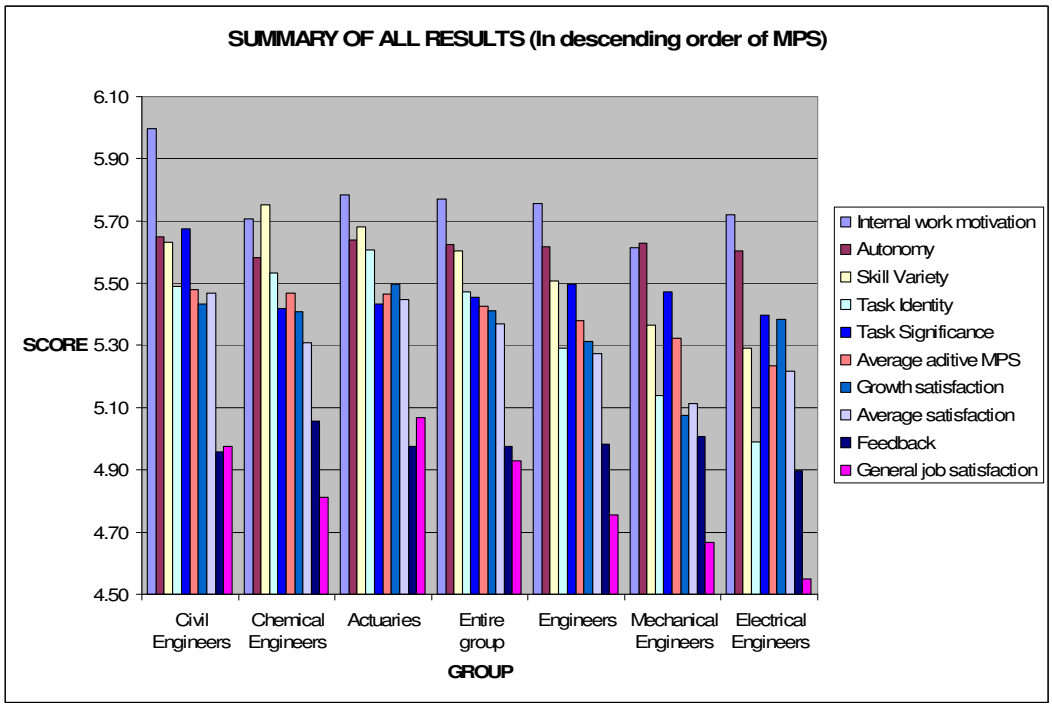


Figure 16: Summary of all results by group
Source: Survey results and author calculations

Table 11 and figure 16 show the following:

- Actuaries scored above the average obtained for the entire group and engineers below.
- In terms of the engineering subgroups, chemical and civil engineers were above average and mechanical and electrical below average.

The results of section 5.15 provide a useful basis for the discussion and conclusion section.

5.2. HYPOTHESIS 1 - CORRELATION BETWEEN MPS AND AVERAGE SATISFACTION.

This section investigates the strength of the correlation between MPS and average satisfaction. As discussed in the literature review MPS (motivating potential score) is the mean score derived from the five job characteristics namely skill variety, task identity, task significance, autonomy and feedback. Average satisfaction is the mean score derived from personal outcomes namely internal work motivation, general job satisfaction and growth satisfaction.

The purpose of the analysis was to determine the applicability of the model to this particular group of employees. It gives an indication of the effect that the job characteristics have on satisfaction and is thus very useful for those managing this group.

The major portion of this section is devoted to a simple linear regression of the entire group with MPS as the independent and average satisfaction the dependent variable. A visual inspection of the scatter and residual plots was done and then the relevant statistics were determined using the ANOVA method. A similar regression was also done on each of the subgroups.

In order to check whether the approximation of the 5 job characteristics into a single score is appropriate, a multiple regression was performed with the job characteristics as the independent and average satisfaction the dependent variables.

5.2.1. The scatter and residual plots

The scatter plot of MPS verses average satisfaction can be seen in figure 17. It shows that there is a positive linear relationship between the two. In other words as the MPS increases, satisfaction increases. This indicates that this model is relevant to the chosen group. As can be expected there are some outliers which will influence the quality of the relationship.

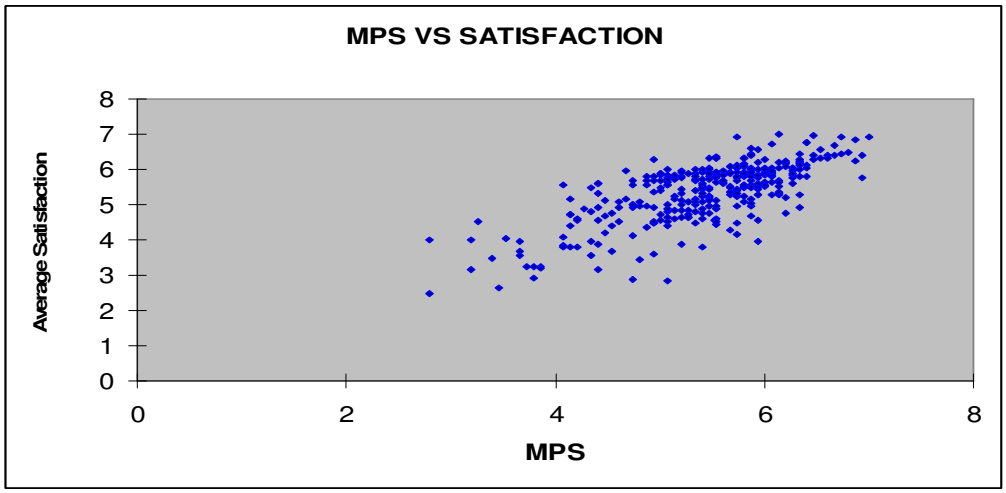


Figure 17: Scatter plot of MPS vs. Average Satisfaction
Source: Survey results and author calculations

The plot of the residuals is shown in figure 18. This gives a visual analysis of whether the chosen linear relationship is an appropriate one. A good model has a residual plot which does not indicate any apparent pattern. In addition the

values should be roughly equally spread above and below the 0 point on the y–axis. Looking at the residual plot shows that these conditions do largely hold true in this case.

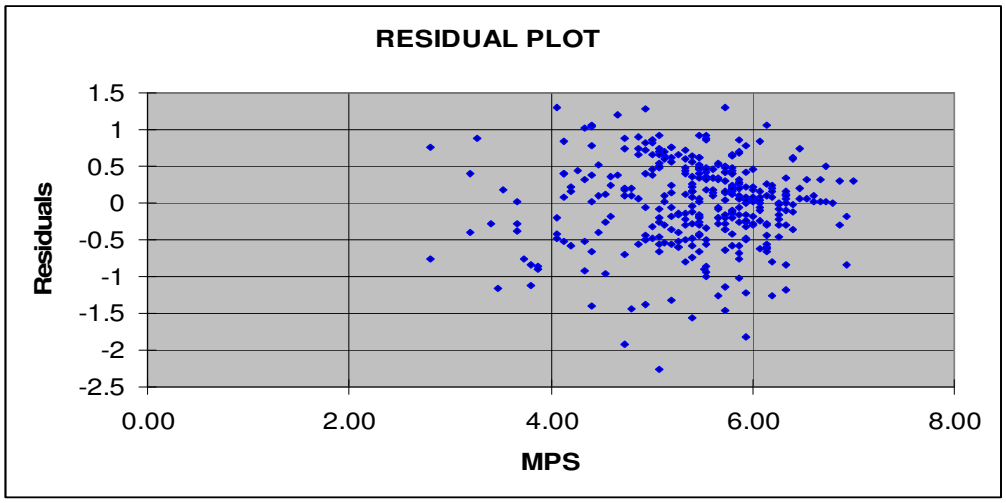


Figure 18: Residual plot of MPS
Source: Survey results and author calculations

5.2.2. Regression Statistics

Table 12 gives a summary of the relevant statistics from a simple linear regression of the entire group performed with MPS as the independent and Average Satisfaction the dependent variable.

Regression Statistics	
Multiple R	0.724
R Square	0.525
Adjusted R Square	0.523
Standard Error	0.574
Observations	344

Table 12: Simple linear regression results - MPS vs. Average satisfaction
Source: Survey results and author calculations

R Square measures the proportion of variation in Y that is explained by the independent variable x in the regression model (Levin et al, 2001: 527). Thus 52.5% of the variation in satisfaction can be attributed to the MPS. This

indicates to supervisors that more than half of the satisfaction of their staff can be attributed to the 5 job characteristics. An explanation of the remaining 47.5% has been given by Hackman and Oldham (1980). They attributed this to a list of moderating factors discussed in the literature review. They are:

a) Growth need strength

b) Pay satisfaction

c) Security satisfaction

d) Co worker satisfaction

e) Supervisor satisfaction

f) Knowledge and skill

Although these factors intuitively do contribute towards satisfaction their legitimacy in the context of this model has been disputed by several researchers, this has been discussed at some length in the literature review. This area of the model needs additional research.

Simple linear regressions were also performed on the subgroups and provided the following results shown in table 13. Civil engineers had a result of 0.63 indicating that 63% of the variation in average satisfaction can be attributed to MPS. The scatter plot for civil engineers is shown in figure 19. It shows graphically how strong the relationship is between the two measures for this group.

Regression statistics for each group	
Group	R Square
Entire group	0.52
Actuaries	0.54
Engineers	0.51
Civil engineers	0.63
Mechanical engineers	0.52
Electrical engineers	0.61
Chemical engineers	0.23

Table 13: R Square values for each subgroup
Source: Survey results and author calculations

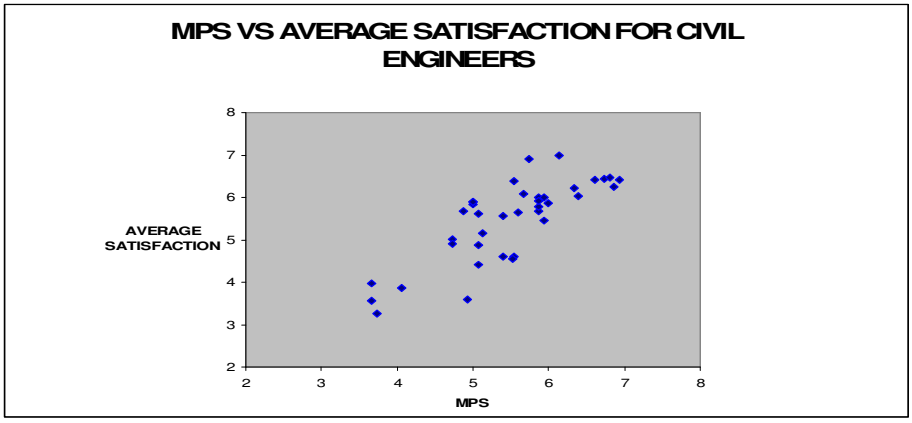


Figure 19: Scatter plot of MPS vs. average satisfaction for civil engineers
Source: Survey results and author calculations

As a complete contrast from the civil engineers, chemical engineers have a poor correlation between MPS and average satisfaction. Their scatter plot is shown in figure 20. Notice the variation in average satisfaction for a given value of MPS. For this group the model doesn't apply nearly as well as for the others. Factors other than job design appear to play a major role in the satisfaction of members of this group.

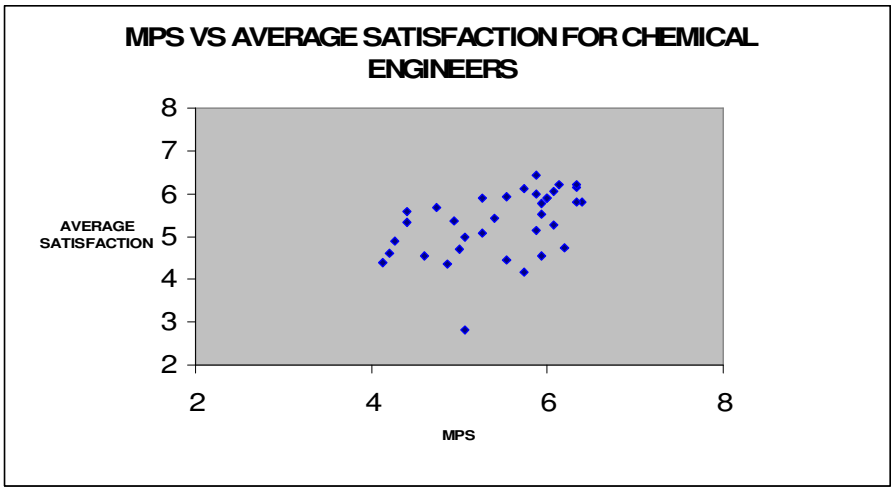


Figure 20: Scatter plot of MPS vs. average satisfaction for chemical engineers
Source: Survey results and author calculations

A further regression analysis was carried out on the whole group, this time a multiple regression to see if a higher level of accuracy could be achieved by considering each of the 5 job characteristics individually. The results are shown in figure 21.

Regression Statistics	
Multiple R	0.737
R Square	0.543
Adjusted R Square	0.536
Standard Error	0.566
Observations	344

Figure 21: Multiple regression statistics
Source: Survey results and author calculations

R Square improved only slightly to 54.3%. This is not considered enough of an improvement to warrant the extra complication of the regression equation with its 5 coefficients. It also indicates that using an average motivating score does not unduly affect the quality of the model.

5.3. HYPOTHESIS 2 - COMPARISON OF ENGINEERS AND ACTURIES WITH OTHERS

Table 14 gives summary statistics of three researchers as well as engineers and actuaries from this study (see column 6 and 7)

	Researchers (see additional notes in literature review)									
	1		**3**		**5**		**6**		**7**	
Job characteristics	Total company workforce including professionals (1989 SA)		Non supervisory clerical jobs in insurance company - qualifications 8-10 (1985 SA)		Professional or technical (USA 1979)		Actuaries (2005 SA)		Engineers (2005 SA)	
No of respondents	4012		135		Know to be a large group, assume 200[4]		197		148	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Skill variety	4.3	1.6	3.7	1.1	5.4	1.0	5.7	0.9	5.7	1.1
Task identity	4.5	1.3	5.1	1.1	5.1	1.2	5.6	0.9	5.0	1.2
Task significance	5.4	1.4	4.9	1.2	5.6	1.0	5.4	1.2	6.0	1.1
Autonomy	4.6	1.5	4.1	1.2	5.4	1.0	5.6	1.0	5.3	1.1
Feedback from job	4.7	1.3	5.1	1.1	5.1	1.1	5.0	1.0	5.0	1.1
Additive MPS	4.7	1.4	4.6	1.1	5.3	1.1	5.5	0.7	5.4	0.9
Multiplicative MPS	114		98		154		161		162	
Internal work motivation	5.2	1	5.2	0.7	5.8	0.65	5.8	0.6	5.8	0.7
General satisfaction	4.7	1.4	4.4	1.1	4.9	0.99	5.1	1.1	4.8	1.2
Growth satisfaction	5	1.5	4.5	1.2	5.1	1.1	5.5	0.9	5.3	1.1
Average satisfaction	5.0	1.3	4.7	1.0	5.3	0.9	5.4	0.8	5.3	0.9

Table 14: Comparative research results with Engineers and Actuaries
Source: Survey results, author calculations and Boonzaier (1994: 105)

[4] 6930 employees were tested. (Hackman, 1980: 316) Professionals formed one of the 9 subgroups. Thus 200 is a very conservative estimate.

Figure 22 shows the 5 job factors of engineers and actuaries compared with Hackman and Oldham's figures for professionals and technical workers in the USA as well as a South African study. Unlike in section 5.13 all the job factors have been shown together.

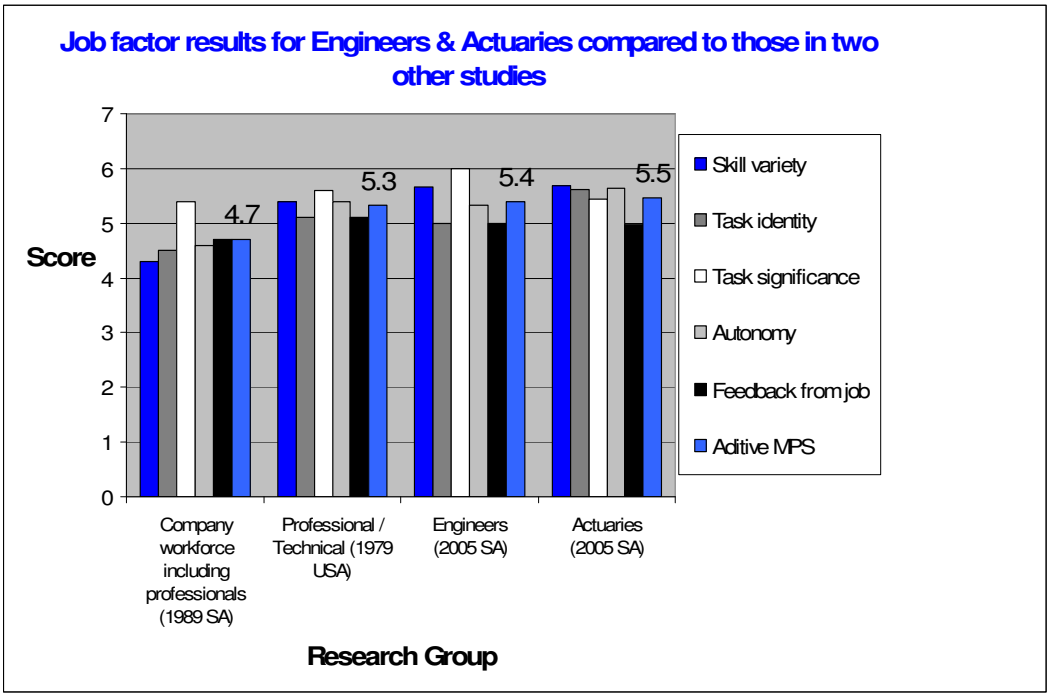


Figure 22: Job factor comparison with other research
Source: Survey results, author calculations and Boonzaier (1994: 105)

The results have been ordered in ascending value of their additive MPS. Note that the MPS and average satisfaction values have been *calculated* for the total work force, clerical group and US professionals. These were not included in the results. This has also been done for the standard deviations.

As could have been expected the company workforce recorded the lowest scores. In general the more skill jobs require the higher their motivating potential. The company workforce contains a wide range of job levels. Table 15 shows that the difference in scores between either actuaries or engineers and the total workforce and clerical group is significant. These can be seen in result numbers 1,2,4,5 & 6 of the table. For more detailed results please refer to annexure F.

The more interesting result is that both the major groups that make up this research obtained higher MPS results than the US norm for professionals. The US norm is somewhat out of date but no new results for a similar group are available. In terms of average satisfaction, actuaries obtained a slightly higher score than the US norm and engineers obtained the same result. Thus, based on this information the jobs of South African engineers and actuaries have a slightly higher motivating potential than the US professionals. Actuaries are slightly more satisfied than US professionals. However, from the perspective of statistical significance these results are inconclusive.

Referring to table 15, the difference between actuaries or engineers and the US group is not large enough to be considered statistically significant.

Result number	Job characteristic	Reject / Do not reject the null hypothesis	Can one say there is a significant difference between the highest and lowest score?
1	Engineers vs. Workforce Average satisfaction	Reject	Yes
2	Actuaries vs. Workforce Average satisfaction	Reject	Yes
3	Actuaries vs. US Professionals Average satisfaction	Do not reject	No
4	Actuaries vs. Clerical MPS	Reject	Yes
5	Actuaries vs. Workforce MPS	Reject	Yes
6	Engineers vs. Workforce MPS	Reject	Yes
7	Engineers vs. US Professionals MPS	Do not reject	No
8	Actuaries vs. US Professionals MPS	Reject	Yes

Table 15: Significance results for comparative groups
Source: Survey results and author calculations

6. DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The results are discussed firstly for the group as a whole and then for each sub group.

6.1. ENTIRE GROUP

6.1.1. Discussion and conclusions

The tables and graphs in section 5.15 provide a basis to discuss the group as a whole. Of the 5 job characteristics autonomy is the highest. This is to be expected from a group of professionals required to use their initiative to solve problems. Feedback is the lowest by a substantial margin across all groups. Clearly, this is a weak area. This is not the feedback provided by supervisors or other staff members rather it is intrinsic to the outcomes of the work itself. Going back to the golf analogy – the quality of the stroke is immediately apparent by the distance and direction of the ball, that is, the feedback is immediate and clear. Fortunately this is an area of a job that can be corrected as discussed in the recommendations. The other three job characteristics are difficult to discuss as a combined group because the scores vary greatly between the sub groups. They are discussed below under the individual sections.

In terms of personal outcomes, internal work motivation received the highest score followed by growth satisfaction and then general job satisfaction. Again there was a high level of variation within these scores. The relatively high score

for internal work motivation is encouraging because it indicates that the group tends to be self motivated, requiring little intervention. Note however that the score of civil engineers stands head and shoulders above the rest. Growth satisfaction could be higher and can be corrected by putting in place a well planned training and development process which is, where possible customised around the needs of individual employees with their input. This process is to be run with integrity. The saying “Talk is cheap” is particularly relevant here. Employees want to see that the opportunities for growth are real and are fulfilled. Time and effort spent growing individuals will be rewarded with loyalty and improved performance. General job satisfaction is a reflection of general happiness in a job. It is more a dependent than independent variable and depends on getting the 5 job factors right as well as other intervening factors.

Hypothesis number one is true: MPS is positively correlated with the average satisfaction. Of the relationship between the two, 52.5% of the variation in satisfaction can be attributed to the MPS for the entire group. This relationship varies substantially form one subgroup to another and will be discussed in each section. **The second hypothesis is not true**, the professionals in this group tend to have a higher satisfaction than those with which they were compared.

6.1.2. Recommendations

Those in authority be they supervisors, team leaders or project managers should ensure that the results of work done are accurately fed back to staff and

highly visible thus allowing unobstructed feedback. As far as possible this feedback should be a natural, ongoing part of the job not the type which is given by a superior in a job appraisal. Another way to improve feedback is through the creation of client relationships as indicated in figure 4 (Boonzaier, 1994). These clients may be external to the company or internal divisions within the company.

Emphasis should be placed on increasing the opportunities for growth. These vary from one employee to the next so the process should be structured to include input from the individual.

In addition to the specifics mentioned above, giving attention to all five of the job factors should yield results in terms of increased satisfaction and motivation. These are relatively straight–forward to understand and implement and so provide a good guideline to those required to manage this group of employees.

6.2. ACTUARIES

6.2.1. Discussion and conclusions

Actuaries on the whole scored well. In addition, as shown in figure 5, the average satisfaction is very close to the MPS score. Thus intervening factors

are well under control and supervisors can focus on increasing the presence of the 5 job factors to maximise satisfaction. They scored better than the group of engineers both on MPS and average satisfaction. They received the highest scores for general job satisfaction and growth satisfaction. They were near the top for most others. The R-Square result was 0.54 which was only 0.02 higher than that obtained for the group as a whole. This is somewhat surprising as it might be expected that the relative homogeneity would result in a higher score.

Two scores they didn't do well in were task significance and feedback. Feedback is a problem common to the entire group and is discussed in section 6.1. Task significance needs to be looked at by the profession. The relatively low score indicates that this group thinks that their work has only a moderately high impact on the lives and work of other people. This result was discussed with an experienced professional actuary, Rob Rusconi. He commented that, to some extent, this is to be expected because the majority of actuaries work on calculations quite far removed from the beneficiary of these.

6.2.2. Recommendations

One way to improve task significance is to form natural work units as suggested in figure 4. (Boonzaier, 1994) Rob Rusconi agreed with this but added that focus should be placed on all five of the job factors.

6.3. ENGINEERS

6.3.1. *Discussion and conclusions*

Engineers, as was expected at the outset of the research, varied substantially between and even within each discipline. It is a heterogeneous group with members doing substantially different work. Thus it is fairly difficult to draw conclusions for the group as a whole.

As discussed in the section on actuaries, engineers scored substantially lower than actuaries on both MPS and average satisfaction. In addition the average satisfaction was much lower than MPS. The R-Square results for engineers and actuaries were close with actuaries scoring 0.54 and engineers 0.51.

A surprising result was skill variety for which engineers scored far lower than actuaries. The author would have thought that the tasks engineers perform are generally more varied than actuaries and hence the skills required would be correspondingly more varied. One explanation for this is that questions are answered based on perception not on absolute reality and so actuaries might perceive that the required skills are more varied than, in fact, they are.

In addition engineers also scored lower than actuaries in the area of task identity which the author found very surprising. Actuaries scored 5.61, 0.3

higher than engineers. One explanation for this could be that engineers tend to be involved in larger projects for which each task is only one small part whereas actuaries are given tasks to perform which form a whole and identifiable piece of work.

6.3.2. Recommendations

The weaker areas for this group are skill variety and task identity. These can be improved by allowing and encouraging more varied work and providing tasks consisting of a 'whole', identifiable piece of work. In general terms, figure 4 refers to this process as combining tasks (Boonzaier, 1994).

6.4. CHEMICAL ENGINEERS

6.4.1. Discussion and conclusions

Chemical engineers are a difficult group to analyse because their results were highly variable. They received the second highest score for MPS but only the forth highest for average satisfaction. In terms of the job factors they received the highest scores for skill variety and feedback yet they received the lowest for autonomy and the second lowest for task significance. In general they faired poorly under the personal outcome scores. They were second lowest for internal work motivation, average for general job satisfaction and average for growth satisfaction.

The R-Square result for the group was only 0.23 indicating that only 23% of the variation in average satisfaction can be attributed to MPS. Thus the model applies weakly to this group (the next lowest R-Square value is 0.52). Factors other than job design are most likely influencing the satisfaction of Chemical engineers. Recommendations are given according to their lowest scoring areas but the group really needs to be studied further to understand this lack of correlation between MPS and average satisfaction.

6.4.2. Recommendations

The low scoring areas were autonomy and task significance. Autonomy should be corrected by establishing internal or external client relationships (Boonzaier, 1994). Task significance should be improved by establishing natural work units. However, as discussed, it is likely that areas outside the 5 job factors are having a large influence on this group. Possible areas may be growth need strength, pay satisfaction, security satisfaction, supervisor satisfaction (Hackman and Oldham, 1980). Areas not mentioned in this research may also have an influence and should be investigated further.

6.5. CIVIL ENGINEERS

6.5.1. Discussion and conclusions

Overall, the results of the civil engineering group were outstanding. It obtained the highest scores for internal work motivation, autonomy, task significance, MPS and average satisfaction. In addition those categories it didn't top, it came close. Particularly noteworthy were internal work motivation and task significance because the scores were highest by significant margins. In addition the difference in scores was statistically significant. The high internal work motivation score means that the job contains a significant proportion of drivers which promote self motivation. When this group performs well it enhances positive internal feelings which in turn encourage even better performance.

Another encouraging sign is that the MPS and average satisfaction scores were very close. This indicates that intervening factors are not interfering with satisfaction which is thus being determined to a large extent by the job design. As discussed under the section on correlation, 63% or nearly two thirds of the variation in average satisfaction can be attributed to the MPS score. Supervisors of this group should get very good results by focusing their attention on the 5 job factors, skill variety, task identity, task significance, autonomy and feedback.

The high task significance score can probably be attributed to the visible nature of their work. From the point of view of the general public, a new bridge is likely to be perceived as far more significant than, say, a new pump!

These results were discussed with two experienced civil engineers, Dr's Patterson and Cooke, directors and founders of a highly successful Cape based engineering consultancy. The model was explained and the results were shown to them. They were asked to respond based on their knowledge of the industry.

Dr Patterson was fairly surprised by the wide range of results amongst the entire engineering group. He expected, on the whole, they would all be relatively satisfied and to a similar degree. He commented that the civil engineering industry is not without its problems. One is that it tends to be more closely linked to the performance of the economy than the other engineering disciplines and that this can be disheartening to those working in it. He commented that he would be keen to see the group of civil engineers investigated in more detail. One way of doing this would be to consider the relationship between area of work and satisfaction for the civil engineers alone as was done for the combined engineering group.

Dr Cooke's view was that the civil engineering industry does offer plenty of opportunity and variety. This enables individuals with the necessary drive to find a niche where they can thrive and enjoy their work. An area he would like to see investigated further is the effect on satisfaction of post graduate qualifications.

6.5.2. Recommendations

Again, feedback was the lowest scoring area for this group. Recommendations for this area are the same as in section 6.1. Those in authority be they supervisors, team leaders or project managers should ensure that the results of work done are accurately fed back to staff and are highly visible, thus allowing unobstructed feedback. As far as possible this feedback should be a natural, ongoing part of the job, not the type which is given by a superior in a job appraisal. Another way to improve feedback is through the creation of client relationships as indicated in figure 6. These clients may be external or internal divisions within the company.

The second lowest area for civil engineers was task identity. This can be improved by combining tasks, encouraging and allowing more varied work and providing tasks consisting of a 'whole' identifiable piece of work

6.6. ELECTRICAL ENGINEERS

6.6.1. Discussion and conclusions

This group obtained the lowest scores for many categories including MPS, average satisfaction, skill variety, task identity, task significance and feedback. For the others it was close to the bottom. Unlike chemical engineers there *is* a

strong correlation between MPS and average satisfaction. This indicates that the low average satisfaction *is* caused by the low MPS and hence a lack of the five job characteristics. The positive side of the results is that the causes are known and, if corrected should significantly improve the average satisfaction. Particular areas for the profession to tackle are skill variety, task identity, task significance and feedback.

6.6.2. Recommendations

It is recommended that emphasis should be placed on all five of the job characteristics. Apart from feedback which is a problem common to all, the lowest scoring areas were skill variety, task identity and task significance. Skill variety and task identity require tasks to be combined, encouraging and allowing more varied work and providing tasks consisting of a 'whole' identifiable piece of work. Task significance should be dealt with by forming natural work units.

6.7. MECHANICAL ENGINEERS

6.7.1. Discussion and conclusions

Mechanical engineers obtained the second lowest scores for both average satisfaction and MPS. Of particular concern is growth satisfaction for which they received the lowest score by the significant margin of 0.3. This indicates

that they are not satisfied with opportunities for growth in the job. The R-Square result was 0.52. Together, these results indicate that satisfaction could be greatly improved by attending to the five job characteristics. The two lowest scoring ones were skill variety and task identity. The low score for task identity may result from the fact that the engineers in question are involved in relatively large projects or plants where their individual efforts form only a small part of the overall result.

6.7.2. Recommendations

In terms of the job characteristics, apart from feedback which is common to all, attention should be paid to skill variety and task identity. As with the engineering group as a whole this can be improved by combining tasks, by encouraging and allowing more varied work and providing tasks consisting of a 'whole' identifiable piece of work. The low score for growth can be correct by putting in place a well planned method of training and development which is developed with the input of individual employees.

6.8. IMPLICATIONS FOR FURTHER RESEARCH

Only some of the detailed demographic information collected in the survey such as age and area of specialisation has been used for this study. However, the balance of the data may be useful for further research. This additional information could be used to subdivided the respondents differently and perhaps discover new traits amongst these groups. Dr Cooke, one of the civil

engineers with whom the results were discussed suggested that satisfaction be related to post graduate education to determine if there is a correlation. Carrell, Jennings & Heavrin (1997) state that older people are generally more satisfied with their jobs than younger people but that this does not occur in a linear fashion. They are relatively satisfied in their thirties as their success grows, become disenchanted their forties but then accept their fate and become more satisfied in their late fifties. Does this assumption hold true for the two groups concerned? To ensure useful results with additional subgroups would require that the sample size be increased. This would have the added benefit of corroborating the results of this study and ensuring that they are truly representative of the population.

It is clear from the literature review that the moderating variables are the least researched area of the model (Johns, Xie and Fang, 1992). These require further research to close the circle and further improve the predictability of the model. Boonzaier (2001) suggests that the JCM variables could be expanded to include psychological factors such as the relationship between personality and motivation. Munz (1996) has researched the effect of positive affectivity on the JDS scales and found that there is a weak relationship. However further research is needed to integrate these ideas into the JCM.

7. REFERENCES

Bennett J. 2002: South African workers can't get no Satisfaction. *Sunday Times*. 13 October.

Boonzaier B & Boonzaier M. 1994: The job diagnostic survey: A functional tool for South African managers. *South African Journal of Business Management*, 25(3): 101 - 109

Boonzaier B, Ficker B & Rust B. 2001: A review of the research on the Job Characteristics Model and the attendant job diagnostic survey. *South African Journal of Business Management*, 32(1): 11 - 34

Burke BG. 1999: Item reversals and response validity in the job diagnostic survey. *Psychological Reports*, 85: 213 – 219

Carrell M, Jennings DF & Heavrin C. 1997: *Fundamentals of Organisational Behaviour*. New Jersey: Prentice Hall.

Cordery JL & Sevastos PP: Responses to the original and revised job diagnostic survey: Is education a factor in responses to negatively worded items? *Journal of Applied Psychology*, 78(1): 141-143

Fried Y & Ferris GR. 1987: The validity of the job characteristics model: A review and meta – analysis. *Personnel Psychology*, 40: 287 - 322

Graham RJ & England R L. 2004: *Creating an Environment for Successful Projects.* San Francisco*:* Jossey – Bass.

Hackman JR & Oldham GR. 1974: *The Job Diagnostic Survey: An instrument for diagnosing the motivational potential of jobs. Technical Report no 4.* Department of Administrative Sciences. Yale University.

Hackman JR. & Oldham GR. 1975: Development of the job diagnostic survey. *Journal of Applied Psychology*, 60(2): 159-170

Hackman JR & Oldham GR. 1980: *Work redesign*. Philippines: Addison – Wesley.

Herzberg F. 1987: One More Time: How Do You Motivate Employees? *Harvard Business review*, September / October 1987: 87 - 96

Idaszak JR, Bottom WP & Drasgow F. 1988: A test of the measurement equivalence of the revised job diagnostic survey: Past problems and current solutions. *Journal of Applied Psychology*, 73(4): 647-656.

Idaszak JR & Drasgow F. 1987: A revision of the job diagnostic survey: Elimination of a measurement artifact. *Journal of Applied Psychology*, 72: 461-468.

Johns G, Xie JL & Fang Y. 1992: Mediating and moderating effects in job design. *Journal of Management*, 18(4): 657 – 676

Larson H. 1982: *Introduction to Probability Theory and Statistical Inference*, Third Edition. New York: Wiley

Levine DM, Stephan D, Krehbiel TC & Berenson ML. 2002: *Statistics for Managers using Microsoft Excel*. Third Edition. New Jersey: Prentice Hall.

Munz DC, Huelsman TJ, Konold TR, McKinney JJ. 1996: Are there Methodological and Substantive Roles for Affectivity in Job Diagnostic Survey Relationships? *Journal of Applied Psychology*, 81(6): 795 – 805

Nel PS, Gerber PD, van Dyk PS, Haasbroek GD, Schultz HB, Sono T & Werner A. 2001: *Human Resource Management*. Fifth edition. Cape Town: Oxford University Press.

Reitz V. 2004: *2004 Engineering Salary Survey It's good to be an engineer.* Cleveland, OH: Penton Media Inc. http:// www.MachineDesign.com

Accessed on 01/05/04

Rusconi R. (RRusconi@seic.com). (2005/03/16): Re: *Research proposal*. E-mail to Rusconi J. (julian@filmatic.com)

University of Central Florida. 2003: *ASME Survey results: Why Engineering*. Florida: University of Central Florida. http://istf.ucf.edu/YEngineering Accessed on 01/05/04

Wiesner, R. and Vermeulen, L. P. 1997: Revised job design practices for future South African organizations. *South African Journal of Economic and Management Sciences*, 21: 175 – 196

8. ANNEXURES: A - G

ANNEXURE A – MEASURING INSTRUMENT – REVISED JDS

ANNEXURE B – SCORING PROCEDURE – REVISED JDS

ANNEXURE C – HERZBERG'S STEPS FOR JOB ENRICHMENT

ANNEXURE D – THE RESULTS

ANNEXURE E – SIGNIFICANCE TESTING FOR SECTION 5.1

ANNEXURE F – SIGNIFICANCE TESTING FOR SECTION 5.3

8.1. ANNEXURE A – MEASURING INSTRUMENT – REVISED JDS

The questions below are those that formed part of the survey. All responses were requested on a scale of 1 (low) to 7 (high) except those in sections 6 and 7 required for classifying responses. A spreadsheet was used with pull-down tools for responses to reduce the probability of flawed survey forms and increase the speed with which responses could be collated and analyzed.

The survey follows the methodology and questions set out by Hackman & Oldham.

Section 1

- How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?
- To what extent does your job involve doing a "whole' and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?
- How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?
- In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

- To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing - aside from any 'feedback' co-workers or supervisors may provide?

Section 2

Listed below are a number of statements which could be used to describe a job. Please indicate whether each statement is an accurate or an inaccurate description of your job.

- The job requires me to use a number of complex or high-level skills.
- The job is arranged so that I can do an entire piece of work from beginning to end.
- Just doing the work required by the job provides many chances for me to figure out how well I am doing.
- The job allows me to use a number of complex or high-level skills.
- This job is one where a lot of other people can be affected by how well the work gets done.
- The job gives me a chance to use my personal initiative and judgment in carrying out the work.
- The job provides me with the chance to completely finish the pieces of work that I begin.
- After I finish a job, I know whether I performed well.

- The job gives me considerable opportunity for independence and freedom in how I do the work.
- The job itself is very significant and important in the broader scheme of things.

Section 3

Each of the statements below is something that a person might say about his or her job. Please indicate your own personal feelings about your job by indicating to what extent you agree with each of the statements.

- My opinion of myself goes up when I do this job well.
- Generally speaking, I am very satisfied with this job.
- I feel a great sense of personal satisfaction when I do this job well.
- I seldom think of quitting this job.
- I feel good and happy when I discover that I have performed well on this job.
- I am generally satisfied with the kind of work I do in this job.
- My own feelings are generally affected by how well I do in this job.

Section 4

Now please indicate how satisfied you are with each aspect of your job listed below.

- The amount of personal growth and development I get in doing my job.
- The feeling of worthwhile accomplishment I get from doing my job.

- The amount of independent thought and action I can exercise in my job.
- The amount of challenge in my job.

Section 5

Now please think of the other people in your organization who hold the same job that you do. If no one has exactly the same job as you, think of the job which is most similar to yours. Please think about how accurately each of the statements describes the feelings of those people about the job.

- Most people in this job feel a great sense of personal satisfaction when they do the job well.
- Most people in this job are very satisfied with the job.
- People in this job seldom think of quitting.
- Most people in this job feel good or happy when they find that they have performed the work well.

Section 6

To be completed only by engineers

- Please select your discipline - Mechanical, Electrical, Chemical or Civil?
- How many years have you worked in this profession?
- How many years have you worked in your current job?
- What age group do you fall into?
- Does more than half your work time involve managing others?

- Are you:
    - Registered as a professional with the Engineering Council of SA
    - Registered as a candidate with the Engineering Council of SA
    - Not registered with the Engineering Council
- Do you work predominantly in:
    - Designing materials, components, systems or processes
    - Planning the capacity and location of infrastructure
    - Investigating, advising and reporting on engineering problems
    - Improvement of materials, components, systems or processes
    - Managing or operating plant and processes
    - Managing implementation or construction projects
    - Implementing designs or solutions
    - Research, development and commercialisation of products

Section 7

To be completed only by actuaries and actuarial students

- In which area do you work; Pensions, Life insurance, Short term insurance, Investments or Other.
- How many years have you worked as an actuary or actuarial student?
- How many years have you worked in your current job?
- What age group do you fall into?
- Does more than half your work time involve managing others?
- Have you qualified as an actuary (FIA or FFA)?

8.2. ANNEXURE B – SCORING PROCEDURE – REVISED JDS

The job characteristics are scored across the following items in each respective section of the revised JDS, according to the following scheme:	
Skill variety:	Section One, question 3; Section Two, statements 1 and 4
Task identity:	Section One, question 2; Section Two, statements 2 and 7
Task significance:	Section One, question 4; Section Two, statements 5 and 10
Autonomy:	Section One, question 1; Section Two, statements 6 and 9
Feedback:	Section One, question 5; Section Two, statements 3 and 8
Subsequently, an average score is computed is computed for each of the job characteristics. The Motivating Potential Score (MPS) represents the sum of the five respective job characteristic scores.	
The personal outcomes are scored across the following items in each respective section of the revised JDS according to the following scheme:	
Internal work motivation:	Section Three, statements 1, 3, 5 and 7
	Section Five, statements 1 and 4
General job satisfaction:	Section Three, statements 2, 4 and 6
	Section Five, statements 2 and 3
Growth satisfaction:	Section Four, statements 1,2, 3 and 4
Subsequently an average score is computed for each of the personal outcomes.	

Table 16 Revised JDS Scoring Procedure
Source: Boonzaier (2001: 34) who adapted Hackman and Oldham (1974 & 1975)

8.3. ANNEXURE C – HERZBERG'S STEPS FOR JOB ENRICHMENT

Now that the motivator idea has been described in practice, here are the steps that managers should take in instituting the principle with their employees:

1. Select those jobs in which a) the investment in industrial engineering does not make changes too costly, b) attitudes are poor, c) hygiene is becoming very costly, and d) motivation will make a difference in performance.

2. Approach these jobs with the conviction that they can be changed. Years of tradition have led managers to believe that job content is sacrosanct and the only scope of action that they have is in ways of stimulating people.

3. Brainstorm a list of changes that may enrich the jobs, without concern for their practicality.

4. Screen the list to eliminate suggestions that involve hygiene, rather than actual motivation.

5. Screen the list for generalities, such as "give them more responsibility," that are rarely followed in practice. This might seem obvious, but the motivator words have never left industry; the substance has just been rationalized and organized out. Words like "responsibility; "growth; "achievement," and "challenge," for example, have been elevated to the lyrics of the patriotic anthem for all organizations. It is the old problem typified by the pledge of allegiance to the flag being more important than

contributions to the country - of following the form, rather than the substance.

6. Screen the list to eliminate any horizontal loading suggestions.

7. Avoid direct participation by the employees whose jobs are to be enriched. Ideas they have expressed previously certainly constitute a valuable source for recommended changes, but their direct involvement contaminates the process with human relations hygiene and, more specifically, gives them only a sense of making a contribution. The job is to be changed, and it is the content that will produce the motivation, not attitudes about being involved or the challenge inherent in setting up a job. That process will be over shortly, and it is what the employees will be doing from then on that will determine their motivation. A sense of participation will result only in short-term movement.

8. In the initial attempts at job enrichment, set up a controlled experiment. At least two equivalent groups should be chosen, one an experimental unit in which the motivators are systematically introduced over a period of time, and the other one a control group in which no changes are made. For both groups, hygiene should be allowed to follow its natural course for the duration of the experiment. Pre- and post-installation tests of performance and job attitudes are necessary to evaluate the effectiveness of the job enrichment program. The attitude test must be limited to motivator items in order to divorce employees' views of the jobs they are given from all the surrounding hygiene feelings that they might have.

9. Be prepared for a drop in performance in the experimental group the first few weeks. The changeover to a new job may lead to a temporary reduction in efficiency.

10. Expect your first-line supervisors to experience some anxiety and hostility over the changes you are making. The anxiety comes from their fear that the changes will result in poorer performance for their unit. Hostility will arise when the employees start assuming what the supervisors regard as their own responsibility for performance. The supervisor without checking duties to perform may then be left with little to do.

After successful experiment, however, the supervisors usually discover the supervisory and managerial functions they have neglected, or which were never theirs because all their time was given over to checking the work of their subordinates. For example, in the R&D division of one large chemical company I know of, the supervisors of the laboratory assistants were theoretically responsible for their training and evaluation. These functions, however, had come to be performed in a routine, unsubstantial fashion. After the job enrichment program, during which the supervisors were not merely passive observers of the assistants' performance, the supervisors actually were devoting their time to reviewing performance and administering thorough training.

What has been called an employee-centered style of supervision will come about not through education of supervisors, but by changing the jobs that they do.

Job enrichment will not be a one-time proposition, but a continuous management functions. The initial changes should last for a very long period of time. There are a number of reasons for this:

• The changes should bring the job up to the level of challenge commensurate with the skill that was hired.

• Those that have still more ability eventually will be able to demonstrate it better and win promotion to higher level jobs.

• The very nature of motivators, as opposed to hygiene factors, is that they have a much longer-term effect on employees' attitudes. It is possible that the job will have to be enriched again, but this will not occur as frequently as the need for hygiene.

Not all jobs can be enriched, nor do all jobs need to be enriched. If only a small percentage of the time and money that is now devoted to hygiene, however, were given to job enrichment efforts, the return in human satisfaction and economic gain would be one of the largest dividends that industry and society have ever reaped through their efforts at better personnel management.

The argument for job enrichment can be summed up quite simply: If you have employees on a job, use them. If you can't use them on the job, get rid of them, either via automation or by selecting someone with lesser ability. If you can't use them and you can't get rid of them, you will have a motivation problem.

Source: Herzberg (1987:95)

8.4. ANNEXURE D – THE RESULTS

Job satisfaction survey Ave aditive MPS 5.43 Ave satisfaction ### Multiplicative MPS 160.82

MPS std dev 0.67 ve satisfaction std dev 0.8 ultiplicative std dev 64

	Key results										Section 1					Section 2										Section 3							Section 4				Section 5				Section 6 - Engineers							Section 7 - Actuaries					
	Skill variety	Task identity	Task significance	Autonomy	Feedback	MPS	Internal work motivation	General job satisfaction	Growth satisfaction	Average sat / mot	Q 1.1	Q 1.2	Q 1.3	Q 1.4	Q 1.5	Q 2.1	Q 2.2	Q 2.3	Q 2.4	Q 2.5	Q 2.6	Q 2.7	Q 2.8	Q 2.9	Q 2.10	Q 3.1	Q 3.2	Q 3.3	Q 3.4	Q 3.5	Q 3.6	Q 3.7	Q 4.1	Q 4.2	Q 4.3	Q 4.4	Q 5.1	Q 5.2	Q 5.3	Q 5.4	Q 6.1	Q 6.2	Q 6.3	Q 6.4	Q 6.5	Q 6.6	Q 6.7	Q 7.1	Q 7.2	Q 7.3	Q 7.4	Q 7.5	Multiplicative MPS
1151	6.67	5.67	7.00	6.67	6.00	6.40	6.50	6.80	7.00	6.77	7	5	7	7	6	6	6	5	7	7	7	6	7	6	7	7	7	7	7	7	7	6	7	7	7	7	6	6	7	6	0	0	0	0	0	0	0	Shor	6-10	Less	26-3	Yes	#####
1152	6.67	5.67	5.67	6.33	4.67	5.80	5.67	5.60	6.50	5.92	6	6	6	5	5	7	5	4	7	7	7	6	5	6	5	6	6	6	6	6	6	6	7	7	6	6	5	5	5	5	0	0	0	0	0	0	0	Othe	11-1	6-10	31-3	No	#####
1153	6.00	5.00	6.33	6.00	6.00	5.87	6.00	6.20	5.75	5.98	5	6	5	6	6	6	3	6	7	6	6	6	6	7	7	6	7	6	6	6	6	6	5	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Life	21-2	6-10	41-4	Yes	#####
1154	6.00	5.33	6.67	6.33	3.67	5.60	5.67	5.40	5.75	5.61	6	5	6	7	3	6	6	4	6	7	7	5	4	6	6	4	6	6	6	7	6	5	6	6	6	5	6	5	4	6	0	0	0	0	0	0	0	Pens	16-2	6-10	36-4	No	#####
1155	5.67	6.00	6.33	6.33	2.67	5.40	5.67	5.40	5.75	5.61	6	6	5	7	3	6	6	2	6	6	7	6	3	6	6	5	5	6	4	7	6	4	5	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Pens	21-2	6-10	41-4	No	#####
1156	4.67	4.33	5.67	4.00	4.00	4.53	4.50	4.20	4.50	4.40	4	5	4	6	4	5	4	4	5	5	5	4	4	3	6	6	5	5	6	5	6	6	4	5	4	5	2	2	2	3	0	0	0	0	0	0	0	Pens	3yrs	1yr t	26-3	No	78.22
1157	7.00	6.33	6.33	7.00	6.00	6.53	5.83	6.40	6.75	6.33	7	7	7	6	6	7	6	6	7	7	7	6	6	7	6	6	7	6	6	6	7	5	7	6	7	7	6	6	6	6	0	0	0	0	0	0	0	Life	More	3yrs	Olde	Yes	#####
1158	5.00	5.67	4.00	4.33	3.00	4.40	4.33	2.60	2.50	3.14	5	5	5	4	2	5	6	3	5	3	3	6	4	5	5	5	2	3	2	5	2	5	2	2	3	3	3	3	4	5	0	0	0	0	0	0	0	Inve	3yrs	3yrs	31-3	No	63.56
1159	6.00	5.00	5.00	5.00	4.67	5.13	6.00	5.60	5.75	5.78	5	5	6	4	4	6	5	4	6	5	5	5	6	5	6	6	6	6	6	6	6	6	6	6	5	6	6	5	5	6	0	0	0	0	0	0	0	Life	3yrs	1yr t	26-3	No	#####
1160	5.67	3.33	5.00	5.67	5.33	5.00	6.33	5.60	4.50	5.48	6	4	5	5	5	6	3	5	6	5	5	3	6	6	5	6	6	7	6	6	5	6	3	6	6	3	7	5	6	6	0	0	0	0	0	0	0	Othe	3yrs	3yrs	25yr	No	#####
1161	6.67	5.67	6.33	6.33	5.33	6.07	5.33	5.40	6.75	5.83	6	5	7	6	5	6	6	5	7	7	7	6	6	6	6	6	7	7	7	4	6	7	6	7	7	7	4	4	3	4	0	0	0	0	0	0	0	Life	11-1	1yr t	31-3	Yes	#####
1162	5.67	5.00	6.33	5.67	5.67	5.67	6.17	5.80	5.75	5.91	6	5	5	6	5	6	5	6	6	6	5	5	6	6	7	7	6	7	6	6	6	5	6	6	5	6	6	6	5	6	0	0	0	0	0	0	0	Othe	6-10	1yr t	26-3	No	#####
1163	5.33	3.67	4.33	4.67	3.67	4.33	6.00	5.00	5.50	5.50	4	2	3	3	4	6	4	3	7	5	5	5	4	5	5	6	6	7	4	5	6	6	6	5	5	6	6	5	4	6	0	0	0	0	0	0	0	Life	Less	Less	25yr	No	76.05
1164	5.33	6.00	6.00	5.67	4.00	5.40	6.00	3.80	4.50	4.77	6	7	4	6	2	6	4	5	6	7	5	7	5	6	5	6	5	6	3	7	4	6	3	5	4	6	5	4	3	6	0	0	0	0	0	0	0	Life	3yrs	3yrs	25yr	No	#####
1165	5.67	4.67	3.33	5.33	5.33	4.87	5.67	5.80	5.25	5.57	5	5	6	2	5	6	4	6	5	5	5	5	5	6	3	5	6	6	5	6	6	5	6	4	5	6	6	6	6	6	0	0	0	0	0	0	0	Shor	6-10	3yrs	26-3	No	#####
1175	6.33	6.00	6.00	6.33	4.00	5.73	6.00	6.00	5.75	5.92	6	6	7	6	4	6	6	3	6	6	7	6	5	6	6	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6	0	0	0	0	0	0	0	Othe	11-1	Less	36-4	No	#####
1176	6.00	6.00	3.00	6.00	3.67	4.93	5.33	5.40	4.00	4.91	6	6	6	3	4	6	6	3	6	3	6	6	4	6	3	4	5	6	4	6	6	4	2	2	6	6	6	6	6	6	0	0	0	0	0	0	0	Pens	16-2	6-10	41-4	No	#####
1177	7.00	7.00	6.67	6.33	6.33	6.67	6.67	6.40	7.00	6.69	5	7	7	6	6	7	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	5	6	0	0	0	0	0	0	0	Life	11-1	6-10	31-3	Yes	#####
1178	5.00	6.00	5.67	5.00	5.33	5.40	6.33	5.40	6.00	5.91	4	6	5	6	5	5	6	5	5	6	6	6	6	5	5	7	6	7	5	6	6	6	6	6	6	6	6	5	5	6	0	0	0	0	0	0	0	Othe	Less	Less	25yr	No	#####
1179	6.00	6.00	6.67	5.00	5.33	5.80	6.33	5.60	4.50	5.48	5	6	5	7	5	6	6	5	7	6	5	6	6	5	7	6	5	6	5	7	6	6	4	6	4	4	6	6	6	7	0	0	0	0	0	0	0	Pens	21-2	1yr t	41-4	No	#####
1180	5.67	5.67	7.00	5.67	4.67	5.73	6.33	5.40	5.25	5.66	5	5	6	7	4	6	6	5	5	7	7	6	5	5	7	6	6	6	4	7	6	6	6	5	5	5	6	6	5	7	0	0	0	0	0	0	0	Inve	6-10	1yr t	31-3	No	#####
1181	6.00	6.67	6.00	6.33	5.67	6.13	5.83	5.40	5.75	5.66	6	7	6	6	5	6	7	6	6	6	7	6	6	6	6	6	6	6	5	6	6	5	5	6	7	5	6	5	5	6	0	0	0	0	0	0	0	Life	11-1	6-10	41-4	Yes	#####
1182	5.67	7.00	5.00	6.00	6.33	6.00	5.67	5.20	5.75	5.54	6	7	5	5	7	6	7	6	6	5	6	7	6	6	5	6	6	6	5	6	6	6	5	6	6	6	5	5	4	5	0	0	0	0	0	0	0	Othe	3yrs	3yrs	31-3	Yes	#####
1183	5.33	5.67	5.33	4.67	6.00	5.40	6.00	5.00	5.50	5.50	4	5	3	6	6	6	6	6	7	5	5	6	6	5	5	6	6	6	4	6	5	6	5	6	5	6	6	5	5	6	0	0	0	0	0	0	0	Life	1yr t	1yr t	25yr	No	#####
1184	6.00	6.33	6.67	6.00	4.33	5.87	4.83	4.80	5.25	4.96	6	7	6	7	4	6	6	4	6	7	6	6	5	6	6	4	6	6	4	5	6	6	6	4	6	5	4	4	4	4	0	0	0	0	0	0	0	Life	3yrs	3yrs	26-3	No	#####
1185	5.33	5.00	5.33	5.00	4.33	5.00	5.83	3.80	4.00	4.54	5	5	3	5	4	6	5	4	7	6	5	5	5	5	5	6	3	6	2	6	3	6	2	5	4	5	5	5	6	6	0	0	0	0	0	0	0	Life	6-10	3yrs	31-3	No	#####
1186	7.00	5.33	5.33	6.33	5.33	5.87	6.17	6.60	7.00	6.59	6	6	7	5	5	7	5	5	7	5	7	5	6	6	6	6	7	7	7	7	7	5	7	7	7	7	6	6	6	6	0	0	0	0	0	0	0	Life	6-10	6-10	31-3	Yes	#####
1187	6.33	6.00	6.67	6.00	5.67	6.13	6.50	5.60	6.00	6.03	5	6	5	7	5	7	6	6	7	7	6	6	6	7	6	7	6	7	6	7	6	6	6	6	6	6	6	5	5	6	0	0	0	0	0	0	0	Life	3yrs	3yrs	25yr	No	#####
1188	6.67	6.33	7.00	6.33	6.33	6.53	6.83	6.40	6.50	6.58	6	6	7	7	5	6	6	7	7	7	6	7	7	7	7	6	7	7	6	7	7	7	7	6	6	7	7	6	6	7	0	0	0	0	0	0	0	Inve	3yrs	1yr t	25yr	No	#####
1189	6.00	7.00	6.00	7.00	6.00	6.40	6.67	6.60	7.00	6.76	7	7	6	6	6	6	7	6	6	6	7	7	6	7	6	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	0	0	0	0	0	0	0	Pens	21-2	3yrs	Olde	No	#####
1190	6.33	6.67	7.00	5.00	6.33	6.27	6.83	5.40	5.25	5.83	4	7	5	7	6	7	7	6	7	7	6	6	7	5	7	7	5	7	5	7	5	7	5	5	6	5	7	6	6	6	0	0	0	0	0	0	0	Pens	6-10	6-10	31-3	No	#####
1191	5.67	6.33	6.33	6.00	4.00	5.67	5.67	5.20	5.00	5.29	6	7	6	7	3	6	6	4	5	6	6	6	5	6	6	6	6	6	6	4	5	6	3	5	6	6	6	5	4	6	0	0	0	0	0	0	0	Othe	11-1	6-10	36-4	No	#####
1192	6.00	5.67	6.00	5.67	5.33	5.73	5.67	6.20	6.25	6.04	5	6	5	6	4	7	5	6	6	6	6	6	6	6	6	6	7	6	7	6	6	4	6	6	7	6	6	6	5	6	0	0	0	0	0	0	0	Life	21-2	11-1	Olde	Yes	#####
1193	5.00	5.67	6.33	6.00	5.67	5.73	6.00	4.00	5.75	5.25	6	6	4	7	6	6	5	5	5	6	6	6	6	6	6	6	5	7	5	6	2	6	5	6	6	6	5	4	4	6	0	0	0	0	0	0	0	Life	16-2	6-10	36-4	No	#####
1194	6.67	4.67	6.00	6.00	5.67	5.80	6.33	5.00	6.25	5.86	6	5	6	6	5	7	4	6	7	6	6	5	6	6	6	7	6	7	6	6	6	7	6	6	7	6	6	3	4	5	0	0	0	0	0	0	0	Othe	6-10	Less	36-4	No	#####
1195	6.33	6.00	5.67	5.33	5.33	5.73	6.17	6.20	5.75	6.04	5	6	5	5	5	7	6	5	7	6	6	6	6	5	6	7	6	6	6	6	6	4	6	6	5	6	7	7	6	7	0	0	0	0	0	0	0	Life	11-1	3yrs	31-3	No	#####
1196	5.67	5.00	3.33	4.67	3.33	4.40	6.00	2.40	3.25	3.88	5	5	3	4	2	7	5	4	7	4	5	5	4	4	2	7	2	7	2	7	2	4	3	3	5	2	6	3	3	5	0	0	0	0	0	0	0	Life	3yrs	3yrs	26-3	No	72.59
1197	6.67	6.67	5.33	5.67	4.67	5.80	5.33	5.40	6.00	5.58	5	7	6	4	4	7	6	5	7	6	6	7	5	6	6	6	6	6	6	6	6	4	6	6	6	6	5	5	4	5	0	0	0	0	0	0	0	Pens	3yrs	3yrs	26-3	Yes	#####
1198	6.33	6.00	6.00	5.33	6.00	5.93	6.17	5.40	6.00	5.86	5	6	5	6	6	7	6	6	7	6	5	6	6	6	6	7	6	7	5	6	6	6	6	6	6	6	6	6	4	5	0	0	0	0	0	0	0	Pens	21-2	Less	Olde	No	#####
1199	6.33	6.67	6.33	7.00	6.00	6.47	6.17	6.80	6.25	6.41	7	7	5	6	6	7	6	6	7	6	7	7	6	7	7	6	7	7	7	6	6	6	6	6	7	6	6	7	7	6	0	0	0	0	0	0	0	Pens	More	3yrs	Olde	No	#####
1200	6.00	6.33	6.00	6.33	5.00	5.93	5.67	5.80	6.00	5.82	7	7	6	6	5	6	6	5	6	6	6	6	5	6	6	4	6	6	6	6	6	6	6	6	6	6	6	5	6	6	0	0	0	0	0	0	0	Pens	21-2	16-2	Olde	No	#####
1201	6.33	5.00	6.00	6.00	4.33	5.53	6.17	6.60	6.25	6.34	6	5	5	6	4	7	5	4	7	6	6	5	5	6	6	6	7	7	7	6	7	6	7	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Life	11-1	Less	31-3	No	#####
1202	5.67	5.67	6.00	6.00	5.00	5.67	6.00	5.80	6.50	6.10	5	6	5	5	4	6	5	5	6	7	7	6	6	6	6	6	6	6	6	7	6	6	6	6	7	7	5	6	5	6	0	0	0	0	0	0	0	Life	11-1	1yr t	31-3	Yes	#####
1203	4.00	6.00	5.00	5.33	3.33	4.73	6.67	5.00	5.00	5.56	5	6	4	5	3	5	6	3	3	4	5	6	4	6	6	7	5	7	3	7	5	6	5	5	6	4	6	6	6	7	0	0	0	0	0	0	0	Life	1yr t	1yr t	31-3	No	88.89
1204	5.67	6.33	6.67	5.33	5.67	5.93	5.83	5.00	5.00	5.28	5	6	5	7	5	6	6	5	6	6	5	7	7	6	7	6	6	6	5	6	5	6	5	5	5	5	5	5	4	6	0	0	0	0	0	0	0	Pens	3yrs	1yr t	31-3	No	#####
1205	5.00	6.00	5.33	5.00	4.67	5.20	5.83	6.00	6.00	5.94	5	6	5	5	4	5	6	5	5	5	5	6	5	5	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Life	11-1	3yrs	31-3	No	#####
1206	6.33	5.00	5.33	6.00	2.67	5.07	6.17	5.40	5.75	5.77	6	5	7	5	2	6	5	3	6	5	6	5	3	6	6	6	5	7	5	6	5	6	6	5	6	6	6	6	6	6	0	0	0	0	0	0	0	Life	6-10	1yr t	31-3	No	88.89
1207	4.00	7.00	5.33	6.67	3.67	5.33	4.83	4.40	4.25	4.49	7	7	4	5	4	3	7	3	5	6	7	7	4	6	5	6	4	4	4	6	6	5	2	4	6	5	4	4	4	4	0	0	0	0	0	0	0	Life	1yr t	1yr t	25yr	No	#####
1208	5.67	5.67	5.67	5.67	5.67	5.67	5.33	5.00	5.75	5.36	6	5	5	6	5	6	6	6	6	7	5	6	6	6	4	4	6	6	4	6	6	4	5	6	6	6	6	5	4	6	0	0	0	0	0	0	0	Pens	More	6-10	41-4	No	#####
1209	2.33	4.33	3.33	4.67	4.67	3.87	4.67	2.20	2.75	3.21	4	4	3	3	4	2	3	4	2	3	6	6	6	4	4	4	1	4	1	5	1	4	2	2	6	1	6	4	4	5	0	0	0	0	0	0	0	Inve	1yr t	1yr t	25yr	No	72.59
1210	5.67	6.00	5.00	6.00	5.67	5.67	6.17	5.20	4.75	5.37	5	6	6	4	5	5	6	6	6	6	6	6	6	7	5	7	6	6	2	6	6	6	2	6	5	6	6	6	6	6	0	0	0	0	0	0	0	Shor	6-10	Less	41-4	No	#####
1211	6.00	5.00	6.33	6.33	5.33	5.80	5.67	6.80	6.50	6.32	6	5	6	7	5	6	5	5	6	7	7	5	6	6	5	5	7	6	7	6	7	5	6	6	7	7	6	6	7	6	0	0	0	0	0	0	0	Life	21-2	6-10	Olde	No	#####
0001	7.00	6.00	6.00	6.00	5.67	6.13	5.83	4.00	6.00	5.28	6	6	7	6	6	7	6	5	7	6	6	6	6	6	6	7	5	7	3	6	6	5	7	6	6	5	5	4	2	5	0	0	0	0	0	0	0	Inve	11-1	1yr t	31-3	No	#####
0002	5.33	6.67	5.67	5.67	6.00	5.87	6.00	6.00	6.00	6.00	5	6	4	5	6	6	7	6	6	6	6	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Life	3yrs	Less	26-3	No	#####
0003	5.33	5.67	5.67	6.33	5.67	5.73	5.33	4.60	5.00	4.98	6	5	5	5	5	5	6	6	6	6	7	6	6	6	6	5	5	5	4	5	5	5	5	6	6	3	6	5	4	6	0	0	0	0	0	0	0	Life	6-10	3yrs	31-3	No	#####
0004	5.67	7.00	5.67	7.00	5.67	6.20	5.67	4.40	5.50	5.19	7	7	5	7	6	6	7	5	6	4	7	7	6	7	6	4	6	5	4	7	4	4	5	5	7	5	7	4	4	7	0	0	0	0	0	0	0	Othe	3yrs	Less	26-3	No	#####
0005	5.33	3.33	4.00	5.67	3.67	4.40	6.17	3.60	5.00	4.92	6	3	4	2	4	6	2	5	6	7	5	5	2	6	3	7	4	6	3	6	2	6	5	3	6	6	6	7	2	6	0	0	0	0	0	0	0	Inve	1yr t	1yr t	25yr	No	87.73
0006	5.67	5.33	3.67	6.00	6.00	5.33	5.67	3.20	5.50	4.79	6	5	5	2	6	6	5	6	6	3	6	6	6	6	6	4	5	6	2	5	4	6	6	4	6	6	7	3	2	6	0	0	0	0	0	0	0	Life	6-10	6-10	26-3	Yes	#####
0007	5.33	6.00	5.67	5.33	5.33	5.53	5.83	5.80	6.00	5.88	5	6	6	5	5	5	6	5	5	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	6	0	0	0	0	0	0	0	Pens	11-1	6-10	31-3	Yes	#####
0008	6.00	5.33	5.67	5.33	4.67	5.40	6.50	5.20	6.25	5.98	5	5	6	5	4	6	5	5	6	7	6	6	5	5	5	7	6	7	4	7	6	6	7	6	6	6	6	6	4	6	0	0	0	0	0	0	0	Pens	6-10	1yr t	31-3	No	#####
0009	6.33	4.67	5.67	6.00	2.67	5.07	6.33	4.60	5.75	5.56	5	4	5	5	3	7	5	3	7	6	7	5	2	6	6	7	5	6	5	7	4	4	6	5	7	5	7	5	4	7	0	0	0	0	0	0	0	Life	6-10	3yrs	26-3	No	88.89
0010	5.00	5.33	3.67	3.67	4.67	4.47	4.50	4.60	5.00	4.70	4	4	5	3	6	5	5	2	5	4	3	7	6	4	4	6	6	6	5	6	4	3	5	6	3	6	2	4	4	4	0	0	0	0	0	0	0	Pens	1yr t	Less	25yr	No	79.85
0011	6.33	2.33	5.67	5.67	3.33	4.67	5.33	4.60	5.50	5.14	6	3	6	5	4	6	2	3	7	6	6	2	3	5	6	6	6	6	3	6	6	5	5	5	6	6	4	5	3	5	0	0	0	0	0	0	0	Life	6-10	3yrs	31-3	No	90.25
0012	5.33	5.33	5.67	5.67	5.33	5.47	5.17	5.00	5.50	5.22	6	5	5	6	5	6	5	5	5	5	6	6	6	5	6	5	6	6	6	6	5	6	6	6	6	4	4	4	4	4	0	0	0	0	0	0	0	Life	3yrs	1yr t	26-3	No	#####
0013	6.33	5.67	6.33	5.67	6.00	6.00	6.17	5.60	6.00	5.92	6	5	5	6	5	7	6	6	7	7	6	6	7	5	6	7	6	7	6	7	7	6	6	6	6	6	4	4	5	6	0	0	0	0	0	0	0	Pens	11-1	1yr t	31-3	No	#####
0014	6.33	5.67	5.33	6.67	5.00	5.80	5.83	5.00	5.75	5.53	7	7	6	5	6	7	5	3	6	5	6	5	6	7	6	6	5	7	4	5	6	7	6	5	6	6	5	6	4	5	0	0	0	0	0	0	0	Life	6-10	3yrs	31-3	No	#####
0015	7.00	4.67	7.00	7.00	6.00	6.33	6.33	6.20	6.25	6.26	7	5	7	7	6	7	4	6	7	7	7	5	6	7	7	6	7	7	6	7	6	6	6	6	7	6	6	6	6	6	0	0	0	0	0	0	0	Life	11-1	3yrs	31-3	Yes	#####
0016	5.67	6.00	6.33	1.00	4.00	4.60	5.33	4.60	5.25	5.06	1	5	4	5	4	6	7	2	7	7	1	6	6	1	7	6	6	6	6	6	6	5	5	6	4	6	3	3	2	6	0	0	0	0	0	0	0	Pens	Less	Less	25yr	No	24.00
0018	5.67	5.33	6.33	6.33	5.33	5.80	6.67	5.80	6.00	6.16	7	5	5	7	5	6	6	5	6	6	6	5	6	6	6	6	6	7	6	7	6	7	6	6	6	6	6	5	6	7	0	0	0	0	0	0	0	Othe	11-1	6-10	36-4	No	#####
0019	4.33	5.33	4.33	6.00	5.67	5.13	5.33	4.20	4.25	4.59	6	4	3	3	5	5	6	6	5	5	6	6	6	6	5	6	4	6	5	6	3	2	3	4	5	5	6	4	5	6	0	0	0	0	0	0	0	Life	6-10	1yr t	31-3	No	#####
0020	4.00	4.67	1.67	4.33	2.67	3.47	3.67	2.00	2.25	2.64	5	5	4	2	2	4	5	3	4	1	5	4	3	3	2	4	2	4	1	4	3	5	2	2	3	2	2	2	2	3	0	0	0	0	0	0	0	Pens	6-10	3yrs	31-3	No	39.80
0021	6.00	5.00	6.00	6.00	5.00	5.60	5.50	5.60	6.00	5.70	6	5	6	6	5	6	5	5	6	6	6	5	5	6	6	4	6	6	6	5	6	6	6	6	6	6	6	5	5	6	0	0	0	0	0	0	0	Othe	21-2	6-10	Olde	Yes	#####
0023	6.33	6.33	7.00	6.33	5.33	6.27	5.67	6.40	6.00	6.02	6	6	6	7	5	6	6	5	7	7	7	7	6	6	7	5	7	6	7	6	6	5	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Life	6-10	3yrs	26-3	Yes	#####
0024	5.67	5.67	6.00	7.00	5.33	5.93	6.17	6.20	6.25	6.21	7	6	5	6	4	6	5	6	6	6	7	6	6	7	6	6	6	7	7	7	6	5	6	6	7	6	6	6	6	6	0	0	0	0	0	0	0	Inve	6-10	11-1	36-4	No	#####
0025	5.67	6.00	5.00	5.67	5.00	5.47	5.83	5.80	6.00	5.88	5	6	6	5	5	5	6	5	6	5	6	6	5	6	5	6	6	6	6	6	6	5	6	6	6	6	6	6	5	6	0	0	0	0	0	0	0	Othe	3yrs	Less	26-3	No	#####
0026	5.67	5.67	3.67	4.67	6.33	5.20	5.67	4.20	5.50	5.12	4	6	5	4	6	5	5	7	7	3	5	6	6	5	4	5	5	6	4	6	4	5	5	5	6	6	6	4	4	6	0	0	0	0	0	0	0	Life	6-10	1yr t	31-3	Yes	#####
0027	5.67	4.00	5.67	6.33	4.00	5.13	4.33	5.40	4.75	4.83	6	5	5	6	4	6	2	5	6	6	6	5	3	7	5	5	6	7	5	5	6	3	3	5	6	5	3	4	6	3	0	0	0	0	0	0	0	Life	11-1	1yr t	31-3	Yes	#####
0028	6.00	5.33	3.67	6.33	5.67	5.40	5.67	4.80	5.25	5.24	6	5	4	3	6	7	5	6	7	3	7	6	5	6	5	6	6	6	5	6	6	6	5	5	6	5	5	5	2	5	0	0	0	0	0	0	0	Life	6-10	6-10	26-3	No	#####
0029	6.33	7.00	4.33	5.67	5.33	5.73	6.17	4.20	6.00	5.46	5	7	5	4	4	7	7	6	7	4	6	7	6	6	5	6	4	6	4	6	5	6	6	6	6	6	7	4	4	6	0	0	0	0	0	0	0	Shor	3yrs	Less	25yr	No	#####
0030	6.00	4.67	5.33	5.00	5.33	5.27	5.50	4.80	5.00	5.10	4	4	6	5	5	6	5	5	6	6	6	5	6	5	5	6	5	6	4	6	6	6	5	5	5	5	5	5	4	4	0	0	0	0	0	0	0	Pens	6-10	Less	26-3	No	#####
0031	5.33	7.00	4.33	5.67	5.00	5.47	5.50	4.00	4.75	4.75	5	7	5	4	5	5	7	5	6	5	7	7	5	5	4	5	2	3	1	5	5	6	6	5	5	3	7	6	6	7	0	0	0	0	0	0	0	Inve	6-10	3yrs	26-3	No	#####
0032	7.00	6.00	5.00	6.33	5.67	6.00	6.00	6.40	6.50	6.30	6	6	7	5	5	7	5	6	7	5	7	7	6	6	5	6	7	6	7	7	6	6	6	6	7	7	6	6	6	5	0	0	0	0	0	0	0	Pens	16-2	3yrs	36-4	Yes	#####
0033	5.67	5.33	5.67	5.67	4.67	5.40	6.00	5.00	5.50	5.50	6	5	4	5	5	7	6	4	6	6	6	5	5	5	6	6	5	6	5	6	6	7	5	5	6	6	5	4	5	6	0	0	0	0	0	0	0	Life	6-10	6-10	31-3	No	#####
0034	4.67	4.67	3.67	4.67	3.00	4.13	6.00	4.00	5.50	5.17	4	5	3	3	2	6	3	3	5	5	5	6	4	5	3	6	5	6	3	6	5	6	6	5	6	5	6	4	3	6	0	0	0	0	0	0	0	Shor	1yr t	1yr t	25yr	No	60.67
0035	4.33	6.33	4.67	5.33	5.33	5.20	5.83	2.00	3.75	3.86	5	7	3	6	5	5	6	6	5	3	5	6	5	6	5	6	2	6	2	6	2	6	3	5	5	2	5	2	2	6	0	0	0	0	0	0	0	Pens	3yrs	Less	26-3	No	#####
0036	5.00	5.67	6.00	6.33	4.67	5.53	5.17	4.40	4.00	4.52	6	5	4	7	4	5	6	4	6	6	6	6	6	7	5	6	6	6	5	7	6	6	2	2	6	6	3	3	2	3	0	0	0	0	0	0	0	Othe	3yrs	Less	31-3	No	#####
0037	6.33	6.00	5.33	6.00	5.67	5.87	6.50	4.60	6.25	5.78	6	6	5	4	4	7	6	6	7	6	6	6	7	6	6	7	5	6	5	7	6	7	6	6	6	7	6	4	3	6	0	0	0	0	0	0	0	Life	3yrs	3yrs	26-3	Yes	#####
0038	2.00	5.00	2.33	4.00	3.00	3.27	5.33	4.20	4.00	4.51	4	5	2	2	2	3	5	3	1	2	3	5	4	5	3	6	5	6	3	5	5	5	5	5	3	3	5	5	3	5	0	0	0	0	0	0	0	Pens	6-10	1yr t	31-3	No	37.33
0039	5.67	4.00	5.33	4.33	4.67	4.80	5.50	4.20	5.50	5.07	3	4	5	5	4	6	3	5	6	6	5	5	5	5	5	4	4	6	4	6	5	6	6	5	5	6	5	4	4	6	0	0	0	0	0	0	0	Othe	3yrs	Less	25yr	No	#####
0040	5.67	5.67	6.33	5.33	6.00	5.80	5.67	4.60	5.00	5.09	5	5	5	6	6	6	6	6	6	7	6	6	6	5	6	6	4	5	2	5	5	6	5	5	5	5	6	6	6	6	0	0	0	0	0	0	0	Pens	16-2	Less	36-4	No	#####
0041	4.67	5.00	4.00	2.67	4.67	4.20	4.83	4.80	4.00	4.54	3	5	3	4	4	6	5	4	5	3	2	5	6	3	5	6	6	5	6	6	4	3	4	3	4	5	4	3	5	5	0	0	0	0	0	0	0	Pens	3yrs	3yrs	26-3	No	56.69
0042	####	4.33	5.33	5.33	5.33	5.20	6.67	4.60	5.00	5.42	4	5	6	4	5	5	2	5	6	6	6	6	6	6	6	7	6	7	1	7	6	7	5	5	5	5	6	5	5	6	0	0	0	0	0	0	0	Pens	11-1	6-10	31-3	No	#####
0043	3.67	4.00	4.00	4.00	5.00	4.13	6.50	3.20	4.50	4.73	4	5	3	3	5	6	5	4	2	5	6	2	6	2	4	7	6	7	2	7	2	7	6	6	3	3	5	4	2	6	0	0	0	0	0	0	0	Life	11-1	1yr t	31-3	No	77.78
0044	3.67	4.00	4.00	4.00	5.00	4.13	6.50	3.20	4.50	4.73	4	5	3	3	5	6	5	4	2	5	6	2	6	2	4	7	6	7	2	7	2	7	6	6	3	3	5	4	2	6	0	0	0	0	0	0	0	Life	11-1	1yr t	31-3	No	77.78
0045	6.00	6.33	5.67	6.67	5.33	6.00	6.00	5.80	6.25	6.02	6	7	6	5	5	6	6	5	6	6	7	6	6	7	6	6	6	6	5	6	6	6	6	6	7	6	6	6	6	6	0	0	0	0	0	0	0	Inve	3yrs	1yr t	26-3	Yes	#####
0046	6.00	6.00	2.00	5.00	5.67	4.93	5.17	3.00	5.25	4.47	6	6	5	2	5	7	6	6	6	2	4	6	6	5	2	6	2	6	1	6	6	4	5	5	6	5	3	3	3	6	0	0	0	0	0	0	0	Life	6-10	3yrs	31-3	No	#####
0047	6.00	6.00	2.00	5.00	5.67	4.93	5.17	3.00	5.25	4.47	6	6	5	2	5	7	6	6	6	2	4	6	6	5	2	6	2	6	1	6	6	4	5	5	6	5	3	3	3	6	0	0	0	0	0	0	0	Life	6-10	3yrs	31-3	No	#####
0048	6.33	4.67	6.00	6.33	2.67	5.20	6.17	5.40	6.25	5.94	7	6	6	6	4	6	2	2	7	6	6	6	2	6	6	7	6	7	5	7	7	6	7	6	6	6	6	5	4	4	0	0	0	0	0	0	0	Life	11-1	Less	31-3	Yes	95.70
0049	4.67	6.33	2.33	3.67	2.00	3.80	2.67	3.40	2.75	2.94	3	6	4	3	2	5	7	2	5	2	5	6	2	3	2	3	6	3	3	3	5	2	3	3	3	2	2	2	1	3	0	0	0	0	0	0	0	Pens	1yr t	1yr t	25yr	No	32.59
0050	6.00	6.00	6.67	6.00	7.00	6.33	6.17	5.60	6.25	6.01	6	6	5	6	7	6	6	7	7	7	6	6	7	6	7	6	7	7	5	7	7	5	6	6	6	7	6	6	3	6	0	0	0	0	0	0	0	Inve	3yrs	3yrs	26-3	No	#####
0051	5.33	6.33	6.00	5.67	6.00	5.87	5.33	5.60	5.75	5.56	5	7	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	6	7	6	6	6	6	5	4	4	4	4	0	0	0	0	0	0	0	Pens	6-10	1yr t	31-3	No	#####
0052	5.67	5.33	6.00	5.33	5.67	5.60	6.17	5.40	6.00	5.86	5	5	5	6	5	6	5	6	6	6	6	6	6	5	6	6	4	7	5	6	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Pens	11-1	Less	31-3	No	#####
0053	6.00	5.00	5.67	6.33	4.33	5.47	6.00	5.00	4.75	5.25	6	4	5	5	4	6	6	4	7	6	6	5	5	7	6	6	6	7	7	7	6	6	6	4	5	4	4	3	3	6	0	0	0	0	0	0	0	Life	6-10	3yrs	26-3	No	#####
0054	5.67	6.00	6.67	5.00	5.67	5.80	6.67	5.80	5.75	6.07	5	6	3	7	6	7	6	5	7	7	5	6	6	5	6	6	7	7	6	7	6	7	5	5	6	7	6	6	4	7	0	0	0	0	0	0	0	Shor	6-10	1yr t	26-3	No	#####
0055	7.00	6.67	6.67	6.33	6.67	6.67	6.50	6.20	6.50	6.40	6	7	7	7	6	7	6	7	7	7	7	7	7	6	6	7	7	7	6	7	7	6	6	6	7	7	6	6	5	6	0	0	0	0	0	0	0	Pens	11-1	3yrs	31-3	No	#####
0056	6.33	6.33	6.00	5.67	4.33	5.73	6.17	5.60	6.50	6.09	5	7	6	6	4	6	6	4	7	6	6	6	5	6	6	7	7	7	5	6	6	5	7	7	6	6	6	5	5	6	0	0	0	0	0	0	0	Pens	6-10	3yrs	26-3	No	#####
0057	3.00	3.67	4.33	1.67	4.33	3.40	3.00	4.40	3.00	3.47	1	4	5	4	4	2	2	4	2	5	3	5	5	1	4	1	4	1	4	5	5	1	1	1	4	6	4	5	4	6	0	0	0	0	0	0	0	Life	1yr t	1yr t	25yr	No	26.48
0058	5.00	5.00	7.00	5.00	4.67	5.33	4.83	4.40	5.75	4.99	3	4	3	7	4	6	6	5	6	7	7	5	5	5	7	4	5	6	5	5	5	4	5	6	6	6	5	4	3	5	0	0	0	0	0	0	0	Pens	6-10	6-10	31-3	No	#####
0059	5.67	6.00	7.00	3.67	5.33	5.53	6.33	5.40	6.00	5.91	3	6	6	7	5	5	6	6	6	7	5	6	5	3	7	6	6	7	6	7	5	6	6	7	5	6	6	6	4	6	0	0	0	0	0	0	0	Pens	1yr t	1yr t	25yr	No	#####
0060	5.67	5.67	5.67	5.00	5.33	5.47	6.67	5.40	6.00	6.02	5	6	5	6	5	6	5	5	6	5	5	6	6	5	6	7	6	7	5	7	7	6	6	6	6	6	6	5	4	7	0	0	0	0	0	0	0	Life	11-1	3yrs	36-4	Yes	#####
0061	5.33	5.00	4.67	5.00	4.00	4.80	4.83	4.80	5.25	4.96	5	5	4	3	5	6	5	4	6	6	5	5	3	5	5	5	5	5	5	6	5	5	5	5	6	5	4	5	4	4	0	0	0	0	0	0	0	Shor	3yrs	1yr t	26-3	No	#####
0062	6.00	6.33	3.67	4.00	2.33	4.47	5.00	3.60	4.00	4.20	4	7	4	4	3	7	6	2	7	2	5	6	2	3	5	5	5	5	2	5	3	4	3	5	3	5	5	3	5	6	0	0	0	0	0	0	0	Othe	3yrs	3yrs	26-3	No	49.78
0063	5.67	6.00	5.00	5.00	4.33	5.20	6.33	5.40	5.50	5.74	5	6	6	5	4	5	6	4	6	5	5	6	5	5	5	7	6	6	6	7	5	6	5	5	6	6	6	5	5	6	0	0	0	0	0	0	0	Pens	3yrs	3yrs	26-3	No	#####
0064	6.00	4.67	6.00	6.00	3.00	5.13	5.67	5.80	5.75	5.74	5	5	6	6	3	6	4	3	6	6	7	5	3	6	6	6	6	7	6	6	5	5	5	5	7	6	5	6	6	5	0	0	0	0	0	0	0	Life	3yrs	3yrs	25yr	No	#####
0065	6.67	6.33	7.00	5.67	5.67	6.27	6.00	5.40	6.50	5.97	5	6	6	7	5	7	6	6	7	7	6	7	6	6	7	7	6	7	6	7	6	6	7	6	6	7	5	5	4	4	0	0	0	0	0	0	0	Pens	1yr t	1yr t	25yr	No	#####
0066	1.33	5.33	4.00	3.33	5.00	3.80	5.17	2.00	2.50	3.22	5	4	1	2	5	1	6	4	2	6	3	6	6	2	4	3	1	5	1	5	1	6	1	1	6	2	6	4	3	6	0	0	0	0	0	0	0	Life	1yr t	1yr t	25yr	No	59.26

0067	7.00	7.00	7.00	7.00	6.33	6.87	6.50	7.00	7.00	6.83	7	7	7	7	6	7	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	4	7	7	7	7	7	7	7	7	0	0	0	0	0	0	0	Othe	1yr t	1yr t	25yr	No	#####
0068	7.00	6.33	6.67	6.00	5.00	6.20	5.17	6.80	6.50	6.16	5	6	7	7	5	7	6	5	7	6	7	7	5	6	7	2	7	6	6	7	7	4	7	6	6	7	6	7	7	6	0	0	0	0	0	0	0	Life i	Less	Less	25yr	No	#####
0069	6.00	6.00	2.00	5.67	4.67	4.87	5.83	5.60	6.00	5.81	5	6	4	2	4	7	6	4	7	2	6	6	6	6	2	6	6	6	7	6	6	6	5	6	6	7	5	4	5	6	0	0	0	0	0	0	0	Life i	3yrs	3yrs	25yr	No	#####
0070	7.00	6.00	5.33	6.00	5.33	5.93	4.50	5.60	6.75	5.62	5	6	7	5	4	7	6	6	7	6	7	6	6	6	5	2	6	6	7	6	6	2	7	6	7	7	6	5	4	5	0	0	0	0	0	0	0	Life i	16-2	3yrs	41-4	No	#####
0071	5.67	6.33	5.00	3.67	5.33	5.20	5.50	3.80	5.75	5.02	3	7	5	4	5	6	6	5	6	5	4	6	6	4	6	7	6	6	3	6	6	6	6	6	5	6	6	2	2	2	0	0	0	0	0	0	0	Pens	3yrs	3yrs	25yr	No	#####
0072	5.67	5.33	4.33	6.00	5.33	5.33	5.83	5.00	6.25	5.69	6	4	4	3	4	7	6	6	6	5	6	6	6	6	5	6	6	6	5	6	6	6	6	6	7	6	6	5	3	5	0	0	0	0	0	0	0	Life i	6-10	Less	26-3	No	#####
0073	6.33	6.00	6.67	6.33	6.00	6.27	5.83	5.60	6.25	5.89	6	6	7	6	6	6	6	6	6	7	7	6	6	6	7	5	6	6	5	6	6	5	5	6	7	7	7	5	6	6	0	0	0	0	0	0	0	Life i	16-2	6-10	36-4	Yes	#####
0074	4.67	5.67	6.00	1.33	4.00	4.33	5.33	2.40	3.00	3.58	1	5	2	4	4	6	6	4	6	7	2	6	4	1	7	6	3	2	1	6	4	6	2	6	2	2	6	2	2	6	0	0	0	0	0	0	0	Pens	3yrs	3yrs	26-3	No	29.04
0075	4.33	6.67	4.33	6.33	5.67	5.47	6.00	5.60	6.00	5.87	6	6	4	3	5	4	7	6	5	4	7	7	6	6	6	6	5	6	6	6	6	6	6	5	7	6	6	6	5	6	0	0	0	0	0	0	0	Othe	3yrs	Less	26-3	No	#####
0076	4.00	6.33	7.00	6.33	5.67	5.87	5.67	5.20	4.25	5.04	6	6	7	7	5	2	7	6	3	7	7	6	6	6	7	6	6	7	6	6	6	7	2	6	6	3	4	4	4	4	0	0	0	0	0	0	0	Othe	11-1	3yrs	31-3	Yes	#####
0077	6.67	6.67	7.00	6.67	6.67	6.73	7.00	7.00	6.75	6.92	6	7	6	7	6	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7	7	0	0	0	0	0	0	0	Othe	11-1	6-10	36-4	Yes	#####
0078	5.33	4.33	5.67	6.33	5.67	5.47	6.17	4.20	5.25	5.21	6	5	4	5	6	6	4	5	6	6	7	4	6	6	6	7	5	6	4	6	6	6	2	6	7	6	6	3	3	6	0	0	0	0	0	0	0	Life i	11-1	6-10	36-4	Yes	#####
0079	7.00	6.00	6.33	6.00	6.00	6.27	6.00	5.00	5.75	5.58	5	5	7	6	6	7	6	6	7	7	6	7	6	7	6	7	5	6	2	6	6	6	6	6	6	5	5	7	5	6	0	0	0	0	0	0	0	Life i	6-10	Less	31-3	Yes	#####
0080	6.67	6.67	6.00	6.00	5.67	6.20	6.50	6.20	6.00	6.23	6	7	6	6	5	7	7	6	7	6	6	6	6	6	6	7	7	7	6	7	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	Life i	3yrs	3yrs	26-3	Yes	#####
0081	4.67	6.33	3.00	5.00	6.33	5.07	4.50	3.80	5.25	4.52	5	7	5	2	6	4	6	6	5	2	6	6	7	4	5	5	3	4	4	6	6	5	6	5	5	5	3	2	4	4	0	0	0	0	0	0	0	Pens	Less	Less	25yr	No	#####
0082	6.67	7.00	6.00	6.67	6.00	6.47	6.83	7.00	7.00	6.94	7	7	6	6	6	7	7	6	7	6	6	7	6	7	6	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	0	0	0	0	0	0	0	Othe	21-2	6-10	Olde	No	#####
0083	4.33	4.33	3.67	3.33	4.67	4.07	5.00	2.40	4.00	3.80	4	6	2	2	5	6	1	3	5	5	4	6	6	2	4	4	1	5	1	6	6	4	1	5	4	6	6	3	1	5	0	0	0	0	0	0	0	Pens	3yrs	3yrs	25yr	No	63.95
0084	5.33	5.00	5.00	6.00	6.00	5.47	5.33	4.60	5.50	5.14	6	5	6	5	6	5	5	6	5	5	6	5	6	6	5	4	5	6	3	6	5	4	5	5	6	6	6	6	4	6	0	0	0	0	0	0	0	Pens	16-2	3yrs	36-4	Yes	#####
0085	6.33	5.67	6.33	6.67	4.33	5.87	6.50	5.40	4.50	5.47	7	5	5	5	4	7	6	4	7	7	7	6	5	6	7	6	6	7	4	6	7	6	3	3	6	6	7	5	5	7	0	0	0	0	0	0	0	Life i	11-1	3yrs	36-4	No	#####
0086	5.00	6.33	5.67	5.33	5.00	5.47	5.67	5.80	5.75	5.74	4	6	4	5	4	5	7	6	6	5	6	6	5	6	7	6	5	6	6	6	6	5	6	5	6	6	5	6	6	6	0	0	0	0	0	0	0	Life i	3yrs	3yrs	26-3	No	#####
0087	5.33	5.67	4.67	6.33	4.67	5.33	6.00	5.00	5.25	5.42	6	5	4	3	5	6	6	3	6	5	6	6	6	7	6	6	5	6	5	7	5	5	4	5	6	6	6	5	5	6	0	0	0	0	0	0	0	Life i	More	1yr t	Olde	No	#####
0088	6.67	4.67	6.67	6.33	5.00	5.87	6.33	6.40	6.50	6.41	6	6	6	6	5	7	2	5	7	7	7	6	5	6	7	6	7	6	7	7	6	6	6	6	7	7	7	6	6	6	0	0	0	0	0	0	0	Life i	More	3yrs	46-5	No	#####
0089	5.33	5.67	6.00	6.00	5.33	5.67	5.50	5.20	5.75	5.48	6	5	5	6	5	5	6	6	6	6	6	6	5	6	6	4	6	6	6	5	6	6	5	6	6	6	6	4	4	6	0	0	0	0	0	0	0	Inves	21-2	3yrs	41-4	No	#####
0090	6.67	5.33	4.33	6.00	6.00	5.67	6.50	5.40	5.75	5.88	6	5	6	3	6	7	6	6	7	5	6	5	6	6	5	6	6	7	6	6	6	6	6	5	7	5	7	5	4	7	0	0	0	0	0	0	0	Life i	6-10	1yr t	36-4	No	#####
0091	4.33	4.33	6.33	6.33	4.00	5.07	6.00	5.20	6.00	5.73	6	5	6	6	5	3	2	5	4	7	7	6	2	6	6	6	6	7	5	6	6	5	5	7	6	6	7	5	4	5	0	0	0	0	0	0	0	Life i	11-1	3yrs	31-3	Yes	#####
0092	5.67	6.00	5.00	4.67	3.33	4.93	6.83	6.20	5.75	6.26	4	6	5	4	3	6	6	3	6	5	5	6	4	5	6	7	6	7	5	6	6	7	6	6	5	6	7	7	7	7	0	0	0	0	0	0	0	Pens	11-1	3yrs	36-4	No	86.42
0093	6.00	5.33	6.33	6.00	5.33	5.80	6.50	5.00	6.00	5.83	6	5	6	6	5	6	5	5	6	7	6	6	6	6	6	7	5	7	5	6	5	7	6	6	6	6	6	5	5	6	0	0	0	0	0	0	0	Pens	3yrs	1yr t	26-3	No	#####
0094	6.00	5.67	6.33	5.33	6.00	5.87	6.00	6.00	5.75	5.92	5	6	6	6	6	6	6	6	6	7	6	5	6	5	6	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6	0	0	0	0	0	0	0	Life i	3yrs	3yrs	25yr	No	#####
0095	5.67	6.33	3.00	6.00	5.33	5.27	5.33	4.60	4.25	4.73	6	6	5	3	5	5	6	5	7	3	6	7	6	6	3	6	5	6	3	6	5	2	3	3	6	5	6	5	5	6	0	0	0	0	0	0	0	Shor	3yrs	3yrs	26-3	No	#####
0096	6.33	6.00	5.67	4.67	5.00	5.53	5.83	5.60	6.00	5.81	4	6	5	5	5	7	6	5	7	5	5	6	5	5	7	5	6	6	6	6	6	6	6	6	6	6	6	6	4	6	0	0	0	0	0	0	0	Shor	3yrs	1yr t	25yr	No	#####
0097	4.67	6.00	5.00	5.67	6.33	5.53	5.33	4.60	4.75	4.89	6	6	4	5	7	4	6	6	6	5	6	6	6	5	5	5	5	7	4	6	2	1	5	5	6	3	6	6	6	7	0	0	0	0	0	0	0	Inves	6-10	3yrs	31-3	No	#####
0098	6.33	7.00	6.33	6.33	5.67	6.33	6.33	6.00	6.00	6.11	6	7	6	7	5	7	7	6	6	6	7	7	6	6	6	6	6	7	6	7	5	6	6	6	6	6	6	7	6	6	0	0	0	0	0	0	0	Shor	11-1	3yrs	36-4	No	#####
0099	5.67	7.00	5.00	6.67	3.33	5.53	6.50	6.20	6.25	6.32	7	7	7	5	3	5	7	3	5	6	7	7	4	6	4	7	7	7	7	7	6	6	7	6	6	6	7	7	4	5	0	0	0	0	0	0	0	Shor	3yrs	Less	25yr	No	#####
0100	5.00	4.67	5.00	6.33	5.67	5.33	5.50	6.20	5.50	5.73	7	4	3	1	6	6	3	5	6	7	7	7	6	5	7	4	6	7	7	6	6	4	5	6	6	5	6	6	6	6	0	0	0	0	0	0	0	Life i	3yrs	3yrs	26-3	No	#####
0101	6.00	6.33	5.67	6.33	6.00	6.07	6.00	5.80	6.00	5.93	6	6	6	5	6	6	7	6	6	6	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	0	0	0	0	0	0	0	Othe	11-1	1yr t	36-4	Yes	#####
0103	6.33	6.33	7.00	7.00	6.33	6.60	6.50	6.00	6.50	6.33	7	7	7	7	7	6	5	5	6	7	7	7	7	7	7	7	5	7	7	7	5	6	7	7	6	6	6	6	7	6	0	0	0	0	0	0	0	Pens	11-1	1yr t	31-3	Yes	#####
0104	6.00	4.33	4.67	5.00	5.67	5.13	5.83	5.20	6.50	5.84	4	3	6	3	5	5	5	6	7	6	6	5	6	5	5	6	6	7	5	7	6	6	7	6	6	7	5	5	4	4	0	0	0	0	0	0	0	Inves	1yr t	Less	25yr	No	#####
0105	5.00	6.33	4.67	6.33	5.00	5.47	5.67	5.60	5.00	5.42	7	7	4	6	4	6	6	5	5	3	6	6	6	6	5	7	6	6	4	5	6	4	4	6	5	5	6	6	6	6	0	0	0	0	0	0	0	Othe	More	6-10	Olde	No	#####
0106	6.00	7.00	6.33	6.33	4.67	6.07	5.83	5.80	6.25	5.96	6	7	6	7	4	6	7	4	6	5	7	7	6	6	7	5	6	6	5	6	6	6	6	6	7	6	6	6	6	6	0	0	0	0	0	0	0	Life i	11-1	3yrs	36-4	No	#####
0107	5.67	7.00	4.67	7.00	6.33	6.13	6.00	5.20	5.75	5.65	7	7	5	4	6	6	7	6	6	5	7	7	7	7	5	7	7	6	5	5	6	6	5	5	7	6	5	4	4	7	0	0	0	0	0	0	0	Inves	6-10	1yr t	26-3	No	#####
0108	5.67	4.00	5.00	5.67	4.33	4.93	6.67	5.20	5.50	5.79	5	4	6	5	4	5	4	5	6	5	6	4	4	6	5	7	5	7	6	7	5	7	5	5	6	6	6	5	5	6	0	0	0	0	0	0	0	Life i	11-1	3yrs	36-4	Yes	#####
0109	5.33	4.67	4.67	5.33	3.00	4.60	5.67	3.40	5.75	4.94	5	2	6	6	3	5	6	3	5	6	6	6	3	5	2	6	5	6	1	7	6	7	6	6	5	6	3	3	2	5	0	0	0	0	0	0	0	Life i	3yrs	Less	26-3	No	78.22
0110	5.33	4.00	7.00	6.33	7.00	5.93	5.50	2.60	3.75	3.95	6	4	2	7	7	7	1	7	7	7	7	7	7	6	7	6	2	6	1	6	2	7	2	5	6	2	4	4	4	4	0	0	0	0	0	0	0	Othe	16-2	3yrs	36-4	Yes	#####
0111	5.00	6.00	3.67	5.67	4.33	4.93	5.50	3.60	4.50	4.53	5	6	3	3	4	6	6	5	6	4	6	6	4	6	4	6	2	6	2	5	5	5	3	5	5	5	5	6	3	6	0	0	0	0	0	0	0	Pens	3yrs	3yrs	26-3	No	#####
0112	5.33	5.67	4.67	5.67	4.67	5.20	5.17	4.20	4.50	4.62	6	6	5	5	4	6	5	4	5	4	6	6	6	5	5	4	4	5	3	5	6	6	3	3	6	6	6	5	3	5	0	0	0	0	0	0	0	Shor	3yrs	3yrs	26-3	No	#####
0114	4.67	6.00	5.00	5.67	5.67	5.40	5.67	5.00	5.25	5.31	6	6	4	5	5	5	6	6	5	5	6	6	6	5	5	5	6	6	4	6	5	5	4	5	6	6	6	5	5	6	0	0	0	0	0	0	0	Life i	11-1	6-10	Olde	Yes	#####
0115	6.33	5.33	6.67	6.00	4.67	5.80	6.17	5.40	6.00	5.86	6	5	6	7	4	6	5	5	7	6	6	6	5	6	7	6	6	6	5	7	6	6	6	6	6	6	6	5	5	6	0	0	0	0	0	0	0	Inves	11-1	3yrs	31-3	No	#####
0116	4.00	6.00	4.67	6.00	4.33	5.00	5.50	5.00	5.75	5.42	6	6	4	4	3	4	6	4	4	6	6	6	6	6	4	7	6	6	5	6	6	6	5	6	6	6	4	4	4	4	0	0	0	0	0	0	0	Inves	11-1	3yrs	31-3	No	#####
0117	7.00	6.00	7.00	7.00	2.67	5.93	5.67	7.00	7.00	6.56	7	5	7	7	2	7	7	4	7	7	7	6	2	7	7	4	7	6	7	6	7	6	7	7	7	7	6	7	7	6	0	0	0	0	0	0	0	Othe	21-2	6-10	41-4	No	#####
0118	5.00	6.00	5.67	6.00	3.67	5.27	5.67	4.00	4.25	4.64	6	6	4	5	3	5	6	3	6	6	6	6	5	6	6	6	5	6	2	6	6	6	3	5	6	3	6	5	2	4	0	0	0	0	0	0	0	Life i	3yrs	3yrs	26-3	No	#####
0119	6.67	6.00	6.00	5.67	5.67	6.00	5.83	5.60	5.50	5.64	5	6	6	6	6	7	6	5	7	6	7	6	6	5	6	6	6	7	5	6	6	4	5	5	6	6	6	6	5	6	0	0	0	0	0	0	0	Othe	6-10	3yrs	26-3	Yes	#####
0120	6.00	6.33	5.67	5.00	6.00	5.80	6.00	6.20	5.50	5.90	4	5	5	5	6	7	7	6	6	6	5	7	6	6	6	6	7	6	6	6	6	6	6	6	5	5	6	6	6	6	0	0	0	0	0	0	0	Life i	1yr t	1yr t	26-3	No	#####
0121	6.67	6.00	6.00	5.33	2.33	5.27	5.83	4.20	4.50	4.84	5	6	6	7	2	7	6	2	7	6	6	6	3	5	5	6	5	5	2	6	3	6	6	3	6	3	6	5	6	6	0	0	0	0	0	0	0	Life i	6-10	3yrs	31-3	No	77.43
0122	6.00	4.00	4.33	6.00	4.33	4.93	5.67	5.40	6.00	5.69	6	4	6	5	4	6	4	5	6	4	6	4	4	6	4	6	6	6	5	6	6	5	6	6	6	6	5	6	4	6	0	0	0	0	0	0	0	Life i	21-2	3yrs	41-4	No	#####
0123	4.33	5.00	6.00	6.00	6.00	5.47	6.50	5.80	5.75	6.02	6	5	5	7	6	3	5	6	5	5	6	5	6	6	6	7	7	7	5	7	6	6	5	5	7	6	6	6	5	6	0	0	0	0	0	0	0	Life i	3yrs	3yrs	31-3	Yes	#####
0124	5.67	5.67	5.67	6.00	4.33	5.47	5.83	4.00	5.50	5.11	5	6	5	5	4	6	5	4	6	6	6	6	5	7	6	6	5	7	2	6	5	4	5	6	5	6	6	5	3	6	0	0	0	0	0	0	0	Inves	11-1	3yrs	31-3	No	#####
0125	7.00	6.33	5.00	6.67	5.00	6.00	5.33	4.80	6.50	5.54	7	7	7	5	5	7	6	5	7	5	7	6	5	6	5	7	6	6	4	6	6	6	6	6	7	7	3	5	3	4	0	0	0	0	0	0	0	Othe	21-2	6-10	Olde	No	#####
0126	5.00	6.00	6.00	5.67	4.67	5.47	5.33	4.80	4.75	4.96	6	6	5	6	4	5	6	5	5	6	5	6	5	6	6	6	5	5	4	6	5	5	5	5	5	4	5	5	5	5	0	0	0	0	0	0	0	Othe	3yrs	3yrs	25yr	No	#####
0127	6.67	6.00	6.33	5.33	5.00	5.87	5.50	3.60	5.00	4.70	5	6	6	6	4	7	6	5	7	7	6	6	6	5	6	5	4	6	3	5	3	5	4	5	5	6	6	4	4	6	0	0	0	0	0	0	0	Pens	6-10	1yr t	31-3	No	#####
0128	5.00	4.67	5.33	5.00	5.00	5.00	5.67	5.40	6.00	5.69	5	5	4	6	4	6	5	6	5	5	5	4	5	5	5	6	6	6	7	7	6	5	6	6	6	6	5	5	3	5	0	0	0	0	0	0	0	Othe	1yr t	1yr t	25yr	No	#####
0129	6.00	3.00	3.67	5.00	4.67	4.47	5.67	4.20	5.50	5.12	5	4	6	3	5	6	3	5	6	4	5	2	4	5	4	6	5	6	3	6	5	5	6	5	5	6	6	5	3	5	0	0	0	0	0	0	0	Life i	3yrs	3yrs	25yr	No	98.52
0130	5.67	5.00	6.67	4.67	6.00	5.60	6.33	5.60	6.00	5.98	6	5	5	7	6	6	3	6	6	7	5	7	6	3	6	6	6	6	4	7	6	6	6	6	6	6	6	5	7	7	0	0	0	0	0	0	0	Pens	11-1	6-10	36-4	Yes	#####
0131	5.00	6.00	5.67	6.00	3.67	5.27	5.67	4.00	4.25	4.64	6	6	4	5	3	5	6	3	6	6	6	6	5	6	6	6	5	6	2	6	6	6	3	5	6	3	6	5	2	4	0	0	0	0	0	0	0	Life i	3yrs	3yrs	26-3	No	#####
0132	5.67	4.33	5.67	5.67	6.00	5.47	5.83	5.80	6.00	5.88	5	6	5	6	6	6	2	6	6	6	6	5	6	6	5	6	6	6	6	6	6	5	6	6	6	6	6	6	5	6	0	0	0	0	0	0	0	Pens	11-1	3yrs	31-3	Yes	#####
0133	5.67	4.67	1.67	6.33	2.33	4.13	5.67	2.00	3.75	3.81	7	3	5	3	2	6	6	2	6	1	6	5	3	6	1	6	2	5	2	6	4	6	3	3	6	3	5	1	1	6	0	0	0	0	0	0	0	Othe	6-10	1yr t	26-3	No	59.11
0135	4.67	6.00	6.00	5.33	4.67	5.33	5.67	6.00	6.00	5.89	5	6	3	5	4	5	5	4	6	7	6	7	6	5	6	6	6	6	6	6	6	5	6	6	6	6	5	6	6	6	0	0	0	0	0	0	0	Othe	6-10	Less	26-3	No	#####
0136	4.67	5.67	6.00	5.33	5.33	5.40	5.33	4.60	5.25	5.06	5	6	3	6	5	6	6	5	5	6	6	5	6	5	6	6	4	4	4	5	5	6	5	5	6	5	5	4	6	6	0	0	0	0	0	0	0	Pens	11-1	6-10	36-4	No	#####
0137	6.00	6.00	5.00	5.00	5.67	5.53	5.33	6.00	6.00	5.78	4	6	6	4	5	6	6	6	6	6	6	6	6	5	5	4	6	6	7	6	6	5	6	6	6	6	5	5	6	6	0	0	0	0	0	0	0	Pens	6-10	1yr t	26-3	No	#####
0138	6.00	5.67	5.00	5.33	4.67	5.33	6.00	5.80	6.25	6.02	5	5	6	5	4	6	6	4	6	5	5	6	6	6	5	6	6	6	6	6	6	6	7	6	6	6	6	6	5	6	0	0	0	0	0	0	0	Life i	3yrs	1yr t	26-3	No	#####
0139	7.00	3.33	7.00	6.67	2.67	5.33	4.67	4.80	5.75	5.07	7	7	7	7	4	7	1	2	7	7	7	2	2	6	7	5	5	5	2	5	6	4	5	5	7	6	4	5	6	5	0	0	0	0	0	0	0	Life i	6-10	3yrs	26-3	Yes	#####
0140	5.33	6.00	5.67	5.33	4.33	5.33	6.00	5.60	5.75	5.78	5	6	5	5	4	5	6	4	6	5	5	6	5	6	7	7	6	6	6	7	6	6	6	5	6	6	5	6	4	5	0	0	0	0	0	0	0	Life i	3yrs	3yrs	26-3	No	#####
0141	6.00	4.33	6.67	5.67	5.00	5.53	6.00	4.40	4.50	4.97	5	5	6	7	5	6	3	5	6	6	6	5	5	6	7	6	5	7	4	5	5	5	4	5	5	4	7	5	3	6	0	0	0	0	0	0	0	Othe	11-1	1yr t	31-3	Yes	#####
0142	6.33	6.33	7.00	6.33	6.33	6.47	6.33	6.20	6.25	6.26	5	6	7	7	6	6	6	6	6	7	7	7	7	7	7	6	7	7	6	6	6	6	6	6	7	6	6	6	6	7	0	0	0	0	0	0	0	Life i	21-2	6-10	41-4	Yes	#####
0143	5.67	5.67	5.00	6.33	6.00	5.73	5.50	5.60	6.25	5.78	6	4	5	4	5	6	6	6	6	7	6	7	7	7	4	6	7	6	7	6	5	4	6	6	6	7	5	6	3	6	0	0	0	0	0	0	0	Pens	6-10	Less	26-3	Yes	#####
0144	5.00	3.67	6.67	6.67	5.67	5.53	5.50	5.40	6.00	5.63	7	5	7	6	6	3	1	6	5	7	7	5	5	6	7	5	6	7	6	7	5	5	6	5	7	6	5	5	5	4	0	0	0	0	0	0	0	Shor	6-10	Less	31-3	No	#####
0145	6.00	5.33	4.33	5.00	4.67	5.07	6.17	4.80	5.75	5.57	5	5	4	4	4	7	5	4	7	5	5	6	6	5	4	6	5	7	5	6	5	6	6	5	6	6	6	5	4	6	0	0	0	0	0	0	0	Life i	6-10	Less	31-3	No	#####
0146	6.67	7.00	6.33	5.67	5.33	6.20	6.67	5.80	5.75	6.07	5	7	6	6	5	7	7	6	7	7	6	7	5	6	6	7	6	7	6	7	6	7	6	5	6	6	6	6	5	6	0	0	0	0	0	0	0	Life i	6-10	1yr t	26-3	No	#####
0147	6.00	7.00	5.00	6.00	5.00	5.80	6.17	5.00	5.50	5.56	6	7	5	5	4	7	7	5	6	5	5	7	6	7	5	6	6	6	4	6	5	7	5	6	7	4	6	5	5	6	0	0	0	0	0	0	0	Life i	16-2	6-10	36-4	Yes	#####
0148	6.33	5.33	4.33	6.33	6.67	5.80	5.33	5.80	6.50	5.88	6	4	6	4	7	6	6	7	7	5	7	6	6	6	4	6	7	6	7	6	6	5	6	6	7	7	5	5	4	4	0	0	0	0	0	0	0	Life i	More	Less	Olde	No	#####
0149	5.67	7.00	6.33	7.00	4.67	6.13	5.17	5.20	5.75	5.37	7	7	5	6	4	6	7	5	6	7	7	7	5	7	6	5	5	6	5	5	6	4	5	6	7	5	5	5	5	6	0	0	0	0	0	0	0	Pens	21-2	16-2	Olde	No	#####
0150	6.67	5.67	6.67	7.00	2.67	5.73	5.00	5.00	6.00	5.33	7	7	7	7	4	6	5	2	7	6	7	5	2	7	7	6	6	6	5	6	6	4	6	5	7	6	4	4	4	4	0	0	0	0	0	0	0	Pens	More	3yrs	Olde	No	#####
1004	5.67	5.67	5.33	6.00	5.00	5.53	4.50	3.60	5.25	4.45	6	6	5	5	5	6	5	5	6	6	6	6	5	6	5	4	6	6	2	6	6	6	4	6	6	5	2	2	2	3	Che	11-1	11-1	36-4	Yes	Regi	Desi	0	0	0	0	0	#####
1014	5.67	6.00	4.67	5.00	5.00	5.27	6.33	5.60	5.75	5.89	4	6	6	4	5	6	6	5	5	5	6	6	5	5	5	7	6	7	6	6	6	6	6	6	5	6	6	5	5	6	Che	3yrs	1yr t	26-3	No	Regi	Inves	0	0	0	0	0	#####
1015	5.33	6.33	6.67	5.67	5.33	5.87	6.00	4.20	5.25	5.15	5	6	5	7	5	6	6	5	5	7	6	7	6	6	6	5	4	6	5	7	5	6	5	5	6	5	6	5	2	6	Che	3yrs	3yrs	26-3	No	Regi	Mana	0	0	0	0	0	#####
1019	4.00	3.33	5.00	5.33	4.33	4.40	6.00	4.00	6.00	5.33	5	3	5	3	4	2	2	5	5	6	6	5	4	5	6	6	5	7	4	7	7	5	7	7	6	4	5	2	2	6	Che	Less	Less	26-3	No	Regi	Plan	0	0	0	0	0	95.01
1021	6.00	5.00	6.00	3.33	4.00	4.87	5.17	3.40	4.50	4.36	3	5	5	6	4	7	5	4	6	6	5	5	4	2	6	6	3	6	2	6	4	5	3	4	5	6	4	4	4	4	Che	6-10	3yrs	26-3	No	Regi	Desi	0	0	0	0	0	75.56
1023	6.33	6.00	6.67	7.00	6.00	6.40	5.67	5.20	6.50	5.79	7	6	7	6	6	6	6	6	6	7	7	6	6	7	7	6	6	6	5	6	5	5	6	6	7	7	5	5	5	6	Che	11-1	3yrs	36-4	Yes	Regi	Rese	0	0	0	0	0	#####
1024	6.00	5.33	6.00	6.33	6.67	6.07	6.50	5.40	6.25	6.05	6	6	5	5	7	7	5	6	6	7	7	5	7	6	6	6	7	7	7	7	6	6	6	6	6	7	6	4	3	7	Che	1yr t	1yr t	26-3	No	Regi	Impr	0	0	0	0	0	#####
1025	5.00	4.67	5.33	5.33	4.33	4.93	6.00	5.60	4.50	5.37	5	5	3	4	4	6	4	4	6	6	5	5	5	6	6	6	6	7	6	7	6	4	5	5	4	4	6	6	4	6	Che	11-1	Less	31-3	No	Regi	Plan	0	0	0	0	0	#####
1029	5.67	6.33	6.33	5.67	5.67	5.93	6.00	4.60	6.00	5.53	5	7	5	6	6	6	6	5	6	6	6	6	6	6	7	7	6	7	6	6	6	5	6	6	6	6	5	3	2	6	Che	1yr t	Less	25yr	No	Regi	Desi	0	0	0	0	0	#####
1031	6.00	4.67	4.33	4.00	4.67	4.73	5.67	5.40	6.00	5.69	3	4	6	3	5	6	5	6	6	5	5	5	3	4	5	6	6	6	6	6	5	4	7	5	6	6	6	5	5	6	Che	1yr t	1yr t	25yr	No	Regi	Desi	0	0	0	0	0	93.33
1034	6.33	6.00	5.00	6.00	5.33	5.73	6.33	6.00	6.00	6.11	6	6	7	5	5	6	6	5	6	5	6	6	6	6	5	7	6	7	6	6	6	6	6	6	6	6	6	6	6	6	Che	6-10	3yrs	26-3	No	Regi	Desi	0	0	0	0	0	#####
1035	3.33	4.67	4.33	3.67	4.67	4.13	5.50	4.20	3.50	4.40	3	5	3	5	4	5	2	5	2	5	5	7	5	3	3	6	3	5	2	5	3	6	2	5	4	3	6	6	7	5	Che	6-10	Less	26-3	No	Regi	Impl	0	0	0	0	0	70.35
1037	6.00	5.67	7.00	6.00	6.00	6.13	6.33	6.00	6.25	6.19	6	6	6	7	6	6	6	6	6	7	6	5	6	6	7	7	6	7	6	7	6	3	6	6	7	6	7	6	6	7	Che	3yrs	1yr t	26-3	No	Regi	Desi	0	0	0	0	0	#####
1041	6.00	6.00	5.00	6.33	6.00	5.87	6.00	6.00	6.00	6.00	7	6	6	5	6	6	6	6	6	5	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	Che	More	1yr t	Olde	Yes	Regi	Inves	0	0	0	0	0	#####
1043	5.00	4.33	4.33	3.33	4.00	4.20	4.83	4.20	4.75	4.59	2	5	3	3	4	6	5	5	6	5	5	3	3	3	5	6	4	5	3	5	4	3	5	4	5	5	5	5	5	5	Che	3yrs	3yrs	26-3	No	Regi	Desi	0	0	0	0	0	60.74
1048	5.33	5.00	5.33	6.00	6.00	5.53	6.00	5.80	6.00	5.93	6	5	6	5	6	5	5	6	5	5	6	5	6	6	6	6	6	6	6	6	6	6	5	6	7	6	6	5	6	6	Che	6-10	3yrs	31-3	Yes	Regi	Inves	0	0	0	0	0	#####
1050	6.00	6.00	6.00	6.00	6.00	6.00	6.50	5.20	6.00	5.90	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	5	7	6	7	6	6	6	6	6	6	6	5	4	6	Che	16-2	1yr t	41-4	No	Regi	Mana	0	0	0	0	0	#####
1056	6.33	6.67	5.67	6.00	5.67	6.07	5.33	5.20	5.25	5.26	6	7	7	6	5	6	7	6	6	5	7	6	6	5	6	4	6	7	6	6	7	3	3	5	6	7	6	4	3	6	Che	More	More	Olde	Yes	Regi	Desi	0	0	0	0	0	#####
1075	5.00	5.33	5.33	3.67	3.67	4.60	5.50	3.60	4.50	4.53	3	5	4	6	4	6	6	4	5	5	5	5	3	3	5	6	3	6	3	5	4	4	5	6	4	3	6	5	3	6	Che	11-1	3yrs	31-3	No	Regi	Desi	0	0	0	0	0	70.21
1077	6.00	6.00	6.00	6.00	6.00	6.00	6.50	5.20	6.00	5.90	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	5	7	6	7	6	6	6	6	6	6	6	5	4	6	Che	16-2	1yr t	41-4	No	Regi	Mana	0	0	0	0	0	#####
1079	6.33	7.00	6.00	6.33	6.00	6.33	5.83	5.60	6.00	5.81	7	7	6	6	6	6	7	5	7	6	6	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	6	Che	6-10	3yrs	31-3	Yes	Regi	Desi	0	0	0	0	0	#####
1090	5.67	5.33	5.33	5.33	5.33	5.40	6.33	4.20	5.75	5.43	5	6	5	5	5	6	5	6	6	5	5	5	5	6	6	7	5	7	3	6	6	6	6	5	6	6	6	5	2	6	Che	3yrs	3yrs	25yr	No	Not i	Impr	0	0	0	0	0	#####
1094	5.00	5.67	3.00	6.00	5.67	5.07	4.33	2.40	1.75	2.83	5	6	4	3	5	5	6	6	6	3	7	5	6	6	3	5	2	5	1	3	2	3	1	2	3	1	4	4	3	6	Che	6-10	Less	31-3	Yes	Regi	Inves	0	0	0	0	0	#####
1095	5.67	5.33	2.33	6.00	2.67	4.40	5.50	5.00	6.25	5.58	6	5	5	3	4	6	5	2	6	2	6	6	2	6	2	6	6	6	4	6	6	5	6	6	6	7	5	6	3	5	Che	6-10	3yrs	26-3	Yes	Regi	Desi	0	0	0	0	0	71.11
1102	7.00	5.00	7.00	6.67	6.00	6.33	6.33	5.40	6.75	6.16	6	7	7	7	6	7	2	6	7	7	7	6	6	7	7	7	6	7	7	7	6	7	6	7	7	7	5	4	4	5	Che	More	3yrs	Olde	No	Regi	Impr	0	0	0	0	0	#####
1108	6.33	5.33	5.67	4.33	3.67	5.07	5.50	5.00	4.50	5.00	5	5	5	5	3	7	6	3	7	6	5	5	5	3	6	5	5	5	5	6	6	6	5	5	3	5	5	5	4	6	Che	6-10	3yrs	31-3	No	Not i	Desi	0	0	0	0	0	91.80
1110	6.33	5.67	6.33	6.00	5.00	5.87	6.67	6.60	6.00	6.42	5	6	7	7	5	6	5	4	6	6	7	6	6	6	6	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	Che	6-10	3yrs	31-3	Yes	Regi	Mana	0	0	0	0	0	#####
1112	4.67	5.33	4.00	5.67	1.67	4.27	5.33	3.80	5.50	4.88	5	2	4	4	1	5	7	1	5	3	7	7	3	5	5	5	5	6	5	6	3	6	6	5	6	5	3	3	3	6	Che	3yrs	Less	26-3	No	Regi	Inves	0	0	0	0	0	44.07
1120	6.00	4.33	6.00	5.67	4.33	5.27	5.00	5.00	5.25	5.08	6	6	5	6	4	7	2	3	6	6	6	5	6	5	6	6	6	6	3	5	5	2	5	5	6	5	5	6	5	6	Che	11-1	1yr t	36-4	Yes	Regi	Mana	0	0	0	0	0	#####
1122	6.33	6.00	6.00	6.00	5.33	5.93	4.50	4.40	4.75	4.55	6	6	6	6	5	6	6	5	7	6	6	6	6	6	6	5	5	5	3	5	6	3	4	4	6	5	5	4	4	4	Che	11-1	6-10	31-3	Yes	Regi	0	0	0	0	0	0	#####
1129	6.67	6.33	6.00	5.67	5.00	5.93	6.67	5.40	5.25	5.77	5	5	6	5	5	7	7	5	7	7	6	7	5	6	6	6	6	7	5	7	6	6	3	6	6	6	7	5	5	7	Che	6-10	3yrs	31-3	No	Regi	Desi	0	0	0	0	0	#####
1132	6.00	7.00	6.33	6.00	5.67	6.20	4.83	4.40	5.00	4.74	5	7	5	5	4	6	7	6	7	7	7	7	7	6	7	5	2	4	2	4	4	2	6	4	4	6	7	7	7	7	Che	3yrs	3yrs	26-3	No	Regi	Impr	0	0	0	0	0	#####
1136	5.67	6.33	4.67	7.00	5.00	5.73	4.33	3.40	4.75	4.16	7	7	7	5	4	5	6	4	5	4	7	6	7	7	5	4	5	5	3	5	2	3	4	5	5	5	4	4	3	5	Che	16-2	6-10	41-4	Yes	Regi	Inves	0	0	0	0	0	#####
1150	7.00	5.67	6.00	7.00	6.00	6.33	6.33	6.00	6.25	6.19	7	6	7	5	5	7	5	6	7	7	7	6	7	7	6	6	6	6	7	6	6	5	6	7	7	7	6	6	6	6	Che	More	21-2	Olde	Yes	Regi	Rese	0	0	0	0	0	#####
1169	5.67	4.33	4.67	5.00	5.33	5.00	5.50	3.40	5.25	4.72	4	3	5	4	5	6	4	5	6	5	6	6	6	5	5	6	4	6	2	4	6	5	5	6	6	4	6	3	2	6	Che	6-10	3yrs	31-3	Yes	Regi	Mana	0	0	0	0	0	#####
1001	5.67	6.00	6.00	6.00	5.67	5.87	6.17	5.80	6.00	5.99	6	6	5	6	5	6	6	6	6	6	6	6	6	6	6	6	6	7	5	6	6	6	6	6	6	6	6	6	6	6	Civil	6-10	1yr t	26-3	Yes	Regi	Plan	0	0	0	0	0	#####
1008	5.33	4.67	6.00	4.33	4.33	4.93	4.83	3.20	2.75	3.59	4	5	4	6	4	6	4	3	6	6	5	5	6	4	6	5	2	4	1	4	2	4	2	2	3	4	6	6	5	6	Civil	6-10	3yrs	26-3	Yes	Regi	Plan	0	0	0	0	0	#####
1010	6.00	3.67	5.33	4.00	5.33	4.87	5.83	5.40	5.75	5.66	4	5	6	5	6	6	3	6	6	5	3	3	4	5	6	6	6	6	6	6	5	6	5	6	6	6	5	5	5	6	Civil	3yrs	3yrs	26-3	Yes	Regi	Impr	0	0	0	0	0	#####
1011	7.00	7.00	7.00	7.00	5.67	6.73	6.67	6.40	6.25	6.44	7	7	7	7	5	7	7	5	7	7	7	7	7	7	7	6	7	7	7	7	6	6	6	6	7	6	7	6	6	7	Civil	3yrs	3yrs	26-3	No	Regi	Inves	0	0	0	0	0	#####

1027	5.00	2.33	5.67	3.00	2.33	3.67	5.50	2.40	4.00	3.97	5	2	4	5	1	6	3	2	5	6	2	2	4	2	6	5	2	5	2	6	2	5	3	4	4	5	6	3	3	6	Civil	1yr t	1yr t	25yr	No	Regi	Plan	0	0	0	0	0	30.33
1038	6.00	7.00	6.00	7.00	6.00	6.40	6.50	5.60	6.00	6.03	7	7	6	6	5	6	7	6	6	5	7	7	7	7	7	7	6	6	6	7	6	7	6	6	6	6	6	5	5	6	Civil	6-10	3yrs	26-3	Yes	Regi	Inves	0	0	0	0	0	#####
1044	7.00	7.00	7.00	6.67	7.00	6.93	6.83	6.40	6.00	6.41	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	6	6	6	6	6	6	5	7	Civil	21-2	Less	41-4	No	Regi	Desi	0	0	0	0	0	#####
1046	6.00	5.00	6.33	5.67	5.00	5.60	6.00	5.20	5.75	5.65	6	5	7	7	6	5	5	3	6	6	5	5	6	6	6	6	6	6	4	6	6	6	5	6	5	7	6	6	4	6	Civil	6-10	3yrs	26-3	No	Regi	Man	0	0	0	0	0	#####
1047	5.33	6.00	6.00	5.67	4.00	5.40	5.83	4.00	4.00	4.61	5	5	6	5	3	5	7	4	5	6	6	6	5	6	7	6	5	6	5	6	6	6	3	4	6	3	5	2	2	6	Civil	3yrs	Less	26-3	No	Regi	Plan	0	0	0	0	0	#####
1052	5.67	3.33	6.00	5.33	5.00	5.07	5.67	4.00	5.00	4.89	4	3	5	7	3	6	1	6	6	5	6	6	6	6	6	6	3	6	6	6	5	6	5	5	5	5	6	3	3	4	Civil	3yrs	Less	31-3	Yes	Regi	Plan	0	0	0	0	0	#####
1055	5.00	4.00	5.67	4.67	4.33	4.73	5.00	4.80	5.25	5.02	5	4	5	5	4	5	3	4	5	6	5	5	5	4	6	6	6	6	4	5	6	3	6	5	5	5	5	5	3	5	Civil	3yrs	3yrs	26-3	No	Regi	Desi	0	0	0	0	0	98.86
1060	2.33	3.67	3.33	5.00	4.00	3.67	5.00	3.20	2.50	3.57	5	3	4	4	3	1	3	5	2	1	5	5	4	5	5	6	6	5	2	6	4	6	3	2	3	2	2	2	2	5	Civil	Less	Less	25yr	No	Regi	Plan	0	0	0	0	0	62.22
1062	2.67	5.00	6.00	3.00	3.67	4.07	5.00	2.80	3.75	3.85	4	5	2	6	3	3	5	5	3	6	3	5	3	2	6	6	4	5	2	6	4	6	4	5	3	3	2	2	2	5	Civil	1yr t	1yr t	25yr	No	Regi	Man	0	0	0	0	0	50.11
1068	5.00	7.00	5.00	6.67	7.00	6.13	7.00	7.00	7.00	7.00	7	7	7	7	7	7	1	7	7	7	4	6	7	7	7	4	7	7	7	7	7	7	7	7	7	7	7	7	7	7	Civil	More	21-2	Olde	No	Regi	Impl	0	0	0	0	0	#####
1076	6.33	4.67	7.00	7.00	5.00	6.00	6.50	5.80	5.25	5.85	7	6	7	7	5	5	5	5	7	7	7	3	5	7	7	7	6	7	6	7	6	7	4	6	6	5	5	5	6	6	Civil	21-2	Less	41-4	No	0	Man	0	0	0	0	0	#####
1080	6.00	5.33	6.33	5.33	2.00	5.00	6.17	5.60	5.75	5.84	5	5	6	6	2	6	5	2	6	6	6	6	2	5	7	7	6	6	6	7	7	6	6	6	5	6	6	5	4	5	Civil	1yr t	Less	26-3	No	Regi	Desi	0	0	0	0	0	62.81
1081	6.00	6.67	5.67	6.33	5.00	5.93	5.17	5.20	6.00	5.46	6	7	5	5	4	7	7	5	6	6	6	6	6	7	6	6	6	6	6	6	6	5	6	6	6	6	4	4	4	4	Civil	16-2	6-10	41-4	No	Regi	Plan	0	0	0	0	0	#####
1087	6.33	7.00	6.67	7.00	7.00	6.80	6.67	6.00	6.75	6.47	7	7	7	7	7	5	7	7	7	6	7	7	7	7	7	7	7	7	5	7	6	7	7	6	7	7	6	6	6	6	Civil	6-10	3yrs	31-3	Yes	Regi	Man	0	0	0	0	0	#####
1092	5.00	6.33	6.00	6.00	6.00	5.87	6.00	5.00	6.00	5.67	5	6	5	7	6	5	6	6	5	5	7	7	6	6	6	7	6	6	4	6	6	6	6	6	6	6	5	5	4	6	Civil	6-10	3yrs	31-3	No	Regi	Man	0	0	0	0	0	#####
1097	6.67	5.67	3.67	6.33	5.33	5.53	6.83	5.80	6.50	6.38	7	5	7	4	4	6	5	6	7	2	5	7	6	7	5	7	7	7	7	7	7	7	6	6	7	7	7	4	4	6	Civil	3yrs	3yrs	26-3	No	Regi	Inves	0	0	0	0	0	#####
1103	5.00	5.33	4.33	5.33	3.67	4.73	5.67	3.80	5.25	4.91	6	6	3	7	3	6	3	2	6	4	5	7	6	5	2	6	5	7	6	7	4	3	4	5	6	6	5	2	2	6	Civil	16-2	3yrs	41-4	Yes	Regi	Impl	0	0	0	0	0	95.60
1106	7.00	7.00	6.33	7.00	5.67	6.60	6.33	6.40	6.50	6.41	7	7	7	7	5	7	7	6	7	6	7	7	6	7	6	5	7	7	6	7	7	7	6	7	7	6	6	6	6	6	Civil	16-2	11-1	41-4	Yes	Regi	Inves	0	0	0	0	0	#####
1109	6.33	5.67	6.33	7.00	6.33	6.33	6.17	6.00	6.50	6.22	7	5	7	6	6	6	6	6	6	7	7	6	7	7	6	6	6	7	6	7	6	5	6	7	7	6	6	6	6	6	Civil	More	3yrs	Olde	Yes	Regi	Man	0	0	0	0	0	#####
1123	5.00	5.33	5.67	5.33	4.00	5.07	6.00	3.00	4.25	4.42	5	5	5	5	4	5	5	4	5	6	6	6	4	5	6	6	4	6	3	6	4	6	5	4	5	3	6	2	2	6	Civil	3yrs	3yrs	26-3	No	Regi	Impl	0	0	0	0	0	#####
1133	4.67	5.67	5.67	5.33	4.33	5.13	5.67	4.80	5.00	5.16	5	5	4	5	4	5	6	5	5	6	5	6	4	6	6	6	5	6	5	6	5	6	5	5	6	4	4	4	5	6	Civil	Less	Less	25yr	No	Regi	Impr	0	0	0	0	0	#####
1135	6.00	6.00	6.00	6.00	5.67	5.93	6.00	6.00	6.00	6.00	6	6	6	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	Civil	21-2	3yrs	41-4	No	Regi	Desi	0	0	0	0	0	#####
1137	5.67	6.00	5.67	5.67	4.67	5.53	5.67	2.40	5.75	4.61	6	6	5	6	4	6	6	4	6	6	6	6	6	5	5	7	2	7	1	6	7	2	6	6	6	5	6	1	1	6	Civil	More	3yrs	Olde	Yes	Regi	Plan	0	0	0	0	0	#####
1143	6.33	5.33	5.33	5.33	3.00	5.07	5.83	4.80	6.25	5.63	5	6	7	6	4	6	5	2	6	5	5	5	3	6	5	4	6	7	5	6	5	6	7	6	6	6	6	4	4	6	Civil	6-10	6-10	41-4	No	Regi	Desi	0	0	0	0	0	90.67
1146	5.33	5.00	4.00	6.00	4.67	5.00	6.50	5.40	5.75	5.88	7	5	6	4	4	5	4	5	5	5	6	6	5	5	3	7	6	6	5	7	6	7	6	5	6	6	6	5	5	6	Civil	21-2	6-10	41-4	No	Regi	Desi	0	0	0	0	0	#####
1147	5.33	5.00	4.00	6.00	4.67	5.00	6.50	5.40	5.75	5.88	7	5	6	4	4	5	4	5	5	5	6	6	5	5	3	7	6	6	5	7	6	7	6	5	6	6	6	5	5	6	Civil	21-2	6-10	41-4	No	Regi	Desi	0	0	0	0	0	#####
1166	6.00	5.33	6.00	5.33	6.00	5.73	7.00	7.00	6.75	6.92	4	4	6	5	5	6	6	7	6	7	6	6	6	6	7	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7	Civil	3yrs	Less	26-3	No	Regi	Plan	0	0	0	0	0	#####
1168	6.00	6.67	5.33	6.33	5.00	5.87	6.00	5.60	5.75	5.78	6	7	4	5	4	7	7	5	7	5	7	6	6	6	6	6	6	6	4	6	6	6	5	5	7	6	6	6	6	6	Civil	6-10	Less	36-4	No	Regi	Impl	0	0	0	0	0	#####
1170	7.00	7.00	7.00	6.67	6.67	6.87	6.17	5.80	6.75	6.24	6	7	7	7	6	7	7	7	7	7	7	7	7	7	7	7	6	7	6	7	6	2	6	7	7	7	7	6	5	7	Civil	11-1	Less	31-3	No	Regi	Man	0	0	0	0	0	#####
1172	5.00	5.33	5.33	6.00	5.33	5.40	6.17	4.80	5.75	5.57	5	4	3	6	5	5	6	5	7	5	6	6	6	7	5	6	7	6	4	6	6	7	4	6	6	7	6	4	3	6	Civil	More	1yr t	Olde	Yes	Regi	Impr	0	0	0	0	0	#####
1173	6.00	5.33	4.67	6.67	5.67	5.67	6.67	5.60	6.00	6.09	7	5	6	4	5	6	5	5	6	5	7	6	7	6	5	7	6	7	6	7	6	7	6	6	6	6	6	5	5	6	Civil	16-2	11-1	41-4	Yes	Regi	Desi	0	0	0	0	0	#####
1212	4.67	3.67	5.00	2.33	3.00	3.73	4.00	4.00	1.75	3.25	1	2	3	3	1	7	4	1	4	6	5	5	7	1	6	4	2	2	7	4	1	6	1	2	2	2	4	4	6	4	Civil	3yrs	Less	26-3	No	Regi	Desi	0	0	0	0	0	31.08
1214	6.67	5.67	6.00	4.33	5.00	5.53	6.17	3.00	4.50	4.56	4	6	6	6	5	7	5	6	7	7	6	6	4	3	5	6	2	6	1	6	4	5	5	6	3	4	7	6	2	7	Civil	3yrs	1yr t	25yr	yes	Regi	Desi	0	0	0	0	0	#####
1217	5.67	6.00	6.33	6.00	5.33	5.87	6.17	5.60	6.00	5.92	5	5	5	7	5	6	6	5	6	6	7	7	6	6	6	7	6	7	6	7	6	6	6	6	6	6	5	5	5	5	Civil	11-1	11-1	36-4	Yes	Regi	Desi	0	0	0	0	0	#####
1002	6.33	6.00	6.67	6.67	6.33	6.40	6.33	5.80	6.25	6.13	7	6	6	6	6	6	6	7	7	7	7	6	6	6	7	7	7	7	6	6	6	6	6	6	7	6	6	5	5	6	Elec	21-2	21-2	41-4	Yes	Regi	Rese	0	0	0	0	0	#####
1005	2.00	2.33	4.67	2.00	5.00	3.20	4.50	4.20	3.25	3.98	2	2	2	4	5	2	2	5	2	5	2	3	5	2	5	5	4	4	3	5	4	4	4	4	2	3	4	5	5	5	Elec	3yrs	1yr t	26-3	Yes	Regi	Impl	0	0	0	0	0	30.00
1006	4.67	5.67	5.33	5.00	4.67	5.07	6.00	4.20	4.25	4.82	4	4	3	5	5	6	6	3	5	5	5	7	6	6	6	6	4	6	2	6	5	6	4	4	5	4	6	6	4	6	Elec	3yrs	3yrs	31-3	No	Regi	Plan	0	0	0	0	0	#####
1007	6.00	6.33	5.67	6.00	5.00	5.80	6.33	6.40	6.25	6.33	6	7	6	5	5	6	6	4	6	5	6	6	6	6	7	6	6	7	6	6	7	6	6	7	6	6	6	7	6	7	Elec	6-10	1yr t	31-3	Yes	Regi	Impl	0	0	0	0	0	#####
1009	5.67	7.00	6.33	6.67	6.00	6.33	6.83	6.00	6.50	6.44	7	7	7	7	6	5	7	6	5	6	6	7	6	7	6	7	7	7	7	7	7	7	6	6	7	7	6	5	4	7	Elec	6-10	6-10	31-3	Yes	Regi	Man	0	0	0	0	0	#####
1016	6.33	5.33	6.33	6.33	4.67	5.80	5.67	4.60	5.50	5.26	6	5	6	6	4	7	5	5	6	7	7	6	5	6	6	6	5	7	5	6	5	5	6	5	5	6	5	4	4	5	Elec	3yrs	1yr t	25yr	Yes	Regi	Inves	0	0	0	0	0	#####
1017	6.67	6.67	6.00	6.00	5.67	6.20	6.33	6.00	6.25	6.19	6	6	7	6	5	6	7	6	7	6	6	7	6	6	6	7	6	7	6	7	6	5	7	6	6	6	6	6	6	6	Elec	3yrs	Less	26-3	No	Regi	Inves	0	0	0	0	0	#####
1040	5.67	6.00	6.00	5.33	4.33	5.47	6.33	4.80	6.25	5.79	5	6	5	6	4	6	6	4	6	6	6	6	5	5	6	6	6	7	6	7	6	6	6	6	6	7	6	3	3	6	Elec	3yrs	1yr t	26-3	No	Regi	Desi	0	0	0	0	0	#####
1045	6.33	6.33	7.00	5.67	6.33	6.33	5.83	3.20	5.75	4.93	4	7	6	7	7	7	6	6	6	7	7	6	6	6	7	6	5	5	2	6	2	6	6	6	6	5	6	5	2	6	Elec	6-10	6-10	31-3	No	Regi	Desi	0	0	0	0	0	#####
1049	2.67	5.67	2.33	2.33	4.67	3.53	5.50	2.60	4.00	4.03	3	5	2	2	4	3	6	5	3	2	2	6	5	2	3	5	3	6	3	6	4	6	4	5	2	5	5	2	1	5	Elec	3yrs	1yr t	26-3	No	Not ı	Impl	0	0	0	0	0	38.72
1061	1.33	1.67	4.33	5.00	1.67	2.80	4.67	3.60	3.75	4.01	4	3	2	4	2	1	1	2	1	5	6	1	1	5	4	4	4	4	2	5	2	5	3	4	4	4	4	5	5	6	Elec	6-10	3yrs	26-3	Yes	Regi	Man	0	0	0	0	0	20.37
1063	5.67	5.00	5.00	6.33	5.00	5.40	5.33	4.00	5.25	4.86	7	5	6	5	5	5	4	5	6	4	6	6	5	6	6	6	5	6	4	6	6	6	6	6	5	4	5	3	2	3	Elec	1yr t	1yr t	25yr	No	Regi	Inves	0	0	0	0	0	#####
1064	6.00	4.67	5.00	6.67	5.00	5.47	6.50	6.20	6.25	6.32	6	5	6	5	5	6	2	5	6	4	7	7	5	7	6	7	7	7	6	7	6	6	6	7	6	6	6	6	6	6	Elec	More	3yrs	Olde	No	Regi	Inves	0	0	0	0	0	#####
1070	6.00	7.00	4.67	7.00	6.00	6.13	5.67	4.60	5.75	5.34	7	7	4	7	7	7	7	4	7	2	7	7	7	7	5	4	7	6	3	6	4	4	4	7	7	5	7	4	5	7	Elec	6-10	3yrs	31-3	Yes	Regi	Man	0	0	0	0	0	#####
1071	6.00	5.00	5.00	5.67	5.67	5.47	6.00	5.80	6.00	5.93	5	4	5	3	5	7	6	6	6	6	5	6	6	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	Elec	11-1	1yr t	31-3	No	Not ı	Impl	0	0	0	0	0	#####
1083	6.67	4.67	6.00	6.33	5.33	5.80	6.17	5.80	6.25	6.07	6	4	7	6	5	6	4	5	7	6	7	6	6	6	6	6	6	6	7	7	6	6	6	6	7	6	6	5	5	6	Elec	6-10	3yrs	31-3	Yes	Regi	Rese	0	0	0	0	0	#####
1088	6.67	5.67	5.33	7.00	5.33	6.00	6.50	5.40	6.25	6.05	7	6	7	4	5	6	5	4	7	7	7	6	7	7	5	7	5	7	5	7	5	6	5	6	7	7	5	6	6	7	Elec	16-2	3yrs	41-4	No	Regi	syste	0	0	0	0	0	#####
1107	6.33	6.00	7.00	5.67	5.33	6.07	6.83	6.60	6.75	6.73	4	6	7	7	4	6	5	6	6	7	7	7	6	6	7	7	7	7	7	7	7	7	6	7	7	7	6	6	6	7	Elec	1yr t	1yr t	25yr	No	Regi	Inves	0	0	0	0	0	#####
1113	6.67	5.67	6.00	6.33	6.00	6.13	5.83	4.40	5.75	5.33	6	5	7	6	6	7	6	6	6	6	7	6	6	6	6	6	6	6	3	6	5	5	6	5	6	6	6	5	3	6	Elec	21-2	3yrs	41-4	Yes	Regi	Plan	0	0	0	0	0	#####
1117	5.67	6.00	3.00	6.00	5.00	5.13	5.33	4.60	5.75	5.23	6	6	6	3	5	5	6	5	6	3	6	6	5	6	3	6	6	6	6	6	6	6	6	6	6	5	3	3	2	5	Elec	1yr t	1yr t	25yr	No	Regi	Impr	0	0	0	0	0	#####
1119	5.00	3.67	6.33	6.00	3.33	4.87	6.17	4.00	4.75	4.97	6	3	5	6	5	5	3	2	5	7	6	5	3	6	6	6	6	7	3	7	6	6	3	5	6	5	6	3	2	5	Elec	11-1	3yrs	36-4	Yes	Regi	Man	0	0	0	0	0	#####
1121	6.67	2.00	7.00	7.00	7.00	5.93	6.00	4.40	5.50	5.30	7	2	6	7	7	7	2	7	7	7	7	2	7	7	7	7	6	7	4	6	6	3	4	6	7	5	7	4	2	6	Elec	More	21-2	Olde	No	Regi	Desi	0	0	0	0	0	#####
1124	5.00	2.33	6.00	5.00	2.00	4.07	4.50	2.20	5.50	4.07	4	2	4	6	1	5	2	2	6	6	5	3	3	6	6	5	3	5	1	5	3	5	5	5	6	6	2	2	2	5	Elec	6-10	6-10	31-3	No	Regi	Inves	0	0	0	0	0	44.44
1125	5.00	5.33	4.00	5.33	4.00	4.73	5.00	5.20	4.75	4.98	5	4	5	4	4	5	6	3	5	5	6	6	5	5	3	5	5	6	6	5	6	4	5	4	5	5	5	4	5	5	Elec	21-2	6-10	Olde	No	Regi	Plan	0	0	0	0	0	#####
1127	4.67	3.33	4.67	5.67	3.33	4.33	5.33	3.60	5.50	4.81	6	3	7	4	2	2	1	3	5	5	6	6	5	5	5	7	5	7	3	7	5	7	6	5	6	5	2	3	2	2	Elec	3yrs	3yrs	25yr	No	Regi	Impr	0	0	0	0	0	79.75
1128	4.00	4.33	4.33	3.67	4.67	4.20	5.33	2.60	3.50	3.81	3	3	4	2	4	3	5	5	5	6	5	5	5	3	5	6	3	3	2	6	3	6	5	3	3	3	5	3	2	6	Elec	Less	Less	25yr	No	Regi	Man	0	0	0	0	0	72.25
1134	7.00	6.33	6.67	5.67	5.67	6.27	6.50	5.00	5.75	5.75	5	6	7	7	5	7	6	6	7	7	6	7	6	6	6	7	6	7	5	6	6	7	5	6	6	6	6	5	3	6	Elec	16-2	6-10	41-4	Yes	Regi	Man	0	0	0	0	0	#####
1140	6.00	4.33	4.67	6.33	4.67	5.20	5.83	5.60	6.00	5.81	6	4	6	4	4	6	3	4	6	5	6	6	6	7	5	6	6	6	6	5	5	6	6	6	6	6	6	5	6	6	Elec	6-10	3yrs	31-3	Yes	Regi	Desi	0	0	0	0	0	#####
1141	4.33	5.33	5.67	5.67	4.33	5.07	6.17	5.80	5.50	5.82	5	4	3	5	3	5	6	5	5	6	6	6	5	6	6	7	6	7	6	7	6	3	6	6	5	5	6	6	5	7	Elec	6-10	3yrs	31-3	No	Regi	Plan	0	0	0	0	0	#####
1144	5.67	6.00	7.00	6.33	6.67	6.33	5.50	4.80	5.50	5.27	6	6	5	7	6	6	6	7	6	7	7	6	7	6	7	6	6	6	5	6	6	5	5	6	6	5	5	4	3	5	Elec	6-10	3yrs	26-3	No	Regi	Desi	0	0	0	0	0	#####
1145	4.67	3.00	6.33	5.00	5.00	4.80	3.67	1.60	5.00	3.42	5	3	3	6	5	6	3	5	5	7	5	3	5	5	6	4	2	2	1	5	2	2	5	5	5	5	5	2	1	4	Elec	3yrs	3yrs	26-3	No	Regi	Plan	0	0	0	0	0	#####
1171	2.00	5.00	2.33	3.67	3.00	3.20	4.50	2.00	3.00	3.17	3	5	2	2	2	2	5	3	2	2	4	5	4	4	3	5	1	4	1	4	1	4	2	3	4	3	5	5	2	5	Elec	6-10	3yrs	26-3	No	Regi	Impl	0	0	0	0	0	34.22
1003	5.00	6.00	5.67	5.00	4.33	5.20	5.83	5.40	4.75	5.33	4	5	3	5	3	6	6	3	6	6	5	7	7	6	6	6	6	6	6	6	6	5	3	5	6	5	6	4	5	6	Mecl	11-1	6-10	36-4	No	Regi	Desi	0	0	0	0	0	#####
1012	2.67	3.00	6.00	6.33	5.33	4.67	6.50	5.60	5.75	5.95	6	2	3	6	4	2	2	6	3	6	7	5	6	6	6	7	6	7	7	6	5	7	5	6	6	6	6	5	5	6	Mecl	6-10	1yr t	31-3	Yes	Regi	Man	0	0	0	0	0	#####
1013	6.00	5.00	6.33	6.67	6.33	6.07	6.67	5.00	6.00	5.89	7	4	5	6	6	7	5	6	6	6	6	6	7	7	7	7	6	7	3	7	6	7	6	6	6	6	6	4	6	6	Mecl	3yrs	3yrs	25yr	No	Regi	Inves	0	0	0	0	0	#####
1022	5.33	2.67	5.33	4.33	4.00	4.33	5.33	3.60	3.00	3.98	3	1	6	4	2	5	2	4	5	6	7	5	6	3	6	5	6	6	3	6	6	7	1	3	4	4	3	2	1	5	Mecl	3yrs	3yrs	26-3	No	Regi	Inves	0	0	0	0	0	77.04
1028	5.67	6.00	5.00	5.67	5.33	5.53	5.17	5.20	5.00	5.12	6	6	6	5	5	5	6	5	6	5	6	6	6	5	5	6	5	6	5	6	6	4	5	5	5	5	5	5	5	4	Mecl	11-1	3yrs	36-4	Yes	Regi	Man	0	0	0	0	0	#####
1030	4.67	2.67	4.67	5.33	4.67	4.40	6.00	4.20	3.50	4.57	5	3	6	5	5	5	2	3	3	4	5	3	6	6	5	7	5	6	6	6	3	6	2	3	4	5	5	2	5	6	Mecl	6-10	6-10	26-3	Yes	Regi	Man	0	0	0	0	0	99.56
1032	3.00	3.00	1.67	3.33	3.00	2.80	3.50	2.00	2.00	2.50	3	3	4	2	3	3	3	3	2	2	4	3	3	3	1	2	2	3	1	2	2	7	2	1	2	3	3	3	2	4	Mecl	3yrs	3yrs	25yr	No	Regi	Inves	0	0	0	0	0	25.56
1033	5.67	6.00	5.67	6.67	6.33	6.07	6.00	5.60	5.75	5.78	6	6	5	5	6	6	7	6	6	6	7	5	7	7	6	6	6	6	5	6	6	6	6	6	6	5	6	6	5	6	Mecl	3yrs	1yr t	26-3	No	Regi	Impl	0	0	0	0	0	#####
1036	4.33	3.67	5.67	5.33	4.67	4.73	4.67	3.20	4.50	4.12	5	4	5	5	5	3	2	4	5	6	6	5	5	5	6	5	4	6	3	6	5	3	6	4	5	3	4	3	1	4	Mecl	3yrs	3yrs	26-3	Yes	Regi	Inves	0	0	0	0	0	#####
1042	7.00	6.67	7.00	7.00	7.00	6.93	6.33	4.40	6.50	5.74	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	7	6	6	7	7	5	1	1	5	Mecl	1yr t	1yr t	26-3	Yes	Regi	Impr	0	0	0	0	0	#####
1051	5.00	5.67	5.00	5.00	4.67	5.07	4.83	3.80	5.25	4.63	4	6	5	5	4	5	6	5	5	5	6	5	5	5	5	5	5	5	2	5	6	6	5	5	6	5	3	3	3	5	Mecl	16-2	1yr t	41-4	No	Regi	Inves	0	0	0	0	0	#####
1054	5.00	3.67	2.67	5.00	3.00	3.87	5.00	2.00	2.75	3.25	5	3	5	2	3	5	3	3	5	3	5	5	3	5	3	6	2	3	2	5	2	6	2	3	3	3	5	2	2	5	Mecl	1yr t	1yr t	25yr	No	Regi	Rese	0	0	0	0	0	56.67
1058	6.67	2.67	6.00	5.67	5.67	5.33	4.67	4.80	6.00	5.16	6	3	7	6	6	6	2	5	7	6	6	3	6	5	6	2	6	6	2	6	6	2	6	6	6	6	6	5	5	6	Mecl	6-10	Less	31-3	Yes	Regi	Plan	0	0	0	0	0	#####
1059	5.00	5.33	5.67	5.00	6.00	5.40	6.00	5.00	5.50	5.50	4	5	5	6	6	5	5	5	6	5	6	5	6	6	6	5	6	5	6	4	6	5	6	5	6	5	6	6	5	6	Mecl	16-2	3yrs	41-4	Yes	Regi	Man	0	0	0	0	0	#####
1065	6.67	4.33	5.33	6.33	5.33	5.60	6.33	5.20	6.00	5.84	6	5	7	6	5	6	2	5	7	5	7	6	6	6	5	6	6	7	4	7	5	5	6	6	5	7	7	6	5	6	Mecl	6-10	6-10	31-3	Yes	Regi	Desi	0	0	0	0	0	#####
1066	5.67	5.33	6.00	6.00	5.67	5.73	6.00	5.80	5.50	5.77	7	6	5	6	6	6	5	6	6	7	5	5	5	6	5	6	6	6	6	6	5	6	5	5	6	6	6	6	6	6	Mecl	6-10	Less	31-3	Yes	Not ı	Man	0	0	0	0	0	#####
1067	4.33	6.00	5.00	4.33	4.00	4.73	4.00	2.20	2.50	2.90	4	6	5	5	4	3	6	3	5	5	6	6	5	3	5	2	2	6	2	6	3	2	2	2	4	2	2	2	2	6	Mecl	16-2	16-2	41-4	No	Regi	Inves	0	0	0	0	0	88.59
1069	4.67	6.00	5.67	5.67	5.33	5.47	5.33	4.60	5.00	4.98	6	6	4	5	5	5	6	6	5	6	6	6	5	5	6	6	6	6	5	6	5	5	4	4	6	6	5	4	3	4	Mecl	3yrs	1yr t	26-3	No	Not ı	Desi	0	0	0	0	0	#####
1072	6.00	6.33	6.33	6.33	6.33	6.27	6.17	6.00	6.00	6.06	7	7	6	7	6	6	6	6	6	6	6	6	7	6	6	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	Mecl	More	16-2	Olde	Yes	Regi	Man	0	0	0	0	0	#####
1073	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.80	7.00	6.93	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	7	Mecl	More	1yr t	Olde	No	Regi	Inves	0	0	0	0	0	#####
1082	6.33	6.33	4.67	6.67	5.67	5.93	5.83	5.20	5.50	5.51	6	6	7	5	6	6	6	5	6	5	7	7	6	7	4	6	6	5	6	6	5	6	5	5	6	6	6	5	4	6	Mecl	16-2	6-10	41-4	Yes	Regi	Desi	0	0	0	0	0	#####
1084	6.00	6.33	5.33	6.00	5.00	5.73	6.00	5.00	4.75	5.25	6	7	6	5	4	6	6	5	6	6	6	6	6	5	6	5	6	4	6	6	5	6	4	5	5	5	6	5	5	6	Mecl	More	1yr t	Olde	No	Regi	Desi	0	0	0	0	0	#####
1085	6.00	6.00	5.67	6.00	5.67	5.87	6.00	6.40	5.75	6.05	6	6	6	5	6	6	6	5	6	6	6	6	6	6	6	7	6	7	6	6	6	6	6	6	5	6	6	6	6	6	Mecl	3yrs	Less	25yr	No	Regi	Man	0	0	0	0	0	#####
1086	3.67	5.00	3.33	5.00	3.33	4.07	5.83	5.40	5.50	5.58	6	6	4	3	2	2	3	3	5	6	3	6	5	6	1	5	6	6	6	6	4	6	6	4	7	5	6	5	6	6	mec	3yrs	3yrs	26-3	Yes	Regi	Desi	0	0	0	0	0	66.67
1089	6.33	5.67	5.33	6.00	6.33	5.93	5.67	5.20	5.75	5.54	6	5	5	5	6	7	6	6	7	6	6	6	7	6	5	6	6	6	6	7	5	5	6	6	6	5	5	4	5	5	Mecl	3yrs	3yrs	26-3	No	Regi	Desi	0	0	0	0	0	#####
1091	6.00	7.00	5.67	6.67	5.00	6.07	5.33	5.60	6.00	5.64	7	7	6	6	5	6	7	4	6	4	6	7	6	7	7	5	6	7	6	6	6	4	6	6	6	6	6	6	4	4	Mecl	21-2	21-2	Olde	Yes	Regi	Desi	0	0	0	0	0	#####
1093	5.33	2.67	6.00	6.00	2.67	4.53	5.83	4.00	4.50	4.78	6	2	5	6	3	5	3	2	6	6	6	3	3	6	6	6	5	6	2	6	6	5	4	3	6	5	6	5	2	6	Mecl	6-10	3yrs	31-3	No	Regi	Inves	0	0	0	0	0	74.67
1096	6.33	5.33	6.33	6.33	4.67	5.80	6.00	5.40	6.00	5.80	7	6	6	6	4	7	4	6	6	6	6	6	4	6	7	6	6	7	5	7	6	5	6	6	6	6	6	6	4	5	Mecl	21-2	11-1	41-4	Yes	Regi	Inves	0	0	0	0	0	#####
1099	5.00	5.00	4.00	4.33	4.33	4.53	4.17	3.40	3.50	3.69	5	5	4	3	4	6	5	4	5	4	4	5	5	4	5	4	3	5	2	4	4	2	3	3	4	4	5	4	4	5	Mecl	1yr t	1yr t	26-3	No	Regi	Rese	0	0	0	0	0	87.63
1100	2.33	5.33	6.67	6.00	5.00	5.07	6.50	6.00	5.50	6.00	6	6	5	7	6	1	5	6	1	6	6	5	3	6	7	7	5	6	7	7	5	7	5	5	6	6	6	7	6	6	Mecl	6-10	3yrs	31-3	Yes	Regi	Man	0	0	0	0	0	#####
1101	5.33	7.00	5.00	5.33	5.67	5.67	5.50	3.40	4.00	4.30	5	7	5	5	6	5	7	5	6	5	6	7	6	5	5	7	5	6	4	6	4	3	2	5	5	4	5	2	2	6	Mecl	21-2	1yr t	41-4	Yes	Regi	Man	0	0	0	0	0	#####
1104	5.33	4.67	6.67	5.00	5.33	5.40	4.67	2.20	4.50	3.79	4	5	6	7	5	5	3	5	5	7	6	6	6	5	6	6	3	6	2	6	2	2	5	5	6	2	2	2	2	6	Mecl	11-1	1yr t	36-4	Yes	Regi	Impr	0	0	0	0	0	#####
1105	6.33	6.33	6.00	6.67	3.00	5.67	5.33	5.20	6.00	5.51	7	7	6	6	3	7	6	3	6	6	7	6	3	6	6	6	5	6	6	6	6	4	6	6	6	6	4	4	5	6	Mecl	16-2	3yrs	41-4	No	Regi	Man	0	0	0	0	0	#####
1111	5.00	4.33	6.67	6.33	6.33	5.73	5.83	4.40	6.00	5.41	6	4	6	7	7	3	3	6	6	7	7	6	6	6	6	6	6	7	4	7	6	6	7	6	5	6	4	4	2	5	Mecl	6-10	Less	26-3	Yes	Regi	Man	0	0	0	0	0	#####
1115	5.00	5.67	5.67	5.00	4.67	5.20	5.33	4.40	4.75	4.83	5	6	3	5	4	6	5	5	6	6	5	6	5	5	6	6	4	7	5	6	6	4	5	5	5	4	3	4	3	6	Mecl	6-10	3yrs	31-3	No	Regi	Man	0	0	0	0	0	#####
1116	7.00	5.00	6.33	6.33	4.33	5.80	6.00	5.60	6.75	6.12	6	3	7	6	3	7	6	4	7	6	7	6	6	6	7	5	6	6	5	6	6	6	6	7	7	7	7	6	5	6	Mecl	11-1	6-10	36-4	Yes	Regi	Man	0	0	0	0	0	#####
1126	5.67	4.33	4.00	2.67	5.33	4.40	6.33	5.20	5.25	5.59	3	5	6	4	5	6	2	5	5	5	3	6	6	2	3	6	6	7	6	7	6	6	6	5	5	5	6	4	4	6	Mecl	1yr t	Less	25yr	Yes	Regi	Man	0	0	0	0	0	66.37
1130	6.33	4.67	5.00	7.00	5.67	5.73	5.33	3.60	4.50	4.48	7	4	6	4	5	6	5	6	7	6	7	5	6	7	5	6	5	5	3	6	3	5	3	5	6	4	5	4	3	5	Mecl	More	1yr t	Olde	No	Regi	Inves	0	0	0	0	0	#####
1131	5.33	6.67	6.00	6.33	6.33	6.13	6.83	5.20	4.50	5.51	6	7	4	6	6	6	6	6	6	6	7	7	7	6	6	7	5	7	4	7	5	7	3	6	6	3	6	6	6	7	Mecl	More	Less	Olde	No	Regi	Impr	0	0	0	0	0	#####
1138	6.00	6.00	7.00	6.33	4.00	5.87	5.50	6.00	6.00	5.83	6	6	6	7	4	6	6	4	6	7	7	6	4	6	7	4	6	6	6	6	6	5	6	6	6	6	6	6	6	6	Mecl	11-1	6-10	41-4	No	Regi	Inves	0	0	0	0	0	#####
1139	5.67	6.00	5.33	5.33	5.00	5.47	5.50	5.40	5.50	5.47	5	6	5	5	4	6	6	5	6	6	6	6	6	5	5	5	6	6	5	5	6	6	5	6	6	5	6	6	4	5	Mecl	16-2	11-1	36-4	Yes	Regi	Man	0	0	0	0	0	#####
1148	3.33	3.67	5.00	3.33	3.00	3.67	4.83	2.20	4.00	3.68	3	5	3	4	3	5	3	1	2	5	4	3	5	3	6	6	2	5	3	4	2	5	5	5	4	2	4	2	2	5	Mecl	3yrs	1yr t	26-3	No	Regi	Man	0	0	0	0	0	40.00
1167	5.67	5.00	6.00	5.33	5.00	5.40	5.83	5.80	5.50	5.71	5	5	5	6	4	6	5	5	6	6	6	5	6	5	6	6	6	6	6	6	6	6	5	5	6	6	5	5	6	6	Mecl	More	6-10	Olde	Yes	Regi	Rese	0	0	0	0	0	#####
Ave	5.60	5.47	5.45	5.63	4.97	5.43	5.77	4.93	5.41	5.37	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	#####
Std dev	1.00	1.06	1.14	1.02	1.09	0.75	0.67	1.14	1.00	0.83	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	64.56

8.5. ANNEXURE E – SIGNIFICANCE TESTING FOR SECTION 5.1

Summary of results

Job characteristic	Reject / Do not reject the null hypothesis	Can one say there is a significant difference between the highest and lowest score?
MPS	Do not reject	No
Average satisfaction	Reject	Yes
Task significance	Reject	Yes
Skill variety	Do not reject	No
Autonomy	Do not reject	No
Task identity	Reject	Yes
Feedback	Do not reject	No
Internal work motivation	Reject	Yes
Growth satisfaction	Reject	Yes
General job satisfaction	Reject	Yes

Actuaries vs. Mechanical engineers Growth satisfaction	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.5
Sample Standard Deviation	0.93
Population 2 Sample	
Sample Size	43
Sample Mean	5.08
Sample Standard Deviation	1.14
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	42

Total Degrees of Freedom	238
Pooled Variance	0.941612
Difference in Sample Means	0.42
t-Test Statistic	2.571432
Two-Tailed Test	
Lower Critical Value	-1.96998
Upper Critical Value	1.969984
p-Value	0.010736
Reject the null hypothesis	

Civil vs. Mechanical Internal work motivation	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	38
Sample Mean	6
Sample Standard Deviation	0.65
Population 2 Sample	
Sample Size	43
Sample Mean	5.61
Sample Standard Deviation	0.75
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	37
Population 2 Sample Degrees of Freedom	42
Total Degrees of Freedom	79
Pooled Variance	0.49693
Difference in Sample Means	0.39
t-Test Statistic	2.484851
Two-Tailed Test	
Lower Critical Value	-1.99045
Upper Critical Value	1.990452
p-Value	0.015074
Reject the null hypothesis	

Chemical vs. Electrical Feedback	

Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	35
Sample Mean	5.06
Sample Standard Deviation	1.05
Population 2 Sample	
Sample Size	32
Sample Mean	4.9
Sample Standard Deviation	1.2
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	34
Population 2 Sample Degrees of Freedom	31
Total Degrees of Freedom	65
Pooled Variance	1.263462
Difference in Sample Means	0.16
t-Test Statistic	0.581983
Two-Tailed Test	
Lower Critical Value	-1.99714
Upper Critical Value	1.997137
p-Value	0.562591
Do not reject the null hypothesis	

Civil vs. Chemical Autonomy	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	38
Sample Mean	5.65
Sample Standard Deviation	1.17
Population 2 Sample	
Sample Size	35
Sample Mean	5.58
Sample Standard Deviation	0.99
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	37
Population 2 Sample Degrees of Freedom	34
Total Degrees of Freedom	71

Pooled Variance	1.182714
Difference in Sample Means	0.07
t-Test Statistic	0.27474
Two-Tailed Test	
Lower Critical Value	-1.99394
Upper Critical Value	1.993944
p-Value	0.784314
Do not reject the null hypothesis	

Actuaries vs. Electrical Task identity	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.61
Sample Standard Deviation	0.9
Population 2 Sample	
Sample Size	32
Sample Mean	4.99
Sample Standard Deviation	1.46
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	31
Total Degrees of Freedom	227
Pooled Variance	0.990483
Difference in Sample Means	0.62
t-Test Statistic	3.268576
Two-Tailed Test	
Lower Critical Value	-1.97047
Upper Critical Value	1.97047
p-Value	0.001249
Reject the null hypothesis	

Chemical vs. Electrical Skill variety	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	

Sample Size	35
Sample Mean	5.75
Sample Standard Deviation	0.76
Population 2 Sample	
Sample Size	32
Sample Mean	5.29
Sample Standard Deviation	1.47
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	34
Population 2 Sample Degrees of Freedom	31
Total Degrees of Freedom	65
Pooled Variance	1.332712
Difference in Sample Means	0.46
t-Test Statistic	1.629151
Two-Tailed Test	
Lower Critical Value	-1.99714
Upper Critical Value	1.997137
p-Value	0.108119
Do not reject the null hypothesis	

Actuaries vs. Mechanical Average satisfaction	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.45
Sample Standard Deviation	0.76
Population 2 Sample	
Sample Size	43
Sample Mean	5.11
Sample Standard Deviation	0.966
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	42
Total Degrees of Freedom	238
Pooled Variance	0.640345
Difference in Sample Means	0.34
t-Test Statistic	2.524257

Two-Tailed Test	
Lower Critical Value	-1.96998
Upper Critical Value	1.969984
p-Value	0.012246
Reject the null hypothesis	

Actuary vs. Electrical General job satisfaction	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.07
Sample Standard Deviation	1.07
Population 2 Sample	
Sample Size	32
Sample Mean	4.55
Sample Standard Deviation	1.33
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	31
Total Degrees of Freedom	227
Pooled Variance	1.230116
Difference in Sample Means	0.52
t-Test Statistic	2.459918
Two-Tailed Test	
Lower Critical Value	-1.97047
Upper Critical Value	1.97047
p-Value	0.014644
Reject the null hypothesis	

Chemical vs. Electrical Task significance	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.61
Sample Standard Deviation	0.9
Population 2 Sample	

Sample Size	32
Sample Mean	4.99
Sample Standard Deviation	1.46
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	31
Total Degrees of Freedom	227
Pooled Variance	0.990483
Difference in Sample Means	0.62
t-Test Statistic	3.268576
Two-Tailed Test	
Lower Critical Value	-1.97047
Upper Critical Value	1.97047
p-Value	0.001249
Reject the null hypothesis	

Civil vs. Electrical MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	38
Sample Mean	5.48
Sample Standard Deviation	0.655
Population 2 Sample	
Sample Size	32
Sample Mean	5.24
Sample Standard Deviation	0.755
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	37
Population 2 Sample Degrees of Freedom	31
Total Degrees of Freedom	68
Pooled Variance	0.493304
Difference in Sample Means	0.24
t-Test Statistic	1.424202
Two-Tailed Test	
Lower Critical Value	-1.99547
Upper Critical Value	1.995468
p-Value	0.158961

Do not reject the null hypothesis

Engineer vs. Actuary MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.47
Sample Standard Deviation	0.634
Population 2 Sample	
Sample Size	148
Sample Mean	5.38
Sample Standard Deviation	0.721
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	147
Total Degrees of Freedom	343
Pooled Variance	0.452478
Difference in Sample Means	0.09
t-Test Statistic	1.22998
Two-Tailed Test	
Lower Critical Value	-1.96691
Upper Critical Value	1.966905
p-Value	0.219547
Do not reject the null hypothesis	

8.6. ANNEXURE F - SIGNIFICANCE TESTING FOR SECTION 5.3

Engineers vs. Workforce Average satisfaction	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	148
Sample Mean	5.3
Sample Standard Deviation	0.91
Population 2 Sample	
Sample Size	4012
Sample Mean	5
Sample Standard Deviation	1.3
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	147
Population 2 Sample Degrees of Freedom	4011
Total Degrees of Freedom	4158
Pooled Variance	1.659529
Difference in Sample Means	0.3
t-Test Statistic	2.782233
Two-Tailed Test	
Lower Critical Value	-1.96053
Upper Critical Value	1.960534
p-Value	0.005423
Reject the null hypothesis	

Actuaries vs. Workforce Average satisfaction	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.5

Sample Standard Deviation	0.7
Population 2 Sample	
Sample Size	4012
Sample Mean	4.7
Sample Standard Deviation	1.4
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	4011
Total Degrees of Freedom	4207
Pooled Variance	1.891514
Difference in Sample Means	0.8
t-Test Statistic	7.970936
Two-Tailed Test	
Lower Critical Value	-1.96053
Upper Critical Value	1.96053
p-Value	2.01E-15
Reject the null hypothesis	

Actuaries vs. US Professionals Average satisfaction	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.4
Sample Standard Deviation	0.76
Population 2 Sample	
Sample Size	200
Sample Mean	5.3
Sample Standard Deviation	0.9
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	199
Total Degrees of Freedom	395
Pooled Variance	0.694683
Difference in Sample Means	0.1
t-Test Statistic	1.195253
Two-Tailed Test	
Lower Critical Value	-1.96599

Upper Critical Value	1.965986
p-Value	0.232705
Do not reject the null hypothesis	

Actuaries vs. Clerical MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.5
Sample Standard Deviation	0.7
Population 2 Sample	
Sample Size	135
Sample Mean	4.6
Sample Standard Deviation	1.1
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	134
Total Degrees of Freedom	330
Pooled Variance	0.782364
Difference in Sample Means	0.9
t-Test Statistic	9.10687
Two-Tailed Test	
Lower Critical Value	-1.96718
Upper Critical Value	1.967178
p-Value	8.32E-18
Reject the null hypothesis	

Actuaries vs. Workforce MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.5
Sample Standard Deviation	0.7
Population 2 Sample	
Sample Size	4012
Sample Mean	4.7

Sample Standard Deviation	1.4
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196
Population 2 Sample Degrees of Freedom	4011
Total Degrees of Freedom	4207
Pooled Variance	1.891514
Difference in Sample Means	0.8
t-Test Statistic	7.970936
Two-Tailed Test	
Lower Critical Value	-1.96053
Upper Critical Value	1.96053
p-Value	2.01E-15
Reject the null hypothesis	

Engineers vs. Workforce MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	148
Sample Mean	5.4
Sample Standard Deviation	0.9
Population 2 Sample	
Sample Size	4012
Sample Mean	4.7
Sample Standard Deviation	1.4
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	147
Population 2 Sample Degrees of Freedom	4011
Total Degrees of Freedom	4158
Pooled Variance	1.919343
Difference in Sample Means	0.7
t-Test Statistic	6.036516
Two-Tailed Test	
Lower Critical Value	-1.96053
Upper Critical Value	1.960534
p-Value	1.71E-09
Reject the null hypothesis	

Engineers vs. US Professionals MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	148
Sample Mean	5.4
Sample Standard Deviation	0.9
Population 2 Sample	
Sample Size	200
Sample Mean	5.3
Sample Standard Deviation	1.1
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	147
Population 2 Sample Degrees of Freedom	199
Total Degrees of Freedom	346
Pooled Variance	1.040058
Difference in Sample Means	0.1
t-Test Statistic	0.904331
Two-Tailed Test	
Lower Critical Value	-1.96685
Upper Critical Value	1.966846
p-Value	0.366449
Do not reject the null hypothesis	

Actuaries vs. US Professionals MPS	
Data	
Hypothesized Difference	0
Level of Significance	0.05
Population 1 Sample	
Sample Size	197
Sample Mean	5.5
Sample Standard Deviation	0.7
Population 2 Sample	
Sample Size	200
Sample Mean	5.3
Sample Standard Deviation	1.1
Intermediate Calculations	
Population 1 Sample Degrees of Freedom	196

Population 2 Sample Degrees of Freedom	199
Total Degrees of Freedom	395
Pooled Variance	0.852734
Difference in Sample Means	0.2
t-Test Statistic	2.157625
Two-Tailed Test	
Lower Critical Value	-1.96599
Upper Critical Value	1.965986
p-Value	0.031559
Reject the null hypothesis	